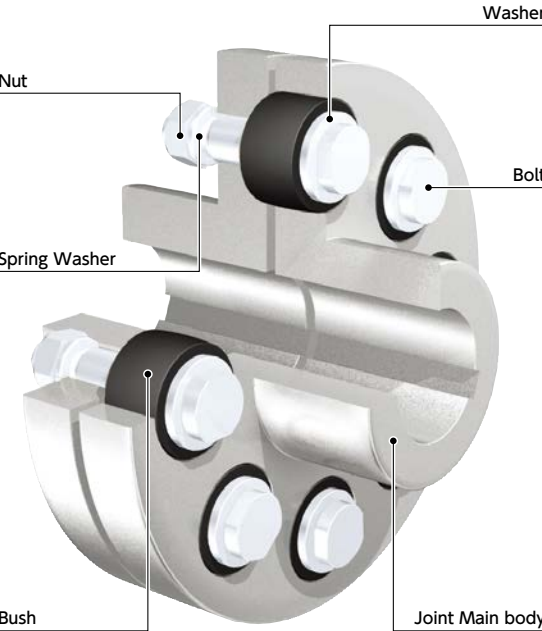


- The most popular flexible shaft coupling in Japan that is compliant with JIS B 1452 - 1991 "Flexible Flanged Shaft Couplings".
- Simple structure comprised of a flange and coupling bolts. Easy-to-mount.
- Bushings can be replaced just by removing coupling bolts. This makes maintenance and service easy.
- While it absorbs misalignment such as eccentricity and argument, it prevents noise by absorbing torsional vibration. It will not transmit thrust load, either.
- Two types are available: Cast Iron **FCL** and Carbon Steel **FCLS**.

Structure



Material/Finish

	FCL	FCLS
Joint Main Unit	FC200 or more	S25C or more
Nut	Equivalent to S5400 Trivalent Chromate Treatment	Equivalent to S5400 Trivalent Chromate Treatment
Spring Lock Washers	SWRH62 Trivalent Chromate Treatment	SWRH62 Trivalent Chromate Treatment
Bushing	NBR B (12) -j1a1 (HS (JIS A)=70)	NBR B (12) -j1a1 (HS (JIS A)=70)
Washer	Equivalent to S5400 Trivalent Chromate Treatment	Equivalent to S5400 Trivalent Chromate Treatment
Bolt	Equivalent to S5400 Trivalent Chromate Treatment	Equivalent to S5400 Trivalent Chromate Treatment



- Full bore alteration service capability. We modify for individual shaft requirement that will allow you for immediate use.
- Additional Setscrew at Shaft Hole / Keyway ➡ P.xxxx
- Available / Add'l charge

Product Standard

The product standard of the flexible flanged shaft couplings is compliant with JIS B 1452 - 1991 "Flexible Flanged Shaft Couplings".

- Allowable value of the run-out of the joint outer diameter to the shaft hole center, and that of the joint surface near the outer diameter—0.03mm
- Allowance of the bolt hole pitch circle diameter and the bushing insertion hole pitch circle diameter, allowance of the pitch, and the run-out tolerance to the shaft bore center

Pitch Circle Diameter	Pitch Circle Diameter and Pitch Allowance	Pitch Circle Diameter Run-out Tolerance
60 / 67 / 75	±0.16	0.12
85 / 100 / 115 / 132 / 145	±0.20	0.14
170 / 180 / 200 / 236	±0.26	0.18
260 / 300 / 355 / 450 / 530	±0.32	0.22
580 / 600 / 670	±0.40	0.28

Dimensional allowance of each part of the joint

	Unit : mm
Joint Outside Diameter A	— g7
Bolt Hole and Bolt a	H7 g7
Washer Inside Diameter*1 a	— +0.4 0
Bushing Inside Diameter, Washer Inside Diameter and Bolt Bushing Insertion Area Diameter a1	+0.4 0 e9
Bushing Insertion Hole M	H8 —
Bushing Outside Diameter p	— 0 -0.4
Bolt Bushing Insertion Area Length m	— k12

\*1 : For those with the standard dimensions of 8, it is +0.2  
0.

Each symbol is identical to that shown in the Dimension/Performance table.

