

TYRE-FLEX COUPLINGS TYPE T / TO / RST



The flexible capabilities of the Tyreflex Coupling help to accommodate angular, parallel and axial misalignments.

Parallel Misalignment upto 6 mm. Angular Misalignment upto 4°. End Float upto 8 mm. Suitable in ambient temp. upto 70°C.

CUSHIONING SHOCK LOADS

Tyreflex being a torsionally soft coupling protects against vibration, impact loads and heavy shocks in the event of sudden load changes.

EASE OF ASSEMBLY / DISASSEMBLY

Alignment is quickly checked by placing a straight edge across the outside diameters of the flanges.

Installation or replacement of new tyre is achieved without disturbing driver or driven shafts, simply by loosening the clamping screws, placing a new tyre between the flanges and clamping rings and then tightening the clamping screws.

TYRE-FLEX COUPLING - RST

Tyre-flex Spacer Couplings RST are specifically designed for motor-pump installations, where it is desirable not to disturb drive/driven equipment while servicing impellers, packing glands, etc.

The maintenance time-reduction feature is valuable on pumps, compressors and many other applications.

SELECTION PROCEDURE - T/TO

(a) Service Factor

Determine the required service factor from table 1.

(b) Design Power

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

(c) Coupling Size

Refer table 2 and from the appropriate speed read across until a power greater than that required is found. The size of Tyre-flex coupling required is given in that column..

(d) Bore Size

Check from table 3 that selected coupling can accommodate required bores.

SELECTION PROCEDURE - RST

1. Select a suitable size of Tyre-flex coupling using the procedure.
2. Refer size column in table A and locate the size of coupling selected.
3. Read across this size until required DBSE can be accommodated.
4. The size of the spacer coupling is given in the first column of table A.
5. Refer coupling dimensional table A to check that the required bores can be accommodated.

TYRE-FLEX COUPLINGS

TYPE T / TO / RST



TABLE 1 : SERVICE FACTORS

SPECIAL CLASSES 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 Rathi Transpower Pvt. Ltd. with full application details for analysis.	Type of Driving Unit					
	Electric Motors Steam Turbines			Internal Combustion Engines Steam Engines Water Engines		
	Hours per day duty			Hours per day duty		
Type of Driven Machine	upto 10	over 10 to 16 incl.	Over 16	upto 10	over 10 to 16 incl.	Over 16
CLASS 1 Agitators, Brewing machinery, Centrifugal compressors and pumps, Belt Conveyors, Dynamometers, Lineshafts, Fans upto 7.5 kW, Blower 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 7.5 kW.	1.3	1.4	1.5	1.8	1.9	2.0
CLASS 3 Bucket elevators, Cooling tower fans, Piston compressors & 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, 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

TABLE 2 : POWER RATING (kW)

Speed rpm	Size T / TO														
	4	5	6	7	8	9	10	11	12	14	16	18	20	22	25
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
750	1.87	5.17	9.97	19.65	29.47	39.30	53.02	68.70	104.25	182.25	296.25	492.75	732	907.5	1155
1000	2.50	6.90	13.30	26.20	39.30	52.40	70.70	91.60	139.0	243.0	395.0	657.0	976	1215	1537
1500	3.75	10.35	19.95	39.30	58.95	78.60	106.05	137.40	208.50	364.50	592.50*	986.5*	-	-	-
1800	4.50	12.42	23.94	47.16	70.74	94.32	127.26	164.88	250.20	437.40*	-	-	-	-	-
3000	7.50	20.70	39.90	78.60	117.90*	157.20*	-	-	-	-	-	-	-	-	-
3600	9.00	24.84	47.98	94.32	-	-	-	-	-	-	-	-	-	-	-

- All these power ratings are calculated at constant torque.
- For speeds below 100 rpm and intermediate speeds use normal torque ratings.

* Dynamic balancing preferred at these speeds.

