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INCH-POUND

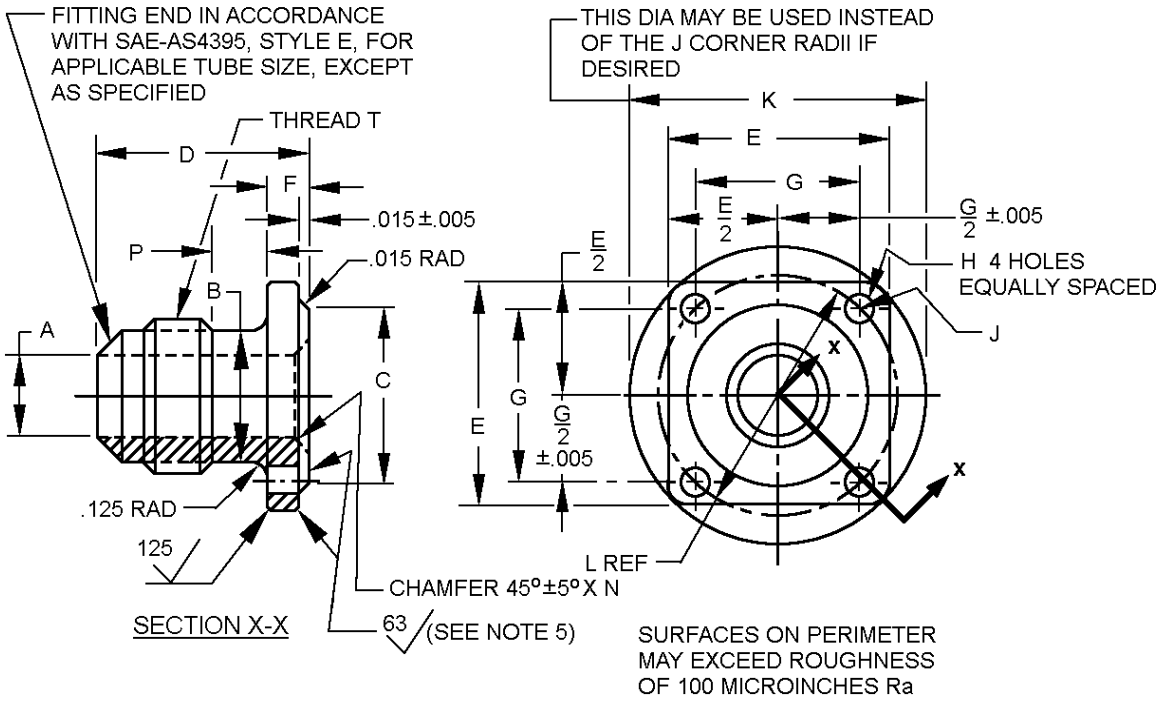
MS20760D
w/AMENDMENT 2
20 April 2016
SUPERSEDING
MS20760D
w/AMENDMENT 1
7 August 2014

DETAIL SPECIFICATION SHEET

ADAPTER, STRAIGHT, FLANGE TO TUBE

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 SAE-AS4875/1.



Size codes 8 through 32

Inches	mm
.005	0.13
.015	0.38
.125	3.18

FIGURE 1. Adapter straight flange to tube dimensions and configurations.

