STÖBER

ServoFit

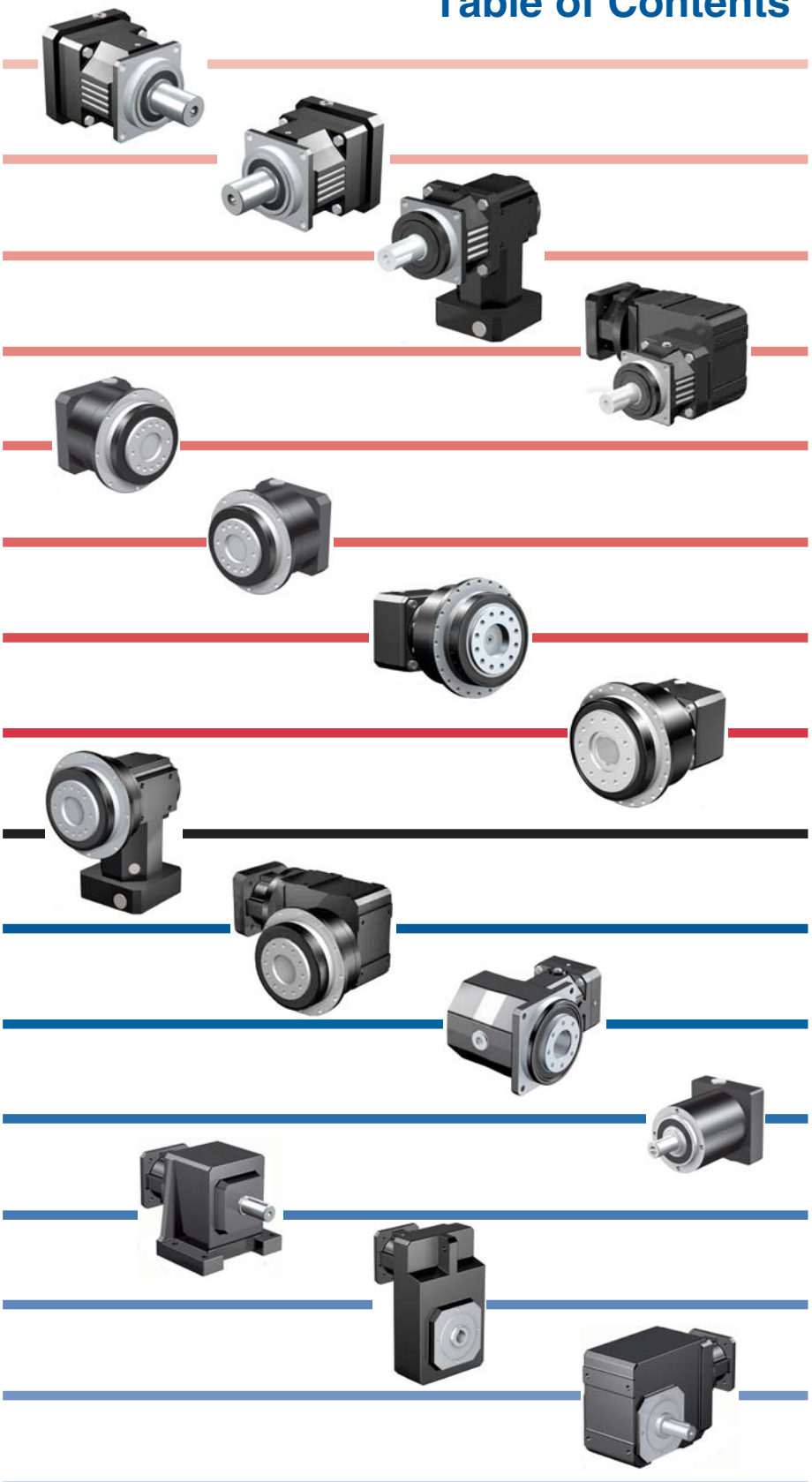
STÖBER ServoFit® Gearheads 2009

STÖBER

75 YEARS STÖBER

since 1934

ServoFit® Gearheads
Table of Contents



See web site for drawings.

ServoFit® Gearheads

P Series
- Backlash — ≤ 3 arc/mins
- Ratios — 3:1 to100:1
- Input RPM — up to 8,000
- Noise Level — as low as 61 dB(A)**
- Output Torque up to 17,700 in.lbs.
- Available:
  - —Washdown Food Duty

PA Series
- Backlash — ≤ 1 arc/mins
- Ratios — 3:1 to100:1
- Input RPM — up to 8,000
- Noise Level — as low as 61 dB(A)**
- Output Torque up to 8,850 in.lbs.
- Available:
  - —Washdown Food Duty

PKX Series
- Backlash — ≤ 4 arc/mins
- Ratios — 3:1 to 300:1
- Input RPM — up to 6,000
- Noise Level — as low as 70 dB(A)**
- Output Torque up to 17,700 in.lbs.

Available:
- —Washdown Food Duty

PK Series
- Backlash — ≤ 3.5 arc/mins
- Ratios — 12:1 to 561:1
- Input RPM — up to 6,000
- Noise Level — as low as 63 dB(A)**
- Output Torque up to 17,700 in.lbs.

Available:
- —Washdown Food Duty

PH Series
- Backlash — ≤ 3 arc/mins
- Ratios — 4:1 to 121.0:1
- Input RPM — up to 8,000
- Noise Level — as low as 61 dB(A)**
- Output Torque up to 44,290 in.lbs.

PHA Series
- Backlash — ≤ 1 arc/mins
- Ratios — 4:1 to 121.0:1
- Input RPM — up to 8,000
- Noise Level — as low as 61 dB(A)**
- Output Torque up to 44,290 in.lbs.

PHQ Series
- Backlash — ≤ 3 arc/mins
- Ratios — 18:1 to 600:1
- Input RPM — up to 7,000
- Noise Level — as low as 62 dB(A)**
- Output Torque up to 57,570 in.lbs.

PHQA Series
- Backlash — ≤ 1 arc/mins
- Ratios — 18:1 to 600:1
- Input RPM — up to 7,000
- Noise Level — as low as 62 dB(A)**
- Output Torque up to 57,570 in.lbs.

PHKX Series
- Backlash — ≤ 3.5 arc/mins
- Ratios — 4:1 to 300:1
- Input RPM — up to 6,000
- Noise Level — as low as 70 dB(A)**
- Output Torque up to 66,430 in.lbs.

PHK Series
- Backlash — ≤ 3.5 arc/mins
- Ratios — 16:1 to 561:1
- Input RPM — up to 6,000
- Noise Level — as low as 63 dB(A)**
- Output Torque up to 11,000 in.lbs.

KS Series
- Backlash — ≤ 4 arc/mins
- Ratios — 6:1 to 200:1
- Input RPM — up to 6,000
- Noise Level — as low as 62 dB(A)**
- Output Torque up to 2,210 in.lbs.

PE Series
- Backlash — ≤ 15 arc/mins
- Ratios — 5:1 to 100:1
- Input RPM — up to 8,000
- Noise Level — as low as 60 dB(A)**
- Output Torque up to 1,060 in.lbs.

C Series
- Backlash — ≤ 20 arc/mins
- Ratios — 2:1 to 276:1*
- Input RPM — up to 4,500
- Noise Level — as low as 53 dB(A)**
- Output Torque up to 62,000 in.lbs.
- Available:
  - —Inch or Metric Output
  - —Beverage and Food Duty

F Series
- Backlash:
  - Standard ≤ 11 arc/mins
  - Reduced ≤ 7 arc/mins
- Ratios — 4:1 to 540:1*
- Input RPM — up to 4,500
- Noise Level — as low as 53 dB(A)**
- Output Torque up to 9,700 in.lbs.
- Available:
  - — Inch or Metric Output
  - —Solid, Hollow, Single and Double Bushing
  - —Beverage and Food Duty

K Series
- Backlash:
  - Standard ≤ 12 arc/mins
  - Reduced ≤ 6 arc/mins
- Ratios — 4:1 to 381:1*
- Input RPM — up to 4,500
- Noise Level — as low as 53 dB(A)**
- Output Torque up to 106,000 in.lbs.
- Available:
  - — Inch or Metric Output
  - —Solid, Hollow, Single and Double Bushing
  - —Beverage and Food Duty

* Ratios standard in one housing. Higher ratios available in compound units.
** dB(A) rating measured at 1 meter distance with 3000 RPM input.

ServoFit® Gearheads

The STOBER offering of ServoFit™ gearheads will enable you to fit all your servo needs. The ServoFit™ Precision Planetary Gearheads are for compact, highly dynamic applications. The ServoFit™ Modular System was designed for those applications where the compact size of a planetary gearhead is not needed. With these two lines, STOBER Drives offers the world's largest variety of servo gearheads.

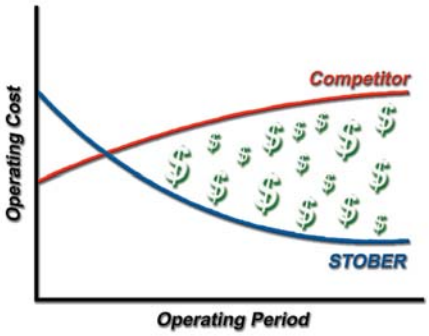
The STOBER difference = VALUE for you!

Fits Any Servo Motor

Motor plates will fit a wide selection of NEMA, IEC, or custom servo motors.

Full warranty on all reducer components: gears, covers, material and workmanship, etc. Normal wear items (oil seals, bearings, etc.) are covered for 2 years.

Most sizes are available with STANDARD 3 DAY DELIVERY. (Does not apply to PA and PHA.) Custom motor plates — 10 days maximum.



24 Hours – No expedite fee
Daytime Phone: 606 759-5090
On-Call Emergency: 606 563-6035

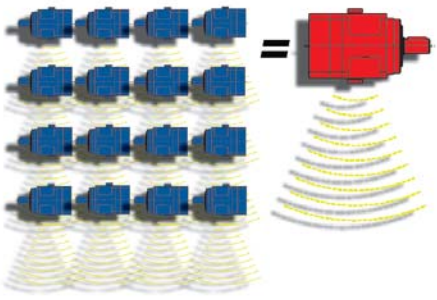
Helical Gears

- Highest torque capacity
- Maximum efficiency
- Maintains low noise level

Exceptional Performance

- Low noise level
- Cool running
- High speed capacity
- High torque capacity
- Low backlash

1 conventional planetary gearhead produces the same noise level as 16 STOBER planetary gearheads with HeliCamber™ gearing technology.



High Quality Lubricant

- Wide temperature range
- Enhanced oxidation stability
- Optimum corrosion protection
- Superior wear protection

See web site for drawings.

ServoFit® Gearheads
Beverage and Food Duty

Beverage and Food Duty

- Lubricated for Life — Double Output Seals (where possible)
- Maintenance Free — No Breather
- Stainless Output Bushing, Shaft, or Bore
  —Output Covers Included with Double Bushings
  —Output Covers Optional with Single Bushing and Quills
- Multilayer Industrial 316 Stainless Steel Epoxy Coating
- 5 Year Warranty

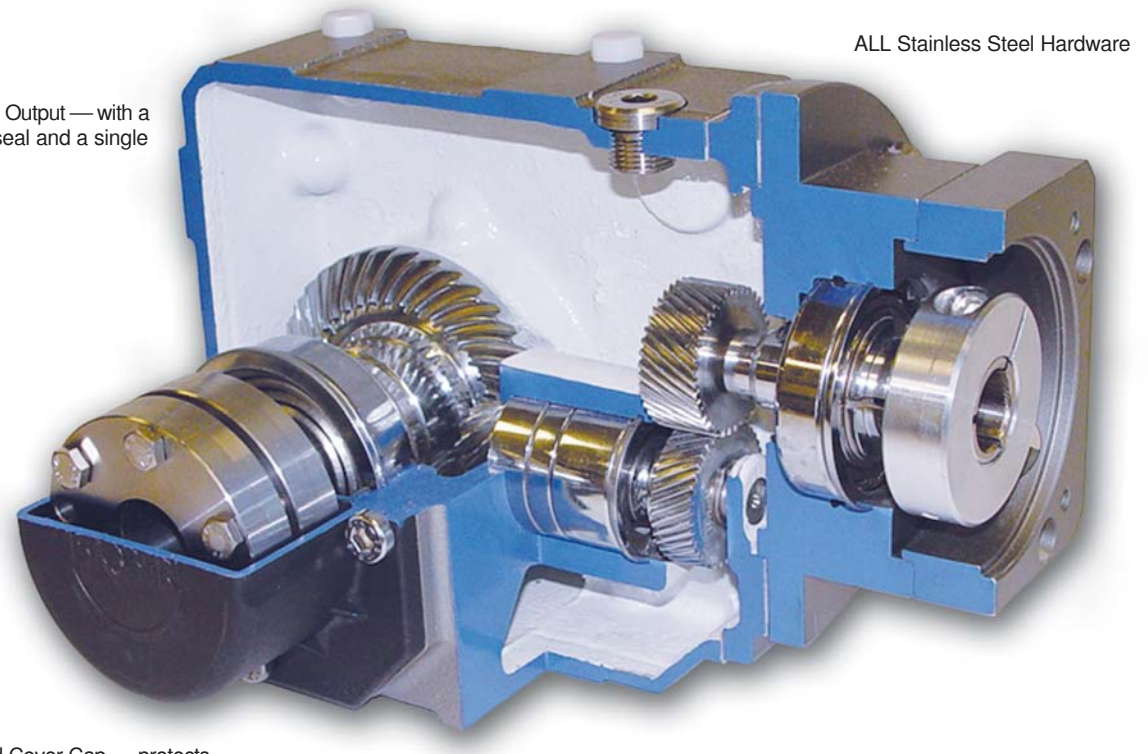
SILVER BULLET AM™

Standard Coating:

• BEVERAGE	1-Primer 2-Industrial 316 Stainless Steel Epoxy
• FOOD	1-Primer 2-Industrial 316 Stainless Steel Epoxy 1-Silver Bullet Anti-Microbial™ Epoxy
• Options	Layer of Ultra Clear Industrial Epoxy White Epoxy

ALL Stainless Steel Hardware

Double Sealed Output — with a dual lip outer seal and a single lip inner seal



Outside Closed Cover Cap — protects seals from high pressure washing

Inside Split Cover Cap — enables easy assembly onto the shaft

OUTPUT OPTIONS:

- Patented (U.S. Patent Number 5,496,127) Stainless Steel Double Sided Bushing Mounted into Stainless Steel Output Quill — easily mounts onto standard cold finished, ground, or stainless shafting.
- Single side output shaft
- Hollow output

Silver Bullet AM™ is a registered trademark of Burke Industrial Coatings.

Mounting Position must be specified when ordering. See Page 246.

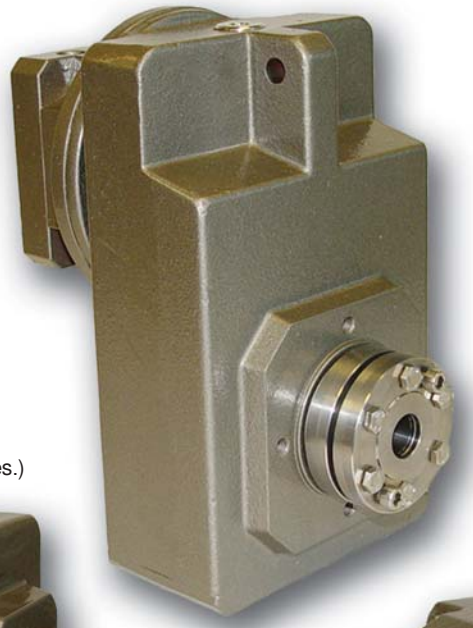
ServoFit® Gearheads
Beverage and Food Duty

Beverage and Food Duty

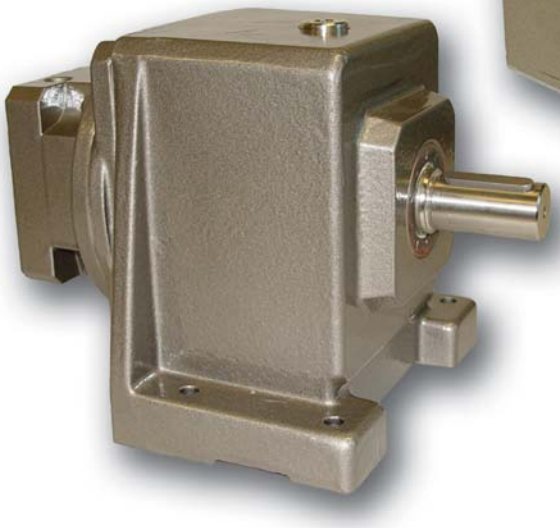
- Totally Enclosed
- Lubricated for Life
- Maintenance Free

SILVER BULLET AM™

"F" Series Hollow Output.
(Stainless steel output is not available in all sizes.)



"C" Series Solid Shaft
(Stainless steel output is not available in all sizes.)



“P” and “PKX” Series Precision Planetary – Sizes 3 thru 5
(Stainless steel output is not available in all sizes.)

Silver Bullet AM® is a registered trademark of Burke Industrial Coatings.

Mounting Position must be specified when ordering. See Page 246.

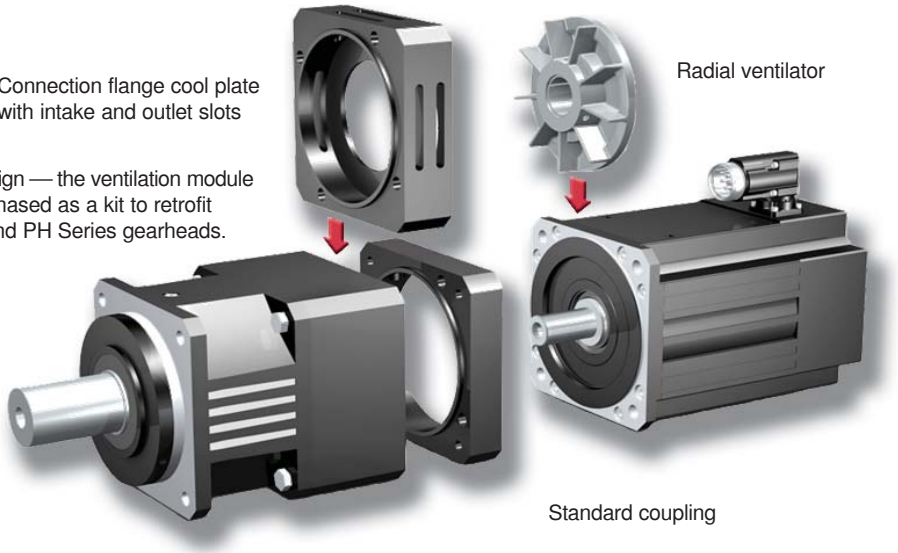
See web site for drawings.

ServoFit® Gearheads
ServoCool

The compact design of planetary gearhead allows very little area for heat dissipation. While the STOBER Precision Planantary Gearhead has the lowest operating temperature available, even it's rating in continuous applications is limited by heat, especially with large planetaries or units with small ratios. The ServoCool planetary gearhead is made possible by adding a ventilation module to the existing ServoFit Precision Planetary Gearhead. These units are currently available in P and PH Series.

Connection flange cool plate with intake and outlet slots

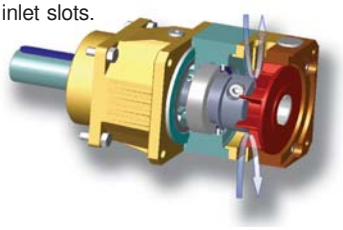
Modular design — the ventilation module can be purchased as a kit to retrofit existing P and PH Series gearheads.

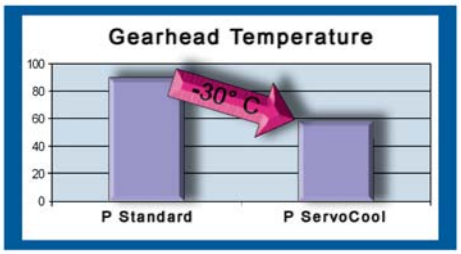


Radial ventilator

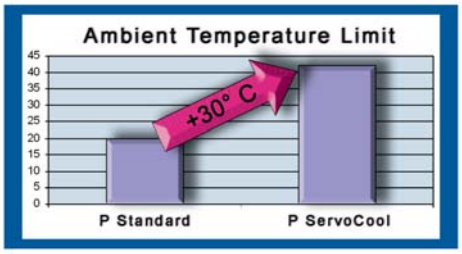
Standard coupling

Air is accelerated outward in a radial manner and then escapes through the outlet slots. Due to the resulting negative pressure in the motor adapter, air is pulled in through the inlet slots.

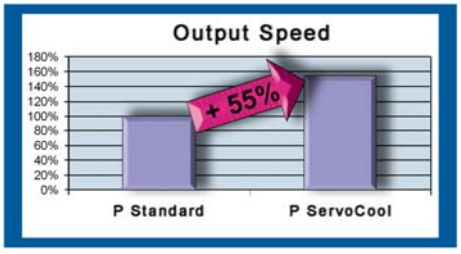




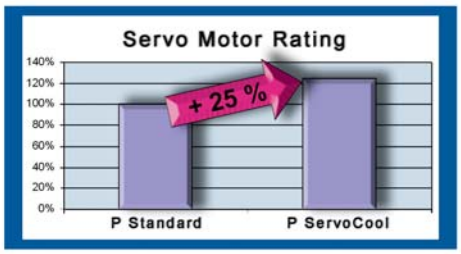
According to data from lubricant suppliers, the lifespan of oil doubles, at certain temperatures, if operating temperature is reduced by 10°C. Adding the ServoCool ventilator reduces gearhead temperature 22°C — quadrupling the expected lubricant life.



- Synthetic oil
- Lower temperature means longer life
- Lubricated for life — maintenance free solutions



- Ventilator fan mounts to motor shaft
- Forced air ventilation improves performance
- Modular design "fits" existing units
- Optional for P and PH Series



- Increased motor performance
- No added motor
- No additional wiring
- More compact than external motor fan

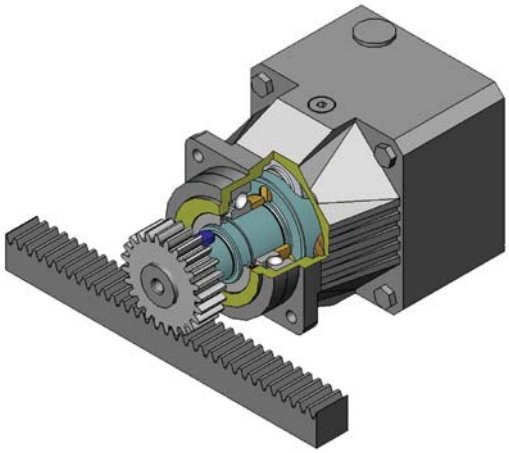
See web site for drawings.

ServoFit® Gearheads
"P" Series – Precision Planetary
Output Shaft Loads

"R" – Deep Groove Ball Bearing

Characteristics:

Minimal frictional torque
Good Radial load capacity
Axial load approx. 35% of radial



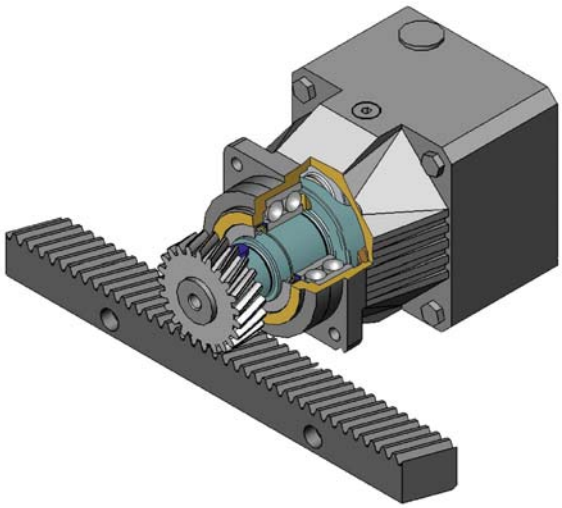
Applications:

Spur geared rack/pinion
Couplings
Belt with or without light tension

"D" – Double Row Angular

Characteristics:

Low frictional torque
Good radial bearing capaci
Axial load approx. 50% of r



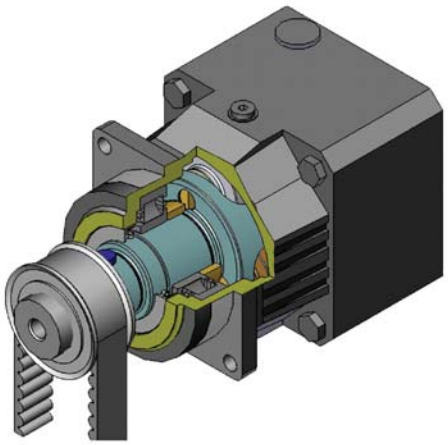
Applications:

Helical geared rack/pinion
Couplings with high axial load
Belt with or without light tension

"Z" – Cylindrical Roller Bearing

Characteristics:

Very good radial load capacity
Axial load approx. 20% of radial loac



Applications:

Prestressed belt drive
Prestressed spur rack drive
Applications with high radial loads
and/or high service requirements

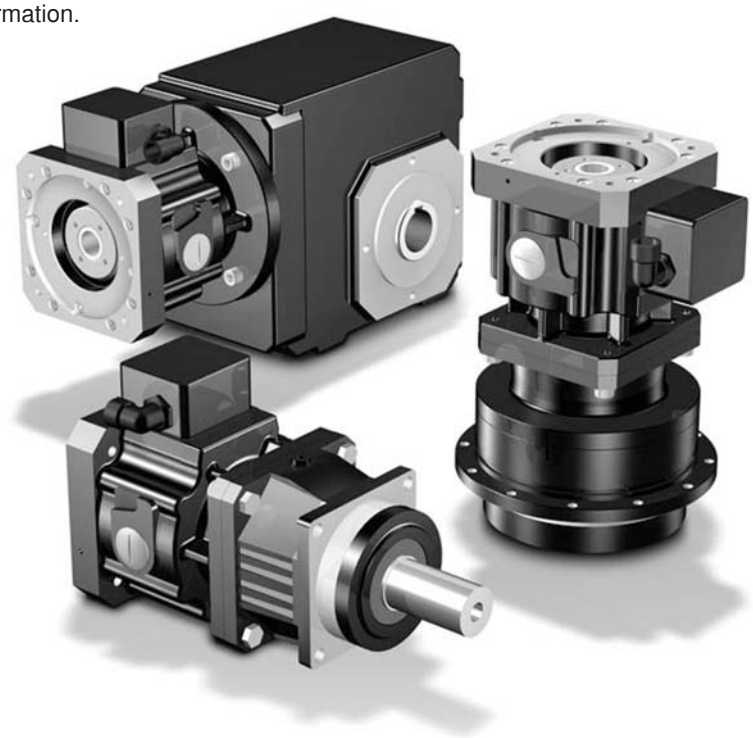
See Page 239 for shaft load.

See web site for drawings.

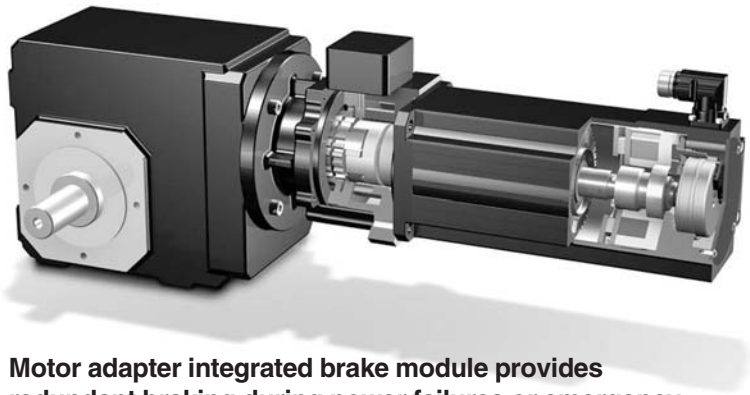
ServoStop
Motor Adapter with Integrated Brake

Available with the following units:

- ServoFit Precision Planetary Gearheads — P, PA, PH, and PHA
- Right Angle Planetary Gearheads — PK and PHK
- ServoFit Modular System Gearheads — C, F, and K
- See ***www.stober.com*** for more information.



- Saves braking at EMERGENCY STOP and power cut
- High durability even at EMERGENCY STOP
- Motor horizontal is recommended but if vertical, mount with motor up.
- Prevents accidental sliding or falling of vertical axis with gravity load absolutely reliable
- Compactness due to integration into gear reducer
- Plug-in coupling allows easy dismounting of servo motor in every position even with brake engaged
- Available with electrical or manual wear control for added safety.
- Manual hand release available
- Fits all standard servo motors
- IP54 Rated
- CSA Approved

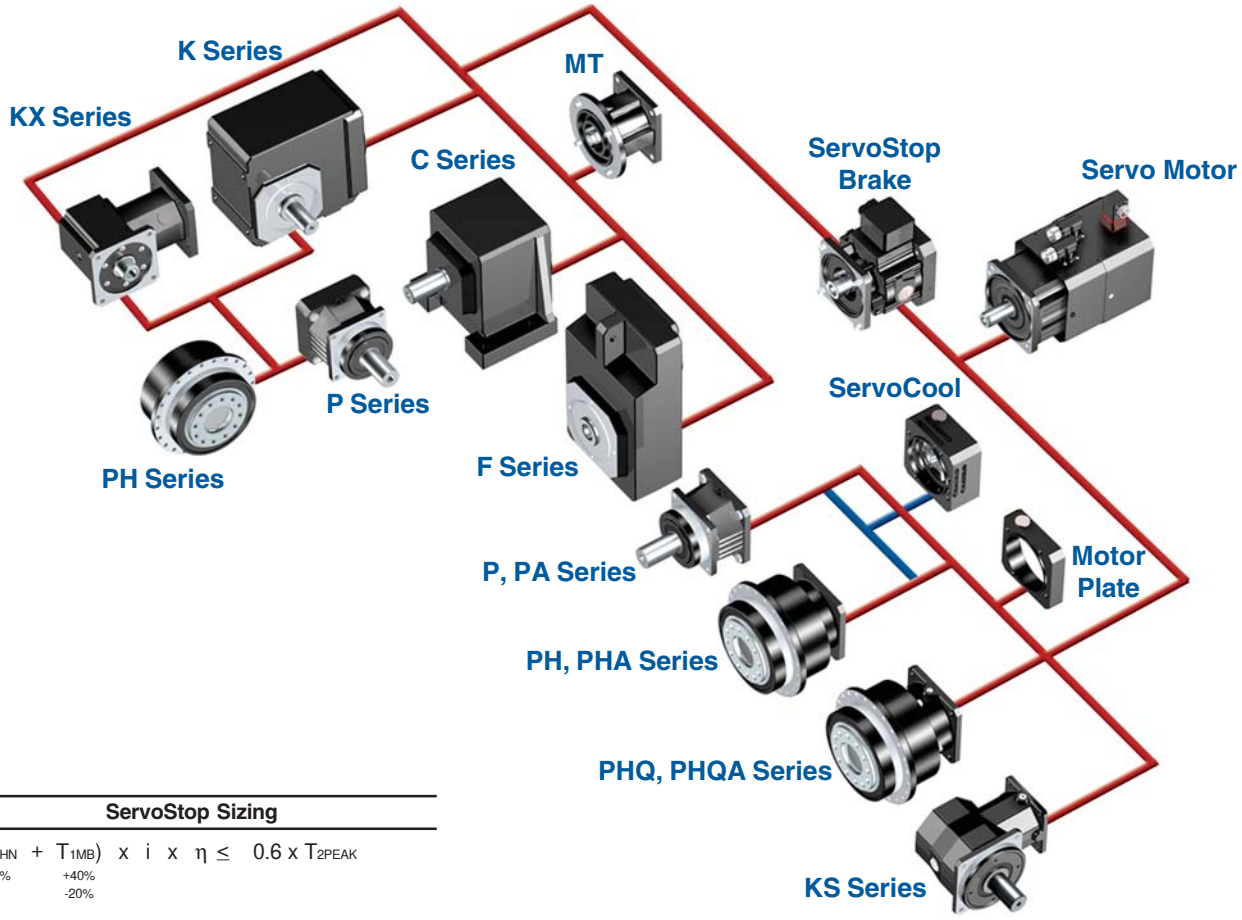


Motor adapter integrated brake module provides redundant braking during power failures or emergency stops in hazarduous situations.

See web site for drawings.

ServoStop
Motor Adapter with Integrated Brake

Combinations of series with ServoStop brakes now available from STOBER Drives Inc.



ServoStop Sizing

$$(T_{1HN} \pm 15\% + T_{1MB} {}^{+40\%}_{-20\%}) \times i \times \eta \leq 0.6 \times T_{2PEAK}$$

where:

T_{1HN} = ServoStop Braking Torque
T_{1MB} = Servo Motor Braking Torque
i = Ratio
η = Efficiency of Gear Reducer
T_{2PEAK} = Peak Output Torque of Gear Reducer

Part No. and Capacity

Unit Series/Brake No.			T_{1HN} — Braking Torque							
C, F, K PK, PHK	P PA	PH PHA	Nm	inlbs	Nm	inlbs	Nm	inlbs	Nm	inlbs
MB20	MB21	MB22	8	71	12	106	16	142	24	212
MB30	MB31	MB32	16	142	24	212	32	283	45	398
MB40	MB41	MB42	—		50	442	72	637	100	885

THE FOLLOWING INFORMATION IS REQUIRED FOR ANY UNIT:

Coil Voltage — 24 Volt, 104 Volt
Hand Release — Yes, No
Braking Torque — See above table.

See web site for drawings.

ServoFit® Gearhead Application Support

ServoSoft® application sizing software:

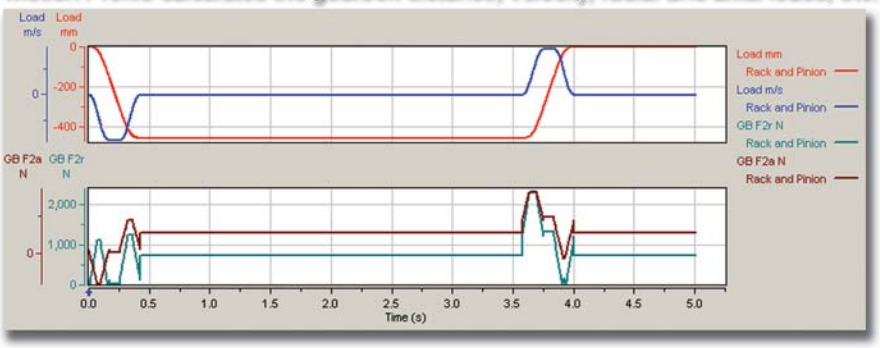
- Extremely accurate
- Sizes for peak and nominal torques
- Sizes for peak and nominal speeds
- Radial and axial loads
- Data base for all STOBER servo products

Professional Sizing Software

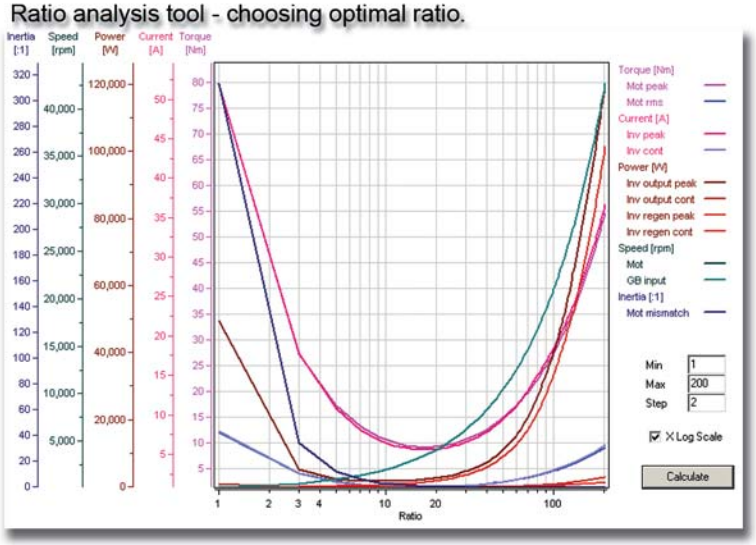
Sizing for 11 Different Types of Drive Mechanisms

- Rotary Axis
- Belt & Pulley
- Conveyor
- Dual Conveyor
- Ball Screw
- Rack & Pinion
- Dual Rack & Pinion
- Feed Roll
- Winder (center driven
- Winder (surface driven)
- Slider Crank

Motion Profile calculates the gearbox distance, velocity, radial and axial loads, etc.



Ratio analysis tool - choosing optimal ratio.



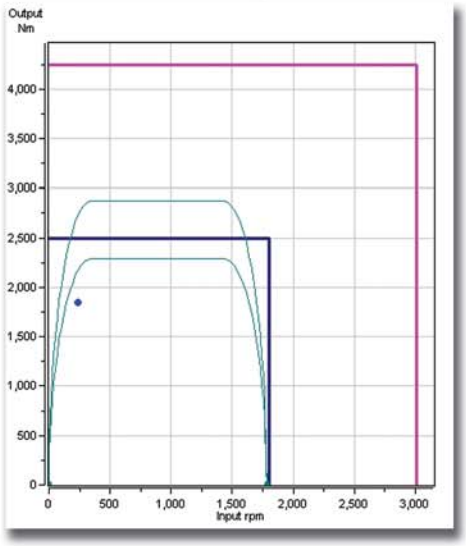
ServoSoft® is a registered trademark of ControlEng Corportation.

ServoFit® Gearhead Application Support

Data Base of ALL STOBER servo products

Vendor	Model	Typ1	Typ2	i	s	d1max (mm)
STOBER	K914_1890 MT40/38	Hollow	Shaft	188.757	4	38
STOBER	K914_1920 MT30/32	Hollow	Shaft	191.67	4	32
STOBER	K914_2430 MT40/38	Hollow	Shaft	243.275	4	38
STOBER	K914_2470 MT30/32	Hollow	Shaft	247.029	4	32
STOBER	K914_2940 MT30/32	Hollow	Shaft	293.764	4	32
STOBER	K914_3740 MT30/32	Hollow	Shaft	373.696	4	32
STOBER	P221_0040 KX301VF0I	Hollow	Shaft	4	2	19
STOBER	P221_0040 KX301VF0I	Hollow	Shaft	8	2	19
STOBER	P221_0040 KX301VF0I	Hollow	Shaft	12	2	19
STOBER	P221_0040 MT/11	Hollow	Shaft	4	1	11
STOBER	P221_0040 MT/14	Hollow	Shaft	4	1	14
STOBER	P221_0040 MT/9	Hollow	Shaft	4	1	9
STOBER	P221_0040 MTL/19	Hollow	Shaft	4	1	19
STOBER	P221_0050 KX301VF0I	Hollow	Shaft	5	2	19
STOBER	P221_0050 KX301VF0I	Hollow	Shaft	10	2	19
STOBER	P221_0050 KX301VF0I	Hollow	Shaft	15	2	19
STOBER	P221_0050 MT/11	Hollow	Shaft	5	1	11
STOBER	P221_0050 MT/14	Hollow	Shaft	5	1	14

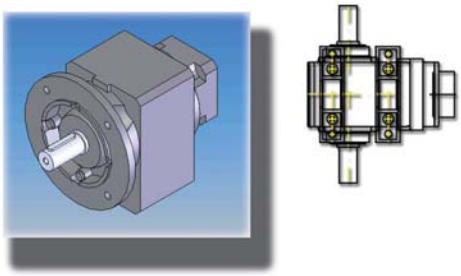
Gear Reducer performance data

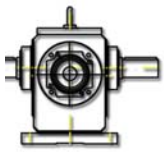
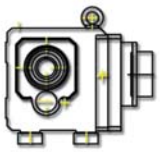
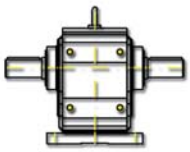


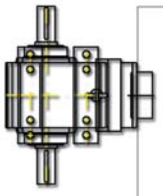
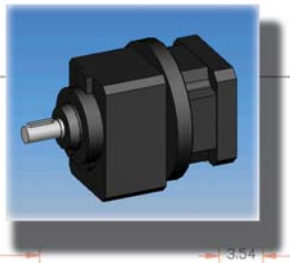
See web site for drawings.

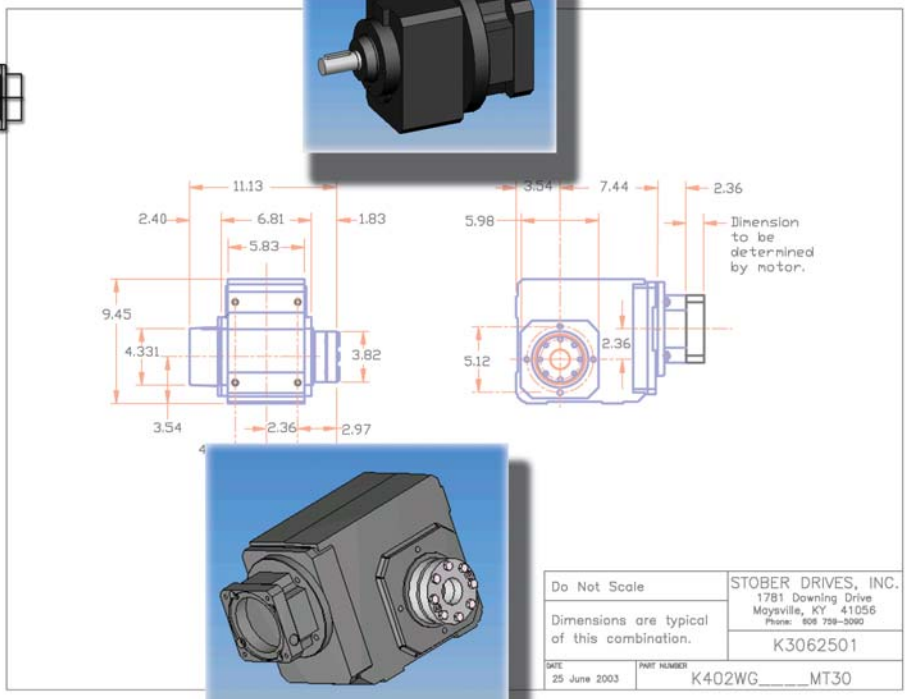
ServoFit® Gearhead Application Support

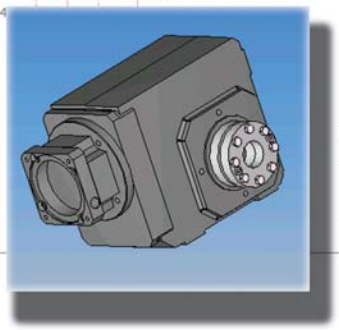
Drawings are available in a format to suit your application. We can provide eDrawings, 2D, 3D, CAD drawings with six views, or certified faxable prints.
The eDrawing application gives you the power to view 3D models and 2D drawings with no special software. The viewer and drawing are contained in one simple download. eDrawings eliminate the communication barriers that designers and engineers deal with daily. They are small enough to email, are self-viewing, and significantly easier to understand, plus, there is no more uncertainty about whether the recipient will be able to open and view the drawing file you send.
Check our web site (www.stober.com) for product drawings in the configuation you need. Call Technical Support for information that is not shown or e-mail *sales@stober.com* or *drawings@stober.com* with your request.



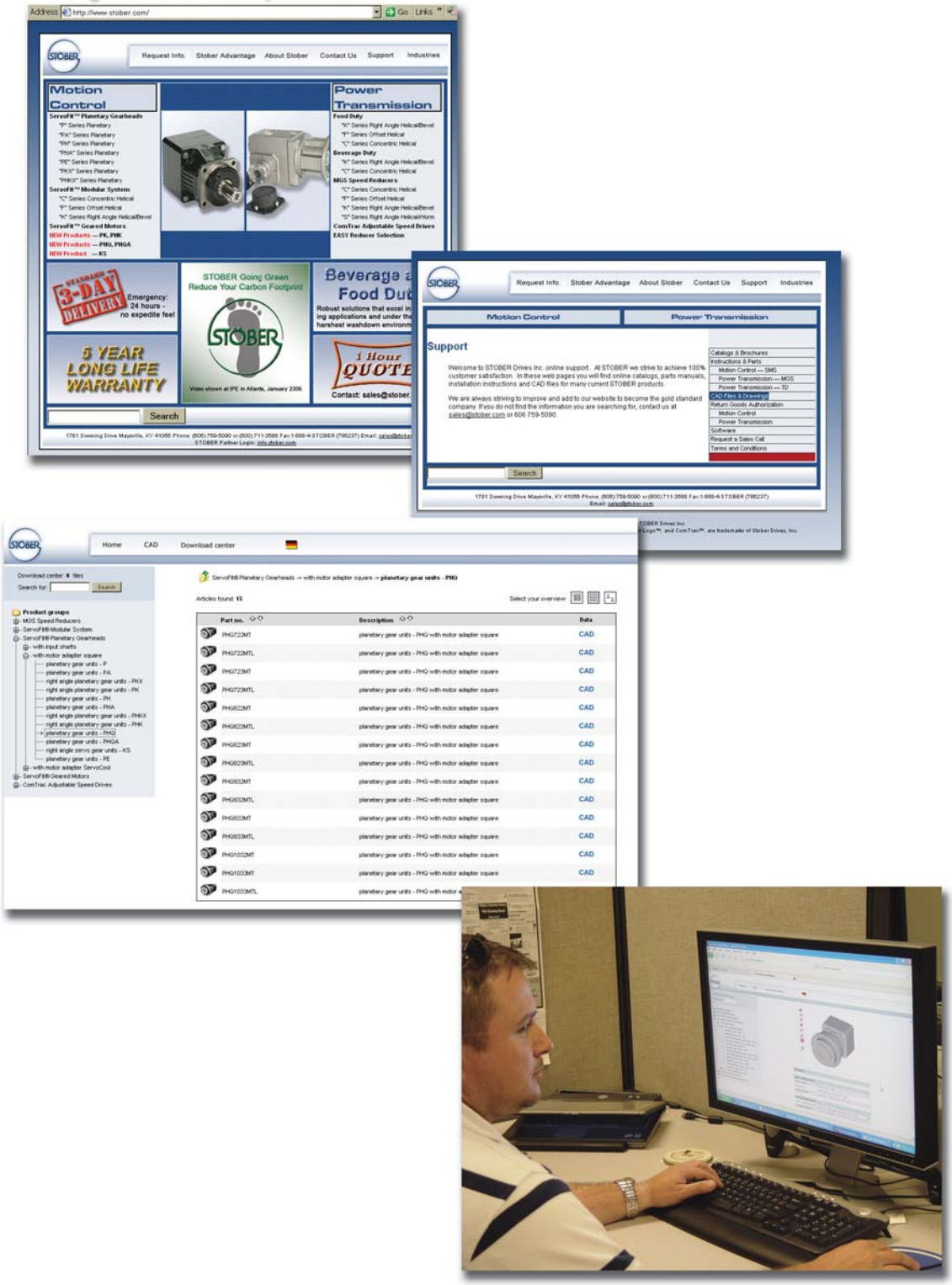







ServoFit® Gearhead Application Support

Drawing files for STOBER products from the web.



See web site for drawings.

"P" Series
ServoFit® Precision Planetary Gearhead
Performance Specification Overview

		P221	P222	P321	P322	P421	P422	P521	P522	P721	P722	P821	P822	P921	P922
Acceleration Torque $M_{2B\,MAX}$	in.lbs.	195		575		1052		2,655		6,195		14,160		26,570	
	Nm	22		65		120		300		700		1,600		3,000	
Output Torque Nom.[1] M_{2N}	in.lbs.	142		399		753		1,860		3,898		8,858		17,716	
	Nm	16		45		85		210		440		1,000		2,000	
Input Speed Max. n_{1MAX}	Continuous	4,500	4,500	4,500	4,500	4,000	4,500	3,700	4,000	3,300	3,700	2,800	3,300	2,500	2,800
	Cyclic	8,000	8,000	8,000	8,000	7,000	8,000	6,500	7,000	6,000	6,500	4,500	6,000	4,000	4,500
ServoCool Input Speed Max. n_{1MAX}	Continuous	—		—		4,500	—	5,500	4,500	5,000	5,000	4,500	4,500	4,000	4,000
	Cyclic	—		—		7,000	—	6,500	7,000	6,000	6,500	6,000	6,000	5,000	6,000
Torsional Backlash [2] $\Delta\varphi$	arcmin	≤6	≤8	≤4	≤5	≤4	≤5	≤3	≤4	≤3	≤4	≤3	≤4	≤3	≤4
Torsional Stiffness C_2	in.lbs./arcmin	17		44		100		266		486		1,557		3,094	3,016
	Nm/arcmin	1.9		5		11		33		55		176		350	340
Axial Load Maximum F_{2AMAX} [3]	R lbs.	112		225		337		518		653		1,058		1,350	
	N	500		1,000		1,500		2,300		2,900		4,700		6,000	
	D lbs.	—		315		506		788		1,013		1,688		2,250	
	N			1,400		2,250		3,500		4,500		7,500		10,000	
	Z lbs.	—		135		225		360		450		810		1,125	
	N			600		1,000		1,600		2,000		3,600		5,000	
Radial Load Maximum [4] F_{2RMAX} [3]	R lbs.	270		563		900		1,463		1,800		2,925		4,050	
	N	1,200		2,500		4,000		6,500		8,000		13,000		18,000	
	D lbs.	—		619		1,013		1,575		2,025		3,375		4,500	
	N			2,750		4,500		7,000		9,000		15,000		20,000	
	Z lbs.	—		675		1,125		1,800		2,250		4,050		6,075	
	N			3,000		5,000		8,000		10,000		18,000		27,000	
Tilting Moment Maximum [4] M_{2Kmax} [3]	R in.lbs.	300		779		1,416		2,991		4,774		5,938		14,735	
	Nm	34		88		160		338		536		897		1,665	
	D in.lbs.	—		929		1,717		3,593		5,735		10,089		18,320	
	Nm			105		194		406		648		1,140		2,070	
	Z in.lbs.	—		929		1,770		3,682		5,929		10,992		22,125	
	Nm			105		200		416		670		1,242		2,500	
Efficiency (at Nom. Torque) h	%	97%	95%	97%	95%	97%	95%	97%	95%	97%	95%	97%	95%	97%	95%
Weight m	pounds	3	4.0	6	8	9	12	14	19	27	33	57	71	110	135
	kg	1.2	1.8	2.6	3.5	4.0	5.3	6.5	8.5	12	15	26	32	50	61
Noise Level L_{PA}	dB(A) [5]	≤61	≤61	≤61	≤61	≤62	≤60	≤63	≤61	≤64	≤62	≤65	≤63	≤65	≤64
Balance Quality		Q 2.5 (Quality Class-2.5 millimeters per second)													
Lubrication		Synthetic Oil — Lubricated for Life													
Degree of Protection		IP65 - FKM Shaft Seals													
Mounting Position		Unrestricted													
Direction of Rotation		Input and Output Rotate the SAME Direction.													
Ambient Temperature		0° C to +40°C (104° F) [Unit temperature ≤ 90° C Max.]													
Finish		Black (Standard), Washdown (White), Food and Beverage (Stainless) Options Available													
Lifetime.[6] L_h	hours	L_h > 10,000 hours if M_{2K}/M_{2A} < 1.25 and > 1.00													
		L_h > 20,000 hours if M_{2K}/M_{2A} > 1.25 and < 1.50													
		L_h > 30,000 hours if M_{2K}/M_{2A} > 1.5													
Warranty		5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)													

1) Ratings based on input speed (n_1) of 2000 RPM.
For torque at higher input speeds (M_{2NX}) solve the formula, where n_1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

2) Tested at 1.5% of nominal torque and recorded on the output side of the gearhead.
For reduced value see the PA Series.

3) See Page 239 for output bearing options.

4) Rating based on output speed (n_2) of 100 RPM. For values at other speeds see Page 239.

5) Measurement at one (1) meter distance with input speed (n_1) of 2000 RPM.

6) M_{2A} equals actual tilting moment of the application. See Page 239 for calculation details.

WARNING: In order to insure that the specified torque ratings are attained, it is essential to attach the gear units to the machine with a grade 10.9 fastener.

Refer to Page 250 for ServoFit Precision Planetary Gearhead Selection Procedure.

"P" Series
ServoFit® Precision Planetary Gearhead
Features

The "P" Series ServoFit Precision Planetary Gearheads feature HeliCamber® gearing and many other components which make them the most accurate and efficient planetary gearheads available. HeliCamber® gear technology provides minimum wear, low backlash and low noise. All units are lubricated for life with synthetic oil and sealed to IP65 standards to prevent lubricant contamination for long life.

Some of these features are:

- Readily Attaches to Any Servo Motor (IEC, NEMA, or Customized Motor Plates*)
- 5 Year Limited Warranty (2 years on bearings, seals, etc.)
- Lowest Standard Backlash
- High Torsional Stiffness
- Advanced Gear Technology
- 95 to 97% Efficiency
- Quiet Running
- Assembled in the U.S.A.

* Maximum 10 working days for custom motor plates.

NO EXPEDITE FEE FOR 24 HOUR SERVICE

Ring gear machined integral to the housing — not welded or pressed in — provides greater concentricity and eliminates speed fluctuation

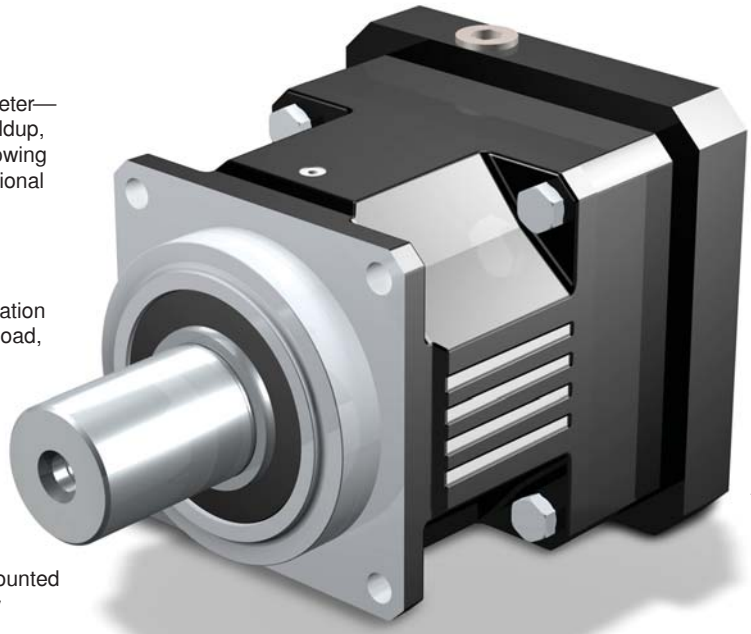
Highest running smoothness achieved by proven helical gearing and gear tooth microgeometry. Gear quality provided by case-hardened and finish-ground sun and planet gears.

Magnetic oil filtration

The patented motor coupling is designed to allow thermal expansion of the motor shaft — ensuring long motor life by preventing thrust load on the motor bearings.

The motor shaft adaption system allows installation of motor in minutes — no special tools required

FKM seals — for the smallest possible diameter— reducing friction and heat buildup, increasing efficiency, and allowing continuous duty without additional cooling.



Triple-split collet — for greater concentricity and low inertia — is rated in excess of 200 percent of the gearheads input torque capacity

Adapter bushings to fit all motor shafts — no key required

Motor plate pilot toleranced to fit your motor for precise concentricity

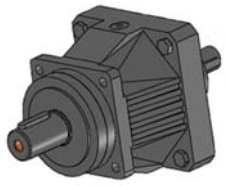
Bearing options for application specific radial load, axial load, and tilting moments

Motor plate can easily be changed to fit your choice of motors

Planet carrier straddle mounted for robust output capacity

Highest running accuracy and precision ensured by single piece housing made from high-tensile tempered ductile iron with the additional characteristics of dissipating heat, noise dampening, and greater lubrication retention on the ring gear

Available as ServoCool in Sizes P4 thru P9.



Also available with input shaft (AW).

See web site for drawings.

"P" Series
ServoFit® Precision Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic										
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
P221 with Motor Mounting Plate													
P221S_0040 MT	4.000	4,500	8,000	14	0.14	16.2	1.8	142	16	195	22	390	44
P221S_0040 MTL	4.000	4,500	8,000	19	0.61	16.8	1.9	142	16	195	22	390	44
P221S_0050 MT	5.000	4,500	8,000	14	0.12	16.4	1.9	142	16	195	22	390	44
P221S_0050 MTL	5.000	4,500	8,000	19	0.59	16.8	1.9	142	16	195	22	390	44
P221S_0070 MT	7.000	4,500	8,000	14	0.11	15.7	1.8	142	16	195	22	390	44
P221S_0070 MTL	7.000	4,500	8,000	19	0.57	15.9	1.8	142	16	195	22	390	44
P221S_0080 MT	8.000	4,500	8,000	14	0.10	14.9	1.7	124	14	159	18	319	36
P221S_0080 MTL	8.000	4,500	8,000	19	0.57	15.1	1.7	124	14	159	18	319	36
P221S_0100 MT	10.00	4,500	8,000	14	0.10	14.1	1.6	106	12	159	18	319	36
P221S_0100 MTL	10.00	4,500	8,000	19	0.56	14.2	1.6	106	12	159	18	319	36
P222 with Motor Mounting Plate													
P222S_0160 MT	16.00	4,500	8,000	14	0.14	15.8	1.8	142	16	195	22	390	44
P222S_0160 MTL	16.00	4,500	8,000	19	0.61	15.8	1.8	142	16	195	22	390	44
P222S_0200 MT	20.00	4,500	8,000	14	0.14	16.2	1.8	142	16	195	22	390	44
P222S_0200 MTL	20.00	4,500	8,000	19	0.61	16.2	1.8	142	16	195	22	390	44
P222S_0250 MT	25.00	4,500	8,000	14	0.12	16.2	1.8	142	16	195	22	390	44
P222S_0250 MTL	25.00	4,500	8,000	19	0.59	16.2	1.8	142	16	195	22	390	44
P222S_0280 MT	28.00	4,500	8,000	14	0.11	15.8	1.8	142	16	195	22	390	44
P222S_0280 MTL	28.00	4,500	8,000	19	0.57	15.8	1.8	142	16	195	22	390	44
P222S_0320 MT	32.00	4,500	8,000	14	0.13	14.8	1.7	124	14	159	18	319	36
P222S_0320 MTL	32.00	4,500	8,000	19	0.60	14.9	1.7	124	14	159	18	319	36
P222S_0350 MT	35.00	4,500	8,000	14	0.11	16.1	1.8	142	16	195	22	390	44
P222S_0350 MTL	35.00	4,500	8,000	19	0.57	16.1	1.8	142	16	195	22	390	44
P222S_0400 MT	40.00	4,500	8,000	14	0.10	15.7	1.8	142	16	195	22	390	44
P222S_0400 MTL	40.00	4,500	8,000	19	0.56	15.7	1.8	142	16	195	22	390	44
P222S_0500 MT	50.00	4,500	8,000	14	0.10	16.1	1.8	142	16	195	22	390	44
P222S_0500 MTL	50.00	4,500	8,000	19	0.56	16.1	1.8	142	16	195	22	390	44
P222S_0700 MT	70.00	4,500	8,000	14	0.10	15.6	1.8	142	16	195	22	390	44
P222S_0700 MTL	70.00	4,500	8,000	19	0.56	15.6	1.8	142	16	195	22	390	44
P222S_1000 MT	100.0	4,500	8,000	14	0.10	14.0	1.6	106	12	159	18	319	36
P222S_1000 MTL	100.0	4,500	8,000	19	0.56	14.0	1.6	106	12	159	18	319	36

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"P" Series
ServoFit® Precision Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic										
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
P321 with Motor Mounting Plate													
P321S_0030 MT	3.000	3,500	6,000	19	0.77	50.5	5.7	266	30	443	50	1,083	122
P321S_0030 MTL	3.000	3,500	6,000	24	1.45	50.5	5.7	266	30	443	50	1,083	122
P321S_0040 MT	4.000	3,700	6,500	19	0.69	46.9	5.3	399	45	576	65	1,152	130
P321S_0040 MTL	4.000	3,700	6,500	24	1.37	46.9	5.3	399	45	576	65	1,152	130
P321S_0050 MT	5.000	4,000	7,000	19	0.64	45.2	5.1	399	45	576	65	1,152	130
P321S_0050 MTL	5.000	4,000	7,000	24	1.32	45.2	5.1	399	45	576	65	1,152	130
P321S_0070 MT	7.000	4,500	8,000	19	0.59	39.0	4.4	399	45	531	60	1,152	130
P321S_0070 MTL	7.000	4,500	8,000	24	1.26	39.0	4.4	399	45	531	60	1,152	130
P321S_0080 MT	8.000	4,500	8,000	19	0.58	37.2	4.2	354	40	443	50	886	100
P321S_0080 MTL	8.000	4,500	8,000	24	1.25	37.2	4.2	354	40	443	50	886	100
P321S_0100 MT	10.00	4,500	8,000	19	0.57	35.4	4.0	266	30	443	50	886	100
P321S_0100 MTL	10.00	4,500	8,000	24	1.24	35.4	4.0	266	30	443	50	886	100
P322 with Motor Mounting Plate													
P322S_0150 MT	15.00	4,500	8,000	14	0.14	39.7	4.5	266	30	443	50	1,082	122
P322S_0150 MTL	15.00	4,500	8,000	19	0.46	39.7	4.5	266	30	443	50	1,082	122
P322S_0160 MT	16.00	4,500	8,000	14	0.14	39.7	4.5	399	45	576	65	1,152	130
P322S_0160 MTL	16.00	4,500	8,000	19	0.61	40.0	4.5	399	45	576	65	1,152	130
P322S_0200 MT	20.00	4,500	8,000	14	0.14	40.6	4.6	399	45	576	65	1,152	130
P322S_0200 MTL	20.00	4,500	8,000	19	0.61	40.8	4.6	399	45	576	65	1,152	130
P322S_0250 MT	25.00	4,500	8,000	14	0.12	40.7	4.6	399	45	576	65	1,152	130
P322S_0250 MTL	25.00	4,500	8,000	19	0.59	40.8	4.6	399	45	576	65	1,152	130
P322S_0280 MT	28.00	4,500	8,000	14	0.11	39.5	4.5	399	45	576	65	1,152	130
P322S_0280 MTL	28.00	4,500	8,000	19	0.57	39.6	4.5	399	45	576	65	1,152	130
P322S_0320 MT	32.00	4,500	8,000	14	0.14	35.9	4.1	354	40	443	50	886	100
P322S_0320 MTL	32.00	4,500	8,000	19	0.61	36.0	4.1	354	40	443	50	886	100
P322S_0350 MT	35.00	4,500	8,000	14	0.11	40.5	4.6	399	45	576	65	1,152	130
P322S_0350 MTL	35.00	4,500	8,000	19	0.57	40.6	4.6	399	45	576	65	1,152	130
P322S_0400 MT	40.00	4,500	8,000	14	0.10	38.8	4.4	399	45	576	65	1,152	130
P322S_0400 MTL	40.00	4,500	8,000	19	0.56	38.9	4.4	399	45	576	65	1,152	130
P322S_0500 MT	50.00	4,500	8,000	14	0.10	40.0	4.5	399	45	576	65	1,152	130
P322S_0500 MTL	50.00	4,500	8,000	19	0.56	40.1	4.5	399	45	576	65	1,152	130
P322S_0700 MT	70.00	4,500	8,000	14	0.10	36.9	4.2	399	45	531	60	1,152	130
P322S_0700 MTL	70.00	4,500	8,000	19	0.56	36.9	4.2	399	45	531	60	1,152	130
P322S_1000 MT	100.0	4,500	8,000	14	0.10	34.6	3.9	266	30	443	50	886	100
P322S_1000 MTL	100.0	4,500	8,000	19	0.56	34.6	3.9	266	30	443	50	886	100

Index of Symbols

MT ..... Motor adapter with TriAdapt® coupling	i ..... Ratio - Exact	M_{2N} ..... Nominal Torque
MF ..... Motor adapter with FlexiAdapt® coupling	n_1 ..... Maximum input speed RPM	M_{2B} ..... Acceleration Torque Maximum
L ..... Large Input	J_1 ..... Mass moment of inertia (input)	M_{2PEAK} ..... Peak Torque
C ..... ServoCool	C_2 ..... Torsional Stiffness	

See web site for drawings.

"P" Series
ServoFit® Precision Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic			C_2		M_{2N}		M_{2B}		M_{2PEAK}	
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
P421 with Motor Mounting Plate													
P421S_0030 MT	3.000	3,000	5,500	24	1.94	110.7	12.5	443	50	886	100	2,126	240
P421S_0030 MTC	3.000	3,500	6,000	24	2.66	98.3	11.1	443	50	886	100	1,289	146
P421S_0030 MTL	3.000	3,000	5,500	32	4.16	110.7	12.5	443	50	886	100	2,126	240
P421S_0040 MT	4.000	3,300	6,000	24	1.54	106.3	12.0	753	85	1,063	120	2,126	240
P421S_0040 MTC	4.000	3,800	6,000	24	2.27	99.5	11.2	753	85	1,063	120	1,718	194
P421S_0040 MTL	4.000	3,300	6,000	32	3.77	106.3	12.0	753	85	1,063	120	2,126	240
P421S_0050 MT	5.000	3,700	6,500	24	1.44	103.6	11.7	753	85	1,063	120	2,126	240
P421S_0050 MTC	5.000	4,200	6,500	24	2.16	99.4	11.2	753	85	1,063	120	2,126	240
P421S_0050 MTL	5.000	3,700	6,500	32	3.66	103.6	11.7	753	85	1,063	120	2,126	240
P421S_0070 MT	7.000	4,000	7,000	24	1.31	89.5	10.1	753	85	974	110	2,126	240
P421S_0070 MTC	7.000	4,500	7,000	24	2.05	87.8	9.9	753	85	974	110	2,126	240
P421S_0070 MTL	7.000	4,000	7,000	32	3.57	89.5	10.1	753	85	974	110	2,126	240
P421S_0080 MT	8.000	4,000	7,000	24	1.29	84.2	9.5	709	80	886	100	1,772	200
P421S_0080 MTC	8.000	4,500	7,000	24	2.03	83.0	9.4	709	80	886	100	1,772	200
P421S_0080 MTL	8.000	4,000	7,000	32	3.55	84.2	9.5	709	80	886	100	1,772	200
P421S_0100 MT	10.00	4,000	7,000	24	1.27	79.7	9.0	531	60	886	100	1,772	200
P421S_0100 MTC	10.00	4,500	7,000	24	2.01	79.1	8.9	531	60	886	100	1,772	200
P421S_0100 MTL	10.00	4,000	7,000	32	3.53	79.7	9.0	531	60	886	100	1,772	200
P422 with Motor Mounting Plate													
P422S_0150 MT	15.00	3,700	6,500	19	.52	92.2	10.4	443	50	885	100	2,124	240
P422S_0150 MTL	15.00	3,700	6,500	24	1.07	92.2	10.4	443	50	885	100	2,124	240
P422S_0160 MT	16.00	3,700	6,500	19	0.71	93.1	10.5	753	85	1,063	120	2,126	240
P422S_0160 MTL	16.00	3,700	6,500	24	1.39	93.1	10.5	753	85	1,063	120	2,126	240
P422S_0200 MT	20.00	3,700	6,500	19	0.70	95.2	10.8	753	85	1,063	120	2,126	240
P422S_0200 MTL	20.00	3,700	6,500	24	1.38	95.2	10.8	753	85	1,063	120	2,126	240
P422S_0250 MT	25.00	4,000	7,000	19	0.65	94.9	10.7	753	85	1,063	120	2,126	240
P422S_0250 MTL	25.00	4,000	7,000	24	1.33	94.9	10.7	753	85	1,063	120	2,126	240
P422S_0280 MT	28.00	4,500	8,000	19	0.60	90.8	10.3	753	85	1,063	120	2,126	240
P422S_0280 MTL	28.00	4,500	8,000	24	1.27	90.8	10.3	753	85	1,063	120	2,126	240
P422S_0320 MT	32.00	3,700	6,500	19	0.69	81.9	9.2	709	80	886	100	1,772	200
P422S_0320 MTL	32.00	3,700	6,500	24	1.37	81.9	9.2	709	80	886	100	1,772	200
P422S_0350 MT	35.00	4,500	8,000	19	0.60	93.7	10.6	753	85	1,063	120	2,126	240
P422S_0350 MTL	35.00	4,500	8,000	24	1.27	93.7	10.6	753	85	1,063	120	2,126	240
P422S_0400 MT	40.00	4,500	8,000	19	0.58	89.5	10.1	753	85	1,063	120	2,126	240
P422S_0400 MTL	40.00	4,500	8,000	24	1.25	89.5	10.1	753	85	1,063	120	2,126	240
P422S_0500 MT	50.00	4,500	8,000	19	0.58	92.8	10.5	753	85	1,063	120	2,126	240
P422S_0500 MTL	50.00	4,500	8,000	24	1.25	92.8	10.5	753	85	1,063	120	2,126	240
P422S_0700 MT	70.00	4,500	8,000	19	0.58	85.1	9.6	753	85	974	110	2,126	240
P422S_0700 MTL	70.00	4,500	8,000	24	1.25	85.1	9.6	753	85	974	110	2,126	240
P422S_1000 MT	100.0	4,500	8,000	19	0.58	78.0	8.8	531	60	886	100	1,772	200
P422S_1000 MTL	100.0	4,500	8,000	24	1.25	78.0	8.8	531	60	886	100	1,772	200

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"P" Series
ServoFit® Precision Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD6	J1	C2		M2N		M2B		M2PEAK	
	i	RPM (n1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
P521 with Motor Mounting Plate													
P521S_0030 MT	3.000	2,500	4,500	32	4.76	321.5	36.3	1,063	120	1,772	200	3,686	416
P521S_0030 MTC	3.000	3,500	6,000	32	6.98	262.7	29.7	1,063	120	1,772	200	2,294	259
P521S_0030 MTL	3.000	2,500	4,500	38	7.79	321.5	36.3	1,063	120	1,772	200	3,686	416
P521S_0040 MT	4.000	3,000	5,000	32	4.55	284.3	32.1	1,860	210	2,657	300	4,915	555
P521S_0040 MTC	4.000	4,000	6,000	32	6.77	255.8	28.9	1,860	210	2,447	276	3,059	345
P521S_0040 MTL	4.000	3,000	5,000	38	7.57	284.3	32.1	1,860	210	2,657	300	4,915	555
P521S_0050 MT	5.000	3,500	6,000	32	4.14	275.5	31.1	1,860	210	2,657	300	5,315	600
P521S_0050 MTC	5.000	4,500	6,000	32	6.36	257.7	29.1	1,860	210	2,657	300	3,824	432
P521S_0050 MTL	5.000	3,500	6,000	38	7.16	275.5	31.1	1,860	210	2,657	300	5,315	600
P521S_0070 MT	7.000	3,700	6,500	32	3.74	248.0	28.0	1,860	210	2,392	270	5,315	600
P521S_0070 MTC	7.000	4,500	6,500	32	5.98	240.4	27.1	1,860	210	2,392	270	5,315	600
P521S_0070 MTL	7.000	3,700	6,500	38	6.79	248.0	28.0	1,860	210	2,392	270	5,315	600
P521S_0080 MT	8.000	3,700	6,500	32	3.67	230.3	26.0	1,772	200	2,215	250	4,429	500
P521S_0080 MTC	8.000	5,000	6,500	32	5.91	225.2	25.4	1,772	200	2,215	250	4,429	500
P521S_0080 MTL	8.000	3,700	6,500	38	6.72	230.3	26.0	1,772	200	2,215	250	4,429	500
P521S_0100 MT	10.00	3,700	6,500	32	3.61	221.5	25.0	1,240	140	2,215	250	4,429	500
P521S_0100 MTC	10.00	5,500	6,500	32	5.85	218.4	24.7	1,240	140	2,215	250	4,429	500
P521S_0100 MTL	10.00	3,700	6,500	38	6.66	221.5	25.0	1,240	140	2,215	250	4,429	500
P522 with Motor Mounting Plate Continued Next Page													
P522S_ 0150MT	15.00	3,300	6,000	24	1.22	241.5	27.3	1,062	120	1,770	200	3,683	416
P522S_ 0150MTC	15.00	3,800	6,000	24	2.29	241.5	27.3	1,062	120	1,770	200	3,683	416
P522S_ 0150MTL	15.00	3,300	6,000	32	3.13	241.5	27.3	1,062	120	1,770	200	3,683	416
P522S_0160 MT	16.00	3,300	6,000	24	1.59	243.6	27.5	1,860	210	2,657	300	4,915	555
P522S_0160 MTC	16.00	3,800	6,000	24	2.32	241.3	27.2	1,860	210	2,657	300	4,915	555
P522S_0160 MTL	16.00	3,300	6,000	32	3.82	243.6	27.5	1,860	210	2,657	300	4,915	555
P522S_0200 MT	20.00	3,300	6,000	24	1.57	249.6	28.2	1,860	210	2,657	300	5,315	600
P522S_0200 MTC	20.00	3,800	6,000	24	2.29	248.0	28.0	1,860	210	2,657	300	5,315	600
P522S_0200 MTL	20.00	3,300	6,000	32	3.79	249.6	28.2	1,860	210	2,657	300	5,315	600
P522S_0250 MT	25.00	3,700	6,500	24	1.46	249.0	28.1	1,860	210	2,657	300	5,315	600
P522S_0250 MTC	25.00	4,200	6,500	24	2.18	248.0	28.0	1,860	210	2,657	300	5,315	600
P522S_0250 MTL	25.00	3,700	6,500	32	3.68	249.0	28.1	1,860	210	2,657	300	5,315	600
P522S_0280 MT	28.00	4,000	7,000	24	1.34	237.2	26.8	1,860	210	2,657	300	4,915	555
P522S_0280 MTC	28.00	4,500	7,000	24	2.08	236.5	26.7	1,860	210	2,657	300	4,915	555
P522S_0280 MTL	28.00	4,000	7,000	32	3.60	237.2	26.8	1,860	210	2,657	300	4,915	555
P522S_0320 MT	32.00	3,300	6,000	24	1.54	222.8	25.1	1,772	200	2,215	250	4,429	500
P522S_0320 MTC	32.00	3,800	6,000	24	2.27	222.3	25.1	1,772	200	2,215	250	4,429	500
P522S_0320 MTL	32.00	3,300	6,000	32	3.76	222.8	25.1	1,772	200	2,215	250	4,429	500
P522S_0350 MT	35.00	4,000	7,000	24	1.33	245.3	27.7	1,860	210	2,657	300	5,315	600
P522S_0350 MTC	35.00	4,500	7,000	24	2.07	244.8	27.6	1,860	210	2,657	300	5,315	600
P522S_0350 MTL	35.00	4,000	7,000	32	3.59	245.3	27.7	1,860	210	2,657	300	5,315	600
P522S_0400 MT	40.00	4,000	7,000	24	1.28	232.5	26.2	1,860	210	2,657	300	4,915	555
P522S_0400 MTC	40.00	4,500	7,000	24	2.03	232.2	26.2	1,860	210	2,657	300	4,915	555
P522S_0400 MTL	40.00	4,000	7,000	32	3.55	232.5	26.2	1,860	210	2,657	300	4,915	555
P522S_0500 MT	50.00	4,000	7,000	24	1.28	242.0	27.3	1,860	210	2,657	300	5,315	600
P522S_0500 MTC	50.00	4,500	7,000	24	2.02	241.8	27.3	1,860	210	2,657	300	5,315	600
P522S_0500 MTL	50.00	4,000	7,000	32	3.54	242.0	27.3	1,860	210	2,657	300	5,315	600

Index of Symbols

MT ..... Motor adapter with TriAdapt® coupling	i ..... Ratio - Exact	M2N ..... Nominal Torque
MF ..... Motor adapter with FlexiAdapt® coupling	n1 ..... Maximum input speed RPM	M2B ..... Acceleration Torque Maximum
L ..... Large Input	J1 ..... Mass moment of inertia (input)	M2PEAK ..... Peak Torque
C ..... ServoCool	C2 ..... Torsional Stiffness	

See web site for drawings.

"P" Series
ServoFit® Precision Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD6	J1	C2		M2N		M2B		M2PEAK	
	i	RPM (n1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
P522 with Motor Mounting Plate Continued													
P522S_0700 MT	70.00	4,000	7,000	24	1.27	233.2	26.3	1,860	210	2,392	270	5,315	600
P522S_0700 MTC	70.00	4,500	7,000	24	2.02	233.1	26.3	1,860	210	2,392	270	5,315	600
P522S_0700 MTL	70.00	4,000	7,000	32	3.54	233.2	26.3	1,860	210	2,392	270	5,315	600
P522S_1000 MT	100.0	4,000	7,000	24	1.27	215.5	24.3	1,240	140	2,215	250	4,429	500
P522S_1000 MTC	100.0	4,500	7,000	24	2.02	215.4	24.3	1,240	140	2,215	250	4,429	500
P522S_1000 MTL	100.0	4,000	7,000	32	3.54	215.5	24.3	1,240	140	2,215	250	4,429	500
P721 with Motor Mounting Plate													
P721S_0030 MT	3.000	2,200	3,700	38	14.81	571.3	64.5	2,480	280	4,429	500	9,177	1,036
P721S_0030 MTC	3.000	3,000	6,000	38	26.04	484.5	54.7	2,480	280	4,429	500	9,177	1,036
P721S_0030 MTL	3.000	2,200	3,700	48	32.66	571.3	64.5	2,480	280	4,429	500	9,177	1,036
P721S_0040 MT	4.000	2,500	4,500	38	10.09	531.5	60.0	3,898	440	6,201	700	12,235	1,381
P721S_0040 MTC	4.000	3,300	6,000	38	21.33	485.9	54.9	3,898	440	6,201	700	12,235	1,381
P721S_0040 MTL	4.000	2,500	4,500	48	27.94	531.5	60.0	3,898	440	6,201	700	12,235	1,381
P721S_0050 MT	5.000	3,000	5,500	38	8.55	509.3	57.5	3,898	440	6,201	700	12,401	1,400
P721S_0050 MTC	5.000	3,800	6,000	38	19.79	481.6	54.4	3,898	440	6,201	700	12,401	1,400
P721S_0050 MTL	5.000	3,000	5,500	48	26.40	509.3	57.5	3,898	440	6,201	700	12,401	1,400
P721S_0070 MT	7.000	3,300	6,000	38	7.55	487.2	55.0	3,898	440	5,758	650	11,127	1,256
P721S_0070 MTC	7.000	4,500	6,000	38	18.46	470.7	53.1	3,898	440	5,758	650	11,127	1,256
P721S_0070 MTL	7.000	3,300	6,000	48	25.86	487.2	55.0	3,898	440	5,758	650	11,127	1,256
P721S_0080 MT	8.000	3,300	6,000	38	7.29	469.5	53.0	3,543	400	4,429	500	8,858	1,000
P721S_0080 MTC	8.000	5,000	6,000	38	18.20	457.6	51.7	3,543	400	4,429	500	8,858	1,000
P721S_0080 MTL	8.000	3,300	6,000	48	25.60	469.5	53.0	3,543	400	4,429	500	8,858	1,000
P721S_0100 MT	10.00	3,300	6,000	38	7.05	438.5	49.5	2,657	300	4,429	500	8,858	1,000
P721S_0100 MTC	10.00	5,000	6,000	38	17.95	431.8	48.7	2,657	300	4,429	500	8,858	1,000
P721S_0100 MTL	10.00	3,300	6,000	48	25.35	438.5	49.5	2,657	300	4,429	500	8,858	1,000
P722 with Motor Mounting Plate Continued Next Page													
P722S_0150 MT	15.00	3,000	5,000	32	3.04	470.4	53.1	2,478	280	4,429	500	9,168	1,036
P722S_0150 MTC	15.00	4,000	6,000	32	5.56	470.4	53.1	2,478	280	4,429	500	9,168	1,036
P722S_0150 MTL	15.00	3,000	5,000	38	6.76	470.4	53.1	2,478	280	4,429	500	9,168	1,036
P722S_0160 MT	16.00	3,000	5,000	32	4.63	475.9	53.7	3,898	440	6,201	700	12,235	1,381
P722S_0160 MTC	16.00	4,000	6,000	32	6.85	470.4	53.1	3,898	440	6,201	700	11,868	1,340
P722S_0160 MTL	16.00	3,000	5,000	38	7.66	475.9	53.7	3,898	440	6,201	700	12,235	1,381
P722S_0200 MT	20.00	3,000	5,000	32	4.54	475.3	53.7	3,898	440	6,201	700	12,401	1,400
P722S_0200 MTC	20.00	4,000	6,000	32	6.76	471.8	53.3	3,898	440	6,201	700	12,401	1,400
P722S_0200 MTL	20.00	3,000	5,000	38	7.57	475.3	53.7	3,898	440	6,201	700	12,401	1,400
P722S_0250 MT	25.00	3,500	6,000	32	4.14	474.3	53.5	3,898	440	6,201	700	12,401	1,400
P722S_0250 MTC	25.00	4,500	6,000	32	6.36	472.0	53.3	3,898	440	6,201	700	12,401	1,400
P722S_0250 MTL	25.00	3,500	6,000	38	7.17	474.3	53.5	3,898	440	6,201	700	12,401	1,400
P722S_0280 MT	28.00	3,700	6,500	32	3.83	468.7	52.9	3,898	440	6,201	700	12,235	1,381
P722S_0280 MTC	28.00	4,500	6,500	32	6.07	466.9	52.7	3,898	440	6,201	700	12,235	1,381
P722S_0280 MTL	28.00	3,700	6,500	38	6.88	468.7	52.9	3,898	440	6,201	700	12,235	1,381
P722S_0320 MT	32.00	3,000	5,000	32	4.46	457.7	51.7	3,543	400	4,429	500	8,858	1,000
P722S_0320 MTC	32.00	4,000	5,000	32	6.68	456.4	51.5	3,543	400	4,429	500	8,858	1,000
P722S_0320 MTL	32.00	3,000	5,000	38	7.49	457.7	51.7	3,543	400	4,429	500	8,858	1,000

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"P" Series
ServoFit® Precision Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD6	J1	C2		M2N		M2B		M2PEAK	
	i	RPM (n1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
P722 with Motor Mounting Plate Continued													
P722S_0350 MT	35.00	3,700	6,500	32	3.80	470.7	53.1	3,898	440	6,201	700	12,401	1,400
P722S_0350 MTC	35.00	4,500	6,500	32	6.04	469.5	53.0	3,898	440	6,201	700	12,401	1,400
P722S_0350 MTL	35.00	3,700	6,500	38	6.85	470.7	53.1	3,898	440	6,201	700	12,401	1,400
P722S_0400 MT	40.00	3,700	6,500	32	3.65	462.2	52.2	3,898	440	6,201	700	12,235	1,381
P722S_0400 MTC	40.00	5,000	6,500	32	5.90	461.3	52.1	3,898	440	6,201	700	12,235	1,381
P722S_0400 MTL	40.00	3,700	6,500	38	6.70	462.2	52.2	3,898	440	6,201	700	12,235	1,381
P722S_0500 MT	50.00	3,700	6,500	32	3.64	466.4	52.7	3,898	440	6,201	700	12,401	1,400
P722S_0500 MTC	50.00	5,000	6,500	32	5.88	465.9	52.6	3,898	440	6,201	700	12,401	1,400
P722S_0500 MTL	50.00	3,700	6,500	38	6.69	466.4	52.7	3,898	440	6,201	700	12,401	1,400
P722S_0700 MT	70.00	3,700	6,500	32	3.63	466.3	52.6	3,898	440	5,758	650	11,127	1,256
P722S_0700 MTC	70.00	5,000	6,500	32	5.87	466.0	52.6	3,898	440	5,758	650	11,127	1,256
P722S_0700 MTL	70.00	3,700	6,500	38	6.68	466.3	52.6	3,898	440	5,758	650	11,127	1,256
P722S_1000 MT	100.0	3,700	6,500	32	3.62	430.0	48.5	2,657	300	4,429	500	8,858	1,000
P722S_1000 MTC	100.0	5,000	6,500	32	5.86	429.8	48.5	2,657	300	4,429	500	8,858	1,000
P722S_1000 MTL	100.0	3,700	6,500	38	6.67	430.0	48.5	2,657	300	4,429	500	8,858	1,000
P821 with Motor Mounting Plate													
P821S_0030 MT	3.000	1,800	3,000	48	65.03	1,948.8	220.0	7,086	800	10,630	1,200	17,064	1,926
P821S_0030 MTC	3.000	2,500	4,500	48	86.28	1,464.9	165.4	7,086	800	10,630	1,200	15,518	1,752
P821S_0030 MTL	3.000	1,800	3,000	60	92.59	1,787.0	201.7	7,086	800	10,630	1,200	17,064	1,926
P821S_0040 MT	4.000	2,200	3,500	48	41.18	1,815.9	205.0	7,086	800	14,173	1,600	22,752	2,569
P821S_0040 MTC	4.000	3,000	5,000	48	62.44	1,547.9	174.7	7,086	800	14,173	1,600	20,690	2,336
P821S_0040 MTL	4.000	2,200	3,500	60	68.75	1,733.6	195.7	7,086	800	14,173	1,600	22,752	2,569
P821S_0050 MT	5.000	2,500	4,000	48	34.36	1,718.5	194.0	8,858	1,000	14,173	1,600	28,346	3,200
P821S_0050 MTC	5.000	3,500	6,000	48	55.62	1,555.4	175.6	8,858	1,000	14,173	1,600	25,863	2,920
P821S_0050 MTL	5.000	2,500	4,000	60	57.31	1,670.4	188.6	8,858	1,000	14,173	1,600	28,346	3,200
P821S_0070 MT	7.000	2,800	4,500	48	29.23	1,563.4	176.5	8,858	1,000	12,401	1,400	24,900	2,811
P821S_0070 MTC	7.000	4,000	6,000	48	50.96	1,478.9	167.0	8,858	1,000	12,401	1,400	24,900	2,811
P821S_0070 MTL	7.000	2,800	4,500	60	57.24	1,542.9	174.2	8,858	1,000	12,401	1,400	24,900	2,811
P821S_0080 MT	8.000	2,800	4,500	48	27.99	1,472.2	166.2	7,086	800	10,630	1,200	21,259	2,400
P821S_0080 MTC	8.000	4,500	6,000	48	49.72	1,413.9	159.6	7,086	800	10,630	1,200	21,259	2,400
P821S_0080 MTL	8.000	2,800	4,500	60	56.00	1,458.2	164.6	7,086	800	10,630	1,200	21,259	2,400
P821S_0100 MT	10.00	2,800	4,500	48	26.82	1,355.3	153.0	6,201	700	10,630	1,200	21,259	2,400
P821S_0100 MTC	10.00	4,500	6,000	48	48.55	1,323.1	149.4	6,201	700	10,630	1,200	21,259	2,400
P821S_0100 MTL	10.00	2,800	4,500	60	54.84	1,347.6	152.1	6,201	700	10,630	1,200	21,259	2,400
P822 with Motor Mounting Plate Continued Next Page													
P822S_0150 MT	15.00	2,500	4,500	38	8.65	1,470.7	166.2	7,086	800	10,620	1,200	17,049	1,926
P822S_0150 MTC	15.00	3,300	6,000	38	11.85	1,470.7	166.2	7,086	800	10,620	1,200	17,049	1,926
P822S_0150 MTL	15.00	2,500	4,500	48	26.63	1,470.7	166.2	7,086	800	10,620	1,200	17,049	1,926
P822S_0160 MT	16.00	2,500	4,500	38	10.65	1,496.4	168.9	7,086	800	14,173	1,600	28,346	3,200
P822S_0160 MTC	16.00	3,300	6,000	38	21.89	1,472.1	166.2	7,086	800	14,173	1,600	28,346	3,200
P822S_0160 MTL	16.00	2,500	4,500	48	28.50	1,496.4	168.9	7,086	800	14,173	1,600	28,346	3,200
P822S_0200 MT	20.00	2,500	4,500	38	10.22	1,521.7	171.8	8,858	1,000	14,173	1,600	28,346	3,200
P822S_0200 MTC	20.00	3,300	6,000	38	21.46	1,505.5	170.0	8,858	1,000	14,173	1,600	28,346	3,200
P822S_0200 MTL	20.00	2,500	4,500	48	28.07	1,521.7	171.8	8,858	1,000	14,173	1,600	28,346	3,200

Index of Symbols

MT ..... Motor adapter with TriAdapt® coupling	i ..... Ratio - Exact	M2N ..... Nominal Torque
MF ..... Motor adapter with FlexiAdapt® coupling	n1 ..... Maximum input speed RPM	M2B ..... Acceleration Torque Maximum
L ..... Large Input	J1 ..... Mass moment of inertia (input)	M2PEAK ..... Peak Torque
C ..... ServoCool	C2 ..... Torsional Stiffness	

See web site for drawings.

"P" Series
ServoFit® Precision Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD6	J1	C2		M2N		M2B		M2PEAK	
	i	RPM (n1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
P822 with Motor Mounting Plate Continued													
P822S_0250 MT	25.00	3,000	5,500	38	8.83	1,514.1	170.9	8,858	1,000	14,173	1,600	28,346	3,200
P822S_0250 MTC	25.00	3,800	6,000	38	20.07	1,503.8	169.8	8,858	1,000	14,173	1,600	28,346	3,200
P822S_0250 MTL	25.00	3,000	5,500	48	26.68	1,514.1	170.9	8,858	1,000	14,173	1,600	28,346	3,200
P822S_0280 MT	28.00	3,300	6,000	38	7.81	1,472.8	166.3	7,086	800	14,173	1,600	28,346	3,200
P822S_0280 MTC	28.00	4,300	6,000	38	18.71	1,463.1	165.2	7,086	800	14,173	1,600	28,346	3,200
P822S_0280 MTL	28.00	3,300	6,000	48	26.11	1,472.8	166.3	7,086	800	14,173	1,600	28,346	3,200
P822S_0320 MT	32.00	2,500	4,500	38	9.85	1,411.1	159.3	7,086	800	10,630	1,200	21,259	2,400
P822S_0320 MTC	32.00	3,300	6,000	38	21.09	1,405.7	158.7	7,086	800	10,630	1,200	21,259	2,400
P822S_0320 MTL	32.00	2,500	4,500	48	27.70	1,411.1	159.3	7,086	800	10,630	1,200	21,259	2,400
P822S_0350 MT	35.00	3,300	6,000	38	7.67	1,506.0	170.0	8,858	1,000	14,173	1,600	28,346	3,200
P822S_0350 MTC	35.00	4,300	6,000	38	18.58	1,499.5	169.3	8,858	1,000	14,173	1,600	28,346	3,200
P822S_0350 MTL	35.00	3,300	6,000	48	25.97	1,506.0	170.0	8,858	1,000	14,173	1,600	28,346	3,200
P822S_0400 MT	40.00	3,300	6,000	38	7.17	1,442.5	162.8	7,086	800	14,173	1,600	28,346	3,200
P822S_0400 MTC	40.00	4,500	6,000	38	18.08	1,437.9	162.3	7,086	800	14,173	1,600	28,346	3,200
P822S_0400 MTL	40.00	3,300	6,000	48	25.47	1,442.5	162.8	7,086	800	14,173	1,600	28,346	3,200
P822S_0500 MT	50.00	3,300	6,000	38	7.10	1,485.6	167.7	8,858	1,000	14,173	1,600	28,346	3,200
P822S_0500 MTC	50.00	4,500	6,000	38	18.01	1,482.5	167.4	8,858	1,000	14,173	1,600	28,346	3,200
P822S_0500 MTL	50.00	3,300	6,000	48	25.40	1,485.6	167.7	8,858	1,000	14,173	1,600	28,346	3,200
P822S_0700 MT	70.00	3,300	6,000	38	7.06	1,457.4	164.5	8,858	1,000	12,401	1,400	24,900	2,811
P822S_0700 MTC	70.00	4,500	6,000	38	17.96	1,455.9	164.4	8,858	1,000	12,401	1,400	24,900	2,811
P822S_0700 MTL	70.00	3,300	6,000	48	25.36	1,457.4	164.5	8,858	1,000	12,401	1,400	24,900	2,811
P822S_1000 MT	100.0	3,300	6,000	38	7.03	1,314.6	148.4	6,201	700	10,630	1,200	21,259	2,400
P822S_1000 MTC	100.0	4,500	6,000	38	17.94	1,314.0	148.3	6,201	700	10,630	1,200	21,259	2,400
P822S_1000 MTL	100.0	3,300	6,000	48	25.33	1,314.6	148.4	6,201	700	10,630	1,200	21,259	2,400

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"P" Series
ServoFit® Precision Planetary Gearhead
Selection Data

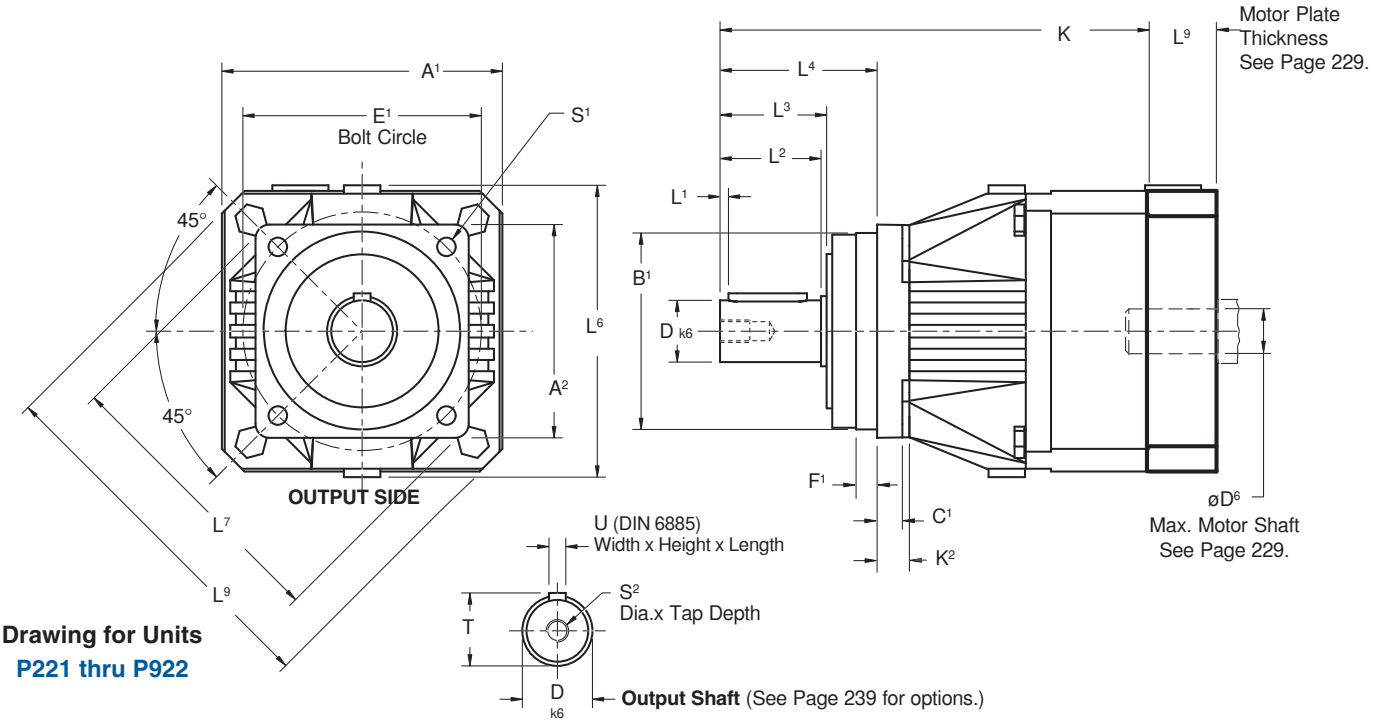
Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD6	J1	C2		M2N		M2B		M2PEAK	
	i	RPM (n1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
P921 with Motor Mounting Plate													
P921S_0040 MT	4.000	2,000	3,000	60	98.17	3,093.9	349.3	17,716	2,000	26,574	3,000	48,117	5,432
P921S_0040 MTC	4.000	3,000	4,500	60	105.81	3,093.9	349.3	17,716	2,000	26,574	3,000	51,554	5,820
P921S_0050 MT	5.000	2,200	3,500	60	80.39	3,027.4	341.8	17,716	2,000	26,574	3,000	53,148	6,000
P921S_0050 MTC	5.000	3,500	5,000	60	88.03	3,027.4	341.8	17,716	2,000	26,574	3,000	53,148	6,000
P921S_0070 MT	7.000	2,500	4,000	60	67.08	2,852.0	322.0	17,716	2,000	23,917	2,700	47,833	5,400
P921S_0070 MTC	7.000	4,000	5,000	60	74.72	2,852.0	322.0	17,716	2,000	23,917	2,700	47,833	5,400
P921S_0100 MT	10.00	2,500	4,000	60	59.46	2,281.1	257.5	12,401	1,400	17,716	2,000	35,432	4,000
P921S_0100 MTC	10.00	4,000	5,000	60	67.09	2,281.1	257.5	12,401	1,400	17,716	2,000	35,432	4,000
P922 with Motor Mounting Plate													
P922S_0160 MT	16.00	2,200	3,500	48	42.16	3,016.6	340.5	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0160 MTC	16.00	3,000	5,000	48	63.41	2,963.3	334.5	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0160 MTL	16.00	2,200	3,500	60	69.72	3,001.8	338.9	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0200 MT	20.00	2,200	3,500	48	41.04	2,979.6	336.4	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0200 MTC	20.00	3,000	5,000	48	62.30	2,946.1	332.6	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0200 MTL	20.00	2,200	3,500	60	68.61	2,970.3	335.3	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0250 MT	25.00	2,500	4,000	48	34.78	2,968.5	335.1	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0250 MTC	25.00	3,500	6,000	48	56.04	2,947.2	332.7	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0250 MTL	25.00	2,500	4,000	60	62.35	2,962.7	334.5	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0280 MT	28.00	2,800	4,500	48	29.81	2,966.8	334.9	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0280 MTC	28.00	3,750	5,000	48	51.54	2,946.8	332.7	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0280 MTL	28.00	2,800	4,500	60	57.82	2,962.1	334.4	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0350 MT	35.00	2,800	4,500	48	29.45	2,948.3	332.8	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0350 MTC	35.00	3,750	6,000	48	51.18	2,935.7	331.4	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0350 MTL	35.00	2,800	4,500	60	57.46	2,945.4	332.5	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0400 MT	40.00	2,800	4,500	48	26.78	2,913.7	328.9	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0400 MTC	40.00	4,000	6,000	48	48.51	2,904.3	327.9	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0400 MTL	40.00	2,800	4,500	60	54.79	2,911.5	328.7	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0500 MT	50.00	2,800	4,500	48	26.60	2,914.6	329.0	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0500 MTC	50.00	4,000	6,000	48	48.33	2,908.5	328.3	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0500 MTL	50.00	2,800	4,500	60	54.61	2,913.1	328.9	17,716	2,000	26,574	3,000	53,148	6,000
P922S_0700 MT	70.00	2,800	4,500	48	26.47	2,799.9	316.1	17,716	2,000	23,917	2,700	47,833	5,400
P922S_0700 MTC	70.00	4,000	6,000	48	48.20	2,797.0	315.8	17,716	2,000	23,917	2,700	47,833	5,400
P922S_0700 MTL	70.00	2,800	4,500	60	54.48	2,799.2	316.0	17,716	2,000	23,917	2,700	47,833	5,400
P922S_1000 MT	100.0	2,800	4,500	48	26.39	2,264.6	255.7	12,401	1,400	17,716	2,000	35,432	4,000
P922S_1000 MTC	100.0	4,000	6,000	48	48.12	2,263.7	255.6	12,401	1,400	17,716	2,000	35,432	4,000
P922S_1000 MTL	100.0	2,800	4,500	60	54.40	2,264.4	255.6	12,401	1,400	17,716	2,000	35,432	4,000

Index of Symbols

MT ..... Motor adapter with TriAdapt® coupling	i ..... Ratio - Exact	M2N ..... Nominal Torque
MF ..... Motor adapter with FlexiAdapt® coupling	n1 ..... Maximum input speed RPM	M2B ..... Acceleration Torque Maximum
L ..... Large Input	J1 ..... Mass moment of inertia (input)	M2PEAK ..... Peak Torque
C ..... ServoCool	C2 ..... Torsional Stiffness	

See web site for drawings.

"P" Series
ServoFit® Precision Planetary Gearhead
Dimensional Data



Drawing for Units
P221 thru P922

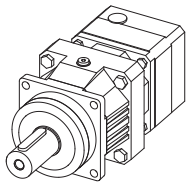
Table No. 1 **"P" Series – Precision Planetary Gearhead Dimensions (mm/inches)**

Unit	A1	A2	B1 h6	C1	D k6	E1	F1	K2	L1	L2	L3	L4	L6	L7	L8	S1	S2	T	U
P221/P222	55 2.17	55 2.17	50 +.000/-.019 1.969 +.0000/-.0007	6 .24	12 +.012/+.001	63 2.48	7 .28	— —	2 .08	22 .87	24 .94	36 1.42	62 2.44	74 2.91	80 3.15	5.5 .22	M4x10	13.5 .53	A4x4x18
P321/P322	72 2.83	72 2.83	60 +.000/-.019 2.362 +.0000/-.0007	7 .28	16 +.012/+.001	75 2.95	7.5 .30	— —	2 .08	28 1.10	30 1.18	48 1.89	79 3.11	92 3.62	92 3.62	5.5 .22	M5x12.5	18 .71	A5x5x22
P421/P422	98 3.86	76 2.99	70 +.000/-.019 2.756 +.0000/-.0007	9 .35	22 +.015/+.002	85 3.35	7.5 .30	12 .47	3 .12	36 1.42	38 1.50	56 2.20	98 3.86	103.3 4.07	130 5.12	6.6 .26	M8x19	24.5 .96	A6x6x28
P521/P522	115 4.53	101 3.98	90 +.000/-.022 3.543 +.0000/-.0009	10 .39	32 +.018/+.002	120 4.72	15 .59	14 .55	3 .12	58 2.28	60 2.36	88 3.46	121 4.76	139 5.47	149 5.87	9 .35	M12x28	35 1.38	A10x8x50
P721/P722	145 5.71	145 5.71	130 +.000/-.025 5.118 +.000/-.001	15 .59	40 +.018/+.002	165 6.50	3.5 .14	— —	4 .16	82 3.23	85 3.35	112 4.41	145 5.71	— —	190 7.48	11 .43	M16x36	43 1.69	A12x8x70
P821/P822	190 7.48	190 7.48	160 +.000/-.025 6.299 +.000/-.001	15 .59	55 +.021/+.002	215 8.46	10 .39	— —	6 .24	82 3.23	85 3.35	112 4.41	190 7.48	— —	250 9.84	13.5 .53	M20x42	59 2.32	A16x10x70
P921/P922	225 8.86	212 8.35	180 +.000/-.025 7.086 +.000/-.001	17 .67	75 +.021/+.002	250 9.84	10 .39	22 .87	7 .28	105 4.13	109 4.29	143 5.63	225 8.86	285 11.22	300 11.81	17.5 .69	M20x42	79.5 3.13	A20x12x90

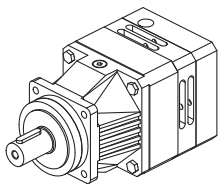
Part No. Explanation

P 4 2 1 S P R 0030 MT C

- **C** — Option for ServoCool
- **MT** — Motor Plate with TriAdapt Coupling
- **0030** — Ratio (0030 = 3.0:1)
- **R** — Normal Bearing
- **D** — Reinforced Bearings-Axial
- **Z** — Reinforced Bearings-Radial
- **G** — Shaft — no Key
- **P** — Output Shaft with Key
- **S** — Standard Housing
- **1** — No. of Gear Stages (1 = 1 Stage, 2 = 2 Stages)
- **4** — Generation Number
- **21** — Unit No.
- **P** — "P" Series ServoFit Precision Planetary Gearhead



Typical 2 Stage Configuration



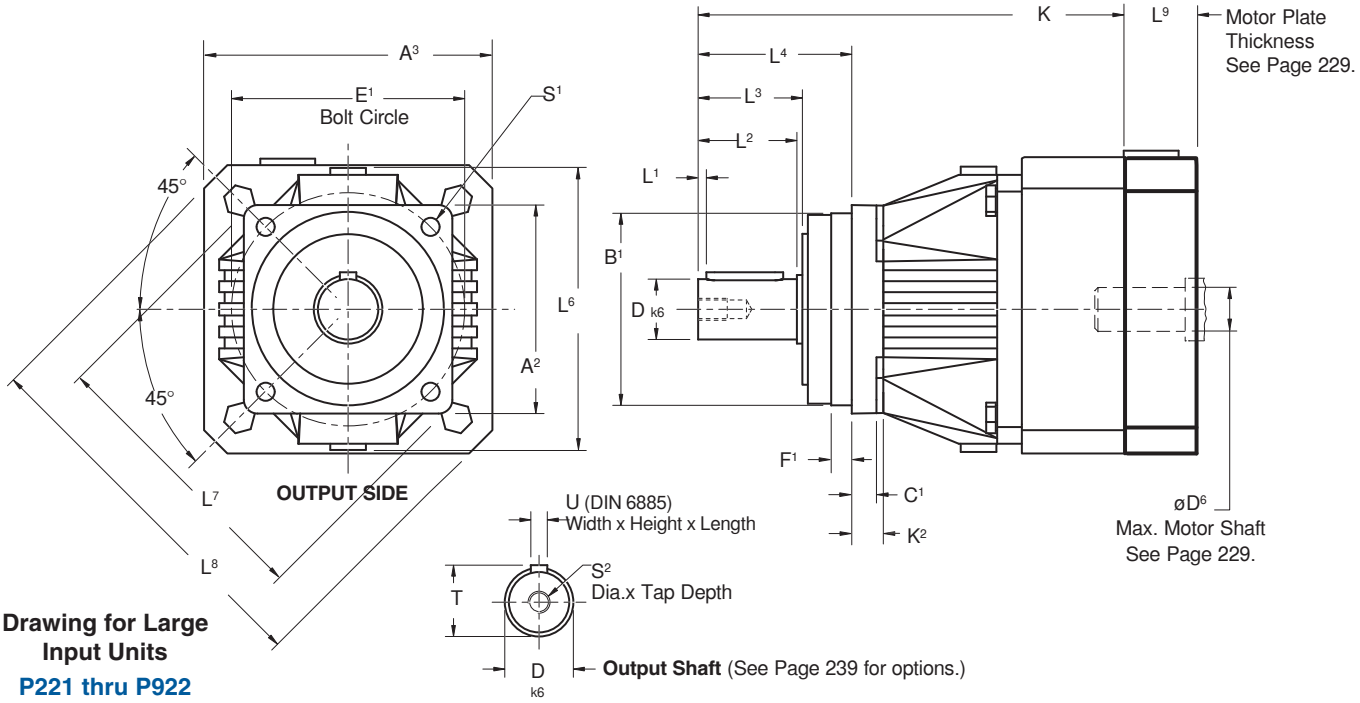
Typical ServoCool Configuration

Table No. 2

K Dimension					
Standard			ServoCool		
Unit	mm	inches	Unit	mm	inches
P221	94.5	3.72	—		
P222	126.5	4.98	—		
P321	135	5.31	—		
P322	158.5	6.24	—		
P421	153	6.02	**P421_C**	176.5	6.95
P422	200.5	7.89	—		
P521	193	7.60	**P521_C**	221	8.70
P522	242.5	9.55	**P522_C**	266	10.47
P721	242	9.53	**P721_C**	272	10.71
P722	294	11.57	**P722_C**	322	12.68
P821	283	11.14	**P821_C**	331	13.03
P822	350.5	13.80	**P822_C**	380.5	14.98
P921	353	13.89	**P921_C**	418	16.45
P922	441	17.36	**P922_C**	489	19.25

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

"P" Series–Large Input ServoFit® Precision Planetary Gearhead Dimensional Data



Drawing for Large Input Units
P221 thru P922

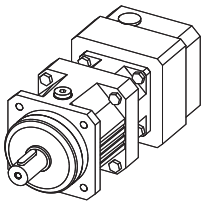
Table No. 1 **"P" Series – Large Input – Precision Planetary Gearhead Dimensions (mm/inches)**

Unit	A^2	B^1 h6	C^1	D k6	E^1	F^1	K^2	L^1	L^2	L^3	L^4	L^6	L^7	S^1	S^2	T	U
P221/P222_L	55 2.17	50 +.000/-.019 1.969 +.0000/-.0007	6 .24	12 +.012/+.001	63 2.48	7 .28	— —	2 .08	22 .87	24 .94	36 1.42	92 3.62	74 2.91	5.5 .22	M4x10	13.5 .53	A4x4x18
P321/P322_L	72 2.83	60 +.000/-.019 2.362 +.0000/-.0007	7 .28	16 +.012/+.001	75 2.95	7.5 .30	— —	2 .08	28 1.10	30 1.18	48 1.89	130 5.12	92 3.62	5.5 .22	M5x12.5	18 .71	A5x5x22
P421/P422_L	76 2.99	70 +.000/-.019 2.756 +.0000/-.0007	9 .35	22 +.015/+.002	85 3.35	7.5 .30	12 .47	3 .12	36 1.42	38 1.50	56 2.20	149 5.87	103.3 4.07	6.6 .26	M8x19	24.5 .96	A6x6x28
P521/P522_L	101 3.98	90 +.000/-.022 3.543 +.0000/-.0009	10 .39	32 +.018/+.002	120 4.72	15 .59	14 .55	3 .12	58 2.28	60 2.36	88 3.46	190 7.48	139 5.47	9 .35	M12x28	35 1.38	A10x8x50
P721/P722_L	145 5.71	130 +.000/-.025 5.118 +.000/-.001	15 .59	40 +.018/+.002	165 6.50	3.5 .14	— —	4 .16	82 3.23	85 3.35	112 4.41	250 5.71	— —	11 .43	M16x36	43 1.69	A12x8x70
P821/P822_L	190 7.48	160 +.000/-.025 6.299 +.000/-.001	15 .59	55 +.021/+.002	215 8.46	10 .39	— —	6 .24	82 3.23	85 3.35	112 4.41	190 7.48	— —	13.5 .53	M20x42	59 2.32	A16x10x70
P922_L	212 8.35	180 +.000/-.025 7.086 +.000/-.001	17 .67	75 +.021/+.002	250 9.84	10 .39	22 .87	7 .28	105 4.13	109 4.29	143 5.63	225 8.86	285 11.22	17.5 .69	M20x42	79.5 3.13	A20x12x90

Part No. Explanation

P 4 2 1 S P R 0030 MT L

- **L**arge Input
- **M**otor Plate with **T**riAdapt Coupling
- Ratio (**0030** = 3.0:1)
- **R** – Normal Bearing
- **D** – Reinforced Bearings-Axial
- **Z** – Reinforced Bearings-Radial
- **G** – Shaft — no Key
- **P** – Output Shaft with Key
- Standard Housing
- No. of Gear Stages (**1** = 1 Stage, **2** = 2 Stages)
- Generation Number
- Unit No.
- "**P**" Series ServoFit Precision Planetary Gearhead



Typical 2 Stage Configuration
Large Input

Table No. 2

Unit	A^3		K		L^8	
	mm	inches	mm	inches	mm	inches
P221_L	75	2.95	111	4.37	100	3.94
P222_L	75	2.95	143	5.63	100	3.94
P321_L	100	3.94	138.3	5.44	130	5.12
P322_L	75	2.95	175	6.89	100	3.94
P421_L	115	4.53	161.5	6.36	149	5.87
P422_L	100	3.94	203.8	8.02	130	5.12
P521_L	145	5.71	207	8.15	190	7.48
P522_L	115	4.53	251	9.88	149	5.87
P721_L	190	7.48	259	10.20	250	9.84
P722_L	145	5.71	308	12.13	190	7.48
P821_L	225	8.85	291	11.45	300	11.81
P822_L	190	7.48	367.5	14.47	250	9.84
P922_L	225	8.85	449	17.68	300	11.81

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

"PA" Series–Advanced ServoFit® Precision Planetary Gearhead Performance Specification Overview

			PA321 PA322	PA421 PA422	PA521 PA522	PA721 PA722	PA821 PA822
Acceleration Torque Maximum	M_{2B}	in.lbs. Nm	575 65	1052 120	2,655 300	6,195 700	14,160 1,600
Nominal Output Torque [1]	M_{2N}	in.lbs. Nm	399 45	753 85	1,860 210	3,898 440	8,858 1,000
Input Speed Maximum	n_{1MAX}	Continuous Cyclic	4,500 8,000	4,000 4,500 7,000 8,000	3,700 4,000 6,500 7,000	3,300 3,700 6,000 6,500	2,800 3,300 4,500 6,000
ServoCool Input RPM Maximum	n_{1MAX}	Continuous Cyclic	— —	6,000 — 7,000 —	6,000 5,500 6,500 7,000	5,500 5,500 6,000 6,500	5,500 5,000 6,000 6,000
Torsional Backlash [2]	$\Delta\varphi$	arcmin	≤2 ≤3	≤2 ≤3	≤1 ≤2	≤1 ≤2	≤1 ≤2
Torsional Stiffness	C_2	in.lbs./arcmin Nm/arcmin	44 5	100 11	266 33	486 55	1,557 176
Axial Load Max.	F_{2AMAX}	lbs. N	315 1,400	506 2,250	788 3,500	1,013 4,500	1,688 7,500
Radial Load Max. [3]	F_{2RMAX}	lbs. N	619 2,750	1,012 4,500	1,575 7,000	2,025 9,000	3,375 15,000
Tilting Moment Max. [3]	M_{2KMAX}	in.lbs. Nm	2,044 231	3,885 439	7,496 847	11,629 1,314	23,497 2,655
Efficiency (at Nominal Torque)	h	%	97% 95%	97% 95%	97% 95%	97% 95%	97% 95%
Weight	m	pounds kg	6 8 2.6 3.5	9 12 4.0 5.3	14 19 6.5 8.5	27 33 12 15	57 71 26 32
Noise Level	L_{PA}	dB(A) [4]	≤61 ≤61	≤62 ≤60	≤63 ≤61	≤64 ≤62	≤65 ≤63
Balance Quality			Q 2.5 (Quality Class-2.5 millimeters per second)				
Lubrication			Synthetic Oil — Lubricated for Life				
Degree of Protection			IP65 - FKM Shaft Seals				
Mounting Position			Unrestricted				
Direction of Rotation			Input and Output Rotate the SAME Direction.				
Ambient Temperature			0° C to +40°C (104° F) [Unit temperature ≤ 90° C Max.]				
Finish			Black (Standard), Washdown, Food and Beverage Options Available				
Lifetime.[5]	L_h	hours	L_h > 10,000 hours if M_{2K}/M_{2A} < 1.25 and > 1.00 L_h > 20,000 hours if M_{2K}/M_{2A} > 1.25 and < 1.50 L_h > 30,000 hours if M_{2K}/M_{2A} > 1.5				
Warranty			5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)				

1) Ratings based on input speed (n_1) of 2000 RPM.
For torque at higher input speeds (M_{2NX}) solve the formula, where n_1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

2) Tested at 1.5% of nominal torque and recorded on the output side of the gearhead.

3) Rating based on output speed (n_2) of 100 RPM. For values at other speeds see Page 239.

4) Measurement at one (1) meter distance with input speed (n_1) of 2000 RPM.

5) M_{2A} equals actual tilting moment of the application. See Page 239 for calculation details.

WARNING: In order to insure that the specified torque ratings are attained, it is essential to attach the gear units to the machine with a grade 10.9 fastener.

Refer to Page 250 for ServoFit Precision Planetary Gearhead Selection Procedure.

"PA" Series–Advanced ServoFit® Precision Planetary Gearhead Features

The "PA" Series Advanced ServoFit Precision Planetary Gearheads feature HeliCamber® gearing, FlexiAdapt® motor adapter system and other features which make them the most accurate, efficient, and lowest backlash planetary gearheads available. HeliCamber® gear technology provides minimum wear, low backlash and low noise. All units are lubricated for life with synthetic oil and sealed to IP65 standards to prevent lubricant contamination.

Some of these features are:

- Lowest Backlash on the Market
- Advanced Gear Technology
- Quiet Running
- 5 Year Limited Warranty (2 years on bearings, seals, etc.)
- Readily Attaches to Any Servo Motor (IEC, NEMA, or customized motor plates*)
- High Torsional Stiffness
- 95 to 97% Efficiency
- Ground and honed gearing

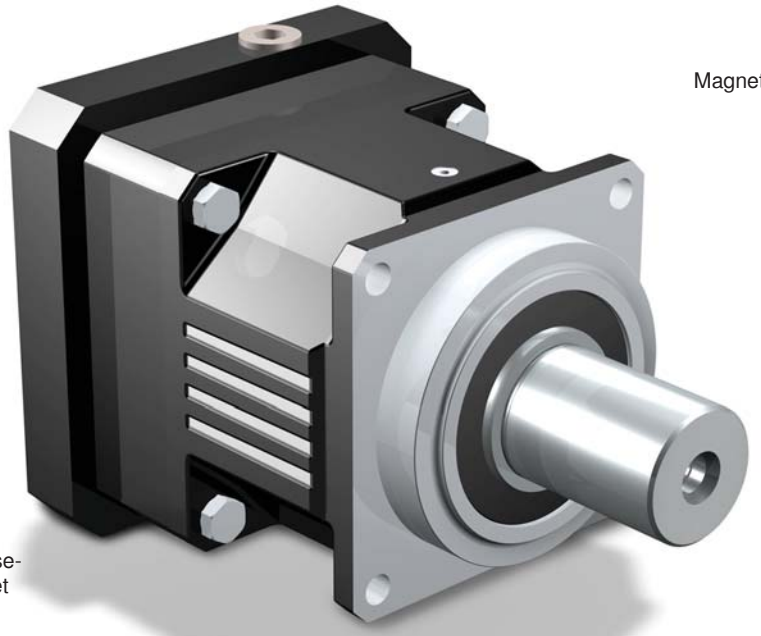
* Maximum 10 working days for custom motor plates.

Motor plate pilot toleranced to fit your motor for precise concentricity

Backlash ≤ 1 arcminute — Precision selection of parts ensure optimal performance without binding gear teeth — resulting in a more accurate and smooth direct drive

Motor plate can easily be changed to fit your choice of motors

Magnetic oil filtration



Adapter bushings to fit all motor shafts — no key required

Double row ball bearings on the output for high radial and axial capacity while maintaining efficiency.

Ring gear machined integral to the housing — not welded or pressed in — provides greater concentricity and eliminates speed fluctuation

High quality gearing provided by case-hardened and ground sun and planet gears and honed ring gear.

Oversized single-piece planet carrier made of high-tensile material assure the highest torsional stiffness while straddle mounted bearings minimize misalignment.

FKM seals for the smallest possible diameter—reducing friction and heat buildup, increasing efficiency, and allowing continuous duty without additional cooling.

Highest running accuracy and precision ensured by single piece housing made from high-tensile tempered ductile iron with the additional characteristics of dissipating heat, noise dampening, and greater lubrication retention on the ring gear

Available as ServoCool in Sizes P4 thru P8.

The FlexiAdapt® motor coupling is designed for accurate and precise motor installation. The integrated thermal expansion feature in the shape of a bellows compensates for linear expansion of the motor shaft.

The FlexiAdapt® motor shaft adapter system allows installation of motor in minutes without special tools.

See web site for drawings.

"PA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD6	J1	C2		M2N		M2B		M2PEAK	
	i	RPM (n1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PA321 with Motor Mounting Plate													
PA321_0030 MF	3.000	3,500	6,000	≤11	0.68	43.1	4.9	266	30	443	50	567	64
PA321_0030 MF	3.000	3,500	6,000	>11≤14	0.69	44.3	5.0	266	30	443	50	954	108
PA321_0030 MF	3.000	3,500	6,000	>14≤19	0.69	44.3	5.0	266	30	443	50	1,083	122
PA321_0030 MFL	3.000	3,500	6,000	>19≤24	1.77	48.3	5.5	266	30	443	50	1,083	122
PA321_0040 MF	4.000	3,700	6,500	≤11	0.60	43.1	4.9	399	45	576	65	756	85
PA321_0040 MF	4.000	3,700	6,500	>11≤14	0.61	43.7	4.9	399	45	576	65	1,152	130
PA321_0040 MF	4.000	3,700	6,500	>14≤19	0.61	43.7	4.9	399	45	576	65	1,152	130
PA321_0040 MFL	4.000	3,700	6,500	>19≤24	1.69	45.9	5.2	399	45	576	65	1,152	130
PA321_0050 MF	5.000	4,000	7,000	≤11	0.55	42.8	4.8	399	45	576	65	945	107
PA321_0050 MF	5.000	4,000	7,000	>11≤14	0.57	43.2	4.9	399	45	576	65	1,152	130
PA321_0050 MF	5.000	4,000	7,000	>14≤19	0.57	43.2	4.9	399	45	576	65	1,152	130
PA321_0050 MFL	5.000	4,000	7,000	>19≤24	1.64	44.5	5.0	399	45	576	65	1,152	130
PA321_0070 MF	7.000	4,500	8,000	≤11	0.51	38.1	4.3	399	45	531	60	1,152	130
PA321_0070 MF	7.000	4,500	8,000	>11≤14	0.51	38.1	4.3	399	45	531	60	1,152	130
PA321_0070 MF	7.000	4,500	8,000	>14≤19	0.51	38.1	4.3	399	45	531	60	1,152	130
PA321_0070 MFL	7.000	4,500	8,000	>19≤24	1.57	38.7	4.4	399	45	531	60	1,152	130
PA321_0080 MF	8.000	4,500	8,000	≤11	0.50	36.6	4.1	354	40	443	50	886	100
PA321_0080 MF	8.000	4,500	8,000	>11≤14	0.50	36.6	4.1	354	40	443	50	886	100
PA321_0080 MF	8.000	4,500	8,000	>14≤19	0.50	36.6	4.1	354	40	443	50	886	100
PA321_0080 MFL	8.000	4,500	8,000	>19≤24	1.56	37.0	4.2	354	40	443	50	886	100
PA321_0100 MF	10.00	4,500	8,000	≤11	0.50	35.1	4.0	266	30	443	50	886	100
PA321_0100 MF	10.00	4,500	8,000	>11≤14	0.50	35.1	4.0	266	30	443	50	886	100
PA321_0100 MF	10.00	4,500	8,000	>14≤19	0.50	35.1	4.0	266	30	443	50	886	100
PA321_0100 MFL	10.00	4,500	8,000	>19≤24	1.56	35.3	4.0	266	30	443	50	886	100
PA322 with Motor Mounting Plate Continued Next Page													
PA322_0120 MF	12.00	4,500	8,000	≤9	0.12	37.3	4.2	266	30	443	50	1,083	122
PA322_0120 MF	12.00	4,500	8,000	>9≤11	0.13	37.5	4.2	266	30	443	50	1,083	122
PA322_0120 MF	12.00	4,500	8,000	>11≤14	0.15	37.5	4.2	266	30	443	50	1,083	122
PA322_0160 MF	16.00	4,500	8,000	≤9	0.11	39.6	4.5	399	45	576	65	1,152	130
PA322_0160 MF	16.00	4,500	8,000	>9≤11	0.12	39.7	4.5	399	45	576	65	1,152	130
PA322_0160 MF	16.00	4,500	8,000	>11≤14	0.14	39.7	4.5	399	45	576	65	1,152	130
PA322_0200 MF	20.00	4,500	8,000	≤9	0.11	40.6	4.6	399	45	576	65	1,152	130
PA322_0200 MF	20.00	4,500	8,000	>9≤11	0.12	40.6	4.6	399	45	576	65	1,152	130
PA322_0200 MF	20.00	4,500	8,000	>11≤14	0.14	40.6	4.6	399	45	576	65	1,152	130
PA322_0250 MF	25.00	4,500	8,000	≤9	0.09	40.6	4.6	399	45	576	65	1,152	130
PA322_0250 MF	25.00	4,500	8,000	>9≤11	0.10	40.7	4.6	399	45	576	65	1,152	130
PA322_0250 MF	25.00	4,500	8,000	>11≤14	0.12	40.7	4.6	399	45	576	65	1,152	130
PA322_0280 MF	28.00	4,500	8,000	≤9	0.08	39.5	4.5	399	45	576	65	1,152	130
PA322_0280 MF	28.00	4,500	8,000	>9≤11	0.09	39.5	4.5	399	45	576	65	1,152	130
PA322_0280 MF	28.00	4,500	8,000	>11≤14	0.11	39.5	4.5	399	45	576	65	1,152	130
PA322_0320 MF	32.00	4,500	8,000	≤9	0.10	35.9	4.1	354	40	443	50	886	100
PA322_0320 MF	32.00	4,500	8,000	>9≤11	0.12	35.9	4.1	354	40	443	50	886	100
PA322_0320 MF	32.00	4,500	8,000	>11≤14	0.14	35.9	4.1	354	40	443	50	886	100
PA322_0350 MF	35.00	4,500	8,000	≤9	0.08	40.5	4.6	399	45	576	65	1,152	130
PA322_0350 MF	35.00	4,500	8,000	>9≤11	0.09	40.5	4.6	399	45	576	65	1,152	130
PA322_0350 MF	35.00	4,500	8,000	>11≤14	0.11	40.5	4.6	399	45	576	65	1,152	130

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"PA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed Continuous	Maximum Input Speed Cyclic	Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
Gearhead													
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PA322 with Motor Mounting Plate Continued													
PA322_0400 MF	40.00	4,500	8,000	≤9	0.07	38.8	4.4	399	45	576	65	1,152	130
PA322_0400 MF	40.00	4,500	8,000	>9≤11	0.08	38.8	4.4	399	45	576	65	1,152	130
PA322_0400 MF	40.00	4,500	8,000	>11≤14	0.10	38.8	4.4	399	45	576	65	1,152	130
PA322_0500 MF	50.00	4,500	8,000	≤9	0.07	40.0	4.5	399	45	576	65	1,152	130
PA322_0500 MF	50.00	4,500	8,000	>9≤11	0.08	40.0	4.5	399	45	576	65	1,152	130
PA322_0500 MF	50.00	4,500	8,000	>11≤14	0.10	40.0	4.5	399	45	576	65	1,152	130
PA322_0700 MF	70.00	4,500	8,000	≤9	0.07	36.9	4.2	399	45	531	60	1,152	130
PA322_0700 MF	70.00	4,500	8,000	>9≤11	0.08	36.9	4.2	399	45	531	60	1,152	130
PA322_0700 MF	70.00	4,500	8,000	>11≤14	0.10	36.9	4.2	399	45	531	60	1,152	130
PA322_1000 MF	100.0	4,500	8,000	≤9	0.07	34.6	3.9	266	30	443	50	886	100
PA322_1000 MF	100.0	4,500	8,000	>9≤11	0.08	34.6	3.9	266	30	443	50	886	100
PA322_1000 MF	100.0	4,500	8,000	>11≤14	0.10	34.6	3.9	266	30	443	50	886	100
PA421 with Motor Mounting Plate Continued Next Page													
PA421_0030 MF	3.000	3,000	5,500	≤14	2.33	98.3	11.1	443	50	886	100	1,289	146
PA421_0030 MF	3.000	3,000	5,500	>14≤19	2.35	100.7	11.4	443	50	886	100	1,753	198
PA421_0030 MF	3.000	3,000	5,500	>19≤24	2.25	100.7	11.4	443	50	886	100	2,126	240
PA421_0030 MFC	3.000	4,500	6,000	≤14	2.66	98.3	11.1	443	50	886	100	1,289	146
PA421_0030 MFC	3.000	4,500	6,000	>14≤19	2.51	100.7	11.4	443	50	886	100	1,753	198
PA421_0030 MFC	3.000	4,500	6,000	>19≤24	2.40	100.7	11.4	443	50	886	100	2,126	240
PA421_0030 MFL	3.000	3,000	5,500	>24≤32	5.46	104.2	11.8	443	50	886	100	2,126	240
PA421_0030 MFLC	3.000	4,500	6,000	>24≤32	5.89	104.2	11.8	443	50	886	100	2,126	240
PA421_0040 MF	4.000	3,300	6,000	≤14	1.93	99.5	11.2	753	85	1,063	120	1,718	194
PA421_0040 MF	4.000	3,300	6,000	>14≤19	1.96	100.9	11.4	753	85	1,063	120	2,126	240
PA421_0040 MF	4.000	3,300	6,000	>19≤24	1.86	100.9	11.4	753	85	1,063	120	2,126	240
PA421_0040 MFC	4.000	5,000	6,000	≤14	2.27	99.5	11.2	753	85	1,063	120	1,718	194
PA421_0040 MFC	4.000	5,000	6,000	>14≤19	2.11	100.9	11.4	753	85	1,063	120	2,126	240
PA421_0040 MFC	4.000	5,000	6,000	>19≤24	2.01	100.9	11.4	753	85	1,063	120	2,126	240
PA421_0040 MFL	4.000	3,300	6,000	>24≤32	5.07	102.8	11.6	753	85	1,063	120	2,126	240
PA421_0040 MFLC	4.000	5,000	6,000	>24≤32	5.50	102.8	11.6	753	85	1,063	120	2,126	240
PA421_0050 MF	5.000	3,700	6,500	≤14	1.83	99.4	11.2	753	85	1,063	120	2,126	240
PA421_0050 MF	5.000	3,700	6,500	>14≤19	1.85	100.3	11.3	753	85	1,063	120	2,126	240
PA421_0050 MF	5.000	3,700	6,500	>19≤24	1.75	100.3	11.3	753	85	1,063	120	2,126	240
PA421_0050 MFC	5.000	5,000	6,500	≤14	2.16	99.4	11.2	753	85	1,063	120	2,126	240
PA421_0050 MFC	5.000	5,000	6,500	>14≤19	2.01	100.3	11.3	753	85	1,063	120	2,126	240
PA421_0050 MFC	5.000	5,000	6,500	>19≤24	1.90	100.3	11.3	753	85	1,063	120	2,126	240
PA421_0050 MFL	5.000	3,700	6,500	>24≤32	4.96	101.5	11.5	753	85	1,063	120	2,126	240
PA421_0050 MFLC	5.000	5,000	6,500	>24≤32	5.39	101.5	11.5	753	85	1,063	120	2,126	240
PA421_0070 MF	7.000	4,000	7,000	≤14	1.72	87.8	9.9	753	85	974	110	2,126	240
PA421_0070 MF	7.000	4,000	7,000	>14≤19	1.72	87.8	9.9	753	85	974	110	2,126	240
PA421_0070 MF	7.000	4,000	7,000	>19≤24	1.62	87.8	9.9	753	85	974	110	2,126	240
PA421_0070 MFC	7.000	5,500	7,000	≤14	2.05	87.8	9.9	753	85	974	110	2,126	240
PA421_0070 MFC	7.000	5,500	7,000	>14≤19	1.88	88.2	10.0	753	85	974	110	2,126	240
PA421_0070 MFC	7.000	5,500	7,000	>19≤24	1.77	87.8	9.9	753	85	974	110	2,126	240
PA421_0070 MFL	7.000	4,000	7,000	>24≤32	4.78	88.5	10.0	753	85	974	110	2,126	240
PA421_0070 MFLC	7.000	5,500	7,000	>24≤32	5.21	88.5	10.0	753	85	974	110	2,126	240
PA421_0080 MF	8.000	4,000	7,000	≤14	1.70	83.0	9.4	709	80	886	100	1,772	200
PA421_0080 MF	8.000	4,000	7,000	>14≤19	1.70	83.0	9.4	709	80	886	100	1,772	200
PA421_0080 MF	8.000	4,000	7,000	>19≤24	1.60	83.0	9.4	709	80	886	100	1,772	200

Index of Symbols

MF ..... Motor adapter with FlexiAdapt® coupling	J_1 ..... Mass moment of inertia (input)
L ..... Large Input	C_2 ..... Torsional Stiffness
C ..... ServoCool	M_{2N} ..... Nominal Torque
i ..... Ratio - Exact	M_{2B} ..... Acceleration Torque Maximum
n_1 ..... Maximum input speed RPM	M_{2PEAK} ..... Peak Torque

See web site for drawings.

"PA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD6	J1	C2		M2N		M2B		M2PEAK	
	i	RPM (n1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PA421 with Motor Mounting Plate Continued													
PA421_0080 MFC	8.000	5,500	7,000	≤14	2.03	83.0	9.4	709	80	886	100	1,772	200
PA421_0080 MFC	8.000	5,500	7,000	>14≤19	1.86	83.3	9.4	709	80	886	100	1,772	200
PA421_0080 MFC	8.000	5,500	7,000	>19≤24	1.75	83.0	9.4	709	80	886	100	1,772	200
PA421_0080 MFL	8.000	4,000	7,000	>24≤32	4.76	83.5	9.4	709	80	886	100	1,772	200
PA421_0080 MFLC	8.000	5,500	7,000	>24≤32	5.19	83.5	9.4	709	80	886	100	1,772	200
PA421_0100 MF	10.00	4,000	7,000	≤14	1.68	79.1	8.9	531	60	886	100	1,772	200
PA421_0100 MF	10.00	4,000	7,000	>14≤19	1.68	79.1	8.9	531	60	886	100	1,772	200
PA421_0100 MF	10.00	4,000	7,000	>19≤24	1.58	79.1	8.9	531	60	886	100	1,772	200
PA421_0100 MFC	10.00	6,000	7,000	≤14	2.01	79.1	8.9	531	60	886	100	1,772	200
PA421_0100 MFC	10.00	6,000	7,000	>14≤19	1.84	79.2	8.9	531	60	886	100	1,772	200
PA421_0100 MFC	10.00	6,000	7,000	>19≤24	1.73	79.1	8.9	531	60	886	100	1,772	200
PA421_0100 MFL	10.00	4,000	7,000	>24≤32	4.74	79.3	9.0	531	60	886	100	1,772	200
PA421_0100 MFLC	10.00	6,000	7,000	>24≤32	5.17	79.3	9.0	531	60	886	100	1,772	200
PA422 with Motor Mounting Plate Continued Next Page													
PA422_0120 MF	12.00	3,700	6,500	≤11	0.64	86.1	9.7	443	50	886	100	2,126	240
PA422_0120 MF	12.00	3,700	6,500	>11≤14	0.65	86.4	9.8	443	50	886	100	2,126	240
PA422_0120 MF	12.00	3,700	6,500	>14≤19	0.65	86.4	9.8	443	50	886	100	2,126	240
PA422_0120 MFL	12.00	3,700	6,500	>19≤24	1.73	87.3	9.9	443	50	886	100	2,126	240
PA422_0120 MFLC	12.00	4,500	6,500	>19≤24	1.88	87.2	9.8	443	50	886	100	2,126	240
PA422_0160 MF	16.00	3,700	6,500	≤11	0.62	92.1	10.4	753	85	1,063	120	2,126	240
PA422_0160 MF	16.00	3,700	6,500	>11≤14	0.63	92.3	10.4	753	85	1,063	120	2,126	240
PA422_0160 MF	16.00	3,700	6,500	>14≤19	0.63	92.3	10.4	753	85	1,063	120	2,126	240
PA422_0160 MFL	16.00	3,700	6,500	>19≤24	1.70	92.8	10.5	753	85	1,063	120	2,126	240
PA422_0160 MFLC	16.00	5,000	6,500	>19≤24	1.86	92.8	10.5	753	85	1,063	120	2,126	240
PA422_0200 MF	20.00	3,700	6,500	≤11	0.61	94.5	10.7	753	85	1,063	120	2,126	240
PA422_0200 MF	20.00	3,700	6,500	>11≤14	0.62	94.7	10.7	753	85	1,063	120	2,126	240
PA422_0200 MF	20.00	3,700	6,500	>14≤19	0.62	94.7	10.7	753	85	1,063	120	2,126	240
PA422_0200 MFL	20.00	3,700	6,500	>19≤24	1.70	95.0	10.7	753	85	1,063	120	2,126	240
PA422_0200 MFLC	20.00	5,000	6,500	>19≤24	1.85	95.0	10.7	753	85	1,063	120	2,126	240
PA422_0250 MF	25.00	4,000	7,000	≤11	0.56	94.5	10.7	753	85	1,063	120	2,126	240
PA422_0250 MF	25.00	4,000	7,000	>11≤14	0.57	94.6	10.7	753	85	1,063	120	2,126	240
PA422_0250 MF	25.00	4,000	7,000	>14≤19	0.57	94.6	10.7	753	85	1,063	120	2,126	240
PA422_0250 MFL	25.00	4,000	7,000	>19≤24	1.65	94.8	10.7	753	85	1,063	120	2,126	240
PA422_0250 MFLC	25.00	5,000	7,000	>19≤24	1.80	94.8	10.7	753	85	1,063	120	2,126	240
PA422_0280 MF	28.00	4,500	8,000	≤11	0.52	90.5	10.2	753	85	1,063	120	2,126	240
PA422_0280 MF	28.00	4,500	8,000	>11≤14	0.52	90.5	10.2	753	85	1,063	120	2,126	240
PA422_0280 MF	28.00	4,500	8,000	>14≤19	0.52	90.5	10.2	753	85	1,063	120	2,126	240
PA422_0280 MFL	28.00	4,500	8,000	>19≤24	1.58	90.7	10.2	753	85	1,063	120	2,126	240
PA422_0280 MFLC	28.00	5,500	8,000	>19≤24	1.74	90.7	10.2	753	85	1,063	120	2,126	240
PA422_0320 MF	32.00	3,700	6,500	≤11	0.60	81.7	9.2	709	80	886	100	1,772	200
PA422_0320 MF	32.00	3,700	6,500	>11≤14	0.62	81.7	9.2	709	80	886	100	1,772	200
PA422_0320 MF	32.00	3,700	6,500	>14≤19	0.62	81.7	9.2	709	80	886	100	1,772	200
PA422_0320 MFL	32.00	3,700	6,500	>19≤24	1.69	81.8	9.2	709	80	886	100	1,772	200
PA422_0320 MFLC	32.00	5,000	6,500	>19≤24	1.84	81.8	9.2	709	80	886	100	1,772	200
PA422_0350 MF	35.00	4,500	8,000	≤11	0.52	93.5	10.6	753	85	1,063	120	2,126	240
PA422_0350 MF	35.00	4,500	8,000	>11≤14	0.52	93.5	10.6	753	85	1,063	120	2,126	240
PA422_0350 MF	35.00	4,500	8,000	>14≤19	0.52	93.5	10.6	753	85	1,063	120	2,126	240
PA422_0350 MFL	35.00	4,500	8,000	>19≤24	1.58	93.6	10.6	753	85	1,063	120	2,126	240
PA422_0350 MFLC	35.00	5,500	8,000	>19≤24	1.73	93.6	10.6	753	85	1,063	120	2,126	240

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"PA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed Continuous	Maximum Input Speed Cyclic	Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
Gearhead													
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PA422 with Motor Mounting Plate Continued													
PA422_0400 MF	40.00	4,500	8,000	≤11	0.50	89.4	10.1	753	85	1,063	120	2,126	240
PA422_0400 MF	40.00	4,500	8,000	>11≤14	0.50	89.4	10.1	753	85	1,063	120	2,126	240
PA422_0400 MF	40.00	4,500	8,000	>14≤19	0.50	89.4	10.1	753	85	1,063	120	2,126	240
PA422_0400 MFL	40.00	4,500	8,000	>19≤24	1.56	89.5	10.1	753	85	1,063	120	2,126	240
PA422_0400 MFLC	40.00	5,500	8,000	>19≤24	1.71	89.5	10.1	753	85	1,063	120	2,126	240
PA422_0500 MF	50.00	4,500	8,000	≤11	0.50	92.7	10.5	753	85	1,063	120	2,126	240
PA422_0500 MF	50.00	4,500	8,000	>11≤14	0.50	92.7	10.5	753	85	1,063	120	2,126	240
PA422_0500 MF	50.00	4,500	8,000	>14≤19	0.50	92.7	10.5	753	85	1,063	120	2,126	240
PA422_0500 MFL	50.00	4,500	8,000	>19≤24	1.56	92.7	10.5	753	85	1,063	120	2,126	240
PA422_0500 MFLC	50.00	5,500	8,000	>19≤24	1.71	92.7	10.5	753	85	1,063	120	2,126	240
PA422_0700 MF	70.00	4,500	8,000	≤11	0.50	85.0	9.6	753	85	974	110	2,126	240
PA422_0700 MF	70.00	4,500	8,000	>11≤14	0.50	85.0	9.6	753	85	974	110	2,126	240
PA422_0700 MF	70.00	4,500	8,000	>14≤19	0.50	85.0	9.6	753	85	974	110	2,126	240
PA422_0700 MFL	70.00	4,500	8,000	>19≤24	1.56	85.1	9.6	753	85	974	110	2,126	240
PA422_0700 MFLC	70.00	5,500	8,000	>19≤24	1.71	85.1	9.6	753	85	974	110	2,126	240
PA422_1000 MF	100.0	4,500	8,000	≤11	0.50	78.0	8.8	531	60	886	100	1,772	200
PA422_1000 MF	100.0	4,500	8,000	>11≤14	0.50	78.0	8.8	531	60	886	100	1,772	200
PA422_1000 MF	100.0	4,500	8,000	>14≤19	0.50	78.0	8.8	531	60	886	100	1,772	200
PA422_1000 MFL	100.0	4,500	8,000	>19≤24	1.56	78.0	8.8	531	60	886	100	1,772	200
PA422_1000 MFLC	100.0	5,500	8,000	>19≤24	1.71	78.0	8.8	531	60	886	100	1,772	200
PA521 with Motor Mounting Plate Continued Next Page													
PA521_0030 MF	3.000	2,500	4,500	≤19	6.07	262.7	29.7	1,063	120	1,772	200	2,294	259
PA521_0030 MF	3.000	2,500	4,500	>19≤24	6.14	271.7	30.7	1,063	120	1,772	200	3,686	416
PA521_0030 MF	3.000	2,500	4,500	>24≤32	6.04	271.7	30.7	1,063	120	1,772	200	3,686	416
PA521_0030 MF	3.000	2,500	4,500	>32≤35	6.04	271.7	30.7	1,063	120	1,772	200	3,686	416
PA521_0030 MFC	3.000	4,000	6,000	≤19	6.98	262.7	29.7	1,063	120	1,772	200	2,294	259
PA521_0030 MFC	3.000	4,000	6,000	>19≤24	6.59	271.7	30.7	1,063	120	1,772	200	3,686	416
PA521_0030 MFC	3.000	4,000	6,000	>24≤32	6.47	271.7	30.7	1,063	120	1,772	200	3,686	416
PA521_0030 MFL	3.000	2,500	4,500	>32≤38	13.23	292.1	33.0	1,063	120	1,772	200	3,686	416
PA521_0030 MFLC	3.000	4,000	6,000	>32≤38	16.02	292.1	33.0	1,063	120	1,772	200	3,686	416
PA521_0040 MF	4.000	3,000	5,000	≤19	5.85	255.8	28.9	1,860	210	2,447	276	3,059	345
PA521_0040 MF	4.000	3,000	5,000	>19≤24	5.93	260.6	29.4	1,860	210	2,657	300	4,915	555
PA521_0040 MF	4.000	3,000	5,000	>24≤32	5.83	260.6	29.4	1,860	210	2,657	300	4,915	555
PA521_0040 MF	4.000	3,000	5,000	>32≤35	5.83	260.6	29.4	1,860	210	2,657	300	4,915	555
PA521_0040 MFC	4.000	4,500	6,000	≤19	6.77	255.8	28.9	1,860	210	2,447	276	3,059	345
PA521_0040 MFC	4.000	4,500	6,000	>19≤24	6.38	260.6	29.4	1,860	210	2,657	300	4,915	555
PA521_0040 MFC	4.000	4,500	6,000	>24≤32	6.26	260.6	29.4	1,860	210	2,657	300	4,915	555
PA521_0040 MFL	4.000	3,000	5,000	>32≤38	13.02	270.8	30.6	1,860	210	2,657	300	4,915	555
PA521_0040 MFLC	4.000	4,500	6,000	>32≤38	15.81	270.8	30.6	1,860	210	2,657	300	4,915	555
PA521_0050 MF	5.000	3,500	6,000	≤19	5.44	257.7	29.1	1,860	210	2,657	300	3,824	432
PA521_0050 MF	5.000	3,500	6,000	>19≤24	5.52	260.7	29.4	1,860	210	2,657	300	5,315	600
PA521_0050 MF	5.000	3,500	6,000	>24≤32	5.42	260.7	29.4	1,860	210	2,657	300	5,315	600
PA521_0050 MF	5.000	3,500	6,000	>32≤35	5.42	260.7	29.4	1,860	210	2,657	300	5,315	600
PA521_0050 MFC	5.000	5,000	6,000	≤19	6.36	257.7	29.1	1,860	210	2,657	300	3,824	432
PA521_0050 MFC	5.000	5,000	6,000	>19≤24	5.97	260.7	29.4	1,860	210	2,657	300	5,315	600
PA521_0050 MFC	5.000	5,000	6,000	>24≤32	5.85	260.7	29.4	1,860	210	2,657	300	5,315	600
PA521_0050 MFL	5.000	3,500	6,000	>32≤38	12.61	267.2	30.2	1,860	210	2,657	300	5,315	600
PA521_0050 MFLC	5.000	5,000	6,000	>32≤38	15.40	267.2	30.2	1,860	210	2,657	300	5,315	600

Index of Symbols

MF ..... Motor adapter with FlexiAdapt® coupling	J_1 ..... Mass moment of inertia (input)
L ..... Large Input	C_2 ..... Torsional Stiffness
C ..... ServoCool	M_{2N} ..... Nominal Torque
i ..... Ratio - Exact	M_{2B} ..... Acceleration Torque Maximum
n_1 ..... Maximum input speed RPM	M_{2PEAK} ..... Peak Torque

See web site for drawings.

"PA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD[6]	J_1	C_2		M_{2N}		M_{2B}		M_{2PEAK}	
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PA521 with Motor Mounting Plate Continued													
PA521_0070 MF	7.000	3,700	6,500	≤19	5.07	240.4	27.1	1,860	210	2,392	270	5,315	600
PA521_0070 MF	7.000	3,700	6,500	>19≤24	5.07	240.4	27.1	1,860	210	2,392	270	5,315	600
PA521_0070 MF	7.000	3,700	6,500	>24≤32	4.97	240.4	27.1	1,860	210	2,392	270	5,315	600
PA521_0070 MF	7.000	3,700	6,500	>32≤35	4.97	240.4	27.1	1,860	210	2,392	270	5,315	600
PA521_0070 MFC	7.000	5,000	6,500	≤19	5.98	240.4	27.1	1,860	210	2,392	270	5,315	600
PA521_0070 MFC	7.000	5,000	6,500	>19≤24	5.52	240.4	27.1	1,860	210	2,392	270	5,315	600
PA521_0070 MFC	7.000	5,000	6,500	>24≤32	5.40	240.4	27.1	1,860	210	2,392	270	5,315	600
PA521_0070 MFL	7.000	3,700	6,500	>32≤38	11.90	243.7	27.5	1,860	210	2,392	270	5,315	600
PA521_0070 MFLC	7.000	5,000	6,500	>32≤38	14.69	243.7	27.5	1,860	210	2,392	270	5,315	600
PA521_0080 MF	8.000	3,700	6,500	≤19	5.00	225.2	25.4	1,772	200	2,215	250	4,429	500
PA521_0080 MF	8.000	3,700	6,500	>19≤24	5.00	225.2	25.4	1,772	200	2,215	250	4,429	500
PA521_0080 MF	8.000	3,700	6,500	>24≤32	4.90	225.2	25.4	1,772	200	2,215	250	4,429	500
PA521_0080 MF	8.000	3,700	6,500	>32≤35	4.90	225.2	25.4	1,772	200	2,215	250	4,429	500
PA521_0080 MFC	8.000	5,500	6,500	≤19	5.91	225.2	25.4	1,772	200	2,215	250	4,429	500
PA521_0080 MFC	8.000	5,500	6,500	>19≤24	5.45	225.2	25.4	1,772	200	2,215	250	4,429	500
PA521_0080 MFC	8.000	5,500	6,500	>24≤32	5.33	225.2	25.4	1,772	200	2,215	250	4,429	500
PA521_0080 MFL	8.000	3,700	6,500	>32≤38	11.83	227.4	25.7	1,772	200	2,215	250	4,429	500
PA521_0080 MFLC	8.000	5,500	6,500	>32≤38	14.63	227.4	25.7	1,772	200	2,215	250	4,429	500
PA521_0100 MF	10.00	3,700	6,500	≤19	4.94	218.4	24.7	1,240	140	2,215	250	4,429	500
PA521_0100 MF	10.00	3,700	6,500	>19≤24	4.94	218.4	24.7	1,240	140	2,215	250	4,429	500
PA521_0100 MF	10.00	3,700	6,500	>24≤32	4.84	218.4	24.7	1,240	140	2,215	250	4,429	500
PA521_0100 MF	10.00	3,700	6,500	>32≤35	4.84	218.4	24.7	1,240	140	2,215	250	4,429	500
PA521_0100 MFC	10.00	6,000	6,500	≤19	5.85	218.4	24.7	1,240	140	2,215	250	4,429	500
PA521_0100 MFC	10.00	6,000	6,500	>19≤24	5.39	218.4	24.7	1,240	140	2,215	250	4,429	500
PA521_0100 MFC	10.00	6,000	6,500	>24≤32	5.27	218.4	24.7	1,240	140	2,215	250	4,429	500
PA521_0100 MFL	10.00	3,700	6,500	>32≤38	11.77	219.7	24.8	1,240	140	2,215	250	4,429	500
PA521_0100 MFLC	10.00	6,000	6,500	>32≤38	14.56	219.7	24.8	1,240	140	2,215	250	4,429	500
PA522 with Motor Mounting Plate Continued Next Page													
PA522_0120 MF	12.00	3,300	6,000	≤14	2.00	236.6	26.7	1,063	120	1,772	200	3,686	416
PA522_0120 MF	12.00	3,300	6,000	>14≤19	2.02	237.5	26.8	1,063	120	1,772	200	3,686	416
PA522_0120 MF	12.00	3,300	6,000	>19≤24	1.92	237.5	26.8	1,063	120	1,772	200	3,686	416
PA522_0120 MFC	12.00	4,500	6,000	≤14	2.33	236.6	26.7	1,063	120	1,772	200	3,686	416
PA522_0120 MFC	12.00	4,500	6,000	>14≤19	2.18	237.5	26.8	1,063	120	1,772	200	3,686	416
PA522_0120 MFC	12.00	4,500	6,000	>19≤24	2.07	237.5	26.8	1,063	120	1,772	200	3,686	416
PA522_0120 MFL	12.00	3,300	6,000	>24≤32	5.13	238.6	26.9	1,063	120	1,772	200	3,686	416
PA522_0120 MFLC	12.00	4,500	6,000	>24≤32	5.56	238.6	26.9	1,063	120	1,772	200	3,686	416
PA522_0160 MF	16.00	3,300	6,000	≤14	1.98	241.3	27.2	1,860	210	2,657	300	4,915	555
PA522_0160 MF	16.00	3,300	6,000	>14≤19	2.01	241.8	27.3	1,860	210	2,657	300	4,915	555
PA522_0160 MF	16.00	3,300	6,000	>19≤24	1.91	241.8	27.3	1,860	210	2,657	300	4,915	555
PA522_0160 MFC	16.00	5,000	6,000	≤14	2.32	241.3	27.2	1,860	210	2,657	300	4,915	555
PA522_0160 MFC	16.00	5,000	6,000	>14≤19	2.16	241.8	27.3	1,860	210	2,657	300	4,915	555
PA522_0160 MFC	16.00	5,000	6,000	>19≤24	2.06	241.8	27.3	1,860	210	2,657	300	4,915	555
PA522_0160 MFL	16.00	3,300	6,000	>24≤32	5.12	242.4	27.4	1,860	210	2,657	300	4,915	555
PA522_0160 MFLC	16.00	5,000	6,000	>24≤32	5.55	242.4	27.4	1,860	210	2,657	300	4,915	555
PA522_0200 MF	20.00	3,300	6,000	≤14	1.96	248.0	28.0	1,860	210	2,657	300	5,315	600
PA522_0200 MF	20.00	3,300	6,000	>14≤19	1.98	248.4	28.0	1,860	210	2,657	300	5,315	600
PA522_0200 MF	20.00	3,300	6,000	>19≤24	1.88	248.4	28.0	1,860	210	2,657	300	5,315	600
PA522_0200 MFC	20.00	5,000	6,000	≤14	2.29	248.0	28.0	1,860	210	2,657	300	5,315	600
PA522_0200 MFC	20.00	5,000	6,000	>14≤19	2.14	248.4	28.0	1,860	210	2,657	300	5,315	600

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"PA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed Continuous	Maximum Input Speed Cyclic	Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
Gearhead													
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PA522 with Motor Mounting Plate Continued Next Page													
PA522_0200 MFC	20.00	5,000	6,000	>19≤24	2.03	248.4	28.0	1,860	210	2,657	300	5,315	600
PA522_0200 MFL	20.00	3,300	6,000	>24≤32	5.09	248.8	28.1	1,860	210	2,657	300	5,315	600
PA522_0200 MFLC	20.00	5,000	6,000	>24≤32	5.52	248.8	28.1	1,860	210	2,657	300	5,315	600
PA522_0250 MF	25.00	3,700	6,500	≤14	1.85	248.0	28.0	1,860	210	2,657	300	5,315	600
PA522_0250 MF	25.00	3,700	6,500	>14≤19	1.87	248.2	28.0	1,860	210	2,657	300	5,315	600
PA522_0250 MF	25.00	3,700	6,500	>19≤24	1.77	248.2	28.0	1,860	210	2,657	300	5,315	600
PA522_0250 MFC	25.00	5,000	6,500	≤14	2.18	248.0	28.0	1,860	210	2,657	300	5,315	600
PA522_0250 MFC	25.00	5,000	6,500	>14≤19	2.03	248.2	28.0	1,860	210	2,657	300	5,315	600
PA522_0250 MFC	25.00	5,000	6,500	>19≤24	1.92	248.2	28.0	1,860	210	2,657	300	5,315	600
PA522_0250 MFL	25.00	3,700	6,500	>24≤32	4.98	248.5	28.1	1,860	210	2,657	300	5,315	600
PA522_0250 MFLC	25.00	5,000	6,500	>24≤32	5.41	248.5	28.1	1,860	210	2,657	300	5,315	600
PA522_0280 MF	28.00	4,000	7,000	≤14	1.75	236.5	26.7	1,860	210	2,657	300	4,915	555
PA522_0280 MF	28.00	4,000	7,000	>14≤19	1.75	236.5	26.7	1,860	210	2,657	300	4,915	555
PA522_0280 MF	28.00	4,000	7,000	>19≤24	1.65	236.5	26.7	1,860	210	2,657	300	4,915	555
PA522_0280 MFC	28.00	5,500	7,000	≤14	2.08	236.5	26.7	1,860	210	2,657	300	4,915	555
PA522_0280 MFC	28.00	5,500	7,000	>14≤19	1.90	236.6	26.7	1,860	210	2,657	300	4,915	555
PA522_0280 MFC	28.00	5,500	7,000	>19≤24	1.80	236.5	26.7	1,860	210	2,657	300	4,915	555
PA522_0280 MFL	28.00	4,000	7,000	>24≤32	4.81	236.8	26.7	1,860	210	2,657	300	4,915	555
PA522_0280 MFLC	28.00	5,500	7,000	>24≤32	5.24	236.8	26.7	1,860	210	2,657	300	4,915	555
PA522_0320 MF	32.00	3,300	6,000	≤14	1.93	222.3	25.1	1,772	200	2,215	250	4,429	500
PA522_0320 MF	32.00	3,300	6,000	>14≤19	1.95	222.4	25.1	1,772	200	2,215	250	4,429	500
PA522_0320 MF	32.00	3,300	6,000	>19≤24	1.85	222.4	25.1	1,772	200	2,215	250	4,429	500
PA522_0320 MFC	32.00	5,000	6,000	≤14	2.27	222.3	25.1	1,772	200	2,215	250	4,429	500
PA522_0320 MFC	32.00	5,000	6,000	>14≤19	2.11	222.4	25.1	1,772	200	2,215	250	4,429	500
PA522_0320 MFC	32.00	5,000	6,000	>19≤24	2.01	222.4	25.1	1,772	200	2,215	250	4,429	500
PA522_0320 MFL	32.00	3,300	6,000	>24≤32	5.06	222.5	25.1	1,772	200	2,215	250	4,429	500
PA522_0320 MFLC	32.00	5,000	6,000	>24≤32	5.49	222.5	25.1	1,772	200	2,215	250	4,429	500
PA522_0350 MF	35.00	4,000	7,000	≤14	1.74	244.8	27.6	1,860	210	2,657	300	5,315	600
PA522_0350 MF	35.00	4,000	7,000	>14≤19	1.74	244.8	27.6	1,860	210	2,657	300	5,315	600
PA522_0350 MF	35.00	4,000	7,000	>19≤24	1.64	244.8	27.6	1,860	210	2,657	300	5,315	600
PA522_0350 MFC	35.00	5,500	7,000	≤14	2.07	244.8	27.6	1,860	210	2,657	300	5,315	600
PA522_0350 MFC	35.00	5,500	7,000	>14≤19	1.90	244.9	27.6	1,860	210	2,657	300	5,315	600
PA522_0350 MFC	35.00	5,500	7,000	>19≤24	1.79	244.8	27.6	1,860	210	2,657	300	5,315	600
PA522_0350 MFL	35.00	4,000	7,000	>24≤32	4.80	245.0	27.7	1,860	210	2,657	300	5,315	600
PA522_0350 MFLC	35.00	5,500	7,000	>24≤32	5.23	245.0	27.7	1,860	210	2,657	300	5,315	600
PA522_0400 MF	40.00	4,000	7,000	≤14	1.69	232.2	26.2	1,860	210	2,657	300	4,915	555
PA522_0400 MF	40.00	4,000	7,000	>14≤19	1.69	232.2	26.2	1,860	210	2,657	300	4,915	555
PA522_0400 MF	40.00	4,000	7,000	>19≤24	1.59	232.2	26.2	1,860	210	2,657	300	4,915	555
PA522_0400 MFC	40.00	5,500	7,000	≤14	2.03	232.2	26.2	1,860	210	2,657	300	4,915	555
PA522_0400 MFC	40.00	5,500	7,000	>14≤19	1.85	232.2	26.2	1,860	210	2,657	300	4,915	555
PA522_0400 MFC	40.00	5,500	7,000	>19≤24	1.75	232.2	26.2	1,860	210	2,657	300	4,915	555
PA522_0400 MFL	40.00	4,000	7,000	>24≤32	4.75	232.3	26.2	1,860	210	2,657	300	4,915	555
PA522_0400 MFLC	40.00	5,500	7,000	>24≤32	5.18	232.3	26.2	1,860	210	2,657	300	4,915	555
PA522_0500 MF	50.00	4,000	7,000	≤14	1.69	241.8	27.3	1,860	210	2,657	300	5,315	600
PA522_0500 MF	50.00	4,000	7,000	>14≤19	1.69	241.8	27.3	1,860	210	2,657	300	5,315	600
PA522_0500 MF	50.00	4,000	7,000	>19≤24	1.59	241.8	27.3	1,860	210	2,657	300	5,315	600
PA522_0500 MFC	50.00	5,500	7,000	≤14	2.02	241.8	27.3	1,860	210	2,657	300	5,315	600
PA522_0500 MFC	50.00	5,500	7,000	>14≤19	1.85	241.8	27.3	1,860	210	2,657	300	5,315	600
PA522_0500 MFC	50.00	5,500	7,000	>19≤24	1.74	241.8	27.3	1,860	210	2,657	300	5,315	600

Index of Symbols

MF ..... Motor adapter with FlexiAdapt® coupling	J_1 ..... Mass moment of inertia (input)
L ..... Large Input	C_2 ..... Torsional Stiffness
C ..... ServoCool	M_{2N} ..... Nominal Torque
i ..... Ratio - Exact	M_{2B} ..... Acceleration Torque Maximum
n_1 ..... Maximum input speed RPM	M_{2PEAK} ..... Peak Torque

See web site for drawings.

"PA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD[6]	J_1	C_2		M_{2N}		M_{2B}		M_{2PEAK}	
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PA522 with Motor Mounting Plate Continued													
PA522_0500 MFL	50.00	4,000	7,000	>24≤32	4.75	241.9	27.3	1,860	210	2,657	300	5,315	600
PA522_0500 MFLC	50.00	5,500	7,000	>24≤32	5.18	241.9	27.3	1,860	210	2,657	300	5,315	600
PA522_0700 MF	70.00	4,000	7,000	≤14	1.69	233.1	26.3	1,860	210	2,392	270	5,315	600
PA522_0700 MF	70.00	4,000	7,000	>14≤19	1.69	233.1	26.3	1,860	210	2,392	270	5,315	600
PA522_0700 MF	70.00	4,000	7,000	>19≤24	1.59	233.1	26.3	1,860	210	2,392	270	5,315	600
PA522_0700 MFC	70.00	5,500	7,000	≤14	2.02	233.1	26.3	1,860	210	2,392	270	5,315	600
PA522_0700 MFC	70.00	5,500	7,000	>14≤19	1.84	233.1	26.3	1,860	210	2,392	270	5,315	600
PA522_0700 MFC	70.00	5,500	7,000	>19≤24	1.74	233.1	26.3	1,860	210	2,392	270	5,315	600
PA522_0700 MFL	70.00	4,000	7,000	>24≤32	4.75	233.1	26.3	1,860	210	2,392	270	5,315	600
PA522_0700 MFLC	70.00	5,500	7,000	>24≤32	5.18	233.1	26.3	1,860	210	2,392	270	5,315	600
PA522_1000 MF	100.0	4,000	7,000	≤14	1.69	215.4	24.3	1,240	140	2,215	250	4,429	500
PA522_1000 MF	100.0	4,000	7,000	>14≤19	1.69	215.4	24.3	1,240	140	2,215	250	4,429	500
PA522_1000 MF	100.0	4,000	7,000	>19≤24	1.59	215.4	24.3	1,240	140	2,215	250	4,429	500
PA522_1000 MFC	100.0	5,500	7,000	≤14	2.02	215.4	24.3	1,240	140	2,215	250	4,429	500
PA522_1000 MFC	100.0	5,500	7,000	>14≤19	1.84	215.4	24.3	1,240	140	2,215	250	4,429	500
PA522_1000 MFC	100.0	5,500	7,000	>19≤24	1.74	215.4	24.3	1,240	140	2,215	250	4,429	500
PA522_1000 MFL	100.0	4,000	7,000	>24≤32	4.75	215.4	24.3	1,240	140	2,215	250	4,429	500
PA522_1000 MFLC	100.0	5,500	7,000	>24≤32	5.18	215.4	24.3	1,240	140	2,215	250	4,429	500
PA721 with Motor Mounting Plate Continued Next Page													
PA721_0030 MF	3.000	2,200	3,700	≤24	19.91	466.8	52.7	2,480	280	3,815	431	4,769	538
PA721_0030 MF	3.000	2,200	3,700	>24≤32	20.25	484.5	54.7	2,480	280	4,429	500	8,945	1,010
PA721_0030 MF	3.000	2,200	3,700	>32≤38	20.25	484.5	54.7	2,480	280	4,429	500	9,177	1,036
PA721_0030 MFC	3.000	3,400	6,000	≤24	22.67	484.5	54.7	2,480	280	4,429	500	6,702	757
PA721_0030 MFC	3.000	3,400	6,000	>24≤32	21.45	484.5	54.7	2,480	280	4,429	500	8,945	1,010
PA721_0030 MFC	3.000	3,400	6,000	>32≤38	23.04	484.5	54.7	2,480	280	4,429	500	9,177	1,036
PA721_0030 MFL	3.000	2,200	3,700	>38≤48	22.26	520.9	58.8	2,480	280	4,429	500	9,177	1,036
PA721_0030 MFLC	3.000	3,400	6,000	>38≤48	38.12	520.9	58.8	2,480	280	4,429	500	9,177	1,036
PA721_0040 MF	4.000	2,500	4,500	≤24	15.20	475.7	53.7	3,898	440	5,087	574	6,358	718
PA721_0040 MF	4.000	2,500	4,500	>24≤32	15.53	485.9	54.9	3,898	440	6,201	700	11,926	1,346
PA721_0040 MF	4.000	2,500	4,500	>32≤38	15.53	485.9	54.9	3,898	440	6,201	700	12,235	1,381
PA721_0040 MFC	4.000	3,600	6,000	≤24	17.95	485.9	54.9	3,898	440	6,201	700	8,936	1,009
PA721_0040 MFC	4.000	3,600	6,000	>24≤32	16.73	485.9	54.9	3,898	440	6,201	700	11,926	1,346
PA721_0040 MFC	4.000	3,600	6,000	>32≤38	18.33	485.9	54.9	3,898	440	6,201	700	12,235	1,381
PA721_0040 MFL	4.000	2,500	4,500	>38≤48	17.55	505.8	57.1	3,898	440	6,201	700	12,235	1,381
PA721_0040 MFLC	4.000	3,600	6,000	>38≤48	33.41	505.8	57.1	3,898	440	6,201	700	12,235	1,381
PA721_0050 MF	5.000	3,000	5,500	≤24	13.66	475.2	53.6	3,898	440	6,201	700	7,948	897
PA721_0050 MF	5.000	3,000	5,500	>24≤32	14.00	481.6	54.4	3,898	440	6,201	700	12,401	1,400
PA721_0050 MF	5.000	3,000	5,500	>32≤38	14.00	481.6	54.4	3,898	440	6,201	700	12,401	1,400
PA721_0050 MFC	5.000	4,200	6,000	≤24	16.41	481.6	54.4	3,898	440	6,201	700	11,170	1,261
PA721_0050 MFC	5.000	4,200	6,000	>24≤32	15.20	481.6	54.4	3,898	440	6,201	700	12,401	1,400
PA721_0050 MFC	5.000	4,200	6,000	>32≤38	16.79	481.6	54.4	3,898	440	6,201	700	12,401	1,400
PA721_0050 MFL	5.000	3,000	5,500	>38≤48	16.01	494.0	55.8	3,898	440	6,201	700	12,401	1,400
PA721_0050 MFLC	5.000	4,200	6,000	>38≤48	31.87	494.0	55.8	3,898	440	6,201	700	12,401	1,400
PA721_0070 MF	7.000	3,300	6,000	≤24	12.66	470.7	53.1	3,898	440	5,758	650	11,127	1,256
PA721_0070 MF	7.000	3,300	6,000	>24≤32	12.66	470.7	53.1	3,898	440	5,758	650	11,127	1,256
PA721_0070 MF	7.000	3,300	6,000	>32≤38	12.66	470.7	53.1	3,898	440	5,758	650	11,127	1,256
PA721_0070 MFC	7.000	4,700	6,000	≤24	15.08	470.7	53.1	3,898	440	5,758	650	11,127	1,256
PA721_0070 MFC	7.000	4,700	6,000	>24≤32	13.87	470.7	53.1	3,898	440	5,758	650	11,127	1,256

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"PA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed Continuous	Maximum Input Speed Cyclic	Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
Gearhead													
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PA721 with Motor Mounting Plate Continued													
PA721_0070 MFC	7.000	4,700	6,000	>32≤38	15.46	470.7	53.1	3,898	440	5,758	650	11,127	1,256
PA721_0070 MFL	7.000	3,300	6,000	>38≤48	15.03	478.7	54.0	3,898	440	5,758	650	11,127	1,256
PA721_0070 MFLC	7.000	4,700	6,000	>38≤48	30.89	478.7	54.0	3,898	440	5,758	650	11,127	1,256
PA721_0080 MF	8.000	3,300	6,000	≤24	12.40	457.6	51.7	3,543	400	4,429	500	8,858	1,000
PA721_0080 MF	8.000	3,300	6,000	>24≤32	12.40	457.6	51.7	3,543	400	4,429	500	8,858	1,000
PA721_0080 MF	8.000	3,300	6,000	>32≤38	12.40	457.6	51.7	3,543	400	4,429	500	8,858	1,000
PA721_0080 MFC	8.000	5,000	6,000	≤24	14.82	457.6	51.7	3,543	400	4,429	500	8,858	1,000
PA721_0080 MFC	8.000	5,000	6,000	>24≤32	13.60	457.6	51.7	3,543	400	4,429	500	8,858	1,000
PA721_0080 MFC	8.000	5,000	6,000	>32≤38	15.20	457.6	51.7	3,543	400	4,429	500	8,858	1,000
PA721_0080 MFL	8.000	3,300	6,000	>38≤48	14.77	463.4	52.3	3,543	400	4,429	500	8,858	1,000
PA721_0080 MFLC	8.000	5,000	6,000	>38≤48	30.63	463.4	52.3	3,543	400	4,429	500	8,858	1,000
PA721_0100 MF	10.00	3,300	6,000	≤24	12.15	431.8	48.7	2,657	300	4,429	500	8,858	1,000
PA721_0100 MF	10.00	3,300	6,000	>24≤32	12.15	431.8	48.7	2,657	300	4,429	500	8,858	1,000
PA721_0100 MF	10.00	3,300	6,000	>32≤38	12.15	431.8	48.7	2,657	300	4,429	500	8,858	1,000
PA721_0100 MFC	10.00	5,500	6,000	≤24	14.57	431.8	48.7	2,657	300	4,429	500	8,858	1,000
PA721_0100 MFC	10.00	5,500	6,000	>24≤32	13.36	431.8	48.7	2,657	300	4,429	500	8,858	1,000
PA721_0100 MFC	10.00	5,500	6,000	>32≤38	14.95	431.8	48.7	2,657	300	4,429	500	8,858	1,000
PA721_0100 MFL	10.00	3,300	6,000	>38≤48	14.52	435.1	49.1	2,657	300	4,429	500	8,858	1,000
PA721_0100 MFLC	10.00	5,500	6,000	>38≤48	30.38	435.1	49.1	2,657	300	4,429	500	8,858	1,000
PA722 with Motor Mounting Plate Continued Next Page													
PA722_0120 MF	12.00	3,000	5,000	≤19	6.24	457.8	51.7	2,480	280	4,429	500	8,901	1,005
PA722_0120 MF	12.00	3,000	5,000	>19≤24	6.31	459.4	51.9	2,480	280	4,429	500	9,177	1,036
PA722_0120 MF	12.00	3,000	5,000	>24≤32	6.21	459.4	51.9	2,480	280	4,429	500	9,177	1,036
PA722_0120 MF	12.00	3,000	5,000	>32≤35	6.21	459.4	51.9	2,480	280	4,429	500	9,177	1,036
PA722_0120 MFC	12.00	4,000	6,000	≤19	7.15	457.8	51.7	2,480	280	4,429	500	8,901	1,005
PA722_0120 MFC	12.00	4,000	6,000	>19≤24	6.76	459.4	51.9	2,480	280	4,429	500	9,177	1,036
PA722_0120 MFC	12.00	4,000	6,000	>24≤32	6.64	459.4	51.9	2,480	280	4,429	500	9,177	1,036
PA722_0120 MFL	12.00	3,000	5,000	>32≤38	13.40	462.8	52.3	2,480	280	4,429	500	9,177	1,036
PA722_0120 MFLC	12.00	4,000	6,000	>32≤38	16.19	462.8	52.3	2,480	280	4,429	500	9,177	1,036
PA722_0160 MF	16.00	3,000	5,000	≤19	5.94	470.4	53.1	3,898	440	6,201	700	11,868	1,340
PA722_0160 MF	16.00	3,000	5,000	>19≤24	6.01	471.4	53.2	3,898	440	6,201	700	12,235	1,381
PA722_0160 MF	16.00	3,000	5,000	>24≤32	5.91	471.4	53.2	3,898	440	6,201	700	12,235	1,381
PA722_0160 MF	16.00	3,000	5,000	>32≤35	5.91	471.4	53.2	3,898	440	6,201	700	12,235	1,381
PA722_0160 MFC	16.00	4,500	6,000	≤19	6.85	470.4	53.1	3,898	440	6,201	700	11,868	1,340
PA722_0160 MFC	16.00	4,500	6,000	>19≤24	6.46	471.4	53.2	3,898	440	6,201	700	12,235	1,381
PA722_0160 MFC	16.00	4,500	6,000	>24≤32	6.34	471.4	53.2	3,898	440	6,201	700	12,235	1,381
PA722_0160 MFL	16.00	3,000	5,000	>32≤38	13.10	473.4	53.4	3,898	440	6,201	700	12,235	1,381
PA722_0160 MFLC	16.00	4,500	6,000	>32≤38	15.90	473.4	53.4	3,898	440	6,201	700	12,235	1,381
PA722_0200 MF	20.00	3,000	5,000	≤19	5.85	471.8	53.3	3,898	440	6,201	700	12,401	1,400
PA722_0200 MF	20.00	3,000	5,000	>19≤24	5.92	472.4	53.3	3,898	440	6,201	700	12,401	1,400
PA722_0200 MF	20.00	3,000	5,000	>24≤32	5.82	472.4	53.3	3,898	440	6,201	700	12,401	1,400
PA722_0200 MF	20.00	3,000	5,000	>32≤35	5.82	472.4	53.3	3,898	440	6,201	700	12,401	1,400
PA722_0200 MFC	20.00	4,500	6,000	≤19	6.76	471.8	53.3	3,898	440	6,201	700	12,401	1,400
PA722_0200 MFC	20.00	4,500	6,000	>19≤24	6.37	472.4	53.3	3,898	440	6,201	700	12,401	1,400
PA722_0200 MFC	20.00	4,500	6,000	>24≤32	6.25	472.4	53.3	3,898	440	6,201	700	12,401	1,400
PA722_0200 MFL	20.00	3,000	5,000	>32≤38	13.01	473.7	53.5	3,898	440	6,201	700	12,401	1,400
PA722_0200 MFLC	20.00	4,500	6,000	>32≤38	15.80	473.7	53.5	3,898	440	6,201	700	12,401	1,400

Index of Symbols

MF ..... Motor adapter with FlexiAdapt® coupling	J_1 ..... Mass moment of inertia (input)
L ..... Large Input	C_2 ..... Torsional Stiffness
C ..... ServoCool	M_{2N} ..... Nominal Torque
i ..... Ratio - Exact	M_{2B} ..... Acceleration Torque Maximum
n_1 ..... Maximum input speed RPM	M_{2PEAK} ..... Peak Torque

See web site for drawings.

