



INDIA



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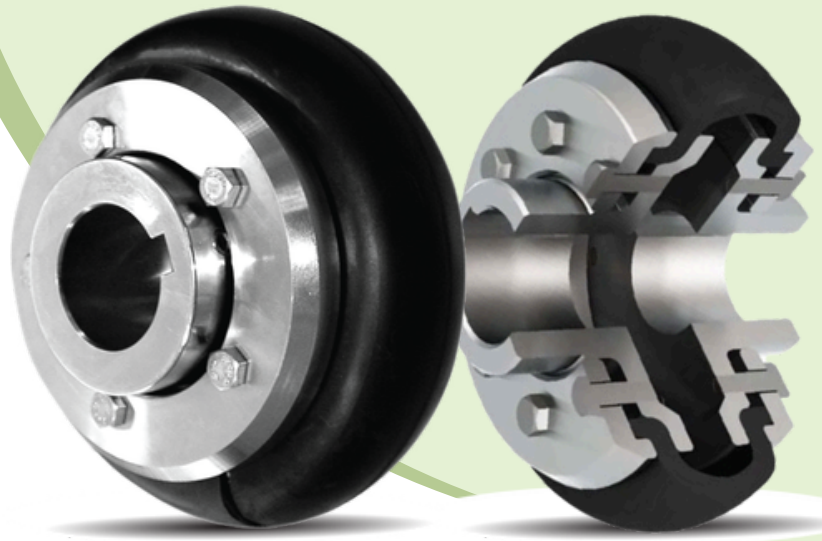
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# TYRE COUPLINGS

From the house of TIDC INDIA



# TYRE COUPLINGS



TIDC INDIA tyre coupling is a highly flexible rubber fabric coupling appropriated for compensation of big shifting and shock energies. Its remarkable high elasticity makes it possible to compensate extremely large offsets in all directions without generating wear. Free from backlash, it is the appropriated coupling to absorb torque peaks and dampen

Vibrations, most interesting feature is quick the TIDC INDIA tyre coupling consists on the simple way in which the elastomeric qualities. The tyre, composed of natural rubber with fabric reinforcements, are set on the coupling's hub and fixed by means of fastening the rings with the screws. The coupling's rubber tyre is split, allowing the rubber band to be radially replaced without moving the hubs and realigning either the driver or the driven equipment, reducing downtime.

The TIDC INDIA tyre coupling covers a high range of series: from the standard, to taper lock bushings, with spacer for pump drives, with brake discs and brake drums in accordance with the standards of the cranes of metallurgical plants, with SAE flywheel assembly, with special design tyres to balance greater misalignments for drives with sliding rotor motors and many other designs already created or to be developed for your application.

## FEATURES

## BENEFITS OF TYRE COUPLINGS

Zero maintenance

No routine maintenance or lubrication required

Quick and easy installation and replacement

Design that allows a quick and easy element installation and replacement without moving hubs and realigning either the driver or the driven equipment, reducing downtime

High misalignment capabilities

Compensates extremely large angular, axial and radial misalignments

Vibration dampening and shock absorption

Due to its quick smoothing qualities, provides damping properties to the torsional vibration induced in the system by cyclic variation of the twisting moment and shocks induced by the fast load variation, protecting the entire system

Natural Rubber Compound

For use in ambient temperatures between -50°C to +50°C

Neoprene Rubber Compound

For use in adverse operating conditions e.g. oil or grease contaminations and can be used in temperatures of -15° C to + 70° C

## APPLICATION FIELDS FOR TYRE COUPLINGS



Suitable for applications with difficult alignment characteristics



Ideal for applications with vibrations and thermal expansions



With high response to torque peaks and great shocks



Especially suited for use in cranes and roller table drives of metallurgical plants

## TYRE COUPLINGS SELECTION



1

Type of driven machine and operating hours per day.

2

Speed and power absorbed by driven machine

(if absorbed power is not known, calculate on power rating of prime mover)

3

Diameters of shafts to be connected.

