COUPLING CATALOGUE

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ENGLISH

ASA ELECTRONICS INDUSTRY Co.,Ltd.

SINCE1974

History of Coupling Product Development

1974 : Company founded, in Kodaira-shi, Tokyo
1976 : Plastic mold coupling (early adoption of engineering plastics)
1986 : CU Series (polyimide/carbon-fiber plate adoption)
1988 : C1 Series, C2 Series
1993 : ASJ Series (Oldham's coupling)
1998 : Adoption of metal slider in ASJ Series (optional)
2000 : M Series
2003 : APJ Series
2004 : Rigid couplings
2007 : Ball couplings (2nd generation universal coupling)

COUPLING INDEX

Selection of Couplings

Couplings that connect two shafts have a vast range of applications. As manufacturers, we produce couplings to suit particular kinds of applications, by carefully considering the way in which the coupling will be used.

In the past, the transmission of rotary motion was achieved mainly through the use of gears and belt drives, but couplings are increasingly being used for this purpose, and the methods and varieties of couplings are growing.

On the other hand, coupling failure can cause a device to break down, frequently resulting in serious damage. In such an event, the rotational drive system of the device can easily suffer from an abnormal, unforeseeable load. It is thus essential to apply great care and to ensure a sufficiently large margin of safety when selecting couplings.

The amount of energy to be transmitted (torque, rotational speed, rotational inertia), the reversal frequency and instantaneous angular acceleration, types and extent of axial misalignment, spacing, environmental conditions (e.g., the ambient temperature and the presence of water, oil, ray, electromagnetic radiation, dust, and vacuum pressure), and the required rotational life... Coupling products must be selected by assessing the specific requirements that need to be met, at an appropriate price.

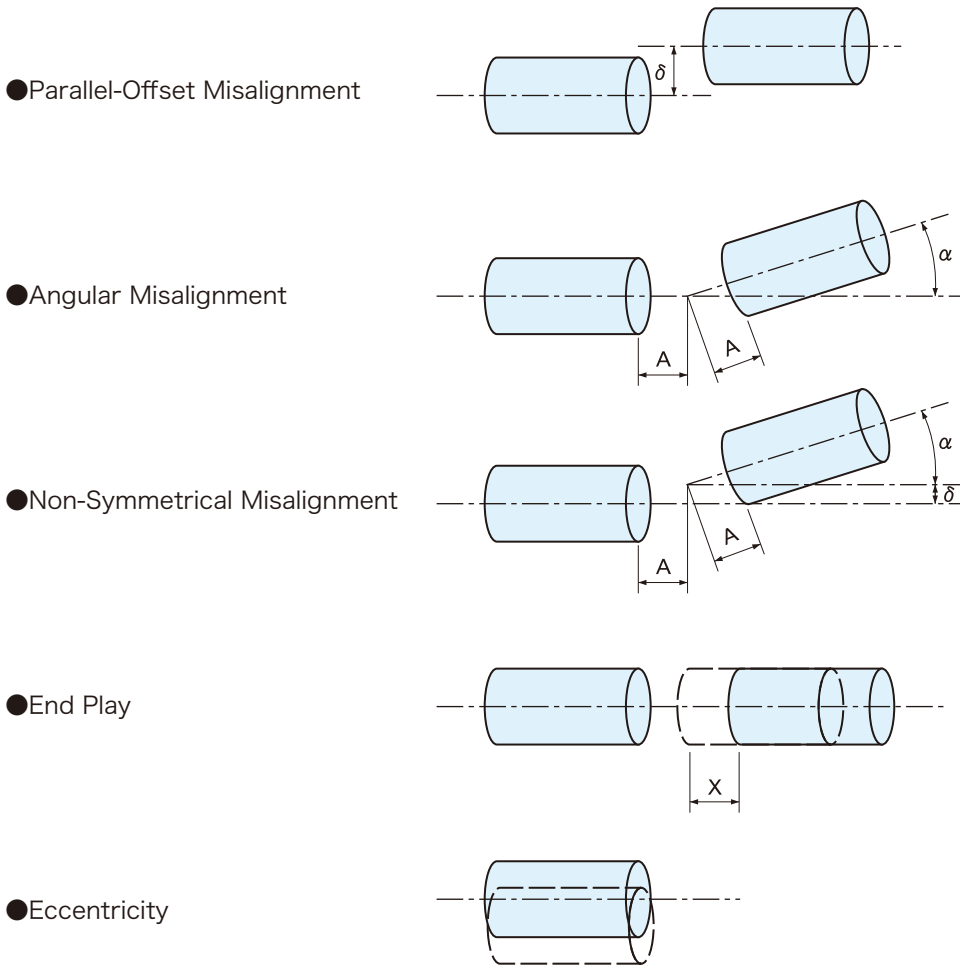


Figure 1 Types of misalignment

Technical Data

Rotational Speed

In the design of normal couplings (excluding couplings for low-speed applications) the allowable torque is determined by assuming a rotational speed of about 3000 rpm. Accordingly, if a coupling is operated at a maximum speed of 6000 rpm (double the design value), for safety purposes the allowable torque should be limited to less than 50% of the rated value (at 3000 rpm). (This value is not precise, since factors such as the increase of vibration and resisting force with speed depend on the specific coupling and its design. Note that in the case of continuous operation at a constant speed it is acceptable to use a factor of 100% to determine the allowable torque.)

Parameters in Performance Tables

The parameters listed in coupling performance tables (allowable torque, allowable parallel and angular misalignments, maximum speed, etc.) are determined based on investigations of each performance factor. Therefore, in the case when misalignments are combined, it is essential to divide each of these allowable values by the number of types of misalignment.

(Customers sometimes complain that this seems like a strange concept. To help explain this, let us assume that the allowable torque is determined under a situation in which all misalignments are at their maximum allowable levels. In such a case, the total allowable torque is very low, resulting in low practicability for the application. Couplings are elemental components that transmit energy, so the types and magnitude of internal stresses significantly affect their lifetime.)

Relationship between misalignment and life of couplings

As an example, consider the plastic mold couplings in our UJ and GJ series. We determined the allowable parallel misalignment to be 1/2.5 to 1/3 of the value of the displacement where the force and parallel misalignment vary linearly when an external force is applied (elastic limit). Please refer to the results of operational life tests conducted over 3 years for each misalignment (see page 17). We conducted our tests for up to one billion rotations, but we are unable to say how many years of use by customers this figure is equivalent to. Note that for the M Series, we conducted tests on the relationship between misalignment and lifetime for each plate material (i.e., polyimide, carbon FRP, and stainless steel). See page 7 for details.

Flexible plate couplings

●Non-backlash
●Smooth rotation transmission
●Wide variation for any purpose

Flexible plate coupling absorbs shaft misalignment through plate bending. There are two types of structure, they are single plate type and double plates type. They must be chosen correctly in consideration of shaft misalignment conditions to avoid unforeseen failure of the rotating system. (Refer to a right table.)

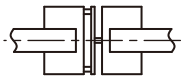
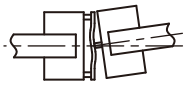
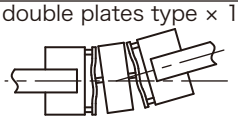
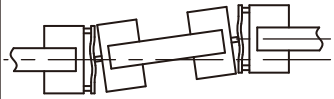
Condition	Solution
no misalignment	single plate type × 1 
small angular misalignment	single plate type × 1 
small parallel misalignment	double plates type × 1 
more angular misalignment	double plates type × 1 
more parallel misalignment	single plate type × 2 

Plate material characteristics

●Polyimide

Polyimide is a super engineering plastic that is highly heat resistant and extremely chemically stable. It also has a high tensile strength and elasticity, and its outstanding flexibility enables it to be used for the flexible plates of couplings, enabling flexibilities to be achieved that are not possible using metals. Polyimide can be used at any temperature between -200℃ and +200℃, and it is resistant not only to mineral oils such as gasoline, but also to organic solvents, and strong acids and alkalis. It is also highly weather resistant due to its excellent resistance to hydrolysis. Polyimide is a good electrical insulator.

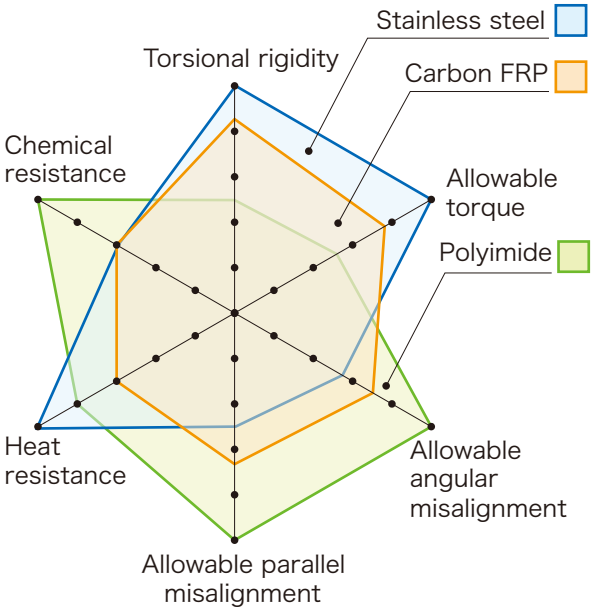
●Carbon FRP (fiber reinforced plastic)

This material is made by solidifying textiles made of carbon fibers by means of resin impregnation. It is the strongest and most elastic of commercially available materials. Due to its excellent mechanical characteristics, such as low creep and high fatigue strength (which is 3 to 7 times greater than that of aluminum alloys), carbon FRP is used, for example, for the vertical and horizontal rudders of jumbo jets, and for structural components of space satellites. This material offers a well-balanced set of characteristics for the flexible plates of couplings-high torsional rigidity and transmission torque, without fatigue damage due to bending caused by parallel and angular misalignments. (Usable temperature range: -100℃ to 80℃)

●Stainless steel

This material utilizes thin stainless steel plates with added spring characteristics provided by heat treatment. This material has the highest tensile strength of the three materials, so it offers high rigidity and high torque for the flexible plates of couplings. On the other hand, it offers the least tolerance for axial mismatching, particularly parallel misalignment, so it must be assembled carefully.

Performance radar chart



Life testing results

Item No.	Torque (N·m)	Parallel misalignment (mm)	Angular misalignment (deg)	End play (mm)	Rotating speed (rpm)	Total number of revolutions	Test result
MLC-32P (Polyimide)	0.15	0.3	3	±0.5	2,950	1.2×10^{8}	Non-fractured
	0	0.3	4	±0.3		2.0×10^{8}	
	0	0.3	8	±0.3		2.0×10^{8}	
	0.22	0	10	±0.3		2.3×10^{8}	
	0.22	1.0	0	0		2.1×10^{8}	
	0.22	1.2	0	0		2.1×10^{8}	
MLC-32C (Carbon FRP)	0.22	0.2	3	±0.3		2.4×10^{8}	
	0.22	0.2	6	±0.3		2.4×10^{8}	
MLC-32M (Stainless steel)	0.22	0.2	3	±0.3		2.3×10^{8}	
	0.22	0.2	6	±0.3		1.3×10^{8}	Plate fractured
MLC-40M (Stainless steel)	1.0	0.2	2	±0.2	1,430	1.6×10^{8}	Non-fractured

ML

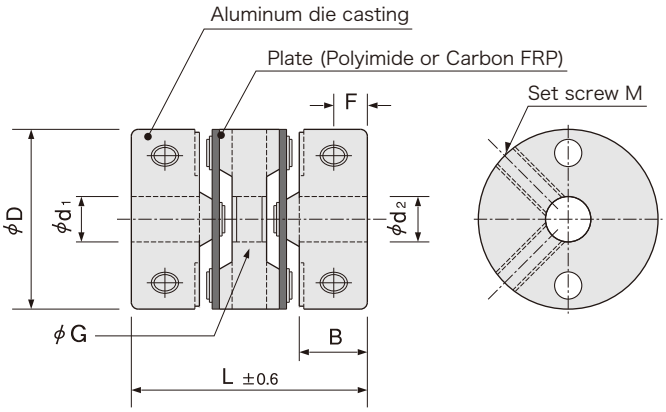
M series
Double plates
Set screw style

RoHS2 compatible

Features

●Anti-misalignment, multi-purpose
●Two types of plate materials to suit all applications
・Polyimide - due to its superb flexibility, it has a low reaction force, phase error and torque fluctuations, even when misaligned when misaligned
・Carbon FRP - multi-purpose type, with good balance of characteristics, offering high levels of flexibility, transmission torque,and torsional rigidity

Configuration and materials



Item No. designation

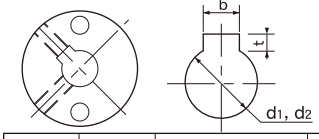
*Key groove processing
No entry: no processing
K3: 3mm key groove width

ML 25 (φD) P/C – 5 (φd1) □ – 8 (φd2) K3

Plate material: P: Polyimide, C: Carbon FRP

・Key groove shape complies with new JIS standards.

■Dimensions of key groove shape



Hole diameter d1 ,d2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
6~8	2	2	±0.0125	1.0	+0.1 0	2×2
8~10	3	3		1.4		3×3
10~12	4	4	±0.0150	1.8		4×4
12~17	5	5		2.3		5×5
17~22	6	6		2.8		6×6
22~25	8	8	±0.0180	3.3	+0.2 0	8×7

Dimensions

(mm)

Item No.	D	Standard hole diameters φd1 ,φd2 H8 (left/right can be freely combined)	L	B	F	G Disk hole diameter	H Plate hole diameter	M	Fastening torque (N·m)
ML	10	2 3 4	15	4.2	2	4.1	4.6	2	0.3
	13	3 4 5 6	19	5.5	2.5	5.5	6	2	0.3
	16	4 5 6 6.35 8	23.2	7	3	6.8	7.6	3	0.7
	20	4 5 6 6.35 8 10	26	7.5	3.7	8.1	9	3	0.7
	25	5 6 6.35 8 10 12	30.2	9	4	10.4	12	4	1.7
	32	6 6.35 8 10 12 14 16	41	12.4	6	15	15.2	4	1.7
	40	8 10 12 14 16 18 20	47	15.5	7.8	19.5	20.4	5	4
	50	14 16 18 20 22 24 25	53	18	9	25	26	6	7

・Recommended tolerance of applied axial diameter is h6 and h7 ・Four set screws included

Specifications

Item No.		Allowable torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Allowable parallel misalignment (mm)	Allowable angular misalignment (°)	Allowable end play (mm)	Moment of inertia (kg·m²)	Mass (g)
ML10	P	0.15	26,000	20	0.4	5	±0.2	4.6×10^{-8}	3
	C	0.25	32,000	40	0.2	2.5	±0.2		
ML13	P	0.25	20,000	30	0.4	5	±0.2	8.0×10^{-8}	5
	C	0.35	24,000	90	0.2	2.5	±0.2		
ML16	P	0.4	19,000	60	0.6	5	±0.3	2.4×10^{-7}	9
	C	0.6	23,000	140	0.2	2.5	±0.3		
ML20	P	0.6	18,000	110	0.6	5	±0.4	7.2×10^{-7}	14
	C	1.0	22,000	230	0.2	2.5	±0.3		
ML25	P	1.4	16,000	150	0.6	5	±0.6	2.2×10^{-6}	27
	C	2.2	19,000	450	0.2	2.5	±0.4		
ML32	P	2.6	12,000	380	0.6	5	±0.6	6.0×10^{-6}	60
	C	3.8	15,000	750	0.2	2.5	±0.4		
ML40	P	4.4	8,000	650	0.6	5	±0.8	1.7×10^{-5}	104
	C	6.8	10,000	900	0.3	2.5	±0.5		
ML50	P	7.0	6,000	850	0.6	5	±1	4.6×10^{-5}	210
	C	11.0	8,000	1,500	0.3	2.5	±0.6		

●Heat resistance (ambient temperature): polyimide: -40℃ to 200℃ , carbon FRP: -25℃ to 85℃
*Note that 1/2 the allowable torque should be used at maximum temperature
●Maximum torque is, as a general rule, twice the normal torque. Select a size equal to or lower than the normal torque and with an instantaneous maximum load torque equal to or smaller than the maximum torque.

MLC

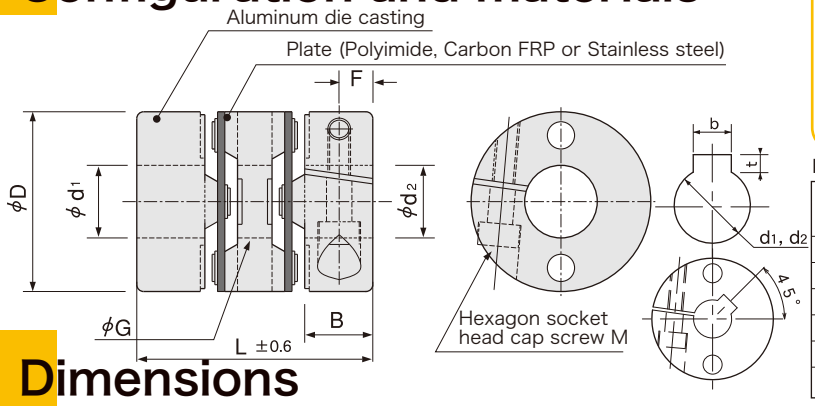
M series
Double plates
Clamp style

RoHS2 compatible

Features

●Anti-misalignment, multi-purpose
●Three types of plate materials to suit all applications
・Polyimide - due to its superb flexibility, it has a low reaction force, phase error and torque fluctuations, even when misaligned
・Carbon FRP - multi-purpose type, with good balance of characteristics, offering high levels of flexibility, transmission torque,and torsional rigidity
・Stainless steel - Inferior flexibility, but high transmission torque and torsional rigidity, so it is optimal for highly responsive servo systems

Configuration and materials



Item No. designation

*Key groove processing
No entry: no processing
K2: 2mm key groove width

MLC [16] [P/C/M] – [5] [ ] – [6] [K2]
(ϕD) (ϕd1) (ϕd2)

*Plate material P:Polyimide C:Carbon FRP M:Stainless steel (ϕD16over)

・Key groove shape complies with new JIS standards.

■Dimensions of key groove shape

Hole diameter d1 ,d2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
6~8	2	2	±0.0125	1.0	+0.1 0	2×2
8~10	3	3		1.4		3×3
10~12	4	4	±0.0150	1.8		4×4
12~17	5	5		2.3		5×5
17~22	6	6		2.8		6×6
22~24	8	8	±0.0180	3.3	+0.2 0	8×7

Dimensions

(mm)

Item No.	D	Standard hole diameters ϕd1 ,ϕd2 H8 (left/right can be freely combined)	L	B	F	G Disk hole diameter	H Plate hole diameter	M	Fastening torque (N·m)
MLC	13	3 4 5	19	5.5	2.5	5.5	6	2	0.42
	16	4 5 6	23.2	7	3	6.8	7.6	2.5	0.9
	20	4 5 6 6.35 8	26	7.5	3.7	8.1	9	2.5	1
	25	5 6 6.35 8 10	30.2	9	4	10.4	12	3	1.7
	32	6 8 10 12 14	41	12.4	6	15	15.2	4	2.5
	40	8 10 12 14 16	47	15.5	7.8	19.5	20.4	5	7
	50	14 16 18 20 22 24	53	18	9	25	26	6	12

・Recommended tolerance of applied axial diameter is h6 and h7 ・Two bolts with hexagonal sockets included

Specifications

Item No.		Allowable torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Allowable paralle misalignment (mm)	Allowable angular misalignment (°)	Allowable end play (mm)	Moment of inertia (kg·m²)	Mass (g)
MLC13	P	0.25	12,000	30	0.4	5	±0.2	8.0×10 -8	5
	C	0.35	12,000	90	0.2	2.5	±0.2		
MLC16	P	0.4	9,000	60	0.6	5	±0.3	2.4×10 -7	9
	C	0.6	9,000	140	0.2	2.5	±0.3		
	M	0.9	7,000	400	015	2	±0.2	2.7×10 -7	10
MLC20	P	0.6	7,600	110	0.6	5	±0.4	7.2×10 -7	14
	C	1.0	7,600	230	0.2	2.5	±0.3		
	M	1.3	6,500	700	0.15	2	±0.2	8.0×10 -7	16
MLC25	P	1.4	6,000	150	0.6	5	±0.6	2.2×10 -6	27
	C	2.2	6,000	450	0.2	2.5	±0.4		
	M	2.8	5,000	1,100	0.15	2	±0.3	2.5×10 -6	30
MLC32	P	2.6	4,800	380	0.6	5	±0.6	6.0×10 -6	60
	C	3.8	4,800	750	0.2	2.5	±0.4		
	M	5.0	4,000	1,500	0.15	2	±0.4	6.6×10 -6	62
MLC40	P	4.4	4,000	650	0.6	5	±±0.8	1.7×10 -5	104
	C	6.8	4,000	900	0.3	2.5	±0.5		
	M	9.0	3,800	4,000	0.2	2	±0.5	1.9×10 -5	110
MLC50	P	7.0	3,500	850	0.6	5	±1	4.6×10 -5	210
	C	11.0	3,500	1,500	0.3	2.5	±0.6		
	M	16.0	3,500	8,000	0.2	2	±0.6	5.0×10 -5	220

●Heat resistance (ambient temperature): polyimide and stainless steel: -40℃ to 200℃, carbon FRP: -25℃ to 85℃
*Note that 1/2 the allowable torque should be used at maximum temperature
●Maximum torque is, as a general rule, twice the normal torque. Select a size equal to or lower than the normal torque and with an instantaneous maximum load torque equal to or smaller than the maximum torque.

MS

M series
Single plate
Set screw style
RoHS2 compatible

Features

●Anti-misalignment, multi-purpose
●Two types of plate materials to suit all applications
・Polyimide - due to its superb flexibility, it has a low reaction force and torque fluctuations, even when misaligned
・Carbon FRP - multi-purpose type, with good balance of characteristics, offering high levels of flexibility, transmission torque,and torsional rigidity

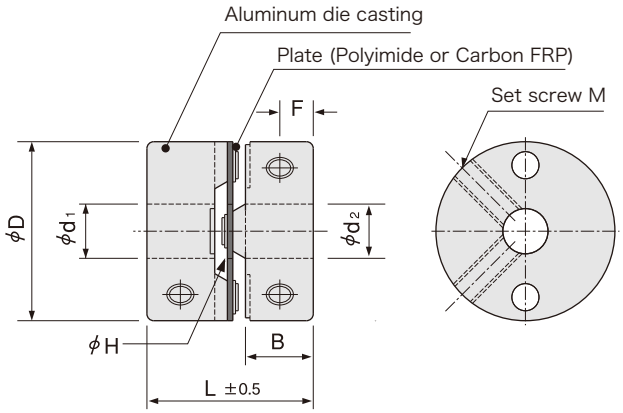
Item No. designation

*Key groove processing
No entry: no processing
K2: 2mm key groove width

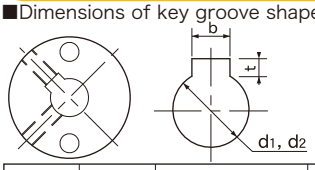
MS 20 P – 5 □ – 6 K2
(φD) C (φd1) (φd2)
Plate material P: Polyimide C: Carbon FRP

・Key groove shape complies with new JIS standards.

Configuration and materials



■Dimensions of key groove shape



Hole diameter d1 ,d2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
6-8	2	2	±0.0125	1.0	+0.1 0	2×2
8~10	3	3		1.4		3×3
10~12	4	4	±0.0150	1.8		4×4
12~17	5	5		2.3		5×5
17~22	6	6		2.8		6×6
22~25	8	8	±0.0180	3.3	+0.2 0	8×7

Dimensions

(mm)

Item No.	D	Standard hole diameters φd1, φd2 H8 (left/right can be freely combined)	L	B	F	H Plate hole diameter	M	Fastening torque (N·m)
MS	10	2 3 4	10.5	4.2	2	4.6	2	0.3
	13	3 4 5 6	13.5	5.5	2.5	6	2	0.3
	16	4 5 6 6.35 8	16.5	7	3	7.6	3	0.7
	20	4 5 6 6.35 8 10	18.4	7.5	3.7	9	3	0.7
	25	5 6 6.35 8 10 12	21.6	9	4	12	4	1.7
	32	6 6.35 8 10 12 14 16	29	12.4	6	15.2	4	1.7
	40	8 10 12 14 16 18 20	35	15.5	7.8	20.4	5	4
	50	14 16 18 20 22 24 25	41	18	9	26	6	7

・Recommended tolerance of applied axial diameter is h6 and h7 ・Four set screws included

Specifications

Item No.		Allowable torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Allowable angular misalignment (°)	Allowable end play (mm)	Moment of inertia (kg·m²)	Mass (g)
MS10	P	0.15	26,000	40	2.5	±0.1	4.0×10^{-8}	2
	C	0.25	32,000	90	1	±0.1		
MS13	P	0.25	20,000	60	2.5	±0.1	7.0×10^{-8}	4
	C	0.35	24,000	200	1	±0.1		
MS16	P	0.4	19,000	120	2.5	±0.1	2.0×10^{-7}	7
	C	0.6	23,000	280	1	±0.1		
MS20	P	0.6	18,000	200	3	±0.2	6.0×10^{-7}	11
	C	1.0	22,000	450	1	±0.1		
MS25	P	1.4	16,000	300	3	±0.3	1.8×10^{-6}	22
	C	2.2	19,000	750	1	±0.2		
MS32	P	2.6	12,000	700	3	±0.3	5.2×10^{-6}	50
	C	3.8	15,000	1,200	1	±0.2		
MS40	P	4.4	8,000	1,200	3	±0.4	1.3×10^{-5}	85
	C	6.8	10,000	1,600	1	±0.2		
MS50	P	7.0	6,000	1,750	3	±0.5	3.6×10^{-5}	170
	C	11.0	8,000	2,800	1	±0.3		

●Heat resistance (ambient temperature): polyimide: -40℃ to 200℃ , carbon FRP: -25℃ to 85℃
*Note that 1/2 the allowable torque should be used at maximum temperature
●Maximum torque is, as a general rule, twice the normal torque. Select a size equal to or lower than the normal torque and with an instantaneous maximum load torque equal to or smaller than the maximum torque

MSC

M series
Single plate
Clamp style

RoHS2 compatible

Features

●Anti-misalignment, multi-purpose
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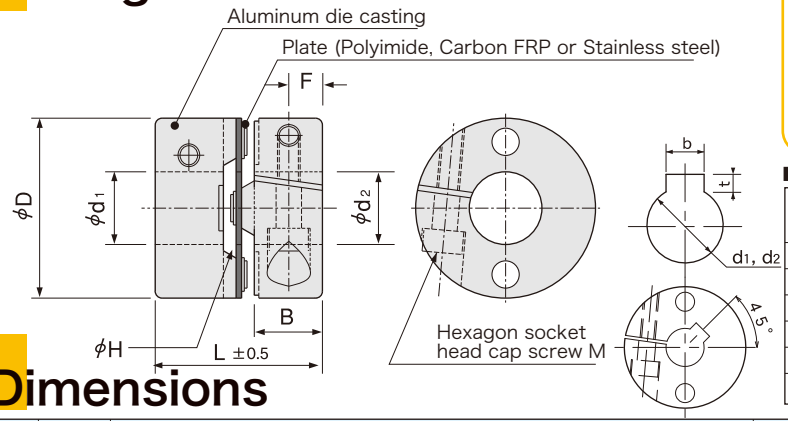
Configuration and materials



Item No. designation

*Key groove processing
No entry: no processing
K3: 3mm key groove width

MSC [P/C/M] 32 (ϕD) – 8 (ϕd1) [K3] – 10 (ϕd2) [ ]

*Plate material
P:Polyimide
C:Carbon FRP
M:Stainless steel (ϕD16over)

・Key groove shape complies with new JIS standards.

