

INCH-POUND

MS51527E
5 March 2018
SUPERSEDING
MS51527D
7 August 2000

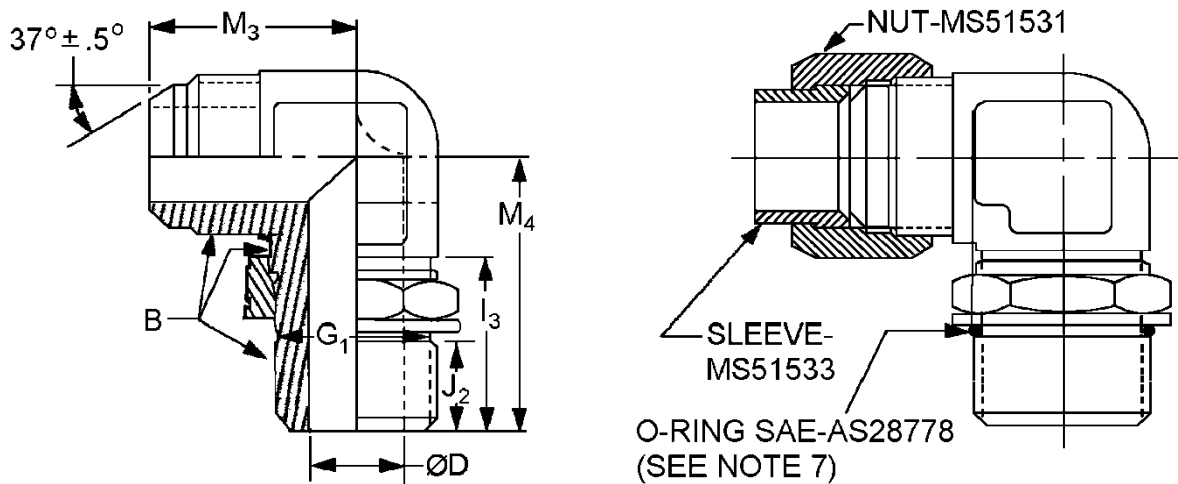
DETAIL SPECIFICATION SHEET

FITTINGS, HYDRAULIC TUBE, FLARED, 37 DEGREE AND FLARELESS, STEEL;
ELBOW, TUBE TO BOSS, 90 DEGREE, O-RING, 37 DEGREE FLARED

Reactivated after 5 March 2018 and may be used for new
and existing designs and acquisitions.

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 MIL-DTL-18866.



See notes at end of figure.

FIGURE 1. Elbow, tube to boss, 90°, O-ring, flared.

AMSC N/A

FSC 4730



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Suffix designator (see note 6)		Tube OD nom.	B Straight thread	D diameter	
Assembly	Body			Basic inches (mm)	Tolerance inches (mm)
A2	B2	.1250 (3.175)	.3125-24 UNF-2A	.062 (1.57)	±.003 (0.08)
A3	B3	.1875 (4.763)	.3750-24 UNF-2A	.125 (3.18)	
A4	B4	.2500 (6.350)	.4375-20 UNF-2A	.172 (4.37)	
A5	B5	.3125 (7.938)	.5000-20 UNF-2A	.234 (5.94)	
A6	B6	.3750 (9.525)	.5625-18 UNF-2A	.297 (7.54)	±.004 (0.10)
A8	B8	.5000 (12.700)	.7500-16 UNF-2A	.391 (9.93)	
A10	B10	.6250 (15.875)	.8750-14 UNF-2A	.484 (12.29)	±.005 (0.13)
A12	B12	.7500 (19.050)	1.0625-12 UN-2A	.609 (15.47)	
A14	B14	.8750 (22.225)	1.1875-12 UN-2A	.718 (18.24)	
A16	B16	1.0000 (25.400)	1.3125-12 UN-2A	.844 (21.44)	±.007 (0.18)
A20	B20	1.2500 (31.750)	1.6250-12 UN-2A	1.078 (27.38)	+.008 -.005 (+0.20 -0.13)
A24	B24	1.5000 (38.100)	1.8750-12 UN-2A	1.312 (33.32)	
A32	B32	2.0000 (50.800)	2.500-12 UN-2A	1.781 (45.24)	+.010 -.005 (+0.25 -.013)

