

INCH - POUNDS

MS27395D
 14 January 2014
 SUPERSEDING
 MS27395C
 12 December 2011

DETAIL SPECIFICATION SHEET

ELBOW, FLARELESS, TUBE TO HOSE - 45° SWIVEL NUT

This specification sheet 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-27272.

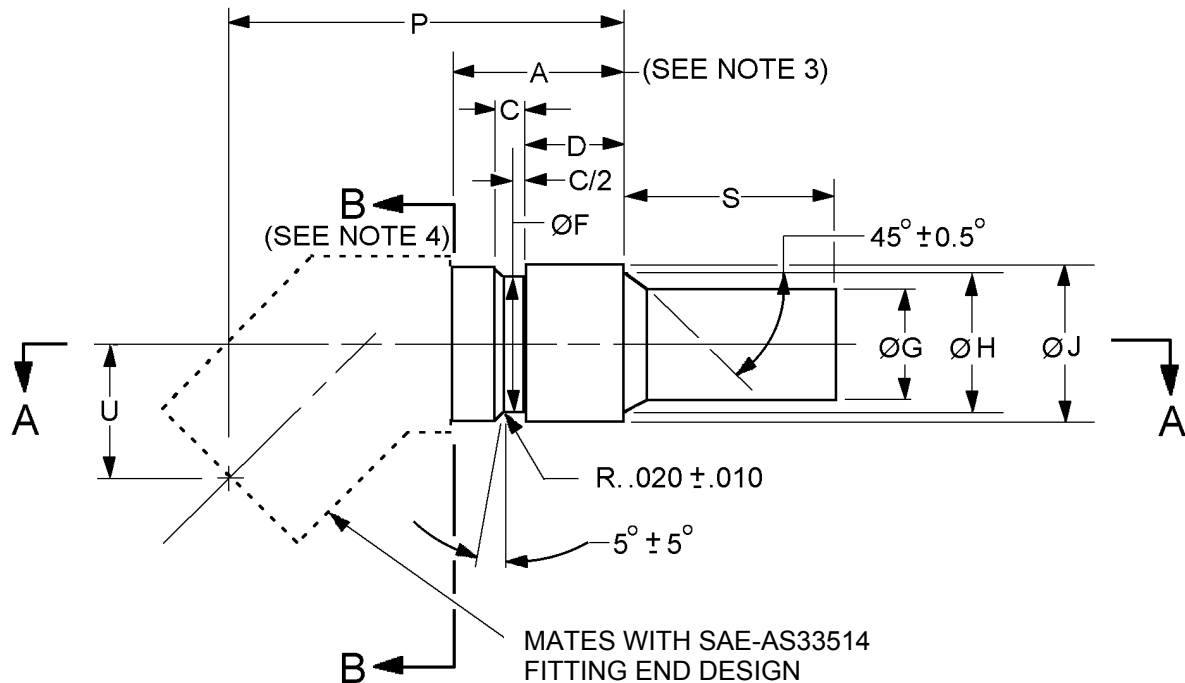
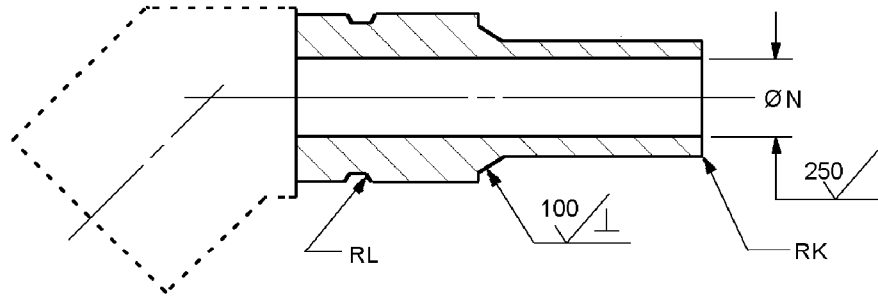
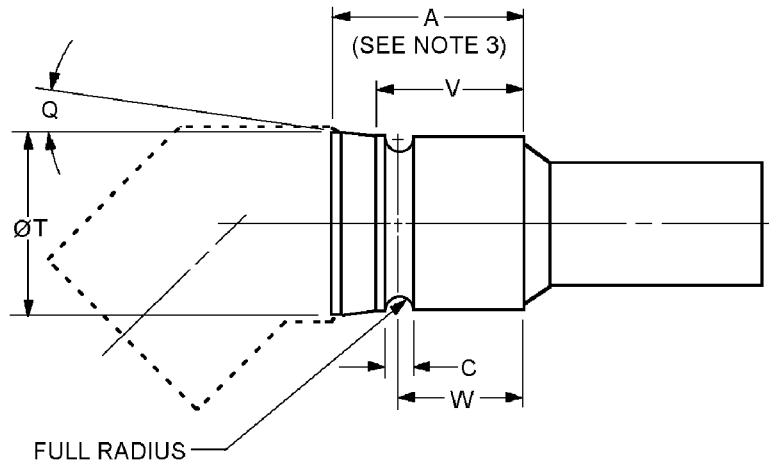