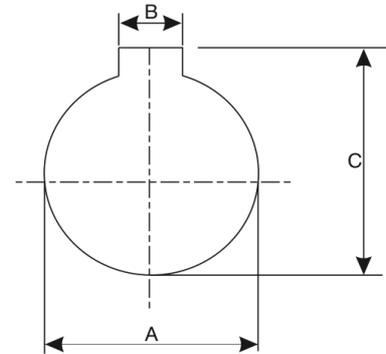
Poles	2	4	6	8
rpm	3000	1500	1000	750

TECHNICAL DATA - FLEXIBLE TYRES

Size	4	5	6	7	8	9	10	11	12	14	16	18	20	22	25
Max. Speed rpm	4500	4500	4000	3600	3100	3000	2600	2300	2050	1800	1600	1500	1300	1100	1000
Torsional Stiffness Nm/Deg.	5	13	26	41	63	91	126	178	296	470	778	1371	1959	2760	3562
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
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
Normal Torque Nm	24	66	127	250	375	500	675	875	1330	2325	3730	6270	9325	11600	14675
Max. Torque Nm	64	160	318	487	759	1096	1517	2137	3547	5642	9339	16455	23508	33125	42740

METRIC BORE & KEYWAYS : IS:2048-1983 / BS 4235-1:1972 (Dimensions comply with DIN 6885/1)

SR. NO.	BORE SIZE (A)		KEYWAY				SET SCREW SIZE
			WIDTH (B)		DEPTH (C)		
	H7		Js9				
1	11	+0.018	4	±0.015	12.8	+0.1	M5 X 0.8P
2	14	-0.000	5		16.3	-0.0	
3	19	+0.021 -0.000	6	±0.018	21.8	±0.2 -0.0	M6 X 1P
4	24		8	±0.022	27.3		
5	28	8	31.3				
6	34	+0.025 -0.000	10	±0.027	37.3	±0.2 -0.0	M10 X 1.5P
7	38		10		41.3		
8	42		12		45.3		
9	48		14		51.8		
10	55	+0.030 -0.000	16	±	59.3	±0.2 -0.0	M12 X 1.75P
11	60		18		64.4		
12	65		18		69.4		
13	75		20		74.9		
14	80	+0.035 -0.000	22	0.033	85.4	±0.3 -0.0	M16 X 2P
15	85		22		90.4		
16	100		28		106.4		
17	110		28		116.4		
18	115	+0.040 -0.000	32	0.033	122.4	±0.3 -0.0	M20 X 2.5P
19	120		32		127.4		
20	125		32		132.4		
21	130		32		137.4		
22	135	+0.040 -0.000	36	0.033	143.4	±0.3 -0.0	M20 X 2.5P
23	140		36		148.4		
24	145		36		153.4		
25	150		36		158.4		



Imperial Bores
Data available on request.

ELASTOMERIC FLEXIBLE MEMBERS FAILURE MODE CAUSES

The investigation procedure is somewhat tougher here. There are many types of elastomers used in various elastomeric couplings. A guideline of failure mode & causes are given below :-

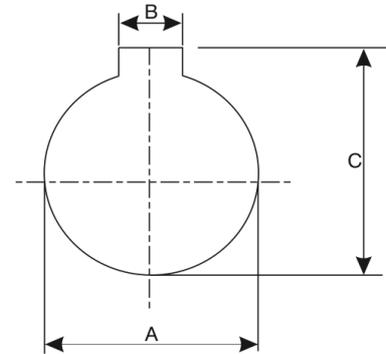
FAILURE MODE	PROBABLE CAUSE	CORRECTIVE ACTION
Worn flexing element or shaft bushings. Shaft bearing failure. High-pitched or staccato noise.	Excessive shaft misalignment.	Realign coupling and shaft to meet specified tolerances.
Ruptured elastomeric flexing element. Sheared hub, pins or teeth. Loose hubs on shaft, sheared keys.	torsional shock overload.	Find and eliminate cause of overload. Use larger coupling.
Fatigue of flexible element. Overheated elastomeric tyre or sleeve. Fatigue or hub pins or discs. Worn gear teeth. Staccato or clacking noise. Loose hub on shaft, keyseat walls.	1. Torsional vibration. 2. Excessive starts and stops. 3. High peak-to-peak torsional overloads.	1 & 2 Use larger coupling. 3 Add flywheel to hub.
Shaft bearing failures. High-pitched whine. Motor thrust bearing failure.	Lubricant failure.	Replace or rebuild coupling.
Swollen or cracked elastomeric flexible member. Lubricant failure. Severe hub corrosion.	Chemical attack.	Use more chemically resistant flexing member or hub. Coat hubs.
Distorted or deteriorated elastomeric flexing member. Lubricant failure.	Excessive heat.	Use special high-temperature rubber compounds and lubricants.
Shattered flexing member. Lubricant failure.	Low temperature. (below - 18°C)	Use special low-temperature rubber compounds and lubricants.

