Metal Disc Couplings

SERVOFLEX

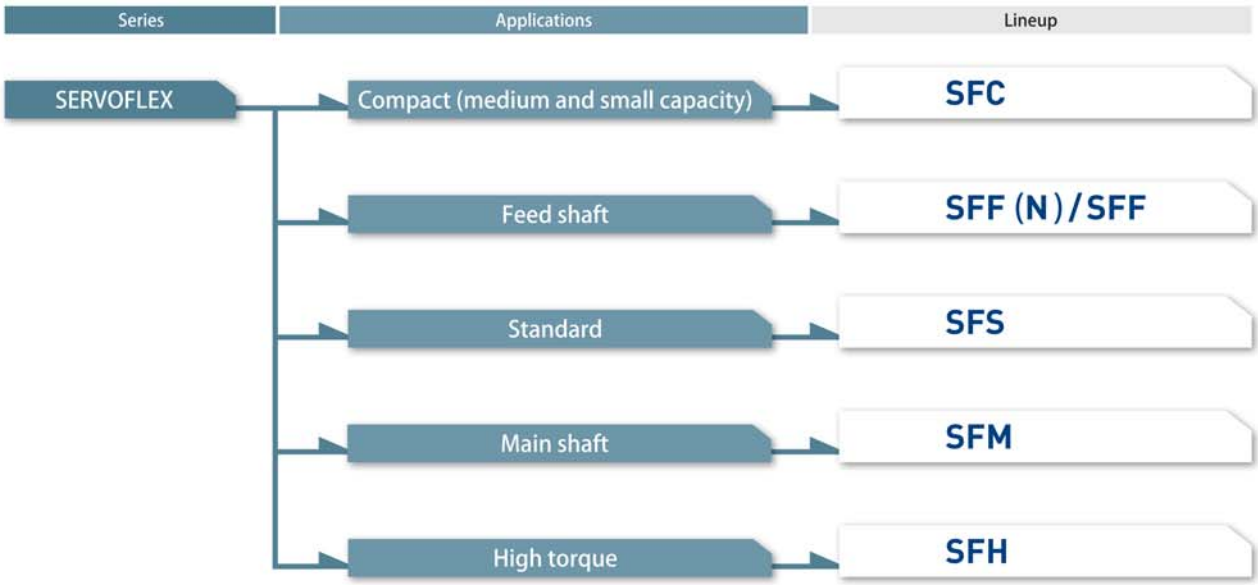
Ultra-high stiffness | Low inertia | High response | No backlash | RoHS

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]	ϕ 3 ~ 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 TYPE B 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.

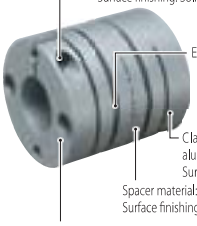
Wide Variety of Options

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

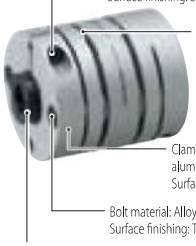
Clamping bolt material: Alloy steel for machine structural use
Surface finishing: Solid lubricant coating*1
Element material: SUS304 metal disc
SUS304 collar*2
Clamping hub material: High-strength aluminum alloy
Surface finishing: Alumite treatment
Bolt material: Alloy steel for machine structural use
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]	ϕ 8 ~ 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.

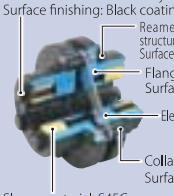
Parts Delivery

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

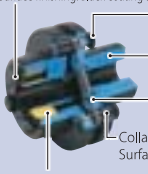
Set screw with hexagonal hole material: Alloy steel for machine structural use
Surface finishing: Black coating applied
Element material: SUS304 metal disc
Collar: S45C or an equivalent
Flange material: S45C or an equivalent
Surface finishing: Black coating applied
Reamer bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied

SFS S-□M-□M



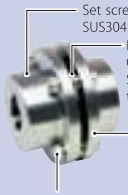
Pressure bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied
Reamer bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied
Flange material: S45C or an equivalent
Surface finishing: Black coating applied
Element material: 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



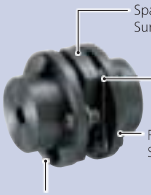
Pressure bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied
Reamer bolt material: Alloy steel for machine structural use
Surface finishing: Black coating applied
Flange material: S45C or an equivalent
Surface finishing: Black coating applied
Element material: 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

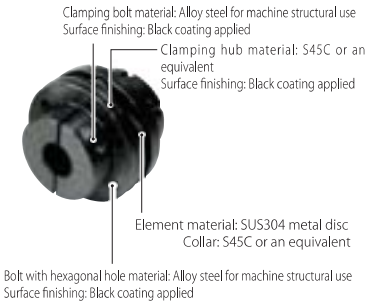
Ultra-high Stiffness and Ultra-low Inertia

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

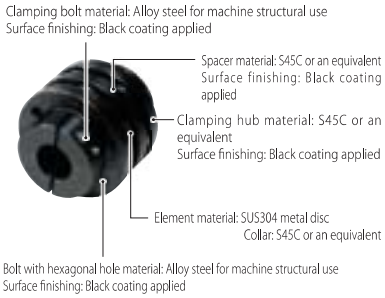
High-precision Clamping Connection

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

SFF SS (N)



SFF DS (N)



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

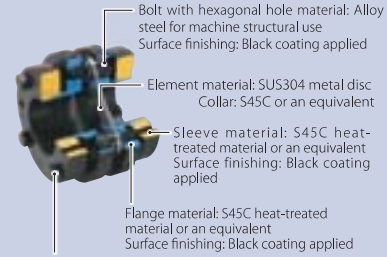
Ultra-high Stiffness

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.

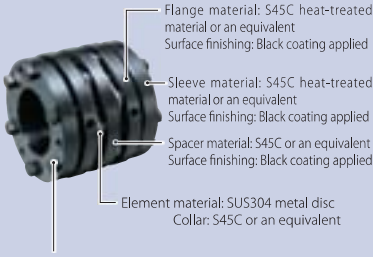
Frictional Coupling for Large Diameters

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

SFF SS



SFF DS



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

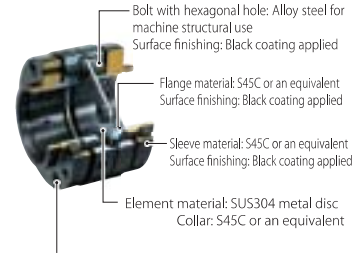
Max. Rotation Speed 20000 min^{-1}

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

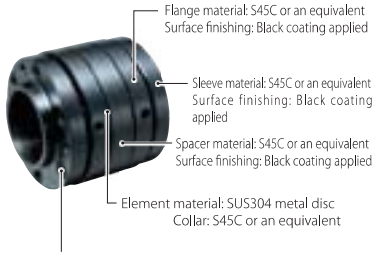
High-accuracy Mounting

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

SFM SS



SFM DS



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

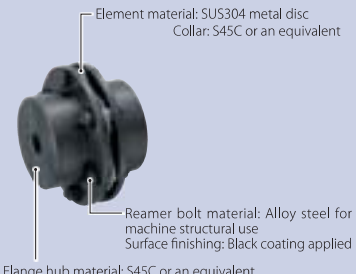
Max. Rated Torque 8000N·m

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



SFH G-□K-□K

Customization Cases

SFC Model stainless steel

The all-stainless-steel construction provides even better rust-proofing.

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.

SFF(N) Model For non-excitation brake assemblies

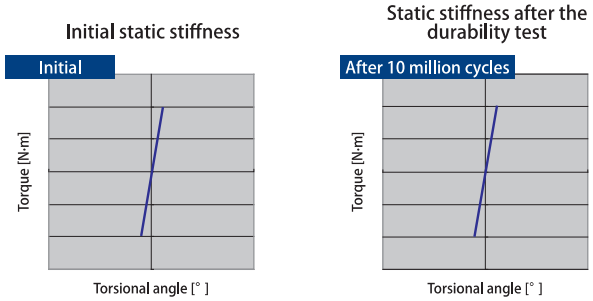
The device design can be made more compact by forming the spline to the outside of the SFF(N) model and using it as the rotor hub for a Miki Pulley non-excitation brake.

For details, please visit our website.

FAQ

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

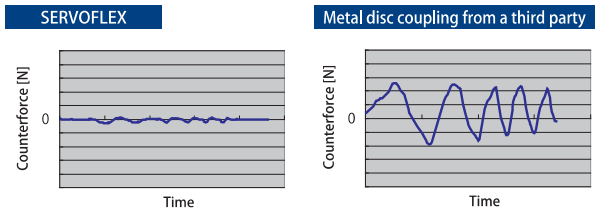
A We conduct a torsional durability test by applying a load larger than the rated torque. SERVOFLEX passed the test by withstanding the metal fatigue limit of 10 million cycles of repeated load. SERVOFLEX is all made of metal materials so the deterioration is extremely slow, and it is able to transmit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

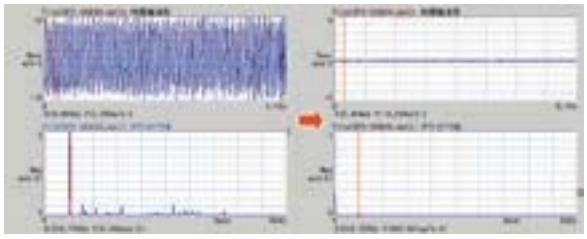
Q2 When a coupling is mounted, the driven shaft runs out. What is the cause?

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.

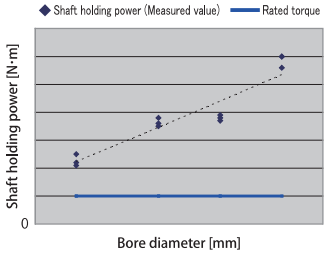


Before adjusting the resonant filter of the servo motor

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 key-way 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

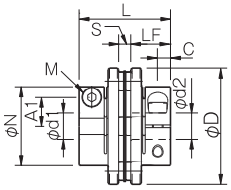
Specifications

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	10	0.02	1	±0.25	10000	18000	112	C	18.44×10^{-6}	0.082
SFC-040SA2	12	0.02	1	±0.3	10000	20000	80	A	16.71×10^{-6}	0.077
								B	22.55×10^{-6}	0.085
								C	29.25×10^{-6}	0.100
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

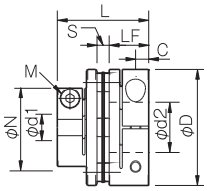
* Max. rotation speed does not take into account dynamic balance.
* Torsional stiffness values given are measured values for the element alone.
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions

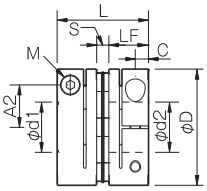
■ TYPE A

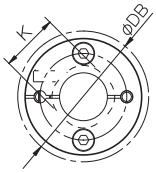


■ TYPE B



■ TYPE C





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	19	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	24							11	17					B
	Over 15	19	Over 15	24			—				—	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 h7 (h6 or g6) 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

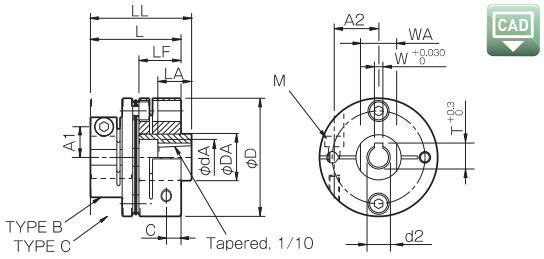
Allows coupling via a clamping hub when a taper adapter is mounted on the tapered shaft of a servo motor.