"PA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD[6]	J_1	C_2		M_{2N}		M_{2B}		M_{2PEAK}	
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PA722 with Motor Mounting Plate Continued Next Page													
PA722_0250 MF	25.00	3,500	6,000	≤19	5.45	472.0	53.3	3,898	440	6,201	700	12,401	1,400
PA722_0250 MF	25.00	3,500	6,000	>19≤24	5.52	472.4	53.3	3,898	440	6,201	700	12,401	1,400
PA722_0250 MF	25.00	3,500	6,000	>24≤32	5.42	472.4	53.3	3,898	440	6,201	700	12,401	1,400
PA722_0250 MF	25.00	3,500	6,000	>32≤35	5.42	472.4	53.3	3,898	440	6,201	700	12,401	1,400
PA722_0250 MFC	25.00	5,000	6,000	≤19	6.36	472.0	53.3	3,898	440	6,201	700	12,401	1,400
PA722_0250 MFC	25.00	5,000	6,000	>19≤24	5.97	472.4	53.3	3,898	440	6,201	700	12,401	1,400
PA722_0250 MFC	25.00	5,000	6,000	>24≤32	5.85	472.4	53.3	3,898	440	6,201	700	12,401	1,400
PA722_0250 MFL	25.00	3,500	6,000	>32≤38	12.62	473.2	53.4	3,898	440	6,201	700	12,401	1,400
PA722_0250 MFLC	25.00	5,000	6,000	>32≤38	15.41	473.2	53.4	3,898	440	6,201	700	12,401	1,400
PA722_0280 MF	28.00	3,700	6,500	≤19	5.16	466.9	52.7	3,898	440	6,201	700	12,235	1,381
PA722_0280 MF	28.00	3,700	6,500	>19≤24	5.16	466.9	52.7	3,898	440	6,201	700	12,235	1,381
PA722_0280 MF	28.00	3,700	6,500	>24≤32	5.06	466.9	52.7	3,898	440	6,201	700	12,235	1,381
PA722_0280 MF	28.00	3,700	6,500	>32≤35	5.06	466.9	52.7	3,898	440	6,201	700	12,235	1,381
PA722_0280 MFC	28.00	5,000	6,500	≤19	6.07	466.9	52.7	3,898	440	6,201	700	12,235	1,381
PA722_0280 MFC	28.00	5,000	6,500	>19≤24	5.61	466.9	52.7	3,898	440	6,201	700	12,235	1,381
PA722_0280 MFC	28.00	5,000	6,500	>24≤32	5.49	466.9	52.7	3,898	440	6,201	700	12,235	1,381
PA722_0280 MFL	28.00	3,700	6,500	>32≤38	11.99	467.7	52.8	3,898	440	6,201	700	12,235	1,381
PA722_0280 MFLC	28.00	5,000	6,500	>32≤38	14.79	467.7	52.8	3,898	440	6,201	700	12,235	1,381
PA722_0320 MF	32.00	3,000	5,000	≤19	5.77	456.4	51.5	3,543	400	4,429	500	8,858	1,000
PA722_0320 MF	32.00	3,000	5,000	>19≤24	5.84	456.6	51.5	3,543	400	4,429	500	8,858	1,000
PA722_0320 MF	32.00	3,000	5,000	>24≤32	5.74	456.6	51.5	3,543	400	4,429	500	8,858	1,000
PA722_0320 MF	32.00	3,000	5,000	>32≤35	5.74	456.6	51.5	3,543	400	4,429	500	8,858	1,000
PA722_0320 MFC	32.00	4,500	5,000	≤19	6.68	456.4	51.5	3,543	400	4,429	500	8,858	1,000
PA722_0320 MFC	32.00	4,500	5,000	>19≤24	6.29	456.6	51.5	3,543	400	4,429	500	8,858	1,000
PA722_0320 MFC	32.00	4,500	5,000	>24≤32	6.17	456.6	51.5	3,543	400	4,429	500	8,858	1,000
PA722_0320 MFL	32.00	3,000	5,000	>32≤38	12.93	457.1	51.6	3,543	400	4,429	500	8,858	1,000
PA722_0320 MFLC	32.00	4,500	5,000	>32≤38	15.72	457.1	51.6	3,543	400	4,429	500	8,858	1,000
PA722_0350 MF	35.00	3,700	6,500	≤19	5.13	469.5	53.0	3,898	440	6,201	700	12,401	1,400
PA722_0350 MF	35.00	3,700	6,500	>19≤24	5.13	469.5	53.0	3,898	440	6,201	700	12,401	1,400
PA722_0350 MF	35.00	3,700	6,500	>24≤32	5.03	469.5	53.0	3,898	440	6,201	700	12,401	1,400
PA722_0350 MF	35.00	3,700	6,500	>32≤35	5.03	469.5	53.0	3,898	440	6,201	700	12,401	1,400
PA722_0350 MFC	35.00	5,000	6,500	≤19	6.04	469.5	53.0	3,898	440	6,201	700	12,401	1,400
PA722_0350 MFC	35.00	5,000	6,500	>19≤24	5.58	469.5	53.0	3,898	440	6,201	700	12,401	1,400
PA722_0350 MFC	35.00	5,000	6,500	>24≤32	5.46	469.5	53.0	3,898	440	6,201	700	12,401	1,400
PA722_0350 MFL	35.00	3,700	6,500	>32≤38	11.96	470.0	53.1	3,898	440	6,201	700	12,401	1,400
PA722_0350 MFLC	35.00	5,000	6,500	>32≤38	14.75	470.0	53.1	3,898	440	6,201	700	12,401	1,400
PA722_0400 MF	40.00	3,700	6,500	≤19	4.98	461.3	52.1	3,898	440	6,201	700	12,235	1,381
PA722_0400 MF	40.00	3,700	6,500	>19≤24	4.98	461.3	52.1	3,898	440	6,201	700	12,235	1,381
PA722_0400 MF	40.00	3,700	6,500	>24≤32	4.88	461.3	52.1	3,898	440	6,201	700	12,235	1,381
PA722_0400 MF	40.00	3,700	6,500	>32≤35	4.88	461.3	52.1	3,898	440	6,201	700	12,235	1,381
PA722_0400 MFC	40.00	5,500	6,500	≤19	5.90	461.3	52.1	3,898	440	6,201	700	12,235	1,381
PA722_0400 MFC	40.00	5,500	6,500	>19≤24	5.43	461.3	52.1	3,898	440	6,201	700	12,235	1,381
PA722_0400 MFC	40.00	5,500	6,500	>24≤32	5.31	461.3	52.1	3,898	440	6,201	700	12,235	1,381
PA722_0400 MFL	40.00	3,700	6,500	>32≤38	11.81	461.7	52.1	3,898	440	6,201	700	12,235	1,381
PA722_0400 MFLC	40.00	5,500	6,500	>32≤38	14.61	461.7	52.1	3,898	440	6,201	700	12,235	1,381
PA722_0500 MF	50.00	3,700	6,500	≤19	4.97	465.9	52.6	3,898	440	6,201	700	12,401	1,400
PA722_0500 MF	50.00	3,700	6,500	>19≤24	4.97	465.9	52.6	3,898	440	6,201	700	12,401	1,400
PA722_0500 MF	50.00	3,700	6,500	>24≤32	4.87	465.9	52.6	3,898	440	6,201	700	12,401	1,400
PA722_0500 MF	50.00	3,700	6,500	>32≤35	4.87	465.9	52.6	3,898	440	6,201	700	12,401	1,400
PA722_0500 MFC	50.00	5,500	6,500	≤19	5.88	465.9	52.6	3,898	440	6,201	700	12,401	1,400
PA722_0500 MFC	50.00	5,500	6,500	>19≤24	5.42	465.9	52.6	3,898	440	6,201	700	12,401	1,400
PA722_0500 MFC	50.00	5,500	6,500	>24≤32	5.30	465.9	52.6	3,898	440	6,201	700	12,401	1,400

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"PA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed Continuous	Maximum Input Speed Cyclic	Motor Shaft øD⁶	Input [1] Inertia J_1	Torsional Stiffness per arcmin C_2		Output Torque: Nominal [2] M_{2N}		Output Torque: Acceleration M_{2B}		Output Torque: Peak [3] M_{2PEAK}	
Gearhead	i	RPM (n_1)	RPM (n_1)	mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PA722 with Motor Mounting Plate Continued													
PA722_0500 MFL	50.00	3,700	6,500	>32≤38	11.80	466.1	52.6	3,898	440	6,201	700	12,401	1,400
PA722_0500 MFLC	50.00	5,500	6,500	>32≤38	14.59	466.1	52.6	3,898	440	6,201	700	12,401	1,400
PA722_0700 MF	70.00	3,700	6,500	≤19	4.96	466.0	52.6	3,898	440	5,758	650	11,127	1,256
PA722_0700 MF	70.00	3,700	6,500	>19≤24	4.96	466.0	52.6	3,898	440	5,758	650	11,127	1,256
PA722_0700 MF	70.00	3,700	6,500	>24≤32	4.86	466.0	52.6	3,898	440	5,758	650	11,127	1,256
PA722_0700 MF	70.00	3,700	6,500	>32≤35	4.86	466.0	52.6	3,898	440	5,758	650	11,127	1,256
PA722_0700 MFC	70.00	5,500	6,500	≤19	5.87	466.0	52.6	3,898	440	5,758	650	11,127	1,256
PA722_0700 MFC	70.00	5,500	6,500	>19≤24	5.41	466.0	52.6	3,898	440	5,758	650	11,127	1,256
PA722_0700 MFC	70.00	5,500	6,500	>24≤32	5.29	466.0	52.6	3,898	440	5,758	650	11,127	1,256
PA722_0700 MFL	70.00	3,700	6,500	>32≤38	11.79	466.1	52.6	3,898	440	5,758	650	11,127	1,256
PA722_0700 MFLC	70.00	5,500	6,500	>32≤38	14.58	466.1	52.6	3,898	440	5,758	650	11,127	1,256
PA722_1000 MF	100.0	3,700	6,500	≤19	4.95	429.8	48.5	2,657	300	4,429	500	8,858	1,000
PA722_1000 MF	100.0	3,700	6,500	>19≤24	4.95	429.8	48.5	2,657	300	4,429	500	8,858	1,000
PA722_1000 MF	100.0	3,700	6,500	>24≤32	4.85	429.8	48.5	2,657	300	4,429	500	8,858	1,000
PA722_1000 MF	100.0	3,700	6,500	>32≤35	4.85	429.8	48.5	2,657	300	4,429	500	8,858	1,000
PA722_1000 MFC	100.0	5,500	6,500	≤19	5.86	429.8	48.5	2,657	300	4,429	500	8,858	1,000
PA722_1000 MFC	100.0	5,500	6,500	>19≤24	5.40	429.8	48.5	2,657	300	4,429	500	8,858	1,000
PA722_1000 MFC	100.0	5,500	6,500	>24≤32	5.28	429.8	48.5	2,657	300	4,429	500	8,858	1,000
PA722_1000 MFL	100.0	3,700	6,500	>32≤38	11.78	429.9	48.5	2,657	300	4,429	500	8,858	1,000
PA722_1000 MFLC	100.0	5,500	6,500	>32≤38	14.58	429.9	48.5	2,657	300	4,429	500	8,858	1,000
PA821 with Motor Mounting Plate Continued Next Page													
PA821_0030 MF	3.000	1,800	3,000	≤32	71.83	1,404.0	158.5	7,086	800	8,537	964	10,672	1,205
PA821_0030 MF	3.000	1,800	3,000	>32≤38	71.60	1,464.9	165.4	7,086	800	10,630	1,200	15,518	1,752
PA821_0030 MF	3.000	1,800	3,000	>38≤48	70.97	1,464.9	165.4	7,086	800	10,630	1,200	17,064	1,926
PA821_0030 MFC	3.000	3,000	4,500	≤32	85.94	1,404.0	158.5	7,086	800	8,537	964	10,672	1,205
PA821_0030 MFC	3.000	3,000	4,500	>32≤38	87.71	1,464.9	165.4	7,086	800	10,630	1,200	15,518	1,752
PA821_0030 MFC	3.000	3,000	4,500	>38≤48	86.83	1,464.9	165.4	7,086	800	10,630	1,200	17,064	1,926
PA821_0040 MF	4.000	2,200	3,500	≤32	47.99	1,509.0	170.4	7,086	800	11,383	1,285	14,229	1,606
PA821_0040 MF	4.000	2,200	3,500	>32≤38	47.76	1,547.9	174.7	7,086	800	14,173	1,600	20,690	2,336
PA821_0040 MF	4.000	2,200	3,500	>38≤48	47.13	1,547.9	174.7	7,086	800	14,173	1,600	22,752	2,569
PA821_0040 MFC	4.000	3,200	5,000	≤32	62.10	1,509.0	170.4	7,086	800	11,383	1,285	14,229	1,606
PA821_0040 MFC	4.000	3,200	5,000	>32≤38	63.86	1,547.9	174.7	7,086	800	14,173	1,600	20,690	2,336
PA821_0040 MFC	4.000	3,200	5,000	>38≤48	62.99	1,547.9	174.7	7,086	800	14,173	1,600	22,752	2,569
PA821_0050 MF	5.000	2,500	4,000	≤32	41.16	1,530.0	172.7	8,858	1,000	14,173	1,600	17,786	2,008
PA821_0050 MF	5.000	2,500	4,000	>32≤38	40.94	1,555.4	175.6	8,858	1,000	14,173	1,600	25,863	2,920
PA821_0050 MF	5.000	2,500	4,000	>38≤48	40.30	1,555.4	175.6	8,858	1,000	14,173	1,600	28,346	3,200
PA821_0050 MFC	5.000	3,750	6,000	≤32	55.28	1,530.0	172.7	8,858	1,000	14,173	1,600	17,786	2,008
PA821_0050 MFC	5.000	3,750	6,000	>32≤38	57.04	1,555.4	175.6	8,858	1,000	14,173	1,600	25,863	2,920
PA821_0050 MFC	5.000	3,750	6,000	>38≤48	56.16	1,555.4	175.6	8,858	1,000	14,173	1,600	28,346	3,200
PA821_0070 MF	7.000	2,800	4,500	≤32	36.48	1,478.9	167.0	8,858	1,000	12,401	1,400	24,900	2,811
PA821_0070 MF	7.000	2,800	4,500	>32≤38	36.28	1,478.9	167.0	8,858	1,000	12,401	1,400	24,900	2,811
PA821_0070 MF	7.000	2,800	4,500	>38≤48	35.64	1,478.9	167.0	8,858	1,000	12,401	1,400	24,900	2,811
PA821_0070 MFC	7.000	4,500	6,000	≤32	50.60	1,478.9	167.0	8,858	1,000	12,401	1,400	24,900	2,811
PA821_0070 MFC	7.000	4,500	6,000	>32≤38	52.38	1,478.9	167.0	8,858	1,000	12,401	1,400	24,900	2,811
PA821_0070 MFC	7.000	4,500	6,000	>38≤48	51.50	1,478.9	167.0	8,858	1,000	12,401	1,400	24,900	2,811
PA821_0080 MF	8.000	2,800	4,500	≤32	35.25	1,413.9	159.6	7,086	800	10,630	1,200	21,259	2,400
PA821_0080 MF	8.000	2,800	4,500	>32≤38	35.04	1,413.9	159.6	7,086	800	10,630	1,200	21,259	2,400
PA821_0080 MF	8.000	2,800	4,500	>38≤48	34.40	1,413.9	159.6	7,086	800	10,630	1,200	21,259	2,400
PA821_0080 MFC	8.000	5,000	6,000	≤32	49.36	1,413.9	159.6	7,086	800	10,630	1,200	21,259	2,400
PA821_0080 MFC	8.000	5,000	6,000	>32≤38	51.14	1,413.9	159.6	7,086	800	10,630	1,200	21,259	2,400
PA821_0080 MFC	8.000	5,000	6,000	>38≤48	50.26	1,413.9	159.6	7,086	800	10,630	1,200	21,259	2,400

Index of Symbols

MF ..... Motor adapter with FlexiAdapt® coupling	J_1 ..... Mass moment of inertia (input)
L ..... Large Input	C_2 ..... Torsional Stiffness
C ..... ServoCool	M_{2N} ..... Nominal Torque
i ..... Ratio - Exact	M_{2B} ..... Acceleration Torque Maximum
n_1 ..... Maximum input speed RPM	M_{2PEAK} ..... Peak Torque

See web site for drawings.

"PA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD[6]	J_1	C_2		M_{2N}		M_{2B}		M_{2PEAK}	
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PA821 with Motor Mounting Plate Continued													
PA821_0100 MF	10.00	2,800	4,500	≤32	34.08	1,323.1	149.4	6,201	700	10,630	1,200	21,259	2,400
PA821_0100 MF	10.00	2,800	4,500	>32≤38	33.87	1,323.1	149.4	6,201	700	10,630	1,200	21,259	2,400
PA821_0100 MF	10.00	2,800	4,500	>38≤48	33.24	1,323.1	149.4	6,201	700	10,630	1,200	21,259	2,400
PA821_0100 MFC	10.00	5,500	6,000	≤32	48.19	1,323.1	149.4	6,201	700	10,630	1,200	21,259	2,400
PA821_0100 MFC	10.00	5,500	6,000	>32≤38	49.97	1,323.1	149.4	6,201	700	10,630	1,200	21,259	2,400
PA821_0100 MFC	10.00	5,500	6,000	>38≤48	49.10	1,323.1	149.4	6,201	700	10,630	1,200	21,259	2,400
PA822 with Motor Mounting Plate Continued Next Page													
PA822_0120 MF	12.00	2,500	4,500	≤24	17.25	1,339.2	151.2	7,086	800	10,630	1,200	18,503	2,089
PA822_0120 MF	12.00	2,500	4,500	>24≤32	17.58	1,348.1	152.2	7,086	800	10,630	1,200	21,781	2,459
PA822_0120 MF	12.00	2,500	4,500	>32≤38	17.58	1,348.1	152.2	7,086	800	10,630	1,200	21,781	2,459
PA822_0120 MFC	12.00	3,300	5,000	≤24	20.00	1,348.1	152.2	7,086	800	10,630	1,200	21,781	2,459
PA822_0120 MFC	12.00	3,300	5,000	>24≤32	18.78	1,348.1	152.2	7,086	800	10,630	1,200	21,781	2,459
PA822_0120 MFC	12.00	3,300	5,000	>32≤38	20.38	1,348.1	152.2	7,086	800	10,630	1,200	21,781	2,459
PA822_0120 MFL	12.00	2,500	4,500	>38≤48	19.60	1,364.6	154.1	7,086	800	10,630	1,200	21,781	2,459
PA822_0120 MFLC	12.00	3,300	5,000	>38≤48	35.46	1,364.6	154.1	7,086	800	10,630	1,200	21,781	2,459
PA822_0160 MF	16.00	2,500	4,500	≤24	15.76	1,466.1	165.5	7,086	800	14,173	1,600	24,670	2,785
PA822_0160 MF	16.00	2,500	4,500	>24≤32	16.09	1,472.1	166.2	7,086	800	14,173	1,600	28,346	3,200
PA822_0160 MF	16.00	2,500	4,500	>32≤38	16.09	1,472.1	166.2	7,086	800	14,173	1,600	28,346	3,200
PA822_0160 MFC	16.00	3,400	6,000	≤24	18.51	1,472.1	166.2	7,086	800	14,173	1,600	28,346	3,200
PA822_0160 MFC	16.00	3,400	6,000	>24≤32	17.29	1,472.1	166.2	7,086	800	14,173	1,600	28,346	3,200
PA822_0160 MFC	16.00	3,400	6,000	>32≤38	18.89	1,472.1	166.2	7,086	800	14,173	1,600	28,346	3,200
PA822_0160 MFL	16.00	2,500	4,500	>38≤48	18.11	1,483.1	167.4	7,086	800	14,173	1,600	28,346	3,200
PA822_0160 MFLC	16.00	3,400	6,000	>38≤48	33.97	1,483.1	167.4	7,086	800	14,173	1,600	28,346	3,200
PA822_0200 MF	20.00	2,500	4,500	≤24	15.33	1,501.5	169.5	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0200 MF	20.00	2,500	4,500	>24≤32	15.66	1,505.5	170.0	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0200 MF	20.00	2,500	4,500	>32≤38	15.66	1,505.5	170.0	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0200 MFC	20.00	3,600	6,000	≤24	18.08	1,505.5	170.0	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0200 MFC	20.00	3,600	6,000	>24≤32	16.87	1,505.5	170.0	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0200 MFC	20.00	3,600	6,000	>32≤38	18.46	1,505.5	170.0	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0200 MFL	20.00	2,500	4,500	>38≤48	17.68	1,512.9	170.8	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0200 MFLC	20.00	3,600	6,000	>38≤48	33.54	1,512.9	170.8	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0250 MF	25.00	3,000	5,500	≤24	13.94	1,501.3	169.5	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0250 MF	25.00	3,000	5,500	>24≤32	14.28	1,503.8	169.8	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0250 MF	25.00	3,000	5,500	>32≤38	14.28	1,503.8	169.8	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0250 MFC	25.00	4,000	6,000	≤24	16.69	1,503.8	169.8	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0250 MFC	25.00	4,000	6,000	>24≤32	15.48	1,503.8	169.8	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0250 MFC	25.00	4,000	6,000	>32≤38	17.07	1,503.8	169.8	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0250 MFL	25.00	3,000	5,500	>38≤48	16.29	1,508.5	170.3	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0250 MFLC	25.00	4,000	6,000	>38≤48	32.15	1,508.5	170.3	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0280 MF	28.00	3,300	6,000	≤24	12.92	1,463.1	165.2	7,086	800	14,173	1,600	28,346	3,200
PA822_0280 MF	28.00	3,300	6,000	>24≤32	12.92	1,463.1	165.2	7,086	800	14,173	1,600	28,346	3,200
PA822_0280 MF	28.00	3,300	6,000	>32≤38	12.92	1,463.1	165.2	7,086	800	14,173	1,600	28,346	3,200
PA822_0280 MFC	28.00	4,500	6,000	≤24	15.34	1,463.1	165.2	7,086	800	14,173	1,600	28,346	3,200
PA822_0280 MFC	28.00	4,500	6,000	>24≤32	14.12	1,463.1	165.2	7,086	800	14,173	1,600	28,346	3,200
PA822_0280 MFC	28.00	4,500	6,000	>32≤38	15.71	1,463.1	165.2	7,086	800	14,173	1,600	28,346	3,200
PA822_0280 MFL	28.00	3,300	6,000	>38≤48	15.29	1,467.9	165.7	7,086	800	14,173	1,600	28,346	3,200
PA822_0280 MFLC	28.00	4,500	6,000	>38≤48	31.15	1,467.9	165.7	7,086	800	14,173	1,600	28,346	3,200

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"PA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

PA822 with Motor Mounting Plate Continued

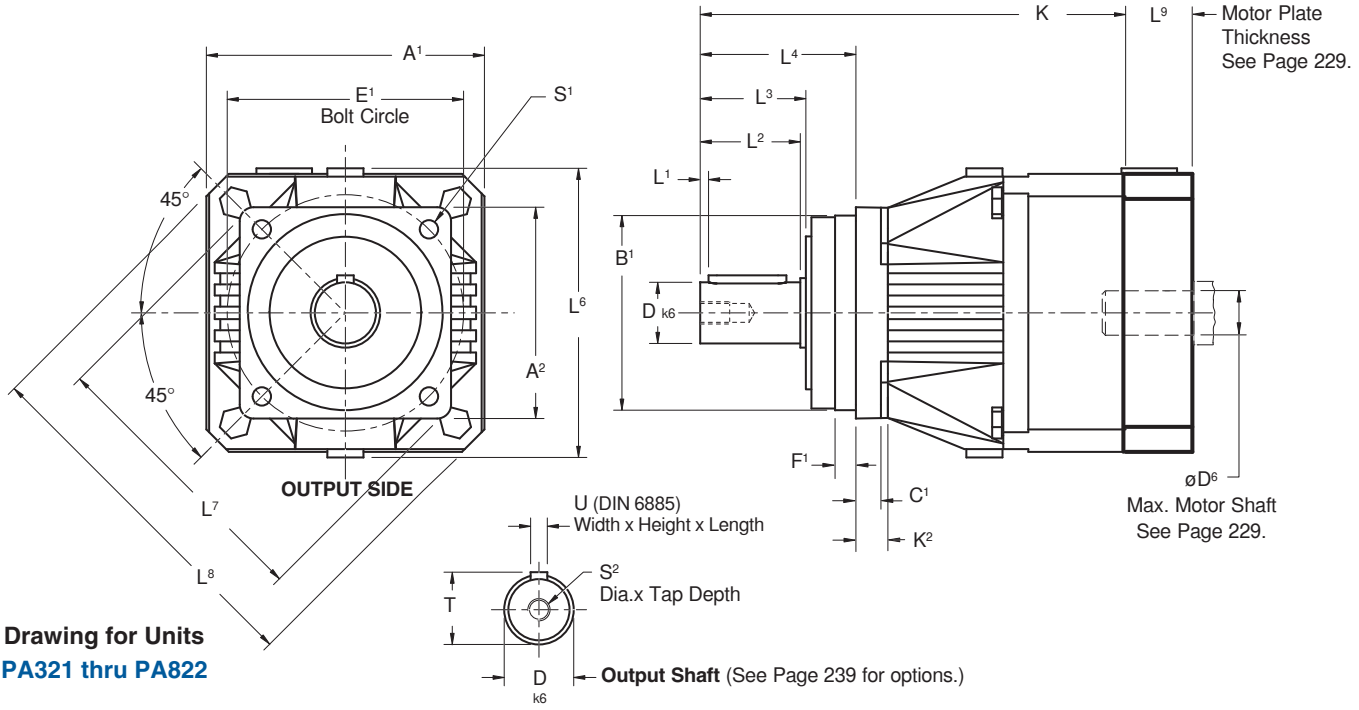
Part Number (Gearhead + Input) Gearhead	Exact Ratio i	Maximum Input Speed Continuous RPM (n_1)	Cyclic RPM (n_1)	Motor Shaft øD6 mm	Input 1) Inertia J_1 kgcm²	Torsional Stiffness per arcmin C_2 in.lbs.	Nm	Output Torque Nominal 2) M_{2N} in.lbs.	Nm	Acceleration M_{2B} in.lbs.	Nm	Peak 3) M_{2PEAK} in.lbs.	Nm
PA822_0320 MF	32.00	2,500	4,500	≤24	14.96	1,404.3	158.5	7,086	800	10,630	1,200	21,259	2,400
PA822_0320 MF	32.00	2,500	4,500	>24≤32	15.29	1,405.7	158.7	7,086	800	10,630	1,200	21,259	2,400
PA822_0320 MF	32.00	2,500	4,500	>32≤38	15.29	1,405.7	158.7	7,086	800	10,630	1,200	21,259	2,400
PA822_0320 MFC	32.00	3,600	6,000	≤24	17.71	1,405.7	158.7	7,086	800	10,630	1,200	21,259	2,400
PA822_0320 MFC	32.00	3,600	6,000	>24≤32	16.50	1,405.7	158.7	7,086	800	10,630	1,200	21,259	2,400
PA822_0320 MFC	32.00	3,600	6,000	>32≤38	18.09	1,405.7	158.7	7,086	800	10,630	1,200	21,259	2,400
PA822_0320 MFL	32.00	2,500	4,500	>38≤48	17.31	1,408.2	159.0	7,086	800	10,630	1,200	21,259	2,400
PA822_0320 MFLC	32.00	3,600	6,000	>38≤48	33.17	1,408.2	159.0	7,086	800	10,630	1,200	21,259	2,400
PA822_0350 MF	35.00	3,300	6,000	≤24	12.78	1,499.5	169.3	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0350 MF	35.00	3,300	6,000	>24≤32	12.78	1,499.5	169.3	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0350 MF	35.00	3,300	6,000	>32≤38	12.78	1,499.5	169.3	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0350 MFC	35.00	4,500	6,000	≤24	15.20	1,499.5	169.3	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0350 MFC	35.00	4,500	6,000	>24≤32	13.98	1,499.5	169.3	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0350 MFC	35.00	4,500	6,000	>32≤38	15.58	1,499.5	169.3	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0350 MFL	35.00	3,300	6,000	>38≤48	15.15	1,502.7	169.6	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0350 MFLC	35.00	4,500	6,000	>38≤48	31.01	1,502.7	169.6	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0400 MF	40.00	3,300	6,000	≤24	12.28	1,437.9	162.3	7,086	800	14,173	1,600	28,346	3,200
PA822_0400 MF	40.00	3,300	6,000	>24≤32	12.28	1,437.9	162.3	7,086	800	14,173	1,600	28,346	3,200
PA822_0400 MF	40.00	3,300	6,000	>32≤38	12.28	1,437.9	162.3	7,086	800	14,173	1,600	28,346	3,200
PA822_0400 MFC	40.00	5,000	6,000	≤24	14.70	1,437.9	162.3	7,086	800	14,173	1,600	28,346	3,200
PA822_0400 MFC	40.00	5,000	6,000	>24≤32	13.48	1,437.9	162.3	7,086	800	14,173	1,600	28,346	3,200
PA822_0400 MFC	40.00	5,000	6,000	>32≤38	15.08	1,437.9	162.3	7,086	800	14,173	1,600	28,346	3,200
PA822_0400 MFL	40.00	3,300	6,000	>38≤48	14.65	1,440.2	162.6	7,086	800	14,173	1,600	28,346	3,200
PA822_0400 MFLC	40.00	5,000	6,000	>38≤48	30.51	1,440.2	162.6	7,086	800	14,173	1,600	28,346	3,200
PA822_0500 MF	50.00	3,300	6,000	≤24	12.21	1,482.5	167.4	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0500 MF	50.00	3,300	6,000	>24≤32	12.21	1,482.5	167.4	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0500 MF	50.00	3,300	6,000	>32≤38	12.21	1,482.5	167.4	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0500 MFC	50.00	5,000	6,000	≤24	14.63	1,482.5	167.4	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0500 MFC	50.00	5,000	6,000	>24≤32	13.41	1,482.5	167.4	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0500 MFC	50.00	5,000	6,000	>32≤38	15.01	1,482.5	167.4	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0500 MFL	50.00	3,300	6,000	>38≤48	14.58	1,484.0	167.5	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0500 MFLC	50.00	5,000	6,000	>38≤48	30.44	1,484.0	167.5	8,858	1,000	14,173	1,600	28,346	3,200
PA822_0700 MF	70.00	3,300	6,000	≤24	12.17	1,455.9	164.4	8,858	1,000	12,401	1,400	24,900	2,811
PA822_0700 MF	70.00	3,300	6,000	>24≤32	12.17	1,455.9	164.4	8,858	1,000	12,401	1,400	24,900	2,811
PA822_0700 MF	70.00	3,300	6,000	>32≤38	12.17	1,455.9	164.4	8,858	1,000	12,401	1,400	24,900	2,811
PA822_0700 MFC	70.00	5,000	6,000	≤24	14.58	1,455.9	164.4	8,858	1,000	12,401	1,400	24,900	2,811
PA822_0700 MFC	70.00	5,000	6,000	>24≤32	13.37	1,455.9	164.4	8,858	1,000	12,401	1,400	24,900	2,811
PA822_0700 MFC	70.00	5,000	6,000	>32≤38	14.96	1,455.9	164.4	8,858	1,000	12,401	1,400	24,900	2,811
PA822_0700 MFL	70.00	3,300	6,000	>38≤48	14.54	1,456.6	164.4	8,858	1,000	12,401	1,400	24,900	2,811
PA822_0700 MFLC	70.00	5,000	6,000	>38≤48	30.40	1,456.6	164.4	8,858	1,000	12,401	1,400	24,900	2,811
PA822_1000 MF	100.0	3,300	6,000	≤24	12.14	1,314.0	148.3	6,201	700	10,630	1,200	21,259	2,400
PA822_1000 MF	100.0	3,300	6,000	>24≤32	12.14	1,314.0	148.3	6,201	700	10,630	1,200	21,259	2,400
PA822_1000 MF	100.0	3,300	6,000	>32≤38	12.14	1,314.0	148.3	6,201	700	10,630	1,200	21,259	2,400
PA822_1000 MFC	100.0	5,000	6,000	≤24	14.56	1,314.0	148.3	6,201	700	10,630	1,200	21,259	2,400
PA822_1000 MFC	100.0	5,000	6,000	>24≤32	13.34	1,314.0	148.3	6,201	700	10,630	1,200	21,259	2,400
PA822_1000 MFC	100.0	5,000	6,000	>32≤38	14.94	1,314.0	148.3	6,201	700	10,630	1,200	21,259	2,400
PA822_1000 MFL	100.0	3,300	6,000	>38≤48	14.51	1,314.3	148.4	6,201	700	10,630	1,200	21,259	2,400
PA822_1000 MFLC	100.0	5,000	6,000	>38≤48	30.37	1,314.3	148.4	6,201	700	10,630	1,200	21,259	2,400

Index of Symbols

MF ..... Motor adapter with FlexiAdapt® coupling	J_1 ..... Mass moment of inertia (input)
L ..... Large Input	C_2 ..... Torsional Stiffness
C ..... ServoCool	M_{2N} ..... Nominal Torque
i ..... Ratio - Exact	M_{2B} ..... Acceleration Torque Maximum
n_1 ..... Maximum input speed RPM	M_{2PEAK} ..... Peak Torque

See web site for drawings.

"PA" Series–Advanced ServoFit® Precision Planetary Gearhead Dimensional Data



Drawing for Units
PA321 thru PA822

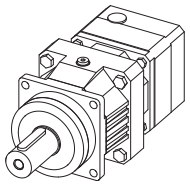
Table No. 1 **"PA" Series – Advanced Precision Planetary Gearhead Dimensions (mm/inches)**

Unit	A1	A2	B1 h6	C1	D k6	E1	F1	K2	L1	L2	L3	L4	L6	L7	L8	S1	S2	T	U
P321/P322	72 2.83	72 2.83	60 +.000/-.019 2.362 +.0000/-.0007	7 .28	16 +.012/+.001	75 2.95	7.5 .30	— —	2 .08	28 1.10	30 1.18	48 1.89	79 3.11	92 3.62	92 3.62	5.5 .22	M5x12.5	18 .71	A5x5x22
P421/P422	98 3.86	76 2.99	70 +.000/-.019 2.756 +.0000/-.0007	9 .35	22 +.015/+.002	85 3.35	7.5 .30	12 .47	3 .12	36 1.42	38 1.50	56 2.20	98 3.86	103.3 4.07	130 5.12	6.6 .26	M8x19	24.5 .96	A6x6x28
P521/P522	115 4.53	101 3.98	90 +.000/-.022 3.543 +.0000/-.0009	10 .39	32 +.018/+.002	120 4.72	15 .59	14 .55	3 .12	58 2.28	60 2.36	88 3.46	121 4.76	139 5.47	149 5.87	9 .35	M12x28	35 1.38	A10x8x50
P721/P722	145 5.71	145 5.71	130 +.000/-.025 5.118 +.000/-.001	15 .59	40 +.018/+.002	165 6.50	3.5 .14	— —	4 .16	82 3.23	85 3.35	112 4.41	145 5.71	— —	190 7.48	11 .43	M16x36	43 1.69	A12x8x70
P821/P822	190 7.48	190 7.48	160 +.000/-.025 6.299 +.000/-.001	15 .59	55 +.021/+.002	215 8.46	10 .39	— —	6 .24	82 3.23	85 3.35	112 4.41	190 7.48	— —	250 9.84	13.5 .53	M20x42	59 2.32	A16x10x70

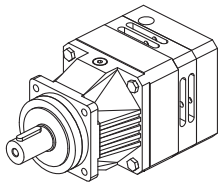
Part No. Explanation

PA 4 2 1 S P D 0030 MF C

- **C** – Option for ServoCool
- **MF** – Motor Plate with FlexiAdapt® Coupling
- **0030** – Ratio (0030 = 3.0:1)
- **D** – Reinforced Bearings-Axial
- **G** – Shaft — no Key
- **P** – Output Shaft with Key
- **S** – Standard Housing
- **1** – No. of Gear Stages (1 = 1 Stage, 2 = 2 Stages)
- **2** – Generation Number
- **4** – Unit No.
- **PA** – Advanced "PA" Series ServoFit Precision Planetary Gearhead



Typical 2 Stage Configuration



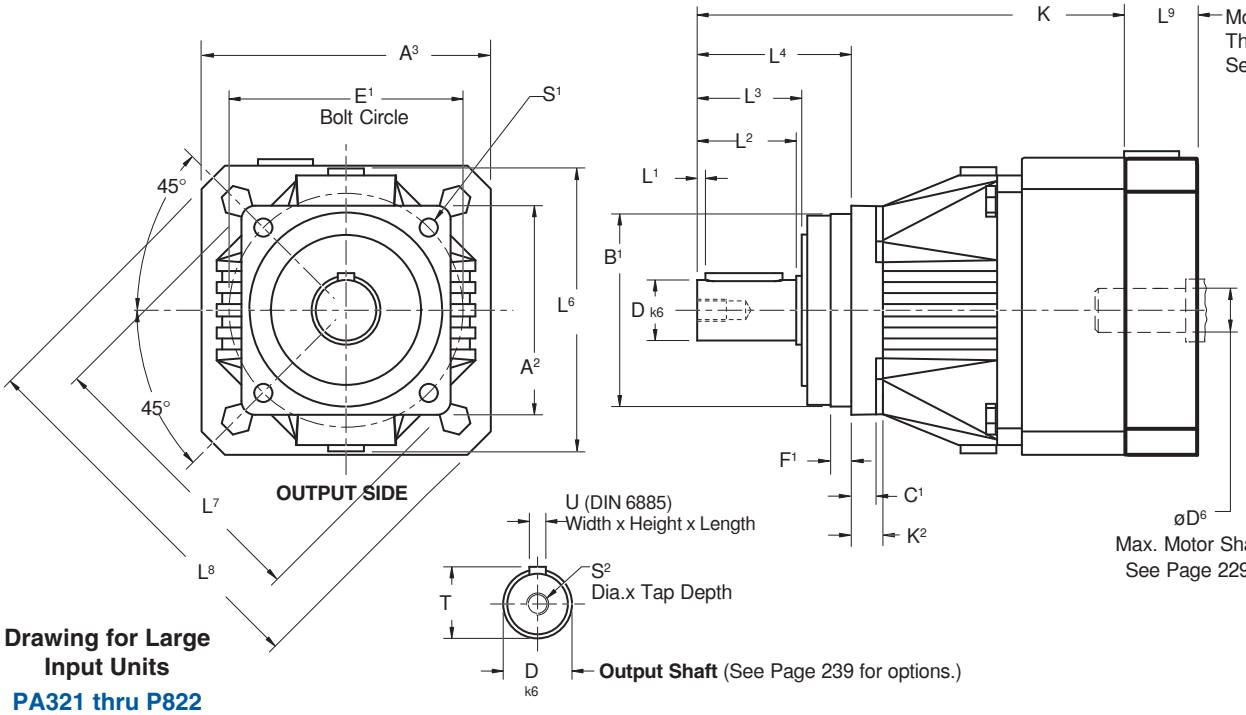
Typical ServoCool Configuration

Table No. 2

K Dimension					
Standard			ServoCool		
Unit	mm	inches	Unit	mm	inches
PA321	135	5.31	—		
PA322	158.5	6.24	—		
PA421	153	6.02	**PA421_C**	176.5	6.95
PA422	200.5	7.89	—		
PA521	193	7.60	**PA521_C**	221	8.70
PA522	242.5	9.55	**PA522_C**	266	10.47
PA721	242	9.53	**PA721_C**	272	10.71
PA722	294	11.57	**PA722_C**	322	12.68
PA821	283	11.14	**PA821_C**	331	13.03
PA822	350.5	13.80	**PA822_C**	380.5	14.98

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

"PA" Series–Advanced–Large Input ServoFit® Precision Planetary Gearhead Dimensional Data



Drawing for Large Input Units

PA321 thru P822

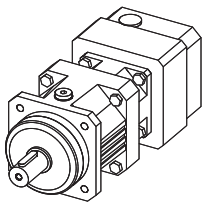
Table No. 1 **"PA" Series – Large Input – Precision Planetary Gearhead Dimensions (mm/inches)**

Unit	A^2	B^1 h6	C^1	D k6	E^1	F^1	K^2	L^1	L^2	L^3	L^4	L^6	L^7	S^1	S^2	T	U
P321/P322_L	72 2.83	60 +.000/-.019 2.362 +.0000/-.0007	7 .28	16 +.012/+.001	75 2.95	7.5 .30	— —	2 .08	28 1.10	30 1.18	48 1.89	130 5.12	92 3.62	5.5 .22	M5x12.5	18 .71	A5x5x22
P421/P422_L	76 2.99	70 +.000/-.019 2.756 +.0000/-.0007	9 .35	22 +.015/+.002	85 3.35	7.5 .30	12 .47	3 .12	36 1.42	38 1.50	56 2.20	149 5.87	103.3 4.07	6.6 .26	M8x19	24.5 .96	A6x6x28
P521/P522_L	101 3.98	90 +.000/-.022 3.543 +.0000/-.0009	10 .39	32 +.018/+.002	120 4.72	15 .59	14 .55	3 .12	58 2.28	60 2.36	88 3.46	190 7.48	139 5.47	9 .35	M12x28	35 1.38	A10x8x50
P721/P722_L	145 5.71	130 +.000/-.025 5.118 +.000/-.001	15 .59	40 +.018/+.002	165 6.50	3.5 .14	— —	4 .16	82 3.23	85 3.35	112 4.41	250 5.71	— —	11 .43	M16x36	43 1.69	A12x8x70
P822_L	190 7.48	160 +.000/-.025 6.299 +.000/-.001	15 .59	55 +.021/+.002	215 8.46	10 .39	— —	6 .24	82 3.23	85 3.35	112 4.41	190 7.48	— —	13.5 .53	M20x42	59 2.32	A16x10x70

Part No. Explanation

PA 4 2 1 S P D 0030 MF L

- **L** – Large Input
- **MF** – Motor Plate with **F**lexiAdapt Coupling
- **0030** – Ratio (**0030** = 3.0:1)
- **D** – Reinforced Bearings-Axial
- **P** – Output Shaft with Key
- **S** – Standard Housing
- **1** – No. of Gear Stages (**1** = 1 Stage, **2** = 2 Stages)
- **2** – Generation Number
- **1** – Unit No.
- **PA** – Advanced "**PA**" Series ServoFit Precision Planetary Gearhead



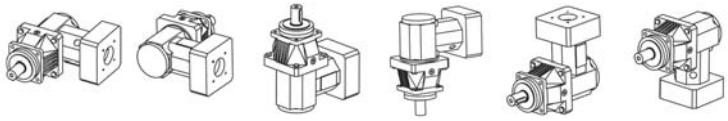
Typical 2 Stage Configuration
Large Input

Table No. 2

Unit	A^3		K		L^8	
	mm	inches	mm	inches	mm	inches
PA321_L	100	3.94	138.3	5.44	130	5.12
PA421_L	115	4.53	161.5	6.36	149	5.87
PA422_L	100	3.94	203.8	8.02	130	5.12
PA521_L	145	5.71	207	8.15	190	7.48
PA522_L	115	4.53	251	9.88	149	5.87
PA721_L	190	7.48	259	10.20	250	9.84
PA722_L	145	5.71	308	12.13	190	7.48
PA822_L	190	7.48	367.5	14.47	250	9.84

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

"PKX" Series
ServoFit® Precision Planetary Gearhead
Performance Specification Overview

			P221 KX3	P222 KX3	P321 KX3	P322 KX3	P421 KX4	P422 KX3	P521 KX5	P522 KX4	P721 KX7	P722 KX5	P821 KX8	P822 KX7	P922 KX8
Acceleration Torque		in.lbs.	195		576		1063		2,657		6,201		14,173		26,574
$M_{2B\ MAX}$		Nm	22		65		120		300		700		1,600		3,000
Output Torque Nom. [1]		in.lbs.	142		399		753		1,860		3,898		8,858		17,716
M_{2N}		Nm	16		45		85		210		440		1,000		2,000
Input Speed Max.	Continuous		3,500	3,500	3,500	3,500	3,000	3,500	3,000	3,000	2,100	3,000	1,300	2,100	1,300
n_{1MAX}	Cyclic		6,000	6,000	6,000	6,000	4,500	6,000	4,000	4,500	3,500	4,000	3,000	3,500	3,000
Torsional Backlash [2]															
$\Delta\varphi$		arcmin	≤7 - 8.5		≤5 - 7.5		≤5 - 7.5		≤4 - 6.5		≤4 - 6.5		≤4 - 6.5		≤4 - 4.5
Torsional Stiffness															
C_2		in.lbs./arcmin	17		44		100		266		486		1,557		3,016
		Nm/arcmin	1.9		5		11		33		55		176		340
Axial Load Maximum	R	lbs.	112		225		337		518		653		1,058		1,350
		N	500		1,000		1,500		2,300		2,900		4,700		6,000
F_{2AMAX} [3]	D	lbs.	—		315		506		788		1,013		1,688		2,250
		N			1,400		2,250		3,500		4,500		7,500		10,000
	Z	lbs.	—		135		225		360		450		810		1,125
		N			600		1,000		1,600		2,000		3,600		5,000
Radial Load Maximum [4]	R	lbs.	270		563		900		1,463		1,800		2,925		4,050
		N	1,200		2,500		4,000		6,500		8,000		13,000		18,000
F_{2RMAX} [3]	D	lbs.	—		619		1,013		1,575		2,025		3,375		4,500
		N			2,750		4,500		7,000		9,000		15,000		20,000
	Z	lbs.	—		675		1,125		1,800		2,250		4,050		6,075
		N			3,000		5,000		8,000		10,000		18,000		27,000
Tilting Moment Maximum [4]	R	in.lbs.	300		779		1,416		2,991		4,774		5,938		14,735
		Nm	34		88		160		338		536		897		1,665
M_{2Kmax} [3]	D	in.lbs.	—		929		1,717		3,593		5,735		10,089		18,320
		Nm			105		194		406		648		1,140		2,070
	Z	in.lbs.	—		929		1,770		3,682		5,929		10,992		22,125
		Nm			105		200		416		670		1,242		2,500
Weight		pounds	7.3	8.6	8.8	101	15	16	28.5	25	51	47	105	95	181
m		kg	3.3	3.9	4.0	4.6	6.8	7.0	12.8	11.3	23.2	21.3	47.4	43.2	82
Noise Level															
L_{PA}		dB(A) [5]	≤70		≤70		≤70		≤70	≤72	≤72	≤72	≤74	≤72	≤74
Efficiency (at Nom. Torque)															
h		%	≥ 93% — 95%												
Balance Quality			Q 2.5 (Quality Class-2.5 millimeters per second)												
Lubrication			Synthetic Oil — Lubricated for Life												
Degree of Protection			IP65 - FKM Shaft Seals												
Mounting Position Any Horizontal – EL1, EL2 EL5, and EL6 Vertical Mounting Position EL3 and EL4 MUST BE SPECIFIED			 EL1 EL2 EL3 EL4 EL5 EL6												
Direction of Rotation			See Page 249.												
Ambient Temperature			0° C to +40°C (104° F) [Unit temperature ≤ 90° C Max.]												
Finish			Black												
Lifetime. [6]		hours	L_h > 10,000 hours if M_{2K}/M_{2A} < 1.25 and > 1.00												
L_h			L_h > 20,000 hours if M_{2K}/M_{2A} > 1.25 and < 1.50												
			L_h > 30,000 hours if M_{2K}/M_{2A} > 1.5												
Warranty			5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)												

1) Ratings based on input speed (n_1) of 2000 RPM.
For torque at higher input speeds (M_{2NX}) solve the formula, where n_1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

2) Tested at 1.5% of nominal torque and recorded on the output side of the gearhead.
For lower than standard backlash, contact STOBER Technical Support.

3) See Page 239 for output bearing options.

4) Rating based on output speed (n_2) of 100 RPM. For values at other speeds see Page 239.

5) Measurement at one (1) meter distance with input speed (n_1) of 2000 RPM.

6) M_{2A} equals actual tilting moment of the application. See Page 239 for calculation details.

WARNING: In order to insure that the specified torque ratings are attained, it is essential to attach the gear units to the machine with a grade 10.9 fastener.

Refer to Page 250 for ServoFit Precision Planetary Gearhead Selection Procedure.

"PKX" Series
ServoFit® Precision Planetary Gearhead
Features

The "PKX" Series ServoFit Precision Planetary Gearheads combines the "P" Series gearhead and a low ratio right angle which uses the FlexiAdapt® motor coupling. HeliCamber® gear technology provides minimum wear, low backlash, and low noise. "PKX" Series units are lubricated for life with synthetic oil and sealed to IP65 standards to prevent lubricant contamination for long life. They have all the great features of the "P" Series unit with the configuration of a right angle.

Some of these features are:

- Readily Attaches to Any Servo Motor (IEC, NEMA, or Customized Motor Plates*)
- 5 Year Limited Warranty (2 years on bearings, seals, etc.)
- Lowest Standard Backlash
- High Torsional Stiffness
- Advanced Gear Technology
- 93 to 95% Efficiency
- Quiet Running
- Assembled in the U.S.A.

* Maximum 10 working days for custom motor plates.

NO EXPEDITE FEE FOR 24 HOUR SERVICE

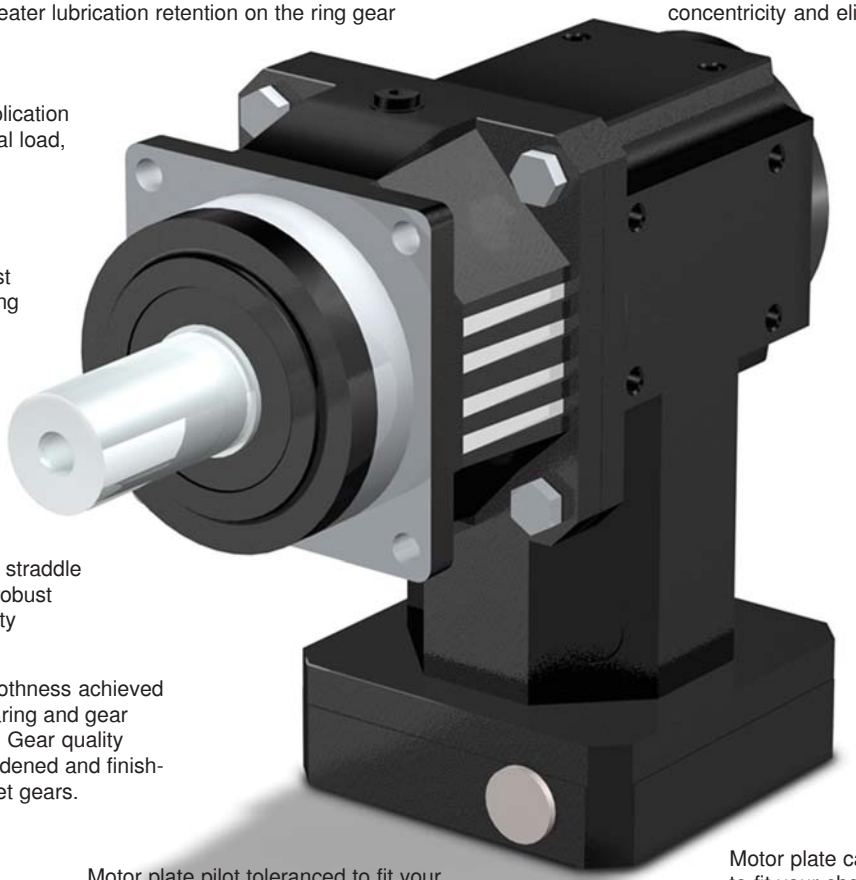
Highest running accuracy and precision ensured by single piece housing made from high-tensile tempered ductile iron with the additional characteristics of dissipating heat, noise dampening, and greater lubrication retention on the ring gear

Ring gear machined integral to the housing — not welded or pressed in — provides greater concentricity and eliminates speed fluctuation

Bearing options for application specific radial load, axial load, and tilting moments

Magnetic oil filtration

FKM seals for the smallest possible diameter—reducing friction and heat buildup, increasing efficiency, and allowing continuous duty without additional cooling.



Planet carrier straddle mounted for robust output capacity

Adapter bushings to fit all motor shafts — no key required

Highest running smoothness achieved by proven helical gearing and gear tooth microgeometry. Gear quality provided by case-hardened and finish-ground sun and planet gears.

Motor plate pilot toleranced to fit your motor for precise concentricity

Motor plate can easily be changed to fit your choice of motors

The FlexiAdapt® motor coupling is designed for accurate and precise motor installation. The integrated thermal expansion feature in the shape of a bellows compensates for linear expansion of the motor shaft.

The FlexiAdapt® motor shaft adapter system allows installation of motor in minutes without special tools.

"PKX" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio i	Max. Input RPM (n_1) Continuous Mounting Position EL 1,2,5,6	Max. Input RPM (n_1) Continuous Mounting Position EL 3,4	Max. Input RPM (n_1) Cyclic All	Max. Motor Shaft øD6 mm	Input Inertia J_1 kgcm²	Torsional Stiffness per arcmin C_2 in.lbs.	Torsional Stiffness per arcmin C_2 Nm	Output Torque Nominal [1] M_{2N} in.lbs.	Output Torque Nominal [1] M_{2N} Nm	Output Torque Acceleration M_{2B} in.lbs.	Output Torque Acceleration M_{2B} Nm	Output Torque Peak [2] M_{2PEAK} in.lbs.	Output Torque Peak [2] M_{2PEAK} Nm
P221S_ _KX3 with Motor Mounting Plate														
P221S_ _0040 KX301VF0010 MF	4.000	3,000	2,500	4,000	19	1.05	13.6	1.5	142	16	195	22	390	44
P221S_ _0050 KX301VF0010 MF	5.000	3,000	2,500	4,000	19	1.03	14.6	1.6	142	16	195	22	390	44
P221S_ _0070 KX301VF0010 MF	7.000	3,000	2,500	4,000	19	1.02	14.9	1.7	142	16	195	22	390	44
P221S_ _0040 KX301VF0020 MF	8.000	3,500	3,000	5,000	19	0.81	13.6	1.5	142	16	195	22	390	44
P221S_ _0050 KX301VF0020 MF	10.00	3,500	3,000	5,000	19	0.81	14.6	1.6	142	16	195	22	390	44
P221S_ _0050 KX301VF0030 MF	15.00	3,500	3,500	6,000	19	0.75	14.6	1.6	142	16	195	22	390	44
P221S_ _0100 KX301VF0020 MF	20.00	3,500	3,000	5,000	19	0.80	13.7	1.6	106	12	159	18	319	36
P221S_ _0070 KX301VF0030 MF	21.00	3,500	3,500	6,000	19	0.75	14.9	1.7	142	16	195	22	390	44
P221S_ _0080 KX301VF0030 MF	24.00	3,500	3,500	6,000	19	0.75	14.3	1.6	124	14	159	18	319	36
P221S_ _0100 KX301VF0030 MF	30.00	3,500	3,500	6,000	19	0.75	13.7	1.6	106	12	159	18	319	36
P222S_ _KX3 with Motor Mounting Plate														
P222S_ _0350 KX301VF0010 MF	35.00	3,000	2,500	4,000	19	1.02	16.1	1.8	142	16	195	22	390	44
P222S_ _0200 KX301VF0020 MF	40.00	3,500	3,000	5,000	19	0.81	16.0	1.8	142	16	195	22	390	44
P222S_ _0250 KX301VF0020 MF	50.00	3,500	3,000	5,000	19	0.81	16.1	1.8	142	16	195	22	390	44
P222S_ _0280 KX301VF0020 MF	56.00	3,500	3,000	5,000	19	0.81	15.7	1.8	142	16	195	22	390	44
P222S_ _0200 KX301VF0030 MF	60.00	3,500	3,500	6,000	19	0.75	16.0	1.8	142	16	195	22	390	44
P222S_ _0350 KX301VF0020 MF	70.00	3,500	3,000	5,000	19	0.81	16.1	1.8	142	16	195	22	390	44
P222S_ _0250 KX301VF0030 MF	75.00	3,500	3,500	6,000	19	0.75	16.1	1.8	142	16	195	22	390	44
P222S_ _0400 KX301VF0020 MF	80.00	3,500	3,000	5,000	19	0.80	15.6	1.8	142	16	195	22	390	44
P222S_ _0280 KX301VF0030 MF	84.00	3,500	3,500	6,000	19	0.75	15.7	1.8	142	16	195	22	390	44
P222S_ _0500 KX301VF0020 MF	100.0	3,500	3,000	5,000	19	0.80	16.0	1.8	142	16	195	22	390	44
P222S_ _0350 KX301VF0030 MF	105.0	3,500	3,500	6,000	19	0.75	16.1	1.8	142	16	195	22	390	44
P222S_ _0400 KX301VF0030 MF	120.0	3,500	3,500	6,000	19	0.75	15.6	1.8	142	16	195	22	390	44
P222S_ _0700 KX301VF0020 MF	140.0	3,500	3,000	5,000	19	0.80	15.6	1.8	142	16	195	22	390	44
P222S_ _0500 KX301VF0030 MF	150.0	3,500	3,500	6,000	19	0.75	16.0	1.8	142	16	195	22	390	44
P222S_ _1000 KX301VF0020 MF	200.0	3,500	3,000	5,000	19	0.80	14.0	1.6	106	12	159	18	319	36
P222S_ _0700 KX301VF0030 MF	210.0	3,500	3,500	6,000	19	0.75	15.6	1.8	142	16	195	22	390	44
P222S_ _1000 KX301VF0030 MF	300.0	3,500	3,500	6,000	19	0.75	14.0	1.6	106	12	159	18	319	36
P321S_ _KX3 with Motor Mounting Plate														
P321S_ _0030 KX301VF0010 MF	3.000	3,000	2,500	4,000	19	1.21	22.3	2.5	258	29	335	38	567	64
P321S_ _0040 KX301VF0010 MF	4.000	3,000	2,500	4,000	19	1.13	28.2	3.2	344	39	447	50	756	85
P321S_ _0050 KX301VF0010 MF	5.000	3,000	2,500	4,000	19	1.08	32.1	3.6	399	45	558	63	945	107
P321S_ _0030 KX301VF0020 MF	6.000	3,500	3,000	5,000	19	0.85	22.3	2.5	258	29	335	38	644	73
P321S_ _0070 KX301VF0010 MF	7.000	3,000	2,500	4,000	19	1.04	33.0	3.7	399	45	531	60	1,152	130
P321S_ _0040 KX301VF0020 MF	8.000	3,500	3,000	5,000	19	0.83	28.2	3.2	344	39	447	50	859	97
P321S_ _0050 KX301VF0020 MF	10.00	3,500	3,000	5,000	19	0.82	32.1	3.6	399	45	558	63	1,074	121
P321S_ _0050 KX301VF0030 MF	15.00	3,500	3,500	6,000	19	0.75	32.1	3.6	399	45	558	63	1,074	121
P321S_ _0100 KX301VF0020 MF	20.00	3,500	3,000	5,000	19	0.81	32.8	3.7	266	30	443	50	886	100
P321S_ _0070 KX301VF0030 MF	21.00	3,500	3,500	6,000	19	0.75	33.0	3.7	399	45	531	60	1,152	130
P321S_ _0080 KX301VF0030 MF	24.00	3,500	3,500	6,000	19	0.75	32.9	3.7	354	40	443	50	886	100
P321S_ _0100 KX301VF0030 MF	30.00	3,500	3,500	6,000	19	0.75	32.8	3.7	266	30	443	50	886	100
P322S_ _KX3 with Motor Mounting Plate Continued Next Page														
P322S_ _0350 KX301VF0010 MF	35.00	3,000	2,500	4,000	19	1.02	40.3	4.5	399	45	576	65	1,152	130
P322S_ _0200 KX301VF0020 MF	40.00	3,500	3,000	5,000	19	0.81	39.9	4.5	399	45	576	65	1,152	130
P322S_ _0250 KX301VF0020 MF	50.00	3,500	3,000	5,000	19	0.81	40.2	4.5	399	45	576	65	1,152	130
P322S_ _0280 KX301VF0020 MF	56.00	3,500	3,000	5,000	19	0.81	39.2	4.4	399	45	576	65	1,152	130
P322S_ _0200 KX301VF0030 MF	60.00	3,500	3,500	6,000	19	0.75	39.9	4.5	399	45	576	65	1,152	130
P322S_ _0350 KX301VF0020 MF	70.00	3,500	3,000	5,000	19	0.81	40.3	4.5	399	45	576	65	1,152	130
P322S_ _0250 KX301VF0030 MF	75.00	3,500	3,500	6,000	19	0.75	40.2	4.5	399	45	576	65	1,152	130
P322S_ _0400 KX301VF0020 MF	80.00	3,500	3,000	5,000	19	0.80	38.7	4.4	399	45	576	65	1,152	130
P322S_ _0280 KX301VF0030 MF	84.00	3,500	3,500	6,000	19	0.75	39.2	4.4	399	45	576	65	1,152	130

[1] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[2] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"PKX" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio i	Max. Input RPM (n_1) Continuous Mounting Position EL 1,2,5,6	Max. Input RPM (n_1) Continuous Mounting Position EL 3,4	Max. Input RPM (n_1) Cyclic All	Max. Motor Shaft øD6 mm	Input Inertia J_1 kgcm²	Torsional Stiffness per arcmin C_2 in.lbs.	Torsional Stiffness per arcmin C_2 Nm	Output Torque Nominal 1) M_{2N} in.lbs.	Output Torque Nominal 1) M_{2N} Nm	Output Torque Acceleration M_{2B} in.lbs.	Output Torque Acceleration M_{2B} Nm	Output Torque Peak 2) M_{2PEAK} in.lbs.	Output Torque Peak 2) M_{2PEAK} Nm
P322S_ _KX3 with Motor Mounting Plate Continued														
P322S_ _0500 KX301VF0020 MF	100.0	3,500	3,000	5,000	19	0.80	39.9	4.5	399	45	576	65	1,152	130
P322S_ _0350 KX301VF0030 MF	105.0	3,500	3,500	6,000	19	0.75	40.3	4.5	399	45	576	65	1,152	130
P322S_ _0400 KX301VF0030 MF	120.0	3,500	3,500	6,000	19	0.75	38.7	4.4	399	45	576	65	1,152	130
P322S_ _0700 KX301VF0020 MF	140.0	3,500	3,000	5,000	19	0.80	36.8	4.2	399	45	531	60	1,152	130
P322S_ _0500 KX301VF0030 MF	150.0	3,500	3,500	6,000	19	0.75	39.9	4.5	399	45	576	65	1,152	130
P322S_ _1000 KX301VF0020 MF	200.0	3,500	3,000	5,000	19	0.80	34.5	3.9	266	30	443	50	886	100
P322S_ _0700 KX301VF0030 MF	210.0	3,500	3,500	6,000	19	0.75	36.8	4.2	399	45	531	60	1,152	130
P322S_ _1000 KX301VF0030 MF	300.0	3,500	3,500	6,000	19	0.75	34.5	3.9	266	30	443	50	886	100
P421S_ _KX4 with Motor Mounting Plate														
P421S_ _0030 KX401VF0010 MF	3.000	2,500	2,000	3,500	24	3.05	46.4	5.2	443	50	644	73	1,289	146
P421S_ _0040 KX401VF0010 MF	4.000	2,500	2,000	3,500	24	2.65	60.7	6.9	687	78	859	97	1,718	194
P421S_ _0050 KX401VF0010 MF	5.000	2,500	2,000	3,500	24	2.55	70.6	8.0	753	85	1,063	120	2,126	240
P421S_ _0030 KX401VF0020 MF	6.000	2,500	2,500	4,000	24	1.79	46.4	5.2	443	50	644	73	1,289	146
P421S_ _0070 KX401VF0010 MF	7.000	2,500	2,000	3,500	24	2.44	74.2	8.4	753	85	974	110	2,126	240
P421S_ _0040 KX401VF0020 MF	8.000	2,500	2,500	4,000	24	1.70	60.7	6.9	687	78	859	97	1,718	194
P421S_ _0050 KX401VF0020 MF	10.00	2,500	2,500	4,000	24	1.67	70.6	8.0	753	85	1,063	120	2,126	240
P421S_ _0050 KX401VF0030 MF	15.00	3,000	3,000	4,500	24	1.45	70.6	8.0	753	85	1,063	120	2,126	240
P421S_ _0100 KX401VF0020 MF	20.00	2,500	2,500	4,000	24	1.63	73.1	8.3	531	60	886	100	1,772	200
P421S_ _0070 KX401VF0030 MF	21.00	3,000	3,000	4,500	24	1.44	74.2	8.4	753	85	974	110	2,126	240
P421S_ _0080 KX401VF0030 MF	24.00	3,000	3,000	4,500	24	1.44	73.3	8.3	709	80	886	100	1,772	200
P421S_ _0100 KX401VF0030 MF	30.00	3,000	3,000	4,500	24	1.44	73.1	8.3	531	60	886	100	1,772	200
P422S_ _KX3 with Motor Mounting Plate														
P422S_ _0160 KX301VF0020 MF	32.00	3,500	3,000	5,000	19	0.84	86.0	9.7	753	85	1,063	120	2,126	240
P422S_ _0350 KX301VF0010 MF	35.00	3,000	2,500	4,000	19	1.05	92.1	10.4	753	85	1,063	120	2,126	240
P422S_ _0200 KX301VF0020 MF	40.00	3,500	3,000	5,000	19	0.84	90.4	10.2	753	85	1,063	120	2,126	240
P422S_ _0250 KX301VF0020 MF	50.00	3,500	3,000	5,000	19	0.82	91.8	10.4	753	85	1,063	120	2,126	240
P422S_ _0200 KX301VF0030 MF	60.00	3,500	3,500	6,000	19	0.76	90.4	10.2	753	85	1,063	120	2,126	240
P422S_ _0350 KX301VF0020 MF	70.00	3,500	3,000	5,000	19	0.81	92.1	10.4	753	85	1,063	120	2,126	240
P422S_ _0250 KX301VF0030 MF	75.00	3,500	3,500	6,000	19	0.75	91.8	10.4	753	85	1,063	120	2,126	240
P422S_ _0400 KX301VF0020 MF	80.00	3,500	3,000	5,000	19	0.81	88.4	10.0	753	85	1,063	120	2,126	240
P422S_ _0500 KX301VF0020 MF	100.0	3,500	3,000	5,000	19	0.81	92.0	10.4	753	85	1,063	120	2,126	240
P422S_ _0400 KX301VF0030 MF	120.0	3,500	3,500	6,000	19	0.75	88.4	10.0	753	85	1,063	120	2,126	240
P422S_ _0700 KX301VF0020 MF	140.0	3,500	3,000	5,000	19	0.81	84.7	9.6	753	85	974	110	2,126	240
P422S_ _0500 KX301VF0030 MF	150.0	3,500	3,500	6,000	19	0.75	92.0	10.4	753	85	1,063	120	2,126	240
P422S_ _1000 KX301VF0020 MF	200.0	3,500	3,000	5,000	19	0.81	77.8	8.8	531	60	886	100	1,772	200
P422S_ _0700 KX301VF0030 MF	210.0	3,500	3,500	6,000	19	0.75	84.7	9.6	753	85	974	110	2,126	240
P422S_ _1000 KX301VF0030 MF	300.0	3,500	3,500	6,000	19	0.75	77.8	8.8	531	60	886	100	1,772	200
P521S_ _KX5 with Motor Mounting Plate														
P521S_ _0030 KX501VF0010 MF	3.000	2,500	2,000	3,000	32	8.73	120.0	13.5	1,063	120	1,624	183	3,222	364
P521S_ _0040 KX501VF0010 MF	4.000	2,500	2,000	3,000	32	8.52	154.9	17.5	1,718	194	2,165	244	4,296	485
P521S_ _0050 KX501VF0010 MF	5.000	2,500	2,000	3,000	32	8.11	181.4	20.5	1,860	210	2,657	300	5,315	600
P521S_ _0030 KX501VF0020 MF	6.000	2,500	2,500	3,500	32	5.59	120.0	13.5	1,063	120	1,624	183	3,222	364
P521S_ _0070 KX501VF0010 MF	7.000	2,500	2,000	3,000	32	7.74	200.3	22.6	1,860	210	2,392	270	5,315	600
P521S_ _0040 KX501VF0020 MF	8.000	2,500	2,500	3,500	32	5.54	154.9	17.5	1,718	194	2,165	244	4,296	485
P521S_ _0050 KX501VF0020 MF	10.00	2,500	2,500	3,500	32	5.43	181.4	20.5	1,860	210	2,657	300	5,315	600
P521S_ _0050 KX501VF0030 MF	15.00	3,000	3,000	4,000	32	4.85	181.4	20.5	1,860	210	2,657	300	5,315	600
P521S_ _0100 KX501VF0020 MF	20.00	2,500	2,500	3,500	32	5.31	200.6	22.6	1,240	140	2,215	250	4,429	500
P521S_ _0070 KX501VF0030 MF	21.00	3,000	3,000	4,000	32	4.81	200.3	22.6	1,860	210	2,392	270	5,315	600
P521S_ _0080 KX501VF0030 MF	24.00	3,000	3,000	4,000	32	4.80	197.0	22.2	1,772	200	2,215	250	4,429	500
P521S_ _0100 KX501VF0030 MF	30.00	3,000	3,000	4,000	32	4.79	200.6	22.6	1,240	140	2,215	250	4,429	500

Index of Symbols

MT ..... Motor adapter with TriAdapt® coupling	i ..... Ratio - Exact	M_{2N} ..... Nominal Torque
MF ..... Motor adapter with FlexiAdapt® coupling	n_1 ..... Maximum input speed RPM	M_{2B} ..... Acceleration Torque Maximum
L ..... Large Input	J_1 ..... Mass moment of inertia (input)	M_{2PEAK} ..... Peak Torque
C ..... ServoCool	C_2 ..... Torsional Stiffness	

See web site for drawings.

"PKX" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Max. Input RPM (n_1) Continuous Mounting Position EL 1,2,5,6	Max. Input RPM (n_1) Continuous Mounting Position EL 3,4	Max. Input RPM (n_1) Cyclic All	Max. Motor Shaft øD6	Input Inertia J_1	Torsional Stiffness per arcmin C_2		Output Torque: Nominal 1) M_{2N}		Output Torque: Acceleration M_{2B}		Output Torque: Peak 2) M_{2PEAK}	
	i				mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
P522S_ _KX4 with Motor Mounting Plate														
P522S_ _0160 KX401VF0020 MF	32.00	2,500	2,500	4,000	24	1.71	220.0	24.8	1,860	210	2,657	300	4,915	555
P522S_ _0350 KX401VF0010 MF	35.00	2,500	2,000	3,500	24	2.46	239.9	27.1	1,860	210	2,657	300	5,315	600
P522S_ _0200 KX401VF0020 MF	40.00	2,500	2,500	4,000	24	1.70	233.2	26.3	1,860	210	2,657	300	5,315	600
P522S_ _0250 KX401VF0020 MF	50.00	2,500	2,500	4,000	24	1.67	238.3	26.9	1,860	210	2,657	300	5,315	600
P522S_ _0200 KX401VF0030 MF	60.00	3,000	3,000	4,500	24	1.47	233.2	26.3	1,860	210	2,657	300	5,315	600
P522S_ _0350 KX401VF0020 MF	70.00	2,500	2,500	4,000	24	1.65	239.9	27.1	1,860	210	2,657	300	5,315	600
P522S_ _0250 KX401VF0030 MF	75.00	3,000	3,000	4,500	24	1.46	238.3	26.9	1,860	210	2,657	300	5,315	600
P522S_ _0400 KX401VF0020 MF	80.00	2,500	2,500	4,000	24	1.64	228.8	25.8	1,860	210	2,657	300	4,915	555
P522S_ _0500 KX401VF0020 MF	100.0	2,500	2,500	4,000	24	1.64	239.4	27.0	1,860	210	2,657	300	5,315	600
P522S_ _0400 KX401VF0030 MF	120.0	3,000	3,000	4,500	24	1.44	228.8	25.8	1,860	210	2,657	300	4,915	555
P522S_ _0700 KX401VF0020 MF	140.0	2,500	2,500	4,000	24	1.63	232.0	26.2	1,860	210	2,392	270	5,315	600
P522S_ _0500 KX401VF0030 MF	150.0	3,000	3,000	4,500	24	1.44	239.4	27.0	1,860	210	2,657	300	5,315	600
P522S_ _1000 KX401VF0020 MF	200.0	2,500	2,500	4,000	24	1.63	214.9	24.3	1,240	140	2,215	250	4,429	500
P522S_ _0700 KX401VF0030 MF	210.0	3,000	3,000	4,500	24	1.44	232.0	26.2	1,860	210	2,392	270	5,315	600
P522S_ _1000 KX401VF0030 MF	300.0	3,000	3,000	4,500	24	1.44	214.9	24.3	1,240	140	2,215	250	4,429	500
P721S_ _KX7 with Motor Mounting Plate														
P721S_ _0030 KX701VF0010 MF	3.000	1,800	1,600	2,250	38	33.17	325.7	36.8	2,480	280	3,186	360	5,671	640
P721S_ _0040 KX701VF0010 MF	4.000	1,800	1,600	2,250	38	28.45	381.1	43.0	3,437	388	4,296	485	7,561	854
P721S_ _0050 KX701VF0010 MF	5.000	1,800	1,600	2,250	38	26.92	410.1	46.3	3,898	440	5,370	606	9,451	1,067
P721S_ _0030 KX701VF0020 MF	6.000	1,800	1,800	3,000	38	16.79	325.7	36.8	2,480	280	3,186	360	6,444	728
P721S_ _0070 KX701VF0010 MF	7.000	1,800	1,600	2,250	38	25.92	435.7	49.2	3,898	440	5,758	650	11,127	1,256
P721S_ _0040 KX701VF0020 MF	8.000	1,800	1,800	3,000	38	15.61	381.1	43.0	3,437	388	4,296	485	8,592	970
P721S_ _0050 KX701VF0020 MF	10.00	1,800	1,800	3,000	38	15.23	410.1	46.3	3,898	440	5,370	606	10,740	1,213
P721S_ _0050 KX701VF0030 MF	15.00	2,100	2,100	3,500	38	12.65	410.1	46.3	3,898	440	5,370	606	10,740	1,213
P721S_ _0100 KX701VF0020 MF	20.00	1,800	1,800	3,000	38	14.85	416.8	47.0	2,657	300	4,429	500	8,858	1,000
P721S_ _0070 KX701VF0030 MF	21.00	2,100	2,100	3,500	38	12.54	435.7	49.2	3,898	440	5,758	650	11,127	1,256
P721S_ _0080 KX701VF0030 MF	24.00	2,100	2,100	3,500	38	12.51	431.8	48.8	3,543	400	4,429	500	8,858	1,000
P721S_ _0100 KX701VF0030 MF	30.00	2,100	2,100	3,500	38	12.48	416.8	47.0	2,657	300	4,429	500	8,858	1,000
P722S_ _KX5 with Motor Mounting Plate														
P722S_ _0160 KX501VF0020 MF	32.00	2,500	2,500	3,500	32	5.56	437.6	49.4	3,898	440	6,201	700	12,235	1,381
P722S_ _0350 KX501VF0010 MF	35.00	2,500	2,000	3,000	32	7.80	462.3	52.2	3,898	440	6,201	700	12,401	1,400
P722S_ _0200 KX501VF0020 MF	40.00	2,500	2,500	3,500	32	5.53	450.1	50.8	3,898	440	6,201	700	12,401	1,400
P722S_ _0250 KX501VF0020 MF	50.00	2,500	2,500	3,500	32	5.43	457.9	51.7	3,898	440	6,201	700	12,401	1,400
P722S_ _0200 KX501VF0030 MF	60.00	3,000	3,000	4,000	32	4.89	450.1	50.8	3,898	440	6,201	700	12,401	1,400
P722S_ _0350 KX501VF0020 MF	70.00	2,500	2,500	3,500	32	5.35	462.3	52.2	3,898	440	6,201	700	12,401	1,400
P722S_ _0250 KX501VF0030 MF	75.00	3,000	3,000	4,000	32	4.85	457.9	51.7	3,898	440	6,201	700	12,401	1,400
P722S_ _0400 KX501VF0020 MF	80.00	2,500	2,500	3,500	32	5.32	456.0	51.5	3,898	440	6,201	700	12,235	1,381
P722S_ _0500 KX501VF0020 MF	100.0	2,500	2,500	3,500	32	5.31	462.4	52.2	3,898	440	6,201	700	12,401	1,400
P722S_ _0400 KX501VF0030 MF	120.0	3,000	3,000	4,000	32	4.80	456.0	51.5	3,898	440	6,201	700	12,235	1,381
P722S_ _0700 KX501VF0020 MF	140.0	2,500	2,500	3,500	32	5.31	464.2	52.4	3,898	440	5,758	650	11,127	1,256
P722S_ _0500 KX501VF0030 MF	150.0	3,000	3,000	4,000	32	4.79	462.4	52.2	3,898	440	6,201	700	12,401	1,400
P722S_ _1000 KX501VF0020 MF	200.0	2,500	2,500	3,500	32	5.31	429.1	48.4	2,657	300	4,429	500	8,858	1,000
P722S_ _0700 KX501VF0030 MF	210.0	3,000	3,000	4,000	32	4.79	464.2	52.4	3,898	440	5,758	650	11,127	1,256
P722S_ _1000 KX501VF0030 MF	300.0	3,000	3,000	4,000	32	4.79	429.1	48.4	2,657	300	4,429	500	8,858	1,000

1) Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

2) Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"PKX" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio i	Max. Input RPM (n_1) Continuous Mounting Position EL 1,2,5,6	Max. Input RPM (n_1) Continuous Mounting Position EL 3,4	Max. Input RPM (n_1) Cyclic All	Max. Motor Shaft øD^6 mm	Input Inertia J_1 kgcm²	Torsional Stiffness per arcmin C_2 in.lbs.	Torsional Stiffness per arcmin C_2 Nm	Output Torque Nominal 1) M_{2N} in.lbs.	Output Torque Nominal 1) M_{2N} Nm	Output Torque Acceleration M_{2B} in.lbs.	Output Torque Acceleration M_{2B} Nm	Output Torque Peak 2) M_{2PEAK} in.lbs.	Output Torque Peak 2) M_{2PEAK} Nm
P821S_ _KX8 with Motor Mounting Plate														
P821S_ _0030 KX801VF0010 MF	3.000	1,000	750	1,750	48	117.58	741.1	83.7	5,155	582	7,089	800	10,826	1,222
P821S_ _0040 KX801VF0010 MF	4.000	1,000	750	1,750	48	93.73	979.4	110.6	6,874	776	9,451	1,067	14,435	1,630
P821S_ _0050 KX801VF0010 MF	5.000	1,000	750	1,750	48	86.91	1132.5	127.9	8,592	970	11,814	1,334	18,044	2,037
P821S_ _0030 KX801VF0020 MF	6.000	1,100	1,100	2,500	48	58.98	741.1	83.7	5,155	582	7,089	800	12,888	1,455
P821S_ _0070 KX801VF0010 MF	7.000	1,000	750	1,750	48	82.23	1260.7	142.3	8,858	1,000	12,401	1,400	24,900	2,811
P821S_ _0040 KX801VF0020 MF	8.000	1,100	1,100	2,500	48	53.02	979.4	110.6	6,874	776	9,451	1,067	17,185	1,940
P821S_ _0050 KX801VF0020 MF	10.00	1,100	1,100	2,500	48	51.31	1132.5	127.9	8,592	970	11,814	1,334	21,481	2,425
P821S_ _0050 KX801VF0030 MF	15.00	1,300	1,300	3,000	48	44.31	1132.5	127.9	8,592	970	11,814	1,334	21,481	2,425
P821S_ _0100 KX801VF0020 MF	20.00	1,100	1,100	2,500	48	49.54	1229.8	138.8	6,201	700	10,630	1,200	21,259	2,400
P821S_ _0070 KX801VF0030 MF	21.00	1,300	1,300	3,000	48	43.79	1260.7	142.3	8,858	1,000	12,401	1,400	24,900	2,811
P821S_ _0080 KX801VF0030 MF	24.00	1,300	1,300	3,000	48	43.65	1254.9	141.7	7,086	800	10,630	1,200	21,259	2,400
P821S_ _0100 KX801VF0030 MF	30.00	1,300	1,300	3,000	48	43.52	1229.8	138.8	6,201	700	10,630	1,200	21,259	2,400
P822S_ _KX7 with Motor Mounting Plate														
P822S_ _0160 KX701VF0020 MF	32.00	1,800	1,800	3,000	38	15.75	1399.2	158.0	7,086	800	14,173	1,600	28,346	3,200
P822S_ _0350 KX701VF0010 MF	35.00	1,800	1,600	2,250	38	26.03	1484.3	167.6	8,858	1,000	14,173	1,600	28,346	3,200
P822S_ _0200 KX701VF0020 MF	40.00	1,800	1,800	3,000	38	15.64	1455.8	164.4	8,858	1,000	14,173	1,600	28,346	3,200
P822S_ _0250 KX701VF0020 MF	50.00	1,800	1,800	3,000	38	15.30	1471.7	166.1	8,858	1,000	14,173	1,600	28,346	3,200
P822S_ _0200 KX701VF0030 MF	60.00	2,100	2,100	3,500	38	12.83	1455.8	164.4	8,858	1,000	14,173	1,600	28,346	3,200
P822S_ _0350 KX701VF0020 MF	70.00	1,800	1,800	3,000	38	15.01	1484.3	167.6	8,858	1,000	14,173	1,600	28,346	3,200
P822S_ _0250 KX701VF0030 MF	75.00	2,100	2,100	3,500	38	12.68	1471.7	166.1	8,858	1,000	14,173	1,600	28,346	3,200
P822S_ _0400 KX701VF0020 MF	80.00	1,800	1,800	3,000	38	14.88	1427.2	161.1	7,086	800	14,173	1,600	28,346	3,200
P822S_ _0500 KX701VF0020 MF	100.0	1,800	1,800	3,000	38	14.86	1475.1	166.5	8,858	1,000	14,173	1,600	28,346	3,200
P822S_ _0400 KX701VF0030 MF	120.0	2,100	2,100	3,500	38	12.49	1427.2	161.1	7,086	800	14,173	1,600	28,346	3,200
P822S_ _0700 KX701VF0020 MF	140.0	1,800	1,800	3,000	38	14.85	1452.3	163.9	8,858	1,000	12,401	1,400	24,900	2,811
P822S_ _0500 KX701VF0030 MF	150.0	2,100	2,100	3,500	38	12.49	1475.1	166.5	8,858	1,000	14,173	1,600	28,346	3,200
P822S_ _1000 KX701VF0020 MF	200.0	1,800	1,800	3,000	38	14.85	1312.6	148.2	6,201	700	10,630	1,200	21,259	2,400
P822S_ _0700 KX701VF0030 MF	210.0	2,100	2,100	3,500	38	12.48	1452.3	163.9	8,858	1,000	12,401	1,400	24,900	2,811
P822S_ _1000 KX701VF0030 MF	300.0	2,100	2,100	3,500	38	12.48	1312.6	148.2	6,201	700	10,630	1,200	21,259	2,400
P922S_ _KX8 with Motor Mounting Plate														
P922S_ _0160 KX801VF0020 MF	32.00	1,100	1,100	2,500	48	53.26	2770.8	312.8	17,716	2,000	26,574	3,000	53,148	6,000
P922S_ _0350 KX801VF0010 MF	35.00	1,000	750	1,750	48	82.45	2895.9	326.9	17,716	2,000	26,574	3,000	53,148	6,000
P922S_ _0200 KX801VF0020 MF	40.00	1,100	1,100	2,500	48	52.98	2821.4	318.5	17,716	2,000	26,574	3,000	53,148	6,000
P922S_ _0250 KX801VF0020 MF	50.00	1,100	1,100	2,500	48	51.41	2866.1	323.6	17,716	2,000	26,574	3,000	53,148	6,000
P922S_ _0200 KX801VF0030 MF	60.00	1,300	1,300	3,000	48	45.05	2821.4	318.5	17,716	2,000	26,574	3,000	53,148	6,000
P922S_ _0350 KX801VF0020 MF	70.00	1,100	1,100	2,500	48	50.19	2895.9	326.9	17,716	2,000	26,574	3,000	53,148	6,000
P922S_ _0250 KX801VF0030 MF	75.00	1,300	1,300	3,000	48	44.35	2866.1	323.6	17,716	2,000	26,574	3,000	53,148	6,000
P922S_ _0400 KX801VF0020 MF	80.00	1,100	1,100	2,500	48	49.53	2874.4	324.5	17,716	2,000	26,574	3,000	53,148	6,000
P922S_ _0500 KX801VF0020 MF	100.0	1,100	1,100	2,500	48	49.48	2889.2	326.2	17,716	2,000	26,574	3,000	53,148	6,000
P922S_ _0400 KX801VF0030 MF	120.0	1,300	1,300	3,000	48	43.51	2874.4	324.5	17,716	2,000	26,574	3,000	53,148	6,000
P922S_ _0700 KX801VF0020 MF	140.0	1,100	1,100	2,500	48	49.45	2787.9	314.7	17,716	2,000	23,917	2,700	47,833	5,400
P922S_ _0500 KX801VF0030 MF	150.0	1,300	1,300	3,000	48	43.49	2889.2	326.2	17,716	2,000	26,574	3,000	53,148	6,000
P922S_ _1000 KX801VF0020 MF	200.0	1,100	1,100	2,500	48	49.43	2260.7	255.2	12,401	1,400	17,716	2,000	35,432	4,000
P922S_ _0700 KX801VF0030 MF	210.0	1,300	1,300	3,000	48	43.48	2787.9	314.7	17,716	2,000	23,917	2,700	47,833	5,400
P922S_ _1000 KX801VF0030 MF	300.0	1,300	1,300	3,000	48	43.47	2260.7	255.2	12,401	1,400	17,716	2,000	35,432	4,000

Index of Symbols

MT ..... Motor adapter with TriAdapt® coupling	i ..... Ratio - Exact	M_{2N} ..... Nominal Torque
MF ..... Motor adapter with FlexiAdapt® coupling	n_1 ..... Maximum input speed RPM	M_{2B} ..... Acceleration Torque Maximum
L ..... Large Input	J_1 ..... Mass moment of inertia (input)	M_{2PEAK} ..... Peak Torque
C ..... ServoCool	C_2 ..... Torsional Stiffness	

See web site for drawings.

"PKX" Series–Right Angle ServoFit® Precision Planetary Gearhead Dimensional Data

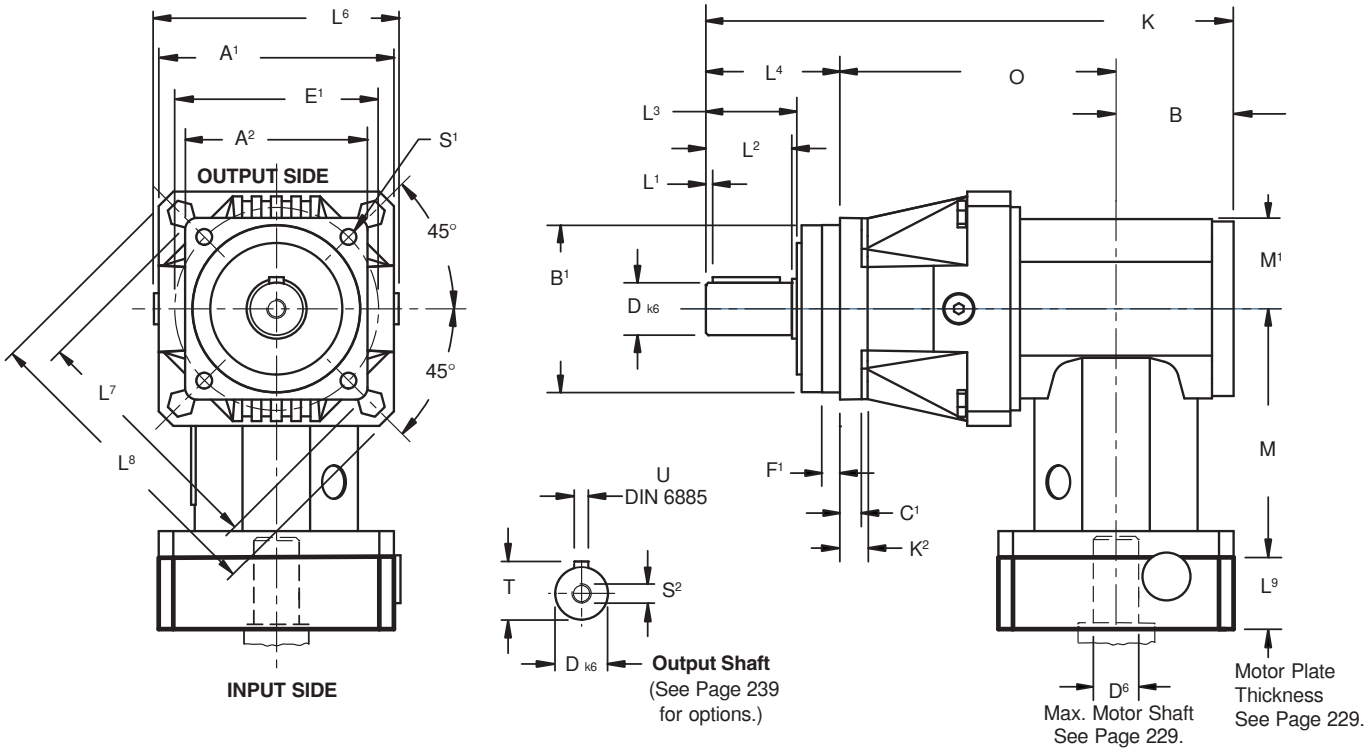


Table No. 1 **"PKX" Series – ServoFit Precision Planetary Gearhead Dimensions (mm/inches)**

Unit	A1	A2	B1 h6	C1	D k6	E1	F1	K2	L1	L2	L3	L4	L6	L7	L8	S1	S2	T	U
P221S_KX3	55	55	50 +.000/-.016	6	12 +.012/+.001	63	7.0	—	2	22	24	36	62	74	80	5.5	M4x13.5	13.5	A4x4x18
	2.17	2.17	1.969 +.0000/-.0006	.24		2.48	.28	—	.08	.87	.94	1.42	2.44	2.91	3.15	.22		.53	
P321S_KX3	72	72	60 +.000/-.019	7	16 +.012/+.001	75	7.5	—	2	28	30	48	79	—	92	5.5	M5x12.5	18	A5x5x22
	2.83	2.83	2.362 +.0000/-.0007	.28		2.95	.30	—	.08	1.10	1.18	1.89	3.11	—	3.62	.22		.71	
P421S_KX4	98	76	70 +.000/-.019	9	22 +.015/+.002	85	7.5	12	3	36	38	56	98	103.3	130	6.6	M8x19	24.5	A6x6x28
	3.86	2.99	2.756 +.0000/-.0007	.35		3.35	.30	.47	.12	1.42	1.50	2.20	3.86	4.07	5.12	.26		.96	
P521S_KX5	115	101	90 +.000/-.022	10	32 +.018/+.002	120	15	14	3	58	60	88	121	139	149	9	M12x28	35	A10x8x50
	4.53	3.98	3.543 +.0000/-.0009	.39		4.72	.59	.55	.12	2.28	2.36	3.46	4.76	5.47	5.87	.35		1.38	
P721S_KX7	145	145	130 +.000/-.025	15	40 +.018/+.002	165	3.5	—	4	82	85	112	145	—	190	11	M16x36	43	A12x8x70
	5.71	5.71	5.118 +.000/-.001	.59		6.50	.14	—	.16	3.23	3.35	4.41	5.71	—	7.48	.43		1.69	
P821S_KX8	190	190	160 +.000/-.025	15	55 +.021/+.002	215	10	—	6	82	85	112	190	—	250	13.5	M20x42	59	A12x8x70
	7.48	7.48	6.299 +.000/-.001	.59		8.46	.39	—	.24	3.23	3.35	4.41	7.48	—	9.84	.53		2.32	

Table No. 2 Dimensions (mm/inches)

Unit	B	K	M	M1	O
P221S_KX3	40	160	95.5	31	84
	1.57	6.30	3.76	1.22	3.31
P321S_KX3	40	184	95.5	31	96
	1.57	7.24	3.76	1.22	3.78
P421S_KX4	49	220	104	37.5	115
	1.93	8.66	4.09	1.48	4.53
P521S_KX5	60	277	132	45	129
	2.36	10.91	5.20	1.77	5.08
P721S_KX7	74	343	172.5	60	157
	2.91	13.50	6.79	2.36	6.18
P821S_KX8	92	417	210	75	213
	3.62	16.42	8.27	2.95	8.39

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

Part No. Explanation

P 4 2 1 S P R 0100 KX401VF 0030 MF

- **M**otor Plate with **F**lexiAdapt® Coupling
- Ratio (**0030** = 3.0:1)
- Right Angle Unit, Size **4**, **1** Stage
- Ratio (**0100** = 10.0:1)
- **R** – Normal Bearing
- **D** – Reinforced Bearings-Axial
- **Z** – Reinforced Bearings-Radial
- **G** – Shaft — no Key
- **P** – Output Shaft with Key
- Standard Housing
- No. of Gear Stages (**1** = 1 Stage, **2** = 2 Stages)
- Generation Number
- Unit No.
- "**P**" Series ServoFit Precision Planetary Gearhead

"PKX" Series–Right Angle ServoFit® Precision Planetary Gearhead Dimensional Data

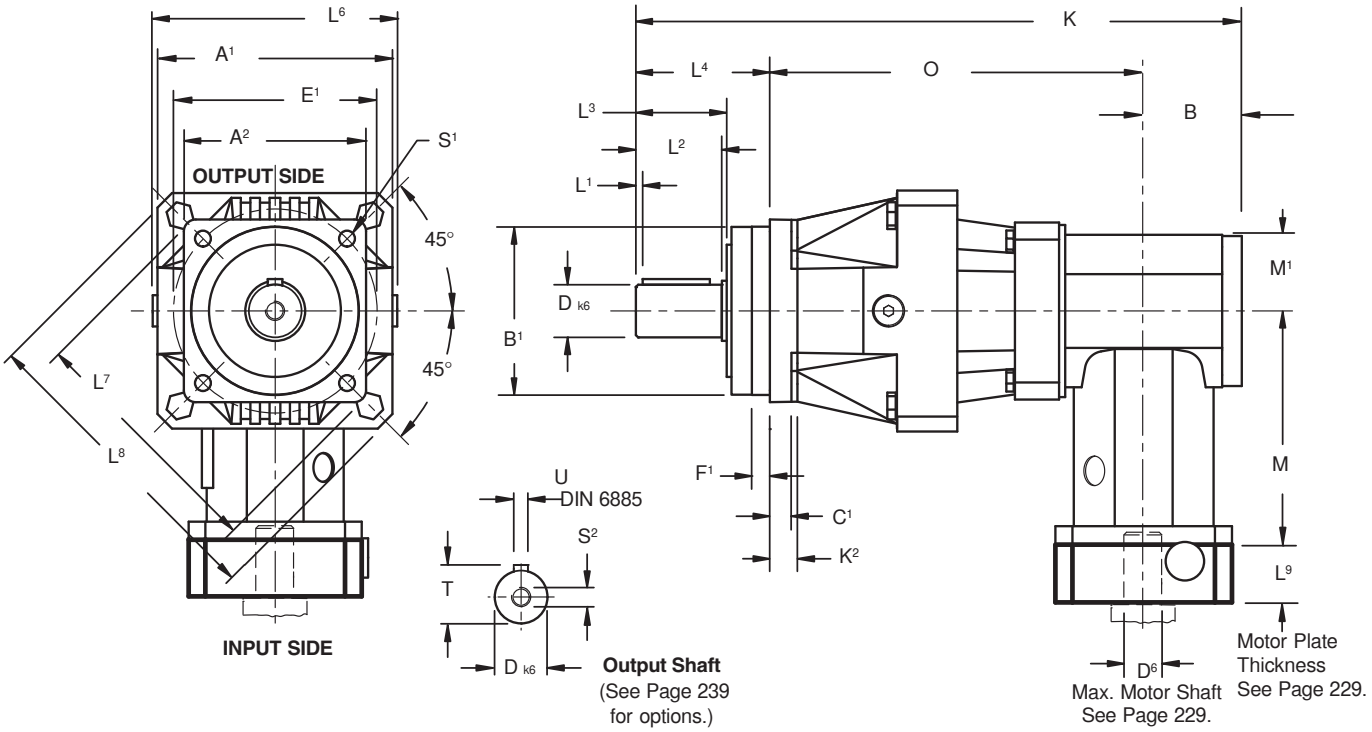


Table No. 3 **"PKX" Series – ServoFit Precision Planetary Gearhead Dimensions (mm/inches)**

Unit	A1	A2	B1 h6	C1	D k6	E1	F1	K2	L1	L2	L3	L4	L6	L7	L8	S1	S2	T	U
P222S_KX3	55	55	50 +.000/-.016	6	12 +.012/+.001	63	7.0	—	2	22	24	36	62	74	80	5.5	M4x13.5	13.5	A4x4x18
	2.17	2.17	1.969 +.0000/-.0006	.24		2.48	.28	—	.08	.87	.94	1.42	2.44	2.91	3.15	.22		.53	
P322S_KX3	72	72	60 +.000/-.019	7	16 +.012/+.001	75	7.5	—	2	28	30	48	79	92	92	5.5	M5x18	18	A5x5x22
	2.83	2.83	2.362 +.0000/-.0007	.28		2.95	.30	—	.08	1.10	1.18	1.89	3.11	3.62	3.62	.22		.71	
P422S_KX3	98	76	70 +.000/-.019	9	22 +.015/+.002	85	7.5	12	3	36	38	56	98	103.3	130	6.6	M8x19	24.5	A6x6x28
	3.86	2.99	2.756 +.0000/-.0007	.35		3.35	.30	.47	.12	1.42	1.50	2.20	3.86	4.07	5.12	.26		.96	
P522S_KX4	115	101	90 +.000/-.022	10	32 +.018/+.002	120	15	14	3	58	60	88	121	139	149	9	M12x28	35	A10x8x50
	4.53	3.98	3.543 +.0000/-.0009	.39		4.72	.59	.55	.12	2.28	2.36	3.46	4.76	5.47	5.87	.35		1.38	
P722S_KX5	145	145	130 +.000/-.025	15	40 +.018/+.002	165	3.5	—	4	82	85	112	145	—	190	11	M16x36	43	A12x8x70
	5.71	5.71	5.118 +.000/-.001	.59		6.50	.14	—	.16	3.23	3.35	4.41	5.71	—	7.48	.43		1.69	
P822S_KX7	190	190	160 +.000/-.025	15	55 +.021/+.002	215	10	—	6	82	85	112	190	—	250	13.5	M20x42	59	A16x10x70
	7.48	7.48	6.299 +.000/-.001	.59		8.46	.39	—	.24	3.23	3.35	4.41	7.48	—	9.84	.53		2.32	
P922S_KX8	225	212	180 +.000/-.025	17	75 +.021/+.002	250	10	22	7	105	109	143	225	285	300	17.5	M20x42	79.5	A20x12x90
	8.86	8.35	7.087 +.000/-.001	.67		9.84	.39	.87	.28	4.29	3.35	5.63	8.86	11.22	11.81	.69		3.13	

Part No. Explanation

P 4 2 2 S P R 0250 KX301VF 0030 MF

- **M**otor Plate with **F**lexiAdapt® Coupling
- Ratio(**0030** = 3.0:1)
- Right Angle Unit, Size **3**, **1** Stage
- Ratio (**0250** = 25.0:1)
- **R** – Normal Bearing
- **D** – Reinforced Bearings-Axial
- **Z** – Reinforced Bearings-Radial
- **G** – Shaft — no Key
- **P** – Output Shaft with Key
- Standard Housing
- No. of Gear Stages (**1** = 1 Stage, **2** = 2 Stages)
- Generation Number
- Unit No.
- "**P**" Series ServoFit Precision Planetary Gearhead

Table No. 4 Dimensions (mm/inches)

Unit	B	K	M	M1	O
P222S_KX3	40	192	95.5	31	116
	1.57	7.56	3.76	1.22	4.57
P322S_KX3	40	224	95.5	31	136
	1.57	8.82	3.76	1.22	5.35
P422S_KX3	40	249.5	95.5	31	153.5
	1.57	9.83	3.76	1.22	6.04
P522S_KX4	49	309.5	104	37.5	172.5
	1.93	12.19	4.09	1.48	6.79
P722S_KX5	60	378	132	45	206
	2.36	14.88	5.20	1.77	8.11
P822S_KX7	74	451.5	172.5	60	265.5
	2.91	17.76	6.79	2.36	10.45
P922S_KX8	92	575	210	75	340
	3.62	22.64	8.27	2.95	13.39

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

"PK" Series
ServoFit® Precision Planetary Gearhead
Performance Specification Overview

		Size	P5_K1	P7_K1	P7_K2	P8_K2	P8_K3	P9_K4
Acceleration Torque		in.lbs.	2,655	5,752	6,195	12,390	14,160	23,895
$M_{2B\ MAX}$		Nm	300	650	700	1,400	1,600	2,700
Output Torque Nom.		in.lbs.	1,860	3,898	3,898	8,850	8,850	17,700
M_{2N}		Nm	210	440	440	1,000	1,000	2,000
Input Speed Max.		Continuous	4,000	4,000	4,000	4,000	3,500	3,500
n_{1MAX}		Cyclic	6,000	6,000	5,500	5,500	5,000	5,000
Torsional Backlash Max. [1]								
$\Delta\varphi$		arcmin	≤5	≤4	≤4.5	≤3.5	≤4.5	≤3.5
Torsional Stiffness								
C_2		in.lbs./arcmin	230	407	398	566	956	2,186
		Nm/arcmin	26	46	45	64	108	247
Axial Load Maximum	R	lbs.	518	653	653	1,058	1,058	1,350
		N	2,300	2,900	2,900	4,700	4,700	6,000
F_{2AMAX} [2]	D	lbs.	788	1,013	1,013	1,688	1,688	2,250
		N	3,500	4,500	4,500	7,500	7,500	10,000
	Z	lbs.	360	450	450	810	810	1,125
		N	1,600	2,000	2,000	3,600	3,600	5,000
Radial Load Maximum [3]	R	lbs.	1,463	1,800	1,800	2,925	2,925	4,050
		N	6,500	8,000	8,000	13,000	13,000	18,000
F_{2RMAX} [2]	D	lbs.	1,575	2,025	2,025	3,375	3,375	4,500
		N	7,000	9,000	9,000	15,000	15,000	20,000
	Z	lbs.	1,800	2,250	2,250	4,050	4,050	6,075
		N	8,000	10,000	10,000	18,000	18,000	27,000
Tilting Moment Maximum [3]	R	in.lbs.	2,991	4,774	4,774	5,938	5,938	14,735
		Nm	338	536	536	897	897	1,665
M_{2Kmax} [2]	D	in.lbs.	3,593	5,735	5,735	10,089	10,089	18,320
		Nm	406	648	648	1,140	1,140	2,070
	Z	in.lbs.	3,682	5,929	5,929	10,992	10,992	22,125
		Nm	416	670	670	1,242	1,242	2,500
Weight		pounds	49	59	82	110	121	213
m		kg	22.4	26.5	37	50	55	96.4
Noise Level								
L_{PA}		dB(A) [5]	≤63	≤63	≤64	≤64	≤65	≤66
Efficiency (at Nom. Torque)								
h		%	≥ 93% — 95%					
Lubrication			Synthetic Oil — Lubricated for Life					
Degree of Protection			IP65 - FKM Shaft Seals					
Mounting Position (MUST BE SPECIFIED)			 EL1 EL2 EL3 EL4 EL5 EL6					
Direction of Rotation			See Page 247 for details.					
Ambient Temperature			0° C to +40°C (104° F) [Unit temperature ≤ 90° C Max.]					
Finish			Black					
Bearing Lifetime. [5]		hours	L_h > 10,000 hours if M_{2K}/M_{2A} < 1.25 and > 1.00					
L_h			L_h > 20,000 hours if M_{2K}/M_{2A} > 1.25 and < 1.50					
			L_h > 30,000 hours if M_{2K}/M_{2A} > 1.5					
Warranty			5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)					

[1] Tested at 1.5% of nominal torque and recorded on the output side of the gearhead. For lower than standard backlash, contact STOBER Technical Support.

[2] See Page 239 for output bearing options.

[3] Rating based on output speed (n_2) of 100 RPM. For values at other speeds see Page 239.

[4] Measurement at one (1) meter distance with input speed (n_1) of 2000 RPM.

[5] M_{2A} equals actual tilting moment of the application. See Page 239 for calculation details.

Refer to Page 250 for ServoFit Precision Planetary Gearhead Selection Procedure.

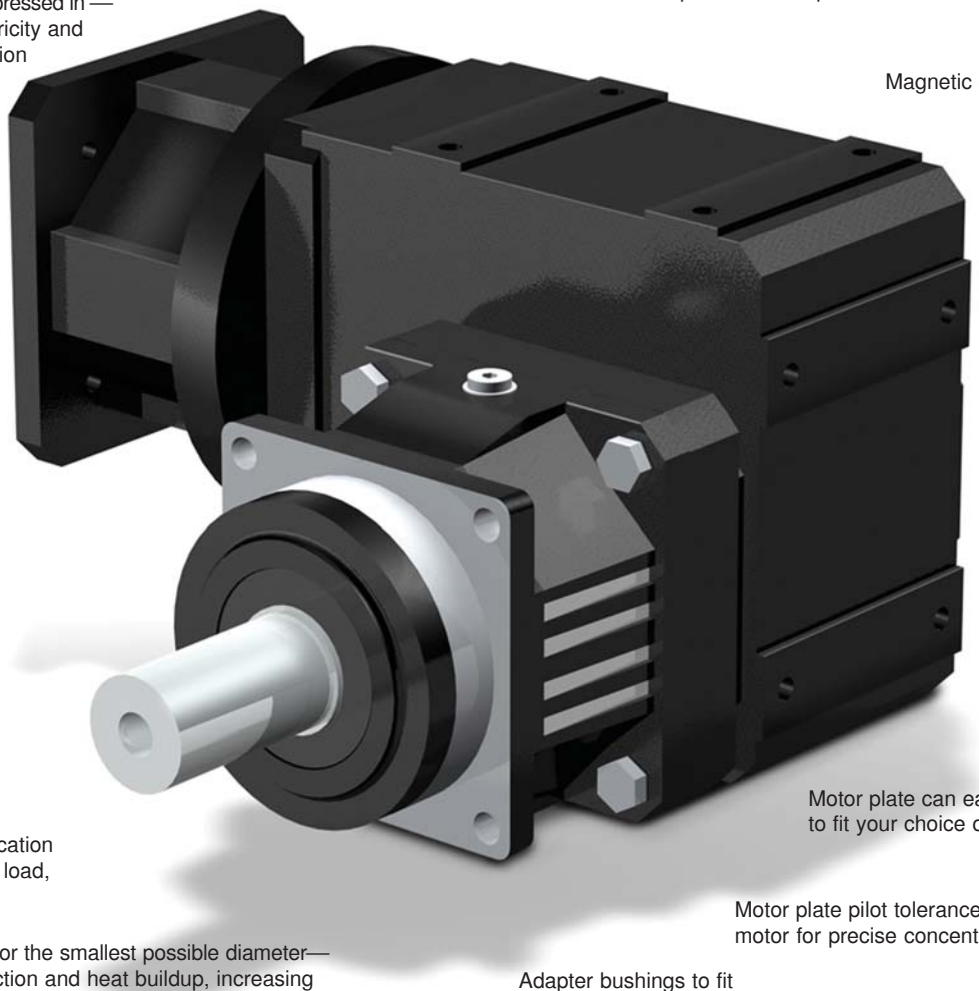
See web site for drawings.

"PK" Series
ServoFit® Precision Planetary Gearhead
Features

The "PK" Series ServoFit Precision Planetary Gearheads combines the "P" Series gearhead and the reduced backlash SMS “K” Series. These gear units have an input stage with ground helical gearing which makes for extremely quiet running. The ground spiral bevel gearset ensures the units to have extremely low backlash of ≤ 5 arcminutes.

Some other features are:

- Readily Attaches to Any Servo Motor (IEC, NEMA, or Customized Motor Plates*)
- 5 Year Limited Warranty (2 years on bearings, seals, etc.)
- Low Backlash
- High Input Speeds
- Ratios up to 561:1
- Advanced Gear Technology
- 93 to 95% Efficiency
- Quiet Running
- Compact
- Assembled in the U.S.A.



See web site for drawings.

"PK" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [1]		Output Torque Acceleration		Output Torque Peak [2]	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	$kgcm^2$	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
P521S_ _K102 with Motor Mounting Plate															
P521_0030 K102VF0040 MT10	12.00	12/1	3,300	2,800	4,500	5	1.51	202	22.8	1,063	120	1,071	121	1,423	161
P521_0030 K102VF0040 MT20	12.00	12/1	3,300	2,800	4,500	5	2.11	202	22.8	1,063	120	1,772	200	2,680	303
P521_0040 K102VF0040 MT10	16.00	16/1	3,300	2,800	4,500	4.5	1.49	219	24.8	1,428	161	1,428	161	1,897	214
P521_0040 K102VF0040 MT20	16.00	16/1	3,300	2,800	4,500	4.5	2.09	219	24.8	1,860	210	2,657	300	3,573	403
P521_0050 K102VF0040 MT10	20.00	20/1	3,300	2,800	4,500	4	1.47	233	26.3	1,785	202	1,785	202	2,372	268
P521_0050 K102VF0040 MT20	20.00	20/1	3,300	2,800	4,500	4	2.07	233	26.3	1,860	210	2,657	300	4,466	504
P521_0050 K102VF0056 MT10	27.84	7600/273	3,300	2,800	4,500	4	1.31	233	26.3	1,860	210	2,485	281	3,301	373
P521_0050 K102VF0056 MT20	27.84	7600/273	3,300	2,800	4,500	4	1.91	233	26.3	1,860	210	2,657	300	5,315	600
P521_0050 K102VF0060 MT10	30.00	30/1	3,300	2,800	4,500	4	1.07	233	26.3	1,860	210	2,537	286	3,370	380
P521_0050 K102VF0060 MT20	30.00	30/1	3,300	2,800	4,500	4	1.67	233	26.3	1,860	210	2,657	300	5,315	600
P521_0050 K102VF0066 MT10	33.22	299/9	3,600	3,300	5,000	4	1.00	233	26.3	1,860	210	2,657	300	3,669	414
P521_0050 K102VF0066 MT20	33.22	299/9	3,500	3,300	5,000	4	1.60	233	26.3	1,860	210	2,657	300	5,315	600
P521_0050 K102VF0083 MT10	41.55	1911/46	3,600	3,300	5,000	4	0.89	233	26.3	1,860	210	2,657	300	4,409	498
P521_0050 K102VF0083 MT20	41.55	1911/46	3,500	3,300	5,000	4	1.49	233	26.3	1,860	210	2,657	300	5,315	600
P521_0050 K102VF0092 MT10	46.25	8740/189	3,600	3,300	5,000	4	0.94	233	26.3	1,860	210	2,657	300	5,108	577
P521_0050 K102VF0092 MT20	46.25	8740/189	3,500	3,300	5,000	4	1.54	233	26.3	1,860	210	2,657	300	5,315	600
P521_0050 K102VF0115 MT10	57.83	1330/23	3,600	3,300	5,000	4	0.85	233	26.3	1,860	210	2,657	300	5,315	600
P521_0050 K102VF0115 MT20	57.83	1330/23	3,500	3,300	5,000	4	1.45	233	26.3	1,860	210	2,657	300	5,315	600
P521_0050 K102VF0140 MT10	70.57	494/7	4,000	3,800	5,500	4	0.79	233	26.3	1,860	210	2,657	300	5,315	600
P521_0050 K102VF0140 MT20	70.57	494/7	3,500	3,500	5,000	4	1.39	233	26.3	1,860	210	2,657	300	5,315	600
P521_0050 K102VF0175 MT10	87.82	10450/119	4,000	3,800	5,500	4	0.74	233	26.3	1,860	210	2,657	300	5,315	600
P521_0050 K102VF0175 MT20	87.82	10450/119	3,500	3,500	5,000	4	1.34	233	26.3	1,860	210	2,657	300	5,315	600
P521_0050 K102VF0230 MT10	116.3	5700/49	4,000	4,000	6,000	4	0.69	233	26.3	1,860	210	2,657	300	5,315	600
P521_0050 K102VF0230 MT20	116.3	5700/49	3,500	3,500	5,000	4	1.29	233	26.3	1,860	210	2,657	300	5,315	600
P521_0050 K102VF0280 MT10	140.2	2945/21	4,000	4,000	6,000	4	0.67	233	26.3	1,860	210	2,657	300	5,315	600
P521_0050 K102VF0280 MT20	140.2	2945/21	3,500	3,500	5,000	4	1.27	233	26.3	1,860	210	2,657	300	5,315	600
P521_0050 K102VF0350 MT10	175.5	3686/21	4,000	4,000	6,000	4	0.64	233	26.3	1,860	210	2,657	300	5,315	600
P521_0050 K102VF0350 MT20	175.5	3686/21	3,500	3,500	5,000	4	1.24	233	26.3	1,860	210	2,657	300	5,315	600
P521_0050 K102VF0470 MT10	234.6	11495/49	4,000	4,000	6,000	4	0.63	233	26.3	1,860	210	2,657	300	5,315	600
P521_0050 K102VF0560 MT10	280.5	5890/21	4,000	4,000	6,000	4	0.62	233	26.3	1,860	210	2,657	300	5,315	600

[1] Maximum torque for continuous input RPM - horizontal output position.

[2] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 5, 6
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL3 and EL4
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

See web site for drawings.

"PK" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal 1)		Output Torque Acceleration		Output Torque Peak 2)	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
P721S_ _K102 with Motor Mounting Plate Continued Next Page															
P721_0070 K102VF0040 MT10	28.00	28/1	3,300	2,800	4,500	4	1.49	418	47.2	2,499	282	2,499	282	3,320	375
P721_0070 K102VF0040 MT20	28.00	28/1	3,300	2,800	4,500	4	2.09	418	47.2	3,479	393	4,706	531	6,252	706
P721_0070 K102VF0056 MT10	38.98	1520/39	3,300	2,800	4,500	4	1.32	418	47.2	3,479	393	3,479	393	4,622	522
P721_0070 K102VF0056 MT20	38.98	1520/39	3,300	2,800	4,500	4	1.92	418	47.2	3,885	439	5,758	650	8,703	983
P721_0100 K102VF0040 MT10	40.00	40/1	3,300	2,800	4,500	3.5	1.46	409	46.1	2,657	300	3,571	403	4,744	536
P721_0100 K102VF0040 MT20	40.00	40/1	3,300	2,800	4,500	3.5	2.06	409	46.1	2,657	300	4,429	500	8,858	1,000
P721_0070 K102VF0060 MT10	42.00	42/1	3,300	2,800	4,500	4	1.08	418	47.2	3,552	401	3,552	401	4,718	533
P721_0070 K102VF0060 MT20	42.00	42/1	3,300	2,800	4,500	4	1.68	418	47.2	3,898	440	5,758	650	8,885	1,003
P721_0070 K102VF0066 MT10	46.51	2093/45	3,600	3,300	5,000	4	1.01	418	47.2	3,867	437	3,867	437	5,137	580
P721_0070 K102VF0066 MT20	46.51	2093/45	3,500	3,300	5,000	4	1.61	418	47.2	3,898	440	5,758	650	9,674	1,092
P721_0100 K102VF0056 MT10	55.68	15200/273	3,300	2,800	4,500	3.5	1.30	409	46.1	2,657	300	4,429	500	6,603	745
P721_0100 K102VF0056 MT20	55.68	15200/273	3,300	2,800	4,500	3.5	1.90	409	46.1	2,657	300	4,429	500	8,858	1,000
P721_0070 K102VF0083 MT10	58.16	13377/230	3,600	3,300	5,000	4	0.89	418	47.2	3,898	440	4,646	524	6,172	697
P721_0070 K102VF0083 MT20	58.16	13377/230	3,500	3,300	5,000	4	1.49	418	47.2	3,898	440	5,758	650	11,127	1,256
P721_0100 K102VF0060 MT10	60.00	60/1	3,300	2,800	4,500	3.5	1.07	409	46.1	2,657	300	4,429	500	6,741	761
P721_0100 K102VF0060 MT20	60.00	60/1	3,300	2,800	4,500	3.5	1.67	409	46.1	2,657	300	4,429	500	8,858	1,000
P721_0070 K102VF0092 MT10	64.74	1748/27	3,600	3,300	5,000	4	0.95	418	47.2	3,898	440	5,383	608	7,152	807
P721_0070 K102VF0092 MT20	64.74	1748/27	3,500	3,300	5,000	4	1.55	418	47.2	3,898	440	5,758	650	11,127	1,256
P721_0100 K102VF0066 MT10	66.44	598/9	3,600	3,300	5,000	3.5	1.00	409	46.1	2,657	300	4,429	500	7,339	829
P721_0100 K102VF0066 MT20	66.44	598/9	3,500	3,300	5,000	3.5	1.60	409	46.1	2,657	300	4,429	500	8,858	1,000
P721_0070 K102VF0100 MT10	70.98	3549/50	4,000	3,800	5,500	4	0.82	418	47.2	3,898	440	5,475	618	7,274	821
P721_0070 K102VF0100 MT20	70.98	3549/50	3,500	3,500	5,000	4	1.42	418	47.2	3,898	440	5,758	650	11,127	1,256
P721_0070 K102VF0115 MT10	80.96	1862/23	3,600	3,300	5,000	4	0.85	418	47.2	3,898	440	5,758	650	8,591	970
P721_0070 K102VF0115 MT20	80.96	1862/23	3,500	3,300	5,000	4	1.45	418	47.2	3,898	440	5,758	650	11,127	1,256
P721_0100 K102VF0083 MT10	83.09	1911/23	3,600	3,300	5,000	3.5	0.89	409	46.1	2,657	300	4,429	500	8,817	995
P721_0100 K102VF0083 MT20	83.09	1911/23	3,500	3,300	5,000	3.5	1.49	409	46.1	2,657	300	4,429	500	8,858	1,000
P721_0070 K102VF0125 MT10	88.33	3003/34	4,000	3,800	5,500	4	0.75	418	47.2	3,898	440	5,758	650	8,691	981
P721_0070 K102VF0125 MT20	88.33	3003/34	3,500	3,500	5,000	4	1.35	418	47.2	3,898	440	5,758	650	11,127	1,256
P721_0100 K102VF0092 MT10	92.49	17480/189	3,600	3,300	5,000	3.5	0.94	409	46.1	2,657	300	4,429	500	8,858	1,000
P721_0100 K102VF0092 MT20	92.49	17480/189	3,500	3,300	5,000	3.5	1.54	409	46.1	2,657	300	4,429	500	8,858	1,000
P721_0070 K102VF0140 MT10	98.80	494/5	4,000	3,800	5,500	4	0.79	418	47.2	3,898	440	5,758	650	10,124	1,143
P721_0070 K102VF0140 MT20	98.80	494/5	3,500	3,500	5,000	4	1.39	418	47.2	3,898	440	5,758	650	11,127	1,256
P721_0100 K102VF0115 MT10	115.7	2660/23	3,600	3,300	5,000	3.5	0.85	409	46.1	2,657	300	4,429	500	8,858	1,000
P721_0100 K102VF0115 MT20	115.7	2660/23	3,500	3,300	5,000	3.5	1.45	409	46.1	2,657	300	4,429	500	8,858	1,000

Motor Shaft

Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48

Mounting Position and Output Side must be specified when ordered.

See web site for drawings.

"PK" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

P721S_ _K102 with Motor Mounting Plate Continued

Part Number	Reducer Ratio i		Input RPM Maximum			Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque					
			Continuous		Cyclic					Nominal [1]		Acceleration		Peak [2]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
P721_0070 K102VF0165 MT10	117.0	117/1	4,000	4,000	6,000	4	0.70	418	47.2	3,898	440	5,758	650	10,967	1,238
P721_0070 K102VF0165 MT20	117.0	117/1	3,500	3,500	5,000	4	1.30	418	47.2	3,898	440	5,758	650	10,967	1,238
P721_0070 K102VF0175 MT10	122.9	2090/17	4,000	3,800	5,500	4	0.74	418	47.2	3,898	440	5,758	650	11,127	1,256
P721_0070 K102VF0175 MT20	122.9	2090/17	3,500	3,500	5,000	4	1.34	418	47.2	3,898	440	5,758	650	11,127	1,256
P721_0070 K102VF0200 MT10	141.1	2821/20	4,000	4,000	6,000	4	0.67	418	47.2	3,898	440	5,758	650	11,127	1,256
P721_0070 K102VF0200 MT20	141.1	2821/20	3,500	3,500	5,000	4	1.27	418	47.2	3,898	440	5,758	650	11,127	1,256
P721_0070 K102VF0230 MT10	162.9	1140/7	4,000	4,000	6,000	4	0.69	418	47.2	3,898	440	5,758	650	11,127	1,256
P721_0070 K102VF0230 MT20	162.9	1140/7	3,500	3,500	5,000	4	1.29	418	47.2	3,898	440	5,758	650	11,127	1,256
P721_0070 K102VF0250 MT10	176.5	8827/50	4,000	4,000	6,000	4	0.65	418	47.2	3,898	440	5,758	650	11,127	1,256
P721_0070 K102VF0250 MT20	176.5	8827/50	3,500	3,500	5,000	4	1.25	418	47.2	3,898	440	5,758	650	11,127	1,256
P721_0070 K102VF0280 MT10	196.3	589/3	4,000	4,000	6,000	4	0.67	418	47.2	3,898	440	5,758	650	11,127	1,256
P721_0070 K102VF0280 MT20	196.3	589/3	3,500	3,500	5,000	4	1.27	418	47.2	3,898	440	5,758	650	11,127	1,256
P721_0100 K102VF0230 MT10	232.7	11400/49	4,000	4,000	6,000	3.5	0.69	409	46.1	2,657	300	4,429	500	8,858	1,000
P721_0100 K102VF0230 MT20	232.7	11400/49	3,500	3,500	5,000	3.5	1.29	409	46.1	2,657	300	4,429	500	8,858	1,000
P721_0070 K102VF0340 MT10	235.9	4719/20	4,000	4,000	6,000	4	0.63	418	47.2	3,898	440	5,268	595	9,331	1,053
P721_0070 K102VF0350 MT10	245.7	3686/15	4,000	4,000	6,000	4	0.64	418	47.2	3,898	440	5,758	650	11,127	1,256
P721_0070 K102VF0350 MT20	245.7	3686/15	3,500	3,500	5,000	4	1.24	418	47.2	3,898	440	5,758	650	11,127	1,256
P721_0100 K102VF0280 MT10	280.5	5890/21	4,000	4,000	6,000	3.5	0.67	409	46.1	2,657	300	4,429	500	8,858	1,000
P721_0100 K102VF0280 MT20	280.5	5890/21	3,500	3,500	5,000	3.5	1.27	409	46.1	2,657	300	4,429	500	8,858	1,000
P721_0070 K102VF0400 MT10	282.1	2821/10	4,000	4,000	6,000	4	0.62	418	47.2	3,697	417	4,436	501	6,105	689
P721_0070 K102VF0470 MT10	328.4	2299/7	4,000	4,000	6,000	4	0.63	418	47.2	3,898	440	5,758	650	11,127	1,256
P721_0100 K102VF0350 MT10	351.1	7372/21	4,000	4,000	6,000	3.5	0.64	409	46.1	2,657	300	4,429	500	8,858	1,000
P721_0100 K102VF0350 MT20	351.1	7372/21	3,500	3,500	5,000	3.5	1.24	409	46.1	2,657	300	4,429	500	8,858	1,000
P721_0070 K102VF0500 MT10	352.2	35217/100	4,000	4,000	6,000	4	0.62	418	47.2	3,004	339	3,604	407	6,385	721
P721_0070 K102VF0560 MT10	392.7	1178/3	4,000	4,000	6,000	4	0.62	418	47.2	3,898	440	5,758	650	8,498	959
P721_0100 K102VF0470 MT10	469.2	22990/49	4,000	4,000	6,000	3.5	0.63	409	46.1	2,657	300	4,429	500	8,858	1,000
P721_0070 K102VF0700 MT10	490.2	2451/5	4,000	4,000	6,000	4	0.61	418	47.2	3,898	440	5,017	566	8,888	1,003
P721_0100 K102VF0560 MT10	561.0	11780/21	4,000	4,000	6,000	3.5	0.62	409	46.1	2,657	300	4,429	500	8,858	1,000

[1] Maximum torque for continuous input RPM - horizontal output position.

[2] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 5, 6
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL3 and EL4
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

See web site for drawings.

"PK" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal 1)		Output Torque Acceleration		Output Torque Peak 2)	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	$kgcm^2$	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
P721S_ _K202 with Motor Mounting Plate Continued Next Page															
P721_0030 K202VF0040 MT10	12.00	12/1	3,000	2,600	4,000	4.5	3.59	341	38.5	1,143	129	1,143	129	1,518	171
P721_0030 K202VF0040 MT20	12.00	12/1	3,000	2,600	4,000	4.5	4.19	341	38.5	2,480	280	4,401	497	6,711	758
P721_0030 K202VF0040 MT30	12.00	12/1	3,000	2,600	4,000	4.5	8.99	341	38.5	2,480	280	4,429	500	6,711	758
P721_0040 K202VF0040 MT10	16.00	16/1	3,000	2,600	4,000	4.5	3.29	393	44.4	1,524	172	1,524	172	2,024	229
P721_0040 K202VF0040 MT20	16.00	16/1	3,000	2,600	4,000	4.5	3.89	393	44.4	3,550	401	5,867	662	8,948	1,010
P721_0040 K202VF0040 MT30	16.00	16/1	3,000	2,600	4,000	4.5	8.69	393	44.4	3,550	401	5,997	677	8,948	1,010
P721_0050 K202VF0040 MT10	20.00	20/1	3,000	2,600	4,000	4	3.20	419	47.3	1,904	215	1,904	215	2,530	286
P721_0050 K202VF0040 MT20	20.00	20/1	3,000	2,600	4,000	4	3.80	419	47.3	3,898	440	6,201	700	11,185	1,263
P721_0050 K202VF0040 MT30	20.00	20/1	3,000	2,600	4,000	4	8.60	419	47.3	3,898	440	6,201	700	11,185	1,263
P721_0050 K202VF0052 MT20	25.89	10535/407	3,000	2,600	4,000	4	2.94	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0052 MT30	25.89	10535/407	3,000	2,600	4,000	4	7.74	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0060 MT10	30.00	30/1	3,000	2,600	4,000	4	2.38	419	47.3	2,808	317	2,808	317	3,730	421
P721_0050 K202VF0060 MT20	30.00	30/1	3,000	2,600	4,000	4	2.98	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0060 MT30	30.00	30/1	3,000	2,600	4,000	4	7.78	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0067 MT10	33.42	11395/341	3,500	3,100	4,500	4	1.76	419	47.3	2,953	333	2,953	333	3,923	443
P721_0050 K202VF0067 MT20	33.42	11395/341	3,500	3,100	4,500	4	2.36	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0067 MT30	33.42	11395/341	3,500	3,100	4,000	4	7.16	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0084 MT10	41.99	12470/297	3,500	3,100	4,500	4	1.41	419	47.3	3,584	405	3,584	405	4,761	538
P721_0050 K202VF0084 MT20	41.99	12470/297	3,500	3,100	4,500	4	2.01	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0084 MT30	41.99	12470/297	3,500	3,100	4,000	4	6.81	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0092 MT10	45.95	11395/248	3,500	3,100	4,500	4	1.56	419	47.3	3,898	440	4,060	458	5,394	609
P721_0050 K202VF0092 MT20	45.95	11395/248	3,500	3,100	4,500	4	2.16	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0092 MT30	45.95	11395/248	3,500	3,100	4,000	4	6.96	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0115 MT10	57.73	6235/108	3,500	3,100	4,500	4	1.29	419	47.3	3,898	440	4,928	556	6,547	739
P721_0050 K202VF0115 MT20	57.73	6235/108	3,500	3,100	4,500	4	1.89	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0115 MT30	57.73	6235/108	3,500	3,100	4,000	4	6.69	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0140 MT10	69.26	14405/208	3,900	3,500	5,000	4	1.12	419	47.3	3,898	440	5,704	644	7,578	856
P721_0050 K202VF0140 MT20	69.26	14405/208	3,500	3,500	5,000	4	1.72	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0140 MT30	69.26	14405/208	3,500	3,500	4,000	4	6.52	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0175 MT10	87.35	2795/32	3,900	3,500	5,000	4	0.97	419	47.3	3,898	440	6,201	700	9,190	1,037
P721_0050 K202VF0175 MT20	87.35	2795/32	3,500	3,500	5,000	4	1.57	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0175 MT30	87.35	2795/32	3,500	3,500	4,000	4	6.37	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0230 MT10	115.9	14835/128	4,000	3,900	5,500	4	0.84	419	47.3	3,898	440	6,201	700	11,532	1,302
P721_0050 K202VF0230 MT20	115.9	14835/128	3,500	3,500	5,000	4	1.44	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0230 MT30	115.9	14835/128	3,500	3,500	4,000	4	6.24	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0280 MT10	139.8	559/4	4,000	3,900	5,500	4	0.78	419	47.3	3,898	440	6,201	700	12,401	1,400

Motor Shaft

Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48

Mounting Position and Output Side must be specified when ordered.

"PK" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [1]		Output Torque Acceleration		Output Torque Peak [2]	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	$kgcm^2$	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
P721S_ _K202 with Motor Mounting Plate Continued															
P721_0050 K202VF0280 MT20	139.8	559/4	3,500	3,500	5,000	4	1.38	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0280 MT30	139.8	559/4	3,500	3,500	4,000	4	6.18	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0350 MT10	172.8	9675/56	4,000	3,900	5,500	4	0.73	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0350 MT20	172.8	9675/56	3,500	3,500	5,000	4	1.33	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0350 MT30	172.8	9675/56	3,500	3,500	4,000	4	6.13	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0460 MT10	231.1	1849/8	4,000	3,900	5,500	4	0.68	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0460 MT20	231.1	1849/8	3,500	3,500	5,000	4	1.28	419	47.3	3,898	440	6,201	700	12,401	1,400
P721_0050 K202VF0560 MT10	277.7	6665/24	4,000	3,900	5,500	4	0.65	419	47.3	3,898	440	6,201	700	11,976	1,352
P821S_ _K202 with Motor Mounting Plate Continued Next Page															
P821_0070 K202VF0040 MT10	28.00	28/1	3,000	2,600	4,000	3.5	3.37	1,168	131.9	2,666	301	2,666	301	3,542	400
P821_0070 K202VF0040 MT20	28.00	28/1	3,000	2,600	4,000	3.5	3.97	1,168	131.9	6,212	701	10,268	1,159	15,659	1,768
P821_0070 K202VF0040 MT30	28.00	28/1	3,000	2,600	4,000	3.5	8.77	1,168	131.9	6,212	701	10,495	1,185	15,659	1,768
P821_0070 K202VF0044 MT10	30.55	336/11	3,000	2,600	4,000	3.5	2.99	1,168	131.9	2,859	323	2,859	323	3,798	429
P821_0070 K202VF0044 MT20	30.55	336/11	3,000	2,600	4,000	3.5	3.59	1,168	131.9	6,395	722	10,804	1,220	16,791	1,896
P821_0070 K202VF0044 MT30	30.55	336/11	3,000	2,600	4,000	3.5	8.39	1,168	131.9	6,395	722	10,804	1,220	16,791	1,896
P821_0070 K202VF0052 MT20	36.24	14749/407	3,000	2,600	4,000	3.5	3.04	1,168	131.9	6,770	764	11,437	1,291	19,658	2,219
P821_0070 K202VF0052 MT30	36.24	14749/407	3,000	2,600	4,000	3.5	7.84	1,168	131.9	6,770	764	11,437	1,291	19,658	2,219
P821_0100 K202VF0040 MT10	40.00	40/1	3,000	2,600	4,000	3.5	3.22	1,185	133.8	3,809	430	3,809	430	5,060	571
P821_0100 K202VF0040 MT20	40.00	40/1	3,000	2,600	4,000	3.5	3.82	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0100 K202VF0040 MT30	40.00	40/1	3,000	2,600	4,000	3.5	8.62	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0070 K202VF0060 MT10	42.00	42/1	3,000	2,600	4,000	3.5	2.46	1,168	131.9	3,931	444	3,931	444	5,222	590
P821_0070 K202VF0060 MT20	42.00	42/1	3,000	2,600	4,000	3.5	3.06	1,168	131.9	7,111	803	12,013	1,356	23,086	2,606
P821_0070 K202VF0060 MT30	42.00	42/1	3,000	2,600	4,000	3.5	7.86	1,168	131.9	7,111	803	12,013	1,356	23,086	2,606
P821_0070 K202VF0067 MT10	46.78	15953/341	3,500	3,100	4,500	3.5	1.82	1,168	131.9	4,134	467	4,134	467	5,492	620
P821_0070 K202VF0067 MT20	46.78	15953/341	3,500	3,100	4,500	3.5	2.42	1,168	131.9	7,371	832	12,401	1,400	24,278	2,741
P821_0070 K202VF0067 MT30	46.78	15953/341	3,500	3,100	4,000	3.5	7.22	1,168	131.9	7,371	832	12,401	1,400	24,278	2,741
P821_0070 K202VF0071 MT20	49.83	14749/296	3,000	2,600	4,000	3.5	2.66	1,168	131.9	7,528	850	12,401	1,400	24,900	2,811
P821_0070 K202VF0071 MT30	49.83	14749/296	3,000	2,600	4,000	3.5	7.46	1,168	131.9	7,528	850	12,401	1,400	24,900	2,811
P821_0100 K202VF0052 MT20	51.77	21070/407	3,000	2,600	4,000	3.5	2.95	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0100 K202VF0052 MT30	51.77	21070/407	3,000	2,600	4,000	3.5	7.75	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0070 K202VF0084 MT10	58.78	17458/297	3,500	3,100	4,500	3.5	1.45	1,168	131.9	5,018	566	5,018	566	6,666	753
P821_0070 K202VF0084 MT20	58.78	17458/297	3,500	3,100	4,500	3.5	2.05	1,168	131.9	7,954	898	12,401	1,400	24,900	2,811
P821_0070 K202VF0084 MT30	58.78	17458/297	3,500	3,100	4,000	3.5	6.85	1,168	131.9	7,954	898	12,401	1,400	24,900	2,811
P821_0100 K202VF0060 MT10	60.00	60/1	3,000	2,600	4,000	3.5	2.39	1,185	133.8	5,615	634	5,615	634	7,460	842
P821_0100 K202VF0060 MT20	60.00	60/1	3,000	2,600	4,000	3.5	2.99	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0100 K202VF0060 MT30	60.00	60/1	3,000	2,600	4,000	3.5	7.79	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400

[1] Maximum torque for continuous input RPM - horizontal output position.

[2] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 5, 6
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL3 and EL4
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

See web site for drawings.

"PK" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal 1)		Output Torque Acceleration		Output Torque Peak 2)	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
P821S_ _K202 with Motor Mounting Plate Continued Next Page															
P821_0070 K202VF0092 MT10	64.33	15953/248	3,500	3,100	4,500	3.5	1.59	1,168	131.9	5,684	642	5,684	642	7,552	853
P821_0070 K202VF0092 MT20	64.33	15953/248	3,500	3,100	4,500	3.5	2.19	1,168	131.9	8,197	925	12,401	1,400	24,900	2,811
P821_0070 K202VF0092 MT30	64.33	15953/248	3,500	3,100	4,000	3.5	6.99	1,168	131.9	8,197	925	12,401	1,400	24,900	2,811
P821_0100 K202VF0067 MT10	66.83	22790/341	3,500	3,100	4,500	3.5	1.77	1,185	133.8	5,905	667	5,905	667	7,846	886
P821_0100 K202VF0067 MT20	66.83	22790/341	3,500	3,100	4,500	3.5	2.37	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0100 K202VF0067 MT30	66.83	22790/341	3,500	3,100	4,000	3.5	7.17	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0070 K202VF0100 MT10	70.51	20167/286	3,900	3,500	5,000	3.5	1.23	1,168	131.9	5,808	656	5,808	656	7,716	871
P821_0070 K202VF0100 MT20	70.51	20167/286	3,500	3,500	5,000	3.5	1.83	1,168	131.9	8,452	954	12,401	1,400	24,900	2,811
P821_0070 K202VF0100 MT30	70.51	20167/286	3,500	3,500	4,000	3.5	6.63	1,168	131.9	8,452	954	12,401	1,400	24,900	2,811
P821_0070 K202VF0115 MT10	80.82	8729/108	3,500	3,100	4,500	3.5	1.31	1,168	131.9	6,899	779	6,899	779	9,166	1,035
P821_0070 K202VF0115 MT20	80.82	8729/108	3,500	3,100	4,500	3.5	1.91	1,168	131.9	8,845	999	12,401	1,400	24,900	2,811
P821_0070 K202VF0115 MT30	80.82	8729/108	3,500	3,100	4,000	3.5	6.71	1,168	131.9	8,845	999	12,401	1,400	24,900	2,811
P821_0100 K202VF0084 MT10	83.97	24940/297	3,500	3,100	4,500	3.5	1.42	1,185	133.8	6,201	700	7,168	809	9,523	1,075
P821_0100 K202VF0084 MT20	83.97	24940/297	3,500	3,100	4,500	3.5	2.02	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0100 K202VF0084 MT30	83.97	24940/297	3,500	3,100	4,000	3.5	6.82	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0070 K202VF0125 MT10	88.94	3913/44	3,900	3,500	5,000	3.5	1.04	1,168	131.9	7,043	795	7,043	795	9,357	1,056
P821_0070 K202VF0125 MT20	88.94	3913/44	3,500	3,500	5,000	3.5	1.64	1,168	131.9	8,858	1,000	12,401	1,400	24,900	2,811
P821_0070 K202VF0125 MT30	88.94	3913/44	3,500	3,500	4,000	3.5	6.44	1,168	131.9	8,858	1,000	12,401	1,400	24,900	2,811
P821_0100 K202VF0092 MT10	91.90	11395/124	3,500	3,100	4,500	3.5	1.56	1,185	133.8	6,201	700	8,121	917	10,788	1,218
P821_0100 K202VF0092 MT20	91.90	11395/124	3,500	3,100	4,500	3.5	2.16	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0100 K202VF0092 MT30	91.90	11395/124	3,500	3,100	4,000	3.5	6.96	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0070 K202VF0140 MT10	96.96	20167/208	3,900	3,500	5,000	3.5	1.13	1,168	131.9	7,986	902	7,986	902	10,609	1,198
P821_0070 K202VF0140 MT20	96.96	20167/208	3,500	3,500	5,000	3.5	1.73	1,168	131.9	8,858	1,000	12,401	1,400	24,900	2,811
P821_0070 K202VF0140 MT30	96.96	20167/208	3,500	3,500	4,000	3.5	6.53	1,168	131.9	8,858	1,000	12,401	1,400	24,900	2,811
P821_0100 K202VF0115 MT10	115.5	6235/54	3,500	3,100	4,500	3.5	1.29	1,185	133.8	6,201	700	9,856	1,113	13,094	1,478
P821_0100 K202VF0115 MT20	115.5	6235/54	3,500	3,100	4,500	3.5	1.89	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0100 K202VF0115 MT30	115.5	6235/54	3,500	3,100	4,000	3.5	6.69	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0070 K202VF0170 MT10	118.0	20769/176	4,000	3,900	5,500	3.5	0.88	1,168	131.9	8,838	998	8,838	998	11,742	1,326
P821_0070 K202VF0170 MT20	118.0	20769/176	3,500	3,500	5,000	3.5	1.48	1,168	131.9	8,858	1,000	12,401	1,400	24,900	2,811
P821_0070 K202VF0170 MT30	118.0	20769/176	3,500	3,500	4,000	3.5	6.28	1,168	131.9	8,858	1,000	12,401	1,400	24,900	2,811
P821_0070 K202VF0175 MT10	122.3	3913/32	3,900	3,500	5,000	3.5	0.98	1,168	131.9	8,858	1,000	9,684	1,093	12,866	1,452
P821_0070 K202VF0175 MT20	122.3	3913/32	3,500	3,500	5,000	3.5	1.58	1,168	131.9	8,858	1,000	12,401	1,400	24,900	2,811
P821_0070 K202VF0175 MT30	122.3	3913/32	3,500	3,500	4,000	3.5	6.38	1,168	131.9	8,858	1,000	12,401	1,400	24,900	2,811
P821_0100 K202VF0140 MT10	138.5	14405/104	3,900	3,500	5,000	3.5	1.12	1,185	133.8	6,201	700	10,630	1,200	15,156	1,711
P821_0100 K202VF0140 MT20	138.5	14405/104	3,500	3,500	5,000	3.5	1.72	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0100 K202VF0140 MT30	138.5	14405/104	3,500	3,500	4,000	3.5	6.52	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400

Motor Shaft

Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48

Mounting Position and Output Side must be specified when ordered.

See web site for drawings.

"PK" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

P821S_ _K202 with Motor Mounting Plate Continued

Part Number	Reducer Ratio i		Input RPM Maximum			Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque					
			Continuous		Cyclic					Nominal [1]		Acceleration		Peak [2]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	$kgcm^2$	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
P821_0070 K202VF0200 MT10	142.3	7826/55	4,000	3,900	5,500	3.5	0.81	1,168	131.9	8,858	1,000	10,214	1,153	13,569	1,532
P821_0070 K202VF0200 MT20	142.3	7826/55	3,500	3,500	5,000	3.5	1.41	1,168	131.9	8,858	1,000	12,401	1,400	24,900	2,811
P821_0070 K202VF0200 MT30	142.3	7826/55	3,500	3,500	4,000	3.5	6.21	1,168	131.9	8,858	1,000	12,401	1,400	24,900	2,811
P821_0070 K202VF0230 MT10	162.3	20769/128	4,000	3,900	5,500	3.5	0.85	1,168	131.9	8,858	1,000	12,153	1,372	16,145	1,823
P821_0070 K202VF0230 MT20	162.3	20769/128	3,500	3,500	5,000	3.5	1.45	1,168	131.9	8,858	1,000	12,401	1,400	24,900	2,811
P821_0070 K202VF0230 MT30	162.3	20769/128	3,500	3,500	4,000	3.5	6.25	1,168	131.9	8,858	1,000	12,401	1,400	24,900	2,811
P821_0100 K202VF0175 MT10	174.7	2795/16	3,900	3,500	5,000	3.5	0.97	1,185	133.8	6,201	700	10,630	1,200	18,379	2,075
P821_0100 K202VF0175 MT20	174.7	2795/16	3,500	3,500	5,000	3.5	1.57	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0100 K202VF0175 MT30	174.7	2795/16	3,500	3,500	4,000	3.5	6.37	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0070 K202VF0250 MT10	175.9	1935/11	4,000	3,900	5,500	3.5	0.74	1,168	131.9	8,858	1,000	12,051	1,360	16,010	1,807
P821_0070 K202VF0250 MT20	175.9	1935/11	3,500	3,500	5,000	3.5	1.34	1,168	131.9	8,858	1,000	12,401	1,400	24,900	2,811
P821_0070 K202VF0250 MT30	175.9	1935/11	3,500	3,500	4,000	3.5	6.14	1,168	131.9	8,858	1,000	12,401	1,400	24,900	2,811
P821_0070 K202VF0280 MT10	195.7	3913/20	4,000	3,900	5,500	3.5	0.78	1,168	131.9	8,858	1,000	12,401	1,400	18,658	2,106
P821_0070 K202VF0280 MT20	195.7	3913/20	3,500	3,500	5,000	3.5	1.38	1,168	131.9	8,858	1,000	12,401	1,400	24,900	2,811
P821_0070 K202VF0280 MT30	195.7	3913/20	3,500	3,500	4,000	3.5	6.18	1,168	131.9	8,858	1,000	12,401	1,400	24,900	2,811
P821_0100 K202VF0230 MT10	231.8	14835/64	4,000	3,900	5,500	3.5	0.84	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0100 K202VF0230 MT20	231.8	14835/64	3,500	3,500	5,000	3.5	1.44	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0100 K202VF0230 MT30	231.8	14835/64	3,500	3,500	4,000	3.5	6.24	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0070 K202VF0340 MT10	235.3	12943/55	4,000	3,900	5,500	3.5	0.69	1,168	131.9	8,858	1,000	11,116	1,255	19,690	2,223
P821_0070 K202VF0340 MT20	235.3	12943/55	3,500	3,500	5,000	3.5	1.29	1,168	131.9	8,858	1,000	11,116	1,255	19,690	2,223
P821_0070 K202VF0350 MT10	241.9	1935/8	4,000	3,900	5,500	3.5	0.73	1,168	131.9	8,858	1,000	12,401	1,400	22,014	2,485
P821_0070 K202VF0350 MT20	241.9	1935/8	3,500	3,500	5,000	3.5	1.33	1,168	131.9	8,858	1,000	12,401	1,400	24,900	2,811
P821_0070 K202VF0350 MT30	241.9	1935/8	3,500	3,500	4,000	3.5	6.13	1,168	131.9	8,858	1,000	12,401	1,400	24,900	2,811
P821_0100 K202VF0280 MT10	279.5	559/2	4,000	3,900	5,500	3.5	0.78	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0100 K202VF0280 MT20	279.5	559/2	3,500	3,500	5,000	3.5	1.38	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0100 K202VF0280 MT30	279.5	559/2	3,500	3,500	4,000	3.5	6.18	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0070 K202VF0400 MT10	282.8	9331/33	4,000	3,900	5,500	3.5	0.66	1,168	131.9	6,948	784	8,337	941	12,194	1,377
P821_0070 K202VF0460 MT10	323.6	12943/40	4,000	3,900	5,500	3.5	0.68	1,168	131.9	8,858	1,000	12,401	1,400	24,900	2,811
P821_0070 K202VF0460 MT20	323.6	12943/40	3,500	3,500	5,000	3.5	1.28	1,168	131.9	8,858	1,000	12,401	1,400	24,900	2,811
P821_0100 K202VF0350 MT10	345.5	9675/28	4,000	3,900	5,500	3.5	0.73	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0100 K202VF0350 MT20	345.5	9675/28	3,500	3,500	5,000	3.5	1.33	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0100 K202VF0350 MT30	345.5	9675/28	3,500	3,500	4,000	3.5	6.13	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0070 K202VF0500 MT10	353.4	46655/132	4,000	3,900	5,500	3.5	0.64	1,168	131.9	5,790	654	6,948	784	12,306	1,389
P821_0070 K202VF0560 MT10	388.8	9331/24	4,000	3,900	5,500	3.5	0.66	1,168	131.9	8,858	1,000	11,464	1,294	16,766	1,893
P821_0100 K202VF0460 MT10	462.3	1849/4	4,000	3,900	5,500	3.5	0.68	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0100 K202VF0460 MT20	462.3	1849/4	3,500	3,500	5,000	3.5	1.28	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400
P821_0070 K202VF0690 MT10	486.0	46655/96	4,000	3,900	5,500	3.5	0.64	1,168	131.9	7,961	899	9,553	1,078	16,922	1,910
P821_0100 K202VF0560 MT10	555.4	6665/12	4,000	3,900	5,500	3.5	0.65	1,185	133.8	6,201	700	10,630	1,200	21,259	2,400

[1] Maximum torque for continuous input RPM - horizontal output position.

[2] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 5, 6
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL3 and EL4
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"PK" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal 1)		Output Torque Acceleration		Output Torque Peak 2)	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	$kgcm^2$	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
P821S_ _K302 with Motor Mounting Plate															
P821_0030 K302VF0040 MT20	12.00	12/1	2,700	2,300	3,800	4.5	8.88	785	88.6	4,001	452	4,401	497	6,922	781
P821_0030 K302VF0040 MT30	12.00	12/1	2,700	2,300	3,800	4.5	13.68	785	88.6	4,663	526	7,877	889	17,064	1,926
P821_0040 K302VF0040 MT20	16.00	16/1	2,700	2,300	3,800	4	7.39	1,022	115.4	5,334	602	5,867	662	9,229	1,042
P821_0040 K302VF0040 MT30	16.00	16/1	2,700	2,300	3,800	4	12.19	1,022	115.4	6,217	702	10,503	1,186	22,752	2,569
P821_0050 K302VF0040 MT20	20.00	20/1	2,700	2,300	3,800	4	6.96	1,169	131.9	6,668	753	7,334	828	11,536	1,302
P821_0050 K302VF0040 MT30	20.00	20/1	2,700	2,300	3,800	4	11.76	1,169	131.9	7,772	877	13,129	1,482	28,346	3,200
P821_0050 K302VF0054 MT20	26.88	215/8	2,700	2,300	3,800	4	4.83	1,169	131.9	8,576	968	9,856	1,113	14,865	1,678
P821_0050 K302VF0054 MT30	26.88	215/8	2,700	2,300	3,800	4	9.63	1,169	131.9	8,576	968	11,189	1,263	14,865	1,678
P821_0050 K302VF0060 MT20	30.00	30/1	2,700	2,300	3,800	4	5.09	1,169	131.9	8,858	1,000	11,002	1,242	17,156	1,937
P821_0050 K302VF0060 MT30	30.00	30/1	2,700	2,300	3,800	4	9.89	1,169	131.9	8,858	1,000	14,173	1,600	28,346	3,200
P821_0050 K302VF0074 MT20	36.96	2365/64	2,700	2,300	3,800	4	4.10	1,169	131.9	8,858	1,000	13,552	1,530	20,441	2,308
P821_0050 K302VF0074 MT30	36.96	2365/64	2,700	2,300	3,800	4	8.90	1,169	131.9	8,858	1,000	14,173	1,600	20,441	2,308
P821_0050 K302VF0093 MT20	46.34	5375/116	3,200	2,800	4,200	4	3.27	1,169	131.9	8,858	1,000	14,173	1,600	24,913	2,813
P821_0050 K302VF0093 MT30	46.34	5375/116	3,200	2,800	4,000	4	8.07	1,169	131.9	8,858	1,000	14,173	1,600	24,913	2,813
P821_0050 K302VF0115 MT20	58.05	1161/20	3,200	2,800	4,200	4	2.69	1,169	131.9	8,858	1,000	14,173	1,600	28,346	3,200
P821_0050 K302VF0115 MT30	58.05	1161/20	3,200	2,800	4,000	4	7.49	1,169	131.9	8,858	1,000	14,173	1,600	28,346	3,200
P821_0050 K302VF0140 MT20	69.68	7525/108	3,500	3,100	5,000	4	2.30	1,169	131.9	8,858	1,000	14,173	1,600	28,346	3,200
P821_0050 K302VF0140 MT30	69.68	7525/108	3,500	3,100	4,000	4	7.10	1,169	131.9	8,858	1,000	14,173	1,600	28,346	3,200
P821_0050 K302VF0175 MT10	86.47	7955/92	3,500	3,100	5,000	4	1.40	1,169	131.9	7,065	798	7,065	798	9,386	1,060
P821_0050 K302VF0175 MT20	86.47	7955/92	3,500	3,100	5,000	4	2.00	1,169	131.9	8,858	1,000	14,173	1,600	28,346	3,200
P821_0050 K302VF0175 MT30	86.47	7955/92	3,500	3,100	4,000	4	6.80	1,169	131.9	8,858	1,000	14,173	1,600	28,346	3,200
P821_0050 K302VF0230 MT10	116.5	2795/24	3,800	3,500	5,000	4	1.11	1,169	131.9	8,858	1,000	8,950	1,010	11,890	1,342
P821_0050 K302VF0230 MT20	116.5	2795/24	3,500	3,500	5,000	4	1.71	1,169	131.9	8,858	1,000	14,173	1,600	28,346	3,200
P821_0050 K302VF0230 MT30	116.5	2795/24	3,500	3,500	4,000	4	6.51	1,169	131.9	8,858	1,000	14,173	1,600	28,346	3,200
P821_0050 K302VF0280 MT10	139.4	17845/128	3,800	3,500	5,000	4	0.98	1,169	131.9	8,858	1,000	10,368	1,171	13,775	1,555
P821_0050 K302VF0280 MT20	139.4	17845/128	3,500	3,500	5,000	4	1.58	1,169	131.9	8,858	1,000	14,173	1,600	28,346	3,200
P821_0050 K302VF0280 MT30	139.4	17845/128	3,500	3,500	4,000	4	6.38	1,169	131.9	8,858	1,000	14,173	1,600	28,346	3,200
P821_0050 K302VF0350 MT10	173.7	4515/26	3,800	3,500	5,000	4	0.87	1,169	131.9	8,858	1,000	12,262	1,384	16,290	1,839
P821_0050 K302VF0350 MT20	173.7	4515/26	3,500	3,500	5,000	4	1.47	1,169	131.9	8,858	1,000	14,173	1,600	28,346	3,200
P821_0050 K302VF0350 MT30	173.7	4515/26	3,500	3,500	4,000	4	6.27	1,169	131.9	8,858	1,000	14,173	1,600	28,346	3,200
P821_0050 K302VF0460 MT10	231.1	1849/8	3,800	3,500	5,000	4	0.76	1,169	131.9	8,858	1,000	14,173	1,600	20,372	2,300
P821_0050 K302VF0460 MT20	231.1	1849/8	3,500	3,500	5,000	4	1.36	1,169	131.9	8,858	1,000	14,173	1,600	28,346	3,200
P821_0050 K302VF0460 MT30	231.1	1849/8	3,500	3,500	4,000	4	6.16	1,169	131.9	8,858	1,000	14,173	1,600	28,346	3,200
P821_0050 K302VF0560 MT10	278.5	12255/44	3,800	3,500	5,000	4	0.72	1,169	131.9	8,858	1,000	13,647	1,541	23,628	2,667
P821_0050 K302VF0560 MT20	278.5	12255/44	3,500	3,500	5,000	4	1.32	1,169	131.9	8,858	1,000	13,647	1,541	23,628	2,667

Motor Shaft

Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48

Mounting Position and Output Side must be specified when ordered.

"PK" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [1]		Output Torque Acceleration		Output Torque Peak [2]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
P921S_ _K402 with Motor Mounting Plate Continued Next Page															
P921_0070 K402VF0040 MT20	28.00	28/1	2,600	2,200	3,500	3.5	12.34	2,399	270.9	9,335	1,054	10,268	1,159	16,336	1,844
P921_0070 K402VF0040 MT30	28.00	28/1	2,600	2,200	3,500	3.5	17.14	2,399	270.9	16,327	1,843	23,917	2,700	43,008	4,855
P921_0070 K402VF0040 MT40	28.00	28/1	2,600	2,200	3,500	3.5	21.14	2,399	270.9	16,327	1,843	23,917	2,700	43,008	4,855
P921_0070 K402VF0044 MT20	30.55	336/11	2,600	2,200	3,500	3.5	10.83	2,399	270.9	10,184	1,150	11,202	1,265	17,822	2,012
P921_0070 K402VF0044 MT30	30.55	336/11	2,600	2,200	3,500	3.5	15.63	2,399	270.9	16,808	1,897	23,917	2,700	46,592	5,260
P921_0070 K402VF0044 MT40	30.55	336/11	2,600	2,200	3,500	3.5	19.63	2,399	270.9	16,808	1,897	23,917	2,700	46,592	5,260
P921_0070 K402VF0054 MT20	37.95	12943/341	2,600	2,200	3,500	3.5	8.03	2,399	270.9	12,653	1,428	13,918	1,571	21,798	2,461
P921_0070 K402VF0054 MT30	37.95	12943/341	2,600	2,200	3,500	3.5	12.83	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0054 MT40	37.95	12943/341	2,600	2,200	3,500	3.5	16.83	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0060 MT20	42.00	42/1	2,600	2,200	3,500	3.5	8.78	2,399	270.9	14,002	1,581	15,402	1,739	24,503	2,766
P921_0070 K402VF0060 MT30	42.00	42/1	2,600	2,200	3,500	3.5	13.58	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0060 MT40	42.00	42/1	2,600	2,200	3,500	3.5	17.58	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0067 MT20	47.03	1505/32	3,000	2,600	4,000	3.5	5.95	2,399	270.9	15,680	1,770	17,248	1,947	26,015	2,937
P921_0070 K402VF0067 MT30	47.03	1505/32	3,000	2,600	4,000	3.5	10.75	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0067 MT40	47.03	1505/32	3,000	2,600	3,500	3.5	14.75	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0075 MT20	52.19	12943/248	2,600	2,200	3,500	3.5	6.71	2,399	270.9	17,400	1,964	19,140	2,161	29,976	3,384
P921_0070 K402VF0075 MT30	52.19	12943/248	2,600	2,200	3,500	3.5	11.51	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0075 MT40	52.19	12943/248	2,600	2,200	3,500	3.5	15.51	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0084 MT20	58.64	645/11	3,000	2,600	4,000	3.5	4.53	2,399	270.9	17,716	2,000	21,504	2,428	31,370	3,541
P921_0070 K402VF0084 MT30	58.64	645/11	3,000	2,600	4,000	3.5	9.33	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0084 MT40	58.64	645/11	3,000	2,600	3,500	3.5	13.33	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0092 MT20	64.67	16555/256	3,000	2,600	4,000	3.5	5.09	2,399	270.9	17,716	2,000	23,714	2,677	35,768	4,038
P921_0070 K402VF0092 MT30	64.67	16555/256	3,000	2,600	4,000	3.5	9.89	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0092 MT40	64.67	16555/256	3,000	2,600	3,500	3.5	13.89	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0100 MT20	70.69	9331/132	3,400	3,000	4,500	3.5	3.68	2,399	270.9	17,716	2,000	23,917	2,700	36,385	4,108
P921_0070 K402VF0100 MT30	70.69	9331/132	3,400	3,000	4,000	3.5	8.48	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0100 MT40	70.69	9331/132	3,000	3,000	3,500	3.5	12.48	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0115 MT20	80.63	645/8	3,000	2,600	4,000	3.5	3.98	2,399	270.9	17,716	2,000	23,917	2,700	43,132	4,869
P921_0070 K402VF0115 MT30	80.63	645/8	3,000	2,600	4,000	3.5	8.78	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0115 MT40	80.63	645/8	3,000	2,600	3,500	3.5	12.78	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0125 MT20	88.61	2924/33	3,400	3,000	4,500	3.5	2.92	2,399	270.9	17,716	2,000	23,917	2,700	44,111	4,980
P921_0070 K402VF0125 MT30	88.61	2924/33	3,400	3,000	4,000	3.5	7.72	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0125 MT40	88.61	2924/33	3,000	3,000	3,500	3.5	11.72	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0140 MT20	97.20	9331/96	3,400	3,000	4,500	3.5	3.29	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0140 MT30	97.20	9331/96	3,400	3,000	4,000	3.5	8.09	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0140 MT40	97.20	9331/96	3,000	3,000	3,500	3.5	12.09	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400

[1] Maximum torque for continuous input RPM - horizontal output position.

[2] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 5, 6
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL3 and EL4
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"PK" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

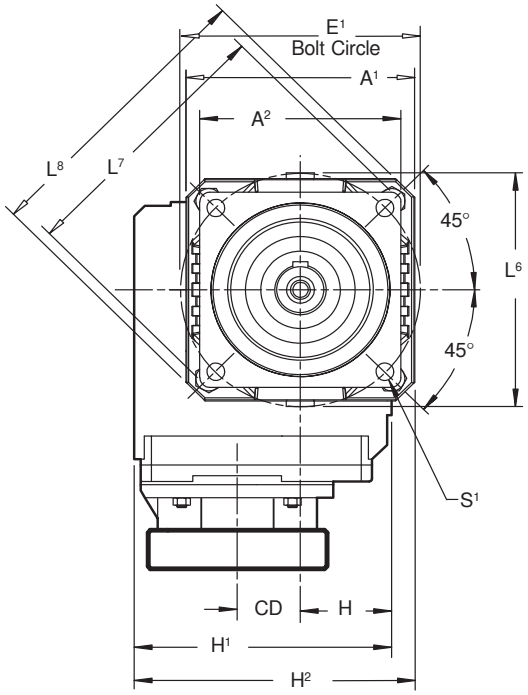
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal 1)		Output Torque Acceleration		Output Torque Peak 2)	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	$kgcm^2$	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
P921S_ _K402 with Motor Mounting Plate Continued															
P921_0070 K402VF0170 MT20	118.6	3913/33	3,500	3,300	5,000	3.5	2.25	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0170 MT30	118.6	3913/33	3,500	3,300	4,000	3.5	7.05	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0170 MT40	118.6	3913/33	3,000	3,000	3,500	3.5	11.05	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0175 MT20	121.8	731/6	3,400	3,000	4,500	3.5	2.68	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0175 MT30	121.8	731/6	3,400	3,000	4,000	3.5	7.48	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0175 MT40	121.8	731/6	3,000	3,000	3,500	3.5	11.48	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0200 MT20	141.4	9331/66	3,500	3,300	5,000	3.5	1.98	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0200 MT30	141.4	9331/66	3,500	3,300	4,000	3.5	6.78	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0200 MT40	141.4	9331/66	3,000	3,000	3,500	3.5	10.78	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0230 MT20	163.0	3913/24	3,500	3,300	5,000	3.5	2.12	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0230 MT30	163.0	3913/24	3,500	3,300	4,000	3.5	6.92	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0230 MT40	163.0	3913/24	3,000	3,000	3,500	3.5	10.92	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0250 MT20	177.0	29197/165	3,500	3,300	5,000	3.5	1.74	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0250 MT30	177.0	29197/165	3,500	3,300	4,000	3.5	6.54	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0250 MT40	177.0	29197/165	3,000	3,000	3,500	3.5	10.54	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0280 MT20	194.4	9331/48	3,500	3,300	5,000	3.5	1.89	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0280 MT30	194.4	9331/48	3,500	3,300	4,000	3.5	6.69	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0280 MT40	194.4	9331/48	3,000	3,000	3,500	3.5	10.69	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0340 MT20	235.7	33712/143	3,500	3,300	5,000	3.5	1.53	2,399	270.9	17,716	2,000	23,917	2,700	40,558	4,579
P921_0070 K402VF0340 MT30	235.7	33712/143	3,500	3,300	4,000	3.5	6.33	2,399	270.9	17,716	2,000	23,917	2,700	40,558	4,579
P921_0070 K402VF0350 MT20	243.3	29197/120	3,500	3,300	5,000	3.5	1.68	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0350 MT30	243.3	29197/120	3,500	3,300	4,000	3.5	6.48	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0350 MT40	243.3	29197/120	3,000	3,000	3,500	3.5	10.48	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0410 MT20	283.6	34314/121	3,500	3,300	5,000	3.5	1.44	2,399	270.9	17,716	2,000	22,232	2,510	39,381	4,446
P921_0070 K402VF0410 MT30	283.6	34314/121	3,500	3,300	4,000	3.5	6.24	2,399	270.9	17,716	2,000	22,232	2,510	39,381	4,446
P921_0070 K402VF0460 MT20	324.2	4214/13	3,500	3,300	5,000	3.5	1.49	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0460 MT30	324.2	4214/13	3,500	3,300	4,000	3.5	6.29	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0500 MT20	353.0	38829/110	3,500	3,300	5,000	3.5	1.36	2,399	270.9	16,211	1,830	19,453	2,196	29,327	3,311
P921_0070 K402VF0560 MT20	389.9	17157/44	3,500	3,300	5,000	3.5	1.41	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0560 MT30	389.9	17157/44	3,500	3,300	4,000	3.5	6.21	2,399	270.9	17,716	2,000	23,917	2,700	47,833	5,400
P921_0070 K402VF0690 MT20	485.4	38829/80	3,500	3,300	5,000	3.5	1.34	2,399	270.9	17,716	2,000	23,917	2,700	40,325	4,552

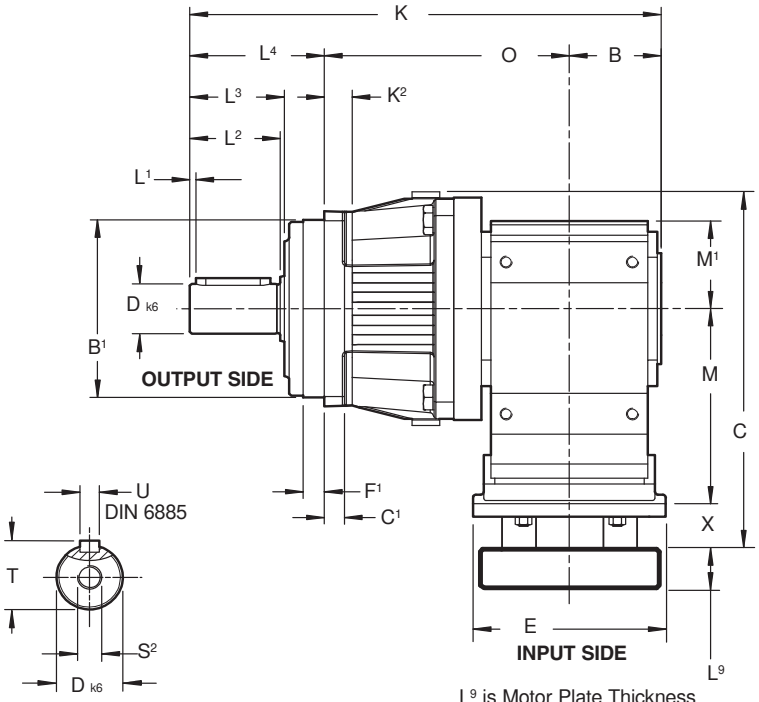
Motor Shaft

Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48

Mounting Position and Output Side must be specified when ordered.

"PK" Series–Right Angle ServoFit® Precision Planetary Gearhead Dimensional Data





Output Shaft
(See Page 239 for options.)

L9 is Motor Plate Thickness
See Page 229.

Table No. 1 **"PK" Series – ServoFit Precision Planetary Gearhead Dimensions (mm/inches)**

Unit	A1	A2	B	B1 h6	C1	D k6	E1	F1	H	H1	H2	K	K2
P521S_K102	115	101	56	90 +.000/-.022	10	32 +.018/+.002	120	15	60	160	160.5	283	14
	4.53	3.98	2.20	3.543 +.0000/-.0009	.39		4.72	.59	2.36	6.30	6.32	11.14	.55
P721S_K102	145	145	56	130 +.000/-.025	15	40 +.018/+.002	165	3.5	60	160	172.5	318	—
	5.71	5.71	2.20	5.118 +.000/-.001	.59		6.50	.14	2.36	6.30	6.79	12.52	—
P721S_K202	145	145	70	130 +.000/-.025	15	40 +.018/+.002	165	3.5	65	190	207.5	346	—
	5.71	5.71	2.76	5.118 +.000/-.001	.59		6.50	.14	2.56	7.48	8.17	13.62	—
P821S_K202	190	190	70	160 +.000/-.025	15	55 +.021/+.002	215	10	65	190	230	384.5	—
	7.48	7.48	2.76	6.299 +.000/-.001	.59		8.46	.39	2.56	7.48	9.06	15.14	—
P821S_K302	190	190	76	160 +.000/-.025	15	55 +.021/+.002	215	10	75	213	233	398	—
	7.48	7.48	2.99	6.299 +.000/-.001	.59		8.46	.39	2.95	3.39	9.17	15.67	—
P921S_K402	225	212	90	180 +.000/-.025	17	75 +.021/+.002	250	10	90	240	262.5	490.5	22
	8.85	8.35	3.54	7.087 +.000/-.001	.66		9.84	.39	3.54	9.45	10.33	19.31	.87

Table No. 2 **"PK" Series – ServoFit Precision Planetary Gearhead Dimensions (mm/inches)**

Unit	L1	L2	L3	L4	L6	L7	L8	M1	O	S1	S2	T	U
P521S_K102	3	58	60	88	121	139	149	60	139	9	M12x28	35	A10x8x50
	.12	2.28	2.36	3.46	4.76	5.47	5.87	2.36	5.47	.35		1.38	
P721S_K102	4	82	85	112	145	—	190	60	150	11	M16x36	43	A12x8x70
	.16	3.23	3.35	4.41	5.71	—	7.48	2.36	5.91	.43		1.69	
P721S_K202	4	82	85	112	145	—	190	65	164	11	M16x36	43	A12x8x70
	.16	3.23	3.35	4.41	5.71	—	7.48	2.56	6.46	.43		1.69	
P821S_K202	6	82	85	112	190	—	250	65	202.5	13.5	M20x42	59	A16x10x70
	.24	3.23	3.35	4.41	7.48	—	9.84	2.56	7.97	.53		2.32	
P821S_K302	6	82	85	112	190	—	250	75	210	13.5	M20x42	59	A16x10x70
	.24	3.23	3.35	4.41	7.48	—	9.84	2.95	8.27	.53		2.32	
P921S_K402	6	105	109	143	225	285	300	90	257.5	17.5	M20x42	80	A20x12x90
	.24	4.13	4.29	5.63	8.86	11.22	11.81	3.54	10.14	.69		3.15	

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

"PK" Series–Right Angle ServoFit® Precision Planetary Gearhead Dimensional Data

Table No. 3
"MT" Motor Plate Dimensions (mm/inches)

Motor Adapter	Motor Shaft D6 Max.1)	Thickness 2) L9 Min.	E	X	Wt. lbs.
MT10	19 .748	21 .83	140 5.51	40 1.57	5
MT20	24 .945	24 .95	160 6.30	50 1.97	8
MT30	38 1.260	25 .98	200 7.87	60 2.36	12
MT40	48 1.890	33 1.30	250 9.84	89 3.50	18

1) If an adapter bushing is required it will be supplied as a component of the motor mounting plate.
2) Motor plate maximum thickness (L^9) will vary with motor shaft length but will not be less than shown.

Table No. 4 **"PK" Series – ServoFit Precision Planetary Gearhead (mm/inches)**

Base Module	MT10			MT20			MT30			MT40			Wt. lbs.
	CD	C	M	CD	C	M	CD	C	M	CD	C	M	
P5_K102	36 1.42	224.5 8.84	124 4.88	36 1.42	238.5 9.39	128 5.04	– –	– –	– –	– –	– –	– –	31
P7_K102	36 1.42	236.5 9.31	124 4.88	36 1.42	250.5 9.86	128 5.04	– –	– –	– –	– –	– –	– –	31
P7_K202	46 1.81	255.5 10.06	143 5.63	46 1.81	269.5 10.61	147 5.78	46 1.81	281.5 11.08	149 5.87	– –	– –	– –	40
P8_K202	46 1.81	278 10.94	143 5.63	46 1.81	292 11.50	147 5.78	46 1.81	307 11.96	149 5.87	– –	– –	– –	40
P8_K302	52.5 2.07	298 11.73	163 6.42	52.5 2.07	312 12.28	167 6.57	52.5 2.07	324 12.76	169 6.65	– –	– –	– –	67
P9_K402	– –	– –	– –	60 2.36	349.5 13.76	187 7.36	60 2.36	361.5 14.23	189 7.44	60 2.36	393.5 15.49	192 7.56	93

Part No. Explanation

P 5 2 1 S P R 0050 K102VF 0060 MT

- **M**otor Plate with **T**riAdapt® Coupling
- Ratio (**0060** = 6.0:1 = Total Ratio 30:1)
- Right Angle Unit, Size **K102VF**
- Ratio (**0050** = 10.0:1 = Total Ratio 30:1)
- **R** – Normal Bearing
- **D** – Reinforced Bearings-Axial
- **Z** – Reinforced Bearings-Radial
- **G** – Shaft — no Key
- **P** – Output Shaft with Key
- **V** – Splined Shaft
- **S**tandard Housing
- No. of Gear Stages (**1** = 1 Stage, 2 = 2 Stages)
- Generation Number
- Unit No.
- "**P**" Series ServoFit Precision Planetary Gearhead

THE FOLLOWING INFORMATION IS REQUIRED FOR ANY UNIT:

Mounting Position — EL1 EL2 EL3 EL4 EL5 EL6
"P" Unit Mounting Side — Side 3 or Side 4
Motor — Motor Manufacturer and Model Number
Paint — Black (Standard) .... White ..... Stainless
Package Option — Beverage Duty ..... Food Duty

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

See web site for drawings.

"PH" Series
ServoFit® Precision Planetary Gearhead
Performance Specifications

	Size	PH321 PH322	PH421 PH422	PH521 PH522	PH721 PH722	PH821 PH822	PH932 PHV933	PH1032 PHV1033
Acceleration Torque Max.	M_{2B} in.lbs.	575	1,150	2,832	6,195	17,700	44,290	66,375
	Nm	65	130	320	700	2,000	5,000	7,500
Output Torque Nominal [1]	M_{2N} in.lbs.	398	796	1,947	3,894	11,062	26,574	44,290
	Nm	45	90	220	440	1,250	3,000	5,000
Input Speed Maximum	n_{1MAX} Continuous	3,800 4,500	3,500 4,500	3,300 4,000	3,000 3,700	2,500 3,300	2,800 2,500	2,300 2,500
	Cyclic	6,000 8,000	6,000 8,000	6,000 7,000	5,000 6,500	4,000 6,000	4,500	4,500
ServoCool Input RPM Max.	n_{1MAX} Continuous	—	4,500 —	4,500 5,000	4,000 4,700	3,700 4,300	4,000 3,200	4,000 3,000
	Cyclic	—	6,000 —	6,000 7,000	5,000 6,500	4,500 6,000	4,500	4,500
Torsional Backlash [2]	$\Delta\varphi$ arcmin	≤3	≤3	≤3	≤3	≤3	≤3	≤3
Torsional Stiffness	C_2 in.lbs./arcmin	≤106	≤292	≤708	≤1,371	≤3,752	≤10,980	≤15,752
	Nm/arcmin	≤12	≤33	≤80	≤155	≤424	≤1,240	≤1,778
Axial Load Maximum	F_{2AMAX} lbs.	371	484	934	1,384	2,260	7,425	11,250
	N	1,650	2,150	4,150	6,150	10,050	33,000	50,000
Tilting Moment Maximum	M_{2K} in.lbs.	885	2,301	3,894	13,275	30,975	66,375	77,880
	Nm	100	260	440	1,500	3,500	7,500	8,800
Tilting Stiffness	C_{2K} in.lbs./arcmin	—	1,416	2,655	4,425	13,718	66,375	84,075
	Nm/arcmin	—	160	300	500	1,550	7,500	9,500
Efficiency (at Nominal Torque)	h %	96% 94%	96% 94%	96% 94%	96% 94%	96% 94%	96% 94%	94% 92%
Weight	m pounds	4	9 10	15 18	27 32	76 88	166 147	200 198
	kg	1.8	3.9 4.6	6.6 8.1	12.3 14.6	34.6 39.8	75.2 66.6	90.6 90
Noise Level [4]	L_{PA} dB(A)	≤61	≤62	≤63	≤64	≤65	≤65	≤65
Balance Quality		Q 2.5 (Quality Class-2.5 millimeters per second)						
Lubrication		Synthetic Oil (ISO VG 150)						
Degree of Protection		IP65						
Mounting Position		Unrestricted.						
Ambient Temperature		0° C to +40°C (104° F) [Unit temperature ≤ 90° C Max.]						
Finish		Black (RAL 9005)						
Lifetime [5]	L_h hours	L_h > 10,000 hours if M_{2K}/M_{2A} < 1.25 and > 1.00 L_h > 20,000 hours if M_{2K}/M_{2A} > 1.25 and < 1.50 L_h > 30,000 hours if M_{2K}/M_{2A} > 1.5						
Warranty		5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)						

[1] Ratings based on input speed (n_1) of 2000 RPM.
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[2] Tested at 1.5% of nominal torque and recorded on the output side of the gearhead.

