INCH-POUND

MIL-DTL-32371/10
24 April 2012

DETAIL SPECIFICATION SHEET

FITTINGS, HYDRAULIC TUBE, SLEEVE, DOUBLE ANGLE

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-32371.

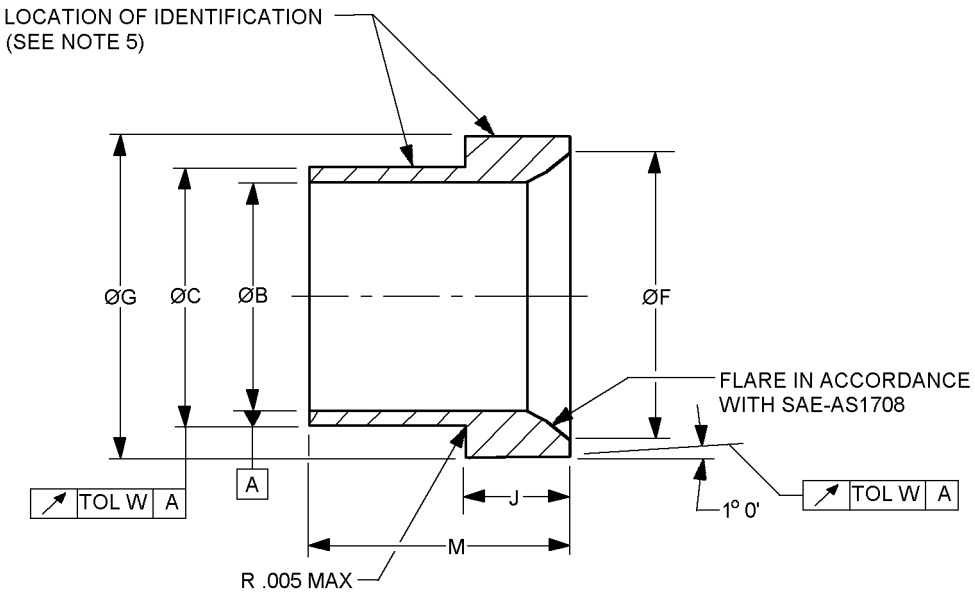


FIGURE 1. Sleeve.

Suffix designator	Tube OD nom. inches (mm)	B dia +.003 (0.08) -.000 inches (mm)	C dia +.000 -.003 (0.08) inches (mm)	F dia ±.005 inches (mm)	G dia +.000 -.003 (0.08) inches (mm)
-4	.250 (6.35)	.255 (6.48)	.297 (7.54)	.315 (8.00)	.383 (9.73)
-6	.375 (9.53)	.380 (9.65)	.342 (8.69)	.441 (11.20)	.502 (12.75)
-8	.500 (12.70)	.505 (12.83)	.562 (14.27)	.589 (14.96)	.682 (17.32)
-10	.625(15.88)	.631 (16.03)	.690 (17.53)	.705 (17.91)	.797 (20.24)
-12	.750 (19.05)	.756 (19.20)	.826 (20.98)	.880 (22.35)	.972 (24.69)
-16	1.000 (25.40)	1.006 (25.55)	1.081 (27.46)	1.130 (28.70)	1.222 (31.04)
-20	1.250 (31.75)	1.260 (32.00)	1.339 (34.01)	1.412 (35.86)	1.784 (45.31)
-24	1.500 (38.10)	1.510 (38.35)	1.609 (1.609)	1.630 (41.40)	2.159 (54.84)

Suffix designator	J inches (mm)	M inches (mm)
-4	.141 (3.58)	.406 (10.31)
-6	.172 (4.37)	.500 (12.70)
-8	.219 (5.56)	.562 (14.27)
-10	.234 (5.94)	.656 (14.35)
-12	.266 (6.76)	.688 (17.48)
-16	.281 (7.14)	.781 (19.84)
-20	.312 (7.92)	.906 (23.01)
-24	.344 (8.74)	1.125 (28.58)

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. Dimensions and tolerances not shown shall be in accordance with SAE-AS5176 and flare dimensions and tolerances shall be in accordance with SAE-AS1708.
5. Identification at either location shown in accordance with SAE-AS478 class C or D or method 7A3, 15A3, or 15B.
6. Circularity for diameters B, C, F and G shall not exceed .003 inch (0.08 mm) for sizes 4 through 8 and .004 inch (0.10 mm) for size -10 through -24.
7. Unless otherwise specified tolerances for three place decimals ±.016 inch (0.41mm), angles 0°30'.
8. Unless otherwise specified, surface roughness shall be 125µ in R_a in accordance with ASME B46.1
9. Break edges .003 inch (0.08 mm) to .015 inch (0.38 mm) unless otherwise specified.

FIGURE 1. Sleeve - Continued.

REQUIREMENTS:

Sleeves shall be as specified on figure 1 and in tables I and II.

Materials shall be in accordance with MIL-DTL-32371 and table I.

TABLE I. Materials reference specifications.

Designator	Material	Form	Specification	Alloy
J	Corrosion resistant steel (CRES)	Bar	SAE-AMS5639	304
K	CRES	Bar	SAE-AMS5648	316
R	CRES	Bar	SAE-AMS5645	321
S	CRES	Bar	SAE-AMS5646	347
- (dash)	Chrome-molybdenum steel	Bars	SAE-AMS6370	4130
			SAE-AMS6382	
T	Titanium 1/	Bars	SAE-AMS4928	6AI-4V annealed

1/ Titanium shall not be used in oxygen or potable water systems.