COMPREHENSIVE PERFORMANCE HISTORY

In reality, the flexible coupling is a mechanical fuse. The failure of this fuse, which is usually the cheapest component in the driveline, should be welcomed. For it thus indicates trouble in the system and a major component failure is avoided. However, if the coupling failure presents a hazard, as it could on a manned lift or an overload crane, point out this hazard vividly to the manufacturer.

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5	28	8	31.3				
6	34	+0.025 -0.000	10	±0.027	37.3	±0.2 -0.0	M10 X 1.5P
7	38		10		41.3		
8	42	12	45.3				
9	48	+0.030 -0.000	14	±	51.8	±0.2 -0.0	M12 X 1.75P
10	55		16		59.3		
11	60	+0.035 -0.000	18	0.033	64.4	±0.3 -0.0	M16 X 2P
12	65		18		69.4		
13	75	20	74.9				
14	80	22	85.4				
15	85	+0.040 -0.000	22	0.033	90.4	±0.3 -0.0	M20 X 2.5P
16	100		28		106.4		
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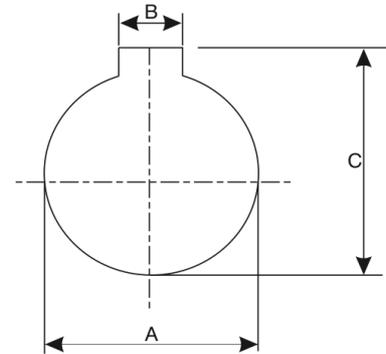
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TYRE-FLEX COUPLINGS

