

INCH-POUND

MS51825H
w/AMENDMENT 1
5 June 2008
SUPERSEDING
MS51825H
24 March 2008

DETAIL SPECIFICATION SHEET

SLEEVES, CLINCHES, TUBE FITTING,
FLARELESS TYPE, HYDRAULIC

Inactive for new design after 17 August 1999. For new design, use SAE-J514.

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 MIL-F-18866.

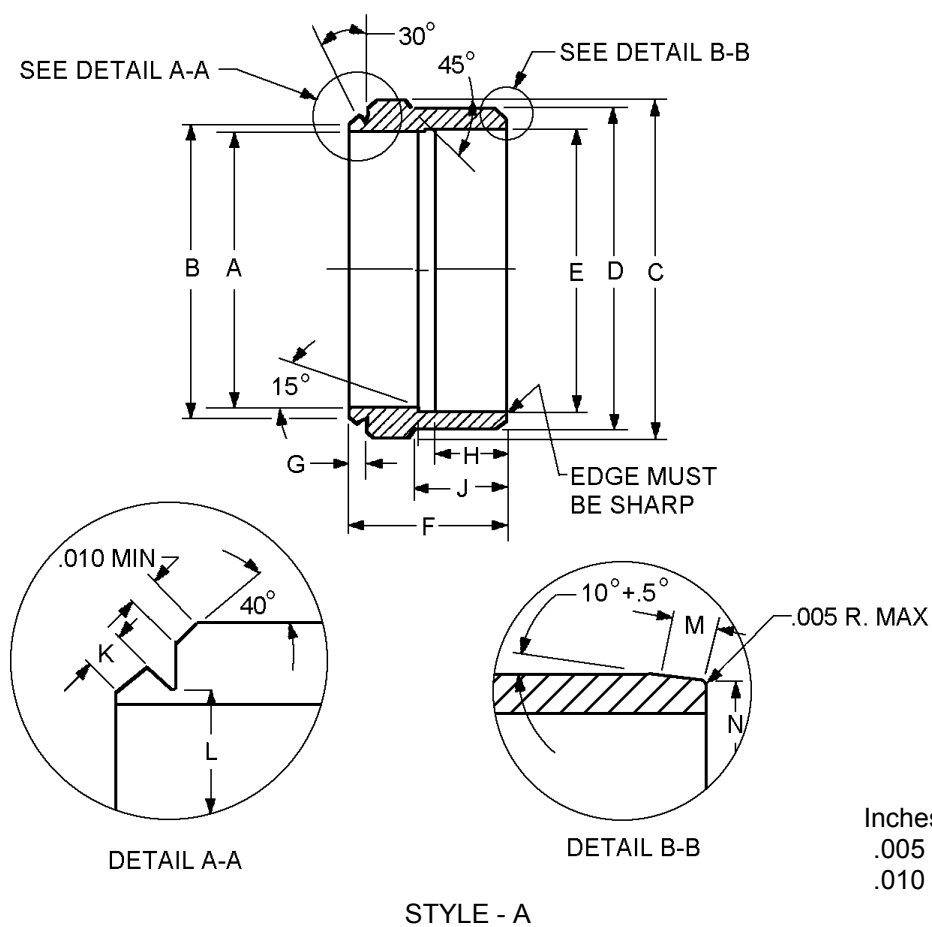


FIGURE 1. Sleeves, clinch, tube fitting.

