

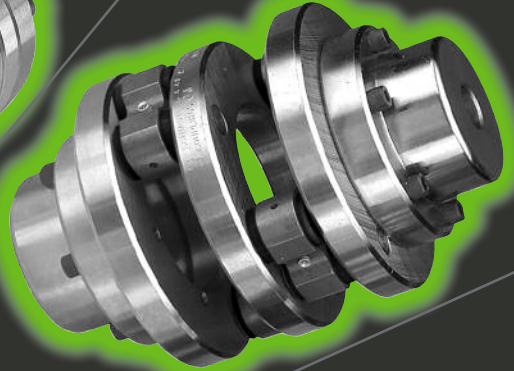
////// ZERO-MAX[®]



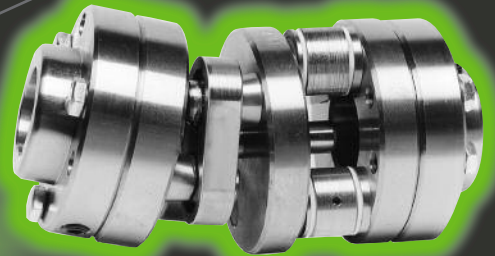
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Offset Coupling



Inline Coupling



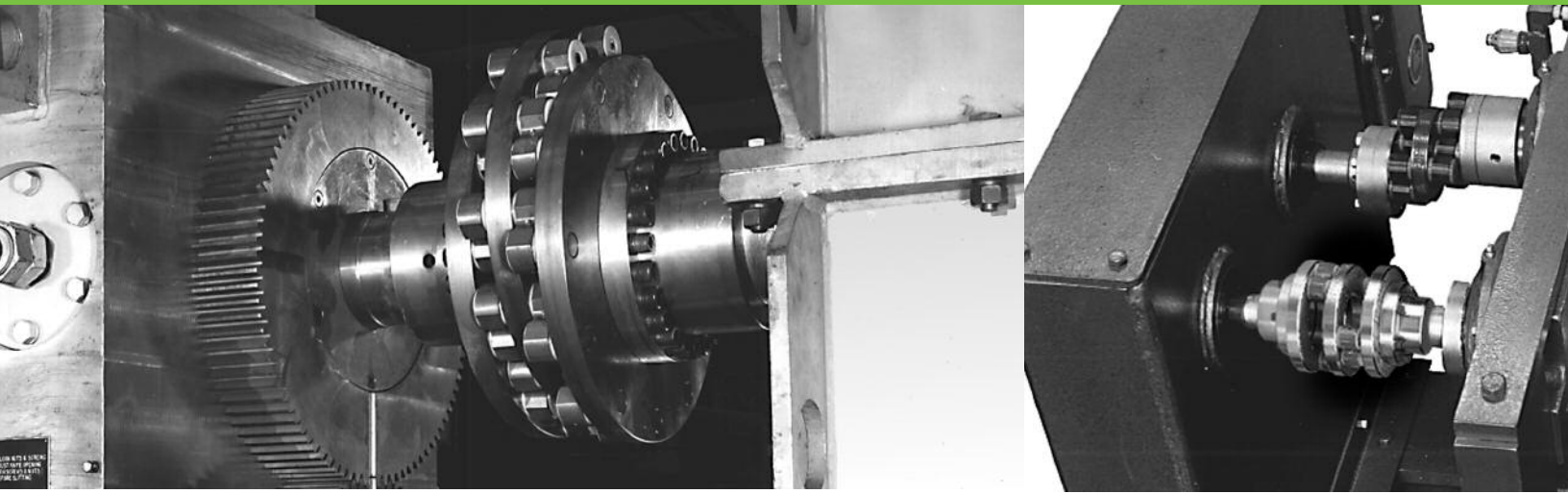
5-D Coupling

Flexible Coupling

Control-Flex[®] Coupling



Schmidt Couplings



Schmidt Couplings

Motion Control Solutions Using Schmidt Couplings

The basic function of a power transmission coupling is to transmit torque from an input shaft to an output shaft at a given shaft speed and, where necessary, to accommodate shaft misalignment. Misalignment is the result of many factors including installation errors and tolerance variations.

Shaft misalignment can increase the axial and radial forces exerted on the coupling. In misaligned applications, undesirable sideloads are usually introduced by the coupling. These sideloads result from dynamic coupling behavior, frictional loads and loads caused by flexing or compressing coupling components. *The undesirable results include:*

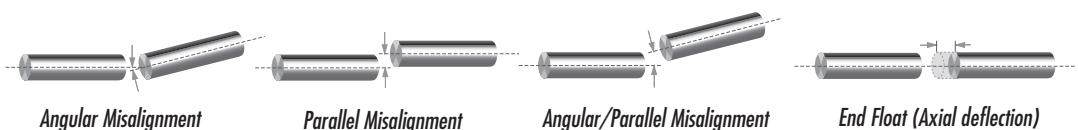
- 1) Torsional or angular velocity vibrations which reduce system accuracy.
- 2) Excessive forces and heat on system bearings which reduce machine life.
- 3) Increased system vibration and noise which adversely affects equipment operation.

Schmidt Couplings Solve Misalignment Problems

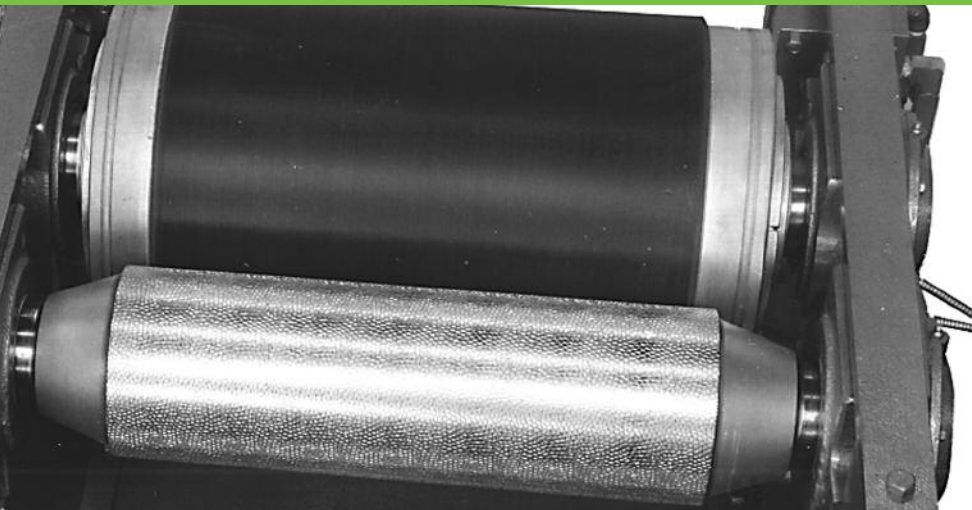
Zero-Max has designed the Schmidt line of couplings specifically for difficult misalignment applications. Schmidt Couplings minimize, and in some cases, eliminate sideloads and provide more shaft misalignment and offset capabilities with greater drive accuracy.

The five different Schmidt Coupling lines – Offset, Inline, 5D, Flexible, and Control-Flex® – provide a full range of design options for solving most misalignment problems. The following chart differentiates each Schmidt Coupling model to help you select the appropriate one for your application. After reading the appropriate brochure sections, feel free to call Zero-Max customer service at 800-533-1731 for further help.

General Differentiation Of Schmidt Coupling Models (see specific model for complete details)				
	Torque	Speed	Angular Shaft Misalignment	Parallel Shaft Misalignment
Offset Coupling	Up to 500,000 in. lbs.	Up to 2500 RPM	Limited	Large
InLine Coupling	Up to 35,000 in. lbs.	Up to 1800 RPM	0.5 degrees	Up to 0.312"
5-D Coupling	Up to 500,000 in. lbs.	Up to 1000 RPM	5 degrees	Up to 1.5"
Flexible Coupling	Up to 600 in. lbs.	Up to 3600 RPM	Up to 2 degrees	Up to 0.020"
Control-Flex® Coupling	Up to 2900 in. lbs.	Up to 3600 RPM	Up to 1.5 degrees	Up to 0.111"



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Five Schmidt Styles For A Wide Range Of Applications – Or Ask About Customizing A Coupling For You.