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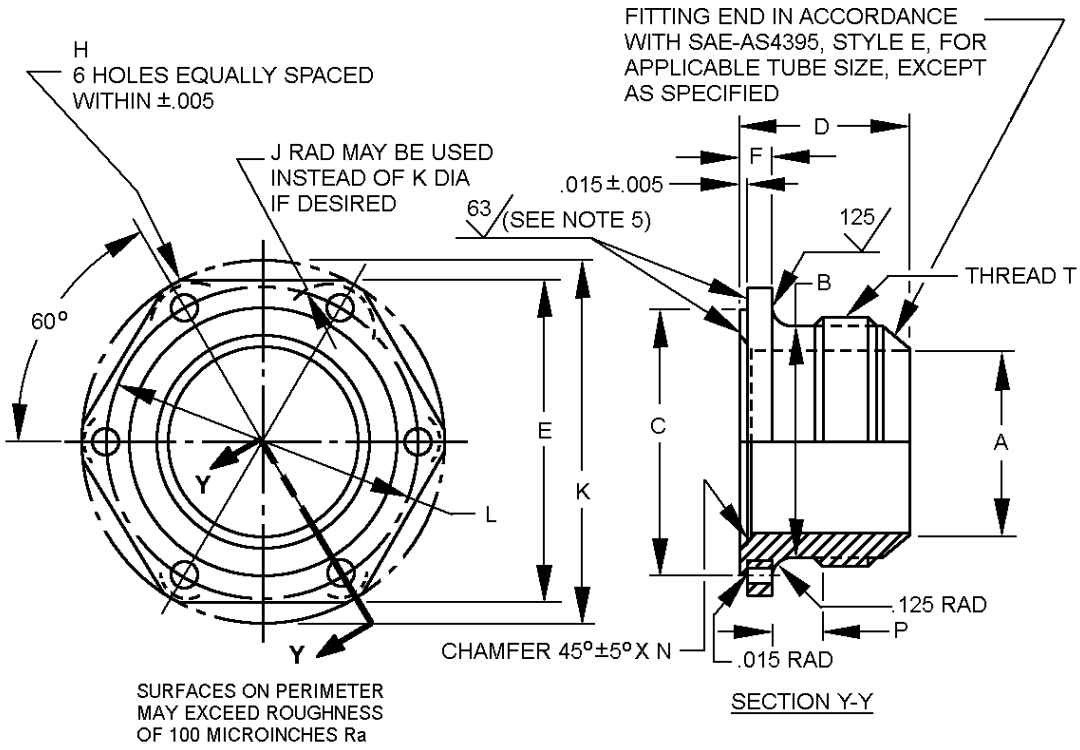

Size codes 40 and 48 (see note 7)

Inches	mm
.005	0.13
.015	0.38
.125	3.18

Size code number	Tubing OD	Thread T (ref)	A dia. ±.003 (0.08) inch (mm)	B dia. inch (mm)
8	.500 (12.70)	.7500-16UNJF-3A	.391 (9.93)	.660 (16.76)
10	.625 (15.88)	.8750-14UNJF-3A	.484 (12.29)	.773 (19.63)
12	.750 (19.05)	1.0625-12UNJ-3A	.609 (15.47)	.891 (22.63)
12-16				
16	1.000 (2.54)	1.3125-12UNJ-3A	.844 (21.44)	1.156 (29.36)
20	1.250 (13.75)	1.6250-12UNJ-3A	1.078 (27.38)	1.438 (36.53)
20-24				
24	1.500 (38.10)	1.8750-12UNJ-3A	1.312 (33.32)	1.688 (42.88)
32	2.000 (50.80)	2.500-12UNJ-3A	1.781 (45.24)	2.250 (57.15)
40	2.500 (63.50)	3.000-12UNJ-3A	2.281 (57.94)	2.812 (71.42)
48	3.000 (76.20)	3.5000-12UNJ-3A	2.781 (70.64)	3.344 (84.94)

FIGURE 1. Adapter straight flange to tube dimensions and configurations - Continued.

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Size code number	C dia. +.000 -.005 (0.13) inch (mm)	D inch (mm)	E inch (mm)		F ± .005 (0.13) inch (mm)	G ±.005 (0.13) inch (mm)
8	.875 (22.23)	1.207 (30.66)	1.390 (35.31)	± .016 (0.41)	.250 (6.35)	.950 (24.13)
10	1.000 (25.40)	1.308 (33.22)	1.468 (37.29)			1.038 (26.37)
12	1.250 (31.75)	1.406 (35.71)	1.594 (40.49)			1.156 (29.36)
12-16	1.500 (38.10)		1.750 (44.45)			1.312 (33.32)
16		1.500 (38.10)				
20	1.844 (46.84)	1.625 (41.28)	2.188 (55.58)			1.656 (42.06)
20-24	2.125 (53.98)		2.375 (60.33)	± .020 (0.51)	.312 (7.92)	1.812 (46.02)
24		1.750 (44.45)				
32	2.750 (69.85)	2.125 (53.98)	3.000 (76.20)			2.375 (60.33)
40	3.281 (83.34)	2.000 (50.80)	4.000 (101.60)			---
48	3.781 (96.04)	2.125 (53.98)	4.500 (114.30)			---

