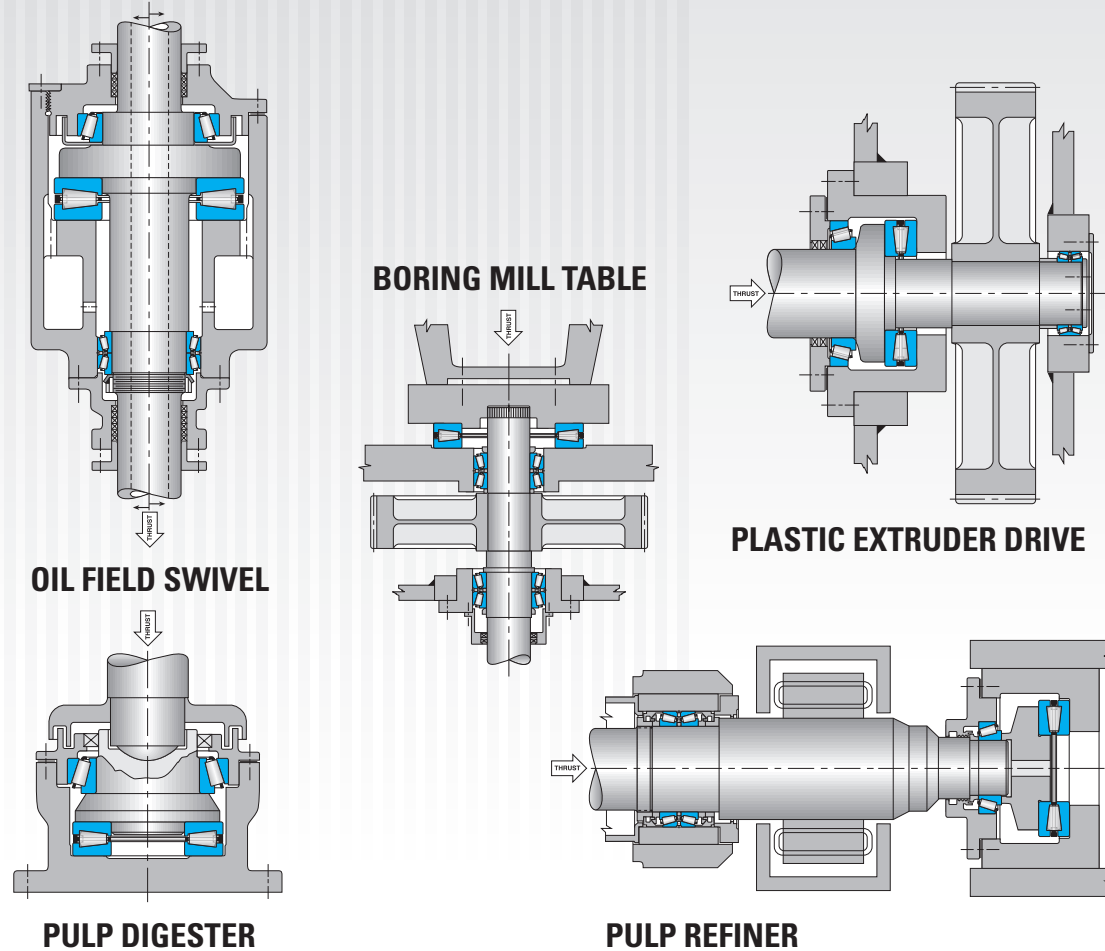


POPULAR APPLICATIONS

Meeting Your Needs

The recent development of an express service program for thrust bearings has dramatically improved The Timken Company's ability to meet tight leadtimes. Contact your Timken sales or service representative, or call 1-800-223-1954, extension 5265 for the name of a Timken authorized distributor, to find out how Timken thrust bearings can improve the profitability of your operation.



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TIMKEN

WORLDWIDE LEADER IN BEARINGS AND STEEL



TIMKEN®

Timken® Thrust Bearings Cost-effectively improving life and load-carrying capacity

A bearing's ability to succeed in an application results from specifying the most appropriate performance characteristics for the needs of the equipment in which it operates. For applications with heavy thrust loads, such as *machine tools, mill stands, oil well swivels, plastic extruders and pulp refiners*, Timken TTHD and TTHDFL bearings are designed and manufactured to maximize bearing life and load-carrying capacity.

TTHD bearings consist of two thrust races, a set of rollers and a cage. This design can create up to 40% more capacity than cylindrical and spherical bearings with the same envelope dimensions. Additionally, special profiles on TTHD bearings – creating an advanced geometry – minimize edge-stress concentrations caused by high thrust loads. Enhanced material, special finishes and increased precision also can be applied to further extend bearing life.