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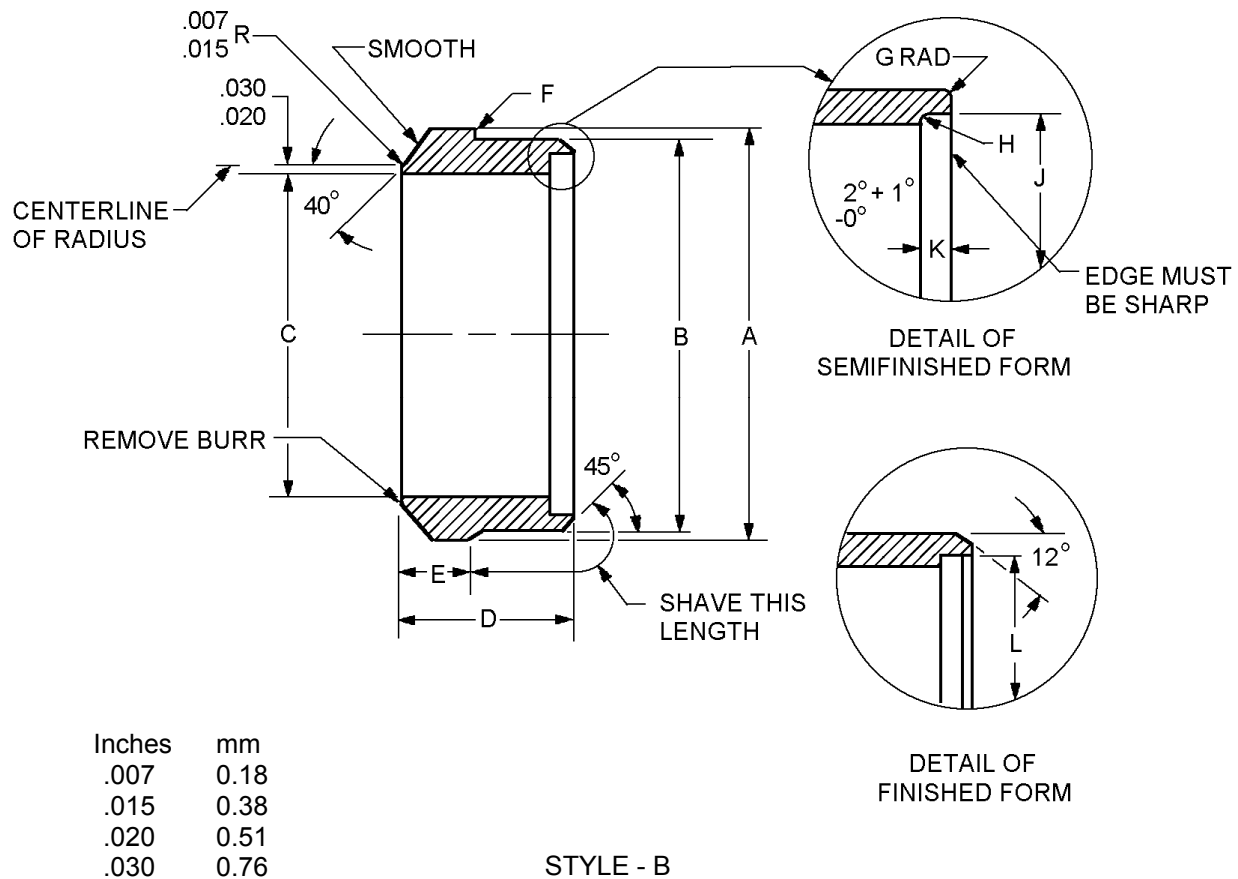
Dash number style A	Tube O.D.	A dia. Inches (mm) +.003 (0.08) -.000	C dia. Inches (mm) +.005 (0.13) -.000	D dia. Inches (mm) +.000 -.003 (0.08)	E dia. Inches (mm) +.003 (0.08) -.000	F Inches (mm) ±.003 (0.08)
-1	1/8	.130 (3.30)	.237 (6.02)	.178 (4.52)	.140 (3.56)	.288 (7.32)
-2	3/16	.193 (4.90)	.307 (7.80)	.249 (6.32)	.205 (5.21)	.329 (8.36)
-3	1/4	.255 (6.48)	.367 (9.32)	.312 (7.92)	.268 (6.81)	.363 (9.22)
-4	5/16	.318 (8.08)	.430 (10.92)	.375 (9.53)	.330 (8.38)	.367 (9.32)
-5	3/8	.380 (9.65)	.492 (12.50)	.440 (11.18)	.393 (9.98)	.393 (9.98)
-6	1/2	.505 (12.83)	.663 (16.84)	.587 (14.91)	.521 (13.23)	.429 (10.90)
-7	5/8	.631 (16.03)	.780 (19.81)	.713 (18.11)	.647 (16.43)	.442 (11.23)
-8	3/4	.756 (19.20)	.925 (23.50)	.838 (21.29)	.772 (19.61)	.475 (12.07)
-9	7/8	.881 (22.38)	1.040 (26.42)	.963 (24.46)	.897 (22.78)	.475 (12.07)
-10	1	1.006 (25.55)	1.187 (30.15)	1.088 (27.64)	1.022 (25.96)	.475 (12.07)
-11	1-1/4	1.260 (32.00)	1.446 (36.73)	1.341 (34.06)	1.275 (32.39)	.475 (12.07)
-12	1-1/2	1.510 (38.35)	1.694 (43.03)	1.590 (40.39)	1.524 (38.71)	.475 (12.07)
-13	2	2.014 (51.16)	2.210 (56.13)	2.094 (53.19)	2.026 (51.46)	.509 (12.93)