Offset Coupling

Provides the utmost in precision for parallel offset shafts. Transmits constant angular velocity and torque in a wide range of parallel shaft misalignments. Imposes no sideloads on shafts or bearings and eliminates radial shaft vibrations. No performance loss for increasing offset. It provides large floor space savings because of its compact design. **Pages 6-10 (Hubs Page 11)**



Inline Coupling

A linkage coupling designed with high torsional stiffness, this coupling accommodates small parallel shaft misalignments at constant angular velocity. Designed as a dropout coupling, it can be easily installed and offers excellent drive performance for low to medium shaft speeds and medium to high torque applications. **Page 12, (Hubs Page 14)**



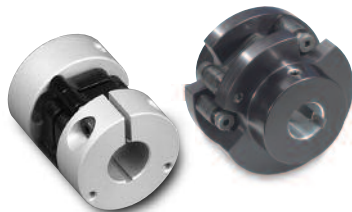
5-D Coupling

Provides parallel shaft misalignment and a $\pm 5^\circ$ angular misalignment with moderate axial shaft displacement capability. This coupling maintains constant angular velocity at all misalignment modes. Recommended for high torque, low rpm applications, the coupling has spherical roller bearings which are easy to maintain. **Page 13, (Hubs Page 14)**



Flexible Coupling

Precision designed with zero backlash, this coupling is available in different disc stiffnesses. It can also be made into an inexpensive floating shaft coupling by using one coupling at each end of an intermediate shaft. **Page 15**



Control-Flex[®] Coupling

Designed with a unique link-type, engineered resin disc member, this coupling overcomes the disadvantages of elastomer couplings by providing larger shaft misalignment capabilities without end-thrust or torsional vibrations. It provides constant velocity with less sideloads, is easy to install and requires no lubrication. **Pages 16-19**

Service Factor Guide

Load	Driving Equipment	
	Motor or Turbine	Reciprocating Engine
Uniform	1.0	1.5
Light Shock	1.5	2.0
Medium Stock	2.0	2.5
Heavy Stock	2.5	3.0

The service factors listed are intended only as a general guide. For typical service factors used in various applications, refer to "AGMA Standard-Lc classification and Service Factors For Flexible Couplings" (AGMA 514.02).

Standard Keyways - Inch Bore Hubs

Bore Size		Keyway	Bore Size		Keyway
Over	To		Over	To	
0.437	0.562	0.125x0.062	2.250	2.750	0.625x0.312
0.562	0.875	0.187x0.094	2.750	3.250	0.750x0.375
0.875	1.250	0.250x0.125	3.250	3.750	0.875x0.437
1.250	1.375	0.312x0.156	3.750	4.500	1.000x0.500
1.375	1.750	0.375x0.187	4.500	5.500	1.250x0.625
1.750	2.250	0.500x0.250	5.500	6.500	1.500x0.750

Standard keyways are for square keys. Keyways for rectangular keys are available - consult factory.

Standard Keyways - Metric Bore Hubs

Bore Size		Keyway	Bore Size		Keyway
Over	To		Over	To	
10	12	4x1.8	58	65	18x4.4
12	17	5x2.3	65	75	20x4.9
17	22	6x2.8	75	85	22x5.4
22	30	8x3.3	85	95	25x5.4
30	38	10x3.3	95	110	28x6.4
38	44	12x3.3	110	130	32x7.4
44	50	14x3.8	130	150	36x8.4
50	58	16x4.3	150	170	40x9.4

Note: Inch bore hubs will be supplied with inch size setscrews. Metric bore hubs will be supplied with metric size setscrews.

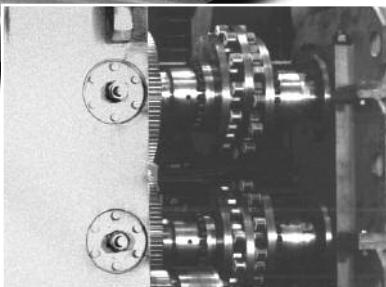
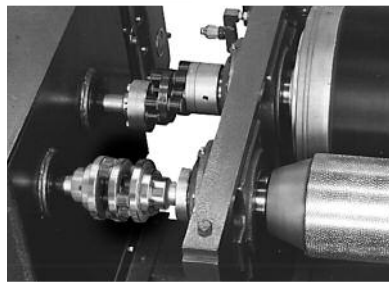
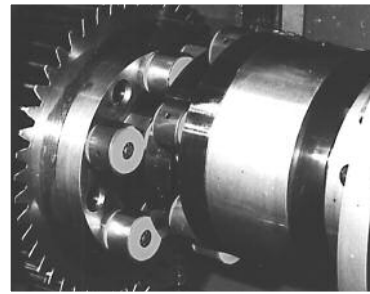
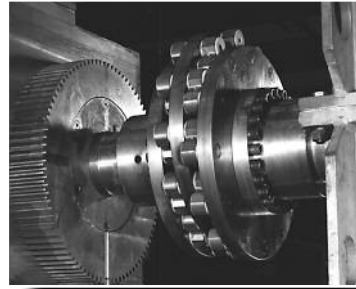
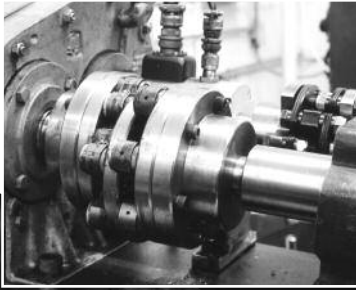
Bore Tolerances

Nominal		Bore Tolerance			
Shaft Diameter		Class 1		Interference	
Over	To	Clearance Fit		Fit	
0.437	1.500	-0.000	+0.001	-0.001	-0.0005
1.500	2.000	-0.000	+0.001	-0.002	-0.001
2.000	3.000	-0.000	+0.0015	-0.002	-0.001
3.000	4.000	-0.000	+0.0015	-0.003	-0.0015
4.000	5.000	-0.000	+0.002	-0.0035	-0.002
5.000	6.000	-0.000	+0.002	-0.004	-0.0025

Based on nominal shaft diameter (AGMA Standard 511.02) Clearance Fit Standard. Metric hub bores will be supplied with H7 clearance fit as standard. S7 interference fit available.



Schmidt Applications



Offset Couplings

Schmidt Offset Couplings

Schmidt Couplings

Schmidt Offset Couplings offer the utmost precision for parallel offset shafts.

Only the Schmidt Offset Coupling offers so much flexibility in shaft displacement while maintaining undisturbed power transmission at constant angular velocity. The coupling does not add sideloads to the drive. It also will not transmit radial vibration between the drive and the driven shafts. It is a dynamically clean drive which will help provide a smooth flow of power for maximum product quality. And, unlike universal joints, there is no performance loss by increasing shaft offset.

Standard Schmidt Offset Couplings are available for parallel shaft displacement from a minimum of 0.156 inches to 17.29 inches and torque capacities from 55 to 459,000 inch-pounds. Special coupling sizes can be manufactured for any specified customer requirement.

The L100 series couplings will handle parallel shaft displacement from a minimum of 0.156 inches to a maximum linear shaft displacement of 1.728 inches with torque ratings from 140 to 400 inch-pounds and shaft speeds up to 4000 RPM. The L100 series is especially suitable for applications in business machines, optical, electronic equipment and robotics.

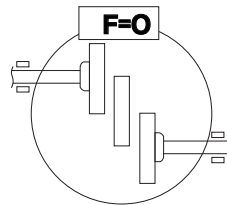
The L200 and L300 series couplings are capable of handling parallel shaft displacement from a minimum of 0.437 inches to a maximum linear shaft displacement of 17.29 inches with torque ratings from 637 to 459,000 inch-pounds and shaft speeds up to 2500 RPM. The L200 and L300 series are equipped with caged-type needle bearings. The shafts are hardened and serve as the inner race of the needle bearings. The coupling can be mounted on shaft hubs or directly to existing machine flanges. This mounting technique permits installation of the offset coupling without any need to move either of the shafts being coupled (i.e. drop-out design).

The Schmidt Offset Coupling has a slight built-in axial freedom to compensate for thermal shaft expansion and assembly tolerances.

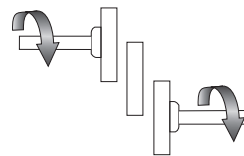


Operational Benefits:

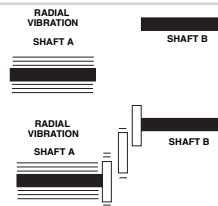
☛ Wide range of parallel shaft displacement without sideloads.



☛ Constant transmission of torque and angular velocity. Zero backlash, models available.



☛ Elimination of radial vibration.



☛ No performance loss by increasing shaft displacement.

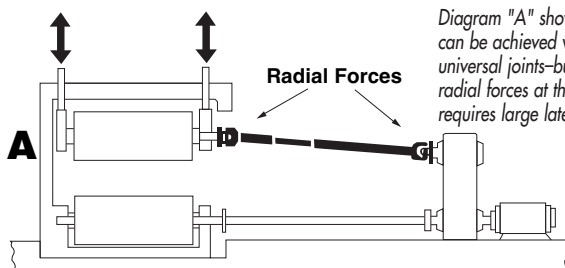
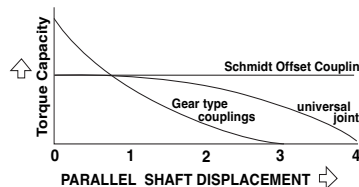
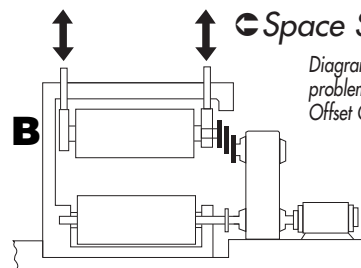


Diagram "A" shows how this can be achieved with double universal joints—but causes radial forces at the joints and requires large lateral space.

