

PalaFlex Transmission Components

Tyre Couplings

Tyre Couplings

PalaFlex tyre couplings provide all the desirable features of an flexible coupling, including TaperTite fixing. The PalaFlex tyre coupling is a "torsionally elastic" coupling offering versatility to designers and engineers with a choice of flange combinations to suit most applications. The flanges are available in either F or H TaperTite fitting or pilot bored, which can be bored to the required size. With the addition of a spacer the coupling can be used to accommodate stan-

dard distances between shaft ends and thereby facilitate pump maintenance.

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

PalaFlex tyres are available in natural rubber compounds for use in ambient temperatures between -50°C and +50°C.



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 and from the appropriate speed read across until a power greater than that required in step (b) is found. The size of PalaFlex coupling required is given at the head of that column.
- (d) **Bore Size**
Check from Dimensions table that chosen flanges can accommodate required bored.

Example

A PalaFlex tyre coupling is required to transmit 45kW from 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. TaperTite is required.

- (a) **Service Factor**
The appropriate service factor is 1.4.
- (b) **Design Power**
Design power = 45 x 1.4 = 63kW
- (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.
- (d) **Bore Size**
By referring to the dimensions table it can be seen that both shaft diameters fall within the bore range available.

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	154
200	0,50	1,38	2,66	5,24	7,85	10,5	14,1	18,3	27,9	48,7	79,0	131	195	243	307
300	0,75	2,07	3,99	7,85	11,8	15,7	21,2	27,5	41,8	73,0	118	197	293	364	461
400	1,01	2,76	5,32	10,5	15,7	20,9	28,3	36,6	55,7	97,4	158	263	391	486	615
500	1,26	3,46	6,65	13,1	19,6	26,2	35,3	45,8	69,6	122	197	328	488	607	768
600	1,51	4,15	7,98	15,7	23,6	31,4	42,4	55,0	83,6	146	237	394	586	729	922
700	1,76	4,84	9,31	18,3	27,5	36,6	49,5	64,1	97,5	170	276	460	684	850	1076
720	1,81	4,98	9,57	18,8	28,3	37,7	50,9	66,0	100	175	284	473	703	875	1106
800	2,01	5,53	10,6	20,9	31,4	41,9	56,5	73,3	111	195	316	525	781	972	1229
900	2,26	6,22	12,0	23,6	35,3	47,1	63,6	82,5	125	219	355	591	879	1093	1383
960	2,41	6,63	12,8	25,1	37,7	50,3	67,9	88,0	134	234	379	630	937	1166	1475
1000	2,51	6,91	13,3	26,2	39,3	52,4	70,7	91,6	139	243	395	657	976	1215	1537
1200	3,02	8,29	16,0	31,4	47,1	62,8	84,8	110	167	292	474	788	1172		
1400	3,52	9,68	18,6	36,6	55,0	73,3	99,0	128	195	341	553	919			
1440	3,62	9,95	19,1	37,7	56,5	75,4	102	132	201	351	568	945			
1600	4,02	11,1	21,3	41,9	62,8	83,8	113	147	223	390	632				
1800	4,52	12,4	23,9	47,1	70,7	94,2	127	165	251	438					
2000	5,03	13,8	26,6	52,4	78,5	105,5	141	183	279						
2200	5,53	15,2	29,3	57,6	86,4	115	155	202							
2400	6,03	16,6	31,9	62,8	94,2	126	170								
2600	6,53	18,0	34,6	68,1	102	136	184								
2800	7,04	19,4	37,2	73,3	110	147									
2880	7,24	19,9	38,3	75,4	113	151									
3000	7,54	20,7	39,9	78,5	118	157									
3600	9,05	24,9	47,9	94,2											