Bush width q dimensional allowance		Washer thickness t dimensional allowance	
Standard Dimension	Allowance	Standard Dimension	Allowance
14 / 16 / 18	±0.3	3	+0.03 -0.43
22.4 / 28 / 40	+0.1 -0.5	4	±0.29
56 / 80	+0.2 -0.6	5	±0.4
		7	±0.5

For the allowable length tolerances of non-fitting part sections to be cut, refer to JIS B 0405 tolerance class m.

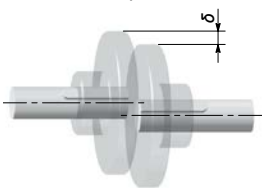
Performance of the Bushing

Characteristics item		NBR (Nitrile rubber)
Machine oil		Excellent
Gasoline		Excellent
Benzine		Impossible
Ketone		Impossible
Alcohol		Excellent
Acid resistance	Weak acid	Good
	Strong acid	OK
Impact resilience		Good
Abrasion resistance		Excellent
Aging Resistance		Excellent
Tensile strength		Excellent
Heat resistance (max. operating temperature, regular use)		90℃
Cold resistance (min. operating temperature, regular use)		-20℃

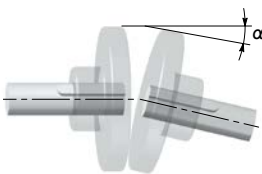
Alignment adjustment

- ① Although the flexible flanged shaft coupling permits misalignment and transmits torque, if the misalignment exceeds the allowable value, vibration may occur or the life may be rapidly shortened. Be sure to perform alignment adjustment.
- ② Shaft center misalignment includes eccentricity (parallel error of both shaft centers), argument (angle error of both shaft centers), and end-play (shaft direction movement of the shaft). Adjust the shaft alignment so that it will not exceed the allowable value listed in the Dimension/Performance table in this catalog.
- ③ The allowable values of the misalignment listed in the Dimension/Performance table are for the case where any one of eccentricity, argument, and end-play occurs independently. Mixing of two or more misalignment causes each of the allowable values to be reduced to half.
- ④ Misalignment may occur not only in assembling into the device but also due to vibration, thermal expansion, and shaft bearing abrasion during operation. Therefore, it is recommended to keep the misalignment one third of the allowable value or less.

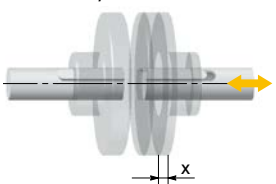
Eccentricity, Parallel Offset Misalignment

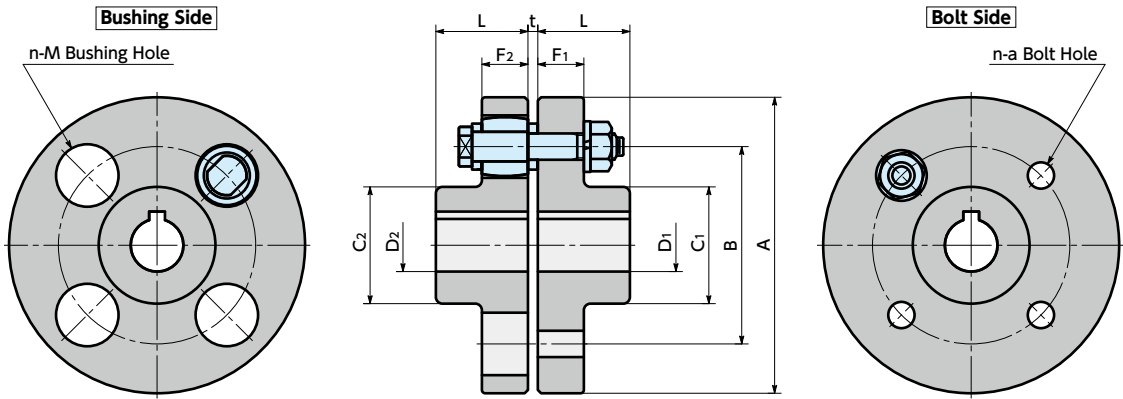


Argument, Angular Misalignment



End-Play





• The bolt hole positions are roughly arranged for the keyway.

