INCH-POUND
MS51502C
7 June 2016
SUPERSEDING
MS51502B
25 June 2015

DETAIL SPECIFICATION SHEET

NIPPLE TUBE, REGULAR HEX, 37 DEGREE FLARED, LONG

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

Inactive for new design after 17 August 1999. For new design, use SAE-J514.

The requirements for acquiring the product described herein shall consist of this specification sheet and MIL-DTL-18866.

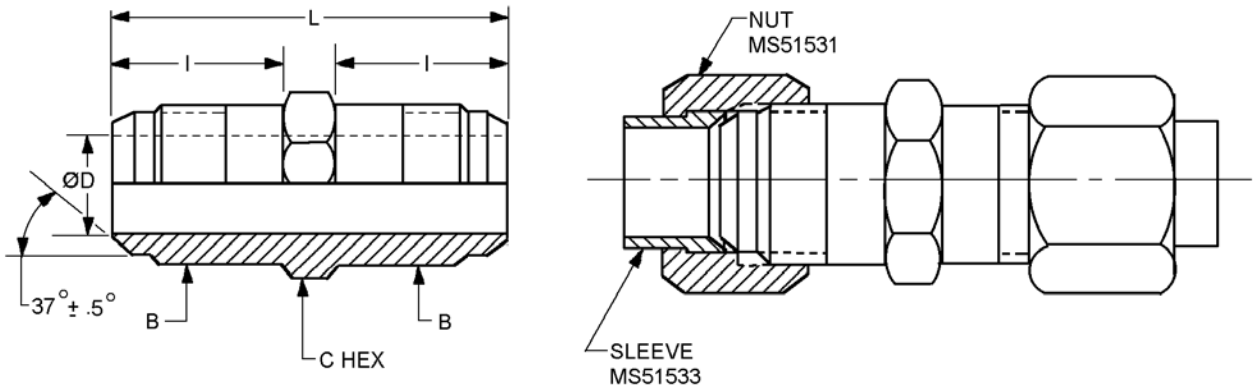


FIGURE 1. Nipple, tube, long.

Suffix designator		Tube OD nom. inches (mm)	B Straight thread	C Hex flat nom.	D diameter	
Assembly (see note 4)	Body				Basic inches (mm)	Tolerance inches (mm)
A2	B2	.1250 (3.175)	.3125-24 UNF-2A	7/16	.062 (1.57)	±.003 (0.08)
A3	B3	.1875 (4.763)	.3750-24 UNF-2A	7/16	.125 (3.18)	
A4	B4	.2500 (6.350)	.4375-20 UNF-2A	1/2	.172 (4.37)	
A5	B5	.3125 (7.938)	.3125-24 UNF-2A	9/16	.234 (5.94)	
A6	B6	.3750 (9.525)	.5625-18 UNF-2A	5/8	.297 (7.54)	±.004 (0.10)
A8	B8	.5000 (12.700)	.7500-16 UNF-2A	13/16	.391 (9.93)	
A10	B10	.6250 (15.875)	.8750-14 UNF-2A	15/16	.484 (12.29)	
A12	B12	.7500 (19.050)	1.0625-12 UN-2A	1 1/8	.609 (15.47)	±.005 (0.13)
A14	B14	.8750 (22.225)	1.1875-12 UN-2A	1 1/4	.718 (18.24)	
A16	B16	1.0000 (25.400)	1.3125-12 UN-2A	1 3/8	.844 (21.44)	+.007 -.005 (+0.18 - 0.13)
A20	B20	1.2500 (31.750)	1.6250-12 UN-2A	1 11/16	1.078 (27.38)	+.008 -.005 (+0.20 -0.13)
A24	B24	1.5000 (38.100)	1.8750-12 UN-2A	2	1.312 (33.32)	
A32	B32	2.0000 (50.800)	2.500-12 UN-2A	2 5/8	1.781 (45.24)	+.010 -.005 (+0.25 -0.13)

Suffix designator		I max inches (mm)	L inches (mm) ±.050 (1.27)
Assembly (see note 4)	Body		
A2	B2	.640 (16.26)	1.500 (38.10)
A3	B3	.700 (17.78)	1.625 (41.28)
A4	B4	.770 (19.56)	1.750 (44.45)
A5	B5	.830 (21.08)	1.875 (47.63)
A6	B6	.920 (23.37)	2.094 (53.19)
A8	B8	1.110 (28.19)	2.469 (62.71)
A10	B10	1.280 (32.51)	2.875 (73.03)
A12	B12	1.450 (36.83)	3.281 (83.34)
A14	B14	1.531 (38.89)	3.453 (87.71)
A16	B16	1.610 (40.89)	3.594 (91.29)
A20	B20	1.844 (46.84)	4.094 (103.99)
A24	B24	2.109 (53.57)	4.625 (117.48)
A32	B32	2.844 (72.24)	6.094 (154.79)

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for information only.
3. Break all sharp edges and remove all burrs and slivers.
4. Assemblies are only furnished to this specification (body, nut, and sleeve). Bodies are not to be stocked, stored, or issued.
5. Dimensions and tolerances not shown shall be in accordance with SAE-J514 for 37 degree flared fittings.
6. The drawing is for identification purposes only and is not intended to restrict designs and shapes not dimensioned.

