

PIX-Tyre Couplings



Tyre Couplings are highly elastic, lubrication free, that tolerate large amounts of misalignment in all the planes as well as offers simple installation and inspection without disrupting the drive.

Coupling also has excellent shock absorbing properties, while reducing vibration and torsional oscillations. Simple time saving installation - motor and machine remains undisturbed whilst tyre is changed, large misalignment capability - 4° angular, up to 3.2mm parallel and 4.0mm axial Internal load carrying cords are wound in both directions, so there is no problem on reversing drives.

- Simple visual inspection to aid maintenance
- Taper and pilot bore flanges
- Lubrication-free

PIX-Tyre coupling ensures high torque transmitting capacity in motor generators & in various industrial machines. The true tyre material is made from neoprene/ natural/synthetic rubber compounds reinforced with Rayon/ Nylon/ Polyester cord to give superior rating & long durability, bore size is well matched to attain maximum speed (rpm) ensuring minimum to nil slippage of the flexible element out from the coupling assembly, in case of any faulty installation.

The flexible tyre coupling is a "torsionally elastic" coupling, which minimizes misalignment and maximizes power transmission for optimum machine run time.

Key features:

- Backlash-free
- Low maintenance
- Torsionally flexible
- Absorbs misalignment
- Dampens vibrations and torsional oscillations
- Easy tyre replacement

1. Highly resilient, flexible tire cushion shock loads, smoothing out the load between driving and driven machines enables high levels of misalignment to be accommodated.
2. Radially split tyre facilitates easy installation and removal without disturbing the driving or driven shafts.
3. No maintenance or lubrication is required, visual inspection is all that is necessary.
4. Taper flanges are made from high grade cast iron and the versatile design enables easy positioning on the shafts. The clamping system prevents relative movement between the flexible tyre and the flange.
5. Tension member is cross-pile, synthetic tension member, which enables torque to be transmitted in either direction.
6. Elastomeric compound available in either natural rubber or fire-resistant and anti-static chloroprene, which provides the shape and damping of the tyre.
7. Taper Bush provides a wide range of bore diameters, and enables easy assembly on the shafts.

PIX-Tyre Couplings

DRIVE DESIGN

Service factor: Determine the required service factor from 'Table-1'.

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.

Coupling size: Refer to power ratings 'Table-2' and from the appropriate speed read across until a power greater than that required in step (b) is found. The size of Coupling required is given at the head of that column.

Bore size: From 'Table-4', select the appropriate Coupling size with available bore dimension details.

Table-1
Service factors

Special Cases For applications where substantial shock, vibration & torque fluctuations occur & for reciprocating machines (i.e. internal combustion engines, piston pumps & compressors) refer to PIX with all machine details for torsional analysis	TYPE OF DRIVEN 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
Type of Driven Machine CLASS 1 Agitators, brewing machinery, centrifugal compressors and pumps. Belt conveyors, dynamometers, line-shafts, fans up to 7.5kW. Blowers and exhausters (except positive displacement), generators.	0.80	0.9	1.0	1.30	1.40	1.50
CLASS 2* Clay working machinery, general machine tools, paper mill beaters & winders, rotary pumps screens, rubber extruders, Textile machinery, marine propellers and fans over 7.5kw	1.30	1.40	1.5	1.80	1.90	2.00
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, pulverizers and positive displacement blowers.	1.80	1.90	2.0	2.30	2.40	2.50
CLASS 4* Reciprocating conveyors, gyratory crushers, mills (ball, pebble and rod), rubber machinery (Banbury mixers and mills) and vibratory screens	2.30	2.40	2.5	2.80	2.90	3.0

*It is recommended that keys (with top clearance, if in Taper bushes) are fitted on application where load function is expected.

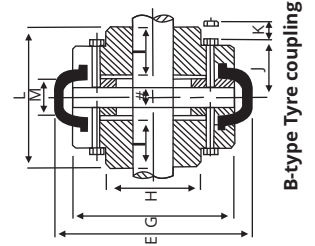
.+Couplings for use with internal combustion engines may require special consideration, such as a flywheel configuration. To know more, please contact our technical support team.

