

INCH-POUND

MS24461J

29 September 1997

SUPERSEDING

MS24461H

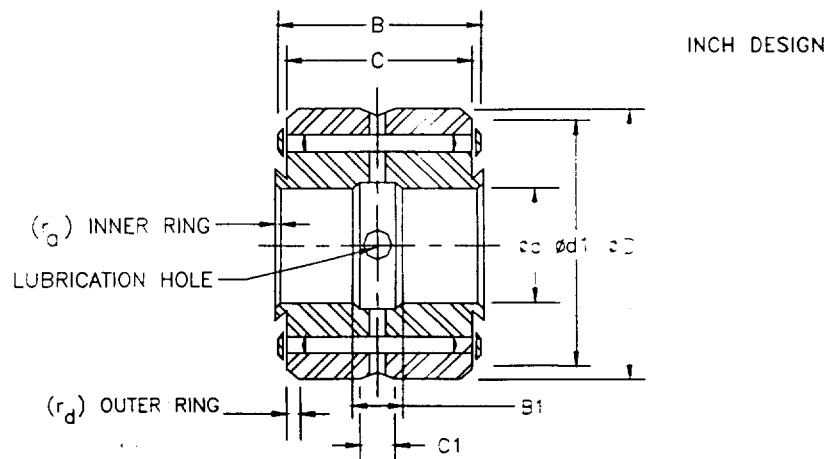
5 December 1994

MILITARY SPECIFICATION SHEET

BEARING ROLLER, NEEDLE, SINGLE ROW,
HEAVY DUTY, TYPE I, ANTIFRICTION, INCH

This Specification is approved for use by all Departments and
Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification
sheet and the issue of the following specification listed in that issue of the Department of Index of
Specifications and Standards (DODISS) specified in the solicitation: MIL-B-3990



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(H) TABLE I.

Dimensions in inches

Dash No.	$\emptyset d$ Bore	$\emptyset D$ Outer Ring Outer Dia.	$\emptyset B$ Overall Width	C Outer Ring Width	$\emptyset d_1$ Washer Outside Dia.	B_1 Lubrication Groove Width	C_1 Lubrication Groove Width	R_{f1} Fillet Max.	Total Radial Internal Clearance Max.	Clamp-Ing Dia. Min.	Limits Load Rating lbf	Mass (approx) ib
-3	0.1900	0.6875	0.312	0.218	0.625	None	0.062	0.022	0.0017	0.438	1800	0.028
-4	0.2500	0.7500	0.375	0.281	0.687	None	0.093	0.022	0.0017	0.516	2870	0.040
-5	0.3125	0.8125	0.437	0.344	0.750	None	0.093	0.022	0.0017	0.578	4080	0.057
-6	0.3750	0.8750	0.562	0.469	0.812	0.188	0.125	0.022	0.0018	0.641	6330	0.075
-7	0.4375	0.9375	0.625	0.531	0.875	0.188	0.125	0.032	0.0018	0.703	8000	0.097
-8	0.5000	1.1250	0.750	0.781	1.031	0.188	0.125	0.032	0.0018	0.844	11600	0.165
-9	0.5625	1.1875	0.875	0.906	1.094	0.188	0.156	0.032	0.0019	0.891	15000	0.207
-10	0.6250	1.2500	1.000	1.000	1.156	0.250	0.156	0.032	0.0019	0.953	18900	0.252
-12	0.7500	1.3750	1.125	1.125	1.281	0.250	0.156	0.032	0.0019	1.078	23900	0.336
-14	0.8750	1.6250	1.250	1.125	1.500	0.375	0.156	0.032	0.0022	1.250	30500	0.423
-16	1.0000	1.7500	1.250	1.049	1.625	0.375	0.156	0.032	0.0026	1.375	33900	0.51
-20	1.2500	2.0000	1.250	1.049	1.906	0.375	0.156	0.032	0.0026	1.625	37900	0.60
-24	1.5000	2.2500	1.250	1.049	2.156	0.375	0.156	0.032	0.0026	1.875	44200	0.71
-28	1.7500	2.5000	1.250	1.049	2.406	0.375	0.156	0.032	0.0027	2.125	50500	0.78
-32	2.0000	2.7500	1.250	1.049	2.656	0.375	0.156	0.032	0.0028	2.375	56800	0.88
-36	2.2500	3.0000	1.250	1.049	2.906	0.375	0.156	0.032	0.0032	2.625	3100	0.98
-40	2.5000	3.2500	1.250	1.049	3.156	0.375	0.156	0.032	0.0037	2.875	69400	1.06
-44	2.7500	3.5000	1.250	1.049	3.406	0.375	0.156	0.032	0.0039	3.125	75700	1.15
-48	3.0000	3.7500	1.250	1.049	3.656	0.375	0.156	0.032	0.0039	3.375	82000	1.24
-52	3.2500	4.0000	1.250	1.049	3.906	0.375	0.156	0.032	0.0039	3.641	88300	1.34
-56	3.7500	4.3750	1.250	1.049	4.219	0.375	0.156	0.044	0.0041	3.969	96700	1.73
-60	3.7500	4.6250	1.250	1.049	4.469	0.375	0.156	0.044	0.0041	4.218	103000	1.84
-64	4.0000	4.8750	1.250	1.049	4.719	0.375	0.156	0.044	0.0045	4.469	109000	1.99
-80	5.0000	5.8750	1.250	1.049	5.688	0.375	0.156	0.044	0.0045	5.438	135000	2.75