■Dimensions of key groove shape

Hole diameter d1 ,d2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
6~8	2	2	±0.0125	1.0	+0.1 0	2×2
8~10	3	3		1.4		3×3
10~12	4	4	±0.0150	1.8		4×4
12~17	5	5		2.3		5×5
17~22	6	6		2.8		6×6
22~24	8	8	±0.0180	3.3	+0.2 0	8×7

(mm)

Dimensions

Item No.	D	Standard hole diameters ϕd1,ϕd2 H8 (left/right can be freely combined)	L	B	F	H Plate hole diameter	M	Fastening torque (N·m)
MSC	13	3 4 5	13.5	5.5	2.5	6	2	0.42
	16	4 5 6	16.5	7	3	7.6	2.5	0.9
	20	4 5 6 6.35 8	18.4	7.5	3.7	9	2.5	1
	25	5 6 6.35 8 10	21.6	9	4	12	3	1.7
	32	6 8 10 12 14	29	12.4	6	15.2	4	2.5
	40	8 10 12 14 16 18	35	15.5	7.8	20.4	5	7
	50	14 16 18 20 22 24	41	18	9	26	6	12

・Recommended tolerance of applied axial diameter is h6 and h7　・Two bolts with hexagonal sockets included

Specifications

Item No.		Allowable torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Allowable angular misalignment (°)	Allowable end play (mm)	Moment of inertia (kg·m²)	Mass (g)
MSC13	P	0.25	12,000	60	2.5	±0.1	7.0×10^{-8}	4
	C	0.35	12,000	200	1	±0.1		
MSC16	P	0.4	9,000	120	2.5	±0.1	2.0×10^{-7}	7
	C	0.6	9,000	280	1	±0.1		
	M	0.9	7,000	800	1	±0.1	2.2×10^{-7}	8
MSC20	P	0.6	7,600	200	2.5	±0.2	6.0×10^{-7}	11
	C	1.0	7,600	450	1	±0.1		
	M	1.3	6,500	1,050	1	±0.1	7.0×10^{-7}	13
MSC25	P	1.4	6,000	300	3	±0.3	1.8×10^{-6}	22
	C	2.2	6,000	750	1	±0.2		
	M	2.8	5,000	2,300	1	±0.2	2.2×10^{-6}	24
MSC32	P	2.6	4,800	700	3	±0.3	5.2×10^{-6}	50
	C	3.8	4,800	1,200	1	±0.2		
	M	5.0	4,000	3,000	1	±0.2	5.6×10^{-6}	53
MSC40	P	4.4	4,000	1,200	3	±0.4	1.3×10^{-5}	85
	C	6.8	4,000	1,600	1	±0.2		
	M	9.0	3,800	6,000	1	±0.2	1.5×10^{-5}	90
MSC50	P	7.0	3,500	1,700	3	±0.5	3.6×10^{-5}	170
	C	11.0	3,500	2,800	1	±0.3		
	M	16.0	3,500	10,000	1	±0.3	3.9×10^{-5}	180

●Heat resistance (ambient temperature): polyimide: -40℃ to 200℃ , carbon FRP: -25℃ to 85℃
*Note that 1/2 the allowable torque should be used at maximum temperature
●Maximum torque is, as a general rule, twice the normal torque. Select a size equal to or lower than the normal torque and with an instantaneous maximum load torque equal to or smaller than the maximum torque.

TSS

NEW

Slim series
Single disk
Set screw type

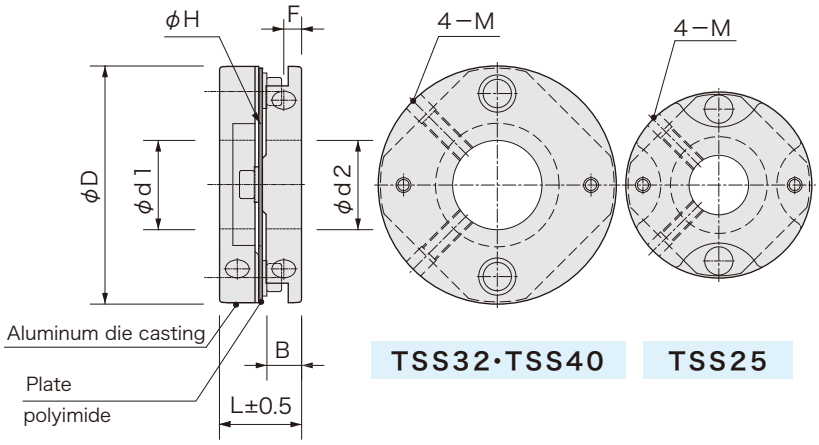
RoHS2 compatible

Features

For more compact design or use in applications where space is limited

- Compact in axial direction, mountable in half the space of conventional couplings or less
- All-round design resists minor misalignment
- Polyimide disk for superb flexibility, producing little counterforce and no phase or torque changes even when off-center

Configuration and materials

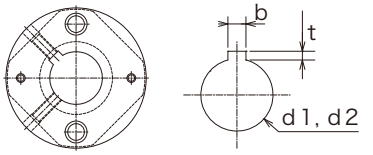


TSS32·TSS40　TSS25

Item No. designation *Key groove processing
No entry: no processing
K2: 2mm key groove width

TSS □ - □ □ - □ □
(ϕD) (ϕd1) (ϕd2)

・Key groove shape complies with new JIS standards.



■Dimensions of key groove shape

Hole diameter d_1, d_2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
6～10	2	2	±0.0125	1.0	+0.1 0	2×2
10～18	3	3		1.4		3×3

※Due to hub material, space, and normal torque size considerations, use a small key

Dimensions

(mm)

Item No.	D	Standard hole diameters ϕd1,ϕd2 H8 (left/right can be freely combined)	L	B	F	H Plate hole diameter	M	Fastening torque (N·m)
TSS25	25	3 4 5 6 8	8.5	3.5	1.8	13	M2	0.2
TSS32	32	5 6 8 10 12 14	11	4.8	2.4	16.6	M2.5	0.4
TSS40	40	10 12 14 16 18	13.5	6	3	22	M3	0.8

Specifications

Item No.	Allowable torque (N·m) / Torsional rigidity (N·m/rad)	Allowable parallel misalignment (mm) / Radial rigidity (N/mm)	Allowable angular misalignment (°) / Bending rigidity (N·m/°)	Allowable end play (mm) / Axial rigidity (N/mm)	Maximum rotating speed (rpm)	Moment of inertia (kg·m²)	Mass (g)
TSS25	1.2 / 400	0.05 / 500	2.5 / 0.007	±0.3 / 16	16,000	6.5×10^{-7}	9
TSS32	1.8 / 700	0.05 / 500	2.5 / 0.008	±0.3 / 10	12,000	2.5×10^{-6}	19
TSS40	3.0 / 1100	0.05 / 800	1.0 / 0.04	±0.4 / 8	8,000	7.2×10^{-6}	32

- Heat resistance (ambient temperature) polyimide: -40°C to 200°C *Note That 1/2 the allowable torque should be used at maximum temperature
- Maximum torque is, as a general rule, twice the normal torque. Select a size equal to or lower than the normal torque and with an instantaneous maximum load torque equal to or smaller than the maximum torque.

TSC

NEW

Slim series
Single disk
Clamp type

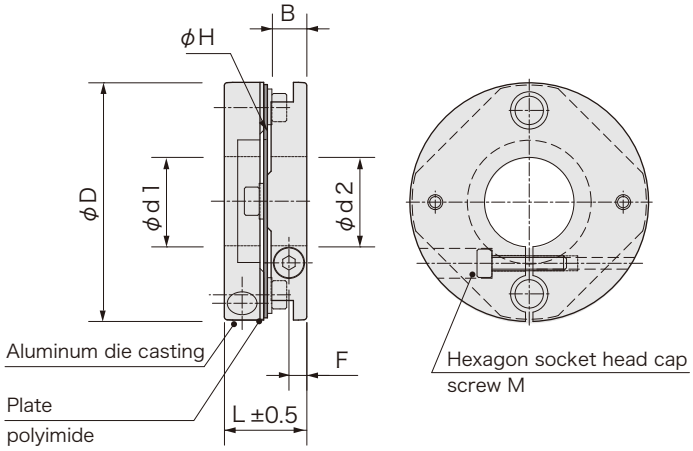
RoHS2 compatible

Features

For more compact design or use in applications where space is limited

- Compact in axial direction, mountable in half the space of conventional couplings or less
- All-round design resists minor misalignment
- Polyimide disk for superb flexibility, producing little counterforce and no phase or torque changes even when off-center

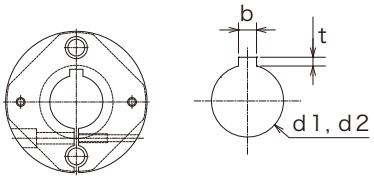
Configuration and materials



Item No. designation *Key groove processing
No entry: no processing
K2: 2mm key groove width

TSC □ - □□ - □□
(ϕD) (ϕd1) (ϕd2)

・Key groove shape complies with new JIS standards.



■Dimensions of key groove shape

Hole diameter d_1, d_2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
6～10	2	2	±0.0125	1.0	+0.1 0	2×2
10～18	3	3		1.4		3×3

※Due to hub material, space, and normal torque size considerations, use a small key

Dimensions

(mm)

Item No.	D	Standard hole diameters ϕd1,ϕd2 H8 (left/right can be freely combined)	L	B	F	H Plate hole diameter	M	Fastening torque (N·m)
TSC32	32	5 6 8 10 12 14	11	4.8	2.4	16.6	M2	0.7
TSC40	40	10 12 14 16 18	13.5	6	3	22	M2.5	1.0

Specifications

Item No.	Allowable torque (N·m) / Torsional rigidity (N·m/rad)	Allowable parallel misalignment (mm) / Radial rigidity (N/mm)	Allowable angular misalignment (°) / Bending rigidity (N·m/°)	Allowable end play (mm) / Axial rigidity (N/mm)	Maximum rotating speed (rpm)	Moment of inertia (kg·m²)	Mass (g)
TSC32	1.8 / 700	0.05 / 500	2.5 / 0.008	±0.3 / 10	12,000	2.5×10^{-6}	19
TSC40	3.0 / 1100	0.05 / 800	1.0 / 0.04	±0.4 / 8	8,000	7.2×10^{-6}	32

- Heat resistance (ambient temperature) polyimide: -40°C to 200°C *Note That 1/2 the allowable torque should be used at maximum temperature
- Maximum torque is, as a general rule, twice the normal torque. Select a size equal to or lower than the normal torque and with an instantaneous maximum load torque equal to or smaller than the maximum torque.

KLC

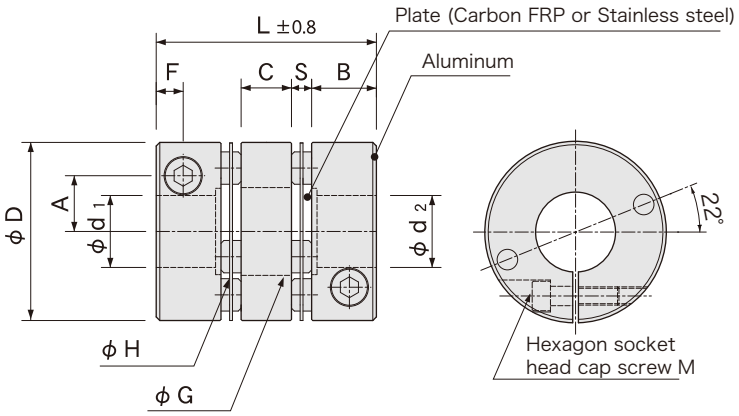
K series
Double plates
Clamp style

RoHS2 compatible

Features

●Strong structure achieved by press-fitting assembly of plate and flanged collar, and by insertion into hub
●Stronger axial joint torque achieved by using larger clamp bolts
●You can choose high-durability carbon plate for cases where misalignment (parallel and angular misalignments, end play and vibration) cannot be restrained to low levels

Configuration and materials



Item No. designation

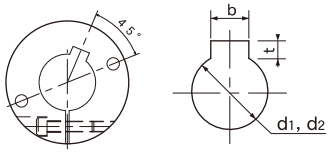
Key groove processing
No entry: no processing
K6: 6mm key groove width

KLC 80 C – 20 K6 – 25 □
(ϕD) M (ϕd1) (ϕd2)

*Plate material C: Carbon FRP
M: Stainless steel

·Key groove shape complies with new JIS standards.

■Dimensions of key groove shape



Hole diameter d1 ,d2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
18~22	6	6	±0.0150	2.8	+0.1 0	6×6
22~30	8	8	±0.0180	3.3	+0.2 0	8×7
30~35	10	10				10×8

Dimensions

(mm)

Item No.	D	Standard hole diameters ϕd1, ϕd2 H8 (left/right can be freely combined)	L	F	B	C	G Disk hole diameter	H Plate hole diameter	A	M	Fastening torque (N·m)
KLC60	59.5	18 20 22 25 28	64	8	19	14	28.5	30.4	20.5	M6	13
KLC70	69.5	20 22 25 28 30 32	71.4	9	21	15	33	33.6	25	M6	13
KLC80	79.5	20 22 25 28 30 32 35	94	10	29	20	38	36.4	28	M8	30

Specifications

Item No.		Allowable torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Allowable parallel misalignment (mm)	Allowable angular misalignment (°)	Allowable end play (mm)	Radial rigidity (Shearing Rigidity) (N/mm)	Axial rigidity (N/mm)	Moment of inertia (kg·m²)	Mass (g)
KLC60	C	55	10,000	15,000	0.8	4	1.0	290	80	1.6×10^{-4}	360
	M	60	10,000	17,000	0.25	1.5	0.3	250	50	1.9×10^{-4}	380
KLC70	C	60	10,000	20,000	1.0	4	1.0	250	65	4.0×10^{-4}	600
	M	80	10,000	30,000	0.3	1.5	0.3	240	45	4.4×10^{-4}	630
KLC80	C	80	10,000	40,000	1.2	4	1.2	250	55	9.0×10^{-4}	1,000
	M	100	10,000	50,000	0.45	1.5	0.4	240	40	9.3×10^{-4}	1,040

●Heat resistance (ambient temperature): stainless steel: -40°C to 200°C,carbon FRP: -25°C to 85°C
*Note that 1/2 the allowable torque should be used at maximum temperature

KSC

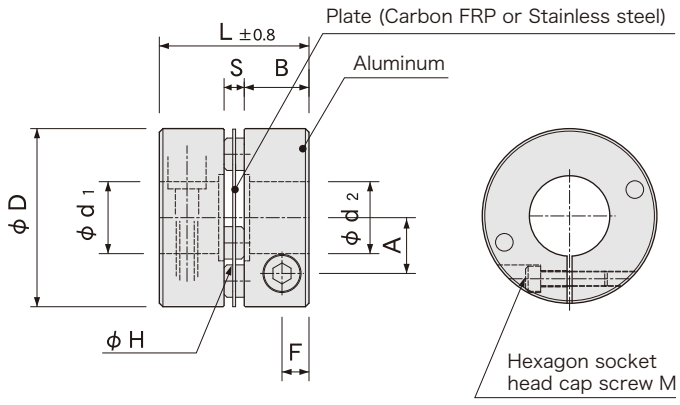
K series
Single plate
Clamp style

RoHS2 compatible

Features

●Strong structure achieved by press-fitting assembly of plate and flanged collar, and by insertion into hub
●Stronger axial joint torque achieved by using larger clamp bolts
●You can choose high-durability carbon plate for cases where misalignment (parallel and angular misalignments, end play and vibration) cannot be restrained to low levels

Configuration and materials



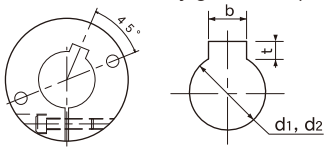
Item No. designation Key groove processing
No entry: no processing
K6: 6mm key groove width

KSC 60 [C/M] – 18 [ ] – 20 K6
(ϕD) (ϕd1) (ϕd2)

*Plate material C: Carbon FRP
M: Stainless steel

・Key groove shape complies with new JIS standards.

■Dimensions of key groove shape



Hole diameter d1 ,d2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
18~22	6	6	±0.0150	2.8	+0.1 0	6×6
22~30	8	8	±0.0180	3.3	+0.2 0	8×7
30~35	10	10				10×8

Dimensions

(mm)

Item No.	D	Standard hole diameters ϕd1 ,ϕd2 H8 (left/right can be freely combined)	L	F	B	H Plate hole diameter	A	M	Fastening torque (N·m)
KSC60	59.5	18 20 22 25 28	44	8	19	30.4	20.5	M6	13
KSC70	69.5	20 22 25 28 30 32	49.2	9	21	33.6	25	M6	13
KSC80	79.5	20 22 25 28 30 32 35	66	10	29	36.4	28	M8	30

Specifications

Item No.		Allowable torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Allowable parallel misalignment (mm)	Allowable angular misalignment (°)	Allowable end play (mm)	Axial rigidity (N/mm)	Moment of inertia (kg·m²)	Mass (g)
KSC60	C	55	10.000	30,000	0.05	2	0.5	140	1.3×10^{-4}	260
	M	60	10.000	34,000	0.02	0.8	0.2	100	1.4×10^{-4}	270
KSC70	C	60	10.000	38,000	0.06	2	0.6	120	3.0×10^{-4}	420
	M	80	10.000	45,000	0.02	0.8	0.2	90	3.1×10^{-4}	440
KSC80	C	80	10.000	55,000	0.08	2	0.8	110	6.4×10^{-4}	720
	M	100	10.000	70,000	0.02	0.8	0.2	80	6.7×10^{-4}	750

●Heat resistance (ambient temperature): stainless steel: -40℃ to 200℃,carbon FRP: -25℃ to 85℃
*Note that 1/2 the allowable torque should be used at maximum temperature

C1

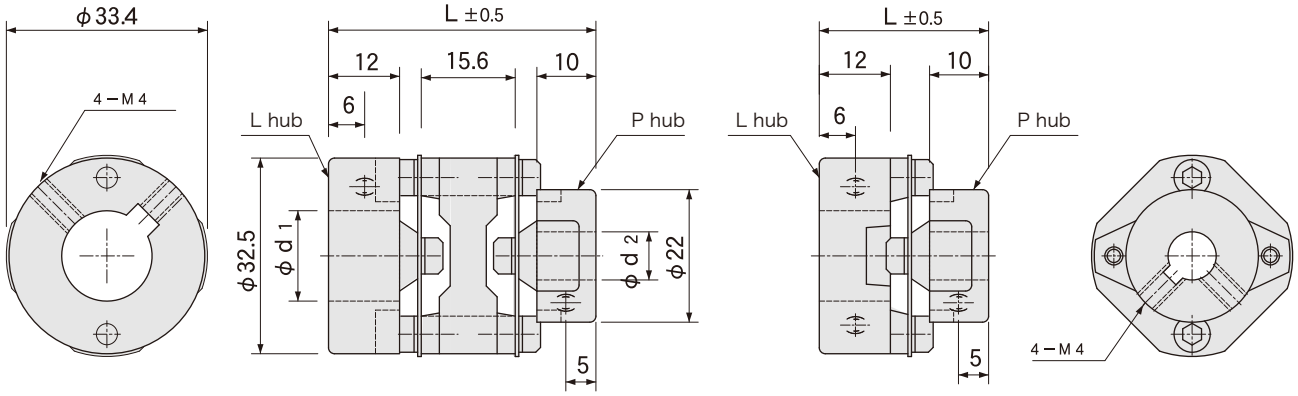
Mini-Carbon
Set screw style

RoHS2 compatible

Features

●Wide range combination of different diameters: ϕ6 to ϕ16
●Hub and disk made of high-tensile-strength die-cast aluminum with a nickel-plating finish
●Plate is made of carbon FRP,in three selectable thicknesses: 0.4, 0.6, and 0.8 (mm)
●Tolerances for parallel and angular misalignments,vibration,and durability,are higher than for metal-plate couplings

Configuration and materials



C1( )S: (Double plates)

C1( )N: (Single plate)

Item No. designation

*Key groove processing
No entry: no processing
K4: 4mm key groove width

C1 | CF / CG / CH | S / N | – | 8 (ϕd1) | K4 | – | 10 (ϕd2) |

CF: Carbon FRP/0.4
CG: Carbon FRP/0.6
CH: Carbon FRP/0.8

S: Double plates
N: Single plate

・Key groove shape complies with new JIS standards.

Dimensions

(mm)

Item No.	Standard hole diameters ϕd1,ϕd2 H8 (left/right can be freely combined)		L	Hub combination
C1( )S (Double plates)	(P hub)	(L hub)	42	P+P
			44	L+P
	6 8	9.53 10 12 14 15 16	46	L+L
C1( )N (Single plate)			26	P+P
			28	L+P
			30	L+L

・Additional hole processing can be done (ϕ6 to ϕ20)

■Dimensions of key groove shape

Hole diameter d1,d2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
6~8	2	2	±0.0125	1.0	+0.1 0	2×2
8~10	3	3		1.4		3×3
10~12	4	4	±0.0150	1.8		4×4
12~17	5	5		2.3		5×5
17~20	6	6		2.8		6×6

Specifications

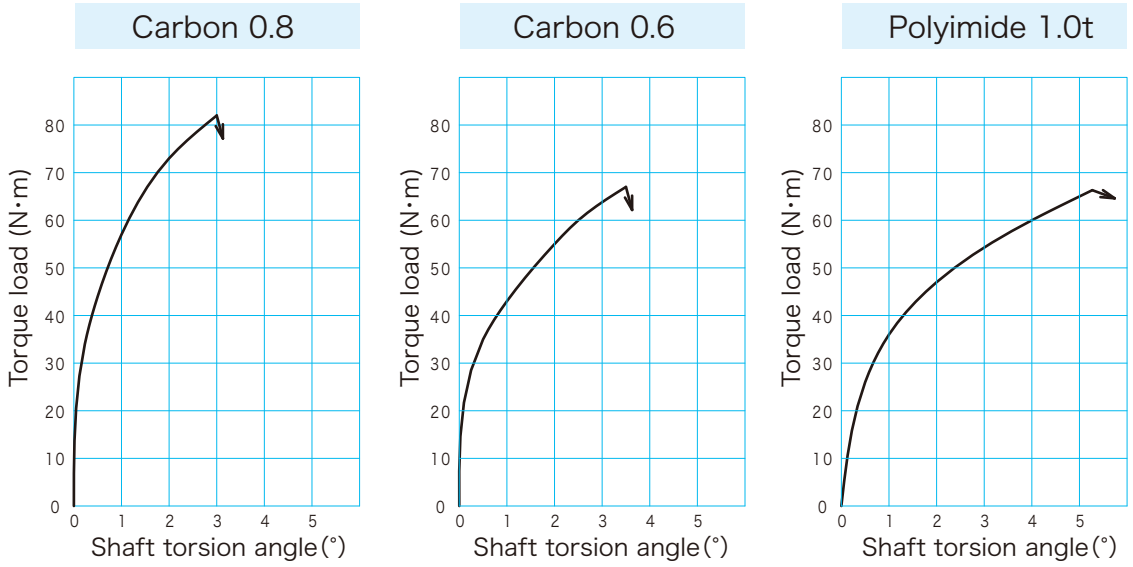
	Item No.	Thickness of plate (mm)	Allowable torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Allowable parallel misalignment (mm)	Allowable angular misalignment (°)	Allowable end play (mm)	Allowable ambient temperature (℃)	Moment of inertia (kg·m²)	Mass (g)
Double plates	C1CFS	0.4	4.5	8,000	600	0.6	4	0.5	-30~75	5×10^{-6}	50
	C1CGS	0.6	6.5		950	0.4	3	0.4		7×10^{-6}	70
	C1CHS	0.8	8.5		1,500	0.3	2.5	0.3		9×10^{-6}	85
Single plate	C1CFN	0.4	4.5		1,000	0.05	2.5	0.25		3×10^{-6}	30
	C1CGN	0.6	6.5		1,600	0.05	2	0.2		5×10^{-6}	45
	C1CHN	0.8	8.5		2,400	0.05	1.5	0.15		6×10^{-6}	60

C2 coupling

C2 series, for customers focused on durability and without severe space restrictions

- Double disk couplings have large spaces between disks, so they have much greater durability when subjected to misalignment (eccentricity, declination).
- The disks are made of resin (polyimide/carbon FRP), so they do not experience the fatigue breaking caused by flexure that metal disks do.
- When unexpectedly large torques are applied the disks first deform, undergoing severe warping, which makes them resistant to breakage. Even in the event of major deformation or breakage, the disk unit can be replaced.(* Contact us regarding disk unit replacement)
- The hub and intermediate shaft are die-cast aluminum alloy, producing a small moment of inertia that enables these couplings to be used with high-speed servo motors.
- The strength of the shaft binding force is a key point for taper locked couplings. They do not require the processing of shafts, such as the cutting of key grooves, nor do they cause damage to shafts.