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

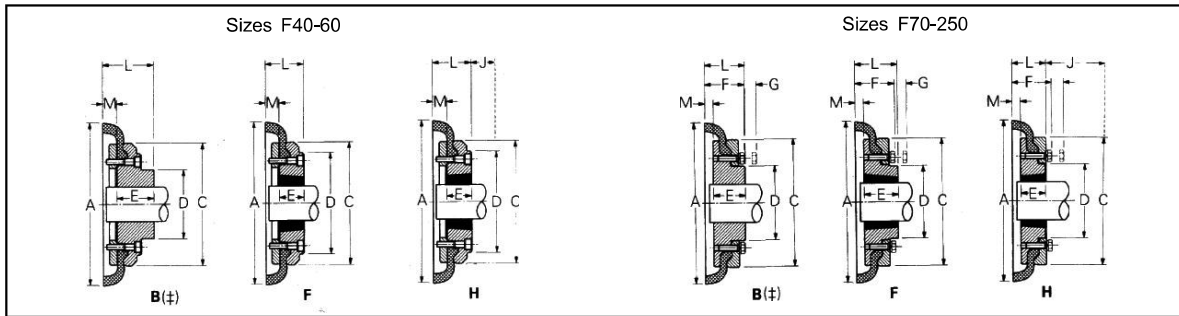
Characteristics	Coupling Size														
	F40	F50	F60	F70	F80	F90	F100	F110	F120	F140	F160	F180	F200	F220	F250
Maximum speed rev/min	4500	4500	4000	3600	3100	3000	2600	2300	2050	1800	1600	1500	1300	1100	1000
Nominal Torque Nm TKN	24	66	127	250	375	500	675	875	1330	2325	3770	6270	9325	11600	14675
Maximum Torque Nm TK MAX	64	160	318	487	759	1096	1517	2137	3547	5642	9339	16455	23508	33125	42740
Torsional Stiffness Nm/o	5	13	26	41	63	91	126	178	296	470	778	1371	1959	2760	3562
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±	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	15
Alternating Torque±Nm @10Hz TKW	11	26	53	81	127	183	252	356	591	940	1556	2742	3918	5521	7124
Resonance Factor V R	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Damping Coefficientψ	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 starting.

All flexible tyres has an angular misalignment capacity up to 4°.

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Dimensions of Flanges Types B,F,H

Item 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									
12020104	F40	B	-	32	-	-	29	33	22	M15	104	82	-	-	-	11	0,8	0,00074	
12020204	F40	F	1008	25	1"	33	22	29	-	-	104	82	-	-	-	11	0,8	0,00074	
12020304	F40	H	1008	25	1"	33	22	29	-	-	104	82	-	-	-	11	0,8	0,00074	
12020105	F50	B	-	38	-	-	38	45	32	M15	133	100	79	-	-	12,5	1,2	0,00115	
12020205	F50	F	1210	32	1 1/4"	38	25	38	-	-	133	100	79	-	-	12,5	1,2	0,00115	
12020305	F50	H	1210	32	1 1/4"	38	25	38	-	-	133	100	79	-	-	12,5	1,2	0,00115	
12020106	F60	B	-	45	-	-	38	55	38	M16	165	125	70	-	-	16,5	2,0	0,0052	
12020206	F60	F	1610	42	1 5/8"	42	25	38	-	-	165	125	103	-	-	16,5	2,0	0,0052	
12020306	F60	H	1610	42	1 5/8"	42	25	38	-	-	165	125	103	-	-	16,5	2,0	0,0052	
12020107	F70	B	-	50	-	-	-	47	35	M10	187	144	80	50	13	11,5	3,1	0,009	
12020207	F70	F	2012	50	2"	44	32	42	-	-	187	144	80	50	13	11,5	3,1	0,009	
12020307	F70	H	1610	42	1 5/8"	42	25	38	-	-	187	144	80	50	13	11,5	3,0	0,009	
12020108	F80	B	-	60	-	-	-	55	42	M10	211	167	98	54	16	12,5	4,9	0,018	
12020208	F80	F	2517	60	2 1/2"	58	45	48	-	-	211	167	97	54	16	12,5	4,9	0,018	
12020308	F80	H	2012	50	2"	45	32	42	-	-	211	167	98	54	16	12,5	4,6	0,017	
12020109	F90	B	-	70	-	-	-	63,5	49	M12	235	188	112	60	16	13,5	7,1	0,032	
12020209	F90	F	2517	60	2 1/2"	59,5	45	48	-	-	235	188	108	60	16	13,5	7,0	0,031	
12020309	F90	H	2517	60	2 1/2"	59,5	45	48	-	-	235	188	108	60	16	13,5	7,0	0,031	
12020110	F100	B	-	80	-	-	-	70,5	56	M12	254	216	125	62	16	13,5	9,9	0,055	
12020210	F100	F	3020	75	3"	65,5	51	55	-	-	254	216	120	62	16	13,5	9,9	0,055	
12020310	F100	H	2517	60	2 1/2"	59,5	45	48	-	-	254	216	113	62	16	13,5	9,4	0,054	
12020111	F110	B	-	90	-	-	-	75,5	63	M12	279	233	128	62	16	12,5	12,5	0,081	
12020211	F110	F	3020	75	3"	63,5	51	55	-	-	279	233	134	62	16	12,5	11,7	0,078	
12020311	F110	H	3020	75	3"	63,5	51	55	-	-	279	233	134	62	16	12,5	11,7	0,078	
12020112	F120	B	-	100	-	-	-	84,5	70	M16	314	264	143	67	16	14,5	16,9	0,137	
12020212	F120	F	3525	100	4"	79,5	65	67	-	-	314	264	140	67	16	14,5	16,5	0,137	
12020312	F120	H	3020	75	3"	65,5	51	55	-	-	314	264	140	67	16	14,5	15,9	0,130	
12020114	F140	B	-	130	-	-	-	110,5	94	M20	359	311	178	73	17	16	22,2	0,254	
12020214	F140	F	3525	100	4"	81,5	65	67	-	-	359	311	178	73	17	16	22,3	0,255	
12020314	F140	H	3525	100	4"	81,5	65	67	-	-	359	311	178	73	17	16	22,3	0,255	
12020116	F160	B	-	140	-	-	-	117	102	M20	402	345	187	78	19	15	35,8	0,469	
12020216	F160	F	4030	115	4 1/2"	92	77	80	-	-	402	345	197	78	19	15	32,5	0,380	
12020316	F160	H	4030	115	4 1/2"	92	77	80	-	-	402	345	197	78	19	15	32,5	0,380	
12020118	F180	B	-	150	-	-	-	137	114	M20	470	398	200	94	19	23	49,1	0,871	
12020218	F180	F	4535	125	5"	112	89	89	-	-	470	398	205	94	19	23	42,2	0,847	
12020318	F180	H	4535	125	5"	112	89	89	-	-	470	398	205	94	19	23	42,2	0,847	
12020120	F200	B	-	150	-	-	-	138	114	M20	508	429	200	103	19	24	58,2	1,301	
12020220	F200	F	4535	125	5"	113	89	89	-	-	508	429	205	103	19	24	53,6	1,281	
12020320	F200	H	4535	125	5"	113	89	89	-	-	508	429	205	103	19	24	53,6	1,281	
12020122	F220	B	-	160	-	-	-	154,5	127	M20	562	474	218	118	20	27,5	79,6	2,142	
12020222	F220	F	5040	125	5"	129,5	102	92	-	-	562	474	223	118	20	27,5	72,0	2,104	
12020322	F220	H	5040	125	5"	129,5	102	92	-	-	562	474	223	118	20	27,5	72,0	2,104	
12020125	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.

