Plastic Bellows Couplings
BELLOWFLEX

Max. nominal torque [N·m]	1.5
Bore ranges [mm]	ϕ 3 ～ 12
Operating temperature [℃]	−20 ～ 60
Drive	Induction motor, stepper motor, encoder
Applications	Automated teller machines, inspection equipment, printing machinery

Plastic Bellows Coupling Ideal for Stepper Motors and Encoders

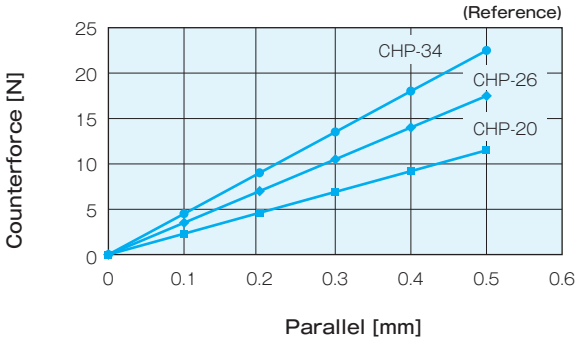
Bellows couplings that use a plastic (polyester resin) boot with plenty of elasticity in order to achieve high damping performance and extremely small counterforce from mounting misalignment. A compact design that unitizes an aluminum alloy hub and plastic boot means there is no backlash.

RoHS

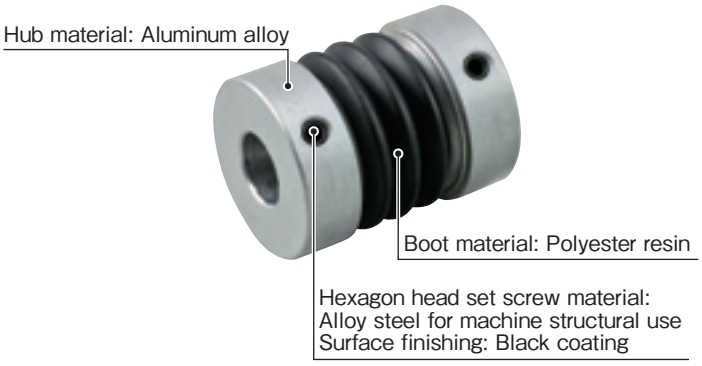
Main Features

Allows Angular Deflection up to 10°

Extremely Small Counterforce due to Misalignment



Structure and Materials



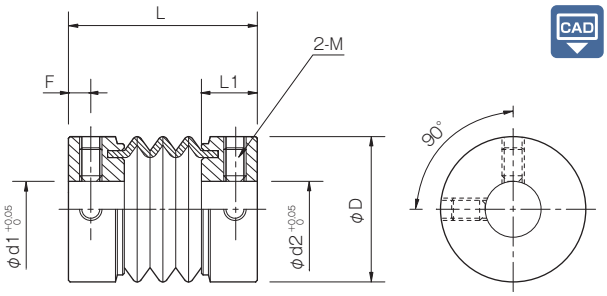
CHP Models

Specifications

Model	Torque		Misalignment			Max. rotation speed [min⁻¹]	Static torsional stiffness [N·m/rad]	Moment of inertia [kg·m²]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Parallel [mm]	Angular [°]	Axial [mm]				
CHP-20	0.4	0.8	0.5	10	± 0.5	9000	6.1	6.30×10^{-7}	0.012
CHP-26	0.7	1.4	0.5	10	± 0.5	7000	8.5	2.40×10^{-6}	0.026
CHP-34	1.5	3.0	0.5	10	± 0.5	5500	19.7	7.90×10^{-6}	0.051

* Static torsional stiffness values given are from measurements taken at 20℃
* The moment of inertia and mass are measured for the minimum bore diameter.

Dimensions



Unit [mm]

Model	d1 • d2		D	L	L1	F	M
	Min.	Max.					
CHP-20	3	8	20	28	8	3	M3
CHP-26	6	13	26	34	10	4	M4
CHP-34	8	18	34	40	12	5	M5

* For combination with a CHP-20 that has a bore diameter of ø3, open the set screw to an angle of 120°.

Model	Standard bore diameter d1-d2 [mm]															
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
CHP-20	●	●	●	●	●	●										
CHP-26				●	●	●	●	●	●	●	●					
CHP-34						●	●	●	●	●	●	●	●	●	●	●

* The recommended processing tolerance for paired mounting shafts is the h8 class.

How to Place an Order

CHP-26 8-8
Size — Bore diameter d1 - d2

Items Checked for Design Purposes

Special Items to Take Note of

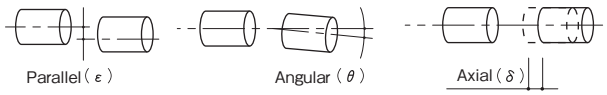
You should note the following to prevent any problems.
(1) Always be careful of parallel, angular, and axial misalignment.
(2) Always tighten bolts with the specified torque.

Precautions for Handling

(1) Couplings are designed for use within an operating temperature range of –20℃ to 60℃ . Although BELLOWFLEX couplings are designed to be waterproof and oilproof, do not subject them to excessive amounts of water or oil as these may cause deterioration. Use and storage in direct sunlight may shorten coupling service life, so cover couplings appropriately.

(2) Be careful, when working on the bore, to not change the shape of the hub or get cutting residue inside the boot.

(3) To get full coupling performance, mount couplings so that differences between coupling centers during operation are within the misalignment shown in the specifications table.
However, this misalignment is the maximum value when each occurs independently, so make the allowable value when they combine 50% or less of this value.



(4) Remove any rust, dust, oil or the like from the inner diameter surfaces of the shaft and coupling.

(5) Be careful not to place more bending, tensile, or compressive load on the coupling than necessary when inserting a shaft into a coupling. Also, the length of insertion of the shaft into the coupling should be the dimension L1 on the dimensions table.

(6) Tighten set screws with hex socket heads to the tightening torques shown below using a calibrated torque screwdriver.

Size of hex-socket-head set screw	M3	M4	M5
Tightening torque [N·m]	0.7	1.7	3.6

Selection Procedures

(1) Find the torque, Ta, applied to the coupling using the output capacity, P, of the driver and the usage rotation speed, n.

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

(2) Determine the service factor K from the usage and operating conditions, and find the corrected torque, Td, applied to the coupling.

$$Td\ [N\cdot m] = Ta \times K1 \times K2$$

■ Service factor based on load property: K1

Load properties	Constant	Vibrations: Small	Vibrations: Medium	Vibrations: Large
K1	1.0	1.25	1.75	2.25

■ Service factor based on operating temperature: K2

Temperature [℃]	− 20	0	+ 20	+ 40	+ 60
K2		1.0		1.2	1.3

(3) Set the size so that the nominal torque of the coupling Tn is at least equal to the corrected torque Td.

$$Tn \geqq Td$$

(4) Select a size that results in a maximum torque, Tm, for the coupling that is at least equal to the peak torque, Ts, generated by the driver, follower or both. Maximum torque refers to the maximum amount of torque that can be applied for a set amount of time considering eight hours of operation per day and up to around ten instances.

$$Tm \geqq Ts$$

(5) When the required shaft diameter exceeds the maximum bore diameter of the selected size, select a suitable coupling.