## PROCEDURE

**a**

### Service Factor

Determine the required service factor from Table - 01

**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 table-03 and from the appropriate speed, read across until a power greater than that required is obtained. The size of TIDC INDIA tyre coupling required is given at the head of that column.

**d**

### Bore Size

Check from dimension tables that chosen flanges can accommodate required bores.

**TABLE 1: Service Factors**

Special Cases	Type Of Driving Unit					
	Electric Motors Steam Turbines			Internal Combustion Engines Steam Engines Water Turbines		
Type of Driven Machine	Operational hours per day					
	10 and under	Over 10 to 16 incl.	Over 16	10 and under	Over 10 to 16 incl.	Over 16
<b>CLASS 1</b> Agitators, Brewing machinery Centrifugal compressors and pumps, Belt conveyors, Dynamometers, Line shafts, Fans upto 7.5 kW, Blowers and Exhausters (except positive displacement) Generators.	0.8	0.9	1.0	1.3	1.4	1.5
<b>CLASS 2</b> Clay working machinery, General Machine tools, Paper mill beaters and winders, Rotary pumps, Rubber extruders, Rotary screens, Textile machinery, Marine propellers and fans over 7.5 kW.	1.3	1.4	1.5	1.8	1.9	2.0
<b>CLASS 3</b> Bucket elevators, Cooling tower fans, Piston compressors and pumps, Foundry machinery, Metal presses, Paper mill calendars, Pulverisers and Positive displacement blowers. Centrifugal compressors and pumps for Paper Mill.	1.8	1.9	2.0	2.3	2.4	2.5
<b>CLASS 1</b> Reciprocating conveyors, Gyrotory 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

## EXAMPLE

TIDC INDIA tyre coupling is required to transmit 45 kW from an A.C. Electric Motor which runs at 1440 rev/min to a rotary screen for 12 hours a day. The motor shaft is 60 mm diameter and the screen shaft is 55 mm diameter.

### Service Factor:

From table -01 the service factor is 1.4.

### c) Coupling Size:

By reading across from 1440 rev/min in table -03 the first figure to exceed the required 63 kW in step (b) is 76.10 kW. The size of coupling is TDT100.

### b) Design Power:

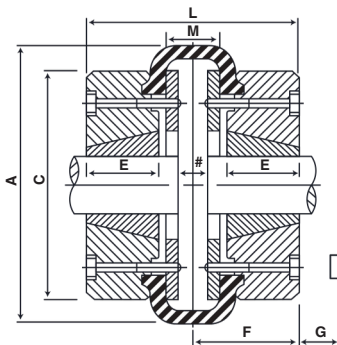
Design Power =  $45 \times 1.4 = 63 \text{ kW}$ .

### d) Bore Size:

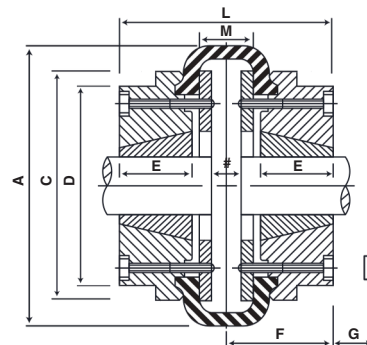
By referring to table -02 it can be seen that both shaft diameters fall within the bore range available.

