Metal Disc Couplings

SERVOFLEX

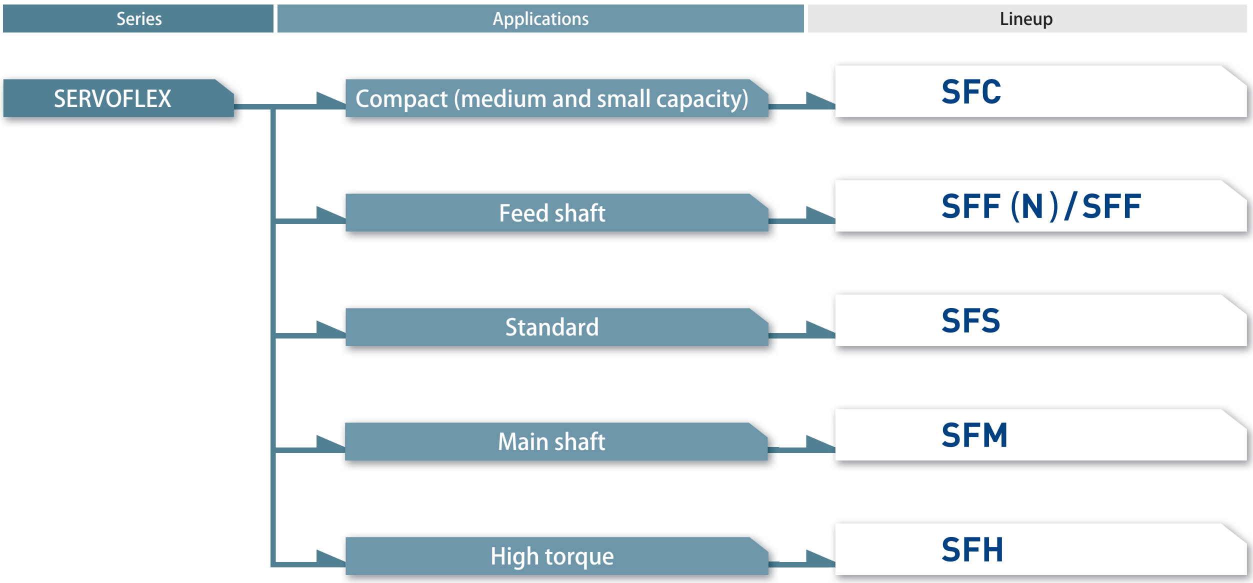
Ultra-high stiffness | Low inertia | High response | No backlash | RoHS

Applications Machine tool, semiconductor manufacturing equipment, actuator, chip mounter, printing press, packing machine

High-stiffness and Low-inertia Servomotor Couplings

Metal disc couplings developed for high-speed and high-precision positioning and ultra-precise control of servomotors, etc. While achieving high stiffness, high torque, low inertia, and high response speed, these couplings are also flexible in the torsional direction, in the uneven directions, and in the shaft direction, and are totally free from backlash. Models with various characteristics are available, and each model has a single element type that emphasizes stiffness and a double element type that emphasizes flexibility.

Available Models



Model Selection

Model type	Rated torque [N・m]	High stiffness	Low inertia	Mountability	Mounting accuracy	High-speed rotation	Material	Operating temperature [°C]
SFC	0.25 ～ 250	◎	●	●	◎	◎	Aluminum alloy	-30 ～ 100
SFF (N)	8 ～ 600	●	●	◎	●	●	Steel	-30 ～ 120
SFF	70 ～ 800	●	◎	○	●	●	Steel	-30 ～ 120
SFS	20 ～ 800	◎	◎	△	○	○	Steel	-30 ～ 120
SFM	200 ～ 800	●	◎	○	●	●	Steel	-30 ～ 120
SFH	1000 ～ 8000	●	◎	△	○	○	Steel	-30 ～ 120

* Symbols in the table indicate four levels of adaptability in order of ●◎○△ with ● showing the highest level of adaptability and △ showing the lowest level. (Adaptability high ←●◎○△→ low)

Product Lineup

SFC

Applications: NC lathe, machining center, chip mounter, actuator, SCARA robot, semiconductor manufacturing equipment

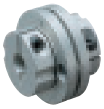
Max. rated torque	[N·m]	250
Bore ranges	[mm]	φ3～45

High stiffness · Ultra-low inertia · High response · Easy to remove · Wide range of options · No backlash · RoHS

High Stiffness and Ultra-low Inertia

Small- and medium-capacity model, which is made of a high-strength aluminum alloy and whose outer hub diameter is linked to the shaft diameter to achieve a ultra-low inertia ideal for high-speed rotation. Three different shapes are available depending on the combination of bore diameters you use.

TYPE A



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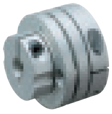
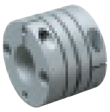


TYPE C



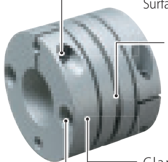
Simple and Reliable Connection

A single clamping method is used for connection to the shaft. The clamping hub is shock and vibration proof, enabling reliable connection and helping to substantially reduce mounting time. A special jig is used for centering to achieve an extremely high concentricity.

Wide Variety of Options

A wide variety of options such as a tapered shaft, length-specified special order, and keyway milling application are available. You can combine options to meet your desired specifications.

SFC SA2



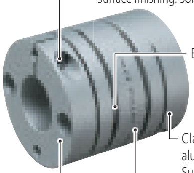
Clamping bolt material: Alloy steel for machine structural use
Surface finishing: Solid lubricant coating*1

Element material: SUS304 metal disc
SUS304 collar*2

Clamping hub material: High-strength aluminum alloy
Surface finishing: Alumite treatment

Bolt material: Alloy steel for machine structural use
Surface finishing: Trivalent chromate treatment*3

SFC DA2



Clamping bolt material: Alloy steel for machine structural use
Surface finishing: Solid lubricant coating*1

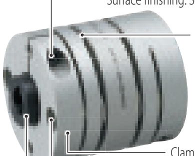
Element material: SUS304 metal disc
SUS304 collar*2

Clamping hub material: High-strength aluminum alloy
Surface finishing: Alumite treatment

Spacer material: High-strength aluminum alloy
Surface finishing: Alumite treatment

Bolt material: Alloy steel for machine structural use
Surface finishing: Trivalent chromate treatment*3

SFC SA2/DA2 BC



Clamping bolt material: Alloy steel for machine structural use
Surface finishing: Solid lubricant coating

Element material: SUS304 metal disc
SUS304 collar

Clamping hub material: High-strength aluminum alloy
Surface finishing: Alumite treatment

Bolt material: Alloy steel for machine structural use
Surface finishing: Trivalent chromate treatment

Taper adapter material: S45C or an equivalent
Surface finishing: Black coating applied

＊1 For surface processing of the clamping bolts , black coating is applied only for #002.
＊2 The collar material in the marked area is S45C in sizes #080 to #100, and the surface finishing is trivalent chrome treatment.
＊3 The bolt surface finishing in the marked area is anti-rust coating in sizes #080 to #100.

SFS

Applications: Machine tool, printing press, packing machine, coater/coating machine

Max. rated torque	[N·m]	800
Bore ranges	[mm]	φ8～60

High stiffness · Low inertia · Wide range of variations · Length-specified · Metal-plateable · No backlash · RoHS

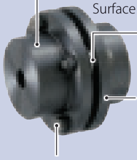
Wide Variations

SERVOFLEX standard model. 18 types with different numbers of elements, distances between shafts, shaft connection methods, etc. are available. You can select the electroless nickel plating for the pilot bore and key/set screw.

Parts Delivery

You can order the parts of the coupling to be delivered instead of an assembled coupling, so you can use this coupling in a design in which the assembled coupling could not be mounted. You can also order an assembled coupling to be delivered or combine different types of hubs.

SFS S



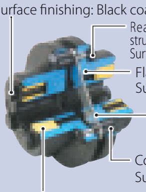
Set screw with hexagonal hole material: Alloy steel for machine structural use
Surface finishing: Black coating applied

Element material: SUS304 metal disc
Collar: S45C or an equivalent

Flange material: S45C or an equivalent
Surface finishing: Black coating applied

Reamer bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied

SFS S-□M-□M



Pressure bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied

Reamer bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied

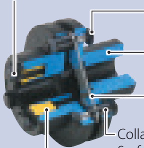
Flange material: S45C or an equivalent
Surface finishing: Black coating applied

Element material: SUS304 metal disc
Collar: S45C or an equivalent

Collar material: S45C or an equivalent
Surface finishing: Black coating applied

Sleeve material: S45C or an equivalent
Surface finishing: Black coating applied

SFS S-□M-□C



Pressure bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied

Reamer bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied

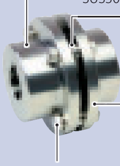
Flange material: S45C or an equivalent
Surface finishing: Black coating applied

Element material: SUS304 metal disc
Collar: S45C or an equivalent

Collar material: S45C or an equivalent
Surface finishing: Black coating applied

Sleeve material: S45C or an equivalent
Surface finishing: Black coating applied

SFS S-C



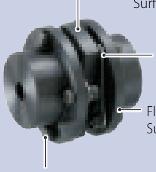
Set screw with hexagonal hole material: SUS304 or an equivalent

Element material: SUS304 metal disc
Collar: S45C or an equivalent
Surface finishing: Electroless nickel plating treatment

Flange material: S45C or an equivalent
Surface finishing: Electroless nickel plating treatment

Reamer bolt material: Alloy steel for machine structural use
Surface finishing: Electroless nickel plating treatment

SFS W



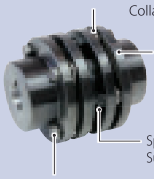
Spacer material: SS400 or an equivalent
Surface finishing: Black coating applied

Element material: SUS304 metal disc
Collar: S45C or an equivalent

Flange material: S45C or an equivalent
Surface finishing: Black coating applied

Reamer bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied

SFS G



Element material: SUS304 metal disc
Collar: S45C or an equivalent

Flange material: S45C or an equivalent
Surface finishing: Black coating applied

Spacer material: Carbon steel
Surface finishing: Black coating or painting

Reamer bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied

SFF (N)

Applications: NC lathe, machining center, chip mounter, electrical discharge machine

Max. rated torque	[N·m]	600
Bore ranges	[mm]	φ 8～55

Ultra-high stiffness · Ultra-low inertia · High torque · Highly accurate mounting · No backlash · RoHS

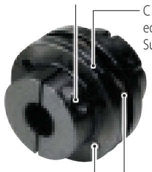
Ultra-high Stiffness and Ultra-low Inertia

This model has an extremely high torsional stiffness and has achieved a high rated torque of up to 1.5 times that of our previous models, as well as an ultra-low inertia.

High-precision Clamping Connection

The number of mounting bolts has been reduced substantially. You can remarkably reduce mounting time.

SFF SS (N)



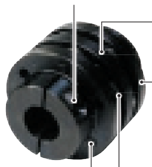
Clamping bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied

Clamping hub material: S45C or an equivalent
Surface finishing: Black coating applied

Element material: SUS304 metal disc
Collar: S45C or an equivalent

Bolt with hexagonal hole material: Alloy steel for machine structural use
Surface finishing: Black coating applied

SFF DS (N)



Clamping bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied

Spacer material: S45C or an equivalent
Surface finishing: Black coating applied

Clamping hub material: S45C or an equivalent
Surface finishing: Black coating applied

Element material: SUS304 metal disc
Collar: S45C or an equivalent

Bolt with hexagonal hole material: Alloy steel for machine structural use
Surface finishing: Black coating applied

SFF

Applications: NC lathe, machining center, chip mounter, packing machine

Max. rated torque	[N·m]	800
Bore ranges	[mm]	φ 18～80

Ultra-high stiffness · Low inertia · Highly accurate mounting · No backlash · RoHS

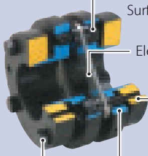
Ultra-high Stiffness

This model was developed for use in the feed shaft of machine tools, has a high torsional stiffness, and enables precise shaft rotation and ultra-precise control.

Frictional Coupling for Large Diameters

This model supports frictional coupling for larger-diameter shafts than the previous models.

SFF SS



Bolt with hexagonal hole material: Alloy steel for machine structural use
Surface finishing: Black coating applied

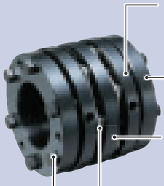
Element material: SUS304 metal disc
Collar: S45C or an equivalent

Sleeve material: S45C heat-treated material or an equivalent
Surface finishing: Black coating applied

Flange material: S45C heat-treated material or an equivalent
Surface finishing: Black coating applied

Pressure bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied

SFF DS



Flange material: S45C heat-treated material or an equivalent
Surface finishing: Black coating applied

Sleeve material: S45C heat-treated material or an equivalent
Surface finishing: Black coating applied

Spacer material: S45C or an equivalent
Surface finishing: Black coating applied

Element material: SUS304 metal disc
Collar: S45C or an equivalent

Pressure bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied

SFM

Application: Machine tool main shaft

Max. rated torque	[N·m]	800
Bore ranges	[mm]	φ 28～80

Ultra-high stiffness · Low inertia · Highly accurate mounting · High speed · Quiet · No backlash · RoHS

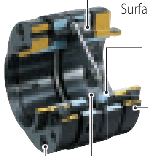
Max. Rotation Speed 20000 min^{-1}

High-speed design substantially reduces wind noise. Balance correction is also available as an option.

High-accuracy Mounting

A centering mechanism is provided to facilitate high-accuracy mounting.

SFM SS



Bolt with hexagonal hole: Alloy steel for machine structural use
Surface finishing: Black coating applied

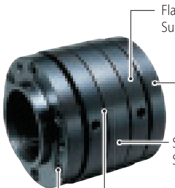
Flange material: S45C or an equivalent
Surface finishing: Black coating applied

Sleeve material: S45C or an equivalent
Surface finishing: Black coating applied

Element material: SUS304 metal disc
Collar: S45C or an equivalent

Pressure bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied

SFM DS



Flange material: S45C or an equivalent
Surface finishing: Black coating applied

Sleeve material: S45C or an equivalent
Surface finishing: Black coating applied

Spacer material: S45C or an equivalent
Surface finishing: Black coating applied

Element material: SUS304 metal disc
Collar: S45C or an equivalent

Pressure bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied

SFH

Applications: Double column machining center, printing press, testing machinery, wind turbine generator

Max. rated torque	[N·m]	8000
Bore ranges	[mm]	φ 22～115

High output response · Ultra-high stiffness · Low inertia · Length-specified · No backlash · RoHS

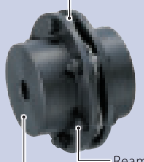
Max. Rated Torque 8000N·m

This model was developed to transmit a large torque, has an extremely high torsional stiffness, and enables precise shaft rotation and ultra-precise control.

Total Length Can Be Specified

The total length can be specified for a type that connects the middle of the element using a floating shaft.

SFH S

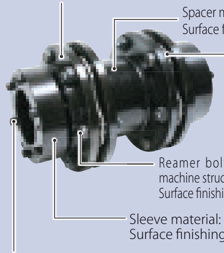


Element material: SUS304 metal disc
Collar: S45C or an equivalent

Reamer bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied

Flange hub material: S45C or an equivalent
Surface finishing: Black coating applied

SFH G-□K-□K



Flange material: S45C or an equivalent
Surface finishing: Black coating applied

Spacer material: S45C or an equivalent
Surface finishing: Black coating applied

Element material: SUS304 metal disc
Collar: S45C or an equivalent

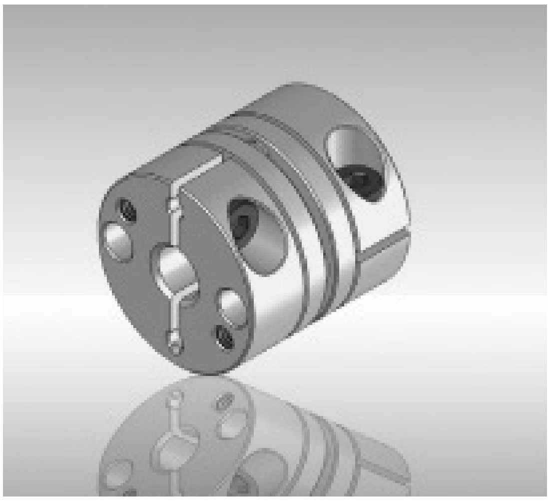
Reamer bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied

Sleeve material: S45C or an equivalent
Surface finishing: Black coating applied

Pressure bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied

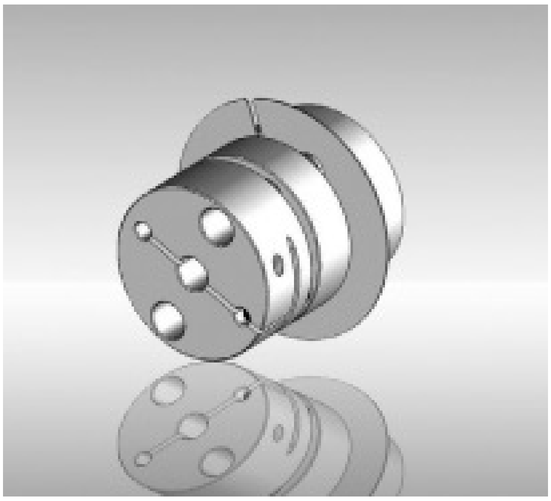
Customization Cases

SFC Model with tap on the end



A slit plate for a position detection sensor can be mounted by drilling a tap hole on the end of the hub.

SFC Model with slit plate



A slit plate is mounted between the hubs to allow it to be used with position detection sensors such as an encoder and photo sensor.

SFC Model with long spacer

This is a specification for when the mounting distance between shafts is long. It can be used in applications such as synchronization of gantry mechanism.

SFC Model with assembly

This is a custom order specification for an assembly of the SFC model, POSI-LOCK (shaft lock) PSL-K, timing pulley, and shaft.

For details, please visit our website.

For inquiries on customization

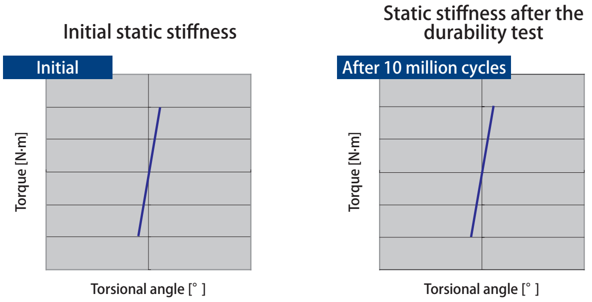
www.mikipulley.co.jp

Web code Z001

FAQ

Q1 What are the durability and aging deterioration of the SERVOFLEX?

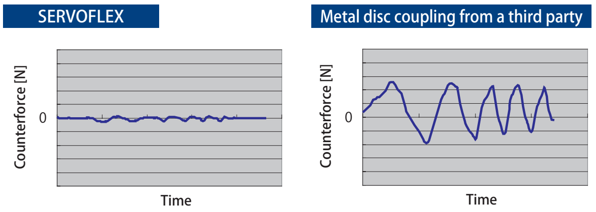
A We conduct a torsional durability test by applying a load larger than the rated torque. SERVOFLEX passed the test by withstanding the metal fatigue limit of 10 million cycles of repeated load. SERVOFLEX is all made of metal materials so the deterioration is extremely slow, and it is able to transmit torque with high precision for a long period of time.



Torsional characteristics of the SERVOFLEX before and after the durability test with 10 million cycles of repeated load

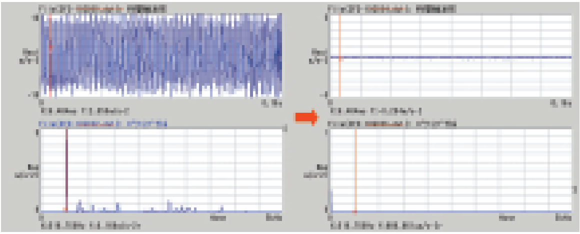
Q2 When a coupling is mounted, the driven shaft runs out. What is the cause?

A The runout of a driven shaft caused by a coupling is mainly attributed to the counterforce of the shaft caused by insufficient centering. All of the SERVOFLEX series are assembled using high-precision special jigs to ensure high concentricity of the bores on the left and right. The counterforce of the shaft is extremely small so the runout of the driven shaft can be minimized.



Q3 Noise and vibrations occurred during use of a metal disc coupling. Please tell me how to prevent them.

A For a servo motor, noise and vibrations can be suppressed by setting the machine resonance suppression filter to its natural frequency in the control system. For a stepper motor, vibrations can be absorbed and suppressed by changing the rotation speed or using a STEPFLEX coupling with high damping ability.

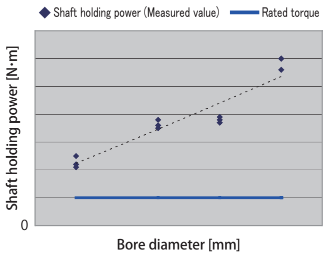


Before adjusting the resonant filter of the servo motor

After adjusting the resonant filter of the servo motor

Q4 Can enough torque be transmitted using the clamping method for connection to the shaft?

A Our torque transmission test uses a sufficient safety factor, so slip of the connection caused by the connection method will not occur when using the rated torque in the catalog. A keyway can be milled into the clamping hub. If you are interested, please refer to P.041 Keyway Milling Option.



Shaft holding power based on SFC-040DA2 bore diameter

SFC SA2 Types Single Element Type

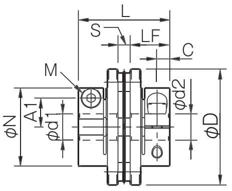
Specifications

Model	Rated torque [N·m]	Misalignment			Max. rotation speed [min⁻¹]	Torsional stiffness [N·m/rad]	Axial stiffness [N/mm]	Type	Moment of inertia [kg·m²]	Mass [kg]
		Parallel [mm]	Angular [°]	Axial [mm]						
SFC-002SA2	0.25	0.01	0.5	± 0.04	10000	190	34	C	0.06×10^{-6}	0.003
SFC-005SA2	0.6	0.02	0.5	± 0.05	10000	500	140	C	0.26×10^{-6}	0.007
SFC-010SA2	1	0.02	1	± 0.1	10000	1400	140	C	0.58×10^{-6}	0.011
SFC-020SA2	2	0.02	1	± 0.15	10000	3700	64	C	2.39×10^{-6}	0.025
SFC-025SA2	4	0.02	1	± 0.19	10000	5600	60	C	3.67×10^{-6}	0.029
SFC-030SA2	5	0.02	1	± 0.2	10000	8000	64	A	4.07×10^{-6}	0.034
								B	6.09×10^{-6}	0.041
								C	8.20×10^{-6}	0.049
SFC-035SA2	8	0.02	1	± 0.25	10000	18000	112	C	18.55×10^{-6}	0.084
SFC-040SA2	10	0.02	1	± 0.3	10000	20000	80	A	16.71×10^{-6}	0.077
								B	22.98×10^{-6}	0.088
								C	29.68×10^{-6}	0.103
SFC-050SA2	25	0.02	1	± 0.4	10000	32000	48	A	55.71×10^{-6}	0.159
								B	76.26×10^{-6}	0.177
								C	99.03×10^{-6}	0.206
SFC-055SA2	40	0.02	1	± 0.42	10000	50000	43	C	188.0×10^{-6}	0.314
SFC-060SA2	60	0.02	1	± 0.45	10000	70000	76.4	A	145.9×10^{-6}	0.283
								B	205.0×10^{-6}	0.326
								C	268.6×10^{-6}	0.385
SFC-080SA2	100	0.02	1	± 0.55	10000	140000	128	C	710.6×10^{-6}	0.708
SFC-090SA2	180	0.02	1	± 0.65	10000	100000	108	C	1236×10^{-6}	0.946
SFC-100SA2	250	0.02	1	± 0.74	10000	120000	111	C	1891×10^{-6}	1.202

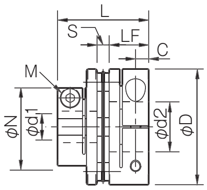
* Max. rotation speed does not take into account dynamic balance.
* Torsional stiffness values given are measured values for the element alone.
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions

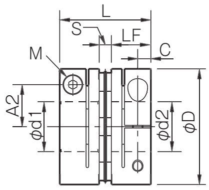
■ TYPE A

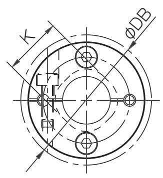


■ TYPE B



■ TYPE C





CAD

Unit [mm]

Model	d1 *1		d2 *1		D	DB	N	L	LF	S	A1	A2	C	K	M	Tightening torque [N·m]	Type
	Min.	Max.	Min.	Max.													
SFC-002SA2	3	5	3	5	12	12.4	—	12.35	5.9	0.55	—	3.7	1.9	5.6	1-M1.6	0.23 ～ 0.28	C
SFC-005SA2	3	6	3	6	16	—	—	16.7	7.85	1	—	4.8	2.5	6.5	1-M2	0.4 ～ 0.5	C
SFC-010SA2	3	8	3	8	19	—	—	19.35	9.15	1.05	—	5.8 *2	3.15	8.5	1-M2.5 *3	1.0 ～ 1.1 *3	C
SFC-020SA2	4	10	4	11	26	—	—	23.15	10.75	1.65	—	9.5	3.3	10.6	1-M2.5	1.0 ～ 1.1	C
SFC-025SA2	5	14	5	14	29	—	—	23.4	10.75	1.9	—	11	3.3	14.5	1-M2.5	1.0 ～ 1.1	C
SFC-030SA2	5	10	5	10	34	—	21.6	27.3	12.4	2.5	8	—	3.75	14.5	1-M3	1.5 ～ 1.9	A
	5	10	Over 10	16							8	12.5					B
	Over 10	14	Over 10	16			—				—	12.5					C
SFC-035SA2	6	16	6	18	39	—	—	34	15.5	3	—	14	4.5	17	1-M4	3.4 ～ 4.1	C
SFC-040SA2	8	15	8	15	44	—	29.6	34	15.5	3	11	—	4.5	19.5	1-M4	3.4 ～ 4.1	A
	8	15	Over 15	22							11	17					B
	Over 15	19	Over 15	22			—				—	17					C
SFC-050SA2	8	19	8	19	56	—	38	43.4	20.5	2.4	14.5	—	6	26	1-M5	7.0 ～ 8.5	A
	8	19	Over 19	30							14.5	22					B
	Over 19	25	Over 19	30			—				—	22					C
SFC-055SA2	10	30	10	30	63	—	—	50.6	24	2.6	—	23	7.75	31	1-M6	14 ～ 15	C
SFC-060SA2	11	24	11	24	68	—	46	53.6	25.2	3.2	17.5	—	7.75	31	1-M6	14 ～ 15	A
	11	24	Over 24	35							17.5	26.5					B
	Over 24	30	Over 24	35			—				—	26.5					C
SFC-080SA2	18	35	18	40	82	—	—	68	30	8	—	28	9	38	1-M8	27 ～ 30	C
SFC-090SA2	25	40	25	45	94	—	—	68.3	30	8.3	—	34	9	42	1-M8	27 ～ 30	C
SFC-100SA2	32	45	32	45	104	—	—	69.8	30	9.8	—	39	9	48	1-M8	27 ～ 30	C

* The rated torque of the coupling may be limited for bore diameters marked with *1. Consult "Standard Bore Diameters" on P.37.
* The øDB value is measured assuming that the head of the clamping bolt is larger than the external diameter of the hub.
* The nominal diameter for the clamping bolt M is equal to the quantity minus the nominal diameter of the screw threads, where the quantity is for a hub on one side.
* For items marked with *2, d1 or d2 may be from ø3 to ø7 in some cases. If d1 or d2 is ø8, this value is 6.
* For items marked with *3, d1 or d2 may be from ø3 to ø7 in some cases. If d1 or d2 is ø8, then this is M2. The M2 tightening torque is 04 to 0.5 N·m.
* The machining tolerance for paired mounting shafts is g6, h6 or h7 class. However, for a shaft diameter of ø35, the tolerance is $^{+0.010}_{-0.025}$. For information on other tolerances, contact Miki Pulley.

For length-specified special order parts

【 For keyway milling applications → P.041 】

Standard Bore Diameter

Model	Standard bore diameter d1 [mm]		Standard bore diameter, d2 [mm]																														
	Min.	Max.	3	4	5	6	6.35	7	8	9	9.525	10	11	12	13	14	15	16	17	18	19	20	22	24	25	28	30	32	35	38	40	42	45
SFC-002SA2	3	5	●	●	●																												
SFC-005SA2	3	6	●	●	●	●																											
SFC-010SA2	3	8	●	●	●	●	●	●	●																								
SFC-020SA2	4	10		●	●	●	●	●	●	●	●	●	○																				
SFC-025SA2	5	14			2.1	●	●	●	●	●	●	●	●	●	●	●																	
SFC-030SA2	5	14			2.8	3.4	●	●	●	●	●	●	●	●	●	●	○	○															
SFC-035SA2	6	16				5	5	6.6	●	●	●	●	●	●	●	●	●	●	○	○													
SFC-040SA2	8	19							9	●	●	●	●	●	●	●	●	●	●	●	●	○	○										
SFC-050SA2	8	25							18	20	22	22	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○						
SFC-055SA2	10	30										31	34	36	38	●	●	●	●	●	●	●	●	●	●	●	●						
SFC-060SA2	11	30											50	51	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○				
SFC-080SA2	18	35																		●	●	●	●	●	●	●	●	●	●	○	○		
SFC-090SA2	25	40																							●	●	●	●	●	●	●	○	○
SFC-100SA2	32	45																										226	●	●	●	●	●

* Bore diameters marked with ●, ○, or numbers are supported as the standard bore diameters.
* Bore diameters marked with ○ have restrictions on the inner diameter of the element, so they can only be used with d2 side hubs. Example of product that cannot be manufactured: SFC-020SA2-11B-11B; example of product that can be manufactured: SFC-020SA2-10B-11B
* Bore diameters whose fields contain numbers are restricted in their rated torque by the holding power of the shaft connection component because the bore diameter is small. The numbers indicate the rated torque [N•m].
* These range of applicable bore diameters is between the minimum and maximum bore diameters of the dimensions table. Consult Miki Pulley regarding special arrangements for other bore diameters.

Option 1 Tapered shaft supported

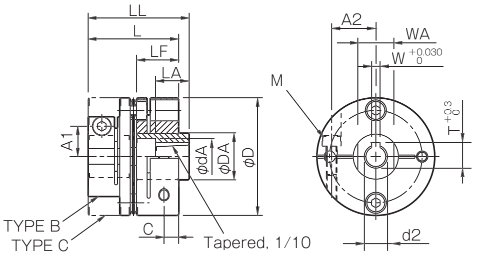
Allows coupling via a clamping hub when a taper adapter is mounted on the tapered shaft of a servo motor.

Specifications

Model	Rated torque [N·m]	Misalignment			Max. rotation speed [min⁻¹]	Torsional stiffness [N·m/rad]	Axial stiffness [N/mm]	Type	Moment of inertia [kg·m²]	Mass [kg]
		Parallel [mm]	Angular [°]	Axial [mm]						
SFC-050SA2-☐B-11BC	25	0.02	1	±0.4	10000	32000	48	B C	82.91×10^{-6} 103.5×10^{-6}	0.240 0.258
SFC-050SA2-☐B-14BC	25	0.02	1	±0.4	10000	32000	48	B C	88.72×10^{-6} 111.5×10^{-6}	0.271 0.301
SFC-050SA2-☐B-16BC	25	0.02	1	±0.4	10000	32000	48	B C	95.44×10^{-6} 118.2×10^{-6}	0.309 0.338
SFC-055SA2-☐B-14BC	40	0.02	1	±0.42	10000	50000	43	C	201.1×10^{-6}	0.409
SFC-055SA2-☐B-16BC	40	0.02	1	±0.42	10000	50000	43	C	207.8×10^{-6}	0.446
SFC-060SA2-☐B-16BC	60	0.02	1	±0.45	10000	70000	76.4	B C	228.7×10^{-6} 287.8×10^{-6}	0.475 0.517

* Max. rotation speed does not take into account dynamic balance.
* Torsional stiffness values given are measured values for the element alone.
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions



Unit [mm]

Model	d2	W	T	WA	LA	dA	DA	LL	D	L	LF	C	A1	A2	M
SFC-050SA2-☐B-11BC	11	4	12.2	18	16	17	22	48.4	56	43.4	20.5	6	14.5	22	1-M5
SFC-050SA2-☐B-14BC	14	4	15.1	24	19	22	28	53.4	56	43.4	20.5	6	14.5	22	1-M5
SFC-050SA2-☐B-16BC	16	5	17.3	24	29	26	30	63.4	56	43.4	20.5	6	14.5	22	1-M5
SFC-055SA2-☐B-14BC	14	4	15.1	24	19	22	28	56.6	63	50.6	24	7.75	—	23	1-M6
SFC-055SA2-☐B-16BC	16	5	17.3	24	29	26	30	66.6	63	50.6	24	7.75	—	23	1-M6
SFC-060SA2-☐B-16BC	16	5	17.3	24	29	26	30	69.6	68	53.6	25.2	7.75	17.5	26.5	1-M6

* The shape is type B or type C.

How to Place an Order

SFC-040SA2-14B-15B

Size
Type: SA2
Single element, aluminum
Bore diameter: d1 (Small diameter) - d2 (Large diameter)
B: Clamping hub
BC: Taper adapter
*Select d2 for BC.

Option 3 For keyway milling applications → P.041

SFC DA2 Types Double Element Type

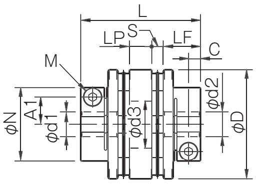
Specifications

Model	Rated torque [N·m]	Misalignment			Max. rotation speed $[\text{min}^{-1}]$	Torsional stiffness [N·m/rad]	Axial stiffness [N/mm]	Type	Moment of inertia $[\text{kg·m}^2]$	Mass [kg]
		Parallel [mm]	Angular [°]	Axial [mm]						
SFC-002DA2	0.25	0.03	0.5 (On one side)	± 0.08	10000	95	17	C	0.07×10^{-6}	0.004
SFC-005DA2	0.6	0.05	0.5 (On one side)	± 0.1	10000	250	70	C	0.37×10^{-6}	0.010
SFC-010DA2	1	0.11	1 (On one side)	± 0.2	10000	700	70	C	0.80×10^{-6}	0.015
SFC-020DA2	2	0.15	1 (On one side)	± 0.33	10000	1850	32	C	3.43×10^{-6}	0.035
SFC-025DA2	4	0.16	1 (On one side)	± 0.38	10000	2800	30	C	5.26×10^{-6}	0.040
SFC-030DA2	5	0.18	1 (On one side)	± 0.4	10000	4000	32	A	7.43×10^{-6}	0.054
								B	9.45×10^{-6}	0.060
								C	11.56×10^{-6}	0.068
SFC-035DA2	8	0.24	1 (On one side)	± 0.5	10000	9000	56	C	27.05×10^{-6}	0.122
SFC-040DA2	10	0.24	1 (On one side)	± 0.6	10000	10000	40	A	29.98×10^{-6}	0.124
								B	36.25×10^{-6}	0.134
								C	42.95×10^{-6}	0.149
SFC-050DA2	25	0.28	1 (On one side)	± 0.8	10000	16000	24	A	98.34×10^{-6}	0.250
								B	118.9×10^{-6}	0.268
								C	141.7×10^{-6}	0.298
SFC-055DA2	40	0.31	1 (On one side)	± 0.84	10000	25000	21.5	C	261.3×10^{-6}	0.459
SFC-060DA2	60	0.34	1 (On one side)	± 0.9	10000	35000	38.2	A	256.6×10^{-6}	0.447
								B	315.7×10^{-6}	0.489
								C	379.3×10^{-6}	0.549
SFC-080DA2	100	0.52	1 (On one side)	± 1.10	10000	70000	64	C	1039×10^{-6}	1.037
SFC-090DA2	180	0.52	1 (On one side)	± 1.30	10000	50000	54	C	1798×10^{-6}	1.369
SFC-100DA2	250	0.55	1 (On one side)	± 1.48	10000	60000	55.5	C	2754×10^{-6}	1.739

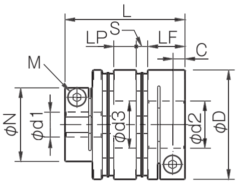
* Max. rotation speed does not take into account dynamic balance.
* Torsional stiffness values given are measured values for the element alone.
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions

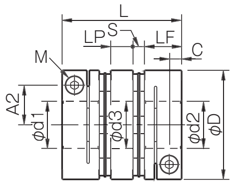
■ TYPE A

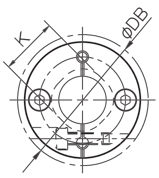


■ TYPE B



■ TYPE C





Unit [mm]

Model	d1 *1		d2 *1		D	DB	N	L	LF	LP	S	A1	A2	C	d3	K	M	Tightening torque [N·m]	Type
	Min.	Max.	Min.	Max.															
SFC-002DA2	3	5	3	5	12	12.4	—	15.7	5.9	2.8	0.55	—	3.7	1.9	5.2	5.6	1-M1.6	0.23 ～ 0.28	C
SFC-005DA2	3	6	3	6	16	—	—	23.2	7.85	5.5	1	—	4.8	2.5	6.5	6.5	1-M2	0.4 ～ 0.5	C
SFC-010DA2	3	8	3	8	19	—	—	25.9	9.15	5.5	1.05	—	5.8 *2	3.15	8.5	8.5	1-M2.5 *3	1.0 ～ 1.1 *3	C
SFC-020DA2	4	10	4	11	26	—	—	32.3	10.75	7.5	1.65	—	9.5	3.3	10.6	10.6	1-M2.5	1.0 ～ 1.1	C
SFC-025DA2	5	14	5	14	29	—	—	32.8	10.75	7.5	1.9	—	11	3.3	15	14.5	1-M2.5	1.0 ～ 1.1	C
SFC-030DA2	5	10	5	10	34	—	21.6	37.8	12.4	8	2.5	8	—	3.75	15	14.5	1-M3	1.5 ～ 1.9	A
	5	10	Over 10	16								8	12.5						B
	Over 10	14	Over 10	16			—					—	12.5						C
SFC-035DA2	6	16	6	18	39	—	—	48	15.5	11	3	—	14	4.5	17	17	1-M4	3.4 ～ 4.1	C
SFC-040DA2	8	15	8	15	44	—	29.6	48	15.5	11	3	11	—	4.5	20	19.5	1-M4	3.4 ～ 4.1	A
	8	15	Over 15	22								11	17						B
	Over 15	19	Over 15	22			—					—	17						C
SFC-050DA2	8	19	8	19	56	—	38	59.8	20.5	14	2.4	14.5	—	6	26	26	1-M5	7.0 ～ 8.5	A
	8	19	Over 19	30								14.5	22						B
	Over 19	25	Over 19	30			—					—	22						C
SFC-055DA2	10	30	10	30	63	—	—	68.7	24	15.5	2.6	—	23	7.75	31	31	1-M6	14 ～ 15	C
SFC-060DA2	11	24	11	24	68	—	46	73.3	25.2	16.5	3.2	17.5	—	7.75	31	31	1-M6	14 ～ 15	A
	11	24	Over 24	35								17.5	26.5						B
	Over 24	30	Over 24	35			—					—	26.5						C
SFC-080DA2	18	35	18	40	82	—	—	98	30	22	8	—	28	9	40	38	1-M8	27 ～ 30	C
SFC-090DA2	25	40	25	45	94	—	—	98.6	30	22	8.3	—	34	9	47	42	1-M8	27 ～ 30	C
SFC-100DA2	32	45	32	45	104	—	—	101.6	30	22	9.8	—	39	9	50	48	1-M8	27 ～ 30	C

* The rated torque of the coupling may be limited for bore diameters marked with *1. Consult "Standard Bore Diameters" on P.39.
* The øDB value is measured assuming that the head of the clamping bolt is larger than the external diameter of the hub.
* The nominal diameter for the clamping bolt M is equal to the quantity minus the nominal diameter of the screw threads, where the quantity is for a hub on one side.
* For items marked with *2, d1 or d2 may be from ø3 to ø7 in some cases. If d1 or d2 is ø8, this value is 6.
* For items marked with *3, d1 or d2 may be from ø3 to ø7 in some cases. If d1 or d2 is ø8, then this is M2. The M2 tightening torque is 04 to 0.5 N·m.
* The machining tolerance for paired mounting shafts is g6, h6 or h7 class. However, for a shaft diameter of ø35, the tolerance is $^{+0.010}_{-0.025}$. For information on other tolerances, contact Miki Pulley.

For length-specified special order parts
【For length-specified special order parts → P.040】【For keyway milling applications → P.041】

Standard Bore Diameter

Model	Std. bore diameter d1 [mm]		Standard bore diameter, d2 [mm]																														
	Min.	Max.	3	4	5	6	6.35	7	8	9	9.525	10	11	12	13	14	15	16	17	18	19	20	22	24	25	28	30	32	35	38	40	42	45
SFC-002DA2	3	5	●	●	●																												
SFC-005DA2	3	6	●	●	●	●																											
SFC-010DA2	3	8	●	●	●	●	●	●	●																								
SFC-020DA2	4	10		●	●	●	●	●	●	●	●	●	○																				
SFC-025DA2	5	14			2.1	●	●	●	●	●	●	●	●	●	●	●																	
SFC-030DA2	5	14			2.8	3.4	●	●	●	●	●	●	●	●	●	●	○	○															
SFC-035DA2	6	16				5	5	6.6	●	●	●	●	●	●	●	●	●	●	○	○													
SFC-040DA2	8	19							9	●	●	●	●	●	●	●	●	●	●	●	●	○	○										
SFC-050DA2	8	25							18	20	22	22	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○						
SFC-055DA2	10	30										31	34	36	38	●	●	●	●	●	●	●	●	●	●	●	●						
SFC-060DA2	11	30											50	51	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○				
SFC-080DA2	18	35																		●	●	●	●	●	●	●	●	●	●	○	○		
SFC-090DA2	25	40																							●	●	●	●	●	●	●	○	○
SFC-100DA2	32	45																										226	●	●	●	●	●

* Bore diameters marked with ●, ○, or numbers are supported as the standard bore diameters.

* Bore diameters marked with ○ have restrictions on the inner diameter of the element, so they can only be used with d2 side hubs. Example of product that cannot be manufactured: SFC-020DA2-11B-11B; example of product that can be manufactured: SFC-020DA2-10B-11B

* Bore diameters whose fields contain numbers are restricted in their rated torque by the holding power of the shaft connection component because the bore diameter is small. The numbers indicate the rated torque [N•m].

* These range of applicable bore diameters is between the minimum and maximum bore diameters of the dimensions table. Consult Miki Pulley regarding special arrangements for other bore diameters.

Option 1 Tapered shaft supported

Allows coupling clamping hub when a taper adapter is mounted on the tapered shaft of a servo motor.

Specifications

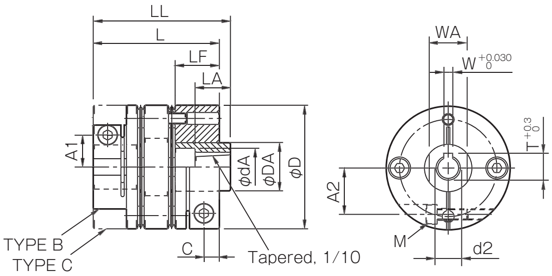
Model	Rated torque [N·m]	Misalignment			Max. rotation speed [min⁻¹]	Torsional stiffness [N·m/rad]	Axial stiffness [N/mm]	Type	Moment of inertia [kg·m²]	Mass [kg]
		Parallel [mm]	Angular [°]	Axial [mm]						
SFC-050DA2-☐B-11BC	25	0.28	1 (On one side)	± 0.8	10000	16000	24	B C	125.5×10^{-6} 146.1×10^{-6}	0.331 0.349
SFC-050DA2-☐B-14BC	25	0.28	1 (On one side)	± 0.8	10000	16000	24	B C	131.1×10^{-6} 154.1×10^{-6}	0.362 0.392
SFC-050DA2-☐B-16BC	25	0.28	1 (On one side)	± 0.8	10000	16000	24	B C	138.1×10^{-6} 160.8×10^{-6}	0.400 0.430
SFC-055DA2-☐B-14BC	40	0.31	1 (On one side)	± 0.84	10000	25000	21.5	C	274.0×10^{-6}	0.530
SFC-055DA2-☐B-16BC	40	0.31	1 (On one side)	± 0.84	10000	25000	21.5	C	280.5×10^{-6}	0.567
SFC-060DA2-☐B-16BC	60	0.34	1 (On one side)	± 0.9	10000	35000	38.2	B C	339.4×10^{-6} 398.5×10^{-6}	0.638 0.681

* Max. rotation speed does not take into account dynamic balance.

* Torsional stiffness values given are measured values for the element alone.

* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions



CAD

Unit [mm]

Model	d2	W	T	WA	LA	dA	DA	LL	D	L	LF	C	A1	A2	M
SFC-050DA2-☐B-11BC	11	4	12.2	18	16	17	22	64.8	56	59.8	20.5	6	14.5	22	1-M5
SFC-050DA2-☐B-14BC	14	4	15.1	24	19	22	28	69.8	56	59.8	20.5	6	14.5	22	1-M5
SFC-050DA2-☐B-16BC	16	5	17.3	24	29	26	30	79.8	56	59.8	20.5	6	14.5	22	1-M5
SFC-055DA2-☐B-14BC	14	4	15.1	24	19	22	28	74.4	63	68.7	24	7.75	—	23	1-M6
SFC-055DA2-☐B-16BC	16	5	17.3	24	29	26	30	84.7	63	68.7	24	7.75	—	23	1-M6
SFC-060DA2-☐B-16BC	16	5	17.3	24	29	26	30	89.3	68	73.3	25.2	7.75	17.5	26.5	1-M6

* The shape is type B or type C.

How to Place an Order

SFC-040DA2-14B-15B

Size

Type: DA2
Double element, aluminum hub

Bore diameter: d1 (Small diameter) - d2 (Large diameter)
B: Clamping hub
BC: Taper adapter

*Select d2 for BC.

Option 2 For length-specified special order parts → P.040
Option 3 For keyway milling applications → P.041

SFC Models

Option 2 For length-specified special order parts

SFC DA2 couplings can be made in specific lengths that match the distance between shafts by changing the length of the spacer. Specify the length in 1 mm units.

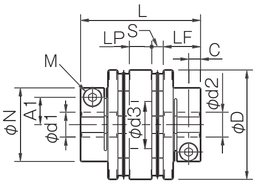
Specifications

Model	Rated torque [N·m]	Misalignment				Max. rotation speed [min⁻¹]	Type	Moment of inertia [kg·m²]		Mass [kg]	
		Parallel [mm]		Angular [°]	Axial [mm]						
		Min. L	Max. L					Min. L	Max. L	Min. L	Max. L
SFC-005DA2	0.6	0.03	0.20	0.5 (On one side)	± 0.1	10000	C	0.33 × 10⁻⁶	0.62 × 10⁻⁶	0.009	0.017
SFC-010DA2	1	0.08	0.44	1 (On one side)	± 0.2	10000	C	0.72 × 10⁻⁶	1.38 × 10⁻⁶	0.014	0.026
SFC-020DA2	2	0.10	0.46	1 (On one side)	± 0.33	10000	C	3.02 × 10⁻⁶	5.30 × 10⁻⁶	0.031	0.054
SFC-025DA2	4	0.09	0.46	1 (On one side)	± 0.38	10000	C	4.55 × 10⁻⁶	7.95 × 10⁻⁶	0.036	0.061
SFC-030DA2	5	0.11	0.48	1 (On one side)	± 0.4	10000	A	6.09 × 10⁻⁶	12.80 × 10⁻⁶	0.046	0.085
							B	8.11 × 10⁻⁶	14.82 × 10⁻⁶	0.053	0.091
							C	10.22 × 10⁻⁶	16.93 × 10⁻⁶	0.061	0.099
SFC-035DA2	8	0.15	0.54	1 (On one side)	± 0.5	10000	C	24.02 × 10⁻⁶	36.09 × 10⁻⁶	0.109	0.162
SFC-040DA2	10	0.15	0.54	1 (On one side)	± 0.6	10000	A	25.06 × 10⁻⁶	44.76 × 10⁻⁶	0.107	0.174
							B	31.33 × 10⁻⁶	51.03 × 10⁻⁶	0.118	0.185
							C	38.02 × 10⁻⁶	57.72 × 10⁻⁶	0.132	0.200
SFC-050DA2	25	0.16	0.63	1 (On one side)	± 0.8	10000	A	77.42 × 10⁻⁶	144.3 × 10⁻⁶	0.205	0.347
							B	97.97 × 10⁻⁶	164.8 × 10⁻⁶	0.225	0.365
							C	120.8 × 10⁻⁶	187.6 × 10⁻⁶	0.252	0.394
SFC-055DA2	40	0.16	0.60	1 (On one side)	± 0.84	10000	C	226.8 × 10⁻⁶	325.0 × 10⁻⁶	0.378	0.538
SFC-060DA2	60	0.19	0.63	1 (On one side)	± 0.9	10000	A	210.8 × 10⁻⁶	340.1 × 10⁻⁶	0.382	0.567
							B	269.9 × 10⁻⁶	399.2 × 10⁻⁶	0.424	0.609
							C	333.5 × 10⁻⁶	462.8 × 10⁻⁶	0.484	0.669

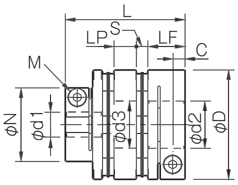
* Max. rotation speed does not take into account dynamic balance.
* The moment of inertia and mass are measured for the maximum bore diameter.
* See P.38 for torsional stiffness values.

Dimensions

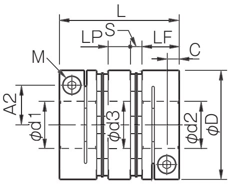
■ TYPE A

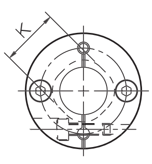


■ TYPE B

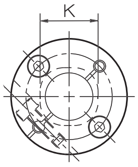


■ TYPE C





L ≧ Standard



L < Standard

Unit [mm]

Model	d1 *1		d2 *1		D	N	L			LF	S	A1	A2	C	d3	K	M	Tightening torque [N·m]	Type
	Min.	Max.	Min.	Max.			Std.	Min.	Max.										
SFC-005DA2	3	6	3	6	16	—	23.2	21	40	7.85	1	—	4.8	2.5	6.5	6.5	1-M2	0.4 ～ 0.5	C
SFC-010DA2	3	8	3	8	19	—	25.9	24	45	9.15	1.05	—	5.8 *2	3.15	8.5	8.5	1-M2.5 *3	1.0 ～ 1.1 *3	C
SFC-020DA2	4	10	4	11	26	—	32.3	29	50	10.75	1.65	—	9.5	3.3	10.6	10.6	1-M2.5	1.0 ～ 1.1	C
SFC-025DA2	5	14	5	14	29	—	32.8	29	50	10.75	1.9	—	11	3.3	15	14.5	1-M2.5	1.0 ～ 1.1	C
SFC-030DA2	5	10	5	10	34	21.6	37.8	34	55	12.4	2.5	8	—	3.75	15	14.5	1-M3	1.5 ～ 1.9	A
	5	10	Over 10	16								8	12.5						B
	Over 10	14	Over 10	16		—						—	12.5						C
SFC-035DA2	6	16	6	18	39	—	48	43	65	15.5	3	—	14	4.5	17	17	1-M4	3.4 ～ 4.1	C
SFC-040DA2	8	15	8	15	44	29.6	48	43	65	15.5	3	11	—	4.5	20	19.5	1-M4	3.4 ～ 4.1	A
	8	15	Over 15	22								11	17						B
	Over 15	19	Over 15	22		—						—	17						C
SFC-050DA2	8	19	8	19	56	38	59.8	53	80	20.5	2.4	14.5	—	6	26	26	1-M5	7.0 ～ 8.5	A
	8	19	Over 19	30								14.5	22						B
	Over 19	25	Over 19	30		—						—	22						C
SFC-055DA2	10	30	10	30	63	–	68.7	60	85	24	2.6	—	23	7.75	31	31	1-M6	14 ～ 15	C
SFC-060DA2	11	24	11	24	68	46	73.3	65	90	25.2	3.2	17.5	—	7.75	31	31	1-M6	14 ～ 15	A
	11	24	Over 24	35								17.5	26.5						B
	Over 24	30	Over 24	35		—						—	26.5						C

* Check P.39, "Standard Bore Diameters," for the standard bore diameters. Also, the rated torque of the coupling may be limited for bore diameters marked with *1, so check that as well.
* The nominal diameter for the clamping bolt M is equal to the quantity minus the nominal diameter of the screw threads, where the quantity is for a hub on one side.
* For items marked with *2, d1 or d2 may be from ø3 to ø7 in some cases. If d1 or d2 is ø8, this value is 6.
* For items marked with *3, d1 or d2 may be from ø3 to ø7 in some cases. If d1 or d2 is ø8, then this is M2. The M2 tightening torque is 04 to 0.5 N·m.
* The machining tolerance for paired mounting shafts is g6, h6 or h7 class. However, for a shaft diameter of ø35, the tolerance is $^{+0.010}_{-0.025}$. For information on other tolerances, contact Miki Pulley.
* Standard compatible lengths L range from the minimum L dimension shown in the above table to the maximum. Specify the length in 1 mm units.
* When the L dimension is shorter than the standard, the left/right clamping bolt phases will be off by 45° .

How to Place an Order

SFC-040DA2-14B-15B-L60

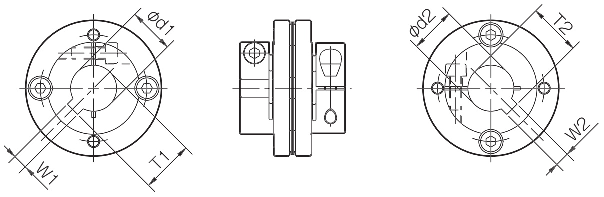
Size
Type: DA2
Double element, aluminum hub
Bore diameter: d1 (Small diameter) - d2 (Large diameter)
B: Clamping hub
Length-specified *Use mm units for L dimensions.

Option 3 For keyway milling applications

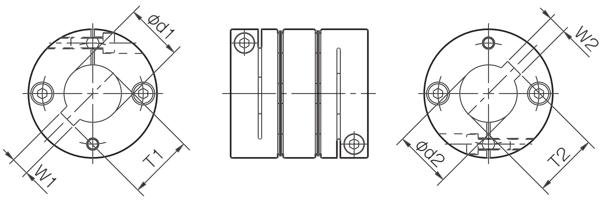
If you are using a keyed shaft, we can mill a keyway in the clamping hub to your specifications.

Dimensions

■ SFC SA2



■ SFC DA2



Unit [mm]

H9 keyway width standards				Js9 keyway width standards			
Nominal bore dia.	Bore dia. (d1, d2)	Keyway width (W1, W2)	Keyway height (T1, T2)	Nominal bore dia.	Bore dia. (d1, d2)	Keyway width (W1, W2)	Keyway height (T1, T2)
8BH	8	$3^{+0.025}_{0}$	$9.4^{+0.3}_{0}$	8BJ	8	3 ±0.0125	$9.4^{+0.3}_{0}$
9BH	9	$3^{+0.025}_{0}$	$10.4^{+0.3}_{0}$	9BJ	9	3 ±0.0125	$10.4^{+0.3}_{0}$
10BH	10	$3^{+0.025}_{0}$	$11.4^{+0.3}_{0}$	10BJ	10	3 ±0.0125	$11.4^{+0.3}_{0}$
11BH	11	$4^{+0.030}_{0}$	$12.8^{+0.3}_{0}$	11BJ	11	4 ±0.0150	$12.8^{+0.3}_{0}$
12BH	12	$4^{+0.030}_{0}$	$13.8^{+0.3}_{0}$	12BJ	12	4 ±0.0150	$13.8^{+0.3}_{0}$
13BH	13	$5^{+0.030}_{0}$	$15.3^{+0.3}_{0}$	13BJ	13	5 ±0.0150	$15.3^{+0.3}_{0}$
14BH	14	$5^{+0.030}_{0}$	$16.3^{+0.3}_{0}$	14BJ	14	5 ±0.0150	$16.3^{+0.3}_{0}$
15BH	15	$5^{+0.030}_{0}$	$17.3^{+0.3}_{0}$	15BJ	15	5 ±0.0150	$17.3^{+0.3}_{0}$
16BH	16	$5^{+0.030}_{0}$	$18.3^{+0.3}_{0}$	16BJ	16	5 ±0.0150	$18.3^{+0.3}_{0}$
17BH	17	$5^{+0.030}_{0}$	$19.3^{+0.3}_{0}$	17BJ	17	5 ±0.0150	$19.3^{+0.3}_{0}$
18BH	18	$6^{+0.030}_{0}$	$20.8^{+0.3}_{0}$	18BJ	18	6 ±0.0150	$20.8^{+0.3}_{0}$
19BH	19	$6^{+0.030}_{0}$	$21.8^{+0.3}_{0}$	19BJ	19	6 ±0.0150	$21.8^{+0.3}_{0}$
20BH	20	$6^{+0.030}_{0}$	$22.8^{+0.3}_{0}$	20BJ	20	6 ±0.0150	$22.8^{+0.3}_{0}$
22BH	22	$6^{+0.030}_{0}$	$24.8^{+0.3}_{0}$	22BJ	22	6 ±0.0150	$24.8^{+0.3}_{0}$
24BH	24	$8^{+0.036}_{0}$	$27.3^{+0.3}_{0}$	24BJ	24	8 ±0.0180	$27.3^{+0.3}_{0}$
25BH	25	$8^{+0.036}_{0}$	$28.3^{+0.3}_{0}$	25BJ	25	8 ±0.0180	$28.3^{+0.3}_{0}$
28BH	28	$8^{+0.036}_{0}$	$31.3^{+0.3}_{0}$	28BJ	28	8 ±0.0180	$31.3^{+0.3}_{0}$
30BH	30	$8^{+0.036}_{0}$	$33.3^{+0.3}_{0}$	30BJ	30	8 ±0.0180	$33.3^{+0.3}_{0}$
32BH	32	$10^{+0.036}_{0}$	$35.3^{+0.3}_{0}$	32BJ	32	10 ±0.0180	$35.3^{+0.3}_{0}$
35BH	35	$10^{+0.036}_{0}$	$38.3^{+0.3}_{0}$	35BJ	35	10 ±0.0180	$38.3^{+0.3}_{0}$
38BH	38	$10^{+0.036}_{0}$	$41.3^{+0.3}_{0}$	38BJ	38	10 ±0.0180	$41.3^{+0.3}_{0}$
40BH	40	$12^{+0.043}_{0}$	$43.3^{+0.3}_{0}$	40BJ	40	12 ±0.0215	$43.3^{+0.3}_{0}$
42BH	42	$12^{+0.043}_{0}$	$45.3^{+0.3}_{0}$	42BJ	42	12 ±0.0215	$45.3^{+0.3}_{0}$
45BH	45	$14^{+0.043}_{0}$	$48.8^{+0.3}_{0}$	45BJ	45	14 ±0.0215	$48.8^{+0.3}_{0}$

* We can also handle standards not listed above. Consult Miki Pulley.

Standard Bore Diameter

Model	Standard bore diameter d1, d2 [mm]																						
	8	9	10	11	12	13	14	15	16	17	18	19	20	22	24	25	28	30	32	35	38	40	42	45
SFC-025SA2/DA2	●	●	●	●	●	●	●																	
SFC-030SA2/DA2	●	●	●	●	●	●	●	○	○															
SFC-035SA2/DA2	●	●	●	●	●	●	●	●	●	○	○													
SFC-040SA2/DA2	9	●	●	●	●	●	●	●	●	●	●	●	○	○										
SFC-050SA2/DA2	18	20	22	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○						
SFC-055SA2/DA2			31	34	36	38	●	●	●	●	●	●	●	●	●	●	●	●						
SFC-060SA2/DA2				50	51	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○				
SFC-080SA2/DA2											●	●	●	●	●	●	●	●	●	●	○	○		
SFC-090SA2/DA2																●	●	●	●	●	●	●	○	○
SFC-100SA2/DA2																			226	●	●	●	●	●

* Bore diameters marked with ●, ○, or numbers are supported as the standard bore diameters.
* Bore diameters marked with ○ have restrictions on the inner diameter of the element, so they can only be used with d2 side hubs.
* Bore diameters whose fields contain numbers are restricted in their rated torque by the holding power of the shaft connection component because the bore diameter is small. The numbers indicate the rated torque [N•m].

How to Place an Order

SFC-060SA2-12BH-16BJ

Size

Type: SA2
Single element, aluminum hub
DA2
Double element, aluminum hub

Bore diameter: d1 (Small diameter)
BH: Class H9 with keyway

Bore diameter: d2 (Large diameter)
BJ: Class Js9 with keyway

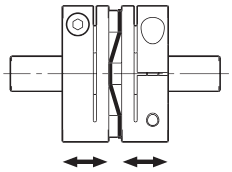
* For equal diameters, select B, BH, and BJ in that order.
(Select d2 for BC.)

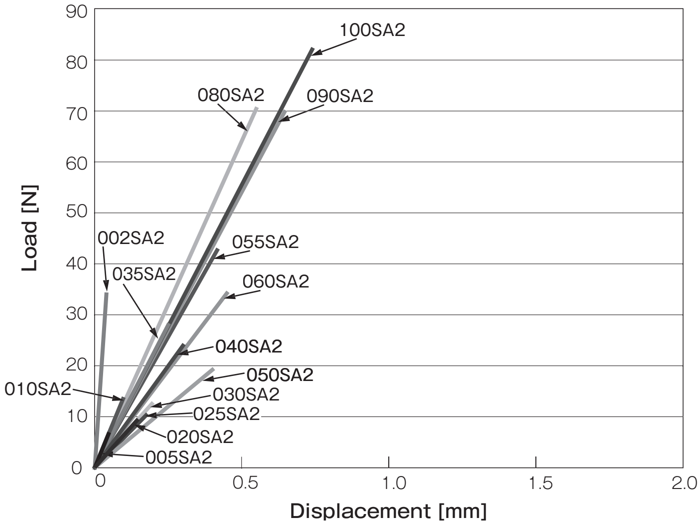
SFC Models

Items Checked for Design Purposes

Spring Characteristics SFC-☐SA2

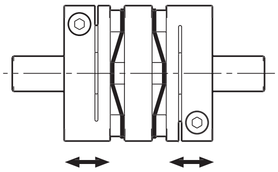
■ Axial load and amount of displacement

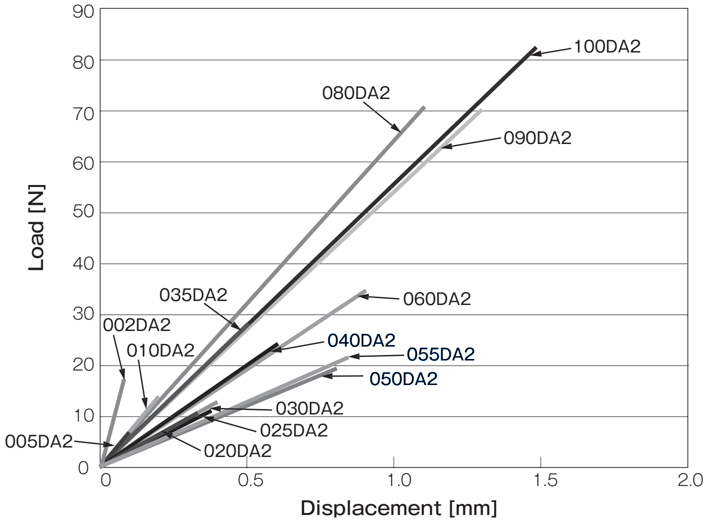




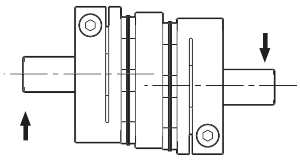
Spring Characteristics SFC-☐DA2

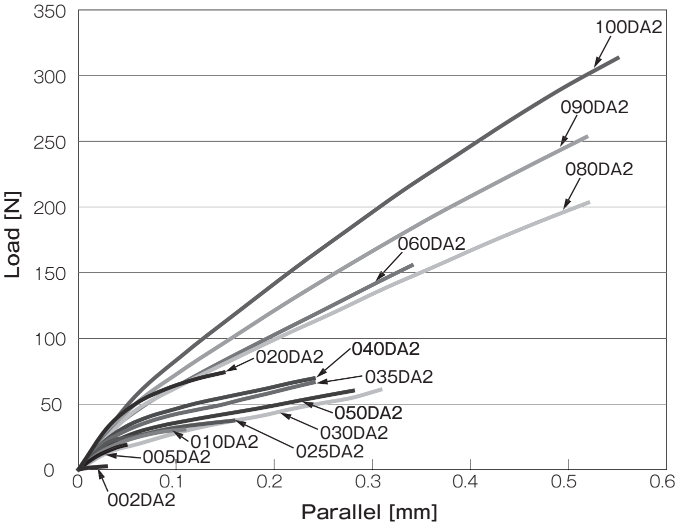
■ Axial load and amount of displacement





■ Parallel misalignment direction load and amount of displacement





Precautions for Handling

Couplings are assembled at high accuracy using a special mounting jig to ensure accurate concentricity of left and right internal diameters.
Take extra precautions when handling couplings, should strong shocks be given on couplings, it may affect mounting accuracy and cause the parts to break during use.

(1) Couplings are designed for use within an operating temperature range of -30° C to 100° C. Although the couplings are designed to be waterproof and oilproof, do not subject them to excessive amounts of water and oil as it may cause part deterioration.

(2) Handle the element with care as it is made of a thin stainless steel metal disc, also making sure to be careful so as not to injure yourself.

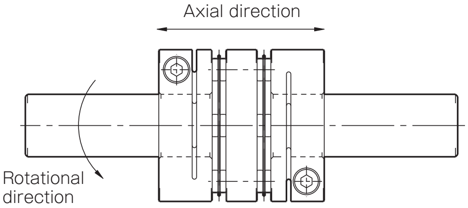
(3) Do not tighten up clamping bolts until after inserting the mounting shaft.

Mounting

(1) Check that clamping bolts have been loosened and remove any rust, dust, oil residue, etc. from the inner diameter surfaces of the shaft and couplings. (Use a waste cloth, etc. to wipe away oil residue or an oil remover as needed.)

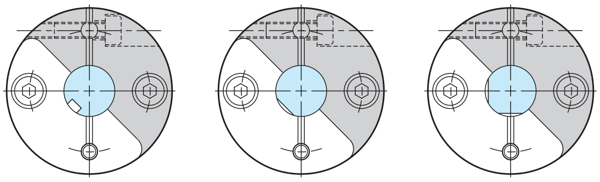
(2) Be careful when inserting the couplings into the shaft so as not to apply excessive force of compression or tensile force to the element. Be particularly careful not to apply excessive compressing force needlessly when inserting couplings into the paired shaft after attaching the couplings to the motor.

(3) With two of the clamping bolts loosened, make sure that couplings move gently along the axial and rotational directions.
Readjust the centering of the two shafts if the couplings fail to move smoothly enough.
This method is recommended as a way to easily check the concentricity of the left and right sides. If unable to use the same method, check the mounting accuracy using machine parts quality control procedures or an alternative method.

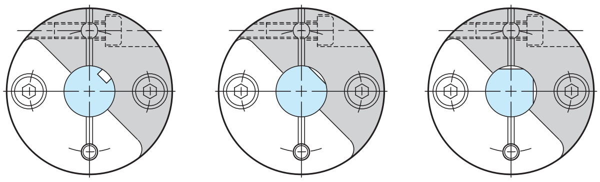


(4) As a general rule, round shafts are to be used for the paired mounting shaft. If needing to use a shaft with a different shape, be careful not to insert it into any of the locations indicated in the diagrams below.
(Do not attempt to face keyways, D-shaped cuts, or other insertions to the grayed areas (▨).)
Placing the shaft in an undesirable location may cause the couplings to break or lead to a loss in shaft holding power. It is recommended that you use only round shafts to ensure full utilization of the entire range of coupling performance.

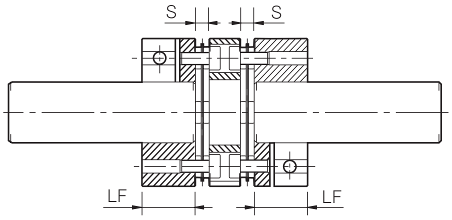
■ Proper Mounting Examples



■ Poor Mounting Examples



(5) Insert each shaft far enough in that the paired shaft touches the shaft along the entire length of the clamping hub of the coupling (LF dimension) as shown in the diagram below.
In addition, restrict the dimensions between clamping hub faces (S dimensions in the diagram) within the allowable misalignment of the axial direction displacement with respect to a reference value. Note that the tolerance values were calculated based on the assumption that both the level of parallel misalignment and angular deflection are zero. Adjust to keep this value as low as possible.



Model	LF [mm]	S [mm]
SFC-002SA2/DA2	5.9	0.55
SFC-005SA2/DA2	7.85	1
SFC-010SA2/DA2	9.15	1.05
SFC-020SA2/DA2	10.75	1.65
SFC-025SA2/DA2	10.75	1.9
SFC-030SA2/DA2	12.4	2.5
SFC-035SA2/DA2	15.5	3
SFC-040SA2/DA2	15.5	3
SFC-050SA2/DA2	20.5	2.4
SFC-055SA2/DA2	24	2.6
SFC-060SA2/DA2	25.2	3.2
SFC-080SA2/DA2	30	8
SFC-090SA2/DA2	30	8.3
SFC-100SA2/DA2	30	9.8

(6) Check to make sure that no compression or tensile force is being applied along the axial direction before tightening up the two clamping bolts.
Use a calibrated torque wrench to tighten the clamping bolts to within the tightening torque range listed below.

Model	Clamping bolts	Tightening torque [N·m]
SFC-002SA2/DA2	M1.6	0.23 ～ 0.28
SFC-005SA2/DA2	M2	0.4 ～ 0.5
SFC-010SA2/DA2	M2	0.4 ～ 0.5
SFC-010SA2/DA2	M2.5	1.0 ～ 1.1
SFC-020SA2/DA2	M2.5	1.0 ～ 1.1
SFC-025SA2/DA2	M2.5	1.0 ～ 1.1
SFC-030SA2/DA2	M3	1.5 ～ 1.9
SFC-035SA2/DA2	M4	3.4 ～ 4.1
SFC-040SA2/DA2	M4	3.4 ～ 4.1
SFC-050SA2/DA2	M5	7.0 ～ 8.5
SFC-055SA2/DA2	M6	14 ～ 15
SFC-060SA2/DA2	M6	14 ～ 15
SFC-080SA2/DA2	M8	27 ～ 30
SFC-090SA2/DA2	M8	27 ～ 30
SFC-100SA2/DA2	M8	27 ～ 30

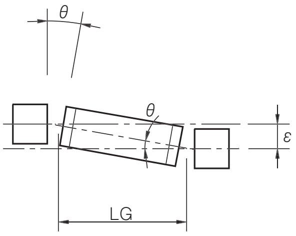
*Use M2 bolts on SFC-010SA2/DA2 models with holes with a diameter of ø8 mm.
*The start and end numbers for the tightening torque ranges are between the minimum and maximum values. Tighten bolts to a tightening torque within the specified range for the model used.

SFC Models

Items Checked for Design Purposes

Length-specified Special Order Parts Option

Specify any length for the length-specified special order option for the SERVOFLEX SFC DA2. Use the following formula to calculate the allowable parallel misalignment value, adjust it to be no greater than that value, and then mount the coupling.



$$\varepsilon = \tan\theta \times LG$$

ε : Allowable parallel misalignment [mm]

θ : Allowable angular deflection [°]

$$LG = LP + S$$

LP: Total length of spacer

S: Gap size between clamping hub and spacer

Options for Keyway Milling

Options for keyway milling are available on request. However, because they are designed such that torque is tranferred to the friction coupling by the clamp mechanism, care should be taken not to exceed the coupling's permitted torque during use. Note also the following issues:

(1) Only ever use keys that are no wider than the keyway. Using keys that are a tight fit could results in damage during mounting or operation.

(2) The positional accuracy of keyway milling is visual. If positional accuracy relative to keyway hubs is required, contact Miki Pulley.

(3) Using Js9 class tolerances provides a tight fit, so couplings may be compressed when mounted on shafts. Take care not to further compress the couplings.

(4) Setting the fit of the key and keyway too loosely may result in play that generates dust. Also take care that the key does not come loose.

(5) Adding a set screw over the keyway is not recommended as it may lower clamp performance, and the set screw may also become loose within the torque range you use or during forward/reverse operation. It may also impair the structural strength of the clamping hub or damage the coupling.

Clamping Bolts

Use Miki Pulley-specified clamping bolts because they are processed with solid lubrication films (except for SFC-002 M1.6). Applying adhesives to prevent loosening, oil, or the like to a clamping bolt will alter torque coefficients due to those lubricating components, creating excessive axial forces and potentially damaging the clamping bolt or coupling. Consult Miki Pulley before using such products.
Note that surface processing of the clamping bolts was changed to solid lubrication film processing (Pallube) starting January 21, 2008. Serial numbers of such bolts end in P.

Surface Processing of Coupling Bore Diameter

The bore diameters of SERVOFLEX SFC models may or may not have surface processing in some components due to the circumstances of processing (additional processing, keyway milling, etc.). This does not affect coupling performance. Consult Miki Pulley if your usage conditions require that bore diameters be surface processed or not.

Points to Consider Regarding the Feed Screw System

■ Servo motor oscillation

When the torsional natural frequency of the overall feed screw system is 400 to 500 Hz or less, gain adjustment of the servo motor may cause the servo motor to oscillate.
Oscillation in the servo motor during operation can cause problems particularly with the overall natural frequency and electrical control systems of the feed screw system.
In order for these issues to be resolved, the torsional stiffness for the coupling and feed screw section and the moment of inertia and other characteristics for the system overall will need to be adjusted and the torsional natural frequency for the mechanical system raised or the tuning function (filter function) for the electrical control system in the servo motor adjusted during the design stage.

■ Stepper motor resonance

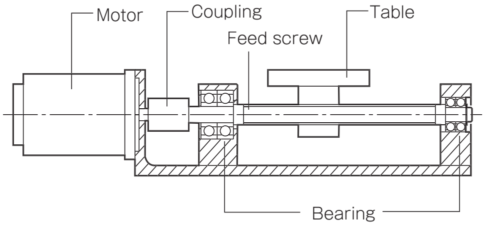
Stepper motors resonate at certain rotation speeds due to the pulsation frequency of the stepper motor and the torsional natural frequency of the system as a whole. To avoid resonance, either the resonant rotation speed must be simply skipped or the torsional natural frequency considered at the design stage.

Please contact Miki Pulley with any questions regarding servo motor oscillation or stepper motor resonance.

How to Find the Natural Frequency of a Feed Screw System

(1) Select a coupling based on the nominal and maximum torque of the servo motor or stepper motor.

(2) Find the overall natural frequency, Nf, from the torsional stiffness of the coupling and feed screw, κ , the moment of inertia of driving side, J1, and the moment of inertia of driven side, J2, for the feed screw system shown below.



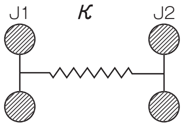
$$Nf=\frac{1}{2\pi}\sqrt{\kappa\left(\frac{1}{J1}+\frac{1}{J2}\right)}$$

Nf: Overall natural frequency of a feed screw system [Hz]

κ : Torsional stiffness of the coupling and feed screw [N·m/rad]

J1: Moment of inertia of driving side [kg·m^2]

J2: Moment of inertia of driven side [kg·m^2]



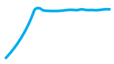
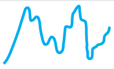
Selection Procedures

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

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

(2) Determine the factor κ from the load properties, and find the corrected torque, Td, applied to the coupling.

Td = Ta × K (Refer to the table below for values)

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

For servo motor drive, multiply the maximum torque, Ts, by the usage factor K = 1.2 to 1.5.

Td = Ts × [1.2 to 1.5]

(3) Set the size so that the rated coupling torque, Tn, is higher than the corrected torque, Td.

Tn ≧ Td

(4) The rated torque of the coupling may be limited by the bore diameter of the coupling. See the Specifications and Standard Bore Diameters tables.

(5) Check that the mount shaft is no larger than the maximum bore diameter of the coupling.

Contact Miki Pulley for assistance with any device experiencing extreme periodic vibrations.

Easy Size Selection Chart

Select a coupling size based on the rated output and the rated/maximum torque of the ordinary servo motor. The torque characteristics of servo motors vary between manufacturers, so check the specifications in the manufacturer catalog before finalizing a coupling size selection.

