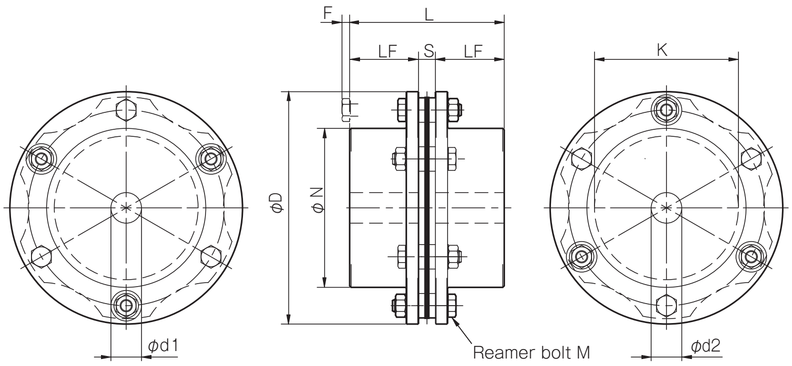
SFH(S) Types Single Element Type

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.86 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

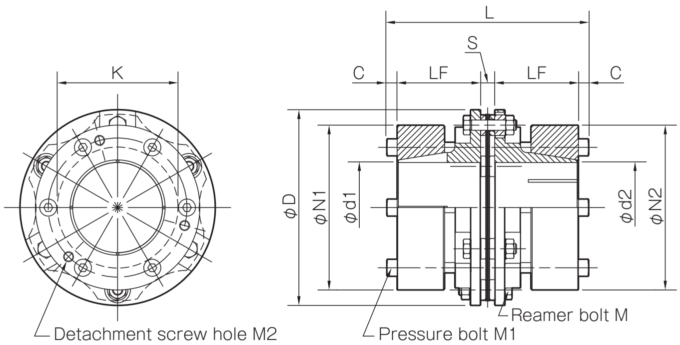
- Size
- Type: S
  Single element
- Bore diameter: d1 (Small diameter) - d2 (Large diameter)
  Blank: Pilot bore
- Bore specifications
  Blank : Compliant with the old JIS standards (class 2) E9
  H: Compliant with JIS standards H9
  N: Compliant with motor standards

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・48・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・48・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・48・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・48・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.)
- Affixing method — K: Frictional coupling
- Bore dia. d2 (Large dia.)
- Countershaft tolerance — Blank: h7 (h6 or g6) K: k6 M: m6 J:j6

COUPLINGS
ETP BUSHINGS
ELECTROMAGNETIC CLUTCHES & BRAKES
SPEED CHANGERS & REDUCERS
INVERTERS
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SERIES
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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
SFS
SFF
SFM
SFH

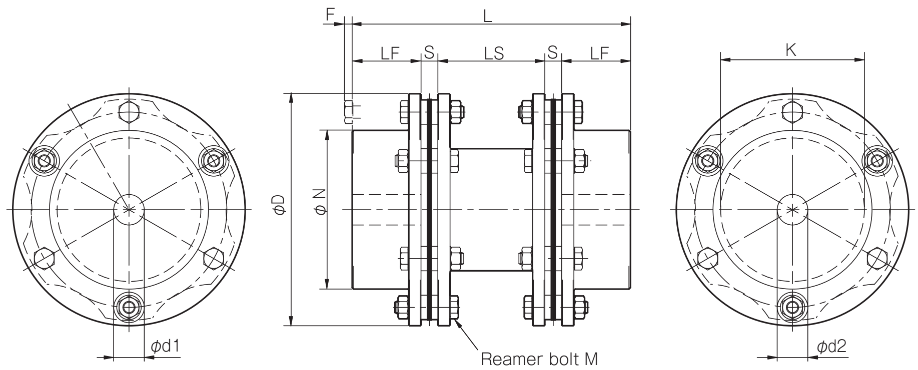
SFH(G) Types Double Element/Floating Shaft Type

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.86 for information on bore drilling.
* If you require a product with an LS dimension that exceeds those above, contact Miki Pulley with your required dimension [mm]. Please contact Miki Pulley for assistance if the LS dimension is less than those above or 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: 150
- 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) E9; H: Compliant with JIS standards H9; N: Compliant with motor standards
- Spacer length (LS=500): *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