## TYPES OF TYRE COUPLINGS

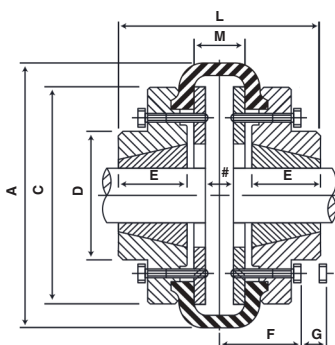
### F TYPE COUPLINGS



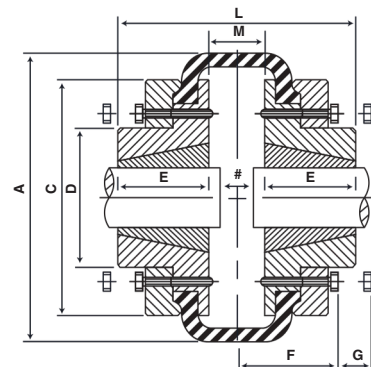
**TDT - 40 & 45**



**TDT - 50 & 60**

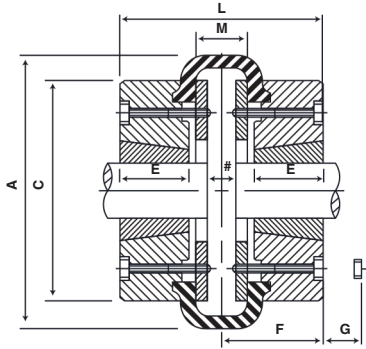


**TDT - 70 & 120**

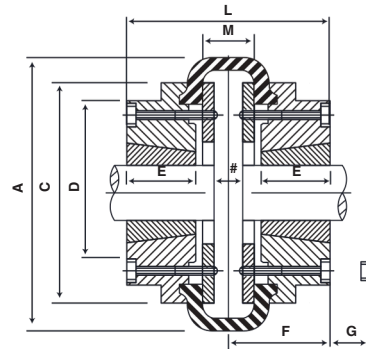


**TDT - 140 & 220**

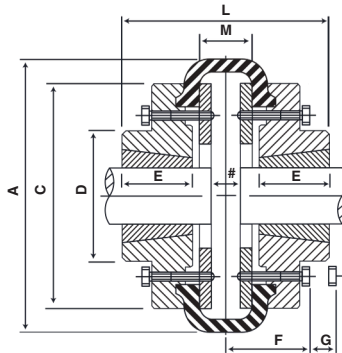
## H TYPE COUPLINGS



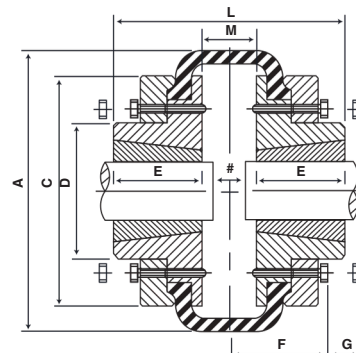
**TDT - 40 & 45**



**TDT - 50 & 60**

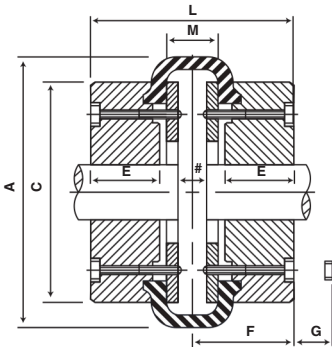


**TDT - 70 & 120**

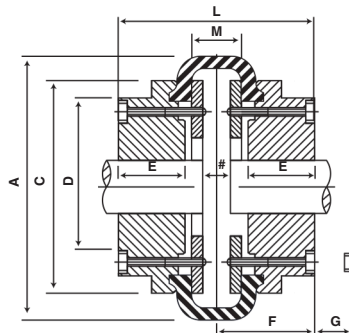


**TDT - 140 & 220**

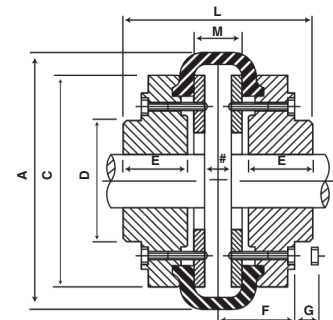
## B TYPE COUPLINGS



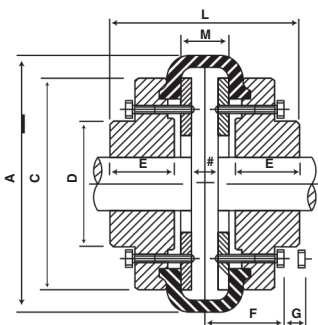
**TDT - 40 & 45**



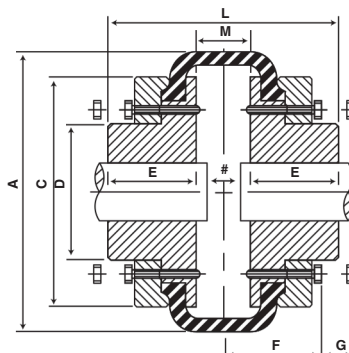
**TDT - 50**



**TDT - 60**



**TDT - 70 to 120**



**TDT - 140 to 220**

## DIMENSIONS

**TABLE 2: Dimensions "F", "H" and "B" Type Couplings**

Size	TYPE F & H								TYPE B								A	C	‡ G	† M	No. of screws per flange
	Bush No.	Max Bore	L	D	E	F	ξ J	Approx Weight Kg*	Max Bore	Min Bore	L	D	E	F	Bush No.	Approx Weight Kg*					
TDT40	1008	25	67	-	22	33.5	29	1.4	30	11.0	67	-	22	33.5	M5	2.0	104.0	82	43	23	4
TDT45	1108	28	67	-	22	33.5	29	3.0	32	11.0	73	-	25	36.5	M5	2.2	120.0	94	43	23	4
TDT50	1210	32	78	79.0	25	39.0	38	3.1	38	16.0	92	79	32	46.0	M5	4.0	133.5	100	43	28	4
TDT60	1610	42	86	103.0	25	43.0	38	5.2	48	16.0	112	73	38	43.0	M6	5.0	165.0	125	43	36	5
TDT70	1610	42	92	76.0	25	50.5	38	7.4	55	19.0	132	82	45	50.5	M6	8.0	197.0	144	10	42	5
TDT80	2012	50	111	95.0	32	53.0	47	9.2	65	15.4	149	95	51	53.0	M10	12.0	211.0	167	10	47	6