(H) TABLE II.

Dimensions in Millimeters

Dash No.	$\emptyset d$ Bore	$\emptyset D$ Outer Ring Outer Dia.	$\emptyset B$ Overall Width	C Outer Ring Width	$\emptyset d_1$ Washer Outside Dia.	B_1 Lubrication Groove Width	C_1 Lubrication Groove Width	R_{f1} Fillet Max.	Total Radial Internal Clearance Max.	Clamp-Ing Dia. Min.	Limits Load Rating lbf	Mass (approx) ib
-3	4.826	17.462	7.92	5.54	15.88	None	1.52	0.6	0.043	11.13	8700	0.013
-4	6.350	19.050	9.52	7.14	17.45	None	2.36	0.6	0.043	13.11	12700	0.018
-5	7.935	20.638	11.10	8.74	19.05	None	3.18	0.6	0.043	14.68	18100	0.026
-6	9.525	22.225	14.27	11.91	20.62	4.78	3.18	0.6	0.046	16.28	28100	0.034
-7	11.112	23.812	15.88	13.49	22.22	4.78	3.18	0.8	0.046	17.86	35600	0.044
-8	12.700	28.575	19.05	16.66	26.19	4.78	3.96	0.8	0.046	21.44	51600	0.075
-9	14.288	30.162	22.22	19.84	27.79	6.35	3.96	0.8	0.048	22.63	66700	0.094
-10	15.875	31.750	25.40	23.01	29.36	6.35	3.96	0.8	0.048	24.21	84000	0.115
-12	19.050	34.925	28.58	25.40	32.54	9.52	3.96	0.8	0.048	27.38	106000	0.153
-14	22.225	41.275	31.75	28.57	38.10	9.52	3.96	0.8	0.056	31.75	136000	0.192
-16	25.400	44.450	31.75	26.64	41.28	9.52	3.96	0.8	0.066	34.92	151000	0.23
-20	31.750	50.800	31.75	26.64	48.41	9.52	3.96	0.8	0.066	41.28	169000	0.27
-24	38.100	57.150	31.75	26.64	54.76	9.52	3.96	0.8	0.066	47.62	197000	0.32
-28	44.450	63.500	31.75	26.64	61.11	9.52	3.96	0.8	0.069	53.98	225000	0.35
-32	50.800	69.850	31.75	26.64	67.46	9.52	3.96	0.8	0.071	60.32	253000	0.40
-36	57.150	76.200	31.75	26.64	73.81	9.52	3.96	0.8	0.081	66.66	280000	0.45
-40	63.500	82.550	31.75	26.64	80.16	9.52	3.96	0.8	0.094	73.02	309000	0.48
-44	68.850	88.900	31.75	26.64	86.51	9.52	3.96	0.8	0.099	79.38	337000	0.52
-48	76.200	95.250	31.75	26.64	92.86	9.52	3.96	0.8	0.099	85.72	365000	0.56
-52	82.550	101.600	31.75	26.64	99.21	9.52	3.96	0.8	0.099	92.48	393000	0.61
-56	88.900	111.125	31.75	26.64	107.16	9.52	3.96	1.1	0.104	100.81	430000	0.79
-60	92.250	117.475	31.75	26.64	113.51	9.52	3.96	1.1	0.104	107.14	458000	0.84
-64	101.600	123.825	31.75	26.64	119.86	9.52	3.96	1.1	0.114	113.51	487000	0.90
-80	127.000	149.225	31.75	26.52	144.45	9.52	3.96	1.1	0.114	138.10	600000	1.25

1/ The chamfer on bearings must clear the maximum fillet radius given in the table. This specification does not control bearing chamfer contours.