Servo motor specifications					Corresponding coupling specifications		
Rated output [kW]	Rated rotation speed [min⁻¹]	Rated torque [N·m]	Max. torque [N·m]	Shaft diameter [mm]	Single element type	Double element type	Max. bore diameter [mm]
0.05	3000	0.16	0.48	8	SFC-010SA2	SFC-010DA2	8
0.1	3000	0.32	0.95	8	SFC-020SA2	SFC-020DA2	11
0.2	3000	0.64	1.9	14	SFC-025SA2	SFC-025DA2	14
0.4	3000	1.3	3.8	14	SFC-035SA2	SFC-035DA2	18
0.5	2000	2.39	7.16	24	SFC-050SA2	SFC-050DA2	30
0.5	3000	1.59	4.77	24	SFC-050SA2	SFC-050DA2	30
0.75	2000	3.58	10.7	22	SFC-050SA2	SFC-050DA2	30
0.75	3000	2.4	7.2	19	SFC-040SA2	SFC-040DA2	22
0.85	1000	8.12	24.4	24	SFC-055SA2	SFC-055DA2	30
1	2000	4.78	14.4	24	SFC-050SA2	SFC-050DA2	30
1	3000	3.18	9.55	24	SFC-050SA2	SFC-050DA2	30
1.2	1000	11.5	34.4	35	SFC-080SA2	SFC-080DA2	40
1.5	2000	7.16	21.6	28	SFC-055SA2	SFC-055DA2	30
1.5	3000	4.78	14.3	24	SFC-050SA2	SFC-050DA2	30
2	2000	9.55	28.5	35	SFC-080SA2	SFC-080DA2	40
2	3000	6.37	15.9	24	SFC-050SA2	SFC-050DA2	30
3	1000	28.6	85.9	35	SFC-090SA2	SFC-090DA2	45
3.5	2000	16.7	50.1	35	SFC-080SA2	SFC-080DA2	40
3.5	3000	11.1	27.9	28	SFC-055SA2	SFC-055DA2	30
5	2000	23.9	71.6	35	SFC-080SA2	SFC-080DA2	40
5	3000	15.9	39.7	28	SFC-060SA2	SFC-060DA2	35
7	2000	33.4	100	35	SFC-090SA2	SFC-090DA2	45

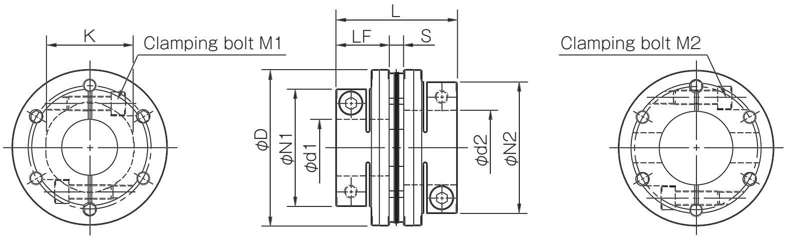
SFF SS (N) Types Single Element Type

Specifications

Model	Rated torque [N·m]	Misalignment			Max. rotation speed [min^{-1}]	Torsional stiffness [N·m/rad]	Axial stiffness [N/mm]	Moment of inertia [kg·m^2]	Mass [kg]
		Parallel [mm]	Angular [°]	Axial [mm]					
SFF-040SS-8N	8	0.02	1	± 0.2	18000	15000	174	0.032×10^{-3}	0.17
SFF-040SS-12N	12	0.02	1	± 0.2	18000	15000	174	0.032×10^{-3}	0.17
SFF-050SS-25N	25	0.02	1	± 0.3	18000	32000	145	0.10×10^{-3}	0.36
SFF-060SS-60N	60	0.02	1	± 0.3	18000	104000	399	0.21×10^{-3}	0.47
SFF-070SS-90N	90	0.02	1	± 0.5	18000	240000	484	0.40×10^{-3}	0.72
SFF-070SS-100N	100	0.02	1	± 0.5	18000	240000	484	0.42×10^{-3}	0.67
SFF-080SS-150N	150	0.02	1	± 0.5	17000	120000	96	0.79×10^{-3}	1.04
SFF-080SS-200N	200	0.02	1	± 0.5	17000	310000	546	1.11×10^{-3}	1.35
SFF-090SS-250N	250	0.02	1	± 0.6	15000	520000	321	1.54×10^{-3}	1.62
SFF-090SS-300N	300	0.02	1	± 0.6	15000	520000	321	1.58×10^{-3}	1.53
SFF-100SS-450N	450	0.02	1	± 0.65	13000	740000	540	3.27×10^{-3}	2.53
SFF-120SS-600N	600	0.02	1	± 0.8	11000	970000	360	6.90×10^{-3}	3.78

* Max. rotation speed does not take into account dynamic balance.
* Torsional stiffness values given are calculated for the element alone.
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions

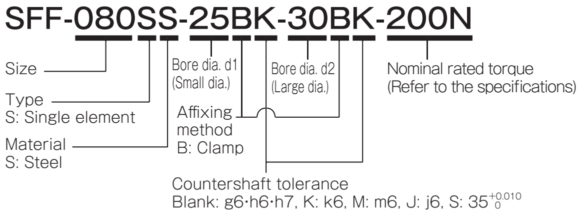


Model	d1		d2		D	L	N1	N2	LF	S	K	M1		M2	
	Min. [mm]	Max. [mm]	Min. [mm]	Max. [mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Qty - Nominal dia.	Tightening torque [N·m]	Qty - Nominal dia.	Tightening torque [N·m]
SFF-040SS-8N	8	9.525	8	16	38	38.9	33	33	17.5	3.9	17	2-M4	3.4	2-M4	3.4
SFF-040SS-12N	10	16	10	16	38	38.9	33	33	17.5	3.9	17	2-M4	3.4	2-M4	3.4
SFF-050SS-25N	10	19	10	19	48	48.4	42	42	21.5	5.4	20	2-M5	7	2-M5	7
SFF-060SS-60N	12	22	12	22	58	53.4	44	44	24	5.4	32	2-M6	14	2-M6	14
	12	22	24	28	58	53.4	44	48	24	5.4	32	2-M6	14	2-M5	7
	24	28	24	28	58	53.4	48	48	24	5.4	32	2-M5	7	2-M5	7
SFF-070SS-90N	18	19	18	25	68	55.9	47	47	25	5.9	38	2-M6	14	2-M6	14
	18	19	28	35	68	55.9	47	56	25	5.9	38	2-M6	14	2-M6	14
SFF-070SS-100N	20	25	20	25	68	55.9	47	47	25	5.9	38	2-M6	14	2-M6	14
	20	25	28	35	68	55.9	47	56	25	5.9	38	2-M6	14	2-M6	14
	28	35	28	35	68	55.9	56	56	25	5.9	38	2-M6	14	2-M6	14
SFF-080SS-150N	22	25	22	25	78	68.3	53	53	30	8.3	37	2-M8	34	2-M8	34
	22	25	28	35	78	68.3	53	56	30	8.3	37	2-M8	34	2-M6	14
	28	35	28	35	78	68.3	56	56	30	8.3	37	2-M6	14	2-M6	14
SFF-080SS-200N	22	25	22	25	78	67.7	53	53	30	7.7	42	2-M8	34	2-M8	34
	22	25	28	35	78	67.7	53	70	30	7.7	42	2-M8	34	2-M8	34
	28	35	28	35	78	67.7	70	70	30	7.7	42	2-M8	34	2-M8	34
SFF-090SS-250N	25	28	25	32	88	68.3	66	66	30	8.3	50	2-M8	34	2-M8	34
	25	28	35	42	88	68.3	66	74	30	8.3	50	2-M8	34	2-M8	34
SFF-090SS-300N	30	32	30	32	88	68.3	66	66	30	8.3	50	2-M8	34	2-M8	34
	30	32	35	42	88	68.3	66	74	30	8.3	50	2-M8	34	2-M8	34
	35	42	35	42	88	68.3	74	74	30	8.3	50	2-M8	34	2-M8	34
SFF-100SS-450N	32	48	32	48	98	90.2	84	84	40	10.2	56	2-M10	68	2-M10	68
SFF-120SS-600N	32	45	32	45	118	90.2	84	84	40	10.2	68	2-M10	68	2-M10	68
	32	45	48	55	118	90.2	84	100	40	10.2	68	2-M10	68	2-M10	68
	48	55	48	55	118	90.2	100	100	40	10.2	68	2-M10	68	2-M10	68

Standard Bore Diameter

Model	Nominal diameter	8	9	9.525	10	11	12	14	15	16	17	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55
		Standard bore diameter d1･d2 [mm]																										
SFF-040SS-8N	d1	●	●	●																								
	d2	●	●	●	●	●	●	●	●	●																		
SFF-040SS-12N	d1				●	●	●	●	●	●																		
	d2				●	●	●	●	●	●																		
SFF-050SS-25N	d1				●	●	●	●	●	●	●	●	●															
	d2				●	●	●	●	●	●	●	●	●															
SFF-060SS-60N	d1						●	●	●	●	●	●	●	●	●	●	●	●										
	d2						●	●	●	●	●	●	●	●	●	●	●	●										
SFF-070SS-90N	d1											●	●															
	d2											●	●	●	●	●	●	●	●	●	●							
SFF-070SS-100N	d1													●	●	●	●	●	●	●	●							
	d2													●	●	●	●	●	●	●	●							
SFF-080SS-150N	d1														●	●	●	●	●	●	●							
	d2														●	●	●	●	●	●	●							
SFF-080SS-200N	d1														●	●	●	●	●	●	●							
	d2														●	●	●	●	●	●	●							
SFF-090SS-250N	d1																●	●										
	d2																●	●	●	●	●	●	●	●				
SFF-090SS-300N	d1																		●	●	●	●	●	●				
	d2																		●	●	●	●	●	●				
SFF-100SS-450N	d1																			●	●	●	●	●	●	●		
	d2																			●	●	●	●	●	●	●		
SFF-120SS-600N	d1																			●	●	●	●	●	●	●	●	●
	d2																			●	●	●	●	●	●	●	●	●

How to Place an Order



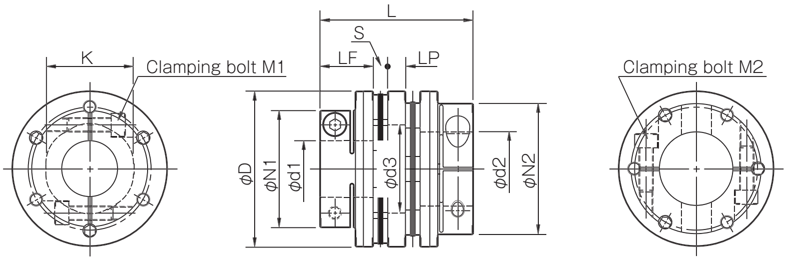
SFF DS (N) Types Double Element Type

Specifications

Model	Rated torque [N·m]	Misalignment			Max. rotation speed $[\text{min}^{-1}]$	Torsional stiffness [N·m/rad]	Axial stiffness [N/mm]	Moment of inertia $[\text{kg·m}^2]$	Mass [kg]
		Parallel [mm]	Angular [°]	Axial [mm]					
SFF-040DS-8N	8	0.10	1 (On one side)	± 0.4	14000	7500	87	0.042×10^{-3}	0.22
SFF-040DS-12N	12	0.10	1 (On one side)	± 0.4	14000	7500	87	0.042×10^{-3}	0.22
SFF-050DS-25N	25	0.20	1 (On one side)	± 0.6	14000	16000	72.5	0.13×10^{-3}	0.46
SFF-060DS-60N	60	0.20	1 (On one side)	± 0.6	14000	52000	199.5	0.27×10^{-3}	0.60
SFF-070DS-90N	90	0.25	1 (On one side)	± 1.0	14000	120000	242	0.53×10^{-3}	0.90
SFF-070DS-100N	100	0.25	1 (On one side)	± 1.0	14000	120000	242	0.55×10^{-3}	0.85
SFF-080DS-150N	150	0.32	1 (On one side)	± 1.0	13000	60000	48	1.10×10^{-3}	1.37
SFF-080DS-200N	200	0.31	1 (On one side)	± 1.0	13000	155000	273	1.41×10^{-3}	1.67
SFF-090DS-250N	250	0.32	1 (On one side)	± 1.2	12000	260000	160.5	2.03×10^{-3}	2.02
SFF-090DS-300N	300	0.32	1 (On one side)	± 1.2	12000	260000	160.5	2.10×10^{-3}	1.92
SFF-100DS-450N	450	0.38	1 (On one side)	± 1.3	10000	370000	270	4.18×10^{-3}	3.12
SFF-120DS-600N	600	0.38	1 (On one side)	± 1.6	9000	485000	180	8.87×10^{-3}	4.60

* Max. rotation speed does not take into account dynamic balance.
* Torsional stiffness values given are calculated for the element alone.
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions

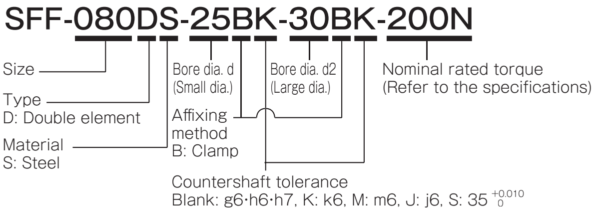


Model	d1		d2		D	L	N1	N2	LF	LP	S	d3	K	M1		M2	
	Min. [mm]	Max. [mm]	Min. [mm]	Max. [mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	Qty - Nominal dia.	Tightening torque [N·m]	Qty - Nominal dia.	Tightening torque [N·m]
SFF-040DS-8N	8	9.525	8	16	38	48.8	33	33	17.5	6	3.9	17	17	2-M4	3.4	2-M4	3.4
SFF-040DS-12N	10	16	10	16	38	48.8	33	33	17.5	6	3.9	17	17	2-M4	3.4	2-M4	3.4
SFF-050DS-25N	10	19	10	19	48	60.8	42	42	21.5	7	5.4	20	20	2-M5	7	2-M5	7
SFF-060DS-60N	12	22	12	22	58	65.8	44	44	24	7	5.4	29	32	2-M6	14	2-M6	14
	12	22	24	28	58	65.8	44	48	24	7	5.4	29	32	2-M6	14	2-M5	7
	24	28	24	28	58	65.8	48	48	24	7	5.4	29	32	2-M5	7	2-M5	7
SFF-070DS-90N	18	19	18	25	68	69.8	47	47	25	8	5.9	37	38	2-M6	14	2-M6	14
	18	19	28	35	68	69.8	47	56	25	8	5.9	37	38	2-M6	14	2-M6	14
SFF-070DS-100N	20	25	20	25	68	69.8	47	47	25	8	5.9	37	38	2-M6	14	2-M6	14
	20	25	28	35	68	69.8	47	56	25	8	5.9	37	38	2-M6	14	2-M6	14
	28	35	28	35	68	69.8	56	56	25	8	5.9	37	38	2-M6	14	2-M6	14
SFF-080DS-150N	22	25	22	25	78	86.6	53	53	30	10	8.3	40	37	2-M8	34	2-M8	34
	22	25	28	35	78	86.6	53	56	30	10	8.3	40	37	2-M8	34	2-M6	14
	28	35	28	35	78	86.6	56	56	30	10	8.3	40	37	2-M6	14	2-M6	14
SFF-080DS-200N	22	25	22	25	78	85.4	53	53	30	10	7.7	40	42	2-M8	34	2-M8	34
	22	25	28	35	78	85.4	53	70	30	10	7.7	40	42	2-M8	34	2-M8	34
	28	35	28	35	78	85.4	70	70	30	10	7.7	40	42	2-M8	34	2-M8	34
SFF-090DS-250N	25	28	25	32	88	86.6	66	66	30	10	8.3	50	50	2-M8	34	2-M8	34
	25	28	35	42	88	86.6	66	74	30	10	8.3	50	50	2-M8	34	2-M8	34
SFF-090DS-300N	30	32	30	32	88	86.6	66	66	30	10	8.3	50	50	2-M8	34	2-M8	34
	30	32	35	42	88	86.6	66	74	30	10	8.3	50	50	2-M8	34	2-M8	34
	35	42	35	42	88	86.6	74	74	30	10	8.3	50	50	2-M8	34	2-M8	34
SFF-100DS-450N	32	48	32	48	98	112.4	84	84	40	12	10.2	52	56	2-M10	68	2-M10	68
SFF-120DS-600N	32	45	32	45	118	112.4	84	84	40	12	10.2	72	68	2-M10	68	2-M10	68
	32	45	48	55	118	112.4	84	100	40	12	10.2	72	68	2-M10	68	2-M10	68
	48	55	48	55	118	112.4	100	100	40	12	10.2	72	68	2-M10	68	2-M10	68

Standard Bore Diameter

Model		Standard bore diameter d1･d2 [mm]																									
	Nominal diameter	8	9	9.525	10	11	12	14	15	16	17	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55
SFF-040DS-8N	d1	●	●	●																								
	d2	●	●	●	●	●	●	●	●	●																		
SFF-040DS-12N	d1				●	●	●	●	●	●																		
	d2				●	●	●	●	●	●																		
SFF-050DS-25N	d1				●	●	●	●	●	●	●	●	●															
	d2				●	●	●	●	●	●	●	●	●															
SFF-060DS-60N	d1						●	●	●	●	●	●	●	●	●	●	●	●										
	d2						●	●	●	●	●	●	●	●	●	●	●	●										
SFF-070DS-90N	d1											●	●															
	d2											●	●	●	●	●	●	●	●	●	●							
SFF-070DS-100N	d1													●	●	●	●	●	●	●	●							
	d2													●	●	●	●	●	●	●	●							
SFF-080DS-150N	d1														●	●	●	●	●	●	●							
	d2														●	●	●	●	●	●	●							
SFF-080DS-200N	d1														●	●	●	●	●	●	●							
	d2														●	●	●	●	●	●	●							
SFF-090DS-250N	d1																●	●										
	d2																●	●	●	●	●	●	●	●				
SFF-090DS-300N	d1																		●	●	●	●	●	●				
	d2																		●	●	●	●	●	●				
SFF-100DS-450N	d1																			●	●	●	●	●	●	●		
	d2																			●	●	●	●	●	●	●		
SFF-120DS-600N	d1																			●	●	●	●	●	●	●	●	●
	d2																			●	●	●	●	●	●	●	●	●

How to Place an Order



SFF (N) Models

Items Checked for Design Purposes

Precautions for Handling

SFF (N) models come pre-assembled. Couplings are assembled at high accuracy using a special mounting jig to ensure accurate concentricity of left and right internal diameters.
Take extra precautions when handling couplings, should strong shocks be given on couplings, it may affect mounting accuracy and cause the parts to break during use.

(1) Couplings are designed for use within an operating temperature range of -30° C to 120℃ . Although the couplings are designed to be waterproof and oilproof, do not subject them to excessive amounts of water and oil as it may cause part deterioration.

(2) Handle the element with care as it is made of a thin stainless steel metal disc, also making sure to be careful so as not to injure yourself.

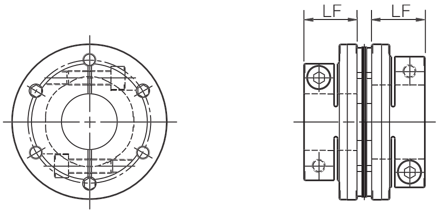
(3) Do not tighten up clamping bolts until after inserting the mounting shaft.

Mounting

(1) Check that coupling clamping bolts have been loosened and remove any rust, dust, oil residue, etc. from the inner diameter surfaces of the shaft and couplings. (Use a waste cloth, etc. to wipe away oil residue or an oil remover as needed.)

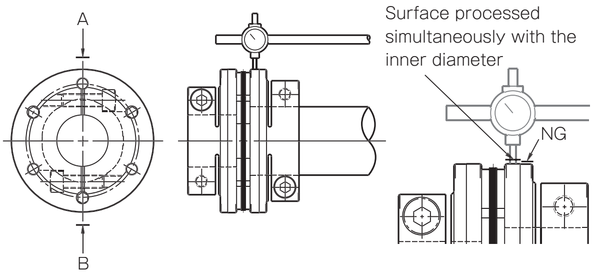
(2) Be careful when inserting the couplings into the shaft so as not to apply excessive force of compression or tensile force to the element.

(3) Make the length of the coupling inserted onto the motor shaft connect to the shaft for the entire length of the clamping hub of the coupling (LF dimension) as shown below, alternately tighten the two clamping bolts, and provisionally tighten enough that the coupling cannot be manually rotated.



Coupling size	040	050	060	070	080	090	100	120
LF [mm]	17.5	21.5	24	25	30	30	40	40

(4) Hold a dial gauge against the outer diameter of the clamping hub on the motor shaft side (the surface processed simultaneously with the inner diameter), and then tighten the two clamping bolts while turning the motor shaft by hand and adjusting the difference in the runout values at A and B in the figure below is 0.02 mm or less (and as close to 0 as possible).



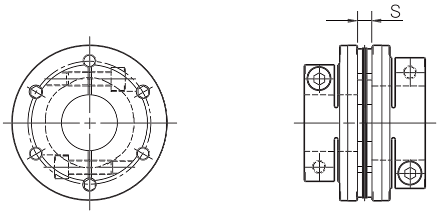
(5) Alternately fasten the two clamping bolts as you adjust them, and finish by tightening both bolts to the appropriate tightening torque of the following table, using a calibrated torque wrench.
Since it is fastened by two clamping bolts, tightening one bolt before the other will place more than the prescribed axial force on the bolt tightened first when the other bolt is tightened. Be sure to tighten them alternately, a little at a time.

Clamping bolt size	M4	M5	M6	M8	M10
Tightening torque [N·m]	3.4	7	14	34	68

(6)Mount the motor, to which the coupling has already been mounted, on the body of the machinery.
At that time, adjust the motor mounting position (centering location) while inserting the coupling onto the driven shaft (a feed screw or the like), being alert to undue forces on the element such as compression or pulling.

(7)Make the length of the driven shaft (feed screw or the like) inserted into the coupling connect to the shaft for the length of the LF dimension (described above), alternately tighten the two clamping bolts, and provisionally tighten enough that the coupling cannot be manually rotated.

(8) In addition, keep the dimension between clamping hub faces (the S dimension in the diagram) to within the allowable misalignment of the axial displacement with respect to a reference value. Note that the tolerance values were calculated based on the assumption that both the level of parallel misalignment and angular deflection are zero. Adjust to keep this value as low as possible.



Model	S [mm]
SFF-040SS/DS-8N	3.9
SFF-040SS/DS-12N	3.9
SFF-050SS/DS-25N	5.4
SFF-060SS/DS-60N	5.4
SFF-070SS/DS-90N	5.9
SFF-070SS/DS-100N	5.9
SFF-080SS/DS-150N	8.3
SFF-080SS/DS-200N	7.7
SFF-090SS/DS-250N	8.3
SFF-090SS/DS-300N	8.3
SFF-100SS/DS-450N	10.2
SFF-120SS/DS-600N	10.2

(9) Adjust runout using the same procedure as for the motor shaft side, and then finish by tightening the clamping bolts to the appropriate tightening torque.

(10) To protect against initial loosening of the clamping bolt, we recommend operating for a set period of time and then retightening to the appropriate tightening torque.

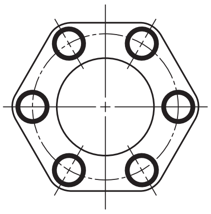
Removal

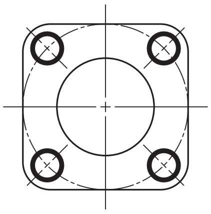
(1)Check to confirm that there is no torque or axial load being applied to the coupling. There may be cases where a torque is applied to the coupling, particularly when the safety brake is being used, for example. Make sure to verify that this is not occurring before removing parts.

(2)Release the fastening to the shaft by sufficiently loosening all clamping bolts. Grease has been applied to the clamping bolts, so do not remove them all the way.
Since two clamping bolts were used to fasten to the shaft, loosening only one will decrease the axial force of the other clamping bolt. Note that this is not the bolt loosening that occured during operation.

Differences in Torsional Stiffness due to Element Shape

Elements used by SFF (N) models may be either square or hexagonal. Since torque is transmitted by placing bolts at each vertex and coupling the hubs to each other via the element, torsional stiffness is higher in couplings that use hexagonal elements, at the expense of some flexibility. Choose your element shape accordingly.





Model	Element shape
SFF-040SS/DS-8N	Square
SFF-040SS/DS-12N	Square
SFF-050SS/DS-25N	Square
SFF-060SS/DS-60N	Hexagonal
SFF-070SS/DS-90N	Hexagonal
SFF-070SS/DS-100N	Hexagonal
SFF-080SS/DS-150N	Square
SFF-080SS/DS-200N	Hexagonal
SFF-090SS/DS-250N	Hexagonal
SFF-090SS/DS-300N	Hexagonal
SFF-100SS/DS-450N	Hexagonal
SFF-120SS/DS-600N	Hexagonal

Points to Consider Regarding the Feed Screw System

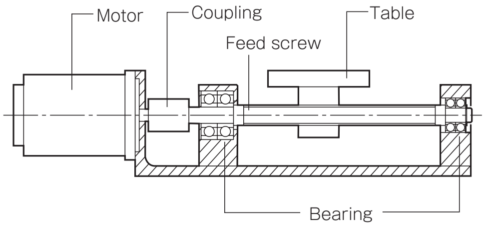
When the torsional natural frequency of the overall feed screw system is 400 to 500 Hz or less, gain adjustment of the servo motor may cause the servo motor to oscillate.
Ocsillation in the servo motor during operation can cause problems particularly with the overall natural frequency and electrical control systems of the feed screw system.
In order for these issues to be resolved, the torsional stiffness for the coupling and feed screw section and the moment of inertia and other characteristics for the system overall will need to be adjusted and the torsional natural frequency for the mechanical system raised or the tuning function (filter function) for the electrical control system in the servo motor adjusted during the design stage.

Please contact Miki Pulley with any questions regarding servo motor oscillation.

How to Find the Natural Frequency of a Feed Screw System

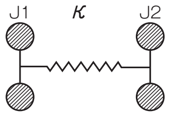
(1) Select a coupling based on the nominal and maximum torque of the servo motor.

(2) Find the overall natural frequency, Nf, from the torsional stiffness of the coupling and feed screw, κ, the moment of inertia of driving side, J1, and the moment of inertia of driven side, J2, for the feed screw system shown below.



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

Nf: Overall natural frequency of a feed screw system [Hz]
κ : Torsional stiffness of the coupling and feed screw [N·m/rad]
J1: Moment of inertia of driving side [kg·m^2]
J2: Moment of inertia of driven side [kg·m^2]



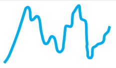
Selection Procedures

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

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

(2) Determine the factor κ from the load properties, and find the corrected torque, Td, applied to the coupling.

Td = Ta × K (Refer to the table below for values)

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

For servo motor drive, multiply the maximum torque, Ts, by the usage factor K = 1.2 to 1.5.

Td = Ts × (1.2 to 1.5)

(3) Set the size so that the rated coupling torque, Tn, is higher than the corrected torque, Td.

Tn ≧ Td

(4) Check that the mount shaft is no larger than the maximum bore diameter of the coupling.

Contact Miki Pulley for assistance with any device experiencing extreme periodic vibrations.

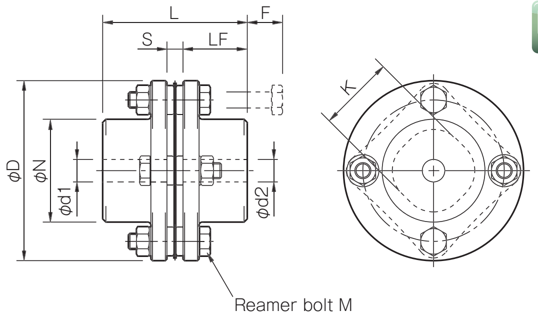
SFS S Types Single Element Type

Specifications

Model	Rated torque [N·m]	Misalignment		Max. rotation speed [min^{-1}]	Torsional stiffness [N·m/rad]	Axial stiffness [N/mm]	Moment of inertia [$kg·m^2$]	Mass [kg]
		Angular [°]	Axial [mm]					
SFS-05S	20	1	± 0.6	25000	16000	43	0.11×10^{-3}	0.30
SFS-06S	40	1	± 0.8	20000	29000	45	0.30×10^{-3}	0.50
SFS-08S	80	1	± 1.0	17000	83000	60	0.87×10^{-3}	1.00
SFS-09S	180	1	± 1.2	15000	170000	122	1.60×10^{-3}	1.40
SFS-10S	250	1	± 1.4	13000	250000	160	2.60×10^{-3}	2.10
SFS-12S	450	1	± 1.6	11000	430000	197	6.50×10^{-3}	3.40
SFS-14S	800	1	± 1.8	9500	780000	313	9.90×10^{-3}	4.90
SFS-05S-C	15	1	± 0.6	25000	16000	43	0.11×10^{-3}	0.30
SFS-06S-C	30	1	± 0.8	20000	29000	45	0.30×10^{-3}	0.50
SFS-08S-C	60	1	± 1.0	17000	83000	60	0.87×10^{-3}	1.00
SFS-09S-C	135	1	± 1.2	15000	170000	122	1.60×10^{-3}	1.40
SFS-10S-C	190	1	± 1.4	13000	250000	160	2.60×10^{-3}	2.10
SFS-12S-C	340	1	± 1.6	11000	430000	197	6.50×10^{-3}	3.40
SFS-14S-C	600	1	± 1.8	9500	780000	313	9.90×10^{-3}	4.90
SFS-06S-☐M-☐M	40	1	± 0.8	5000	29000	45	0.30×10^{-3}	0.70
SFS-08S-☐M-☐M	80	1	± 1.0	5000	83000	60	0.93×10^{-3}	1.30
SFS-09S-☐M-☐M	180	1	± 1.2	5000	170000	122	1.80×10^{-3}	1.80
SFS-10S-☐M-☐M	250	1	± 1.4	5000	250000	160	2.70×10^{-3}	2.30
SFS-12S-☐M-☐M	450	1	± 1.6	5000	430000	197	6.80×10^{-3}	4.10
SFS-14S-35M-35M	580	1	± 1.8	5000	780000	313	14.01×10^{-3}	6.40
SFS-06S-☐M-11C	40	1	± 0.8	5000	29000	45	0.29×10^{-3}	0.60
SFS-06S-15M-16C	40	1	± 0.8	5000	29000	45	0.34×10^{-3}	0.70
SFS-08S-☐M-16C	80	1	± 1.0	5000	83000	60	0.84×10^{-3}	1.20
SFS-09S-☐M-16C	180	1	± 1.2	5000	170000	122	1.50×10^{-3}	1.60

*Max. rotation speed does not take into account dynamic balance.
*The moment of inertia and mass are measured for the maximum bore diameter.

Dimension (SFS-☐S) Pilot Bore/Key or Set Screw



Unit [mm]

Model	d1 • d2			D	N	L	LF	S	F	K	M
	Pilot bore	Min.	Max.								
SFS-05S	7	8	20	56	32	45	20	5	11	24	4-M5 × 22
SFS-06S	7	8	25	68	40	56	25	6	10	30	4-M6 × 25
SFS-08S	10	11	35	82	54	66	30	6	11	38	4-M6 × 29
SFS-09S	10	11	38	94	58	68	30	8	21	42	4-M8 × 36
SFS-10S	15	16	42	104	68	80	35	10	16	48	4-M8 × 36
SFS-12S	18	19	50	126	78	91	40	11	23	54	4-M10 × 45
SFS-14S	20	22	60	144	88	102	45	12	31	61	4-M12 × 54

* Pilot bores are to be drilled into the part. See the standard hole-drilling standards of P.58 for information on bore drilling.
* The nominal diameter of the reamer bolt is equal to the quantity minus the nominal diameter of the screw threads times the nominal length.

How to Place an Order

SFS-10S-C-25H-30H

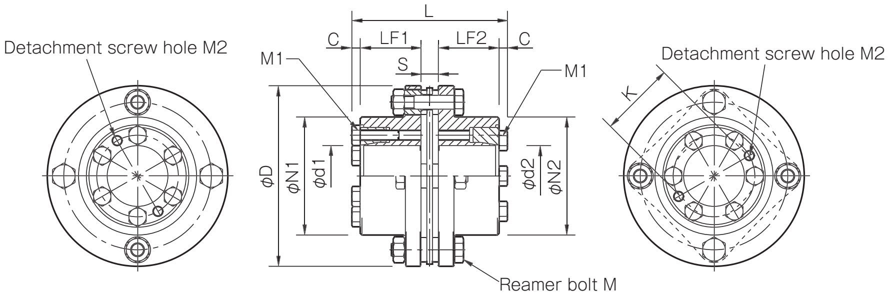
Size

Type: S
Single element

Surface finishing options
Blank: Black coating
-C: Electroless nickel plating

Bore diameter: d1 (Small diameter) - d2 (Large diameter)
Blank: Pilot bore
Bore specifications
Blank: Compliant with the old JIS standards (class 2) E9
H: Compliant with the new JIS standards H9
J: Compliant with the new JIS standards Js9
P: Compliant with the new JIS standards P9
N: Compliant with the new motor standards

Dimensions (SFS-□S-□M-□M) Frictional Coupling



Unit [mm]

Model	Bore diameter	d1	d2	D	N1	N2	L	LF1	LF2	S	C	K	M	M1	M2
SFS-06S	□M-□M	12･14･15	12･14･15	68	40	40	65.6	25	25	6	4.8	30	4-M6 × 25	4-M5	2-M5
SFS-08S	□M-□M	15･16･20･22	15･16･20･22	82	54	54	75.6	30	30	6	4.8	38	4-M6 × 29	4-M6	2-M6
SFS-09S	□M-□M	25･28	25･28	94	58	58	77.6	30	30	8	4.8	42	4-M8 × 36	6-M6	2-M6
	□M-35M	25･28	35			68	85.6		38						
SFS-10S	□M-□M	25･28･30･35	25･28･30･35	104	68	68	89.6	35	35	10	4.8	48	4-M8 × 36	6-M6	2-M6
SFS-12S	□M-□M *1	30･35	30･35	126	78	78	101.6	40	40	11	5.3	54	4-M10 × 45	4-M8	2-M8
SFS-14S	35M-35M	35	35	144	88	88	112.6	45	45	12	5.3	61	4-M12 × 54	6-M8	2-M8

* The nominal diameters of each bolt and tap are equal to the quantity minus the nominal diameter of the screw threads times the nominal length. The quantities for the pressure bolt M1 and detachment screw hole M2 are quantities for the hub on one side.

* The rated torque of SFS-12S-30M-□M in note *1 is limited by the ø30 shaft coupling mechanism and is 380 N·m.

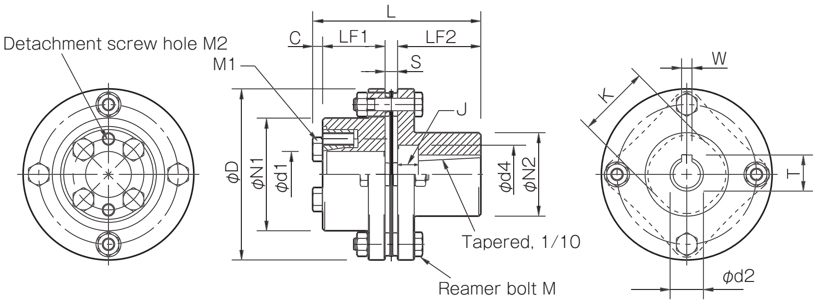
* The machining tolerance for paired mounting shafts is g6, h6 or h7 class. However, for a shaft diameter of 35 mm, the tolerance is $^{+0.010}_{-0.025}$.

How to Place an Order

SFS-10S-25M-30M

Bore diameter: d1 (Small diameter) - d2 (Large diameter)
M: Frictional coupling
Type: S
Single element
Size

Dimension (SFS-□S-□M-□C) Frictional Coupling/Tapered Shaft Supported



Unit [mm]

Model	Bore diameter	d1	d2	W $^{+0.030}_{0}$	T $^{+0.3}_{0}$	d4	J	D	N1	N2	L	LF1	LF2	S	C	K	M	M1	M2
SFS-06S	□M-11C	12･14･15	11	4	12.2	18	9	68	40	30	60.8	25	25	6	4.8	30	4-M6 × 25	4-M5	2-M5
	15M-16C	15	16	5	17.3	28	10			40	75.8		40						
SFS-08S	□M-16C	15･16･20･22	16	5	17.3	28	10	82	54	40	80.8	30	40	6	4.8	38	4-M6 × 29	4-M6	2-M6
SFS-09S	□M-16C	25･28	16	5	17.3	28	10	94	58	40	82.8	30	40	8	4.8	42	4-M8 × 36	6-M6	2-M6

* The nominal diameters of each bolt and tap are equal to the quantity minus the nominal diameter of the screw threads times the nominal length.

* The machining tolerance for paired mounting shafts of the hub on the friction-coupled side is g6, h6 or h7 class.

How to Place an Order

SFS-08S-20M-16C

Bore diameter: d1 - d2
M: Frictional coupling
C: Tapered shaft supported
Type: S
Single element
Size

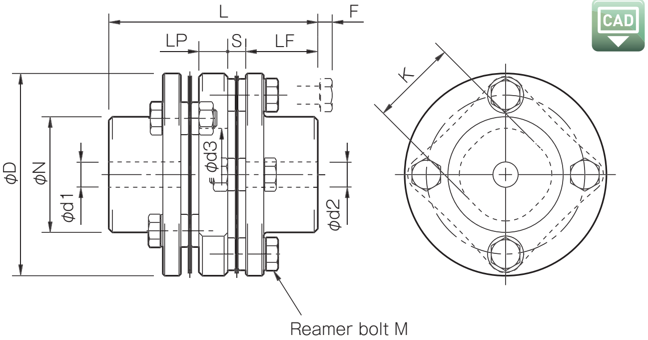
SFS W Types Double Element Type

Specifications

Model	Rated torque [N·m]	Misalignment			Max. rotation speed [min⁻¹]	Torsional stiffness [N·m/rad]	Axial stiffness [N/mm]	Moment of inertia [kg·m²]	Mass [kg]
		Parallel [mm]	Angular [°]	Axial [mm]					
SFS-05W	20	0.2	1 (On one side)	±1.2	10000	8000	21	0.14×10^{-3}	0.40
SFS-06W	40	0.3	1 (On one side)	±1.6	8000	14000	22	0.41×10^{-3}	0.70
SFS-08W	80	0.3	1 (On one side)	±2.0	6800	41000	30	1.10×10^{-3}	1.30
SFS-09W	180	0.5	1 (On one side)	±2.4	6000	85000	61	2.20×10^{-3}	2.10
SFS-10W	250	0.5	1 (On one side)	±2.8	5200	125000	80	3.60×10^{-3}	2.80
SFS-12W	450	0.6	1 (On one side)	±3.2	4400	215000	98	9.20×10^{-3}	4.90
SFS-14W	800	0.7	1 (On one side)	±3.6	3800	390000	156	15.00×10^{-3}	7.10
SFS-05W-C	15	0.2	1 (On one side)	±1.2	10000	8000	21	0.14×10^{-3}	0.40
SFS-06W-C	30	0.3	1 (On one side)	±1.6	8000	14000	22	0.41×10^{-3}	0.70
SFS-08W-C	60	0.3	1 (On one side)	±2.0	6800	41000	30	1.10×10^{-3}	1.30
SFS-09W-C	135	0.5	1 (On one side)	±2.4	6000	85000	61	2.20×10^{-3}	2.10
SFS-10W-C	190	0.5	1 (On one side)	±2.8	5200	125000	80	3.60×10^{-3}	2.80
SFS-12W-C	340	0.6	1 (On one side)	±3.2	4400	215000	98	9.20×10^{-3}	4.90
SFS-14W-C	600	0.7	1 (On one side)	±3.6	3800	390000	156	15.00×10^{-3}	7.10
SFS-06W-□M-□M	40	0.3	1 (On one side)	±1.6	5000	14000	22	0.41×10^{-3}	0.90
SFS-08W-□M-□M	80	0.3	1 (On one side)	±2.0	5000	41000	30	1.16×10^{-3}	1.60
SFS-09W-□M-□M	180	0.5	1 (On one side)	±2.4	5000	85000	61	2.40×10^{-3}	2.50
SFS-10W-□M-□M	250	0.5	1 (On one side)	±2.8	5000	125000	80	3.70×10^{-3}	3.00
SFS-12W-□M-□M	450	0.6	1 (On one side)	±3.2	4400	215000	98	9.50×10^{-3}	5.60
SFS-14W-35M-35M	580	0.7	1 (On one side)	±3.6	3800	390000	156	19.11×10^{-3}	8.60
SFS-06W-□M-11C	40	0.3	1 (On one side)	±1.6	5000	14000	22	0.40×10^{-3}	0.80
SFS-06W-15M-16C	40	0.3	1 (On one side)	±1.6	5000	14000	22	0.45×10^{-3}	0.90
SFS-08W-□M-16C	80	0.3	1 (On one side)	±2.0	5000	41000	30	1.07×10^{-3}	1.50
SFS-09W-□M-16C	180	0.5	1 (On one side)	±2.4	5000	85000	61	2.10×10^{-3}	2.30

* Max. rotation speed does not take into account dynamic balance.
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimension (SFS-□W) Pilot Bore/Key or Set Screw



Unit [mm]

Model	d1・d2			D	N	L	LF	LP	S	F	d3	K	M
	Pilot bore	Min.	Max.										
SFS-05W	7	8	20	56	32	58	20	8	5	4	20	24	8-M5 × 15
SFS-06W	7	8	25	68	40	74	25	12	6	3	24	30	8-M6 × 18
SFS-08W	10	11	35	82	54	84	30	12	6	2	28	38	8-M6 × 20
SFS-09W	10	11	38	94	58	98	30	22	8	12	32	42	8-M8 × 27
SFS-10W	15	16	42	104	68	110	35	20	10	7	34	48	8-M8 × 27
SFS-12W	18	19	50	126	78	127	40	25	11	10	40	54	8-M10 × 32
SFS-14W	20	22	60	144	88	144	45	30	12	15	46	61	8-M12 × 38

*Pilot bores are to be drilled into the part. See the standard hole-drilling standards of P.58 for information on bore drilling.
*The nominal diameter of the reamer bolt is equal to the quantity minus the nominal diameter of the screw threads times the nominal length.

How to Place an Order

SFS-10W-C-25H-30H

Bore diameter: d1 (Small diameter) - d2 (Large diameter)

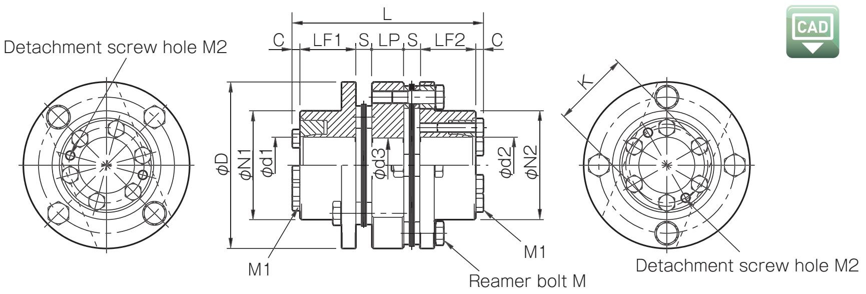
Size

Surface finishing options
Blank: Black coating
-C: Electroless nickel plating

Type: W
Double element

Bore specifications
Blank: Pilot bore
Blank: Compliant with the old JIS standards (class 2) E9
H: Compliant with the new JIS standards H9
J: Compliant with the new JIS standards Js9
P: Compliant with the new JIS standards P9
N: Compliant with the new motor standards

Dimensions (SFS-☐W-☐M-☐M) Frictional Coupling



Unit [mm]

Model	Bore diameter	d1	d2	D	N1	N2	L	LF1	LF2	LP	S	C	d3	K	M	M1	M2
SFS-06W	☐M-☐M	12·14·15	12·14·15	68	40	40	83.6	25	25	12	6	4.8	24	30	8-M6 × 18	4-M5	2-M5
SFS-08W	☐M-☐M	15·16·20·22	15·16·20·22	82	54	54	93.6	30	30	12	6	4.8	28	38	8-M6 × 20	4-M6	2-M6
SFS-09W	☐M-☐M	25·28	25·28	94	58	58	107.6	30	30	22	8	4.8	32	42	8-M8 × 27	6-M6	2-M6
	☐M-35M	25·28	35			68	115.6		38								
SFS-10W	☐M-☐M	25·28·30·35	25·28·30·35	104	68	68	119.6	35	35	20	10	4.8	34	48	8-M8 × 27	6-M6	2-M6
SFS-12W	☐M-☐M*1	30·35	30·35	126	78	78	137.6	40	40	25	11	5.3	40	54	8-M10 × 32	4-M8	2-M8
SFS-14W	35M-35M	35	35	144	88	88	154.6	45	45	30	12	5.3	46	61	8-M12 × 38	6-M8	2-M8

* The nominal diameters of each bolt and tap are equal to the quantity minus the nominal diameter of the screw threads times the nominal length. The quantities for the pressure bolt M1 and detachment screw hole M2 are quantities for the hub on one side.

* The rated torque of SFS-12W-30M-☐M in note *1 is limited by the ø35 shaft coupling mechanism and is 380 N·m.

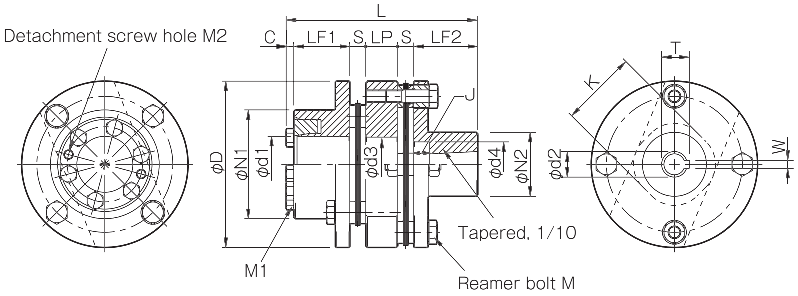
* The machining tolerance for paired mounting shafts is g6, h6 or h7 class.

How to Place an Order

SFS-10W-25M-30M

Bore diameter: d1 (Small diameter) - d2 (Large diameter)
Type: W
M: Frictional coupling
Size
Double element

Dimension (SFS-☐W-☐M-☐C) Frictional Coupling/Tapered Shaft Supported



Unit [mm]

Model	Bore diameter	d1	d2	W $^{+0.030}_{0}$	T $^{+0.3}_{0}$	d4	J	D	N1	N2	L	LF1	LF2	LP	S	C	d3	K	M	M1	M2
SFS-06W	☐M-11C	12·14·15	11	4	12.2	18	9	68	40	30	78.8	25	25	12	6	4.8	24	30	8-M6 × 18	4-M5	2-M5
	15M-16C	15	16	5	17.3	28	10			40	93.8		40								
SFS-08W	☐M-16C	15·16·20·22	16	5	17.3	28	10	82	54	40	98.8	30	40	12	6	4.8	28	38	8-M6 × 20	4-M6	2-M6
SFS-09W	☐M-16C	25·28	16	5	17.3	28	10	94	58	40	112.8	30	40	22	8	4.8	32	42	8-M8 × 27	6-M6	2-M6

* The nominal diameters of each bolt and tap are equal to the quantity minus the nominal diameter of the screw threads times the nominal length.

* The machining tolerance for paired mounting shafts of the hub on the friction-coupled side is g6, h6 or h7 class.

How to Place an Order

SFS-08W-20M-16C

Bore diameter: d1 - d2
Type: W
M: Frictional coupling
C: Tapered shaft supported
Size
Double element

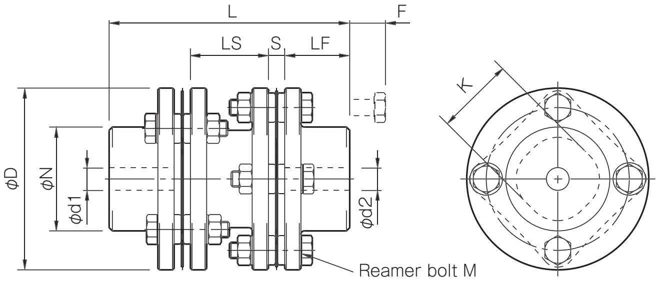
SFS G Types Double Element/Floating Shaft Type

Specifications

Model	Rated torque [N·m]	Misalignment			Max. rotation speed [min⁻¹]	Torsional stiffness [N·m/rad]	Axial stiffness [N/mm]	Moment of inertia [kg·m²]	Mass [kg]
		Parallel [mm]	Angular [°]	Axial [mm]					
SFS-05G	20	0.5	1 (On one side)	± 1.2	20000	8000	21	0.20×10^{-3}	0.50
SFS-06G	40	0.5	1 (On one side)	± 1.6	16000	14000	22	0.55×10^{-3}	0.90
SFS-08G	80	0.5	1 (On one side)	± 2.0	13000	41000	30	1.50×10^{-3}	1.70
SFS-09G	180	0.6	1 (On one side)	± 2.4	12000	85000	61	2.90×10^{-3}	2.40
SFS-10G	250	0.6	1 (On one side)	± 2.8	10000	125000	80	4.60×10^{-3}	3.30
SFS-12G	450	0.8	1 (On one side)	± 3.2	8000	215000	98	11.80×10^{-3}	5.80
SFS-14G	800	0.9	1 (On one side)	± 3.6	7000	390000	156	21.20×10^{-3}	8.60
SFS-05G-C	15	0.5	1 (On one side)	± 1.2	20000	8000	21	0.20×10^{-3}	0.50
SFS-06G-C	30	0.5	1 (On one side)	± 1.6	16000	14000	22	0.55×10^{-3}	0.90
SFS-08G-C	60	0.5	1 (On one side)	± 2.0	13000	41000	30	1.50×10^{-3}	1.70
SFS-09G-C	135	0.6	1 (On one side)	± 2.4	12000	85000	61	2.90×10^{-3}	2.40
SFS-10G-C	190	0.6	1 (On one side)	± 2.8	10000	125000	80	4.60×10^{-3}	3.30
SFS-12G-C	340	0.8	1 (On one side)	± 3.2	8000	215000	98	11.80×10^{-3}	5.80
SFS-14G-C	600	0.9	1 (On one side)	± 3.6	7000	390000	156	21.20×10^{-3}	8.60
SFS-06G-□M-□M	40	0.5	1 (On one side)	± 1.6	5000	14000	22	0.55×10^{-3}	1.10
SFS-08G-□M-□M	80	0.5	1 (On one side)	± 2.0	5000	41000	30	1.56×10^{-3}	2.00
SFS-09G-□M-□M	180	0.6	1 (On one side)	± 2.4	5000	85000	61	3.10×10^{-3}	2.80
SFS-10G-□M-□M	250	0.6	1 (On one side)	± 2.8	5000	125000	80	4.70×10^{-3}	3.50
SFS-12G-□M-□M	450	0.8	1 (On one side)	± 3.2	5000	215000	98	12.10×10^{-3}	6.50
SFS-14G-35M-35M	580	0.9	1 (On one side)	± 3.6	5000	390000	156	25.31×10^{-3}	10.10
SFS-06G-□M-11C	40	0.5	1 (On one side)	± 1.6	5000	14000	22	0.54×10^{-3}	1.00
SFS-06G-15M-16C	40	0.5	1 (On one side)	± 1.6	5000	14000	22	0.59×10^{-3}	1.10
SFS-08G-□M-16C	80	0.5	1 (On one side)	± 2.0	5000	41000	30	1.47×10^{-3}	1.90
SFS-09G-□M-16C	180	0.6	1 (On one side)	± 2.4	5000	85000	61	2.80×10^{-3}	2.60

* Max. rotation speed does not take into account dynamic balance.
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimension (SFS-□G) Pilot Bore/Key or Set Screw



CAD

Unit [mm]

Model	d1 • d2			D	N	L	LF	LS	S	F	K	M
	Pilot bore	Min.	Max.									
SFS-05G	7	8	20	56	32	74	20	24	5	11	24	8-M5 × 22
SFS-06G	7	8	25	68	40	86	25	24	6	10	30	8-M6 × 25
SFS-08G	10	11	35	82	54	98	30	26	6	11	38	8-M6 × 29
SFS-09G	10	11	38	94	58	106	30	30	8	21	42	8-M8 × 36
SFS-10G	15	16	42	104	68	120	35	30	10	16	48	8-M8 × 36
SFS-12G	18	19	50	126	78	140	40	38	11	23	54	8-M10 × 45
SFS-14G	20	22	60	144	88	160	45	46	12	31	61	8-M12 × 54

* Pilot bores are to be drilled into the part. See the standard hole-drilling standards of P.58 for information on bore drilling.
* If you require a product with an LS dimension other than that above, contact Miki Pulley with your required dimension. Please contact Miki Pulley for assistance if LS ≧ 1000.
* Please note that when the LS dimension exceeds 100 mm with the electroless nickel plating option (SFS-□G-C), the insertion length of the shaft cannot exceed the LS dimension.
* The nominal diameter of the reamer bolt M is equal to the quantity minus the nominal diameter of the screw threads times the nominal length.

How to Place an Order

SFS-10G-C-25H-30H LS=500

Size

Type: G
Double element
Floating shaft

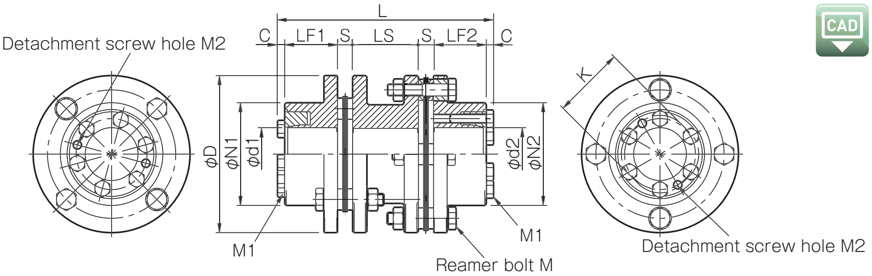
Surface finishing options
Blank: Black coating
-C: Electroless nickel plating

Bore diameter: d1 (Small diameter) - d2 (Large diameter)
Blank: Pilot bore

Bore specifications
Blank: Compliant with the old JIS standards (class 2) E9
H: Compliant with the new JIS standards H9
J: Compliant with the new JIS standards Js9
P: Compliant with the new JIS standards P9
N: Compliant with the new motor standards

Spacer length
* Use mm units for LS dimensions.
* Leave blank for standard spacers.

Dimensions (SFS-□G-□M-□M) Frictional Coupling

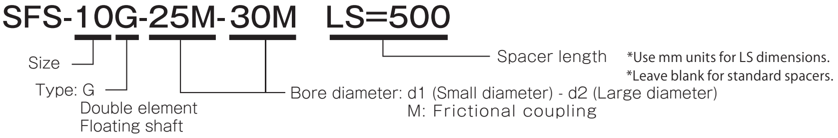


Unit [mm]

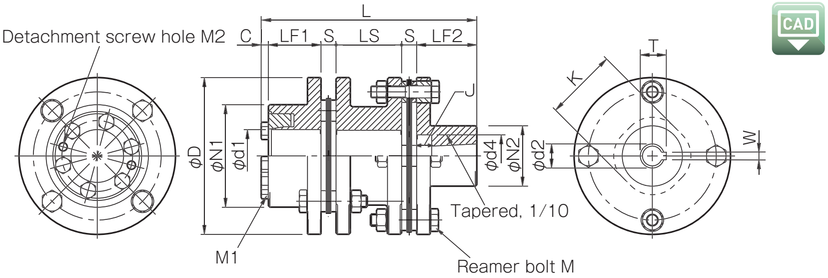
Model	Bore diameter	d1	d2	D	N1	N2	L	LF1	LF2	LS	S	C	K	M	M1	M2
SFS-06G	□M-□M	12・14・15	12・14・15	68	40	40	95.6	25	25	24	6	4.8	30	8-M6 × 18	4-M5	2-M5
SFS-08G	□M-□M	15・16・20・22	15・16・20・22	82	54	54	107.6	30	30	26	6	4.8	38	8-M6 × 20	4-M6	2-M6
SFS-09G	□M-□M	25・28	25・28	94	58	58	115.6	30	30	30	8	4.8	42	8-M8 × 27	6-M6	2-M6
	□M-35M	25・28	35			68	123.6		38							
SFS-10G	□M-□M	25・28・30・35	25・28・30・35	104	68	68	129.6	35	35	30	10	4.8	48	8-M8 × 27	6-M6	2-M6
SFS-12G	□M-□M*1	30・35	30・35	126	78	78	150.6	40	40	38	11	5.3	54	8-M10 × 32	4-M8	2-M8
SFS-14G	35M-35M	35	35	144	88	88	170.6	45	45	46	12	5.3	61	8-M12 × 38	6-M8	2-M8

* If you require a product with an LS dimension other than that above, contact Miki Pulley with your required dimension. Please contact Miki Pulley for assistance if LS ≧ 1000.
* The nominal diameters of each bolt and tap are equal to the quantity minus the nominal diameter of the screw threads times the nominal length. The quantities for the pressure bolt M1 and detachment screw hole M2 are quantities for the hub on one side.
* The rated torque of SFS-12G-30M-□M in note *1 is limited by the ø30 shaft coupling mechanism and is 380 N·m.
* The machining tolerance for paired mounting shafts is g6, h6 or h7 class. However, for a shaft diameter of 35 mm, the tolerance is $^{+0.010}_{-0.025}$.

How to Place an Order



Dimension (SFS-□G-□M-□C) Frictional Coupling/Tapered Shaft Supported

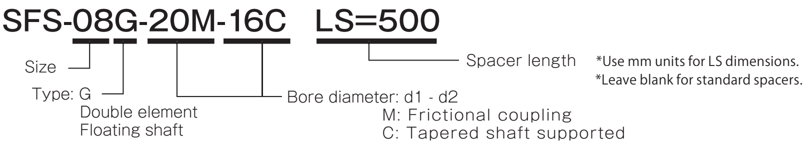


Unit [mm]

Model	Bore diameter	d1	d2	W $^{+0.030}_{0}$	T $^{+0.3}_{0}$	d4	J	D	N1	N2	L	LF1	LF2	LS	S	C	K	M	M1	M2
SFS-06G	□M-11C	12・14・15	11	4	12.2	18	9	68	40	30	90.8	25	25	24	6	4.8	30	8-M6 × 18	4-M5	2-M5
	15M-16C	15	16	5	17.3	28	10			40	105.8		40							
SFS-08G	□M-16C	15・16・20・22	16	5	17.3	28	10	82	54	40	112.8	30	40	26	6	4.8	38	8-M6 × 20	4-M6	2-M6
SFS-09G	□M-16C	25・28	16	5	17.3	28	10	94	58	40	120.8	30	40	30	8	4.8	42	8-M8 × 27	6-M6	2-M6

* If you require a product with an LS dimension other than that above, contact Miki Pulley with your required dimension. Please contact Miki Pulley for assistance if LS ≧ 1000.
* The nominal diameters of each bolt and tap are equal to the quantity minus the nominal diameter of the screw threads times the nominal length.
* The machining tolerance for paired mounting shafts of the hub on the friction-coupled side is g6, h6 or h7 class.

How to Place an Order



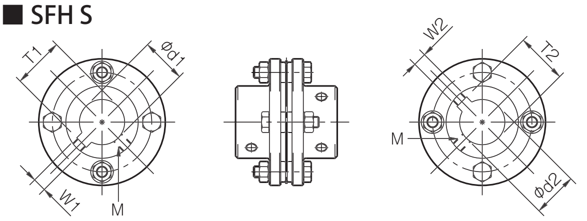
COUPLINGS
ETP BUSHINGS
ELECTROMAGNETIC CLUTCHES & BRAKES
SPEED CHANGERS & REDUCERS
INVERTERS
LINEAR SHAFT DRIVES
TORQUE LIMITERS
ROSTA
SERIES
Metal Couplings
Metal Disc Couplings SERVOFLEX
High-rigidity Couplings SERVORIGID
Metal Slit Couplings HELI-CAL
Metal Coil Spring Couplings BAUMANNFLEX
Pin Bushing Couplings PARAFLEX
Link Couplings SCHMIDT
Rubber and Plastic Couplings
Dual Rubber Couplings STEPFLEX
Jaw Couplings MIKI PULLEY STARFLEX
Jaw Couplings SPRFLEX
Plastic Bellows Couplings BELLOWFLEX
Rubber and Plastic Couplings CENTAFLEX
MODELS
SFC
SFF (N)
SFS
SFF
SFM
SFH

SFS Models

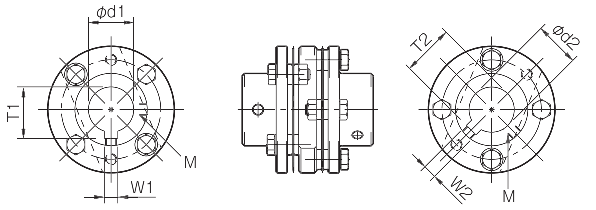
Standard Hole-Drilling Standards

- Positioning precision for keyway milling is determined by sight, so contact Miki Pulley when the keyway requires a positioning precision for a particular hub.
- Set screw positions are not on the same plane.
- The set screws are included with the product.
- Consult the technical documentation at the end of this volume for standard dimensions for bore drilling other than those given here.

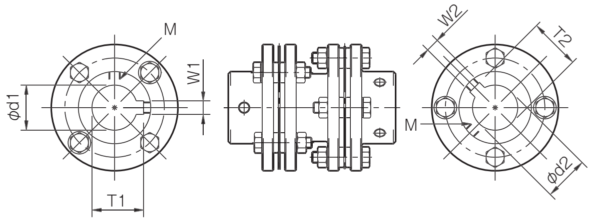
■ SFH S



■ SFS W



■ SFH G



Unit [mm]

Models compliant with the old JIS standards (class 2)					Models compliant with the new JIS standards (H9)					Models compliant with the new JIS standards (Js9)					Models compliant with the new JIS standards (P9)				
Nominal bore diameter	Bore diameter [d1・d2]	Keyway width [W1・W2]	Keyway height [T1・T2]	Set screw hole [M]	Nominal bore diameter	Bore diameter [d1・d2]	Keyway width [W1・W2]	Keyway height [T1・T2]	Set screw hole [M]	Nominal bore diameter	Bore diameter [d1・d2]	Keyway width [W1・W2]	Keyway height [T1・T2]	Set screw hole [M]	Nominal bore diameter	Bore diameter [d1・d2]	Keyway width [W1・W2]	Keyway height [T1・T2]	Set screw hole [M]
Tolerance	H7, H8	E9	$^{+0.3}_{0}$	—	Tolerance	H7, H8	H9	$^{+0.3}_{0}$	—	Tolerance	H7, H8	Js9	$^{+0.3}_{0}$	—	Tolerance	H7, H8	P9	$^{+0.3}_{0}$	—
8	$8^{+0.022}_{0}$	—	—	2-M4	8H	$8^{+0.022}_{0}$	$3^{+0.025}_{0}$	9.4	2-M4	8J	$8^{+0.022}_{0}$	3 ± 0.0125	9.4	2-M4	8P	$8^{+0.022}_{0}$	$3^{-0.006}_{-0.031}$	9.4	2-M4
9	$9^{+0.022}_{0}$	—	—	2-M4	9H	$9^{+0.022}_{0}$	$3^{+0.025}_{0}$	10.4	2-M4	9J	$9^{+0.022}_{0}$	3 ± 0.0125	10.4	2-M4	9P	$9^{+0.022}_{0}$	$3^{-0.006}_{-0.031}$	10.4	2-M4
10	$10^{+0.022}_{0}$	—	—	2-M4	10H	$10^{+0.022}_{0}$	$3^{+0.025}_{0}$	11.4	2-M4	10J	$10^{+0.022}_{0}$	3 ± 0.0125	11.4	2-M4	10P	$10^{+0.022}_{0}$	$3^{-0.006}_{-0.031}$	11.4	2-M4
11	$11^{+0.018}_{0}$	—	—	2-M4	11H	$11^{+0.018}_{0}$	$4^{+0.030}_{0}$	12.8	2-M4	11J	$11^{+0.018}_{0}$	4 ± 0.0150	12.8	2-M4	11P	$11^{+0.018}_{0}$	$4^{-0.012}_{-0.042}$	12.8	2-M4
12	$12^{+0.018}_{0}$	$4^{+0.050}_{+0.020}$	13.5	2-M4	12H	$12^{+0.018}_{0}$	$4^{+0.030}_{0}$	13.8	2-M4	12J	$12^{+0.018}_{0}$	4 ± 0.0150	13.8	2-M4	12P	$12^{+0.018}_{0}$	$4^{-0.012}_{-0.042}$	13.8	2-M4
14	$14^{+0.018}_{0}$	$5^{+0.050}_{+0.020}$	16.0	2-M4	14H	$14^{+0.018}_{0}$	$5^{+0.030}_{0}$	16.3	2-M4	14J	$14^{+0.018}_{0}$	5 ± 0.0150	16.3	2-M4	14P	$14^{+0.018}_{0}$	$5^{-0.012}_{-0.042}$	16.3	2-M4
15	$15^{+0.018}_{0}$	$5^{+0.050}_{+0.020}$	17.0	2-M4	15H	$15^{+0.018}_{0}$	$5^{+0.030}_{0}$	17.3	2-M4	15J	$15^{+0.018}_{0}$	5 ± 0.0150	17.3	2-M4	15P	$15^{+0.018}_{0}$	$5^{-0.012}_{-0.042}$	17.3	2-M4
16	$16^{+0.018}_{0}$	$5^{+0.050}_{+0.020}$	18.0	2-M4	16H	$16^{+0.018}_{0}$	$5^{+0.030}_{0}$	18.3	2-M4	16J	$16^{+0.018}_{0}$	5 ± 0.0150	18.3	2-M4	16P	$16^{+0.018}_{0}$	$5^{-0.012}_{-0.042}$	18.3	2-M4
17	$17^{+0.018}_{0}$	$5^{+0.050}_{+0.020}$	19.0	2-M4	17H	$17^{+0.018}_{0}$	$5^{+0.030}_{0}$	19.3	2-M4	17J	$17^{+0.018}_{0}$	5 ± 0.0150	19.3	2-M4	17P	$17^{+0.018}_{0}$	$5^{-0.012}_{-0.042}$	19.3	2-M4
18	$18^{+0.018}_{0}$	$5^{+0.050}_{+0.020}$	20.0	2-M4	18H	$18^{+0.018}_{0}$	$6^{+0.030}_{0}$	20.8	2-M5	18J	$18^{+0.018}_{0}$	6 ± 0.0150	20.8	2-M5	18P	$18^{+0.018}_{0}$	$6^{-0.012}_{-0.042}$	20.8	2-M5
19	$19^{+0.021}_{0}$	$5^{+0.050}_{+0.020}$	21.0	2-M4	19H	$19^{+0.021}_{0}$	$6^{+0.030}_{0}$	21.8	2-M5	19J	$19^{+0.021}_{0}$	6 ± 0.0150	21.8	2-M5	19P	$19^{+0.021}_{0}$	$6^{-0.012}_{-0.042}$	21.8	2-M5
20	$20^{+0.021}_{0}$	$5^{+0.050}_{+0.020}$	22.0	2-M4	20H	$20^{+0.021}_{0}$	$6^{+0.030}_{0}$	22.8	2-M5	20J	$20^{+0.021}_{0}$	6 ± 0.0150	22.8	2-M5	20P	$20^{+0.021}_{0}$	$6^{-0.012}_{-0.042}$	22.8	2-M5
22	$22^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	25.0	2-M6	22H	$22^{+0.021}_{0}$	$6^{+0.030}_{0}$	24.8	2-M5	22J	$22^{+0.021}_{0}$	6 ± 0.0150	24.8	2-M5	22P	$22^{+0.021}_{0}$	$6^{-0.012}_{-0.042}$	24.8	2-M5
24	$24^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	27.0	2-M6	24H	$24^{+0.021}_{0}$	$8^{+0.036}_{0}$	27.3	2-M6	24J	$24^{+0.021}_{0}$	8 ± 0.0180	27.3	2-M6	24P	$24^{+0.021}_{0}$	$8^{-0.015}_{-0.051}$	27.3	2-M6
25	$25^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	28.0	2-M6	25H	$25^{+0.021}_{0}$	$8^{+0.036}_{0}$	28.3	2-M6	25J	$25^{+0.021}_{0}$	8 ± 0.0180	28.3	2-M6	25P	$25^{+0.021}_{0}$	$8^{-0.015}_{-0.051}$	28.3	2-M6
28	$28^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	31.0	2-M6	28H	$28^{+0.021}_{0}$	$8^{+0.036}_{0}$	31.3	2-M6	28J	$28^{+0.021}_{0}$	8 ± 0.0180	31.3	2-M6	28P	$28^{+0.021}_{0}$	$8^{-0.015}_{-0.051}$	31.3	2-M6
30	$30^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	33.0	2-M6	30H	$30^{+0.021}_{0}$	$8^{+0.036}_{0}$	33.3	2-M6	30J	$30^{+0.021}_{0}$	8 ± 0.0180	33.3	2-M6	30P	$30^{+0.021}_{0}$	$8^{-0.015}_{-0.051}$	33.3	2-M6
32	$32^{+0.025}_{0}$	$10^{+0.061}_{+0.025}$	35.5	2-M8	32H	$32^{+0.025}_{0}$	$10^{+0.036}_{0}$	35.3	2-M8	32J	$32^{+0.025}_{0}$	10 ± 0.0180	35.3	2-M8	32P	$32^{+0.025}_{0}$	$10^{-0.015}_{-0.051}$	35.3	2-M8
35	$35^{+0.025}_{0}$	$10^{+0.061}_{+0.025}$	38.5	2-M8	35H	$35^{+0.025}_{0}$	$10^{+0.036}_{0}$	38.3	2-M8	35J	$35^{+0.025}_{0}$	10 ± 0.0180	38.3	2-M8	35P	$35^{+0.025}_{0}$	$10^{-0.015}_{-0.051}$	38.3	2-M8
38	$38^{+0.025}_{0}$	$10^{+0.061}_{+0.025}$	41.5	2-M8	38H	$38^{+0.025}_{0}$	$10^{+0.036}_{0}$	41.3	2-M8	38J	$38^{+0.025}_{0}$	10 ± 0.0180	41.3	2-M8	38P	$38^{+0.025}_{0}$	$10^{-0.015}_{-0.051}$	41.3	2-M8
40	$40^{+0.025}_{0}$	$10^{+0.061}_{+0.025}$	43.5	2-M8	40H	$40^{+0.025}_{0}$	$12^{+0.043}_{0}$	43.3	2-M8	40J	$40^{+0.025}_{0}$	12 ± 0.0215	43.3	2-M8	40P	$40^{+0.025}_{0}$	$12^{-0.018}_{-0.061}$	43.3	2-M8
42	$42^{+0.025}_{0}$	$12^{+0.075}_{+0.032}$	45.5	2-M8	42H	$42^{+0.025}_{0}$	$12^{+0.043}_{0}$	45.3	2-M8	42J	$42^{+0.025}_{0}$	12 ± 0.0215	45.3	2-M8	42P	$42^{+0.025}_{0}$	$12^{-0.018}_{-0.061}$	45.3	2-M8
45	$45^{+0.025}_{0}$	$12^{+0.075}_{+0.032}$	48.5	2-M8	45H	$45^{+0.025}_{0}$	$14^{+0.043}_{0}$	48.8	2-M10	45J	$45^{+0.025}_{0}$	14 ± 0.0215	48.8	2-M10	45P	$45^{+0.025}_{0}$	$14^{-0.018}_{-0.061}$	48.8	2-M10
48	$48^{+0.025}_{0}$	$12^{+0.075}_{+0.032}$	51.5	2-M8	48H	$48^{+0.025}_{0}$	$14^{+0.043}_{0}$	51.8	2-M10	48J	$48^{+0.025}_{0}$	14 ± 0.0215	51.8	2-M10	48P	$48^{+0.025}_{0}$	$14^{-0.018}_{-0.061}$	51.8	2-M10
50	$50^{+0.025}_{0}$	$12^{+0.075}_{+0.032}$	53.5	2-M8	50H	$50^{+0.025}_{0}$	$14^{+0.043}_{0}$	53.8	2-M10	50J	$50^{+0.025}_{0}$	14 ± 0.0215	53.8	2-M10	50P	$50^{+0.025}_{0}$	$14^{-0.018}_{-0.061}$	53.8	2-M10
55	$55^{+0.030}_{0}$	$15^{+0.075}_{+0.032}$	60.0	2-M10	55H	$55^{+0.030}_{0}$	$16^{+0.043}_{0}$	59.3	2-M10	55J	$55^{+0.030}_{0}$	16 ± 0.0215	59.3	2-M10	55P	$55^{+0.030}_{0}$	$16^{-0.018}_{-0.061}$	59.3	2-M10
56	$56^{+0.030}_{0}$	$15^{+0.075}_{+0.032}$	61.0	2-M10	56H	$56^{+0.030}_{0}$	$16^{+0.043}_{0}$	60.3	2-M10	56J	$56^{+0.030}_{0}$	16 ± 0.0215	60.3	2-M10	56P	$56^{+0.030}_{0}$	$16^{-0.018}_{-0.061}$	60.3	2-M10
60	$60^{+0.030}_{0}$	$15^{+0.075}_{+0.032}$	65.0	2-M10	60H	$60^{+0.030}_{0}$	$18^{+0.043}_{0}$	64.4	2-M10	60J	$60^{+0.030}_{0}$	18 ± 0.0215	64.4	2-M10	60P	$60^{+0.030}_{0}$	$18^{-0.018}_{-0.061}$	64.4	2-M10

Models compliant with the new motor standards				
Nominal bore diameter	Bore diameter [d1・d2]	Keyway width [W1・W2]	Keyway height [T1・T2]	Set screw hole [M]
Tolerance	G7, F7	H9	$^{+0.3}_{0}$	—
14N	$14^{+0.024}_{+0.006}$	$5^{+0.030}_{0}$	16.3	2-M4
19N	$19^{+0.028}_{+0.007}$	$6^{+0.030}_{0}$	21.8	2-M5
24N	$24^{+0.028}_{+0.007}$	$8^{+0.036}_{0}$	27.3	2-M6
28N	$28^{+0.028}_{+0.007}$	$8^{+0.036}_{0}$	31.3	2-M6
38N	$38^{+0.050}_{+0.025}$	$10^{+0.036}_{0}$	41.3	2-M8
42N	$42^{+0.050}_{+0.025}$	$12^{+0.043}_{0}$	45.3	2-M8
48N	$48^{+0.050}_{+0.025}$	$14^{+0.043}_{0}$	51.8	2-M10
55N	$55^{+0.060}_{+0.030}$	$16^{+0.043}_{0}$	59.3	2-M10
60N	$60^{+0.060}_{+0.030}$	$18^{+0.043}_{0}$	64.4	2-M10

Distance from Set Screw Edge

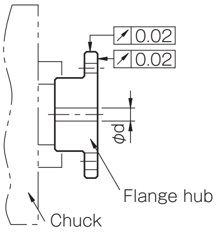
Model	Distance from set screw edge [mm]
SFS-05	7
SFS-06	9
SFS-08	10
SFS-09	10
SFS-10	12
SFS-12	12
SFS-14	15

Centering and Finishing When Drilling Bores in Flange Hubs

Keep the following in mind when processing bore diameters in pilot-bore products.

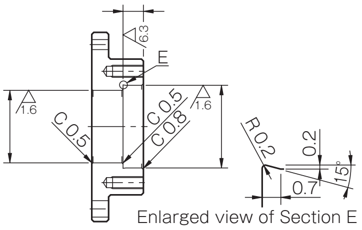
■ Centering

After adjusting the chuck so that runout of each flange hub is no more than the precision of the figure below, finish the inner diameter, guided by Figure A.



■ Locking collar specifications

Finish as shown in Figure B if you are processing for a connection by means of locking collar.



Standard Bore Diameter Combinations

The standard bore diameter combinations for the types that use frictional coupling to mount on the shaft (SFS-☐ S/W/G-☐ M-☐ M) are as follows.

SFS-06		Standard bore diameter d2 [mm]									
		12M	14M	15M	16M	20M	22M	25M	28M	30M	35M
Standard bore diameter d1 [mm]	12M	●	●	●							
	14M		●	●							
	15M			●							

SFS-08		Standard bore diameter d2 [mm]									
		12M	14M	15M	16M	20M	22M	25M	28M	30M	35M
Standard bore diameter d1 [mm]	15M			●	●	●	●				
	16M				●	●	●				
	20M					●	●				
	22M						●				

SFS-09		Standard bore diameter d2 [mm]									
		12M	14M	15M	16M	20M	22M	25M	28M	30M	35M
Standard bore diameter d1 [mm]	25M							●	●		●
	28M								●		●

SFS-10		Standard bore diameter d2 [mm]									
		12M	14M	15M	16M	20M	22M	25M	28M	30M	35M
Standard bore diameter d1 [mm]	25M							●	●	●	●
	28M								●	●	●
	30M									●	●
	35M										●

SFS-12		Standard bore diameter d2 [mm]									
		12M	14M	15M	16M	20M	22M	25M	28M	30M	35M
Standard bore diameter d1 [mm]	30M									380	380
	35M										●

SFS-14		Standard bore diameter d2 [mm]									
		12M	14M	15M	16M	20M	22M	25M	28M	30M	35M
Standard bore diameter d1 [mm]	35M										●

* Bore diameters marked with ● and numbers are supported as standard bore diameter.

* Bore diameters whose fields contain numbers are restricted in their rated torque by the holding power of the shaft connection component because the bore diameter is small. The numbers indicate the rated torque value [N·m].

* Consult Miki Pulley regarding special arrangements for other bore diameters.

SFS Models

Items Checked for Design Purposes

Precautions for Handling

SFS S/ W / G types are delivered as components. Select whether to assemble by mounting flange hubs on each shaft and coupling shafts in both directions by mounting the element last, while centering, or to assemble by completing couplings first and then inserting them onto the shafts.
When using the assembly method that completes couplings first, take extra precautions when handling couplings. Subjecting assembled couplings to strong shocks may affect mounting accuracy and cause the parts to break during use.

(1) Couplings are designed for use within an operating temperature range of -30° C to 120℃ . Although the couplings are designed to be waterproof and oilproof, do not subject them to excessive amounts of water and oil as it may cause part deterioration.

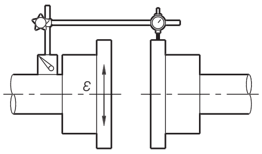
(2) Handle the element with care as it is made of a thin stainless steel metal disc, also making sure to be careful so as not to injure yourself.

(3) For frictional coupling types, do not tighten up pressure bolts until after inserting the mounting shaft.

Centering

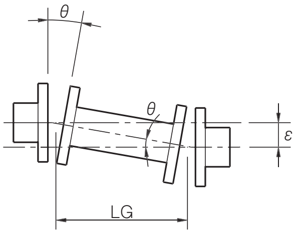
■ Parallel misalignment (ε)

Lock the dial gauge in place on one shaft and then measure the runout of the paired flange hub's outer periphery while rotating that shaft.
Since couplings on which the elements (discs) are a set (SFS S types) do not allow parallel misalignment, get as close to zero as possible. For couplings that allow the entire length to be freely set (SFS G types), use the following formula to calculate allowable parallel misalignment.



$$\varepsilon = \tan\theta \times LG$$

ε : Allowable parallel misalignment
θ : 1°

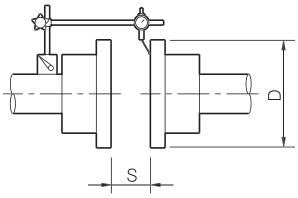


$$LG = LS + S$$

LS: Total length of spacer
S: Dimension of gap between flange hub and spacer

■ Angular deflection(θ)

Lock the dial gauge in place on one shaft and then measure the runout of the end surface near the paired flange hub's outer periphery while rotating that shaft.
Adjust runout B so that $\theta \leqq 1°$ in the following formula.



$$B = D \times \tan\theta$$

B: Runout
D: Flange hub outer diameter
θ : 1°

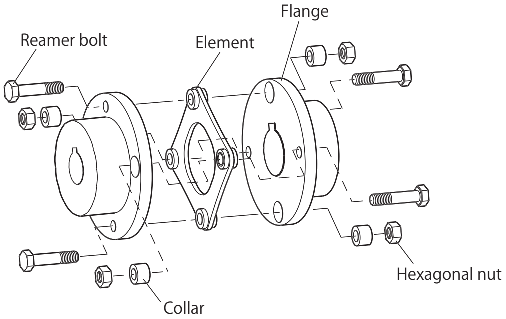
■ Axial displacement (S)

In addition, restrict the dimension between flange hub faces (S in the diagram) within the allowable error range for axial displacement with respect to a reference value. Note that the tolerance values were calculated based on the assumption that both the level of parallel misalignment and angular deflection are zero. Adjust to keep this value as low as possible.

*On the SFS S, this is the dimension of the gap between two flange hubs. On the SFS W/G, dimension S is the gap between the flange hub and the spacer.

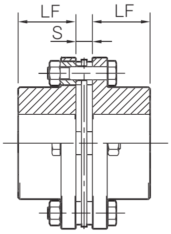
Mounting (SFS S/W/G Types)

This assembly method mounts a flange hub on each shaft of the SFS S/ W/G and couples shafts in both directions by mounting the element last, while centering.



(1) Remove any rust, dust, oil or the like from the inner diameter surfaces of the shaft and flange. (Use a waste cloth, etc. to wipe away oil residue or an oil remover as needed.)

(2) Insert each shaft far enough into the flange so that the paired mounting shaft touches the shaft along the entire length of the flange (LF dimension) as shown in the diagram below.



(3) Mount the other flange on the paired mounting shaft as described in steps (1) and (2).

(4) Keep the width of the dimension between flange faces (S dimension in the diagram) within the allowable error range for axial misalignment with respect to the reference value. Note that the tolerance values were calculated based on the assumption that both the level of parallel misalignment and angular deflection are zero. Adjust to keep this value as low as possible.

Coupling size	05	06	08	09	10	12	14
S [mm]	5	6	6	8	10	11	12

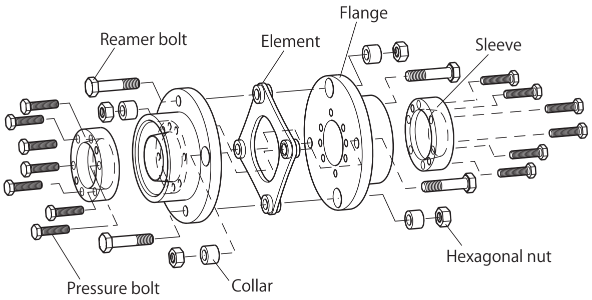
(5) Insert the element into the gap between the two flanges, and then mount it with the reamer bolt for locking the element in place. Check that the element is not deformed. If it is, it may be under an axial force or there may be insufficient lubrication between the collar, bolt, and disc, so adjust to bring it to normal. The situation may be improved by applying a small amount of machine oil to the bearing surface of the reamer bolt. However, do not use oil that contains molybdenum-based extreme-pressure additives.

(6) Use a calibrated torque wrench to tighten all the reamer bolts to the tightening torques of the table below.

Coupling size	05	06	08	09	10	12	14
Reamer bolt size	M5	M6	M6	M8	M8	M10	M12
Tightening torque [N•m] Black oxide finish (standard) specification	8	14	14	34	34	68	118
Tightening torque [N•m] Electroless nickel plating [° C] specification	6	11	11	26	26	51	90

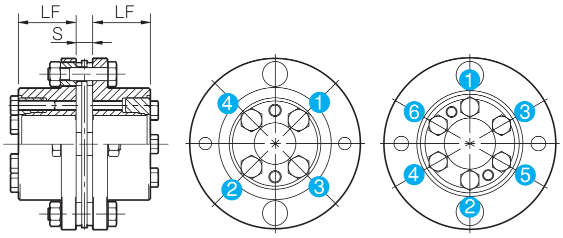
Mounting (SFS S/W/G-☐M-☐M Types)

This assembly method mounts a flange hub on each shaft of the SFS S/W/G-☐M-☐M type and couples both shafts by mounting the element last while centering.



(1) Loosen the pressure bolts of the flanges, check that the sleeve can move freely, and then remove any rust, dust, oil residue, etc. from the inner diameter surfaces of the shaft and flange. (Use a waste cloth, etc. to wipe away oil residue or an oil remover as needed.)

(2) Insert each shaft far enough into the flange so that the paired mounting shaft touches the shaft along the entire length of the flange (LF dimension) as shown in the diagram below, hold them in place, and then tighten the pressure bolts evenly, a little at a time, on the diagonal, guided by the tightening procedure of the figure below.



(3) Mount the other flange on the paired mounting shaft as described in steps (1) and (2).

(4) Keep the width of the dimension between flange faces (S dimension in the diagram) within the allowable error range for axial misalignment with respect to the reference value. Note that the tolerance values were calculated based on the assumption that both the level of parallel misalignment and angular deflection are zero. Adjust to keep this value as low as possible.

Coupling size	05	06	08	09	10	12	14
S [mm]	5	6	6	8	10	11	12

(5) Insert the element into the gap between the two flanges, and then mount it with the reamer bolt for locking the element in place. Check that the element is not deformed. If it is, it may be under an axial force or there may be insufficient lubrication between the collar, bolt, and disc, so adjust to bring it to normal. The situation may be improved by applying a small amount of machine oil to the bearing surface of the reamer bolt. However, do not use oil that contains molybdenum-based extreme-pressure additives.

(6) Use a calibrated torque wrench to tighten all the reamer and pressure bolts to the tightening torques of the table below.

Coupling size	05	06	08	09	10	12	14
Reamer bolt size	M5	M6	M6	M8	M8	M10	M12
Tightening torque [N·m]	8	14	14	34	34	68	118
Pressure bolt size	M5	M6	M6	M6	M6	M8	M8
Tightening torque [N·m]	8	14	14	14	14	34	34

Mounting (When Mounted After Coupling Is Completed)

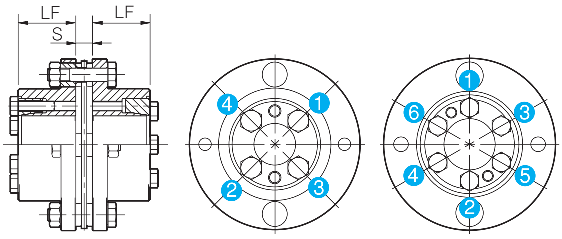
This SFS S/W/G type assembly method first completes the coupling and then inserts it onto the shaft.

(1) Remove any rust, dust, oil or the like from the inner diameter surfaces of the shaft and flange. (Use a waste cloth, etc. to wipe away oil residue or an oil remover as needed.)
For types that use frictional coupling, loosen the flange's pressure bolt and check that the sleeve can move freely.

(2) Be careful when inserting the couplings into the shaft so as not to apply excessive force of compression or tensile force to the element.
Be particularly careful not to mistakenly apply excessive compression force when inserting couplings into the paired shaft after mounting on one shaft.

(3) For frictional coupling types, with the pressure bolts loosened, make sure that couplings move gently in the axial and rotational directions.
Readjust the centering of the two shafts if the couplings fail to move smoothly enough.

(4) Insert each shaft far enough into the flange so that the paired mounting shaft touches the shaft along the entire length of the flange (LF dimension) as shown in the diagram below and then lock it in place. For frictional coupling types, tighten the pressure bolts evenly, a little at a time, on the diagonal, guided by the tightening procedure of the figure below.



(5) Keep the width of the dimension between flange faces (S dimension in the diagram) within the allowable error range for axial misalignment with respect to the reference value. Note that the tolerance values were calculated based on the assumption that both the level of parallel misalignment and angular deflection are zero. Adjust to keep this value as low as possible.

Coupling size	05	06	08	09	10	12	14
S [mm]	5	6	6	8	10	11	12

(6) Use a calibrated torque wrench to tighten all the pressure bolts to the appropriate tightening torques of the table below.

Coupling size	05	06	08	09	10	12	14
Pressure bolt size	M5	M6	M6	M6	M6	M8	M8
Tightening torque [N·m]	8	14	14	14	14	34	34

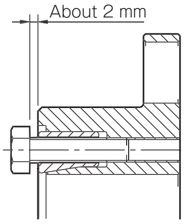
SFS Models

Items Checked for Design Purposes

Removal

(1) Check to confirm that there is no torque or axial direction load being applied to the coupling. There may be cases where a torque is applied to the coupling, particularly when the safety brake is being used. Make sure to verify that this is not occurring before removing parts.

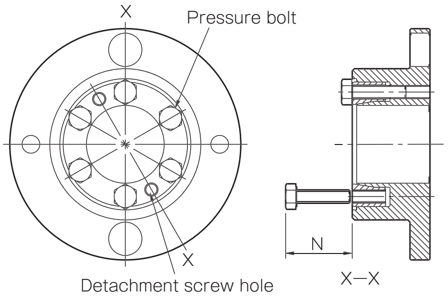
(2) Loosen all the pressure bolts placing pressure on the sleeve until the gap between bearing seat and sleeve is about 2 mm.



In the case of a tapered coupling system that tightens a pressure bolt from the axial direction, the sleeve will be self-locking, so the coupling between flange and shaft cannot be released simply by loosening the pressure bolt. (Note that in some cases, a coupling can be released by loosening a pressure bolt.)
For that reason, when designing couplings, a space must be installed for inserting a detachment screw.
If there is no space in the axial direction, consult Miki Pulley.

(3) Pull out two of the pressure bolts loosened in step (2), insert them into detachment screw holes at two locations on the sleeve, and tighten them alternately, a little at a time. The coupling between the flange and shaft will be released.

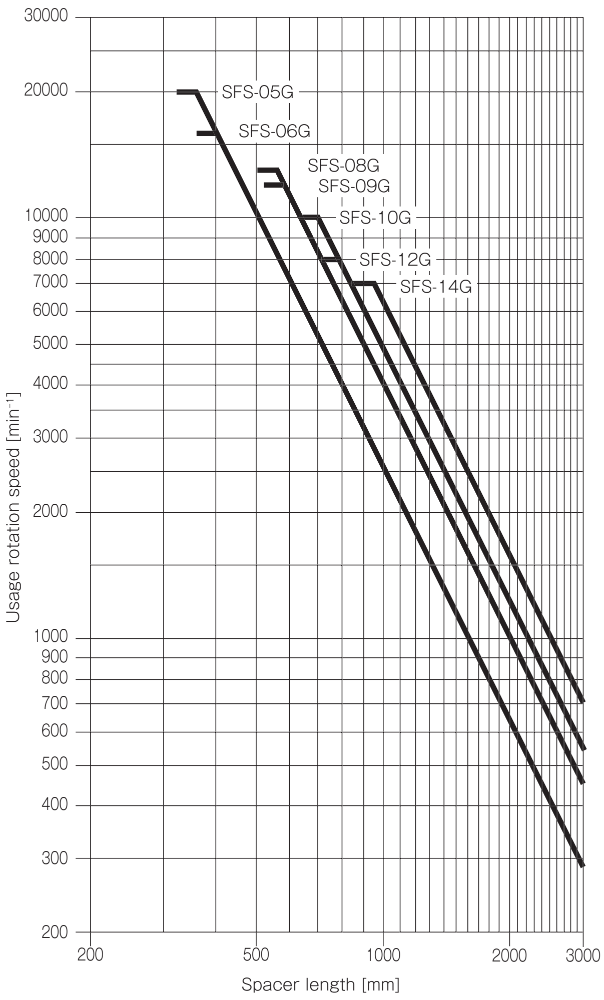
■ SFS-S/W/G type



Coupling size	06	08	09	10	12	14
Nominal diameter of pressure bolt × Length	M5 × 20	M6 × 24	M6 × 24	M6 × 24	M8 × 25	M8 × 25
Recommended N dimension [mm]	26	30	30	30	31.5	31.5

Limit Rotation Speed

For SFS G long spacer types, the speed at which the coupling can be used will vary with the length of spacer selected. Use the following table to confirm that the speed you will use is at or below the limit rotation speed. When a max. rotation speed is set for a specific type, that speed is the upper limit.



