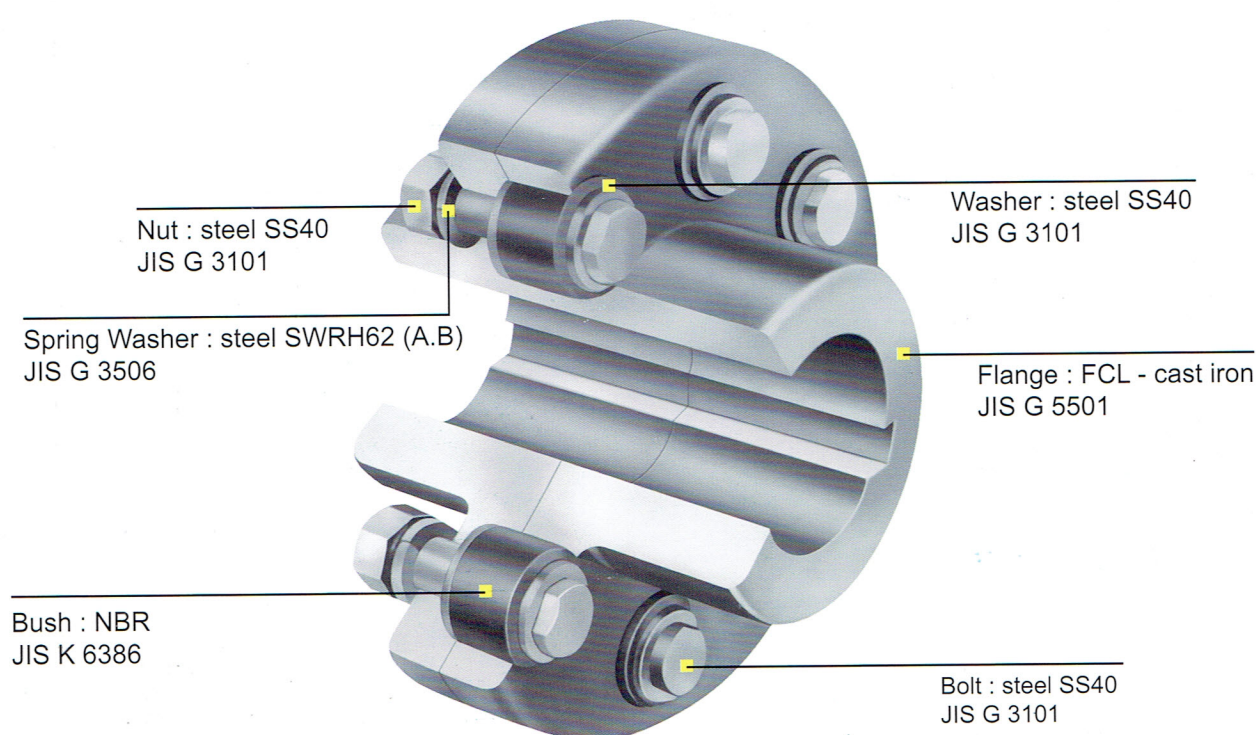


NBK® Flexible Shaft Coupling

NBK Flexible Shaft Coupling (flanged type) as per JIS B 1452, are safe couplings most suited to transmit power efficiently and safely from the driver shaft to the driven shaft. Simple in construction, these couplings are easy-mount, easy-to-remove, and maintenance-free.

JIS = Japanese Industrial Standard (almost same with I.S.O & DIN)

Construction and Material



Dimensional Tolerance

Coupling outer diameter	-	g7
Bolt bore and bolt	H7	g7
Bush inserting bore	H8	-
Diameter of bolt through bush	-	e9
Inner diameter of washer and bush	+0.4 0	-
Bush outer diameter	-	0 -0.4

Size Selection

In determining size, firstly T (torque) is to be obtained by using the following equation.

$$T = \frac{N(\text{HP})}{n} \times 716 \times S \text{ or } \frac{N(\text{KW})}{n} \times 973 \times S \text{ where}$$

T = Torque (kgf. m) in normal operating condition

N = Output (HP or KW) of the driving machine

n = minimum revolution per minute at which couplings are used

S = Service factor (overload factor)

T thus obtained is then applied to torque on the next page to select catalog no. coupling and check the shaft bore diameter shall not be over D (max diameter of shaft bore).