PIX-Tyre Couplings

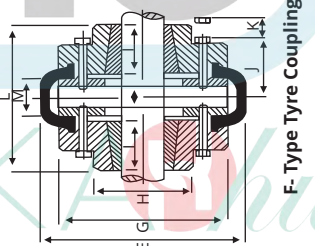
Table - 2
Power ratings (kW)

Speed in rpm	Coupling size																	
	PTC-040	PTC-045	PTC-050	PTC-060	PTC-070	PTC-080	PTC-085	PTC-090	PTC-100	PTC-110	PTC-120	PTC-140	PTC-160	PTC-180	PTC-200	PTC-220	PTC-250	
100	0.21	0.40	0.55	1.10	1.70	3.64	3.20	3.81	5.30	7.40	12.50	19.50	32.60	57.50	84.00	105.00	131.50	
200	0.43	0.77	1.10	2.20	3.40	5.30	6.50	7.65	10.00	15.00	25.00	39.50	65.00	115.00	170.00	210.00	265.00	
300	0.65	1.18	1.68	3.30	5.10	7.90	9.50	11.50	16.00	22.50	37.00	59.10	97.90	171.80	252.20	312.80	395.00	
400	0.89	1.55	2.20	5.45	8.50	10.60	12.80	15.30	21.20	29.80	49.40	78.90	130.00	231.00	335.00	418.00	530.00	
500	1.11	1.95	2.80	5.55	8.50	16.20	16.00	19.10	26.50	37.30	62.00	98.50	163.00	288.00	421.00	520.00	658.00	
600	1.32	2.33	3.30	6.65	10.10	16.00	19.00	23.00	31.00	45.00	74.00	117.00	195.00	345.00	505.00	625.00	732.00	
700	1.55	2.74	3.90	7.70	11.90	18.50	22.50	26.70	37.00	52.25	86.50	137.00	227.00	402.00	585.00	730.00	922.00	
720	1.56	2.75	4.00	8.00	12.20	19.10	23.00	27.50	38.10	53.70	89.00	142.00	235.00	415.00	605.00	752.00	950.00	
800	1.75	3.10	4.45	8.90	13.50	21.20	25.50	30.50	42.30	60.00	99.00	157.00	260.00	460.00	670.00	835.00	1055.00	
900	1.96	2.98	4.85	10.00	15.20	23.50	28.50	34.50	74.50	67.00	111.00	176.00	292.00	518.00	755.00	939.00	1195.00	
960	2.10	3.75	5.30	10.50	16.20	15.50	30.00	36.50	50.50	71.50	118.00	188.00	312.00	550.00	805.00	1002.00	1267.00	
1000	2.20	3.80	5.50	11.00	16.80	26.20	32.00	38.00	53.50	74.50	124.00	196.00	325.00	573.00	840.00	1044.00	1320.00	
1200	2.65	4.65	6.65	13.20	20.30	31.50	38.50	45.50	63.50	89.50	148.00	235.00	390.00	686.00	1006.00	-	-	
1400	3.06	5.45	7.70	15.50	23.60	37.00	45.00	53.50	73.00	103.00	172.00	275.00	455.00	802.00	-	-	-	
1440	3.15	5.60	8.00	15.80	24.30	38.00	45.00	55.00	76.00	106.00	177.00	285.00	470.00	825.00	-	-	-	
1600	3.50	6.25	8.80	17.80	27.00	42.00	51.00	61.00	84.00	118.00	197.00	314.00	520.00	-	-	-	-	
1800	3.95	7.00	10.00	20.00	30.40	47.50	57.50	68.60	95.00	133.00	222.00	354.00	-	-	-	-	-	
2000	4.36	7.60	11.00	22.00	34.00	52.00	63.00	76.00	106.00	148.00	246.00	-	-	-	-	-	-	
2200	4.82	8.60	12.10	24.50	37.30	58.30	70.50	84.00	115.00	165.00	-	-	-	-	-	-	-	
2400	5.10	9.35	13.20	26.50	40.60	63.50	77.00	91.60	127.00	-	-	-	-	-	-	-	-	
2600	5.70	10.10	14.50	29.00	44.00	69.00	83.00	99.50	135.00	-	-	-	-	-	-	-	-	
2800	6.15	10.90	15.50	31.00	47.50	74.20	89.50	106.00	-	-	-	-	-	-	-	-	-	
2880	6.30	11.20	16.00	32.00	49.00	76.00	92.00	110.00	-	-	-	-	-	-	-	-	-	
3000	6.61	11.80	16.80	33.40	51.00	79.60	96.00	-	-	-	-	-	-	-	-	-	-	
3500	7.72	13.60	19.50	39.00	59.00	-	-	-	-	-	-	-	-	-	-	-	-	
3600	7.90	14.00	20.00	40.00	-	-	-	-	-	-	-	-	-	-	-	-	-	