FIGURE 1. Elbow dimensions and configuration.

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SECTION A - A



-10 THROUGH -24 SIZE ONLY

FIGURE 1. Elbow dimensions and configuration - Continued.

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Size and material code		A min (see note 3) Inches (mm)	C Inches (mm)		D +.005 -.000 Inches (mm)	F dia. Inches (mm)		
Corrosion- resistant steel (CRES)	Aluminum (Al)							
-3/-4C	---	.515	.106	±.010 (0.25)	.307	.288	+.005 (0.13) -.000	
-4C	---	(13.08)	(2.69)		(7.80)	(7.32)		
-5C	---	.520	.116		.322	.316		
-6C	---	(13.21)	(2.95)		(8.18)	(8.03)		
-8C	-8D	.555	.140	±.020	.335	.391		
		(14.10)	(3.56)	(0.51)	(8.51)	(9.93)		
-10C	-10D	.630	.098	+.004	---	.497		
		(16.00)	(2.49)	(0.10)		(12.62)		
-12C	-12D	.654	.128	+.005 (0.13) -.000	---	.586		
		(16.61)			(2.49)			
-16C	-16D	.755			+.005 (0.13) -.000	---	1.001	.674
		(19.18)						(25.43)
-20C	-20D	.831	---	1.255		+.008		
		(21.11)			(0.20)			
-24C	-24D	.881		---	1.490	.391		
		(22.38)			(37.85)	(9.93)		
		1.035						
		(26.29)						

FIGURE 1. Elbow dimensions and configuration - Continued.

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Size and material code		G dia. +.005 (0.13) -.000 Inches (mm)	H dia. ±.005 (0.13) Inches (mm)	J dia. +.005 (0.13) -.000 Inches (mm)	K Inches (mm)		L ±.004 (0.10) Inches (mm)
CRES	Al						
-3/-4C	---	.205	.295	.373	.015 (0.38)	+.005 (0.13) -.000	.036 (0.91)
-4C	---	(5.21)	(7.49)	(9.47)			
-5C	---	.268 (6.81)	.360 (9.14)	.416 (10.57)			
-6C	---	.330 (8.38)	.425 (10.80)	.491 (12.47)	.020 (0.51)		.040 (1.02)
-8C	-8D	.426 (10.82)	.530 (13.46)	.616 (15.65)			
-10C	-10D	.526 (13.36)	.625 (15.88)	.706 (17.93)	.030 (0.76)	±.005 (0.13)	.047 (1.19)
-12C	-12D	.650 (16.61)	.760 (19.30)	.826 (20.98)			
-16C	-16D	.900 (22.86)	1.040 (26.41)	1.150 (29.21)			
-20C	-20D	1.151 (29.24)	1.275 (32.39)	1.405 (35.69)			
-24C	-24D	1.401 (35.59)	1.550 (39.37)	1.635 (41.53)	.035 (0.89)		---

FIGURE 1. Elbow dimensions and configuration - Continued.