Service Factors

Driven Equipment		Driver					
Load Classification	Machines Used	Electric Motor or Steam Turbine		Steam Engine or Gasoline Engine with Four or More Cylinders		Diesel or Gas Engines	
		Operating time per day		Operating time per day		Operating time per day	
		8 - 10 hours	16 - 24 hours	8 - 10 hours	16 - 24 hours	8 - 10 hours	16 - 24 hours
Even Load Non - reversing Low Torque starting	Liquid agitator Centrifugal blower exhaust blower (up to and including 10 HP) Centrifugal Pump Generator Light load conveyor Reduction gear for worm gears	1	1.5	1.5	2.0	2.0	2.5
Uneven Load moderate shock or torsional loads Non reversing Most common type of service	Conveyor Hoist Elevator Line shaft Ball mill Kiln	1.5	2	2	2.5	2.5	3.0
Heavy shock load High peak torsional load Reversing under load Full load starting	Reciprocating compressor Presses Hammer mill Crusher Reciprocating pump Marine Propeller	2	2.5	2.5	3.0	3.0	3.5

Standard Specifications

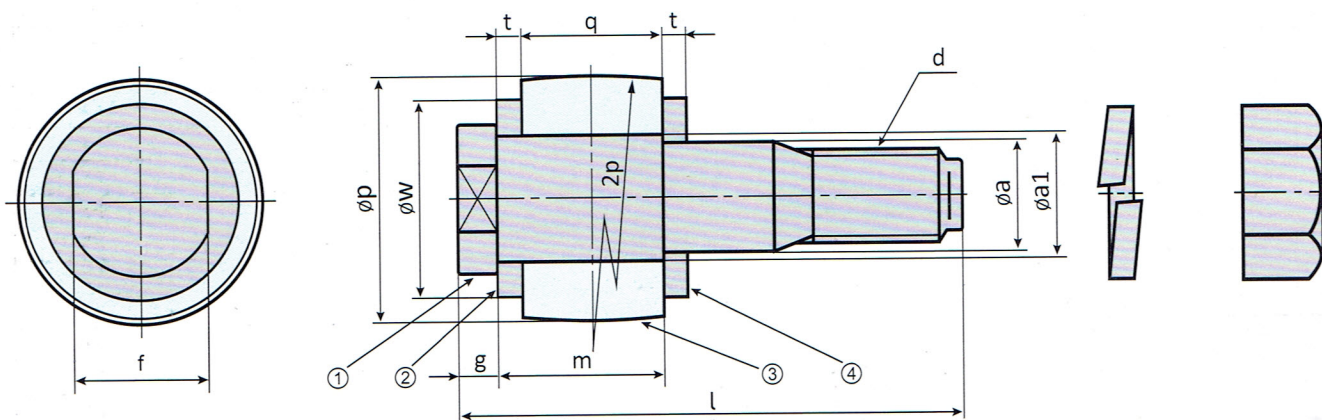
Catalog Number	Max. Bore (mm)		Max. Torque (Kgf·m)	Max. Revolution (min ⁻¹)	Moment of Inertia (kg·m ²)	Errors of Eccentricity (mm)	Errors of Angularity	Errors of Shaft End-Play (mm)	Mass (Kg)
	D1	D2							
FCL 90	20		1.5	4000	1.3×10^{-3}	0.1	1/6	± 2.1	1.37
FCL 100	25		2.9	4000	2.4×10^{-3}	0.1	1/6	± 2.1	2.00
FCL 112	28		3.3	4000	3.8×10^{-3}	0.1	1/6	± 2.1	2.64
FCL 125	32	28	7.3	4000	6.5×10^{-3}	0.1	1/6	± 2.1	3.59
FCL 140	38	35	13	4000	1.1×10^{-2}	0.2	1/6	± 2.1	4.88
FCL 160	45		20	4000	1.9×10^{-2}	0.2	1/6	± 2.1	6.70
FCL 180	50		23	3500	3.0×10^{-2}	0.2	1/6	± 2.1	8.98
FCL 200	56		44	3200	6.0×10^{-2}	0.2	1/6	± 2.8	13.9
FCL 224	63		51	2850	9.6×10^{-2}	0.2	1/6	± 2.8	18.1
FCL 250	71		85	2550	1.8×10^{-1}	0.2	1/6	± 2.8	26.6
FCL 280	80		150	2300	3.2×10^{-1}	0.3	1/6	± 2.8	37.4
FCL 315	90		220	2050	5.3×10^{-1}	0.3	1/6	± 2.8	50.3
FCL 355	100		350	1800	1.1	0.3	1/6	± 3.5	79.2
FCL 400	110		500	1600	1.8	0.3	1/6	± 3.5	100
FCL 450	125		710	1400	2.9	0.3	1/6	± 3.5	132
FCL 560	140		1000	1150	6.8	0.3	1/6	± 3.5	207
FCL 630	160		1600	1000	11	0.3	1/6	± 3.5	271
FCL 710B	180		2500	900	22	0.3	1/6	± 3.5	425
FCL 711B	200		3400	900	32	0.3	1/6	± 4.9	588