Size code number	H dia. +.010 (0.25) -.000 inch (mm)	J rad. inch (mm)	K dia. inch (mm)	L Dia. ±.005 (0.13) inch (mm)	N dia. inch (mm)	P +.015 (0.38) -.000 inch (mm)
8	.205 (5.21)	.219 (5.56)	1.782 (45.26)	1.344 (34.14)	.451 (11.46)	.394 (10.01)
10			1.906 (48.41)	1.468 (37.29)	.544 (13.82)	.407 (10.34)
12			2.094 (53.19)	1.635 (41.53)	.669 (16.99)	.417 (10.59)
12-16			2.312 (58.72)	1.855 (47.12)		
16					.904 (22.96)	.464 (11.79)
20	.266 (6.76)	.266 (6.76)	2.875 (73.03)	2.342 (59.49)	1.138 (28.91)	.480 (12.19)
20-24		.281 (7.14)	3.094 (78.59)	2.562 (65.07)		
24					1.372 (34.85)	
32	.328 (8.33)	.312 (7.92)	3.953 (100.41)	3.359 (85.32)	1.841 (46.76)	.605 (15.37)
40		.375 (9.53)	4.500 (114.30)	3.812 (96.82)	2.341 (59.46)	.704 (17.88)
48		.625 (15.88)	5.000 (127.00)	4.312 (109.52)	2.841 (72.16)	.751 (19.08)

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for information only.
3. Dimensioning and tolerancing are in accordance with ASME Y14.5. Unless otherwise specified tolerances are ±.005 inch (0.13 mm), angles ±0.5°.
4. Break sharp edges and remove all hanging burrs and slivers.
5. Annular tool marks up to 63 µ-in (1.6 µm) Ra max will be allowed, machined surfaces shall be finished to 100µin (2.54 µm) Ra, unless otherwise specified on the figures. Surface finish shall be in accordance with ASME B46.1.
6. Reduction by forging draft angle of 7° maximum is permissible.
7. Not to be used unless approved by the procuring activity.

FIGURE 1. Adapter straight flange to tube dimensions and configurations - Continued.

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REQUIREMENTS:

Dimensions and configuration shall be in accordance with figure 1.

For design features purposes, this standard takes precedence over documents referenced herein.

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

Porosity test: finished castings shall not leak when subjected to 100-psi (0.7 MPa) internal air pressure and submerged in water for 3 minutes minimum.

This part is designed for use in fuel and oil systems with maximum operating pressures in accordance with table I.

TABLE I. Maximum operating pressure.

Size code number	Material	PSI	MPa
8 thru 16	Aluminum alloy	1500	10.3
24 thru 28	Aluminum alloy	500	3.4
32 thru 48	Aluminum alloy	500	3.4

Maximum operating temperature 275° F (135°C).

The connector flange to hose shall not exceed the weight limits specified in table II.

TABLE II. Weight limits. 1/

Size code number	Weight max lbs. (gram)		
	AL alloy	Steel/CRES	TI alloy
8	---	---	---
10	---	---	---
12	.09 (41)	.25 (113)	.15 (68)
12-16	.10 (45)	.28 (127)	.17 (77)
16	.12 (54)	.35 (159)	.20 (91)
20	.16 (73)	.53 (240)	.26 (118)
20-24	.23 (104)	.64 (290)	.38 (172)
24	.25 (113)	1.28 (581)	.41 (186)
32	.45 (204)	1.82 (826)	.74 (336)
40	.65 (295)	2.32 (1052)	1.07 (485)
48	.83 (376)	2.43 (1102)	1.37 (621)

1/ Metric equivalents given for information only.

Materials and finishes shall be in accordance with table III. 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.

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TABLE III. Material and finish code letters.

Code letter	Material	Finish
-	Steel 1137 or 1141 in accordance with ASTM A108	Cadmium plating in accordance with SAE-AMS-C-81562, type II, class 2 or SAE-AMS-QQ-P-416, type II, class 2, dye black 1/
A	Steel 1137 or 1141 in accordance with ASTM A108	Zinc-Aluminum in accordance with ASTM F1136/F1136M, grade 3, NC.
D	Aluminum alloy 2014-T4 in accordance with SAE-AMS-QQ-A-225/6 or aluminum alloy casting in accordance with ASTM B108/B108M Aluminum alloy 2024 or 2024 forging and bar stock in accordance with SAE-AS4875	Anodized anodize in accordance with MIL-A-8625, type 2 2/
DA	Aluminum alloy 2014-T4 in accordance with SAE-AMS-QQ-A-225/6 or aluminum alloy casting in accordance with ASTM B108/108M Aluminum alloy 2024 or 2024 forging and bar stock in accordance with SAE-AS4875	Chemical conversion coating in accordance with, MIL-DTL-5541, type II, class 3 2/
G	Steel 1137 or 1141 in accordance with ASTM A108	Zinc plating in accordance with ASTM B633; type V, Fe/Zn 12.
H	Steel	Zinc phosphate finish in accordance MIL-DTL-16232 type Z, class 4. 4/
J	Steel	Zinc plating in accordance with ASTM B633; type II or III, Fe/Zn 12, or ASTM B695, type II, class 12.
R	Corrosion resistant steel (CRES) alloy 321 in accordance with SAE-AS4875	Passivate in accordance with SAE-AS4875
W	Aluminum alloy 7075-T73 or T7352 in accordance with SAE-AS4875	Anodize in accordance with MIL-A-8625, type 2 6/
WC	Aluminum alloy 7075-T73 or T7352 in accordance with SAE-AS4875	Chemical conversion coating in accordance with, MIL-DTL-5541, type II, class 3 6/
T 3/	Titanium in accordance with SAE-AS4875	Anodized in accordance with SAE-AS4875
TF 3/	Titanium in accordance with SAE-AS4875	Fluoride phosphate in accordance with SAE-AMS2486.
Z	Steel 1137 or 1141 in accordance with ASTM A108	Zinc may be any zinc plating's from PIN codes G, H, or J. 7/
ZN	Steel 1137 or 1141 in accordance with ASTM A108	Zinc may be any zinc plating from PIN codes G, H, or J, with a colored chromate coating. 7/