[3] Rating based on output speed (n2) of 100 RPM. For values at other speeds see Page 240.

[4] Measurement at one (1) meter distance with input speed (n1) of 3000 RPM.

[5] M_{2A} equals actual tilting moment of the application. See Page 240 for calculation details.

WARNING: In order to insure that the specified torque ratings are attained, it is essential to use a grade 12.9 fastener on all output connections.

Refer to Page 250 for ServoFit Precision Planetary Gearhead Selection Procedure.

"PH" Series
ServoFit® Precision Planetary Gearhead
Features

The "PH" Series ServoFit Precision Planetary Gearheads are designed for high demands of torsional stiffness and tilting rigidity. The "PH" series is well suited where a smooth, precise, reliable drive is needed. All units are lubricated for life with synthetic oil and sealed to IP65 standards to prevent lubricant contamination for long life.

Some features are:

- Readily Attaches to Any Servo Motor
- ISO Output Flange for Coupling Free Mounting
- Superior Torsional Stiffness
- Advanced Helicamber Gear Technology
- 90-96% Efficiency
- 5 Year Limited Warranty (2 Year on bearings, seals, etc.)
- Excellent Axial Load Capacity
- Wide Selection of IEC, NEMA, or Customized* Motor Plates

* Maximum 10 working day for custom motor plates.

HeliCamber® gear technology provides minimum wear, low backlash, and low noise

The motor shaft adapter system allows installation of motor in minutes – no special tools required.

Ring gear machined integral to the housing — not welded or pressed in

The patented motor coupling is designed to allow thermal expansion of the motor shaft—ensuring long motor life by preventing thrust load on the motor bearings.

Oversized tapered roller bearings and shafts for high radial load capacity and superior torsional stiffness

Triple-split steel collet for greater concentricity and low inertia

Blind pilot hole

Adapter bushings fit all motor shafts — no key required

The output flange dimensions are ISO 9409 and allow easy mounting to rotary or indexing tables, pinions, timing belt pulleys, transmission shafting, etc., without using a coupling.

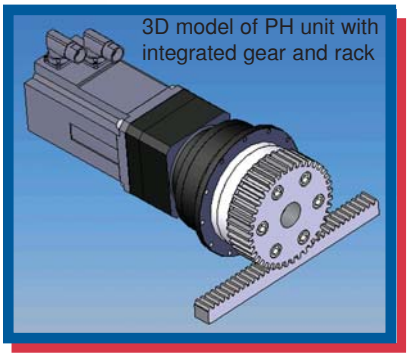
FKM seals for the smallest possible diameter—reducing friction and heat buildup, increasing efficiency, and allowing continuous duty without additional cooling.

Single piece steel housing provides greater concentricity and more precise alignment

Gears are case hardened to 61 Rockwell "C" and ground for maximum efficiency

Available as ServoCool in Sizes PH4 — PH10.

Also available with input shaft (AW).



3D model of PH unit with integrated gear and rack

See web site for drawings.

"PH" Series
ServoFit® Precision Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD6	J1	C2		M2N		M2B		M2PEAK	
	i	RPM (n1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PH321 with Motor Mounting Plate													
PH321F0050MT	5.000	3,000	6,000	19	0.64	115	13.0	399	45	576	65	1,152	130
PH321F0050MTL	5.000	3,000	6,000	24	1.32	115	13.0	399	45	576	65	1,152	130
PH321F0070MT	7.000	3,500	6,000	19	0.59	102	11.5	399	45	531	60	1,152	130
PH321F0070MTL	7.000	3,500	6,000	24	1.26	102	11.5	399	45	531	60	1,152	130
PH321F0100MT	10.00	3,800	6,000	19	0.57	79.7	9.0	266	30	443	50	886	100
PH321F0100MTL	10.00	3,800	6,000	24	1.25	79.7	9.0	266	30	443	50	886	100
PH322 with Motor Mounting Plate													
PH322F0200MT	20.00	4,500	8,000	14	0.14	89.7	10.1	399	45	576	65	1,152	130
PH322F0200MTL	20.00	4,500	8,000	19	0.61	90.4	10.2	399	45	576	65	1,152	130
PH322F0250MT	25.00	4,500	8,000	14	0.12	89.9	10.2	399	45	576	65	1,152	130
PH322F0250MTL	25.00	4,500	8,000	19	0.59	90.4	10.2	399	45	576	65	1,152	130
PH322F0280MT	28.00	4,500	8,000	14	0.14	90.3	10.2	399	45	531	60	1,152	130
PH322F0280MTL	28.00	4,500	8,000	19	0.61	90.7	10.2	399	45	531	60	1,152	130
PH322F0350MT	35.00	4,500	8,000	14	0.11	89.0	10.0	399	45	576	65	1,152	130
PH322F0350MTL	35.00	4,500	8,000	19	0.57	89.3	10.1	399	45	576	65	1,152	130
PH322F0400MT	40.00	4,500	8,000	14	0.14	76.0	8.6	266	30	443	50	886	100
PH322F0400MTL	40.00	4,500	8,000	19	0.61	76.1	8.6	266	30	443	50	886	100
PH322F0500MT	50.00	4,500	8,000	14	0.10	86.7	9.8	399	45	576	65	1,152	130
PH322F0500MTL	50.00	4,500	8,000	19	0.56	86.9	9.8	399	45	576	65	1,152	130
PH322F0700MT	70.00	4,500	8,000	14	0.10	88.7	10.0	399	45	531	60	1,152	130
PH322F0700MTL	70.00	4,500	8,000	19	0.56	88.8	10.0	399	45	531	60	1,152	130
PH322F1000MT	100.0	4,500	8,000	14	0.10	75.4	8.5	266	30	443	50	886	100
PH322F1000MTL	100.0	4,500	8,000	19	0.56	75.5	8.5	266	30	443	50	886	100
PH421 with Motor Mounting Plate													
PH421F0040MT	4.000	2,300	5,000	24	1.73	346	39	753	85	1,152	130	2,126	240
PH421F0040MTC	4.000	3,300	5,000	24	2.46	283	32	753	85	1,152	130	1,701	192
PH421F0040MTL	4.000	2,300	5,000	32	3.96	346	39	753	85	1,152	130	2,126	240
PH421F0050MT	5.000	2,700	6,000	24	1.55	328	37	753	85	1,152	130	2,126	240
PH421F0050MTC	5.000	3,700	6,000	24	2.28	289	33	753	85	1,152	130	2,126	240
PH421F0050MTL	5.000	2,700	6,000	32	3.78	328	37	753	85	1,152	130	2,126	240
PH421F0070MT	7.000	3,200	6,000	24	1.38	275	31	753	85	974	110	2,126	240
PH421F0070MTC	7.000	4,200	6,000	24	2.13	260	29	753	85	974	110	2,126	240
PH421F0070MTL	7.000	3,200	6,000	32	3.65	275	31	753	85	974	110	2,126	240
PH421F0100MT	10.00	3,500	6,000	24	1.30	186	21	531	60	886	100	1,772	200
PH421F0100MTC	10.00	4,500	6,000	24	2.05	183	21	531	60	886	100	1,772	200
PH421F0100MTL	10.00	3,500	6,000	32	3.57	186	21	531	60	886	100	1,772	200
PH422 with Motor Mounting Plate Continued Next Page													
PH422F0160MT	16.00	3,700	6,500	19	0.72	237	27	797	90	1,152	130	2,126	240
PH422F0160MTL	16.00	3,700	6,500	24	1.40	237	27	797	90	1,152	130	2,126	240
PH422F0200MT	20.00	3,700	6,500	19	0.71	256	29	797	90	1,152	130	2,126	240
PH422F0200MTL	20.00	3,700	6,500	24	1.39	256	29	797	90	1,152	130	2,126	240
PH422F0250MT	25.00	4,000	7,000	19	0.65	254	29	797	90	1,152	130	2,126	240
PH422F0250MTL	25.00	4,000	7,000	24	1.34	254	29	797	90	1,152	130	2,126	240

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

See web site for drawings.

"PH" Series
ServoFit® Precision Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD6	J1	C2		M2N		M2B		M2PEAK	
	i	RPM (n1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PH422 with Motor Mounting Plate Continued													
PH422F0280MT	28.00	4,500	8,000	19	0.60	222	25	797	90	1,152	130	2,126	240
PH422F0280MTL	28.00	4,500	8,000	24	1.27	222	25	797	90	1,152	130	2,126	240
PH422F0350MT	35.00	4,500	8,000	19	0.60	245	28	797	90	1,152	130	2,126	240
PH422F0350MTL	35.00	4,500	8,000	24	1.27	245	28	797	90	1,152	130	2,126	240
PH422F0400MT	40.00	4,500	8,000	19	0.58	215	24	797	90	1,152	130	2,126	240
PH422F0400MTL	40.00	4,500	8,000	24	1.25	215	24	797	90	1,152	130	2,126	240
PH422F0500MT	50.00	4,500	8,000	19	0.58	239	27	797	90	1,152	130	2,126	240
PH422F0500MTL	50.00	4,500	8,000	24	1.25	239	27	797	90	1,152	130	2,126	240
PH422F0700MT	70.00	4,500	8,000	19	0.58	237	27	797	90	974	110	2,126	240
PH422F0700MTL	70.00	4,500	8,000	24	1.25	237	27	797	90	974	110	2,126	240
PH422F1000MT	100.0	4,500	8,000	19	0.58	177	20	531	60	886	100	1,772	200
PH422F1000MTL	100.0	4,500	8,000	24	1.25	177	20	531	60	886	100	1,772	200
PH521 with Motor Mounting Plate													
PH521F0040MT	4.000	2,200	5,000	32	3.65	868	98	1,860	210	2,835	320	4,915	555
PH521F0040MTC	4.000	3,200	5,000	32	5.87	648	73	1,860	210	2,447	276	3,059	345
PH521F0040MTL	4.000	2,200	5,000	38	6.68	868	98	1,860	210	2,835	320	4,915	555
PH521F0050MT	5.000	2,500	5,500	32	4.47	824	93	1,860	210	2,835	320	5,315	600
PH521F0050MTC	5.000	3,500	5,500	32	6.69	683	77	1,860	210	2,835	320	3,824	432
PH521F0050MTL	5.000	2,500	5,500	38	7.50	824	93	1,860	210	2,835	320	5,315	600
PH521F0070MT	7.000	3,000	6,000	32	3.97	682	77	1,860	210	2,392	270	5,315	600
PH521F0070MTC	7.000	4,000	6,000	32	6.21	627	71	1,860	210	2,392	270	5,315	600
PH521F0070MTL	7.000	3,000	6,000	38	7.02	682	77	1,860	210	2,392	270	5,315	600
PH521F0100MT	10.00	3,300	6,000	32	3.72	487	55	1,240	140	2,215	250	4,429	500
PH521F0100MTC	10.00	4,500	6,000	32	5.96	473	53	1,240	140	2,215	250	4,429	500
PH521F0100MTL	10.00	3,300	6,000	38	6.77	487	55	1,240	140	2,215	250	4,429	500
PH522 with Motor Mounting Plate Continued Next Page													
PH522F0160 MT	16.00	3,300	6,000	24	1.54	575	65	1,860	210	2,835	320	4,915	555
PH522F0160MTC	16.00	4,300	6,000	24	2.26	562	63	1,860	210	2,835	320	4,915	555
PH522F0160MTL	16.00	3,300	6,000	32	3.76	575	65	1,860	210	2,835	320	4,915	555
PH522F0200MT	20.00	3,300	6,000	24	1.59	629	71	1,949	220	2,835	320	5,315	600
PH522F0200MTC	20.00	4,300	6,000	24	2.31	619	70	1,949	220	2,835	320	5,315	600
PH522F0200MTL	20.00	3,300	6,000	32	3.81	629	71	1,949	220	2,835	320	5,315	600
PH522F0250MT	25.00	3,700	6,500	24	1.47	625	71	1,949	220	2,835	320	5,315	600
PH522F0250MTC	25.00	4,500	6,500	24	2.19	619	70	1,949	220	2,835	320	5,315	600
PH522F0250MTL	25.00	3,700	6,500	32	3.69	625	71	1,949	220	2,835	320	5,315	600
PH522F0280MT	28.00	4,000	7,000	24	1.32	540	61	1,860	210	2,835	320	4,915	555
PH522F0280MTC	28.00	5,000	7,000	24	2.06	537	61	1,860	210	2,835	320	4,915	555
PH522F0280MTL	28.00	4,000	7,000	32	3.58	540	61	1,860	210	2,835	320	4,915	555
PH522F0350 MT	35.00	4,000	7,000	24	1.33	602	68	1,949	220	2,835	320	5,315	600
PH522F0350MTC	35.00	5,000	7,000	24	2.08	599	68	1,949	220	2,835	320	5,315	600
PH522F0350MTL	35.00	4,000	7,000	32	3.60	602	68	1,949	220	2,835	320	5,315	600
PH522F0400MT	40.00	4,000	7,000	24	1.27	517	58	1,860	210	2,835	320	4,915	555
PH522F0400MTC	40.00	5,000	7,000	24	2.02	515	58	1,860	210	2,835	320	4,915	555
PH522F0400MTL	40.00	4,000	7,000	32	3.54	517	58	1,860	210	2,835	320	4,915	555

Index of Symbols

MT ..... Motor adapter with TriAdapt® coupling	i ..... Ratio - Exact	M2N ..... Nominal Torque
MF ..... Motor adapter with FlexiAdapt® coupling	n1 ..... Maximum input speed RPM	M2B ..... Acceleration Torque Maximum
L ..... Large Input	J1 ..... Mass moment of inertia (input)	M2PEAK ..... Peak Torque
C ..... ServoCool	C2 ..... Torsional Stiffness	

See web site for drawings.

"PH" Series
ServoFit® Precision Planetary Gearhead
Selection Data

STÖBER

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD6	J1	C2		M2N		M2B		M2PEAK	
	i	RPM (n1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PH522 with Motor Mounting Plate Continued													
PH522F0500MT	50.00	4,000	7,000	24	1.28	583	66	1,949	220	2,835	320	5,315	600
PH522F0500MTC	50.00	5,000	7,000	24	2.03	582	66	1,949	220	2,835	320	5,315	600
PH522F0500MTL	50.00	4,000	7,000	32	3.55	583	66	1,949	220	2,835	320	5,315	600
PH522F0700MT	70.00	4,000	7,000	24	1.28	581	66	1,860	210	2,392	270	5,315	600
PH522F0700MTC	70.00	5,000	7,000	24	2.02	580	66	1,860	210	2,392	270	5,315	600
PH522F0700 MTL	70.00	4,000	7,000	32	3.54	581	66	1,860	210	2,392	270	5,315	600
PH522F1000MT	100.0	4,000	7,000	24	1.27	459	52	1,240	140	2,215	250	4,429	500
PH522F1000MTC	100.0	5,000	7,000	24	2.02	459	52	1,240	140	2,215	250	4,429	500
PH522F1000MTL	100.0	4,000	7,000	32	3.54	459	52	1,240	140	2,215	250	4,429	500
PH721 with Motor Mounting Plate													
PH721F0040MT	4.000	1,900	4,000	38	11.18	1,639	185	3,898	440	6,201	700	12,235	1,381
PH721F0040MTC	4.000	2,400	4,000	38	22.42	1,271	144	3,898	440	6,201	700	12,235	1,381
PH721F0040MTL	4.000	1,900	4,000	48	29.03	1,639	185	3,898	440	6,201	700	12,235	1,381
PH721F0050MT	5.000	2,200	5,000	38	9.34	1,630	184	3,898	440	6,201	700	12,401	1,400
PH721F0050MTC	5.000	3,000	5,000	38	20.58	1,377	155	3,898	440	6,201	700	12,401	1,400
PH721F0050MTL	5.000	2,200	5,000	48	27.19	1,630	184	3,898	440	6,201	700	12,401	1,400
PH721F0070MT	7.000	2,500	5,000	38	7.92	1,417	160	3,898	440	5,758	650	11,127	1,256
PH721F0070 MTC	7.000	3,500	5,000	38	18.82	1,286	145	3,898	440	5,758	650	11,127	1,256
PH721F0070MTL	7.000	2,500	5,000	48	26.22	1,417	160	3,898	440	5,758	650	11,127	1,256
PH721F0100MT	10.00	3,000	5,000	38	7.23	1,036	117	2,657	300	4,429	500	8,858	1,000
PH721F0100MTC	10.00	4,000	5,000	38	18.13	1,000	113	2,657	300	4,429	500	8,858	1,000
PH721F0100MTL	10.00	3,000	5,000	48	25.53	1,036	117	2,657	300	4,429	500	8,858	1,000
PH722 with Motor Mounting Plate Continued Next Page													
PH722F0160MT	16.00	3,000	5,000	32	4.70	1,205	136	3,898	440	6,201	700	12,235	1,381
PH722F0160MTC	16.00	4,000	5,000	32	6.92	1,170	132	3,898	440	6,201	700	11,746	1,326
PH722F0160MTL	16.00	3,000	5,000	38	7.73	1,205	136	3,898	440	6,201	700	12,235	1,381
PH722F0200MT	20.00	3,000	5,000	32	4.59	1,326	150	3,898	440	6,201	700	12,401	1,400
PH722F0200MTC	20.00	4,000	5,000	32	6.81	1,299	147	3,898	440	6,201	700	12,401	1,400
PH722F0200MTL	20.00	3,000	5,000	38	7.61	1,326	150	3,898	440	6,201	700	12,401	1,400
PH722F0250MT	25.00	3,500	6,000	32	4.18	1,318	149	3,898	440	6,201	700	12,401	1,400
PH722F0250MTC	25.00	4,200	6,000	32	6.40	1,301	147	3,898	440	6,201	700	12,401	1,400
PH722F0250MTL	25.00	3,500	6,000	38	7.20	1,318	149	3,898	440	6,201	700	12,401	1,400
PH722F0280MT	28.00	3,700	6,500	32	3.86	1,160	131	3,898	440	6,201	700	12,235	1,381
PH722F0280MTC	28.00	4,500	6,500	32	6.10	1,149	130	3,898	440	6,201	700	12,235	1,381
PH722F0280MTL	28.00	3,700	6,500	38	6.90	1,160	131	3,898	440	6,201	700	12,235	1,381
PH722F0350MT	35.00	3,700	6,500	32	3.82	1,291	146	3,898	440	6,201	700	12,401	1,400
PH722F0350MTC	35.00	4,500	6,500	32	6.06	1,282	145	3,898	440	6,201	700	12,401	1,400
PH722F0350MTL	35.00	3,700	6,500	38	6.87	1,291	146	3,898	440	6,201	700	12,401	1,400
PH722F0400MT	40.00	3,700	6,500	32	3.67	1,121	127	3,898	440	6,201	700	12,235	1,381
PH722F0400MTC	40.00	4,700	6,500	32	5.91	1,116	126	3,898	440	6,201	700	12,235	1,381
PH722F0400MTL	40.00	3,700	6,500	38	6.71	1,121	127	3,898	440	6,201	700	12,235	1,381
PH722F0500MT	50.00	3,700	6,500	32	3.65	1,259	142	3,898	440	6,201	700	12,401	1,400
PH722F0500MTC	50.00	4,700	6,500	32	5.89	1,255	142	3,898	440	6,201	700	12,401	1,400
PH722F0500MTL	50.00	3,700	6,500	38	6.70	1,259	142	3,898	440	6,201	700	12,401	1,400

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"PH" Series
ServoFit® Precision Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD6	J1	C2		M2N		M2B		M2PEAK	
	i	RPM (n1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PH722 with Motor Mounting Plate Continued													
PH722F0700MT	70.00	3,700	6,500	32	3.63	1,254	142	3,898	440	5,758	650	11,127	1,256
PH722F0700MTC	70.00	4,700	6,500	32	5.87	1,252	141	3,898	440	5,758	650	11,127	1,256
PH722F0700MTL	70.00	3,700	6,500	38	6.68	1,254	142	3,898	440	5,758	650	11,127	1,256
PH722F1000MT	100.0	3,700	6,500	32	3.63	990	112	2,657	300	4,429	500	8,858	1,000
PH722F1000MTC	100.0	4,700	6,500	32	5.87	989	112	2,657	300	4,429	500	8,858	1,000
PH722F1000MTL	100.0	3,700	6,500	38	6.67	990	112	2,657	300	4,429	500	8,858	1,000
PH821 with Motor Mounting Plate													
PH821F0040MT	4.000	1,500	3,500	48	48.88	5,315	600	7,086	800	14,173	1,600	22,752	2,569
PH821F0040MTC	4.000	2,200	3,500	48	70.14	3,527	398	7,086	800	14,173	1,600	20,477	2,312
PH821F0050MT	5.000	1,700	4,000	48	39.89	4,872	550	8,858	1,000	15,059	1,700	28,346	3,200
PH821F0050 MTC	5.000	2,500	4,000	48	61.15	3,755	424	8,858	1,000	15,059	1,700	25,596	2,890
PH821F0070MT	7.000	2,000	4,000	48	32.00	4,075	460	8,858	1,000	14,173	1,600	24,900	2,811
PH821F0070MTC	7.000	3,200	4,000	48	53.73	3,546	400	8,858	1,000	14,173	1,600	24,900	2,811
PH821F0100MT	10.00	2,500	4,000	48	28.19	2,790	315	7,086	800	10,630	1,200	21,259	2,400
PH821F0100MTC	10.00	3,700	4,500	48	49.92	2,657	300	7,086	800	10,630	1,200	21,259	2,400
PH822 with Motor Mounting Plate													
PH822F0160MT	16.00	2,500	4,500	38	11.13	3,271	369	9,744	1,100	17,716	2,000	28,346	3,200
PH822F0160MTC	16.00	3,250	4,500	38	22.37	3,157	356	9,744	1,100	17,716	2,000	28,346	3,200
PH822F0160MTL	16.00	2,500	4,500	48	28.98	3,271	369	9,744	1,100	17,716	2,000	28,346	3,200
PH822F0200MT	20.00	2,500	4,500	38	10.57	3,565	402	11,073	1,250	17,716	2,000	28,346	3,200
PH822F0200MTC	20.00	3,300	4,500	38	21.80	3,477	393	11,073	1,250	17,716	2,000	28,346	3,200
PH822F0200MTL	20.00	2,500	4,500	48	28.42	3,565	402	11,073	1,250	17,716	2,000	28,346	3,200
PH822F0250 MT	25.00	3,000	5,500	38	9.05	3,524	398	11,073	1,250	17,716	2,000	28,346	3,200
PH822F0250MTC	25.00	3,800	5,500	38	20.29	3,469	392	11,073	1,250	17,716	2,000	28,346	3,200
PH822F0250MTL	25.00	3,000	5,500	48	26.91	3,524	398	11,073	1,250	17,716	2,000	28,346	3,200
PH822F0280MT	28.00	3,300	6,000	38	7.97	3,160	357	9,744	1,100	17,716	2,000	28,346	3,200
PH822F0280MTC	28.00	4,000	6,000	38	18.87	3,116	352	9,744	1,100	17,716	2,000	28,346	3,200
PH822F0280MTL	28.00	3,300	6,000	48	26.27	3,160	357	9,744	1,100	17,716	2,000	28,346	3,200
PH822F0350MT	35.00	3,300	6,000	38	7.78	3,480	393	11,073	1,250	17,716	2,000	28,346	3,200
PH822F0350MTC	35.00	4,000	6,000	38	18.69	3,445	389	11,073	1,250	17,716	2,000	28,346	3,200
PH822F0350MTL	35.00	3,300	6,000	48	26.09	3,480	393	11,073	1,250	17,716	2,000	28,346	3,200
PH822F0400MT	40.00	3,300	6,000	38	7.25	3,024	341	9,744	1,100	17,007	1,920	28,346	3,200
PH822F0400MTC	40.00	4,300	6,000	38	18.15	3,004	339	9,744	1,100	17,007	1,920	28,346	3,200
PH822F0400MTL	40.00	3,300	6,000	48	25.55	3,024	341	9,744	1,100	17,007	1,920	28,346	3,200
PH822F0500MT	50.00	3,300	6,000	38	7.16	3,373	381	11,073	1,250	17,716	2,000	28,346	3,200
PH822F0500MTC	50.00	4,300	6,000	38	18.06	3,357	379	11,073	1,250	17,716	2,000	28,346	3,200
PH822F0500MTL	50.00	3,300	6,000	48	25.46	3,373	381	11,073	1,250	17,716	2,000	28,346	3,200
PH822F0700MT	70.00	3,300	6,000	38	7.08	3,425	387	8,858	1,000	14,173	1,600	24,900	2,811
PH822F0700MTC	70.00	4,300	6,000	38	17.99	3,417	386	8,858	1,000	14,173	1,600	24,900	2,811
PH822F0700MTL	70.00	3,300	6,000	48	25.39	3,425	387	8,858	1,000	14,173	1,600	24,900	2,811
PH822F1000MT	100.0	3,300	6,000	38	7.05	2,623	296	7,086	800	10,630	1,200	21,259	2,400
PH822F1000MTC	100.0	4,300	6,000	38	17.95	2,621	296	7,086	800	10,630	1,200	21,259	2,400
PH822F1000MTL	100.0	3,300	6,000	48	25.35	2,623	296	7,086	800	10,630	1,200	21,259	2,400

Index of Symbols

MT ..... Motor adapter with TriAdapt® coupling	i ..... Ratio - Exact	M2N ..... Nominal Torque
MF ..... Motor adapter with FlexiAdapt® coupling	n1 ..... Maximum input speed RPM	M2B ..... Acceleration Torque Maximum
L ..... Large Input	J1 ..... Mass moment of inertia (input)	M2PEAK ..... Peak Torque
C ..... ServoCool	C2 ..... Torsional Stiffness	

See web site for drawings.

"PH" Series
ServoFit® Precision Planetary Gearhead
Selection Data

STÖBER

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD6	J1	C2		M2N		M2B		M2PEAK	
	i	RPM (n1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PH932 with Motor Mounting Plate													
PH932F0120 MT	12.00	1,800	3,000	48	74.94	10,980	1,240	26,574	3,000	40,818	4,608	65,527	7,397
PH932F0120 MTC	12.00	2,700	3,000	48	95.95	9,836	1,110	26,574	3,000	40,818	4,608	65,527	7,397
PH932F0120 MTL	12.00	1,800	3,000	60	97.89	10,641	1,201	26,574	3,000	40,818	4,608	65,527	7,397
PH932F0160 MT	16.00	2,200	3,500	48	44.87	10,735	1,212	26,574	3,000	44,290	5,000	87,369	9,863
PH932F0160 MTC	16.00	2,900	3,500	48	65.88	10,089	1,139	26,574	3,000	44,290	5,000	87,369	9,863
PH932F0160 MTL	16.00	2,200	3,500	60	67.82	10,550	1,191	26,574	3,000	44,290	5,000	87,369	9,863
PH932F0180 MT	18.00	1,800	3,000	48	68.89	10,054	1,135	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0180 MTC	18.00	2,700	3,000	48	89.91	9,599	1,084	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0180 MTL	18.00	1,800	3,000	60	91.84	9,925	1,120	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0200 MT	20.00	2,500	4,000	48	37.23	10,520	1,188	26,574	3,000	44,290	5,000	88,580	10,000
PH932F0200 MTC	20.00	3,300	4,000	48	58.25	10,114	1,142	26,574	3,000	44,290	5,000	88,580	10,000
PH932F0200 MTL	20.00	2,500	4,000	60	60.18	10,406	1,175	26,574	3,000	44,290	5,000	88,580	10,000
PH932F0240 MT	24.00	2,200	3,500	48	41.47	9,961	1,125	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0240 MTC	24.00	2,700	3,000	48	62.48	9,705	1,096	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0240 MTL	24.00	2,200	3,500	60	64.42	9,889	1,116	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0280 MT	28.00	2,800	4,500	48	30.69	10,157	1,147	26,574	3,000	44,290	5,000	88,580	10,000
PH932F0280 MTC	28.00	4,000	4,500	48	52.18	9,926	1,121	26,574	3,000	44,290	5,000	88,580	10,000
PH932F0280 MTL	28.00	2,800	4,500	60	58.71	10,102	1,140	26,574	3,000	44,290	5,000	88,580	10,000
PH932F0300 MT	30.00	2,500	4,000	48	35.05	9,878	1,115	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0300 MTC	30.00	2,700	3,000	48	56.07	9,715	1,097	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0300 MTL	30.00	2,500	4,000	60	58.00	9,833	1,110	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0320 MT	32.00	2,800	4,500	48	29.38	9,847	1,112	26,574	3,000	40,818	4,608	88,580	10,000
PH932F0320 MTC	32.00	4,000	4,500	48	50.87	9,680	1,093	26,574	3,000	40,818	4,608	88,580	10,000
PH932F0320 MTL	32.00	2,800	4,500	60	57.40	9,808	1,107	26,574	3,000	40,818	4,608	88,580	10,000
PH932F0400 MT	40.00	2,800	4,500	48	27.21	9,362	1,057	23,810	2,688	40,818	4,608	88,580	10,000
PH932F0400 MTC	40.00	4,000	4,500	48	48.70	9,265	1,046	23,810	2,688	40,818	4,608	88,580	10,000
PH932F0400 MTL	40.00	2,800	4,500	60	55.23	9,339	1,054	23,810	2,688	40,818	4,608	88,580	10,000
PH932F0420 MT	42.00	2,800	4,500	48	29.58	9,733	1,099	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0420 MTC	42.00	4,000	4,500	48	51.07	9,637	1,088	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0420 MTL	42.00	2,800	4,500	60	57.60	9,710	1,096	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0480 MT	48.00	2,800	4,500	48	28.53	9,604	1,084	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0480 MTC	48.00	4,000	4,500	48	50.02	9,533	1,076	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0480 MTL	48.00	2,800	4,500	60	56.55	9,587	1,082	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0600 MT	60.00	2,800	4,500	48	26.67	9,393	1,060	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0600 MTC	60.00	4,000	4,500	48	48.16	9,349	1,055	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0600 MTL	60.00	2,800	4,500	60	54.68	9,383	1,059	26,574	3,000	39,861	4,500	79,722	9,000
PHV933 with Motor Mounting Plate													
PHV933F0610 MT	61.00	2,500	4,500	38	49.32	7,531	850	22,145	2,500	37,647	4,250	79,722	9,000
PHV933F0610 MTC	61.00	3,200	4,500	38	53.32	7,488	845	22,145	2,500	37,647	4,250	79,722	9,000
PHV933F0610 MTL	61.00	2,500	4,500	48	67.17	7,531	850	22,145	2,500	37,647	4,250	79,722	9,000
PHV933F0910 MT	91.00	2,500	4,500	38	45.51	7,427	838	22,145	2,500	37,647	4,250	79,722	9,000
PHV933F0910 MTC	91.00	3,200	4,500	38	51.19	7,403	836	22,145	2,500	37,647	4,250	79,722	9,000
PHV933F0910 MTL	91.00	2,500	4,500	48	63.81	7,427	838	22,145	2,500	37,647	4,250	79,722	9,000
PHV933F1210 MT	121.00	2,500	4,500	38	44.12	7,131	805	22,145	2,500	37,647	4,250	79,722	9,000
PHV933F1210 MTC	121.00	3,200	4,500	38	49.81	7,119	804	22,145	2,500	37,647	4,250	79,722	9,000
PHV933F1210 MTL	121.00	2,500	4,500	48	62.42	7,131	805	22,145	2,500	37,647	4,250	79,722	9,000

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"PH" Series
ServoFit® Precision Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic										
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PH1032 with Motor Mounting Plate													
PH1032F0180 MT	18.00	1,800	3,000	48	72.04	15,752	1,778	40,818	4,608	61,226	6,912	98,290	11,096
PH1032F0180 MTC	18.00	2,500	3,000	48	93.06	14,665	1,656	40,818	4,608	61,226	6,912	98,290	11,096
PH1032F0180 MTL	18.00	1,800	3,000	60	94.99	15,438	1,743	40,818	4,608	61,226	6,912	98,290	11,096
PH1032F0240 MT	24.00	2,200	3,500	48	43.24	15,526	1,753	40,818	4,608	66,435	7,500	131,053	14,795
PH1032F0240 MTC	24.00	2,700	3,500	48	64.25	14,913	1,684	40,818	4,608	66,435	7,500	131,053	14,795
PH1032F0240 MTL	24.00	2,200	3,500	60	66.19	15,353	1,733	40,818	4,608	66,435	7,500	131,053	14,795
PH1032F0300 MT	30.00	2,500	4,000	48	36.19	15,325	1,730	44,290	5,000	66,435	7,500	132,870	15,000
PH1032F0300 MTC	30.00	3,200	4,000	48	57.20	14,937	1,686	44,290	5,000	66,435	7,500	132,870	15,000
PH1032F0300 MTL	30.00	2,500	4,000	60	59.14	15,217	1,718	44,290	5,000	66,435	7,500	132,870	15,000
PH1032F0420 MT	42.00	2,800	4,500	48	30.16	14,978	1,691	44,290	5,000	66,435	7,500	132,870	15,000
PH1032F0420 MTC	42.00	4,000	4,500	48	51.65	14,754	1,666	44,290	5,000	66,435	7,500	132,870	15,000
PH1032F0420 MTL	42.00	2,800	4,500	60	58.18	14,925	1,685	44,290	5,000	66,435	7,500	132,870	15,000
PH1032F0480 MT	48.00	2,800	4,500	48	28.98	14,676	1,657	40,818	4,608	61,226	6,912	132,870	15,000
PH1032F0480 MTC	48.00	4,000	4,500	48	50.46	14,510	1,638	40,818	4,608	61,226	6,912	132,870	15,000
PH1032F0480 MTL	48.00	2,800	4,500	60	56.99	14,637	1,652	40,818	4,608	61,226	6,912	132,870	15,000
PH1032F0600 MT	60.00	2,800	4,500	48	26.95	14,189	1,602	35,715	4,032	61,226	6,912	132,870	15,000
PH1032F0600 MTC	60.00	4,000	4,500	48	48.44	14,090	1,591	35,715	4,032	61,226	6,912	132,870	15,000
PH1032F0600 MTL	60.00	2,800	4,500	60	54.96	14,166	1,599	35,715	4,032	61,226	6,912	132,870	15,000
PHV1033 with Motor Mounting Plate													
PHV1033F0610 MT	61.00	2,500	4,500	48	146.08	12,139	1,370	35,432	4,000	66,435	7,500	132,870	15,000
PHV1033F0610 MTC	61.00	3,000	4,500	48	165.05	12,078	1,364	35,432	4,000	66,435	7,500	132,870	15,000
PHV1033F0910 MT	91.00	2,500	4,500	48	120.21	11,888	1,342	35,432	4,000	66,435	7,500	132,870	15,000
PHV1033F0910 MTC	91.00	3,000	4,500	48	142.68	11,858	1,339	35,432	4,000	66,435	7,500	132,870	15,000

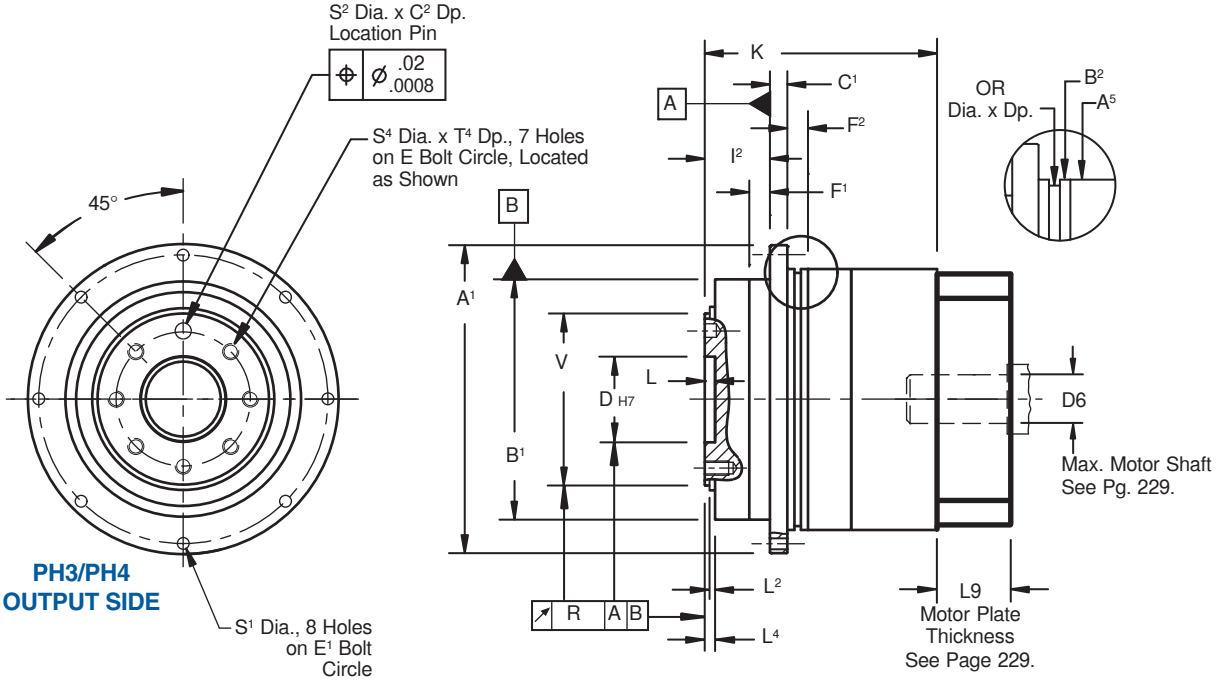
Index of Symbols

MT ..... Motor adapter with TriAdapt® coupling	i ..... Ratio - Exact	M_{2N} ..... Nominal Torque
MF ..... Motor adapter with FlexiAdapt® coupling	n_1 ..... Maximum input speed RPM	M_{2B} ..... Acceleration Torque Maximum
L ..... Large Input	J_1 ..... Mass moment of inertia (input)	M_{2PEAK} ..... Peak Torque
C ..... ServoCool	C_2 ..... Torsional Stiffness	

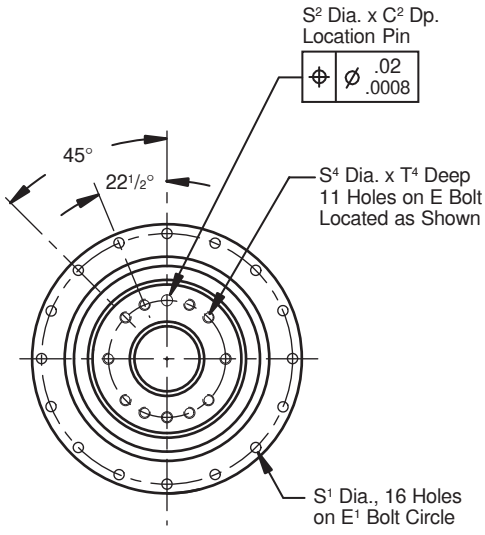
See web site for drawings.

"PH" Series
ServoFit® Precision Planetary Gearhead
Dimensional Data

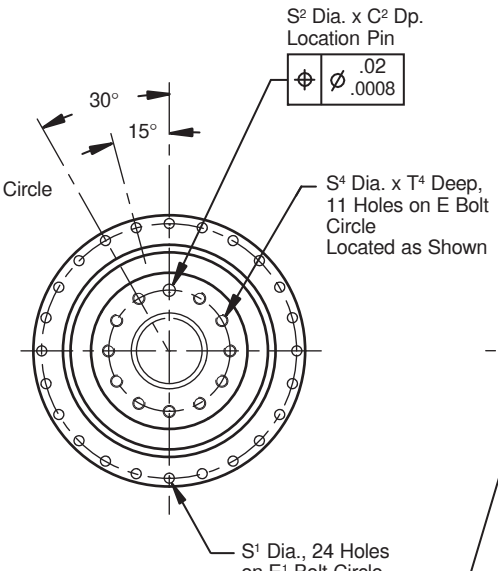
Drawing for Units
PH321 thru PH1033



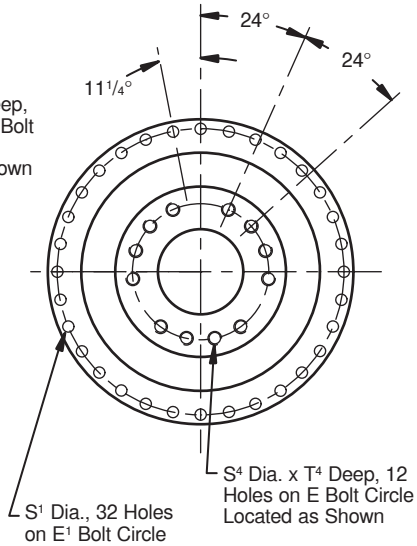
PH3/PH4
OUTPUT SIDE



PH5
OUTPUT SIDE



PH7/PH8
OUTPUT SIDE



PH9/PH10
OUTPUT SIDE

"PH" Series
ServoFit® Precision Planetary Gearhead
Dimensional Data

Table No. 1 **"PH" Series – Gearhead with Motor Plate – Dimensions (mm/inches)**

Unit	A^1 h7	B^1 h7	B^2 h7	C^1	C^2	D H7	E	E^1	F^1	F^2	I^2	L	L^2	L^4	OR
PH321/PH322	86 +.000/-.035 3.386 +.0000/-.0014	64 +.000/-.030 2.520 +.0000/-.0012	70 * +.000/-.030 2.756 +.0000/-.0012	4 .16	3 .12	20 +.021/-.0 .787 +.0008/-.0000	31.5 1.24	79 3.11	7 .28	8 .31	19.5 .77	4 .16	3 .12	3.5 .14	65x2 2.55x.08
PH421/PH422	118 +.000/-.035 4.646 +.0000/-.0014	90 +.000/-.035 3.543 +.0000/-.0014	95 +.000/-.035 3.740 +.0000/-.0014	7 .28	7 .28	31.5 +.025/-.0 1.240 +.0010/-.0000	50 1.97	109 4.29	10 .39	10 .39	30 1.18	6 .24	6 .24	6 .24	90x3 3.54x.12
PH521/PH522	145 +.000/-.040 5.709 +.0000/-.0016	110 +.000/-.035 4.331 +.0000/-.0014	120 * +.000/-.035 4.724 +.0000/-.0014	8 .32	7 .28	40 +.025/-.0 1.575 +.0010/-.0000	63 2.48	135 5.31	10 .39	12 .47	29 1.14	6 .24	6 .24	6 .24	110x3 4.33x.12
PH721/PH722	179 +.000/-.040 7.047 +.0000/-.0016	140 +.000/-.040 5.513 +.0000/-.0016	152 +.000/-.040 5.984 +.0000/-.0016	10 .39	7 .28	50 +.025/-.0 1.969 +.0010/-.0000	80 3.15	168 6.61	12 .47	12 .47	38 1.50	6 .24	6 .24	6 .24	145x3 5.71x.12
PH821/PH822	247 +.000/-.046 9.724 +.0000/-.0018	200 +.000/-.046 7.874 +.0000/-.0018	212 +.000/-.046 8.346 +.0000/-.0018	12 .47	10 .39	80 +.030/-.0 3.150 +.0012/-.0000	125 4.92	233 9.17	15 .59	15 .59	50 1.97	8 .31	8 .31	8 .31	200x5 7.87x.20
PH932/PHV933	300 — 11.811	255 +.000/-.052 10.039 +.000/-.0020	255 +.000/-.052 10.039 +.0000/-.0020	18 .71	—	90 +.035/-.0 3.543 +.0014/-.0000	140 5.51	280 11.02	20 .79	33 1.29	66 2.60	12 .47	11 .43	12 .47	238x5 9.37x.20
PH1032/PHV1033	330 — 12.992	285 +.000/-.057 11.220 +.000/-.0022	285 +.000/-.052 11.221 +.0000/-.0020	20 .79	—	95 +.035/-.0 3.740 +.0014/-.0000	160 6.30	310 12.20	20 .79	20 .79	75 2.95	10 .39	15 .59	15 .59	270x6 10.63x.24

* Not applicable for PH322 and PH522.

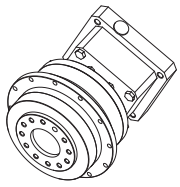
Table No. 2 **"PH" Series – Dimensions (mm/inches)**

Unit	R	S^1	S^2 H7	S^4	T^4	V h7
PH321/PH322	.020 .0008	4.5 .18	5 +.012/-.000 .20 +.0005/-.0000	M5	7 .28	40 +.000/-.025 1.575 +.000/-.0010
PH421/PH422	.020 .0008	5.5 .22	6 +.012/-.000 .236 +.0005/-.0000	M6	11 .43	63 +.000/-.030 2.480 +.000/-.0012
PH521/PH522	.020 .0008	5.5 .22	6 +.012/-.000 .236 +.0005/-.0000	M6	11 .43	80 +.000/-.030 3.150 +.000/-.0012
PH721/PH722	.025 .0010	6.6 .26	8 +.015/-.000 .315 +.0006/-.0000	M8	14 .55	100 +.000/-.035 3.937 +.000/-.0014
PH821/PH822	.030 .0012	9 .35	10 +.015/-.000 .393 +.0006/-.0000	M10	18 .71	160 +.000/-.040 6.299 +.000/-.0016
PH932/PHV933	.030 .0012	13.5 .53	—	M16	24 .94	180 +.000/-.040 7.087 +.000/-.0016
PH1032/PHV1033	.040 .0016	13.5 .53	—	M20	30 1.18	200 +.000/-.046 7.874 +.000/-.0018

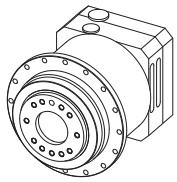
Part No. Explanation

PH 8 2 1 F 0050 MT C

- **C** — Option for ServoCool
- **MT** — Motor Plate with TriAdapt Coupling
- **0050** — Ratio (**0050** = 5.0:1)
- **F** — Output Flange
- **1** — No. of Stages (**1** = 1 Stage, **2** = 2 Stage)
- **2** — Generation No.
- **8** — Unit No.
- **PH** — "**PH**" Series ServoFit Precision Planetary Gearhead



Typical 2 Stage Configuration



Typical ServoCool

Table No. 3 **"PH" Series – Dimensions (mm/inches)**

Unit	A^5 mm	A^5 inches	K — Standard mm	K — Standard inches	Unit	A^5 mm	A^5 inches	K — ServoCool mm	K — ServoCool inches
PH321	70	2.76	80.5	3.17	—				
PH322	55	2.17	104	4.09	—				
PH421	95	3.74	99	3.90	**PH421_C**	98	3.86	122.5	4.82
PH422	72	2.83	146.5	5.77	–				
PH521	120	4.72	110	4.33	**PH521_C**	115	4.53	138	5.43
PH522	98	3.86	159.5	6.28	**PH522_C**	98	3.86	183	7.20
PH721	152	5.98	138	5.43	**PH721_C**	145	5.71	168	6.61
PH722	115	4.53	190	7.48	**PH722_C**	115	4.53	218	8.58
PH821	212	8.35	183	7.20	**PH821_C**	190	7.48	231	9.09
PH822	145	5.71	251	9.88	**PH822_C**	145	5.71	281	11.06
PH932	190	7.48	349.5	13.74	**PH932_C**	190	7.48	397.5	15.64
PHV933	152	5.98	269.5	10.61	**PHV933_C**	145	5.71	299.5	11.79
PH1032	190	7.48	366	14.41	**PH1032_C**	190	7.48	414	16.30
PHV1033	212	8.35	307	12.09	**PHV1033_C**	190	7.48	355	13.98

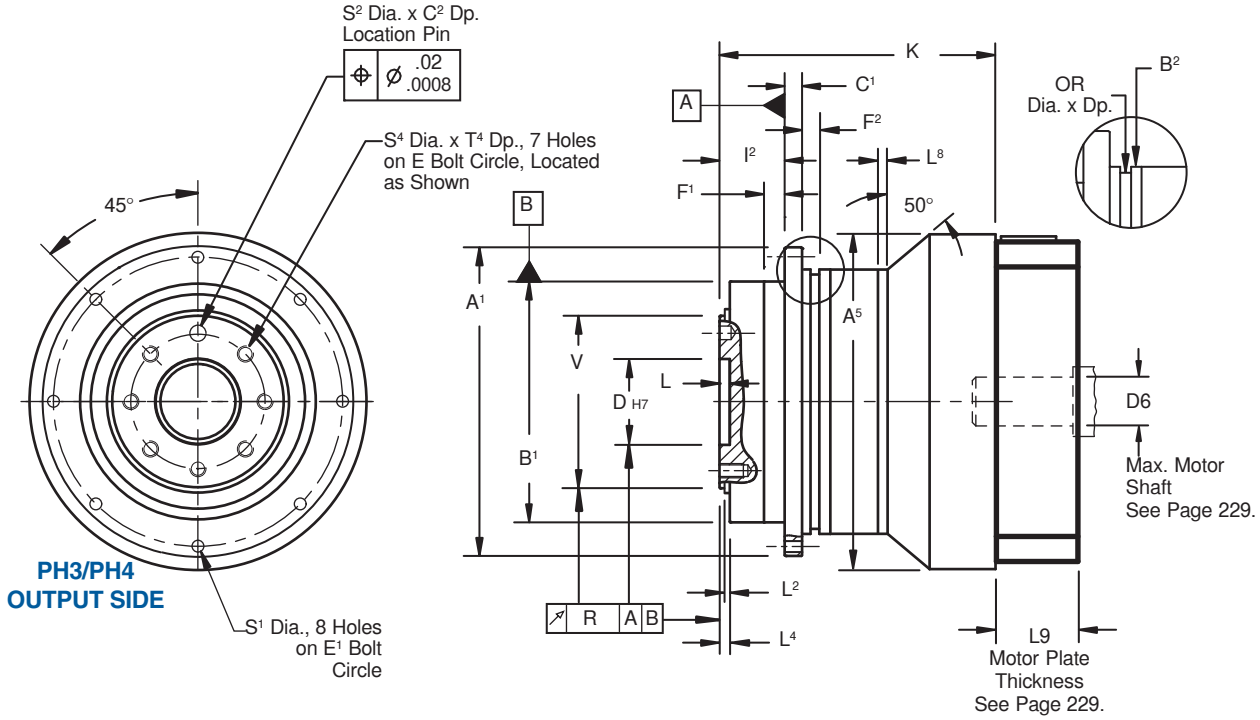
If a planetary gearhead is to be mounted from "B²" side, specify when ordering. For proper mounting the paint must be eliminated and the tolerance held on that surface.

Side "B²" mounting is not possible with the Large Input.

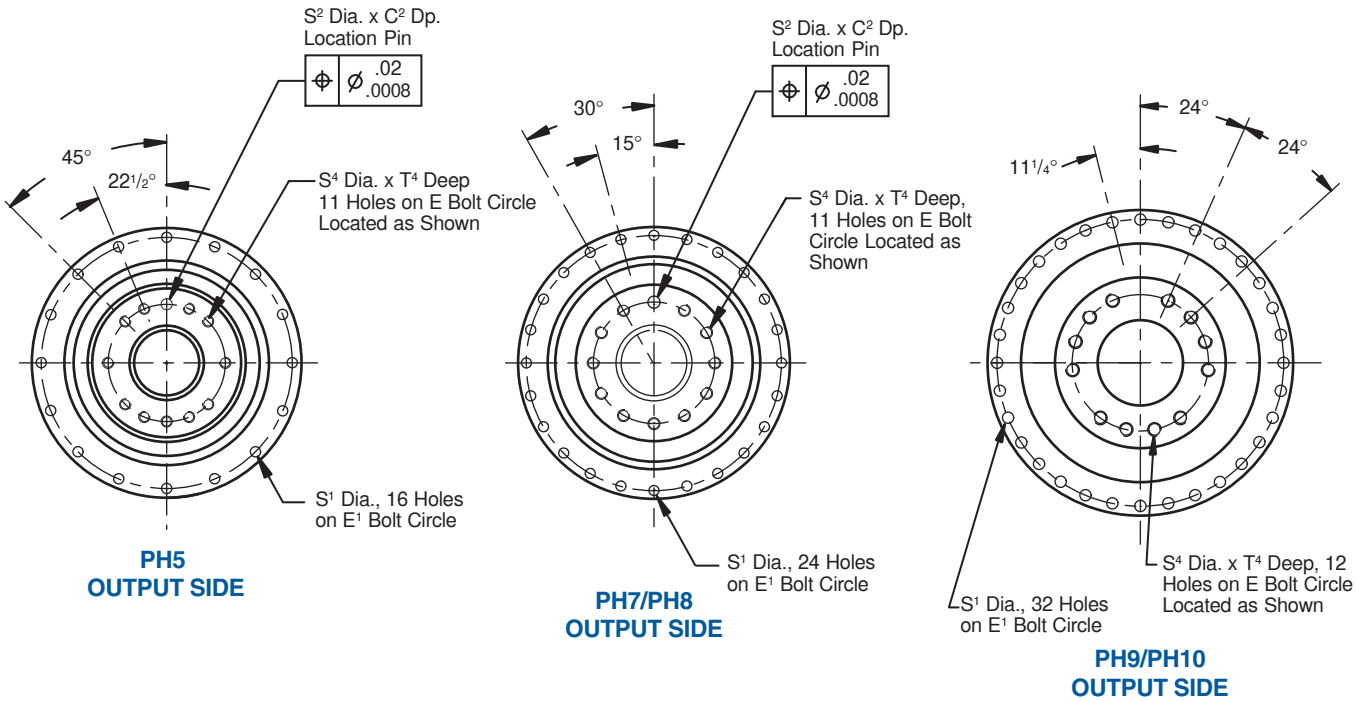
When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

"PH" Series – Large Input ServoFit® Precision Planetary Gearhead Dimensional Data

Drawing for Units
PH321_L thru PH1032_L



PH3/PH4
OUTPUT SIDE



PH5
OUTPUT SIDE

PH7/PH8
OUTPUT SIDE

PH9/PH10
OUTPUT SIDE

"PH" Series – Large Input
ServoFit® Precision Planetary Gearhead
Dimensional Data

Table No. 1 **"PH" Series – Gearhead with Motor Plate – Dimensions (mm/inches)**

Unit	A^1 h7	B^1 h7	B^2 h7	C^1	C^2	D H7	E	E^1	F^1	F^2	I^2	L	L^2	L^4	L^8
PH321/PH322_L	86 +.000/-.035 3.386 +.0000/-.0014	64 +.000/-.030 2.520 +.0000/-.0012	70 * +.000/-.030 2.756 +.0000/-.0012	4 .16	3 .12	20 +.021/-.0 .787 +.0008/-.0000	31.5 1.24	79 3.11	7 .28	8 .31	19.5 .77	4 .16	3 .12	3.5 .14	5 .20
PH421/PH422_L	118 +.000/-.035 4.646 +.0000/-.0014	90 +.000/-.035 3.543 +.0000/-.0014	95 +.000/-.035 3.740 +.0000/-.0014	7 .28	7 .28	31.5 +.025/-.0 1.240 +.0010/-.0000	50 1.97	109 4.29	10 .39	10 .39	30 1.18	6 .24	6 .24	6 .24	5 .20
PH521/PH522_L	145 +.000/-.040 5.709 +.0000/-.0016	110 +.000/-.035 4.331 +.0000/-.0014	120 * +.000/-.035 4.724 +.0000/-.0014	8 .32	7 .28	40 +.025/-.0 1.575 +.0010/-.0000	63 2.48	135 5.31	10 .39	12 .47	29 1.14	6 .24	6 .24	6 .24	5 .20
PH721/PH722_L	179 +.000/-.040 7.047 +.0000/-.0016	140 +.000/-.040 5.513 +.0000/-.0016	152 +.000/-.040 5.984 +.0000/-.0016	10 .39	7 .28	50 +.025/-.0 1.969 +.0010/-.0000	80 3.15	168 6.61	12 .47	12 .47	38 1.50	6 .24	6 .24	6 .24	5 .20
PH822_L	247 +.000/-.046 9.724 +.0000/-.0018	200 +.000/-.046 7.874 +.0000/-.0018	212 +.000/-.046 8.346 +.0000/-.0018	12 .47	10 .39	80 +.030/-.0 3.150 +.0012/-.0000	125 4.92	233 9.17	15 .59	15 .59	50 1.97	8 .31	8 .31	8 .31	5 .20
PH932/PHV933_L	300 11.811	255 +.000/-.052 10.039 +.000/-.0020	255 +.000/-.052 10.039 +.0000/-.0020	18 .71	—	90 +.035/-.0 3.543 +.0014/-.0000	140 5.51	280 11.02	20 .79	33 1.29	66 2.60	12 .47	11 .43	12 .47	5 .20
PH1032_L	330 12.992	285 +.000/-.057 11.220 +.000/-.0022	285 +.000/-.052 11.221 +.0000/-.0020	20 .79	—	95 +.035/-.0 3.740 +.0014/-.0000	160 6.30	310 12.20	20 .79	20 .79	75 2.95	10 .39	15 .59	15 .59	3 .12

* Not applicable for PH322 and PH522.

Table No. 2 **"PH" Series – Large Input – Dimensions (mm/inches)**

Unit	OR	R	S^1	S^2 H7	S^4	T^4	V h7
PH321/PH322_L	65x2 2.55x.08	.020 .0008	4.5 .18	5 +.012/-.000 .20 +.0005/-.0000	M5	7 .28	40 +.000/-.025 1.575 +.000/-.0010
PH421/PH422_L	90x3 3.54x.12	.020 .0008	5.5 .22	6 +.012/-.000 .236 +.0005/-.0000	M6	10 .39	63 +.000/-.030 2.480 +.000/-.0012
PH521/PH522_L	110x3 4.33x.12	.020 .0008	5.5 .22	6 +.012/-.000 .236 +.0005/-.0000	M6	11 .43	80 +.000/-.030 3.150 +.000/-.0012
PH721/PH722_L	145x3 5.71x.12	.025 .0010	6.6 .26	8 +.015/-.000 .315 +.0006/-.0000	M8	14 .55	100 +.000/-.035 3.937 +.000/-.0014
PH822_L	200x5 7.87x.20	.030 .0012	9 .35	10 +.015/-.000 .393 +.0006/-.0000	M10	18 .71	160 +.000/-.040 6.299 +.000/-.0016
PH932/PHV933_L	238x5 9.37x.20	.030 .0012	13.5 .53	—	M16	24 .94	180 +.000/-.040 7.087 +.000/-.0016
PH1032_L	270x6 10.63x.24	.040 .0015	13.5 .53	—	M20	30 1.18	200 +.000/-.046 7.874 +.000/-.0018

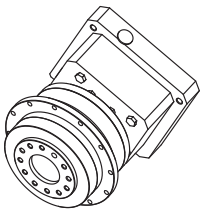
Table No. 3 **"PH" Series**

Unit	A^5 mm	A^5 inches	K mm	K inches
PH321_L	95	3.74	80.5	3.17
PH322_L	72	2.83	104	4.09
PH421_L	120	4.72	99	3.90
PH422_L	98	3.86	146.5	5.77
PH521_L	152	5.98	110	4.33
PH522_L	115	4.53	159.5	6.28
PH721_L	212	8.35	138	5.43
PH722_L	145	5.71	190	7.48
PH822_L	190	7.48	251	9.88
PH932_L	225	8.86	349.5	13.74
PHV933_L	212	8.35	269.5	10.61
PH1032_L	225	8.86	366	14.41

Part No. Explanation

PH 4 2 1 F 0050 MT L

- **L** – **L**arge Input
- **MT** – **M**otor Plate with **T**riAdapt Coupling
- **0050** – Ratio (**0050** = 5.0:1)
- **F** – Output Flange
- **1** – No. of Stages (**1** = 1 Stage, **2** = 2 Stage)
- **4** – Generation No.
- **2** – Unit No.
- **PH** – "**PH**" Series ServoFit Precision Planetary Gearhead



Typical 2 Stage Configuration

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

See web site for drawings.

"PHA" Series–Advanced ServoFit® Precision Planetary Gearhead Performance Specifications

	Size	PHA321 PHA322	PHA421 PHA422	PHA521 PHA522	PHA721 PHA722	PHA821 PHA822	PHA932 PHVA933	PHA1032 PHVA1033
Acceleration Torque Max. M_{2B}	in.lbs.	575	1,150	2,832	6,195	17,700	44,290	66,375
	Nm	65	130	320	700	2,000	5,000	7,500
Output Torque Nominal [1] M_{2N}	in.lbs.	398	796	1,947	3,894	11,062	26,574	44,290
	Nm	45	90	220	440	1,250	3,000	5,000
Input Speed Maximum n_{1MAX}	Continuous	3,800 4,500	3,500 4,500	3,300 4,000	3,000 3,700	2,500 3,300	2,800 2,500	2,800 2,500
	Cyclic	6,000 8,000	6,000 8,000	6,000 7,000	5,000 6,500	4,000 6,000	4,500 4,500	4,500 4,500
ServoCool Input RPM Max. n_{1MAX}	Continuous	—	4,500 —	4,500 5,000	4,000 4,700	3,700 4,300	4,000 3,200	4,000 3,000
	Cyclic	—	6,000 —	6,000 7,000	5,000 6,500	4,500 6,000	4,500 4,500	4,500 4,500
Torsional Backlash [2] $\Delta\varphi$	arcmin	≤2	≤1	≤1	≤1	≤1	≤1	≤1
Torsional Stiffness C_2	in.lbs./arcmin	≤106	≤292	≤708	≤1,371	≤3,752	≤10,980	≤15,752
	Nm/arcmin	≤12	≤33	≤80	≤155	≤424	≤1,240	≤1,778
Axial Load Maximum F_{2AMAX}	lbs.	371	484	934	1,384	2,260	7,425	11,250
	N	1,650	2,150	4,150	6,150	10,050	33,000	50,000
Tilting Moment Maximum M_{2K}	in.lbs.	885	2,301	3,894	13,275	30,975	66,375	77,880
	Nm	100	260	440	1,500	3,500	7,500	8,800
Tilting Stiffness C_{2K}	in.lbs./arcmin	—	1,416	2,655	4,425	13,718	66,375	84,075
	Nm/arcmin	—	160	300	500	1,550	7,500	9,500
Efficiency (at Nominal Torque) h	%	96% 94%	96% 94%	96% 94%	96% 94%	96% 94%	96% 94%	94% 92%
Weight m	pounds	4	9 10	15 18	27 32	76 88	166 147	200 198
	kg	1.8	3.9 4.6	6.6 8.1	12.3 14.6	34.6 39.8	75.2 66.6	90.6 90
Noise Level [4] L_{PA}	dB(A)	≤61	≤62	≤63	≤64	≤65	≤65	≤65
Balance Quality		Q 2.5 (Quality Class-2.5 millimeters per second)						
Lubrication		Synthetic Oil (ISO VG 150)						
Degree of Protection		IP65						
Mounting Position		Unrestricted						
Ambient Temperature		0° C to +40°C (104° F) [Unit temperature ≤ 90° C Max.]						
Finish		Black (RAL 9005)						
Lifetime [5] L_h	hours	L_h > 10,000 hours if M_{2K}/M_{2A} < 1.25 and > 1.00 L_h > 20,000 hours if M_{2K}/M_{2A} > 1.25 and < 1.50 L_h > 30,000 hours if M_{2K}/M_{2A} > 1.5						
Warranty		5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)						

[1] Ratings based on input speed (n_1) of 2000 RPM.
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[2] Tested at 1.5% of nominal torque and recorded on the output side of the gearhead.

[3] Rating based on output speed (n2) of 100 RPM. For values at other speeds see Page 240.

[4] Measurement at one (1) meter distance with input speed (n1) of 3000 RPM.

[5] M_{2A} equals actual tilting moment of the application. See Page 240 for calculation details.

WARNING: In order to insure that the specified torque ratings are attained, it is essential to use a grade 12.9 fastener on all output connections.

Refer to Page 250 for ServoFit Precision Planetary Gearhead Selection Procedure.

"PHA" Series–Advanced ServoFit® Precision Planetary Gearhead Features

The "PHA" Series ServoFit Precision Planetary Gearheads are designed for high demands of torsional stiffness and tilting rigidity. The "PHA" series is well suited where a smooth, precise, reliable drive is needed. All units are lubricated for life with synthetic oil and sealed on the smallest diameters possible with FKM radial oil seals to IP65 standards — reduces friction and prevents heat build up, increases efficiency, and prevents lubricant contamination for long life.

Some features are:

- Readily Attaches to Any Servo Motor
- Superior Torsional Stiffness
- 90-96% Efficiency
- Excellent Axial Load Capacity
- ≤ 1 arc minute backlash
- ISO Output Flange for Coupling Free Mounting
- Advanced Helicamber Gear Technology
- 5 Year Limited Warranty (2 Year on bearings, seals, etc.)
- Wide Selection of IEC, NEMA, or Customized* Motor Plates
- Ground and honed gearing

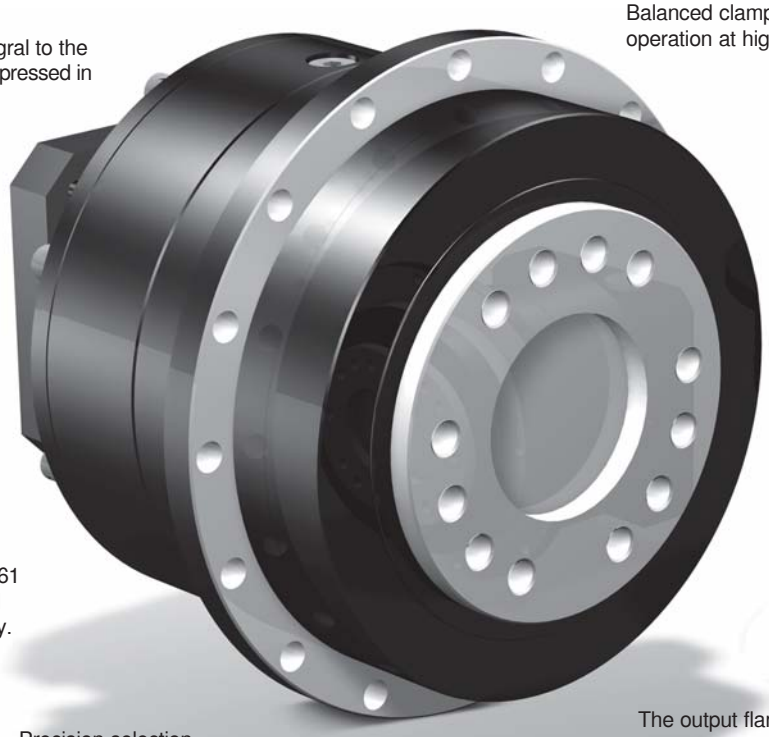
* Maximum 10 working day for custom motor plates.

Helical gears made with the proven experience of HeliCamber® gear technology provides the highest running smoothness — ensuring backlash stability and extremely quiet operation.

The FlexiAdapt® motor coupling is designed for large motor shaft diameters and features a bellows coupling to compensate for thermal expansion of the motor shaft—ensuring long motor life by preventing thrust load on the motor bearings.

Balanced clamp coupling for smooth operation at high speeds.

Ring gear machined integral to the housing — not welded or pressed in



The FlexiAdapt® motor shaft adapter system allows easy and accurate installation of motor in minutes – no special tools required.

Adapter bushings fit all motor shafts — no key required

FKM double-lip radial oil seals for continuous duty applications and very good chemical resistance.

Blind pilot hole

Gears are case hardened to 61 Rockwell "C" and ground and honed for maximum accuracy.

Backlash ≤ 1 arcminute — Precision selection of parts ensure optimal performance without binding gear teeth — resulting in a more accurate and smooth direct drive

The output flange dimensions are ISO 9409 and allow easy mounting to rotary or indexing tables, pinions, timing belt pulleys, transmission shafting, etc., without using a coupling.

Single piece high tensile steel housing provides greater concentricity and more precise alignment — ensuring high running accuracy and precision.

Oversized tapered roller bearings and shafts for high radial load capacity and superior torsional stiffness

Precision selection of gears and parts ensures backlash of less than 1 arcminute.

See web site for drawings.

"PHA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD6	J1	C2		M2N		M2B		M2PEAK	
	i	RPM (n1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PHA321 with Motor Mounting Plate													
PHA321F0050 MF	5.000	3,000	6,000	≤11	0.55	101.0	11.4	399	45	576	65	1,152	130
PHA321F0050 MF	5.000	3,000	6,000	>11≤14	0.56	103.2	11.7	399	45	576	65	1,152	130
PHA321F0050 MF	5.000	3,000	6,000	>14≤19	0.56	103.2	11.7	399	45	576	65	1,152	130
PHA321F0050 MFL	5.000	3,000	6,000	>19≤24	1.64	111.0	12.5	399	45	576	65	1,152	130
PHA321F0070 MF	7.000	3,500	6,000	≤11	0.52	95.8	10.8	399	45	531	60	1,152	130
PHA321F0070 MF	7.000	3,500	6,000	>11≤14	0.52	95.8	10.8	399	45	531	60	1,152	130
PHA321F0070 MF	7.000	3,500	6,000	>14≤19	0.52	95.8	10.8	399	45	531	60	1,152	130
PHA321F0070 MFL	7.000	3,500	6,000	>19≤24	1.58	99.7	11.3	399	45	531	60	1,152	130
PHA321F0100 MF	10.00	3,800	6,000	≤11	0.50	77.8	8.8	266	30	443	50	886	100
PHA321F0100 MF	10.00	3,800	6,000	>11≤14	0.50	77.8	8.8	266	30	443	50	886	100
PHA321F0100 MF	10.00	3,800	6,000	>14≤19	0.50	77.8	8.8	266	30	443	50	886	100
PHA321F0100 MFL	10.00	3,800	6,000	>19≤24	1.56	79.1	8.9	266	30	443	50	886	100
PHA322 with Motor Mounting Plate													
PHA322F0200 MF	20.00	4,500	8,000	≤9	0.11	89.3	10.1	399	45	576	65	1,152	130
PHA322F0200 MF	20.00	4,500	8,000	>11≤14	0.14	89.7	10.1	399	45	576	65	1,152	130
PHA322F0200 MF	20.00	4,500	8,000	>9≤11	0.12	89.7	10.1	399	45	576	65	1,152	130
PHA322F0250 MF	25.00	4,500	8,000	≤9	0.09	89.7	10.1	399	45	576	65	1,152	130
PHA322F0250 MF	25.00	4,500	8,000	>11≤14	0.12	89.9	10.2	399	45	576	65	1,152	130
PHA322F0250 MF	25.00	4,500	8,000	>9≤11	0.10	89.9	10.2	399	45	576	65	1,152	130
PHA322F0280 MF	28.00	4,500	8,000	≤9	0.10	90.1	10.2	399	45	531	60	1,152	130
PHA322F0280 MF	28.00	4,500	8,000	>11≤14	0.14	90.3	10.2	399	45	531	60	1,152	130
PHA322F0280 MF	28.00	4,500	8,000	>9≤11	0.12	90.3	10.2	399	45	531	60	1,152	130
PHA322F0350 MF	35.00	4,500	8,000	≤9	0.08	89.0	10.0	399	45	576	65	1,152	130
PHA322F0350 MF	35.00	4,500	8,000	>11≤14	0.11	89.0	10.0	399	45	576	65	1,152	130
PHA322F0350 MF	35.00	4,500	8,000	>9≤11	0.09	89.0	10.0	399	45	576	65	1,152	130
PHA322F0400 MF	40.00	4,500	8,000	≤9	0.10	75.9	8.6	266	30	443	50	886	100
PHA322F0400 MF	40.00	4,500	8,000	>11≤14	0.14	76.0	8.6	266	30	443	50	886	100
PHA322F0400 MF	40.00	4,500	8,000	>9≤11	0.11	76.0	8.6	266	30	443	50	886	100
PHA322F0500 MF	50.00	4,500	8,000	≤9	0.07	86.7	9.8	399	45	576	65	1,152	130
PHA322F0500 MF	50.00	4,500	8,000	>11≤14	0.10	86.7	9.8	399	45	576	65	1,152	130
PHA322F0500 MF	50.00	4,500	8,000	>9≤11	0.08	86.7	9.8	399	45	576	65	1,152	130
PHA322F0700 MF	70.00	4,500	8,000	≤9	0.07	88.7	10.0	399	45	531	60	1,152	130
PHA322F0700 MF	70.00	4,500	8,000	>11≤14	0.10	88.7	10.0	399	45	531	60	1,152	130
PHA322F0700 MF	70.00	4,500	8,000	>9≤11	0.08	88.7	10.0	399	45	531	60	1,152	130
PHA322F1000 MF	100.0	4,500	8,000	≤9	0.07	75.4	8.5	266	30	443	50	886	100
PHA322F1000 MF	100.0	4,500	8,000	>11≤14	0.10	75.4	8.5	266	30	443	50	886	100
PHA322F1000 MF	100.0	4,500	8,000	>9≤11	0.08	75.4	8.5	266	30	443	50	886	100
PHA421 with Motor Mounting Plate Continued Next Page													
PHA421F0040 MF	4.000	2,300	5,000	≤14	2.13	282.8	31.9	753	85	1,152	130	1,701	192
PHA421F0040 MF	4.000	2,300	5,000	>14≤19	2.15	294.2	33.2	753	85	1,152	130	2,126	240
PHA421F0040 MF	4.000	2,300	5,000	>19≤24	2.05	294.2	33.2	753	85	1,152	130	2,126	240
PHA421F0040 MFC	4.000	3,300	5,000	≤14	2.46	282.8	31.9	753	85	1,152	130	1,701	192
PHA421F0040 MFC	4.000	3,300	5,000	>14≤19	2.31	294.2	33.2	753	85	1,152	130	2,126	240
PHA421F0040 MFC	4.000	3,300	5,000	>19≤24	2.20	294.2	33.2	753	85	1,152	130	2,126	240
PHA421F0040 MFL	4.000	2,300	5,000	>24≤32	5.26	311.0	35.1	753	85	1,152	130	2,126	240
PHA421F0040 MFLC	4.000	3,300	5,000	>24≤32	5.69	311.0	35.1	753	85	1,152	130	2,126	240
PHA421F0050 MF	5.000	2,700	6,000	≤14	1.95	288.9	32.6	753	85	1,152	130	2,126	240
PHA421F0050 MF	5.000	2,700	6,000	>14≤19	1.97	296.4	33.5	753	85	1,152	130	2,126	240
PHA421F0050 MF	5.000	2,700	6,000	>19≤24	1.87	296.4	33.5	753	85	1,152	130	2,126	240
PHA421F0050 MFC	5.000	3,700	6,000	≤14	2.28	288.9	32.6	753	85	1,152	130	2,126	240

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"PHA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead	i	Continuous RPM (n_1)	Cyclic	øD^6 mm	J_1 kgcm²	C_2 in.lbs.	Nm	M_{2N} in.lbs.	Nm	M_{2B} in.lbs.	Nm	M_{2PEAK} in.lbs.	Nm
PHA421 with Motor Mounting Plate Continued													
PHA421F0050 MFC	5.000	3,700	6,000	>14≤19	2.13	296.4	33.5	753	85	1,152	130	2,126	240
PHA421F0050 MFC	5.000	3,700	6,000	>19≤24	2.02	296.4	33.5	753	85	1,152	130	2,126	240
PHA421F0050 MFL	5.000	2,700	6,000	>24≤32	5.08	307.1	34.7	753	85	1,152	130	2,126	240
PHA421F0050 MFLC	5.000	3,700	6,000	>24≤32	5.51	307.1	34.7	753	85	1,152	130	2,126	240
PHA421F0070 MF	7.000	3,200	6,000	≤14	1.79	259.7	29.3	753	85	974	110	2,126	240
PHA421F0070 MF	7.000	3,200	6,000	>14≤19	1.79	259.7	29.3	753	85	974	110	2,126	240
PHA421F0070 MF	7.000	3,200	6,000	>19≤24	1.69	259.7	29.3	753	85	974	110	2,126	240
PHA421F0070 MFC	7.000	4,200	6,000	≤14	2.13	259.7	29.3	753	85	974	110	2,126	240
PHA421F0070 MFC	7.000	4,200	6,000	>14≤19	1.98	262.7	29.7	753	85	974	110	2,126	240
PHA421F0070 MFC	7.000	4,200	6,000	>19≤24	1.85	259.7	29.3	753	85	974	110	2,126	240
PHA421F0070 MFL	7.000	3,200	6,000	>24≤32	4.85	265.3	29.9	753	85	974	110	2,126	240
PHA421F0070 MFLC	7.000	4,200	6,000	>24≤32	5.29	265.3	29.9	753	85	974	110	2,126	240
PHA421F0100 MF	10.00	3,500	6,000	≤14	1.72	182.5	20.6	531	60	886	100	1,772	200
PHA421F0100 MF	10.00	3,500	6,000	>14≤19	1.72	182.5	20.6	531	60	886	100	1,772	200
PHA421F0100 MF	10.00	3,500	6,000	>19≤24	1.62	182.5	20.6	531	60	886	100	1,772	200
PHA421F0100 MFC	10.00	4,500	6,000	≤14	2.05	182.5	20.6	531	60	886	100	1,772	200
PHA421F0100 MFC	10.00	4,500	6,000	>14≤19	1.90	183.3	20.7	531	60	886	100	1,772	200
PHA421F0100 MFC	10.00	4,500	6,000	>19≤24	1.77	182.5	20.6	531	60	886	100	1,772	200
PHA421F0100 MFL	10.00	3,500	6,000	>24≤32	4.78	183.9	20.8	531	60	886	100	1,772	200
PHA421F0100 MFLC	10.00	4,500	6,000	>24≤32	5.21	183.9	20.8	531	60	886	100	1,772	200
PHA422 with Motor Mounting Plate Continued Next Page													
PHA422F0160 MF	16.00	3,700	6,500	≤11	0.63	230.1	26.0	797	90	1,152	130	2,126	240
PHA422F0160 MF	16.00	3,700	6,500	>11≤14	0.64	231.3	26.1	797	90	1,152	130	2,126	240
PHA422F0160 MF	16.00	3,700	6,500	>14≤19	0.64	231.3	26.1	797	90	1,152	130	2,126	240
PHA422F0160 MFL	16.00	3,700	6,500	>19≤24	1.72	234.9	26.5	797	90	1,152	130	2,126	240
PHA422F0160 MFLC	16.00	4,500	6,500	>19≤24	1.87	234.4	26.5	797	90	1,152	130	2,126	240
PHA422F0200 MF	20.00	3,700	6,500	≤11	0.62	251.3	28.4	797	90	1,152	130	2,126	240
PHA422F0200 MF	20.00	3,700	6,500	>11≤14	0.63	252.2	28.5	797	90	1,152	130	2,126	240
PHA422F0200 MF	20.00	3,700	6,500	>14≤19	0.63	252.2	28.5	797	90	1,152	130	2,126	240
PHA422F0200 MFL	20.00	3,700	6,500	>19≤24	1.70	254.9	28.8	797	90	1,152	130	2,126	240
PHA422F0200 MFLC	20.00	4,500	6,500	>19≤24	1.86	254.5	28.7	797	90	1,152	130	2,126	240
PHA422F0250 MF	25.00	4,000	7,000	≤11	0.57	250.9	28.3	797	90	1,152	130	2,126	240
PHA422F0250 MF	25.00	4,000	7,000	>11≤14	0.58	251.5	28.4	797	90	1,152	130	2,126	240
PHA422F0250 MF	25.00	4,000	7,000	>14≤19	0.58	251.5	28.4	797	90	1,152	130	2,126	240
PHA422F0250 MFL	25.00	4,000	7,000	>19≤24	1.65	253.2	28.6	797	90	1,152	130	2,126	240
PHA422F0250 MFLC	25.00	4,800	7,000	>19≤24	1.81	253.0	28.6	797	90	1,152	130	2,126	240
PHA422F0280 MF	28.00	4,500	8,000	≤11	0.53	220.4	24.9	797	90	1,152	130	2,126	240
PHA422F0280 MF	28.00	4,500	8,000	>11≤14	0.53	220.4	24.9	797	90	1,152	130	2,126	240
PHA422F0280 MF	28.00	4,500	8,000	>14≤19	0.53	220.4	24.9	797	90	1,152	130	2,126	240
PHA422F0280 MFL	28.00	4,500	8,000	>19≤24	1.59	221.7	25.0	797	90	1,152	130	2,126	240
PHA422F0280 MFLC	28.00	5,300	8,000	>19≤24	1.74	221.7	25.0	797	90	1,152	130	2,126	240
PHA422F0350 MF	35.00	4,500	8,000	≤11	0.52	243.8	27.5	797	90	1,152	130	2,126	240
PHA422F0350 MF	35.00	4,500	8,000	>11≤14	0.52	243.8	27.5	797	90	1,152	130	2,126	240
PHA422F0350 MF	35.00	4,500	8,000	>14≤19	0.52	243.8	27.5	797	90	1,152	130	2,126	240
PHA422F0350 MFL	35.00	4,500	8,000	>19≤24	1.58	244.7	27.6	797	90	1,152	130	2,126	240
PHA422F0350 MFLC	35.00	5,300	8,000	>19<24	1.74	244.7	27.6	797	90	1,152	130	2,126	240
PHA422F0400 MF	40.00	4,500	8,000	≤11	0.50	213.8	24.1	797	90	1,152	130	2,126	240
PHA422F0400 MF	40.00	4,500	8,000	>11≤14	0.50	213.8	24.1	797	90	1,152	130	2,126	240
PHA422F0400 MF	40.00	4,500	8,000	>14≤19	0.50	213.8	24.1	797	90	1,152	130	2,126	240
PHA422F0400 MFL	40.00	4,500	8,000	>19≤24	1.56	214.4	24.2	797	90	1,152	130	2,126	240
PHA422F0400 MFLC	40.00	5,300	8,000	>19≤24	1.72	214.4	24.2	797	90	1,152	130	2,126	240

Index of Symbols

MF	Motor adapter with FlexiAdapt® coupling	J_1	Mass moment of inertia (input)
L	Large Input	C_2	Torsional Stiffness
C	ServoCool	M_{2N}	Nominal Torque
i	Ratio - Exact	M_{2B}	Acceleration Torque Maximum
n_1	Maximum input speed RPM	M_{2PEAK}	Peak Torque

See web site for drawings.

"PHA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead	i	Continuous RPM (n_1)	Cyclic RPM (n_1)	øD[6] mm	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	M_{2N} in.lbs.	M_{2N} Nm	M_{2B} in.lbs.	M_{2B} Nm	M_{2PEAK} in.lbs.	M_{2PEAK} Nm
PHA422 with Motor Mounting Plate Continued													
PHA422F0500 MF	50.00	4,500	8,000	≤11	0.50	238.5	26.9	797	90	1,152	130	2,126	240
PHA422F0500 MF	50.00	4,500	8,000	>11≤14	0.50	238.5	26.9	797	90	1,152	130	2,126	240
PHA422F0500 MF	50.00	4,500	8,000	>14≤19	0.50	238.5	26.9	797	90	1,152	130	2,126	240
PHA422F0500 MFL	50.00	4,500	8,000	>19≤24	1.56	239.0	27.0	797	90	1,152	130	2,126	240
PHA422F0500 MFLC	50.00	5,300	8,000	>19≤24	1.71	239.0	27.0	797	90	1,152	130	2,126	240
PHA422F0700 MF	70.00	4,500	8,000	≤11	0.50	236.8	26.7	797	90	974	110	2,126	240
PHA422F0700 MF	70.00	4,500	8,000	>11≤14	0.50	236.8	26.7	797	90	974	110	2,126	240
PHA422F0700 MF	70.00	4,500	8,000	>14≤19	0.50	236.8	26.7	797	90	974	110	2,126	240
PHA422F0700 MFL	70.00	4,500	8,000	>19≤24	1.56	237.0	26.8	797	90	974	110	2,126	240
PHA422F0700 MFLC	70.00	5,300	8,000	>19≤24	1.71	237.0	26.8	797	90	974	110	2,126	240
PHA422F1000 MF	100.0	4,500	8,000	≤11	0.50	176.6	19.9	531	60	886	100	1,772	200
PHA422F1000 MF	100.0	4,500	8,000	>11≤14	0.50	176.6	19.9	531	60	886	100	1,772	200
PHA422F1000 MF	100.0	4,500	8,000	>14≤19	0.50	176.6	19.9	531	60	886	100	1,772	200
PHA422F1000 MFL	100.0	4,500	8,000	>19≤24	1.56	176.7	19.9	531	60	886	100	1,772	200
PHA422F1000 MFLC	100.0	5,300	8,000	>19≤24	1.71	176.7	19.9	531	60	886	100	1,772	200
PHA521 with Motor Mounting Plate													
PHA521F0040 MF	4.000	2,200	5,000	≤19	4.96	647.7	73.1	1,860	210	2,835	320	4,422	499
PHA521F0040 MF	4.000	2,200	5,000	>19≤24	5.03	679.0	76.7	1,860	210	2,835	320	4,915	555
PHA521F0040 MF	4.000	2,200	5,000	>24≤32	4.93	679.0	76.7	1,860	210	2,835	320	4,915	555
PHA521F0040 MF	4.000	2,200	5,000	>32≤35	4.93	679.0	76.7	1,860	210	2,835	320	4,915	555
PHA521F0040 MFC	4.000	3,200	5,000	≤19	5.87	647.7	73.1	1,860	210	2,447	276	3,059	345
PHA521F0040 MFC	4.000	3,200	5,000	>19≤24	5.48	679.0	76.7	1,860	210	2,835	320	4,915	555
PHA521F0040 MFC	4.000	3,200	5,000	>24≤32	5.36	679.0	76.7	1,860	210	2,835	320	4,915	555
PHA521F0040 MFL	4.000	2,200	5,000	>32≤38	12.12	752.8	85.0	1,860	210	2,835	320	4,915	555
PHA521F0040 MFLC	4.000	3,200	5,000	>32≤38	14.91	752.8	85.0	1,860	210	2,835	320	4,915	555
PHA521F0050 MF	5.000	2,500	5,500	≤19	5.78	682.7	77.1	1,860	210	2,835	320	5,315	600
PHA521F0050 MF	5.000	2,500	5,500	>19≤24	5.85	704.6	79.5	1,860	210	2,835	320	5,315	600
PHA521F0050 MF	5.000	2,500	5,500	>24≤32	5.75	704.6	79.5	1,860	210	2,835	320	5,315	600
PHA521F0050 MF	5.000	2,500	5,500	>32≤35	5.75	704.6	79.5	1,860	210	2,835	320	5,315	600
PHA521F0050 MFC	5.000	3,500	5,500	≤19	6.69	682.7	77.1	1,860	210	2,835	320	3,824	432
PHA521F0050 MFC	5.000	3,500	5,500	>19≤24	6.30	704.6	79.5	1,860	210	2,835	320	5,315	600
PHA521F0050 MFC	5.000	3,500	5,500	>24≤32	6.18	704.6	79.5	1,860	210	2,835	320	5,315	600
PHA521F0050 MFL	5.000	2,500	5,500	>32≤38	12.94	753.7	85.1	1,860	210	2,835	320	5,315	600
PHA521F0050 MFLC	5.000	3,500	5,500	>32≤38	15.73	753.7	85.1	1,860	210	2,835	320	5,315	600
PHA521F0070 MF	7.000	3,000	6,000	≤19	5.30	627.3	70.8	1,860	210	2,392	270	5,315	600
PHA521F0070 MF	7.000	3,000	6,000	>19≤24	5.30	627.3	70.8	1,860	210	2,392	270	5,315	600
PHA521F0070 MF	7.000	3,000	6,000	>24≤32	5.20	627.3	70.8	1,860	210	2,392	270	5,315	600
PHA521F0070 MF	7.000	3,000	6,000	>32≤35	5.20	627.3	70.8	1,860	210	2,392	270	5,315	600
PHA521F0070 MFC	7.000	4,000	6,000	≤19	6.21	627.3	70.8	1,860	210	2,392	270	5,315	600
PHA521F0070 MFC	7.000	4,000	6,000	>19≤24	5.75	627.3	70.8	1,860	210	2,392	270	5,315	600
PHA521F0070 MFC	7.000	4,000	6,000	>24≤32	5.63	627.3	70.8	1,860	210	2,392	270	5,315	600
PHA521F0070 MFL	7.000	3,000	6,000	>32≤38	12.13	650.1	73.4	1,860	210	2,392	270	5,315	600
PHA521F0070 MFLC	7.000	4,000	6,000	>32≤38	14.92	650.1	73.4	1,860	210	2,392	270	5,315	600
PHA521F0100 MF	10.00	3,300	6,000	≤19	5.05	472.7	53.4	1,240	140	2,215	250	4,429	500
PHA521F0100 MF	10.00	3,300	6,000	>19≤24	5.05	472.7	53.4	1,240	140	2,215	250	4,429	500
PHA521F0100 MF	10.00	3,300	6,000	>24≤32	4.95	472.7	53.4	1,240	140	2,215	250	4,429	500
PHA521F0100 MF	10.00	3,300	6,000	>32≤35	4.95	472.7	53.4	1,240	140	2,215	250	4,429	500
PHA521F0100 MFC	10.00	4,500	6,000	≤19	5.96	472.7	53.4	1,240	140	2,215	250	4,429	500
PHA521F0100 MFC	10.00	4,500	6,000	>19≤24	5.50	472.7	53.4	1,240	140	2,215	250	4,429	500
PHA521F0100 MFC	10.00	4,500	6,000	>24≤32	5.38	472.7	53.4	1,240	140	2,215	250	4,429	500
PHA521F0100 MFL	10.00	3,300	6,000	>32≤38	11.88	479.0	54.1	1,240	140	2,215	250	4,429	500
PHA521F0100 MFLC	10.00	4,500	6,000	>32≤38	14.67	479.0	54.1	1,240	140	2,215	250	4,429	500

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"PHA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead	i	Continuous RPM (n_1)	Cyclic	øD^6 mm	J_1 kgcm²	C_2 in.lbs.	Nm	M_{2N} in.lbs.	Nm	M_{2B} in.lbs.	Nm	M_{2PEAK} in.lbs.	Nm
PHA522 with Motor Mounting Plate Continued Next Page													
PHA522F0160 MF	16.00	3,300	6,000	≤14	1.93	561.8	63.4	1,860	210	2,835	320	4,915	555
PHA522F0160 MF	16.00	3,300	6,000	>14≤19	1.95	564.5	63.7	1,860	210	2,835	320	4,915	555
PHA522F0160 MF	16.00	3,300	6,000	>19≤24	1.85	564.5	63.7	1,860	210	2,835	320	4,915	555
PHA522F0160 MFC	16.00	4,300	6,000	≤14	2.26	561.8	63.4	1,860	210	2,835	320	4,915	555
PHA522F0160 MFC	16.00	4,300	6,000	>14≤19	2.11	564.5	63.7	1,860	210	2,835	320	4,915	555
PHA522F0160 MFC	16.00	4,300	6,000	>19≤24	2.00	564.5	63.7	1,860	210	2,835	320	4,915	555
PHA522F0160 MFL	16.00	3,300	6,000	>24≤32	5.06	568.2	64.1	1,860	210	2,835	320	4,915	555
PHA522F0160 MFLC	16.00	4,300	6,000	>24≤32	5.49	568.2	64.1	1,860	210	2,835	320	4,915	555
PHA522F0200 MF	20.00	3,300	6,000	≤14	1.98	618.9	69.9	1,949	220	2,835	320	5,315	600
PHA522F0200 MF	20.00	3,300	6,000	>14≤19	2.00	621.0	70.1	1,949	220	2,835	320	5,315	600
PHA522F0200 MF	20.00	3,300	6,000	>19≤24	1.90	621.0	70.1	1,949	220	2,835	320	5,315	600
PHA522F0200 MFC	20.00	4,300	6,000	≤14	2.31	618.9	69.9	1,949	220	2,835	320	5,315	600
PHA522F0200 MFC	20.00	4,300	6,000	>14≤19	2.16	621.0	70.1	1,949	220	2,835	320	5,315	600
PHA522F0200 MFC	20.00	4,300	6,000	>19≤24	2.06	621.0	70.1	1,949	220	2,835	320	5,315	600
PHA522F0200 MFL	20.00	3,300	6,000	>24≤32	5.11	623.8	70.4	1,949	220	2,835	320	5,315	600
PHA522F0200 MFLC	20.00	4,300	6,000	>24≤32	5.54	623.8	70.4	1,949	220	2,835	320	5,315	600
PHA522F0250 MF	25.00	3,700	6,500	≤14	1.86	618.7	69.8	1,949	220	2,835	320	5,315	600
PHA522F0250 MF	25.00	3,700	6,500	>14≤19	1.88	620.1	70.0	1,949	220	2,835	320	5,315	600
PHA522F0250 MF	25.00	3,700	6,500	>19≤24	1.78	620.1	70.0	1,949	220	2,835	320	5,315	600
PHA522F0250 MFC	25.00	4,500	6,500	≤14	2.19	618.7	69.8	1,949	220	2,835	320	5,315	600
PHA522F0250 MFC	25.00	4,500	6,500	>14≤19	2.04	620.1	70.0	1,949	220	2,835	320	5,315	600
PHA522F0250 MFC	25.00	4,500	6,500	>19≤24	1.94	620.1	70.0	1,949	220	2,835	320	5,315	600
PHA522F0250 MFL	25.00	3,700	6,500	>24≤32	4.99	621.9	70.2	1,949	220	2,835	320	5,315	600
PHA522F0250 MFLC	25.00	4,500	6,500	>24≤32	5.42	621.9	70.2	1,949	220	2,835	320	5,315	600
PHA522F0280 MF	28.00	4,000	7,000	≤14	1.73	536.6	60.6	1,860	210	2,835	320	4,915	555
PHA522F0280 MF	28.00	4,000	7,000	>14≤19	1.73	536.6	60.6	1,860	210	2,835	320	4,915	555
PHA522F0280 MF	28.00	4,000	7,000	>19≤24	1.63	536.6	60.6	1,860	210	2,835	320	4,915	555
PHA522F0280 MFC	28.00	5,000	7,000	≤14	2.06	536.6	60.6	1,860	210	2,835	320	4,915	555
PHA522F0280 MFC	28.00	5,000	7,000	>14≤19	1.89	537.4	60.7	1,860	210	2,835	320	4,915	555
PHA522F0280 MFC	28.00	5,000	7,000	>19≤24	1.78	536.6	60.6	1,860	210	2,835	320	4,915	555
PHA522F0280 MFL	28.00	4,000	7,000	>24≤32	4.79	538.1	60.7	1,860	210	2,835	320	4,915	555
PHA522F0280 MFLC	28.00	5,000	7,000	>24≤32	5.22	538.1	60.7	1,860	210	2,835	320	4,915	555
PHA522F0350 MF	35.00	4,000	7,000	≤14	1.75	599.0	67.6	1,949	220	2,835	320	5,315	600
PHA522F0350 MF	35.00	4,000	7,000	>14≤19	1.75	599.0	67.6	1,949	220	2,835	320	5,315	600
PHA522F0350 MF	35.00	4,000	7,000	>19≤24	1.65	599.0	67.6	1,949	220	2,835	320	5,315	600
PHA522F0350 MFC	35.00	5,000	7,000	≤14	2.08	599.0	67.6	1,949	220	2,835	320	5,315	600
PHA522F0350 MFC	35.00	5,000	7,000	>14≤19	1.90	599.7	67.7	1,949	220	2,835	320	5,315	600
PHA522F0350 MFC	35.00	5,000	7,000	>19≤24	1.80	599.0	67.6	1,949	220	2,835	320	5,315	600
PHA522F0350 MFL	35.00	4,000	7,000	>24≤32	4.81	600.2	67.8	1,949	220	2,835	320	5,315	600
PHA522F0350 MFLC	35.00	5,000	7,000	>24≤32	5.24	600.2	67.8	1,949	220	2,835	320	5,315	600
PHA522F0400 MF	40.00	4,000	7,000	≤14	1.69	514.8	58.1	1,860	210	2,835	320	4,915	555
PHA522F0400 MF	40.00	4,000	7,000	>14≤19	1.69	514.8	58.1	1,860	210	2,835	320	4,915	555
PHA522F0400 MF	40.00	4,000	7,000	>19≤24	1.59	514.8	58.1	1,860	210	2,835	320	4,915	555
PHA522F0400 MFC	40.00	5,000	7,000	≤14	2.02	514.8	58.1	1,860	210	2,835	320	4,915	555
PHA522F0400 MFC	40.00	5,000	7,000	>14≤19	1.84	515.2	58.2	1,860	210	2,835	320	4,915	555
PHA522F0400 MFC	40.00	5,000	7,000	>19≤24	1.74	514.8	58.1	1,860	210	2,835	320	4,915	555
PHA522F0400 MFL	40.00	4,000	7,000	>24≤32	4.75	515.5	58.2	1,860	210	2,835	320	4,915	555
PHA522F0400 MFLC	40.00	5,000	7,000	>24≤32	5.18	515.5	58.2	1,860	210	2,835	320	4,915	555

Index of Symbols

MF	Motor adapter with FlexiAdapt® coupling	J_1	Mass moment of inertia (input)
L	Large Input	C_2	Torsional Stiffness
C	ServoCool	M_{2N}	Nominal Torque
i	Ratio - Exact	M_{2B}	Acceleration Torque Maximum
n_1	Maximum input speed RPM	M_{2PEAK}	Peak Torque

See web site for drawings.

"PHA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

STÖBER

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead	i	Continuous RPM (n_1)	Cyclic	øD6 mm	J_1 kgcm²	C_2 in.lbs.	Nm	M_{2N} in.lbs.	Nm	M_{2B} in.lbs.	Nm	M_{2PEAK} in.lbs.	Nm
PHA522 with Motor Mounting Plate Continued													
PHA522F0500 MF	50.00	4,000	7,000	≤14	1.69	581.5	65.6	1,949	220	2,835	320	5,315	600
PHA522F0500 MF	50.00	4,000	7,000	>14≤19	1.69	581.5	65.6	1,949	220	2,835	320	5,315	600
PHA522F0500 MF	50.00	4,000	7,000	>19≤24	1.59	581.5	65.6	1,949	220	2,835	320	5,315	600
PHA522F0500 MFC	50.00	5,000	7,000	≤14	2.03	581.5	65.6	1,949	220	2,835	320	5,315	600
PHA522F0500 MFC	50.00	5,000	7,000	>14≤19	1.85	581.8	65.7	1,949	220	2,835	320	5,315	600
PHA522F0500 MFC	50.00	5,000	7,000	>19≤24	1.75	581.5	65.6	1,949	220	2,835	320	5,315	600
PHA522F0500 MFL	50.00	4,000	7,000	>24≤32	4.75	582.0	65.7	1,949	220	2,835	320	5,315	600
PHA522F0500 MFLC	50.00	5,000	7,000	>24≤32	5.18	582.0	65.7	1,949	220	2,835	320	5,315	600
PHA522F0700 MF	70.00	4,000	7,000	≤14	1.69	580.0	65.5	1,860	210	2,392	270	5,315	600
PHA522F0700 MF	70.00	4,000	7,000	>14≤19	1.69	580.0	65.5	1,860	210	2,392	270	5,315	600
PHA522F0700 MF	70.00	4,000	7,000	>19≤24	1.59	580.0	65.5	1,860	210	2,392	270	5,315	600
PHA522F0700 MFC	70.00	5,000	7,000	≤14	2.02	580.0	65.5	1,860	210	2,392	270	5,315	600
PHA522F0700 MFC	70.00	5,000	7,000	>14≤19	1.85	580.1	65.5	1,860	210	2,392	270	5,315	600
PHA522F0700 MFC	70.00	5,000	7,000	>19≤24	1.74	580.0	65.5	1,860	210	2,392	270	5,315	600
PHA522F0700 MFL	70.00	4,000	7,000	>24≤32	4.75	580.2	65.5	1,860	210	2,392	270	5,315	600
PHA522F0700 MFLC	70.00	5,000	7,000	>24≤32	5.18	580.2	65.5	1,860	210	2,392	270	5,315	600
PHA522F1000 MF	100.0	4,000	7,000	≤14	1.69	458.9	51.8	1,240	140	2,215	250	4,429	500
PHA522F1000 MF	100.0	4,000	7,000	>14≤19	1.69	458.9	51.8	1,240	140	2,215	250	4,429	500
PHA522F1000 MF	100.0	4,000	7,000	>19≤24	1.59	458.9	51.8	1,240	140	2,215	250	4,429	500
PHA522F1000 MFC	100.0	5,000	7,000	≤14	2.02	458.9	51.8	1,240	140	2,215	250	4,429	500
PHA522F1000 MFC	100.0	5,000	7,000	>14≤19	1.84	459.0	51.8	1,240	140	2,215	250	4,429	500
PHA522F1000 MFC	100.0	5,000	7,000	>19≤24	1.74	458.9	51.8	1,240	140	2,215	250	4,429	500
PHA522F1000 MFL	100.0	4,000	7,000	>24≤32	4.75	459.0	51.8	1,240	140	2,215	250	4,429	500
PHA522F1000 MFLC	100.0	5,000	7,000	>24≤32	5.18	459.0	51.8	1,240	140	2,215	250	4,429	500
PHA721 with Motor Mounting Plate Continued Next Page													
PHA721F0040 MF	4.000	1,900	4,000	≤24	16.29	1,203.8	135.9	3,898	440	6,201	700	8,844	998
PHA721F0040 MF	4.000	1,900	4,000	>24≤32	16.63	1,271.3	143.5	3,898	440	6,201	700	11,803	1,332
PHA721F0040 MF	4.000	1,900	4,000	>32≤38	16.63	1,271.3	143.5	3,898	440	6,201	700	12,235	1,381
PHA721F0040 MFC	4.000	2,400	4,000	≤24	21.71	1,203.8	135.9	3,898	440	5,087	574	6,358	718
PHA721F0040 MFC	4.000	2,400	4,000	>24≤32	20.83	1,271.3	143.5	3,898	440	6,201	700	11,803	1,332
PHA721F0040 MFC	4.000	2,400	4,000	>32≤38	22.42	1,271.3	143.5	3,898	440	6,201	700	12,235	1,381
PHA721F0040 MFL	4.000	1,900	4,000	>38≤48	35.43	1,417.3	160.0	3,898	440	6,201	700	12,235	1,381
PHA721F0040 MFLC	4.000	2,400	4,000	>38≤48	51.29	1,417.3	160.0	3,898	440	6,201	700	12,235	1,381
PHA721F0050 MF	5.000	2,200	5,000	≤24	14.45	1,325.1	149.6	3,898	440	6,201	700	11,055	1,248
PHA721F0050 MF	5.000	2,200	5,000	>24≤32	14.78	1,376.6	155.4	3,898	440	6,201	700	12,401	1,400
PHA721F0050 MF	5.000	2,200	5,000	>32≤38	14.78	1,376.6	155.4	3,898	440	6,201	700	12,401	1,400
PHA721F0050 MFC	5.000	3,000	5,000	≤24	19.86	1,325.1	149.6	3,898	440	6,201	700	7,948	897
PHA721F0050 MFC	5.000	3,000	5,000	>24≤32	18.98	1,376.6	155.4	3,898	440	6,201	700	12,401	1,400
PHA721F0050 MFC	5.000	3,000	5,000	>32≤38	20.58	1,376.6	155.4	3,898	440	6,201	700	12,401	1,400
PHA721F0050 MFL	5.000	2,200	5,000	>38≤48	33.58	1,482.4	167.4	3,898	440	6,201	700	12,401	1,400
PHA721F0050 MFLC	5.000	3,000	5,000	>38≤48	49.44	1,482.4	167.4	3,898	440	6,201	700	12,401	1,400
PHA721F0070 MF	7.000	2,500	5,000	≤24	13.03	1,286.0	145.2	3,898	440	5,758	650	11,127	1,256
PHA721F0070 MF	7.000	2,500	5,000	>24≤32	13.03	1,286.0	145.2	3,898	440	5,758	650	11,127	1,256
PHA721F0070 MF	7.000	2,500	5,000	>32≤38	13.03	1,286.0	145.2	3,898	440	5,758	650	11,127	1,256
PHA721F0070 MFC	7.000	3,500	5,000	≤24	18.44	1,286.0	145.2	3,898	440	5,758	650	11,127	1,256
PHA721F0070 MFC	7.000	3,500	5,000	>24≤32	17.23	1,286.0	145.2	3,898	440	5,758	650	11,127	1,256
PHA721F0070 MFC	7.000	3,500	5,000	>32≤38	18.82	1,286.0	145.2	3,898	440	5,758	650	11,127	1,256
PHA721F0070 MFL	7.000	2,500	5,000	>38≤48	32.18	1,347.4	152.1	3,898	440	5,758	650	11,127	1,256
PHA721F0070 MFLC	7.000	3,500	5,000	>38≤48	48.04	1,347.4	152.1	3,898	440	5,758	650	11,127	1,256

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"PHA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD[6]	J_1	C_2		M_{2N}		M_{2B}		M_{2PEAK}	
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PHA721 with Motor Mounting Plate Continued													
PHA721F0100 MF	10.00	3,000	5,000	≤24	12.33	999.8	112.9	2,657	300	4,429	500	8,858	1,000
PHA721F0100 MF	10.00	3,000	5,000	>24≤32	12.33	999.8	112.9	2,657	300	4,429	500	8,858	1,000
PHA721F0100 MF	10.00	3,000	5,000	>32≤38	12.33	999.8	112.9	2,657	300	4,429	500	8,858	1,000
PHA721F0100 MFC	10.00	4,000	5,000	≤24	17.75	999.8	112.9	2,657	300	4,429	500	8,858	1,000
PHA721F0100 MFC	10.00	4,000	5,000	>24≤32	16.54	999.8	112.9	2,657	300	4,429	500	8,858	1,000
PHA721F0100 MFC	10.00	4,000	5,000	>32≤38	18.13	999.8	112.9	2,657	300	4,429	500	8,858	1,000
PHA721F0100 MFL	10.00	3,000	5,000	>38≤48	31.49	1,017.5	114.9	2,657	300	4,429	500	8,858	1,000
PHA721F0100 MFLC	10.00	4,000	5,000	>38≤48	47.35	1,017.5	114.9	2,657	300	4,429	500	8,858	1,000
PHA722 with Motor Mounting Plate Continued Next Page													
PHA722F0160 MF	16.00	3,000	5,000	≤19	6.01	1,170.2	132.1	3,898	440	6,201	700	11,746	1,326
PHA722F0160 MF	16.00	3,000	5,000	>19≤24	6.08	1,176.4	132.8	3,898	440	6,201	700	12,235	1,381
PHA722F0160 MF	16.00	3,000	5,000	>24≤32	5.98	1,176.4	132.8	3,898	440	6,201	700	12,235	1,381
PHA722F0160 MF	16.00	3,000	5,000	>32≤35	5.98	1,176.4	132.8	3,898	440	6,201	700	12,235	1,381
PHA722F0160 MFC	16.00	4,000	5,000	≤19	6.92	1,170.2	132.1	3,898	440	6,201	700	11,746	1,326
PHA722F0160 MFC	16.00	4,000	5,000	>19≤24	6.53	1,176.4	132.8	3,898	440	6,201	700	12,235	1,381
PHA722F0160 MFC	16.00	4,000	5,000	>24≤32	6.41	1,176.4	132.8	3,898	440	6,201	700	12,235	1,381
PHA722F0160 MFL	16.00	3,000	5,000	>32≤38	13.17	1,189.0	134.2	3,898	440	6,201	700	12,235	1,381
PHA722F0160 MFLC	16.00	4,000	5,000	>32≤38	15.97	1,189.0	134.2	3,898	440	6,201	700	12,235	1,381
PHA722F0200 MF	20.00	3,000	5,000	≤19	5.89	1,298.9	146.6	3,898	440	6,201	700	12,401	1,400
PHA722F0200 MF	20.00	3,000	5,000	>19≤24	5.97	1,303.7	147.2	3,898	440	6,201	700	12,401	1,400
PHA722F0200 MF	20.00	3,000	5,000	>24≤32	5.87	1,303.7	147.2	3,898	440	6,201	700	12,401	1,400
PHA722F0200 MF	20.00	3,000	5,000	>32≤35	5.87	1,303.7	147.2	3,898	440	6,201	700	12,401	1,400
PHA722F0200 MFC	20.00	4,000	5,000	≤19	6.81	1,298.9	146.6	3,898	440	6,201	700	12,401	1,400
PHA722F0200 MFC	20.00	4,000	5,000	>19≤24	6.42	1,303.7	147.2	3,898	440	6,201	700	12,401	1,400
PHA722F0200 MFC	20.00	4,000	5,000	>24≤32	6.30	1,303.7	147.2	3,898	440	6,201	700	12,401	1,400
PHA722F0200 MFL	20.00	3,000	5,000	>32≤38	13.06	1,313.6	148.3	3,898	440	6,201	700	12,401	1,400
PHA722F0200 MFLC	20.00	4,000	5,000	>32≤38	15.85	1,313.6	148.3	3,898	440	6,201	700	12,401	1,400
PHA722F0250 MF	25.00	3,500	6,000	≤19	5.48	1,300.8	146.8	3,898	440	6,201	700	12,401	1,400
PHA722F0250 MF	25.00	3,500	6,000	>19≤24	5.56	1,303.9	147.2	3,898	440	6,201	700	12,401	1,400
PHA722F0250 MF	25.00	3,500	6,000	>24≤32	5.46	1,303.9	147.2	3,898	440	6,201	700	12,401	1,400
PHA722F0250 MF	25.00	3,500	6,000	>32≤35	5.46	1,303.9	147.2	3,898	440	6,201	700	12,401	1,400
PHA722F0250 MFC	25.00	4,200	6,000	≤19	6.40	1,300.8	146.8	3,898	440	6,201	700	12,401	1,400
PHA722F0250 MFC	25.00	4,200	6,000	>19≤24	6.01	1,303.9	147.2	3,898	440	6,201	700	12,401	1,400
PHA722F0250 MFC	25.00	4,200	6,000	>24≤32	5.89	1,303.9	147.2	3,898	440	6,201	700	12,401	1,400
PHA722F0250 MFL	25.00	3,500	6,000	>32≤38	12.65	1,310.2	147.9	3,898	440	6,201	700	12,401	1,400
PHA722F0250 MFLC	25.00	4,200	6,000	>32≤38	15.44	1,310.2	147.9	3,898	440	6,201	700	12,401	1,400
PHA722F0280 MF	28.00	3,700	6,500	≤19	5.18	1,149.1	129.7	3,898	440	6,201	700	12,235	1,381
PHA722F0280 MF	28.00	3,700	6,500	>19≤24	5.18	1,149.1	129.7	3,898	440	6,201	700	12,235	1,381
PHA722F0280 MF	28.00	3,700	6,500	>24≤32	5.08	1,149.1	129.7	3,898	440	6,201	700	12,235	1,381
PHA722F0280 MF	28.00	3,700	6,500	>32≤35	5.08	1,149.1	129.7	3,898	440	6,201	700	12,235	1,381
PHA722F0280 MFC	28.00	4,500	6,500	≤19	6.10	1,149.1	129.7	3,898	440	6,201	700	12,235	1,381
PHA722F0280 MFC	28.00	4,500	6,500	>19≤24	5.63	1,149.1	129.7	3,898	440	6,201	700	12,235	1,381
PHA722F0280 MFC	28.00	4,500	6,500	>24≤32	5.51	1,149.1	129.7	3,898	440	6,201	700	12,235	1,381
PHA722F0280 MFL	28.00	3,700	6,500	>32≤38	12.01	1,153.8	130.3	3,898	440	6,201	700	12,235	1,381
PHA722F0280 MFLC	28.00	4,500	6,500	>32≤38	14.81	1,153.8	130.3	3,898	440	6,201	700	12,235	1,381
PHA722F0350 MF	35.00	3,700	6,500	≤19	5.15	1,282.2	144.7	3,898	440	6,201	700	12,401	1,400
PHA722F0350 MF	35.00	3,700	6,500	>19≤24	5.15	1,282.2	144.7	3,898	440	6,201	700	12,401	1,400
PHA722F0350 MF	35.00	3,700	6,500	>24≤32	5.05	1,282.2	144.7	3,898	440	6,201	700	12,401	1,400

Index of Symbols

MF	Motor adapter with FlexiAdapt® coupling	J_1	Mass moment of inertia (input)
L	Large Input	C_2	Torsional Stiffness
C	ServoCool	M_{2N}	Nominal Torque
i	Ratio - Exact	M_{2B}	Acceleration Torque Maximum
n_1	Maximum input speed RPM	M_{2PEAK}	Peak Torque

See web site for drawings.

"PHA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

STÖBER

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD6	J1	C2		M2N		M2B		M2PEAK	
	i	RPM (n1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PHA722 with Motor Mounting Plate Continued													
PHA722F0350 MF	35.00	3,700	6,500	>32≤35	5.05	1,282.2	144.7	3,898	440	6,201	700	12,401	1,400
PHA722F0350 MFC	35.00	4,500	6,500	≤19	6.06	1,282.2	144.7	3,898	440	6,201	700	12,401	1,400
PHA722F0350 MFC	35.00	4,500	6,500	>19≤24	5.60	1,282.2	144.7	3,898	440	6,201	700	12,401	1,400
PHA722F0350 MFC	35.00	4,500	6,500	>24≤32	5.48	1,282.2	144.7	3,898	440	6,201	700	12,401	1,400
PHA722F0350 MFL	35.00	3,700	6,500	>32≤38	11.98	1,285.8	145.2	3,898	440	6,201	700	12,401	1,400
PHA722F0350 MFLC	35.00	4,500	6,500	>32≤38	14.77	1,285.8	145.2	3,898	440	6,201	700	12,401	1,400
PHA722F0400 MF	40.00	3,700	6,500	≤19	4.99	1,115.6	125.9	3,898	440	6,201	700	12,235	1,381
PHA722F0400 MF	40.00	3,700	6,500	>19≤24	4.99	1,115.6	125.9	3,898	440	6,201	700	12,235	1,381
PHA722F0400 MF	40.00	3,700	6,500	>24≤32	4.89	1,115.6	125.9	3,898	440	6,201	700	12,235	1,381
PHA722F0400 MF	40.00	3,700	6,500	>32≤35	4.89	1,115.6	125.9	3,898	440	6,201	700	12,235	1,381
PHA722F0400 MFC	40.00	4,700	6,500	≤19	5.91	1,115.6	125.9	3,898	440	6,201	700	12,235	1,381
PHA722F0400 MFC	40.00	4,700	6,500	>19≤24	5.44	1,115.6	125.9	3,898	440	6,201	700	12,235	1,381
PHA722F0400 MFC	40.00	4,700	6,500	>24≤32	5.32	1,115.6	125.9	3,898	440	6,201	700	12,235	1,381
PHA722F0400 MFL	40.00	3,700	6,500	>32≤38	11.82	1,117.7	126.2	3,898	440	6,201	700	12,235	1,381
PHA722F0400 MFLC	40.00	4,700	6,500	>32≤38	14.62	1,117.7	126.2	3,898	440	6,201	700	12,235	1,381
PHA722F0500 MF	50.00	3,700	6,500	≤19	4.98	1,255.2	141.7	3,898	440	6,201	700	12,401	1,400
PHA722F0500 MF	50.00	3,700	6,500	>19≤24	4.98	1,255.2	141.7	3,898	440	6,201	700	12,401	1,400
PHA722F0500 MF	50.00	3,700	6,500	>24≤32	4.88	1,255.2	141.7	3,898	440	6,201	700	12,401	1,400
PHA722F0500 MF	50.00	3,700	6,500	>32≤35	4.88	1,255.2	141.7	3,898	440	6,201	700	12,401	1,400
PHA722F0500 MFC	50.00	4,700	6,500	≤19	5.89	1,255.2	141.7	3,898	440	6,201	700	12,401	1,400
PHA722F0500 MFC	50.00	4,700	6,500	>19≤24	5.43	1,255.2	141.7	3,898	440	6,201	700	12,401	1,400
PHA722F0500 MFC	50.00	4,700	6,500	>24≤32	5.31	1,255.2	141.7	3,898	440	6,201	700	12,401	1,400
PHA722F0500 MFL	50.00	3,700	6,500	>32≤38	11.80	1,256.9	141.9	3,898	440	6,201	700	12,401	1,400
PHA722F0500 MFLC	50.00	4,700	6,500	>32≤38	14.60	1,256.9	141.9	3,898	440	6,201	700	12,401	1,400
PHA722F0700 MF	70.00	3,700	6,500	≤19	4.96	1,251.5	141.3	3,898	440	5,758	650	11,127	1,256
PHA722F0700 MF	70.00	3,700	6,500	>19≤24	4.96	1,251.5	141.3	3,898	440	5,758	650	11,127	1,256
PHA722F0700 MF	70.00	3,700	6,500	>24≤32	4.86	1,251.5	141.3	3,898	440	5,758	650	11,127	1,256
PHA722F0700 MF	70.00	3,700	6,500	>32≤35	4.86	1,251.5	141.3	3,898	440	5,758	650	11,127	1,256
PHA722F0700 MFC	70.00	4,700	6,500	≤19	5.87	1,251.5	141.3	3,898	440	5,758	650	11,127	1,256
PHA722F0700 MFC	70.00	4,700	6,500	>19≤24	5.41	1,251.5	141.3	3,898	440	5,758	650	11,127	1,256
PHA722F0700 MFC	70.00	4,700	6,500	>24≤32	5.29	1,251.5	141.3	3,898	440	5,758	650	11,127	1,256
PHA722F0700 MFL	70.00	3,700	6,500	>32≤38	11.79	1,252.4	141.4	3,898	440	5,758	650	11,127	1,256
PHA722F0700 MFLC	70.00	4,700	6,500	>32≤38	14.59	1,252.4	141.4	3,898	440	5,758	650	11,127	1,256
PHA722F1000 MF	100.0	3,700	6,500	≤19	4.95	989.4	111.7	2,657	300	4,429	500	8,858	1,000
PHA722F1000 MF	100.0	3,700	6,500	>19≤24	4.95	989.4	111.7	2,657	300	4,429	500	8,858	1,000
PHA722F1000 MF	100.0	3,700	6,500	>24≤32	4.85	989.4	111.7	2,657	300	4,429	500	8,858	1,000
PHA722F1000 MF	100.0	3,700	6,500	>32≤35	4.85	989.4	111.7	2,657	300	4,429	500	8,858	1,000
PHA722F1000 MFC	100.0	4,700	6,500	≤19	5.87	989.4	111.7	2,657	300	4,429	500	8,858	1,000
PHA722F1000 MFC	100.0	4,700	6,500	>19≤24	5.40	989.4	111.7	2,657	300	4,429	500	8,858	1,000
PHA722F1000 MFC	100.0	4,700	6,500	>24≤32	5.28	989.4	111.7	2,657	300	4,429	500	8,858	1,000
PHA722F1000 MFL	100.0	3,700	6,500	>32≤38	11.78	989.7	111.7	2,657	300	4,429	500	8,858	1,000
PHA722F1000 MFLC	100.0	4,700	6,500	>32≤38	14.58	989.7	111.7	2,657	300	4,429	500	8,858	1,000
PHA821 with Motor Mounting Plate Continued Next Page													
PHA821F0040 MF	4.000	1,500	3,500	≤32	55.66	3,331.7	376.1	7,086	800	14,173	1,600	17,245	1,947
PHA821F0040 MF	4.000	1,500	3,500	>32≤38	55.46	3,527.3	398.2	7,086	800	14,173	1,600	20,477	2,312
PHA821F0040 MF	4.000	1,500	3,500	>38≤48	54.82	3,527.3	398.2	7,086	800	14,173	1,600	22,752	2,569
PHA821F0040 MFC	4.000	2,200	3,500	≤32	68.17	3,331.7	376.1	7,086	800	11,383	1,285	14,229	1,606
PHA821F0040 MFC	4.000	2,200	3,500	>32≤38	70.14	3,527.3	398.2	7,086	800	14,173	1,600	20,477	2,312
PHA821F0040 MFC	4.000	2,200	3,500	>38≤48	69.89	3,527.3	398.2	7,086	800	14,173	1,600	22,752	2,569

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"PHA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead	i	Continuous RPM (n_1)	Cyclic	øD[6] mm	J_1 kgcm²	C_2 in.lbs.	Nm	M_{2N} in.lbs.	Nm	M_{2B} in.lbs.	Nm	M_{2PEAK} in.lbs.	Nm
PHA821 with Motor Mounting Plate Continued													
PHA821F0050 MF	5.000	1,700	4,000	≤32	46.67	3,610.9	407.6	8,858	1,000	15,059	1,700	21,557	2,434
PHA821F0050 MF	5.000	1,700	4,000	>32≤38	46.47	3,755.4	424.0	8,858	1,000	15,059	1,700	25,596	2,890
PHA821F0050 MF	5.000	1,700	4,000	>38≤48	45.84	3,755.4	424.0	8,858	1,000	15,059	1,700	28,346	3,200
PHA821F0050 MFC	5.000	2,500	4,000	≤32	59.18	3,610.9	407.6	8,858	1,000	14,229	1,606	17,786	2,008
PHA821F0050 MFC	5.000	2,500	4,000	>32≤38	61.15	3,755.4	424.0	8,858	1,000	15,059	1,700	25,596	2,890
PHA821F0050 MFC	5.000	2,500	4,000	>38≤48	60.91	3,755.4	424.0	8,858	1,000	15,059	1,700	28,346	3,200
PHA821F0070 MF	7.000	2,000	4,000	≤32	39.26	3,546.2	400.3	8,858	1,000	14,173	1,600	24,900	2,811
PHA821F0070 MF	7.000	2,000	4,000	>32≤38	39.05	3,546.2	400.3	8,858	1,000	14,173	1,600	24,900	2,811
PHA821F0070 MF	7.000	2,000	4,000	>38≤48	38.42	3,546.2	400.3	8,858	1,000	14,173	1,600	24,900	2,811
PHA821F0070 MFC	7.000	3,200	4,000	≤32	51.74	3,546.2	400.3	8,858	1,000	14,173	1,600	24,900	2,811
PHA821F0070 MFC	7.000	3,200	4,000	>32≤38	53.73	3,546.2	400.3	8,858	1,000	14,173	1,600	24,900	2,811
PHA821F0070 MFC	7.000	3,200	4,000	>38≤48	53.49	3,546.2	400.3	8,858	1,000	14,173	1,600	24,900	2,811
PHA821F0100 MF	10.00	2,500	4,000	≤32	35.44	2,657.4	300.0	7,086	800	10,630	1,200	21,259	2,400
PHA821F0100 MF	10.00	2,500	4,000	>32≤38	35.24	2,657.4	300.0	7,086	800	10,630	1,200	21,259	2,400
PHA821F0100 MF	10.00	2,500	4,000	>38≤48	34.60	2,657.4	300.0	7,086	800	10,630	1,200	21,259	2,400
PHA821F0100 MFC	10.00	3,700	4,500	≤32	47.93	2,657.4	300.0	7,086	800	10,630	1,200	21,259	2,400
PHA821F0100 MFC	10.00	3,700	4,500	>32≤38	49.92	2,657.4	300.0	7,086	800	10,630	1,200	21,259	2,400
PHA821F0100 MFC	10.00	3,700	4,500	>38≤48	49.67	2,657.4	300.0	7,086	800	10,630	1,200	21,259	2,400
PHA822 with Motr Mounting Plate Continued Next Page													
PHA822F0160 MF	16.00	2,500	4,500	≤24	16.24	3,129.6	353.3	9,744	1,100	17,716	2,000	24,416	2,756
PHA822F0160 MF	16.00	2,500	4,500	>24≤32	16.57	3,156.8	356.4	9,744	1,100	17,716	2,000	28,346	3,200
PHA822F0160 MF	16.00	2,500	4,500	>32≤38	16.57	3,156.8	356.4	9,744	1,100	17,716	2,000	28,346	3,200
PHA822F0160 MFC	16.00	3,250	4,500	≤24	18.99	3,156.8	356.4	9,744	1,100	17,716	2,000	28,346	3,200
PHA822F0160 MFC	16.00	3,250	4,500	>24≤32	17.77	3,156.8	356.4	9,744	1,100	17,716	2,000	28,346	3,200
PHA822F0160 MFC	16.00	3,250	4,500	>32≤38	19.37	3,156.8	356.4	9,744	1,100	17,716	2,000	28,346	3,200
PHA822F0160 MFL	16.00	2,500	4,500	>38≤48	18.59	3,208.1	362.2	9,744	1,100	17,716	2,000	28,346	3,200
PHA822F0160 MFLC	16.00	3,250	4,500	>38≤48	34.45	3,208.1	362.2	9,744	1,100	17,716	2,000	28,346	3,200
PHA822F0200 MF	20.00	2,500	4,500	≤24	15.68	3,456.1	390.2	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0200 MF	20.00	2,500	4,500	>24≤32	16.01	3,477.3	392.6	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0200 MF	20.00	2,500	4,500	>32≤38	16.01	3,477.3	392.6	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0200 MFC	20.00	3,300	4,500	≤24	18.43	3,477.3	392.6	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0200 MFC	20.00	3,300	4,500	>24≤32	17.21	3,477.3	392.6	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0200 MFC	20.00	3,300	4,500	>32≤38	18.80	3,477.3	392.6	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0200 MFL	20.00	2,500	4,500	>38≤48	18.02	3,517.0	397.0	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0200 MFLC	20.00	3,300	4,500	>38≤48	33.88	3,517.0	397.0	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0250 MF	25.00	3,000	5,500	≤24	14.16	3,455.0	390.0	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0250 MF	25.00	3,000	5,500	>24≤32	14.50	3,468.5	391.6	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0250 MF	25.00	3,000	5,500	>32≤38	14.50	3,468.5	391.6	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0250 MFC	25.00	3,800	5,500	≤24	16.91	3,468.5	391.6	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0250 MFC	25.00	3,800	5,500	>24≤32	15.70	3,468.5	391.6	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0250 MFC	25.00	3,800	5,500	>32≤38	17.29	3,468.5	391.6	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0250 MFL	25.00	3,000	5,500	>38≤48	16.51	3,493.7	394.4	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0250 MFLC	25.00	3,800	5,500	>38≤48	32.37	3,493.7	394.4	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0280 MF	28.00	3,300	6,000	≤24	13.08	3,115.8	351.8	9,744	1,100	17,716	2,000	28,346	3,200
PHA822F0280 MF	28.00	3,300	6,000	>24≤32	13.08	3,115.8	351.8	9,744	1,100	17,716	2,000	28,346	3,200
PHA822F0280 MF	28.00	3,300	6,000	>32≤38	13.08	3,115.8	351.8	9,744	1,100	17,716	2,000	28,346	3,200
PHA822F0280 MFC	28.00	4,000	6,000	≤24	15.49	3,115.8	351.8	9,744	1,100	17,716	2,000	28,346	3,200
PHA822F0280 MFC	28.00	4,000	6,000	>24≤32	14.28	3,115.8	351.8	9,744	1,100	17,716	2,000	28,346	3,200
PHA822F0280 MFC	28.00	4,000	6,000	>32≤38	15.87	3,115.8	351.8	9,744	1,100	17,716	2,000	28,346	3,200
PHA822F0280 MFL	28.00	3,300	6,000	>38≤48	15.45	3,137.5	354.2	9,744	1,100	17,716	2,000	28,346	3,200
PHA822F0280 MFLC	28.00	4,000	6,000	>38≤48	31.31	3,137.5	354.2	9,744	1,100	17,716	2,000	28,346	3,200

Index of Symbols

MF	Motor adapter with FlexiAdapt® coupling
L	Large Input
C	ServoCool
i	Ratio - Exact
n_1	Maximum input speed RPM
J_1	Mass moment of inertia (input)
C_2	Torsional Stiffness
M_{2N}	Nominal Torque
M_{2B}	Acceleration Torque Maximum
M_{2PEAK}	Peak Torque

See web site for drawings.

"PHA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

STÖBER

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead	i	Continuous RPM (n_1)	Cyclic	øD[6] mm	J_1 kgcm²	C_2 in.lbs.	Nm	M_{2N} in.lbs.	Nm	M_{2B} in.lbs.	Nm	M_{2PEAK} in.lbs.	Nm
PHA822 with Motor Mounting Plate Continued													
PHA822F0350 MF	35.00	3,300	6,000	≤24	12.89	3,445.4	389.0	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0350 MF	35.00	3,300	6,000	>24≤32	12.89	3,445.4	389.0	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0350 MF	35.00	3,300	6,000	>32≤38	12.89	3,445.4	389.0	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0350 MFC	35.00	4,000	6,000	≤24	15.31	3,445.4	389.0	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0350 MFC	35.00	4,000	6,000	>24≤32	14.10	3,445.4	389.0	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0350 MFC	35.00	4,000	6,000	>32≤38	15.69	3,445.4	389.0	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0350 MFL	35.00	3,300	6,000	>38≤48	15.26	3,462.3	390.9	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0350 MFLC	35.00	4,000	6,000	>38≤48	31.12	3,462.3	390.9	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0400 MF	40.00	3,300	6,000	≤24	12.36	3,003.9	339.1	9,744	1,100	17,007	1,920	28,346	3,200
PHA822F0400 MF	40.00	3,300	6,000	>24≤32	12.36	3,003.9	339.1	9,744	1,100	17,007	1,920	28,346	3,200
PHA822F0400 MF	40.00	3,300	6,000	>32≤38	12.36	3,003.9	339.1	9,744	1,100	17,007	1,920	28,346	3,200
PHA822F0400 MFC	40.00	4,300	6,000	≤24	14.77	3,003.9	339.1	9,744	1,100	17,007	1,920	28,346	3,200
PHA822F0400 MFC	40.00	4,300	6,000	>24≤32	13.56	3,003.9	339.1	9,744	1,100	17,007	1,920	28,346	3,200
PHA822F0400 MFC	40.00	4,300	6,000	>32≤38	15.15	3,003.9	339.1	9,744	1,100	17,007	1,920	28,346	3,200
PHA822F0400 MFL	40.00	3,300	6,000	>38≤48	14.73	3,013.7	340.2	9,744	1,100	17,007	1,920	28,346	3,200
PHA822F0400 MFLC	40.00	4,300	6,000	>38≤48	30.59	3,013.7	340.2	9,744	1,100	17,007	1,920	28,346	3,200
PHA822F0500 MF	50.00	3,300	6,000	≤24	12.27	3,356.9	379.0	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0500 MF	50.00	3,300	6,000	>24≤32	12.27	3,356.9	379.0	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0500 MF	50.00	3,300	6,000	>32≤38	12.27	3,356.9	379.0	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0500 MFC	50.00	4,300	6,000	≤24	14.68	3,356.9	379.0	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0500 MFC	50.00	4,300	6,000	>24≤32	13.47	3,356.9	379.0	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0500 MFC	50.00	4,300	6,000	>32≤38	15.06	3,356.9	379.0	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0500 MFL	50.00	3,300	6,000	>38≤48	14.64	3,364.7	379.9	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0500 MFLC	50.00	4,300	6,000	>38≤48	30.50	3,364.7	379.9	11,073	1,250	17,716	2,000	28,346	3,200
PHA822F0700 MF	70.00	3,300	6,000	≤24	12.19	3,416.7	385.7	8,858	1,000	14,173	1,600	24,900	2,811
PHA822F0700 MF	70.00	3,300	6,000	>24≤32	12.19	3,416.7	385.7	8,858	1,000	14,173	1,600	24,900	2,811
PHA822F0700 MF	70.00	3,300	6,000	>32≤38	12.19	3,416.7	385.7	8,858	1,000	14,173	1,600	24,900	2,811
PHA822F0700 MFC	70.00	4,300	6,000	≤24	14.61	3,416.7	385.7	8,858	1,000	14,173	1,600	24,900	2,811
PHA822F0700 MFC	70.00	4,300	6,000	>24≤32	13.39	3,416.7	385.7	8,858	1,000	14,173	1,600	24,900	2,811
PHA822F0700 MFC	70.00	4,300	6,000	>32≤38	14.99	3,416.7	385.7	8,858	1,000	14,173	1,600	24,900	2,811
PHA822F0700 MFL	70.00	3,300	6,000	>38≤48	14.56	3,420.8	386.2	8,858	1,000	14,173	1,600	24,900	2,811
PHA822F0700 MFLC	70.00	4,300	6,000	>38≤48	30.42	3,420.8	386.2	8,858	1,000	14,173	1,600	24,900	2,811
PHA822F1000 MF	100.0	3,300	6,000	≤24	12.15	2,620.9	295.9	7,086	800	10,630	1,200	21,259	2,400
PHA822F1000 MF	100.0	3,300	6,000	>24≤32	12.15	2,620.9	295.9	7,086	800	10,630	1,200	21,259	2,400
PHA822F1000 MF	100.0	3,300	6,000	>32≤38	12.15	2,620.9	295.9	7,086	800	10,630	1,200	21,259	2,400
PHA822F1000 MFC	100.0	4,300	6,000	≤24	14.57	2,620.9	295.9	7,086	800	10,630	1,200	21,259	2,400
PHA822F1000 MFC	100.0	4,300	6,000	>24≤32	13.36	2,620.9	295.9	7,086	800	10,630	1,200	21,259	2,400
PHA822F1000 MFC	100.0	4,300	6,000	>32≤38	14.95	2,620.9	295.9	7,086	800	10,630	1,200	21,259	2,400
PHA822F1000 MFL	100.0	3,300	6,000	>38≤48	14.52	2,622.1	296.0	7,086	800	10,630	1,200	21,259	2,400
PHA822F1000 MFLC	100.0	4,300	6,000	>38≤48	30.38	2,622.1	296.0	7,086	800	10,630	1,200	21,259	2,400
PHA932 with Motor Mounting Plate Continued Next Page													
PHA932F0120 MF	12.00	1,800	3,000	≤32	81.74	9,660	1,090	26,574	3,000	32,783	3,701	40,979	4,626
PHA932F0120 MF	12.00	1,800	3,000	>32≤38	81.51	9,836	1,110	26,574	3,000	40,818	4,608	59,511	6,718
PHA932F0120 MF	12.00	1,800	3,000	>38≤48	80.88	9,836	1,110	26,574	3,000	40,818	4,608	65,527	7,397
PHA932F0120 MFC	12.00	2,700	3,000	≤32	95.85	9,660	1,090	26,574	3,000	32,783	3,701	40,979	4,626
PHA932F0120 MFC	12.00	2,700	3,000	>32≤38	97.62	9,836	1,110	26,574	3,000	40,818	4,608	59,511	6,718
PHA932F0120 MFC	12.00	2,700	3,000	>38≤48	96.74	9,836	1,110	26,574	3,000	40,818	4,608	65,527	7,397
PHA932F0160 MF	16.00	2,200	3,500	≤32	53.56	9,984	1,127	26,574	3,000	43,711	4,935	54,639	6,168
PHA932F0160 MF	16.00	2,200	3,500	>32≤38	53.34	10,089	1,139	26,574	3,000	44,290	5,000	79,348	8,958
PHA932F0160 MF	16.00	2,200	3,500	>38≤48	52.70	10,089	1,139	26,574	3,000	44,290	5,000	87,369	9,863

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"PHA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead	i	Continuous RPM (n_1)	Cyclic	øD[6] mm	J_1 kgcm²	C_2 in.lbs.	Nm	M_{2N} in.lbs.	Nm	M_{2B} in.lbs.	Nm	M_{2PEAK} in.lbs.	Nm
PHA932 with Motor Mounting Plate Continued Next Page													
PHA932F0160 MFC	16.00	2,900	3,500	≤32	67.68	9,984	1,127	26,574	3,000	43,711	4,935	54,639	6,168
PHA932F0160 MFC	16.00	2,900	3,500	>32≤38	69.44	10,089	1,139	26,574	3,000	44,290	5,000	79,348	8,958
PHA932F0160 MFC	16.00	2,900	3,500	>38≤48	68.56	10,089	1,139	26,574	3,000	44,290	5,000	87,369	9,863
PHA932F0180 MF	18.00	1,800	3,000	≤32	75.69	9,524	1,075	26,574	3,000	39,861	4,500	61,468	6,939
PHA932F0180 MF	18.00	1,800	3,000	>32≤38	75.47	9,599	1,084	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0180 MF	18.00	1,800	3,000	>38≤48	74.83	9,599	1,084	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0180 MFC	18.00	2,700	3,000	≤32	89.81	9,524	1,075	26,574	3,000	39,861	4,500	61,468	6,939
PHA932F0180 MFC	18.00	2,700	3,000	>32≤38	91.57	9,599	1,084	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0180 MFC	18.00	2,700	3,000	>38≤48	90.69	9,599	1,084	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0200 MF	20.00	2,500	4,000	≤32	44.73	10,047	1,134	26,574	3,000	44,290	5,000	68,298	7,710
PHA932F0200 MF	20.00	2,500	4,000	>32≤38	44.51	10,114	1,142	26,574	3,000	44,290	5,000	88,580	10,000
PHA932F0200 MF	20.00	2,500	4,000	>38≤48	43.87	10,114	1,142	26,574	3,000	44,290	5,000	88,580	10,000
PHA932F0200 MFC	20.00	3,300	4,000	≤32	58.85	10,047	1,134	26,574	3,000	44,290	5,000	68,298	7,710
PHA932F0200 MFC	20.00	3,300	4,000	>32≤38	60.61	10,114	1,142	26,574	3,000	44,290	5,000	88,580	10,000
PHA932F0200 MFC	20.00	3,300	4,000	>38≤48	59.73	10,114	1,142	26,574	3,000	44,290	5,000	88,580	10,000
PHA932F0240 MF	24.00	2,200	3,500	≤32	50.16	9,661	1,091	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0240 MF	24.00	2,200	3,500	>32≤38	49.94	9,705	1,096	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0240 MF	24.00	2,200	3,500	>38≤48	49.30	9,705	1,096	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0240 MFC	24.00	2,900	3,500	≤32	64.27	9,661	1,091	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0240 MFC	24.00	2,900	3,500	>32≤38	66.04	9,705	1,096	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0240 MFC	24.00	2,900	3,500	>38≤48	65.16	9,705	1,096	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0280 MF	28.00	2,800	4,500	≤32	38.30	9,926	1,121	26,574	3,000	44,290	5,000	88,580	10,000
PHA932F0280 MF	28.00	2,800	4,500	>32≤38	38.10	9,926	1,121	26,574	3,000	44,290	5,000	88,580	10,000
PHA932F0280 MF	28.00	2,800	4,500	>38≤48	37.46	9,926	1,121	26,574	3,000	44,290	5,000	88,580	10,000
PHA932F0280 MFC	28.00	4,000	4,500	≤32	52.42	9,926	1,121	26,574	3,000	44,290	5,000	88,580	10,000
PHA932F0280 MFC	28.00	4,000	4,500	>32≤38	54.20	9,926	1,121	26,574	3,000	44,290	5,000	88,580	10,000
PHA932F0280 MFC	28.00	4,000	4,500	>38≤48	53.32	9,926	1,121	26,574	3,000	44,290	5,000	88,580	10,000
PHA932F0300 MF	30.00	2,500	4,000	≤32	42.56	9,687	1,094	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0300 MF	30.00	2,500	4,000	>32≤38	42.33	9,715	1,097	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0300 MF	30.00	2,500	4,000	>38≤48	41.69	9,715	1,097	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0300 MFC	30.00	3,500	4,000	≤32	56.67	9,687	1,094	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0300 MFC	30.00	3,500	4,000	>32≤38	58.43	9,715	1,097	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0300 MFC	30.00	3,500	4,000	>38≤48	57.55	9,715	1,097	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0320 MF	32.00	2,800	4,500	≤32	36.64	9,680	1,093	26,574	3,000	40,818	4,608	88,580	10,000
PHA932F0320 MF	32.00	2,800	4,500	>32≤38	36.44	9,680	1,093	26,574	3,000	40,818	4,608	88,580	10,000
PHA932F0320 MF	32.00	2,800	4,500	>38≤48	35.80	9,680	1,093	26,574	3,000	40,818	4,608	88,580	10,000
PHA932F0320 MFC	32.00	4,000	4,500	≤32	50.75	9,680	1,093	26,574	3,000	40,818	4,608	88,580	10,000
PHA932F0320 MFC	32.00	4,000	4,500	>32≤38	52.54	9,680	1,093	26,574	3,000	40,818	4,608	88,580	10,000
PHA932F0320 MFC	32.00	4,000	4,500	>38≤48	51.66	9,680	1,093	26,574	3,000	40,818	4,608	88,580	10,000
PHA932F0400 MF	40.00	2,800	4,500	≤32	34.97	9,265	1,046	23,810	2,688	40,818	4,608	88,580	10,000
PHA932F0400 MF	40.00	2,800	4,500	>32≤38	34.76	9,265	1,046	23,810	2,688	40,818	4,608	88,580	10,000
PHA932F0400 MF	40.00	2,800	4,500	>38≤48	34.13	9,265	1,046	23,810	2,688	40,818	4,608	88,580	10,000
PHA932F0400 MFC	40.00	4,000	4,500	≤32	49.08	9,265	1,046	23,810	2,688	40,818	4,608	88,580	10,000
PHA932F0400 MFC	40.00	4,000	4,500	>32≤38	50.87	9,265	1,046	23,810	2,688	40,818	4,608	88,580	10,000
PHA932F0400 MFC	40.00	4,000	4,500	>38≤48	49.99	9,265	1,046	23,810	2,688	40,818	4,608	88,580	10,000
PHA932F0420 MF	42.00	2,800	4,500	≤32	37.19	9,637	1,088	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0420 MF	42.00	2,800	4,500	>32≤38	36.99	9,637	1,088	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0420 MF	42.00	2,800	4,500	>38≤48	36.35	9,637	1,088	26,574	3,000	39,861	4,500	79,722	9,000

Index of Symbols

MF	Motor adapter with FlexiAdapt® coupling	J_1	Mass moment of inertia (input)
L	Large Input	C_2	Torsional Stiffness
C	ServoCool	M_{2N}	Nominal Torque
i	Ratio - Exact	M_{2B}	Acceleration Torque Maximum
n_1	Maximum input speed RPM	M_{2PEAK}	Peak Torque

See web site for drawings.

"PHA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

STÖBER

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead	i	Continuous RPM (n_1)	Cyclic	øD6 mm	J_1 kgcm²	C_2 in.lbs.	Nm	M_{2N} in.lbs.	Nm	M_{2B} in.lbs.	Nm	M_{2PEAK} in.lbs.	Nm
PHA932 with Motor Mounting Plate Continued													
PHA932F0420 MFC	42.00	4,000	4,500	≤32	51.31	9,637	1,088	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0420 MFC	42.00	4,000	4,500	>32≤38	53.09	9,637	1,088	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0420 MFC	42.00	4,000	4,500	>38≤48	52.21	9,637	1,088	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0480 MF	48.00	2,800	4,500	≤32	35.79	9,533	1,076	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0480 MF	48.00	2,800	4,500	>32≤38	35.58	9,533	1,076	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0480 MF	48.00	2,800	4,500	>38≤48	34.95	9,533	1,076	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0480 MFC	48.00	4,000	4,500	≤32	49.90	9,533	1,076	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0480 MFC	48.00	4,000	4,500	>32≤38	51.69	9,533	1,076	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0480 MFC	48.00	4,000	4,500	>38≤48	50.81	9,533	1,076	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0600 MF	60.00	2,800	4,500	≤32	34.42	9,349	1,055	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0600 MF	60.00	2,800	4,500	>32≤38	34.22	9,349	1,055	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0600 MF	60.00	2,800	4,500	>38≤48	33.58	9,349	1,055	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0600 MFC	60.00	4,000	4,500	≤32	48.54	9,349	1,055	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0600 MFC	60.00	4,000	4,500	>32≤38	50.32	9,349	1,055	26,574	3,000	39,861	4,500	79,722	9,000
PHA932F0600 MFC	60.00	4,000	4,500	>38≤48	49.44	9,349	1,055	26,574	3,000	39,861	4,500	79,722	9,000
PHVA933 with Motor Mounting Plate													
PHVA933F0610 MF	61.00	2,500	4,500	≤24	54.43	7,478	844	22,145	2,500	37,647	4,250	79,722	9,000
PHVA933F0610 MF	61.00	2,500	4,500	>24≤32	54.76	7,488	845	22,145	2,500	37,647	4,250	79,722	9,000
PHVA933F0610 MF	61.00	2,500	4,500	>32≤38	54.76	7,488	845	22,145	2,500	37,647	4,250	79,722	9,000
PHVA933F0610 MFC	61.00	3,200	4,500	>24≤32	58.96	7,488	845	22,145	2,500	37,647	4,250	79,722	9,000
PHVA933F0610 MFC	61.00	3,200	4,500	>32≤38	60.56	7,488	845	22,145	2,500	37,647	4,250	79,722	9,000
PHVA933F0610 MFL	61.00	2,500	4,500	>38≤48	73.56	7,508	848	22,145	2,500	37,647	4,250	79,722	9,000
PHVA933F0910 MF	91.00	2,500	4,500	≤24	50.61	7,403	836	22,145	2,500	37,647	4,250	79,722	9,000
PHVA933F0910 MF	91.00	2,500	4,500	>24≤32	50.61	7,403	836	22,145	2,500	37,647	4,250	79,722	9,000
PHVA933F0910 MF	91.00	2,500	4,500	>32≤38	50.61	7,403	836	22,145	2,500	37,647	4,250	79,722	9,000
PHVA933F0910 MFC	91.00	3,200	4,500	≤24	56.03	7,403	836	22,145	2,500	37,647	4,250	79,722	9,000
PHVA933F0910 MFC	91.00	3,200	4,500	>24≤32	54.82	7,403	836	22,145	2,500	37,647	4,250	79,722	9,000
PHVA933F0910 MFC	91.00	3,200	4,500	>32≤38	56.41	7,403	836	22,145	2,500	37,647	4,250	79,722	9,000
PHVA933F0910 MFL	91.00	2,500	4,500	>38≤48	69.77	7,415	837	22,145	2,500	37,647	4,250	79,722	9,000
PHVA933F1210 MF	121.0	2,500	4,500	≤24	49.23	7,119	804	22,145	2,500	37,647	4,250	79,722	9,000
PHVA933F1210 MF	121.0	2,500	4,500	>24≤32	49.23	7,119	804	22,145	2,500	37,647	4,250	79,722	9,000
PHVA933F1210 MF	121.0	2,500	4,500	>32≤38	49.23	7,119	804	22,145	2,500	37,647	4,250	79,722	9,000
PHVA933F1210 MFC	121.0	3,200	4,500	≤24	54.65	7,119	804	22,145	2,500	37,647	4,250	79,722	9,000
PHVA933F1210 MFC	121.0	3,200	4,500	>24≤32	53.43	7,119	804	22,145	2,500	37,647	4,250	79,722	9,000
PHVA933F1210 MFC	121.0	3,200	4,500	>32≤38	55.02	7,119	804	22,145	2,500	37,647	4,250	79,722	9,000
PHVA933F1210 MFL	121.0	2,500	4,500	>38≤48	68.39	7,125	804	22,145	2,500	37,647	4,250	79,722	9,000
PHA1032 with Motor Mounting Plate Continued Next Page													
PHA1032F0180 MF	18.00	1,800	3,000	≤32	78.84	14,490	1,636	40,818	4,608	49,175	5,551	61,468	6,939
PHA1032F0180 MF	18.00	1,800	3,000	>32≤38	78.62	14,664	1,656	40,818	4,608	61,226	6,912	89,266	10,077
PHA1032F0180 MF	18.00	1,800	3,000	>38≤48	77.98	14,664	1,656	40,818	4,608	61,226	6,912	98,290	11,096
PHA1032F0180 MFC	18.00	2,500	3,000	≤32	92.96	14,490	1,636	40,818	4,608	49,175	5,551	61,468	6,939
PHA1032F0180 MFC	18.00	2,500	3,000	>32≤38	94.72	14,664	1,655	40,818	4,608	61,226	6,912	89,266	10,077
PHA1032F0180 MFC	18.00	2,500	3,000	>38≤48	93.84	14,664	1,655	40,818	4,608	61,226	6,912	98,290	11,096
PHA1032F0240 MF	24.00	2,200	3,500	≤32	51.93	14,811	1,672	40,818	4,608	65,566	7,402	81,958	9,252
PHA1032F0240 MF	24.00	2,200	3,500	>32≤38	51.71	14,913	1,683	40,818	4,608	66,435	7,500	119,022	13,437
PHA1032F0240 MF	24.00	2,200	3,500	>38≤48	51.07	14,913	1,683	40,818	4,608	66,435	7,500	131,053	14,795
PHA1032F0240 MFC	24.00	2,700	3,500	≤32	66.05	14,811	1,672	40,818	4,608	65,566	7,402	81,958	9,252

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"PHA" Series–Advanced ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead	i	Continuous RPM (n_1)	Cyclic	øD[6] mm	J_1 kgcm²	C_2 in.lbs.	Nm	M_{2N} in.lbs.	Nm	M_{2B} in.lbs.	Nm	M_{2PEAK} in.lbs.	Nm
PHA1032 with Motor Mounting Plate Continued													
PHA1032F0240 MFC	24.00	2,700	3,500	>32≤38	67.81	14,913	1,683	40,818	4,608	66,435	7,500	119,022	13,437
PHA1032F0240 MFC	24.00	2,700	3,500	>38≤48	66.93	14,913	1,683	40,818	4,608	66,435	7,500	131,053	14,795
PHA1032F0300 MF	30.00	2,500	4,000	≤32	43.69	14,871	1,679	44,290	5,000	66,435	7,500	102,447	11,566
PHA1032F0300 MF	30.00	2,500	4,000	>32≤38	43.46	14,937	1,686	44,290	5,000	66,435	7,500	132,870	15,000
PHA1032F0300 MF	30.00	2,500	4,000	>38≤48	42.83	14,937	1,686	44,290	5,000	66,435	7,500	132,870	15,000
PHA1032F0300 MFC	30.00	3,200	4,000	≤32	57.80	14,871	1,679	44,290	5,000	66,435	7,500	102,447	11,566
PHA1032F0300 MFC	30.00	3,200	4,000	>32≤38	59.57	14,937	1,686	44,290	5,000	66,435	7,500	132,870	15,000
PHA1032F0300 MFC	30.00	3,200	4,000	>38≤48	58.69	14,937	1,686	44,290	5,000	66,435	7,500	132,870	15,000
PHA1032F0420 MF	42.00	2,800	4,500	≤32	37.77	14,754	1,666	44,290	5,000	66,435	7,500	132,870	15,000
PHA1032F0420 MF	42.00	2,800	4,500	>32≤38	37.57	14,754	1,666	44,290	5,000	66,435	7,500	132,870	15,000
PHA1032F0420 MF	42.00	2,800	4,500	>38≤48	36.93	14,754	1,666	44,290	5,000	66,435	7,500	132,870	15,000
PHA1032F0420 MFC	42.00	4,000	4,500	≤32	51.88	14,754	1,666	44,290	5,000	66,435	7,500	132,870	15,000
PHA1032F0420 MFC	42.00	4,000	4,500	>32≤38	53.67	14,754	1,666	44,290	5,000	66,435	7,500	132,870	15,000
PHA1032F0420 MFC	42.00	4,000	4,500	>38≤48	52.79	14,754	1,666	44,290	5,000	66,435	7,500	132,870	15,000
PHA1032F0480 MF	48.00	2,800	4,500	≤32	36.23	14,510	1,638	40,818	4,608	61,226	6,912	132,870	15,000
PHA1032F0480 MF	48.00	2,800	4,500	>32≤38	36.03	14,510	1,638	40,818	4,608	61,226	6,912	132,870	15,000
PHA1032F0480 MF	48.00	2,800	4,500	>38≤48	35.39	14,510	1,638	40,818	4,608	61,226	6,912	132,870	15,000
PHA1032F0480 MFC	48.00	4,000	4,500	≤32	50.34	14,510	1,638	40,818	4,608	61,226	6,912	132,870	15,000
PHA1032F0480 MFC	48.00	4,000	4,500	>32≤38	52.13	14,510	1,638	40,818	4,608	61,226	6,912	132,870	15,000
PHA1032F0480 MFC	48.00	4,000	4,500	>38≤48	51.25	14,510	1,638	40,818	4,608	61,226	6,912	132,870	15,000
PHA1032F0600 MF	60.00	2,800	4,500	≤32	34.71	14,090	1,591	35,715	4,032	61,226	6,912	132,870	15,000
PHA1032F0600 MF	60.00	2,800	4,500	>32≤38	34.50	14,090	1,591	35,715	4,032	61,226	6,912	132,870	15,000
PHA1032F0600 MF	60.00	2,800	4,500	>38≤48	33.87	14,090	1,591	35,715	4,032	61,226	6,912	132,870	15,000
PHA1032F0600 MFC	60.00	4,000	4,500	≤32	48.82	14,090	1,591	35,715	4,032	61,226	6,912	132,870	15,000
PHA1032F0600 MFC	60.00	4,000	4,500	>32≤38	50.61	14,090	1,591	35,715	4,032	61,226	6,912	132,870	15,000
PHA1032F0600 MFC	60.00	4,000	4,500	>38≤48	49.73	14,090	1,591	35,715	4,032	61,226	6,912	132,870	15,000
PHVA1033 with Motor Mounting Plate													
PHVA1033F0610 MF	61.00	2,500	4,500	≤32	152.86	12,068	1,362	35,432	4,000	66,435	7,500	132,870	15,000
PHVA1033F0610 MF	61.00	2,500	4,500	>32≤38	152.66	12,078	1,364	35,432	4,000	66,435	7,500	132,870	15,000
PHVA1033F0610 MF	61.00	2,500	4,500	>38≤48	152.02	12,078	1,364	35,432	4,000	66,435	7,500	132,870	15,000
PHVA1033F0610 MFC	61.00	3,000	4,500	>32≤38	167.34	12,078	1,364	35,432	4,000	66,435	7,500	132,870	15,000
PHVA1033F0610 MFC	61.00	3,000	4,500	>38≤48	167.10	12,078	1,364	35,432	4,000	66,435	7,500	132,870	15,000
PHVA1033F0910 MF	91.00	2,500	4,500	≤32	127.47	11,858	1,339	35,432	4,000	66,435	7,500	132,870	15,000
PHVA1033F0910 MF	91.00	2,500	4,500	>32≤38	127.26	11,858	1,339	35,432	4,000	66,435	7,500	132,870	15,000
PHVA1033F0910 MF	91.00	2,500	4,500	>38≤48	126.62	11,858	1,339	35,432	4,000	66,435	7,500	132,870	15,000
PHVA1033F0910 MFC	91.00	3,000	4,500	≤32	139.95	11,858	1,339	35,432	4,000	66,435	7,500	132,870	15,000
PHVA1033F0910 MFC	91.00	3,000	4,500	>32≤38	141.94	11,858	1,339	35,432	4,000	66,435	7,500	132,870	15,000
PHVA1033F0910 MFC	91.00	3,000	4,500	>38≤48	141.70	11,858	1,339	35,432	4,000	66,435	7,500	132,870	15,000

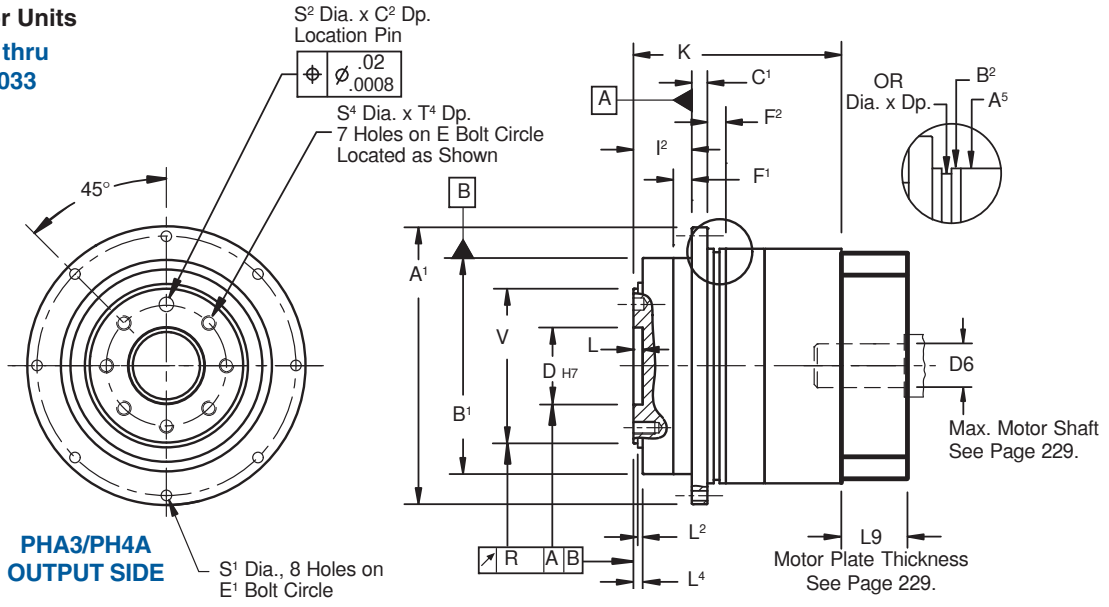
Index of Symbols

MF	Motor adapter with FlexiAdapt® coupling	J_1	Mass moment of inertia (input)
L	Large Input	C_2	Torsional Stiffness
C	ServoCool	M_{2N}	Nominal Torque
i	Ratio - Exact	M_{2B}	Acceleration Torque Maximum
n_1	Maximum input speed RPM	M_{2PEAK}	Peak Torque

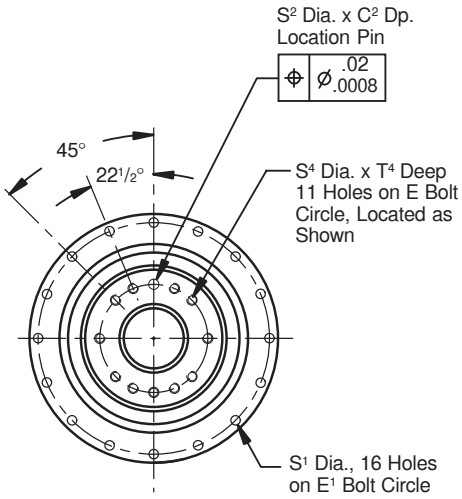
See web site for drawings.

"PHA" Series–Advanced ServoFit® Precision Planetary Gearhead Dimensional Data

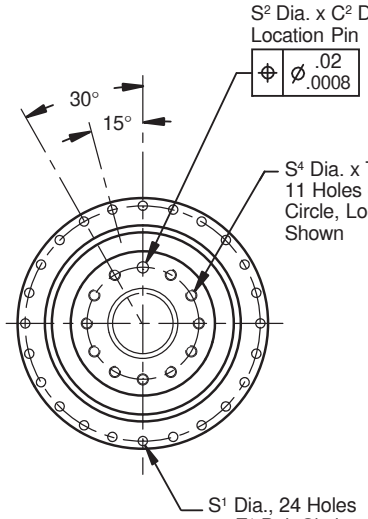
Drawing for Units
PHA321 thru PHVA1033



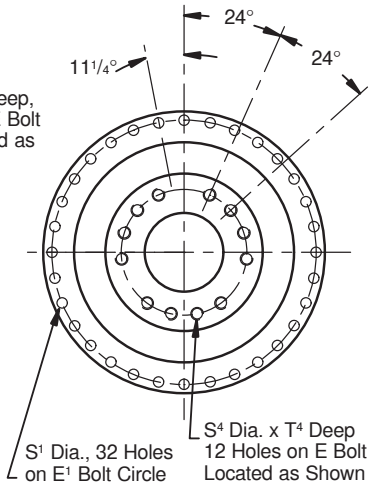
PHA3/PH4A OUTPUT SIDE



PHA5 OUTPUT SIDE



PHA7/PHA8 OUTPUT SIDE



PHA9/PHA10 OUTPUT SIDE

Table No. 1 **"PHA" Series – Advanced Gearhead with Motor Plate – Dimensions (mm/inches)**

Unit	A¹ h7	B¹ h7	B² h7	C¹	C²	D H7	E	E¹	F¹	F²	I²	L	L²	L⁴	OR
PHA321/PHA322	86 +.000/-.035 3.386 +.0000/-.0014	64 +.000/-.030 2.520 +.0000/-.0012	70 * +.000/-.030 2.756 +.0000/-.0012	4 .16	3 .12	20 +.021/-.0 .787 +.0008/-.0000	31.5 1.24	79 3.11	7 .28	8 .31	19.5 .77	4 .16	3 .12	3.5 .14	65x2 2.55x.08
PHA421/PHA422	118 +.000/-.035 4.646 +.0000/-.0014	90 +.000/-.035 3.543 +.0000/-.0014	95 +.000/-.035 3.740 +.0000/-.0014	7 .28	7 .28	31.5 +.025/-.0 1.240 +.0010/-.0000	50 1.97	109 4.29	10 .39	10 .39	30 1.18	6 .24	6 .24	6 .24	90x3 3.54x.12
PHA521/PHA522	145 +.000/-.040 5.709 +.0000/-.0016	110 +.000/-.035 4.331 +.0000/-.0014	120 * +.000/-.035 4.724 +.0000/-.0014	8 .32	7 .28	40 +.025/-.0 1.575 +.0010/-.0000	63 2.48	135 5.31	10 .39	12 .47	29 1.14	6 .24	6 .24	6 .24	110x3 4.33x.12
PHA721/PHA722	179 +.000/-.040 7.047 +.0000/-.0016	140 +.000/-.040 5.513 +.0000/-.0016	152 +.000/-.040 5.984 +.0000/-.0016	10 .39	7 .28	50 +.025/-.0 1.969 +.0010/-.0000	80 3.15	168 6.61	12 .47	12 .47	38 1.50	6 .24	6 .24	6 .24	145x3 5.71x.12
PHA821/PHA822	247 +.000/-.046 9.724 +.0000/-.0018	200 +.000/-.046 7.874 +.0000/-.0018	212 +.000/-.046 8.346 +.0000/-.0018	12 .47	10 .39	80 +.030/-.0 3.150 +.0012/-.0000	125 4.92	233 9.17	15 .59	15 .59	50 1.97	8 .31	8 .31	8 .31	200x5 7.87x.20
PHA932/PHVA933	300 11.811	255 +.000/-.052 10.039 +.000/-.0020	255 +.000/-.052 10.039 +.0000/-.0020	18 .71	—	90 +.035/-.0 3.543 +.0014/-.0000	140 5.51	280 11.02	20 .79	33 1.29	66 2.60	12 .47	11 .43	12 .47	238x5 9.37x.20
PHA1032/PHVA1033	330 12.992	285 +.000/-.057 11.220 +.000/-.0022	285 +.000/-.052 11.221 +.0000/-.0020	20 .79	—	95 +.035/-.0 3.740 +.0014/-.0000	160 6.30	310 12.20	20 .79	20 .79	75 2.95	10 .39	15 .59	15 .59	270x6 10.63x.24

* Not applicable for PH322 and PH522.

"PHA" Series–Advanced ServoFit® Precision Planetary Gearhead Dimensional Data

Table No. 2 "PHA" Series – Dimensions (mm/inches)

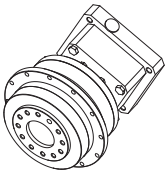
Unit	R	S[1]	S[2] H7	S[4]	T[4]	V h7
PHA321/PHA322	.020 .0008	4.5 .18	5 +.012/-.000 .20 +.0005/-.0000	M5	7 .28	40 +.000/-.025 1.575 +.000/-.0010
PHA421/PHA422	.020 .0008	5.5 .22	6 +.012/-.000 .236 +.0005/-.0000	M6	11 .43	63 +.000/-.030 2.480 +.000/-.0012
PHA521/PHA522	.020 .0008	5.5 .22	6 +.012/-.000 .236 +.0005/-.0000	M6	11 .43	80 +.000/-.030 3.150 +.000/-.0012
PHA721/PHA722	.025 .0010	6.6 .26	8 +.015/-.000 .315 +.0006/-.0000	M8	14 .55	100 +.000/-.035 3.937 +.000/-.0014
PHA821/PHA822	.030 .0012	9 .35	10 +.015/-.000 .393 +.0006/-.0000	M10	18 .71	160 +.000/-.040 6.299 +.000/-.0016
PHA932/PHVA933	.030 .0012	13.5 .53	—	M16	24 .94	180 +.000/-.040 7.087 +.000/-.0016
PHA1032/PHVA1033	.040 .0016	13.5 .53	—	M20	30 1.18	200 +.000/-.046 7.874 +.000/-.0018

If a planetary gearhead is to be mounted from "B²" side, specify when ordering. For proper mounting the paint must be eliminated and the tolerance held on that surface.

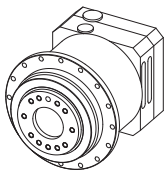
Side "B²" mounting is not possible with the Large Input.

Table No. 3 "PHA" Series – Dimensions (mm/inches)

	Standard					ServoCool					Large Input			
	A[5]		K			A[5]		K			A[5]		K	
Unit	mm	inches	mm	inches	Unit	mm	inches	mm	inches	Unit	mm	inches	mm	inches
PHA321	70	2.76	80.5	3.17	—					**PHA321_L**	95	3.74	84.5	3.33
PHA322	55	2.17	104	4.09	—					—				
PHA421	95	3.74	99	3.90	**PHA421_C**	98	3.86	122.5	4.82	**PHA421_L**	120	4.72	117.5	4.63
PHA422	72	2.83	146.5	5.77	–					**PHA422_L**	100	3.94	150.5	5.93
PHA521	120	4.72	110	4.33	**PHA521_C**	115	4.53	138	5.43	**PHA521_L**	152	5.98	124	4.88
PHA522	98	3.86	159.5	6.28	**PHA522_C**	98	3.86	183	7.20	**PHA522_L**	115	4.53	171	6.73
PHA721	152	5.98	138	5.43	**PHA721_C**	145	5.71	168	6.61	**PHA721_L**	212	8.35	155	6.10
PHA722	115	4.53	190	7.48	**PHA722_C**	115	4.53	218	8.58	**PHA722_L**	145	5.71	204	8.03
PHA821	212	8.35	183	7.20	**PHA821_C**	190	7.48	231	9.09	—				
PHA822	145	5.71	251	9.88	**PHA822_C**	145	5.71	281	11.06	**PHA822_L**	190	7.48	268	10.55
PHA932	190	7.48	349.5	13.74	**PHA932_C**	190	7.48	397.5	15.64	—				
PHVA933	152	5.98	269.5	10.61	**PHVA933_C**	145	5.71	299.5	11.79	**PHVA933_L**	225	8.86	274	10.79
PHA1032	190	7.48	366	14.41	**PHA1032_C**	190	7.48	414	16.30	—				
PHVA1033	212	8.35	307	12.09	**PHVA1033_C**	190	7.48	355	13.98	—				



Typical 2 Stage Configuration



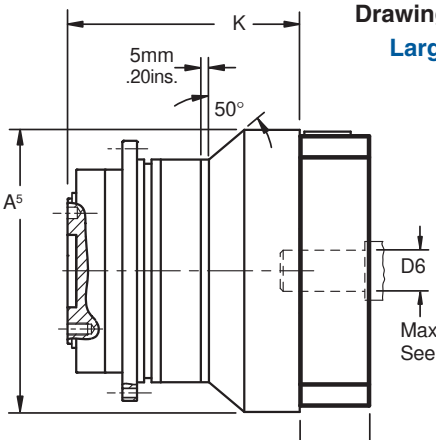
Typical ServoCool

Part No. Explanation

PHA 5 2 1 F 0050 MF C L

- **L** — Option for Large Input
- **C** — Option for ServoCool
- **MF** — Motor Plate with **F**lexiAdapt Coupling
- **0050** — Ratio (**0050** = 5.0:1)
- **F** — Output Flange
- **1** — No. of Stages (**1** = 1 Stage, **2** = 2 Stage)
- **5** — Generation No.
- **2** — Unit No.
- **PHA** — Advanced "**PHA**" Series ServoFit Precision Planetary Gearhead

Drawing for Units Large Input

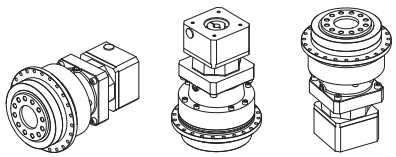


Max. Motor Shaft See Page 229.

Motor Plate Thickness See Page 229.

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

"PHQ" Series
ServoFit® Precision Planetary Gearhead
Performance Specification Overview

	Size	PHQ722	PHQ723	PHQ822	PHQ823	PHQ932	PHQ933	PHQ1032	PHQ1033
Acceleration Torque	in.lbs.	8,408		23,010		53,100		88,500	
$M_{2B\ MAX}$	Nm	950		2,600		6,000		10,000	
Output Torque Nom. [1]	in.lbs.	5,752		15,045		33,660		57,577	
M_{2N}	Nm	650		1,700		3,800		6,500	
Input Speed Max.	Continuous	3,700	4,000	3,300	3,700	2,800	3,300	2,500	2,800
n_{1MAX}	Cyclic	6,500	7,000	6,000	6,500	4,500	6,000	4,000	4,500
Torsional Backlash Max. [2]									
$\Delta\varphi$	arcmin	≤3		≤3		≤3		≤3	
Torsional Stiffness	in.lbs./arcmin	≤1,840		≤5,840		≤10,885		≤18,320	
C_2	Nm/arcmin	≤208		≤660		≤1,230		≤2,068	
Axial Load Max. [3]	lbs.	1,384		2,261		7,425		11,250	
F_{2AMAX}	N	6,150		10,050		33,000		50,000	
Tilting Moment Max. [3]	in.lbs.	13,275		30,975		66,375		77,880	
M_{2Kmax}	Nm	1,500		3,500		7,500		8,800	
Tilting Stiffness	in.lbs./arcmin	4,425		13,718		66,375		84,075	
C_{2K}	Nm/arcmin	500		1,550		7,500		9,500	
Weight	pounds	36	38	96	98	189	196	261	293
m	kg	16.3	17.1	43.6	44.3	85.6	88.9	118.2	132.7
Noise Level [4]									
L_{PA}	dB(A)	≤62		≤63		≤65		≤64	
Efficiency (at Nom. Torque)									
h	%	≥ 90% — 93%							
Degree of Protection		IP65 - FKM Shaft Seals							
Lubrication		Synthetic Oil — Lubricated for Life							
Mounting Position		 EL1 EL5 EL6							
For 3-stage units (ratios ≥72:1), the amount of lubrication depends on the mounting position. **ON THESE UNITS THE MOUNTING POSITION MUST BE SPECIFIED**									
Ambient Temperature		0° C to +40°C (104° F) [Unit temperature ≤ 90° C Max.]							
Finish		Black (RAL 9005)							
Bearing Lifetime [5]	hours	L_h > 10,000 hours if M_{2K}/M_{2A} < 1.25 and > 1.00							
L_h		L_h > 20,000 hours if M_{2K}/M_{2A} > 1.25 and < 1.50							
		L_h > 30,000 hours if M_{2K}/M_{2A} > 1.5							
Warranty		5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)							

[1] Ratings based on input speed (n_1) of 2000 RPM.
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[2] Tested at 1.5% of nominal torque and recorded on the output side of the gearhead.

[3] Rating based on output speed (n2) of 100 RPM. For values at other speeds see Page 241.

[4] Measurement at one (1) meter distance with input speed (n1) of 3000 RPM.

[5] M_{2A} equals actual tilting moment of the application. See Page 241 for calculation details.

WARNING: In order to insure that the specified torque ratings are attained, it is essential to use a grade 12.9 fastener on all output connections.

Refer to Page 250 for ServoFit Precision Planetary Gearhead Selection Procedure.

"PHQ" Series
ServoFit® Precision Planetary Gearhead
Features

The "PHQ" Series ServoFit Precision Planetary Gearheads is a four-planet system allowing the torque to be distributed over 4 planets instead of 3, resulting in an increase in output torque of ≥35% and an increase in torsional rigidity of ≥80%.

Some other features are:

- Readily Attaches to Any Servo Motor (IEC, NEMA, or Customized Motor Plates*)
- 5 Year Limited Warranty (2 years on bearings, seals, etc.)
- Low Backlash
- High Input Speeds
- Ratios up to 600:1
- Advanced Gear Technology
- Up to 93% Efficiency
- Quiet Running
- Assembled in the U.S.A.

The patented TriAdapt® motor coupling is designed to allow thermal expansion of the motor shaft — ensuring long motor life by preventing thrust load on the motor bearings.

The TriAdapt® motor shaft adapter system allows installation of motor in minutes — no special tools required

High tensile tempered steel single-piece housing

Ring gear machined integral to the housing — not welded or pressed in — and case-hardened, finish-ground sun and planet gears, provide greater concentricity and eliminates speed fluctuation

Lubricated for life with high-quality synthetic oil. Input bearing with shields and high temperature grease provide maintenance free operation.

Motor plate can easily be changed to fit your choice of motors

Motor plate pilot toleranced to fit your motor for precise concentricity

Adapter bushings to fit all motor shafts — no key required

Oversized, single-piece planet carrier, made of high tensile material, enables use of higher load capacity bearings and provides highest torsional stiffness possible.

FKM seals for the smallest possible diameter— reduces friction and heat buildup, increases efficiency, and allows continuous duty without additional cooling.

