

TAPERED ROLLER THRUST BEARINGS

Overview: Timken® thrust bearings are built to handle high thrust loads and heavy shock. The distinctive on-apex design characteristic of tapered roller thrust bearings ensures true rolling motion, which reduces roller sliding and provides a smoother, cooler-running bearing than other thrust types. Available in a wide range of sizes and design styles, these bearings fit many types of machinery in the industrial and automotive markets.

- **Bore Sizes:** 16.1 mm - 1550.0 mm (0.6337 in. - 61.0236 in.)
- **Industries:** Aggregate, rubber and plastics, metals, oil, gas and power generation.
- **Applications:** Cone crushers, crane hooks, oil well swivels, top drives, extruders, pulverizer drives, rolling mills, machine tool spindles and tables, drilling rig hydraulic heads, gear boxes and pre-heater fans.
- **Benefits:** High performance and application flexibility versus other non-tapered bearing types. Large range of product offerings.



TAPERED ROLLER THRUST BEARINGS

Timken tapered roller thrust bearings include conical rollers for true rolling motion. These bearings are engineered so that the rollers and raceway converge at a common apex point, which is on the center line of the bearing. Seating force between the rib and roller helps provide positive roller guidance.

Timken manufactures several types of heavy-duty tapered roller thrust bearings: standard (TTHD), V-flat (TTHDFL) and self-aligning V-flat (TTVS). Timken also offers TTSP and TTC, light-duty thrust bearings designed for oscillating applications.

TTHD

The TTHD design has an identical pair of hardened and ground steel rings with tapered raceways. Because both rings have the same bore and O.D., housings should be designed to clear the O.D. of rotating rings and shafts stepped to clear the bore of stationary rings. Controlled-contour tapered rollers are used and equally spaced by a cage. All components are separable. Most TTHD bearings are supplied with case-carburized components, which are well-suited for applications where extremely high thrust loads and heavy shock may be encountered. For very low-speed applications with unusually high loading, TTHD bearings can be supplied with a full complement of rollers. Extensively used in numerous applications, including oil well swivels, top drives, pulp refiners, extruders and gearboxes. Applications for full-complement bearings should be reviewed by your Timken engineer to help ensure selection of the proper bearing.



Fig. 34. Type TTHD.

TTHDFL

The TTHDFL combines the outstanding features of tapered and cylindrical roller bearings, offering the highest possible capacity of any thrust bearing of its size. The V-flat design includes one flat ring and one ring having a tapered raceway matching the rollers. These bearings maximize dynamic and static capacity within a given envelope. The design was originally developed for screwdown applications in metal rolling mills. They also have been highly successful in heavily loaded extruders, cone crushers, top drives and other applications where a wide range of operating conditions are found. Most sizes utilize pin-type cages with hardened pins through the center of the rollers, allowing closer spacing of the rollers to maximize capacity. Smaller sizes have brass cages designed for unidirectional retention of rollers.



Fig. 35. Type TTHDFL.

TTVS

The TTVS design employs the same basic roller and raceway design as the TTHDFL, except the lower ring is in two pieces. The contacting faces of the lower ring are spherically ground, permitting self-alignment under conditions of initial misalignment. TTVS bearings should not be used if dynamic misalignment (changing under load) is expected. These bearings are found in cone crushers, extruders, gear drives and pulp refiners.



Fig. 36. Type TTVS.

TTSP

Type TTSP thrust bearing is made up of two tapered thrust races, rollers, cage and an outside retainer which holds the components together during shipping and installation. TTSP bearings are light-duty thrust bearings and are used extensively in the steering pivot positions of automotive and other industrial applications.



Fig. 37. Type TTSP.

TTC, TTCS, TTCL

The types TTC, TTCS and TTCL thrust bearings consist of two tapered thrust races, rollers, and an outside retainer, but do not have a cage. The outside retainer holds the assembly together for shipping and installation. Types TTC, TTCS and TTCL bearings are thrust bearings specifically designed for oscillating applications. The retainer construction varies between types.



Fig. 38. Type TTC.



Fig. 39. Type TTCS.



Fig. 40. Type TTCL.

TAPERED STANDARD THRUST BEARING NOMENCLATURE

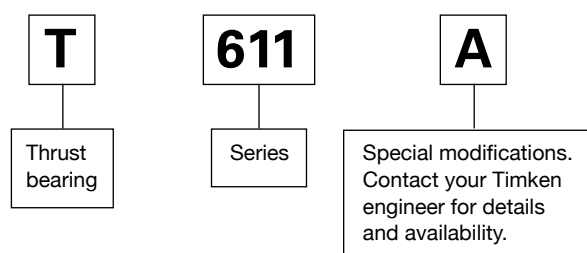


Fig. 41. Tapered thrust bearing nomenclature.

SPECIAL PART NUMBERS

Timken thrust bearings follow a unique part-numbering system with three main components. Since many thrust bearings are designed for a specific application it is common to use special part numbers.

