ZERO-MAX®

CD® Couplings

SERIES A1C

ZERO-MAX CD® COUPLINGS SERIES A1C

- For today's most demanding servo motor and motion control applications. CD Couplings Series A1C are precise, robust, and available in sizes and models for every application
- High torsional stiffness and high dynamic load capacity ensure reliable machine operation
- Precise positioning under high speed reversing loads without fatigue for reliable 24/7 operation
- Unique patented composite disc design provides misalignment capacity and long operational life
- Clamp style hub design provides a superior method of shaft engagement
- Eco-Friendly, adapted to RoHS Directive with no banned substances

These next-generation CD Couplings Series A1C allow you to transmit high horsepower in a small envelope. They are ideal for cyclic applications where speed and repeatable accuracy are critical to keep 24/7 systems going.

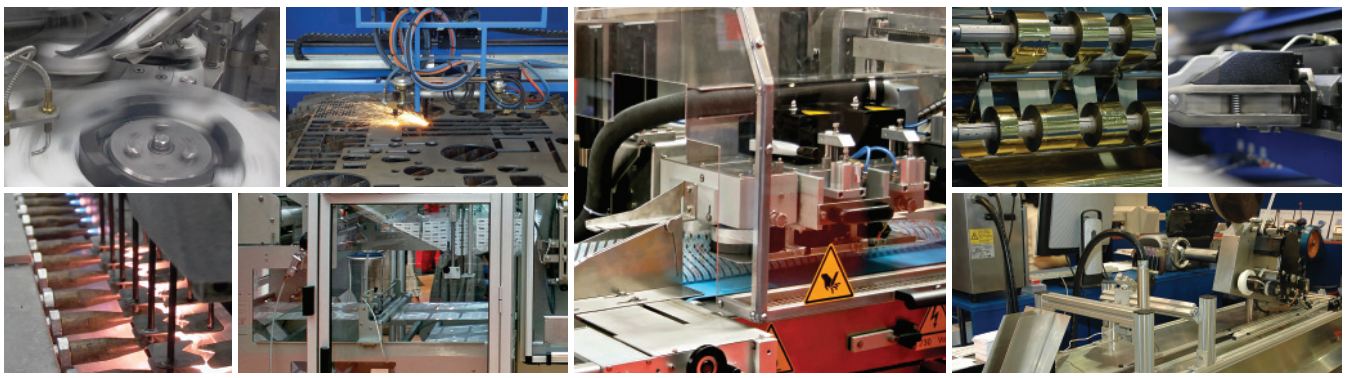
CD Couplings Series A1C withstand the punishment and stress of a servo motor. In comparison, other couplings may have high torsional stiffness specifications; however, they can be too brittle to withstand the punishment of high speed reversing applications.

The working part of a CD Coupling Series A1C is made of high precision composite material. This patented design has high torsional stiffness, and yet allows for misalignment in high stress applications. CD Couplings Series A1C have excellent chemical and moisture resistance and operate without maintenance in hostile environments.

Standard and Custom CD Couplings Series A1C are available for every application. Do you need higher misalignment and greater torque capacity in your coupling? Need more flexibility and torsional stiffness? Need a very large bore diameter coupling? Or a long spacer coupling? Zero-Max CD Couplings Series A1C are available in a full range of styles, models and sizes to meet those needs. Zero-Max will design and build a custom CD Coupling Series A1C to handle your unique application.

CD® COUPLINGS SERIES A1C FOR THE MOST DIFFICULT MOTION APPLICATIONS

- Ideal for high precision applications including packaging machines, pick and place systems, printing machinery, machine tools and most systems using servo motors
- Operating temperature range is -70° to +250° F (- 57° to + 121°C)
- Composite discs are resistant to many chemicals
- Maintenance free
- Hubs are machined to a high level of concentricity for smooth and quiet operation
- RoHS compliant – manufactured of RoHS compliant materials and contains no banned substances



CD® COUPLINGS ***SINGLE FLEX*** ALUMINUM

CD Coupling Series A1C has very low weight and inertia, making it an excellent choice for servo motor applications. The unique design delivers two features that are not often found in a precision coupling. High torsional stiffness and high durability!

The compact size, low inertia, and clamping system enable this coupling to fit into many applications.