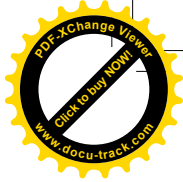
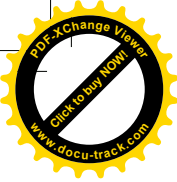
m Mass and inertia figures are for single flange with mid range bore and include clamping ring, screws and washers and half tyre.

± 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.



PalaFlex Transmission Components

Tyre Couplings

Comprising a PalaFlex tyre coupling (size F40 - F140) complete with a spacer flange designed for use on applications where it is an advantage to be able to move either shaft axially without disturbing the driving or driven machine (e.g, centrifugal pump rotors), PalaFlex spacer couplings are primarily designed for standard distance between shaft end dimensions 100, 140 and 180mm.

Distance Between Shaft Ends

Size	Distance between Shaft Ends (mm)																	
	SM12		SM16				SM25				SM30				SM35			
	80(100)	100	140	140	180	140	180	180	140	180	140	180	140	180	140	180		
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max		
F40	80	100	100	113	140	150												
F50			100	116	140	156												
F60			100	124	140	164												
F70							100	114	140	154	180	194						
F80							100	117	140	157	180	197						
F90									140	158	180	198						
F100													140	158	180	198		
F110													140	156	180	196		
F120															140	160	180	200
F140															140	163	180	203

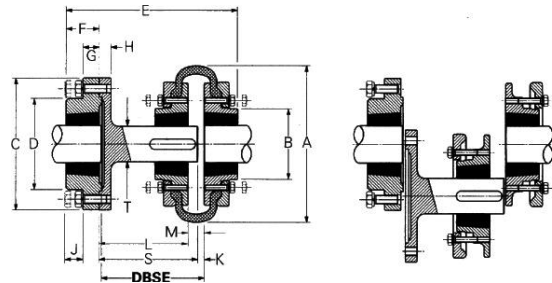
Note : Alternative distances between shaft ends may be accommodated. Consult Palawatr.

