

INCH-POUND

MS51504C

7 June 2016

SUPERSEDING

MS51504B

25 June 2015

DETAIL SPECIFICATION SHEET

ELBOW, PIPE TO TUBE, 90 DEGREE
MALE PIPE END, 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.

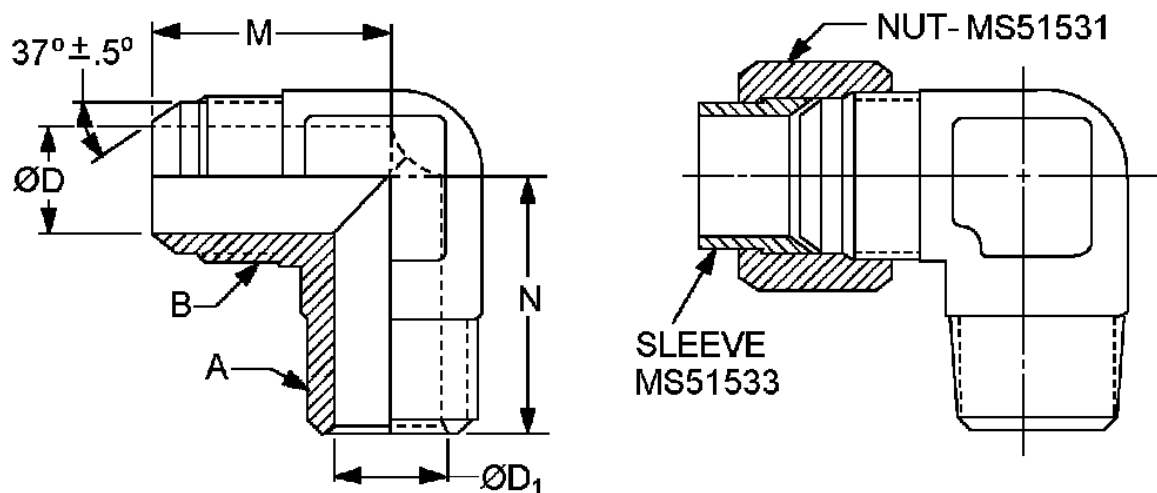


FIGURE 1. 90° male elbow.



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Suffix designator		Tube OD nom. inches (mm)	A Pipe thread NPTF	B Straight thread
Assembly (see note 4)	Body			
A2	B2	.1250 (3.175)	1/8 - 27	.3125-24 UNF-2A
A3	B3	.1875 (4.763)	1/8 - 27	.3750-24 UNF-2A
A4	B4	.2500 (6.350)	1/8 - 27	.4375-20 UNF-2A
A4-4	B4-4	.2500 (6.350)	1/4 - 18	.4375-20 UNF-2A
A5	B5	.3125 (7.938)	1/8 - 27	.5000-20 UNF-2A
A5-4	B5-4	.3125 (7.938)	1/4 - 18	.5000-20 UNF-2A
A6-2	B6-2	.3750 (9.525)	1/8 - 27	.5625-18 UNF-2A
A6	B6	.3750 (9.525)	1/4 - 18	.5625-18 UNF-2A
A6-6	B6-6	.3750 (9.525)	3/8 - 18	.5625-18 UNF-2A
A6-8	B6-8	.3750 (9.525)	1/2 - 14	.5625-18 UNF-2A
A8-4	B8-4	.5000 (12.700)	1/4 - 18	.7500-16 UNF-2A
A8	B8	.5000 (12.700)	3/8 - 18	.7500-16 UNF-2A
A8-8	B8-8	.5000 (12.700)	1/2 - 14	.7500-16 UNF-2A
A8-12	B8-12	.5000 (12.700)	3/4 -14	.7500-16 UNF-2A
A10-6	B10-6	.6250 (15.875)	3/8 - 18	.8750-14 UNF-2A
A10	B10	.6250 (15.875)	1/2 - 14	.8750-14 UNF-2A
A12-8	B12-8	.7500 (19.050)	1/2 - 14	1.0625-12 UN-2A
A12	B12	.7500 (19.050)	3/4 -14	1.0625-12 UN-2A
A14	B14	.8750 (22.225)	3/4 -14	1.1875-12 UN-2A
A16-12	B16-12	1.0000 (25.400)	3/4 -14	1.3125-12 UN-2A
A16	B16	1.0000 (25.400)	1 - 11 1/2	1.3125-12 UN-2A
A20	B20	1.2500 (31.750)	1 1/4 - 11 1/2	1.6250-12 UN-2A
A24	B24	1.5000 (38.100)	1 1/2 - 11 1/2	1.8750-12 UN-2A
A32	B32	2.0000 (50.800)	2 - 11 1/2	2.500-12 UN-2A

FIGURE 1. 90° male elbow - Continued.