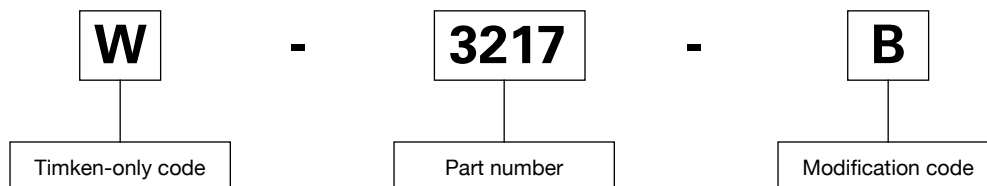
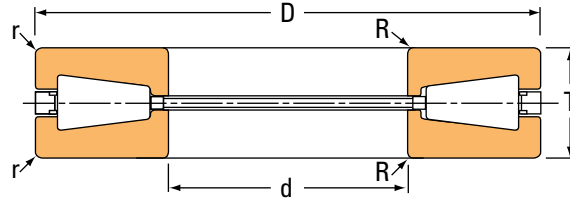


Fig. 42. Special part number nomenclature.

TYPE TTHD



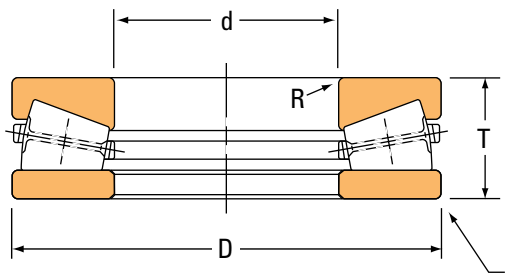
Part Number		Dimensions					Ratings		Bearing Weight
Bearing	Cage Type	Bore	Outside Diameter	Width	Max. Shaft Fillet Radius	Housing Fillet Radius ⁽¹⁾	Static	Dynamic ⁽²⁾	
		d	D	T	R	r	C ₀	C ₉₀	
		mm in.	mm in.	mm in.	mm in.	mm in.	N lbf	N lbf	kg lbs.
T135	Machined	34.925 1.3750	76.200 3.0000	15.875 0.6250	1.5 0.06	1.5 0.06	317000 71200	31700 7130	0.37 0.82
T1750	Machined	44.450 1.7500	84.734 3.3360	18.258 0.7188	2.3 0.09	2.3 0.09	434000 97700	42000 9460	0.49 1.07
T200A	Machined	50.800 2.0000	109.538 4.3125	22.225 0.8750	2.3 0.09	2.3 0.09	804000 181000	73100 16400	1.04 2.30
T311	Machined	76.200 3.0000	161.925 6.3750	33.338 1.3215	3.3 0.13	3.3 0.13	1760000 395000	152000 34200	3.47 7.66
T311F	Cageless	76.200 3.0000	161.925 6.3750	33.338 1.3215	3.3 0.13	3.3 0.13	2440000 545000	1250000 281000	3.54 7.81
T451	Machined	114.300 4.5000	250.825 9.8750	53.975 2.1250	4.0 0.16	4.0 0.16	4380000 985000	352000 79100	14.20 31.31
T511	Machined	127.000 5.0000	266.700 10.5000	58.738 2.3125	4.8 0.19	4.8 0.19	4580000 1030000	372000 83600	17.03 37.56
T9250FA	Cageless	139.700 5.5000	546.100 21.5000	127.000 5.0000	* *	16.0 0.63	31200000 7050000	16050000 3600000	191.33 421.80
T611	Machined	152.400 6.0000	317.500 12.5000	69.850 2.7500	6.4 0.25	6.4 0.25	6660000 1500000	526000 118000	28.35 62.50
T661	Machined	168.275 6.6250	304.800 12.0000	69.850 2.7500	6.4 0.25	6.4 0.25	5340000 1200000	442000 99300	23.53 51.87
T691	Machined	174.625 6.8750	358.775 14.1250	82.550 3.2500	6.4 0.25	6.4 0.25	7870000 1770000	620000 139000	43.16 95.15
T811	Machined	203.200 8.0000	419.100 16.5000	92.075 3.6250	9.7 0.38	9.7 0.38	11400000 2560000	869000 195000	65.48 144.33
T911	Machined	228.600 9.0000	482.600 19.0000	104.775 4.1250	* *	11.2 0.44	15200000 3420000	1140000 256000	98.25 216.61
T9250F	Cageless	234.950 9.2500	546.100 21.5000	127.000 5.0000	* *	16.0 0.63	31200000 7050000	16050000 3600000	164.84 363.40
T1421	Cageless	355.600 14.0000	533.400 21.0000	101.600 4.0000	* *	6.4 0.25	17200000 3870000	8000000 1790000	82.88 182.72
T16021	Machined	406.400 16.0000	711.200 28.0000	146.050 5.7500	* *	9.7 0.38	29000000 6530000	2130000 480000	259.63 572.38

⁽¹⁾These maximum fillet radii will be cleared by the bearing corners.

⁽²⁾Dynamic rating C₉₀ is for breaker block on cageless designer.

^(*)Contact your Timken engineer for details.

