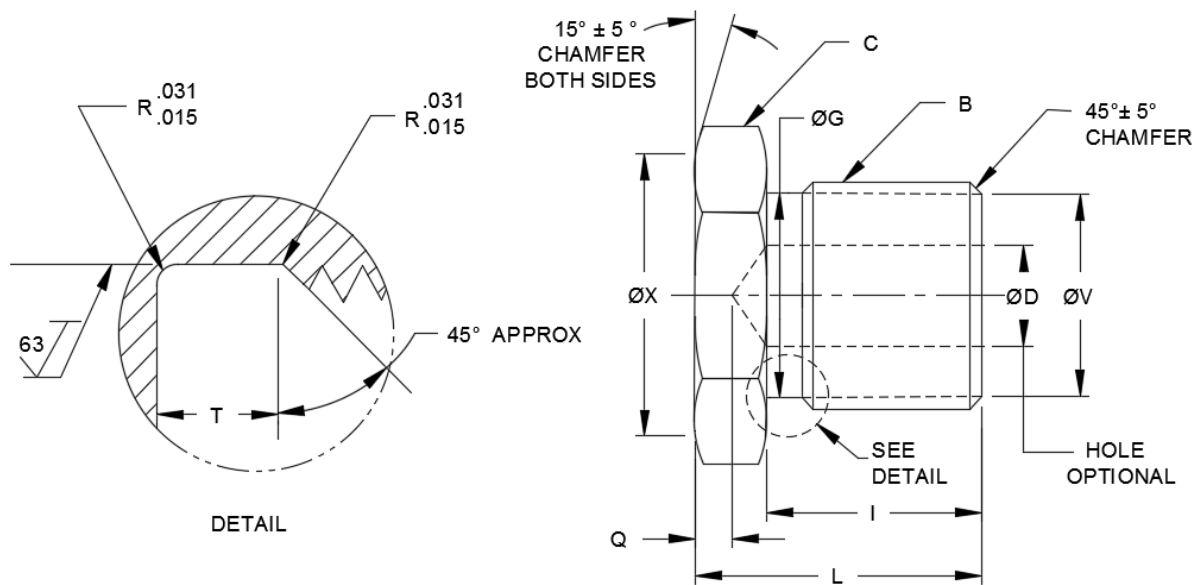


MS51840F
w/Amendment 1
8 September 2022
SUPERSEDING
MS51840F
23 October 2020

FITTINGS, HYDRAULIC TUBE, FLARELESS TYPE,
PLUG, MACHINE THREAD, O-RING

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



Inches	mm
.015	0.38
.031	0.79

FIGURE 1. Plug.

AMSC N/A
DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.



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Dash number	Tube OD Nom inches (mm)	B Straight thread ASME B1.1 Class 2A	C Hex (across flats)		Wrench size
			Min inches (mm)	Max inches (mm)	
-21	.1250 (3.175)	.3125 - 24UNF	.425 (10.80)	.439 (11.15)	7/16
-22	.1875 (4.763)	.3750 - 24UNF	.488 (12.40)	.502 (12.75)	1/2
-23	.2500 (6.350)	.4375 - 20UNF	.550 (13.97)	.562 (14.27)	9/16
-24	.3125 (7.936)	.5000 - 20UNF	.613 (15.57)	.627 (15.93)	5/8
-25	.3750 (9.525)	.5625 - 18UNF	.675 (17.15)	.690 (17.53)	11/16
-26	.5000 (12.700)	.7500 - 16UNF	.859 (21.82)	.877 (22.28)	7/8
-27	.6250 (15.875)	.8750 - 14UNF	.984 (24.99)	1.002 (25.45)	1
-28	.7500 (19.050)	1.0625 - 12UN	1.230 (31.24)	1.252 (31.80)	1-1/4
-29	.8750 (22.225)	1.1875 - 12UN	1.355 (34.42)	1.377 (34.98)	1-3/8
-30	1.0000 (25.400)	1.3125 - 12UN	1.469 (37.31)	1.502 (38.15)	1-1/2
-31	1.2500 (31.750)	1.6250 - 12UN	1.844 (46.84)	1.877 (47.68)	1-7/8
-32	1.5000 (38.100)	1.8750 - 12UN	2.094 (53.19)	2.127 (54.03)	2
-33	2.0000 (50.800)	2.5000 - 12UN	2.719 (69.06)	2.752 (69.90)	2-5/8

