Sure motion Drive Couplings

Drive Couplings Overview

Rotating shaft-driven mechanical components are commonly used in all forms of machinery that perform the various processes and functions of modern industry. Perfect alignment of shafts and rotating components is desired, but it is nearly impossible to build a real-world machine in which adjacent shaft ends align perfectly.

Shaft ends can be misaligned radially or angularly, exhibit axial displacement, or experience a combination of all three. Misalignment will place stresses on shafts and related parts of the assembly such as bearings, which can result in early failure of both.

Drive couplings can be used to compensate for shaft misalignment, whether the misalignment is an intentional or an unintentional part of the design. When designing or modifying a system, there are essential factors to consider for choosing the correct couplings for the application.

Design/Selection Factors:

(Refer to the specification tables herein for the particular specifications of each type of drive coupling.)

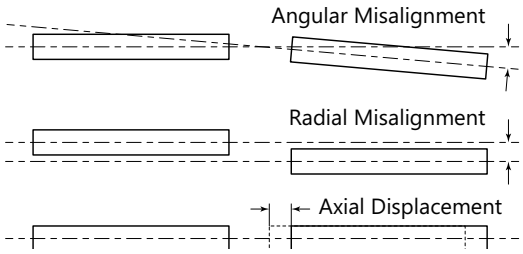
• RPM: For higher rpm applications, choose Jaw/Spider or Beam-Style Servo couplings. For lower rpm, consider Double-Loop or Oldham couplings.

• Torque: Consider the torque requirements of the application, and the torque specifications of the different drive coupling types. peak torque generally occurs at start-up, operating torque at steady-state operation, and reversing or braking torque during rapid acceleration or deceleration or direction changes.

• Backlash: Backlash is a measurement of the positional accuracy of the coupling, which is important for reversing and/or motion control applications. Zero backlash is ultimately desirable, but more expensive than necessary for low-precision applications.

For high-precision applications, choose Beam-Style Servo or Oldham couplings. For applications requiring less precision, consider Jaw/Spider or Double-Loop couplings.

• Misalignment: Some degree of angular, axial, or radial misalignment/displacement between shafts is almost unavoidable. Drive couplings can compensate for this misalignment.



Coupling Type Comparisons				
Coupling Type	***Jaw / Spider***	***Double Loop***	***Oldham***	***Beam-Style Servo***
Representative Photo				
Purpose	most common	light duty	general purpose	high performance & torque
Hub Material	aluminum	stainless steel	aluminum	416 stainless steel
Center Material	polyurethane	Hytrel™	Delrin™	420 stainless steel
Mounting Method	clamp	set screw	clamp	set screw
Electrical Isolation	yes	yes	yes	no
Backlash	varies	varies	zero	zero
Misalignment Capacity	++ (axial)	+++	++	+
Breakable "Mechanical Fuse"	no (fail safe)	no	yes	no
Relative Price	$$	$$	$	$$$

Beam-Style Servo Stainless Steel Set-Screw Couplings

Features

- Flexibility of bellows coupling plus torsional stiffness and strength of disc coupling
- Hubs made of 416 stainless steel
- Flex beams made of 420 stainless steel
- Zero backlash
- Corrosion-resistant
- Bore reducers available to fit a wide variety of bore combinations
- Very wide operating temperature range:
  for 24/7 applications:
  -73 to 191 °C (-100 to 375 °F)
  for intermittent applications (<8hr):
  -73 to 232 °C (-100 to 450 °F)
- Speeds up to 10,000rpm
- Torque up to 300 lb·in

Applications

- High performance applications
- High-speed applications
- High-torque applications

Beam-Style Servo Stainless Steel* Set-Screw Drive Coupling Hubs

Part Number	Price	Size	Bore**	Max rpm	Torsional Stiffness (lb·in/°)	Max Torque (lb·in [N·m])	Max Misalignment Radial (in [mm])	Max Misalignment Axial (in [mm])	Max Misalignment Angular (°)	Moment of Inertia (lb·in·s²x10⁻⁵)	Weight (oz)
DC-SBS19-0404		19	1/4 in	10,000	11	12 [1.4]	0.010 [0.25]	0.020 [0.51]	7	0.86	0.84
DC-SBS25-0808		25	1/2 in	7,500	27	24 [2.7]	0.015 [0.38]	0.025 [0.64]		3.75	1.60
DC-SBS32-1010		32	5/8 in		51	48 [5.4]		0.030 [0.76]		11.1	2.45
DC-SBS38-1212		38	3/4 in	5,000	89	75 [8.5]	0.020 [0.51]			28.2	4.94
DC-SBS44-1414		44	7/8 in		135	135 [15.3]		0.040 [1.02]		59.2	7.59
DC-SBS51-1616		51	1in	3,750	205	180 [20.3]	0.025 [0.64]	0.050 [1.27]		115	11.26
DC-SBS63-2020		63	1-1/4 in		395	300 [33.9]		0.060 [1.52]		349	18.67

** Hubs are 416 stainless; flex beams are 420 stainless.*

*** Bore Reducers can be purchased separately from AutomationDirect and installed in DC-SBSxx-xxxx hubs if different bore sizes are needed.*
(See page tPTR-58 for Bore Reducers.)