NBK® Flexible Shaft Coupling

Selection Table

50Hz	2 P. 2850 min-1					4 P. 1425 min-1					6 P. 950 min-1					8 P. 725 min-1				
Motor (kW)	Shaft (mm)	Torque (Kg f m)	Size			Shaft (mm)	Torque (Kg f m)	Size			Shaft (mm)	Torque (Kg f m)	Size			Shaft (mm)	Torque (Kg f m)	Size		
			1.0	1.5	2.0			1.0	1.5	2.0			1.0	1.5	2.0			1.0	1.5	2.0
0.2	(11)	0.0683	90	90	90	(11)	0.137	90	90	90										
0.4	(14)	0.137	90	90	90	(14)	0.273	90	90	90	(19)	0.41	90	90	90					
0.75	19	0.256	90	90	90	19	0.512	90	90	90	24	0.769	100	100	100					
1.5	24	0.512	100	100	100	24	1.02	100	100	100	28	1.54	112	112	112					
2.2	24	0.751	100	100	100	24	1.5	112	112	112	28	2.25	112	125	125					
3.7	28	1.26	112	112	112	28	2.53	112	125	125	38	3.79	140	140	140					
5.5	38	1.88	140	140	140	38	3.76	140	140	140	38	5.64	140	140	140					
7.5	38	2.56	140	140	140	38	5.12	140	140	140	42	7.69	160	160	160					
11	42	3.76	160	160	160	42	7.51	160	160	160	42	11.3	160	160	160					
15	42	5.12	160	160	160	42	10.2	160	160	180	(48) • 55	15.4	(180) • 200	200	200					
18.5	42	6.32	160	160	160	48	12.6	180	180	200	55	19.0	200	200	200					
22	48	7.51	180	180	180	(48) • 55	15.0	(180) • 200	(180) • 200	200	(55) • 60	22.5	(200) • 224	(200) • 224	224					
30	55	10.2	200	200	200	55	20.5	200	200	200	60	30.7	224	224	250	65	40.3	250	250	250
37	55	12.6	200	200	200	60	25.3	224	224	224	(60) • 65	37.9	(224) • 250	250	250	75	49.7	280	280	280
45	55	15.4	200	200	200	60	30.7	224	224	250	65	46.1	250	250	280	75	60.4	280	280	280
55	55	18.8	200	200	200	65	37.6	250	250	250	75	56.4	280	280	280	85	73.9	315	315	315
75	55	25.6	200	200		75	51.2	280	280	280	75	76.9	280	280	315	85	101	315	315	315
90	55	30.7	200	224		75	61.5	280	280	280	85	92.2	315	315	315	95	121	355	355	355
110	55	37.6	200			85	75.1	315	315	315	85	113	315	315	355	95	148	355	355	355
132	55	45.1	224			85	90.2	315	315	315	95	135	355	355	355					
160	55	54.7				95	109.0	355	355	355	95	164	355	355	355					
200	55	68.3				95	137.0	355	355	355										

Dimension



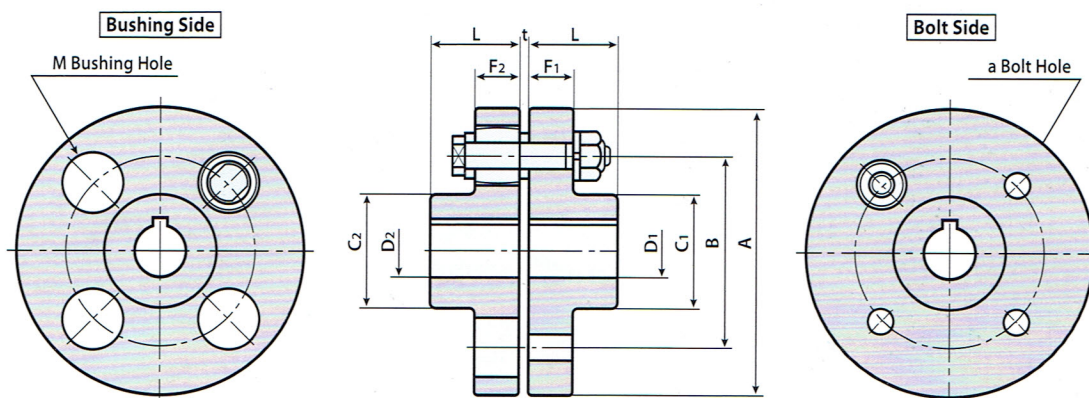
Catalog Number	Nominal Size a x l	① Bolt							② ④ Washer		③ Bush		Wrench Torque (kgf.m)
		d	a1	a	f	g	m	l	w	t	p	q	
F1	8 x 50	M 8	9	8	10	4	17	50	14	3	18	14	1.1
F2	10 x 56	M 10	12	10	13	4	19	56	18	3	22	16	2.2
F3	14 x 64	M 12	16	14	17	5	21	64	25	3	31	18	3.9
F4	20 x 85	M 20	22.4	20	24	5	26.4	85	32	4	40	22.4	19
F5	25 x 100	M 24	28	25	30	6	32	100	40	4	50	28	33
F6	28 x 116	M 24	31.5	28	32	6	44	116	45	4	56	40	33
F7	35.5 x 150	M 30	40	35.5	41	8	61	150	56	5	71	56	65
F7L	35.5 x 174	M 30	40	35.5	41	8	61	174	56	5	71	56	65
F8	45 x 240	M 42	50	45	50	10	87	240	71	7	85	80	180