Selection

1. Select a suitable size of PalaFlex coupling using the method shown on page 1. Read down the first column in table below and locate the size of coupling selected.
2. Read across until the required distance between shaft ends can be accommodated.
3. Note the required spacer coupling designation at head of column.
4. Check from the Spacer Coupling Dimensions table below that the selected spacer/coupling combination can accommodate the machine shaft size.

Note

Typical order consists of
 1 x Spacer 3 x TaperTite bushes
 2 x PalaFlex flanges 1 x PalaFlex tyre



Spacer Coupling Dimensions

Spacer	Nom DBAE	Coupling	Item Code	Spacer Bush Size	Max.Bore		Coupling Bush Size	Max.Bore		A	B	C	D	E	F	G	H	J	K	L	M	S	T
					mm	Inch		mm	Inch														
SM12	80	F40	12020611	1210	32	1 1/4"	1008	25	1"	104	82	118	83	134	25	14	15	14	6	65	22	77	25
SM12	100	F40	12020612	1210	32	1 1/4"	1008	25	1"	104	82	118	83	140	25	14	15	14	22	77	22	77	25
SM16	100	F40*	12020621	1610	42	1 5/8"	1008	25	1"	104	82	127	80	157	25	18	15	14	9	88	22	94	32
SM16	140	F40*	12020622	1610	42	1 5/8"	1008	25	1"	104	82	127	80	187	25	18	15	14	9	128	22	134	32
SM16	100	F50	12020621	1610	42	1 5/8"	1210	32	1 1/4"	133	79	127	80	160	25	18	15	14	9	85	25	94	32
SM16	140	F50	12020622	1610	42	1 5/8"	1210	32	1 1/4"	133	79	127	80	200	25	18	15	14	9	125	25	134	32
SM16	100	F60	12020621	1610	42	1 5/8"	1610	42	1 5/8"	165	70	127	80	161	25	18	15	14	9	78	33	94	32
SM16	140	F60	12020622	1610	42	1 5/8"	1610	42	1 5/8"	165	70	127	80	201	25	18	15	14	9	118	33	134	32
SM25	100	F70†	12020631	2517	60	2 1/2"	2012	50	2"	187	80	178	123	180	45	22	16	14	9	80	23	94	48
SM25	140	F70†	12020632	2517	60	2 1/2"	2012	50	2"	187	80	178	123	220	45	22	16	14	9	120	23	134	48
SM25	180	F70†	12020633	2517	60	2 1/2"	2012	50	2"	187	80	178	123	260	45	22	16	14	9	160	23	174	48
SM25	100	F80	12020631	2517	60	2 1/2"	2517	60	2 1/2"	211	95	178	123	193	45	22	16	14	9	78	25	94	48
SM25	140	F80	12020632	2517	60	2 1/2"	2517	60	2 1/2"	211	95	178	123	233	45	22	16	14	9	118	25	134	48
SM25	180	F80	12020633	5217	60	2 1/2"	2517	60	2 1/2"	211	95	178	123	273	45	22	16	14	9	158	25	174	48
SM25	140	F90	12020631	2517	60	2 1/2"	2517	60	2 1/2"	235	108	178	123	233	45	22	16	14	9	116	27	134	48
SM25	180	F90	12020632	2517	60	2 1/2"	2517	60	2 1/2"	235	108	178	123	273	45	22	16	14	9	156	27	174	48
SM30	140	F100	12020641	3020	75	3"	3020	75	3"	254	120	216	146	245	51	29	20	17	9	116	27	134	60
SM30	180	F100	12020642	3020	75	3"	3020	75	3"	254	120	216	146	285	51	29	20	17	9	156	27	174	60
SM30	140	F110	12020641	3020	75	3"	3020	75	3"	279	134	216	146	245	51	29	20	17	9	118	25	134	60
SM30	180	F110	12020642	3020	75	3"	3020	75	3"	279	134	216	146	285	51	29	20	17	9	158	25	174	60
SM35	140	F120†	12020651	3525	100	4"	3525	100	4"	314	140	248	178	272	63	34	20	17	9	114	29	134	80
SM35	180	F120†	12020652	3525	100	4"	3525	100	4"	314	140	248	178	312	63	34	20	17	9	154	29	174	80
SM35	140	F140	12020651	3525	100	4"	3525	100	4"	359	178	248	178	271	63	34	20	17	9	111	32	134	80
SM35	180	F140	12020652	3525	100	4"	3525	100	4"	359	178	248	178	312	63	34	20	17	9	151	32	174	80

Note : Larger size of spacer coupling can be manufactured to order.

* F40 "B" Flange must be used to fit spacer shaft

† "F" Flange must be used to fit spacer shaft