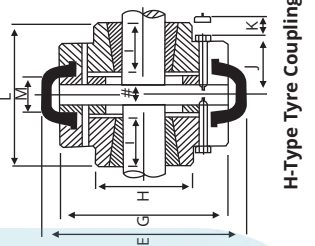
*All these power ratings are calculated at constant torque. For speeds below 100 rev / min and intermediate speeds, use nominal torque ratings



B-type tyre coupling



F-type tyre coupling



H-type tyre coupling

PIX-Tyre Couplings

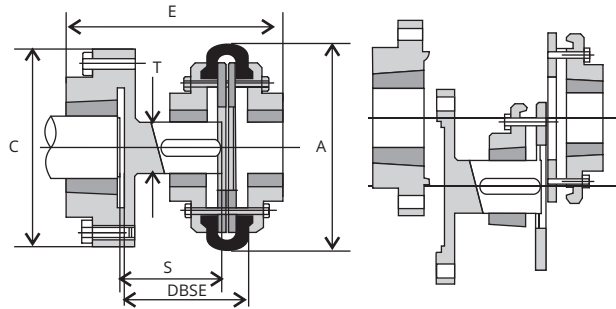
Table-3
Dimensions

Size	Unit	Type B										Type F & H						E	G	K (ξ)	M*	No. of screw per flange
		Min. Bore	Max. Bore	L	H	I	J	Set screw on key	Approx. Weight	Bush No.	Max. Bore	L	H	I	J	W (ω)	Weight (Kgs)					
PTC-040	mm	11	30	67	-	22	33.5	M5	2	1008	25	67	-	22	33.5	29	1.4	104	82	43	23	4
	inch	3/7	1 1/6	2 2/3	-	6/7	1 1/3				1	2 2/3	-	6/7	1 1/3	1 1/7		4	3 2/9	1 2/3	1	
PTC-045	mm	11	32	73	-	25	36.5	M5	2.2	1008	28	67	-	22	33.3	29	3.0	120	94	43	23	4
	inch	3/7	1 1/4	2 7/8	-	1	1 3/7				1 1/9	2 2/3	-	6/7	1 1/3	1 1/7		4 5/7	3 5/7	1 2/3	1	
PTC-050	mm	16	38	92	79	32	46	M5	4.1	1210	32	78	79	25	39	38	3.1	133.5	100	43	28	4
	inch	5/8	1 1/2	3 5/8	3 1/9	1 1/4	1 4/5				1 1/4	3	3 1/9	1	1 1/2	1 1/2		5 1/4	4	1 2/3	1 1/9	
PTC-060	mm	16	48	112	73	38	43	M6	5	1610	42	86	103	25	43	38	5.2	165	125	43	36	5
	inch	5/8	1 8/9	4 2/5	2 7/8	1 1/2	1 2/3				1 2/3	3 2/5	4	1	1 2/3	1 1/2		6 1/2	5	1 2/3	1 3/7	
PTC-070	mm	19.05	55	132	82	45	50.5	M6	8	1610	42	92	76	25	50.5	38	7.4	197	144	10	42	5
	inch	3/4	2 1/6	5 1/5	3 2/9	1 7/9	2				1 2/3	3 5/8	3	1	2	1 1/2		7 3/4	5 2/3	2 5/5	1 2/3	
PTC-080	mm	25.4	65	149	95	51	53	M10	12	2012	50	111	95	32	53	47	9.2	211	167	10	47	6
	inch	1	2 5/9	5 6/7	3 3/4	2	2				2	4 3/8	3 3/4	1 1/4	2	1 6/7		8 1/3	6 4/7	2 5/5	1 6/7	
PTC-090	mm	31.75	76	164	110	57	59.5	M12	15	2517	60	140	110	45	59.5	50	15.0	235	188	13	50	6
