

The Fenaflex coupling is a highly flexible, torsionally elastic coupling offering versatility to designers and engineers with a choice of flange combinations to suit most applications.

Tyre coupling flanges are available in either F or H Taper Lock™ fitting or pilot bored, which can be finish bored to the required size.

With the addition of a spacer assembly the coupling can be used to accommodate standard distances between shaft ends, (DBSE) facilitating centrifugal pump maintenance.

Fenaflex couplings can accommodate simultaneous maximum misalignment in all planes without imposing undue loads on adjacent bearings and the excellent shock-absorbing properties of the flexible tyre reduce vibration and torsional oscillations.

Fenaflex tyres are available in natural rubber compounds for use in ambient temperatures between -50°C and $+50^{\circ}\text{C}$. Chloroprene rubber compounds are available for use in adverse operating conditions (e.g. oil or grease contamination) and can be used in temperatures of -15°C to $+70^{\circ}\text{C}$. The chloroprene compound should also be used when fire-resistance and anti-static (FRAS) properties are required, and it is this tyre material that is used with specific flange modifications in the ATEX  approved variant.

SELECTION

(a) Service Factor

Determine the required Service Factor from table below.

(b) Design Power

Multiply the normal running power by the service factor. This gives the design power which is used as a basis for selecting the coupling.

(c) Coupling Size

Refer to Power Ratings table (page 111) and from the appropriate speed read across until a power greater than that required in step (b) is found.

The size of Fenaflex coupling required is given at the head of that column.

(d) Bore Size

Check from Dimensions table (page 112) that chosen flanges can accommodate required bores.

EXAMPLE

A Fenaflex coupling is required to transmit 45kW from an A.C. electric motor which runs at 1440 rev/min to a rotary screen for 12 hours per day. The motor shaft is 60mm diameter and the screen shaft is 55mm diameter. Taper Lock is required.

(a) Service Factor

The appropriate service factor is 1.4.

(b) Design Power

Design power = $45 \times 1.4 = 63\text{kW}$.

(c) Coupling Size

By reading across from 1440 rev/min in the power ratings table the first power figure to exceed the required 63kW in step (b) is 75,4kW. The size of coupling is F90 Fenaflex.

(d) Bore Size

By referring to the dimensions table it can be seen that both shaft diameters fall within the bore range available.

SERVICE FACTORS

Type of Driven Machine	Type of Driving Unit					
	Electric Motors Steam Turbines			Internal Combustion Engines† Steam Engines Water Turbines		
	Hours per day duty			Hours per day duty		
	10 and under	over 10 to 16 incl.	over 16	10 and under	over 10 to 16 incl.	over 16
SPECIAL CASES For applications where substantial shock, vibration and torque fluctuations occur, and for reciprocating machines (e.g. internal combustion engines, piston pumps and compressors) refer to your local Authorised Distributor with full machine details for analysis.						
CLASS 1 Agitators, Brewing machinery, Centrifugal compressors and pumps. Belt conveyors, Dynamometers, Lineshafts, Fans up to 7.5kW. Blowers and exhausters (except positive displacement), Generators.	0.8	0.9	1.0	1.3	1.4	1.5
CLASS 2* Clay working machinery, General machine tools, paper mill beaters and winders, Rotary pumps, Rubber extruders, Rotary screens, Textile machinery, Marine propellers and Fans over 7.5kw.	1.3	1.4	1.5	1.8	1.9	2.0
CLASS 3* Bucket elevators, Cooling tower fans, Piston compressors and pumps, Foundry machinery, Metal presses, Paper mill calenders, Hammer mills, Presses and pulp grinders, Rubber calenders, Pulverisers and Positive displacement blowers.	1.8	1.9	2.0	2.3	2.4	2.5
CLASS 4* Reciprocating conveyors, Gyratory crushers, Mills (ball, pebble and rod), Rubber machinery (Banbury mixers and mills) and Vibratory screens.	2.3	2.4	2.5	2.8	2.9	3.0

* It is recommended that keys (with top clearance if in Taper Lock bushes) are fitted on applications where load fluctuation is expected.