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Size and material code		M min (see note 3) Inches (mm)	N dia. Inches (mm)			P Inches (mm)	
CRES	Al		CRES	Al			
-3/-4C	---	.485 (12.32)	.161 (4.09)	---	+.005 (0.13) -.000	1.227 (31.17)	±.020 (0.51)
-4C	---			---		1.219 (30.96)	
-5C	---	.501 (12.73)	.224 (5.69)	---		1.258 (31.95)	
-6C	---	.521 (13.23)	.261 (6.63)	---		1.361 (34.57)	
-8C	-8D	.583 (14.81)	.345 (8.76)	.345 (8.76)	+.006 (0.15) -.000	1.877 (47.68)	±.035 (0.89)
-10C	-10D	.620 (15.75)	.440 (11.18)	.440 (11.18)		1.674 (42.52)	
-12C	-12D	.720 (18.29)	.560 (14.22)	.560 (14.22)		2.114 (53.70)	
-16C	-16D	.796 (20.22)	.828 (21.03)	.828 (21.03)		2.188 (55.58)	
-20C	-20D	.846 (21.49)	1.058 (26.87)	1.058 (26.87)	2.445 (62.10)		
-24C	-24D	1.000 (25.40)	1.253 (31.83)	1.282 (32.56)	+.005 (0.13) -.000	2.849 (72.36)	

FIGURE 1. Elbow dimensions and configuration - Continued.

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Size and material code		Q max	S Inches (mm)		T dia. max Inches (mm)	U Inches (mm)	
CRES	Al						
-3/-4C	---	---	.480 (12.19)	± 0.10 (0.25)	---	.432 (10.97)	± 0.020 (0.51)
-4C	---	---			---	.424 (10.77)	
-5C	---	---			---	.448 (11.38)	
-6C	---	---			---	.526 (13.36)	
-8C	-8D	---			.600 (15.24)	---	
-10C	-10D	---	.650 (16.51)	± 0.15 (0.38)	---	.725 (18.42)	± 0.035 (8.98)
-12C	-12D	15.5°	.675 (17.15)	± 0.025 (0.64)	.900 (22.86)	.800 (20.32)	
-16C	-16D	10.5°	.730 (18.54)		1.190 (30.23)	.854 (21.69)	
-20C	-20D	15.5°	.935 (23.75)		1.485 (37.72)	.962 (24.43)	
-24C	-24D		.980 (24.89)		1.750 (44.45)	1.155 (29.34)	

FIGURE 1. Elbow dimensions and configuration - Continued.

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Size and material code		V Inches (mm)		W +.005 (0.13) -.000 Inches (mm)	
CRES	Al			CRES	Al
-3/-4C	---	---	---	---	---
-4C	---	---	---	---	---
-5C	---	---	---	---	---
-6C	---	---	---	---	---
-8C	-8D	---	---	---	---
-10C	-10D	---	---	.420 (10.67)	.427 (10.85)
-12C	-12D	.625 (15.88)	±.010 (0.25)	.500 (12.70)	.500 (12.70)
-16C	-16D	.670 (17.02)		.545 (13.84)	.545 (13.84)
-20C	-20D	.695 (17.65)		.565 (14.35)	.571 (14.50)
-24C	-24D	.795 (20.19)		.665 (16.89)	.665 (16.89)

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for information only.
3. Use A dimension when the adjacent diameter to the left of plane B - B is greater than J dimension. When the adjacent diameter is equal to or less than J dimension, M dimension may be used in place of A dimension.
4. Any design of the elbow to the left of plane B - B is acceptable provided the dimensions P and U and the requirements of this specification sheet and the procurement specification are met.
5. Any forged design is acceptable for sizes -3/-4 through -8.
6. Any bent tube design is acceptable for sizes -10 through -24.
7. The inside diameter (ID) of the elbow, sizes -10 through -24, shall not be less than the ID of the nipple end of the elbow.
8. Ovality shall not exceed 7.5 percent of nominal tubing outside diameter (OD).
9. Unless otherwise specified, break or radius all corners +.005, -.000 inch (+0.13 -0.00 mm).
10. All diameters within length A plus S must be concentric within .005 inch (0.13 mm) full indicator movement.
11. Remove all burrs and slivers.
12. Surface roughness unless otherwise specified, maximum surface roughness shall not exceed 125 μ inch. R_a in accordance with ASME B46.1.