	inch	1 1/4	3	6 1/2	4 1/3	2 1/4	2 1/3				2 1/3	5 1/2	4 1/3	1 7/9	2 1/3	2		9 1/4	7 2/5	1 2/2	2	
PTC-100	mm	31.75	84	178	124	60	61.5	M12	21	2517	60	148	124	45	61.5	50	20.0	254	216	13	58	6
	inch	1 1/4	3 1/3	7	4 7/8	2 1/3	2 3/7				2 1/3	5 5/6	4 7/8	1 7/9	2 3/7	2		10	8 1/2	1 2/2	2 2/7	
PTC-110	mm	32	90	180	134	65	63.5	M12	28	2517	60	150	134	45	63.5	50	26.5	279	233	14	50	6
	inch	1 1/4	3 1/2	7	5 2/7	2 5/9	2 1/2				2 1/3	6	5 2/7	1 7/9	2 1/2	2		11	9 1/6	5/9	2	
PTC-120	mm	38.1	102	207	152	76	70	M12	41	3020	75	157	152	51	70	68	35.5	314	264	14	55	6
	inch	1 1/2	4	8 1/7	6	3	2 3/4				3	6 1/6	6	2	2 3/4	2 2/3		12 1/3	10 2/5	5/9	2 1/6	
PTC-140	mm	75	120	204	195	89	76	M20	61	3535	90	204	197.5	89	76	89	67.2	359	313	14	26	8
	inch	3	4 5/7	8	7 2/3	3 1/2	3				3 1/2	8	7 7/9	3 1/2	3	3 1/2		14 1/7	12 1/3	5/9	1	
PTC-160	mm	75	140	220	216	102	78	M20	86	4040	100	220	216	102	78	110	91.0	402	345	19	16	8
	inch	3	5 1/2	8 2/3	8 1/2	4	3				4	8 2/3	8 1/2	4	3	4 1/3		15 5/6	13 4/7	3/4	5/8	
PTC-180	mm	75	150	258	266	114	94	M20	141	4545	110	258	266	114	94	126	146.0	470	398	19	30	10
	inch	3	6	10 1/6	10 1/2	4 1/2	3 5/7				4 1/3	10 1/6	10 1/2	4 1/2	3 5/7	5		18 1/2	15 2/3	3/4	1 1/6	
PTC-200	mm	75	150	276	266	114	103	M20	179	4545	110	278	266	114	103	126	182.0	508	429	19	48	12
	inch	3	6	10 6/7	10 1/2	4 1/2	4				4 1/3	11	10 1/2	4 1/2	4	5		20	16 8/9	3/4	1 8/9	
PTC-220	mm	90	160	312	267	127	118	M20	312	5050	125	312	267	127	118	140	320.0	562	474	20	56	12
	inch	3 1/2	6 2/7	12 2/7	10 1/2	5	4 2/3				5	12 2/7	10 1/2	5	4 2/3	5 1/2		22 1/8	18 2/3	4/5	2 1/5	
PTC-250	mm	100	190	360	290	150	125	M20	500	-	-	-	-	-	-	-	-	628	532	25	60	12
	inch	4	7 1/2	14 1/6	11 3/7	6	5				-	-	-	-	-	-	-	24 5/7	21	1	2 1/3	