A Higher Level Of Performance

The configuration of TTHD bearings creates a benefit called *true rolling motion*. The extensions of the raceways and rollers converge at a common point [the apex] on the axis of rotation. As a result, *true rolling motion* reduces heat generation and wear on the races and rollers.

The combination of manufacturing expertise and an in-depth knowledge of the application environment in which bearings operate offers additional benefits such as:

High speed capabilities. *True rolling motion* allows higher speeds with minimum roller skewing or skidding. While many applications operate at speeds well below 5,000 feet/minute, TTHD bearings have

been modified to run at rib speeds over 9,000 feet/minute in pulp refiner applications.

High shock load resistance. Premium quality, case-carburized bearing steel features a hard, fatigue-resistant surface and a durable, crack-resistant core to maximize service life in applications with heavy loading such as oil field swivels and mill stands.

Increased pressures and thrust loads. As technology continues to advance, so do the demands on operations. TTHD bearings' high thrust load capacity supports the operating pressures required by new products and market needs within the plastic extrusion industry.

Application flexibility. A variety of design configurations are available to ensure the best possible bearing is selected for the application. Timken thrust bearings can be manufactured to class 3 tolerances for use in precision machine tools.

Additional capacity. TTHDFL bearings have a similar design to the TTHD bearing with the exception that one of the thrust races is flat. The ability to implement a pin-type cage with additional rollers in a TTHDFL configuration can lead to higher capacity to an equivalent TTHD design.

TTHDFL bearings are differentiated from TTHD designs because one of the thrust races is flat. Due to the flat race feature and different cage in the TTHDFL, the shaft shoulder width may not allow direct interchangeability with a TTHD despite having the same envelope dimensions. Please review the existing design or consult your Timken sales representative to determine the applicability of TTHDFL bearings.

- Increased bearing life
- Additional load-carrying capacity
- Integrated manufacturing process
- Customized for your application
- True Rolling Motion
- Express delivery

THE TIMKEN COMPANY

BEARING TOLERANCES

TOP LINE IS METRIC, BOTTOM LINE IS INCHES

METRIC TOLERANCES IN MICROMETRES [μm] 1 μm = 0.001mm						INCH TOLERANCES IN INCHES					
BORE [d]			OUTSIDE DIAMETER [D]						WIDTH [T]		
range		deviation		range		deviation		range		deviation	
over	inclusive	class 2	class 3	over	inclusive	class 2	class 3	over	inclusive	class 2	class 3
		high	low	high	low	high	low	high	low	high	low
0	304.800	+25	0	+13	0						
0	12.000	+0.0010	0	+0.0005	0						
304.800	609.600	+51	0	+25	0						
12.000	24.000	+0.0020	0	+0.0010	0						
609.600	914.400	+76	0	+38	0						
24.000	36.000	+0.0030	0	+0.0015	0						
914.400	1219.200	+102	0	+51	0						
36.000	48.000	+0.0040	0	+0.0020	0						
1219.200	48.000	+127	0	+76	0						
48.000		+0.0050	0	+0.0030	0						
						all sizes		+381	-381	+203	-203
								+0.0150	-0.0150	+0.0080	-0.0080



TTHD

TOP LINE IS METRIC, BOTTOM LINE IS INCHES

BORE [d]	OUTSIDE DIAMETER [D]	WIDTH [T]	MAX SHAFT AND HOUSING FILLET RADII [R]	RATING AT 500 RPM FOR 3000 HOURS L10 [N lb]	BEARING ASSEMBLY/NUMBER
34.925 1.375	76.200 3.000	15.875 0.625	1.50 0.06	31700 7130	T135
44.450 1.750	84.734 3.336	18.2580 0.7188	2.30 0.09	42000 9460	T1750
50.800 2.000	109.538 4.3125	22.225 0.875	2.30 0.09	73100 16400	T200A
63.500 2.500	117.475 4.625	25.400 1.000	2.30 0.09	75100 16900	T2520
76.200 3.000	161.925 6.375	33.338 1.3125	3.30 0.13	152000 34200	T311
76.200 3.000	161.925 6.375	33.338 1.3125	3.30 .131	1250000 281000	T311F*
101.600 4.000	215.900 8.500	46.038 1.8125	3.30 0.13	253000 56800	T411
111.760 4.400	223.520 8.800	55.880 2.200	3.30 0.13	270000 60700	T441
114.300 4.500	250.825 9.875	53.975 2.125	4.00 0.16	352000 79100	T451
127.000 5.000	250.825 9.875	55.562 2.1875	4.80 0.19	309000 69500	T520
127.000 5.000	266.700 10.500	58.738 2.3125	4.80 0.19	371000 83500	T511
128.588 5.0625	266.700 10.500	58.738 2.3125	4.80 0.19	371000 83500	T511A
152.400 6.000	317.500 12.500	69.850 2.750	6.40 0.25	526000 118000	T611
152.400 6.000	317.500 12.500	69.850 2.750	6.40 0.25	4750000 1060000	T611F*
165.100 6.500	311.150 12.250	88.900 3.500	6.40 0.25	467000 105000	T651
168.275 6.625	304.800 12.000	69.850 2.750	6.40 0.25	441000 99300	T661
174.625 6.875	358.775 14.125	82.550 3.250	6.40 0.25	620000 139000	T691
177.800 7.000	368.300 14.500	82.550 3.250	8.00 0.31	693000 156000	T711
190.000 7.4803	355.600 14.000	74.219 2.922	6.40 0.25	564000 127000	T7519