Points to Consider Regarding the Feed Screw System

■ Servo motor oscillation

When the torsional natural frequency of the overall feed screw system is 400 to 500 Hz or less, gain adjustment of the servo motor may cause the servo motor to oscillate.
Oscillation in the servo motor during operation can cause problems particularly with the overall natural frequency and electrical control systems of the feed screw system.
In order for these issues to be resolved, the torsional stiffness for the coupling and feed screw section and the moment of inertia and other characteristics for the system overall will need to be adjusted and the torsional natural frequency for the mechanical system raised or the tuning function (filter function) for the electrical control system in the servo motor adjusted during the design stage.

■ Stepper motor resonance

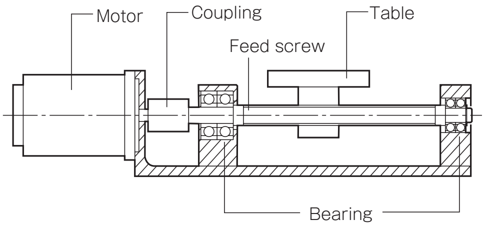
Stepper motors resonate at certain rotation speeds due to the pulsation frequency of the stepper motor and the torsional natural frequency of the system as a whole. To avoid resonance, either the resonant rotation speed must be simply skipped or the torsional natural frequency considered at the design stage.

Please contact Miki Pulley with any questions regarding servo motor oscillation or stepper motor resonance.

How to Find the Natural Frequency of a Feed Screw System

(1) Select a coupling based on the nominal and maximum torque of the servo motor or stepper motor.

(2) Find the overall natural frequency, Nf, from the torsional stiffness of the coupling and feed screw, κ, the moment of inertia of driving side, J1, and the moment of inertia of driven side, J2, for the feed screw system shown below.



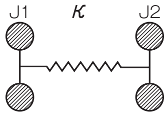
$$Nf=\frac{1}{2\pi}\sqrt{\kappa\left(\frac{1}{J1}+\frac{1}{J2}\right)}$$

Nf: Overall natural frequency of a feed screw system [Hz]

κ : Torsional stiffness of the coupling and feed screw [N·m/rad]

J1: Moment of inertia of driving side [kg·m^2]

J2: Moment of inertia of driven side [kg·m^2]



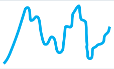
Selection Procedures

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

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

(2) Determine the factor κ from the load properties, and find the corrected torque, Td, applied to the coupling.

Td = Ta × K (Refer to the table below for values)

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

For servo motor drive, multiply the maximum torque, Ts, by the usage factor K = 1.2 to 1.5.

$$Td=Ts\times(1.2\text{ to }1.5)$$

(3) Set the size so that the rated coupling torque, Tn, is higher than the corrected torque, Td.

$$Tn\geqq Td$$

(4) The rated torque of the coupling may be limited by the bore diameter of the coupling. See the table showing the bore diameters that limit rated torque.

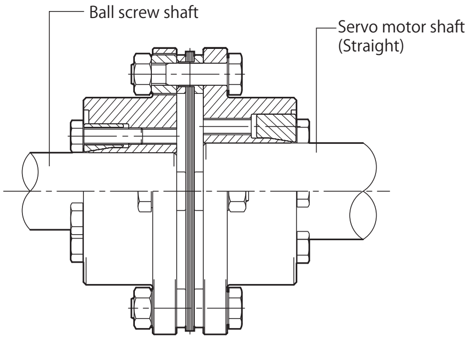
(5) Check that the mount shaft is no larger than the maximum bore diameter of the coupling.

Contact Miki Pulley for assistance with any device experiencing extreme periodic vibrations.

Mounting Example

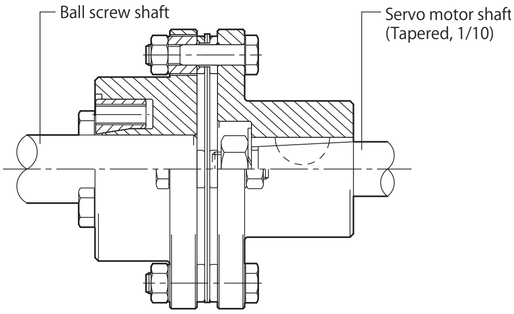
■ SFS S-□M-□M

These are combinations of multiple high-precision frictional-coupling flanges. When these are used, shafts can be connected to each other after couplings are finished.



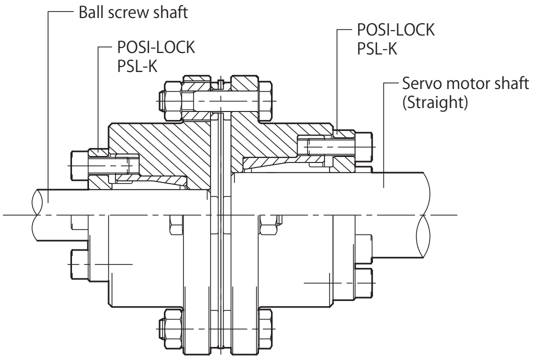
■ SFS S-□M-□C

These are combinations of high-precision frictional-coupling flanges with flanges for tapered shafts.. They are assembled by tightening the end of the servo motor shaft with a nut.



■ SFS S

The example shows a pilot-bore type of flange hub processed for a POSI-LOCK PSL-K, a shaft lock made by Miki Pulley, and connected to a straight shaft.



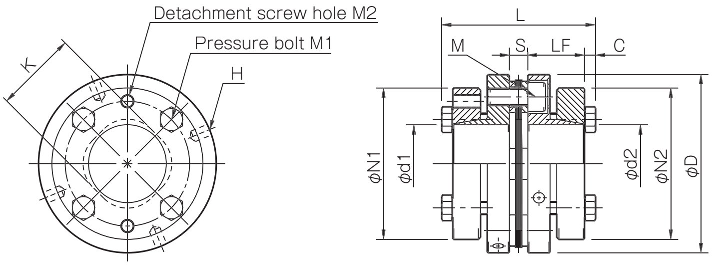
SFF SS Types Single Element Type

Specifications

Model	Rated torque [N·m]	Misalignment			Max. rotation speed [min⁻¹]	Torsional stiffness [N·m/rad]	Axial stiffness [N/mm]	Moment of inertia [kg·m²]	Mass [kg]
		Parallel [mm]	Angular [°]	Axial [mm]					
SFF-070SS	70	0.02	1	± 0.5	18000	60000	105	0.64×10^{-3}	0.92
SFF-080SS	130	0.02	1	± 0.5	17000	64000	96	1.03×10^{-3}	1.23
SFF-090SS	200	0.02	1	± 0.6	15000	140000	320	2.09×10^{-3}	1.63
SFF-100SS	300	0.02	1	± 0.7	13000	160000	360	2.90×10^{-3}	1.83
SFF-120SS	500	0.02	1	± 0.8	11000	140000	360	5.73×10^{-3}	2.63
SFF-140SS	800	0.02	1	± 1.0	10000	100000	360	13.54×10^{-3}	4.68

* Max. rotation speed does not take into account dynamic balance.
* Torsional stiffness values given are calculated for the element alone.
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions

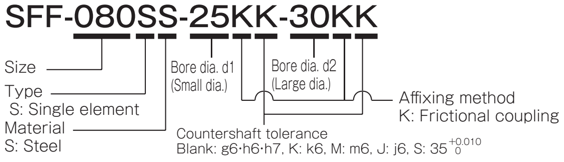


Unit [mm]

Model	D	L	d1	d2	N1·N2	LF	S	C	K	H	M	M1	M2
SFF-070SS	70	63.5	18·19	18·19	53	23.5	6.5	5	31	4-5.1	M6	4-M6	2-M6
			20·22·24·25	20·22·24·25	58								
			28·30	28·30	63								
			—	32·35	68								
SFF-080SS	80	69.3	22·24·25	22·24·25	58	25.5	8.3	5	37	4-5.1	M8	4-M6	2-M6
			28·30	28·30	63								
			32·35	32·35	68								
SFF-090SS	90	68.7	28	28	68	25.5	7.7	5	50	3-6.8	M8	6-M6	3-M6
			30·32·35	30·32·35	73								
			38·40	38·40	78								
			42·45	42·45	83								
			48	48	88								
SFF-100SS	100	69	32·35	32·35	73	25.5	8	5	58	3-6.8	M8	6-M6	3-M6
			38·40	38·40	78								
			42·45	42·45	83								
			48·50·52	48·50·52	88								
			55	55	93								
			—	60	98								
SFF-120SS	120	75.2	35	35	73	27.5	10.2	5	68	3-8.6	M10	6-M6	3-M6
			38·40	38·40	78								
			42·45	42·45	83								
			48·50·52	48·50·52	88								
			55	55	93								
			60	60	98								
			62·65	62·65	103								
			—	70	108								
SFF-140SS	140	94.6	35·38	35·38	83	36.5	10.6	5.5	78	3-8.6	M12	6-M8	3-M8
			40·42·45·48	40·42·45·48	88								
			50·52·55	50·52·55	98								
			60·62·65	60·62·65	108								
			70·75	70·75	118								
			—	80	123								

* The nominal diameters of the pressure bolt M1 and detachment screw hole M2 are equal to the quantity minus the nominal diameter of the screw threads. The quantities of H, M1 and M2 are the same as the quantity for a hub on one side.

How to Place an Order



Standard Bore Diameter Combinations

Model	Standard bore diameter d1 [mm]	Standard bore diameter d2 [mm]																							
		18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	52	55	60	62	65	70	75	80
SFF-070SS	18	●	●	●	●	●	●	●	●	●	●														
	19		●	●	●	●	●	●	●	●	●														
	20			●	●	●	●	●	●	●	●														
	22				●	●	●	●	●	●	●														
	24					●	●	●	●	●	●														
	25						●	●	●	●	●														
	28							●	●	●	●														
	30								●	●	●														
SFF-080SS	22				●	●	●	●	●	●	●														
	24					●	●	●	●	●	●														
	25						●	●	●	●	●														
	28							●	●	●	●														
	30								●	●	●														
	32									●	●														
	35										●														
SFF-090SS	28							●	●	●	●	●	●	●	●	●									
	30								●	●	●	●	●	●	●	●									
	32									●	●	●	●	●	●	●									
	35										●	●	●	●	●	●									
	38											●	●	●	●	●									
	40												●	●	●	●									
	42													●	●	●									
	45														●	●									
	48															●									
SFF-100SS	32									●	●	●	●	●	●	●	●	●	●	●					
	35										●	●	●	●	●	●	●	●	●	●					
	38											●	●	●	●	●	●	●	●	●					
	40												●	●	●	●	●	●	●	●					
	42													●	●	●	●	●	●	●					
	45														●	●	●	●	●	●					
	48															●	●	●	●	●					
	50																●	●	●	●					
	52																	●	●	●					
	55																		●	●					
SFF-120SS	35										●	●	●	●	●	●	●	●	●	●	●	●	●		
	38											●	●	●	●	●	●	●	●	●	●	●	●		
	40												●	●	●	●	●	●	●	●	●	●	●		
	42													●	●	●	●	●	●	●	●	●	●		
	45														●	●	●	●	●	●	●	●	●		
	48															●	●	●	●	●	●	●	●		
	50																●	●	●	●	●	●	●		
	52																	●	●	●	●	●	●		
	55																		●	●	●	●	●		
	60																			●	●	●	●		
	62																				●	●	●		
	65																					●	●		
SFF-140SS	35										●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	38											●	●	●	●	●	●	●	●	●	●	●	●	●	●
	40												●	●	●	●	●	●	●	●	●	●	●	●	●
	42													●	●	●	●	●	●	●	●	●	●	●	●
	45														●	●	●	●	●	●	●	●	●	●	●
	48															●	●	●	●	●	●	●	●	●	●
	50																●	●	●	●	●	●	●	●	●
	52																	●	●	●	●	●	●	●	●
	55																		●	●	●	●	●	●	●
	60																			●	●	●	●	●	●
	62																				●	●	●	●	●
	65																					●	●	●	●
	70																						●	●	●
	75																							●	●
	Standard bore diameter d1 [mm]	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	52	55	60	62	65	70	75	80
		Standard bore diameter d2 [mm]																							

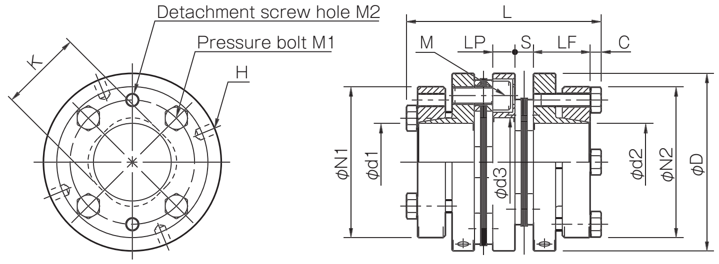
SFF DS Types Double Element Type

Specifications

Model	Rated torque [N·m]	Misalignment			Max. rotation speed [min⁻¹]	Torsional stiffness [N·m/rad]	Axial stiffness [N/mm]	Moment of inertia [kg·m²]	Mass [kg]
		Parallel [mm]	Angular [°]	Axial [mm]					
SFF-070DS	70	0.25	1 (On one side)	±1.0	14000	30000	53	0.79×10^{-3}	1.13
SFF-080DS	130	0.31	1 (On one side)	±1.0	13000	32000	48	1.36×10^{-3}	1.57
SFF-090DS	200	0.30	1 (On one side)	±1.2	12000	70000	160	2.59×10^{-3}	2.04
SFF-100DS	300	0.31	1 (On one side)	±1.4	10000	80000	180	3.68×10^{-3}	2.29
SFF-120DS	500	0.38	1 (On one side)	±1.6	9000	70000	180	7.70×10^{-3}	3.46
SFF-140DS	800	0.44	1 (On one side)	±2.0	8000	50000	180	17.94×10^{-3}	6.06

* Max. rotation speed does not take into account dynamic balance.
* Torsional stiffness values given are calculated for the element alone.
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions



Unit [mm]

Model	D	L	d1	d2	N1·N2	LF	LP	S	C	d3	K	H	M	M1	M2
SFF-070DS	70	78	18·19	18·19	53	23.5	8	6.5	5	35	31	4-5.1	M6	4-M6	2-M6
			20·22·24·25	20·22·24·25	58										
			28·30	28·30	63										
			—	32·35	68										
SFF-080DS	80	87.6	22·24·25	22·24·25	58	25.5	10	8.3	5	40	37	4-5.1	M8	4-M6	2-M6
			28·30	28·30	63										
			32·35	32·35	68										
SFF-090DS	90	86.4	28	28	68	25.5	10	7.7	5	50	50	3-6.8	M8	6-M6	3-M6
			30·32·35	30·32·35	73										
			38·40	38·40	78										
			42·45	42·45	83										
			48	48	88										
SFF-100DS	100	87	32·35	32·35	73	25.5	10	8	5	60	58	3-6.8	M8	6-M6	3-M6
			38·40	38·40	78										
			42·45	42·45	83										
			48·50·52	48·50·52	88										
			55	55	93										
			—	60	98										
SFF-120DS	120	97.4	35	35	73	27.5	12	10.2	5	72	68	3-8.6	M10	6-M6	3-M6
			38·40	38·40	78										
			42·45	42·45	83										
			48·50·52	48·50·52	88										
			55	55	93										
			60	60	98										
			62·65	62·65	103										
			—	70	108										
SFF-140DS	140	120.2	35·38	35·38	83	36.5	15	10.6	5.5	80	78	3-8.6	M12	6-M8	3-M8
			40·42·45·48	40·42·45·48	88										
			50·52·55	50·52·55	98										
			60·62·65	60·62·65	108										
			70·75	70·75	118										
			—	80	123										

* The nominal diameters of the pressure bolt M1 and detachment screw hole M2 are equal to the quantity minus the nominal diameter of the screw threads. The quantities of H, M1 and M2 are the same as the quantity for a hub on one side.

How to Place an Order

SFF-080DS-25KK-30KK

Size
Type
D: Double element
Material
S: Steel
Bore dia. d1
(Small dia.)
Bore dia. d2
(Large dia.)
Affixing method
K: Frictional coupling
Countershaft tolerance
Blank: g6·h6·h7, K: k6, M: m6, J: j6, S: $35^{+0.010}_{0}$

Standard Bore Diameter Combinations

Model	Standard bore diameter d1 [mm]	Standard bore diameter d2 [mm]																							
		18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	52	55	60	62	65	70	75	80
SFF-070DS	18	●	●	●	●	●	●	●	●	●	●														
	19		●	●	●	●	●	●	●	●	●														
	20			●	●	●	●	●	●	●	●														
	22				●	●	●	●	●	●	●														
	24					●	●	●	●	●	●														
	25						●	●	●	●	●														
	28							●	●	●	●														
	30								●	●	●														
SFF-080DS	22				●	●	●	●	●	●	●														
	24					●	●	●	●	●	●														
	25						●	●	●	●	●														
	28							●	●	●	●														
	30								●	●	●														
	32									●	●														
	35										●														
SFF-090DS	28							●	●	●	●	●	●	●	●	●									
	30								●	●	●	●	●	●	●	●									
	32									●	●	●	●	●	●	●									
	35										●	●	●	●	●	●									
	38											●	●	●	●	●									
	40												●	●	●	●									
	42													●	●	●									
	45														●	●									
	48															●									
SFF-100DS	32									●	●	●	●	●	●	●	●	●	●	●					
	35										●	●	●	●	●	●	●	●	●	●					
	38											●	●	●	●	●	●	●	●	●					
	40												●	●	●	●	●	●	●	●					
	42													●	●	●	●	●	●	●					
	45														●	●	●	●	●	●					
	48															●	●	●	●	●					
	50																●	●	●	●					
	52																	●	●	●					
	55																		●	●					
SFF-120DS	35										●	●	●	●	●	●	●	●	●	●	●	●	●		
	38											●	●	●	●	●	●	●	●	●	●	●	●		
	40												●	●	●	●	●	●	●	●	●	●	●		
	42													●	●	●	●	●	●	●	●	●	●		
	45														●	●	●	●	●	●	●	●	●		
	48															●	●	●	●	●	●	●	●		
	50																●	●	●	●	●	●	●		
	52																	●	●	●	●	●	●		
	55																		●	●	●	●	●		
	60																			●	●	●	●		
	62																				●	●	●		
	65																					●	●		
SFF-140DS	35										●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	38											●	●	●	●	●	●	●	●	●	●	●	●	●	●
	40												●	●	●	●	●	●	●	●	●	●	●	●	●
	42													●	●	●	●	●	●	●	●	●	●	●	●
	45														●	●	●	●	●	●	●	●	●	●	●
	48															●	●	●	●	●	●	●	●	●	●
	50																●	●	●	●	●	●	●	●	●
	52																	●	●	●	●	●	●	●	●
	55																		●	●	●	●	●	●	●
	60																			●	●	●	●	●	●
	62																				●	●	●	●	●
	65																					●	●	●	●
	70																						●	●	●
	75																							●	●
	Standard bore diameter d1 [mm]	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	52	55	60	62	65	70	75	80
		Standard bore diameter d2 [mm]																							

SFF Models

Items Checked for Design Purposes

Precautions for Handling

SFF models come pre-assembled. Couplings are assembled at high accuracy using a special mounting jig to ensure accurate concentricity of left and right internal diameters. Take extra precautions when handling couplings, should strong shocks be given on couplings, it may affect mounting accuracy and cause the parts to break during use.

(1) Couplings are designed for use within an operating temperature range of -30° C to 120℃ . Although the couplings are designed to be waterproof and oilproof, do not subject them to excessive amounts of water and oil as it may cause part deterioration.

(2) Handle the element with care as it is made of a thin stainless steel metal disc, also making sure to be careful so as not to injure yourself.

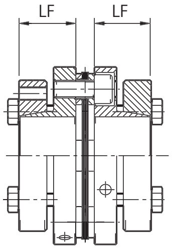
(3) Do not tighten up pressure bolts until after inserting the mounting shaft.

Mounting

(1) Check that coupling pressure bolts have been loosened and remove any rust, dust, oil residue, etc. from the inner diameter surfaces of the shaft and couplings. (Use a waste cloth, etc. to wipe away oil residue or an oil remover as needed.)

(2) Be careful when inserting the couplings into the shaft so as not to apply excessive force of compression or tensile force to the element.

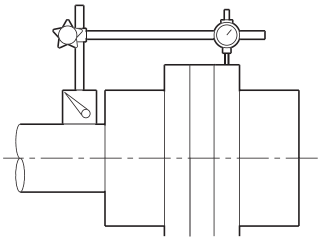
(3) Insert each coupling far enough onto the motor shaft so that it touches the shaft along the entire length of the coupling flange (LF dimension) as shown in the diagram below and then hold it in that position.



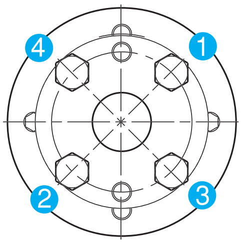
Model	LF [mm]
SFF-070SS/DS	23.5
SFF-080SS/DS	25.5
SFF-090SS/DS	25.5
SFF-100SS/DS	25.5
SFF-120SS/DS	27.5
SFF-140SS/DS	36.5

(4) Using the drive pin hole, lightly tighten the pressure bolt on the diagonal.

(5) Touch the dial gauge to the flange end face or outer diameter on the motor shaft side. Then, while gently rotating the motor shaft manually, adjust the flange periphery and end face by hammering until the runout is as close to zero as possible.



(6) Sequentially fasten the pressure bolts while doing hammering adjustments, and then use a calibrated torque wrench to tighten all the pressure bolts to the appropriate tightening torques below. See the following figure for the tightening procedure for the pressure bolts. Try to tighten them evenly.

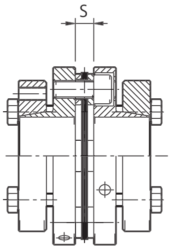


Model	Pressure bolt size	Tightening torque [N·m]
SFF-070SS/DS	M6	10
SFF-080SS/DS	M6	10
SFF-090SS/DS	M6	10
SFF-100SS/DS	M6	10
SFF-120SS/DS	M6	10
SFF-140SS/DS	M8	24

(7) Tighten the motor shaft's pressure bolts at the nominal torque and check that the runout value is low.

(8) Mount the motor, to which the coupling has already been mounted, on the body of the machinery. At that time, adjust the motor mounting position (centering location) while inserting the coupling onto the spindle or feed screw, taking care to not deform the disc. Also insert each coupling far enough onto the paired shaft that it touches the shaft along the entire length of the coupling flange (LF dimension) and then hold it in that position.

(9) Keep the width of the dimension between flange faces (S dimension in the diagram) within the allowable error range for axial misalignment with respect to the reference value. Note that the tolerance values were calculated based on the assumption that both the level of parallel misalignment and angular deflection are zero. Adjust to keep this value as low as possible.



Model	S [mm]
SFF-070SS/DS	6.5
SFF-080SS/DS	8.3
SFF-090SS/DS	7.7
SFF-100SS/DS	8
SFF-120SS/DS	10.2
SFF-140SS/DS	10.6

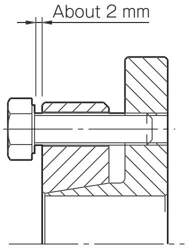
(10) Sequentially tighten the pressure bolts on the spindle or feed screw side using the same procedure as for the motor shaft side pressure bolts, and then tighten to the appropriate tightening torque.

(11) To protect against initial loosening of the pressure bolt, we recommend operating for a set period of time and then retightening to the appropriate tightening torque.

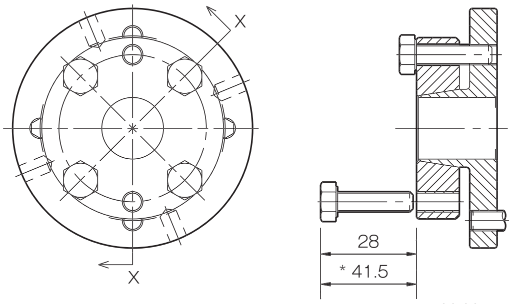
Removal

(1) Check to confirm that there is no torque or axial load being applied to the coupling. There may be cases where a torque is applied to the coupling, particularly when the safety brake is being used. Make sure to verify that this is not occurring before removing parts.

(2) Loosen all the pressure bolts placing pressure on the sleeve until the gap between bearing seat and sleeve is about 2 mm.



For a tapered coupling system that tightens pressure bolts from the axial direction, the sleeve will be self-locking, so the coupling between flange and shaft cannot be released simply by loosening the pressure bolt. (Note that in some cases, a coupling can be released by loosening a pressure bolt.) For that reason, when designing devices, a space must be installed for inserting a detachment screw.

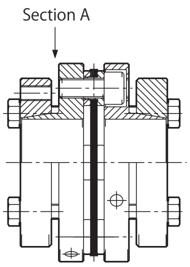


X–X

Note) Use dimensions marked with [*] for SFF-140 models.

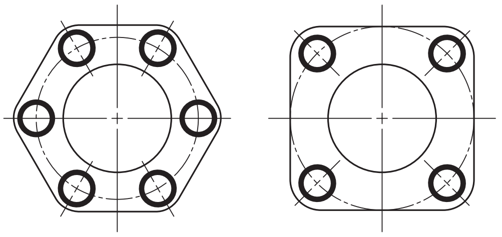
(3) Pull out three of the pressure bolts (one 070, two 080) loosened in step (2), insert them into the detachment screw holes on the sleeve, and tighten them in order, a little at a time. The coupling will be released.

If there is no space in the axial direction, insert the tip of a flathead screwdriver or the like into part A and lightly tap perpendicular to the shaft or use it as a lever to pry off the coupling. Use appropriate caution to not damage the coupling body or the pressure bolts.



Differences in Torsional Stiffness due to Element Shape

Elements used by SFF models may be either square or hexagonal. Since torque is transmitted by placing bolts at each vertex and coupling the hubs to each other via the element, torsional stiffness is higher in couplings that use hexagonal elements, at the expense of some flexibility. Choose your element shape accordingly.



Model	Element shape
SFF-070SS/DS	Square
SFF-080SS/DS	Square
SFF-090SS/DS	Hexagonal
SFF-100SS/DS	Hexagonal
SFF-120SS/DS	Hexagonal
SFF-140SS/DS	Hexagonal

Points to Consider Regarding the Feed Screw System

■ Servo motor oscillation

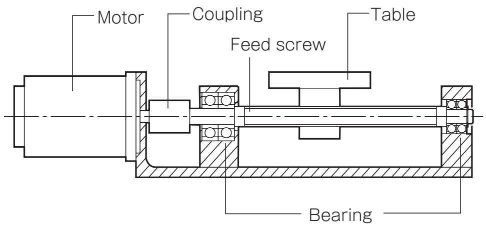
When the torsional natural frequency of the overall feed screw system is 400 to 500 Hz or less, gain adjustment of the servo motor may cause the servo motor to oscillate.
Oscillation in the servo motor during operation can cause problems particularly with the overall natural frequency and electrical control systems of the feed screw system.
In order for these issues to be resolved, the torsional stiffness for the coupling and feed screw section and the moment of inertia and other characteristics for the system overall will need to be adjusted and the torsional natural frequency for the mechanical system raised or the tuning function (filter function) for the electrical control system in the servo motor adjusted during the design stage.

Please contact Miki Pulley with any questions regarding servo motor oscillation.

How to Find the Natural Frequency of a Feed Screw System

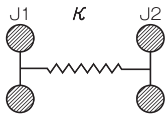
(1) Select a coupling based on the nominal and maximum torque of the servo motor.

(2) Find the overall natural frequency, Nf, from the torsional stiffness of the coupling and feed screw, κ, the moment of inertia of driving side, J1, and the moment of inertia of driven side, J2, for the feed screw system shown below.



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

Nf: Overall natural frequency of a feed screw system [Hz]
κ : Torsional stiffness of the coupling and feed screw [N·m/rad]
J1: Moment of inertia of driving side [kg·m2]
J2: Moment of inertia of driven side [kg·m2]



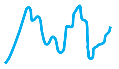
Selection Procedures

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

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

(2) Determine the factor κ from the load properties, and find the corrected torque, Td, applied to the coupling.

$Td = Ta \times K$ (Refer to the table below for values)

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

For servo motor drive, multiply the maximum torque, Ts, by the usage factor K = 1.2 to 1.5.

$Td = Ts \times (1.2\ to\ 1.5)$

(3) Set the size so that the rated coupling torque, Tn, is higher than the corrected torque, Td.

$Tn \geqq Td$

(4) Check that the mount shaft is no larger than the maximum bore diameter of the coupling.

Contact Miki Pulley for assistance with any device experiencing extreme periodic vibrations.

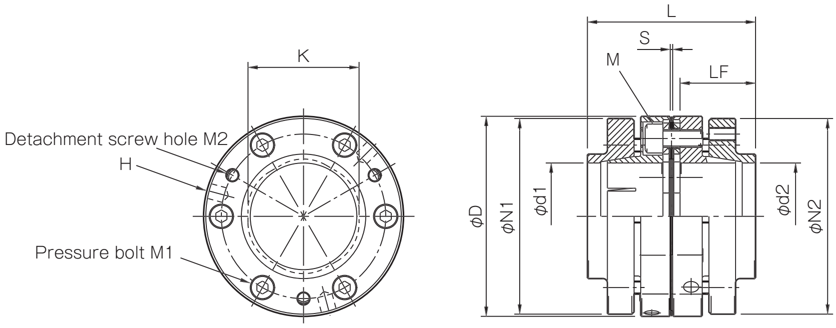
SFM SS Types Single Element Type

Specifications

Model	Rated torque [N·m]	Misalignment			Max. rotation speed [min^{-1}]	Torsional stiffness [N·m/rad]	Axial stiffness [N/mm]	Moment of inertia [kg·m^2]	Mass [kg]
		Parallel [mm]	Angular [°]	Axial [mm]					
SFM-090SS	200	0.02	1	±0.6	20000	140000	320	1.87×10^{-3}	1.66
SFM-100SS	300	0.02	1	±0.7	20000	160000	360	3.56×10^{-3}	2.07
SFM-120SS	500	0.02	1	±0.8	20000	140000	360	6.65×10^{-3}	2.90
SFM-140SS	800	0.02	1	±1.0	20000	100000	360	16.9×10^{-3}	5.35

* Torsional stiffness values given are calculated for the element alone.
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions



Unit [mm]

Model	D	L	d1・d2	N1・N2	LF	S	K	H	M	M1	M2
SFM-090SS	90	75.7	28・30	73	34	1.1	50	3-6.8	M8	6-M6	3-M6
			32・35	78							
			38・40・42	83							
			45・48	88							
SFM-100SS	100	76	32・35	78	34	1	58	3-6.8	M8	6-M6	3-M6
			38・40・42	83							
			45・48	88							
			50・52	93							
			55	98							
			60	105							
SFM-120SS	120	82.2	38・40・42	83	36	1	68	3-8.6	M10	6-M6	3-M6
			45・48	88							
			50・52	93							
			55	98							
			60・62・65	105							
			70	115							
SFM-140SS	140	100.6	45	98	45	1	78	3-8.6	M12	6-M8	3-M8
			48・50・52	105							
			55	108							
			60・62	115							
			65	118							
			70・75	125							
			80	135							

* The nominal diameters of the pressure bolt M1 and detachment screw hole M2 are equal to the quantity minus the nominal diameter of the screw threads. The quantities of H, M1 and M2 are the same as the quantity for a hub on one side.

Standard Bore Diameter Combinations

SFM-090SS		Standard bore diameter d2 [mm]																	
		28	30	32	35	38	40	42	45	48	50	52	55	60	62	65	70	75	80
Standard bore diameter d1 [mm]	28	●	●	●	●	●	●	●	●	●									
	30		●	●	●	●	●	●	●	●									
	32			●	●	●	●	●	●	●									
	35				●	●	●	●	●	●									
	38					●	●	●	●	●									
	40						●	●	●	●									
	42							●	●	●									
	45								●	●									
	48									●									

SFM-100SS		Standard bore diameter d2 [mm]																	
		28	30	32	35	38	40	42	45	48	50	52	55	60	62	65	70	75	80
Standard bore diameter d1 [mm]	32			●	●	●	●	●	●	●	●	●	●	●					
	35				●	●	●	●	●	●	●	●	●	●					
	38					●	●	●	●	●	●	●	●	●					
	40						●	●	●	●	●	●	●	●					
	42							●	●	●	●	●	●	●					
	45								●	●	●	●	●	●					
	48									●	●	●	●	●					
	50										●	●	●	●					
	52											●	●	●					
	55												●	●					

SFM-120SS		Standard bore diameter d2 [mm]																	
		28	30	32	35	38	40	42	45	48	50	52	55	60	62	65	70	75	80
Standard bore diameter d1 [mm]	38					●	●	●	●	●	●	●	●	●	●	●	●		
	40						●	●	●	●	●	●	●	●	●	●	●		
	42							●	●	●	●	●	●	●	●	●	●		
	45								●	●	●	●	●	●	●	●	●		
	48									●	●	●	●	●	●	●	●		
	50										●	●	●	●	●	●	●		
	52											●	●	●	●	●	●		
	55												●	●	●	●	●		
	60													●	●	●	●		
	62														●	●	●		
	65															●	●		

SFM-140SS		Standard bore diameter d2 [mm]																	
		28	30	32	35	38	40	42	45	48	50	52	55	60	62	65	70	75	80
Standard bore diameter d1 [mm]	45								●	●	●	●	●	●	●	●	●	●	●
	48									●	●	●	●	●	●	●	●	●	●
	50										●	●	●	●	●	●	●	●	●
	52											●	●	●	●	●	●	●	●
	55												●	●	●	●	●	●	●
	60													●	●	●	●	●	●
	62														●	●	●	●	●
	65															●	●	●	●
	70																●	●	●
	75																	●	●

How to Place an Order

SFM-090SS-28KK-30KK-G2.5/15000

Size

Type
S: Single element

Material
S: Steel

Bore dia d1
(Small dia.)

Affixing method
K: Frictional coupling

Bore dia d2
(Large dia.)

Countershaft tolerance
Blank: h6 J: k6
K: k6 S: 35$^{+0.010}_{0}$
M: m6

Affixing method
K: Frictional coupling

Countershaft tolerance
Blank: h6 J: k6
K: k6 S: 35$^{+0.010}_{0}$
M: m6

Max. practical rotation speed (min^{-1})
Balance classification
Blank: No balance correction performed

*The balance classification and max. practical rotation speed selections are optional items.

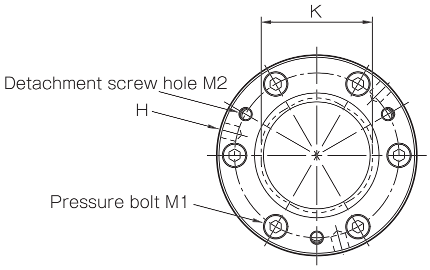
SFM DS Types Double Element Type

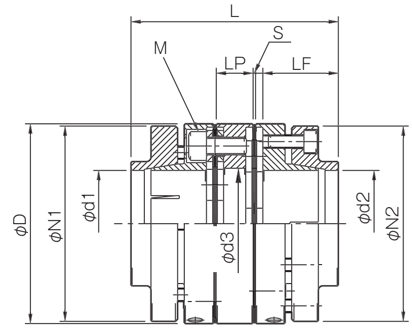
Specifications

Model	Rated torque [N·m]	Misalignment			Max. rotation speed [min^{-1}]	Torsional stiffness [N·m/rad]	Axial stiffness [N/mm]	Moment of inertia [kg·m^2]	Mass [kg]
		Parallel [mm]	Angular [°]	Axial [mm]					
SFM-090DS	200	0.30	1 (On one side)	± 1.2	15000	70000	160	2.43×10^{-3}	2.08
SFM-100DS	300	0.31	1 (On one side)	± 1.4	15000	80000	180	4.39×10^{-3}	2.56
SFM-120DS	500	0.38	1 (On one side)	± 1.6	15000	70000	180	8.74×10^{-3}	3.76
SFM-140DS	800	0.44	1 (On one side)	± 2.0	15000	50000	180	21.5×10^{-3}	6.77

* Torsional stiffness values given are calculated for the element alone.
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions





Unit [mm]

Model	D	L	d1 • d2	N1 • N2	LF	LP	S	d3	K	H	M	M1	M2
SFM-090DS	90	93.4	28 • 30	73	34	16.6	1.1	50	50	3-6.8	M8	6-M6	3-M6
			32 • 35	78									
			38 • 40 • 42	83									
			45 • 48	88									
SFM-100DS	100	94	32 • 35	78	34	17	1	60	58	3-6.8	M8	6-M6	3-M6
			38 • 40 • 42	83									
			45 • 48	88									
			50 • 52	93									
			55	98									
			60	105									
SFM-120DS	120	104.4	38 • 40 • 42	83	36	21.2	1	72	68	3-8.6	M10	6-M6	3-M6
			45 • 48	88									
			50 • 52	93									
			55	98									
			60 • 62 • 65	105									
			70	115									
SFM-140DS	140	126.2	45	98	45	24.6	1	80	78	3-8.6	M12	6-M8	3-M8
			48 • 50 • 52	105									
			55	108									
			60 • 62	115									
			65	118									
			70 • 75	125									
			80	135									

* The nominal diameters of the pressure bolt M1 and detachment screw hole M2 are equal to the quantity minus the nominal diameter of the screw threads. The quantities of H, M1 and M2 are the same as the quantity for a hub on one side.

Standard Bore Diameter Combinations

SFM-090DS		Standard bore diameter d2 [mm]																	
		28	30	32	35	38	40	42	45	48	50	52	55	60	62	65	70	75	80
Standard bore diameter d1 [mm]	28	●	●	●	●	●	●	●	●	●									
	30		●	●	●	●	●	●	●	●									
	32			●	●	●	●	●	●	●									
	35				●	●	●	●	●	●									
	38					●	●	●	●	●									
	40						●	●	●	●									
	42							●	●	●									
	45								●	●									
	48									●									

SFM-100DS		Standard bore diameter d2 [mm]																	
		28	30	32	35	38	40	42	45	48	50	52	55	60	62	65	70	75	80
Standard bore diameter d1 [mm]	32			●	●	●	●	●	●	●	●	●	●	●					
	35				●	●	●	●	●	●	●	●	●	●					
	38					●	●	●	●	●	●	●	●	●					
	40						●	●	●	●	●	●	●	●					
	42							●	●	●	●	●	●	●					
	45								●	●	●	●	●	●					
	48									●	●	●	●	●					
	50										●	●	●	●					
	52											●	●	●					
	55												●	●					

SFM-120DS		Standard bore diameter d2 [mm]																	
		28	30	32	35	38	40	42	45	48	50	52	55	60	62	65	70	75	80
Standard bore diameter d1 [mm]	38					●	●	●	●	●	●	●	●	●	●	●	●		
	40						●	●	●	●	●	●	●	●	●	●	●		
	42							●	●	●	●	●	●	●	●	●	●		
	45								●	●	●	●	●	●	●	●	●		
	48									●	●	●	●	●	●	●	●		
	50										●	●	●	●	●	●	●		
	52											●	●	●	●	●	●		
	55												●	●	●	●	●		
	60													●	●	●	●		
	62														●	●	●		
	65															●	●		

SFM-140DS		Standard bore diameter d2 [mm]																	
		28	30	32	35	38	40	42	45	48	50	52	55	60	62	65	70	75	80
Standard bore diameter d1 [mm]	45								●	●	●	●	●	●	●	●	●	●	●
	48									●	●	●	●	●	●	●	●	●	●
	50										●	●	●	●	●	●	●	●	●
	52											●	●	●	●	●	●	●	●
	55												●	●	●	●	●	●	●
	60													●	●	●	●	●	●
	62														●	●	●	●	●
	65															●	●	●	●
	70																●	●	●
	75																	●	●

How to Place an Order

SFM-090DS-28KK-30KK-G2.5/15000

Size

Type
D: Double element

Material
S: Steel

Bore dia. d1 (Small dia.)

Affixing method
K: Frictional coupling

Bore dia. d2 (Large dia.)

Countershaft tolerance
Blank: h6 J: k6
K: k6 S: 35 $^{+0.010}_{0}$
M: m6

Affixing method
K: Frictional coupling

Countershaft tolerance
Blank: h6 J: k6
K: k6 S: 35 $^{+0.010}_{0}$
M: m6

Balance classification
Blank: No balance correction performed

Max. practical rotation speed (min^{-1})

*The balance classification and max. practical rotation speed selections are optional items.

COUPLINGS
ETP BUSHINGS
ELECTROMAGNETIC CLUTCHES & BRAKES
SPEED CHANGERS & REDUCERS
INVERTERS
LINEAR SHAFT DRIVES
TORQUE LIMITERS
ROSTA
SERIES
Metal Couplings
Metal Disc Couplings SERVOFLEX
High-rigidity Couplings SERVORIGID
Metal Slit Couplings HELI-CAL
Metal Coil Spring Couplings BAUMANNFLEX
Pin Bushing Couplings PARAFLEX
Link Couplings SCHMIDT
Rubber and Plastic Couplings
Dual Rubber Couplings STEPFLEX
Jaw Couplings MIKI PULLEY STARFLEX
Jaw Couplings SPRFLEX
Plastic Bellows Couplings BELLOWFLEX
Rubber and Plastic Couplings CENTAFLEX
MODELS
SFC
SFF (N)
SFS
SFF
SFM
SFH

SFM Models

Items Checked for Design Purposes

Precautions for Handling

SFM models come pre-assembled. Couplings are assembled at high accuracy using a special mounting jig to ensure accurate concentricity of left and right internal diameters.

Take extra precautions when handling couplings, should strong shocks be given on couplings, it may affect mounting accuracy and cause the parts to break during use.

(1) Couplings are designed for use within an operating temperature range of -30° C to 120℃ . Although the couplings are designed to be waterproof and oilproof, do not subject them to excessive amounts of water and oil as it may cause part deterioration.

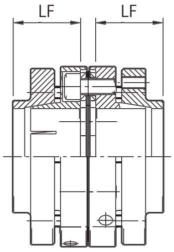
(2) Do not tighten up pressure bolts until after inserting the mounting shaft.

Mounting

(1) Check that coupling pressure bolts have been loosened and remove any rust, dust, oil residue, etc. from the inner diameter surfaces of the shaft and couplings. (Use a waste cloth, etc. to wipe away oil residue or an oil remover as needed.)

(2) Be careful when inserting the couplings into the shaft so as not to apply excessive force of compression or tensile force to the element.

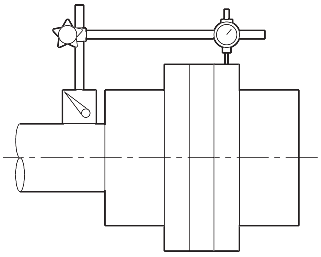
(3) Insert each coupling far enough onto the motor shaft so that it touches the shaft along the entire length of the coupling flange (LF dimension) as shown in the diagram below and then hold it in that position.



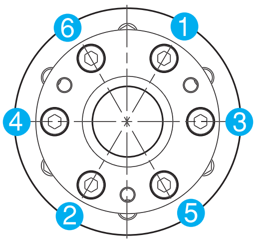
Model	LF [mm]
SFM-090SS/DS	34
SFM-100SS/DS	34
SFM-120SS/DS	36
SFM-140SS/DS	45

(4) Using the drive pin hole, lightly tighten the pressure bolt on the diagonal.

(5) Touch the dial gauge to the flange end face or outer diameter on the motor shaft side. Then, while gently rotating the motor shaft manually, adjust the flange periphery and end face by hammering until the runout is as close to zero as possible.



(6) Sequentially fasten the pressure bolts while doing hammering adjustments, and then use a calibrated torque wrench to tighten all the pressure bolts to the appropriate tightening torques below. See the following figure for the tightening procedure for the pressure bolts. Try to tighten them evenly.

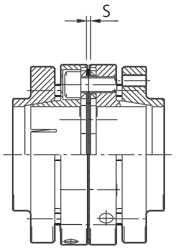


Model	Pressure bolt size	Tightening torque [N·m]
SFM-090SS/DS	M6	14
SFM-100SS/DS	M6	14
SFM-120SS/DS	M6	14
SFM-140SS/DS	M8	34

(7) Tighten the motor shaft's pressure bolts at the nominal torque and check that the runout value is low.

(8) Mount the motor, to which the coupling has already been mounted, on the body of the machinery. At that time, adjust the motor mounting position (centering location) while inserting the coupling onto the spindle or feed screw, taking care to not deform the disc. Also insert each coupling far enough onto the paired shaft that it touches the shaft along the entire length of the coupling flange (LF dimension) and then hold it in that position.

(9) Keep the width of the dimension between flange faces (S dimension in the diagram) within the allowable error range for axial misalignment with respect to the reference value. Note that the tolerance values were calculated based on the assumption that both the level of parallel misalignment and angular deflection are zero. Adjust to keep this value as low as possible.



Model	S [mm]
SFM-090SS/DS	1.1
SFM-100SS/DS	1.0
SFM-120SS/DS	1.0
SFM-140SS/DS	1.0

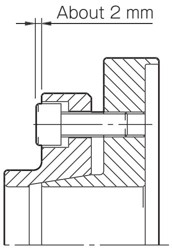
(10) Sequentially tighten the pressure bolts on the spindle or feed screw side using the same procedure as for the motor shaft side pressure bolts, and then tighten to the appropriate tightening torque.

(11) To protect against initial slackness of the pressure bolt, we recommend operating for a set period of time and then retightening to the appropriate tightening torque.

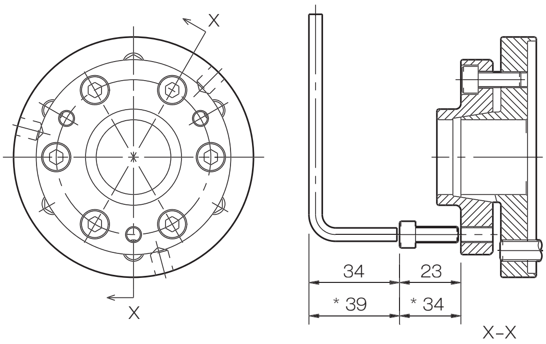
Removal

(1) Check to confirm that there is no torque or axial load being applied to the coupling. There may be cases where a torque is applied to the coupling, particularly when the safety brake is being used. Make sure to verify that this is not occurring before removing parts.

(2) Loosen all the pressure bolts placing pressure on the sleeve until the heads of the pressure bolts are about 2 mm from the end face of the sleeve.



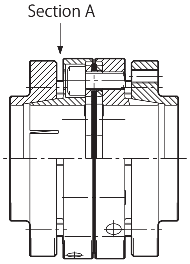
For a tapered shaft coupling system that tightens pressure bolts from the axial direction, the sleeve will be self-locking, so the coupling between flange and shaft cannot be released simply by loosening the pressure bolt. (Note that in some cases, a coupling can be released by loosening a pressure bolt.) For that reason, when designing devices, a space must be installed for inserting a detachment screw.



Note) Use dimensions marked with [*] for SFM-140 models.

(3) Pull out three of the pressure bolts loosened in step (2), insert them into detachment screw holes on the sleeve, and tighten them in order, a little at a time. The coupling will be released.

The SFM models use pressure bolts with hexagonal-holes, so the design must allow enough space for an L-shaped hex wrench to fit. If there is no space in the axial direction, insert the tip of a flathead screwdriver or the like into part A and lightly tap perpendicular to the shaft or use it as a lever to pry off the coupling. Use appropriate caution to not damage the coupling body or the pressure bolts.



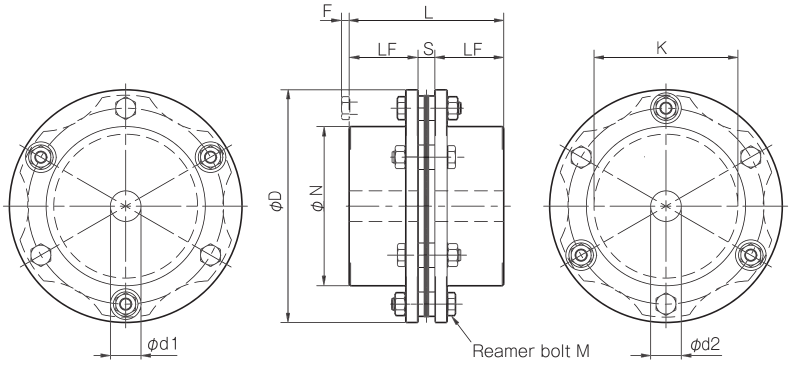
SFH S Types Single Element Type

Specification (SFH-□S) Pilot Bore/Key or Set Screw

Model	Rated torque [N·m]	Misalignment		Max. rotation speed [min^{-1}]	Torsional stiffness [N·m/rad]	Axial stiffness [N/mm]	Moment of inertia [kg·m^2]	Mass [kg]
		Angular [°]	Axial [mm]					
SFH-150S	1000	1	±0.4	5900	1500000	244	12.60×10^{-3}	4.71
SFH-170S	1300	1	±0.5	5100	2840000	224	26.88×10^{-3}	7.52
SFH-190S	2000	1	±0.5	4700	3400000	244	43.82×10^{-3}	10.57
SFH-210S	4000	1	±0.55	4300	4680000	508	68.48×10^{-3}	13.78
SFH-220S	5000	1	±0.6	4000	5940000	448	102.53×10^{-3}	18.25
SFH-260S	8000	1	±0.7	3400	10780000	612	233.86×10^{-3}	29.66

* Max. rotation speed does not take into account dynamic balance.
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions (SFH-□S) Pilot Bore/Key or Set Screw

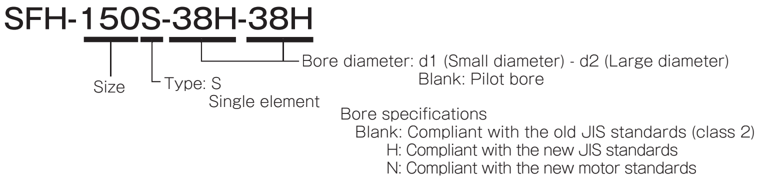


Unit [mm]

Model	d1·d2			D	N	L	LF	S	F	K	M
	Pilot bore	Min.	Max.								
SFH-150S	20	22	70	152	104	101	45	11	5	94	6-M8 × 36
SFH-170S	25	28	80	178	118	124	55	14	6	108	6-M10 × 45
SFH-190S	30	32	85	190	126	145	65	15	10	116	6-M12 × 54
SFH-210S	35	38	90	210	130	165	75	15	8	124	6-M16 × 60
SFH-220S	45	48	100	225	144	200	90	20	−2	132	6-M16 × 60
SFH-260S	50	55	115	262	166	223	100	23	11	150	6-M20 × 80

* Pilot bores are to be drilled into the part. See the standard hole-drilling standards of P.80 for information on bore drilling.
* The nominal diameter of the reamer bolt is equal to the quantity minus the nominal diameter of the screw threads times the nominal length.

How to Place an Order



SFH-150S-38H-38H

Size

Type: S
Single element

Bore diameter: d1 (Small diameter) - d2 (Large diameter)
Blank: Pilot bore

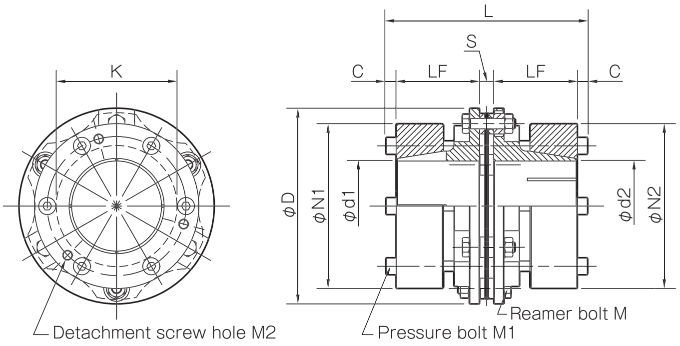
Bore specifications
Blank: Compliant with the old JIS standards (class 2)
H: Compliant with the new JIS standards
N: Compliant with the new motor standards

Specification (SFH-□S-□K-□K) Frictional Coupling

Model	Rated torque [N·m]	Misalignment		Max. rotation speed [min⁻¹]	Torsional stiffness [N·m/rad]	Axial stiffness [N/mm]	Moment of inertia [kg·m²]	Mass [kg]
		Angular [°]	Axial [mm]					
SFH-150S	1000	1	±0.4	5900	1500000	244	25.14×10^{-3}	8.95
SFH-170S	1300	1	±0.5	5100	2840000	224	47.90×10^{-3}	12.53
SFH-190S	2000	1	±0.5	4700	3400000	244	60.40×10^{-3}	14.21
SFH-210S	4000	1	±0.55	4300	4680000	508	80.50×10^{-3}	16.12

* Max. rotation speed does not take into account dynamic balance.
* The moment of inertia and mass in the table are measured for the maximum bore diameter.

Dimensions (SFH-□S-□K-□K) Frictional Coupling



Unit [mm]

Model	D	L	d1・d2	N1・N2	LF	S	C	K	M	M1	M2
SFH-150S	152	157	38・40・42・45・50	108	65	11	8	94	6-M8×36	6-M8×60	3-M8
			55・56・60・65・70	128							
SFH-170S	178	160	38・40・42・45・50	108	65	14	8	108	6-M10×45	6-M8×60	3-M8
			55・56・60・65・70	128							
			75・80	148							
SFH-190S	190	175	38・40・42・45・50	108	70	15	10	116	6-M12×54	6-M10×65	3-M10
			55・56・60・65・70	128							
			75・80・85	148							
SFH-210S	210	181	38・40・42・45・50	108	73	15	10	124	6-M16×60	6-M10×65	3-M10
			55・56・60・65・70	128							
			75・80・85・90	148							

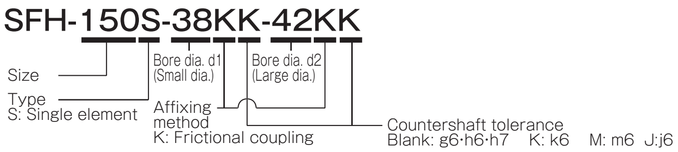
* The nominal diameters of each bolt and tap are equal to the quantity minus the nominal diameter of the screw threads times the nominal length. The quantities for the pressure bolt M1 and detachment screw hole M2 are quantities for the hub on one side.

Standard Bore Diameter

Model	Standard bore diameter d1, d2 [mm]														
	38	40	42	45	48	50	55	56	60	65	70	75	80	85	90
SFH-150S	●	●	●	●	●	●	●	●	●	●	●				
SFH-170S	1100	1200	1250	●	●	●	●	●	●	●	●	●	●		
SFH-190S	1800	1900	●	●	●	●	●	●	●	●	●	●	●	●	
SFH-210S	1800	1900	2000	2150	2300	2400	2600	2650	2850	3100	3350	3600	3800	●	●

* The bore diameters marked with ● or numbers are supported as standard bore diameter.
* Bore diameters whose fields contain numbers are restricted in their rated torque by the holding power of the shaft connection component because the bore diameter is small. The numbers indicate the rated torque value [N·m].

How to Place an Order



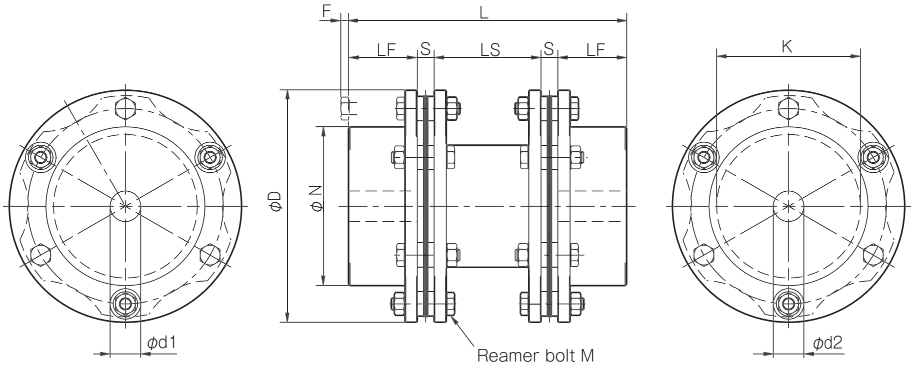
SFH G Types Double Element/Floating Shaft Type

Specification (SFH-□G) Pilot Bore/Key or Set Screw

Model	Rated torque [N·m]	Misalignment			Max. rotation speed $[min^{-1}]$	Torsional stiffness [N·m/rad]	Axial stiffness [N/mm]	Moment of inertia $[kg·m^2]$	Mass [kg]
		Parallel [mm]	Angular [°]	Axial [mm]					
SFH-150G	1000	1.4	1 (On one side)	±0.8	5900	750000	122	21.87×10^{-3}	8.72
SFH-170G	1300	1.6	1 (On one side)	±1.0	5100	1420000	112	51.07×10^{-3}	13.94
SFH-190G	2000	2.0	1 (On one side)	±1.0	4700	1700000	122	81.58×10^{-3}	19.51
SFH-210G	4000	2.1	1 (On one side)	±1.1	4300	2340000	254	125.50×10^{-3}	24.26
SFH-220G	5000	2.3	1 (On one side)	±1.2	4000	2970000	224	176.91×10^{-3}	30.27
SFH-260G	8000	2.9	1 (On one side)	±1.4	3400	5390000	306	433.47×10^{-3}	53.11

* Max. rotation speed does not take into account dynamic balance.
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions (SFH-□G) Pilot Bore/Key or Set Screw



Unit [mm]

Model	d1·d2			D	N	L	LF	LS	S	F	K	M
	Pilot bore	Min.	Max.									
SFH-150G	20	22	70	152	104	182	45	70	11	5	94	12-M8 × 36
SFH-170G	25	28	80	178	118	218	55	80	14	6	108	12-M10 × 45
SFH-190G	30	32	85	190	126	260	65	100	15	10	116	12-M12 × 54
SFH-210G	35	38	90	210	130	290	75	110	15	8	124	12-M16 × 60
SFH-220G	45	48	100	225	144	335	90	115	20	−2	132	12-M16 × 60
SFH-260G	50	55	115	262	166	391	100	145	23	11	150	12-M20 × 80

* Pilot bores are to be drilled into the part. See the standard hole-drilling standards of P.80 for information on bore drilling.
* If you require a product with an LS dimension other than that above, contact Miki Pulley with your required dimension [mm]. Please contact Miki Pulley for assistance if LS ≧ 1000.
* The nominal diameter of the reamer bolt is equal to the quantity minus the nominal diameter of the screw threads times the nominal length.

How to Place an Order

SFH-150G-38H-38H LS=500

Size

Type: G
Double element
Floating shaft

Bore diameter: d1 (Small diameter) - d2 (Large diameter)
Blank: Pilot bore

Bore specifications
Blank: Compliant with the old JIS standards (class 2)
H: Compliant with the new JIS standards
N: Compliant with the new motor standards

Spacer length
*Use mm units for LS dimensions.
*Leave blank for standard spacers.

Maximum LS Dimension When Used Vertically

Model	LS [mm]
SFH-150G	1100
SFH-170G	800
SFH-190G	900
SFH-210G	2000
SFH-220G	1900
SFH-260G	2500

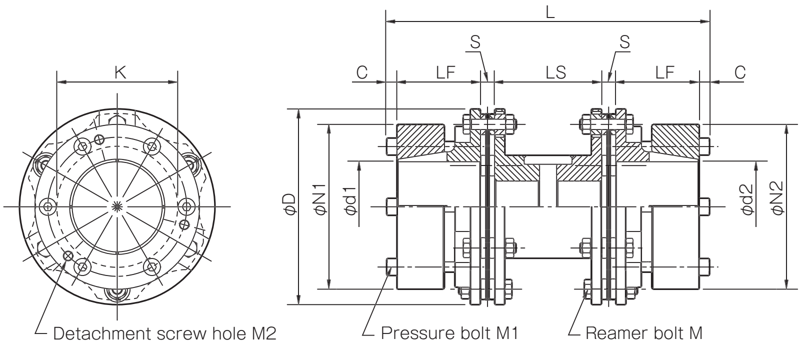
* When considering vertical use and the LS dimension is greater than that in the above table, consult Miki Pulley.

Specification (SFH-□G-□K-□K) Frictional Coupling

Model	Rated torque [N·m]	Misalignment			Max. rotation speed [min⁻¹]	Torsional stiffness [N·m/rad]	Axial stiffness [N/mm]	Moment of inertia [kg·m²]	Mass [kg]
		Parallel [mm]	Angular [°]	Axial [mm]					
SFH-150G	1000	1.4	1 (On one side)	±0.8	5900	750000	122	34.41×10^{-3}	12.96
SFH-170G	1300	1.6	1 (On one side)	±1.0	5100	1420000	112	72.09×10^{-3}	18.95
SFH-190G	2000	2.0	1 (On one side)	±1.0	4700	1700000	122	98.15×10^{-3}	23.14
SFH-210G	4000	2.1	1 (On one side)	±1.1	4300	2340000	254	137.53×10^{-3}	26.61

* Max. rotation speed does not take into account dynamic balance.
* The moment of inertia and mass in the table are measured for the maximum bore diameter.

Dimensions (SFH-□G-□K-□K) Frictional Coupling



Unit [mm]

Model	D	L	d1・d2	N1・N2	LF	LS	S	C	K	M	M1	M2
SFH-150G	152	238	38・40・42・45・50	108	65	70	11	8	94	12-M8 × 36	6-M8 × 60	3-M8
			55・56・60・65・70	128								
SFH-170G	178	254	38・40・42・45・50	108	65	80	14	8	108	12-M10 × 45	6-M8 × 60	3-M8
			55・56・60・65・70	128								
			75・80	148								
SFH-190G	190	290	38・40・42・45・50	108	70	100	15	10	116	12-M12 × 54	6-M10 × 65	3-M10
			55・56・60・65・70	128								
			75・80・85	148								
SFH-210G	210	306	38・40・42・45・50	108	73	110	15	10	124	12-M16 × 60	6-M10 × 65	3-M10
			55・56・60・65・70	128								
			75・80・85・90	148								

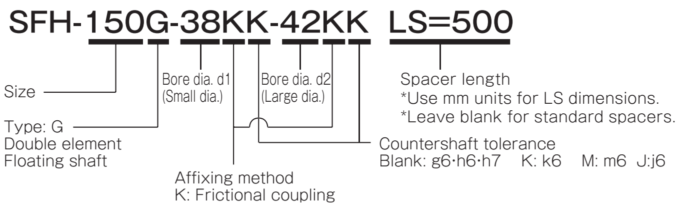
* If you require a product with an LS dimension other than that above, contact Miki Pulley with your required dimension [mm]. Please contact Miki Pulley for assistance if LS ≧ 1000.
* The nominal diameters of each bolt and tap are equal to the quantity minus the nominal diameter of the screw threads times the nominal length. The quantities for the pressure bolt M1 and detachment screw hole M2 are quantities for the hub on one side.

Standard Bore Diameter

Model	Standard bore diameter d1, d2 [mm]														
	38	40	42	45	48	50	55	56	60	65	70	75	80	85	90
SFH-150G	●	●	●	●	●	●	●	●	●	●	●				
SFH-170G	1100	1200	1250	●	●	●	●	●	●	●	●	●	●		
SFH-190G	1800	1900	●	●	●	●	●	●	●	●	●	●	●	●	
SFH-210G	1800	1900	2000	2150	2300	2400	2600	2650	2850	3100	3350	3600	3800	●	●

* The bore diameters marked with ● or numbers are supported as standard bore diameter.
* Bore diameters whose fields contain numbers are restricted in their rated torque by the holding power of the shaft connection component because the bore diameter is small. The numbers indicate the rated torque value [N·m].

How to Place an Order



Maximum LS Dimension When Used Vertically

Model	LS [mm]
SFH-150G	1100
SFH-170G	800
SFH-190G	900
SFH-210G	2000

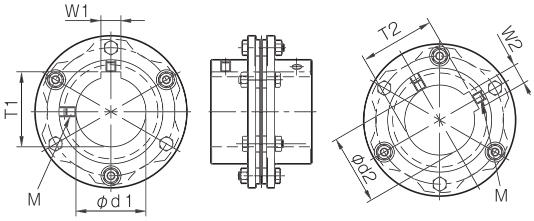
* When considering vertical use and the LS dimension is greater than that in the above table, consult Miki Pulley.

SFH Models

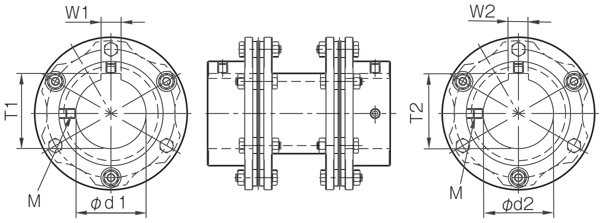
Standard Hole-Drilling Standards

- Positioning precision for keyway milling is determined by sight, so contact Miki Pulley when the keyway requires a positioning precision for a particular hub.
- Set screw positions are not on the same plane.
- The set screws are included with the product.
- Consult the technical documentation at the end of this volume for standard dimensions for bore processing other than those given here.

■ SFH S



■ SFH G



Unit [mm]

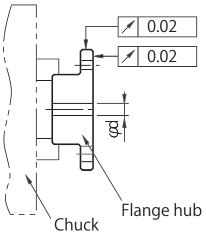
Models compliant with the old JIS standards (class 2)					Models compliant with the new JIS standards					Models compliant with the new motor standards				
Nominal bore diameter	Bore diameter [d1 · d2]	Keyway width [W1·W2]	Keyway height [T1·T2]	Set screw hole [M]	Nominal bore diameter	Bore diameter [d1 · d2]	Keyway width [W1·W2]	Keyway height [T1·T2]	Set screw hole [M]	Nominal bore diameter	Bore diameter [d1 · d2]	Keyway width [W1·W2]	Keyway height [T1·T2]	Set screw hole [M]
Tolerance	H7	E9	–	–	Tolerance	H7	H9	–	–	Tolerance	G7, F7	H9	–	–
22	$22^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	$25.0^{+0.3}_{0}$	2-M6	22H	$22^{+0.021}_{0}$	$6^{+0.030}_{0}$	$24.8^{+0.3}_{0}$	2-M5	–	–	–	–	–
24	$24^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	$27.0^{+0.3}_{0}$	2-M6	24H	$24^{+0.021}_{0}$	$8^{+0.036}_{0}$	$27.3^{+0.3}_{0}$	2-M6	24N	$24^{+0.028}_{+0.007}$	$8^{+0.036}_{0}$	$27.3^{+0.3}_{0}$	2-M6
25	$25^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	$28.0^{+0.3}_{0}$	2-M6	25H	$25^{+0.021}_{0}$	$8^{+0.036}_{0}$	$28.3^{+0.3}_{0}$	2-M6	–	–	–	–	–
28	$28^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	$31.0^{+0.3}_{0}$	2-M6	28H	$28^{+0.021}_{0}$	$8^{+0.036}_{0}$	$31.3^{+0.3}_{0}$	2-M6	28N	$28^{+0.028}_{+0.007}$	$8^{+0.036}_{0}$	$31.3^{+0.3}_{0}$	2-M6
30	$30^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	$33.0^{+0.3}_{0}$	2-M6	30H	$30^{+0.021}_{0}$	$8^{+0.036}_{0}$	$33.3^{+0.3}_{0}$	2-M6	–	–	–	–	–
32	$32^{+0.025}_{0}$	$10^{+0.061}_{+0.025}$	$35.5^{+0.3}_{0}$	2-M8	32H	$32^{+0.025}_{0}$	$10^{+0.036}_{0}$	$35.3^{+0.3}_{0}$	2-M8	–	–	–	–	–
35	$35^{+0.025}_{0}$	$10^{+0.061}_{+0.025}$	$38.5^{+0.3}_{0}$	2-M8	35H	$35^{+0.025}_{0}$	$10^{+0.036}_{0}$	$38.3^{+0.3}_{0}$	2-M8	–	–	–	–	–
38	$38^{+0.025}_{0}$	$10^{+0.061}_{+0.025}$	$41.5^{+0.3}_{0}$	2-M8	38H	$38^{+0.025}_{0}$	$10^{+0.036}_{0}$	$41.3^{+0.3}_{0}$	2-M8	38N	$38^{+0.050}_{+0.025}$	$10^{+0.036}_{0}$	$41.3^{+0.3}_{0}$	2-M8
40	$40^{+0.025}_{0}$	$10^{+0.061}_{+0.025}$	$43.5^{+0.3}_{0}$	2-M8	40H	$40^{+0.025}_{0}$	$12^{+0.043}_{0}$	$43.3^{+0.3}_{0}$	2-M8	–	–	–	–	–
42	$42^{+0.025}_{0}$	$12^{+0.075}_{+0.032}$	$45.5^{+0.3}_{0}$	2-M8	42H	$42^{+0.025}_{0}$	$12^{+0.043}_{0}$	$45.3^{+0.3}_{0}$	2-M8	42N	$42^{+0.050}_{+0.025}$	$12^{+0.043}_{0}$	$45.3^{+0.3}_{0}$	2-M8
45	$45^{+0.025}_{0}$	$12^{+0.075}_{+0.032}$	$48.5^{+0.3}_{0}$	2-M8	45H	$45^{+0.025}_{0}$	$14^{+0.043}_{0}$	$48.8^{+0.3}_{0}$	2-M10	–	–	–	–	–
48	$48^{+0.025}_{0}$	$12^{+0.075}_{+0.032}$	$51.5^{+0.3}_{0}$	2-M8	48H	$48^{+0.025}_{0}$	$14^{+0.043}_{0}$	$51.8^{+0.3}_{0}$	2-M10	48N	$48^{+0.050}_{+0.025}$	$14^{+0.043}_{0}$	$51.8^{+0.3}_{0}$	2-M10
50	$50^{+0.025}_{0}$	$12^{+0.075}_{+0.032}$	$53.5^{+0.3}_{0}$	2-M8	50H	$50^{+0.025}_{0}$	$14^{+0.043}_{0}$	$53.8^{+0.3}_{0}$	2-M10	–	–	–	–	–
55	$55^{+0.030}_{0}$	$15^{+0.075}_{+0.032}$	$60.0^{+0.3}_{0}$	2-M10	55H	$55^{+0.030}_{0}$	$16^{+0.043}_{0}$	$59.3^{+0.3}_{0}$	2-M10	55N	$55^{+0.060}_{+0.030}$	$16^{+0.043}_{0}$	$59.3^{+0.3}_{0}$	2-M10
56	$56^{+0.030}_{0}$	$15^{+0.075}_{+0.032}$	$61.0^{+0.3}_{0}$	2-M10	56H	$56^{+0.030}_{0}$	$16^{+0.043}_{0}$	$60.3^{+0.3}_{0}$	2-M10	–	–	–	–	–
60	$60^{+0.030}_{0}$	$15^{+0.075}_{+0.032}$	$65.0^{+0.3}_{0}$	2-M10	60H	$60^{+0.030}_{0}$	$18^{+0.043}_{0}$	$64.4^{+0.3}_{0}$	2-M10	60N	$60^{+0.060}_{+0.030}$	$18^{+0.043}_{0}$	$64.4^{+0.3}_{0}$	2-M10
65	$65^{+0.030}_{0}$	$18^{+0.075}_{+0.032}$	$71.0^{+0.3}_{0}$	2-M10	65H	$65^{+0.030}_{0}$	$18^{+0.043}_{0}$	$69.4^{+0.3}_{0}$	2-M10	65N	$65^{+0.060}_{+0.030}$	$18^{+0.043}_{0}$	$69.4^{+0.3}_{0}$	2-M10
70	$70^{+0.030}_{0}$	$18^{+0.075}_{+0.032}$	$76.0^{+0.3}_{0}$	2-M10	70H	$70^{+0.030}_{0}$	$20^{+0.052}_{0}$	$74.9^{+0.5}_{0}$	2-M10	–	–	–	–	–
75	$75^{+0.030}_{0}$	$20^{+0.092}_{+0.040}$	$81.0^{+0.5}_{0}$	2-M10	75H	$75^{+0.030}_{0}$	$20^{+0.052}_{0}$	$79.9^{+0.5}_{0}$	2-M10	75N	$75^{+0.060}_{+0.030}$	$20^{+0.052}_{0}$	$79.9^{+0.5}_{0}$	2-M10
80	$80^{+0.030}_{0}$	$20^{+0.092}_{+0.040}$	$86.0^{+0.5}_{0}$	2-M10	80H	$80^{+0.030}_{0}$	$22^{+0.052}_{0}$	$85.4^{+0.5}_{0}$	2-M12	–	–	–	–	–
85	$85^{+0.035}_{0}$	$24^{+0.092}_{+0.040}$	$93.0^{+0.5}_{0}$	2-M12	85H	$85^{+0.035}_{0}$	$22^{+0.052}_{0}$	$90.4^{+0.5}_{0}$	2-M12	85N	$85^{+0.071}_{+0.036}$	$22^{+0.052}_{0}$	$90.4^{+0.5}_{0}$	2-M12
90	$90^{+0.035}_{0}$	$24^{+0.092}_{+0.040}$	$98.0^{+0.5}_{0}$	2-M12	90H	$90^{+0.035}_{0}$	$25^{+0.052}_{0}$	$95.4^{+0.5}_{0}$	2-M12	–	–	–	–	–
95	$95^{+0.035}_{0}$	$24^{+0.092}_{+0.040}$	$103.0^{+0.5}_{0}$	2-M12	95H	$95^{+0.035}_{0}$	$25^{+0.052}_{0}$	$100.4^{+0.5}_{0}$	2-M12	95N	$95^{+0.071}_{+0.036}$	$25^{+0.052}_{0}$	$100.4^{+0.5}_{0}$	2-M12
100	$100^{+0.035}_{0}$	$28^{+0.092}_{+0.040}$	$109.0^{+0.5}_{0}$	2-M12	100H	$100^{+0.035}_{0}$	$28^{+0.052}_{0}$	$106.4^{+0.5}_{0}$	2-M12	–	–	–	–	–
115	$115^{+0.035}_{0}$	$32^{+0.112}_{+0.050}$	$125.0^{+0.5}_{0}$	2-M12	115H	$115^{+0.035}_{0}$	$32^{+0.062}_{0}$	$122.4^{+0.5}_{0}$	2-M12	–	–	–	–	–

Distance from Set Screw Edge

Model	SFH-150	SFH-170	SFH-190	SFH-210	SFH-220	SFH-260
Distance from set screw edge [mm]	15	20	25	30	35	40

Centering and Finishing when Drilling Bores in Flange Hubs

SFH models are delivered in component form. When processing bore diameters in pilot-bore products in particular, adjust the chuck so that runout of each flange hub is no more than the precision of the figure at right, and then finish the inner diameter.



Items Checked for Design Purposes

Precautions for Handling

SFH models are delivered in component form. This mounts a flange hub on each shaft and couples both shafts by mounting the element (spacer) last, while centering. Also, the SFH S types can first mount an element on the flange hub, then center, and then complete the coupling before inserting it onto the shaft.

When using the assembly method that completes coupling first, take extra precautions when handling couplings. Subjecting assembled couplings to strong shocks may affect mounting accuracy and cause the parts to break during use.

(1) Couplings are designed for use within an operating temperature range of -30° C to 120℃ . Although the couplings are designed to be waterproof and oilproof, do not subject them to excessive amounts of water and oil as it may cause part deterioration.

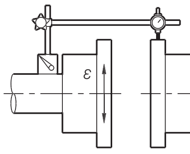
(2) Handle the element with care as it is made of a thin stainless steel metal disc, also making sure to be careful so as not to injure yourself.

(3) For frictional coupling types, do not tighten up pressure bolts until after inserting the mounting shaft.

Centering

■ Parallel misalignment (ε)

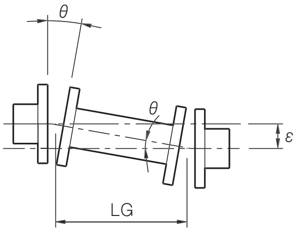
Lock the dial gauge in place on one shaft and then measure the runout of the paired flange hub's outer periphery while rotating that shaft. Since couplings on which the elements (discs) are a set (SFH S types) do not allow parallel misalignment, get as close to zero as possible. For couplings that allow the entire length to be freely set (SFH G types), use the following formula to calculate allowable parallel misalignment.



$$\varepsilon = \tan\theta \times LG$$

ε : Allowable parallel misalignment

θ : 1°



$$LG = LS + S$$

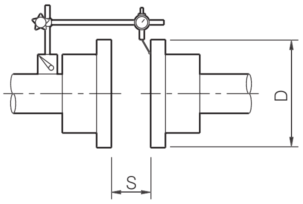
LS: Total length of spacer

S: Dimension of gap between flange hub and spacer

■ Angular deflection(θ)

Lock the dial gauge in place on one shaft and then measure the runout of the end surface near the paired flange hub's outer periphery while rotating that shaft.

Adjust runout B so that θ ≦ 1° in the following formula.



$$B = D \times \tan\theta$$

B: Runout

D: Flange hub outer diameter

θ : 1°

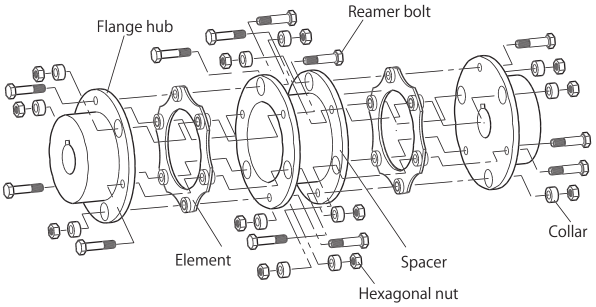
■ Axial displacement (S)

In addition, restrict the dimension between flange hub faces (S in the diagram) within the allowable error range for axial displacement with respect to a reference value. Note that the tolerance values were calculated based on the assumption that both the level of parallel misalignment and angular deflection are zero. Adjust to keep this value as low as possible.

* On the SFH S, this is the dimension of the gap between two flange hubs. On the SFH G, dimension S is the gap between the flange hub and the spacer.

Mounting

This assembly method mounts a flange hub on each shaft of the SFH models and couples both shafts by mounting the element (spacer) last, while centering.

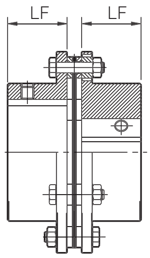


(1) Remove any rust, dust, oil or the like from the inner diameter surfaces of the shaft and flange hub. (Use a waste cloth, etc. to wipe away oil residue or an oil remover as needed.)

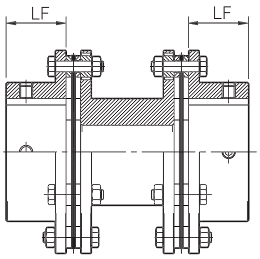
For types that use frictional coupling, loosen the flange's pressure bolt and check that the sleeve can move freely.

(2) Insert the flange hub onto the paired mounting shaft. Insert each shaft far enough into the coupling so that the paired mounting shaft touches the shaft along the entire length of the flange hub (LF dimension) as shown in the diagram below.

■ SFH S types



■ SFH G types



Coupling size	150	170	190	210	220	260
LF (key or set screw) [mm]	45	55	65	75	90	100
LF (frictional coupling) [mm]	65	65	70	73	—	—

(3) Mount the other flange hub on the paired mounting shaft as described in steps (1) and (2).

(4) With the flange hub inserted, center (parallel misalignment and angular deflection), and the adjust the distance between shafts.

(5) For SFH S types, translate the flange hubs on the shaft, insert the element between the two flange hubs, and provisionally assemble with the reamer bolt, collar, and hexagonal nut. For SFH G types, insert reamer bolts from the flange side for both flanges, provisionally fasten the element and collar with a hexagonal nut, and then translate the flange hubs on the shaft, insert the spacer between the flange hubs, and provisionally assemble with the reamer bolt, collar and hexagonal nut.

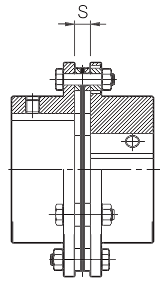
SFH Models

Items Checked for Design Purposes

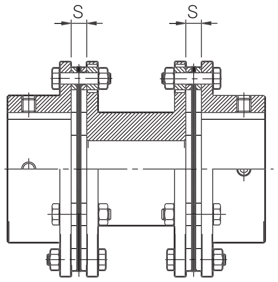
Mounting

(6) Keep the width of the dimension between flange faces (S dimension in the diagram) within the allowable error range for axial misalignment with respect to the reference value. Note that the tolerance values were calculated based on the assumption that both the level of parallel misalignment and angular deflection are zero. Adjust to keep this value as low as possible.

■ SFH S types



■ SFH G types



Coupling size	150	170	190	210	220	260
S [mm]	11	14	15	15	20	23

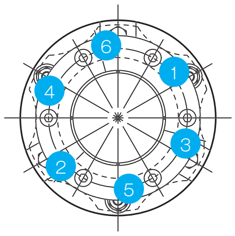
(7) Check that the element is not deformed. If it is, a force may be being applied axially or there may be insufficient lubrication between the collar, bolt, and disc spring, so adjust to bring it to normal. The situation may be improved by applying a small amount of machine oil to the bearing surface of the reamer bolt. However, do not use oil that contains molybdenum-based extreme-pressure additives.

(8) Use a calibrated torque wrench to tighten all the reamer bolts to the appropriate tightening torques.

Coupling size	150	170	190	210	220	260
Reamer bolt size	M8	M10	M12	M16	M16	M20
Tightening torque [N·m]	34	68	118	300	300	570

(9) When selecting a key system for the mounting on the shaft, lock the flange hub to the shaft with a set screw.

For frictional coupling types, tighten the pressure bolts evenly, a little at a time, on the diagonal, guided by the tightening procedure of the figure below.

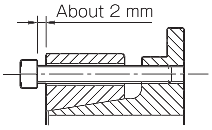


Type	Pressure bolt size	Tightening torque [N·m]
SFH-150S/G	M8	34
SFH-170S/G	M8	34
SFH-190S/G	M10	68
SFH-210S/G	M10	68

Removal

(1) Check to confirm that there is no torque or axial load being applied to the coupling. There may be cases where a torque is applied to the coupling, particularly when the safety brake is being used. Make sure to verify that this is not occurring before removing parts.

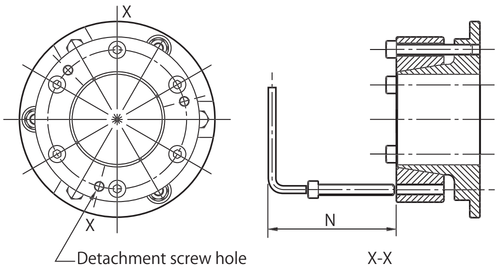
(2) Loosen all the pressure bolts placing pressure on the sleeve until the gap between bearing seat and sleeve is about 2 mm.



For a tapered coupling system that tightens pressure bolts from the axial direction, the sleeve will be self-locking, so the coupling between flange and shaft cannot be released simply by loosening the pressure bolt. (Note that in some cases, a coupling can be released by loosening a pressure bolt.) For that reason, when designing devices, a space must be installed for inserting a detachment screw.