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-040SA2-□B-11BC	12	0.02	1	±0.3	10000	20000	80	B	26.58×10^{-6}	0.131
								C	33.28×10^{-6}	0.146
SFC-050SA2-□B-11BC	25	0.02	1	±0.4	10000	32000	48	B	82.91×10^{-6}	0.240
								C	103.5×10^{-6}	0.258
SFC-050SA2-□B-14BC	25	0.02	1	±0.4	10000	32000	48	B	88.72×10^{-6}	0.271
								C	111.5×10^{-6}	0.301
SFC-050SA2-□B-16BC	25	0.02	1	±0.4	10000	32000	48	B	95.44×10^{-6}	0.309
								C	118.2×10^{-6}	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	228.7×10^{-6}	0.475
								C	287.8×10^{-6}	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-040SA2-□B-11BC	11	4	12.2	18	16	17	22	44	44	34	15.5	4.5	11	17	1-M4
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

- 040: Size
- SA2: Type: SA2 Single element, aluminum
- 14B: Bore diameter: d1 (Small diameter) - d2 (Large diameter) B: Supported shaft tolerance: h7 (h6, g6) BC: Taper adapter
- 15B: *Select d2 for BC.

Option 3 For keyway milling applications → P.041

SFC DA2 Types Double Element Type

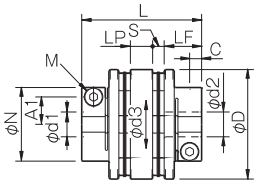
Specifications

Model	Rated torque [N·m]	Misalignment			Max. rotation speed [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-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	10	0.24	1 (On one side)	± 0.5	10000	9000	56	C	26.93×10^{-6}	0.121
SFC-040DA2	12	0.24	1 (On one side)	± 0.6	10000	10000	40	A	29.98×10^{-6}	0.124
								B	35.82×10^{-6}	0.131
								C	42.52×10^{-6}	0.146
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

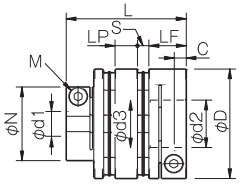
* Max. rotation speed does not take into account dynamic balance.
* Torsional stiffness values given are measured values for the element alone.
* The moment of inertia and mass are measured for the maximum bore diameter.

Dimensions

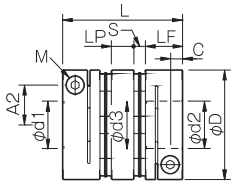
■ TYPE A



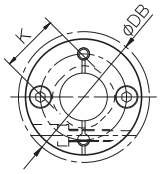
■ TYPE B



■ TYPE C



CAD



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	19	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	24								11	17						B
	Over 15	19	Over 15	24			—					—	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 h7 (h6 or g6) 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

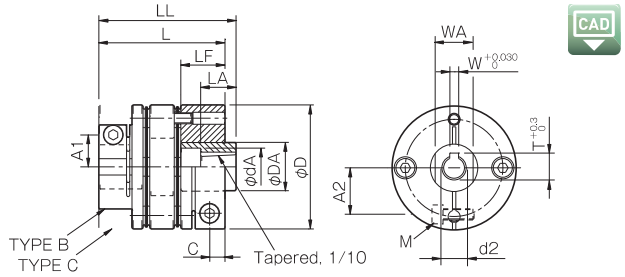
Allows coupling clamping hub when a taper adapter is mounted on the tapered shaft of a servo motor.

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-040DA2-□B-11BC	12	0.24	1 (On one side)	±0.6	10000	10000	40	B C	39.42×10^{-6} 46.12×10^{-6}	0.180 0.195
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



Unit [mm]

Model	d2	W	T	WA	LA	dA	DA	LL	D	L	LF	C	A1	A2	M
SFC-040DA2-□B-11BC	11	4	12.2	18	16	17	22	58	44	48	15.5	4.5	11	17	1-M4
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

- SFC-040: Size
- DA2: Type: DA2, Double element, aluminum hub
- 14B: Bore diameter: d1 (Small diameter) - d2 (Large diameter), B: Supported shaft tolerance: h7 (h6, g6), BC: Taper adapter
- 15B: *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.

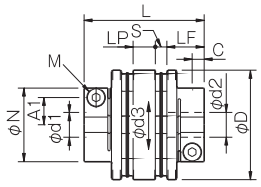
Specifications

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	10	0.15	0.54	1 (On one side)	±0.5	10000	C	23.85×10^{-6}	35.97×10^{-6}	0.108	0.161
SFC-040DA2	12	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	30.89×10^{-6}	50.62×10^{-6}	0.116	0.182
							C	37.58×10^{-6}	57.31×10^{-6}	0.130	0.197
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



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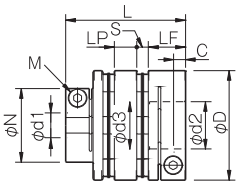
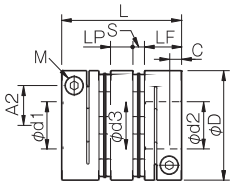
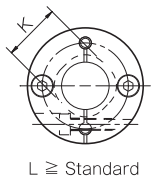
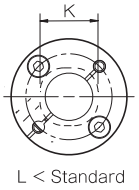


■ TYPE C





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	19	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	24								11	17						B
	Over 15	19	Over 15	24		—						—	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 h7 (h6 or g6) 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

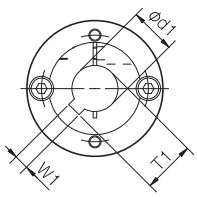
- Size
- Type: DA2 Double element, aluminum hub
- Bore diameter: d1 (Small diameter) - d2 (Large diameter)
- B: Supported shaft tolerance: h7 (h6, g6)
- Length-specified *Use mm units for L dimensions.

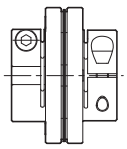
Option 3 For keyway milling applications

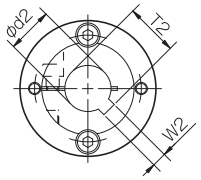
If you are using a keyed shaft, we can mill a keyway in the clamping hub to your specifications.

Dimensions

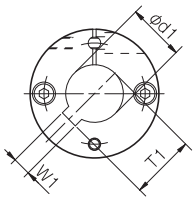
■ SFC SA2

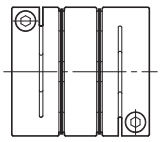


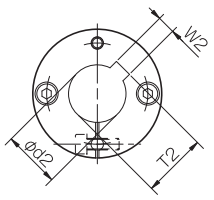




■ SFC DA2







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

- SFC-060: Size
- SA2: Type: SA2 Single element, aluminum hub; DA2 Double element, aluminum hub
- 12BH: Bore diameter: d1 (Small diameter) BH: Class H9 with keyway
- 16BJ: 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.)

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

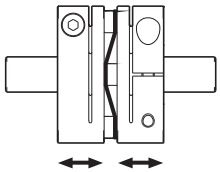
MODELS
- SFC
- SFF (N)
- SFS
- SFF
- SFM
- SFH

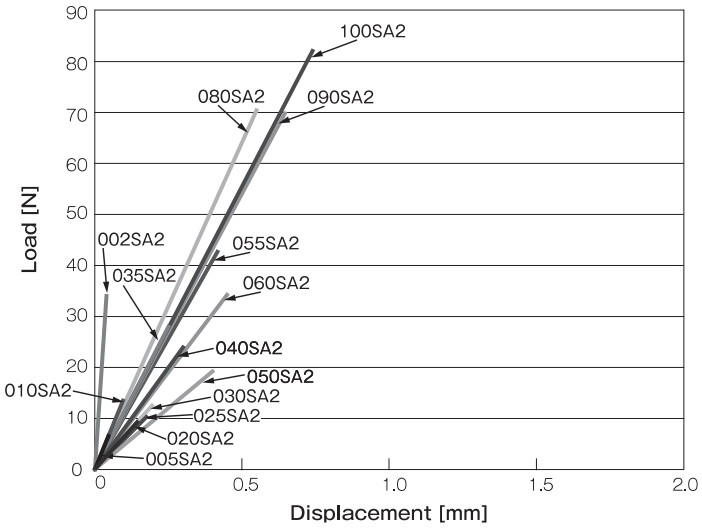
SFC Models

Items Checked for Design Purposes

Spring Characteristics SFC-□SA2

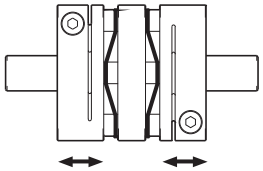
■ Axial load and amount of displacement

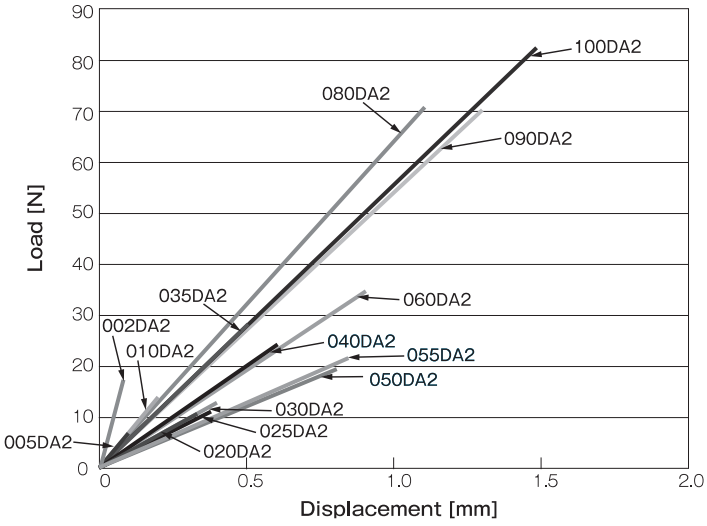




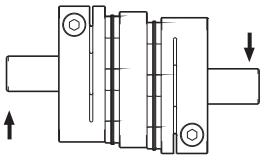
Spring Characteristics SFC-□DA2

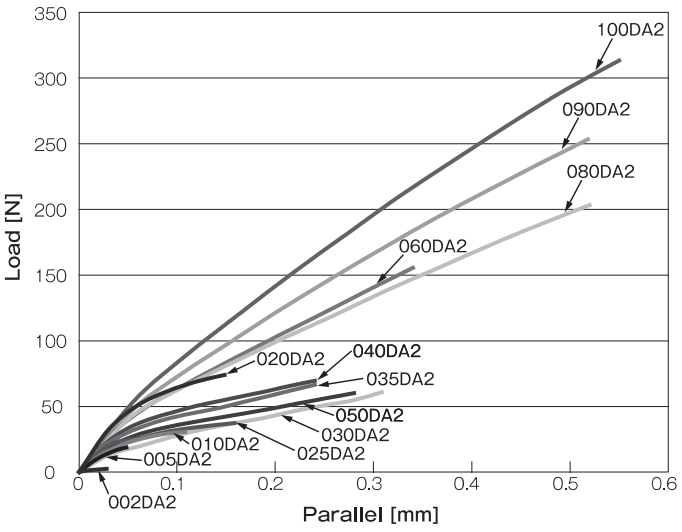
■ Axial load and amount of displacement





■ 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.