Torque vs. torsion angle static test results



●Product lifespans are considered semi-permanent provided that torque tolerances are not exceeded.

● For uses that involve rotational vibration or servo motor usage, the amount of torque produced by rotational angular acceleration and moment of inertia must be taken into consideration.

C2L

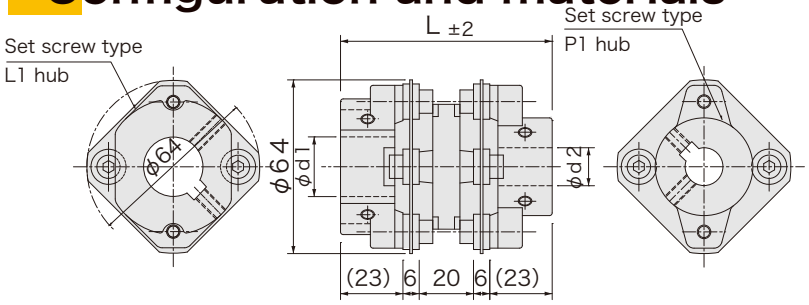
C2 series
Double disk

RoHS2 compatible

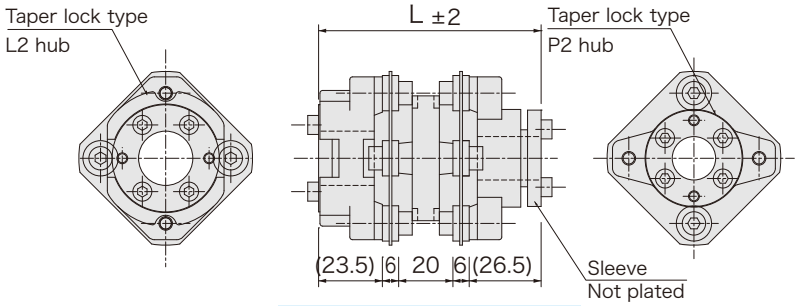
Features

- Disk material made up of polyimide, for its high flexibility, and carbon FRP, for its high torque capabilities
- No key groove or other shaft processing necessary for taper lock type couplings
- Easy positioning for taper lock type coupling
- Set screw type and taper lock type couplings can be combined freely

Configuration and materials



Set screw type



Taper lock type

Item No. designation

Note) For set screw types only
*Key groove processing
No entry: no processing
K6: 6mm key groove width

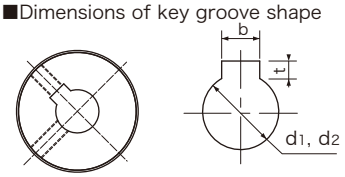
C2L [CG / CH / PJ] - [TL] [15] [ ] - [ ] [20] [K6]
([15]: φd1) ([20]: φd2)

CG: Carbon 0.6
CH: Carbon 0.8
PJ: Polyimide 1t

[TL]: Screw type
No entry: Set screw type
TL: Taper lock type

Key groove shape compliant with new JIS standard.

■Dimensions of key groove shape



Hole diameter d1,d2	K	b		t		Nominal dimension of keys b×h
		Basic dimensions	Tolerance	Basic dimensions	Tolerance	
14~17	5	5	±0.0150	2.3	+0.1 0	5×5
17~22	6	6		2.8		6×6
22~30	8	8	±0.0180	3.3	+0.2 0	8×7

Dimensions

(mm)

	Standard hole diameters φd1,φd2 H8 (left/right can be freely combined)		Hub configuration	L	M	Fastening torque (N·m)
Set screw type	(P1hub) 14,15,16,18	(L1hub) 20,22,24,25,28,30	P1+P1	78	M5	1.7
			P1+L1			
			L1+L1			
Taper lock type	(P2hub) 14,15,16	(L2hub) 18,20,25	P2+P2	85	M4	2.0
			P2+L2	82		
			L2+L2	79		
Mixed type	(P1hub) 14,15,16,18	(L1hub) 20,22,24,25,28,30	P1+P2	81.5		
			P2+L1			
	(P2hub) 14,15,16	(L2hub) 18,20,25	P1+L2	78.5		
			L1+L2			

● Precautions regarding tightening
・After inserting the shaft in the coupling, tighten the locking bolts. Use a torque wrench to tighten locking bolts.
・Only use the locking bolts supplied with the coupling.
・Only perform work when the device is completely stopped.
● Removal
・Only perform work when the device is completely stopped.
・Tighten the locking bolts in order in circumferential direction.
・Insert bolts into the removal bolt holes and tighten equally.
・Repeat the tightening procedure to retighten bolts.

＊How to tighten taper locks

①After completing positioning, use a torque wrench to tighten the locking bolts on opposing diagonal sides, first lightly (to roughly 1/4 of the specified tightening torque).
②Increase the tightening torque, tightening each bolt again (to roughly 1/2 the specified tightening torque).
③Tightening each bolt again the specified tightening torque.
④Finally, tighten the locking bolts in order in circumferential direction.

Specifications

Item No.	Disk material	Allowable torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Allowable parallel misalignment (mm)	Allowable angular misalignment (°)	Moment of inertia (g·cm²)	Mass (g)
C2LPJ	Polyimide1t	20	4,000	2,000	0.8	5	500~900	200~350
C2LCG	Carbon0.6t	30	6,000	3,500	0.5	4		
C2LCH	Carbon0.8t	40	8,000	5,000	0.4	3		

●Hole processing can be performed separately (for set screw types only)

C2S

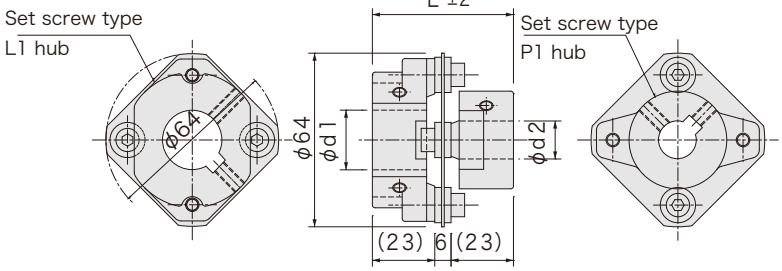
C2 series
Single disk

RoHS2 compatible

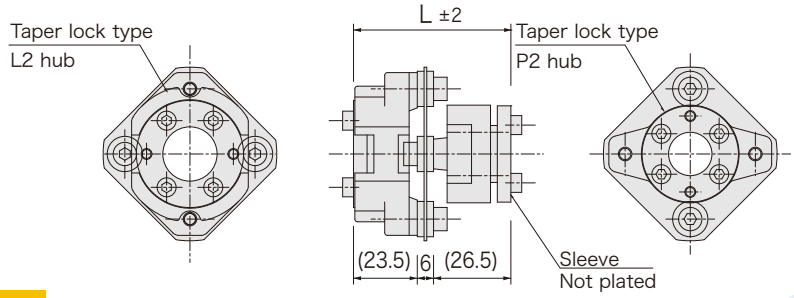
Features

- Disk material made up of polyimide, for its high flexibility, and carbon FRP, for its high torque capabilities
- No key groove or other shaft processing necessary for taper lock type couplings
- Easy positioning for taper lock type coupling
- Set screw type and taper lock type couplings can be combined freely

Configuration and materials



Set screw type



Taper lock type

Item No. designation

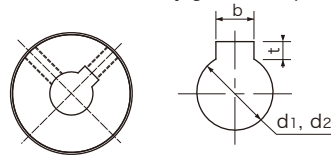
Note) For set screw types only
*Key groove processing
No entry: no processing
K6: 6mm key groove width

C2S [CG / CH / PJ] - [TL] [15] [ ] - [ ] [20] [K6]

- [CG / CH / PJ]: CG: Carbon 0.6, CH: Carbon 0.8, PJ: Polyimide 1t
- [15]: (φd1)
- [ ]: Screw type — No entry: Set screw type; TL: Taper lock type
- [ ]: (φd2)

Key groove shape compliant with new JIS standard.

■Dimensions of key groove shape



Hole diameter d1, d2	K	b		t		Nominal dimension of keys b×h
		Basic dimensions	Tolerance	Basic dimensions	Tolerance	
14~17	5	5	±0.0150	2.3	+0.1 0	5×5
17~22	6	6		2.8		6×6
22~30	8	8	±0.0180	3.3	+0.2 0	8×7

Dimensions

(mm)

	Standard hole diameters φd1, φd2 H8 (left/right can be freely combined)		Hub configuration	L	M	Fastening torque (N·m)
Set screw type	(P1hub) 14,15,16,18	(L1hub) 20,22,24,25,28,30	P1+P1	52	M5	1.7
			P1+L1			
			L1+L1			
Taper lock type	(P2hub) 14,15,16	(L2hub) 18,20,25	P2+P2	59	M4	2.0
			P2+L2	56		
			L2+L2	53		
Mixed type	(P1hub) 14,15,16,18 (P2hub) 14,15,16	(L1hub) 20,22,24,25,28,30 (L2hub) 18,20,25	P1+P2	55.5		
			P2+L1			
			P1+L2	52.5		
			L1+L2			

● Precautions regarding tightening
・After inserting the shaft in the coupling, tighten the locking bolts.
Use a torque wrench to tighten locking bolts.
・Only use the locking bolts supplied with the coupling.
・Only perform work when the device is completely stopped.
● Removal
・Only perform work when the device is completely stopped.
・Tighten the locking bolts in order in circumferential direction.
・Insert bolts into the removal bolt holes and tighten equally.
・Repeat the tightening procedure to retighten bolts.

＊How to tighten taper locks

①After completing positioning, use a torque wrench to tighten the locking bolts on opposing diagonal sides, first lightly (to roughly 1/4 of the specified tightening torque).
②Increase the tightening torque, tightening each bolt again (to roughly 1/2 the specified tightening torque).
③Tightening each bolt again the specified tightening torque.
④Finally, tighten the locking bolts in order in circumferential direction.

Specifications

Item No.	Disk material	Allowable torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Allowable parallel misalignment (mm)	Allowable angular misalignment (°)	Moment of inertia (g·cm²)	Mass (g)
C2SPJ	Polyimide1t	20	4,000	4,000	0.2	3	300~600	150~250
C2SCG	Carbon0.6t	30	6,000	6,000	0.15	2		
C2SCH	Carbon0.8t	40	8,000	9,000	0.1	1.5		

●Hole processing can be performed separately (for set screw types only)

CU

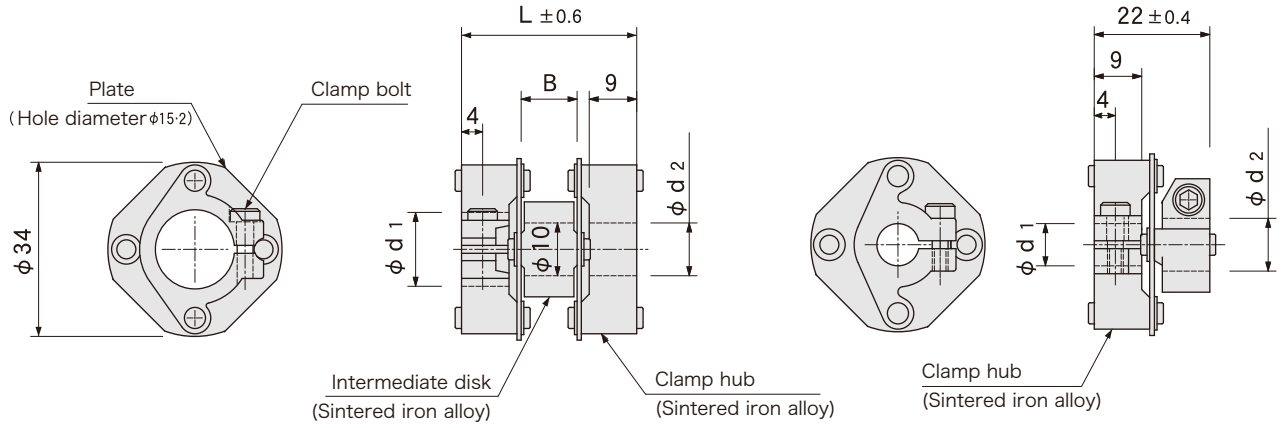
Mini-Clamp
Clamp style

RoHS2 compatible

Features

- Clamp-style couplings, available in a wide range combination of diameters: ϕ4 to ϕ13
- Hub and disk are made of sintered iron alloy for low cost
- Higher tolerances for parallel and angular misalignments, and vibration than metal-plate couplings
- Polyimide plate-type is particularly strong against misalignment, with good heat resistance and high electrical insulation

Configuration and materials



CU ( ) □S/M/L□ (Double plates)

CU ( ) □N□(Single plate)

Dimensions

(mm)

Item No.	Standard hole diameters ϕd_1,ϕd_2 H8	L	B
CU( )□N□	4 6 8 10 13	22	-
CU( )□S□		27.5	5
CU( )□M□		30	7.5
CU( )□L□		32.5	10

When the hub hole diameter is ϕ13, the intermediate disk becomes only L size and it becomes screw assembly.

Item No. designation

CU [P/CF/CG] [8] (ϕd_1) [N/S/M/L] [10] (ϕd_2)

Plate Materials
P: Polyimide
CF: Carbon FRP/0.4mm
CG: Carbon FRP/0.6mm

Length of intermediate disk [B] mm
N: None (Single plate)
S: 5
M 7.5
L: 10

Specifications

Item No.	Plate material	Allowable torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Allowable parallel misalignment (mm)	Allowable angular misalignment (°)	Allowable ambient temperature (°C)	Electrical insulation	Moment of inertia (kg·m²)	Mass (g)	Fastening torque of clamp bolt (N·m)
CUP	P Polyimide 0.4t	1.5	6,000	100 (180)	0.6 (0.1)	7 (3.50	-40~200	High	4×10^{-8} $(3\times10)^{-8}$	60 (40)	2.2
CUCF	CF Carbon FRP0.4t	3		500 (850)	0.4 (0.05)	4 (2)	-25~85	None			
CUCG	CG Carbon FRP0.6t	5		700 (1200)	0.3 (0.05)	3 (1.5)	-25~85	None			

・Please conform to the clamp bolt fastening torque values listed in the above table.
・Value in ( ) is for single plate type.

CUH

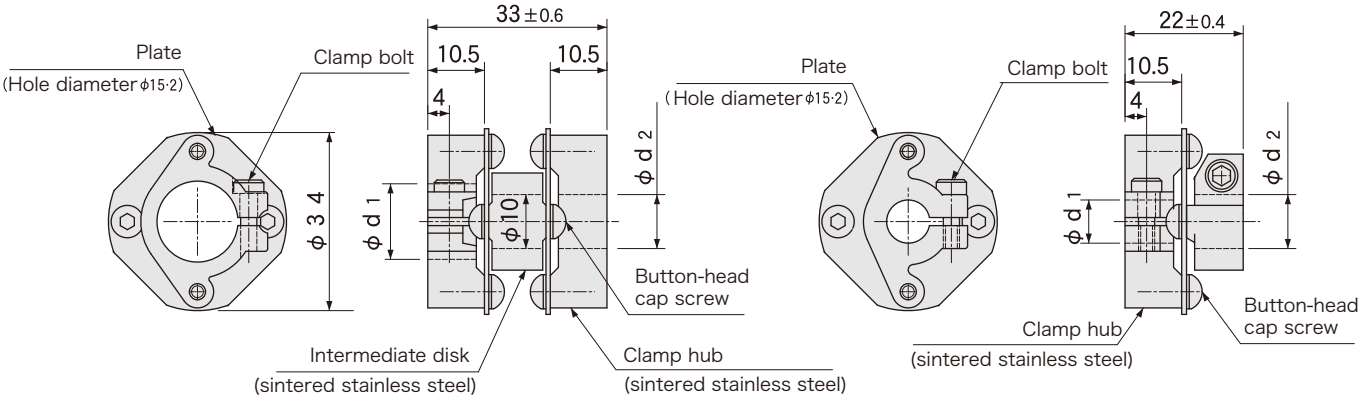
Mini-Clamp
Clamp style

RoHS2 compatible

Features

- Clamp-style couplings, available in a wide range combination of diameters:φ6 toφ14
- Hub and disk are made of sintered stainless steel for high working torques
- Higher tolerances for parallel and angular misalignments, and vibration than metal-plate couplings
- Polyimide plate-type is particularly strong against misalignment, with good heat resistance and a high electrical insulation

Configuration and materials



CUHL (Double plates)

CUHS (Single plate)

Dimensions

(mm)

	Item No.	Standard hole diameters φd1, φd2 H8	Plate materials
Double	CUHLP	6 8 10 12 13 14	Polyimide (0.9t)
Double	CUHLC		Carbon FRP (0.8t)
Single	CUHSP		Polyimide (0.9t)
Single	CUHSC		Carbon FRP (0.8t)

Item No. designation

L: Double plates
S: Single plate

CUH [L/S] [P/C] – [8] – [10]
(φd1) (φd2)

P: Polyimide/0.9
C: Carbon FRP/0.8

Specifications

	Item No.	Allowable torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Allowable parallel misalignment (mm)	Radial rigidity (Shearing rigidity) (N/mm)	Allowable angular misalignment (°)	Bending rigidity (N·m/rad)	Allowable end play (mm)	Axial rigidity (N/mm)	Allowable ambient temperature (℃)
Double	CUHLP	4	6,000	800	0.6	70	6	2	0.9	0.7	-40~200
Double	CUHLC	7	8,000	1,800	0.3	150	3	5.2	0.4	1.1	-25~85
Single	CUHSP	4	6,000	1,300	0.15	1,600	3	3.5	0.5	1.2	-40~200
Single	CUHSC	7	8,000	2,400	0.07	2,300	1.5	7	0.25	2.1	-25~85

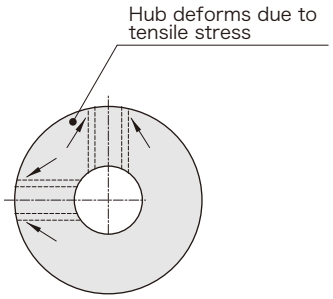
	Item No.	Electrical insulation	Moment of inertia (kg·m²)	Fastening torque of clamp bolt (N·m)	Mass (g)
Double	CUHLP	High	4×10^{-8}	2.4 (φd≦8)	60
Double	CUHLC	None		2.2 (φd=10)	
Single	CUHSP	High	3×10^{-8}	2 (φd≧12)	40
Single	CUHSC	None			

・Please conform to the clamp bolt fastening torque values listed in the above table.

Plastic couplings

Actions to prevent set screws from becoming loose

For the set screws of plastic couplings it is necessary to observe the rated values for the fastening torque. This is because the margins for the strength of screws are less than those for metal products. On the other hand, the hub of the coupling deforms elastically (as shown in the figure) as the set screws are fastened, and the overall hub functions to stop the set screws from becoming loose, like a spring washer. For this reason, the set screws do not become loose more easily than in the case of metal products. However, for special applications that require even stronger suppression of loosening, it is effective to use an adhesive substance, such as a thread lock.



Durability of plastic couplings

Figure 2 shows relationship between life of couplings and load (torque, parallel misalignment or angular misalignment) on the results of durability tests. Durability under complex operating conditions can be estimated by referring to our database of past durability tests. Please contact us if you require such data.

Note: The torque, parallel misalignment and angular misalignment are displayed as percentage values, by taking the catalog value as 100%.

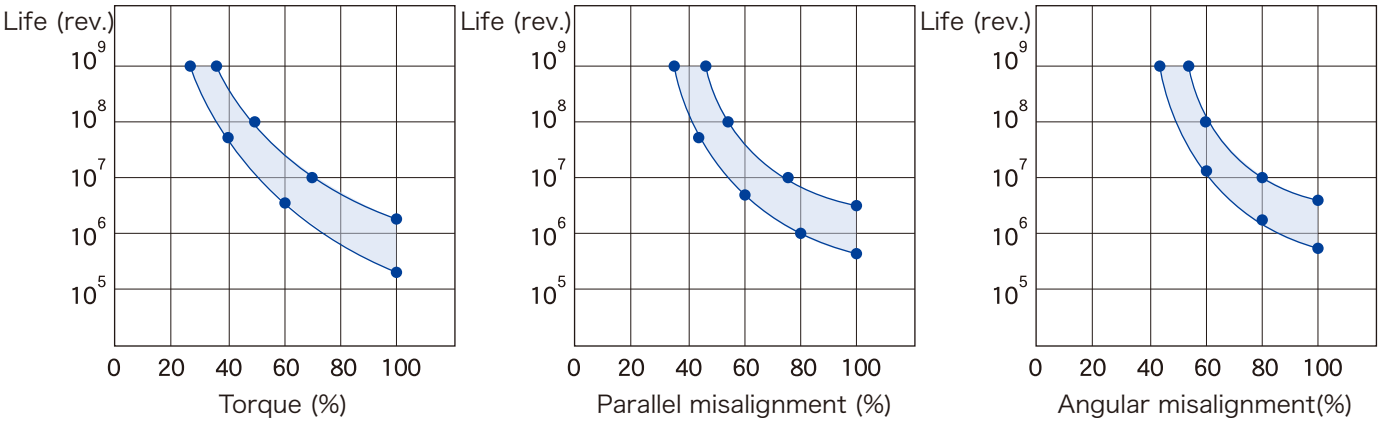


Figure 2 Life of Plastic couplings

Life testing results

Item No.	Torque (N・m)	Parallel misalignment (mm)	Angular misalignment (deg)	End play (mm)	Rotating speed (rpm)	Total number of revolutions	Test result
UJ6-6,UJ5-5,UJ4-4 UJ3-3,UJ2-2	0	0	3	0	2,950	3.0×10^{8}	Non-fractured
GJ8-8,GJ6-6,GJ5-5 GJ4-4,GJ3-3	Encorder	0.2	3			10.0×10^{8}	
GJ6-6	0.2	0	2.5			2.0×10^{8}	
		0.25	0				
		0	5			5.6×10^{8}	Fractured
		0.5	0			2.6×10^{8}	
	0.05	0.25	5	0.5	6,000	1.7×10^{8}	
GJ8-8		0	3	0		10.0×10^{8}	Non-fractured
		0.1	4			3.0×10^{8}	Fractured
			5			0.8×10^{8}	
GJ10-10	0.15	0.1	4		2,600	10.0×10^{8}	Non-fractured
		0.3				3.0×10^{8}	Fractured
G2J5-3	0.1	0.1	2.5		2,950	1.1×10^{8}	Non-fractured
	0.2	0.2	5			1.0×10^{8}	
G2J5-3-P (Material: POM)	0.1	0.1	2.5			1.1×10^{8}	
	0.2	0.2	5			0.5×10^{8}	Fractured

UJ

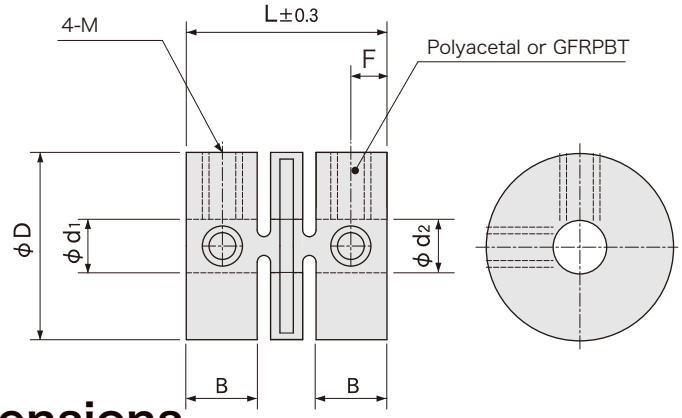
Plastic
Single plate (equivalent)
Set screw style

RoHS2 compatible

Features

- ●Miniature coupling, utilizing the fatigue resistance of engineering plastics
- ●Light, smooth rotational transmission, thanks to excellent bending fatigue performance superior to that of metal products made of aluminum alloys
- ●Suitable for light-load transmissions, for devices such as rotary switchers,encoders,and small motors
- ●Suitable for rotational transmissions requiring electrical insulation

Configuration and materials



※Cautions when Using Plastic Couplings

- Since they are made of plastic, their strength is inferior to that of metal products. So please take care when handling.
- Take care not to exceed the rated value of the fastening torque (given in the table) for set screws. Otherwise the thread may be damaged, resulting in axial slip.
- Make sure to insert the shaft up to dimension"B"in the dimensional diagram, but do not insert it beyond the slit.
- In your design, make sure that the peak torque values do not exceed the allowable torque even if the peak is transitional load such as motor
- starting or stopping.
  You should ensure that the safety rate for the allowable values in the table is two or more on
- continuous and high speed condition(≧3000 rpm).
  Use two UJ Series couplings to connect shafts having a large parallel misalignment.