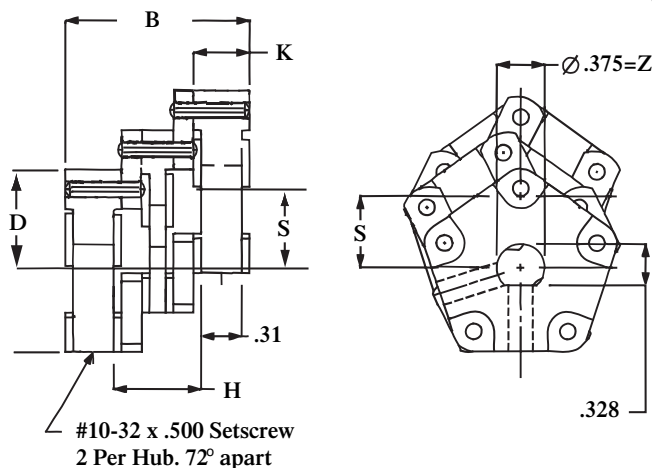


☛ Space Savings.

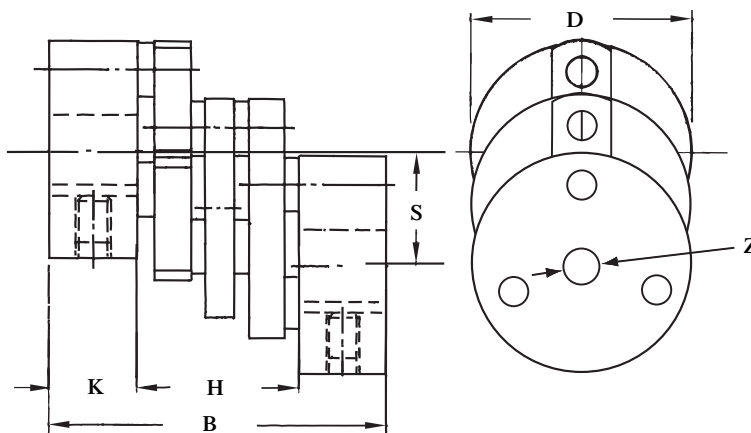
Diagram "B" overcomes both problems—by the use of a Schmidt Offset Coupling.

Schmidt L100 Series Offset Couplings

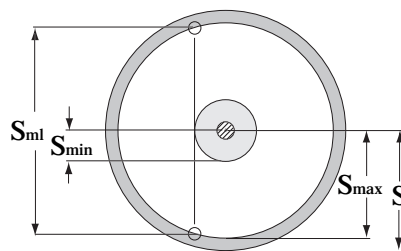
L115A Model



L119A Model



Coupling Designation		Part No.	
		L115A	L119A
Disc Diameter	D	1.562	1.900
Coupling Length ± 0.040	B	1.438	2.927
Shaft bore Diameter (Bore Tolerance +0.002 -0.000)	Z	0.375 (d-shaped bore)	0.500
			0.625
			.750
			.875
Disc Width	K	0.438	0.750
Shaft Separation	H	0.682	1.427
Shaft Displacement	S	0.625	1.000
Minimum Operational Shaft Displacement	S _{min}	0.156	0.250
Maximum Operational Shaft Displacement	S _{max}	0.562	0.900
Maximum Linear Operational Shaft Displacement	S _{ml}	1.080	1.728
Coupling Weight (Lb)		0.400	1.400
Inertia Wk ² (Lb-In ²)		0.100	0.555



Recommended operational area for shaft displacement

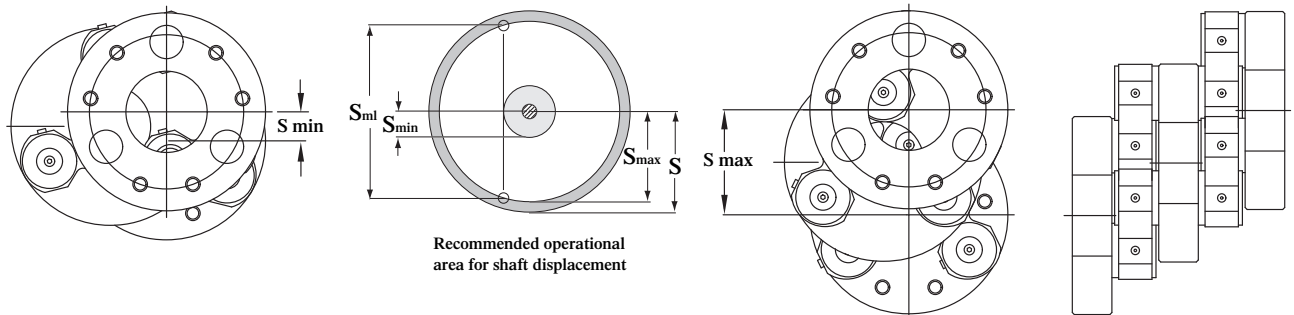
Performance Data				
Coupling Designation	Maximum Torque Capacity* (In-Lb)	Horsepower Capacity	Practicable Speed Limit (rpm)	Lowest Speed Limit for Maximum Torque (rpm)
L115A	140	0.37	4000	160
L119A	400	0.50	3000	80

Notes: *The maximum torque capacity of the coupling is based on a 5000 psi bearing unit load.

L200 & 300 Series

Schmidt Couplings


Performance Data



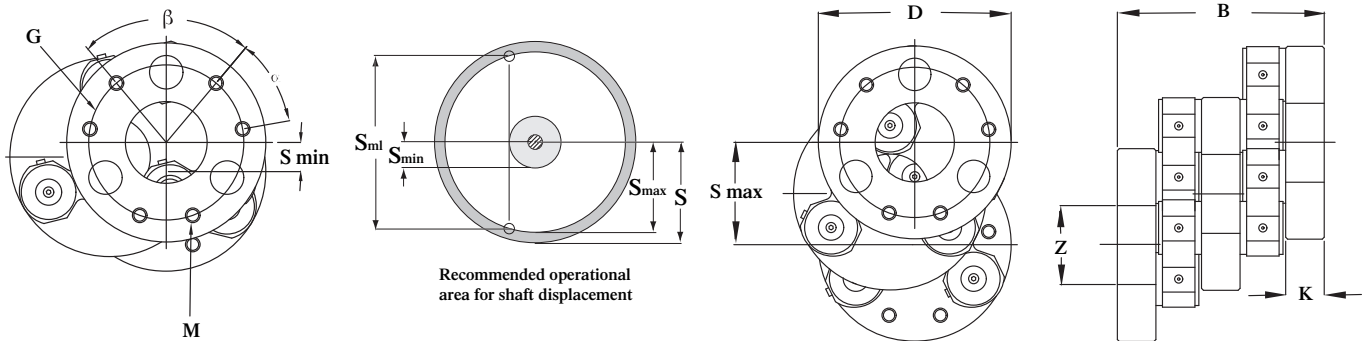
Coupling Designation	Performance Data									
	Part No.	Shaft Displacements					Performance Factor P	Max. Torque Capacity (In Lb)*	Practical Speed Limit (rpm)**	Coupling Weight (Lb)
S (In)		S min (In)	S max (In)	S ml (In)	Angular (In)*					
L230C	1.75	0.437	1.575	3.026	0.020	0.186	637	2500	2	2
L234C	2.00	0.50	1.80	3.46	0.025	0.878	3000	2000	6	9
L239C						1.465	5000	2000	7	17
L246C						2.285	7800	2000	9	31
L253C						3.222	11000	2000	11	50
L259C	3.50	0.87	3.15	6.05	0.025	5.272	18000	1750	30	155
L270C						8.787	30000	1750	39	297
L280C						13.035	44500	1500	47	496
L290C						18.160	62000	1250	55	770
L281C	4.50	1.12	4.05	7.78	0.025	10.691	36500	1250	65	608
L289C						16.549	56500	1250	77	948
L210C						24.605	84000	1000	96	616
L211C						34.856	119000	1000	112	2594
L214C						60.633	207000	1000	171	6049
L217C						93.732	320000	1000	223	11917
L220C						134.446	459000	750	273	20913
L350C						4.00	1.00	3.60	6.92	0.025
L355C	2.255	7700	2500	12	55					
L360C	6.00	1.50	5.40	10.37	0.025	1.845	6300	2000	12	70
L375C	5.00	1.25	4.50	8.64		6.883	23500	1750	45	360
L385C	7.00	1.75	6.30	12.10		8.143	27800	1750	57	583
L310C	7.00	1.75	6.30	12.10		13.767	47000	1250	95	1368
L312C	10.00	2.50	9.00	17.29	0.025	17.135	58500	1000	129	2594

* The torque capacity of the Schmidt Coupling is primarily a function of the bearing size, the number of bearings and the torque radius of the coupling. These design parameters are expressed by the performance factor P.
 ** If shaft speed requirement is higher than the practical speed limit consult our engineering department.