TYPE T / TO

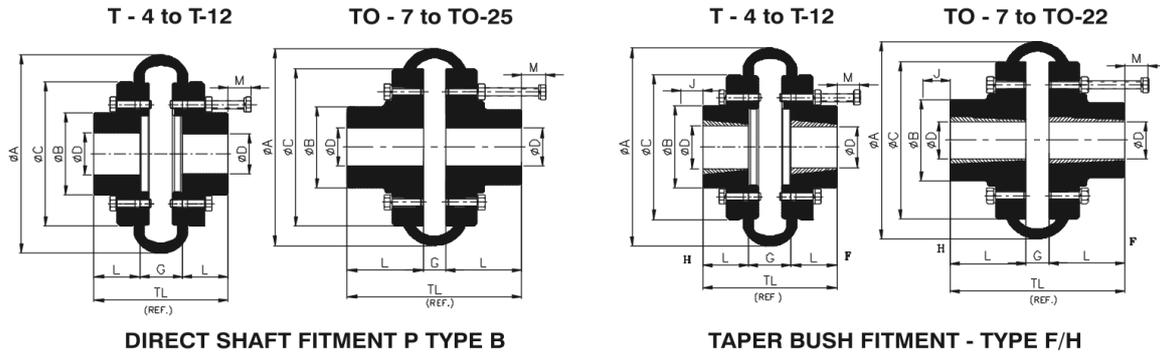


TABLE 3 : DIMENSIONS OF TYRE-FLEX HUB TYPES B, F & H

SIZE	KW @ 100 RPM	MAX. SPEED (RPM)	TYPE	# BUSH SIZE	BORE ØD		TYPE F/H			TYPE B		ØA	ØC	ØB	M	G	WT.(Kg)	M.I. (WR ²) Kg-m ²
					PB	MAX.	TL	L	J	TL	L							
T-4	0.25	4500	B	-	10	32	-	-	-	68	22	104	82	-	17	24	1.9	0.00161
			F/H	1008	-	25	68	22	29	-	-							
T-5	0.69	4500	B	-	10	38	-	-	-	93	32	133	100	79	17	29	3.5	0.00358
			F/H	1210	-	32	79	25	38	-	-							
T-6	1.33	4000	B	-	15	45	-	-	-	111	38	165	125	73	8	35	5	0.0105
			F/H	1610	-	42	85	25	38	-	-							
TO-7	2.62	3600	B	-	19	50	-	-	-	106	45	197	144	82	-	16	8.4	0.0177
			F	2012	-	50	80	32	38	-	-							
			H	1610	-	42	66	25	-	-	-							
TO-8	3.93	3100	B	-	25	63	-	-	-	124	51	210	167	96	10	22	11.5	0.0329
			F	2517	-	60	112	45	42	-	-							
			H	2012	-	50	86	32	-	-	-							
TO-9	5.24	3000	B	-	30	75	-	-	-	138	57	235	188	110	-	24	16	0.0599
			F/H	2517	-	60	114	45	48	-	-							
TO-10	7.07	2600	B	-	32	80	-	-	-	144	60	254	216	125	-	24	22.7	0.1148
			F	3020	-	75	126	51	48	-	-							
			H	2517	-	60	114	45	-	-	-							
TO-11	9.16	2300	B	-	32	90	-	-	-	152	65	279	233	140	-	22	28.3	0.1631
			F/H	3020	-	75	124	51	55	-	-							
TO-12	13.9	2050	B	-	38	100	-	-	-	177	76	314	264	152	-	24.5	40.1	0.2902
			F	3525	-	90	154.5	65	55	-	-							
			H	3020	-	75	126.5	51	-	-	-							
TO-14	24.3	1800	B	-	58	127	-	-	-	201	89	359	311	195	26	23	60.6	0.6045
			F/H	3525	-	90	153	65	67	-	-							
TO-16	39.5	1600	B	-	65	140	-	-	-	212	102	395	345	216	-	8	86.4	1.2755
			F/H	4030	-	100	162	77	80	-	-							
TO-18	65.7	1500	B	-	70	150	-	-	-	254	116	470	398	220	-	22	133.3	2.1525
			F/H	4535	-	115	200	89	89	-	-							
TO-20	97.6	1300	B	-	70	150	-	-	-	258	114	508	429	220	-	30	144.6	3.1765
			F/H	4535	-	115	208	89	89	-	-							
TO-22	121	1100	B	-	75	160	-	-	-	281	127	562	470	240	-	27	181.63	4.7861
			F/H	5040	-	125	231	102	92	-	-							
TO-25	154	1000	B	-	85	190	-	-	-	294	132	628	532	275	-	30	281.1	8.129

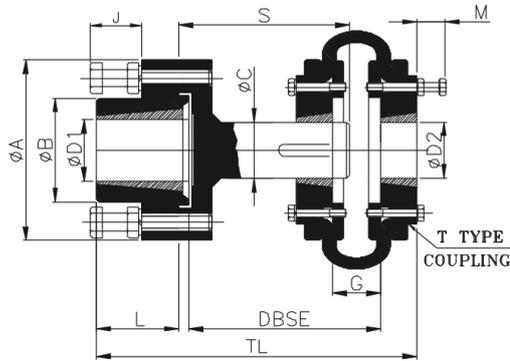
NOTES:

- 1) All Dimensions are in mm .
- 2) M is amount by which clamping screw need to be withdrawn to release tyre .
- 3) J is wrench clearance to allow for tightening and loosening of the bush on the shaft.
- 4) Shaft ends, although normally located G apart can project beyond flanges.
- 5) Weight & Moment of inertia specified for solid bores.
- 6) # For detailed information about Taper Bore, Please refer Taper Bush catalog.
- 7) FRAS Tyres are available on request.