FIGURE 1. Elbow dimensions and configuration - Continued.

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REQUIREMENTS:

Intended use. This part is a component of MS27389 for sizes -3/-4C through -8, and MS27387 for sizes -10 through -24. This is a design standard for manufacturing purposes. The item is only procured as an integral part of adapter assemblies.

Dimensions and configuration see figure 1.

Material: Material and material codes see table I.

TABLE I. Material to material code.

Material code	Material	Requirements
C	CRES	Class 304 or 321 cold drawn or cold rolled, in accordance with SAE-AMS5639 or SAE-AMS5645.
D	Aluminum	Bar alloy 6061-T6 or T651 in accordance with SAE-AMS4117. Forgings alloy 6061-T6 in accordance with SAE-AMS-QQ-A-367, or SAE-AMS4127. Bar alloy 7075-T73, 7075-T7351 in accordance with SAE-AMS-QQ-A-225/9 or alloy 7055-T7351 in accordance with SAE-AMS4124.

Finish:

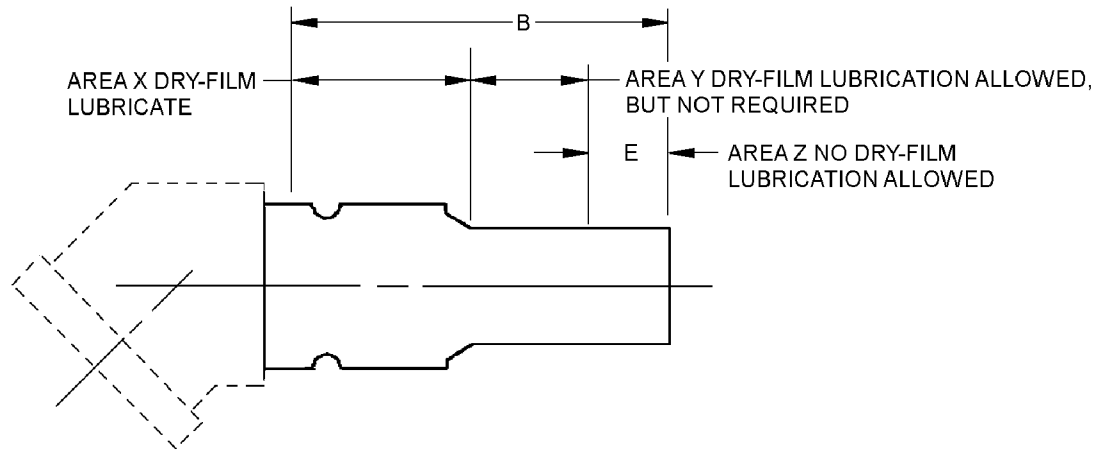
Corrosion-resistant steel, passivate in accordance with SAE-AMS2700, method 1, type 6 or 7.

Aluminum alloy, anodize in accordance with MIL-A-8625, type II, dye yellow.

Dry film lubricant. Dry film lubricate in accordance with figure 2 and table II.

NOTE: Avoid using graphite dry film lubes with aluminum elbow end because in a wet environment, graphite becomes corrosive to the aluminum.

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Size and material code		B min Inches (mm)	E	
CRES	Al		Inches	(mm)
-3/-4C	---	.870	.25 (6.35)	±.05 (1.3)
-4C	---	(22.10)		
-5C	---	.890		
-6C	---	(22.61)		
-8C	-8D	1.030 (26.16)	.32 (8.1)	±.12 (3.0)
-10C	-10D	1.130 (28.70)	.35 (8.9)	±.15 (3.80)
-12C	-12D	1.240 (31.50)		
-16C	-16D	1.340 (34.04)	.39 (9.9)	±.19 (4.8)
-20C	-20D	1.570 (39.88)	.48 (12.2)	±.28 (7.1)
-24C	-24D	1.720 (43.69)	.50 (12.7)	±.30 (7.6)

FIGURE 2. Dry film lubrication area.