Dimensions

Part Number	A	Prepared hole diameter	L	C		B	F		n (item)	a	M	t	Bolt Draft	Coupling bolt Part Number
				C <sub>1</sub>	C <sub>2</sub>		F <sub>1</sub>	F <sub>2</sub>						
FCL-90	90	—	28	35.5	35.5	60	14	14	4	8	19	3	50	F1
FCL-100	100	—	35.5	42.5	42.5	67	16	16	4	10	23	3	56	F2
FCL-112	112	—	40	50	50	75	16	16	4	10	23	3	56	F2
FCL-125	125	—	45	56	50	85	18	18	4	14	32	3	64	F3
FCL-140	140	—	50	71	63	100	18	18	6	14	32	3	64	F3
FCL-160	160	—	56	80	80	115	18	18	8	14	32	3	64	F3
FCL-180	180	—	63	90	90	132	18	18	8	14	32	3	64	F3
FCL-200	200	18	71	100	100	145	22.4	22.4	8	20	41	4	85	F4
FCL-224	224	18	80	112	112	170	22.4	22.4	8	20	41	4	85	F4
FCL-250	250	20	90	125	125	180	28	28	8	25	51	4	100	F5
FCL-280	280	30	100	140	140	200	28	40	8	28	57	4	116	F6
FCL-315	315	30	112	160	160	236	28	40	10	28	57	4	116	F6
FCL-355	355	30	125	180	180	260	35.5	56	8	35.5	72	5	150	F7
FCL-400	400	48	125	200	200	300	35.5	56	10	35.5	72	5	150	F7
FCL-450	450	58	140	224	224	355	35.5	56	12	35.5	72	5	150	F7
FCL-560	560	78	160	250	250	450	35.5	56	14	35.5	72	5	150	F7
FCL-630	630	90	180	280	280	530	35.5	56	18	35.5	72	5	150	F7
FCL-710B	710	110	224	315	315	600	56	56	24	35.5	72	5	174	F7L
FCL-711B	710	120	250	355	355	580	80	80	20	45	87	7	240	F8
FCL-800B	800	130	265	375	375	670	80	80	22	45	87	7	240	F8
FCLS-112	112	13	40	50	50	75	16	16	4	10	23	3	56	F2
FCLS-125	125	13	45	56	50	85	18	18	4	14	32	3	64	F3
FCLS-140	140	13	50	71	63	100	18	18	6	14	32	3	64	F3
FCLS-160	160	14	56	80	80	115	18	18	8	14	32	3	64	F3
FCLS-180	180	14	63	90	90	132	18	18	8	14	32	3	64	F3
FCLS-200	200	18	71	100	100	145	22.4	22.4	8	20	41	4	85	F4
FCLS-224	224	18	80	112	112	170	22.4	22.4	8	20	41	4	85	F4
FCLS-250	250	20	90	125	125	180	28	28	8	25	51	4	100	F5
FCLS-280	280	30	100	140	140	200	28	40	8	28	57	4	116	F6
FCLS-315	315	32	112	160	160	236	28	40	10	28	57	4	116	F6
FCLS-355	355	32	125	180	180	260	35.5	56	8	35.5	72	5	150	F7
FCLS-400	400	50	125	200	200	300	35.5	56	10	35.5	72	5	150	F7
FCLS-450	450	60	140	224	224	355	35.5	56	12	35.5	72	5	150	F7
FCLS-560	560	80	160	250	250	450	35.5	56	14	35.5	72	5	150	F7
FCLS-630	630	90	180	280	280	530	35.5	56	18	35.5	72	5	150	F7