Dimensions

(mm)

Item No.	d1	Standard hole diameters ϕd2 (left/right can be freely combined)	D	L	F	B	Set screw	
							M	Fastening torque (N·m)
UJ	2	2	8	9	1.6	3.2	2	0.05
	2.5	3	12	14.5	2.6	5.3	3	0.18
	3	3	12	14.5	2.6	5.3	3	0.18
	3.2	3.2	12	14.2	2.6	5.3	3	0.2
	4	3 4	14	15	2.6	5.2	3	0.2
	5	5	14	15	2.6	5.2	3	0.2
	6	2.4 3 3.2 4 5 6	15	15.5	2.8	5.5	3	0.2
	8	4 5 6 8	18	17.8	2.6	5.5	3	0.25

Specifications

Item No. (d1–d2)		Allowable torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Allowable parallel misalignment (mm)	Allowable angular misalignment (°)	Allowable end play (mm)	Moment of inertia (kg·m²)	Mass (g)	Materials
UJ	2-2	0.1	4,000	2.5	0.05	3	±0.15	0.5×10^{-8}	0.7	Polyacetal / GFRPBT
	2.5-3 3-3	0.3	4,000	8	0.1	4	±0.2	0.4×10^{-7}	2.3	
	3.2-3.2A	0.4	4,000	8	0.1	4	±0.2	0.4×10^{-7}	2.2	
	4-3 4-4	0.5	5,000	9	0.1	5	±0.3	0.6×10^{-7}	2.4	
	5-5	0.6	5,000	9	0.1	5	±0.3	0.6×10^{-7}	2.7	
	6-2.4 6-3	0.6	6,000	9	0.1	5	±0.3	0.8×10^{-7}	3	
	6-3.2 6-4 6-5	0.6	6,000	9	0.1	5	±0.3	0.8×10^{-7}	3	
	6-6	0.6	6,000	9	0.1	5	±0.3	0.8×10^{-7}	3	
	8-4 8-5 8-6 8-8	0.9	6,000	25	0.2	5	±0.3	2.5×10^{-7}	4	

●Heat resistance (ambient temperature): polyacetal : -20℃ to 60℃ / GFRPBT: -30℃ to 85℃
*Note that 1/2 the allowable torque should be used at maximum temperature

GJ

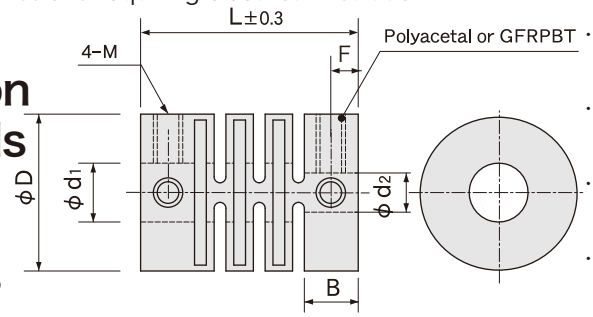
Plastic
Double plates(equivalent)
Set screw style

RoHS2 compatible

Features

- ●More allowable misalignment at single use due to longer slits than UJ Series
- ●Both parallel and angular misalignment are readily absorbed in a single unit
- ●Smooth rotary transmission in a compact design
- ●Suitable for rotary transmissions requiring electrical insulation

Configuration and materials



※Cautions when Using Plastic Couplings

- Since they are made of plastic, their strength is inferior to that of metal products. So please take care when handling.
- Take care not to exceed the rated value of the fastening torque (given in the table) for set screws. Otherwise the thread may be damaged, resulting in axial slip.
- Make sure to insert the shaft up to dimension "B" in the dimensional diagram, but do not insert it beyond the slit.
- In your design, make sure that the peak torque values do not exceed the allowable torque even if the peak is transitional load such as motor starting or stopping.
- You should ensure that the safety rate for the allowable values in the table is two or more on continuous and high speed condition(≧3000 rpm).
- Use one GJ or G2J series coupling to connect shafts having a small parallel misalignment.

Dimensions

(mm)

Item No.	d_1	Standard hole diameters ϕd_2 (left/right can be freely combined)	D	L	F	B	Set screw	
							M	Fastening torque (N·m)
GJ	1.5	1.5	9	11.4	1.6	3.2	2	0.08
	1.5	2.5	10	11.8	1.7	3.2	2	0.08
	2	2	9	13.2	1.6	3.2	2	0.08
	3	3	12	20	2.6	5.1	3	0.15
	4	4	13	21	2.7	5.2	3	0.2
	5	5	14	21	2.7	5.2	3	0.2
	6	6	15	22	2.8	5.4	3	0.25
	8	8	19	24	3.5	7	4	0.4
	10	10	22	26	3.6	7.1	4	0.5
G2J	4	2.5 3 3.2 4	13.5	21	2.7	5.3	3	0.25
	5	3 3.2 4 5	15	20.5	2.7	5.3	3	0.25
	6	3 3.2 4 5 6	16	21	2.7	5.5	3	0.3
	8	4 5 6 8	20	24	4	7.4	4	0.45
GJK	9.53	9.53	25	32.2	3.8	7.4	4	0.65
	10	10	25	32.2	3.8	7.4	4	0.65
	12	12	28	34.4	3.9	7.5	4	0.8

Specifications

Item No.	(d_1-d_2)	Allowable torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Allowable parallel misalignment (mm)	Allowable angular misalignment (°)	Allowable end play (mm)	Moment of inertia ($kg·m^2$)	Mass (g)	Materials
GJ	1.5-1.5	0.16	4,000	4	0.2	3	±0.3	1.0×10^{-8}	0.9	GFRPBT
	1.5-2.5	0.22	4,000	5	0.2	3	±0.3	1.4×10^{-8}	1.1	
	2-2	0.18	4,000	3.5	.3	4	±0.3	1.0×10^{-8}	1	
	3-3	0.35	4,000	8	0.4	5	±0.3	4.5×10^{-8}	2.5	
	4-4	0.5	4,000	8	0.4	5	±0.4	7.0×10^{-8}	3.1	
	5-5	0.55	5,000	10	0.5	5	±0.4	9.0×10^{-8}	3.3	
	6-6	0.8	6,000	16	0.5	5	±0.4	1.2×10^{-7}	3.9	
	8-8	1.2	8,000	40	0.5	5	±0.4	3.9×10^{-7}	7.3	
	10-10	1.7	10,000	60	0.5	5	±0.4	7.0×10^{-7}	10	
G2J	4-d	0.5	5,000	6	0.4	5	±0.4	8.0×10^{-8}	3.4	
	5-d	0.6	6,000	12	0.4	5	±0.4	1.0×10^{-7}	4	
	6-d	0.8	6,000	18	0.5	5	±0.4	1.3×10^{-7}	4.5	
	8-d	1.4	8,000	50	0.5	5	±0.4	4.0×10^{-7}	7.5	
GJK	9.53-9.53	2.2	10,000	100	0.4	4	±0.4	1.3×10^{-6}	15	
	10-10									
	12-12	3	12,000	80	0.4	4	±0.4	2.1×10^{-6}	19	

●Heat resistance (ambient temperature): GFRPBT: -30℃ to 85℃
*Note that 1/2 the allowable torque should be used at maximum temperature

EGJ,EGP

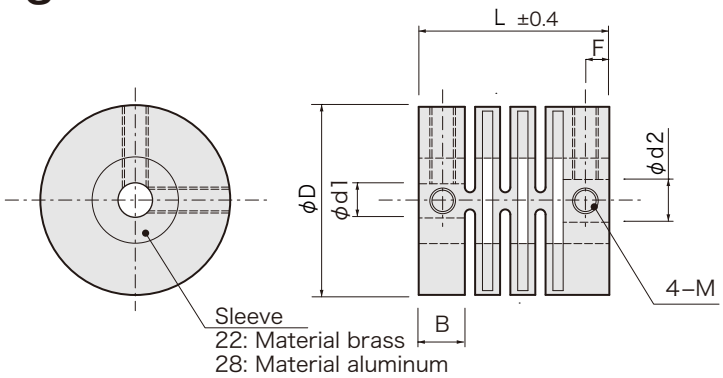
Plastic
Double disk (equivalent)
Set screw type

RoHS2 compatible

Features

- Soft coupling reduces loss of rotational energy
- High rigidity despite its softness, producing low rotation angle deviation
- Two types of resin material, making it possible to separately select softness and torque properties
- Also effective for mechanisms with low torque on the drive side which require accuracy and stable rotation
- High reliability design, with roughly 10 times the rotation lifespans of UJ and GJ couplings
- Electrical insulation: 1000V

Configuration and materials



Item No. designation

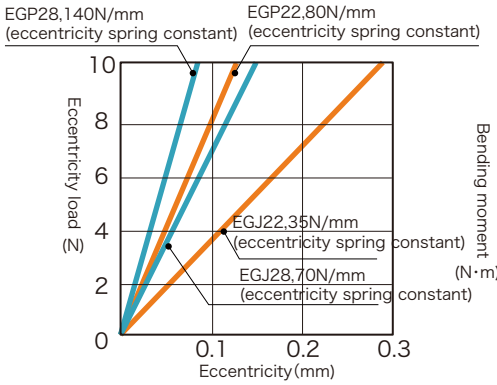
EG J 22 - 4 - 6
(ϕD) (ϕd1) (ϕd2)

Material
J: POM
P: Glass-fiber reinforced resin

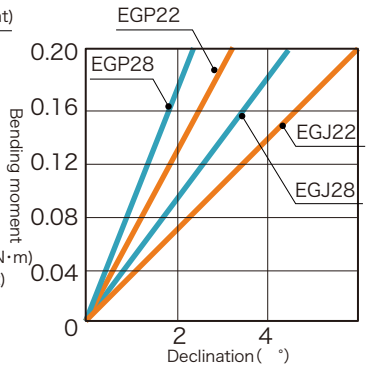
※Usage precautions

○These couplings are made of plastic, and are therefore not as strong as metal couplings. Please keep this in mind when using these couplings.
○Do not exceed the set screw tightening torques specified in the table.
○Shafts can be inserted deeper than the dimensions of B indicated in the

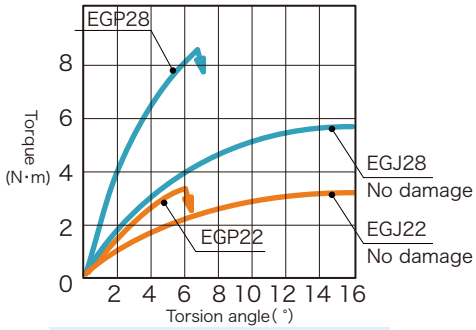
Reference materials



Eccentricity flexure properties



Declination flexure properties



Torque/torsion properties

Dimensions

(mm)

Item No.	D	Standard hole diameters ϕd1 ,ϕd2 H8 (left/right can be freely combined)	L	F	B	M	Fastening torque (N·m)
EGJ/EGP	22	3 4 5 6 8	22.2	2.8	5.4	M3	0.7 ※
	28	5 6 8 10 12	32	3.6	8.8	M4	1.5

※ϕ8 fastening torque = 0.3N·m

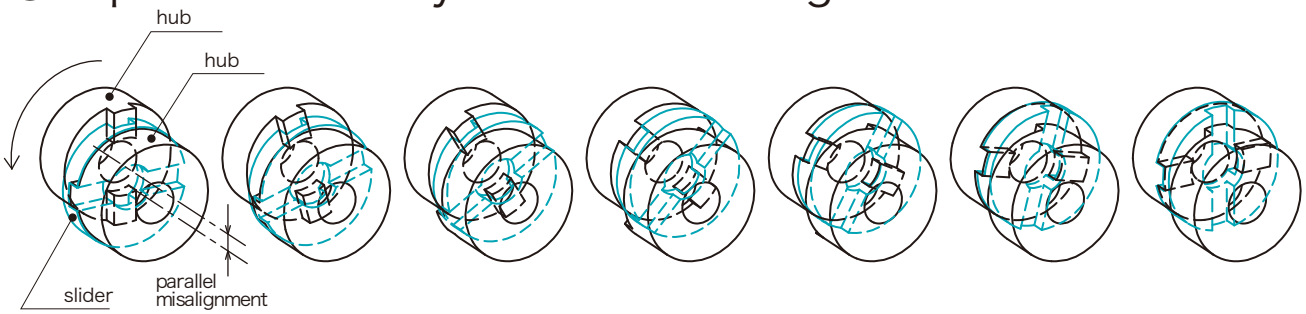
Specifications

Item No.	Allowable torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Allowable parallel misalignment (mm)	Allowable angular misalignmen (°)	Allowable end play (mm)	Moment of inertia (kg·m²)	Mass (g)	Material
EGJ 22	1.0	8,000	20	0.6	6	±0.6	4×10^{-7}	13	POM
EGP 22	1.6	12,000	40	0.4	4	±0.4	4×10^{-7}	13	Glass-fiberreinforced resin
EGJ 28	1.8	8,000	40	0.6	5	±0.8	3.4×10^{-6}	26	POM
EGP 28	3.0	12,000	100	0.4	4	±0.5	3.4×10^{-6}	26	Glass-fiber reinforced resin

●Thermal resistance (ambient temperature) GF resin: -30°C to 85°C *1/2 torque at maximum temperature

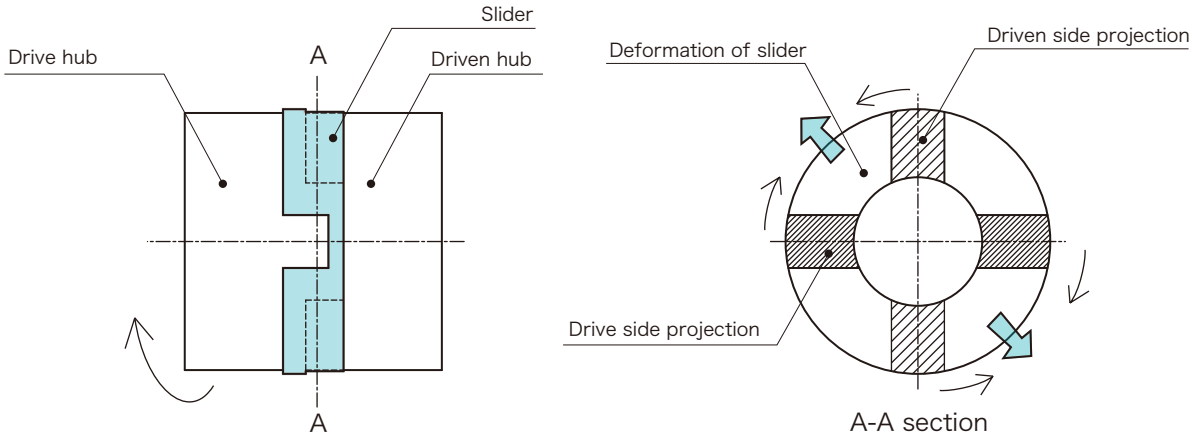
Oldham's couplings

●Compact for the working toruque
●Separatable on system assembling



Oldham's coupling absorbs mainly parallel misalignment through the slider sliding along its groove.(Refer to an above figure.)So on condition that there is large parallel misalignment with load torque,abrasion will progress on the slider's groove during each rotation.If you need to avoid the increase of backlashes caused by abrasion on high-speed and adequate torque condition,you should adjust shafts to less misalignment.

Oldham's coupling is typically composed of metal hubs(e.g.,aluminum,steel,stainless steel)and a plastic slider(e.g.,polyacetal,nylon,or thier reinforced resin)for good sliding characteristic.Since the slider is made of weaker material,the part of slider caught between the drive and driven side projections is pushed outward and is deformed when transmission torque is applied.When excessive load torque(shock/impact torque in many cases)is applied,the slider is plastically deformed,and eventually ruptures in the deformation direction,as shown below.



Features of Each Series

ASJ and ASJU Series

These products are composed of strong hubs,made of sintered stainless steel with resin impregnation,and sliders molded with carbon fiber-reinforced plastic for enhanced strength.Accordingly,these couplings offer high strength, in addition to high transmission torque and high torsional rigidity.Furthermore,in order to support servo mechanism at zero backlash,their hub and slider are assembled in light press-fitting generally.

APJ and APJU Series

There are suitable for high-torque applications that would damage ASJ Series couplings.The sliders are made of aluminum-bronze,and their destruction torque and torsional rigidity are more than three times greater than those of the ASJ Series.(In the specifications,the rated torque is limited to two times.)Since these products are made completely of metal,the clearance of sliding surface is set to 0.02 to 0.04(mm)to prevent sticking,but this clearance is filled with super-high viscosity grease to protect against sticking and to maintain zero backlash characteristics.

FJ and FJU Series

These are suitable for applications requiring larger couplings than ASJ Series,but their main feature is low cost.The hub material is machined A2017 aluminum,while the slider,which is designed to be used at normal ambient temperature,is made of machined polyacetal.Hubs and slider are assembled in light press-fitting,so there is zero backlash.If heat resistance is necessary,slider material options include MC nylon,GF reinforced PPS,and aluminum-bronze.

FSPJ Series

These newly developed products are our strongest Oldham's couplings,and are suitable for applications requiring lager couplings than those provided by APJ Series.The hubs are made of SUS303 stainless steel,while the sliders are made of aluminum-bronze.These couplings offer our highest performance in term of transmission torque and torsional rigidity.Super-high vicosity grease fills the clearance of the sliding surface,so there is zero backlash in servo mechanism use.

ASJ

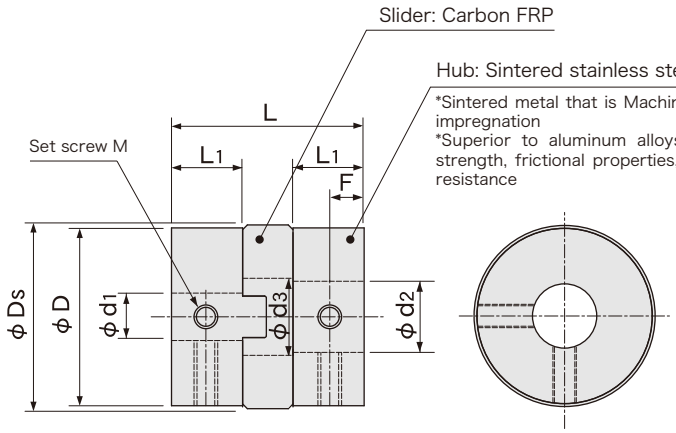
Oldham's
Set screw style

RoHS2 compatible

Features

- Compact, powerful, and excellent durability
- Wide product range enables selection of the ideal size
- Combination of sintered stainless steel hubs and a carbon FRP slider

Configuration and materials



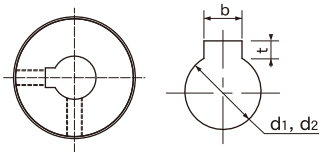
Item No. designation

*Key groove processing
No entry: no processing
K3: 3mm key groove width

ASJ 34 – 10 K3 – 16 □
(ϕD) (ϕd1) (ϕd2)

・Key groove shape complies with new JIS standards. Special key grooves should be shown in separate drawings.
・ For d1 and d2, orders for hole diameters other than the standard values can be made.
Feel free to consult us about custom orders.
・Combinations of set screw and clamp styles can also be customized.

■Dimensions of key groove shape



Hole diameter d1,d2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
6~8	2	2	±0.0125	1.0	+0.1 0	2×2
8~10	3	3		1.4		3×3
10~12	4	4	±0.0150	1.8		4×4
12~17	5	5		2.3		5×5
17~20	6	6		2.8		6×6

Dimensions

(mm)

Item No.	D	Standard hole diameters (ϕd1,ϕd2H8)	Ds	d3	L	F	L1	M	Fastening torque (N·m)
ASJ6	6	1 1.5 2	6.2	2.4	8.4	1.5	3	M1.6	0.15
ASJ8	8	1 2 3	8.2	3.4	9.6	1.7	3.4		0.15
ASJ10	10	2 3 4	10.2	4.4	10.2	1.8	3.6	M2	0.3
ASJ12	12	3 4 5	12.5	4.0	14.2	2.5	5	M3	0.7
ASJ15	14.5	4 5 6 6.35 8	15	5.0	16	2.7	5.4	M3	0.7
ASJ17	16.8	5 6 6.35 8	17.5	7.2	19.8	3.3	6.6	M4	1.7
ASJ20	20	6 6.35 8 9.53 10 12	21	8.2	21.4	3.5	7	M4	1.7
ASJ26	26	6 6.35 8 9.53 10 12 14	27	12.0	25.6	4.2	9	M4	1.7
ASJ30	30	8 10 12 14	31	13.0	33	5.8	12	M4	1.7
ASJ34	34	10 12 14 15 16	35	14.0	34	5.5	13	M5	4.0
ASJ38	38	10 12 14 15 16 18 20	41	16.0	40	7.0	15	M5	4.0

●If the torque applied to the coupling is small, wear is suppressed. Even if the eccentricity is somewhat large, the amount of wear will not increase.

Specifications

Item No.		Transmission torque (N·m)		Allowable misalignment		Torsional rigidity (N·m/rad)	Maximum rotating speed (rpm)	Moment of inertia (kg·m²)	Mass (g)
		Rated torque	Maximum torque	Parallel misalignment (mm)	angular misalignment (°)				
ASJ	6	0.3	0.8	0.3	2	9	12,000	5.9×10^{-9}	1.5
	8	0.5	1.2	0.3	2	13	12,000	2.1×10^{-8}	2.5
	10	0.8	2	0.3	1.5	21	12,000	5.2×10^{-8}	4
	12	1.0	3	0.4	1.5	44	12,000	1.5×10^{-7}	8
	15	1.6	5	0.5	1.5	90	10,000	3.5×10^{-7}	11
	17	2.2	7	0.5	1.5	250	10,000	7.8×10^{-7}	18
	20	3.2	10	0.5	1.5	340	8,000	1.7×10^{-6}	29
	26	6	22	0.6	1.5	420	6,500	6.1×10^{-6}	65
	30	15	45	0.7	1.5	1,200	6,200	1.4×10^{-5}	105
	34	16	60	0.7	1.5	2,400	6,000	2.4×10^{-5}	150
	38	28	85	0.7	1.5	3,500	5,800	4.3×10^{-5}	230

●Heat resistance (ambient temperature): -30℃ to 80℃
●When the hole diameter exceeds dimension d3, characteristics such as the rated torque may deteriorate.
●Maximum permissible eccentricity and declination are not guaranteed to be used under rated torque.The amount of eccentricity and declination affects the speed of wear, by synergistic with the operating torque and rotating speed.

ASJU

Oldham 's
Clamp style

RoHS2 compatible

Features

●Compact, powerful, and excellent durability
●Wide product range enables selection of the ideal size and shape
●Combination of sintered stainless steel hubs and a carbon FRP slider

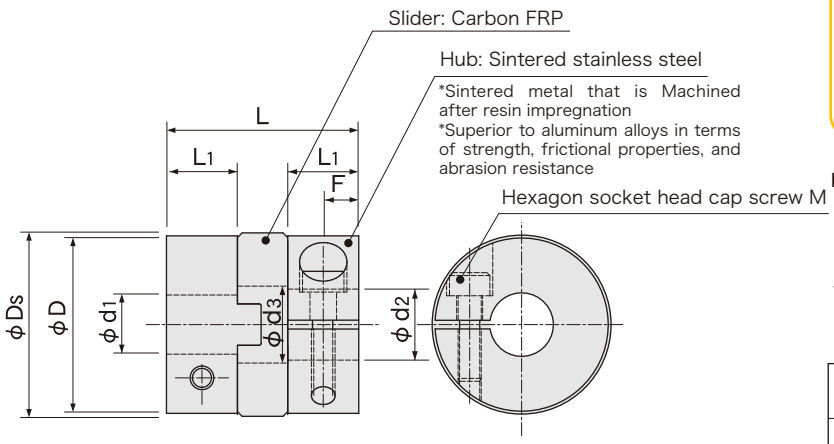
Item No. designation

*Key groove processing
No entry: no processing
K3: 3mm key groove width

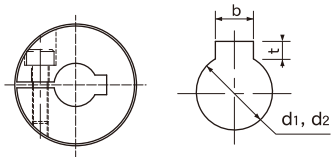
ASJU 34 – 10 K3 – 16 □
(φD) (φd1) (φd2)

・Key groove shape complies with new JIS standards. Special key grooves should be shown in separate drawings.
・ For d1 and d2, orders for hole diameters other than the standard values can be made.
Feel free to consult us about custom orders.
・Combinations of set screw and clamp styles can also be customized.

Configuration and materials



■Dimensions of key groove shape



Hole diameter d1,d2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
6~8	2	2	±0.0125	1.0	+0.1 0	2×2
8~10	3	3		1.4		3×3
10~12	4	4	±0.0150	1.8		4×4
12~17	5	5		2.3		5×5
17~20	6	6		2.8		6×6

Dimensions

(mm)

Item No.	D	Standard hole diameters (φd1, φd2 H8)	Ds	d3	L	F	L1	M	Fastening torque (N·m)
ASJU15	14.5	4 5 6	16	5.0	18.8	3.3	6.6	M2.5	1.0
ASJU17	16.8	5 6 6.35	19	7.2	24.4	4.3	8.8	M3	1.8
ASJU20	20	6 6.35 8 9.53 10	22	8.2	27.4	4.8	10	M3	1.8
ASJU26	26	6 6.35 8 9.53 10 12	28	12.0	30.4	5.5	11.5	M4	4.5 ※
ASJU30	30	8 10	32.5	13.0	33	6.0	12	M5	8.0
		12 14						M4	4.5
ASJU34	34	10 12 14 15 16	37	14.0	34	6.3	13	M5	8.0 ※
ASJU38	38	10 12 14 15 16 18 20	41	16.0	40	7.3	15	M5	8.0

●If the torque applied to the coupling is small, wear is suppressed. Even if the eccentricity is somewhat large, the amount of wear will not increase
●The clamp bolt for ASJU 34 with a hole diameter of 17 to 20 is M4.
●The dimension Ds is the circumference of the clamp bolt head.
*The clamp bolt fastening torque for ASJU34 is 5.4 (N·m) when the hole diameters (d1, d2) are ≧16.
*The clamp bolt fastening torque for ASJU26 is 3.8N·m when the hole diameters(d1,d2) are ≧12.

Specifications

Item No.		Transmission torque (N·m)		Allowable misalignment		Torsional rigidity (N·m/rad)	Maximum rotating speed (rpm)	Moment of inertia (kg·m²)	Mass (g)
		Rated torque	Maximum torque	Parallel misalignment (mm)	angular misalignment (°)				
ASJU	15	1.6	5	0.5	1.5	90	10,000	4.1×10^{-7}	15
	17	2.2	7	0.5	1.5	250	10,000	1.0×10^{-6}	28
	20	3.2	10	0.5	1.5	340	8,000	2.0×10^{-6}	40
	26	6.0	22	0.6	1.5	420	6,500	7.3×10^{-6}	85
	30	15	45	0.7	1.5	1,200	6,200	1.4×10^{-5}	100
	34	16	60	0.7	1.5	2,400	6,000	2.4×10^{-5}	140
	38	28	85	0.7	1.5	3,500	5,800	4.3×10^{-5}	215

●Heat resistance (ambient temperature): -30℃ to 80℃
●When the hole diameter exceeds dimension d3, characteristics such as the rated torque may deteriorate.
●Maximum permissible eccentricity and declination are not guaranteed to be used under rated torque.The amount of eccentricity and declination affects the speed of wear, by synergistic with the operating torque and rotating speed.

