

INCH-POUND

MS51509B

14 December 2015

SUPERSEDING

MS51509A

17 January 1979

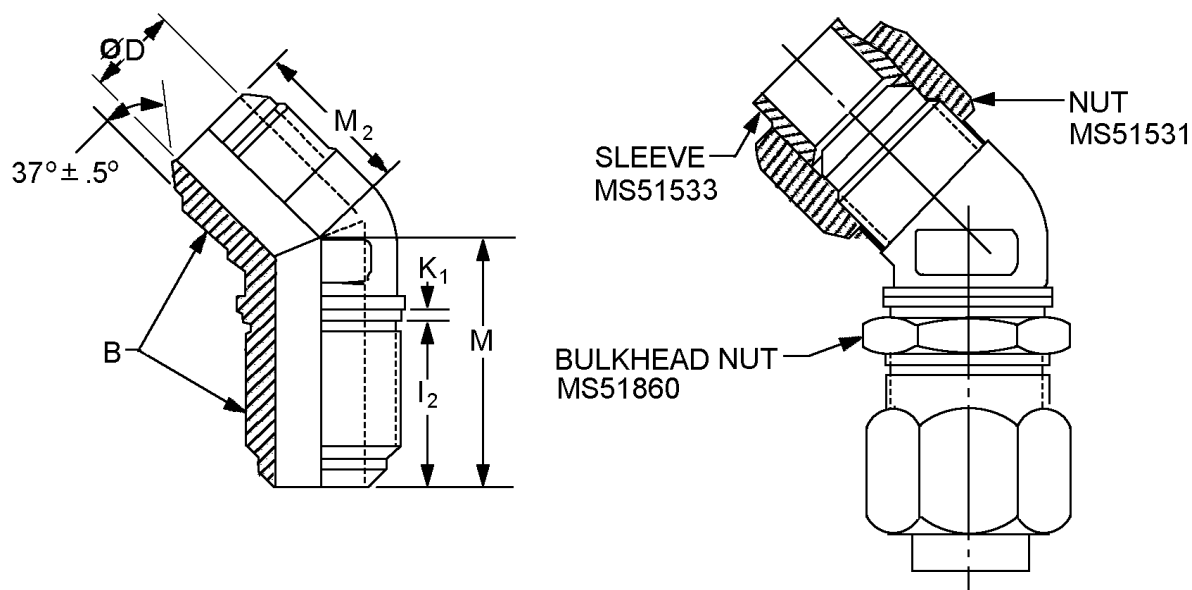
DETAIL SPECIFICATION SHEET

ELBOW, TUBE, 45 DEGREE,
BULKHEAD, 37 DEGREE FLARED

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. Elbow, bulkhead 45°.

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Suffix designator		Tube OD nom.	B Straight thread	D diameter	
Assembly (see note 4)	Body			Basic inches (mm)	Tolerance inches (mm)
A2	B2	.1250 (3.175)	.3125-24 UNF-2A	.062 (1.57)	±.003 (0.08)
A3	B3	.1875 (4.763)	.3750-24 UNF-2A	.125 (3.18)	
A4	B4	.2500 (6.350)	.4375-20 UNF-2A	.172 (4.37)	
A5	B5	.3125 (7.936)	.5000-20 UNF-2A	.234 (5.94)	
A6	B6	.3750 (9.525)	.5625-18 UNF-2A	.297 (7.54)	±.004 (0.10)
A8	B8	.5000 (12.700)	.7500-16 UNF-2A	.391 (9.93)	
A10	B10	.6250 (15.875)	.8750-14 UNF-2A	.484 (12.29)	
A12	B12	.7500 (19.050)	1.0625-12 UN-2A	.609 (15.47)	±.005 (0.13)
A14	B14	.8750 (22.225)	1.1875-12 UN-2A	.718 (18.24)	
A16	B16	1.0000 (25.400)	1.3125-12 UN-2A	.844 (21.44)	±.007 (0.18)
A20	B20	1.2500 (31.750)	1.6250-12 UN-2A	1.078 (27.38)	+0.008 -.005
A24	B24	1.5000 (38.100)	1.8750-12 UN-2A	1.312 (33.32)	(+0.20 -.013)
A32	B32	2.0000 (50.800)	2.500-12 UN-2A	1.781 (45.24)	+0.010 -.005 (+0.25 -.013)