Suffix designator (see note 6)		G1 +.002 (0.05) -.003 (0.08)	I3 ±.020 (0.51) inches (mm)	J2 Full thread ±.005 (0.13) inches (mm)	M3 ±.030 (0.76) inches (mm)	M4 ±.030 (0.76) inches (mm)
Assembly	Body					
A2	B2	.250 (6.35)	.610 (15.49)	.234 (5.94)	.770 (19.56)	.910 (23.11)
A3	B3	.313 (7.95)	.610 (15.49)	.234 (5.94)	.830 (21.08)	.940 (23.88)
A4	B4	.364 (9.25)	.700 (17.78)	.281 (7.14)	.890 (22.61)	1.030 (26.16)
A5	B5	.427 (10.85)	.700 (17.78)	.281 (7.14)	.950 (24.13)	1.090 (27.69)
A6	B6	.482 (12.24)	.770 (19.56)	.312 (7.92)	1.060 (26.92)	1.250 (31.75)
A8	B8	.660 (16.76)	.880 (22.35)	.344 (8.74)	1.250 (31.75)	1.450 (36.83)
A10	B10	.773 (19.63)	1.020 (25.91)	.391 (9.93)	1.450 (36.83)	1.700 (43.18)
A12	B12	.945 (24.00)	1.160 (29.46)	.469 (11.91)	1.660 (42.16)	1.940 (49.28)
A14	B14	1.070 (27.18)	1.160 (29.46)	.469 (11.91)	1.730 (43.94)	2.000 (50.80)
A16	B16	1.195 (30.35)	1.160 (29.46)	.469 (11.91)	1.810 (45.97)	2.050 (52.07)
A20	B20	1.507 (38.28)	1.160 (29.46)	.469 (11.91)	2.060 (52.32)	2.250 (57.15)
A24	B24	1.756 (44.60)	1.160 (29.46)	.469 (11.91)	2.330 (59.18)	2.390 (60.71)
A32	B32	2.381 (60.48)	1.160 (29.46)	.469 (11.91)	3.060 (77.72)	2.890 (73.41)

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for information only.
3. Break all sharp edges; remove all burrs and slivers.
4. Dimensions and tolerances not shown shall be in accordance with SAE-J514 for 37° flared fittings.
5. The drawing is for identification purposes only and is not intended to restrict designs and shapes not dimensioned.
6. Assemblies are only furnished to this specification (body, nuts, and sleeves). Bodies are not to be stocked, stored, or issued.
7. Procure O-ring separately and install before installation of the fittings.

FIGURE 1. Elbow, tube to boss, 90°, O-ring, flared - Continued.

REQUIREMENTS:

Fittings shall be as specified on figure 1 and in table I.

Components of the assemblies shall be of the same material and finish.

Materials shall be in accordance with MIL-DTL-18866.

Finish. Finishes shall be as specified in table I. All plating's shall be capable of meeting a minimum of 96 hours salt spray test in accordance with ASTM B117. The fittings shall show no evidence of red corrosion after 96 hours of salt spray. Fluid passages, other openings and internal threads shall not be subject to the plating thickness requirement and may have bare areas provided they are protected with a light film of oil.

TABLE I. Material and finish identification codes.

PIN code material/plating finish	Material	Plating finish
Blank	Steel	Cadmium plating in accordance with SAE-AMS-C-81562, type II, class 3 or SAE-AMS-QQ-P-416, type II, class 2. <u>1/</u>
H	Steel	Zinc-Aluminum in accordance with ASTM F1136/F1136M, grade 3, NC. <u>2/</u>
J	Steel	Zinc-nickel in accordance with SAE-AMS2417, type 2, grade B. <u>2/ 3/</u>
M	Nickel-copper alloy UNS N04400	No additional finish.
N	High-chromium nickel alloy UNS N06690	No additional finish.
P	Steel	Zinc phosphate finish in accordance MIL-DTL-16232 type Z, class 1. <u>4/</u>
R	Steel	Zinc plating in accordance with ASTM B633; type III or V, Fe/Zn 8. <u>4/</u>
S	Corrosion resistant steel	No additional finish. Passivation in accordance with SAE-AMS2700, method 1, type 6 or 7, free machining alloy UNS S30300 method 1, type 2 or 4.
T	Titanium	Anodize in accordance with SAE-AMS2488 type 2. <u>5/</u>
TF	Titanium	Fluoride phosphate in accordance with SAE-AMS2486. <u>5/</u>
Z	Steel	Zinc plating in accordance with ASTM B695, type II, class 8. <u>4/</u>
ZC	Steel	Zinc may be any zinc plating from PIN codes J, R, and Z with a colored chromate coating. <u>4/</u>

1/ Embrittlement test need not be run. Cadmium shall not be used in oxygen or potable water systems. Cadmium is prohibited from use in NAVSEA owned shipboard systems.