L200 & L300 Offset Couplings


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L200 & L300 Series Dimension Data



Coupling Designation	Dimension Data											
	Coupling		End Disc Assembly Data									
Part No.	D (In)	B ± 032 (In)	Z (In)	K (In)	G (In)	M (In)	Number of Bolts	α (°)	β (°)	Bolt Size (In)		
L230C	3.00	2.75	1.280	0.380	2.187	0.20	6	40	80	8-32 Fl. Hd.		
L234C	3.37	3.81	1.375	0.60	2.750	5/16-18	6	40	80	5/16-18x1		
L239C	3.93		1.937		3.000		4	90	90			
L246C	4.62		2.625		3.750		5	72	72			
L253C	5.25		3.250		4.375		6	60	60			
L259C	5.94		2.437		4.625		7/16-14	6	40		80	7/16-14x1.75
L270C	7.00	6.37	3.500	1.19	5.625	5/8-11	4	90	90	5/8-11x2		
L280C	8.00		4.500		6.625		5	72	72			
L290C	9.00		5.500		7.625		6	60	60			
L281C	8.00	7.62	3.500	1.44	6.500	5/8-11	6	40	80	5/8-11x2		
L289C	8.90		4.375		7.375		4	90	90			
L210C	10.20		5.500		8.500		3/4-10	5	72		72	3/4-10x2.25
L211C	11.60		7.000		10.000		6	60	60			
L214C	14.41		9.500		12.625	1-8	8	45	45	1-8x2.25		
L217C	17.31		12.000		15.500		10	36	36			
L220C	20.25		14.500		18.250		12	30	30			
L350C	5.00		3.81		1.375	0.60	2.750	5/16-18	6	40	80	5/16-18x1
L355C	5.56	1.625										
L360C	6.00	1.375										
L375C	7.50	6.37	2.437	1.19	4.625	7/16-14	6	40	80	7/16-14x2		
L385C	8.50		2.437									
L310C	10.00	7.62	3.500	1.44	6.500	5/8-11	6	40	80	5/8-11x2		
L312C	11.80		3.500									

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L200 & L300 Series

How To Select L200 & L300

Schmidt Couplings

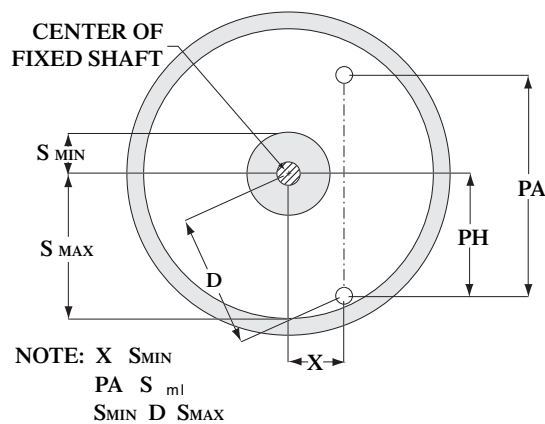
Schmidt Offset Couplings

Example:

Step 1. List the performance requirements

- a) Horsepower H=55 (HP)
- b) Shaft Speed N=1000 (RPM)
- c) B-10 Bearing Lifetime B-10=25000(HRS)
- d) Offset From Fixed Shaft PH=2 (INCH)
- e) Variable Offset (if required) PA=5 (INCH)

Step 2. Select a coupling with the required offset characteristics. All offset couplings have a minimum offset (Smin), a maximum offset (Smax) and a maximum linear range of shaft displacement (Sml). For applications where the offset distance between shafts remains FIXED, simply select a coupling with an offset larger than Smin and smaller than Smax. For applications where the shaft offset distance VARIES during operation, select a coupling where the linear range of displacement is less than the Sml. Note: At no time can the shafts be separated by more than Smax nor less than Smin. To use all of Sml, X (see diagram below) must be equal to Smin and PH must equal PA/2. Consult dimension chart on page 6.



Step 3. Select the lifetime speed factor "L" from chart to the right. For N=1000 (RPM) and B10=(25000) (HRS) L=6.034

Step 4. Calculate the required performance factor
 $P_r = H/L = 55/6.034 = 9.115$

Step 5. Compare the required performance factor "Pr" with the coupling performance factor "P" listed on the performance data table on page 6. Select a coupling size which has an equal or higher "P" factor as "Pr". The coupling size L280C meets these requirements.

Step 6. Compare the practical speed limit (see performance data table on page 6). The data shows that the coupling size L280C can operate at 1500 RPM.

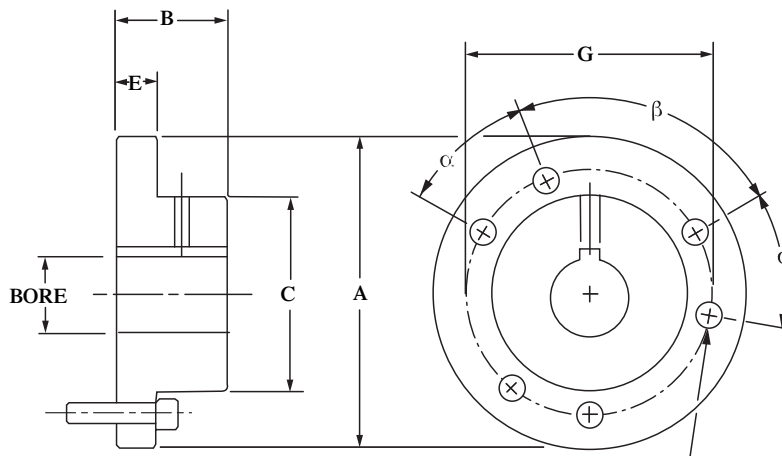
Step 7. Select hubs (if required) from chart on page 11.

Lifetime-Speed Factor "L"

Shaft Speed N (rpm)	B-10 Lifetime (Hours)					
	1000	2500	5000	10000	25000	50000
10	0.631	0.479	0.389	0.316	0.240	0.195
25	1.198	0.910	0.739	0.601	0.456	0.371
50	1.947	1.479	1.201	0.976	0.741	0.601
100	3.162	2.402	1.951	1.585	1.204	0.978
150	4.200	3.191	2.502	2.105	1.599	1.299
200	5.137	3.902	3.170	2.575	1.956	1.589
250	6.001	4.562	3.706	3.010	2.287	1.857
300	6.823	5.183	4.210	3.420	2.598	2.110
400	8.345	6.340	5.149	4.182	3.177	2.581
500	9.756	7.411	6.020	4.889	3.714	3.017
600	11.08	8.420	6.839	5.555	4.220	3.428
700	12.34	9.379	7.618	6.188	4.700	3.818
800	13.56	10.30	8.365	6.795	5.161	4.192
900	14.72	11.18	9.084	7.378	5.605	4.553
1000	15.85	12.04	9.779	7.943	6.034	4.901
1100	16.94	12.87	10.45	8.491	6.450	5.391
1200	18.01	13.68	11.11	9.025	6.856	5.568
1300	19.04	14.47	11.75	9.545	7.250	5.889
1400	20.06	15.24	12.38	10.05	7.636	6.203
1500	21.05	15.99	12.99	10.55	8.015	6.510
1600	22.02	16.73	13.59	11.04	8.385	6.810
1700	22.98	17.45	14.18	11.52	8.748	7.106
1800	23.92	18.17	14.76	11.99	9.105	7.396
1900	24.84	18.87	15.33	12.45	9.456	7.681
2000	25.75	19.56	15.89	12.90	9.803	7.962
2100	26.64	20.24	16.44	13.35	10.14	8.238
2200	27.52	20.91	16.98	13.79	10.48	8.511
2300	28.39	21.57	17.52	14.23	10.81	8.780
2400	29.25	22.22	18.05	14.66	11.14	9.046
2500	30.10	22.86	18.57	15.08	11.46	9.308

The L200 & L300 Series couplings use needle bearings. The B-10 lifetime on the bearing is considered the life of the coupling, assuming that the bearing is the weakest part in the coupling. The lifetime-speed factor accounts for the B-10 lifetime and shaft speed.