TDT85	2012	50	112	103.0	32	53.5	47	12.5	70	31.7	154	103	53	53.5	M12	14.0	222.0	179	13	48	6
TDT90	2517	60	140	110.0	45	59.5	50	15.0	76	31.7	164	110	57	59.5	M12	15.0	235.0	188	13	50	6
TDT100	2517	60	148	124.0	45	61.5	50	21.0	85	31.7	178	124	60	61.5	M12	21.0	254.0	216	13	58	6
TDT110	2517	60	140	134.0	45	63.5	50	26.5	90	31.7	180	134	65	63.5	M12	28.0	279.0	233	14	50	6
TDT120	3020	75	157	152.0	51	70.0	68	35.5	102	38.1	207	152	76	70.0	M12	41.0	314.0	264	14	55	6
TDT140	3535	90	204	194.5	89	76.0	89	67.2	120	75.0	204	195	89	76.0	M20	61.0	359.0	313	14	26	8
TDT160	4040	100	220	216.0	102	78.0	110	91.0	140	75.0	220	216	102	78.0	M20	86.0	402.0	345	19	16	8
TDT180	4545	110	258	266.0	114	94.0	126	146.0	150	75.0	258	266	114	94.0	M20	141.0	470.0	398	19	30	10
TDT200	4545	110	278	266.0	114	103.0	126	182.0	150	75.0	276	266	114	103.0	M20	179.0	508.0	429	19	48	12
TDT220	5050	127	312	267.0	127	118.0	140	320.0	160	90.0	312	267	127	118.0	M20	312.0	562.0	474	20	56	12
TDT250	-	-	-	-	-	-	-	-	190	100.0	360	290	150	125.0	M20	500.0	628.0	532	25	60	12

Dimensions are in millimeters

\* Weights given are for min. bore complete coupling

† Misthe distance between flanges.

# Shaftends, although normally located 'M' apart - can project beyond the flanges as shown. In the event, allow sufficient space between shaft ends for the float and misalignment.

‡ Gisthe amount by which clamping screws need to be withdrawn to release tyre.

ξ Jisthe wrench clearance to allow for tightening and loosening the bush on the shaft. The use of shortened wrench willallow dimension to be reduced.