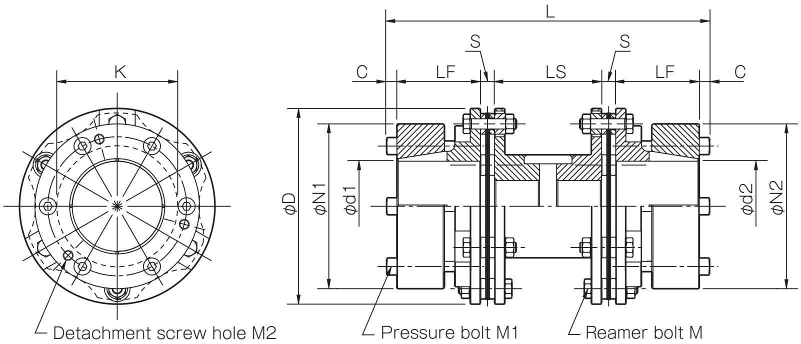
* When considering vertical use and the LS dimension is greater than that in the above table, consult Miki Pulley.

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・48・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・48・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・48・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・48・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 that exceeds those above, contact Miki Pulley with your required dimension [mm]. Please contact Miki Pulley for assistance if the LS dimension is less than those above or 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

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

Countershaft tolerance
Blank: h7 (h6 or g6) K: k6 M: m6 J:j6

Maximum LS Dimension When Used Vertically

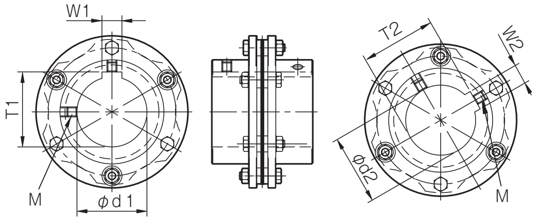
Model	LS [mm]
SFH-150G	1100
SFH-170G	800
SFH-190G	900
SFH-210G	2000

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

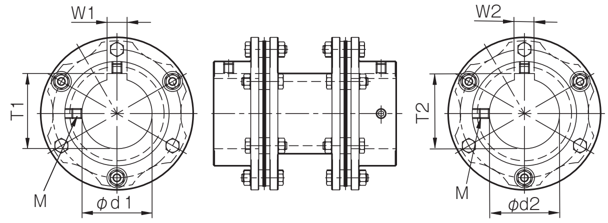
SFH Models

Standard Hole-Drilling Standards

■ SFH(S)



■ SFH(G)



Unit [mm]

Models compliant with the old JIS standard (class 2) JIS B 1301 1959					Models compliant with the new JIS standard (H9) JIS B 1301 1996					Models compliant with the motor standard JIS C 4210 2001				
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	Tolerance E9	–	–		Tolerance H7	Tolerance H9	–	–		Tolerance G7, F7	Tolerance 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	–	–	–	–	–

Set screw position

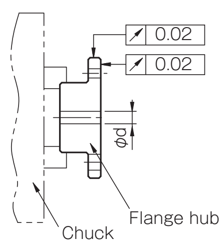
Model	Distance from edge [mm]
SFH-150	15
SFH-170	20
SFH-190	25
SFH-210	30
SFH-220	35
SFH-260	40

NOTE

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

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

Special Items to Take Note of

You should note the following to prevent any problems.

(1) Always be careful of parallel, angular, and axial misalignment.

(2) Always tighten bolts with the specified torque.

Precautions for Handling

SFH models are delivered in component form. This mounts a flange hub on each shaft and couples both shafts by mounting the element (spacer) last, while centering. Also, the SFH(S) types can first mount an element on the flange hub, then center, and then complete the coupling before inserting it onto the shaft.
When using the assembly method that completes coupling first, take extra precautions when handling couplings. Subjecting assembled couplings to strong shocks may affect mounting accuracy and cause the parts to break during use.

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

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

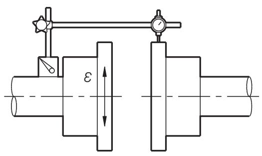
(3) For frictional coupling types, do not tighten up pressure bolts until after inserting the mounting shaft.

(4) Mounting shaft to frictional coupling types is assumed to be a round shaft.

Centering

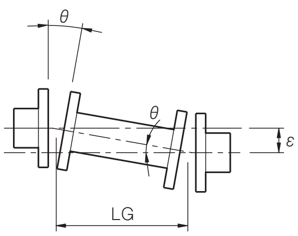
■ Parallel misalignment (ε)

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



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

ε : Allowable parallel misalignment
θ : 1°

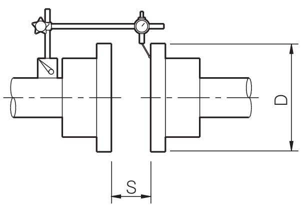


$$LG = LS + S$$

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

■ Angular deflection(θ)