M*=Distance between the flanges

K(ξ)= Amount to release tyre by withdrawing clamping screwsW(ω)= Wrench clearance for loosening and tightening of bushes

PIX-Tyre Spacer Couplings



Comprising a PIX-Tyre coupling (size PTC 40-PTC 140) 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. PIX-Tyre Spacer Couplings are primarily designed for the standard distance between shaft end dimensions 100, 140 and 180 mm.

Table-4

Spacer size	Size	DBSE	PIX Tyre Coupling size	Spacer Bush size	Max. bore	PIX Tyre Coupling Bush size	Max. bore	A	C	E	S	T
PSM12	mm	80	PTC40	PTC40	32	1008	25	104	118	134	77	25
	inch	3 1/7			1 1/4		1	4	4 2/3	5 2/7	3	1
PSM12	mm	100	PTC40	PTC40	32	1008	25	104	118	140	97	25
	inch	4			1 1/4		1	4	4 2/3	5 1/2	3 5/6	1
PSM16	mm	100	PTC40*	PTC40*	42	1008	25	104	127	170	94	32
	inch	4			1 2/3		1	4	5	6 2/3	3 5/7	1 1/4
PSM16	mm	140	PTC40*	PTC40*	42	1008	25	104	127	210	134	32
	inch	5 1/2			1 2/3		1	4	5	8 1/4	5 2/7	1 1/4
PSM16	mm	100	PTC50	PTC50	42	1210	32	133 1/2	127	173	94	32
	inch	4			1 2/3		1 1/4	5 1/4	5	6 4/5	3 5/7	1 1/4
PSM16	mm	140	PTC50	PTC50	42	1210	32	133 1/2	127	213	134	32
	inch	5 1/2			1 2/3		1 1/4	5 1/4	5	8 2/5	5 2/7	1 1/4
PSM16	mm	100	PTC60	PTC60	42	1610	42	165	127	177	94	32
	inch	4			1 2/3		1 2/3	6 1/2	5	7	3 5/7	1 1/4
PSM16	mm	140	PTC60	PTC60	42	1610	42	165	127	214	134	32
	inch	5 1/2			1 2/3		1 2/3	6 1/2	5	8 3/7	5 2/7	1 1/4
PSM25	mm	100	PTC70	PTC70	60	1610	42	197	178	180	94	42
	inch	4			2 1/3		1 2/3	7 3/4	7	7	3 5/7	1 2/3
PSM25	mm	140	PTC70	PTC70	60	1610	42	197	178	220	134	42
	inch	5 1/2			2 1/3		1 2/3	7 3/4	7	8 2/3	5 2/7	1 2/3
PSM25	mm	180	PTC70	PTC70	60	1610	42	197	178	260	174	42
	inch	7			2 1/3		1 2/3	7 3/4	7	10 1/4	6 6/7	1 2/3
PSM25	mm	100	PTC80	PTC80	60	2012	50	211	178	193	94	48
	inch	4			2 1/3		2	8 1/3	7	7 3/5	3 5/7	1 8/9
PSM25	mm	140	PTC80	PTC80	60	2012	50	211	178	233	134	48
	inch	5 1/2			2 1/3		2	8 1/3	7	9 1/6	5 2/7	1 8/9
PSM25	mm	180	PTC80	PTC80	60	2012	50	211	178	273	174	48
	inch	7			2 1/3		2	8 1/3	7	10 3/4	6 6/7	1 8/9
PSM25	mm	140	PTC90	PTC90	60	2517	60	235	178	235	134	48
	inch	5 1/2			2 1/3		2 1/3	9 1/4	7	9 1/4	5 2/7	1 8/9
PSM25	mm	180	PTC90	PTC90	60	2517	60	235	178	275	174	48
	inch	7			2 1/3		2 1/3	9 1/4	7	10 5/6	6 6/7	1 8/9
PSM30	mm	140	PTC100	PTC100	75	2517	60	254	216	269.5	134	60
	inch	5 1/2			3		2 1/3	10	8 1/2	10 3/5	5 2/7	2 1/3
PSM30	mm	180	PTC100	PTC100	75	2517	60	254	216	309.5	174	60
	inch	7			3		2 1/3	10	8 1/2	12 1/5	6 6/7	2 1/3
PSM30	mm	140	PTC110	PTC110	75	2517	60	279	216	369.5	134	60
	inch	5 1/2			3		2 1/3	11	8 1/2	14 5/9	5 2/7	2 1/3
PSM30	mm	180	PTC110	PTC110	75	2517	60	279	216	309.5	174	60
	inch	7			3		2 1/3	11	8 1/2	12 1/5	6 6/7	2 1/3
PSM35	mm	140	PTC120	PTC120	90	3020	75	314	248	297.5	134	75
	inch	5 1/2			3 1/2		3	12 1/3	9 3/4	11 5/7	5 2/7	3
PSM35	mm	180	PTC120	PTC120	90	3020	75	314	248	327.5	174	75
	inch	7			3 1/2		3	12 1/3	9 3/4	12 8/9	6 6/7	3
PSM35	mm	140	PTC140	PTC140	90	3535	90	359	248	296	134	80
	inch	5 1/2			3 1/2		3 1/2	14 1/7	9 3/4	11 2/3	5 2/7	3 1/7
PSM35	mm	180	PTC140	PTC140	90	3535	90	359	248	336	174	80
	inch	7			3 1/2		3 1/2	14 1/7	9 3/4	13 2/9	6 6/7	3 1/7

• PTC40* 'B' type coupling flange must be used to fit spacer shaft • DBSE :Distance between the shaft ends

PIX-Tyre Spacer Couplings

DRIVE DESIGN EXAMPLE

A Tyre spacer coupling is required to transmit 40kW from an electric motor running at 1400 RPM to a centrifugal pump for 15 hours per day. The diameter of the motor shaft is 35 mm. The diameter of the pump shaft is 40 mm

Step 1:

From the 'Table -1', select appropriate service factor (SF), the appropriate service factor in this case is 1.90

Step 2:

To determine design power, multiply motor power with above selected service factor

$$\begin{aligned}\text{Design Power (Pd)} &= P \times SF \\ &= 40 \times 1.9 \\ &= 76\text{kW}\end{aligned}$$

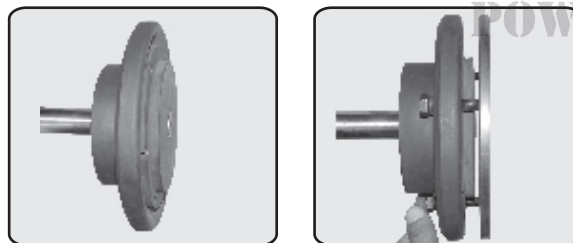
Step 3:

Now determine the coupling size using the power rating 'Table - 2' and by searching 1400 RPM, the first power rating figure to exceed the required 76 kW is 103 kW. Therefore, the tyre coupling of size PTC-110 can be used (See vertically upwards in 'Table-2' for desired coupling size).

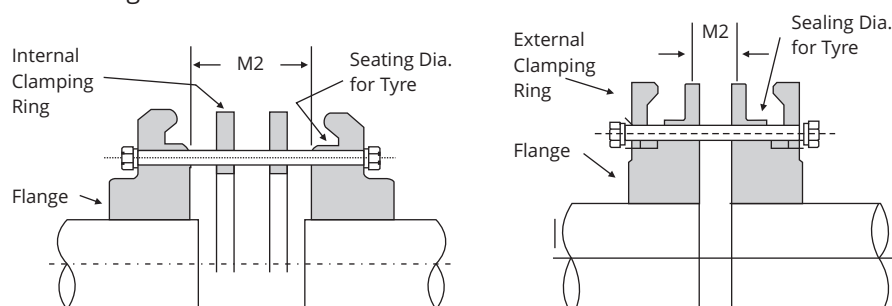
PIX-Tyre Couplings

Installation

1. Thoroughly clean all the components, paying particular attention to the removal of the protective coating inside the bore of the flanges.
2. Fit flanges to the shafts placing the external clamp rings on the shafts. (Where taper flanges are used, see separate fitting instructions supplied with the taper Bushes). Locate flanges so that dimension 'M2' is obtained (see paragraph 3). Flanges with internal clamping rings should then have the clamping rings fitted, engaging only two or three of the threads of the screws at this time.



3. Bring the shafts close to each other until dimension 'M2' is obtained (Table-5). If a shaft end float is to occur, locate the shafts at mid-position of end float when checking dimension 'M2'. Note that shaft ends may project beyond the faces of the flanges, if required. In this event, allow sufficient space between shaft ends for end float and misalignment. Flanges should be fitted, flushed with the end of the shaft when used with mill-motor flanges.



PIX-Tyre Couplings

Installation

Table-5

Coupling size	Unit	Coupling size															
		PTC 40*	PTC 45*	PTC 50*	PTC 60*	PTC 70	PTC 80	PTC 90	PTC 100	PTC 110	PTC 120	PTC 140	PTC 160	PTC 180	PTC 200	PTC 220	PTC 250
M2 (mm)	mm	23	23	28	36	42	47	50	58	50	55	26	16	30	48	56	60
	inch	1	1	1	1 3/7	1 2/3	1 6/7	2	2 2/7	2	2 1/6	1	5/8	1 1/6	1 8/9	2 1/5	2 1/3
Clamping screw torque (Nm)		15	15	15	15	24	24	32	32	32	35	35	35	35	35	38	38

Unless otherwise specified flexible tyres will be supplied in a natural rubber compound, which are suitable for operation in temperatures range -15°C to +70°C.

- Check parallel alignment by laying a straight edge across the flanges at several positions around the circumference. Check angular alignment by measuring the gap between the flanges at several positions around the circumference. It is desirable to align the coupling as accurately as possible, particularly on high speed applications.
- Open out tyre and fit over coupling flanges ensuring that the tyre beads seat properly on the flanges and/or clamping rings. To ensure proper seating, it may be necessary to strike the outside diameter of the tyre with a small mallet. When seated, there should be a gap between the ends of the tyre as shown in 'Table-6'.

Table-6

Coupling size	Unit	F40 to F60	F70 to F120	F140	F160 to F180	F200 to F250
Tyre gap	mm	2	3	5	6.5	8.0
	inch	3 3/8	1/8	1/5	1/4	1/3



- Tighten clamping ring screws alternately and evenly (half-turn at a time) working around each flange.