# POWER RATINGS

**TABLE 3: Power Ratings (kW)**

Speed (rev/min)	TDT Series - Coupling Size																
	40	45	50	60	70	80	85	90	100	110	120	140	160	180	200	220	250
100	0.2	0.40	0.6	1.1	1.7	2.6	3.2	3.8	5.3	7.5	12.4	19.7	32.6	57.4	84	104	132
200	0.4	0.80	1.1	2.2	3.3	5.3	6.4	7.6	10.0	14.9	24.8	39.4	65.2	115.0	168	209	264
300	0.7	1.20	1.7	3.3	5.1	7.9	9.6	11.5	15.9	22.4	37.1	59.1	97.8	172.0	252	313	396
400	0.9	1.60	2.2	4.4	6.8	10.6	12.8	15.5	21.2	29.8	49.5	78.8	130.0	230.0	336	418	529
500	1.1	1.90	2.8	5.5	8.4	13.2	16.0	19.1	26.4	37.3	61.9	98.5	163.0	287.0	420	522	660
600	1.3	2.30	3.3	6.6	10.2	15.9	19.2	22.9	31.7	44.7	74.3	118.0	196.0	345.0	504	627	793
700	1.5	2.70	3.9	7.7	11.9	18.5	22.4	26.8	37.0	52.2	86.6	138.0	228.0	402.0	588	731	925
720	1.6	2.80	4.0	8.0	12.2	19.1	23.0	27.5	38.1	53.7	89.1	142.0	235.0	414.0	605	753	951
800	1.8	3.10	4.4	8.9	13.6	21.2	25.6	30.6	42.3	59.6	99.0	158.0	261.0	459.0	672	836	1057
900	2.0	3.00	5.0	10.0	15.3	23.8	28.8	34.4	47.6	67.1	111.0	177.0	293.0	517.0	756	940	1198
960	2.1	3.70	5.3	10.7	16.3	25.4	30.7	36.7	50.8	71.6	119.0	189.0	313.0	551.0	806	1003	1269
1000	2.2	3.90	5.5	11.1	17.0	26.5	32.0	38.2	52.9	74.6	124.0	197.0	326.0	574.0	840	1045	1322
1200	2.6	4.70	6.7	13.3	20.4	31.8	38.4	45.9	63.5	89.5	149.0	236.0	391.0	689.0	1008		
1400	3.1	5.46	7.8	15.5	23.8	37.1	44.8	53.5	74.0	104.0	173.0	276.0	456.0	804.0			
1440	3.2	5.60	8.0	16.0	24.4	38.1	46.0	55.0	76.1	107.0	178.0	284.0	469.0	827.0			
1600	3.5	6.20	8.9	17.8	27.1	42.4	51.2	61.2	84.6	119.0	198.0	315.0	522.0				
1800	4.0	7.00	10.0	20.0	30.5	47.7	57.6	68.8	95.2	134.0	223.0	355.0					
2000	4.4	7.80	11.1	22.2	33.9	53.0	64.0	76.4	106.0	149.0	248.0						
2200	4.8	8.60	12.2	24.4	37.3	58.3	70.4	84.1	116.0	164.0							
2400	5.9	9.40	13.3	26.6	40.7	63.6	76.8	91.7	127.0								
2600	5.7	10.10	14.4	28.9	44.1	68.9	83.2	99.4	137.0								
2800	6.2	10.90	15.5	31.1	47.5	74.2	89.6	107.0									
2880	6.3	11.20	16.0	32.0	48.9	76.3	92.1	110.0									
3000	6.6	11.70	16.7	33.3	50.9	79.5	96.0										
3500	7.7	13.60	19.4	38.9	59.4												
3600	7.9	14.00	20.0	40.0													

The figures in heavier type are for standard motor speeds

For speeds below 100 rev/min and intermediate speeds, use normal torque ratings.