2/ Hexavalent chromium free. Finish shall be RoHS compliant.

3/ The zinc-nickel alloy plate shall contain 12% to 16% nickel. The coating thickness shall be 315µ inches (8µm) minimum.

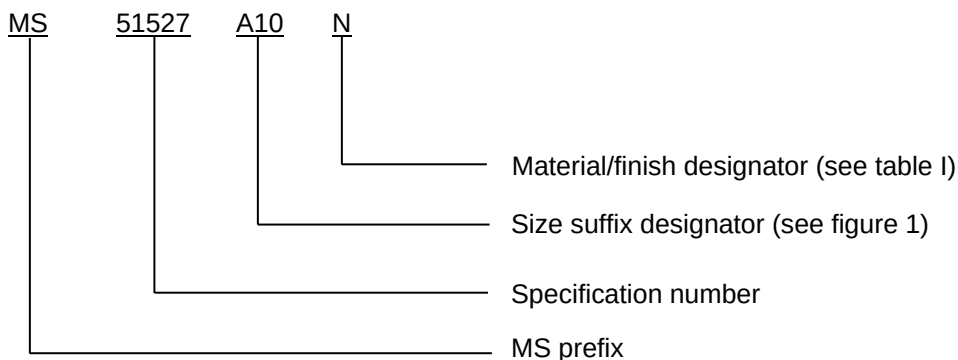
4/ Not for use in aircraft. Requires approval from the Program Office for all applications.

5/ A pretreatment, a modification of the fluoride treatment, or a post treatment shall be applied so the final color of the fittings shall be similar to SAE-AMS-STD-595 colors 36076 through 36293. Titanium shall not be used in oxygen or potable water systems.

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Maximum operating pressure. Maximum operating pressure shall be in accordance with SAE-J514.

PIN: The PIN consists of the letters "MS", the specification number, a letter and number for a 90° elbow size, and a letter for material finish designator.



PIN example: MS51527A10N indicates a 90° elbow, tube to boss, .6250 inch (15.875 mm), high-chromium nickel.

Cadmium is not recommended. To the users of this document, it is recommended that the use of carbon steel material with cadmium plating be used only when other materials and finishes specified in this document cannot meet performance requirements.

Cadmium is prohibited from use in NAVSEA owned shipboard systems in accordance with the requirements of T9070-AL-DPC-020/077-2.

Class I and II ozone depleting substances (ODS) shall not be used in MS51527 or any referenced procedures.

Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

Referenced documents shall be of the issue in effect on date of invitations for bid.

Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue, due to the extent of the changes.

Referenced documents. In addition to MIL-DTL-18866, this document references the following:

MIL-DTL-16232	SAE-AMS-STD-595/36081	SAE-AMS-STD-595/36270
MS51531	SAE-AMS-STD-595/36099	SAE-AMS-STD-595/36280
MS51533	SAE-AMS-STD-595/36118	SAE-AMS-STD-595/36293
ASTM B117	SAE-AMS-STD-595/36134	SAE-AMS2417
ASTM B633	SAE-AMS-STD-595/36152	SAE-AMS2486
ASTM B695	SAE-AMS-STD-595/36170	SAE-AMS2488
ASTM F1136/F1136M	SAE-AMS-STD-595/36173	SAE-AMS2700
SAE-AMS-C-81562	SAE-AMS-STD-595/36176	SAE-AS28778
SAE-AMS-QQ-P-416	SAE-AMS-STD-595/36231	SAE-J514
SAE-AMS-STD-595/36076	SAE-AMS-STD-595/36251	T9070-AL-DPC-020/077-2

CONCLUDING MATERIAL

Custodians:

Army - AT
Navy - SH
Air Force - 99
DLA - CC

Preparing activity:

DLA - CC

(Project 4730-2018-023)

Review activities:

Army - AR, MI
Navy - AS, CG, MC, SA
Air Force - 71

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil>.