If there is no space in the axial direction, consult Miki Pulley.

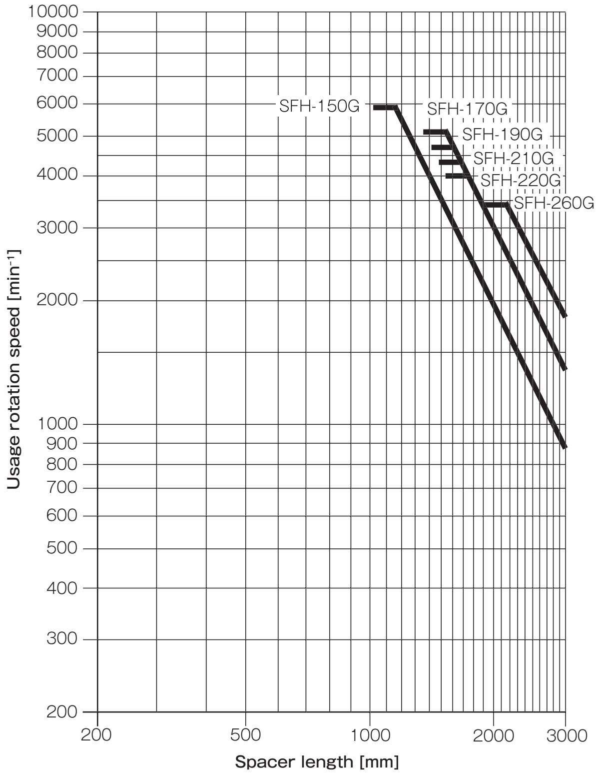
(3) Pull out three of the pressure bolts loosened in step (2), insert them into detachment screw holes at three locations on the sleeve, and tighten them alternately, a little at a time. The link between the flange and shaft will be released.



Coupling size	150	170	190	210
Nominal diameter of pressure bolt × Length	M8 × 60	M8 × 60	M10 × 65	M10 × 65
Recommended N dimension [mm]	108	108	121	121

Limit Rotation Speed

For SFH G long spacer types, the speeds at which the coupling can be used will vary with the length of spacer selected. Use the following table to confirm that the speed you will use is at or below the limit rotation speed.



Points to Consider Regarding the Feed Screw System

■ Servo motor oscillation

When the torsional natural frequency of the overall feed screw system is 400 to 500 Hz or less, gain adjustment of the servo motor may cause the servo motor to oscillate.

Oscillation in the servo motor during operation can cause problems particularly with the overall natural frequency and electrical control systems of the feed screw system.

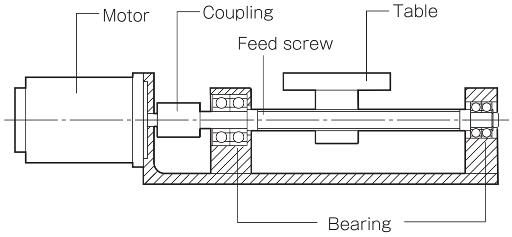
In order for these issues to be resolved, the torsional stiffness for the coupling and feed screw section and the moment of inertia and other characteristics for the system overall will need to be adjusted and the torsional natural frequency for the mechanical system raised or the tuning function (filter function) for the electrical control system in the servo motor adjusted during the design stage.

Please contact Miki Pulley with any questions regarding servo motor oscillation.

How to Find the Natural Frequency of a Feed Screw System

(1) Select a coupling based on the nominal and maximum torque of the servo motor.

(2) Find the overall natural frequency, Nf, from the torsional stiffness of the coupling and feed screw, κ, the moment of inertia of driving side, J1, and the moment of inertia of driven side, J2, for the feed screw system shown below.



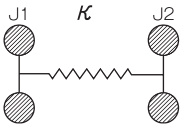
$$Nf=\frac{1}{2\pi}\sqrt{\kappa\left(\frac{1}{J1}+\frac{1}{J2}\right)}$$

Nf: Overall natural frequency of a feed screw system [Hz]

κ: Torsional stiffness of the coupling and feed screw [N·m/rad]

J1: Moment of inertia of driving side [kg·m^2]

J2: Moment of inertia of driven side [kg·m^2]



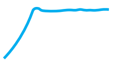
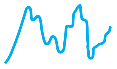
Selection Procedures

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

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

(2) Determine the factor κ from the load properties, and find the corrected torque, Td, applied to the coupling.

Td = Ta × K (Refer to the table below for values)

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

For servo motor drive, multiply the maximum torque, Ts, by the usage factor K = 1.2 to 1.5.

Td = Ts × (1.2 to 1.5)

(3) Set the size so that the rated coupling torque, Tn, is higher than the corrected torque, Td.

Tn ≧ Td

(4) The rated torque of the coupling may be limited by the bore diameter of the coupling. See the table showing the bore diameters that limit rated torque.

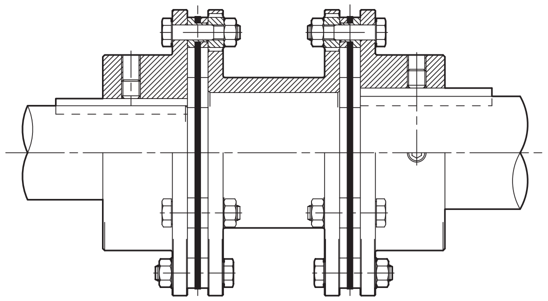
(5) Check that the mount shaft is no larger than the maximum bore diameter of the coupling.

Contact Miki Pulley for assistance with any device experiencing extreme periodic vibrations.

Mounting Example

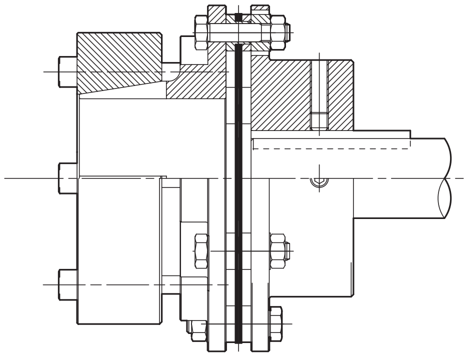
■ SFH G

This is a combination of multiple standard bore-drilled couplings. Either Miki Pulley can do the processing, or you can drill pilot bores however you like.



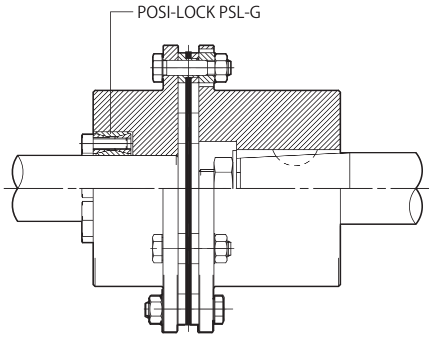
■ SFH S

This example combines a frictional-coupling type flange and a standard bore-drilled flange hub.



■ SFH S special

This combines a flange hub processed for the tapered shaft of a servo motor with a flange hub processed for a Miki Pulley shaft lock PSL-G.



Torque Wrenches

SFC-□ SA2/DA2 (Clamping Bolt)

Nominal bolt diameter	Tightening torque [N·m]	Torque screwdriver (Preset)	Hexagon bit	Coupling size
M1.6	0.23 ～ 0.28	N3LTDK	CB 1.5mm	002
M2	0.4 ～ 0.5	N6LTDK	SB 1.5mm	005,010
M2.5	1.0 ～ 1.1	N12LTDK	SB 2mm	010,020,025
M3	1.5 ～ 1.9	N20LTDK	SB 2.5mm	030
M4	3.4 ～ 4.1	N50LTDK	SB 3mm	035,040
M5	7.0 ～ 8.5	N100LTDK	SB 4mm	050
Nominal bolt diameter	**Tightening torque [N·m]**	**Torque wrenches (Preset)**	**Hexagonal head**	**Coupling size**
M6	14 ～ 15	N230LCK	230HCK 5mm	055,060
M8	27 ～ 30	N450LCK	450HCK 6mm	080,090,100

SFF-□ SS/DS (N) (Clamping Bolt)

Nominal bolt diameter	Tightening torque [N·m]	Torque screwdriver (Preset)	Hexagon bit	Coupling size
M4	3.4	N50LTDK	SB 3mm	040
M5	7	N100LTDK	SB 4mm	050,060
Nominal bolt diameter	**Tightening torque [N·m]**	**Torque wrenches (Preset)**	**Hexagonal head**	**Coupling size**
M6	14	N230LCK	230HCK 5mm	060,070,080
M8	34	N450LCK	450HCK 6mm	080,090
Nominal bolt diameter	**Tightening torque [N·m]**	**Torque wrench (Single-function)**	**Hexagonal head**	**Coupling size**
M10	68	N900SPCK × 68N • m	900HCK 8mm	100,120

SFS-□ S/W/G (Pressure Bolt)

Nominal bolt diameter	Tightening torque [N·m]	Torque wrench (Single-function)	Wrench attachment	Coupling size
M5	8	N120SPCK × 8N • m	230SCK 8mm	05
M6	14	N230SPCK × 14N • m	230SCK 10mm	06,08,09,10
M8	34	N450SPCK × 34N • m	450SCK 13mm	12,14

SFS-□ S/W/G (Reamer Bolt)

Nominal bolt diameter	Tightening torque [N·m]	Torque wrench (Single-function)	Wrench attachment	Coupling size
M5	8	N120SPCK × 8N • m	230SCK 8mm	05
M6	14	N230SPCK × 14N • m	230SCK 10mm	06,08
M8	34	N450SPCK × 34N • m	450SCK 13mm	09,10
M10	68	N900SPCK × 68N • m	900SCK 17mm	12
M12	118	N1800SPCK × 118N • m	1800SCK 19mm	14

SFS-□ S/W/G-C (Reamer Bolt)

Nominal bolt diameter	Tightening torque [N·m]	Torque wrench (Single-function)	Wrench attachment	Coupling size
M5	6	N60SPCK × 6N • m	230SCK 8mm	05
M6	11	N120SPCK × 11N • m	230SCK 10mm	06,08
M8	26	N450SPCK × 26N • m	450SCK 13mm	09,10
M10	51	N900SPCK × 51N • m	900SCK 17mm	12
M12	90	N900SPCK × 90N • m	900SCK 19mm	14

SFF-□ SS/DS (Pressure Bolt)

Nominal bolt diameter	Tightening torque [N·m]	Torque wrench (Single-function)	Wrench attachment	Coupling size
M6	10	N120SPCK × 10N • m	230SCK 10mm	070,080,090,100,120
M8	24	N450SPCK × 24N • m	450SCK 13mm	140

SFM-□ SS/DS (Pressure Bolt)

Nominal bolt diameter	Tightening torque [N·m]	Torque wrench (Single-function)	Hexagonal head	Coupling size
M6	14	N230SPCK × 14N • m	230HCK 5mm	090,100,120
M8	34	N450SPCK × 34N • m	450HCK 6mm	140

SFH-☐S/G (Pressure Bolt)

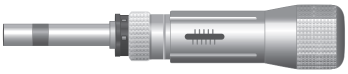
Nominal bolt diameter	Tightening torque [N·m]	Torque wrench (Single-function)	Hexagonal head	Coupling size
M8	34	N450SPCK × 34N・m	450HCK 6mm	150,170
M10	68	N900SPCK × 68N・m	900HCK 8mm	190,210

SFH-☐S/G (Reamer Bolt)

Nominal bolt diameter	Tightening torque [N·m]	Torque wrench (Single-function)	Wrench attachment	Coupling size
M8	34	N450SPCK × 34N・m	450SCK 13mm	150
M10	68	N900SPCK × 68N・m	900SCK 17mm	170
M12	118	N1800SPCK × 118N・m	1800SCK 19mm	190
M16	300	N4400SPCK × 300N・m	4400SCK 24mm	210,220
Nominal bolt diameter	Tightening torque [N·m]	Torque wrenches (Preset)	Wrench attachment	Coupling size
M20	570	N7000LCK	7000SCK 30mm	260

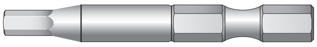
Torque Screwdriver (Preset)

■ N-LTDK



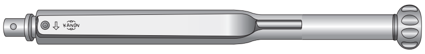
Bit

■ SB



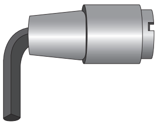
Torque Wrenches (Preset)

■ N-LCK



Hexagonal Head

■ HCK

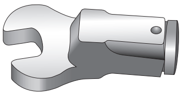


Torque Wrench (Single-function)

■ N-SPCK

Wrench Attachment

■ SCK



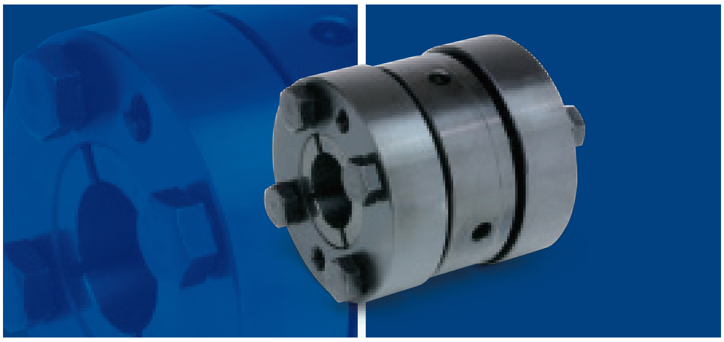
High-rigidity Couplings

SERVORIGID

Ultra-high stiffness | Low inertia | No backlash | RoHS

Max. rated torque [N·m]	490
Bore ranges [mm]	ϕ16 ～ 48
Operating temperature [℃]	−30 ～ 120
Driver	Servo motor
Application	Machine tools

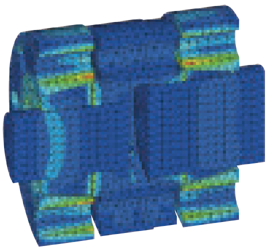
Rigid Couplings with Ultra-high Torsional Stiffness

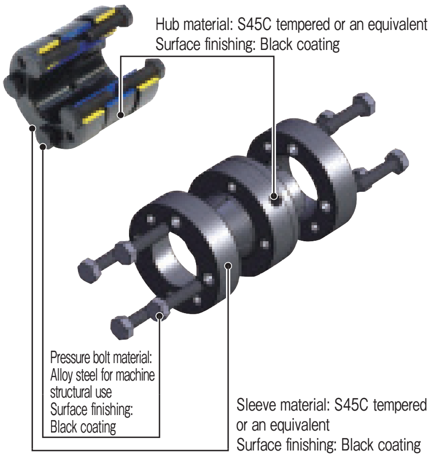


Rigid couplings with ultra-high torsional stiffness that were developed for servo motor applications. Unlike flexible couplings, they have no element to absorb differences between the centers of two shafts, so they have very high torsional stiffness. Since the outer diameter relative to torque can be reduced compared to flexible couplings, smaller couplings can be used, which helps reduce the moment of inertia.

Structure and Materials

Modeling uses the latest CAE Systems and 3D-CAD. Shape and hardness was calculated using the support of the latest finite element method (FEM) analysis software for optimal designs.





Other Specifications and Options

Through-bolt Construction

By using a through-bolt construction for the sleeve and hub on one side, the drive shaft and driven shaft can be engaged simply by tightening the pressure bolt on one side.

Taper Adapter

Allows coupling via friction when an optional taper adapter is mounted on the tapered shaft of a servo motor.

Clamp Type

A clamp-type high-rigidity coupling can also be manufactured.

*Specifications may not be identical. Contact Miki Pulley for details.

SRG Models

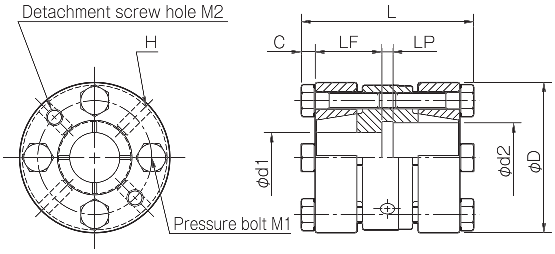
Specifications

Model	d1・d2 [mm]		Rated torque [N·m] compared to the standard bore diameters, d1 and d2 [mm]																		Max. rotation speed [min⁻¹]	Torsional stiffness [N·m/rad]	Moment of inertia [kg·m²]	Mass [kg]
	Min.	Max.	16	17	18	19	20	22	24	25	28	30	32	35	36	38	40	42	45	48				
SRG-050DS	16	22	90	100	110	120	130	140													15000	60000	0.16×10^{-3}	0.45
SRG-060DS	18	25			80	100	110	145	180	190											13000	115000	0.29×10^{-3}	0.67
SRG-070DS	22	35						150	200	220	290	340	390	460							12000	340000	0.55×10^{-3}	0.85
SRG-080DS	30	48										180	220	270	290	320	360	390	440	490	9500	1335000	1.21×10^{-3}	1.17

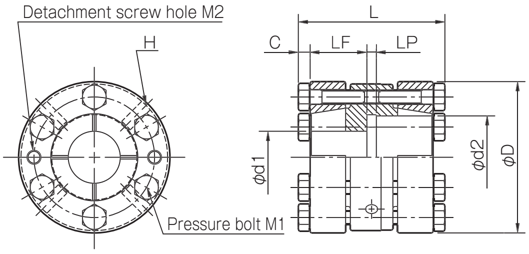
* The shaft coupling employs friction, so rated torque is determined by bore diameter. The rated torque of the side with the smallest diameter serves as the rated torque of the coupling.
* Max. rotation speed does not take into account dynamic balance.
* The torsional stiffness, moment of inertia, and mass are measured for the maximum bore diameter.

Dimensions

■ SRG-050, 060



■ SRG-070, 080

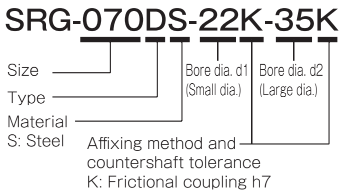


Unit [mm]

Model	Standard bore diameter d1, d2	D	L	LF	LP	C	H	M1	M2
SRG-050DS	16・17・18・19・20・22	48	52.8	20	4	4.4	4-5.1	4-M6	2-M6
SRG-060DS	18・19・20・22・24・25	54	62	24	4	5	4-5.1	4-M6	2-M6
SRG-070DS	22・24・25・28・30・32・35	64	62	24	4	5	4-5.1	6-M6	2-M6
SRG-080DS	30・32・35・36・38・40・42・45・48	78	63	25.5	4	4	4-5.1	6-M6	2-M6

* The nominal diameters of the pressure bolt M1 and detachment screw hole M2 are equal to the quantity minus the nominal diameter of the screw threads. Quantities are for a single side.

How to Place an Order



* For positive tolerances for bore diameters of 35 ($35^{+0.010}_{0}$), use 35KS to distinguish the setting from that of h7 class.

SRG Models

Items Checked for Design Purposes

Precautions for Handling

SERVORIGID SRG model is, as the name suggests, a high-rigidity coupling with no element to absorb differences between the centers of two shafts. For that reason, when mounting, the two shafts must be carefully centered. Please keep that in mind and take extra precautions when handling.

(1) Couplings are designed for use within an operating temperature from -30℃ to 120℃ . Although the couplings are designed to be waterproof and oilproof, do not subject them to excessive amounts of water and oil as it may cause part deterioration.

(2) Do not tighten up pressure bolts until after inserting the mounting shaft.

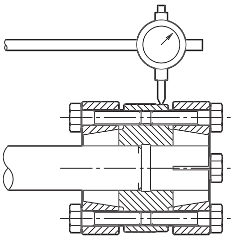
Mounting

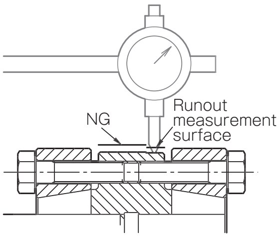
(1) Check that coupling pressure bolts have been loosened and remove any rust, dust, oil residue, etc. from the inner diameter surfaces of the shaft and couplings. (Use a waste cloth, etc. to wipe away oil residue or an oil remover as needed.)

(2) Be careful when inserting the couplings into the shaft Insert each shaft for a length listed in the table below measured from the sleeve edge. However, be sure that mounting shafts do not come into contact with each other.

Coupling size	050	060	070	080
Insert length of shaft [mm]	20 or more	24 or more	24 or more	25.5 or more

(3) After deciding the place to insert, hold a dial gauge against the outer diameter uneven surface of coupling as shown below.

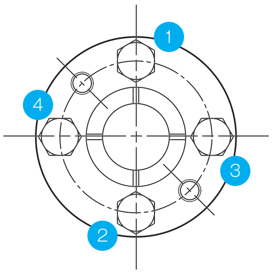




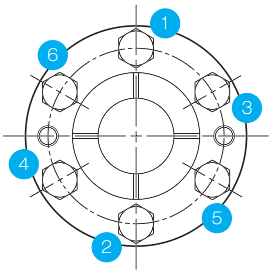
(4) Gently rotate the motor shaft manually and tighten the pressure bolt by adjusting it to make sure the value of dial gauge is zero.

Tighten the pressure bolts evenly, a little at a time, on the diagonal, guided by the tightening procedure of the figure below. However, there is sometimes no need to follow the procedure, depending on the value of dial gauge.

■ SRG-050・060



■ SRG-070・080



(5) Finally, use a calibrated torque wrench to tighten all the pressure bolts to the appropriate tightening torques of the table below, make sure that there is no bolts loosened and that the runout is small (the value almost near to zero), and tighten the driven shaft using the same procedure.

Coupling size	050	060	070	080
Pressure bolt size	M6	M6	M6	M6
Tightening torque [N·m]	14	14	14	14

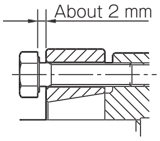
■ Suitable Torque Wrench

Torque wrench (Single-function)	Wrench attachment
N230SPCK × 14N・m	230SCK 10mm

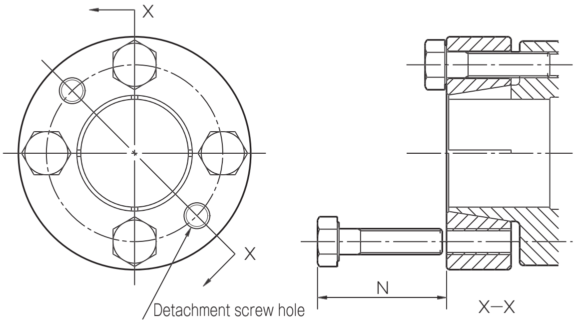
Removal

(1) Be sure to check that the main power of the equipment is off before removing to avoid incorrect operation of the drive. Take extra precautions if any of the components are damaged as it may be sharpened.

(2) Loosen all the pressure bolts placing pressure on the sleeve until the gap between bearing seat and sleeve is about 2 mm.



In the case of a tapered coupling system that tightens a pressure bolt from the axial direction, the sleeve will be self-locking, so the coupling between flange and shaft cannot be released simply by loosening the pressure bolt. (Note that in some cases, a coupling can be released by loosening a pressure bolt.)
For that reason, when designing devices, a space must be installed for inserting a detachment screw.



Coupling size	050	060	070	080
Nominal diameter of pressure bolt × Length	M6 × 20	M6 × 24	M6 × 24	M6 × 25
RecommendedN dimension [mm]	26	30	30	31.5

(3) Insert the bolt into detachment screw holes and tighten them alternately. The coupling will be released. It is recommended to use the bolt whose dimension is same as that of pressure bolt.

Note that if the bolt is too short, couplings may no be able to release.

Points to Consider Regarding the Feed Screw System

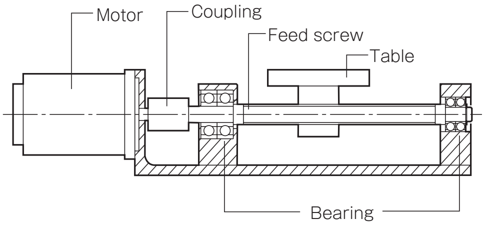
Servo motor oscillation

When the torsional natural frequency of the overall feed screw system is 400 to 500 Hz or less, gain adjustment of the servo motor may cause the servo motor to oscillate.
Oscillation in the servo motor during operation can cause problems particularly with the overall natural frequency and electrical control systems of the feed screw system.
In order for these issues to be resolved, the torsional stiffness for the coupling and feed screw section and the moment of inertia and other characteristics for the system overall will need to be adjusted and the torsional natural frequency for the mechanical system raised or the tuning function (filter function) for the electrical control system in the servo motor adjusted during the design stage.
Please contact Miki Pulley with any questions regarding servo motor oscillation.

How to Find the Natural Frequency of a Feed Screw System

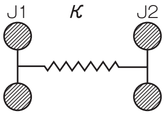
(1) Select a coupling based on the nominal and maximum torque of the servo motor.

(2) Find the overall natural frequency, Nf, from the torsional stiffness of the coupling and feed screw, κ, the moment of inertia of driving side, J1, and the moment of inertia of driven side, J2, for the feed screw system shown below.



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

Nf: Overall natural frequency of a feed screw system[Hz]
κ : Torsional stiffness of the coupling and feed screw [N·m/rad]
J1: Moment of inertia of driving side [kg·m^2]
J2: Moment of inertia of driven side [kg·m^2]



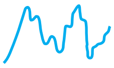
Selection Procedures

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

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

(2) Determine the factor κ from the load properties, and find the corrected torque, Td, applied to the coupling.

Td = Ta × K (Refer to the table below for values)

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

Service factor based on operating time: K2

Hrs./day	~ 8	~ 16	~ 24
K2	1.0	1.12	1.25

For servo motor drive, multiply the maximum torque, Ts, by the usage factor K = 1.2 to 1.5.

Td = Ts × (1.2 to 1.5)

(3) Set the size so that the rated coupling torque, Tn, is higher than the corrected torque, Td.

$$Tn \geqq Td$$

(4) Check that the mount shaft is no larger than the maximum bore diameter of the coupling.

Contact Miki Pulley for assistance with any device experiencing extreme periodic vibrations.

Metal Coil Spring Couplings

BAUMANNFLEX

Max. nominal torque [N·m]	220
Pilot bore/added work ranges [mm]	ϕ 3～35
Operating temperature [℃]	BAUMANN MINI FLEX: -40 to 120, BAUMANNFLEX: -30 to 100
Backlash	Insignificant
Driver	Induction motor
Application	Vacuum equipment, medical equipment, printing machinery

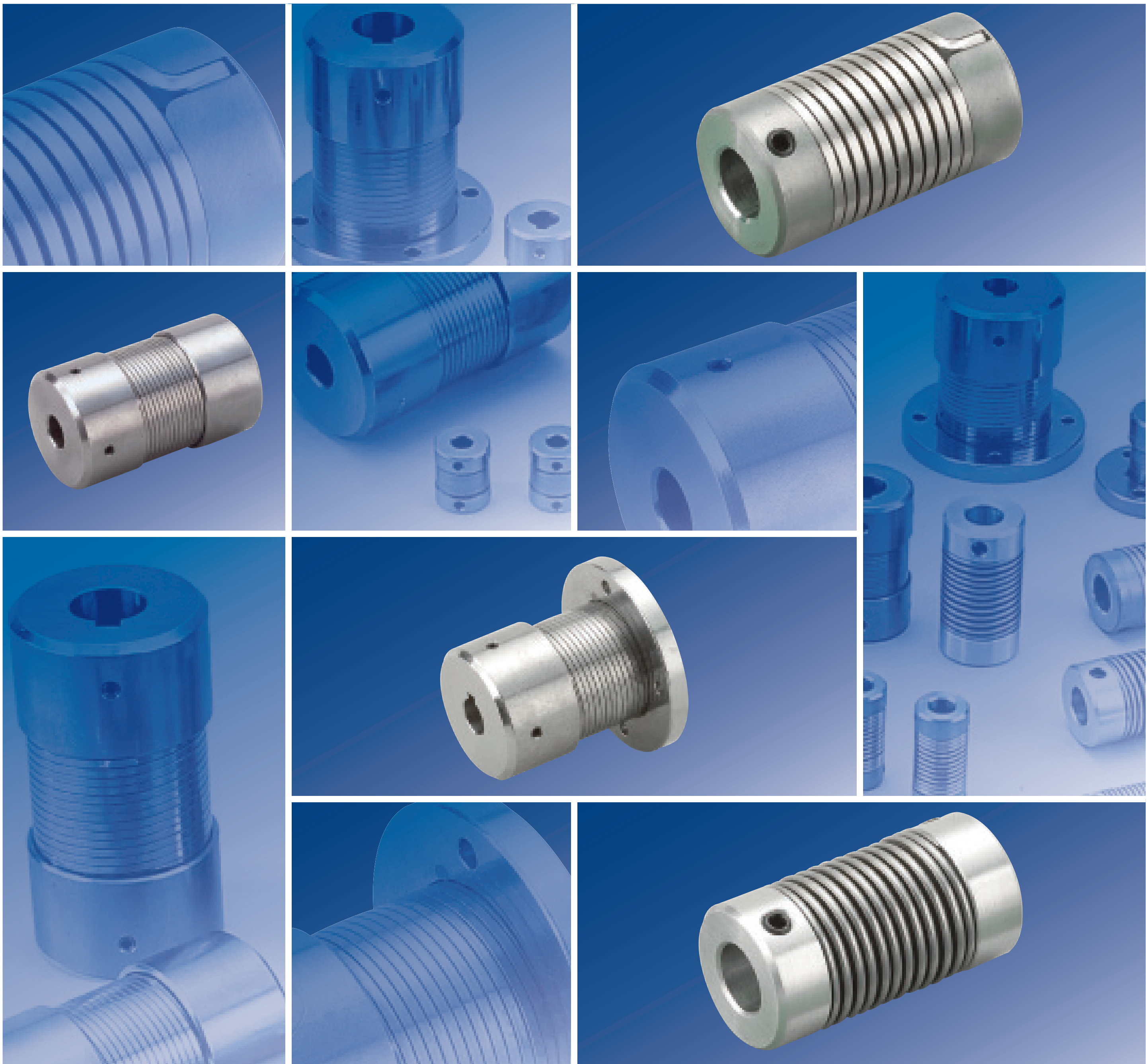
High flexibility

High torque

Stainless steel

Metal Coil Spring Couplings with Excellent Flexibility

These couplings connect hubs that mount on shafts to other hubs, separated by a metal coil spring. They achieve excellent flexibility, compact size, and high torque.

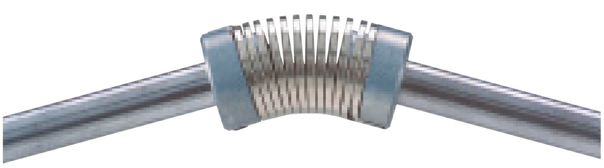


Available Models

Series	Features	Spring Materials and Features	Lineup
BAUMANNFLEX	Small-capacity type	Spring steel	ZG
		Stainless steel Standard	LM
		Ultra-flexible	LM-□-1
	Standard/Coupling type	Spring steel	MM-□K
		Stainless steel	MM-□K-S
	Standard/Single-flange Type	Spring steel	MF

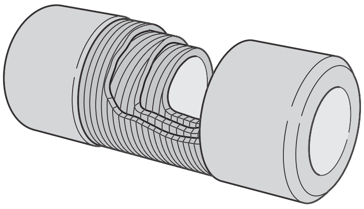
Main Features

Allows angular deflection up to 14°



ZG • LM

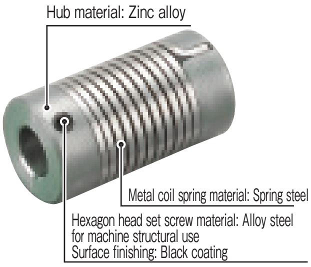
Three-layer coil makes it compact with high torque



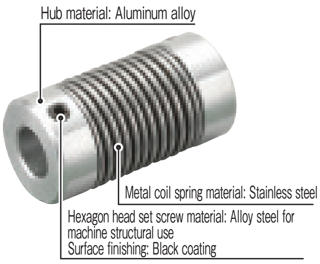
MM • MF

Structure and Materials

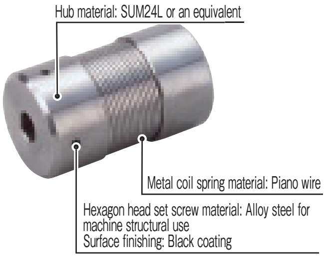
■ BAUMANN MINI FLEX ZG



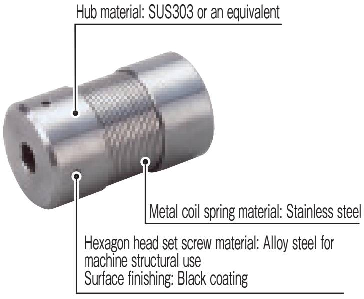
■ BAUMANN MINI FLEX LM



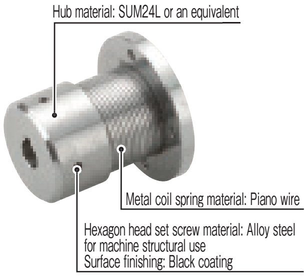
■ BAUMANNFLEX MM-K



■ BAUMANNFLEX MM-K-S



■ BAUMANNFLEX MF-K



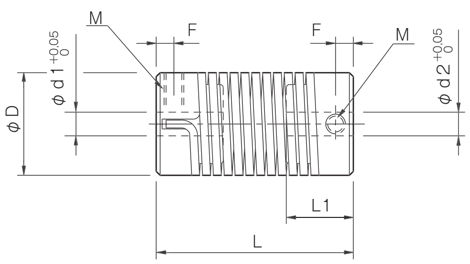
ZG Models

Specifications

Model	Torque		Misalignment			Max. rotation speed [min^{-1}]	Torsional stiffness [N·m/rad]	Moment of inertia [kg·m^2]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Parallel [mm]	Angular [°]	Axial [mm]				
ZG-6	0.15	0.3	0.5	5	± 0.5	3000	0.17	1.95×10^{-7}	0.020
ZG-8	0.5	1.0	1.0	8	± 1.0	3000	0.48	1.02×10^{-6}	0.070
ZG-14	1.5	3.0	1.2	8	± 1.0	3000	1.70	1.15×10^{-5}	0.130

* Max. rotation speed does not take into account dynamic balance.
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions



Unit [mm]

Model	d1 • d2			D	L	L1	F	M
	Pilot bore	Min.	Max.					
ZG-6	2	3	6	12	25	9	2.4	M3
ZG-8	3	4	8	16	35	12.5	3.5	M4
ZG-14	6	7	14	26	50	17	4.5	M5

* Pilot bores are to be drilled into the part.
* Left and right tap positions may be shifted slightly.

Standard Bore Diameter

Model	Standard bore diameter d1, d2												
	3	4	5	6	6.35	7	8	9	9.525	10	11	12	14
ZG-6	●	●	●	●									
ZG-8		●	●	●	●	●	●						
ZG-14						●	●	●	●	●	●	●	●

* Standard bore-drilled products do not have keyways. Keyways may be possible under some conditions. Contact Miki Pulley for details.

How to Place an Order

ZG-14 10-14

Size: ZG-14

Bore diameter: d1 (Small diameter) - d2 (Large diameter)
Blank: Pilot bore

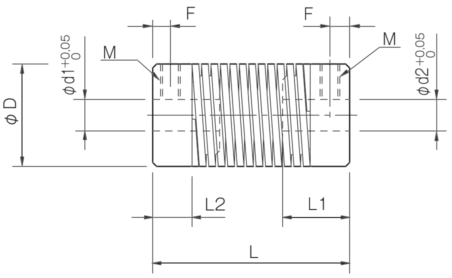
LM Models

Specifications

Model	Torque		Misalignment			Max. rotation speed [min^{-1}]	Torsional stiffness [N·m/rad]	Moment of inertia [kg·m^2]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Parallel [mm]	Angular [°]	Axial [mm]				
LM-6	0.5	1.0	1.0	8	± 1.0	6000	0.77	5.10×10^{-7}	0.020
LM-6-1	0.5	1.0	3.0	14	± 1.5	6000	0.40	7.65×10^{-7}	0.030
LM-9	1.0	2.0	2.5	8	± 1.0	6000	1.55	2.55×10^{-6}	0.050
LM-9-1	1.0	2.0	4.0	14	± 1.5	6000	0.80	3.06×10^{-6}	0.060
LM-14	2.0	4.0	3.0	8	± 1.0	6000	3.10	7.65×10^{-6}	0.090
LM-14-1	2.0	4.0	4.5	14	± 1.5	6000	1.60	9.44×10^{-6}	0.110

* Max. rotation speed does not take into account dynamic balance.
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions



Unit [mm]

Model	d1・d2			D	L	L1	L2	F	M
	Pilot bore	Min.	Max.						
LM-6	4	5	6	14	35	12	6.5	3.5	M4
LM-6-1	4	5	6	14	50	12	6.5	3.5	M4
LM-9	5	6	9	20	40	14	7.5	4	M4
LM-9-1	5	6	9	20	60	14	7.5	4	M4
LM-14	8	9	14	26	50	17	10	5	M5
LM-14-1	8	9	14	26	70	17	10	5	M5

* Pilot bores are to be drilled into the part.
* Left and right tap positions may be shifted slightly.

Standard Bore Diameter

Model	Standard bore diameter d1, d2										
	5	6	6.35	7	8	9	9.525	10	11	12	14
LM-6 (-1)	●	●									
LM-9 (-1)		●	●	●	●	●					
LM-14 (-1)						●	●	●	●	●	●

* Standard bore-drilled products do not have keyways. Keyways may be possible under some conditions. Contact Miki Pulley for details.

How to Place an Order

LM-14-1 12-12

Size

Total length
Blank: Standard part
1: Long type

Bore diameter: d1 (Small diameter)
- d2 (Large diameter)
Blank: Pilot bore

MM Models

Specifications

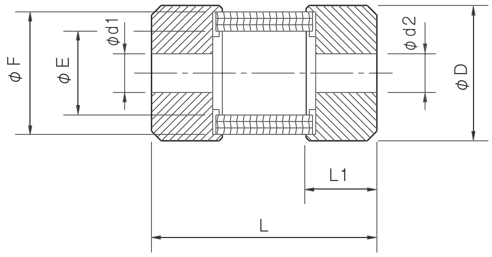
Model	Torque		Misalignment			Max. rotation speed [min⁻¹]	Torsional stiffness [N·m/rad]	Moment of inertia [kg·m²]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Parallel [mm]	Angular [°]	Axial [mm]				
MM-6K	2.5	5	0.3	3	+0.6	20000	143	7.65×10^{-7}	0.03
MM-8K	5	10	0.3	3	+0.8	15000	286.5	4.08×10^{-6}	0.07
MM-12K	10	20	0.4	3	+1.0	12000	573	1.43×10^{-5}	0.14
MM-14K	10	20	0.5	3	+1.0	10000	573	2.47×10^{-5}	0.15
MM-16K	20	40	0.6	3	+1.2	9000	1146	6.12×10^{-5}	0.30
MM-19K	20	40	0.7	3	+1.2	8000	1146	8.42×10^{-5}	0.32
MM-20K	40	80	0.7	3	+1.6	7000	2292	1.99×10^{-4}	0.70
MM-24K	40	80	0.9	3	+1.6	7000	2292	2.63×10^{-4}	0.75
MM-25K	90	180	0.9	3	+2.0	6000	3438	5.66×10^{-4}	1.25
MM-28K	90	180	1.0	3	+2.0	6000	2865	5.77×10^{-4}	1.35
MM-30K	150	300	1.1	3	+2.5	5000	4297.5	1.39×10^{-4}	2.10
MM-35K	220	440	1.2	3	+3.2	4500	6303	3.01×10^{-4}	3.50

Model	Torque		Misalignment			Max. rotation speed [min⁻¹]	Torsional stiffness [N·m/rad]	Moment of inertia [kg·m²]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Parallel [mm]	Angular [°]	Axial [mm]				
MM-6K-S	2.5	5	0.3	3	+0.6	20000	143	7.65×10^{-7}	0.03
MM-8K-S	5	10	0.3	3	+0.8	15000	286.5	4.08×10^{-6}	0.07
MM-12K-S	10	20	0.4	3	+1.0	12000	573	1.43×10^{-5}	0.14
MM-16K-S	20	40	0.6	3	+1.2	9000	1146	6.12×10^{-5}	0.30
MM-20K-S	40	80	0.7	3	+1.6	7000	2292	1.99×10^{-4}	0.70
MM-25K-S	90	180	0.9	3	+2.0	6000	3438	5.66×10^{-4}	1.25

* Max. rotation speed does not take into account dynamic balance.

* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions



Unit [mm]

Model	d1 · d2			D	L	L1	E	F
	Pilot bore	Min.	Max.					
MM-6K	2.5	3	8	16	20	6	11	15.5
MM-8K	3.5	4	8	21	35	11	13	19
MM-12K	5.5	6	12	26	50	16.5	16.5	24
MM-14K	5.5	7	14	30	50	16.5	20.5	28
MM-16K	5.5	10	16	35	65	22	22.4	32
MM-19K	5.5	10	19	38	65	22	26.4	36
MM-20K	5.5	10	20	45	80	27	28	40
MM-24K	5.5	14	24	48	80	27	33	45
MM-25K	5.5	14	25	55	100	33.5	35	50
MM-28K	5.5	14	28	55	100	33.5	37	52
MM-30K	5.5	16	30	65	125	40	40.8	60
MM-35K	5.5	20	35	75	150	48	46	70

Model	d1 · d2			D	L	L1	E	F
	Pilot bore	Min.	Max.					
MM-6K-S	2.5	3	8	17	25	9	11	15.5
MM-8K-S	3.5	4	8	21	35	11	13	19
MM-12K-S	5.5	6	12	26	50	16.5	16.5	24
MM-16K-S	5.5	10	16	35	65	22	22.4	32
MM-20K-S	5.5	10	20	45	80	27	28	40
MM-25K-S	5.5	14	25	55	100	32.5	35	50

*Pilot bores are to be drilled into the part.

How to Place an Order

MM-16K-S 12H-14N

Size

Materials
Blank: Carbon steel and spring steel
-S : Stainless steel

Bore diameter: d1 (Small diameter) - d2 (Large diameter)
Blank: Pilot bore

Bore specifications
Blank: Compliant with the old JIS standards (class 2)
H: Compliant with the new JIS standards
N: Compliant with the new motor standards

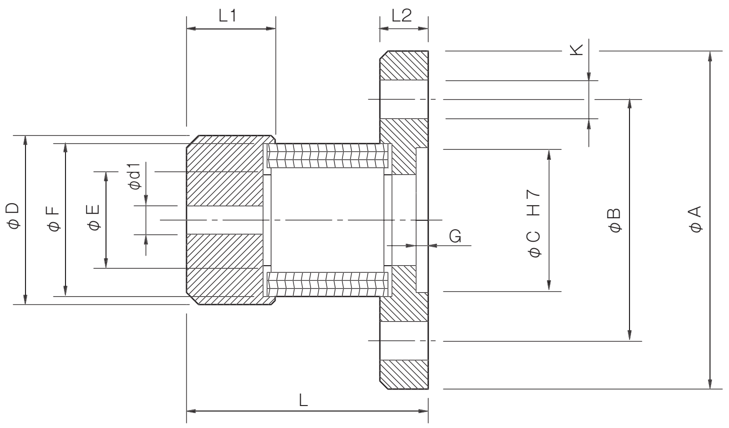
MF Models

Specifications

Model	Torque		Misalignment			Max. rotation speed [min^{-1}]	Torsional stiffness [N·m/rad]	Moment of inertia [$kg·m^2$]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Parallel [mm]	Angular [°]	Axial [mm]				
MF-8K	5	10	0.3	3	+ 0.8	15000	286.5	1.66×10^{-5}	0.1
MF-12K	10	20	0.4	3	+ 1.0	12000	573	3.32×10^{-5}	0.16
MF-16K	20	40	0.6	3	+ 1.2	9000	1146	9.18×10^{-5}	0.31
MF-20K	40	80	0.8	3	+ 1.6	7000	2292	2.12×10^{-4}	0.5
MF-25K	90	180	0.9	3	+ 2.0	6000	3438	5.33×10^{-4}	0.9
MF-30K	150	300	1.1	3	+ 2.5	5000	4297.5	1.35×10^{-3}	1.7
MF-35K	220	440	1.2	3	+ 3.2	4500	6303	2.86×10^{-3}	2.8

* Max. rotation speed does not take into account dynamic balance.
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions



Unit [mm]

Model	d1			D	L	L1	L2	A	B	C	E	F	G	K
	Pilot bore	Min.	Max.											
MF-8K	3.5	4	8	21	30	11	6	42	30	18	13	19	1.5	3- φ 4.8
MF-12K	5.5	6	12	26	40	16.5	6	48	37	22	16.5	24	1.5	3- φ 4.8
MF-16K	5.5	10	16	35	50	22	6.5	58	47	30	22.4	32	1.5	4- φ 4.8
MF-20K	5.5	12	20	45	60	27	7	65	52	35	28	40	1.5	4- φ 4.8
MF-25K	5.5	14	25	55	75	33.5	8.5	75	62	42	35	50	1.5	6- φ 5.8
MF-30K	5.5	16	30	65	95	40	10	90	74.5	47	40.8	60	2.5	4- φ 7.0
MF-35K	5.5	20	35	75	115	48	13	100	84	57	46	70	2.5	6- φ 7.0

* Pilot bores are to be drilled into the part.

How to Place an Order

MF-16K 12H

Bore diameter: d1
Blank: Pilot bore

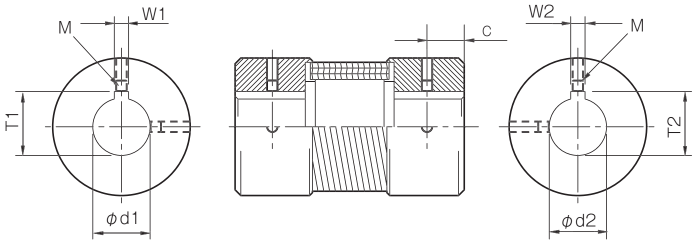
Size

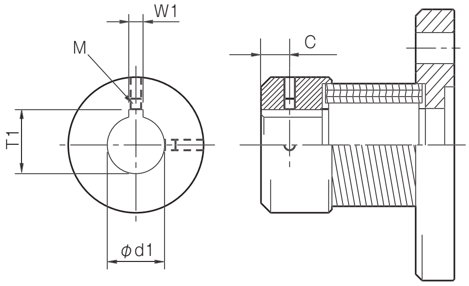
Bore specifications
Blank: Compliant with the old JIS standards (class 2)
H: Compliant with the new JIS standards
N: Compliant with the new motor standards

MM/MF Models

Standard Hole-Drilling Standards

- These standard hole-drilling standards apply to the MM and MF models of the BAUMANNFLEX.
- Positioning precision for keyway milling is determined by sight, so contact Miki Pulley when the keyway requires a positioning precision for a particular hub.
- Set screw positions are not on the same plane.
- The set screws are included with the product.
- Refer to the technical documents at the end of this volume for standard dimensions for bore drilling other than those given here.





Unit [mm]

Models compliant with the old JIS standards (class 2)					Models compliant with the new JIS standards					Models compliant with the new motor standards				
Nominal bore diameter	**Bore diameter [d1・d2]**	**Keyway width [W1・W2]**	**Keyway height [T1・T2]**	**Set screw hole [M]**	**Nominal bore diameter**	**Bore diameter [d1・d2]**	**Keyway width [W1・W2]**	**Keyway height [T1・T2]**	**Set screw hole [M]**	**Nominal bore diameter**	**Bore diameter [d1・d2]**	**Keyway width [W1・W2]**	**Keyway height [T1・T2]**	**Set screw hole [M]**
Tolerance	H7,H8	E9	$^{+0.3}_{0}$	—	Tolerance	H7	H9	$^{+0.3}_{0}$	—	Tolerance	G7	H9	$^{+0.3}_{0}$	—
4	$4^{+0.018}_{0}$	—	—	2-M3	—	—	—	—	—	—	—	—	—	—
5	$5^{+0.018}_{0}$	—	—	2-M3	—	—	—	—	—	—	—	—	—	—
6	$6^{+0.018}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
7	$7^{+0.022}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
8	$8^{+0.022}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
9	$9^{+0.022}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
10	$10^{+0.022}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
11	$11^{+0.018}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
12	$12^{+0.018}_{0}$	$4^{+0.050}_{+0.020}$	13.5	2-M4	12H	$12^{+0.018}_{0}$	$4^{+0.030}_{0}$	13.8	2-M4	—	—	—	—	—
14	$14^{+0.018}_{0}$	$5^{+0.050}_{+0.020}$	16.0	2-M4	14H	$14^{+0.018}_{0}$	$5^{+0.030}_{0}$	16.3	2-M4	14N	$14^{+0.024}_{+0.006}$	$5^{+0.030}_{0}$	16.3	2-M4
15	$15^{+0.018}_{0}$	$5^{+0.050}_{+0.020}$	17.0	2-M4	15H	$15^{+0.018}_{0}$	$5^{+0.030}_{0}$	17.3	2-M4	—	—	—	—	—
16	$16^{+0.018}_{0}$	$5^{+0.050}_{+0.020}$	18.0	2-M4	16H	$16^{+0.018}_{0}$	$5^{+0.030}_{0}$	18.3	2-M4	—	—	—	—	—
17	$17^{+0.018}_{0}$	$5^{+0.050}_{+0.020}$	19.0	2-M4	17H	$17^{+0.018}_{0}$	$5^{+0.030}_{0}$	19.3	2-M4	—	—	—	—	—
18	$18^{+0.018}_{0}$	$5^{+0.050}_{+0.020}$	20.0	2-M4	18H	$18^{+0.018}_{0}$	$6^{+0.030}_{0}$	20.8	2-M5	—	—	—	—	—
19	$19^{+0.021}_{0}$	$5^{+0.050}_{+0.020}$	21.0	2-M4	19H	$19^{+0.021}_{0}$	$6^{+0.030}_{0}$	21.8	2-M5	19N	$19^{+0.028}_{+0.007}$	$6^{+0.030}_{0}$	21.8	2-M5
20	$20^{+0.021}_{0}$	$5^{+0.050}_{+0.020}$	22.0	2-M4	20H	$20^{+0.021}_{0}$	$6^{+0.030}_{0}$	22.8	2-M5	—	—	—	—	—
22	$22^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	25.0	2-M6	22H	$22^{+0.021}_{0}$	$6^{+0.030}_{0}$	24.8	2-M5	—	—	—	—	—
24	$24^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	27.0	2-M6	24H	$24^{+0.021}_{0}$	$8^{+0.036}_{0}$	27.3	2-M6	24N	$24^{+0.028}_{+0.007}$	$8^{+0.036}_{0}$	27.3	2-M6
25	$25^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	28.0	2-M6	25H	$25^{+0.021}_{0}$	$8^{+0.036}_{0}$	28.3	2-M6	—	—	—	—	—
28	$28^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	31.0	2-M6	28H	$28^{+0.021}_{0}$	$8^{+0.036}_{0}$	31.3	2-M6	28N	$28^{+0.028}_{+0.007}$	$8^{+0.036}_{0}$	31.3	2-M6
30	$30^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	33.0	2-M6	30H	$30^{+0.021}_{0}$	$8^{+0.036}_{0}$	33.3	2-M6	—	—	—	—	—
32	$32^{+0.025}_{0}$	$10^{+0.061}_{+0.025}$	35.5	2-M8	32H	$32^{+0.025}_{0}$	$10^{+0.036}_{0}$	35.3	2-M8	—	—	—	—	—
35	$35^{+0.025}_{0}$	$10^{+0.061}_{+0.025}$	38.5	2-M8	35H	$35^{+0.025}_{0}$	$10^{+0.036}_{0}$	38.3	2-M8	—	—	—	—	—

* The ø11 or below requirement under the new JIS standards and ø11 requirement for the new motor standards are the same as the old JIS standards (class 2)

Distance from Set Screw Edge

Coupling size	6	8	12	14	16	19	20	24	25	28	30	35
Distance from set screw edge C [mm]	3	5	7	7	10	10	10	10	15	15	15	15

ZG/LM/MM/MF Models

Items Checked for Design Purposes

Precautions for Handling

(1) The operating temperature range is -40℃ to 120℃ for ZG and LM models and -30℃ to 100℃ for MM and MF models. Note that the MM-K and MF-K types are not waterproof and cannot be used outdoors.

(2) To prevent friction during operation, the MM and MF models are lightly lubricated with oil on their coil spring components. Do not clean them with degreasers.
Note that when processing the inner diameter of pilot-bore products, cutting oil (particularly if water soluble) should be kept away from the coil spring component.

(3) To get full coupling performance, mount couplings so that differences between coupling centers during operation are within the misalignment shown in the specifications table.
The coupling should be mounted, however, so that the difference between centers is 50% or less of that misalignment value if rotation speed exceeds 2000 min^{-1}.

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

(5) Be careful not to place more bending, tensile, or compressive load on the coupling than necessary when inserting a shaft into a coupling.

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

Size of hex-socket-head set screw	M3	M4	M5	M6	M8
Tightening torque [N·m]	0.7	1.7	3.6	6.0	14.2

Selection Procedures

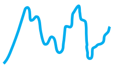
(1) Find the torque, Ta, applied to the coupling using the output capacity, P, of the driver and the usage rotation speed, n.

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

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

$$Td\,[\mathrm{N{\cdot}m}] = Ta \times K1 \times K2 \times K3$$

■ Service factor based on load property: K1

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

■ Service factor based on operating time: K2

Hrs./day	～8	～16	～24
K2	1.0	1.12	1.25

■ Service factor based on starting/braking frequency: K3

Times/hr.	～10	～30	～60	～120	～240	Over 240
K3	1.0	1.1	1.3	1.5	2.0	*

* Items marked with asterisks require consultations.

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

$$Tn \geqq Td$$

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

$$Tm \geqq Ts$$

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

Pin Bushing Couplings

PARAFLEX

- High stiffness
- High flexibility
- High damping
- Easy to mount and remove
- RoHS

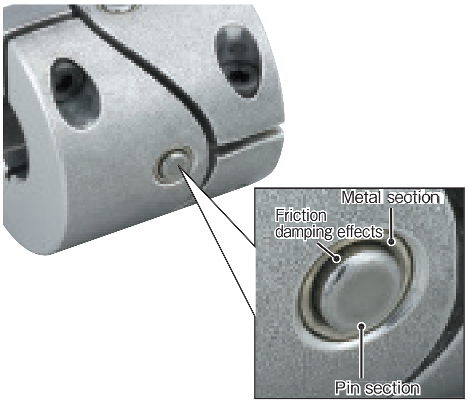
Max. nominal torque [N·m]	25
Bore ranges [mm]	ϕ 3 ～ 22
Operating temperature [℃]	−30 ～ 100
Backlash	Extremely small size
Driver	Servo motor, stepper motor, induction motor
Application	Chip mounters, electric discharge machines, automated teller machines, winders

Pin bushing Couplings That Keep Shaft Reaction Force from Mounting Misalignment Extremely Low

Pin/bushing style couplings that use aluminum alloy as their primary material. This system makes shaft reaction force due to mounting misalignment extremely small. There is also a damping effect from sliding at the friction surface between the pin and dry metal.

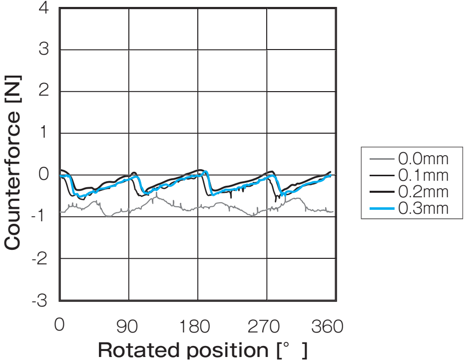
Main Features

Friction Damping Effect of Pin and Metal Bushing



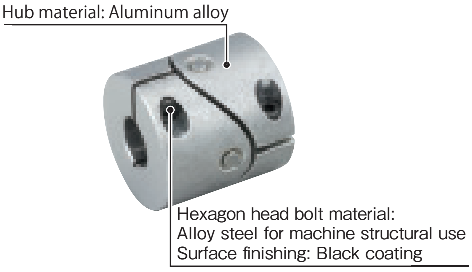
Counterforce from Parallel Misalignment and Angular Deflection is Extremely Small

■ CPU-36-A: Counterforce due to parallel misalignment



Structure and Materials

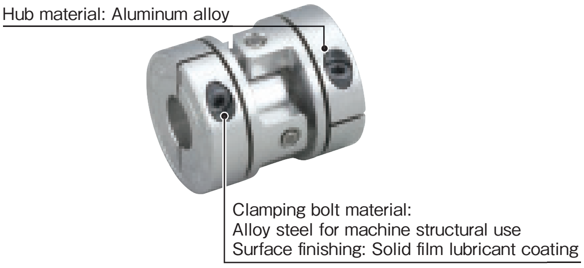
■ CPE



Hub material: Aluminum alloy

Hexagon head bolt material:
Alloy steel for machine structural use
Surface finishing: Black coating

■ CPU



Hub material: Aluminum alloy

Clamping bolt material:
Alloy steel for machine structural use
Surface finishing: Solid film lubricant coating

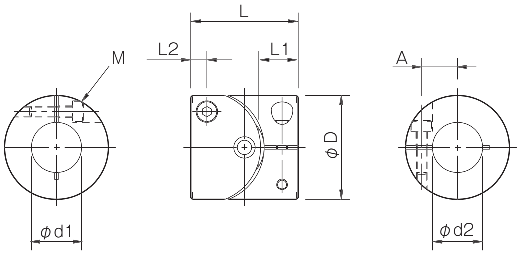
CPE Models

Specifications

Model	Torque		Misalignment		Max. rotation speed [min^{-1}]	Torsional stiffness [N·m/rad]	Moment of inertia [kg·m^2]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Parallel [mm]	Angular [°]				
CPE-19	0.7	1.4	0.2	1	6000	500	0.69×10^{-6}	0.015
CPE-29	2	4	0.2	1	6000	700	5.80×10^{-6}	0.050
CPE-39	5	10	0.2	1	6000	1900	18.50×10^{-6}	0.080

* Torques for CPE-19 are values when the bore diameter is at least equal to 4 mm.
* Max. rotation speed does not take into account dynamic balance.
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions



Unit [mm]

Model	d1 • d2		D	L	L1	L2	M	A
	Min.	Max.						
CPE-19	3	8	19	19.4	6	3	M2.5	6
CPE-29	6	14	29	30	9.5	4.5	M3	10
CPE-39	8	20	39	40	12.5	6	M4	14

* Insert the shaft to at least the dimension L1. (Note that the shaft cannot go all the way through.)
* The recommended processing tolerance for paired mounting shafts is the h7 class.

Standard Bore Diameter

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

* Torque on the CPE-19 with a bore diameter of 3 mm is limited by holding force in the shaft coupling component, so nominal torque is 0.4 N·m and maximum torque is 0.8 N·m.
* Bore diameters between the minimum and maximums shown in the dimensions table are compatible, but bore diameters other than those shown in the above table require a separate bore drilling charge.

How to Place an Order

CPE-19-6B-6B

Size

Bore diameter: d1 (Small diameter) - d2 (Large diameter)
B: Clamping hub

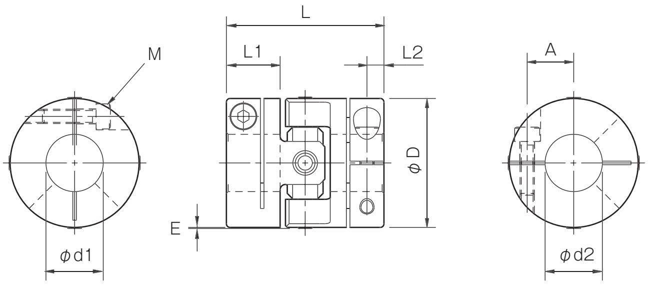
CPU Models

Specifications

Model	Rated torque [N·m]	Misalignment		Max. rotation speed [min^{-1}]	Torsional stiffness [N·m/rad]	Moment of inertia [$kg·m^2$]	Mass [kg]
		Parallel [mm]	Angular [°]				
CPU-26-A	2.2	0.3	4	4000	600	3.57×10^{-6}	0.04
CPU-36-A	10	0.4	4	3500	1350	1.64×10^{-5}	0.09
CPU-46-A	25	0.5	4	3000	1650	5.33×10^{-5}	0.19

* Max. rotation speed does not take into account dynamic balance.
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions



Unit [mm]

Model	d1 • d2		D	E	L	L1	L2	M	A
	Min.	Max.							
CPU-26-A	6	12	26	0.3	36	12	4	M3	9
CPU-36-A	8	18	36	0.3	44	15	4.75	M4	13
CPU-46-A	10	22	46	0.3	54	18	6.5	M5	16

* Insert the shaft to at least the dimension L1. (Note that the shaft cannot go all the way through.)
* The recommended processing tolerance for paired mounting shafts is the h7 class.

Standard Bore Diameter

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

* Bore diameters between the minimum and maximums shown in the dimensions table are compatible, but bore diameters other than those shown in the above table require a separate bore drilling charge.

How to Place an Order

CPU-36-A-12B-12B

Size

Type A: Aluminum type

Bore diameter: d1 (Small diameter) - d2 (Large diameter)
B: Clamping hub

Items Checked for Design Purposes

Precautions for Handling

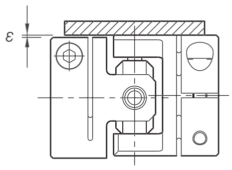
(1) Couplings are designed for use within an operating temperature range of -30℃ to 100℃ . PARAFLEX couplings are water and oil resistant, but should not be used in extreme atmospheres.

(2) Never tighten the clamping bolt (hex-socket-head bolt) prior to inserting the shaft into the coupling.

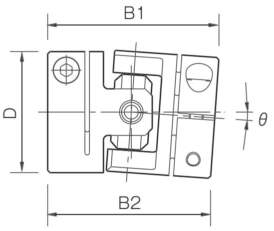
(3) Remove any rust, dust, oil or the like from the inner diameter surfaces of the shaft and coupling. Be particularly careful to degrease or otherwise process to fully remove any grease, oil, or the like that is molybdenum disulfide based or contains extreme-pressure additives that causes fundamental changes in coefficients of friction.

(4) Mount couplings after checking, by the following sort of method, that differences between coupling centers during operation are within the misalignment shown in the specifications table. CPU models allow angular deflection of up to 4° at this time, but it should be kept within 1.5° if it is important that the coupling be isokinetic. The angular velocity ratio at an angular deflection of 1.5° is 1.0007.

■ Parallel misalignment



■ Angular deflection



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

(5) PARAFLEX couplings are not structurally able to absorb axial displacement, so do not place tensile or compressive loads on them during use.

(6) The length of insertion of the shaft into the coupling should be the dimension L1 on the dimensions table. The shaft cannot go all the way through.

(7) Tighten clamping bolts (hex-socket-head bolt) to the tightening torques shown below using a calibrated torque wrench.

Model	CPE-19	CPE-29	CPE-39
Bolt with hex socket head for clamping	M2.5	M3	M4
Tightening torque [N·m]	1.0	1.5	3.4

Model	CPU-26-A	CPU-36-A	CPU-46-A
Clamping bolts	M3	M4	M5
Tightening torque [N·m]	1.5	3.4	7.0

(8)Do not use any clamping bolt (hex-socket-head bolt) other than those specified by Miki Pulley. Do not apply oil, grease, fixatives (adhesives) or the like to the clamping bolt (hex-socket-head bolt).

Selection Procedures

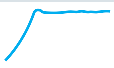
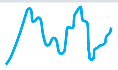
(1) Find the torque, Ta, applied to the coupling using the output capacity, P, of the driver and the usage rotation speed, n.

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

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

$$\mathrm{Td\,[N{\cdot}m]} = \mathrm{Ta} \times \mathrm{K1} \times \mathrm{K2} \times \mathrm{K3} \times \mathrm{K4} \times \mathrm{K5}$$

■ Service factor based on load property: K1

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

■ Service factor based on amount of parallel misalignment: K2

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

■ Service factor based on amount of angular deflection: K3

Amount of angular deflection [°]	0	0.5	1.0
K3	1.0	1.06	1.12

■ Service factor based on operating temperature: K4

Atmospheric temperature [℃]	60 or below	80 or below	100 or below
K4	1.0	1.4	1.8

■ Service factor based on rotation speed: K5

Max. rotation speed $[\mathrm{min}^{-1}]$	1500 or below	2500 or below	2500 or below	3000 or below	3500 or below	4000 or below	5000 or below	6000 or below
K5	1.0	1.3	1.7	2.0	2.4	2.7	3.3	4.0

(3) Select the size so that the nominal torque (CPE models) or rated torque (CPU models) Tn is at least equal to the corrected torque, Td.

$$\mathrm{Tn} \geqq \mathrm{Td}$$

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

$$\mathrm{Tm} \geqq \mathrm{Ts} \times \mathrm{K4}$$

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

Link Couplings

SCHMIDT

High parallel misalignment

For high output

RoHS

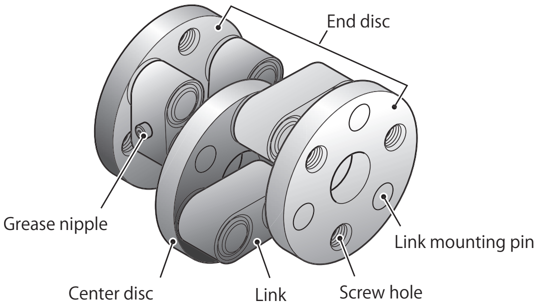
Model	NSS	DL
Max. nominal torque [N·m]	7850	2310
Operating temperature [℃]	－10 ～ 60	－10 ～ 60
Backlash	Extremely small size	Extremely small size
Max. displacement (parallel) [mm]	183 (linear)	4
Driver	Induction motor	
Application	Roll formers, production equipment for sanitary goods	

Compact Couplings That Transmit Power with Different Shaft Centers

Power transmission with different shaft centers, constructed with spline shafts or the like, efficiently transmit power in a compact form factor. The NSS models not only transmit power with different shaft centers, they can also translate shafts over a wide range while rotating.

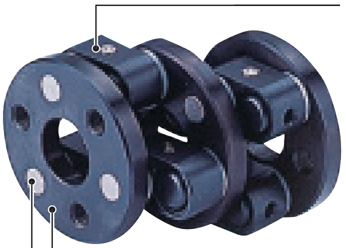
Operating Principles

SCHMIDT couplings employ different shaft centers and the crank motion of a link.
Power input at one end disc is transmitted to the other end disc via links and center disc. This eliminates the slight frictional loss of bearings and reliably transmits the drive-side energy to the driven side together with rotation speed and torque.

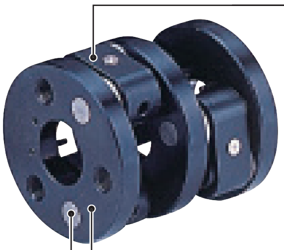


Structure and Materials

■ NSS



■ DL



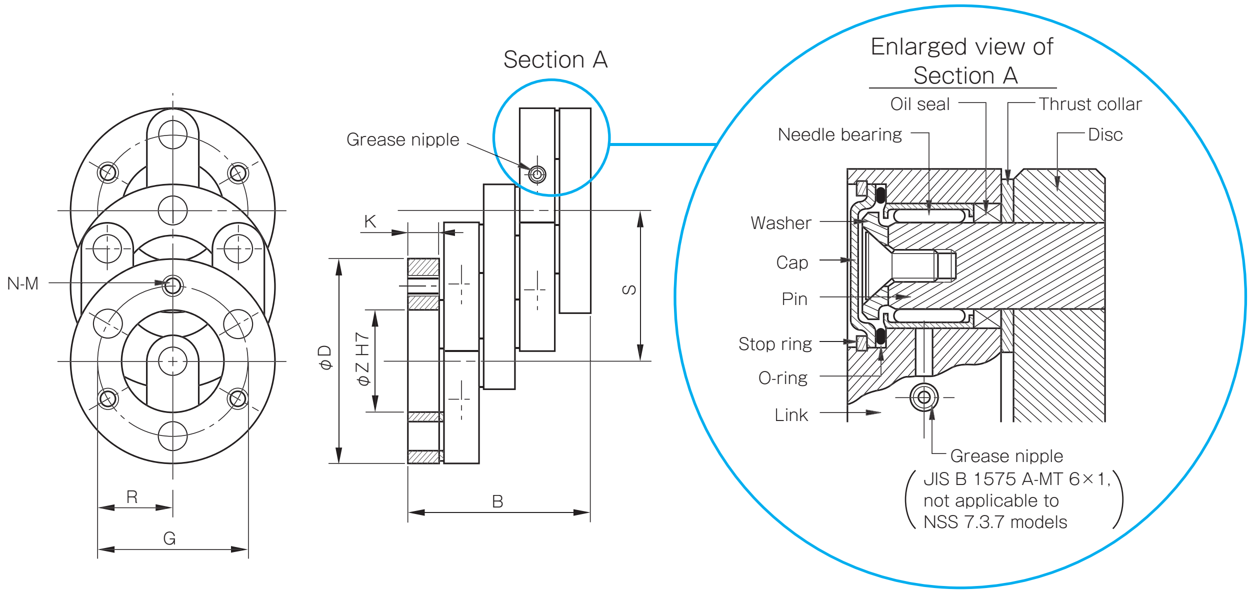
NSS Models

Specifications

Model	No. of links	Parallel misalignment			Torque		Max. rotation speed [min⁻¹]	Bearing basic load [N]	Pin pitch = Radius of the circle [m]	Moment of inertia [kg·m²]	Mass [kg]
		Min. [mm] S × 0.25	Max. [mm] S × 0.95	Linear Max. [mm]	Nominal [N·m]	Max. [N·m]		C	R		
NSS 7.3.7	3 × 2	9	34	65	49	137	3000	3870	0.024	9.03×10^{-4}	1.3
NSS 7.7.9	3 × 2	18	66	128	68	196	2500	3870	0.035	2.69×10^{-3}	1.9
NSS 10.9.12	3 × 2	23	85	165	196	600	2000	8920	0.045	1.15×10^{-2}	4.9
NSS 13.9.14	3 × 2	23	85	165	350	1060	1800	14120	0.050	2.80×10^{-2}	10.4
NSS 16.10.16	3 × 2	25	95	183	640	1850	1500	21570	0.057	5.80×10^{-2}	15.7
NSS 20.9.20	3 × 2	23	85	165	1180	3470	1000	30890	0.075	1.61×10^{-1}	27
NSS 20.9.20/4	4 × 2	23	85	165	1370	4170	600	30890	0.075	1.80×10^{-1}	30
NSS 20.9.23/5	5 × 2	23	85	165	2060	6280	500	30890	0.090	3.08×10^{-1}	35
NSS 20.9.25/6	6 × 2	23	85	165	2750	8340	460	30890	0.100	4.48×10^{-1}	43
NSS 20.9.33/8	8 × 2	23	85	165	5200	15700	300	30890	0.140	1.19	59
NSS 20.9.39/10	10 × 2	23	85	165	7850	23500	250	30890	0.170	2.25	79

* If the number of links is not 3 × 2, the part must be made to order.
* Max. rotation speed does not take into account dynamic balance.
* Select NSS model SCHMIDT couplings as guided by the design checklist on P.112-115, with due consideration to service life.

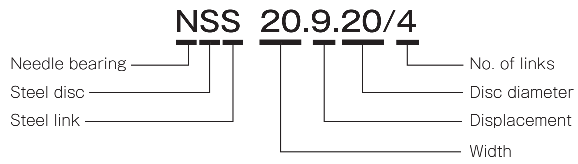
Dimensions



Unit [mm]

Model	D	B	S	Z	G	N	M	K
NSS 7.3.7	70	74	36	25	48	3	M10	10
NSS 7.7.9	92	74	70	45	70	3	M10	10
NSS 10.9.12	120	101	90	50	90	3	M12	15
NSS 13.9.14	140	134	90	55	100	3	M16	22
NSS 16.10.16	160	155	100	60	115	3	M16	25
NSS 20.9.20	200	196	90	80	150	3	M20	30
NSS 20.9.20/4	200	196	90	80	150	4	M20	30
NSS 20.9.23/5	230	196	90	120	180	5	M20	30
NSS 20.9.25/6	250	196	90	120	200	6	M20	30
NSS 20.9.33/8	330	196	90	210	280	8	M20	30
NSS 20.9.39/10	390	196	90	250	340	10	M20	30

How to Place an Order



NSS Models

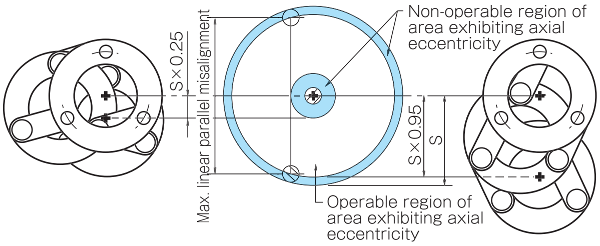
Items Checked for Design Purposes

Precautions for Handling

(1) Couplings are designed for use within an operating temperature range of -10℃ to 60℃ . NSS model SCHMIDT couplings are not waterproof. Do not use them outdoors.

(2) The discs are all connected by bearings and can move freely, so be alert to injury during transport and handle so that undue force is not applied to the product.

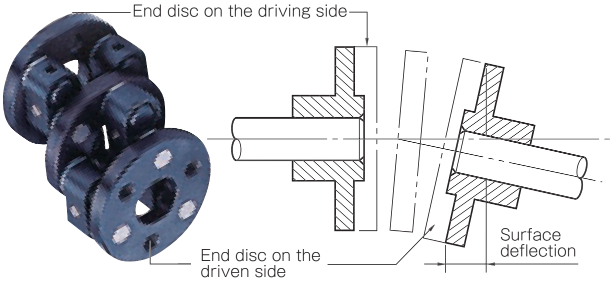
(3) Use in a manner that results in the parallel misalignment of both shafts being in the range S × 0.25 to S × 0.95.



Amount of parallel misalignment of both shafts

Model	Parallel misalignment [mm]		
	S × 0.25	S × 0.95	Max. linear
NSS 7.3.7	9	34	65
NSS 7.7.9	18	66	128
NSS 10.9.12	23	85	165
NSS 13.9.14	23	85	165
NSS 16.10.16	25	95	183
NSS 20.9.20	23	85	165
NSS 20.9.20/4	23	85	165
NSS 20.9.23/5	23	85	165
NSS 20.9.25/6	23	85	165
NSS 20.9.33/8	23	85	165
NSS 20.9.39/10	23	85	165

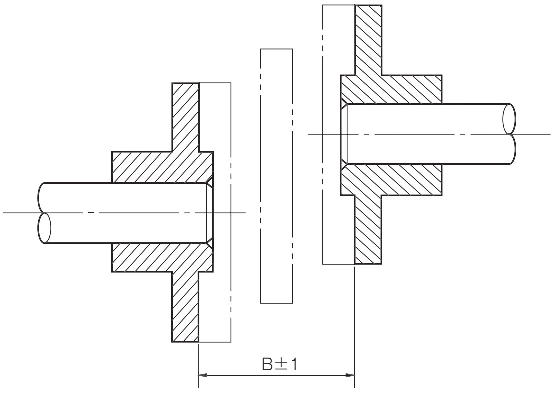
(4) Make the driving shaft and driven shaft parallel. Adjust the mounting angle misalignment of the two coupling shafts so that the coupling surface deflection is at or below the values of the table below after mounting and during operation. If surface deflection exceeds the allowable value, the product will break down in a very short period of time.



Allowable surface deflection

Model	Allowable surface deflection [mm]
NSS 7.3.7	0.15
NSS 7.7.9	0.15
NSS 10.9.12	0.2
NSS 13.9.14	0.2
NSS 16.10.16	0.2
NSS 20.9.20	0.2
NSS 20.9.20/4	0.2
NSS 20.9.23/5	0.3
NSS 20.9.25/6	0.4
NSS 20.9.33/8	0.5
NSS 20.9.39/10	0.6

(5) When mounting a coupling, design and mount it so that the axial length during use is standard dimension B ± 1 mm.



(6) Design the device so that no bending or thrust loads act on the coupling. Avoid using these couplings in applications that install them vertically or obliquely.

(7) The grease for lubricating the bearings should be type 1-1 or 1-2 JIS K2220 cup grease or the equivalent.

(8) Mount a protective cover on the rotating part. Be careful not to pinch your hand between the discs and links when mounting.

(9) When mounting heavy items, be sure to use an eye bolt. Eye bolts can be used by securing them to both end discs, but when they are wider than the end disc, the link components and eye bolt can come into contact and suffer damage when hanging, so consider the mounting position when choosing an eye bolt size.

Selection Procedures

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

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

(2) When a service factor based on load property, K, shown on the table below is 1.5, select the model from the quick reference table.

Service factor based on load property: K

When mounted between shafts with virtually no shock	1.0 ~ 1.5
When mounted between shafts with severe shock (including when shaft displacement speed is fast)	1.5 ~ 2.0
When mounted in unbalanced machinery that shakes the entire coupling	2.0 ~ 2.5

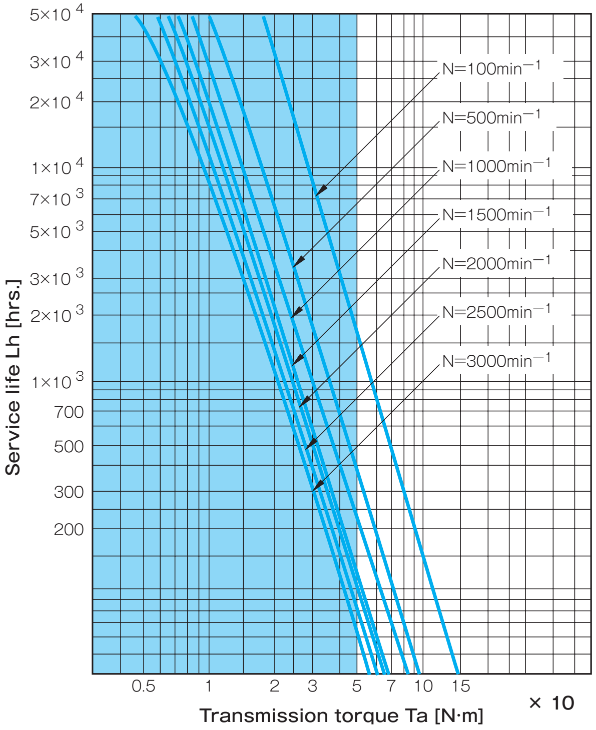
If selecting a model using conditions other than those of the quick reference table, calculate the service life using the equation below.

$$p = \frac{4 \times \text{Ta}}{\text{N} \times \text{R}}$$

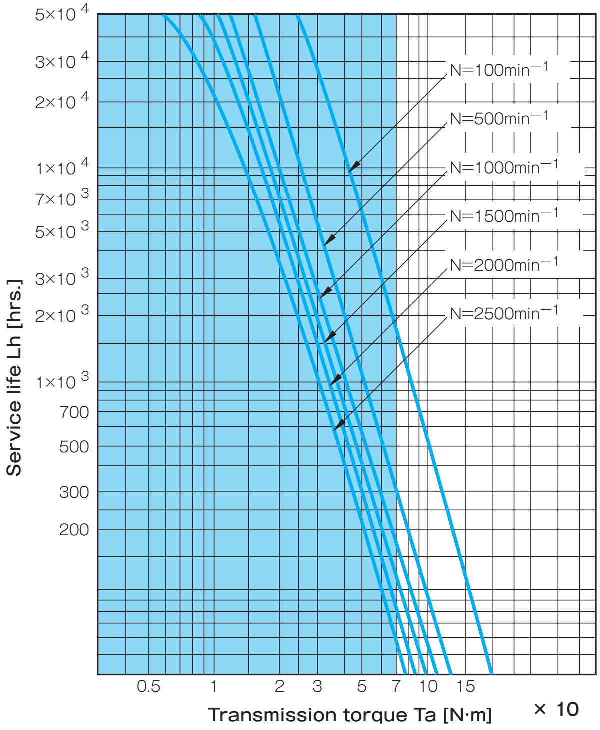
$$\text{Lh} = \frac{16666}{\text{n}} \left(\frac{\text{C}}{\text{p} \cdot \text{K}} \right)^{\frac{10}{3}}$$

P: Output capacity of driver [kW]
p: Bearing load [N]
R: Radius of pitch circle of pin [m]
Ta: Transmission torque [N·m]
N: Total number of links (on a standard product, 3x2=6)
Lh: Service life [h]
n: Usage rotation speed [min⁻¹]
C: Basic load capacity of bearing [N]
K: Load coefficient

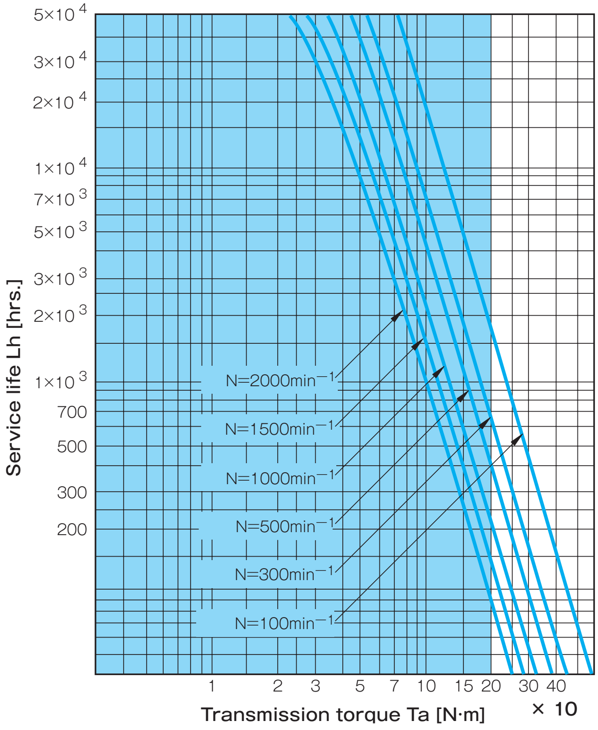
Model NSS 7.3.7



Model NSS 7.7.9



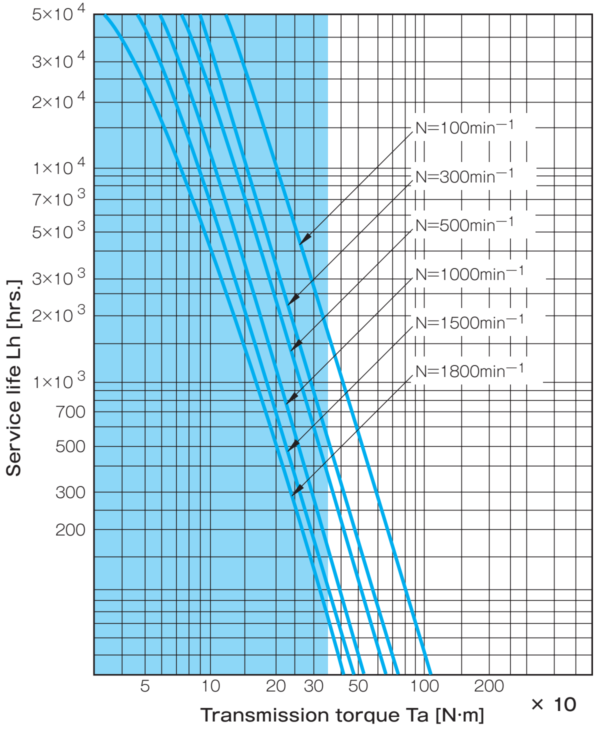
Model NSS 10.9.12



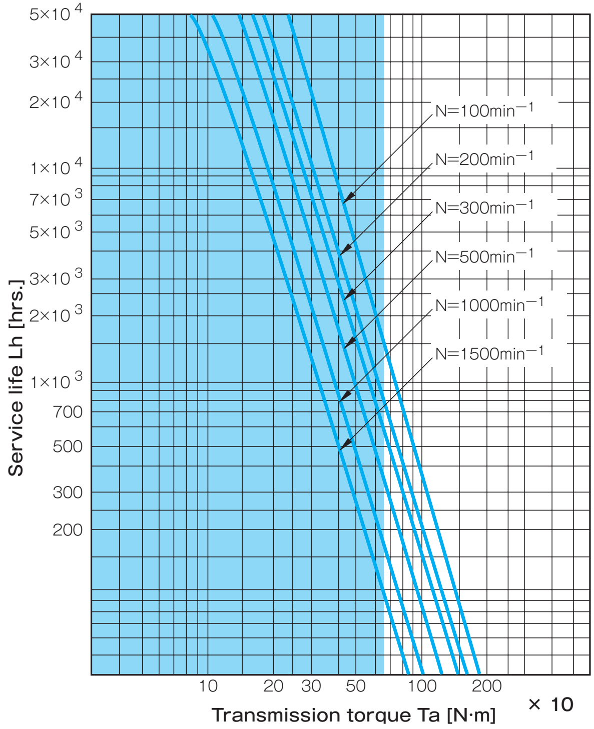
* The table considers safety factors (service factor based on load property: K = 1.5). Use in the range of the 🟦 part in the graph.