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Suffix designator		D diameter		D ₁ dia. drill inches (mm)	M inches (mm) ±.030 (0.76)	N inches (mm) ±.030 (0.76)
Assembly (see note 4)	Body	Basic inches (mm)	Tolerance inches (mm)			
A2	B2	.062 (1.57)	±.003 (0.08)	.188 (4.78)	.770 (19.56)	.720 (18.29)
A3	B3	.125 (3.18)		.188 (4.78)	.830 (21.08)	.720 (18.29)
A4	B4	.172 (4.37)		.188 (4.78)	.890 (22.61)	.780 (19.81)
A4-4	B4-4	.172 (4.37)		.281 (7.14)	1.030 (26.16)	1.090 (27.69)
A5	B5	.234 (5.94)		.188 (4.78)	.950 (24.13)	.780 (19.81)
A5-4	B5-4	.234 (5.94)		.281 (7.14)	1.050 (26.67)	1.090 (27.69)
A6-2	B6-2	.297 (7.54)	±.004 (0.10)	.188 (4.78)	1.060 (26.92)	.900 (22.86)
A6	B6	.297 (7.54)		.281 (7.14)	1.060 (26.92)	1.090 (27.69)
A6-6	B6-6	.297 (7.54)		.406 (10.31)	1.140 (28.96)	1.220 (30.99)
A6-8	B6-8	.297 (7.54)		.533 (13.54)	1.220 (30.99)	1.470 (37.34)
A8-4	B8-4	.391 (9.93)		.281 (7.14)	1.250 (31.75)	1.220 (30.99)
A8	B8	.391 (9.93)		.406 (10.31)	1.250 (31.75)	1.220 (30.99)
A8-8	B8-8	.391 (9.93)		.531 (13.49)	1.330 (33.78)	1.470 (37.34)
A8-12	B8-12	.391 (9.93)		.719 (18.26)	1.420 (36.07)	1.590 (40.39)
A10-6	B10-6	.484 (12.29)		.406 (10.31)	1.450 (36.83)	1.280 (32.51)
A10	B10	.484 (12.29)		.531 (13.49)	1.450 (36.83)	1.470 (37.34)
A12-8	B12-8	.609 (15.47)	±.005 (0.13)	.531 (13.49)	1.660 (42.16)	1.590 (40.39)
A12	B12	.609 (15.47)		.719 (18.26)	1.660 (42.16)	1.590 (40.39)
A14	B14	.718 (18.24)		.719 (18.26)	1.730 (43.94)	1.690 (42.93)
A16-12	B16-12	.844 (21.44)	+.007 -.005 (+0.18 - 0.13)	.719 (18.26)	1.810 (45.97)	1.780 (45.21)
A16	B16	.844 (21.44)		.938 (23.83)	1.810 (45.97)	1.970 (50.04)
A20	B20	1.078 (27.38)	+.006 -.005 (+0.15 -0.13)	1.250 (31.75)	2.060 (52.32)	2.380 (60.45)
A24	B24	1.312 (33.32)		1.500 (38.10)	2.330 (59.18)	2.640 (67.06)
A32	B32	1.781 (45.24)	+.010 -.005 (+0.25 -0.13)	1.938 (49.23)	3.060 (77.72)	3.000 (76.20)

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, nut, and sleeve). Bodies are not to be stocked, stored, or issued.
5. Dimensions and tolerances not shown shall be in accordance with SAE-J514 for 37° flared fittings.
6. The drawing is for identification purposes only and is not intended to restrict designs and shapes not dimensioned.
7. It is recommended that threads be dressed prior to assembly.

FIGURE 1. 90° male elbow - Continued.

REQUIREMENTS:

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

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

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

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Finish. Finishes shall be as specified in table I. 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.

TABLE I. 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 2 or SAE-AMS-QQ-P-416, type II, class 2. <u>1/</u>
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. <u>2/</u>
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, class 4. <u>3/</u>
R	Steel	Zinc plating in accordance with ASTM B633; type VI, Fe/Zn 12. <u>4/</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. <u>5/</u>
TF	Titanium	Fluoride phosphate in accordance with SAE-AMS2486. <u>5/</u>
Z	Steel	Zinc plating in accordance with ASTM B633; type II or III, Fe/Zn 12, or ASTM B695, type II, class 12. <u>4/</u>
ZC	Steel	Zinc may be any zinc plating from PIN codes H, J, and R with a colored chromate coating. <u>4/</u>

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

2/ The zinc-nickel alloy plate shall contain 12% to 16% nickel. The coating thickness shall be 315μ inches (8μm) minimum coating thickness.

3/ Hexavalent chromium free. Finish shall be ROHS compliant.

4/ Not for use in aircraft. Requires approval from the Program Office for all applications.

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

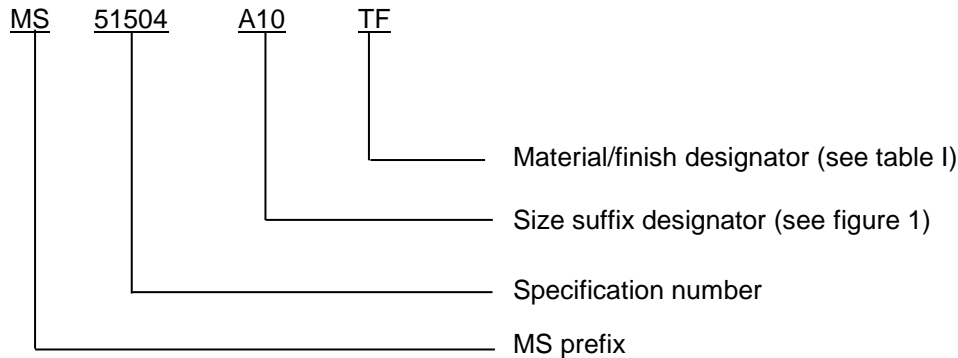
Trivalent wrenchability. When the finish has been damaged due to poor wrenchability, the surface of the connector shall be touched up using one of the brush plating processes below as appropriate to primary finish. The term "trivalent wrenchability" is used to evaluate the ability of the finish to the 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.

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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 sheet number, a letter and number for elbow size, and a letter for material finish designator.



PIN example: MS51504A10TF indicates an elbow 90°, pipe to tube, .6250 inch (15.875 mm), titanium fluoride 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.

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 II provides a detailed cross-reference of inactive MS51504 PIN's and for new design SAE-J514 PIN's.