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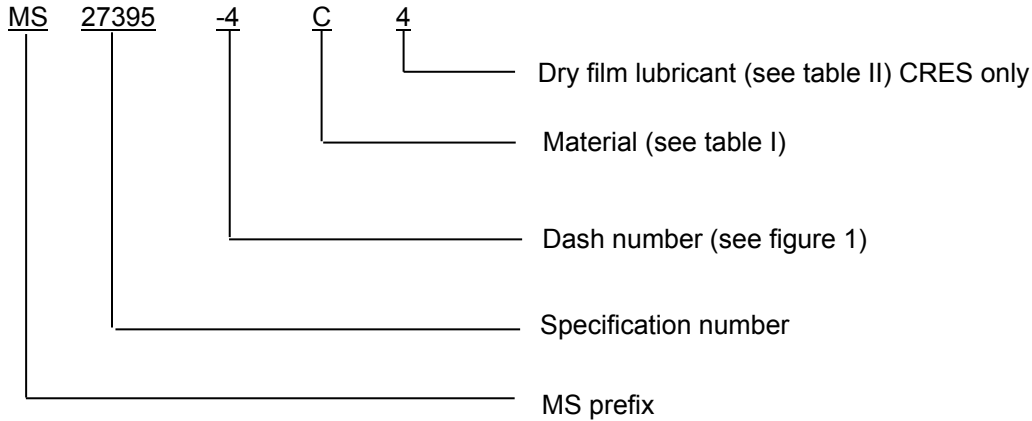
TABLE II. Dry film designator.

Dry film PIN code	SAE class or type designator	Dry film characteristics
Blank	Any SAE class or type below	N/A
SAE-AS1701	SAE-AS1701 class	SAE-AS1701 temperature ranges °F (°C)
4	4	-65 to +1400°F (-54 to 760°C)
5	5	-65 to +850°F (-54 to 454°C)
6	6	-375 to +850°F (-226 to 454°C)
SAE-AS5272	SAE-AS5272 type	SAE-AS5272 temperature ranges. °F (°C)
7	Type I	-90 to 400 °F (-68 to 204°C) endurance life of 250 min minimum
8	Type II	-90 to 400 °F (-68 to 204°C) endurance life of 450 min minimum
9	Type III	Color 1 - Natural product color -90 to 400 °F (-68 to 204°C) low Volatile organic compound with an endurance life of 450min minimum
10	Type III	Color 2 - Black color -90 to 400 °F (-68 to 204°C) low Volatile organic compound with an endurance life of 450 min minimum
MIL-PRF-46010 1/	---	MIL-PRF-46010 temperature ranges. °F (°C)
11	N/A	Color 1 natural product color, -90 to 400°F (-68 to 204°C) solvent resisting
12	N/A	Color 2 - Black color -90 to 400°F (-68 to 204°C) solvent resisting

1/ Not for aerospace usage.

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Part or Identifying Number (PIN): The PIN consists of prefix "MS", the specification sheet number, dash number for 45° elbow assembly size, letter for material, and a blank or number for dry film lubricant. Unassigned PIN's shall not be used.



PIN example: MS27395-4C4 is a 45° elbow size 4 corrosion resistant steel, with dry film class designator 4.

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-27272, this document references the following:

MIL-A-8625	SAE-AMS4117
MIL-PRF-46010	SAE-AMS4124
MS27387	SAE-AMS4127
MS27389	SAE-AMS5639
ASME B46.1	SAE-AMS5645
SAE-AMS-QQ-A-225/9	SAE-AS1701
SAE-AMS-QQ-A-367	SAE-AS5272
SAE-AMS2700	SAE-AS33514

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CONCLUDING MATERIAL

Custodians:

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

Preparing activity:
DLA - CC

(Project 4730-2013-113)

Review activities:

Army - AT, MI
Navy - 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.dla.mil>.