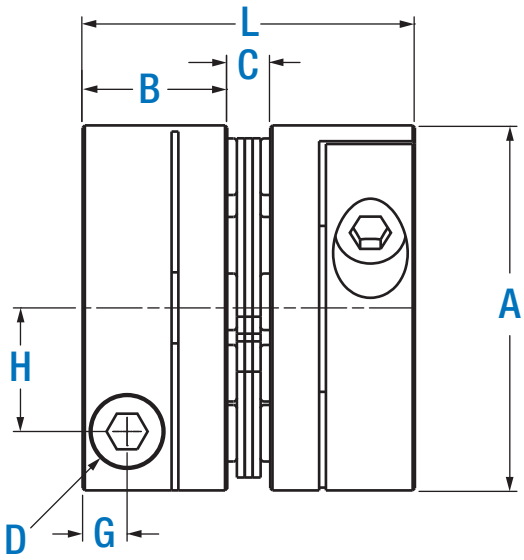
- Zero Backlash
- Torsionally Stiff
- Excellent for Reversing Loads
- Smooth Operation at High Speeds
- Compact

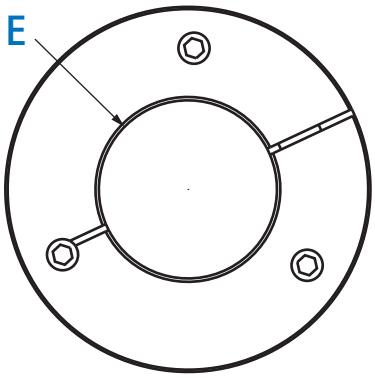
Performance Information

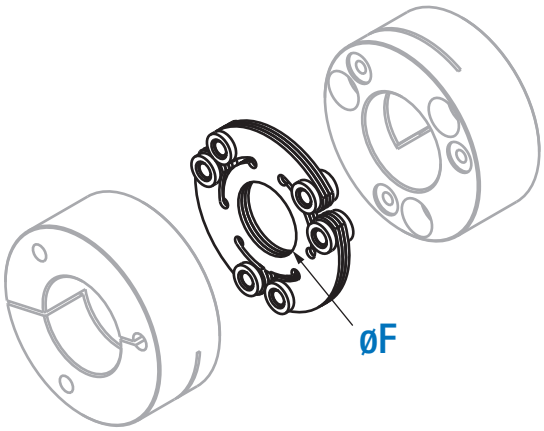
Model	Continuous Torque	Peak Torque	Torsional Stiffness	Maximum Speed	Maximum Misalignments			Weight		Inertia	
					Angular	Parallel	Axial	Max Bore	Min Bore	Max Bore	Min Bore
	in. lb. (Nm)	in. lb. (Nm)	in.lb./deg. (Nm/rad)	RPM	Degrees	Inch (mm)	Inch (mm)	(kg)	(kg)	10^{-3}kg-m^2	10^{-3}kg-m^2
6A18-A1C	180 (20)	360 (40)	1,800 (11,650)	15,000	2	(0.10)	0.030 (0.8)	(0.2)	(0.26)	0.088	0.095
6A22-A1C	270 (30)	540 (60)	2,680 (17,352)	13,500	2	(0.15)	0.036 (0.9)	(0.33)	(0.41)	0.19	0.21
6A26-A1C	475 (53)	950 (106)	3,100 (20,100)	11,500	2	(0.20)	0.043 (1.1)	(0.46)	(0.6)	0.35	0.37
6A30-A1C	800 (90)	1,600 (180)	6,638 (42,976)	9,500	2	(0.25)	0.050 (1.3)	(0.76)	(0.94)	0.78	0.82
6A37-A1C	1,600 (181)	3,200 (362)	10,374 (67,167)	8,000	2	(0.33)	0.070 (1.8)	(1.59)	(2.04)	2.53	2.71
6A45-A1C	2,500 (282)	5,000 (564)	19,138 (123,909)	6,700	2	(0.38)	0.090 (2.3)	(3)	(3.9)	7.16	7.71

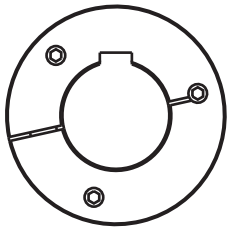
- Consult factory for speeds higher than those listed and balancing requirements, if necessary.
- Consult factory for higher torque and higher torsional stiffness couplings.
- Available with or without keyway on clamp style hubs.