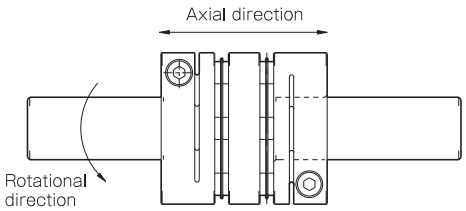
(3) Do not tighten up clamping bolts until after inserting the mounting shaft.

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.)

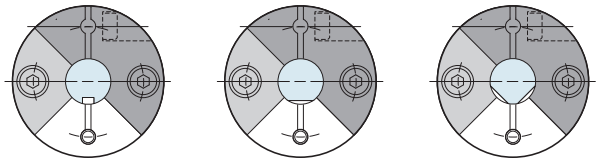
(2) Be careful when inserting the couplings into the shaft so as not to apply excessive force of compression or tensile force to the element. Be particularly careful not to apply excessive compressing force needlessly when inserting couplings into the paired shaft after attaching the couplings to the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

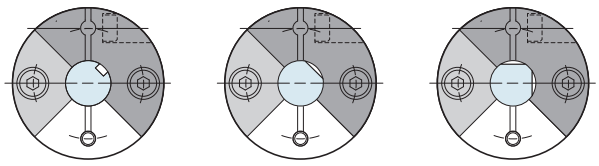


(4) As a general rule, round shafts are to be used for the paired mounting shaft. If needing to use a shaft with a different shape, be careful not to insert it into any of the locations indicated in the diagrams below.
(Do not attempt to face keyways, D-shaped cuts, or other insertions to the grayed 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

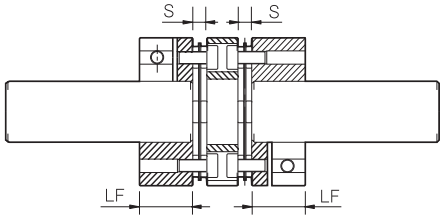


■ Poor Mounting Examples



*□: Size 002/005; ■: Size 010 or above

(5) Insert and mount each shaft far enough in that the paired mounting shaft touches the shaft along the entire length of the clamping hub of the coupling (LF dimension), as shown in the diagram below, and does not interfere with the elements, spacers or the other shaft.
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

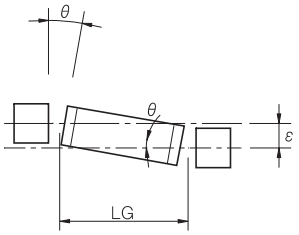
*Use M2 bolts on SFC-010SA2/DA2 models with holes with a diameter of ø8 mm.
*The start and end numbers for the tightening torque ranges are between the minimum and maximum values. Tighten bolts to a tightening torque within the specified range for the model used.

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

Gain adjustment on 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

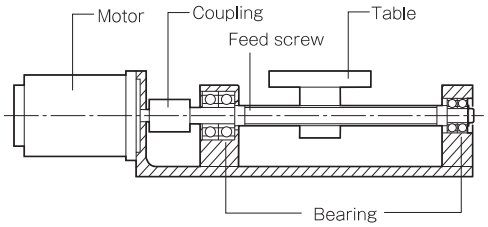
Stepper motors resonate at certain rotation speeds due to the pulsation frequency of the stepper motor and the torsional natural frequency of the system as a whole. To avoid resonance, either the resonant rotation speed must be simply skipped or the torsional natural frequency considered at the design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

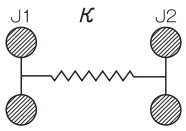
(1) Select a coupling based on the nominal and maximum torque of the servo motor or stepper motor.

(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·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 K 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 [W]・[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]
3W	3000 ~ 6000	0.0096	0.029	4	SFC-002SA2	SFC-002DA2	5
5W	3000 ~ 6000	0.016	0.048	5	SFC-002SA2	SFC-002DA2	5
10W	3000 ~ 6000	0.032	0.096	6	SFC-005SA2	SFC-005DA2	6
15W	3000 ~ 6000	0.047	0.143	4	SFC-002SA2	SFC-002DA2	5
20W	3000 ~ 6000	0.0638	0.191	6	SFC-005SA2	SFC-005DA2	6
30W	3000 ~ 6000	0.098	0.322	8	SFC-010SA2	SFC-010DA2	8
50W	3000 ~ 6000	0.16	0.64	8	SFC-010SA2	SFC-010DA2	8
100W	3000 ~ 6000	0.32	1.28	8	SFC-020SA2	SFC-020DA2	11
150W	3000 ~ 6000	0.477	1.67	8	SFC-025SA2	SFC-025DA2	14
200W	3000 ~ 6000	0.64	2.23	14	SFC-025SA2	SFC-025DA2	14
300W	3000 ~ 6000	0.95	3.72	14	SFC-030SA2	SFC-030DA2	16
400W	3000 ~ 6000	1.3	5	14	SFC-035SA2	SFC-035DA2	19
450W	1500	2.86	8.92	19	SFC-040SA2	SFC-040DA2	24
500W	2000	2.4	7.2	24	SFC-040SA2	SFC-040DA2	24
600W	3000 ~ 6000	1.91	5.73	19	SFC-035SA2	SFC-035DA2	19
750W	3000 ~ 6000	2.387	9	19	SFC-040SA2	SFC-040DA2	24
750W	2000	3.6	10.7	22	SFC-050SA2	SFC-050DA2	30
850W	1500	5.39	13.8	19	SFC-050SA2	SFC-050DA2	30
1kW	3000 ~ 6000	3.18	12.5	24	SFC-050SA2	SFC-050DA2	30
1kW	2000	5	16.6	24	SFC-050SA2	SFC-050DA2	30
1.5kW	2000	7.5	21.6	35	SFC-060SA2	SFC-060DA2	35
2kW	3000 ~ 6000	6.8	21	24	SFC-055SA2	SFC-055DA2	30
2kW	2000	9.54	31	35	SFC-060SA2	SFC-060DA2	35
2.2kW	2000	10.5	36.7	28	SFC-060SA2	SFC-060DA2	35
2.5kW	3000 ~ 6000	12	46	24	SFC-060SA2	SFC-060DA2	35
3kW	3000 ~ 6000	12	35	28	SFC-060SA2	SFC-060DA2	35
3kW	2000	14.3	42.9	35	SFC-060SA2	SFC-060DA2	35
3.5kW	3000 ~ 6000	11.1	33.4	28	SFC-060SA2	SFC-060DA2	35
3.5kW	2000	17	55	35	SFC-080SA2	SFC-080DA2	40
4kW	3000 ~ 6000	22	39.2	28	SFC-060SA2	SFC-060DA2	35
4kW	2000	19.1	66.9	35	SFC-080SA2	SFC-080DA2	40
4.5kW	1500	28.5	105	35	SFC-090SA2	SFC-090DA2	45
5kW	3000 ~ 6000	15.9	47.6	28	SFC-080SA2	SFC-080DA2	40
5kW	2000	23.9	71.6	35	SFC-080SA2	SFC-080DA2	40
6kW	2000	38	130	35	SFC-090SA2	SFC-090DA2	45
7kW	1500	44.6	134	42	SFC-090SA2	SFC-090DA2	45
7.5kW	1500	48	139	42	SFC-100SA2	SFC-100DA2	45
9kW	3000 ~ 6000	28.6	85	35	SFC-090SA2	SFC-090DA2	45
11kW	2000	52.5	158	42	SFC-100SA2	SFC-100DA2	45

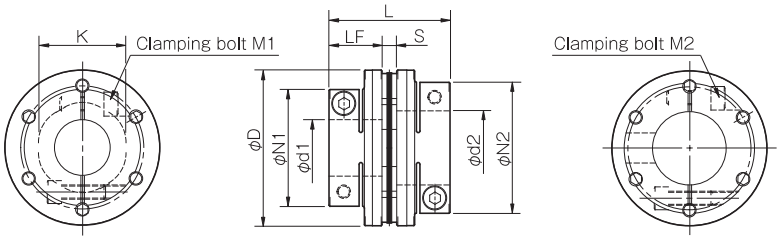
SFF SS (N) Types Single Element Type

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·m²]	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	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-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-080SS-25BK-30BK-200N

- Size
- Type
  S: Single element
- Material
  S: Steel
- Bore dia. d1 (Small dia.)
- Affixing method
  B: Clamp
- Bore dia. d2 (Large dia.)
- Countershaft tolerance
  Blank: h7 (h6 or g6), K: k6, M: m6, J: j6, S: $35^{+0.010}_{0}$
- Nominal rated torque (Refer to the specifications)

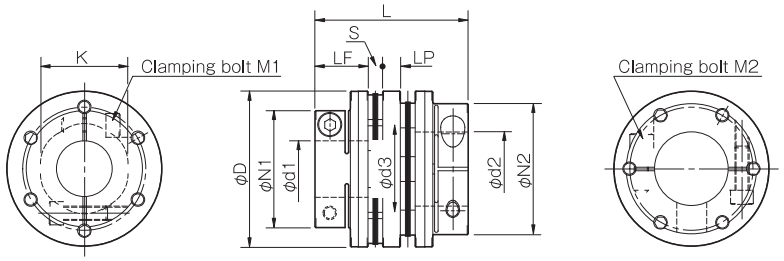
SFF DS (N) Types Double Element Type

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-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-080DS-25BK-30BK-200N

- Size
- Type
  D: Double element
- Material
  S: Steel
- Bore dia. d (Small dia.)
- Affixing method
  B: Clamp
- Bore dia. d2 (Large dia.)
- Countershaft tolerance
  Blank: h7 (h6 or g6), K: k6, M: m6, J: j6, S: $35^{+0.010}_{0}$
- Nominal rated torque
  (Refer to the specifications)

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°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.

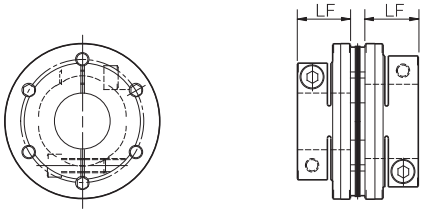
(3) Do not tighten up clamping bolts until after inserting the mounting shaft.

Mounting

(1) Check that 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.)

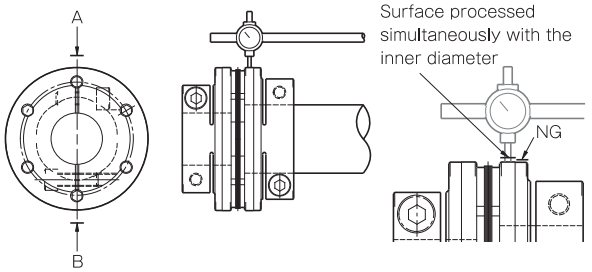
(2) Be careful when inserting the couplings into the shaft so as not to apply excessive force of compression or tensile force to the element.

(3) Ensure that the length of the coupling inserted onto the motor shaft touches the shaft for the entire length of the clamping hub of the coupling (LF dimension), as shown in the diagram below, and position it so that it does not interfere with the elements, spacers or the other shaft. Then temporarily tighten the two clamping bolts, tightening them alternately until 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).



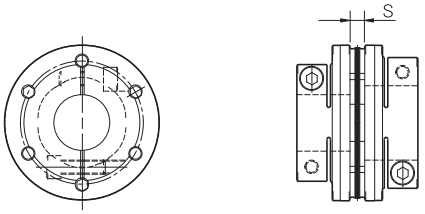
(5) Alternately fasten the two clamping bolts as you adjust them, and finish by tightening both bolts to the appropriate tightening torque of the following table, using a calibrated torque wrench.
Since it is fastened by two clamping bolts, tightening one bolt before the other will place more than the 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.