Standard Hub Data For Schmidt Couplings



ALL HOLES ARE 1/32" LARGER THAN SCREW SIZE

Used on Coupling		Hub Part No.	Hub Dimensions (INCH)									Wt. (Lbs)
L200	L300		A	B	C	E	Max† Bore	G	Number & Size of Fasteners*	α	β	
L230C		S6025XX	2.812	1.000	1.750	0.500	1.125	2.188	(6) #8-32 x 3/4	40	80	1.2
L234C	L350C L355C L360C	S6027XX	3.375	1.250	2.000	0.687	1.250	2.750	(6) 5/16-18 x 1	40	80	2.2
L239C		S6030XX	3.938	1.500	2.250	0.687	1.500	3.000	(4) 5/16-18 x 1	90	90	3.2
L246C		S6031XX	4.625	1.750	3.000	0.687	2.000	3.750	(5) 5/16-18 x 1	72	72	5.3
L253C		S6032XX	5.250	1.875	3.625	0.687	2.500	4.375	(6) 5/16-18 x 1	60	60	7.6
L259C	L375C L385C	S6033XX	5.938	2.125	3.750	0.750	2.500	4.625	(6) 7/16-14 x 1-3/4	40	80	10.1
L270C		S6035XX	7.000	2.500	4.375	1.000	3.000	5.625	(4) 5/8-11 x 2	90	90	17.2
L280C		S6039XX	8.000	2.875	5.375	1.000	3.750	6.625	(5) 5/8-11 x 2	72	72	26.1
L290C		S6042XX	9.000	3.375	6.375	1.000	4.500	7.625	(6) 5/8-11 x 2	60	60	39.5
L281C	L310C L312C	S6038XX	8.000	3.250	5.250	1.000	3.500	6.500	(6) 5/8-11 x 2	40	80	28.0
L289C		S6040XX	8.900	3.500	6.000	1.250	4.125	7.375	(4) 3/4-10 x 2-1/4	90	90	39.8
L210C		S6043XX	10.000	4.000	7.125	1.250	5.250	8.500	(5) 3/4-10 x 2-1/4	72	72	58.6
L211C		S6044XX	11.600	4.500	8.625	1.250	6.375	10.000	(6) 3/4-10 x 2-1/4	60	60	90.4
L214C		Contact Factory										
L217C												
L220C												

†Please specify bore and keyway size.

*Socket head cap screws are not furnished with the hub order.

Schmidt Inline Couplings L400

Schmidt Couplings

Schmidt Inline Couplings - L400 Series

Schmidt Inline Couplings are a torque-rigid type, designed with two pairs of parallel links installed 90 degrees out of phase with each other. This linkage arrangement allows for the precise transmission of torque and constant angular velocity between shafts with small to moderate parallel misalignments. The coupling utilizes needle bearings which can be preloaded for "zero" backlash conditions. Where backlash is not as critical, non-lubricated filament wound teflon bearings are available for higher torque capacity and where relubrication of the coupling is difficult.

Typical applications which benefit from the high accuracy provided by Schmidt Inline Couplings are feeders, embossers, compactors, printing presses and many others.

Schmidt Inline Couplings are available for a torque range from 500 to 35,000 inch-pounds. Couplings for higher torque requirements are made available on special orders.



How To Select An Inline or 5-D Coupling

Selection Formula

$$(HP/100 \text{ RPM}) = \frac{(\text{Required HP}) \times (\text{Service Factor}) \times 100}{\text{RPM}}$$

Selection Formula Example

Required HP = 100 at 1750 RPM and 1.5 Service Factor

$$(HP/100 \text{ RPM}) = \frac{100 \times 1.5 \times 100}{1750} = 8.57$$

Look for a coupling size which as a HP/100 RPM rating equal or greater than the required 8.57. For this example the coupling size L463C with a HP/100 RPM rating of 19.04 can be selected. If the backlash requirement is not critical the coupling L463D, which does not require any further lubrication, can be chosen.

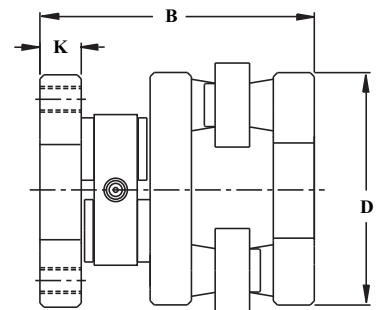
Recommended Service Factor

No Shock Load	1.0
Light Shock Load	1.5
Medium Shock Load	2.0
Heavy Shock Load	2.5
Reversing Shock Load	3.0

Dimensions and Performance Data of Inline Couplings up to 1800 RPM


Coupling Designation		L4xxC or L4xxD SERIES*							
		L431C/D	L442C/D	L436C/D	L448C/D	L463C/D	L485C/D	L481C/D	L411C/D
Performance Capacity	HP/100 rpm**	0.88	1.35	3.17	5.08	19.04	29.51	36.49	56.49
	Torque (In x Lb)**	550	850	2000	3200	12000	18600	23000	35600
	Displacement*	Parallel* (In)	.06	.06	.06	.06	.06	.06	.06
Angular (°)		±0.5	±0.5	±0.5	±0.5	±0.5	±0.5	±0.5	±0.5
Coupling Dimensions (In.)	Disc Diameter D	3.098	4.190	3.613	4.863	6.286	8.475	8.129	10.943
	Swing Diameter DO	3.23	4.32	3.70	4.95	6.44	8.63	8.33	11.14
	Coupling Length B	3.156	3.156	3.810	3.810	6.373	6.373	7.623	7.623
	Disc Width K	0.500	0.500	0.600	0.600	1.187	1.187	1.437	1.437
	Center Bore Dia Z	1.500	1.812	1.625	2.562	2.875	4.000	3.625	5.500
	Bolt Circle G	2.412	2.412	3.000	3.000	5.000	5.000	7.000	7.000
	No. of Bolts and Size M	3 1/4"-20	3 1/4"-20	6 1/4"-20	6 1/4"-20	6 1/2"-13	6 1/2"-13	8 5/8"-11	8 5/8"-11
	Net Weight (Lb)	3.1	5.1	5.6	7.8	32.0	47.0	64.2	93.2
Inertia Wk ² (Lb - In ²)	6.7	18.6	10.2	29.7	178.7	534.0	604.0	1783	

In-line & 5-D Couplings Side View

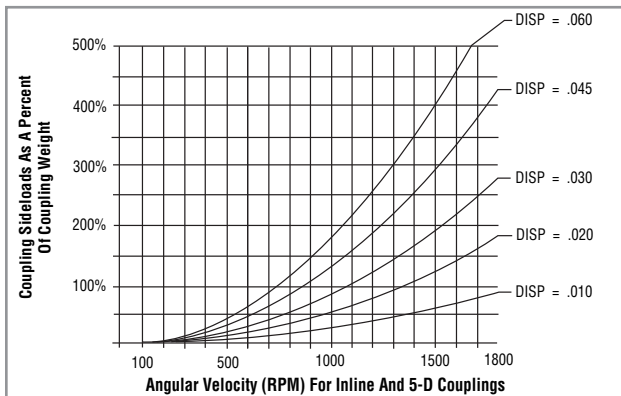


Notes: *Data apply to shaft speed under 1800 RPM. Greater parallel misalignment is possible at lower RPM. Consult factory.
**LC Series Inline Couplings are equipped with needle bearings. LD Series Inline Couplings are equipped with filament wound teflon bearings for 20% higher torque capacities than shown above.

Inline Couplings L400


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Schmidt 5-D Couplings L500 Series



The graph shows the InLine /5D coupling's reaction to parallel misalignment. Machinery sensitive to sideload forces generated by the coupling may require closer shaft alignment. Machinery not sensitive to sideload forces may allow for more misalignment than shown in the dimension and performance data tables.

Schmidt 5-D Couplings were developed to fill a gap in the family of torque-rigid couplings. Most couplings in the Schmidt Coupling line are designed to accommodate either axial, angular, or parallel shaft displacements only. For some applications, however, the operational conditions require all possible shaft misalignments. If these shaft misalignments exceed the limit of the selected coupling capacity, excess sideloads are introduced into the equipment which can cause vibrations, life reduction or failure of vital machine components such as bearings, motors, etc.

The 5-D Couplings are a modification of the Schmidt InLine Coupling, designed to accommodate 5 degrees of angular shaft misalignment. This coupling allows easy adjustment to any possible misaligned shaft position without imposing heavy sideloads on shafts, bearings or other machine equipment. Schmidt 5-D Couplings offer large shaft misalignment capabilities and constant angular velocity. The acting forces within the coupling can be precisely calculated, assuring a sound coupling design which is especially important for heavy-duty applications. To select a 5-D Coupling, follow the same procedure as the InLine on the preceding page.