FIGURE 1. Nipple, tube, long - 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 platings 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 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 2 or SAE-AMS-QQ-P-416, type II, class 2. 1/
H	Steel	Zinc-Aluminum in accordance with ASTM F1136/F1136M, grade 3, NC.
J	Steel	Zinc-nickel in accordance with SAE-AMS2417, type 2, grade B. 2/
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 4. 3/
R	Steel	Zinc plating in accordance with ASTM B633; type VI, Fe/Zn 12. 4/
S	Corrosion resistant steel	No additional finish. Passivation in accordance with SAE-AMS2700, method 1, type 6 or 7.
T	Titanium	Anodize in accordance with SAE-AMS2488 type 2. 5/
TF	Titanium	Fluoride phosphate in accordance with SAE-AMS2486. 5/
Z	Steel	Zinc plating in accordance with ASTM B633; type II or III, Fe/Zn 12, or ASTM B695, type II, class 12. 4/
ZC	Steel	Zinc may be any zinc plating from PIN codes H, J, and R with a colored chromate coating. 4/

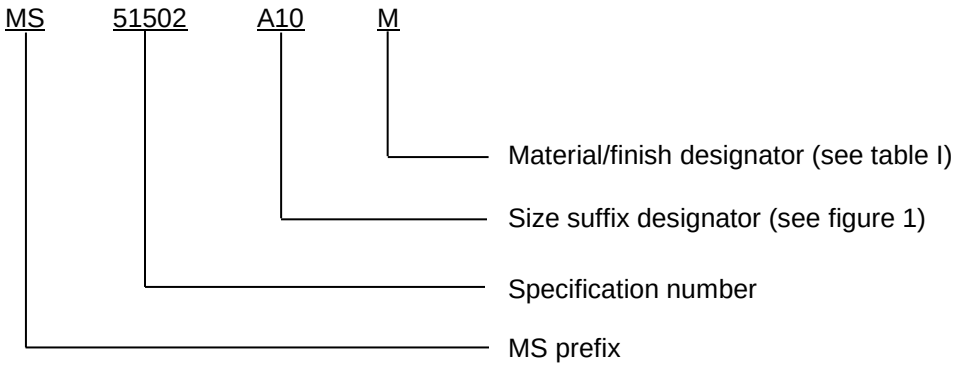
1/ Embrittlement test need not be run. Cadmium shall not be used in oxygen or potable water systems.
2/ The zinc-nickel alloy plate shall contain 12% to 16% nickel. The coating thickness shall be 315µ inches (8µm) minimum coating thickness.
3/ Hexavalent chromium free. Finish shall be ROHS compliant.
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 FED-STD-595 colors 36076 through 36293. Titanium shall not be used in oxygen or potable water systems.

Trivalent wrenchability. When the finish has been damaged due to poor wrenchability, the surface of the connector shall be touched up using one of the brush plating processes below as appropriate to the primary finish. The term “trivalent wrenchability” is used to evaluate the ability of the finish to withstand abrasion from an excessive amount of wrenching.

a. Brush plating of hard chromium by electrodeposition shall be in accordance with SAE-AMS-2451/5.
b. Brush plating of medium-hardness, low stress nickel by electrodeposition shall be in accordance with SAE-AMS-2451/9.

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 nipple size, and a letter for material/finish designator.



PIN example: MS51502A10M indicates a tube nipple, .6250 inch (15.875 mm), nickel-copper alloy.

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.

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:

FED-STD-595/36076	FED-STD-595/36176	MS51533	SAE-AMS2417
FED-STD-595/36081	FED-STD-595/36231	ASTM B117	SAE-AMS2451/5
FED-STD-595/36099	FED-STD-595/36251	ASTM B633	SAE-AMS2451/9
FED-STD-595/36118	FED-STD-595/36270	ASTM B695	SAE-AMS2486
FED-STD-595/36134	FED-STD-595/36280	ASTM F1136/F1136M	SAE-AMS2488
FED-STD-595/36152	FED-STD-595/36293	SAE-AMS-C-81562	SAE-AMS2700
FED-STD-595/36170	MIL-DTL-16232	SAE-AMS-QQ-P-416	SAE-J514
FED-STD-595/36173	MS51531		

CONCLUDING MATERIAL

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

Preparing activity:
DLA - CC

(Project 4730-2016-037)

Review activities:
Army - AR, AV, MI
Navy - CG, 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.