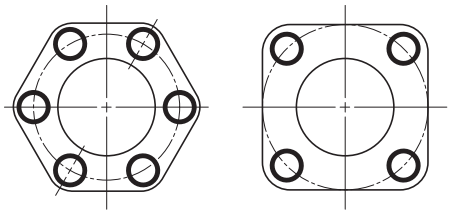
Removal

(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

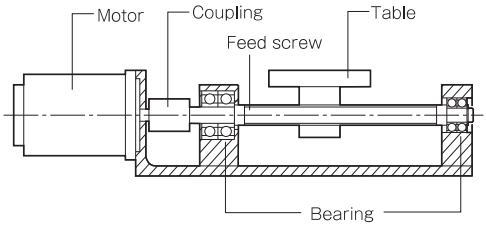
Gain adjustment on the servo motor may cause the servo motor to oscillate.
Ocsillation in the servo motor during operation can cause problems particularly with the overall natural frequency and electrical control systems of the feed screw system.
In order for these issues to be resolved, the torsional 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

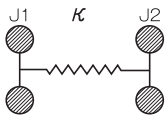
(1) Select a coupling based on the nominal and maximum torque of the servo motor.

(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·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 × 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.

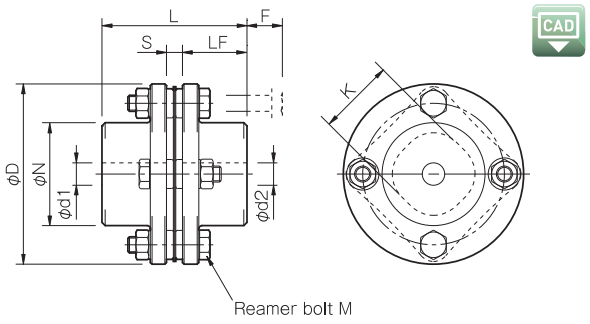
SFS S Types Single Element Type

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·m²]	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

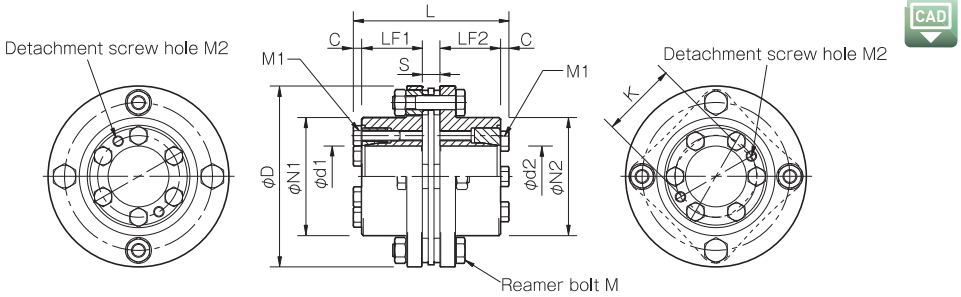
* Pilot bores are to be drilled into the part. See the standard hole-drilling standards of P.58 for information on bore drilling.
* The nominal diameter of the reamer bolt is equal to the quantity minus the nominal diameter of the screw threads times the nominal length.

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

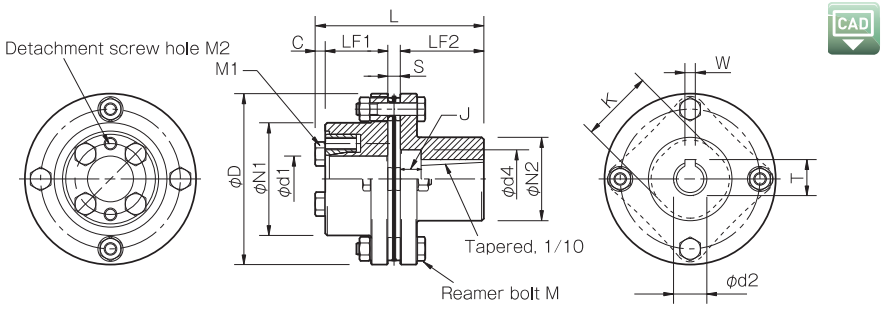
* For a standard bore diameter, consult Miki Pulley as restrictions may apply to the permitted torque.
* The nominal diameters of each bolt and tap are equal to the quantity minus the nominal diameter of the screw threads times the nominal length. The quantities for the pressure bolt M1 and detachment 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 h7 (h6 or g6) 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

- SFS: Size
- 10S: Type: S, Single element
- 25M: Bore diameter: d1 (Small diameter) - d2 (Large diameter), M: Frictional coupling
- 30M: Bore diameter: d1 (Small diameter) - d2 (Large diameter), M: Frictional coupling

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

* For a standard bore diameter, consult Miki Pulley as restrictions may apply to the permitted torque.
* 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 h7 (h6 or g6) class.

How to Place an Order

SFS-08S-20M-16C

- SFS: Size
- 08S: Type: S, Single element
- 20M: Bore diameter: d1 - d2, M: Frictional coupling
- 16C: Bore diameter: d1 - d2, C: Tapered shaft supported

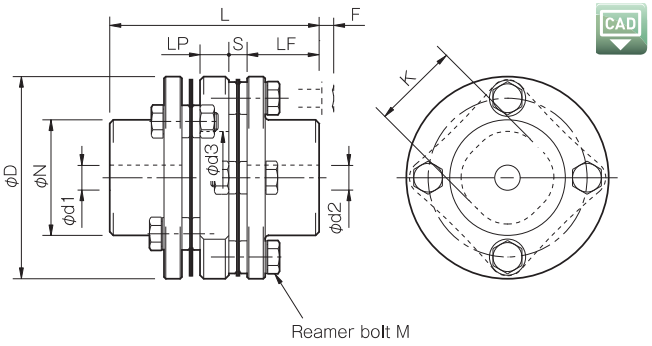
SFS W Types Double Element Type

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

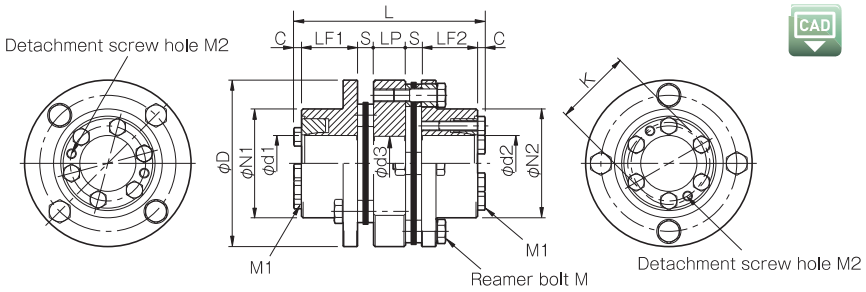
*Pilot bores are to be drilled into the part. See the standard hole-drilling standards of P.58 for information on bore drilling.
*The nominal diameter of the reamer bolt is equal to the quantity minus the nominal diameter of the screw threads times the nominal length.

How to Place an Order

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

- Size
- Type: W — Double element
- Surface finishing options — Blank: Black coating; -C: Electroless nickel plating
- Bore diameter: d1 (Small diameter) - d2 (Large diameter)
- 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]

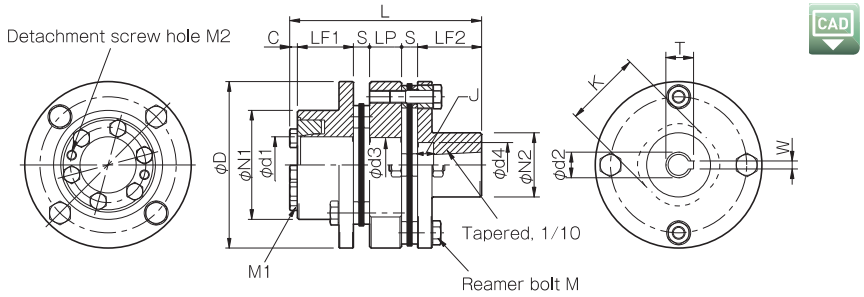
Model	Bore diameter	d1	d2	D	N1	N2	L	LF1	LF2	LP	S	C	d3	K	M	M1	M2
SFS-06W	□M-□M	12·14·15	12·14·15	68	40	40	83.6	25	25	12	6	4.8	24	30	8-M6 × 18	4-M5	2-M5
SFS-08W	□M-□M	15·16·20·22	15·16·20·22	82	54	54	93.6	30	30	12	6	4.8	28	38	8-M6 × 20	4-M6	2-M6
SFS-09W	□M-□M	25·28	25·28	94	58	58	107.6	30	30	22	8	4.8	32	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

* For a standard bore diameter, consult Miki Pulley as restrictions may apply to the permitted torque.
* 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 h7 (h6 or g6) class.

How to Place an Order

SFS-10W-25M-30M
- Size
- Type: W, Double element
- M: Frictional coupling
- Bore diameter: d1 (Small diameter) - d2 (Large diameter)

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

* For a standard bore diameter, consult Miki Pulley as restrictions may apply to the permitted torque.
* 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 h7 (h6 or g6) class.

How to Place an Order

SFS-08W-20M-16C
- Size
- Type: W, Double element
- M: Frictional coupling
- C: Tapered shaft supported
- Bore diameter: d1 - d2

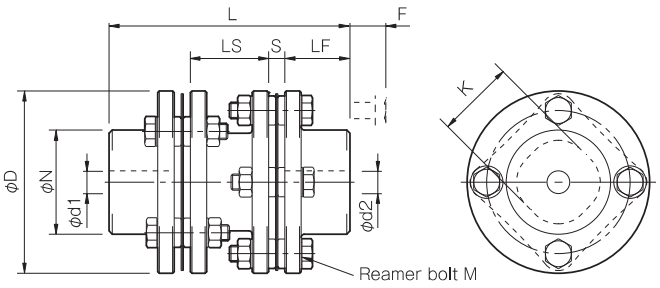
SFS G Types Double Element/Floating Shaft Type

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



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

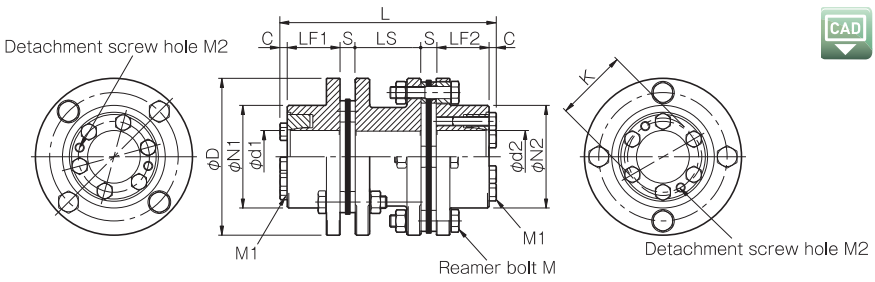
SFS-10G-C-25H-30H LS=500

- Size: 10
- Type: G — Double element Floating shaft
- Surface finishing options: Blank: Black coating; -C: Electroless nickel plating
- Bore diameter: d1 (Small diameter) - d2 (Large diameter)
- Bore specifications: Blank: Pilot bore
- Spacer length: 25H-30H
- LS=500

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

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-□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

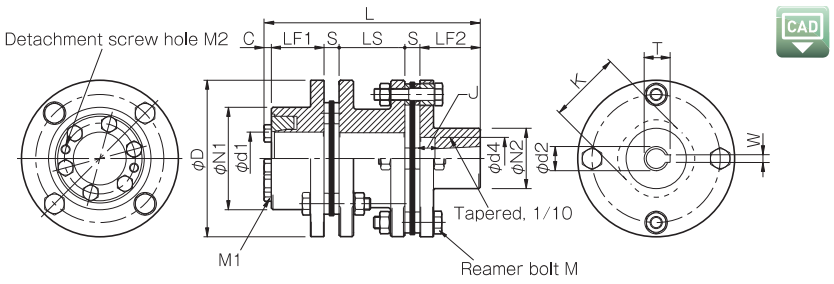
* For a standard bore diameter, consult Miki Pulley as restrictions may apply to the permitted torque.
* If you require a product with an LS dimension other than that above, contact Miki Pulley with your required dimension. Please contact Miki Pulley for assistance if LS ≧ 1000.
* The nominal diameters 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 h7 (h6 or g6) class. However, for a shaft diameter of 35 mm, the tolerance is $^{+0.010}_{-0.025}$.