TYRE-FLEX COUPLINGS TYPE RST



T-4 to T-6



TO-7 to TO-14

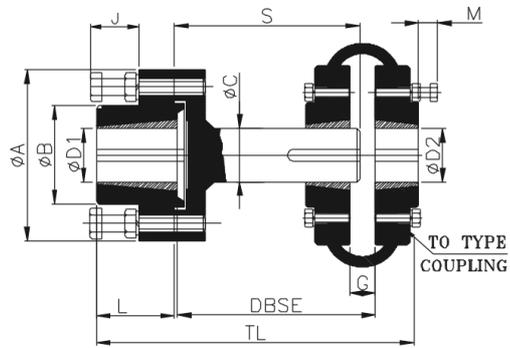


TABLE A - DIMENSIONAL DATA

SPACER SIZE	TYPE	NOM. DBSE	BORE ØD1		ØA	ØB	TL		L	J	S		ØC	TYRE FLEX SIZE T/TO	BORE ØD2		G		M
			PB	MAX.			T	TO			T	TO			PB	MAX.	T	TO	
RST-12	B	80 100	12	42	118	83	127 147	-	25	22	57 77	-	25	4	10	32	24	-	17
RST-16	B	100	18	48	127	80	160	-	38	24	94	-	32	4	10	32	24	-	17
		200					134				4			10	32	24	17		
		100					94				5			10	38	29	17		
		140					134				5			10	38	29	17		
		100					94				6			15	45	35	8		
140	134	6	15	45	35	8													
RST-25	B	100	38	80	178	127	-	45	27	-	94	48	-	7	19	50	16	-	-
		140									134			7	19	50	16		-
		180									174			7	19	50	16		-
		100									94			8	25	63	22		10
		140									134			8	25	63	22		10
		180									174			8	25	63	22		10
		140									134			9	30	75	24		-
		180									174			9	30	75	24		-
RST-30	B	140	40	90	216	146	-	76	33	-	134	60	-	10	32	80	24	-	-
		180									174			10	32	80	24		-
		140									134			11	32	90	22		-
		180									174			11	32	90	22		-
RST-35	B	140	66	110	248	178	-	89	33	-	134	80	-	12	38	100	25	-	-
		180									174			12	38	100	25		-
		180									174			14	58	125	32		26