MS51504 parts have threads in accordance with ASME B1.1 the SAE parts have straight threads in accordance with SAE-J425.

Plating "P" SAE allows a range of nickel from 6% to 20%. Below 12%, ZnNi is not much better than zinc plating, which is less expensive and easier to apply. Above 16%, ZnNi becomes more cathodic and no longer acts as a sacrificial coating - if a high nickel coating is damaged the steel beneath the coating will corrode at an accelerated rate.

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 II. MS51504 to SAE-J514 cross reference.

Inactive for new design MS51504- PIN		Tube OD	Pipe thread NPTF	For new design SAE-J514 PIN	
Assembly	Body			Assembly	Body
MS51504A2	MS51504B2	1/8	1/8	Not available	Not available
MS51504A2H	MS51504B2H	1/8	1/8	Not available	Not available
MS51504A2J	MS51504B2J	1/8	1/8	Not available	Not available
MS51504A2M	MS51504B2M	1/8	1/8	J514-2-2-070202MA	J514-2-2-070202MB
MS51504A2N	MS51504B2N	1/8	1/8	J514-2-2-070202NA	J514-2-2-070202NB
MS51504A2P	MS51504B2P	1/8	1/8	J514-2-2-070202PA	J514-2-2-070202PB
MS51504A2R	MS51504B2R	1/8	1/8	Not available	Not available
MS51504A2S	MS51504B2S	1/8	1/8	J514-2-2-070202SA	J514-2-2-070202SB
MS51504A2T	MS51504B2T	1/8	1/8	J514-2-2-070202TA	J514-2-2-070202TB
MS51504A2TF	MS51504B2TF	1/8	1/8	Not available	Not available
MS51504A2Z	MS51504B2Z	1/8	1/8	J514-2-2-070202ZA	J514-2-2-070202ZB
MS51504A2ZC	MS51504B2ZC	1/8	1/8	Not available	Not available
MS51504A3	MS51504B3	3/16	1/8	Not available	Not available
MS51504A3H	MS51504B3H	3/16	1/8	Not available	Not available
MS51504A3J	MS51504B3J	3/16	1/8	Not available	Not available
MS51504A3M	MS51504B3M	3/16	1/8	J514-3-2-070202MA	J514-3-2-070202MB
MS51504A3N	MS51504B3N	3/16	1/8	J514-3-2-070202NA	J514-3-2-070202NB
MS51504A3P	MS51504B3P	3/16	1/8	J514-3-2-070202PA	J514-3-2-070202PB
MS51504A3R	MS51504B3R	3/16	1/8	Not available	Not available
MS51504A3S	MS51504B3S	3/16	1/8	J514-3-2-070202SA	J514-3-2-070202SB
MS51504A3T	MS51504B3T	3/16	1/8	J514-3-2-070202TA	J514-3-2-070202TB
MS51504A3TF	MS51504B3TF	3/16	1/8	Not available	Not available
MS51504A3Z	MS51504B3Z	3/16	1/8	J514-3-2-070202ZA	J514-3-2-070202ZB
MS51504A3ZC	MS51504B3ZC	3/16	1/8	Not available	Not available
MS51504A4	MS51504B4	1/4	1/8	Not available	Not available
MS51504A4H	MS51504B4H	1/4	1/8	Not available	Not available
MS51504A4J	MS51504B4J	1/4	1/8	Not available	Not available
MS51504A4M	MS51504B4M	1/4	1/8	J514-4-2-070202MA	J514-4-2-070202MB
MS51504A4N	MS51504B4N	1/4	1/8	J514-4-2-070202NA	J514-4-2-070202NB
MS51504A4P	MS51504B4P	1/4	1/8	J514-4-2-070202PA	J514-4-2-070202PB
MS51504A4R	MS51504B4R	1/4	1/8	Not available	Not available
MS51504A4S	MS51504B4S	1/4	1/8	J514-4-2-070202SA	J514-4-2-070202SB
MS51504A4T	MS51504B4T	1/4	1/8	J514-4-2-070202TA	J514-4-2-070202TB
MS51504A4TF	MS51504B4TF	1/4	1/8	Not available	Not available
MS51504A4Z	MS51504B4Z	1/4	1/8	J514-4-2-070202ZA	J514-4-2-070202ZB
MS51504A4ZC	MS51504B4ZC	1/4	1/8	Not available	Not available
MS51504A5	MS51504B5	5/16	1/8	Not available	Not available
MS51504A5H	MS51504B5H	5/16	1/8	Not available	Not available
MS51504A5J	MS51504B5J	5/16	1/8	Not available	Not available
MS51504A5M	MS51504B5M	5/16	1/8	J514-5-2-070202MA	J514-5-2-070202MB
MS51504A5N	MS51504B5N	5/16	1/8	J514-5-2-070202NA	J514-5-2-070202NB
MS51504A5P	MS51504B5P	5/16	1/8	J514-5-2-070202PA	J514-5-2-070202PB
MS51504A5R	MS51504B5R	5/16	1/8	Not available	Not available
MS51504A5S	MS51504B5S	5/16	1/8	J514-5-2-070202SA	J514-5-2-070202SB
MS51504A5T	MS51504B5T	5/16	1/8	J514-5-2-070202TA	J514-5-2-070202TB
MS51504A5TF	MS51504B5TF	5/16	1/8	Not available	Not available
MS51504A5Z	MS51504B5Z	5/16	1/8	J514-5-2-070202ZA	J514-5-2-070202ZB
MS51504A5ZC	MS51504B5ZC	5/16	1/8	Not available	Not available

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TABLE II. MS51504 to SAE-J514 cross reference - Continued.