NSS Models

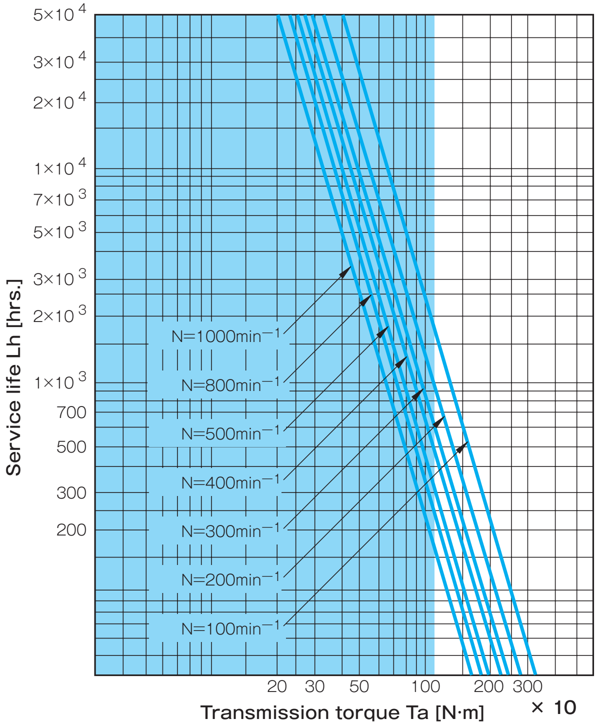
■ Model NSS 13.9.14



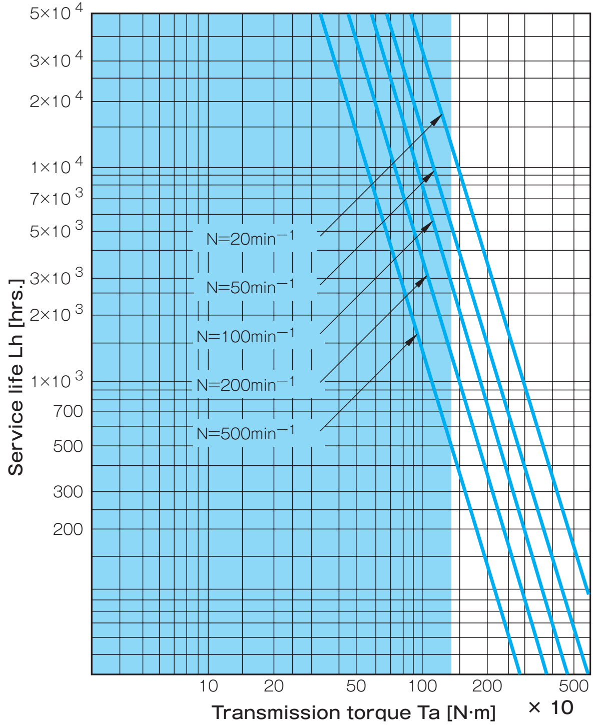
■ Model NSS 16.10.16



■ Model NSS 20.9.20

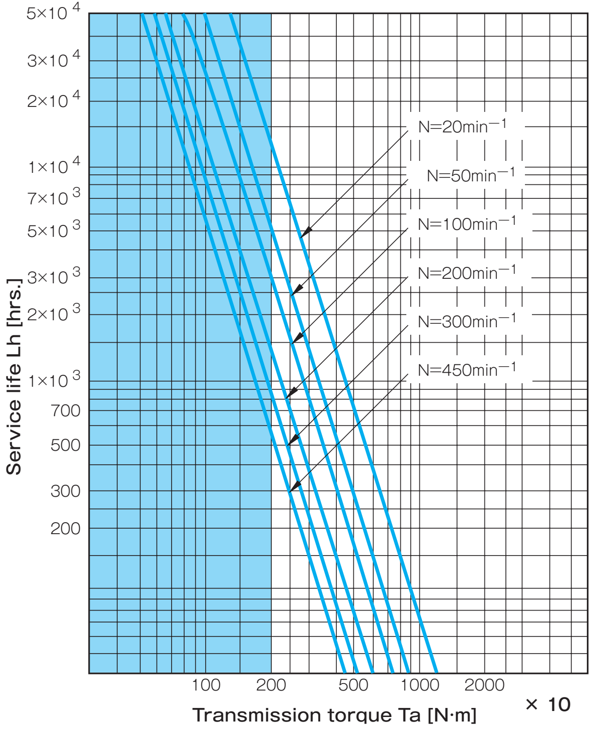


■ Model NSS 20.9.20/4

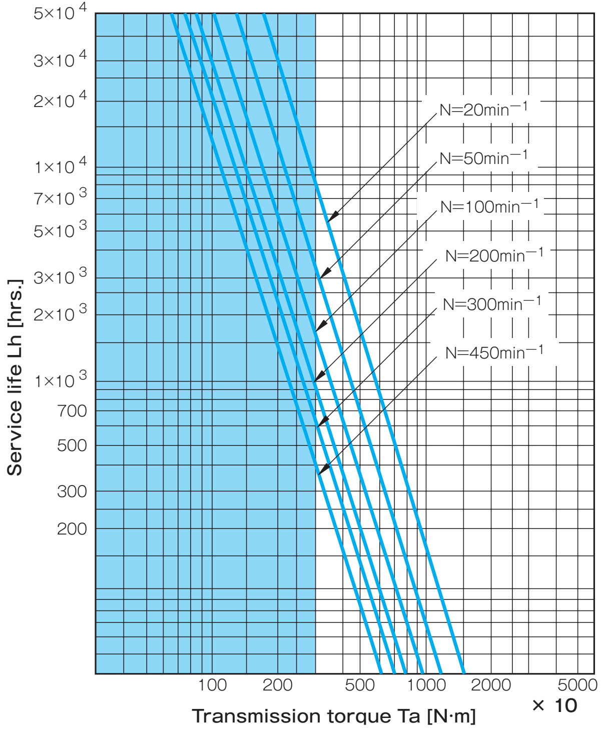


* The table considers safety factors (service factor based on load property: K = 1.5). Use in the range of the 🟦 part in the graph.

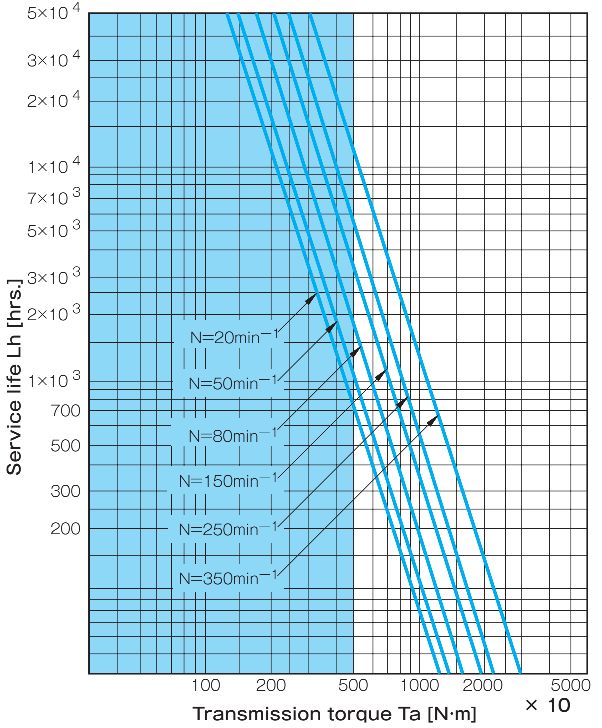
■ Model NSS 20.9.23/5



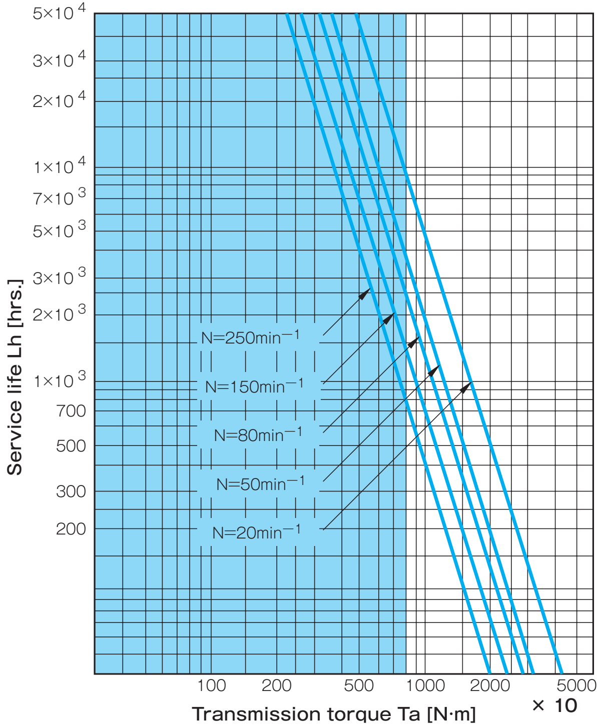
■ Model NSS 20.9.25/6



■ Model NSS 20.9.33/8



■ Model NSS 20.9.39/10



* The table considers safety factors (Service factor based on load property: K = 1.5). Use in the range of the 🟦 part in the graph.

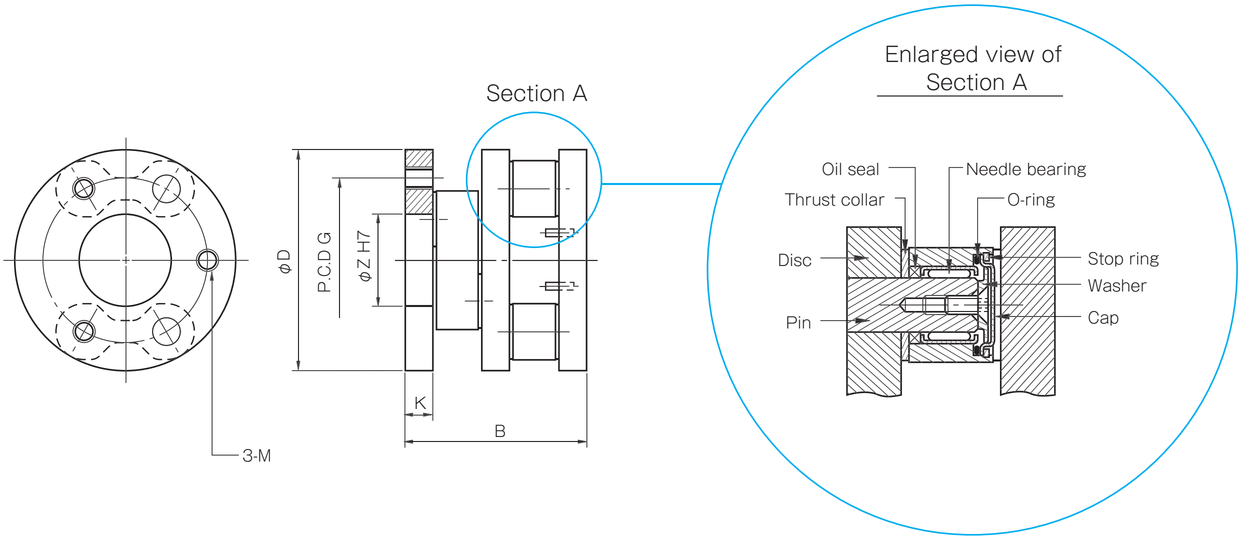
DL Models

Specifications

Model	No. of links	Parallel [mm]	Rated torque [N·m]	Max. rotation speed [min⁻¹]	Moment of inertia [kg·m²]	Mass [kg]
DL 7.7-02	2 × 2	± 2	93	2000	7.75×10^{-4}	1.1
DL 7.9-03	2 × 2	± 3	135	1800	2.30×10^{-3}	1.7
DL 10.12-04	2 × 2	± 4	402	1600	9.98×10^{-3}	4.4
DL 13.14-04	2 × 2	± 4	706	1400	2.60×10^{-2}	9.1
DL 16.16-04	2 × 2	± 4	1230	1200	5.10×10^{-2}	13.9
DL 20.20-04	2 × 2	± 4	2310	1000	1.44×10^{-1}	24.1

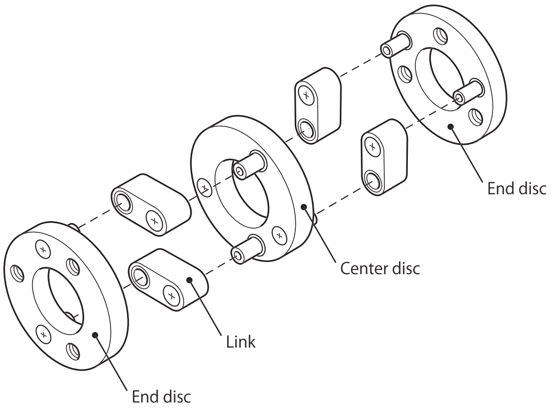
* Max. rotation speed does not take into account dynamic balance.

Dimensions

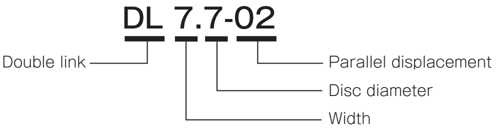


Unit [mm]

Model	D	B	Z	G	M	K
DL 7.7-02	70	74	25	48	M10	10
DL 7.9-03	92	74	45	70	M10	10
DL 10.12-04	120	101	50	90	M12	15
DL 13.14-04	140	134	55	100	M16	22
DL 16.16-04	160	155	60	115	M16	25
DL 20.20-04	200	196	80	150	M20	30



How to Place an Order



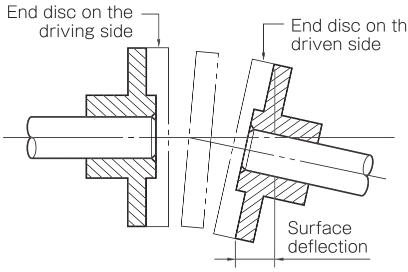
Items Checked for Design Purposes

Precautions for Handling

(1) Couplings are designed for use within an operating temperature range of -10 ℃ to 60 ℃ . DL model SCHMIDT couplings are not waterproof. Do not use them outdoors.

(2) The discs are all connected by bearings and can move freely, so be alert to injury during transport and handle so that undue force is not applied to the product.

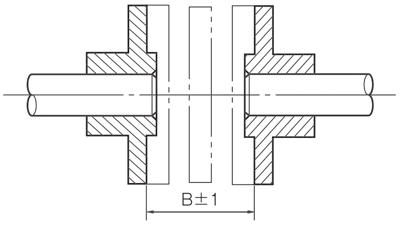
(3) Make the driving shaft and driven shaft parallel. Adjust the mounting angle misalignment of the two coupling shafts so that the coupling surface deflection is at or below the values of the table below after mounting and during operation.



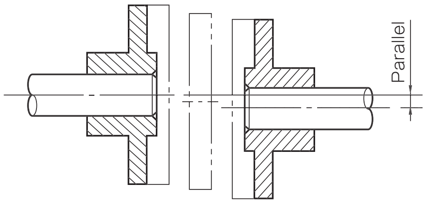
■ Allowable surface deflection

Model	Allowable surface deflection [mm]
DL 7.7-02	0.15
DL 7.9-03	0.15
DL 10.12-04	0.2
DL 13.14-04	0.2
DL 16.16-04	0.2
DL 20.20-04	0.2

(4) When mounting a coupling, design and mount it so that the axial length during use is standard dimension B ± 1 mm.



(5) Adjust so that driving shaft and driven shaft parallel misalignment is within the following allowable values after mounting and during operation.



■ Allowable parallel misalignment

Model	Allowable parallel misalignment [mm]
DL 7.7-02	±2
DL 7.9-03	±3
DL 10.12-04	±4
DL 13.14-04	±4
DL 16.16-04	±4
DL 20.20-04	±4

(6) Mount the couplings so they are not subject to axial loads. Avoid using these couplings in applications that install them vertically or obliquely.

Selection Procedures

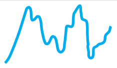
(1) Find the torque, Ta, applied to the coupling using the output capacity P of the motor and the usage rotation speed n.

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

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

$$Td=Ta\times K1\times K2\times K3$$

■ Service factor based on load property: K1

Load properties	Constant 	Vibrations: Small 	Vibrations: Medium 	Vibrations: Large 
K1	1.0	1.0 ～ 1.5	1.5 ～ 2.0	2.0 ～ 2.5

■ Service factor based on service life: K2

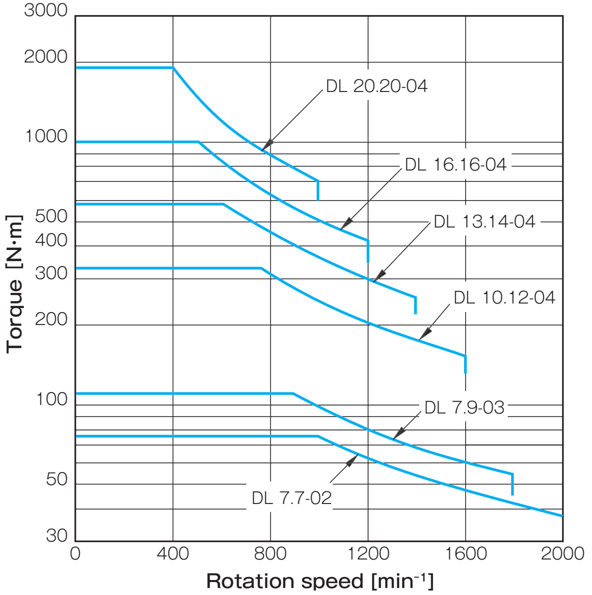
Required service life [h]	1,000	5,000	10,000	15,000	20,000	25,000	30,000	40,000	50,000
K2	1.0	1.0	1.05	1.1	1.2	1.3	1.4	1.5	1.6

■ Service factor based on amount of parallel misalignment: K3

Parallel misalignment [mm]	0	0.5	1	1.5	2	2.5	3	3.5	4
K3	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8

(3) Find Td, and then select the DL model that can be used in the zone under the rated torque diagram shown for each type.

■ Diagram for rated torque and rotation speed



Jaw Couplings

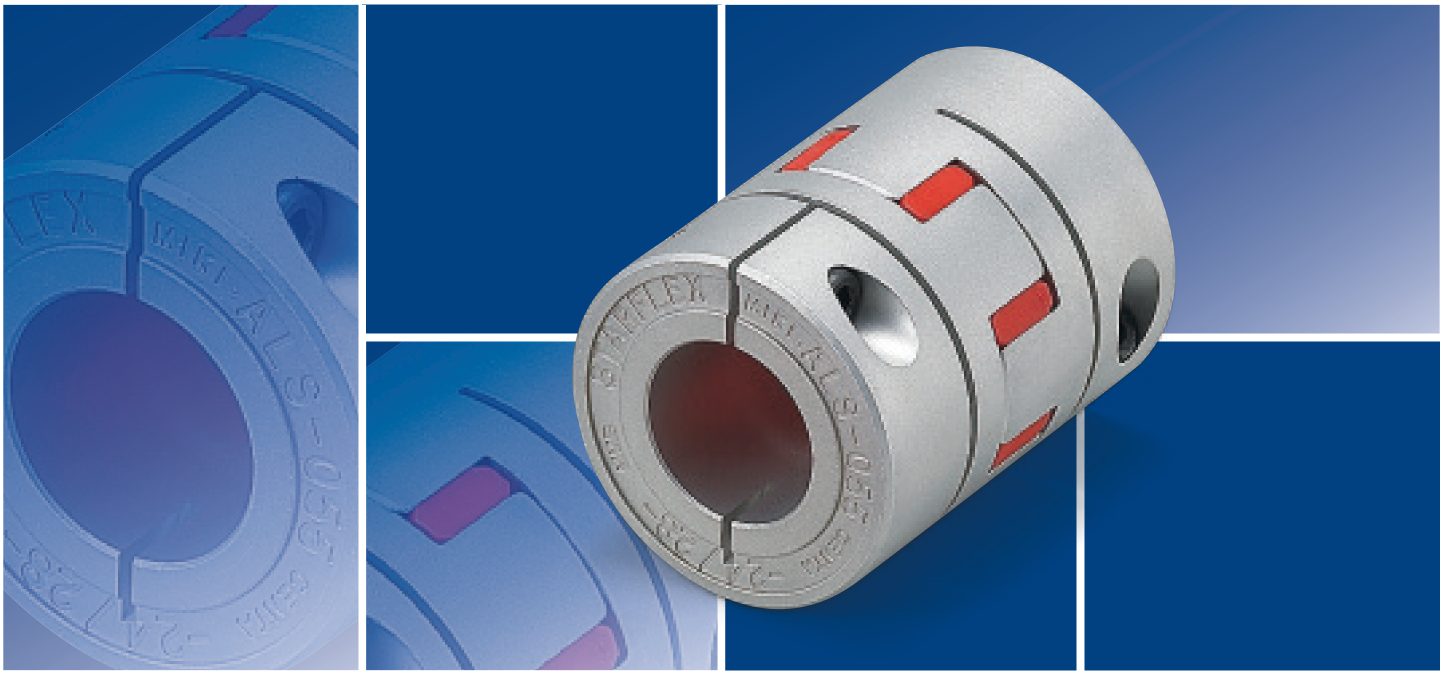
MIKI PULLEY STARFLEX

- High damping
- High flexibility
- High torque
- Easy to mount and remove
- Wide range of variations
- RoHS

Application	Machine tools, hydraulic equipment, pumps, fans, conveyors, textile machinery
Driver	Servo motor, stepper motor, induction motor

General-purpose Coupling of Simple Construction

Motive power is transmitted by polyurethane elastomer with the elastic force of rubber. These not only excel in absorbing vibration and shock, they transmit more than double the torque of older jaw couplings. The line-up includes three types of hubs, two types of elements and two types of fit. They can provide the optimum combination for your transmission torque, response, and misalignment. Since you can combine different hubs, they can be used in a wide range of applications.



Various Types of Combinations

The line-up includes three types of hubs: pilot-bore products that allow free bore drilling, key/set screw types that enable high transmission torque, and clamp types that are easy to mount and remove.

No backlash

The R and Y types have no backlash and yet can absorb shock and vibration.

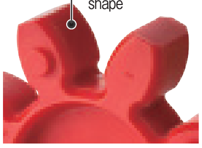
Reduced Counterforfce

Optimal design of the element shape reduces mounting error counterforfce to not damage the shaft.

Shaped like older models

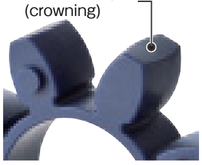
The shape of the torque transmission surface is linear.

ALS Y/R types



The shape of the torque transmission surface is arced. Combined with an undercut to reduce mounting error reaction force.

ALS B types



It is also made more flexible by its crowning shape and by removing material from the inner diameter.

Available Models

There are three MIKI PULLEY STARFLEX models. Each has a different type of element.

ALS R

These are JIS A tight-fit, high-torque, high-response models that have a shore hardness of 97.

ALS Y

These are JIS A tight-fit models that have a shore hardness of 90 and are equipped with a good balance of torque transmission performance, flexibility, and responsiveness.

ALS B

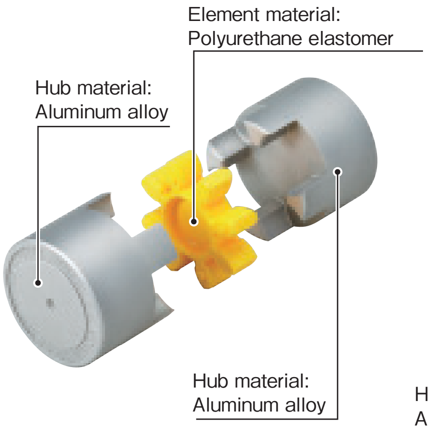
These are JIS A loose-fit, high-torque, flexible models that have a shore hardness of 97.

Model Selection

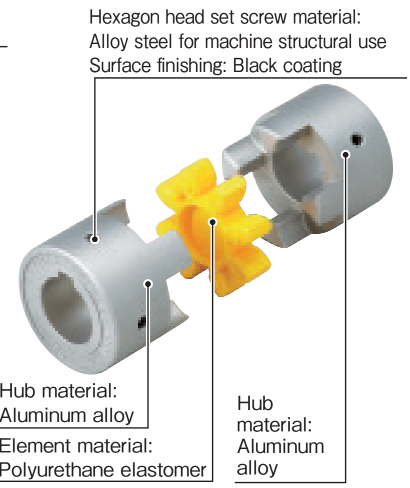
Model/Type	Nominal torque [N·m]	Hub material	Shore hardness (Element) JIS A	Element fit	Transmission torque	Flexibility	No-backlash	Operating temperature [℃]
	0 310 525							
ALS R	2 ～ 525	Aluminum alloy	97	Tight fit (pre-compressed construction)	◎	○	○	−30 ～ 80
ALS Y	1.2 ～ 310	Aluminum alloy	90	Tight fit (pre-compressed construction)	○	○	○	−30 ～ 80
ALS B	12.5 ～ 525	Aluminum alloy	97	Loose fit	◎	◎	―	−30 ～ 80

Structure and Materials

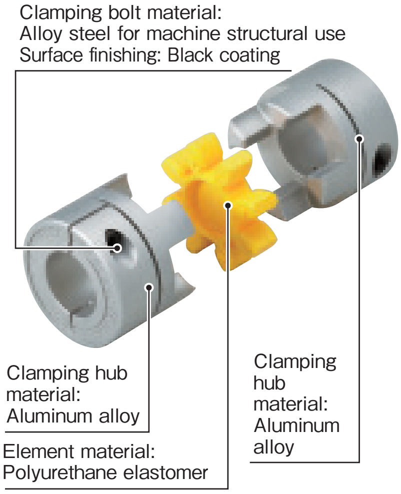
Pilot Bore



Key/Set Screw Type



Clamp Type

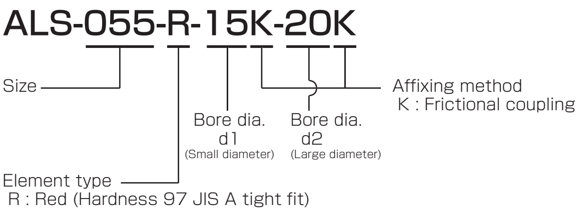


Customization Examples

Tapered coupling type

How to Place an Order

The amount of thrust applied to the axis can be increased with the tapered shaft installation method.



Model	Torque		Misalignment			Max. rotation speed [min^{-1}]	Torsional stiffness [N・m/rad]	Moment of inertia [$\text{kg}\cdot\text{m}^2$]	Mass [kg]
	Nominal [N・m]	Max. [N・m]	Parallel [mm]	Angular [°]	Axial [mm]				
ALS-055-R	30 (60)	60 (120)	0.1	1	0 to +1.4	8700	2000	1.63×10^{-4}	0.34
ALS-065-R	80 (160)	160 (320)	0.1	1	0 to +1.5	7400	3100	3.73×10^{-4}	0.53

* The specified torque in the above table shows the rate concerned the feeding screw application only and calculated with safety factor. Figures in ( ) is the rate of MP standard STARFLEX Coupling.
* Dynamic balance is not considered for the maximum rotation speed.
* The torsional stiffness values are measured at 20℃ .
* Moment of Inertia and mass are measured with the maximum bore diameters.

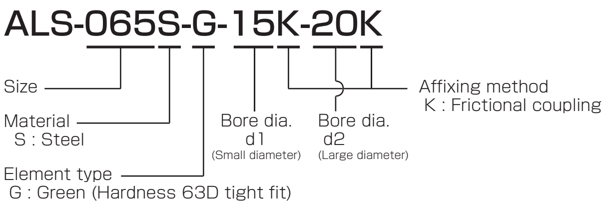
Model	Standard bore diameter d1・d2 [mm] and rated torque [N-m]													D [mm]	L [mm]	L1・L2 [mm]	E [mm]	S [mm]	R [mm]	M	M1
	14	15	16	19	20	22	24	25	28	30	32	35	38								
ALS-055-R	50	●	●	●	●	●	●	●	●					55	79	30.5	18	2	24	4-M5	4-M5
ALS-065-R				125	135	147	●	●	●	●	●	●	●	65	94	37	20	2.5	30	8-M5	4-M5

* The bore diameters marked with ● or numbers are supported as standard bore diameter.
* The rated torque of small bore diameter indicated in the column with value is limited by the shaft locking mechanism. The value indicates its operating torque [N·m].
* M: Name of Bolt specified the amount of bolts on one hub and bolt size. M1: Name of Tap specified the amount of taps for release on one hub and tap size.
* To tighten the pressure bolts M1, please use a torque wrench. Tightening torque is M5 : 6N-m.
* The dimensional tolerance of the target shaft is h7.

High-speed rotation specifications

How to Place an Order

These are high-speed rotation specifications for main spindles of machine tools. These hubs are processed with high precision to ensure high concentricity; they reduce imbalances and suppress vibration.



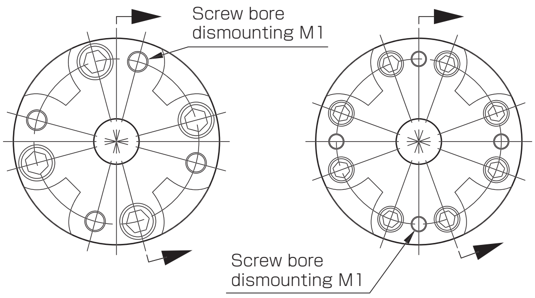
Model	Torque		Misalignment			Max. rotation speed [min^{-1}]	Torsional stiffness [N・m/rad]	Moment of inertia [$\text{kg}\cdot\text{m}^2$]	Mass [kg]
	Nominal [N・m]	Max. [N・m]	Parallel [mm]	Angular [°]	Axial [mm]				
ALS-065S-G	200	400	0.08	0.8	0 to +1.5	22000	16000	0.95×10^{-3}	1.34
ALS-080S-G	405	810	0.09	0.8	0 to +1.8	17900	22100	2.79×10^{-3}	2.64

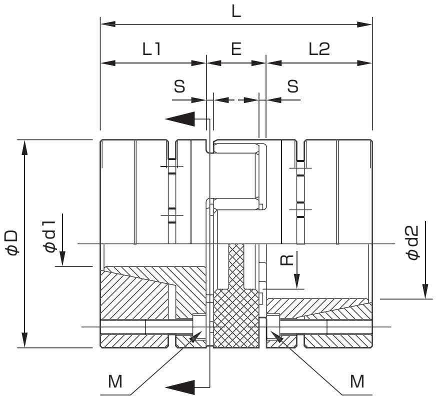
* Dynamic balance is not considered for the maximum rotation speed.
* The torsional stiffness values are measured at 20℃ .
* Moment of Inertia and mass are measured with the maximum bore diameters.

Model	Standard bore diameter d1・d2 [mm]															D [mm]	L [mm]	L1・L2 [mm]	E [mm]	S [mm]	R [mm]	M	M1
	15	16	19	20	22	24	25	28	30	32	35	38	40	42	45								
ALS-065S-G	●	●	●	●	●	●	●	●	●	●	●	●				65	94	37	20	2.5	25	8-M5	4-M5
ALS-080S-G				●	●	●	●	●	●	●	●	●	●	●	●	80	118	47	24	3	32	8-M6	4-M6

* The bore diameters marked with ● or numbers are supported as standard bore diameter.
* M: Name of Bolt specified the amount of bolts on one hub and bolt size. M1: Name of Tap specified the amount of taps for release on one hub and tap size.
* To tighten the pressure bolts M1, please use a torque wrench. Tightening torque is M5 : 6N-m , M6 : 14N-m.
* The dimensional tolerance of the target shaft is h7.

■ ALS-055　　■ ALS-065・080





FAQ

Q1 How long is the MIKI PULLEY STARFLEX service life?

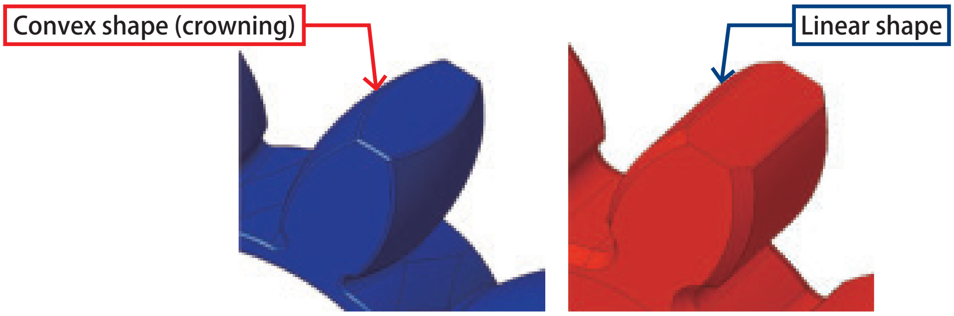
A If power transmission is your primary goal, select an appropriate coupling using the selection procedures of the catalog, then you can expect a service life of more than 10 years. Service life will vary with usage environment and conditions and is heavily affected by usage temperature and mounting misalignment. Contact Miki Pulley for details.

Q2 Can they be used in excess of the nominal torque?

A They can, up to ten times daily when operating 8 hours per day, but not in excess of the maximum torque.
This assumes startup torque of a motor with a low frequency of starting and stopping.

Q3 What exactly is a loose fit element?

A These elements have a convex (crowning) shape to the torque transmission surface. They greatly increase the permissible mounting misalignment. They are also easy to assemble, since they set a loose fit with the hub. This can reduce the number of work steps.



Loose fit

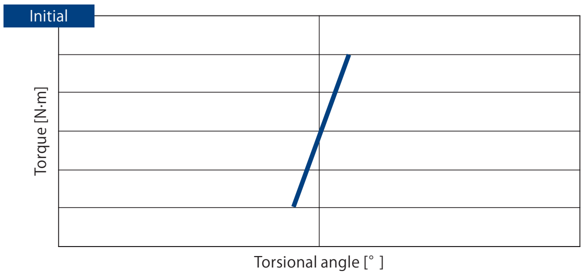
Tight fit

Q4 Does MIKI PULLEY STARFLEX develop no-backlash as it ages?

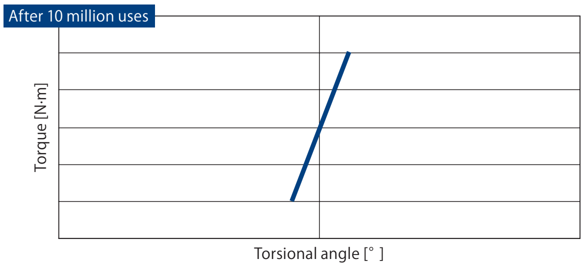
A MIKI PULLEY STARFLEX achieves no-backlash by preliminary compression of the element, so it may not be able to maintain no-backlash as the plastic ages. If you are considering using one in no-backlash mode over a long period of time, we recommend setting the service factor based on load property to a high value. If you require high precision control for a longer period, we recommend the SERVOFLEX series of metal disc couplings.

SERVOFLEX

Initial static torsional stiffness

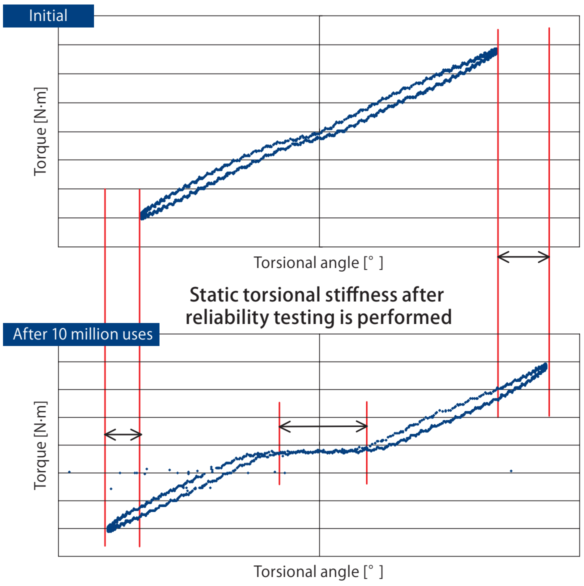


Static torsional stiffness after reliability testing is performed



MIKI PULLEY STARFLEX

Initial static torsional stiffness



Static torsional stiffness after reliability testing is performed

ALS R Types Key/Set Screw Type

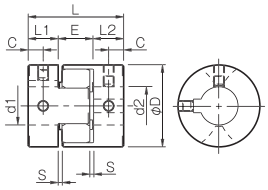
Specifications

Model	Torque		Misalignment			Max. rotation speed [min^{-1}]	Static torsional stiffness [N·m/rad]	Radial stiffness [N/mm]	Moment of inertia [kg·m^2]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Parallel [mm]	Angular [°]	Axial [mm]					
ALS-014-R	2	4	0.10	1	0 ～ +0.6	34100	21	380	1.91×10^{-7}	0.007
ALS-020-R	5	10	0.10	1	0 ～ +0.8	23800	43	400	1.08×10^{-6}	0.018
ALS-030-R	12.5	25	0.10	1	0 ～ +1.0	15900	136	650	6.25×10^{-6}	0.047
ALS-040-R	17	34	0.10	1	0 ～ +1.2	11900	1550	1700	3.87×10^{-5}	0.15
ALS-055-R	60	120	0.10	1	0 ～ +1.4	8700	2000	1350	1.66×10^{-4}	0.35
ALS-065-R	160	320	0.10	1	0 ～ +1.5	7400	3100	1400	3.57×10^{-4}	0.51
ALS-080-R	325	650	0.10	1	0 ～ +1.8	6000	6000	1710	1.06×10^{-3}	1.01
ALS-095-R	450	900	0.10	1	−0.5 ～ +2.0	5000	10000	4200	2.24×10^{-3}	1.50
ALS-105-R	525	1050	0.15	1	−0.9 ～ +2.0	4500	12000	5000	3.72×10^{-3}	2.05

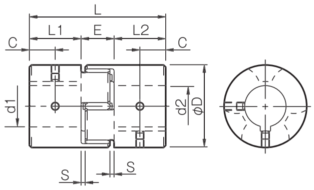
* Axial displacement of the ALS-014-R to ALS-080-R is not allowed in the negative direction.
* Max. rotation speed does not take into account dynamic balance.
* Stiffness values given are from measurements taken at 20℃
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions

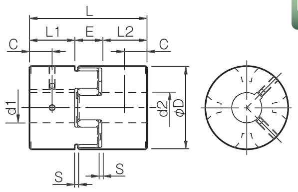
■ALS-014 to 030



■ALS-040



■ALS-055 to 105



Unit [mm]

Model	d1・d2			D	L	L1・L2	E	S	C
	Pilot bore	Min.	Max.						
ALS-014-R	3	3	6.5	14	22	7	8	1	3.5
ALS-020-R	4	4	9.6	20	30	10	10	1	5
ALS-030-R	5	6	14	30	35	11	13	1.5	5.5
ALS-040-R	5	8	22	40	66	25	16	2	12.5
ALS-055-R	5	10	28	55	78	30	18	2	15
ALS-065-R	5	14	38	65	90	35	20	2.5	17.5
ALS-080-R	10	19	45	80	114	45	24	3	22.5
ALS-095-R	8	19	55	95	126	50	26	3	25
ALS-105-R	10	19	60	105	140	56	28	3.5	28

* "Pilot bore" refers to center processing.

Standard Bore Diameter

Model	Standard bore diameter d1, d2 [mm]																													
	3	4	5	6	6.35	8	9	9.525	10	11	12	14	15	16	18	19	20	24	25	28	30	32	35	38	40	42	45	50	55	60
ALS-014-R	●	●	●	●	●																									
ALS-020-R			●	●	●	●	●	●																						
ALS-030-R						●	●	●	●	●	●	●																		
ALS-040-R										●	●	●	●	●	●	●	●													
ALS-055-R													●	●	●	●	●	●	●	●										
ALS-065-R																	●	●	●	●	●	●	●							
ALS-080-R																					●	●	●	●	●	●	●			
ALS-095-R																								●	●	●	●	●	●	
ALS-105-R																								●	●	●	●	●	●	●

* The bore diameters marked with ● are supported as standard bore diameter.
* ø 11 and below have no keyway; ø12 and above can be processed for old JIS standards, new JIS standards, and new standard motors.
* The only standard processing of bore diameters of the ALS-095 and ALS-105 are for new JIS standards and new standard motors.

How to Place an Order

ALS-055-R-24N-28H

Size

Element type
R: Hardness, 97; JIS A; Tight-fit type

Bore diameter: d1 (Small diameter) - d2 (Large diameter)
Blank: Pilot bore

Bore specifications
Blank: Compliant with the old JIS standards (class 2)
H: Compliant with the new JIS standards
N: Compliant with the new motor standards

ALS R Types Clamp Type

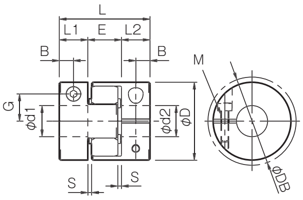
Specifications

Model	Misalignment			Max. rotation speed [min^{-1}]	Static torsional stiffness [N·m/rad]	Radial stiffness [N/mm]	Moment of inertia [kg·m^2]	Mass [kg]
	Parallel [mm]	Angular [°]	Axial [mm]					
ALS-014-R	0.10	1	0～+0.6	10000	21	380	1.98×10^{-7}	0.007
ALS-020-R	0.10	1	0～+0.8	10000	43	400	1.09×10^{-6}	0.019
ALS-030-R	0.10	1	0～+1.0	10000	136	650	6.19×10^{-6}	0.045
ALS-040-R	0.10	1	0～+1.2	10000	1550	1700	4.01×10^{-5}	0.16
ALS-055-R	0.10	1	0～+1.4	7000	2000	1350	1.63×10^{-4}	0.34
ALS-065-R	0.10	1	0～+1.5	5900	3100	1400	3.69×10^{-4}	0.54
ALS-080-R	0.10	1	0～+1.8	4800	6000	1710	1.04×10^{-3}	1.00

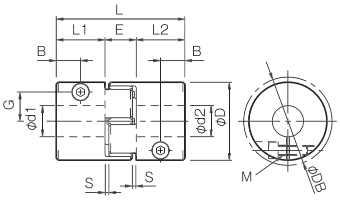
* Axial displacement is not allowed in the negative direction.
* Max. rotation speed does not take into account dynamic balance.
* Stiffness values given are from measurements taken at 20℃
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions

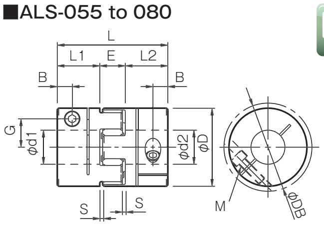
■ALS-014 to 030



■ALS-040



■ALS-055 to 080



Unit [mm]

Model	d1 • d2		D	DB	L	L1 • L2	E	S	B	G	M	Tightening torque [N·m]
	Min.	Max.										
ALS-014-R	3	6	14	16.1	22	7	8	1	3.5	4.8	1-M2	0.4
ALS-020-R	4	8	20	20	30	10	10	1	5	6.5	1-M2.5	1
ALS-030-R	6	14	30	30	35	11	13	1.5	5.5	10.5	1-M3	1.5
ALS-040-R	8	20	40	43.2	66	25	16	2	12.5	15	1-M5	7
ALS-055-R	10	28	55	55	78	30	18	2	10.5	20	1-M6	14
ALS-065-R	14	35	65	69.8	90	35	20	2.5	11.5	24.5	1-M8	30
ALS-080-R	19	45	80	80	114	45	24	3	11.5	30	1-M8	30

* The øDB value is measured assuming that the head of the clamping bolt is larger than the external diameter of the hub.
* The nominal diameter for the clamping bolt M is equal to the quantity minus the nominal diameter of the screw threads, where the quantity is for a hub on one side.

Standard Bore Diameter and Rated Transmission Torque

Model	Standard bore diameter d1, d2 [mm] and rated transmission torque [N·m]																						
	3	4	5	6	6.35	7	8	10	11	12	14	15	16	18	19	20	22	24	25	28	30	35	42
ALS-014-R	0.31	0.42	0.54	0.65																			
ALS-020-R		1.2	1.6	2.1	2.2	2.6	3.0																
ALS-030-R				2.0	2.2		3.4	4.7	5.4	6.0	7.4												
ALS-040-R							8	16		23	31	34	34		34								
ALS-055-R												38	41	48	51	54	61	67	71	80			
ALS-065-R																61	68	75	79	89	96	114	
ALS-080-R																				108	121	151	194

* Bore diameters whose fields contain numbers are supported as the standard bore diameters.
* Bore diameters whose fields contain numbers are restricted in their rated transmission torque by the holding power of the shaft connection component. The numbers indicate the rated transmission torque value [N·m].
* The recommended processing tolerance for paired mounting shafts is the h7 class. However, for a shaft diameter of ø35, the tolerance is $^{+0.010}_{-0.025}$.
* Bore diameters between the minimum and maximums shown in the dimensions table are compatible, but bore diameters other than those shown in the above table require other arrangements. Contact Miki Pulley for details.

How to Place an Order

ALS-055-R-24B-28B

Size
Element type
R: Hardness, 97; JIS A; Tight-fit type
Bore diameter: d1 (Small diameter) - d2 (Large diameter)
Bore specifications
B: Clamp type

ALS Y Types Key/Set Screw Type

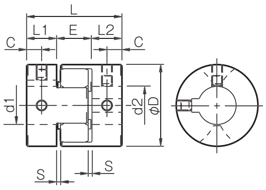
Specifications

Model	Torque		Misalignment			Max. rotation speed [min^{-1}]	Static torsional stiffness [N·m/rad]	Radial stiffness [N/mm]	Moment of inertia [kg·m^2]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Parallel [mm]	Angular [°]	Axial [mm]					
ALS-014-Y	1.2	2.4	0.10	1	0～+0.6	34100	12	200	1.91×10^{-7}	0.007
ALS-020-Y	3	6	0.15	1	0～+0.8	23800	24	210	1.08×10^{-6}	0.018
ALS-030-Y	7.5	15	0.15	1	0～+1.0	15900	73	330	6.25×10^{-6}	0.047
ALS-040-Y	10	20	0.10	1	0～+1.2	11900	760	940	3.87×10^{-5}	0.15
ALS-055-Y	35	70	0.15	1	0～+1.4	8700	1400	1160	1.66×10^{-4}	0.35
ALS-065-Y	95	190	0.15	1	0～+1.5	7400	2100	1200	3.57×10^{-4}	0.51
ALS-080-Y	190	380	0.15	1	0～+1.8	6000	4000	1430	1.06×10^{-3}	1.01
ALS-095-Y	265	530	0.15	1	−0.5～+2.0	5000	6000	2400	2.24×10^{-3}	1.50
ALS-105-Y	310	620	0.20	1	−0.9～+2.0	4500	7000	4000	3.72×10^{-3}	2.05

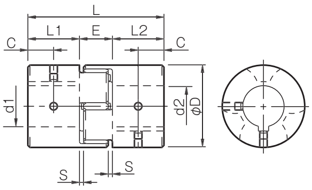
* Axial displacement of the ALS-014-Y to ALS-080-Y is not allowed in the negative direction.
* Max. rotation speed does not take into account dynamic balance.
* Stiffness values given are from measurements taken at 20℃
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions

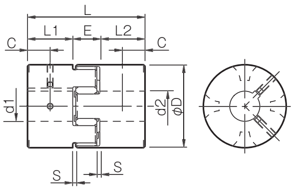
■ALS-014 to 030



■ALS-040



■ALS-055 to 105



Unit [mm]

Model	d1 • d2			D	L	L1 • L2	E	S	C
	Pilot bore	Min.	Max.						
ALS-014-Y	3	3	6.5	14	22	7	8	1	3.5
ALS-020-Y	4	4	9.6	20	30	10	10	1	5
ALS-030-Y	5	6	14	30	35	11	13	1.5	5.5
ALS-040-Y	5	8	22	40	66	25	16	2	12.5
ALS-055-Y	5	10	28	55	78	30	18	2	15
ALS-065-Y	5	14	38	65	90	35	20	2.5	17.5
ALS-080-Y	10	19	45	80	114	45	24	3	22.5
ALS-095-Y	8	19	55	95	126	50	26	3	25
ALS-105-Y	10	19	60	105	140	56	28	3.5	28

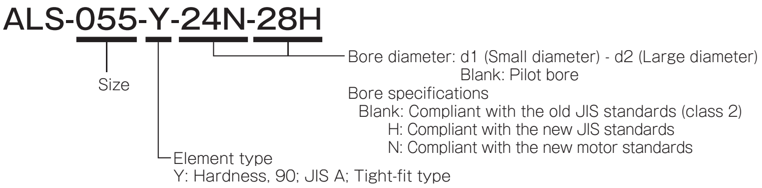
* "Pilot bore" refers to center processing.

Standard Bore Diameter

Model	Standard bore diameter d1, d2 [mm]																													
	3	4	5	6	6.35	8	9	9.525	10	11	12	14	15	16	18	19	20	24	25	28	30	32	35	38	40	42	45	50	55	60
ALS-014-Y	●	●	●	●	●																									
ALS-020-Y			●	●	●	●	●	●																						
ALS-030-Y						●	●	●	●	●	●	●																		
ALS-040-Y										●	●	●	●	●	●	●	●													
ALS-055-Y													●	●	●	●	●	●	●	●										
ALS-065-Y																	●	●	●	●	●	●	●							
ALS-080-Y																					●	●	●	●	●	●	●			
ALS-095-Y																								●	●	●	●	●	●	
ALS-105-Y																								●	●	●	●	●	●	●

* The bore diameters marked with ● are supported as standard bore diameter.
* ø11 and below have no keyway; ø12 and above can be processed for old JIS standards, new JIS standards, and new standard motors.
* The only standard processing of bore diameters of the ALS-095 and ALS-105 are for new JIS standards and new standard motors.

How to Place an Order



ALS-055-Y-24N-28H

Size

Element type
Y: Hardness, 90; JIS A; Tight-fit type

Bore diameter: d1 (Small diameter) - d2 (Large diameter)
Blank: Pilot bore

Bore specifications
Blank: Compliant with the old JIS standards (class 2)
H: Compliant with the new JIS standards
N: Compliant with the new motor standards

ALS Y Types Clamp Type

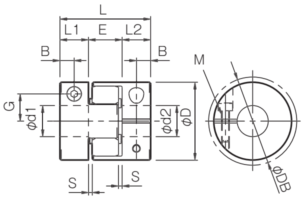
Specifications

Model	Misalignment			Max. rotation speed [min^{-1}]	Static torsional stiffness [N·m/rad]	Radial stiffness [N/mm]	Moment of inertia [kg·m^2]	Mass [kg]
	Parallel [mm]	Angular [°]	Axial [mm]					
ALS-014-Y	0.10	1	0～+0.6	10000	12	200	1.98×10^{-7}	0.007
ALS-020-Y	0.15	1	0～+0.8	10000	24	210	1.09×10^{-6}	0.019
ALS-030-Y	0.15	1	0～+1.0	10000	73	330	6.19×10^{-6}	0.045
ALS-040-Y	0.10	1	0～+1.2	10000	760	940	4.01×10^{-5}	0.16
ALS-055-Y	0.15	1	0～+1.4	7000	1400	1160	1.63×10^{-4}	0.34
ALS-065-Y	0.15	1	0～+1.5	5900	2100	1200	3.69×10^{-4}	0.54
ALS-080-Y	0.15	1	0～+1.8	4800	4000	1430	1.04×10^{-3}	1.00

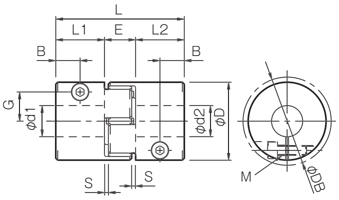
* Axial displacement is not allowed in the negative direction.
* Max. rotation speed does not take into account dynamic balance.
* Stiffness values given are from measurements taken at 20℃
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions

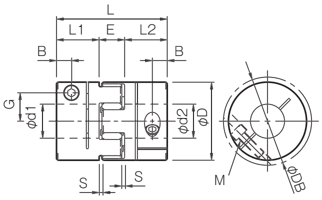
■ALS-014 to 030



■ALS-040



■ALS-055 to 080



CAD

Unit [mm]

Model	d1 • d2		D	DB	L	L1 • L2	E	S	B	G	M	Tightening torque [N·m]
	Min.	Max.										
ALS-014-Y	3	6	14	16.1	22	7	8	1	3.5	4.8	1-M2	0.4
ALS-020-Y	4	8	20	20	30	10	10	1	5	6.5	1-M2.5	1
ALS-030-Y	6	14	30	30	35	11	13	1.5	5.5	10.5	1-M3	1.5
ALS-040-Y	8	20	40	43.2	66	25	16	2	12.5	15	1-M5	7
ALS-055-Y	10	28	55	55	78	30	18	2	10.5	20	1-M6	14
ALS-065-Y	14	35	65	69.8	90	35	20	2.5	11.5	24.5	1-M8	30
ALS-080-Y	19	45	80	80	114	45	24	3	11.5	30	1-M8	30

* The øDB value is measured assuming that the head of the clamping bolt is larger than the external diameter of the hub.
* The nominal diameter for the clamping bolt M is equal to the quantity minus the nominal diameter of the screw threads, where the quantity is for a hub on one side.

Standard Bore Diameter and Rated Transmission Torque

Model	Standard bore diameter d1, d2 [mm] and rated transmission torque [N·m]																						
	3	4	5	6	6.35	7	8	10	11	12	14	15	16	18	19	20	22	24	25	28	30	35	42
ALS-014-Y	0.31	0.42	0.54	0.65																			
ALS-020-Y		1.2	1.6	2.1	2.2	2.6	3.0																
ALS-030-Y				2.0	2.2		3.4	4.7	5.4	6.0	7.4												
ALS-040-Y							8	16		20	20	20	20		20								
ALS-055-Y												38	41	48	51	54	61	67	70	70			
ALS-065-Y																61	68	75	79	89	96	114	
ALS-080-Y																				108	121	151	194

* Bore diameters whose fields contain numbers are supported as the standard bore diameters.
* Bore diameters whose fields contain numbers are restricted in their rated transmission torque by the holding power of the shaft connection component. The numbers indicate the rated transmission torque value [N·m].
* The recommended processing tolerance for paired mounting shafts is the h7 class. However, for a shaft diameter of ø35, the tolerance is $^{+0.010}_{-0.025}$.
* Bore diameters between the minimum and maximums shown in the dimensions table are compatible, but bore diameters other than those shown in the above table require other arrangements. Contact Miki Pulley for details.

How to Place an Order

ALS-055-Y-24B-28B

Size

Element type
Y: Hardness, 90; JIS A; Tight-fit type

Bore diameter: d1 (Small diameter) - d2 (Large diameter)
Bore specifications
B: Clamp type

ALS B Types Key/Set Screw Type

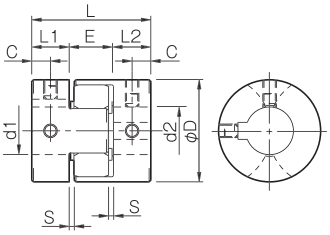
Specifications

Model	Torque		Misalignment			Max. rotation speed [min^{-1}]	Static torsional stiffness [N·m/rad]	Radial stiffness [N/mm]	Moment of inertia [kg·m^2]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Parallel [mm]	Angular [°]	Axial [mm]					
ALS-030-B	12.5	25	0.17	1	−0.2～+1.0	15900	90	460	6.13×10^{-6}	0.045
ALS-040-B	17	34	0.20	1	−0.5～+1.2	11900	400	640	3.86×10^{-5}	0.15
ALS-055-B	60	120	0.22	1	−0.2～+1.4	8700	1150	400	1.66×10^{-4}	0.35
ALS-065-B	160	320	0.25	1	−0.6～+1.5	7400	2000	800	3.57×10^{-4}	0.51
ALS-080-B	325	650	0.28	1	−0.9～+1.8	6000	4550	600	1.06×10^{-3}	1.01
ALS-095-B	450	900	0.32	1	−0.5～+2.0	5000	12000	800	2.22×10^{-3}	1.48
ALS-105-B	525	1050	0.36	1	−0.9～+2.0	4500	15000	2000	3.70×10^{-3}	2.02

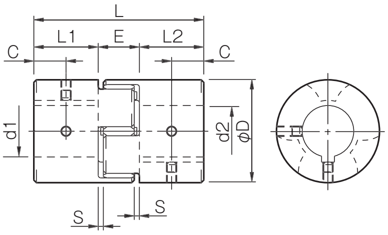
* Max. rotation speed does not take into account dynamic balance.
* Stiffness values given are from measurements taken at 20℃
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions

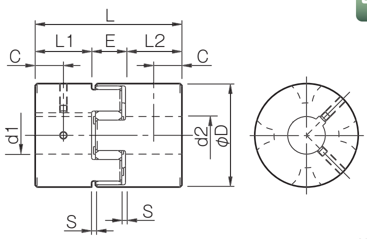
■ALS-030



■ALS-040



■ALS-055 to 105



Unit [mm]

Model	d1・d2			D	L	L1・L2	E	S	C
	Pilot bore	Min.	Max.						
ALS-030-B	5	6	14	30	35	11	13	1.5	5.5
ALS-040-B	5	8	22	40	66	25	16	2	12.5
ALS-055-B	5	10	28	55	78	30	18	2	15
ALS-065-B	5	14	38	65	90	35	20	2.5	17.5
ALS-080-B	10	19	45	80	114	45	24	3	22.5
ALS-095-B	8	19	55	95	126	50	26	3	25
ALS-105-B	10	19	60	105	140	56	28	3.5	28

* "Pilot bore" refers to center processing.

Standard Bore Diameter

Model	Standard bore diameter d1, d2 [mm]																								
	8	9	9.525	10	11	12	14	15	16	18	19	20	24	25	28	30	32	35	38	40	42	45	50	55	60
ALS-030-B	●	●	●	●	●	●	●																		
ALS-040-B					●	●	●	●	●	●	●	●													
ALS-055-B								●	●	●	●	●	●	●	●										
ALS-065-B												●	●	●	●	●	●	●							
ALS-080-B																●	●	●	●	●	●	●			
ALS-095-B																			●	●	●	●	●	●	
ALS-105-B																			●	●	●	●	●	●	●

* The bore diameters marked with ● are supported as standard bore diameter.
* ø11 and below have no keyway; ø12 and above can be processed for old JIS standards, new JIS standards, and new standard motors.
* The only standard processing of bore diameters of the ALS-095 and ALS-105 are for new JIS standards and new standard motors.

How to Place an Order

ALS-055-B-24N-28H

Size

Element type
B: Hardness, 97; JIS A; Loose-fit type

Bore specifications
Blank: Compliant with the old JIS standards (class 2)
H: Compliant with the new JIS standards
N: Compliant with the new motor standards

Bore diameter: d1 (Small diameter) - d2 (Large diameter)
Blank: Pilot bore

ALS B Types Clamp Type

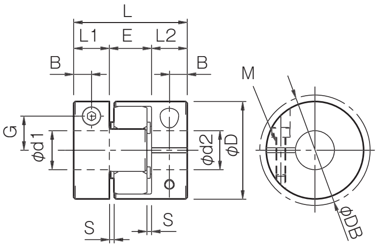
Specifications

Model	Misalignment			Max. rotation speed [min⁻¹]	Static torsional stiffness [N·m/rad]	Radial stiffness [N/mm]	Moment of inertia [kg·m²]	Mass [kg]
	Parallel [mm]	Angular [°]	Axial [mm]					
ALS-030-B	0.17	1	− 0.2 ～+ 1.0	10000	90	460	6.07×10^{-6}	0.043
ALS-040-B	0.20	1	− 0.5 ～+ 1.2	10000	400	640	4.00×10^{-5}	0.16
ALS-055-B	0.22	1	− 0.2 ～+ 1.4	7000	1150	400	1.63×10^{-4}	0.34
ALS-065-B	0.25	1	− 0.6 ～+ 1.5	5900	2000	800	3.69×10^{-4}	0.54
ALS-080-B	0.28	1	− 0.9 ～+ 1.8	4800	4550	600	1.04×10^{-3}	1.00

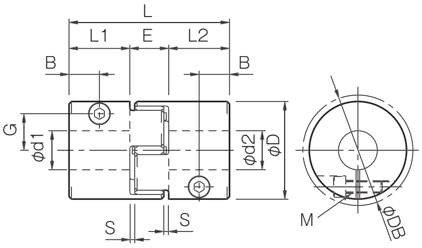
* Max. rotation speed does not take into account dynamic balance.
* Stiffness values given are from measurements taken at 20℃
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions

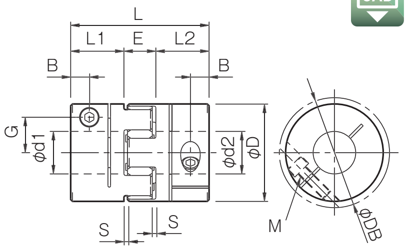
■ALS-030



■ALS-040



■ALS-055 to 080



CAD

Unit [mm]

Model	d1 • d2		D	DB	L	L1 • L2	E	S	B	G	M	Tightening torque [N·m]
	Min.	Max.										
ALS-030-B	6	14	30	30	35	11	13	1.5	5.5	10.5	1-M3	1.5
ALS-040-B	8	20	40	43.2	66	25	16	2	12.5	15	1-M5	7
ALS-055-B	10	28	55	55	78	30	18	2	10.5	20	1-M6	14
ALS-065-B	14	35	65	69.8	90	35	20	2.5	11.5	24.5	1-M8	30
ALS-080-B	19	45	80	80	114	45	24	3	11.5	30	1-M8	30

* The øDB value is measured assuming that the head of the clamping bolt is larger than the external diameter of the hub.
* The nominal diameter for the clamping bolt M is equal to the quantity minus the nominal diameter of the screw threads, where the quantity is for a hub on one side.

Standard Bore Diameter and Rated Transmission Torque

Model	Standard bore diameter d1, d2 [mm] and rated transmission torque [N·m]																		
	6	6.35	8	10	11	12	14	15	16	18	19	20	22	24	25	28	30	35	42
ALS-030-B	2.0	2.2	3.4	4.7	5.4	6.0	7.4												
ALS-040-B			8	16		23	31	34	34		34								
ALS-055-B								38	41	48	51	54	61	67	71	80			
ALS-065-B												61	68	75	79	89	96	114	
ALS-080-B																108	121	151	194

* Bore diameters whose fields contain numbers are supported as the standard bore diameters.
* Bore diameters whose fields contain numbers are restricted in their rated transmission torque by the holding power of the shaft connection component. The numbers indicate the rated transmission torque value [N·m].
* The recommended processing tolerance for paired mounting shafts is the h7 class. However, for a shaft diameter of ø35, the tolerance is $^{+0.010}_{-0.025}$.
* Bore diameters between the minimum and maximums shown in the dimensions table are compatible, but bore diameters other than those shown in the above table require other arrangements. Contact Miki Pulley for details.

How to Place an Order

ALS-055-B-24B-28B

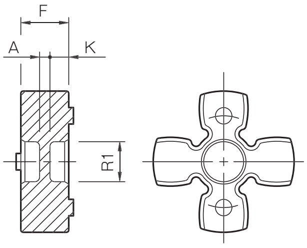
Size
Element type
B: Hardness, 97; JIS A; Loose-fit type
Bore diameter: d1 (Small diameter) - d2 (Large diameter)
Bore specifications
B: Clamp type

ALS Elements

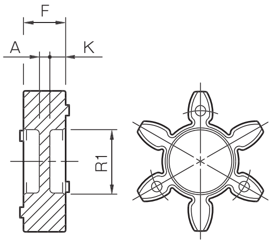
Dimensions

ALS R/Y

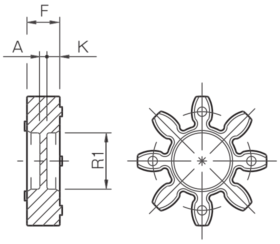
■ALS-014 to 030-R·Y



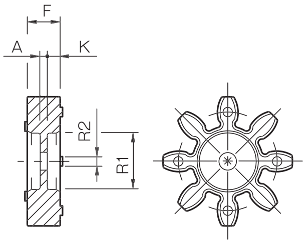
■ALS-040-R·Y



■ALS-055 to 065-R·Y



■ALS-080 to105-R·Y



Unit [mm]

Model	F	R1	R2	K	A
ALS-014-□-EL	6.2	3.5	–	2.5	1.2
ALS-020-□-EL	8.2	6.2	–	3.4	1.4
ALS-030-□-EL	10.2	8.5	–	4	2.2
ALS-040-□-EL	12	18	–	4.5	3
ALS-055-□-EL	14	24	–	5.5	3
ALS-065-□-EL	15	30	–	5.5	4
ALS-080-□-EL	18	37	15	7	4
ALS-095-□-EL	20	43	20	8	4
ALS-105-□-EL	21	50	20	8.5	4

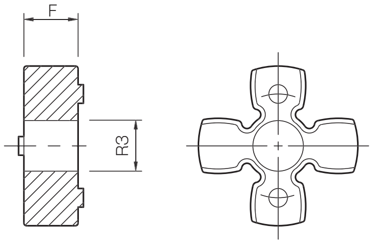
How to Place an Order

ALS-055-R-EL

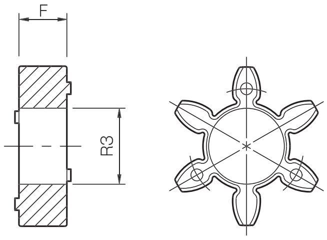
Size
Element type
R: Hardness, 97; JIS A; Tight-fit type
Y: Hardness, 90; JIS A; Tight-fit type
Element only

ALS B

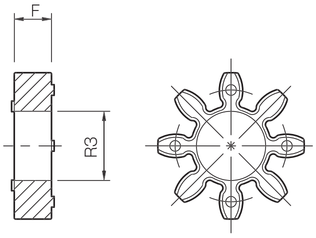
■ALS-030-B



■ALS-040-B



■ALS-055 to 105-B



Unit [mm]

Model	F	R3
ALS-030-B-EL	10.2	10.5
ALS-040-B-EL	12	18.5
ALS-055-B-EL	14	27.5
ALS-065-B-EL	15	32
ALS-080-B-EL	18	41
ALS-095-B-EL	20	47
ALS-105-B-EL	21	50

How to Place an Order

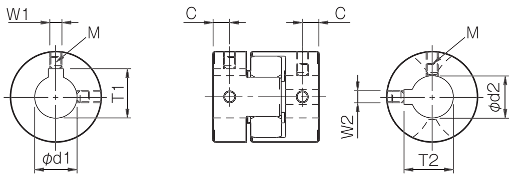
ALS-055-B-EL

Size
Element type
B: Hardness, 97; JIS A; Loose-fit type
Element only

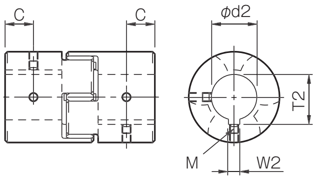
Standard Hole-Drilling Standards

- Set screw and keyway positions are not on the same plane. Positioning precision for keyway milling is determined by sight, so contact Miki Pulley when the keyway requires a positioning precision for a particular hub.
- The set screws are included with the product.
- We also process non-standard bore diameters to the standards of the table below.
- Contact Miki Pulley if you require standards other than those shown below.

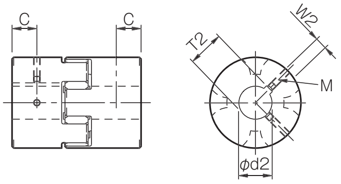
■ALS-014 to 030



■ALS-040



■ALS-055 to105



Unit [mm]

Models compliant with the old JIS standards (class 2)					Models compliant with the new JIS standards					Models compliant with the new motor standards				
Nominal bore diameter	Bore diameter [d1 • d2]	Keyway width [W1 • W2]	Keyway height [T1 • T2]	Set screw hole [M]	Nominal bore diameter	Bore diameter [d1 • d2]	Keyway width [W1 • W2]	Keyway height [T1 • T2]	Set screw hole [M]	Nominal bore diameter	Bore diameter [d1 • d2]	Keyway width [W1 • W2]	Keyway height [T1 • T2]	Set screw hole [M]
Tolerance	H7,H8	E9	$^{+0.3}_{0}$	–	Tolerance	H7	H9	$^{+0.3}_{0}$	–	Tolerance	G7,F7	H9	$^{+0.3}_{0}$	–
3	3 $^{+0.018}_{0}$	–	–	1-M3	–	–	–	–	–	–	–	–	–	–
4	4 $^{+0.018}_{0}$	–	–	2-M3	–	–	–	–	–	–	–	–	–	–
5	5 $^{+0.018}_{0}$	–	–	2-M3	–	–	–	–	–	–	–	–	–	–
6	6 $^{+0.018}_{0}$	–	–	2-M4	–	–	–	–	–	–	–	–	–	–
6.35	6.35 $^{+0.022}_{0}$	–	–	2-M4	–	–	–	–	–	–	–	–	–	–
7	7 $^{+0.022}_{0}$	–	–	2-M4	–	–	–	–	–	–	–	–	–	–
8	8 $^{+0.022}_{0}$	–	–	2-M4	–	–	–	–	–	–	–	–	–	–
9	9 $^{+0.022}_{0}$	–	–	2-M4	–	–	–	–	–	–	–	–	–	–
9.525	9.525 $^{+0.022}_{0}$	–	–	2-M4	–	–	–	–	–	–	–	–	–	–
10	10 $^{+0.022}_{0}$	–	–	2-M4	–	–	–	–	–	–	–	–	–	–
11	11 $^{+0.018}_{0}$	–	–	2-M4	–	–	–	–	–	–	–	–	–	–
12	12 $^{+0.018}_{0}$	4 $^{+0.050}_{+0.020}$	13.5	2-M4	12H	12 $^{+0.018}_{0}$	4 $^{+0.030}_{0}$	13.8	2-M4	–	–	–	–	–
14	14 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	16.0	2-M4	14H	14 $^{+0.018}_{0}$	5 $^{+0.030}_{0}$	16.3	2-M4	14N	14 $^{+0.024}_{+0.006}$	5 $^{+0.030}_{0}$	16.3	2-M4
15	15 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	17.0	2-M4	15H	15 $^{+0.018}_{0}$	5 $^{+0.030}_{0}$	17.3	2-M4	–	–	–	–	–
16	16 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	18.0	2-M4	16H	16 $^{+0.018}_{0}$	5 $^{+0.030}_{0}$	18.3	2-M4	–	–	–	–	–
17	17 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	19.0	2-M4	17H	17 $^{+0.018}_{0}$	5 $^{+0.030}_{0}$	19.3	2-M4	–	–	–	–	–
18	18 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	20.0	2-M4	18H	18 $^{+0.018}_{0}$	6 $^{+0.030}_{0}$	20.8	2-M5	–	–	–	–	–
19	19 $^{+0.021}_{0}$	5 $^{+0.050}_{+0.020}$	21.0	2-M4	19H	19 $^{+0.021}_{0}$	6 $^{+0.030}_{0}$	21.8	2-M5	19N	19 $^{+0.028}_{+0.007}$	6 $^{+0.030}_{0}$	21.8	2-M5
20	20 $^{+0.021}_{0}$	5 $^{+0.050}_{+0.020}$	22.0	2-M4	20H	20 $^{+0.021}_{0}$	6 $^{+0.030}_{0}$	22.8	2-M5	–	–	–	–	–
22	22 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	25.0	2-M6	22H	22 $^{+0.021}_{0}$	6 $^{+0.030}_{0}$	24.8	2-M5	–	–	–	–	–
24	24 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	27.0	2-M6	24H	24 $^{+0.021}_{0}$	8 $^{+0.036}_{0}$	27.3	2-M6	24N	24 $^{+0.028}_{+0.007}$	8 $^{+0.036}_{0}$	27.3	2-M6
25	25 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	28.0	2-M6	25H	25 $^{+0.021}_{0}$	8 $^{+0.036}_{0}$	28.3	2-M6	–	–	–	–	–
28	28 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	31.0	2-M6	28H	28 $^{+0.021}_{0}$	8 $^{+0.036}_{0}$	31.3	2-M6	28N	28 $^{+0.028}_{+0.007}$	8 $^{+0.036}_{0}$	31.3	2-M6
30	30 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	33.0	2-M6	30H	30 $^{+0.021}_{0}$	8 $^{+0.036}_{0}$	33.3	2-M6	–	–	–	–	–
32	32 $^{+0.025}_{0}$	10 $^{+0.061}_{+0.025}$	35.5	2-M8	32H	32 $^{+0.025}_{0}$	10 $^{+0.036}_{0}$	35.3	2-M8	–	–	–	–	–
35	35 $^{+0.025}_{0}$	10 $^{+0.061}_{+0.025}$	38.5	2-M8	35H	35 $^{+0.025}_{0}$	10 $^{+0.036}_{0}$	38.3	2-M8	–	–	–	–	–
38	38 $^{+0.025}_{0}$	10 $^{+0.061}_{+0.025}$	41.5	2-M8	38H	38 $^{+0.025}_{0}$	10 $^{+0.036}_{0}$	41.3	2-M8	38N	38 $^{+0.050}_{+0.025}$	10 $^{+0.036}_{0}$	41.3	2-M8
40	40 $^{+0.025}_{0}$	10 $^{+0.061}_{+0.025}$	43.5	2-M8	40H	40 $^{+0.025}_{0}$	12 $^{+0.043}_{0}$	43.3	2-M8	–	–	–	–	–
42	42 $^{+0.025}_{0}$	12 $^{+0.075}_{+0.032}$	45.5	2-M8	42H	42 $^{+0.025}_{0}$	12 $^{+0.043}_{0}$	45.3	2-M8	42N	42 $^{+0.050}_{+0.025}$	12 $^{+0.043}_{0}$	45.3	2-M8
45	45 $^{+0.025}_{0}$	12 $^{+0.075}_{+0.032}$	48.5	2-M8	45H	45 $^{+0.025}_{0}$	14 $^{+0.043}_{0}$	48.8	2-M10	–	–	–	–	–
48	48 $^{+0.025}_{0}$	12 $^{+0.075}_{+0.032}$	51.5	2-M8	48H	48 $^{+0.025}_{0}$	14 $^{+0.043}_{0}$	51.8	2-M10	48N	48 $^{+0.050}_{+0.025}$	14 $^{+0.043}_{0}$	51.8	2-M10
50	50 $^{+0.025}_{0}$	12 $^{+0.075}_{+0.032}$	53.5	2-M8	50H	50 $^{+0.025}_{0}$	14 $^{+0.043}_{0}$	53.8	2-M10	–	–	–	–	–
55	55 $^{+0.030}_{0}$	15 $^{+0.075}_{+0.032}$	60.0	2-M10	55H	55 $^{+0.030}_{0}$	16 $^{+0.043}_{0}$	59.3	2-M10	55N	55 $^{+0.060}_{+0.030}$	16 $^{+0.043}_{0}$	59.3	2-M10
56	56 $^{+0.030}_{0}$	15 $^{+0.075}_{+0.032}$	61.0	2-M10	56H	56 $^{+0.030}_{0}$	16 $^{+0.043}_{0}$	60.3	2-M10	–	–	–	–	–
60	60 $^{+0.030}_{0}$	15 $^{+0.075}_{+0.032}$	65.0	2-M10	60H	60 $^{+0.030}_{0}$	18 $^{+0.043}_{0}$	64.4	2-M10	60N	60 $^{+0.060}_{+0.030}$	18 $^{+0.043}_{0}$	64.4	2-M10

* Tolerance will be h8 class for hole diameter equal to or less than ø10 mm.
* The set screw size is M3 for ALS-014.

Distance from Set Screw Edge

Model	ALS-014	ALS-020	ALS-030	ALS-040	ALS-055	ALS-065	ALS-080	ALS-095	ALS-105
Distance from set screw edge C [mm]	3.5	5	5.5	12.5	15	17.5	22.5	25	28

ALS Models

Items Checked for Design Purposes

Precautions for Handling

ALS models come with three different types of elements and two different types of mounting hubs. Be aware in their handling that their allowable values and points of caution are not the same.

(1) Couplings are designed for use within an operating temperature range of -30℃ to 80℃ .

(2) Although elements are designed to be oilproof, do not subject them to excessive amounts of oil as it may cause deterioration. Use and storage in direct sunlight may shorten element service life, so cover elements appropriately.

(3) Do not tighten up clamping bolts on clamp-type ALS models until after inserting the mounting shaft.

Mounting

(1) Remove any rust, dust, oil or the like from the inner diameter surfaces of the shaft and coupling. Be particularly careful to degrease or otherwise process clamp-type couplings (which use friction to hold shafts in place) to fully remove any grease, oil, or the like that is molybdenum disulfide based or contains extreme-pressure additives that strongly affect coefficients of friction.

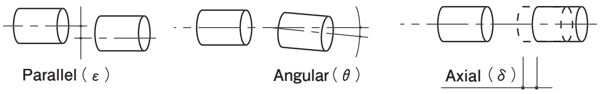
(2) Insert each shaft far enough so that the paired mounting shaft touches the shaft along the entire length of the hub of the coupling (L1/L2 in dimensions table).
After mounting the left and right hubs, check also that the total coupling length (L in the dimensions chart) does not exceed the permitted axial tolerance. If the total coupling length cannot be checked, use a feeler gauge or similar tool to check that the gap between the left and right hubs (S in the dimensions chart) does not exceed the permitted axial tolerance.

Coupling size	014	020	030	040	055	065	080	095	105
L1, L2 [mm]	7	10	11	25	30	35	45	50	56
S [mm]	1	1	1.5	2	2	2.5	3	3	3.5

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

(4) Check centering by holding a straight-edge to the outer circumference of the main body, using two points about 90° apart. The centering precision has a major impact on the service life of the element. We recommend aligning the centering locations as the method for centering the two shafts.

Misalignment



Model	Parallel ε [mm]	Angular θ [°]	Axial δ [mm]	Axial total length L [mm]
ALS-014-R	0.10	1	0～+0.6	22～22.6
ALS-020-R	0.10	1	0～+0.8	30～30.8
ALS-030-R	0.10	1	0～+1.0	35～36.0
ALS-040-R	0.10	1	0～+1.2	66～67.2
ALS-055-R	0.10	1	0～+1.4	78～79.4
ALS-065-R	0.10	1	0～+1.5	90～91.5
ALS-080-R	0.10	1	0～+1.8	114～115.8
ALS-095-R	0.10	1	−0.5～+2.0	125.5～128.0
ALS-105-R	0.15	1	−0.9～+2.0	139.1～142.0

Model	Parallel ε [mm]	Angular θ [°]	Axial δ [mm]	Axial total length L [mm]
ALS-014-Y	0.10	1	0～+0.6	22～22.6
ALS-020-Y	0.15	1	0～+0.8	30～30.8
ALS-030-Y	0.15	1	0～+1.0	35～36.0
ALS-040-Y	0.10	1	0～+1.2	66～67.2
ALS-055-Y	0.15	1	0～+1.4	78～79.4
ALS-065-Y	0.15	1	0～+1.5	90～91.5
ALS-080-Y	0.15	1	0～+1.8	114～115.8
ALS-095-Y	0.15	1	−0.5～+2.0	125.5～128.0
ALS-105-Y	0.20	1	−0.9～+2.0	139.1～142.0

Model	Parallel ε [mm]	Angular θ [°]	Axial δ [mm]	Axial total length L [mm]
ALS-030-B	0.17	1	−0.2～+1.0	34.8～36.0
ALS-040-B	0.20	1	−0.5～+1.2	65.5～67.2
ALS-055-B	0.22	1	−0.2～+1.4	77.8～79.4
ALS-065-B	0.25	1	−0.6～+1.5	89.4～91.5
ALS-080-B	0.28	1	−0.9～+1.8	113.1～115.8
ALS-095-B	0.32	1	−0.5～+2.0	125.5～128.0
ALS-105-B	0.36	1	−0.9～+2.0	139.1～142.0

(5) Tighten set screws with hex socket heads and clamping bolts to the tightening torques shown below using a calibrated torque screwdriver or torque wrench.

Size of hex-socket-head set screw	M3	M4	M5	M6	M8	M10
Tightening torque [N·m]	0.7	1.7	3.6	6.0	14.5	28.0

Clamping bolt size	M2	M2.5	M3	M5	M6	M8
Tightening torque [N·m]	0.4	1.0	1.5	7.0	14.0	30.0

(6) Do not use any hex-socket-head set screw or clamping bolt other than those specified by Miki Pulley. Do not apply oil, grease, or screw fixatives.

Selection Procedures

ALS models can be selected in one of two ways depending on their mode of use: ordinary use or no-backlash use (exploiting their pre-compressed construction). When considering use of couplings in no-backlash mode, however, be sure that use will be at a torque that is low enough for the nominal torque of the coupling. Note that selection criteria are different for ordinary use and use in no-backlash mode. When considering use of couplings in no-backlash mode, select from among the ALS-R and ALS-Y types. ALS-B types cannot be used in no-backlash mode.

■ Ordinary use

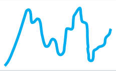
(1) Find the torque, Ta, applied to the coupling using the output capacity, P, of the driver and the usage rotation speed, n.

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

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

$$\mathrm{Td\,[N{\cdot}m]} = \mathrm{Ta} \times \mathrm{K1} \times \mathrm{K2} \times \mathrm{K3} \times \mathrm{K4}$$

■ Service factor based on load property: K1

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

■ Service factor based on operating time: K2

Hrs./day	～8	～16	～24
K2	1.0	1.12	1.25

■ Service factor based on starting/braking frequency: K3

Times/hr.	～10	～30	～60	～120	～240	Over 240
K3	1.0	1.1	1.3	1.5	2.0	2.5≦

■ Service factor based on operating temperature: K4

Temperature [℃]	－30～30	30～40	40～60	60～80
K4	1.0	1.2	1.4	1.8

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

$$\mathrm{Tn} \geqq \mathrm{Td}$$

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

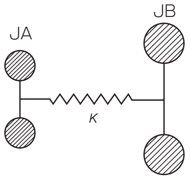
$$\mathrm{Tm} \geqq \mathrm{Ts} \times \mathrm{K4}$$

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

(6) When the coupling is used in machinery prone to periodic violent load-torque fluctuations, torsional vibration must also be considered in addition to the above selection criteria. In other words, check that the vibration frequency of the torque fluctuation does not match the natural frequency of the shafting. The natural frequency is generally calculated by finding the natural frequency, fe, of one section, approximating the shafting as shown in the diagram below.

$$\mathrm{fe} = \frac{1}{2\pi}\sqrt{\kappa\left(\frac{1}{\mathrm{JA}}+\frac{1}{\mathrm{JB}}\right)}\ \mathrm{[Hz]}$$

κ : Static torsional stiffness of coupling [N·m/rad]
JA: Moment of inertia of driving side [kg·m^2]
JB: Moment of inertia of driven side [kg·m^2]



■ No-backlash use

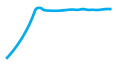
(1) Find the torque, Ta, applied to the coupling using the output capacity, P, of the driver and the usage rotation speed, n.