How to Place an Order

SFS-10G-25M-30M LS=500

- Size
- Type: G — Double element Floating shaft
- Bore diameter: d1 (Small diameter) - d2 (Large diameter) — M: Frictional coupling
- Spacer length — *Use mm units for LS dimensions. *Leave blank for standard spacers.

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

* For a standard bore diameter, consult Miki Pulley as restrictions may apply to the permitted torque.
* 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 h7 (h6 or g6) class.

How to Place an Order

SFS-08G-20M-16C LS=500

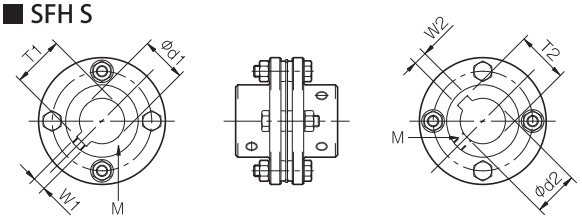
- Size
- Type: G — Double element Floating shaft
- Bore diameter: d1 - d2 — M: Frictional coupling, C: Tapered shaft supported
- Spacer length — *Use mm units for LS dimensions. *Leave blank for standard spacers.

SFS Models

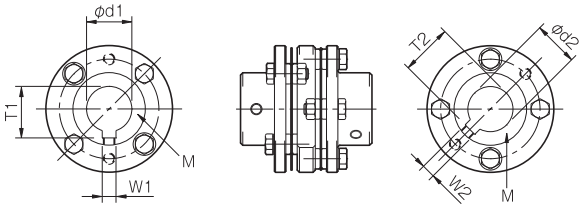
Standard Hole-Drilling Standards

- 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.

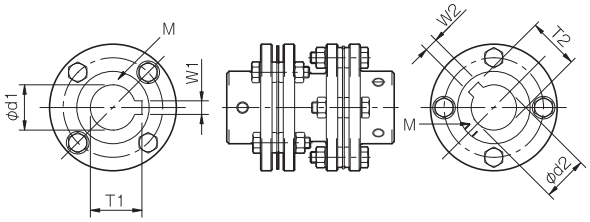
■ SFH S



■ 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

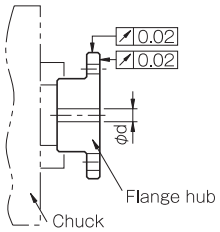
Model	Distance from set screw edge [mm]
SFS-05	7
SFS-06	9
SFS-08	10
SFS-09	10
SFS-10	12
SFS-12	12
SFS-14	15

Centering and Finishing When Drilling Bores in Flange Hubs

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

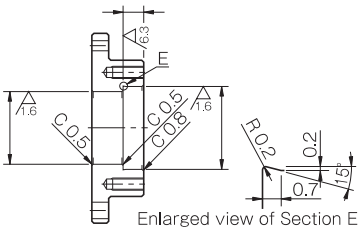
■ Centering

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. For small bore diameters, consult Miki Pulley as restrictions may apply to the permitted torque.

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°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.

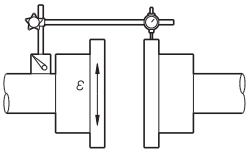
(2) Handle the element with care as it is made of a thin stainless steel metal disc, also making sure to be careful so as not to injure yourself.

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

Centering

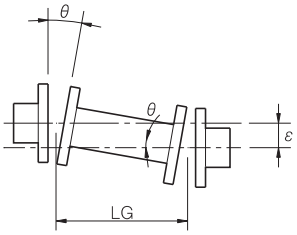
■ Parallel misalignment (ε)

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°

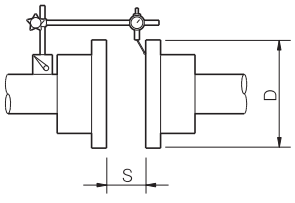


$$LG = LS + S$$

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°

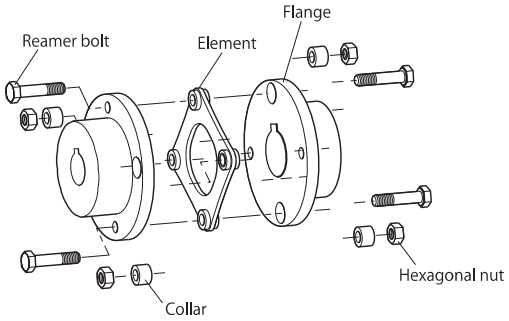
■ Axial displacement (S)

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.

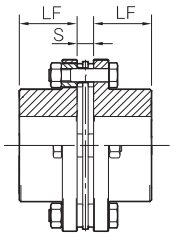
Mounting (SFS S/W/G Types)

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 that the paired mounting shaft touches the shaft along the entire length of the flange (LF dimension), as shown in the diagram below, and does not interfere with the elements, spacers or the other shaft.



(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

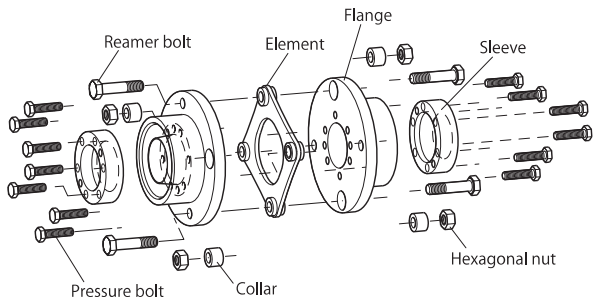
(5) Insert the element into the gap between the two flanges, and then mount it with the reamer bolt for locking the element in place. Check that the element is not deformed. If it is, it may be under an axial force or there may be insufficient lubrication between the collar, bolt, and disc, so adjust 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

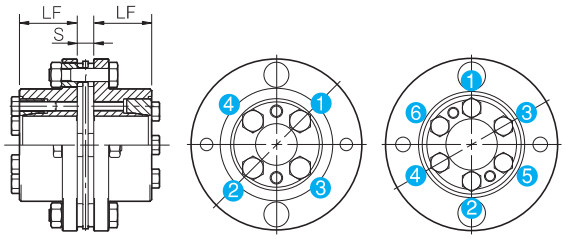
Mounting (SFS S/W/G-☐M-☐M Types)

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 that the paired mounting shaft touches the shaft along the entire length of the flange (LF dimension), as shown in the diagram below, and does not interfere with the elements, spacers or the other shaft. Then, holding them in place, tighten the pressure bolts evenly, a little at a time on the diagonal, following the tightening sequence shown in 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)

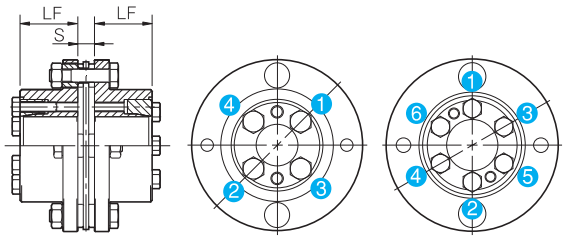
This SFS S/W/G type assembly method first completes the coupling and then inserts it onto the shaft.

(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 that the paired mounting shaft touches the shaft along the entire length of the flange (LF dimension), as shown in the diagram below. Then position it so that it does not interfere with the elements, spacers or the other shaft and lock it in place. For frictional coupling types, tighten the pressure bolts evenly, a little at a time on the diagonal, following the tightening sequence shown in 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

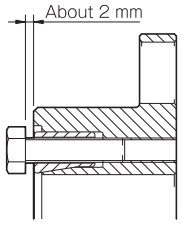
SFS Models

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.

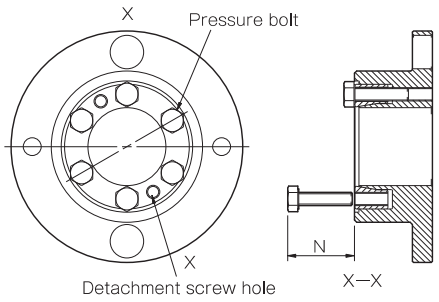
(2) Loosen all the pressure bolts placing pressure on the sleeve until the gap between bearing seat and sleeve is about 2 mm.



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.

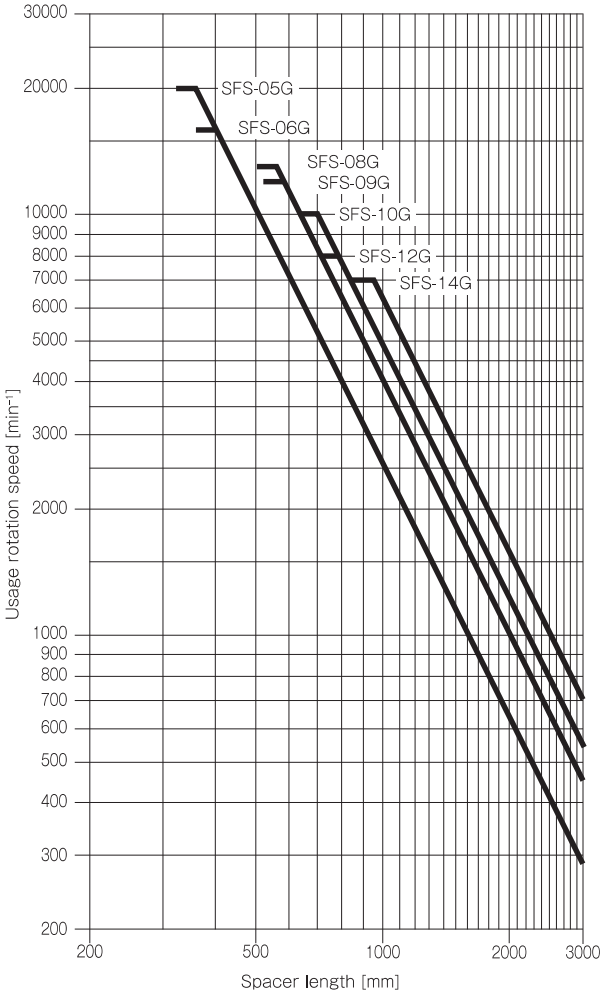
■ SFS-S/W/G type



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

Gain adjustment on 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

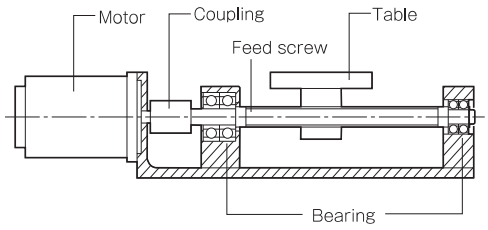
Stepper motors resonate at certain rotation speeds due to the pulsation frequency of the stepper motor and the torsional natural frequency of the system as a whole. To avoid resonance, either the resonant rotation speed must be simply skipped or the torsional natural frequency considered at the design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

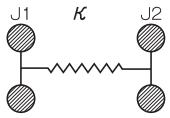
(1) Select a coupling based on the nominal and maximum torque of the servo motor or stepper motor.