Inactive for new design MS51504- PIN		Tube OD	Pipe thread NPTF	For new design SAE-J514 PIN	
Assembly	Body			Assembly	Body
MS51504A6	MS51504B6	3/8	1/4	Not available	Not available
MS51504A6H	MS51504B6H	3/8	1/4	Not available	Not available
MS51504A6J	MS51504B6J	3/8	1/4	Not available	Not available
MS51504A6M	MS51504B6M	3/8	1/4	J514-6-4-070202MA	J514-6-4-070202MB
MS51504A6N	MS51504B6N	3/8	1/4	J514-6-4-070202NA	J514-6-4-070202NB
MS51504A6P	MS51504B6P	3/8	1/4	J514-6-4-070202PA	J514-6-4-070202PB
MS51504A6R	MS51504B6R	3/8	1/4	Not available	Not available
MS51504A6S	MS51504B6S	3/8	1/4	J514-6-4-070202SA	J514-6-4-070202SB
MS51504A6T	MS51504B6T	3/8	1/4	J514-6-4-070202TA	J514-6-4-070202TB
MS51504A6TF	MS51504B6TF	3/8	1/4	Not available	Not available
MS51504A6Z	MS51504B6Z	3/8	1/4	J514-6-4-070202ZA	J514-6-4-070202ZB
MS51504A6ZC	MS51504B6ZC	3/8	1/4	Not available	Not available
MS51504A8	MS51504B8	1/2	3/8	Not available	Not available
MS51504A8H	MS51504B8H	1/2	3/8	Not available	Not available
MS51504A8J	MS51504B8J	1/2	3/8	Not available	Not available
MS51504A8M	MS51504B8M	1/2	3/8	J514-8-6-070202MA	J514-8-6-070202MB
MS51504A8N	MS51504B8N	1/2	3/8	J514-8-6-070202NA	J514-8-6-070202NB
MS51504A8P	MS51504B8P	1/2	3/8	J514-8-6-070202PA	J514-8-6-070202PB
MS51504A8R	MS51504B8R	1/2	3/8	Not available	Not available
MS51504A8S	MS51504B8S	1/2	3/8	J514-8-6-070202SA	J514-8-6-070202SB
MS51504A8T	MS51504B8T	1/2	3/8	J514-8-6-070202TA	J514-8-6-070202TB
MS51504A8TF	MS51504B8TF	1/2	3/8	Not available	Not available
MS51504A8Z	MS51504B8Z	1/2	3/8	J514-8-6-070202ZA	J514-8-6-070202ZB
MS51504A8ZC	MS51504B8ZC	1/2	3/8	Not available	Not available
MS51504A10	MS51504B10	5/8	1/2	Not available	Not available
MS51504A10H	MS51504B10H	5/8	1/2	Not available	Not available
MS51504A10J	MS51504B10J	5/8	1/2	Not available	Not available
MS51504A10M	MS51504B10M	5/8	1/2	J514-10-8-070202MA	J514-10-8-070202MB
MS51504A10N	MS51504B10N	5/8	1/2	J514-10-8-070202NA	J514-10-8-070202NB
MS51504A10P	MS51504B10P	5/8	1/2	J514-10-8-070202PA	J514-10-8-070202PB
MS51504A10R	MS51504B10R	5/8	1/2	Not available	Not available
MS51504A10S	MS51504B10S	5/8	1/2	J514-10-8-070202SA	J514-10-8-070202SB
MS51504A10T	MS51504B10T	5/8	1/2	J514-10-8-070202TA	J514-10-8-070202TB
MS51504A10TF	MS51504B10TF	5/8	1/2	Not available	Not available
MS51504A10Z	MS51504B10Z	5/8	1/2	J514-10-8-070202ZA	J514-10-8-070202ZB
MS51504A10ZC	MS51504B10ZC	5/8	1/2	Not available	Not available
MS51504A12	MS51504B12	3/4	3/4	Not available	Not available
MS51504A12H	MS51504B12H	3/4	3/4	Not available	Not available
MS51504A12J	MS51504B12J	3/4	3/4	Not available	Not available
MS51504A12M	MS51504B12M	3/4	3/4	J514-12-12-070202MA	J514-12-12-070202MB
MS51504A12N	MS51504B12N	3/4	3/4	J514-12-12-070202NA	J514-12-12-070202NB
MS51504A12P	MS51504B12P	3/4	3/4	J514-12-12-070202PA	J514-12-12-070202PB
MS51504A12R	MS51504B12R	3/4	3/4	Not available	Not available
MS51504A12S	MS51504B12S	3/4	3/4	J514-12-12-070202SA	J514-12-12-070202SB
MS51504A12T	MS51504B12T	3/4	3/4	J514-12-12-070202TA	J514-12-12-070202TB
MS51504A12TF	MS51504B12TF	3/4	3/4	Not available	Not available
MS51504A12Z	MS51504B12Z	3/4	3/4	J514-12-12-070202ZA	J514-12-12-070202ZB
MS51504A12ZC	MS51504B12ZC	3/4	3/4	Not available	Not available

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TABLE II. MS51504 to SAE-J514 cross reference - Continued.