# PHYSICAL CHARACTERISTICS

**TABLE 4: Physical Characteristics**

Size	Max. Speed (rev/min)	Torque (Nm)		Moment of inertia MR <sup>2</sup> (kgm) <sup>2</sup>	Torsional Stiffness (Nm/O)	Maximum Misalignment (mm)	
		Nominal	Max.			Parallel	End float ±
TDT40	4500	21	64	0.00148	5	1.1	1.3
TDT45	4500	37	110	0.00250	9	1.2	1.5
TDT50	4500	53	160	0.00349	13	1.3	1.7
TDT60	4000	106	318	0.01030	26	1.6	2.0
TDT70	3600	162	487	0.01811	41	1.9	2.3
TDT80	3100	253	759	0.03679	63	2.1	2.6
TDT85	3000	305	915	0.05015	76	2.2	2.8
TDT90	2880	365	1096	0.06374	91	2.4	3.0
TDT100	2600	505	1517	0.11989	126	2.6	3.3
TDT110	2300	712	2137	0.16012	178	2.9	3.7
TDT120	1050	1182	3547	0.34302	296	3.2	4.0
TDT140	1800	1881	5642	0.69452	470	3.7	4.6
TDT160	1600	3113	9339	1.21767	778	4.2	5.3
TDT180	1500	5485	16455	2.01800	1371	4.8	6.0
TDT200	1300	8022	23508	4.03446	1959	5.3	6.6
TDT220	1100	9932	33125	8.67644	2760	5.8	7.3
TDT250	1000	12606	42740	16.85095	3562	6.6	8.2

**Note:**

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

All flexible tyres have an angular misalignment capacity upto 4

**TABLE 5**

Coupling Size	TDT 40	TDT 45	TDT 50	TDT 60	TDT 70	TDT 80	TDT 85	TDT 90	TD T 10	TD T 11	TD T 12	TD T 14	TD T 16	TD T 18	TD T 20	TD T 22	TD T 25	
	M2 (mm)	23	23	28	36	42	47	48	50	Ø8	Ø9	Ø5	Ø6	Ø6	Ø8	Ø8	Ø6	Ø6
Clamping Screw Torque	Nm	15	15	15	15	24	24	32	32	32	32	35	35	35	35	35	38	38

\* Hexabonal socket cap head clamping screws on those sizes.

# INSTALLATION INSTRUCTIONS

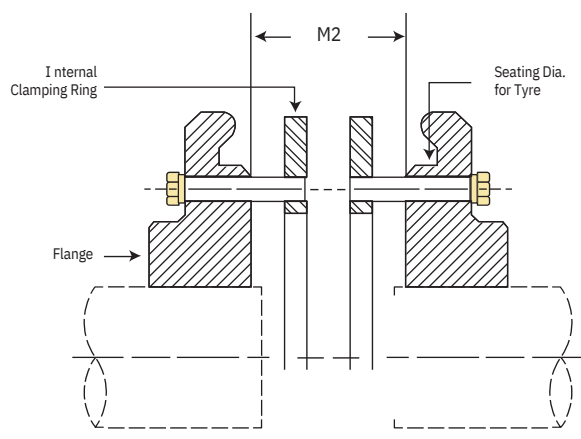
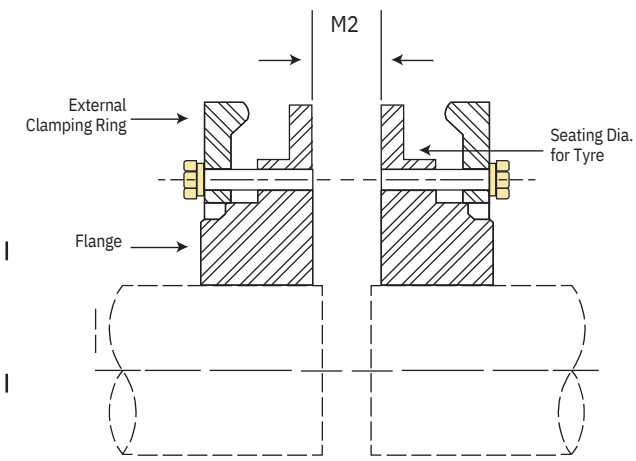
**Note :**

Satisfactory performance depends on correct installation and maintenance. All instructions in this manual must therefore be followed carefully.