† Couplings for use with internal combustion engines may require special consideration, refer to pages 114.



POWER RATINGS (KW)

Speed rev/min	Coupling Size														
	F40	F50	F60	F70	F80	F90	F100	F110	F120	F140	F160	F180	F200	F220	F250
100	0.25	0.69	1.33	2.62	3.93	5.24	7.07	9.16	13.9	24.3	39.5	65.7	97.6	121.0	154.0
200	0.50	1.38	2.66	5.24	7.85	10.50	14.10	18.30	27.9	48.7	79.0	131.0	195.0	243.0	307.0
300	0.75	2.07	3.99	7.85	11.80	15.70	21.20	27.50	41.8	73.0	118.0	197.0	293.0	364.0	461.0
400	1.01	2.76	5.32	10.50	15.70	20.90	28.30	36.60	55.7	97.4	158.0	263.0	391.0	486.0	615.0
500	1.26	3.46	6.65	13.10	19.60	26.20	35.30	45.80	69.6	122.0	197.0	328.0	488.0	607.0	768.0
600	1.51	4.15	7.98	15.70	23.60	31.40	42.40	55.00	83.6	146.0	237.0	394.0	586.0	729.0	922.0
700	1.76	4.84	9.31	18.30	27.50	36.60	49.50	64.10	97.5	170.0	276.0	460.0	684.0	850.0	1076.0
720	1.81	4.98	9.57	18.80	28.30	37.70	50.90	66.00	100.0	175.0	284.0	473.0	703.0	875.0	1106.0
800	2.01	5.53	10.60	20.90	31.40	41.90	56.50	73.30	111.0	195.0	316.0	525.0	781.0	972.0	1229.0
900	2.26	6.22	12.00	23.60	35.30	47.10	63.60	82.50	125.0	219.0	355.0	591.0	879.0	1093.0	1383.0
960	2.41	6.63	12.80	25.10	37.70	50.30	67.90	88.00	134.0	234.0	379.0	630.0	937.0	1166.0	1475.0
1000	2.51	6.91	13.30	26.20	39.30	52.40	70.70	91.60	139.0	243.0	395.0	657.0	976.0	1215.0	1537.0
1200	3.02	8.29	16.00	31.40	47.10	62.80	84.80	110.00	167.0	292.0	474.0	788.0	1172.0		
1400	3.52	9.68	18.60	36.60	55.00	73.30	99.00	128.00	195.0	341.0	553.0	919.0			
1440	3.62	9.95	19.10	37.70	56.50	75.40	102.00	132.00	201.0	351.0	568.0	945.0			
1600	4.02	11.10	21.30	41.90	62.80	83.80	113.00	147.00	223.0	390.0	632.0				
1800	4.52	12.40	23.90	47.10	70.70	94.20	127.00	165.00	251.0	438.0					
2000	5.03	13.80	26.60	52.40	78.50	105.50	141.00	183.00	279.0						
2200	5.53	15.20	29.30	57.60	86.40	115.00	155.00	202.00							
2400	6.03	16.60	31.90	62.80	94.20	126.00	170.00								
2600	6.53	18.00	34.60	68.10	102.00	136.00	184.00								
2800	7.04	19.40	37.20	73.30	110.00	147.00									
2880	7.24	19.90	38.30	75.40	113.00	151.00									
3000	7.54	20.70	39.90	78.50	118.00	157.00									
3600	9.05	24.90	47.90	94.20											

The figures in heavier type are for standard motor speeds. All these power ratings are calculated at constant torque. For speeds below 100 rev/min and intermediate speeds use nominal torque ratings.