Dash number style A	G Inches (mm) +.000 -.006 (0.15)	H Inches (mm) +.016 (0.41) -.000	J Max Inches (mm)	K ref Inches (mm)	L Inches (mm) .000 -.005 (0.13)	M Inches (mm) +.003 (0.08) -.002 (0.05)
-1	.046 (1.17)	.078 (1.98)	.130 (3.30)	.027 (0.69)	.152 (3.86)	.020 (0.51)
-2	.047 (1.19)	.078 (1.98)	.130 (3.30)	.027 (0.69)	.218 (5.54)	.020 (0.51)
-3	.049 (1.24)	.109 (2.77)	.161 (4.09)	.027 (0.69)	.285 (7.24)	.025 (0.64)
-4	.049 (1.24)	.125 (3.18)	.171 (4.34)	.027 (0.69)	.352 (8.94)	.025 (0.64)
-5	.049 (1.24)	.125 (3.18)	.156 (3.96)	.029 (0.74)	.418 (10.62)	.025 (0.64)
-6	.068 (1.73)	.162 (4.11)	.260 (6.60)	.044 (1.12)	.555 (14.10)	.030 (0.76)
-7	.064 (1.63)	.181 (4.60)	.247 (6.27)	.042 (1.07)	.681 (17.30)	.030 (0.76)
-8	.076 (1.93)	.181 (4.60)	.270 (6.86)	.050 (1.27)	.807 (20.50)	.030 (0.76)
-9	.083 (2.11)	.181 (4.60)	.275 (6.99)	.052 (1.32)	.931 (23.65)	.030 (0.76)
-10	.083 (2.11)	.187 (4.75)	.265 (6.73)	.054 (1.37)	1.056 (26.82)	.030 (0.76)
-11	.083 (2.11)	.187 (4.75)	.245 (6.22)	.062 (1.57)	1.309 (33.25)	.030 (0.76)
-12	.086 (2.18)	.187 (4.75)	.245 (6.22)	.062 (1.57)	1.559 (39.60)	.030 (0.76)
-13	.092 (2.34)	.187 (4.75)	.258 (6.55)	.070 (1.78)	2.059 (52.30)	.030 (0.76)

Dash number style A	N Inches (mm)
-1	.171 (4.34)
-2	.242 (6.15)
-3	.303 (7.70)
-4	.366 (9.30)
-5	.431 (10.95)
-6	.577 (14.66)
-7	.703 (17.86)
-8	.828 (21.03)
-9	.953 (24.21)
-10	1.078 (27.38)
-11	1.331 (33.81)
-12	1.580 (40.13)
-13	2.084 (52.93)

FIGURE 1. Sleeves, clinch, tube fitting - Continued.