Dimension

FCL — **224**

Coupling Type
Material (FC 200)

Coupling
Size



unit : mm

Catalog Number	A	Pilot Bore	L	C		B	F		Number of Bolts n	a	M	Withdrawal Distance of Bolts	Bolt Catalog Number
				C1	C2		F1	F2					
FCL 90	90		28	35.5		60	14		4	8	19	50	F1
FCL 100	100		35.5	42.5		67	16		4	10	23	56	F2
FCL 112	112		40	50		75	16		4	10	23	56	F2
FCL 125	125		45	56	50	85	18		4	14	32	64	F3
FCL 140	140		50	71	63	100	18		6	14	32	64	F3
FCL 160	160		56	80		115	18		8	14	32	64	F3
FCL 180	180		63	90		132	18		8	14	32	64	F3
FCL 200	200	18	71	100		145	22.4		8	20	41	85	F4
FCL 224	224	18	80	112		170	22.4		8	20	41	85	F4
FCL 250	250	20	90	125		180	28		8	25	51	100	F5
FCL 280	280	30	100	140		200	28	40	8	28	57	116	F6
FCL 315	315	32	112	160		236	28	40	10	28	57	116	F6
FCL 355	355	32	125	180		260	35.5	56	8	35.5	72	150	F7
FCL 400	400	50	125	200		300	35.5	56	10	35.5	72	150	F7
FCL 450	450	60	140	224		355	35.5	56	12	35.5	72	150	F7
FCL 560	560	80	160	250		450	35.5	56	14	35.5	72	150	F7
FCL 630	630	90	180	280		530	35.5	56	14	35.5	72	150	F7
FCL 710B	710	110	224	315		600	56		24	35.5	72	174	F7L
FCL 711B	710	120	250	355		580	80		20	45	87	240	F8

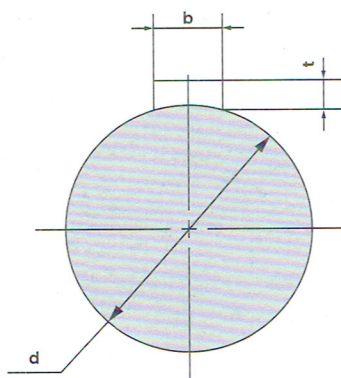
NBK® Standard V-Pulley and FCL Flexible Coupling

Useful Table :

Keyway and Key dimension table.

Bore & Keyway

We can finish a bore and a keyway upon request. A keyway is finished speedy, precisely and economically by Broaching Machine. Please specify size of bore, dimension of keyway and tolerances.



Basic Dimension of bore d	Keyway				Key
	b		t		Nominal Dimension of Key b x h
	Basic Dimension	Tolerance (Js9)	Basic Dimension	Tolerance	
10	3	± 0.0125	1.4	+0.1 0	3 x 3
11 12	4	± 0.0150	1.8	+0.1 0	4 x 4
14 15 16 17	5	± 0.0150	2.3	+0.1 0	5 x 5
18 19 20 21 22	6	± 0.0150	2.8	+0.1 0	6 x 6
24 25 28 30	8	± 0.0180	3.3	+0.2 0	8 x 7
32 35 38	10	± 0.0180	3.3	+0.2 0	10 x 8
40 42	12	± 0.0215	3.3	+0.2 0	12 x 8
45 48 50	14	± 0.0215	3.8	+0.2 0	14 x 9
55	16	± 0.0215	4.3	+0.2 0	16 x 10
60 65	18	± 0.0215	4.4	+0.2 0	18 x 11
70 75	20	± 0.0260	4.9	+0.2 0	20 x 12
80 85	22	± 0.0260	5.4	+0.2 0	22 x 14
90 95	25	± 0.0260	5.4	+0.2	25 x 14
100 105 108 110	28	± 0.0260	6.4	+0.2 0	28 x 16
112 115 120 125 130	32	± 0.0310	7.4	+0.2 0	32 x 18