Unit : mm

Performance

Part Number	Max. Bore Diameter (mm)		Maximum Torque (N・m)	Max. Rotational Frequency (min <sup>-1</sup> )	Moment of Inertia *1 (kg・m <sup>2</sup> )	Max. Lateral Misalignment (mm)	Max. Angular Alignment (°)	Max. End-Play (mm)	Mass *2 (kg)
	D <sub>1</sub>	D <sub>2</sub>							
FCL-90	20	20	15	4000	1.4×10 <sup>-3</sup>	0.1	1 / 6	±2.1	1.55
FCL-100	25	25	29	4000	2.4×10 <sup>-3</sup>	0.1	1 / 6	±2.1	2.32
FCL-112	28	28	33	4000	3.9×10 <sup>-3</sup>	0.1	1 / 6	±2.1	3.10
FCL-125	32	28	73	4000	6.6×10 <sup>-3</sup>	0.1	1 / 6	±2.1	4.18
FCL-140	38	35	130	4000	1.1×10 <sup>-2</sup>	0.2	1 / 6	±2.1	5.80
FCL-160	45	45	200	4000	1.9×10 <sup>-2</sup>	0.2	1 / 6	±2.1	8.22
FCL-180	50	50	230	3500	3.1×10 <sup>-2</sup>	0.2	1 / 6	±2.1	11.1
FCL-200	56	56	440	3200	6.2×10 <sup>-2</sup>	0.2	1 / 6	±2.8	16.6
FCL-224	63	63	510	2850	9.9×10 <sup>-2</sup>	0.2	1 / 6	±2.8	22.0
FCL-250	71	71	850	2550	1.9×10 <sup>-1</sup>	0.2	1 / 6	±2.8	32.2
FCL-280	80	80	1500	2300	3.3×10 <sup>-1</sup>	0.3	1 / 6	±2.8	45.0
FCL-315	90	90	2200	2050	5.4×10 <sup>-1</sup>	0.3	1 / 6	±2.8	61.4
FCL-355	100	100	3500	1800	1.1	0.3	1 / 6	±3.5	94.7
FCL-400	110	110	5000	1600	1.8	0.3	1 / 6	±3.5	118
FCL-450	125	125	7100	1400	3	0.3	1 / 6	±3.5	157
FCL-560	140	140	10000	1150	7	0.3	1 / 6	±3.5	238
FCL-630	160	160	16000	1000	11	0.3	1 / 6	±3.5	316
FCL-710B	180	180	25000	900	22	0.3	1 / 6	±3.5	492
FCL-711B	200	200	34000	900	29	0.3	1 / 6	±4.9	683
FCL-800B	210	210	45000	800	52	0.3	1 / 6	±4.9	855
FCLS-112	30	30	33	6000	4.0×10 <sup>-3</sup>	0.1	1 / 6	±2.1	3.13
FCLS-125	35	30	73	6000	6.8×10 <sup>-3</sup>	0.1	1 / 6	±2.1	4.23
FCLS-140	42	38	130	6000	1.1×10 <sup>-2</sup>	0.2	1 / 6	±2.1	5.90
FCLS-160	48	48	200	6000	2.0×10 <sup>-2</sup>	0.2	1 / 6	±2.1	8.38
FCLS-180	55	55	230	5250	3.2×10 <sup>-2</sup>	0.2	1 / 6	±2.1	11.4
FCLS-200	60	60	440	4800	6.3×10 <sup>-2</sup>	0.2	1 / 6	±2.8	17.1
FCLS-224	70	70	510	4300	1.0×10 <sup>-1</sup>	0.2	1 / 6	±2.8	22.8
FCLS-250	75	75	850	3800	1.9×10 <sup>-1</sup>	0.2	1 / 6	±2.8	33.3
FCLS-280	85	85	1500	3450	3.4×10 <sup>-1</sup>	0.3	1 / 6	±2.8	46.6
FCLS-315	100	100	2200	3050	5.6×10 <sup>-1</sup>	0.3	1 / 6	±2.8	63.3
FCLS-355	110	110	3500	2700	1.2	0.3	1 / 6	±3.5	97.8
FCLS-400	125	125	5000	2400	1.9	0.3	1 / 6	±3.5	122
FCLS-450	140	140	7100	2150	3	0.3	1 / 6	±3.5	162
FCLS-560	150	150	10000	1700	7.2	0.3	1 / 6	±3.5	246
FCLS-630	170	170	16000	1500	12	0.3	1 / 6	±3.5	328

\*1 : These are values with max. bore diameter.

\*2 : These are pilot hole values.

- Full bore alteration service capability.  
We modify for individual shaft requirement that will allow you for immediate use.