Suffix designator		I_2 inches (mm) ±.020 (0.51)	K_1 inches (mm) ±.020 (0.51)	M inches (mm) ±.030 (0.76)	M_2 inches (mm) ±.030 (0.76)
Assembly (see note 4)	Body				
A2	B2	.920 (23.37)	.094 (2.39)	1.375 (34.93)	.660 (16.76)
A3	B3	.920 (23.37)	.094 (2.39)	1.375 (34.93)	.660 (16.76)
A4	B4	1.020 (25.91)	.094 (2.39)	1.531 (38.89)	.720 (18.29)
A5	B5	1.020 (25.91)	.094 (2.39)	1.531 (38.89)	.770 (19.56)
A6	B6	1.090 (27.69)	.094 (2.39)	1.672 (42.47)	.830 (21.08)
A8	B8	1.250 (31.75)	.125 (3.18)	1.938 (49.23)	.980 (24.89)
A10	B10	1.390 (35.31)	.125 (3.18)	2.172 (55.17)	1.110 (28.19)
A12	B12	1.590 (40.39)	.125 (3.18)	2.438 (61.93)	1.280 (32.51)
A14	B14	1.560 (39.62)	.125 (3.18)	2.500 (63.50)	1.390 (35.31)
A16	B16	1.560 (39.62)	.125 (3.18)	2.562 (65.07)	1.470 (37.34)
A20	B20	1.610 (40.89)	.125 (3.18)	2.656 (67.46)	1.590 (40.39)
A24	B24	1.620 (41.15)	.125 (3.18)	2.672 (67.87)	1.780 (45.21)
A32	B32	1.910 (49.02)	.125 (3.18)	2.906 (73.81)	2.220 (56.39)

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, bulkhead nut, nut, and sleeve). Bodies are not to be stocked stored or issued.
5. MS51509A shall not be supplied with the undercut "G₁" on the bulkhead end of the fitting.
6. Dimensions and tolerances not shown shall be in accordance with SAE-J514 for 37° flared fittings.
7. The drawing is for identification purposes only and is not intended to restrict designs and shapes not dimensioned.

FIGURE 1. Elbow, bulkhead 45°. - Continued.

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REQUIREMENTS:

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

Components of the assemblies shall be of the same material and finish.

Materials shall be in accordance with MIL-DTL-18866 and table I.

TABLE I. Materials.

Material	Form	Specification	Alloy
Carbon steel	Bar	SAE-J403	1110, 1120, 1140, 1213, 1215, or 12L14
	Forgings		
Chrome-molybdenum steel	Bars	SAE-AMS6370	4130
	Forgings	SAE-AMS6382	
		SAE-AMS6370	
Corrosion resistant steel	Bars and forgings	ASTM A276/A276M	304, 304L, 316, or 321
		ASTM A564/A564M	XM-12 (15-5 PH) UNS S15500 or 603 (17-4 PH) UNS S17400
		SAE-AMS5639	UNS S30400
		SAE-AMS5645	UNS S32100
		SAE-AMS5647	UNS S30403
		SAE-AMS5743	UNS S35500
	Bar	ASTM A582/A582M	UNS S30300
Nickel-copper alloy	Bar	ASTM B164 QQ-N-281	UNS N04400
High-chromium nickel alloy	Bar	ASTM B166	UNS N06690
	Forgings	ASTM B564	
Titanium <u>1/</u>	Bars	SAE-AMS4928	6Al-4V annealed
	Forgings		