TYPE TTHDFL



Part Number		Dimensions					Ratings		Bearing Weight
Bearing	Cage Type	Bore	Outside Diameter	Width	Shaft Fillet Radius	Housing Fillet Radius ⁽¹⁾	Static	Dynamic	
		d	D	T	R	r	C ₀	C ₉₀	
		mm in.	mm in.	mm in.	mm in.	mm in.	N lbf	N lbf	kg lbs.
F-3167-B	Machined	101.575 3.9990	215.875 8.4990	46.038 1.8125	2.5 0.10	2.5 0.10	1570000 353000	228000 51300	9.30 20.50
T4920-T4921	Machined	124.993 4.9210	185.738 7.3125	25.400 1.0000	1.5 0.06	1.5 0.06	1250000 282000	93300 21000	2.36 5.19
W-3217-B	Machined	127.000 5.0000	266.700 10.5000	58.357 2.2975	3.6 0.14	3.6 0.14	2570000 578000	350000 78800	19.00 41.00
S-4055-C	Machined	149.974 5.9045	299.720 11.8000	89.700 3.5315	3.0 0.12	3.0 0.12	3350000 754000	480000 108000	36.00 79.00
G-3304-B	Pin	168.275 6.6250	304.800 12.0000	69.850 2.7500	6.4 0.25	6.4 0.25	3730000 839000	495000 111000	25.90 57.00
T660V	Cageless	168.275 6.6250	304.800 12.0000	69.850 2.7500	6.4 0.25	6.4 0.25	7090000 1590000	524000 118000	23.10 50.91
W-3218-B	Pin	177.800 7.0000	368.300 14.5000	82.169 3.2350	6.1 0.24	6.1 0.24	6270000 1410000	762000 171000	49.00 109.00
T7010V	Pin	177.800 7.0000	368.300 14.5000	82.550 3.2500	7.9 0.31	7.9 0.31	10900000 2450000	775000 174000	43.86 96.68
F-3094-C	Machined	228.575 8.9990	431.749 16.9980	88.900 3.5000	5.1 0.20	5.1 0.20	7120000 1600000	887000 199000	71.70 158.00
T9011	Pin	228.600 9.0000	482.600 19.0000	104.775 4.1250	1.5 0.06	11.2 0.44	18500000 4170000	1270000 285000	94.85 209.13
DX121944	Pin	234.950 9.2500	21.500 21.5000	127.000 5.0000	1.5 0.06	3.3 0.13	28100000 6320000	2230000 500000	161.88 356.88
I-2077-C	Machined	253.975 9.9990	508.000 20.0000	95.250 3.7500	6.4 0.25	6.4 0.25	10000000 2260000	1170000 264000	110.20 243.00
R-2927-C	Pin	254.000 10.0000	508.000 20.0000	107.950 4.2500	4.8 0.19	4.8 0.19	12100000 2720000	1440000 324000	123.40 272.00
T10100V	Pin	256.540 10.1000	546.100 21.5000	164.719 6.4850	1.5 0.06	6.4 0.25	28300000 6370000	2070000 465000	205.09 452.15
G-3224-C	Pin	256.540 10.1000	546.100 21.5000	165.100 6.5000	6.1 0.24	6.1 0.24	14900000 3350000	2050000 461000	227.20 501.00
S-4077-C	Pin	259.999 10.2362	479.948 18.8956	132.080 5.2000	4.8 0.19	4.8 0.19	8980000 2020000	1220000 275000	126.50 279.00
T11000	Pin	279.400 11.0000	601.675 23.6880	136.525 5.3750	1.5 0.06	11.2 0.44	32200000 7240000	2090000 469000	201.12 443.40
C-8091-C	Pin	279.400 11.0000	603.250 23.7500	136.140 5.3600	11.2 0.44	4.8 0.19	1770000 3980000	2050000 459000	231.00 508.00

⁽¹⁾These maximum fillet radii will be cleared by the bearing corners.

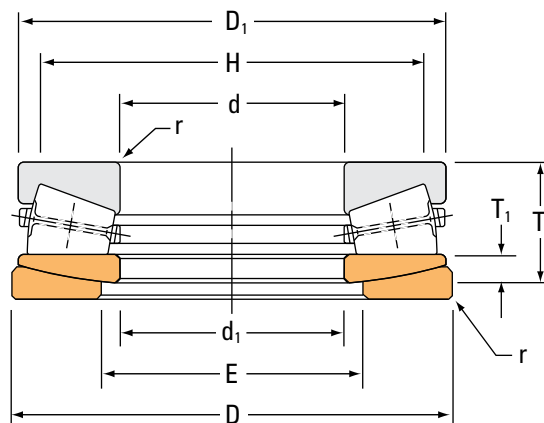
Continued on the next page.

