

MGS Speed Reducers



**"K" Series
Maintenance
Manual**





"K" Series – Right Angle Helical/Bevel MGS Reducer Installation Instructions

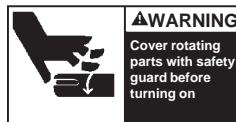
Thank you for purchasing a STOBER drive. In order to obtain long life and trouble-free operation from your MGS speed reducer, it is essential that the installation and operating procedures outlined in this manual be followed.

This manual includes directions for mounting and start-up of the MGS unit, as well as lubrication and maintenance instructions. Failure to follow these instructions will void the drive's warranty.

The torque required by the application must not exceed the reducer torque capacity shown on the nameplate. For safety purposes a safety coupling should be installed between the reducer and the driven load. Otherwise, overload may cause damage to the interior parts of the reducer which may result in breaking the reducer housing. As a result, persons could be injured by flying parts or splashing hot gear oil.

If you have questions about the installation, operation or maintenance of your MGS unit, please contact your local STOBER distributor for assistance.

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 shafts of MGS speed reducers and gearmotors rotate at very high speeds and can cut off or severely injure hands, fingers, and arms. Use appropriate guards for shafts and other rotating parts at all times. 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 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 MGS speed reducer, 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.

MAINTENANCE:

With STOBER reducers very little maintenance is required under normal operating conditions. We recommend that the lubrication be changed in sizes K5 thru K10 after 5000 hours of operation or after 2000 hours of operation if the reducer is in a moist environment.

In the event an oil change is needed, completely drain the reducer and replace with a compatible 5EP rated lubricant. Check your lubrication supplier for a comparable lubricant.

CAUTION – KNOW YOUR APPLICATION: If synthetic oil is required for high temperatures, replacing with mineral oil may prematurely fail the reducer.

LUBRICATION and MOUNTING POSITION:

All STOBER units are shipped filled with the required amount of lubrication (Mobilgear 630) unless otherwise specified.

The mounting positions and the required amount of lubricant for each position is shown on the following pages. In order to provide the proper lubrication quantity the position required should be specified at the time of order. **No unit will be shipped without the mounting position specified by the customer.**

Vertical positions such as EL3 or EL4 may require different seals, bearings, etc. so it is very important to mount the unit in the position for which it was assembled.

"K" Series – MGS Lubrication and Mounting Data



The unit shown has the shaft on Side 4 (left) in all drawings. Mounting position is not a description of shaft side extension.

Breathers are provided on sizes K5 to K10. See tables for location of drain and vent for each mounting position.

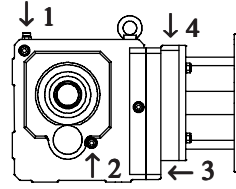
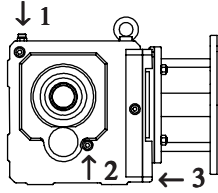


Table No. 1 K513/K1013 Plug Locations

Mounting Position	Drain Plug and Vent Location			
	1	2	2a	3
EL1	Vent			Drain
EL2	Drain			Vent
EL3		Vent	Drain	
EL4		Drain	Vent	
EL5	Drain			Vent
EL6	Vent			Drain

Position 2a is on the opposite side of 2.

Table No. 2 K514/K1014 Plug Locations

Mounting Position	Drain Plug and Vent Location				
	1	2	2a	3	4
EL1	Vent			Drain	
EL2	Drain			Vent	
EL3		Vent	Drain		
EL4		Drain	Vent		
EL5	Drain				Vent
EL6	Vent				Drain

Position 2a is on the opposite side of 2.

Position EL1 K1 — K4

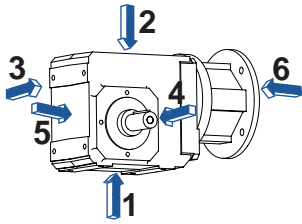


Table No. 1
Quantity of Lubricant

Module	Quantity	
	ozs.	liters
K102	14	.4
K202	27	.8
K203	51	1.5
K302	41	1.2
K303	61	1.8
K402	84	2.5
K403	118	3.5

Position EL2 K1 — K4

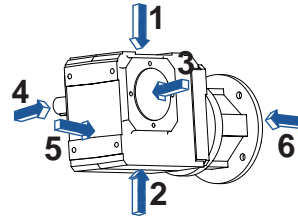


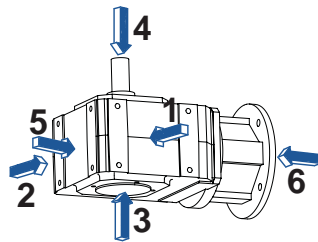
Table No. 2
Quantity of Lubricant

Module	Quantity	
	ozs.	liters
K102	37	1.1
K202	61	1.8
K203	74	2.2
K302	84	2.5
K303	101	3.0
K402	135	4.0
K403	152	4.5

Position EL3 K1 — K4

Table No. 3
Quantity of Lubricant

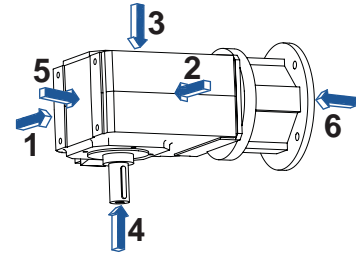
Module	Quantity	
	ozs.	liters
K102	24	.7
K202	54	1.6
K203	64	1.9
K302	78	2.3
K303	91	2.7
K402	118	3.5
K403	135	4.0



Position EL4 K1 — K4

Table No. 4
Quantity of Lubricant

Module	Quantity	
	ozs.	liters
K102	24	.7
K202	54	1.6
K203	64	1.9
K302	78	2.3
K303	91	2.7
K402	118	3.5
K403	135	4.0



Position EL5 K1 — K4

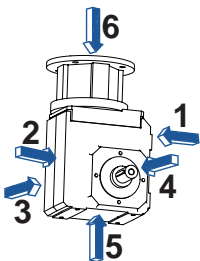


Table No. 5
Quantity of Lubricant

Module	Quantity	
	ozs.	liters
K102	46	1.36
K202	78	2.3
K203	83	2.45
K302	117	3.45
K303	125	3.70
K402	178	5.25
K403	186	5.50

Position EL6 K1 — K4

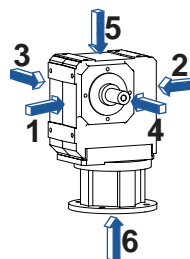


Table No. 6
Quantity of Lubricant

Module	Quantity	
	ozs.	liters
K102	31	.9
K203	68	2.0
K203	81	2.4
K302	101	3.0
K303	118	3.5
K402	135	4.0
K403	152	4.5





"K" Series – MGS Lubrication and Mounting Data

The unit shown has the shaft on Side 4 (left) in all drawings. Mounting position is not a description of shaft side extension.

Position EL1 K5 — K10

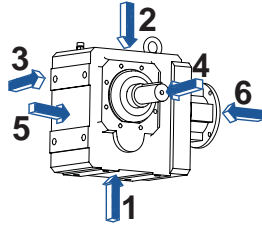


Table No. 1 Quantity of Lubricant

Module	Quantity		Module	Quantity	
	ozs.	liters		ozs.	liters
K513	101	3.0	K813	406	12.0
K514	135	4.0	K814	473	14.0
K613	142	4.2	K913	710	21.0
K614	182	5.4	K914	810	24.0
K713	203	6.0	K1013	1014	30.0
K714	270	8.0	K1014	1115	33.0

Position EL2 K5 — K10

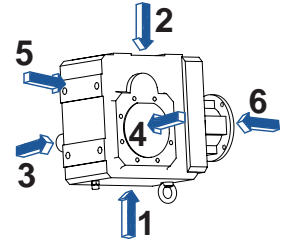


Table No. 2 Quantity of Lubricant

Module	Quantity		Module	Quantity	
	ozs.	liters		ozs.	liters
K513	152	4.5	K813	507	15.0
K514	152	4.5	K814	541	16.0
K613	230	6.8	K913	947	28.0
K614	247	7.3	K914	1014	30.0
K713	304	9.0	K1013	1588	47.0
K714	321	9.5	K1014	1758	52.0

Position EL3 K5 — K10

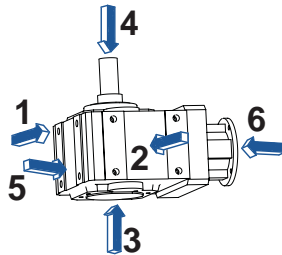


Table No. 3 Quantity of Lubricant

Module	Quantity		Module	Quantity	
	ozs.	liters		ozs.	liters
K513	118	3.5	K813	440	13.0
K514	135	4.0	K814	507	15.0
K613	186	5.5	K913	879	26.0
K614	203	6.0	K914	981	24.0
K713	237	7.0	K1013	1690	50.0
K714	271	8.0	K1014	1858	55.0

Position EL4 K5 — K10

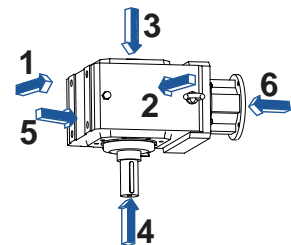


Table No. 4 Quantity of Lubricant

Module	Quantity		Module	Quantity	
	ozs.	liters		ozs.	liters
K513	118	3.5	K813	440	13.0
K514	135	4.0	K814	507	15.0
K613	186	5.5	K913	879	26.0
K614	203	6.0	K914	981	24.0
K713	237	7.0	K1013	1690	50.0
K714	271	8.0	K1014	1858	55.0

Position EL5 K5 — K10

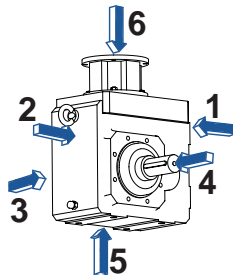


Table No. 5 Quantity of Lubricant

"A" Module					
Part#	ozs.	liters	Part#	ozs.	liters
K513	193	5.7	K813	693	20.5
K514	213	6.3	K814	741	21.9
K613	287	8.5	K913	1251	37.0
K614	311	9.2	K914	1301	38.5
K713	382	11.3	K1013	1960	58.0
K714	419	12.4	K1014	2129	63.0
"V" Module					
Part#	ozs.	liters	Part#	ozs.	liters
K513	196	5.8	K813	710	21.0
K514	223	6.6	K814	788	23.3
K613	296	8.75	K913	1284	38.0
K614	320	9.45	K914	1362	40.3
K713	382	11.3	K1013	1960	58.0
K714	426	12.6	K1014	2129	63.0

Position EL6 K5 — K10

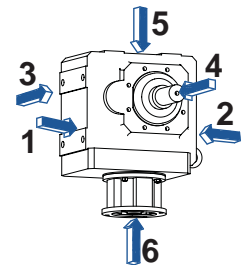


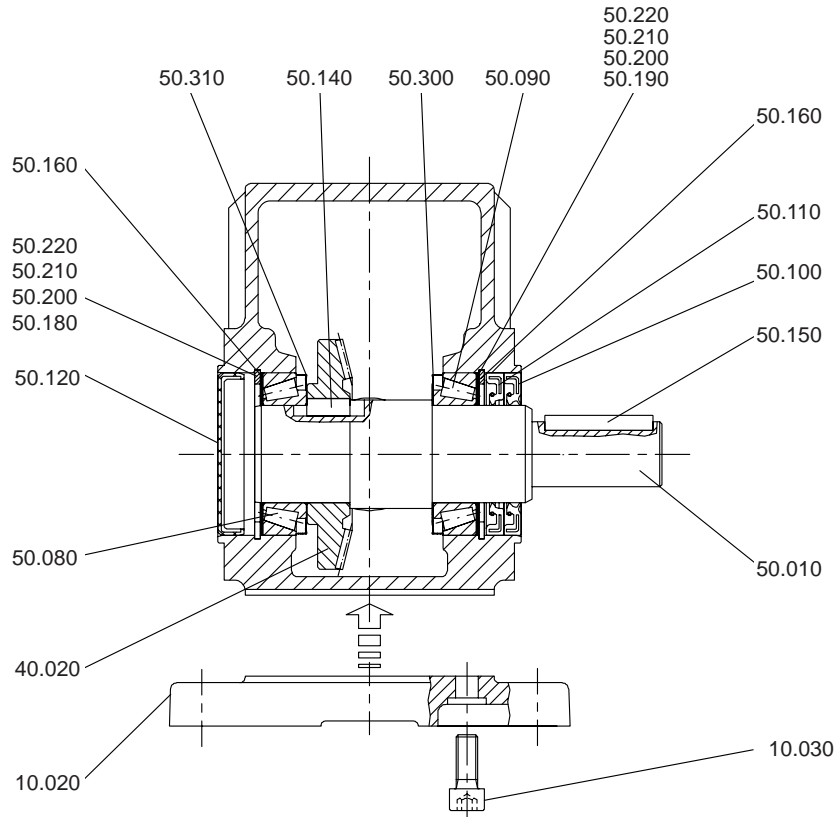
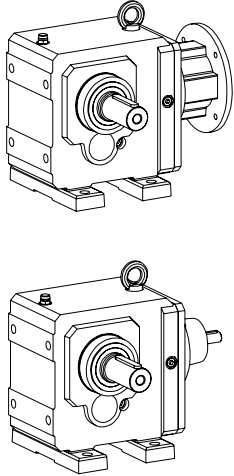
Table No. 6 Quantity of Lubricant