(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 × (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.

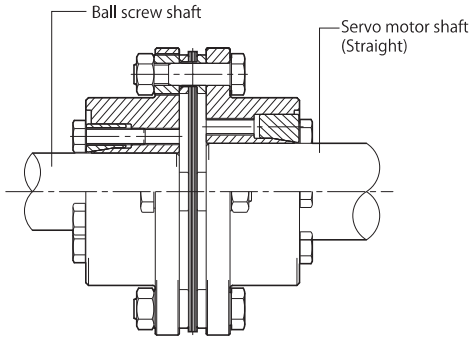
(5) Check that the mount shaft is no larger than the maximum bore diameter of the coupling.

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

Mounting Example

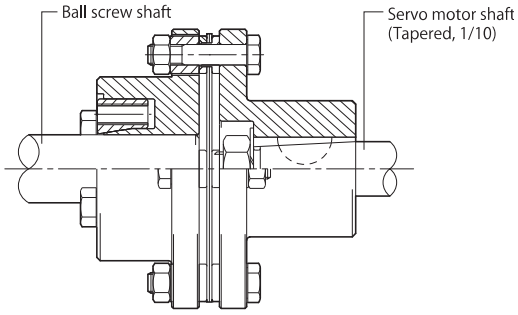
■ SFS S-□M-□M

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.



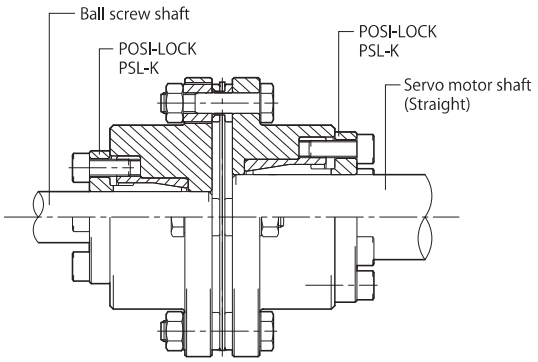
■ SFS S-□M-□C

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.



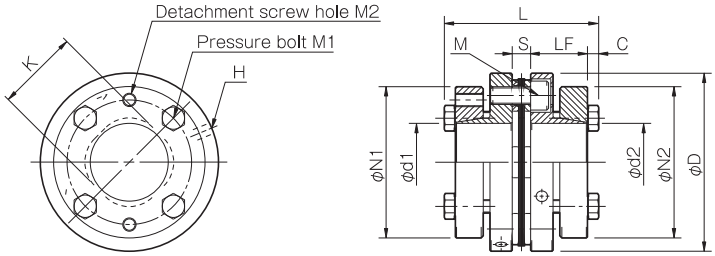
SFF SS Types Single Element Type

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

SFF-080SS-25KK-30KK

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

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]																							

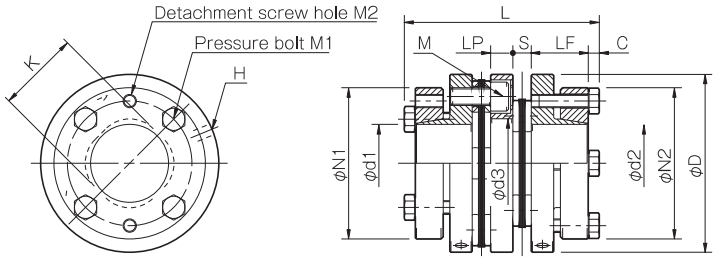
SFF DS Types Double Element Type

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.)
- Countershaft tolerance
  Blank: h7 (h6 or g6), K: k6, M: m6, J: j6, S: $35^{+0.010}_{0}$
- Affixing method
  K: Frictional coupling

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°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.

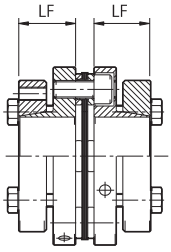
(3) Do not tighten up pressure bolts until after inserting the mounting shaft.

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.)

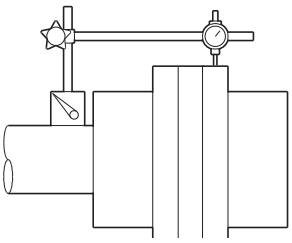
(2) Be careful when inserting the couplings into the shaft so as not to apply excessive force of compression or tensile force to the element.

(3) Insert each coupling far enough onto the motor shaft that it touches the shaft along the entire length of the coupling flange (LF dimension), as shown in the diagram below. Position it so that it does not interfere with the elements, spacers or the other shaft and then hold it in place.



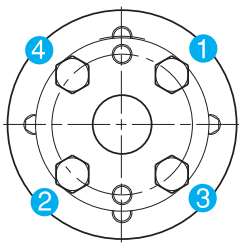
Model	LF [mm]
SFF-070SS/DS	23.5
SFF-080SS/DS	25.5
SFF-090SS/DS	25.5
SFF-100SS/DS	25.5
SFF-120SS/DS	27.5
SFF-140SS/DS	36.5

(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.

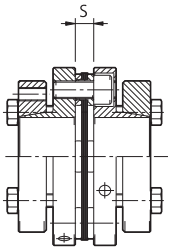


Model	Pressure bolt size	Tightening torque [N·m]
SFF-070SS/DS	M6	10
SFF-080SS/DS	M6	10
SFF-090SS/DS	M6	10
SFF-100SS/DS	M6	10
SFF-120SS/DS	M6	10
SFF-140SS/DS	M8	24

(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

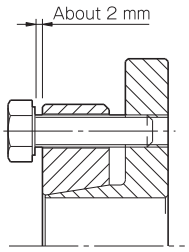
(10) Sequentially tighten the pressure bolts on the spindle or feed screw side using the same procedure as for the motor shaft side pressure bolts, and then tighten to the appropriate tightening torque.

(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.

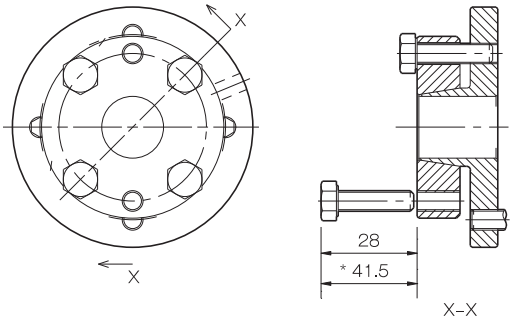
Removal

(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.



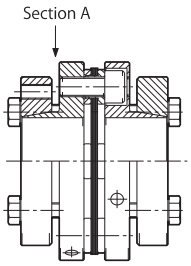
For a tapered coupling system that tightens pressure bolts from the axial direction, the sleeve will be self-locking, so the coupling between flange and shaft cannot be released simply by loosening the pressure bolt. (Note that in some cases, a coupling can be released by loosening a pressure bolt.)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



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

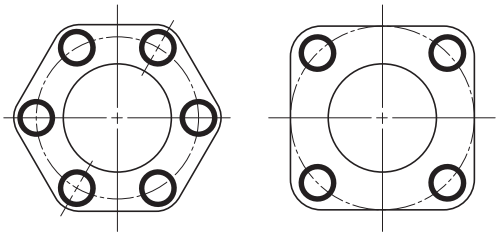
(3) Pull out three of the pressure bolts (one 070, two 080) loosened in step (2), insert them into the detachment screw holes on the sleeve, and tighten them in order, a little at a time. The coupling will be released.

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

Gain adjustment on 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.

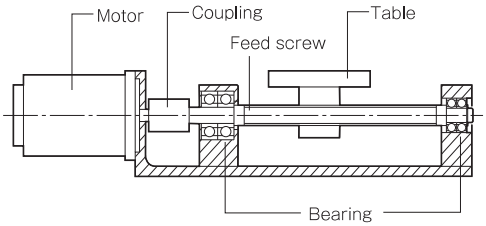
In order for these issues to be resolved, the torsional stiffness for the coupling and feed screw section and the moment of inertia and other characteristics for the system overall will need to be adjusted and the torsional natural frequency for the mechanical system raised or the tuning function (filter 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

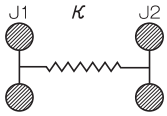
(1) Select a coupling based on the nominal and maximum torque of the servo motor.

(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 × 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.

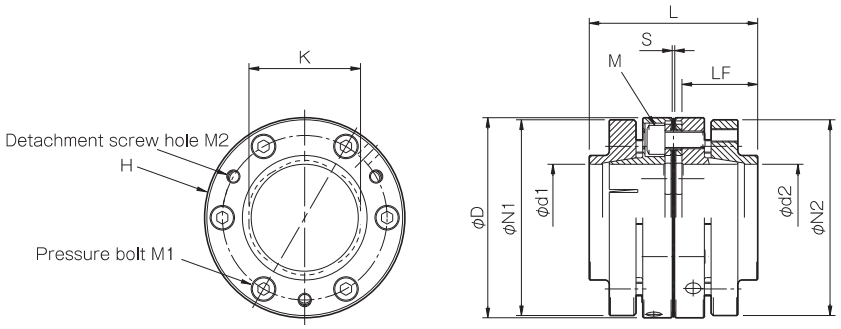
SFM SS Types Single Element Type

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·m²]	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]																	
Standard bore diameter d1 [mm]	28	30	32	35	38	40	42	45	48	50	52	55	60	62	65	70	75	80
28	●	●	●	●	●	●	●	●	●									
30		●	●	●	●	●	●	●	●									
32			●	●	●	●	●	●	●									
35				●	●	●	●	●	●									
38					●	●	●	●	●									
40						●	●	●	●									
42							●	●	●									
45								●	●									
48									●									

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

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

SFM-140SS	Standard bore diameter d2 [mm]																	
Standard bore diameter d1 [mm]	28	30	32	35	38	40	42	45	48	50	52	55	60	62	65	70	75	80
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
- Affixing method: K: Frictional coupling
- Bore dia d1 (Small dia.)
- 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.

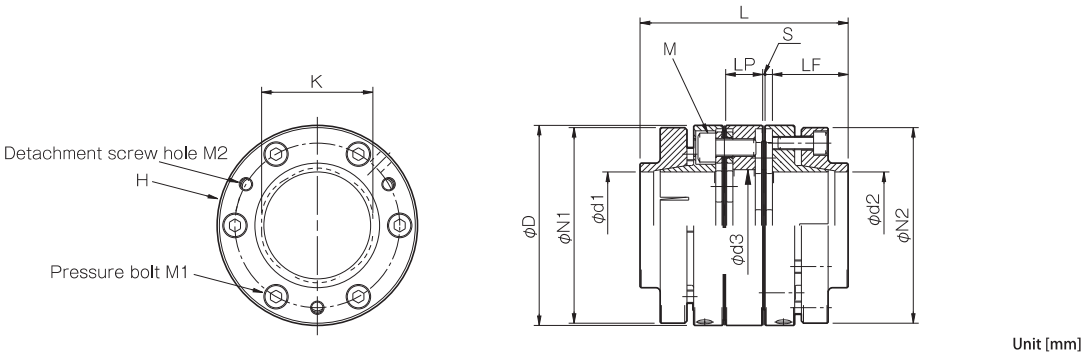
SFM DS Types Double Element Type

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·m²]	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]																	
Standard bore diameter d1 [mm]	28	30	32	35	38	40	42	45	48	50	52	55	60	62	65	70	75	80
28	●	●	●	●	●	●	●	●	●									
30		●	●	●	●	●	●	●	●									
32			●	●	●	●	●	●	●									
35				●	●	●	●	●	●									
38					●	●	●	●	●									
40						●	●	●	●									
42							●	●	●									
45								●	●									
48									●									

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

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

SFM-140DS	Standard bore diameter d2 [mm]																	
Standard bore diameter d1 [mm]	28	30	32	35	38	40	42	45	48	50	52	55	60	62	65	70	75	80
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, K: k6, M: m6, J: k6, S: 35 +0.010 0
- Affixing method: K: Frictional coupling
- Countershaft tolerance: Blank: h6, K: k6, M: m6, J: k6, S: 35 +0.010 0
- 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.