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, 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 II. 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 3 or SAE-AMS-QQ-P-416, type II, class 2. <u>1/</u>
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. <u>1/</u>
E		NAVAIR TCP in accordance with MIL-DTL-81706, type II, class 1A.
F	Steel	Zinc plate (finish J, P, or R) with NAVAIR TCP in accordance with MIL-DTL-81706, type II, class 1A.
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.
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, class1.
R	Steel	Zinc plating in accordance with ASTM B633; type VI, Fe/Zn 5. <u>2/</u>
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.
TF	Titanium	Fluoride phosphate in accordance with SAE-AMS2486. <u>3/</u>
Z	Steel	Zinc plating in accordance with ASTM B633; type II or III, Fe/Zn 5, or ASTM B695, type II, class 5. <u>4/</u>
ZN	Steel	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. <u>4/</u>

1/ Embrittlement test need not be run. Cadmium shall not be used in oxygen or potable water systems.

2/ Hexavalent chromium free.

3/ 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/ Not for use in aircraft.

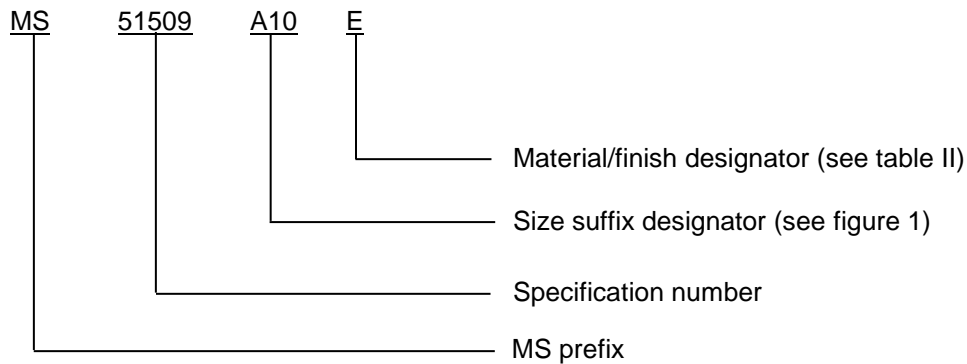
Trivalent wrenchability. When the finish has been damaged due to poor wrenchability, the surface of the connector shall be touched up using the brush plating process below. The term "trivalent wrenchability" is used to evaluate the ability of the finish to withstand abrasion from an excessive amount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

- a. Brush plating of hard chromium by electrodeposition shall be in accordance with SAE-AMS-2451/5.
- b. Brush plating of medium-hardness, low stress nickel by electrodeposition shall be in accordance with SAE-AMS-2451/9.
- c. Brush plating of NAVAIR TCP shall be in accordance with MIL-DTL-81706, type II, class 1A, material form 1 through 6, application method B. Example of a PIN: M817062A6B.

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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 elbow size, and a letter for material finish designator.



PIN example: MS51509A10E indicates an elbow 45°, bulkhead, .6250 inch (15.875 mm), steel with NAVAIR TCP.

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.

Table III provides a detailed cross-reference of inactive MS51507 PIN's and for new design SAE-J514 PIN's.

MS51509 parts have straight threads in accordance with ASME B1.1 the SAE parts have straight threads in accordance with SAE-J425.

Users are cautioned to evaluate replacement parts for their particular application.

CAUTION: The superseding information is valid as of the date of this specification and may be superseded by subsequent revisions of the superseding document.

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TABLE III. MS51509 to SAE-J514 cross reference.