Module	Quantity	
	ozs.	liters
K513	135	4.0
K514	169	5.0
K613	203	6.0
K614	220	6.5
K713	287	8.5
K714	321	9.5
K813	473	14.0
K814	507	15.0
K913	845	25.0
K914	946	28.0
K1013	1453	43.0
K1014	1656	49.0

"K" Series – Right Angle Helical/Bevel MGS Reducer "N" Housing Style — Foot Mounting



K102VN to K403VN



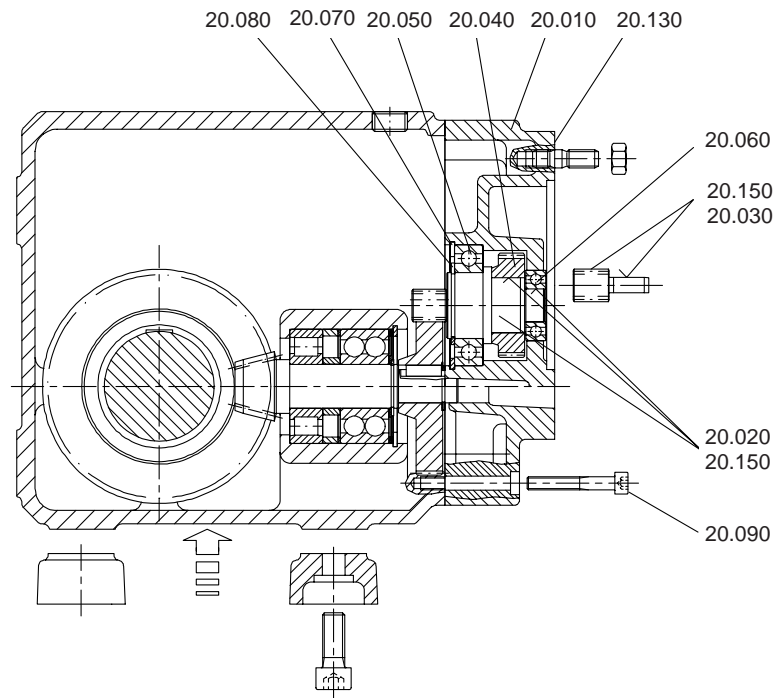
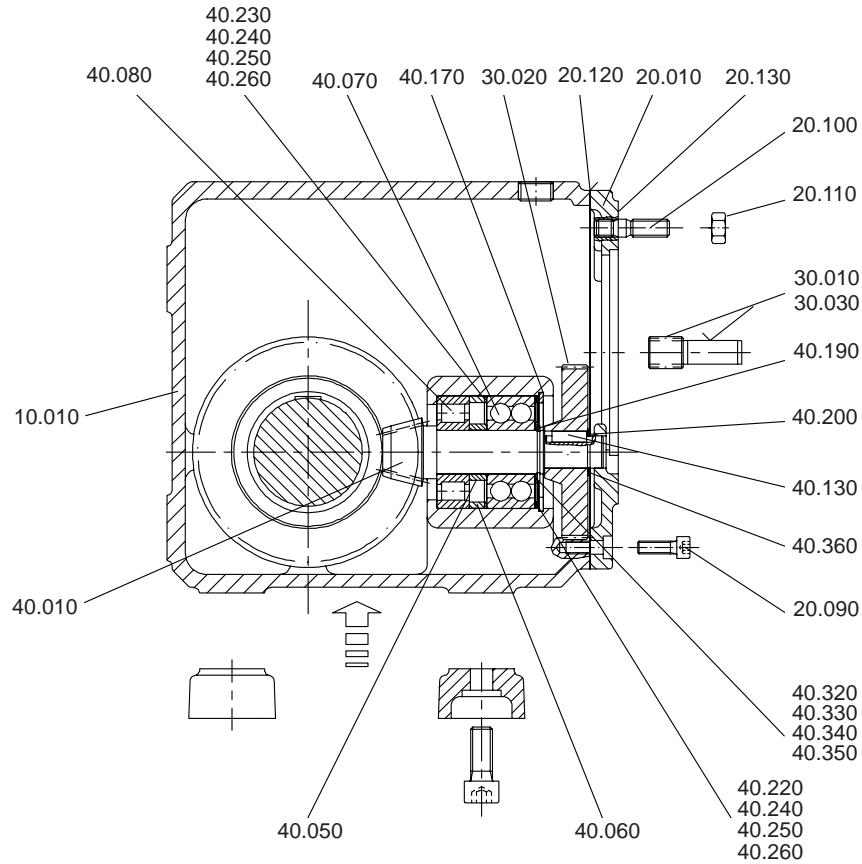
Parts List for Double and Triple Reduction — "N" Housing Style

Location No.	Description	Location No.	Description	Location No.	Description
10.010	Housing	40.050	Spacer	50.110	Oil Seal
10.020	Feet	40.060	Spacer	50.120	End Cap
10.030	Hollow Head Capscrew	40.070	Double Ball Bearing	50.140	Key
20.010	Cover	40.080	Cylindrical Roller Bearing	50.150	Key
20.020	Shaft	40.130	Key	50.160	Snap Ring
20.030	Stem Pinion	40.170	Snap Ring	50.180	Shim
20.040	Gear	40.190	Snap Ring	50.190	Shim
20.050	Ball Bearing	40.200	Snap Ring	50.200	Shim
20.060	Ball Bearing	40.220	Shim	50.210	Shim
20.070	Snap Ring	40.230	Shim	50.220	Shim
20.080	Snap Ring	40.240	Shim	50.300	Nilos Ring
20.090	Hollow Head Capscrew	40.250	Shim	50.310	Nilos Ring
20.100	Stud	40.260	Shim		
20.110	Nut	40.320	Shim		
20.120	Joint Compound	40.330	Shim		
20.130	Gasket	40.340	Shim		
20.150	Adhesive	40.350	Shim		
30.010	Stem Pinion	40.360	Shim		
30.020	Gear	50.010	Output Shaft		
30.030	Adhesive	50.080	Tapered Roller Bearing		
40.010	Bevel Pinion	50.090	Tapered Roller Bearing		
40.020	Bevel Gear	50.100	Oil Seal		



K" Series – Right Angle Helical/Bevel MGS Reducer "N" Housing Style — Foot Mounting

K102VN to K403VN



See Page 16 for MR Motor Adapter or Page 17 for an AW Input to fit these units.

When ordering replacement parts, specify the Part No. and Serial No. from the nameplate and the Location No. shown on the drawing.



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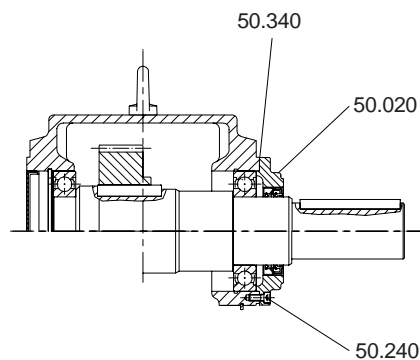
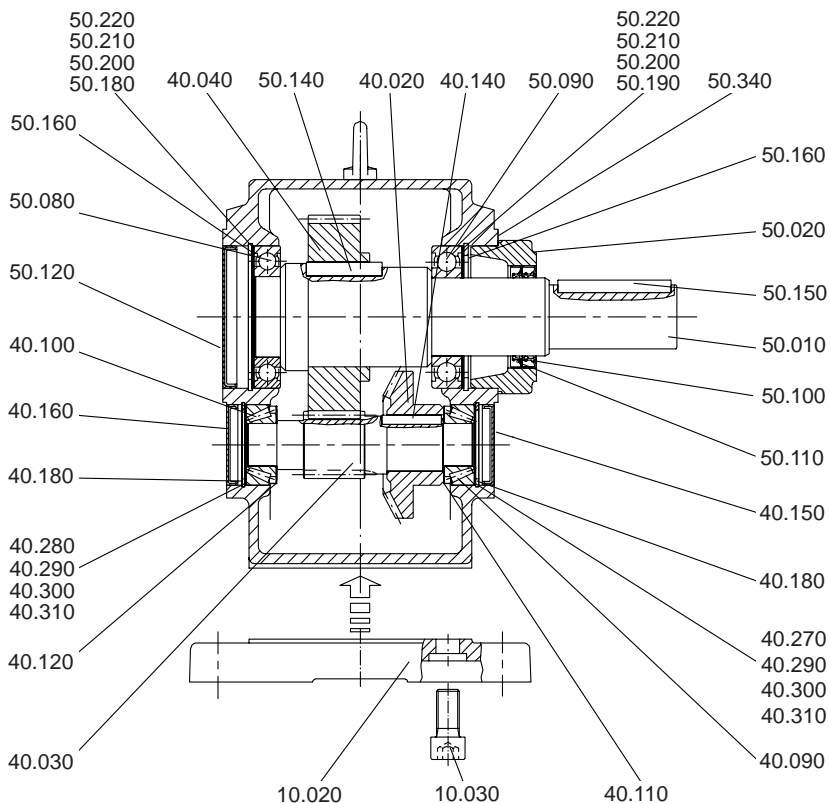
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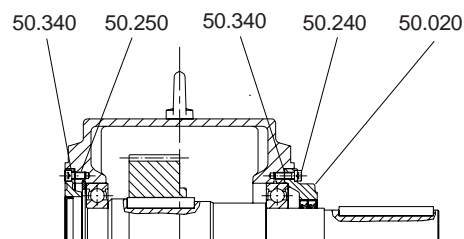
"K" Series – Right Angle Helical/Bevel MGS Reducer "N" Housing Style — Foot Mounting



