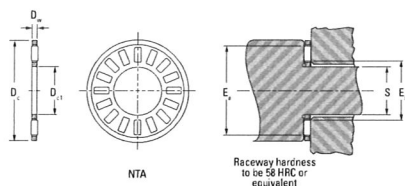


NEEDLE ROLLER BEARINGS

THRUST NEEDLE ROLLER AND CAGE ASSEMBLIES, THRUST WASHERS

INCH SERIES

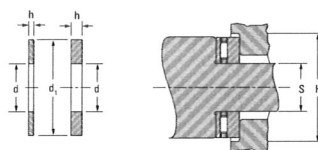
- Dimensions for bore and O.D. of thrust assemblies and washers are nominal.
- See page B-6-36 for details on piloting and backup surfaces.
- Thrust washers burnished at least one-quarter of bore area (remainder is rough breakaway finish).
- O.D. finish of washers will be as blanked.



Shift Dia.	Assembly Dimensions						Assembly Designation	Load Ratings		Fatigue Load Limit C_0	Speed Rating ¹
	D_{p1}	D_1	D_{p2}	D_2	D_3	D_4		Dynamic C	Static C_0		
in	mm	mm	mm	mm	mm	mm		lbf	kgf	mm ³	
$\frac{1}{16}$	6.35 0.250	17.45 0.687	1.964 0.0781	8.636 0.340	14.732 0.580		NTA-411	5.12 1190	10.76 2420	1.05	26000
$\frac{1}{8}$	7.92 0.312	19.05 0.75	1.964 0.0781	10.16 0.400	16.256 0.640		NTA-512	5.83 1310	12.17 2760	1.30	24000
$\frac{3}{16}$	9.53 0.375	20.625 0.812	1.964 0.0781	11.68 0.460	18.034 0.710		NTA-613	6.05 1360	14.32 3200	1.40	22000
$\frac{1}{4}$	12.70 0.500	23.80 0.937	1.964 0.0781	14.99 0.590	21.08 0.830		NTA-815	7.16 1610	15.13 4200	1.85	19000
$\frac{5}{16}$	14.275 0.562	25.40 1.000	1.964 0.0781	16.51 0.650	22.066 0.860		NTA-916	7.70 1730	21.53 4840	2.10	18000
$\frac{3}{8}$	15.88 0.625	28.575 1.125	1.964 0.0781	18.03 0.710	25.508 1.000		NTA-1018	9.79 2200	30.38 6800	2.85	15000

¹ Speed ratings listed are based on adequate oil lubrication. See page B-6-37 for lubrication information. Suggests for an application requiring O.D. piloting should be determined in consultation with your representative.

Needle Roller Thrust Bearings, Assemblies, Washers



Approx. Wt.	Thrust Washer Designation	Washer Dimensions						Pilot Dimensions		Dia. To Clear O.D.	Washer Wt.	Shift Dia.
		d	d1	d2	d3	d4	d5	S	s			
kg		mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	in
0.001	TRA-411	6.35	17.45	0.81	0.76	6.35	6.27	18.26	0.001			$\frac{1}{16}$
0.003	TRA-411	0.250	0.687	0.032	0.030	0.250	0.247	0.719	0.003			
	TRB-411	6.35	17.45	1.60	1.52	6.35	6.27	18.26	0.002			
	TRB-411	0.250	0.687	0.060	0.060	0.250	0.247	0.719	0.002			
	TRC-411	6.35	17.45	2.41	2.34	6.35	6.27	18.26	0.004			
	TRC-411	0.250	0.687	0.095	0.092	0.250	0.247	0.719	0.004			
0.002	TRA-512	7.92	19.05	0.81	0.76	7.92	7.85	19.84	0.001			$\frac{1}{8}$
0.004	TRA-512	0.312	0.750	0.032	0.030	0.312	0.308	0.781	0.004			
	TRB-512	7.92	19.05	1.60	1.52	7.92	7.85	19.84	0.003			
	TRB-512	0.312	0.750	0.060	0.060	0.312	0.308	0.781	0.003			
0.002	TRA-613	9.53	20.62	0.81	0.76	9.53	9.45	21.44	0.001			$\frac{3}{16}$
0.004	TRA-613	0.375	0.812	0.032	0.030	0.375	0.372	0.944	0.004			
	TRB-613	9.53	20.62	1.60	1.52	9.53	9.45	21.44	0.003			
	TRB-613	0.375	0.812	0.060	0.060	0.375	0.372	0.944	0.003			
	TRC-613	9.53	20.62	2.41	2.34	9.53	9.45	21.44	0.004			
	TRC-613	0.375	0.812	0.095	0.092	0.375	0.372	0.944	0.004			
0.002	TRA-815	12.70	23.80	0.81	0.76	12.70	12.62	24.61	0.001			$\frac{1}{4}$
0.004	TRA-815	0.500	0.937	0.032	0.030	0.500	0.497	0.989	0.004			
	TRB-815	12.70	23.80	1.60	1.52	12.70	12.62	24.61	0.004			
	TRB-815	0.500	0.937	0.060	0.060	0.500	0.497	0.989	0.004			
	TRC-815	12.70	23.80	2.41	2.34	12.70	12.62	24.61	0.005			
	TRC-815	0.500	0.937	0.095	0.092	0.500	0.497	0.989	0.005			
0.003	TRA-916	14.27	25.40	0.81	0.76	14.27	14.20	26.19	0.002			$\frac{5}{16}$
0.006	TRA-916	0.562	1.000	0.032	0.030	0.562	0.559	1.031	0.006			
	TRB-916	14.27	25.40	1.60	1.52	14.27	14.20	26.19	0.004			
	TRB-916	0.562	1.000	0.060	0.060	0.562	0.559	1.031	0.004			
	TRC-916	14.27	25.40	2.41	2.34	14.27	14.20	26.19	0.006			
	TRC-916	0.562	1.000	0.095	0.092	0.562	0.559	1.031	0.006			
0.003	TRA-1018	15.88	28.58	0.81	0.76	15.88	15.80	29.36	0.003			$\frac{3}{8}$
0.007	TRA-1018	0.625	1.125	0.032	0.030	0.625	0.622	1.196	0.007			
	TRB-1018	15.88	28.58	1.60	1.52	15.88	15.80	29.36	0.005			
	TRB-1018	0.625	1.125	0.060	0.060	0.625	0.622	1.196	0.005			
	TRC-1018	15.88	28.58	2.41	2.34	15.88	15.80	29.36	0.008			
	TRC-1018	0.625	1.125	0.095	0.092	0.625	0.622	1.196	0.008			
	TRD-1018	15.88	28.58	3.20	3.12	15.88	15.80	29.36	0.011			
	TRD-1018	0.625	1.125	0.125	0.123	0.625	0.622	1.196	0.011			
	TRF-1018	15.88	28.58	3.99	3.91	15.88	15.80	29.36	0.013			
	TRF-1018	0.625	1.125	0.157	0.154	0.625	0.622	1.196	0.013			

Continued on next page

¹ If the shaft and the housing adjacent to the bearing O.D. are not concentric, the T.R. between the shaft and housing should be added to this dimension.