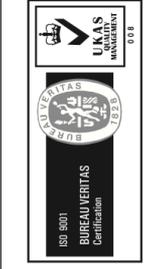
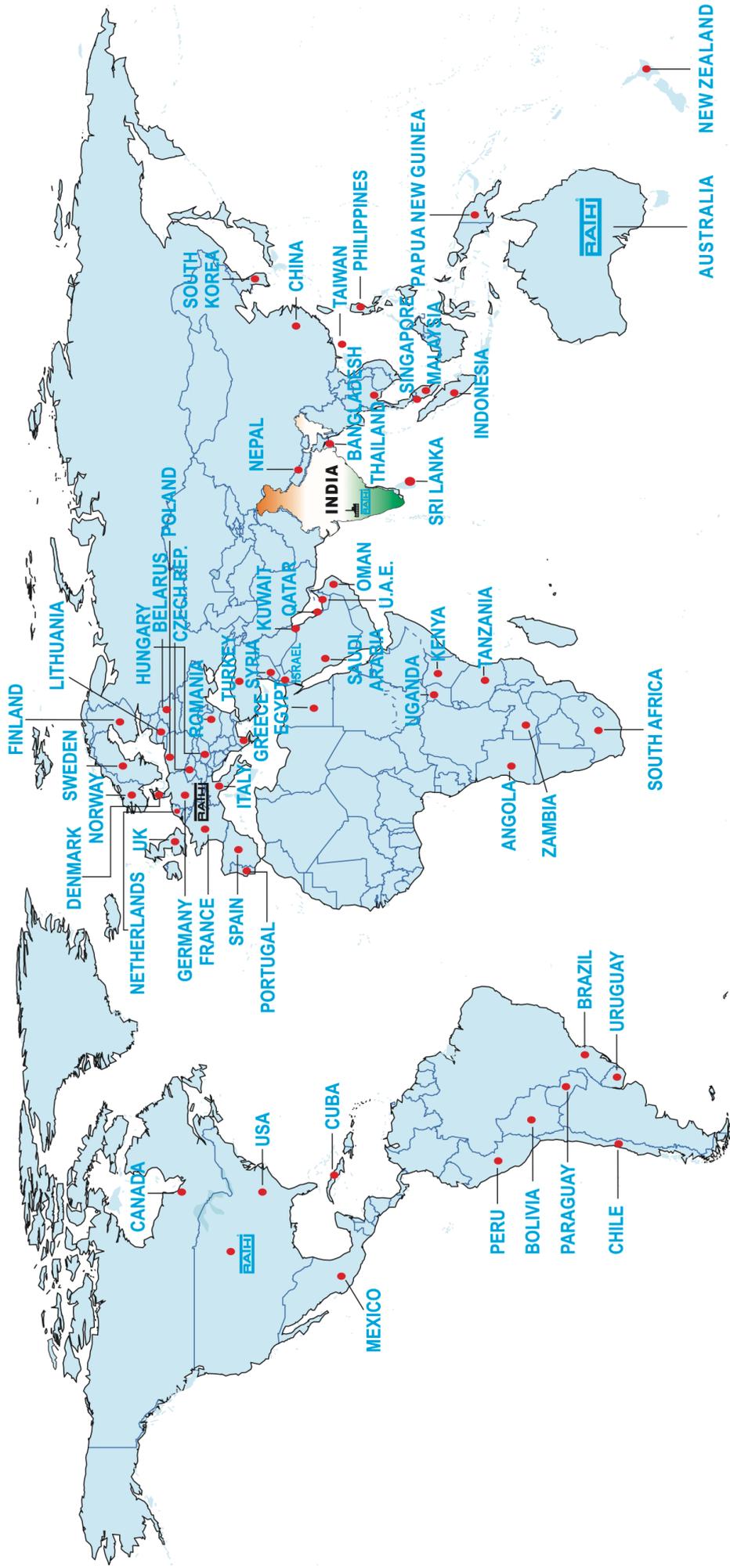
- * T4 'B' flange must be used to fit spacer shaft.
- # For detailed information about Taper Bush bore, please refer Taper Bush catalogue.
- All dimensions are in mm unless otherwise specified.
- M is amount by which clamping screw need to be withdrawn to release tyre.

TABLE B: DISTANCE BETWEEN SHAFT ENDS (DBSE)

Tyre-flex Size T/TO	RST12		RST 16				RST 25						RST 30				RST 35				
	80		100		140		100		140		180		140		180		140		180		
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
4	80	100	100	113	140	153															
5			100	116	140	156															
6			100	124	140	164															
7 F							100	107	140	147	180	187									
8 F							100	112	140	152	180	192									
9									140	155	180	195									
10 F													140	151	180	191					
11													140	151	180	192					
12 F																	140	156	180	196	
14																	140	153	180	193	

- NOTES :-
- 1) Non STD Spacers are available on request .
 - 2) Refer Installation Instructions for Mounting and Dismounting. .
 - 3) Available only with taper bore, without taper bush.