K513VN to K1014VN



K813/K814VN



K913/K914VN

Parts List for Double and Triple Reduction — "N" Housing Style

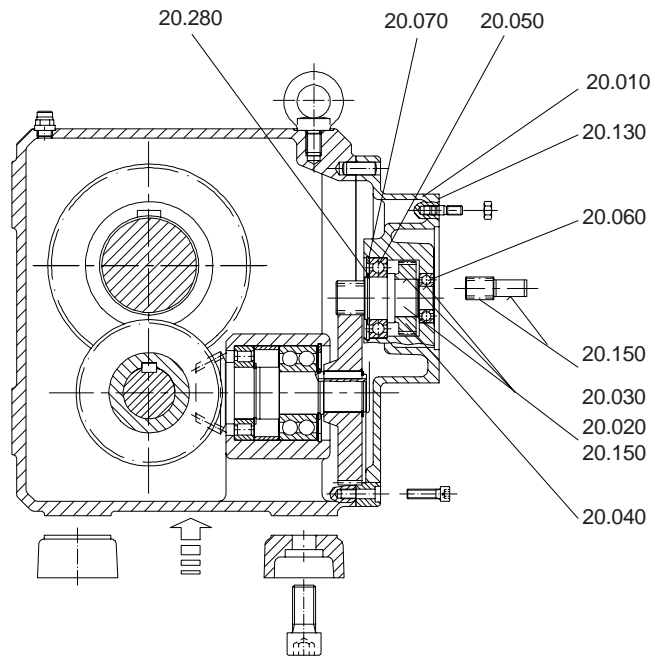
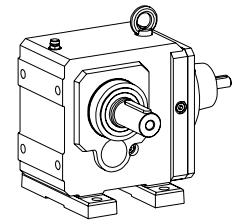
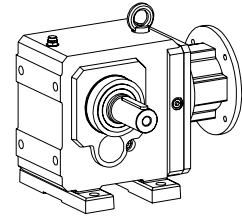
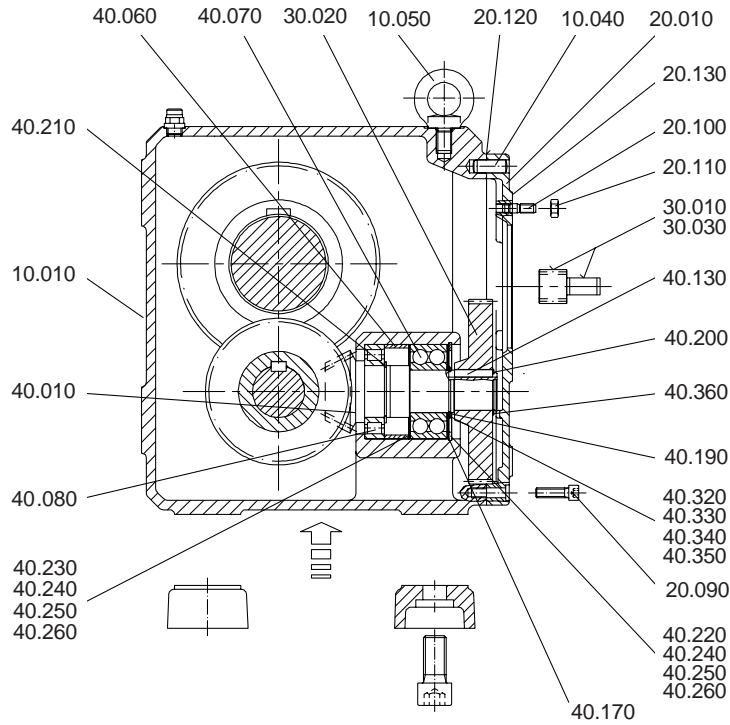
Location No.	Description	Location No.	Description	Location No.	Description
10.010	Housing	40.060	Spacer	40.320	Shim
10.020	Feet	40.070	Tapered Roller Bearing	40.330	Shim
10.030	Hollow Head Capscrew	40.080	Tapered Roller Bearing	40.340	Shim
10.040	Dowell Pin (K7 thru K9)	40.090	Tapered Roller Bearing	40.350	Shim
10.050	Eye Bolt	40.100	Tapered Roller Bearing	40.360	Shim
20.010	Cover	40.110	Nilos Ring	50.010	Output Shaft
20.020	Shaft	40.120	Nilos Ring	50.020	Output Cover
20.030	Stem Pinion	40.130	Key	50.080	Grooved Ball Bearing
20.040	Gear	40.140	Key	50.090	Grooved Ball Bearing
20.050	Ball Bearing	40.150	End Cap	50.100	Oil Seal
20.060	Ball Bearing *	40.160	End Cap	50.110	Oil Seal
20.070	Snap Ring	40.170	Snap Ring	50.120	End Cap
20.080	Snap Ring	40.180	Snap Ring	50.140	Key
20.090	Hollow Head Capscrew	40.190	Snap Ring	50.150	Key
20.100	Stud	40.200	Snap Ring	50.160	Snap Ring
20.110	Nut	40.210	Snap Ring	50.180	Shim
20.120	Joint Compound	40.220	Shim	50.190	Shim
20.130	Gasket	40.230	Shim	50.200	Shim
20.150	Adhesive	40.240	Shim	80.210	Shim
30.010	Stem Pinion	40.250	Shim	50.220	Shim
30.020	Gear	40.260	Shim	50.240	Hollow Head Capscrew
30.030	Adhesive	40.270	Shim	50.250	Hollow Head Capscrew
40.010	Bevel Pinion	40.280	Shim	50.340	Gasket
40.020	Bevel Gear	40.290	Shim		
40.030	Pinion	40.300	Shim		
40.040	Gear	41.310	Shim		

* Cylindrical Roller Bearing in K10



"K" Series – Right Angle Helical/Bevel MGS Reducer "N" Housing Style — Foot Mounting

K513VN to K1014VN



See Page 16 for MR Motor Adapter or Page 17 for an AW Input to fit these units.

When ordering replacement parts, specify the Part No. and Serial No. from the nameplate and the Location No. shown on the drawing.



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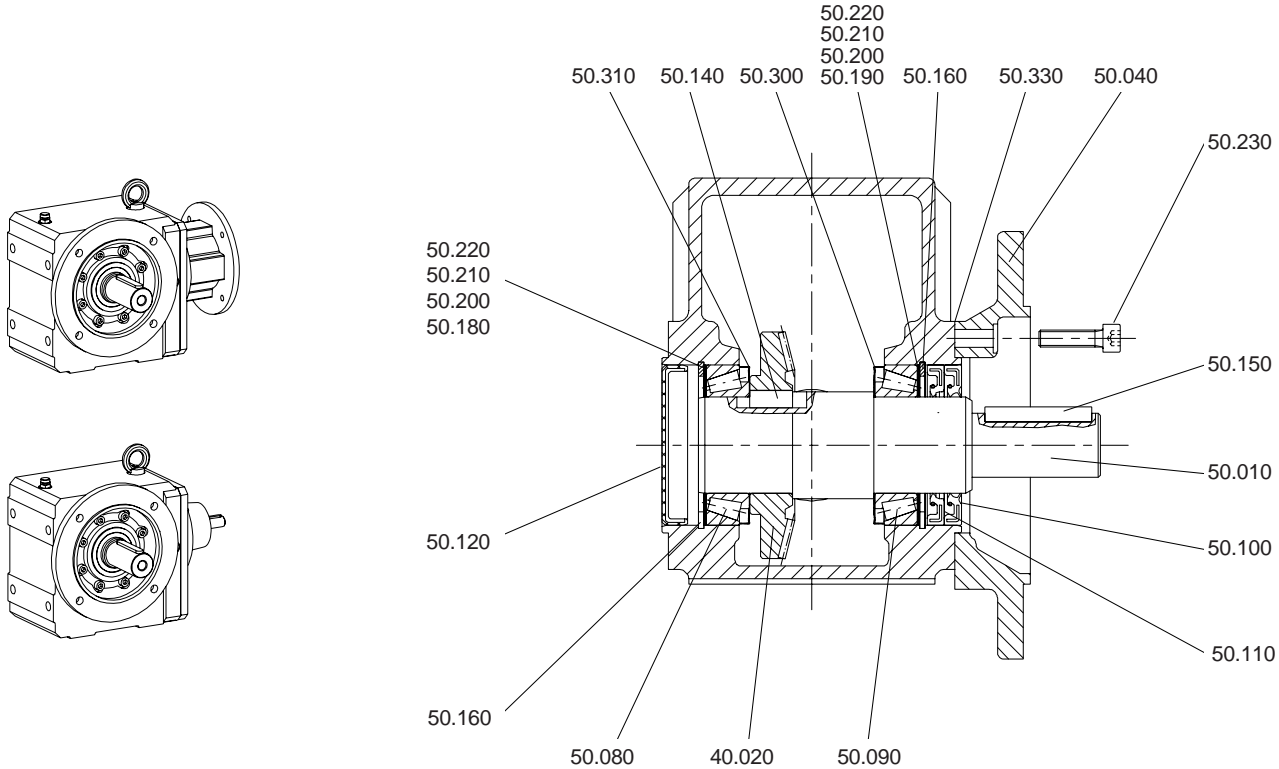
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"K" Series – Right Angle Helical/Bevel MGS Reducer "F" Housing Style — Round Flange



K102VF to K403VF



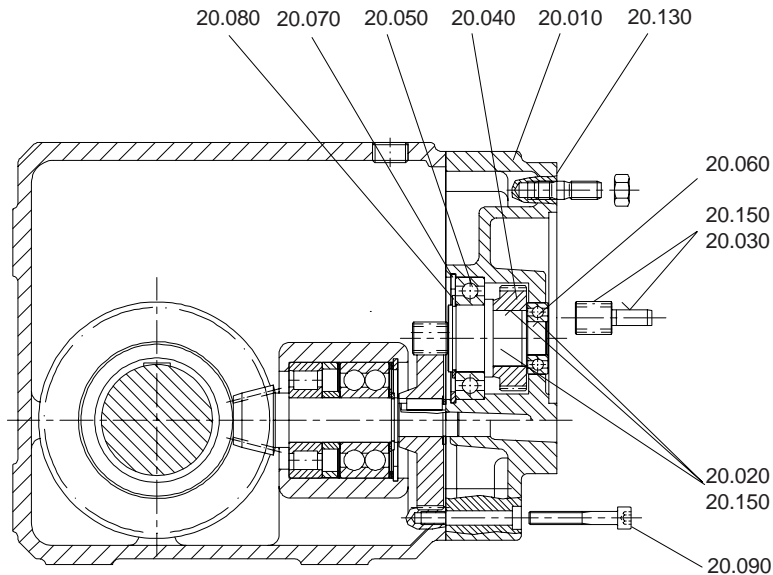
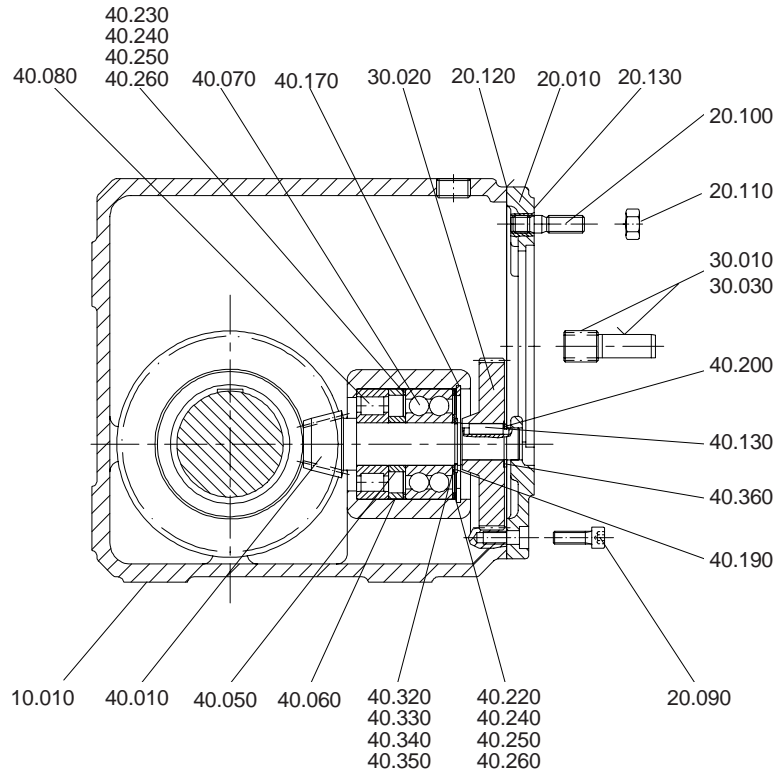
Parts List for Double and Triple Reduction — "F" Housing Style

Location No.	Description	Location No.	Description	Location No.	Description
10.010	Housing	40.060	Spacer	50.100	Oil Seal
20.010	Cover	40.070	Double Ball Bearing	50.110	Oil Seal
20.020	Shaft	40.080	Cylindrical Roller Bearing	50.120	End Cap
20.030	Stem Pinion	40.130	Key	50.140	Key
20.040	Gear	40.170	Snap Ring	50.150	Key
20.050	Ball Bearing	40.190	Snap Ring	50.160	Snap Ring
20.060	Ball Bearing	40.200	Snap Ring	50.180	Shim
20.070	Snap Ring	40.220	Shim	50.190	Shim
20.080	Snap Ring	40.230	Shim	50.200	Shim
20.090	Hollow Head Capscrew	40.240	Shim	50.210	Shim
20.100	Stud	40.250	Shim	50.220	Shim
20.110	Nut	40.260	Shim	50.230	Hollow Head Capscrew
20.120	Joint Compound	40.320	Shim	50.300	Nilos Ring
20.130	Gasket	40.330	Shim	50.310	Nilos Ring
20.150	Adhesive	40.340	Shim	50.330	Sealing Compound
30.010	Stem Pinion	40.350	Shim		
30.020	Gear	40.360	Shim		
30.030	Adhesive	50.010	Output Shaft		
40.010	Bevel Pinion	50.040	Output Flange		
40.020	Bevel Gear	50.080	Tapered Roller Bearing		
40.050	Spacer	50.090	Tapered Roller Bearing		



K" Series – Right Angle Helical/Bevel MGS Reducer "F" Housing Style — Round Flange

K102VF to K403VF



See Page 16 for MR Motor Adapter or Page 17 for an AW Input to fit these units.