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.

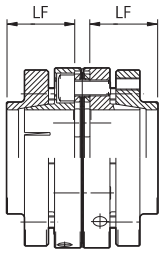
(2) Do not tighten up pressure bolts until after inserting the mounting shaft.

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.

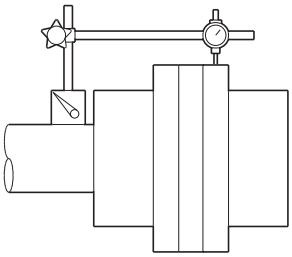
(3) Insert each coupling far enough onto the motor shaft that it touches the shaft along the entire length of the coupling flange (LF dimension), as shown in the diagram below. Position it so that it does not interfere with the elements, spacers or the other shaft and then hold it in place.



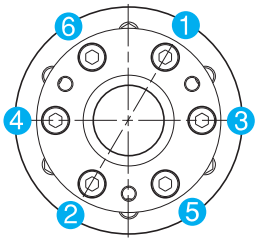
Model	LF [mm]
SFM-090SS/DS	34
SFM-100SS/DS	34
SFM-120SS/DS	36
SFM-140SS/DS	45

(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.

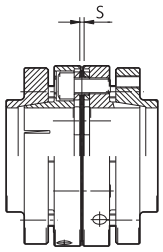


Model	Pressure bolt size	Tightening torque [N·m]
SFM-090SS/DS	M6	14
SFM-100SS/DS	M6	14
SFM-120SS/DS	M6	14
SFM-140SS/DS	M8	34

(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

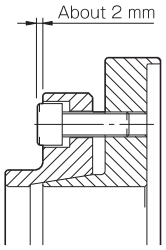
(10) Sequentially tighten the pressure bolts on the spindle or feed screw side using the same procedure as for the motor shaft side pressure bolts, and then tighten to the appropriate tightening torque.

(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.

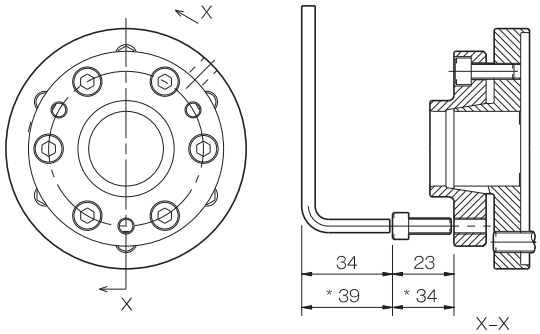
Removal

(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.



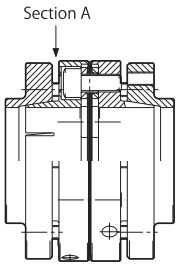
For a tapered shaft coupling system that tightens pressure bolts from the axial direction, the sleeve will be self-locking, so the coupling between flange and shaft cannot be released simply by loosening the pressure bolt. (Note that in some cases, a coupling can be released by loosening a pressure bolt.) 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.



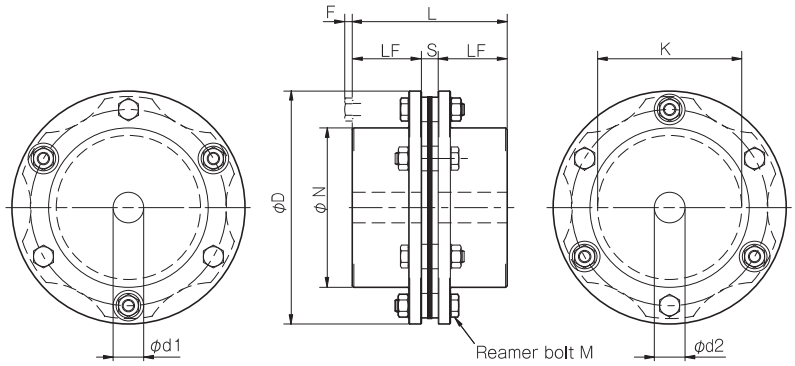
SFH S Types Single Element Type

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·m²]	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

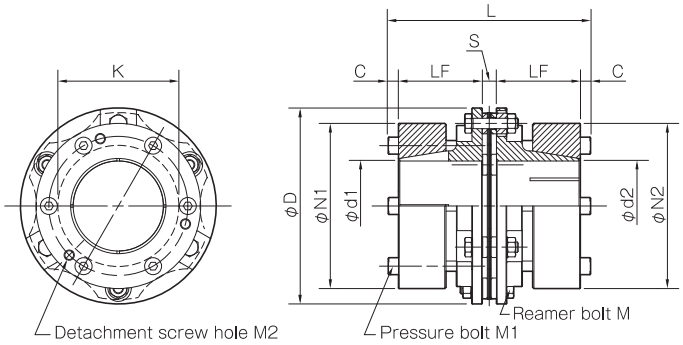
Bore specifications
Blank: Compliant with the old JIS standards (class 2)
H: Compliant with the new JIS standards
N: Compliant with the new motor standards

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-150S-38KK-42KK

- Size / Type: S: Single element
- Bore dia. d1 (Small dia.)
- Bore dia. d2 (Large dia.)
- Affixing method: K: Frictional coupling
- Countershaft tolerance: Blank: h7 (h6 or g6) K: k6 M: m6 J:j6

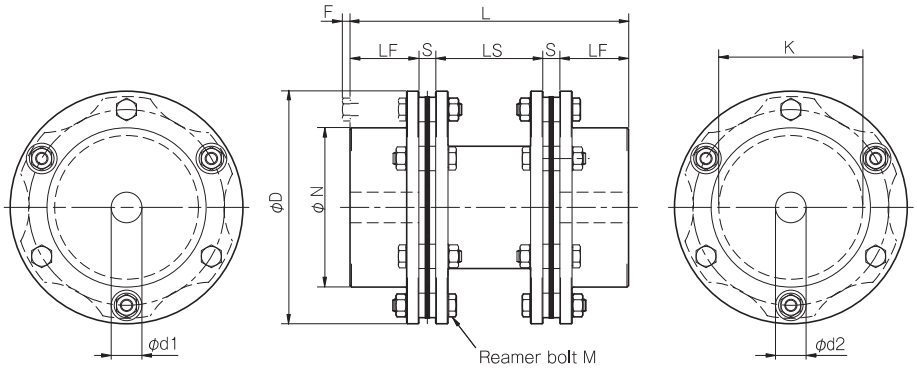
SFH G Types Double Element/Floating Shaft Type

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·m²]	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

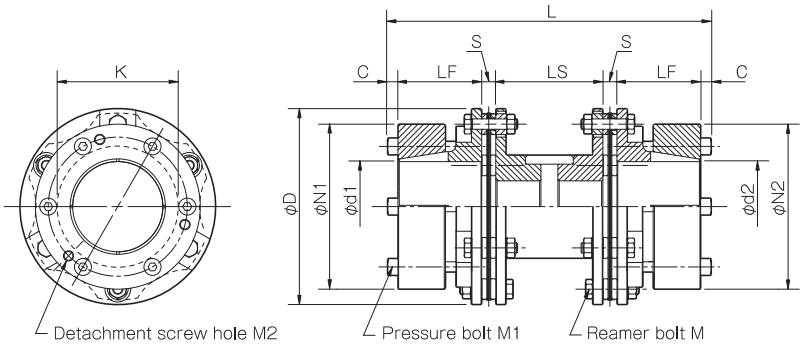
* When considering vertical use and the LS dimension is greater than that in the above table, consult Miki Pulley.

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

SFH-150G-38KK-42KK LS=500

- Size
- Type: G — Double element Floating shaft
- Bore dia. d1 (Small dia.)
- Bore dia. d2 (Large dia.)
- Affixing method — K: Frictional coupling
- Countershaft tolerance — Blank: h7 (h6 or g6) K: k6 M: m6 J:j6
- 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

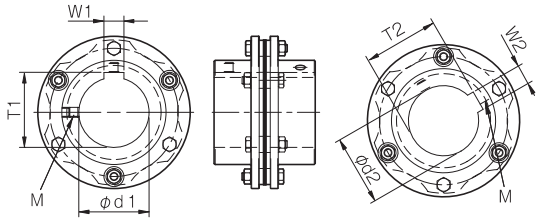
* When considering vertical use and the LS dimension is greater than that in the above table, consult Miki Pulley.

SFH Models

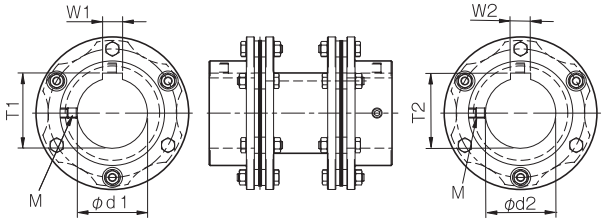
Standard Hole-Drilling Standards

- 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]

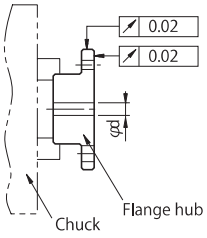
Models compliant with the old JIS standards (class 2)					Models compliant with the new JIS standards					Models compliant with the new motor standards				
Nominal bore diameter	Bore diameter [d1 · d2]	Keyway width [W1·W2]	Keyway height [T1·T2]	Set screw hole [M]	Nominal bore diameter	Bore diameter [d1 · 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°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.

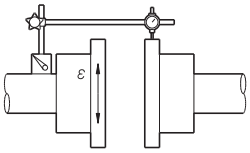
(2) Handle the element with care as it is made of a thin stainless steel metal disc, also making sure to be careful so as not to injure yourself.

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

Centering

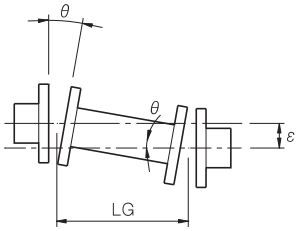
■ Parallel misalignment (ε)

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°

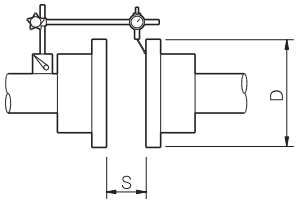


$$LG = LS + S$$

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 $\theta \leqq 1°$ in the following formula.



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

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

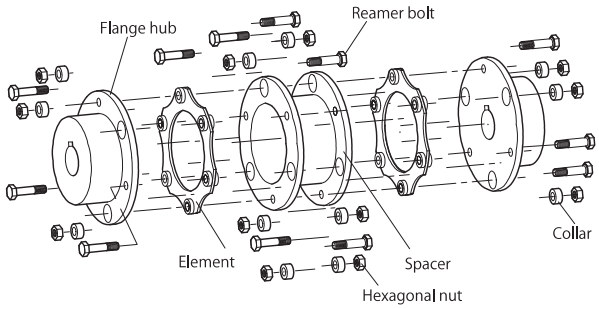
■ Axial displacement (S)

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 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.