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

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

$$\mathrm{Td\,[N{\cdot}m]} = \mathrm{Ta} \times \mathrm{K1} \times \mathrm{K2} \times \mathrm{K3} \times \mathrm{K4}$$

■ Service factor based on load property: K1

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

* When using in no-backlash mode, be sure that K1 ≧ 4.

■ Service factor based on operating time: K2

Hrs./day	～8	～16	～24
K2	1.0	1.12	1.25

■ Service factor based on starting/braking frequency: K3

Times/hr.	～10	～30	～60	～120	～240	Over 240
K3	1.0	1.1	1.3	1.5	2.0	2.5≦

■ Service factor based on operating temperature: K4

Temperature [℃]	－30～30	30～40	40～60	60～80
K4	1.0	1.2	1.4	1.8

(3) Select a size that results in a peak torque Ts generated by the driver, follower or both that is no greater than the nominal torque Tn for the coupling.

$$\mathrm{Tn} \geqq \mathrm{Ts} \times \mathrm{K4}$$

(4) When the required shaft diameter exceeds the maximum bore diameter of the selected size, select a suitable coupling. When using a clamping hub, the bore diameter may restrict the transmission torque. For that reason, check that the clamping-hub shaft holding force of the selected coupling size is at least equal to the peak torque, Ts, applied to the coupling.

Couplings can structurally be used in no-backlash mode while the element is pre-compressed, but backlash may start to occur with use. If you are considering using the coupling in no-backlash mode over a long period of time, we recommend setting the service factor K1 to a high value.
If you require higher precision control/positioning for a long period of time, we recommend our SERVOFLEX series of metal disc couplings.

ALS Models

Items Checked for Design Purposes

Induction Motor Specifications and Easy Selection Table

Motor		50 Hz: 3000 min^{-1}, 60 Hz: 3600 min^{-1}				50 Hz: 1500min^{-1}, 60 Hz: 1800min^{-1}				50 Hz: 1000min^{-1}, 60 Hz: 1200min^{-1}			
		Two-pole motor		MIKI PULLEY STARFLEX		Four-pole motor		MIKI PULLEY STARFLEX		Six-pole motor		MIKI PULLEY STARFLEX	
Output [kW]	Frequency [Hz]	Shaft diameter [mm]	Torque [N·m]	Model	Nominal bore diameter	Shaft diameter [mm]	Torque [N·m]	Model	Nominal bore diameter	Shaft diameter [mm]	Torque [N·m]	Model	Nominal bore diameter
0.1	50	–	–	–	–	11	0.7	ALS-030	11	–	–	–	–
	60	–	–	–	–	11	0.5	ALS-030	11	–	–	–	–
0.2	50	11	0.7	ALS-030	11	11	1.3	ALS-030	11	–	–	–	–
	60	11	0.5	ALS-030	11	11	1.1	ALS-030	11	–	–	–	–
0.4	50	14	1.3	ALS-030	14N	14	2.6	ALS-030	14N	19	3.9	ALS-040	19N
	60	14	1.1	ALS-030	14N	14	2.2	ALS-030	14N	19	3.2	ALS-040	19N
0.75	50	19	2.4	ALS-040	19N	19	4.9	ALS-040	19N	24	7.3	ALS-055	24N
	60	19	2	ALS-040	19N	19	4.1	ALS-040	19N	24	6.1	ALS-055	24N
1.5	50	24	4.9	ALS-055	24N	24	9.7	ALS-055	24N	28	15	ALS-055	28N
	60	24	4.1	ALS-055	24N	24	8.1	ALS-055	24N	28	12	ALS-055	28N
2.2	50	24	7.1	ALS-055	24N	28	14	ALS-055	28N	28	21	ALS-065	28N
	60	24	6	ALS-055	24N	28	12	ALS-055	28N	28	18	ALS-065	28N
3.7	50	28	12	ALS-055	28N	28	24	ALS-065	28N	38	36	ALS-065	38N
	60	28	10	ALS-055	28N	28	20	ALS-065	28N	38	30	ALS-065	38N
5.5	50	38	18	ALS-065	38N	38	36	ALS-065	38N	38	54	ALS-080	38N
	60	38	15	ALS-065	38N	38	30	ALS-065	38N	38	45	ALS-065	38N
7.5	50	38	24	ALS-065	38N	38	49	ALS-065	38N	42	72	ALS-080	42N
	60	38	20	ALS-065	38N	38	41	ALS-065	38N	42	60	ALS-080	42N
11	50	42	36	ALS-080	42N	42	71	ALS-080	42N	42	108	ALS-080-R	42N
	60	42	30	ALS-080	42N	42	59	ALS-080	42N	42	90	ALS-080	42N
15	50	42	49	ALS-080	42N	42	97	ALS-080	42N	48	149	ALS-095-R	48N
	60	42	41	ALS-080	42N	42	81	ALS-080	42N	48	124	ALS-095	48N
18.5	50	42	65	ALS-080	42N	48	120	ALS-095	48N	55	183	ALS-095-R	55N
	60	42	50	ALS-080	42N	48	100	ALS-095	48N	55	152	ALS-095-R	55N
22	50	48	71	ALS-095	48N	48	143	ALS-095-R	48N	55	218	ALS-095-R	55N
	60	48	59	ALS-095	48N	48	119	ALS-095	48N	55	182	ALS-095-R	55N
30	50	55	97	ALS-095	55N	55	195	ALS-095-R	55N	60	296	–	60N
	60	55	81	ALS-095	55N	55	162	ALS-095-R	55N	60	247	ALS-105-R	60N
37	50	55	120	ALS-095	55N	60	240	ALS-105-R	60N	–	–	–	–
	60	55	100	ALS-095	55N	60	200	ALS-105-R	60N	–	–	–	–
45	50	55	146	ALS-105	55N	60	292	–	60N	–	–	–	–
	60	55	122	ALS-095	55N	60	243	ALS-105-R	60N	–	–	–	–

* The above table shows appropriate sizes for key types in ordinary use in an induction motor driver. It is not for making selections for use with no-backlash specifications.

* Motor rotation speed and output torque are calculated (reference) values.

Servo Motor Specifications and Easy Selection Table

Servo motor specifications					Corresponding coupling specifications	
Rated output [kW]	**Rated rotation speed [min^{-1}]**	**Rated torque [N·m]**	**Max. torque [N·m]**	**Shaft diameter [mm]**	**Model ALS-□-R**	**Max. bore diameter [mm]**
0.05	3000	0.16	0.48	8	ALS-020-R	8
0.1	3000	0.32	0.95	8	ALS-020-R	8
0.2	3000	0.64	1.9	14	ALS-030-R	14
0.4	3000	1.30	3.8	14	ALS-030-R	14
0.5	2000	2.39	7.16	24	ALS-055-R	28
0.5	3000	1.59	4.77	24	ALS-055-R	28
0.75	2000	3.58	10.7	22	ALS-055-R	28
0.75	3000	2.40	7.2	19	ALS-040-R	20
0.85	1000	8.12	24.4	24	ALS-055-R	28
1	2000	4.78	14.4	24	ALS-055-R	28
1	3000	3.18	9.55	24	ALS-055-R	28
1.2	1000	11.50	34.4	35	ALS-065-R	35
1.5	2000	7.16	21.6	28	ALS-055-R	28
1.5	3000	4.78	14.3	24	ALS-055-R	28
2	2000	9.55	28.5	35	ALS-065-R	35
2	3000	6.37	15.9	24	ALS-055-R	28
3	1000	28.60	85.9	35	ALS-065-R	35
3.5	2000	16.70	50.1	35	ALS-065-R	35
3.5	3000	11.10	27.9	28	ALS-055-R	28
5	2000	23.90	71.6	35	ALS-065-R	35
5	3000	15.90	39.7	28	ALS-055-R	28
7	2000	33.40	100	35	ALS-065-R	35

* The above table was set up in simple terms for clamp types based on the shaft diameters of compatible servo motors and the rated transmission torque of the coupling. It is not guaranteed when using the couplings in the no-backlash mode.

Jaw Couplings

SPRFLEX

High flexibility

High damping

RoHS

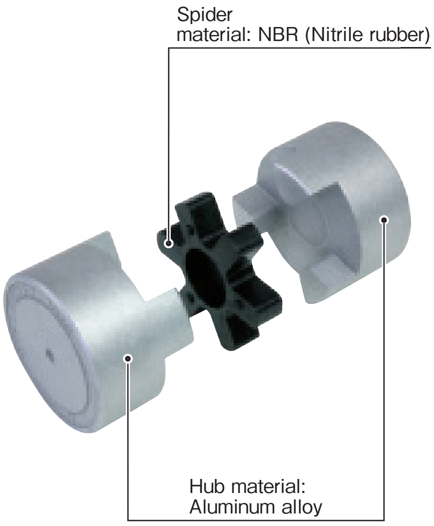
Max. nominal torque [N·m]	50
Pilot bore/added work ranges [mm]	ϕ 4～48
Operating temperature [℃]	− 20～80
Backlash	Yes
Driver	Induction motor
Application	Pumps, fans, textile machinery

Jaw Couplings that Use Rubber as Buffer Material

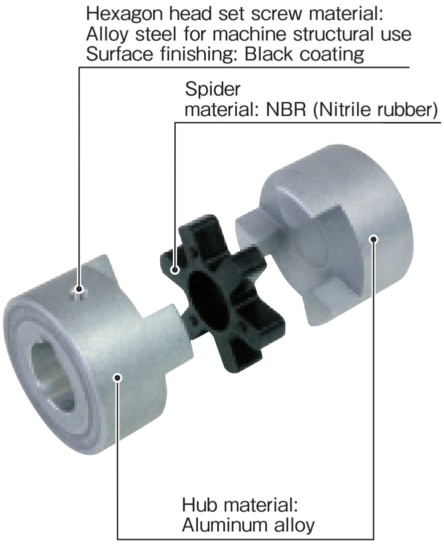
These jaw couplings have simpler designs that sandwich a buffer material (spider) between two hubs. The hub is lightweight, being made of aluminum alloy. Input and output can be coupled or separated easily by simply moving the coupling in the axial.

Structure and Materials

■ Pilot bore



■ Key/set screw types



■ Spider (rubber buffer)

AL Models

Specifications

Model	Torque		Misalignment			Max. rotation speed [min⁻¹]	Moment of inertia [kg·m²]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Parallel [mm]	Angular [°]	Axial [mm]			
AL-035	0.5	1.5	0.1	0.5	+ 0.3	18000	0.38×10^{-6}	0.01
AL-050	1.5	4.5	0.2	1.0	± 0.5	12000	5.10×10^{-6}	0.06
AL-070	3	9	0.2	1.0	± 0.5	9000	1.79×10^{-5}	0.12
AL-075	5	15	0.2	1.0	± 0.5	7000	5.36×10^{-5}	0.21
AL-090	8	24	0.3	1.0	± 0.5	6000	1.15×10^{-4}	0.31
AL-095	10	30	0.3	1.0	± 0.5	6000	1.40×10^{-4}	0.36
AL-100	25	75	0.3	1.0	± 0.7	5000	4.34×10^{-4}	0.78
AL-110	50	150	0.3	1.0	± 0.7	4000	1.43×10^{-3}	1.56

* Max. rotation speed does not take into account dynamic balance or mounting misalignment.
* The moment of inertia and mass are measured for the pilot bore.

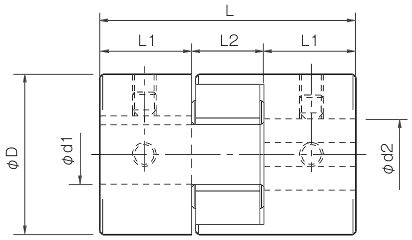
Dimensions (Couplings)

Unit [mm]

Model	d1・d2			D	L	L1	L2
	Pilot bore	Min.	Max.				
AL-035	4	4	8	16.1	20.5	6.5	7.5[*1]
AL-050	5	6	16	27	43.2	15.5	12.2
AL-070	5	6	20	35	49.2	18.5	12.2
AL-075	5	7	26	45	54.4	21.0	12.4
AL-090	5	9	28	54	55.0	21.0	13.0
AL-095	5	9	28	55	61.0	24.0	13.0
AL-100	5	11	36	66	88.0	35.0	18.0
AL-110	5	11	48	85	110.0	44.0	22.0

* "Pilot bore" refers to center processing. Minimums and maximums for d1 and d2 are values at the MIKI PULLEY standard hole-drilling standards.
* The value marked *1 leaves a 1 mm space for the thickness of the spider body.

CAD



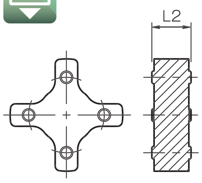
Dimensions (Spider)

Unit [mm]

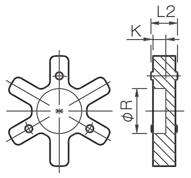
Model	L2	R	K
L-035	6.5	—	—
L-050	12.2	—	—
L-070	12.2	—	—
L-075	12.4	20	6.0
L-090	13.0	22	6.3
L-095	13.0	22	6.3
L-100	18.0	26	6.0
L-110	22.0	30	6.0

■ L-035 - 070

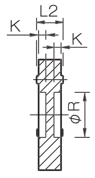
CAD



■ L-075 - 095



■ L-100 - 110



How to Place an Order

Pilot Bore

AL-050 ·

Size

Key/Set Screw Types

AL-050 12H-14N

Size

Bore diameter: d1 (Small diameter) - d2 (Large diameter)
Bore specifications
Blank: Compliant with the old JIS standards (class 2)
H: Compliant with the new JIS standards
N: Compliant with the new motor standards

Spiders

L-090

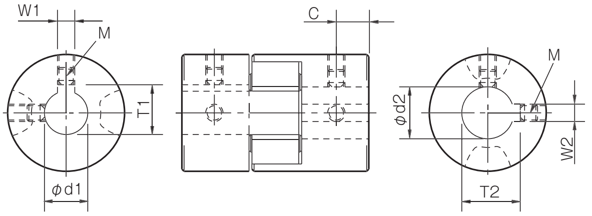
Size

AL Models

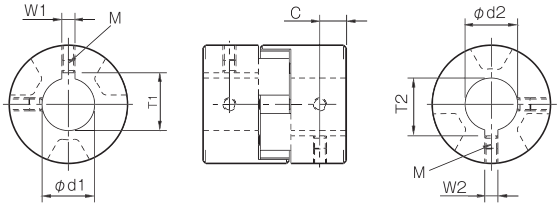
Standard Hole-Drilling Standards

- Set screw and keyway positions are not on the same plane. Positioning precision for keyway milling is determined by sight, so contact Miki Pulley when the keyway requires a positioning precision for a particular hub.
- The set screws are included with the product.

■ AL-035 to 070



■ AL-075 to 110



Unit [mm]

Models compliant with the old JIS standards (class 2)					Models compliant with the new JIS standards					Models compliant with the new motor standards				
Nominal bore diameter	Bore diameter [d1 • d2]	Keyway width [W1 • W2]	Keyway height [T1 • T2]	Set screw hole [M]	Nominal bore diameter	Bore diameter [d1 • d2]	Keyway width [W1 • W2]	Keyway height [T1 • T2]	Set screw hole [M]	Nominal bore diameter	Bore diameter [d1 • d2]	Keyway width [W1 • W2]	Keyway height [T1 • T2]	Set screw hole [M]
Toler-ance	H7, H8	E9	$^{+0.3}_{0}$	—	Toler-ance	H7	H9	$^{+0.3}_{0}$	—	Toler-ance	G7, F7	H9	$^{+0.3}_{0}$	—
6	6 $^{+0.018}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
7	7 $^{+0.022}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
8	8 $^{+0.022}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
9	9 $^{+0.022}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
10	10 $^{+0.022}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
11	11 $^{+0.018}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
12	12 $^{+0.018}_{0}$	4 $^{+0.050}_{+0.020}$	13.5	2-M4	12H	12 $^{+0.018}_{0}$	4 $^{+0.030}_{0}$	13.8	2-M4	—	—	—	—	—
14	14 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	16.0	2-M4	14H	14 $^{+0.018}_{0}$	5 $^{+0.030}_{0}$	16.3	2-M4	14N	14 $^{+0.024}_{+0.006}$	5 $^{+0.030}_{0}$	16.3	2-M4
15	15 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	17.0	2-M4	15H	15 $^{+0.018}_{0}$	5 $^{+0.030}_{0}$	17.3	2-M4	—	—	—	—	—
16	16 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	18.0	2-M4	16H	16 $^{+0.018}_{0}$	5 $^{+0.030}_{0}$	18.3	2-M4	—	—	—	—	—
17	17 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	19.0	2-M4	17H	17 $^{+0.018}_{0}$	5 $^{+0.030}_{0}$	19.3	2-M4	—	—	—	—	—
18	18 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	20.0	2-M4	18H	18 $^{+0.018}_{0}$	6 $^{+0.030}_{0}$	20.8	2-M5	—	—	—	—	—
19	19 $^{+0.021}_{0}$	5 $^{+0.050}_{+0.020}$	21.0	2-M4	19H	19 $^{+0.021}_{0}$	6 $^{+0.030}_{0}$	21.8	2-M5	19N	19 $^{+0.028}_{+0.007}$	6 $^{+0.030}_{0}$	21.8	2-M5
20	20 $^{+0.021}_{0}$	5 $^{+0.050}_{+0.020}$	22.0	2-M4	20H	20 $^{+0.021}_{0}$	6 $^{+0.030}_{0}$	22.8	2-M5	—	—	—	—	—
22	22 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	25.0	2-M6	22H	22 $^{+0.021}_{0}$	6 $^{+0.030}_{0}$	24.8	2-M5	—	—	—	—	—
24	24 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	27.0	2-M6	24H	24 $^{+0.021}_{0}$	8 $^{+0.036}_{0}$	27.3	2-M6	24N	24 $^{+0.028}_{+0.007}$	8 $^{+0.036}_{0}$	27.3	2-M6
25	25 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	28.0	2-M6	25H	25 $^{+0.021}_{0}$	8 $^{+0.036}_{0}$	28.3	2-M6	—	—	—	—	—
28	28 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	31.0	2-M6	28H	28 $^{+0.021}_{0}$	8 $^{+0.036}_{0}$	31.3	2-M6	28N	28 $^{+0.028}_{+0.007}$	8 $^{+0.036}_{0}$	31.3	2-M6
30	30 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	33.0	2-M6	30H	30 $^{+0.021}_{0}$	8 $^{+0.036}_{0}$	33.3	2-M6	—	—	—	—	—
32	32 $^{+0.025}_{0}$	10 $^{+0.061}_{+0.025}$	35.5	2-M8	32H	32 $^{+0.025}_{0}$	10 $^{+0.036}_{0}$	35.3	2-M8	—	—	—	—	—
35	35 $^{+0.025}_{0}$	10 $^{+0.061}_{+0.025}$	38.5	2-M8	35H	35 $^{+0.025}_{0}$	10 $^{+0.036}_{0}$	38.3	2-M8	—	—	—	—	—
38	38 $^{+0.025}_{0}$	10 $^{+0.061}_{+0.025}$	41.5	2-M8	38H	38 $^{+0.025}_{0}$	10 $^{+0.036}_{0}$	41.3	2-M8	38N	38 $^{+0.050}_{+0.025}$	10 $^{+0.036}_{0}$	41.3	2-M8
40	40 $^{+0.025}_{0}$	10 $^{+0.061}_{+0.025}$	43.5	2-M8	40H	40 $^{+0.025}_{0}$	12 $^{+0.043}_{0}$	43.3	2-M8	—	—	—	—	—
42	42 $^{+0.025}_{0}$	12 $^{+0.075}_{+0.032}$	45.5	2-M8	42H	42 $^{+0.025}_{0}$	12 $^{+0.043}_{0}$	45.3	2-M8	42N	42 $^{+0.050}_{+0.025}$	12 $^{+0.043}_{0}$	45.3	2-M8
45	45 $^{+0.025}_{0}$	12 $^{+0.075}_{+0.032}$	48.5	2-M8	45H	45 $^{+0.025}_{0}$	14 $^{+0.043}_{0}$	48.8	2-M10	—	—	—	—	—
48	48 $^{+0.025}_{0}$	12 $^{+0.075}_{+0.032}$	51.5	2-M8	48H	48 $^{+0.025}_{0}$	14 $^{+0.043}_{0}$	51.8	2-M10	48N	48 $^{+0.050}_{+0.025}$	14 $^{+0.043}_{0}$	51.8	2-M10

* The ø11 or below requirement under the new JIS standards and ø11 requirement for the new motor standards are the same as the old JIS standards (class 2).

* For AL-035, the tolerance is $^{+0.05}_{0}$ regardless of bore diameter. The set screw size is M3.

Distance from Set Screw Edge

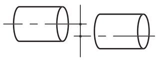
Model	AL-035	AL-050	AL-070	AL-075	AL-090	AL-095	AL-100	AL-110
Distance from set screw edge C [mm]	3.5	7.5	9	10	12	12	12	15

Items Checked for Design Purposes

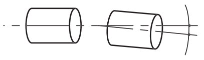
Precautions for Handling

(1) Couplings are designed for use within an operating temperature from -20℃ to 80℃ . Although SPRFLEX couplings are designed to be waterproof and oilproof, do not subject them to excessive amounts of water or oil as these may cause deterioration. Use and storage in direct sunlight may shorten coupling service life, so cover couplings appropriately.

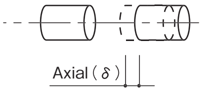
(2) To get full coupling performance, mount couplings so that differences between coupling centers during operation are within the misalignment shown in the specifications table. However, this misalignment is the maximum value when each occurs independently, so make the allowable value when they combine 50% or less of this value. Also, the maximum rotation speed does not take into account dynamic balance or mounting misalignment, so factor in the dynamic balance and mounting misalignment when using the couplings at or above 3600 min^{-1}. Be particularly careful to mount the couplings so that the mounting misalignment at rotation speeds of 2000 min^{-1} or more is no greater than 50% or the allowable value.



Parallel (ε)



Angular (θ)



Axial (δ)

(3) Check centering by holding a straight-edge to the outer circumference of the main body, using two points about 90˚ apart. Spider service life is greatly affected by the precision of centering. We recommend matching of centering locations as the method for centering two shafts.

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

(5) The length of insertion of the shaft into the coupling should be the dimension L1 on the dimensions table.

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

Size of hex-socket-head set screw	M3	M4	M5	M6	M8	M10
Tightening torque [N·m]	0.7	1.7	3.6	6.0	14.2	28.0

Selection Procedures

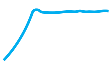
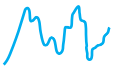
(1) Find the torque, Ta, applied to the coupling using the output capacity, P, of the driver and the usage rotation speed, n.

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

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

$$Td\ [N{\cdot}m] = Ta \times K1 \times K2 \times K3 \times K4$$

■ Service factor based on load property: K1

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

■ Service factor based on operating time: K2

Hrs./day	～8	～16	～24
K2	1.0	1.12	1.25

■ Service factor based on starting/braking frequency: K3

Times/hr.	～10	～30	～60	～120	～240	Over 240
K3	1.0	1.1	1.3	1.5	2.0	∗

* Items marked with asterisks require consultations.

■ Service factor based on operating temperature: K4

Temperature [℃]	−20	0	+20	+40	+60	+80
K4	1.3	1.1	1.0		1.1	1.3

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

$$Tn \geqq Td$$

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

$$Tm \geqq Ts{\bullet}K4$$

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

Induction Motor Specifications and Easy Selection Table

Motor		50 Hz: 3000 min^{-1}, 60 Hz: 3600 min^{-1}				50 Hz: 1500min^{-1}, 60 Hz: 1800min^{-1}				50 Hz: 1000min^{-1}, 60 Hz: 1200min^{-1}			
		Two-pole motor		SPRFLEX		Four-pole motor		SPRFLEX		Six-pole motor		SPRFLEX	
Output [kW]	Frequency [Hz]	Shaft diameter [mm]	Torque [N·m]	Model	Nominal bore diameter	Shaft diameter [mm]	Torque [N·m]	Model	Nominal bore diameter	Shaft diameter [mm]	Torque [N·m]	Model	Nominal bore diameter
0.1	50	—	—	—	—	11	0.7	AL-050	11	—	—	—	—
	60	—	—	—	—	11	0.5	AL-050	11	—	—	—	—
0.2	50	11	0.7	AL-050	11	11	1.3	AL-070	11	—	—	—	—
	60	11	0.5	AL-050	11	11	1.1	AL-070	11	—	—	—	—
0.4	50	14	1.3	AL-070	14N	14	2.6	AL-075	14N	19	3.9	AL-090	19N
	60	14	1.1	AL-070	14N	14	2.2	AL-075	14N	19	3.2	AL-090	19N
0.75	50	19	2.4	AL-075	19N	19	4.9	AL-095	19N	24	7.3	AL-100	24N
	60	19	2.0	AL-075	19N	19	4.1	AL-090	19N	24	6.1	AL-095	24N
1.5	50	24	4.9	AL-095	24N	24	9.7	AL-100	24N	28	15	AL-110	28N
	60	24	4.1	AL-095	24N	24	8.1	AL-100	24N	28	12	AL-100	28N
2.2	50	24	7.1	AL-100	24N	28	14	AL-110	28N	28	21	AL-110	28N
	60	24	6.0	AL-095	24N	28	12	AL-100	28N	28	18	AL-110	28N
3.7	50	28	12	AL-100	28N	28	24	AL-110	28N	38	36	—	38N
	60	28	10	AL-100	28N	28	20	AL-110	28N	38	30	AL-110	38N

* The above table shows suitable sizes for ordinary use on an induction motor drive unit.
* Motor rotation speed and output torque are calculated (reference) values.

Plastic Bellows Couplings

BELLOWFLEX

High flexibility
High damping
No backlash
RoHS

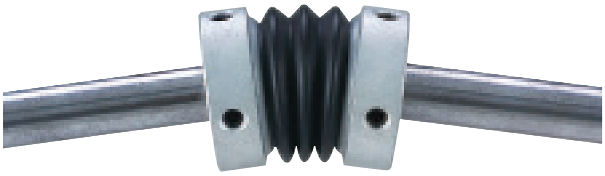
Max. nominal torque [N·m]	1.5
Bore ranges [mm]	φ 3 ～ 12
Operating temperature [℃]	−20 ～ 60
Driver	Induction motor, stepper motor, encoder
Application	Automated teller machines, inspection equipment, printing machinery

Plastic Bellows Coupling Ideal for Stepper Motors and Encoders

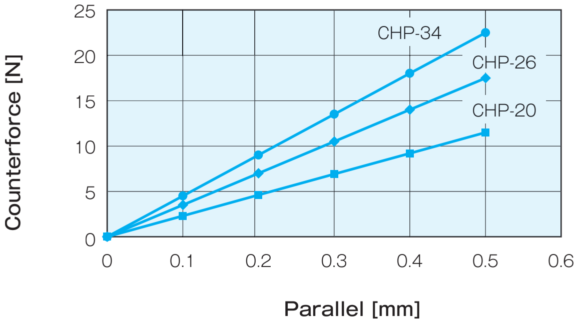
Bellows couplings that use a plastic (polyester resin) boot with plenty of elasticity in order to achieve high damping performance and extremely small counterforce from mounting misalignment. A compact design that unitizes an aluminum alloy hub and plastic boot means there is no backlash.

Main Features

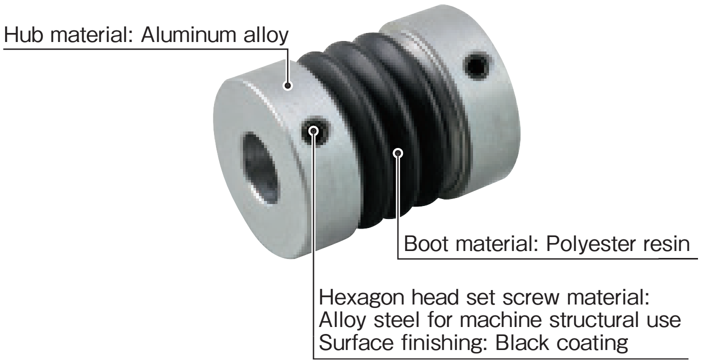
Allows Angular Deflection up to 10°



Extremely Small Counterforce due to Misalignment



Structure and Materials



CHP Models

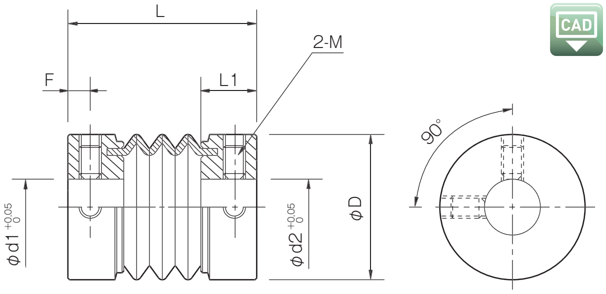
Specifications

Model	Torque		Misalignment			Max. rotation speed [min^{-1}]	Static torsional stiffness [N·m/rad]	Moment of inertia [kg·m²]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Parallel [mm]	Angular [°]	Axial [mm]				
CHP-20	0.4	0.8	0.5	10	± 0.5	9000	5.9	6.30×10^{-7}	0.012
CHP-26	0.7	1.4	0.5	10	± 0.5	7000	12.5	2.40×10^{-6}	0.026
CHP-34	1.5	3.0	0.5	10	± 0.5	5500	32.8	7.90×10^{-6}	0.051

* Static torsional stiffness values given are from measurements taken at 20℃

* The moment of inertia and mass are measured for the minimum bore diameter.

Dimensions



Unit [mm]

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

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

Model	Standard bore diameter d1-d2 [mm]					
	3-3	5-5	6-6	8-8	10-10	12-12
CHP-20	●	●	●			
CHP-26			●	●	●	
CHP-34				●	●	●

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

* Non-standard bore diameters require additional processing.

How to Place an Order

CHP-26 8-8

Size

Bore diameter d1 - d2

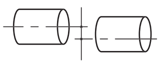
Items Checked for Design Purposes

Precautions for Handling

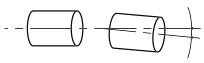
(1) Couplings can be used within a temperature range of −20℃ to 60℃ . Although BELLOWFLEX couplings are designed to be waterproof and oilproof, do not subject them to excessive amounts of water or oil as these may cause deterioration. Use and storage in direct sunlight may shorten coupling service life,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

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

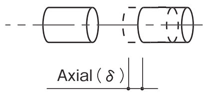
(3) To get full coupling performance, mount couplings so that differences between coupling centers during operation are within the misalignment shown in the specifications table.
However, this misalignment is the maximum value when each occurs independently, so make the allowable value when they combine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



Parallel (ε)



Angular (θ)



Axial (δ)

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

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

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

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

Selection Procedures

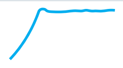
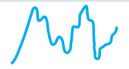
(1) Find the torque, Ta, applied to the coupling using the output capacity, P, of the driver and the usage rotation speed, n.

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

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

$$\mathrm{Td\,[N{\cdot}m]} = \mathrm{Ta} \times \mathrm{K1} \times \mathrm{K2}$$

Service factor based on load property: K1

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

Service factor based on operating temperature: K2

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

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

$$\mathrm{Tn} \geqq \mathrm{Td}$$

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

$$\mathrm{Tm} \geqq \mathrm{Ts}$$

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

Rubber and Plastic Couplings

CENTAFLEX

- High flexibility
- High damping
- For high output
- For special-order specific length couplings
- Long service life
- Wide range of variations

Driver	Engines, induction motors
Application	Construction machinery, agricultural machinery, ships, generators, special rolling stock, machine tools, testing machinery, wind turbin generator

Couplings Allow a Large Mounting Misalignment and Rapidly Absorb Vibration and Shock

These couplings use rubber or plastic in their power transmission elements. They reduce or absorb shock and vibration using the elasticity of those transmission elements. Their advantages include high flexibility, low noise, easy maintenance (because they do not require lubrication), simple construction, and long service life.

* Depending on your location and such, we may not be able to sell you our products.
Please contact us for details.

Available Models

Series	Element material	Main application(s)	Lineup
CENTAFLEX	Natural rubber based	General industrial machinery, construction machinery, ships	CF-A
	Polyester resin	Construction machinery	CF-H
	Nylon resin	Machine tools, printing machinery	CF-X
	Polyurethane resin	General industrial machinery, generators	CF-B
	Polyester resin	General industrial machinery, generators	CF-B (-H)
	Natural rubber based	Ships, construction machinery	CM

Model Selection

Model/ Type	Nominal torque [N·m] (0 / 2500 / 5000 / 18000)	Element material	Oil-proof	Misalignment			Operating temperature [℃]	Torsion at rated torque[°]	Outer diameter [mm]	Max. shaft dia. [mm]	Max. nominal torque [N·m]
				Parallel	Angular	Axial					
CF-A	10 ～ 5000	Natural rubber based (NR)	×	●	●	●	−30 ～ 95	3 ～ 6	56 ～ 370	130	5000
CF-H	100 ～ 2500	Polyester resin	●	○	△	●	−40 ～ 120	0.2 ～ 0.3	125 ～ 330	120	2500
CF-X	15 ～ 370	Nylon resin	●	△	△	○	−30 ～ 90	0.12	57 ～ 175	65	370
CF-B	30 ～ 1000	Polyurethane resin	●	●	○	○	−40 ～ 80	2.5	72 ～ 187	80	1000
CF-B (-H)	45 ～ 1400	Polyester resin	●	●	○	○	−40 ～ 120	4	72 ～ 187	80	1400
CM	700 ～ 18000	Natural rubber based (NR)	×	◎	△	●	−30 ～ 90	12	314.3 ～ 733.4	180	18000

* Symbols in the table indicate compatibility in five levels. The symbols are, highest compatibility to lowest, ●◎○△× . (Higher compatibility ← ●◎○△× → Lower compatibility)

Product Lineup

CF-A

No backlash
High flexibility
High damping
For special-order specific-length couplings

Applications: Construction machinery, ships, generators, compressors

Excellent Durability and Vibration/Shock Absorbance

Heat resistant rubber and pre-compressed construction were used to provide excellent durability and vibration/shock absorbance. Machinery noise is also reduced.

Two Ways to Mount

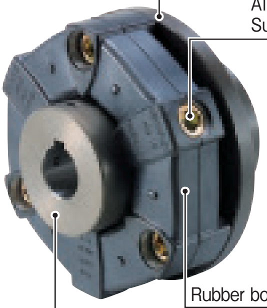
These couplings can be mounted on the shaft using bolts (O0) or by insertion (S0). Select the method that works best for your maintenance and mounting/removal circumstances. Both are easy to center.

Specific Lengths Can be Ordered

Specific lengths can be ordered for the OG and OZ types. Select either high speed (OZ) or low speed (OG) types.

Max. nominal torque	[N·m]	5000
Pilot bore/added work ranges	[mm]	φ 9 ～ 130
Operating temperature	[℃]	− 30 ～ 95
Backlash		Zero

Materials Used for Main Parts



Flange hub material: FC200 or FCD450 or S45C
Surface finishing: Phosphate conversion coating

Bolt material:
Alloy steel for machine structural use
Surface finishing: Zinc plating

Rubber body material: Natural rubber (NR)

Cylindrical hub material: S45C
Surface finishing: Phosphate conversion coating

Component Construction by Type

Type	Structural components				
	Rubber body	Spring pin	Bolt	Cylindrical hub	Flange hub
00・S0	●				
0P・SP	●	●			
0B・SB	●		●		
0C・SC	●	●	●		
01・S1	●	●	●	●	
02・S2	●	●	●	●	●

CF-H

High stiffness
High flexibility
High damping
Thermal resistance
Oil resistance

Applications: Construction machinery

Excellent Environmental Resistance

In addition to absorbing vibration and shock, they have excellent resistance to cold, heat, and oil, enabling their use in punishing environments.

High Durability

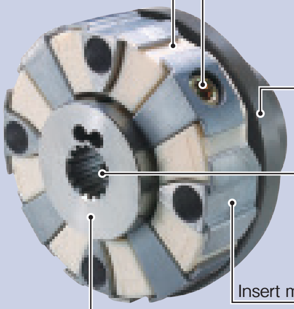
A clamping hub is available (made to order) that fully locks the cylindrical hub to the spline shaft to eliminate fretting wear.

Easy to Maintain

Input and output can be coupled or separated easily by simply moving the coupling in the axial, facilitating maintenance.

Max. nominal torque	[N·m]	2500
Pilot bore/added work ranges	[mm]	φ 13 ～ 120
Operating temperature	[℃]	− 40 ～ 120
Backlash		Yes

Materials Used for Main Parts



Element material: Polyester resin

Bolt material: Alloy steel for machine structural use
Surface finishing: Zinc plating

Flange hub material:
S45C or FCD450
Surface finishing:
Phosphate conversion coating

Special order parts:
Spline machining

Insert material: Aluminum alloy

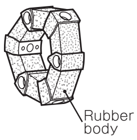
Cylindrical hub material: S45C
Surface finishing: Phosphate conversion coating

Component Construction by Type

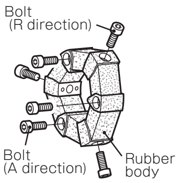
Type	Structural components					
	Element	Aluminum insert	Spring pin	Bolt	Cylindrical hub	Flange hub
00	●	●				
0P	●	●	●			
0B	●	●		●		
0C	●	●	●	●		
01	●	●	●	●	●	
02	●	●	●	●	●	●

O
Bolt Mounted Types

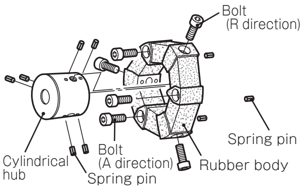
O0 type



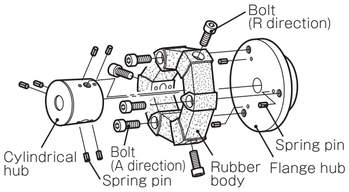
OB type



O1 type

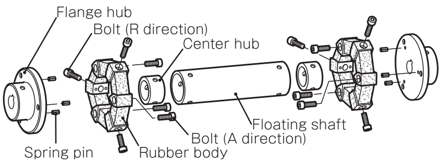


O2 type



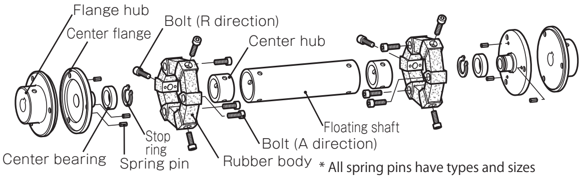
OG type

■ For Low Rotation Speeds



OZ type

■ For High Rotation Speeds

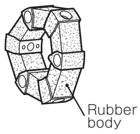


* All spring pins have types and sizes on which they are not used.

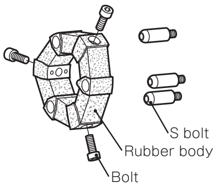
* The OP type is the O0 type with a spring pin. * The OC type is the OB type with a spring pin.

S
Insertion-Mounted Types

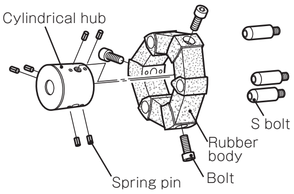
S0 type



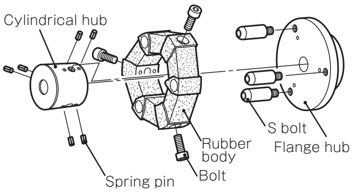
SB type



S1 type



S2 type

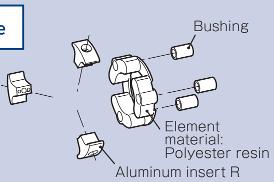


* The SP type is the S0 type with a spring pin. * The SC type is the SB type with a spring pin.

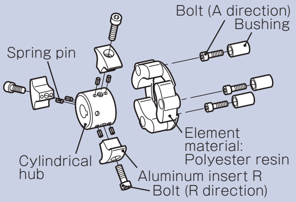
O
Bolt Mounted Types

Size
008, 016

O0 type

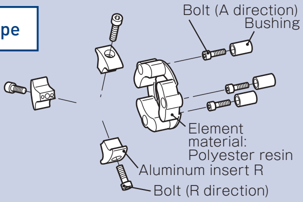


O1 type

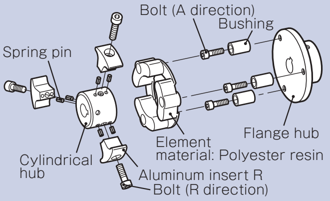


* There is no spring pin for size 008.

OB type



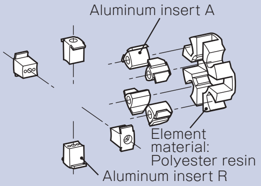
O2 type



* There is no spring pin for size 008.

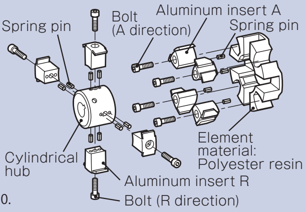
Size
030 to 240

O0 type



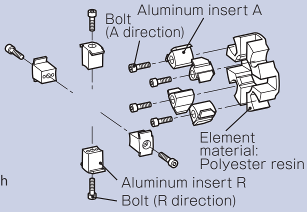
*There are three of each bolt for size 030.

O1 type



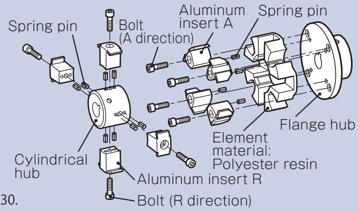
* There are three of each bolt for size 030.

OB type



* There are three of each bolt for size 030.

O2 type



* There are three of each bolt for size 030.

* The OP type is the O0 type with a spring pin. * The OC type is the OB type with a spring pin.

Product Lineup

CF-X

High stiffness | No backlash | High flexibility | High damping | Oil resistance | For special-order specific-length couplings

Applications: Machine tools, printing machines, compressors

High Torsional Stiffness, High Strength

They have very high torsional stiffness for rubber/plastic couplings, as well as no backlash in constant-speed operation. They absorb vibration and shock while delivering accurate power transmission.

Specific Lengths Can be Ordered

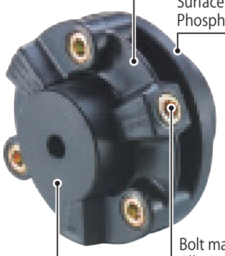
The OG types allow specific lengths to be specified, and they can be removed without moving machinery.

Two Types of Hubs

Cylindrical hubs and flange hubs can be selected with the key/set screw system or the clamp system.

Max. nominal torque	[N·m]	370
Pilot bore/added work ranges	[mm]	φ9～65
Operating temperature	[℃]	−30～90
Backlash		Zero

Materials Used for Main Parts



Element material: Nylon resin

Flange hub material: FC200 or FCD450
Surface finishing:
Phosphate conversion coating

Bolt material:
Alloy steel for machine structural use
Surface finishing: Zinc plating

Cylindrical hub material: S45C
Surface finishing: Phosphate conversion coating

Component Construction by Type

Type	Structural components			
	Element	Bolt	Cylindrical hub	Flange hub
00	●			
0B	●	●		
01	●	●	●	
02	●	●	●	●

CF-B

High flexibility | High damping | Oil resistance

Applications: Electric motors, electric pumps, general industrial machinery

Excellent Vibration/Shock Absorbance

Excellent at absorbing shock and vibration and also reduces machinery noise.

Easy to Maintain

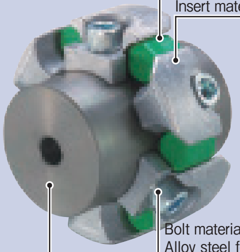
The simple design sandwiches the element between two hubs, facilitating mounting and removal.

Two Types of Elements

Elements with differing characteristics are available. Select CF-B couplings to emphasize flexibility or CF-B-H couplings to emphasize torsional stiffness.

Max. nominal torque	[N·m]	1400
Pilot bore/added work ranges	[mm]	φ10～80
Operating temperature	[℃]	CF-B: -40 - 80 CF-B-H: -40 - 120
Backlash		Insignificant

Materials Used for Main Parts



Element material:
Polyurethane resin or polyester resin

Insert material: Aluminum alloy

Bolt material:
Alloy steel for machine structural use
Surface finishing: Zinc plating

Cylindrical hub material: S45C
Surface finishing: Phosphate conversion coating

CM Made to order

For high output | High flexibility | High damping

Applications: Ships, construction machinery, generators, compressors

Excellent Vibration/Shock Absorbance

These are very soft in the torsional direction and excellent at absorbing shock and vibration.

Easy to Mount and Remove

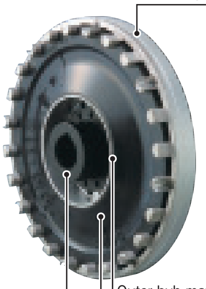
Input and output can be coupled or separated easily by simply moving the coupling in the axial, and these couplings can be mounted directly onto engine flywheels that conform to SAE standard J620.

Excellent Durability

Two types of rubber with different transmission torques and hardnesses are available. They boast superior durability and require virtually no maintenance.

Max. nominal torque	[N·m]	18000
Pilot bore/added work ranges	[mm]	φ19～180
Operating temperature	[℃]	−30～90
Backlash		Yes

Materials Used for Main Parts



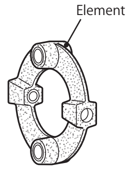
Outer ring material: Aluminum casting

Outer hub material:
FCD450 or an equivalent

Rubber material: Natural rubber (NR)

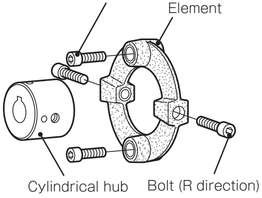
Inner hub material: S45C

00 type

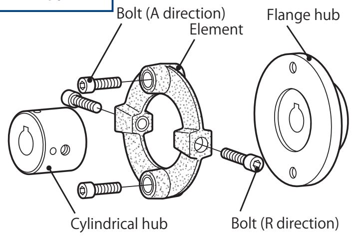


* The OB type is the O0 type with a bolt.

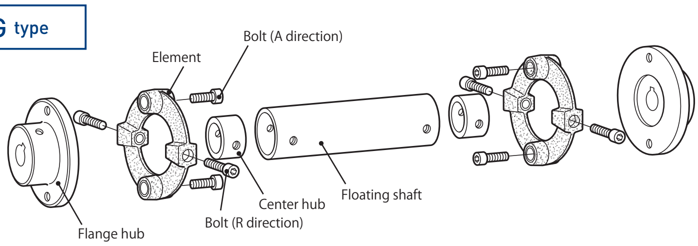
01 type



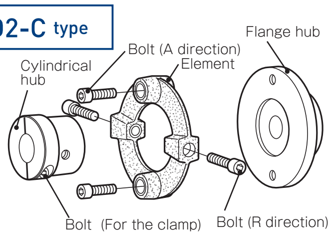
02 type



0G type

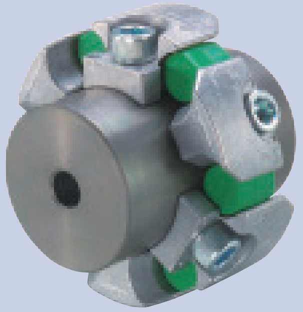


02-C type



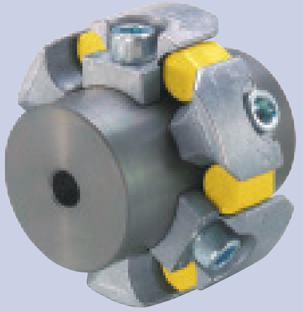
Clamp system, made to order

CF-B



Polyurethane resin used for elements. These can transmit power smoothly even when the two shafts get off center.

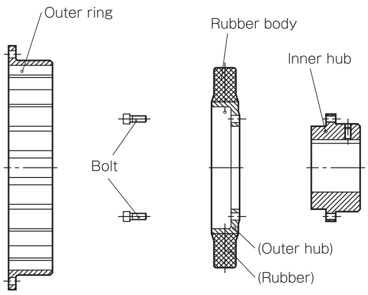
CF-B(-H)



Polyester resin used for elements. These have double the torsional stiffness of polyurethane resins. They excel in resisting heat and cold.

Structural Components

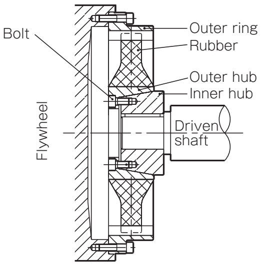
The rubber body is composed of rubber and an outer hub that are fully attached by vulcanizing adhesion.



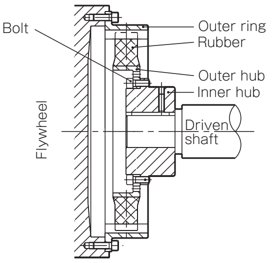
Component Construction by Type

Type	Structural components			
	Rubber body	Outer ring	Bolt	Inner hub
00	●			
S0	●	●		
SB	●	●	●	
S1	●	●	●	●

Size
800～2400



Size
2800～18000



Product Lineup (for Ships)

The line-up of CENTAFLEX couplings includes products for generators and main and auxiliary ship engines.

CENTAX L Types

These are types that combine a high-elasticity CENTAX coupling with a center link. They are optimal for high-speed ferries, passenger boats, tugboats and the like that place engines on flexible mounts.

CENTAMAX

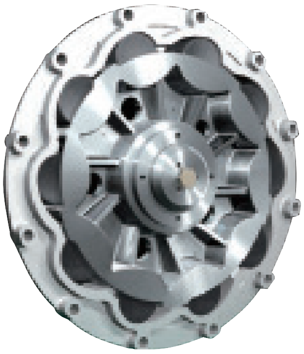
They come in a standard type for flange mounting and a no-backlash type for base mounting. They are optimal for medium-sized engine compressors and generators.

CENTAX G Types

These are types that combine a high-elasticity CENTAX coupling with a membrane. The membrane system can absorb ample mounting misalignment whether the engine has a rigid mount or flexible mount.

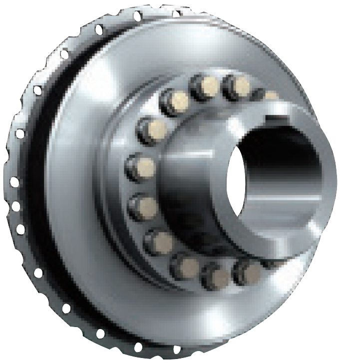
CENTAFLEX R Types

These are rubber roller couplings for small main ship engines. They are supple in the torsional direction at low torques and shift the resonance point below the idle RPM. These are optimal for small fishing boats, stern drives, and the like.



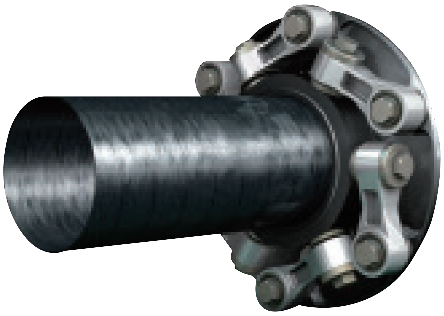
CENTAX B Types

These are simply constructed types that combine a high-elasticity CENTAX coupling with a pin/bushing system. They are ideal for flange-mounted large engine generators.



CENTALINK Carbon Drive Shaft

The drive shaft is made of carbon fiber. These are optimal for high-speed ferry and tugboat propulsion shafts and for wind power generation. Total shaft systems can be designed that include a center link coupling, bearings, bulkhead seals, and the like.



FAQ

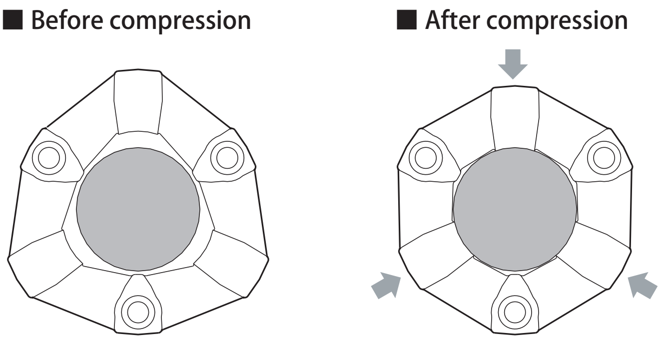
Q1 Resonance occurs on equipment that is driven by diesel engines. What can I do about it?

A If you are using a diesel engine as your drive source, resonance will occur when the natural frequency in the rotation direction of the torque transmission system as a whole coincides with the vibration frequency caused by engine rotation speed. Engine couplings not only transmit rotation and absorb vibration, they also serve the role of avoiding resonant rotation speeds. This means that any resonant rotation speed that may exist can be shifted away from the rotation speed at which the engine is used by changing the torsional stiffness of the coupling (accomplished by changing the coupling, the shore hardness, or the like). With models with low torsional stiffness that use natural rubber-based elements, such as the CF-A and CM, the resonant rotation speed tends to be below the low idle, while on models with high torsional stiffness such as the CF-H, it tends to be in a speed band that is higher than the high-idle rotation speed.

Q2 What does the "pre-compressed construction" of CF-A models refer to?

A It is a characteristic of rubber that its service life is longer when it is compressed rather than extended during use. It also has a longer life, even when compressed, if force is only applied to it after it has been somewhat compressed. This somewhat-compressed state is called pre-compression.

CF-A models are assembled with pre-compression applied to the rubber body. The compressed portion has longer life, and even the pulled portion will not go into an extended state if the torque on it does not exceed a certain level, so a longer overall life is achieved.

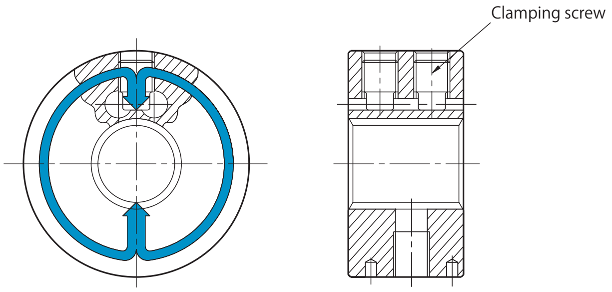

■ Before compression ■ After compression

Q3 Do rubber couplings have heat and maintenance issues?

A When natural rubber is heated, it loses its surface oil, decreasing its elasticity and hardening it. While the progress of that hardening will vary with the temperature, when a CF-A coupling used inside an engine housing is subjected to heat, the rubber body surface hardens, so that when torque is applied to that part of it, cracks can start in the hardened layer, damaging it. As a maintenance guide, we recommend replacing the coupling when rubber hardness increases about 15 Hs from the pre-use level.

Q4 What is CENTA-LOCK?

A Hubs can be mounted on shafts using a CENTA-LOCK mechanism. Tightening the clamping screw changes the shape of the spline part of the clamping hub, pressing it against the spline part of the shaft and completely locking the hub to the spline shaft. While size also matters, when the clamping screw is tightened to the stipulated torque, about one ton of axial holding force is generated per clamping screw. This means that under normal conditions of use, they are locked to a degree that you never have to think about.



Center lock mechanism on the clamping hub

CF-A 00/01/02 Types Bolt-mounted Type

Specifications

Model	Torque			Misalignment			Max. rotation speed [min^{-1}]	Dynamic torsional stiffness [N·m/rad]	Moment of inertia [kg·m^2]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Continuous vibration torque [N·m/10 Hz]	Parallel [mm]	Angular [°]	Axial [mm]				
CF-A-001-00-1360	10	25	± 4	0.5	3	± 2	10000	1.47×10^{2}	2.5×10^{-5}	0.08
CF-A-002-00-1360	20	50	± 8	1.0	3	± 3	8000	2.92×10^{2}	1.3×10^{-4}	0.2
CF-A-004-00-1360	40	100	± 16	1.0	3	± 3	7000	7.59×10^{2}	2.8×10^{-4}	0.2
CF-A-008-00-1360	80	200	± 32	1.0	3	± 4	6500	1.44×10^{3}	7.6×10^{-4}	0.3
CF-A-012-00-1360	120	300	± 48	1.0	2	± 4	6500	4.38×10^{3}	8.3×10^{-4}	0.3
CF-A-016-00-1360	160	400	± 64	1.5	3	± 5	6000	3.28×10^{3}	2.5×10^{-3}	0.7
CF-A-022-00-1360	220	550	± 88	1.5	2	± 5	6000	8.26×10^{3}	2.7×10^{-3}	0.7
CF-A-025-00-1360	250	630	± 100	1.5	3	± 5	5000	4.12×10^{3}	4.2×10^{-3}	0.8
CF-A-028-00-1360	350	880	± 140	1.5	2	± 5	5000	1.05×10^{4}	4.6×10^{-3}	1.0
CF-A-030-00-1360	400	1000	± 160	1.5	3	± 5	4000	6.40×10^{3}	1.1×10^{-2}	1.5
CF-A-050-00-1360	600	1500	± 240	1.5	2	± 5	4000	1.48×10^{4}	1.2×10^{-2}	1.7
CF-A-080-00-1360	800	2000	± 320	1.5	2	± 4	4000	2.17×10^{4}	1.5×10^{-2}	2.3
CF-A-090-00-1360	900	2250	± 360	1.5	3	± 5	3600	1.37×10^{4}	3.8×10^{-2}	3.2
CF-A-140-00-1360	1400	3500	± 560	1.5	2	± 5	3600	2.90×10^{4}	4.2×10^{-2}	3.7
CF-A-200-00-1360	2000	5000	± 800	1.5	2	± 5	3200	6.08×10^{4}	7.8×10^{-2}	5.5
CF-A-250-00-1360	3000	8750	± 1250	1.5	2	± 5	3000	8.28×10^{4}	0.14	7.8
CF-A-400-00-1360	5000	12500	± 2000	1.5	2	± 5	2800	1.25×10^{5}	0.24	11.5

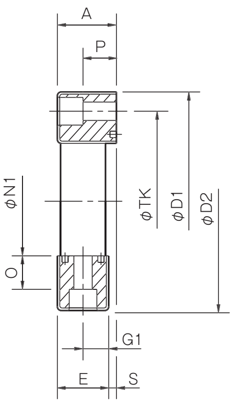
Model	Torque			Misalignment			Max. rotation speed [min^{-1}]	Dynamic torsional stiffness [N·m/rad]	Moment of inertia [kg·m^2]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Continuous vibration torque [N·m/10 Hz]	Parallel [mm]	Angular [°]	Axial [mm]				
CF-A-001-01-1360	10	25	± 4	0.5	3	± 2	10000	1.47×10^{2}	5.8×10^{-5}	0.3
CF-A-002-01-1360	20	50	± 8	1.0	3	± 3	8000	2.92×10^{2}	2.5×10^{-4}	0.5
CF-A-004-01-1360	40	100	± 16	1.0	3	± 3	7000	7.59×10^{2}	5.4×10^{-4}	0.6
CF-A-008-01-1360	80	200	± 32	1.0	3	± 4	6500	1.44×10^{3}	1.6×10^{-3}	1.3
CF-A-012-01-1360	120	300	± 48	1.0	2	± 4	6500	4.38×10^{3}	1.8×10^{-3}	1.3
CF-A-016-01-1360	160	400	± 64	1.5	3	± 5	6000	3.28×10^{3}	4.3×10^{-3}	2.3
CF-A-022-01-1360	220	550	± 88	1.5	2	± 5	6000	8.26×10^{3}	4.8×10^{-3}	2.4
CF-A-025-01-1360	250	630	± 100	1.5	3	± 5	5000	4.12×10^{3}	8.5×10^{-3}	3.6
CF-A-028-01-1360	350	880	± 140	1.5	2	± 5	5000	1.05×10^{4}	9.6×10^{-3}	3.8
CF-A-030-01-1360	400	1000	± 160	1.5	3	± 5	4000	6.40×10^{3}	2.1×10^{-2}	6.0
CF-A-050-01-1360	600	1500	± 240	1.5	2	± 5	4000	1.48×10^{4}	2.3×10^{-2}	6.3
CF-A-080-01-1360	800	2000	± 320	1.5	2	± 4	4000	2.17×10^{4}	2.6×10^{-2}	7.6
CF-A-090-01-1360	900	2250	± 360	1.5	3	± 5	3600	1.37×10^{4}	6.7×10^{-2}	11.8
CF-A-140-01-1360	1400	3500	± 560	1.5	2	± 5	3600	2.90×10^{4}	7.4×10^{-2}	12.6
CF-A-200-01-1360	2000	5000	± 800	1.5	2	± 5	3200	6.08×10^{4}	0.14	17.8
CF-A-250-01-1360	3000	8750	± 1250	1.5	2	± 5	3000	8.28×10^{4}	0.24	24.5
CF-A-400-01-1360	5000	12500	± 2000	1.5	2	± 5	2800	1.25×10^{5}	0.44	37.6

Model	Torque			Misalignment			Max. rotation speed [min^{-1}]	Dynamic torsional stiffness [N·m/rad]	Moment of inertia [kg·m^2]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Continuous vibration torque [N·m/10 Hz]	Parallel [mm]	Angular [°]	Axial [mm]				
CF-A-001-02-1360	10	25	± 4	0.5	3	± 2	10000	1.47×10^{2}	1.3×10^{-4}	0.5
CF-A-002-02-1360	20	50	± 8	1.0	3	± 3	8000	2.92×10^{2}	6.3×10^{-4}	1.1
CF-A-004-02-1360	40	100	± 16	1.0	3	± 3	7000	7.59×10^{2}	1.3×10^{-3}	1.5
CF-A-008-02-1360	80	200	± 32	1.0	3	± 4	6500	1.44×10^{3}	3.7×10^{-3}	3.0
CF-A-012-02-1360	120	300	± 48	1.0	2	± 4	6500	4.38×10^{3}	3.9×10^{-3}	3.1
CF-A-016-02-1360	160	400	± 64	1.5	3	± 5	6000	3.28×10^{3}	1.1×10^{-2}	5.5
CF-A-022-02-1360	220	550	± 88	1.5	2	± 5	6000	8.26×10^{3}	1.1×10^{-2}	5.6
CF-A-025-02-1360	250	630	± 100	1.5	3	± 5	5000	4.12×10^{3}	2.1×10^{-2}	8.5
CF-A-028-02-1360	350	880	± 140	1.5	2	± 5	5000	1.05×10^{4}	2.2×10^{-2}	8.7
CF-A-030-02-1360	400	1000	± 160	1.5	3	± 5	4000	6.40×10^{3}	4.7×10^{-2}	13.8
CF-A-050-02-1360	600	1500	± 240	1.5	2	± 5	4000	1.48×10^{4}	5.0×10^{-2}	14.2
CF-A-080-02-1360	800	2000	± 320	1.5	2	± 4	4000	2.17×10^{4}	5.4×10^{-2}	15.5
CF-A-090-02-1360	900	2250	± 360	1.5	3	± 5	3600	1.37×10^{4}	0.15	26.1
CF-A-140-02-1360	1400	3500	± 560	1.5	2	± 5	3600	2.90×10^{4}	0.16	26.8
CF-A-200-02-1360	2000	5000	± 800	1.5	2	± 5	3200	6.08×10^{4}	0.30	39.4
CF-A-250-02-1360	3000	8750	± 1250	1.5	2	± 5	3000	8.28×10^{4}	0.50	52.3
CF-A-400-02-1360	5000	12500	± 2000	1.5	2	± 5	2800	1.25×10^{5}	0.97	85.0

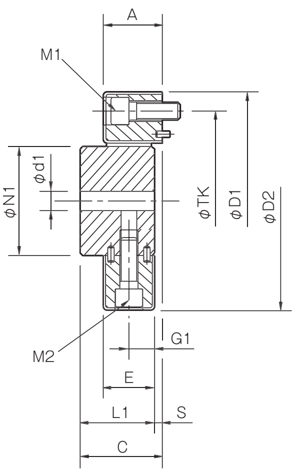
* Max. rotation speed does not take into account dynamic balance.
* The dynamic torsional stiffness is about 1.3 times that of the static torsional stiffness.
* Values for moment of inertia and mass are those when the cylindrical hub and flange hub have pilot bores.

Dimensions

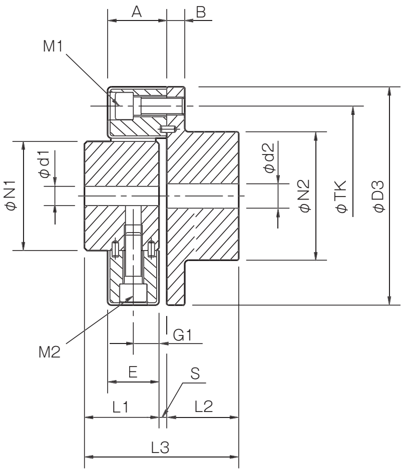
■ CF-A 00



■ CF-AO1



■ CF-AO2



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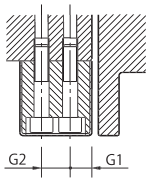


Unit [mm]

Model	d1			d2			D1	D2	D3	N1	N2	L1	L2	L3	A	B	C	E	G1	G2	O	P	S	TK	M1	M2
	Pilot bore	Min.	Max.	Pilot bore	Min.	Max.																				
CF-A-001	8	9	19	8	9	22	57	56	56	30	36	32	24	58	24	7	34	22	11	—	5	18	2	44	2-M6	2-M6
CF-A-002	10	11	28	9	10	30	86	85	85	40	45	30	28	62	24	8	34	20	10	—	14	12	4	68	2-M8	2-M8
CF-A-004	12	14	30	11	12	36	100	97	100	45	55	34	30	68	28	8	38	24	12	—	18	17	4	80	3-M8	3-M8
CF-A-008	12	14	38	15	16	46	122	120	120	60	70	40	42	86	32	10	44	28	14	—	20	20	4	100	3-M10	3-M10
CF-A-012	12	14	38	15	16	46	122	120	120	60	70	40	42	86	32	10	44	28	14	—	20	20	4	100	4-M10	4-M10
CF-A-016	15	16	48	19	20	56	150	150	150	70	85	52	50	108	42	12	58	36	18	—	25	24	6	125	3-M12	3-M12
CF-A-022	15	16	48	19	20	56	150	150	150	70	85	52	50	108	42	12	58	36	18	—	25	24	6	125	4-M12	4-M12
CF-A-025	15	16	55	19	20	65	170	170	170	85	100	58	56	120	46	14	64	40	20	—	26	26	6	140	3-M14	3-M14
CF-A-028	15	16	55	19	20	65	170	170	170	85	100	58	56	120	46	14	64	40	20	—	26	26	6	140	4-M14	4-M14
CF-A-030	20	22	65	28	30	80	200	200	200	100	120	68	66	142	58	16	76	50	25	—	33	35	8	165	3-M16	3-M16
CF-A-050	20	22	65	28	30	80	200	200	200	100	120	68	66	142	58	16	76	50	25	—	33	35	8	165	4-M16	4-M16
CF-A-080	20	22	65	28	30	80	205	205	200	100	120	80	66	150	65	16	84	61	30.5	—	33	35	4	165	4-M16	4-M16
CF-A-090	30	32	85	30	32	95	260	260	260	125	140	84	80	172	70	19	92	62	31	—	46	45	8	215	3-M20	3-M20
CF-A-140	30	32	85	30	32	95	260	260	260	125	140	84	80	172	70	19	92	62	31	—	46	45	8	215	4-M20	4-M20
CF-A-200	35	38	105	35	38	110	300	300	300	145	160	94	90	192	80	19	102	72	36	—	46	45	8	250	4-M20	4-M20
CF-A-250	40	42	115	40	42	120	340	340	340	160	180	100	100	208	85	19	108	77	22.5	32	60	60	8	280	4-M20	8-M20
CF-A-400	40	42	115	40	42	130	370	370	370	170	200	125	125	260	105	29	135	95	28.5	38	70.5	67	10	300	4-M24	8-M20

* Pilot bores are to be drilled into the part. Minimum values for d1 and d2 are given by the minimum bore diameter values in the MIKI PULLEY standard hole-drilling standards and maximum values from the maximum allowable drilled bore diameters.
* The above table values are dimensions when the rubber body is assembled, so the N1, TK, D1, and D2 dimensions prior to rubber body assembly will differ from those above.
* The TK dimension is the bolt mounting pitch diameter of the flange hub or paired mounting part.
* The nominal diameters for bolts M1/M2 are equal to the quantity minus the nominal diameter of the screw threads.
* Using a hex-socket-head bolt with the CF-A-400 requires a special flat washer.
* CF-A-O2 data is used as the CAD data.

How to Place an Order

CF-A-001-02-1360 12H-14N

Size

Type
O0: Rubber body only
OB: O0 and bolts
O1: OC and cylindrical hub
OP: O0 and spring pin
OC: OB and spring pin
O2: O1 and flange hub

Rubber material
13: Natural rubber (NR)

Shore hardness (Rubber)
60: 60 hardness (JIS A)
50: 50 hardness (JIS A) (made to order)

Bore diameter: d1 (Cylindrical hub) - d2 (Flange hub)
Blank: Pilot bore
Bore specifications
Blank: Compliant with the old JIS standards (class 2) E9
H: Compliant with the new JIS standards H9
N: Compliant with the new motor standards

* Depending on your location and such, we may not be able to sell you our products.
Please contact us for details.

CF-A S0/S1/S2 Types Bolt-insertion Mounted Type

Specifications

Model	Torque			Misalignment			Max. rotation speed [min^{-1}]	Dynamic torsional stiffness [N·m/rad]	Moment of inertia [kg·m^2]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Continuous vibration torque [N·m/10 Hz]	Parallel [mm]	Angular [°]	Axial [mm]				
CF-A-001-S0-1360	10	25	± 4	0.5	3	± 2	10000	1.47×10^{2}	1.9×10^{-5}	0.07
CF-A-002-S0-1360	20	50	± 8	1.0	3	± 3	8000	2.92×10^{2}	1.2×10^{-4}	0.1
CF-A-004-S0-1360	40	100	± 16	1.0	3	± 3	7000	7.59×10^{2}	2.6×10^{-4}	0.2
CF-A-008-S0-1360	80	200	± 32	1.0	3	± 4	6500	1.44×10^{3}	7.2×10^{-4}	0.3
CF-A-012-S0-1360	120	300	± 48	1.0	2	± 4	6500	4.38×10^{3}	7.6×10^{-4}	0.3
CF-A-016-S0-1360	160	400	± 64	1.5	3	± 5	6000	3.28×10^{3}	2.4×10^{-3}	0.6
CF-A-022-S0-1360	220	550	± 88	1.5	2	± 5	6000	8.26×10^{3}	2.6×10^{-3}	0.7
CF-A-025-S0-1360	250	630	± 100	1.5	3	± 5	5000	4.12×10^{3}	4.0×10^{-3}	0.8
CF-A-028-S0-1360	350	880	± 140	1.5	2	± 5	5000	1.05×10^{4}	4.3×10^{-3}	0.9
CF-A-030-S0-1360	400	1000	± 160	1.5	3	± 5	4000	6.40×10^{3}	1.0×10^{-2}	1.4
CF-A-050-S0-1360	600	1500	± 240	1.5	2	± 5	4000	1.48×10^{4}	1.1×10^{-2}	1.7
CF-A-080-S0-1360	800	2000	± 320	1.5	2	± 4	4000	2.17×10^{4}	1.5×10^{-2}	2.3
CF-A-090-S0-1360	900	2250	± 360	1.5	3	± 5	3600	1.37×10^{4}	3.6×10^{-2}	3.1
CF-A-140-S0-1360	1400	3500	± 560	1.5	2	± 5	3600	2.90×10^{4}	3.8×10^{-2}	3.4
CF-A-200-S0-1360	2000	5000	± 800	1.5	2	± 5	3200	6.08×10^{4}	7.5×10^{-2}	5.3
CF-A-250-S0-1360	3000	8750	± 1250	1.5	2	± 5	3000	8.28×10^{4}	0.14	7.0
CF-A-400-S0-1360	5000	12500	± 2000	1.5	2	± 5	2800	1.25×10^{5}	0.22	10.7

Model	Torque			Misalignment			Max. rotation speed [min^{-1}]	Dynamic torsional stiffness [N·m/rad]	Moment of inertia [kg·m^2]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Continuous vibration torque [N·m/10 Hz]	Parallel [mm]	Angular [°]	Axial [mm]				
CF-A-001-S1-1360	10	25	± 4	0.5	3	± 2	10000	1.47×10^{2}	6.0×10^{-5}	0.3
CF-A-002-S1-1360	20	50	± 8	1.0	3	± 3	8000	2.92×10^{2}	2.8×10^{-4}	0.5
CF-A-004-S1-1360	40	100	± 16	1.0	3	± 3	7000	7.59×10^{2}	5.8×10^{-4}	0.7
CF-A-008-S1-1360	80	200	± 32	1.0	3	± 4	6500	1.44×10^{3}	1.8×10^{-3}	1.4
CF-A-012-S1-1360	120	300	± 48	1.0	2	± 4	6500	4.38×10^{3}	2.0×10^{-3}	1.4
CF-A-016-S1-1360	160	400	± 64	1.5	3	± 5	6000	3.28×10^{3}	4.7×10^{-3}	2.5
CF-A-022-S1-1360	220	550	± 88	1.5	2	± 5	6000	8.26×10^{3}	5.4×10^{-3}	2.6
CF-A-025-S1-1360	250	630	± 100	1.5	3	± 5	5000	4.12×10^{3}	9.2×10^{-3}	3.8
CF-A-028-S1-1360	350	880	± 140	1.5	2	± 5	5000	1.05×10^{4}	1.1×10^{-3}	4.0
CF-A-030-S1-1360	400	1000	± 160	1.5	3	± 5	4000	6.40×10^{3}	2.2×10^{-2}	6.3
CF-A-050-S1-1360	600	1500	± 240	1.5	2	± 5	4000	1.48×10^{4}	2.5×10^{-2}	6.8
CF-A-080-S1-1360	800	2000	± 320	1.5	2	± 4	4000	2.17×10^{4}	2.9×10^{-2}	8.1
CF-A-090-S1-1360	900	2250	± 360	1.5	3	± 5	3600	1.37×10^{4}	7.1×10^{-2}	12.4
CF-A-140-S1-1360	1400	3500	± 560	1.5	2	± 5	3600	2.90×10^{4}	7.9×10^{-2}	13.3
CF-A-200-S1-1360	2000	5000	± 800	1.5	2	± 5	3200	6.08×10^{4}	0.15	18.5
CF-A-250-S1-1360	3000	8750	± 1250	1.5	2	± 5	3000	8.28×10^{4}	0.25	24.5
CF-A-400-S1-1360	5000	12500	± 2000	1.5	2	± 5	2800	1.25×10^{5}	0.49	39.5

Model	Torque			Misalignment			Max. rotation speed [min^{-1}]	Dynamic torsional stiffness [N·m/rad]	Moment of inertia [kg·m^2]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Continuous vibration torque [N·m/10 Hz]	Parallel [mm]	Angular [°]	Axial [mm]				
CF-A-001-S2-1360	10	25	± 4	0.5	3	± 2	10000	1.47×10^{2}	1.4×10^{-4}	0.5
CF-A-002-S2-1360	20	50	± 8	1.0	3	± 3	8000	2.92×10^{2}	6.6×10^{-4}	1.1
CF-A-004-S2-1360	40	100	± 16	1.0	3	± 3	7000	7.59×10^{2}	1.4×10^{-3}	1.5
CF-A-008-S2-1360	80	200	± 32	1.0	3	± 4	6500	1.44×10^{3}	3.9×10^{-3}	3.1
CF-A-012-S2-1360	120	300	± 48	1.0	2	± 4	6500	4.38×10^{3}	4.1×10^{-3}	3.2
CF-A-016-S2-1360	160	400	± 64	1.5	3	± 5	6000	3.28×10^{3}	1.1×10^{-2}	5.6
CF-A-022-S2-1360	220	550	± 88	1.5	2	± 5	6000	8.26×10^{3}	1.2×10^{-2}	5.8
CF-A-025-S2-1360	250	630	± 100	1.5	3	± 5	5000	4.12×10^{3}	2.2×10^{-2}	8.7
CF-A-028-S2-1360	350	880	± 140	1.5	2	± 5	5000	1.05×10^{4}	2.3×10^{-2}	8.9
CF-A-030-S2-1360	400	1000	± 160	1.5	3	± 5	4000	6.40×10^{3}	4.9×10^{-2}	14.2
CF-A-050-S2-1360	600	1500	± 240	1.5	2	± 5	4000	1.48×10^{4}	5.2×10^{-2}	14.6
CF-A-080-S2-1360	800	2000	± 320	1.5	2	± 4	4000	2.17×10^{4}	5.6×10^{-2}	16.0
CF-A-090-S2-1360	900	2250	± 360	1.5	3	± 5	3600	1.37×10^{4}	0.16	26.6
CF-A-140-S2-1360	1400	3500	± 560	1.5	2	± 5	3600	2.90×10^{4}	0.17	27.5
CF-A-200-S2-1360	2000	5000	± 800	1.5	2	± 5	3200	6.08×10^{4}	0.32	40.1
CF-A-250-S2-1360	3000	8750	± 1250	1.5	2	± 5	3000	8.28×10^{4}	0.50	52.3
CF-A-400-S2-1360	5000	12500	± 2000	1.5	2	± 5	2800	1.25×10^{5}	1.00	86.9

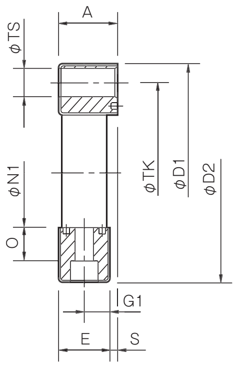
* Max. rotation speed does not take into account dynamic balance.

* The dynamic torsional stiffness is about 1.3 times that of the static torsional stiffness.

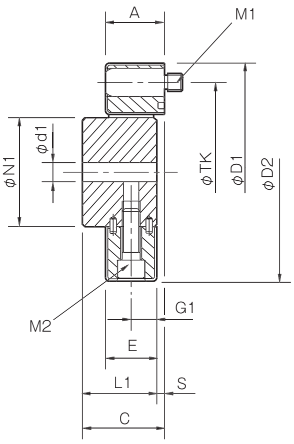
* Values for moment of inertia and mass are those when the cylindrical hub and flange hub have pilot bores.

Dimensions

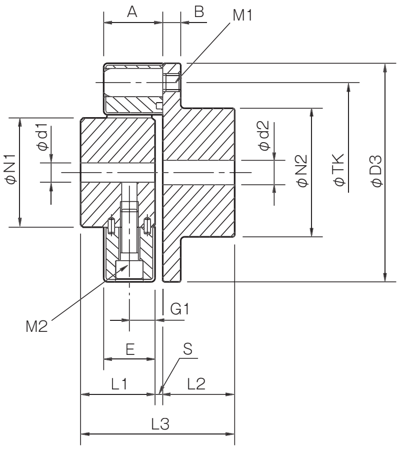
■ CF-A S0



■ CF-A S1



■ CF-A S2



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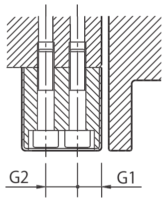


Unit [mm]

Model	d1			d2			D1	D2	D3	N1	N2	L1	L2	L3	A	B	C	E	G1	G2	O	S	TS	TK	M1	M2
	Pilot bore	Min.	Max.	Pilot bore	Min.	Max.																				
CF-A-001	8	9	19	8	9	22	57	56	56	30	36	32	24	58	24	7	34	22	11	—	5	2	10	44	2-M6	2-M6
CF-A-002	10	11	28	9	10	30	86	85	85	40	45	30	28	62	24	8	34	20	10	—	14	4	14	68	2-M8	2-M8
CF-A-004	12	14	30	11	12	36	100	97	100	45	55	34	30	68	28	8	38	24	12	—	18	4	14	80	3-M8	3-M8
CF-A-008	12	14	38	15	16	46	122	120	120	60	70	40	42	86	32	10	4	28	14	—	20	4	17	100	3-M10	3-M10
CF-A-012	12	14	38	15	16	46	122	120	120	60	70	40	42	86	32	10	44	28	14	—	20	4	17	100	4-M10	4-M10
CF-A-016	15	16	48	19	20	56	150	150	150	70	85	52	50	108	42	12	58	36	18	—	25	6	19	125	3-M12	3-M12
CF-A-022	15	16	48	19	20	56	150	150	150	70	85	52	50	108	42	12	58	36	18	—	25	6	19	125	4-M12	4-M12
CF-A-025	15	16	55	19	20	65	170	170	170	85	100	58	56	120	46	14	64	40	20	—	26	6	22	140	3-M14	3-M14
CF-A-028	15	16	55	19	20	65	170	170	170	85	100	58	56	120	46	14	64	40	20	—	26	6	22	140	4-M14	4-M14
CF-A-030	20	22	65	28	30	80	200	200	200	100	120	68	66	142	58	16	76	50	25	—	33	8	25	165	3-M16	3-M16
CF-A-050	20	22	65	28	30	80	200	200	200	100	120	68	66	142	58	16	76	50	25	—	33	8	25	165	4-M16	4-M16
CF-A-080	20	22	65	28	30	80	205	205	200	100	120	80	66	150	65	16	84	61	30.5	—	33	4	25	165	4-M16	4-M16
CF-A-090	30	32	85	30	32	95	260	260	260	125	140	84	80	172	70	19	92	62	31	—	46	8	32	215	3-M20	3-M20
CF-A-140	30	32	85	30	32	95	260	260	260	125	140	84	80	172	70	19	92	62	31	—	46	8	32	215	4-M20	4-M20
CF-A-200	35	38	105	35	38	110	300	300	300	145	160	94	90	192	80	19	102	72	36	—	46	8	32	250	4-M20	4-M20
CF-A-250	40	42	115	40	42	120	340	340	340	160	180	100	100	208	85	19	108	77	22.5	32	60	8	32	280	4-M20	8-M20
CF-A-400	40	42	115	40	42	130	370	370	370	170	200	125	125	260	105	29	135	95	28.5	38	70.5	10	45	300	4-M24	8-M20

* Pilot bores are to be drilled into the part. Minimum values for d1 and d2 are given by the minimum bore diameter values in the MIKI PULLEY standard hole-drilling standards and maximum values from the maximum allowable drilled bore diameters.

* The above table values are dimensions when the rubber body is assembled, so the N1, TK, D1, and D2 dimensions prior to rubber body assembly will differ from those above.

* The TK dimension is the bolt mounting pitch diameter of the flange hub or paired mounting part, but it is possible to change to make the mounting easier. Please contact MIKI PULLEY for the details.

* The TS dimension is the H8 plug gauge reference dimension. However, size 001 has a tolerance of $^{+0.15}_{0}$ while sizes 002 and 004 have tolerances of $^{+0.1}_{0}$.

* The nominal diameters for bolts M1/M2 are equal to the quantity minus the nominal diameter of the screw threads.

* Using a hex-socket-head bolt with the CF-A-400 requires a special flat washer.

How to Place an Order

CF-A-001-S2-1360 12H-14N

Size

Type
S0: Rubber body only
SB: S0 and bolts
S1: SC and cylindrical hub
SP: S0 and spring pin
SC: SB and spring pin
S2: S1 and flange hub

Rubber material
13: Natural rubber (NR)

Shore hardness (Rubber)
60: 60 hardness (JIS A)
50: 50 hardness (JIS A) (made to order)

Bore diameter: d1 (Cylindrical hub) - d2 (Flange hub)
Blank: Pilot bore

Bore specifications
Blank: Compliant with the old JIS standards (class 2) E9
H: Compliant with the new JIS standards H9
N: Compliant with the new motor standards

* Depending on your location and such, we may not be able to sell you our products.
Please contact us for details.