Part Number		Dimensions					Ratings		Bearing Weight
Bearing	Cage Type	Bore	Outside Diameter	Width	Shaft Fillet Radius	Housing Fillet Radius ⁽¹⁾	Static	Dynamic	
		d	D	T	R	r	C ₀	C _{a90}	
		mm in.	mm in.	mm in.	mm in.	mm in.	N lbf	N lbf	kg lbs.
G-3272-C	Pin	304.775 11.9990	609.600 24.0000	113.792 4.4800	6.4 0.25	6.4 0.25	17800000 3990000	1910000 430000	190.90 421.00
E-1994-C	Pin	304.800 12.0000	673.100 26.5000	171.069 6.7350	7.6 0.30	7.6 0.30	22700000 5100000	2850000 710000	347.80 767.00
F-3090-A	Pin	304.800 12.0000	736.600 29.0000	279.020 10.9850	9.1 0.36	9.1 0.36	28000000 6300000	4430000 998000	729.00 1607.00
I-2060-C	Machined	368.541 14.5095	609.156 23.9825	120.269 4.7350	9.7 0.38	11.2 0.38	11800000 2640000	1510000 340000	176.00 388.00
T15500	Machined	393.700 15.5000	495.300 19.5000	44.450 1.7500	3.3 0.13	3.3 0.13	6900000 1550000	373000 83700	* *
T15501	Polymer	393.700 15.5000	495.300 19.5000	44.450 1.7500	3.3 0.13	3.3 0.13	6900000 1550000	373000 83700	* *
B-8350-C	Machined	406.400 16.0000	711.200 28.0000	167.084 6.5781	9.1 0.36	9.1 0.36	19900000 4480000	2670000 599000	356.50 786.00
F-3163-C	Pin	406.400 16.0000	712.394 28.0470	146.050 5.7500	7.6 0.30	7.6 0.30	19300000 4350000	2380000 537000	303.40 669.00
F-3131-G	Pin	431.800 17.0000	863.600 34.0000	228.219 8.9850	10.2 0.40	10.2 0.40	37700000 8480000	4870000 1100000	774.60 1708.00
DX948645	Pin	457.200 18.0000	914.400 36.0000	181.044 7.1277	6.4 0.25	6.4 0.25	70100000 15800000	5422000 1219000	597.87 1318.10
DX175273	Pin	457.200 18.0000	965.200 38.0000	198.232 7.8044	6.4 0.25	6.4 0.25	18000000 4040000	5730000 1290000	742.59 1637.12
A-6096-C	Machined	508.000 20.0000	990.600 39.0000	196.850 7.7500	12.7 0.50	12.7 0.50	41500000 9320000	4330000 975000	882.50 1946.00
T20751	Polymer	527.050 20.7500	635.000 25.0000	44.450 1.7500	3.3 0.13	3.3 0.13	7750000 1740000	357000 80200	25.82 56.92
F-3093-A	Pin	558.800 22.0000	1066.800 42.0000	285.370 11.2350	10.2 0.40	10.2 0.40	49400000 11100000	7260000 1630000	1405.00 3097.00
F-3172-C	Machined	711.200 28.0000	965.200 38.0000	127.000 5.0000	4.8 0.19	4.8 0.19	19600000 4400000	2250000 506000	354.20 781.00
H-2054-G	Pin	711.200 28.0000	990.600 39.0000	190.119 7.4850	10.2 0.40	10.2 0.40	28000000 6300000	3680000 830000	460.00 1013.00
T30620	Machined	777.697 30.6180	889.000 35.0000	47.625 1.8750	3.3 0.13	3.3 0.13	11500000 2580000	442000 99300	45.71 100.79
D-2864-C	Pin	825.424 32.4970	1168.400 46.0000	127.000 5.0000	14.2 0.56	14.2 0.56	44100000 9920000	4040000 907000	549.70 1212.00
T45750	Machined	1162.050 45.7500	1282.700 50.5000	52.388 2.0625	3.3 0.13	3.3 0.13	19000000 4280000	618000 139000	79.69 175.66
F-3067-C	Machined	1219.998 48.0314	1574.869 62.0027	177.800 7.0000	6.4 0.25	6.4 0.25	49900000 11200000	5680000 1280000	1173.20 2587.00
T53250	Machined	1352.550 53.2500	1473.200 58.0000	52.375 2.0620	3.3 0.13	3.3 0.13	21100000 4750000	652000 146000	92.74 204.48
NP552714	Cageless	1549.999 61.0236	105.000 67.1260	60.000 2.3622	1.5 0.06	6.4 0.25	59400000 13400000	1600000 360000	149.16 328.85

⁽¹⁾Maximum shaft or housing fillet radius that bearing corners will clear.

^(*)Contact your Timken engineer for details.