When ordering replacement parts, specify the Part No. and Serial No. from the nameplate and the Location No. shown on the drawing.



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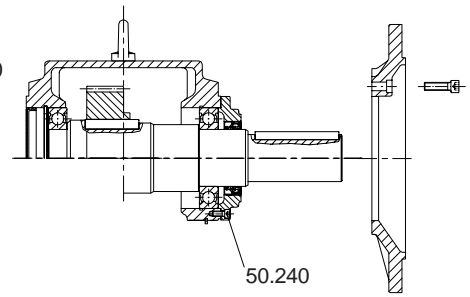
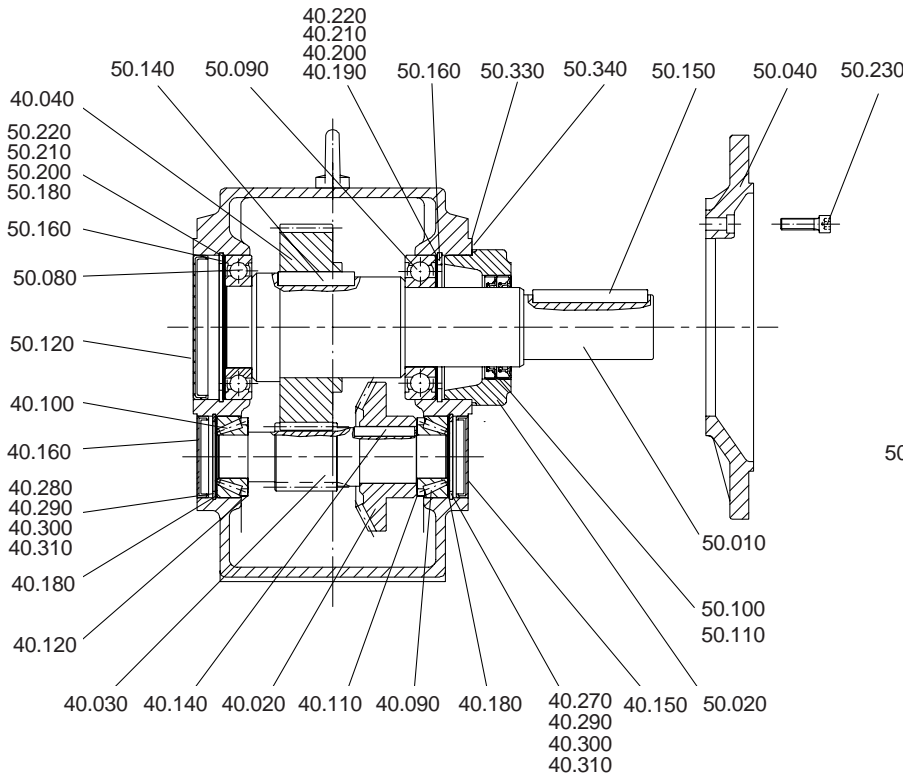
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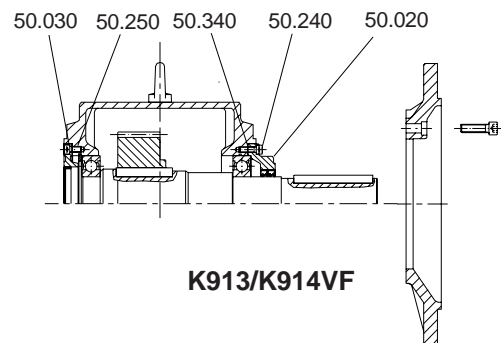
"K" Series – Right Angle Helical/Bevel MGS Reducer "F" Housing Style — Round Flange



K513VF to K1014VF (also K503 to K1004)



K813/K814VF



K913/K914VF

Parts List for Triple and Quadruple Reduction — "F" Housing Style

Location No.	Description	Location No.	Description	Location No.	Description
10.010	Housing	40.080	Tapered Roller Bearing	40.340	Shim
10.040	Dowel Pin (K7 thru K9)	40.090	Tapered Roller Bearing	40.350	Shim
10.050	Eye Bolt	40.100	Tapered Roller Bearing	40.360	Shim
20.010	Cover	40.110	Nilos Ring	50.010	Output Shaft
20.020	Shaft	40.120	Nilos Ring	50.020	Output Cover
20.030	Stem Pinion	40.130	Key	50.030	Output Flange
20.040	Gear	40.140	Key	50.080	Grooved Ball Bearing
20.050	Ball Bearing	40.150	End Cap	50.090	Grooved Ball Bearing
20.060	Ball Bearing*	40.160	End Cap	50.100	Oil Seal
20.070	Snap Ring	40.170	Snap Ring	50.110	Oil Seal
20.080	Snap Ring	40.180	Snap Ring	50.120	End Cap
20.090	Hollow Head Capscrew	40.190	Snap Ring	50.140	Key
20.100	Stud	40.200	Snap Ring	50.150	Key
20.110	Nut	40.210	Snap Ring	50.160	Snap Ring
20.120	Joint Compound	40.220	Shim	50.180	Shim
20.130	Gasket	40.230	Shim	50.190	Shim
20.150	Adhesive	40.240	Shim	50.200	Shim
30.010	Stem Pinion	40.250	Shim	50.210	Shim
30.020	Gear	40.260	Shim	50.220	Shim
30.030	Adhesive	40.270	Shim	50.230	Hollow Head Capscrew
40.010	Bevel Pinion	40.280	Shim	50.240	Hollow Head Capscrew
40.020	Bevel Gear	40.290	Shim	50.330	Sealing Compound
40.030	Pinion	40.300	Shim	50.340	Gasket
40.040	Gear	40.310	Shim		
40.060	Spacer	40.320	Shim		
40.070	Tapered Roller Bearing	40.330	Shim		

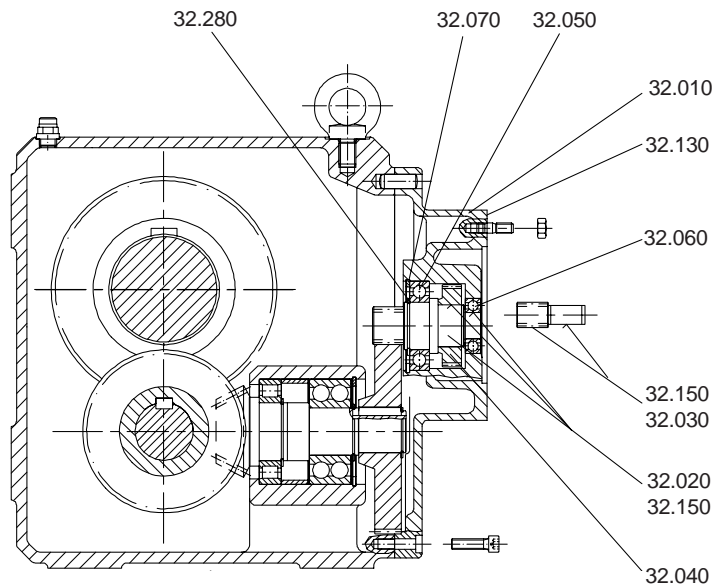
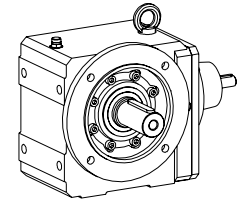
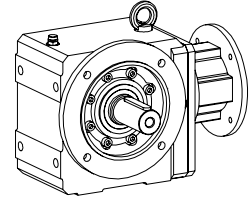
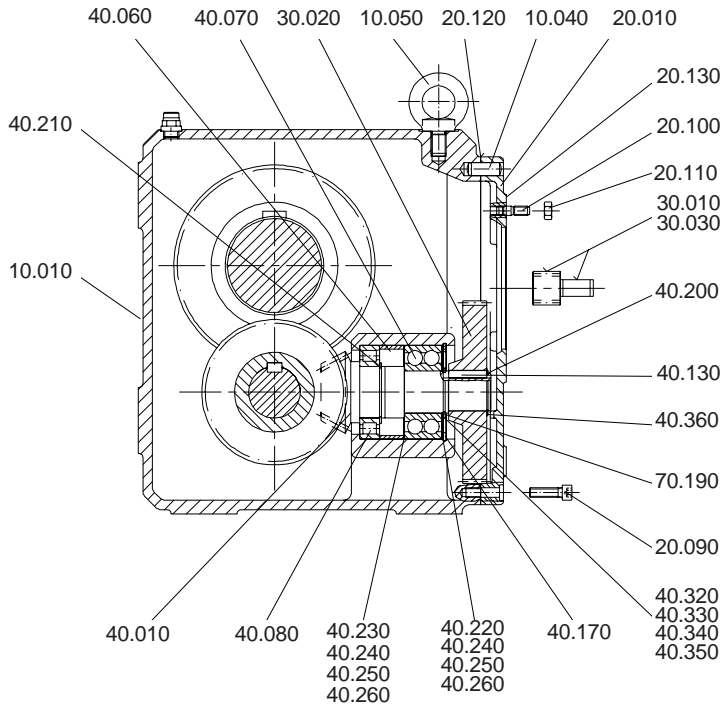
* Cylindrical Roller Bearing in K10



"K" Series – Right Angle Helical/Bevel MGS Reducer "F" Housing Style — Round Flange

K513VF to K1014VF

(also K503 to K1004)3



See Page 16 for MR Motor Adapter or Page 17 for an AW Input to fit these units.

When ordering replacement parts, specify the Part No. and Serial No. from the nameplate and the Location No. shown on the drawing.



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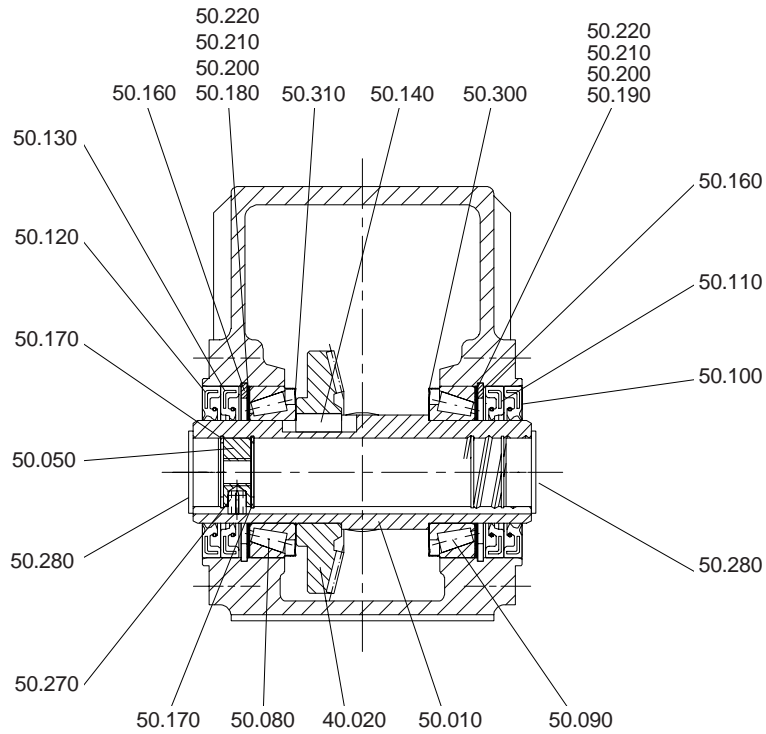
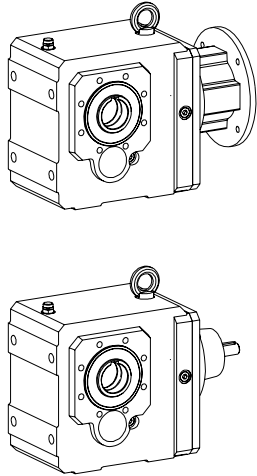
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“K” Series – Right Angle Helical/Bevel MGS Reducer “G” Housing Style — Tapped Holes



K102AG to K403AG



See Page 23 for hollow output installation instructions.