CD® COUPLINGS **SINGLE FLEX** ALUMINUM









Note: Typical keyway placement

Dimensional Information

Model	A	B	C	D		E (bore)		F	G	H	L
				Bolt	Torque	Min	Max				
	Inch (mm)	Inch (mm)	Inch (mm)	M	in. lb. (Nm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)
6A18-A1C	(53)	(22.5)	(5.49)	M6	(13)	0.30 (8)	1.06 (27)	0.790 (20.1)	(7.25)	0.709 (18)	(50.5)
6A22-A1C	2.44 (62)	1.000 (26)	(5.74)	M6	(13)	(12)	1.22 (31)	(24.9)	(7.24)	0.866 (22)	(57.7)
6A26-A1C	(69.5)	(29.5)	(6.25)	M8	1.250 (32)	0.551 (14)	(36)	1.00 (25.4)	(9.14)	1.00 (24)	(65.2)
6A30-A1C	(82)	(32.5)	(9.65)	M10	(58)	0.625 (16)	(40)	(30.71)	0.4 (10)	(27.8)	(74.7)
6A37-A1C	3.96 (101)	1.813 (46)	(11.23)	M12	3.875 (100)	0.709 (18)	(52)	1.51 (38.4)	0.500 (12.7)	1.00 (26)	(103.2)
6A45-A1C	4.83 (123)	2.250 (60)	(12.75)	M16	(245)	1.00 (24)	2.62 (65)	1.81 (46)	(16.95)	(45.5)	5.23 (132.8)

Feed Screw Systems

1. Oscillation phenomena of servomotors

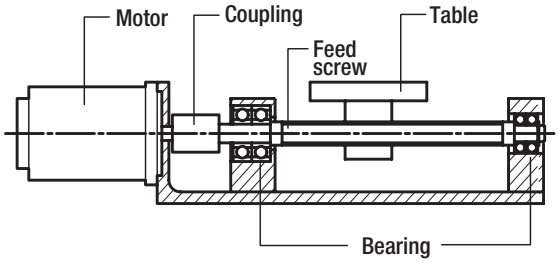
If the resonant frequency of the entire feed-screw system is under 400~500Hz, oscillation may occur depending on the gain adjustment of the servomotor. The problems can be avoided by raising the resonant frequency of the mechanical system or adjusting the tuning function (filter function) of the servomotor.

Contact us for unclear points concerning oscillation phenomena of servomotors.

How to evaluate the resonant frequency of feed-screw system

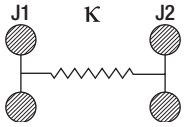
1. Select the coupling according to the normal operating torque and maximum torque of the servomotor/stepping motor.

2. In the following feed-screw system, evaluate the entire resonant frequency: Nf from the torsional spring constant: *K* of the coupling and feed screw, the moment of inertia: J1 of the driving side and the moment of inertia: J2 of the driven side.



$$Nf = \frac{1}{2\pi}\sqrt{K\left(\frac{1}{J1}+\frac{1}{J2}\right)}$$

Nf: Eigenfrequency of the entire feed-screw system [Hz]
K: Torsional spring constant of the coupling and feed screw [N • m/rad]
J1: Moment of inertia of the driving side
J2: Moment of inertia of the driven side



Selection Procedure

1. Calculate torque Ta applied to the coupling based on the motor output P and coupling operating rotation speed n.

$$Ta[N\cdot m] = 9550 \times \frac{R\ [kW]}{n\ [min^{-1}]}$$

2. Calculate corrected torque Td applied to the coupling after deciding the service factor K based on load conditions.
Td = Ta x K

In servomotor drive, multiply the service factor K=1.2~1.5 by the maximum torque of servomotor Ts.
Td = Ts × (1.2~1.5)

3. Select a coupling size with permissible torque Tn that becomes greater than the corrected torque Td.
Tn ≥ Td

4. Depending on the bore diameters, the coupling permissible torque may be limited. Refer to the "Specification" and "Standard bore diameter".

5. Confirm if the required shaft diameter does not exceed the maximum bore diameter of the selected size.

Custom Designs Available Upon Request

If our standard line of couplings will not exactly fit your system needs, contact us for a custom design.