* Breaker block rating for rolling mill applications

TTHD continued

TOP LINE IS METRIC, BOTTOM LINE IS INCHES

BORE [d]	OUTSIDE DIAMETER [D]	WIDTH [T]	MAX SHAFT AND HOUSING FILLET RADII [R]	RATING AT 500 RPM FOR 3000 HOURS L10 [N lb]	BEARING ASSEMBLY/NUMBER
203.200 8.000	419.100 16.500	92.075 3.625	9.70 0.38	869000 195000	T811
203.200 8.000	419.100 16.500	92.075 3.625	9.70 0.38	869000 195000	T811V
203.200 8.000	419.100 16.500	120.650 4.750	9.70 0.38	869000 195000	T811X
228.600 9.000	431.800 17.000	88.773 3.495	9.70 0.38	854000 192000	T9020
228.600 9.000	482.600 19.000	104.775 4.125	11.20 0.44	1140000 256000	T911
234.950 9.250	482.600 19.000	104.775 4.125	11.20 0.44	1140000 256000	T911A
234.950 9.250	546.100 21.500	127.000 5.000	16.00 0.63	1570000 353000	T921
254.000 10.000	539.750 21.250	117.475 4.625	11.20 0.44	1420000 319000	T1011
279.400 11.000	603.250 23.750	136.525 5.375	11.20 0.44	1810000 407000	T1120
368.300 14.500	603.250 23.750	120.650 4.750	9.70 0.38	1420000 319000	T14520
406.400 16.000	711.200 28.000	146.050 5.750	9.70 0.38	2130000 480000	T16021
406.400 16.000	838.200 33.000	117.800 7.000	12.70 0.50	3320000 747000	T16050
508.000 20.000	990.600 39.000	196.850 7.750	12.70 0.50	4530000 1020000	T20020
1219.200 48.000	1524.000 60.000	136.525 5.375	9.70 0.38	3450000 775000	T48000



TTHDFL

TOP LINE IS METRIC, BOTTOM LINE IS INCHES

BORE [d]	OUTSIDE DIAMETER [D]	WIDTH [T]	MAX SHAFT AND HOUSING FILLET RADII [R]	RATING AT 500 RPM FOR 3000 HOURS L10 [N lb]	BEARING ASSEMBLY/NUMBER
124.993 4.921	185.738 7.3125	25.400 1.000	1.50 0.06	933000 210000	T4920 90011
168.275 6.625	304.800 12.000	69.850 2.750	6.40 0.25	494000 111000	T660V 90011
177.800 7.000	368.300 14.500	82.550 3.250	8.00 0.31	775000 174000	T7010V 90011
228.600 9.000	482.600 19.000	104.775 4.125	11.20 0.44	1270000 285000	T9010V 90011
279.400 11.000	603.250 23.750	136.525 5.375	11.20 0.44	2090000 469000	T11000 90010
393.700 15.500	495.300 19.500	44.450 1.750	3.20 0.125	373000 83700	T15500 90025**
527.050 20.750	635.000 25.000	44.450 1.750	3.30 0.13	356000 80100	T20750 90013**
777.697 30.618	889.000 35.000	47.625 1.875	3.30 0.13	442000 99300	T30620 90012**
1162.050 45.750	1282.700 50.500	52.3880 2.0625	3.30 0.13	618000 139000	T45750 90011**
1162.050 45.750	1282.700 50.500	57.099 2.248	3.30 0.13	618000 139000	T45751 90012**
1352.550 53.250	1473.200 58.000	52.375 2.062	3.30 0.13	652000 146000	T53250 90092**

**Assembly number shown is for class 3 bearings.