PHYSICAL CHARACTERISTICS – FLEXIBLE TYRES

Characteristics	Coupling Size														
	F40	F50	F60	F70	F80	F90	F100	F110	F120	F140	F160	F180	F200	F220	F250
Maximum speed rev/min	4,500	4,500	4,000	3,600	3,100	3,000	2,600	2,300	2,050	1,800	1,600	1,500	1,300	1,100	1,000
Nominal Torque Nm T_{KN}	24	66	127	250	375	500	675	875	1,330	2,325	3,770	6,270	9,325	11,600	14,675
Maximum Torque Nm $T_{K MAX}$	64	160	318	487	759	1,096	1,517	2,137	3,547	5,642	9,339	16,455	23,508	33,125	42,740
Torsional Stiffness Nm/°	5	13	26	41	63	91	126	178	296	470	778	1,371	1,959	2,760	3,562
Max. parallel misalignment mm	1.1	1.3	1.6	1.9	2.1	2.4	2.6	2.9	3.2	3.7	4.2	4.8	5.3	5.8	6.6
Maximum end float mm $\pm$	1.3	1.7	2.0	2.3	2.6	3.0	3.3	3.7	4.0	4.6	5.3	6.0	6.6	7.3	8.2
Approximate mass. kg	0.1	0.3	0.5	0.7	1.0	1.1	1.1	1.4	2.3	2.6	3.4	7.7	8.0	10.0	15.0
Alternating Torque $\pm$ Nm @ 10Hz T_{KW}	11	26	53	81	127	183	252	356	591	940	1,556	2,742	3,918	5,521	7,124
Resonance Factor V_R	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Damping Coefficient Ψ	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9

Maximum torque figures should be regarded as short duration overload ratings for use in such circumstances as direct-on-line motor starting.

All Fenaflex tyre couplings have an angular misalignment capacity up to 4°.

FLEXIBLE TYRE CODE NUMBERS

Unless otherwise specified Fenaflex flexible tyres will be supplied in a natural rubber compound which is suitable for operation in temperatures -50°C to +50°C. A chloroprene compound is available which is Fire Resistant and Anti-Static (FRAS) and has greater resistance to heat and oil.

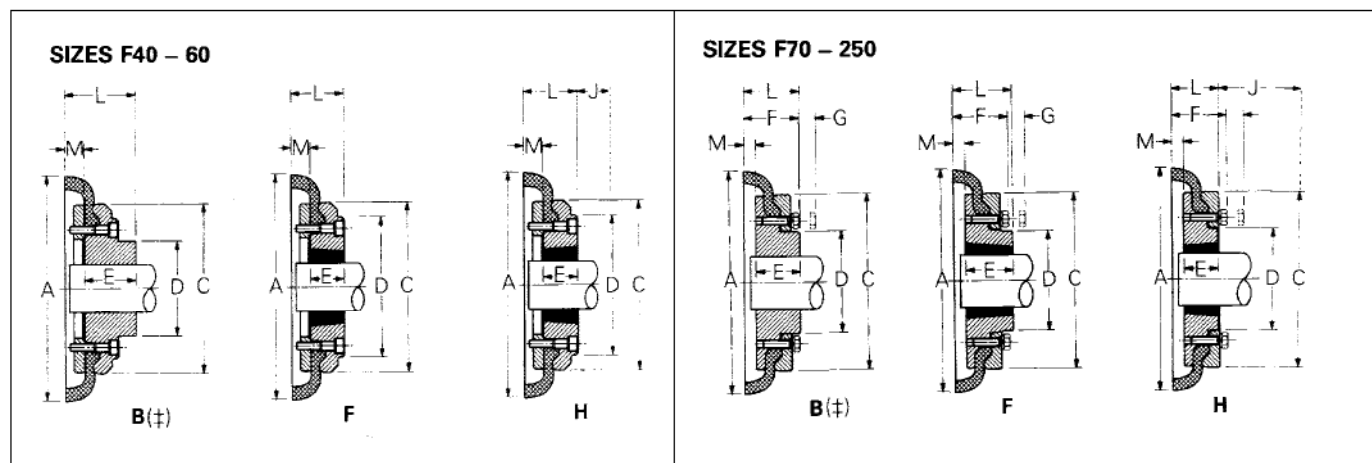
This is suitable for operation in temperatures -15°C to +70°C. For temperatures outside these ranges – consult your local Authorised Distributor.

The FRAS tyre variant is used with specifically modified metal flanges to create the ATEX  approved variant.

