Paraflex coupling

High rigidity and minimum backlash

Each component is a rigid body and has a high rigidity. By a combination of high-precision pin and dry metal, backlash is very slight.

Extremely small shaft reaction force

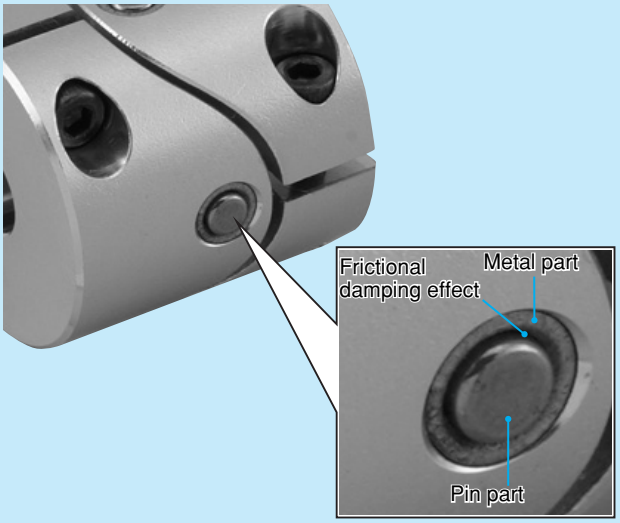
Shaft reaction force caused by a mounting error is extremely small due to the universal method.

Frictional damping effect

Damping effect is generated in the sliding surface between a pin and dry metal.

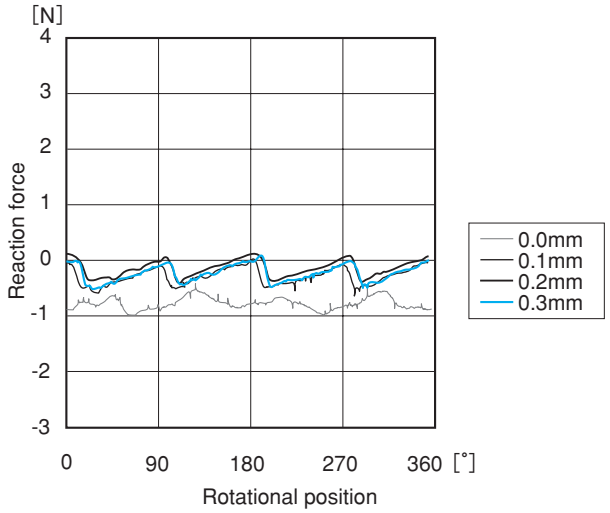
Normal operating torque [N·m]		0.7 ～ 25
Bore processing finished product [mm]		ϕ3 ～ 20
Operational temp. [℃]		−40 ～ +100
Backlash		Little
Max. permissible misalignment	Parallel offset [mm]	0.2 ～ 0.5
	Angular misalignment [°]	1 ～ 4
	Axial displacement [mm]	Zero

Frictional damping effect by frictional sliding of a pin and metal bush



Reaction force caused by parallel offset and angular misalignment is extremely small.

CPU-36-A: Shaft reaction force caused by parallel offset error



Structure and Material

■CPE

- The CPE series designed to achieve a high rigidity and low cost.

■CPU

- The CPU series designed to achieve a high torque and large permissible misalignment.

CPE

Paraflex-CPE model

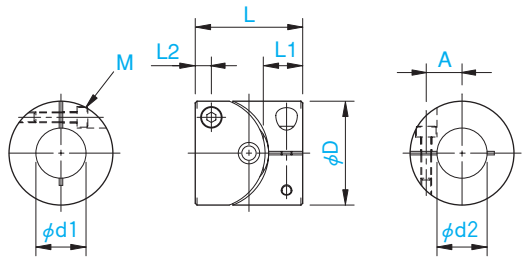
General-purpose motor | Stepping motor | Servo motor | Detector | Engine

Specification

Model	Torque		Max. permissible misalignment		Max. rotation speed [min⁻¹]	Torsional spring constant [N·m/rad]	Moment of inertia [kg·m²]	Mass [kg]	Price
	Normal [N·m]	Max. [N·m]	Parallel offset [mm]	Axial misalignment [°]					
CPE-19	0.7	1.4	0.2	1	6000	500	0.69×10^{-6}	0.015	—
CPE-29	2.0	4.0	0.2	1	6000	700	5.80×10^{-6}	0.050	—
CPE-39	5.0	10.0	0.2	1	6000	1900	18.50×10^{-6}	0.080	—

* The indicated values in the moment of inertia and mass are measured with the maximum bore diameter.
* The indicated torque in CPE-19 is the values when bore diameter is over 4mm.

Dimensions



Unit [mm]

Model	d1 · d2		D	L	L1	L2	M	A	CAD file No.
	Min.	Max.							
CPE-19	3	8	19	19.4	6.0	3.0	M2.5	6	CPE2
CPE-29	6	14	29	30.0	9.5	4.5	M3	10	CPE3
CPE-39	8	20	39	40.0	12.5	6.0	M4	14	CPE4

* Adjust the length of shaft insertion to achieve the dimension L1. (Note: The shaft is impenetrable.)
* The recommended machining tolerance of the mate mounting shaft is h7.

Ordering Information

CPE - 19 - 6 B - 6 B

Size

d2: Bore diameter 2

d1: Bore diameter 1

Standard bore diameter

Model	Standard bore diameter d1 · d2 [mm]																
	3	4	5	6	6.35	7	8	9.525	10	11	12	14	15	16	18	19	20
CPE-19	○	●	●	●	●	●	●										
CPE-29				●	●	●	●	●	●	●	●	●					
CPE-39							●	●	●	●	●	●	●	●	●	●	●

* The permissible torque of CPE-19 with bore diameter of 3mm is limited by the shaft fixing mechanism. The normal operating torque will be 0.4[N・m], and the maximum torque will be 0.8[N・m].
* For bore diameters other than those above, processing cost is added to the standard price.