Dimensions and Performance Data of 5-D Couplings up to 1000 RPM

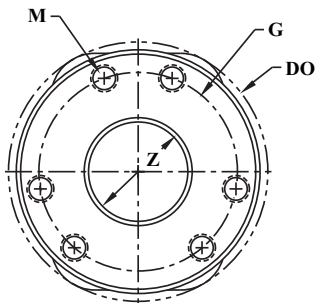
Coupling Designation*		L5xxS Series									
		L536S**	L558S**	L564S	L585S	L582S	L511S	L514S	L517S	L519S	L526S
Performance Capacity	HP/100 rpm	4.44	9.52	20.3	31.4	46.5	71.8	136	211	373	793
	Torque (In - Lb)	2800	6000	12800	19800	29300	45300	86000	133000	235000	500000
Dis-*** place ment	Parallel (In)	3/16	3/16	1/4	1/4	3/8	3/8	7/16	7/16	1	1-1/2
	Angular (°)	±5	±5	±5	±5	±5	±5	±5	±5	±5	±5
Coupling Dimensions (In)	Disc Diameter D	3.38	5.63	6.25	8.38	8.00	10.75	13.25	16.38	19.25	25.13
	Swing Diameter DO	3.60	5.82	6.36	8.55	8.21	11.03	13.52	16.52	19.88	26.28
	Coupling Length B	4.18	4.18	5.38	5.38	7.23	7.23	8.70	12.75	13.75	15.00
	Center Bore Diameter Z	1.375	3.25	3.25	2.44	3.50	4.38	7.00	6.75	7.25	10.00
	Bolt Circle G	2.75	4.38	4.38	4.63	6.63	6.50	10.00	13.50	16.88	21.75
	No. of Bolts and Size M	6 5/16"-18	6 5/16"-18	6 5/16"-18	6 7/16"-14	5 5/8"-11	6 5/8"-11	6 3/4"-10	12 3/4"-10	12 7/8"-9	12 1"-8
Net Weight (Lb)		6	10	21	38	52	86	139	345	577	1205
Inertia Wk ² (Lb - In ²)		7	26	77	281	331	1050	2290	8615	22000	70350

*Other sizes available for special applications.

**Sealed bearings not available.

***Data applies to shaft speeds under 1000 RPM. For higher RPM, please consult factory.

In-line & 5-D Couplings End View



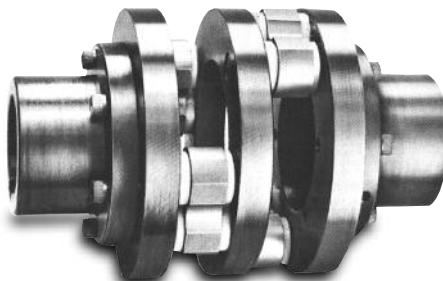
Hubs For Inline and 5-D Couplings

Schmidt Couplings

Inverted-standard configuration



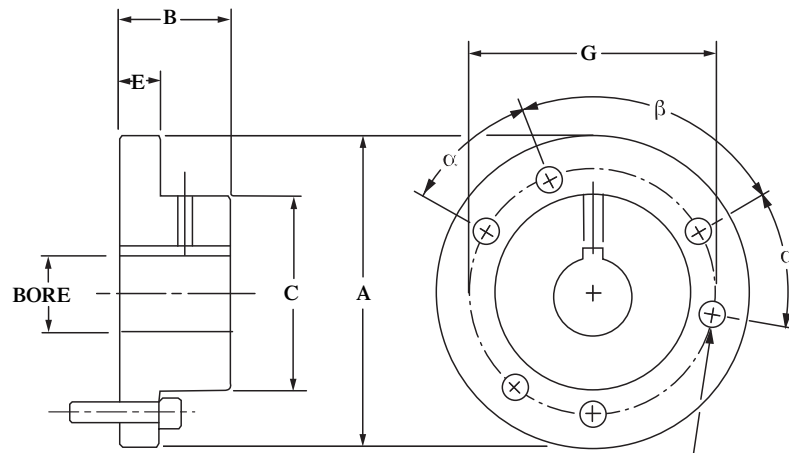
Standard configuration



Inverted configuration



Typical shaft/hub configurations determined by amount of axial shaft separation.



ALL HOLES ARE 1/32" LARGER THAN SCREW SIZE

Standard Hub Data For Inline and 5-D Couplings


Used On Coupling	Hub Part No.	A	B	C	E	Max. Bore +	G	Number and Size of Fasteners**	α	β	Hub Wts. Net. Lbs.
L431C/D L442C/D	S6026XX	3.000	1.250	3.000	1.250	1.500	2.412	(3) 1/4-20 x 1	120	120	2.5
L436C/D L448C/D*	S6029XX	3.613	1.750	2.500	0.687	1.750	3.000	(6) 1/4-20 x 1-1/4	60	60	3.4
L463C/D L485C/D*	S6034XX	6.250	3.000	3.937	1.000	2.625	5.000	(6) 1/2-13 x 2	60	60	15.5
L481C/D L411C/D*	S6037XX	8.125	4.000	5.437	1.250	3.500	7.000	(8) 5/8-11 x 2-1/4	45	45	36.4
L536S	S6027XX	3.375	1.250	2.000	0.687	1.250	2.750	(6) 5/16-18 x 1	40	80	2.2
L558S L564S	S6032XX	5.250	1.875	3.625	0.687	2.500	4.375	(6) 5/16-18 x 1	60	60	7.6
L585S	S6033XX	5.938	2.125	3.750	0.750	2.500	4.625	(6) 7/16-14 x 1-3/4	40	80	10.1
L582S	S6039XX	8.000	2.875	5.375	1.000	3.750	6.625	(5) 5/8-11 x 2	72	72	26.1
L511S	S6038XX	8.000	3.250	5.250	1.000	3.500	6.500	(6) 5/8-11 x 2	40	80	28.0
L514S	S6044XX	11.600	4.500	8.625	1.250	6.375	10.000	(6) 3/4-10 x 2-1/4	60	60	90.4

+Please specify bore and keyway size.

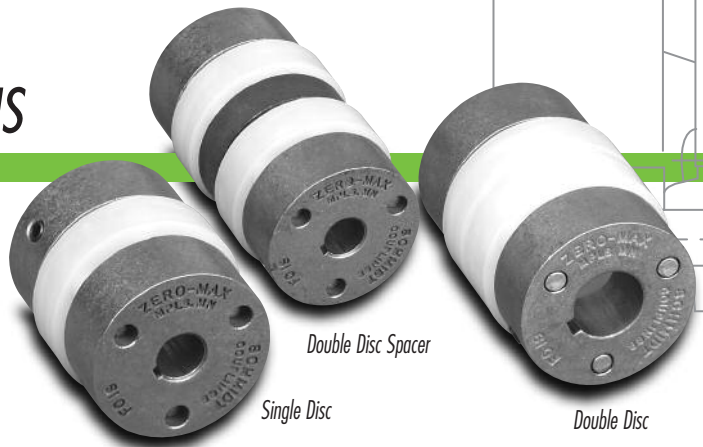
*Only these sizes will accept an inverted hub configuration to reduce axial length.

**Socket head cap screws are not furnished with the hub order.

Hubs For Inline and 5-D Couplings


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Schmidt Flexible Couplings



Schmidt Flexible Couplings provide precision for slightly misaligned shafts and are designed to adapt to various drive conditions. This coupling uses precision sintered parts for the hubs which are connected to the shafts. The molded flexible center disc is preloaded on the precision shafts of the end disc which give the coupling a "zero" backlash condition. Different configurations of the coupling and the choice of three durometers (soft, standard, stiff) of the center disc result in the ability of this coupling to be adapted to various drive conditions.

The Flexible Coupling may be built into a floating shaft design by including one coupling at each end of an intermediate shaft.

Schmidt Flexible Couplings are available in stock to meet requirements of 6 to 630 inch-pounds torque at a shaft size range from 1/4" to 1". Other shaft sizes are available on request.

Among the many applications where the Flexible Couplings are used include collators, printing machines, packaging machines and pumps.

How to select a Flexible Coupling

Selection Formula:

$$HP/100 \text{ RPM} = \frac{\text{Required HP} \times \text{Service Factor} \times 100}{\text{RPM}}$$

Selection Formula Example:

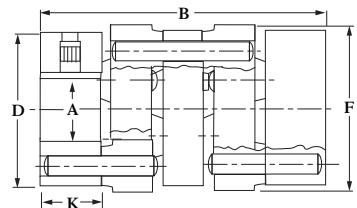
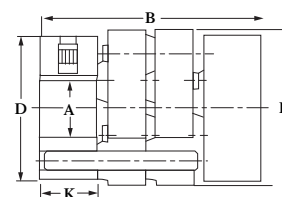
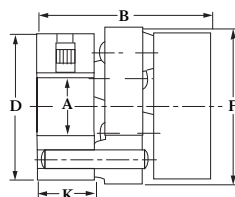
Required HP = 10 at 1750 RPM and Service Factor

$$HP/100 \text{ RPM} = \frac{10 \times 1.0 \times 100}{1750} = 0.57$$

Select Coupling F028B

Recommended Service Factor

No Shock Load1.0
Light Shock Load1.5
Medium Shock Load2.0
Heavy Shock Load2.5
Reversing Shock Load3.0