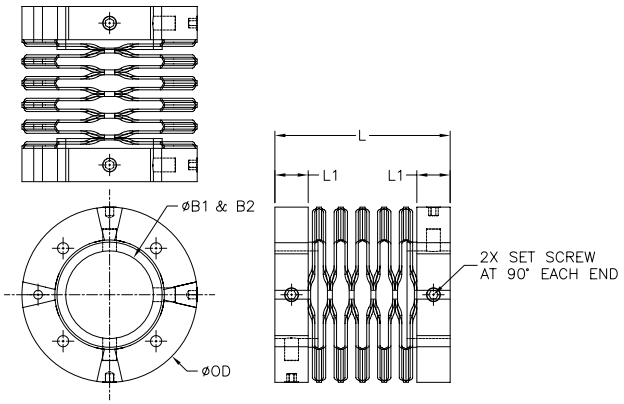
Dimensions (in [mm])

Beam-Style Servo Stainless Steel Drive Coupling Dimensions

Size	Set Screw	L	L1	ØB1*	ØB2*	ØOD
		(in [mm])				
19	M3x0.5	0.75 [19.1]	0.240 [6.10]	0.250 [6.35]		0.75 [19.1]
25		1.00 [25.4]	0.345 [8.76]	0.500 [12.70]		1.00 [25.4]
32	M5x0.8	1.25 [31.6]	0.386 [9.80]	0.625 [15.88]		1.25 [31.6]
38		1.50 [38.1]	0.505 [12.83]	0.750 [19.05]		1.50 [38.1]
44		1.75 [44.5]	0.550 [13.97]	0.875 [22.23]		1.75 [44.5]
51		2.00 [50.8]	0.555 [14.10]	1.000 [25.40]		2.00 [50.8]
63	M6x1.0	2.50 [63.5]	0.615 [15.62]	1.250 [31.75]		2.50 [63.5]

** Use bore reducers for additional bore sizes and bore combinations.*

See our website: _____ for complete Engineering drawings.



Drive Couplings

Accessories – Bore Reducers

Features

- For use in all SureMotion drive coupling hubs to reduce bore size
- Split-collar design with 2 set screw flats will not mark shaft
- 25% greater holding power than standard split collar
- Hardened stainless steel

Bore Reducers – Stainless Steel Clamping Type						
Part Number	Price	Outside Diameter		Inside Diameter		Length
		Nominal	Actual	Nominal	Actual	
DC-BRS04-02		1/4 in	0.250 in	1/8 in	0.125 in	0.221 in
DC-BRS04-04M				4mm	4mm	
DC-BRS04-03				3/16 in	0.1875 in	
DC-BRS04-05M				5mm	5mm	
DC-BRS08-06M		1/2 in	0.500 in	6mm	6mm	0.449 in
DC-BRS08-04				1/4 in	0.25 in	
DC-BRS08-05				5/16 in	0.3125 in	
DC-BRS08-08M				8mm	8mm	
DC-BRS08-06				3/8 in	0.375 in	
DC-BRS08-10M				10mm	10mm	
DC-BRS10-10M		5/8 in	0.625 in	10mm	10mm	0.460 in
DC-BRS10-07				7/16 in	0.4375 in	
DC-BRS10-12M				12mm	12mm	
DC-BRS10-08				1/2 in	0.5 in	
DC-BRS10-14M				14mm	14mm	
DC-BRS10-09				9/16 in	0.5625 in	
DC-BRS12-06		3/4 in	0.750 in	3/8 in	0.375 in	0.646 in
DC-BRS12-12M				12mm	12mm	
DC-BRS12-08				1/2 in	0.5 in	
DC-BRS12-10				5/8 in	0.625 in	
DC-BRS12-16M				16mm	16mm	
DC-BRS12-11				11/16 in	0.6875 in	
DC-BRS14-14M		7/8 in	0.875 in	14mm	14mm	0.755 in
DC-BRS14-10				5/8 in	0.625 in	
DC-BRS14-16M				16mm	16mm	
DC-BRS14-11				11/16 in	0.6875 in	
DC-BRS14-18M				18mm	18mm	
DC-BRS14-12				3/4 in	0.75 in	
DC-BRS16-10		1in	1.000 in	5/8 in	0.625 in	0.773 in
DC-BRS16-18M				18mm	18mm	
DC-BRS16-12				3/4 in	0.75 in	
DC-BRS16-20M				20mm	20mm	
DC-BRS16-13				13/16 in	0.8125 in	
DC-BRS16-14				7/8 in	0.875 in	
DC-BRS20-22M		1-1/4 in	1.250 in	22mm	22mm	0.793 in
DC-BRS20-24M				24mm	24mm	
DC-BRS20-25M				25mm	25mm	
DC-BRS20-16				1in	1.0 in	
DC-BRS20-17				1-1/16 in	1.0625 in	
DC-BRS20-18				1-1/8 in	1.125 in	