Inactive for new design MS51509- PIN		Tube OD	For new design SAE-J514 PIN	
Assembly	Body		Assembly	Body
MS51509A2	MS51509B2	1/8	Not available	Not available
MS51509A2CN	MS51509B2CN	1/8	Not available	Not available
MS51509A2E	MS51509B2E	1/8	Not available	Not available
MS51509A2F	MS51509B2F	1/8	Not available	Not available
MS51509A2H	MS51509B2H	1/8	Not available	Not available
MS51509A2J	MS51509B2J	1/8	Not available	Not available
MS51509A2M	MS51509B2M	1/8	J514-2-2-070801MA	J514-2-2-070801MB
MS51509A2N	MS51509B2N	1/8	J514-2-2-070801NA	J514-2-2-070801NB
MS51509A2P	MS51509B2P	1/8	J514-2-2-070801PA	J514-2-2-070801PB
MS51509A2R	MS51509B2R	1/8	Not available	Not available
MS51509A2S	MS51509B2S	1/8	J514-2-2-070801SA	J514-2-2-070801SB
MS51509A2T	MS51509B2T	1/8	J514-2-2-070801TA	J514-2-2-070801TB
MS51509A2TF	MS51509B2TF	1/8	Not available	Not available
MS51509A2Z	MS51509B2Z	1/8	J514-2-2-070801ZA	J514-2-2-070801ZB
MS51509A2ZN	MS51509B2ZN	1/8	Not available	Not available
MS51509A3	MS51509B3	3/16	Not available	Not available
MS51509A3CN	MS51509B3CN	3/16	Not available	Not available
MS51509A3E	MS51509B3E	3/16	Not available	Not available
MS51509A3F	MS51509B3F	3/16	Not available	Not available
MS51509A3H	MS51509B3H	3/16	Not available	Not available
MS51509A3J	MS51509B3J	3/16	Not available	Not available
MS51509A3M	MS51509B3M	3/16	J514-3-3-070801MA	J514-3-3-070801MB
MS51509A3N	MS51509B3N	3/16	J514-3-3-070801NA	J514-3-3-070801NB
MS51509A3P	MS51509B3P	3/16	J514-3-3-070801PA	J514-3-3-070801PB
MS51509A3R	MS51509B3R	3/16	Not available	Not available
MS51509A3S	MS51509B3S	3/16	J514-3-3-070801SA	J514-3-3-070801SB
MS51509A3T	MS51509B3T	3/16	J514-3-3-070801TA	J514-3-3-070801TB
MS51509A3TF	MS51509B3TF	3/16	Not available	Not available
MS51509A3Z	MS51509B3Z	3/16	J514-3-3-070801ZA	J514-3-3-070801ZB
MS51509A3ZN	MS51509B3ZN	3/16	Not available	Not available
MS51509A4	MS51509B4	1/4	Not available	Not available
MS51509A4CN	MS51509B4CN	1/4	Not available	Not available
MS51509A4E	MS51509B4E	1/4	Not available	Not available
MS51509A4F	MS51509B4F	1/4	Not available	Not available
MS51509A4H	MS51509B4H	1/4	Not available	Not available
MS51509A4J	MS51509B4J	1/4	Not available	Not available
MS51509A4M	MS51509B4M	1/4	J514-4-4-070801MA	J514-4-4-070801MB
MS51509A4N	MS51509B4N	1/4	J514-4-4-070801NA	J514-4-4-070801NB
MS51509A4P	MS51509B4P	1/4	J514-4-4-070801PA	J514-4-4-070801PB
MS51509A4R	MS51509B4R	1/4	Not available	Not available
MS51509A4S	MS51509B4S	1/4	J514-4-4-070801SA	J514-4-4-070801SB
MS51509A4T	MS51509B4T	1/4	J514-4-4-070801TA	J514-4-4-070801TB
MS51509A4TF	MS51509B4TF	1/4	Not available	Not available
MS51509A4Z	MS51509B4Z	1/4	J514-4-4-070801ZA	J514-4-4-070801ZB
MS51509A4ZN	MS51509B4ZN	1/4	Not available	Not available

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TABLE III. MS51509 to SAE-J514 cross reference - Continued.