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



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

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

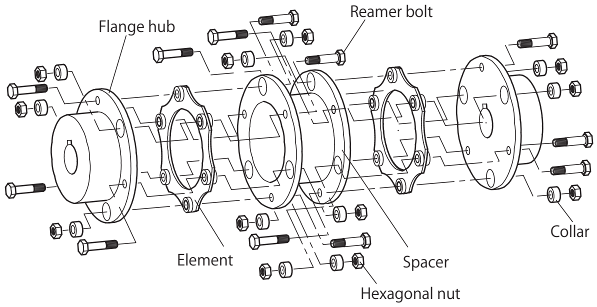
■ Axial displacement (S)

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

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

Mounting

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

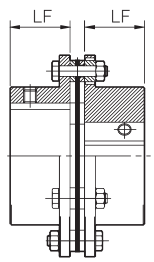


(1) Remove any rust, dust, oil or the like from the inner diameter surfaces of the shaft and flange hubs. In particular, never allow oil or grease containing antifriction or other agent (molybdenum-, silicon-, or fluorine-based), which would dramatically affect the friction coefficient, to contact the surface.

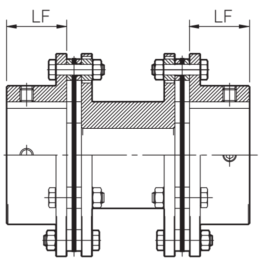
For types that use frictional coupling, loosen the flange hub's pressure bolt and check that the sleeve can move freely.

(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.

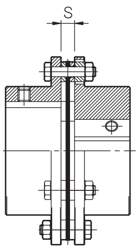
SFH Models

Items Checked for Design Purposes

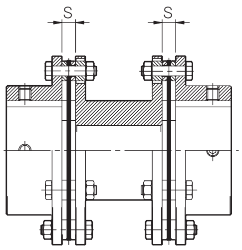
Mounting

(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

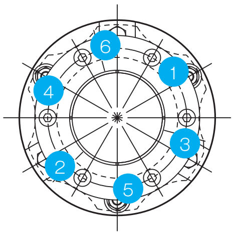
(7) Check that the element is not deformed. If it is, it may be under an axial force or there may be insufficient lubrication between the collar, bolt, and disc, so adjust to bring it to normal. The situation may be improved by applying a small amount of machine oil to the bearing surface of the reamer bolt. However, never use any oil or grease containing antifriction or other agent (molybdenum-, silicon-, or fluorine-based) which would dramatically affect the friction coefficient.

(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.



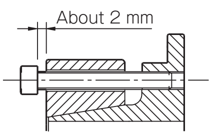
Type	Pressure bolt size	Tightening torque [N·m]
SFH-150	M8	34
SFH-170	M8	34
SFH-190	M10	68
SFH-210	M10	68

(10) To protect against initial loosening of the pressure bolts, 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.

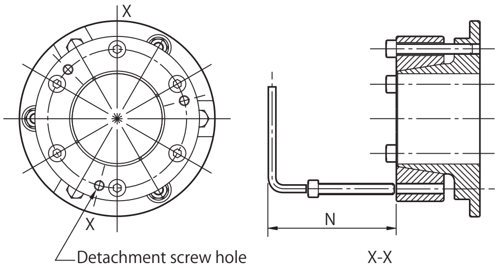
(2) Loosen all the pressure bolts placing pressure on the sleeve until the gap between bearing seat and sleeve is about 2 mm.



For a tapered coupling system that tightens pressure bolts from the axial direction, the sleeve will be self-locking, so the coupling between flange hub 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.

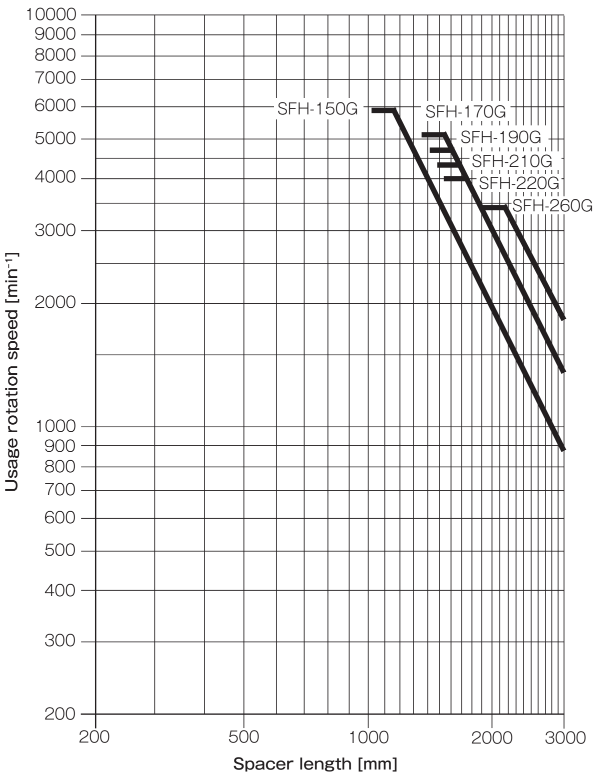
(3) Pull out three of the pressure bolts loosened in step (2), insert them into detachment screw holes at three locations on the sleeve, and tighten them alternately, a little at a time. The link between the flange hub and shaft will be released.