Parts List for Double and Triple Reduction — “G” Housing Style

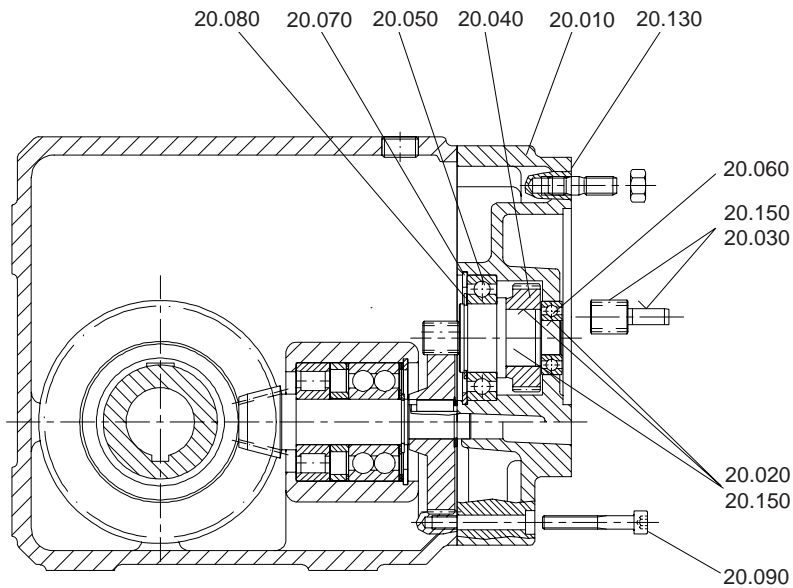
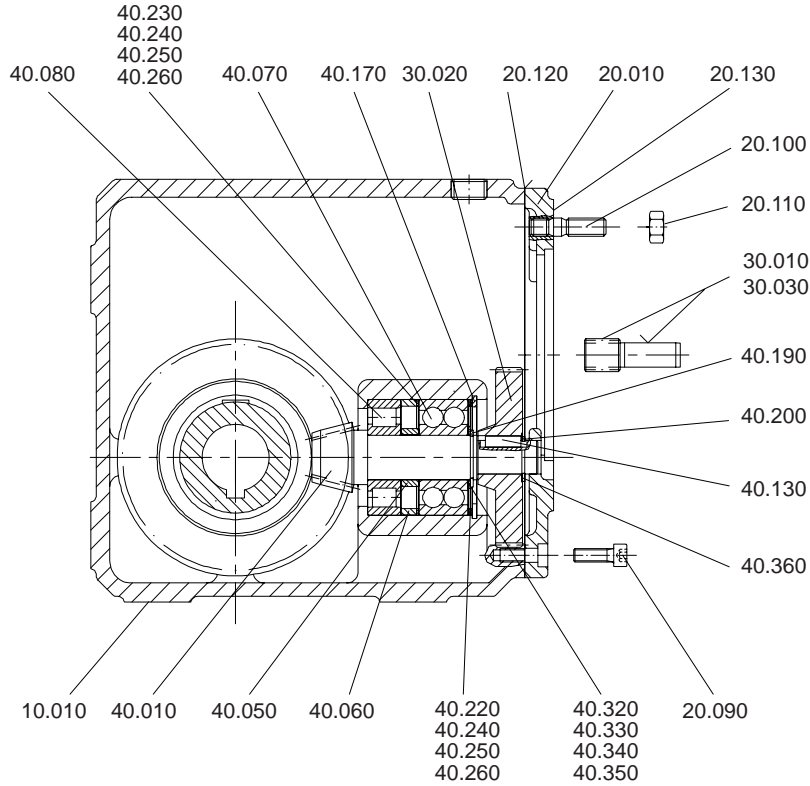
Location No.	Description	Location No.	Description	Location No.	Description
10.010	Housing	40.070	Double Ball Bearing	50.120	Oil Seal
20.010	Cover	40.080	Cylindrical Roller Bearing	50.130	Oil Seal
20.020	Shaft	40.130	Key	50.140	Key
20.030	Stem Pinion	40.170	Snap Ring	50.160	Snap Ring
20.040	Gear	40.190	Snap Ring	50.170	Snap Ring
20.050	Ball Bearing	40.200	Snap Ring	50.180	Shim
20.060	Ball Bearing	40.220	Shim	50.190	Shim
20.070	Snap Ring	40.230	Shim	50.200	Shim
20.080	Snap Ring	40.240	Shim	50.210	Shim
20.090	Hollow Head Capscrew	40.250	Shim	50.220	Shim
20.100	Stud	40.260	Shim	50.270	Roll Pin
20.110	Nut	40.320	Shim	50.280	Plug
20.120	Joint Compound	40.330	Shim	50.300	Nilos Ring
20.130	Gasket	40.340	Shim	50.310	Nilos Ring
20.150	Adhesive	40.350	Shim		
30.010	Stem Pinion	40.360	Shim		
30.020	Gear	50.010	Output Quill		
30.030	Adhesive	50.050	Keeper Plate		
40.010	Bevel Pinion	50.080	Tapered Roller Bearing		
40.020	Bevel Gear	50.090	Tapered Roller Bearing		
40.050	Spacer	50.100	Oil Seal		
40.060	Spacer	50.110	Oil Seal		





“K” Series – Right Angle Helical/Bevel MGS Reducer “G” Housing Style — Tapped Holes

K102AG to K403AG



See Page 16 for MR Motor Adapter or Page 17 for an AW Input to fit these units.

When ordering replacement parts, specify the Part No. and Serial No. from the nameplate and the Location No. shown on the drawing.



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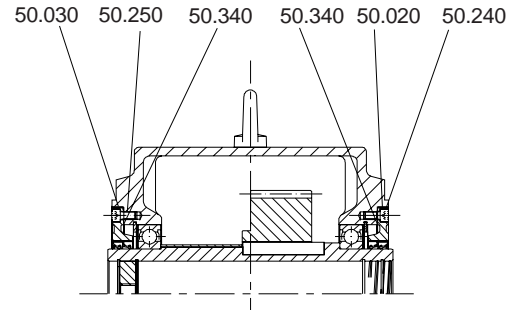
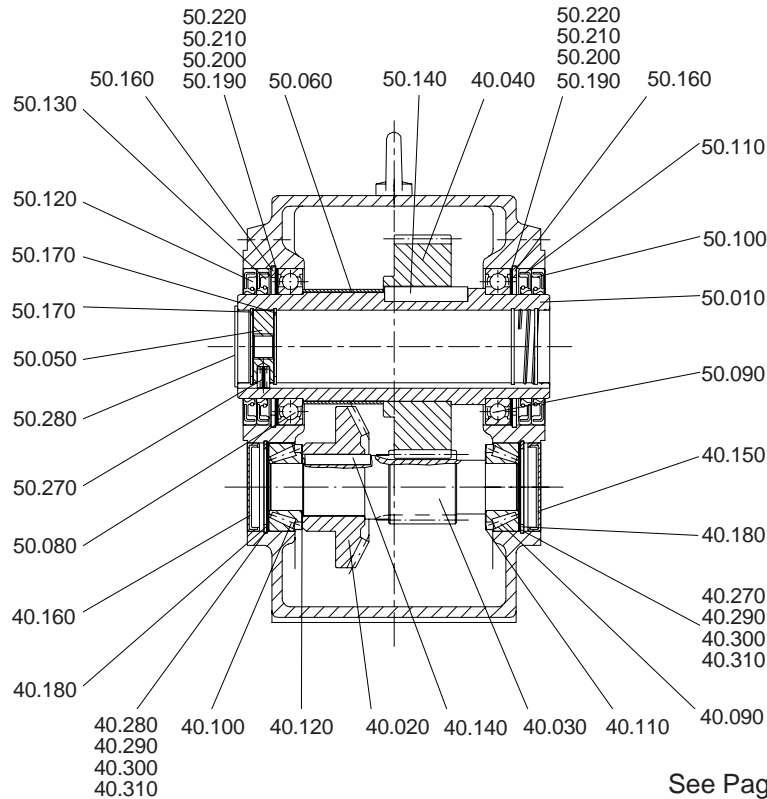
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“K” Series – Right Angle Helical/Bevel MGS Reducer “G” Housing Style — Tapped Holes



K513AG to K1014AG (also K503 to K1004)



K913/K914AG

* Cylindrical Roller Bearing in K10

See Page 23 for hollow output installation instructions.

Parts List for Triple and Quadruple Reduction — “G” Housing Style

Location No.	Description	Location No.	Description	Location No.	Description
10.010	Housing	40.090	Tapered Roller Bearing	40.360	Shim
10.040	Dowel Pin (K7 thru K9)	40.100	Tapered Roller Bearing	50.010	Output Quill
10.050	Eye Bolt	40.110	Nilos Ring	50.020	Output Cover
20.010	Cover	40.120	Nilos Ring	50.030	Output Cover
20.020	Shaft	40.130	Key	50.050	Keeper Plate
20.030	Stem Pinion	40.140	Key	50.060	Spacer
20.040	Gear	40.150	End Cap	50.080	Grooved Ball Bearing
20.050	Ball Bearing	40.160	End Cap	50.090	Grooved Ball Bearing
20.060	Ball Bearing*	40.170	Snap Ring	50.100	Oil Seal
20.070	Snap Ring	40.180	Snap Ring	50.110	Oil Seal
20.080	Snap Ring	40.190	Snap Ring	50.120	Oil Seal
20.090	Hollow Head Capscrew	40.200	Snap Ring	50.130	Oil Seal
20.100	Stud	40.210	Snap Ring	50.140	Key
20.110	Nut	40.220	Shim	50.160	Snap Ring
20.120	Joint Compound	40.230	Shim	50.170	Snap Ring
20.130	Gasket	40.240	Shim	50.180	Shim
20.150	Adhesive	40.250	Shim	50.190	Shim
30.010	Stem Pinion	40.260	Shim	50.200	Shim
30.020	Gear	40.270	Shim	50.210	Shim
30.030	Adhesive	40.280	Shim	50.220	Shim
40.010	Bevel Pinion	40.290	Shim	50.240	Hollow Head Capscrew
40.020	Bevel Gear	40.300	Shim	50.250	Hollow Head Capscrew
40.030	Pinion	40.310	Shim	50.270	Roll Pin
40.040	Gear	40.320	Shim	50.280	Plug
40.060	Spacer	40.330	Shim	50.340	O-Ring (K5-K7)
40.070	Tapered Roller Bearing	40.340	Shim	50.340	Gasket (K8 & K9)
40.080	Tapered Roller Bearing	40.350	Shim		