Also available as a right angle drive. Contact STOBER Drives.

See web site for drawings.

"PHQ" Series
ServoFit® Precision Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic										
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PHQ722 with Motor Mounting Plate													
PHQ722F0220 MT	22.00	3,000	5,000	32	4.69	1,837.0	207.4	5,758	650	8,415	950	15,059	1,700
PHQ722F0220 MTL	22.00	3,000	5,000	38	7.72	1,837.0	207.4	5,758	650	8,415	950	15,059	1,700
PHQ722F0280 MT	27.50	3,500	6,000	32	4.22	1,823.1	205.8	5,758	650	8,415	950	15,059	1,700
PHQ722F0280 MTL	27.50	3,500	6,000	38	7.24	1,823.1	205.8	5,758	650	8,415	950	15,059	1,700
PHQ722F0390 MT	38.50	3,700	6,500	32	3.84	1,795.5	202.7	5,758	650	8,415	950	15,059	1,700
PHQ722F0390 MTL	38.50	3,700	6,500	38	6.89	1,795.5	202.7	5,758	650	8,415	950	15,059	1,700
PHQ722F0550 MT	55.00	3,700	6,500	32	3.66	1,731.0	195.4	5,758	650	8,415	950	15,059	1,700
PHQ722F0550 MTL	55.00	3,700	6,500	38	6.71	1,731.0	195.4	5,758	650	8,415	950	15,059	1,700
PHQ723 with Motor Mounting Plate													
PHQ723F0880 MT	88.00	3,300	6,000	24	1.63	1,807.6	204.1	5,758	650	8,415	950	15,059	1,700
PHQ723F0880 MTL	88.00	3,300	6,000	32	3.86	1,807.6	204.1	5,758	650	8,415	950	15,059	1,700
PHQ723F1100 MT	110.0	3,300	6,000	24	1.60	1,804.5	203.7	5,758	650	8,415	950	15,059	1,700
PHQ723F1100 MTL	110.0	3,300	6,000	32	3.83	1,804.5	203.7	5,758	650	8,415	950	15,059	1,700
PHQ723F1380 MT	137.5	3,700	6,500	24	1.48	1,803.1	203.6	5,758	650	8,415	950	15,059	1,700
PHQ723F1380 MTL	137.5	3,700	6,500	32	3.70	1,803.1	203.6	5,758	650	8,415	950	15,059	1,700
PHQ723F1540 MT	154.0	4,000	7,000	24	1.35	1,799.8	203.2	5,758	650	8,415	950	15,059	1,700
PHQ723F1540 MTL	154.0	4,000	7,000	32	3.61	1,799.8	203.2	5,758	650	8,415	950	15,059	1,700
PHQ723F1930 MT	192.5	4,000	7,000	24	1.34	1,799.5	203.2	5,758	650	8,415	950	15,059	1,700
PHQ723F1930 MTL	192.5	4,000	7,000	32	3.60	1,799.5	203.2	5,758	650	8,415	950	15,059	1,700
PHQ723F2200 MT	220.0	4,000	7,000	24	1.29	1,787.2	201.8	5,758	650	8,415	950	15,059	1,700
PHQ723F2200 MTL	220.0	4,000	7,000	32	3.55	1,787.2	201.8	5,758	650	8,415	950	15,059	1,700
PHQ723F2750 MT	275.0	4,000	7,000	24	1.28	1,791.4	202.2	5,758	650	8,415	950	15,059	1,700
PHQ723F2750 MTL	275.0	4,000	7,000	32	3.55	1,791.4	202.2	5,758	650	8,415	950	15,059	1,700
PHQ723F3850 MT	385.0	4,000	7,000	24	1.28	1,779.2	200.9	5,758	650	8,415	950	15,059	1,700
PHQ723F3850 MTL	385.0	4,000	7,000	32	3.54	1,779.2	200.9	5,758	650	8,415	950	15,059	1,700
PHQ723F5500 MT	550.0	4,000	7,000	24	1.28	1,723.5	194.6	5,758	650	8,415	950	15,059	1,700
PHQ723F5500 MTL	550.0	4,000	7,000	32	3.54	1,723.5	194.6	5,758	650	8,415	950	15,059	1,700

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM. For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

See web site for drawings.

"PHQ" Series
ServoFit® Precision Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic										
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PHQ822 with Motor Mounting Plate													
PHQ822F0220 MT	22.00	2,500	4,500	38	11.00	5,855.1	661.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ822F0220 MTL	22.00	2,500	4,500	48	28.85	5,855.1	661.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ822F0280 MT	27.50	3,000	5,500	38	9.25	5,810.8	656.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ822F0280 MTL	27.50	3,000	5,500	48	27.10	5,810.8	656.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ822F0390 MT	38.50	3,300	6,000	38	7.87	5,695.7	643.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ822F0390 MTL	38.50	3,300	6,000	48	26.18	5,695.7	643.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ822F0550 MT	55.00	3,300	6,000	38	7.20	5,447.7	615.0	14,031	1,584	23,031	2,600	35,432	4,000
PHQ822F0550 MTL	55.00	3,300	6,000	48	25.50	5,447.7	615.0	14,031	1,584	23,031	2,600	35,432	4,000
PHQ823 with Motor Mounting Plate													
PHQ823F0880 MT	88.00	3,000	5,000	32	4.81	5,731.1	647.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F0880 MTL	88.00	3,000	5,000	38	7.84	5,731.1	647.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F1100 MT	110.0	3,000	5,000	32	4.70	5,731.1	647.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F1100 MTL	110.0	3,000	5,000	38	7.73	5,731.1	647.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F1380 MT	137.5	3,500	6,000	32	4.22	5,722.3	646.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F1380 MTL	137.5	3,500	6,000	38	7.25	5,722.3	646.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F1540 MT	154.0	3,700	6,500	32	3.88	5,713.4	645.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F1540 MTL	154.0	3,700	6,500	38	6.93	5,713.4	645.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F1930 MT	192.5	3,700	6,500	32	3.85	5,713.4	645.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F1930 MTL	192.5	3,700	6,500	38	6.90	5,713.4	645.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F2200 MT	220.0	3,700	6,500	32	3.68	5,678.0	641.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F2200 MTL	220.0	3,700	6,500	38	6.73	5,678.0	641.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F2750 MT	275.0	3,700	6,500	32	3.66	5,695.7	643.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F2750 MTL	275.0	3,700	6,500	38	6.71	5,695.7	643.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F3850 MT	385.0	3,700	6,500	32	3.65	5,624.8	635.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F3850 MTL	385.0	3,700	6,500	38	6.70	5,624.8	635.0	15,059	1,700	23,031	2,600	35,432	4,000
PHQ823F5500 MT	550.0	3,700	6,500	32	3.64	5,412.2	611.0	14,031	1,584	23,031	2,600	35,432	4,000
PHQ823F5500 MTL	550.0	3,700	6,500	38	6.69	5,412.2	611.0	14,031	1,584	23,031	2,600	35,432	4,000

Index of Symbols

MT ..... Motor adapter with TriAdapt® coupling	n_1 ..... Maximum input speed RPM	M_{2B} ..... Acceleration Torque Maximum
MF ..... Motor adapter with FlexiAdapt® coupling	J_1 ..... Mass moment of inertia (input)	M_{2PEAK} ..... Peak Torque
L ..... Large Input	C_2 ..... Torsional Stiffness	
i ..... Ratio - Exact	M_{2N} ..... Nominal Torque	

See web site for drawings.

"PHQ" Series
ServoFit® Precision Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic										
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PHQ932 with Motor Mounting Plate													
PHQ932F0180 MT	18.00	1,800	3,000	48	71.30	10,961.3	1,237.4	33,660	3,800	53,148	6,000	106,296	12,000
PHQ932F0180 MTL	18.00	1,800	3,000	60	94.25	10,808.4	1,220.2	33,660	3,800	53,148	6,000	106,296	12,000
PHQ932F0240 MT	24.00	2,200	3,500	48	42.54	10,851.3	1,225.0	33,660	3,800	53,148	6,000	106,296	12,000
PHQ932F0240 MTL	24.00	2,200	3,500	60	65.49	10,766.5	1,215.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQ932F0300 MT	30.00	2,500	4,000	48	35.62	10,752.9	1,213.9	33,660	3,800	53,148	6,000	106,296	12,000
PHQ932F0300 MTL	30.00	2,500	4,000	60	58.57	10,699.4	1,207.9	33,660	3,800	53,148	6,000	106,296	12,000
PHQ932F0420 MT	42.00	2,800	4,500	48	29.79	10,580.9	1,194.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQ932F0420 MTL	42.00	2,800	4,500	55	57.80	10,554.4	1,191.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQ932F0600 MT	60.00	2,800	4,500	48	27.07	10,180.8	1,149.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQ932F0600 MTL	60.00	2,800	4,500	55	55.09	10,168.8	1,148.0	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933 with Motor Mounting Plate													
PHQ933F0720 MT	72.00	2,200	4,500	38	13.04	10,676.6	1,205.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F0720 MTL	72.00	2,200	4,500	48	30.89	10,676.6	1,205.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F0960 MT	96.00	2,500	4,500	38	11.25	10,692.5	1,207.1	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F0960 MTL	96.00	2,500	4,500	48	29.10	10,692.5	1,207.1	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F1200 MT	120.0	2,500	4,500	38	10.81	10,652.6	1,202.6	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F1200 MTL	120.0	2,500	4,500	48	28.66	10,652.6	1,202.6	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F1500 MT	150.0	3,000	5,500	38	9.13	10,646.5	1,201.9	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F1500 MTL	150.0	3,000	5,500	48	26.98	10,646.5	1,201.9	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F1680 MT	168.0	3,300	6,000	38	7.96	10,660.6	1,203.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F1680 MTL	168.0	3,300	6,000	48	26.26	10,660.6	1,203.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F2100 MT	210.0	3,300	6,000	38	7.81	10,632.3	1,200.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F2100 MTL	210.0	3,300	6,000	48	26.12	10,632.3	1,200.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F2400 MT	240.0	3,300	6,000	38	7.24	10,607.8	1,197.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F2400 MTL	240.0	3,300	6,000	48	25.54	10,607.8	1,197.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F3000 MT	300.0	3,300	6,000	38	7.17	10,598.6	1,196.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F3000 MTL	300.0	3,300	6,000	48	25.47	10,598.6	1,196.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F4200 MT	420.0	3,300	6,000	38	7.11	10,488.0	1,184.0	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F4200 MTL	420.0	3,300	6,000	48	25.42	10,488.0	1,184.0	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F6000 MT	600.0	3,300	6,000	38	7.09	10,138.5	1,144.6	33,660	3,800	53,148	6,000	106,296	12,000
PHQ933F6000 MTL	600.0	3,300	6,000	48	25.39	10,138.5	1,144.6	33,660	3,800	53,148	6,000	106,296	12,000

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM. For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

See web site for drawings.

"PHQ" Series
ServoFit® Precision Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	$\varnothing D^6$	J_1	C_2		M_{2N}		M_{2B}		M_{2PEAK}	
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PHQ1032 with Motor Mounting Plate													
PHQ1032F0240 MT	24.00	2,000	3,000	60	95.79	18,268.8	2,062.4	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1032F0300 MT	30.00	2,200	3,500	60	77.22	18,232.6	2,058.3	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1032F0420 MT	42.00	2,500	4,000	60	62.49	18,070.9	2,040.1	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1032F0600 MT	60.00	2,500	4,000	60	55.17	17,454.3	1,970.5	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033 with Motor Mounting Plate													
PHQ1033F0960 MT	96.00	2,200	3,500	48	43.73	18,320.3	2,068.2	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F0960 MTL	96.00	2,200	3,500	60	66.68	18,305.1	2,066.5	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F1200 MT	120.0	2,200	3,500	48	42.57	18,265.4	2,062.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F1200 MTL	120.0	2,200	3,500	60	65.52	18,255.7	2,060.9	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F1500 MT	150.0	2,500	4,000	48	35.64	18,254.1	2,060.8	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F1500 MTL	150.0	2,500	4,000	60	58.59	18,247.9	2,060.1	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F1680 MT	168.0	2,800	4,500	48	30.18	18,282.5	2,064.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F1680 MTL	168.0	2,800	4,500	55	58.19	18,277.6	2,063.4	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F2100 MT	210.0	2,800	4,500	48	29.80	18,241.3	2,059.3	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F2100 MTL	210.0	2,800	4,500	55	57.81	18,238.2	2,059.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F2400 MT	240.0	2,800	4,500	48	27.27	18,205.9	2,055.3	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F2400 MTL	240.0	2,800	4,500	55	55.28	18,203.5	2,055.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F3000 MT	300.0	2,800	4,500	48	27.08	18,196.1	2,054.2	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F3000 MTL	300.0	2,800	4,500	55	55.09	18,194.5	2,054.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F4200 MT	420.0	2,800	4,500	48	26.93	18,038.5	2,036.4	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F4200 MTL	420.0	2,800	4,500	55	54.95	18,037.7	2,036.3	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F6000 MT	600.0	2,800	4,500	48	26.86	17,439.5	1,968.8	57,577	6,500	88,580	10,000	177,160	20,000
PHQ1033F6000 MTL	600.0	2,800	4,500	55	54.87	17,439.2	1,968.7	57,577	6,500	88,580	10,000	177,160	20,000

Index of Symbols

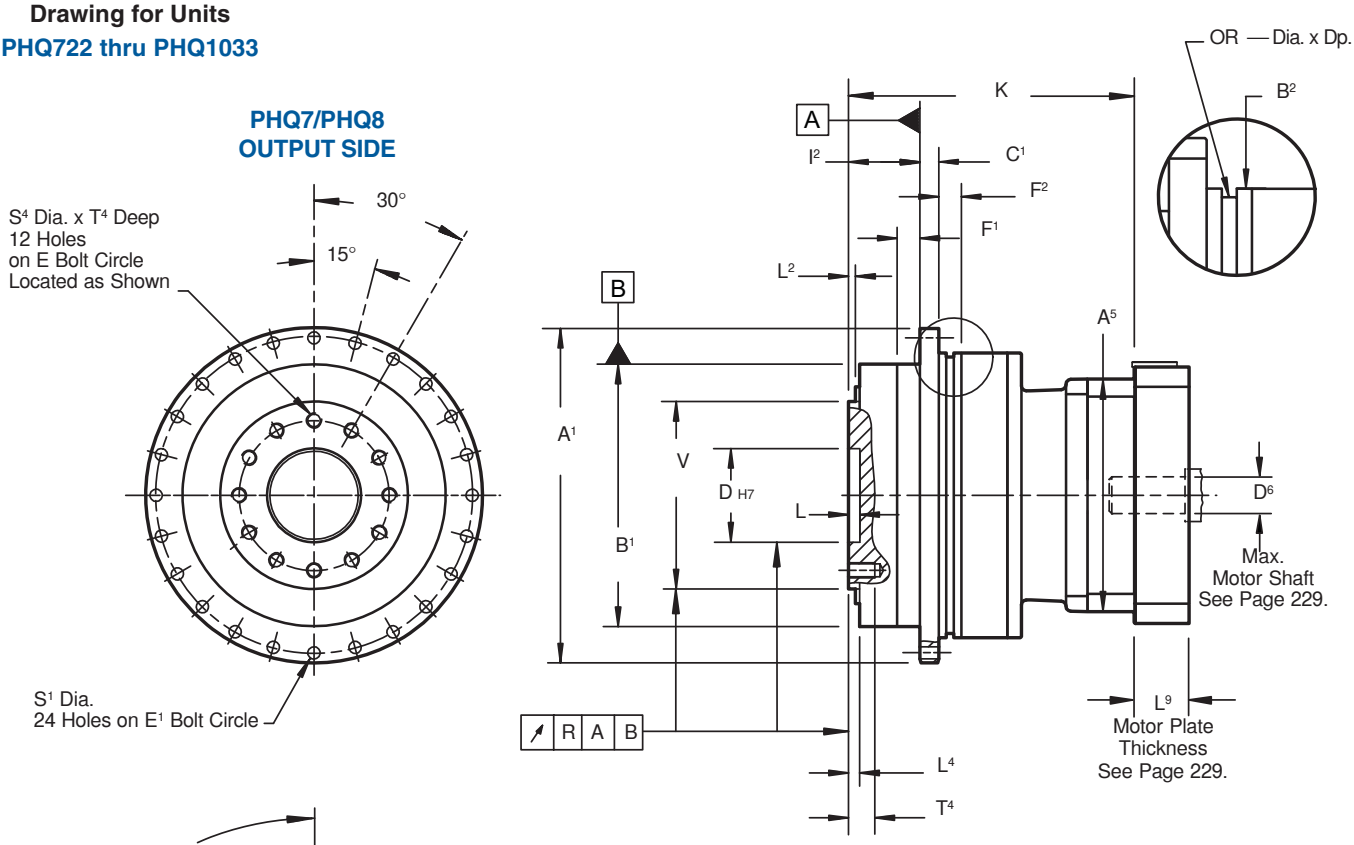
MT ..... Motor adapter with TriAdapt® coupling	n_1 ..... Maximum input speed RPM	M_{2B} ..... Acceleration Torque Maximum
MF ..... Motor adapter with FlexiAdapt® coupling	J_1 ..... Mass moment of inertia (input)	M_{2PEAK} ..... Peak Torque
L ..... Large Input	C_2 ..... Torsional Stiffness	
i ..... Ratio - Exact	M_{2N} ..... Nominal Torque	

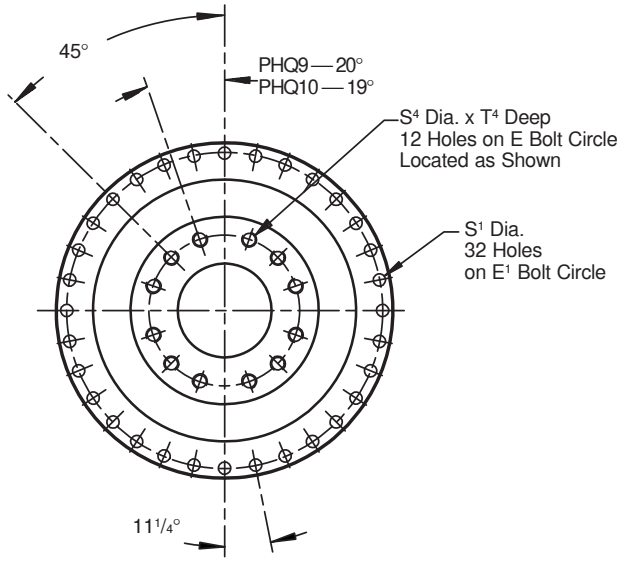
See web site for drawings.

"PHQ" Series
ServoFit® Precision Planetary Gearhead
Dimensional Data

Drawing for Units
PHQ722 thru PHQ1033

PHQ7/PHQ8
OUTPUT SIDE

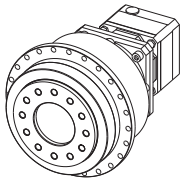




PHQ9/PHQ10
OUTPUT SIDE

If a planetary gearhead is to be mounted from "B²" side, specify when ordering. For proper mounting the paint must be eliminated and the tolerance held on that surface.

Side "B²" mounting is not possible with the Large Input.



Typical 3 Stage Configuration

Part No. Explanation

PHQ 8 2 2 F 0050 MT L

- **L**arge Input Option
- **M**otor Plate with **T**riAdapt Coupling
- Ratio (**0050** = 5.0:1)
- Output Flange
- No. of Stages (**2** = 2 Stage, **3** = 3 Stage)
- Generation No.
- Unit No.
- "**PHQ**" Series Quattro Power ServoFit Precision Planetary Gearhead

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

"PHQ" Series
ServoFit® Precision Planetary Gearhead
Dimensional Data

Table No. 1 **"PHQ" Series – Gearhead with Motor Plate – Dimensions (mm/inches)**

Unit	A[1] h7	B[1] h7	B[2] h7	C[1]	D H7	E	E[1]	F[1]	F[2]	I[2]	L	L[2]	L[4]	OR
PHQ722/PHQ723	179 +.000/-.040	140 +.000/-.040	152 +.000/-.040	10	50 +.025/-.0	80	168	12	12	38	6	6	6	145x3
	7.047 +.0000/-.0016	5.513 +.0000/-.0016	5.984 +.0000/-.0016	.39	1.969 +.0010/-.0000	3.15	6.61	.47	.47	1.50	.24	.24	.24	5.71x.12
PHQ822/PHQ823	247 +.000/-.046	200 +.000/-.046	212 +.000/-.046	12	80 +.030/-.0	125	233	15	15	50	8	8	8.5	200x5
	9.724 +.0000/-.0018	7.874 +.0000/-.0018	8.346 +.0000/-.0018	.47	3.150 +.0012/-.0000	4.92	9.17	.59	.59	1.97	.31	.31	.33	7.87x.20
PHQ932/PHQ933	300 —	255 +.000/-.052	255 +.000/-.052	18	90 +.035/-.0	145	280	20	33	66	12	11	12	238x5
	11.811	10.039 +.000/-.0020	10.039 +.0000/-.0020	.71	3.543 +.0014/-.0000	5.71	11.02	.79	1.29	2.60	.47	.43	.47	9.37x.20
PHQ1032/PHQ1033	330 —	285 +.000/-.057	285 +.000/-.052	20	95 +.035/-.0	166	310	20	20	75	10	15	15	270x6
	12.992	11.220 +.000/-.0022	11.221 +.0000/-.0020	.79	3.740 +.0014/-.0000	6.53	12.20	.79	.79	2.95	.39	.59	.59	10.63x.24

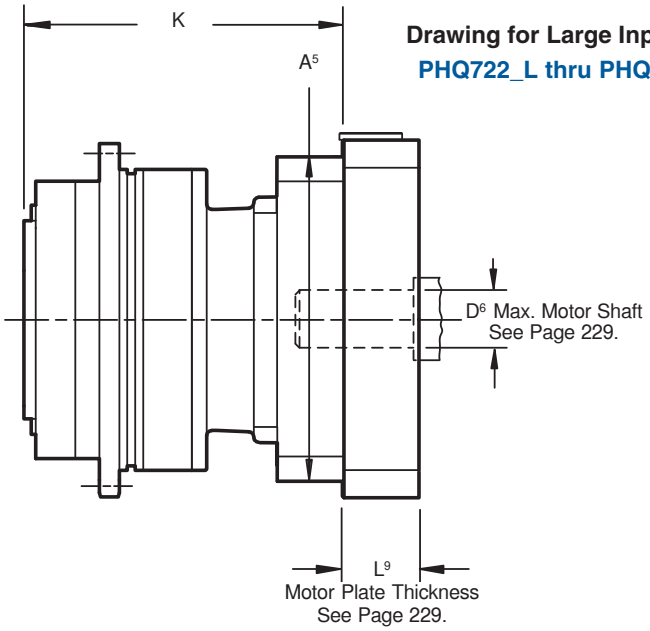
Table No. 2 **"PHQ" Series – Dimensions (mm/inches)**

Unit	R	S[1]	S[2] H7	S[4]	T[4]	V h7
PHQ722/PHQ723	.025	6.6	8 +.015/-.000	M10	16	100 +.000/-.035
	.0010	.26	.315 +.0006/-.0000		.63	3.937 +.000/-.0014
PHQ822/PHQ823	.030	9	10 +.015/-.000	M12	17	160 +.000/-.040
	.0012	.35	.393 +.0006/-.0000		.67	6.299 +.000/-.0016
PHQ932/PHQ933	.030	13.5	—	M20	28	180 +.000/-.040
	.0012	.53			1.10	7.087 +.000/-.0016
PHQ1032/PHQ1033	.040 (1)	13.5	—	M24	35	200 +.000/-.046
	.0016	.53			1.38	7.874 +.000/-.0018

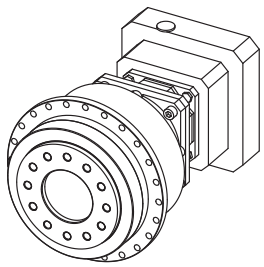
(1) "R" is .030 (.0012) for PHQ1033

Table No. 3 **"PHQ" Series – Dimensions (mm/inches)**

	A[5]		K — Standard			A[5]		K — Large Input	
Unit	mm	inches	mm	inches	Unit	mm	inches	mm	inches
PHQ722	115	4.53	190	7.48	**PHQ722_L**	145	5.71	204	8.03
PHQ723	100	3.94	236.5	9.31	**PHQ723_L**	115	4.53	248	9.76
PHQ822	145	5.71	251	9.88	**PHQ822_L**	190	7.48	268	10.55
PHQ823	115	4.53	303	11.93	**PHQ823_L**	145	5.71	204	8.03
PHQ932	190	7.48	349.5	13.74	**PHQ932_L**	225	8.85	357.5	14.07
PHQ933	145	5.71	417	16.42	**PHQ933_L**	190	7.48	434	17.08
PHQ1032	225	8.85	415	16.34	–	—	—	—	—
PHQ1033	190	7.48	503	19.80	**PHQ1033_L**	225	8.85	511	20.12



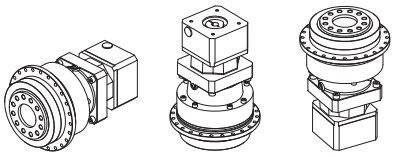
Drawing for Large Input Units
PHQ722_L thru PHQ1033_L



Typical Large Input Configuration

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

"PHQA" Series
ServoFit® Precision Planetary Gearhead
Performance Specifications

	Size	PHQA722	PHQA723	PHQA822	PHQA823	PHQA932	PHQA933	PHQA1032	PHQA1033
Acceleration Torque	in.lbs.	8,408		23,010		53,100		88,500	
$M_{2B\ MAX}$	Nm	950		2,600		6,000		10,000	
Output Torque Nom. [1]	in.lbs.	5,752		15,045		33,660		57,577	
M_{2N}	Nm	650		1,700		3,800		6,500	
Input Speed Max.	Continuous	3,700	4,000	3,300	3,700	2,800	3,300	2,500	2,800
n_{1MAX}	Cyclic	6,500	7,000	6,000	6,500	4,500	6,000	4,000	4,500
Torsional Backlash Max. [2]									
$\Delta\varphi$	arcmin	≤1		≤1		≤1		≤1.5	
Torsional Stiffness	in.lbs./arcmin	≤1,840		≤5,840		≤10,885		≤18,320	
C_2	Nm/arcmin	≤208		≤660		≤1,230		≤2,068	
Axial Load Max. [3]	lbs.	1,384		2,261		7,425		11,250	
F_{2AMAX}	N	6,150		10,050		33,000		50,000	
Tilting Moment Max. [3]	in.lbs.	13,275		30,975		66,375		77,880	
M_{2Kmax}	Nm	1,500		3,500		7,500		8,800	
Tilting Stiffness	in.lbs./arcmin	4,425		13,718		66,375		84,075	
C_{2K}	Nm/arcmin	500		1,550		7,500		9,500	
Weight	pounds	36	38	96	98	189	196	261	293
m	kg	16.3	17.1	43.6	44.3	85.6	88.9	118.2	132.7
Noise Level [4]									
L_{PA}	dB(A)	≤62		≤63		≤65		≤64	
Efficiency (at Nom. Torque)									
h	%	≥ 90% — 93%							
Degree of Protection		IP65 - FKM Shaft Seals							
Lubrication		Synthetic Oil — Lubricated for Life							
Mounting Position		 EL1 EL5 EL6							
Ambient Temperature		0° C to +40°C (104° F) [Unit temperature ≤ 90° C Max.]							
Finish		Black (RAL 9005)							
Bearing Lifetime [5]	hours	L_h > 10,000 hours if M_{2K}/M_{2A} < 1.25 and > 1.00							
L_h		L_h > 20,000 hours if M_{2K}/M_{2A} > 1.25 and < 1.50							
		L_h > 30,000 hours if M_{2K}/M_{2A} > 1.5							
Warranty		5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)							

For 3-stage units (ratios ≥72:1), the amount of lubrication depends on the mounting position. **ON THESE UNITS THE MOUNTING POSITION MUST BE SPECIFIED**

[1] Ratings based on input speed (n_1) of 2000 RPM.
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[2] Tested at 1.5% of nominal torque and recorded on the output side of the gearhead.

[3] Rating based on output speed (n2) of 100 RPM. For values at other speeds, see Page 241.

[4] Measurement at one (1) meter distance with input speed (n1) of 3000 RPM.

[5] M_{2A} equals actual tilting moment of the application. See Page 241 for caluculation details.

WARNING: In order to insure that the specified torque ratings are attained, it is essential to use a grade 12.9 fastener on all output connections.

Refer to Page 250 for ServoFit Precision Planetary Gearhead Selection Procedure.

"PHQA" Series
ServoFit® Precision Planetary Gearhead
Features

The "PHQA" Series ServoFit Precision Planetary Gearheads is a four-planet system allowing the torque to be distributed over 4 planets instead of 3, resulting in a ≥35% increase in output torque and a ≥80% increase in torsional rigidity. Precision selection of the gears ensures the lowest backlash possible of ≤1 arcminute.

Some other features are:

- Readily Attaches to Any Servo Motor (IEC, NEMA, or Customized Motor Plates*)
- 5 Year Limited Warranty (2 years on bearings, seals, etc.)
- Low Backlash
- High Input Speeds
- Ratios up to 600:1
- Advanced Gear Technology
- Up to 93% Efficiency
- Quiet Running
- Assembled in the U.S.A.

Lubricated for life with high-quality synthetic oil. Input bearing with shields and high temperature grease provide maintenance free operation.

High tensile tempered steel single-piece housing

Ring gear machined integral to the housing — not welded or pressed in — and case-hardened, finish-ground sun and planet gears, provide greater concentricity and eliminates speed fluctuation

The FlexiAdapt® motor coupling is designed for large motor shaft diameters and features a bellows coupling to compensate for thermal expansion of the motor shaft—ensuring long motor life by preventing thrust load on the motor bearings.

Balanced clamp coupling for smooth operation at high speeds.

Oversized, single-piece planet carrier, made of high tensile material, enables use of higher load capacity bearings and provides highest torsional stiffness possible.

Motor plate can easily be changed to fit your choice of motors

The FlexiAdapt® motor shaft adapter system allows easy and accurate installation of motor in minutes – no special tools required.

FKM seals for the smallest possible diameter— reduces friction and heat buildup, increases efficiency, and allows continuous duty without additional cooling.

Adapter bushings to fit all motor shafts — no key required

Motor plate pilot toleranced to fit your motor for precise concentricity

Also available as a right angle drive. Contact STOBER Drives.

See web site for drawings.

"PHQA" Series
ServoFit® Precision Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead	i	Continuous RPM (n_1)	Cyclic RPM (n_1)	øD6 mm	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	M_{2N} in.lbs.	M_{2N} Nm	M_{2B} in.lbs.	M_{2B} Nm	M_{2PEAK} in.lbs.	M_{2PEAK} Nm
PHQA722 with Motor Mounting Plate													
PHQA722F0220 MF	22.00	3,000	5,000	≤19	6.00	1,794.3	202.6	5,758	650	8,415	950	16,830	1,900
PHQA722F0220 MF	22.00	3,000	5,000	>19≤24	6.07	1,801.9	203.4	5,758	650	8,415	950	16,830	1,900
PHQA722F0220 MF	22.00	3,000	5,000	>24≤32	5.97	1,801.9	203.4	5,758	650	8,415	950	16,830	1,900
PHQA722F0220 MF	22.00	3,000	5,000	>32≤35	5.97	1,801.9	203.4	5,758	650	8,415	950	16,830	1,900
PHQA722F0220 MFL	22.00	3,000	5,000	>32≤38	13.16	1,817.5	205.2	5,758	650	8,415	950	16,830	1,900
PHQA722F0280 MF	27.50	3,500	6,000	≤19	5.52	1,796.0	202.8	5,758	650	8,415	950	16,830	1,900
PHQA722F0280 MF	27.50	3,500	6,000	>19≤24	5.60	1,800.8	203.3	5,758	650	8,415	950	16,830	1,900
PHQA722F0280 MF	27.50	3,500	6,000	>24≤32	5.50	1,800.8	203.3	5,758	650	8,415	950	16,830	1,900
PHQA722F0280 MF	27.50	3,500	6,000	>32≤35	5.50	1,800.8	203.3	5,758	650	8,415	950	16,830	1,900
PHQA722F0280 MFL	27.50	3,500	6,000	>32≤38	12.69	1,810.8	204.4	5,758	650	8,415	950	16,830	1,900
PHQA722F0390 MF	38.50	3,700	6,500	≤19	5.17	1,781.9	201.2	5,758	650	8,415	950	16,830	1,900
PHQA722F0390 MF	38.50	3,700	6,500	>19≤24	5.17	1,781.9	201.2	5,758	650	8,415	950	16,830	1,900
PHQA722F0390 MF	38.50	3,700	6,500	>24≤32	5.07	1,781.9	201.2	5,758	650	8,415	950	16,830	1,900
PHQA722F0390 MF	38.50	3,700	6,500	>32≤35	5.07	1,781.9	201.2	5,758	650	8,415	950	16,830	1,900
PHQA722F0390 MFL	38.50	3,700	6,500	>32≤38	12.00	1,787.8	201.8	5,758	650	8,415	950	16,830	1,900
PHQA722F0550 MF	55.00	3,700	6,500	≤19	4.99	1,724.8	194.7	5,758	650	8,415	950	16,830	1,900
PHQA722F0550 MF	55.00	3,700	6,500	>19≤24	4.99	1,724.8	194.7	5,758	650	8,415	950	16,830	1,900
PHQA722F0550 MF	55.00	3,700	6,500	>24≤32	4.89	1,724.8	194.7	5,758	650	8,415	950	16,830	1,900
PHQA722F0550 MF	55.00	3,700	6,500	>32≤35	4.89	1,724.8	194.7	5,758	650	8,415	950	16,830	1,900
PHQA722F0550 MFL	55.00	3,700	6,500	>32≤38	11.82	1,727.5	195.0	5,758	650	8,415	950	16,830	1,900
PHQA723 with Motor Mounting Plate Continued Next Page													
PHQA723F0880 MF	88.00	3,300	6,000	≤14	2.02	1,803.3	203.6	5,758	650	8,415	950	16,830	1,900
PHQA723F0880 MF	88.00	3,300	6,000	>14≤19	2.05	1,804.2	203.7	5,758	650	8,415	950	16,830	1,900
PHQA723F0880 MF	88.00	3,300	6,000	>19≤24	1.95	1,804.2	203.7	5,758	650	8,415	950	16,830	1,900
PHQA723F0880 MFL	88.00	3,300	6,000	>24≤32	5.16	1,805.4	203.8	5,758	650	8,415	950	16,830	1,900
PHQA723F1100 MF	110.0	3,300	6,000	≤14	1.99	1,801.8	203.4	5,758	650	8,415	950	16,830	1,900
PHQA723F1100 MF	110.0	3,300	6,000	>14≤19	2.02	1,802.3	203.5	5,758	650	8,415	950	16,830	1,900
PHQA723F1100 MF	110.0	3,300	6,000	>19≤24	1.92	1,802.3	203.5	5,758	650	8,415	950	16,830	1,900
PHQA723F1100 MFL	110.0	3,300	6,000	>24≤32	5.13	1,803.1	203.6	5,758	650	8,415	950	16,830	1,900
PHQA723F1380 MF	137.5	3,700	6,500	≤14	1.87	1,801.3	203.4	5,758	650	8,415	950	16,830	1,900
PHQA723F1380 MF	137.5	3,700	6,500	>14≤19	1.89	1,801.7	203.4	5,758	650	8,415	950	16,830	1,900
PHQA723F1380 MF	137.5	3,700	6,500	>19≤24	1.79	1,801.7	203.4	5,758	650	8,415	950	16,830	1,900
PHQA723F1380 MFL	137.5	3,700	6,500	>24≤32	5.00	1,802.2	203.5	5,758	650	8,415	950	16,830	1,900
PHQA723F1540 MF	154.0	4,000	7,000	≤14	1.76	1,798.4	203.0	5,758	650	8,415	950	16,830	1,900
PHQA723F1540 MF	154.0	4,000	7,000	>14≤19	1.76	1,798.4	203.0	5,758	650	8,415	950	16,830	1,900
PHQA723F1540 MF	154.0	4,000	7,000	>19≤24	1.66	1,798.4	203.0	5,758	650	8,415	950	16,830	1,900
PHQA723F1540 MFL	154.0	4,000	7,000	>24≤32	4.82	1,798.9	203.1	5,758	650	8,415	950	16,830	1,900
PHQA723F1930 MF	192.5	4,000	7,000	≤14	1.75	1,798.6	203.0	5,758	650	8,415	950	16,830	1,900
PHQA723F1930 MF	192.5	4,000	7,000	>14≤19	1.75	1,798.6	203.0	5,758	650	8,415	950	16,830	1,900
PHQA723F1930 MF	192.5	4,000	7,000	>19≤24	1.65	1,798.6	203.0	5,758	650	8,415	950	16,830	1,900
PHQA723F1930 MFL	192.5	4,000	7,000	>24≤32	4.81	1,799.0	203.1	5,758	650	8,415	950	16,830	1,900

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM. For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"PHQA" Series
ServoFit® Precision Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD[6]	J_1	C_2		M_{2N}		M_{2B}		M_{2PEAK}	
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PHQA723 with Motor Mounting Plate Continued													
PHQA723F2200 MF	220.0	4,000	7,000	≤14	1.70	1,786.5	201.7	5,758	650	8,415	950	16,830	1,900
PHQA723F2200 MF	220.0	4,000	7,000	>14≤19	1.70	1,786.5	201.7	5,758	650	8,415	950	16,830	1,900
PHQA723F2200 MF	220.0	4,000	7,000	>19≤24	1.60	1,786.5	201.7	5,758	650	8,415	950	16,830	1,900
PHQA723F2200 MFL	220.0	4,000	7,000	>24≤32	4.76	1,786.7	201.7	5,758	650	8,415	950	16,830	1,900
PHQA723F2750 MF	275.0	4,000	7,000	≤14	1.70	1,791.0	202.2	5,758	650	8,415	950	16,830	1,900
PHQA723F2750 MF	275.0	4,000	7,000	>14≤19	1.70	1,791.0	202.2	5,758	650	8,415	950	16,830	1,900
PHQA723F2750 MF	275.0	4,000	7,000	>19≤24	1.60	1,791.0	202.2	5,758	650	8,415	950	16,830	1,900
PHQA723F2750 MFL	275.0	4,000	7,000	>24≤32	4.76	1,791.1	202.2	5,758	650	8,415	950	16,830	1,900
PHQA723F3850 MF	385.0	4,000	7,000	≤14	1.69	1,779.0	200.8	5,758	650	8,415	950	16,830	1,900
PHQA723F3850 MF	385.0	4,000	7,000	>14≤19	1.69	1,779.0	200.8	5,758	650	8,415	950	16,830	1,900
PHQA723F3850 MF	385.0	4,000	7,000	>19≤24	1.59	1,779.0	200.8	5,758	650	8,415	950	16,830	1,900
PHQA723F3850 MFL	385.0	4,000	7,000	>24≤32	4.75	1,779.1	200.8	5,758	650	8,415	950	16,830	1,900
PHQA723F5500 MF	550.0	4,000	7,000	≤14	1.69	1,723.4	194.6	5,758	650	8,415	950	16,830	1,900
PHQA723F5500 MF	550.0	4,000	7,000	>14≤19	1.69	1,723.4	194.6	5,758	650	8,415	950	16,830	1,900
PHQA723F5500 MF	550.0	4,000	7,000	>19≤24	1.59	1,723.4	194.6	5,758	650	8,415	950	16,830	1,900
PHQA723F5500 MFL	550.0	4,000	7,000	>24≤32	4.75	1,723.5	194.6	5,758	650	8,415	950	16,830	1,900
PHQA822 with Motor Mounting Plate													
PHQA822F0220 MF	22.00	2,500	4,500	≤24	16.11	5,615.5	633.9	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0220 MF	22.00	2,500	4,500	>24≤32	16.44	5,661.8	639.2	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0220 MF	22.00	2,500	4,500	>32≤38	16.44	5,661.8	639.2	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0220 MFL	22.00	2,500	4,500	>38≤48	18.46	5,749.0	649.0	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0280 MF	27.50	3,000	5,500	≤24	14.36	5,657.5	638.7	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0280 MF	27.50	3,000	5,500	>24≤32	14.69	5,687.5	642.1	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0280 MF	27.50	3,000	5,500	>32≤38	14.69	5,687.5	642.1	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0280 MFL	27.50	3,000	5,500	>38≤48	16.71	5,743.5	648.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0390 MF	38.50	3,300	6,000	≤24	12.98	5,619.5	634.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0390 MF	38.50	3,300	6,000	>24≤32	12.98	5,619.5	634.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0390 MF	38.50	3,300	6,000	>32≤38	12.98	5,619.5	634.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0390 MFL	38.50	3,300	6,000	>38≤48	15.35	5,656.7	638.6	15,059	1,700	23,031	2,600	38,975	4,400
PHQA822F0550 MF	55.00	3,300	6,000	≤24	12.31	5,413.3	611.1	14,031	1,584	23,031	2,600	38,975	4,400
PHQA822F0550 MF	55.00	3,300	6,000	>24≤32	12.31	5,413.3	611.1	14,031	1,584	23,031	2,600	38,975	4,400
PHQA822F0550 MF	55.00	3,300	6,000	>32≤38	12.31	5,413.3	611.1	14,031	1,584	23,031	2,600	38,975	4,400
PHQA822F0550 MFL	55.00	3,300	6,000	>38≤48	14.68	5,430.1	613.0	14,031	1,584	23,031	2,600	38,975	4,400
PHQA823 with Motor Mounting Plate Continued Next Page													
PHQA823F0880 MF	88.00	3,000	5,000	≤19	6.12	5,704.6	644.0	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F0880 MF	88.00	3,000	5,000	>19≤24	6.19	5,709.4	644.6	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F0880 MF	88.00	3,000	5,000	>24≤32	6.09	5,709.4	644.6	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F0880 MF	88.00	3,000	5,000	>32≤35	6.09	5,709.4	644.6	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F0880 MFL	88.00	3,000	5,000	>32≤38	13.28	5,719.2	645.7	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1100 MF	110.0	3,500	6,000	≤19	6.01	5,714.2	645.1	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1100 MF	110.0	3,500	6,000	>19≤24	6.08	5,717.2	645.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1100 MF	110.0	3,500	6,000	>24≤32	5.98	5,717.2	645.4	15,059	1,700	23,031	2,600	38,975	4,400

Index of Symbols

MT ..... Motor adapter with TriAdapt® coupling	n_1 ..... Maximum input speed RPM	M_{2B} ..... Acceleration Torque Maximum
MF ..... Motor adapter with FlexiAdapt® coupling	J_1 ..... Mass moment of inertia (input)	M_{2PEAK} ..... Peak Torque
L ..... Large Input	C_2 ..... Torsional Stiffness	
i ..... Ratio - Exact	M_{2N} ..... Nominal Torque	

See web site for drawings.

"PHQA" Series
ServoFit® Precision Planetary Gearhead
Selection Data

STÖBER

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic										
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PHQA823 with Motor Mounting Plate Continued													
PHQA823F1100 MF	110.0	3,500	6,000	>32≤35	5.98	5,717.2	645.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1100 MFL	110.0	3,500	6,000	>32≤38	13.17	5,723.5	646.1	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1380 MF	137.5	3,500	6,000	≤19	5.53	5,711.4	644.8	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1380 MF	137.5	3,500	6,000	>19≤24	5.60	5,713.4	645.0	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1380 MF	137.5	3,500	6,000	>24≤32	5.50	5,713.4	645.0	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1380 MF	137.5	3,500	6,000	>32≤35	5.50	5,713.4	645.0	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1380 MFL	137.5	3,500	6,000	>32≤38	12.69	5,717.4	645.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1540 MF	154.0	3,700	6,500	≤19	5.21	5,704.8	644.0	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1540 MF	154.0	3,700	6,500	>19≤24	5.21	5,704.8	644.0	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1540 MF	154.0	3,700	6,500	>24≤32	5.11	5,704.8	644.0	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1540 MF	154.0	3,700	6,500	>32≤35	5.11	5,704.8	644.0	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1540 MFL	154.0	3,700	6,500	>32≤38	12.04	5,708.6	644.5	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1930 MF	192.5	3,700	6,500	≤19	5.18	5,707.9	644.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1930 MF	192.5	3,700	6,500	>19≤24	5.18	5,707.9	644.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1930 MF	192.5	3,700	6,500	>24≤32	5.08	5,707.9	644.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1930 MF	192.5	3,700	6,500	>32≤35	5.08	5,707.9	644.4	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F1930 MFL	192.5	3,700	6,500	>32≤38	12.01	5,710.3	644.6	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F2200 MF	220.0	3,700	6,500	≤19	5.01	5,673.8	640.5	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F2200 MF	220.0	3,700	6,500	>19≤24	5.01	5,673.8	640.5	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F2200 MF	220.0	3,700	6,500	>24≤32	4.91	5,673.8	640.5	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F2200 MF	220.0	3,700	6,500	>32≤35	4.91	5,673.8	640.5	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F2200 MFL	220.0	3,700	6,500	>32≤38	11.84	5,675.6	640.7	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F2750 MF	275.0	3,700	6,500	≤19	4.99	5,693.0	642.7	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F2750 MF	275.0	3,700	6,500	>19≤24	4.99	5,693.0	642.7	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F2750 MF	275.0	3,700	6,500	>24≤32	4.89	5,693.0	642.7	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F2750 MF	275.0	3,700	6,500	>32≤35	4.89	5,693.0	642.7	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F2750 MFL	275.0	3,700	6,500	>32≤38	11.82	5,694.2	642.8	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F3850 MF	385.0	3,700	6,500	≤19	4.98	5,623.5	634.8	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F3850 MF	385.0	3,700	6,500	>19≤24	4.98	5,623.5	634.8	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F3850 MF	385.0	3,700	6,500	>24≤32	4.88	5,623.5	634.8	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F3850 MF	385.0	3,700	6,500	>32≤35	4.88	5,623.5	634.8	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F3850 MFL	385.0	3,700	6,500	>32≤38	11.80	5,624.1	634.9	15,059	1,700	23,031	2,600	38,975	4,400
PHQA823F5500 MF	550.0	3,700	6,500	≤19	4.97	5,411.6	610.9	14,031	1,584	23,031	2,600	38,975	4,400
PHQA823F5500 MF	550.0	3,700	6,500	>19≤24	4.97	5,411.6	610.9	14,031	1,584	23,031	2,600	38,975	4,400
PHQA823F5500 MF	550.0	3,700	6,500	>24≤32	4.87	5,411.6	610.9	14,031	1,584	23,031	2,600	38,975	4,400
PHQA823F5500 MF	550.0	3,700	6,500	>32≤35	4.87	5,411.6	610.9	14,031	1,584	23,031	2,600	38,975	4,400
PHQA823F5500 MFL	550.0	3,700	6,500	>32≤38	11.80	5,411.9	611.0	14,031	1,584	23,031	2,600	38,975	4,400

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM. For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

PHQA

"PHQA" Series
ServoFit® Precision Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD6	J1	C2		M2N		M2B		M2PEAK	
	i	RPM (n1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PHQA932 with Motor Mounting Plate													
PHQA932F0180 MF	18.00	1,800	3,000	≤32	78.11	10,334.8	1,166.7	33,660	3,800	53,148	6,000	75,179	8,487
PHQA932F0180 MF	18.00	1,800	3,000	>32≤38	77.88	10,423.3	1,176.7	33,660	3,800	53,148	6,000	89,266	10,077
PHQA932F0180 MF	18.00	1,800	3,000	>38≤48	77.25	10,423.3	1,176.7	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0240 MF	24.00	2,200	3,500	≤32	49.34	10,496.9	1,185.0	33,660	3,800	53,148	6,000	100,239	11,316
PHQA932F0240 MF	24.00	2,200	3,500	>32≤38	49.12	10,548.1	1,190.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0240 MF	24.00	2,200	3,500	>38≤48	48.48	10,548.1	1,190.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0300 MF	30.00	2,500	4,000	≤32	42.43	10,527.5	1,188.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0300 MF	30.00	2,500	4,000	>32≤38	42.20	10,560.4	1,192.2	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0300 MF	30.00	2,500	4,000	>38≤48	41.57	10,560.4	1,192.2	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0420 MF	42.00	2,800	4,500	≤32	37.04	10,468.4	1,181.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0420 MF	42.00	2,800	4,500	>32≤38	36.84	10,468.4	1,181.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0420 MF	42.00	2,800	4,500	>38≤48	36.20	10,468.4	1,181.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0600 MF	60.00	2,800	4,500	≤32	34.33	10,129.5	1,143.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0600 MF	60.00	2,800	4,500	>32≤38	34.12	10,129.5	1,143.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQA932F0600 MF	60.00	2,800	4,500	>38≤48	33.49	10,129.5	1,143.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933 with Motor Mounting Plate Continued Next Page													
PHQA933F0720 MF	72.00	2,200	4,500	≤24	18.15	10,599.6	1,196.6	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F0720 MF	72.00	2,200	4,500	>24≤32	18.49	10,614.9	1,198.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F0720 MF	72.00	2,200	4,500	>32≤38	18.49	10,614.9	1,198.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F0720 MFL	72.00	2,200	4,500	>38≤48	20.50	10,643.2	1,201.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F0960 MF	96.00	2,500	4,500	≤24	16.35	10,649.0	1,202.2	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F0960 MF	96.00	2,500	4,500	>24≤32	16.69	10,657.6	1,203.2	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F0960 MF	96.00	2,500	4,500	>32≤38	16.69	10,657.6	1,203.2	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F0960 MFL	96.00	2,500	4,500	>38≤48	18.70	10,673.7	1,205.0	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1200 MF	120.0	2,500	4,500	≤24	15.92	10,624.8	1,199.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1200 MF	120.0	2,500	4,500	>24≤32	16.26	10,630.4	1,200.1	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1200 MF	120.0	2,500	4,500	>32≤38	16.26	10,630.4	1,200.1	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1200 MFL	120.0	2,500	4,500	>38≤48	18.27	10,640.5	1,201.2	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1500 MF	150.0	3,000	5,500	≤24	14.24	10,628.8	1,199.9	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1500 MF	150.0	3,000	5,500	>24≤32	14.58	10,632.3	1,200.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1500 MF	150.0	3,000	5,500	>32≤38	14.58	10,632.3	1,200.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1500 MFL	150.0	3,000	5,500	>38≤48	16.59	10,638.8	1,201.0	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1680 MF	168.0	3,300	6,000	≤24	13.06	10,646.5	1,201.9	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1680 MF	168.0	3,300	6,000	>24≤32	13.06	10,646.5	1,201.9	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1680 MF	168.0	3,300	6,000	>32≤38	13.06	10,646.5	1,201.9	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F1680 MFL	168.0	3,300	6,000	>38≤48	15.43	10,653.4	1,202.7	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F2100 MF	210.0	3,300	6,000	≤24	12.92	10,623.2	1,199.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F2100 MF	210.0	3,300	6,000	>24≤32	12.92	10,623.2	1,199.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F2100 MF	210.0	3,300	6,000	>32≤38	12.92	10,623.2	1,199.3	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F2100 MFL	210.0	3,300	6,000	>38≤48	15.29	10,627.7	1,199.8	33,660	3,800	53,148	6,000	106,296	12,000

Index of Symbols

MT ..... Motor adapter with TriAdapt® coupling
MF ..... Motor adapter with FlexiAdapt® coupling
L ..... Large Input
i ..... Ratio - Exact

n1 ..... Maximum input speed RPM
J1 ..... Mass moment of inertia (input)
C2 ..... Torsional Stiffness
M2N ..... Nominal Torque

M2B ..... Acceleration Torque Maximum
M2PEAK ..... Peak Torque

See web site for drawings.

"PHQA" Series
ServoFit® Precision Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD6	J1	per arcmin C2		M2N		M2B		M2PEAK	
	i	RPM (n1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PHQA933 with Motor Mounting Plate Continued													
PHQA933F2400 MF	240.0	3,300	6,000	≤24	12.35	10,600.9	1,196.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F2400 MF	240.0	3,300	6,000	>24≤32	12.35	10,600.9	1,196.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F2400 MF	240.0	3,300	6,000	>32≤38	12.35	10,600.9	1,196.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F2400 MFL	240.0	3,300	6,000	>38≤48	14.72	10,604.3	1,197.1	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F3000 MF	300.0	3,300	6,000	≤24	12.28	10,594.2	1,196.0	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F3000 MF	300.0	3,300	6,000	>24≤32	12.28	10,594.2	1,196.0	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F3000 MF	300.0	3,300	6,000	>32≤38	12.28	10,594.2	1,196.0	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F3000 MFL	300.0	3,300	6,000	>38≤48	14.65	10,596.3	1,196.2	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F4200 MF	420.0	3,300	6,000	≤24	12.22	10,485.8	1,183.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F4200 MF	420.0	3,300	6,000	>24≤32	12.22	10,485.8	1,183.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F4200 MF	420.0	3,300	6,000	>32≤38	12.22	10,485.8	1,183.8	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F4200 MFL	420.0	3,300	6,000	>38≤48	14.59	10,486.8	1,183.9	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F6000 MF	600.0	3,300	6,000	≤24	12.20	10,137.5	1,144.4	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F6000 MF	600.0	3,300	6,000	>24≤32	12.20	10,137.5	1,144.4	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F6000 MF	600.0	3,300	6,000	>32≤38	12.20	10,137.5	1,144.4	33,660	3,800	53,148	6,000	106,296	12,000
PHQA933F6000 MFL	600.0	3,300	6,000	>38≤48	14.57	10,138.0	1,144.5	33,660	3,800	53,148	6,000	106,296	12,000
PHQA1032 with Motor Mounting Plate													
PHQA1032F0240 MT	24.00	2,000	3,000	≤48	90.76	18,268.8	2,062.4	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0240 MT	24.00	2,000	3,000	>48≤55	100.40	18,268.8	2,062.4	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0240 MT	24.00	2,000	3,000	>55≤60	95.79	18,268.8	2,062.4	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0300 MT	30.00	2,200	3,500	≤48	72.20	18,232.6	2,058.3	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0300 MT	30.00	2,200	3,500	>48≤55	81.84	18,232.6	2,058.3	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0300 MT	30.00	2,200	3,500	>55≤60	77.22	18,232.6	2,058.3	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0420 MT	42.00	2,500	4,000	≤48	57.46	18,070.9	2,040.1	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0420 MT	42.00	2,500	4,000	>48≤55	67.10	18,070.9	2,040.1	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0420 MT	42.00	2,500	4,000	>55≤60	62.49	18,070.9	2,040.1	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0600 MT	60.00	2,500	4,000	≤48	50.14	17,454.4	1,970.5	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0600 MT	60.00	2,500	4,000	>48≤55	59.78	17,454.4	1,970.5	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1032F0600 MT	60.00	2,500	4,000	>55≤60	55.17	17,454.4	1,970.5	57,577	6,500	88,580	10,000	177,160	20,000

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM. For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"PHQA" Series
ServoFit® Precision Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD6	J1	C2		M2N		M2B		M2PEAK	
	i	RPM (n1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PHQA1033 with Motor Mounting Plate													
PHQA1033F0960 MT	96.00	2,200	3,500	≤32	28.33	18,255.3	2,060.9	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F0960 MT	96.00	2,200	3,500	>32≤38	32.26	18,265.0	2,062.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F0960 MT	96.00	2,200	3,500	>38≤48	36.00	18,265.0	2,062.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F0960 MTL	96.00	2,200	3,500	>48≤55	71.29	18,305.1	2,066.5	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F0960 MTL	96.00	2,200	3,500	>55≤60	66.68	18,305.1	2,066.5	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1200 MT	120.0	2,200	3,500	≤32	27.17	18,224.0	2,057.3	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1200 MT	120.0	2,200	3,500	>32≤38	31.10	18,230.1	2,058.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1200 MT	120.0	2,200	3,500	>38≤48	34.84	18,230.1	2,058.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1200 MTL	120.0	2,200	3,500	>48≤55	70.13	18,255.7	2,060.9	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1200 MTL	120.0	2,200	3,500	>55≤60	65.52	18,255.7	2,060.9	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1500 MT	150.0	2,500	4,000	≤32	20.24	18,227.6	2,057.8	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1500 MT	150.0	2,500	4,000	>32≤38	24.17	18,231.6	2,058.2	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1500 MT	150.0	2,500	4,000	>38≤48	27.90	18,231.6	2,058.2	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1500 MTL	150.0	2,500	4,000	>48≤55	63.20	18,247.9	2,060.1	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1500 MTL	150.0	2,500	4,000	>55≤60	58.59	18,247.9	2,060.1	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1680 MT	168.0	2,800	4,500	≤32	15.23	18,261.3	2,061.6	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1680 MT	168.0	2,800	4,500	>32≤38	17.50	18,261.3	2,061.6	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1680 MT	168.0	2,800	4,500	>38≤48	20.79	18,261.3	2,061.6	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F1680 MTL	168.0	2,800	4,500	>48≤55	58.19	18,277.6	2,063.4	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F2100 MT	210.0	2,800	4,500	≤32	14.85	18,227.8	2,057.8	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F2100 MT	210.0	2,800	4,500	>32≤38	17.12	18,227.8	2,057.8	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F2100 MT	210.0	2,800	4,500	>38≤48	20.41	18,227.8	2,057.8	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F2100 MTL	210.0	2,800	4,500	>48≤55	57.81	18,238.2	2,059.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F2400 MT	240.0	2,800	4,500	≤32	12.32	18,201.3	2,054.8	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F2400 MT	240.0	2,800	4,500	>32≤38	14.59	18,201.3	2,054.8	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F2400 MT	240.0	2,800	4,500	>38≤48	17.87	18,201.3	2,054.8	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F2400 MTL	240.0	2,800	4,500	>48≤55	55.28	18,209.2	2,055.7	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F3000 MT	300.0	2,800	4,500	≤32	12.13	18,189.5	2,053.5	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F3000 MT	300.0	2,800	4,500	>32≤38	14.40	18,189.5	2,053.5	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F3000 MT	300.0	2,800	4,500	>38≤48	17.69	18,189.5	2,053.5	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F3000 MTL	300.0	2,800	4,500	>48≤55	55.09	18,194.5	2,054.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F4200 MT	420.0	2,800	4,500	≤32	11.99	18,035.2	2,036.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F4200 MT	420.0	2,800	4,500	>32≤38	14.25	18,035.2	2,036.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F4200 MT	420.0	2,800	4,500	>38≤48	17.54	18,035.2	2,036.0	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F4200 MTL	420.0	2,800	4,500	>48≤55	54.95	18,037.7	2,036.3	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F6000 MT	600.0	2,800	4,500	≤32	11.91	17,438.0	1,968.6	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F6000 MT	600.0	2,800	4,500	>32≤38	14.18	17,438.0	1,968.6	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F6000 MT	600.0	2,800	4,500	>38≤48	17.47	17,438.0	1,968.6	57,577	6,500	88,580	10,000	177,160	20,000
PHQA1033F6000 MTL	600.0	2,800	4,500	>48≤55	54.87	17,439.2	1,968.7	57,577	6,500	88,580	10,000	177,160	20,000

Index of Symbols

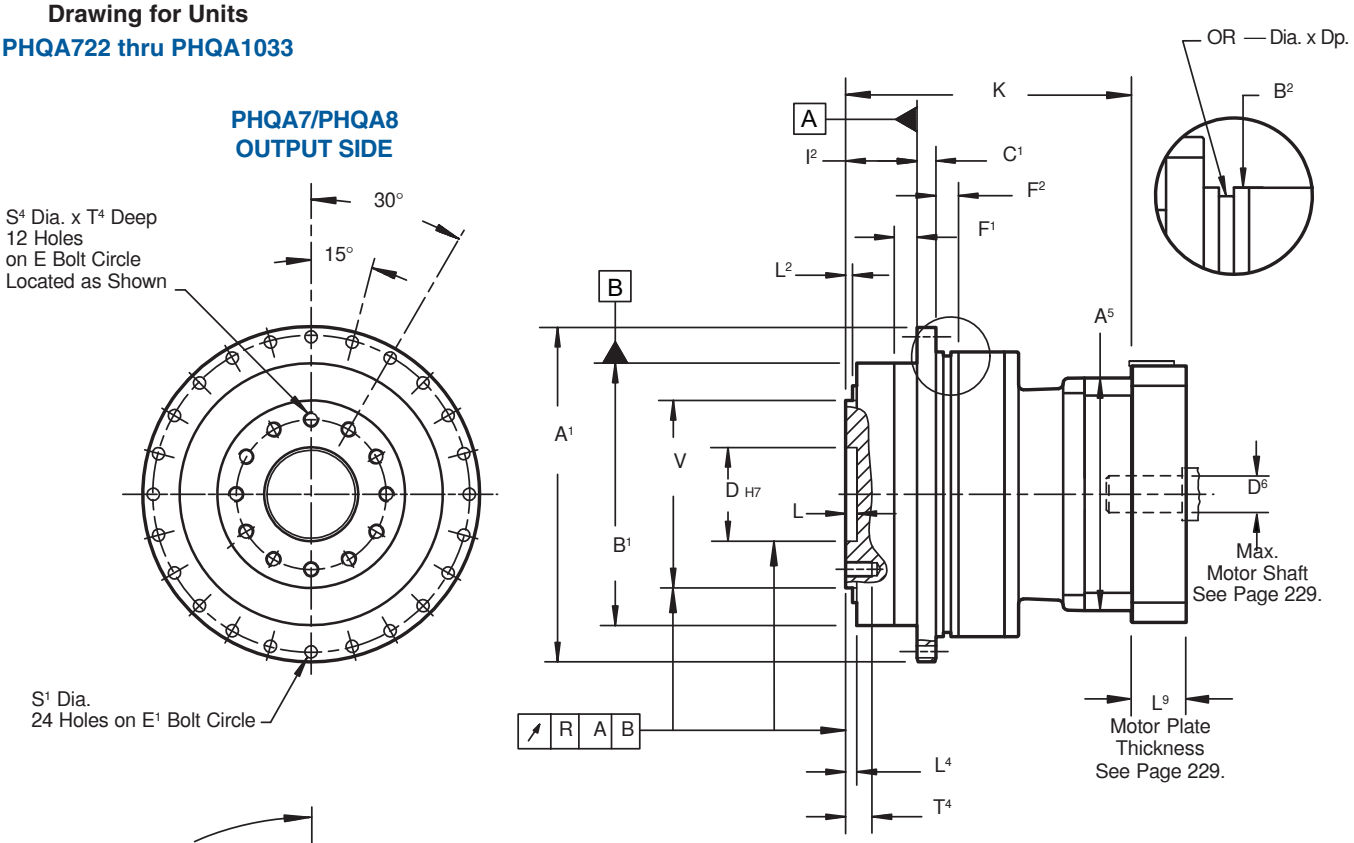
MT ..... Motor adapter with TriAdapt® coupling	n1 ..... Maximum input speed RPM	M2B ..... Acceleration Torque Maximum
MF ..... Motor adapter with FlexiAdapt® coupling	J1 ..... Mass moment of inertia (input)	M2PEAK ..... Peak Torque
L ..... Large Input	C2 ..... Torsional Stiffness	
i ..... Ratio - Exact	M2N ..... Nominal Torque	

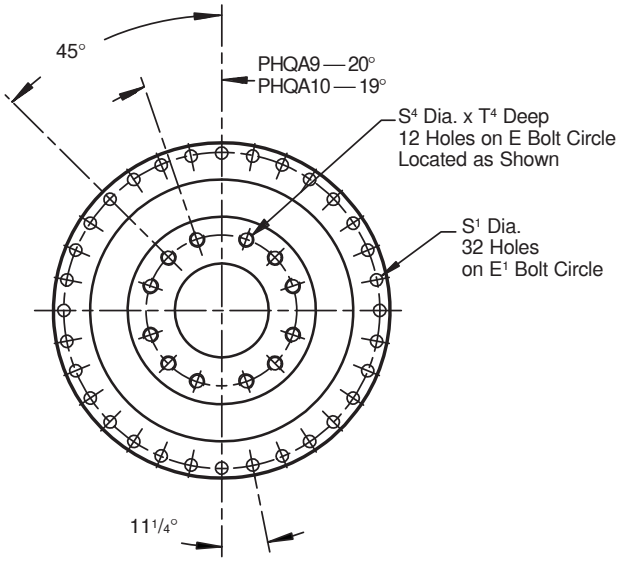
See web site for drawings.

"PHQA" Series
ServoFit® Precision Planetary Gearhead
Dimensional Data

Drawing for Units
PHQA722 thru PHQA1033

PHQA7/PHQA8 OUTPUT SIDE

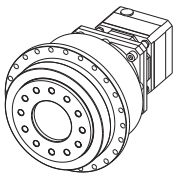




PHQA9/PHQA10 OUTPUT SIDE

If a planetary gearhead is to be mounted from "B²" side, specify when ordering. For proper mounting the paint must be eliminated and the tolerance held on that surface.

Side "B²" mounting is not possible with the Large Input.



Typical 3 Stage Configuration

Part No. Explanation

PHQA 8 2 2 F 0050 MF L

- **L** — Large Input Option
- **MF** — Motor Plate with FlexiAdapt Coupling (PHQA10 uses the MT adapter)
- **0050** — Ratio (0050 = 5.0:1)
- **F** — Output Flange
- **2** — No. of Stages (2 = 2 Stage, 3 = 3 Stage)
- **2** — Generation No.
- **2** — Unit No.
- **PHQA** — "PHQA" Series Quattro Power ServoFit Precision Planetary Gearhead

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

"PHQA" Series
ServoFit® Precision Planetary Gearhead
Dimensional Data

Table No. 1 **"PHQA" Series – Gearhead with Motor Plate – Dimensions (mm/inches)**

Unit	A[1] h7	B[1] h7	B[2] h7	C[1]	D H7	E	E[1]	F[1]	F[2]	I[2]	L	L[2]	L[4]	OR
PHQA722/PHQA723	179 +.000/-.040 7.047 +.0000/-.0016	140 +.000/-.040 5.513 +.0000/-.0016	152 +.000/-.040 5.984 +.0000/-.0016	10 .39	50 +.025/-.0 1.969 +.0010/-.0000	80 3.15	168 6.61	12 .47	12 .47	38 1.50	6 .24	6 .24	6 .24	145x3 5.71x.12
PHQA822/PHQA823	247 +.000/-.046 9.724 +.0000/-.0018	200 +.000/-.046 7.874 +.0000/-.0018	212 +.000/-.046 8.346 +.0000/-.0018	12 .47	80 +.030/-.0 3.150 +.0012/-.0000	125 4.92	233 9.17	15 .59	15 .59	50 1.97	8 .31	8 .31	8.5 .33	200x5 7.87x.20
PHQA932/PHQA933	300 — 11.811 10.039	255 +.000/-.052 +.000/-.0020 10.039	255 +.000/-.052 +.0000/-.0020	18 .71	90 +.035/-.0 3.543 +.0014/-.0000	145 5.71	280 11.02	20 .79	33 1.29	66 2.60	12 .47	11 .43	12 .47	238x5 9.37x.20
PHQA1032/PHQA1033	330 — 12.992 11.220	285 +.000/-.057 +.000/-.0022 11.221	285 +.000/-.052 +.0000/-.0020	20 .79	95 +.035/-.0 3.740 +.0014/-.0000	166 6.53	310 12.20	20 .79	20 .79	75 2.95	10 .39	15 .59	15 .59	270x6 10.63x.24

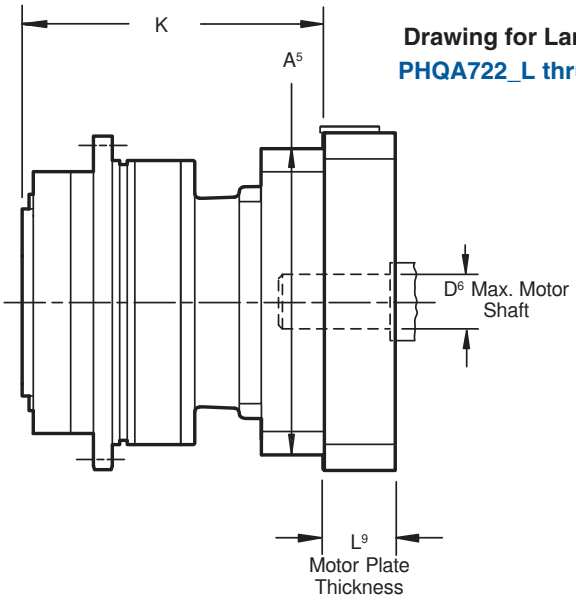
Table No. 2 **"PHQA" Series – Dimensions (mm/inches)**

Unit	R	S[1]	S[2] H7	S[4]	T[4]	V h7
PHQA722/PHQA723	.025 .0010	6.6 .26	8 +.015/-.000 .315 +.0006/-.0000	M10	16 .63	100 +.000/-.035 3.937 +.000/-.0014
PHQA822/PHQA823	.030 .0012	9 .35	10 +.015/-.000 .393 +.0006/-.0000	M12	17 .67	160 +.000/-.040 6.299 +.000/-.0016
PHQA932/PHQA933	.030 .0012	13.5 .53	—	M20	28 1.10	180 +.000/-.040 7.087 +.000/-.0016
PHQA1032/PHQA1033	.040 (1) .0016	13.5 .53	—	M24	35 1.38	200 +.000/-.046 7.874 +.000/-.0018

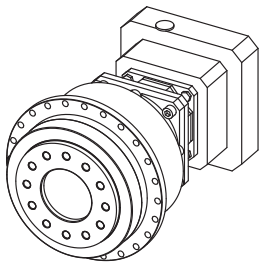
(1) "R" is .030 (.0012) for PHQA1033

Table No. 3 **"PHQA" Series – Dimensions (mm/inches)**

	A[5]		K — Standard			A[5]		K — Large Input	
Unit	mm	inches	mm	inches	Unit	mm	inches	mm	inches
PHQA722	115	4.53	190	7.48	**PHQA722_L**	145	5.71	204	8.03
PHQA723	100	3.94	236.5	9.31	**PHQA723_L**	115	4.53	248	9.76
PHQA822	145	5.71	251	9.88	**PHQA822_L**	190	7.48	268	10.55
PHQA823	115	4.53	303	11.93	**PHQA823_L**	145	5.71	204	8.03
PHQA932	190	7.48	349.5	13.74	**PHQA932_L**	225	8.85	357.5	14.07
PHQA933	145	5.71	417	16.42	**PHQA933_L**	190	7.48	434	17.08
PHQA1032	225	8.85	415	16.34	–	—	—	—	—
PHQA1033	190	7.48	503	19.80	**PHQA1033_L**	225	8.85	511	20.12



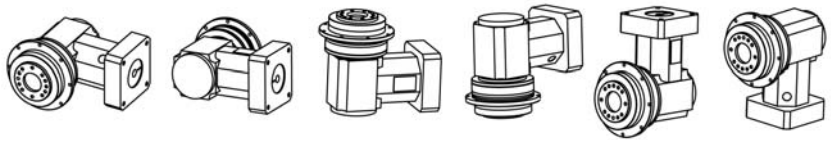
Drawing for Large Input Units
PHQA722_L thru PHQA1033_L



Typical Large Input Configuration

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

"PHKX" Series–Right Angle ServoFit® Precision Planetary Gearhead Performance Specifications

			Size	PH321 KX3	PH322 KX3	PH421 KX4	PH422 KX3	PH521 KX5	PH522 KX4	PH721 KX7	PH722 KX5	PH821 KX8	PH822 KX7	PH932 KX8	PH1032 KX8
Acceleration Torque Maximum	M_{2B}	in.lbs. Nm		558 63	576 65	1,071 121	1,105 130	2,708 306	2,832 320	5,753 650	6,195 700	14,160 1,600	17,700 2,000	40,818 4,608	66,435 7,500
Output Torque [1] **Nominal**	M_{2N}	in.lbs. Nm		398 45		797 90		1,947 220		3,894 440		8,850 1,000	11,063 1,250	26,574 3,000	44,290 5,000
Input Speed Maximum	n_{1MAX}	Continuous Cyclic		3,500 6,000		3,000 4,500	3,500 6,000	3,000 4,500		2,100 3,500	3,000 4,000	1,300 3,000	2,100 3,500	1,300 3,000	1,300 3,000
Torsional Backlash [2]	$\Delta\varphi$	arcmin		≤6		≤5.5	≤3.5	≤5.5	≤3.5	≤5	≤3.5	≤5	≤3.5	≤4	≤3.5
Torsional Stiffness Maximum	C_2	in.lbs./arcmin Nm/arcmin		69 7.8	88 10	168 19	230 26	416 47	575 65	1,053 119	1,239 140	2,505 283	3,407 385	9,301 1,051	14,062 1,589
Axial Load Maximum	F_{2AMAX}	lbs. N		371 1,650		484 2,150		934 4,150		1,384 6,150		2,261 10,050		7,425 33,000	11,250 50,000
Tilting Moment [3] **Maximum**	M_{2K}	in.lbs. Nm		885 100		2,301 260		3,894 440		2,593 1,500		30,975 3,500		57,525 6,500	66,375 7,500
Weight	m	pounds kg		8 3.5	9 4.0	12 5.5	14 6.3	28 12.9	24 10.9	52 23.5	46 20.9	124 56	112 51	203 92.0	237 107.4
Noise Level [4]	L_{PA}	dB(A)		≤70		≤70	≤70	≤72	≤70	≤72		≤74	≤72	≤74	≤74
Efficiency at Nominal Torque	η	%		≥93 - 96											
Balance Quality				Q 2.5 (Quality Class - 2.5 millimeters per second)											
Lubrication				Synthetic Oil (ISO VG 150)											
Mounting Position – Any Horizontal EL1, EL2, EL5, and EL6 **Vertical Mounting Position EL3 and EL4 MUST BE SPECIFIED**				 EL1 EL2 EL3 EL4 EL5 EL6											
Direction of Rotation				See Page 249 for direction of rotation.											
Ambient Temperature				0°C to +40°C (104° F) Other temperatures, contact STOBER Drives.											
Finish				Black (RAL 9005)											
Lifetime [5]	L_h	hours		L_h > 10,000 hours if M_{2K}/M_{2A} < 1.25 and > 1.00 L_h > 20,000 hours if M_{2K}/M_{2A} > 1.25 and < 1.50 L_h > 30,000 hours if M_{2K}/M_{2A} > 1.5											
Warranty				5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)											

[1] Ratings based on input speed (n_1) of 2000 RPM.
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[2] Tested at 1.5% of nominal torque and recorded on the output side of the gearhead.

[3] Rating based on output speed (n2) of 100 RPM. For values at other speeds see Page 240.

[4] Measurement at one (1) meter distance with input speed (n1) of 3000 RPM.

[5] M_{2A} equals actual tilting moment of the application. See Page 240 for load values.

WARNING: In order to insure that the specified torque ratings are attained, it is essential to attach the gear units to the machine with a grade 12.9 fastener.

Refer to Page 250 for ServoFit Precision Planetary Gearhead Selection Procedure.

"PHKX" Series–Right Angle ServoFit® Precision Planetary Gearhead Features

The "PHKX" Series combines the "PH" Series ServoFit Precision Planetary Gearheads with a right angle to provide a configuration that is a smooth, precise, and reliable drive with the benefit of direct mounting to many types of equipment without a coupling. All units are lubricated for life with synthetic oil and sealed to IP65 standards to prevent lubricant contamination for long life.

Some features are:

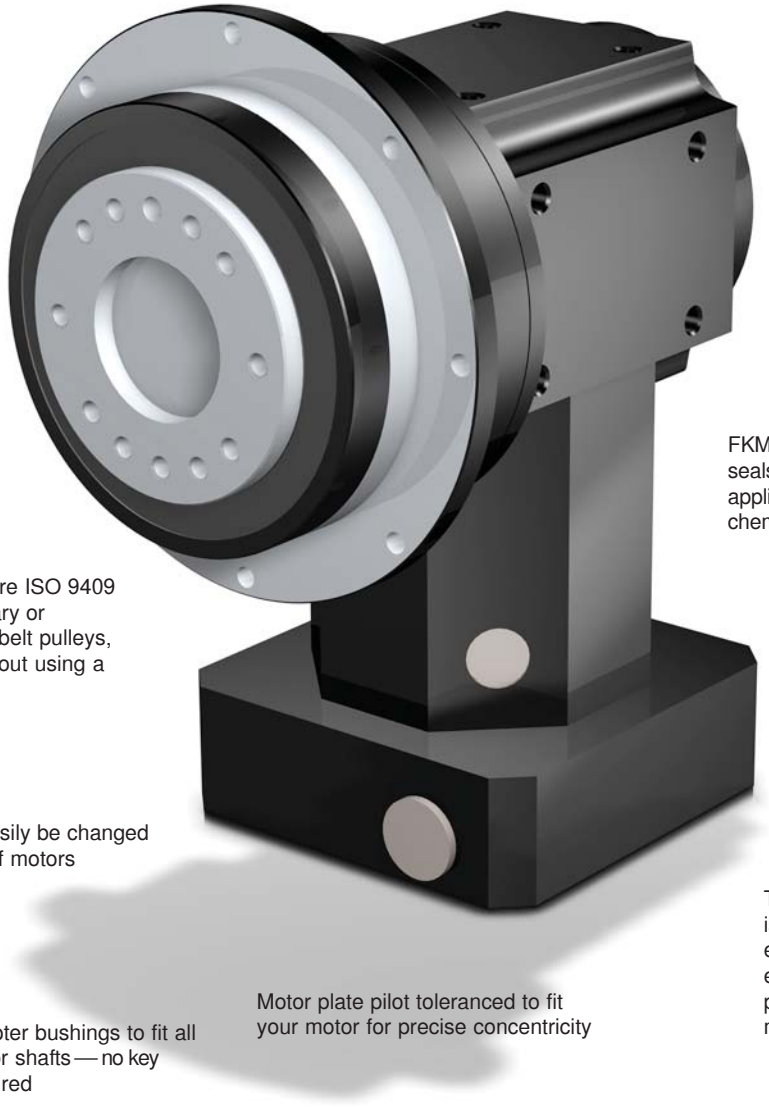
- High Axial Load Capacity
- Superior Torsional Stiffness
- 5-300:1 Ratio Range
- Wide Selection of IEC, NEMA, or Customized Motor Wide Plates
- Lowest Backlash
- Advanced Helical Gear Technology
- 5 Year Limited Warranty (2 Year on bearings, seals, etc.)

Highly efficient spiral bevel gearsets provide quiet operation and excellent torque carrying capacity.

Oversized tapered roller bearings and shafts for high radial load capacity and superior torsional stiffness

Gears are case hardened to 61 Rockwell "C" and ground for maximum efficiency

HeliCamber® gear technology provides minimum wear, low backlash, and low noise



Ring gear machined integral to the housing — not welded or pressed in —provides greater concentricity and more precise alignment

Blind pilot hole

Single piece steel housing

FKM double-lip radial oil seals for continuous duty applications and very good chemical resistance.

The output flange dimensions are ISO 9409 and allow easy mounting to rotary or indexing tables, pinions, timing belt pulleys, transmission shafting, etc., without using a coupling.

Motor plate can easily be changed to fit your choice of motors

The integrated motor coupling is designed to allow thermal expansion of the motor shaft–ensuring long motor life by preventing thrust load on the motor bearings.

Motor plate pilot toleranced to fit your motor for precise concentricity

Adapter bushings to fit all motor shafts — no key required

See web site for drawings.

"PHKX" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Max. Input RPM (n_1) Continuous Mounting Position EL 1,2,5,6	Max. Input RPM (n_1) Continuous Mounting Position EL 3,4	Max. Input RPM (n_1) Cyclic Mounting Position All	Max. Motor Shaft øD^6	Input Inertia J_1	Torsional Stiffness per arcmin C_2		Output Torque Nominal [1] M_{2N}		Output Torque Acceleration M_{2B}		Output Torque Peak [2] M_{2PEAK}	
	i				mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PH321_KX3 with Motor Mounting Plate														
PH321F0050 KX301VF0010 MF	5.000	3,000	2,500	4,000	19	1.08	56.5	6.4	399	45	553	62	935	106
PH321F0070 KX301VF0010 MF	7.000	3,000	2,500	4,000	19	1.04	69.3	7.8	399	45	531	60	1,152	130
PH321F0050 KX301VF0020 MF	10.00	3,500	3,000	5,000	19	0.82	56.5	6.4	399	45	553	62	1,063	120
PH321F0070 KX301VF0020 MF	14.00	3,500	3,000	5,000	19	0.81	69.3	7.8	399	45	531	60	1,152	130
PH321F0050 KX301VF0030 MF	15.00	3,500	3,500	6,000	19	0.75	56.5	6.4	399	45	553	62	1,063	120
PH321F0100 KX301VF0020 MF	20.00	3,500	3,000	5,000	19	0.81	67.6	7.6	266	30	443	50	886	100
PH321F0070 KX301VF0030 MF	21.00	3,500	3,500	6,000	19	0.75	69.3	7.8	399	45	531	60	1,152	130
PH321F0100 KX301VF0030 MF	30.00	3,500	3,500	6,000	19	0.75	67.6	7.6	266	30	443	50	886	100
PH322_KX3 with Motor Mounting Plate														
PH322F0350 KX301VF0010 MF	35.00	3,000	2,500	4,000	19	1.02	87.9	9.9	399	45	576	65	1,152	130
PH322F0200 KX301VF0020 MF	40.00	3,500	3,000	5,000	19	0.81	86.0	9.7	399	45	576	65	1,152	130
PH322F0250 KX301VF0020 MF	50.00	3,500	3,000	5,000	19	0.81	87.6	9.9	399	45	576	65	1,152	130
PH322F0280 KX301VF0020 MF	56.00	3,500	3,000	5,000	19	0.81	88.4	10.0	399	45	531	60	1,152	130
PH322F0200 KX301VF0030 MF	60.00	3,500	3,500	6,000	19	0.75	86.0	9.7	399	45	576	65	1,152	130
PH322F0350 KX301VF0020 MF	70.00	3,500	3,000	5,000	19	0.81	87.9	9.9	399	45	576	65	1,152	130
PH322F0250 KX301VF0030 MF	75.00	3,500	3,500	6,000	19	0.75	87.6	9.9	399	45	576	65	1,152	130
PH322F0400 KX301VF0020 MF	80.00	3,500	3,000	5,000	19	0.81	75.3	8.5	266	30	443	50	886	100
PH322F0280 KX301VF0030 MF	84.00	3,500	3,500	6,000	19	0.75	88.4	10.0	399	45	531	60	1,152	130
PH322F0500 KX301VF0020 MF	100.0	3,500	3,000	5,000	19	0.80	86.2	9.7	399	45	576	65	1,152	130
PH322F0350 KX301VF0030 MF	105.0	3,500	3,500	6,000	19	0.75	87.9	9.9	399	45	576	65	1,152	130
PH322F0400 KX301VF0030 MF	120.0	3,500	3,500	6,000	19	0.75	75.3	8.5	266	30	443	50	886	100
PH322F0700 KX301VF0020 MF	140.0	3,500	3,000	5,000	19	0.80	88.5	10.0	399	45	531	60	1,152	130
PH322F0500 KX301VF0030 MF	150.0	3,500	3,500	6,000	19	0.75	86.2	9.7	399	45	576	65	1,152	130
PH322F1000 KX301VF0020 MF	200.0	3,500	3,000	5,000	19	0.80	75.4	8.5	266	30	443	50	886	100
PH322F0700 KX301VF0030 MF	210.0	3,500	3,500	6,000	19	0.75	88.5	10.0	399	45	531	60	1,152	130
PH322F1000 KX301VF0030 MF	300.0	3,500	3,500	6,000	19	0.75	75.4	8.5	266	30	443	50	886	100

[1] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[2] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"PHKX" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Max. Input RPM (n_1) Continuous Mounting Position EL 1,2,5,6	Max. Input RPM (n_1) Continuous Mounting Position EL 3,4	Max. Input RPM (n_1) Cyclic Mounting Position All	Max. Motor Shaft øD6	Input Inertia J_1	Torsional Stiffness per arcmin C_2		Output Torque Nominal 1) M_{2N}		Output Torque Acceleration M_{2B}		Output Torque Peak 2) M_{2PEAK}	
	i				mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PH421_KX4 with Motor Mounting Plate														
PH421F0040 KX401VF0010 MF	4.00	2,500	2,000	3,500	24	2.84	100.5	11.3	680	77	850	96	1,701	192
PH421F0050 KX401VF0010 MF	5.00	2,500	2,000	3,500	24	2.66	132.2	14.9	753	85	1,063	120	2,126	240
PH421F0070 KX401VF0010 MF	7.00	2,500	2,000	3,500	24	2.51	168.2	19.0	753	85	974	110	2,126	240
PH421F0040 KX401VF0020 MF	8.00	2,500	2,500	4,000	24	1.74	100.5	11.3	680	77	850	96	1,701	192
PH421F0050 KX401VF0020 MF	10.00	2,500	2,500	4,000	24	1.70	132.2	14.9	797	90	1,063	120	2,126	240
PH421F0070 KX401VF0020 MF	14.00	2,500	2,500	4,000	24	1.66	168.2	19.0	797	90	974	110	2,126	240
PH421F0050 KX401VF0030 MF	15.00	3,000	3,000	4,500	24	1.47	132.2	14.9	797	90	1,063	120	2,126	240
PH421F0100 KX401VF0020 MF	20.00	2,500	2,500	4,000	24	1.64	153.7	17.4	531	60	886	100	1,772	200
PH421F0070 KX401VF0030 MF	21.00	3,000	3,000	4,500	24	1.45	168.2	19.0	797	90	974	110	2,126	240
PH421F0100 KX401VF0030 MF	30.00	3,000	3,000	4,500	24	1.44	153.7	17.4	531	60	886	100	1,772	200
PH422_KX3 with Motor Mounting Plate														
PH422F0350 KX301VF0010 MF	35.00	3,000	2,500	4,000	19	1.05	234.6	26.5	797	90	1,152	130	2,126	240
PH422F0200 KX301VF0020 MF	40.00	3,500	3,000	5,000	19	0.84	223.8	25.3	797	90	1,152	130	2,126	240
PH422F0160 KX301VF0030 MF	48.00	3,500	3,500	6,000	19	0.76	195.8	22.1	797	90	1,152	130	2,126	240
PH422F0250 KX301VF0020 MF	50.00	3,500	3,000	5,000	19	0.82	232.7	26.3	797	90	1,152	130	2,126	240
PH422F0280 KX301VF0020 MF	56.00	3,500	3,000	5,000	19	0.81	208.9	23.6	797	90	1,152	130	2,126	240
PH422F0200 KX301VF0030 MF	60.00	3,500	3,500	6,000	19	0.76	223.8	25.3	797	90	1,152	130	2,126	240
PH422F0350 KX301VF0020 MF	70.00	3,500	3,000	5,000	19	0.81	234.6	26.5	797	90	1,152	130	2,126	240
PH422F0250 KX301VF0030 MF	75.00	3,500	3,500	6,000	19	0.76	232.7	26.3	797	90	1,152	130	2,126	240
PH422F0400 KX301VF0020 MF	80.00	3,500	3,000	5,000	19	0.81	208.3	23.5	797	90	1,152	130	2,126	240
PH422F0280 KX301VF0030 MF	84.00	3,500	3,500	6,000	19	0.75	208.9	23.6	797	90	1,152	130	2,126	240
PH422F0500 KX301VF0020 MF	100.0	3,500	3,000	5,000	19	0.81	234.2	26.4	797	90	1,152	130	2,126	240
PH422F0350 KX301VF0030 MF	105.0	3,500	3,500	6,000	19	0.75	234.6	26.5	797	90	1,152	130	2,126	240
PH422F0400 KX301VF0030 MF	120.0	3,500	3,500	6,000	19	0.75	208.3	23.5	797	90	1,152	130	2,126	240
PH422F0700 KX301VF0020 MF	140.0	3,500	3,000	5,000	19	0.81	234.5	26.5	797	90	974	110	2,126	240
PH422F0500 KX301VF0030 MF	150.0	3,500	3,500	6,000	19	0.75	234.2	26.4	797	90	1,152	130	2,126	240
PH422F1000 KX301VF0020 MF	200.0	3,500	3,000	5,000	19	0.81	176.0	19.9	531	60	886	100	1,772	200
PH422F0700 KX301VF0030 MF	210.0	3,500	3,500	6,000	19	0.75	234.5	26.5	797	90	974	110	2,126	240
PH422F1000 KX301VF0030 MF	300.0	3,500	3,500	6,000	19	0.75	176.0	19.9	531	60	886	100	1,772	200

Index of Symbols

MT ..... Motor adapter with TriAdapt® coupling	i ..... Ratio - Exact	M_{2N} ..... Nominal Torque
MF ..... Motor adapter with FlexiAdapt® coupling	n_1 ..... Maximum input speed RPM	M_{2B} ..... Acceleration Torque Maximum
L ..... Large Input	J_1 ..... Mass moment of inertia (input)	M_{2PEAK} ..... Peak Torque
C ..... ServoCool	C_2 ..... Torsional Stiffness	

See web site for drawings.

"PHKX" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Max. Input RPM (n_1) Continuous Mounting Position EL 1,2,5,6	Max. Input RPM (n_1) Continuous Mounting Position EL 3,4	Max. Input RPM (n_1) Cyclic All	Max. Motor Shaft øD6	Input Inertia J_1	Torsional Stiffness per arcmin C_2		Output Torque Nominal 1) M_{2N}		Output Torque Acceleration M_{2B}		Output Torque Peak 2) M_{2PEAK}	
	i				mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PH521_KX5 with Motor Mounting Plate														
PH521F0040 KX501VF0010 MF	4.000	2,500	2,000	3,000	32	7.62	244.4	27.6	1,701	192	2,143	242	4,252	480
PH521F0050 KX501VF0010 MF	5.000	2,500	2,000	3,000	32	8.44	323.1	36.5	1,860	210	2,679	302	5,315	600
PH521F0070 KX501VF0010 MF	7.000	2,500	2,000	3,000	32	7.97	412.2	46.5	1,860	210	2,392	270	5,315	600
PH521F0040 KX501VF0020 MF	8.000	2,500	2,500	3,500	32	5.31	244.4	27.6	1,701	192	2,143	242	4,252	480
PH521F0050 KX501VF0020 MF	10.00	2,500	2,500	3,500	32	5.52	323.1	36.5	1,949	220	2,679	302	5,315	600
PH521F0070 KX501VF0020 MF	14.00	2,500	2,500	3,500	32	5.40	412.2	46.5	1,860	210	2,392	270	5,315	600
PH521F0050 KX501VF0030 MF	15.00	3,000	3,000	4,000	32	4.88	323.1	36.5	1,949	220	2,679	302	5,315	600
PH521F0100 KX501VF0020 MF	20.00	2,500	2,500	3,500	32	5.33	396.4	44.7	1,240	140	2,215	250	4,429	500
PH521F0070 KX501VF0030 MF	21.00	3,000	3,000	4,000	32	4.83	412.2	46.5	1,860	210	2,392	270	5,315	600
PH521F0100 KX501VF0030 MF	30.00	3,000	3,000	4,000	32	4.80	396.4	44.7	1,240	140	2,215	250	4,429	500
PH522_KX4 with Motor Mounting Plate														
PH522F0350 KX401VF0010 MF	35.00	2,500	2,000	3,500	24	2.46	570.4	64.4	1,949	220	2,835	320	5,315	600
PH522F0200 KX401VF0020 MF	40.00	2,500	2,500	4,000	24	1.71	534.1	60.3	1,949	220	2,835	320	5,315	600
PH522F0160 KX401VF0030 MF	48.00	3,000	3,000	4,500	24	1.46	458.5	51.8	1,860	210	2,835	320	4,915	555
PH522F0250 KX401VF0020 MF	50.00	2,500	2,500	4,000	24	1.68	561.6	63.4	1,949	220	2,835	320	5,315	600
PH522F0280 KX401VF0020 MF	56.00	2,500	2,500	4,000	24	1.64	501.4	56.6	1,860	210	2,835	320	4,915	555
PH522F0200 KX401VF0030 MF	60.00	3,000	3,000	4,500	24	1.47	534.1	60.3	1,949	220	2,835	320	5,315	600
PH522F0350 KX401VF0020 MF	70.00	2,500	2,500	4,000	24	1.65	570.4	64.4	1,949	220	2,835	320	5,315	600
PH522F0250 KX401VF0030 MF	75.00	3,000	3,000	4,500	24	1.46	561.6	63.4	1,949	220	2,835	320	5,315	600
PH522F0400 KX401VF0020 MF	80.00	2,500	2,500	4,000	24	1.63	498.4	56.3	1,860	210	2,835	320	4,915	555
PH522F0280 KX401VF0030 MF	84.00	3,000	3,000	4,500	24	1.44	501.4	56.6	1,860	210	2,835	320	4,915	555
PH522F0500 KX401VF0020 MF	100.0	2,500	2,500	4,000	24	1.64	567.9	64.1	1,949	220	2,835	320	5,315	600
PH522F0350 KX401VF0030 MF	105.0	3,000	3,000	4,500	24	1.44	570.4	64.4	1,949	220	2,835	320	5,315	600
PH522F0400 KX401VF0030 MF	120.0	3,000	3,000	4,500	24	1.44	498.4	56.3	1,860	210	2,835	320	4,915	555
PH522F0700 KX401VF0020 MF	140.0	2,500	2,500	4,000	24	1.63	573.0	64.7	1,860	210	2,392	270	5,315	600
PH522F0500 KX401VF0030 MF	150.0	3,000	3,000	4,500	24	1.44	567.9	64.1	1,949	220	2,835	320	5,315	600
PH522F1000 KX401VF0020 MF	200.0	2,500	2,500	4,000	24	1.63	456.8	51.6	1,240	140	2,215	250	4,429	500
PH522F0700 KX401VF0030 MF	210.0	3,000	3,000	4,500	24	1.44	573.0	64.7	1,860	210	2,392	270	5,315	600
PH522F1000 KX401VF0030 MF	300.0	3,000	3,000	4,500	24	1.44	456.8	51.6	1,240	140	2,215	250	4,429	500

1) Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

2) Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"PHKX" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Max. Input RPM (n_1) Continuous Mounting Position EL 1,2,5,6	Max. Input RPM (n_1) Continuous Mounting Position EL 3,4	Max. Input RPM (n_1) Cyclic All	Max. Motor Shaft øD6	Input Inertia J_1	Torsional Stiffness per arcmin C_2		Output Torque Nominal 1) M_{2N}		Output Torque Acceleration M_{2B}		Output Torque Peak 2) M_{2PEAK}	
	i				mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PH721_KX7 with Motor Mounting Plate														
PH721F0040 KX701VF0010 MF	4.000	1,800	1,600	2,250	38	29.54	739.1	83.4	3,401	384	4,252	480	7,483	845
PH721F0050 KX701VF0010 MF	5.000	1,800	1,600	2,250	38	27.70	918.4	103.7	3,898	440	5,315	600	9,354	1,056
PH721F0070 KX701VF0010 MF	7.000	1,800	1,600	2,250	38	26.28	1054.7	119.1	3,898	440	5,758	650	11,127	1,256
PH721F0040 KX701VF0020 MF	8.000	1,800	1,800	3,000	38	15.88	739.1	83.4	3,401	384	4,252	480	8,504	960
PH721F0050 KX701VF0020 MF	10.00	1,800	1,800	3,000	38	15.42	918.4	103.7	3,898	440	5,315	600	10,630	1,200
PH721F0070 KX701VF0020 MF	14.00	1,800	1,800	3,000	38	15.07	1054.7	119.1	3,898	440	5,758	650	11,127	1,256
PH721F0050 KX701VF0030 MF	15.00	2,100	2,100	3,500	38	12.74	918.4	103.7	3,898	440	5,315	600	10,630	1,200
PH721F0100 KX701VF0020 MF	20.00	1,800	1,800	3,000	38	14.89	922.7	104.2	2,657	300	4,429	500	8,858	1,000
PH721F0070 KX701VF0030 MF	21.00	2,100	2,100	3,500	38	12.58	1054.7	119.1	3,898	440	5,758	650	11,127	1,256
PH721F0100 KX701VF0030 MF	30.00	2,100	2,100	3,500	38	12.50	922.7	104.2	2,657	300	4,429	500	8,858	1,000
PH722_KX5 with Motor Mounting Plate														
PH722F0350 KX501VF0010 MF	35.00	2,500	2,000	3,000	32	7.82	1229.7	138.8	3,898	440	6,201	700	12,401	1,400
PH722F0200 KX501VF0020 MF	40.00	2,500	2,500	3,500	32	5.55	1147.0	129.5	3,898	440	6,201	700	12,401	1,400
PH722F0160 KX501VF0030 MF	48.00	3,000	3,000	4,000	32	4.91	986.4	111.4	3,898	440	6,201	700	12,235	1,381
PH722F0250 KX501VF0020 MF	50.00	2,500	2,500	3,500	32	5.44	1199.0	135.4	3,898	440	6,201	700	12,401	1,400
PH722F0280 KX501VF0020 MF	56.00	2,500	2,500	3,500	32	5.37	1084.3	122.4	3,898	440	6,201	700	12,235	1,381
PH722F0200 KX501VF0030 MF	60.00	3,000	3,000	4,000	32	4.90	1147.0	129.5	3,898	440	6,201	700	12,401	1,400
PH722F0350 KX501VF0020 MF	70.00	2,500	2,500	3,500	32	5.36	1229.7	138.8	3,898	440	6,201	700	12,401	1,400
PH722F0250 KX501VF0030 MF	75.00	3,000	3,000	4,000	32	4.85	1199.0	135.4	3,898	440	6,201	700	12,401	1,400
PH722F0400 KX501VF0020 MF	80.00	2,500	2,500	3,500	32	5.32	1084.8	122.5	3,898	440	6,201	700	12,235	1,381
PH722F0280 KX501VF0030 MF	84.00	3,000	3,000	4,000	32	4.82	1084.3	122.4	3,898	440	6,201	700	12,235	1,381
PH722F0500 KX501VF0020 MF	100.0	2,500	2,500	3,500	32	5.32	1230.0	138.9	3,898	440	6,201	700	12,401	1,400
PH722F0350 KX501VF0030 MF	105.0	3,000	3,000	4,000	32	4.81	1229.7	138.8	3,898	440	6,201	700	12,401	1,400
PH722F0400 KX501VF0030 MF	120.0	3,000	3,000	4,000	32	4.80	1084.8	122.5	3,898	440	6,201	700	12,235	1,381
PH722F0700 KX501VF0020 MF	140.0	2,500	2,500	3,500	32	5.31	1238.6	139.8	3,898	440	5,758	650	11,127	1,256
PH722F0500 KX501VF0030 MF	150.0	3,000	3,000	4,000	32	4.79	1230.0	138.9	3,898	440	6,201	700	12,401	1,400
PH722F1000 KX501VF0020 MF	200.0	2,500	2,500	3,500	32	5.31	985.5	111.3	2,657	300	4,429	500	8,858	1,000
PH722F0700 KX501VF0030 MF	210.0	3,000	3,000	4,000	32	4.79	1238.6	139.8	3,898	440	5,758	650	11,127	1,256
PH722F1000 KX501VF0030 MF	300.0	3,000	3,000	4,000	32	4.79	985.5	111.3	2,657	300	4,429	500	8,858	1,000

Index of Symbols

MT ..... Motor adapter with TriAdapt® coupling	i ..... Ratio - Exact	M_{2N} ..... Nominal Torque
MF ..... Motor adapter with FlexiAdapt® coupling	n_1 ..... Maximum input speed RPM	M_{2B} ..... Acceleration Torque Maximum
L ..... Large Input	J_1 ..... Mass moment of inertia (input)	M_{2PEAK} ..... Peak Torque
C ..... ServoCool	C_2 ..... Torsional Stiffness	

See web site for drawings.

"PHKX" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Max. Input RPM (n_1) Continuous Mounting Position EL 1,2,5,6	Max. Input RPM (n_1) Continuous Mounting Position EL 3,4	Max. Input RPM (n_1) Cyclic All	Max. Motor Shaft øD6	Input Inertia J_1	Torsional Stiffness per arcmin C_2		Output Torque Nominal 1) M_{2N}		Output Torque Acceleration M_{2B}		Output Torque Peak 2) M_{2PEAK}	
	i				mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PH821_KX8 with Motor Mounting Plate														
PH821F0040 KX801VF0010 MF	4.000	1,000	750	1,750	48	101.43	1518.5	171.4	6,803	768	9,354	1,056	14,286	1,613
PH821F0050 KX801VF0010 MF	5.000	1,000	750	1,750	48	92.44	1975.1	223.0	8,504	960	11,693	1,320	17,858	2,016
PH821F0070 KX801VF0010 MF	7.000	1,000	750	1,750	48	85.00	2506.2	282.9	8,858	1,000	14,173	1,600	24,900	2,811
PH821F0040 KX801VF0020 MF	8.000	1,100	1,100	2,500	48	54.94	1518.5	171.4	6,803	768	9,354	1,056	17,007	1,920
PH821F0050 KX801VF0020 MF	10.00	1,100	1,100	2,500	48	52.69	1975.1	223.0	8,504	960	11,693	1,320	21,259	2,400
PH821F0070 KX801VF0020 MF	14.00	1,100	1,100	2,500	48	50.83	2506.2	282.9	8,858	1,000	14,173	1,600	24,900	2,811
PH821F0050 KX801VF0030 MF	15.00	1,300	1,300	3,000	48	44.92	1975.1	223.0	8,504	960	11,693	1,320	21,259	2,400
PH821F0100 KX801VF0020 MF	20.00	1,100	1,100	2,500	48	49.88	2306.0	260.3	7,086	800	10,630	1,200	21,259	2,400
PH821F0070 KX801VF0030 MF	21.00	1,300	1,300	3,000	48	44.09	2506.2	282.9	8,858	1,000	14,173	1,600	24,900	2,811
PH821F0100 KX801VF0030 MF	30.00	1,300	1,300	3,000	48	43.67	2306.0	260.3	7,086	800	10,630	1,200	21,259	2,400
PH822_KX7 with Motor Mounting Plate														
PH822F0350 KX701VF0010 MF	35.00	1,800	1,600	2,250	38	26.15	3366.3	380.0	11,073	1,250	17,716	2,000	28,346	3,200
PH822F0200 KX701VF0020 MF	40.00	1,800	1,800	3,000	38	15.73	3223.4	363.9	11,073	1,250	17,716	2,000	28,346	3,200
PH822F0160 KX701VF0030 MF	48.00	2,100	2,100	3,500	38	12.93	2839.5	320.6	9,744	1,100	16,476	1,860	28,346	3,200
PH822F0250 KX701VF0020 MF	50.00	1,800	1,800	3,000	38	15.35	3302.4	372.8	11,073	1,250	17,716	2,000	28,346	3,200
PH822F0280 KX701VF0020 MF	56.00	1,800	1,800	3,000	38	15.08	3015.7	340.5	9,744	1,100	17,716	2,000	28,346	3,200
PH822F0200 KX701VF0030 MF	60.00	2,100	2,100	3,500	38	12.87	3223.4	363.9	11,073	1,250	17,716	2,000	28,346	3,200
PH822F0350 KX701VF0020 MF	70.00	1,800	1,800	3,000	38	15.03	3366.3	380.0	11,073	1,250	17,716	2,000	28,346	3,200
PH822F0250 KX701VF0030 MF	75.00	2,100	2,100	3,500	38	12.70	3302.4	372.8	11,073	1,250	17,716	2,000	28,346	3,200
PH822F0400 KX701VF0020 MF	80.00	1,800	1,800	3,000	38	14.90	2957.5	333.9	9,744	1,100	17,007	1,920	28,346	3,200
PH822F0280 KX701VF0030 MF	84.00	2,100	2,100	3,500	38	12.58	3015.7	340.5	9,744	1,100	17,716	2,000	28,346	3,200
PH822F0500 KX701VF0020 MF	100.0	1,800	1,800	3,000	38	14.88	3319.6	374.8	11,073	1,250	17,716	2,000	28,346	3,200
PH822F0350 KX701VF0030 MF	105.0	2,100	2,100	3,500	38	12.56	3366.3	380.0	11,073	1,250	17,716	2,000	28,346	3,200
PH822F0400 KX701VF0030 MF	120.0	2,100	2,100	3,500	38	12.50	2957.5	333.9	9,744	1,100	17,007	1,920	28,346	3,200
PH822F0700 KX701VF0020 MF	140.0	1,800	1,800	3,000	38	14.86	3396.9	383.5	8,858	1,000	14,173	1,600	24,900	2,811
PH822F0500 KX701VF0030 MF	150.0	2,100	2,100	3,500	38	12.49	3319.6	374.8	11,073	1,250	17,716	2,000	28,346	3,200
PH822F1000 KX701VF0020 MF	200.0	1,800	1,800	3,000	38	14.85	2615.2	295.2	7,086	800	10,630	1,200	21,259	2,400
PH822F0700 KX701VF0030 MF	210.0	2,100	2,100	3,500	38	12.49	3396.9	383.5	8,858	1,000	14,173	1,600	24,900	2,811
PH822F1000 KX701VF0030 MF	300.0	2,100	2,100	3,500	38	12.48	2615.2	295.2	7,086	800	10,630	1,200	21,259	2,400

1) Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

2) Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

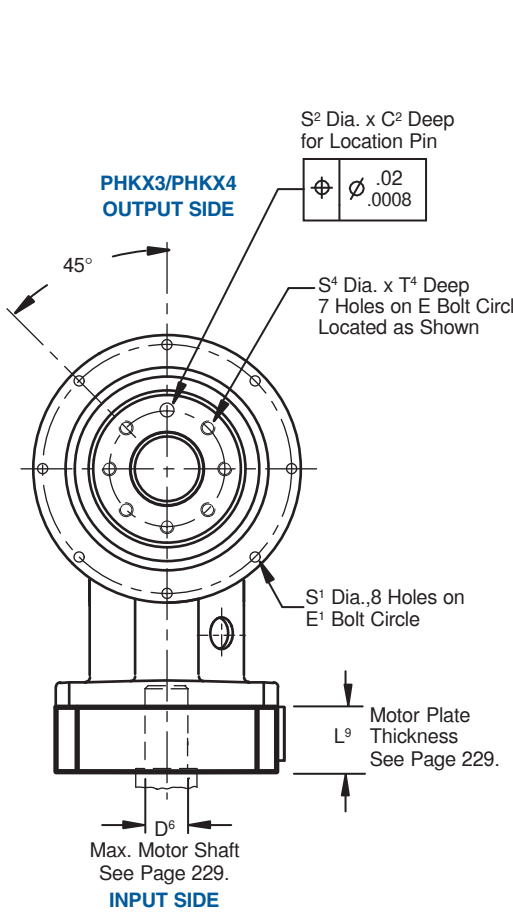
"PHKX" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Max. Input RPM (n_1) Continuous Mounting Position EL 1,2,5,6	Max. Input RPM (n_1) Continuous Mounting Position EL 3,4	Max. Input RPM (n_1) Cyclic All	Max. Motor Shaft øD6	Input Inertia J_1	Torsional Stiffness per arcmin C_2		Output Torque Nominal 1) M_{2N}		Output Torque Acceleration M_{2B}		Output Torque Peak 2) M_{2PEAK}	
	i				mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PH932_KX8 with Motor Mounting Plate														
PH932F0120 KX801VF0010 MF	12.00	1,000	750	2,000	48	127.49	6,976.3	787.6	19,771	2,232	27,185	3,069	48,005	5,419
PH932F0160 KX801VF0010 MF	16.00	1,000	750	2,000	48	97.42	8,159.5	921.1	26,361	2,976	36,247	4,092	64,006	7,226
PH932F0180 KX801VF0010 MF	18.00	1,000	750	2,000	48	121.44	8,150.2	920.1	26,574	3,000	39,861	4,500	72,007	8,129
PH932F0200 KX801VF0010 MF	20.00	1,000	750	2,000	48	89.78	8,781.9	991.4	26,574	3,000	44,290	5,000	80,008	9,032
PH932F0120 KX801VF0020 MF	24.00	1,100	1,100	2,500	48	61.45	6,976.3	787.6	19,771	2,232	27,185	3,069	57,148	6,452
PH932F0300 KX801VF0010 MF	30.00	1,000	750	2,000	48	87.60	9,124.2	1,030.1	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0160 KX801VF0020 MF	32.00	1,100	1,100	2,500	48	53.94	8,159.5	921.1	26,361	2,976	36,247	4,092	76,198	8,602
PH932F0180 KX801VF0020 MF	36.00	1,100	1,100	2,500	48	59.94	8,150.2	920.1	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0200 KX801VF0020 MF	40.00	1,100	1,100	2,500	48	52.03	8,781.9	991.4	26,574	3,000	44,290	5,000	88,580	10,000
PH932F0420 KX801VF0010 MF	42.00	1,000	750	2,000	48	82.59	9,344.6	1,054.9	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0240 KX801VF0020 MF	48.00	1,100	1,100	2,500	48	53.09	8,813.8	995.0	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0180 KX801VF0030 MF	54.00	1,300	1,300	3,000	48	48.14	8,150.2	920.1	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0300 KX801VF0020 MF	60.00	1,100	1,100	2,500	48	51.48	9,124.2	1,030.1	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0240 KX801VF0030 MF	72.00	1,300	1,300	3,000	48	45.09	8,813.8	995.0	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0400 KX801VF0020 MF	80.00	1,100	1,100	2,500	48	49.63	8,967.3	1,012.3	23,810	2,688	40,818	4,608	88,580	10,000
PH932F0420 KX801VF0020 MF	84.00	1,100	1,100	2,500	48	50.23	9,344.6	1,054.9	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0300 KX801VF0030 MF	90.00	1,300	1,300	3,000	48	44.38	9,124.2	1,030.1	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0480 KX801VF0020 MF	96.00	1,100	1,100	2,500	48	49.97	9,311.9	1,051.2	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0600 KX801VF0020 MF	120.0	1,100	1,100	2,500	48	49.50	9,212.2	1,040.0	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0420 KX801VF0030 MF	126.0	1,300	1,300	3,000	48	43.82	9,344.6	1,054.9	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0480 KX801VF0030 MF	144.0	1,300	1,300	3,000	48	43.71	9,311.9	1,051.2	26,574	3,000	39,861	4,500	79,722	9,000
PH932F0600 KX801VF0030 MF	180.0	1,300	1,300	3,000	48	43.50	9,212.2	1,040.0	26,574	3,000	39,861	4,500	79,722	9,000
PH1032_KX8 with Motor Mounting Plate														
PH1032F0180 KX801VF0010 MF	18.00	1,000	750	2,000	48	124.59	11,532.4	1,301.9	29,657	3,348	40,778	4,604	72,007	8,129
PH1032F0240 KX801VF0010 MF	24.00	1,000	750	2,000	48	95.79	12,907.5	1,457.2	39,542	4,464	54,370	6,138	96,009	10,839
PH1032F0300 KX801VF0010 MF	30.00	1,000	750	2,000	48	88.74	13,584.4	1,533.6	44,290	5,000	66,435	7,500	120,012	13,548
PH1032F0180 KX801VF0020 MF	36.00	1,100	1,100	2,500	48	60.73	11,532.4	1,301.9	29,657	3,348	40,778	4,604	85,723	9,677
PH1032F0420 KX801VF0010 MF	42.00	1,000	750	2,000	48	83.16	14,078.7	1,589.4	44,290	5,000	66,435	7,500	132,870	15,000
PH1032F0240 KX801VF0020 MF	48.00	1,100	1,100	2,500	48	53.53	12,907.5	1,457.2	39,542	4,464	54,370	6,138	114,297	12,903
PH1032F0180 KX801VF0030 MF	54.00	1,300	1,300	3,000	48	48.49	11,532.4	1,301.9	29,657	3,348	40,778	4,604	85,723	9,677
PH1032F0300 KX801VF0020 MF	60.00	1,100	1,100	2,500	48	51.77	13,584.4	1,533.6	44,290	5,000	66,435	7,500	132,870	15,000
PH1032F0240 KX801VF0030 MF	72.00	1,300	1,300	3,000	48	45.29	12,907.5	1,457.2	39,542	4,464	54,370	6,138	114,297	12,903
PH1032F0420 KX801VF0020 MF	84.00	1,100	1,100	2,500	48	50.37	14,078.7	1,589.4	44,290	5,000	66,435	7,500	132,870	15,000
PH1032F0300 KX801VF0030 MF	90.00	1,300	1,300	3,000	48	44.51	13,584.4	1,533.6	44,290	5,000	66,435	7,500	132,870	15,000
PH1032F0480 KX801VF0020 MF	96.00	1,100	1,100	2,500	48	50.08	14,004.5	1,581.0	40,818	4,608	61,226	6,912	132,870	15,000
PH1032F0600 KX801VF0020 MF	120.0	1,100	1,100	2,500	48	49.57	13,780.3	1,555.7	35,715	4,032	61,226	6,912	132,870	15,000
PH1032F0420 KX801VF0030 MF	126.0	1,300	1,300	3,000	48	43.89	14,078.7	1,589.4	44,290	5,000	66,435	7,500	132,870	15,000
PH1032F0480 KX801VF0030 MF	144.0	1,300	1,300	3,000	48	43.76	14,004.5	1,581.0	40,818	4,608	61,226	6,912	132,870	15,000
PH1032F0600 KX801VF0030 MF	180.0	1,300	1,300	3,000	48	43.53	13,780.3	1,555.7	35,715	4,032	61,226	6,912	132,870	15,000

Index of Symbols

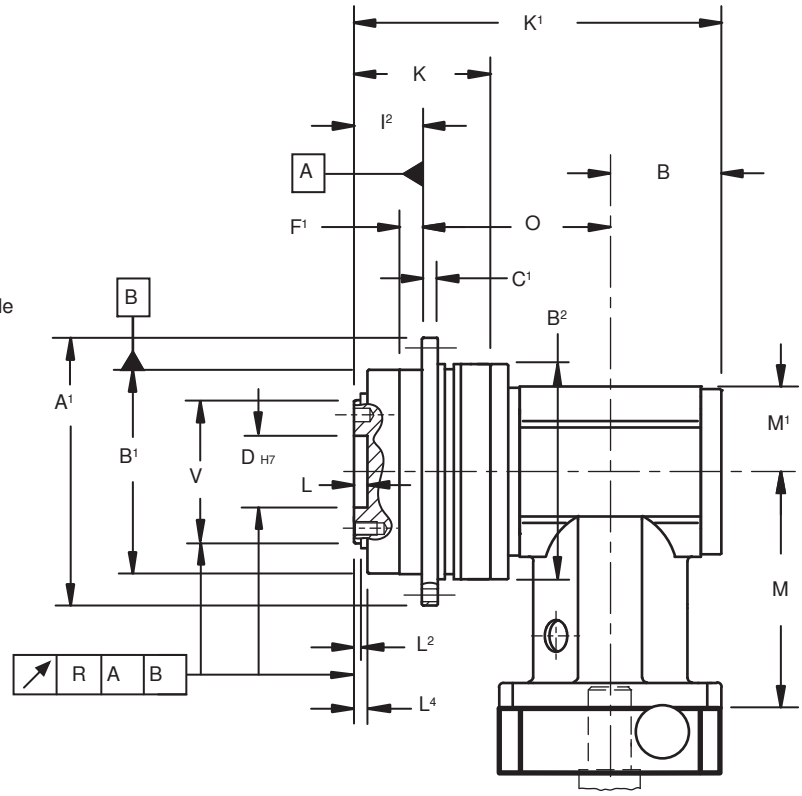
MT ..... Motor adapter with TriAdapt® coupling MF ..... Motor adapter with FlexiAdapt® coupling L ..... Large Input C ..... ServoCool	i ..... Ratio - Exact n_1 ..... Maximum input speed RPM J_1 ..... Mass moment of inertia (input) C_2 ..... Torsional Stiffness	M_{2N} ..... Nominal Torque M_{2B} ..... Acceleration Torque Maximum M_{2PEAK} ..... Peak Torque

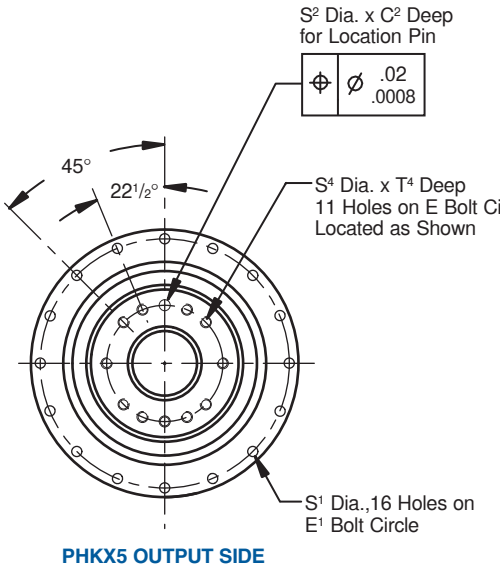
"PHKX" Series–Right Angle ServoFit® Precision Planetary Gearhead Dimensional Data



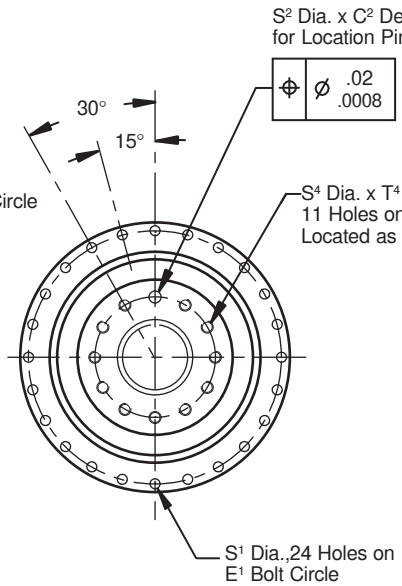
PHKX3/PHKX4
OUTPUT SIDE

INPUT SIDE

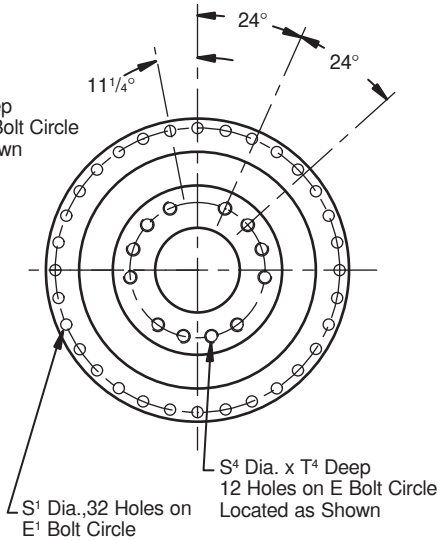




PHKX5 OUTPUT SIDE



PHKX7/PHKX8
OUTPUT SIDE



PHKX9/PHKX10
OUTPUT SIDE

See web site for drawings.

"PHKX" Series–Right Angle ServoFit® Precision Planetary Gearhead Dimensional Data

Table No. 1 **"PHKX" Series – Gearhead with Motor Plate – Dimensions (mm/inches)**

Unit	A^1 h7	B^1 h7	B^2	C^1	C^2	D H7	E	E^1	F^1	I^2	L	L^2	L^4	R	S^1	S^2 H7
PH3_KX	86 +.000/-.035 3.39 +.0000/-.0014	64 +.000/-.030 2.520 +.0000/-.0012	70 2.76	4 .16	3 .12	20 +.021/-.0 .787 +.0008/-.0000	31.5 1.24	79 3.11	7 .28	19.5 .77	4 .16	3 .12	3.5 .14	.020 .0008	4.5 .18	5 +.012/-.000 .20 +.0005/-.0000
PH4_KX	118 +.000/-.035 4.65 +.0000/-.0014	90 +.000/-.035 3.543 +.0000/-.0014	95 3.74	7 .28	7 .28	31.5 +.025/-.0 1.240 +.0010/-.0000	50 1.97	109 4.29	10 .39	30 1.18	6 .24	6 .24	6 .24	.020 .0008	5.5 .22	6 +.012/-.000 .236 +.0005/-.0000
PH5_KX	145 +.000/-.040 5.71 +.0000/-.0016	110 +.000/-.035 4.331 +.0000/-.0014	120 4.72	8 .32	7 .28	40 +.025/-.0 1.575 +.0010/-.0000	63 2.48	135 5.31	10 .39	29 1.14	6 .24	6 .24	6 .24	.020 .0008	5.5 .22	6 +.012/-.000 .236 +.0005/-.0000
PH7_KX	179 +.000/-.040 7.05 +.0000/-.0016	140 +.000/-.040 5.513 +.0000/-.0016	152 5.98	10 .39	7 .28	50 +.025/-.0 1.969 +.0010/-.0000	80 3.15	168 6.61	12 .47	38 1.50	6 .24	6 .24	6 .24	.025 .0010	6.6 .26	8 +.015/-.000 .315 +.0006/-.0000
PH8_KX	247 +.000/-.046 9.72 +.0000/-.0018	200 +.000/-.046 7.874 +.0000/-.0018	212 8.35	12 .47	10 .39	80 +.030/-.0 3.150 +.0012/-.0000	125 4.92	233 9.17	15 .59	50 1.97	8 .31	8 .31	8 .31	.030 .0012	9 .35	10 +.015/-.000 .393 +.0006/-.0000
PH9_KX	300 — 11.81	255 +.000/-.052 10.039 +.000/-.0020	255 10.04	18 .71	—	90 +.035/-.0 3.543 +.0014/-.0000	140 5.51	280 11.02	20 .79	66 2.60	12 .47	11 .43	12 .47	.030 .0012	13.5 .53	—
PH10_KX	330 — 12.99	285 +.000/-.052 11.220 +.000/-.0020	285 11.22	20 .78	—	95 +.035/-.0 3.740 +.0014/-.0000	160 6.30	310 12.20	20 .79	75 2.95	10 .39	15 .59	15 .59	.040 .0016	13.5 .53	—

Table No. 2 **"PHKX" Series**

Unit	S^4	T^4	V h7
PH3_KX	M5	7 .28	40 +.000/-.025 1.575 +.000/-.0010
PH4_KX	M6	11 .43	63 +.000/-.030 2.480 +.000/-.0012
PH5_KX	M6	11 .43	80 +.000/-.030 3.150 +.000/-.0012
PH7_KX	M8	14 .55	100 +.000/-.035 3.937 +.000/-.0014
PH8_KX	M10	18 .71	160 +.000/-.040 6.299 +.000/-.0016
PH9_KX	M16	24 .94	180 +.000/-.046 7.087 +.000/-.0018
PH10_KX	M20	30 1.18	200 +.000/-.046 7.874 +.000/-.0018

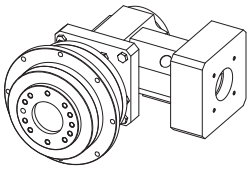
Table No. 3 **"PHKX" Series Dimensions (mm/inches)**

Unit	B	K	K^1	M	M^1	O
PH321_KX3	40 1.57	50 1.97	133.5 5.26	95.5 3.76	31 1.22	74 2.91
PH322_KX3	40 1.57	87 3.43	169.5 6.67	95.5 3.76	31 1.22	110 4.33
PH421_KX4	50 1.97	66 2.60	167 6.57	104 4.09	37.5 1.48	87 3.43
PH422_KX3	40 1.57	113 4.45	195.5 7.70	95.5 3.76	31 1.22	125.5 4.94
PH521_KX5	59 2.32	70 2.76	193 7.60	132 5.20	45 1.77	105 4.13
PH522_KX4	50 1.97	124.5 4.90	227.5 8.96	104 4.09	37.5 1.48	148.5 5.85
PH721_KX7	74 2.91	88 3.46	239 9.41	172.5 6.79	60 2.39	127 5.00
PH722_KX5	59 2.32	150 5.91	273 10.75	132 5.20	45 1.77	176 6.93
PH821_KX8	92 3.62	126 4.96	317.5 12.50	210 8.27	75 2.95	175.5 6.91
PH822_KX7	74 2.91	201 7.91	352 13.86	172.5 6.79	60 2.39	228 8.98
PH932_KX8	92 3.62	277.5 10.93	470.5 18.52	210 8.27	75 2.95	312.5 12.30
PH1032_KX8	92 3.62	307 2.09	500 19.69	210 8.27	75 2.95	333 13.11

Part No. Explanation

PH 4 2 1 F 0050 KX401VF 0020 MF

- **PH** – "PH" Series ServoFit Precision Planetary Gearhead
- **4** – Unit No.
- **2** – Generation No.
- **1** – No. of Stages (**1** = 1 Stage, **2** = 2 Stage)
- **F** – Output Flange
- **0050** – Ratio (**0050** = 5:1, Total Ratio 5 x 2 = 10:1)
- **KX401VF** – Right Angle Unit, Size **4** with Shaft and Flange
- **0020** – Ratio (**0020** = 2:1)
- **MF** – **M**otor Plate with **F**lexiAdapt Coupling

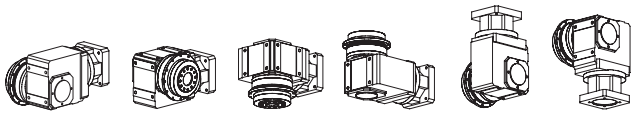


Typical 2 Stage Configuration

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions.
(See Page 229.)

See web site for drawings.

"PHK" Series–Right Angle ServoFit® Precision Planetary Gearhead Performance Specifications

		Size	PH5_K1	PH7_K1	PH7_K2	PH8_K2	PH8_K3
Acceleration Torque Maximum	M_{2B}	in.lbs. Nm	2,832 320	5,753 650	6,195 700	13,098 1,480	16,373 1,850
Output Torque Nominal	M_{2N}	in.lbs. Nm	1,947 220	3,894 440	3,894 440	8,762 990	11,063 1,250
Input Speed Maximum	n_{1MAX}	Continuous Cyclic	4,000 6,000	4,000 6,000	4,000 5,500	4,000 5,500	3,800 5,000
Torsional Backlash [1]	$\Delta\varphi$	arcmin	≤4	≤4	≤4.5	≤3.5	≤4
Torsional Stiffness Maximum	C_2	in.lbs./arcmin Nm/arcmin	504 57	903 102	858 97	2,009 227	1,487 168
Axial Load Maximum	F_{2AMAX}	lbs. N	934 4,150	1,384 6,150	1,384 6,150	2,261 10,050	2,261 10,050
Tilting Moment [2] **Maximum**	M_{2K}	in.lbs. Nm	3,894 440	2,593 1,500	2,593 1,500	30,975 3,500	30,975 3,500
Weight	m	pounds kg	50 22.5	59 26.8	82.2 37.3	129.2 58.6	140.2 63.6
Noise Level [3]	L_{PA}	dB(A)	≤63	≤63	≤64	≤64	≤65
Efficiency at Nominal Torque	η	%	≥93 - 96				
Lubrication			Synthetic Oil (ISO VG 150)				
Mounting Position (MUST BE SPECIFIED)			 EL1 EL2 EL3 EL4 EL5 EL6				
Direction of Rotation			See Page 248 for details.				
Ambient Temperature			0° C to +40°C (104° F) [Unit temperature ≤ 90° C Max.]				
Finish			Black (RAL 9005)				
Bearing Lifetime [4]	L_h	hours	L_h > 10,000 hours if M_{2K}/M_{2A} < 1.25 and > 1.00 L_h > 20,000 hours if M_{2K}/M_{2A} > 1.25 and < 1.50 L_h > 30,000 hours if M_{2K}/M_{2A} > 1.5				
Warranty			5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)				

1) Tested at 1.5% of nominal torque and recorded on the output side of the gearhead.
2) Rating based on output speed (n2) of 100 RPM. For values at other speeds see Page 240.
3) Measurement at one (1) meter distance with input speed (n1) of 2000 RPM.
4) M_{2A} equals actual tilting moment of the application. See Page 240 for calculation details.

WARNING: In order to insure that the specified torque ratings are attained, it is essential to attach the gear units to the machine with a grade 12.9 fastener.

Refer to Page 250 for ServoFit Precision Planetary Gearhead Selection Procedure.

"PHK" Series–Right Angle ServoFit® Precision Planetary Gearhead Features

The "PHK" Series combines the "PH" Series ServoFit Precision Planetary Gearheads with a reduced backlash SMS right angle Series “K” to provide a configuration that is a smooth, precise, and reliable drive with the benefit of direct mounting to many types of equipment without a coupling. All units are lubricated for life with synthetic oil and sealed to IP65 standards to prevent lubricant contamination for long life.

Some features are:

- High Axial Load Capacity
- Superior Torsional Stiffness
- Low Backlash
- Low Noise
- High Input Speed
- Advanced Helical Gear Technology
- Ratios up to 561:1
- Compact
- Wide Selection of IEC, NEMA, or Customized Motor Wide Plates
- 5 Year Limited Warranty (2 Year on bearings, seals, etc.)

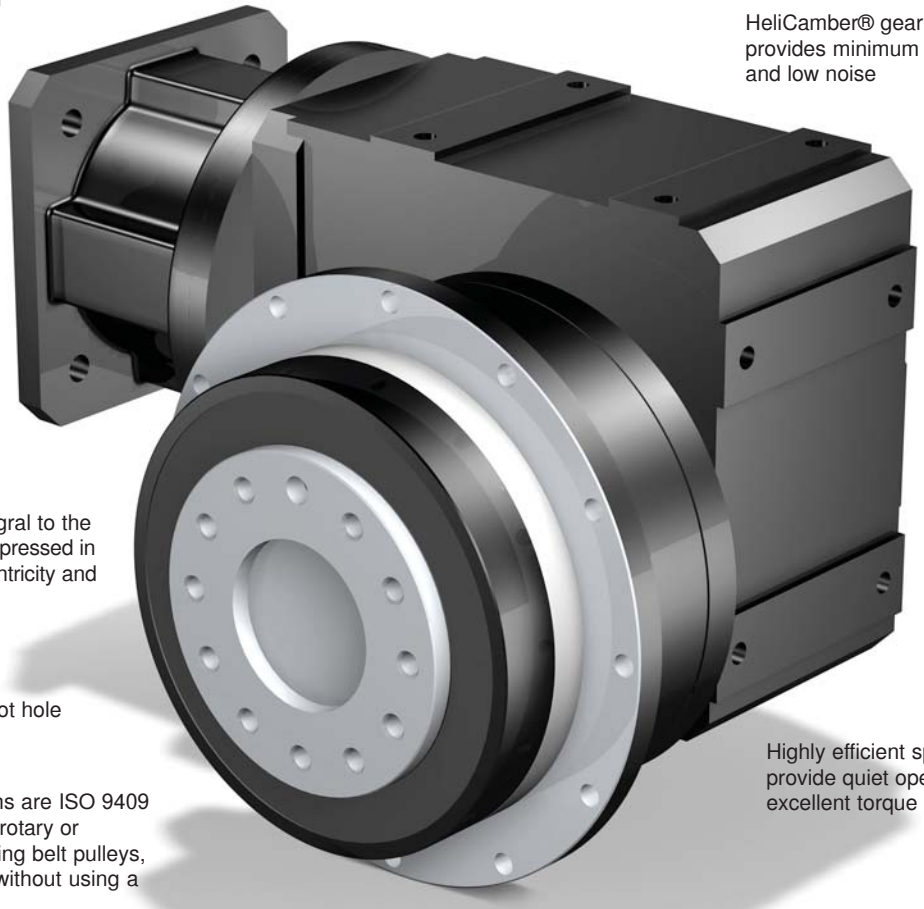
The patented motor coupling is designed to allow thermal expansion of the motor shaft — ensuring long motor life by preventing thrust load on the motor bearings.

The motor shaft adapter system allows installation of motor in minutes — no special tools required

Motor plate can easily be changed to fit your choice of motors

HeliCamber® gear technology provides minimum wear, low backlash, and low noise

Adapter bushings to fit all motor shafts — no key required



Motor plate pilot toleranced to fit your motor for precise concentricity

Ring gear machined integral to the housing — not welded or pressed in —provides greater concentricity and more precise alignment

Blind pilot hole

Highly efficient spiral bevel gearsets provide quiet operation and excellent torque carrying capacity.

The output flange dimensions are ISO 9409 and allow easy mounting to rotary or indexing tables, pinions, timing belt pulleys, transmission shafting, etc., without using a coupling.

FKM double-lip radial oil seals for continuous duty applications and very good chemical resistance.

Oversized tapered roller bearings and shafts for high radial load capacity and superior torsional stiffness

See web site for drawings.

"PHK" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal 1)		Output Torque Acceleration		Output Torque Peak 2)	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PH521_K102 with Motor Mounting Plate															
PH521F0040 K102VF0040 MT10	16.00	16/1	3,300	2,800	4,500	4.5	1.44	456	51.5	1,413	160	1,413	160	1,917	216
PH521F0040 K102VF0040 MT20	16.00	16/1	3,300	2,800	4,500	4.5	2.04	456	51.5	1,860	210	2,662	300	3,610	408
PH521F0050 K102VF0040 MT10	20.00	20/1	3,300	2,800	4,500	4	1.49	532	60.1	1,767	199	1,767	199	2,396	271
PH521F0050 K102VF0040 MT20	20.00	20/1	3,300	2,800	4,500	4	2.09	532	60.1	1,949	220	2,835	320	4,513	509
PH521F0050 K102VF0056 MT10	27.84	7600/273	3,300	2,800	4,500	4	1.32	532	60.1	1,949	220	2,459	278	3,336	377
PH521F0050 K102VF0056 MT20	27.84	7600/273	3,300	2,800	4,500	4	1.92	532	60.1	1,949	220	2,835	320	5,315	600
PH521F0050 K102VF0060 MT10	30.00	30/1	3,300	2,800	4,500	4	1.08	532	60.1	1,949	220	2,511	283	3,405	384
PH521F0050 K102VF0060 MT20	30.00	30/1	3,300	2,800	4,500	4	1.68	532	60.1	1,949	220	2,835	320	5,315	600
PH521F0050 K102VF0066 MT10	33.22	299/9	3,600	3,300	5,000	4	1.01	532	60.1	1,949	220	2,734	309	3,708	419
PH521F0050 K102VF0066 MT20	33.22	299/9	3,500	3,300	5,000	4	1.61	532	60.1	1,949	220	2,835	320	5,315	600
PH521F0050 K102VF0083 MT10	41.55	1911/46	3,600	3,300	5,000	4	0.89	532	60.1	1,949	220	2,835	320	4,455	503
PH521F0050 K102VF0083 MT20	41.55	1911/46	3,500	3,300	5,000	4	1.49	532	60.1	1,949	220	2,835	320	5,315	600
PH521F0050 K102VF0092 MT10	46.25	8740/189	3,600	3,300	5,000	4	0.95	532	60.1	1,949	220	2,835	320	5,161	583
PH521F0050 K102VF0092 MT20	46.25	8740/189	3,500	3,300	5,000	4	1.55	532	60.1	1,949	220	2,835	320	5,315	600
PH521F0050 K102VF0115 MT10	57.83	1330/23	3,600	3,300	5,000	4	0.85	532	60.1	1,949	220	2,835	320	5,315	600
PH521F0050 K102VF0115 MT20	57.83	1330/23	3,500	3,300	5,000	4	1.45	532	60.1	1,949	220	2,835	320	5,315	600
PH521F0050 K102VF0140 MT10	70.57	494/7	4,000	3,800	5,500	4	0.79	532	60.1	1,949	220	2,835	320	5,315	600
PH521F0050 K102VF0140 MT20	70.57	494/7	3,500	3,500	5,000	4	1.39	532	60.1	1,949	220	2,835	320	5,315	600
PH521F0050 K102VF0175 MT10	87.82	10450/119	4,000	3,800	5,500	4	0.74	532	60.1	1,949	220	2,835	320	5,315	600
PH521F0050 K102VF0175 MT20	87.82	10450/119	3,500	3,500	5,000	4	1.34	532	60.1	1,949	220	2,835	320	5,315	600
PH521F0050 K102VF0230 MT10	116.3	5700/49	4,000	4,000	6,000	4	0.69	532	60.1	1,949	220	2,835	320	5,315	600
PH521F0050 K102VF0230 MT20	116.3	5700/49	3,500	3,500	5,000	4	1.29	532	60.1	1,949	220	2,835	320	5,315	600
PH521F0050 K102VF0280 MT10	140.2	2945/21	4,000	4,000	6,000	4	0.67	532	60.1	1,949	220	2,835	320	5,315	600
PH521F0050 K102VF0280 MT20	140.2	2945/21	3,500	3,500	5,000	4	1.27	532	60.1	1,949	220	2,835	320	5,315	600
PH521F0050 K102VF0350 MT10	175.5	3686/21	4,000	4,000	6,000	4	0.64	532	60.1	1,949	220	2,835	320	5,315	600
PH521F0050 K102VF0350 MT20	175.5	3686/21	3,500	3,500	5,000	4	1.24	532	60.1	1,949	220	2,835	320	5,315	600
PH521F0050 K102VF0470 MT10	234.6	11495/49	4,000	4,000	6,000	4	0.63	532	60.1	1,949	220	2,835	320	5,315	600
PH521F0050 K102VF0560 MT10	280.5	5890/21	4,000	4,000	6,000	4	0.62	532	60.1	1,949	220	2,835	320	5,315	600

1) Maximum torque for continuous input RPM - horizontal output position.

2) Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 5, 6
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL3 and EL4
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"PHK" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum			Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque					
			Continuous		Cyclic					Nominal [1]		Acceleration		Peak [2]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PH721_K102 with Motor Mounting Plate Continued Next Page															
PH721F0070 K102VF0040 MT10	28.00	28/1	3,300	2,800	4,500	4	1.51	957	108.0	2,474	279	2,474	279	3,355	379
PH721F0070 K102VF0040 MT20	28.00	28/1	3,300	2,800	4,500	4	2.11	957	108.0	3,443	389	4,658	526	6,318	713
PH721F0070 K102VF0056 MT10	38.98	1520/39	3,300	2,800	4,500	4	1.33	957	108.0	3,443	389	3,443	389	4,670	527
PH721F0070 K102VF0056 MT20	38.98	1520/39	3,300	2,800	4,500	4	1.93	957	108.0	3,844	434	5,758	650	8,794	993
PH721F0100 K102VF0040 MT10	40.00	40/1	3,300	2,800	4,500	3.5	1.47	884	99.8	2,657	300	3,534	399	4,793	541
PH721F0100 K102VF0040 MT20	40.00	40/1	3,300	2,800	4,500	3.5	2.07	884	99.8	2,657	300	4,429	500	8,858	1,000
PH721F0070 K102VF0060 MT10	42.00	42/1	3,300	2,800	4,500	4	1.09	957	108.0	3,515	397	3,515	397	4,768	538
PH721F0070 K102VF0060 MT20	42.00	42/1	3,300	2,800	4,500	4	1.69	957	108.0	3,898	440	5,758	650	8,977	1,013
PH721F0070 K102VF0066 MT10	46.51	2093/45	3,600	3,300	5,000	4	1.02	957	108.0	3,827	432	3,827	432	5,191	586
PH721F0070 K102VF0066 MT20	46.51	2093/45	3,500	3,300	5,000	4	1.62	957	108.0	3,898	440	5,758	650	9,774	1,103
PH721F0100 K102VF0056 MT10	55.68	15200/273	3,300	2,800	4,500	3.5	1.31	884	99.8	2,657	300	4,429	500	6,672	753
PH721F0100 K102VF0056 MT20	55.68	15200/273	3,300	2,800	4,500	3.5	1.91	884	99.8	2,657	300	4,429	500	8,858	1,000
PH721F0070 K102VF0083 MT10	58.16	13377/230	3,600	3,300	5,000	4	0.90	957	108.0	3,898	440	4,598	519	6,237	704
PH721F0070 K102VF0083 MT20	58.16	13377/230	3,500	3,300	5,000	4	1.50	957	108.0	3,898	440	5,758	650	11,127	1,256
PH721F0100 K102VF0060 MT10	60.00	60/1	3,300	2,800	4,500	3.5	1.08	884	99.8	2,657	300	4,429	500	6,811	769
PH721F0100 K102VF0060 MT20	60.00	60/1	3,300	2,800	4,500	3.5	1.68	884	99.8	2,657	300	4,429	500	8,858	1,000
PH721F0070 K102VF0092 MT10	64.74	1748/27	3,600	3,300	5,000	4	0.95	957	108.0	3,898	440	5,328	601	7,226	816
PH721F0070 K102VF0092 MT20	64.74	1748/27	3,500	3,300	5,000	4	1.55	957	108.0	3,898	440	5,758	650	11,127	1,256
PH721F0100 K102VF0066 MT10	66.44	598/9	3,600	3,300	5,000	3.5	1.00	884	99.8	2,657	300	4,429	500	7,415	837
PH721F0100 K102VF0066 MT20	66.44	598/9	3,500	3,300	5,000	3.5	1.60	884	99.8	2,657	300	4,429	500	8,858	1,000
PH721F0070 K102VF0100 MT10	70.98	3549/50	4,000	3,800	5,500	4	0.82	957	108.0	3,898	440	5,419	612	7,350	830
PH721F0070 K102VF0100 MT20	70.98	3549/50	3,500	3,500	5,000	4	1.42	957	108.0	3,898	440	5,758	650	11,127	1,256
PH721F0070 K102VF0115 MT10	80.96	1862/23	3,600	3,300	5,000	4	0.85	957	108.0	3,898	440	5,758	650	8,680	980
PH721F0070 K102VF0115 MT20	80.96	1862/23	3,500	3,300	5,000	4	1.45	957	108.0	3,898	440	5,758	650	11,127	1,256
PH721F0100 K102VF0083 MT10	83.09	1911/23	3,600	3,300	5,000	3.5	0.89	884	99.8	2,657	300	4,429	500	8,858	1,000
PH721F0100 K102VF0083 MT20	83.09	1911/23	3,500	3,300	5,000	3.5	1.49	884	99.8	2,657	300	4,429	500	8,858	1,000
PH721F0070 K102VF0125 MT10	88.33	3003/34	4,000	3,800	5,500	4	0.76	957	108.0	3,898	440	5,758	650	8,781	991
PH721F0070 K102VF0125 MT20	88.33	3003/34	3,500	3,500	5,000	4	1.36	957	108.0	3,898	440	5,758	650	11,127	1,256
PH721F0100 K102VF0092 MT10	92.49	17480/189	3,600	3,300	5,000	3.5	0.94	884	99.8	2,657	300	4,429	500	8,858	1,000
PH721F0100 K102VF0092 MT20	92.49	17480/189	3,500	3,300	5,000	3.5	1.54	884	99.8	2,657	300	4,429	500	8,858	1,000
PH721F0070 K102VF0140 MT10	98.80	494/5	4,000	3,800	5,500	4	0.79	957	108.0	3,898	440	5,758	650	10,230	1,155
PH721F0070 K102VF0140 MT20	98.80	494/5	3,500	3,500	5,000	4	1.39	957	108.0	3,898	440	5,758	650	11,127	1,256
PH721F0100 K102VF0115 MT10	115.7	2660/23	3,600	3,300	5,000	3.5	0.85	884	99.8	2,657	300	4,429	500	8,858	1,000
PH721F0100 K102VF0115 MT20	115.7	2660/23	3,500	3,300	5,000	3.5	1.45	884	99.8	2,657	300	4,429	500	8,858	1,000
PH721F0070 K102VF0165 MT10	117.0	117/1	4,000	4,000	6,000	4	0.70	957	108.0	3,898	440	5,758	650	11,081	1,251
PH721F0070 K102VF0165 MT20	117.0	117/1	3,500	3,500	5,000	4	1.30	957	108.0	3,898	440	5,758	650	11,081	1,251

Motor Shaft

Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38

Mounting Position and Output Side must be specified when ordered.

See web site for drawings.

"PHK" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [1]		Output Torque Acceleration		Output Torque Peak [2]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PH721_K102 with Motor Mounting Plate Continued															
PH721F0070 K102VF0175 MT10	122.9	2090/17	4,000	3,800	5,500	4	0.74	957	108.0	3,898	440	5,758	650	11,127	1,256
PH721F0070 K102VF0175 MT20	122.9	2090/17	3,500	3,500	5,000	4	1.34	957	108.0	3,898	440	5,758	650	11,127	1,256
PH721F0070 K102VF0200 MT10	141.1	2821/20	4,000	4,000	6,000	4	0.67	957	108.0	3,898	440	5,758	650	11,127	1,256
PH721F0070 K102VF0200 MT20	141.1	2821/20	3,500	3,500	5,000	4	1.27	957	108.0	3,898	440	5,758	650	11,127	1,256
PH721F0070 K102VF0230 MT10	162.9	1140/7	4,000	4,000	6,000	4	0.69	957	108.0	3,898	440	5,758	650	11,127	1,256
PH721F0070 K102VF0230 MT20	162.9	1140/7	3,500	3,500	5,000	4	1.29	957	108.0	3,898	440	5,758	650	11,127	1,256
PH721F0070 K102VF0250 MT10	176.5	8827/50	4,000	4,000	6,000	4	0.65	957	108.0	3,898	440	5,758	650	11,127	1,256
PH721F0070 K102VF0250 MT20	176.5	8827/50	3,500	3,500	5,000	4	1.25	957	108.0	3,898	440	5,758	650	11,127	1,256
PH721F0070 K102VF0280 MT10	196.3	589/3	4,000	4,000	6,000	4	0.67	957	108.0	3,898	440	5,758	650	11,127	1,256
PH721F0070 K102VF0280 MT20	196.3	589/3	3,500	3,500	5,000	4	1.27	957	108.0	3,898	440	5,758	650	11,127	1,256
PH721F0100 K102VF0230 MT10	232.7	11400/49	4,000	4,000	6,000	3.5	0.69	884	99.8	2,657	300	4,429	500	8,858	1,000
PH721F0100 K102VF0230 MT20	232.7	11400/49	3,500	3,500	5,000	3.5	1.29	884	99.8	2,657	300	4,429	500	8,858	1,000
PH721F0070 K102VF0340 MT10	235.9	4719/20	4,000	4,000	6,000	4	0.63	957	108.0	3,898	440	5,214	589	9,429	1,064
PH721F0070 K102VF0350 MT10	245.7	3686/15	4,000	4,000	6,000	4	0.64	957	108.0	3,898	440	5,758	650	11,127	1,256
PH721F0070 K102VF0350 MT20	245.7	3686/15	3,500	3,500	5,000	4	1.24	957	108.0	3,898	440	5,758	650	11,127	1,256
PH721F0100 K102VF0280 MT10	280.5	5890/21	4,000	4,000	6,000	3.5	0.67	884	99.8	2,657	300	4,429	500	8,858	1,000
PH721F0100 K102VF0280 MT20	280.5	5890/21	3,500	3,500	5,000	3.5	1.27	884	99.8	2,657	300	4,429	500	8,858	1,000
PH721F0070 K102VF0400 MT10	282.1	2821/10	4,000	4,000	6,000	4	0.62	957	108.0	3,659	413	4,390	496	6,169	696
PH721F0070 K102VF0470 MT10	328.4	2299/7	4,000	4,000	6,000	4	0.63	957	108.0	3,898	440	5,758	650	11,127	1,256
PH721F0100 K102VF0350 MT10	351.1	7372/21	4,000	4,000	6,000	3.5	0.64	884	99.8	2,657	300	4,429	500	8,858	1,000
PH721F0100 K102VF0350 MT20	351.1	7372/21	3,500	3,500	5,000	3.5	1.24	884	99.8	2,657	300	4,429	500	8,858	1,000
PH721F0070 K102VF0500 MT10	352.2	35217/100	4,000	4,000	6,000	4	0.62	957	108.0	2,973	336	3,567	403	6,451	728
PH721F0070 K102VF0560 MT10	392.7	1178/3	4,000	4,000	6,000	4	0.62	957	108.0	3,898	440	5,758	650	8,586	969
PH721F0100 K102VF0470 MT10	469.2	22990/49	4,000	4,000	6,000	3.5	0.63	884	99.8	2,657	300	4,429	500	8,858	1,000
PH721F0070 K102VF0700 MT10	490.2	2451/5	4,000	4,000	6,000	4	0.61	957	108.0	3,898	440	4,966	561	8,980	1,014
PH721F0100 K102VF0560 MT10	561.0	11780/21	4,000	4,000	6,000	3.5	0.62	884	99.8	2,657	300	4,429	500	8,858	1,000
PH721_K202 with Motor Mounting Plate Continued Next Page															
PH721F0040 K202VF0040 MT10	16.00	16/1	3,000	2,600	4,000	4.5	3.36	785	88.7	1,508	170	1,508	170	2,045	231
PH721F0040 K202VF0040 MT20	16.00	16/1	3,000	2,600	4,000	4.5	3.96	785	88.7	3,513	397	5,807	656	9,041	1,021
PH721F0040 K202VF0040 MT30	16.00	16/1	3,000	2,600	4,000	4.5	8.76	785	88.7	3,513	397	5,935	670	9,041	1,021
PH721F0050 K202VF0040 MT10	20.00	20/1	3,000	2,600	4,000	4	3.24	963	108.8	1,885	213	1,885	213	2,556	289
PH721F0050 K202VF0040 MT20	20.00	20/1	3,000	2,600	4,000	4	3.84	963	108.8	3,898	440	6,201	700	11,302	1,276
PH721F0050 K202VF0040 MT30	20.00	20/1	3,000	2,600	4,000	4	8.64	963	108.8	3,898	440	6,201	700	11,302	1,276
PH721F0050 K202VF0052 MT20	25.89	10535/407	3,000	2,600	4,000	4	2.97	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0052 MT30	25.89	10535/407	3,000	2,600	4,000	4	7.77	963	108.8	3,898	440	6,201	700	12,401	1,400

[1] Maximum torque for continuous input RPM - horizontal output position.

[2] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 5, 6
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL3 and EL4
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"PHK" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal 1)		Output Torque Acceleration		Output Torque Peak 2)	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PH721_K202 with Motor Mounting Plate Continued															
PH721F0050 K202VF0060 MT10	30.00	30/1	3,000	2,600	4,000	4	2.40	963	108.8	2,779	314	2,779	314	3,769	425
PH721F0050 K202VF0060 MT20	30.00	30/1	3,000	2,600	4,000	4	3.00	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0060 MT30	30.00	30/1	3,000	2,600	4,000	4	7.80	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0067 MT10	33.42	11395/341	3,500	3,100	4,500	4	1.77	963	108.8	2,922	330	2,922	330	3,964	447
PH721F0050 K202VF0067 MT20	33.42	11395/341	3,500	3,100	4,500	4	2.37	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0067 MT30	33.42	11395/341	3,500	3,100	4,000	4	7.17	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0084 MT10	41.99	12470/297	3,500	3,100	4,500	4	1.42	963	108.8	3,547	400	3,547	400	4,811	543
PH721F0050 K202VF0084 MT20	41.99	12470/297	3,500	3,100	4,500	4	2.02	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0084 MT30	41.99	12470/297	3,500	3,100	4,000	4	6.82	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0092 MT10	45.95	11395/248	3,500	3,100	4,500	4	1.57	963	108.8	3,898	440	4,019	454	5,450	615
PH721F0050 K202VF0092 MT20	45.95	11395/248	3,500	3,100	4,500	4	2.17	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0092 MT30	45.95	11395/248	3,500	3,100	4,000	4	6.97	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0115 MT10	57.73	6235/108	3,500	3,100	4,500	4	1.29	963	108.8	3,898	440	4,877	551	6,615	747
PH721F0050 K202VF0115 MT20	57.73	6235/108	3,500	3,100	4,500	4	1.89	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0115 MT30	57.73	6235/108	3,500	3,100	4,000	4	6.69	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0140 MT10	69.26	14405/208	3,900	3,500	5,000	4	1.12	963	108.8	3,898	440	5,645	637	7,657	864
PH721F0050 K202VF0140 MT20	69.26	14405/208	3,500	3,500	5,000	4	1.72	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0140 MT30	69.26	14405/208	3,500	3,500	4,000	4	6.52	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0175 MT10	87.35	2795/32	3,900	3,500	5,000	4	0.97	963	108.8	3,898	440	6,201	700	9,285	1,048
PH721F0050 K202VF0175 MT20	87.35	2795/32	3,500	3,500	5,000	4	1.57	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0175 MT30	87.35	2795/32	3,500	3,500	4,000	4	6.37	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0230 MT10	115.9	14835/128	4,000	3,900	5,500	4	0.84	963	108.8	3,898	440	6,201	700	11,652	1,315
PH721F0050 K202VF0230 MT20	115.9	14835/128	3,500	3,500	5,000	4	1.44	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0230 MT30	115.9	14835/128	3,500	3,500	4,000	4	6.24	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0280 MT10	139.8	559/4	4,000	3,900	5,500	4	0.78	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0280 MT20	139.8	559/4	3,500	3,500	5,000	4	1.38	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0280 MT30	139.8	559/4	3,500	3,500	4,000	4	6.18	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0350 MT10	172.8	9675/56	4,000	3,900	5,500	4	0.73	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0350 MT20	172.8	9675/56	3,500	3,500	5,000	4	1.33	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0350 MT30	172.8	9675/56	3,500	3,500	4,000	4	6.13	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0460 MT10	231.1	1849/8	4,000	3,900	5,500	4	0.68	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0460 MT20	231.1	1849/8	3,500	3,500	5,000	4	1.28	963	108.8	3,898	440	6,201	700	12,401	1,400
PH721F0050 K202VF0560 MT10	277.7	6665/24	4,000	3,900	5,500	4	0.65	963	108.8	3,898	440	6,201	700	12,101	1,366

Motor Shaft

Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38

Mounting Position and Output Side must be specified when ordered.

See web site for drawings.

"PHK" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

PH821_K202 with Motor Mounting Plate Continued Next Page

Part Number	Reducer Ratio i		Input RPM Maximum			Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque					
			Continuous		Cyclic					Nominal [1]		Acceleration		Peak [2]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PH821F0070 K202VF0040 MT10	28.00	28/1	3,000	2,600	4,000	3.5	3.55	2,165	244.4	2,639	298	2,639	298	3,579	404
PH821F0070 K202VF0040 MT20	28.00	28/1	3,000	2,600	4,000	3.5	4.15	2,165	244.4	6,148	694	10,162	1,147	15,822	1,786
PH821F0070 K202VF0040 MT30	28.00	28/1	3,000	2,600	4,000	3.5	8.95	2,165	244.4	6,148	694	10,386	1,173	15,822	1,786
PH821F0070 K202VF0044 MT10	30.55	336/11	3,000	2,600	4,000	3.5	3.13	2,165	244.4	2,829	319	2,829	319	3,838	433
PH821F0070 K202VF0044 MT20	30.55	336/11	3,000	2,600	4,000	3.5	3.73	2,165	244.4	6,329	715	10,692	1,207	16,966	1,915
PH821F0070 K202VF0044 MT30	30.55	336/11	3,000	2,600	4,000	3.5	8.53	2,165	244.4	6,329	715	10,692	1,207	16,966	1,915
PH821F0070 K202VF0052 MT20	36.24	14749/407	3,000	2,600	4,000	3.5	3.15	2,165	244.4	6,700	756	11,319	1,278	19,863	2,242
PH821F0070 K202VF0052 MT30	36.24	14749/407	3,000	2,600	4,000	3.5	7.95	2,165	244.4	6,700	756	11,319	1,278	19,863	2,242
PH821F0100 K202VF0040 MT10	40.00	40/1	3,000	2,600	4,000	3.5	3.31	2,153	243.0	3,770	426	3,770	426	5,113	577
PH821F0100 K202VF0040 MT20	40.00	40/1	3,000	2,600	4,000	3.5	3.91	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0100 K202VF0040 MT30	40.00	40/1	3,000	2,600	4,000	3.5	8.71	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0070 K202VF0060 MT10	42.00	42/1	3,000	2,600	4,000	3.5	2.53	2,165	244.4	3,890	439	3,890	439	5,277	596
PH821F0070 K202VF0060 MT20	42.00	42/1	3,000	2,600	4,000	3.5	3.13	2,165	244.4	7,038	795	11,890	1,342	23,326	2,633
PH821F0070 K202VF0060 MT30	42.00	42/1	3,000	2,600	4,000	3.5	7.93	2,165	244.4	7,038	795	11,890	1,342	23,326	2,633
PH821F0070 K202VF0067 MT10	46.78	15953/341	3,500	3,100	4,500	3.5	1.88	2,165	244.4	4,091	462	4,091	462	5,549	626
PH821F0070 K202VF0067 MT20	46.78	15953/341	3,500	3,100	4,500	3.5	2.48	2,165	244.4	7,295	824	12,325	1,391	24,531	2,769
PH821F0070 K202VF0067 MT30	46.78	15953/341	3,500	3,100	4,000	3.5	7.28	2,165	244.4	7,295	824	12,325	1,391	24,531	2,769
PH821F0070 K202VF0071 MT20	49.83	14749/296	3,000	2,600	4,000	3.5	2.72	2,165	244.4	7,450	841	12,586	1,421	24,900	2,811
PH821F0070 K202VF0071 MT30	49.83	14749/296	3,000	2,600	4,000	3.5	7.52	2,165	244.4	7,450	841	12,586	1,421	24,900	2,811
PH821F0100 K202VF0052 MT20	51.77	21070/407	3,000	2,600	4,000	3.5	3.00	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0100 K202VF0052 MT30	51.77	21070/407	3,000	2,600	4,000	3.5	7.80	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0070 K202VF0084 MT10	58.78	17458/297	3,500	3,100	4,500	3.5	1.49	2,165	244.4	4,966	561	4,966	561	6,735	760
PH821F0070 K202VF0084 MT20	58.78	17458/297	3,500	3,100	4,500	3.5	2.09	2,165	244.4	7,872	889	13,096	1,478	24,900	2,811
PH821F0070 K202VF0084 MT30	58.78	17458/297	3,500	3,100	4,000	3.5	6.89	2,165	244.4	7,872	889	13,096	1,478	24,900	2,811
PH821F0100 K202VF0060 MT10	60.00	60/1	3,000	2,600	4,000	3.5	2.43	2,153	243.0	5,557	627	5,557	627	7,538	851
PH821F0100 K202VF0060 MT20	60.00	60/1	3,000	2,600	4,000	3.5	3.03	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0100 K202VF0060 MT30	60.00	60/1	3,000	2,600	4,000	3.5	7.83	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0070 K202VF0092 MT10	64.33	15953/248	3,500	3,100	4,500	3.5	1.63	2,165	244.4	5,626	635	5,626	635	7,631	861
PH821F0070 K202VF0092 MT20	64.33	15953/248	3,500	3,100	4,500	3.5	2.23	2,165	244.4	8,113	916	13,096	1,478	24,900	2,811
PH821F0070 K202VF0092 MT30	64.33	15953/248	3,500	3,100	4,000	3.5	7.03	2,165	244.4	8,113	916	13,096	1,478	24,900	2,811
PH821F0100 K202VF0067 MT10	66.83	22790/341	3,500	3,100	4,500	3.5	1.80	2,153	243.0	5,845	660	5,845	660	7,927	895
PH821F0100 K202VF0067 MT20	66.83	22790/341	3,500	3,100	4,500	3.5	2.40	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0100 K202VF0067 MT30	66.83	22790/341	3,500	3,100	4,000	3.5	7.20	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0070 K202VF0100 MT10	70.51	20167/286	3,900	3,500	5,000	3.5	1.26	2,165	244.4	5,748	649	5,748	649	7,796	880
PH821F0070 K202VF0100 MT20	70.51	20167/286	3,500	3,500	5,000	3.5	1.86	2,165	244.4	8,365	944	13,096	1,478	24,900	2,811
PH821F0070 K202VF0100 MT30	70.51	20167/286	3,500	3,500	4,000	3.5	6.66	2,165	244.4	8,365	944	13,096	1,478	24,900	2,811

[1] Maximum torque for continuous input RPM - horizontal output position.

[2] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 5, 6
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL3 and EL4
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"PHK" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal 1)		Output Torque Acceleration		Output Torque Peak 2)	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PH821_K202 with Motor Mounting Plate Continued Next Page															
PH821F0070 K202VF0115 MT10	80.82	8729/108	3,500	3,100	4,500	3.5	1.33	2,165	244.4	6,828	771	6,828	771	9,261	1,046
PH821F0070 K202VF0115 MT20	80.82	8729/108	3,500	3,100	4,500	3.5	1.93	2,165	244.4	8,754	988	13,096	1,478	24,900	2,811
PH821F0070 K202VF0115 MT30	80.82	8729/108	3,500	3,100	4,000	3.5	6.73	2,165	244.4	8,754	988	13,096	1,478	24,900	2,811
PH821F0100 K202VF0084 MT10	83.97	24940/297	3,500	3,100	4,500	3.5	1.44	2,153	243.0	7,086	800	7,094	801	9,622	1,086
PH821F0100 K202VF0084 MT20	83.97	24940/297	3,500	3,100	4,500	3.5	2.04	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0100 K202VF0084 MT30	83.97	24940/297	3,500	3,100	4,000	3.5	6.84	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0070 K202VF0125 MT10	88.94	3913/44	3,900	3,500	5,000	3.5	1.06	2,165	244.4	6,971	787	6,971	787	9,454	1,067
PH821F0070 K202VF0125 MT20	88.94	3913/44	3,500	3,500	5,000	3.5	1.66	2,165	244.4	8,858	1,000	13,096	1,478	24,900	2,811
PH821F0070 K202VF0125 MT30	88.94	3913/44	3,500	3,500	4,000	3.5	6.46	2,165	244.4	8,858	1,000	13,096	1,478	24,900	2,811
PH821F0100 K202VF0092 MT10	91.90	11395/124	3,500	3,100	4,500	3.5	1.58	2,153	243.0	7,086	800	8,037	907	10,901	1,231
PH821F0100 K202VF0092 MT20	91.90	11395/124	3,500	3,100	4,500	3.5	2.18	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0100 K202VF0092 MT30	91.90	11395/124	3,500	3,100	4,000	3.5	6.98	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0070 K202VF0140 MT10	96.96	20167/208	3,900	3,500	5,000	3.5	1.15	2,165	244.4	7,903	892	7,903	892	10,720	1,210
PH821F0070 K202VF0140 MT20	96.96	20167/208	3,500	3,500	5,000	3.5	1.75	2,165	244.4	8,858	1,000	13,096	1,478	24,900	2,811
PH821F0070 K202VF0140 MT30	96.96	20167/208	3,500	3,500	4,000	3.5	6.55	2,165	244.4	8,858	1,000	13,096	1,478	24,900	2,811
PH821F0100 K202VF0115 MT10	115.5	6235/54	3,500	3,100	4,500	3.5	1.30	2,153	243.0	7,086	800	9,755	1,101	13,231	1,494
PH821F0100 K202VF0115 MT20	115.5	6235/54	3,500	3,100	4,500	3.5	1.90	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0100 K202VF0115 MT30	115.5	6235/54	3,500	3,100	4,000	3.5	6.70	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0070 K202VF0170 MT10	118.0	20769/176	4,000	3,900	5,500	3.5	0.89	2,165	244.4	8,747	987	8,747	987	11,864	1,339
PH821F0070 K202VF0170 MT20	118.0	20769/176	3,500	3,500	5,000	3.5	1.49	2,165	244.4	8,858	1,000	13,096	1,478	24,900	2,811
PH821F0070 K202VF0170 MT30	118.0	20769/176	3,500	3,500	4,000	3.5	6.29	2,165	244.4	8,858	1,000	13,096	1,478	24,900	2,811
PH821F0070 K202VF0175 MT10	122.3	3913/32	3,900	3,500	5,000	3.5	0.99	2,165	244.4	8,858	1,000	9,584	1,082	13,000	1,468
PH821F0070 K202VF0175 MT20	122.3	3913/32	3,500	3,500	5,000	3.5	1.59	2,165	244.4	8,858	1,000	13,096	1,478	24,900	2,811
PH821F0070 K202VF0175 MT30	122.3	3913/32	3,500	3,500	4,000	3.5	6.39	2,165	244.4	8,858	1,000	13,096	1,478	24,900	2,811
PH821F0100 K202VF0140 MT10	138.5	14405/104	3,900	3,500	5,000	3.5	1.13	2,153	243.0	7,086	800	10,630	1,200	15,314	1,729
PH821F0100 K202VF0140 MT20	138.5	14405/104	3,500	3,500	5,000	3.5	1.73	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0100 K202VF0140 MT30	138.5	14405/104	3,500	3,500	4,000	3.5	6.53	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0070 K202VF0200 MT10	142.3	7826/55	4,000	3,900	5,500	3.5	0.81	2,165	244.4	8,858	1,000	10,109	1,141	13,711	1,548
PH821F0070 K202VF0200 MT20	142.3	7826/55	3,500	3,500	5,000	3.5	1.41	2,165	244.4	8,858	1,000	13,096	1,478	24,900	2,811
PH821F0070 K202VF0200 MT30	142.3	7826/55	3,500	3,500	4,000	3.5	6.21	2,165	244.4	8,858	1,000	13,096	1,478	24,900	2,811
PH821F0070 K202VF0230 MT10	162.3	20769/128	4,000	3,900	5,500	3.5	0.85	2,165	244.4	8,858	1,000	12,028	1,358	16,313	1,842
PH821F0070 K202VF0230 MT20	162.3	20769/128	3,500	3,500	5,000	3.5	1.45	2,165	244.4	8,858	1,000	13,096	1,478	24,900	2,811
PH821F0070 K202VF0230 MT30	162.3	20769/128	3,500	3,500	4,000	3.5	6.25	2,165	244.4	8,858	1,000	13,096	1,478	24,900	2,811
PH821F0100 K202VF0175 MT10	174.7	2795/16	3,900	3,500	5,000	3.5	0.98	2,153	243.0	7,086	800	10,630	1,200	18,571	2,097
PH821F0100 K202VF0175 MT20	174.7	2795/16	3,500	3,500	5,000	3.5	1.58	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0100 K202VF0175 MT30	174.7	2795/16	3,500	3,500	4,000	3.5	6.38	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400

Motor Shaft

Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38

Mounting Position and Output Side must be specified when ordered.

See web site for drawings.

"PHK" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

PH821_K202 with Motor Mounting Plate Continued

Part Number	Reducer Ratio i		Input RPM Maximum			Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [1]		Acceleration		Peak [2]	
			Continuous		Cyclic					$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PH821F0070 K202VF0250 MT10	175.9	1935/11	4,000	3,900	5,500	3.5	0.75	2,165	244.4	8,858	1,000	11,927	1,346	16,177	1,826
PH821F0070 K202VF0250 MT20	175.9	1935/11	3,500	3,500	5,000	3.5	1.35	2,165	244.4	8,858	1,000	13,096	1,478	24,900	2,811
PH821F0070 K202VF0250 MT30	175.9	1935/11	3,500	3,500	4,000	3.5	6.15	2,165	244.4	8,858	1,000	13,096	1,478	24,900	2,811
PH821F0070 K202VF0280 MT10	195.7	3913/20	4,000	3,900	5,500	3.5	0.78	2,165	244.4	8,858	1,000	13,096	1,478	18,853	2,128
PH821F0070 K202VF0280 MT20	195.7	3913/20	3,500	3,500	5,000	3.5	1.38	2,165	244.4	8,858	1,000	13,096	1,478	24,900	2,811
PH821F0070 K202VF0280 MT30	195.7	3913/20	3,500	3,500	4,000	3.5	6.18	2,165	244.4	8,858	1,000	13,096	1,478	24,900	2,811
PH821F0100 K202VF0230 MT10	231.8	14835/64	4,000	3,900	5,500	3.5	0.84	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0100 K202VF0230 MT20	231.8	14835/64	3,500	3,500	5,000	3.5	1.44	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0100 K202VF0230 MT30	231.8	14835/64	3,500	3,500	4,000	3.5	6.24	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0070 K202VF0340 MT10	235.3	12943/55	4,000	3,900	5,500	3.5	0.69	2,165	244.4	8,858	1,000	11,001	1,242	19,896	2,246
PH821F0070 K202VF0340 MT20	235.3	12943/55	3,500	3,500	5,000	3.5	1.29	2,165	244.4	8,858	1,000	11,001	1,242	19,896	2,246
PH821F0070 K202VF0350 MT10	241.9	1935/8	4,000	3,900	5,500	3.5	0.73	2,165	244.4	8,858	1,000	13,096	1,478	22,244	2,511
PH821F0070 K202VF0350 MT20	241.9	1935/8	3,500	3,500	5,000	3.5	1.33	2,165	244.4	8,858	1,000	13,096	1,478	24,900	2,811
PH821F0070 K202VF0350 MT30	241.9	1935/8	3,500	3,500	4,000	3.5	6.13	2,165	244.4	8,858	1,000	13,096	1,478	24,900	2,811
PH821F0100 K202VF0280 MT10	279.5	559/2	4,000	3,900	5,500	3.5	0.78	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0100 K202VF0280 MT20	279.5	559/2	3,500	3,500	5,000	3.5	1.38	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0100 K202VF0280 MT30	279.5	559/2	3,500	3,500	4,000	3.5	6.18	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0070 K202VF0400 MT10	282.8	9331/33	4,000	3,900	5,500	3.5	0.66	2,165	244.4	6,876	776	8,251	931	12,321	1,391
PH821F0070 K202VF0460 MT10	323.6	12943/40	4,000	3,900	5,500	3.5	0.68	2,165	244.4	8,858	1,000	13,096	1,478	24,900	2,811
PH821F0070 K202VF0460 MT20	323.6	12943/40	3,500	3,500	5,000	3.5	1.28	2,165	244.4	8,858	1,000	13,096	1,478	24,900	2,811
PH821F0100 K202VF0350 MT10	345.5	9675/28	4,000	3,900	5,500	3.5	0.73	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0100 K202VF0350 MT20	345.5	9675/28	3,500	3,500	5,000	3.5	1.33	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0100 K202VF0350 MT30	345.5	9675/28	3,500	3,500	4,000	3.5	6.13	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0070 K202VF0500 MT10	353.4	46655/132	4,000	3,900	5,500	3.5	0.64	2,165	244.4	5,730	647	6,876	776	12,435	1,404
PH821F0070 K202VF0560 MT10	388.8	9331/24	4,000	3,900	5,500	3.5	0.66	2,165	244.4	8,858	1,000	11,345	1,281	16,941	1,913
PH821F0100 K202VF0460 MT10	462.3	1849/4	4,000	3,900	5,500	3.5	0.68	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0100 K202VF0460 MT20	462.3	1849/4	3,500	3,500	5,000	3.5	1.28	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400
PH821F0070 K202VF0690 MT10	486.0	46655/96	4,000	3,900	5,500	3.5	0.64	2,165	244.4	7,879	889	9,455	1,067	17,098	1,930
PH821F0100 K202VF0560 MT10	555.4	6665/12	4,000	3,900	5,500	3.5	0.65	2,153	243.0	7,086	800	10,630	1,200	21,259	2,400

[1] Maximum torque for continuous input RPM - horizontal output position.

[2] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 5, 6
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL3 and EL4
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"PHK" Series–Right Angle ServoFit® Precision Planetary Gearhead Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal 1)		Output Torque Acceleration		Output Torque Peak 2)	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
PH821_K302 with Motor Mounting Plate															
PH821F0040 K302VF0040 MT20	16.00	16/1	2,700	2,300	3,800	4	7.87	1,623	183.3	5,279	596	5,807	656	9,238	1,043
PH821F0040 K302VF0040 MT30	16.00	16/1	2,700	2,300	3,800	4	12.67	1,623	183.3	6,153	695	10,395	1,174	22,752	2,569
PH821F0050 K302VF0040 MT20	20.00	20/1	2,700	2,300	3,800	4	7.30	2,087	235.6	6,599	745	7,259	819	11,548	1,304
PH821F0050 K302VF0040 MT30	20.00	20/1	2,700	2,300	3,800	4	12.10	2,087	235.6	7,691	868	12,994	1,467	28,346	3,200
PH821F0050 K302VF0054 MT20	26.88	215/8	2,700	2,300	3,800	4	5.02	2,087	235.6	8,488	958	9,754	1,101	15,020	1,696
PH821F0050 K302VF0054 MT30	26.88	215/8	2,700	2,300	3,800	4	9.82	2,087	235.6	8,488	958	11,074	1,250	15,020	1,696
PH821F0050 K302VF0060 MT20	30.00	30/1	2,700	2,300	3,800	4	5.24	2,087	235.6	8,804	994	10,888	1,229	17,322	1,956
PH821F0050 K302VF0060 MT30	30.00	30/1	2,700	2,300	3,800	4	10.04	2,087	235.6	8,804	994	14,874	1,679	28,346	3,200
PH821F0050 K302VF0074 MT20	36.96	2365/64	2,700	2,300	3,800	4	4.20	2,087	235.6	9,438	1,066	13,412	1,514	20,653	2,332
PH821F0050 K302VF0074 MT30	36.96	2365/64	2,700	2,300	3,800	4	9.00	2,087	235.6	9,438	1,066	15,227	1,719	20,653	2,332
PH821F0050 K302VF0093 MT20	46.34	5375/116	3,200	2,800	4,200	4	3.34	2,087	235.6	10,177	1,149	16,370	1,848	25,173	2,842
PH821F0050 K302VF0093 MT30	46.34	5375/116	3,200	2,800	4,000	4	8.14	2,087	235.6	10,177	1,149	16,370	1,848	25,173	2,842
PH821F0050 K302VF0115 MT20	58.05	1161/20	3,200	2,800	4,200	4	2.73	2,087	235.6	10,971	1,239	16,370	1,848	28,346	3,200
PH821F0050 K302VF0115 MT30	58.05	1161/20	3,200	2,800	4,000	4	7.53	2,087	235.6	10,971	1,239	16,370	1,848	28,346	3,200
PH821F0050 K302VF0140 MT20	69.68	7525/108	3,500	3,100	5,000	4	2.33	2,087	235.6	11,073	1,250	16,370	1,848	28,346	3,200
PH821F0050 K302VF0140 MT30	69.68	7525/108	3,500	3,100	4,000	4	7.13	2,087	235.6	11,073	1,250	16,370	1,848	28,346	3,200
PH821F0050 K302VF0175 MT10	86.47	7955/92	3,500	3,100	5,000	4	1.42	2,087	235.6	6,992	789	6,992	789	9,484	1,071
PH821F0050 K302VF0175 MT20	86.47	7955/92	3,500	3,100	5,000	4	2.02	2,087	235.6	11,073	1,250	16,370	1,848	28,346	3,200
PH821F0050 K302VF0175 MT30	86.47	7955/92	3,500	3,100	4,000	4	6.82	2,087	235.6	11,073	1,250	16,370	1,848	28,346	3,200
PH821F0050 K302VF0230 MT10	116.5	2795/24	3,800	3,500	5,000	4	1.12	2,087	235.6	8,858	1,000	8,858	1,000	12,014	1,356
PH821F0050 K302VF0230 MT20	116.5	2795/24	3,500	3,500	5,000	4	1.72	2,087	235.6	11,073	1,250	16,370	1,848	28,346	3,200
PH821F0050 K302VF0230 MT30	116.5	2795/24	3,500	3,500	4,000	4	6.52	2,087	235.6	11,073	1,250	16,370	1,848	28,346	3,200
PH821F0050 K302VF0280 MT10	139.4	17845/128	3,800	3,500	5,000	4	0.99	2,087	235.6	10,262	1,158	10,262	1,158	13,918	1,571
PH821F0050 K302VF0280 MT20	139.4	17845/128	3,500	3,500	5,000	4	1.59	2,087	235.6	11,073	1,250	16,370	1,848	28,346	3,200
PH821F0050 K302VF0280 MT30	139.4	17845/128	3,500	3,500	4,000	4	6.39	2,087	235.6	11,073	1,250	16,370	1,848	28,346	3,200
PH821F0050 K302VF0350 MT10	173.7	4515/26	3,800	3,500	5,000	4	0.87	2,087	235.6	11,073	1,250	12,135	1,370	16,459	1,858
PH821F0050 K302VF0350 MT20	173.7	4515/26	3,500	3,500	5,000	4	1.47	2,087	235.6	11,073	1,250	16,370	1,848	28,346	3,200
PH821F0050 K302VF0350 MT30	173.7	4515/26	3,500	3,500	4,000	4	6.27	2,087	235.6	11,073	1,250	16,370	1,848	28,346	3,200
PH821F0050 K302VF0460 MT10	231.1	1849/8	3,800	3,500	5,000	4	0.77	2,087	235.6	11,073	1,250	15,177	1,713	20,584	2,324
PH821F0050 K302VF0460 MT20	231.1	1849/8	3,500	3,500	5,000	4	1.37	2,087	235.6	11,073	1,250	16,370	1,848	28,346	3,200
PH821F0050 K302VF0460 MT30	231.1	1849/8	3,500	3,500	4,000	4	6.17	2,087	235.6	11,073	1,250	16,370	1,848	28,346	3,200
PH821F0050 K302VF0560 MT10	278.5	12255/44	3,800	3,500	5,000	4	0.72	2,087	235.6	11,073	1,250	13,507	1,525	23,874	2,695
PH821F0050 K302VF0560 MT20	278.5	12255/44	3,500	3,500	5,000	4	1.32	2,087	235.6	11,073	1,250	13,507	1,525	23,874	2,695

Motor Shaft

Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38

Mounting Position and Output Side must be specified when ordered.