Inactive for new design MS51509- PIN		Tube OD	For new design SAE-J514 PIN	
Assembly	Body		Assembly	Body
MS51509A5	MS51509B5	5/16	Not available	Not available
MS51509A5CN	MS51509B5CN	5/16	Not available	Not available
MS51509A5E	MS51509B5E	5/16	Not available	Not available
MS51509A5F	MS51509B5F	5/16	Not available	Not available
MS51509A5H	MS51509B5H	5/16	Not available	Not available
MS51509A5J	MS51509B5J	5/16	Not available	Not available
MS51509A5M	MS51509B5M	5/16	J514-5-5-070801MA	J514-5-5-070801MB
MS51509A5N	MS51509B5N	5/16	J514-5-5-070801NA	J514-5-5-070801NB
MS51509A5P	MS51509B5P	5/16	J514-5-5-070801PA	J514-5-5-070801PB
MS51509A5R	MS51509B5R	5/16	Not available	Not available
MS51509A5S	MS51509B5S	5/16	J514-5-5-070801SA	J514-5-5-070801SB
MS51509A5T	MS51509B5T	5/16	J514-5-5-070801TA	J514-5-5-070801TB
MS51509A5TF	MS51509B5TF	5/16	Not available	Not available
MS51509A5Z	MS51509B5Z	5/16	J514-5-5-070801ZA	J514-5-5-070801ZB
MS51509A5ZN	MS51509B5ZN	5/16	Not available	Not available
MS51509A6	MS51509B6	3/8	Not available	Not available
MS51509A6CN	MS51509B6CN	3/8	Not available	Not available
MS51509A6E	MS51509B6E	3/8	Not available	Not available
MS51509A6F	MS51509B6F	3/8	Not available	Not available
MS51509A6H	MS51509B6H	3/8	Not available	Not available
MS51509A6J	MS51509B6J	3/8	Not available	Not available
MS51509A6M	MS51509B6M	3/8	J514-6-6-070801MA	J514-6-6-070801MB
MS51509A6N	MS51509B6N	3/8	J514-6-6-070801NA	J514-6-6-070801NB
MS51509A6P	MS51509B6P	3/8	J514-6-6-070801PA	J514-6-6-070801PB
MS51509A6R	MS51509B6R	3/8	Not available	Not available
MS51509A6S	MS51509B6S	3/8	J514-6-6-070801SA	J514-6-6-070801SB
MS51509A6T	MS51509B6T	3/8	J514-6-6-070801TA	J514-6-6-070801TB
MS51509A6TF	MS51509B6TF	3/8	Not available	Not available
MS51509A6Z	MS51509B6Z	3/8	J514-6-6-070801ZA	J514-6-6-070801ZB
MS51509A6ZN	MS51509B6ZN	3/8	Not available	Not available
MS51509A8	MS51509B8	1/2	Not available	Not available
MS51509A8CN	MS51509B8CN	1/2	Not available	Not available
MS51509A8E	MS51509B8E	1/2	Not available	Not available
MS51509A8F	MS51509B8F	1/2	Not available	Not available
MS51509A8H	MS51509B8H	1/2	Not available	Not available
MS51509A8J	MS51509B8J	1/2	Not available	Not available
MS51509A8M	MS51509B8M	1/2	J514-8-8-070801MA	J514-8-8-070801MB
MS51509A8N	MS51509B8N	1/2	J514-8-8-070801NA	J514-8-8-070801NB
MS51509A8P	MS51509B8P	1/2	J514-8-8-070801PA	J514-8-8-070801PB
MS51509A8R	MS51509B8R	1/2	Not available	Not available
MS51509A8S	MS51509B8S	1/2	J514-8-8-070801SA	J514-8-8-070801SB
MS51509A8T	MS51509B8T	1/2	J514-8-8-070801TA	J514-8-8-070801TB
MS51509A8TF	MS51509B8TF	1/2	Not available	Not available
MS51509A8Z	MS51509B8Z	1/2	J514-8-8-070801ZA	J514-8-8-070801ZB
MS51509A8ZN	MS51509B8ZN	1/2	Not available	Not available

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TABLE III. MS51509 to SAE-J514 cross reference - Continued.