Distribution throughout the world



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TYRE-FLEX COUPLINGS

TYPE T / TO

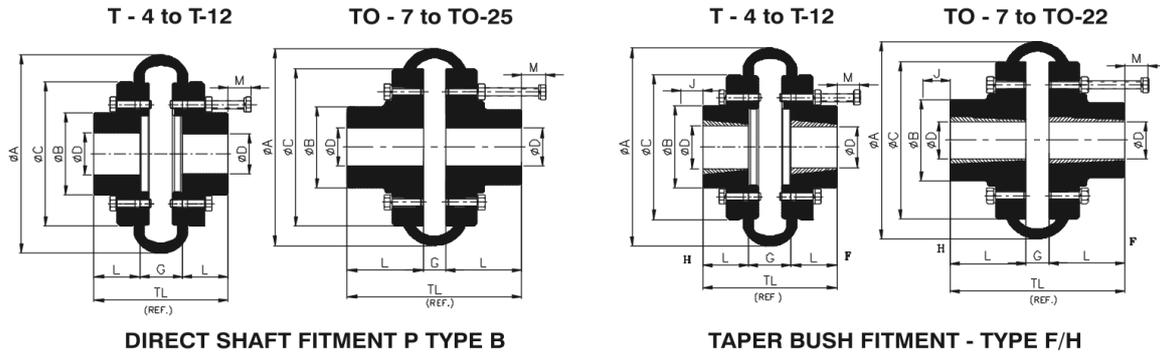


TABLE 3 : DIMENSIONS OF TYRE-FLEX HUB TYPES B, F & H

SIZE	KW @ 100 RPM	MAX. SPEED (RPM)	TYPE	# BUSH SIZE	BORE ØD		TYPE F/H			TYPE B		ØA	ØC	ØB	M	G	WT.(Kg)	M.I. (WR ²) Kg-m ²
					PB	MAX.	TL	L	J	TL	L							
T-4	0.25	4500	B	-	10	32	-	-	-	68	22	104	82	-	17	24	1.9	0.00161
			F/H	1008	-	25	68	22	29	-	-							
T-5	0.69	4500	B	-	10	38	-	-	-	93	32	133	100	79	17	29	3.5	0.00358
			F/H	1210	-	32	79	25	38	-	-							
T-6	1.33	4000	B	-	15	45	-	-	-	111	38	165	125	73	8	35	5	0.0105
			F/H	1610	-	42	85	25	38	-	-							
TO-7	2.62	3600	B	-	19	50	-	-	-	106	45	197	144	82	-	16	8.4	0.0177
			F	2012	-	50	80	32	38	-	-							
			H	1610	-	42	66	25	-	-	-							
TO-8	3.93	3100	B	-	25	63	-	-	-	124	51	210	167	96	10	22	11.5	0.0329
			F	2517	-	60	112	45	42	-	-							
			H	2012	-	50	86	32	-	-	-							
TO-9	5.24	3000	B	-	30	75	-	-	-	138	57	235	188	110	-	24	16	0.0599
			F/H	2517	-	60	114	45	48	-	-							
TO-10	7.07	2600	B	-	32	80	-	-	-	144	60	254	216	125	-	24	22.7	0.1148
			F	3020	-	75	126	51	48	-	-							
			H	2517	-	60	114	45	-	-	-							
TO-11	9.16	2300	B	-	32	90	-	-	-	152	65	279	233	140	-	22	28.3	0.1631
			F/H	3020	-	75	124	51	55	-	-							
TO-12	13.9	2050	B	-	38	100	-	-	-	177	76	314	264	152	-	24.5	40.1	0.2902
			F	3525	-	90	154.5	65	55	-	-							
			H	3020	-	75	126.5	51	-	-	-							
TO-14	24.3	1800	B	-	58	127	-	-	-	201	89	359	311	195	26	23	60.6	0.6045
			F/H	3525	-	90	153	65	67	-	-							
TO-16	39.5	1600	B	-	65	140	-	-	-	212	102	395	345	216	-	8	86.4	1.2755
			F/H	4030	-	100	162	77	80	-	-							
TO-18	65.7	1500	B	-	70	150	-	-	-	254	116	470	398	220	-	22	133.3	2.1525
			F/H	4535	-	115	200	89	89	-	-							
TO-20	97.6	1300	B	-	70	150	-	-	-	258	114	508	429	220	-	30	144.6	3.1765
			F/H	4535	-	115	208	89	89	-	-							
TO-22	121	1100	B	-	75	160	-	-	-	281	127	562	470	240	-	27	181.63	4.7861
			F/H	5040	-	125	231	102	92	-	-							
TO-25	154	1000	B	-	85	190	-	-	-	294	132	628	532	275	-	30	281.1	8.129