Inactive for new design MS51504- PIN		Tube OD	Pipe thread NPTF	For new design SAE-J514 PIN	
Assembly	Body			Assembly	Body
MS51504A14	MS51504B14	7/8	3/4	Not available	Not available
MS51504A14H	MS51504B14H	7/8	3/4	Not available	Not available
MS51504A14J	MS51504B14J	7/8	3/4	Not available	Not available
MS51504A14M	MS51504B14M	7/8	3/4	J514-14-12-070202MA	J514-14-12-070202MB
MS51504A14N	MS51504B14N	7/8	3/4	J514-14-12-070202NA	J514-14-12-070202NB
MS51504A14P	MS51504B14P	7/8	3/4	J514-14-12-070202PA	J514-14-12-070202PB
MS51504A14R	MS51504B14R	7/8	3/4	Not available	Not available
MS51504A14S	MS51504B14S	7/8	3/4	J514-14-12-070202SA	J514-14-12-070202SB
MS51504A14T	MS51504B14T	7/8	3/4	J514-14-12-070202TA	J514-14-12-070202TB
MS51504A14TF	MS51504B14TF	7/8	3/4	Not available	Not available
MS51504A14Z	MS51504B14Z	7/8	3/4	J514-14-12-070202ZA	J514-14-12-070202ZB
MS51504A14ZC	MS51504B14ZC	7/8	3/4	Not available	Not available
MS51504A16	MS51504B16	1	1	Not available	Not available
MS51504A16H	MS51504B16H	1	1	Not available	Not available
MS51504A16J	MS51504B16J	1	1	Not available	Not available
MS51504A16M	MS51504B16M	1	1	J514-16-16-070202MA	J514-16-16-070202MB
MS51504A16N	MS51504B16N	1	1	J514-16-16-070202NA	J514-16-16-070202NB
MS51504A16P	MS51504B16P	1	1	J514-16-16-070202PA	J514-16-16-070202PB
MS51504A16R	MS51504B16R	1	1	Not available	Not available
MS51504A16S	MS51504B16S	1	1	J514-16-16-070202SA	J514-16-16-070202SB
MS51504A16T	MS51504B16T	1	1	J514-16-16-070202TA	J514-16-16-070202TB
MS51504A16TF	MS51504B16TF	1	1	Not available	Not available
MS51504A16Z	MS51504B16Z	1	1	J514-16-16-070202ZA	J514-16-16-070202ZB
MS51504A16ZC	MS51504B16ZC	1	1	Not available	Not available
MS51504A20	MS51504B20	1 1/4	1 1/4	Not available	Not available
MS51504A20H	MS51504B20H	1 1/4	1 1/4	Not available	Not available
MS51504A20J	MS51504B20J	1 1/4	1 1/4	Not available	Not available
MS51504A20M	MS51504B20M	1 1/4	1 1/4	J514-20-20-070202MA	J514-20-20-070202MB
MS51504A20N	MS51504B20N	1 1/4	1 1/4	J514-20-20-070202NA	J514-20-20-070202NB
MS51504A20P	MS51504B20P	1 1/4	1 1/4	J514-20-20-070202PA	J514-20-20-070202PB
MS51504A20R	MS51504B20R	1 1/4	1 1/4	Not available	Not available
MS51504A20S	MS51504B20S	1 1/4	1 1/4	J514-20-20-070202SA	J514-20-20-070202SB
MS51504A20T	MS51504B20T	1 1/4	1 1/4	J514-20-20-070202TA	J514-20-20-070202TB
MS51504A20TF	MS51504B20TF	1 1/4	1 1/4	Not available	Not available
MS51504A20Z	MS51504B20Z	1 1/4	1 1/4	J514-20-20-070202ZA	J514-20-20-070202ZB
MS51504A20ZC	MS51504B20ZC	1 1/4	1 1/4	Not available	Not available
MS51504A24	MS51504B24	1 1/2	1 1/2	Not available	Not available
MS51504A24H	MS51504B24H	1 1/2	1 1/2	Not available	Not available
MS51504A24J	MS51504B24J	1 1/2	1 1/2	Not available	Not available
MS51504A24M	MS51504B24M	1 1/2	1 1/2	J514-24-24-070202MA	J514-24-24-070202MB
MS51504A24N	MS51504B24N	1 1/2	1 1/2	J514-24-24-070202NA	J514-24-24-070202NB
MS51504A24P	MS51504B24P	1 1/2	1 1/2	J514-24-24-070202PA	J514-24-24-070202PB
MS51504A24R	MS51504B24R	1 1/2	1 1/2	Not available	Not available
MS51504A24S	MS51504B24S	1 1/2	1 1/2	J514-24-24-070202SA	J514-24-24-070202SB
MS51504A24T	MS51504B24T	1 1/2	1 1/2	J514-24-24-070202TA	J514-24-24-070202TB
MS51504A24TF	MS51504B24TF	1 1/2	1 1/2	Not available	Not available
MS51504A24Z	MS51504B24Z	1 1/2	1 1/2	J514-24-24-070202ZA	J514-24-24-070202ZB
MS51504A24ZC	MS51504B24ZC	1 1/2	1 1/2	Not available	Not available

MS51504C

TABLE II. MS51504 to SAE-J514 cross reference - Continued.