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(H) TABLE III – Tolerance Limits

ϕd Basic Bore		Allowable Deviation From d of Single Mean Dia., d_{mp}		Allowable Deviation From overall Width B		Allowable Deviation From Washer outside dia. d_l		Allowable Deviation From Lubrication Groove Width, B1	
Over	Incl	High	Low	High	Low	High	Low	High	Low
0.1250	3.0000	+0	-0.0007	+0	-0.005	+0.010	-0.010	+0	-0.062
3.0000	4.0000	+0	-0.0008	+0	-0.005	+0.010	-0.010	+0	-0.062
4.0000	5.0000	+0	0.0010	+0	-0.005	+0.010	-0.010	+0	-0.062

D Basic Outside Dia.		Allowable Deviation From D of Single Mean Dia., D_{mp}		Allowable Deviation From outside Ring Width C		Allowable Deviation From Lubrication Groove Width, C1	
Over	Incl	High	Low	High	Low	High	Low
0.5000	1.7500	+0	-0.0005	+0	-0.005	+0.031	-0.031
1.7500	3.0000	+0	-0.0006	+0	-0.005	+0.031	-0.031
3.0000	4.6250	+0	-0.0008	+0	-0.005	+0.031	-0.031
4.6250	5.8750	+0	-0.0010	+0	-0.005	+0.031	-0.031

(H) TABLE IV

ϕd Basic Bore		Allowable Deviation From d of Single Mean Dia., d_{mp}		Allowable Deviation From overall Width B		Allowable Deviation From Washer outside dia. d_l		Allowable Deviation From Lubrication Groove Width, B1	
Over	Incl	High	Low	High	Low	High	Low	High	Low
3.18	76.20	-0	-0.0007	+0	-0.005	+0.010	-0.010	+0	-1.60
76.20	101.60	-0	-0.0008	+0	-0.005	+0.010	-0.010	+0	-1.60
101.60	127.0	-0	0.0010	+0	-0.005	+0.010	-0.010	+0	-1.60

D Basic Outside Dia.		Allowable Deviation From D of Single Mean Dia., D_{mp}		Allowable Deviation From outside Ring Width C		Allowable Deviation From Lubrication Groove Width, C1	
Over	Incl	High	Low	High	Low	High	Low
0.5000	1.7500	+0	-0.0005	+0	-0.005	+0.031	-0.031
1.7500	3.0000	+0	-0.0006	+0	-0.005	+0.031	-0.031
3.0000	4.6250	+0	-0.0008	+0	-0.005	+0.031	-0.031
4.6250	5.8750	+0	-0.0010	+0	-0.005	+0.031	-0.031

TABLE II. – Oil Hole Data

Bore-Dash No.		Number of Holes	
Over	Incl	Inner Ring	Outer Ring
2	5	None	2
5	10	2	4
10	80	4	4

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REQUIREMENTS:

1. **MATERIAL:** Steel, MIL-S-8690, QQ-S-624, QQ-624, QQ-S-700, Fed Std No. 66, AISI/SAE Steel No. 50100, 51100, 52100.
2. **PLATING:** Zinc-nickel in accordance with AMS 2417 Type 2, or cadmium plated in accordance with QQ-P-416, Type I, Class 2, to a thickness of .0003 inches, to .0006 inches.
3. **MACHINE FINISH:** ANSI/ASME B46.1 see procurement specification.
4. **LUBRICATION:** Grease conforming to MIL-G-81322 or MIL-C-23827 at suppliers option unless either specified on order.
5. The limit load rating listed can be defined as the maximum radial load which can be applied to a bearing Without impairing the subsequent functioning of the bearing in airframe applications. The ultimate or static fracture load rating is not less than 1.5 times the limit load rating.
6. Remove all burrs and sharp corners.
7. Dimensions to met after plating.

NOTES:

1. This standard takes precedence over any other documents referenced herein.
2. Referenced documents are the issues in effect of the date of invitation for bid.

Custodians:
Army - AT
Navy - AS
Air Force - 99

Preparing activity:
Navy - AS

(Project 5310-1056)

Review activities:
Army - MI
Air Force - 84
DLA-IS