APJ

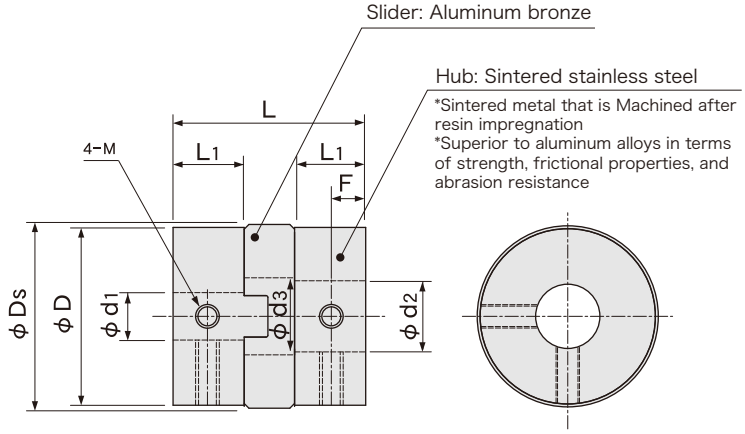
Oldham's
Set screw style

RoHS2 compatible

Features

●Compact, more powerful and excellent durability
● Rated torque is approximately twice compared with ASJ series

Configuration and materials



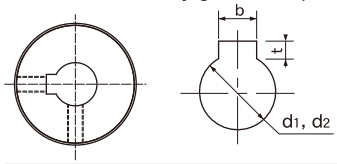
Item No. designation

*Key groove processing
No entry: no processing
K3: 3mm key groove width

APJ 34 – 10 K3 – 16 □
(ϕ D) (ϕ d1) (ϕ d2)

・Key groove shape complies with new JIS standards.Special key grooves should be shown in separate drawings.
・For d1 and d2, orders for hole diameters other than the standard values can be made. Feel free to consult us about custom orders.
・Combinations of set screw and clamp styles can also be customized.

■Dimensions of key groove shape



Hole diameter d1, d2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
6~8	2	2	±0.0125	1.0	+0.1 0	2×2
8~10	3	3		1.4		3×3
10~12	4	4	±0.0150	1.8		4×4
12~17	5	5		2.3		5×5
17~20	6	6		2.8		6×6

Dimensions

(mm)

Item No.	D	Standard hole diameters (ϕd1, ϕd2H8)	Ds	d3	L	F	L1	M	Fastening torque (N·m)
APJ12	12	3 4 5	12	6	13.8	2.5	5	M3	0.7
APJ15	14.5	4 5 6 6.35 8	15	7.2	16.2	2.7	5.4	M3	0.7
APJ17	16.8	5 6 6.35 8	17.5	8.2	19.9	3.3	6.6	M4	1.7
APJ20	20	6 6.35 8 9.53 10 12	21	9.0	21.3	3.5	7.0	M4	1.7
APJ26	26	6 6.35 8 9.53 10 12 14	27	12	25.5	4.2	9.0	M4	1.7
APJ30	30	8 10 12 14	30	14	33	5.8	12	M4	1.7
APJ34	34	10 12 14 15 16	35	14	34.5	5.5	13	M5	4.0
APJ38	38	10 12 14 15 16 18 20	39	17	39.7	7.0	15	M5	4.0

Specifications

Item No.		Transmission torque (N·m)		Allowable misalignment			Torsional rigidity (N·m/rad)	Maximum rotating speed (rpm)	Moment of inertia (kg·m²)	Mass (g)
		Rated torque	Maximum torque	Parallel misalignment (mm)	angular misalignment (°)	End play (mm)				
APJ	12	2.5	11	0.3	0.6	±0.1	250	10,000	2.0×10^{-7}	8.5
	15	3.0	15	0.3	0.6	±0.1	800	8,000	4.5×10^{-7}	15
	17	5.0	20	0.3	0.6	±0.1	1,000	7,000	1.0×10^{-6}	25
	20	7.0	30	0.4	0.6	±0.1	2,200	6,000	2.2×10^{-6}	37
	26	10	40	0.5	0.6	±0.2	4,000	5,000	7.5×10^{-6}	79
	30	24	80	0.6	0.6	±0.2	5,500	5,000	1.7×10^{-5}	122
	34	32	120	0.6	0.6	±0.2	6,000	4,000	2.8×10^{-5}	173
	38	50	170	0.6	0.6	±0.3	9,000	4,000	5.2×10^{-5}	260

●Heat resistance (ambient temperature): -30℃ to 100℃
●When the hole diameter exceeds dimension d3, characteristics such as the rated torque may deteriorate.
●Maximum permissible eccentricity and declination are not guaranteed to be used under rated torque.The amount of eccentricity and declination affects the speed of wear, by synergistic with the operating torque and rotating speed.
●Maximum rotational speed corresponds to no parallel misalignment (that is less than 1/10 of allowable value).

APJU

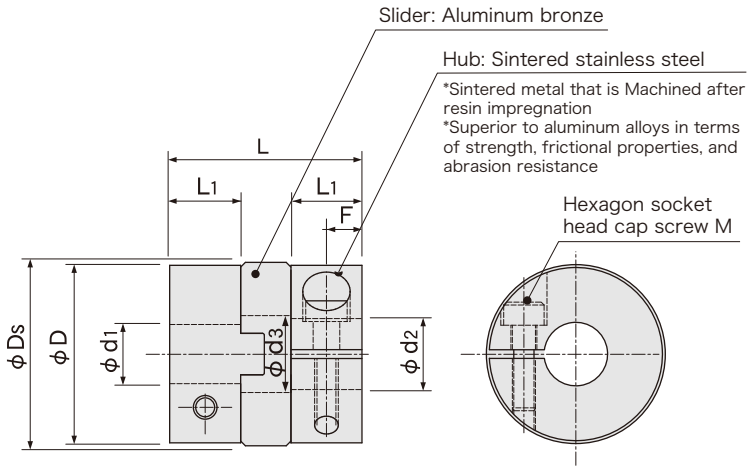
Oldham's
Clamp style

RoHS2 compatible

Features

●Compact, more powerful and excellent durability
●Rated torque is approximately twice compared with ASJU series

Configuration and materials



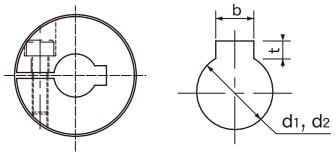
Item No. designation

*Key groove processing
No entry: no processing
K3: 3mm key groove width

APJU [34] – [10] [K3] – [16] [ ]
(ϕD) (ϕd1) (ϕd2)

・Key groove shape complies with new JIS standards. Special key grooves should be shown in separate drawings.
・For d1 and d2, orders for hole diameters other than the standard values can be made. Feel free to consult us about custom orders.
・Combinations of set screw and clamp styles can also be customized.

■Dimensions of key groove shape



Hole diameter d1,d2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
6~8	2	2	±0.0125	1.0	+0.1 0	2×2
8~10	3	3		1.4		3×3
10~12	4	4	±0.0150	1.8		4×4
12~17	5	5		2.3		5×5
17~20	6	6		2.8		6×6

Dimensions

(mm)

Item No.	D	Standard hole diameters (ϕd1, ϕd2 H8)	Ds	d3	L	F	L1	M	Fastening torque (N·m)
APJU15	14.5	4 5 6	16	7.2	18.7	3.3	6.6	M2.5	1.0
APJU17	16.8	5 6 6.35	19	8.7	24.2	4.3	8.8	M3	1.8
APJU20	20	6 6.35 8 9.53 10	22	9	27.3	4.8	10	M3	1.8
APJU26	26	6 6.35 8 9.53 10 12	29	12	30.5	5.5	11.5	M4	4.5 ※
APJU30	30	8 10	32.5	14	32.8	6.0	12	M5	8.0
		12 14						M4	4.5
APJU34	34	10 12 14 15 16	37	14	34.5	6.3	13	M5	8.0 ※
APJU38	38	10 12 14 15 16 18 20	41	17	39.7	7.3	15	M5	8.0

●The dimension Ds is the circumference of the clamp bolt head.
●The clamp bolt for APJU 34 with a hole diameter of 17 over is M4.
*The clamp bolt fastening torque for ASJU34 is 5.4 (N·m) when the hole diameters (d1, d2) are ≧16.
*The clamp bolt fastening torque for APJU26 is 3.8N·m when the hole diameters(d1,d2) are ≧12.

Specifications

Item No.		Transmission torque (N·m)		Allowable misalignment			Torsional rigidity	Maximum rotating speed	Moment of inertia	Mass
		Rated torque	Maximum torque	Parallel misalignment (mm)	angular misalignment (°)	End play (mm)	(N·m/rad)	(rpm)	(kg·m²)	(g)
APJU	15	3	12	0.3	0.6	±0.1	700	8,000	5.1×10^{-7}	17
	17	5	18	0.3	0.6	±0.1	1,000	7,000	1.2×10^{-6}	30
	20	7	26	0.4	0.6	±0.1	2,200	6,000	2.6×10^{-6}	48
	26	10	35	0.5	0.6	±0.2	4,000	5,000	8.7×10^{-6}	90
	30	24	70	0.6	0.6	±0.2	5,500	5,000	1.7×10^{-5}	117
	34	32	105	0.6	0.6	±0.2	6,000	4,000	2.8×10^{-5}	165
	38	50	140	0.6	0.6	±0.3	9,000	4,000	5.2×10^{-5}	250

●Heat resistance (ambient temperature): -30℃ to 100℃
●When the hole diameter exceeds dimension d3, characteristics such as the rated torque may deteriorate.
●Maximum permissible eccentricity and declination are not guaranteed to be used under rated torque.The amount of eccentricity and declination affects the speed of wear, by synergistic with the operating torque and rotating speed.
●Maximum rotational speed corresponds to no parallel misalignment (that is less than 1/10 of allowable value).
●There is a possibility of slip occurring when a high transmission torque is loaded. For this reason, it may be necessary to process the key groove.

FJ

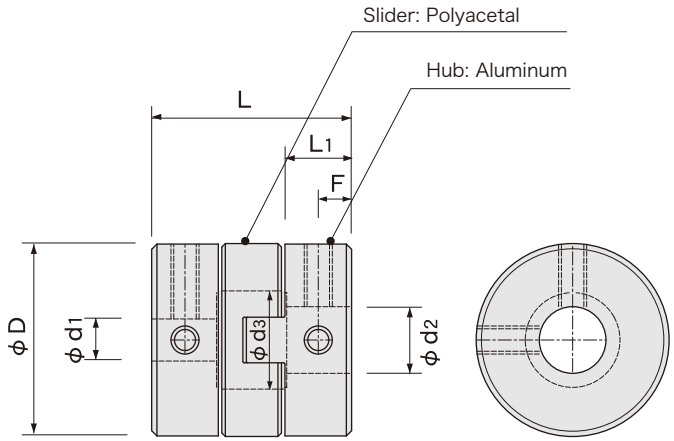
Oldham's with larger size
Set screw style

RoHS2 compatible

Features

●Combination of aluminum hubs and a polyacetal slider to handle shaft diameters up to ϕ38
●High-precision slider groove for light press-fitting and zero backlash, enabling servo operation
●Sliders can also be made of chemical-resistant or heat-resistant materials

Configuration and materials



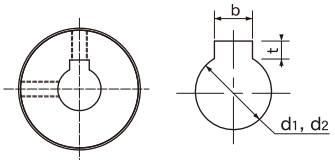
Item No. designation

*Key groove processing
No entry: no processing
K□: □mm key groove width

FJ 70 – 30 K8 – 35 K10
(ϕ D) (ϕ d1) (ϕ d2)

・Key groove shape complies with new JIS standards. Special key grooves should be shown in separate drawings.
・For d1 and d2, orders for hole diameters other than the standard values can be made. Feel free to consult us about custom orders.
・Combinations of set screw and clamp styles can also be customized.

■Dimensions of key groove shape



Hole diameter d1 ,d2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
14~17	5	5	±0.0150	2.3	+0.1 0	5×5
17~22	6	6		2.8		6×6
22~30	8	8	±0.0180	3.3	+0.2 0	8×7
30~38	10	10				10×8

Dimensions

(mm)

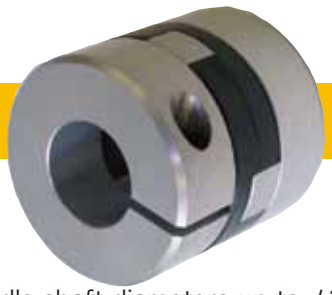
Item No.	D	Standard hole diameters ϕd1, ϕd2 H8 (left/right can be freely combined)	d3	L	L1	F	M	Fastening torque (N·m)
FJ44	44	14 15 16 18 20 22	22.5	46	15	7.5	6	7.0
FJ55	55	18 20 22 25 26	28	57	19	9.5	8	15.0
FJ70	69	22 25 28 30 35 38	39	77	25	12.5	10	30.0

Specifications

Item No.	Rated torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Allowable parallel misalignment (mm)	Allowable angular misalignment (°)	Moment of inertia (kg·m²)	Mass (g)
FJ44	30	12,000	1,500	0.7	1.5	4×10^{-5}	140
FJ55	45	10,000	2,800	1	1.5	11×10^{-5}	260
FJ70	80	8,000	4,800	1.2	1.5	40×10^{-5}	450

●Heat resistance (ambient temperature): -25℃ to 80℃ (rated torque should be 1/2 in 80℃)

FJU



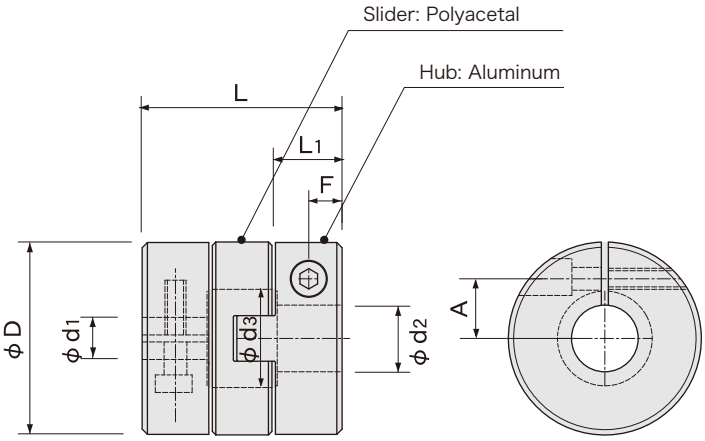
Oldham's with larger size
Clamp style

RoHS2 compatible

Features

●Combination of aluminum hubs and a polyacetal slider to handle shaft diameters up to ϕ35
●High-precision slider groove for light press-fitting and zero backlash, enabling servo operation
●Sliders can also be made of chemical-resistant and heat-resistant materials

Configuration and materials



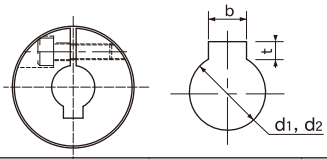
Item No. designation

*Key groove processing
No entry: no processing
K□: □mm key groove width

FJU 70 – 30 K8 – 35 K10
(ϕ D) (ϕ d1) (ϕ d2)

・Key groove shape complies with new JIS standards. Special key grooves should be shown in separate drawings.
・For d1 and d2, orders for hole diameters other than the standard values can be made. Feel free to consult us about custom orders.
・Combinations of set screw and clamp styles can also be customized.

■Dimensions of key groove shape



Hole diameter d1 ,d2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
14~17	5	5	±0.0150	2.3	+0.1 0	5×5
17~22	6	6		2.8		6×6
22~30	8	8	±0.0180	3.3	+0.2 0	8×7
30~35	10	10				10×8

Dimensions

(mm)

Item No.	D	Standard hole diameters ϕd1, ϕd2 H8 (left/right can be freely combined)	d3	L	L1	F	A	M	Fastening torque※ (N·m)
FJU44	44	14 15 16 18 20	22.5	46	15	7.5	14.5	5	8.4
FJU55	55	18 20 22 25	28	57	19	9.5	17	6	14.4
FJU70	69	22 25 28 30 35	39	77	25	12.5	24	8	30

※For small hole diameters, it is necessary to fasten the clamp bolt to higher torque than the listed value to prevent slip.
The listed fastening torque is intended only as an approximate guide.

Specifications

Item No.	Rated torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Allowable parallel misalignment (mm)	Allowable angular misalignment (°)	Moment of inertia (kg·m²)	Mass (g)
FJU44	26	10,000	1,500	0.7	1.5	4×10^{-5}	140
FJU55	40	8,000	2,800	1	1.5	11×10^{-5}	260
FJU70	72	6,000	4,800	1.2	1.5	40×10^{-5}	450

・Heat resistance (ambient temperature): -25℃ to 80℃ (rated torque should be 1/2 in 80℃)

FSPJ

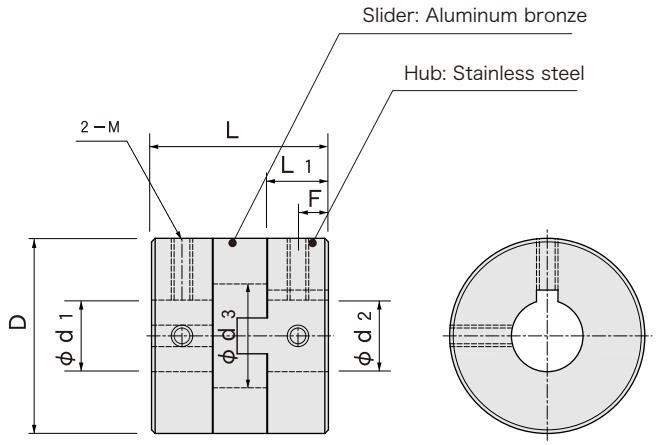
Oldham's
Set screw style

RoHS2 compatible

Features

●Strongest Oldham's coupling
●Combination of stainless steel hubs and aluminum-bronze slider: all-metal Oldham's coupling
●The minimized clearance of the sliding surface is filled with super-high viscosity grease, for both anti-sticking and zero backlash

Configuration and materials



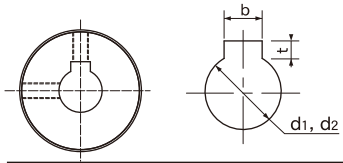
Item No. designation

*Key groove processing(required)
K5 : 5mm key groove width

FSPJ 45 – 15 K5 – 20 □
(φD) (φd1) (φd2)

・Key groove shape complies with new JIS standards.
Special key grooves should be shown in separate drawings.

■Dimensions of key groove shape



Hole diameter d1 ,d2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
15~17	5	5	±0.0150	2.3	+0.1 0	5×5
17~22	6	6		2.8		6×6
22~30	8	8	±0.0180	3.3	+0.2 0	8×7
30~35	10	10				10×8

Dimensions

(mm)

Item No.	D	Standard hole diameters φd1, φd2 H8 (left/right can be freely combined)	d3	L	L1	F	Clearance of the sliding surface	M	Fastening torque (N·m)
FSPJ45	45	15 18 20 22	22.5	43.6	15	7.5	0.01~0.025	M5	3.6
FSPJ55	55	18 20 22 25 28	29	49.4	17	8.5	0.01~0.03	M6	6
FSPJ70	70	20 22 25 28 30 32 35	36	57	20	10	0.01~0.035	M8	14

■Note■
FSPJ couplings require key groove processing.
Always indicated the hole diameter and key groove dimensions.

Specifications

Item No.	Rated torque (N·m)	Maximum rotating speed (rpm)	Allowable parallel misalignment (mm)	Allowable angular misalignment (°)	Allowable end play (mm)	Torsional rigidity (N·m/rad)	Moment of inertia (kg·m²)	Mass (g)
FSPJ45	60	10,000	1	0.2	03	65,000	1.7×10^{-4}	380
FSPJ55	90	10,000	1.2	0.2	0.5	100,000	3.3×10^{-4}	750
FSPJ70	160	10,000	1.6	0.2	0.6	180,000	1.1×10^{-3}	1,300

* Note:
1. The above specifications are for an envisioned rotation lifespan of approximately 10^8, and tolerance values are for isolated use. In the event of compound misalignment, torque margins must be increased based on the number of elements and the degree of misalignment.
2. In usage environments in which eccentricity, torque, or rotation speed exceed 50% of their respective tolerances, regularly apply grease to prevent seizure and abnormal abrasion.
3. This coupling is a high-precision, high-rigidity coupling, so the parallelism of the shaft is especially important. If there is declination then every 90° there will be rotation resistance, producing rotational vibration and noise.
4. The amount of eccentricity must also be kept at a minimum for high-speed rotation.

FSPJU

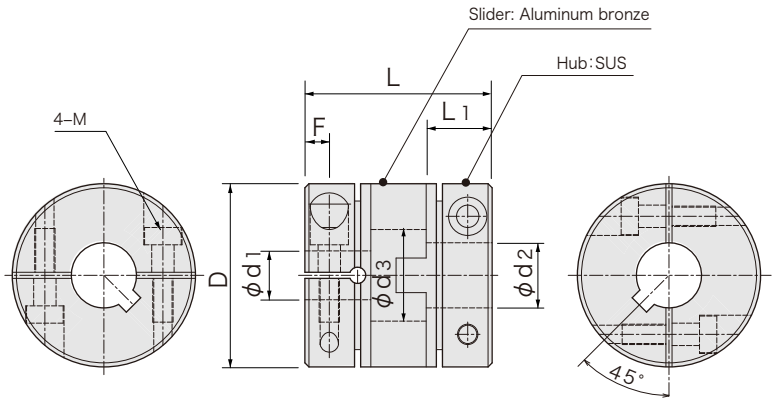
Oldham's
Clamp type

RoHS2 compatible

Features

- The very best Oldham's coupling
- Stainless steel hub and aluminum bronze slider: All-metal Oldham's coupling
- Minimally-sized slider gap covered with a high viscosity resin film to prevent seizure and eliminate backlash
- Not damaged even by impact torques four times greater than the torque tolerance.

Configuration and materials



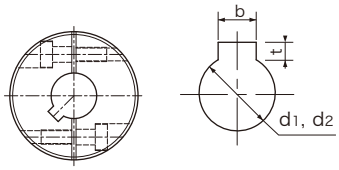
Item No. designation

* Key groove processing (required)
K5:5mm key groove width

FSPJU 45 - 15 K5 - 20 K6
(φD) (φd1) (φd2)

* Key groove shape compliant with new JIS standard.

■Dimensions of key groove shape



Hole diameter d1 ,d2	K	b		t		Nominal dimension of keys
		Basic dimension	Tolerance	Basic dimension	Tolerance	
14～17	5	5	±0.0150	2.3	+0.1 0	5×5
17～22	6	6		2.8		6×6
22～30	8	8	±0.0180	3.3	+0.2 0	8×7

Dimensions

(mm)

Item No.	D	Standard hole diameters φd1, φd2 H8 (left/right can be freely combined)	d3	L	L1	F	Clearance of the sliding surface	M	Fastening torque (N·m)
FSPJU 45	45	15 16 18 20	22.5	46	16.2	6	0.015～0.03	M5	10
FSPJU 55	55	20 22 24 25	29	57	20.8	7	0.02～0.035	M6	15

■Note■
FSPJU couplings require key groove processing.
Always indicated the hole diameter and key groove dimensions.

Specifications

Item No.	Rated torque (N·m)	Maximum rotating speed (rpm)	Allowable parallel misalignment (mm)	Allowable angular misalignment (°)	Allowable end play (mm)	Torsional rigidity (N·m/rad)	Moment of inertia (kg·m²)	Mass (g)
FSPJU 45	50	5,000	0.8	0.5	±0.3	35,000	1.8×10^{-4}	450
FSPJU 55	70	5,000	1.0	0.5	±0.5	52,000	3.3×10^{-4}	800

* Note:
1. The above specifications are for an envisioned rotation lifespan of approximately 10^8, and tolerance values are for isolated use. In the event of compound misalignment, torque margins must be increased based on the number of elements and the degree of misalignment.
2. Torque tolerance values are for an envisioned rotation speed of 3000rpm and eccentricities and declinations of 1/3 of their respective tolerances. In optimal operating conditions rotation speeds of up to 6000 rpm can be used.
3. In usage environments in which eccentricity, torque, or rotation speed exceed 50% of their respective tolerances, regularly apply grease to prevent seizure and abnormal abrasion.
4. This coupling is a high-precision, high-rigidity coupling, so the parallelism of the shaft is especially important. If there is declination then every 90° there will be rotation resistance, producing rotational vibration and noise.
5. The amount of eccentricity must also be kept at a minimum for high-speed rotation.

FFPJ

The very best Oldham's coupling Set screw type

RoHS2 compatible

Features

- The very best Oldham's coupling (large size)
- Combines a S45C hub and cast slider

:All-metal Oldham's coupling

- Minimally-sized slider gap filled with ultra-high viscosity grease to prevent seizure and eliminate backlash
- Features a high-speed rotation grease resupply mechanism

※Note:

* This coupling is a high-precision, high-rigidity coupling, so the parallelism of the shaft is especially important. If there is declination then every 90° there will be rotation resistance, producing rotational vibration and noise.
* The amount of eccentricity must also be kept at a minimum for high-speed rotation.

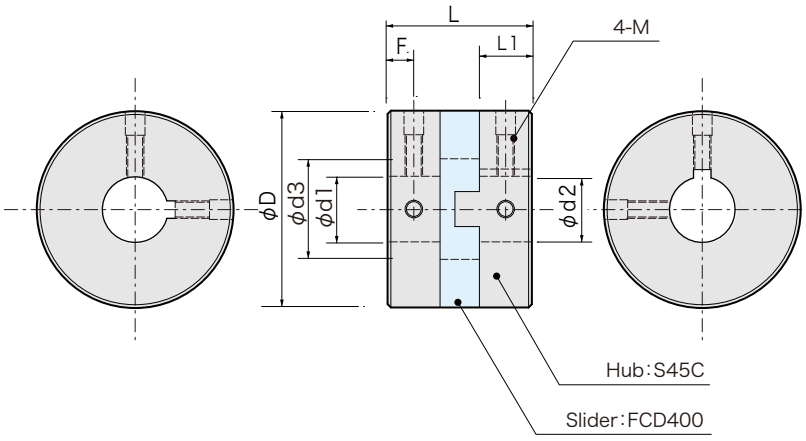
Item No. designation

* Key groove processing (required)
K6:6mm key groove width

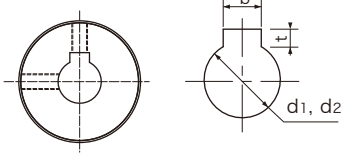
FFPJ 90 - 20 K6 - 25 K8
(φD) (φd1) (φd2)

* Key groove shape compliant with new JIS standard.