TYPE TTVS



Part Number	Dimensions									Ratings		Bearing Weight
	Bearing			Rings			Shoulder Dia.		Housing	Static	Dynamic	
Bearing	Bore	O.D.	Width	Thickness	Small Dia. O.D.	Large Bore I.D.	Housing Max.	Shaft Min.	Fillet ⁽¹⁾ Radius Max.	C ₀	C _{a90}	
	d	D	T	T ₁	D ₁	d ₁	E	H	r	N lbf	N lbf	kg lbs.
	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.	mm in.			
B-7976-C	184.150 7.2500	406.400 16.0000	203.200 8.0000	66.680 2.6250	404.810 15.9380	187.320 7.3750	228.6 9.00	346.1 13.62	6.1 0.24	7650000 1720000	1180000 264000	157.40 347.00
B-8824-C	199.374 7.8730	399.948 15.7460	121.841 4.7969	36.400 1.4330	396.880 15.6250	203.200 8.0000	240.5 9.47	358.8 14.12	4.1 0.16	7020000 1580000	931000 209000	86.20 190.00
E-2004-C	228.600 9.0000	482.549 18.9980	158.750 6.2500	44.910 1.7680	479.550 18.8800	231.780 9.1250	282.6 11.12	419.1 16.50	4.8 0.19	10900000 2440000	1520000 342000	170.10 375.00
H-1685-C	241.300 9.5000	488.899 19.2480	152.400 6.0000	57.150 2.2500	482.600 19.0000	242.090 9.5310	279.4 11.00	431.8 17.00	6.1 0.24	9940000 2240000	1290000 290000	162.80 359.00
W-3120-C	253.975 9.9990	508.000 20.0000	215.900 8.5000	61.910 2.4370	504.820 19.8750	285.750 11.2500	317.5 12.50	425.4 16.75	10.2 0.40	9770000 2200000	1560000 350000	250.80 553.00
P-1739-C	304.800 12.0000	609.600 24.0000	215.900 8.5000	61.910 2.4370	608.010 23.9380	307.980 12.1250	349.2 13.75	536.6 21.12	7.6 0.30	17800000 4010000	2590000 586000	359.60 793.00
N-2827-G	355.600 14.0000	660.400 26.0000	254.000 10.0000	76.200 3.0000	657.220 25.8750	358.780 14.1250	412.8 16.25	577.8 22.75	10.2 0.40	18600000 4180000	2880000 646000	483.00 1065.00
B-8424-C	406.400 16.0000	869.950 34.2500	241.300 9.5000	82.550 3.2500	887.410 34.9380	438.150 17.2500	463.6 18.25	803.3 31.62	16.5 0.65	39000000 8770000	4590000 1030000	858.00 1892.00

⁽¹⁾These maximum fillet radii will be cleared by the bearing corners.

TYPE TTSP

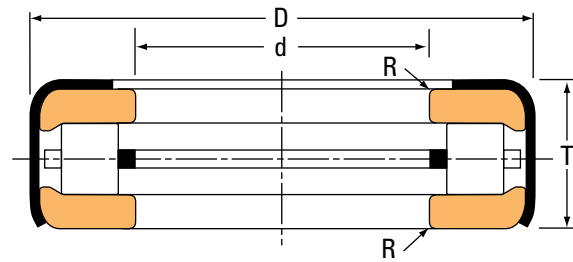


Fig. A.

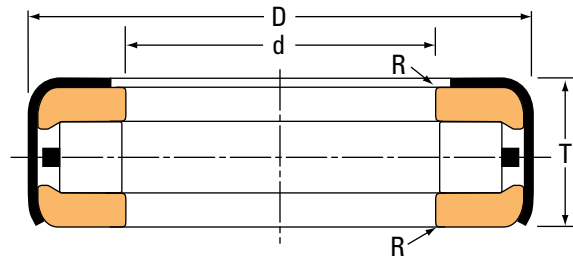


Fig. B.

Part Number		Fig.	Dimensions				Steering Pivot Rating	Bearing Weight	Remarks
No Oil Holes In Retainer	Oil Holes In Retainer		Bore	Outside Diameter	Width	Shaft Fillet Radius			
			d	D	T	R			
			mm in.	mm in.	mm in.	mm in.	N lbf	kg lbs.	
T63	T63W	A	16.129 0.6350	41.275 1.6250	12.700 0.5000	0.8 0.03	11100 2500	0.08 0.18	
T76	T76W	A	19.304 0.7600	41.275 1.6250	13.487 0.5310	0.8 0.03	11100 2500	0.08 0.18	
T77	T77W	A	19.304 0.7600	41.275 1.6250	12.700 0.5000	0.8 0.03	11100 2500	0.07 0.15	
T82	T82W	A	20.879 0.8220	41.275 1.6250	13.487 0.5310	0.8 0.03	11100 2500	0.07 0.15	
T86		A	20.257 0.7975	39.688 1.5625	14.288 0.5625	1.3 0.05	10700 2400	0.07 0.15	
T88	T88W	A	22.479 0.8850	48.021 1.8906	15.088 0.5940	0.8 0.03	17300 3890	0.11 0.24	
T89		A	22.479 0.8850	48.021 1.8906	15.875 0.6250	0.8 0.03	17350 3900	0.12 0.26	
T92		B	23.825 0.9380	44.958 1.7700	13.487 0.5310	0.8 0.03	11950 2690	* *	T92 has two bores, other bore = 24.054 mm (0.9470 in.)
T93		A	24.054 0.9470	44.958 1.7700	13.487 0.5310	0.8 0.03	11950 2690	0.09 0.2	
T94	T94W	A	24.054 0.9470	48.021 1.8906	15.088 0.5940	0.8 0.03	17350 3900	0.11 0.24	
T95	T95W	A	24.130 0.9500	50.800 2.0000	15.875 0.6250	0.8 0.03	18600 4200	0.13 0.29	
T101	T101W	A	25.654 1.0100	50.800 2.0000	15.875 0.6250	0.8 0.03	18600 4200	0.13 0.29	
T101X		A	25.146 0.9900	50.800 2.0000	15.875 0.6250	0.8 0.03	18600 4200	* *	T101X has two bores, other bore = 24.654 mm (1.0100 in.)

(*)Contact your Timken engineer for details.

Continued on the next page.