CPU

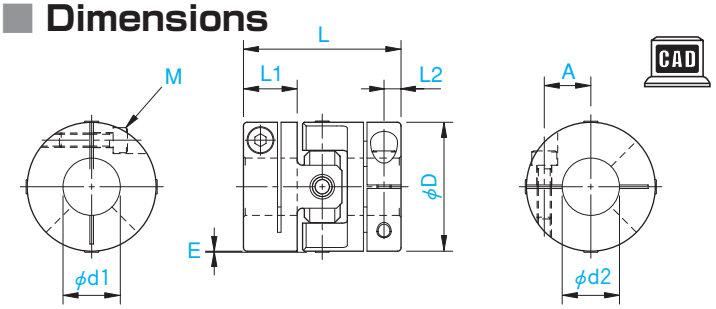
Paraflex-CPU model

Specification

Model	Permissible torque [N·m]	Max. permissible misalignment		Max. rotation speed [min⁻¹]	Torsional spring constant [N·m/rad]	Moment of inertia [kg·m²]	Mass [kg]	Price
		Parallel offset [mm]	Axial misalignment [°]					
CPU-26-A	2.2	0.3	4	4000	600	3.57×10^{-6}	0.040	—
CPU-36-A	10.0	0.4	4	3500	1350	1.64×10^{-5}	0.090	—
CPU-46-A	25.0	0.5	4	3000	1650	5.33×10^{-5}	0.190	—

* The indicated values in the moment of inertia and mass are measured with the maximum bore diameter.

Dimensions



Unit [mm]

Model	d1 · d2		D	E	L	L1	L2	M	A	CAD file No.
	Min.	Max.								
CPU-26-A	6	12	26	0.3	36	12	4.0	M3	9	CPU-A1
CPU-36-A	8	18	36	0.3	44	15	4.75	M4	13	CPU-A2
CPU-46-A	10	22	46	0.3	54	18	6.5	M5	16	CPU-A3

* Adjust the length of shaft insertion to achieve the dimension L1. (Note: The shaft is impenetrable.)
* The recommended machining tolerance of the mate mounting shaft is h7.

Ordering Information

CPU - 36 - A - 12 B - 12 B

- 36: Size
- A: Type A: Aluminum type
- 12 B: d1: Bore diameter 1
- 12 B: d2: Bore diameter 2

Standard bore diameter

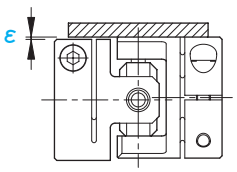
Model	Standard bore diameter d1 · d2 [mm]															
	6	6.35	7	8	9	9.525	10	11	12	14	15	16	18	19	20	22
CPU-26-A	●	●	●	●	●	●	●	●	●							
CPU-36-A				●	●	●	●	●	●	●	●	●	●			
CPU-46-A							●	●	●	●	●	●	●	●	●	●

* For bore diameters other than those above, processing cost is added to the standard price.

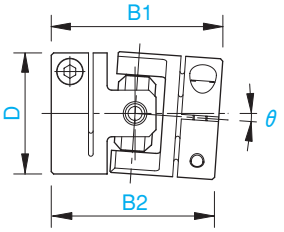
Design check items

- The CPU model allows angular misalignment up to 4° . However, if uniform speed is important, restrict angular misalignment to less than 1.5° . The angular speed ratio will be 1.0007 if angular misalignment is 1.5° .
- Because of its construction, the CPE and CPU models cannot absorb axial displacement. Make sure that couplings do not receive axial displacement.
- Check centering of the CPE and CPU models by the method shown on the right and adjust centering to satisfy the tolerances.

Parallel offset



Angular misalignment



$$\tan\theta = \frac{|B1-B2|}{D}$$

Instruction for use

■Mounting

❶ Loosen the clamping bolts of the coupling.
❷ Confirm that no rust or oil is attached on the mate mounting shaft. If there is any, wife off completely.
❸ After inserting the mate mounting shaft into the coupling, tighten the clamping bolts using a torque wrench.

Tightening torque list

Size					
	CPE	19	29	39	—
	CPU	—	26	36	46
Tightening torque [N·m]		1.0	1.5	3.4	7.0
Clamping bolt M		M2.5	M3	M4	M5

Selection

■Selection procedure

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

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

❷ Calculate corrected torque Td applied to the coupling after deciding the service factor K based on operating conditions.

Td=Ta×K (See next item)

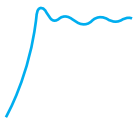
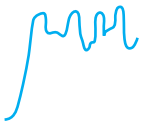
❸ Select the size in order that the coupling permissible torque Tn becomes greater than the corrected torque Td.

Tn≧Td

■Service Factor

K=K1・K2・K3・K4・K5

●Operating coefficient by load character: K1

Load character			
Constant	Fluctuations: small	Fluctuations: medium	Fluctuations: large
			
1.0	1.25	1.75	2.25

●Parallel offset coefficient: K2

Parallel offset [mm]	0	0.1	0.2
K2	1.0	1.1	1.2

●Angular misalignment coefficient: K3

Angular misalignment [°]	0	0.5	1.0
K3	1.0	1.06	1.12

●Ambient temperature coefficient: K4

Ambient temp. [℃]	60 or less	80 or less	100 or less
K4	1.0	1.4	1.8

●Rotation speed coefficient: K5

Rotation speed [min⁻¹]	1500 or less	2000 or less	2500 or less	3000 or less	3500 or less	4000 or less	5000 or less	6000 or less
K5	1.0	1.3	1.7	2.0	2.4	2.7	3.3	4.0