1/ Cadmium shall not be used in oxygen or potable water systems.
2/ Aluminum alloys 2014 and 2024 shall be dyed light blue. Aluminum alloys 2014/2024 code D are inactive for new design, use aluminum alloy 7075 code W aluminum for new design.
3/ Titanium shall not be used in oxygen systems. 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.
4/ Hexavalent chromium free. Finish shall be ROHS compliant.
5/ The zinc-nickel alloy plate shall contain 12% to 16% nickel. The coating thickness shall be 315µ inches (8µm) minimum coating thickness.
6/ Unless otherwise specified aluminum alloy 7075 shall be dyed brown.
7/ Not for use in Aircraft.

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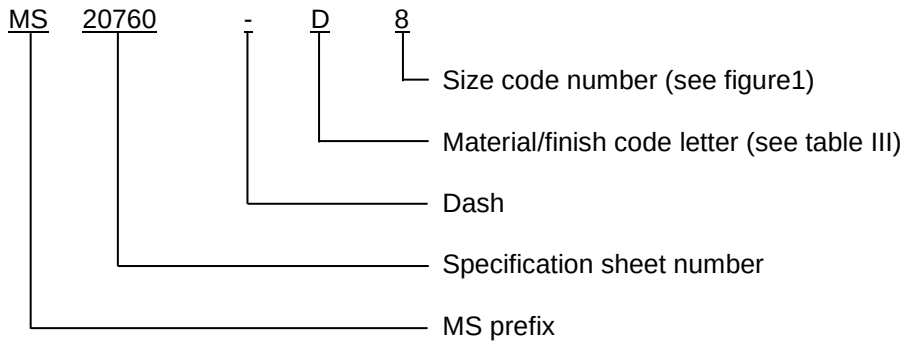
Part or Identifying Number (PIN): The PIN consists of prefix “MS” the specification sheet number, a dash, letter for material/finish, and size code. Unassigned PIN’s shall not be used.



PIN example: MS20760-D8 indicates a flange to hose adapter .500 inch (12.70 mm) flange to a .750 inch (19.05 mm) thread, aluminum alloy 2014-T4 anodized light blue.

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.

Marking: Part shall be permanently marked with the MS PIN, and include the manufacturers CAGE, name, or trademark.

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

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 SAE-AS4875/1, this document references the following:

FED-STD-595/36076	FED-STD-595/36270	ASTM B633
FED-STD-595/36081	FED-STD-595/36280	ASTM B695
FED-STD-595/36099	FED-STD-595/36293	ASTM F1136/F1136M
FED-STD-595/36118	MIL-A-8625	SAE-AMS-C-81562
FED-STD-595/36134	MIL-DTL-5541	SAE-AMS-QQ-A-225/6
FED-STD-595/36152	MIL-DTL-16232	SAE-AMS-QQ-P-416
FED-STD-595/36170	ASME B46.1	SAE-AMS2486
FED-STD-595/36173	ASME Y14.5	SAE-AS4395
FED-STD-595/36176	ASTM A108	SAE-AS4875
FED-STD-595/36231	ASTM B108/B108M	
FED-STD-595/36251	ASTM B117	

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CONCLUDING MATERIAL

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

Preparing activity:
DLA - CC

(Project 4730-2016-030)

Review activities:
Army - MI
Navy - MC, SA
Air Force - 71

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