Dash number	D Diameter ±.015 (0.38) inches (mm)	G Diameter Inches (mm) +.002 (0.05) -.003 (0.08)	I inches (mm) ±.005 (0.13)	L inches (mm) ±.02 (0.51)	Q Min inches (mm)
-21	.093 (2.36)	.250 (6.35)	.297 (7.54)	.60 (15.2)	.06 (1.5)
-22	.125 (3.18)	.313 (7.95)	.297 (7.54)	.60 (15.2)	.08 (2.0)
-23	.203 (5.16)	.364 (9.25)	.360 (9.14)	.67 (17.0)	.10 (2.5)
-24	.234 (5.94)	.427 (10.85)	.360 (9.14)	.67 (17.0)	.12 (3.1)
-25	.297 (7.54)	.482 (12.24)	.391 (9.93)	.73 (18.5)	.16 (4.0)
-26	.422 (10.72)	.660 (16.76)	.438 (11.13)	.80 (20.3)	.22 (5.6)
-27	.500 (12.70)	.773 (19.63)	.500 (12.70)	.93 (23.6)	.25 (6.4)
-28	.656 (16.66)	.945 (24.00)	.594 (15.09)	1.09 (27.7)	.25 (6.4)
-29	.718 (18.24)	1.070 (27.18)	.594 (15.09)	1.09 (27.7)	.25 (6.4)
-30	.875 (22.23)	1.195 (30.35)	.594 (15.09)	1.12 (28.5)	.25 (6.4)
-31	1.093 (27.76)	1.507 (38.28)	.594 (15.09)	1.20 (30.5)	.25 (6.4)
-32	1.344 (34.14)	1.756 (44.60)	.594 (15.09)	1.27 (32.3)	.25 (6.4)
-33	1.813 (46.05)	2.381 (60.48)	.594 (15.09)	1.43 (36.3)	.30 (7.6)

See notes at end of figure.

FIGURE 1. Plug - Continued.

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Dash number	T inches (mm) +.030 (0.76) -.000	V Diameter inches (mm) ±.015 (0.38)	X Diameter inches (mm) ±.005 (0.13)
-21	.063 (1.60)	.250 (6.35)	.438 (11.13)
-22	.063 (1.60)	.310 (7.87)	.500 (12.70)
-23	.075 (1.91)	.365 (9.27)	.563 (14.30)
-24	.075 (1.91)	.425 (10.80)	.625 (15.88)
-25	.083 (2.11)	.480 (12.19)	.688 (17.48)
-26	.094 (2.39)	.660 (16.76)	.875 (22.23)
-27	.107 (2.72)	.775 (19.69)	1.000 (25.40)
-28	.125 (3.18)	.945 (24.00)	1.250 (31.75)
-29	.125 (3.18)	1.070 (27.18)	1.375 (34.93)
-30	.125 (3.18)	1.195 (30.35)	1.500 (38.10)
-31	.125 (3.18)	1.505 (38.23)	1.875 (47.63)
-32	.125 (3.18)	1.755 (44.58)	2.125 (53.98)
-33	.125 (3.18)	2.380 (60.45)	2.750 (69.85)

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for information only.
3. Remove all burrs and slivers.
4. Dimensions and tolerances not shown shall be in accordance with SAE-J514.
5. The drawing is for identification purposes only and is not intended to restrict designs and shapes not dimensioned.

FIGURE 1. Plug - Continued.

REQUIREMENTS:

Plug shall be as specified on figure 1.

Materials shall be in accordance with MIL-DTL-18866 unless otherwise specified herein.

Procure O-rings separately see SAE-AS28778. O-ring shall not be supplied with plug.