TYPE TTSP – continued

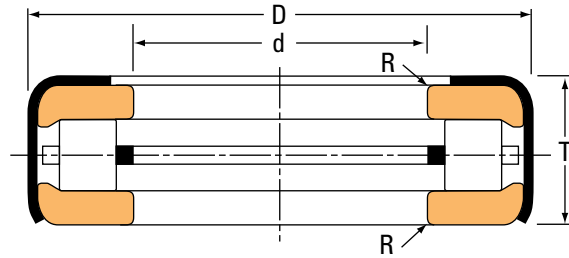


Fig. A.

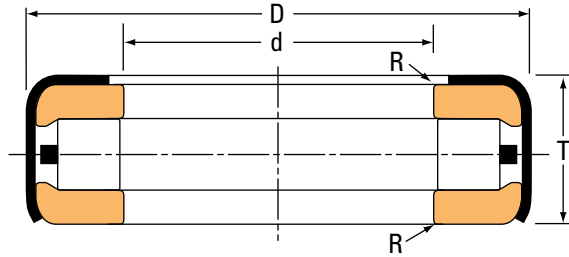


Fig. B.

Part Number		Fig.	Dimensions				Steering Pivot Rating	Bearing Weight	Remarks
No Oil Holes In Retainer	Oil Holes In Retainer		Bore	Outside Diameter	Width	Shaft Fillet Radius			
			d	D	T	R			
			mm in.	mm in.	mm in.	mm in.	N lbf	kg lbs.	
T102R		A	25.654 1.0100	50.800 2.0000	16.916 0.6660	0.8 0.03	18600 4200	* *	T102 has extended retainer. Contact Timken engineer for details.
T104	T104W	A	26.289 1.0350	50.800 2.0000	15.875 0.6250	0.8 0.03	18600 4200	0.13 0.29	
T105		A	25.654 1.0100	50.800 2.0000	15.875 0.6250	0.8 0.03	18600 4200	* *	T105 has two bores, other bore = 27.299 mm (1.0720 in.).
T107	T107W	A	27.299 1.0720	50.800 2.0000	15.875 0.6250	0.8 0.03	18600 4200	0.12 0.26	
T110	T110W	A	28.829 1.1350	53.188 2.0940	15.875 0.6250	0.8 0.03	20000 4500	0.14 0.31	
T113	T113W	A	28.829 1.1350	55.562 2.1875	15.875 0.6250	0.8 0.03	20000 4500	0.15 0.33	
T114	T114W	A	25.654 1.0100	55.562 2.1875	15.875 0.6250	0.8 0.03	20000 4500	* *	T114 and T114W have two bores, other bore = 28.829 mm (1.1350 in.).
T114X		B	28.829 1.1350	50.800 2.0000	15.875 0.6250	0.8 0.03	20000 4500	* *	T114X has two cages and two bores, other bore = 29.261 mm (1.1520 in.).
T119	T119W	A	30.416 1.1975	55.562 2.1875	15.875 0.6250	0.8 0.03	20000 4500	0.15 0.33	
T120		B	30.416 1.1975	54.745 2.1553	11.430 0.4500	0.8 0.03	16500 3710	0.11 0.24	
T121		A	30.716 1.2093	55.562 2.1875	15.875 0.6250	0.8 0.03	20000 4500	0.16 0.35	
T126	T126W	A	32.004 1.2600	55.562 2.1875	15.875 0.6250	0.8 0.03	20000 4500	0.14 0.31	
T126A	T126AW	A	32.004 1.2600	55.562 2.1875	15.875 0.6250	0.8 0.03	20000 4500	0.14 0.31	T126A - two cages.

(*)Contact your Timken engineer for details.

Continued on the next page.

Part Number		Fig.	Dimensions				Steering Pivot Rating	Bearing Weight	Remarks
No Oil Holes In Retainer	Oil Holes In Retainer		Bore	Outside Diameter	Width	Shaft Fillet Radius			
			d	D	T	R			
			mm in.	mm in.	mm in.	mm in.	N lbf	kg lbs.	
T139	T139W	A	35.179 1.3850	58.738 2.3125	15.875 0.6250	0.8 0.03	21400 4800	0.15 0.33	
T139KP		A	35.179 1.3850	58.738 2.3125	15.875 0.6250	0.8 0.03	21400 4800	0.15 0.33	Races are cadmium plated.
T142	T142W	A	35.179 1.3850	62.708 2.4688	19.431 0.7650	0.8 0.03	22400 5050	0.23 0.51	
T149	T149W	A	38.303 1.5080	65.883 2.5938	19.431 0.7650	0.8 0.03	23600 5300	0.24 0.53	
T158		A	40.234 1.5840	65.883 2.5938	19.431 0.7650	0.8 0.03	23600 5300	0.23 0.51	
T199	T199W	A	51.054 2.0100	74.612 2.9375	15.875 0.6250	0.8 0.03	26000 5850	0.2 0.44	
T309	T309W	A	78.583 3.0938	102.395 4.0313	15.875 0.6250	0.8 0.03	35400 8000	0.29 0.64	
T387	T387W	A	96.425 3.8750	127.000 5.0000	17.463 0.7650	0.8 0.03	43000 9700	0.5 1.1	
T484		A	123.012 4.8430	152.400 6.0000	17.463 0.6875	0.8 0.03	47500 10600	0.63 1.39	
T581		A	147.638 5.8125	177.800 7.0000	17.463 0.6875	0.8 0.03	51500 11600	0.89 1.96	
T1760		SPCL ⁽¹⁾	44.623 1.7568	76.200 3.0000	10.922 0.4300	0.8 0.03	31600 7100	0.18 0.4	

⁽¹⁾SPCL = special, not shown.