Finish. Finishes shall be as specified in table II. 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 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 II. Chemical finish identification codes and chemical finish reference specifications.

PIN code plating finish 1/	Material	Plating finish
Blank	Steel 4130	Cadmium plating in accordance with SAE-AMS-C-81562, type II, class 3 or SAE-AMS-QQ-P-416, type II, class 2. 2/
CN		Cadmium plating in accordance with SAE-AMS-C-81562, type II, class 3 or SAE-AMS-QQ-P-416, type II, class 2 with NAVAIR trivalent chromium pretreatment (TCP) in accordance with MIL-DTL-81706, type II, class 1A.
E		NAVAIR TCP in accordance with MIL-DTL-81706, type II, class 1A.
F	Steel 4130	Zinc plate (finish J, P, or R) with NAVAIR TCP in accordance with MIL-DTL-81706, type II, class 1A.
H	Steel 4130	Aluminum-nickel in accordance with ASTM F1136/F1136M, grade 3, NC.
J	Steel 4130	Zinc-nickel in accordance with SAE-AMS2417, type 2, grade B.
P	Steel 4130	Zinc phosphate finish in accordance MIL-DTL-16232 type Z, class1.
R	Steel 4130	Zinc plating in accordance with ASTM B633; type VI, Fe/Zn 5. 3/
Blank	Corrosion resistant steel	No additional finish. Passivation in accordance with SAE-AMS2700, type 6 or 7.
Blank	Titanium 4/	Anodize in accordance with SAE-AMS2488 type 2.
F		Fluoride phosphate in accordance with SAE-AMS2486.
Z	Steel 4130	Zinc plating in accordance with ASTM B633; type II or III, Fe/Zn 5, or ASTM B695, type II, class 5.
ZN	Steel 4130	Zinc plating in accordance with ASTM B633; type II or III, Fe/Zn 5, or ASTM B695, type II, class 5 with NAVAIR TCP in accordance with MIL-DTL-81706, type II, class 1A.

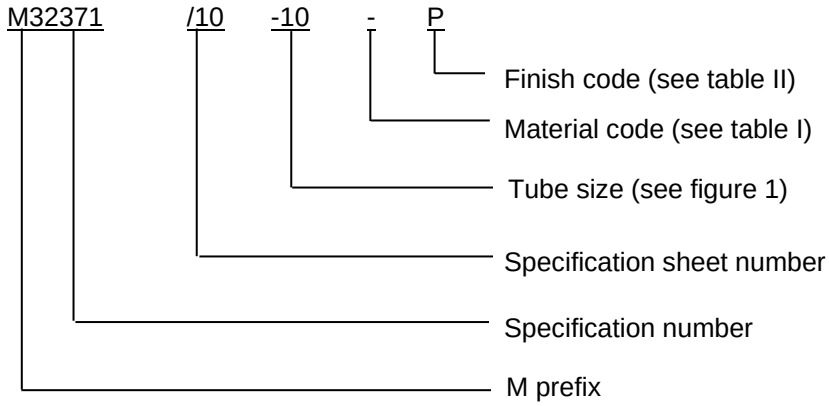
1/ Part or Identifying Number (PIN)
2/ Hydrogen embrittlement relief test need not be run.
3/ Hexavalent chromium free.
4/ Titanium shall not be used in oxygen or potable water systems.

Trivalent wrenchability. When the finish has been damaged due to poor wrenchability, the surface of the connector shall be touched up using the brush plating process below. 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-AMS2451/5.
b. Brush plating of medium-hardness, low stress nickel by electrodeposition shall be in accordance with SAE-AMS2451/9.
c. Brush plating of NAVAIR TCP shall be in accordance with MIL-DTL-81706, type 2, class A, material form 1 through 6, application method B. Example of a PIN: M817062A6B.

Maximum operating pressure. Maximum operating pressure shall be in accordance with MIL-DTL-32371.

PIN: The PIN consists of the letters “MS”, the specification number, a letter and number for adapter size, a letter for material finish designator, and the number 1 for an inverted flare.



PIN example: M32371/10-10-P indicates a sleeve, .625 inch (15.88 mm) tube OD, steel with zinc phosphate.

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.

Referenced documents. In addition to MIL-DTL-32371, this document references the following:

MIL-DTL-16232	SAE-AMS2451/5	SAE-AMS5646
MIL-DTL-81706	SAE-AMS2451/9	SAE-AMS5648
ASME B46.1	SAE-AMS2486	SAE-AMS6370
ASTM B117	SAE-AMS2488	SAE-AMS6382
ASTM B633	SAE-AMS2700	SAE-AMS-C-81562
ASTM B695	SAE-AMS4928	SAE-AMS-QQ-P-416
ASTM F1136/F1136M	SAE-AMS5639	SAE-AS478
SAE-AMS2417	SAE-AMS5645	SAE-AS5176
		SAE-AS1708

CONCLUDING MATERIAL

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

Preparing activity:
DLA - CC

(Project 4730-2010-011)

Review activities:
Army - AR
Navy - CG, MC, SA, SH
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.daps.dla.mil.