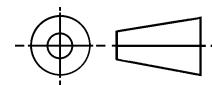


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<div style="text-align: right; margin-top: 100px;"> THIRD ANGLE PROJECTION  </div>					
<p>PREPARED BY AIRFRAME CONTROL BEARINGS GROUP</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; vertical-align: top;">  400 Commonwealth Drive, Warrendale, PA 15098-0001 </td> <td style="width: 33%; vertical-align: top; text-align: center;"> AEROSPACE STANDARD BEARING, ROLLER, NEEDLE, SINGLE ROW, HEAVY DUTY, TRACK ROLLER, SEALED, TYPE V ANTIFRICTION, INCH </td> <td style="width: 33%; vertical-align: top; text-align: right;"> AS21438 SHEET 1 OF 4 </td> </tr> </table>			 400 Commonwealth Drive, Warrendale, PA 15098-0001	AEROSPACE STANDARD BEARING, ROLLER, NEEDLE, SINGLE ROW, HEAVY DUTY, TRACK ROLLER, SEALED, TYPE V ANTIFRICTION, INCH	AS21438 SHEET 1 OF 4
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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.

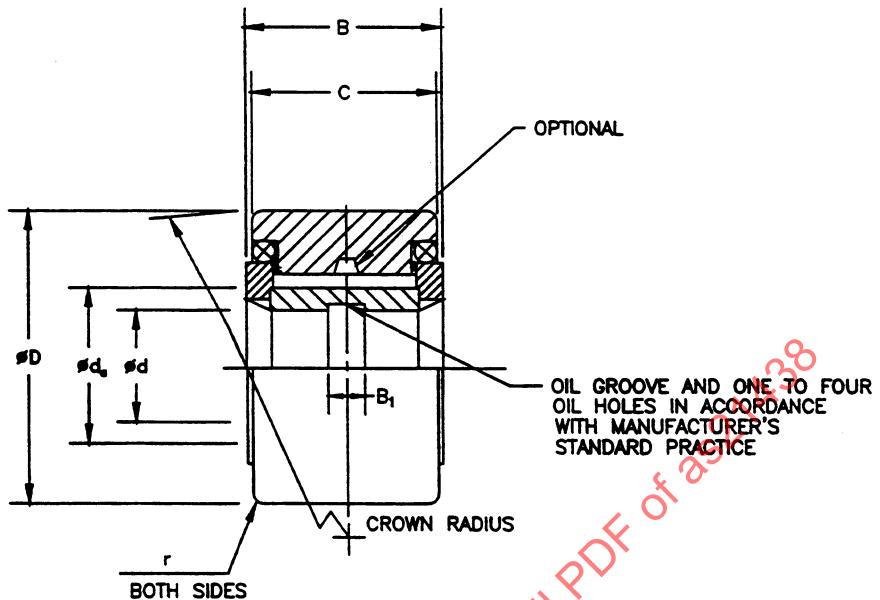


TABLE I. DIMENSIONS

Dash No.	-d Bore	-D Outer Ring Outer Side Diameter	C Outer Ring Width	B Overall Width	-d _a Clamping Diameter Min	r Rad Min 1/4	B ₁ Lubrication Groove Width	Crown Radius Ref.	Total Capacity Clearance Max.	Capacity As a Track Roller Lb.	Track Capacity 40 HRC Lb.	Limit Load Rating Lb.	Mass (Approx) lbs.
-103	.1900	.7500	.280	0.312	0.438	0.022	0.094	10.000	0.0018	900	290	1200	0.03
-104	.2500	.8750	.345	0.375	0.516	0.022	0.125	10.000	0.0018	1430	575	1910	0.05
-106	.3750	1.0625	.455	0.500	0.672	0.022	0.188	10.000	0.0018	2700	1000	3600	0.10
-108	.5000	1.3125	.580	0.625	0.844	0.032	0.188	12.500	0.0018	4300	1785	5780	0.18
-110	.6250	1.5000	.705	0.750	0.953	0.032	0.250	17.500	0.0018	6400	2600	8500	0.28
-112	.7500	1.7500	.950	1.000	1.109	0.032	0.250	25.000	0.0018	18700	4050	14200	0.52
-114	.8750	2.0000	1.075	1.125	1.219	0.032	0.250	27.500	0.0018	14400	5350	19300	0.75
-120	1.2500	2.5000	1.200	1.250	1.625	0.032	0.375	30.000	0.0018	18900	7100	25300	1.16
-124	1.5000	3.0000	1.440	1.500	2.000	0.032	0.375	60.000	0.0018	28400	18900	37900	2.36
-128	1.7500	3.4375	1.440	1.500	2.281	0.032	0.375	60.000	0.0018	33000	12400	44100	2.71
-132	2.0000	3.8750	1.440	1.500	2.562	0.032	0.375	60.000	0.0018	36700	14000	48900	3.42
-136	2.2500	4.3125	1.440	1.500	2.859	0.032	0.375	60.000	0.0018	41200	15600	55000	4.23
-140	2.2000	4.7500	1.440	1.500	3.109	0.032	0.375	60.000	0.0020	44900	17200	59900	5.14
-144	2.7500	5.0000	1.440	1.500	3.344	0.032	0.375	60.000	0.0020	46800	18100	64800	5.49