Single Disc

Double Disc

Double Disc Spacer

Part No.		F008A	F011A	F019A	F028A	F008B	F011B	F019B	F028B	F011C	F019C	
Maximum Performance Capacity	HP/100RPM	0.009	0.025	0.180	0.500	0.018	0.050	0.360	1.000	0.025	0.180	
	Torque (In-Lb) (Std. durometer)	6	16	115	315	12	32	230	630	16	115	
	Displacement	Angular (°)	1	1	1	1	1	1	1	1	2	2
Parallel (In)		0.005	0.008	0.010	0.010	0.005	0.008	0.010	0.010	0.016	0.020	
Torsional Stiffness In-Lb/Degree*		4.5	14.0	91.0	264.6	9.0	27.0	214.1	531.5	7.0	45.5	
Coupling Dimensions (Inch)	Disc Diameter D	0.750	1.125	1.900	2.812	0.750	1.125	1.900	2.812	1.125	1.900	
	Flex. Disc Diameter F	0.750	1.250	2.040	2.812	0.750	1.250	2.040	2.812	1.250	2.040	
	Coupling Length B	0.812	1.375	2.250	2.812	0.837	1.688	2.875	3.375	2.125	3.500	
	Hub Length K	0.281	0.500	0.750	1.000	0.281	0.500	0.750	1.000	0.500	0.750	
	Bore Diameter A	Keyway Size	1/4	•	•		•	•			•	
			3/8		•			•			•	
			1/2		•	•		•	•		•	•
			5/8			•	•		•	•		•
3/4					•	•		•	•		•	•
7/8					•	•		•	•		•	•
1				•						•		
Net Weight (Lb)		0.06	0.25	1.03	2.50	0.07	0.27	1.12	2.80	0.34	1.47	
Inertia Wk ² (Lb-In ²)		0.004	0.04	0.46	2.50	0.005	0.04	0.55	2.27	0.05	0.66	

*Standard durometer.

Schmidt Control-Flex® Couplings

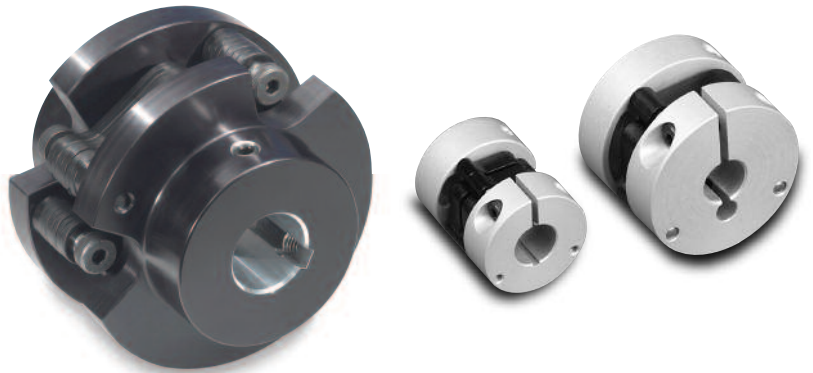
Schmidt Couplings

Schmidt Control-Flex® Couplings offer better solutions for today's power transmission requirements

Control-Flex® couplings are available with clamp-style "zero" backlash hubs or in a drop-out design for easy flexible disc changeout.

The Schmidt Control-Flex® Coupling was developed to satisfy the higher performance requirements of today's modern power transmission drives. To meet this goal, Schmidt Couplings engineered a unique Control-Flex® Disc which is based on a parallel linkage system.

Because of these features, the reaction forces due to transmission of torque and unavoidable shaft misalignments are considerably smaller when compared with common flexible couplings.



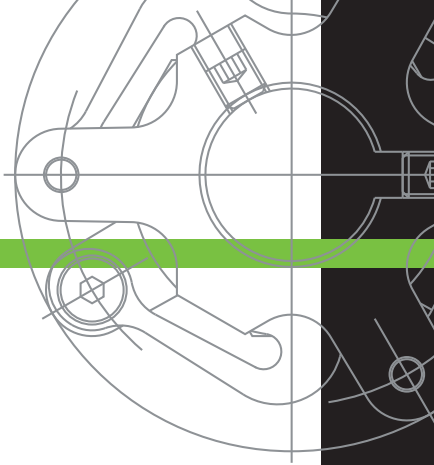
The Control-Flex® Disc allows parallel, angular and axial shaft misalignments, while offering higher torque rigidity and maintaining constant transmission of torque and angular velocity.

Outstanding Features and Benefits

The following exclusive and other valuable features are available with the Schmidt Control-Flex® Coupling:

Feature	Benefit
More parallel, angular and axial shaft misalignment capabilities with considerably less sideloads on shaft bearings, seals.	Increases lifetime of other machine components.
No change of torque and angular shaft velocity due to shaft misalignments.	Required for precision drives.
Higher torsional stiffness than elastomer couplings.	Increased system accuracy.
No end thrust on shafts due to transmission of torque.	Required to avoid damage of seals and bearings to pumps or hydraulic motor drives.
Less weight and inertia.	Less power requirements.
No maintenance or lubrication required.	Less danger of coupling failure through neglect.
Bolted-Style.	Ease of installation.
Clamp-Style.	"Zero" backlash for precision drives.
Couplings with clamp style hubs available in two lengths.	Adaptable to different shaft spacing requirement.

How To Select Schmidt Control-Flex® Couplings



Here's how:

The basic performance ratings listed in the table are maximum values. The graph below must be used to determine the coupling's suitability in each application.

To see if a coupling is suitable for an application, see the selection procedure on this page.

Note that a coupling can provide more torque if it is subject to less misalignment, and vice versa. Note also that if a coupling is subjected to 100% of its rated torque (with service factor applied), it cannot tolerate any misalignment.

When calculating torque requirements, see the service factor table provided on this page.

For special designs or requirements, consult the factory.

Selection Procedure:

To select the proper Control-Flex® coupling size, identify the application's requirements for torque, misalignment, and service factor. Tentatively select a coupling based on these requirements. Find the selected coupling's maximum rated torque and misalignment.

Compute the misalignment ratio by dividing the required parallel misalignment by the maximum rated parallel misalignment. If either angular or axial misalignment are required, multiply the existing misalignment ratio by 1.2. If both angular and axial misalignment are required, multiply the misalignment ratio by 1.4.

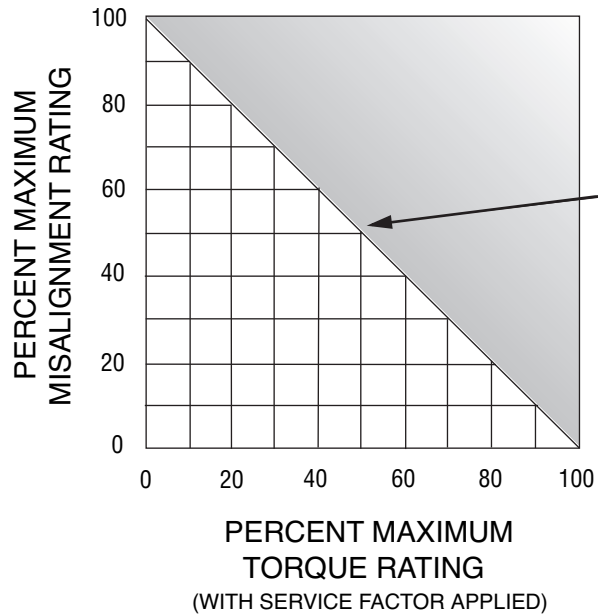
Next, compute the torque ratio. Divide the required torque including service factor by the maximum rated peak torque of the selected coupling. The actual running torque should never exceed the maximum continuous rated torque. Occasional torque spikes in the system should never exceed the maximum peak torque rating.

Now that the torque and misalignment ratios are known, their effect on the coupling can be compared to the couplings operating envelope shown below.

If the lines representing the two performance ratios meet to the left of the shaded area, the selected coupling is appropriate for the application.

If the lines meet in the shaded area, the selected coupling is not appropriate for the application, and a larger coupling size must be selected.

CONTROL FLEX® COUPLING
OPERATING ENVELOPE



Recommended Service Factor

No Shock Load	1.0
Light Shock Load	1.5
Medium Shock Load	2.0
Heavy Shock Load	2.5
Reversing Shock Load	3.0

Schmidt Control-Flex® Couplings

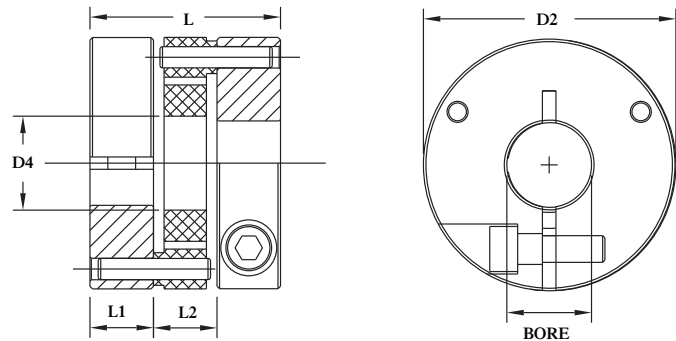
Couplings

The construction of a Control-Flex® Coupling consists of two hubs (to be attached to the shafts) and a center flex member. This flexible element is affixed to the hubs through pins. The round, clamp-style hubs provide a positive friction connection. Special modifications are available upon request.