Inactive for new design MS51504- PIN		Tube OD	Pipe thread NPTF	For new design SAE-J514 PIN	
Assembly	Body			Assembly	Body
MS51504A32	MS51504B32	2	2	Not available	Not available
MS51504A32H	MS51504B32H	2	2	Not available	Not available
MS51504A32J	MS51504B32J	2	2	Not available	Not available
MS51504A32M	MS51504B32M	2	2	J514-32-32-070202MA	J514-32-32-070202MB
MS51504A32N	MS51504B32N	2	2	J514-32-32-070202NA	J514-32-32-070202NB
MS51504A32P	MS51504B32P	2	2	J514-32-32-070202PA	J514-32-32-070202PB
MS51504A32R	MS51504B32R	2	2	Not available	Not available
MS51504A32S	MS51504B32S	2	2	J514-32-32-070202SA	J514-32-32-070202SB
MS51504A32T	MS51504B32T	2	2	J514-32-32-070202TA	J514-32-32-070202TB
MS51504A32TF	MS51504B32TF	2	2	Not available	Not available
MS51504A32Z	MS51504B32Z	2	2	J514-32-32-070202ZA	J514-32-32-070202ZB
MS51504A32ZC	MS51504B32ZC	2	2	Not available	Not available
MS51504A4-4	MS51504B4-4	1/4	1/4	Not available	Not available
MS51504A4-4H	MS51504B4-4H	1/4	1/4	Not available	Not available
MS51504A4-4J	MS51504B4-4J	1/4	1/4	Not available	Not available
MS51504A4-4M	MS51504B4-4M	1/4	1/4	J514-4-4-070202MA	J514-4-4-070202MB
MS51504A4-4N	MS51504B4-4N	1/4	1/4	J514-4-4-070202NA	J514-4-4-070202NB
MS51504A4-4P	MS51504B4-4P	1/4	1/4	J514-4-4-070202PA	J514-4-4-070202PB
MS51504A4-4R	MS51504B4-4R	1/4	1/4	Not available	Not available
MS51504A4-4S	MS51504B4-4S	1/4	1/4	J514-4-4-070202SA	J514-4-4-070202SB
MS51504A4-4T	MS51504B4-4T	1/4	1/4	J514-4-4-070202TA	J514-4-4-070202TB
MS51504A4-4TF	MS51504B4-4TF	1/4	1/4	Not available	Not available
MS51504A4-4Z	MS51504B4-4Z	1/4	1/4	J514-4-4-070202ZA	J514-4-4-070202ZB
MS51504A4-4ZC	MS51504B4-4ZC	1/4	1/4	Not available	Not available
MS51504A5-4	MS51504B5-4	5/16	1/4	Not available	Not available
MS51504A5-4H	MS51504B5-4H	5/16	1/4	Not available	Not available
MS51504A5-4J	MS51504B5-4J	5/16	1/4	Not available	Not available
MS51504A5-4M	MS51504B5-4M	5/16	1/4	J514-5-4-070202MA	J514-5-4-070202MB
MS51504A5-4N	MS51504B5-4N	5/16	1/4	J514-5-4-070202NA	J514-5-4-070202NB
MS51504A5-4P	MS51504B5-4P	5/16	1/4	J514-5-4-070202PA	J514-5-4-070202PB
MS51504A5-4R	MS51504B5-4R	5/16	1/4	Not available	Not available
MS51504A5-4S	MS51504B5-4S	5/16	1/4	J514-5-4-070202SA	J514-5-4-070202SB
MS51504A5-4T	MS51504B5-4T	5/16	1/4	J514-5-4-070202TA	J514-5-4-070202TB
MS51504A5-4TF	MS51504B5-4TF	5/16	1/4	Not available	Not available
MS51504A5-4Z	MS51504B5-4Z	5/16	1/4	J514-5-4-070202ZA	J514-5-4-070202ZB
MS51504A5-4ZC	MS51504B5-4ZC	5/16	1/4	Not available	Not available
MS51504A6-2	MS51504B6-2	3/8	1/8	Not available	Not available
MS51504A6-2H	MS51504B6-2H	3/8	1/8	Not available	Not available
MS51504A6-2J	MS51504B6-2J	3/8	1/8	Not available	Not available
MS51504A6-2M	MS51504B6-2M	3/8	1/8	J514-6-2-070202MA	J514-6-2-070202MB
MS51504A6-2N	MS51504B6-2N	3/8	1/8	J514-6-2-070202NA	J514-6-2-070202NB
MS51504A6-2P	MS51504B6-2P	3/8	1/8	J514-6-2-070202PA	J514-6-2-070202PB
MS51504A6-2R	MS51504B6-2R	3/8	1/8	Not available	Not available
MS51504A6-2S	MS51504B6-2S	3/8	1/8	J514-6-2-070202SA	J514-6-2-070202SB
MS51504A6-2T	MS51504B6-2T	3/8	1/8	J514-6-2-070202TA	J514-6-2-070202TB
MS51504A6-2TF	MS51504B6-2TF	3/8	1/8	Not available	Not available
MS51504A6-2Z	MS51504B6-2Z	3/8	1/8	J514-6-2-070202ZA	J514-6-2-070202ZB
MS51504A6-2ZC	MS51504B6-2ZC	3/8	1/8	Not available	Not available

MS51504C

TABLE II. MS51504 to SAE-J514 cross reference - Continued.