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Dash number style B	A dia. $\pm .005$ (0.13) Inches (mm)	B dia.		C dia. $+ .003$ (0.08) $- .000$ Inches (mm)	D $\pm .003$ (0.08) Inches (mm)
		Min Inches (mm)	Max Inches (mm)		
-1	.203 (5.16)	.175 (4.45)	.178 (4.52)	.129 (3.28)	.278 (7.06)
-2	.312 (7.92)	.252 (6.40)	.256 (6.50)	.193 (4.90)	.278 (7.06)
-3	.359 (9.12)	.309 (7.85)	.313 (7.95)	.255 (6.48)	.336 (8.53)
-4	.422 (10.72)	.373 (9.47)	.377 (9.58)	.318 (8.08)	.336 (8.53)
-5	.484 (12.29)	.431 (10.95)	.435 (11.05)	.380 (9.65)	.375 (9.53)
-6	.625 (15.88)	.585 (14.86)	.589 (14.96)	.506 (12.85)	.375 (9.53)
-7	.750 (19.05)	.698 (17.73)	.702 (17.83)	.633 (16.08)	.415 (10.54)
-8	.875 (22.23)	.836 (21.23)	.840 (21.34)	.758 (19.25)	.415 (10.54)
-9	1.000 (25.40)	.961 (24.41)	.965 (24.51)	.883 (22.43)	.415 (10.54)
-10	1.125 (28.58)	1.086 (27.58)	1.090 (27.69)	1.008 (25.60)	.415 (10.54)
-11	1.406 (35.71)	1.339 (34.01)	1.343 (34.11)	1.260 (32.00)	.415 (10.54)
-12	1.656 (42.06)	1.589 (40.36)	1.593 (40.46)	1.511 (38.38)	.415 (10.54)
-13	2.188 (55.58)	2.092 (53.14)	2.096 (53.24)	2.014 (51.16)	.450 (11.43)

FIGURE 1. Sleeves, clinch, tube fitting - Continued.

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Dash number style B	E Max Inches (mm)	F radius Inches (mm)	G radius Inches (mm)	H radius max Inches (mm)	J dia. Min Inches (mm)
-1	.281 (7.14)	.010 (0.25)	.007 (0.18)	.006 (0.15)	.154 (3.91)
-2	.281 (7.14)	.020 (0.51)	.007 (0.18)	.006 (0.15)	.227 (5.77)
-3	.339 (8.61)	.020 (0.51)	.007 (0.18)	.006 (0.15)	.286 (7.26)
-4	.378 (9.60)	.020 (0.51)	.007 (0.18)	.006 (0.15)	.350 (8.89)
-5	.418 (10.62)	.020 (0.51)	.007 (0.18)	.006 (0.15)	.408 (10.36)
-6	.418 (10.62)	.020 (0.51)	.010 (0.25)	.010 (0.25)	.556 (14.12)
-7	.418 (10.62)	.020 (0.51)	.010 (0.25)	.010 (0.25)	.669 (16.99)
-8	.418 (10.62)	.020 (0.51)	.010 (0.25)	.010 (0.25)	.807 (20.50)
-9	.418 (10.62)	.020 (0.51)	.010 (0.25)	.010 (0.25)	.932 (23.67)
-10	.418 (10.62)	.020 (0.51)	.010 (0.25)	.010 (0.25)	1.057 (26.85)
-11	.418 (10.62)	.020 (0.51)	.010 (0.25)	.010 (0.25)	1.310 (33.27)
-12	.418 (10.62)	.020 (0.51)	.010 (0.25)	.010 (0.25)	1.560 (39.62)
-13	.456 (11.58)	.020 (0.51)	.010 (0.25)	.010 (0.25)	2.063 (52.40)