Inactive for new design MS51509- PIN		Tube OD	For new design SAE-J514 PIN	
Assembly	Body		Assembly	Body
MS51509A10	MS51509B10	5/8	Not available	Not available
MS51509A10CN	MS51509B10CN	5/8	Not available	Not available
MS51509A10E	MS51509B10E	5/8	Not available	Not available
MS51509A10F	MS51509B10F	5/8	Not available	Not available
MS51509A10H	MS51509B10H	5/8	Not available	Not available
MS51509A10J	MS51509B10J	5/8	Not available	Not available
MS51509A10M	MS51509B10M	5/8	J514-10-10-070801MA	J514-10-10-070801MB
MS51509A10N	MS51509B10N	5/8	J514-10-10-070801NA	J514-10-10-070801NB
MS51509A10P	MS51509B10P	5/8	J514-10-10-070801PA	J514-10-10-070801PB
MS51509A10R	MS51509B10R	5/8	Not available	Not available
MS51509A10S	MS51509B10S	5/8	J514-10-10-070801SA	J514-10-10-070801SB
MS51509A10T	MS51509B10T	5/8	J514-10-10-070801TA	J514-10-10-070801TB
MS51509A10TF	MS51509B10TF	5/8	Not available	Not available
MS51509A10Z	MS51509B10Z	5/8	J514-10-10-070801ZA	J514-10-10-070801ZB
MS51509A10ZN	MS51509B10ZN	5/8	Not available	Not available
MS51509A12	MS51509B12	3/4	Not available	Not available
MS51509A12CN	MS51509B12CN	3/4	Not available	Not available
MS51509A12E	MS51509B12E	3/4	Not available	Not available
MS51509A12F	MS51509B12F	3/4	Not available	Not available
MS51509A12H	MS51509B12H	3/4	Not available	Not available
MS51509A12J	MS51509B12J	3/4	Not available	Not available
MS51509A12	MS51509B12	3/4	Not available	Not available
MS51509A12M	MS51509B12M	3/4	J514-12-12-070801MA	J514-12-12-070801MB
MS51509A12N	MS51509B12N	3/4	J514-12-12-070801NA	J514-12-12-070801NB
MS51509A12P	MS51509B12P	3/4	J514-12-12-070801PA	J514-12-12-070801PB
MS51509A12R	MS51509B12R	3/4	Not available	Not available
MS51509A12S	MS51509B12S	3/4	J514-12-12-070801SA	J514-12-12-070801SB
MS51509A12T	MS51509B12T	3/4	J514-12-12-070801TA	J514-12-12-070801TB
MS51509A12TF	MS51509B12TF	3/4	Not available	Not available
MS51509A12Z	MS51509B12Z	3/4	J514-12-12-070801ZA	J514-12-12-070801ZB
MS51509A12ZN	MS51509B12ZN	3/4	Not available	Not available
MS51509A14	MS51509B14	7/8	Not available	Not available
MS51509A14CN	MS51509B14CN	7/8	Not available	Not available
MS51509A14E	MS51509B14E	7/8	Not available	Not available
MS51509A14F	MS51509B14F	7/8	Not available	Not available
MS51509A14H	MS51509B14H	7/8	Not available	Not available
MS51509A14G	MS51509B14G	7/8	Not available	Not available
MS51509A14M	MS51509B14M	7/8	J514-14-14-070801MA	J514-14-14-070801MB
MS51509A14N	MS51509B14N	7/8	J514-14-14-070801NA	J514-14-14-070801NB
MS51509A14P	MS51509B14P	7/8	J514-14-14-070801PA	J514-14-14-070801PB
MS51509A14R	MS51509B14R	7/8	Not available	Not available
MS51509A14S	MS51509B14S	7/8	J514-14-14-070801SA	J514-14-14-070801SB
MS51509A14T	MS51509B14T	7/8	J514-14-14-070801TA	J514-14-14-070801TB
MS51509A14TF	MS51509B14TF	7/8	Not available	Not available
MS51509A14Z	MS51509B14Z	7/8	J514-14-14-070801ZA	J514-14-14-070801ZB
MS51509A14ZN	MS51509B14ZN	7/8	Not available	Not available