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

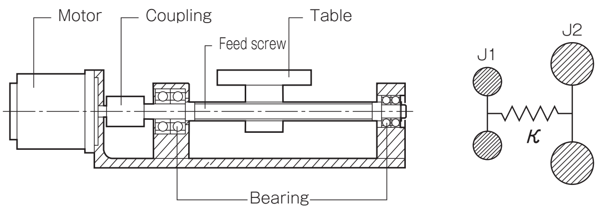
Gain adjustment in feed screw systems using a servo motor may cause the servo motor to oscillate. If oscillation occurs, adjustment will need to be made such as by using the filter function or other electrical control system to resolve this issue.

To handle issues such as oscillation, it will be necessary to take into account the torsional natural frequency for the system overall during the design stage, including the torsional stiffness for the coupling and feed screw section and the moment of inertia and other characteristics. Please contact Miki Pulley with any questions regarding servo motor oscillation.

How to Find the Natural Frequency of a Feed Screw System

Select a coupling based on the standard torque or maximum torque of the servo motor.

Next, 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.



Natural frequency of overall feed screw system Nf [Hz]

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

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]

Torsional spring constant of coupling and feed screw κ [N·m/rad]

$$\frac{1}{\kappa} = \frac{1}{\kappa c} + \frac{1}{\kappa b}$$

κ c: Torsional spring constant of coupling [N·m/rad]
κ b: Torsional spring constant of feed screw [N·m/rad]

Driving moment of inertia J1 [kg·m²]

$$J1 = Jm + \frac{Jc}{2}$$

Jm: Moment of inertia of servomotor [kg·m²]
Jc: Moment of inertia of coupling [kg·m²]

Driven moment of inertia J2 [kg·m²]

$$J2 = Jb + Jt + \frac{Jc}{2}$$

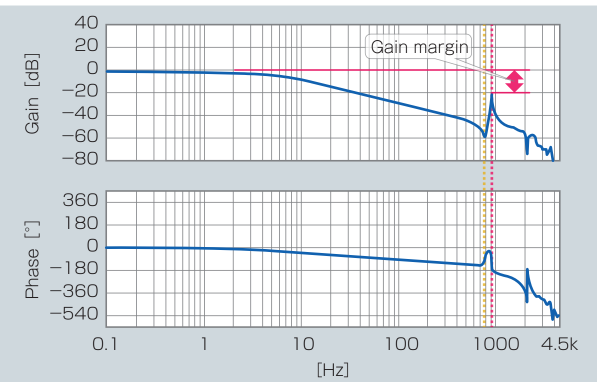
Jb: Moment of inertia of feedscrew [kg·m²]
Jt: Moment of inertia of table [kg·m²]
Jc: Moment of inertia of coupling [kg·m²]

Moment of inertia of table Jt [kg·m²]

$$Jt = \frac{M \times P^2}{4\pi^2}$$

M: Mass of table [kg]
P: Lead of feed screw [m]

Since it is easier for oscillation to occur when the gain margin with natural frequency is 10 dB or lower, it is necessary for the natural frequency to be set high with a therefore higher gain margin at the design stage, or to adjust the natural frequency using the servomotor's electric tuning function (filter function) so as to avoid oscillation.



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.

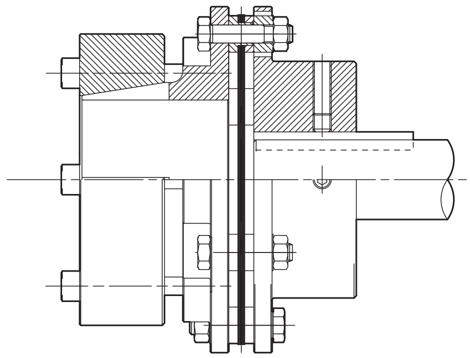
(5) Check that the mount shaft is no larger than the maximum bore diameter of the coupling.

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

Mounting Example

■ SFH(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.