See web site for drawings.

"PHK" Series–Right Angle ServoFit® Precision Planetary Gearhead Dimensional Data

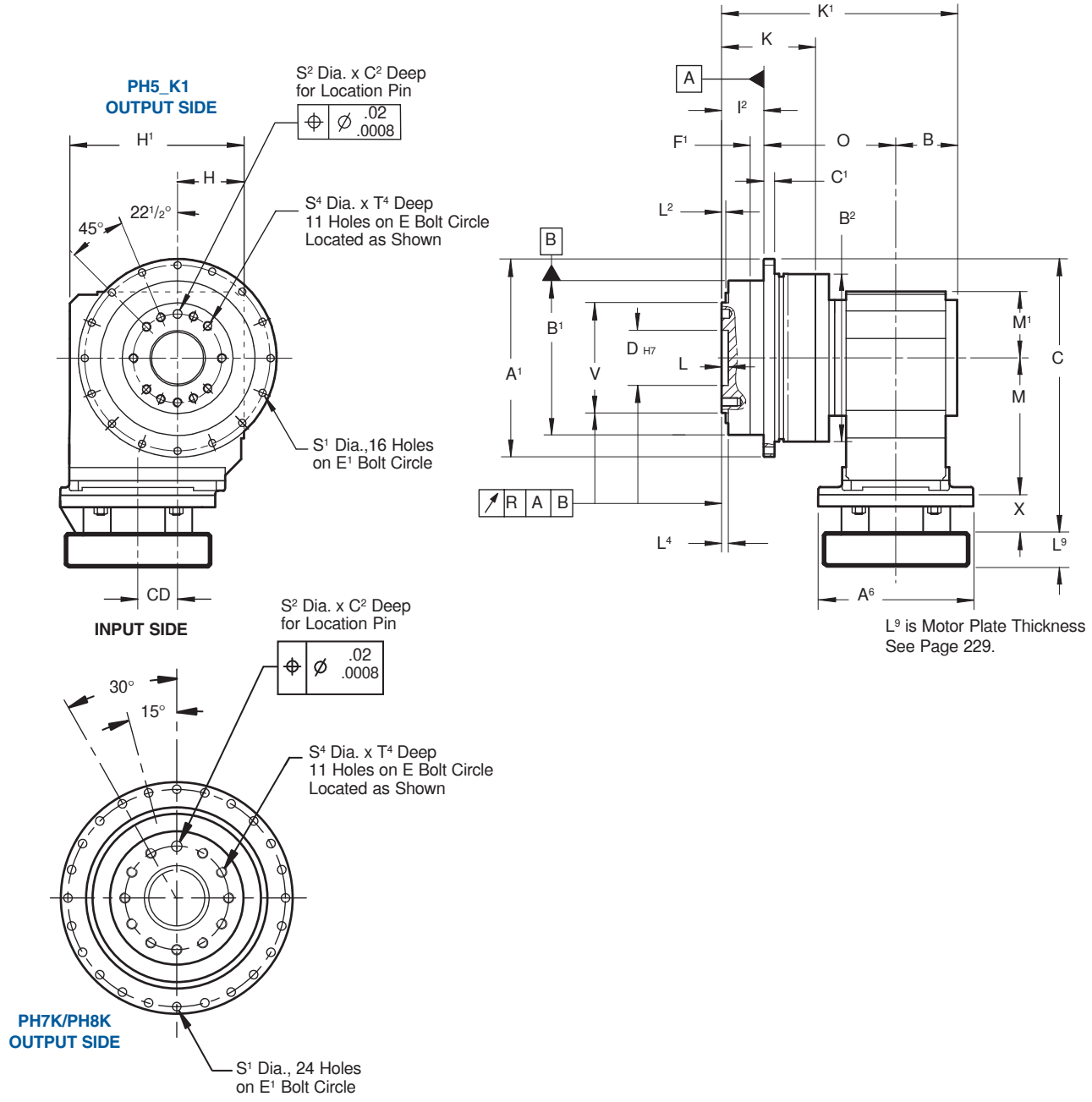


Table No. 1 **"PHK" Series – Gearhead with Motor Plate – Dimensions (mm/inches)**

Unit	A¹	B	B¹ h7	B²	C¹	C²	D H7	E	E¹	F¹	H	H¹	I²	L	L²	L⁴	R	S¹
PH521_K102	145	56	110 +.000/-.035	120	8	7	40 +.025/-.0	63	135	10	60	160	29	6	6	6	.020	5.5
	5.71	2.20	4.331 +.0000/-.0014	4.72	.32	.28	1.575 +.0010/-.0000	2.48	5.31	.39	2.36	6.30	1.14	.24	.24	.24	.0008	.22
PH721_K102	179	56	140 +.000/-.040	152	10	7	50 +.025/-.0	80	168	12	60	160	38	6	6	6	.025	6.6
	7.05	2.20	5.513 +.0000/-.0016	5.98	.39	.28	1.969 +.0010/-.0000	3.15	6.61	.47	2.36	6.30	1.50	.24	.24	.24	.0010	.26
PH721_K202	179	70	140 +.000/-.040	152	10	7	50 +.025/-.0	80	168	12	65	190	38	6	6	6	.025	6.6
	7.05	2.76	5.513 +.0000/-.0016	5.98	.39	.28	1.969 +.0010/-.0000	3.15	6.61	.47	2.56	7.48	1.50	.24	.24	.24	.0010	.26
PH821_K202	247	70	200 +.000/-.046	212	12	10	80 +.030/-.0	125	233	15	65	190	50	8	8	8	.030	9
	9.72	2.76	7.874 +.0000/-.0018	8.35	.47	.39	3.150 +.0012/-.0000	4.92	9.17	.59	2.65	7.48	1.97	.31	.31	.31	.0012	.35
PH821_K302	247	76	200 +.000/-.046	212	12	10	80 +.030/-.0	125	233	15	75	213	50	8	8	8	.030	9
	9.72	2.99	7.874 +.0000/-.0018	8.35	.47	.39	3.150 +.0012/-.0000	4.92	9.17	.59	2.95	8.39	1.97	.31	.31	.31	.0012	.35

"PHK" Series–Right Angle ServoFit® Precision Planetary Gearhead Dimensional Data

Table No. 2 "PHK" Series – Dimensions (mm/inches)

Unit	K	K[1]	M[1]	O	S[2] H7	S[4]	T[4]	V h7
PH521_K102	70 2.76	201 7.91	60 2.36	116 4.57	6 +.012/-.000 .236 +.0005/-.0000	M6	11 .43	80 +.000/-.030 3.150 +.000/-.0012
PH721_K102	88 3.46	214 8.43	60 2.36	120 4.72	8 +.015/-.000 .315 +.0006/-.0000	M8	14 .55	100 +.000/-.035 3.937 +.000/-.0014
PH721_K202	88 3.46	242 9.53	65 2.56	134 5.28	8 +.015/-.000 .315 +.0006/-.0000	M8	14 .55	100 +.000/-.035 3.937 +.000/-.0014
PH821_K202	126 4.96	284.5 11.20	65 2.56	164.5 6.48	10 +.015/-.000 .393 +.0006/-.0000	M10	18 .71	160 +.000/-.040 6.299 +.000/-.0016
PH821_K302	126 4.96	298 11.73	75 2.95	172 6.77	10 +.015/-.000 .393 +.0006/-.0000	M10	18 .71	160 +.000/-.040 6.299 +.000/-.0016

Table No. 3 "PHK" Dimensions

Motor Adapter	Motor Shaft D[6] Max.[1)]	Thickness[2)] L[9] Min.	A[6]	X	Wt. lbs.
MT10	19 .748	21 .83	140 5.51	40 1.57	5
MT20	24 .945	24 .95	160 6.30	50 1.97	8
MT30	38 1.260	25 .98	200 7.87	60 2.36	12

1) If an adapter bushing is required it will be supplied as a component of the motor mounting plate.
2) Motor plate maximum thickness (L[9]) will vary with motor shaft length but will not be less than shown.

Table No. 4 "PHK" Series – ServoFit Precision Planetary Gearhead (mm/inches)

Base Module	MT10 CD	MT10 C	MT10 M	MT20 CD	MT20 C	MT20 M	MT30 CD	MT30 C	MT30 M	Wt. lbs.
PH521_K102	36 1.42	236.5 9.31	124 4.88	36 1.42	240.5 9.47	128 5.04	– –	– –	– –	43
PH721_K102	36 1.42	253.5 9.98	124 4.88	36 1.42	263.5 10.37	128 5.04	– –	– –	– –	53
PH721_K202	46 1.81	278.5 10.96	143 5.63	46 1.81	286.5 11.28	147 5.78	46 1.81	296.5 11.67	149 5.87	69
PH821_K202	46 1.81	310.5 12.22	143 5.63	46 1.81	316.5 12.46	147 5.79	46 1.81	330.5 13.01	149 5.87	116
PH821_K302	52.5 2.07	332.5 13.09	169 6.65	52.5 2.07	342.5 13.48	169 6.65	52.5 2.07	352.5 13.88	169 6.65	134

Part No. Explanation

PH 5 2 1 F 0050 K102VF 0060 MT10

- **M**otor Plate with **T**riAdapt Coupling
- Ratio (**0060** = 6:1)
- Right Angle Unit, Size **K102VF**
- Ratio (**0050** = 5:1, Total Ratio 5 x 6 = 30:1)
- Output **F**lange
- No. of Stages (**1** = 1 Stage, 2 = 2 Stage)
- Generation No.
- Unit No.
- "**PH**" Series ServoFit Precision Planetary Gearhead

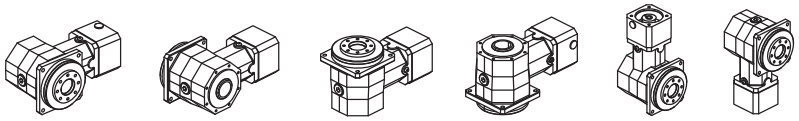
THE FOLLOWING INFORMATION IS REQUIRED FOR ANY UNIT:

Mounting Position — EL1 EL2 EL3 EL4 EL5 EL6
"PH" Unit Mounting Side — Side 3 or Side 4
Motor — Motor Manufacturer and Model Number
Paint — Black (Standard) .... White ..... Stainless

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

See web site for drawings.

"KS" Series
ServoFit® Precision Planetary Gearhead
Performance Specification Overview

		Size	KS402	KS403	KS502	KS503	KS702	KS703
Acceleration Torque	$M_{2B\,MAX}$	in.lbs. Nm	797 90		1,772 200		3,543 400	
Output Torque Nom. [1]	M_{2N}	in.lbs. Nm	576 65		1,150 130		2,215 250	
Input Speed Max.	n_{1MAX}	Continuous Cyclic	4,000 6,000	4,500	3,500 6,000	4,200	3,200 6,000	4,000
Torsional Backlash Max. [2]	$\Delta\varphi$	arcmin	≤6		≤5		≤4	
Torsional Stiffness	C_2	in.lbs./arcmin Nm/arcmin	≤75.3 ≤8.5		≤150.6 ≤17		≤372 ≤42	
Axial Load [3] Output — G/P **Maximum**	F_{2AMAX}	lbs. N	765 3,400		1,350 6,000		2,250 10,000	
Output — F		lbs. N	900 4,000		1,350 6,000		2,250 10,000	
Output — S		lbs. N	900 4,000		1,350 6,000		2,250 10,000	
Radial Load [3] **Maximum** — Output — G/P	F_{2RMAX}	lbs. N	1,125 5,000		1,800 8,000		2,250 10,000	
Tilting Moment [3] **Maximum** — Output — F/S	M_{2Kmax}	in.lbs. Nm	1,859 210		4,071 460		6,903 780	
Weight	m	pounds kg	18.5 8.4	18.1 8.2	30 13.6	31.8 14.4	59.1 26.8	62 28.1
Noise Level [4]	L_{PA}	dB(A)	≤65		≤62		≤63	
Efficiency (at Nom. Torque)	h	%	≥ 93% — 95%					
Degree of Protection			IP65 - FKM Shaft Seals					
Lubrication			Synthetic Oil — Lubricated for Life					
Mounting Position – Any Horizontal **Vertical Mounting Position MUST BE SPECIFIED** **EL5 Mounting is not possible on 3 stage units.**			 ---------- Any Horizontal ----------				EL5	EL6
Temperature			0° C to +40°C (104° F) [Unit temperature ≤ 90° C Max.]					
Finish			Black (RAL 9005)					
Bearing Lifetime [5]	L_h	hours	L_h > 10,000 hours if M_{2K}/T_{2A} < 1.25 L_h > 20,000 hours if M_{2K}/T_{2A} > 1.25 L_h > 30,000 hours if M_{2K}/T_{2A} > 1.5					
Warranty			5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)					

[1] Ratings based on input speed (n_1) of 2000 RPM.
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[2] Tested at 1.5% of nominal torque and recorded on the output side of the gearhead.

[3] Rating based on output speed (n2) of 100 RPM. For values at other speeds see Page 243.

[4] Measurement at one (1) meter distance with input speed (n1) of 3000 RPM.

[5] T_{2A} equals actual tilting moment of the application. See Page 243 for caluculation details.

WARNING: In order to insure that the specified torque ratings are attained, it is essential to use a grade 10.9 fastener on all output connections.

Refer to Page 250 for ServoFit Precision Planetary Gearhead Selection Procedure.

"KS" Series
ServoFit® Precision Planetary Gearhead
Features

The "KS" Series ServoFit Right Angle Precision Planetary Gearhead uses time-tested helical gearing and finish ground spiral bevel gears to provide a low backlash unit, that is smooth running, with high efficiency, high power density, and high input speed capacity.

Some other features are:

- Readily Attaches to Any Servo Motor (IEC, NEMA, or Customized Motor Plates)
- 5 Year Limited Warranty (2 years on bearings, seals, etc.)
- Low Backlash
- High Input Speeds
- Ratios up to 200:1
- Advanced Gear Technology
- Up to 95% Efficiency
- Quiet Running
- IP65 Protection
- Assembled in the U.S.A.

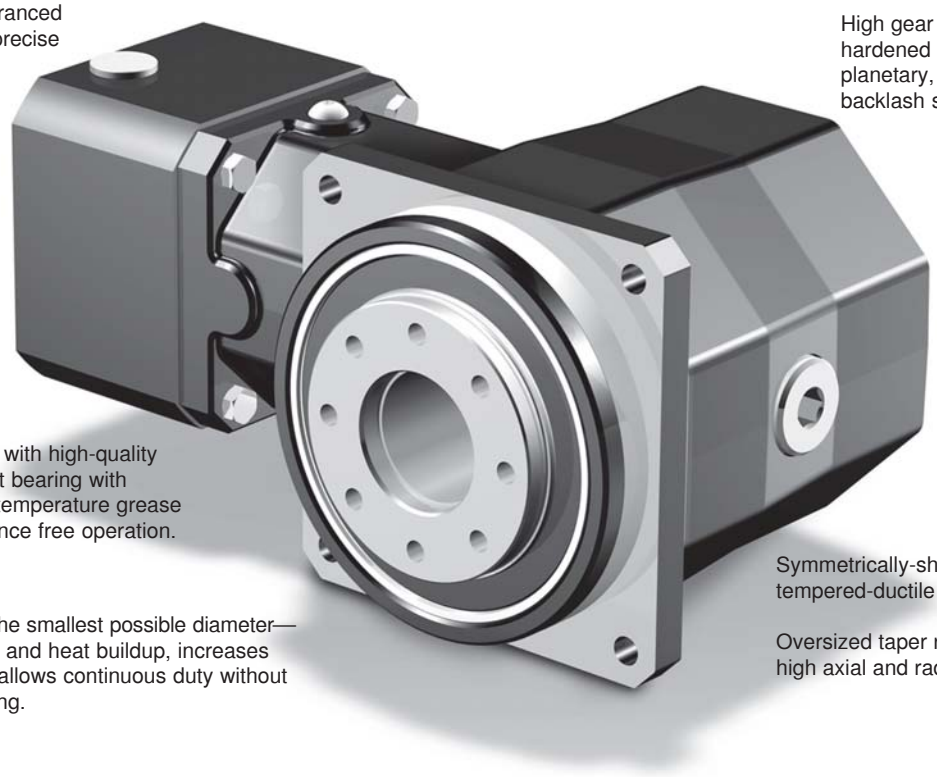
The patented motor coupling is designed to allow thermal expansion of the motor shaft — ensuring long motor life by preventing thrust load on the motor bearings.

Motor plate can easily be changed to fit your choice of motors

The motor shaft adapter system allows installation of motor in minutes — no special tools required

Motor plate pilot toleranced to fit your motor for precise concentricity

High gear quality provided in case-hardened and finish-ground sun, planetary, and spiral bevel gears for backlash stability and quiet running



Lubricated for life with high-quality synthetic oil. Input bearing with shields and high temperature grease provide maintenance free operation.

FKM seals for the smallest possible diameter— reduces friction and heat buildup, increases efficiency, and allows continuous duty without additional cooling.

Symmetrically-shaped, high-tensile, tempered-ductile iron housing

Oversized taper roller bearings enable high axial and radial loads

Output available as: Flanged hollow output
Solid shaft, with or without key
Hollow with shrink ring

See web site for drawings.

"KS" Series – Right Angle ServoFit® Precision Planetary Gearhead Selection Data

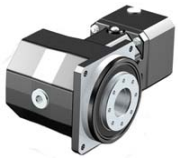
Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic			C_2		M_{2N}		M_{2B}		M_{2PEAK}	
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
KS402 with Motor Mounting Plate													
KS402_0060 MT	6.000	3,000	6,000	19	1.24	71.7	8.1	531	60	797	90	1,240	140
KS402_0060 MTL	6.000	3,000	6,000	24	1.92	74.3	8.4	531	60	797	90	1,240	140
KS402_0080 MT	8.000	3,500	6,000	19	0.89	73.5	8.3	576	65	797	90	1,240	140
KS402_0080 MTL	8.000	3,500	6,000	24	1.58	74.3	8.4	576	65	797	90	1,240	140
KS402_0100 MT	10.000	3,800	6,000	19	0.76	73.5	8.3	576	65	797	90	1,240	140
KS402_0100 MTL	10.000	3,800	6,000	24	1.45	74.3	8.4	576	65	797	90	1,240	140
KS402_0140 MT	14.000	4,000	6,000	19	0.65	74.3	8.4	576	65	797	90	1,240	140
KS402_0140 MTL	14.000	4,000	6,000	24	1.32	75.3	8.5	576	65	797	90	1,240	140
KS402_0200 MT	20.000	4,000	6,000	19	0.60	75.3	8.5	531	60	797	90	1,240	140
KS402_0200 MTL	20.000	4,000	6,000	24	1.28	75.3	8.5	531	60	797	90	1,240	140
KS403 with Motor Mounting Plate													
KS403_0240 MT	24.000	3,500	6,000	14	0.20	74.9	8.5	531	60	797	90	1,240	140
KS403_0240 MTL	24.000	3,500	6,000	19	0.67	75.3	8.5	531	60	797	90	1,240	140
KS403_0320 MT	32.000	3,500	6,000	14	0.17	75.1	8.5	576	65	797	90	1,240	140
KS403_0320 MTL	32.000	3,500	6,000	19	0.65	75.3	8.5	576	65	797	90	1,240	140
KS403_0400 MT	40.000	3,500	6,000	14	0.17	75.2	8.5	576	65	797	90	1,240	140
KS403_0400 MTL	40.000	3,500	6,000	19	0.64	75.3	8.5	576	65	797	90	1,240	140
KS403_0500 MT	50.000	4,000	6,000	14	0.13	75.2	8.5	576	65	797	90	1,240	140
KS403_0500 MTL	50.000	4,000	6,000	19	0.61	75.3	8.5	576	65	797	90	1,240	140
KS403_0700 MT	70.000	4,500	6,000	14	0.11	75.2	8.5	576	65	797	90	1,240	140
KS403_0700 MTL	70.000	4,500	6,000	19	0.57	75.3	8.5	576	65	797	90	1,240	140
KS403_0800 MT	80.000	4,500	6,000	14	0.10	75.2	8.5	576	65	797	90	1,240	140
KS403_0800 MTL	80.000	4,500	6,000	19	0.57	75.3	8.5	576	65	797	90	1,240	140
KS403_1000 MT	100.000	4,500	6,000	14	0.10	75.3	8.5	576	65	797	90	1,240	140
KS403_1000 MTL	100.000	4,500	6,000	19	0.57	75.3	8.5	576	65	797	90	1,240	140
KS403_1400 MT	140.000	4,500	6,000	14	0.10	75.3	8.5	576	65	797	90	1,240	140
KS403_1400 MTL	140.000	4,500	6,000	19	0.56	75.3	8.5	576	65	797	90	1,240	140
KS403_2000 MT	200.000	4,500	6,000	14	0.10	75.3	8.5	531	60	797	90	1,240	140
KS403_2000 MTL	200.000	4,500	6,000	19	0.56	75.3	8.5	531	60	797	90	1,240	140
KS502 with Motor Mounting Plate													
KS502_0060 MT	6.000	2,500	5,500	24	2.90	141.6	16.0	886	100	1,772	200	2,657	300
KS502_0060 MTL	6.000	2,500	5,500	32	5.12	150.6	17.0	886	100	1,772	200	2,657	300
KS502_0080 MT	8.000	2,800	6,000	24	2.26	150.6	17.0	1,150	130	1,772	200	2,657	300
KS502_0080 MTL	8.000	2,800	6,000	32	4.49	150.6	17.0	1,150	130	1,772	200	2,657	300
KS502_0100 MT	10.000	3,000	6,000	24	1.87	150.6	17.0	1,150	130	1,772	200	2,657	300
KS502_0100 MTL	10.000	3,000	6,000	32	4.10	150.6	17.0	1,150	130	1,772	200	2,657	300
KS502_0140 MT	14.000	3,200	6,000	24	1.52	150.6	17.0	1,150	130	1,772	200	2,657	300
KS502_0140 MTL	14.000	3,200	6,000	32	3.79	150.6	17.0	1,150	130	1,772	200	2,657	300
KS502_0200 MT	20.000	3,500	6,000	24	1.33	150.6	17.0	1,063	120	1,772	200	2,657	300
KS502_0200 MTL	20.000	3,500	6,000	32	3.60	150.6	17.0	1,063	120	1,772	200	2,657	300
KS503 with Motor Mounting Plate Continued Next Page													
KS503_0240 MT	24.000	3,100	6,000	19	0.83	150.6	17.0	886	100	1,772	200	2,657	300
KS503_0240 MTL	24.000	3,100	6,000	24	1.51	150.6	17.0	886	100	1,772	200	2,657	300
KS503_0320 MT	32.000	3,100	6,000	19	0.79	150.6	17.0	1,150	130	1,772	200	2,657	300
KS503_0320 MTL	32.000	3,100	6,000	24	1.47	150.6	17.0	1,150	130	1,772	200	2,657	300

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

"KS" Series – Right Angle ServoFit® Precision Planetary Gearhead Selection Data



Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead		Continuous	Cyclic	øD[6]	J_1	C_2		M_{2N}		M_{2B}		M_{2PEAK}	
	i	RPM (n_1)		mm	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
KS503 with Motor Mounting Plate Continued													
KS503_0400 MT	40.000	3,100	6,000	19	0.76	150.6	17.0	1,150	130	1,772	200	2,657	300
KS503_0400 MTL	40.000	3,100	6,000	24	1.45	150.6	17.0	1,150	130	1,772	200	2,657	300
KS503_0500 MT	50.000	3,500	6,000	19	0.68	150.6	17.0	1,150	130	1,772	200	2,657	300
KS503_0500 MTL	50.000	3,500	6,000	24	1.36	150.6	17.0	1,150	130	1,772	200	2,657	300
KS503_0700 MT	70.000	4,200	6,000	19	0.61	150.6	17.0	1,150	130	1,772	200	2,657	300
KS503_0700 MTL	70.000	4,200	6,000	24	1.28	150.6	17.0	1,150	130	1,772	200	2,657	300
KS503_0800 MT	80.000	4,200	6,000	19	0.59	150.6	17.0	1,150	130	1,772	200	2,657	300
KS503_0800 MTL	80.000	4,200	6,000	24	1.26	150.6	17.0	1,150	130	1,772	200	2,657	300
KS503_1000 MT	100.000	4,200	6,000	19	0.58	150.6	17.0	1,150	130	1,772	200	2,657	300
KS503_1000 MTL	100.000	4,200	6,000	24	1.25	150.6	17.0	1,150	130	1,772	200	2,657	300
KS503_1400 MT	140.000	4,200	6,000	19	0.58	150.6	17.0	1,150	130	1,772	200	2,657	300
KS503_1400 MTL	140.000	4,200	6,000	24	1.25	150.6	17.0	1,150	130	1,772	200	2,657	300
KS503_2000 MT	200.000	4,200	6,000	19	0.58	150.6	17.0	1,063	120	1,772	200	2,657	300
KS503_2000 MTL	200.000	4,200	6,000	24	1.25	150.6	17.0	1,063	120	1,772	200	2,657	300
KS702 with Motor Mounting Plate													
KS702_0060 MT	6.000	2,100	4,500	32	9.26	354.0	40.0	2,126	240	3,543	400	5,315	600
KS702_0060 MTL	6.000	2,100	4,500	38	12.28	363.0	41.0	2,126	240	3,543	400	5,315	600
KS702_0080 MT	8.000	2,500	5,000	32	6.39	363.0	41.0	2,215	250	3,543	400	5,315	600
KS702_0080 MTL	8.000	2,500	5,000	38	9.42	363.0	41.0	2,215	250	3,543	400	5,315	600
KS702_0100 MT	10.000	2,800	6,000	32	5.31	363.0	41.0	2,215	250	3,543	400	5,315	600
KS702_0100 MTL	10.000	2,800	6,000	38	8.34	372.0	42.0	2,215	250	3,543	400	5,315	600
KS702_0140 MT	14.000	3,000	6,000	32	4.33	372.0	42.0	2,215	250	3,543	400	5,315	600
KS702_0140 MTL	14.000	3,000	6,000	38	7.38	372.0	42.0	2,215	250	3,543	400	5,315	600
KS702_0200 MT	20.000	3,200	6,000	32	3.90	372.0	42.0	2,215	250	3,543	400	5,315	600
KS702_0200 MTL	20.000	3,200	6,000	38	6.95	372.0	42.0	2,215	250	3,543	400	5,315	600
KS703 with Motor Mounting Plate													
KS703_0240 MT	24.000	3,000	6,000		2.00	372.0	42.0	2,126	240	3,543	400	5,315	600
KS703_0240 MTL	24.000	3,000	6,000	32	4.23	372.0	42.0	2,126	240	3,543	400	5,315	600
KS703_0320 MT	32.000	3,000	6,000	24	1.83	372.0	42.0	2,215	250	3,543	400	5,315	600
KS703_0320 MTL	32.000	3,000	6,000	32	4.05	372.0	42.0	2,215	250	3,543	400	5,315	600
KS703_0400 MT	40.000	3,000	6,000	24	1.76	372.0	42.0	2,215	250	3,543	400	5,315	600
KS703_0400 MTL	40.000	3,000	6,000	32	3.98	372.0	42.0	2,215	250	3,543	400	5,315	600
KS703_0500 MT	50.000	3,200	6,000	24	1.55	372.0	42.0	2,215	250	3,543	400	5,315	600
KS703_0500 MTL	50.000	3,200	6,000	32	3.77	372.0	42.0	2,215	250	3,543	400	5,315	600
KS703_0700 MT	70.000	3,500	6,000	24	1.36	372.0	42.0	2,215	250	3,543	400	5,315	600
KS703_0700 MTL	70.000	3,500	6,000	32	3.62	372.0	42.0	2,215	250	3,543	400	5,315	600
KS703_0800 MT	80.000	4,000	6,000	24	1.30	372.0	42.0	2,215	250	3,543	400	5,315	600
KS703_0800 MTL	80.000	4,000	6,000	32	3.57	372.0	42.0	2,215	250	3,543	400	5,315	600
KS703_1000 MT	100.000	4,000	6,000	24	1.29	372.0	42.0	2,215	250	3,543	400	5,315	600
KS703_1000 MTL	100.000	4,000	6,000	32	3.56	372.0	42.0	2,215	250	3,543	400	5,315	600
KS703_1400 MT	140.000	4,000	6,000	24	1.28	372.0	42.0	2,215	250	3,543	400	5,315	600
KS703_1400 MTL	140.000	4,000	6,000	32	3.55	372.0	42.0	2,215	250	3,543	400	5,315	600
KS703_2000 MT	200.000	4,000	6,000	24	1.28	372.0	42.0	2,215	250	3,543	400	5,315	600
KS703_2000 MTL	200.000	4,000	6,000	32	3.54	372.0	42.0	2,215	250	3,543	400	5,315	600

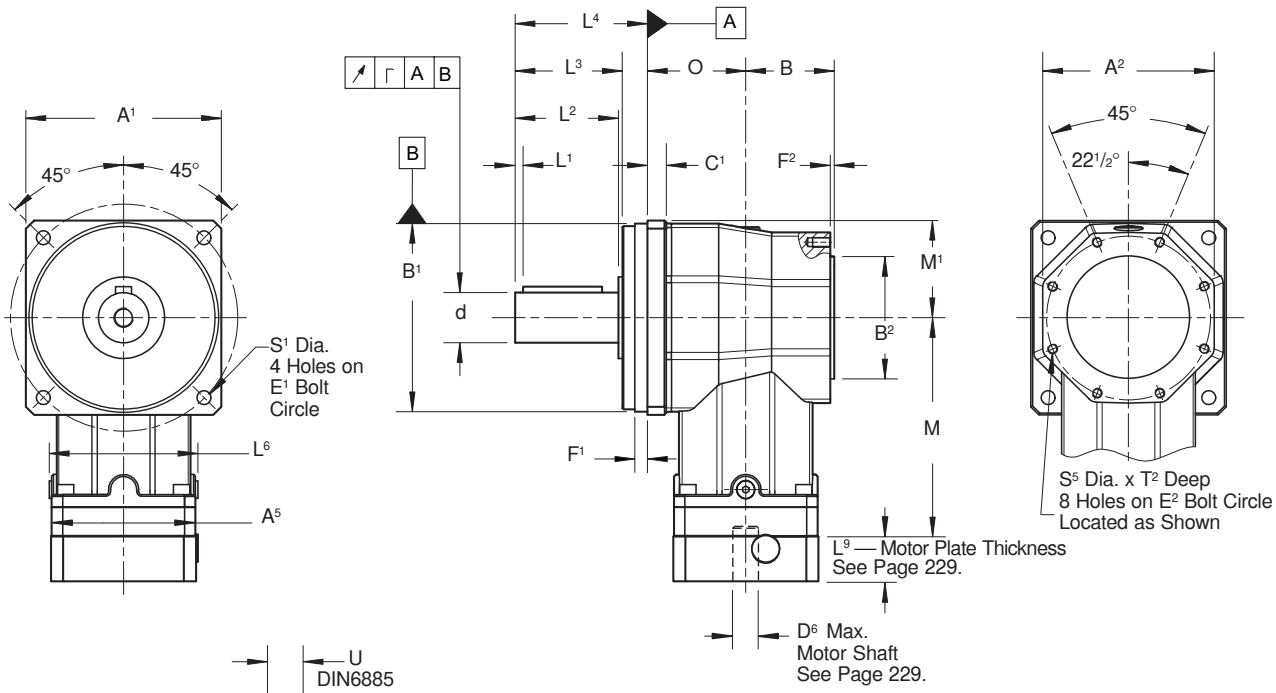
Index of Symbols

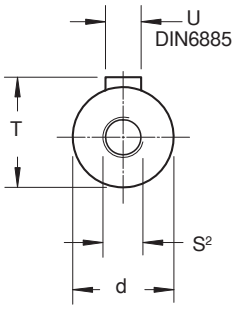
MT ..... Motor adapter with TriAdapt® coupling	i ..... Ratio - Exact	M_{2N} ..... Nominal Torque
MF ..... Motor adapter with FlexiAdapt® coupling	n_1 ..... Maximum input speed RPM	M_{2B} ..... Acceleration Torque Maximum
L ..... Large Input	J_1 ..... Mass moment of inertia (input)	M_{2PEAK} ..... Peak Torque
C ..... ServoCool	C_2 ..... Torsional Stiffness	

See web site for drawings.

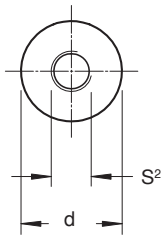
"KS" Series – ServoFit® Right Angle Flange Housing – Shaft Output Dimensional Data

Drawing for Units
KS402PF thru KS703PF





OUTPUT SIDE
Style "P"
Keyed Shaft Side 4



OUTPUT SIDE
Style "G"
Plain Shaft Side 4

Part No. Explanation

KS 5 0 2 P F 0050 MT L

- **L**arge Input Option
- **M**otor Plate with **T**riAdapt Coupling
- Ratio (**0050** = 5.0:1)
- "**F**" Housing Design
- "**P**" — Shaft with Keyed Output (Side 4)
- "**G**" — Shaft without Keyed Output (Side 4)
- No. of Stages (**2** = 2 Stage, 3 = 3 Stage)
- Generation No.
- Unit No.
- "**KS**" Series Right Angle ServoFit Precision Planetary Gearhead

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

"KS" Series – ServoFit® Right Angle Flange Housing – Shaft Output Dimensional Data

Table No. 1 "KS" Series – Right Angle Gearhead with Motor Plate – Dimensions (mm/inches)

Unit	A^1	A^2	B^1 h6	B^2 h6	B	C^1	d k6	E^1	E^2	F^1	F^2
KS402/KS403	101	93	95 +.000/-.022	75 +.000/-.019	51	10	22 +.015/+.002	120	88	8	3
	3.98	3.66	3.740 +.0000/-.0009	2.953 +.0000/-.0007	2.01	.39	.8661 +.0006/+.00008	4.724	3.46	.31	.12
KS502/KS503	125	109	120 +.000/-.022	90 +.000/-.022	58	10	32 +.018/+.002	145	105	9	3
	4.92	4.29	4.724 +.0000/-.0009	3.543 +.0000/-.0009	2.28	.39	1.2598 +.0007/+.00008	1.772	4.13	.35	.12
KS702/KS703	155	135	150 +.000/-.025	110 +.000/-.022	70	15	40 +.018/+.002	180	130	10	3
	6.10	5.31	5.906 +.000/-.0010	4.331 +.0000/-.0009	2.76	.59	1.5748 +.0007/+.00008	7.087	5.12	.39	.12

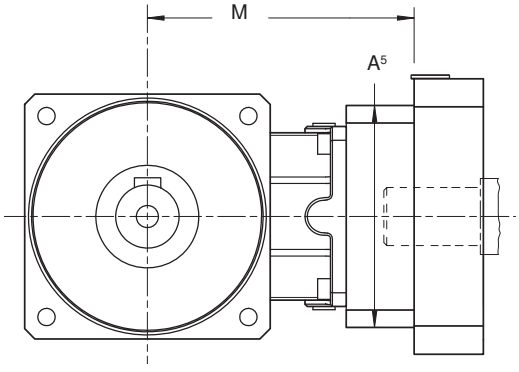
Table No. 2 "KS" Series – Right Angle Gearhead with Motor Plate – Dimensions (mm/inches)

Unit	L^1	L^2	L^3	L^4	L^6	M^1	O	r	S^1	S^2	S^5	T	T^2	U
KS402/KS403	3	36	38	52	77.5	50.5	53	.020	6.6	M8	M5	24.5	9	A6x6x28
	.12	1.42	1.50	2.05	3.05	1.99	2.09	.00008	.26			.9646	.35	.24x.24x1.10
KS502/KS503	3	58	60	75.5	98	62.5	62	.020	9	M12	M6	35	11	A10x8x50
	.12	2.28	2.36	2.97	3.86	2.46	2.44	.00008	.35			1.3780	.43	.39x.31x1.97
KS702/KS703	4	82	85	105	120	77.5	78	.025	11	M16	M8	43	14	A12x8x70
	.16	3.23	3.35	4.13	4.72	3.05	3.07	.0010	.43			1.6929	.55	.47x31x2.76

Table No. 3 "KS" Series – Dimensions (mm/inches)

	A^5		M — Standard			A^5		M — Large Input	
Unit	mm	inches	mm	inches	Unit	mm	inches	mm	inches
KS402	72	2.83	137.5	5.41	**KS402_L**	100	3.94	140.8	5.54
KS403	55	2.17	121	4.76	**KS403_L**	75	2.95	137.5	5.41
KS502	98	3.86	158	6.22	**KS502_L**	115	4.53	188.5	7.42
KS503	72	2.83	156.5	6.16	**KS503_L**	100	3.94	181.8	7.16
KS702	115	4.53	191	7.52	**KS702_L**	145	5.71	205	8.07
KS703	98	3.86	186	7.32	**KS703_L**	115	4.53	194.5	7.66

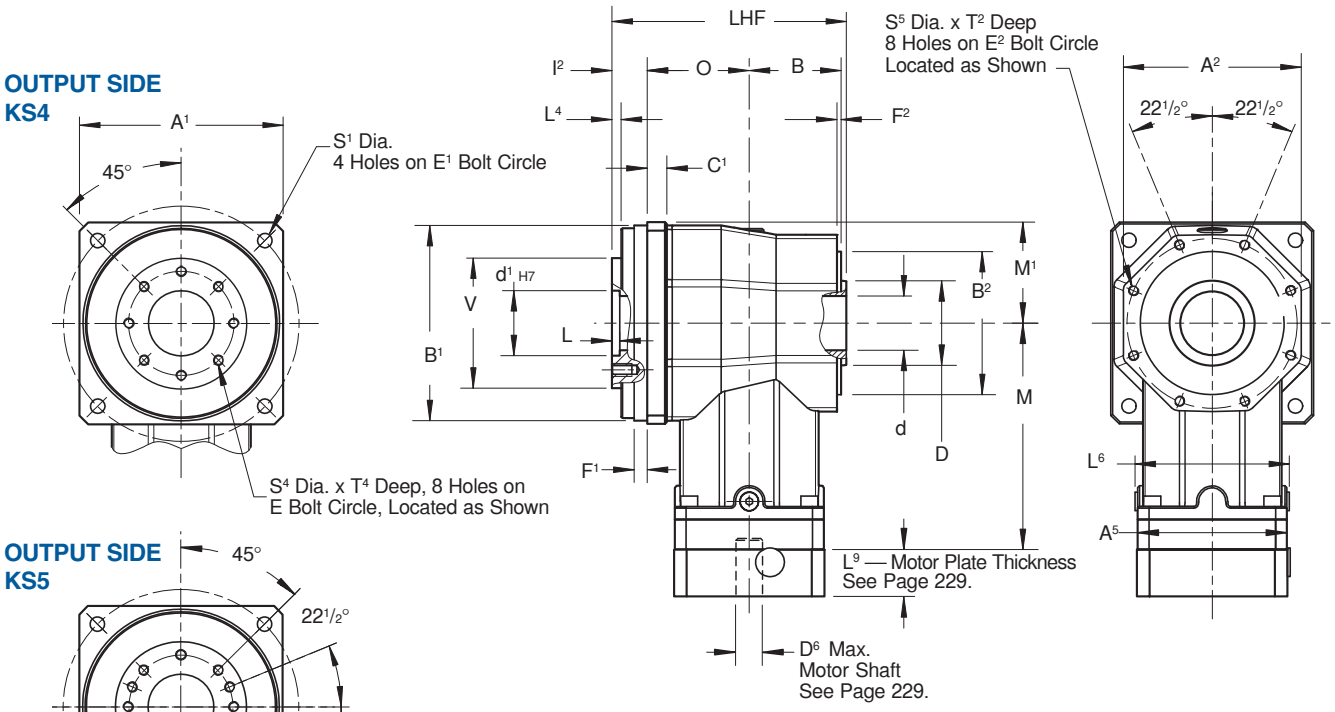
Drawing for Large Input Units
KS402_L thru KS703_L



When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

"KS" Series – ServoFit® Right Angle Flange Housing – Flange Hollow Output Dimensional Data

Drawing for Units
KS402FF thru KS703FF



Part No. Explanation

KS 5 0 2 F F 0050 MT L

- **L**arge Input Option
- **M**otor Plate with **T**riAdapt Coupling
- Ratio (**0050** = 5.0:1)
- "**F**" Housing Design
- "**F**" — Flange Hollow Output
- No. of Stages (**2** = 2 Stage, 3 = 3 Stage)
- Generation No.
- Unit No.
- "**KS**" Series Right Angle ServoFit Precision Planetary Gearhead

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

"KS" Series – ServoFit® Right Angle Flange Housing – Flange Hollow Output Dimensional Data

Table No. 1 **"KS" Series – Right Angle Gearhead with Motor Plate – Dimensions (mm/inches)**

Unit	A[1]	A[2]	B[1] h6	B[2] h6	B	C[1]	d	d[1] H7	D d9	E	E[1]	E[2]	F[1]	F[2]
KS402/KS403	101	93	95 +.000/-.022	75 +.000/-.019	51	10	30	31.5 +.025/-.0	40 -.080/-.180	50	120	88	8	3
	3.98	3.66	3.740 +.0000/-.0009	2.953 +.0000/-.0007	2.01	.39	1.18	1.2402 +.0010/-.0000	1.5748 -.0031/-.0071	1.97	4.72	3.46	.31	.12
KS502/KS503	125	109	120 +.000/-.022	90 +.000/-.022	58	10	38	40 +.025/-.0	48 -.080/-.180	63	145	105	9	3
	4.92	4.29	4.724 +.0000/-.0009	3.543 +.0000/-.0009	2.28	.39	1.50	1.5748 +.0010/-.0000	1.8898 -.0031/-.0071	2.48	5.71	4.13	.35	.12
KS702/KS703	155	135	150 +.000/-.025	110 +.000/-.022	70	15	49	50 +.025/-.0	60 -.100/-.174	80	180	130	10	3
	6.10	5.31	5.906 +.000/-.0010	4.331 +.0000/-.0009	2.76	.59	1.93	1.9685 +.0010/-.0000	2.3622 -0039/-.0069	3.15	7.09	5.12	.39	.12

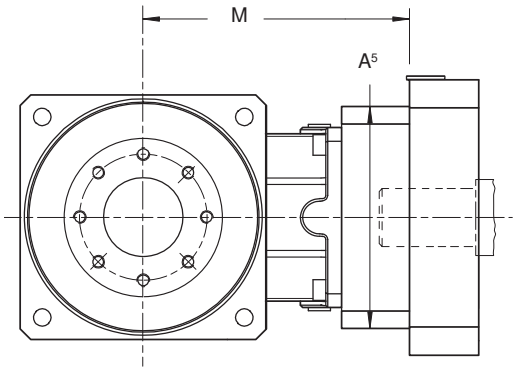
Table No. 2 **"KS" Series – Right Angle Gearhead with Motor Plate – Dimensions (mm/inches)**

Unit	l[2]	L	L[4]	L[6]	LHF	M[1]	O	S[1]	S[4]	S[5]	T[2]	T[4]	V h7
KS402/KS403	20	6	6	77.5	127	50.5	53	6.6	M6	M5	9	11	63 +.000/-.030
	.79	.24	.24	3.05	5.00	1.99	2.09	.26			.35	.43	2.4803 +.0000/-.0012
KS502/KS503	22	7	6.5	98	145	62.5	62	9	M6	M6	11	12	80 +.000/-.030
	.87	.28	.26	3.86	5.71	2.46	2.44	.35			.43	.47	3.1496 +.0000/-.0012
KS702/KS703	27	7	7	120	178	77.5	78	11	M8	M8	14	15	100 +.000/-.035
	1.06	.28	.28	4.72	7.01	3.05	3.07	.43			.55	.59	3.9370 +.0000/-.0014

Table No. 3 **"KS" Series – Dimensions (mm/inches)**

	A[5]		M — Standard			A[5]		M — Large Input	
Unit	mm	inches	mm	inches	Unit	mm	inches	mm	inches
KS402	72	2.83	137.5	5.41	**KS402_L**	100	3.94	140.8	5.54
KS403	55	2.17	121	4.76	**KS403_L**	75	2.95	137.5	5.41
KS502	98	3.86	158	6.22	**KS502_L**	115	4.53	188.5	7.42
KS503	72	2.83	156.5	6.16	**KS503_L**	100	3.94	181.8	7.16
KS702	115	4.53	191	7.52	**KS702_L**	145	5.71	205	8.07
KS703	98	3.86	186	7.32	**KS703_L**	115	4.53	194.5	7.66

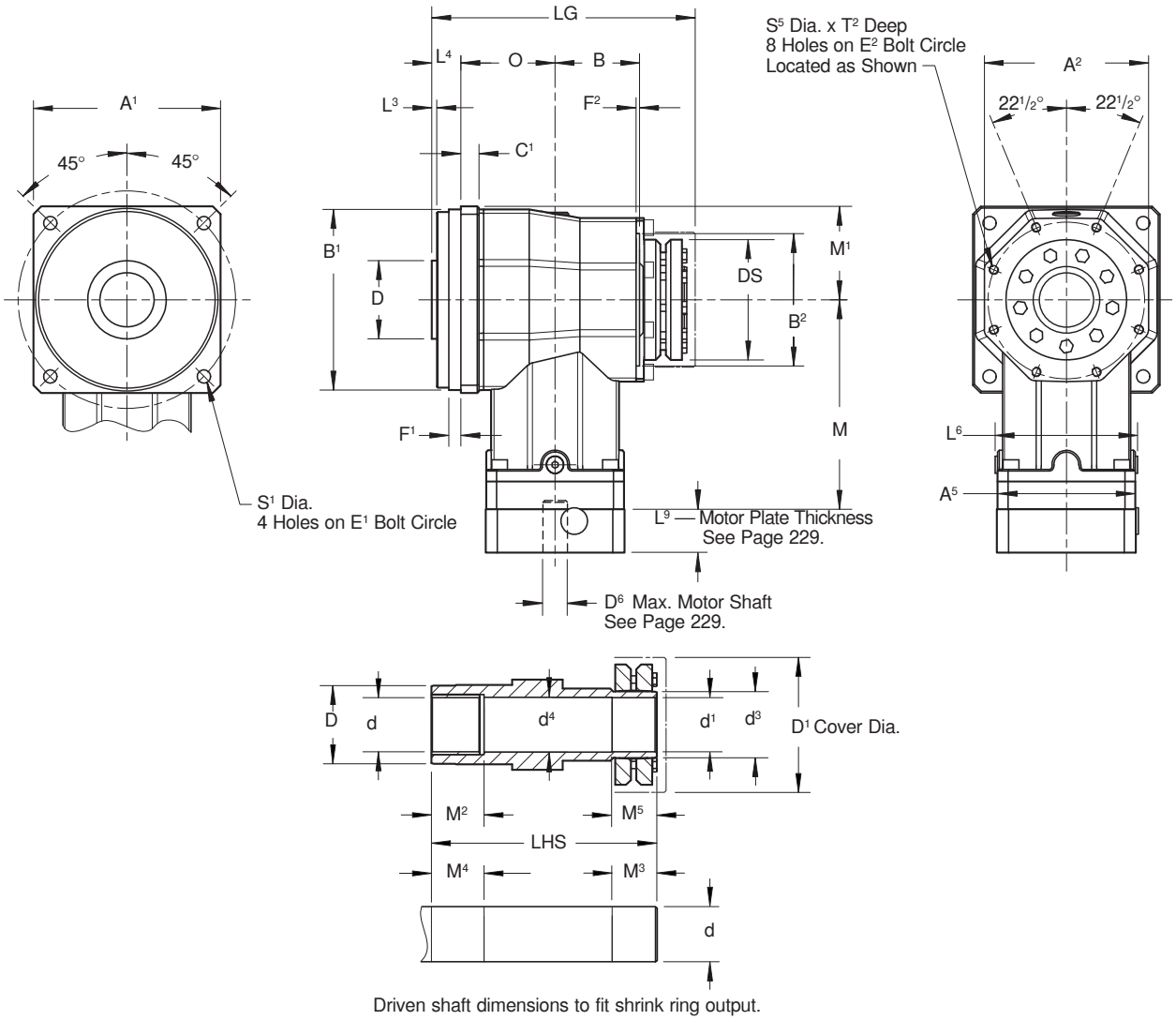
Drawing for Large Input Units
KS402_L thru KS703_L



When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

"KS" Series – ServoFit® Right Angle Flange Housing – Shrink Ring Output Dimensional Data

Drawing for Units
KS402 thru KS703



Driven shaft dimensions to fit shrink ring output.

Part No. Explanation

KS 5 0 2 S F 0050 MT L

- **L**arge Input Option
- **M**otor Plate with **T**riAdapt Coupling
- Ratio (**0050** = 5.0:1)
- "**F**" Housing Design
- "S"—**S**hrink Ring Output
- No. of Stages (**2** = 2 Stage, 3 = 3 Stage)
- Generation No.
- Unit No.
- "**KS**" Series Right Angle ServoFit Precision Planetary Gearhead

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

"KS" Series – ServoFit® Right Angle Flange Housing – Shrink Ring Output Dimensional Data

Table No. 1 **"KS" Series – Right Angle Gearhead with Motor Plate – Dimensions (mm/inches)**

Unit	A[1]	A[2]	B[1] h6	B[2] h6	B	C[1]	d h9	d[1] H9	d[3]	d[4]	D	D[1]	DS
KS402/KS403	101	93	95 +.000/-.022	75 +.000/-.019	51	10	25 +.000/-.052	25 +.052/-.000	30	25.5	40	72	60
	3.98	3.66	3.740 +.0000/-.0009	2.953 +.0000/-.0007	2.01	.39	.9843 +.0000/-.0020	.9843 +.0020/-.0000	1.18	1.00	1.57	2.83	2.36
KS502/KS503	125	109	120 +.000/-.022	90 +.000/-.022	58	10	35 +.000/-.062	35 +.062/-.000	44	35.5	50	92	80
	4.92	4.29	4.724 +.0000/-.0009	3.543 +.0000/-.0009	2.28	.39	1.3780 +.0000/-.0024	1.3780 +.0024/-.0000	1.73	1.40	1.97	3.62	3.15
KS702/KS703	155	135	150 +.000/-.025	110 +.000/-.022	70	15	45 +.000/-.062	45 +.062/-.000	55	45.5	65	112	100
	6.10	5.31	5.906 +.000/-.0010	4.331 +.0000/-.0009	2.76	.59	1.7717 +.0000/-.0024	1.7717 +.0024/-.0000	2.17	1.79	2.56	4.41	3.15

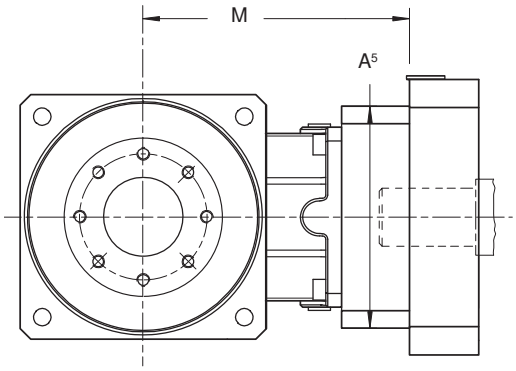
Table No. 2 **"KS" Series – Right Angle Gearhead with Motor Plate – Dimensions (mm/inches)**

Unit	E[1]	E[2]	F[1]	F[2]	I[2]	L[3]	L[4]	L[6]	LG	LHS	M[1]	M[2]	M[3]	M[4]	M[5]	O	S[1]	S[5]	T[2]
KS402/KS403	120	88	8	3	20	4	18	77.5	158	151	50.5	20	34	25	29	53	6.6	M5	9
	4.72	3.46	.31	.12	.79	.16	.71	3.05	6.22	5.94	1.99	.79	1.34	.98	1.14	2.09	.26		
KS502/KS503	145	105	9	3	22	4	19.5	98	179.5	171.5	62.5	30	39	35	34	62	9	M6	11
	5.71	4.13	.35	.12	.87	.16	.77	3.86	7.07	6.75	2.46	1.18	1.54	1.38	1.34	2.44	.35		
KS702/KS703	180	130	10	3	27	4	24	120	218	211	77.5	40	42	45	37	78	11	M8	14
	7.09	5.12	.39	.12	1.06	.16	.94	4.72	8.58	8.31	3.05	1.57	1.65	1.77	1.46	3.07	.43		

Table No. 3 **"KS" Series – Dimensions (mm/inches)**

	A[5]		M — Standard			A[5]		M — Large Input	
Unit	mm	inches	mm	inches	Unit	mm	inches	mm	inches
KS402	72	2.83	137.5	5.41	**KS402_L**	100	3.94	140.8	5.54
KS403	55	2.17	121	4.76	**KS403_L**	75	2.95	137.5	5.41
KS502	98	3.86	158	6.22	**KS502_L**	115	4.53	188.5	7.42
KS503	72	2.83	156.5	6.16	**KS503_L**	100	3.94	181.8	7.16
KS702	115	4.53	191	7.52	**KS702_L**	145	5.71	205	8.07
KS703	98	3.86	186	7.32	**KS703_L**	115	4.53	194.5	7.66

Drawing for Large Input Units
KS402_L thru KS703_L



When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. (See Page 229.)

See web site for drawings.

"PE" Series
ServoFit® Precision Planetary Gearhead
Performance Specifications

		Size	Ratio	PE201 PE202	PE301 PE302	PE401 PE402	PE501 PE502
Permissible Acceleration Torque	M_{2B}	in.lbs. Nm	5, 25, 50	132 15	292 33	725 82	1,858 210
		in.lbs. Nm	10, 100	106 12	265 30	637 72	1,593 180
Nominal Output Torque [1]	M_{2N}	in.lbs. Nm		58 6.5	159 18	398 45	1,062 120
Input Speed Maximum	n_{1MAX}	Continuous Cyclic		4,000 8,000	3,700 6,000	3,400 6,000	2,600 5,000
Torsional Stiffness	C_2	in.lbs./arcmin Nm/arcmin		9 1	31 3.5	89 10	221 25
Axial Load Max.	F_{2AMAX}	lbs. N		56 250	93 412	146 650	270 1,200
Radial Load Max. [2]	F_{2RMAX}	lbs. N		190 850	370 1,650	585 2,600	1,080 4,800
Tilting Moment Max. [2]	M_{2K}	in.lbs. Nm		221 25	451 51	991 112	2,973 336
Weight	m	pounds kg		1.8 2.2 0.8 1.0	4.4 5.5 2.0 2.5	9.4 11.6 4.3 5.3	20.2 25.1 9.2 11.4
Noise Level [3]	L_{PA}	dB(A)		≤60	≤62	≤62	≤64
Torsional Backlash	$\Delta\varphi$	arcmin		1 Stage (5, 10:1) = ≤12; 2 Stage (25, 50, 100:1) = ≤15			
Efficiency (at Nominal Torque)	η	%		1 Stage (5, 10:1) = ≥96; 2 Stage (25, 50, 100:1) = ≥94			
Lubrication				Synthetic Grease (NLGI 2) Lubricated for Life			
Mounting Position				Unrestricted			
Ambient Temperature				0° C to +40°C (104° F) [Unit temperature ≤ 90° C Max.]			
Finish				Black (RAL 9005)			
Lifetime [4]	L_h	hours		L_h > 10,000 hours if M_{2K}/M_{2A} < 1.25 L_h > 20,000 hours if M_{2K}/M_{2A} > 1.25			
Warranty				5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)			

1) Ratings based on input speed (n_1) of 2000 RPM.
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed.

$$M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$$

2) Rating based on output speed (n2) of 100 RPM. For values at other speeds see Page 242.

3) Measurement at one (1) meter distance with input speed (n1) of 3000 RPM.

4) M_{2A} equals actual tilting moment of the application. See Page 242 for overhung loads.

"PE" Series
ServoFit® Precision Planetary Gearhead
Features

The "PE" Series ServoFit Precision Planetary Gearheads are available for applications where very low backlash is not a criteria. They are an economical straight tooth planetary, comparable in quality to other STOBER units. "PE" Series units are shipped with a motor adapter to fit your specific motor, can be supplied with NEMA output adapters, and have a five year warranty. All units are lubricated for life with synthetic grease and enclosed to IP65 standards to prevent lubricant contamination for long life.

Some features of these units are:

- Readily Attaches to Any Servo Motor
- Quiet Running ≤64 dB(A)
- Readily Available
- Wide Selection of IEC, NEMA, or Customized* Motor Plates
- 94 to 96% Efficiency
- NEMA Output Available
- 5 Year Limited Warranty (2 Years bearings, seals, etc.)

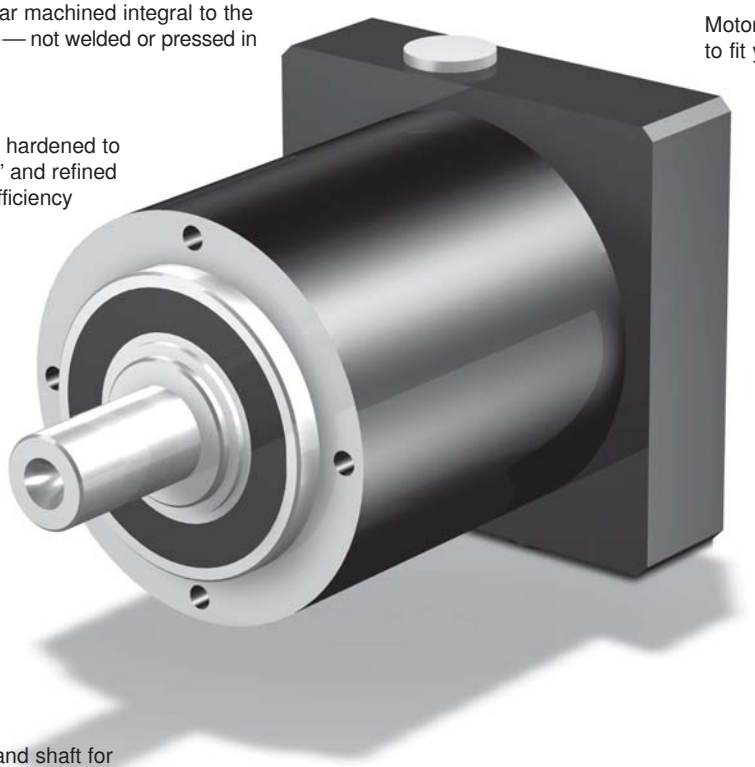
* Maximum 10 working days for custom motor plates.

Motor plate pilot toleranced to fit your motor for precise concentricity

Ring gear machined integral to the housing — not welded or pressed in

Motor plate can easily be changed to fit your choice of motors

Gears are case hardened to 61 Rockwell "C" and refined for maximum efficiency



The integrated motor coupling is designed to allow thermal expansion of the motor shaft–ensuring long motor life by preventing thrust load on the motor bearings.

Adapter bushings fit all motor shafts — no key required

Single piece planet carrier and shaft for greater concentricity and more precise alignment

Available with NEMA Output Adapters (shaft remains metric). See Page 73.

"PE" Series
ServoFit® Planetary Gearhead
Selection Data

Part Number (Gearhead + Input)	Exact Ratio	Maximum Input Speed		Maximum Motor Shaft	Input [1] Inertia	Torsional Stiffness per arcmin		Output Torque					
								Nominal [2]		Acceleration		Peak [3]	
Gearhead	i	Continuous RPM (n_1)	Cyclic RPM (n_1)	øD^6 mm	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	M_{2N} in.lbs.	M_{2N} Nm	M_{2B} in.lbs.	M_{2B} Nm	M_{2PEAK} in.lbs.	M_{2PEAK} Nm
PE201 with Motor Mounting Plate													
PE201SP0050M	5.000	4,000	8,000	11	.063	8.9	1.0	58	6.5	133	15	248	28
PE201SP0100M	10.00	4,000	8,000	11	.063	8.9	1.0	49	5.5	106	12	248	28
PE202 with Motor Mounting Plate													
PE202SP0250M	25.00	4,000	8,000	11	.052	8.9	1.0	58	6.5	133	15	248	28
PE202SP0500M	50.00	4,000	8,000	11	.052	8.9	1.0	58	6.5	133	15	248	28
PE202SP1000M	100.0	4,000	8,000	11	.052	8.9	1.0	49	5.5	106	12	248	28
PE301 with Motor Mounting Plate [4]													
PE301SP0050M	5.000	3,700	6,000	14	.31	31	3.5	159	18	292	33	664	75
PE301SP0100M	10.00	3,700	6,000	14	.31	31	3.5	150	17	266	30	664	75
PE302 with Motor Mounting Plate [4]													
PE302SP0250M	25.00	3,700	6,000	14	.25	31	3.5	159	18	292	33	664	75
PE302SP0500M	50.00	3,700	6,000	14	.25	31	3.5	159	18	292	33	664	75
PE302SP1000M	100.0	3,700	6,000	14	.25	31	3.5	150	17	266	30	664	75
PE401 with Motor Mounting Plate													
PE401SP0050M	5.000	3,400	6,000	19	1.72	88.5	10	398	45	726	82	1,770	200
PE401SP0100M	10.00	3,400	6,000	19	1.72	88.5	10	354	40	637	72	1,770	200
PE402 with Motor Mounting Plate													
PE402SP0250M	25.00	3,400	6,000	19	1.47	88.5	10	398	45	726	82	1,770	200
PE402SP0500M	50.00	3,400	6,000	19	1.47	88.5	10	398	45	726	82	1,770	200
PE402SP1000M	100.0	3,400	6,000	19	1.47	88.5	10	354	40	637	72	1,770	200
PE501 with Motor Mounting Plate													
PE501SP0050M	5.000	2,600	5,000	24	5.50	221.3	25	1,062	120	1,859	210	4,248	480
PE501SP0100M	10.00	2,600	5,000	24	5.50	221.3	25	885	100	1,593	180	4,248	480
PE502 with Motor Mounting Plate													
PE502SP0250M	25.00	2,600	5,000	24	4.45	221.3	25	1,062	120	1,859	210	4,248	480
PE502SP0500M	50.00	2,600	5,000	24	4.45	221.3	25	1,062	120	1,859	210	4,248	480
PE502SP1000M	100.0	2,600	5,000	24	4.45	221.3	25	885	100	1,593	180	4,248	480

Part No. Explanation

PE 4 0 1 SP 0050 M

- **PE** – "PE" Series ServoFit Planetary Gearhead
- **4** – Unit No.
- **0** – Generation Number
- **1** – No. of Gear Stages (**1** = 1 Stage, **2** = 2 Stages)
- **SP** – Output shaft with key
- **0050** – Ratio (**0050** = 5.0:1)
- **M** – Motor Plate

When ordering a planetary gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. **(See Page 229.)**

[1] Inertia based on maximum input. For lower inertia using smaller diameter input, contact STOBER.

[2] Based on input speed: n1 = 2000 RPM
For torque at higher input speeds (M_{2NX}) solve the formula, where n1 = Actual Input Speed. $M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of gearhead = 1,000 stops maximum.

[4] Contact STOBER Technical Support for larger input.

"PE" Series
ServoFit® Planetary Gearhead
Dimensional Data

Dimension shown in millimeters (inches).

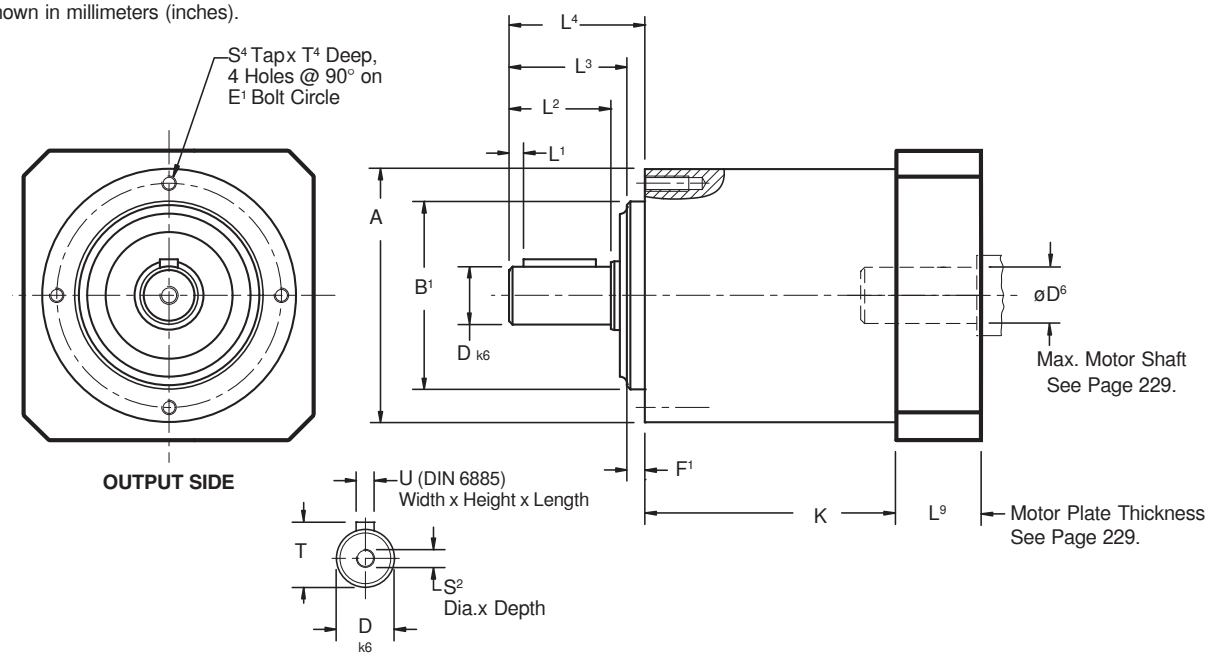


Table No. 1 **"PE" Series – Planetary Gearhead Dimensions (mm/inches)**

Unit	A	B1 h6	D k6	E1	F1	L1	L2	L3	L4	S2	S4	T	T4	U
PE201/P202	50 1.97	35 +.000/-.016 1.378 +.0000/-.0006	12 +.012/+.001	44 1.73	4 .16	2 .08	18 .71	20.5 .81	24.5 .96	M4	M4	13.5 .53	10 .39	A4x4x14
PE301/PE302	70 2.76	52 +.000/-.019 2.047 +.0000/-.0007	16 +.012/+.001	62 2.44	5 .20	2 .08	28 1.10	31 1.22	36 1.42	M5	M5	18 .71	12 .47	A5x5x25
PE401/PE402	90 3.54	68 +.000/-.019 2.677 +.0000/-.0007	22 +.015/+.002	80 3.15	5 .20	3 .12	36 1.42	41 1.61	46 1.81	M8	M6	24.5 .96	15 .59	A6x6x32
PE501/PE502	120 4.72	90 +.000/-.022 3.543 +.0000/-.0009	32 +.018/+.002	108 4.25	6 .24	3 .12	58 2.28	64 2.52	70 2.76	M12	M8	35 1.38	20 .79	A10x8x50

Table No. 2

Unit	K	
	mm	inches
PE201 **PE202**	53 74.5	2.09 2.93
PE301 **PE302**	69 91.5	2.72 3.60
PE401 **PE402**	80 109	3.15 4.29
PE501 **PE502**	106.5 142	4.19 5.59

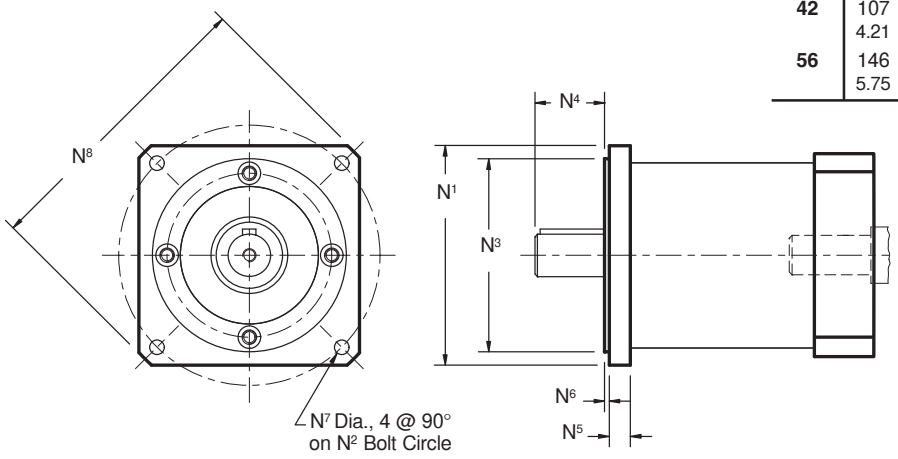


Table No. 3 **NEMA Output Flange (mm/inches)**

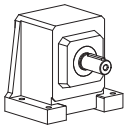
NEMA	N1	N2	N3	N5	N6	N7	N8
23	58 2.28	66.67 2.625	38.10 +.000/-.025 1.500 +.000/-.001	7 .28	1.6 .063	5.0 .20	76 2.99
34	83 3.27	98.43 3.875	73.03 +.000/-.030 2.875 +.000/-.001	8 .31	1.6 .063	5.5 .22	111 4.37
42	107 4.21	125.73 4.950	55.52 +.000/-.030 2.186 +.000/-.001	7.6 .30	2.4 .094	7.1 .28	143 5.63
56	146 5.75	149.23 5.875	114.30 +.000/-.035 4.500 +.000/-.001	15 .59	3.2 .125	10 .39	200 7.87

Table No. 4 **N4 Dimension**

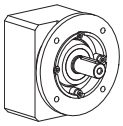
NEMA	PE2	PE3	PE4	PE5
23	15.9 .63	—	—	—
34	—	26.6 1.05	36.8 1.45	—
42	—	25.6 1.01	36 1.42	—
56	—	—	—	51.8 2.04

"C" Series–Concentric Helical ServoFit® SMS Gearhead Overview

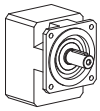
Housing Styles + TriAdapt® Motor Adapter Input = Gearhead Configurations



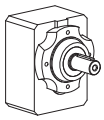
Style N
Foot Mount



Style F
Round Flange



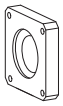
Style Q,
Square Flange



Style G
Tapped Holes

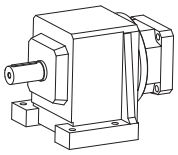
+

MT
Motor Adapter

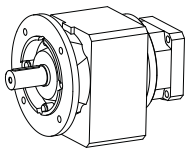


Motor Plate
to fit any servo motor

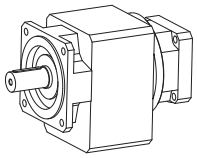
Gearhead Configurations



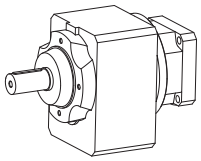
Style N, Foot Mount



Style F, Round Flange



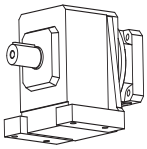
Style Q, Square Flange



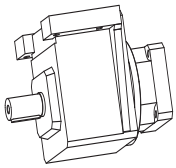
Style G, Tapped Holes

Mounting Positions

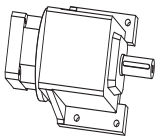
EL1



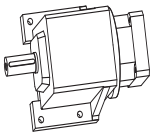
EL2



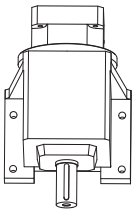
EL3



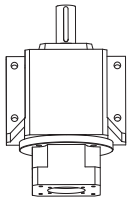
EL4



EL5



EL6



Part No. Explanation with OPTIONS and REQUIRED INFORMATION

C 4 0 2 N 0135 MT20 B

- **C** — Concentric Helical
- **4** — Unit Size No.
- **0** — Design Generation
- **2** — No. of Stages (**02** = 2 Stage, determined by ratio)
- **N** — HOUSING STYLE
  - "**N**" Housing Style — Foot Mounting
  - "**F**" Housing Style — Flange Mounting
  - "**Q**" Housing Style — Square Output Flange
  - "**G**" Housing Style — Tapped Holes
- **0135** — Nominal Ratio: **0135** = 13.5:1
- **MT20** — TriAdapt® Motor Adapter Size: **MT10**, **MT20**, **MT30**, **MT40**, **MT50**
- **B** — This designation is only required when ordering a:
  - **B** — Beverage Duty
  - **F** — Food Duty

THE FOLLOWING INFORMATION IS REQUIRED FOR ANY UNIT:

Mounting Position	—	EL1 EL2 EL3 EL4 EL5 EL6
Motor	—	Motor Manufacturer and Model Number
Paint	—	Black (Standard) ..... White ..... Stainless
Option	—	Imperial or Metric Shaft[1)]
Package Options	—	Beverge Duty ..... Food Duty

[1)] Not available in all sizes. Contact STOBER.

Refer to Page 250 for ServoFit Gearhead Selection Procedure.

"C" Series–Concentric Helical ServoFit® Modular System

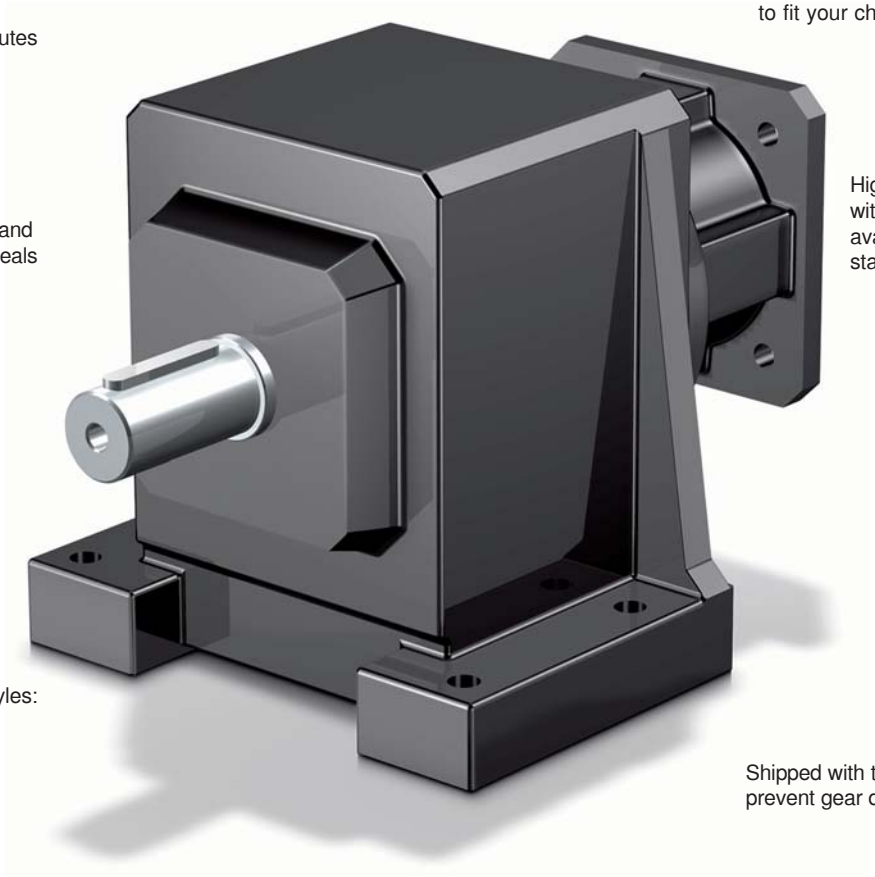
These versatile gear drives offer you performance, durability, and economy for a wide range of applications. High efficiency helical gearing keeps motor size to a minimum while running almost silently.

Performance Specifications:

- Input RPM up to 4,500 RPM
- Nominal output torque — 97 to 62,000 in.lbs. (21-7,000 Nm)
- Reducer ratios from 2:1 to 276:1
- 5 year limited warranty (2 years on bearings, seals, etc.)
- Ambient temperature — 0° C to +40°C (104° F) [Unit temperature ≤ 80° C Max.]
- Noise level — as low as 53 dB(A)
- ≥ 95.5% Efficiency
- Maintenance free
- Can be back driven

High quality helical gearing is case hardened to 58-62 Rockwell C. Precision finished for low noise and long service life.
Backlash is ≤20 arc minutes

Motor plate can easily be changed to fit your choice of motors.



Double lip seals keep oil in and contaminants out. Double seals available for severe duty applications.

High tensile strength shafts with captured keys available inches, metric, or stainless.

Available in four housing styles:
N-foot mounting
F-output flange
Q-square output flange
G-tapped holes

Shipped with the proper amount of oil to prevent gear damaging dry start-ups

One-piece cast iron housing. Precision machined bearing supports assure gearset alignment, prolongs bearing life, provides exceptional overhung load capacities to eliminate leakage problems common to drives with bolt-on output covers.

Also available in washdown, food duty, and beverage duty.
Maximum 10 working days for custom motor plates.

"C" Series–Concentric Helical ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum			Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque					
			Continuous		Cyclic					Nominal [1]		Acceleration		Peak [2]	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	$M_{2N \le 2000\ RPM}$ in.lbs.	$M_{2N \le 2000\ RPM}$ Nm	M_{2B} in.lbs.	M_{2B} Nm	M_{2PEAK} in.lbs.	M_{2PEAK} Nm
C002 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 55 dB(A)** [3]	
C002_0020 MT10	1.997	1480/741	3,500	3,000	6,000	20	1.3	7	0.8	184	21	184	21	230	26
C002_0020 MT20	1.997	1480/741	3,500	3,000	5,000	20	1.9	7	0.8	272	31	346	39	433	49
C002_0028 MT10	2.769	36/13	3,500	3,000	6,000	20	1.0	9	1.0	241	27	241	27	302	34
C002_0028 MT20	2.769	36/13	3,500	3,000	5,000	20	1.6	9	1.0	304	34	455	51	568	64
C002_0031 MT10	3.067	46/15	3,700	3,600	6,000	20	1.0	9	1.0	263	30	263	30	329	37
C002_0031 MT20	3.067	46/15	3,500	3,500	5,000	20	1.6	9	1.0	314	35	495	56	619	70
C002_0033 MT10	3.318	1702/513	3,700	3,600	6,000	20	1.0	9	1.0	284	32	284	32	356	40
C002_0033 MT20	3.318	1702/513	3,500	3,500	5,000	20	1.6	9	1.1	323	36	536	60	669	76
C002_0038 MT10	3.835	441/115	3,700	3,600	6,000	20	0.9	10	1.1	316	36	316	36	395	45
C002_0038 MT20	3.835	441/115	3,500	3,500	5,000	20	1.5	10	1.1	339	38	572	65	743	84
C002_0041 MT10	4.149	1813/437	3,700	3,600	6,000	20	0.9	10	1.1	342	39	342	39	427	48
C002_0041 MT20	4.149	1813/437	3,500	3,500	5,000	20	1.5	10	1.1	348	39	576	65	804	91
C002_0047 MT10	4.680	117/25	4,000	4,000	6,000	20	0.8	10	1.1	362	41	372	42	465	53
C002_0047 MT20	4.680	117/25	3,500	3,500	5,000	20	1.4	10	1.1	362	41	576	65	876	99
C002_0051 MT10	5.063	481/95	4,000	4,000	6,000	20	0.8	10	1.1	371	42	403	45	503	57
C002_0051 MT20	5.063	481/95	3,500	3,500	5,000	20	1.4	10	1.2	371	42	576	65	948	107
C002_0058 MT10	5.824	99/17	4,000	4,000	6,000	20	0.7	10	1.2	389	44	445	50	556	63
C002_0058 MT20	5.824	99/17	3,500	3,500	5,000	20	1.3	10	1.2	389	44	576	65	974	110
C002_0063 MT10	6.300	2035/323	4,000	4,000	6,000	20	0.7	10	1.2	399	45	481	54	601	68
C002_0063 MT20	6.300	2035/323	3,500	3,500	5,000	20	1.3	11	1.2	399	45	576	65	974	110
C002_0077 MT10	7.714	54/7	4,000	4,000	6,000	20	0.7	11	1.2	427	48	561	63	701	79
C002_0077 MT20	7.714	54/7	3,500	3,500	5,000	20	1.3	11	1.2	427	48	561	63	701	79
C002_0082 MT10	8.235	667/81	3,700	3,600	6,000	16	0.9	14	1.5	516	58	638	72	882	100
C002_0082 MT20	8.235	667/81	3,500	3,500	5,000	16	1.5	14	1.5	516	58	638	72	1,063	120
C002_0092 MT10	9.228	1495/162	3,700	3,600	6,000	16	0.9	14	1.5	531	60	576	65	989	112
C002_0092 MT20	9.228	1495/162	3,500	3,500	5,000	16	1.5	14	1.6	531	60	576	65	1,063	120
C002_0105 MT10	10.30	1421/138	3,700	3,600	6,000	16	0.8	14	1.6	531	60	638	72	1,060	120
C002_0105 MT20	10.30	1421/138	3,500	3,500	5,000	16	1.4	14	1.6	531	60	638	72	1,063	120
C002_0115 MT10	11.54	3185/276	3,700	3,600	6,000	16	0.8	14	1.6	531	60	576	65	1,063	120
C002_0115 MT20	11.54	3185/276	3,500	3,500	5,000	16	1.4	14	1.6	531	60	576	65	1,063	120
C002_0125 MT10	12.57	377/30	4,000	4,000	6,000	16	0.8	14	1.6	531	60	638	72	1,063	120
C002_0125 MT20	12.57	377/30	3,500	3,500	5,000	16	1.4	14	1.6	531	60	638	72	1,063	120
C002_0140 MT10	14.08	169/12	4,000	4,000	6,000	16	0.8	14	1.6	531	60	576	65	1,063	120
C002_0140 MT20	14.08	169/12	3,500	3,500	5,000	16	1.4	14	1.6	531	60	576	65	1,063	120
C002_0155 MT10	15.64	1595/102	4,000	4,000	6,000	16	0.7	14	1.6	531	60	638	72	1,063	120
C002_0155 MT20	15.64	1595/102	3,500	3,500	5,000	16	1.3	14	1.6	531	60	638	72	1,063	120
C002_0175 MT10	17.53	3575/204	4,000	4,000	6,000	16	0.7	14	1.6	531	60	576	65	1,063	120
C002_0175 MT20	17.53	3575/204	3,500	3,500	5,000	16	1.3	14	1.6	531	60	576	65	1,063	120
C002_0210 MT10	20.71	145/7	4,000	4,000	6,000	16	0.7	14	1.6	531	60	638	72	1,063	120
C002_0210 MT20	20.71	145/7	3,500	3,500	5,000	16	1.3	14	1.6	531	60	638	72	1,063	120
C002_0230 MT10	23.21	325/14	4,000	4,000	6,000	16	0.7	14	1.6	531	60	576	65	1,063	120
C002_0230 MT20	23.21	325/14	3,500	3,500	5,000	16	1.3	14	1.6	531	60	576	65	1,063	120

[1] Maximum torque for continuous input RPM - horizontal output position.

[2] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

[3] dB(A) Measured at 1 meter distance with 3000 RPM input.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 3, 4
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL5 and EL6
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL3, EL4
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"C" Series–Concentric Helical ServoFit® Modular System Selection Data

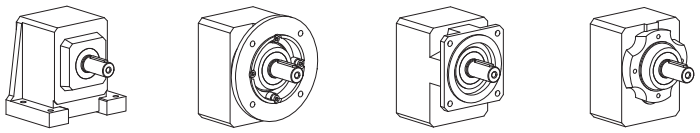
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [1]		Output Torque Acceleration		Output Torque Peak [2]	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	$kgcm^2$	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
C002 with MT TriAdapt® Motor Adapter Continued														**Noise Level ≤ 55 dB(A)** [3]	
C002_0250 MT10	24.97	899/36	4,000	4,000	6,000	16	0.7	14	1.6	531	60	638	72	1,063	120
C002_0250 MT20	24.97	899/36	3,500	3,500	5,000	16	1.3	14	1.6	531	60	638	72	1,063	120
C002_0280 MT10	27.99	2015/72	4,000	4,000	6,000	16	0.7	14	1.6	531	60	576	65	1,063	120
C002_0280 MT20	27.99	2015/72	3,500	3,500	5,000	16	1.3	14	1.6	531	60	576	65	1,063	120
C002_0310 MT10	31.26	2813/90	4,000	4,000	6,000	16	0.6	14	1.6	531	60	638	72	1,063	120
C002_0310 MT20	31.26	2813/90	3,500	3,500	5,000	16	1.2	14	1.6	531	60	638	72	1,063	120
C002_0350 MT10	35.03	1261/36	4,000	4,000	6,000	16	0.6	14	1.6	531	60	576	65	1,063	120
C002_0350 MT20	35.03	1261/36	3,500	3,500	5,000	16	1.2	14	1.6	531	60	576	65	1,063	120
C002_0420 MT10	41.77	3509/84	4,000	4,000	6,000	16	0.6	14	1.6	531	60	638	72	1,063	120
C002_0470 MT10	46.82	7865/168	4,000	4,000	6,000	16	0.6	14	1.6	531	60	576	65	1,063	120
C002_0500 MT10	49.94	899/18	4,000	4,000	6,000	16	0.6	14	1.6	531	60	638	72	1,048	118
C002_0560 MT10	55.97	2015/36	4,000	4,000	6,000	16	0.6	14	1.6	531	60	576	65	1,063	120
C002_0620 MT10	62.35	1247/20	4,000	4,000	6,000	16	0.6	14	1.6	531	60	638	72	1,063	120
C002_0700 MT10	69.88	559/8	4,000	4,000	6,000	16	0.6	14	1.6	531	60	576	65	1,063	120
C102 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 55 dB(A)** [3]	
C102_0020 MT10	2.018	1128/559	3,100	2,600	5,000	18	2.5	12	1.3	195	22	195	22	243	27
C102_0020 MT20	2.018	1128/559	3,100	2,600	5,000	18	3.1	12	1.4	547	62	763	86	1,076	121
C102_0020 MT30	2.018	1128/559	3,100	2,600	4,000	18	7.9	16	1.8	547	62	861	97	1,076	121
C102_0022 MT10	2.177	468/215	3,100	2,600	5,000	18	2.4	13	1.4	210	24	210	24	263	30
C102_0022 MT20	2.177	468/215	3,100	2,600	5,000	18	3.0	13	1.5	561	63	823	93	1,161	131
C102_0022 MT30	2.177	468/215	3,100	2,600	4,000	18	7.8	17	1.9	561	63	929	105	1,161	131
C102_0024 MT20	2.394	2303/962	3,100	2,600	5,000	18	2.7	15	1.7	579	65	905	102	1,260	142
C102_0024 MT30	2.394	2303/962	3,100	2,600	4,000	18	7.5	18	2.0	579	65	978	110	1,260	142
C102_0026 MT20	2.582	1911/740	3,100	2,600	5,000	18	2.7	16	1.8	593	67	976	110	1,359	153
C102_0026 MT30	2.582	1911/740	3,100	2,600	4,000	18	7.5	19	2.1	593	67	1,003	113	1,359	153
C102_0031 MT10	3.091	2491/806	3,600	3,100	6,000	18	1.6	17	2.0	282	32	282	32	352	40
C102_0031 MT20	3.091	2491/806	3,500	3,100	5,000	18	2.2	18	2.0	630	71	1,065	120	1,556	176
C102_0031 MT30	3.091	2491/806	3,500	3,100	4,000	18	7.0	21	2.4	630	71	1,065	120	1,556	176
C102_0033 MT10	3.334	2067/620	3,600	3,100	6,000	18	1.6	18	2.1	304	34	304	34	380	43
C102_0033 MT20	3.334	2067/620	3,500	3,100	5,000	18	2.2	19	2.1	646	73	1,092	123	1,678	189
C102_0033 MT30	3.334	2067/620	3,500	3,100	4,000	18	7.0	22	2.4	646	73	1,092	123	1,678	189
C102_0039 MT10	3.883	1363/351	3,600	3,100	6,000	18	1.3	20	2.3	342	39	342	39	427	48
C102_0039 MT20	3.883	1363/351	3,500	3,100	5,000	18	1.9	21	2.3	680	77	1,149	130	1,888	213
C102_0039 MT30	3.883	1363/351	3,500	3,100	4,000	18	6.7	23	2.6	680	77	1,149	130	1,888	213
C102_0042 MT10	4.189	377/90	3,600	3,100	6,000	18	1.3	21	2.4	369	42	369	42	461	52
C102_0042 MT20	4.189	377/90	3,500	3,100	5,000	18	1.9	22	2.4	697	79	1,152	130	1,949	220
C102_0042 MT30	4.189	377/90	3,500	3,100	4,000	18	6.7	24	2.7	697	79	1,152	130	1,949	220
C102_0047 MT10	4.658	3149/676	3,800	3,500	6,000	18	1.1	22	2.5	396	45	396	45	494	56
C102_0047 MT20	4.658	3149/676	3,500	3,500	5,000	18	1.7	22	2.5	722	82	1,152	130	1,949	220
C102_0047 MT30	4.658	3149/676	3,500	3,500	4,000	18	6.5	24	2.7	722	82	1,152	130	1,949	220

Motor Shaft

Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48
MT50	60

Housing Styles

N — Foot Mounted **F** — Round Flange **Q** — Square Flange **G** — Tapped Holes



Contact STOBER for availability of "Q" housing style.

See Page 146 for required ordering information and part number example.

"C" Series–Concentric Helical ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum			Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque					
			Continuous		Cyclic					Nominal [1]		Acceleration		Peak [2]	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	Δφ	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	$M_{2N \le 2000\ RPM}$ in.lbs.	Nm	M_{2B} in.lbs.	Nm	M_{2PEAK} in.lbs.	Nm
C102 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 55 dB(A)** [3]	
C102_0050 MT10	5.025	201/40	3,800	3,500	6,000	18	1.1	23	2.6	427	48	427	48	533	60
C102_0050 MT20	5.025	201/40	3,500	3,500	5,000	18	1.7	23	2.6	741	84	1,152	130	1,949	220
C102_0050 MT30	5.025	201/40	3,500	3,500	4,000	18	6.5	25	2.8	741	84	1,152	130	1,949	220
C102_0059 MT10	5.875	47/8	3,800	3,500	6,000	18	1.0	24	2.7	480	54	480	54	600	68
C102_0059 MT20	5.875	47/8	3,500	3,500	5,000	18	1.6	24	2.7	781	88	1,152	130	1,949	220
C102_0059 MT30	5.875	47/8	3,500	3,500	4,000	18	6.4	25	2.9	781	88	1,152	130	1,949	220
C102_0063 MT10	6.338	507/80	3,800	3,500	6,000	18	1.0	24	2.7	517	58	517	58	647	73
C102_0063 MT20	6.338	507/80	3,500	3,500	5,000	18	1.6	25	2.8	801	90	1,152	130	1,949	220
C102_0063 MT30	6.338	507/80	3,500	3,500	4,000	18	6.4	26	2.9	801	90	1,152	130	1,949	220
C102_0078 MT10	7.796	3243/416	4,000	3,900	6,000	18	0.8	25	2.9	602	68	602	68	752	85
C102_0078 MT20	7.796	3243/416	3,500	3,500	5,000	18	1.4	26	2.9	858	97	1,152	130	1,949	220
C102_0078 MT30	7.796	3243/416	3,500	3,500	4,000	18	6.2	26	3.0	858	97	1,152	130	1,949	220
C102_0083 MT10	8.263	1537/186	3,600	3,100	6,000	15	1.3	32	3.6	753	85	753	85	941	106
C102_0083 MT20	8.263	1537/186	3,500	3,100	5,000	15	1.9	32	3.6	1,033	117	1,222	138	2,126	240
C102_0083 MT30	8.263	1537/186	3,500	3,100	4,000	15	6.7	33	3.7	1,033	117	1,222	138	2,126	240
C102_0093 MT10	9.326	3180/341	3,600	3,100	6,000	15	1.3	32	3.6	850	96	850	96	1,062	120
C102_0093 MT20	9.326	3180/341	3,500	3,100	5,000	15	1.9	32	3.7	1,063	120	1,222	138	2,126	240
C102_0093 MT30	9.326	3180/341	3,500	3,100	4,000	15	6.7	33	3.8	1,063	120	1,222	138	2,126	240
C102_0105 MT10	10.38	841/81	3,600	3,100	6,000	15	1.1	33	3.7	914	103	914	103	1,142	129
C102_0105 MT20	10.38	841/81	3,500	3,100	5,000	15	1.7	33	3.7	1,063	120	1,222	138	2,126	240
C102_0105 MT30	10.38	841/81	3,500	3,100	4,000	15	6.5	34	3.8	1,063	120	1,222	138	2,126	240
C102_0115 MT10	11.72	1160/99	3,600	3,100	6,000	15	1.1	33	3.7	1,031	116	1,031	116	1,289	146
C102_0115 MT20	11.72	1160/99	3,500	3,100	5,000	15	1.7	33	3.8	1,063	120	1,222	138	2,126	240
C102_0115 MT30	11.72	1160/99	3,500	3,100	4,000	15	6.5	34	3.8	1,063	120	1,222	138	2,126	240
C102_0125 MT10	12.46	1943/156	3,800	3,500	6,000	15	1.0	33	3.8	1,058	119	1,058	119	1,322	149
C102_0125 MT20	12.46	1943/156	3,500	3,500	5,000	15	1.6	33	3.8	1,063	120	1,222	138	2,126	240
C102_0125 MT30	12.46	1943/156	3,500	3,500	4,000	15	6.4	34	3.8	1,063	120	1,222	138	2,126	240
C102_0140 MT10	14.06	2010/143	3,800	3,500	6,000	15	1.0	34	3.8	1,063	120	1,194	135	1,492	168
C102_0140 MT20	14.06	2010/143	3,500	3,500	5,000	15	1.6	34	3.8	1,063	120	1,222	138	2,126	240
C102_0140 MT30	14.06	2010/143	3,500	3,500	4,000	15	6.4	34	3.9	1,063	120	1,222	138	2,126	240
C102_0155 MT10	15.71	377/24	3,800	3,500	6,000	15	0.9	34	3.8	1,063	120	1,222	138	1,603	181
C102_0155 MT20	15.71	377/24	3,500	3,500	5,000	15	1.5	34	3.8	1,063	120	1,222	138	2,126	240
C102_0155 MT30	15.71	377/24	3,500	3,500	4,000	15	6.3	34	3.9	1,063	120	1,222	138	2,126	240
C102_0175 MT10	17.73	195/11	3,800	3,500	6,000	15	0.9	34	3.8	1,063	120	1,222	138	1,809	204
C102_0175 MT20	17.73	195/11	3,500	3,500	5,000	15	1.5	34	3.9	1,063	120	1,222	138	2,126	240
C102_0175 MT30	17.73	195/11	3,500	3,500	4,000	15	6.3	34	3.9	1,063	120	1,222	138	2,126	240
C102_0210 MT10	20.84	667/32	4,000	3,900	6,000	15	0.8	34	3.9	1,063	120	1,222	138	2,012	227
C102_0210 MT20	20.84	667/32	3,500	3,500	5,000	15	1.4	34	3.9	1,063	120	1,222	138	2,126	240
C102_0210 MT30	20.84	667/32	3,500	3,500	4,000	15	6.2	34	3.9	1,063	120	1,222	138	2,126	240
C102_0240 MT10	23.52	1035/44	4,000	3,900	6,000	15	0.8	34	3.9	1,063	120	1,222	138	2,126	240
C102_0240 MT20	23.52	1035/44	3,500	3,500	5,000	15	1.4	34	3.9	1,063	120	1,222	138	2,126	240
C102_0240 MT30	23.52	1035/44	3,500	3,500	4,000	15	6.2	35	3.9	1,063	120	1,222	138	2,126	240

[1] Maximum torque for continuous input RPM - horizontal output position.

[2] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

[3] dB(A) Measured at 1 meter distance with 3000 RPM input.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 3, 4
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL5 and EL6
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL3, EL4
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

C

"C" Series–Concentric Helical ServoFit® Modular System Selection Data

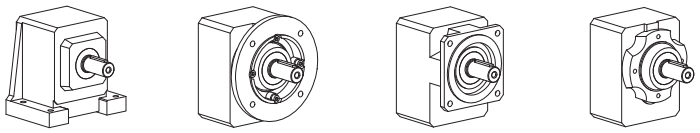
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [1]		Output Torque Acceleration		Output Torque Peak [2]	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	$kgcm^2$	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
C102 with MT TriAdapt® Motor Adapter Continued														**Noise Level ≤ 55 dB(A)** [3]	
C102_0250 MT10	25.13	377/15	4,000	3,900	6,000	15	0.8	34	3.9	1,063	120	1,222	138	2,126	240
C102_0250 MT20	25.13	377/15	3,500	3,500	5,000	15	1.4	34	3.9	1,063	120	1,222	138	2,126	240
C102_0250 MT30	25.13	377/15	3,500	3,500	4,000	15	6.2	35	3.9	1,063	120	1,222	138	2,126	240
C102_0280 MT10	28.36	312/11	4,000	3,900	6,000	15	0.8	35	3.9	1,063	120	1,222	138	2,126	240
C102_0280 MT20	28.36	312/11	3,500	3,500	5,000	15	1.4	35	3.9	1,063	120	1,222	138	2,126	240
C102_0280 MT30	28.36	312/11	3,500	3,500	4,000	15	6.2	35	3.9	1,063	120	1,222	138	2,126	240
C102_0310 MT10	31.07	435/14	4,000	3,900	6,000	15	0.7	35	3.9	1,063	120	1,222	138	2,126	240
C102_0310 MT20	31.07	435/14	3,500	3,500	5,000	15	1.3	35	3.9	1,063	120	1,222	138	2,126	240
C102_0310 MT30	31.07	435/14	3,500	3,500	4,000	15	6.1	35	3.9	1,063	120	1,222	138	2,126	240
C102_0350 MT10	35.07	2700/77	4,000	3,900	6,000	15	0.7	35	3.9	1,063	120	1,222	138	2,126	240
C102_0350 MT20	35.07	2700/77	3,500	3,500	5,000	15	1.3	35	3.9	1,063	120	1,222	138	2,126	240
C102_0350 MT30	35.07	2700/77	3,500	3,500	4,000	15	6.1	35	3.9	1,063	120	1,222	138	2,126	240
C102_0420 MT10	41.57	1247/30	4,000	3,900	6,000	15	0.7	35	3.9	1,063	120	1,222	138	2,126	240
C102_0420 MT20	41.57	1247/30	3,500	3,500	5,000	15	1.3	35	3.9	1,063	120	1,222	138	2,126	240
C102_0470 MT10	46.91	516/11	4,000	3,900	6,000	15	0.7	35	3.9	1,063	120	1,222	138	2,126	240
C102_0470 MT20	46.91	516/11	3,500	3,500	5,000	15	1.3	35	3.9	1,063	120	1,222	138	2,126	240
C102_0500 MT10	49.94	899/18	4,000	3,900	6,000	15	0.6	35	3.9	1,063	120	1,222	138	2,089	236
C102_0560 MT10	56.36	620/11	4,000	3,900	6,000	15	0.6	35	3.9	1,063	120	1,222	138	2,126	240
C102_0620 MT10	62.43	4495/72	4,000	3,900	6,000	15	0.6	35	3.9	1,054	119	1,222	138	2,108	238
C102_0700 MT10	70.46	775/11	4,000	3,900	6,000	15	0.6	35	3.9	1,063	120	1,222	138	2,126	240
C103 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 55 dB(A)** [3]	
C103_0820 MT10	81.64	31349/384	4,000	3,900	6,000	15	0.7	35	3.9	1,063	120	1,222	138	2,126	240
C103_0920 MT10	92.13	16215/176	4,000	3,900	6,000	15	0.7	35	3.9	1,063	120	1,222	138	2,126	240
C103_1110 MT10	111.1	1222/11	4,000	3,900	6,000	15	0.7	35	3.9	1,063	120	1,222	138	2,126	240
C103_1370 MT10	137.3	10575/77	4,000	3,900	6,000	15	0.7	35	3.9	1,063	120	1,222	138	2,126	240
C103_1840 MT10	183.7	2021/11	4,000	3,900	6,000	15	0.6	35	3.9	1,063	120	1,222	138	2,126	240
C103_2210 MT10	220.8	7285/33	4,000	3,900	6,000	15	0.6	35	3.9	1,063	120	1,222	138	2,126	240
C103_2760 MT10	275.9	36425/132	4,000	3,900	6,000	15	0.6	35	3.9	1,063	120	1,222	138	2,126	240
C202 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 53 dB(A)** [3]	
C202_0020 MT20	2.009	432/215	3,000	2,600	4,500	17	5.1	15	1.7	690	78	760	86	1,114	126
C202_0020 MT30	2.009	432/215	3,000	2,600	4,000	17	9.9	21	2.4	834	94	1,408	159	2,874	324
C202_0022 MT20	2.184	2160/989	3,000	2,600	4,500	17	4.9	17	2.0	751	85	826	93	1,211	137
C202_0022 MT30	2.184	2160/989	3,000	2,600	4,000	17	9.7	23	2.6	857	97	1,448	163	3,100	350
C202_0025 MT20	2.475	99/40	3,000	2,600	4,500	17	4.1	20	2.3	851	96	936	106	1,328	150
C202_0025 MT30	2.475	99/40	3,000	2,600	4,000	17	8.9	27	3.0	894	101	1,062	120	1,328	150
C202_0027 MT20	2.690	495/184	3,000	2,600	4,500	17	4.0	23	2.5	919	104	1,017	115	1,443	163
C202_0027 MT30	2.690	495/184	3,000	2,600	4,000	17	8.8	29	3.3	919	104	1,155	130	1,443	163
C202_0031 MT20	3.103	90/29	3,500	3,100	5,000	17	3.3	26	3.0	964	109	1,173	132	1,618	183
C202_0031 MT30	3.103	90/29	3,500	3,100	4,000	17	8.1	33	3.7	964	109	1,295	146	1,618	183

Motor Shaft

Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48
MT50	60

Housing Styles

N — Foot Mounted **F** — Round Flange **Q** — Square Flange **G** — Tapped Holes



Contact STOBER for availability of "Q" housing style.

See Page 146 for required ordering information and part number example.

C

"C" Series–Concentric Helical ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum			Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque					
			Continuous		Cyclic					Nominal [1]		Acceleration		Peak [2]	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	Δφ	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	$M_{2N \le 2000\ RPM}$ in.lbs.	$M_{2N \le 2000\ RPM}$ Nm	M_{2B} in.lbs.	M_{2B} Nm	M_{2PEAK} in.lbs.	M_{2PEAK} Nm
C202 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 53 dB(A)** [3]	
C202_0034 MT20	3.373	2250/667	3,500	3,100	5,000	17	3.2	29	3.2	991	112	1,275	144	1,759	199
C202_0034 MT30	3.373	2250/667	3,500	3,100	4,000	17	8.0	35	3.9	991	112	1,407	159	1,759	199
C202_0039 MT20	3.888	486/125	3,500	3,100	5,000	17	2.7	32	3.6	1,039	117	1,470	166	1,954	221
C202_0039 MT30	3.888	486/125	3,500	3,100	4,000	17	7.5	38	4.3	1,039	117	1,563	176	1,954	221
C202_0042 MT20	4.226	486/115	3,500	3,100	5,000	17	2.6	34	3.9	1,068	121	1,598	180	2,124	240
C202_0042 MT30	4.226	486/115	3,500	3,100	4,000	17	7.4	40	4.5	1,068	121	1,699	192	2,124	240
C202_0047 MT20	4.667	14/3	3,500	3,500	5,000	17	2.3	37	4.1	1,104	125	1,764	199	2,261	255
C202_0047 MT30	4.667	14/3	3,500	3,500	4,000	17	7.1	42	4.7	1,104	125	1,772	200	2,261	255
C202_0051 MT20	5.072	350/69	3,500	3,500	5,000	17	2.3	39	4.4	1,135	128	1,772	200	2,457	277
C202_0051 MT30	5.072	350/69	3,500	3,500	4,000	17	7.1	43	4.9	1,135	128	1,772	200	2,457	277
C202_0058 MT10	5.791	666/115	3,700	3,500	5,500	17	1.4	40	4.5	488	55	488	55	610	69
C202_0058 MT20	5.791	666/115	3,500	3,500	5,000	17	2.0	41	4.7	1,186	134	1,772	200	2,696	304
C202_0058 MT30	5.791	666/115	3,500	3,500	4,000	17	6.8	45	5.1	1,186	134	1,772	200	2,696	304
C202_0063 MT10	6.295	3330/529	3,700	3,500	5,500	17	1.4	42	4.7	530	60	530	60	663	75
C202_0063 MT20	6.295	3330/529	3,500	3,500	5,000	17	2.0	43	4.8	1,220	138	1,772	200	2,930	331
C202_0063 MT30	6.295	3330/529	3,500	3,500	4,000	17	6.8	46	5.2	1,220	138	1,772	200	2,930	331
C202_0078 MT10	7.800	39/5	4,000	3,900	6,000	17	1.1	45	5.1	618	70	618	70	772	87
C202_0078 MT20	7.800	39/5	3,500	3,500	5,000	17	1.7	46	5.2	1,310	148	1,772	200	3,100	350
C202_0078 MT30	7.800	39/5	3,500	3,500	4,000	17	6.5	48	5.5	1,310	148	1,772	200	3,100	350
C202_0082 MT20	8.190	475/58	3,500	3,100	5,000	14	2.7	61	6.9	1,692	191	2,037	230	3,543	400
C202_0082 MT30	8.190	475/58	3,500	3,100	4,000	14	7.5	65	7.4	1,692	191	2,037	230	3,543	400
C202_0094 MT20	9.387	2450/261	3,500	3,100	5,000	14	2.7	64	7.2	1,771	200	2,037	230	3,543	400
C202_0094 MT30	9.387	2450/261	3,500	3,100	4,000	14	7.5	67	7.6	1,771	200	2,037	230	3,543	400
C202_0105 MT20	10.26	513/50	3,500	3,100	5,000	14	2.3	65	7.3	1,772	200	2,037	230	3,543	400
C202_0105 MT30	10.26	513/50	3,500	3,100	4,000	14	7.1	68	7.7	1,772	200	2,037	230	3,543	400
C202_0120 MT20	11.76	294/25	3,500	3,100	5,000	14	2.3	67	7.5	1,772	200	2,037	230	3,543	400
C202_0120 MT30	11.76	294/25	3,500	3,100	4,000	14	7.1	69	7.8	1,772	200	2,037	230	3,543	400
C202_0125 MT20	12.32	665/54	3,500	3,500	5,000	14	2.1	67	7.6	1,772	200	2,037	230	3,543	400
C202_0125 MT30	12.32	665/54	3,500	3,500	4,000	14	6.9	70	7.9	1,772	200	2,037	230	3,543	400
C202_0140 MT20	14.12	3430/243	3,500	3,500	5,000	14	2.0	69	7.8	1,772	200	2,037	230	3,543	400
C202_0140 MT30	14.12	3430/243	3,500	3,500	4,000	14	6.8	70	8.0	1,772	200	2,037	230	3,543	400
C202_0155 MT10	15.28	703/46	3,700	3,500	5,500	14	1.2	69	7.8	1,287	145	1,287	145	1,609	182
C202_0155 MT20	15.28	703/46	3,500	3,500	5,000	14	1.8	69	7.8	1,772	200	2,037	230	3,543	400
C202_0155 MT30	15.28	703/46	3,500	3,500	4,000	14	6.6	71	8.0	1,772	200	2,037	230	3,543	400
C202_0175 MT10	17.52	3626/207	3,700	3,500	5,500	14	1.2	70	7.9	1,476	167	1,476	167	1,844	208
C202_0175 MT20	17.52	3626/207	3,500	3,500	5,000	14	1.8	70	7.9	1,772	200	2,037	230	3,543	400
C202_0175 MT30	17.52	3626/207	3,500	3,500	4,000	14	6.6	71	8.1	1,772	200	2,037	230	3,543	400
C202_0210 MT10	20.58	247/12	4,000	3,900	6,000	14	1.0	71	8.0	1,631	184	1,631	184	2,038	230
C202_0210 MT20	20.58	247/12	3,500	3,500	5,000	14	1.6	71	8.0	1,772	200	2,037	230	3,543	400
C202_0210 MT30	20.58	247/12	3,500	3,500	4,000	14	6.4	72	8.1	1,772	200	2,037	230	3,543	400
C202_0240 MT10	23.59	637/27	4,000	3,900	6,000	14	1.0	71	8.1	1,772	200	1,869	211	2,337	264
C202_0240 MT20	23.59	637/27	3,500	3,500	5,000	14	1.6	72	8.1	1,772	200	2,037	230	3,543	400
C202_0240 MT30	23.59	637/27	3,500	3,500	4,000	14	6.4	72	8.2	1,772	200	2,037	230	3,543	400

[1] Maximum torque for continuous input RPM - horizontal output position.

[2] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

[3] dB(A) Measured at 1 meter distance with 3000 RPM input.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 3, 4
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL5 and EL6
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL3, EL4
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"C" Series–Concentric Helical ServoFit® Modular System Selection Data

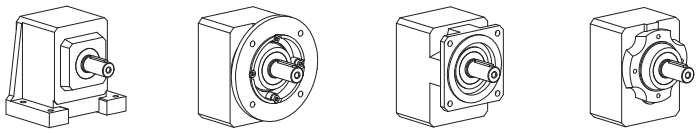
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [1]		Output Torque Acceleration		Output Torque Peak [2]	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	$kgcm^2$	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
C202 with MT TriAdapt® Motor Adapter Continued											**Noise Level ≤ 53 dB(A)** [3]				
C202_0250 MT10	24.64	1577/64	4,000	3,900	6,000	14	0.9	72	8.1	1,772	200	1,889	213	2,362	267
C202_0250 MT20	24.64	1577/64	3,500	3,500	5,000	14	1.5	72	8.1	1,772	200	2,037	230	3,543	400
C202_0250 MT30	24.64	1577/64	3,500	3,500	4,000	14	6.3	72	8.2	1,772	200	2,037	230	3,543	400
C202_0280 MT10	28.24	4067/144	4,000	3,900	6,000	14	0.9	72	8.1	1,772	200	2,037	230	2,707	306
C202_0280 MT20	28.24	4067/144	3,500	3,500	5,000	14	1.5	72	8.2	1,772	200	2,037	230	3,543	400
C202_0280 MT30	28.24	4067/144	3,500	3,500	4,000	14	6.3	73	8.2	1,772	200	2,037	230	3,543	400
C202_0310 MT10	30.69	399/13	4,000	3,900	6,000	14	0.8	72	8.2	1,772	200	2,037	230	2,793	315
C202_0310 MT20	30.69	399/13	3,500	3,500	5,000	14	1.4	72	8.2	1,772	200	2,037	230	3,543	400
C202_0310 MT30	30.69	399/13	3,500	3,500	4,000	14	6.2	73	8.2	1,772	200	2,037	230	3,543	400
C202_0350 MT10	35.18	1372/39	4,000	3,900	6,000	14	0.8	73	8.2	1,772	200	2,037	230	3,201	361
C202_0350 MT20	35.18	1372/39	3,500	3,500	5,000	14	1.4	73	8.2	1,772	200	2,037	230	3,543	400
C202_0350 MT30	35.18	1372/39	3,500	3,500	4,000	14	6.2	73	8.2	1,772	200	2,037	230	3,543	400
C202_0410 MT10	40.85	817/20	4,000	3,900	6,000	14	0.7	73	8.2	1,772	200	2,037	230	3,493	394
C202_0410 MT20	40.85	817/20	3,500	3,500	5,000	14	1.3	73	8.2	1,772	200	2,037	230	3,543	400
C202_0410 MT30	40.85	817/20	3,500	3,500	4,000	14	6.1	73	8.2	1,772	200	2,037	230	3,543	400
C202_0470 MT10	46.82	2107/45	4,000	3,900	6,000	14	0.7	73	8.2	1,772	200	2,037	230	3,543	400
C202_0470 MT20	46.82	2107/45	3,500	3,500	5,000	14	1.3	73	8.2	1,772	200	2,037	230	3,543	400
C202_0470 MT30	46.82	2107/45	3,500	3,500	4,000	14	6.1	73	8.3	1,772	200	2,037	230	3,543	400
C202_0490 MT10	49.23	1083/22	4,000	3,900	6,000	14	0.7	73	8.2	1,772	200	2,037	230	3,543	400
C202_0490 MT20	49.23	1083/22	3,500	3,500	5,000	14	1.3	73	8.2	1,772	200	2,037	230	3,543	400
C202_0560 MT10	56.42	1862/33	4,000	3,900	6,000	14	0.7	73	8.3	1,772	200	2,037	230	3,543	400
C202_0560 MT20	56.42	1862/33	3,500	3,500	5,000	14	1.3	73	8.3	1,772	200	2,037	230	3,543	400
C202_0610 MT10	61.35	2945/48	4,000	3,900	6,000	14	0.7	73	8.3	1,658	187	1,989	225	2,518	284
C202_0700 MT10	70.32	7595/108	4,000	3,900	6,000	14	0.7	73	8.3	1,772	200	2,037	230	2,886	326
C203 with MT TriAdapt® Motor Adapter											**Noise Level ≤ 53 dB(A)** [3]				
C203_0800 MT20	79.59	7163/90	3,500	3,500	5,000	14	1.4	73	8.3	1,772	200	2,037	230	3,543	400
C203_0810 MT10	80.62	11609/144	4,000	3,900	6,000	14	0.7	73	8.3	1,772	200	2,037	230	3,543	400
C203_0910 MT20	91.23	36946/405	3,500	3,500	5,000	14	1.4	73	8.3	1,772	200	2,037	230	3,543	400
C203_0920 MT10	92.40	29939/324	4,000	3,900	6,000	14	0.7	73	8.3	1,772	200	2,037	230	3,543	400
C203_1090 MT20	109.2	117943/1080	3,500	3,500	5,000	14	1.4	73	8.3	1,772	200	2,037	230	3,543	400
C203_1110 MT10	110.6	191149/1728	4,000	3,900	6,000	14	0.7	73	8.3	1,772	200	2,037	230	3,543	400
C203_1360 MT20	136.0	79576/585	3,500	3,500	5,000	14	1.4	73	8.3	1,772	200	2,037	230	3,543	400
C203_1380 MT10	137.8	16121/117	4,000	3,900	6,000	14	0.7	73	8.3	1,772	200	2,037	230	3,543	400
C203_1810 MT20	181.0	122206/675	3,500	3,500	5,000	14	1.4	73	8.3	1,772	200	2,037	230	3,543	400
C203_1830 MT10	183.4	99029/540	4,000	3,900	6,000	14	0.7	73	8.3	1,772	200	2,037	230	3,543	400
C203_2210 MT10	221.0	43757/198	4,000	3,900	6,000	14	0.7	73	8.3	1,772	200	2,037	230	3,543	400
C203_2750 MT10	275.4	356965/1296	4,000	3,900	6,000	14	0.6	73	8.3	1,772	200	2,037	230	2,885	326

Motor Shaft

Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48
MT50	60

Housing Styles

N — Foot Mounted **F** — Round Flange **Q** — Square Flange **G** — Tapped Holes



Contact STOBER for availability of "Q" housing style.

See Page 146 for required ordering information and part number example.

C

See web site for drawings.

"C" Series–Concentric Helical ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [1]		Output Torque Acceleration		Output Torque Peak [2]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
C302 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 53 dB(A)** [3]	
C302_0020 MT20	2.020	608/301	2,700	2,300	4,000	16	8.2	16	1.8	694	78	764	86	1,159	131
C302_0020 MT30	2.020	608/301	2,700	2,300	4,000	16	13.0	23	2.6	1,367	154	1,814	205	2,988	337
C302_0020 MT40	2.020	608/301	2,700	2,300	3,500	16	17.0	34	3.9	1,367	154	2,309	261	2,988	337
C302_0022 MT20	2.177	468/215	2,700	2,300	4,000	16	7.8	18	2.1	748	84	823	93	1,249	141
C302_0022 MT30	2.177	468/215	2,700	2,300	4,000	16	12.6	25	2.8	1,402	158	1,955	221	3,221	364
C302_0022 MT40	2.177	468/215	2,700	2,300	3,500	16	16.6	37	4.1	1,402	158	2,368	267	3,221	364
C302_0025 MT20	2.510	1634/651	2,700	2,300	4,000	16	6.3	22	2.5	863	97	949	107	1,398	158
C302_0025 MT30	2.510	1634/651	2,700	2,300	4,000	16	11.1	29	3.3	1,470	166	2,254	254	3,607	407
C302_0025 MT40	2.510	1634/651	2,700	2,300	3,500	16	15.1	41	4.6	1,470	166	2,483	280	3,607	407
C302_0027 MT20	2.705	1677/620	2,700	2,300	4,000	16	6.1	24	2.7	930	105	1,023	115	1,507	170
C302_0027 MT30	2.705	1677/620	2,700	2,300	4,000	16	10.9	32	3.6	1,507	170	2,429	274	3,887	439
C302_0027 MT40	2.705	1677/620	2,700	2,300	3,500	16	14.9	43	4.8	1,507	170	2,546	287	3,887	439
C302_0031 MT20	3.110	1045/336	3,200	2,800	4,500	16	4.8	28	3.2	1,069	121	1,176	133	1,669	188
C302_0031 MT30	3.110	1045/336	3,200	2,800	4,000	16	9.6	36	4.1	1,579	178	2,667	301	4,304	486
C302_0031 MT40	3.110	1045/336	3,000	2,800	3,500	16	13.6	46	5.2	1,579	178	2,667	301	4,304	486
C302_0034 MT20	3.352	429/128	3,200	2,800	4,500	16	4.7	31	3.5	1,152	130	1,267	143	1,798	203
C302_0034 MT30	3.352	429/128	3,200	2,800	4,000	16	9.5	38	4.3	1,618	183	2,734	309	4,639	524
C302_0034 MT40	3.352	429/128	3,000	2,800	3,500	16	13.5	48	5.4	1,618	183	2,734	309	4,639	524
C302_0039 MT20	3.878	190/49	3,200	2,800	4,500	16	3.8	35	4.0	1,333	150	1,466	166	2,012	227
C302_0039 MT30	3.878	190/49	3,200	2,800	4,000	16	8.6	42	4.8	1,699	192	2,870	324	4,872	550
C302_0039 MT40	3.878	190/49	3,000	2,800	3,500	16	12.6	51	5.8	1,699	192	2,870	324	4,872	550
C302_0042 MT20	4.179	117/28	3,200	2,800	4,500	16	3.7	38	4.3	1,436	162	1,580	178	2,169	245
C302_0042 MT30	4.179	117/28	3,200	2,800	4,000	16	8.5	44	5.0	1,742	197	2,923	330	4,872	550
C302_0042 MT40	4.179	117/28	3,000	2,800	3,500	16	12.5	52	5.9	1,742	197	2,923	330	4,872	550
C302_0047 MT20	4.675	589/126	3,500	3,100	5,000	16	3.2	41	4.6	1,552	175	1,767	200	2,334	264
C302_0047 MT30	4.675	589/126	3,500	3,100	4,000	16	8.0	47	5.3	1,808	204	2,923	330	4,872	550
C302_0047 MT40	4.675	589/126	3,000	3,000	3,500	16	12.0	54	6.1	1,808	204	2,923	330	4,872	550
C302_0050 MT20	5.038	403/80	3,500	3,100	5,000	16	3.1	43	4.9	1,672	189	1,905	215	2,515	284
C302_0050 MT30	5.038	403/80	3,500	3,100	4,000	16	7.9	49	5.5	1,854	209	2,923	330	4,872	550
C302_0050 MT40	5.038	403/80	3,000	3,000	3,500	16	11.9	55	6.2	1,854	209	2,923	330	4,872	550
C302_0059 MT20	5.859	2584/441	3,500	3,100	5,000	16	2.6	47	5.3	1,702	192	2,215	250	2,829	319
C302_0059 MT30	5.859	2584/441	3,500	3,100	4,000	16	7.4	52	5.9	1,950	220	2,923	330	4,872	550
C302_0059 MT40	5.859	2584/441	3,000	3,000	3,500	16	11.4	57	6.4	1,950	220	2,923	330	4,872	550
C302_0063 MT20	6.314	221/35	3,500	3,100	5,000	16	2.6	49	5.5	1,834	207	2,387	269	3,049	344
C302_0063 MT30	6.314	221/35	3,500	3,100	4,000	16	7.4	53	6.0	1,999	226	2,923	330	4,872	550
C302_0063 MT40	6.314	221/35	3,000	3,000	3,500	16	11.4	58	6.5	1,999	226	2,923	330	4,872	550
C302_0078 MT20	7.841	494/63	3,500	3,500	5,000	16	2.1	53	5.9	1,771	200	2,845	321	3,556	401
C302_0078 MT30	7.841	494/63	3,500	3,500	4,000	16	6.9	56	6.3	2,148	243	2,923	330	4,872	550
C302_0078 MT40	7.841	494/63	3,000	3,000	3,500	16	10.9	59	6.7	2,148	243	2,923	330	4,872	550
C302_0083 MT20	8.250	33/4	3,200	2,800	4,500	13	3.8	64	7.2	2,638	298	3,119	352	4,426	500
C302_0083 MT30	8.250	33/4	3,200	2,800	4,000	13	8.6	68	7.7	2,638	298	3,543	400	6,201	700
C302_0083 MT40	8.250	33/4	3,000	2,800	3,500	13	12.6	73	8.2	2,638	298	3,543	400	6,201	700

[1] Maximum torque for continuous input RPM - horizontal output position.

[2] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

[3] dB(A) Measured at 1 meter distance with 3000 RPM input.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 3, 4
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL5 and EL6
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL3, EL4
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"C" Series–Concentric Helical ServoFit® Modular System Selection Data

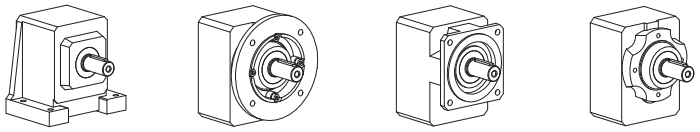
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [1]		Output Torque Acceleration		Output Torque Peak [2]	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	$kgcm^2$	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
C302 with MT TriAdapt® Motor Adapter Continued Next Page											**Noise Level ≤ 53 dB(A)** [3]				
C302_0093 MT20	9.310	3575/384	3,200	2,800	4,500	13	3.7	66	7.5	2,746	310	3,100	350	4,995	564
C302_0093 MT30	9.310	3575/384	3,200	2,800	4,000	13	8.5	70	7.9	2,746	310	3,100	350	6,201	700
C302_0093 MT40	9.310	3575/384	3,000	2,800	3,500	13	12.5	74	8.3	2,746	310	3,100	350	6,201	700
C302_0105 MT20	10.29	72/7	3,200	2,800	4,500	13	3.1	68	7.7	2,839	321	3,543	400	5,338	603
C302_0105 MT30	10.29	72/7	3,200	2,800	4,000	13	7.9	71	8.1	2,839	321	3,543	400	6,201	700
C302_0105 MT40	10.29	72/7	3,000	2,800	3,500	13	11.9	74	8.4	2,839	321	3,543	400	6,201	700
C302_0115 MT20	11.61	325/28	3,200	2,800	4,500	13	3.1	70	7.9	2,956	334	3,100	350	6,023	680
C302_0115 MT30	11.61	325/28	3,200	2,800	4,000	13	7.9	73	8.2	2,956	334	3,100	350	6,201	700
C302_0115 MT40	11.61	325/28	3,000	2,800	3,500	13	11.9	75	8.5	2,956	334	3,100	350	6,201	700
C302_0125 MT20	12.40	62/5	3,500	3,100	5,000	13	2.7	71	8.0	3,022	341	3,543	400	6,191	699
C302_0125 MT30	12.40	62/5	3,500	3,100	4,000	13	7.5	73	8.3	3,022	341	3,543	400	6,201	700
C302_0125 MT40	12.40	62/5	3,000	3,000	3,500	13	11.5	75	8.5	3,022	341	3,543	400	6,201	700
C302_0140 MT20	13.99	2015/144	3,500	3,100	5,000	13	2.7	72	8.1	3,100	350	3,100	350	6,201	700
C302_0140 MT30	13.99	2015/144	3,500	3,100	4,000	13	7.5	74	8.4	3,100	350	3,100	350	6,201	700
C302_0140 MT40	13.99	2015/144	3,000	3,000	3,500	13	11.5	76	8.5	3,100	350	3,100	350	6,201	700
C302_0155 MT20	15.54	544/35	3,500	3,100	5,000	13	2.3	73	8.2	3,100	350	3,543	400	6,201	700
C302_0155 MT30	15.54	544/35	3,500	3,100	4,000	13	7.1	75	8.4	3,100	350	3,543	400	6,201	700
C302_0155 MT40	15.54	544/35	3,000	3,000	3,500	13	11.1	76	8.6	3,100	350	3,543	400	6,201	700
C302_0175 MT20	17.54	1105/63	3,500	3,100	5,000	13	2.3	74	8.3	3,100	350	3,100	350	6,201	700
C302_0175 MT30	17.54	1105/63	3,500	3,100	4,000	13	7.1	75	8.5	3,100	350	3,100	350	6,201	700
C302_0175 MT40	17.54	1105/63	3,000	3,000	3,500	13	11.1	76	8.6	3,100	350	3,100	350	6,201	700
C302_0210 MT20	20.80	104/5	3,500	3,500	5,000	13	1.9	75	8.5	3,100	350	3,543	400	6,201	700
C302_0210 MT30	20.80	104/5	3,500	3,500	4,000	13	6.7	76	8.6	3,100	350	3,543	400	6,201	700
C302_0210 MT40	20.80	104/5	3,000	3,000	3,500	13	10.7	77	8.6	3,100	350	3,543	400	6,201	700
C302_0230 MT20	23.47	845/36	3,500	3,500	5,000	13	1.9	75	8.5	3,100	350	3,100	350	6,201	700
C302_0230 MT30	23.47	845/36	3,500	3,500	4,000	13	6.7	76	8.6	3,100	350	3,100	350	6,201	700
C302_0230 MT40	23.47	845/36	3,000	3,000	3,500	13	10.7	77	8.7	3,100	350	3,100	350	6,201	700
C302_0250 MT20	24.80	124/5	3,500	3,500	5,000	13	1.7	76	8.5	3,100	350	3,543	400	6,201	700
C302_0250 MT30	24.80	124/5	3,500	3,500	4,000	13	6.5	76	8.6	3,100	350	3,543	400	6,201	700
C302_0250 MT40	24.80	124/5	3,000	3,000	3,500	13	10.5	77	8.7	3,100	350	3,543	400	6,201	700
C302_0280 MT20	27.99	2015/72	3,500	3,500	5,000	13	1.7	76	8.6	3,100	350	3,100	350	6,201	700
C302_0280 MT30	27.99	2015/72	3,500	3,500	4,000	13	6.5	76	8.6	3,100	350	3,100	350	6,201	700
C302_0280 MT40	27.99	2015/72	3,000	3,000	3,500	13	10.5	77	8.7	3,100	350	3,100	350	6,201	700
C302_0310 MT20	31.04	776/25	3,500	3,500	5,000	13	1.6	76	8.6	3,100	350	3,543	400	6,201	700
C302_0310 MT30	31.04	776/25	3,500	3,500	4,000	13	6.4	77	8.7	3,100	350	3,543	400	6,201	700
C302_0310 MT40	31.04	776/25	3,000	3,000	3,500	13	10.4	77	8.7	3,100	350	3,543	400	6,201	700
C302_0350 MT20	35.03	1261/36	3,500	3,500	5,000	13	1.6	76	8.6	3,100	350	3,100	350	6,201	700
C302_0350 MT30	35.03	1261/36	3,500	3,500	4,000	13	6.4	77	8.7	3,100	350	3,100	350	6,201	700
C302_0350 MT40	35.03	1261/36	3,000	3,000	3,500	13	10.4	77	8.7	3,100	350	3,100	350	6,201	700
C302_0410 MT20	41.35	2688/65	3,500	3,500	5,000	13	1.4	77	8.7	3,100	350	3,543	400	6,201	700
C302_0410 MT30	41.35	2688/65	3,500	3,500	4,000	13	6.2	77	8.7	3,100	350	3,543	400	6,201	700
C302_0470 MT20	46.67	140/3	3,500	3,500	5,000	13	1.4	77	8.7	3,100	350	3,100	350	6,201	700
C302_0470 MT30	46.67	140/3	3,500	3,500	4,000	13	6.2	77	8.7	3,100	350	3,100	350	6,201	700

Motor Shaft

Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48
MT50	60

Housing Styles

N — Foot Mounted **F** — Round Flange **Q** — Square Flange **G** — Tapped Holes



Contact STOBER for availability of "Q" housing style.

See Page 146 for required ordering information and part number example.

C

See web site for drawings.

"C" Series–Concentric Helical ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [1]		Output Torque Acceleration		Output Torque Peak [2]	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	kgcm²	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
C302 with MT TriAdapt® Motor Adapter Continued														**Noise Level ≤ 53 dB(A)** [3]	
C302_0500 MT20	49.75	2736/55	3,500	3,500	5,000	13	1.4	77	8.7	3,100	350	3,543	400	6,201	700
C302_0500 MT30	49.75	2736/55	3,500	3,500	4,000	13	6.2	77	8.7	3,100	350	3,543	400	6,201	700
C302_0560 MT20	56.14	1235/22	3,500	3,500	5,000	13	1.4	77	8.7	3,100	350	3,100	350	6,201	700
C302_0560 MT30	56.14	1235/22	3,500	3,500	4,000	13	6.2	77	8.7	3,100	350	3,100	350	6,201	700
C302_0620 MT20	61.92	1548/25	3,500	3,500	5,000	13	1.3	77	8.7	2,932	331	3,518	397	4,990	563
C302_0700 MT20	69.88	559/8	3,500	3,500	5,000	13	1.3	77	8.7	3,100	350	3,100	350	5,631	636
C303 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 53 dB(A)** [3]	
C303_0800 MT20	80.43	6032/75	3,500	3,500	5,000	13	1.4	77	8.7	3,100	350	3,543	400	6,201	700
C303_0810 MT10	81.47	1222/15	3,800	3,500	5,500	13	0.7	77	8.7	2,954	334	2,954	334	3,693	417
C303_0910 MT20	90.76	4901/54	3,500	3,500	5,000	13	1.4	77	8.7	3,100	350	3,100	350	6,201	700
C303_0920 MT10	91.93	39715/432	3,800	3,500	5,500	13	0.7	77	8.7	3,100	350	3,100	350	4,167	470
C303_1080 MT20	108.2	11687/108	3,500	3,500	5,000	13	1.4	77	8.7	3,100	350	3,100	350	6,201	700
C303_1100 MT10	109.6	94705/864	3,800	3,500	5,500	13	0.7	77	8.7	3,100	350	3,100	350	4,969	561
C303_1350 MT20	135.4	36569/270	3,500	3,500	5,000	13	1.4	77	8.7	3,100	350	3,100	350	6,201	700
C303_1370 MT10	137.2	59267/432	3,800	3,500	5,500	13	0.7	77	8.7	3,100	350	3,100	350	6,201	700
C303_1800 MT20	180.4	1624/9	3,500	3,500	5,000	13	1.4	77	8.7	3,100	350	3,100	350	6,201	700
C303_1830 MT10	182.8	1645/9	3,800	3,500	5,500	13	0.7	77	8.7	3,100	350	3,100	350	6,201	700
C303_2170 MT20	217.1	7163/33	3,500	3,500	5,000	13	1.4	77	8.7	3,100	350	3,100	350	6,201	700
C303_2200 MT10	219.9	58045/264	3,800	3,500	5,500	13	0.7	77	8.7	3,100	350	3,100	350	6,201	700
C303_2740 MT10	273.7	26273/96	3,800	3,500	5,500	13	0.7	77	8.7	3,100	350	3,100	350	5,631	636
C402 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 61 dB(A)** [3]	
C402_0020 MT30	1.968	551/280	2,500	2,100	3,500	15	23.1	28	3.1	1,606	181	1,767	199	3,029	342
C402_0020 MT40	1.968	551/280	2,500	2,100	3,500	15	27.1	49	5.5	1,971	223	2,424	274	3,029	342
C402_0022 MT30	2.221	171/77	2,500	2,100	3,500	15	21.2	34	3.8	1,813	205	1,994	225	3,419	386
C402_0022 MT40	2.221	171/77	2,500	2,100	3,500	15	25.2	57	6.4	2,052	232	2,735	309	3,419	386
C402_0025 MT30	2.456	609/248	2,500	2,100	3,500	15	18.2	39	4.4	2,005	226	2,205	249	3,668	414
C402_0025 MT40	2.456	609/248	2,500	2,100	3,500	15	22.2	64	7.2	2,122	240	2,934	331	3,668	414
C402_0028 MT30	2.771	945/341	2,500	2,100	3,500	15	17.0	47	5.3	2,209	249	2,488	281	4,138	467
C402_0028 MT40	2.771	945/341	2,500	2,100	3,500	15	21.0	73	8.3	2,209	249	3,311	374	4,138	467
C402_0031 MT30	3.099	1537/496	2,900	2,500	4,000	15	14.5	54	6.1	2,293	259	2,783	314	4,453	503
C402_0031 MT40	3.099	1537/496	2,900	2,500	3,500	15	18.5	82	9.2	2,293	259	3,562	402	4,453	503
C402_0035 MT30	3.497	2385/682	2,900	2,500	4,000	15	13.7	63	7.1	2,388	270	3,140	354	5,025	567
C402_0035 MT40	3.497	2385/682	2,900	2,500	3,500	15	17.7	91	10.2	2,388	270	4,020	454	5,025	567
C402_0039 MT20	3.894	841/216	2,900	2,500	4,000	15	7.2	53	6.0	1,338	151	1,472	166	2,088	236
C402_0039 MT30	3.894	841/216	2,900	2,500	4,000	15	12.0	71	8.0	2,475	279	3,496	395	5,385	608
C402_0039 MT40	3.894	841/216	2,900	2,500	3,500	15	16.0	98	11.1	2,475	279	4,181	472	5,385	608
C402_0044 MT20	4.394	145/33	2,900	2,500	4,000	15	6.7	62	7.0	1,510	170	1,661	188	2,356	266
C402_0044 MT30	4.394	145/33	2,900	2,500	4,000	15	11.5	80	9.0	2,576	291	3,945	445	6,077	686
C402_0044 MT40	4.394	145/33	2,900	2,500	3,500	15	15.5	106	12.0	2,576	291	4,353	491	6,077	686

[1] Maximum torque for continuous input RPM - horizontal output position.

[2] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

[3] dB(A) Measured at 1 meter distance with 3000 RPM input.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 3, 4
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL5 and EL6
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL3, EL4
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"C" Series–Concentric Helical ServoFit® Modular System Selection Data

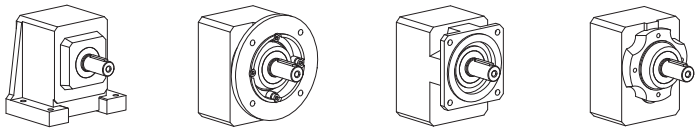
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [1]		Output Torque Acceleration		Output Torque Peak [2]	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	$kgcm^2$	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
C402 with MT TriAdapt® Motor Adapter Continued Next Page											**Noise Level ≤ 61 dB(A)** [3]				
C402_0047 MT20	4.682	899/192	3,300	2,800	4,500	15	5.8	66	7.5	1,609	182	1,770	200	2,438	275
C402_0047 MT30	4.682	899/192	3,300	2,800	4,000	15	10.6	84	9.5	2,632	297	4,204	475	6,287	710
C402_0047 MT40	4.682	899/192	3,000	2,800	3,500	15	14.6	110	12.4	2,632	297	4,446	502	6,287	710
C402_0053 MT20	5.284	465/88	3,300	2,800	4,500	15	5.4	75	8.5	1,816	205	1,998	226	2,751	311
C402_0053 MT30	5.284	465/88	3,300	2,800	4,000	15	10.2	93	10.5	2,740	309	4,629	523	7,096	801
C402_0053 MT40	5.284	465/88	3,000	2,800	3,500	15	14.2	117	13.2	2,740	309	4,629	523	7,096	801
C402_0059 MT20	5.891	377/64	3,300	2,800	4,500	15	4.4	84	9.4	1,927	218	2,227	251	2,930	331
C402_0059 MT30	5.891	377/64	3,300	2,800	4,000	15	9.2	101	11.4	2,841	321	4,799	542	7,529	850
C402_0059 MT40	5.891	377/64	3,000	2,800	3,500	15	13.2	122	13.8	2,841	321	4,799	542	7,529	850
C402_0066 MT20	6.648	585/88	3,300	2,800	4,500	15	4.2	92	10.4	2,174	245	2,513	284	3,307	373
C402_0066 MT30	6.648	585/88	3,300	2,800	4,000	15	9.0	109	12.3	2,958	334	4,872	550	7,529	850
C402_0066 MT40	6.648	585/88	3,000	2,800	3,500	15	13.0	127	14.4	2,958	334	4,872	550	7,529	850
C402_0078 MT20	7.816	2001/256	3,500	3,200	5,000	15	3.3	103	11.7	2,045	231	2,942	332	3,677	415
C402_0078 MT30	7.816	2001/256	3,500	3,200	4,000	15	8.1	118	13.3	3,122	352	4,872	550	7,529	850
C402_0078 MT40	7.816	2001/256	3,000	3,000	3,500	15	12.1	133	15.0	3,122	352	4,872	550	7,529	850
C402_0083 MT30	8.285	3339/403	2,900	2,500	4,000	12	11.9	146	16.5	4,432	500	5,315	600	9,744	1,100
C402_0083 MT40	8.285	3339/403	2,900	2,500	3,500	12	15.9	168	18.9	4,432	500	5,315	600	9,744	1,100
C402_0093 MT30	9.261	3445/372	2,900	2,500	4,000	12	11.8	154	17.4	4,600	519	4,872	550	9,744	1,100
C402_0093 MT40	9.261	3445/372	2,900	2,500	3,500	12	15.8	172	19.5	4,600	519	4,872	550	9,744	1,100
C402_0105 MT20	10.41	406/39	2,900	2,500	4,000	12	5.6	145	16.4	3,578	404	3,936	444	5,582	630
C402_0105 MT30	10.41	406/39	2,900	2,500	4,000	12	10.4	161	18.1	4,783	540	5,315	600	9,744	1,100
C402_0105 MT40	10.41	406/39	2,900	2,500	3,500	12	14.4	176	19.9	4,783	540	5,315	600	9,744	1,100
C402_0115 MT20	11.64	1885/162	2,900	2,500	4,000	12	5.5	153	17.3	3,999	451	4,399	497	6,239	704
C402_0115 MT30	11.64	1885/162	2,900	2,500	4,000	12	10.3	166	18.8	4,872	550	4,872	550	9,744	1,100
C402_0115 MT40	11.64	1885/162	2,900	2,500	3,500	12	14.3	179	20.3	4,872	550	4,872	550	9,744	1,100
C402_0125 MT20	12.52	651/52	3,300	2,800	4,500	12	4.6	157	17.8	4,303	486	4,733	534	6,518	736
C402_0125 MT30	12.52	651/52	3,300	2,800	4,000	12	9.4	169	19.1	4,872	550	5,315	600	9,744	1,100
C402_0125 MT40	12.52	651/52	3,000	2,800	3,500	12	13.4	181	20.5	4,872	550	5,315	600	9,744	1,100
C402_0140 MT20	13.99	2015/144	3,300	2,800	4,500	12	4.6	163	18.5	4,809	543	4,872	550	7,285	822
C402_0140 MT30	13.99	2015/144	3,300	2,800	4,000	12	9.4	174	19.6	4,872	550	4,872	550	9,744	1,100
C402_0140 MT40	13.99	2015/144	3,000	2,800	3,500	12	13.4	183	20.7	4,872	550	4,872	550	9,744	1,100
C402_0160 MT20	15.75	63/4	3,300	2,800	4,500	12	3.7	169	19.1	4,872	550	5,315	600	7,835	884
C402_0160 MT30	15.75	63/4	3,300	2,800	4,000	12	8.5	178	20.0	4,872	550	5,315	600	9,744	1,100
C402_0160 MT40	15.75	63/4	3,000	2,800	3,500	12	12.5	185	20.9	4,872	550	5,315	600	9,744	1,100
C402_0175 MT20	17.60	845/48	3,300	2,800	4,500	12	3.7	173	19.6	4,872	550	4,872	550	8,757	989
C402_0175 MT30	17.60	845/48	3,300	2,800	4,000	12	8.5	180	20.4	4,872	550	4,872	550	9,744	1,100
C402_0175 MT40	17.60	845/48	3,000	2,800	3,500	12	12.5	187	21.1	4,872	550	4,872	550	9,744	1,100
C402_0210 MT20	20.90	4347/208	3,500	3,200	5,000	12	2.9	179	20.2	4,872	550	5,315	600	9,744	1,100
C402_0210 MT30	20.90	4347/208	3,500	3,200	4,000	12	7.7	184	20.8	4,872	550	5,315	600	9,744	1,100
C402_0210 MT40	20.90	4347/208	3,000	3,000	3,500	12	11.7	189	21.3	4,872	550	5,315	600	9,744	1,100
C402_0230 MT20	23.36	1495/64	3,500	3,200	5,000	12	2.9	181	20.5	4,872	550	4,872	550	9,744	1,100
C402_0230 MT30	23.36	1495/64	3,500	3,200	4,000	12	7.7	186	21.0	4,872	550	4,872	550	9,744	1,100
C402_0230 MT40	23.36	1495/64	3,000	3,000	3,500	12	11.7	190	21.4	4,872	550	4,872	550	9,744	1,100

Motor Shaft

Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48
MT50	60

Housing Styles

N — Foot Mounted **F** — Round Flange **Q** — Square Flange **G** — Tapped Holes



Contact STOBER for availability of "Q" housing style.

See Page 146 for required ordering information and part number example.

See web site for drawings.

"C" Series–Concentric Helical ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum			Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque					
			Continuous		Cyclic					Nominal [1]		Acceleration		Peak [2]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	Δφ	$kgcm^2$	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
C402 with MT TriAdapt® Motor Adapter Continued														**Noise Level ≤ 61 dB(A)** [3]	
C402_0250 MT20	24.92	324/13	3,500	3,200	5,000	12	2.5	183	20.6	4,872	550	5,315	600	9,744	1,100
C402_0250 MT30	24.92	324/13	3,500	3,200	4,000	12	7.3	187	21.1	4,872	550	5,315	600	9,744	1,100
C402_0250 MT40	24.92	324/13	3,000	3,000	3,500	12	11.3	190	21.5	4,872	550	5,315	600	9,744	1,100
C402_0280 MT20	27.86	195/7	3,500	3,200	5,000	12	2.5	185	20.9	4,872	550	4,872	550	9,744	1,100
C402_0280 MT30	27.86	195/7	3,500	3,200	4,000	12	7.3	188	21.2	4,872	550	4,872	550	9,744	1,100
C402_0280 MT40	27.86	195/7	3,000	3,000	3,500	12	11.3	191	21.5	4,872	550	4,872	550	9,744	1,100
C402_0310 MT20	31.15	405/13	3,500	3,200	5,000	12	2.1	186	21.0	4,872	550	5,315	600	9,744	1,100
C402_0310 MT30	31.15	405/13	3,500	3,200	4,000	12	6.9	189	21.3	4,872	550	5,315	600	9,744	1,100
C402_0310 MT40	31.15	405/13	3,000	3,000	3,500	12	10.9	191	21.6	4,872	550	5,315	600	9,744	1,100
C402_0350 MT20	34.82	975/28	3,500	3,200	5,000	12	2.1	188	21.2	4,872	550	4,872	550	9,744	1,100
C402_0350 MT30	34.82	975/28	3,500	3,200	4,000	12	6.9	190	21.4	4,872	550	4,872	550	9,744	1,100
C402_0350 MT40	34.82	975/28	3,000	3,000	3,500	12	10.9	192	21.6	4,872	550	4,872	550	9,744	1,100
C402_0420 MT20	41.75	7056/169	3,500	3,200	5,000	12	1.8	189	21.4	4,872	550	5,315	600	9,744	1,100
C402_0420 MT30	41.75	7056/169	3,500	3,200	4,000	12	6.6	191	21.5	4,872	550	5,315	600	9,744	1,100
C402_0420 MT40	41.75	7056/169	3,000	3,000	3,500	12	10.6	192	21.7	4,872	550	5,315	600	9,744	1,100
C402_0470 MT20	46.67	140/3	3,500	3,200	5,000	12	1.7	190	21.5	4,872	550	4,872	550	9,744	1,100
C402_0470 MT30	46.67	140/3	3,500	3,200	4,000	12	6.5	191	21.6	4,872	550	4,872	550	9,744	1,100
C402_0470 MT40	46.67	140/3	3,000	3,000	3,500	12	10.5	192	21.7	4,872	550	4,872	550	9,744	1,100
C402_0500 MT20	50.19	1305/26	3,500	3,200	5,000	12	1.6	191	21.5	4,872	550	5,315	600	8,313	938
C402_0500 MT30	50.19	1305/26	3,500	3,200	4,000	12	6.4	192	21.6	4,872	550	5,315	600	8,313	938
C402_0560 MT20	56.10	9425/168	3,500	3,200	5,000	12	1.6	191	21.6	4,872	550	4,872	550	9,292	1,049
C402_0560 MT30	56.10	9425/168	3,500	3,200	4,000	12	6.4	192	21.7	4,872	550	4,872	550	9,292	1,049
C402_0630 MT20	62.52	8127/130	3,500	3,200	5,000	12	1.5	192	21.6	4,440	501	5,315	600	8,879	1,002
C402_0630 MT30	62.52	8127/130	3,500	3,200	4,000	12	6.3	192	21.7	4,440	501	5,315	600	8,879	1,002
C402_0700 MT20	69.88	559/8	3,500	3,200	5,000	12	1.5	192	21.7	4,872	550	4,872	550	9,744	1,100
C402_0700 MT30	69.88	559/8	3,500	3,200	4,000	12	6.3	192	21.7	4,872	550	4,872	550	9,744	1,100
C403 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 61 dB(A)** [3]	
C403_0810 MT20	80.81	42021/520	3,500	3,200	5,000	12	1.5	192	21.7	4,872	550	5,315	600	9,744	1,100
C403_0900 MT20	90.32	8671/96	3,500	3,200	5,000	12	1.5	192	21.7	4,872	550	4,872	550	9,744	1,100
C403_1080 MT20	107.7	754/7	3,500	3,200	5,000	12	1.5	193	21.8	4,872	550	4,872	550	9,744	1,100
C403_1350 MT20	134.6	1885/14	3,500	3,200	5,000	12	1.4	193	21.8	4,872	550	4,872	550	9,744	1,100
C403_1800 MT20	180.4	1624/9	3,500	3,200	5,000	12	1.4	193	21.8	4,872	550	4,872	550	9,744	1,100
C403_2170 MT20	216.9	54665/252	3,500	3,200	5,000	12	1.4	193	21.8	4,872	550	4,872	550	9,291	1,049
C403_2700 MT20	270.2	16211/60	3,500	3,200	5,000	12	1.4	193	21.8	4,872	550	4,872	550	9,744	1,100

[1] Maximum torque for continuous input RPM - horizontal output position.

[2] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

[3] dB(A) Measured at 1 meter distance with 3000 RPM input.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 3, 4
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL5 and EL6
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL3, EL4
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"C" Series–Concentric Helical ServoFit® Modular System Selection Data

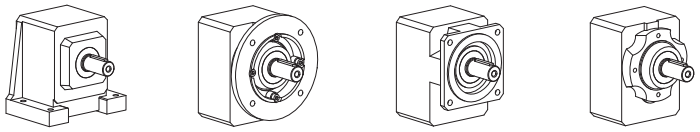
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [1]		Output Torque Acceleration		Output Torque Peak [2]	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	$kgcm^2$	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
C502 with MT TriAdapt® Motor Adapter Continued Next Page											**Noise Level ≤ 61 dB(A)** [3]				
C502_0020 MT30	1.976	81/41	2,400	2,000	3,000	14	36.0	29	3.3	1,613	182	1,774	200	3,142	355
C502_0020 MT40	1.976	81/41	2,400	2,000	3,000	14	40.0	52	5.9	2,514	284	2,514	284	3,142	355
C502_0020 MT50	1.976	81/41	2,400	2,000	3,000	14	50.0	103	11.6	3,060	345	4,804	542	6,005	678
C502_0022 MT30	2.247	645/287	2,400	2,000	3,000	14	33.8	36	4.0	1,834	207	2,018	228	3,573	403
C502_0022 MT40	2.247	645/287	2,400	2,000	3,000	14	37.8	62	7.0	2,859	323	2,859	323	3,573	403
C502_0022 MT50	2.247	645/287	2,400	2,000	3,000	14	47.8	114	12.9	3,193	361	5,395	609	6,828	771
C502_0025 MT30	2.450	49/20	2,400	2,000	3,000	14	27.6	41	4.6	2,000	226	2,200	248	3,784	427
C502_0025 MT40	2.450	49/20	2,400	2,000	3,000	14	31.6	70	7.9	3,027	342	3,027	342	3,784	427
C502_0025 MT50	2.450	49/20	2,400	2,000	3,000	14	41.6	122	13.8	3,287	371	5,553	627	7,231	816
C502_0028 MT30	2.787	301/108	2,400	2,000	3,000	14	26.1	50	5.6	2,275	257	2,502	283	4,305	486
C502_0028 MT40	2.787	301/108	2,400	2,000	3,000	14	30.1	81	9.2	3,431	387	3,444	389	4,305	486
C502_0028 MT50	2.787	301/108	2,400	2,000	3,000	14	40.1	133	15.0	3,431	387	5,797	654	8,226	929
C502_0031 MT30	3.077	477/155	2,800	2,400	3,500	14	21.3	58	6.5	2,512	284	2,763	312	4,595	519
C502_0031 MT40	3.077	477/155	2,800	2,400	3,500	14	25.3	91	10.2	3,546	400	3,676	415	4,595	519
C502_0031 MT50	3.077	477/155	2,500	2,400	3,000	14	35.3	140	15.8	3,546	400	3,676	415	4,595	519
C502_0035 MT30	3.501	2279/651	2,800	2,400	3,500	14	20.4	68	7.7	2,858	323	3,144	355	5,228	590
C502_0035 MT40	3.501	2279/651	2,800	2,400	3,500	14	24.4	103	11.6	3,702	418	4,183	472	5,228	590
C502_0035 MT50	3.501	2279/651	2,500	2,400	3,000	14	34.4	149	16.8	3,702	418	4,183	472	5,228	590
C502_0039 MT30	3.867	58/15	2,800	2,400	3,500	14	17.0	77	8.7	3,156	356	3,472	392	5,579	630
C502_0039 MT40	3.867	58/15	2,800	2,400	3,500	14	21.0	112	12.6	3,827	432	4,463	504	5,579	630
C502_0039 MT50	3.867	58/15	2,500	2,400	3,000	14	31.0	154	17.4	3,827	432	4,463	504	5,579	630
C502_0044 MT30	4.399	2494/567	2,800	2,400	3,500	14	16.4	89	10.1	3,591	405	3,950	446	6,346	716
C502_0044 MT40	4.399	2494/567	2,800	2,400	3,500	14	20.4	123	13.9	3,995	451	5,077	573	6,346	716
C502_0044 MT50	4.399	2494/567	2,500	2,400	3,000	14	30.4	161	18.2	3,995	451	5,077	573	6,346	716
C502_0046 MT20	4.629	162/35	3,100	2,700	4,000	14	9.4	72	8.1	1,591	180	1,750	198	2,496	282
C502_0046 MT30	4.629	162/35	3,100	2,700	4,000	14	14.2	94	10.6	3,512	396	4,156	469	6,439	727
C502_0046 MT40	4.629	162/35	3,000	2,700	3,500	14	18.2	128	14.4	4,063	459	5,151	582	6,439	727
C502_0046 MT50	4.629	162/35	2,500	2,500	3,000	14	28.2	163	18.4	4,063	459	5,151	582	6,439	727
C502_0053 MT20	5.265	258/49	3,100	2,700	4,000	14	9.0	83	9.4	1,810	204	1,990	225	2,839	321
C502_0053 MT30	5.265	258/49	3,100	2,700	4,000	14	13.8	106	12.0	3,994	451	4,727	534	7,323	827
C502_0053 MT40	5.265	258/49	3,000	2,700	3,500	14	17.8	138	15.5	4,242	479	5,859	661	7,323	827
C502_0053 MT50	5.265	258/49	2,500	2,500	3,000	14	27.8	168	19.0	4,242	479	5,859	661	7,323	827
C502_0059 MT20	5.850	117/20	3,100	2,700	4,000	14	7.1	93	10.5	2,011	227	2,212	250	3,036	343
C502_0059 MT30	5.850	117/20	3,100	2,700	4,000	14	11.9	116	13.1	3,804	429	5,253	593	7,830	884
C502_0059 MT40	5.850	117/20	3,000	2,700	3,500	14	15.9	145	16.4	4,393	496	6,264	707	7,830	884
C502_0059 MT50	5.850	117/20	2,500	2,500	3,000	14	25.9	172	19.4	4,393	496	6,264	707	7,830	884
C502_0067 MT20	6.655	559/84	3,100	2,700	4,000	14	6.8	105	11.9	2,287	258	2,516	284	3,453	390
C502_0067 MT30	6.655	559/84	3,100	2,700	4,000	14	11.6	127	14.3	4,328	489	5,975	675	8,907	1,006
C502_0067 MT40	6.655	559/84	3,000	2,700	3,500	14	15.6	153	17.3	4,586	518	7,086	800	8,907	1,006
C502_0067 MT50	6.655	559/84	2,500	2,500	3,000	14	25.6	175	19.8	4,586	518	7,086	800	8,907	1,006
C502_0078 MT20	7.763	621/80	3,400	3,000	4,500	14	5.0	119	13.5	2,405	272	2,935	331	3,810	430
C502_0078 MT30	7.763	621/80	3,400	3,000	4,000	14	9.8	139	15.7	4,039	456	6,970	787	9,826	1,109
C502_0078 MT40	7.763	621/80	3,000	3,000	3,500	14	13.8	161	18.2	4,828	545	7,086	800	9,826	1,109
C502_0078 MT50	7.763	621/80	2,500	2,500	3,000	14	23.8	178	20.1	4,828	545	7,086	800	9,826	1,109

Motor Shaft

Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48
MT50	60

Housing Styles

N — Foot Mounted **F** — Round Flange **Q** — Square Flange **G** — Tapped Holes



Contact STOBER for availability of "Q" housing style.

See Page 146 for required ordering information and part number example.

C

See web site for drawings.

"C" Series–Concentric Helical ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [1]		Output Torque Acceleration		Output Torque Peak [2]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
C502 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 61 dB(A)** [3]	
C502_0083 MT30	8.263	1537/186	2,800	2,400	3,500	12	16.9	150	17.0	6,642	750	7,419	838	12,340	1,393
C502_0083 MT40	8.263	1537/186	2,800	2,400	3,500	12	20.9	173	19.6	6,642	750	8,149	920	12,340	1,393
C502_0083 MT50	8.263	1537/186	2,500	2,400	3,000	12	30.9	191	21.6	6,642	750	8,149	920	12,340	1,393
C502_0093 MT30	9.261	3445/372	2,800	2,400	3,500	12	16.6	159	17.9	6,900	779	7,529	850	13,830	1,561
C502_0093 MT40	9.261	3445/372	2,800	2,400	3,500	12	20.6	178	20.1	6,900	779	7,529	850	13,830	1,561
C502_0093 MT50	9.261	3445/372	2,500	2,400	3,000	12	30.6	193	21.8	6,900	779	7,529	850	13,830	1,561
C502_0105 MT30	10.38	841/81	2,800	2,400	3,500	12	14.1	166	18.7	7,086	800	8,149	920	14,173	1,600
C502_0105 MT40	10.38	841/81	2,800	2,400	3,500	12	18.1	183	20.6	7,086	800	8,149	920	14,173	1,600
C502_0105 MT50	10.38	841/81	2,500	2,400	3,000	12	28.1	195	22.0	7,086	800	8,149	920	14,173	1,600
C502_0115 MT30	11.64	1885/162	2,800	2,400	3,500	12	13.9	172	19.4	7,086	800	7,529	850	14,173	1,600
C502_0115 MT40	11.64	1885/162	2,800	2,400	3,500	12	17.9	186	21.0	7,086	800	7,529	850	14,173	1,600
C502_0115 MT50	11.64	1885/162	2,500	2,400	3,000	12	27.9	196	22.1	7,086	800	7,529	850	14,173	1,600
C502_0125 MT20	12.43	87/7	3,100	2,700	4,000	12	7.4	162	18.3	4,272	482	4,699	530	6,703	757
C502_0125 MT30	12.43	87/7	3,100	2,700	4,000	12	12.2	175	19.8	7,086	800	8,149	920	14,173	1,600
C502_0125 MT40	12.43	87/7	3,000	2,700	3,500	12	16.2	188	21.2	7,086	800	8,149	920	14,173	1,600
C502_0125 MT50	12.43	87/7	2,500	2,500	3,000	12	26.2	197	22.2	7,086	800	8,149	920	14,173	1,600
C502_0140 MT20	13.93	195/14	3,100	2,700	4,000	12	7.3	169	19.0	4,787	540	5,266	594	7,512	848
C502_0140 MT30	13.93	195/14	3,100	2,700	4,000	12	12.1	180	20.3	7,086	800	7,529	850	14,173	1,600
C502_0140 MT40	13.93	195/14	3,000	2,700	3,500	12	16.1	190	21.5	7,086	800	7,529	850	14,173	1,600
C502_0140 MT50	13.93	195/14	2,500	2,500	3,000	12	26.1	197	22.3	7,086	800	7,529	850	14,173	1,600
C502_0155 MT20	15.71	377/24	3,100	2,700	4,000	12	5.8	175	19.7	5,399	609	5,939	670	8,151	920
C502_0155 MT30	15.71	377/24	3,100	2,700	4,000	12	10.6	184	20.8	7,086	800	8,149	920	14,173	1,600
C502_0155 MT40	15.71	377/24	3,000	2,700	3,500	12	14.6	193	21.7	7,086	800	8,149	920	14,173	1,600
C502_0155 MT50	15.71	377/24	2,500	2,500	3,000	12	24.6	198	22.4	7,086	800	8,149	920	14,173	1,600
C502_0175 MT20	17.60	845/48	3,100	2,700	4,000	12	5.8	179	20.3	6,050	683	6,655	751	9,135	1,031
C502_0175 MT30	17.60	845/48	3,100	2,700	4,000	12	10.6	187	21.1	7,086	800	7,529	850	14,173	1,600
C502_0175 MT40	17.60	845/48	3,000	2,700	3,500	12	14.6	194	21.9	7,086	800	7,529	850	14,173	1,600
C502_0175 MT50	17.60	845/48	2,500	2,500	3,000	12	24.6	199	22.4	7,086	800	7,529	850	14,173	1,600
C502_0210 MT20	20.84	667/32	3,400	3,000	4,500	12	4.3	185	20.9	6,458	729	7,880	890	10,229	1,155
C502_0210 MT30	20.84	667/32	3,400	3,000	4,000	12	9.1	191	21.6	7,086	800	8,149	920	14,173	1,600
C502_0210 MT40	20.84	667/32	3,000	3,000	3,500	12	13.1	196	22.1	7,086	800	8,149	920	14,173	1,600
C502_0210 MT50	20.84	667/32	2,500	2,500	3,000	12	23.1	199	22.5	7,086	800	8,149	920	14,173	1,600
C502_0230 MT20	23.36	1495/64	3,400	3,000	4,500	12	4.2	188	21.2	7,086	800	7,529	850	11,464	1,294
C502_0230 MT30	23.36	1495/64	3,400	3,000	4,000	12	9.0	193	21.8	7,086	800	7,529	850	14,173	1,600
C502_0230 MT40	23.36	1495/64	3,000	3,000	3,500	12	13.0	197	22.2	7,086	800	7,529	850	14,173	1,600
C502_0230 MT50	23.36	1495/64	2,500	2,500	3,000	12	23.0	200	22.5	7,086	800	7,529	850	14,173	1,600
C502_0250 MT20	25.07	2407/96	3,400	3,000	4,500	12	3.5	190	21.4	6,561	741	8,149	920	11,796	1,332
C502_0250 MT30	25.07	2407/96	3,400	3,000	4,000	12	8.3	194	21.9	7,086	800	8,149	920	14,173	1,600
C502_0250 MT40	25.07	2407/96	3,000	3,000	3,500	12	12.3	198	22.3	7,086	800	8,149	920	14,173	1,600
C502_0250 MT50	25.07	2407/96	2,500	2,500	3,000	12	22.3	200	22.6	7,086	800	8,149	920	14,173	1,600
C502_0280 MT20	28.10	5395/192	3,400	3,000	4,500	12	3.5	192	21.7	7,086	800	7,529	850	13,219	1,492
C502_0280 MT30	28.10	5395/192	3,400	3,000	4,000	12	8.3	195	22.1	7,086	800	7,529	850	14,173	1,600
C502_0280 MT40	28.10	5395/192	3,000	3,000	3,500	12	12.3	198	22.4	7,086	800	7,529	850	14,173	1,600
C502_0280 MT50	28.10	5395/192	2,500	2,500	3,000	12	22.3	200	22.6	7,086	800	7,529	850	14,173	1,600

[1] Maximum torque for continuous input RPM - horizontal output position.

[2] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

[3] dB(A) Measured at 1 meter distance with 3000 RPM input.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 3, 4
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL5 and EL6
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL3, EL4
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"C" Series–Concentric Helical ServoFit® Modular System Selection Data

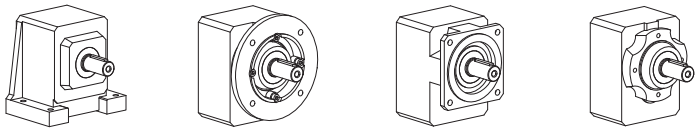
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [1]		Output Torque Acceleration		Output Torque Peak [2]	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	$kgcm^2$	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
C502 with MT TriAdapt® Motor Adapter Continued											**Noise Level ≤ 61 dB(A)** [3]				
C502_0310 MT20	31.23	406/13	3,400	3,000	4,500	12	2.8	194	21.9	6,739	761	8,149	920	14,001	1,581
C502_0310 MT30	31.23	406/13	3,400	3,000	4,000	12	7.6	196	22.2	7,086	800	8,149	920	14,001	1,581
C502_0310 MT40	31.23	406/13	3,000	3,000	3,500	12	11.6	199	22.4	7,086	800	8,149	920	14,001	1,581
C502_0350 MT20	35.00	35/1	3,400	3,000	4,500	12	2.8	195	22.0	7,086	800	7,529	850	14,173	1,600
C502_0350 MT30	35.00	35/1	3,400	3,000	4,000	12	7.6	197	22.3	7,086	800	7,529	850	14,173	1,600
C502_0350 MT40	35.00	35/1	3,000	3,000	3,500	12	11.6	199	22.5	7,086	800	7,529	850	14,173	1,600
C502_0420 MT20	41.69	667/16	3,400	3,000	4,500	12	2.2	197	22.2	7,014	792	8,149	920	14,173	1,600
C502_0420 MT30	41.69	667/16	3,400	3,000	4,000	12	7.0	198	22.4	7,086	800	8,149	920	14,173	1,600
C502_0420 MT40	41.69	667/16	3,000	3,000	3,500	12	11.0	200	22.5	7,086	800	8,149	920	14,173	1,600
C502_0470 MT20	46.72	1495/32	3,400	3,000	4,500	12	2.2	198	22.3	7,086	800	7,529	850	14,173	1,600
C502_0470 MT30	46.72	1495/32	3,400	3,000	4,000	12	7.0	199	22.5	7,086	800	7,529	850	14,173	1,600
C502_0470 MT40	46.72	1495/32	3,000	3,000	3,500	12	11.0	200	22.6	7,086	800	7,529	850	14,173	1,600
C502_0500 MT20	49.82	1943/39	3,400	3,000	4,500	12	1.9	198	22.4	7,086	800	8,149	920	14,173	1,600
C502_0500 MT30	49.82	1943/39	3,400	3,000	4,000	12	6.7	199	22.5	7,086	800	8,149	920	14,173	1,600
C502_0500 MT40	49.82	1943/39	3,000	3,000	3,500	12	10.7	200	22.6	7,086	800	8,149	920	14,173	1,600
C502_0560 MT20	55.83	335/6	3,400	3,000	4,500	12	1.9	199	22.4	7,086	800	7,529	850	14,173	1,600
C502_0560 MT30	55.83	335/6	3,400	3,000	4,000	12	6.7	200	22.5	7,086	800	7,529	850	14,173	1,600
C502_0560 MT40	55.83	335/6	3,000	3,000	3,500	12	10.7	200	22.6	7,086	800	7,529	850	14,173	1,600
C502_0620 MT20	62.43	4495/72	3,400	3,000	4,500	12	1.7	199	22.5	6,325	714	7,590	857	10,212	1,153
C502_0620 MT30	62.43	4495/72	3,400	3,000	4,000	12	6.5	200	22.6	6,325	714	7,590	857	10,212	1,153
C502_0700 MT20	69.97	10075/144	3,400	3,000	4,500	12	1.7	199	22.5	7,086	800	7,529	850	11,444	1,292
C502_0700 MT30	69.97	10075/144	3,400	3,000	4,000	12	6.5	200	22.6	7,086	800	7,529	850	11,444	1,292
C503 with MT TriAdapt® Motor Adapter											**Noise Level ≤ 61 dB(A)** [3]				
C503_0810 MT20	80.60	19343/240	3,400	3,000	4,500	12	1.6	200	22.6	7,086	800	8,149	920	10,228	1,155
C503_0900 MT20	90.32	8671/96	3,400	3,000	4,500	12	1.6	200	22.6	7,086	800	7,529	850	11,463	1,294
C503_1090 MT20	108.6	31291/288	3,400	3,000	4,500	12	1.5	200	22.6	7,086	800	7,529	850	13,218	1,492
C503_1350 MT20	135.3	406/3	3,400	3,000	4,500	12	1.5	201	22.6	7,086	800	7,529	850	14,173	1,600
C503_1810 MT20	180.6	8671/48	3,400	3,000	4,500	12	1.4	201	22.7	7,086	800	7,529	850	14,173	1,600
C503_2160 MT20	215.9	1943/9	3,400	3,000	4,500	12	1.4	201	22.7	7,086	800	7,529	850	14,173	1,600
C503_2710 MT20	270.5	58435/216	3,400	3,000	4,500	12	1.4	201	22.7	7,086	800	7,529	850	11,443	1,292
C612 with MT TriAdapt® Motor Adapter Continued Next Page											**Noise Level ≤ 61 dB(A)** [3]				
C612_0042 MT30	4.184	2745/656	2,300	1,900	2,800	10	52.9	124	14.0	3,415	386	3,757	424	6,831	771
C612_0042 MT40	4.184	2745/656	2,300	1,900	2,800	10	56.9	217	24.5	5,522	623	5,522	623	6,902	779
C612_0042 MT50	4.184	2745/656	2,300	1,900	2,800	10	66.9	398	45.0	7,293	823	10,552	1,191	13,190	1,489
C612_0051 MT30	5.083	61/12	2,300	1,900	2,800	10	42.1	168	19.0	4,149	468	4,564	515	8,147	920
C612_0051 MT40	5.083	61/12	2,300	1,900	2,800	10	46.1	277	31.3	6,518	736	6,518	736	8,147	920
C612_0051 MT50	5.083	61/12	2,300	1,900	2,800	10	56.1	456	51.5	7,782	878	12,455	1,406	15,569	1,758
C612_0065 MT30	6.518	3233/496	2,700	2,300	3,300	10	31.7	238	26.8	5,320	601	5,852	661	10,064	1,136
C612_0065 MT40	6.518	3233/496	2,700	2,300	3,300	10	35.7	358	40.4	8,051	909	8,051	909	10,064	1,136
C612_0065 MT50	6.518	3233/496	2,500	2,300	3,000	10	45.7	518	58.5	8,454	954	14,282	1,612	19,232	2,171

Motor Shaft

Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48
MT50	60

Housing Styles

N — Foot Mounted **F** — Round Flange **Q** — Square Flange **G** — Tapped Holes



Contact STOBER for availability of "Q" housing style.

See Page 146 for required ordering information and part number example.

C

See web site for drawings.

"C" Series–Concentric Helical ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum			Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque					
			Continuous		Cyclic					Nominal [1]		Acceleration		Peak [2]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
C612 with MT TriAdapt® Motor Adapter Continued Next Page											**Noise Level ≤ 61 dB(A)** [3]				
C612_0071 MT30	7.111	64/9	2,300	1,900	2,800	10	38.4	265	29.9	5,804	655	6,385	721	11,398	1,287
C612_0071 MT40	7.111	64/9	2,300	1,900	2,800	10	42.4	386	43.6	8,703	983	9,118	1,029	11,398	1,287
C612_0071 MT50	7.111	64/9	2,300	1,900	2,800	10	52.4	536	60.6	8,703	983	12,224	1,380	21,780	2,459
C612_0082 MT30	8.190	1769/216	2,700	2,300	3,300	10	25.0	310	35.0	6,685	755	7,354	830	12,217	1,379
C612_0082 MT40	8.190	1769/216	2,700	2,300	3,300	10	29.0	430	48.5	9,123	1,030	9,773	1,103	12,217	1,379
C612_0082 MT50	8.190	1769/216	2,500	2,300	3,000	10	39.0	562	63.4	9,123	1,030	14,616	1,650	23,344	2,635
C612_0091 MT30	9.118	848/93	2,700	2,300	3,300	10	29.4	346	39.0	7,443	840	8,187	924	14,079	1,589
C612_0091 MT40	9.118	848/93	2,700	2,300	3,300	10	33.4	460	52.0	9,455	1,067	11,263	1,272	14,079	1,589
C612_0091 MT50	9.118	848/93	2,500	2,300	3,000	10	43.4	578	65.3	9,455	1,067	12,224	1,380	23,031	2,600
C612_0100 MT30	10.11	3721/368	3,000	2,600	3,500	10	20.7	379	42.8	8,253	932	9,079	1,025	14,489	1,636
C612_0100 MT40	10.11	3721/368	3,000	2,600	3,500	10	24.7	488	55.1	9,787	1,105	11,592	1,309	14,489	1,636
C612_0100 MT50	10.11	3721/368	2,500	2,500	3,000	10	34.7	591	66.8	9,787	1,105	14,616	1,650	25,688	2,900
C612_0115 MT30	11.46	928/81	2,700	2,300	3,300	10	23.6	418	47.2	9,352	1,056	10,287	1,161	17,090	1,929
C612_0115 MT40	11.46	928/81	2,700	2,300	3,300	10	27.6	517	58.4	10,203	1,152	12,224	1,380	17,090	1,929
C612_0115 MT50	11.46	928/81	2,500	2,300	3,000	10	37.6	605	68.3	10,203	1,152	12,224	1,380	23,031	2,600
C612_0125 MT30	12.58	2013/160	3,000	2,600	3,500	10	16.7	446	50.3	9,091	1,026	11,296	1,275	17,288	1,952
C612_0125 MT40	12.58	2013/160	3,000	2,600	3,500	10	20.7	537	60.6	10,526	1,188	13,830	1,561	17,288	1,952
C612_0125 MT50	12.58	2013/160	2,500	2,500	3,000	10	30.7	613	69.2	10,526	1,188	14,616	1,650	25,688	2,900
C612_0140 MT30	14.15	976/69	3,000	2,600	3,500	10	19.7	478	54.0	10,945	1,236	12,224	1,380	20,270	2,288
C612_0140 MT40	14.15	976/69	3,000	2,600	3,500	10	23.7	558	63.0	10,945	1,236	12,224	1,380	20,270	2,288
C612_0140 MT50	14.15	976/69	2,500	2,500	3,000	10	33.7	622	70.2	10,945	1,236	12,224	1,380	23,031	2,600
C612_0160 MT30	16.20	1037/64	3,200	2,900	4,000	10	13.3	511	57.7	9,634	1,088	14,549	1,642	21,206	2,394
C612_0160 MT40	16.20	1037/64	3,000	2,900	3,500	10	17.3	579	65.3	11,452	1,293	14,616	1,650	21,206	2,394
C612_0160 MT50	16.20	1037/64	2,500	2,500	3,000	10	27.3	630	71.1	11,452	1,293	14,616	1,650	25,688	2,900
C612_0175 MT30	17.60	88/5	3,000	2,600	3,500	10	16.1	529	59.7	11,515	1,300	12,224	1,380	23,031	2,600
C612_0175 MT40	17.60	88/5	3,000	2,600	3,500	10	20.1	590	66.6	11,515	1,300	12,224	1,380	23,031	2,600
C612_0175 MT50	17.60	88/5	2,500	2,500	3,000	10	30.1	634	71.6	11,515	1,300	12,224	1,380	23,031	2,600
C612_0195 MT30	19.61	549/28	3,200	2,900	4,000	10	11.4	550	62.1	9,917	1,120	14,616	1,650	24,644	2,782
C612_0195 MT40	19.61	549/28	3,000	2,900	3,500	10	15.4	602	67.9	12,204	1,378	14,616	1,650	24,644	2,782
C612_0195 MT50	19.61	549/28	2,500	2,500	3,000	10	25.4	638	72.0	12,204	1,378	14,616	1,650	24,644	2,782
C612_0230 MT30	22.67	68/3	3,200	2,900	4,000	10	12.9	573	64.7	11,515	1,300	12,224	1,380	23,031	2,600
C612_0230 MT40	22.67	68/3	3,000	2,900	3,500	10	16.9	615	69.4	11,515	1,300	12,224	1,380	23,031	2,600
C612_0230 MT50	22.67	68/3	2,500	2,500	3,000	10	26.9	643	72.6	11,515	1,300	12,224	1,380	23,031	2,600
C612_0250 MT30	24.93	5185/208	3,200	2,900	4,000	10	9.7	586	66.2	10,244	1,157	14,616	1,650	25,688	2,900
C612_0250 MT40	24.93	5185/208	3,000	2,900	3,500	10	13.7	622	70.2	12,844	1,450	14,616	1,650	25,688	2,900
C612_0250 MT50	24.93	5185/208	2,500	2,500	3,000	10	23.7	645	72.8	12,844	1,450	14,616	1,650	25,688	2,900
C612_0270 MT30	27.43	192/7	3,200	2,900	4,000	10	11.2	598	67.5	11,515	1,300	12,224	1,380	23,031	2,600
C612_0270 MT40	27.43	192/7	3,000	2,900	3,500	10	15.2	627	70.8	11,515	1,300	12,224	1,380	23,031	2,600
C612_0270 MT50	27.43	192/7	2,500	2,500	3,000	10	25.2	647	73.1	11,515	1,300	12,224	1,380	23,031	2,600
C612_0320 MT30	32.41	1037/32	3,200	2,900	4,000	10	8.4	613	69.2	10,679	1,206	14,616	1,650	25,688	2,900
C612_0320 MT40	32.41	1037/32	3,000	2,900	3,500	10	12.4	636	71.8	12,844	1,450	14,616	1,650	25,688	2,900
C612_0320 MT50	32.41	1037/32	2,500	2,500	3,000	10	22.4	650	73.4	12,844	1,450	14,616	1,650	25,688	2,900
C612_0350 MT30	34.87	1360/39	3,200	2,900	4,000	10	9.5	619	69.9	11,515	1,300	12,224	1,380	23,031	2,600
C612_0350 MT40	34.87	1360/39	3,000	2,900	3,500	10	13.5	638	72.1	11,515	1,300	12,224	1,380	23,031	2,600
C612_0350 MT50	34.87	1360/39	2,500	2,500	3,000	10	23.5	651	73.5	11,515	1,300	12,224	1,380	23,031	2,600

[1] Maximum torque for continuous input RPM - horizontal output position.