Configuration and materials



■Dimensions of key groove shape



Hole diameter d1 ,d2	K	b		t		Nominal dimension of keys
		Basic dimension	Tolerance	Basic dimension	Tolerance	
20~22	6	6	±0.0150	2.8	+0.1 0	6×6
22~30	8	8	±0.0180	3.3	+0.2 0	8×7
30~38	10	10		3.3		10×8
38~44	12	12	±0.0215	3.3		12×8
44~50	14	14		3.8		14×9
50~58	16	16		4.3		16×10
58~65	18	18		4.4		18×11
65~75	20	20	±0.0260	4.9		20×12
75~85	22	22		5.4		22×14

Dimensions

Item No.	D	Standard hole diameters φd1, φd2 H8 (left/right can be freely combined)	d3	L	L1	F	State with no fitting section gap grease (μ)	M	Fastening torque (N·m)
FFPJ 90	89.5	20 25 30 35 40 45	46	66	24	12	15~20	M8	16
FFPJ 110	109	25 30 35 40 45 55	56	80	29	14.5	17~22	M10	33
FFPJ 130	129	30 35 40 45 55 65	66	94	34	17	19~24	M10	33
FFPJ 150	149	35 40 45 55 65 75	76	110	40	20	21~26	M12	50
FFPJ 180	179	40 45 55 65 75 85	86	130	48	24	25~30	M12	50

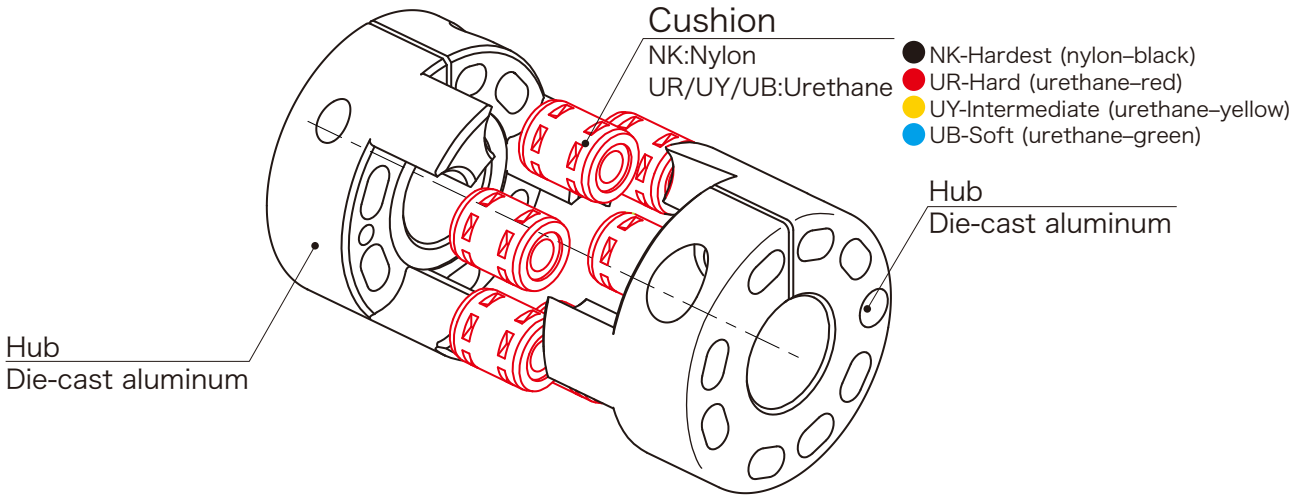
■Note■
FFPJ couplings require key groove processing.
Always indicated the hole diameter and key groove dimensions.

Specifications

Item No.	Rated torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Allowable parallel misalignment (mm)	Allowable angular misalignment (°)	Allowable end play (mm)	Moment of inertia (kg·m²)	Mass (kg)
FFPJ 90	160	10,000	3×10^{5}	1	0.2	±0.4	3.3×10^{-3}	3.0
FFPJ 110	200	10,000	4.5×10^{5}	1.1	0.2	±0.45	9×10^{-3}	5.3
FFPJ 130	260	10,000	6.5×10^{5}	1.3	0.2	±0.5	2×10^{-2}	8.7
FFPJ 150	320	10,000	8×10^{5}	1.5	0.2	±0.6	4×10^{-2}	13.3
FFPJ 180	400	10,000	1×10^{6}	1.8	0.2	±0.8	0.1	23.0

●Due to grease limitations, standard thermal resistance is 150°C or below

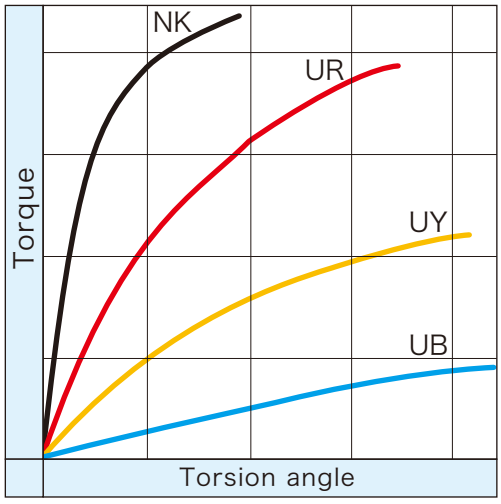
Cushion couplings



Cushion couplings absorb eccentricity, declination, and rotational vibration through the deformation of cylindrical cushions which surround hub projections. The six cushions are fully independent, so each can deform in the most effective manner, easily handling issues of misalignment or rotational vibration.
There are four types of cushion material. The differences in hardness levels between them are reflected in their torsion properties and eccentricity properties.

Selection precautions

●Select soft cushions (with small torsional spring constants) for rotation loads with torque vibration, such as from pumps. Prioritizing normal torque and selecting a hard cushion can cause the bases of the hub' s projecting elements to be damaged first due to metal fatigue.
●For servo or cam drive loads, etc., with large inertial masses, select soft cushions for the same reason, as well as sufficiently large torques.
●Use a normal torque of 1/2 of the rated torque for constant operation at the maximum rpm.
●Apply grease to cushion connection sides in the event of large amounts of eccentricity,declination,expansion/contraction, etc.



Torsion properties of cushion materials (conceptual image)

Ambient temperature and normal torque correction

Adjust the normal torque based on the ambient temperature (see table below).

Ambient temperature	Temperature correction factor	
	Cushion UB,UY,UR	Cushion NK
-20～20℃	1.2	1.2
20～45℃	1.0	1.0
45～60℃	0.8	0.8
60～80℃		0.7

● Cushion UB, UY, and UR can be used in operating environments with temperatures of up to 60°C.
● Cushion NK can be used in operating environments with temperatures of up to 80°C.

QJ

Cushion
Set screw type

RoHS2 compatible

Features

- Zero backlash
- Absorb vibration and sound
- Cushions are pipe-shaped for large degree of flexibility and long life
- Cushion material determines torsion properties.
- Aluminum die-cast hub for a small moment of inertia

Item No. designation

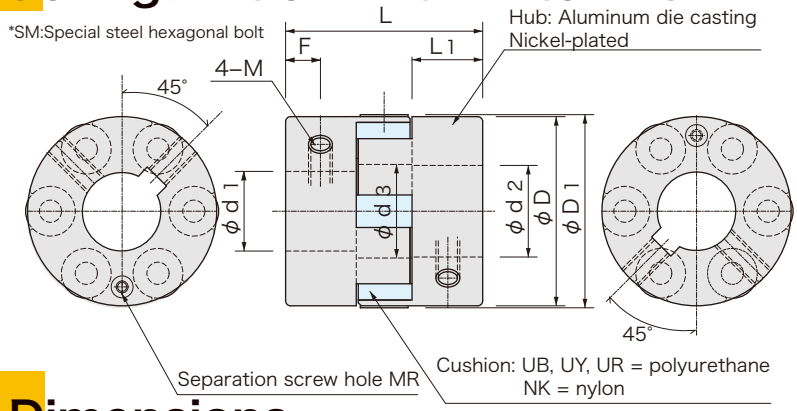
* Key groove processing No entry:No processing
K6:6mm key groove width

QJ | 55 (φD) | UB - | 20 (φd1) | K6 - | 24 (φd2) | K8

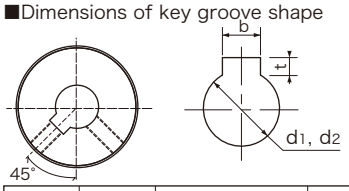
Cushion material:UB , UY , UR , NK

* Key groove shape compliant with new JIS standard.

Configuration and materials



■Dimensions of key groove shape



Hole diameter d1 ,d2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
12	4	4	±0.0150	1.8	+0.1 0	4×4
12～17	5	5		2.3		5×5
17～22	6	6		2.8		6×6
22～30	8	8	±0.0180	3.3	+0.2 0	8×7
30～38	10	10				10×8
38～40	12	12	±0.0215			12×8

Dimensions

Item No.	D	Standard hole diameters φd1, φd2 H8 (left/right can be freely combined)	D1	d3	L	L1	F	M	Fastening torque (N·m)	MR (for separation)
QJ 45□	45	12 14 15 18 20	45	24	48	16.5	8	M5	5	M3
QJ 55□	55	15 16 18 20 24	56	27	60	21	10.5	M6	8	M4
QJ 70□	70	18 20 24 28 30 35	72	35	75	26	13	M8	16	M5
QJ 95□	95	24 28 30 35 40	97	46	100	35.5	17.5	M10	33	M6

- Connecting shaft precision based on g6 to h7 finish.
- Shafts with diameters of φd3 or less can be inserted to within the cushion.

Specifications

Item No.		Allowable torque (N・m)	Maximum rotating speed (rpm)	Torsional rigidity (N・m/rad)	Allowable parallel misalignment (mm)	Eccentricity reaction force (N/mm)	Allowable angular misalignment (°)	Moment of inertia (kg・m²)	Mass (g)
QJ 45	UB	10	4,500	280	0.3	400	2	3×10^{-5}	130
	UY	20	4,500	1,000	0.15	850	1.6		
	UR	32	6,000	2,700	0.12	1,400	1.3		
	NK	40	6,000	3,800	0.1	1,500	1		
QJ 55	UB	20	4,500	600	0.3	500	2	1×10^{-4}	300
	UY	40	4,500	2,100	0.15	1,100	1.6		
	UR	50	6,000	5,600	0.12	1,700	1.3		
	NK	80	6,000	8,000	0.1	2,000	1		
QJ 70	UB	40	4,500	1,500	0.3	700	2	4×10^{-4}	600
	UY	65	4,500	4,000	0.15	1,500	1.6		
	UR	85	6,000	8,000	0.12	1,900	1.3		
	NK	120	6,000	11,000	0.1	2,200	1		
QJ 95	UB	80	3,000	4,000	0.4	850	2	1×10^{-3}	1,200
	UY	110	3,000	11,000	0.2	1,600	1.6		
	UR	135	4,000	16,000	0.15	2,000	1.3		
	NK	180	4,000	20,000	0.15	2,400	1		

QJU

Cushion
Clamp type

RoHS2 compatible

Features

- Zero backlash
- Absorb vibration and sound
- Cushions are pipe-shaped for large degree of flexibility and long life
- Cushion material determines torsion properties.
- Aluminum die-cast hub for a small moment of inertia

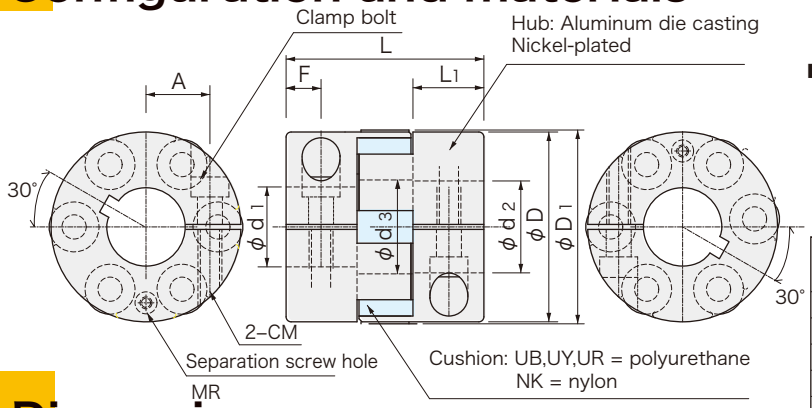
Item No. designation

* Key groove processing No entry:Noprocessing
K8:8mm key groove width

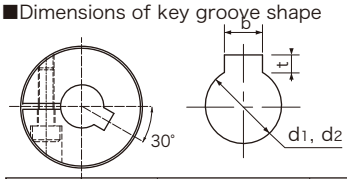
QJU [70] [UB] - [24] [K8] - [28] [K8]
(φD) (φd1) (φd2)
Cushion material:UB , UY , UR , NK

* Key groove shape compliant with new JIS standard.

Configuration and materials



■Dimensions of key groove shape



Hole diameter d1 ,d2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
12	4	4	±0.0150	1.8	+0.1 0	4×4
12～17	5	5		2.3		5×5
17～22	6	6		2.8		6×6
22～30	8	8	±0.0180	3.3	+0.2 0	8×7
30～38	10	10				10×8
38～40	12	12	±0.0215			12×8

Dimensions

Item No.	D	Standard hole diameters φd1, φd2 H8 (left/right can be freely combined)	D1	d3	L	L1	F	A	M	Fastening torque (N·m)	MR (for separation)
QJU 45□	45	12 14 15 18 20	45	24	48	16.5	8	14.5	M5	8	M3
QJU 55□	55	15 16 18 20 24	56	27	60	21	10.5	18.5	M6	15	M4
QJU 70□	70	18 20 24 28 30 35	72	35	75	26	13	24	M8	32	M5
QJU 95□	95	24 28 30 35 40	97	46	100	35.5	17.5	32	M10	65	M6

- Connecting shaft precision based on g6 to h7 finish.
- Shafts with diameters of φd3 or less can be inserted to within the cushion.

Specifications

Item No.		Allowable torque (N・m)	Maximum rotating speed (rpm)	Torsional rigidity (N・m/rad)	Allowable parallel misalignment (mm)	Eccentricity reaction force (N/mm)	Allowable angular misalignment (°)	Moment of inertia (kg・m²)	Mass (g)
QJU 45	UB	10	4,500	280	0.3	400	2	3×10^{-5}	130
	UY	20	4,500	1,000	0.15	850	1.6		
	UR	32	6,000	2,700	0.12	1,400	1.3		
	NK	40	6,000	3,800	0.1	1,500	1		
QJU 55	UB	20	4,500	600	0.3	500	2	1×10^{-4}	300
	UY	40	4,500	2,100	0.15	1,100	1.6		
	UR	50	6,000	5,600	0.12	1,700	1.3		
	NK	80	6,000	8,000	0.1	2,000	1		
QJU 70	UB	40	4,500	1,500	0.3	700	2	4×10^{-4}	600
	UY	65	4,500	4,000	0.15	1,500	1.6		
	UR	85	6,000	8,000	0.12	1,900	1.3		
	NK	120	6,000	11,000	0.1	2,200	1		
QJU 95	UB	80	3,000	4,000	0.4	850	2	1×10^{-3}	1,200
	UY	110	3,000	11,000	0.2	1,600	1.6		
	UR	135	4,000	16,000	0.15	2,000	1.3		
	NK	180	4,000	20,000	0.15	2,400	1		

QRU

Patented

Cushion Clamp type

RoHS2 compatible

Features

- Soft cushion type coupling.
- It corresponds to a mechanism with eccentricity and argument.
- It can also be used for rotation mechanism with vibration.
- There are two types of cushions, soft and hard, and can be replaced.
- Cushion is a synthetic rubber that can be insulated.

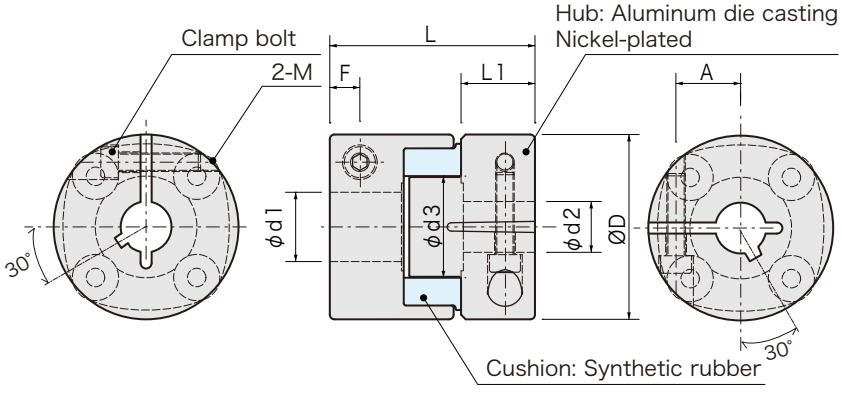
Item No. designation

* Key groove processing No entry:No processing
K6:6mm key groove width

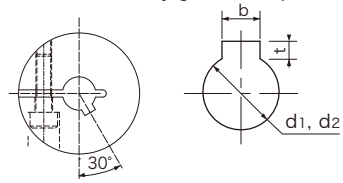
QRU 40 H - 12 K4 - 18 K6
(ϕD) (ϕd1) (ϕd2)
Cushion material S: soft, H: hard

* Key groove shape compliant with new JIS standard.

Configuration and materials



■Dimensions of key groove shape



Hole diameter d1 ,d2	K	b		t		Nominal dimension of keys bxh
		Basic dimension	Tolerance	Basic dimension	Tolerance	
6-8	2	2	±0.0125	1.0	+0.1 0	2×2
8~10	3	3		1.4		3×3
10~12	4	4	±0.0150	1.8		4×4
12~17	5	5		2.3		5×5
17~18	6	6		2.8		6×6

■Ambient temperature and normal torque correction

Correct the normal torque based on the ambient temperature.(See the table right)

● Usage precautions

* Regularly apply high viscosity grease to the contact surfaces of the cushion and the hub in the event of high speed operation, eccentricity, or declination.
* Replace cushions that have become worn down.
* If usage conditions cause a large amount of cushion abrasion, replace the cushion with a cushion that is one size larger.

Ambient temperature	Temperature correction factor
	Cushion S, H
-20~20℃	1.2
20~45℃	1.0
45~60℃	0.8
60~80℃	0.5

Dimensions

(mm)

Item No.	D	Standard hole diameters ϕd1, ϕd2 H8 (left/right can be freely combined)	d3	L	L1	F	A	M	Fastening torque (N·m)
QRU 16□	16	4 5 6 7	8	18	6.4	2.7	5	M2	0.6
QRU 19□	19	5 6 7 8	10	21.2	7.6	2.7	6	M2	0.6
QRU 22□	22	6 7 8 9 10	11	24.5	8.8	3.5	7	M2.5	1.1
QRU 26□	26	6 7 8 9 10 12	13	29.5	10.5	4	9	M2.5	1.3
QRU 30□	30	7 8 10 12 14	15	34	12	5	10.5	M3	2.5
QRU 35□	35	8 9 10 12 14 16	18	39	14	6.5	11.5	M4	4.5
QRU 40□	40	10 12 14 15 16 18	20	44.5	16	6.5	14	M4	4.5

Specifications

Item No.	Embedded cushion	Allowable torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Allowable parallel misalignment (mm)	Radial rigidity (N/mm)	Allowable angular misalignment (°)	Bending rigidity (N·m/°)	Moment of inertia (kg·m²)	Mass (g)
QRU 16S	QR16S	0.25	2,000	10	0.3	105	3	0.4	3×10^{-7}	7
QRU 16H	QR16H	0.6	4,000	15	0.2	230	2	0.8		
QRU 19S	QR19S	0.4	2,000	14	0.4	120	3	0.6	7×10^{-7}	11
QRU 19H	QR19H	0.9	4,000	25	0.2	240	2	1.2		
QRU 22S	QR22S	0.6	2,000	17	0.4	140	3	0.9	1.4×10^{-6}	17
QRU 22H	QR22H	1.6	4,000	30	0.2	250	2	1.8		
QRU 26S	QR26S	1	3,000	25	1.2	170	3	1.5	2.5×10^{-6}	30
QRU 26H	QR26H	2	8,000	45	0.6	270	2	3.0		
QRU 30S	QR30S	1.8	3,000	30	1.2	200	3	2.5	5.2×10^{-6}	45
QRU 30H	QR30H	3.5	8,000	70	0.6	300	2	5.0		
QRU 35S	QR35S	3	3,000	45	1.2	270	3	4.5	1.1×10^{-5}	70
QRU 35H	QR35H	5.5	8,000	100	0.6	380	2	9.0		
QRU 40S	QR40S	5	3,000	75	1.2	420	3	9.0	2.2×10^{-5}	105
QRU 40H	QR40H	7.5	8,000	150	0.6	500	2	16.0		

● The eccentricity spring constant is not linear with respect to the amount of eccentricity, but is instead described by a quadratic curve. The values in the table are for an eccentricity reaction force of 10N.
● The declination spring constant is the value for the declination tolerance, and is also described by a quadratic curve.

Rigid Couplings

Usage Cautions

Asa Electronics Industry's rigid couplings are manufactured on precision lathes using a single-chuck processing finish (for both same hole diameters and different hole diameters). Clamping-style coupling maintains the concentricity of both holes by using cutting and slotting processes after the internal stresses are eliminated by heat treatment. Still, sufficient caution is needed when assembling in order to minimize the radial run-out at high precision.

■Measuring methods for parallel and angular misalignments in assembly (see Fig. 1)

Place shaft (1) of the assembled unit on the V block, and while rotating the shaft slowly, measure the radial run-out of shaft (2) using the displacement indicator. For example, if the run-out at point A is 0.04, the eccentricity will be 0.02.
Then, taking the value of the radial run-out for point B (position at distance L from point A) to be 0.16, and L to be 100, the angular misalignment angle α will be given by:

$$\tan\alpha = \frac{0.16/2}{100} \qquad \therefore\alpha = \tan^{-1}\frac{0.08}{100} = 0.046^\circ$$

(Strictly, what should be measured is the difference between point B and point A when point B is in the rotational position of maximum run-out.)

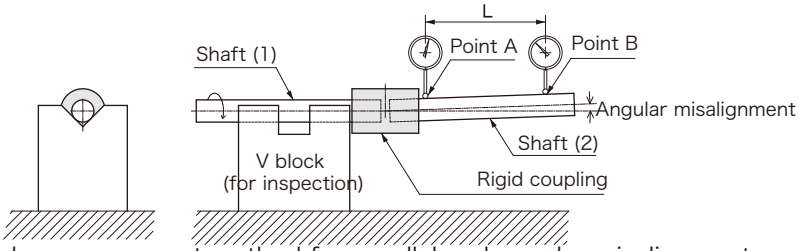


Fig.1 Simple measurement method for parallel and angular misalignments.

■Assembly Cautions (set screw style)

(see Fig. 2)

- Clean the fitting part and remove any dirt.
- While gently rotating the shaft or coupling, alternately fasten the two set screws (located obliquely on the left and right) to the same torque, to fix the shaft to the bottom surface (C).
- Insert shaft (1) and shaft (2), ensuring that they are aligned in a straight line so that there is no angular misalignment. The correction cannot be completely effected if the set screws are fastened when there is angular misalignment (see Fig. 3).
- It is important not to fasten the set screws too firmly when the shafts are made of soft materials, such as plastics or aluminum alloys. Otherwise the shafts may deform, resulting in angular misalignment.

Set screw style

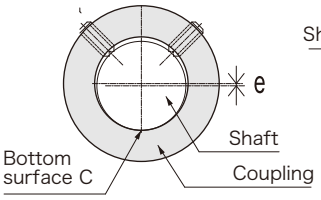


Fig. 2
Section of coupling and shaft (enlarged)

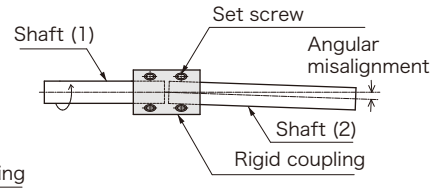


Fig. 3
Method of fixing coupling and shaft

■Assembly Cautions (clamping style)

(see Fig. 4)

- Clean the fitting part and remove any dirt.
- While gently rotating the shaft or coupling, alternately fasten the clamp bolt, little by little. The hole diameter of the coupling matches the circumference of the shaft and the misalignment becomes zero. This is a feature of clamping-style coupling.
- Insert shaft (1) and shaft (2), ensuring that they are aligned in a straight line so that there is no angular misalignment. The correction cannot be completely effected if the clamp is fastened while there is angular misalignment (see Fig. 5).

Clamping style

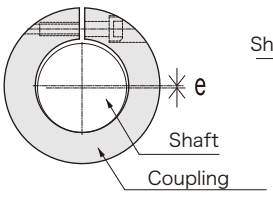


Fig. 4
Section of coupling and shaft (enlarged)

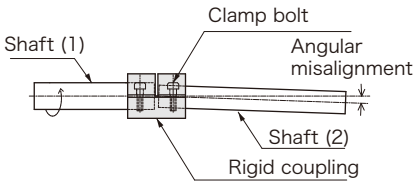


Fig. 5
Method of fixing coupling and shaft

RAS

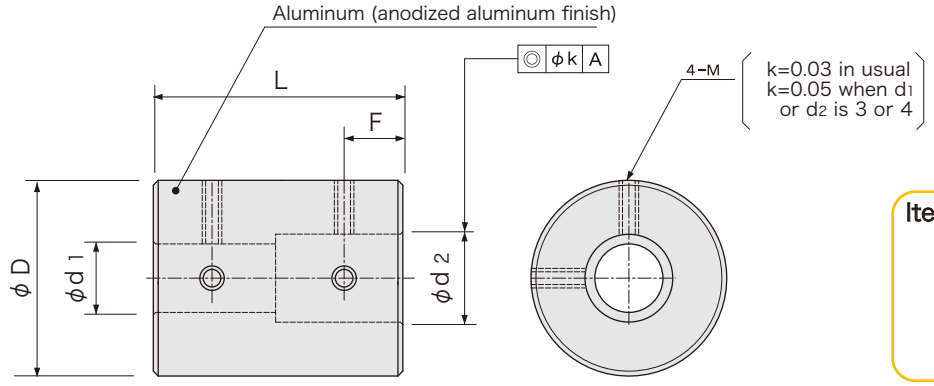
Rigid
Aluminum
Set screw style

RoHS2 compatible

Features

●High concentricity of both holes by means of single-chuck left-right hole through bite finishing
●Aluminum alloy with anodized aluminum finish

Configuration and materials



Item No. designation

RAS [32] – [12] – [12]
(ϕD) (ϕd1) (ϕd2)

Dimensions

(mm)

Item No.	D	Standard hole diameters ϕd1, ϕd2 H8 (left/right can be freely combined)	L	F	M	Fastening torque (N·m)
RAS 16	16	3 4 5 6	24	6	M3	0.7
RAS 20	20	5 6 8 10	30	7	M3	0.7
RAS 25	25	8 10 11 12	36	9	M4	1.7
RAS 32	32	12 14 15 16	41	10	M4	1.7
RAS 40	40	15 16 18 20	44	10.5	M4	4

Specifications

Item No.	Maximum hole diameter (mm)	Rated torque (N·m)	Maximum torque (N·m)	Maximum rotating speed (rpm)	Moment of inertia (kg·m²)	Mass (g)
RAS 16	6	0.3	0.6	24,000	4.4×10^{-7}	11
RAS 20	10	0.5	1	19,000	1.5×10^{-6}	20
RAS 25	12	1	2	15,000	3.9×10^{-6}	40
RAS 32	16	2	4	12,000	1.2×10^{-5}	70
RAS 40	20	4	8	4,000	1.5×10^{-5}	120

・Since there is no tolerance for misalignment, this type is suitable in cases where misalignment can be absorbed on the shaft side.