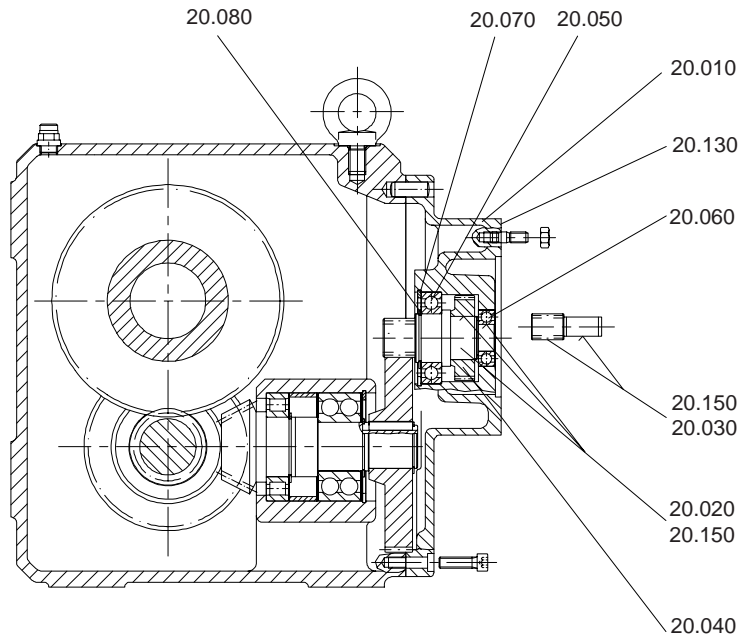
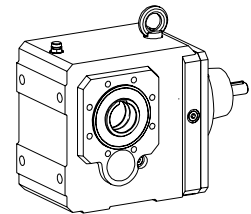
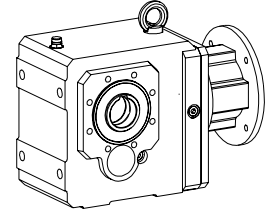
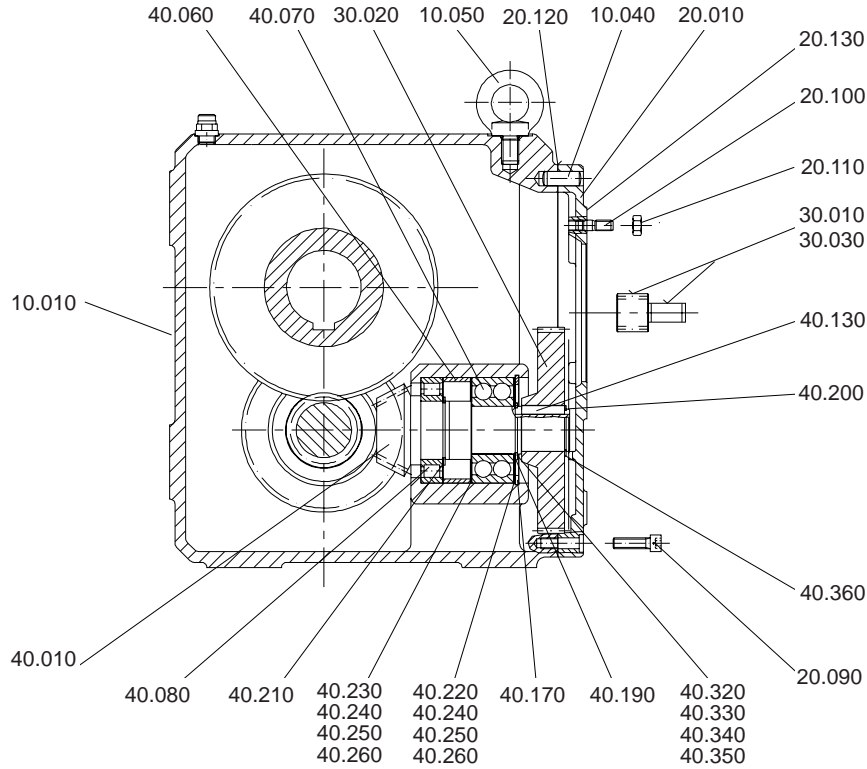




“K” Series – Right Angle Helical/Bevel MGS Reducer “G” Housing Style — Tapped Holes

K513AG to K1014AG

(also K503 to K1004)



See Page 16 for MR Motor Adapter or Page 17 for an AW Input to fit these units.

When ordering replacement parts, specify the Part No. and Serial No. from the nameplate and the Location No. shown on the drawing.



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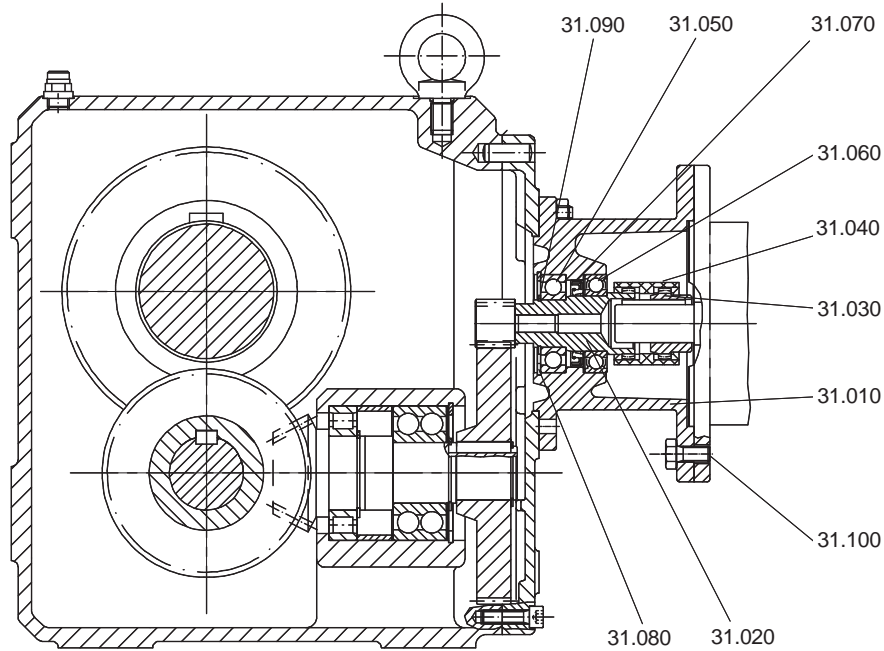
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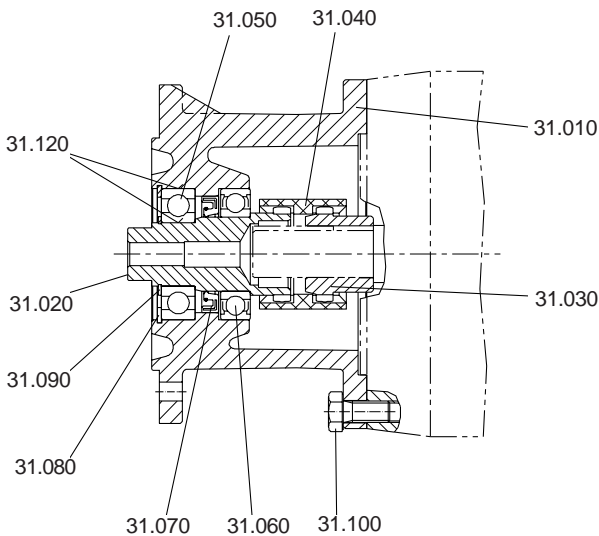
"K" Series –Right Angle Helical/Bevel MGS Reducer

MR — Motor Adapter

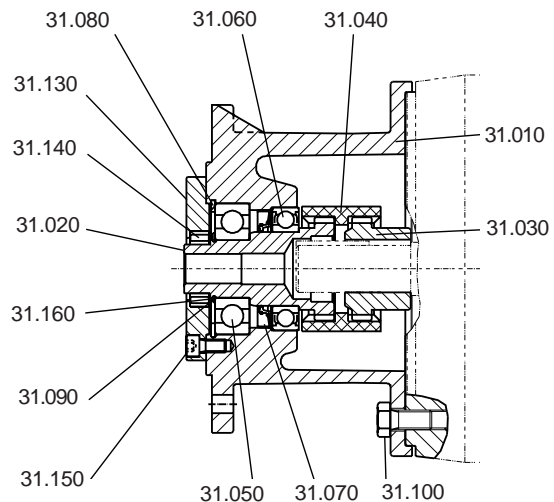
MRB — Motor Adapter with Backstop



MRB for flange diameter 140-160



MRB for flange diameter 200 to 350 (Double Reduction Only)



Parts List for MR and MRB Motor Adapter

Loc. No.	Description	Loc. No.	Description	Loc. No.	Description
31.010	MR Motor Adapter Housing	31.060	Ball Bearing	31.120	Adhesive
31.020	Coupling Hub/Shaft	31.070	Seal	31.130	Backstop Cover
31.030	Motor Coupling Hub	31.080	Snap Ring	31.140	Backstop
31.040	Coupling Sleeve	31.090	Snap Ring	31.150	Capscrew
31.050	Ball Bearing *	31.100	Capscrew	31.160	Shim

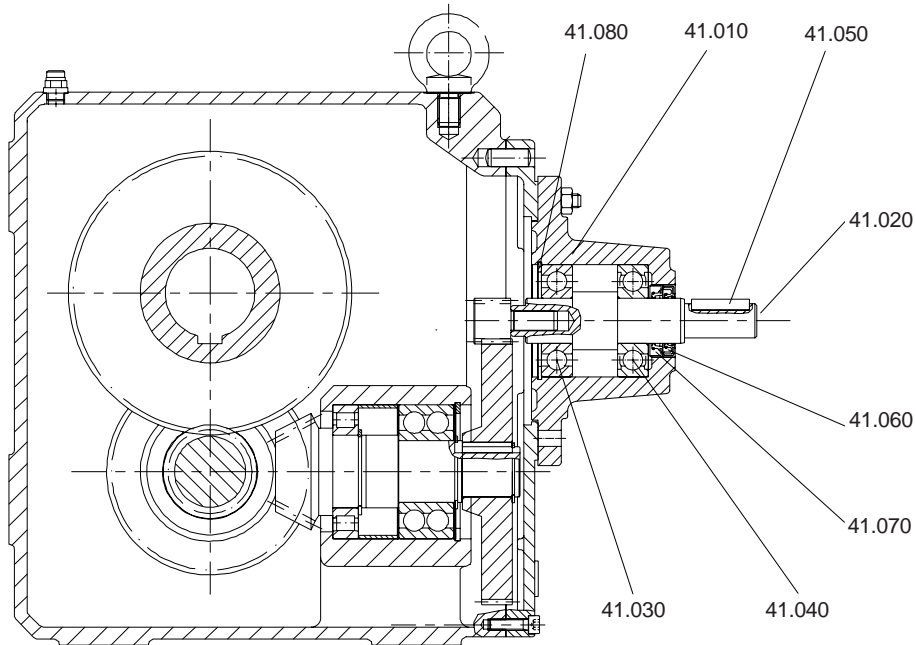
The direction of rotation of the backstop **MUST** be specified when ordered. Do Not Use Backstops on Man Lifts.

When ordering replacement parts, specify the Part No. and Serial No. from the nameplate and the Location No. shown on the drawing.

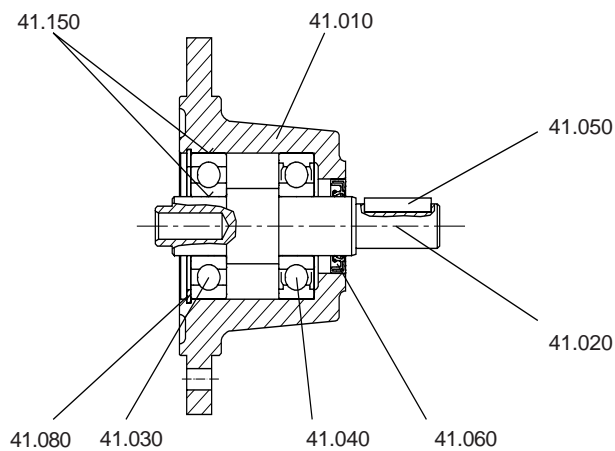


"K" Series — Right Angle Helical/Bevel MGS Reducer

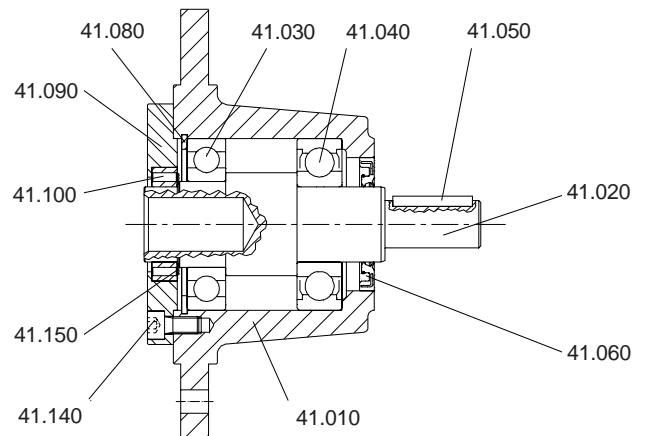
AW — Input Shaft and
AWB — Input Shaft with Backstop



AWB for flange diameter 140-160



AWB for flange diameter 200 to 350 (Double Reduction Only)



Parts List for AW and AWB Input Shaft

Location	Description	Location	Description	Location	Description
41.010	Input Housing	41.060	Seal	41.110	Capscrew
41.020	Shaft	41.070	Seal	41.120	Shim
41.030	Ball Bearing *	41.080	Snap Ring	41.130	Key
41.040	Ball Bearing	41.090	Backstop Cover	41.140	Snap Ring
41.050	Key	41.100	Backstop	41.150	Adhesive

* This is a combination Bearing/Backstop in the AWB for flange diameters 140 to 160.