Size	Natural	FRAS	Coupling Size	M Dimension (mm)	Gap Between Tyre Ends (mm)	Clamping Screw Torque (Nm)	Screw Size
F40	033A0048	033A0068	F40*	22	2	15	M6
F50	033B0048	033B0068	F50*	25	2	15	M6
F60	033C0048	033C0068	F60*	33	2	15	M6
F70	033D0048	033D0068	F70	23	3	24	M8
F80	033E0048	033E0068	F80	25	3	24	M8
F90	033F0048	033F0068	F90	27	3	40	M10
F100	033G0048	033G0068	F100	27	3	40	M10
F110	033H0048	033H0068	F110	25	3	40	M10
F120	033J0048	033J0068	F120	29	3	50	M12
F140	033K0048	033K0068	F140	32	5	55	M12
F160	033L0048	033L0068	F160	30	5	80	M16
F180	033Q0048	033Q0068	F180	46	6	105	M16
F200	033M0048	033M0068	F200	48	6	120	M16
F220	033N0048	033N0068	F220	55	6	165	M20
F250	033P0048	033P0068	F250	59	6	165	M20

*Hexagonal socket caphead clamping screws on these sizes.

FLANGES



DIMENSIONS OF FENAFLEX FLANGES TYPES B, F & H

Catalogue # Code	Size	Type	Bush No. #	Max Bore		Types F & H			Type B		Screw over Key	A	C	D	F	G§	M	Mass* (kg)	Inertia* (kgm²)
				Metric	Inch	L	E	J†	L	E									
033A0501	F40	B	—	32	—	—	—	29	33.0	22	M5	104	82	—	—	—	11.0	0.8	0.00074
033A0502	F40	F	1008	25	1"	33.0	22	29	—	—	—	104	82	—	—	—	11.0	0.8	0.00074
033A0503	F40	H	1008	25	1"	33.0	22	29	—	—	—	104	82	—	—	—	11.0	0.8	0.00074
033B0501	F50	B	—	38	—	—	—	38	45.0	32	M5	133	100	79	—	—	12.5	1.2	0.00115
033B0502	F50	F	1210	32	1 1/4"	38.0	25	38	—	—	—	133	100	79	—	—	12.5	1.2	0.00115
033B0503	F50	H	1210	32	1 1/4"	38.0	25	38	—	—	—	133	100	79	—	—	12.5	1.2	0.00115
033C0501	F60	B	—	45	—	—	—	38	55.0	38	M6	165	125	70	—	—	16.5	2.0	0.0052
033C0502	F60	F	1610	42	1 5/8"	42.0	25	38	—	—	—	165	125	103	—	—	16.5	2.0	0.0052
033C0503	F60	H	1610	42	1 5/8"	42.0	25	38	—	—	—	165	125	103	—	—	16.5	2.0	0.0052
033D0301	F70	B	—	50	—	—	—	—	47.0	35	M10	187	144	80	50	13	11.5	3.1	0.009
033D0302	F70	F	2012	50	2"	44.0	32	42	—	—	—	187	144	80	50	13	11.5	3.1	0.009
033D0303	F70	H	1610	42	1 5/8"	42.0	25	38	—	—	—	187	144	80	50	13	11.5	3.0	0.009
033E0301	F80	B	—	60	—	—	—	—	55.0	42	M10	211	167	98	54	16	12.5	4.9	0.018
033E0302	F80	F	2517	60	2 1/2"	58.0	45	48	—	—	—	211	167	97	54	16	12.5	4.9	0.018
033E0303	F80	H	2012	50	2"	45.0	32	42	—	—	—	211	167	98	54	16	12.5	4.6	0.017
033F0301	F90	B	—	70	—	—	—	—	63.5	49	M12	235	188	112	60	16	13.5	7.1	0.032
033F0302	F90	F	2517	60	2 1/2"	59.5	45	48	—	—	—	235	188	108	60	16	13.5	7.0	0.031
033F0303	F90	H	2517	60	2 1/2"	59.5	45	48	—	—	—	235	188	108	60	16	13.5	7.0	0.031
033G0301	F100	B	—	80	—	—	—	—	70.5	56	M12	254	216	125	62	16	13.5	9.9	0.055
033G0302	F100	F	3020	75	3"	65.5	51	55	—	—	—	254	216	120	62	16	13.5	9.9	0.055
033G0303	F100	H	2517	60	2 1/2"	59.5	45	48	—	—	—	254	216	113	62	16	13.5	9.4	0.054
033H0301	F110	B	—	90	—	—	—	—	75.5	63	M12	279	233	128	62	16	12.5	12.5	0.081