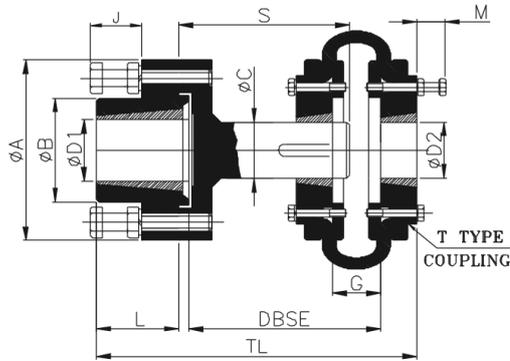
NOTES:

- 1) All Dimensions are in mm .
- 2) M is amount by which clamping screw need to be withdrawn to release tyre .
- 3) J is wrench clearance to allow for tightening and loosening of the bush on the shaft.
- 4) Shaft ends, although normally located G apart can project beyond flanges.
- 5) Weight & Moment of inertia specified for solid bores.
- 6) # For detailed information about Taper Bore, Please refer Taper Bush catalog.
- 7) FRAS Tyres are available on request.

TYRE-FLEX COUPLINGS TYPE RST



T-4 to T-6



TO-7 to TO-14

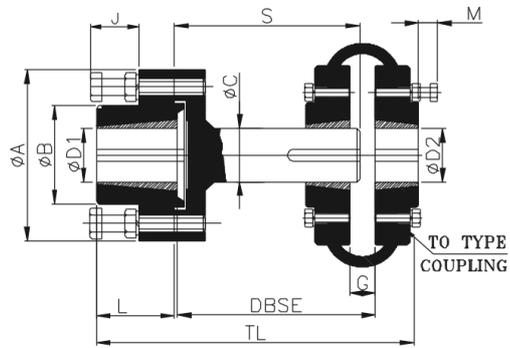


TABLE A - DIMENSIONAL DATA

SPACER SIZE	TYPE	NOM. DBSE	BORE ØD1		ØA	ØB	TL		L	J	S		ØC	TYRE FLEX SIZE T/TO	BORE ØD2		G		M
			PB	MAX.			T	TO			T	TO			PB	MAX.	T	TO	
RST-12	B	80 100	12	42	118	83	127 147	-	25	22	57 77	-	25	4	10	32	24	-	17
RST-16	B	100	18	48	127	80	160	-	38	24	94	-	32	4	10	32	24	-	17
		200					134				4			10	32	24	17		
		100					94				5			10	38	29	17		
		140					134				5			10	38	29	17		
		100					94				6			15	45	35	8		
140	134	6	15	45	35	8													
RST-25	B	100	38	80	178	127	-	45	27	-	94	48	-	7	19	50	16	-	-
		140									134			7	19	50	16		-
		180									174			7	19	50	16		-
		100									94			8	25	63	22		10
		140									134			8	25	63	22		10
		180									174			8	25	63	22		10
		140									134			9	30	75	24		-
		180									174			9	30	75	24		-
RST-30	B	140	40	90	216	146	-	76	33	-	134	60	-	10	32	80	24	-	-
		180									174			10	32	80	24		-
		140									134			11	32	90	22		-
		180									174			11	32	90	22		-
RST-35	B	140	66	110	248	178	-	89	33	-	134	80	-	12	38	100	25	-	-
		180									174			12	38	100	25		-
		180									174			14	58	125	32		26

* T4 'B' flange must be used to fit spacer shaft.

For detailed information about Taper Bush bore, please refer Taper Bush catalogue.

• All dimensions are in mm unless otherwise specified.

M is amount by which clamping screw need to be withdrawn to release tyre.

TABLE B: DISTANCE BETWEEN SHAFT ENDS (DBSE)

Tyre-flex Size T/TO	RST12		RST 16				RST 25						RST 30				RST 35			
	80		100		140		100		140		180		140		180		140		180	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
4	80	100	100	113	140	153														
5			100	116	140	156														
6			100	124	140	164														
7 F							100	107	140	147	180	187								
8 F							100	112	140	152	180	192								
9									140	155	180	195								
10 F													140	151	180	191				
11													140	151	180	192				
12 F																	140	156	180	196
14																	140	153	180	193

NOTES :-

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