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TABLE III. MS51509 to SAE-J514 cross reference - Continued.

Inactive for new design MS51509- PIN		Tube OD	For new design SAE-J514 PIN	
Assembly	Body		Assembly	Body
MS51509A16	MS51509B16	1	Not available	Not available
MS51509A16CN	MS51509B16CN	1	Not available	Not available
MS51509A16E	MS51509B16E	1	Not available	Not available
MS51509A16F	MS51509B16F	1	Not available	Not available
MS51509A16H	MS51509B16H	1	Not available	Not available
MS51509A16J	MS51509B16J	1	Not available	Not available
MS51509A16M	MS51509B16M	1	J514-16-16-070801MA	J514-16-16-070801MB
MS51509A16N	MS51509B16N	1	J514-16-16-070801NA	J514-16-16-070801NB
MS51509A16P	MS51509B16P	1	J514-16-16-070801PA	J514-16-16-070801PB
MS51509A16R	MS51509B16R	1	Not available	Not available
MS51509A16S	MS51509B16S	1	J514-16-16-070801SA	J514-16-16-070801SB
MS51509A16T	MS51509B16T	1	J514-16-16-070801TA	J514-16-16-070801TB
MS51509A16TF	MS51509B16TF	1	Not available	Not available
MS51509A16Z	MS51509B16Z	1	J514-16-16-070801ZA	J514-16-16-070801ZB
MS51509A16ZN	MS51509B16ZN	1	Not available	Not available
MS51509A20	MS51509B20	1 1/4	Not available	Not available
MS51509A20CN	MS51509B20CN	1 1/4	Not available	Not available
MS51509A20E	MS51509B20E	1 1/4	Not available	Not available
MS51509A20F	MS51509B20F	1 1/4	Not available	Not available
MS51509A20H	MS51509B20H	1 1/4	Not available	Not available
MS51509A20J	MS51509B20J	1 1/4	Not available	Not available
MS51509A20M	MS51509B20M	1 1/4	J514-20-20-070801MA	J514-20-20-070801MB
MS51509A20N	MS51509B20N	1 1/4	J514-20-20-070801NA	J514-20-20-070801NB
MS51509A20P	MS51509B20P	1 1/4	J514-20-20-070801PA	J514-20-20-070801PB
MS51509A20R	MS51509B20R	1 1/4	Not available	Not available
MS51509A20S	MS51509B20S	1 1/4	J514-20-20-070801SA	J514-20-20-070801SB
MS51509A20T	MS51509B20T	1 1/4	J514-20-20-070801TA	J514-20-20-070801TB
MS51509A20TF	MS51509B20TF	1 1/4	Not available	Not available
MS51509A20Z	MS51509B20Z	1 1/4	J514-20-20-070801ZA	J514-20-20-070801ZB
MS51509A20ZN	MS51509B20ZN	1 1/4	Not available	Not available
MS51509A24	MS51509B24	1 1/2	Not available	Not available
MS51509A24CN	MS51509B24CN	1 1/2	Not available	Not available
MS51509A24E	MS51509B24E	1 1/2	Not available	Not available
MS51509A24F	MS51509B24F	1 1/2	Not available	Not available
MS51509A24H	MS51509B24H	1 1/2	Not available	Not available
MS51509A24J	MS51509B24J	1 1/2	Not available	Not available
MS51509A24M	MS51509B24M	1 1/2	J514-24-24-070801MA	J514-24-24-070801MB
MS51509A24N	MS51509B24N	1 1/2	J514-24-24-070801NA	J514-24-24-070801NB
MS51509A24P	MS51509B24P	1 1/2	J514-24-24-070801PA	J514-24-24-070801PB
MS51509A24R	MS51509B24R	1 1/2	Not available	Not available
MS51509A24S	MS51509B24S	1 1/2	J514-24-24-070801SA	J514-24-24-070801SB
MS51509A24T	MS51509B24T	1 1/2	J514-24-24-070801ZA	J514-24-24-070801ZB
MS51509A24TF	MS51509B24TF	1 1/2	Not available	Not available
MS51509A24Z	MS51509B24Z	1 1/2	J514-24-24-070801ZA	J514-24-24-070801ZB
MS51509A24ZN	MS51509B24ZN	1 1/2	Not available	Not available