[2] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

[3] dB(A) Measured at 1 meter distance with 3000 RPM input.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 3, 4
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL5 and EL6
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL3, EL4
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"C" Series–Concentric Helical ServoFit® Modular System Selection Data

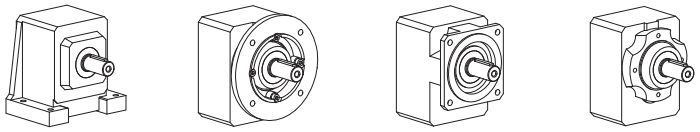
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [1]		Output Torque Acceleration		Output Torque Peak [2]	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	$kgcm^2$	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
C612 with MT TriAdapt® Motor Adapter Continued											**Noise Level ≤ 61 dB(A)** [3]				
C612_0390 MT30	39.40	1891/48	3,200	2,900	4,000	10	7.7	627	70.8	10,812	1,221	12,975	1,465	16,479	1,860
C612_0390 MT40	39.40	1891/48	3,000	2,900	3,500	10	11.7	642	72.5	10,812	1,221	12,975	1,465	16,479	1,860
C612_0450 MT30	45.33	136/3	3,200	2,900	4,000	10	8.3	634	71.6	11,515	1,300	12,224	1,380	23,031	2,600
C612_0450 MT40	45.33	136/3	3,000	2,900	3,500	10	12.3	646	72.9	11,515	1,300	12,224	1,380	23,031	2,600
C612_0450 MT50	45.33	136/3	2,500	2,500	3,000	10	22.3	653	73.8	11,515	1,300	12,224	1,380	23,031	2,600
C612_0550 MT30	55.11	496/9	3,200	2,900	4,000	10	7.6	641	72.4	11,515	1,300	12,224	1,380	23,031	2,600
C612_0550 MT40	55.11	496/9	3,000	2,900	3,500	10	11.6	649	73.3	11,515	1,300	12,224	1,380	23,031	2,600
C612_0690 MT30	68.89	620/9	3,200	2,900	4,000	10	7.1	647	73.0	11,515	1,300	12,224	1,380	23,031	2,600
C612_0690 MT40	68.89	620/9	3,000	2,900	3,500	10	11.1	652	73.6	11,515	1,300	12,224	1,380	23,031	2,600
C613 with MT TriAdapt® Motor Adapter											**Noise Level ≤ 61 dB(A)** [3]				
C613_0490 MT30	49.28	31537/640	3,200	2,900	4,000	10	7.2	637	72.0	12,688	1,432	13,829	1,561	17,287	1,952
C613_0630 MT30	63.46	48739/768	3,200	2,900	4,000	10	6.9	645	72.8	12,844	1,450	14,616	1,650	21,204	2,394
C613_0760 MT20	75.81	5307/70	3,200	2,900	4,000	10	1.7	643	72.6	7,643	863	7,643	863	9,554	1,079
C613_0770 MT30	76.80	8601/112	3,200	2,900	4,000	10	6.8	649	73.2	12,844	1,450	14,616	1,650	24,642	2,782
C613_0880 MT20	87.64	3944/45	3,200	2,900	4,000	10	1.8	647	73.0	9,200	1,039	9,200	1,039	11,500	1,298
C613_0890 MT30	88.78	799/9	3,200	2,900	4,000	10	6.9	651	73.5	11,515	1,300	12,224	1,380	23,031	2,600
C613_0980 MT30	97.63	243695/2496	3,200	2,900	4,000	10	6.7	652	73.6	12,844	1,450	14,616	1,650	25,688	2,900
C613_1060 MT20	106.1	3712/35	3,200	2,900	4,000	10	1.7	650	73.4	10,692	1,207	10,692	1,207	13,365	1,509
C613_1070 MT30	107.4	752/7	3,200	2,900	4,000	10	6.8	653	73.7	11,515	1,300	12,224	1,380	23,031	2,600
C613_1270 MT30	126.9	48739/384	3,200	2,900	4,000	10	6.6	654	73.8	12,844	1,450	14,616	1,650	25,688	2,900
C613_1350 MT20	134.8	15776/117	3,200	2,900	4,000	10	1.6	653	73.7	11,515	1,300	12,224	1,380	16,132	1,821
C613_1370 MT30	136.6	15980/117	3,200	2,900	4,000	10	6.7	654	73.9	11,515	1,300	12,224	1,380	23,031	2,600
C613_1750 MT20	175.3	7888/45	3,200	2,900	4,000	10	1.5	655	73.9	11,515	1,300	12,224	1,380	19,846	2,240
C613_1780 MT30	177.6	1598/9	3,200	2,900	4,000	10	6.6	656	74.0	11,515	1,300	12,224	1,380	23,031	2,600
C613_2130 MT20	213.1	28768/135	3,200	2,900	4,000	10	1.5	655	74.0	11,515	1,300	12,224	1,380	23,031	2,600
C613_2660 MT20	266.4	7192/27	3,200	2,900	4,000	10	1.4	656	74.1	11,515	1,300	12,224	1,380	23,031	2,600
C712 with MT TriAdapt® Motor Adapter Continued Next Page											**Noise Level ≤ 67 dB(A)** [3]				
C712_0043 MT30	4.259	477/112	2,200	1,900	2,600	10	101.8	139	15.7	3,476	392	3,824	432	6,953	785
C712_0043 MT40	4.259	477/112	2,200	1,900	2,600	10	105.8	256	28.9	5,899	666	5,899	666	7,374	832
C712_0043 MT50	4.259	477/112	2,200	1,900	2,600	10	115.8	532	60.1	11,272	1,273	11,272	1,273	14,090	1,591
C712_0053 MT30	5.311	1827/344	2,200	1,900	2,600	10	77.3	201	22.7	4,335	489	4,769	538	8,670	979
C712_0053 MT40	5.311	1827/344	2,200	1,900	2,600	10	81.3	352	39.8	7,120	804	7,120	804	8,900	1,005
C712_0053 MT50	5.311	1827/344	2,200	1,900	2,600	10	91.3	650	73.4	13,070	1,475	13,605	1,536	17,006	1,920
C712_0068 MT30	6.811	252/37	2,600	2,300	3,100	10	57.4	296	33.4	5,560	628	6,116	690	10,992	1,241
C712_0068 MT40	6.811	252/37	2,600	2,300	3,100	10	61.4	479	54.1	8,794	993	8,794	993	10,992	1,241
C712_0068 MT50	6.811	252/37	2,500	2,300	3,000	10	71.4	771	87.0	14,200	1,603	16,804	1,897	21,005	2,371
C712_0074 MT30	7.357	3480/473	2,200	1,900	2,600	10	70.9	330	37.2	6,005	678	6,606	746	12,011	1,356
C712_0074 MT40	7.357	3480/473	2,200	1,900	2,600	10	74.9	520	58.7	9,862	1,113	9,862	1,113	12,328	1,392
C712_0074 MT50	7.357	3480/473	2,200	1,900	2,600	10	84.9	804	90.8	14,569	1,645	18,846	2,128	23,557	2,659

Motor Shaft

Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48
MT50	60

Housing Styles

N — Foot Mounted **F** — Round Flange **Q** — Square Flange **G** — Tapped Holes



Contact STOBER for availability of "Q" housing style.

See Page 146 for required ordering information and part number example.

"C" Series–Concentric Helical ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum			Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque					
			Continuous		Cyclic					Nominal [1]		Acceleration		Peak [2]	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	Δφ	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	$M_{2N \le 2000\ RPM}$ in.lbs.	M_{2N} Nm	M_{2B} in.lbs.	M_{2B} Nm	M_{2PEAK} in.lbs.	M_{2PEAK} Nm
C712 with MT TriAdapt® Motor Adapter Continued Next Page											**Noise Level ≤ 67 dB(A)** [3]				
C712_0085 MT30	8.490	4347/512	2,600	2,300	3,100	10	44.2	399	45.0	6,930	782	7,623	861	13,214	1,492
C712_0085 MT40	8.490	4347/512	2,600	2,300	3,100	10	48.2	598	67.5	10,571	1,193	10,571	1,193	13,214	1,492
C712_0085 MT50	8.490	4347/512	2,500	2,300	3,000	10	58.2	859	97.0	15,282	1,725	20,200	2,280	25,250	2,850
C712_0094 MT30	9.435	3840/407	2,600	2,300	3,100	10	53.4	454	51.2	7,701	869	8,472	956	15,227	1,719
C712_0094 MT40	9.435	3840/407	2,600	2,300	3,100	10	57.4	653	73.7	12,182	1,375	12,182	1,375	15,227	1,719
C712_0094 MT50	9.435	3840/407	2,500	2,300	3,000	10	67.4	894	100.9	15,829	1,787	20,373	2,300	29,097	3,285
C712_0099 MT30	9.912	4599/464	2,900	2,600	3,400	10	37.5	480	54.2	8,091	913	8,900	1,005	15,052	1,699
C712_0099 MT40	9.912	4599/464	2,900	2,600	3,400	10	41.5	678	76.6	12,041	1,359	12,041	1,359	15,052	1,699
C712_0099 MT50	9.912	4599/464	2,500	2,500	3,000	10	51.5	909	102.6	16,091	1,817	23,010	2,598	28,762	3,247
C712_0120 MT30	11.76	1035/88	2,600	2,300	3,100	10	41.7	572	64.6	9,600	1,084	10,560	1,192	18,304	2,066
C712_0120 MT40	11.76	1035/88	2,600	2,300	3,100	10	45.7	761	85.9	14,644	1,653	14,644	1,653	18,304	2,066
C712_0120 MT50	11.76	1035/88	2,500	2,300	3,000	10	55.7	953	107.6	17,035	1,923	20,373	2,300	34,978	3,949
C712_0130 MT30	13.18	4851/368	2,900	2,600	3,400	10	27.6	633	71.4	10,760	1,215	11,836	1,336	18,890	2,133
C712_0130 MT40	13.18	4851/368	2,900	2,600	3,400	10	31.6	810	91.4	15,112	1,706	15,112	1,706	18,890	2,133
C712_0130 MT50	13.18	4851/368	2,500	2,500	3,000	10	41.6	977	110.3	17,696	1,998	24,448	2,760	36,097	4,075
C712_0135 MT30	13.73	4380/319	2,900	2,600	3,400	10	35.6	654	73.8	11,207	1,265	12,328	1,392	20,850	2,354
C712_0135 MT40	13.73	4380/319	2,900	2,600	3,400	10	39.6	826	93.3	16,680	1,883	16,680	1,883	20,850	2,354
C712_0135 MT50	13.73	4380/319	2,500	2,500	3,000	10	49.6	984	111.1	17,716	2,000	20,373	2,300	35,432	4,000
C712_0165 MT30	16.73	1071/64	3,100	2,900	3,600	10	21.1	751	84.8	12,091	1,365	15,025	1,696	22,994	2,596
C712_0165 MT40	16.73	1071/64	3,000	2,900	3,500	10	25.1	895	101.1	18,395	2,077	18,395	2,077	22,994	2,596
C712_0165 MT50	16.73	1071/64	2,500	2,500	3,000	10	35.1	1,014	114.5	19,160	2,163	24,448	2,760	42,518	4,800
C712_0185 MT30	18.26	420/23	2,900	2,600	3,400	10	26.5	790	89.2	14,906	1,683	16,396	1,851	26,169	2,954
C712_0185 MT40	18.26	420/23	2,900	2,600	3,400	10	30.5	921	103.9	17,716	2,000	20,373	2,300	26,169	2,954
C712_0185 MT50	18.26	420/23	2,500	2,500	3,000	10	40.5	1,025	115.7	17,716	2,000	20,373	2,300	35,432	4,000
C712_0210 MT30	20.67	1323/64	3,100	2,900	3,600	10	16.9	840	94.8	12,291	1,388	18,561	2,095	27,054	3,054
C712_0210 MT40	20.67	1323/64	3,000	2,900	3,500	10	20.9	952	107.5	20,559	2,321	21,643	2,443	27,054	3,054
C712_0210 MT50	20.67	1323/64	2,500	2,500	3,000	10	30.9	1,037	117.0	20,559	2,321	24,448	2,760	42,518	4,800
C712_0230 MT30	23.18	255/11	3,100	2,900	3,600	10	20.4	880	99.4	16,751	1,891	20,373	2,300	31,854	3,596
C712_0230 MT40	23.18	255/11	3,000	2,900	3,500	10	24.4	976	110.2	17,716	2,000	20,373	2,300	31,854	3,596
C712_0230 MT50	23.18	255/11	2,500	2,500	3,000	10	34.4	1,046	118.1	17,716	2,000	20,373	2,300	35,432	4,000
C712_0250 MT30	25.31	405/16	3,100	2,900	3,600	10	13.8	907	102.4	12,803	1,445	22,728	2,566	31,815	3,592
C712_0250 MT40	25.31	405/16	3,000	2,900	3,500	10	17.8	992	112.0	21,259	2,400	24,448	2,760	31,815	3,592
C712_0250 MT50	25.31	405/16	2,500	2,500	3,000	10	27.8	1,051	118.7	21,259	2,400	24,448	2,760	31,815	3,592
C712_0290 MT30	28.64	315/11	3,100	2,900	3,600	10	16.5	941	106.2	17,027	1,922	20,373	2,300	35,432	4,000
C712_0290 MT40	28.64	315/11	3,000	2,900	3,500	10	20.5	1,010	114.0	17,716	2,000	20,373	2,300	35,432	4,000
C712_0290 MT50	28.64	315/11	2,500	2,500	3,000	10	30.5	1,058	119.4	17,716	2,000	20,373	2,300	35,432	4,000
C712_0340 MT30	33.80	2163/64	3,100	2,900	3,600	10	10.9	977	110.3	13,188	1,489	24,448	2,760	39,811	4,494
C712_0340 MT40	33.80	2163/64	3,000	2,900	3,500	10	14.9	1,029	116.2	21,259	2,400	24,448	2,760	39,811	4,494
C712_0340 MT50	33.80	2163/64	2,500	2,500	3,000	10	24.9	1,065	120.2	21,259	2,400	24,448	2,760	39,811	4,494
C712_0350 MT30	35.07	2700/77	3,100	2,900	3,600	10	13.6	983	111.0	17,716	2,000	20,373	2,300	35,432	4,000
C712_0350 MT40	35.07	2700/77	3,000	2,900	3,500	10	17.6	1,033	116.6	17,716	2,000	20,373	2,300	35,432	4,000
C712_0350 MT50	35.07	2700/77	2,500	2,500	3,000	10	27.6	1,066	120.3	17,716	2,000	20,373	2,300	35,432	4,000
C712_0410 MT30	41.02	2625/64	3,100	2,900	3,600	10	9.5	1,008	113.8	13,517	1,526	22,265	2,514	37,108	4,189
C712_0410 MT40	41.02	2625/64	3,000	2,900	3,500	10	13.5	1,046	118.1	18,554	2,095	22,265	2,514	37,108	4,189
C712_0410 MT50	41.02	2625/64	2,500	2,500	3,000	10	23.5	1,070	120.8	18,554	2,095	22,265	2,514	37,108	4,189

[1] Maximum torque for continuous input RPM - horizontal output position.

[2] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

[3] dB(A) Measured at 1 meter distance with 3000 RPM input.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 3, 4
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL5 and EL6
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL3, EL4
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

C

"C" Series–Concentric Helical ServoFit® Modular System Selection Data

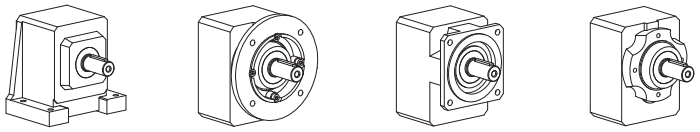
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [1]		Output Torque Acceleration		Output Torque Peak [2]	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	$kgcm^2$	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
C712 with MT TriAdapt® Motor Adapter Continued														**Noise Level ≤ 67 dB(A)** [3]	
C712_0470 MT30	46.82	515/11	3,100	2,900	3,600	10	10.7	1,024	115.7	17,716	2,000	20,373	2,300	35,432	4,000
C712_0470 MT40	46.82	515/11	3,000	2,900	3,500	10	14.7	1,054	119.0	17,716	2,000	20,373	2,300	35,432	4,000
C712_0470 MT50	46.82	515/11	2,500	2,500	3,000	10	24.7	1,073	121.1	17,716	2,000	20,373	2,300	35,432	4,000
C712_0570 MT30	56.82	625/11	3,100	2,900	3,600	10	9.4	1,042	117.7	17,716	2,000	20,373	2,300	35,432	4,000
C712_0570 MT40	56.82	625/11	3,000	2,900	3,500	10	13.4	1,063	120.0	17,716	2,000	20,373	2,300	35,432	4,000
C712_0570 MT50	56.82	625/11	2,500	2,500	3,000	10	23.4	1,076	121.5	17,716	2,000	20,373	2,300	35,432	4,000
C712_0700 MT30	69.55	765/11	3,100	2,900	3,600	10	8.3	1,055	119.1	17,716	2,000	20,373	2,300	29,091	3,284
C712_0700 MT40	69.55	765/11	3,000	2,900	3,500	10	12.3	1,069	120.7	17,716	2,000	20,373	2,300	29,091	3,284
C713 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 67 dB(A)** [3]	
C713_0510 MT40	50.85	18711/368	3,000	2,900	3,500	10	13.1	1,058	119.5	21,259	2,400	24,448	2,760	36,099	4,075
C713_0650 MT40	64.55	4131/64	3,000	2,900	3,500	10	12.6	1,067	120.5	21,259	2,400	24,448	2,760	42,518	4,800
C713_0800 MT40	79.73	5103/64	3,000	2,900	3,500	10	12.4	1,072	121.1	21,259	2,400	24,448	2,760	42,518	4,800
C713_0810 MT30	80.97	20727/256	3,100	2,900	3,600	10	7.2	1,062	119.9	17,492	1,975	21,642	2,443	27,052	3,054
C713_0890 MT40	89.42	6885/77	3,000	2,900	3,500	10	12.6	1,074	121.3	17,716	2,000	20,373	2,300	35,432	4,000
C713_0980 MT40	97.63	10935/112	3,000	2,900	3,500	10	12.2	1,076	121.4	21,259	2,400	24,448	2,760	31,816	3,592
C713_0990 MT30	99.14	6345/64	3,100	2,900	3,600	10	7.0	1,069	120.7	18,518	2,090	24,448	2,760	31,812	3,591
C713_1100 MT40	110.5	1215/11	3,000	2,900	3,500	10	12.3	1,077	121.6	17,716	2,000	20,373	2,300	35,432	4,000
C713_1300 MT40	130.4	8343/64	3,000	2,900	3,500	10	12.0	1,078	121.8	21,259	2,400	24,448	2,760	39,812	4,494
C713_1320 MT30	132.4	33887/256	3,100	2,900	3,600	10	6.8	1,075	121.3	19,575	2,210	24,448	2,760	39,807	4,494
C713_1350 MT40	135.3	72900/539	3,000	2,900	3,500	10	12.1	1,079	121.8	17,716	2,000	20,373	2,300	35,432	4,000
C713_1370 MT30	137.3	10575/77	3,100	2,900	3,600	10	7.0	1,075	121.4	17,716	2,000	20,373	2,300	35,432	4,000
C713_1810 MT40	180.6	13905/77	3,000	2,900	3,500	10	11.9	1,080	122.0	17,716	2,000	20,373	2,300	35,432	4,000
C713_1830 MT30	183.4	24205/132	3,100	2,900	3,600	10	6.8	1,078	121.7	17,716	2,000	20,373	2,300	35,432	4,000
C713_2190 MT40	219.2	16875/77	3,000	2,900	3,500	10	11.9	1,081	122.0	17,716	2,000	20,373	2,300	35,432	4,000
C713_2230 MT30	222.5	29375/132	3,100	2,900	3,600	10	6.7	1,079	121.9	17,716	2,000	20,373	2,300	35,432	4,000
C812 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 67 dB(A)** [3]	
C812_0042 MT50	4.225	1711/405	2,100	1,800	2,500	10	264.3	573	64.7	11,756	1,327	11,756	1,327	14,695	1,659
C812_0054 MT50	5.387	1239/230	2,100	1,800	2,500	10	195.5	728	82.2	14,454	1,632	14,454	1,632	18,067	2,040
C812_0067 MT50	6.670	767/115	2,500	2,200	2,800	10	151.9	858	96.9	17,377	1,962	17,377	1,962	21,721	2,452
C812_0073 MT50	7.304	168/23	2,100	1,800	2,500	10	179.0	1,138	128.4	19,597	2,212	19,597	2,212	24,496	2,765
C812_0085 MT50	8.472	1652/195	2,500	2,200	2,800	10	113.4	983	111.0	21,179	2,391	21,179	2,391	26,474	2,989
C812_0090 MT50	9.043	208/23	2,500	2,200	2,800	10	141.2	1,305	147.3	23,559	2,660	23,559	2,660	29,448	3,325
C812_0100 MT50	10.15	944/93	2,500	2,400	3,000	10	93.8	1,059	119.6	24,585	2,776	24,585	2,776	30,732	3,469
C812_0115 MT50	11.49	448/39	2,500	2,200	2,800	10	106.8	1,458	164.7	27,458	3,100	28,716	3,242	35,895	4,052
C812_0125 MT40	12.75	5546/435	2,700	2,400	3,200	10	63.5	902	101.8	15,488	1,748	15,488	1,748	19,360	2,186
C812_0125 MT50	12.75	5546/435	2,500	2,400	3,000	10	73.5	1,133	127.9	28,429	3,209	29,596	3,341	36,994	4,176
C812_0140 MT50	13.76	1280/93	2,500	2,400	3,000	10	89.2	1,548	174.8	29,164	3,292	33,334	3,763	41,667	4,704
C812_0170 MT40	17.10	1180/69	2,900	2,700	3,400	10	45.2	1,041	117.5	19,605	2,213	19,605	2,213	24,506	2,767
C812_0170 MT50	17.10	1180/69	2,500	2,500	3,000	10	55.2	1,197	135.1	31,353	3,540	37,463	4,229	46,829	5,287

Motor Shaft

Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48
MT50	60

Housing Styles

N — Foot Mounted **F** — Round Flange **Q** — Square Flange **G** — Tapped Holes



Contact STOBER for availability of "Q" housing style.

See Page 146 for required ordering information and part number example.

C

"C" Series–Concentric Helical ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum			Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [1]		Acceleration		Peak [2]	
			Continuous		Cyclic					$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
C812 with MT TriAdapt® Motor Adapter Continued														**Noise Level ≤ 67 dB(A)** [3]	
C812_0175 MT40	17.29	1504/87	2,700	2,400	3,200	10	60.6	1,360	153.6	21,001	2,371	21,001	2,371	26,251	2,964
C812_0175 MT50	17.29	1504/87	2,500	2,400	3,000	10	70.6	1,633	184.4	31,466	3,552	36,672	4,140	50,163	5,663
C812_0200 MT40	20.26	6077/300	2,900	2,700	3,400	10	37.1	1,102	124.4	22,426	2,532	22,426	2,532	28,032	3,165
C812_0200 MT50	20.26	6077/300	2,500	2,500	3,000	10	47.1	1,222	137.9	33,174	3,745	42,518	4,800	53,566	6,047
C812_0230 MT40	23.19	1600/69	2,900	2,700	3,400	10	43.6	1,527	172.4	26,583	3,001	26,583	3,001	33,229	3,751
C812_0230 MT50	23.19	1600/69	2,500	2,500	3,000	10	53.6	1,705	192.4	31,889	3,600	36,672	4,140	63,497	7,168
C812_0260 MT40	26.06	3127/120	2,900	2,700	3,400	10	28.3	1,169	131.9	27,158	3,066	27,283	3,080	34,103	3,850
C812_0260 MT50	26.06	3127/120	2,500	2,500	3,000	10	38.3	1,247	140.8	36,079	4,073	42,518	4,800	65,167	7,357
C812_0270 MT40	27.47	412/15	2,900	2,700	3,400	10	35.9	1,597	180.3	30,408	3,433	30,408	3,433	38,010	4,291
C812_0270 MT50	27.47	412/15	2,500	2,500	3,000	10	45.9	1,732	195.5	31,889	3,600	36,672	4,140	63,778	7,200
C812_0340 MT40	33.59	2183/65	2,900	2,700	3,400	10	22.1	1,213	137.0	28,022	3,163	33,261	3,755	41,577	4,694
C812_0340 MT50	33.59	2183/65	2,500	2,500	3,000	10	32.1	1,263	142.6	37,204	4,200	42,518	4,800	74,407	8,400
C812_0350 MT40	35.33	106/3	2,900	2,700	3,400	10	27.6	1,673	188.9	31,889	3,600	36,672	4,140	46,242	5,220
C812_0350 MT50	35.33	106/3	2,500	2,500	3,000	10	37.6	1,760	198.7	31,889	3,600	36,672	4,140	63,778	7,200
C812_0400 MT40	39.94	2596/65	2,900	2,700	3,400	10	18.9	1,234	139.4	28,769	3,248	38,126	4,304	47,658	5,380
C812_0400 MT50	39.94	2596/65	2,500	2,500	3,000	10	28.9	1,271	143.4	33,527	3,785	38,126	4,304	47,658	5,380
C812_0460 MT40	45.54	592/13	2,900	2,700	3,400	10	21.7	1,723	194.5	31,889	3,600	36,672	4,140	56,374	6,364
C812_0460 MT50	45.54	592/13	2,500	2,500	3,000	10	31.7	1,777	200.6	31,889	3,600	36,672	4,140	63,778	7,200
C812_0540 MT40	54.15	704/13	2,900	2,700	3,400	10	18.6	1,746	197.1	31,889	3,600	36,672	4,140	63,778	7,200
C812_0540 MT50	54.15	704/13	2,500	2,500	3,000	10	28.6	1,785	201.5	31,889	3,600	36,672	4,140	63,778	7,200
C812_0690 MT40	68.89	620/9	2,900	2,700	3,400	10	15.6	1,767	199.5	31,889	3,600	36,672	4,140	63,778	7,200
C812_0690 MT50	68.89	620/9	2,500	2,500	3,000	10	25.6	1,792	202.3	31,889	3,600	36,672	4,140	63,778	7,200
C813 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 67 dB(A)** [3]	
C813_0490 MT40	49.18	49914/1015	2,900	2,700	3,400	10	15.2	1,734	195.7	29,597	3,341	29,597	3,341	36,997	4,177
C813_0660 MT40	65.96	10620/161	2,900	2,700	3,400	10	14.0	1,764	199.2	32,936	3,718	37,466	4,230	46,832	5,287
C813_0780 MT40	78.13	54693/700	2,900	2,700	3,400	10	13.4	1,775	200.4	34,401	3,884	42,518	4,800	53,567	6,047
C813_0790 MT30	79.34	285619/3600	2,900	2,700	3,400	10	8.3	1,747	197.2	20,953	2,365	22,424	2,531	28,029	3,164
C813_0890 MT40	89.44	14400/161	2,900	2,700	3,400	10	13.9	1,782	201.2	31,889	3,600	36,672	4,140	63,501	7,169
C813_0910 MT30	90.82	18800/207	2,900	2,700	3,400	10	8.7	1,760	198.7	24,905	2,812	26,582	3,001	33,227	3,751
C813_1010 MT40	100.5	28143/280	2,900	2,700	3,400	10	12.9	1,786	201.7	36,202	4,087	42,518	4,800	65,171	7,357
C813_1060 MT40	105.9	3708/35	2,900	2,700	3,400	10	13.4	1,788	201.9	31,889	3,600	36,672	4,140	63,778	7,200
C813_1080 MT30	107.6	4841/45	2,900	2,700	3,400	10	8.2	1,772	200.1	28,411	3,207	30,405	3,432	38,006	4,291
C813_1300 MT40	129.5	58941/455	2,900	2,700	3,400	10	12.4	1,793	202.4	37,204	4,200	42,518	4,800	74,407	8,400
C813_1360 MT40	136.3	954/7	2,900	2,700	3,400	10	12.8	1,794	202.6	31,889	3,600	36,672	4,140	63,778	7,200
C813_1380 MT30	138.4	2491/18	2,900	2,700	3,400	10	7.6	1,784	201.5	29,899	3,375	36,672	4,140	46,238	5,220
C813_1760 MT40	175.6	15984/91	2,900	2,700	3,400	10	12.4	1,798	203.0	31,889	3,600	36,672	4,140	63,778	7,200
C813_1780 MT30	178.4	6956/39	2,900	2,700	3,400	10	7.3	1,792	202.3	31,543	3,561	36,672	4,140	56,370	6,364
C813_2090 MT40	208.9	19008/91	2,900	2,700	3,400	10	12.2	1,800	203.2	31,889	3,600	36,672	4,140	63,778	7,200
C813_2120 MT30	212.1	8272/39	2,900	2,700	3,400	10	7.1	1,795	202.7	31,889	3,600	36,672	4,140	63,778	7,200
C813_2660 MT40	265.7	1860/7	2,900	2,700	3,400	10	12.0	1,801	203.3	31,889	3,600	36,672	4,140	63,778	7,200
C813_2700 MT30	269.8	7285/27	2,900	2,700	3,400	10	6.9	1,799	203.0	31,889	3,600	36,672	4,140	63,778	7,200

[1] Maximum torque for continuous input RPM - horizontal output position.

[2] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

[3] dB(A) Measured at 1 meter distance with 3000 RPM input.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 3, 4
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL5 and EL6
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL3, EL4
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"C" Series–Concentric Helical ServoFit® Modular System Selection Data

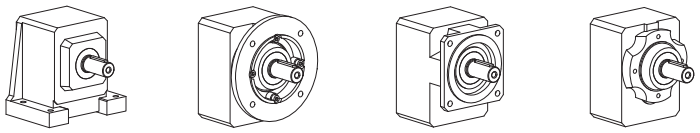
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [1]		Output Torque Acceleration		Output Torque Peak [2]	
							J_1	C_2		$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$	$kgcm^2$	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
C912 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 73 dB(A) [3]**	
C912_0165 MT50	16.5	5795/352	2,500	2,500	3,000	10	101.5	2,020	228.0	37,713	4,258	37,713	4,258	47,141	5,322
C912_0200 MT50	20.2	2257/112	2,500	2,500	3,000	10	79.6	2,110	238.2	44,280	4,999	44,280	4,999	55,349	6,249
C912_0230 MT50	23.4	6175/264	2,500	2,500	3,000	10	96.8	3,134	353.8	53,148	6,000	53,581	6,049	66,977	7,561
C912_0250 MT50	25.3	6893/272	2,500	2,500	3,000	10	61.5	2,183	246.4	53,014	5,985	53,014	5,985	66,268	7,481
C912_0290 MT50	28.6	2405/84	2,500	2,500	3,000	10	76.4	3,240	365.8	53,148	6,000	57,577	6,500	78,638	8,878
C912_0320 MT50	32.1	3599/112	2,500	2,500	3,000	10	48.0	2,232	252.0	55,803	6,300	63,801	7,203	79,751	9,003
C912_0360 MT50	36.0	7345/204	2,500	2,500	3,000	10	59.6	3,324	375.3	53,148	6,000	57,577	6,500	94,151	10,629
C912_0390 MT50	39.3	4087/104	2,500	2,500	3,000	10	39.9	2,260	255.2	53,230	6,009	63,876	7,211	92,963	10,495
C912_0460 MT50	45.7	3835/84	2,500	2,500	3,000	10	46.8	3,381	381.7	53,148	6,000	57,577	6,500	106,296	12,000
C912_0560 MT50	55.8	335/6	2,500	2,500	3,000	10	39.0	3,413	385.3	53,148	6,000	57,577	6,500	106,296	12,000
C912_0700 MT50	70.0	10075/144	2,500	2,500	3,000	10	32.8	3,436	387.9	53,148	6,000	57,577	6,500	82,414	9,304
C913 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 73 dB(A) [3]**	
C913_0650 MT50	64.6	295545/4576	2,500	2,500	3,000	10	28.3	3,429	387.1	58,960	6,656	70,864	8,000	94,010	10,613
C913_0780 MT40	77.7	60939/784	2,800	2,600	3,200	10	15.8	3,374	380.9	39,232	4,429	44,280	4,999	55,351	6,249
C913_0790 MT50	79.1	115107/1456	2,500	2,500	3,000	10	26.8	3,445	389.0	62,006	7,000	70,864	8,000	110,376	12,461
C913_0900 MT40	90.2	55575/616	2,800	2,600	3,200	10	17.0	3,400	383.8	52,907	5,973	53,584	6,049	66,979	7,561
C913_0920 MT50	91.8	8075/88	2,500	2,500	3,000	10	28.0	3,454	389.9	53,148	6,000	57,577	6,500	106,296	12,000
C913_0990 MT50	99.4	20679/208	2,500	2,500	3,000	10	25.7	3,457	390.3	62,006	7,000	70,864	8,000	124,012	14,000
C913_1100 MT40	110.4	21645/196	2,800	2,600	3,200	10	15.6	3,426	386.7	53,148	6,000	57,577	6,500	78,641	8,878
C913_1120 MT50	112.3	3145/28	2,500	2,500	3,000	10	26.6	3,462	390.8	53,148	6,000	57,577	6,500	106,296	12,000
C913_1260 MT50	126.1	183549/1456	2,500	2,500	3,000	10	24.8	3,465	391.2	62,006	7,000	70,864	8,000	124,012	14,000
C913_1390 MT40	138.9	66105/476	2,800	2,600	3,200	10	14.5	3,445	388.9	53,148	6,000	57,577	6,500	94,154	10,629
C913_1410 MT50	141.3	565/4	2,500	2,500	3,000	10	25.5	3,468	391.5	53,148	6,000	57,577	6,500	106,296	12,000
C913_1760 MT40	176.1	34515/196	2,800	2,600	3,200	10	13.6	3,458	390.3	53,148	6,000	57,577	6,500	106,296	12,000
C913_1790 MT50	179.1	5015/28	2,500	2,500	3,000	10	24.7	3,472	392.0	53,148	6,000	57,577	6,500	106,296	12,000
C913_2150 MT40	215.4	3015/14	2,800	2,600	3,200	10	13.1	3,464	391.1	53,148	6,000	57,577	6,500	106,296	12,000

Motor Shaft

Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48
MT50	60

Housing Styles

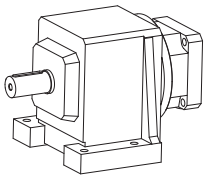
N — Foot Mounted **F** — Round Flange **Q** — Square Flange **G** — Tapped Holes



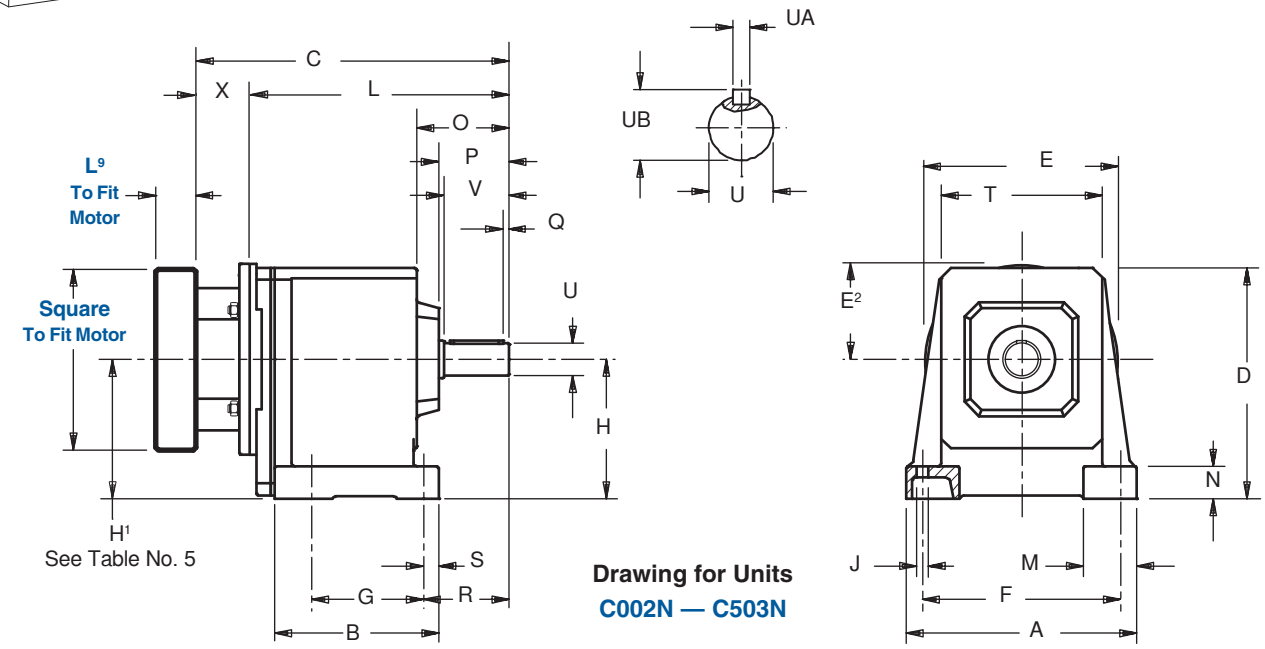
Contact STOBER for availability of "Q" housing style.

See Page 146 for required ordering information and part number example.

See web site for drawings.



ServoFit® "C" Series–Concentric Helical Foot Mount – "N" Housing Dimensional Data



Drawing for Units
C002N — C503N

Table No. 1 **"C" Series – Foot Mounting Unit Dimensions (Inches) – "N" Housing Style**

Base Module	A	B	D	F	G	H	J	M	N	O	P	Q	R
C002	5.20	3.74	5.67	4.33	2.44	3.23	.28	1.38	.79	2.24	1.73	.16	2.17
C102/C103	6.93	4.65	6.97	5.91	2.76	4.02	.35	1.65	.98	2.72	2.13	.16	2.64
C202/C203	7.87	5.31	7.68	6.69	3.35	4.53[1)]	.43	1.97	1.18	3.39	2.56	.16	3.11
C302/C303	8.46	6.06	8.46	7.28	4.13	5.12[1)]	.43	1.97	1.18	3.35	2.56	.16	3.11
C402/C403	10.04	7.09	9.65	8.66	4.33	5.71	.55	2.36	1.38	4.17	3.39	.16	4.13
C502/C503	11.42	7.76	11.42	9.65	5.12	6.69	.71	2.76	1.57	4.21	3.39	.16	4.25
C612/C613	11.81	10.43	12.40	9.65	8.46	7.87[1)]	.71	2.95	1.57	6.02	4.17	.20	5.12
C712/C713	14.37	11.22	14.76	11.81	9.25	9.25[1)]	.71	3.54	1.97	7.28	5.00	.20	6.42
C812/C813	17.13	14.17	17.72	13.39	11.81	11.42	.87	3.74	2.17	8.58	5.83	.39	7.48
C912/C913	20.08	16.14	20.87	15.75	13.39	13.39	1.02	4.33	2.36	10.08	7.01	.39	8.74

[1)] See Table No. 5

Table No. 2 **Metric output available on request**

Base Module	S	T	Standard Shaft - inches			Optional Shaft - mm			V	Z[1]
			U	UA	UB	U	UA	UB		
C002	.43	3.62	.750$_{h6}$	$^{3}/_{16} \times ^{3}/_{16} \times 1^{7}/_{32}$	.83	20$_{k6}$	A6x6x32	22.5	1.57	–
C102/C103	.51	4.88	1.000$_{h6}$	$^{1}/_{4} \times ^{1}/_{4} \times 1^{9}/_{16}$	1.11	25$_{k6}$	A8x7x40	28	1.97	–
C202/C203	.55	5.43	1.250$_{h6}$	$^{1}/_{4} \times ^{1}/_{4} \times 1^{15}/_{16}$	1.36	30$_{k6}$	A8x7X50	33	2.36	–
C302/C303	.55	5.91	1.250$_{h6}$	$^{1}/_{4} \times ^{1}/_{4} \times 1^{15}/_{16}$	1.36	30$_{k6}$	A8x7X50	33	2.36	–
C402/C403	.75	6.89	1.625$_{h6}$	$^{3}/_{8} \times ^{3}/_{8} \times 2^{7}/_{8}$	1.79	40$_{k6}$	A12x8X70	43	3.15	–
C502/C503	.87	7.56	1.625$_{h6}$	$^{3}/_{8} \times ^{3}/_{8} \times 2^{7}/_{8}$	1.79	40$_{k6}$	A12x8X70	43	3.15	–
C612/C613	.98	6.97	2.125$_{h6}$	$^{1}/_{2} \times ^{1}/_{2} \times 3^{5}/_{32}$	2.35	50$_{k6}$	A14x9x90	53.5	3.94	6.57
C712/C713	.98	7.56	2.375$_{h6}$	$^{5}/_{8} \times ^{5}/_{8} \times 3^{15}/_{16}$	2.65	60$_{m6}$	A18x11x100	64	4.72	7.91
C812/C813	1.14	8.78	2.875$_{h6}$	$^{3}/_{4} \times ^{3}/_{4} \times 4^{5}/_{16}$	3.21	70$_{m6}$	A20x12x125	74.5	5.51	8.70
C912/C913	1.34	10.91	3.625$_{h6}$	$^{7}/_{8} \times ^{7}/_{8} \times 5^{1}/_{2}$	4.01	90$_{m6}$	A25x14x140	95	6.69	10.24

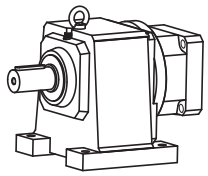
Table No. 3 **"MT" Motor Plate Dimensions**

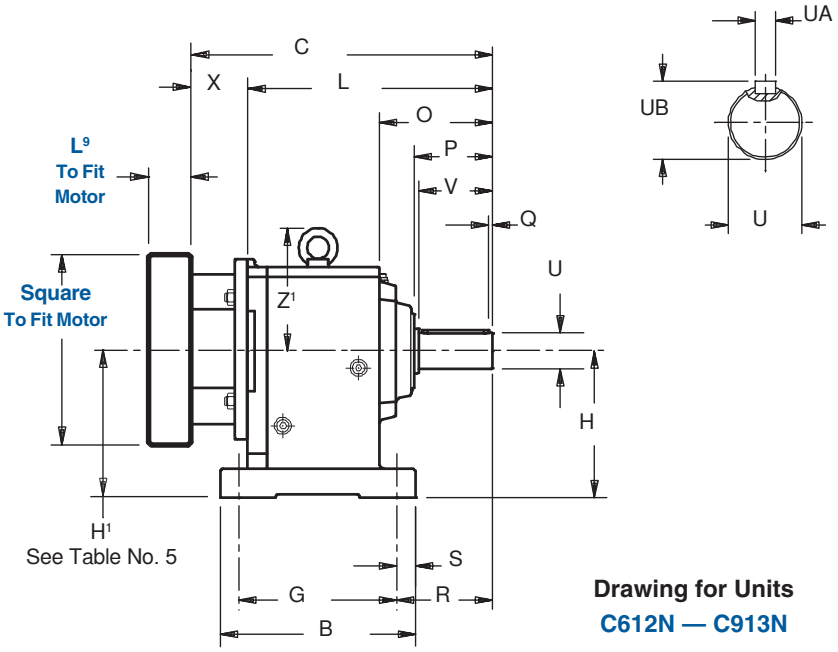
Motor Adapter	Motor Shaft D[6] Max. [1)]		Motor Plate [2)] Thickness L[9] Minimum		Inches			Wt. lbs.
	mm	ins.	mm	inches	E	E[2]	X	
MT10	19	.748	21	.83	5.51	2.75	1.57	5
MT20	24	.945	24	.95	6.30	3.15	1.97	8
MT30	38	1.260	25	.98	7.87	3.94	2.36	12
MT40	48	1.890	33	1.30	9.84	4.92	3.50	18
MT50	60	2.362	43	1.69	11.81	5.91	3.21	16

[1)] If an adapter bushing is required it will be supplied as a component of the motor mounting plate.
[2)] Motor plate maximum thickness (L[9]) will vary with motor shaft length but will not be less than shown.

C

ServoFit "C" Series–Concentric Helical Foot Mount – "N" Housing Dimensional Data





Drawing for Units
C612N — C913N

Table No. 4

"C" Series – Foot Mounting Unit Dimensions (Inches) – "N" Housing Style

Base	MT10		MT20		MT30		MT40		MT50		Approx.
Module	C	L	C	L	C	L	C	L	C	L	Wt.(lbs.)
C002	7.63	6.06	8.19	6.22	–	–	–	–	–	–	18
C102	8.93	7.36	9.49	7.52	9.96	7.60	–	–	–	–	29
C103	10.39	8.82	–	–	–	–	–	–	–	–	34
C202	10.03	8.46	10.59	8.62	11.06	8.70	–	–	–	–	38
C203 [1]	11.49	9.92	12.28	10.31	–	–	–	–	–	–	45
C302	–	–	11.34	9.37	11.81	9.45	13.07	9.57	–	–	49
C303 [1]	12.24	10.67	13.03	11.06	–	–	–	–	–	–	56
C402	–	–	13.23	11.26	13.70	11.34	14.96	11.46	–	–	71
C403	–	–	14.92	12.95	–	–	–	–	–	–	78
C502	–	–	14.06	12.09	14.53	12.17	15.78	12.28	16.04	12.83	95
C503	–	–	15.75	13.78	–	–	–	–	–	–	111
C612 [1]	–	–	–	–	15.47	13.11	16.73	13.23	16.95	13.74	115
C613 [1]	–	–	16.73	14.76	17.91	15.55	–	–	–	–	159
C712	–	–	–	–	17.56	15.20	18.78	15.28	19.00	15.79	199
C713 [1]	–	–	–	–	19.96	17.60	–	–	–	–	221
C812	–	–	–	–	–	–	21.41	17.91	21.24	18.03	322
C813	–	–	–	–	22.60	20.24	24.21	20.71	–	–	342
C912	–	–	–	–	–	–	–	–	24.27	21.06	596
C913	–	–	–	–	–	–	26.06	22.56	27.54	24.33	678

[1] See Table No. 5

Table No. 5

"C" Series – Input Dimension

Base	MT20	MT30	MT40	MT50
Module	H1	H1	H1	H1
C203	3.09	—	—	—
C303	3.66	—	—	—
C612	—	7.63	7.63	7.63
C613	—	—	7.63	—
C713	—	—	10.00	—

Units shown in Table 5 do not have a concentric input and output.

Part No. Example

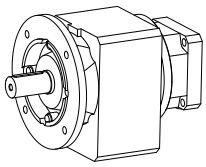
Foot Mounting with TriAdapt® Motor Adapter

C302N0620 MT10

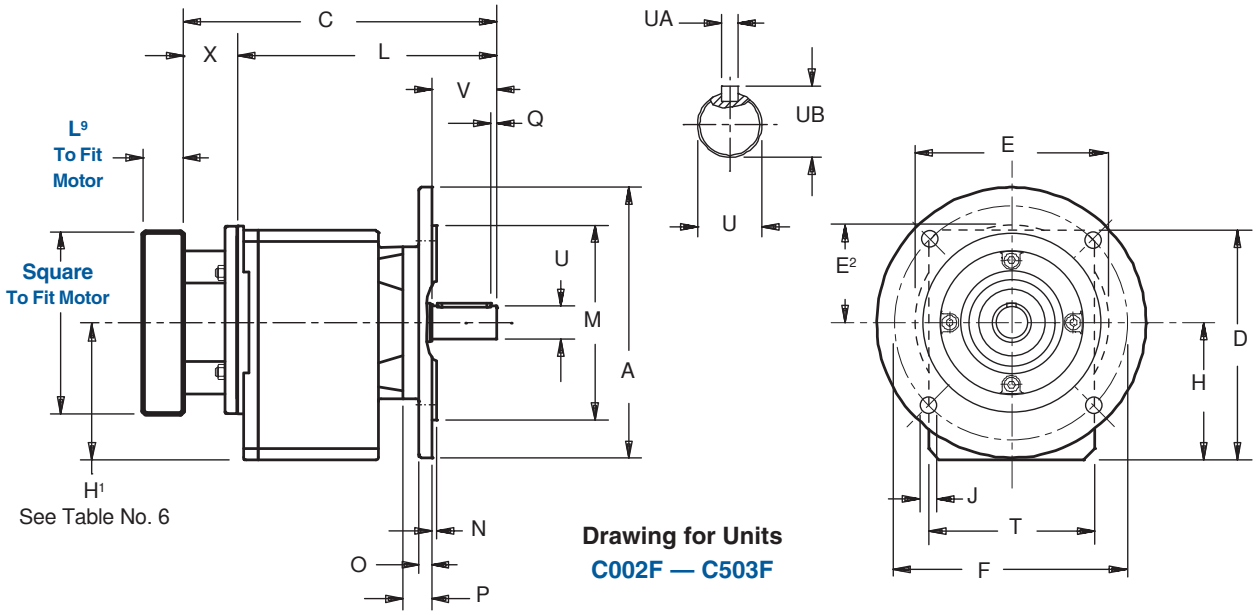
For approximate weight, add adapter weight from Table 3 and base module weight from Table 4.

C

See web site for drawings.



ServoFit® "C" Series–Concentric Helical Round Flange – "F" Housing Dimensional Data



Drawing for Units
C002F — C503F

Table No. 1 **"C" Series – Round Flange Unit Dimensions (Inches) – "F" Housing Style**

Base Module	A	D	F	H	J	M	N	O	P	Q	T
C002	6.30	5.55	5.12	3.11	.35	4.331 +.001/-.0004	.12	.39	.71	.16	3.82
C102/C103	7.87	6.89	6.50	3.94	.43	5.118 +.001/-.0004	.14	.47	.83	.16	5.12
C202/C203	7.87	7.56	6.50	4.41 1)	.43	5.118 +.001/-.0004	.14	.47	1.06	.16	5.59
C302/C303	9.84	8.35	8.46	5.00 1)	.55	7.087 +.001/-.0004	.16	.47	1.06	.16	6.06
C402/C403	9.84	9.55	8.46	5.61	.55	7.087 +.001/-.0004	.16	.55	1.10	.16	7.01
C502/C503	11.81	11.26	10.43	6.54	.55	9.055 +.001/-.001	.16	.63	1.14	.16	7.68
C612/C613	11.81	11.97	10.43	7.44 1)	.55	9.055 +.001/-.001	.16	.67	1.42	.20	8.86
C712/C713	13.78	14.61	11.81	9.09 1)	.71	9.842 +.000/-.001	.20	.71	1.73	.20	10.43
C812/C813	15.75	17.52	13.78	11.22	.71	11.811 +.000/-.001	.20	.79	1.77	.39	12.20
C912/C913	17.72	20.63	15.75 *	13.15	.71	13.780 +.000/-.001	.20	.91	1.97	.39	14.37

1) See Table No. 6
* C913 has 8 mounting holes (located 22.5° from horizontal) in the output flange instead of 4 as shown in the drawing.

Table No. 2 **Metric output available on request**

Base Module	Standard Shaft - inches			Optional Shaft - mm			V	Z1
	U	UA	UB	U	UA	UB		
C002	.750h6	3/16 × 3/16 × 1 7/32	.83	20k6	A6x6x32	22.5	1.57	–
C102/C103	1.000h6	1/4 × 1/4 × 1 9/16	1.11	25k6	A8x7x40	28	1.97	–
C202/C203	1.250h6	1/4 × 1/4 × 1 15/16	1.36	30k6	A8x7X50	33	2.36	–
C302/C303	1.250h6	1/4 × 1/4 × 1 15/16	1.36	30k6	A8x7X50	33	2.36	–
C402/C403	1.625h6	3/8 × 3/8 × 2 7/8	1.79	40k6	A12x8X70	43	3.15	–
C502/C503	1.625h6	3/8 × 3/8 × 2 7/8	1.79	40k6	A12x8X70	43	3.15	–
C612/C613	2.125h6	1/2 × 1/2 × 3 5/32	2.35	50k6	A14x9x90	53.5	3.94	6.57
C712/C713	2.375h6	5/8 × 5/8 × 3 15/16	2.65	60m6	A18x11x100	64	4.72	7.91
C812/C813	2.875h6	3/4 × 3/4 × 4 5/16	3.21	70m6	A20x12x125	74.5	5.51	8.70
C912/C913	3.625h6	7/8 × 7/8 × 5 1/2	4.01	90m6	A25x14x140	95	6.69	10.24

Table No. 3 **"MT" Motor Plate Dimensions**

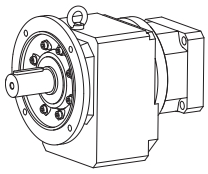
Motor Adapter	Motor Shaft D6 Max. 1)		Motor Plate 2) Thickness L9 Minimum		Inches			Wt. lbs.
	mm	ins.	mm	inches	E	E2	X	
MT10	19	.748	21	.83	5.51	2.75	1.57	5
MT20	24	.945	24	.95	6.30	3.15	1.97	8
MT30	38	1.260	25	.98	7.87	3.94	2.36	12
MT40	48	1.890	33	1.30	9.84	4.92	3.50	18
MT50	60	2.362	43	1.69	11.81	5.91	3.21	16

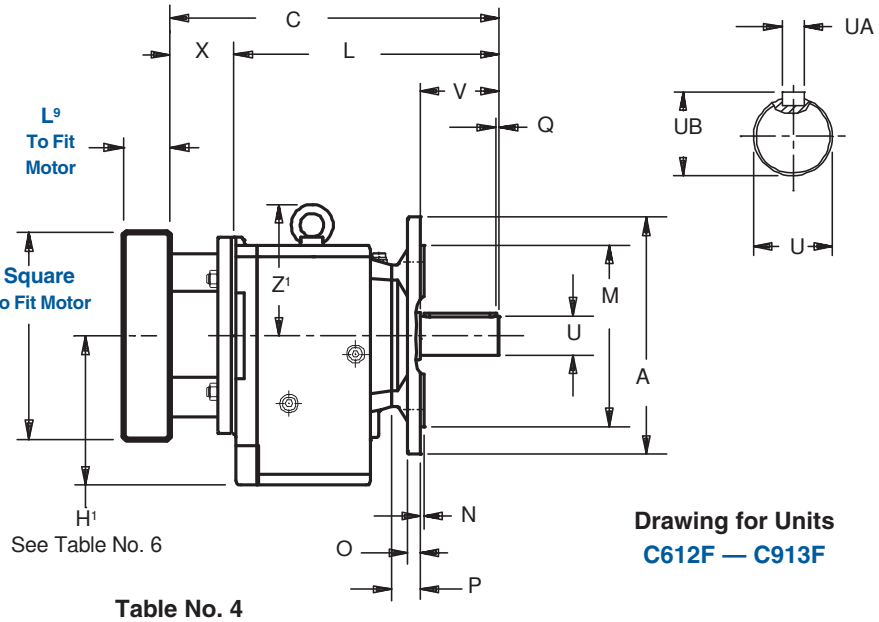
1) If an adapter bushing is required it will be supplied as a component of the motor mounting plate.
2) Motor plate maximum thickness (L9) will vary with motor shaft length but will not be less than shown.

For approximate weight, add adapter weight from Table 3 and base module weight from Table 4.

C

ServoFit® "C" Series–Concentric Helical Round Flange – "F" Housing Dimensional Data





Drawing for Units
C612F — C913F

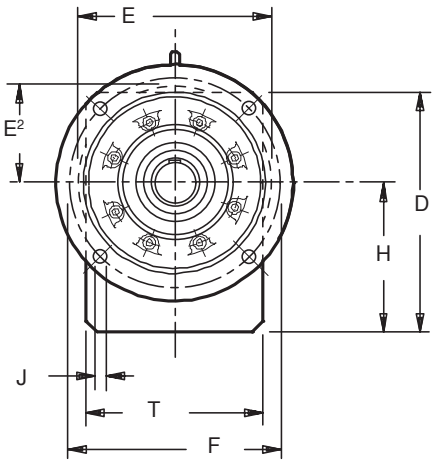


Table No. 4

"C" Series – Round Flange Unit Dimensions (Inches) – "F" Housing Style

Base	MT10		MT20		MT30		MT40		MT50		Approx.
Module	C	L	C	L	C	L	C	L	C	L	Wt.(lbs.)
C002	7.63	6.06	8.19	6.22	–	–	–	–	–	–	18
C102	8.93	7.36	9.49	7.52	9.96	7.60	–	–	–	–	29
C103	10.39	8.82	–	–	–	–	–	–	–	–	34
C202	10.03	8.46	10.59	8.62	11.06	8.70	–	–	–	–	38
C203 [1)]	11.49	9.92	12.28	10.31	–	–	–	–	–	–	45
C302	–	–	11.34	9.37	11.81	9.45	13.07	9.57	–	–	49
C303 [1)]	12.24	10.67	13.03	11.06	–	–	–	–	–	–	56
C402	–	–	13.23	11.26	13.70	11.34	14.96	11.46	–	–	71
C403	–	–	14.92	12.95	–	–	–	–	–	–	78
C502	–	–	14.06	12.09	14.53	12.17	15.78	12.28	16.04	12.83	95
C503	–	–	15.75	13.78	–	–	–	–	–	–	111
C612 [1)]	–	–	–	–	15.47	13.11	16.73	13.23	16.95	13.74	115
C613 [1)]	–	–	16.73	14.76	17.91	15.55	–	–	–	–	159
C712	–	–	–	–	17.56	15.20	18.78	15.28	19.00	15.79	199
C713 [1)]	–	–	–	–	19.96	17.60	–	–	–	–	221
C812	–	–	–	–	–	–	21.41	17.91	21.24	18.03	322
C813	–	–	–	–	22.60	20.24	24.21	20.71	–	–	342
C912	–		–	–	–	–	–	–	24.27	21.06	596
C913	–		–	–	–	–	26.06	22.56	27.54	24.33	678

[1)]See Table No. 6

Table No. 5 Optional Flange Dimensions (Inches)

Base Module	Flange Size	A	F	J	M	N	O
C0	120	4.724	3.93	.28	3.150 +.001/-.0004	.12	.39
	140	5.512	4.53	.35	3.740 +.001/-.0004	.12	.39
C1	140	5.512	4.53	.35	3.740 +.001/-.0004	.14	.32
	160	6.300	5.12	.35	4.331 +.001/-.0004	.14	.39
C2	160	6.300	5.12	.35	4.331 +.001/-.0004	.14	.39
	250	9.843	8.46	.55	7.087 +.001/-.0004	.16	.47
C3	160	6.300	5.12	.35	4.331 +.001/-.0004	.14	.39
	200	7.874	6.50	.43	5.118 +.001/-.0004	.14	.47
C4	200	7.874	6.50	.43	5.118 +.001/-.0004	.16	.55
	300	11.811	10.43	.55	9.055 +.001/-.001	.16	.55
C5	250	9.843	8.46	.55	7.087 +.001/-.0004	.16	.55
C8	350	13.780	11.81	.71	9.842 +.000/-.001	.20	.71
	450	17.717	15.75	.71	13.780 +.000/-.001	.20	.79

Optional flange are not available for all sizes.

Table No. 6

"C" Series – Input Dimension

Base	MT20	MT30	MT40	MT50
Module	H1	H1	H1	H1
C203	2.97	—	—	—
C303	3.54	—	—	—
C612	—	7.44	7.44	7.44
C613	—	—	7.44	—
C713	—	—	9.84	—

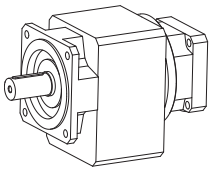
Units shown in Table 6 do not have a concentric input and output.

Part No. Example

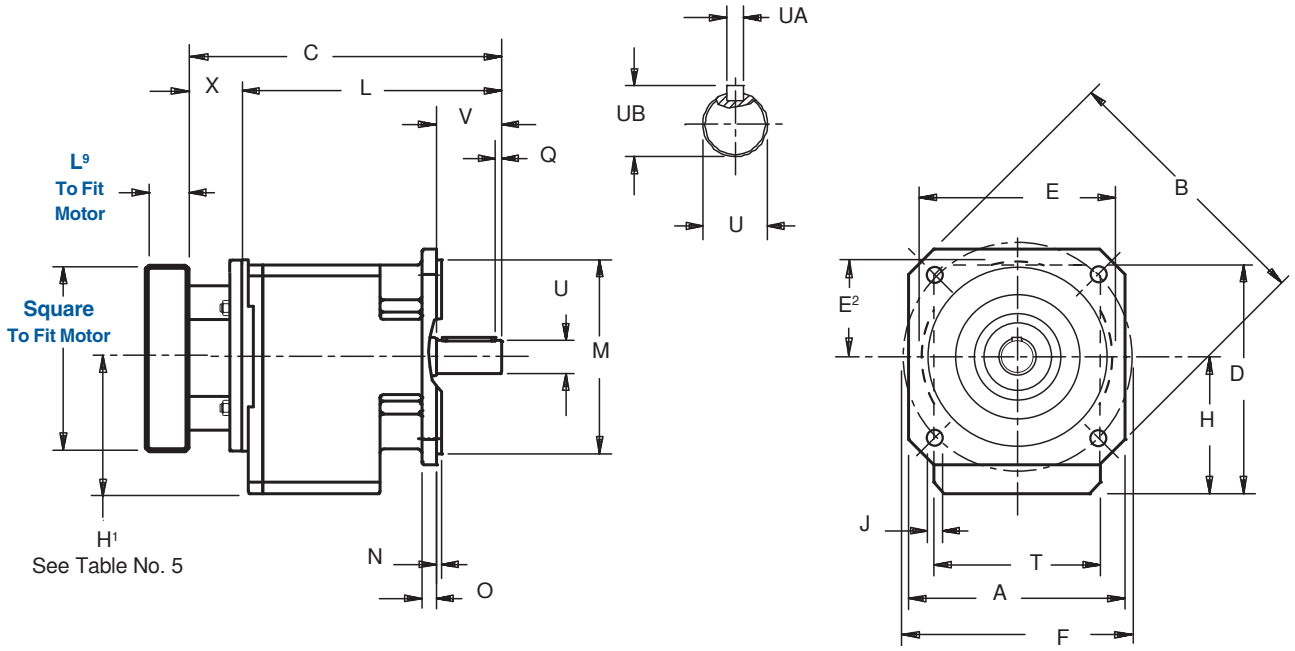
Round Flange with TriAdapt® Motor Adapter

C302F0620 MT10

C



ServoFit® "C" Series–Concentric Helical Square Flange – "Q" Housing Dimensional Data



Drawing for Units
C002Q — C503Q

Table No. 1 **"C" Series – Square Flange Unit Dimensions (Inches) – "Q" Housing Style**

Base Module	A	B	D	F	H	J	M	N	O	Q	T	V
C002	4.88	6.30	5.55	5.12	3.11	.35	4.331 +.001/-.0004	.14	.35	.16	3.82	1.57
C102/C103	5.71	7.56	6.89	6.50	3.94	.43	5.118 +.001/-.0004	.14	.43	.16	5.12	1.97
C202/C203	5.71	7.56	7.56	6.50	4.41 [1]	.43	5.118 +.001/-.0004	.14	.43	.16	5.59	2.36
C302/C303	7.87	9.84	8.35	8.46	5.00 [1]	.55	7.087 +.001/-.0004	.16	.55	.16	6.06	2.36
C402/C403	7.87	9.84	9.55	8.46	5.61	.55	7.087 +.001/-.0004	.16	.55	.16	7.01	3.15

[1] See Table No. 5

Table No. 2 **Metric output available on request**

Base Module	Standard Shaft - inches			Optional Shaft - mm		
	U	UA	UB	U	UA	UB
C002	.750h6	3/16 × 3/16 × 1 7/32	.83	20k6	A6x6x32	22.5
C102/C103	1.000h6	1/4 × 1/4 × 1 9/16	1.11	25k6	A8x7x40	28
C202/C203	1.250h6	1/4 × 1/4 × 1 15/16	1.36	30k6	A8x7X50	33
C302/C303	1.250h6	1/4 × 1/4 × 1 15/16	1.36	30k6	A8x7X50	33
C402/C403	1.625h6	3/8 × 3/8 × 2 7/8	1.79	40k6	A12x8X70	43

Contact STOBER Drives for availability of "Q" housing style.

ServoFit® "C" Series–Concentric Helical Square Flange – "Q" Housing Dimensional Data

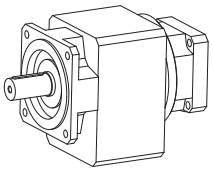


Table No. 3 "MT" Motor Plate Dimensions

Motor Adapter	Motor Shaft D[6] Max. [1]		Motor Plate [2] Thickness L[9] Minimum		Inches			Wt.
	mm	ins.	mm	inches	E	E[2]	X	lbs.
MT10	19	.748	21	.83	5.51	2.75	1.57	5
MT20	24	.945	24	.95	6.30	3.15	1.97	8
MT30	38	1.260	25	.98	7.87	3.94	2.36	12
MT40	48	1.890	33	1.30	9.84	4.92	3.50	18

[1] If an adapter bushing is required it will be supplied as a component of the motor mounting plate.
[2] Motor plate maximum thickness (L[9]) will vary with motor shaft length but will not be less than shown.

Table No. 4
"C" Series – Square Flange Unit Dimensions (Inches) – "Q" Housing Style

Base Module	MT10		MT20		MT30		MT40		Approx.
	C	L	C	L	C	L	C	L	Wt.(lbs.)
C002	7.63	6.06	8.19	6.22	–	–	–	–	18
C102	8.93	7.36	9.49	7.52	9.96	7.60	–	–	29
C103	10.39	8.82	–	–	–	–	–	–	34
C202	10.03	8.46	10.59	8.62	11.06	8.70	–	–	38
C203 [1]	11.49	9.92	12.28	10.31	–	–	–	–	45
C302	–	–	11.34	9.37	11.81	9.45	13.07	9.57	49
C303 [1]	12.24	10.67	13.03	11.06	–	–	–	–	56
C402	–	–	13.23	11.26	13.70	11.34	14.96	11.46	71
C403	–	–	14.92	12.95	–	–	–	–	78

[1] See Table No. 6

Table No. 5
Input Dimension (Inches)

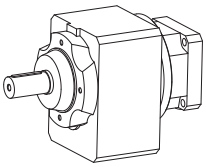
Base Module	MT20
	H[1]
C203	2.97
C303	3.54

Units shown in Table 5 do not have a concentric input and output.

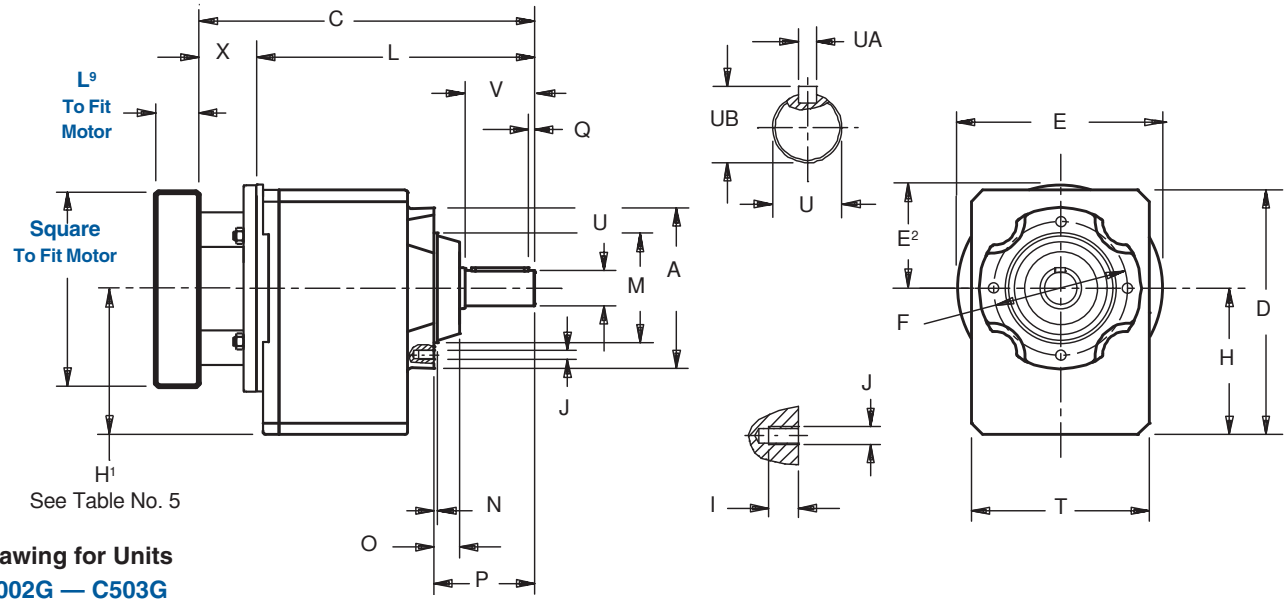
Part No. Example
Square Flange with TriAdapt® Motor Adapter
C302Q0620 MT20

For approximate weight, add adapter weight from Table 3 and base module weight from Table 4.

C



ServoFit® "C" Series–Concentric Helical Tapped Hole – "G" Housing Dimensional Data



Drawing for Units
C002G — C503G

Table No. 1 **"C" Series – Tapped Holes Unit Dimensions (Inches) – "G" Housing Style**

Base Module	A	D	F	H	I	J	M	N	O	P	Q	T
C002	3.43	5.55	2.95	3.11	.39	4-M6	2.165 +.001/-.0003	.12	.55	2.28	.16	3.82
C102/C103	4.72	6.89	3.94	3.94	.51	4-M6	3.150 +.001/-.0003	.12	.67	2.80	.16	5.12
C202/C203	5.51	7.56	4.53	4.41 1)	.51	4-M8	3.740 +.001/-.0004	.12	.87	3.43	.16	5.59
C302/C303	5.51	8.35	4.53	5.00 1)	.51	4-M8	3.740 +.001/-.0004	.12	.87	3.43	.16	6.06
C402/C403	6.30	9.55	5.12	5.61	.63	4-M10	4.331 +.001/-.0004	.14	.87	4.25	.16	7.01
C502/C503	7.56	11.26	6.50	6.54	.63	8-M10 2)	5.118 +.001/-.0004	.14	.91	4.29	.16	7.68
C612/C613	7.09	11.97	6.50	7.44 1)	.63	8-M10	5.512 +.001/-.0004	.20	1.18	5.35	.20	8.86
C712/C713	7.68	14.61	7.28	9.09 1)	.75	8-M12	6.102 +.001/-.0004	.31	1.46	6.46	.20	10.43
C812/C813	8.90	17.52	8.46	11.22	.75	8-M12	7.283 +.001/-.001	.20	1.46	7.28	.39	12.20
C912/C913	11.02	20.63	10.43	13.15	1.02	8-M16	9.055 +.001/-.001	.20	1.65	8.66	.39	14.37

1) See Table No. 5
2) C502/C503 has 8 holes located as shown on drawing for C612G — C913G.

Table No. 2 **Metric output available on request**

Base Module	Standard Shaft - inches			Optional Shaft - mm			V	Z1
	U	UA	UB	U	UA	UB		
C002	.750h6	3/16 × 3/16 × 1 7/32	.83	20k6	A6x6x32	22.5	1.57	–
C102/C103	1.000h6	1/4 × 1/4 × 1 9/16	1.11	25k6	A8x7x40	28	1.97	–
C202/C203	1.250h6	1/4 × 1/4 × 1 15/16	1.36	30k6	A8x7X50	33	2.36	–
C302/C303	1.250h6	1/4 × 1/4 × 1 15/16	1.36	30k6	A8x7X50	33	2.36	–
C402/C403	1.625h6	3/8 × 3/8 × 2 7/8	1.79	40k6	A12x8X70	43	3.15	–
C502/C503	1.625h6	3/8 × 3/8 × 2 7/8	1.79	40k6	A12x8X70	43	3.15	–
C612/C613	2.125h6	1/2 × 1/2 × 3 5/32	2.35	50k6	A14x9x90	53.5	3.94	6.57
C712/C713	2.375h6	5/8 × 5/8 × 3 15/16	2.65	60m6	A18x11x100	64	4.72	7.91
C812/C813	2.875h6	3/4 × 3/4 × 4 5/16	3.21	70m6	A20x12x125	74.5	5.51	8.70
C912/C913	3.625h6	7/8 × 7/8 × 5 1/2	4.01	90m6	A25x14x140	95	6.69	10.24

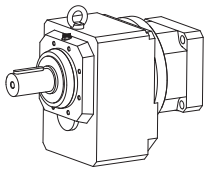
Table No. 3 **"MT" Motor Plate Dimensions**

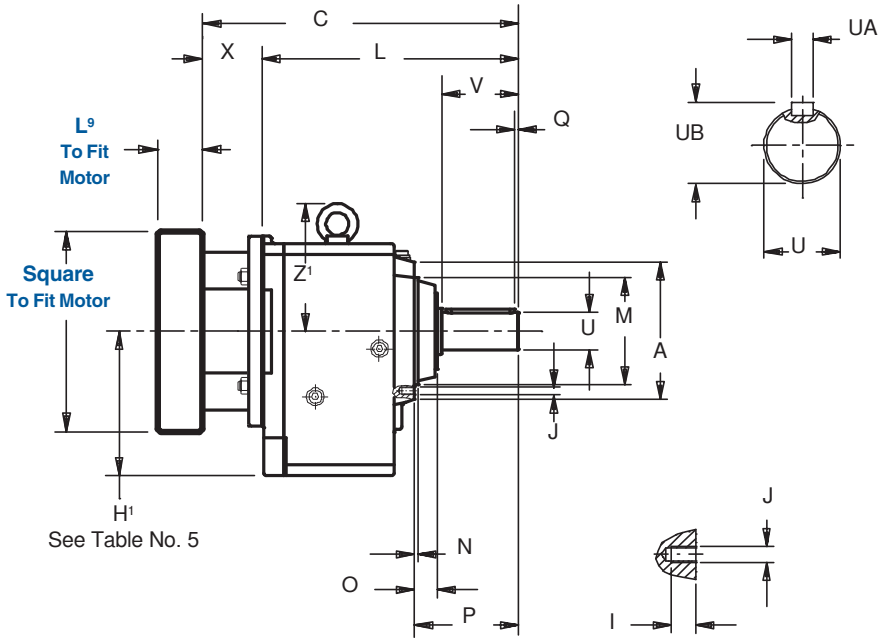
Motor Adapter	Motor Shaft D6 Max. 1)		Motor Plate 2) Thickness L9 Minimum		Inches			Wt. lbs.
	mm	ins.	mm	inches	E	E2	X	
MT10	19	.748	21	.83	5.51	2.75	1.57	5
MT20	24	.945	24	.95	6.30	3.15	1.97	8
MT30	38	1.260	25	.98	7.87	3.94	2.36	12
MT40	48	1.890	33	1.30	9.84	4.92	3.50	18
MT50	60	2.362	43	1.69	11.81	5.91	3.21	16

1) If an adapter bushing is required it will be supplied as a component of the motor mounting plate.
2) Motor plate maximum thickness (L^9) will vary with motor shaft length but will not be less than shown.

C

ServoFit® "C" Series–Concentric Helical Tapped Hole – "G" Housing Dimensional Data





Drawing for Units
C612G — C913G

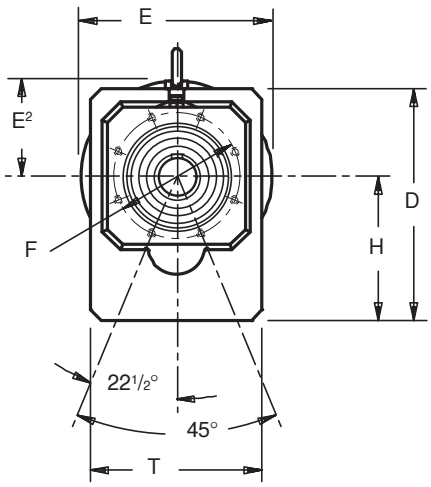


Table No. 4

"C" Series – Tapped Holes Unit Dimensions (Inches) – "G" Housing Style

Base	MT10		MT20		MT30		MT40		MT50		Approx.
Module	C	L	C	L	C	L	C	L	C	L	Wt.(lbs.)
C002	7.63	6.06	8.19	6.22	–	–	–	–	–	–	18
C102	8.93	7.36	9.49	7.52	9.96	7.60	–	–	–	–	29
C103	10.39	8.82	–	–	–	–	–	–	–	–	34
C202	10.03	8.46	10.59	8.62	11.06	8.70	–	–	–	–	38
C203 [1]	11.49	9.92	12.28	10.31	–	–	–	–	–	–	45
C302	–	–	11.34	9.37	11.81	9.45	13.07	9.57	–	–	49
C303 [1]	12.24	10.67	13.03	11.06	–	–	–	–	–	–	56
C402	–	–	13.23	11.26	13.70	11.34	14.96	11.46	–	–	71
C403	–	–	14.92	12.95	–	–	–	–	–	–	78
C502	–	–	14.06	12.09	14.53	12.17	15.78	12.28	16.04	12.83	95
C503	–	–	15.75	13.78	–	–	–	–	–	–	111
C612 [1]	–	–	–	–	15.47	13.11	16.73	13.23	16.95	13.74	115
C613 [1]	–	–	16.73	14.76	17.91	15.55	–	–	–	–	159
C712	–	–	–	–	17.56	15.20	18.78	15.28	19.00	15.79	199
C713 [1]	–	–	–	–	19.96	17.60	–	–	–	–	221
C812	–	–	–	–	–	–	21.41	17.91	21.24	18.03	322
C813	–	–	–	–	22.60	20.24	24.21	20.71	–	–	342
C912	–		–	–	–	–	–	–	24.27	21.06	596
C913	–		–	–	–	–	26.06	22.56	27.54	24.33	678

[1] See Table No. 6

Part No. Example

Tapped Holes Housing with TriAdapt® Motor Adapter

C302G0620 MT20

Table No. 5

"C" Series – Input Dimension

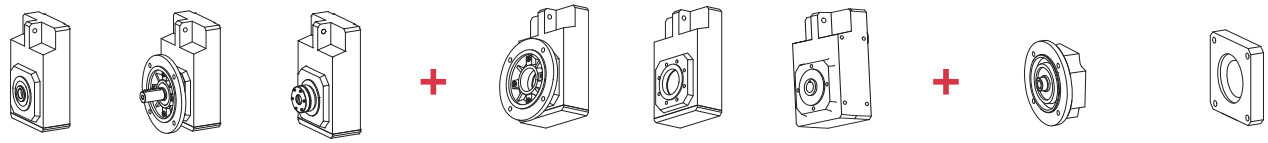
Base	MT20	MT30	MT40	MT50
Module	H1	H1	H1	H1
C203	2.97	—	—	—
C303	3.54	—	—	—
C612	—	7.44	7.44	7.44
C613	—	—	7.44	—
C713	—	—	9.84	—

Units shown in Table 5 do not have a concentric input and output.

For approximate weight, add adapter weight from Table 3 and base module weight from Table 4.

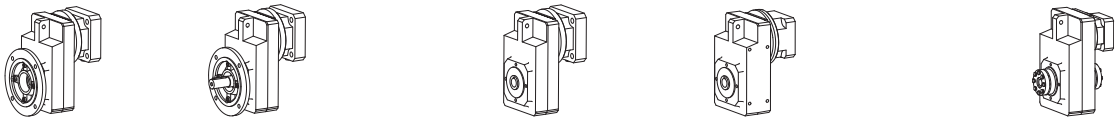
"F" Series–Offset Helical ServoFit® SMS Gearhead Overview

Output Style + Housing Style + TriAdapt® Input = Gearhead Configurations



Style A Hollow Output | Style V Solid Output | Style W Bushing Output | + | Style F Round Flange | Style G Tapped Holes | Style GN Foot Mount | + | MT Motor Adapter | Motor Plate to fit any servo motor

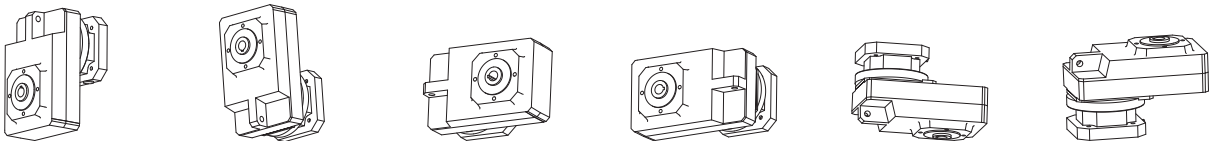
Gearhead Configurations



Style AF | Style VF | Style AG | Style AGN | Style WG

Mounting Positions

EL1 EL2 EL3 EL4 EL5 EL6



Part No. Explanation with OPTIONS and REQUIRED INFORMATION

F 4 0 2 V F 0135 MT20 B

This designation is only required when ordering a:
B — Beverage Duty
F — Food Duty

TriAdapt® Motor Adapter Size: **MT10**, **MT20**, **MT30**, **MT40**

Nominal Ratio: (**0135** = 13.5:1)

HOUSING STYLE
"**F**" Housing Style — Flange Mounting
"**G**" Housing Style — Tapped Holes
"**GN**" Housing Style — Foot Mount

OUTPUT STYLE
"**V**" Solid Output — ONLY AVAILABLE with "F" Housing Style
SPECIFY IN A NOTE: Standard or Stainless Steel[1)]
Imperial or Metric [1)]

"**A**" Hollow Output
SPECIFY IN A NOTE: Standard or Stainless Steel [1)]
Imperial or Metric [1)]

"**W**" Wobble Free Bushing
SPECIFY IN A NOTE: Bushing Part Number
Single or Double Bushing (Double not possible on F203, F303, F403, F603)
Single Side 5 or Side 6 (Side 6 not possible on F203, F303, F403, F603)

No. of Stages (**02** = 2 Stage, determined by ratio)

Design Generation

Unit Size No.

OFfset Helical

[1)]Not available in all sizes.

THE FOLLOWING INFORMATION IS REQUIRED FOR ANY UNIT:

Mounting Position — EL1 EL2 EL3 EL4 EL5 EL6
Motor — Motor Manufacturer and Model Number
Paint — Black (Standard) ..... White ..... Stainless
Package Option — Beverage Duty ..... Food Duty
Backlash Option — Standard or Reduced Backlash

Bushing Part No. Explanation

W F 2 – 103

Output Bore in inches — **103** = 1 3/16
Base Module Size example: F202/F203)
Wobble **F**ree Single Side Bushing

W F N 2 – 103

Output Bore in inches — **103** = 1 3/16
Base Module Size example: F202)
Wobble **F**ree — **N**o Covers — Double Side Bushing

Refer to Page 250 for ServoFit Gearhead Selection Procedure.

"F" Series—Offset Helical ServoFit® Modular System

Compact size and flexibility make these gear drives a popular choice for applications that require high performance, efficiency, and durability. Series "F" gear drives, like all SMS units, are available with a wide selection of configurations to match almost any mounting requirement.

Performance Specifications:

- Input RPM up to 4,500 RPM
- Nominal output torque — 200 to 9,700 in. lbs. (22-1,100 Nm)
- Reducer ratios from 4.1:1 to 540:1
- 5 year limited warranty (2 years on bearings, seals, etc.)
- Ambient temperature — 0° C to +40°C (104° F) [Unit temperature ≤ 80° C Max.]
- Noise level — as low as 53 dB(A)
- ≥ 95.5% Efficiency
- Maintenance free
- Can be back driven

High quality helical gearing is case hardened to 58-62 Rockwell C. Precision finished for low noise and long service life. Standard backlash is ≤11 arc minutes Reduced backlash is ≤7 arc minutes

Motor plate can easily be changed to fit your choice of motors.

Shipped with the proper amount of oil to prevent gear damaging dry start-ups

One-piece cast iron housing with precision machined bearing supports assure gearset alignment, prolongs bearing life, provides exceptional overhung load capacities, and eliminates leakage problems common to two-piece housings.

Double lip seals keep oil in and contaminants out. Double seals available for severe duty applications.

Output Options:
- Solid shaft
- Hollow
- Backlash free, wobble free bushings

Also available in metric or stainless shaft or quill.

Also available in washdown and poultry duty.
Maximum 10 working days for custom motor plates.

See web site for drawings.

"F" Series–Offset Helical ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	$kgcm^2$	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
F102 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 55 dB(A)** [4]	
F102_0043 MT10	4.308	56/13	3,500	3,000	6,000	11/8	2.1	35	4.0	396	45	396	45	496	56
F102_0043 MT20	4.308	56/13	3,500	3,000	5,000	11/8	2.7	37	4.1	539	61	746	84	933	105
F102_0065 MT10	6.462	84/13	3,500	3,000	6,000	11/8	1.4	45	5.1	563	64	563	64	704	79
F102_0065 MT20	6.462	84/13	3,500	3,000	5,000	11/8	2.0	46	5.2	617	70	930	105	1,326	150
F102_0072 MT10	7.156	322/45	3,700	3,600	6,000	11/8	1.2	47	5.3	613	69	613	69	767	87
F102_0072 MT20	7.156	322/45	3,500	3,500	5,000	11/8	1.8	48	5.4	639	72	930	105	1,444	163
F102_0089 MT10	8.948	1029/115	3,700	3,600	6,000	11/8	1.0	50	5.7	688	78	737	83	921	104
F102_0089 MT20	8.948	1029/115	3,500	3,500	5,000	11/8	1.6	51	5.8	688	78	930	105	1,734	196
F102_0110 MT10	10.92	273/25	4,000	4,000	6,000	11/8	0.9	53	5.9	735	83	868	98	1,085	123
F102_0110 MT20	10.92	273/25	3,500	3,500	5,000	11/8	1.5	53	6.0	735	83	930	105	1,772	200
F102_0135 MT10	13.59	231/17	4,000	4,000	6,000	11/8	0.8	54	6.1	791	89	930	105	1,297	146
F102_0135 MT20	13.59	231/17	3,500	3,500	5,000	11/8	1.4	55	6.2	791	89	930	105	1,772	200
F102_0185 MT10	18.46	1495/81	3,700	3,600	6,000	11/6	0.9	66	7.4	876	99	1,063	120	1,978	223
F102_0185 MT20	18.46	1495/81	3,500	3,500	5,000	11/6	1.5	66	7.5	876	99	1,063	120	2,126	240
F102_0230 MT10	23.08	3185/138	3,700	3,600	6,000	11/6	0.8	67	7.5	944	107	1,063	120	2,126	240
F102_0230 MT20	23.08	3185/138	3,500	3,500	5,000	11/6	1.4	67	7.6	944	107	1,063	120	2,126	240
F102_0280 MT10	28.17	169/6	4,000	4,000	6,000	11/6	0.8	67	7.6	1,009	114	1,063	120	2,126	240
F102_0280 MT20	28.17	169/6	3,500	3,500	5,000	11/6	1.4	67	7.6	1,009	114	1,063	120	2,126	240
F102_0350 MT10	35.05	3575/102	4,000	4,000	6,000	11/6	0.7	68	7.7	1,063	120	1,063	120	2,126	240
F102_0350 MT20	35.05	3575/102	3,500	3,500	5,000	11/6	1.3	68	7.7	1,063	120	1,063	120	2,126	240
F102_0460 MT10	46.43	325/7	4,000	4,000	6,000	11/6	0.7	68	7.7	1,063	120	1,063	120	2,126	240
F102_0460 MT20	46.43	325/7	3,500	3,500	5,000	11/6	1.3	68	7.7	1,063	120	1,063	120	2,126	240
F102_0560 MT10	55.97	2015/36	4,000	4,000	6,000	11/6	0.7	68	7.7	1,063	120	1,063	120	2,126	240
F102_0560 MT20	55.97	2015/36	3,500	3,500	5,000	11/6	1.3	68	7.7	1,063	120	1,063	120	2,126	240
F102_0700 MT10	70.06	1261/18	4,000	4,000	6,000	11/6	0.6	68	7.7	1,063	120	1,063	120	2,126	240
F102_0700 MT20	70.06	1261/18	3,500	3,500	5,000	11/6	1.2	68	7.7	1,063	120	1,063	120	2,126	240
F102_0940 MT10	93.63	7865/84	4,000	4,000	6,000	11/6	0.6	68	7.7	1,063	120	1,063	120	2,126	240
F102_1120 MT10	111.9	2015/18	4,000	4,000	6,000	11/6	0.6	68	7.7	1,063	120	1,063	120	2,126	240
F102_1400 MT10	139.8	559/4	4,000	4,000	6,000	11/6	0.6	69	7.7	1,063	120	1,063	120	2,126	240
F202 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 53 dB(A)** [4]	
F202_0047 MT10	4.680	2616/559	3,100	2,600	5,000	11/8	4.7	60	6.8	452	51	452	51	564	64
F202_0047 MT20	4.680	2616/559	3,100	2,600	5,000	11/8	5.3	64	7.2	1,103	125	1,769	200	2,495	282
F202_0047 MT30	4.680	2616/559	3,100	2,600	4,000	11/8	10.1	80	9.1	1,103	125	1,860	210	2,495	282
F202_0056 MT20	5.552	5341/962	3,100	2,600	5,000	11/8	4.2	75	8.5	1,168	132	1,860	210	2,921	330
F202_0056 MT30	5.552	5341/962	3,100	2,600	4,000	11/8	9.0	91	10.3	1,168	132	1,860	210	2,921	330
F202_0072 MT10	7.167	5777/806	3,600	3,100	6,000	11/8	2.5	89	10.0	653	74	653	74	816	92
F202_0072 MT20	7.167	5777/806	3,500	3,100	5,000	11/8	3.1	92	10.4	1,272	144	1,860	210	3,543	400
F202_0072 MT30	7.167	5777/806	3,500	3,100	4,000	11/8	7.9	106	11.9	1,272	144	1,860	210	3,543	400
F202_0090 MT10	9.006	3161/351	3,600	3,100	6,000	11/8	1.9	102	11.5	793	89	793	89	991	112
F202_0090 MT20	9.006	3161/351	3,500	3,100	5,000	11/8	2.5	105	11.8	1,372	155	1,860	210	3,543	400
F202_0090 MT30	9.006	3161/351	3,500	3,100	4,000	11/8	7.3	115	13.0	1,372	155	1,860	210	3,543	400

[1] Backlash shown "STANDARD/REDUCED".

[2] Maximum torque for continuous input RPM - horizontal output position.

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

[4] dB(A) Measured at 1 meter distance with 3000 RPM input.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 3, 4
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL5 and EL6
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL3, EL4
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"F" Series–Offset Helical ServoFit® Modular System Selection Data

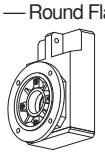
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
F202 with MT TriAdapt® Motor Adapter Continued														**Noise Level ≤ 53 dB(A)** [4]	
F202_0110 MT10	10.80	7303/676	3,800	3,500	6,000	11/8	1.5	111	12.5	917	104	917	104	1,147	129
F202_0110 MT20	10.80	7303/676	3,500	3,500	5,000	11/8	2.1	113	12.8	1,458	165	1,860	210	3,543	400
F202_0110 MT30	10.80	7303/676	3,500	3,500	4,000	11/8	6.9	121	13.7	1,458	165	1,860	210	3,543	400
F202_0135 MT10	13.63	109/8	3,800	3,500	6,000	11/8	1.2	120	13.5	1,112	126	1,112	126	1,391	157
F202_0135 MT20	13.63	109/8	3,500	3,500	5,000	11/8	1.8	121	13.7	1,576	178	1,860	210	3,543	400
F202_0135 MT30	13.63	109/8	3,500	3,500	4,000	11/8	6.6	127	14.3	1,576	178	1,860	210	3,543	400
F202_0185 MT10	18.65	6360/341	3,600	3,100	6,000	11/6	1.5	145	16.4	1,699	192	1,699	192	2,124	240
F202_0185 MT20	18.65	6360/341	3,500	3,100	5,000	11/6	2.1	146	16.5	1,749	197	2,392	270	4,252	480
F202_0185 MT30	18.65	6360/341	3,500	3,100	4,000	11/6	6.9	151	17.0	1,749	197	2,392	270	4,252	480
F202_0230 MT10	23.43	2320/99	3,600	3,100	6,000	11/6	1.3	150	16.9	1,888	213	2,062	233	2,578	291
F202_0230 MT20	23.43	2320/99	3,500	3,100	5,000	11/6	1.9	151	17.0	1,888	213	2,392	270	4,252	480
F202_0230 MT30	23.43	2320/99	3,500	3,100	4,000	11/6	6.7	154	17.3	1,888	213	2,392	270	4,252	480
F202_0280 MT10	28.11	4020/143	3,800	3,500	6,000	11/6	1.1	152	17.2	2,006	226	2,387	269	2,984	337
F202_0280 MT20	28.11	4020/143	3,500	3,500	5,000	11/6	1.7	153	17.3	2,006	226	2,392	270	4,252	480
F202_0280 MT30	28.11	4020/143	3,500	3,500	4,000	11/6	6.5	155	17.5	2,006	226	2,392	270	4,252	480
F202_0350 MT10	35.46	390/11	3,800	3,500	6,000	11/6	1.0	155	17.5	2,126	240	2,392	270	3,618	408
F202_0350 MT20	35.46	390/11	3,500	3,500	5,000	11/6	1.6	155	17.5	2,126	240	2,392	270	4,252	480
F202_0350 MT30	35.46	390/11	3,500	3,500	4,000	11/6	6.4	156	17.7	2,126	240	2,392	270	4,252	480
F202_0470 MT10	47.05	1035/22	4,000	3,900	6,000	11/6	0.8	156	17.7	2,126	240	2,392	270	4,252	480
F202_0470 MT20	47.05	1035/22	3,500	3,500	5,000	11/6	1.4	157	17.7	2,126	240	2,392	270	4,252	480
F202_0470 MT30	47.05	1035/22	3,500	3,500	4,000	11/6	6.2	157	17.8	2,126	240	2,392	270	4,252	480
F202_0570 MT10	56.73	624/11	4,000	3,900	6,000	11/6	0.8	157	17.7	2,126	240	2,392	270	4,252	480
F202_0570 MT20	56.73	624/11	3,500	3,500	5,000	11/6	1.4	157	17.8	2,126	240	2,392	270	4,252	480
F202_0570 MT30	56.73	624/11	3,500	3,500	4,000	11/6	6.2	158	17.8	2,126	240	2,392	270	4,252	480
F202_0700 MT10	70.13	5400/77	4,000	3,900	6,000	11/6	0.7	158	17.8	2,126	240	2,392	270	4,252	480
F202_0700 MT20	70.13	5400/77	3,500	3,500	5,000	11/6	1.3	158	17.8	2,126	240	2,392	270	4,252	480
F202_0700 MT30	70.13	5400/77	3,500	3,500	4,000	11/6	6.1	158	17.9	2,126	240	2,392	270	4,252	480
F202_0940 MT10	93.82	1032/11	4,000	3,900	6,000	11/6	0.7	158	17.9	2,126	240	2,392	270	4,252	480
F202_0940 MT20	93.82	1032/11	3,500	3,500	5,000	11/6	1.3	158	17.9	2,126	240	2,392	270	4,252	480
F202_1130 MT10	112.7	1240/11	4,000	3,900	6,000	11/6	0.7	158	17.9	2,126	240	2,392	270	4,252	480
F202_1410 MT10	140.9	1550/11	4,000	3,900	6,000	11/6	0.6	158	17.9	2,126	240	2,392	270	4,252	480
F203 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 53 dB(A)** [4]	
F203_1840 MT10	184.3	16215/88	4,000	3,900	6,000	11/7	0.7	159	17.9	2,126	240	2,392	270	4,252	480
F203_2220 MT10	222.2	2444/11	4,000	3,900	6,000	11/7	0.7	159	17.9	2,126	240	2,392	270	4,252	480
F203_2750 MT10	274.7	21150/77	4,000	3,900	6,000	11/7	0.7	159	17.9	2,126	240	2,392	270	4,252	480
F203_3670 MT10	367.5	4042/11	4,000	3,900	6,000	11/7	0.7	159	17.9	2,126	240	2,392	270	4,252	480
F203_4420 MT10	441.5	14570/33	4,000	3,900	6,000	11/7	0.6	159	17.9	2,126	240	2,392	270	4,252	480
F203_5520 MT10	551.9	36425/66	4,000	3,900	6,000	11/7	0.6	159	17.9	2,126	240	2,392	270	4,252	480

Motor Shaft

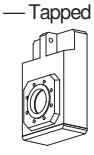
Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48

Housing Styles

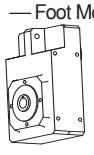
F — Round Flange



G — Tapped Holes



GN — Foot Mount



The "F" Housing Style is available as Hollow (A) or Solid (V) Output.
"G" style is Hollow (A) or Bushing (W).

See Page 176 for required ordering information and part number example.

"F" Series–Offset Helical ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	$kgcm^2$	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
F302 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 53 dB(A)** [4]	
F302_0046 MT20	4.644	4992/1075	3,000	2,600	4,500	11/8	9.4	71	8.0	1,596	180	1,756	198	2,576	291
F302_0046 MT30	4.644	4992/1075	3,000	2,600	4,000	11/8	14.2	92	10.4	1,832	207	3,094	349	5,758	650
F302_0057 MT20	5.720	143/25	3,000	2,600	4,500	11/8	6.9	89	10.1	1,963	222	2,163	244	3,069	346
F302_0057 MT30	5.720	143/25	3,000	2,600	4,000	11/8	11.7	111	12.5	1,963	222	2,455	277	3,069	346
F302_0072 MT20	7.172	208/29	3,500	3,100	5,000	11/8	5.1	109	12.3	2,117	239	2,711	306	3,741	422
F302_0072 MT30	7.172	208/29	3,500	3,100	4,000	11/8	9.9	129	14.5	2,117	239	2,992	338	3,741	422
F302_0090 MT20	8.986	5616/625	3,500	3,100	5,000	11/8	3.8	128	14.4	2,282	258	3,100	350	4,516	510
F302_0090 MT30	8.986	5616/625	3,500	3,100	4,000	11/8	8.6	144	16.2	2,282	258	3,100	350	4,516	510
F302_0110 MT20	10.79	1456/135	3,500	3,500	5,000	11/8	3.1	140	15.8	2,426	274	3,100	350	5,225	590
F302_0110 MT30	10.79	1456/135	3,500	3,500	4,000	11/8	7.9	153	17.3	2,426	274	3,100	350	5,225	590
F302_0135 MT10	13.38	7696/575	3,700	3,500	5,500	11/8	1.9	149	16.9	1,127	127	1,127	127	1,409	159
F302_0135 MT20	13.38	7696/575	3,500	3,500	5,000	11/8	2.5	152	17.2	2,607	294	3,100	350	5,758	650
F302_0135 MT30	13.38	7696/575	3,500	3,500	4,000	11/8	7.3	162	18.3	2,607	294	3,100	350	5,758	650
F302_0190 MT20	18.77	4900/261	3,500	3,100	5,000	11/6	3.1	175	19.8	2,918	329	3,986	450	7,086	800
F302_0190 MT30	18.77	4900/261	3,500	3,100	4,000	11/6	7.9	182	20.5	2,918	329	3,986	450	7,086	800
F302_0240 MT20	23.52	588/25	3,500	3,100	5,000	11/6	2.6	182	20.5	3,146	355	3,986	450	7,086	800
F302_0240 MT30	23.52	588/25	3,500	3,100	4,000	11/6	7.4	186	21.0	3,146	355	3,986	450	7,086	800
F302_0280 MT20	28.23	6860/243	3,500	3,500	5,000	11/6	2.2	185	20.9	3,343	377	3,986	450	7,086	800
F302_0280 MT30	28.23	6860/243	3,500	3,500	4,000	11/6	7.0	188	21.2	3,343	377	3,986	450	7,086	800
F302_0350 MT10	35.03	7252/207	3,700	3,500	5,500	11/6	1.3	187	21.1	2,951	333	2,951	333	3,689	416
F302_0350 MT20	35.03	7252/207	3,500	3,500	5,000	11/6	1.9	188	21.2	3,543	400	3,986	450	7,086	800
F302_0350 MT30	35.03	7252/207	3,500	3,500	4,000	11/6	6.7	190	21.4	3,543	400	3,986	450	7,086	800
F302_0470 MT10	47.19	1274/27	4,000	3,900	6,000	11/6	1.1	190	21.4	3,543	400	3,738	422	4,673	528
F302_0470 MT20	47.19	1274/27	3,500	3,500	5,000	11/6	1.7	190	21.5	3,543	400	3,986	450	7,086	800
F302_0470 MT30	47.19	1274/27	3,500	3,500	4,000	11/6	6.5	191	21.6	3,543	400	3,986	450	7,086	800
F302_0560 MT10	56.49	4067/72	4,000	3,900	6,000	11/6	1.0	191	21.6	3,543	400	3,986	450	5,414	611
F302_0560 MT20	56.49	4067/72	3,500	3,500	5,000	11/6	1.6	191	21.6	3,543	400	3,986	450	7,086	800
F302_0560 MT30	56.49	4067/72	3,500	3,500	4,000	11/6	6.4	192	21.7	3,543	400	3,986	450	7,086	800
F302_0700 MT10	70.36	2744/39	4,000	3,900	6,000	11/6	0.9	192	21.6	3,543	400	3,986	450	6,402	723
F302_0700 MT20	70.36	2744/39	3,500	3,500	5,000	11/6	1.5	192	21.7	3,543	400	3,986	450	7,086	800
F302_0700 MT30	70.36	2744/39	3,500	3,500	4,000	11/6	6.3	192	21.7	3,543	400	3,986	450	7,086	800
F302_0940 MT10	93.64	4214/45	4,000	3,900	6,000	11/6	0.8	192	21.7	3,543	400	3,986	450	7,086	800
F302_0940 MT20	93.64	4214/45	3,500	3,500	5,000	11/6	1.4	192	21.7	3,543	400	3,986	450	7,086	800
F302_0940 MT30	93.64	4214/45	3,500	3,500	4,000	11/6	6.2	193	21.8	3,543	400	3,986	450	7,086	800
F302_1130 MT10	112.8	3724/33	4,000	3,900	6,000	11/6	0.7	193	21.8	3,543	400	3,986	450	7,086	800
F302_1130 MT20	112.8	3724/33	3,500	3,500	5,000	11/6	1.3	193	21.8	3,543	400	3,986	450	7,086	800
F302_1410 MT10	140.6	7595/54	4,000	3,900	6,000	11/6	0.7	193	21.8	3,543	400	3,986	450	5,771	652
F303 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 53 dB(A)** [4]	
F303_1820 MT20	182.4	73892/405	3,500	3,500	5,000	11/7	1.4	193	21.8	3,543	400	3,986	450	7,086	800
F303_1850 MT10	184.8	29939/162	4,000	3,900	6,000	11/7	0.7	193	21.8	3,543	400	3,986	450	7,086	800
F303_2180 MT20	218.4	117943/540	3,500	3,500	5,000	11/7	1.4	193	21.8	3,543	400	3,986	450	7,086	800
F303_2210 MT10	221.2	191149/864	4,000	3,900	6,000	11/7	0.7	193	21.8	3,543	400	3,986	450	7,086	800

[1] Backlash shown "STANDARD/REDUCED".

[2] Maximum torque for continuous input RPM - horizontal output position.

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

[4] dB(A) Measured at 1 meter distance with 3000 RPM input.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 3, 4
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL5 and EL6
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL3, EL4
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"F" Series–Offset Helical ServoFit® Modular System Selection Data

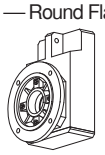
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
F303 with MT TriAdapt® Motor Adapter Continued														**Noise Level ≤ 53 dB(A)** [4]	
F303_2720 MT20	272.1	159152/585	3,500	3,500	5,000	11/7	1.4	193	21.8	3,543	400	3,986	450	7,086	800
F303_2760 MT10	275.6	32242/117	4,000	3,900	6,000	11/7	0.7	193	21.8	3,543	400	3,986	450	7,086	800
F303_3620 MT20	362.1	244412/675	3,500	3,500	5,000	11/7	1.4	193	21.8	3,543	400	3,986	450	7,086	800
F303_3670 MT10	366.8	99029/270	4,000	3,900	6,000	11/7	0.7	193	21.8	3,543	400	3,986	450	7,086	800
F303_4420 MT10	442.0	43757/99	4,000	3,900	6,000	11/7	0.7	193	21.8	3,543	400	3,986	450	7,086	800
F303_5510 MT10	550.9	356965/648	4,000	3,900	6,000	11/7	0.7	193	21.8	3,543	400	3,986	450	5,771	651
F402 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 53 dB(A)** [4]	
F402_0047 MT20	4.678	1408/301	2,700	2,300	4,000	10/7	16.0	88	9.9	1,608	182	1,769	200	2,683	303
F402_0047 MT30	4.678	1408/301	2,700	2,300	4,000	10/7	20.8	123	13.9	3,033	342	4,200	474	6,921	781
F402_0047 MT40	4.678	1408/301	2,700	2,300	3,500	10/7	24.8	186	21.0	3,033	342	4,872	550	6,921	781
F402_0058 MT20	5.813	3784/651	2,700	2,300	4,000	10/7	11.4	119	13.4	1,998	226	2,198	248	3,238	366
F402_0058 MT30	5.813	3784/651	2,700	2,300	4,000	10/7	16.2	159	17.9	3,260	368	4,872	550	8,353	943
F402_0058 MT40	5.813	3784/651	2,700	2,300	3,500	10/7	20.2	221	25.0	3,260	368	4,872	550	8,353	943
F402_0072 MT20	7.202	605/84	3,200	2,800	4,500	10/7	8.1	154	17.4	2,475	279	2,723	307	3,864	436
F402_0072 MT30	7.202	605/84	3,200	2,800	4,000	10/7	12.9	195	22.1	3,502	395	4,872	550	9,744	1,100
F402_0072 MT40	7.202	605/84	3,000	2,800	3,500	10/7	16.9	253	28.5	3,502	395	4,872	550	9,744	1,100
F402_0090 MT20	8.980	440/49	3,200	2,800	4,500	10/7	5.9	192	21.7	3,086	348	3,395	383	4,660	526
F402_0090 MT30	8.980	440/49	3,200	2,800	4,000	10/7	10.7	231	26.1	3,769	425	4,872	550	9,744	1,100
F402_0090 MT40	8.980	440/49	3,000	2,800	3,500	10/7	14.7	279	31.5	3,769	425	4,872	550	9,744	1,100
F402_0110 MT20	10.83	682/63	3,500	3,100	5,000	10/7	4.6	222	25.1	3,593	406	4,092	462	5,405	610
F402_0110 MT30	10.83	682/63	3,500	3,100	4,000	10/7	9.4	257	29.0	4,011	453	4,872	550	9,744	1,100
F402_0110 MT40	10.83	682/63	3,000	3,000	3,500	10/7	13.4	296	33.4	4,011	453	4,872	550	9,744	1,100
F402_0135 MT20	13.57	5984/441	3,500	3,100	5,000	10/7	3.5	255	28.8	3,941	445	4,872	550	6,552	740
F402_0135 MT30	13.57	5984/441	3,500	3,100	4,000	10/7	8.3	283	31.9	4,325	488	4,872	550	9,744	1,100
F402_0135 MT40	13.57	5984/441	3,000	3,000	3,500	10/7	12.3	311	35.2	4,325	488	4,872	550	9,744	1,100
F402_0185 MT20	18.62	3575/192	3,200	2,800	4,500	10/5	4.5	290	32.7	4,806	543	6,201	700	9,990	1,128
F402_0185 MT30	18.62	3575/192	3,200	2,800	4,000	10/5	9.3	308	34.8	4,806	543	6,201	700	12,401	1,400
F402_0185 MT40	18.62	3575/192	3,000	2,800	3,500	10/5	13.3	325	36.7	4,806	543	6,201	700	12,401	1,400
F402_0230 MT20	23.21	325/14	3,200	2,800	4,500	10/5	3.6	307	34.6	5,173	584	6,201	700	12,046	1,360
F402_0230 MT30	23.21	325/14	3,200	2,800	4,000	10/5	8.4	320	36.1	5,173	584	6,201	700	12,401	1,400
F402_0230 MT40	23.21	325/14	3,000	2,800	3,500	10/5	12.4	331	37.4	5,173	584	6,201	700	12,401	1,400
F402_0280 MT20	27.99	2015/72	3,500	3,100	5,000	10/5	3.0	317	35.8	5,505	622	6,201	700	12,401	1,400
F402_0280 MT30	27.99	2015/72	3,500	3,100	4,000	10/5	7.8	326	36.9	5,505	622	6,201	700	12,401	1,400
F402_0280 MT40	27.99	2015/72	3,000	3,000	3,500	10/5	11.8	335	37.8	5,505	622	6,201	700	12,401	1,400
F402_0350 MT20	35.08	2210/63	3,500	3,100	5,000	10/5	2.5	326	36.8	5,936	670	6,201	700	12,401	1,400
F402_0350 MT30	35.08	2210/63	3,500	3,100	4,000	10/5	7.3	332	37.5	5,936	670	6,201	700	12,401	1,400
F402_0350 MT40	35.08	2210/63	3,000	3,000	3,500	10/5	11.3	338	38.1	5,936	670	6,201	700	12,401	1,400
F402_0470 MT20	46.94	845/18	3,500	3,500	5,000	10/5	2.0	333	37.6	6,201	700	6,201	700	12,401	1,400
F402_0470 MT30	46.94	845/18	3,500	3,500	4,000	10/5	6.8	337	38.0	6,201	700	6,201	700	12,401	1,400
F402_0470 MT40	46.94	845/18	3,000	3,000	3,500	10/5	10.8	340	38.4	6,201	700	6,201	700	12,401	1,400

Motor Shaft

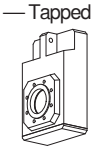
Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48

Housing Styles

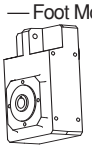
F — Round Flange



G — Tapped Holes



GN — Foot Mount



The "F" Housing Style is available as Hollow (A) or Solid (V) Output.
"G" style is Hollow (A) or Bushing (W).

See Page 176 for required ordering information and part number example.

F

"F" Series–Offset Helical ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
F402 with MT TriAdapt® Motor Adapter Continued														**Noise Level ≤ 53 dB(A)** [4]	
F402_0560 MT20	55.97	2015/36	3,500	3,500	5,000	10/5	1.8	336	37.9	6,201	700	6,201	700	12,401	1,400
F402_0560 MT30	55.97	2015/36	3,500	3,500	4,000	10/5	6.6	338	38.2	6,201	700	6,201	700	12,401	1,400
F402_0560 MT40	55.97	2015/36	3,000	3,000	3,500	10/5	10.6	341	38.5	6,201	700	6,201	700	12,401	1,400
F402_0700 MT20	70.06	1261/18	3,500	3,500	5,000	10/5	1.6	338	38.2	6,201	700	6,201	700	12,401	1,400
F402_0700 MT30	70.06	1261/18	3,500	3,500	4,000	10/5	6.4	340	38.4	6,201	700	6,201	700	12,401	1,400
F402_0700 MT40	70.06	1261/18	3,000	3,000	3,500	10/5	10.4	341	38.5	6,201	700	6,201	700	12,401	1,400
F402_0930 MT20	93.33	280/3	3,500	3,500	5,000	10/5	1.5	340	38.4	6,201	700	6,201	700	12,401	1,400
F402_0930 MT30	93.33	280/3	3,500	3,500	4,000	10/5	6.3	341	38.5	6,201	700	6,201	700	12,401	1,400
F402_1120 MT20	112.3	1235/11	3,500	3,500	5,000	10/5	1.4	341	38.5	6,201	700	6,201	700	12,401	1,400
F402_1120 MT30	112.3	1235/11	3,500	3,500	4,000	10/5	6.2	342	38.6	6,201	700	6,201	700	12,401	1,400
F402_1400 MT20	139.8	559/4	3,500	3,500	5,000	10/5	1.3	342	38.6	6,201	700	6,201	700	11,262	1,271
F403 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 53 dB(A)** [4]	
F403_1820 MT20	181.5	4901/27	3,500	3,500	5,000	10/6	1.4	342	38.6	6,201	700	6,201	700	12,401	1,400
F403_1840 MT10	183.9	39715/216	3,800	3,500	5,500	10/6	0.7	342	38.6	6,201	700	6,201	700	8,334	941
F403_2160 MT20	216.4	11687/54	3,500	3,500	5,000	10/6	1.4	342	38.6	6,201	700	6,201	700	12,401	1,400
F403_2190 MT10	219.2	94705/432	3,800	3,500	5,500	10/6	0.7	342	38.6	6,201	700	6,201	700	9,937	1,122
F403_2710 MT20	270.9	36569/135	3,500	3,500	5,000	10/6	1.4	342	38.7	6,201	700	6,201	700	12,401	1,400
F403_2740 MT10	274.4	59267/216	3,800	3,500	5,500	10/6	0.7	342	38.7	6,201	700	6,201	700	12,401	1,400
F403_3610 MT20	360.9	3248/9	3,500	3,500	5,000	10/6	1.4	343	38.7	6,201	700	6,201	700	12,401	1,400
F403_3660 MT10	365.6	3290/9	3,800	3,500	5,500	10/6	0.7	343	38.7	6,201	700	6,201	700	12,401	1,400
F403_4340 MT20	434.1	14326/33	3,500	3,500	5,000	10/6	1.4	343	38.7	6,201	700	6,201	700	12,401	1,400
F403_4400 MT10	439.7	58045/132	3,800	3,500	5,500	10/6	0.7	343	38.7	6,201	700	6,201	700	12,401	1,400
F403_5470 MT10	547.4	26273/48	3,800	3,500	5,500	10/6	0.7	343	38.7	6,201	700	6,201	700	11,261	1,271
F602 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 61 dB(A)** [4]	
F602_0045 MT30	4.546	1273/280	2,500	2,100	3,500	10/7	42.2	141	16.0	3,711	419	4,082	461	6,998	790
F602_0045 MT40	4.546	1273/280	2,500	2,100	3,500	10/7	46.2	240	27.1	5,020	567	5,598	632	6,998	790
F602_0057 MT30	5.673	1407/248	2,500	2,100	3,500	10/7	30.5	196	22.2	4,631	523	5,094	575	8,472	956
F602_0057 MT40	5.673	1407/248	2,500	2,100	3,500	10/7	34.5	310	34.9	5,405	610	6,778	765	8,472	956
F602_0072 MT30	7.159	3551/496	2,900	2,500	4,000	10/7	22.2	265	29.9	5,840	659	6,428	726	10,287	1,161
F602_0072 MT40	7.159	3551/496	2,900	2,500	3,500	10/7	26.2	384	43.3	5,840	659	8,230	929	10,287	1,161
F602_0090 MT20	8.995	1943/216	2,900	2,500	4,000	10/7	12.1	260	29.4	3,091	349	3,401	384	4,823	545
F602_0090 MT30	8.995	1943/216	2,900	2,500	4,000	10/7	16.9	338	38.1	6,302	711	8,077	912	12,440	1,404
F602_0090 MT40	8.995	1943/216	2,900	2,500	3,500	10/7	20.9	450	50.9	6,302	711	8,858	1,000	12,440	1,404
F602_0110 MT20	10.82	2077/192	3,300	2,800	4,500	10/7	9.1	319	36.0	3,718	420	4,090	462	5,632	636
F602_0110 MT30	10.82	2077/192	3,300	2,800	4,000	10/7	13.9	396	44.7	6,702	757	8,858	1,000	14,173	1,600
F602_0110 MT40	10.82	2077/192	3,000	2,800	3,500	10/7	17.9	497	56.1	6,702	757	8,858	1,000	14,173	1,600
F602_0135 MT20	13.61	871/64	3,300	2,800	4,500	10/7	6.6	392	44.2	4,451	502	5,145	581	6,770	764
F602_0135 MT30	13.61	871/64	3,300	2,800	4,000	10/7	11.4	461	52.1	7,235	817	8,858	1,000	14,173	1,600
F602_0135 MT40	13.61	871/64	3,000	2,800	3,500	10/7	15.4	542	61.2	7,235	817	8,858	1,000	14,173	1,600

[1] Backlash shown "STANDARD/REDUCED".

[2] Maximum torque for continuous input RPM - horizontal output position.

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

[4] dB(A) Measured at 1 meter distance with 3000 RPM input.

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 3, 4
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL5 and EL6
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL3, EL4
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"F" Series–Offset Helical ServoFit® Modular System Selection Data

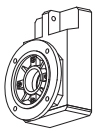
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
F602 with MT TriAdapt® Motor Adapter Continued															**Noise Level ≤ 61 dB(A)** [4]
F602_0185 MT30	18.52	3445/186	2,900	2,500	4,000	10/5	13.6	558	63.0	8,018	905	9,744	1,100	17,716	2,000
F602_0185 MT40	18.52	3445/186	2,900	2,500	3,500	10/5	17.6	619	69.8	8,018	905	9,744	1,100	17,716	2,000
F602_0230 MT20	23.27	1885/81	2,900	2,500	4,000	10/5	6.6	555	62.7	7,998	903	8,798	993	12,479	1,409
F602_0230 MT30	23.27	1885/81	2,900	2,500	4,000	10/5	11.4	599	67.6	8,652	977	9,744	1,100	17,716	2,000
F602_0230 MT40	23.27	1885/81	2,900	2,500	3,500	10/5	15.4	642	72.4	8,652	977	9,744	1,100	17,716	2,000
F602_0280 MT20	27.99	2015/72	3,300	2,800	4,500	10/5	5.4	590	66.6	9,200	1,039	9,744	1,100	14,571	1,645
F602_0280 MT30	27.99	2015/72	3,300	2,800	4,000	10/5	10.2	623	70.4	9,200	1,039	9,744	1,100	17,716	2,000
F602_0280 MT40	27.99	2015/72	3,000	2,800	3,500	10/5	14.2	654	73.9	9,200	1,039	9,744	1,100	17,716	2,000
F602_0350 MT20	35.21	845/24	3,300	2,800	4,500	10/5	4.2	622	70.2	9,744	1,100	9,744	1,100	17,514	1,977
F602_0350 MT30	35.21	845/24	3,300	2,800	4,000	10/5	9.0	645	72.8	9,744	1,100	9,744	1,100	17,716	2,000
F602_0350 MT40	35.21	845/24	3,000	2,800	3,500	10/5	13.0	666	75.1	9,744	1,100	9,744	1,100	17,716	2,000
F602_0470 MT20	46.72	1495/32	3,500	3,200	5,000	10/5	3.1	648	73.1	9,744	1,100	9,744	1,100	17,716	2,000
F602_0470 MT30	46.72	1495/32	3,500	3,200	4,000	10/5	7.9	662	74.7	9,744	1,100	9,744	1,100	17,716	2,000
F602_0470 MT40	46.72	1495/32	3,000	3,000	3,500	10/5	11.9	674	76.1	9,744	1,100	9,744	1,100	17,716	2,000
F602_0560 MT20	55.71	390/7	3,500	3,200	5,000	10/5	2.7	659	74.3	9,744	1,100	9,744	1,100	17,716	2,000
F602_0560 MT30	55.71	390/7	3,500	3,200	4,000	10/5	7.5	669	75.5	9,744	1,100	9,744	1,100	17,716	2,000
F602_0560 MT40	55.71	390/7	3,000	3,000	3,500	10/5	11.5	677	76.5	9,744	1,100	9,744	1,100	17,716	2,000
F602_0700 MT20	69.64	975/14	3,500	3,200	5,000	10/5	2.2	668	75.4	9,744	1,100	9,744	1,100	17,716	2,000
F602_0700 MT30	69.64	975/14	3,500	3,200	4,000	10/5	7.0	675	76.2	9,744	1,100	9,744	1,100	17,716	2,000
F602_0700 MT40	69.64	975/14	3,000	3,000	3,500	10/5	11.0	680	76.8	9,744	1,100	9,744	1,100	17,716	2,000
F602_0930 MT20	93.33	280/3	3,500	3,200	5,000	10/5	1.8	676	76.3	9,744	1,100	9,744	1,100	17,716	2,000
F602_0930 MT30	93.33	280/3	3,500	3,200	4,000	10/5	6.6	679	76.7	9,744	1,100	9,744	1,100	17,716	2,000
F602_0930 MT40	93.33	280/3	3,000	3,000	3,500	10/5	10.6	683	77.1	9,744	1,100	9,744	1,100	17,716	2,000
F602_1120 MT20	112.2	9425/84	3,500	3,200	5,000	10/5	1.6	679	76.6	9,744	1,100	9,744	1,100	17,716	2,000
F602_1120 MT30	112.2	9425/84	3,500	3,200	4,000	10/5	6.4	681	76.9	9,744	1,100	9,744	1,100	17,716	2,000
F602_1400 MT20	139.8	559/4	3,500	3,200	5,000	10/5	1.5	681	76.9	9,744	1,100	9,744	1,100	17,716	2,000
F602_1400 MT30	139.8	559/4	3,500	3,200	4,000	10/5	6.3	683	77.1	9,744	1,100	9,744	1,100	17,716	2,000
F603 with MT TriAdapt® Motor Adapter															**Noise Level ≤ 61 dB(A)** [4]
F603_1810 MT20	180.6	8671/48	3,500	3,200	5,000	10/6	1.5	683	77.1	9,744	1,100	9,744	1,100	17,716	2,000
F603_2150 MT20	215.4	1508/7	3,500	3,200	5,000	10/6	1.5	684	77.2	9,744	1,100	9,744	1,100	17,716	2,000
F603_2690 MT20	269.3	1885/7	3,500	3,200	5,000	10/6	1.4	684	77.2	9,744	1,100	9,744	1,100	17,716	2,000
F603_3610 MT20	360.9	3248/9	3,500	3,200	5,000	10/6	1.4	685	77.3	9,744	1,100	9,744	1,100	17,716	2,000
F603_4340 MT20	433.8	54665/126	3,500	3,200	5,000	10/6	1.4	685	77.3	9,744	1,100	9,744	1,100	17,716	2,000
F603_5400 MT20	540.4	16211/30	3,500	3,200	5,000	10/6	1.4	685	77.3	9,744	1,100	9,744	1,100	17,716	2,000

Motor Shaft

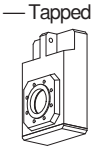
Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48

Housing Styles

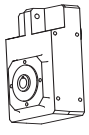
F — Round Flange



G — Tapped Holes

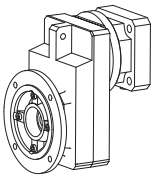


GN — Foot Mount

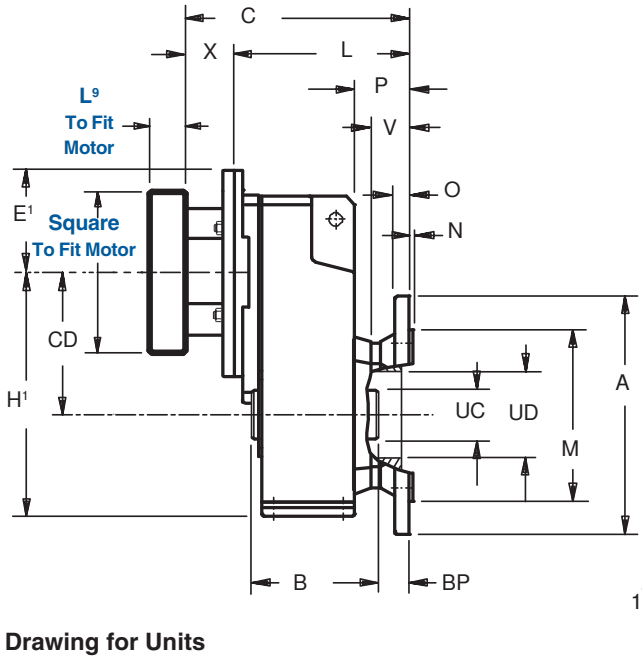


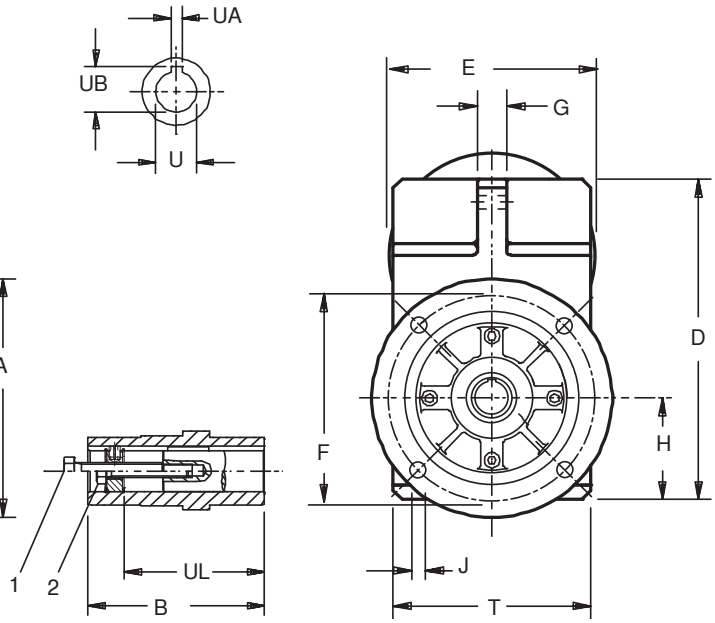
The "F" Housing Style is available as Hollow (A) or Solid (V) Output.
"G" style is Hollow (A) or Bushing (W).

See Page 176 for required ordering information and part number example.



ServoFit® "F" Series–Offset Helical Round Flange – "F" Housing Hollow Output – Dimensional Data





Drawing for Units
F102AF — F603AF

See Page 235 for installation of hollow ouput.

Table No. 1 **"F" Series –Round Flange Unit Dimensions (Inches) – "F" Housing Style**

Base Module	CD	A	B	D	F	G	H	H1	J	M	N	O	P	T	BP	UC	UD	UL
F102	4.02	6.30	3.74	9.37	5.12	.79	2.91	6.93	.43	4.331 +.001/-.0004	.14	.39	1.75	5.71	1.00	1.38	2.05	2.87
F202/F203	5.16	7.87	4.53	11.77	6.50	.87	3.66	8.82	.43	5.118 +.001/-.0004	.14	.55	2.09	7.09	1.18	1.77	2.56	3.62
F302/F303	5.89	9.84	5.12	13.23	8.46	1.18	4.17	10.06	.55	7.087 +.001/-.0004	.16	.59	2.22	8.11	1.24	1.97	2.83	4.06
F402/F403	6.65 [1]	9.84	5.71	14.57	8.46	1.18	4.57	11.22	.55	7.087 +.001/-.0004	.16	.59	2.22	9.06	1.24	2.17	2.83	4.49
F602/F603	7.72	11.81	7.09	17.64	10.43	1.38	5.39	13.11	.87	9.055 +.001/-.001	.16	.67	2.38	10.43	1.16	2.76	3.15	5.63

[1] C.D. is 5.19 for F403 with MT20.

1. Removal Bolt – not supplied. See Page 235.
2. Mounting Bolt – must be smaller than removal bolt.

Table No. 2 **Metric output available on request**

Base Module	Standard Bore - inches			Optional Bore - mm		
	U	UA	UB	U	UA	UB
F102	.750G7	.187	.84	20H7	6JS9	22.8
F202/F203	1.000G7	.250	1.12	25H7	8JS9	28.3
F302/F303	1.250G7	.250	1.37	30H7	8JS9	33.3
F402/F403	1.500G7	.375	1.67	40H7	12JS9	43.3
F602/F603	2.000G7	.500	2.23	50H7	14JS9	53.8

ServoFit® "F" Series–Offset Helical Round Flange – "F" Housing Hollow Output – Dimensional Data

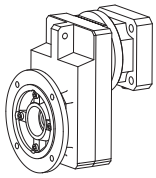


Table No. 3

"F" Series – Unit Dimensions (Inches) – "F" Housing Style

Base Module	MT10		MT20		MT30		MT40		Approx. Wt. lbs.
	C	L	C	L	C	L	C	L	
F102	6.67	5.10	7.23	5.26	–	–	–	–	38
F202	7.59	6.02	8.15	6.18	9.62	6.26	–	–	51
F203	9.05	7.48	–	–	–	–	–	–	64
F302	8.24	6.67	8.80	6.83	9.27	6.91	–	–	67
F303	9.70	8.13	10.49	8.52	–	–	–	–	73
F402	–	–	14.62	7.42	9.86	7.50	11.12	7.62	84
F403	10.29	8.72	11.08	9.11	–	–	–	–	91
F602	–	–	10.61	8.64	11.08	8.72	12.34	8.84	165
F603	–	–	12.30	10.33	–	–	–	–	177

Table No. 4 **"MT" Motor Plate Dimensions**

Motor Adapter	Motor Shaft D^6 Max. [1]		Motor Plate [2] Thickness		Inches			Wt. lbs.
			L^9 Minimum					
	mm	ins.	mm	inches	E	E^2	X	
MT10	19	.748	21	.83	5.51	2.75	1.57	5
MT20	24	.945	24	.95	6.30	3.15	1.97	8
MT30	38	1.260	25	.98	7.87	3.94	2.36	12
MT40	48	1.890	33	1.30	9.84	4.92	3.50	18

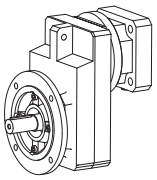
[1] If an adapter bushing is required it will be supplied as a component of the motor mounting plate.
[2] Motor plate maximum thickness (L^9) will vary with motor shaft length but will not be less than shown.

For approximate weight, add base module weight form Table 3 and adapter weight from Table 4.

Part No. Example

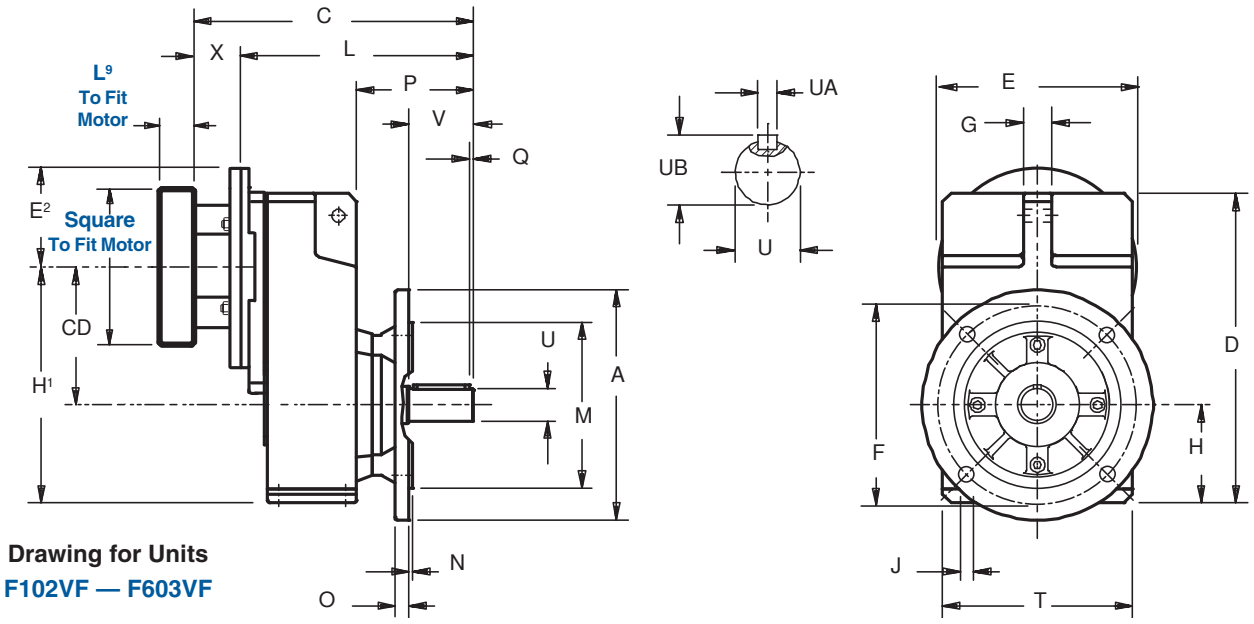
Round Flange Unit with TriAdapt® Motor Adapter

F302AF0620 MT20



ServoFit® "F" Series–Offset Helical Round Flange – "F" Housing Shaft Output – Dimensional Data

NOTE: Solid output shaft is ONLY available with an output flange.



Drawing for Units
F102VF — F603VF

Table No. 1 **"F" Series – Round Flange Dimensions (Inches) – "F" Housing Style**

Base Module	CD	A	D	F	G	H	H1	J	M	N	O	P	Q	T	V
F102	4.02	6.30	9.37	5.12	.79	2.91	6.93	.35	4.331 +.001/-.0004	.14	.39	3.80	.16	5.71	1.97
F202/F203	5.16	7.87	11.77	6.50	.87	3.66	8.82	.43	5.118 +.001/-.0004	.14	.55	4.53	.16	7.09	2.36
F302/F303	5.89	9.84	13.23	8.46	1.18	4.17	10.06	.55	7.087 +.001/-.0004	.16	.59	5.10	.16	8.11	2.76
F402/F403	6.65 [1]	9.84	14.57	8.46	1.18	4.57	11.22	.55	7.087 +.001/-.0004	.16	.59	5.49	.16	9.06	3.15
F602/F603	7.72	11.81	17.64	10.43	1.38	5.39	13.11	.55	9.055 +.001/-.001	.16	.67	6.44	.20	10.43	3.94

[1] C.D. is 5.19 for F403 with MT20.

Table No. 2 **Metric output available on request**

Base Module	Standard Shaft - inches			Optional Shaft - mm		
	U	UA	UB	U	UA	UB
F102	1.000 h6	1/4 × 1/4 × 1 9/16	1.11	25 k6	A8x7x40	28
F202/F203	1.250 h6	1/4 × 1/4 × 1 15/16	1.36	30 k6	A8x7x50	33
F302/F303	1.375 h6	5/16 × 5/16 × 2 5/16	1.51	35 k6	A10x8X60	38
F402/F403	1.625 h6	3/8 × 3/8 × 2 7/8	1.79	40 k6	A12x8X70	43
F602/F603	2.125 h6	1/2 × 1/2 × 3 5/32	2.35	50 k6	A14x9X90	53.5

F

ServoFit® "F" Series–Offset Helical Round Flange – "F" Housing Shaft Output – Dimensional Data

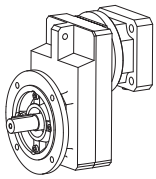


Table No. 3 "F" Series–"F" Housing Style

Base	MT10		MT20		MT30		MT40		Approx.
Module	C	L	C	L	C	L	C	L	Wt. lbs.
F102	8.66	7.09	9.21	7.24	–	–	–	–	38
F202	9.96	8.39	10.51	8.54	10.98	8.62	–	–	51
F203	11.41	9.84	–	–	–	–	–	–	64
F302	11.02	9.45	11.58	9.61	12.05	9.69	–	–	67
F303	12.48	10.91	13.25	11.28	–	–	–	–	73
F402	–	–	12.56	10.59	13.03	10.67	14.29	10.79	84
F403	13.46	11.89	14.25	12.28	–	–	–	–	91
F602	–	–	14.57	12.60	15.04	12.68	16.30	12.80	165
F603	–	–	16.26	14.29	–	–	–	–	177

Table No. 4 "MT" Motor Plate Dimensions

Motor Adapter	Motor Shaft D⁶ Max. [1]		Motor Plate [2] Thickness		Inches			Wt.
			L⁹ Minimum					
	mm	ins.	mm	inches	E	E²	X	lbs.
MT10	19	.748	21	.83	5.51	2.75	1.57	5
MT20	24	.945	24	.95	6.30	3.15	1.97	8
MT30	38	1.260	25	.98	7.87	3.94	2.36	12
MT40	48	1.890	33	1.30	9.84	4.92	3.50	18

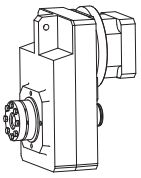
[1] If an adapter bushing is required it will be supplied as a component of the motor mounting plate.
[2] Motor plate maximum thickness (L⁹) will vary with motor shaft length but will not be less than shown.

For approximate weight, add base module weight form Table 3 and adapter weight from Table 4.

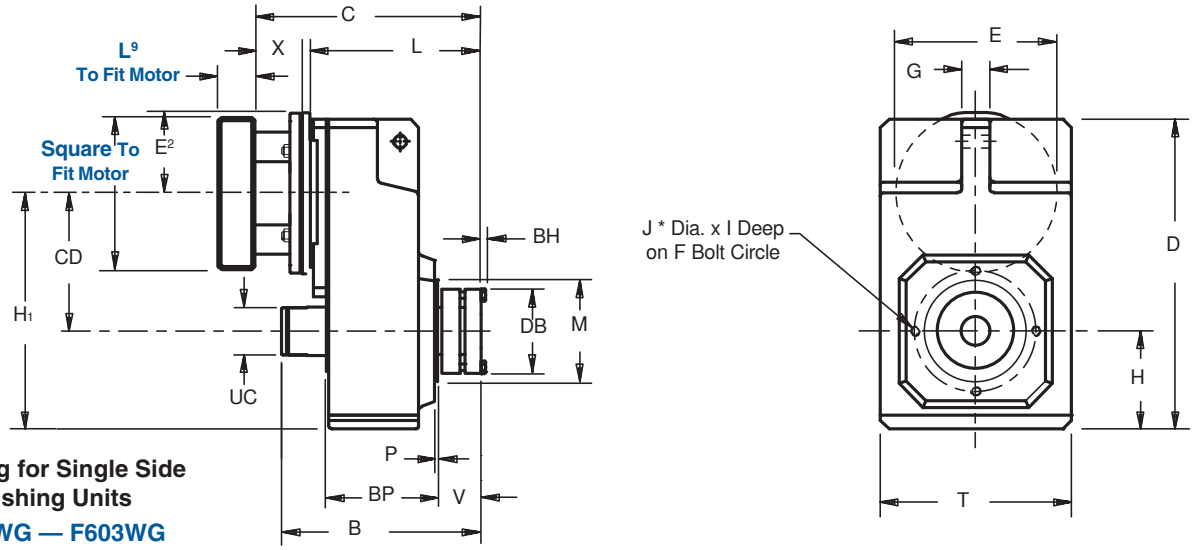
Part No. Example

Round Flange with TriAdapt® Motor Adapter

F302VF0620 MT20



ServoFit® "F" Series–Offset Helical Tapped Hole – "G" Housing Single Bushing – Dimensional Data



Drawing for Single Side Bushing Units
F102WG — F603WG

Important: For ease of installation, a 1/32 x 45° chamfer (minimum) is recommended for the output shaft end.

Table No. 1 "F" Series – Single Side Wobble Free Bushing Unit Dimensions (Inches)

Base Module	CD	B	D	F	G	H	H_1	I	J *	M	P	T	V	BH	BP	DB	UC	Bushing Capscrews No.—Size Metric	Tight Torque in.lbs	Tight Torque Nm
F102	4.02	6.40	9.37	3.35	.79	2.91	6.93	.51	M8	2.756	.10	5.71	1.18	.16	3.43	2.68	1.35	6—M6x25	89	10
F202/F203	5.16	7.26	11.77	4.53	.87	3.66	8.82	.51	M8	3.740	.12	7.09	1.54	.16	4.13	3.07	1.74	8—M6x30	89	10
F302/F303	5.89	7.95	13.23	5.12	1.18	4.17	10.06	.63	M10	4.331	.14	8.11	1.54	.16	4.72	3.31	1.90	8—M6x30	89	10
F402/F403	6.65 [1]	8.93	14.57	5.12	1.18	4.57	11.22	.63	M10	4.331	.14	9.06	1.78	.20	5.31	3.82	2.14	8—M8x30	221	25
F602/F603	7.72	10.24	17.64	6.50	1.38	5.39	13.11	.63	M10	5.118	.14	10.43	1.77	.24	6.54	4.13	2.53	8—M10x35	434	49

*F602 and F603 has 8 tapped holes instead of 4 as shown on drawing.
[1] C.D. is 5.19 for F403 with MT20.

Table No. 2 "MT" Motor Plate Dimensions

Motor Adapter	Motor Shaft D^6 Max. [1] mm	Motor Shaft D^6 Max. [1] ins.	Motor Plate [2] Thickness L^9 Minimum mm	Motor Plate [2] Thickness L^9 Minimum inches	Inches E	Inches E^2	Inches X	Wt. lbs.
MT10	19	.748	21	.83	5.51	2.75	1.57	5
MT20	24	.945	24	.95	6.30	3.15	1.97	8
MT30	38	1.260	25	.98	7.87	3.94	2.36	12
MT40	48	1.890	33	1.30	9.84	4.92	3.50	18

[1] If an adapter bushing is required it will be supplied as a component of the motor mounting plate.
[2] Motor plate maximum thickness (L^9) will vary with motor shaft length but will not be less than shown.

Table No. 3 "F" Series – "G" Housing Style

Base Module	MT10 C	MT10 L	MT20 C	MT20 L	MT30 C	MT30 L	MT40 C	MT40 L	Approx. Wt. lbs.
F102	8.66	7.09	9.21	7.24	—	—	—	—	38
F202	9.96	8.39	10.51	8.54	10.98	8.62	—	—	51
F203	11.41	9.84	—	—	—	—	—	—	64
F302	11.02	9.45	11.58	9.61	12.05	9.69	—	—	67
F303	12.48	10.91	13.25	11.28	—	—	—	—	73
F402	—	—	12.56	10.59	13.03	10.67	14.29	10.79	84
F403	13.46	11.89	14.25	12.28	—	—	—	—	91
F602	—	—	14.57	12.60	15.04	12.68	16.30	12.80	165
F603	—	—	16.26	14.29	—	—	—	—	177

ServoFit® "F" Series–Offset Helical Tapped Hole – "G" Housing Single Bushing – Dimensional Data

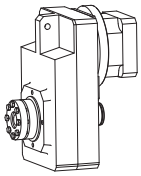


Table No. 4 "WF" Single Side Bushings – Inches

Base Module	Stock Bores Sizes												
	3/4	1	1 3/16	1 1/4	1 3/8	1 7/16	1 1/2	1 5/8	1 11/16	1 3/4	1 7/8	1 15/16	2
F102	WF1-075	–	–	–	–	–	–	–	–	–	–	–	–
F202/F203	–	WF2-100	WF2-103	–	–	–	–	–	–	–	–	–	–
F302/F303	–	WF3-100	WF3-103	WF3-104	WF3-106	WF3-107	WF3-108	–	–	–	–	–	–
F402/F403	–	WF4-100	WF4-103	WF4-104	WF4-106	WF4-107	WF4-108	–	–	–	–	–	–
F602/F603	–	–	–	–	–	WF5-107	WF5-108	WF5-110	WF5-111	WF5-112	WF5-114	WF5-115	WF5-200

A complete bushing kit includes the locking ring assembly, tapered cone, support ring, and all hardware to mount the kit into the reducer. The bushing will accept a shaft with a tolerance of +.000/-.005.

NOTE: F6 units use a WF5 Bushing Kit.

Table No. 5 "WF" Bushing Single Side without Covers – Metric

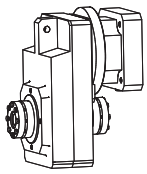
Unit	Stock Bores Sizes		
	20	30	35
F102	WF1-20	–	–
F202	–	WF2-30	–
F302	–	WF3-30	WF3-35

Part No. Example

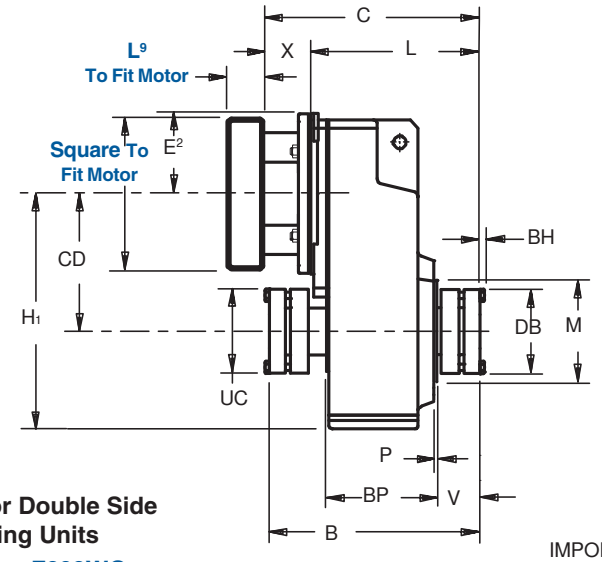
Unit with TriAdapt® Motor Adapter, 1 3/8" Bore, Single Bushing

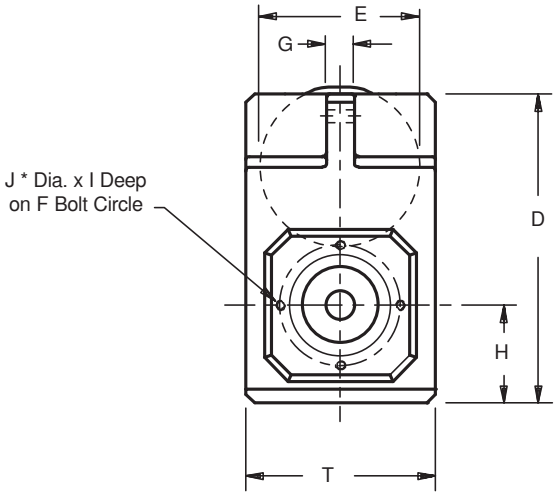
F402WG0560 MT20 WF4–106

For an approximate unit weight, add the weights in Table 2 and Table 3.



ServoFit® "F" Series–Offset Helical Tapped Hole – "G" Housing Double Bushing – Dimensional Data





Drawing for Double Side Bushing Units
F102WG – F602WG

IMPORTANT: A 1/32 x 45° chamfer minimum is recommended for the shaft end.
The bushing will accept a shaft with a tolerance of +.000/-.005 inches.
The double bushing cannot be mounted on sizes F203, F303, F403, or F603.

Table No. 1 "F" Series – Double Side Wobble Free Bushing Unit Dimensions (Inches)

Base Module	CD	B	D	F	G	H	H₁	I	J *	M	P	T	V	BH	BP	DB	Bushing Capscrews No.— Size Metric	Tight Torque in.lbs	Tight Torque Nm
F102	4.02	6.73	9.37	3.35	.79	2.91	6.93	.51	M8	2.756	.10	5.71	1.18	.16	3.43	2.68	6 — M6x25	89	10
F202	5.16	7.77	11.77	4.53	.87	3.66	8.82	.51	M8	3.740	.12	7.09	1.54	.16	4.13	3.07	8 — M6x30	89	10
F302	5.89	8.46	13.23	5.12	1.18	4.17	10.06	.63	M10	4.331	.14	8.11	1.54	.16	4.72	3.31	8 — M6x30	89	10
F402	6.65	9.57	14.57	5.12	1.18	4.57	11.22	.63	M10	4.331	.14	9.06	1.78	.20	5.31	3.82	8 — M8x30	221	25
F602	7.72	10.84	17.64	6.50	1.38	5.39	13.11	.63	M10	5.118	.14	10.43	1.77	.24	6.54	4.13	8 — M10x35	434	49

*F602 has 8 tapped holes instead of 4 as shown on drawing.

Table No. 2 "MT" Motor Plate Dimensions

Motor Adapter	Motor Shaft D⁶ Max. 1) mm	Motor Shaft D⁶ Max. 1) ins.	Motor Plate 2) Thickness L⁹ Minimum mm	Motor Plate 2) Thickness L⁹ Minimum inches	Inches E	Inches E²	Inches X	Wt. lbs.
MT10	19	.748	21	.83	5.51	2.75	1.57	5
MT20	24	.945	24	.95	6.30	3.15	1.97	8
MT30	38	1.260	25	.98	7.87	3.94	2.36	12
MT40	48	1.890	33	1.30	9.84	4.92	3.50	18

1) If an adapter bushing is required it will be supplied as a component of the motor mounting plate.
2) Motor plate maximum thickness (L⁹) will vary with motor shaft length but will not be less than shown.

Table No. 3 "F" Series – "G" Housing Style

Base Module	MT10 C	MT10 L	MT20 C	MT20 L	MT30 C	MT30 L	MT40 C	MT40 L	Approx. Wt. lbs.
F102	8.66	7.09	9.21	7.24	—	—	—	—	38
F202	9.96	8.39	10.51	8.54	10.98	8.62	—	—	51
F302	11.02	9.45	11.58	9.61	12.05	9.69	—	—	67
F402	—	—	12.56	10.59	13.03	10.67	14.29	10.79	84
F602	—	—	14.57	12.60	15.04	12.68	16.30	12.80	165

ServoFit® "F" Series–Offset Helical Tapped Hole – "G" Housing Double Bushing – Dimensional Data

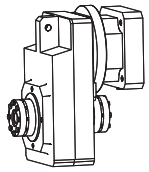


Table No. 4 "WFN" Double Side Bushings without Covers – Inches

	Stock Bores Sizes												
Unit	3/4	1	1 3/16	1 1/4	1 3/8	1 7/16	1 1/2	1 5/8	1 11/16	1 3/4	1 7/8	1 15/16	2
F102	WFN1-075	–	–	–	–	–	–	–	–	–	–	–	–
F202	–	WFN2-100	WFN2-103	–	–	–	–	–	–	–	–	–	–
F302	–	WFN3-100	WFN3-103	WFN3-104	WFN3-106	WFN3-107	WFN3-108	–	–	–	–	–	–
F402	–	WFN4-100	WFN4-103	WFN4-104	WFN4-106	WFN4-107	WFN4-108	–	–	–	–	–	–
F602	–	–	–	–	–	WFN5-107	WFN5-108	WFN5-110	WFN5-111	WFN5-112	WFN5-114	WFN5-115	WFN5-200

A complete bushing kit includes the locking ring assembly, tapered cone, support ring, and all hardware to mount the kit into the reducer.
The bushing will accept a shaft with a tolerance of +.000/-.005.

NOTE: F6 units use a WFN5 Bushing Kit.

Table No. 5 "WFN" Bushing Double Side without Covers – Metric

	Stock Bores Sizes			
Unit	20	30	35	40
F102	WFN1-20	–	–	–
F202	–	WFN2-30	–	–
F302	–	WFN3-30	WFN3-35	–
F402	–	–	–	WFN4-40
F602	–	–	–	WFN5-40

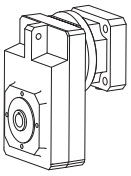
NOTE: F6 units use a WFN5 Bushing Kit.

Part No. Explanation

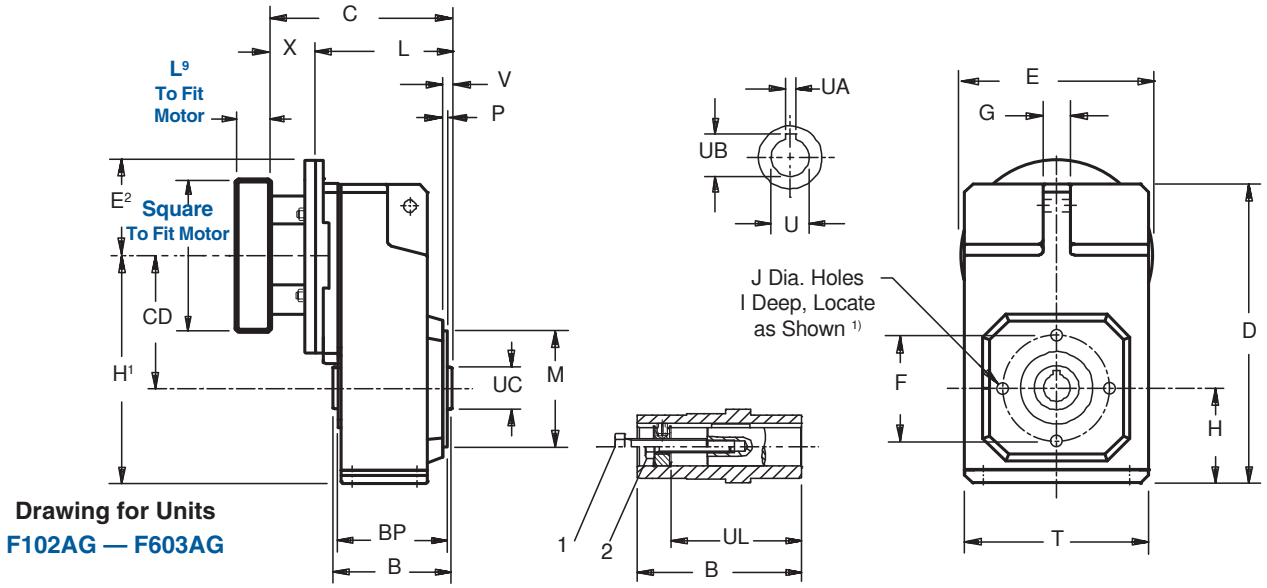
Unit with TriAdapt® Motor Adapter 1 3/8" Bore Double Bushing — No Covers

F402WG0560 MT20 WFN4–106

For an approximate unit weight, add the weights in Table 2 and Table 3.



ServoFit® "F" Series–Offset Helical Tapped Hole – "G" Housing Hollow Output – Dimensional Data



Drawing for Units
F102AG — F603AG

See Page 235 for installation of hollow ouput.

Table No. 1 **"F" Series – Tapped Holes Unit Dimensions (Inches) – "G" Housing Style**

Base Module	CD	B	D	F	G	H	H1	I	J 1)	M	P	T	V	BP	UC	UL
F102	4.02	3.74	9.37	3.35	.79	2.91	6.93	.51	4-M8	2.756 +.001/-.0003	.10	5.71	.26	3.43	1.38	2.87
F202/F203	5.16	4.53	11.77	4.53	.87	3.66	8.82	.51	4-M8	3.740 +.001/-.0004	.12	7.09	.31	4.13	1.77	3.62
F302/F303	5.89	5.12	13.23	5.12	1.18	4.17	10.06	.63	4-M10	4.331 +.001/-.0004	.14	8.11	.33	4.72	1.97	4.06
F402/F403	6.65 2)	5.71	14.57	5.12	1.18	4.57	11.22	.63	4-M10	4.331 +.001/-.0004	.14	9.06	.33	5.31	2.17	4.49
F602/F603	7.72	7.09	17.64	6.50	1.38	5.39	13.11	.63	8-M10	5.118 +.001/-.0004	.14	10.43	.41	6.54	2.76	5.63

1) F602 and F603 has 8 tapped holes located 22.5° from horizontal instead of 4 as shown on drawing.
2) C.D. is 5.19 for F403 with MT20.
1. Removal Bolt – not supplied. See Page 235.
2. Mounting Bolt – must be smaller than removal bolt.

Table No. 2 **Metric output available on request**

Base Module	Standard Bore - inches			Optional Bore - mm		
	U	UA	UB	U	UA	UB
F102	.750	.187	.84	20_{H7}	6_{JS9}	22.8
F202/F203	1.000	.250	1.12	25_{H7}	8_{JS9}	28.3
F302/F303	1.250	.250	1.37	30_{H7}	8_{JS9}	33.3
F402/F403	1.500	.375	1.67	40_{H7}	12_{JS9}	43.3
F602/F603	2.000	.500	2.23	50_{H7}	14_{JS9}	53.8

Table No. 3 **"F" Series – "G" Housing Style**

Base	MT10		MT20		MT30		MT40		Approx.
Module	C	L	C	L	C	L	C	L	Wt. lbs.
F102	5.66	4.09	6.22	4.25	–	–	–	–	38
F202	6.41	4.84	6.97	5.00	7.44	5.08	–	–	51
F203	7.87	6.30	–	–	–	–	–	–	64
F302	7.00	5.43	7.56	5.59	8.03	5.67	–	–	67
F303	8.46	6.89	9.25	7.28	–	–	–	–	73
F402	–	–	8.15	6.18	8.62	6.26	9.88	6.38	84
F403	9.05	7.48	9.84	7.87	–	–	–	–	91
F602	–	–	9.45	7.48	9.92	7.56	11.18	7.68	165
F603	–	–	11.14	9.17	–	–	–	–	177

Table No. 4 **"MT" Motor Plate Dimensions**

Motor Adapter	Motor Shaft D6 Max. 1)		Motor Plate 2) Thickness L9 Minimum		Inches			Wt. lbs.
	mm	ins.	mm	inches	E	E2	X	
MT10	19	.748	21	.83	5.51	2.75	1.57	5
MT20	24	.945	24	.95	6.30	3.15	1.97	8
MT30	38	1.260	25	.98	7.87	3.94	2.36	12
MT40	48	1.890	33	1.30	9.84	4.92	3.50	18

Part No. Example
Tapped Holes Housing with TriAdapt® Motor Adapter
F302AG0620 MT20

1) If an adapter bushing is required it will be supplied as a component of the motor mounting plate.
2) Motor plate maximum thickness (L9) will vary with motor shaft length but will not be less than shown.

For approximate weight, add base module weight form Table 3 and adapter weight from Table 4.

ServoFit® "F" Series–Offset Helical Tapped Hole – "GN" Housing Hollow Output – Dimensional Data

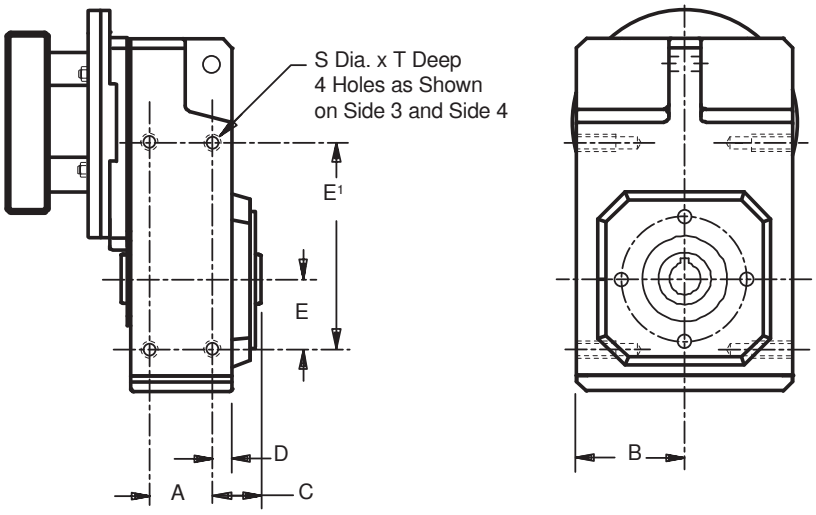


Table No. 1

"F" Series — Foot Mount "GN" Housing Dimensions (Inches)

Base Module	A	B	C	D	E	E¹	S	T
F102/F103	1.97	2.79	1.14	.39	1.57	5.51	M6	.43
F202/F203	2.52	3.46	1.32	.41	2.17	6.89	M8	.51
F302/F303	2.83	4.02	1.48	.49	2.36	7.87	M10	.63
F402/F403	3.43	4.49	1.48	49	2.76	8.66	M10	.63
F602/F603	4.25	5.16	1.83	.61	3.35	10.63	M12	.75

Rubber Buffer – Dimensional Data

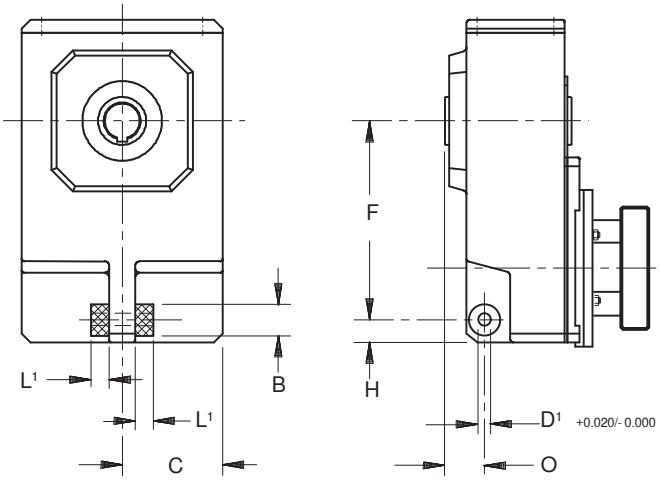


Table No. 2

"F" Series — Rubber Buffer Dimensions (Inches)

Base Module	Part No.	B	C	F	H	D¹	L¹	O
F102/F103	**25192**	1.18	2.86	5.91	.55	.43	.59	1.38
F202/F203	**25192**	1.18	3.55	7.12	.98	.43	.59	1.57
F302/F303	**25193**	1.57	4.06	8.07	.96	.55	.79	1.77
F402/F403	**25193**	1.57	4.53	8.98	1.02	.55	.79	1.77
F602/F603	**25194**	2.36	5.22	10.63	1.02	.57	1.18	2.77

Order two (2) rubber buffers for each unit.
Torque arms are not supplied by STOBER.

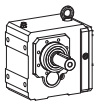
F

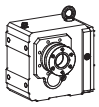
See web site for drawings.

"K" Series–Right Angle Helical/Bevel ServoFit® Modular System Overview

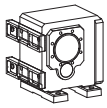
Output Style + Housing Style + TriAdapt® Input = Gearhead Configurations

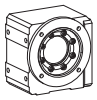

Style A
Hollow Output

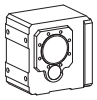

Style V
Solid Output

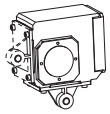

Style W
Bushing Output

+


Style N
Foot Mount


Style F
Round Flange


Style G
Tapped Holes

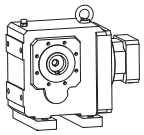

Style GD
Torque Arm Bracket

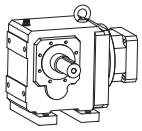
+

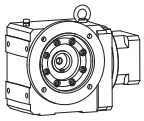

MT
Motor Adapter

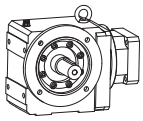

Motor Plate
Fit ANY Servo Motor

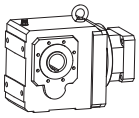
Gearhead Configurations

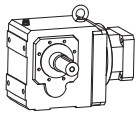

Style AN
Hollow Output

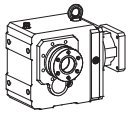

Style VN
Solid Output


Style AF
Hollow Output


Style VF
Solid Output

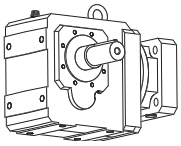

Style AG
Hollow Output

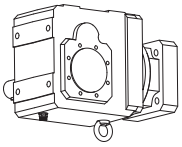

Style VG
Solid Output

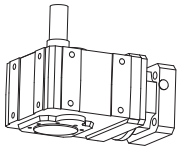

Style WG
Bushing Output

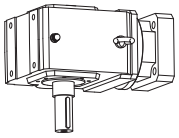
Mounting Positions *(Units shown K5-K9, Shaft Side 4. See Page 246 for additional mounting information.)*

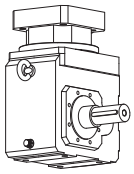
EL1 EL2 EL3 EL4 EL5 EL6

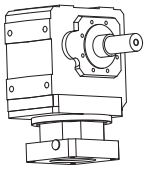












Part No. Explanation with OPTIONS and REQUIRED INFORMATION

K 6 1 3 A GD 0580 MT40 B

This designation is only required when ordering a: **B** — Beverage Duty, **F** — Food Duty

TriAdapt® Motor Adapter Size: **MT10**, **MT20**, **MT30**, **MT40**, **MT50**

Nominal Ratio: (**0580** = 57.5:1)

HOUSING STYLE
"**F**" Housing Style — Flange Mounting ..... **SPECIFY IN A NOTE**: Flange on Side 3 or Side 4
"**G**" Housing Style — Tapped Holes
"**GD**" G Housing Style with Torque Arm Bracket .... **SPECIFY IN A NOTE**: Torque Arm Bracket on Side 1 or Side 5
"**N**" Housing Style — Foot Mount ..... **SPECIFY IN A NOTE**: Feet on Side 1 or Side 5

OUTPUT STYLE
"**V**" Solid Output ..... **SPECIFY IN A NOTE**: Standard or Stainless Steel[1)]
Imperial or Metric[1)]
Single or Double
IF Single: Shaft on Side 3 or Side 4

"**A**" Hollow Output ..... **SPECIFY IN A NOTE**: Standard or Stainless Steel[1)]
Imperial or Metric[1)]

"**W**" Wobble Free Bushing ..... **SPECIFY IN A NOTE**: Bushing Part Number
Single or Double Bushing
IF Single: Side 3 or Side 4

[1)] Not available in all sizes.

No. of Stages (**3** = 3 Stage, determined by ratio)
Design Generation
Unit Size No.
Right Angle Helical/Bevel

Bushing Part No. Explanation

W F 5 – 107

Output Bore in inches — **107** = $1^{7}/_{16}$
Base Module Size example: K**5**13/K**5**14)
Wobble **F**ree Single Side Bushing

W F B 5 – 107

Output Bore in inches — **107** = $1^{7}/_{16}$
Base Module Size example: K**5**13/K**5**14)
Wobble **F**ree Double Side

THE FOLLOWING INFORMATION IS REQUIRED FOR ANY UNIT:

Mounting Position — EL1 EL2 EL3 EL4 EL5 EL6 (See also Page 171.)
Motor — Motor Manufacturer and Model Number
Paint — Black (Standard) ..... White ..... Stainless
Package Option — Beverge Duty ..... Food Duty
Backlash Option — Standard or Reduced Backlash

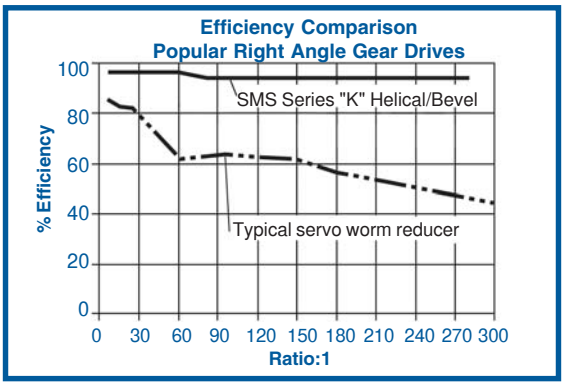
Refer to Page 250 for ServoFit Gearhead Selection Procedure.

"K" Series—Right Angle Helical/Bevel ServoFit® Modular System

Right angle helical/bevel gear drives offer higher input-to-output efficiencies than conventional worm gear drives or right angle planetary gearheads—making them the optimal drive for truly demanding continuous applications.

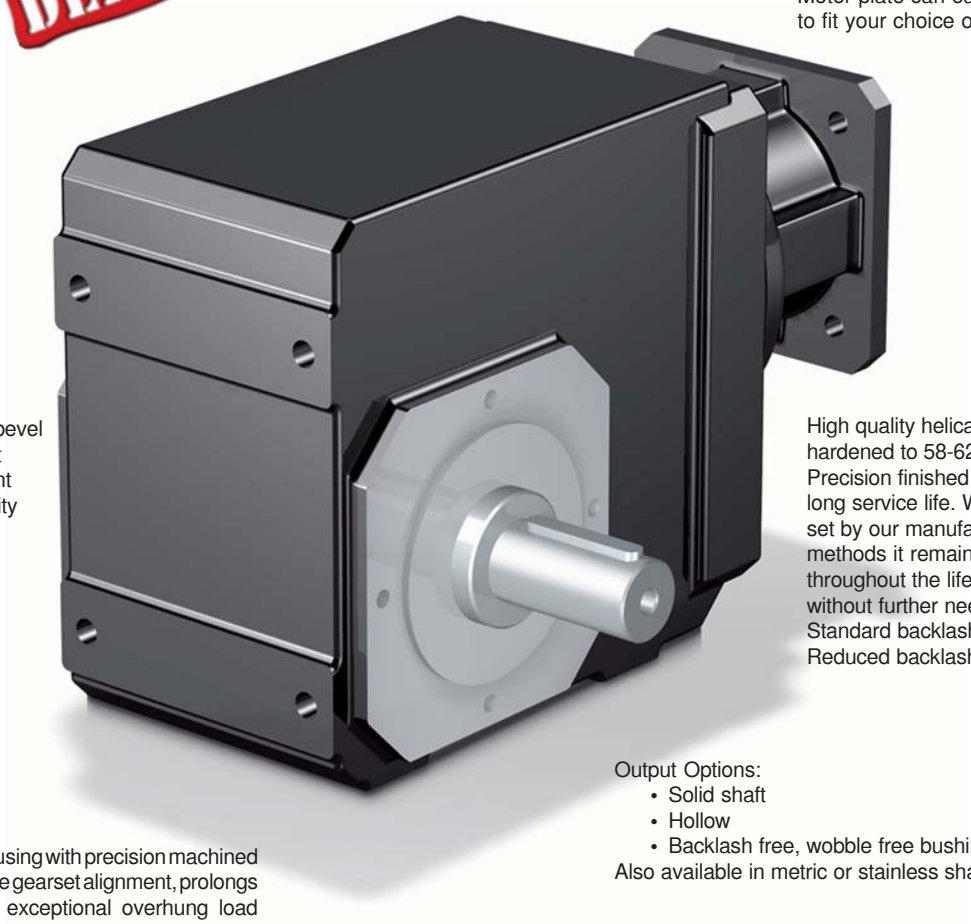
Performance Specifications:

- Input RPM up to 4,500 RPM
- Nominal output torque — 109 to 106,000 in. lbs. (12-11,900Nm)
- Reducer ratios from 4:1 to 381:1
- 5 year limited warranty (2 years on bearings, seals, etc.)
- Ambient temperature — 0° C to +40°C (104° F) [Unit temperature ≤ 80° C Max.]
- Noise level — as low as 53 dB(A)
- Maintenance free
- Can be back driven



STANDARD 3-DAY DELIVERY

Motor plate can easily be changed to fit your choice of motors.



High efficiency spiral bevel gearing provides quiet operation and excellent torque carrying capacity

High quality helical gearing is case hardened to 58-62 Rockwell C. Precision finished for low noise and long service life. When the backlash is set by our manufacturing and assemble methods it remains consistent throughout the life of the reducer without further need for adjustment. Standard backlash is ≤12 arc minutes Reduced backlash is ≤6 arc minutes

Output Options:
- Solid shaft
- Hollow
- Backlash free, wobble free bushings

Also available in metric or stainless shaft or quill

One-piece cast iron housing with precision machined bearing supports assure gearset alignment, prolongs bearing life, provides exceptional overhung load capacities, and eliminates leakage problems common to drives with bolt-on output covers.

Double lip seals keep oil in and contaminants out. Double seals available for severe duty applications.

Shipped with the proper amount of oil to prevent gear damaging dry start-ups.

Also available in washdown, poultry duty, food duty, and beverage duty. Maximum 10 working days for custom motor plates.