RSS

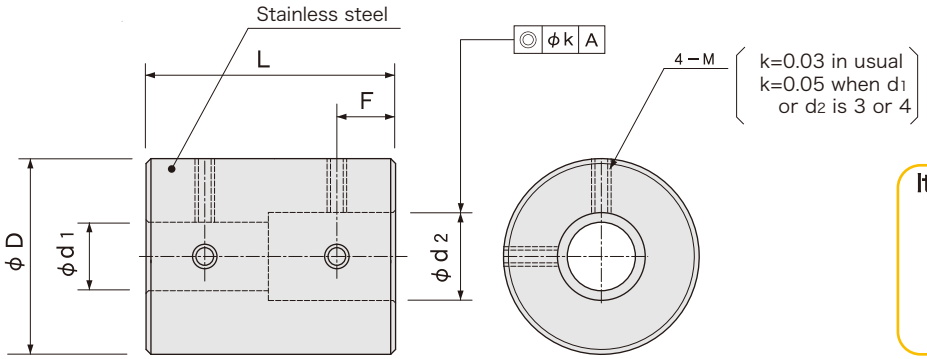
Rigid
Stainless steel
Set screw style

RoHS2 compatible

Features

●High concentricity of both holes by means of single-chuck left-right hole through bite finishing
●Made of stainless steel for strong joint and excellent corrosion resistance

Configuration and materials



Item No. designation

RSS [20] − [5] − [8]
(φD) (φd1) (φd2)

Dimensions

(mm)

Item No.	D	Standard hole diameters φd1, φd2 H8 (left/right can be freely combined)	L	F	M	Fastening torque (N·m)
RSS 16	16	3 4 5 6	24	6	M3	0.7
RSS 20	20	5 6 8 10	30	7	M3	0.7
RSS 25	25	8 10 11 12	36	9	M4	1.7
RSS 32	32	12 14 15 16	41	10	M4	1.7

Specifications

Item No.	Maximum hole diameter (mm)	Rated torque (N·m)	Maximum torque (N·m)	Maximum rotating speed (rpm)	Moment of inertia (kg·m²)	Mass (g)
RSS 16	6	0.3	0.6	24,000	1.2×10^{-5}	30
RSS 20	10	0.5	1	19,000	3.5×10^{-6}	55
RSS 25	12	1	2	15,000	1.0×10^{-5}	100
RSS 32	16	2	4	12,000	3.1×10^{-5}	200

・Since there is no tolerance for misalignment, this type is suitable in cases where misalignment can be absorbed on the shaft side.

RAC

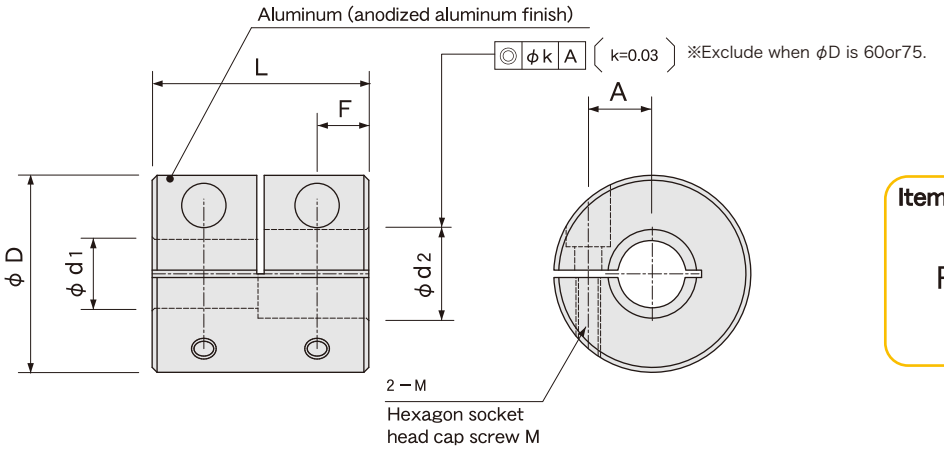
Rigid
Aluminum
Clanp style

RoHS2 compatible

Features

●High concentricity of both holes by means of single-chuck left-right hole through bite finishing
●Aluminum alloy with anodized aluminum finish

Configuration and materials



Item No. designation

RAC [40] – [15] – [15]
(ϕD) (ϕd1) (ϕd2)

Dimensions

(mm)

Item No.	D	Standard hole diameters ϕd1, ϕd2 H8 ϕd1≦ϕd2	L	A	F	M	Fastening torque (N·m)
RAC 16	16	5 6	16	5	3.8	M2.5	1
RAC 20	20	6 8	20	6.5	4.8	M2.5	1
RAC 25	25	8 10	25	9	6	M3	1.5
RAC 32	32	10 12 14	32	11	7.8	M4	2.5
RAC 40	40	14 15 16 18	44	13	10.5	M5	7
RAC 50	50	18 20 24	55	16	13	M6	12
RAC 60	60	20 24 28	66	19	16	M8	30
RAC 75	75	25 30 35	84	25	20	M10	50

Specifications

Item No.	Maximum hole diameter (mm)	Rated torque (N·m)	Maximum torque (N·m)	Maximum rotating speed (rpm)	Moment of inertia (kg·m²)	Mass (g)
RAC 16	6	0.3	0.6	9,500	3.0×10^{-7}	10
RAC 20	8	0.7	1.4	7,600	8.7×10^{-7}	15
RAC 25	10	1.2	2.4	6,100	2.7×10^{-6}	30
RAC 32	14	2.5	5	4,800	7.1×10^{-6}	60
RAC 40	18	5	10	4,000	1.5×10^{-5}	120
RAC 50	24	8	16	4,000	7.0×10^{-5}	240
RAC 60	28	40	80	6,000	2.2×10^{-4}	420
RAC 75	35	80	160	5,000	5.7×10^{-4}	850

・Since there is no tolerance for misalignment, this type is suitable in cases where misalignment can be absorbed on the shaft side.

RSC

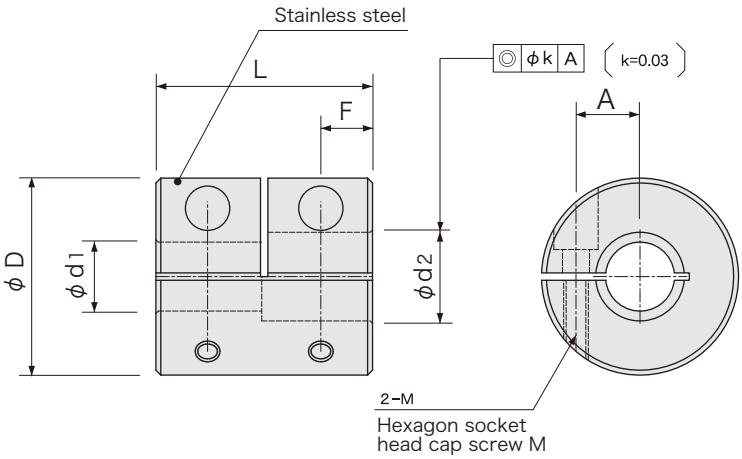
Rigid
Stainless steel
Clamp style

RoHS2 compatible

Features

●High concentricity of both holes by means of single-chuck left-right hole through bite finishing
●Made of stainless steel for strong joint and excellent corrosion resistance

Configuration and materials



Item No. designation

RSC [25] – [8] – [10]
(φD) (φd1) (φd2)

Dimensions

(mm)

Item No.	D	Standard hole diameters φd1, φd2 H8 φd1≦φd2	L	A	F	M	Fastening torque (N·m)
RSC 16	16	5 6	16	5	3.8	M2.5	1.2
RSC 20	20	6 8	20	6.5	4.8	M2.5	1.2
RSC 25	25	8 10	25	9	6	M3	2
RSC 32	32	10 12 14	32	11	7.8	M4	3

Specifications

Item No.	Maximum hole diameter (mm)	Rated torque (N·m)	Maximum torque (N·m)	Maximum rotating speed (rpm)	Moment of inertia (kg·m²)	Mass (g)
RSC 16	6	0.3	0.6	9,500	8.0×10^{-7}	25
RSC 20	8	0.5	1	7,600	3.0×10^{-6}	40
RSC 25	10	1	2	6,100	8.0×10^{-6}	100
RSC 32	14	2	4	4,800	2.5×10^{-5}	160

・Since there is no tolerance for misalignment, this type is suitable in cases where misalignment can be absorbed on the shaft side.

Ball Couplings

Our ball couplings are rotary transmission elements that combine the functions of a universal joint and a spline. They are composed of three elements an inner hub, an outer hub, and balls. The unique functional structure of our design is currently patent pending. Furthermore, since there are no limitations on the size of these couplings, they can be made in designs ranging from micro scale to massive scale.

Features

(1) Miniaturization of devices is possible since the transmission torque-in particular, the failure torque-is very high relative to its external dimensions. (Their operational life is determined not by failure under usage conditions of high angular misalignment and high torque, but rather by progressive abrasion.)

(2) There are no fundamental limitations on the materials that can be used for the hub and ball, so it is possible to design these couplings for use in water or oil, at high or low temperatures, or even in a vacuum.

(3) It is possible to design couplings with angular and expansion/contraction (spline) values that match the specifications required by actual usage.

(4) Future development is expected to focus on couplings for microrobots, automatic machines, packaging machinery, and large-scale machinery for industrial applications.

(5) Zero backlash is achieved with a ball-press-fit-type design. There is potential for application to high-speed and high-rigidity servomechanisms.

(6) The size and number of balls contained in a coupling are determined in accordance to the particular application. (In practice: maximum of 10 balls per device)

Features by Series

DBSC
Inexpensive since both inner and outer hubs are made of die-cast aluminum alloy

MBSB and MBDB
Micro-coupling series
Steel balls in a stainless steel hub. Outer diameter: ϕ4 to ϕ7.
(Since the hole diameter (M2 to M4) is extremely small, set screws cannot be used.)

MBS and MBD
Mini-coupling series
Steel balls in a stainless steel hub. Outer diameter: ϕ6 to ϕ20.
(Hole diameter: ϕ3 to ϕ10; easy-to-use set-screw type)

NBS
Medium-size specification: Combination of aluminum alloy (A2017), nickel-plated hub and steel balls
Outer diameter is ϕ30 to ϕ50 (hole diameter: ϕ10 to ϕ28). Key groove processing is possible for large hubs.

DBSC

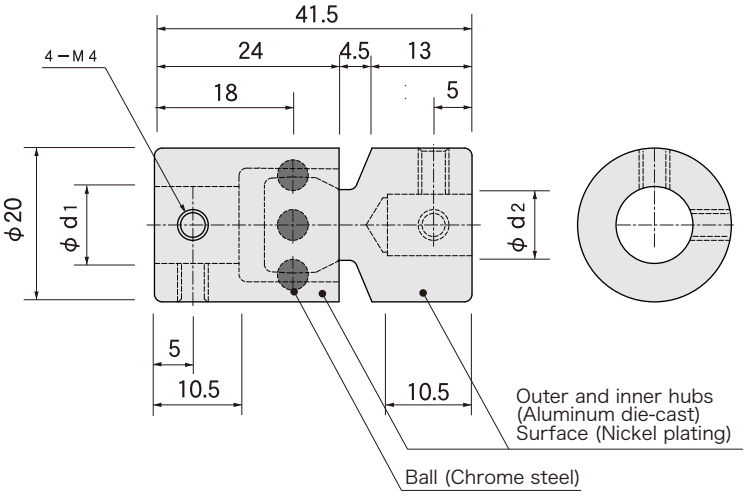
Patent Applied
Ball Coupling
Low cost type

RoHS2 compatible

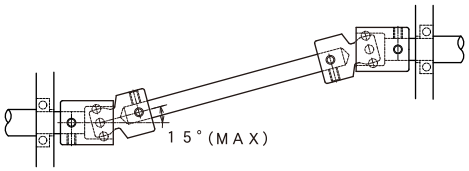
Features

●New coupling that incorporates tolerance endplay function in a universal joint
●Inexpensive due to a simple construction—composed of three elements:an outer hub,an inner hub,and multiple balls
●Sturdy structure that is capable of withstanding high-impact torques in extreme conditions
●Left and right hole diameters range from ϕ6 to ϕ12, and can be freely selected in any combination
●No splashing even at 3000 rpm, thanks to the use of special high-viscosity grease
●Suitable for use in pumps, medical equipment, electric wheelchairs, agricultural equipment, transport equipment, construction equipment, and robots
∗The balls, which transmit torque, do not rotate; they only move back and forth slightly when there is angular misalignment

Configuration and materials



Assembly: Example Application



1) Since eccentricity is not allowed in single unit, the shaft is supported on one side by the same coupling.
2) The outer hub and inner hub should be assembled in their correct relative positions, without detaching them from each other.
3) The relationship between abrasion and angular misalignment:the balls slip through the groove of the outer hub during each rotation.

Angular misalignment	0°	5°	10°	15°
Slip	0°	1.1mm	2.3mm	3.4mm

Abrasion (backlash) is given by torque × slip × rpm

∗Rotational life test
(Ex. 1: Light load rotational life test)

Conditions 1)
Continuous rotation of 60 million cycles at a load torque of 0.2 Nm,angular misalignment 5°, and speed 2960 rpm. Lubrication: special high-viscosity grease (our standard) was applied once before the test.
Test results: no decrease in strength; increase in backlash from 0.6° to 1.1°

Conditions 2)
Continuousrotation of 60 million cycles at a load torque of 0.2 Nm, angular misalignment 10°, and speed 2960 rpm. Lubrication: special high-viscosity grease (our standard) was applied once before the test.
Test results: no decrease in strength; increase in backlash from 0.6° to 1.7°

Dimensions

(mm)

Item No.	Standard hole diameters ϕd1, ϕd2 H8 (left/right can be freely combined)				M	Fastening torque (N·m)
DBSC 20	6	8	10	12	M4	2.5

Item No. designation

DBSC 20 − 6 (ϕd1) − 6 (ϕd2)

Specifications

Item No.	Rated torque (N·m)	Static failure torque (N·m)	Tortional rigidity (N·m/rad)	Back lash (deg.MAX)	Allowable end play	Allowable angular misalignment (°)	Allowable rotating speed (rpm)	Mass (g)
DBSC 20	6	34	750	≦1.2	±2.5mm at angular misalignment ≦5° ±1mm at angular misalignment =15°	15(MAX)	1,500	26

Note: Rated torque is for angular misalignment ≦5°. At a deflection of 15°,the rated torque will be approximately 1/3 these values.

MBS

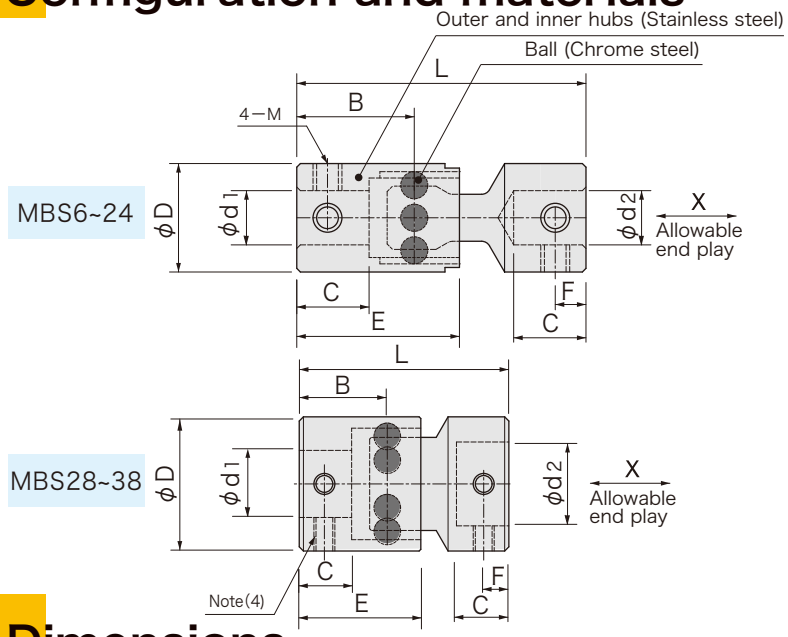
Patent Applied
Mini coupling
Single

RoHS2 compatible

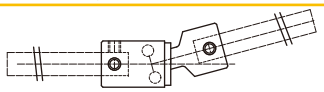
Features

- New coupling that incorporates tolerance endplay function in a universal joint
- Inexpensive due to a simple construction—composed of three elements: an outer hub,an inner hub, and multiple balls
- No splashing even at high speed, thanks to the use of special high-viscosity grease
- Compact, with high-strength, making it suitable for miniaturization of mechanisms

Configuration and materials



Assembly: Example Application



<Note>
Fix the shaft-coupling component using a strong adhesive, such as "Loctite".
Strong high-viscosity grease is applied to the ball joint.

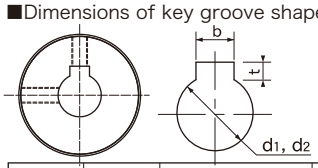
Item No. designation

*Key groove processing
No entry: no processing
K3: 3mm key groove width

MBS 20 – 10 K3 – 10 □
(φD) (φd1) (φd2)

・Key groove shape complies with new JIS standards.

■Dimensions of key groove shape



Hole diameter d1 ,d2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
10	3	3	±0.0125	1.4	+0.1 0	3×3
10～12	4	4	±0.0150	1.8		4×4
12～17	5	5		2.3		5×5
17～22	6	6		2.8		6×6

Dimensions

(mm)

Item No.	D	φd1 H8	φd2 H8	L	B	C	E	F	M	Fastening torque (N·m)
MBS 6	6	3	3	16.2	6.8	4	9	1.7	M2	0.3
MBS 8	8	3	3	20.2	8.2	5	11	2.5	M3	1
MBS 10	10	4	4	21	9.2	5.5	12	2.8	M3	1
MBS 11	11	5	5	21.5	9.5	6	12.5	2.8	M3	1
MBS 12	12	6	6	25.3	11	7	14	3	M3	1
MBS 15	15	6 8	8	28	12	7	15.7	3.5	M4	2
MBS 20	20	6 8 10	8 10	36	15	8	20.5	4	M4	2
MBS 24	24	8 10 12	10 12	44	18.5	10	25	5	M4	2
MBS 28	28	12 14 15	12 15	48	20.5	12.5	27.5	6	M5	4
MBS 32	32	16 18 20	16 18 20 *1	50	21	12.5	29	6	M5	4
MBS 38	37.8	18 20 22 24 *2	18 20 22 24 *2	64	26.5	15	37.5	7.5	M6	6

* 1: Key groove machining is not possible for φ20 of d2.
* 2: Key groove machining is not available for φ24.

Specifications

Item No.	Rated torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Back lash (deg,MAX)	Allowable angular misalignment (°)	Allowable end play (mm)	Moment of inertia (kg·m²)	Mass (g)
MBS 6	0.7	3,000	40	1	15	±1.0	1.0×10 -8	3
MBS 8	2.0	3,000	170	1	15	±1.3	4.0×10 -8	6
MBS 10	2.8	4,000	260	1	15	±1.3	1.0×10 -7	9
MBS 11	3.5	4,000	400	0.8	15	±1.5	2.0×10 -7	11
MBS 12	5.0	4,000	500	0.8	15	±1.5	3.5×10 -7	15
MBS 15	9.0	4,000	1,000	0.5	15	±1.8	9.0×10 -7	25
MBS 20	20	4,000	2,200	0.5	12	±2.2	3.5×10 -6	40
MBS 24	32	4,000	5,200	0.4	12	±2.5	9.0×10 -6	70
MBS 28	40	4,000	9,200	0.4	12	±3.0	2.0×10 -5	150
MBS 32	60	4,000	15,000	0.3	12	±3.0	3.2×10 -5	210
MBS 38	90	4,000	40,000	0.3	8	±4.0	7.1×10 -5	360

Note (1): Rated torque is for angular misalignment ≦5°. At 10°,it will be approx.2/3 the value.
Note (2): Maximum rotating speed is for angular misalignment ≦5°. At 10°,it will be approx.1/2 the value.
Note (3): Allowable end play is for angular misalignment ≦5°. At 10°,it will be approx.1/2 the value.
Note (4): The MBS 20～38 has 6 balls and the direction of the set screw is the same on the left and right.

MBD

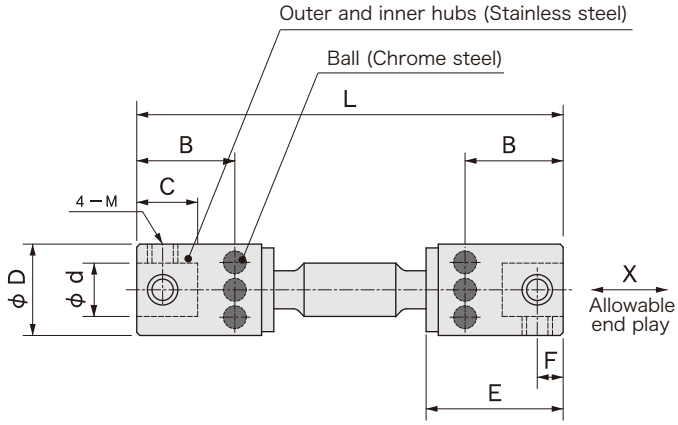
Patent Applied
Mini coupling
Double

RoHS2 compatible

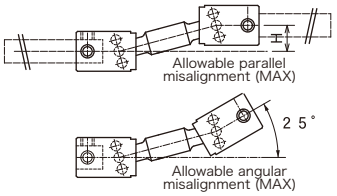
Features

- New coupling that incorporates tolerance endplay function in a universal joint
- Inexpensive due to a simple construction—composed of three elements:an outer hub,an inner hub, and multiple balls
- No splashing even at high speed, thanks to the use of special high-viscosity grease
- Compact, with high-strength, making it suitable for miniaturization of mechanisms

Configuration and materials



Assembly: Example Application



<Note>
Fix the shaft-coupling component using a strong adhesive, such as "Loctite".
Strong high-viscosity grease is applied to the ball joint.
Since the inner hub is free in the axial direction during rotation, it has left-right movement.

Item No. designation

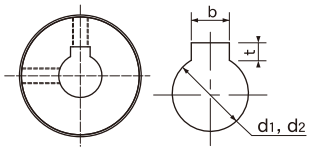
∗Key groove processing
No entry: no processing
K3: 3mm key groove width

MBD 20 – 10 K3 – 10 □
(φD) (φd1) (φd2)

・Key groove shape complies with new JIS standards.

Dimensions

■Dimensions of key groove shape



Hole diameter d1 ,d2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
10	3	3	±0.0125	1.4	+0.1 0	3×3
10～12	4	4	±0.0150	1.8		4×4
12～17	5	5		2.3		5×5
17～20	6	6		2.8		6×6

(mm)

Item No.	D	Standard hole diameters φd1, φd2 H8 (left/right can be freely combined)	L	B	C	E	F	M	Fastening torque (N·m)
MBD 6	6	3	27.5	6.8	4	9	1.7	M2	0.3
MBD 8	8	3	33.5	8.2	5	11	2.5	M3	1
MBD 10	10	4	37	9.2	5.5	12	2.8	M3	1
MBD 11	11	5	39	9.5	6	12.5	2.8	M3	1
MBD 12	12	6	42	11	7	14	3	M3	1
MBD 15	15	6 8	46	12	7	15.7	3.5	M4	2
MBD 20	20	6 8 10	58.5	15	8	20.5	4	M4	2
MBD 24	24	8 10 12	64	18.5	10	25	5	M4	2
MBD 28	28	12 14 15	68	20.5	12.5	27.5	6	M5	4
MBD 32	32	16 18 20	73	21	12.5	29	6	M5	4

Note (1): When using eccentricity or argument at maximum, please observe L ± 0.5 of expansion / contraction when assembling.

Specifications

Item No.	Rated torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Back lash (deg.MAX)	Allowable angular misalignment (°)	Allowable parallel misalignment (±mm)	Allowable end play (mm)	Moment of inertia (kg·m²)	Mass (g)
MBD 6	0.6	2,000	25	1.2	15	3	±2.0	2×10^{-8}	6
MBD 8	1.7	2,000	90	1.2	15	3	±2.5	7×10^{-8}	12
MBD 10	2.2	3,000	150	1	15	4	±2.5	1.7×10^{-7}	18
MBD 11	3	3,000	250	1	15	4	±2.5	2.5×10^{-7}	22
MBD 12	4	3,000	300	0.8	15	4	±2.5	4×10^{-7}	30
MBD 15	7	3,000	600	0.8	15	4	±3.0	1×10^{-6}	50
MBD 20	17	3,000	1,300	0.8	12	5	±3.5	4×10^{-6}	80
MBD 24	26	3,000	3,000	0.5	12	5	±4	1×10^{-5}	110
MBD 28	32	3,000	5,500	0.5	12	5	±4.5	2×10^{-5}	210
MBD 32	46	3,000	9,000	0.5	12	6	±5	3.5×10^{-5}	290

Note (2): Rated torque is for angular misalignment ≦10°. At 10°,it will be approx.1/2 the value.
Note (3): Maximum rotating speed is for angular misalignment ≦10°. At 10°,it will be approx.1/2 the value.
Note (4): Allowable end play is for angular misalignment ≦10°. At 10°,it will be approx.1/2 the value.