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TABLE III. MS51509 to SAE-J514 cross reference – Continued.

Inactive for new design MS51509- PIN		Tube OD	For new design SAE-J514 PIN	
Assembly	Body		Assembly	Body
MS51509A32	MS51509B32	2	Not available	Not available
MS51509A32CN	MS51509B32CN	2	Not available	Not available
MS51509A32E	MS51509B32E	2	Not available	Not available
MS51509A32F	MS51509B32F	2	Not available	Not available
MS51509A32H	MS51509B32H	2	Not available	Not available
MS51509A32J	MS51509B32K	2	Not available	Not available
MS51509A32M	MS51509B32M	2	J514-32-32-070801MA	J514-32-32-070801MB
MS51509A32N	MS51509B32N	2	J514-32-32-070801NA	J514-32-32-070801NB
MS51509A32P	MS51509B32P	2	J514-32-32-070801PA	J514-32-32-070801PB
MS51509A32R	MS51509B32R	2	Not available	Not available
MS51509A32S	MS51509B32S	2	J514-32-32-070801SA	J514-32-32-070801SB
MS51509A32T	MS51509B32T	2	J514-32-32-070801TA	J514-32-32-070801TB
MS51509A32TF	MS51509B32TF	2	Not available	Not available
MS51509A32Z	MS51509B32Z	2	J514-32-32-070801ZA	J514-32-32-070801ZB
MS51509A32ZN	MS51509B32ZN	2	Not available	Not available

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-595/36293	ASTM B166	SAE-AMS4928
FED-STD-595/36081	MIL-DTL-16232	ASTM B564	SAE-AMS5639
FED-STD-595/36099	MIL-DTL-81706	ASTM B633	SAE-AMS5645
FED-STD-595/36118	MS51531	ASTM B695	SAE-AMS5647
FED-STD-595/36134	MS51533	ASTM F1136/F1136M	SAE-AMS5743
FED-STD-595/36152	MS51860	SAE-AMS-C-81562	SAE-AMS6370
FED-STD-595/36170	QQ-N-281	SAE-AMS-QQ-P-416	SAE-AMS6382
FED-STD-595/36173	ASME B1.1	SAE-AMS2417	SAE-J403
FED-STD-595/36176	ASTM A276/A276M	SAE-AMS2451/5	SAE-J425
FED-STD-595/36231	ASTM A564/A564M	SAE-AMS2451/9	SAE-J514
FED-STD-595/36251	ASTM A582/A582M	SAE-AMS2486	
FED-STD-595/36270	ASTM B117	SAE-AMS2488	
FED-STD-595/36280	ASTM B164	SAE-AMS2700	

MS51509B

CONCLUDING MATERIAL

Custodians:

Army - AR
Navy - OS
Air Force - 99
DLA - CC

Preparing activity:

DLA - CC

(Project 4730-2016-005)

Review activities:

Army - AT
Navy - MC
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>.