Additional Setscrew at Shaft Hole / Keyway ➡ P.xxxx

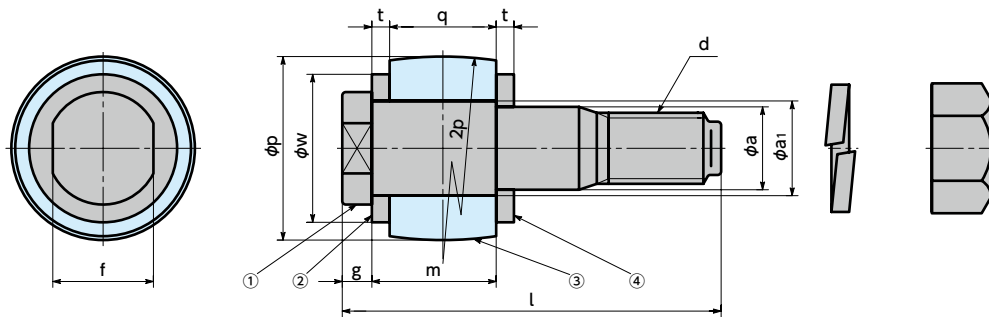
Available / Add'l charge



- Part number specification

FCL -200

Product Code Outside Diameter



## Bolt Set Dimensions

Unit : mm

Bolt set Part Number	Bush Part Number	Nominal a×l	1) Bolt							2), 4) Washer		3) Bush		Tightening torque (N·m)
			d	a <sub>1</sub>	a	f	g	m	l	w	t	p	q	
F1-SET	F1-G	8×50	M8	9	8	10	4	17	50	14	3	18	14	11
F2-SET	F2-G	10×56	M10	12	10	13	4	19	56	18	3	22	16	22
F3-SET	F3-G	14×64	M12	16	14	17	5	21	64	25	3	31	18	39
F4-SET	F4-G	20×85	M20	22.4	20	24	5	26.4	85	32	4	40	22.4	190
F5-SET	F5-G	25×100	M24	28	25	30	6	32	100	40	4	50	28	330
F6-SET	F6-G	28×116	M24	31.5	28	32	6	44	116	45	4	56	40	330
F7-SET	F7-G	35.5×150	M30	40	35.5	41	8	61	150	56	5	71	56	650
F7L-SET	F7-G	35.5×174	M30	40	35.5	41	8	61	174	56	5	71	56	650
F8-SET	F8-G	45×240	M42	50	45	50	10	87	240	71	7	85	80	1800

## Reference Material

- Surface pressure of the bushing and the bending stress of the bolt

Joint Outside Diameter A (mm)	Rated Torque (N·m)	Pitch Circle Diameter B (mm)	Number of Bolts n (pc)	Load per Piece*1 (N)	Area in Bushing $q \times a_1$ (mm <sup>2</sup> )	Inner Periphery Pressure P <sub>1</sub> (MPa)	Bushing Width q (mm)	Clearance t (mm)	Arm t+q/2 (mm)	Bending Moment (N·m)	Bolt Diameter a (mm)	Section Modulus $\pi a^3 / 32$ (mm <sup>3</sup> )	Bending Stress $\sigma$ (MPa)
90	4.9	60	4	82	14×9	0.65	14	3	10	0.82	8	50.3	16.2
100	9.8	67	4	146	16×12	0.76	16	3	11	1.61	10	98.2	16.4
112	15.7	75	4	209	16×12	1.09	16	3	11	2.30	10	98.2	23.4
125	24.5	85	4	288	18×16	1.00	18	3	12	3.46	14	269.4	12.8
140	49	100	6	327	18×16	1.13	18	3	12	3.92	14	269.4	14.6
160	110	115	8	478	18×16	1.66	18	3	12	5.74	14	269.4	21.3
180	157	132	8	595	18×16	2.06	18	3	12	7.14	14	269.4	26.5
200	245	145	8	845	22.4×22.4	1.68	22.4	4	15.2	12.8	20	785.4	16.4
224	392	170	8	1150	22.4×22.4	2.30	22.4	4	15.2	17.5	20	785.4	22.3
250	618	180	8	1720	28×28	2.19	28	4	18	30.9	25	1535	20.1
280	980	200	8	2450	40×32	1.94	40	4	24	58.8	28	2155	27.3
315	1570	236	10	2660	40×32	2.11	40	4	24	63.9	28	2155	29.6
355	2450	260	8	4710	56×40	2.10	56	5	33	155	35.5	4390	35.4
400	3920	300	10	5230	56×40	2.33	56	5	33	172	35.5	4390	39.3
450	6180	355	12	5800	56×40	2.59	56	5	33	191	35.5	4390	43.6
560	9800	450	14	6220	56×40	2.78	56	5	33	205	35.5	4390	46.8
630	15700	530	18	6580	56×40	2.94	56	5	33	217	35.5	4390	49.5
710B	24500	600	24	6810	56×40	3.04	56	5	33	225	35.5	4390	51.3
711B	33300	580	20	11500	80×50	2.88	80	7	47	541	45	8950	60.4
800B	45000	670	22	12200	80×50	3.05	80	7	47	573	45	8950	64.0

\*1: The effective number of bolts is calculated as half of the actual number of bolts "n".