TYPE TTC, TTCS, TTCL



TTC



TTCS



TTCL

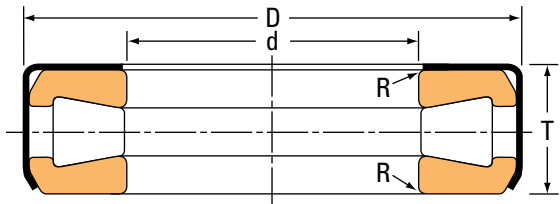


Fig. C. Type TTC.

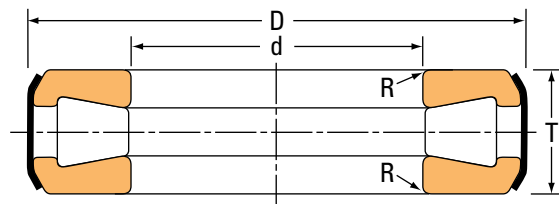


Fig. D. Type TTCS.

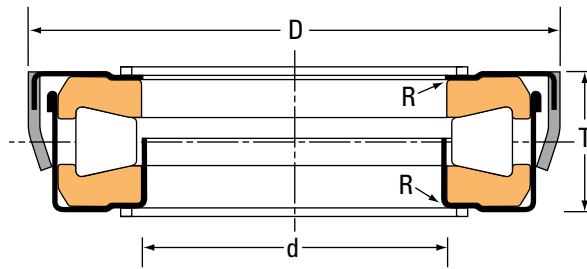


Fig. E. Type TTCL.

Part Number		Dimensions					Steering Pivot Rating	Bearing Weight	Remarks
No Oil Holes In Retainer	Oil Holes In Retainer	Fig.	Bore d	Outside Diameter D	Width T	Shaft Fillet Radius R			
			mm in.	mm in.	mm in.	mm in.	N lbf	kg lbs.	
T127	T127W	C	32.004 1.2600	66.675 2.6250	19.446 0.7656	0.8 0.03	42200 9450	0.31 0.68	
T128		D	32.004 1.2600	66.675 2.6250	18.654 0.7344	0.8 0.03	42200 9450	0.29 0.64	
T130		C	27.102 1.0670	66.675 2.6250	19.446 0.7656	0.8 0.03	42200 9450	0.34 0.75	
T136		D	35.179 1.3850	66.675 2.6250	18.654 0.7344	0.8 0.03	42200 9450	0.28 0.62	
T138	T138W	C	35.179 1.3850	66.675 2.6250	19.446 0.7656	0.8 0.03	42200 9450	0.30 0.66	
T138XS		SPCL ⁽¹⁾	35.179 1.3850	66.675 2.6250	19.446 0.7656	0.8 0.03	42200 9450	* *	T138XS has two bores, other bore = 35.387 mm (1.3972 in.).

⁽¹⁾SPCL = special, not shown.

^(*)Contact your Timken engineer for details.

Continued on the next page.

Part Number			Dimensions				Steering Pivot Rating	Bearing Weight	Remarks
No Oil Holes In Retainer	Oil Holes In Retainer	Fig.	Bore d	Outside Diameter D	Width T	Shaft Fillet Radius R			
			mm in.	mm in.	mm in.	mm in.	N lbf	kg lbs.	
T144	T144W	C	36.754 1.4470	66.675 2.6250	19.446 0.7656	1.5 0.06	42200 9450	0.29 0.64	
T144XA		SPCL ⁽¹⁾	36.754 1.4470	66.675 2.6250	19.446 0.7656	1.5 0.06	42200 9450	* *	T144XA has two bores, other bore = 37.137 mm (1.4621 in.).
T151	T151W	C	38.354 1.5100	72.619 2.8590	21.433 0.8438	0.8 0.03	47000 10600	0.37 0.82	
T152		D	38.354 1.5100	72.619 2.8590	20.638 0.8125	0.8 0.03	47000 10600	0.35 0.77	
T157	T157W	C	39.954 1.5730	72.619 2.8590	21.433 0.8438	0.8 0.03	47000 10600	0.37 0.82	
T163	T163W	C	41.529 1.6350	72.619 2.8590	21.433 0.8438	0.8 0.03	47000 10600	0.35 0.77	
T163X	T163XW	C	41.529 1.6350	72.619 2.8590	21.433 0.8438	2.0 0.80	47000 10600	0.35 0.77	
T169	T169W	C	43.104 1.6970	82.956 3.2660	23.812 0.9375	0.8 0.03	64000 14300	0.55 1.21	
T176	T176W	C	44.704 1.7600	82.956 3.2660	23.812 0.9375	0.8 0.03	64000 14300	0.54 1.19	
T177		C	45.000 1.7717	73.000 2.8740	20.000 0.7874	0.8 0.03	47500 10700	0.32 0.71	
T177A		C	45.484 1.7907	73.000 2.8740	20.000 0.7874	0.8 0.03	47500 10700	0.33 0.73	
T177XA		SPCL ⁽¹⁾	45.000 1.7717	73.127 2.8790	20.000 0.7874	0.8 0.03	47500 10700	* *	T177XA has two bores, other = 45.484 mm (1.7907 in.).
T177S		E	45.000 1.7717	74.500 2.9331	20.221 0.7961	0.8 0.03	47500 10700	0.35 0.77	
T178		C	40.401 1.5906	73.000 2.8740	19.000 0.7480	0.8 0.03	47500 10700	* *	
T182	T182W	C	46.279 1.8220	82.956 3.2660	23.812 0.9375	0.8 0.03	64000 14300	0.52 1.15	
T188	T188W	C	47.879 1.8850	82.956 3.2660	23.812 0.9375	0.8 0.03	64000 14300	0.52 1.15	
T189	T189W	D	47.879 1.8850	82.956 3.2660	23.020 0.9063	0.8 0.03	64000 14300	0.50 1.10	
T193	T193W	D	49.454 1.9470	93.269 3.6720	26.187 1.0310	0.8 0.03	86000 19400	0.80 1.76	
T194	T194W	C	49.454 1.9470	93.269 3.6720	26.975 1.0620	0.8 0.03	86000 19400	0.81 1.79	
T201	T201W	D	51.054 2.0100	93.269 3.6720	26.187 1.0310	3.3 0.13	86000 19400	0.77 1.70	
T202	T202W	C	51.054 2.0100	93.269 3.6720	26.975 1.0620	3.3 0.13	86000 19400	0.80 1.76	
T208	T208W	C	52.629 2.0720	93.269 3.6720	26.975 1.0620	0.8 0.03	86000 19400	0.79 1.74	