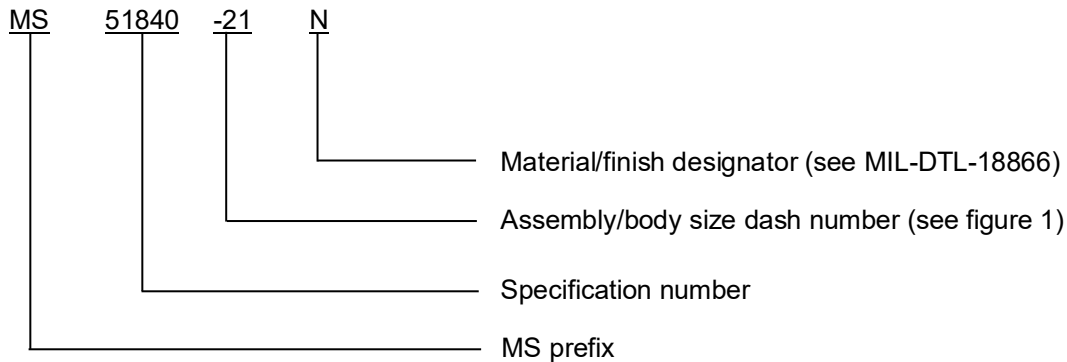
Finish and finish designators shall be in accordance with MIL-DTL-18866. For steel materials, the user is advised to specify PIN code R unless another finish option is determined necessary by the application conditions. See MIL-DTL18866 sections 3.4.4.2.1 and 3.4.4.4 thru 3.4.4.7 for recommendations regarding finish restrictions.

Unless otherwise specified in MIL-DTL-18866, all plating's shall be capable of meeting 96-hour 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.

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

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PIN: The PIN consists of the letters “MS”, the specification number, a dash number for plug body size, and a letter for material finish designator.



PIN example: MS51840-21N indicates a plug; .1250 inches (3.175 mm) tube OD, .3125 - 24UNF-2A straight thread, high-chromium nickel alloy.

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

Class I and II ozone depleting substances (ODS) shall not be used in MS51840 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.

Phosphate coating finish “P” has been replaced by “KA”.

Material/finish designator “SS” has been replaced by “S”.

NOTE: The following restrictions do not apply to manufactures of the fittings and is applicable only to OEM's and users.

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.

Zinc-plated materials should be avoided in hydraulic systems with water-glycol fluids. Reference ASTM MNL37 - Fuels and Lubricants Handbook, "water glycol fluids are highly alkaline due to the presence of amine based corrosion inhibitors. As a result, these fluids can attack zinc, cadmium, magnesium, and non-anodized aluminum, forming sticky or gummy residues." Consequently, these metals should be avoided when selecting system components.

Army and Marine ground forces zinc plating restrictions. PIN codes FC, FD, Z, and ZC finishes have a chromate conversion coating which includes hexavalent chromium and are not recommended for Army and Marine ground systems. The use of coatings depositing hexavalent chromium for Army vehicles is prohibited unless otherwise explicitly stated in the contract as a requirement. For new designs PIN codes FC, FD, Z, and ZC are not to be supplied to Army and Marine ground forces. MIL-PRF-32647 Type K20 (PIN code KA) is intended as a hazardous free plating material and is a direct replacement for zinc plating with a hexavalent chromium conversion coating. KA has an equivalent torque/tension as the plating being replaced.

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Army and Marine ground vehicles. The use of cadmium plating for Army and Marine ground vehicles is prohibited unless otherwise explicitly stated in the contract as a requirement.

Army and Marine ground vehicle applications cadmium plating alternative. Pin code J or KB may be substituted for cadmium ("Blank" PIN code) for Army and Marine ground vehicle applications. MIL-PRF-32647 Type K16 (PIN code KB) is intended as a hazardous free plating material and is a direct replacement for cadmium plating ("Blank" PIN code). KB has an equivalent torque/tension as cadmium.

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

Amendment notations. The margins of this specification are marked with vertical lines to indicate modifications generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

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

MIL-PRF-32647	SAE-AS28778
ASME B1.1	SAE-J514
ASTM B117	T9070-AL-DPC-020/077-2
ASTM MNL37	

CONCLUDING MATERIAL

Custodians:

Army - AR
Navy - OS
Air Force - 71
DLA - CC

Preparing activity:
DLA - CC

(Project 4730-2022-025)

Review activities:

Army - AT, CR, CR4, EA, GL
Navy - AS, SH

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>.