The direction of rotation of the backstop **MUST** be specified when ordered. Do Not Use Backstops on Man Lifts.

When ordering replacement parts, specify the Part No. and Serial No. from the nameplate and the Location No. shown on the drawing.

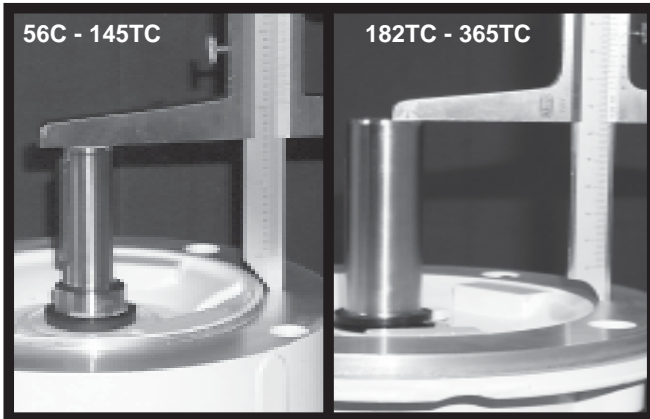


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MGS Reducer Motor Adapter Installation



Step 1. Measure the Motor Shaft



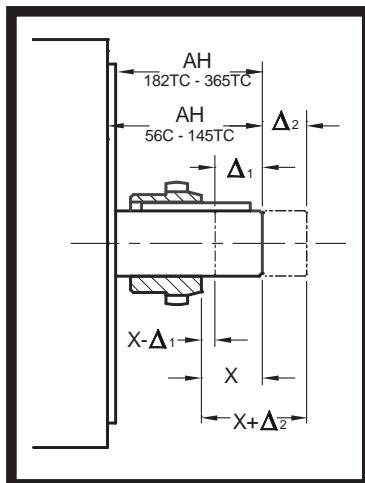
Accurate measurement of the motor shaft is vital to mounting the motor coupling correctly. The measurement must be taken from the face of the motor or pilot surface (see above) to the end of the motor shaft. If this dimension is the same as the NEMA standard "AH" dimension shown in Table No. 1, proceed with the motor mounting in Step 2.

Table No. 1 NEMA Motor Shaft Dimensions

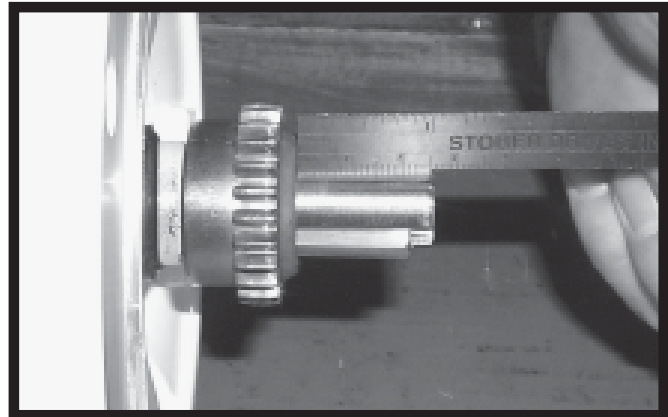
Motor Frame	"AH"	Shaft Dia.	Motor Frame	"AH"	Shaft Dia.
56C	2 ¹ / ₁₆	5/8	254/256TC	3 ³ / ₄	1 ⁵ / ₈
143/145TC	2 ¹ / ₈	7/8	284/286TC	4 ³ / ₈	1 ⁷ / ₈
182/184TC	2 ⁵ / ₈	1 ¹ / ₈	324/326TC	5	2 ¹ / ₈
213/215TC	3 ¹ / ₈	1 ³ / ₈	364/365TC	5 ⁵ / ₈	2 ³ / ₈

If the motor shaft length measurement is less than "AH", **subtract** the difference (Δ_1) from the "X" dimension shown in Table No. 2.

If the motor shaft length measurement is greater than "AH", **add** the difference (Δ_2) to the "X" dimension shown in Table No. 2.



Step 2. Locate the Motor Coupling on the Motor Shaft



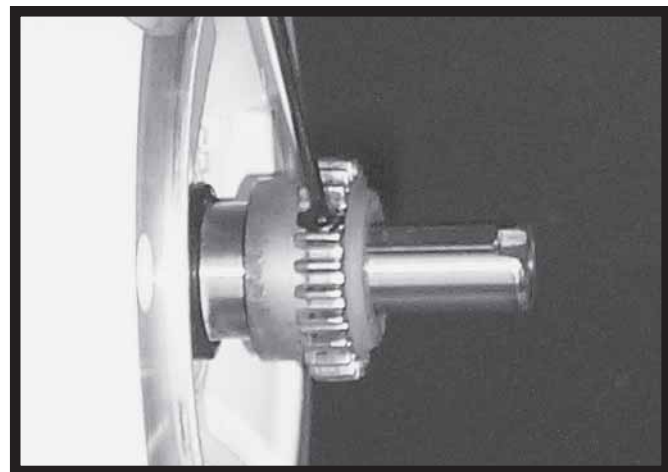
Mount the coupling with the hub projection toward the step or shoulder of the motor. The motor shaft should project through the coupling by the "X" dimension (or the value determined using the previous measurement).

Table No. 2 Location of Motor Coupling

Adapter Part No.	"X" mm	"X" inches	Adapter Part No.	"X" mm	"X" inches
MR140/050	28	1.1	MR250/210	46	1.8
MR160/050	22	.9	MR300/180	10	.4
MR160/140	25	1.0	MR300/210	26	1.0
MR200/050	12	.5	MR300/250	42	1.7
MR200/140	12	.5	MR300/280	58	2.3
MR200/180	30	1.2	MR350/320	64	2.5
MR250/180	30	1.2	MR350/360	80	3.1

"X" Tolerance – +1mm / -0mm (+0.040 / -0.000 inches)

Step 3. Tighten the Setscrew

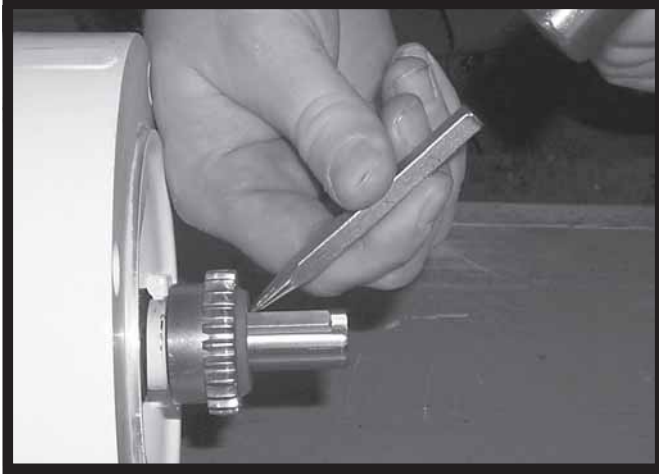


With the coupling hub located at the correct distance, tighten the setscrew in the coupling.



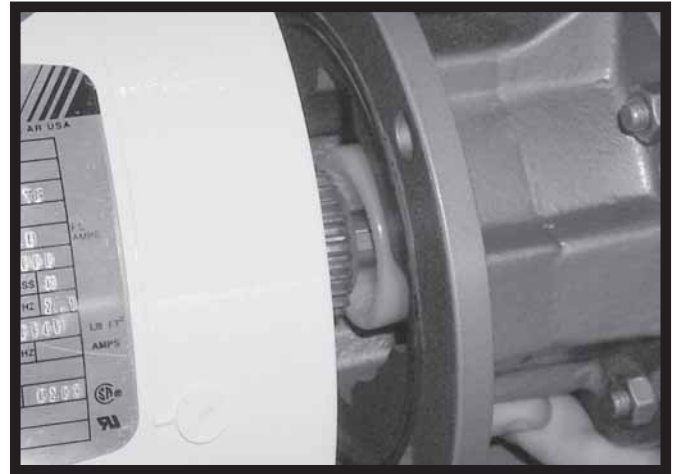
MGS Reducer Motor Adapter Installation

Step 4. Secure the Motor Shaft Key



For ease of installation, secure the motor shaft key. Staking near the end of the keyway, on the sides of the key, or a temporary adhesive works well.

Step 5. Mount the Motor



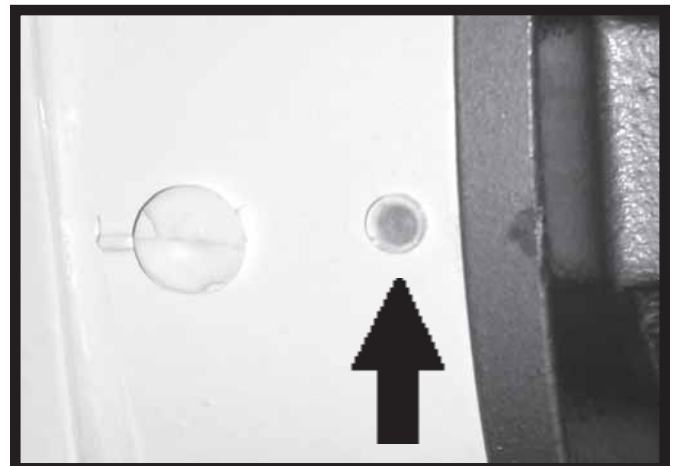
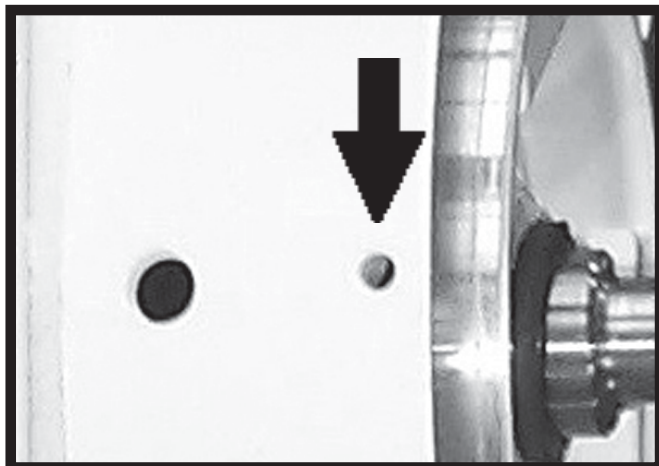
With the coupling secure, insert the motor shaft into the motor adapter. The coupling sleeve is already installed on the mating reducer coupling hub inside the motor adapter. **The sleeve should move freely in an axial direction.** (Axial displacement ± 0.040 inches.)

With the motor in place, tighten the motor bolts.

Caution: If the motor coupling is not installed correctly, the input bearing may fail due to pre-load. This will void the warranty of the reducer and possibly fail the motor.

Some motor manufacturers provide a drain hole in the mounting face of washdown motors. In some mounting positions, water or other material can enter the motor adapter and fail the bearing.

Be sure this hole is covered during washing or when the unit is in a wet environment. The illustration shows the method that Stober assembly personnel use to plug the hole.



"WFB" Bushings for "K" Series MGS Reducer Double Side Bushing – Installation Instructions



Shaft and Reducer Preparation



The gearbox is shipped with Pressure Rings installed as shown.



The Bushing kit includes:

- Split Cover with capscrews
- Support Side Flanged Cone Assembly
- Clamp Side Flanged Cone Assembly
- Closed Cover with capscrews
- Bushing Capscrews.

**Support Side
Bushing
Components**



**Clamp Side
Bushing
Components**

The Support Side is the bushing with the coating on the cone.

DO NOT use cleaner on the coated cone.

The support side bushing is mounted on the machine side.



Be sure the inside of the quill is free of grease and oil before installing the tapered cones.

VERY IMPORTANT

Do NOT Remove Spacer Bolts until directed to do so.



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.