Inactive for new design MS51504- PIN		Tube OD	Pipe thread NPTF	For new design SAE-J514 PIN	
Assembly	Body			Assembly	Body
MS51504A6-6	MS51504B6-6	3/8	3/8	Not available	Not available
MS51504A6-6H	MS51504B6-6H	3/8	3/8	Not available	Not available
MS51504A6-6J	MS51504B6-6J	3/8	3/8	Not available	Not available
MS51504A6-6M	MS51504B6-6M	3/8	3/8	J514-6-6-070202MA	J514-6-6-070202MB
MS51504A6-6N	MS51504B6-6N	3/8	3/8	J514-6-6-070202NA	J514-6-6-070202NB
MS51504A6-6P	MS51504B6-6P	3/8	3/8	J514-6-6-070202PA	J514-6-6-070202PB
MS51504A6-6R	MS51504B6-6R	3/8	3/8	Not available	Not available
MS51504A6-6S	MS51504B6-6S	3/8	3/8	J514-6-6-070202SA	J514-6-6-070202SB
MS51504A6-6T	MS51504B6-6T	3/8	3/8	J514-6-6-070202TA	J514-6-6-070202TB
MS51504A6-6TF	MS51504B6-6TF	3/8	3/8	Not available	Not available
MS51504A6-6Z	MS51504B6-6Z	3/8	3/8	J514-6-6-070202ZA	J514-6-6-070202ZB
MS51504A6-6ZC	MS51504B6-6ZC	3/8	3/8	Not available	Not available
MS51504A6-8	MS51504B6-8	3/8	1/2	Not available	Not available
MS51504A6-8H	MS51504B6-8H	3/8	1/2	Not available	Not available
MS51504A6-8J	MS51504B6-8J	3/8	1/2	Not available	Not available
MS51504A6-8M	MS51504B6-8M	3/8	1/2	J514-6-8-070202MA	J514-6-8-070202MB
MS51504A6-8N	MS51504B6-8N	3/8	1/2	J514-6-8-070202NA	J514-6-8-070202NB
MS51504A6-8P	MS51504B6-8P	3/8	1/2	J514-6-8-070202PA	J514-6-8-070202PB
MS51504A6-8R	MS51504B6-8R	3/8	1/2	Not available	Not available
MS51504A6-8S	MS51504B6-8S	3/8	1/2	J514-6-8-070202SA	J514-6-8-070202SB
MS51504A6-8T	MS51504B6-8T	3/8	1/2	J514-6-8-070202TA	J514-6-8-070202TB
MS51504A6-8TF	MS51504B6-8TF	3/8	1/2	Not available	Not available
MS51504A6-8Z	MS51504B6-8Z	3/8	1/2	J514-6-8-070202ZA	J514-6-8-070202ZB
MS51504A6-8ZC	MS51504B6-8ZC	3/8	1/2	Not available	Not available
MS51504A8-4	MS51504B8-4	1/2	1/4	Not available	Not available
MS51504A8-4H	MS51504B8-4H	1/2	1/4	Not available	Not available
MS51504A8-4J	MS51504B8-4J	1/2	1/4	Not available	Not available
MS51504A8-4M	MS51504B8-4M	1/2	1/4	J514-8-4-070202MA	J514-8-4-070202MB
MS51504A8-4N	MS51504B8-4N	1/2	1/4	J514-8-4-070202NA	J514-8-4-070202NB
MS51504A8-4P	MS51504B8-4P	1/2	1/4	J514-8-4-070202PA	J514-8-4-070202PB
MS51504A8-4R	MS51504B8-4R	1/2	1/4	Not available	Not available
MS51504A8-4S	MS51504B8-4S	1/2	1/4	J514-8-4-070202SA	J514-8-4-070202SB
MS51504A8-4T	MS51504B8-4T	1/2	1/4	J514-8-4-070202TA	J514-8-4-070202TB
MS51504A8-4TF	MS51504B8-4TF	1/2	1/4	Not available	Not available
MS51504A8-4Z	MS51504B8-4Z	1/2	1/4	J514-8-4-070202ZA	J514-8-4-070202ZB
MS51504A8-4ZC	MS51504B8-4 ZC	1/2	1/4	Not available	Not available
MS51504A8-8	MS51504B8-8	1/2	1/2	Not available	Not available
MS51504A8-8H	MS51504B8-8H	1/2	1/2	Not available	Not available
MS51504A8-8J	MS51504B8-8J	1/2	1/2	Not available	Not available
MS51504A8-8M	MS51504B8-8M	1/2	1/2	J514-8-8-070202MA	J514-8-8-070202MB
MS51504A8-8N	MS51504B8-8N	1/2	1/2	J514-8-8-070202NA	J514-8-8-070202NB
MS51504A8-8P	MS51504B8-8P	1/2	1/2	J514-8-8-070202PA	J514-8-8-070202PB
MS51504A8-8R	MS51504B8-8R	1/2	1/2	Not available	Not available
MS51504A8-8S	MS51504B8-8S	1/2	1/2	J514-8-8-070202SA	J514-8-8-070202SB
MS51504A8-8T	MS51504B8-8T	1/2	1/2	J514-8-8-070202TA	J514-8-8-070202TB
MS51504A8-8TF	MS51504B8-8TF	1/2	1/2	Not available	Not available
MS51504A8-8Z	MS51504B8-8Z	1/2	1/2	J514-8-8-070202ZA	J514-8-8-070202ZB
MS51504A8-8ZC	MS51504B8-8ZC	1/2	1/2	Not available	Not available

MS51504C

TABLE II. MS51504 to SAE-J514 cross reference - Continued.