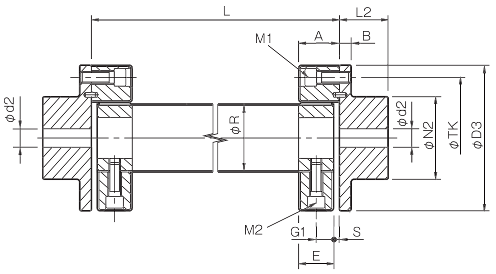
CF-A OG Types Floating Shaft (Low-speed Rotation) Type

Specifications

Model	Torque			Misalignment			Max. rotation speed [min^{-1}]	Dynamic torsional stiffness [N·m/rad]	Moment of inertia [kg·m^2]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Continuous vibration torque [N·m/10 Hz]	Parallel [mm]	Angular [°]	Axial [mm]				
CF-A-001-OG-1360	10	25	± 4	24.8	3	± 2	1000	7.35×10^1	3.5×10^{-4}	1.4
CF-A-002-OG-1360	20	50	± 8	24.7	3	± 3	1000	1.46×10^2	1.5×10^{-3}	2.5
CF-A-004-OG-1360	40	100	± 16	24.5	3	± 3	1000	3.80×10^2	2.9×10^{-3}	3.3
CF-A-008-OG-1360	80	200	± 32	24.3	3	± 4	1000	7.20×10^2	8.0×10^{-3}	6.2
CF-A-012-OG-1360	120	300	± 48	16.2	2	± 4	1000	2.19×10^3	8.4×10^{-3}	6.4
CF-A-016-OG-1360	160	400	± 64	23.7	3	± 5	1000	1.64×10^3	2.1×10^{-2}	10.6
CF-A-022-OG-1360	220	550	± 88	15.8	2	± 5	1000	4.13×10^3	2.3×10^{-2}	11.0
CF-A-025-OG-1360	250	630	± 100	23.5	3	± 5	1000	2.06×10^3	4.2×10^{-2}	15.9
CF-A-028-OG-1360	350	880	± 140	15.6	2	± 5	1000	0.53×10^4	4.4×10^{-2}	16.5
CF-A-030-OG-1360	400	1000	± 160	22.7	3	± 5	1000	3.20×10^3	9.6×10^{-2}	25.8
CF-A-050-OG-1360	600	1500	± 240	15.2	2	± 5	1000	7.40×10^3	0.10	26.6
CF-A-080-OG-1360	800	2000	± 320	15.1	2	± 4	1000	1.09×10^4	0.11	28.7
CF-A-090-OG-1360	900	2250	± 360	22.1	3	± 5	1000	6.85×10^3	0.30	47.8
CF-A-140-OG-1360	1400	3500	± 560	14.7	2	± 5	1000	1.45×10^4	0.31	49.3
CF-A-200-OG-1360	2000	5000	± 800	14.4	2	± 5	1000	3.04×10^4	0.55	74.3
CF-A-250-OG-1360	3000	8750	± 1250	14.2	2	± 5	1000	4.14×10^4	0.99	97.7
CF-A-400-OG-1360	5000	12500	± 2000	13.4	2	± 5	1000	6.25×10^4	1.77	164.6

* The values of the above table are for a flange hub with pilot bore when L = 500.
* Max. rotation speed does not take into account dynamic balance.
* The dynamic torsional stiffness is about 1.3 times that of the static torsional stiffness.

Dimensions



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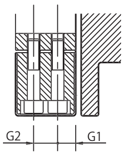


Unit [mm]

Model	d2			D3	N2	L2	A	B	R	E	G1	G2	S	TK	M1	M2
	Pilot bore	Min.	Max.													
CF-A-001-OG-1360	8	9	22	56	36	24	24	7	30	22	11	—	2	44	2-M6	2-M6
CF-A-002-OG-1360	9	10	30	85	45	28	24	8	40	20	10	—	4	68	2-M8	2-M8
CF-A-004-OG-1360	11	12	36	100	55	30	28	8	45	24	12	—	4	80	3-M8	3-M8
CF-A-008-OG-1360	15	16	46	120	70	42	32	10	60	28	14	—	4	100	3-M10	3-M10
CF-A-012-OG-1360	15	16	46	120	70	42	32	10	60	28	14	—	4	100	4-M10	4-M10
CF-A-016-OG-1360	19	20	56	150	85	50	42	12	70	36	18	—	6	125	3-M12	3-M12
CF-A-022-OG-1360	19	20	56	150	85	50	42	12	70	36	18	—	6	125	4-M12	4-M12
CF-A-025-OG-1360	19	20	65	170	100	56	46	14	85	40	20	—	6	140	3-M14	3-M14
CF-A-028-OG-1360	19	20	65	170	100	56	46	14	85	40	20	—	6	140	4-M14	4-M14
CF-A-030-OG-1360	28	30	80	200	120	66	58	16	100	50	25	—	8	165	3-M16	3-M16
CF-A-050-OG-1360	28	30	80	200	120	66	58	16	100	50	25	—	8	165	4-M16	4-M16
CF-A-080-OG-1360	28	30	80	205	120	66	65	16	100	61	30.5	—	4	165	4-M16	4-M16
CF-A-090-OG-1360	30	32	95	260	140	80	70	19	125	62	31	—	8	215	3-M20	3-M20
CF-A-140-OG-1360	30	32	95	260	140	80	70	19	125	62	31	—	8	215	4-M20	4-M20
CF-A-200-OG-1360	35	38	110	300	160	90	80	19	145	72	36	—	8	250	4-M20	4-M20
CF-A-250-OG-1360	40	42	120	340	180	100	85	19	160	77	22.5	32	8	280	4-M20	8-M20
CF-A-400-OG-1360	40	42	130	370	200	125	105	29	170	95	28.5	38	10	300	4-M24	8-M20

* Pilot bores are to be drilled into the part. Minimum values for d2 are given by the minimum bore diameter values in the MIKI PULLEY standard hole-drilling standards and maximum values from the maximumallowable drilled bore diameters.
* The nominal diameters for bolts M1/M2 are equal to the quantity minus the nominal diameter of the screw threads, where the quantity is for one side.
* The L dimension has a standard length of 1000 mm or less. Dimension L must at least allow enough space for an M1 bolt to be mounted.

How to Place an Order

CF-A-001-OG-1360 12H-14N L=600

Type
OG: Floating shaft
Low-speed type

Size

Rubber material
13: Natural rubber (NR)

Shore hardness (Rubber)
60: 60 hardness (JIS A)
50: 50 hardness (JIS A) (made to order)

Bore diameter: d1 (Small diameter) - d2 (Large diameter)
Blank: Pilot bore

Bore specifications
Blank: Compliant with the old JIS standards (class 2) E9
H: Compliant with the new JIS standards H9
N: Compliant with the new motor standards

Floating shaft length *Use mm units for L dimensions.

* Depending on your location and such, we may not be able to sell you our products.
Please contact us for details.

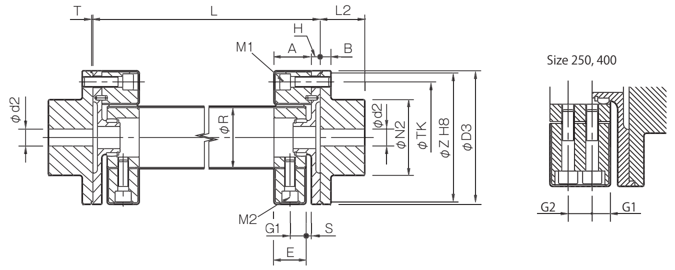
CF-A OZ Types Floating Shaft (High-speed Rotation) Type

Specifications

Model	Torque			Misalignment			Max. rotation speed [min^{-1}]	Dynamic torsional stiffness [N·m/rad]	Moment of inertia [kg·m^2]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Continuous vibration torque [N·m/10 Hz]	Parallel [mm]	Angular [°]	Axial [mm]				
CF-A-001-OZ-1360	10	25	± 4	8.1	1	± 2	10000	7.35×10^{1}	4.3×10^{-4}	1.6
CF-A-002-OZ-1360	20	50	± 8	8.1	1	± 3	8000	1.46×10^{2}	2.0×10^{-3}	3.1
CF-A-004-OZ-1360	40	100	± 16	8.0	1	± 3	7000	3.80×10^{2}	3.6×10^{-3}	4.0
CF-A-008-OZ-1360	80	200	± 32	7.8	1	± 4	6500	7.20×10^{2}	1.1×10^{-2}	7.7
CF-A-012-OZ-1360	120	300	± 48	7.8	1	± 4	6500	2.19×10^{3}	1.1×10^{-2}	7.8
CF-A-016-OZ-1360	160	400	± 64	7.5	1	± 5	6000	1.64×10^{3}	2.9×10^{-2}	13.1
CF-A-022-OZ-1360	220	550	± 88	7.5	1	± 5	6000	4.13×10^{3}	3.0×10^{-2}	13.4
CF-A-025-OZ-1360	250	630	± 100	7.5	1	± 5	5000	2.06×10^{3}	5.4×10^{-2}	19.1
CF-A-028-OZ-1360	350	880	± 140	7.5	1	± 5	5000	0.53×10^{4}	5.7×10^{-2}	19.6
CF-A-030-OZ-1360	400	1000	± 160	7.2	1	± 5	4000	3.20×10^{3}	0.12	30.2
CF-A-050-OZ-1360	600	1500	± 240	7.2	1	± 5	4000	7.40×10^{3}	0.12	30.9
CF-A-080-OZ-1360	800	2000	± 320	7.2	1	± 4	4000	1.09×10^{4}	0.13	33.0
CF-A-090-OZ-1360	900	2250	± 360	7.0	1	± 5	3600	6.85×10^{3}	0.37	55.3
CF-A-140-OZ-1360	1400	3500	± 560	7.0	1	± 5	3600	1.45×10^{4}	0.38	56.7
CF-A-200-OZ-1360	2000	5000	± 800	6.7	1	± 5	3200	3.04×10^{4}	0.74	91.3
CF-A-250-OZ-1360	3000	8750	± 1250	6.6	1	± 5	3000	4.14×10^{4}	1.19	111.9
CF-A-400-OZ-1360	5000	12500	± 2000	6.2	1	± 5	2800	6.25×10^{4}	2.47	190.0

* The values of the above table are for a flange hub with pilot bore when L = 500.
* Max. rotation speed does not take into account dynamic balance.
* The dynamic torsional stiffness is about 1.3 times that of the static torsional stiffness.

Dimensions



CAD

Unit [mm]

Model	d2			D3	N2	L2	A	B	H	R	E	T	G1	G2	S	TK	Z	M1	M2
	Pilot bore	Min.	Max.																
CF-A-001-OZ-1360	8	9	22	56	36	24	24	7	5	30	22	1.5	11	—	2	44	52	2-M6	2-M6
CF-A-002-OZ-1360	9	10	30	85	45	28	24	8	5	40	20	1.5	10	—	4	68	80	2-M8	2-M8
CF-A-004-OZ-1360	11	12	36	100	55	30	28	8	5	45	24	1.5	12	—	4	80	95	3-M8	3-M8
CF-A-008-OZ-1360	15	16	46	120	70	42	32	10	10	60	28	1.5	14	—	4	100	115	3-M10	3-M10
CF-A-012-OZ-1360	15	16	46	120	70	42	32	10	10	60	28	1.5	14	—	4	100	115	4-M10	4-M10
CF-A-016-OZ-1360	19	20	56	150	85	50	42	12	10	70	36	1.5	18	—	6	125	145	3-M12	3-M12
CF-A-022-OZ-1360	19	20	56	150	85	50	42	12	10	70	36	1.5	18	—	6	125	145	4-M12	4-M12
CF-A-025-OZ-1360	19	20	65	170	100	56	46	14	10	85	40	1.5	20	—	6	140	165	3-M14	3-M14
CF-A-028-OZ-1360	19	20	65	170	100	56	46	14	10	85	40	1.5	20	—	6	140	165	4-M14	4-M14
CF-A-030-OZ-1360	28	30	80	200	120	66	58	16	10	100	50	1.5	25	—	8	165	195	3-M16	3-M16
CF-A-050-OZ-1360	28	30	80	200	120	66	58	16	10	100	50	1.5	25	—	8	165	195	4-M16	4-M16
CF-A-080-OZ-1360	28	30	80	205	120	66	65	16	10	100	61	1.5	30.5	—	4	165	195	4-M16	4-M16
CF-A-090-OZ-1360	30	32	95	260	140	80	70	19	10	125	62	2	31	—	8	215	250	3-M20	3-M20
CF-A-140-OZ-1360	30	32	95	260	140	80	70	19	10	125	62	2	31	—	8	215	250	4-M20	4-M20
CF-A-200-OZ-1360	35	38	110	300	160	90	80	19	15	145	72	2	36	—	8	250	290	4-M20	4-M20
CF-A-250-OZ-1360	40	42	120	340	180	100	85	19	15	160	77	2.5	22.5	32	8	280	330	4-M20	8-M20
CF-A-400-OZ-1360	40	42	130	370	200	125	105	29	15	170	95	2	28.5	38	10	300	360	4-M24	8-M20

* Pilot bores are to be drilled into the part. Minimum values for d2 are given by the minimum bore diameter values in the MIKI PULLEY standard hole-drilling standards and maximum values from the maximum allowable drilled bore diameters.
* The nominal diameters for bolts M1/M2 are equal to the quantity minus the nominal diameter of the screw threads, where the quantity is for one side.
* See the floating length graph on P.163 for the L dimension. Dimension L must at least allow enough space for an M1 bolt to be mounted.

How to Place an Order

CF-A-001-OZ-1360 12H-14N L=600

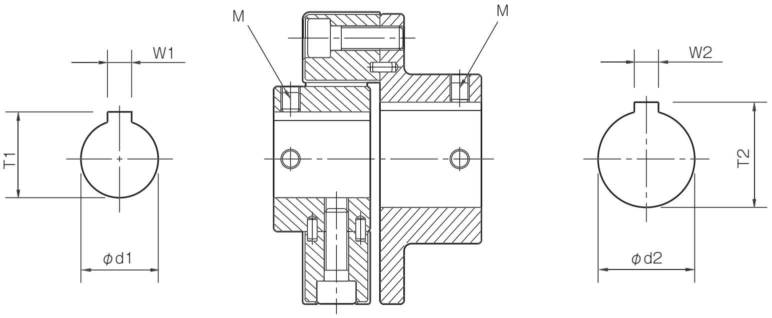
Size
Type
OZ: Floating shaft
High-speed type
Rubber material
13: Natural rubber (NR)
Shore hardness (Rubber)
60: 60 hardness (JIS A)
50: 50 hardness (JIS A) (made to order)
Floating shaft length *Use mm units for L dimensions.
Bore diameter: d1 (Small diameter) - d2 (Large diameter)
Blank: Pilot bore
Bore specifications
Blank: Compliant with the old JIS standards (class 2) E9
H: Compliant with the new JIS standards H9
N: Compliant with the new motor standards

* Depending on your location and such, we may not be able to sell you our products. Please contact us for details.

CF-A Models

Standard Hole-Drilling Standards

- Positioning precision for keyway milling is determined by sight, so contact Miki Pulley when the keyway requires a positioning precision for a particular hub.
- Set screw positions are not on the same plane.
- The set screws are included with the product.
- The spline can also be processed. Contact Miki Pulley regarding such processing.



Unit [mm]

Models compliant with the old JIS standards (class 2)					Models compliant with the new JIS standards					Models compliant with the new motor standards				
Nominal bore diameter	Bore diameter [d1・d2]	Keyway width [W1・W2]	Keyway height [T1・T2]	Set screw hole [M]	Nominal bore diameter	Bore diameter [d1・d2]	Keyway width [W1・W2]	Keyway height [T1・T2]	Set screw hole [M]	Nominal bore diameter	Bore diameter [d1・d2]	Keyway width [W1・W2]	Keyway height [T1・T2]	Set screw hole [M]
Toler-ance	H7, H8	E9	$^{+0.3}_{0}$	—	Toler-ance	H7	H9	$^{+0.3}_{0}$	—	Toler-ance	G7, F7	H9	$^{+0.3}_{0}$	—
9	9 $^{+0.022}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
10	10 $^{+0.022}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
11	11 $^{+0.018}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
12	12 $^{+0.018}_{0}$	4 $^{+0.050}_{+0.020}$	13.5	2-M4	12H	12 $^{+0.018}_{0}$	4 $^{+0.030}_{0}$	13.8	2-M4	—	—	—	—	—
14	14 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	16.0	2-M4	14H	14 $^{+0.018}_{0}$	5 $^{+0.030}_{0}$	16.3	2-M4	14N	14 $^{+0.024}_{+0.006}$	5 $^{+0.030}_{0}$	16.3	2-M4
15	15 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	17.0	2-M4	15H	15 $^{+0.018}_{0}$	5 $^{+0.030}_{0}$	17.3	2-M4	—	—	—	—	—
16	16 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	18.0	2-M4	16H	16 $^{+0.018}_{0}$	5 $^{+0.030}_{0}$	18.3	2-M4	—	—	—	—	—
17	17 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	19.0	2-M4	17H	17 $^{+0.018}_{0}$	5 $^{+0.030}_{0}$	19.3	2-M4	—	—	—	—	—
18	18 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	20.0	2-M4	18H	18 $^{+0.018}_{0}$	6 $^{+0.030}_{0}$	20.8	2-M5	—	—	—	—	—
19	19 $^{+0.021}_{0}$	5 $^{+0.050}_{+0.020}$	21.0	2-M4	19H	19 $^{+0.021}_{0}$	6 $^{+0.030}_{0}$	21.8	2-M5	19N	19 $^{+0.028}_{+0.007}$	6 $^{+0.030}_{0}$	21.8	2-M5
20	20 $^{+0.021}_{0}$	5 $^{+0.050}_{+0.020}$	22.0	2-M4	20H	20 $^{+0.021}_{0}$	6 $^{+0.030}_{0}$	22.8	2-M5	—	—	—	—	—
22	22 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	25.0	2-M6	22H	22 $^{+0.021}_{0}$	6 $^{+0.030}_{0}$	24.8	2-M5	—	—	—	—	—
24	24 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	27.0	2-M6	24H	24 $^{+0.021}_{0}$	8 $^{+0.036}_{0}$	27.3	2-M6	24N	24 $^{+0.028}_{+0.007}$	8 $^{+0.036}_{0}$	27.3	2-M6
25	25 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	28.0	2-M6	25H	25 $^{+0.021}_{0}$	8 $^{+0.036}_{0}$	28.3	2-M6	—	—	—	—	—
28	28 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	31.0	2-M6	28H	28 $^{+0.021}_{0}$	8 $^{+0.036}_{0}$	31.3	2-M6	28N	28 $^{+0.028}_{+0.007}$	8 $^{+0.036}_{0}$	31.3	2-M6
30	30 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	33.0	2-M6	30H	30 $^{+0.021}_{0}$	8 $^{+0.036}_{0}$	33.3	2-M6	—	—	—	—	—
32	32 $^{+0.025}_{0}$	10 $^{+0.061}_{+0.025}$	35.5	2-M8	32H	32 $^{+0.025}_{0}$	10 $^{+0.036}_{0}$	35.3	2-M8	—	—	—	—	—
35	35 $^{+0.025}_{0}$	10 $^{+0.061}_{+0.025}$	38.5	2-M8	35H	35 $^{+0.025}_{0}$	10 $^{+0.036}_{0}$	38.3	2-M8	—	—	—	—	—
38	38 $^{+0.025}_{0}$	10 $^{+0.061}_{+0.025}$	41.5	2-M8	38H	38 $^{+0.025}_{0}$	10 $^{+0.036}_{0}$	41.3	2-M8	38N	38 $^{+0.050}_{+0.025}$	10 $^{+0.036}_{0}$	41.3	2-M8
40	40 $^{+0.025}_{0}$	10 $^{+0.061}_{+0.025}$	43.5	2-M8	40H	40 $^{+0.025}_{0}$	12 $^{+0.043}_{0}$	43.3	2-M8	—	—	—	—	—
42	42 $^{+0.025}_{0}$	12 $^{+0.075}_{+0.032}$	45.5	2-M8	42H	42 $^{+0.025}_{0}$	12 $^{+0.043}_{0}$	45.3	2-M8	42N	42 $^{+0.050}_{+0.025}$	12 $^{+0.043}_{0}$	45.3	2-M8
45	45 $^{+0.025}_{0}$	12 $^{+0.075}_{+0.032}$	48.5	2-M8	45H	45 $^{+0.025}_{0}$	14 $^{+0.043}_{0}$	48.8	2-M10	—	—	—	—	—
48	48 $^{+0.025}_{0}$	12 $^{+0.075}_{+0.032}$	51.5	2-M8	48H	48 $^{+0.025}_{0}$	14 $^{+0.043}_{0}$	51.8	2-M10	48N	48 $^{+0.050}_{+0.025}$	14 $^{+0.043}_{0}$	51.8	2-M10
50	50 $^{+0.025}_{0}$	12 $^{+0.075}_{+0.032}$	53.5	2-M8	50H	50 $^{+0.025}_{0}$	14 $^{+0.043}_{0}$	53.8	2-M10	—	—	—	—	—
55	55 $^{+0.030}_{0}$	15 $^{+0.075}_{+0.032}$	60.0	2-M10	55H	55 $^{+0.030}_{0}$	16 $^{+0.043}_{0}$	59.3	2-M10	55N	55 $^{+0.060}_{+0.030}$	16 $^{+0.043}_{0}$	59.3	2-M10
56	56 $^{+0.030}_{0}$	15 $^{+0.075}_{+0.032}$	61.0	2-M10	56H	56 $^{+0.030}_{0}$	16 $^{+0.043}_{0}$	60.3	2-M10	—	—	—	—	—
60	60 $^{+0.030}_{0}$	15 $^{+0.075}_{+0.032}$	65.0	2-M10	60H	60 $^{+0.030}_{0}$	18 $^{+0.043}_{0}$	64.4	2-M10	60N	60 $^{+0.060}_{+0.030}$	18 $^{+0.043}_{0}$	64.4	2-M10
63	63 $^{+0.030}_{0}$	18 $^{+0.075}_{+0.032}$	69.0	2-M10	63H	63 $^{+0.030}_{0}$	18 $^{+0.043}_{0}$	67.4	2-M10	—	—	—	—	—
65	65 $^{+0.030}_{0}$	18 $^{+0.075}_{+0.032}$	71.0	2-M10	65H	65 $^{+0.030}_{0}$	18 $^{+0.043}_{0}$	69.4	2-M10	65N	65 $^{+0.060}_{+0.030}$	18 $^{+0.043}_{0}$	69.4	2-M10

* The ø11 or below requirement under the new JIS standards and ø11 requirement for the new motor standards are the same as the old JIS standards (class 2).

Distance from Set Screw Edge (Cylindrical Hub)

Coupling size	001	002	004	008	012	016	022	025	028	030	050	080	090	140	200	250	400
Distance from set screw edge [mm]	6	6	6	7	7	10	10	10	10	11	11	11	13	13	13	13	13

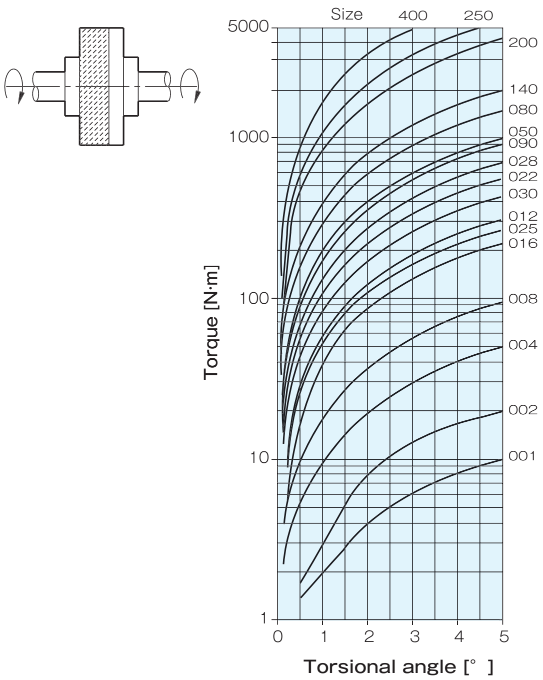
Distance from Set Screw Edge (Flange Hub)

Coupling size	001	002	004	008	012	016	022	025	028	030	050	080	090	140	200	250	400
Distance from set screw edge [mm]	6	7	7	9	9	10	10	10	10	15	15	15	15	15	16	16	16

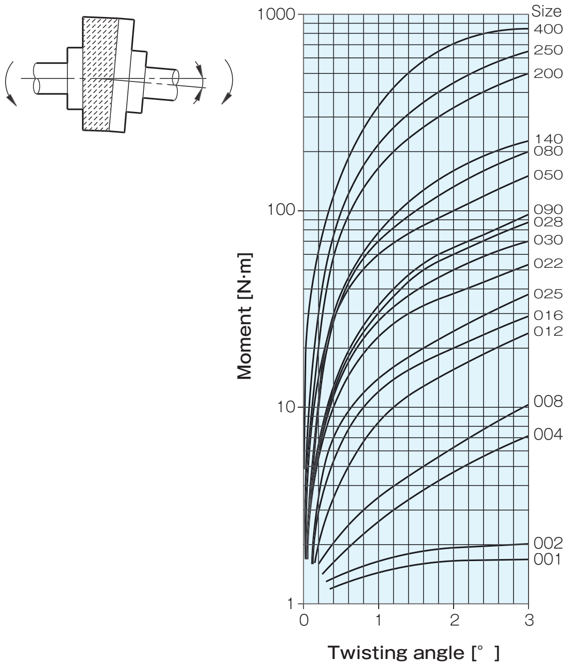
Items Checked for Design Purposes

Static Spring Characteristics

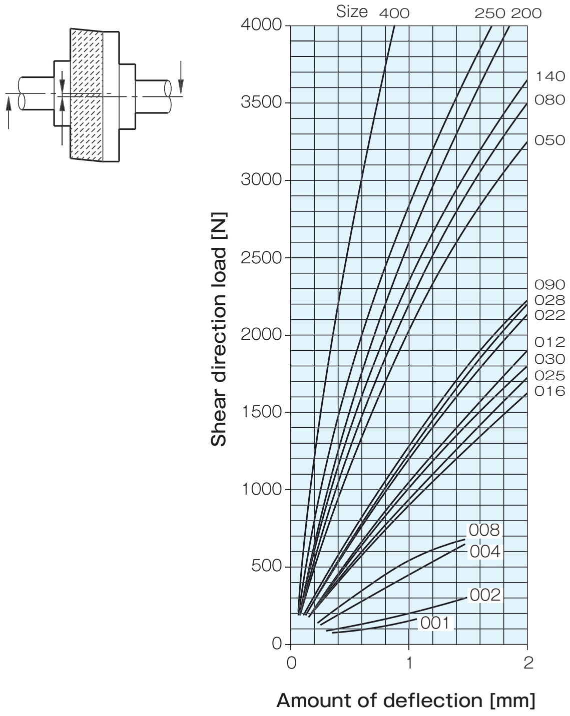
■ Torsional angle vs. torque diagram



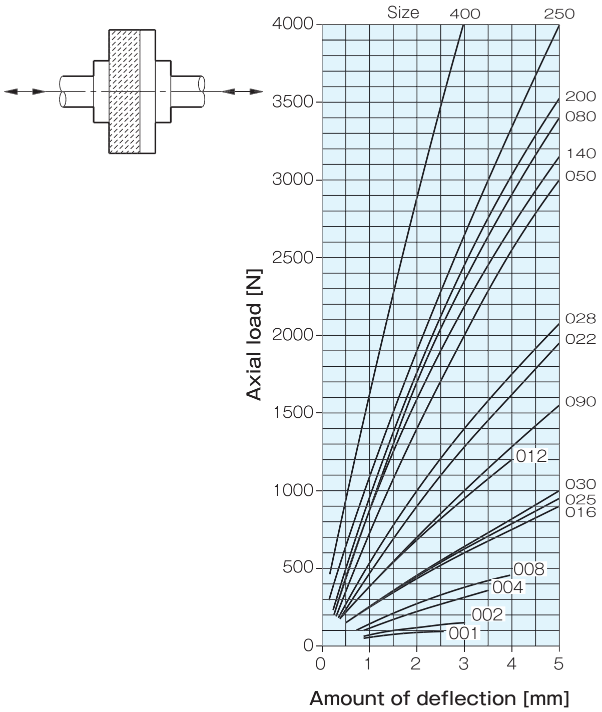
■ Twisting angle vs. moment diagram



■ Shear direction load vs. deflection diagram



■ Axial load vs. deflection diagram



CF-A Models

Items Checked for Design Purposes

Precautions for Handling

CF-A models are delivered in component form. Pay close attention to the misalignments for mounting and assembly methods shown below when you mount couplings.

(1) Couplings are designed for use within an operating temperature range of -30℃ to 95℃ .

(2) Rubber bodies are not sufficiently resistant to oil and grease, so avoid contact with these substances. Use and storage in direct sunlight may shorten service life of the rubber body, so cover it appropriately.

(3) Bolts for mounting are given a microcapsule coating that takes effect after mounting to stop loosening. Screw fixatives or other adhesives are therefore unnecessary. Be particularly careful to never use liquid anaerobic screw fixatives, as they have adverse effects on the rubber body. Also, store the couplings in well ventilated locations away from moisture to preserve their efficacy and keep them out of contact with oils.

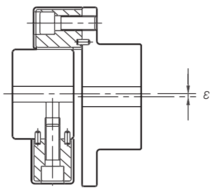
Mounting Misalignment

To get full coupling performance, mount couplings so that differences between coupling centers during operation are within the misalignment shown in the specifications table. When used at rotation speeds exceeding 1000 min^{-1}, however, we recommend parallel misalignment of 0.5 mm or less and angular deflection of 1° or less.

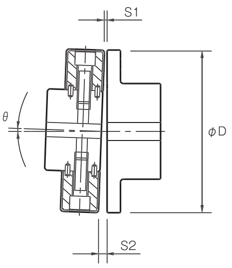
■ Mounting misalignment

Model	Parallel [mm]	Angular [°]	Axial [mm]
CF-A-001	0.5	3	± 2
CF-A-002	1.0	3	± 3
CF-A-004	1.0	3	± 3
CF-A-008	1.0	3	± 4
CF-A-012	1.0	2	± 4
CF-A-016	1.5	3	± 5
CF-A-022	1.5	2	± 5
CF-A-025	1.5	3	± 5
CF-A-028	1.5	2	± 5
CF-A-030	1.5	3	± 5
CF-A-050	1.5	2	± 5
CF-A-080	1.5	2	± 4
CF-A-090	1.5	3	± 5
CF-A-140	1.5	2	± 5
CF-A-200	1.5	2	± 5
CF-A-250	1.5	2	± 5
CF-A-400	1.5	2	± 5

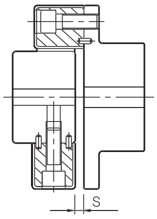
■ Parallel



■ Angular



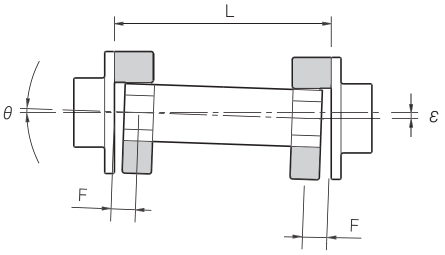
■ Axial



$$\theta = \sin^{-1}\frac{S2 - S1}{D}$$

The allowable values for parallel misalignment and angular deflection of the floating-shaft type OG and OZ types will vary with the floating length used. Calculate them using the equations below.

■ Calculating parallel misalignment and angular deflection for OG and OZ types



$$\varepsilon = \tan\theta\ (L-2F)$$

Calculate F from the dimensions table as follows.

- For OG types, $F = G1 + S$

For sizes 250 and 400, however, $F = (E/2) + S$

- For OZ types, $F = G1 + S + H$

For sizes 250 and 400, however, $F = (E/2) + S + H$

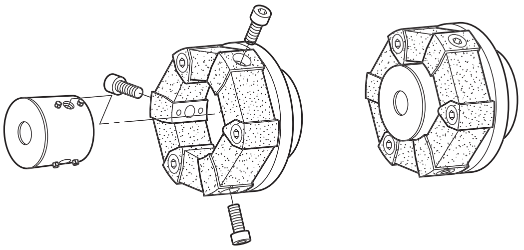
ε : Parallel misalignment of two shafts, θ : Angular deflection of coupling,

L: Length of floating shaft

Assembly

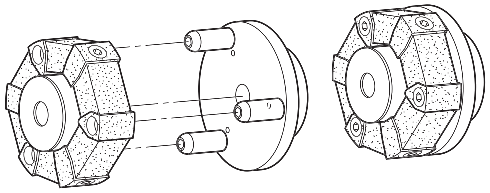
■ O☐ Types

Push the spring pin into the cylindrical hub and flange hub, and then lock the rubber body first to the flange hub and then to the cylindrical hub. (Use a spring pin of size 008 or larger.)



■ S☐ Types

Push the spring pin into the cylindrical hub, and then lock the S bolt into the flange hub. Assemble by first locking the rubber body into the cylindrical hub and then pushing the rubber body onto the S bolt. (Use a spring pin of size 008 or larger.)



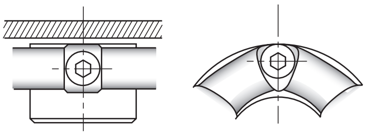
(1) To lock the cylindrical hub and flange hub to the rubber body, use a torque wrench to tighten the bolt to the prescribed torque. To ensure secure fastening, apply an extremely small amount of grease to the seat surface of the bolt. (Be careful not to get grease on the threads of the bolt.) Also be careful to never use liquid anaerobic screw fixatives, as they have adverse effects on the rubber body.

(2) When mounting a rubber body on a flange hub and then mounting it on a cylindrical hub, the rubber body can become significantly warped by the frictional force of the bolt's seat surface, so tighten the bolt after the cylindrical hub is locked in place.

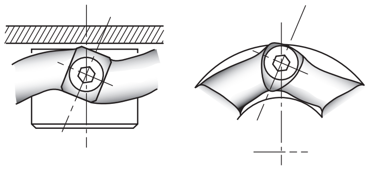
(3) When mounting a rubber body onto a cylindrical hub, screw each bolt in by two threads each and then tighten.

(4) Once assembly is complete, recheck the mounting situation of the rubber body, as shown in the next page.

Good mountings

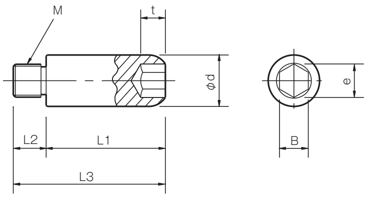


Bad mountings



Bolt Specifications and Tightening Torques

The bolts are hex-socket-head bolts that conform to JIS B1176, are zinc plated, and have microcapsule coatings (to prevent loosening). Dedicated S bolts are used for bolts in the A (axial) direction that are insertion-mounted (S□ types). Check the dimensions in the following.



S bolt dimensions

Coupling size	d	L1	L2	L3	t	B	e	M
001	10	24	7	31	5.0	5	5.9	M6 × 1
002·004	14	24	8	32	6.0	6	7.0	M8 × 1.25
008·012	17	32	10	42	9.0	8	9.4	M10 × 1.5
016·022	19	42	12	54	9.0	10	11.7	M12 × 1.75
025·028	22	46	14	60	10.5	12	14.0	M14 × 2
030·050·080	25	58	16	74	12.0	14	16.3	M16 × 2
090·140·200·250	32	70	20	90	14.0	17	19.8	M20 × 2.5

* The nominal diameter for the bolt M is equal to the nominal diameter of the screw thread times pitch.

* Size 400 uses the spacer system, so S bolts are not used.

Tighten each of the bolts to the tightening torques given in the following tables, using a torque wrench or the like.

Bolt specifications and tightening torques in direction R

Model	Strength classification	Direction R bolt specification		Tightening torque [N·m]
		01・02・S1・S2・OG	OZ	
CF-A-001	8.8 or over	2-M6 × 10	2-M6 × 10	9 ~ 11
CF-A-002	8.8 or over	2-M8 × 20	2-M8 × 20	24 ~ 27
CF-A-004	8.8 or over	3-M8 × 25	3-M8 × 25	24 ~ 27
CF-A-008	8.8 or over	3-M10 × 30	3-M10 × 30	49 ~ 54
CF-A-012	8.8 or over	4-M10 × 30	4-M10 × 30	49 ~ 54
CF-A-016	8.8 or over	3-M12 × 35	3-M12 × 35	85 ~ 94
CF-A-022	8.8 or over	4-M12 × 35	4-M12 × 35	85 ~ 94
CF-A-025	8.8 or over	3-M14 × 40	3-M14 × 40	130 ~ 150
CF-A-028	8.8 or over	4-M14 × 40	4-M14 × 40	130 ~ 150
CF-A-030	8.8 or over	3-M16 × 50	3-M16 × 50	210 ~ 230
CF-A-050	8.8 or over	4-M16 × 50	4-M16 × 50	210 ~ 230
CF-A-080	8.8 or over	4-M16 × 50	4-M16 × 50	210 ~ 230
CF-A-090	10.9 or over	3-M20 × 65	3-M20 × 65	440 ~ 490
CF-A-140	10.9 or over	4-M20 × 65	4-M20 × 65	440 ~ 490
CF-A-200	10.9 or over	4-M20 × 65	4-M20 × 65	440 ~ 490
CF-A-250	10.9 or over	8-M20 × 80	8-M20 × 90	440 ~ 490
CF-A-400	10.9 or over	8-M20 × 100	8-M20 × 100	440 ~ 490

* The nominal diameters for bolts are equal to the quantity minus the nominal diameter of the screw threads times the nominal length. The OG and OZ quantities are for one side only.

* Contact Miki Pulley if you plan to use bolts with specifications other than those shown.

Bolt specifications and tightening torques in direction A

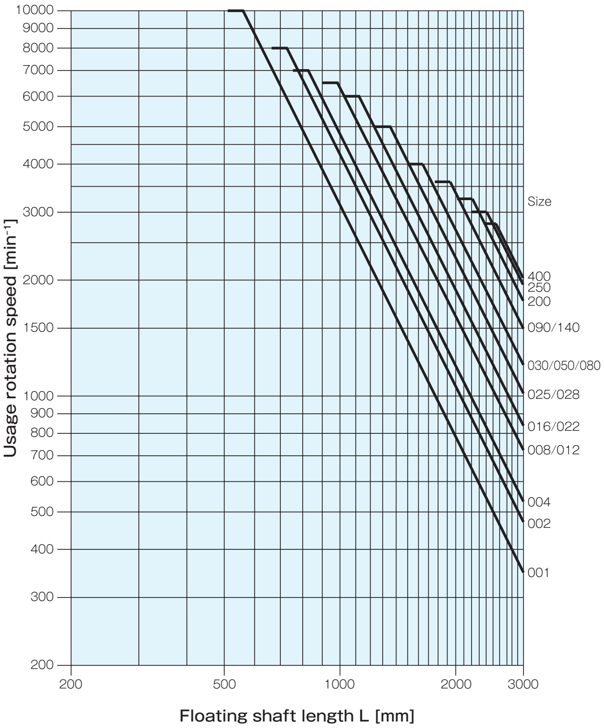
Model	Strength classification	Direction A bolt specification			Tightening torque [N·m]
		01・02・OG	OZ	S1・S2	
CF-A-001	8.8 or over	2-M6 × 25	2-M6 × 30	2-M6	9 ~ 11
CF-A-002	8.8 or over	2-M8 × 20	2-M8 × 25	2-M8	24 ~ 27
CF-A-004	8.8 or over	3-M8 × 25	3-M8 × 30	3-M8	24 ~ 27
CF-A-008	8.8 or over	3-M10 × 30	3-M10 × 40	3-M10	49 ~ 54
CF-A-012	8.8 or over	4-M10 × 30	4-M10 × 40	4-M10	49 ~ 54
CF-A-016	8.8 or over	3-M12 × 35	3-M12 × 45	3-M12	85 ~ 94
CF-A-022	8.8 or over	4-M12 × 35	4-M12 × 45	4-M12	85 ~ 94
CF-A-025	8.8 or over	3-M14 × 40	3-M14 × 50	3-M14	130 ~ 150
CF-A-028	8.8 or over	4-M14 × 40	4-M14 × 50	4-M14	130 ~ 150
CF-A-030	8.8 or over	3-M16 × 50	3-M16 × 60	3-M16	210 ~ 230
CF-A-050	8.8 or over	4-M16 × 50	4-M16 × 60	4-M16	210 ~ 230
CF-A-080	8.8 or over	4-M16 × 50	4-M16 × 60	4-M16	210 ~ 230
CF-A-090	10.9 or over	3-M20 × 65	3-M20 × 75	3-M20	440 ~ 490
CF-A-140	10.9 or over	4-M20 × 65	4-M20 × 75	4-M20	440 ~ 490
CF-A-200	10.9 or over	4-M20 × 65	4-M20 × 80	4-M20	440 ~ 490
CF-A-250	10.9 or over	4-M20 × 80	4-M20 × 95	4-M20	440 ~ 490
CF-A-400	10.9 or over	4-M24 × 100	4-M24 × 115	4-M24	850 ~ 900

* The nominal diameters for bolts are equal to the quantity minus the nominal diameter of the screw threads times the nominal length. The OG and OZ quantities are for one side only.

* Contact Miki Pulley if you plan to use bolts with specifications other than those shown.

Usage Rotation Speed Limits for OZ Types

For OZ types, the rotation speeds at which the coupling can be used will vary with the length of floating shaft selected. Use the following figure to confirm that the rotation speed you will use is at or below the limit speed.



CF-A Models

Designing a Cylindrical or Flange Hub

Materials

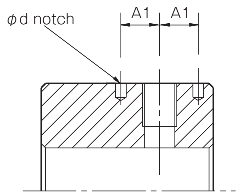
When designing a new cylindrical or flange hub, use the following materials or materials that have at least the following tensile strength.

Hub type	Size	Material	Tensile strength
Cylindrical hub	Total size	S 45 C	569 N/mm^2 or higher
Flange hub	001 ～ 004	FC 200	200N/mm^2 or higher
	008 ～ 400	FCD 450	450N/mm^2 or higher

Spring pin bore dimensions

Contact the following table for spring pin bore dimensions for cylindrical or flange hubs. (Coupling size 008 or larger)

Cylindrical hub

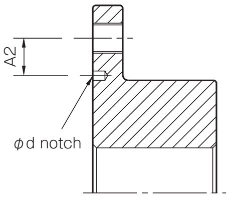


Unit [mm]

Model	A1 ± 0.1	d	Depth	Spring pin specification
CF-A-008	10.0	4	5.5	6- ϕ 4 × 8
CF-A-012	10.0	4	5.5	8- ϕ 4 × 8
CF-A-016	13.5	5	6.5	6- ϕ 5 × 10
CF-A-022	13.5	5	6.5	8- ϕ 5 × 10
CF-A-025	14.0	5	6.5	6- ϕ 5 × 10
CF-A-028	14.0	5	6.5	8- ϕ 5 × 10
CF-A-030	18.0	5	6.5	6- ϕ 5 × 10
CF-A-050	18.0	5	6.5	8- ϕ 5 × 10
CF-A-080	18.0	5	6.5	8- ϕ 5 × 10
CF-A-090	22.5	8	13.0	6- ϕ 8 × 16
CF-A-140	22.5	8	13.0	8- ϕ 8 × 16
CF-A-200	22.5	8	13.0	8- ϕ 8 × 16

* The nominal diameter of the spring pin is equal to the quantity minus the diameter times the length.
* Coupling sizes 250 and 400 do not require a spring pin bore on the cylindrical hub side.

Flange hubs (flywheel side)



Unit [mm]

Model	A2 ± 0.1	d	Depth	Spring pin specification
CF-A-008	12	4	5.5	3- ϕ 4 × 8
CF-A-012	12	4	5.5	4- ϕ 4 × 8
CF-A-016	18	5	6.5	3- ϕ 5 × 10
CF-A-022	18	5	6.5	4- ϕ 5 × 10
CF-A-025	18	5	6.5	3- ϕ 5 × 10
CF-A-028	18	5	6.5	4- ϕ 5 × 10
CF-A-030	20	5	6.5	3- ϕ 5 × 10
CF-A-050	20	5	6.5	4- ϕ 5 × 10
CF-A-080	20	5	6.5	4- ϕ 5 × 10
CF-A-090	25	8	13.0	3- ϕ 8 × 16
CF-A-140	25	8	13.0	4- ϕ 8 × 16
CF-A-200	25	8	13.0	4- ϕ 8 × 16
CF-A-250	30	10	13.0	4- ϕ 10 × 18
CF-A-400	40	10	13.0	4- ϕ 10 × 18

* The nominal diameter of the spring pin is equal to the quantity minus the diameter times the length.

Standard spring pin specifications for products with spring pins are given below.

Standard spring pin specification

Size	OP • OC • O1 • O2		SP • SC • S1 • S2		OG	OZ
	Cylindrical hub	Flange hub	Cylindrical hub	Flange hub	Flange hub	Center hub
001	—	—	—	—	—	—
002	—	—	—	—	—	—
004	—	—	—	—	—	—
008	6-ϕ4×8	3-ϕ4×8	6-ϕ4×8	—	3-ϕ4×8	—
012	8-ϕ4×8	4-ϕ4×8	8-ϕ4×8	—	4-ϕ4×8	—
016	6-ϕ5×10	3-ϕ5×10	6-ϕ5×10	—	3-ϕ5×10	3-ϕ5×10
022	8-ϕ5×10	4-ϕ5×10	8-ϕ5×10	—	4-ϕ5×10	4-ϕ5×10
025	6-ϕ5×10	3-ϕ5×10	6-ϕ5×10	—	3-ϕ5×10	3-ϕ5×10
028	8-ϕ5×10	4-ϕ5×10	8-ϕ5×10	—	4-ϕ5×10	4-ϕ5×10
030	6-ϕ5×10	3-ϕ5×10	6-ϕ5×10	—	3-ϕ5×10	3-ϕ5×10
050	8-ϕ5×10	4-ϕ5×10	8-ϕ5×10	—	4-ϕ5×10	4-ϕ5×10
080	8-ϕ5×10	4-ϕ5×10	8-ϕ5×10	—	4-ϕ5×10	4-ϕ5×10
090	6-ϕ8×16	3-ϕ8×16	6-ϕ8×16	—	3-ϕ8×16	3-ϕ8×10
140	8-ϕ8×16	4-ϕ8×16	8-ϕ8×16	—	4-ϕ8×16	4-ϕ8×10
200	8-ϕ8×16	4-ϕ8×16	8-ϕ8×16	—	4-ϕ8×16	4-ϕ8×10
250	—	4-ϕ 10×18	—	—	4-ϕ 10×18	—
400	—	4-ϕ 10×18	—	—	4-ϕ 10×18	—

* The nominal diameter of the spring pin is equal to the quantity minus the diameter times the length.
* The number of spring pins given for OG and OZ flange (center) hubs is for one side.

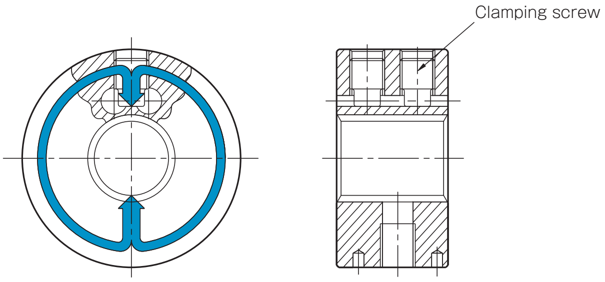
Coupling a pump shaft (spline shaft) to a cylindrical hub

(1) Movable splines

Heat treat (carburize and quench) the spline teeth of the cylindrical hub. Contact Miki Pulley regarding materials, heat-treated hardness, and the like. Only use type O0 rubber bodies for movable splines.

(2) Fixed splines

We can design a clamping hub that completely locks a cylindrical hub to a spline shaft using center lock action. Contact Miki Pulley for details. Clamping hubs must be made to order.



CENTA-LOCK mechanism on the clamping hub

Recommended spline-shaft fit grades

Standards	Grade of fit
JIS D2001	Class b
SAE J498b	Class 2
ANSI B92.1	Class 5

Induction Motor Specifications and Easy Selection Table

Motor		50 Hz: 3000 min^{-1}, 60 Hz: 3600 min^{-1}				50 Hz: 1500min^{-1}, 60 Hz: 1800min^{-1}			
		Two-pole motor		CENTAFLEX		Four-pole motor		CENTAFLEX	
Output [kW]	Frequency [Hz]	Shaft diameter [mm]	Torque [N·m]	Model	Nominal bore diameter	Shaft diameter [mm]	Torque [N·m]	Model	Nominal bore diameter
0.4	50	14	1.3	CF-A-001	14N	14	2.6	CF-A-001	14N
	60	14	1.1	CF-A-001	14N	14	2.2	CF-A-001	14N
0.75	50	19	2.4	CF-A-001	19N	19	4.9	CF-A-001	19N
	60	19	2	CF-A-001	19N	19	4.1	CF-A-001	19N
1.5	50	24	4.9	CF-A-002	24N	24	9.7	CF-A-002	24N
	60	24	4.1	CF-A-002	24N	24	8.1	CF-A-002	24N
2.2	50	24	7.1	CF-A-002	24N	28	14	CF-A-004	28N
	60	24	6	CF-A-002	24N	28	12	CF-A-004	28N
3.7	50	28	12	CF-A-002	28N	28	24	CF-A-008	28N
	60	28	10	CF-A-002	28N	28	20	CF-A-004	28N
5.5	50	38	18	CF-A-008	38N	38	36	CF-A-008	38N
	60	38	15	CF-A-008	38N	38	30	CF-A-008	38N
7.5	50	38	24	CF-A-008	38N	38	49	CF-A-012	38N
	60	38	20	CF-A-008	38N	38	41	CF-A-008	38N
11	50	42	36	CF-A-008	42N	42	71	CF-A-016	42N
	60	42	30	CF-A-008	42N	42	59	CF-A-012	42N
15	50	42	49	CF-A-012	42N	42	97	CF-A-022	42N
	60	42	41	CF-A-008	42N	42	81	CF-A-016	42N
18.5	50	42	60	CF-A-012	42N	48	120	CF-A-025	48N
	60	42	50	CF-A-012	42N	48	100	CF-A-022	48N
22	50	48	71	CF-A-016	48N	48	143	CF-A-028	48N
	60	48	59	CF-A-012	48N	48	119	CF-A-022	48N
30	50	55	97	CF-A-022	55N	55	195	CF-A-030	55N
	60	55	81	CF-A-016	55N	55	162	CF-A-028	55N
37	50	55	120	CF-A-025	55N	60	240	CF-A-050	60N
	60	55	100	CF-A-022	55N	60	200	CF-A-030	60N
45	50	55	146	CF-A-028	55N	60	292	CF-A-050	60N
	60	55	122	CF-A-025	55N	60	243	CF-A-050	60N

* The above table shows generally suitable sizes for use on an induction motor drive unit.
* Motor rotation speed and output torque are calculated (reference) values.

CF-H 00/01/02 Types

Specifications

Model	Torque		Misalignment			Max. rotation speed [min^{-1}]	Dynamic torsional stiffness [N·m/rad]
	Nominal [N·m]	Max. [N·m]	Parallel [mm]	Angular [°]	Axial [mm]		
CF-H-008	100	200	0.3	0.5	± 3	6500	1.27×10^4
CF-H-016	200	400	0.3	0.5	± 3	5500	2.46×10^4
CF-H-030	400	800	0.4	0.5	± 3	4000	5.91×10^4
CF-H-040	600	1200	0.4	0.5	± 3	4000	1.87×10^5
CF-H-050	800	1600	0.4	0.5	± 3	4000	1.91×10^5
CF-H-090	950	1900	0.4	0.5	± 3	4000	2.69×10^5
CF-H-110	1100	2200	0.4	0.5	± 3	4000	2.79×10^5
CF-H-160	1600	3200	0.4	0.5	± 3	3600	5.11×10^5
CF-H-240	2500	5000	0.4	0.5	± 3	3000	5.10×10^5

Model	Moment of inertia [kg·m^2]	Mass [kg]
CF-H-008-00	9.4×10^{-4}	0.4
CF-H-016-00	3.0×10^{-3}	0.8
CF-H-030-00	9.2×10^{-3}	1.5
CF-H-040-00	6.9×10^{-3}	1.4
CF-H-050-00	1.2×10^{-2}	1.8
CF-H-090-00	1.5×10^{-2}	2.3
CF-H-110-00	2.3×10^{-2}	2.8
CF-H-160-00	3.6×10^{-2}	3.4
CF-H-240-00	0.10	5.8

Model	Moment of inertia [kg·m^2]	Mass [kg]
CF-H-008-01	1.8×10^{-3}	1.3
CF-H-016-01	4.9×10^{-3}	2.5
CF-H-030-01	1.9×10^{-2}	6.0
CF-H-040-01	1.3×10^{-2}	4.4
CF-H-050-01	2.3×10^{-2}	6.5
CF-H-090-01	2.6×10^{-2}	6.9
CF-H-110-01	3.7×10^{-2}	9.7
CF-H-160-01	7.0×10^{-2}	11.9
CF-H-240-01	0.18	20.9

Model	Moment of inertia [kg·m^2]	Mass [kg]
CF-H-008-02	3.9×10^{-3}	3.1
CF-H-016-02	1.1×10^{-2}	5.6
CF-H-030-02	4.6×10^{-2}	13.9
CF-H-040-02	2.8×10^{-2}	9.8
CF-H-050-02	5.0×10^{-2}	14.4
CF-H-090-02	5.3×10^{-2}	14.8
CF-H-110-02	8.2×10^{-2}	18.3
CF-H-160-02	0.16	26.1
CF-H-240-02	0.39	48.8

* Max. rotation speed does not take into account dynamic balance.

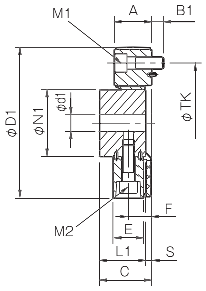
* Dynamic torsion spring characteristics are non-linear, so use a dynamic torsional stiffness that is at least roughly 20% of rated torque.

* The dynamic torsional stiffness is about 1.3 times that of the static torsional stiffness.

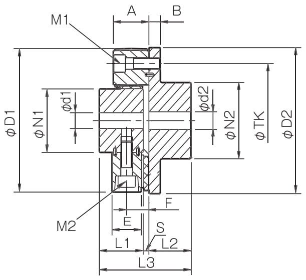
* Values for moment of inertia and mass are those when the cylindrical hub and flange hub have pilot bores.

Dimensions

■ CF-H-01



■ CF-H-02



Unit [mm]

Model	d1			d2			D1	D2	N1	N2	L1	L2	L3	A	B	B1	C	E	F	S	TK	M1	M2
	Pilot bore	Min.	Max.	Pilot bore	Min.	Max.																	
CF-H-008	12	14	38	15	16	46	125	120	60	70	40	42	88	32	10	10	46	25	20	6	100	3-M10	3-M10
CF-H-016	15	16	48	19	20	56	155	150	70	85	52	50	110	41	12	12	60	34	26	8	125	3-M12	3-M12
CF-H-030	20	22	65	28	30	80	205	200	100	120	68	66	144	56	16	15	78	46	35	10	165	3-M16	3-M16
CF-H-040	22	24	50	22	24	65	175	180	85	100	58	56	124	50	16	16	68	42	31	10	140	4-M16	4-M16
CF-H-050	20	22	65	28	30	80	205	200	100	120	68	66	144	56	16	15	78	46	35	10	165	4-M16	4-M16
CF-H-090	20	22	65	28	30	80	215	200	100	120	68	66	144	56	16	15	78	46	35	10	165	4-M16	4-M16
CF-H-110	25	28	63	28	30	80	225	230	100	120	68	66	144	56	18	18	78	46	35	10	180	4-M18	4-M18
CF-H-160	30	32	85	30	32	95	270	260	125	140	84	80	177	59	19	20	97	48	37	13	215	4-M20	4-M20
CF-H-240	40	42	115	40	42	120	330	320	160	180	100	100	213	65	19	20	113	54	40	13	260	4-M20	4-M20

* Pilot bores are to be drilled into the part. Minimum values for d1 and d2 are given by the minimum bore diameter values in the MIKI PULLEY standard hole-drilling standards and maximum values from the maximum allowable drilled bore diameters.

* The TK dimension is the bolt mounting pitch diameter of the flange hub or paired mounting part.

How to Place an Order

CF-H-008-02 14H-14N

Size

Type
- 00: Element and aluminum insert
- 0B: 00 and bolts
- 01: 0C and cylindrical hub
- 0P: 00 and spring pin
- 0C: 0B and spring pin
- 02: 01 and flange hub

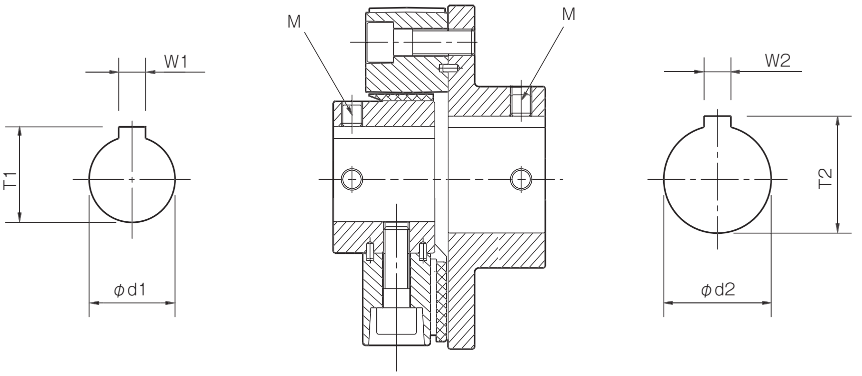
Bore diameter: d1 (Cylindrical hub) - d2 (Flange hub)
Blank: Pilot bore

Bore specifications
- Blank: Compliant with the old JIS standards (class 2) E9
- H: Compliant with the new JIS standards H9
- N: Compliant with the new motor standards

* Depending on your location and such, we may not be able to sell you our products.
Please contact us for details.

Standard Hole-Drilling Standards

- Positioning precision for keyway milling is determined by sight, so contact Miki Pulley when the keyway requires a positioning precision for a particular hub.
- Set screw positions are not on the same plane.
- The set screws are included with the product.
- The spline can also be processed. Contact Miki Pulley regarding such processing.



Models compliant with the old JIS standards (class 2)					Models compliant with the new JIS standards					Models compliant with the new motor standards				
Nominal bore diameter	Bore diameter [d1・d2]	Keyway width [W1・W2]	Keyway height [T1・T2]	Set screw hole [M]	Nominal bore diameter	Bore diameter [d1・d2]	Keyway width [W1・W2]	Keyway height [T1・T2]	Set screw hole [M]	Nominal bore diameter	Bore diameter [d1・d2]	Keyway width [W1・W2]	Keyway height [T1・T2]	Set screw hole [M]
Tolerance	H7	E9	$^{+0.3}_{0}$	—	Tolerance	H7	H9	$^{+0.3}_{0}$	—	Tolerance	G7, F7	H9	$^{+0.3}_{0}$	—
14	$14^{+0.018}_{0}$	$5^{+0.050}_{+0.020}$	16.0	2-M4	14H	$14^{+0.018}_{0}$	$5^{+0.030}_{0}$	16.3	2-M4	14N	$14^{+0.024}_{+0.006}$	$5^{+0.030}_{0}$	16.3	2-M4
15	$15^{+0.018}_{0}$	$5^{+0.050}_{+0.020}$	17.0	2-M4	15H	$15^{+0.018}_{0}$	$5^{+0.030}_{0}$	17.3	2-M4	—	—	—	—	—
16	$16^{+0.018}_{0}$	$5^{+0.050}_{+0.020}$	18.0	2-M4	16H	$16^{+0.018}_{0}$	$5^{+0.030}_{0}$	18.3	2-M4	—	—	—	—	—
17	$17^{+0.018}_{0}$	$5^{+0.050}_{+0.020}$	19.0	2-M4	17H	$17^{+0.018}_{0}$	$5^{+0.030}_{0}$	19.3	2-M4	—	—	—	—	—
18	$18^{+0.018}_{0}$	$5^{+0.050}_{+0.020}$	20.0	2-M4	18H	$18^{+0.018}_{0}$	$6^{+0.030}_{0}$	20.8	2-M5	—	—	—	—	—
19	$19^{+0.021}_{0}$	$5^{+0.050}_{+0.020}$	21.0	2-M4	19H	$19^{+0.021}_{0}$	$6^{+0.030}_{0}$	21.8	2-M5	19N	$19^{+0.028}_{+0.007}$	$6^{+0.030}_{0}$	21.8	2-M5
20	$20^{+0.021}_{0}$	$5^{+0.050}_{+0.020}$	22.0	2-M4	20H	$20^{+0.021}_{0}$	$6^{+0.030}_{0}$	22.8	2-M5	—	—	—	—	—
22	$22^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	25.0	2-M6	22H	$22^{+0.021}_{0}$	$6^{+0.030}_{0}$	24.8	2-M5	—	—	—	—	—
24	$24^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	27.0	2-M6	24H	$24^{+0.021}_{0}$	$8^{+0.036}_{0}$	27.3	2-M6	24N	$24^{+0.028}_{+0.007}$	$8^{+0.036}_{0}$	27.3	2-M6
25	$25^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	28.0	2-M6	25H	$25^{+0.021}_{0}$	$8^{+0.036}_{0}$	28.3	2-M6	—	—	—	—	—
28	$28^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	31.0	2-M6	28H	$28^{+0.021}_{0}$	$8^{+0.036}_{0}$	31.3	2-M6	28N	$28^{+0.028}_{+0.007}$	$8^{+0.036}_{0}$	31.3	2-M6
30	$30^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	33.0	2-M6	30H	$30^{+0.021}_{0}$	$8^{+0.036}_{0}$	33.3	2-M6	—	—	—	—	—
32	$32^{+0.025}_{0}$	$10^{+0.061}_{+0.025}$	35.5	2-M8	32H	$32^{+0.025}_{0}$	$10^{+0.036}_{0}$	35.3	2-M8	—	—	—	—	—
35	$35^{+0.025}_{0}$	$10^{+0.061}_{+0.025}$	38.5	2-M8	35H	$35^{+0.025}_{0}$	$10^{+0.036}_{0}$	38.3	2-M8	—	—	—	—	—
38	$38^{+0.025}_{0}$	$10^{+0.061}_{+0.025}$	41.5	2-M8	38H	$38^{+0.025}_{0}$	$10^{+0.036}_{0}$	41.3	2-M8	38N	$38^{+0.050}_{+0.025}$	$10^{+0.036}_{0}$	41.3	2-M8
40	$40^{+0.025}_{0}$	$10^{+0.061}_{+0.025}$	43.5	2-M8	40H	$40^{+0.025}_{0}$	$12^{+0.043}_{0}$	43.3	2-M8	—	—	—	—	—
42	$42^{+0.025}_{0}$	$12^{+0.075}_{+0.032}$	45.5	2-M8	42H	$42^{+0.025}_{0}$	$12^{+0.043}_{0}$	45.3	2-M8	42N	$42^{+0.050}_{+0.025}$	$12^{+0.043}_{0}$	45.3	2-M8
45	$45^{+0.025}_{0}$	$12^{+0.075}_{+0.032}$	48.5	2-M8	45H	$45^{+0.025}_{0}$	$14^{+0.043}_{0}$	48.8	2-M10	—	—	—	—	—
48	$48^{+0.025}_{0}$	$12^{+0.075}_{+0.032}$	51.5	2-M8	48H	$48^{+0.025}_{0}$	$14^{+0.043}_{0}$	51.8	2-M10	48N	$48^{+0.050}_{+0.025}$	$14^{+0.043}_{0}$	51.8	2-M10
50	$50^{+0.025}_{0}$	$12^{+0.075}_{+0.032}$	53.5	2-M8	50H	$50^{+0.025}_{0}$	$14^{+0.043}_{0}$	53.8	2-M10	—	—	—	—	—
55	$55^{+0.030}_{0}$	$15^{+0.075}_{+0.032}$	60.0	2-M10	55H	$55^{+0.030}_{0}$	$16^{+0.043}_{0}$	59.3	2-M10	55N	$55^{+0.060}_{+0.030}$	$16^{+0.043}_{0}$	59.3	2-M10
56	$56^{+0.030}_{0}$	$15^{+0.075}_{+0.032}$	61.0	2-M10	56H	$56^{+0.030}_{0}$	$16^{+0.043}_{0}$	60.3	2-M10	—	—	—	—	—
60	$60^{+0.030}_{0}$	$15^{+0.075}_{+0.032}$	65.0	2-M10	60H	$60^{+0.030}_{0}$	$18^{+0.043}_{0}$	64.4	2-M10	60N	$60^{+0.060}_{+0.030}$	$18^{+0.043}_{0}$	64.4	2-M10
63	$63^{+0.030}_{0}$	$18^{+0.075}_{+0.032}$	69.0	2-M10	63H	$63^{+0.030}_{0}$	$18^{+0.043}_{0}$	67.4	2-M10	—	—	—	—	—
65	$65^{+0.030}_{0}$	$18^{+0.075}_{+0.032}$	71.0	2-M10	65H	$65^{+0.030}_{0}$	$18^{+0.043}_{0}$	69.4	2-M10	65N	$65^{+0.060}_{+0.030}$	$18^{+0.043}_{0}$	69.4	2-M10

Distance from Set Screw Edge (Cylindrical Hub)

Model	CF-H-008	CF-H-016	CF-H-030	CF-H-040	CF-H-050	CF-H-090	CF-H-110	CF-H-160	CF-H-240
Distance from set screw edge [mm]	7	10	11	10	11	11	11	15	15

Distance from Set Screw Edge (Flange Hub)

Model	CF-H-008	CF-H-016	CF-H-030	CF-H-040	CF-H-050	CF-H-090	CF-H-110	CF-H-160	CF-H-240
Distance from set screw edge [mm]	9	10	15	10	15	15	15	15	15

CF-H Models

Items Checked for Design Purposes

Precautions for Handling

CF-H models are delivered in component form. Pay close attention to the assembly methods shown below when mounting couplings.

(1) Couplings are designed for use within an operating temperature range of -40℃ to 120℃ .

(2) The elements have excellent oil resistance, but avoid using them submerged in oil or in oil mist atmospheres. Also, if the coupling will be stored rather than used immediately, store it in a cool location out of sunlight.

(3) Bolts for mounting (other than clamping screws) are given a microcapsule coating that takes effect after mounting to stop loosening. Screw fixatives or other adhesives are therefore unnecessary. Also, store the couplings in well ventilated locations away from moisture to preserve their efficacy and keep them out of contact with oils.

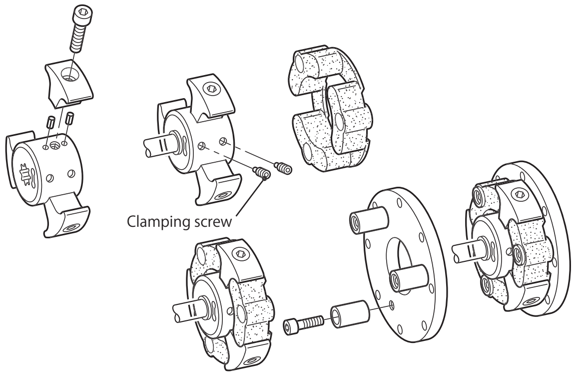
Assembly (When Using CENTA-LOCK)

(1) Press the spring pin into the cylindrical hub (except for coupling size 008), and then lock aluminum insert R into the cylindrical hub.

(2) Mount the cylindrical hub (clamping hub) onto the spline shaft, and then tighten the clamping screw to lock.

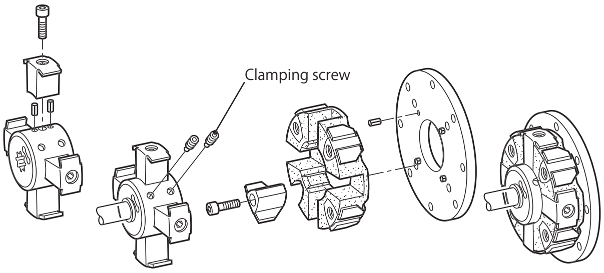
(3) **a. Coupling sizes 008 and 016**

Lock the bushing onto the flange hub (flywheel side).
Push the element into the cylindrical hub.



b. Coupling sizes 030, 040, 050, 090, 110, 160, and 240

Press the spring pin into the flange hub (flywheel side), add aluminum insert A to the element, and then lock it to the flange hub (flywheel side).



Bolt Specifications and Tightening Torques

The bolts are hex-socket-head bolts that conform to JIS B1176, are zinc plated, and have microcapsule coatings (to prevent loosening). The clamping screws are hex-socket-head screws (dog point) that conform to JIS B1177.
Tighten each of the bolts and clamping screws to the tightening torques given in the following tables, using a torque wrench or the like. To ensure secure fastening, apply an extremely small amount of grease to the seat surface of the bolt. (Be careful not to get grease on the threads of the bolt.)

■ Bolt specifications and tightening torques in directions R and A

Model	Strength classification	R direction/A direction Nominal bolt diameter	Tightening torque [N·m]
CF-H-008	8.8 or over	3-M10 × 30	49 ～ 54
CF-H-016	8.8 or over	3-M12 × 35	85 ～ 94
CF-H-030	8.8 or over	3-M16 × 50	210 ～ 230
CF-H-040	8.8 or over	4-M16 × 45	210 ～ 230
CF-H-050	8.8 or over	4-M16 × 50	210 ～ 230
CF-H-090	8.8 or over	4-M16 × 50	210 ～ 230
CF-H-110	10.9 or over	4-M18 × 55	310 ～ 330
CF-H-160	10.9 or over	4-M20 × 50	440 ～ 490
CF-H-240	10.9 or over	4-M20 × 65	440 ～ 490

* The nominal diameter of bolts are equal to the quantity minus the nominal diameter of the screw threads times the nominal length.
* Contact Miki Pulley if you plan to use bolts with specifications other than those shown.

■ Clamping screw specifications and tightening torques

Model	Clamping screw nominal diameter	Tightening torque [N·m]
CF-H-008	2-M10	25 ～ 30
CF-H-016	2-M12	40 ～ 50
CF-H-030	2-M16	100 ～ 120
CF-H-040	2-M16	100 ～ 120
CF-H-050	2-M16	100 ～ 120
CF-H-090	2-M16	100 ～ 120
CF-H-110	2-M16	100 ～ 120
CF-H-160	2-M20	200 ～ 220
CF-H-240	2-M20	200 ～ 220

* The nominal diameter of clamping screws are equal to the quantity minus the nominal diameter of the screw threads.

Designing a Cylindrical or Flange Hub

Materials

When designing a new cylindrical hub, flange hub, flywheel mounting plate, or the like, use the following materials or materials that have at least the following tensile strength.

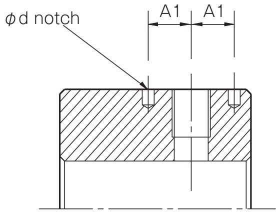
If the material is not strong enough on the flywheel side, it can be compensated for by changing the bolt length. Contact Miki Pulley for details.

Hub type	Material	Tensile strength
Cylindrical hub	S 45 C	569 N/mm² or higher
Flange hub	FCD 450	450N/mm² or higher

Spring pin bore dimensions

Consult the following table for spring pin bore dimensions for cylindrical or flange hubs (flywheel side). (Coupling size 016 or larger)

Cylindrical hub

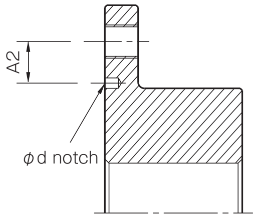


Unit [mm]

Model	A1 ± 0.1	d	Depth	Spring pin specification
CF-H-016	13.5	5	6.5	6- ϕ 5 × 10
CF-H-030	18.0	5	6.5	6- ϕ 5 × 10
CF-H-040	14.0	5	6.5	8- ϕ 5 × 10
CF-H-050	18.0	5	6.5	8- ϕ 5 × 10
CF-H-090	18.0	5	6.5	8- ϕ 5 × 10
CF-H-110	18.0	5	6.5	8- ϕ 5 × 10
CF-H-160	17.5	8	13.0	8- ϕ 8 × 16
CF-H-240	20.0	8	13.0	8- ϕ 8 × 16

* The nominal diameter of the spring pin is equal to the quantity minus the diameter times the length.

Flange hubs (flywheel side)



Unit [mm]

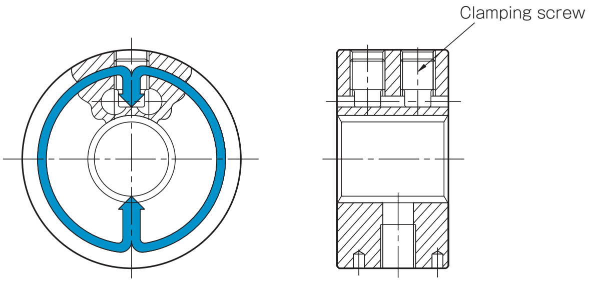
Model	A2 ± 0.1	d	Depth	Spring pin specification
CF-H-030	20	5	6.5	3- ϕ 5 × 10
CF-H-040	17	5	6.5	4- ϕ 5 × 10
CF-H-050	20	5	6.5	4- ϕ 5 × 10
CF-H-090	20	5	6.5	4- ϕ 5 × 10
CF-H-110	17.5	5	6.5	4- ϕ 5 × 10
CF-H-160	25	8	13.0	4- ϕ 8 × 16
CF-H-240	30	8	13.0	4- ϕ 8 × 16

* The nominal diameter of the spring pin is equal to the quantity minus the diameter times the length.

* Coupling size 016 does not require a spring pin bore on the flange hub side.

Coupling a pump shaft (spline shaft) to a cylindrical hub

We can design a clamping hub that completely locks a cylindrical hub to a spline shaft using CENTA-LOCK action. Contact Miki Pulley for details. Clamping hubs must be made to order.



CENTA-LOCK mechanism on the clamping hub

Recommended spline-shaft fit grades

Standards	Grade of fit
JIS D2001	Class b
SAE J498b	Class 2
ANSI B92.1	Class 5

CF-X 00/01/02 Types

Specifications

Model	Torque		Misalignment			Max. rotation speed $[\mathrm{min}^{-1}]$	Static torsional stiffness [N·m/rad]
	Nominal [N·m]	Max. [N·m]	Parallel [mm]	Angular [°]	Axial [mm]		
CF-X-001	15	30	0.1	1	± 0.5	10000	3.0×10^3
CF-X-002	30	60	0.1	1	± 0.5	10000	6.0×10^3
CF-X-004	60	120	0.1	1	± 0.5	8000	2.3×10^4
CF-X-008	120	250	0.1	1	± 0.5	7000	5.8×10^4
CF-X-016	240	500	0.1	1	± 0.5	6000	1.1×10^5
CF-X-025	370	800	0.1	1	± 0.5	5000	1.7×10^5

Model	Moment of inertia $[\mathrm{kg \cdot m^2}]$	Mass [kg]
CF-X-001-00	2.03×10^{-5}	0.04
CF-X-002-00	9.75×10^{-5}	0.1
CF-X-004-00	2.30×10^{-4}	0.2
CF-X-008-00	6.63×10^{-4}	0.3
CF-X-016-00	1.56×10^{-3}	0.5
CF-X-025-00	2.77×10^{-3}	0.6

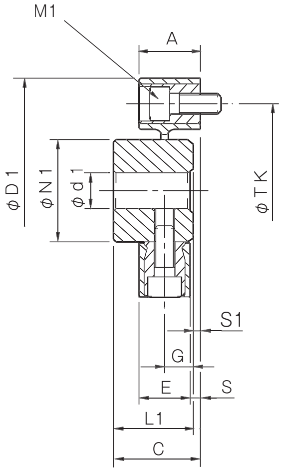
Model	Moment of inertia $[\mathrm{kg \cdot m^2}]$	Mass [kg]
CF-X-001-01	5.25×10^{-5}	0.2
CF-X-002-01	2.20×10^{-4}	0.4
CF-X-004-01	4.83×10^{-4}	0.6
CF-X-008-01	1.49×10^{-3}	1.3
CF-X-016-01	3.49×10^{-3}	2.2
CF-X-025-01	7.07×10^{-3}	3.5

Model	Moment of inertia $[\mathrm{kg \cdot m^2}]$	Mass [kg]
CF-X-001-02	1.22×10^{-4}	0.5
CF-X-002-02	5.74×10^{-4}	0.9
CF-X-004-02	1.19×10^{-3}	1.4
CF-X-008-02	3.49×10^{-3}	2.9
CF-X-016-02	9.20×10^{-3}	5.0
CF-X-025-02	1.83×10^{-2}	7.9

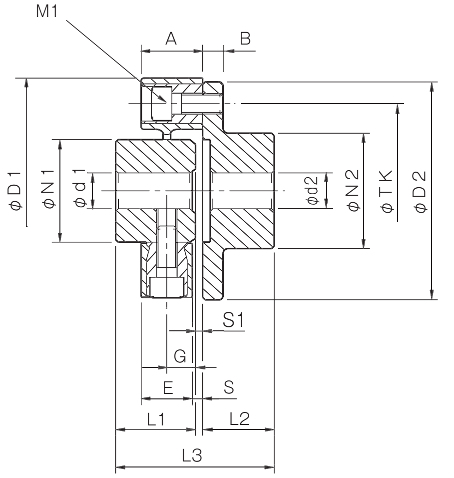
* Max. rotation speed does not take into account dynamic balance.
* Static torsional stiffness values given are from measurements taken at 20℃ .
* Values for moment of inertia and mass are those when the cylindrical hub and flange hub have pilot bores.

Dimensions

■ CF-X-01



■ CF-X-02



Unit [mm]

Model	d1			d2			D1	D2	N1	N2	L1	L2	L3	A	B	C	E	G	S	S1	M1	M2	TK
	Pilot bore	Min.	Max.	Pilot bore	Min.	Max.																	
CF-X-001	8	9	19	8	9	22	57	56	30	36	32	24	57	24	7	33	18	11	3	1	2-M6	2-M6	44
CF-X-002	10	11	26	9	10	30	88	85	40	45	30	28	62	24	8	34	20	10	4	4	2-M8	2-M8	68
CF-X-004	12	14	30	11	12	36	100	100	45	55	34	30	66.5	25	8	36.5	21	12	4	2.5	3-M8	3-M8	80
CF-X-008	12	14	38	15	16	46	125	120	60	70	40	42	85	30	10	43	26	14	4	3	3-M10	3-M10	100
CF-X-016	15	16	48	19	20	56	155	150	70	85	52	50	105	35	12	55	28	18	7	3	3-M12	3-M12	125
CF-X-025	15	16	55	19	20	65	175	170	85	100	58	56	117	40	14	61	34	20	6	3	3-M14	3-M14	140

* Pilot bores are to be drilled into the part. Minimum values for d1 and d2 are given by the minimum bore diameter values in the MIKI PULLEY standard hole-drilling standards and maximum values from the maximum allowable drilled bore diameters.
* The nominal diameters for bolts M1/M2 are equal to the quantity minus the nominal diameter of the screw threads.
* The TK dimension is the bolt mounting pitch diameter of the flange hub or paired mounting part.

How to Place an Order

CF-X-001-O2 12H-14N

Size

Type
O0: Element only
O1: OB and cylindrical hub
OB: O0 and bolts
O2: O1 and flange hub

Bore diameter: d1 (Cylindrical hub) - d2 (Flange hub)
Blank: Pilot bore

Bore specifications
Blank: Compliant with the old JIS standards (class 2) E9
H: Compliant with the new JIS standards H9
N: Compliant with the new motor standards

* Depending on your location and such, we may not be able to sell you our products.
Please contact us for details.

CF-X OG Types

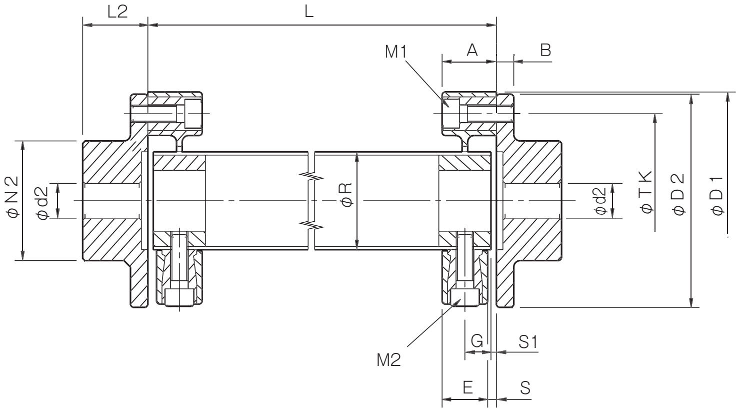
Specifications

Model	Torque		Misalignment			Max. rotation speed [min^{-1}]	Static torsional stiffness [N·m/rad]	Moment of inertia [kg·m^2]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Parallel [mm]	Angular [°]	Axial [mm]				
CF-X-001-OG	15	30	8.2	1	±0.5	2000	1.15×10^3	4.4×10^{-4}	1.2
CF-X-002-OG	30	60	8.2	1	±0.5	2000	2.40×10^3	1.6×10^{-3}	2.2
CF-X-004-OG	60	120	8.2	1	±0.5	2000	6.97×10^3	3.1×10^{-3}	3.1
CF-X-008-OG	120	250	8.1	1	±0.5	2000	1.75×10^4	8.6×10^{-3}	5.8
CF-X-016-OG	240	500	7.9	1	±0.5	2000	3.15×10^4	2.1×10^{-3}	9.6
CF-X-025-OG	370	800	7.8	1	±0.5	2000	5.76×10^4	4.2×10^{-2}	14.6

* Max. rotation speed does not take into account dynamic balance.
* Static torsional stiffness values given are from measurements taken at 20℃ .
* Values for moment of inertia and mass are those when the flange hubs have pilot bores and L = 500 mm.

Dimensions

■ CF-X-OG



Unit [mm]

Model	d2			D1	D2	N2	L2	A	B	E	G	S	S1	M1	M2	R	TK
	Pilot bore	Min.	Max.														
CF-X-001-OG	8	9	22	57	56	36	24	24	7	18	11	3	1	2-M6	2-M6	30	44
CF-X-002-OG	9	10	30	88	85	45	28	24	8	20	10	4	4	2-M8	2-M8	40	68
CF-X-004-OG	11	12	36	100	100	55	30	25	8	21	12	4	2.5	3-M8	3-M8	45	80
CF-X-008-OG	15	16	46	125	120	70	42	30	10	26	14	4	3	3-M10	3-M10	60	100
CF-X-016-OG	19	20	56	155	150	85	50	35	12	28	18	7	3	3-M12	3-M12	70	125
CF-X-025-OG	19	20	65	175	170	100	56	40	14	34	20	6	3	3-M14	3-M14	85	140

* Pilot bores are to be drilled into the part. Minimum values for d2 are given by the minimum bore diameter values in the MIKI PULLEY standard hole-drilling standards and maximum values from the maximum allowable drilled bore diameters.
* The nominal diameters for bolts M1/M2 are equal to the quantity minus the nominal diameter of the screw threads, where the quantity is for one side.
* The L dimension has a standard length of 1000 mm or less. Dimension L must at least allow enough space for an M1 bolt to be mounted.

How to Place an Order

CF-X-001-OG 12H-14N L=600

Size
Type
OG: Floating shaft type
Bore diameter: d1 (Small diameter) - d2 (Large diameter)
Blank: Pilot bore
Bore specifications
Blank: Compliant with the old JIS standards (class 2) E9
H: Compliant with the new JIS standards H9
N: Compliant with the new motor standards
Floating shaft length *Use mm units for L dimensions.

* Depending on your location and such, we may not be able to sell you our products.
Please contact us for details.