- Custom bores
- Ultra high speeds
- Special finishes
- Special Lengths
- Designed for operation in special environments

Part Numbering Structure

SIZE — **A1C** — **Bore** **TYPE** — **Bore** **TYPE**

Code	Description
6A18	Size 18
6A22	Size 22
6A26	Size 26
6A30	Size 30
6A37	Size 37
6A45	Size 45

Bore: See Chart

Code	Description
B	without Keyway
K	with Keyway

Bore: See Chart

Code	Description
B	without Keyway
K	with Keyway

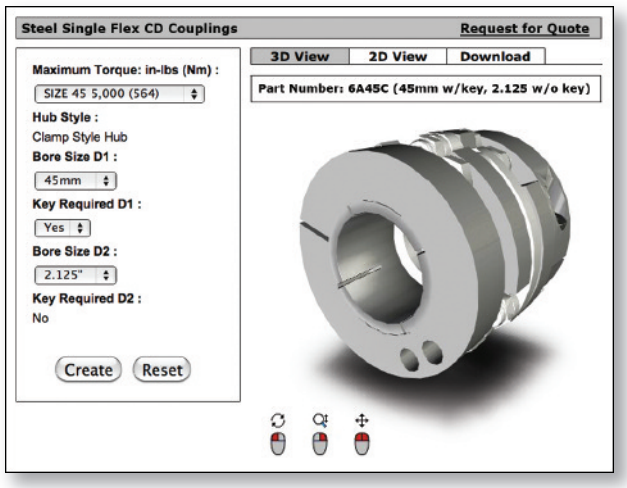
Note: The hub design of Series A1C CD Couplings will provide the necessary clamping force to hold the shaft in a dynamic application without the use of keyways.

Example:
6A30-A1C-20B-28B
- Size 30
- 20mm bore without keyway x 28mm bore without keyway

Bore Size

Model	Inch (mm)	9	10	11	12	13	14	15	16	17	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	52	55	58	60	62	63	65
6A18-A1C		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●																	
6A22-A1C									●	●	●	●	●	●	●	●	●	●																
6A26-A1C							●	●	●	●	●	●	●	●	●	●	●	●	●	●														
6A30-A1C									●	●	●	●	●	●	●	●	●	●	●	●	●	●												
6A37-A1C											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●								
6A45-A1C															●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

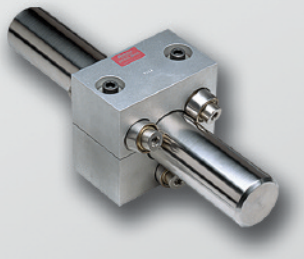
●: The coupling will transmit full peak torque on a shaft without a keyway. Please contact the factory for additional bores



New Zero-Max Configurable 3D CAD Downloads.
www.zero-max.com

ServoClass® Couplings

Designed for demanding servomotor applications. Zero backlash, high torsional stiffness coupling. Features flexible metal discs and keyless clamp-type mounting hubs. Couplings are RoHS compliant.

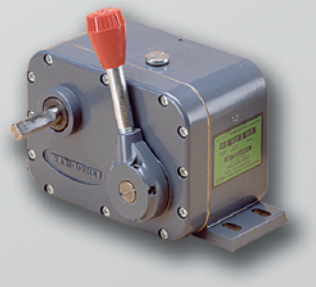


Roh'lix® Linear Actuators

Roh'Lix® Linear Actuators convert rotary motion into precise linear motion. Available in five models. Roh'Lix® actuators have thrust ratings from 5 to 200 lbs. All models feature built in overload protection.

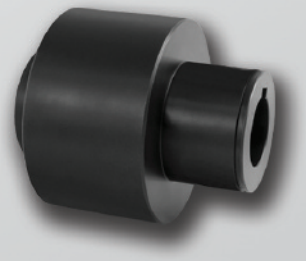
CD® Couplings

These high performance couplings **out last** bellows and steel disc design couplings. The unique design of the composite disc enables the CD Couplings® to withstand punishing applications and deliver high precision performance.



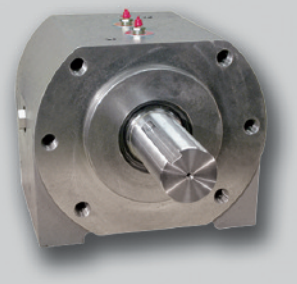
Adjustable Speed Drive

Easy to install and maintenance free. Zero-Max Drives offer infinitely variable speeds from 0 rpm to 1/4 of input rpm. 5 models with torque ranges from 12 in-lbs to 200 in-lbs.



Torq-Tender® Couplings

Torq-Tender® Couplings provide reliable overload protection in any mechanical power transmission system. Torque ranges from 2 to 3000 in-lbs.



OHLA® Overhung Load Adapters

OHLA® Overhung Load Adapters are designed to eliminate radial and axial loads from a hydraulic pump or motor. 11 models available for mounts from SAE A to SAE F.

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