MBDS

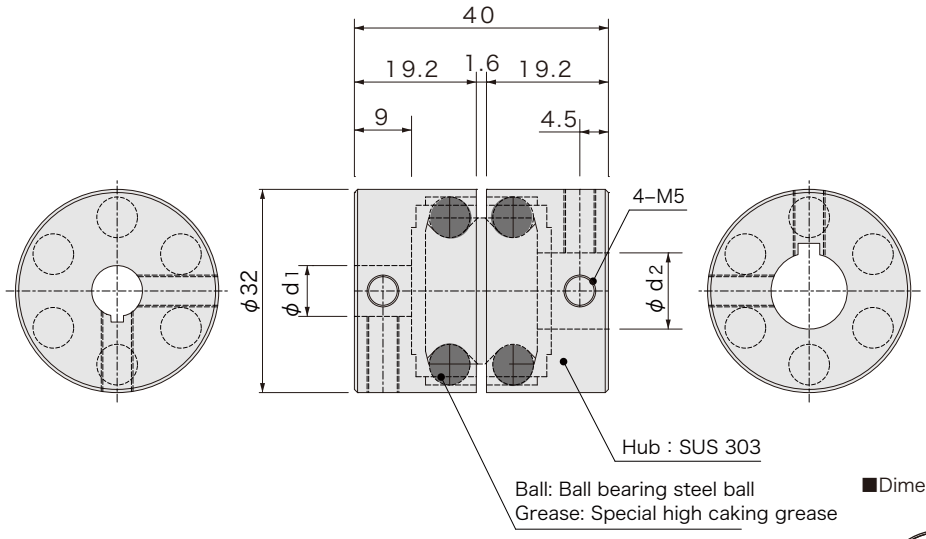
Ball couplings
Set screw type

RoHS2 compatible

Features

- Reliable “unstoppable” servo-compatible coupling that is not damaged by high impact torques or vibrating rotation
- Tolerates actual misalignment (eccentricity, declination, expansion and contraction) with minimum torque loss
- Provides excellent operation performance even with servo mechanisms with insufficient levels of mechanical precision
- Small, high torque, and high rigidity make device miniaturization possible

Configuration and materials

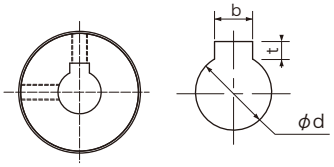


Item No. designation

MBDS 32- 8 K3 - 10 K4
(φd1) (φd2)

* Key groove shape compliant with new JIS standard.

■Dimensions of key groove shape



Hole diameter d1 ,d2	K	b		t		Nominal dimension of keys
		Basic dimension	Tolerance	Basic dimension	Tolerance	
8	2	2	±0.0125	1.0	+0.1 0	2×2
8~10	3	3		1.4		3×3
10~12	4	4	±0.0150	1.8		4×4
12~15	5	5		2.3		5×5

Dimensions

Item No.	Standard hole diameters φd1, φd2 H8 (left/right can be freely combined)
MBDS 32	8 10 12 15

Specifications

Item No.	Allowable torque (N・m)	Maximum rotating speed (rpm)	Torsional rigidity (N・m/rad)	Backlash (°)	Allowable angular misalignment (°)	Allowable parallel misalignment (mm)	Allowable end play (mm)	Moment of inertia (kg・m²)	Mass (g)
MBDS 32	50	3,000	8,000	0.1	3	0.2	±0.4	3×10^{-5}	190

Note(1) Indicated normal torque is for eccentricity of 0.1 or less. Halved for eccentricity of 0.2.
Note(2) Maximum rpm is for eccentricity of 0.1 or less. Halved for eccentricity of 0.2.
Note(3) Declination of up to 5° tolerated for maximum rpm of 1/3 or less of indicated maximum rpm and normal torque of 1/2 or less of indicated normal torque.
Note(4) Eccentricity of up to 0.4 tolerated for maximum rpm of 1/3 or less of indicated maximum rpm and normal torque of 1/2 or less of indicated normal torque.
Note(5) This is a high load torque coupling so key connections are required as a general rule (axial bonding torque is insufficient).

MBDC,NBDC

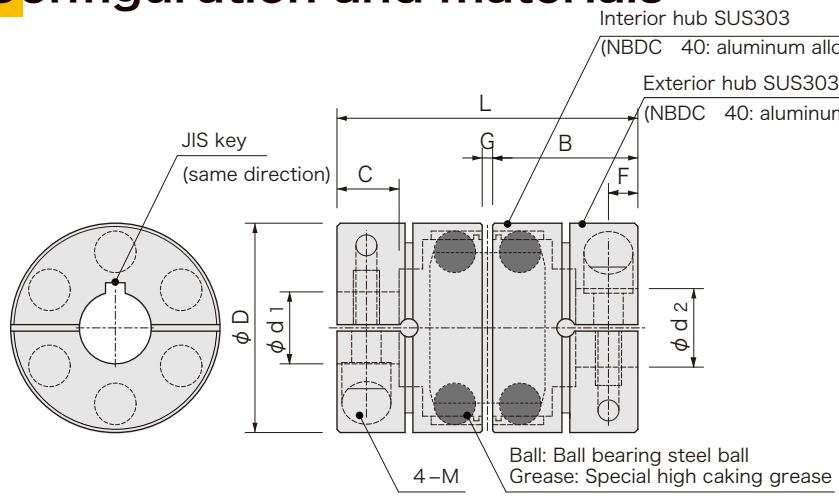
Ball couplings
Clamp type

RoHS2 compatible

Features

- Reliable “unstoppable” servo-compatible coupling that is not damaged by high impact torques or vibrating rotation
- Tolerates actual misalignment (eccentricity, declination, expansion and contraction) with minimum torque loss
- Provides excellent operation performance even with servo mechanisms with insufficient levels of mechanical precision
- Small, high torque, and high rigidity make device miniaturization possible

Configuration and materials



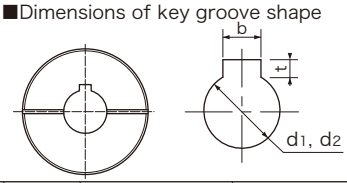
Item No. designation

MBDC 32 - 8 K3 - 10 K4
(ϕD) (ϕd1) (ϕd2)

NBDC 40 - 12 K4 - 18 K6
(ϕD) (ϕd1) (ϕd2)

* Key groove shape compliant with new JIS standard.

■Dimensions of key groove shape



Hole diameter d1 ,d2	K	b		t		Nominal dimension of keys
		Basic dimension	Tolerance	Basic dimension	Tolerance	
6～8	2	2	±0.0125	1.0	+0.1 0	2×2
8～10	3	3		1.4		3×3
10～12	4	4	±0.0150	1.8		4×4
12～17	5	5		2.3		5×5
17～20	6	6		2.8		6×6

Dimensions

Item No.	D	Standard hole diameters ϕd1, ϕd2 H8 (left/right can be freely combined)	L	B	C	F	G	4-M	Fastening torque (N・m)
MBDC 28	28	6 8 10 12	39.6	19.2	7.8	4	1.2	#6-32 *1	3
MBDC 32	32	8 10 12 14	46	22.2	9.5	4.5	1.6	M4	4.5
NBDC 40	39.5	12 14 18 20	56	27.2	14.3	6	1.6	M4	4.5

*1 Unified screw standard hexagonal bolt, L wrench = 7/64

Specifications

Item No.	Allowable torque (N・m)	Maximum rotating speed (rpm)	Torsional rigidity (N・m/rad)	Backlash (˚)	Allowable angular misalignment (˚)	Allowable parallel misalignment (mm)	Allowable end play (mm)	Moment of inertia (kg・m²)	Mass (g)
MBDC 28	30	3,000	6,000	0.1	3	0.2	±0.5	2×10^{-5}	160
MBDC 32	45	3,000	7,500	0.1	3	0.2	±0.5	4×10^{-5}	210
NBDC 40	50	3,000	8,000	0.1	3	0.3	±0.5	4×10^{-5}	180

Note (1) Indicated normal torque is for eccentricity of 0.15 or less. Halved for eccentricity of 0.3.
Note (2) Maximum rpm is for eccentricity of 0.15 or less. Halved for eccentricity of 0.3.
Note (3) Declination of up to 5˚ tolerated for maximum rpm of 1/3 or less of indicated maximum rpm and normal torque of 1/2 or less of indicated normal torque.
Note (4) Eccentricity of up to 0.4 tolerated for maximum rpm of 1/3 or less of indicated maximum rpm and normal torque of 1/2 or less of indicated normal torque.
Note (5) This is a high load torque coupling so key connections are required as a general rule (axial bonding torque is insufficient).

NBS

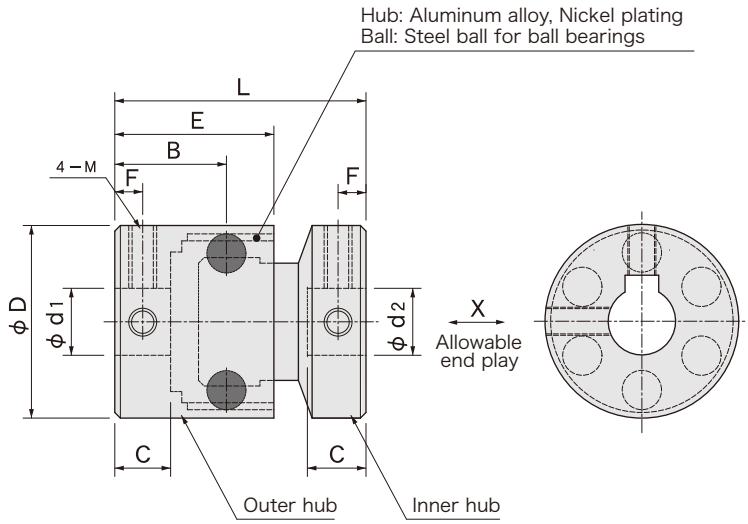
Patent Applied
Ball coupling

RoHS2 compatible

Features

- New coupling that incorporates tolerance endplay function in a universal joint
- Inexpensive due to a simple construction-composed of three elements: an outer hub, an inner hub, and multiple balls
- No splashing even at high speed, thanks to the use of special high-viscosity grease
- Compact, with high-strength, making it suitable for miniaturization of mechanisms

Configuration and materials



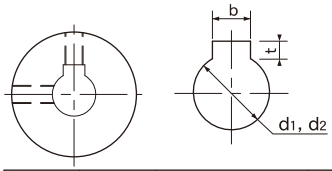
Item No. designation

*Key groove processing
No entry: no processing
K3: 3mm key groove width

NBS 30 – 10 K4 – 12 □
(ϕD) (ϕd1) (ϕd2)

・Key groove shape complies with new JIS standards.

■Dimensions of key groove shape



Hole diameter d1 ,d2	K	b		t		Nominal dimension of keys b×h
		Basic dimension	Tolerance	Basic dimension	Tolerance	
10	3	3	±0.0125	1.4	+0.1 0	3×3
10~12	4	4	±0.0150	1.8		4×4
12~17	5	5		2.3		5×5
17~22	6	6		2.8		6×6
22~30	8	8	±0.0180	3.3	+0.2 0	8×7
30~38	10	10		3.3		10×8
38~44	12	12	±0.0215	3.3		12×8
44~50	14	14		3.8		14×9
50	16	16		4.3		16×10

Dimensions

(mm)

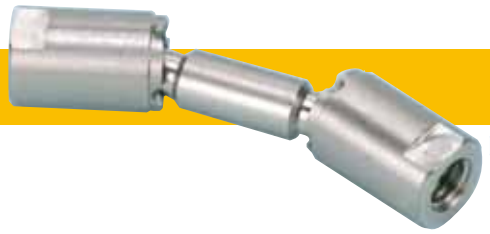
Item No.	D	Standard hole diameters ϕd1 ,ϕd2 H8 (left/right can be freely combined)	L	B	C	E	F	M	Fastening torque (N·m)
NBS 30	30	10 12 15	39	17.5	10	25	4.5	M5	4
NBS 35	35	12 15	50	21	10	29.5	5	M5	4
NBS 40	40	18 20	70	30	16	40	8	M6	7
NBS 50	50	18 20 22 24 28	86	36.5	18	50.5	9	M8	15
NBS 60	60	20 25 30 35	100	41	23	57	11	M10	30
NBS 75	74	25 30 35 40	100	41	23	57	11	M10	30
NBS 85	84	30 35 40 45	100	41	23	57	11	M10	30

Specifications

Item No.	Rated torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Back lash (deg,MAX)	Allowable end play (mm)	Allowable angular misalignment (°)	Moment of inertia (kg·m²)	Mass (g)
NBS 30	20	3,000	6,000	0.3	±4.0	10	6.8×10^{-6}	60
NBS 35	30	3,000	8,000	0.3	±5.0	10	1.3×10^{-5}	85
NBS 40	50	3,000	10,000	0.2	±5.0	10	3.5×10^{-5}	170
NBS 50	80	3,000	11,000	0.2	±7.5	10	1.1×10^{-4}	360
NBS 60	130	2,000	12,000	0.2	±7.5	7.5	2.8×10^{-4}	555
NBS 75	190	1,500	13,000	0.2	±7.5	7.5	6.6×10^{-4}	850
NBS 85	250	1,500	15,000	0.2	±7.5	7.5	1.2×10^{-3}	1,150

Note (1): Rated torque is for angular misalignment ≦5°. At 10°,it will be approx.1/2 the value.
Note (2): Maximum rotating speed is for angular misalignment ≦5°. At 10°,it will be approx.1/2 the value.
Note (3): Allowable end play is for angular misalignment ≦5°. At 10°,it will be approx.1/2 the value.

MBDB



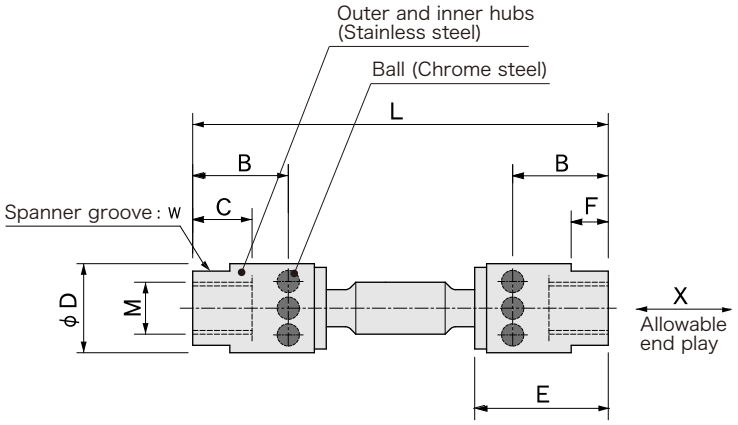
Patent Applied
Micro coupling
Double

RoHS2 compatible

Features

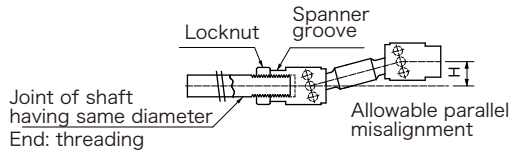
- New coupling that incorporates tolerance endplay function in a universal joint
- Inexpensive due to a simple construction—composed of three elements:an outer hub,an inner hub,and multiple balls
- No splashing even at high speed, thanks to the use of special high-viscosity grease
- Compact, with high-strength, making it suitable for miniaturization of mechanisms

Configuration and materials

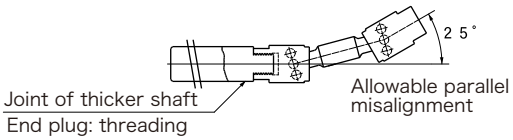


Assembly: Example Application

Assembly Example 1
Shaft has same diameter as hub screw
Thread the end of the shaft and fix it using the locknut.



Assembly example 2
Shaft is thicker than the hub screw diameter
Thread the end of the shaft and fix using a screwed-in plug.



<Note>
Fix the shaft-coupling component using a strong adhesive , such as "Loctite".
Strong high-viscosity grease is applied to the ball joint.
Since the inner hub is free in the axial direction during rotation,it has left-right movement.

Dimensions

(mm)

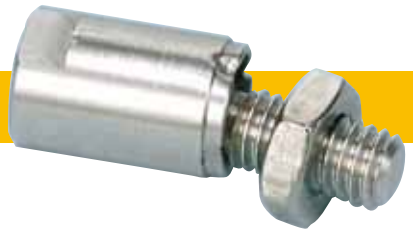
Item No.	D	L	B	C	E	F	W Spanner groove	M	Fastening torque (N・m)
MBDB 4	4	19.8	5	2.7	6.5	1.5	3.2	M2	0.2
MBDB 5	5	24.5	6.2	3.5	8	2	4	M3	0.6
MBDB 6	6	27.6	6.8	4	9	2.5	5	M3.5	1.2
MBDB 7	7	31	8	4.5	10.5	2.5	6	M4	2.5

Specifications

Item No.	Rated torque (N・m)	Maximum rotating speed (rpm)	Torsional rigidity (N・m/rad)	Back lash (deg,MAX)	Allowable angular misalignment (°)	Allowable parallel misalignment (±H)	Allowable end play (mm)	Moment of inertia ($kg \cdot m^2$)	Mass (g)
MBDB 4	0.1	2,000	6	2.5	25	3	±1.5	2.0×10^{-9}	1
MBDB 5	0.25	2,000	12	2.5	25	4	±1.8	6.3×10^{-9}	2
MBDB 6	0.4	2,000	20	2	25	5	±2.0	2.0×10^{-8}	4
MBDB 7	0.6	3,000	33	2	25	6	±2.4	4.0×10^{-8}	6

Note (1): Rated torque is for angular misalignment ≦10°. At 17°,it will be approx. 1/2 the value; at 25°approx.1/2.
Note (2): Maximum rotating speed is for angular misalignment ≦10°.At 17°,it will be approx. 1/2 the value; at 25°approx.1/3.
Note (3): Allowable end play is for angular misalignment ≦10°. At 17°,it will be approx. 1/2 the value; at 25°approx.1/3.

MBSA



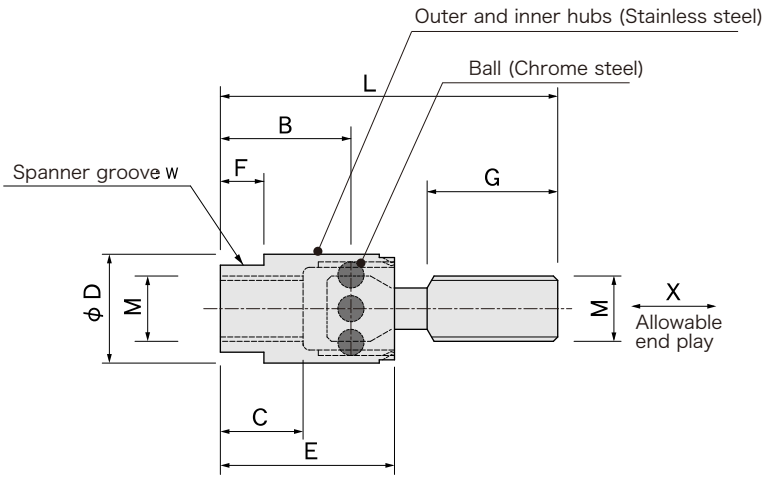
Patent Applied
Micro coupling
Single

RoHS2 compatible

Features

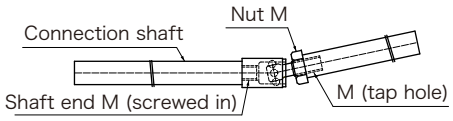
●New coupling that incorporates tolerance endplay function in a universal joint
●Inexpensive due to a simple construction—composed of three elements:an outer hub,an inner hub,and multiple balls
●No splashing even at high speed, thanks to the use of special high-viscosity grease
●Compact, with high-strength, making it suitable for miniaturization of mechanisms

Configuration and materials



Assembly: Example Application

Assembly Example 1
The left side shaft is thicker than the screw diameter, and the end is a screwed-in plug.
On the right side the shaft end has a tap hole.



<Note>
Fix the shaft-coupling component using a strong adhesive,such as "Loctite".
Strong high-viscosity grease is applied to the ball joint.

Dimensions

(mm)

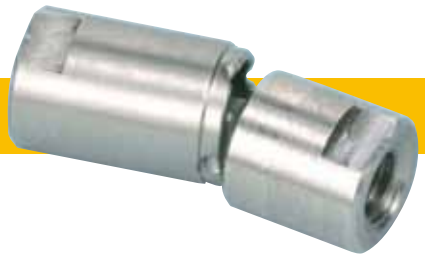
Item No.	D	L	B	C	E	G	F	W Spanner groove	M	Fastening torque (N·m)
MBSA 4	4	12	5	2.7	6.5	4.5	1.5	3.2	M2	0.2
MBSA 5	5	15.5	6.2	3.5	8	6	2	4	M3	0.6
MBSA 6	6	16.8	6.8	4	9	6	2.5	5	M3.5	1.2
MBSA 7	7	20.5	8	4.5	10.5	8	2.5	6	M4	2.5

Specifications

Item No.	Rated torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Back lash (deg,MAX)	Allowable angular misalignment (°)	Allowable end play (mm)	Moment of inertia (kg·m²)	Mass (g)
MBSA 4	0.13	2,000	11	2	15	±0.8	1.0×10^{-9}	0.5
MBSA 5	0.3	2,000	25	2	15	±0.8	3.1×10^{-9}	1
MBSA 6	0.5	2,000	40	1.5	15	±1.0	7.2×10^{-9}	2
MBSA 7	0.8	3,000	65	1.5	15	±1.5	2.0×10^{-8}	3

Note (1): Rated torque is for angular misalignment ≦5°.At 10°,it will be approx.2/3 the value; at 15°approx.1/2.
Note (2): Maximum rotating speed is for angular misalignment ≦5°.At 10°,it will be approx.1/2 the value; at 15°approx.1/3.
Note (3): Allowable end play is for angular misalignment ≦5°.At 10°,it will be approx.1/2 the value; at 15°approx.1/3.

MBSB



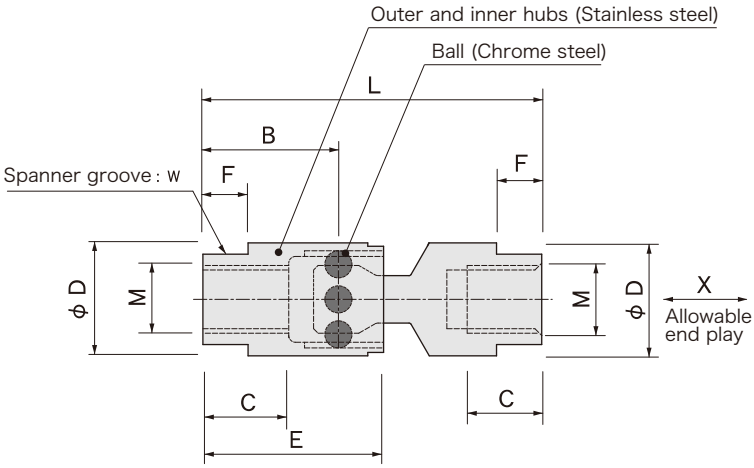
Patent Applied
Micro coupling
Single

RoHS2 compatible

Features

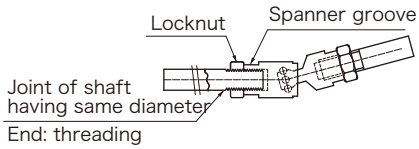
- New coupling that incorporates tolerance endplay function in a universal joint
- Inexpensive due to a simple construction—composed of three elements:an outer hub,an inner hub,and multiple balls
- No splashing even at high speed, thanks to the use of special high-viscosity grease
- Compact, with high-strength, making it suitable for miniaturization of mechanisms

Configuration and materials

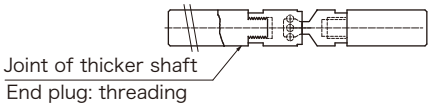


Assembly: Example Application

Assembly Example 1
Shaft has same diameter as hub screw
Thread the end of the shaft and fix it using the locknut.



Assembly example 2
Shaft is thicker than the hub screw diameter
Thread the end of the shaft and fix using a screwed-in plug.



<Note>
Fix the shaft-coupling component using a strong adhesive, such as "Loctite".
Strong high-viscosity grease is applied to the ball joint.

Dimensions

(mm)

Item No.	D	L	B	C	E	F	W Spanner groove	M	Fastening torque (N·m)
MBSB 4	4	12	5	2.7	6.5	1.5	3.2	M2	0.2
MBSB 5	5	15.5	6.2	3.5	8	2	4	M3	0.6
MBSB 6	6	16.8	6.8	4	9	2.5	5	M3.5	1.2
MBSB 7	7	20.5	8	4.5	10.5	2.5	6	M4	2.5

Specifications

Item No.	Rated torque (N·m)	Maximum rotating speed (rpm)	Torsional rigidity (N·m/rad)	Back lash (deg,MAX)	Allowable angular misalignment (°)	Allowable end play (mm)	Moment of inertia (kg·m²)	Mass (g)
MBSB 4	0.13	2,000	11	2	15	±0.8	2.0×10^{-9}	1
MBSB 5	0.3	2,000	25	2	15	±0.8	5.0×10^{-9}	2
MBSB 6	0.5	3,000	40	1.5	15	±1.0	1.1×10^{-8}	3
MBSB 7	0.8	3,000	65	1.5	15	±1.5	3.0×10^{-8}	4

Note (1): Rated torque is for angular misalignment ≦5°. At 10°,it will be approx.2/3 the value; at 15°approx.1/2.
Note (2): Maximum rotating speed is for angular misalignment ≦5°. At 10°,it will be approx.1/2 the value; at 15°approx.1/3.
Note (3): Allowable end play is for angular misalignment ≦5°. At 10°,it will be approx.1/2 the value; at 15°approx.1/3.