⁽¹⁾SPCL = special, not shown.

^(*)Contact your Timken engineer for details.

Continued on the next page.

TAPERED ROLLER BEARINGS

THRUST • TYPE TTC, TTCS, TTCL

TYPE TTC, TTCS, TTCL – continued

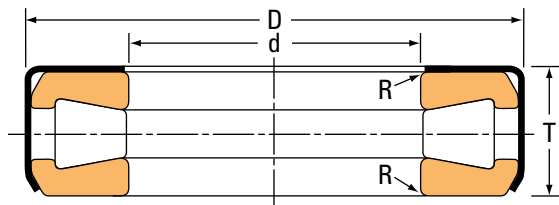


Fig. C. Type TTC.

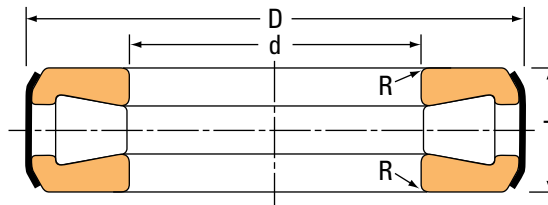


Fig. D. Type TTCS.

Part Number		Fig.	Dimensions				Steering Pivot Rating	Bearing Weight	Remarks
No Oil Holes In Retainer	Oil Holes In Retainer		Bore	Outside Diameter	Width	Shaft Fillet Radius			
			d	D	T	R			
			mm in.	mm in.	mm in.	mm in.	N lbf	kg lbs.	
T209	T209W	D	52.629 2.0720	93.269 3.6720	26.187 1.0310	0.8 0.03	86000 19400	0.75 1.65	
T251	T251W	C	63.754 2.5100	111.125 4.3750	26.988 1.0625	0.8 0.03	124000 27900	1.07 2.36	
T252	T252W	D	63.754 2.5100	111.125 4.3750	25.796 1.0156	0.8 0.03	124000 27900	1.07 2.23	
T301	T301W	D	76.454 3.0100	133.350 5.2500	33.338 1.3125	2.3 0.09	178500 40000	1.87 4.12	
T302	T302W	C	76.454 3.0100	133.350 5.2500	34.925 1.3750	2.3 0.09	178500 40000	1.99 4.39	
T350		D	88.900 3.5000	133.350 5.2500	33.335 1.3124	2.8 0.11	115500 26000	1.41 3.11	
T402	T402W	D	102.108 4.0200	179.619 7.0716	44.450 1.7500	1.5 0.06	344000 77500	4.84 10.67	
T600	T600W	C	152.400 8.0000	241.300 9.5000	76.200 3.0000	3.3 0.13	575000 129000	14.10 31.09	
T1260	T1260W	C	32.004 1.2600	55.562 2.1875	15.875 0.6250	0.8 0.03	27600 6200	0.17 0.37	
T1380		SPCL ⁽¹⁾	35.179 1.3850	59.400 2.3386	15.875 0.6250	0.8 0.03	31200 7000	0.35 0.77	Two-piece seal.
T1921		C	46.279 1.8220	80.010 3.1500	15.977 0.6290	0.8 0.03	56500 12700	0.34 0.75	
T4020		D	102.108 4.0200	179.619 7.0716	31.750 1.2500	1.5 0.06	324000 73000	3.70 8.16	

⁽¹⁾SPCL = special, not shown.

^(*)Contact your Timken engineer for details.