TABLE II. TOLERANCE VALUES.

Dimensions in inches

-d Basic Bore		Allowable Deviation From d of Single Mean Dia., d_{mp}		Allowable Deviation From Over all Width B		Allowable Deviation From Lubrication Groove Width B_1		-D Basic Outside Dia.		Allowable Deviation From d of Single Dia., D_{mp}		Allowable Deviation From Outer Ring Width C	
Over	Incl	High	Low	High	Low	High	Low	Over	Incl	High	Low	High	Low
0.1250	2.7500	0	-0.0007	0	-0.010	0	-0.062	0.6875	5.0000	+0.001	-0.001	0	-0.015

AS21438

1. MATERIAL:

- STEEL, MIL-S-7493, MIL-S-8690, ASTM NO. A304, A322, A331, QQ-S-700, FED-STD-66, AISI/SAE STEEL NO. 50100, 52100, STEEL AMS 6640.
- SEALS AND BACKING RINGS - ACETAL RESIN PER L-P-392 OR NYLON PER L-P-410, TYPE 6/6, WEAR RESISTANT GRADE, OR POLYESTER ELASTOMER. CONSTRUCTION OPTIONAL.

2. FINISH OR PLATING:

- OUTER RING - OUTER RING CHROME PLATED PER QQ-C-320, CLASS 2. O.D. AND O.D. CORNERS .0005 - .0010 INCH THICKNESS, FACES MINIMUM .0003 IN THICKNESS.
- INNER - RING ALL EXTERNAL SURFACES, EXCEPT THE INNER RING BORE, ZINC-NICKEL IN ACCORDANCE WITH AMS 2417, TYPE 2, OR CADMIUM PLATED IN ACCORDANCE WITH QQ-P-416, TYPE, WITH A THICKNESS OF .0003 TO .0006 INCHES.
- ENDPLATES - ALL EXPOSED SURFACES ZINC-NICKEL IN ACCORDANCE AMS 2417, TYPE 2, OR CADMIUM PLATED IN ACCORDANCE WITH QQ-P-416, TYPE I, CLASS 2, WITH A THICKNESS OF .0003 INCHES TO .0006 INCHES.
- LUBRICANT: MIL-G-81322 OR MIL-G-23827. ALL BEARINGS SHALL BE PREPACKED WITH GREASE CONFORMING TO MIL-G-81322 UNLESS OTHERWISE SPECIFIED. IF MIL-G-23827 IS REQUIRED, ADD THE SUFFIX G TO THE MS PART NUMBER.
- MARKING: THE MARKING SHALL CONSIST OF THE MS PART NUMBER AND THE MANUFACTURER'S IDENTIFICATION IN ACCORDANCE WITH MIL-STD-130.
- PART NUMBER: THE PART NUMBER SHALL CONSIST OF THE BASIC SPECIFICATION SHEET NUMBER FOLLOWED BY A DASH NUMBER TAKEN FROM TABLE I. WHEN BLACK OXIDE COATING IS REQUIRED, THE DASH NUMBER SHALL BE FOLLOWED BY THE LETTER "B".

EXAMPLES: MS21438-103, MS21438-103G.

- PACKAGING: BEARINGS SHALL BE INDIVIDUALLY PACKAGED TO THE REQUIREMENTS OF MIL-P-197. PACKAGE MARKED WITH MANUFACTURER'S NAME OR TRADEMARK, AND DATE OF LUBRICATION BY MONTH AND YEAR.
- DIMENSIONS: ALL DIMENSIONS ARE AFTER PLATING AND ARE IN INCHES.
- LOAD RATING: 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. THE ULTIMATE OR STATIC FRACTURE LOAD RATING IS NOT LESS THAN 1.5 TIMES THE LIMIT LOAD RATING. THE LOAD RATING AS A TRACK ROLLER IS THE LOAD THE BEARING WILL CARRY AS A TRACK ROLLER FOR AN L - 10 LIFE OF 20,000 REVOLUTIONS.