The clamp-style Control-Flex® couplings are available with a single flex disc for standard torque capacity, or with two flex discs for increased torque capacity and torsional stiffness. The clamp-style hub models come standard without keyways. Keyways are available on special request.

- Easy Installation
- Space Saving
- Electrically Insulating
- Large Misalignment Capacity
- Absorbs Radial Vibrations
- "Zero" Backlash
- Maintenance Free

Clamp-Style



Dimensions & Performance Data of Control-Flex Coupling - Clamp-Style (Single Flex Disc)

Part No	Coupling Dimensions							Performance Data								Maximum Shaft Misalignments		
	CPL. Diam. (Inch) D2	Coupling Length (Inch) L	Hub Length (Inch) L1	Max. Bore		Disc Inside Diam. (Inch) D4	Disc Length (Inch) L2	Net Weight (Lb)	Inertia WK ² (Lb-In ²)	Max. Peak Torque (In-Lb)	Max. Cont. Running Torque (In-Lb)	Torsional Stiffness			Max Speed (RPM)	Par. (Inch)	Ang. (Deg.)	Axial (Inch)
				(Inch)	(mm)							In Lbs. Per Degree	In Lbs. Per Radian	In. Oz Per Min.				
C008P	0.748	0.62	0.219	0.375	10	0.28	0.19	.020	.0014	6	4	2.3	130	.61	12000	.013	1.5	.010
C011P	0.984	1.00	0.374	0.500	12	0.31	0.25	.057	.0075	13	9	5.0	285	1.33	11000	.019	1.5	.014
C016P	1.457	1.17	0.394	0.750	19	0.56	0.38	.135	.038	45	31	16.3	930	4.35	8000	.028	1.5	.021
C023P	2.205	1.74	0.591	1.188	30	0.84	0.56	.450	.291	152	106	55.0	3150	14.29	6000	.041	1.5	.031
C031P	2.953	2.17	0.709	1.500	40	1.13	0.75	1.060	1.220	361	250	75.0	4300	20.00	5000	.055	1.5	.042

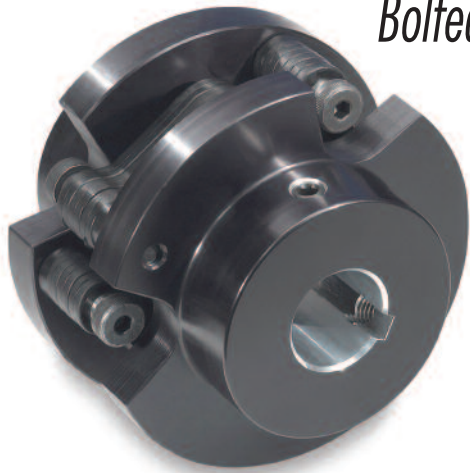
- 1) Maximum speed rating applicable at 50% or less continuous torque rating.
- 2) As speeds approach the maximum speed rating, some applications may require dynamically balanced couplings.

Dimensions & Performance Data of Control-Flex Coupling - Clamp Style (Double Flex Discs)

Part No.	Coupling Dimensions							Performance Data								Maximum Shaft Misalignments		
	CPL. Diam. (Inch) D2	Coupling Length (Inch) L	Hub Length (Inch) L1	Max. Bore		Disc Inside Diam. (Inch) D4	Disc Length (Inch) L2	Net Weight (Lb)	Inertia WK ² (Lb-In ²)	Max. Peak Torque (In-Lb)	Max. Cont. Running Torque (In-Lb)	Torsional Stiffness			Max Speed (RPM)	Par. (Inch)	Ang. (Deg.)	Axial (Inch)
				(Inch)	(mm)							In Lbs. Per Degree	In Lbs. Per Radian	In. Oz Per Min.				
C208P	0.748	0.78	0.219	0.375	10	0.28	0.34	.021	.0014	10	7	4.6	260	1.22	10000	.009	1	.007
C211P	0.984	1.20	0.374	0.500	12	0.31	0.46	.060	.0077	24	17	9.9	570	2.63	9000	.012	1	.009
C216P	1.457	1.48	0.394	0.750	19	0.56	0.69	.145	.039	81	57	31.3	1790	8.33	7000	.019	1	.014
C223P	2.205	2.20	0.591	1.188	30	0.84	1.02	.483	.298	274	192	110.0	6300	29.41	5000	.027	1	.020
C231P	2.953	2.79	0.709	1.500	40	1.13	1.38	1.140	1.250	650	435	150.0	8600	40.00	4000	.037	1	.028

- 1) Maximum speed rating applicable at 50% or less continuous torque rating.
- 2) As speeds approach the maximum speed rating, some applications may require dynamically balanced couplings.

Schmidt Control-Flex® Couplings



Bolted-Style

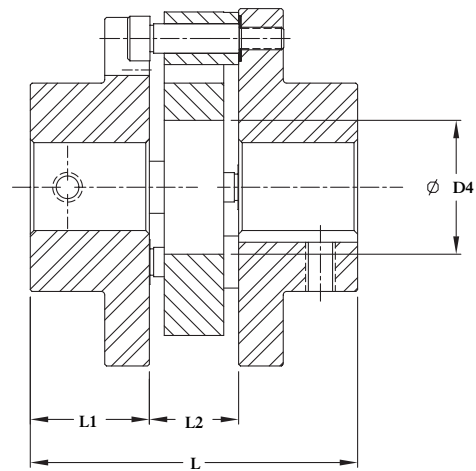
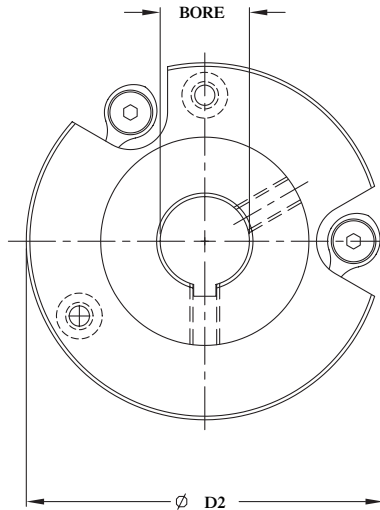
The construction of a Control-Flex® Coupling consists of two hubs (to be attached to the shafts) and a center flex member. This flexible element is affixed to the hubs through shoulder bolts. The Bolted-Style hubs incorporate keyway and setscrew shaft attachment. Flex discs are bolted for drop-out capability. Special modifications are available upon request.

Standard versions are shown below along with some of the available variations. If you have a requirement that is not suited to one of these, contact the factory for a solution.

Standard Bore, Keyway and Setscrew Dimensions for Bolted-Style Control-Flex Coupling Hubs

Bore Size	Keyway Size
0.312 - 0.437	None
0.500 - 0.562	1/8 x 1/16
0.625 - 0.875	3/16 x 3/32
0.937 - 1.250	1/4 x 1/8
1.312 - 1.375	5/16 x 5/32
1.437 - 1.750	3/8 x 3/16
1.813 - 2.250	1/2 x 1/4

- Hubs available without keyways.
- Metric Bore Sizes also available.



The above drawing is valid for C030P, C060P and C075P. C045P will still use the triangular style hubs. Consult factory if necessary.

Dimensions & Performance Data of Control-Flex Coupling Bolted-Style

PART NO.	Coupling Dimensions				Performance Data								Max Shaft Misalignment				
	CPL. Diam. (Inch) D2	Coupling Length (Inch) L	Hub Length (Inch) L1	Max. Bore		Disc Inside Diam. (Inch) D4	Disc Length (Inch) L2	Net Weight (Lb)	Inertia WK ² (Lb-In ²)	Max. Peak Torque (In-Lb)	Max. Cont. Running Torque (In-Lb)	Torsional Stiffness		Max Speed (RPM)	Par. (Inch)	Ang. (Deg)	Axial (Inch)
				(Inch)	(mm)							In-Lbs. Per Degree	In-Lbs. Per Radian				
C030P	3.00	2.750	1.00	1.000	25	1.125	.750	.78	.345	361	250	75.0	4300	6300	.055	1.5	.042
C045P	4.50	4.125	1.50	1.500	40	1.687	1.125	2.63	2.62	1218	850	261.0	14950	4200	.083	1.5	.063
C060P	6.00	5.500	2.00	2.000	55	2.250	1.500	6.24	11.03	2887	2000	515.0	29500	3100	.111	1.5	.083
C075P	7.50	6.875	2.50	2.500	65	2.812	1.875	12.18	33.66	5638	3900	1529.0	87600	2500	.139	1.5	.104

- 1) Maximum speed rating applicable at 50% or less continuous torque rating.
- 2) As speeds approach the maximum speed rating, some applications may require dynamically balanced couplings.