033H0302	F110	F	3020	75	3"	63.5	51	55	—	—	—	279	233	134	62	16	12.5	11.7	0.078
033H0303	F110	H	3020	75	3"	63.5	51	55	—	—	—	279	233	134	62	16	12.5	11.7	0.078
033J0301	F120	B	—	100	—	—	—	—	84.5	70	M16	314	264	143	67	16	14.5	16.9	0.137
033J0302	F120	F	3525	100	4"	79.5	65	67	—	—	—	314	264	140	67	16	14.5	16.5	0.137
033J0303	F120	H	3020	75	3"	65.5	51	55	—	—	—	314	264	140	67	16	14.5	15.9	0.130
033K0301	F140	B	—	130	—	—	—	—	110.5	94	M20	359	311	178	73	17	16.0	22.2	0.254
033K0302	F140	F	3525	100	4"	81.5	65	67	—	—	—	359	311	178	73	17	16.0	22.3	0.255
033K0303	F140	H	3525	100	4"	81.5	65	67	—	—	—	359	311	178	73	17	16.0	22.3	0.255
033L0301	F160	B	—	140	—	—	—	—	117	102	M20	402	345	187	78	19	15.0	35.8	0.469
033L0302	F160	F	4030	115	4 1/2"	92.0	77	80	—	—	—	402	345	197	78	19	15.0	32.5	0.380
033L0303	F160	H	4030	115	4 1/2"	92.0	77	80	—	—	—	402	345	197	78	19	15.0	32.5	0.380
033Q0301	F180	B	—	150	—	—	—	—	137	114	M20	470	398	200	94	19	23.0	49.1	0.871
033Q0302	F180	F	4535	125	5"	112.0	89	89	—	—	—	470	398	205	94	19	23.0	42.2	0.847
033Q0303	F180	H	4535	125	5"	112.0	89	89	—	—	—	470	398	205	94	19	23.0	42.2	0.847
033M0301	F200	B	—	150	—	—	—	—	138	114	M20	508	429	200	103	19	24.0	58.2	1.301
033M0302	F200	F	4535	125	5"	113.0	89	89	—	—	—	508	429	205	103	19	24.0	53.6	1.281
033M0303	F200	H	4535	125	5"	113.0	89	89	—	—	—	508	429	205	103	19	24.0	53.6	1.281
033N0301	F220	B	—	160	—	—	—	—	154.5	127	M20	562	474	218	118	20	27.5	79.6	2.142
033N0302	F220	F	5040	125	5"	129.5	102	92	—	—	—	562	474	223	118	20	27.5	72.0	2.104
033N0303	F220	H	5040	125	5"	129.5	102	92	—	—	—	562	474	223	118	20	27.5	72.0	2.104
033P0301	F250	B	—	190	—	—	—	—	161.5	132	M20	628	532	254	125	25	29.5	104.0	3.505

Dimensions in millimetres unless otherwise stated.

§ G is the amount by which clamping screws need to be withdrawn to release tyre.

† J is the wrench clearance to allow for tightening/loosening the bush on the shaft and the clamp ring screws on sizes F40, F50 and F60. The use of a shortened wrench will allow this dimension to be reduced.

|| M is half the distance between flanges. Shaft ends, although normally located twice M apart, can project beyond the flanges as shown. In this event allow sufficient space between shaft ends for end float and misalignment.

* Mass and inertia figures are for single flange with mid range bore and include clamping ring, screws and washers and half tyre.

‡ For pilot bore 'B' flange code as listed. Flanges are also available finish bored with keyway if required. Bore must be specified on order.

Note: On sizes F70, 80, 100 and 120 the 'F' direction bush is larger than that in the 'H' direction.

Note: Flange assemblies comprise hub, clamp ring and clamp ring screws/washers.