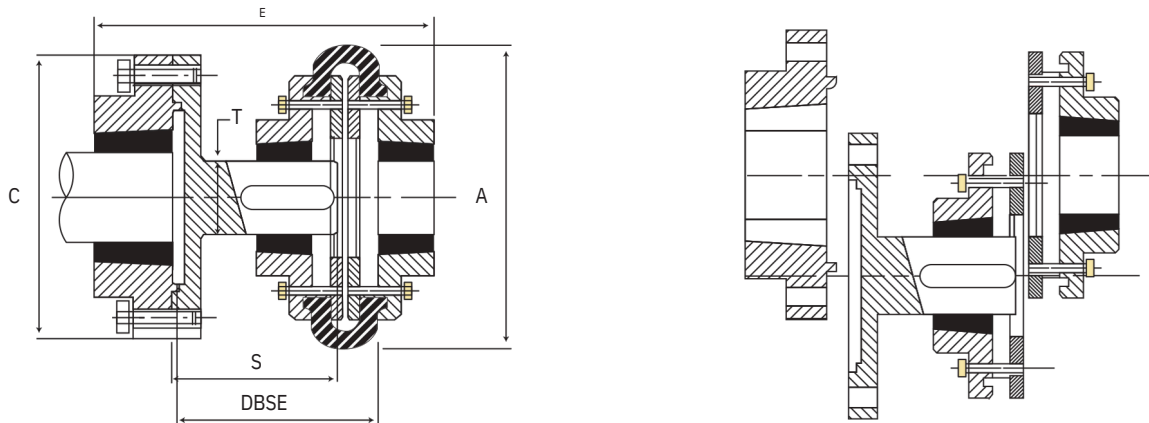
- 01** Thoroughly clean all components, paying particular attention to the removal of the protective coating in the bore of the flanges.
- 02** Fit flanges to the shafts placing the external clamp rings on the shafts. (Where Taper-Lock flanges are used, see separate fitting instructions supplied with the Taper-Lock 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.
- 03** Bring shafts into line until dimension M2 is obtained (table -05). If 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 flush with the end of the shaft when used with Mill-Motor flanges.
- 04** Check parallel alignment by laying a straight edge across the flanges at several positions around the circumference. Check angular alignment by measuring gap between flanges at several positions around the circumference. It is desirable to align the coupling as accurately as possible, particularly on high speed applications.
- 05** 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.
- 06** Tighten clamping ring screws alternately and evenly (half turn at a time) working round each flange until the required screw torque is achieved.

**TABLE 6**

Coupling Size	TDT40 to TDT60	TDT70 to TDT120	TDT140	TDT160 to TDT180	TDT200 to TDT250
Tyre Gap (mm)	2	3	5	6.5	8



## TYRE SPACER COUPLINGS



Comprising a TIDC INDIA Tyre Coupling (Size TDT40 - TDT140) 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. TIDC Type Couplings are primarily designed for the standard distance between shaft and dimensions 100, 140 and 180 mm.