CF-X 02-C Types

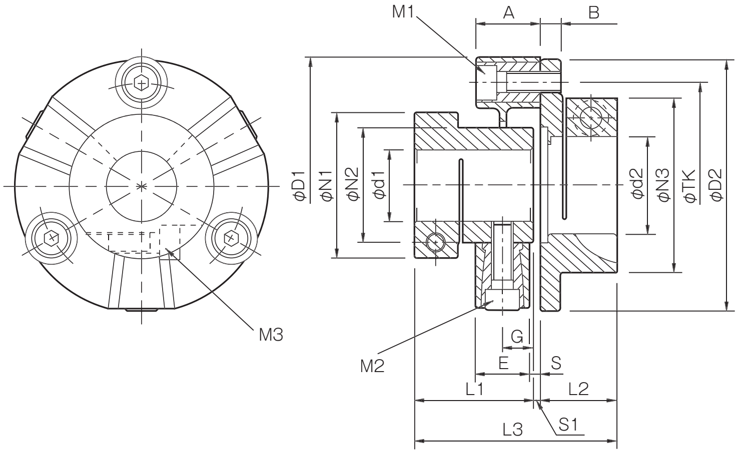
Made to order

Specifications

Model	Torque		Misalignment			Max. rotation speed [min^{-1}]	Static torsional stiffness [N·m/rad]	Moment of inertia [kg·m^2]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Parallel [mm]	Angular [°]	Axial [mm]				
CF-X-001-02-C	15	30	0.1	1	± 0.5	10000	3.0×10^3	7.14×10^{-5}	0.2
CF-X-002-02-C	30	60	0.1	1	± 0.5	10000	6.0×10^3	3.44×10^{-4}	0.5
CF-X-004-02-C	60	120	0.1	1	± 0.5	8000	2.3×10^4	7.22×10^{-4}	0.7

* Max. rotation speed does not take into account dynamic balance.
* Static torsional stiffness values given are from measurements taken at 20℃ .
* Values for moment of inertia and mass are those when the cylindrical hub and flange hub have the minimum bore diameters.

Dimensions



Unit [mm]

Model	d1		d2		D1	D2	N1	N2	N3	L1	L2	L3	A	B	E	G	S	S1	M1	M2	M3	TK
	Min.	Max.	Min.	Max.																		
CF-X-001-02-C	10	16	10	19	57	56	33	30	38	37	24	62	24	7	18	11	3	1	2-M6	2-M6	1-M5	44
CF-X-002-02-C	12	25	12	25	88	85	46	40	46	43	28	75	24	8	20	10	4	4	2-M8	2-M8	1-M6	68
CF-X-004-02-C	14	28	14	38	100	99	57	45	68	46.5	30	79	25	8	21	12	4	2.5	3-M8	3-M8	1-M8	80

* The nominal diameters for bolts M1, M2, and M3 are equal to the quantity minus the nominal diameter of the screw threads, where the quantity for clamping bolt M3 is for a hub on one side.
* The recommended processing tolerance for paired shafts is the h7 class.

Standard Bore Diameter

Model		Standard bore diameter [mm]																
		10	11	12	14	15	16	18	19	20	22	24	25	28	30	32	35	38
CF-X-001-02-C	d1	●	●	●	●	●	●											
	d2	●	●	●	●	●	●	●	●									
CF-X-002-02-C	d1			●	●	●	●	●	●	●	●	●	●					
	d2			●	●	●	●	●	●	●	●	●	●					
CF-X-004-02-C	d1				●	●	●	●	●	●	●	●	●	●				
	d2				●	●	●	●	●	●	●	●	●	●	●	●	●	●

How to Place an Order

CF-X-001-02-C 10-19

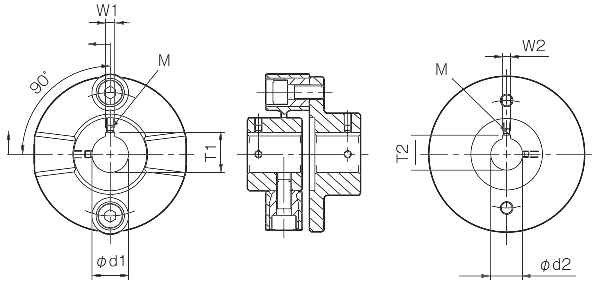
Bore diameter: d1 (Cylindrical hub) - d2 (Flange hub)
Clamp
Size
Type
O2: Element and bolt and cylindrical hub and flange hub

* Depending on your location and such, we may not be able to sell you our products.
Please contact us for details.

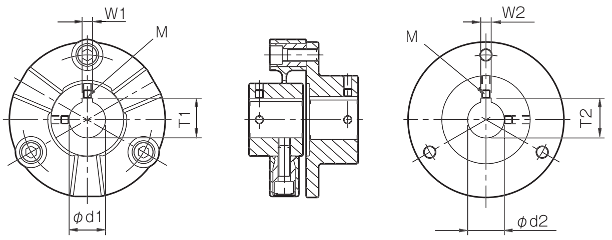
Standard Hole-Drilling Standards

- Positioning precision for keyway milling is determined by sight, so contact Miki Pulley when the keyway requires a positioning precision for a particular hub.
- Set screw positions are not on the same plane.
- The set screws are included with the product.

■ CF-X-001, 002



■ CF-X-004 to 025



Unit [mm]

Models compliant with the old JIS standards (class 2)					Models compliant with the new JIS standards					Models compliant with the new motor standards				
Nominal bore diameter	Bore diameter [d1・d2]	Keyway width [W1・W2]	Keyway height [T1・T2]	Set screw hole [M]	Nominal bore diameter	Bore diameter [d1・d2]	Keyway width [W1・W2]	Keyway height [T1・T2]	Set screw hole [M]	Nominal bore diameter	Bore diameter [d1・d2]	Keyway width [W1・W2]	Keyway height [T1・T2]	Set screw hole [M]
Toler-ance	H7, H8	E9	$^{+0.3}_{0}$	—	Toler-ance	H7	H9	$^{+0.3}_{0}$	—	Toler-ance	G7, F7	H9	$^{+0.3}_{0}$	—
9	$9^{+0.022}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
10	$10^{+0.022}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
11	$11^{+0.018}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
12	$12^{+0.018}_{0}$	$4^{+0.050}_{+0.020}$	13.5	2-M4	12H	$12^{+0.018}_{0}$	$4^{+0.030}_{0}$	13.8	2-M4	—	—	—	—	—
14	$14^{+0.018}_{0}$	$5^{+0.050}_{+0.020}$	16.0	2-M4	14H	$14^{+0.018}_{0}$	$5^{+0.030}_{0}$	16.3	2-M4	14N	$14^{+0.024}_{+0.006}$	$5^{+0.030}_{0}$	16.3	2-M4
15	$15^{+0.018}_{0}$	$5^{+0.050}_{+0.020}$	17.0	2-M4	15H	$15^{+0.018}_{0}$	$5^{+0.030}_{0}$	17.3	2-M4	—	—	—	—	—
16	$16^{+0.018}_{0}$	$5^{+0.050}_{+0.020}$	18.0	2-M4	16H	$16^{+0.018}_{0}$	$5^{+0.030}_{0}$	18.3	2-M4	—	—	—	—	—
17	$17^{+0.018}_{0}$	$5^{+0.050}_{+0.020}$	19.0	2-M4	17H	$17^{+0.018}_{0}$	$5^{+0.030}_{0}$	19.3	2-M4	—	—	—	—	—
18	$18^{+0.018}_{0}$	$5^{+0.050}_{+0.020}$	20.0	2-M4	18H	$18^{+0.018}_{0}$	$6^{+0.030}_{0}$	20.8	2-M5	—	—	—	—	—
19	$19^{+0.021}_{0}$	$5^{+0.050}_{+0.020}$	21.0	2-M4	19H	$19^{+0.021}_{0}$	$6^{+0.030}_{0}$	21.8	2-M5	19N	$19^{+0.028}_{+0.007}$	$6^{+0.030}_{0}$	21.8	2-M5
20	$20^{+0.021}_{0}$	$5^{+0.050}_{+0.020}$	22.0	2-M4	20H	$20^{+0.021}_{0}$	$6^{+0.030}_{0}$	22.8	2-M5	—	—	—	—	—
22	$22^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	25.0	2-M6	22H	$22^{+0.021}_{0}$	$6^{+0.030}_{0}$	24.8	2-M5	—	—	—	—	—
24	$24^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	27.0	2-M6	24H	$24^{+0.021}_{0}$	$8^{+0.036}_{0}$	27.3	2-M6	24N	$24^{+0.028}_{+0.007}$	$8^{+0.036}_{0}$	27.3	2-M6
25	$25^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	28.0	2-M6	25H	$25^{+0.021}_{0}$	$8^{+0.036}_{0}$	28.3	2-M6	—	—	—	—	—
28	$28^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	31.0	2-M6	28H	$28^{+0.021}_{0}$	$8^{+0.036}_{0}$	31.3	2-M6	28N	$28^{+0.028}_{+0.007}$	$8^{+0.036}_{0}$	31.3	2-M6
30	$30^{+0.021}_{0}$	$7^{+0.061}_{+0.025}$	33.0	2-M6	30H	$30^{+0.021}_{0}$	$8^{+0.036}_{0}$	33.3	2-M6	—	—	—	—	—
32	$32^{+0.025}_{0}$	$10^{+0.061}_{+0.025}$	35.5	2-M8	32H	$32^{+0.025}_{0}$	$10^{+0.036}_{0}$	35.3	2-M8	—	—	—	—	—
35	$35^{+0.025}_{0}$	$10^{+0.061}_{+0.025}$	38.5	2-M8	35H	$35^{+0.025}_{0}$	$10^{+0.036}_{0}$	38.3	2-M8	—	—	—	—	—
38	$38^{+0.025}_{0}$	$10^{+0.061}_{+0.025}$	41.5	2-M8	38H	$38^{+0.025}_{0}$	$10^{+0.036}_{0}$	41.3	2-M8	38N	$38^{+0.050}_{+0.025}$	$10^{+0.036}_{0}$	41.3	2-M8
40	$40^{+0.025}_{0}$	$10^{+0.061}_{+0.025}$	43.5	2-M8	40H	$40^{+0.025}_{0}$	$12^{+0.043}_{0}$	43.3	2-M8	—	—	—	—	—
42	$42^{+0.025}_{0}$	$12^{+0.075}_{+0.032}$	45.5	2-M8	42H	$42^{+0.025}_{0}$	$12^{+0.043}_{0}$	45.3	2-M8	42N	$38^{+0.050}_{+0.025}$	$12^{+0.043}_{0}$	45.3	2-M8
45	$45^{+0.025}_{0}$	$12^{+0.075}_{+0.032}$	48.5	2-M8	45H	$45^{+0.025}_{0}$	$14^{+0.043}_{0}$	48.8	2-M10	—	—	—	—	—
48	$48^{+0.025}_{0}$	$12^{+0.075}_{+0.032}$	51.5	2-M8	48H	$48^{+0.025}_{0}$	$14^{+0.043}_{0}$	51.8	2-M10	48N	$48^{+0.050}_{+0.025}$	$14^{+0.043}_{0}$	51.8	2-M10
50	$50^{+0.025}_{0}$	$12^{+0.075}_{+0.032}$	53.5	2-M8	50H	$50^{+0.025}_{0}$	$14^{+0.043}_{0}$	53.8	2-M10	—	—	—	—	—
55	$55^{+0.030}_{0}$	$15^{+0.075}_{+0.032}$	60.0	2-M10	55H	$55^{+0.030}_{0}$	$16^{+0.043}_{0}$	59.3	2-M10	55N	$55^{+0.060}_{+0.030}$	$16^{+0.043}_{0}$	59.3	2-M10
56	$56^{+0.030}_{0}$	$15^{+0.075}_{+0.032}$	61.0	2-M10	56H	$56^{+0.030}_{0}$	$16^{+0.043}_{0}$	60.3	2-M10	—	—	—	—	—
60	$60^{+0.030}_{0}$	$15^{+0.075}_{+0.032}$	65.0	2-M10	60H	$60^{+0.030}_{0}$	$18^{+0.043}_{0}$	64.4	2-M10	60N	$60^{+0.060}_{+0.030}$	$18^{+0.043}_{0}$	64.4	2-M10
63	$63^{+0.030}_{0}$	$18^{+0.075}_{+0.032}$	69.0	2-M10	63H	$63^{+0.030}_{0}$	$18^{+0.043}_{0}$	67.4	2-M10	—	—	—	—	—
65	$65^{+0.030}_{0}$	$18^{+0.075}_{+0.032}$	71.0	2-M10	65H	$65^{+0.030}_{0}$	$18^{+0.043}_{0}$	69.4	2-M10	65N	$65^{+0.060}_{+0.030}$	$18^{+0.043}_{0}$	69.4	2-M10

* The ø11 or below requirement under the new JIS standards and ø11 requirement for the new motor standards are the same as the old JIS standards (class 2)

Distance from Set Screw Edge (Cylindrical Hub)

Model	CF-X-001	CF-X-002	CF-X-004	CF-X-008	CF-X-016	CF-X-025
Distance from set screw edge [mm]	6	6	6	7	10	10

Distance from Set Screw Edge (Flange Hub)

Model	CF-X-001	CF-X-002	CF-X-004	CF-X-008	CF-X-016	CF-X-025
Distance from set screw edge [mm]	6	7	7	9	10	10

CF-X Models

Items Checked for Design Purposes

Precautions for Handling

CF-X models are delivered in component form. Pay close attention to the misalignments for mounting and assembly methods shown below when mounting couplings.

(1) Couplings are designed for use within an operating temperature range of -30℃ to 90℃ .

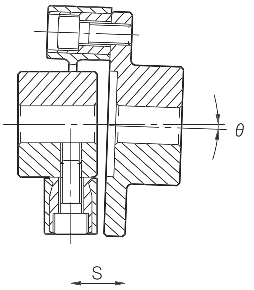
(2) Although elements are designed to be oilproof, do not subject them to excessive amounts of oil as this may cause deterioration. Use and storage in direct sunlight may shorten element service life, so cover elements appropriately.

(3) Bolts for mounting (other than CF-X(-C) type clamping bolts) are given a microcapsule coating that takes effect after mounting to stop loosening. Screw fixatives or other adhesives are therefore unnecessary. Also, store the couplings in well ventilated locations away from moisture to preserve their efficacy and keep them out of contact with oils.

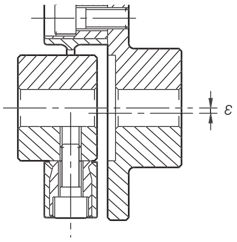
Mounting Misalignment

To get full coupling performance, mount couplings so that differences between coupling centers during operation are within the misalignment shown in the specifications table. The coupling should be mounted, however, so that the difference between centers is 50% or less of that misalignment value if rotation speed exceeds 2000 min^{-1}.

■ Angular (θ)/Axial (S)

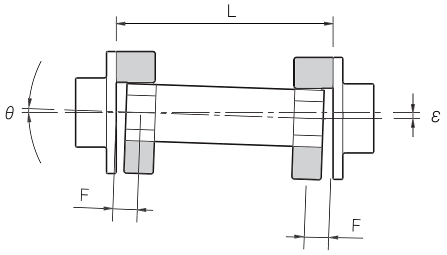


■ Parallel (ε)



The allowable values for parallel misalignment and angular deflection of the floating-shaft type OG types will vary with the floating length used. Calculate them using the equations below.

■ Calculating parallel misalignment and angular deflection for OG types



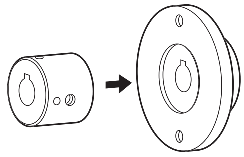
$\varepsilon = \tan\theta\,(L - 2F)$ From the dimensions table: **$F = G + S1$**

ε : Parallel misalignment of two shafts
θ : Angular deflection of coupling
L: Floating length

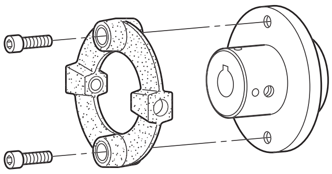
Assembly

When mounting elements onto cylindrical or flange hubs, wipe the oil on cylindrical hubs, flange hubs, and element mounting surfaces well, and then tighten with a torque wrench to the specified torque. To ensure secure fastening, apply an extremely small amount of grease to the seat surface of the bolt. (Be careful not to get grease on the threads of the bolt.)

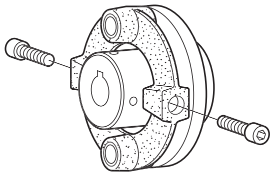
(1) To center the coupling, insert the cylindrical hub onto the centering part of the flange hub.



(2) With the cylindrical hub placed on the centering part of the flange hub, tighten the A direction bolt, and then mount the element onto the flange hub.

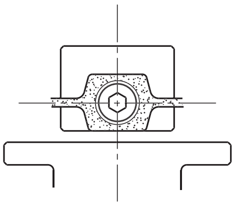


(3) Pull the cylindrical hub out a bit, tighten the R direction bolt, and then mount the element on the cylindrical hub.

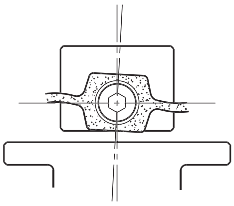


Once assembly is complete, recheck that the element is not mounted as shown in the figure below.

Good mountings



Bad mountings



Bolt Specifications and Tightening Torques

The R and A direction bolts are hex-socket-head bolts that conform to JIS B1176, are zinc plated, and have microcapsule coatings (to prevent loosening). CF-X(-C) types of bolts for clamping are also hex-socket-head bolts that conform to JIS B1176. They are surface treated with black oxide finishing to prevent loosening. Tighten each of the bolts to the tightening torques given in the following tables, using a torque wrench or the like.

■ Bolt specifications and tightening torques in directions R and A

Size	Direction R bolts	Direction A bolts	Tightening torque [N·m]
001	2-M6 × 25	2-M6 × 25	9 ～ 11
002	2-M8 × 20	2-M8 × 20	24 ～ 27
004	3-M8 × 25	3-M8 × 25	24 ～ 27
008	3-M10 × 30	3-M10 × 30	49 ～ 54
016	3-M12 × 35	3-M12 × 35	85 ～ 94
025	3-M14 × 40	3-M14 × 40	130 ～ 150

* The nominal diameters for bolts are equal to the quantity minus the nominal diameter of the screw threads times the nominal length.

■ CF-X(-C) clamping bolt specifications and tightening torques

Size	Clamping bolt	Tightening torque [N·m]
001	2-M5 × 14	7
002	2-M6 × 15	11
004	2-M8 × 20	27

* The nominal diameters for bolts are equal to the quantity minus the nominal diameter of the screw threads times the nominal length.

CF-B Models

Specifications

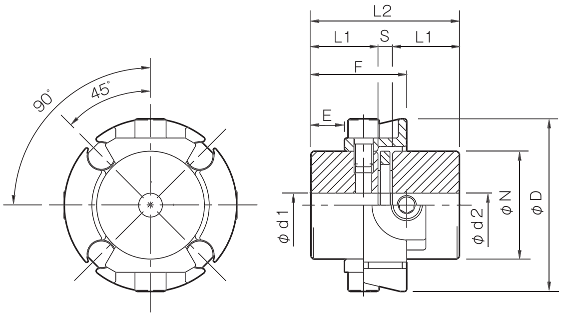
Model	Torque		Misalignment			Max. rotation speed [min^{-1}]	Static torsional stiffness [N·m/rad]	Moment of inertia [kg·m^2]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Parallel [mm]	Angular [°]	Axial [mm]				
CF-B-070	30	60	0.5	1.0	±1	10000	1.30×10^3	2.80×10^{-4}	0.7
CF-B-080	60	120	0.5	1.0	±1	9000	1.53×10^3	3.39×10^{-4}	0.8
CF-B-100	120	240	0.5	1.0	±1	7500	3.51×10^3	1.34×10^{-3}	2.0
CF-B-120	250	500	0.5	1.0	±1	6000	7.90×10^3	3.34×10^{-3}	3.4
CF-B-140	400	800	0.5	1.0	±1	5000	1.34×10^4	7.02×10^{-3}	5.4
CF-B-165	600	1200	0.5	1.0	±1	4000	2.36×10^4	1.78×10^{-2}	8.7
CF-B-185	1000	2000	0.5	1.0	±1	3600	1.02×10^5	3.67×10^{-2}	13.8

Model	Torque		Misalignment			Max. rotation speed [min^{-1}]	Static torsional stiffness [N·m/rad]	Moment of inertia [kg·m^2]	Mass [kg]
	Nominal [N·m]	Max. [N·m]	Parallel [mm]	Angular [°]	Axial [mm]				
CF-B-070-H	45	60	0.3	0.5	±1	10000	2.76×10^3	2.80×10^{-4}	0.7
CF-B-080-H	85	120	0.3	0.5	±1	9000	4.15×10^3	3.39×10^{-4}	0.8
CF-B-100-H	170	240	0.3	0.5	±1	7500	9.49×10^3	1.34×10^{-3}	2.0
CF-B-120-H	350	500	0.3	0.5	±1	6000	2.03×10^4	3.34×10^{-3}	3.4
CF-B-140-H	560	800	0.3	0.5	±1	5000	3.44×10^4	7.02×10^{-3}	5.4
CF-B-165-H	850	1200	0.3	0.5	±1	4000	5.24×10^4	1.78×10^{-2}	8.7
CF-B-185-H	1400	2000	0.3	0.5	±1	3600	2.53×10^5	3.67×10^{-2}	13.8

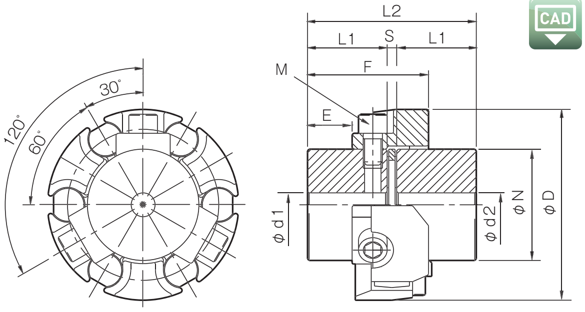
* Max. rotation speed does not take into account dynamic balance.
* Static torsional stiffness values given are from measurements taken at 20℃.
* Values for moment of inertia and mass are those when the cylindrical hubs have pilot bores.

Dimensions

■ CF-B-070



■ CF-B-080 to 185



Model	d1・d2			D	N	L1	L2	S	E	F	M
	Pilot bore	Min.	Max.								
CF-B-070	9	10	30	72	45	28	62	6	14	40	4-M8
CF-B-080	12	14	30	76	45	30	66	6	16	42	6-M8
CF-B-100	12	14	38	98	60	42	90	6	24	64.5	6-M10
CF-B-120	15	16	48	120	70	50	106	6	28	76	6-M12
CF-B-140	15	16	55	138	85	55	116	6	30	83	6-M14
CF-B-165	19	20	60	165	100	65	138	8	36	99	6-M16
CF-B-185	29	30	80	187	115	80	170	10	45	123	6-M20

* Pilot bores are to be drilled into the part. Minimum values for d1 and d2 are given by the minimum bore diameter values in the MIKI PULLEY standard hole-drilling standards and maximum values from the maximum allowable drilled bore diameters.
* The nominal diameter for the bolt M is equal to the quantity minus the nominal diameter of the screw thread.

How to Place an Order

CF-B-070-H 12H-14N

Size

Element Material
Blank: Polyurethane resin (Green)
H: Polyester resin (Yellow)

Bore diameter: d1 (Small diameter) - d2 (Large diameter)
Blank: Pilot bore

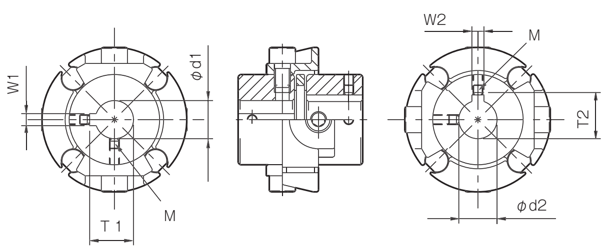
Bore specifications
Blank: Compliant with the old JIS standards (class 2) E9
H: Compliant with the new JIS standards H9
N: Compliant with the new motor standards

* Depending on your location and such, we may not be able to sell you our products.
Please contact us for details.

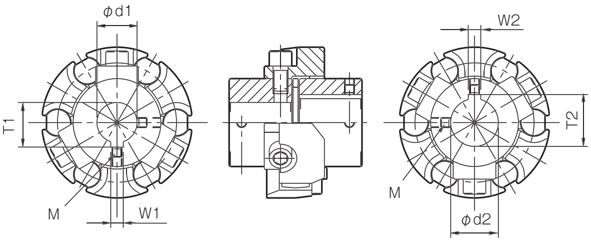
Standard Hole-Drilling Standards

- Positioning precision for keyway milling is determined by sight, so contact Miki Pulley when the keyway requires a positioning precision for a particular hub.
- Set screw positions are not on the same plane.
- The set screws are included with the product.

■ CF-B-070



■ CF-B-080 to 185



Unit [mm]

Models compliant with the old JIS standards (class 2)					Models compliant with the new JIS standards					Models compliant with the new motor standards				
Nominal bore diameter	Bore diameter [d1 • d2]	Keyway width [W1•W2]	Keyway height [T1 • T2]	Set screw hole [M]	Nominal bore diameter	Bore diameter [d1 • d2]	Keyway width [W1 • W2]	Keyway height [T1 • T2]	Set screw hole [M]	Nominal bore diameter	Bore diameter [d1 • d2]	Keyway width [W1 • W2]	Keyway height [T1 • T2]	Set screw hole [M]
Tolerance	H7, H8	E9	$^{+0.3}_{0}$	—	Tolerance	H7	H9	$^{+0.3}_{0}$	—	Tolerance	G7, F7	H9	$^{+0.3}_{0}$	—
10	10 $^{+0.022}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
11	11 $^{+0.018}_{0}$	—	—	2-M4	—	—	—	—	—	—	—	—	—	—
12	12 $^{+0.018}_{0}$	4 $^{+0.050}_{+0.020}$	13.5	2-M4	12H	12 $^{+0.018}_{0}$	4 $^{+0.030}_{0}$	13.8	2-M4	—	—	—	—	—
14	14 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	16.0	2-M4	14H	14 $^{+0.018}_{0}$	5 $^{+0.030}_{0}$	16.3	2-M4	14N	14 $^{+0.024}_{+0.006}$	5 $^{+0.030}_{0}$	16.3	2-M4
15	15 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	17.0	2-M4	15H	15 $^{+0.018}_{0}$	5 $^{+0.030}_{0}$	17.3	2-M4	—	—	—	—	—
16	16 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	18.0	2-M4	16H	16 $^{+0.018}_{0}$	5 $^{+0.030}_{0}$	18.3	2-M4	—	—	—	—	—
17	17 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	19.0	2-M4	17H	17 $^{+0.018}_{0}$	5 $^{+0.030}_{0}$	19.3	2-M4	—	—	—	—	—
18	18 $^{+0.018}_{0}$	5 $^{+0.050}_{+0.020}$	20.0	2-M4	18H	18 $^{+0.018}_{0}$	6 $^{+0.030}_{0}$	20.8	2-M5	—	—	—	—	—
19	19 $^{+0.021}_{0}$	5 $^{+0.050}_{+0.020}$	21.0	2-M4	19H	19 $^{+0.021}_{0}$	6 $^{+0.030}_{0}$	21.8	2-M5	19N	19 $^{+0.028}_{+0.007}$	6 $^{+0.030}_{0}$	21.8	2-M5
20	20 $^{+0.021}_{0}$	5 $^{+0.050}_{+0.020}$	22.0	2-M4	20H	20 $^{+0.021}_{0}$	6 $^{+0.030}_{0}$	22.8	2-M5	—	—	—	—	—
22	22 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	25.0	2-M6	22H	22 $^{+0.021}_{0}$	6 $^{+0.030}_{0}$	24.8	2-M5	—	—	—	—	—
24	24 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	27.0	2-M6	24H	24 $^{+0.021}_{0}$	8 $^{+0.036}_{0}$	27.3	2-M6	24N	24 $^{+0.028}_{+0.007}$	8 $^{+0.036}_{0}$	27.3	2-M6
25	25 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	28.0	2-M6	25H	25 $^{+0.021}_{0}$	8 $^{+0.036}_{0}$	28.3	2-M6	—	—	—	—	—
28	28 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	31.0	2-M6	28H	28 $^{+0.021}_{0}$	8 $^{+0.036}_{0}$	31.3	2-M6	28N	28 $^{+0.028}_{+0.007}$	8 $^{+0.036}_{0}$	31.3	2-M6
30	30 $^{+0.021}_{0}$	7 $^{+0.061}_{+0.025}$	33.0	2-M6	30H	30 $^{+0.021}_{0}$	8 $^{+0.036}_{0}$	33.3	2-M6	—	—	—	—	—
32	32 $^{+0.025}_{0}$	10 $^{+0.061}_{+0.025}$	35.5	2-M8	32H	32 $^{+0.025}_{0}$	10 $^{+0.036}_{0}$	35.3	2-M8	—	—	—	—	—
35	35 $^{+0.025}_{0}$	10 $^{+0.061}_{+0.025}$	38.5	2-M8	35H	35 $^{+0.025}_{0}$	10 $^{+0.036}_{0}$	38.3	2-M8	—	—	—	—	—
38	38 $^{+0.025}_{0}$	10 $^{+0.061}_{+0.025}$	41.5	2-M8	38H	38 $^{+0.025}_{0}$	10 $^{+0.036}_{0}$	41.3	2-M8	38N	38 $^{+0.050}_{+0.025}$	10 $^{+0.036}_{0}$	41.3	2-M8
40	40 $^{+0.025}_{0}$	10 $^{+0.061}_{+0.025}$	43.5	2-M8	40H	40 $^{+0.025}_{0}$	12 $^{+0.043}_{0}$	43.3	2-M8	—	—	—	—	—
42	42 $^{+0.025}_{0}$	12 $^{+0.075}_{+0.032}$	45.5	2-M8	42H	42 $^{+0.025}_{0}$	12 $^{+0.043}_{0}$	45.3	2-M8	42N	42 $^{+0.050}_{+0.025}$	12 $^{+0.043}_{0}$	45.3	2-M8
45	45 $^{+0.025}_{0}$	12 $^{+0.075}_{+0.032}$	48.5	2-M8	45H	45 $^{+0.025}_{0}$	14 $^{+0.043}_{0}$	48.8	2-M10	—	—	—	—	—
48	48 $^{+0.025}_{0}$	12 $^{+0.075}_{+0.032}$	51.5	2-M8	48H	48 $^{+0.025}_{0}$	14 $^{+0.043}_{0}$	51.8	2-M10	48N	48 $^{+0.050}_{+0.025}$	14 $^{+0.043}_{0}$	51.8	2-M10
50	50 $^{+0.025}_{0}$	12 $^{+0.075}_{+0.032}$	53.5	2-M8	50H	50 $^{+0.025}_{0}$	14 $^{+0.043}_{0}$	53.8	2-M10	—	—	—	—	—
55	55 $^{+0.030}_{0}$	15 $^{+0.075}_{+0.032}$	60.0	2-M10	55H	55 $^{+0.030}_{0}$	16 $^{+0.043}_{0}$	59.3	2-M10	55N	55 $^{+0.060}_{+0.030}$	16 $^{+0.043}_{0}$	59.3	2-M10
56	56 $^{+0.030}_{0}$	15 $^{+0.075}_{+0.032}$	61.0	2-M10	56H	56 $^{+0.030}_{0}$	16 $^{+0.043}_{0}$	60.3	2-M10	—	—	—	—	—
60	60 $^{+0.030}_{0}$	15 $^{+0.075}_{+0.032}$	65.0	2-M10	60H	60 $^{+0.030}_{0}$	18 $^{+0.043}_{0}$	64.4	2-M10	60N	60 $^{+0.060}_{+0.030}$	18 $^{+0.043}_{0}$	64.4	2-M10
63	63 $^{+0.030}_{0}$	18 $^{+0.075}_{+0.032}$	69.0	2-M10	63H	63 $^{+0.030}_{0}$	18 $^{+0.043}_{0}$	67.4	2-M10	—	—	—	—	—
65	65 $^{+0.030}_{0}$	18 $^{+0.075}_{+0.032}$	71.0	2-M10	65H	65 $^{+0.030}_{0}$	18 $^{+0.043}_{0}$	69.4	2-M10	65N	65 $^{+0.060}_{+0.030}$	18 $^{+0.043}_{0}$	69.4	2-M10

* The ø11 or below requirement under the new JIS standards and ø11 requirement for the new motor standards are the same as the old JIS standards (class 2)

Distance from Set Screw Edge

Model	CF-B-070	CF-B-080	CF-B-100	CF-B-120	CF-B-140	CF-B-165	CF-B-185
Distance from set screw edge [mm]	7	8	10	10	10	15	15

CF-B Models

Items Checked for Design Purposes

Precautions for Handling

The CF-B model cylindrical hub and aluminum insert are locked together with bolts before shipment. To maintain assembly precision, be careful to not loosen the bolts. When finishing the inner diameters of products with pilot bores, be sure to add the cylindrical hub part before machining.

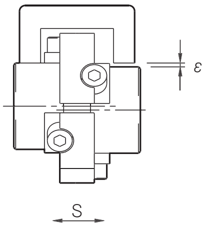
(1) The operating temperature range is -40℃ to 80℃ for polyurethane elements and -40℃ to 120℃ for polyester elements.

(2) Although elements are designed to be oilproof, do not subject them to excessive amounts of oil as this may cause deterioration. Use and storage in direct sunlight may shorten element service life, so cover elements appropriately.

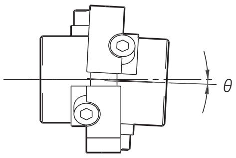
Mounting Misalignment

To get full coupling performance, mount couplings so that differences between coupling centers during operation are within the misalignment shown in the specifications table. The coupling should be mounted, however, so that the difference between centers is 50% or less of that misalignment value if rotation speed exceeds 2000 min^{-1}. Check centering by holding a jig to the outer circumference of the cylindrical hub, using two points about 90° apart. Set the axial displacement S using the total length (L2) as a reference.

■ Parallel (ε)/Axial (S)



■ Angular (θ)



Bolt Specifications and Tightening Torques

The bolts are galvanized hex-socket-head bolts that conform to JIS B1176 and are microcapsule-coated (to prevent loosening).

Type	Nominal bolt diameter	Tightening torque [N·m]
CF-B-070	4-M8 × 12	25
CF-B-080	6-M8 × 12	25
CF-B-100	6-M10 × 18	50
CF-B-120	6-M12 × 20	90
CF-B-140	6-M14 × 25	140
CF-B-165	6-M16 × 30	220
CF-B-185	6-M20 × 32	470

* The nominal diameters for bolts are equal to the quantity minus the nominal diameter of the screw threads times the nominal length.

Induction Motor Specifications and Easy Selection Table

Motor		50Hz: 3000min^{-1}/60Hz: 3600min^{-1}				50Hz: 1500min^{-1}/60Hz: 1800min^{-1}			
		Two-pole motor		CENTAFLEX		Four-pole motor		CENTAFLEX	
Output [kW]	Frequency [Hz]	Shaft diameter [mm]	Torque [N·m]	Model	Nominal bore diameter	Shaft diameter [mm]	Torque [N·m]	Model	Nominal bore diameter
0.4	50	14	1.3	CF-B-070	14N	14	2.6	CF-B-070	14N
	60	14	1.1	CF-B-070	14N	14	2.2	CF-B-070	14N
0.75	50	19	2.4	CF-B-070	19N	19	4.9	CF-B-070	19N
	60	19	2	CF-B-070	19N	19	4.1	CF-B-070	19N
1.5	50	24	4.9	CF-B-070	24N	24	9.7	CF-B-070	24N
	60	24	4.1	CF-B-070	24N	24	8.1	CF-B-070	24N
2.2	50	24	7.1	CF-B-070	24N	28	14	CF-B-070	28N
	60	24	6	CF-B-070	24N	28	12	CF-B-070	28N
3.7	50	28	12	CF-B-070	28N	28	24	CF-B-080	28N
	60	28	10	CF-B-070	28N	28	20	CF-B-080	28N
5.5	50	38	18	CF-B-100	38N	38	36	CF-B-100	38N
	60	38	15	CF-B-100	38N	38	30	CF-B-100	38N
7.5	50	38	24	CF-B-100	38N	38	49	CF-B-100	38N
	60	38	20	CF-B-100	38N	38	41	CF-B-100	38N
11.0	50	42	36	CF-B-120	42N	42	71	CF-B-120	42N
	60	42	30	CF-B-120	42N	42	59	CF-B-120	42N
15.0	50	42	49	CF-B-120	42N	42	97	CF-B-120	42N
	60	42	41	CF-B-120	42N	42	81	CF-B-120	42N
18.5	50	42	60	CF-B-120	42N	48	120	CF-B-120	48N
	60	42	50	CF-B-120	42N	48	100	CF-B-120	48N
22.0	50	48	71	CF-B-120	48N	48	143	CF-B-120	48N
	60	48	59	CF-B-120	48N	48	119	CF-B-120	48N
30.0	50	55	97	CF-B-140	55N	55	195	CF-B-140	55N
	60	55	81	CF-B-140	55N	55	162	CF-B-140	55N
37.0	50	55	120	CF-B-140	55N	60	240	CF-B-165	60N
	60	55	100	CF-B-140	55N	60	200	CF-B-165	60N
45.0	50	55	146	CF-B-140	55N	60	292	CF-B-165	60N
	60	55	122	CF-B-140	55N	60	243	CF-B-165	60N

* The above table shows generally suitable sizes for use on an induction motor drive unit.
* Motor rotation speed and output torque are calculated (reference) values.

CM Models

Made to order

Specifications

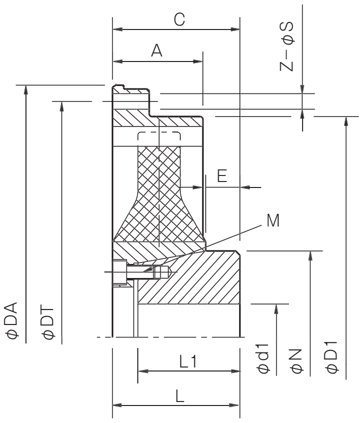
Model	Shore hardness 50SH Torque			Shore hardness 50SH Dynamic torsional stiffness [N·m/rad]	Shore hardness 60SH Torque			Shore hardness 60SH Dynamic torsional stiffness [N·m/rad]	Misalignment		Max. rotation speed [min^{-1}]	Compatible flange size SAE J620
	Nominal [N·m]	Max. [N·m]	Continuous vibration torque [N·m/10 Hz]		Nominal [N·m]	Max. [N·m]	Continuous vibration torque [N·m/10 Hz]		Parallel [mm]	Angular [°]		
CM-800-S1	700	1400	280	2.80 × 10³	850	1700	340	4.20 × 10³	0.5	0.5	3600	10 • $11^{1}/_{2}$ • 14
CM-1200-S1	1000	2000	400	4.50 × 10³	1200	2400	480	7.00 × 10³	0.5	0.5	3500	$11^{1}/_{2}$ • 14
CM-2400-S1	2000	4000	800	1.00 × 10⁴	2500	5000	1000	1.50 × 10⁴	0.5	0.5	3000	14 • 18
CM-2800-S1	2800	6000	1120	2.50 × 10⁴	3000	7500	1200	3.75 × 10⁴	0.5	0.5	3000	14 • 18
CM-3000-S1	3000	6000	1200	1.00 × 10⁴	3300	7000	1300	1.51 × 10⁴	0.5	0.5	3000	14 • 18
CM-3500-S1	3200	6500	1280	1.60 × 10⁴	3500	8000	1400	2.40 × 10⁴	0.5	0.5	3000	14 • 18
CM-4000-S1	—	—	—	—	4500	11000	1800	5.00 × 10⁴	0.5	0.5	3000	14 • 18
CM-5000-S1	4500	9000	1800	1.70 × 10⁴	5000	10000	2000	2.70 × 10⁴	0.5	0.5	3000	14 • 18
CM-7000-S1	6300	12600	2520	2.85 × 10⁴	7000	14000	2800	4.50 × 10⁴	0.5	0.5	2500	18
CM-8000-S1	—	—	—	—	9000	22000	3600	8.00 × 10⁴	0.5	0.5	2500	18 • 21 • 24
CM-18000-S1	16000	32000	6400	1.15 × 10⁵	18000	36000	7200	1.70 × 10⁵	0.5	0.5	2300	21 • 24

* Max. rotation speed is for the minimum flange size.

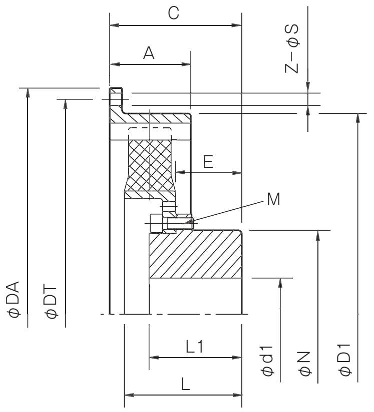
* This also does not take into account dynamic balance.

Dimensions

■ CM-800 ～ 2400-S1



■ CM-2800 ～ 18000-S1



Unit [mm]

Model	Compatible flange size SAE J620	A	C	d1		D1	E	L	L1	N	M
				Pilot bore	Max.						
CM-800	10	50	82 ± 2	18	70	316	18	84	66	107	8-M10
	$11^{1}/_{2}$	39	71 ± 3	18	70	318	18	84	66	107	8-M10
	14	46	74 ± 6	18	70	318	18	84	66	107	8-M10
CM-1200	$11^{1}/_{2}$	39	65 ± 4	18	70	318	18	84	66	107	8-M10
	14	46	74 ± 1	18	70	318	18	84	66	107	8-M10
CM-2400	14 • 18	61	97 ± 6	28	105	417	26	106	85	150	8-M12
CM-2800	14 • 18	61	130 ± 4	33	110	417	76	126	100	162	8-M16
CM-3000	14 • 18	70	135 ± 8	19	65	465	53	135	105	100	12-M12
CM-3500	14 • 18	70	135 ± 8	33	110	465	59	139	100	162	8-M16
CM-4000	14 • 18	70	161 ± 6	48	140	465	94	159	125	218	12-M16
CM-5000	14 • 18	70	147 ± 2	35	110	465	64	159	105	162	12-M16
CM-7000	18	80	159 ± 9	48	140	570	76	161	125	218	12-M16
CM-8000	18	111	197 ± 5	68	180	600	110	195	150	248	12-M20
	21	90	197 ± 5	68	180	584	110	195	150	248	12-M20
	24	90	197 ± 5	68	180	584	110	195	150	248	12-M20
CM-18000	21	156	310 ± 9	70	180	680	176	306	200	248	24-M20
	24	137	310 ± 9	70	180	680	176	306	200	248	24-M20

Nominal compatible flange size	10	11	14	18	21	24
Compatible flange size SAE J620	**10**	**$11^{1}/_{2}$**	**14**	**18**	**21**	**24**
DA	314.3	352.4	466.7	571.5	673.1	733.4
DT	295.3	333.4	438.2	542.9	641.4	692.2
Z	8 × 45°	8 × 45°	8 × 45°	6 × 60°	12 × 30°	12 × 30°
S	11	11	13	17	17	19

* The dimensions of the outer ring on the drive side are for mounting directly on an SAE J620 flywheel.

How to Place an Order

CM-1200-S1-50-14

Size: 1200

Type: S1
O0: Rubber body
S0: O0 and outer ring
SB: S0 and bolt
S1: SB and inner hub

Shore hardness (Rubber): 50
50: SH 50
60: SH 60

Nominal optimal flange size: 14
10: 10, 11: 11½, 14: 14
18: 18, 21: 21, 24: 24

Items Checked for Design Purposes

Precautions for Handling

CM models are delivered in component form. Pay close attention to the misalignments for mounting shown below when mounting couplings.

(1) Couplings are designed for use within an operating temperature range of -30℃ to 90℃ .

(2) Rubber pieces are not sufficiently resistant to oil and grease, so avoid contact with these substances. Use and storage in direct sunlight may shorten service life of rubber bodies, so cover them appropriately.

(3) Be careful to never use liquid anaerobic screw fixatives on any of the mounting bolts to prevent loosening, as such fixatives have adverse effects on rubber bodies.

Mounting Misalignment

To get full coupling performance, mount couplings so that differences between coupling centers during operation are within the misalignment shown in the specifications table. When rotation speed exceeds 1500 min^{-1}, however, we recommend keeping to 50% or less of allowable values.

Parallel [mm]	Angular [°]	Axial [mm]
0.5	0.5	Tolerance C from Dimensions Table

Bolt Specifications and Tightening Torques (for Locking Inner Hubs)

Bolts are hex-socket-head bolts that conform to JIS B1176.
Tighten each of the bolts to the tightening torques given in the following tables, using a torque wrench or the like. To ensure secure fastening, apply an extremely small amount or grease to the seat surface of the bolt.

Model	Strength classification	Nominal bolt diameter	Tightening torque [N·m]
CM-800	8.8 or over	8-M10 × 20	46
CM-1200	8.8 or over	8-M10 × 20	46
CM-2400	8.8 or over	8-M12 × 25	79
CM-2800	10.9 or over	8-M16 × 40	280
CM-3000	10.9 or over	12-M12 × 30	85
CM-3500	10.9 or over	8-M16 × 40	280
CM-4000	10.9 or over	12-M16 × 40	280
CM-5000	10.9 or over	12-M16 × 40	280
CM-7000	10.9 or over	12-M16 × 40	280
CM-8000	10.9 or over	12-M20 × 50	490
CM-18000	10.9 or over	24-M20 × 50	490

* The nominal diameters for bolts are equal to the quantity minus the nominal diameter of the screw threads times the nominal length.
* Contact Miki Pulley if you plan to use bolts with specifications other than those shown.

Bolt Specifications and Tightening Torques (for Locking Outer Rings)

The bolts for locking the outer ring are not supplied. The customer must supply these bolts. Be sure to supply bolts whose specifications conform to JIS B1176 hex-socket-head bolts.
Tighten to the tightening torques given in the following tables, using a torque wrench or the like. To ensure secure fastening, apply an extremely small amount of grease to the seat surface of the bolt.

Compatible flange size SAE J620	Strength classification	Nominal bolt diameter	Tightening torque [N·m]
10	8.8 or over	8-M10	46
$11^{1}/_{2}$	8.8 or over	8-M10	46
14	8.8 or over	8-M12	79
18	8.8 or over	6-M16	195
21	8.8 or over	12-M16	195
24	8.8 or over	12-M18	245

* The nominal diameters for bolts are equal to the quantity minus the nominal diameter of the screw threads.
* Contact Miki Pulley if you plan to use bolts with specifications other than those shown.
* Be sure to use the supplied flat washers.

Designing an Inner Hub

When designing a new inner hub, contact Miki Pulley regarding materials and dimensions for mounting on the rubber piece.

CF-A/H/X/B/CM Models

Selection

Selection Procedures

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

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

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

$$\text{Td [N·m]} = \text{Ta} \times \text{K1} \times \text{K2} \times \text{K3} \times \text{K4}$$

K1: Service factor based on load property
K2: Service factor based on operating time
K3: Service factor based on mounting misalignment
K4: Service factor based on operating temperature

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

$$\text{Tn} \geqq \text{Td}$$

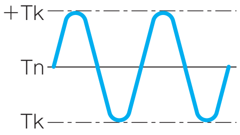
(4) Select a size that results in a maximum torque, Tm, for the coupling that is at least equal to the peak torque, Ts, generated by the driver, follower or both. Maximum torque refers to the maximum amount of torque that can be applied for a set amount of time considering eight hours of operation per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

$$\text{Tm} \geqq \text{Ts}$$

(5) Find the corrected fluctuation torque, Tkw1, of the coupling using the following equation.
(For CF-A or CM)

$$\text{Tkw1} = \text{Tk} \times \text{Sf} \times \text{St}$$

Tk: Size of torque fluctuation
Sf: Period (fluctuation) coefficient
St: Temperature coefficient (=K4)
Tn is at or below the nominal torque.



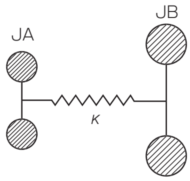
f [Hz]	≦10	>10
Sf	1	$\sqrt{\frac{f}{10}}$

Check that the corrected fluctuation torque, Tkw1, calculated from the above equation is within the rated fluctuation torque, Tkw, of the selected size.

(6) When the required shaft diameter exceeds the maximum bore diameter of the selected size, select a suitable coupling.
When the coupling is used in machinery prone to periodic violent load-torque fluctuations, torsional vibration must also be considered in addition to the above selection criteria. In other words, check that the vibration frequency of the torque fluctuation does not match the natural frequency of the shafting. The natural frequency is generally calculated by finding the natural frequency, fe, of one section, approximating the shafting as shown in the diagram below.

$$\text{fe} = \frac{1}{2\pi}\sqrt{\kappa\left(\frac{1}{\text{JA}}+\frac{1}{\text{JB}}\right)}\ \text{[Hz]}$$

κ : Dynamic torsional stiffness of coupling [N·m/rad]
JA: Moment of inertia of driving side [kg·m^2]
JB: Moment of inertia of driven side [kg·m^2]



Selection

Service Factors

■ Service factor based on load property: K1

● Winches	1.5
● Elevators	
Rope type	1.25
Hydraulic	2.0
● Agitators	1.0
● Metal molding machines	
Pultrusion/extrusion machines	2.0
Slitter machines	1.0
Wire drawers, rolling mills	1.75
Copper wire winders	1.5
● Cranes and hoists	
Hoist cranes	2.0
Skip hoists, hoists with trolleys	1.75
● Cooling towers	2.0
● Industrial washers	2.0
● Machine tools	
Auxiliary drives, transport devices	1.0
Bending and pressing machines	1.75
Main drive components	1.5
● Conveyors	
Belt, chain, roller	1.0
Screws, elevating (flat)	1.0
Elevating (bucket)	1.25
Vibrating screens	3.0
● Compressors	1.0
Centrifugal	
Rotary	1.25
Reciprocal	
2 cylinders or fewer	3.0
3 cylinders	2.0
4 cylinders or more	1.75
● Screens	
Air cleaners, water intake	1.0
Rotary coal and gravel screens	1.5
Vibrating types	2.5
● Ventilators	
Centrifugal	1.0
Impeller type	1.25
● Tumbling barrel	1.75
● Power meters	1.0
● Induction motors	
Constant load	1.0
Medium variable load (hoist)	1.5
Large variable load (welder)	2.0
● Hammer mills	2.0
● Feeders	
Aprons, belts, discs, screws	1.0
Reciprocal	2.5
● Pumps	
Centrifugal	1.0
Geared, rotary, vanes	1.25
Reciprocal	
1 cylinders	2.0
2 cylinders	1.75
3 cylinders or more	1.5
● Mixers	
Concrete	1.75
Pulverizing	1.5

* The values of the above table are generally recommended values.

* The values of the above table are suitable for electric motors, steam turbines, and internal combustion engines or four or more cylinders.

* For internal combustion engine drives with a single cylinder, add 0.7 to the above values.
For internal combustion engine drives with two or three cylinders, add 0.3 to the above values.

■ Service factor based on operating time: K2

Hrs./day	8 ≧	10	12	14	16	18	20	22	24
K2	1.0	1.1	1.2		1.3		1.4		1.5

■ Service factor based on mounting misalignment: K3 (=K ε × K θ)

(1) CENTAFLEX CF-A

- Sizes 001, 002, 004, 008, 012

Parallel [mm]	0.3	0.5	0.8	1.0
K ε	1.0	1.2	1.5	2.0

- Sizes 016, 022, 025, 028, 030, 050, 080, 090, 140, 200, 250, 400

Parallel [mm]	0.5	0.8	1.0	1.5
K ε	1.0	1.3	1.5	2.0

- Sizes 001, 002, 004, 008, 016, 025, 030, 090, 200

Angular [°]	0.5	1.0	1.5	2.0	2.5	3.0
K θ	1.0	1.1	1.3	1.5	1.8	2.0

- Sizes 012, 022, 028, 050, 080, 140, 250, 400

Angular [°]	0.5	1.0	1.5	2.0
K θ	1.0	1.2	1.5	2.0

(2) CENTAFLEX CF-H

Parallel [mm]	0.3	0.4
K ε	1.0	1.1

Angular [°]	0.5
K θ	1.0

(3) CENTAFLEX CF-X

Parallel [mm]	0.05	0.1
K ε	1.0	1.5

Angular [°]	0.5	1.0
K θ	1.0	1.5

(4) CENTAFLEX CF-B (polyurethane)

Parallel [mm]	0.2	0.3	0.5
K ε	1.0	1.1	1.2

Angular [°]	0.5	1.0
K θ	1.0	1.1

(5) CENTAFLEX CF-B-H (polyester)

Parallel [mm]	0.1	0.2	0.3
K ε	1.0	1.1	1.2

Angular [°]	0.25	0.5
K θ	1.0	1.1

(6) CENTAMAX CM

Parallel [mm]	0.5
K ε	1.0

Angular [°]	0.5
K θ	1.0

■ Service factor based on operating temperature: K4 (=St)

Temperature [℃]	− 20	− 10	0	10	20	30	40	50	60	70	80	90	100
CF-A	1.0								1.1	1.2	1.4	1.6	—
CF-H	1.0												
CF-X	1.3		1.2		1.0		1.2		1.5			1.8	—
CF-B	1.0							1.1		1.3		—	
CF-B-H	1.0									1.1			
CM	1.0								1.1	1.2	1.4	1.6	—

High precision dual rubber coupling

STEPFLEX STF

FLEX series
STEPFLEX®

MIKI PULLEY

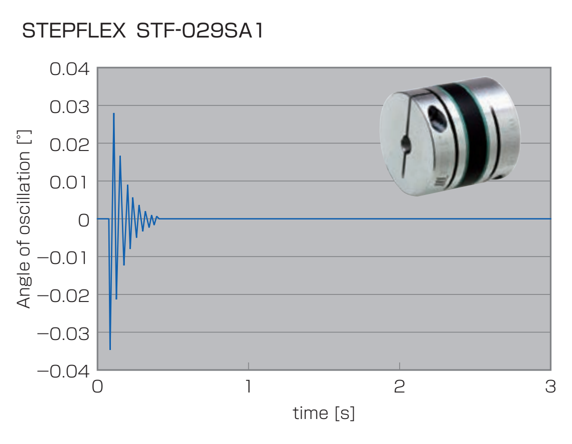
STEPFLEX

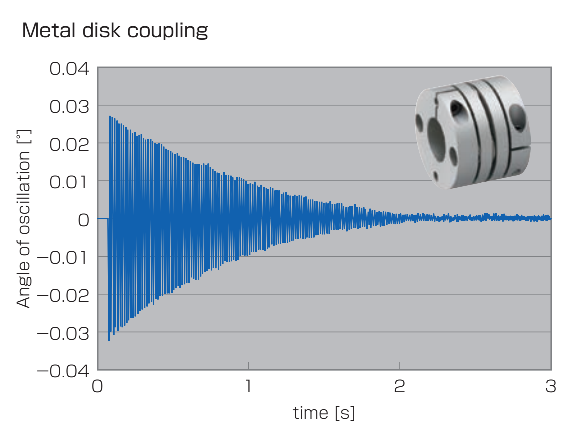
High-damping couplings

Our newly developed laminated rubber element achieves high damping and low reaction force.
Their unitized construction with HNBR in the power-transmitting elements provides a backlash-free design.
They dampen vibration faster than flexible couplings that use metal in their elastic components.
This suppresses the resonance phenomenon that can occur with stepper motors, enabling resonance to be avoided over a wide range of operating speeds. It also provides stable high-speed control. *Patent pending

Excellent damping performance

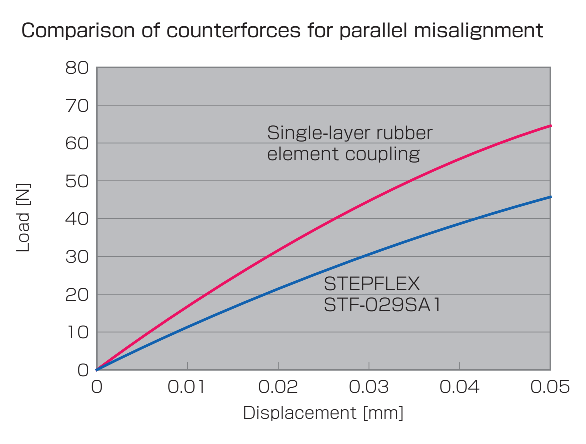
The STEPFLEX laminated rubber element couplings provide better damping performance than standard metal disc couplings.

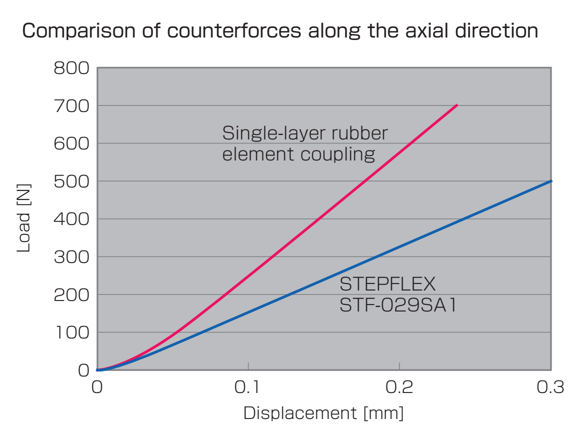




Shaft counterforce is also reduced

Use of a laminated rubber element with layers of varying hardnesses of rubber works to dramatically cut down on counterforces generated along the parallel and axial directions.



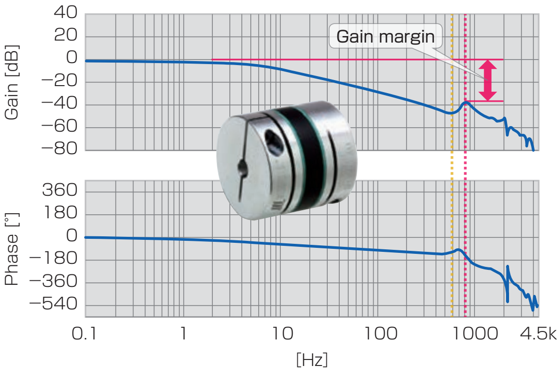


GOOD DESIGN
AWARD 2014

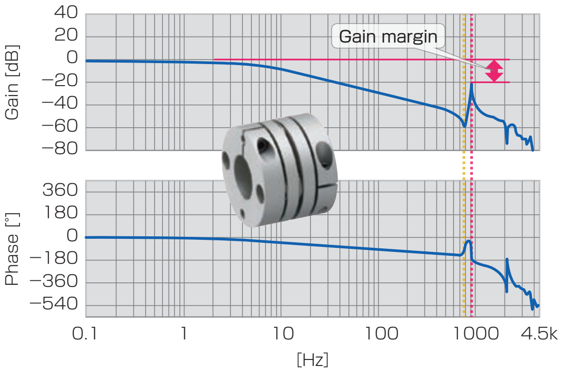
Possible to set higher gain

Damping effect is confirmed from the Bode plot. Gain margin is large compared to metal disk coupling, it is possible to increase the gain.

STEPFLEX STF-029SA1

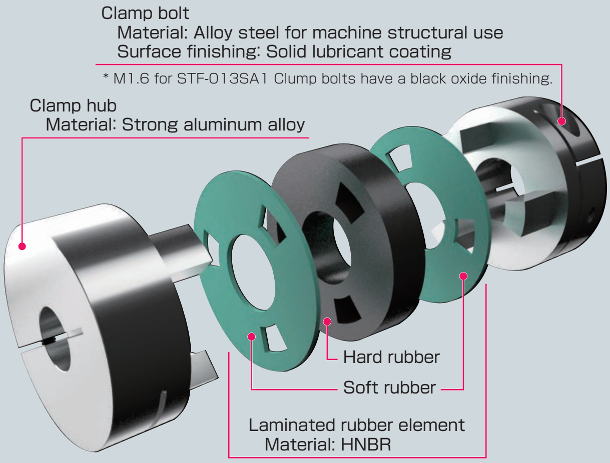


Metal disk coupling



Laminated element structure made up of hard and soft rubber layers

The couplings have a simple, integrated laminated rubber structure formed of layers of hard rubber sandwiched between layers of soft rubber.



Clamp bolt
Material: Alloy steel for machine structural use
Surface finishing: Solid lubricant coating

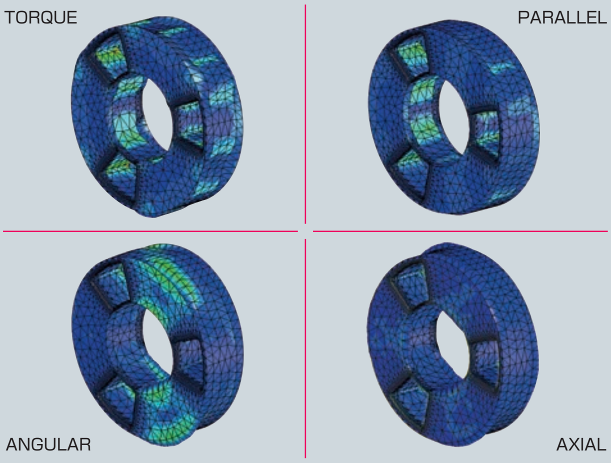
* M1.6 for STF-013SA1 Clump bolts have a black oxide finishing.

Clamp hub
Material: Strong aluminum alloy

Hard rubber

Soft rubber

Laminated rubber element
Material: HNBR



* These measurement results were calculated from actual experiments performed using MIKI PULLEY procedures and are not to be interpreted as guarantees of product performance.

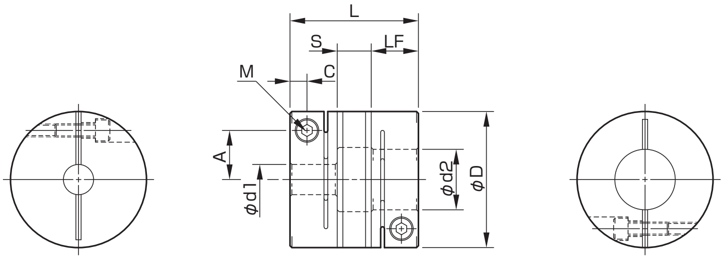
STF Model

Specifications

Model	Torque		Misalignment			Max. rotation speed	Static torsional stiffness	Moment of inertia	Mass
	Nominal [N·m]	Max. [N·m]	Parallel [mm]	Angular [°]	Axial [mm]	[min^{-1}]	[N·m/rad]	[kg·m^2]	[kg]
STF-013SA1	0.5	1	0.15	1.5	±0.2	10000	15	0.11×10^{-6}	0.004
STF-016SA1	1	2	0.15	1.5	±0.2	10000	27	0.29×10^{-6}	0.008
STF-019SA1	1.5	3	0.15	1.5	±0.2	10000	38	0.70×10^{-6}	0.013
STF-024SA1	2.5	5	0.15	1.5	±0.2	10000	127	1.89×10^{-6}	0.023
STF-029SA1	4	8	0.2	1.5	±0.3	10000	201	4.40×10^{-6}	0.034
STF-034SA1	6	12	0.2	1.5	±0.3	10000	371	9.80×10^{-6}	0.056
STF-039SA1	8.5	17	0.2	1.5	±0.3	10000	485	21.15×10^{-6}	0.091
NEW STF-044SA1	15	30	0.2	1.5	±0.3	10000	996	37.34×10^{-6}	0.120

* Check the Max. Torque for the Shaft Diameter list as there may be limitations on the standard and maximum torque caused by the holding power of the coupling shaft section. * The max. rotation speed values do not take into account dynamic balance. * The static torsional stiffness values are analysis values for the element taken at a temperature of 20℃ at maximum bore diameter. * The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions



Model	d1·d2 [mm]		D [mm]	L [mm]	LF [mm]	S [mm]	A [mm]	C [mm]	M Quantity-Nominal dia.	Tightening torque [N·m]
	Min.	Max.								
STF-013SA1	3	5	13	18	6	6	3.9	2	1-M1.6	0.23～0.28
STF-016SA1	3	6	16	22	7.5	7	4.8	2.5	1-M2	0.4～0.5
STF-019SA1	3	8	19	25	9	7	5.8 (6)	3.15	1-M2.5 (M2)	1.0～1.1 (0.4～0.5)
STF-024SA1	5	10	24	27	9	9	8.7	3.15	1-M2.5	1.0～1.1
STF-029SA1	5	14	29	30	10	10	11	3.3	1-M2.5	1.0～1.1
STF-034SA1	5	16	34	34	12	10	12.5	3.75	1-M3	1.5～1.9
STF-039SA1	6	19	39	41	15.5	10	14	4.5	1-M4	3.4～4.1
NEW STF-044SA1	8	24	44	48	15.5	17	17	4.5	1-M4	3.4～4.1

* The nominal diameter for the clamp bolt M is equal to the quantity - the nominal diameter of the screw, where the quantity is for a hub on one side. * The values in ( ) of the STF-019, d1 or d2 is the value in the case of ø8mm. * The escape in the internal diameter of the element is equal to dimension d2 (large diameter) plus ø0.5 mm. * The rated dimension tolerance for countershafts is h7 class.

Standard bore diameters

Model	Standard bore diameters d1·d2 [mm]																					
	3	4	5	6	6.35	7	8	9	9.525	10	11	12	13	14	15	16	17	18	19	NEW 20	NEW 22	NEW 24
STF-013SA1	●	●	●																			
STF-016SA1	●	●	●	●																		
STF-019SA1	●	●	●	●	●	●	●															
STF-024SA1			●	●	●	●	●	●	●	●												
STF-029SA1			●	●	●	●	●	●	●	●	●	●	●	●								
STF-034SA1			●	●	●	●	●	●	●	●	●	●	●	●	●	●						
STF-039SA1				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
NEW STF-044SA1							●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

* The bore dimensions in cells marked with a "●" are used as standard bore dimensions. * Check the table for information on max. torque for the shaft diameter as there may be limitations on the standard and maximum torque determined by the holding power of the coupling shaft section depending on the bore diameter used.

Max. torque for the shaft diameter

Model	Standard bore diameters [mm] and Max. torque for the shaft diameter [N · m]																					
	3	4	5	6	6.35	7	8	9	9.525	10	11	12	13	14	15	16	17	18	19	20	22	24
STF-013SA1	0.10	0.25	0.40																			
STF-016SA1	0.5	0.6	0.7	0.8																		
STF-019SA1	0.8	1.2	1.6	1.9	1.9	2.3	0.8															
STF-024SA1			1.6	2.1	2.1	2.6	3.3	4.0	4.0	4.7												
STF-029SA1			1.8	2.2	2.2	2.7	3.4	4.1	4.1	4.8	5.5	6.3	7.8	8.0								
STF-034SA1			2.7	3.0	3.0	3.3	4.0	4.8	4.8	5.6	6.5	7.8	9.0	10.7	12.0	12.0						
STF-039SA1				3.4	3.4	4.0	5.0	6.1	6.1	7.1	8.2	9.3	10.4	11.5	12.8	14.0	15.3	16.6	17.0			
NEW STF-044SA1							6.0	8.3	8.3	9.8	11.3	12.8	14.3	16.0	17.3	18.8	20.3	21.8	23.5	24.8	27.8	30.0

* Check this table as there may be limitations on the standard and maximum torque caused by the holding power of the coupling shaft section. * The max. imit-received torque is a torque value of the small diameter side (d1). However, only in the case that STF-019SA1's d1 or d2 is ϕ8mm does the clamp bolt size down, so the limiting value is 0.8N · m. Please keep this in mind.

Standard bore diameters and Max. torque of STF-019SA1

d1-d2	Max. torque [N · m]	d1-d2	Max. torque [N · m]	d1-d2	Max. torque [N · m]	d1-d2	Max. torque [N · m]	d1-d2	Max. torque [N · m]	d1-d2	Max. torque [N · m]	d1-d2	Max. torque [N · m]
3B-3B	0.8	3B-4B	0.8	3B-5B	0.8	3B-6B	0.8	3B-6.35B	0.8	3B-7B	0.8	3B-8B	0.8
		4B-4B	1.2	4B-5B	1.2	4B-6B	1.2	4B-6.35B	1.2	4B-7B	1.2	4B-8B	0.8
				5B-5B	1.6	5B-6B	1.6	5B-6.35B	1.6	5B-7B	1.6	5B-8B	0.8
						6B-6B	1.9	6B-6.35B	1.9	6B-7B	1.9	6B-8B	0.8
								6.35B-6.35B	1.9	6.35B-7B	1.9	6.35B-8B	0.8
										7B-7B	2.3	7B-8B	0.8
												8B-8B	0.8

How to Place an Order

STF-029SA1-10B-14B

Size

Bore diameter d1
(Small diameter)

Affixing method
B: Clamp

Bore diameter d2
(Large diameter)

Items Checked for Design Purposes

Precautions for handling

(1) Couplings are designed for use within an ambient temperature range from −20℃ to 80℃. Do not attempt to use in environments that are exposed to water, oil, acidic or alkali solutions, ozone, chemicals, or other potentially harmful substances.
Make sure to use a suitable cover when using or storing in direct sunlight as sunlight could shorten the life of the element.

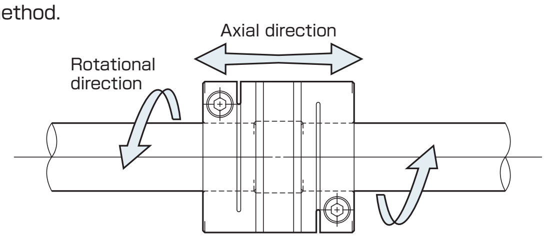
(2) Do not tighten up clamp bolts until after inserting the mounting shaft.

Mounting

(1) Check for loose clamp bolts and remove any rust, dust, oil residue, etc. from the inner diameter surfaces of the shaft and couplings. (Use a waste cloth, etc. to wipe away oil residue or an oil remover as needed.)

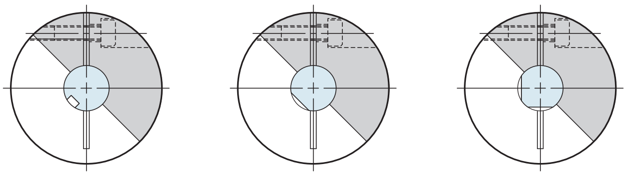
(2) Be careful when inserting the couplings into the shaft so as not to apply excessive force of compression or tensile force to the element. Be particularly careful not to apply excessive compressing force needlessly when inserting couplings into the opposite shaft after attaching the couplings to the motor.

(3) With two of the clamp bolts loosened, make sure that couplings move gently along the axial and rotational directions. Readjust the centering of the two shafts if the couplings fail to move smoothly enough. This method is recommended as a way to easily check the concentricity of the left and right sides. If unable to use the same method, check the mounting accuracy using machine parts quality control procedures or an alternative method.

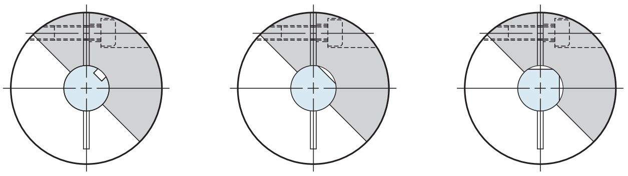


(4) As a general rule, round shafts are to be used for the paired mounting shaft. If needing to use a shaft with a different shape, be careful not to insert it into any of the locations indicated in the diagrams below. (Do not attempt to face keyed grooves, D-shaped cuts, or other insertions to the grayed areas ▨.)
Placing the shaft in an undesirable location may cause the couplings to break or lead to a loss in shaft holding power.
It is recommended that you use only round shafts to ensure full utilization of the entire range of coupling performance.

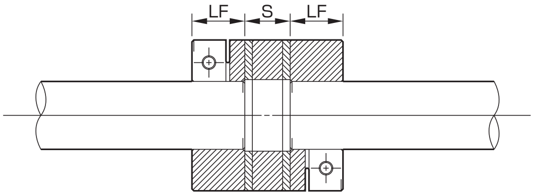
■ Proper mounting examples



■ Poor mounting examples



(5) Insert each shaft far enough in that the opposite shaft touches the shaft along the entire length of the clamping hub of the coupling (LF length) as shown in the diagram below. In addition, restrict the dimensions between clamp hub faces (S dimensions in the diagram) within the permissible error of the axial direction displacement with respect to a reference value. Note that the tolerance values were calculated based on the assumption that both the level of eccentricity and angle of deviation are zero. Adjust to keep this value as low as possible.



Model	LF [mm]	S [mm]
STF-013SA1	6	6
STF-016SA1	7.5	7
STF-019SA1	9	7
STF-024SA1	9	9
STF-029SA1	10	10
STF-034SA1	12	10
STF-039SA1	15.5	10
STF-044SA1	15.5	17

(6) Check to make sure that no compression or tensile force is being applied along the axial direction before tightening up the two clamp bolts. Use a calibrated torque wrench to tighten the clamping bolts to within the tightening torque range listed below.

Model	Nominal Clamp bolt diameter	Tightening torque [N · m]
STF-013SA1	M1.6	0.23～0.28
STF-016SA1	M2	0.4～0.5
STF-019SA1	M2.5 (M2)	1.0～1.1 (0.4～0.5)
STF-024SA1	M2.5	1.0～1.1
STF-029SA1	M2.5	1.0～1.1
STF-034SA1	M3	1.5～1.9
STF-039SA1	M4	3.4～4.1
STF-044SA1	M4	3.4～4.1

* Use M2 bolts on STF-019SA1 models with holes with a diameter of ø8 mm. * The start and end numbers for the tightening torque ranges are between the minimum and maximum values. Tighten bolts to a tightening torque within the specified range for the model used.

Compatible torque driver

Nominal bolt diameter	Tightening torque [N · m]	Torque driver	Hexagon bit	Coupling size
M1.6	0.23～0.28	N3LTDK	CB1.5mm	013
M2	0.4～0.5	N6LTDK	SB1.5mm	016 · 019
M2.5	1.0～1.1	N12LTDK	SB2mm	019 · 024 · 029
M3	1.5～1.9	N20LTDK	SB2.5mm	034
M4	3.4～4.1	N50LTDK	SB3mm	039 · 044

Clamp bolts

Make sure to use the specified clamp bolts as the ones provided by MIKI PULLEY come with solid lubricant coatings (except for on M1.6 bolts for STF-013SA1). Applying a coating of screw-locking compound such as an adhesive compound, oil, or another substance to the clamp bolts may cause the torque factor to change due to the presence of lubricant, which could generate an excessive axial force and cause the clamp bolt or coupling to become damaged. Do not attempt to apply an anaerobic threadlocking compound to the screw threads under any circumstances as such compounds could adversely affect the parts

Points to consider regarding the feed screw system

STF model STEPFLEX couplings, which work to dramatically suppress and prevent resonance caused by the stepper motor and vibration produced in the servo motor using the damping characteristics of the laminated rubber element, can be selected relatively easily.

When needing to base selections on more detailed analysis, consider the below points before making a decision.

Please contact MIKI PULLEY for assistance with inquiries regarding resonance in the stepper motor, vibrations in the servo motor, and other issues.

Resonance phenomena produced by the stepper motor

The resonance phenomena produced by the stepper motor occurs in a certain range of usage speed due to the pulsation frequency of the stepper motor and the overall torsional natural frequency of the system.

To prevent resonance, leave the system as is and work to avoid using the resonant speed, or consider adjusting the torsional natural frequency at the design stage.

Servo motor vibration

There is a concern that the servo motor will produce vibration caused by adjustment of the servo motor gain when the overall torsional natural frequency of the feed screw system is under 400 Hz to 500 Hz.

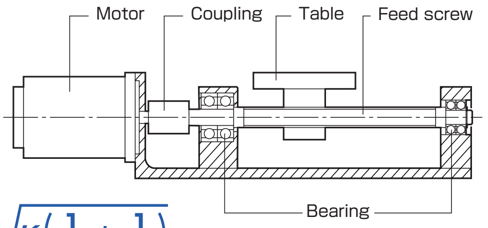
Vibration in the servo motor during operation can cause problems particularly with the overall natural frequency and electrical control systems of the feed screw system.

In order for these issues to be resolved, the torsional stiffness for the coupling and feed screw section and the moment of inertia and other characteristics for the system overall will need to be adjusted and the torsional natural frequency for the mechanical system raised during the design stage or the tuning function (filter function) for the electrical control system in the servo motor adjusted.

How to find the natural frequency of a feed screw system

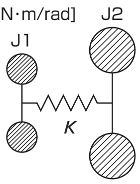
(1) Select a suitable coupling for the application at hand from the standard and maximum torque of the servo motor and stepper motor.

(2) Find the overall natural frequency, Nf, from the torsional stiffness of the coupling and feed screw, κ, the moment of inertia of the driver, J1, and the moment of inertia of the follower, J2, for the feed screw system shown below.



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

Nf : Overall natural frequency of a feed screw system [Hz]
κ : Torsional stiffness of the coupling and feed screw [N·m/rad]
J1 : Moment of inertia of the driver [kg·m²]
J2 : Moment of inertia of the follower [kg·m²]



Selection

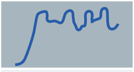
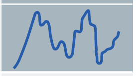
(1) Find the torque T_a applied to the coupling using the output capacity, P, of the driver and the usage speed, n.

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

(2) Set the service factors K using the usage conditions, operating conditions, and other conditions, and find the amount of correction torque T_d to apply to the coupling.

$$T_d\,[N{\cdot}m] = T_a\,[N{\cdot}m] \times K1 \times K2 \times K3 \times K4$$

Service factor, K1, found using the load properties

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

Service factor, K2, found using the operating time

Hrs./day	to 8	to 16	to 24
K2	1.0	1.12	1.25

Service factor, K3, found using the startup and braking frequencies

Times/min.	to 60	to 120	to 360	Over 360
K3	1.0	1.3	1.5	*

* Please consult MIKI PULLEY for assistance with items marked with [*].

Service factor, K4, found using the ambient temperature

Temp. [℃]	−20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80
K4	1.0	1.1	1.2	1.4	1.6	1.8

(3) Set the size so that the rated coupling torque, T_n, is higher than the correction torque, T_d.

$$T_n\,[N{\cdot}m] \geqq T_d\,[N{\cdot}m]$$

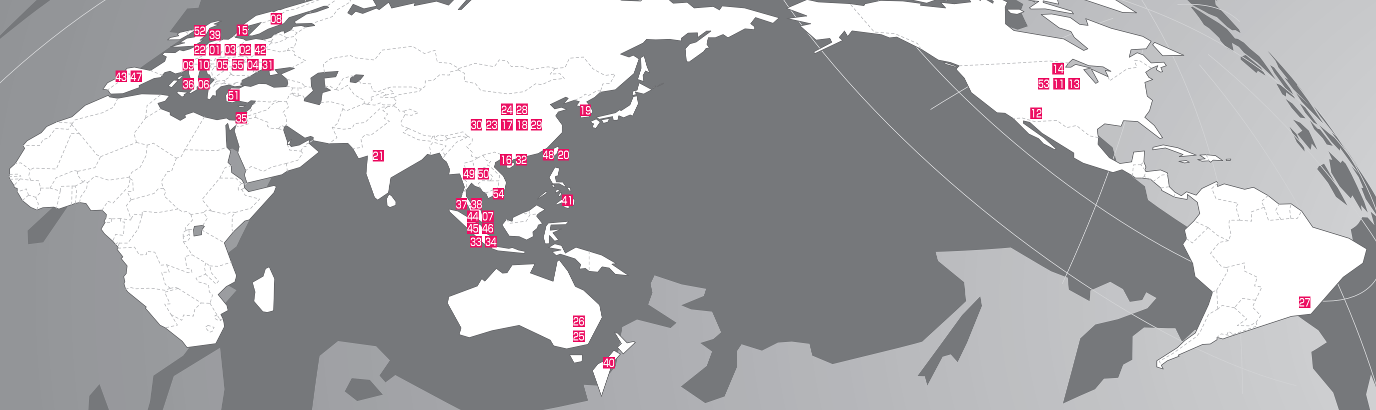
(4) Set the size so that the max. torque for the coupling T_m is higher than the peak torque T_s generated on the driver side, follower side, or both sides. Maximum torque refers to the maximum amount of torque that can be applied temporarily and up to around ten instances a day in cases where operated for eight hours.

$$T_m\,[N{\cdot}m] \geqq T_s\,[N{\cdot}m] \times K4$$

(5) Select an appropriate coupling for applications in which the shaft diameter of the required shaft exceeds the max. bore diameter for the selected size. The transmission torque may be limited by the bore diameter of the clamping hub. Check to make sure that the max. torque for the shaft diameter of the selected coupling size is higher than the peak torque T_s applied on the coupling.

(6) Contact MIKI PULLEY for assistance with any device experiencing extreme periodic vibrations.

World Wide Network



PARTNERS

01 GERMANY
CENTA ANTRIEBE KIRSCHEY GmbH
BERGISCHE STRASSE 7 42781 HAAN, GERMANY
TEL:49-2129-9120 FAX:49-2129-2790

02 GERMANY
INTORQ GmbH & Co.KG
WULMSER WEG5,D-31855 AERZEN GERMANY
TEL:49-5154-9539-41 FAX:49-5154-9539-10

03 GERMANY
LENZE SE
P.O.BOX 10 13 52, D-31763 HAMELN,
HAUS-LENZESTRASSE 1, D-31855 AERZEN, GERMANY
TEL:49-5154-82-0 FAX:49-5154-82-2800

04 GERMANY
MASCHINENFABRIK MOENNINGHOFF GmbH & CO KG
BESSEMERSTRASSE 100 44793 BOCHUM
P.O.BOX 10 17 49, 44717 BOCHUM, GERMANY
TEL:49-234-3335-0 FAX:49-234-3335-200

05 GERMANY
SCHMIDT-KUPPLUNG GmbH
WILHELM-MAST-STRASSE 15 D-38304
WOLFENBUETTEL, GERMANY
TEL:49-5331-9552-500 FAX:49-5331-9552-552

06 ITALY
MOTOVARIO S. p. A.
VIA QUATTROPASSI, 1/3-41043 FORMIGINE (MO),
ITALY
TEL:39-059579711 FAX:39-059579710

07 SINGAPORE
CENTA TRANSMISSIONS FAR EAST PTE., LTD.
No 76 TUAS SOUTH AVENUE 2 SINGAPORE 637519
TEL:65-6316-2508 FAX:65-6316-2509

08 SWEDEN
ETP TRANSMISSION AB.
BOX 1120, S-581 11, LINKOEPING, SWEDEN
TEL:46-13247100 FAX:46-13247190

09 SWITZERLAND
BAMATEC AG
FABRIKSTRASSE POSTFACH CH 8734 ERMENSWIL,
SWITZERLAND
TEL:41-55-2868-585 FAX:41-55-2868-525

10 SWITZERLAND
ROSTA AG
HAUPTS TRASSE 58 SH-5502, HUNZENSCHWIL,
SWITZERLAND
TEL:41-62-897-2421 FAX:41-62-897-1510

11 U.S.A.
CENTA CORPORATION
2570 BEVERLY DRIVE #128 AURORA, ILLINOIS
60502-8588 U.S.A.
TEL:1-630-236-3500 FAX:1-630-236-3565

12 U.S.A.
HELICAL PRODUCTS COMPANY, INC.
901 WEST McCOY LANE, P.O.BOX 1069, SANTA MARIA,
CALIFORNIA 93456-1069, U.S.A.
TEL:1-805-928-3851 FAX:1-805-928-2369

13 U.S.A.
LOVEJOY, INC.
2655 WISCONSIN AVENUE, DOWNERS GROVE, ILLINOIS
60515, U.S.A.
TEL:1-630-852-0500 FAX:1-630-852-2120

GROUP COMPANIES

14 U.S.A.
ZERO-MAX, INC.
13200 SIXTH AVENUE NORTH, PLYMOUTH, MINNESOTA
55441, U.S.A.
TEL:1-763-546-4300 FAX:1-763-546-8260

15 DENMARK
ZERO-MAX A/S
HAARUP TVAERVEJ 1, HAARUP, DK-8600 SILKEBORG,
DENMARK
TEL:45-8681-2288 FAX:45-8681-5388

16 HONG KONG
MIKI PULLEY(HONG KONG)CO., LTD.
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