"K" Series–Right Angle Helical/Bevel ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
K102 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 53 dB(A) [4]**	
K102_0040 MT10	4.000	4/1	3,300	2,800	4,500	12/6	1.4	25	2.8	368	42	368	42	460	52
K102_0040 MT20	4.000	4/1	3,300	2,800	4,500	12/6	2.0	25	2.9	512	58	693	78	866	98
K102_0056 MT10	5.568	1520/273	3,300	2,800	4,500	12/6	1.3	38	4.3	512	58	512	58	640	72
K102_0056 MT20	5.568	1520/273	3,300	2,800	4,500	12/6	1.9	39	4.5	572	65	965	109	1,206	136
K102_0060 MT10	6.000	6/1	3,300	2,800	4,500	12/6	1.1	30	3.4	523	59	523	59	654	74
K102_0060 MT20	6.000	6/1	3,300	2,800	4,500	12/6	1.7	30	3.4	587	66	985	111	1,231	139
K102_0066 MT10	6.644	299/45	3,600	3,300	5,000	12/6	1.0	31	3.5	570	64	570	64	712	80
K102_0066 MT20	6.644	299/45	3,500	3,300	5,000	12/6	1.6	31	3.5	607	69	1,025	116	1,340	151
K102_0083 MT10	8.309	1911/230	3,600	3,300	5,000	12/6	0.9	33	3.7	654	74	684	77	855	97
K102_0083 MT20	8.309	1911/230	3,500	3,300	5,000	12/6	1.5	33	3.7	654	74	1,104	125	1,611	182
K102_0092 MT10	9.249	1748/189	3,600	3,300	5,000	12/6	0.9	46	5.2	678	76	793	90	991	112
K102_0092 MT20	9.249	1748/189	3,500	3,300	5,000	12/6	1.5	46	5.2	678	76	1,145	129	1,866	211
K102_0100 MT10	10.14	507/50	4,000	3,800	5,500	12/6	0.8	34	3.8	699	79	806	91	1,008	114
K102_0100 MT20	10.14	507/50	3,500	3,500	5,000	12/6	1.4	34	3.8	699	79	1,107	125	1,898	214
K102_0115 MT10	11.57	266/23	3,600	3,300	5,000	12/6	0.8	48	5.4	730	82	952	108	1,190	134
K102_0115 MT20	11.57	266/23	3,500	3,300	5,000	12/6	1.4	48	5.4	730	82	1,196	135	2,126	240
K102_0125 MT10	12.62	429/34	4,000	3,800	5,500	12/6	0.7	34	3.9	751	85	963	109	1,204	136
K102_0125 MT20	12.62	429/34	3,500	3,500	5,000	12/6	1.3	35	3.9	751	85	1,107	125	1,949	220
K102_0140 MT10	14.11	494/35	4,000	3,800	5,500	12/6	0.8	49	5.5	780	88	1,122	127	1,403	158
K102_0140 MT20	14.11	494/35	3,500	3,500	5,000	12/6	1.4	49	5.6	780	88	1,196	135	2,126	240
K102_0165 MT10	16.71	117/7	4,000	4,000	6,000	12/6	0.7	35	4.0	825	93	1,107	125	1,520	172
K102_0165 MT20	16.71	117/7	3,500	3,500	5,000	12/6	1.3	35	4.0	825	93	1,107	125	1,520	172
K102_0175 MT10	17.56	2090/119	4,000	3,800	5,500	12/6	0.7	50	5.6	839	95	1,196	135	1,676	189
K102_0175 MT20	17.56	2090/119	3,500	3,500	5,000	12/6	1.3	50	5.6	839	95	1,196	135	2,126	240
K102_0200 MT10	20.15	403/20	4,000	4,000	6,000	12/6	0.7	35	4.0	878	99	1,107	125	1,763	199
K102_0200 MT20	20.15	403/20	3,500	3,500	5,000	12/6	1.3	35	4.0	878	99	1,107	125	1,763	199
K102_0230 MT10	23.27	1140/49	4,000	4,000	6,000	12/6	0.7	51	5.7	921	104	1,196	135	2,115	239
K102_0230 MT20	23.27	1140/49	3,500	3,500	5,000	12/6	1.3	51	5.7	921	104	1,196	135	2,115	239
K102_0250 MT10	25.22	1261/50	4,000	4,000	6,000	12/6	0.6	36	4.0	851	96	1,021	115	1,701	192
K102_0250 MT20	25.22	1261/50	3,500	3,500	5,000	12/6	1.2	36	4.0	851	96	1,021	115	1,701	192
K102_0280 MT10	28.05	589/21	4,000	4,000	6,000	12/6	0.7	51	5.7	981	111	1,196	135	2,126	240
K102_0280 MT20	28.05	589/21	3,500	3,500	5,000	12/6	1.3	51	5.8	981	111	1,196	135	2,126	240
K102_0340 MT10	33.71	4719/140	4,000	4,000	6,000	12/6	0.6	36	4.0	647	73	776	88	1,293	146
K102_0350 MT10	35.11	3686/105	4,000	4,000	6,000	12/6	0.6	51	5.8	1,057	119	1,196	135	2,126	240
K102_0350 MT20	35.11	3686/105	3,500	3,500	5,000	12/6	1.2	51	5.8	1,057	119	1,196	135	2,126	240
K102_0400 MT10	40.30	403/10	4,000	4,000	6,000	12/6	0.6	36	4.1	544	61	653	74	846	96
K102_0470 MT10	46.92	2299/49	4,000	4,000	6,000	12/6	0.6	51	5.8	900	102	1,080	122	1,800	203
K102_0500 MT10	50.31	5031/100	4,000	4,000	6,000	12/6	0.6	36	4.1	442	50	531	60	885	100
K102_0560 MT10	56.10	1178/21	4,000	4,000	6,000	12/6	0.6	51	5.8	758	86	909	103	1,178	133
K102_0700 MT10	70.03	2451/35	4,000	4,000	6,000	12/6	0.6	51	5.8	616	70	739	83	1,232	139

[1] Backlash shown "STANDARD/REDUCED".

[2] Maximum torque for continuous input RPM - horizontal output position.

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

[4] dB(A)Measured at 1 meter distance with 3000 RPM input

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 5, 6
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL3 and EL4
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL5, EL6
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"K" Series–Right Angle Helical/Bevel ServoFit® Modular System Selection Data

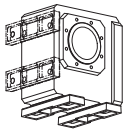
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
K202 with MT TriAdapt® Motor Adapter Continued Next Page													**Noise Level ≤ 53 dB(A)** [4]		
K202_0040 MT10	4.000	4/1	3,000	2,600	4,000	10/5	3.1	33	3.8	393	44	393	44	491	55
K202_0040 MT20	4.000	4/1	3,000	2,600	4,000	10/5	3.7	35	3.9	915	103	1,512	171	2,170	245
K202_0040 MT30	4.000	4/1	3,000	2,600	4,000	10/5	8.5	41	4.7	915	103	1,546	174	2,170	245
K202_0044 MT10	4.364	48/11	3,000	2,600	4,000	10/5	2.7	36	4.1	421	48	421	48	526	59
K202_0044 MT20	4.364	48/11	3,000	2,600	4,000	10/5	3.3	37	4.2	942	106	1,591	180	2,327	263
K202_0044 MT30	4.364	48/11	3,000	2,600	4,000	10/5	8.1	43	4.9	942	106	1,591	180	2,327	263
K202_0052 MT20	5.177	2107/407	3,000	2,600	4,000	10/5	2.9	42	4.7	997	113	1,684	190	2,724	308
K202_0052 MT30	5.177	2107/407	3,000	2,600	4,000	10/5	7.7	47	5.3	997	113	1,684	190	2,724	308
K202_0060 MT10	6.000	6/1	3,000	2,600	4,000	10/5	2.3	51	5.8	579	65	579	65	724	82
K202_0060 MT20	6.000	6/1	3,000	2,600	4,000	10/5	2.9	53	5.9	1,047	118	1,769	200	3,199	361
K202_0060 MT30	6.000	6/1	3,000	2,600	4,000	10/5	7.7	59	6.6	1,047	118	1,769	200	3,199	361
K202_0067 MT10	6.683	2279/341	3,500	3,100	4,500	10/5	1.7	46	5.2	609	69	609	69	761	86
K202_0067 MT20	6.683	2279/341	3,500	3,100	4,500	10/5	2.3	47	5.3	1,086	123	1,834	207	3,364	380
K202_0067 MT30	6.683	2279/341	3,500	3,100	4,000	10/5	7.1	51	5.8	1,086	123	1,834	207	3,364	380
K202_0071 MT20	7.118	2107/296	3,000	2,600	4,000	10/5	2.6	57	6.4	1,109	125	1,873	211	3,543	400
K202_0071 MT30	7.118	2107/296	3,000	2,600	4,000	10/5	7.4	62	7.0	1,109	125	1,873	211	3,543	400
K202_0084 MT10	8.397	2494/297	3,500	3,100	4,500	10/5	1.4	50	5.7	739	83	739	83	924	104
K202_0084 MT20	8.397	2494/297	3,500	3,100	4,500	10/5	2.0	51	5.7	1,171	132	1,949	220	3,543	400
K202_0084 MT30	8.397	2494/297	3,500	3,100	4,000	10/5	6.8	54	6.1	1,171	132	1,949	220	3,543	400
K202_0092 MT10	9.190	2279/248	3,500	3,100	4,500	10/5	1.5	61	6.9	837	95	837	95	1,046	118
K202_0092 MT20	9.190	2279/248	3,500	3,100	4,500	10/5	2.1	62	7.0	1,207	136	1,949	220	3,543	400
K202_0092 MT30	9.190	2279/248	3,500	3,100	4,000	10/5	6.9	66	7.4	1,207	136	1,949	220	3,543	400
K202_0100 MT10	10.07	2881/286	3,900	3,500	5,000	10/5	1.2	52	5.9	855	97	855	97	1,069	121
K202_0100 MT20	10.07	2881/286	3,500	3,500	5,000	10/5	1.8	53	6.0	1,245	141	1,949	220	3,543	400
K202_0100 MT30	10.07	2881/286	3,500	3,500	4,000	10/5	6.6	55	6.2	1,245	141	1,949	220	3,543	400
K202_0115 MT10	11.55	1247/108	3,500	3,100	4,500	10/5	1.3	65	7.3	1,016	115	1,016	115	1,270	143
K202_0115 MT20	11.55	1247/108	3,500	3,100	4,500	10/5	1.9	66	7.4	1,303	147	1,949	220	3,543	400
K202_0115 MT30	11.55	1247/108	3,500	3,100	4,000	10/5	6.7	68	7.7	1,303	147	1,949	220	3,543	400
K202_0125 MT10	12.71	559/44	3,900	3,500	5,000	10/5	1.0	55	6.2	1,037	117	1,037	117	1,297	146
K202_0125 MT20	12.71	559/44	3,500	3,500	5,000	10/5	1.6	55	6.2	1,345	152	1,949	220	3,543	400
K202_0125 MT30	12.71	559/44	3,500	3,500	4,000	10/5	6.4	56	6.4	1,345	152	1,949	220	3,543	400
K202_0140 MT10	13.85	2881/208	3,900	3,500	5,000	10/5	1.1	67	7.6	1,176	133	1,176	133	1,470	166
K202_0140 MT20	13.85	2881/208	3,500	3,500	5,000	10/5	1.7	67	7.6	1,384	156	1,949	220	3,543	400
K202_0140 MT30	13.85	2881/208	3,500	3,500	4,000	10/5	6.5	69	7.8	1,384	156	1,949	220	3,543	400
K202_0170 MT10	16.86	2967/176	4,000	3,900	5,500	10/5	0.9	56	6.4	1,302	147	1,302	147	1,627	184
K202_0170 MT20	16.86	2967/176	3,500	3,500	5,000	10/5	1.5	57	6.4	1,478	167	1,949	220	3,543	400
K202_0170 MT30	16.86	2967/176	3,500	3,500	4,000	10/5	6.3	57	6.5	1,478	167	1,949	220	3,543	400
K202_0175 MT10	17.47	559/32	3,900	3,500	5,000	10/5	1.0	69	7.8	1,426	161	1,426	161	1,783	201
K202_0175 MT20	17.47	559/32	3,500	3,500	5,000	10/5	1.6	69	7.8	1,495	169	1,949	220	3,543	400
K202_0175 MT30	17.47	559/32	3,500	3,500	4,000	10/5	6.4	70	7.9	1,495	169	1,949	220	3,543	400
K202_0200 MT10	20.33	1118/55	4,000	3,900	5,500	10/5	0.8	57	6.4	1,504	170	1,504	170	1,880	212
K202_0200 MT20	20.33	1118/55	3,500	3,500	5,000	10/5	1.4	57	6.5	1,573	178	1,949	220	3,541	400
K202_0200 MT30	20.33	1118/55	3,500	3,500	4,000	10/5	6.2	58	6.5	1,573	178	1,949	220	3,541	400

Motor Shaft

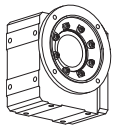
Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48
MT50	60

Housing Styles

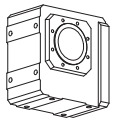
N Foot Mounted



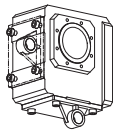
F Round Flange



G Tapped Holes



GD Torque Arm Bracket



These Housing Styles are available as Hollow (A), Bushing (W), or Solid (V) Output.

See Page 194 for required ordering information and part number example.

"K" Series–Right Angle Helical/Bevel ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
K202 with MT TriAdapt® Motor Adapter Continued														**Noise Level ≤ 53 dB(A)** [4]	
K202_0230 MT10	23.18	2967/128	4,000	3,900	5,500	10/5	0.8	70	7.9	1,643	186	1,790	202	2,237	253
K202_0230 MT20	23.18	2967/128	3,500	3,500	5,000	10/5	1.4	70	7.9	1,643	186	1,949	220	3,543	400
K202_0230 MT30	23.18	2967/128	3,500	3,500	4,000	10/5	6.2	71	8.0	1,643	186	1,949	220	3,543	400
K202_0250 MT10	25.13	1935/77	4,000	3,900	5,500	10/5	0.7	58	6.5	1,688	191	1,775	200	2,219	250
K202_0250 MT20	25.13	1935/77	3,500	3,500	5,000	10/5	1.3	58	6.5	1,688	191	1,949	220	3,543	400
K202_0250 MT30	25.13	1935/77	3,500	3,500	4,000	10/5	6.1	58	6.6	1,688	191	1,949	220	3,543	400
K202_0280 MT10	27.95	559/20	4,000	3,900	5,500	10/5	0.8	71	8.0	1,749	197	1,949	220	2,586	292
K202_0280 MT20	27.95	559/20	3,500	3,500	5,000	10/5	1.4	71	8.0	1,749	197	1,949	220	3,543	400
K202_0280 MT30	27.95	559/20	3,500	3,500	4,000	10/5	6.2	71	8.1	1,749	197	1,949	220	3,543	400
K202_0340 MT10	33.62	1849/55	4,000	3,900	5,500	10/5	0.7	58	6.6	1,364	154	1,637	185	2,729	308
K202_0340 MT20	33.62	1849/55	3,500	3,500	5,000	10/5	1.3	58	6.6	1,364	154	1,637	185	2,729	308
K202_0350 MT10	34.55	1935/56	4,000	3,900	5,500	10/5	0.7	71	8.0	1,772	200	1,949	220	3,051	344
K202_0350 MT20	34.55	1935/56	3,500	3,500	5,000	10/5	1.3	71	8.1	1,772	200	1,949	220	3,543	400
K202_0350 MT30	34.55	1935/56	3,500	3,500	4,000	10/5	6.1	72	8.1	1,772	200	1,949	220	3,543	400
K202_0400 MT10	40.39	1333/33	4,000	3,900	5,500	10/5	0.7	58	6.6	1,023	116	1,228	139	1,690	191
K202_0460 MT10	46.23	1849/40	4,000	3,900	5,500	10/5	0.7	72	8.1	1,772	200	1,949	220	3,543	400
K202_0460 MT20	46.23	1849/40	3,500	3,500	5,000	10/5	1.3	72	8.1	1,772	200	1,949	220	3,543	400
K202_0500 MT10	50.49	6665/132	4,000	3,900	5,500	10/5	0.6	58	6.6	853	96	1,023	116	1,705	193
K202_0560 MT10	55.54	1333/24	4,000	3,900	5,500	10/5	0.7	72	8.1	1,407	159	1,688	191	2,323	262
K202_0690 MT10	69.43	6665/96	4,000	3,900	5,500	10/5	0.6	72	8.1	1,172	132	1,407	159	2,345	265
K203 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 53 dB(A)** [4]	
K203_0390 MT10	39.45	135407/3432	4,000	3,900	5,500	10/6	0.7	58	6.6	1,431	162	1,431	162	1,788	202
K203_0450 MT10	45.22	58609/1296	4,000	3,900	5,500	10/6	0.7	72	8.1	1,640	185	1,640	185	2,050	231
K203_0500 MT10	49.76	26273/528	4,000	3,900	5,500	10/6	0.7	58	6.6	1,772	200	1,804	204	2,256	255
K203_0540 MT10	54.25	135407/2496	4,000	3,900	5,500	10/6	0.7	72	8.1	1,772	200	1,949	220	2,459	278
K203_0660 MT10	66.03	46483/704	4,000	3,900	5,500	10/6	0.7	59	6.6	1,772	200	1,949	220	2,993	338
K203_0680 MT10	68.42	26273/384	4,000	3,900	5,500	10/6	0.7	72	8.1	1,772	200	1,949	220	3,101	350
K203_0800 MT10	79.62	26273/330	4,000	3,900	5,500	10/6	0.7	59	6.6	1,772	200	1,949	220	3,540	400
K203_0910 MT10	90.79	46483/512	4,000	3,900	5,500	10/6	0.7	72	8.1	1,772	200	1,949	220	3,543	400
K203_1090 MT10	109.5	26273/240	4,000	3,900	5,500	10/6	0.7	72	8.1	1,772	200	1,949	220	3,543	400
K203_1350 MT10	135.3	30315/224	4,000	3,900	5,500	10/6	0.7	72	8.1	1,772	200	1,949	220	3,543	400
K203_1810 MT10	181.0	86903/480	4,000	3,900	5,500	10/6	0.7	72	8.1	1,772	200	1,949	220	3,543	400
K203_2180 MT10	217.5	62651/288	4,000	3,900	5,500	10/6	0.6	72	8.1	1,407	159	1,688	191	2,323	262
K203_2720 MT10	271.9	313255/1152	4,000	3,900	5,500	10/6	0.6	72	8.1	1,172	132	1,407	159	2,345	265

[1] Backlash shown "STANDARD/REDUCED".

[2] Maximum torque for continuous input RPM - horizontal output position.

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

[4] dB(A)Measured at 1 meter distance with 3000 RPM input

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 5, 6
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL3 and EL4
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL5, EL6
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"K" Series–Right Angle Helical/Bevel ServoFit® Modular System Selection Data

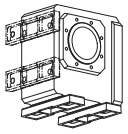
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
K302 with MT TriAdapt® Motor Adapter Continued Next Page											**Noise Level ≤ 53 dB(A)** [4]				
K302_0040 MT20	4.000	4/1	2,700	2,300	3,800	10/4	6.4	40	4.5	1,375	155	1,512	171	2,238	253
K302_0040 MT30	4.000	4/1	2,700	2,300	3,800	10/4	11.2	49	5.5	1,602	181	2,707	306	5,772	652
K302_0044 MT20	4.364	48/11	2,700	2,300	3,800	10/4	5.7	43	4.9	1,500	169	1,650	186	2,421	273
K302_0044 MT30	4.364	48/11	2,700	2,300	3,800	10/4	10.5	52	5.8	1,650	186	2,787	315	6,201	700
K302_0054 MT20	5.375	43/8	2,700	2,300	3,800	10/4	4.5	51	5.7	1,768	200	2,032	229	2,884	326
K302_0054 MT30	5.375	43/8	2,700	2,300	3,800	10/4	9.3	58	6.5	1,768	200	2,307	260	2,884	326
K302_0060 MT20	6.000	6/1	2,700	2,300	3,800	10/4	4.8	59	6.7	1,834	207	2,268	256	3,328	376
K302_0060 MT30	6.000	6/1	2,700	2,300	3,800	10/4	9.6	67	7.6	1,834	207	3,099	350	6,201	700
K302_0067 MT20	6.740	2150/319	3,200	2,800	4,200	10/4	3.5	57	6.5	1,907	215	2,548	288	3,515	397
K302_0067 MT30	6.740	2150/319	3,200	2,800	4,000	10/4	8.3	63	7.1	1,907	215	2,812	317	3,515	397
K302_0074 MT20	7.391	473/64	2,700	2,300	3,800	10/4	3.9	66	7.5	1,966	222	2,794	315	3,965	448
K302_0074 MT30	7.391	473/64	2,700	2,300	3,800	10/4	8.7	73	8.2	1,966	222	3,172	358	3,965	448
K302_0084 MT20	8.444	2322/275	3,200	2,800	4,200	10/4	2.8	63	7.1	2,056	232	3,192	360	4,244	479
K302_0084 MT30	8.444	2322/275	3,200	2,800	4,000	10/4	7.6	67	7.5	2,056	232	3,395	383	4,244	479
K302_0093 MT20	9.267	1075/116	3,200	2,800	4,200	10/4	3.2	72	8.2	2,120	239	3,410	385	4,833	546
K302_0093 MT30	9.267	1075/116	3,200	2,800	4,000	10/4	8.0	77	8.7	2,120	239	3,410	385	4,833	546
K302_0100 MT20	10.14	3010/297	3,500	3,100	5,000	10/4	2.4	66	7.4	2,185	247	3,410	385	4,911	554
K302_0100 MT30	10.14	3010/297	3,500	3,100	4,000	10/4	7.2	69	7.8	2,185	247	3,410	385	4,911	554
K302_0115 MT20	11.61	1161/100	3,200	2,800	4,200	10/4	2.6	77	8.6	2,286	258	3,410	385	5,835	659
K302_0115 MT30	11.61	1161/100	3,200	2,800	4,000	10/4	7.4	80	9.0	2,286	258	3,410	385	5,835	659
K302_0125 MT10	12.58	3182/253	3,500	3,100	5,000	10/4	1.5	68	7.7	1,059	120	1,059	120	1,324	150
K302_0125 MT20	12.58	3182/253	3,500	3,100	5,000	10/4	2.1	69	7.8	2,348	265	3,410	385	5,854	661
K302_0125 MT30	12.58	3182/253	3,500	3,100	4,000	10/4	6.9	71	8.0	2,348	265	3,410	385	5,854	661
K302_0140 MT20	13.94	1505/108	3,500	3,100	5,000	10/4	2.3	79	8.9	2,429	274	3,410	385	6,201	700
K302_0140 MT30	13.94	1505/108	3,500	3,100	4,000	10/4	7.1	81	9.2	2,429	274	3,410	385	6,201	700
K302_0170 MT10	16.94	559/33	3,800	3,500	5,000	10/4	1.1	71	8.0	1,342	152	1,342	152	1,678	189
K302_0170 MT20	16.94	559/33	3,500	3,500	5,000	10/4	1.7	71	8.1	2,592	293	3,410	385	6,201	700
K302_0170 MT30	16.94	559/33	3,500	3,500	4,000	10/4	6.5	73	8.2	2,592	293	3,410	385	6,201	700
K302_0175 MT10	17.29	1591/92	3,500	3,100	5,000	10/4	1.4	81	9.1	1,457	164	1,457	164	1,821	206
K302_0175 MT20	17.29	1591/92	3,500	3,100	5,000	10/4	2.0	81	9.2	2,610	295	3,410	385	6,201	700
K302_0175 MT30	17.29	1591/92	3,500	3,100	4,000	10/4	6.8	83	9.4	2,610	295	3,410	385	6,201	700
K302_0200 MT10	20.28	3569/176	3,800	3,500	5,000	10/4	1.0	72	8.1	1,555	176	1,555	176	1,943	219
K302_0200 MT20	20.28	3569/176	3,500	3,500	5,000	10/4	1.6	72	8.2	2,753	311	3,410	385	6,201	700
K302_0200 MT30	20.28	3569/176	3,500	3,500	4,000	10/4	6.4	73	8.3	2,753	311	3,410	385	6,201	700
K302_0230 MT10	23.29	559/24	3,800	3,500	5,000	10/4	1.1	83	9.4	1,845	208	1,845	208	2,307	260
K302_0230 MT20	23.29	559/24	3,500	3,500	5,000	10/4	1.7	83	9.4	2,883	325	3,410	385	6,201	700
K302_0230 MT30	23.29	559/24	3,500	3,500	4,000	10/4	6.5	84	9.5	2,883	325	3,410	385	6,201	700
K302_0250 MT10	25.26	3612/143	3,800	3,500	5,000	10/4	0.9	73	8.2	1,839	208	1,839	208	2,298	259
K302_0250 MT20	25.26	3612/143	3,500	3,500	5,000	10/4	1.5	73	8.3	2,962	334	3,410	385	4,328	489
K302_0250 MT30	25.26	3612/143	3,500	3,500	4,000	10/4	6.3	74	8.3	2,962	334	3,410	385	4,328	489
K302_0280 MT10	27.88	3569/128	3,800	3,500	5,000	10/4	1.0	84	9.4	2,138	241	2,138	241	2,672	302
K302_0280 MT20	27.88	3569/128	3,500	3,500	5,000	10/4	1.6	84	9.5	3,061	346	3,410	385	6,201	700
K302_0280 MT30	27.88	3569/128	3,500	3,500	4,000	10/4	6.4	85	9.5	3,061	346	3,410	385	6,201	700

Motor Shaft

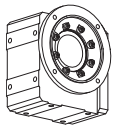
Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48
MT50	60

Housing Styles

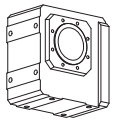
N Foot Mounted



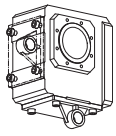
F Round Flange



G Tapped Holes



GD Torque Arm Bracket



These Housing Styles are available as Hollow (A), Bushing (W), or Solid (V) Output.

See Page 194 for required ordering information and part number example.

"K" Series–Right Angle Helical/Bevel ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
K302 with MT TriAdapt® Motor Adapter Continued														**Noise Level ≤ 53 dB(A)** [4]	
K302_0340 MT10	33.62	1849/55	3,800	3,500	5,000	10/4	0.8	74	8.3	2,217	250	2,299	260	2,874	324
K302_0340 MT20	33.62	1849/55	3,500	3,500	5,000	10/4	1.4	74	8.3	2,217	250	2,660	300	4,434	501
K302_0340 MT30	33.62	1849/55	3,500	3,500	4,000	10/4	6.2	74	8.4	2,217	250	2,660	300	4,434	501
K302_0350 MT10	34.73	903/26	3,800	3,500	5,000	10/4	0.9	84	9.5	2,528	285	2,528	285	3,160	357
K302_0350 MT20	34.73	903/26	3,500	3,500	5,000	10/4	1.5	84	9.5	3,100	350	3,410	385	5,951	672
K302_0350 MT30	34.73	903/26	3,500	3,500	4,000	10/4	6.3	85	9.6	3,100	350	3,410	385	5,951	672
K302_0410 MT10	40.51	4902/121	3,800	3,500	5,000	10/4	0.7	74	8.4	1,705	193	2,046	231	3,334	376
K302_0410 MT20	40.51	4902/121	3,500	3,500	5,000	10/4	1.3	74	8.4	1,705	193	2,046	231	3,334	376
K302_0460 MT10	46.23	1849/40	3,800	3,500	5,000	10/4	0.8	85	9.6	3,048	344	3,162	357	3,952	446
K302_0460 MT20	46.23	1849/40	3,500	3,500	5,000	10/4	1.4	85	9.6	3,048	344	3,410	385	6,097	688
K302_0460 MT30	46.23	1849/40	3,500	3,500	4,000	10/4	6.2	85	9.6	3,048	344	3,410	385	6,097	688
K302_0500 MT10	50.49	6665/132	3,800	3,500	5,000	10/4	0.7	74	8.4	1,364	154	1,637	185	2,072	234
K302_0560 MT10	55.71	2451/44	3,800	3,500	5,000	10/4	0.7	85	9.6	2,345	265	2,814	318	4,584	517
K302_0560 MT20	55.71	2451/44	3,500	3,500	5,000	10/4	1.3	85	9.6	2,345	265	2,814	318	4,584	517
K302_0690 MT10	69.43	6665/96	3,800	3,500	5,000	10/4	0.7	85	9.6	1,876	212	2,251	254	2,849	322
K303 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 53 dB(A)** [4]	
K303_0330 MT20	32.65	44892/1375	3,500	3,500	5,000	10/5	1.5	74	8.3	3,100	350	3,394	383	4,243	479
K303_0360 MT20	35.83	215/6	3,500	3,500	5,000	10/5	1.5	85	9.5	3,100	350	3,410	385	4,833	546
K303_0390 MT20	39.19	34916/891	3,500	3,500	5,000	10/5	1.4	74	8.4	3,100	350	3,410	385	4,910	554
K303_0450 MT20	44.89	11223/250	3,500	3,500	5,000	10/5	1.4	85	9.6	3,100	350	3,410	385	5,834	659
K303_0490 MT10	49.26	74777/1518	3,800	3,500	5,000	10/5	0.7	74	8.4	1,786	202	1,786	202	2,233	252
K303_0490 MT20	48.63	184556/3795	3,500	3,500	5,000	10/5	1.4	74	8.4	3,100	350	3,410	385	5,854	661
K303_0540 MT20	53.88	8729/162	3,500	3,500	5,000	10/5	1.4	85	9.6	3,100	350	3,410	385	6,201	700
K303_0550 MT10	54.58	70735/1296	3,800	3,500	5,000	10/5	0.7	85	9.6	1,979	223	1,979	223	2,474	279
K303_0650 MT20	65.50	32422/495	3,500	3,500	5,000	10/5	1.4	75	8.4	3,100	350	3,410	385	6,201	700
K303_0660 MT10	66.35	26273/396	3,800	3,500	5,000	10/5	0.7	75	8.4	2,406	272	2,406	272	3,007	340
K303_0670 MT20	66.87	46139/690	3,500	3,500	5,000	10/5	1.4	85	9.6	3,100	350	3,410	385	6,201	700
K303_0680 MT10	67.73	74777/1104	3,800	3,500	5,000	10/5	0.7	85	9.6	2,456	277	2,456	277	3,070	347
K303_0780 MT20	78.41	103501/1320	3,500	3,500	5,000	10/5	1.4	75	8.4	3,100	350	3,410	385	6,201	700
K303_0790 MT10	79.42	167743/2112	3,800	3,500	5,000	10/5	0.7	75	8.4	2,832	320	2,880	325	3,600	406
K303_0900 MT20	90.06	16211/180	3,500	3,500	5,000	10/5	1.4	85	9.6	3,100	350	3,410	385	6,201	700
K303_0910 MT10	91.23	26273/288	3,800	3,500	5,000	10/5	0.7	85	9.6	3,100	350	3,308	373	4,135	467
K303_1080 MT20	107.8	103501/960	3,500	3,500	5,000	10/5	1.4	85	9.6	3,100	350	3,410	385	6,201	700
K303_1090 MT10	109.2	167743/1536	3,800	3,500	5,000	10/5	0.7	85	9.6	3,100	350	3,410	385	4,950	559
K303_1340 MT20	134.3	8729/65	3,500	3,500	5,000	10/5	1.4	85	9.7	3,100	350	3,410	385	5,950	672
K303_1360 MT10	136.0	14147/104	3,800	3,500	5,000	10/5	0.7	85	9.7	3,100	350	3,410	385	5,950	672
K303_1790 MT20	178.7	53621/300	3,500	3,500	5,000	10/5	1.4	86	9.7	3,048	344	3,410	385	6,097	688
K303_1810 MT10	181.0	86903/480	3,800	3,500	5,000	10/5	0.7	86	9.7	3,048	344	3,410	385	6,097	688
K303_2180 MT10	218.2	38399/176	3,800	3,500	5,000	10/5	0.7	86	9.7	2,345	265	2,814	318	4,583	517
K303_2720 MT10	271.9	313255/1152	3,800	3,500	5,000	10/5	0.7	86	9.7	1,876	212	2,251	254	2,849	322

[1] Backlash shown "STANDARD/REDUCED".

[2] Maximum torque for continuous input RPM - horizontal output position.

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

[4] dB(A)Measured at 1 meter distance with 3000 RPM input

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 5, 6
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL3 and EL4
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL5, EL6
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"K" Series–Right Angle Helical/Bevel ServoFit® Modular System Selection Data

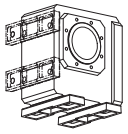
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
K402 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 51 dB(A)** [4]	
K402_0040 MT20	4.000	4/1	2,600	2,200	3,500	10/4	11.4	55	6.2	1,375	155	1,512	171	2,311	261
K402_0040 MT30	4.000	4/1	2,600	2,200	3,500	10/4	16.2	72	8.2	2,405	271	3,592	405	5,960	673
K402_0040 MT40	4.000	4/1	2,600	2,200	3,500	10/4	20.2	99	11.2	2,405	271	4,062	459	5,960	673
K402_0044 MT20	4.364	48/11	2,600	2,200	3,500	10/4	10.1	61	6.9	1,500	169	1,650	186	2,503	283
K402_0044 MT30	4.364	48/11	2,600	2,200	3,500	10/4	14.9	79	8.9	2,475	279	3,918	442	6,456	729
K402_0044 MT40	4.364	48/11	2,600	2,200	3,500	10/4	18.9	105	11.8	2,475	279	4,182	472	6,456	729
K402_0054 MT20	5.422	1849/341	2,600	2,200	3,500	10/4	7.5	77	8.7	1,863	210	2,050	231	3,021	341
K402_0054 MT30	5.422	1849/341	2,600	2,200	3,500	10/4	12.3	95	10.7	2,661	300	4,496	508	7,791	880
K402_0054 MT40	5.422	1849/341	2,600	2,200	3,500	10/4	16.3	117	13.2	2,661	300	4,496	508	7,791	880
K402_0060 MT20	6.000	6/1	2,600	2,200	3,500	10/4	8.4	92	10.4	2,062	233	2,268	256	3,442	389
K402_0060 MT30	6.000	6/1	2,600	2,200	3,500	10/4	13.2	113	12.8	2,752	311	4,650	525	8,877	1,002
K402_0060 MT40	6.000	6/1	2,600	2,200	3,500	10/4	17.2	139	15.7	2,752	311	4,650	525	8,877	1,002
K402_0067 MT20	6.719	215/32	3,000	2,600	4,000	10/4	5.6	93	10.5	2,309	261	2,540	287	3,605	407
K402_0067 MT30	6.719	215/32	3,000	2,600	4,000	10/4	10.4	108	12.2	2,858	323	4,829	545	9,298	1,050
K402_0067 MT40	6.719	215/32	3,000	2,600	3,500	10/4	14.4	127	14.3	2,858	323	4,829	545	9,298	1,050
K402_0075 MT20	7.456	1849/248	2,600	2,200	3,500	10/4	6.4	111	12.5	2,563	289	2,819	318	4,154	469
K402_0075 MT30	7.456	1849/248	2,600	2,200	3,500	10/4	11.2	129	14.6	2,959	334	4,999	564	9,744	1,100
K402_0075 MT40	7.456	1849/248	2,600	2,200	3,500	10/4	15.2	150	17.0	2,959	334	4,999	564	9,744	1,100
K402_0084 MT20	8.377	645/77	3,000	2,600	4,000	10/4	4.3	107	12.1	2,879	325	3,167	358	4,347	491
K402_0084 MT30	8.377	645/77	3,000	2,600	4,000	10/4	9.1	120	13.6	3,076	347	5,197	587	9,744	1,100
K402_0084 MT40	8.377	645/77	3,000	2,600	3,500	10/4	13.1	134	15.1	3,076	347	5,197	587	9,744	1,100
K402_0092 MT20	9.238	2365/256	3,000	2,600	4,000	10/4	4.9	128	14.4	3,175	358	3,493	394	4,956	560
K402_0092 MT30	9.238	2365/256	3,000	2,600	4,000	10/4	9.7	143	16.1	3,178	359	5,315	600	9,744	1,100
K402_0092 MT40	9.238	2365/256	3,000	2,600	3,500	10/4	13.7	159	17.9	3,178	359	5,315	600	9,744	1,100
K402_0100 MT20	10.10	1333/132	3,400	3,000	4,500	10/4	3.5	118	13.3	3,274	370	3,818	431	5,042	569
K402_0100 MT30	10.10	1333/132	3,400	3,000	4,000	10/4	8.3	128	14.5	3,274	370	5,315	600	9,744	1,100
K402_0100 MT40	10.10	1333/132	3,000	3,000	3,500	10/4	12.3	138	15.6	3,274	370	5,315	600	9,744	1,100
K402_0115 MT20	11.52	645/56	3,000	2,600	4,000	10/4	3.9	141	16.0	3,421	386	4,354	492	5,977	675
K402_0115 MT30	11.52	645/56	3,000	2,600	4,000	10/4	8.7	153	17.3	3,421	386	5,315	600	9,744	1,100
K402_0115 MT40	11.52	645/56	3,000	2,600	3,500	10/4	12.7	164	18.6	3,421	386	5,315	600	9,744	1,100
K402_0125 MT20	12.66	2924/231	3,400	3,000	4,500	10/4	2.8	127	14.4	3,530	399	4,785	540	6,113	690
K402_0125 MT30	12.66	2924/231	3,400	3,000	4,000	10/4	7.6	135	15.2	3,530	399	5,315	600	9,744	1,100
K402_0125 MT40	12.66	2924/231	3,000	3,000	3,500	10/4	11.6	142	16.1	3,530	399	5,315	600	9,744	1,100
K402_0140 MT20	13.89	1333/96	3,400	3,000	4,500	10/4	3.2	151	17.0	3,641	411	5,249	593	6,933	783
K402_0140 MT30	13.89	1333/96	3,400	3,000	4,000	10/4	8.0	160	18.0	3,641	411	5,315	600	9,744	1,100
K402_0140 MT40	13.89	1333/96	3,000	3,000	3,500	10/4	12.0	168	19.0	3,641	411	5,315	600	9,744	1,100
K402_0170 MT20	16.94	559/33	3,500	3,300	5,000	10/4	2.2	136	15.4	3,827	432	5,315	600	7,682	867
K402_0170 MT30	16.94	559/33	3,500	3,300	4,000	10/4	7.0	141	15.9	3,890	439	5,315	600	9,744	1,100
K402_0170 MT40	16.94	559/33	3,000	3,000	3,500	10/4	11.0	145	16.4	3,890	439	5,315	600	9,744	1,100
K402_0175 MT20	17.41	731/42	3,400	3,000	4,500	10/4	2.6	159	18.0	3,926	443	5,315	600	8,405	949
K402_0175 MT30	17.41	731/42	3,400	3,000	4,000	10/4	7.4	165	18.7	3,926	443	5,315	600	9,744	1,100
K402_0175 MT40	17.41	731/42	3,000	3,000	3,500	10/4	11.4	171	19.3	3,926	443	5,315	600	9,744	1,100

Motor Shaft

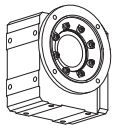
Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48
MT50	60

Housing Styles

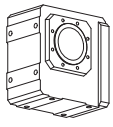
N Foot Mounted



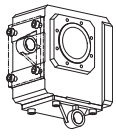
F Round Flange



G Tapped Holes



GD Torque Arm Bracket



These Housing Styles are available as Hollow (A), Bushing (W), or Solid (V) Output.

See Page 194 for required ordering information and part number example.

"K" Series–Right Angle Helical/Bevel ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
K402 with MT TriAdapt® Motor Adapter Continued														**Noise Level ≤ 51 dB(A)** [4]	
K402_0200 MT20	20.20	1333/66	3,500	3,300	5,000	10/4	1.9	140	15.8	3,964	447	5,315	600	8,842	998
K402_0200 MT30	20.20	1333/66	3,500	3,300	4,000	10/4	6.7	143	16.2	4,125	466	5,315	600	8,842	998
K402_0200 MT40	20.20	1333/66	3,000	3,000	3,500	10/4	10.7	147	16.5	4,125	466	5,315	600	8,842	998
K402_0230 MT20	23.29	559/24	3,500	3,300	5,000	10/4	2.1	166	18.8	4,326	488	5,315	600	9,744	1,100
K402_0230 MT30	23.29	559/24	3,500	3,300	4,000	10/4	6.9	170	19.2	4,326	488	5,315	600	9,744	1,100
K402_0230 MT40	23.29	559/24	3,000	3,000	3,500	10/4	10.9	173	19.6	4,326	488	5,315	600	9,744	1,100
K402_0250 MT20	25.28	4171/165	3,500	3,300	5,000	10/4	1.7	143	16.2	4,079	460	5,315	600	8,868	1,001
K402_0250 MT30	25.28	4171/165	3,500	3,300	4,000	10/4	6.5	146	16.4	4,434	501	5,315	600	8,868	1,001
K402_0250 MT40	25.28	4171/165	3,000	3,000	3,500	10/4	10.5	148	16.7	4,434	501	5,315	600	8,868	1,001
K402_0280 MT20	27.77	1333/48	3,500	3,300	5,000	10/4	1.9	169	19.1	4,587	518	5,315	600	9,744	1,100
K402_0280 MT30	27.77	1333/48	3,500	3,300	4,000	10/4	6.7	172	19.4	4,587	518	5,315	600	9,744	1,100
K402_0280 MT40	27.77	1333/48	3,000	3,000	3,500	10/4	10.7	174	19.7	4,587	518	5,315	600	9,744	1,100
K402_0340 MT20	33.68	4816/143	3,500	3,300	5,000	10/4	1.5	146	16.5	3,445	389	4,134	467	5,620	634
K402_0340 MT30	33.68	4816/143	3,500	3,300	4,000	10/4	6.3	147	16.6	3,445	389	4,134	467	5,620	634
K402_0350 MT20	34.76	4171/120	3,500	3,300	5,000	10/4	1.7	172	19.4	4,872	550	5,315	600	9,744	1,100
K402_0350 MT30	34.76	4171/120	3,500	3,300	4,000	10/4	6.5	173	19.6	4,872	550	5,315	600	9,744	1,100
K402_0350 MT40	34.76	4171/120	3,000	3,000	3,500	10/4	10.5	175	19.7	4,872	550	5,315	600	9,744	1,100
K402_0410 MT20	40.51	4902/121	3,500	3,300	5,000	10/4	1.4	147	16.6	2,729	308	3,274	370	5,457	616
K402_0410 MT30	40.51	4902/121	3,500	3,300	4,000	10/4	6.2	148	16.7	2,729	308	3,274	370	5,457	616
K402_0460 MT20	46.31	602/13	3,500	3,300	5,000	10/4	1.5	174	19.6	4,737	535	5,315	600	7,728	872
K402_0460 MT30	46.31	602/13	3,500	3,300	4,000	10/4	6.3	175	19.7	4,737	535	5,315	600	7,728	872
K402_0500 MT20	50.43	5547/110	3,500	3,300	5,000	10/4	1.4	148	16.7	2,387	270	2,865	323	4,064	459
K402_0560 MT20	55.71	2451/44	3,500	3,300	5,000	10/4	1.4	174	19.7	3,752	424	4,502	508	7,504	847
K402_0560 MT30	55.71	2451/44	3,500	3,300	4,000	10/4	6.2	175	19.8	3,752	424	4,502	508	7,504	847
K402_0690 MT20	69.34	5547/80	3,500	3,300	5,000	10/4	1.3	175	19.8	3,283	371	3,939	445	5,588	631
K403 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 51 dB(A)** [4]	
K403_0320 MT20	32.39	2494/77	3,500	3,300	5,000	10/5	1.6	146	16.4	3,477	393	3,477	393	4,346	491
K403_0360 MT20	35.72	13717/384	3,500	3,300	5,000	10/5	1.6	172	19.4	3,965	448	3,965	448	4,956	560
K403_0390 MT20	39.05	38657/990	3,500	3,300	5,000	10/5	1.5	147	16.6	4,033	455	4,033	455	5,042	569
K403_0450 MT20	44.54	1247/28	3,500	3,300	5,000	10/5	1.5	173	19.6	4,781	540	4,781	540	5,976	675
K403_0490 MT20	48.94	169592/3465	3,500	3,300	5,000	10/5	1.5	148	16.7	4,872	550	4,890	552	6,112	690
K403_0540 MT20	53.69	38657/720	3,500	3,300	5,000	10/5	1.5	174	19.7	4,872	550	5,315	600	6,932	783
K403_0650 MT20	65.50	32422/495	3,500	3,300	5,000	10/5	1.4	148	16.8	4,872	550	5,315	600	7,681	867
K403_0660 MT10	66.35	26273/396	3,600	3,300	5,000	10/5	0.7	148	16.8	2,406	272	2,406	272	3,007	340
K403_0670 MT20	67.30	21199/315	3,500	3,300	5,000	10/5	1.4	175	19.8	4,872	550	5,315	600	8,404	949
K403_0680 MT10	68.17	34357/504	3,600	3,300	5,000	10/5	0.7	175	19.7	2,472	279	2,472	279	3,090	349
K403_0780 MT20	78.10	38657/495	3,500	3,300	5,000	10/5	1.4	149	16.8	4,872	550	5,315	600	8,842	998
K403_0790 MT10	79.11	62651/792	3,600	3,300	5,000	10/5	0.7	149	16.8	2,869	324	2,869	324	3,586	405
K403_0900 MT20	90.06	16211/180	3,500	3,300	5,000	10/5	1.4	176	19.8	4,872	550	5,315	600	9,744	1,100
K403_0910 MT10	91.23	26273/288	3,600	3,300	5,000	10/5	0.7	176	19.8	3,308	373	3,308	373	4,135	467
K403_1070 MT20	107.4	38657/360	3,500	3,300	5,000	10/5	1.4	176	19.8	4,872	550	5,315	600	9,744	1,100

[1] Backlash shown "STANDARD/REDUCED".

[2] Maximum torque for continuous input RPM - horizontal output position.

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

[4] dB(A)Measured at 1 meter distance with 3000 RPM input

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 5, 6
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL3 and EL4
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL5, EL6
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"K" Series–Right Angle Helical/Bevel ServoFit® Modular System Selection Data

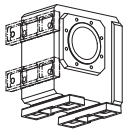
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
K403 with MT TriAdapt® Motor Adapter Continued														**Noise Level ≤ 51 dB(A)** [4]	
K403_1090 MT10	108.8	62651/576	3,600	3,300	5,000	10/5	0.7	176	19.8	3,944	445	3,944	445	4,930	557
K403_1340 MT20	134.4	120959/900	3,500	3,300	5,000	10/5	1.4	176	19.9	4,872	550	5,315	600	9,744	1,100
K403_1360 MT10	136.1	196037/1440	3,600	3,300	5,000	10/5	0.7	176	19.9	4,581	517	4,937	557	6,171	697
K403_1790 MT20	179.1	34916/195	3,500	3,300	5,000	10/5	1.4	176	19.9	4,737	535	5,315	600	7,727	872
K403_1810 MT10	181.4	14147/78	3,600	3,300	5,000	10/5	0.7	176	19.9	4,737	535	5,315	600	7,727	872
K403_2150 MT20	215.4	23693/110	3,500	3,300	5,000	10/5	1.4	176	19.9	3,752	424	4,502	508	7,504	847
K403_2180 MT10	218.2	38399/176	3,600	3,300	5,000	10/5	0.7	176	19.9	3,752	424	4,502	508	7,504	847
K403_2720 MT10	271.6	86903/320	3,600	3,300	5,000	10/5	0.7	176	19.9	3,283	371	3,939	445	5,587	631
K513 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 61 dB(A)** [4]	
K513_0073 MT30	7.347	551/75	1,900	1,800	3,000	10/5	23.1	172	19.4	5,461	617	6,502	734	11,147	1,258
K513_0073 MT40	7.347	551/75	1,900	1,800	3,000	10/5	27.1	213	24.0	5,461	617	8,858	1,000	11,147	1,258
K513_0081 MT30	8.134	17081/2100	1,900	1,800	3,000	10/5	21.2	185	20.8	5,649	638	7,198	813	12,341	1,393
K513_0081 MT40	8.134	17081/2100	1,900	1,800	3,000	10/5	25.2	222	25.0	5,649	638	8,858	1,000	12,341	1,393
K513_0092 MT30	9.168	1421/155	1,900	1,800	3,000	10/5	18.2	198	22.3	5,879	664	8,113	916	13,494	1,523
K513_0092 MT40	9.168	1421/155	1,900	1,800	3,000	10/5	22.2	230	26.0	5,879	664	8,858	1,000	13,494	1,523
K513_0100 MT30	10.15	203/20	1,900	1,800	3,000	10/5	17.0	208	23.5	6,082	687	8,858	1,000	14,939	1,686
K513_0100 MT40	10.15	203/20	1,900	1,800	3,000	10/5	21.0	237	26.7	6,082	687	8,858	1,000	14,939	1,686
K513_0115 MT30	11.57	10759/930	2,300	2,200	3,600	10/5	14.5	220	24.8	6,353	717	8,858	1,000	15,944	1,800
K513_0115 MT40	11.57	10759/930	2,300	2,200	3,500	10/5	18.5	244	27.5	6,353	717	8,858	1,000	15,944	1,800
K513_0130 MT30	12.81	1537/120	2,300	2,200	3,600	10/5	13.7	228	25.7	6,573	742	8,858	1,000	15,944	1,800
K513_0130 MT40	12.81	1537/120	2,300	2,200	3,500	10/5	17.7	248	28.0	6,573	742	8,858	1,000	15,944	1,800
K513_0145 MT20	14.54	5887/405	2,300	2,200	3,600	10/5	7.2	219	24.7	4,924	556	5,416	611	7,682	867
K513_0145 MT30	14.54	5887/405	2,300	2,200	3,600	10/5	12.0	236	26.6	6,856	774	8,858	1,000	15,944	1,800
K513_0145 MT40	14.54	5887/405	2,300	2,200	3,500	10/5	16.0	253	28.6	6,856	774	8,858	1,000	15,944	1,800
K513_0160 MT20	16.09	26071/1620	2,300	2,200	3,600	10/5	6.7	227	25.6	5,451	615	5,996	677	8,505	960
K513_0160 MT30	16.09	26071/1620	2,300	2,200	3,600	10/5	11.5	242	27.3	7,092	801	8,858	1,000	15,944	1,800
K513_0160 MT40	16.09	26071/1620	2,300	2,200	3,500	10/5	15.5	256	28.9	7,092	801	8,858	1,000	15,944	1,800
K513_0175 MT20	17.48	6293/360	2,800	2,500	4,000	10/5	5.8	232	26.2	5,921	668	6,513	735	8,970	1,013
K513_0175 MT30	17.48	6293/360	2,800	2,500	4,000	10/5	10.6	246	27.7	7,291	823	8,858	1,000	15,944	1,800
K513_0175 MT40	17.48	6293/360	2,800	2,500	3,500	10/5	14.6	258	29.1	7,291	823	8,858	1,000	15,944	1,800
K513_0195 MT20	19.35	27869/1440	2,800	2,500	4,000	10/5	5.4	239	26.9	6,555	740	7,211	814	9,931	1,121
K513_0195 MT30	19.35	27869/1440	2,800	2,500	4,000	10/5	10.2	250	28.2	7,542	851	8,858	1,000	15,944	1,800
K513_0195 MT40	19.35	27869/1440	2,800	2,500	3,500	10/5	14.2	260	29.4	7,542	851	8,858	1,000	15,944	1,800
K513_0220 MT20	21.99	2639/120	2,800	2,500	4,000	10/5	4.4	245	27.7	7,089	800	8,194	925	10,782	1,217
K513_0220 MT30	21.99	2639/120	2,800	2,500	4,000	10/5	9.2	254	28.7	7,870	888	8,858	1,000	15,944	1,800
K513_0220 MT40	21.99	2639/120	2,800	2,500	3,500	10/5	13.2	263	29.6	7,870	888	8,858	1,000	15,944	1,800
K513_0240 MT20	24.35	11687/480	2,800	2,500	4,000	10/5	4.2	249	28.2	7,849	886	8,858	1,000	11,937	1,348
K513_0240 MT30	24.35	11687/480	2,800	2,500	4,000	10/5	9.0	257	29.0	7,972	900	8,858	1,000	15,944	1,800
K513_0240 MT40	24.35	11687/480	2,800	2,500	3,500	10/5	13.0	264	29.8	7,972	900	8,858	1,000	15,944	1,800
K513_0290 MT20	29.18	4669/160	3,400	3,000	4,500	10/5	3.3	256	28.8	7,525	850	8,858	1,000	13,530	1,527
K513_0290 MT30	29.18	4669/160	3,400	3,000	4,000	10/5	8.1	261	29.5	7,972	900	8,858	1,000	15,944	1,800
K513_0290 MT40	29.18	4669/160	3,000	3,000	3,500	10/5	12.1	266	30.0	7,972	900	8,858	1,000	15,944	1,800

Motor Shaft

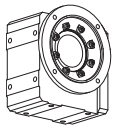
Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48
MT50	60

Housing Styles

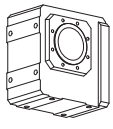
N Foot Mounted



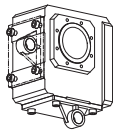
F Round Flange



G Tapped Holes



GD Torque Arm Bracket



These Housing Styles are available as Hollow (A), Bushing (W), or Solid (V) Output.

See Page 194 for required ordering information and part number example.

"K" Series–Right Angle Helical/Bevel ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
K513 with MT TriAdapt® Motor Adapter Continued														**Noise Level ≤ 61 dB(A)** [4]	
K513_0320 MT20	32.31	20677/640	3,400	3,000	4,500	10/5	3.2	258	29.1	7,972	900	8,858	1,000	14,980	1,691
K513_0320 MT30	32.31	20677/640	3,400	3,000	4,000	10/5	8.0	263	29.7	7,972	900	8,858	1,000	15,944	1,800
K513_0320 MT40	32.31	20677/640	3,000	3,000	3,500	10/5	12.0	267	30.1	7,972	900	8,858	1,000	15,944	1,800
K513_0350 MT20	34.80	174/5	3,400	3,000	4,500	10/5	2.8	260	29.3	7,852	886	8,858	1,000	15,606	1,762
K513_0350 MT30	34.80	174/5	3,400	3,000	4,000	10/5	7.6	264	29.8	7,972	900	8,858	1,000	15,606	1,762
K513_0350 MT40	34.80	174/5	3,000	3,000	3,500	10/5	11.6	267	30.2	7,972	900	8,858	1,000	15,606	1,762
K513_0390 MT20	38.53	2697/70	3,400	3,000	4,500	10/5	2.7	262	29.5	7,972	900	8,858	1,000	15,944	1,800
K513_0390 MT30	38.53	2697/70	3,400	3,000	4,000	10/5	7.5	265	29.9	7,972	900	8,858	1,000	15,944	1,800
K513_0390 MT40	38.53	2697/70	3,000	3,000	3,500	10/5	11.5	268	30.2	7,972	900	8,858	1,000	15,944	1,800
K513_0440 MT20	43.50	87/2	3,400	3,000	4,500	10/5	2.3	264	29.8	7,972	900	8,858	1,000	15,944	1,800
K513_0440 MT30	43.50	87/2	3,400	3,000	4,000	10/5	7.1	266	30.1	7,972	900	8,858	1,000	15,944	1,800
K513_0440 MT40	43.50	87/2	3,000	3,000	3,500	10/5	11.1	268	30.3	7,972	900	8,858	1,000	15,944	1,800
K513_0480 MT20	48.16	2697/56	3,400	3,000	4,500	10/5	2.2	265	29.9	7,972	900	8,858	1,000	15,944	1,800
K513_0480 MT30	48.16	2697/56	3,400	3,000	4,000	10/5	7.0	267	30.1	7,972	900	8,858	1,000	15,944	1,800
K513_0480 MT40	48.16	2697/56	3,000	3,000	3,500	10/5	11.0	269	30.3	7,972	900	8,858	1,000	15,944	1,800
K513_0580 MT20	58.30	11368/195	3,400	3,000	4,500	10/5	1.9	267	30.1	7,972	900	8,858	1,000	15,944	1,800
K513_0580 MT30	58.30	11368/195	3,400	3,000	4,000	10/5	6.7	268	30.3	7,972	900	8,858	1,000	15,944	1,800
K513_0580 MT40	58.30	11368/195	3,000	3,000	3,500	10/5	10.7	269	30.4	7,972	900	8,858	1,000	15,944	1,800
K513_0650 MT20	64.54	12586/195	3,400	3,000	4,500	10/5	1.8	267	30.2	7,972	900	8,858	1,000	15,944	1,800
K513_0650 MT30	64.54	12586/195	3,400	3,000	4,000	10/5	6.6	269	30.3	7,972	900	8,858	1,000	15,944	1,800
K513_0650 MT40	64.54	12586/195	3,000	3,000	3,500	10/5	10.6	270	30.4	7,972	900	8,858	1,000	15,944	1,800
K513_0700 MT20	70.08	841/12	3,400	3,000	4,500	10/5	1.7	268	30.2	7,268	821	8,722	985	11,440	1,291
K513_0700 MT30	70.08	841/12	3,400	3,000	4,000	10/5	6.5	269	30.3	7,268	821	8,722	985	11,440	1,291
K513_0780 MT20	77.59	26071/336	3,400	3,000	4,500	10/5	1.7	268	30.3	7,972	900	8,858	1,000	12,666	1,430
K513_0780 MT30	77.59	26071/336	3,400	3,000	4,000	10/5	6.5	269	30.4	7,972	900	8,858	1,000	12,666	1,430
K513_0870 MT20	87.29	8729/100	3,400	3,000	4,500	10/5	1.5	269	30.3	6,105	689	7,326	827	12,211	1,378
K513_0870 MT30	87.29	8729/100	3,400	3,000	4,000	10/5	6.3	269	30.4	6,105	689	7,326	827	12,211	1,378
K513_0970 MT20	96.64	38657/400	3,400	3,000	4,500	10/5	1.5	269	30.4	6,761	763	8,113	916	13,522	1,527
K513_0970 MT30	96.64	38657/400	3,400	3,000	4,000	10/5	6.3	270	30.4	6,761	763	8,113	916	13,522	1,527
K514 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 61 dB(A)** [4]	
K514_0850 MT20	85.03	76531/900	3,400	3,000	4,500	10/6	1.6	269	30.3	7,972	900	8,625	974	10,781	1,217
K514_0940 MT20	94.15	338923/3600	3,400	3,000	4,500	10/6	1.6	269	30.4	7,972	900	8,858	1,000	11,936	1,347
K514_1130 MT20	112.8	135401/1200	3,400	3,000	4,500	10/6	1.5	269	30.4	7,972	900	8,858	1,000	13,529	1,527
K514_1250 MT20	124.9	599633/4800	3,400	3,000	4,500	10/6	1.5	270	30.4	7,972	900	8,858	1,000	14,979	1,691
K514_1350 MT20	134.6	3364/25	3,400	3,000	4,500	10/6	1.5	270	30.5	7,972	900	8,858	1,000	15,604	1,762
K514_1490 MT20	149.0	26071/175	3,400	3,000	4,500	10/6	1.5	270	30.5	7,972	900	8,858	1,000	15,944	1,800
K514_1680 MT20	168.2	841/5	3,400	3,000	4,500	10/6	1.4	270	30.5	7,972	900	8,858	1,000	15,944	1,800
K514_1860 MT20	186.2	26071/140	3,400	3,000	4,500	10/6	1.4	270	30.5	7,972	900	8,858	1,000	15,944	1,800
K514_2250 MT20	225.4	659344/2925	3,400	3,000	4,500	10/6	1.4	270	30.5	7,972	900	8,858	1,000	15,944	1,800
K514_2500 MT20	249.6	729988/2925	3,400	3,000	4,500	10/6	1.4	270	30.5	7,972	900	8,858	1,000	15,944	1,800
K514_2710 MT20	271.0	24389/90	3,400	3,000	4,500	10/6	1.4	270	30.5	7,268	821	8,722	985	11,439	1,291

[1] Backlash shown "STANDARD/REDUCED".

[2] Maximum torque for continuous input RPM - horizontal output position.

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

[4] dB(A)Measured at 1 meter distance with 3000 RPM input

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 5, 6
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL3 and EL4
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL5, EL6
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"K" Series–Right Angle Helical/Bevel ServoFit® Modular System Selection Data

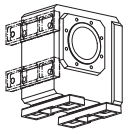
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
K514 with MT TriAdapt® Motor Adapter Continued														**Noise Level ≤ 61 dB(A)** [4]	
K514_3000 MT20	300.0	756059/2520	3,400	3,000	4,500	10/6	1.4	270	30.5	7,972	900	8,858	1,000	12,665	1,430
K514_3380 MT20	337.5	253141/750	3,400	3,000	4,500	10/6	1.4	270	30.5	6,105	689	7,326	827	12,211	1,378
K514_3740 MT20	373.7	1121053/3000	3,400	3,000	4,500	10/6	1.4	270	30.5	6,761	763	8,113	916	13,522	1,527
K613 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 61 dB(A)** [4]	
K613_0073 MT30	7.323	19215/2624	1,800	1,700	2,900	10/5	37.9	216	24.4	5,891	665	6,480	732	11,477	1,296
K613_0073 MT40	7.323	19215/2624	1,800	1,700	2,900	10/5	41.9	285	32.2	7,208	814	9,182	1,037	11,477	1,296
K613_0073 MT50	7.323	19215/2624	1,800	1,700	2,900	10/5	51.9	354	39.9	7,208	814	12,178	1,375	21,932	2,476
K613_0081 MT30	8.107	85095/10496	1,800	1,700	2,900	10/5	34.8	236	26.6	6,522	736	7,174	810	12,706	1,434
K613_0081 MT40	8.107	85095/10496	1,800	1,700	2,900	10/5	38.8	301	33.9	7,457	842	10,165	1,148	12,706	1,434
K613_0081 MT50	8.107	85095/10496	1,800	1,700	2,900	10/5	48.8	361	40.8	7,457	842	12,597	1,422	24,280	2,741
K613_0091 MT30	9.081	20923/2304	1,800	1,700	2,900	10/5	28.8	257	29.0	7,306	825	8,036	907	13,823	1,561
K613_0091 MT40	9.081	20923/2304	1,800	1,700	2,900	10/5	32.8	317	35.7	7,744	874	11,059	1,248	13,823	1,561
K613_0091 MT50	9.081	20923/2304	1,800	1,700	2,900	10/5	42.8	369	41.6	7,744	874	13,083	1,477	25,688	2,900
K613_0100 MT30	10.05	92659/9216	1,800	1,700	2,900	10/5	26.8	275	31.1	8,012	904	8,897	1,004	15,305	1,728
K613_0100 MT40	10.05	92659/9216	1,800	1,700	2,900	10/5	30.8	329	37.2	8,012	904	12,244	1,382	15,305	1,728
K613_0100 MT50	10.05	92659/9216	1,800	1,700	2,900	10/5	40.8	374	42.2	8,012	904	13,534	1,528	25,688	2,900
K613_0115 MT30	11.41	22631/1984	2,200	2,000	3,200	10/5	22.1	296	33.4	8,356	943	10,094	1,140	16,789	1,895
K613_0115 MT40	11.41	22631/1984	2,200	2,000	3,200	10/5	26.1	343	38.7	8,356	943	13,431	1,516	16,789	1,895
K613_0115 MT50	11.41	22631/1984	2,200	2,000	3,000	10/5	36.1	379	42.8	8,356	943	13,431	1,516	16,789	1,895
K613_0125 MT30	12.63	3233/256	2,200	2,000	3,200	10/5	20.9	311	35.1	8,644	976	11,176	1,262	18,588	2,098
K613_0125 MT40	12.63	3233/256	2,200	2,000	3,200	10/5	24.9	352	39.7	8,644	976	14,173	1,600	18,588	2,098
K613_0125 MT50	12.63	3233/256	2,200	2,000	3,000	10/5	34.9	383	43.2	8,644	976	14,173	1,600	18,588	2,098
K613_0145 MT30	14.33	12383/864	2,200	2,000	3,200	10/5	17.4	327	36.9	9,017	1,018	12,683	1,432	20,378	2,301
K613_0145 MT40	14.33	12383/864	2,200	2,000	3,200	10/5	21.4	361	40.8	9,017	1,018	14,173	1,600	20,378	2,301
K613_0145 MT50	14.33	12383/864	2,200	2,000	3,000	10/5	31.4	386	43.6	9,017	1,018	14,173	1,600	20,378	2,301
K613_0160 MT30	15.87	54839/3456	2,200	2,000	3,200	10/5	16.6	338	38.2	9,328	1,053	14,042	1,585	22,562	2,547
K613_0160 MT40	15.87	54839/3456	2,200	2,000	3,200	10/5	20.6	368	41.5	9,328	1,053	14,173	1,600	22,562	2,547
K613_0160 MT50	15.87	54839/3456	2,200	2,000	3,000	10/5	30.6	389	43.9	9,328	1,053	14,173	1,600	22,562	2,547
K613_0170 MT20	17.16	549/32	2,600	2,300	3,600	10/5	9.7	319	36.0	5,811	656	6,392	722	9,119	1,029
K613_0170 MT30	17.16	549/32	2,600	2,300	3,600	10/5	14.5	346	39.0	9,574	1,081	14,173	1,600	23,519	2,655
K613_0170 MT40	17.16	549/32	2,600	2,300	3,500	10/5	18.5	372	42.0	9,574	1,081	14,173	1,600	23,519	2,655
K613_0170 MT50	17.16	549/32	2,500	2,300	3,000	10/5	28.5	390	44.1	9,574	1,081	14,173	1,600	23,519	2,655
K613_0190 MT20	18.99	17019/896	2,600	2,300	3,600	10/5	9.2	331	37.4	6,434	726	7,077	799	10,095	1,140
K613_0190 MT30	18.99	17019/896	2,600	2,300	3,600	10/5	14.0	355	40.0	9,904	1,118	14,173	1,600	25,688	2,900
K613_0190 MT40	18.99	17019/896	2,600	2,300	3,500	10/5	18.0	377	42.5	9,904	1,118	14,173	1,600	25,688	2,900
K613_0190 MT50	18.99	17019/896	2,500	2,300	3,000	10/5	28.0	392	44.2	9,904	1,118	14,173	1,600	25,688	2,900
K613_0220 MT20	21.68	5551/256	2,600	2,300	3,600	10/5	7.3	345	39.0	7,345	829	8,080	912	11,090	1,252
K613_0220 MT30	21.68	5551/256	2,600	2,300	3,600	10/5	12.1	364	41.1	10,351	1,169	14,173	1,600	25,688	2,900
K613_0220 MT40	21.68	5551/256	2,600	2,300	3,500	10/5	16.1	382	43.1	10,351	1,169	14,173	1,600	25,688	2,900
K613_0220 MT50	21.68	5551/256	2,500	2,300	3,000	10/5	26.1	394	44.4	10,351	1,169	14,173	1,600	25,688	2,900

Motor Shaft

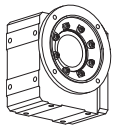
Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48
MT50	60

Housing Styles

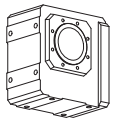
N Foot Mounted



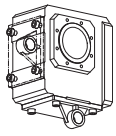
F Round Flange



G Tapped Holes



GD Torque Arm Bracket



These Housing Styles are available as Hollow (A), Bushing (W), or Solid (V) Output.

See Page 194 for required ordering information and part number example.

"K" Series–Right Angle Helical/Bevel ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
K613 with MT TriAdapt® Motor Adapter Continued														**Noise Level ≤ 61 dB(A)** [4]	
K613_0240 MT20	24.01	24583/1024	2,600	2,300	3,600	10/5	6.9	354	40.0	8,132	918	8,945	1,010	12,278	1,386
K613_0240 MT30	24.01	24583/1024	2,600	2,300	3,600	10/5	11.7	370	41.8	10,708	1,209	14,173	1,600	25,688	2,900
K613_0240 MT40	24.01	24583/1024	2,600	2,300	3,500	10/5	15.7	385	43.5	10,708	1,209	14,173	1,600	25,688	2,900
K613_0240 MT50	24.01	24583/1024	2,500	2,300	3,000	10/5	25.7	395	44.6	10,708	1,209	14,173	1,600	25,688	2,900
K613_0290 MT20	28.77	29463/1024	3,100	2,800	4,000	10/5	5.1	367	41.4	8,786	992	10,721	1,210	13,916	1,571
K613_0290 MT30	28.77	29463/1024	3,100	2,800	4,000	10/5	9.9	379	42.7	11,374	1,284	14,173	1,600	25,688	2,900
K613_0290 MT40	28.77	29463/1024	3,000	2,800	3,500	10/5	13.9	389	43.9	11,374	1,284	14,173	1,600	25,688	2,900
K613_0290 MT50	28.77	29463/1024	2,500	2,500	3,000	10/5	23.9	396	44.7	11,374	1,284	14,173	1,600	25,688	2,900
K613_0320 MT20	31.86	130479/4096	3,100	2,800	4,000	10/5	4.9	372	42.0	9,727	1,098	11,869	1,340	15,407	1,739
K613_0320 MT30	31.86	130479/4096	3,100	2,800	4,000	10/5	9.7	382	43.2	11,767	1,328	14,173	1,600	25,688	2,900
K613_0320 MT40	31.86	130479/4096	3,000	2,800	3,500	10/5	13.7	391	44.2	11,767	1,328	14,173	1,600	25,688	2,900
K613_0320 MT50	31.86	130479/4096	2,500	2,500	3,000	10/5	23.7	397	44.8	11,767	1,328	14,173	1,600	25,688	2,900
K613_0350 MT20	34.61	35441/1024	3,100	2,800	4,000	10/5	4.1	376	42.5	8,925	1,008	12,838	1,449	16,048	1,812
K613_0350 MT30	34.61	35441/1024	3,100	2,800	4,000	10/5	8.9	385	43.4	12,097	1,366	14,173	1,600	25,688	2,900
K613_0350 MT40	34.61	35441/1024	3,000	2,800	3,500	10/5	12.9	392	44.3	12,097	1,366	14,173	1,600	25,688	2,900
K613_0350 MT50	34.61	35441/1024	2,500	2,500	3,000	10/5	22.9	397	44.8	12,097	1,366	14,173	1,600	25,688	2,900
K613_0380 MT20	38.32	156953/4096	3,100	2,800	4,000	10/5	3.9	380	42.9	9,882	1,116	14,173	1,600	17,767	2,006
K613_0380 MT30	38.32	156953/4096	3,100	2,800	4,000	10/5	8.7	387	43.7	12,514	1,413	14,173	1,600	25,688	2,900
K613_0380 MT40	38.32	156953/4096	3,000	2,800	3,500	10/5	12.7	394	44.4	12,514	1,413	14,173	1,600	25,688	2,900
K613_0380 MT50	38.32	156953/4096	2,500	2,500	3,000	10/5	22.7	398	44.9	12,514	1,413	14,173	1,600	25,688	2,900
K613_0430 MT20	43.11	8967/208	3,100	2,800	4,000	10/5	3.2	384	43.4	9,168	1,035	14,173	1,600	19,048	2,150
K613_0430 MT30	43.11	8967/208	3,100	2,800	4,000	10/5	8.0	390	44.0	12,844	1,450	14,173	1,600	19,048	2,150
K613_0430 MT40	43.11	8967/208	3,000	2,800	3,500	10/5	12.0	395	44.6	12,844	1,450	14,173	1,600	19,048	2,150
K613_0480 MT20	47.73	39711/832	3,100	2,800	4,000	10/5	3.1	387	43.7	10,150	1,146	14,173	1,600	21,089	2,381
K613_0480 MT30	47.73	39711/832	3,100	2,800	4,000	10/5	7.9	392	44.2	12,844	1,450	14,173	1,600	21,089	2,381
K613_0480 MT40	47.73	39711/832	3,000	2,800	3,500	10/5	11.9	396	44.7	12,844	1,450	14,173	1,600	21,089	2,381
K613_0580 MT20	57.55	29463/512	3,100	2,800	4,000	10/5	2.4	391	44.1	9,542	1,077	14,173	1,600	23,893	2,697
K613_0580 MT30	57.55	29463/512	3,100	2,800	4,000	10/5	7.2	394	44.5	12,844	1,450	14,173	1,600	23,893	2,697
K613_0580 MT40	57.55	29463/512	3,000	2,800	3,500	10/5	11.2	397	44.8	12,844	1,450	14,173	1,600	23,893	2,697
K613_0640 MT20	63.71	130479/2048	3,100	2,800	4,000	10/5	2.4	392	44.3	10,565	1,193	14,173	1,600	25,688	2,900
K613_0640 MT30	63.71	130479/2048	3,100	2,800	4,000	10/5	7.2	395	44.6	12,844	1,450	14,173	1,600	25,688	2,900
K613_0640 MT40	63.71	130479/2048	3,000	2,800	3,500	10/5	11.2	397	44.9	12,844	1,450	14,173	1,600	25,688	2,900
K613_0690 MT20	68.77	28609/416	3,100	2,800	4,000	10/5	2.1	393	44.4	9,750	1,101	13,967	1,577	23,278	2,628
K613_0690 MT30	68.77	28609/416	3,100	2,800	4,000	10/5	6.9	396	44.7	11,639	1,314	13,967	1,577	23,278	2,628
K613_0690 MT40	68.77	28609/416	3,000	2,800	3,500	10/5	10.9	398	44.9	11,639	1,314	13,967	1,577	23,278	2,628
K613_0760 MT20	76.14	126697/1664	3,100	2,800	4,000	10/5	2.0	394	44.5	10,794	1,219	14,173	1,600	25,688	2,900
K613_0760 MT30	76.14	126697/1664	3,100	2,800	4,000	10/5	6.8	396	44.7	12,844	1,450	14,173	1,600	25,688	2,900
K613_0760 MT40	76.14	126697/1664	3,000	2,800	3,500	10/5	10.8	398	44.9	12,844	1,450	14,173	1,600	25,688	2,900
K613_0860 MT20	86.18	66185/768	3,100	2,800	4,000	10/5	1.8	395	44.6	8,600	971	10,320	1,165	13,893	1,568
K613_0860 MT30	86.18	66185/768	3,100	2,800	4,000	10/5	6.6	397	44.8	8,600	971	10,320	1,165	13,893	1,568
K613_0950 MT20	95.41	293105/3072	3,100	2,800	4,000	10/5	1.8	396	44.7	9,524	1,075	11,429	1,290	15,382	1,736
K613_0950 MT30	95.41	293105/3072	3,100	2,800	4,000	10/5	6.6	397	44.9	9,524	1,075	11,429	1,290	15,382	1,736

[1] Backlash shown "STANDARD/REDUCED".

[2] Maximum torque for continuous input RPM - horizontal output position.

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

[4] dB(A)Measured at 1 meter distance with 3000 RPM input

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 5, 6
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL3 and EL4
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL5, EL6
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"K" Series–Right Angle Helical/Bevel ServoFit® Modular System Selection Data

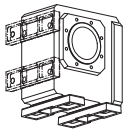
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
K614 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 61 dB(A)** [4]	
K614_0840 MT20	83.84	160979/1920	3,100	2,800	4,000	10/6	1.8	395	44.6	8,871	1,001	8,871	1,001	11,088	1,252
K614_0930 MT20	92.83	712907/7680	3,100	2,800	4,000	10/6	1.7	396	44.7	9,821	1,109	9,821	1,109	12,277	1,386
K614_1110 MT20	111.3	284809/2560	3,100	2,800	4,000	10/6	1.6	397	44.8	11,132	1,257	11,132	1,257	13,915	1,571
K614_1230 MT20	123.2	1261297/10240	3,100	2,800	4,000	10/6	1.6	397	44.9	12,325	1,391	12,325	1,391	15,406	1,739
K614_1340 MT20	133.8	1027789/7680	3,100	2,800	4,000	10/6	1.6	398	44.9	12,837	1,449	12,837	1,449	16,046	1,812
K614_1480 MT20	148.2	4551637/30720	3,100	2,800	4,000	10/6	1.5	398	44.9	12,844	1,450	14,173	1,600	17,766	2,006
K614_1670 MT20	166.7	86681/520	3,100	2,800	4,000	10/6	1.5	398	45.0	12,844	1,450	14,173	1,600	19,047	2,150
K614_1850 MT20	184.6	383873/2080	3,100	2,800	4,000	10/6	1.5	399	45.0	12,844	1,450	14,173	1,600	21,087	2,381
K614_2230 MT20	222.5	284809/1280	3,100	2,800	4,000	10/6	1.4	399	45.0	12,844	1,450	14,173	1,600	23,891	2,697
K614_2460 MT20	246.3	1261297/5120	3,100	2,800	4,000	10/6	1.4	399	45.0	12,844	1,450	14,173	1,600	25,688	2,900
K614_2660 MT20	265.9	829661/3120	3,100	2,800	4,000	10/6	1.4	399	45.0	11,639	1,314	13,967	1,577	23,278	2,628
K614_2940 MT20	294.4	3674213/12480	3,100	2,800	4,000	10/6	1.4	399	45.1	12,844	1,450	14,173	1,600	25,688	2,900
K614_3330 MT20	333.2	383873/1152	3,100	2,800	4,000	10/6	1.4	399	45.1	8,600	971	10,320	1,165	13,892	1,568
K614_3690 MT20	368.9	1700009/4608	3,100	2,800	4,000	10/6	1.4	399	45.1	9,524	1,075	11,429	1,290	15,380	1,736
K713 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 59 dB(A)** [4]	
K713_0076 MT30	7.563	19845/2624	1,700	1,600	2,700	10/5	71.2	295	33.4	6,084	687	6,693	756	12,169	1,374
K713_0076 MT40	7.563	19845/2624	1,700	1,600	2,700	10/5	75.2	428	48.3	9,837	1,111	9,837	1,111	12,297	1,388
K713_0076 MT50	7.563	19845/2624	1,700	1,600	2,700	10/5	85.2	590	66.7	11,924	1,346	18,798	2,122	23,498	2,653
K713_0084 MT30	8.373	87885/10496	1,700	1,600	2,700	10/5	66.3	331	37.4	6,736	760	7,410	836	13,472	1,521
K713_0084 MT40	8.373	87885/10496	1,700	1,600	2,700	10/5	70.3	463	52.2	10,891	1,230	10,891	1,230	13,614	1,537
K713_0084 MT50	8.373	87885/10496	1,700	1,600	2,700	10/5	80.3	611	68.9	12,336	1,393	20,812	2,349	26,014	2,937
K713_0092 MT30	9.188	147/16	1,700	1,600	2,700	10/5	54.4	365	41.2	7,392	834	8,131	918	14,515	1,639
K713_0092 MT40	9.188	147/16	1,700	1,600	2,700	10/5	58.4	492	55.6	11,612	1,311	11,612	1,311	14,515	1,639
K713_0092 MT50	9.188	147/16	1,700	1,600	2,700	10/5	68.4	627	70.7	12,724	1,436	21,495	2,427	27,736	3,131
K713_0100 MT30	10.17	651/64	1,700	1,600	2,700	10/5	51.2	401	45.3	8,183	924	9,002	1,016	16,069	1,814
K713_0100 MT40	10.17	651/64	1,700	1,600	2,700	10/5	55.2	523	59.0	12,855	1,451	12,855	1,451	16,069	1,814
K713_0100 MT50	10.17	651/64	1,700	1,600	2,700	10/5	65.2	642	72.4	13,163	1,486	22,237	2,510	30,706	3,467
K713_0120 MT30	11.78	23373/1984	2,000	1,900	3,000	10/5	39.2	452	51.0	9,478	1,070	10,425	1,177	17,928	2,024
K713_0120 MT40	11.78	23373/1984	2,000	1,900	3,000	10/5	43.2	562	63.4	13,823	1,561	14,342	1,619	17,928	2,024
K713_0120 MT50	11.78	23373/1984	2,000	1,900	3,000	10/5	53.2	660	74.5	13,823	1,561	23,031	2,600	34,258	3,868
K713_0130 MT30	13.04	3339/256	2,000	1,900	3,000	10/5	37.2	485	54.8	10,493	1,185	11,542	1,303	19,849	2,241
K713_0130 MT40	13.04	3339/256	2,000	1,900	3,000	10/5	41.2	585	66.1	14,300	1,614	15,879	1,793	19,849	2,241
K713_0130 MT50	13.04	3339/256	2,000	1,900	3,000	10/5	51.2	670	75.6	14,300	1,614	23,031	2,600	37,928	4,282
K713_0150 MT30	14.80	1421/96	2,000	1,900	3,000	10/5	29.8	523	59.1	11,908	1,344	13,099	1,479	21,761	2,457
K713_0150 MT40	14.80	1421/96	2,000	1,900	3,000	10/5	33.8	611	68.9	14,916	1,684	17,409	1,965	21,761	2,457
K713_0150 MT50	14.80	1421/96	2,000	1,900	3,000	10/5	43.8	680	76.8	14,916	1,684	23,031	2,600	41,582	4,694
K713_0165 MT30	16.39	6293/384	2,000	1,900	3,000	10/5	28.5	551	62.2	13,184	1,488	14,502	1,637	24,092	2,720
K713_0165 MT40	16.39	6293/384	2,000	1,900	3,000	10/5	32.5	628	70.9	15,431	1,742	19,274	2,176	24,092	2,720
K713_0165 MT50	16.39	6293/384	2,000	1,900	3,000	10/5	42.5	687	77.6	15,431	1,742	23,031	2,600	42,518	4,800

Motor Shaft

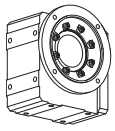
Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48
MT50	60

Housing Styles

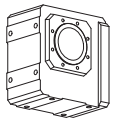
N Foot Mounted



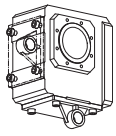
F Round Flange



G Tapped Holes



GD Torque Arm Bracket



These Housing Styles are available as Hollow (A), Bushing (W), or Solid (V) Output.

See Page 194 for required ordering information and part number example.

"K" Series–Right Angle Helical/Bevel ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal 2)		Output Torque Acceleration		Output Torque Peak 3)	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ 1)	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
K713 with MT TriAdapt® Motor Adapter Continued														**Noise Level ≤ 59 dB(A)** 4)	
K713_0185 MT30	18.28	26901/1472	2,400	2,200	3,400	10/5	23.8	577	65.2	14,702	1,660	16,172	1,826	25,811	2,914
K713_0185 MT40	18.28	26901/1472	2,400	2,200	3,400	10/5	27.8	644	72.7	16,001	1,806	20,649	2,331	25,811	2,914
K713_0185 MT50	18.28	26901/1472	2,400	2,200	3,000	10/5	37.8	693	78.2	16,001	1,806	23,031	2,600	42,518	4,800
K713_0200 MT30	20.23	119133/5888	2,400	2,200	3,400	10/5	23.0	599	67.6	16,277	1,838	17,905	2,021	28,576	3,226
K713_0200 MT40	20.23	119133/5888	2,400	2,200	3,400	10/5	27.0	657	74.1	16,554	1,869	22,861	2,581	28,576	3,226
K713_0200 MT50	20.23	119133/5888	2,400	2,200	3,000	10/5	37.0	698	78.8	16,554	1,869	23,031	2,600	42,518	4,800
K713_0230 MT30	22.74	14553/640	2,400	2,200	3,400	10/5	18.8	621	70.1	16,193	1,828	20,122	2,272	30,795	3,476
K713_0230 MT40	22.74	14553/640	2,400	2,200	3,400	10/5	22.8	669	75.5	17,211	1,943	23,031	2,600	30,795	3,476
K713_0230 MT50	22.74	14553/640	2,400	2,200	3,000	10/5	32.8	702	79.3	17,211	1,943	23,031	2,600	42,518	4,800
K713_0250 MT30	25.18	64449/2560	2,400	2,200	3,400	10/5	18.2	637	71.9	17,804	2,010	22,278	2,515	34,094	3,849
K713_0250 MT40	25.18	64449/2560	2,400	2,200	3,400	10/5	22.2	677	76.5	17,804	2,010	23,031	2,600	34,094	3,849
K713_0250 MT50	25.18	64449/2560	2,400	2,200	3,000	10/5	32.2	705	79.6	17,804	2,010	23,031	2,600	42,518	4,800
K713_0290 MT30	29.29	7497/256	2,900	2,600	3,800	10/5	14.5	656	74.1	17,161	1,937	23,031	2,600	37,773	4,264
K713_0290 MT40	29.29	7497/256	2,900	2,600	3,500	10/5	18.5	688	77.6	18,725	2,114	23,031	2,600	37,773	4,264
K713_0290 MT50	29.29	7497/256	2,500	2,500	3,000	10/5	28.5	709	80.0	18,725	2,114	23,031	2,600	42,518	4,800
K713_0320 MT30	32.42	33201/1024	2,900	2,600	3,800	10/5	14.2	667	75.3	19,000	2,145	23,031	2,600	41,821	4,721
K713_0320 MT40	32.42	33201/1024	2,900	2,600	3,500	10/5	18.2	693	78.3	19,371	2,187	23,031	2,600	41,821	4,721
K713_0320 MT50	32.42	33201/1024	2,500	2,500	3,000	10/5	28.2	711	80.2	19,371	2,187	23,031	2,600	42,518	4,800
K713_0350 MT30	35.44	567/16	2,900	2,600	3,800	10/5	12.2	675	76.2	17,666	1,994	23,031	2,600	42,518	4,800
K713_0350 MT40	35.44	567/16	2,900	2,600	3,500	10/5	16.2	697	78.7	19,954	2,253	23,031	2,600	42,518	4,800
K713_0350 MT50	35.44	567/16	2,500	2,500	3,000	10/5	26.2	712	80.4	19,954	2,253	23,031	2,600	42,518	4,800
K713_0390 MT30	39.23	2511/64	2,900	2,600	3,800	10/5	12.0	683	77.1	19,558	2,208	23,031	2,600	42,518	4,800
K713_0390 MT40	39.23	2511/64	2,900	2,600	3,500	10/5	16.0	701	79.2	20,642	2,330	23,031	2,600	42,518	4,800
K713_0390 MT50	39.23	2511/64	2,500	2,500	3,000	10/5	26.0	713	80.5	20,642	2,330	23,031	2,600	42,518	4,800
K713_0450 MT30	45.05	37485/832	2,900	2,600	3,800	10/5	10.2	691	78.0	18,248	2,060	23,031	2,600	42,518	4,800
K713_0450 MT40	45.05	37485/832	2,900	2,600	3,500	10/5	14.2	705	79.6	21,259	2,400	23,031	2,600	42,518	4,800
K713_0450 MT50	45.05	37485/832	2,500	2,500	3,000	10/5	24.2	715	80.7	21,259	2,400	23,031	2,600	42,518	4,800
K713_0500 MT30	49.88	166005/3328	2,900	2,600	3,800	10/5	10.1	696	78.6	20,203	2,281	23,031	2,600	42,518	4,800
K713_0500 MT40	49.88	166005/3328	2,900	2,600	3,500	10/5	14.1	708	79.9	21,259	2,400	23,031	2,600	42,518	4,800
K713_0500 MT50	49.88	166005/3328	2,500	2,500	3,000	10/5	24.1	715	80.8	21,259	2,400	23,031	2,600	42,518	4,800
K713_0590 MT30	58.57	7497/128	2,900	2,600	3,800	10/5	8.7	702	79.3	19,023	2,148	23,031	2,600	42,518	4,800
K713_0590 MT40	58.57	7497/128	2,900	2,600	3,500	10/5	12.7	711	80.3	21,259	2,400	23,031	2,600	42,518	4,800
K713_0590 MT50	58.57	7497/128	2,500	2,500	3,000	10/5	22.7	716	80.9	21,259	2,400	23,031	2,600	42,518	4,800
K713_0650 MT30	64.85	33201/512	2,900	2,600	3,800	10/5	8.6	705	79.6	21,061	2,378	23,031	2,600	42,518	4,800
K713_0650 MT40	64.85	33201/512	2,900	2,600	3,500	10/5	12.6	712	80.4	21,259	2,400	23,031	2,600	42,518	4,800
K713_0650 MT50	64.85	33201/512	2,500	2,500	3,000	10/5	22.6	717	80.9	21,259	2,400	23,031	2,600	42,518	4,800
K713_0710 MT30	71.20	4557/64	2,900	2,600	3,800	10/5	7.9	707	79.9	19,244	2,173	23,031	2,600	29,355	3,314
K713_0710 MT40	71.20	4557/64	2,900	2,600	3,500	10/5	11.9	713	80.5	19,244	2,173	23,031	2,600	29,355	3,314
K713_0790 MT30	78.83	20181/256	2,900	2,600	3,800	10/5	7.8	710	80.1	21,259	2,400	23,031	2,600	32,500	3,669
K713_0790 MT40	78.83	20181/256	2,900	2,600	3,500	10/5	11.8	714	80.7	21,259	2,400	23,031	2,600	32,500	3,669
K713_0890 MT30	89.00	22785/256	2,900	2,600	3,800	10/5	7.3	712	80.3	14,803	1,671	17,764	2,005	29,607	3,342
K713_0890 MT40	89.00	22785/256	2,900	2,600	3,500	10/5	11.3	715	80.8	14,803	1,671	17,764	2,005	29,607	3,342
K713_0990 MT30	98.54	100905/1024	2,900	2,600	3,800	10/5	7.2	713	80.5	16,394	1,851	19,672	2,221	32,787	3,701
K713_0990 MT40	98.54	100905/1024	2,900	2,600	3,500	10/5	11.2	716	80.8	16,394	1,851	19,672	2,221	32,787	3,701

1) Backlash shown "STANDARD/REDUCED".

2) Maximum torque for continuous input RPM - horizontal output position.

3) Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

4) dB(A)Measured at 1 meter distance with 3000 RPM input

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 5, 6
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL3 and EL4
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL5, EL6
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"K" Series–Right Angle Helical/Bevel ServoFit® Modular System Selection Data

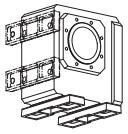
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
K714 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 59 dB(A)** [4]	
K714_0890 MT30	89.06	227997/2560	2,900	2,600	3,800	10/6	7.3	712	80.3	21,259	2,400	23,031	2,600	30,792	3,476
K714_0990 MT30	98.60	1009701/10240	2,900	2,600	3,800	10/6	7.2	713	80.5	21,259	2,400	23,031	2,600	34,091	3,849
K714_1130 MT20	113.2	72471/640	2,900	2,600	3,800	10/6	1.9	712	80.3	11,715	1,323	11,715	1,323	14,644	1,653
K714_1150 MT30	114.7	117453/1024	2,900	2,600	3,800	10/6	7.0	714	80.7	21,259	2,400	23,031	2,600	37,770	4,264
K714_1250 MT20	125.4	320943/2560	2,900	2,600	3,800	10/6	1.9	713	80.5	12,970	1,464	12,970	1,464	16,213	1,830
K714_1270 MT30	127.0	520149/4096	2,900	2,600	3,800	10/6	7.0	715	80.8	21,259	2,400	23,031	2,600	41,817	4,721
K714_1370 MT20	137.0	5481/40	2,900	2,600	3,800	10/6	1.8	714	80.6	13,615	1,537	13,615	1,537	17,018	1,921
K714_1390 MT30	138.8	8883/64	2,900	2,600	3,800	10/6	6.9	716	80.8	21,259	2,400	23,031	2,600	42,518	4,800
K714_1520 MT20	151.7	24273/160	2,900	2,600	3,800	10/6	1.8	715	80.7	15,073	1,702	15,073	1,702	18,842	2,127
K714_1540 MT30	153.7	39339/256	2,900	2,600	3,800	10/6	6.8	716	80.9	21,259	2,400	23,031	2,600	42,518	4,800
K714_1740 MT20	174.2	72471/416	2,900	2,600	3,800	10/6	1.6	716	80.8	16,434	1,855	16,434	1,855	20,542	2,319
K714_1760 MT30	176.5	587265/3328	2,900	2,600	3,800	10/6	6.7	717	80.9	21,259	2,400	23,031	2,600	42,518	4,800
K714_1930 MT20	192.9	320943/1664	2,900	2,600	3,800	10/6	1.6	716	80.9	18,194	2,054	18,194	2,054	22,743	2,567
K714_1950 MT30	195.4	2600745/13312	2,900	2,600	3,800	10/6	6.7	717	81.0	21,259	2,400	23,031	2,600	42,518	4,800
K714_2260 MT20	226.5	72471/320	2,900	2,600	3,800	10/6	1.5	717	81.0	17,798	2,009	20,216	2,282	25,271	2,853
K714_2290 MT30	229.4	117453/512	2,900	2,600	3,800	10/6	6.6	718	81.0	21,259	2,400	23,031	2,600	42,518	4,800
K714_2510 MT20	250.7	320943/1280	2,900	2,600	3,800	10/6	1.5	717	81.0	19,705	2,225	22,382	2,527	27,978	3,159
K714_2540 MT30	254.0	520149/2048	2,900	2,600	3,800	10/6	6.6	718	81.1	21,259	2,400	23,031	2,600	42,518	4,800
K714_2750 MT20	275.3	44051/160	2,900	2,600	3,800	10/6	1.5	718	81.0	18,362	2,073	23,031	2,600	29,352	3,314
K714_3050 MT20	304.8	195083/640	2,900	2,600	3,800	10/6	1.5	718	81.0	20,330	2,295	23,031	2,600	32,497	3,669
K714_3440 MT20	344.1	44051/128	2,900	2,600	3,800	10/6	1.4	718	81.1	14,803	1,671	17,764	2,005	29,607	3,342
K714_3810 MT20	381.0	195083/512	2,900	2,600	3,800	10/6	1.4	718	81.1	16,394	1,851	19,672	2,221	32,787	3,701
K813 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 65 dB(A)** [4]	
K813_0074 MT30	7.445	3127/420	1,600	1,500	2,600	10/5	161.2	350	39.5	5,989	676	6,588	744	11,979	1,352
K813_0074 MT40	7.445	3127/420	1,600	1,500	2,600	10/5	165.2	564	63.7	10,163	1,147	10,163	1,147	12,704	1,434
K813_0074 MT50	7.445	3127/420	1,600	1,500	2,600	10/5	175.2	900	101.6	19,420	2,192	19,420	2,192	24,275	2,740
K813_0082 MT30	8.243	96937/11760	1,600	1,500	2,600	10/5	142.9	404	45.6	6,631	749	7,294	823	13,263	1,497
K813_0082 MT40	8.243	96937/11760	1,600	1,500	2,600	10/5	146.9	628	70.8	11,252	1,270	11,252	1,270	14,065	1,588
K813_0082 MT50	8.243	96937/11760	1,600	1,500	2,600	10/5	156.9	949	107.2	21,242	2,398	21,502	2,427	26,877	3,034
K813_0093 MT30	9.284	11977/1290	1,600	1,500	2,600	10/5	115.5	471	53.2	7,469	843	8,216	927	14,938	1,686
K813_0093 MT40	9.284	11977/1290	1,600	1,500	2,600	10/5	119.5	702	79.2	12,266	1,385	12,266	1,385	15,333	1,731
K813_0093 MT50	9.284	11977/1290	1,600	1,500	2,600	10/5	129.5	1,001	113.0	22,101	2,495	23,439	2,646	29,299	3,308
K813_0105 MT30	10.28	53041/5160	1,600	1,500	2,600	10/5	103.7	533	60.1	8,269	934	9,096	1,027	16,539	1,867
K813_0105 MT40	10.28	53041/5160	1,600	1,500	2,600	10/5	107.7	763	86.2	13,581	1,533	13,581	1,533	16,976	1,916
K813_0105 MT50	10.28	53041/5160	1,600	1,500	2,600	10/5	117.7	1,039	117.3	22,864	2,581	25,951	2,930	32,439	3,662
K813_0120 MT30	11.91	6608/555	1,900	1,800	2,900	10/5	80.6	624	70.4	9,578	1,081	10,536	1,189	18,938	2,138
K813_0120 MT40	11.91	6608/555	1,900	1,800	2,900	10/5	84.6	848	95.7	15,150	1,710	15,150	1,710	18,938	2,138
K813_0120 MT50	11.91	6608/555	1,900	1,800	2,900	10/5	94.6	1,086	122.6	24,011	2,711	28,950	3,268	36,188	4,085

Motor Shaft

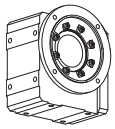
Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48
MT50	60

Housing Styles

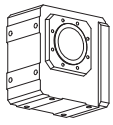
N Foot Mounted



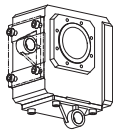
F Round Flange



G Tapped Holes



GD Torque Arm Bracket



These Housing Styles are available as Hollow (A), Bushing (W), or Solid (V) Output.

See Page 194 for required ordering information and part number example.

"K" Series–Right Angle Helical/Bevel ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal 2)		Output Torque Acceleration		Output Torque Peak 3)	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ 1)	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
K813 with MT TriAdapt® Motor Adapter Continued Next Page														**Noise Level ≤ 65 dB(A)** 4)	
K813_0130 MT30	13.18	7316/555	1,900	1,800	2,900	10/5	73.4	687	77.6	10,605	1,197	11,665	1,317	20,967	2,367
K813_0130 MT40	13.18	7316/555	1,900	1,800	2,900	10/5	77.4	901	101.8	16,774	1,894	16,774	1,894	20,967	2,367
K813_0130 MT50	13.18	7316/555	1,900	1,800	2,900	10/5	87.4	1,113	125.7	24,840	2,804	32,053	3,619	40,066	4,523
K813_0150 MT30	14.84	9499/640	1,900	1,800	2,900	10/5	59.2	760	85.8	11,940	1,348	13,134	1,483	22,766	2,570
K813_0150 MT40	14.84	9499/640	1,900	1,800	2,900	10/5	63.2	958	108.2	18,213	2,056	18,213	2,056	22,766	2,570
K813_0150 MT50	14.84	9499/640	1,900	1,800	2,900	10/5	73.2	1,140	128.7	25,842	2,917	34,803	3,929	43,504	4,911
K813_0165 MT30	16.43	42067/2560	1,900	1,800	2,900	10/5	54.5	819	92.5	13,219	1,492	14,541	1,642	25,205	2,845
K813_0165 MT40	16.43	42067/2560	1,900	1,800	2,900	10/5	58.5	1,001	113.1	20,164	2,276	20,164	2,276	25,205	2,845
K813_0165 MT50	16.43	42067/2560	1,900	1,800	2,900	10/5	68.5	1,159	130.9	26,734	3,018	38,531	4,350	48,164	5,437
K813_0175 MT30	17.33	30149/1740	2,300	2,100	3,300	10/5	48.4	849	95.8	13,939	1,574	15,333	1,731	25,932	2,928
K813_0175 MT40	17.33	30149/1740	2,300	2,100	3,300	10/5	52.4	1,022	115.4	20,746	2,342	20,746	2,342	25,932	2,928
K813_0175 MT50	17.33	30149/1740	2,300	2,100	3,000	10/5	62.4	1,168	131.8	27,211	3,072	39,642	4,475	49,553	5,594
K813_0190 MT30	19.18	133517/6960	2,300	2,100	3,300	10/5	45.1	902	101.8	15,432	1,742	16,976	1,916	28,710	3,241
K813_0190 MT40	19.18	133517/6960	2,300	2,100	3,300	10/5	49.1	1,058	119.4	22,968	2,593	22,968	2,593	28,710	3,241
K813_0190 MT50	19.18	133517/6960	2,300	2,100	3,000	10/5	59.1	1,183	133.5	28,149	3,178	41,190	4,650	54,861	6,193
K813_0230 MT30	23.04	31801/1380	2,300	2,100	3,300	10/5	33.8	987	111.4	18,539	2,093	20,392	2,302	32,546	3,674
K813_0230 MT40	23.04	31801/1380	2,300	2,100	3,300	10/5	37.8	1,111	125.4	26,037	2,939	26,037	2,939	32,546	3,674
K813_0230 MT50	23.04	31801/1380	2,300	2,100	3,000	10/5	47.8	1,203	135.8	29,924	3,378	41,190	4,650	62,192	7,021
K813_0260 MT30	25.51	140833/5520	2,300	2,100	3,300	10/5	31.9	1,027	115.9	20,525	2,317	22,577	2,549	36,033	4,068
K813_0260 MT40	25.51	140833/5520	2,300	2,100	3,300	10/5	35.9	1,134	128.1	28,827	3,254	28,827	3,254	36,033	4,068
K813_0260 MT50	25.51	140833/5520	2,300	2,100	3,000	10/5	45.9	1,212	136.8	30,956	3,495	41,190	4,650	68,856	7,773
K813_0290 MT30	29.25	7021/240	2,800	2,500	3,600	10/5	24.9	1,073	121.2	20,833	2,352	25,888	2,923	39,618	4,473
K813_0290 MT40	29.25	7021/240	2,800	2,500	3,500	10/5	28.9	1,161	131.0	31,694	3,578	31,694	3,578	39,618	4,473
K813_0290 MT50	29.25	7021/240	2,500	2,500	3,000	10/5	38.9	1,221	137.9	32,401	3,658	41,190	4,650	74,407	8,400
K813_0320 MT30	32.39	31093/960	2,800	2,500	3,600	10/5	23.7	1,102	124.4	23,065	2,604	28,662	3,236	43,863	4,952
K813_0320 MT40	32.39	31093/960	2,800	2,500	3,500	10/5	27.7	1,176	132.8	33,519	3,784	35,091	3,961	43,863	4,952
K813_0320 MT50	32.39	31093/960	2,500	2,500	3,000	10/5	37.7	1,227	138.5	33,519	3,784	41,190	4,650	74,407	8,400
K813_0360 MT30	36.14	2891/80	2,800	2,500	3,600	10/5	19.4	1,129	127.4	21,177	2,391	31,980	3,610	46,613	5,262
K813_0360 MT40	36.14	2891/80	2,800	2,500	3,500	10/5	23.4	1,191	134.4	34,766	3,925	37,290	4,210	46,613	5,262
K813_0360 MT50	36.14	2891/80	2,500	2,500	3,000	10/5	33.4	1,232	139.1	34,766	3,925	41,190	4,650	74,407	8,400
K813_0400 MT30	40.01	12803/320	2,800	2,500	3,600	10/5	18.6	1,150	129.8	23,446	2,647	35,405	3,997	51,606	5,826
K813_0400 MT40	40.01	12803/320	2,800	2,500	3,500	10/5	22.6	1,201	135.6	35,965	4,060	41,190	4,650	51,606	5,826
K813_0400 MT50	40.01	12803/320	2,500	2,500	3,000	10/5	32.6	1,236	139.5	35,965	4,060	41,190	4,650	74,407	8,400
K813_0440 MT30	44.25	177/4	2,800	2,500	3,600	10/5	15.5	1,167	131.8	22,059	2,490	39,158	4,421	54,814	6,188
K813_0440 MT40	44.25	177/4	2,800	2,500	3,500	10/5	19.5	1,210	136.6	37,194	4,199	41,190	4,650	54,814	6,188
K813_0440 MT50	44.25	177/4	2,500	2,500	3,000	10/5	29.5	1,239	139.8	37,194	4,199	41,190	4,650	54,814	6,188
K813_0490 MT30	48.99	5487/112	2,800	2,500	3,600	10/5	15.0	1,182	133.4	24,422	2,757	41,190	4,650	60,687	6,851
K813_0490 MT40	48.99	5487/112	2,800	2,500	3,500	10/5	19.0	1,218	137.5	37,204	4,200	41,190	4,650	60,687	6,851
K813_0490 MT50	48.99	5487/112	2,500	2,500	3,000	10/5	29.0	1,241	140.1	37,204	4,200	41,190	4,650	60,687	6,851
K813_0590 MT30	59.08	42539/720	2,800	2,500	3,600	10/5	11.8	1,203	135.8	22,721	2,565	41,190	4,650	68,590	7,743
K813_0590 MT40	59.08	42539/720	2,800	2,500	3,500	10/5	15.8	1,228	138.7	37,204	4,200	41,190	4,650	68,590	7,743
K813_0590 MT50	59.08	42539/720	2,500	2,500	3,000	10/5	25.8	1,245	140.5	37,204	4,200	41,190	4,650	68,590	7,743

1) Backlash shown "STANDARD/REDUCED".

2) Maximum torque for continuous input RPM - horizontal output position.

3) Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

4) dB(A)Measured at 1 meter distance with 3000 RPM input

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 5, 6
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL3 and EL4
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL5, EL6
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"K" Series–Right Angle Helical/Bevel ServoFit® Modular System Selection Data

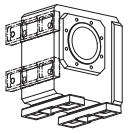
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
K813 with MT TriAdapt® Motor Adapter Continued														**Noise Level ≤ 65 dB(A)** [4]	
K813_0650 MT30	65.41	188387/2880	2,800	2,500	3,600	10/5	11.5	1,212	136.8	25,155	2,840	41,190	4,650	74,407	8,400
K813_0650 MT40	65.41	188387/2880	2,800	2,500	3,500	10/5	15.5	1,233	139.2	37,204	4,200	41,190	4,650	74,407	8,400
K813_0650 MT50	65.41	188387/2880	2,500	2,500	3,000	10/5	25.5	1,246	140.7	37,204	4,200	41,190	4,650	74,407	8,400
K813_0720 MT30	71.70	10325/144	2,800	2,500	3,600	10/5	10.1	1,218	137.5	23,288	2,629	38,322	4,326	63,869	7,210
K813_0720 MT40	71.70	10325/144	2,800	2,500	3,500	10/5	14.1	1,236	139.5	31,935	3,605	38,322	4,326	63,869	7,210
K813_0720 MT50	71.70	10325/144	2,500	2,500	3,000	10/5	24.1	1,247	140.8	31,935	3,605	38,322	4,326	63,869	7,210
K813_0790 MT30	79.38	45725/576	2,800	2,500	3,600	10/5	9.9	1,225	138.2	25,783	2,911	41,190	4,650	70,731	7,985
K813_0790 MT40	79.38	45725/576	2,800	2,500	3,500	10/5	13.9	1,239	139.9	35,365	3,992	41,190	4,650	70,731	7,985
K813_0790 MT50	79.38	45725/576	2,500	2,500	3,000	10/5	23.9	1,248	140.9	35,365	3,992	41,190	4,650	70,731	7,985
K813_0880 MT30	87.76	7021/80	2,800	2,500	3,600	10/5	8.8	1,229	138.8	23,753	2,682	28,945	3,268	36,182	4,085
K813_0880 MT40	87.76	7021/80	2,800	2,500	3,500	10/5	12.8	1,241	140.1	24,838	2,804	28,945	3,268	36,182	4,085
K813_0970 MT30	97.17	31093/320	2,800	2,500	3,600	10/5	8.7	1,234	139.3	26,298	2,969	32,047	3,618	40,058	4,522
K813_0970 MT40	97.17	31093/320	2,800	2,500	3,500	10/5	12.7	1,243	140.4	27,506	3,105	32,047	3,618	40,058	4,522
K814 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 65 dB(A)** [4]	
K814_0670 MT40	66.83	38763/580	2,800	2,500	3,500	10/6	14.5	1,234	139.3	37,204	4,200	39,644	4,476	49,555	5,594
K814_0740 MT40	73.99	1201653/16240	2,800	2,500	3,500	10/6	14.3	1,237	139.6	37,204	4,200	41,190	4,650	54,864	6,194
K814_0890 MT40	88.89	40887/460	2,800	2,500	3,500	10/6	13.5	1,242	140.2	37,204	4,200	41,190	4,650	62,195	7,021
K814_0980 MT40	98.41	181071/1840	2,800	2,500	3,500	10/6	13.4	1,244	140.4	37,204	4,200	41,190	4,650	68,859	7,774
K814_1130 MT40	112.8	9027/80	2,800	2,500	3,500	10/6	12.9	1,246	140.6	37,204	4,200	41,190	4,650	74,407	8,400
K814_1150 MT30	114.6	329987/2880	2,800	2,500	3,600	10/6	7.7	1,239	139.8	29,076	3,282	31,692	3,578	39,615	4,472
K814_1250 MT40	124.9	279837/2240	2,800	2,500	3,500	10/6	12.8	1,247	140.8	37,204	4,200	41,190	4,650	74,407	8,400
K814_1270 MT30	126.9	1461371/11520	2,800	2,500	3,600	10/6	7.7	1,241	140.1	32,191	3,634	35,087	3,961	43,859	4,951
K814_1390 MT40	139.4	11151/80	2,800	2,500	3,500	10/6	12.5	1,248	140.9	37,204	4,200	41,190	4,650	74,407	8,400
K814_1420 MT30	141.5	135877/960	2,800	2,500	3,600	10/6	7.4	1,243	140.4	30,138	3,402	37,287	4,209	46,608	5,262
K814_1540 MT40	154.3	49383/320	2,800	2,500	3,500	10/6	12.5	1,249	141.0	37,204	4,200	41,190	4,650	74,407	8,400
K814_1570 MT30	156.7	601741/3840	2,800	2,500	3,600	10/6	7.3	1,245	140.6	33,367	3,767	41,190	4,650	51,602	5,825
K814_1710 MT40	170.7	4779/28	2,800	2,500	3,500	10/6	12.3	1,249	141.0	37,204	4,200	41,190	4,650	54,816	6,188
K814_1730 MT30	173.3	2773/16	2,800	2,500	3,600	10/6	7.1	1,246	140.7	31,904	3,602	41,190	4,650	54,810	6,188
K814_1890 MT40	189.0	148149/784	2,800	2,500	3,500	10/6	12.2	1,250	141.1	37,204	4,200	41,190	4,650	60,690	6,851
K814_1920 MT30	191.9	85963/448	2,800	2,500	3,600	10/6	7.1	1,247	140.8	35,323	3,988	41,190	4,650	60,682	6,851
K814_2280 MT40	227.9	18231/80	2,800	2,500	3,500	10/6	12.0	1,251	141.2	37,204	4,200	41,190	4,650	68,593	7,744
K814_2310 MT30	231.4	1999333/8640	2,800	2,500	3,600	10/6	6.9	1,249	141.0	33,726	3,807	41,190	4,650	68,584	7,743
K814_2520 MT40	252.3	565161/2240	2,800	2,500	3,500	10/6	12.0	1,251	141.2	37,204	4,200	41,190	4,650	74,407	8,400
K814_2560 MT30	256.2	8854189/34560	2,800	2,500	3,600	10/6	6.9	1,250	141.1	37,204	4,200	41,190	4,650	74,407	8,400
K814_2770 MT40	276.6	4425/16	2,800	2,500	3,500	10/6	11.9	1,251	141.2	31,935	3,605	38,322	4,326	63,869	7,210
K814_2810 MT30	280.8	485275/1728	2,800	2,500	3,600	10/6	6.8	1,250	141.1	31,935	3,605	38,322	4,326	63,869	7,210
K814_3060 MT40	306.2	137175/448	2,800	2,500	3,500	10/6	11.9	1,251	141.3	35,365	3,992	41,190	4,650	70,731	7,985
K814_3110 MT30	310.9	2149075/6912	2,800	2,500	3,600	10/6	6.8	1,250	141.2	35,365	3,992	41,190	4,650	70,731	7,985

Motor Shaft

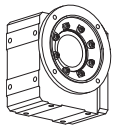
Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48
MT50	60

Housing Styles

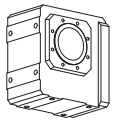
N Foot Mounted



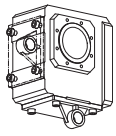
F Round Flange



G Tapped Holes



GD Torque Arm Bracket



These Housing Styles are available as Hollow (A), Bushing (W), or Solid (V) Output.

See Page 194 for required ordering information and part number example.

"K" Series–Right Angle Helical/Bevel ServoFit® Modular System Selection Data

Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
K913 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 65 dB(A) [4]**	
K913_0079 MT50	7.934	54839/6912	1,500	1,500	2,500	10/5	351.2	1,232	139.1	21,757	2,456	21,757	2,456	27,197	3,070
K913_0100 MT50	10.12	119133/11776	1,500	1,500	2,500	10/5	248.9	1,417	159.9	26,753	3,020	26,753	3,020	33,441	3,775
K913_0125 MT50	12.53	73749/5888	1,800	1,800	2,800	10/5	186.8	1,545	174.4	32,159	3,631	32,159	3,631	40,199	4,538
K913_0160 MT50	15.91	13237/832	1,800	1,800	2,800	10/5	135.0	1,652	186.5	39,199	4,425	39,199	4,425	48,999	5,532
K913_0190 MT50	19.06	305/16	2,200	2,100	3,000	10/5	108.9	1,711	193.2	45,504	5,137	45,504	5,137	56,880	6,421
K913_0240 MT40	23.94	88877/3712	2,200	2,100	3,100	10/5	73.0	1,585	178.9	28,667	3,236	28,667	3,236	35,834	4,045
K913_0240 MT50	23.94	88877/3712	2,200	2,100	3,000	10/5	83.0	1,764	199.1	54,779	6,184	54,779	6,184	68,474	7,730
K913_0320 MT40	32.12	47275/1472	2,600	2,500	3,400	10/5	50.5	1,697	191.6	36,287	4,097	36,287	4,097	45,359	5,121
K913_0320 MT50	32.12	47275/1472	2,500	2,500	3,000	10/5	60.5	1,806	203.9	60,669	6,849	68,207	7,700	86,676	9,785
K913_0380 MT40	38.04	194773/5120	2,600	2,500	3,400	10/5	40.9	1,742	196.6	41,507	4,686	41,507	4,686	51,884	5,857
K913_0380 MT50	38.04	194773/5120	2,500	2,500	3,000	10/5	50.9	1,822	205.7	62,006	7,000	68,207	7,700	99,144	11,193
K913_0490 MT40	48.94	100223/2048	2,600	2,500	3,400	10/5	30.6	1,788	201.8	50,266	5,675	50,497	5,701	63,122	7,126
K913_0490 MT50	48.94	100223/2048	2,500	2,500	3,000	10/5	40.6	1,838	207.5	62,006	7,000	68,207	7,700	120,618	13,617
K913_0630 MT40	63.07	209901/3328	2,600	2,500	3,400	10/5	23.5	1,817	205.1	51,864	5,855	61,561	6,950	76,952	8,687
K913_0630 MT50	63.07	209901/3328	2,500	2,500	3,000	10/5	33.5	1,848	208.6	62,006	7,000	68,207	7,700	124,012	14,000
K913_0750 MT40	75.00	62403/832	2,600	2,500	3,400	10/5	19.9	1,830	206.6	53,248	6,011	68,207	7,700	88,210	9,958
K913_0750 MT50	75.00	62403/832	2,500	2,500	3,000	10/5	29.9	1,852	209.1	62,006	7,000	68,207	7,700	88,210	9,958
K913_0950 MT40	95.41	293105/3072	2,600	2,500	3,400	10/5	16.4	1,843	208.0	47,620	5,376	57,144	6,451	95,240	10,752
K913_0950 MT50	95.41	293105/3072	2,500	2,500	3,000	10/5	26.4	1,856	209.6	47,620	5,376	57,144	6,451	95,240	10,752
K914 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 65 dB(A) [4]**	
K914_0920 MT40	92.35	2399679/25984	2,600	2,500	3,400	10/5	15.9	1,841	207.9	54,781	6,184	54,781	6,184	68,477	7,730
K914_0940 MT30	93.78	4177219/44544	2,600	2,500	3,400	10/5	10.6	1,819	205.3	25,351	2,862	28,664	3,236	35,831	4,045
K914_1240 MT40	123.9	1276425/10304	2,600	2,500	3,400	10/5	14.3	1,851	208.9	60,960	6,882	68,207	7,700	86,680	9,785
K914_1260 MT30	125.8	2221925/17664	2,600	2,500	3,400	10/5	9.1	1,838	207.5	34,011	3,840	36,284	4,096	45,355	5,120
K914_1470 MT40	146.7	5258871/35840	2,600	2,500	3,400	10/5	13.7	1,854	209.3	62,006	7,000	68,207	7,700	99,147	11,193
K914_1490 MT30	149.0	9154331/61440	2,600	2,500	3,400	10/5	8.5	1,845	208.3	38,782	4,378	41,503	4,685	51,879	5,857
K914_1890 MT40	188.8	2706021/14336	2,600	2,500	3,400	10/5	13.0	1,858	209.7	62,006	7,000	68,207	7,700	120,623	13,617
K914_1920 MT30	191.7	4710481/24576	2,600	2,500	3,400	10/5	7.8	1,852	209.1	40,812	4,607	50,493	5,700	63,116	7,125
K914_2430 MT40	243.3	5667327/23296	2,600	2,500	3,400	10/5	12.5	1,860	210.0	62,006	7,000	68,207	7,700	124,012	14,000
K914_2470 MT30	247.0	3288449/13312	2,600	2,500	3,400	10/5	7.4	1,856	209.6	43,056	4,861	61,556	6,949	76,945	8,687
K914_2940 MT30	293.8	977647/3328	2,600	2,500	3,400	10/5	7.1	1,858	209.8	44,860	5,064	68,207	7,700	88,202	9,957
K914_3740 MT30	373.7	13775935/36864	2,600	2,500	3,400	10/5	6.9	1,860	210.0	46,783	5,281	57,144	6,451	95,240	10,752

[1] Backlash shown "STANDARD/REDUCED".

[2] Maximum torque for continuous input RPM - horizontal output position.

[3] Maximum momentary torque for emergency stops or heavy shock load. Admissible stops per life of reducer = 1,000 stops maximum.

[4] dB(A)Measured at 1 meter distance with 3000 RPM input

Index of Symbols

- i ... Exact Ratio = Exact Tooth Count
- J_1 ... Reducer Inertia
- C ... ServoCool
- C_2 ... Torsional Stiffness
- n_{1DBH} ... Maximum Continuous Input RPM Horizontal Mounting - EL1, 2, 5, 6
- n_{1DBV} ... Maximum Continuous Input RPM Vertical Position - EL3 and EL4
- n_{1ZB} ... Maximum Cyclic Input RPM
- M_{2N} ... Nominal Torque @ 2000 RPM Input
- $M_{2N(n1DBH)}$ ... Rated Torque @ Maximum Continuous Input RPM Horizontal Mounting - EL1, EL2, EL5, EL6
- M_{2B} ... Acceleration Torque Maximum
- M_{2PEAK} ... Peak Torque

"K" Series–Right Angle Helical/Bevel ServoFit® Modular System Selection Data

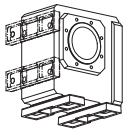
Part Number	Reducer Ratio i		Input RPM Maximum Continuous		Input RPM Maximum Cyclic	Backlash arcmins	Input Inertia	Torsional Stiffness per arcmin		Output Torque Nominal [2]		Output Torque Acceleration		Output Torque Peak [3]	
										$M_{2N \le 2000\ RPM}$		M_{2B}		M_{2PEAK}	
	Nom.	Exact	n_{1DBH}	n_{1DBV}	n_{1ZB}	$\Delta\varphi$ [1]	J_1 kgcm²	C_2 in.lbs.	C_2 Nm	in.lbs.	Nm	in.lbs.	Nm	in.lbs.	Nm
K1013 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 65 dB(A) [4]**	
K1013_0079 MT50	7.9	47089/5928	1,500	1,500	2,200	10/5	816.2	1,934	218.4	22,197	2,506	24,417	2,756	35,650	4,025
K1013_0100 MT50	10.0	2077/208	1,500	1,500	2,200	10/5	578.1	2,403	271.2	27,906	3,150	30,697	3,465	44,819	5,060
K1013_0125 MT50	12.5	71393/5720	1,800	1,800	2,500	10/5	411.7	2,827	319.2	34,878	3,938	38,366	4,331	56,017	6,324
K1013_0160 MT50	15.9	37975/2392	1,800	1,800	2,500	10/5	293.3	3,213	362.7	44,366	5,009	48,802	5,509	71,254	8,044
K1013_0190 MT50	18.8	144305/7696	2,100	2,000	2,800	10/5	234.2	3,427	386.9	52,400	5,916	57,640	6,507	84,158	9,501
K1013_0240 MT50	23.8	4949/208	2,100	2,000	2,800	10/5	169.2	3,661	413.3	66,490	7,506	73,139	8,257	106,787	12,055
K1013_0320 MT50	31.5	144305/4576	2,500	2,300	3,000	10/5	117.3	3,847	434.2	71,197	8,038	71,197	8,038	88,996	10,047
K1013_0390 MT50	38.6	8029/208	2,500	2,300	3,000	10/5	90.1	3,934	444.1	83,593	9,437	83,593	9,437	104,491	11,796
K1013_0490 MT50	48.5	171647/3536	2,500	2,300	3,000	10/5	68.2	4,001	451.7	100,084	11,299	100,084	11,299	125,105	14,123
K1013_0620 MT50	61.6	12803/208	2,500	2,300	3,000	10/5	52.2	4,046	456.8	105,349	11,893	116,926	13,200	150,559	16,997
K1013_0750 MT50	75.3	101773/1352	2,500	2,300	3,000	10/5	42.6	4,071	459.6	100,417	11,336	116,926	13,200	175,501	19,813
K1013_0940 MT50	94.3	235445/2496	2,500	2,300	3,000	10/5	35.1	4,090	461.7	82,844	9,352	87,608	9,890	109,510	12,363
K1014 with MT TriAdapt® Motor Adapter														**Noise Level ≤ 65 dB(A) [4]**	
K1014_0930 MT50	93.3	252399/2704	2,500	2,300	3,000	10/5	32.7	4,089	461.6	95,723	10,806	113,260	12,786	141,576	15,983
K1014_1220 MT40	121.6	556605/4576	2,500	2,300	3,200	10/5	18.4	4,062	458.5	70,302	7,937	71,200	8,038	89,000	10,047
K1014_1240 MT50	123.7	7359555/59488	2,500	2,300	3,000	10/5	29.3	4,104	463.3	106,296	12,000	116,926	13,200	177,477	20,036
K1014_1490 MT40	148.9	30969/208	2,500	2,300	3,200	10/5	16.5	4,082	460.8	74,065	8,361	83,596	9,437	104,495	11,797
K1014_1510 MT50	151.4	409479/2704	2,500	2,300	3,000	10/5	27.5	4,110	464.0	106,296	12,000	116,926	13,200	208,376	23,524
K1014_1870 MT40	187.2	662067/3536	2,500	2,300	3,200	10/5	15.1	4,097	462.5	78,043	8,811	100,087	11,299	125,108	14,124
K1014_1900 MT50	190.4	514941/2704	2,500	2,300	3,000	10/5	26.1	4,115	464.5	106,296	12,000	116,926	13,200	212,592	24,000
K1014_2370 MT40	237.4	49383/208	2,500	2,300	3,200	10/5	14.0	4,106	463.6	81,994	9,256	116,926	13,200	150,564	16,998
K1014_2900 MT40	290.4	392553/1352	2,500	2,300	3,200	10/5	13.3	4,112	464.2	84,369	9,525	116,926	13,200	175,508	19,813

Motor Shaft

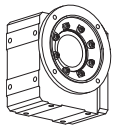
Motor Adapter	Max. Shaft Diameter
MT10	19
MT20	24
MT30	38
MT40	48
MT50	60

Housing Styles

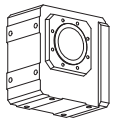
N Foot Mounted



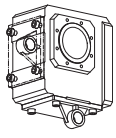
F Round Flange



G Tapped Holes

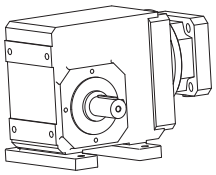


GD Torque Arm Bracket

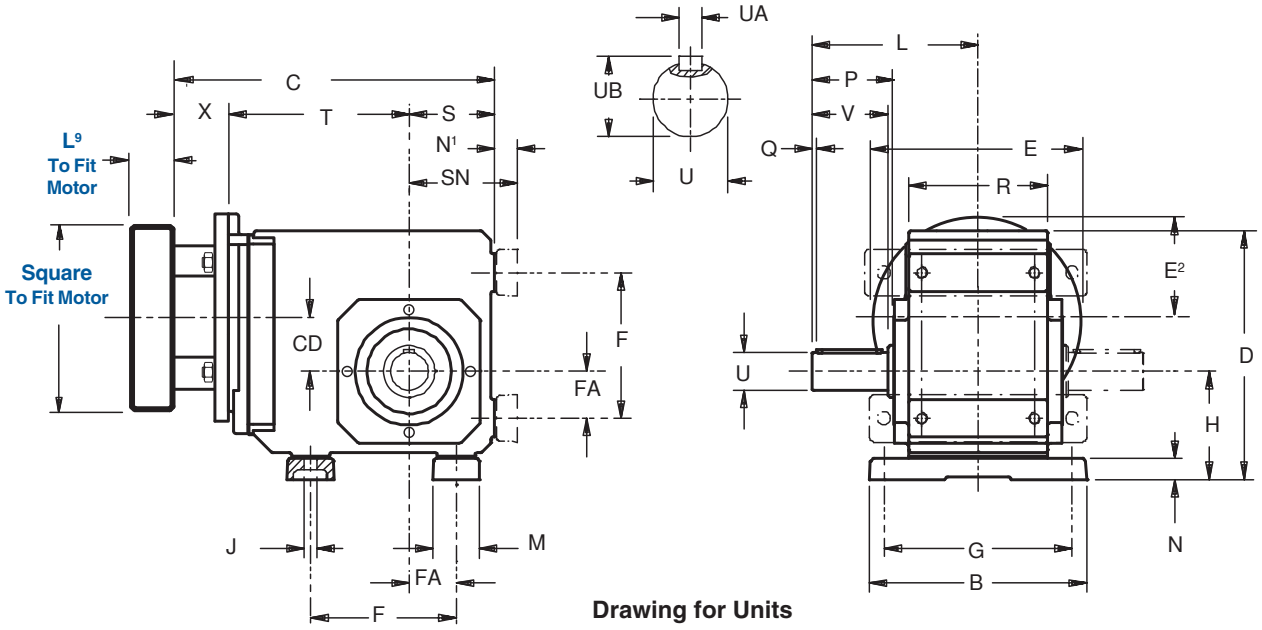


These Housing Styles are available as Hollow (A), Bushing (W), or Solid (V) Output.

See Page 194 for required ordering information and part number example.



ServoFit® "K" Series–Helical/Bevel Foot Mount – "N" Housing Shaft Output – Dimensional Data



Drawing for Units
K102VN — K403VN

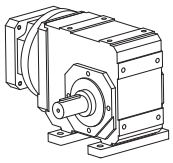
Table No. 1 **"K" Series – Foot Mounting Unit Dimensions (Inches) – "N" Housing Style**

Base Module	B	D	F	G	H	J	L	M	N	O	P	Q	R	S	V	Z[1]	BO	FA	N[1]	SN
K102	5.51	6.81	3.54[1)]	4.53	2.95	.35	4.53	1.18	.51	–	2.32	.16	3.54	2.36	1.97	–	–	1.18	.59	2.95
K202/203	7.28	8.39	4.53	6.10	3.46	.43	5.31	1.57	.79	–	2.56	.16	4.53	2.56	2.36	–	–	1.38	.91	3.46
K302/303	7.87	9.29	5.12	6.69	3.86	.43	5.59	1.77	.79	–	2.60	.16	5.12	2.95	2.36	–	–	1.57	.91	3.86
K402/403	9.06	10.43	6.10	7.87	4.53	.55	6.93	1.97	.87	–	3.39	.16	5.83	3.54	2.76	–	–	1.97	.98	4.53
K513/514	9.45	11.42	5.51	7.87	7.48	.71	8.74	2.36	1.06	5.10	3.90	.16	6.30	3.94	3.54	5.98	7.28	1.57	1.18	5.12
K613/614	9.84	13.39	6.30	8.27	8.66	.71	9.29	2.56	1.06	5.35	4.31	.16	6.61	4.72	3.94	6.77	7.87	1.97	1.18	5.91
K713/714	11.42	14.96	7.09	9.45	9.84	.87	10.91	2.76	1.38	6.46	5.14	.16	7.48	4.92	4.72	7.52	8.90	2.17	1.50	6.42
K813/814	14.17	17.91	9.45	11.81	12.20	1.02	12.83	3.35	1.61	7.28	5.94	.20	9.25	5.71	5.51	8.11	11.10	2.95	1.77	7.48
K913/914	16.93	21.46	11.02	14.17	14.37	1.30	15.16	3.74	1.81	8.66	7.13	.31	11.22	7.09	6.69	9.84	12.99	3.74	1.97	9.06
K1013/1014	15.75	23.27	13.78	12.99	14.76	1.54	16.46	4.72	1.77	9.45	8.66	.59	15.75	–	8.27	12.01	14.02	4.53	1.77	8.86

[1)] Mounting holes are also located on Side 1 of the K1 unit ONLY.

Table No. 2 **Metric and Stainless Output available on request. Contact STOBER Drives for delivery.**

	Standard Shaft — inches			Metric Shaft —mm			Stainless Shaft	
Base Module	U	UA—Key	UB	U	UA—Key	UB	Inches	mm
K102	1.000$_{h6}$	$^1/_4 \times ^1/_4 \times 1^9/_{16}$	1.11	25$_{k6}$	M8 ×7×40	28	1.000	25
K202/203	1.250$_{h6}$	$^1/_4 \times ^1/_4 \times 1^{15}/_{16}$	1.36	30$_{k6}$	M8 ×7×50	33	1.250	30
K302/303	1.250$_{h6}$	$^1/_4 \times ^1/_4 \times 1^{15}/_{16}$	1.36	30$_{k6}$	M8 ×7×50	33	1.250	40
K402/403	1.375$_{h6}$	$^5/_{16} \times ^5/_{16} \times 2^5/_{16}$	1.51	40$_{k6}$	M12 ×8×70	43	1.375	—
K513/514	1.750$_{h6}$	$^3/_8 \times ^3/_8 \times 3^5/_{32}$	1.92	45$_{k6}$	M14 ×9×80	48.5	1.750	45
K613/614	1.750$_{h6}$	$^3/_8 \times ^3/_8 \times 3^5/_{32}$	1.92	50$_{k6}$	M14 ×9×90	53.5	1.750	—
K713/714	2.375$_{h6}$	$^5/_8 \times ^5/_8 \times 3^{15}/_{16}$	2.65	60$_{k6}$	M18 ×11×110	64	2.375	—
K813/814	2.875$_{h6}$	$^3/_4 \times ^3/_4 \times 4^5/_{16}$	3.21	70$_{m6}$	M20 ×12×125	74.5	2.875	70
K913/914	3.625$_{h6}$	$^7/_8 \times ^7/_8 \times 5^1/_2$	4.01	90$_{m6}$	M25 ×14×140	95	—	90
K1013/1014	4.375$_{h6}$	$1 \times 1 \times 7^1/_8$	4.82	110$_{m6}$	M28 ×16×180	116	—	—

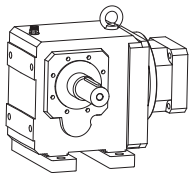


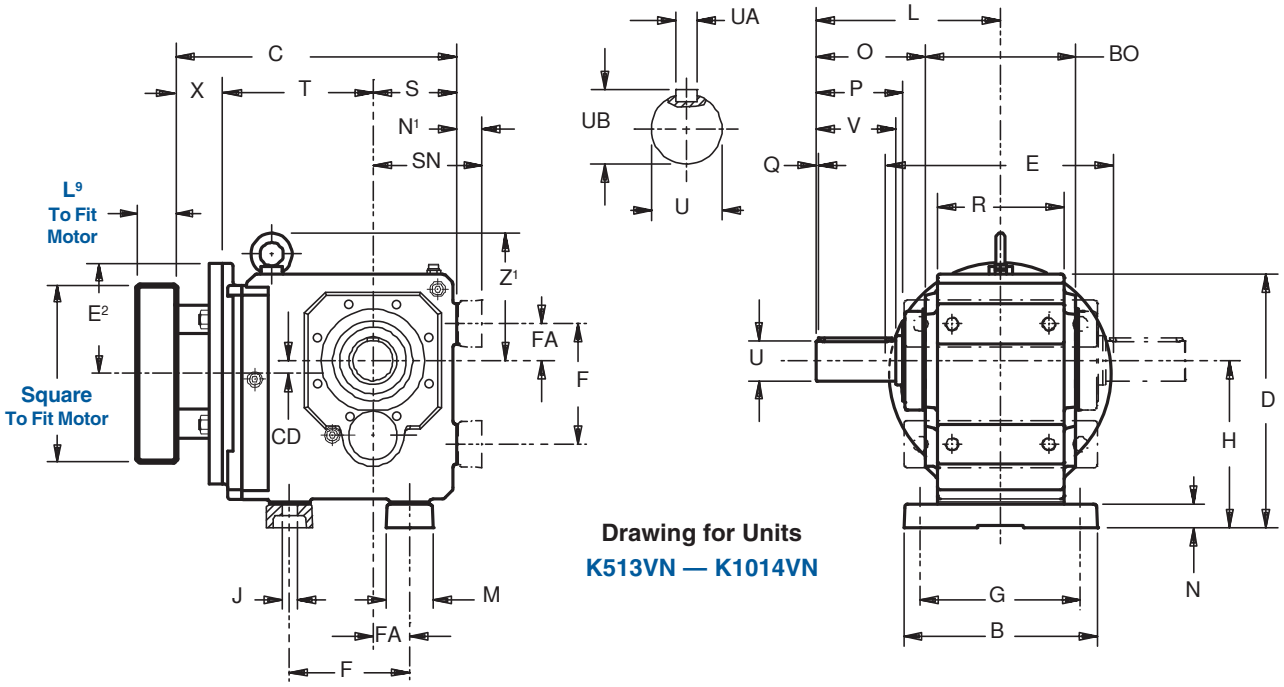
K1 Housing with tapped holes on Side 1, Side 2, and Side 5. Shown EL1 with mounting feet on Side 1.

Part No. Example
Foot Mounting with TriAdapt® Motor Adapter
K303VN0650 MT20

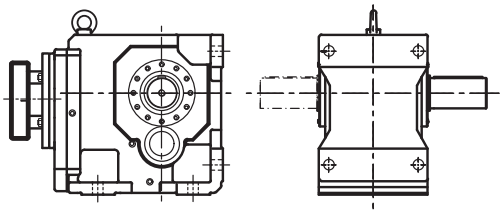
For approximate weight, add adapter weight from Table 3 and base module weight from Table 4.

ServoFit® "K" Series–Helical/Bevel Foot Mount – "N" Housing Shaft Output – Dimensional Data





Drawing for Units
K513VN — K1014VN



Mounting feet are integral on the K10 housing.

Table No. 3 "MT" Motor Plate Dimensions

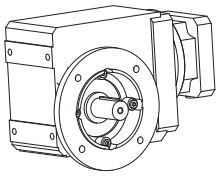
Motor Adapter	Motor Shaft D⁶ Max. [1]		Motor Plate [2] Thickness L⁹ Minimum		Inches			Wt. lbs.
	mm	ins.	mm	inches	E	E²	X	
MT10	19	.748	21	.83	5.51	2.75	1.57	5
MT20	24	.945	24	.95	6.30	3.15	1.97	8
MT30	38	1.260	25	.98	7.87	3.94	2.36	12
MT40	48	1.890	33	1.30	9.84	4.92	3.50	18
MT50	60	2.362	43	1.69	11.81	5.91	3.21	16

[1] If an adapter bushing is required it will be supplied as a component of the motor mounting plate.
[2] Motor plate maximum thickness (L⁹) will vary with motor shaft length but will not be less than shown.

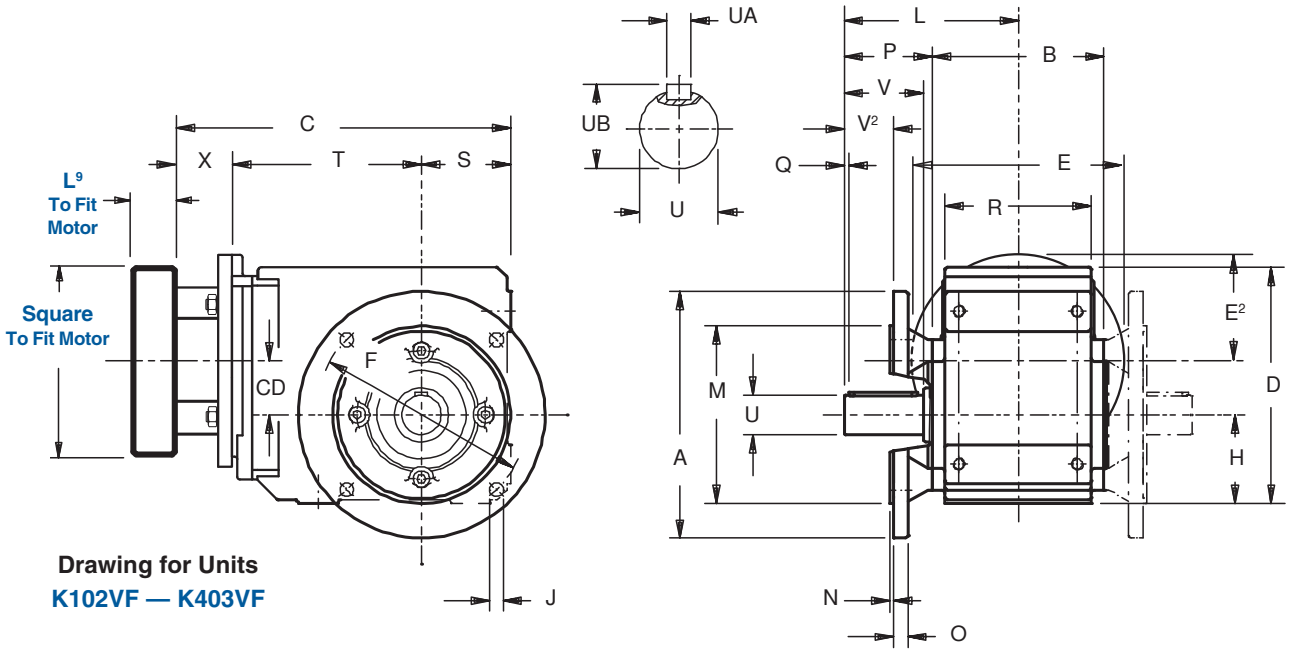
Table No. 4

"K" Series – Foot Mounting Unit Dimensions (Inches) – "N" Housing Style

Base Module	MT10			MT20			MT30			MT40			MT50			Wt. lbs.
	CD	C	T	CD	C	T	CD	C	T	CD	C	T	CD	C	T	
K102	1.42	9.40	4.88	1.42	9.96	5.04	–	–	–	–	–	–	–	–	–	31
K202	1.81	9.76	5.63	1.81	10.32	5.79	1.81	10.79	5.87	–	–	–	–	–	–	40
K203	1.81	11.22	7.09	–	–	–	–	–	–	–	–	–	–	–	–	53
K302	2.07	10.94	6.42	2.07	11.49	6.57	2.07	11.96	6.65	–	–	–	–	–	–	67
K303	2.07	12.39	7.87	.63	13.19	8.27	–	–	–	–	–	–	–	–	–	73
K402	–	–	–	2.36	12.87	7.36	2.36	13.34	7.44	2.36	14.60	7.56	–	–	–	93
K403	2.36	13.77	8.66	.91	14.57	9.06	–	–	–	–	–	–	–	–	–	100
K513	–	–	–	.59	12.68	6.77	.59	13.15	6.85	.59	14.41	6.97	–	–	–	106
K514	–	–	–	.59	14.37	8.46	–	–	–	–	–	–	–	–	–	109
K613	–	–	–	.71	14.21	7.52	.71	14.68	7.60	.71	15.94	7.72	.71	11.48	8.27	170
K614	–	–	–	.71	15.90	9.21	–	–	–	–	–	–	–	–	–	177
K713	–	–	–	–	–	–	.79	15.98	8.70	.79	17.24	8.82	.79	12.54	9.33	221
K714	–	–	–	.79	17.24	10.35	.79	18.42	11.14	–	–	–	–	–	–	234
K813	–	–	–	–	–	–	.94	17.79	9.72	.94	19.01	9.80	.94	13.52	10.31	309
K814	–	–	–	–	–	–	.94	20.20	12.13	–	–	–	–	–	–	331
K913	–	–	–	–	–	–	–	–	–	.98	22.16	11.57	.98	15.30	12.09	508
K914	–	–	–	–	–	–	.98	23.35	13.90	.98	24.96	14.37	–	–	–	530
K1013	–	–	–	–	–	–	–	–	–	–	–	–	1.10	27.50	15.43	1,055
K1014	–	–	–	–	–	–	–	–	–	1.10	30.08	17.72	1.10	30.77	18.70	1,079



ServoFit® "K" Series–Helical/Bevel Round Flange – "F" Housing Shaft Output – Dimensional Data



Drawing for Units
K102VF — K403VF

Table No. 1 **"K" Series – Round Flange Unit Dimensions (Inches) – "F" Housing Style**

Base Module	A	B	D	F	H	J	L	M	N	O	P	Q	R	S	V	V²	Z¹
K102	6.30	4.17	6.30	5.12	2.36	.35	4.53	4.331 +.001/-.0004	.14	.39	2.44	.16	3.54	2.36	1.97	1.18	–
K202/203	7.87	5.28	7.48	6.50	2.56	.43	5.31	5.118 +.001/-.0004	.14	.47	2.68	.16	4.53	2.56	2.36	1.42	–
K302/303	7.87	5.75	8.39	6.50	2.95	.43	5.59	5.118 +.001/-.0004	.14	.55	2.72	.16	5.12	2.95	2.36	1.22	–
K402/403	9.84	6.81	9.45	8.46	3.54	.55	6.93	7.087 +.001/-.0004	.16	.59	3.52	.16	5.83	3.54	2.76	1.95	–
K513/514	9.84	7.28	10.24	8.46	6.30	.55	8.74	7.087 +.001/-.0004	.16	.59	5.10	.16	6.30	3.94	3.54	–	5.98
K613/614	11.81	7.87	12.20	10.43	7.48	.55	9.29	9.055 +.001/-.001	.16	.67	5.35	.16	6.61	4.72	3.94	–	6.77
K713/714	13.78	8.90	13.46	11.81	8.35	.71	10.91	9.842 +.000/-.001	.20	.71	6.46	.16	7.48	4.92	4.72	–	7.52
K813/814	15.75	11.10	16.14	13.78	10.43	.71	12.83	11.811 +.000/-.001	.20	.79	7.28	.20	9.25	5.71	5.51	–	8.11
K913/914	17.72	12.99	19.49	15.75 *	12.40	.71	15.16	13.780 +.000/-.001	.20	.91	8.66	.31	11.22	7.09	6.69	–	9.84
K1013/K1014	21.65	14.02	23.27	19.69 *	14.76	.71	18.35	17.716 +.000/-.002	.20	.98	11.34	.59	15.75	8.86	8.27	–	12.01

* K913 thru K1014 has 8 mounting holes in the output flange instead of 4 as shown in drawing.

Table No. 2 **Metric and Stainless Output available on request. Contact STOBER Drives for delivery.**

	Standard Shaft — inches			Metric Shaft —mm			Stainless Shaft	
Base Module	U	UA—Key	UB	U	UA—Key	UB	Inches	mm
K102	1.000h6	1/4 × 1/4 × 1 9/16	1.11	25k6	M8 ×7×40	28	1.000	25
K202/203	1.250h6	1/4 × 1/4 × 1 15/16	1.36	30k6	M8 ×7×50	33	1.250	30
K302/303	1.250h6	1/4 × 1/4 × 1 15/16	1.36	30k6	M8 ×7×50	33	1.250	40
K402/403	1.375h6	5/16 × 5/16 × 2 5/16	1.51	40k6	M12 ×8×70	43	1.375	—
K513/514	1.750h6	3/8 × 3/8 × 3 5/32	1.92	45k6	M14 ×9×80	48.5	1.750	45
K613/614	1.750h6	3/8 × 3/8 × 3 5/32	1.92	50k6	M14 ×9×90	53.5	1.750	—
K713/714	2.375h6	5/8 × 5/8 × 3 15/16	2.65	60k6	M18 ×11×110	64	2.375	—
K813/814	2.875h6	3/4 × 3/4 × 4 5/16	3.21	70m6	M20 ×12×125	74.5	2.875	70
K913/914	3.625h6	7/8 × 7/8 × 5 1/2	4.01	90m6	M25 ×14×140	95	—	90
K1013/1014	4.375h6	1 × 1 × 7 1/8	4.82	110m6	M28 ×16×180	116	—	—

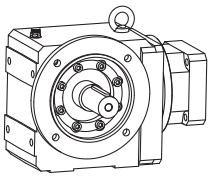
Part No. Example

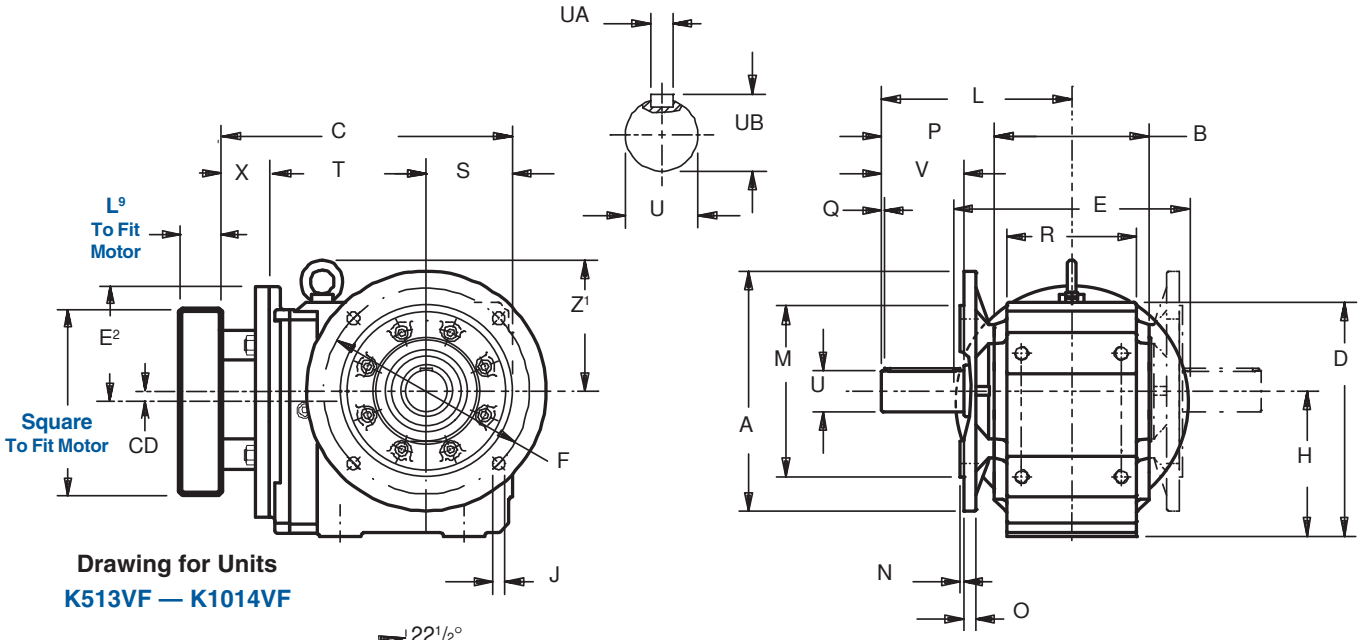
Round Flange with TriAdapt® Motor Adapter

K303VF0650 MT20

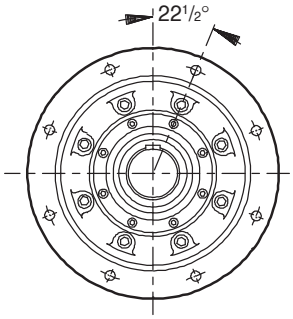
For approximate weight, add adapter weight from Table 3 and base module weight from Table 4.

ServoFit® "K" Series–Helical/Bevel Round Flange – "F" Housing Shaft Output – Dimensional Data





Drawing for Units
K513VF — K1014VF



K913 thru K1014 has 8 mounting holes in the output flange located as shown.

Table No. 3 "MT" Motor Plate Dimensions

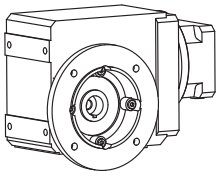
Motor Adapter	Motor Shaft D6 Max. 1)		Motor Plate 2) Thickness L9 Minimum		Inches			Wt. lbs.
	mm	ins.	mm	inches	E	E2	X	
MT10	19	.748	21	.83	5.51	2.75	1.57	5
MT20	24	.945	24	.95	6.30	3.15	1.97	8
MT30	38	1.260	25	.98	7.87	3.94	2.36	12
MT40	48	1.890	33	1.30	9.84	4.92	3.50	18
MT50	60	2.362	43	1.69	11.81	5.91	3.21	16

1) If an adapter bushing is required it will be supplied as a component of the motor mounting plate.
2) Motor plate maximum thickness (L9) will vary with motor shaft length but will not be less than shown.

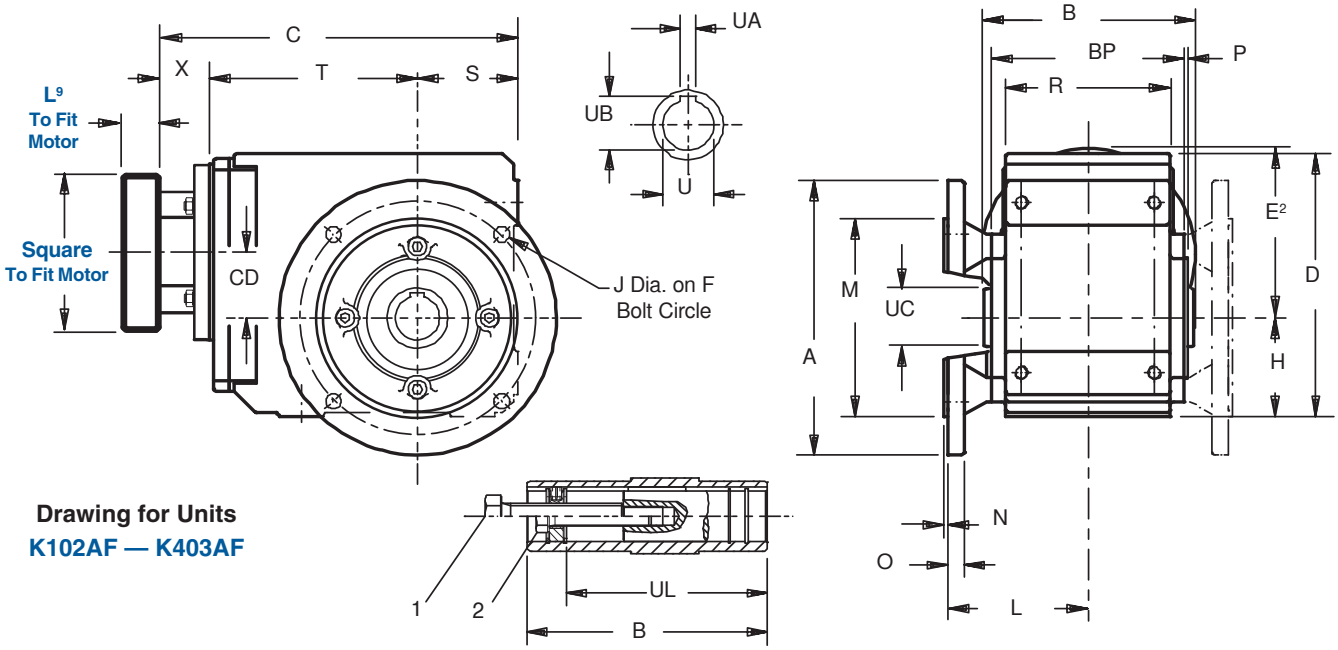
Table No. 4

"K" Series – Flange Mounting Unit Dimensions (Inches) – "F" Housing Style

Base Module	MT10			MT20			MT30			MT40			MT50			Wt. lbs.
	CD	C	T	CD	C	T	CD	C	T	CD	C	T	CD	C	T	
K102	1.42	9.40	4.88	1.42	9.96	5.04	–	–	–	–	–	–	–	–	–	31
K202	1.81	9.76	5.63	1.81	10.32	5.79	1.81	10.79	5.87	–	–	–	–	–	–	40
K203	1.81	11.22	7.09	–	–	–	–	–	–	–	–	–	–	–	–	53
K302	2.07	10.94	6.42	2.07	11.49	6.57	2.07	11.96	6.65	–	–	–	–	–	–	67
K303	2.07	12.39	7.87	.63	13.19	8.27	–	–	–	–	–	–	–	–	–	73
K402	–	–	–	2.36	12.87	7.36	2.36	13.34	7.44	2.36	14.60	7.56	–	–	–	93
K403	2.36	13.77	8.66	.91	14.57	9.06	–	–	–	–	–	–	–	–	–	100
K513	–	–	–	.59	12.68	6.77	.59	13.15	6.85	.59	14.41	6.97	–	–	–	106
K514	–	–	–	.59	14.37	8.46	–	–	–	–	–	–	–	–	–	109
K613	–	–	–	.71	14.21	7.52	.71	14.68	7.60	.71	15.94	7.72	.71	11.48	8.27	170
K614	–	–	–	.71	15.90	9.21	–	–	–	–	–	–	–	–	–	177
K713	–	–	–	–	–	–	.79	15.98	8.70	.79	17.24	8.82	.79	12.54	9.33	221
K714	–	–	–	.79	17.24	10.35	.79	18.42	11.14	–	–	–	–	–	–	234
K813	–	–	–	–	–	–	.94	17.79	9.72	.94	19.01	9.80	.94	13.52	10.31	309
K814	–	–	–	–	–	–	.94	20.20	12.13	–	–	–	–	–	–	331
K913	–	–	–	–	–	–	–	–	–	.98	22.16	11.57	.98	15.30	12.09	508
K914	–	–	–	–	–	–	.98	23.35	13.90	.98	24.96	14.37	–	–	–	530
K1013	–	–	–	–	–	–	–	–	–	–	–	–	1.10	27.50	15.43	1,055
K1014	–	–	–	–	–	–	–	–	–	1.10	30.08	17.72	1.10	30.77	18.70	1,079



ServoFit® "K" Series–Helical/Bevel Round Flange – "F" Housing Hollow Output – Dimensional Data



Drawing for Units
K102AF — K403AF

See Page 235 for installation of hollow ouput.

Table No. 1 "K" Series – Hollow Output, Round Flange Unit Dimensions (Inches) – "F" Housing Style

Base Module	A	B	D	F	H	J	L	M	N	O	P	R	S	Z_1	BP	UC	UL
K102	6.30	4.72	6.30	5.12	2.36	.35	3.35	4.331 +.001/-.0004	.14	.39	.12	3.54	2.36	–	4.17	1.57	3.86
K202/203	7.87	5.83	7.48	6.50	2.56	.43	3.90	5.118 +.001/-.0004	.14	.47	.12	4.53	2.56	–	5.28	1.77	4.78
K302/303	7.87	6.30	8.39	6.50	2.95	.43	4.37	5.118 +.001/-.0004	.14	.55	.12	5.12	2.95	–	5.75	1.97	4.92
K402/403	9.84	7.40	9.45	8.46	3.54	.55	4.98	7.087 +.001/-.0004	.16	.59	.14	5.83	3.54	–	6.81	2.17	6.18
K513/514	9.84	7.87	10.24	8.46	6.30	.55	5.20	7.087 +.001/-.0004	.16	.59	.14	6.30	3.94	5.98	7.28	2.56	6.46
K613/614	11.81	8.46	12.20	10.43	7.48	.55	5.35	9.055 +.001/-.001	.16	.67	.14	6.61	4.72	6.77	7.87	2.76	7.05
K713/714	13.78	9.53	13.46	11.81	8.35	.71	6.18	9.842 +.000/-.001	.20	.71	.14	7.48	4.92	7.52	8.90	3.35	8.43
K813/814	15.75	11.81	16.14	13.78	10.43	.71	7.32	11.811 +.000/-.001	.20	.79	.16	9.25	5.71	8.11	11.10	3.94	10.35
K913/914	17.72	13.78	19.49	15.75	12.40	.71	8.46	13.780 +.000/-.001	.20	.91	.20	11.22	7.09	9.84	12.99	4.33	12.32
K1013/K1014	21.65	16.14	23.27	19.69	14.76	.71	10.08	17.716 +.000/-.002	.20	.98	.28	15.75	8.86	12.01	15.60	5.12	14.25

1. Removal Bolt – not supplied. See Page 235.
2. Mounting Bolt – must be smaller than removal bolt.

Table No. 2

Metric and Stainless Output available on request. Contact STOBER Drives for delivery.

	Standard Bore - Inches			Metric Bore - mm			Stainless Bore	
Base Module	U	UA	UB	U	UA	UB	Inches	mm
K102	1.000$_{G7}$	.250	1.11	25$_{H7}$	8$_{JS9}$	28.3	1.000	25
K202/203	1.1875$_{G7}$	.250	1.31	30$_{H7}$	8$_{JS9}$	33.3	1.1875, 1.125, 1.25	30
K302/303	1.375$_{G7}$	.312	1.52	35$_{H7}$	10$_{JS9}$	38.3	1.25, 1.375	35
K402/403	1.500$_{G7}$	.375	1.67	40$_{H7}$	12$_{JS9}$	43.3	1.500	40
K513/514	2.000$_{G7}$	.500	2.13	50$_{H7}$	14$_{JS9}$	53.8	2.000	40, 50
K613/614	2.000$_{G7}$	.500	2.23	50$_{H7}$	14$_{JS9}$	53.8	1.4375, 1.9375, 2.000	40, 50, 60
K713/714	2.375$_{G7}$	.625	2.66	60$_{H7}$	18$_{JS9}$	64.4	—	60
K813/814	2.750$_{G7}$	.625	3.03	70$_{H7}$	20$_{JS9}$	74.9	2.1875, 2.375, 2.6875, 2.750	60, 70
K913/914	3.250$_{G7}$	.750	3.59	90$_{H7}$	25$_{JS9}$	95.4	2.6875, 2.9375, 3.000, 3.4375	90
K1013/K1014	4.000$_{G7}$	1.000	4.31	100$_{H7}$	28$_{JS9}$	116	—	—

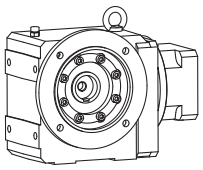
Part No. Example

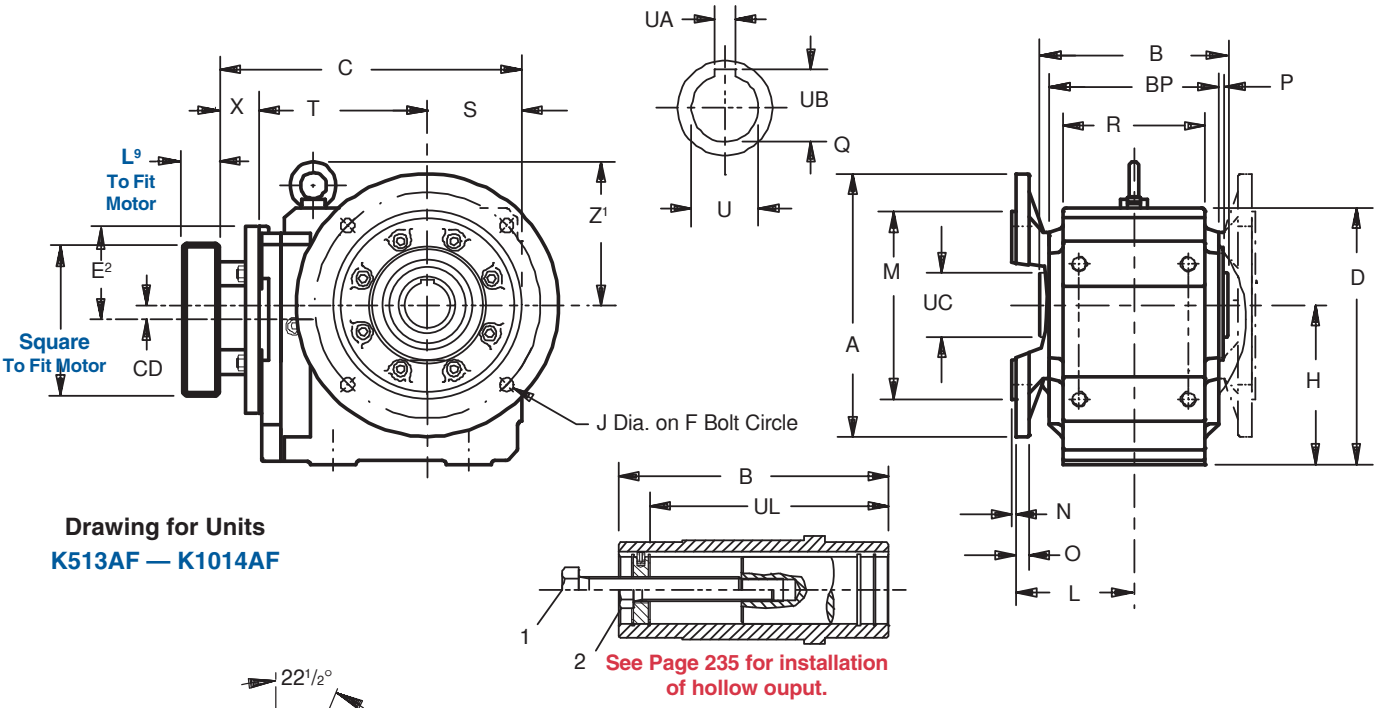
Round Flange with TriAdapt® Motor Adapter

K303AF0650 MT20

For approximate weight, add adapter weight from Table 3 and base module weight from Table 4.

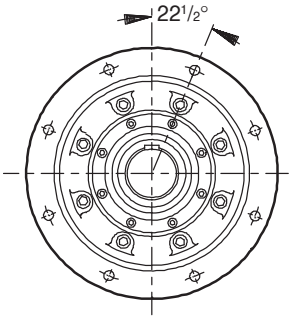
ServoFit® "K" Series–Helical/Bevel Round Flange – "F" Housing Hollow Output – Dimensional Data





Drawing for Units
K513AF — K1014AF

See Page 235 for installation of hollow ouput.



K913 thru K1014 has 8 mounting holes in the output flange located as shown.

Table No. 3 "MT" Motor Plate Dimensions

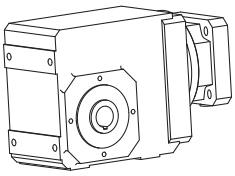
Motor Adapter	Motor Shaft D6 Max. 1)		Motor Plate 2) Thickness		Inches			Wt. lbs.
			L9 Minimum					
	mm	ins.	mm	inches	E	E2	X	
MT10	19	.748	21	.83	5.51	2.75	1.57	5
MT20	24	.945	24	.95	6.30	3.15	1.97	8
MT30	38	1.260	25	.98	7.87	3.94	2.36	12
MT40	48	1.890	33	1.30	9.84	4.92	3.50	18
MT50	60	2.362	43	1.69	11.81	5.91	3.21	16

1) If an adapter bushing is required it will be supplied as a component of the motor mounting plate.
2) Motor plate maximum thickness (L9) will vary with motor shaft length but will not be less than shown.

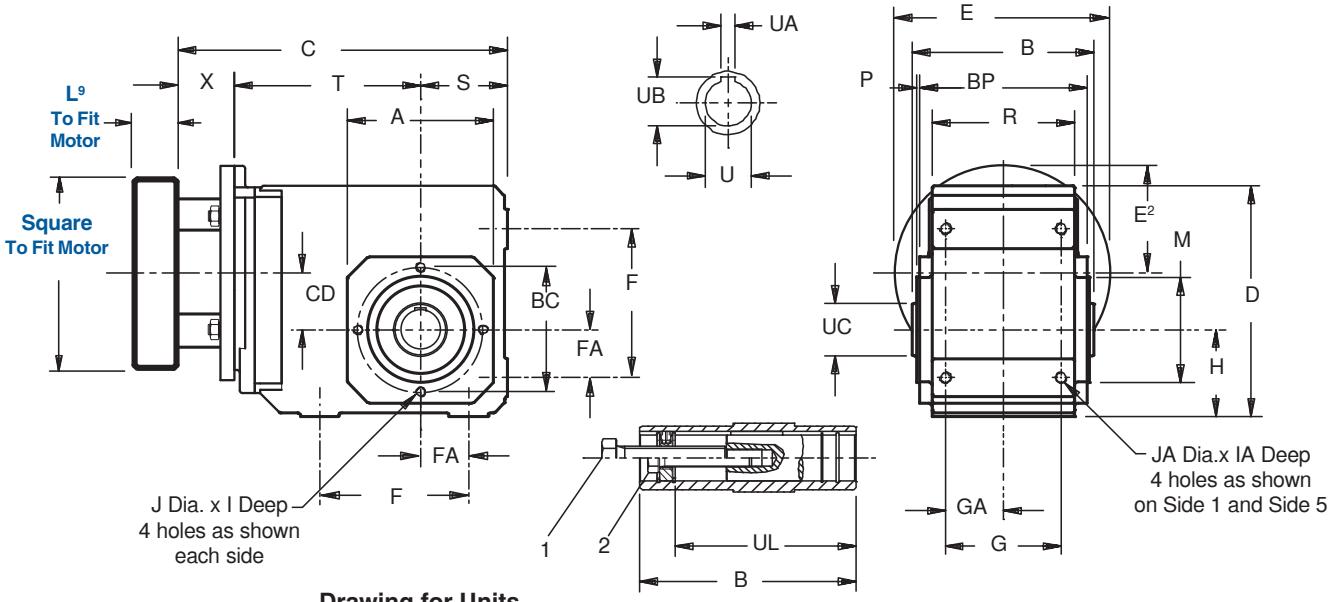
Table No. 4

"K" Series – Flange Mounting Unit Dimensions (Inches) – "F" Housing Style

Base	MT10			MT20			MT30			MT40			MT50			Wt.
Module	CD	C	T	CD	C	T	CD	C	T	CD	C	T	CD	C	T	lbs.
K102	1.42	9.40	4.88	1.42	9.96	5.04	–	–	–	–	–	–	–	–	–	31
K202	1.81	9.76	5.63	1.81	10.32	5.79	1.81	10.79	5.87	–	–	–	–	–	–	40
K203	1.81	11.22	7.09	–	–	–	–	–	–	–	–	–	–	–	–	53
K302	2.07	10.94	6.42	2.07	11.49	6.57	2.07	11.96	6.65	–	–	–	–	–	–	67
K303	2.07	12.39	7.87	.63	13.19	8.27	–	–	–	–	–	–	–	–	–	73
K402	–	–	–	2.36	12.87	7.36	2.36	13.34	7.44	2.36	14.60	7.56	–	–	–	93
K403	2.36	13.77	8.66	.91	14.57	9.06	–	–	–	–	–	–	–	–	–	100
K513	–	–	–	.59	12.68	6.77	.59	13.15	6.85	.59	14.41	6.97	–	–	–	106
K514	–	–	–	.59	14.37	8.46	–	–	–	–	–	–	–	–	–	109
K613	–	–	–	.71	14.21	7.52	.71	14.68	7.60	.71	15.94	7.72	.71	11.48	8.27	170
K614	–	–	–	.71	15.90	9.21	–	–	–	–	–	–	–	–	–	177
K713	–	–	–	–	–	–	.79	15.98	8.70	.79	17.24	8.82	.79	12.54	9.33	221
K714	–	–	–	.79	17.24	10.35	.79	18.42	11.14	–	–	–	–	–	–	234
K813	–	–	–	–	–	–	.94	17.79	9.72	.94	19.01	9.80	.94	13.52	10.31	309
K814	–	–	–	–	–	–	.94	20.20	12.13	–	–	–	–	–	–	331
K913	–	–	–	–	–	–	–	–	–	.98	22.16	11.57	.98	15.30	12.09	508
K914	–	–	–	–	–	–	.98	23.35	13.90	.98	24.96	14.37	–	–	–	530
K1013	–	–	–	–	–	–	–	–	–	–	–	–	1.10	27.50	15.43	1,055
K1014	–	–	–	–	–	–	–	–	–	1.10	30.08	17.72	1.10	30.77	18.70	1,079



ServoFit® "K" Series–Helical/Bevel Tapped Hole – "G" Housing Hollow Output – Dimensional Data



Drawing for Units
K102AG — K403AG

See Page 235 for installation of hollow ouput.

Table No. 1 **"K" Series – Tapped Hole Unit Dimensions (Inches) – "G" Housing Style**

Base Module	A	B	D	F	G	H	I	J	M	P	R	S	Z[1]	BC	BP	FA	GA	IA	JA
K102	4.13	4.72	6.30	3.54	2.76	2.36	.51	4-M8	2.953 +.001/-.0003	.12	3.54	2.36	—	3.54	4.17	1.18	1.38	.51	M8
K202/203	4.57	5.83	7.48	4.53	3.54	2.56	.51	4-M8	3.228 +.001/-.0004	.12	4.53	2.56	—	3.94	5.28	1.38	1.77	.63	M10
K302/303	5.20	6.30	8.39	5.12	4.13	2.95	.51	4-M8	3.740 +.001/-.0004	.12	5.12	2.95	—	4.53	5.75	1.57	2.07	.63	M10
K402/403	5.98	7.40	9.45	6.10	4.72	3.54	.63	4-M10	4.331 +.001/-.0004	.14	5.83	3.54	—	5.12	6.81	1.97	2.36	.75	M12
K513/514	5.71	7.87	10.24	5.51	4.92	6.30	.63	8-M10	4.331 +.001/-.0004	.14	6.30	3.94	5.98	5.12	7.28	1.57	2.46	1.02	M16
K613/614	7.09	8.46	12.20	6.30	5.12	7.48	.63	8-M10	5.512 +.001/-.0004	.14	6.61	4.72	6.77	6.50	7.87	1.97	2.56	1.02	M16
K713/714	7.68	9.53	13.46	7.09	5.71	8.35	.75	8-M12	6.102 +.001/-.0004	.14	7.48	4.92	7.52	7.28	8.90	2.17	2.85	1.22	M20
K813/814	8.90	11.81	16.14	9.45	7.28	10.43	.75	8-M12	7.283 +.001/-.001	.16	9.25	5.71	8.11	8.46	11.10	2.95	3.64	1.50	M24
K913/914	11.02	13.78	19.49	11.02	8.86	12.40	1.02	8-M16	9.055 +.001/-.001	.20	11.22	7.09	9.84	10.43	12.99	3.74	4.43	1.89	M30
K1013/K1014	13.38	16.14	23.27	11.81	12.99	14.76	1.30	10-M20	9.843 +.001/-.001	.28	15.59	8.86	12.01	11.81	15.60	4.53	6.50	1.77	1.54

Table No. 2

Base Module	UC	UL
K102	1.57	3.86
K202/203	1.77	4.78
K302/303	1.97	4.92
K402/403	2.17	6.18
K513/514	2.56	6.46
K613/614	2.76	7.05
K713/714	3.35	8.43
K813/814	3.94	10.35
K913/914	4.33	12.32
K1013/K1014	5.12	14.25

Table No. 3

Metric and Stainless Output available on request. Contact STOBER Drives for delivery.

	Standard Bore - Inches			Metric Bore - mm			Stainless Bore	
Base Module	U	UA	UB	U	UA	UB	Inches	mm
K102	1.000$_{G7}$	.250	1.11	25$_{H7}$	8$_{JS9}$	28.3	1.000	25
K202/203	1.1875$_{G7}$	.250	1.31	30$_{H7}$	8$_{JS9}$	33.3	1.1875, 1.125, 1.25	30
K302/303	1.375$_{G7}$	.312	1.52	35$_{H7}$	10$_{JS9}$	38.3	1.25, 1.375	35
K402/403	1.500$_{G7}$	.375	1.67	40$_{H7}$	12$_{JS9}$	43.3	1.500	40
K513/514	2.000$_{G7}$	.500	2.13	50$_{H7}$	14$_{JS9}$	53.8	2.000	40, 50
K613/614	2.000$_{G7}$	.500	2.23	50$_{H7}$	14$_{JS9}$	53.8	1.4375, 1.9375, 2.000	40, 50, 60
K713/714	2.375$_{G7}$	.625	2.66	60$_{H7}$	18$_{JS9}$	64.4	—	60
K813/814	2.750$_{G7}$	.625	3.03	70$_{H7}$	20$_{JS9}$	74.9	2.1875, 2.375, 2.6875, 2.750	60, 70
K913/914	3.250$_{G7}$	.750	3.59	90$_{H7}$	25$_{JS9}$	95.4	2.6875, 2.9375, 3.000, 3.4375	90
K1013/K1014	4.000$_{G7}$	1.000	4.31	100$_{H7}$	28$_{JS9}$	116	—	—

1. Removal Bolt – not supplied. See Page 235.
2. Mounting Bolt – must be smaller than removal bolt.

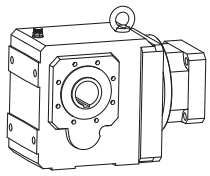
For approximate weight, add adapter weight from Table 4 and base module weight from Table 5.

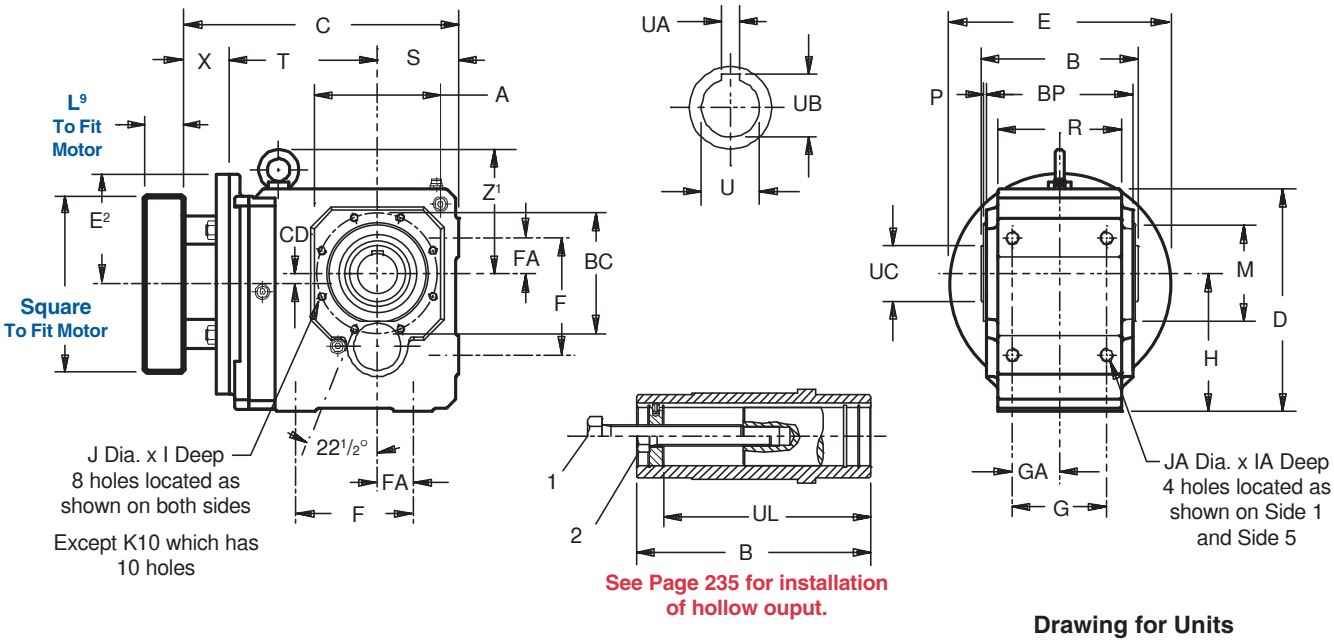
Part No. Example

Tapped Holes Housing with TriAdapt® Motor Adapter

K303AG0650 MT20

ServoFit® "K" Series–Helical/Bevel
Tapped Hole – "G" Housing
Hollow Output – Dimensional Data





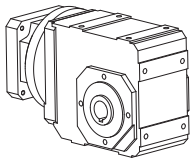
See Page 235 for installation of hollow ouput.