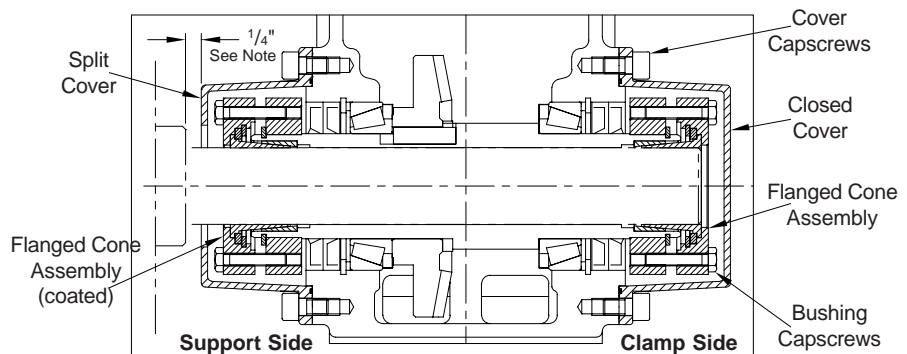
WARNING: Shaft must be free of grease for bushing to clamp properly.

Table No. 1 Recommended Tightening Torque

Base Module	Capscrews		Tight. Torque		U		Spacer Bolts
	Qty.	Size x Lgth	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/F303	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



For ease of installation, a chamfer ($1/32 \times 45^\circ$) should be machined onto the end of the shaft.



NOTE: The distance shown is the maximum allowable shaft exposure that will meet safety standards. To disengage the bushing from the shaft with the back off bolts may require a distance of $1 1/4"$.





"WFB" Bushings for "K" Series MGS Reducer

Double Side Bushing – Installation Instructions



Insert Tapered Cone



Install the Flanged Cone Assembly with it's slot opposite the slot in the tapered cone.



Hand Tighten Capscrews



Insert Tapered Cone



Install the Flanged Cone Assembly with it's slot opposite the slot in the tapered cone.



Hand Tighten Capscrews



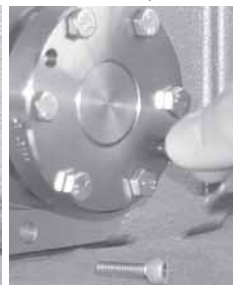
Guide Unit onto Shaft



Clamp Side – Shaft Does Not Protrude



Remove the Spacer Bolts from both sides.



Tighten Clamp Side First – More Than 1 Rotating Sequence



Use a Torque Wrench – see Table 1 for Tightening Torque



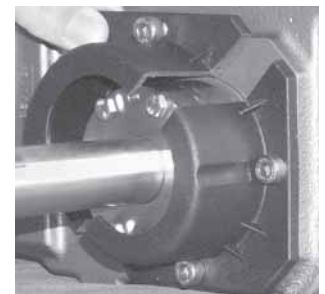
Tighten Capscrews – More Than 1 Rotating Sequence



Use a Torque Wrench (See Table 1) for Tightening Torque



Install Closed Cover with the weep hole located at the lowest point.



Install Split Cover

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.

Removal of Reducer with a "WFB" Bushing

1. Remove cover caps on support and clamp side.
2. Loosen all clamp and support side bushing capscrews.
3. Mount two (2) capscrews into the two tapped holes of the clamp ring on both bushings to back off the clamp ring assembly and release pressure between the flanged cone and the tapered cone.
4. Remove the gearbox from the machine shaft using a crane or hoist.

"WF" Bushings for "K" Series MGS Reducer

Single Side Bushing – Installation Instructions



NOTE: The gap from the pressure ring to the clamp ring should remain the "U" dimension as shown in Table No. 1 until the unit is mounted onto the shaft. The "Support Bolts" are installed to maintain this distance. **DO NOT REMOVE** the support bolts until the unit is installed onto the shaft. (See double bushing installation.)

Mounting of Reducer

1. The machine shaft should have a chamfer of $1/32 \times 45^\circ$ minimum for ease of installation. Mount the gearbox with bushing installed onto a clean shaft. Guide the shaft through the bore of the quill until it penetrates the support ring on the opposite side. The shaft must be long enough to engage the support ring in order to be "wobble free".
2. Remove the support bolts used as spacers and tighten the capscrews to the torque shown in the following table. **Use a torque wrench.** The tightening should be done gradually in a rotating sequence and will require more than one (1) rotation to tighten properly.

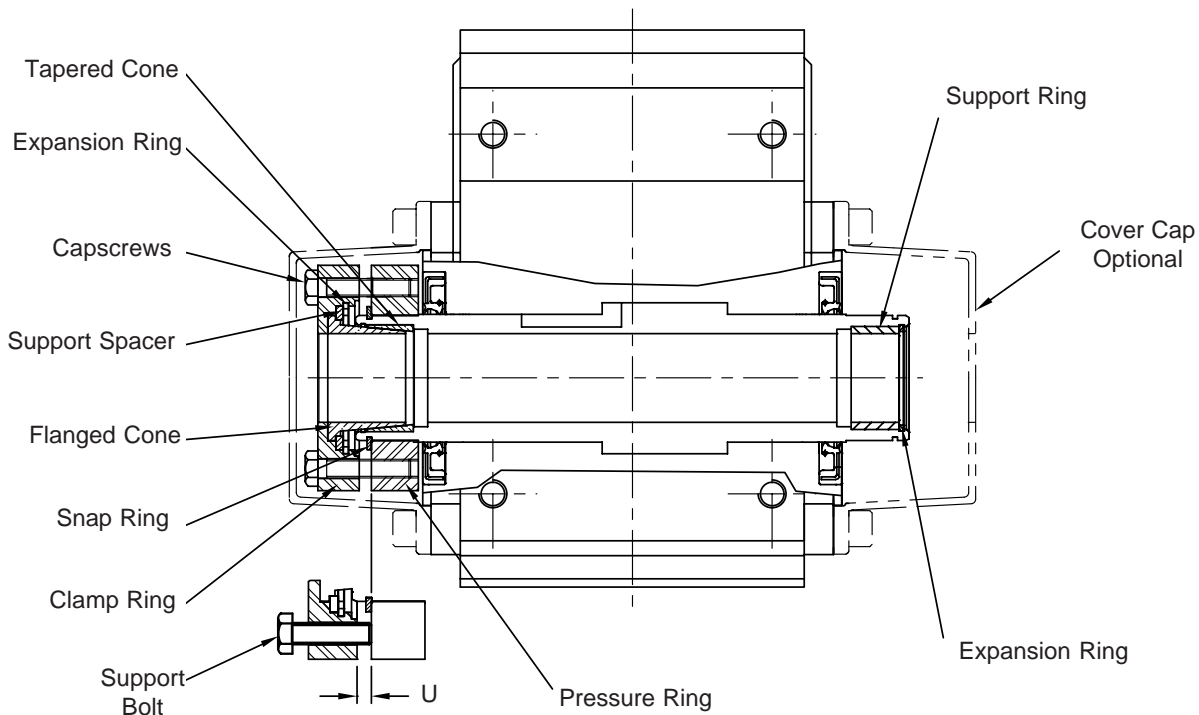
After two (2) hours (minimum) running time, check capscrews and retighten to the specified torque, if necessary.

Removal of WF Bushing

1. Loosen all capscrews.
2. Mount two (2) of the capscrews into the tapped holes of the clamp ring to back off the clamp ring assembly and release pressure between the flanged cone and the tapered cone.

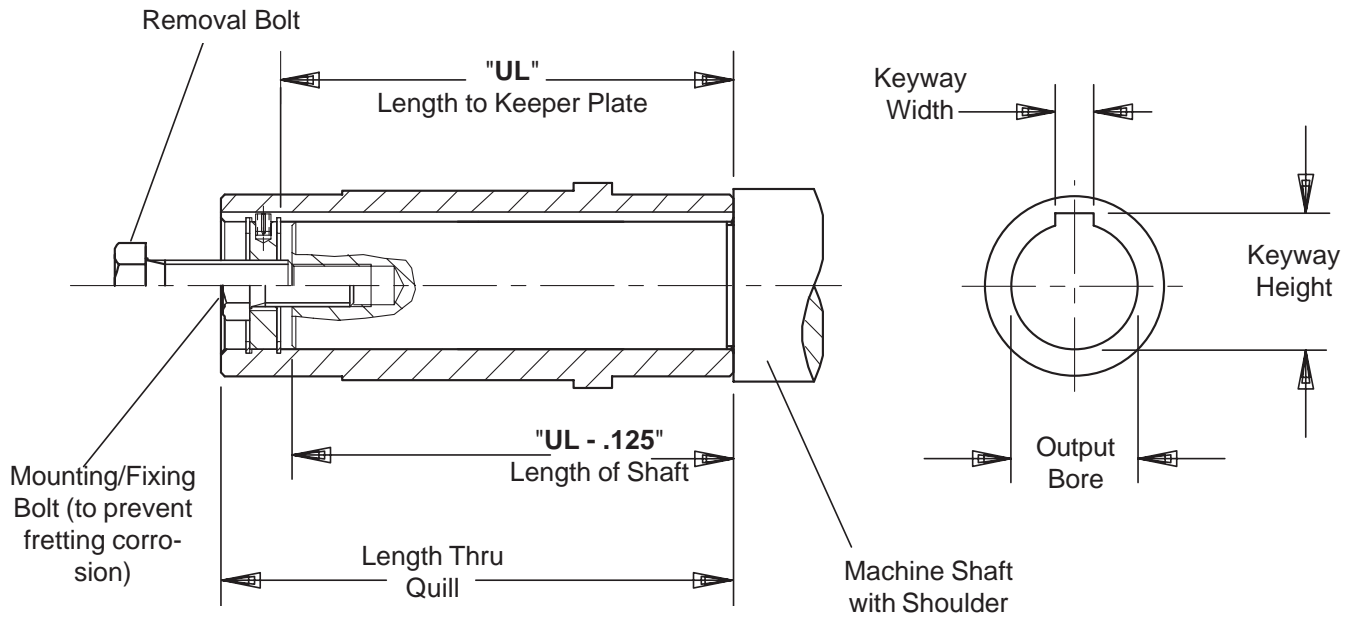
Table No. 1 Capscrew Tightening Torque

Base Module	Capscrews		Torque		U		Spacer Bolts
	Qty.	Size x Lgth	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/F303	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





"K" Series – Right Angle Helical/Bevel MGS Reducer Installation of Hollow Output



Mounting Hollow Output Reducers

A STOBER hollow output reducer can be mounted from either side. The tolerance for the hollow bore is shown in the table below and the shaft should be toleranced to fit this bore accordingly.

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 Table No. 2.

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" 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 Hollow Output Bore Tolerance

Bore Range	Tolerance
.39 — .71	+0.0007/-0.0000
.71 — 1.18	+0.0008/-0.0000
1.18 — 1.97	+0.0010/-0.0000
1.97 — 3.15	+0.0012/-0.0000
3.15 & UP	+0.0014/-0.0000

Table No. 2

Base Module	Output Bore	UL	Removal Bolt
K102	1.0000	3.86	1/2-13 NC
K202/K203	1.1875	4.78	1/2-13 NC
K302/K303	1.3750	4.92	5/8-11 NC
K402/K403	1.5000	6.18	3/4-10 NC
K513/K514	2.0000	6.46	3/4-10 NC
K613/K614	2.0000	7.05	3/4-10 NC
K713/K714	2.3750	8.43	1-8 NC
K813/K814	2.7500	10.35	1-8 NC
K913/K914	3.2500	12.32	1-8 NC
K1013/K1014	4.0000	14.25	1 1/4-7NC



INDUSTRIAL MAGZA
DIST. AUTORIZADO

MEX (55) 53 63 23 31 MTY (81) 83 54 10 18
QRO (442) 1 95 72 60 ventas@industrialmagza.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; 3-years (single shift operation or 18 months multiple shift operation) for MGS products; 2-years (single shift operation or 12 months multiple shift operation) for TD products, from the date of shipment to the Customer. For ServoFit products, 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.



Purchased from:

Company Name: _____
Address: _____
City: _____
State: _____ Zip Code: _____
Telephone: _____ FAX: _____
Contact: _____

Nameplate Data:

Part No.		
Serial No.		Date Code
Oil Capacity in Ozs./Liters	Output Torque in./lb.	
Input HP/kW	Input RPM	Output RPM
Customer Information		Ratio : 1
STOBER DRIVES INC. 1781 Downing Drive Maysville KY 41056		 www.stober.com Toll Free: 888 726-2371 Assembled in U.S.A.



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