Inactive for new design MS51504- PIN		Tube OD	Pipe thread NPTF	For new design SAE-J514 PIN	
Assembly	Body			Assembly	Body
MS51504A8-12	MS51504B8-12	1/2	3/4	Not available	Not available
MS51504A8-12H	MS51504B8-12H	1/2	3/4	Not available	Not available
MS51504A8-12J	MS51504B8-12J	1/2	3/4	Not available	Not available
MS51504A8-12M	MS51504B8-12M	1/2	3/4	J514-8-12-070202MA	J514-8-12-070202MB
MS51504A8-12N	MS51504B8-12N	1/2	3/4	J514-8-12-070202NA	J514-8-12-070202NB
MS51504A8-12P	MS51504B8-12P	1/2	3/4	J514-8-12-070202PA	J514-8-12-070202PB
MS51504A8-12R	MS51504B8-12R	1/2	3/4	Not available	Not available
MS51504A8-12S	MS51504B8-12S	1/2	3/4	J514-8-12-070202SA	J514-8-12-070202SB
MS51504A8-12T	MS51504B8-12T	1/2	3/4	J514-8-12-070202TA	J514-8-12-070202TB
MS51504A8-12TF	MS51504B8-12TF	1/2	3/4	Not available	Not available
MS51504A8-12Z	MS51504B8-12Z	1/2	3/4	J514-8-12-070202ZA	J514-8-12-070202ZB
MS51504A8-12ZC	MS51504B8-12ZC	1/2	3/4	Not available	Not available
MS51504A10-6	MS51504B10-6	5/8	3/8	Not available	Not available
MS51504A10-6H	MS51504B10-6H	5/8	3/8	Not available	Not available
MS51504A10-6J	MS51504B10-6J	5/8	3/8	Not available	Not available
MS51504A10-6M	MS51504B10-6M	5/8	3/8	J514-10-6-070202MA	J514-10-6-070202MB
MS51504A10-6N	MS51504B10-6N	5/8	3/8	J514-10-6-070202NA	J514-10-6-070202NB
MS51504A10-6P	MS51504B10-6P	5/8	3/8	J514-10-6-070202PA	J514-10-6-070202PB
MS51504A10-6R	MS51504B10-6R	5/8	3/8	Not available	Not available
MS51504A10-6S	MS51504B10-6S	5/8	3/8	J514-10-6-070202SA	J514-10-6-070202SB
MS51504A10-6T	MS51504B10-6T	5/8	3/8	J514-10-6-070202TA	J514-10-6-070202TB
MS51504A10-6TF	MS51504B10-6TF	5/8	3/8	Not available	Not available
MS51504A10-6Z	MS51504B10-6Z	5/8	3/8	J514-10-6-070202ZA	J514-10-6-070202ZB
MS51504A10-6ZC	MS51504B10-6ZC	5/8	3/8	Not available	Not available
MS51504A12-8	MS51504B12-8	3/4	1/2	Not available	Not available
MS51504A12-8H	MS51504B12-8H	3/4	1/2	Not available	Not available
MS51504A12-8J	MS51504B12-8J	3/4	1/2	Not available	Not available
MS51504A12-8M	MS51504B12-8M	3/4	1/2	J514-12-8-070202MA	J514-12-8-070202MB
MS51504A12-8N	MS51504B12-8N	3/4	1/2	J514-12-8-070202NA	J514-12-8-070202NB
MS51504A12-8P	MS51504B12-8P	3/4	1/2	J514-12-8-070202PA	J514-12-8-070202PB
MS51504A12-8R	MS51504B12-8R	3/4	1/2	Not available	Not available
MS51504A12-8S	MS51504B12-8S	3/4	1/2	J514-12-8-070202SA	J514-12-8-070202SB
MS51504A12-8T	MS51504B12-8T	3/4	1/2	J514-12-8-070202TA	J514-12-8-070202TB
MS51504A12-8TF	MS51504B12-8TF	3/4	1/2	Not available	Not available
MS51504A12-8Z	MS51504B12-8Z	3/4	1/2	J514-12-8-070202ZA	J514-12-8-070202ZB
MS51504A12-8ZC	MS51504B12-8ZC	3/4	1/2	Not available	Not available
MS51504A16-12	MS51504B16-12	1	3/4	Not available	Not available
MS51504A16-12H	MS51504B16-12H	1	3/4	Not available	Not available
MS51504A16-12J	MS51504B16-12J	1	3/4	Not available	Not available
MS51504A16-12M	MS51504B16-12M	1	3/4	J514-16-12-070202MA	J514-16-12-070202MB
MS51504A16-12N	MS51504B16-12N	1	3/4	J514-16-12-070202NA	J514-16-12-070202NB
MS51504A16-12P	MS51504B16-12P	1	3/4	J514-16-12-070202PA	J514-16-12-070202PB
MS51504A16-12R	MS51504B16-12R	1	3/4	Not available	Not available
MS51504A16-12S	MS51504B16-12S	1	3/4	J514-16-12-070202SA	J514-16-12-070202SB
MS51504A16-12T	MS51504B16-12T	1	3/4	J514-16-12-070202TA	J514-16-12-070202TB
MS51504A16-12TF	MS51504B16-12TF	1	3/4	Not available	Not available
MS51504A16-12Z	MS51504B16-12Z	1	3/4	J514-16-12-070202ZA	J514-16-12-070202ZB
MS51504A16-12ZC	MS51504B16-12ZC	1	3/4	Not available	Not available

MS51504C

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-595/36176	MS51533	SAE-AMS2417
FED-STD-595/36081	FED-STD-595/36231	ASME B1.1	SAE-AMS2451/5
FED-STD-595/36099	FED-STD-595/36251	ASTM B117	SAE-AMS2451/9
FED-STD-595/36118	FED-STD-595/36270	ASTM B633	SAE-AMS2486
FED-STD-595/36134	FED-STD-595/36280	ASTM B695	SAE-AMS2488
FED-STD-595/36152	FED-STD-595/36293	ASTM F1136/F1136M	SAE-AMS2700
FED-STD-595/36170	MIL-DTL-16232	SAE-AMS-C-81562	SAE-J425
FED-STD-595/36173	MS51531	SAE-AMS-QQ-P-416	SAE-J514

CONCLUDING MATERIAL

Custodians:

Army - AT
Navy - SH
Air Force - 99
DLA - CC

Preparing activity:

DLA - CC

(Project 4730-2016-039)

Review activities:

Army - AR, AV, MI
Navy - AS, CG, SA
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>.