Drawing for Units
K513AG — K1014AG

Table No. 4

"K" Series – Tapped Hole Unit Dimensions (Inches) – "G" Housing Style

Base	MT10			MT20			MT30			MT40			MT50			Wt.
Module	CD	C	T	CD	C	T	CD	C	T	CD	C	T	CD	C	T	lbs.
K102	1.42	9.40	4.88	1.42	9.96	5.04	–	–	–	–	–	–	–	–	–	31
K202	1.81	9.76	5.63	1.81	10.32	5.79	1.81	10.79	5.87	–	–	–	–	–	–	40
K203	1.81	11.22	7.09	–	–	–	–	–	–	–	–	–	–	–	–	53
K302	2.07	10.94	6.42	2.07	11.49	6.57	2.07	11.96	6.65	–	–	–	–	–	–	67
K303	2.07	12.39	7.87	.63	13.19	8.27	–	–	–	–	–	–	–	–	–	73
K402	–	–	–	2.36	12.87	7.36	2.36	13.34	7.44	2.36	14.60	7.56	–	–	–	93
K403	2.36	13.77	8.66	.91	14.57	9.06	–	–	–	–	–	–	–	–	–	100
K513	–	–	–	.59	12.68	6.77	.59	13.15	6.85	.59	14.41	6.97	–	–	–	106
K514	–	–	–	.59	14.37	8.46	–	–	–	–	–	–	–	–	–	109
K613	–	–	–	.71	14.21	7.52	.71	14.68	7.60	.71	15.94	7.72	.71	11.48	8.27	170
K614	–	–	–	.71	15.90	9.21	–	–	–	–	–	–	–	–	–	177
K713	–	–	–	–	–	–	.79	15.98	8.70	.79	17.24	8.82	.79	12.54	9.33	221
K714	–	–	–	.79	17.24	10.35	.79	18.42	11.14	–	–	–	–	–	–	234
K813	–	–	–	–	–	–	.94	17.79	9.72	.94	19.01	9.80	.94	13.52	10.31	309
K814	–	–	–	–	–	–	.94	20.20	12.13	–	–	–	–	–	–	331
K913	–	–	–	–	–	–	–	–	–	.98	22.16	11.57	.98	15.30	12.09	508
K914	–	–	–	–	–	–	.98	23.35	13.90	.98	24.96	14.37	–	–	–	530
K1013	–	–	–	–	–	–	–	–	–	–	–	–	1.10	27.50	15.43	1,055
K1014	–	–	–	–	–	–	–	–	–	1.10	30.08	17.72	1.10	30.77	18.70	1,079

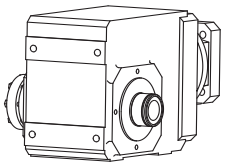


K1 Housing with tapped holes on Side 1, Side 2, and Side 5.

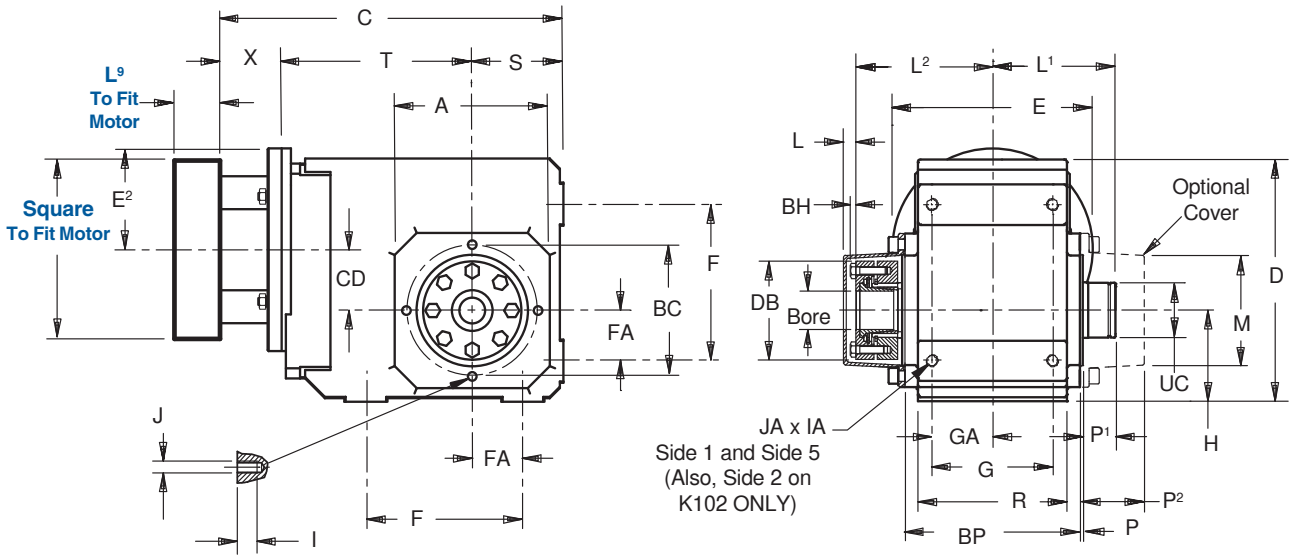
Table No. 5 **"MT" Motor Plate Dimensions**

Motor Adapter	Motor Shaft D6 Max. 1)		Motor Plate 2) Thickness		Inches			Wt.
			L9 Minimum					
	mm	ins.	mm	inches	E	E2	X	lbs.
MT10	19	.748	21	.83	5.51	2.75	1.57	5
MT20	24	.945	24	.95	6.30	3.15	1.97	8
MT30	38	1.260	25	.98	7.87	3.94	2.36	12
MT40	48	1.890	33	1.30	9.84	4.92	3.50	18
MT50	60	2.362	43	1.69	11.81	5.91	3.21	16

1) If an adapter bushing is required it will be supplied as a component of the motor mounting plate.
2) Motor plate maximum thickness (L9) will vary with motor shaft length but will not be less than shown.



ServoFit® "K" Series–Helical/Bevel
Tapped Hole – "G" Housing
Single Bushing – Dimensional Data



Drawing for Units
K102WG — K403WG

Important: A 1/32 x 45° chamfer minimum is recommended for the shaft end. The bushing will accept a shaft with a tolerance of +.000/-.005 inches.

Table No. 1 **"K" Series – Single Side Wobble Free – Unit Dimensions (Inches)**

Base Module	Max. Bore	A	D	F	G	H	I	J	L	L_1	L_2	M	P	P_1	P_2	R	S	Z_1	BC	BH
K102	1.000	4.13	6.30	3.54	2.76	2.36	.51	4-M8	.24	3.15	3.66	3.07	.12	.95	1.62	3.54	2.36	–	3.54	.16
K202/203	1.1875	4.57	7.48	4.53	3.54	2.56	.51	4-M8	.39	3.78	4.27	3.46	.12	1.02	1.54	4.53	2.56	–	3.94	.16
K302/303	1.500	5.20	8.39	5.12	4.13	2.95	.51	4-M8	.43	4.02	4.54	3.78	.12	1.02	1.55	5.12	2.95	–	4.53	.16
K402/403	1.500	5.98	9.45	6.10	4.72	3.54	.63	4-M10	.47	4.69	5.32	4.33	.14	1.14	1.83	5.83	3.54	–	5.12	.20
K513/514	2.000	5.71	10.24	5.51	4.92	6.30	.63	8-M10	.43	4.96	5.61	4.54	.14	1.18	1.87	6.30	3.94	5.98	5.12	.20
K613/614	2.1875	7.09	12.20	6.30	5.12	7.48	.63	8-M10	.51	5.12	6.10	5.00	.14	1.38	2.11	6.61	4.72	5.98	6.50	.24
K713/714	2.375	7.68	13.46	7.09	5.71	8.35	.75	8-M12	—	6.20	7.29	—	.14	1.61	2.70	7.48	4.92	7.52	7.28	.24
K813/814	2.750	8.90	16.14	9.45	7.28	10.43	.75	8-M12	—	7.58	8.70	—	.16	2.03	2.99	9.25	5.71	8.11	8.46	.31

Table No. 2

Base Module	BP	DB	FA	GA	IA	JA	UC
K102	4.17	2.76	1.18	1.38	.51	M8	1.54
K202/203	5.28	3.07	1.38	1.77	.63	M10	1.73
K302/303	5.75	3.31	1.57	2.07	.63	M10	1.93
K402/403	6.81	3.82	1.97	2.36	.75	M12	2.13
K513/514	7.28	4.13	1.57	2.46	1.02	M16	2.56
K613/614	7.87	4.65	1.97	2.56	1.02	M16	2.91
K713/714	8.90	5.43	2.17	2.85	1.22	M20	3.35
K813/814	11.10	6.22	2.95	3.64	1.50	M24	3.94

Table No. 3 **"MT" Motor Plate Dimensions**

Motor Adapter	Motor Shaft D^6 Max. [1]		Motor Plate [2] Thickness		Inches			Wt. lbs.
			L^9 Minimum					
	mm	ins.	mm	inches	E	E^2	X	
MT10	19	.748	21	.83	5.51	2.75	1.57	5
MT20	24	.945	24	.95	6.30	3.15	1.97	8
MT30	38	1.260	25	.98	7.87	3.94	2.36	12
MT40	48	1.890	33	1.30	9.84	4.92	3.50	18
MT50	60	2.362	43	1.69	11.81	5.91	3.21	16

[1] If an adapter bushing is required it will be supplied as a component of the motor mounting plate.
[2] Motor plate maximum thickness (L^9) will vary with motor shaft length but will not be less than shown.

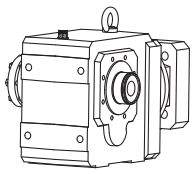
Table No. 4
"WF" Single Side Bushing – Metric

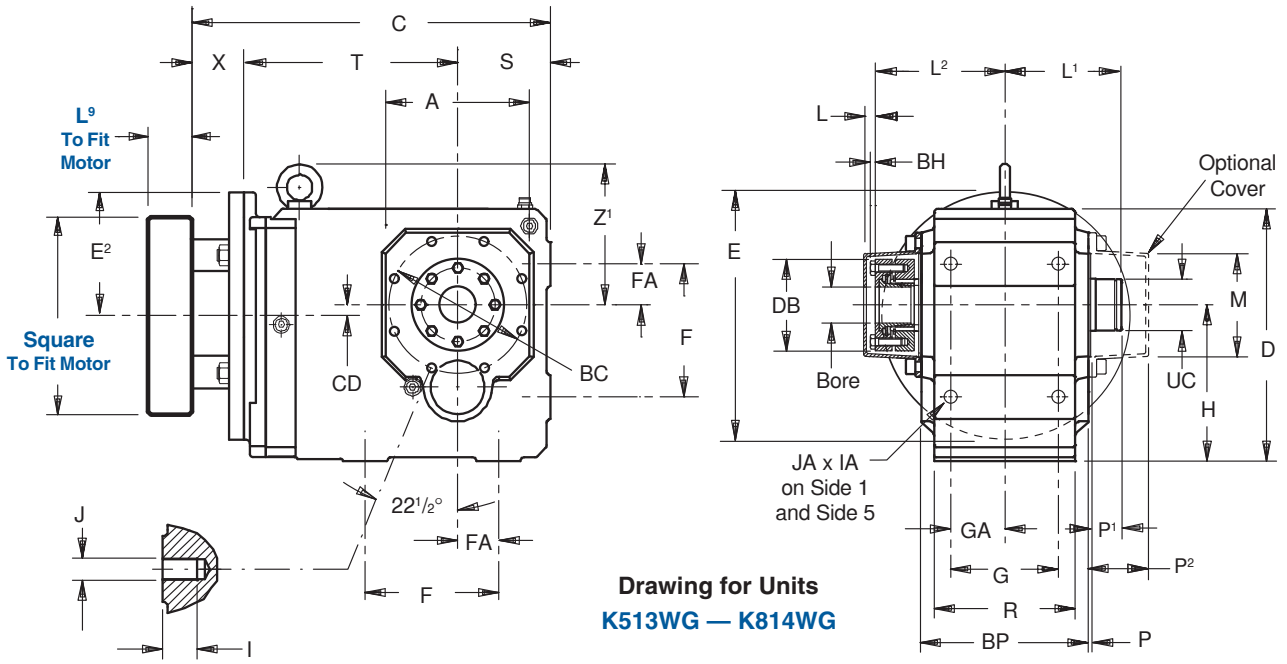
Unit	Stock Bores Sizes — mm		
	25	30	35
K1	WF1-25	–	–
K2	–	WF2-30	–
K3	–	WF3-30	WF3-35

Table No. 5 **"WF" Single Side Bushing – Inches**

Unit	Stock Bores Sizes					
	1	1 3/16	1 1/4	1 3/8	1 7/16	1 1/2
K1	WF1-100	–	–	–	–	–
K2	WF2-100	WF2-103	–	–	–	–
K3	WF3-100	WF3-103	WF3-104	WF3-106	WF3-107	WF3-108
K4	WF4-100	WF4-103	WF4-104	WF4-106	WF4-107	WF4-108

ServoFit® "K" Series–Helical/Bevel
Tapped Hole – "G" Housing
Single Bushing – Dimensional Data





Drawing for Units
K513WG — K814WG

Table No. 6 "K" Series – Single Side Bushing – Unit Dimensions (Inches) – "G" Housing Style

Base	MT10			MT20			MT30			MT40			MT50			Wt.
Module	CD	C	T	CD	C	T	CD	C	T	CD	C	T	CD	C	T	lbs.
K102	1.42	9.40	4.88	1.42	9.96	5.04	–	–	–	–	–	–	–	–	–	31
K202	1.81	9.76	5.63	1.81	10.32	5.79	1.81	10.79	5.87	–	–	–	–	–	–	40
K203	1.81	11.22	7.09	–	–	–	–	–	–	–	–	–	–	–	–	53
K302	2.07	10.94	6.42	2.07	11.49	6.57	2.07	11.96	6.65	–	–	–	–	–	–	67
K303	2.07	12.39	7.87	.63	13.19	8.27	–	–	–	–	–	–	–	–	–	73
K402	–	–	–	2.36	12.87	7.36	2.36	13.34	7.44	2.36	14.60	7.56	–	–	–	93
K403	2.36	13.77	8.66	.91	14.57	9.06	–	–	–	–	–	–	–	–	–	100
K513	–	–	–	.59	12.68	6.77	.59	13.15	6.85	.59	14.41	6.97	–	–	–	106
K514	–	–	–	.59	14.37	8.46	–	–	–	–	–	–	–	–	–	109
K613	–	–	–	.71	14.21	7.52	.71	14.68	7.60	.71	15.94	7.72	.71	11.48	8.27	170
K614	–	–	–	.71	15.90	9.21	–	–	–	–	–	–	–	–	–	177
K713	–	–	–	–	–	–	.79	15.98	8.70	.79	17.24	8.82	.79	12.54	9.33	221
K714	–	–	–	.79	17.24	10.35	.79	18.42	11.14	–	–	–	–	–	–	234
K813	–	–	–	–	–	–	.94	17.79	9.72	.94	19.01	9.80	.94	13.52	10.31	309
K814	–	–	–	–	–	–	.94	20.20	12.13	–	–	–	–	–	–	331

Part No. Example

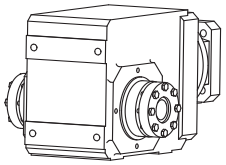
Unit with TriAdapt® Motor Adapter
1 3/8" Bore Single Bushing
K402WG0560 MT20
WF4–106

SPECIFY BUSHING SIDE WHEN ORDERING

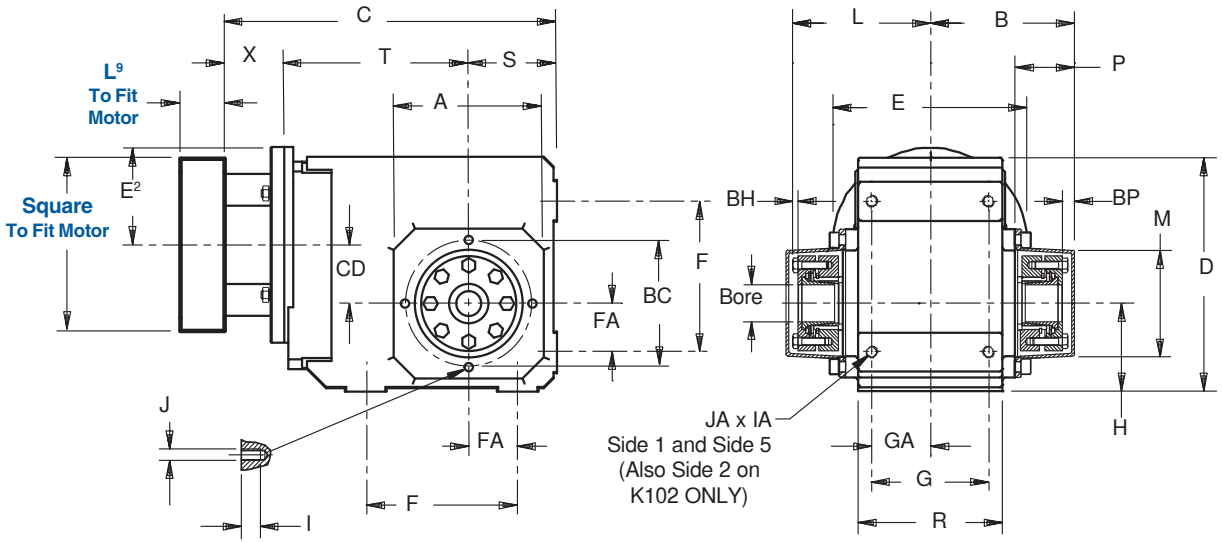
Table No. 7 "WF" Single Side Bushings – Inches

	Stock Bores Sizes — Inches											
Unit	1 7/16	1 1/2	1 5/8	1 11/16	1 3/4	1 7/8	1 15/16	2	2 3/16	2 3/8	2 7/16	2 3/4
K5	WF5-107	WF5-108	WF5-110	WF5-111	WF5-112	WF5-114	WF5-115	WF5-200	–	–	–	–
K6	WF6-107	WF6-108	WF6-110	WF6-111	WF6-112	–	WF6-115	WF6-200	WF6-203	–	–	–
K7	–	–	–	–	–	–	WF7-115	WF7-200	WF7-203	WF7-206	–	–
K8	–	–	–	–	–	–	–	–	WF8-203	WF8-206	WB7-207	WF8-212

NOTES: A complete bushing kit includes the locking ring assembly, tapered cone, support ring, and all hardware to mount the kit into the reducer. The WF1-100 bushing does not have a tapered cone.
The optional cover caps can be ordered separately.



ServoFit® "K" Series–Helical/Bevel Tapped Hole – "G" Housing Double Bushing – Dimensional Data



Drawing for Units
K102WG — K403WG

Important: A 1/32 x 45° chamfer minimum is recommended for the shaft end. The bushing will accept a shaft with a tolerance of +.000/-.005 inches.

Table No. 1 **"K" Series – Double Side Bushing – Unit Dimensions (Inches)**

Base Module	A	B	D	F	G	H	I	J	L	M	P	R	S	Z¹	BC	BP	BH	FA	GA	IA	JA
K102	4.13	3.90	6.30	3.54	2.76	2.36	.51	4-M8	3.82	3.07	1.97	3.54	2.36	–	3.54	.24	.16	1.18	1.38	.51	M8
K202/203	4.57	4.68	7.48	4.53	3.54	2.56	.51	4-M8	4.45	3.46	2.05	4.53	2.56	–	3.94	.39	.16	1.38	1.77	.63	M10
K302/303	5.20	4.98	8.39	5.12	4.13	2.95	.51	4-M8	4.70	3.78	2.09	5.12	2.95	–	4.53	.43	.16	1.57	2.07	.63	M10
K402/403	5.98	5.80	9.45	6.10	4.72	3.54	.63	4-M10	5.53	4.33	2.40	5.83	3.54	–	5.12	.47	.20	1.97	2.36	.75	M12
K513/514	5.71	6.05	10.24	5.51	4.92	6.30	.63	8-M10	5.81	4.54	2.40	6.30	3.94	5.98	5.12	.43	.20	1.57	2.46	1.02	M16
K613/614	7.09	6.61	12.20	6.30	5.12	7.48	.63	8-M10	6.34	5.00	2.68	6.61	4.72	6.77	6.50	.51	.24	1.97	2.56	1.02	M16
K713/714	7.68	7.68	13.46	7.09	5.71	8.35	.75	8-M12	7.53	5.75	2.91	7.48	4.92	7.52	7.28	.39	.24	2.17	2.85	1.22	M20
K813/814	8.90	9.34	16.14	9.45	7.28	10.43	.75	8-M12	9.01	6.95	3.43	9.25	5.71	8.11	8.46	.64	.31	2.95	3.64	1.50	M24

Table No. 2 **"MT" Motor Plate Dimensions**

Motor Adapter	Motor Shaft D⁶ Max. ¹⁾		Motor Plate ²⁾ Thickness L⁹ Minimum		Inches			Wt. lbs.
	mm	ins.	mm	inches	E	E²	X	
MT10	19	.748	21	.83	5.51	2.75	1.57	5
MT20	24	.945	24	.95	6.30	3.15	1.97	8
MT30	38	1.260	25	.98	7.87	3.94	2.36	12
MT40	48	1.890	33	1.30	9.84	4.92	3.50	18
MT50	60	2.362	43	1.69	11.81	5.91	3.21	16

1) If an adapter bushing is required it will be supplied as a component of the motor mounting plate.
2) Motor plate maximum thickness (L⁹) will vary with motor shaft length but will not be less than shown.

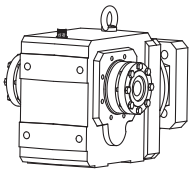
Table No. 3
"WFB" – Double Side Bushings – Metric

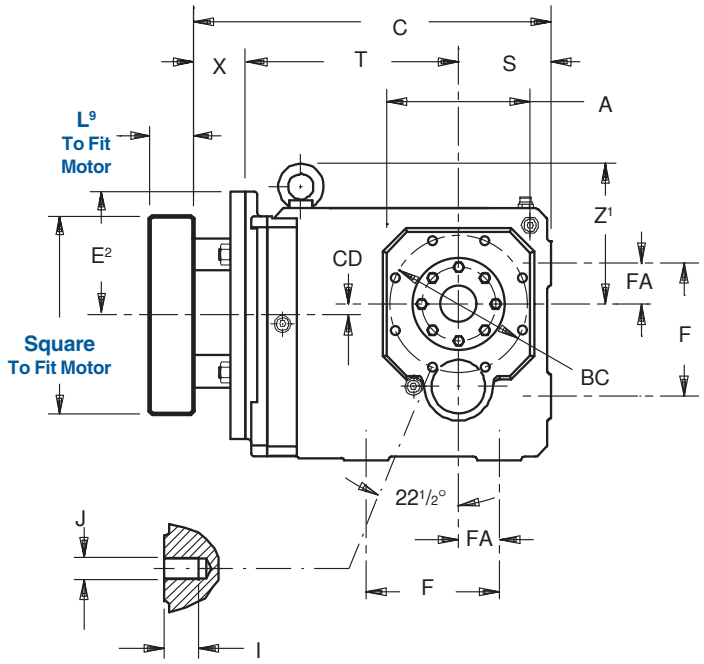
Unit	Stock Bores Sizes — mm			
	25	30	35	40
K1	WFB1-25	–	–	–
K2	–	WFB2-30	–	–
K3	–	WFB3-30	WFB3-35	–
K4	–	–	–	WFB4-40
K5	–	–	–	WFB5-40
K6	–	–	–	WFB6-40

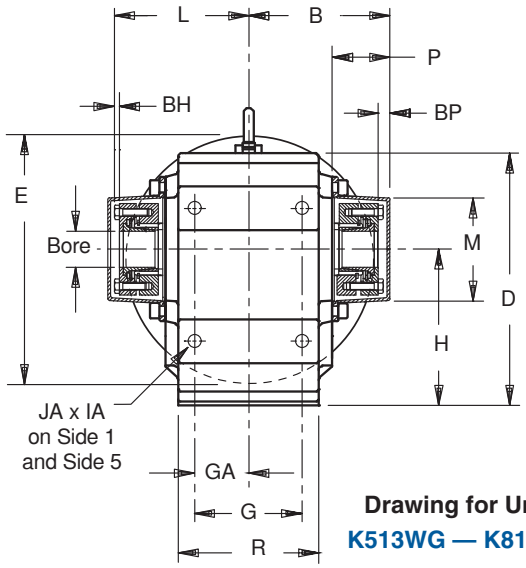
Table No. 4 **"WFB" Double Side Bushings – Inches**

Unit	Stock Bores Sizes					
	1	1 3/16	1 1/4	1 3/8	1 7/16	1 1/2
K1	WFB1-100	–	–	–	–	–
K2	WFB2-100	WFB2-103	–	–	–	–
K3	WFB3-100	WFB3-103	WFB3-104	WFB3-106	WFB3-107	WFB3-108
K4	WFB4-100	WFB4-103	WFB4-104	WFB4-106	WFB4-107	WFB4-108

ServoFit® "K" Series–Helical/Bevel
Tapped Hole – "G" Housing
Double Bushing – Dimensional Data







Drawing for Units
K513WG — K814WG

Table No. 5 "K" Series – Double Side Bushing – Unit Dimensions (Inches) – "G" Housing Style

Base	MT10			MT20			MT30			MT40			MT50			Wt.
Module	CD	C	T	CD	C	T	CD	C	T	CD	C	T	CD	C	T	lbs.
K102	1.42	9.40	4.88	1.42	9.96	5.04	–	–	–	–	–	–	–	–	–	31
K202	1.81	9.76	5.63	1.81	10.32	5.79	1.81	10.79	5.87	–	–	–	–	–	–	40
K203	1.81	11.22	7.09	–	–	–	–	–	–	–	–	–	–	–	–	53
K302	2.07	10.94	6.42	2.07	11.49	6.57	2.07	11.96	6.65	–	–	–	–	–	–	67
K303	2.07	12.39	7.87	.63	13.19	8.27	–	–	–	–	–	–	–	–	–	73
K402	–	–	–	2.36	12.87	7.36	2.36	13.34	7.44	2.36	14.60	7.56	–	–	–	93
K403	2.36	13.77	8.66	.91	14.57	9.06	–	–	–	–	–	–	–	–	–	100
K513	–	–	–	.59	12.68	6.77	.59	13.15	6.85	.59	14.41	6.97	–	–	–	106
K514	–	–	–	.59	14.37	8.46	–	–	–	–	–	–	–	–	–	109
K613	–	–	–	.71	14.21	7.52	.71	14.68	7.60	.71	15.94	7.72	.71	11.48	8.27	170
K614	–	–	–	.71	15.90	9.21	–	–	–	–	–	–	–	–	–	177
K713	–	–	–	–	–	–	.79	15.98	8.70	.79	17.24	8.82	.79	12.54	9.33	221
K714	–	–	–	.79	17.24	10.35	.79	18.42	11.14	–	–	–	–	–	–	234
K813	–	–	–	–	–	–	.94	17.79	9.72	.94	19.01	9.80	.94	13.52	10.31	309
K814	–	–	–	–	–	–	.94	20.20	12.13	–	–	–	–	–	–	331

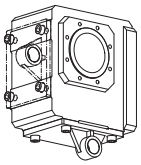
Part No. Example

Unit with TriAdapt® Motor Adapter
1 3/8" Bore Double Bushing
K402WG0560 MT20
WFB4–106

Table No. 6 "WFB" Double Side Bushings – Inches

	Stock Bores Sizes — Inches											
Unit	1 7/16	1 1/2	1 5/8	1 11/16	1 3/4	1 7/8	1 15/16	2	2 3/16	2 3/8	2 7/16	2 3/4
K5	WFB5-107	WFB5-108	WFB5-110	WFB5-111	WFB5-112	WFB5-114	WFB5-115	WFB5-200	–	–	–	–
K6	WFB6-107	WFB6-108	WFB6-110	WFB6-111	WFB6-112	–	WFB6-115	WFB6-200	WFB6-203	–	–	–
K7	–	–	–	–	–	–	WFB7-115	WFB7-200	WFB7-203	WFB7-206	–	–
K8	–	–	–	–	–	–	–	–	WFB8-203	WFB8-206	WFB7-207	WFB8-212

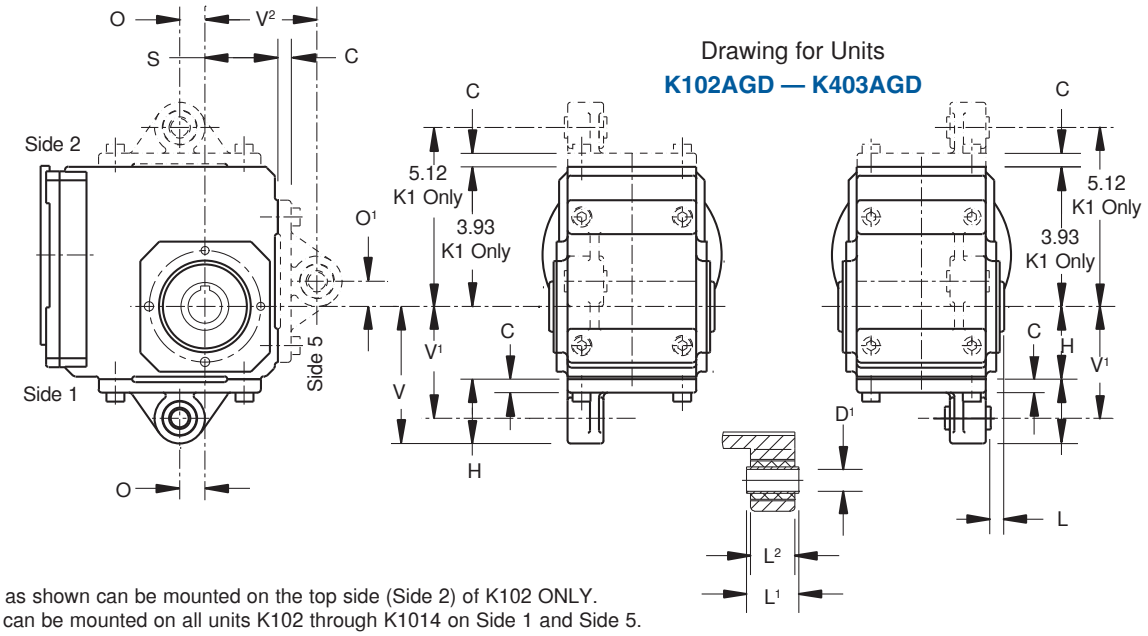
NOTES: A complete bushing kit includes the locking ring assembly, tapered cone, support ring, and all hardware to mount the kit into the reducer. The WFB1-100 bushing does not have a tapered cone.



ServoFit® "K" Series–Helical/Bevel Torque Arm Bracket Dimensional Data

(Torque arm supplied by others.)

Drawing for Units
K102AGD — K403AGD

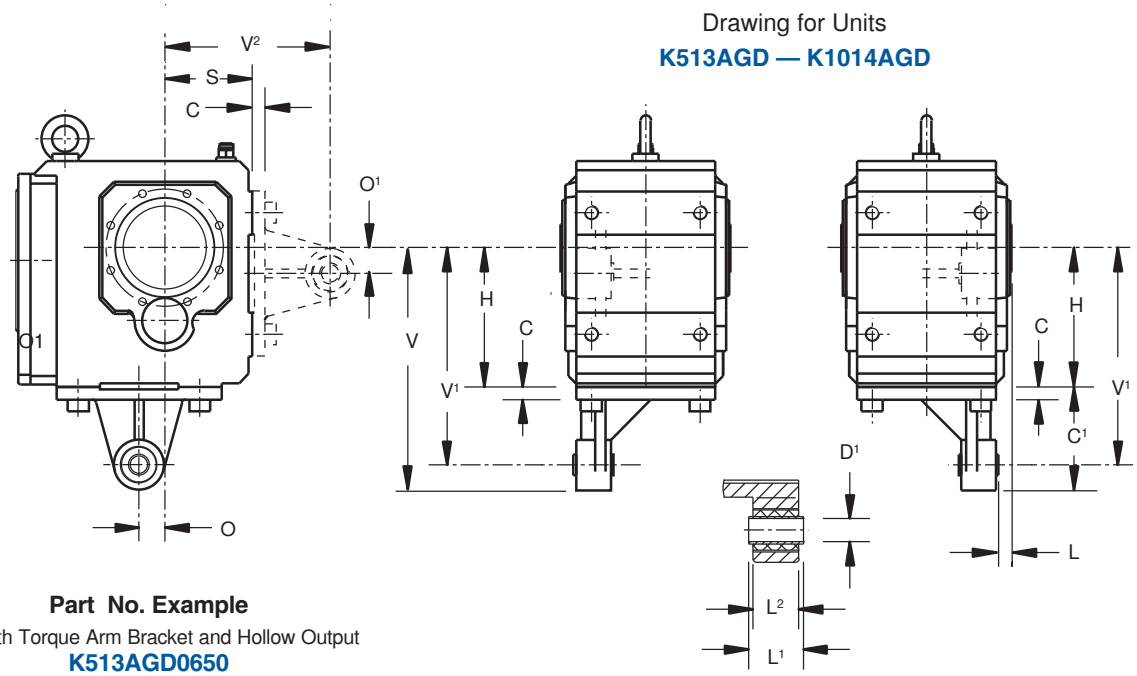


The bracket as shown can be mounted on the top side (Side 2) of K102 ONLY.
All brackets can be mounted on all units K102 through K1014 on Side 1 and Side 5.

Table No. 1 **"K" Series — Torque Arm Bracket Dimensions (Inches)**

Base Module	C	C¹	D¹ H9		H	L	L¹	L²	O	O¹	S	V	V¹	V²
K102	.39	2.03	.47	+0.017/-0.000	2.36	.51	1.10	.94	.59	.59	2.36	4.39	3.54	3.54
K202/K203	.47	2.26	.63	+0.017/-0.000	2.56	.53	1.50	1.26	.89	.89	2.56	4.82	3.93	3.93
K302/K303	.47	2.66	.63	+0.017/-0.000	2.95	.47	1.50	1.26	.98	.98	2.95	5.61	4.72	4.72
K402/K403	.55	3.46	.79	+0.020/-0.000	3.54	.67	1.81	1.57	1.08	1.08	3.54	7.00	5.91	5.91
K513/K514	.59	4.68	.79	+0.020/-0.000	6.30	.67	1.81	1.57	1.18	1.18	3.93	10.98	9.84	7.48
K613/K614	.59	3.50	.79	+0.020/-0.000	7.48	.81	1.81	1.57	1.18	1.18	4.72	10.98	9.84	7.09
K713/K714	.67	4.80	.79	+0.020/-0.000	8.35	.91	2.76	2.52	1.38	1.38	4.92	13.15	11.81	8.39
K813/K814	.67	4.77	.94	+0.020/-0.000	10.43	1.02	4.53	4.02	1.77	1.77	5.71	15.20	13.78	9.06
K913/K914	.79	6.80	.94	+0.020/-0.000	12.40	1.02	4.53	4.02	1.77	1.77	7.09	19.20	17.72	12.40
K1013/1014	1.65	9.25	1.57	+0.024/-0.000	14.76	.24	4.88	4.65	2.36	2.17	8.86	24.01	21.65	15.75

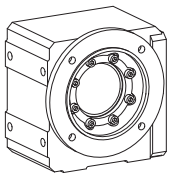
Drawing for Units
K513AGD — K1014AGD

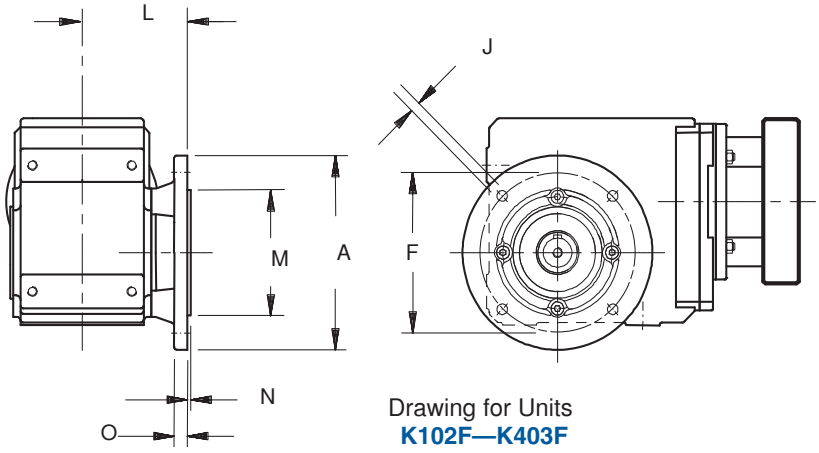


Part No. Example

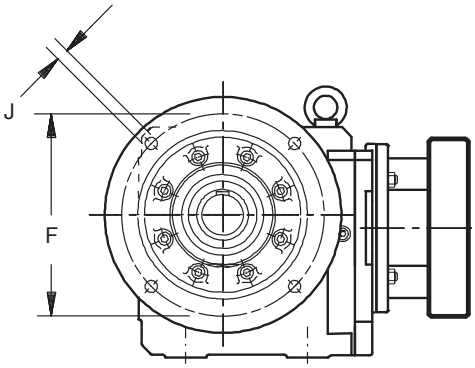
Unit with Torque Arm Bracket and Hollow Output
K513AGD0650

ServoFit® "K" Series–Helical/Bevel Optional Round Flange Sizes Dimensional Data

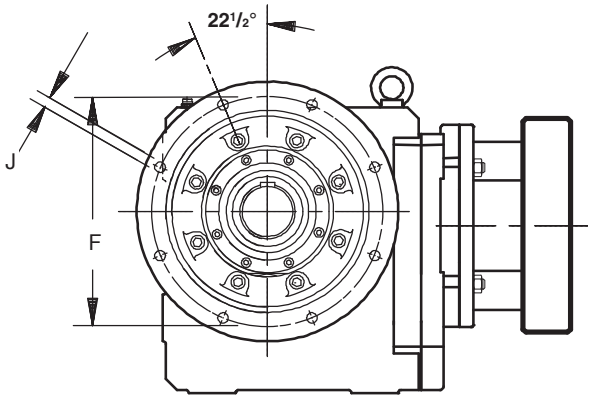




Drawing for Units
K102F—K403F



Drawing for Units
K513F—K814F



Drawing for Units
K913-K1014F

Table No. 1 "K" Series —Optional Flange Dimensions (Inches)

Base Module	Flange Designation	A	F	J	L	M	N	O
K102	140	5.51	4.53	.35	3.35	3.740 +0.001/-0.0004	.12	.39
	160 *	6.30	5.12	.35	3.35	4.331 +0.001/-0.0004	.14	.39
K202/K203	160	6.30	5.12	.35	3.90	4.331 +0.001/-0.0004	.14	.47
	200 *	7.87	6.50	.43	3.90	5.118 +0.001/-0.0004	.14	.47
K302/K303	160	6.30	5.12	.35	4.37	4.331 +0.001/-0.0004	.14	.55
	200 *	7.87	6.50	.43	4.37	5.118 +0.001/-0.0004	.14	.55
	250	9.84	8.46	.55	4.37	7.087 +0.001/-0.0004	.14	.55
K402/K403	**250** *	9.84	8.46	.55	4.98	7.087 +0.001/-0.0004	.16	.59
K513/K514	**250** *	9.84	8.46	.55	5.20	7.087 +0.001/-0.0004	.16	.59
K613/K614	**300** *	11.81	10.43	.55	5.35	9.055 +0.001/-0.0005	.16	.67
K713/K714	**350** *	13.78	11.81	.71	6.18	9.843 +0.000/-0.001	.20	.71
K813/K814	350	13.78	11.81	.71	7.32	9.843 +0.000/-0.001	.20	.79
	400 *	15.75	13.78	.71	7.32	11.811 +0.000/-0.001	.20	.79
	450	17.72	15.75	.71	7.32	13.781 +0.000/-0.002	.20	.79
K913/K914	**450** *	17.72	15.75	.71	8.46	13.780 +0.000/-0.002	.20	.91
	550	21.65	19.69	.71	8.46	17.717 +0.000/-0.002	.20	.91
K1013/K1014	**550**	21.65	19.69	.71	10.08	17.717 +0.000/-0.002	.20	.98

* This is the standard flange diameter. For other diameters, specify at the time of ordering.

Safety Instructions

In order to obtain long life and trouble-free operation from your STOBER gearhead, it is essential that the proper installation and operating procedures be followed. Failure to follow these instructions will void the drive's warranty.

WARNING: Safety is the most important consideration when operating any type of drive. Through proper application, safe handling methods, and wearing appropriate clothing, you can prevent accidents and injury to yourself and fellow workers.

The torque required by the application must not exceed the rated torque capacity of the drive. For safety purposes, a safety coupling should be installed between the driver and the driven load. Otherwise, overload may cause damage to the interior parts of the drive which may result in breaking the housing. As a result, persons could be injured by flying parts or splashing hot gear oil.

The shafts of STOBER drives rotate at very high speeds and can cut off or severely injure hands, fingers, and arms.

Follow all directions in the service instruction manual. Obey all federal, state and local safety regulations when operating the drive.

- Always be sure electrical power is off while making electrical connections and during installation and maintenance of the unit.
- Keep clothing, hands, and tools away from ventilation openings on motors and from all rotating parts during operation.
- Lift the drive with a double rope sling or other proper lifting equipment of adequate strength. Make sure load is secured and balanced to prevent shifting when unit is being moved. Lifting drives by hand may be dangerous and should be avoided.
- The intended use of lifting lugs is to handle the weight of the unit only. Never use a lifting lug to lift attached assemblies.
- Never operate drive at speeds higher than those shown on the nameplate, or personal injury may result. Contact STOBER Drives Inc., if there is any change of operating conditions from those for which the unit was originally sold (as stamped on the nameplate). Failure to comply could result in personal injury and or machinery damage.
- Always follow good safety practices at all times.

Each drive is tested before delivery. Before installation, however, it is advisable to examine the unit for possible damage which might have occurred during transit. If damage is discovered, it should be immediately reported to the transport agent.

If installation is delayed after receipt of the unit, the drive should be stored in a clean, dry place until put into service. Long term storage requires special procedures. If not kept in a heated, dry area, consult STOBER Drives, Inc. for storage instructions.

NOTE: If it is necessary to clean drive shafts, take care to protect the oil seals.

IMPORTANT: Do not use any device to hammer the unit onto the output shaft during installation since the bearing races could be damaged.

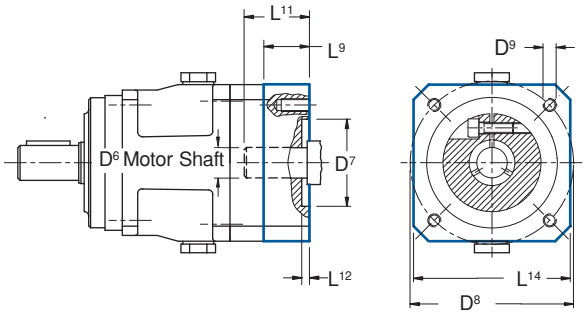
If you have questions about the installation, operation, maintenance or lubrication of the unit, information can be found in this catalog, on our website, or by calling STOBER Technical Support.

ServoFit® Gearhead
Motor Plate Specifications

STOBER ServoFit Gearheads will fit the motor of your choice by assembling the correct motor mounting plate between the motor and the gearhead. When ordering a gearhead, specify the motor manufacturer and part number, provide the motor drawing with dimensions, or specify the motor mounting dimensions. The motor plate thickness (L^9) dimension will be determined by the motor shaft length. The minimum motor plate thickness is shown below. For a precise dimension on a specific motor, contact STOBER Technical Support.

The following dimensions are required to provide the correct motor mounting plate:

1. D^6 Motor Shaft Diameter (If an adapter bushing is required it will be supplied with the motor plate.)
2. D^7 Pilot Diameter
3. D^8 Bolt Circle Diameter
4. D^9 Bolt Diameter
5. L^{11} Motor Shaft Length
6. L^{12} Pilot Length
7. L^{14} Square Flange (Optional—Motor plate will typically be made to match.)



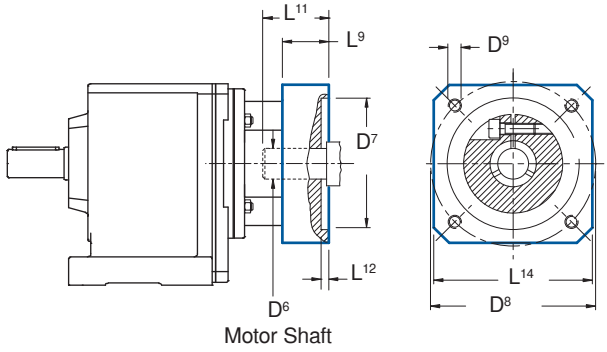


Table No. 1 **Motor Plate Thickness - Minimum**

Unit										D^6 Max.	Motor Plate L^9 Min.	
P	PA	PKX	PH	PHA	PHKX	PHQ(A)	KS	PE	PK, PHK, C, F, K	mm	mm	ins.
P221/222 P322	PA322		PH322	PHA322			KS403			14	15	.59
P221L P222L P321 P322L P422	PA321 PA422	P321KX3 P422KX3	PH321 PH322L PH422	PHA321 PHA422	PH321KX3 PH322KX3 PH422KX3		KS402 KS503			19	18	.71
P321L P421 P422L P522	PA421 PA522	P421KX4 P522KX4	PH321L PH421 PH422L PH522	PHA421 PHA522	PH421KX4 PH522KX4	PHQ723	KS502 KS703			24	21	.83
P421L P521 P522L P722	PA521 PA722	P521KX5 P722KX5	PH421L PH521 PH522L PH722 PH932	PHA521 PHA722 PHA932	PH521KX5 PH722KX5	PHQ823 PHQ722	KS702			32	24	.95
P521L P721 P722L P822	PA721 PA822	P721KX7 P822KX7	PH521L PH721 PH722L PH822 PHV933 PHV1033	PHA721 PHA822 PHVA933 PHVA1033	PH721KX7 PH822KX7	PHQ933 PHQ822				38	25	.98
P721L P821 P822L P922	PA821	P821KX8	PH821 PH932 PH1032	PHA821 PHA932 PHA1032 PHVA1033	PH821KX8 PH932KX8	PHQ1033 PHQ932				48	33	1.3
P921 P922L						PHQ1032				60	43	1.69
								PE201/PE202 PE301/PE302 PE401/PE402 PE501/PE502		11 14 19 24	18 20 30 33	.71 .79 1.2 1.3
									MT10 MT20 MT30 MT40 MT50	19 24 38 48 60	21 24 25 33 43	.83 .95 .98 1.30 1.69

ServoFit® Gearhead Motor Mounting Instructions

General Information

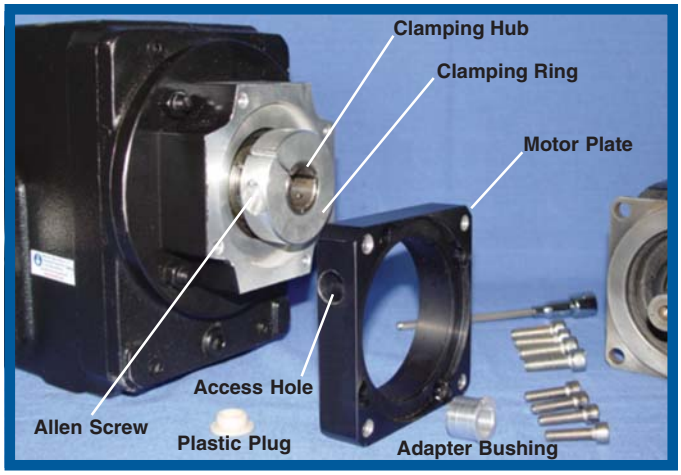
Servo motors are mounted to ServoFit® gearheads by using a TriAdapt® motor adapter with a clamp coupling or the FlexiAdapt® motor adapter with a bellows shaped thermal expansion feature. These patented adapters require no key but uses a friction locking triple split collet to clamp the shaft. A split bushing is included when the motor shaft is smaller than the input bore in the gearhead. The coupling operates free of backlash and, if installed correctly, requires no maintenance.

Tolerances for the motor must be ISO j6 on the pilot diameter and ISO k6 on the motor shaft, see Table No. 1. The motor shaft does not require a key but shaft runout, pilot concentricity and perpendicularity should meet DIN standard 42955-N when possible.

ISO metric threads are designated by the letter "M" followed by the nominal diameter and the pitch, separated by the "x" sign. Example: M6 x 0.75. (NOTE: The absense of the pitch number indicates course pitch by default.)
The pitch number for tapped holes on STOBER specifications are: M5 x 0.80, M6 x 1.00, M8 x 1.25, M10 x 1.50, M12 x 1.75, and M16 x 2.00.

Important: Clean the motor shaft with degreaser to remove any film of oil or grease.

Parts for ServoFit Modular System



Parts for ServoFit Precision Planetary Gearheads

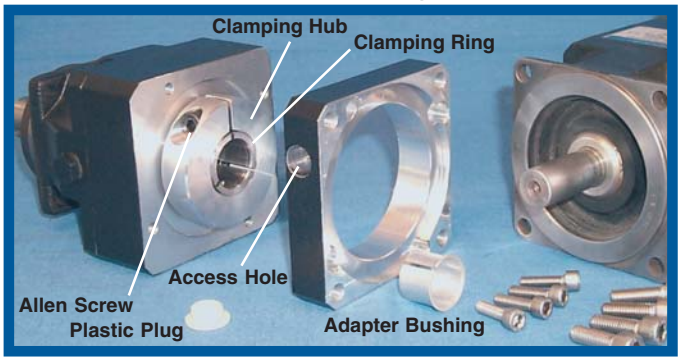


Table No. 1 Tolerances for Motors

k6 - Shaft Diameter	Metric (µm)	Imperial (ins.)
over 6 - 10	+10 / +1	+.00039 / +.00004
over 10 - 18	+12 / +1	+.00047 / +.00004
over 18 - 30	+15 / +2	+.00059 / +.00008
over 30 - 50	+18 / +2	+.0007 / +.00008
j6 - Pilot Diameter	Metric (µm)	Imperial (ins.)
over 10 - 18	+8 / -3	+.0003 / -.00012
over 18 - 30	+9 / -4	+.00035 / -.00016
over 30 - 50	+11 / -5	+.0004 / -.0002
over 50 - 80	+12 / -7	+.00047 / -.00027
over 80 - 120	+13 / -9	+.0005 / -.00035
over 120 - 180	+14 / -11	+.00055 / -.0004
over 180 - 250	+16 / -13	+.0006 / -.0005
over 250 - 315	+16 / -16	+.0006 / -.0006
over 315 - 400	+18 / -18	+.0007 / -.0007

Table No. 2 Capscrew Tightening Torque

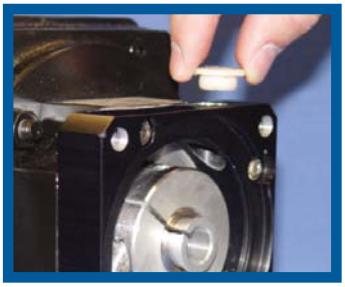
Unit	Allen Wrench Size	Tightening Torque Nm.	Tightening Torque in. lbs.
P221, P222, P322, KS403	3	3	26.6
P221L, P222L, P321, P322L, P422	5	10	88.5
KS402, KS503	5	10	88.5
P321L, P421, P422L, P522	6	25	221.3
KS502, KS703	6	25	221.3
P421L, P521, P522L, P722, KS702	6	25	221.3
P521L, P721, P722L, P822	8	45	398.3
P721L, P821, P822L, P922	10	60	531
P821L, P921, P922L, PHQ1032	14	210	1,858.5
PA322	3	4.5	39.8
PA321, PA422	4	9	35.4
PA321L, PA421, PA522	5	16	141.6
PA421L, PA521, PA522L, PA722	6	40	354.0
PA521L, PA721, PA722L, PA822	8	75	663.8
PA821, PA822L	10	130	1,150.5
P321KX3, P422KX3	4	10	88.5
P421KX4, P521KX5, P522KX4, P722KX5	5	14	123.9
P721KX7, P822KX7	8	45	398.3
P821KX8, P932KX8	10	60	531
PH322	3	3	26.6
PH321, PH322L, PH422	5	10	88.5
PH321L, PH421, PH422L, PH522, PHQ723	6	25	221.25
PH421L, PH521, PH522L, PHQ722, PHQ823	6	25	221.3
PH521L, PH721, PH722L, PH822, PHV933	8	45	398.3
PHQ822, PHQ923	8	45	398.3
PH821, PH932, PH1032, PHV1033	10	60	531
PHQ922, PHQ1023	10	60	531
PHA322	3	4.5	39.8
PHA321, PHA422	4	9	35.4
PHA321L, PHA421, PHA522	5	16	141.6
PHA421L, PHA521, PHA722	6	40	354.0
PHA521L, PHA721, PHA822, PHVA933	8	75	663.8
PHA821, PHA932, PHA1032, PHVA1033	10	130	1,150.5
PH321KX3, PH422KX3	4	10	88.5
PH421KX4, PH521KX5	5	14	123.9
PH522KX4, PH722KX5	5	17	150.5
PH721KX7, PH822KX7	8	35	309.8
PH821KX8, PH932KX8	10	120	1062
PE2	4	10	88.5
PE3	5	17	150.5
PE4	6	42	371.7
PE5	8	83	734.6
ServoFit Gearheads – "C", "F", or "K"			
MT10	5	10	88.5
MT20	6	25	221.3
MT30	8	45	398.3
MT40	10	60	531
MT50	14	210	1,858.5

ServoFit® Gearhead
Motor Mounting Instructions

STEP 1. Remove the access hole plug.

Carefully remove the plastic plug from the access hole in the motor plate.

For new installations, the plastic plug, wrench, instructions, and bushing, when required, are contained in a plastic bag included in the shipping carton.

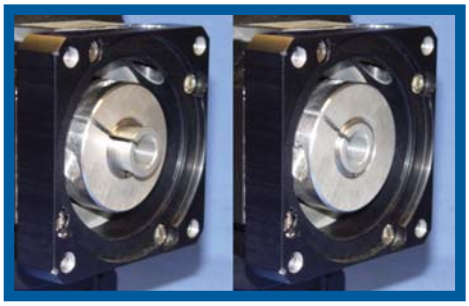


STEP 2. Align screw with access hole.

Visually align the access hole with the Allen screw in the clamping ring by turning the gearhead output shaft or the input coupling. (Shown with wrench for illustration purposes.)

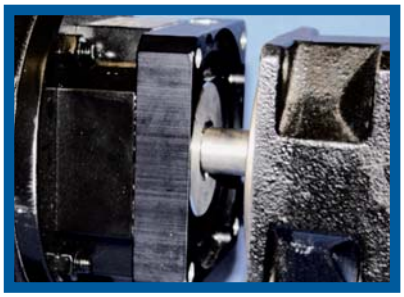
STEP 3. Install bushing (when applicable).

If an adapter bushing is needed, degrease the bushing inside and outside. Align the slot in the adapter bushing with the slot in the coupling hub. Slide the bushing into the input bore until the collar of the bushing touches the shaft end.



STEP 4. Carefully mount the motor.

Place the gearhead (with the bushing installed where necessary) onto the motor shaft. (If there is a keyway in the motor shaft, align the slot in the clamping hub with the keyway.) Support the gearhead while sliding it onto the motor shaft.

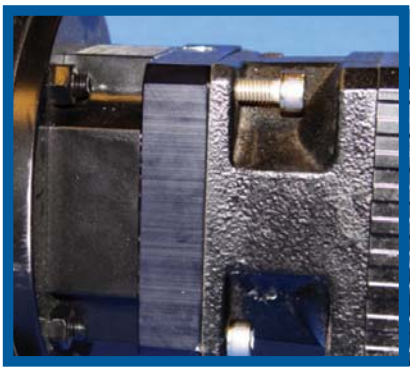


IT IS VERY IMPORTANT THAT THE GEARHEAD IS NOT FORCED ONTO THE SHAFT AND THE MOTOR IS CONCENTRIC WITH THE GEARHEAD COUPLING.

STEP 5. Bolt the motor to the motor plate.

Bolt the motor flange to the gearhead motor plate.

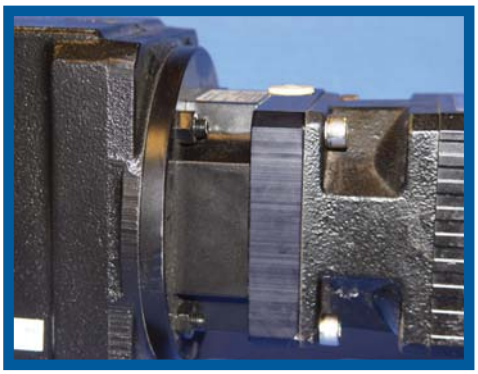
Tighten the motor bolts to the recommended tightening torque shown in Table No. 2.



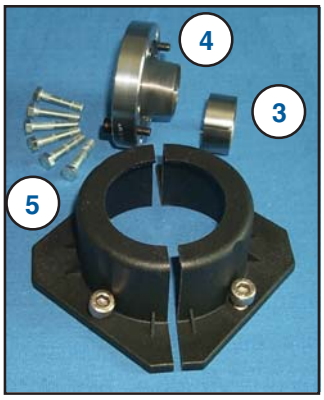
STEP 6. Tighten the TriAdapt coupling screw.

With a torque wrench, tighten the Allen screw on the coupling to the recommended torque shown in Table No. 2. A torque wrench extension is provided with each gearhead. If there are two (2) screws, be sure to tighten them equally.

STEP 7. Re-insert the plastic plug.

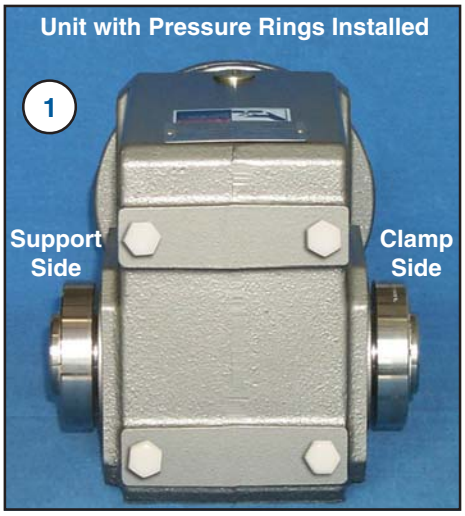


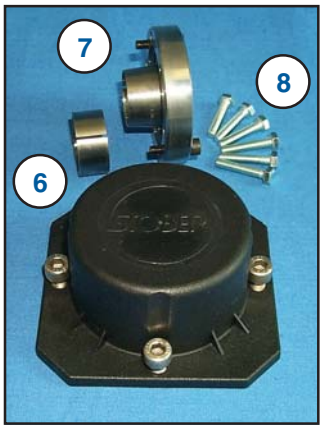
"K" Series – ServoFit® Modular System
"WFB" Bushing Installation



Support Side Bushing Components

The Support Side is the bushing with the dark coating on the cone. Do NOT use cleaner on the coated cone.

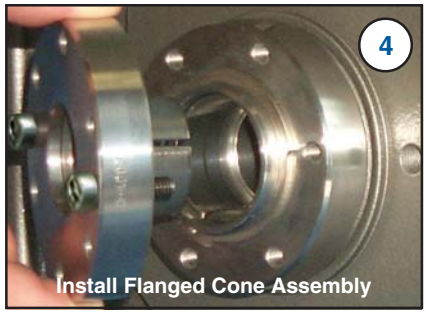




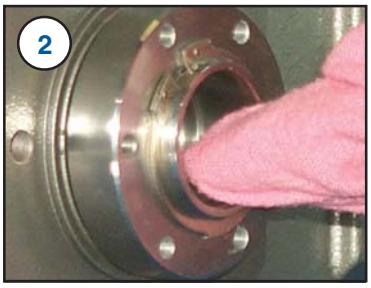
Clamp Side Bushing Components

Support Side Installation

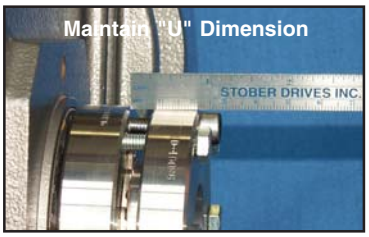
K1 units do not have a tapered cone.



Install the Flanged Cone Assembly (4) with it's slot opposite the slot in the tapered cone (3).

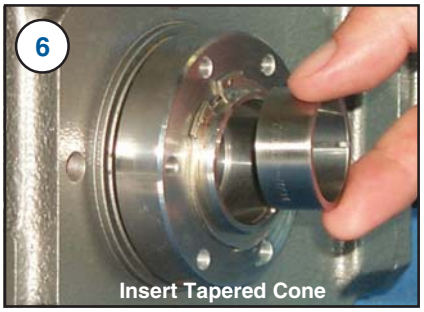


Be sure the inside of the quill is free of grease and oil before installing the tapered cones.

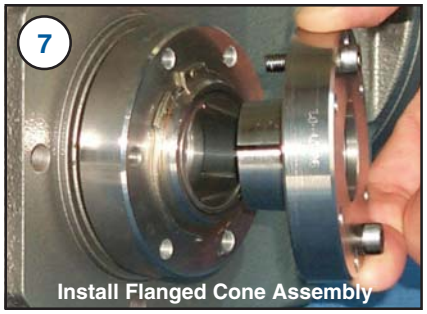


The "U" distance (between the rings) determined by the spacer bolts (see Table 1) must be maintained throughout assembly of the bushing and mounting onto the shaft. Therefore DO NOT tighten the capscrews or remove the spacer bolts until the unit is mounted on the shaft.

Clamp Side Installation

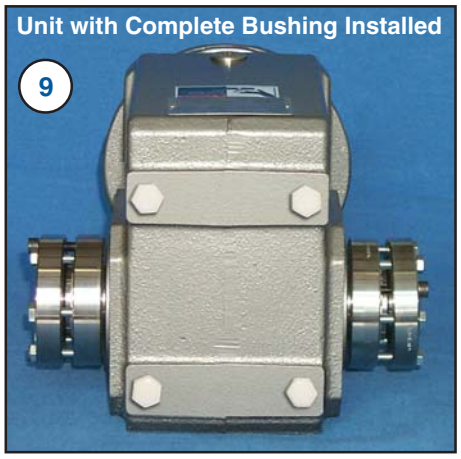


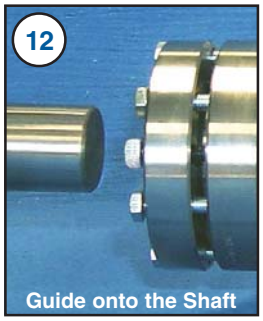
K1 units do not have a tapered cone.

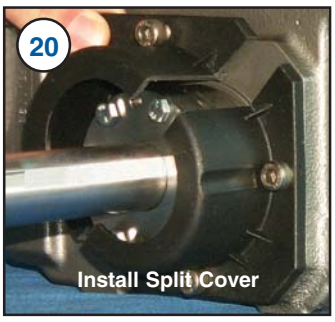


Install the Flanged Cone Assembly (7) with it's slot opposite the slot in the tapered cone (6).

"K" Series – ServoFit® Modular System
"WFB" Bushing Installation







Tighten all capscrews to the torque shown in Table 1. Use a torque wrench. The tightening should be done gradually in a rotating sequence and will require more than one rotation.

After two hours (minimum) running time, check capscrews and retighten, if necessary.

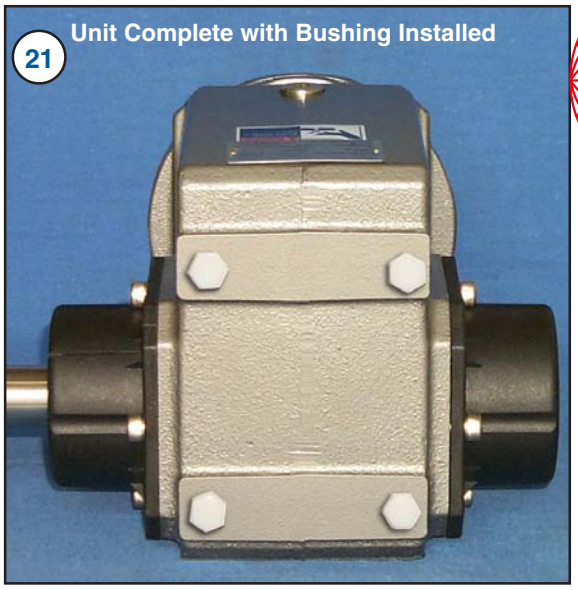


Table No. 1

Base Module	Capscrews		Tightening Torque		U		Spacer Bolts
	Qty.	Size x Length	Nm.	in. lbs.	mm	ins.	
K102	6	M6x25 mm	10	89	5	.20	M6x20mm
K202/K203	6	M6x30 mm	10	89	5	.20	M6x20mm
K302/K303	8	M6x30 mm	10	89	5	.20	M6x20mm
K402/K403	8	M8x30 mm	25	221	6	.24	M8x20mm
K513/K514	8	M8x30 mm	25	221	7	.28	M8x25mm
K613/K614	8	M10x35 mm	49	434	8.5	.33	M10x25mm
K713/K714	8	M10x40 mm	49	434	5.5	.22	M10x25mm
K813/K814	8	M12x40 mm	85	752	7	.28	M12x45mm

ServoFit® Modular System
Wobble Free Bushing Features

"No Key and Wobble Free"

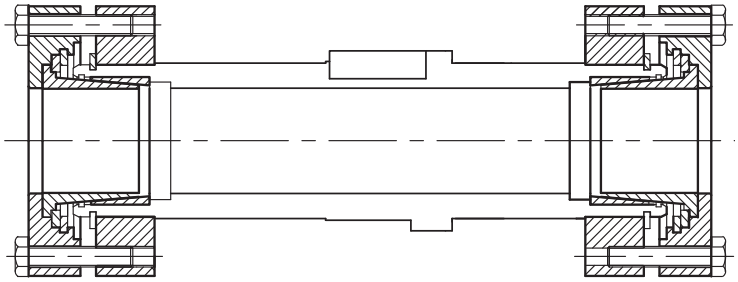
The STOBER "Wobble Free" bushing is a unique patented[1] bushing system which can be supplied on a single side or double sides. These bushings can be mounted in the "F" Series and "K" Series ServoFit reducers. Each case size can be provided with a variety of bushing bores. The unit is selected based on horsepower or torque rating, output speed or ratio, and the shaft size of the driven equipment.

Some special features of the bushing system are:

- Featuring a distinct support side and a clamp side, the dual tapered cones will overcome a wide range of tolerances normally found with standard shaft materials. There is no shaft key necessary.
- Units sizes K102 through K814 can be supplied with output covers on one or both sides which protect the seals and also cover the rotating bushing. F102 through F603 can only have a cover mounted on Side 5.
- Wobble Free — tapered cones in conjunction with a support ring or support side bushing prevent the "rocking" of the reducer on the shaft, common with many bushing designs.
- The reducer output bore can be changed any time by changing the bushing kit.
- The bushing will accept a shaft with a tolerance of +.000/-.005 inches. **Important:** A 1/32 x 45° chamfer minimum is recommended for the shaft end.
- The quill, all bushing parts, and hardware can be supplied stainless steel to provide corrosion resistance for washdown applications.

Detailed instructions for mounting the bushing are included with each bushing kit.

Double Sided Bushing

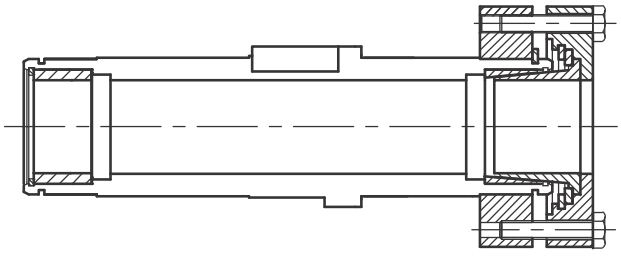


Support Side **Clamp Side**

This unique design allows the unit to be mounted on the shaft from either side of the reducer by reversing the clamp side and support side bushings. The clamp side is determined by the customer but is usually the easily accessible outside bushing.
The double sided bushing is not installed into the unit at assembly, but with easy-to-follow installation instructions, the unit and bushing can be mounted on the machinery quickly — without any special tools.

Single Sided Bushing

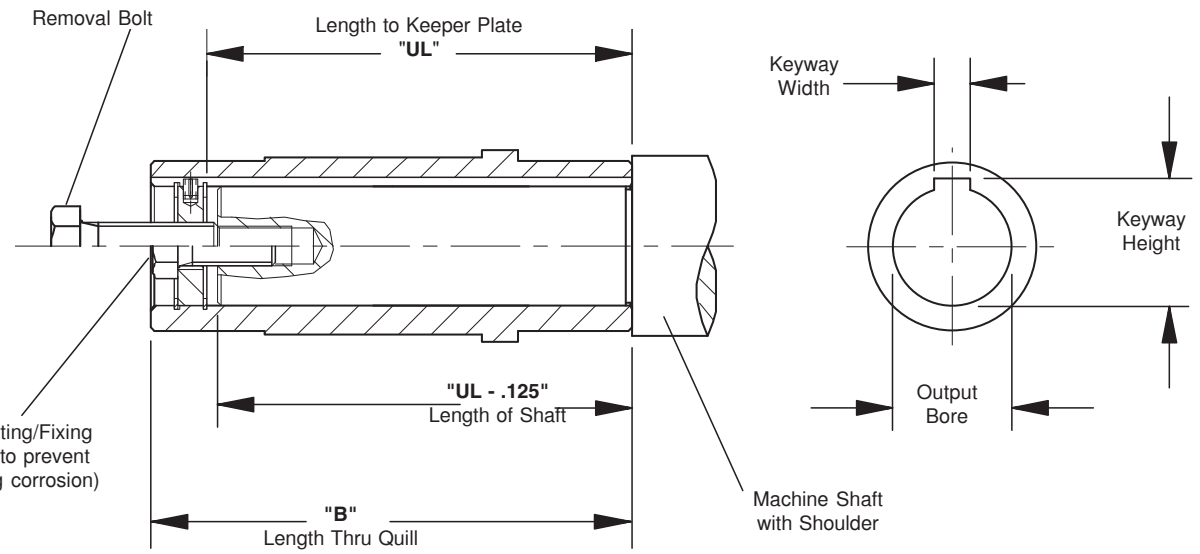
The single sided bushing is assembled at the time of the order. The bushing side extension must be specified by the customer before assembly. The bushing is installed into the unit for shipping and is not interchangeable once the unit is assembled.



Support Side **Clamp Side**

[1] U.S. Patent Number 5,496,127

ServoFit® Modular System
Installation of Hollow Output



Mounting Hollow Output Reducers

A STOBER hollow output reducer can be mounted from either side. The sizes of the hollow bores are shown in the table below and the shaft should be toleranced to an ISO k6 standard to fit this bore.

A keeper plate inside the quill is provided with each unit to prevent axial movement. This keeper plate is held in place with snap rings and can be easily removed for location on either end. A spring pin in the keeper plate mounts into the keyway of the quill and prevents rotation. The keeper plate center hole is tapped to fit the removal bolt.

Before installation, brush the inside of the quill with rust inhibiting grease. When mounting the unit onto the shaft, avoid hammering as this may damage the bearings. Do not mount the reducer dry as removal may be impossible.

The drawing above shows a mounting or fixing bolt and a removal bolt. The mounting/fixing bolt should be smaller in size than the removal bolt. See tables below.

To use the keeper plate with a mounting/fixing bolt, drill and tap the end of the shaft that will be mounted into the reducer. Insert the mounting/fixing bolt through the keeper plate and thread into the shaft end. The machine shaft length should not be longer than the “UL” dimension. A shaft length of "UL minus .125" (or 3mm) will allow the shaft shoulder to pull against the face of the quill of the reducer.

Removal of Hollow Output Reducers

To dismantle the unit from the shaft, remove the mounting bolt. Thread the removal bolt into the keeper plate to press against the shaft and loosen the shaft from the unit. Removal of the reducer will be easier if the quill is greased before installation.

Table No. 1 "UL" Dimension/Removal Bolt Size

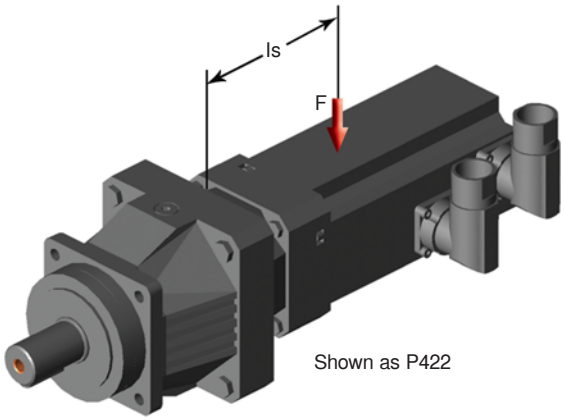
Base Module	Standard Bore - inches			Optional Bore - mm		
	U	UL	Bolt	U	UL	Bolt
F102	.750$_{G7}$	2.67	3/8-16 NC	20$_{H7}$	95	M8
F202/F203	1.000$_{G7}$	3.62	3/8-16 NC	25$_{H7}$	115	M12
F302/F303	1.250$_{G7}$	4.06	1/2-13 NC	30$_{H7}$	130	M12
F402/F403	1.500$_{G7}$	4.49	3/4-10 NC	40$_{H7}$	145	M20
F602/F603	2.000$_{G7}$	5.63	3/4-10 NC	40$_{H7}$	180	M20

Table No. 2 "UL" Dimension/Removal Bolt Size

Base Module	Standard Bore - inches			Optional Bore - mm		
	U	UL	Bolt	U	UL	Bolt
K102	1.000$_{G7}$	3.86	1/2-13 NC	25$_{H7}$	120	M10
K202/203	1.1875$_{G7}$	4.78	1/2-13 NC	30$_{H7}$	148	M10
K302/303	1.375$_{G7}$	4.92	5/8-11 NC	35$_{H7}$	160	M12
K402/403	1.500$_{G7}$	6.18	3/4-10 NC	40$_{H7}$	188	M16
K513/514	2.000$_{G7}$	6.49	3/4-10 NC	50$_{H7}$	200	M16
K613/614	2.000$_{G7}$	7.05	3/4-10 NC	50$_{H7}$	215	M16
K713/714	2.375$_{G7}$	8.43	1-8 NC	60$_{H7}$	242	M20
K813/814	2.750$_{G7}$	10.35	1-8 NC	70$_{H7}$	300	M20
K913/914	3.250$_{G7}$	12.32	1-8 NC	90$_{H7}$	350	M24
K1013/K1014	4.000$_{G7}$	14.25	1 1/4-7 NC	100$_{H7}$	410	M24

Permissable Motor Tilting Torque

The permissible tilting torque of the motor attached to the gear unit is a result of the static and dynamic load "**F**" from the motor weight, mass acceleration, and vibration multiplied by the distance from the center of gravity "$\mathbf{l_s}$" of the motor. $M_{1k} = F \times l_s \leq M_{1K}$



Shown as P422

Table No. 1 M_{1K} – Permissible Motor Tilting Torque

Unit Type with MT	Nm	inlbs.
P221, P222, P(A)322 **KS403**	10	88.5
P(A)321, P(A)422 **PH(A)422** **KS402, KS503**	20	177
P(A)421, P(A)522 **PH(A)421, PH(A)522** **PHQ(A)723** **KS502, KS703**	40	354
P(A)521, P(A)722 **PH(A)521, PH(A)722** **PHQ(A)722, PHQ(A)823** **KS702**	80	708
P(A)721, P(A)822 **PH(A)721, PH(A)822** **PHQ(A)822, PHQ(A)933, PHV(A)933**	200	1,770
P(A)821, P(A)922 **PH(A)821, PH(A)932, PH(A)1032** **PHQ(A)932, PHQ(A)1033, PHV(A)1033**	400	3,540
P921 **PHQ(A)1032**	800	7,080
MT10	25	221
MT20	60	531
MT30	125	1,106
MT40	250	2,212
MT50	600	5,310

Overhung Load

Pulling forces or overhung load of pulleys, sheaves, sprockets, etc. on the reducer output shaft must not exceed the allowable limits shown in the above calculations. The overhung load shown is measured at the center of the shaft extension.

The following formula can be used to determine actual overhung load for a given drive.

METRIC

$$OHL = \frac{19{,}100 \times kW \times K}{D \times n}$$

where
- OHL = Newtons (N)
- kW = Transmitted Kilowatt
- D = Pitch Diameter (meters) of Sprocket, Gear, Sheave, Pulley, etc.
- n = Maximum Shaft RPM
- K = 1.00 Single Chain Drive
  - 1.25 Timing Belt Drive
  - 1.25 Spur, Helical Gear Drive
  - 1.50 V-Belt Drive
  - 2.50 Flat Belt Drive

IMPERIAL

$$OHL = \frac{126{,}000 \times HP \times K}{D \times RPM}$$

where
- OHL = Pounds (lbs.)
- HP = Horsepower
- D = Pitch Diameter (inches) of Sprocket, Gear, Sheave, Pulley, etc.
- n = Maximum Shaft RPM
- K = 1.00 Single Chain Drive
  - 1.25 Timing Belt Drive
  - 1.25 Spur, Helical Gear Drive
  - 1.50 V-Belt Drive
  - 2.50 Flat Belt Drive

No overhung load is encountered when an reducer is flange mounted and/or coupling connected to another unit. However, the shafts of all components must be accurately aligned and secured to prevent pre-loading of the bearings and premature bearing failure.

"P and PA" Series
ServoFit® Precision Planetary Gearhead
No Load Running Torque

Table No. 1 **"P" Series Input – No Load Running Torque –** T_R

Unit No.		Ratio 3	4	5	7	8	10	15	16	20	25	28	32	35	40	50	70	100
P2	in.lbs.	—	1.8	1.8	1.8	1.8	.9	—	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
	Nm.		.2	.2	.2	.2	.1		.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
P3	in.lbs.	2.7	1.8	1.8	1.8	1.8	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
	Nm.	.3	.2	.2	.2	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
P4	in.lbs.	3.5	2.7	2.7	1.8	1.8	1.8	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
	Nm	.4	.3	.3	.2	.2	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1
P5	in.lbs.	7.0	5.3	4.4	3.5	2.7	2.7	2.7	2.7	2.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
	Nm	.8	.6	.5	.4	.3	.3	.3	.3	.3	.2	.2	.2	.2	.2	.2	.2	.2
P7	in.lbs.	8.0	6.2	5.3	4.4	3.5	3.5	2.7	2.7	2.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
	Nm	.9	.7	.6	.5	.4	.4	.3	.3	.3	.2	.2	.2	.2	.2	.2	.2	.2
P8	in.lbs.	14.2	11.5	9.7	8.0	6.2	6.2	5.3	5.3	4.4	4.4	3.5	3.5	3.5	3.5	3.5	3.5	3.5
	Nm	1.6	1.3	1.1	.9	.7	.7	.3	.6	.5	.5	.4	.4	.4	.4	.4	.4	.4

The torque is measured with the input at 2000 RPM and an ambient temperature of 20° C.

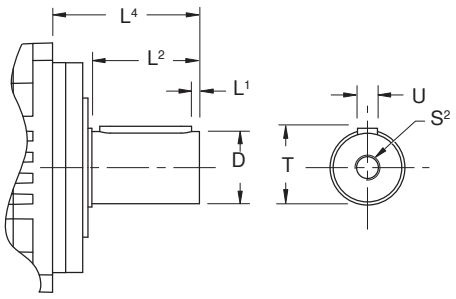
Table No. 2 **"PA" Series Input – No Load Running Torque –** T_R

Unit No.		Ratio 3	4	5	7	8	10	15	16	20	25	28	32	35	40	50	70	100
PA3	in.lbs.	2.7	1.8	1.8	1.8	1.8	1.8	—	1.3	1.3	.9	.9	.9	.9	.9	.9	.9	.9
	Nm.	.3	.2	.2	.2	.2	.2	—	.15	.15	.1	.1	.1	.1	.1	.1	.1	.1
PA4	in.lbs.	4.4	3.5	3.5	2.7	2.7	2.7	2.7	2.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
	Nm	.5	.4	.4	.3	.3	.3	.3	.3	.2	.15	.15	.15	.15	.15	.15	.15	.15
PA5	in.lbs.	7.0	5.3	4.4	3.5	3.5	3.5	3.5	3.5	2.7	2.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8
	Nm	.8	.6	.5	.4	.4	.4	.4	.4	.3	.3	.2	.2	.2	.2	.2	.2	.2
PA7	in.lbs.	8.0	6.2	5.3	4.4	4.4	4.4	6.2	4.4	3.5	1.8	3.5	3.5	3.5	3.5	3.5	3.5	3.5
	Nm	.9	.7	.6	.5	.5	.5	.7	.5	.4	.2	.4	.4	.4	.4	.4	.4	.4
PA8	in.lbs.	19.5	17.7	15.9	15.0	15.0	15.0	8.0	5.3	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
	Nm	2.2	2.0	1.8	1.7	1.7	1.7	.9	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5

The torque is measured with the input at 2000 RPM and an ambient temperature of 20° C.

"P and PA" Series
ServoFit® Precision Planetary Gearhead
Output Shaft Options

"P" – Shaft with Key



"G" – Shaft without Key

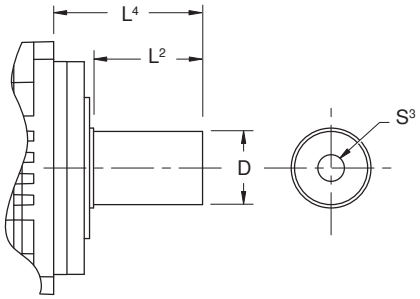


Table No. 1 **Output Shaft Options**

P – Shaft with Key

Unit No.	D k6 mm		L1 mm	L1 inches	L2 mm	L2 inches	L4 mm	L4 inches	S2 (1)	T mm	T inches	U (2) WDxHTxLG
P2	12	+.012/+.001	2	.08	22	.87	36	1.42	M4	13.5	.53	A4x4x18
P3/PA3	16	+.012/+.001	2	.08	28	1.10	48	1.89	M5	18	.71	A5x5x22
P4/PA4	22	+.015/+.002	3	.11	36	1.42	56	2.20	M8	24.5	.96	A6x6x28
P5/PA5	32	+.018/+.002	3	.11	58	2.28	88	3.46	M12	35	1.38	A10x8x50
P7/PA7	40	+.018/+.002	4	.16	82	3.23	112	4.41	M16	43	1.69	A12x8x70
P8/PA8	55	+.021/+.002	6	.24	82	3.23	112	4.41	M20	59	2.32	A16x10x70
P9	75	+.021/+.002	7	.28	105	4.13	143	5.63	M20	79.5	3.13	A20x12x90

G – Shaft without Key

Unit No.	D k6 mm		L2 mm	L2 inches	L4 mm	L4 inches	S3 (1)
P2	12	+.012/+.001	22	.87	36	1.42	R3.5x6.7
P3/PA3	16	+.012/+.001	28	1.10	48	1.89	R4x8.5
P4/PA4	22	+.015/+.002	36	1.42	56	2.20	R4x8.5
P5/PA5	32	+.018/+.002	58	2.28	88	3.46	R4x8.5
P7/PA7	40	+.018/+.002	82	3.23	112	4.41	R4x8.5
P8/PA8	55	+.021/+.002	82	3.23	112	4.41	R5x10.6
P9	75	+.021/+.002	105	4.13	143	5.63	M20

(1) The center hole in shafts with keys (Option "P") are machined to DIN 332 T2 shape DR.

(2) Feather keys are toleranced according to standard DIN 6885.

"P, PA, PKX, and PK" Series ServoFit® Precision Planetary Gearhead Permissable Shaft Load

All formulas shown are based on METRIC values.

Upper case letters are permissible values. Lower case letters are for existing values.

The permissible load and tilting moment values are based on an output speed of 100 RPM. For higher speeds the following applies, where n_2 is the desired speed:

$$F_{2AX} = \frac{F_{2A}}{\sqrt[3]{\frac{n_2}{100}}} \qquad F_{2RX} = \frac{F_{2R}}{\sqrt[3]{\frac{n_2}{100}}} \qquad M_{2KX} = \frac{M_{2K}}{\sqrt[3]{\frac{n_2}{100}}}$$

The application input tilting moment should be determined by the following formula:

$$M_{2A} = \frac{2 \bullet F_{2a} \bullet y_2 + F_{2rb} \bullet (x_2 + z_2)}{1000} \leq M_{2KB}$$

$$M_{2ka} = \sqrt[3]{\frac{n_{2b1} \bullet t_{b1} \bullet M_{2kb1}{}^3 + \ldots + n_{2bn} \bullet t_{bn} \bullet M_{2kbn}{}^3}{n_{2b1} \bullet t_{b1} + \ldots + n_{2bn} \bullet t_{bn}}} \leq M_{2K}$$

$$F_{2r} = \sqrt[3]{\frac{n_{2b1} \bullet t_{b1} \bullet F_{2rb1}{}^3 + \ldots + n_{2bn} \bullet t_{bn} \bullet F_{2rbn}{}^3}{n_{2b1} \bullet t_{b1} + \ldots + n_{2bn} \bullet t_{bn}}} \leq F_{2R}$$

where:

- F_{2a} ..... Axial Load at Output Shaft
- F_{2A} ..... Permissible Axial Load
- F_{2r} ..... Radial Load at Output Shaft
- F_{2R} ..... Permissible Radial Load
- F_{2RB} ..... Acceleration Permissible Radial Load
- M_{2K} ..... Rated Tilting Torque
- M_{2k} ..... Equivalent Tilting Load
- M_{2KB} ..... Acceleration Tilting Torque
- z_2 ..... Distance Factor

The hours of life (L_h) of the unit can be determined by the following formula:

bearing life for duty cycle ≤ 40%

L_h > 10,000 hours if M_{2K}/M_{2A} < 1.25 and > 1
L_h > 20,000 hours if M_{2K}/M_{2A} > 1.25 and > 1.5
L_h > 30,000 hours if M_{2K}/M_{2A} < 1.5

bearing life for duty cycle ≥ 40%

$$L_{hA} = L_h \left(\frac{40\%}{\text{Duty Cycle}}\right)$$

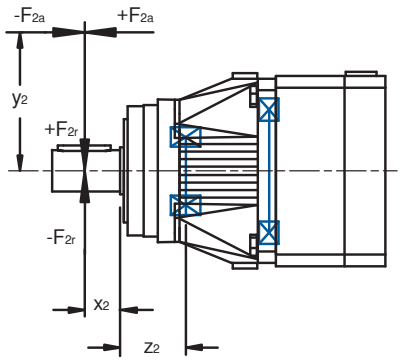


Table No. 1 Permissible Load and Tilting Moments

R – Output Bearing Option, Normal

Unit No.	z2 mm	z2 inches	F2A N	F2A lbs.	F2R N	F2R lbs.	F2RB N	F2RB lbs.	M2K Nm	M2K in.lbs.	M2KB Nm	M2KB in.lbs.
P2	17	.669	500	112	1,200	270	1,300	293	34	300	36	319
P3	21	.827	1,000	225	2,500	563	2,500	563	88	779	88	779
P4	22	.866	1,500	337	4,000	900	4,500	1,013	160	1,416	180	1,593
P5	23	.906	2,300	518	6,500	1,463	7,000	1,575	338	2,708	364	3,221
P7	26	1.023	2,900	653	8,000	1,800	9,000	2,025	536	4,744	603	5,337
P8	28	1.102	4,700	1,058	13,000	2,925	18,000	4,050	897	7,938	1,242	10,992
P9	40	1.575	6,000	1,350	18,000	4,050	27,000	6,075	1,665	14,735	2,498	22,107

D – Output Bearing Option, Axially Reinforced

Unit No.	z2 mm	z2 inches	F2A N	F2A lbs.	F2R N	F2R lbs.	F2RB N	F2RB lbs.	M2K Nm	M2K in.lbs.	M2KB Nm	M2KB in.lbs.
P3, PA3	24	.945	1,400	315	2,750	619	2,750	619	105	929	105	929
P4, PA4	25	.984	2,250	506	4,500	1,013	5,000	1,125	194	1,717	215	1,903
P5, PA5	29	1.142	3,500	788	7,000	1,575	8,000	1,800	406	3,593	464	4,106
P7, PA7	31	1.220	4,500	1,013	9,000	2,025	10,000	2,250	648	5,735	720	6,372
P8, PA8	35	1.378	7,500	1,688	15,000	3,375	18,000	4,050	1,140	10,089	1,368	12,107
P9	51	2.008	10,000	2,250	20,000	4,500	30,000	6,750	2,070	18,320	3,105	27,479

Z – Output Bearing Option, Radially Reinforced

Unit No.	z2 mm	z2 inches	F2A N	F2A lbs.	F2R N	F2R lbs.	F2RB N	F2RB lbs.	M2K Nm	M2K in.lbs.	M2KB Nm	M2KB in.lbs.
P3	21	.83	600	135	3,000	675	3,000	675	105	929	105	929
P4	22	.87	1,000	225	5,000	1,125	5,000	1,125	200	1,770	200	1,770
P5	23	.91	1,600	360	8,000	1,800	8,000	1,800	416	3,682	416	3,682
P7	26	1.02	2,000	450	10,000	2,250	10,000	2,250	670	5,929	670	5,929
P8	28	1.10	3,600	810	18,000	4,050	18,000	4,050	1,242	10,992	1,242	10,992
P9	40	1.58	5,000	1,125	27,000	6,075	35,000	7,875	2,500	22,125	3,238	28,656

During EMERGENCY OFF operation (maximum stops per gearhead = 1000) the permissible values in the table for F_{2A}, F_{2R}, and M_{2K} can be multiplied by a factor of 2.

The permissible load values given are valid with the load applied to the center of the output shaft (x_2).
See Page 7 for output shaft load characteristics and typical applications.

"PH, PHA, PHKX and PHK" Series ServoFit® Precision Planetary Gearhead Permissable Shaft Load

All formulas shown are based on METRIC values.

Upper case letters are permissible values. Lower case letters are for existing values.

The permissible load and tilting moment values are based on an output speed of 100 RPM. For higher speeds the following applies, where n_2 is the desired speed:

$$F_{2AX} = \frac{F_{2A}}{\sqrt[3]{\frac{n_2}{100}}} \qquad M_{2KX} = \frac{M_{2K}}{\sqrt[3]{\frac{n_2}{100}}}$$

The application input tilting moment should be determined by the following formula:

$$M_{2A} = \frac{F_{2a} \bullet y_2 + F_{2rb} \bullet (x_2 + z_2)}{1000} \leq M_{2KB}$$

$$M_{2ka} = \sqrt[3]{\frac{n_{2b1} \bullet t_{b1} \bullet M_{2kb1}{}^3 + ... + n_{2bn} \bullet t_{bn} \bullet M_{2kbn}{}^3}{n_{2b1} \bullet t_{b1} + ... + n_{2bn} \bullet t_{bn}}} \leq M_{2K}$$

$$F_{2r} = \sqrt[3]{\frac{n_{2b1} \bullet t_{b1} \bullet F_{2rb1}{}^3 + ... + n_{2bn} \bullet t_{bn} \bullet F_{2rbn}{}^3}{n_{2b1} \bullet t_{b1} + ... + n_{2bn} \bullet t_{bn}}} \leq F_{2R}$$

where:

- F_{2a} ..... Axial Load at Output Shaft
- F_{2A} ..... Permissible Axial Load
- F_{2r} ..... Radial Load at Output Shaft
- F_{2R} ..... Permissible Radial Load
- F_{2RB} ..... Acceleration Permissible Radial Load
- M_{2K} ..... Rated Tilting Torque
- M_{2k} ..... Equivalent Tilting Load
- M_{2KB} ..... Acceleration Tilting Torque
- z_2 ..... Distance Factor

The hours of life (L_h) of the unit can be determined by the following formula:

bearing life for duty cycle ≤ 40%

L_h > 10,000 hours if M_{2K}/M_{2A} < 1.25 and > 1
L_h > 20,000 hours if M_{2K}/M_{2A} > 1.25 and > 1.5
L_h > 30,000 hours if M_{2K}/M_{2A} < 1.5

bearing life for duty cycle ≥ 40%

$$L_{hA} = L_h \left(\frac{40\%}{\text{Duty Cycle}}\right)$$

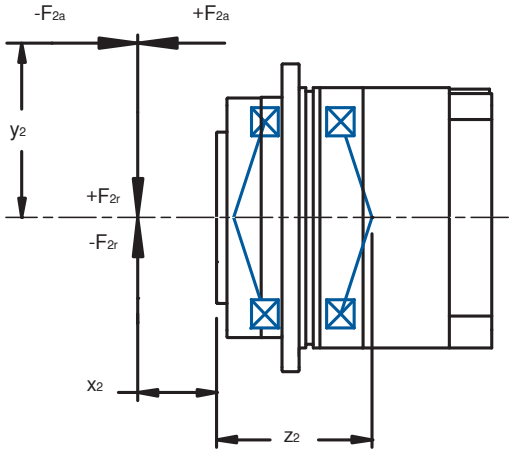


Table No. 1 "PH" and "PHA" Series – Permissible Output Load and Tilting Moments

Unit No.	z_2 mm	z_2 inches	F_{2AMAX} N	F_{2AMAX} lbs.	M_{2KMAX} Nm	M_{2KMAX} in.lbs.	M_{2KB} Nm	M_{2KB} in.lbs.	C_{2K} Nm/arcmin	C_{2K} In.lbs/arcmin
PH3, PHA3	62	2.44	1,650	371	100	885	100	885	53	469
PH4, PHA4	84	3.07	2,150	484	260	2,124	300	2,655	160	1,416
PH5, PHA5	97	3.62	4,150	934	440	3,717	475	4,204	380	3,363
PH7, PHA7	88	3.31	6,150	1,384	1,500	13,275	1,500	13,275	500	4,425
PH8, PHA8	126	4.65	10,050	2,261	3,500	30,975	3,500	30,975	1,550	13,718
PH(A)9, PHV(A)9	155	6.10	33,000	7,425	7,500	66,375	11,000	97,350	7,500	66,375
PH(A)10, PHV(A)10	171	5.51	50,000	11,250	8,800	77,880	12,500	110,625	9,500	84,075

During EMERGENCY OFF operation (maximum stops per gearhead = 1000) the permissible values in the table for F_{2A}, F_{2R}, and M_{2K} can be multiplied by a factor of 2.

"PHQ and PHQA" Series
ServoFit® Precision Planetary Gearhead
Permissable Shaft Load

All formulas shown are based on METRIC values.

Upper case letters are permissible values. Lower case letters are for existing values.

The permissible load and tilting moment values are based on an output speed of 100 RPM. For higher speeds the following applies, where n_2 is the desired speed:

$$F_{2AX} = \frac{F_{2A}}{\sqrt[3]{\frac{n_2}{100}}} \qquad F_{2RX} = \frac{F_{2R}}{\sqrt[3]{\frac{n_2}{100}}} \qquad M_{2KX} = \frac{M_{2K}}{\sqrt[3]{\frac{n_2}{100}}}$$

The application input tilting moment should be determined by the following formula:

$$M_{2A} = \frac{F_{2a} \bullet y_2 + F_{2rb} \bullet (x_2 + z_2)}{1000} \leq M_{2KB}$$

$$M_{2ka} = \sqrt[3]{\frac{n_{2b1} \bullet t_{b1} \bullet M_{2kb1}{}^3 + ... + n_{2bn} \bullet t_{bn} \bullet M_{2kbn}{}^3}{n_{2b1} \bullet t_{b1} + ... + n_{2bn} \bullet t_{bn}}} \leq M_{2K}$$

$$F_{2r} = \sqrt[3]{\frac{n_{2b1} \bullet t_{b1} \bullet F_{2rb1}{}^3 + ... + n_{2bn} \bullet t_{bn} \bullet F_{2rbn}{}^3}{n_{2b1} \bullet t_{b1} + ... + n_{2bn} \bullet t_{bn}}} \leq F_{2R}$$

where:

- F_{2a} ..... Axial Load at Output Shaft
- F_{2A} ..... Permissible Axial Load
- F_{2r} ..... Radial Load at Output Shaft
- F_{2R} ..... Permissible Radial Load
- F_{2RB} ..... Acceleration Permissible Radial Load
- M_{2K} ..... Rated Tilting Torque
- M_{2k} ..... Equivalent Tilting Load
- M_{2KB} ..... Acceleration Tilting Torque
- z_2 ..... Distance Factor

The hours of life (L_h) of the unit can be determined by the following formula:

bearing life for duty cycle ≤ 40%

L_h > 10,000 hours if M_{2K}/M_{2A} < 1.25 and > 1
L_h > 20,000 hours if M_{2K}/M_{2A} > 1.25 and > 1.5
L_h > 30,000 hours if M_{2K}/M_{2A} < 1.5

bearing life for duty cycle ≥ 40%

$$L_{hA} = L_h \left(\frac{40\%}{\text{Duty Cycle}}\right)$$

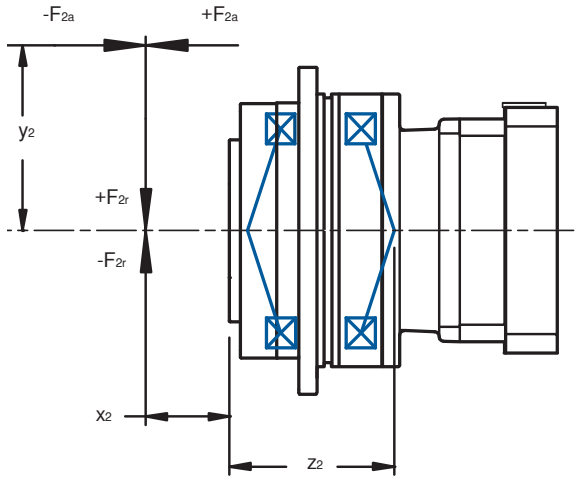


Table No. 1 "PHQ" and "PHQA" Series – Permissible Output Load and Tilting Moments

Unit No.	z_2 mm	z_2 inches	F_{2AMAX} N	F_{2AMAX} lbs.	M_{2KMAX} Nm	M_{2KMAX} in.lbs.	M_{2KB} Nm	M_{2KB} in.lbs.	C_{2K} Nm/arcmin	C_{2K} In.lbs/arcmin
PHQ7	88	3.47	6,150	1,384	1,500	13,275	1,700	15,045	500	4,425
PHQ8	126	4.96	10,050	2,261	3,500	30,975	5,300	46,905	1,550	13,718
PHQ(A)9	155	6.10	33,000	7,425	7,500	66,375	11,000	97,350	7,500	66,375
PHQ(A)10	171	6.73	50,000	11,250	8,800	77,880	12,500	110,625	9,500	84,075

During EMERGENCY OFF operation (maximum stops per gearhead = 1000) the permissible values in the table for F_{2A}, F_{2R}, and M_{2K} can be multiplied by a factor of 2.

"PE" Series
ServoFit® Planetary Gearhead
Permissable Shaft Load

All formulas shown are based on METRIC values.

Upper case letters are permissible values. Lower case letters are for existing values.

The permissible load and tilting moment values are based on an output speed of 100 RPM. For higher speeds the following applies, where n_2 is the desired speed:

$$F_{2AX} = \frac{F_{2A}}{\sqrt[3]{\frac{n_2}{100}}} \qquad F_{2RX} = \frac{F_{2R}}{\sqrt[3]{\frac{n_2}{100}}} \qquad M_{2KX} = \frac{M_{2K}}{\sqrt[3]{\frac{n_2}{100}}}$$

The application input tilting moment should be determined by the following formula:

$$M_{2A} = \frac{F_{2a} \bullet y_2 + F_{2rb} \bullet (x_2 + z_2)}{1000} \leq M_{2KB}$$

where:

F_{2a} ..... Axial Load at Output Shaft
F_{2A} ..... Permissible Axial Load
F_{2r} ..... Radial Load at Output Shaft
F_{2R} ..... Permissible Radial Load
F_{2RB} ..... Acceleration Permissible Radial Load
M_{2K} ..... Rated Tilting Torque
M_{2k} ..... Equivalent Tilting Load
z_2 ..... Distance Factor

The hours of life (L_h) of the unit can be determined by the following formula:

bearing life for duty cycle ≤ 40%

L_h > 10,000 hours if M_{2K}/M_{2A} < 1.25 and > 1
L_h > 20,000 hours if M_{2K}/M_{2A} > 1.25 and > 1.5

bearing life for duty cycle ≥ 40%

$$L_{hA} = L_h \left(\frac{40\%}{\text{Duty Cycle}}\right)$$

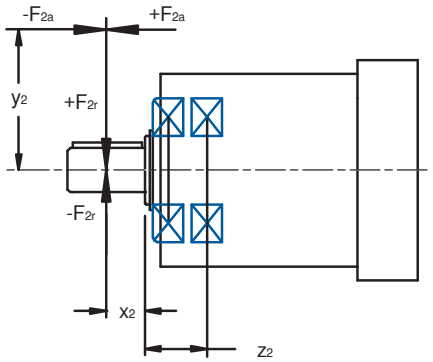


Table No. 1 "PE" Series – Permissible Load and Tilting Moments

Unit No.	z_2 mm	z_2 inches	F_{2A} N	F_{2A} lbs.	F_{2R} N	F_{2R} lbs.	M_{2K} Nm	M_{2K} in.lbs.
PE201, PE202	20	0.79	250	56	850	191	25	221
PE301, PE302	28	1.10	412	93	1,650	371	69	610
PE401, PE402	31	1.22	650	146	2,600	585	127	1,124
PE501, PE502	41	1.61	1,200	270	4,800	1,080	336	2,974

"KS" Series
ServoFit® Precision Planetary Gearhead
Permissable Shaft Load

All formulas shown are based on METRIC values.

Upper case letters are permissible values. Lower case letters are for existing values.

The permissible load and tilting moment values are based on an output speed of 100 RPM. For higher speeds the following applies, where n_2 is the desired speed:

$$F_{2AX} = \frac{F_{2A}}{\sqrt[3]{\frac{n_2}{100}}} \qquad F_{2RX} = \frac{F_{2R}}{\sqrt[3]{\frac{n_2}{100}}} \qquad M_{2KX} = \frac{M_{2K}}{\sqrt[3]{\frac{n_2}{100}}}$$

The application input tilting moment should be determined by the following formula:

Type G/P $$M_{2A} = \frac{2 \bullet F_{2a} \bullet y_2 + F_{2rb} \bullet (x_2 + z_2)}{1000} \leq M_{2KB}$$

Type F/S $$M_{2A} = \frac{F_{2a} \bullet y_2 + F_{2rb} \bullet (x_2 + z_2)}{1000} \leq M_{2KB}$$

$$M_{2ka} = \sqrt[3]{\frac{n_{2b1} \bullet t_{b1} \bullet M_{2kb1}^3 + \ldots + n_{2bn} \bullet t_{bn} \bullet M_{2kbn}^3}{n_{2b1} \bullet t_{b1} + \ldots + n_{2bn} \bullet t_{bn}}} \leq M_{2K}$$

$$F_{2r} = \sqrt[3]{\frac{n_{2b1} \bullet t_{b1} \bullet F_{2rb1}^3 + \ldots + n_{2bn} \bullet t_{bn} \bullet F_{2rbn}^3}{n_{2b1} \bullet t_{b1} + \ldots + n_{2bn} \bullet t_{bn}}} \leq F_{2R}$$

where:
- F_{2a} ..... Axial Load at Output Shaft
- F_{2A} ..... Permissible Axial Load
- F_{2r} ..... Radial Load at Output Shaft
- F_{2R} ..... Permissible Radial Load
- F_{2RB} ..... Acceleration Permissible Radial Load
- M_{2K} ..... Rated Tilting Torque
- M_{2k} ..... Equivalent Tilting Load
- M_{2KB} ..... Acceleration Tilting Torque
- z_2 ..... Distance Factor

The hours of life (L_h) of the unit can be determined by the following formula:

bearing life for duty cycle ≤ 40%

L_h > 10,000 hours if M_{2K}/M_{2A} < 1.25 and > 1
L_h > 20,000 hours if M_{2K}/M_{2A} > 1.25 and > 1.5
L_h > 30,000 hours if M_{2K}/M_{2A} < 1.5

bearing life for duty cycle ≥ 40%

$$L_{hA} = L_h \left(\frac{40\%}{\text{Duty Cycle}} \right)$$

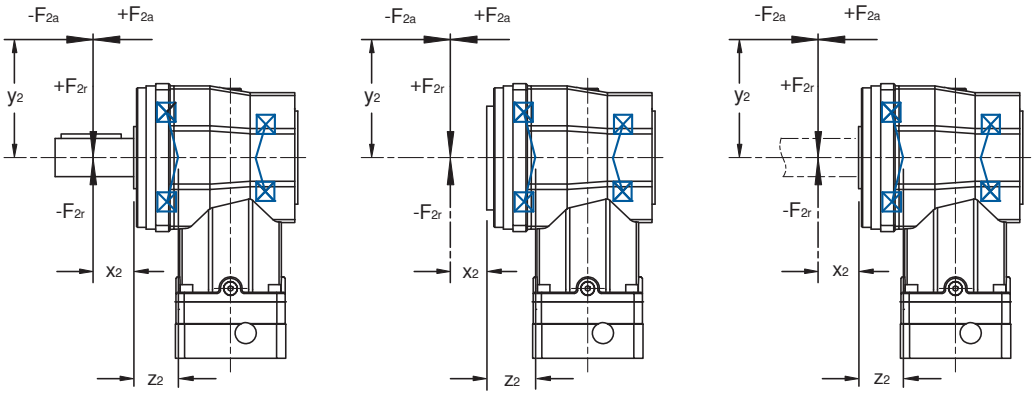


Table No. 1 **Permissible Load and Tilting Moments**

G/P – Solid Shaft

Unit No.	z_2 mm	z_2 inches	F_{2A} N	F_{2A} lbs.	F_{2R} N	F_{2R} lbs.	F_{2RB} N	F_{2RB} lbs.	M_{2K} Nm	M_{2K} in.lbs.	M_{2KB} Nm	M_{2KB} in.lbs.
KS4	34	1.34	3,400	765	5,000	1,125	5,000	1,125	260	2,301	260	2,301
KS5	40	1.57	6,000	1,350	8,000	1,800	8,000	1,800	550	4,868	550	4,868
KS7	51	2.01	10,000	2,250	10,000	2,250	10,000	2,250	920	8,142	920	8,142

F – Flange Hollow Output

Unit No.	z_2 mm	z_2 inches	F_{2A} N	F_{2A} lbs.	F_{2R} N	F_{2R} lbs.	F_{2RB} N	F_{2RB} lbs.	M_{2K} Nm	M_{2K} in.lbs.	M_{2KB} Nm	M_{2KB} in.lbs.
KS4	38	1.50	4,000	900	—		—		260	2,301	390	3,452
KS5	45	1.77	6,000	1,350	—		—		550	4,868	825	7,301
KS7	55	2.17	10,000	2,250	—		—		920	8,142	1,380	12,213

S – Hollow Output with Shrink Ring

Unit No.	z_2 mm	z_2 inches	F_{2A} N	F_{2A} lbs.	F_{2R} N	F_{2R} lbs.	F_{2RB} N	F_{2RB} lbs.	M_{2K} Nm	M_{2K} in.lbs.	M_{2KB} Nm	M_{2KB} in.lbs.
KS4	36	1.42	4,000	900	—		—		260	2,301	260	2,301
KS5	42	1.65	6,000	1,350	—		—		550	4,868	550	4,868
KS7	52	2.05	10,000	2,250	—		—		920	8,142	920	8,142

During EMERGENCY OFF operation (maximum stops per gearhead = 1000) the permissible values in the table for F_{2A}, F_{2R}, and M_{2K} can be multiplied by a factor of 2.

ServoFit® Modular System Permissable Shaft Load Tilting Moment

All formulas shown are based on METRIC values.

Upper case letters are permissible values. Lower case letters are for existing values.

The permissible load values given are valid with the load applied to the center of the output shaft (x_2).

The permissible load and tilting moment values are based on an output speed of 20 RPM. For higher speeds the following applies, where n_2 is the desired speed:

$$F_{2AX} = \frac{F_{2A}}{\sqrt[3]{\frac{n_2}{20}}} \qquad F_{2RX} = \frac{F_{2R}}{\sqrt[3]{\frac{n_2}{20}}} \qquad M_{2KX} = \frac{M_{2K}}{\sqrt[3]{\frac{n_2}{20}}}$$

The application input tilting moment should be determined by the following formula:

$$M_{2A} = \frac{2 \bullet F_{2a} \bullet y_2 + F_{2r} \bullet (x_2 + z_2)}{1000} \leq M_{2K}$$

F_{2a} ..... Axial Load at Output Shaft
F_{2A} .... Permissible Axial Load
F_{2r} ..... Radial Load at Output Shaft
F_{2R} .... Permissible Radial Load
F_{2RB} ... Acceleration Permissible Radial Load
M_{2K} ... Rated Tilting Torque
M_{2k} .... Equivalent Tilting Load
z_2 ..... Distance Factor

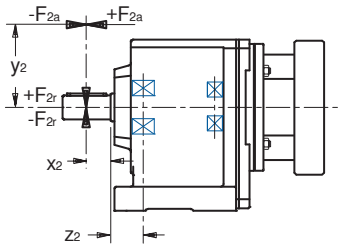
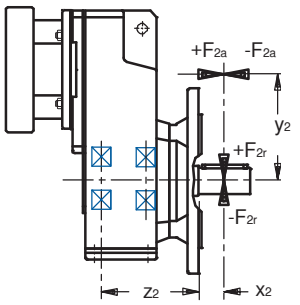


Table No. 1 "C" Series
Permissible Load and Tilting Moments

Unit No.	z2 mm	z2 inches	F2A N	F2A lbs.	F2R N	F2R lbs.	M2K Nm	M2K in.lbs.
C0	20	0.79	500	112	1,900	427	80	708
C1	30	1.18	850	191	3,400	765	190	1,682
C2	30	1.18	1,050	236	4,200	945	260	2,301
C3	30	1.18	1,400	315	5,650	1,271	350	3,098
C4	35	1.38	2,400	540	9,700	2,182	750	6,638
C5	42	1.65	3,000	675	11,000	2,475	900	7,965
C6	40	1.57	4,000	900	16,000	3,600	1,500	13,275
C7	45	1.77	5,500	1,237	22,000	4,950	2,400	21,240
C8	50	1.97	7,500	1,687	30,000	6,750	3,700	32,745
C9	55	2.17	9,500	2,137	37,000	8,325	5,200	46,020

Table No. 2 "F" Series – Permissible Load and Tilting Moments

	Solid Shaft Output – "V" Style								Hollow Output – "A" and "W" Style [1]							
Unit No.	z2 mm	z2 inches	F2A N	F2A lbs.	F2R N	F2R lbs.	M2K Nm	M2K in.lbs.	Unit No.	z2 mm	z2 inches	F2A N	F2A lbs.	M2K Nm	M2K in.lbs.
F1_V	35	1.38	1,100	247	4,200	945	260	2,301	F1_A	30	1.18	900	203	175	1,549
F2_V	41	1.61	1,400	351	5,400	1,215	400	3,540	F2_A	33	1.30	1,200	270	250	2,213
F3_V	43	1.69	1,900	427	7,500	1,687	600	5,310	F3_A	33	1.30	1,350	304	375	3,319
F4_V	44	1.73	2,350	528	9,250	2,081	800	7,080	F4_A	39	1.54	1,900	428	550	4,858
F6_V	44	1.73	3,100	697	12,500	2,812	1,200	10,620	F6_A	45	1.77	2,200	495	800	7,080



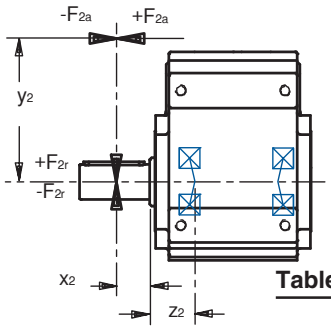


Table No. 3 "K" Series – Permissible Load and Tilting Moments

	Solid Shaft Output – "V" Style								Hollow Output – "A" and "W" Style [1]							
Unit No.	z2 mm	z2 ins	F2A N	F2A lbs.	F2R N	F2R lbs.	M2K Nm	M2K in.lbs.	Unit No.	z2 mm	z2 ins	F2A N	F2A lbs.	M2K Nm	M2K in.lbs.
K1_V	40	1.57	1,900	427	5,000	1,125	360	3,186	K1_A	40	1.57	1,900	427	240	2,124
K2_V	42	1.65	2,100	472	6,000	1,350	430	3,805	K2_A	42	1.65	2,100	472	310	2,744
K3_V	45	1.77	2,400	540	7,000	1,575	525	4,646	K3_A	45	1.77	2,400	540	380	3,363
K4_V	52	2.05	3,500	787	11,200	2,520	1,050	9,292	K4_A	52	2.05	3,500	788	740	6,549
K5_V	72	2.83	3,500	787	13,450	3,026	1,580	13,983	K5_A	36	1.42	2,500	563	1,000	8,850
K6_V	72	2.83	4,000	900	16,000	3,600	1,960	17,346	K6_A	42	1.65	3,000	675	1,300	11,505
K7_V	85	3.35	5,500	1,237	22,000	4,950	3,200	28,320	K7_A	45	1.77	4,100	923	2,100	18,585
K8_V	60	2.36	7,250	1,631	29,000	6,525	3,800	33,630	K8_A	50	1.97	5,300	1,193	2,600	23,010
K9_V	87	3.43	16,500	3,712	65,000	14,625	11,200	89,385	K9_A	56	2.20	7,000	1,575	3,600	31,860
K10_V	84[3]	3.31	25,000	5,625	80,000[3]	18,000	15,200	134,520	K10_A	56	2.20	9,000	2,025	5,000	44,250

[1] Values shown for "W" Style are for double bushings. For single bushings use value M_{2K} x 0.5 and F_{2A} x 0.5.
[2] For DOUBLE output shaft: F_{2R} x 0.7
[3] Solid Shaft unit with a Flange — z_2 value is 132mm/5.20"; F_{2R} value is 64,000N/14,400 lbs.

ServoFit® Modular System Lubrication Data

All ServoFit Precision Planetary units are filled with synthetic oil and lubricated for life. The units should never be opened or the oil changed.

All ServoFit Modular System units are shipped filled with the required amount of Mobilgear XP600 lubrication. In order to provide the proper lubrication quantity **the mounting position must be specified at the time the unit is ordered**.

Maintenance

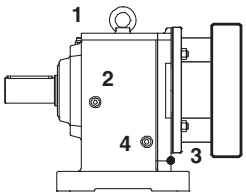
With STOBER reducers very little maintenance is required under normal operating conditions. Unless otherwise noted breathers are provided on the following units:

C612 through C913
K513 through K1014

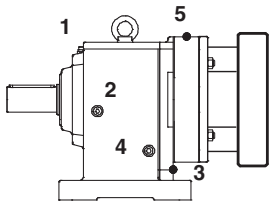
We recommend that the lubrication be changed in units supplied with breathers according to the following schedule:

Normal Operating Conditions ..... after 5000 Hours
Wet Operating Conditions ..... after 2000 Hours.

Units supplied without breathers (beverage and food packages) are lubricated for life.



C612-C912

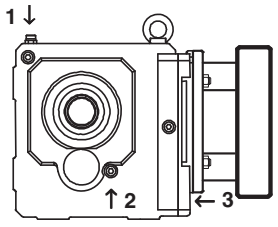


C613-C913

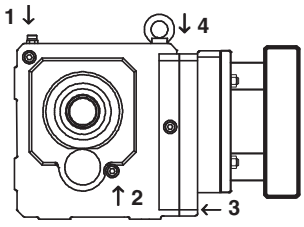
Table No. 2 Drain Plug and Vent Location

Mounting Position	1	2	2a	3	5
EL1	Vent			Drain	
EL2	Drain			Vent	
EL3		Vent	Drain		
EL4		Drain	Vent		
EL5 (C612-C912)	Drain			Vent	
EL5 (C613-C913)	Drain				Vent
EL6	Vent			Drain	

Position 2a is on the opposite side of 2.



K513-K1013



K514-K1014

Table No. 4 Drain Plug and Vent Location

Mounting Position	1	2	2a	3	4
EL1	Vent			Drain	
EL2	Drain			Vent	
EL3		Vent	Drain		
EL4		Drain	Vent		
EL5 (K513/K1013)	Drain			Vent	
EL5 (K514/K1014)	Drain				Vent
EL6 (K513/K1013)	Vent			Drain	
EL6 (K513/K1014)	Vent				Drain

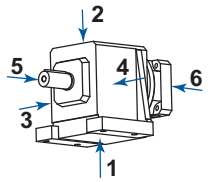
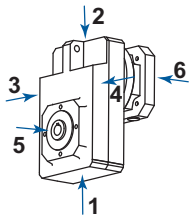
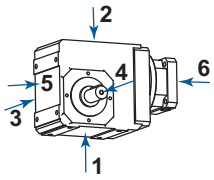
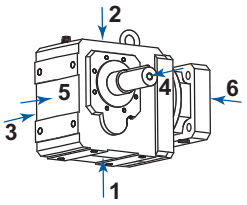
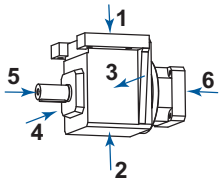
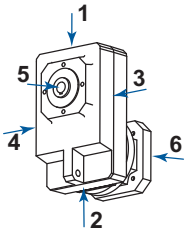
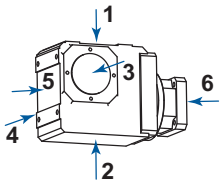
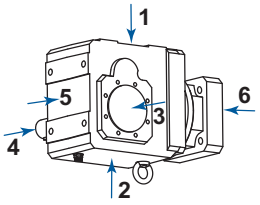
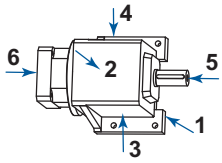
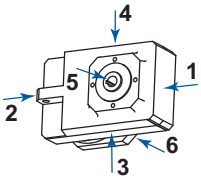
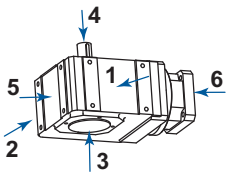
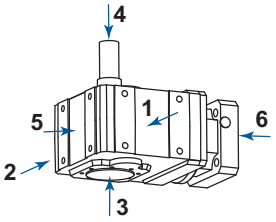
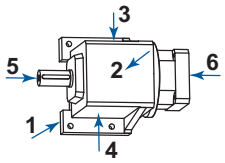
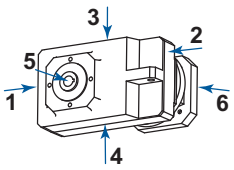
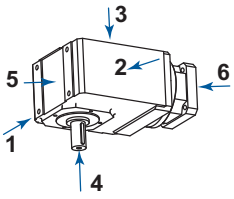
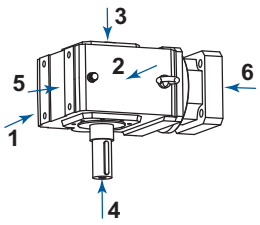
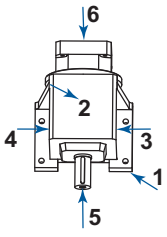
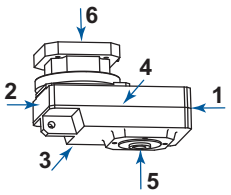
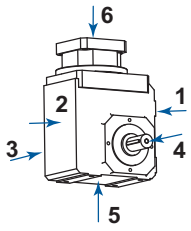
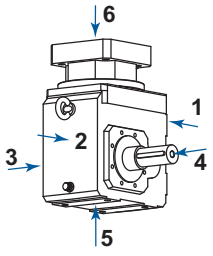
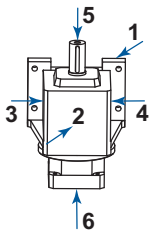
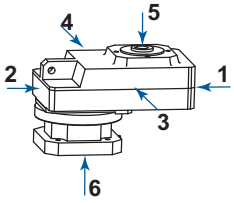
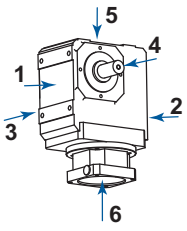
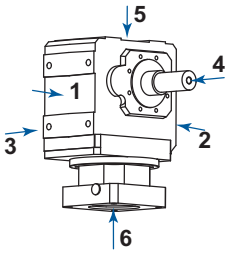
Position 2a is on the opposite side of 2.

ServoFit® Modular System
Mounting Position Specification

("K" Series shown with shaft on Side 4.)

Lubrication and Mounting Position

All STOBER units are filled with the correct amount of lubrication before shipping. In order to provide the proper lubrication quantity **the mounting position must be specified at the time the unit is ordered**.

Mounting Position	"C" Series	"F" Series	"K" Series K1 - K4	"K" Series K5 - K10
EL1 Side 1 is the bottom side when the unit is set in a normal position. Side 1 is the down side for EL1.				
EL2 Side 2 is the top of the unit. Side 2 is the down side for EL2 . (The unit is up-side-down.)				
EL3 Side 3 is the right side when facing the input with the unit in a normal position (EL1). Side 3 is the down side for EL3. Right angle units have the output on Side 3 or 4.				
EL4 Side 4 is the left side when facing the input with the unit in a normal position (EL1). Side 4 is the down side for EL4. Right angle units have the output on Side 3 or 4.				
EL5 Side 5 is the side opposite the motor. Side 5 is the down side for EL5.				
EL6 Side 6 is always the input or motor side. Side 6 is the down side for EL6.				

ServoFit® Precision Planetary Mounting Position Specification Direction of Rotation

All ServoFit Precision Planetary units are filled with synthetic oil and lubricated for life. The units should never be opened or the oil changed.

All ServoFit Modular System units are shipped filled with the required amount of Mobilgear XP600 lubrication. In order to provide the proper lubrication quantity **the mounting position must be specified at the time the unit is ordered**.

Maintenance

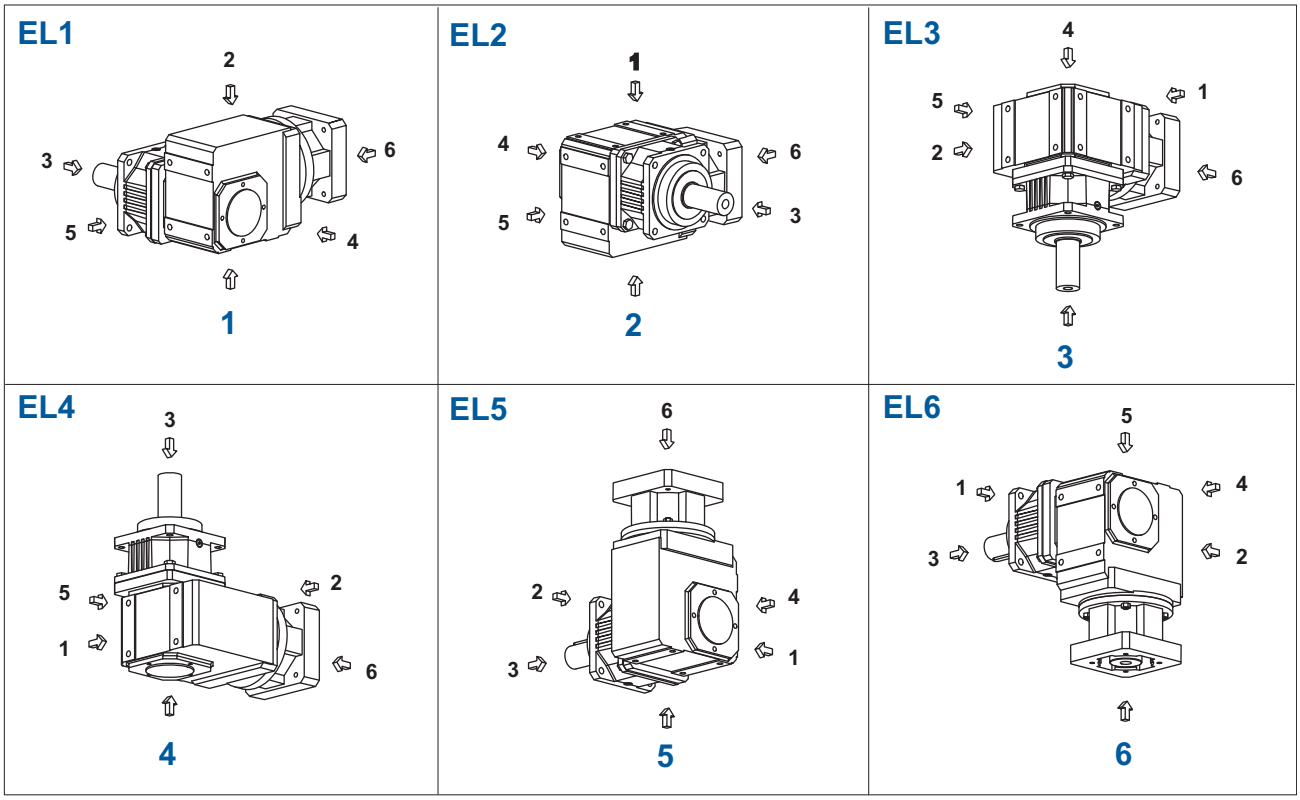
With STOBER reducers very little maintenance is required under normal operating conditions.

The lubrication should be changed in units supplied with breathers according to the following schedule:

Normal Operating Conditions ..... after 5000 Hours
Wet Operating Conditions ..... after 2000 Hours.

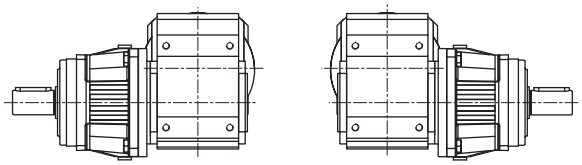
Units supplied without breathers are lubricated for life.

P5_K1 – P9_K4



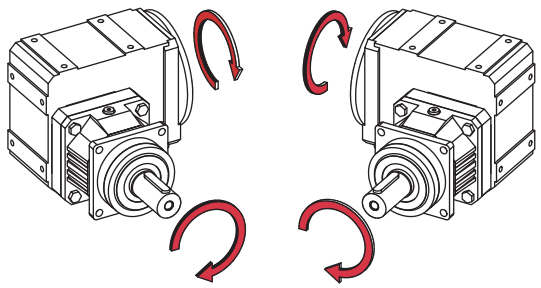
P5_K1 – P9_K4

Side 3 **Side 4**



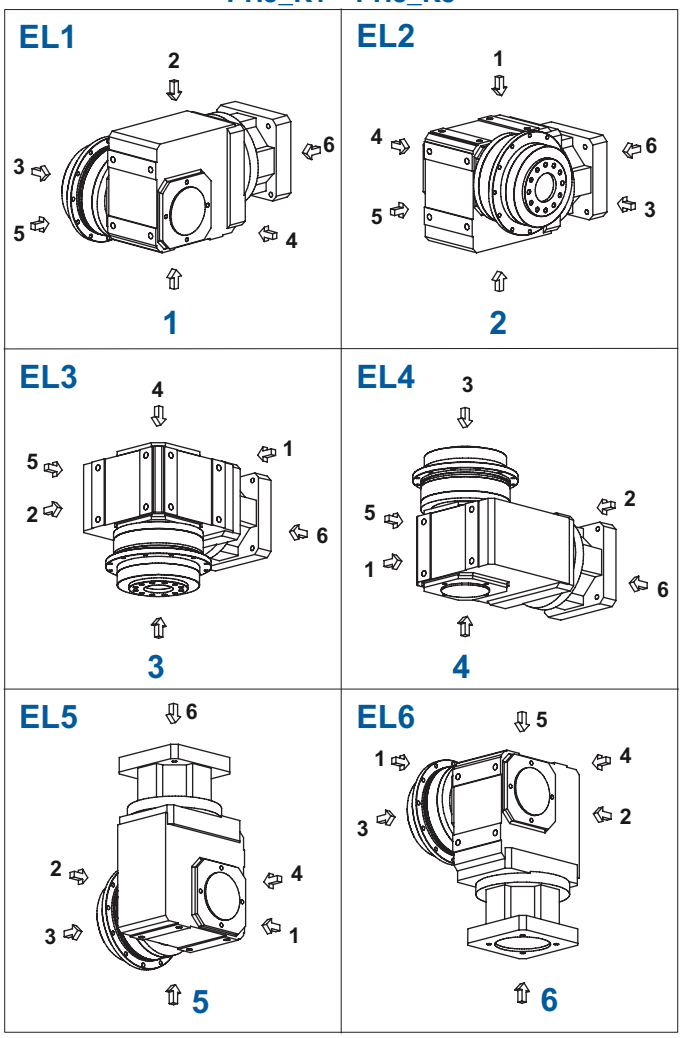
Viewed from Side 5, EL1 Mounting Postion

Direction of Rotation

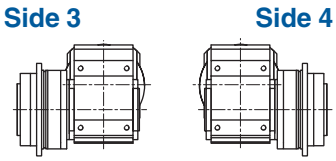


ServoFit® Precision Planetary Mounting Position Specification Direction of Rotation

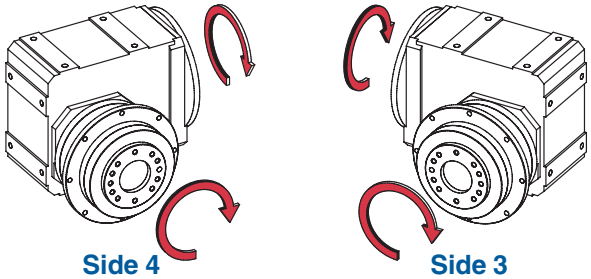
PH5_K1 – PH8_K3



PH5_K1 – PH8_K3

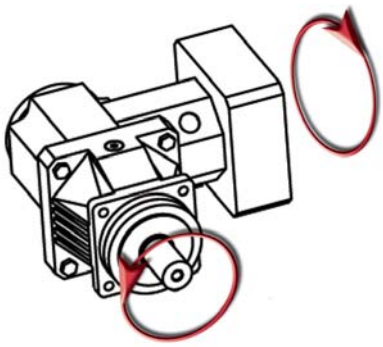


Direction of Rotation

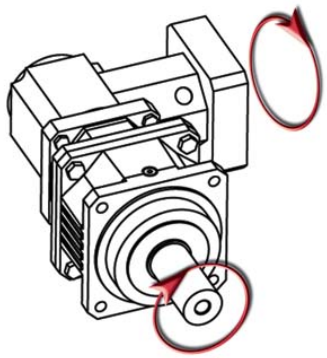


ServoFit® Gearhead
Direction of Rotation

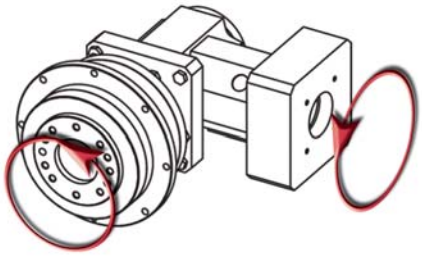
P221KX301 – P521KX501
P222KX301 – P522KX401



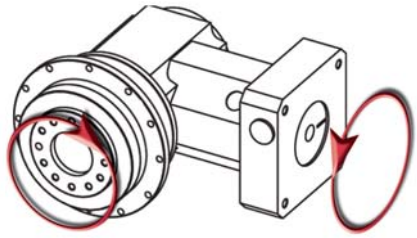
P721KX701 – P821KX801
P722KX501 – P822KX701



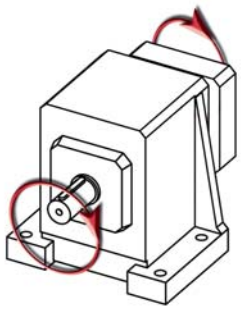
PH321KX3 – PH521KX5
PH322KX3 – PH522KX4



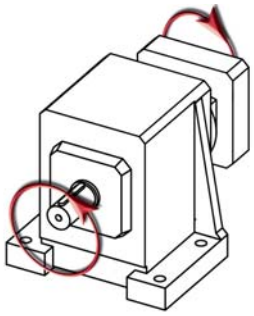
PH721KX7 – PH821KX8
PH722KX5 – PH1012KX8



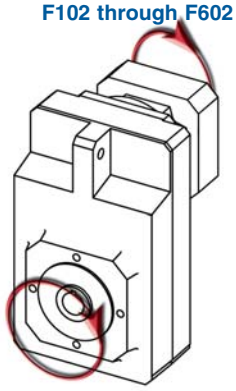
"C" Series – 2 Stage
C002 through C812



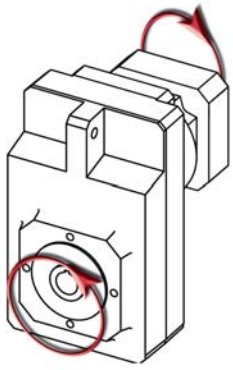
"C" Series – 3 Stage
C103 through C913



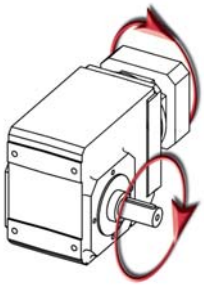
"F" Series – 2 Stage
F102 through F602



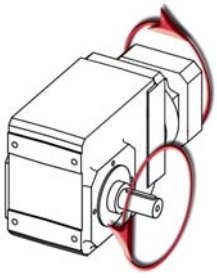
"F" Series – 3 Stage
F203 through F603



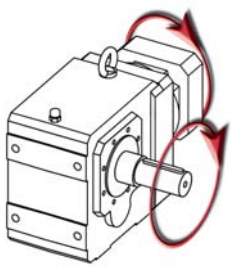
"K" Series – 2 Stage
K102 through K402



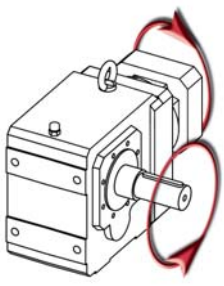
"K" Series – 3 Stage
K203 through K403



"K" Series – 3 Stage
K513 through K913



"K" Series – 4 Stage
K514 through K1014



See web site for drawings.

ServoFit® Gearhead
Selection Procedures Flow Chart

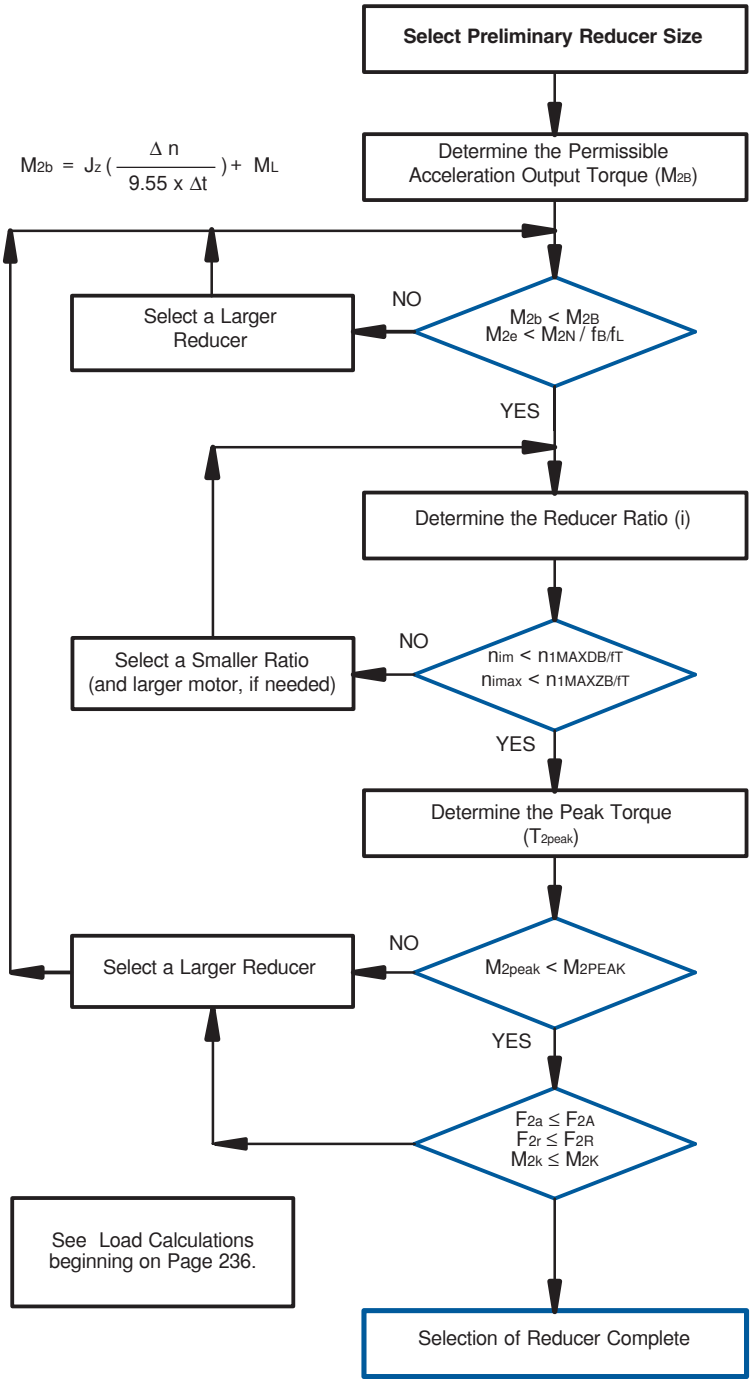
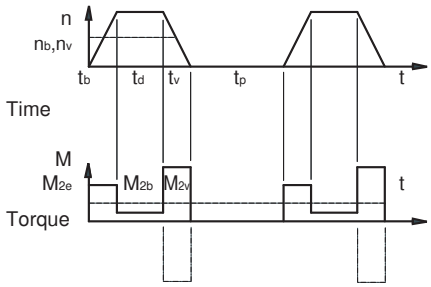


Table No. 1 ServoFit Service Factor (Apply to Nominal Rating ONLY)

Load Factor	f_B	
Operating Mode	P(A), PH(A), PHQ(A), PHV(A), KS	P_K, PH_K, P_KX, PH_KX C, F, K
Continuous	1.0	1.0
Cyclic	1.0	1.25
Cyclic-Reversing	1.0	1.4
Running Time Factor	f_L	
≤ 8 hours	1.0	
≤ 16 hours	1.15	
≤ 24 hours	1.2	
Apply to Input RPM		
Temperature Factor[1)]	f_T	
≤ 20° C	1.0	
≤ 30° C	1.10	
≤ 40° C	1.25	

1) Without ventilation

Table No. 2 Cycle Run



$$M_{2e} = \sqrt[3]{\frac{n_{2b} \cdot t_b \cdot M_{2b}^3 + \ldots + n_{2n} \cdot t_n \cdot M_{2n}^3}{n_{2b} \cdot t_b + \ldots + n_{2n} \cdot t_n}}$$

Continuous Duty – a drive can be considered continuous duty if the running time ($t_r = t_b + t_d + t_v$) is 60% of the complete cycle time ($t_b+t_d+t_v+t_p$) or longer than 20 minutes.

Cyclic Duty – Drive will cycle on and off.

For cyclic operation, the recommended ratio of external (application) inertia to gearhead inertia can be determined by the following equation:

$$\frac{J_z}{i^2} = 4 \cdot J_D$$

The gearhead selected, using the following equation for inertia ratio, will result in the lowest motor torque demand and the optimum drive selection.

$$\frac{J_z}{i^2} = J_D$$

ServoFit® Gearhead Value Explanation

Table No. 3 Index of Values and Symbols

Symbol	Value Imperial	Value *Multiplier*	Value Metric	Description
F_{2a}	lbs.	4.45	N	Axial Force @ Output Shaft
F_{2A}	lbs.	4.45	N	Permissible Axial Force
F_{2r}	lbs.	4.45	N	Radial Force @ Output Shaft
F_{2R}	lbs.	4.45	N	Permissible Radial Load
F_{2RB}	lbs.	4.45	N	Acceleration Permissible Radial Load
f_B	–	–	–	Load Factor
i	–	–	–	Reducer Ratio
J_D	lb-in-s^2	1.13×10^3	kgcm^2	Motor + Reducer Inertia @ Motor RPM
J_Z	lb-in-s^2	1.13×10^3	kgcm^2	Total Inertia @ Reducer RPM
M	in.lbs.	.113	Nm	Torque
M_2	in.lbs.	.113	Nm	Application Torque
M_{2e}	in.lbs.	.113	Nm	Equivalent Torque (Average RMS Torque)
M_L	in.lbs.	.113	Nm	Friction Torque (Losses)
M_{2b}	in.lbs.	.113	Nm	Application Acceleration Torque
M_{2B}	in.lbs.	.113	Nm	Reducer Acceleration Torque
M_{2K}	in.lbs.	.113	Nm	Reducer Tilting Moment
M_{2KB}	in.lbs.	.113	Nm	Reducer Acceleration Tilting Moment
M_{2N}	in.lbs.	.113	Nm	Reducer Nominal Output Torque
M_{2peak}	in.lbs.	.113	Nm	Application Peak Torque
M_{2PEAK}	in.lbs.	.113	Nm	Reducer Peak Torque
M_{2V}	in.lbs.	.113	Nm	Application Deceleration Torque
n	RPM	–	min^{-1}	Speed
n_b	RPM	–	min^{-1}	Acceleration Speed
n_v	RPM	–	min^{-1}	Deceleration Speed
n_1	RPM	–	min^{-1}	Input Speed
n_2	RPM	–	min^{-1}	Reducer Output Speed
t	seconds	–	seconds	Time
t_b	seconds	–	seconds	Acceleration Time
t_d	seconds	–	seconds	Duration Time
t_v	seconds	–	seconds	Deceleration Time
t_p	seconds	–	seconds	Pause Time
t_r	seconds	–	seconds	Running Time

Table No. 4 Conversions Factors

Imperial				
1 inch	x	25.4	=	mm
1 in^2	x	645.16	=	mm^2
1 lb	x	.453	=	kg
1 US gal	x	3.785	=	L
1 HP	x	.746	=	kW
1 lb	x	4.45	=	N
1 lb in	x	.113	=	Nm
1 lb ft	x	1.36	=	Nm
1 lb ft	x	.1383	=	kgm
1 lb in	x	.0115	=	kgm
1 lb in^2	x	.00029	=	kgm^2
1 PSI	x	.0689	=	bar
1 PSI	x	.00689	=	N/mm^2
		°F	=	32 + $^9/_5$ x °C
Metric				
mm	x	.03937	=	inch
1 mm^2	x	.0015	=	in^2
1 kg	x	2.205	=	lb
1 L	x	.264	=	US gal
1 kW	x	1.341	=	HP
1 N	x	.225	=	lb
1 Nm	x	8.85	=	lb in
1 Nm	x	.737	=	lb ft
1 kgm	x	7.233	=	lb ft
1 kgm	x	86.798	=	lb ft
1 kgm^2 (J)	x	3418.0	=	lb in^2 (WR^2)
1 bar	x	14.5	=	PSI
1 N/mm^2	x	145.04	=	PSI
		°C	=	$^5/_9$ (°F-32)

Formulas

.2618 x Dia.(ins) x RPM = FPM
.00314 x Dia.(mm) x RPM = MPM

Table No. 5 Backlash Comparison – Arcminute vs Linear Distance

Arcminute	Degrees	Linear Distance in Inches at 3" R	at 12" R	at 24" R	at 48" R
1	.017	.0009	.0035	.0070	.0140
2	.033	.0017	.0070	.0140	.0279
3	.050	.0026	.0105	.0209	.0419
4	.067	.0035	.0140	.0279	.0558
5	.083	.0044	.0175	.0349	.0698
6	.100	.0052	.0209	.0419	.0838
7	.117	.0061	.0244	.0489	.0977
8	.133	.0070	.0279	.0558	.1117
9	.150	.0079	.0314	.0628	.1257
10	.167	.0087	.0349	.0698	.1396
11	.183	.0096	.0384	.0768	.1536
12	.200	.0105	.0419	.0838	.1675
13	.217	.0113	.0454	.0908	.1815
14	.233	.0122	.0489	.0977	.1955
15	.250	.0131	.0524	.1047	.2094
16	.267	.0140	.0558	.1117	.2234
17	.283	.0148	.0593	.1187	.2373
18	.300	.0157	.0628	.1257	.2513
19	.317	.0166	.0663	.1326	.2653
20	.333	.0175	.0698	.1396	.2792

These values can be interpolated for backlash or distances not shown in the table.

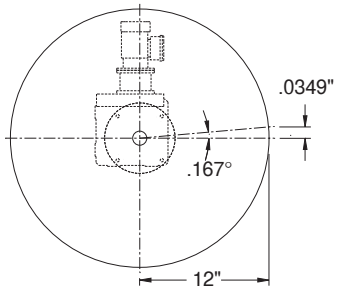
$$\text{Backlash in Arcminutes} = \left(\frac{\text{Linear Backlash in Inches x } 57.296}{\text{Radius}}\right) 60$$

Table No. 5 can be used to determine the amount of linear movement that will be realized with a given backlash value.

Example:
A "K" Series gearhead is mounted, with the output shaft vertical, under a 24" diameter turntable. The gearhead backlash is 10 arcminutes.

Reading across the table, the angular value of 10 arcminutes is .167 degrees.

Further determination indicates 10 arcminutes backlash will allow a linear movement of .0349 inches when measured at a 12 inch radius.



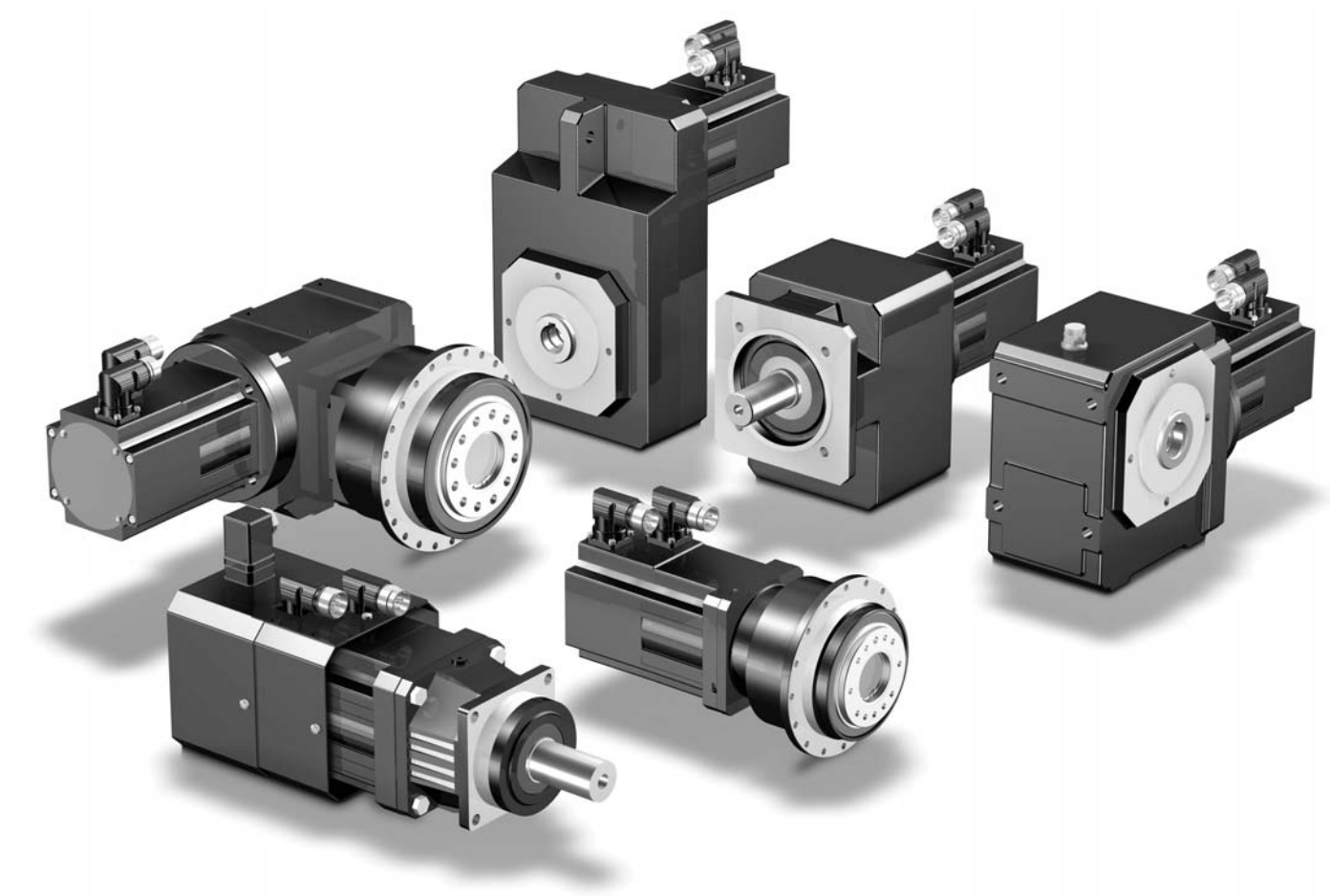
ServoFit Geared Motors

STOBER ED geared servo motors are set-up for connection to a variety of popular servo inverters. They are a compact, highly-dynamic, electronically commutated, permanent magnet brushless motor of modular construction. The stator and rotor components have been designed in an energy-optimized shape to provide very low torque ripple and high power density. The feedback is by resolver or multiturn or singleturn absolute encoder.

Basic components of the motors are: housing, flange, feedback, thermal winding protection (PTC thermistor), backlash free holding brake, and plug connectors.

ED servo geared motors are designed for industrial machinery and comply with the following standards and regulations:

- EN60034/VED0530
- IEC34, IEC72, IEC85
- VDE0100, VDE0110
- EEC Machinery Directive 2006/42/EG
- EEC Low Voltage Directive 2006/95/EC



- CE mark - standard
- UL and CSA approved.
- Mounting position — ANY
- Enclosure — IP65
- Thermal Classification — F 155° C, overtemperature ΔT = 105K
- Maximum DC Link Voltage - 650V (Exceding this value will damage winding insulation.)
- Environment/Altitude — The motor design data is valid for continuous operation (DIN EN60034) with temperature range from -15 to +40°C.
- Neodymium iron boron magnets
- Rotating connectors — 290°
- Cooling — IC 0041 surface cooling
- Oversized bearings — designed for gearing loads
- Finish — Black (RAL9005)

"MGS" – Modular Gear System

5 YEAR WARRANTY Available

Series "C"
Concentric/Helical Speed Reducers

- 1/6 to 165 HP
- Output torques to 62,000 in. lbs.
- Output speeds from 875 to 6.3 RPM
- Ratios from 2:1 to 276:1
- NEMA C-face or shaft input
- Foot or flange mounting

Series "F"
Offset/Helical Speed Reducers

- 1/6 to 33 HP
- Output torques to 9,743 in. lbs.
- Output speeds from 406 to 3 RPM
- Ratios from 4.3:1 to 552:1
- NEMA C-face or shaft input
- Output flange
- Solid, hollow, and wobble free bushing output

Series "K" – Right Angle
Helical/Bevel Speed Reducers

- 1/6 to 165 HP
- Output torques to 106,296 in. lbs.
- Output speeds from 437 to 4.5 RPM
- Ratios from 4:1 to 381:1
- NEMA C-face or shaft input
- Foot mount and output flange
- Solid (single or double), hollow, and wobble free bushing (single or double side) output

Series "S" – Right Angle
Helical/Worm Speed Reducers

- 1/6 to 8 HP
- Output torques to 7,086 in. lbs.
- Output speeds from 318 to 2.5 RPM
- Ratios from 9.2:1 to 683:1
- NEMA C-face or shaft input
- Foot mount and output flange
- Solid (single or double) and hollow output

5 Year long life not available with "S" Series.

Application Options

- Stainless steel hardware
  - — Output shafts
  - — Hollow output
  - — Single or double side bushings
- Coatings
  - — Standard severe duty gray paint
  - — White (BISC approved)
  - — Stainless steel (FDA/USDA approved)

Additional Product Offering

- ComTrac® Adjustable Speed Drives
- Food and Beverage Duty Speed Reducers

Information in the Ex Directive ATEX 100a (95) for Gear Reducers and Gear Reducers with 3-phase AC Motors (EC Directive 94/9/EC)

1. General. The Directive 94/9/EC regulates the circulation of electrical and nonelectrical equipment in Ex endangered areas. The regulation applies to Ex areas in atmospheres and conditions up to 60°C.
STÖBER supplies gear units and gear units with directly attached 3-phase A.C. motors compliant with this directive in the ranges listed below:

- Helical Gear Unlts — **C**
- Shaft-Mounted Helical Gear Units — **F, FS**
- Helical Bevel Gear Units — **K**
- Helical Worm Gear Units — **S**
- Worm Gear Units — **W0**
- Planetary Gear Units — **P, PKX, PH, PHKX**
- Adjustable Gear Units — **R**
- Adjustable Gear Units - **RD11**
- Combinations of these Gear Unit ranges.

2. Standards. The EC Directive 94/9/EC is, since 1 July 2003, a national law. The following standards are applied:
Electrical equipment:

- EN 50014 General specifications
- EN 50015 Oil encapsulation “o"
- EN 50016 High pressure encapsulation "p"
- EN 50017 Sand encapsulation "q"
- EN 50018 Pressure-resistant encapsulation "d"
- EN 50019 Improved safety “e"
- EN 50020 Intrinsic safety "i"
- EN 50028 Cast encapsulation "m"
- EN 50033 Miners lamps for mining in a firedamp hazard
- EN 50039 Intrinsically safe systems "i"

Nonelectrical equipment:

- EN 13463-1 Principles and requirements
- EN 13463-2 Protection by vapor inhibiting encapsulation “fr"
- EN 13463-3 Protection by pressure resistant encapsulation "d"
- EN 13463-4 Protection by intrinsic safety "g"
- EN 13463-5 Protection by design safety “c"
- EN 13463-6 Protection by ignition cause monitoring “b"
- EN 13463-7 Protection by high pressure encapsulation “p"
- EN 13463-8 Protection by liquid encapsulation “k"

The following standards are applied for the assessment and classification of ignition hazards: EN 13463-1, EN 13463-5, EN 13463-6, EN 13463-8.

3. Assessment and classification of ignition hazards
In Appendix II, the directive 94/9/EC (ATEX100a/95) demands the fulfillment of fundamental safety and health requirements for a device to be regarded as explosion protected. Potential causes of ignition such as hot surfaces, impact or friction sparks or electrostatic charges must not become effectual causes of ignition. Depending on the possible ignition hazards and fault conditions, suitable explosion protection measures must be specified. An important condition for the fulfillment of the fundamental safety and health requirements is therefore an assessment of the ignition hazards as required by EN 13463-1 to 8.
Potential causes of ignition can generally occur by:

- mechanically produced sparks
- electrostatic discharge
- hot surfaces
- chemical reactions

Mechanical sparks and hot surfaces are significant for the assessment of the ignition hazards in gear units.
Mechanical sparks are avoided by design safety and liquid encapsulation as well as by temperature monitoring of the gear unit/geared motor.
The ignition hazard assessment can be classified by the following overview: An ignition hazard assessment has been conducted for the STÖBER gear units listed in Item 1 and the following classifications were made.
Specified categories and temperature ranges of STÖBER gear units:

MGS and P:
II 3 G c/k T3; II 3 D c/k 120°C
II 3 G c/k T4; II 3 D c/k 120°C
II 2 G c/k T4; II 2 D c/k 120°C
II 2 G c/k T3; II 2 D c/k 120°C
(see Item 6 Project planning)

MGS with RD11:
II 3 G c/k T3; II 3 D c/k 120°C

MGS with R:
II 2 G b/c/k T3; II 2 D b/c/k 120°C (with GTW)
II 2 G b/c/k T4; II 2 D b/c/k 120°C with GTW)
II 3 G c/k T3; II 3 D c/k 120°C (without GTW)

R:
II 2 G b/c/k T3; II 2 D b/c/k 120°C (with GTW)
II 2 G b/c/k T4; II 2 D b/c/k 120°C (with GTW)
II 3 G c/k T3; II 3 D c/k 120°C (without GTW)

RD11 (adjustment range 10:1 only):
II 3 G c/k T3; II 3 D c/k 120°C

Explanation:
MGS - **M**odular **G**ear **S**ystem (consisting of C, F, FS, K, P and S gear units - see also Item 1).
GTW - Temperature limit monitor
II2GD - Designation according to Group II, Category 2, gas and dust.
II3GD - Designation according to Group II, Category 3, gas and dust.
b/c/k - Monitored design safety and liquid encapsulation.
T3, T4 - Temperature class.
120°C - Maximum surface temperature.

Group II (Explosive atmosphere composed of gas/air or dust/air mixtures, aerosols or vapors.)					
Category 1		Category 2		Category 3	
G (Gas) (Zone 0)	D (Dust) (Zone 20)	G (Gas) (Zone 1)	D (Dust) (Zone 21)	G (Gas) (Zone 2)	D (Dust) (Zone 22)
For equipment which ensures a **very high degree** of safety. Intended for cases in which a frequent or permanent explosive atmosphere must be expected.		For equipment which ensures a **high degree** of safety. Intended for cases in which an explosive almosphere must be expected.		For equipment which ensures a **normal degree** of safely. Intended for cases in which an infrequent and only brief explosive atmosphere must be expected.	

Gear units to ATEX 100a (95) receive a separate specification plate indicating the selected classification.
3-phase AC motors are offered as stand-alone motors or mounted to a gear unit accordance with EN 50019 - high safety models II2G EExe IIT3 and EN50018 pressure-resistant encapsulation.
Mounting position IMVI requires protective cowling.
Other designs on request.

4. Models.
The STÖBER drives intended for application to ATEX 100a (95) are supplied as follows.
Gear units:

- double FKM seal (wherever the design allows)
- optional synthetic oil, also food compatible oil or siliconfree
- gear units with hollow shafts always come with a hollow shaft cover. Series F and FS shaft-mounted gear units with an “S" type hollow shaft cannot be used in the standard version (no suitable hollow shaft cover).

Motors:

- FKM seal
- synthetic ball bearing grease

5. Service and maintenance.
Separate operating instructions are provided for the application and operation of STÖBER gear units to ATEX 100a (95), which require additional attention (see also Item 7, Documentation).

6. Project planning
Category 2: The gear units are suitable for the following applications:

- Ambient temperature - 0° C ≤ T_a ≤ 40° C
- Input speeds n_1 ≤ 1800 rpm
- Exception: R-0000 variable speed drives with GTW. For applications with n_1 > 1800 min^{-1}, contact STÖBER.
- Service factor fEx ≥1.5, based on permissible torque as per catalog in addition to the further service factors of the respective catalogs (not applicable to R-0000 gears).
  CAUTION: Catalog data for maximum permissible accelerating and EMERGENCY STOP torques do not apply to gear unit operation in potentially explosive atmospheres as per EU Directive 94/9/EC
- Service factor fEx = 1.5, referred to permissible forces and breakdown torques as per catalog.
- Not exceed the thermal breakeven performance P ≤ P_{th} (kW)
- Possible ratio i = i_{min}
- Installation of line and inverter operated three-phase AC motors, provided the motors come with the required Ex protection.

CAUTION: Please observe maximum permissible speeds.

- Inverter operation: Only motors with type ”d" protection (flameproof enclosure) permitted.
- Brake motors:
  Dynamic braking is only permissible for a load factor of S ≥ 1.5. Otherwise the brakes can only be used as holding brakes.

Category 3:
Gear units can be operated under the following conditions:

- Ambient temperature - 0° C ≤ T_a ≤ 40°C
- Please observe maximum permissible input speed restrictions as per catalog.
- Service factor fEx = 1, referred to permissible torques, forces and breakdown torques as per catalog.
- Installation of line and inverter operated three-phase AC motors provided the motors come with the required Ex protection.

CAUTION: Please observe maximum permissible speeds.

- Inverter operation: Only motors with type ”d" protection (flameproof enclosure) permitted.
- Brake Motors:
  Dynamic braking is only permissible for a load factor of S≥1. Otherwise the brakes can only be used as holding brakes.

7. Documentation
Operating instructions and commissioning:

- 442045 - Operating instructions for MGS gear units C, F, FS, K, S and W0
- 442050 - Operating instructions for MGS adjustable gear units C, F, K, S
- 442060 - Operating instructions for adjustable gear units series R and RD11
- 442055 - Operating instructions for planetary gear units.
- 440985 - Commissioning of adjustable gear units in Ex areas, temperature monitoring by GTW.

Sales/customer information:

- Conformity declarations 441658, 441674, 441675, 441676
- ATEX information 441677

ATEX: Category 2 - thermal breakeven performance at i n1 ≤ 1800 1/min (RPM) and minimum ratio (i min.)

Unit	Design Gear Unit															
	C		F		FS		K		S		P		PH		KX	
Size	kW	i min.	kW	i min.	kW	i min.	kW	i min.	kW	i min.	kW	i min.	kW	i min.	kW	i min.
0	2.5	1.8							1	13						
1	4	1.8	4	4	2.5	14	2.5	4	1.5	13						
2	5	1.8	5	4	4	14	4	4	2.2	13	0.5	5				
3	7.5	1.8	7.5	4	5	14	5	4	3	13	1	5			1	2
4	10	1.8	10	4	7.5	14	7.5	4	4	20	2	5	1.7	5	1.5	2
5	15	1.8					10	15			4	5	3.5	5	3	2
6	18.5	4	15	4	10	14	15	15								
7	22	4					18.5	18			7.5	5	6	5	0	
8	30	4					22	18			15	5	12	5	0	
9	37	4					30	25								
10	37	25					37	25								

power = thermal breakeven performance ==> load factor = 1.5

STÖBER Subsidiaries

Germany (Headquarters)

STÖBER ANTRIEBSTECHNIK GmbH + Co. KG
Kieselbronner Strasse 12
75177 PFORZHEIM
Phone: +49 (0) 7231 582-0
Fax: +49 (0) 7231 582-1000
Web: www.stoeber.de
E-mail: mail@stoeber.de

Austria

STÖBER ANTRIEBSTECHNIK GmbH
Fabriksplatz 1
4662 Steyrermühl
Phone: +43 7613 7600-0
Fax: +43 7613 7600-2525
E-mail: office@stoeber.at
www.stoeber.st

China

STOBER CHINA
German Centre Beifing
Unit 2010, Landmark Tower 2
8 North Dongsanhuan Road
Chaoyang District
100004 Beijing
Phone: +86 10 65907391
Fax: +86 10 65907393
E-mail: info@stoeber.cn
www.stoeber.cn

France

STÖBER S.a.r.l.
131, Chemin du Bac à Traille
Les Portes du Rhône
69300 Caluire et Cuire
Phone: +33 4 78989180
Fax: +33 4 78985901
E-mail: mail@stober.fr
www.stober.fr

Great Britain

STOBER DRIVES LIMITED
Ability House
121 Brooker Road, Waltham Abbey
Essex EN9 1JH
Phone: +44 1992 709710
Fax: +44 1992 714111
E-mail: mail@stober.co.uk
www.stober.co.uk

Italy

STÖBER TRASMISSIONI S.r.l.
Via Risorgimento, 8
20017 Mazzo di Rho (Milano)
Phone: +39 02 93909-570
Fax: +39 02 93909-325
E-mail: info@stoeber.it
www.stoeber.it

Switzerland

STÖBER SCHWEIZ AG
Rugghölzli 2 9
5453 Remetschwil
Phone: +41 56 496 96 50
Fax: +41 56 496 96 55
E-mail: info@stoeber.ch
www.stoeber.ch

United States of America

STOBER Drives Inc.
1781 Downing Drive
Maysville KY 41056
Phone: 606 759-5090
Fax: 606 759-5045
E-mail: sales@stober.com
www.stober.com

Terms and Conditions of Sale

1. **GENERAL.** All orders for products supplied by STOBER DRIVES INC. ("STOBER") shall be subject to these terms and conditions of sales. All transactions shall be governed by the laws of the Commonwealth of Kentucky. No modifications hereto will be binding unless agreed to in writing by STOBER.

2. **CUSTOMER.** The term "Customer," as used herein, means the distributor, resale dealer, original equipment manufacturer or first end-user customer that purchases the STOBER products.

3. **WARRANTY.** STOBER products shall be free from defects in material and workmanship for a maximum of 5-years (single shift operation or 30 months multiple shift operation) for ServoFit products (ServoFit Modular System, ServoFit Precision Planetary Gearheads, and ServoFit Geared Motors) and MGS Long Life products; 3-years (single shift operation or 18 months multiple shift operation) for other MGS products; 2-years (single shift operation or 12 months multiple shift operation) for ComTrac products, from the date of shipment to the Customer. For ServoFit products, the motor on ServoFit Geared Motors, as well as all normal wear items, including oil seals and bearings, shall be covered for a period of 2-years (single shift operation or 12 months multiple shift operation). In the event that a product proves to be defective, STOBER's sole obligation shall be, at its option, to repair or replace the product. The repaired or replacement product will be shipped F.O.B. STOBER's facilities, freight prepaid by STOBER.

No employee, agent or representative of STOBER has the authority to waive, alter, vary or add to the terms hereof without the prior written approval of an officer of STOBER. It is expressly agreed that (a) this section constitutes the final expression of the parties' understanding with respect to the warranty and (b) this section is a complete and exclusive statement of the terms of the warranty.

STOBER shall have no obligation under the warranty set forth above in the event that:

(a) The Customer fails, within the warranty period to notify STOBER in writing and provide STOBER with evidence satisfactory to STOBER of the alleged defect within five (5) days after it becomes known to the customer;

(b) After inspection of a product, STOBER determines, in its sole discretion, that it is not defective in material or workmanship;

(c) Repair or replacement of a product is required through normal wear and tear;

(d) Any part in a product or any ingredient contained in a product requires replacement or repair through routine usage or normal wear and tear;

(e) A product is not maintained or used in accordance with STOBER's applicable operating and/or maintenance manuals, whether by the Customer or any third party;

(f) A product has been subject to misuse, misapplication, negligence, neglect (including, but not limited to, improper maintenance or storage), accident, catastrophe, improper installation, modification, adjustment, repair or lubrication, whether by the Customer or any third party, without the prior written consent of STOBER. Misuse shall include, but not be limited to, deterioration in a product due to chemical action and wear caused by the presence of abrasive materials;

(g) The system of connected rotating parts into which the product becomes incorporated is not compatible with the product, or it is not free from critical speed or torsional or other type of vibration within the specified operating range, no matter how induced; or

(h) The transmitted load and imposed torsional thrust and overhung loads are not within the published capacity limits for the unit sold.

Items manufactured by other parties but installed in or affixed to STOBER's products are not warranted by STOBER and bear only those warranties, express or implied, which are given by the manufacturer of such items, if any.

THE WARRANTY SET FORTH ABOVE IS INTENDED SOLELY FOR THE BENEFIT OF THE Customer AND DOES NOT APPLY TO ANY THIRD PARTY. ALL CLAIMS MUST BE MADE BY THE Customer AND MAY NOT BE MADE BY ANY THIRD PARTY. THIS WARRANTY MAY NOT BE TRANSFERRED OR ASSIGNED, IN WHOLE OR IN PART, BY THE Customer FOR ANY REASON WHATSOEVER. ANY SUCH ATTEMPTED TRANSFER OR ASSIGNMENT SHALL BE NULL AND VOID.

THIS WARRANTY TAKES THE PLACE OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, WHICH ARE HEREBY DISCLAIMED AND EXCLUDED BY STOBER, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF USE AND ALL OBLIGATIONS OR LIABILITIES ON THE PART OF STOBER FOR DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE USE, REPAIR OR PERFORMANCE OF THE PRODUCTS.

4. **MODIFICATIONS.** STOBER reserves the right, without notice to the Customer, to (a) change the specifications of any product, (b) improve a product in any manner that STOBER deems necessary or appropriate and (c) discontinue the manufacture of any product.

5. **PURCHASE ORDERS.** The Customer will submit purchase orders for the products to STOBER in writing, whether by mail or telefax, which shall set forth, at a minimum: (a) an identification of the products ordered, (b) prices for such products, (c) quantities, (d) requested delivery dates and (e) shipping instructions and shipping addresses.

6. **ACCEPTANCE OF ORDERS.** All purchase orders received from the Customer are subject to acceptance by STOBER in writing.

7. **MODIFICATION OF ORDERS.** No accepted purchase order shall be modified or canceled except upon the written agreement of STOBER and the Customer. Mutually agreed cancellations shall be subject to reasonable charges based upon expenses already incurred by STOBER and commitments made by STOBER. Mutually agreed change orders shall be subject to all provisions of these Terms and Conditions of Sale.

8. **PRICE INCREASES.** STOBER may increase its prices for the products by providing the original purchaser of the products with at least thirty (30) days' prior written notice. Increased prices for products shall not apply to purchase orders accepted prior to the effective date of the price increase unless such orders provide for delivery more than thirty (30) days after the date of acceptance of the order.

9. **PRICING AND DELIVERY TERMS.** In accordance with KRS 355.2-319(1)(b), all products are delivered F.O.B. STOBER's warehouse facility in Maysville, Kentucky, or such other facility as STOBER may designate. Orders are then shipped per Customer's shipping instructions as set forth in Customer's purchase order. **CATALOG PRICING DOES NOT INCLUDE SHIPPING, HANDLING AND TAXES.** Once delivered to a common carrier of the Customer's choosing [or of STOBER's choosing if Customer has failed to specify a common carrier on or before five (5) days prior to the requested delivery date] STOBER shall have no further responsibility for the products and all risk of damage, loss or delay shall pass to the Customer. A handling fee is added to freight costs by STOBER to cover the cost of having to pay the carrier within seven (7) days when the terms with the Customer are net 30. The Customer has the option of shipping collect with our carrier or the carrier of choice.

10. **PAYMENT TERMS.** Net 30 days. All orders will be shipped either prepaid by the Customer or C.O.D., at STOBER's option, unless the Customer has established a previously approved credit line. If STOBER approves a credit line for the Customer, all payments shall be due within thirty (30) days of the date of the invoice. If any invoice is not paid in full within such thirty (30) day period, then finance charges shall be assessed at the rate of one and one-half percent (1½%) per month (eighteen percent (18%) per year). If such rate is deemed to be usurious at any time, it shall be reduced to the maximum rate permitted by applicable law. STOBER may stop or withhold shipment of products if the Customer does not fulfill its payment obligations. If STOBER is insecure about payment for any reason, STOBER may require full or partial payment in advance and as a condition to the continuation of its delivery of products.

11. **SECURITY INTEREST.** Unless and until the products are paid for in full, STOBER reserves a security interest in them to secure the unpaid balance of the purchase price. The Customer hereby grants to STOBER a power of attorney, coupled with an interest, to execute and file on behalf of the Customer all necessary financing statements and other documents required or appropriate to protect the security interest granted herein.

12. **ACCEPTANCE OF PRODUCTS.** The Customer will conduct any incoming inspection tests as soon as possible upon arrival of the products, but in no event later than ten (10) days after the date of receipt. Any products not rejected by written notice to STOBER within such period shall be deemed accepted by the Customer. STOBER shall not be liable for any additional costs, expenses or damages incurred by the Customer, directly or indirectly, as a result of any shortage, damage or discrepancy in a shipment.

13. **LIMITATION OF REMEDIES.**

(a) STOBER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE CAUSED BY DELAY IN FURNISHING THE CUSTOMER WITH PRODUCTS.

(b) IN NO EVENT SHALL STOBER'S LIABILITY INCLUDE ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL LOSSES OR DAMAGES, EVEN IF STOBER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH POTENTIAL LOSS OR DAMAGE.

14. **MADE-TO-ORDER PRODUCTS.** STOBER reserves the right to revoke and amend any price quotations offered to the Customer for made-to-order products, provided that such price quotations have not been accepted by the Customer prior to the date of revocation or amendment.

15. **DIES, TOOLS AND EQUIPMENT.** Charges incurred by the Customer for dies, tools and other equipment shall not confer ownership or the right to possession therein by the Customer. All such dies, tools and equipment shall remain the property of STOBER, and STOBER shall have the exclusive right to possession thereof. STOBER shall maintain such tools and equipment in good working order.

16. **REGULATORY LAWS AND STANDARDS.** STOBER makes no representation that its products conform to state or local laws, ordinances, regulations, codes or standards except as may be otherwise agreed to in writing by STOBER.

17. **SIZES AND WEIGHTS.** STOBER's products are made only in the sizes and to the specifications set forth in its catalogs and other literature. If any alteration is requested, such altered product will be treated as a made-to-order item. STOBER assumes no responsibility for typographical errors which may appear in its catalogs or literature, and cannot accept alteration charges caused by such errors. Since weights shown in STOBER's catalogs are approximate, they cannot be used in determining freight allowances set forth in its catalogs and other literature. Freight allowances will be determined at the time of shipment and shall be based on actual shipping weight.

18. **SYSTEM DESIGN.** Responsibility for system design to ensure proper use and application of STOBER's products within their published specifications and ratings rests solely with the Customer. This includes, but is not limited to, an analysis of loads created by torsional vibrations within the entire system, regardless of how induced.

STOBER DRIVES INC.
1781 Downing Drive • Maysville, KY 41056
Phone: (606) 759-5090 • FAX: (606) 759-5045
www.stober.com • E-mail: sales@stober.com

24 Hour Service Hotline

No matter what happens....

whenever,

wherever,

..we're here!

365 days, 24 hours a day

Emergency: 606 563-6035

STOBER Drives Inc.
1781 Downing Drive, Maysville KY 41056
Phone: 606 759-5090, Fax: 606 759-5045
Web: www.stober.com, E-mail: sales@stober.com

STOBER Drives Inc.
1781 Downing Drive, Maysville KY 41056
Phone: 606 759-5090, Fax: 606 759-5045
Web: www.stober.com, E-mail: sales@stober.com