**TABLE 7**

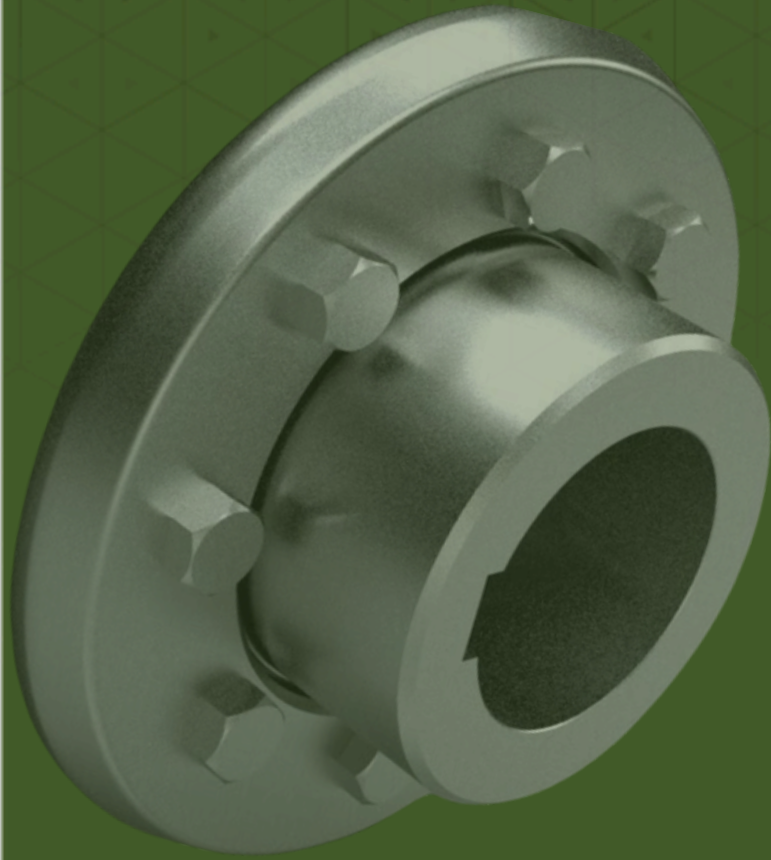
DBSE - Distance between shaft end

Spacer Size	DBSE	Tyre Coupling Size	Spacer Bush Size	Max. Bore	Tyre Coupling Bush Size	Max. Bore	A	C	E	S	T
TSM12	80	TDT40	1210	32	1008	25	104.0	118	134.0	77	25
TSM12	100	TDT40	1210	32	1008	25	104.0	118	140.0	97	25
TSM16	100	TDT40*	1615	42	1008	25	104.0	127	170.0	94	32
TSM16	140	TDT40*	1615	42	1008	25	104.0	127	210.0	134	32
TSM16	100	TDT50	1615	42	1210	32	133.5	127	173.0	94	32
TSM16	140	TDT50	1615	42	1210	32	133.5	127	213.0	134	32
TSM16	100	TDT60	1615	42	1610	42	165.0	127	177.0	94	32
TSM16	140	TDT60	1615	42	1610	42	165.0	127	214.0	134	32
TSM25	100	TDT70	2517	60	1610	42	197.0	178	180.0	94	42
TSM25	140	TDT70	2517	60	1610	42	197.0	178	220.0	134	42
TSM25	180	TDT70	2517	60	1610	42	197.0	178	260.0	174	42
TSM25	100	TDT80	2517	60	2012	50	211.0	178	193.0	94	48
TSM25	140	TDT80	2517	60	2012	50	211.0	178	233.0	134	48
TSM25	180	TDT80	2517	60	2012	50	211.0	178	273.0	174	48
TSM25	140	TDT90	2517	60	2517	60	235.0	178	235.0	134	48
TSM25	180	TDT90	2517	60	2517	60	235.0	178	275.0	174	48
TSM30	140	TDT100	3030	75	2517	60	254.0	216	269.5	134	60
TSM30	180	TDT100	3030	75	2517	60	254.0	216	309.5	174	60
TSM30	140	TDT110	3030	75	2517	60	279.0	216	369.5	134	60
TSM30	180	TDT110	3030	75	2517	60	279.0	216	309.5	174	60
TSM35	140	TDT120	3535	90	3020	75	314.0	248	297.5	134	75
TSM35	180	TDT120	3535	90	3020	75	314.0	248	327.5	174	75
TSM35	140	TDT140	3535	90	3535	90	359.0	248	296.0	134	80
TSM35	180	TDT140	3535	90	3535	90	359.0	248	336.0	174	80

TDT40 'B' Flange must be used to fit spacer shaft.

All dimensions are in millimeters.

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# TYRE

# COUPLINGS



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