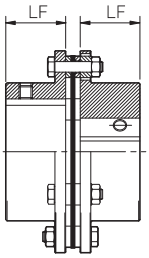


(1) Remove any rust, dust, oil or the like from the inner diameter surfaces of the shaft and flange hub. (Use a waste cloth, etc. to wipe away oil residue or an oil remover as needed.)

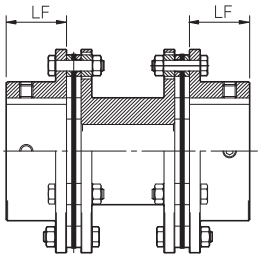
For types that use frictional coupling, loosen the flange's pressure bolt and check that the sleeve can move freely.

(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, and does not interfere with the elements, spacers or the other shaft.

■ 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.

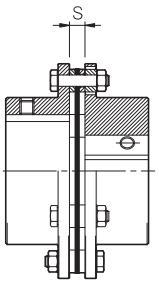
SFH Models

Items Checked for Design Purposes

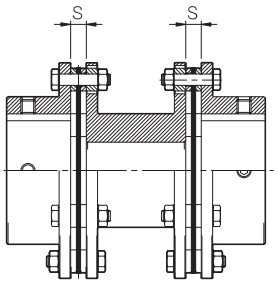
Mounting

(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

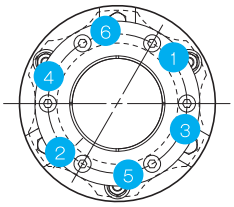
(7) Check that the element is not deformed. If it is, a force may be being applied axially or there may be insufficient lubrication between the collar, bolt, and disc spring, so adjust to bring it to normal. The situation may be improved by applying a small amount of machine oil to the bearing surface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

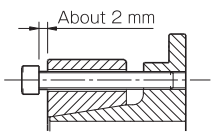


Type	Pressure bolt size	Tightening torque [N·m]
SFH-150S/G	M8	34
SFH-170S/G	M8	34
SFH-190S/G	M10	68
SFH-210S/G	M10	68

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.

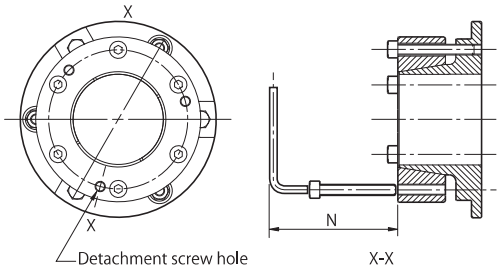
(2) Loosen all the pressure bolts placing pressure on the sleeve until the gap between bearing seat and sleeve is about 2 mm.



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.

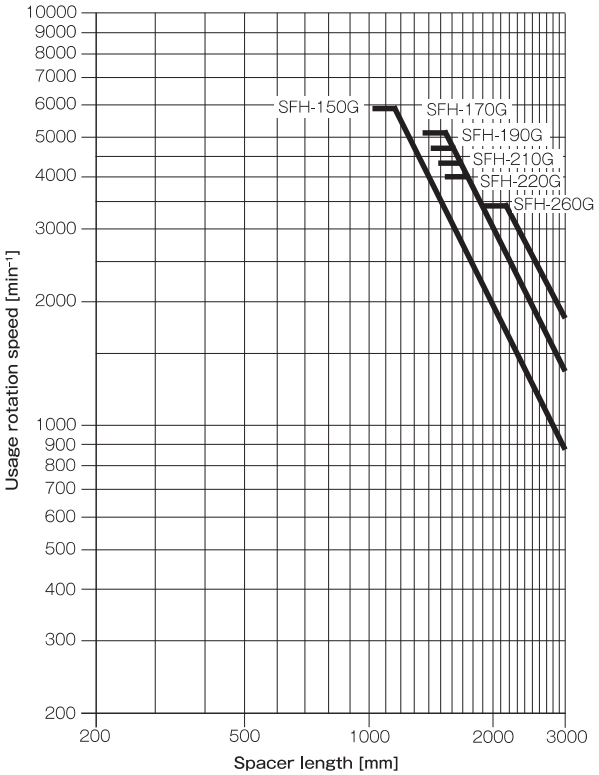
(3) Pull out three of the pressure bolts loosened in step (2), insert them into detachment screw holes at three locations on the sleeve, and tighten them alternately, a little at a time. The link between the flange and shaft will be released.



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

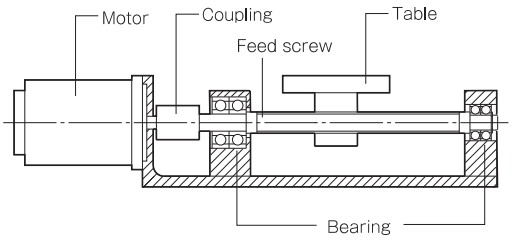
Gain adjustment on the servo motor may cause the servo motor to oscillate.
Oscillation in the servo motor during operation can cause problems particularly with the overall natural frequency and electrical control systems of the feed screw system.
In order for these issues to be resolved, the torsional 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

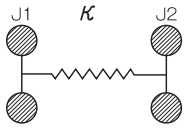
(1) Select a coupling based on the nominal and maximum torque of the servo motor.

(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 × 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.

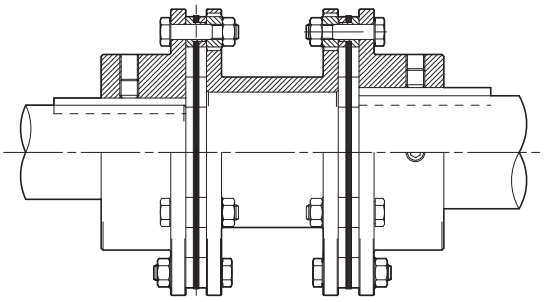
(5) Check that the mount shaft is no larger than the maximum bore diameter of the coupling.

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

Mounting Example

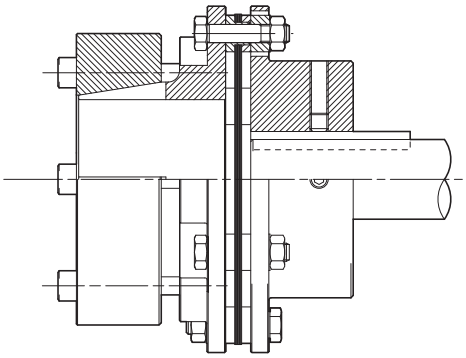
SFH G

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.



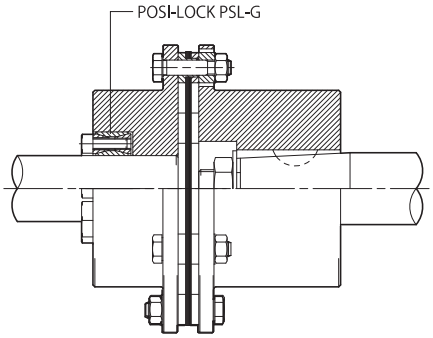
SFH S

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	CN30LTDK	CB 1.5mm	002
M2	0.4 ~ 0.5	CN60LTDK	SB 1.5mm	005,010
M2.5	1.0 ~ 1.1	CN120LTDK	SB 2mm	010,020,025
M3	1.5 ~ 1.9	CN200LTDK	SB 2.5mm	030
M4	3.4 ~ 4.1	CN500LTDK	SB 3mm	035,040
M5	7.0 ~ 8.5	N10LTDK	SB 4mm	050
Nominal bolt diameter	**Tightening torque [N·m]**	**Torque wrenches (Preset)**	**Hexagonal head**	**Coupling size**
M6	14 ~ 15	N25LCK	25HCK 5mm	055,060
M8	27 ~ 30	N50LCK	50HCK 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	CN500LTDK	SB 3mm	040
M5	7	N10LTDK	SB 4mm	050,060
Nominal bolt diameter	**Tightening torque [N·m]**	**Torque wrenches (Preset)**	**Hexagonal head**	**Coupling size**
M6	14	N25LCK	25HCK 5mm	060,070,080
M8	34	N50LCK	50HCK 6mm	080,090
Nominal bolt diameter	**Tightening torque [N·m]**	**Torque wrench (Single-function)**	**Hexagonal head**	**Coupling size**
M10	68	N100SPCK × 68N・m	100HCK 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	N12SPCK × 8N・m	230SCK 8mm	05
M6	14	N25SPCK × 14N・m	230SCK 10mm	06,08,09,10
M8	34	N50SPCK × 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	N12SPCK × 8N・m	25SCK 8mm	05
M6	14	N25SPCK × 14N・m	25SCK 10mm	06,08
M8	34	N50SPCK × 34N・m	50SCK 13mm	09,10
M10	68	N100SPCK × 68N・m	100SCK 17mm	12
M12	118	N200SPCK × 118N・m	200SCK 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	N6SPCK × 6N・m	25SCK 8mm	05
M6	11	N12SPCK × 11N・m	25SCK 10mm	06,08
M8	26	N50SPCK × 26N・m	50SCK 13mm	09,10
M10	51	N100SPCK × 51N・m	100SCK 17mm	12
M12	90	N100SPCK × 90N・m	100SCK 19mm	14

SFF-□SS/DS (Pressure Bolt)

Nominal bolt diameter	Tightening torque [N·m]	Torque wrench (Single-function)	Wrench attachment	Coupling size
M6	10	N12SPCK × 10N・m	25SCK 10mm	070,080,090,100,120
M8	24	N50SPCK × 24N・m	50SCK 13mm	140

SFM-□SS/DS (Pressure Bolt)

Nominal bolt diameter	Tightening torque [N·m]	Torque wrench (Single-function)	Hexagonal head	Coupling size
M6	14	N25SPCK × 14N・m	25HCK 5mm	090,100,120
M8	34	N50SPCK × 34N・m	50HCK 6mm	140

SFH-□S/G (Pressure Bolt)

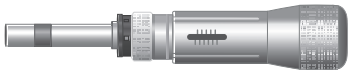
Nominal bolt diameter	Tightening torque [N·m]	Torque wrench (Single-function)	Hexagonal head	Coupling size
M8	34	N50SPCK × 34N・m	50HCK 6mm	150,170
M10	68	N100SPCK × 68N・m	100HCK 8mm	190,210

SFH-□S/G (Reamer Bolt)

Nominal bolt diameter	Tightening torque [N·m]	Torque wrench (Single-function)	Wrench attachment	Coupling size
M8	34	N50SPCK × 34N・m	50SCK 13mm	150
M10	68	N100SPCK × 68N・m	100SCK 17mm	170
M12	118	N200SPCK × 118N・m	200SCK 19mm	190
M16	300	N4400SPCK × 300N・m	440SCK 24mm	210,220
Nominal bolt diameter	**Tightening torque [N·m]**	**Torque wrenches (Preset)**	**Wrench attachment**	**Coupling size**
M20	570	N700LCK	700SCK 30mm	260

Torque Screwdriver (Preset)

■ N-LTDK



Bit

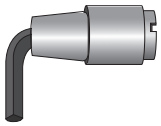
■ SB

Torque Wrenches (Preset)

■ N-LCK

Hexagonal Head

■ HCK



Torque Wrench (Single-function)

■ N-SPCK

Wrench Attachment

■ SCK