Dash number style B	K Inches (mm)		L Diameter Inches (mm)	
	Min	Max	Min	Max
-1	.015 (0.38)	.023 (0.58)	.148 (3.76)	.156 (3.96)
-2	.020 (0.51)	.028 (0.71)	.221 (5.61)	.229 (5.82)
-3	.024 (0.61)	.032 (0.81)	.280 (7.11)	.288 (7.32)
-4	.024 (0.61)	.032 (0.81)	.344 (8.74)	.352 (8.94)
-5	.024 (0.61)	.032 (0.81)	.402 (10.21)	.410 (10.41)
-6	.024 (0.61)	.032 (0.81)	.550 (13.97)	.558 (14.17)
-7	.024 (0.61)	.032 (0.81)	.663 (16.84)	.671 (17.04)
-8	.024 (0.61)	.032 (0.81)	.801 (20.35)	.809 (20.55)
-9	.024 (0.61)	.032 (0.81)	.926 (23.52)	.934 (23.72)
-10	.024 (0.61)	.032 (0.81)	1.051 (26.70)	1.059 (26.90)
-11	.024 (0.61)	.032 (0.81)	1.304 (33.12)	1.312 (33.32)
-12	.024 (0.61)	.032 (0.81)	1.554 (39.47)	1.562 (39.67)
-13	.024 (0.61)	.032 (0.81)	2.057 (52.25)	2.065 (52.45)

NOTES:

1. Dimensions are in inches, unless otherwise specified.
2. Metric equivalents are given for information only.
3. This illustration is for identification and is not intended to restrict designs or shapes not dimensioned.

FIGURE 1. Sleeves, clinch, tube fitting - Continued.

REQUIREMENTS:

Dimensions and configuration: See figure 1.

Material: Materials shall be in accordance with MIL-F-18866.

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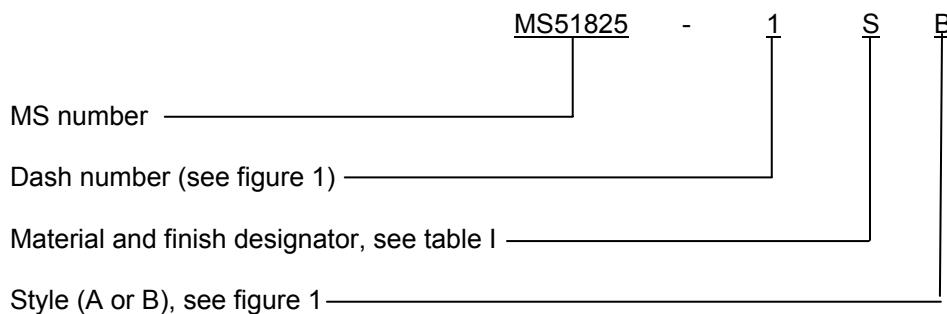
Finish: All plating's shown in table I shall be capable of meeting the 96 hour salt spray test in accordance with ASTM B117.

TABLE I. Material and finish designators.

Designator	Material	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.
N	Steel	NAVAIR trivalent chromium pretreatment (TCP) in accordance with MIL-DTL-81706, type II, class 1a.
J	Steel	Zinc plating with chromate conversion in accordance with ASTM B633; type II or III, Fe/Zn 5, or ASTM B695, type II, class 5.
H	Steel	Zinc phosphate in accordance with MIL-DTL-16232, type Z, class 1 and shall be hexavalent chromium free.
P	Steel	Zinc plating with colorless passivate in accordance with ASTM B633, type VI, Fe/Zn 5.
S	Corrosion resistant steel <u>1/</u>	No additional finish. Passivation in accordance with SAE-AMS2700, type 6 or 7. <u>1/</u>
V	Steel	Zinc nickel in accordance with SAE-AMS2417, type 1.

1/ Stainless steel of such hardness as to be capable of biting, fully annealed type 304 stainless steel tubing.

Part or Identifying Number (PIN) example:



Guidance on use of alternative parts with less hazardous or nonhazardous materials. This specification provides for a number of alternative plating materials via the PIN. Users should select the PIN with the least hazardous material that meets the form, fit and function requirements of their application.

For old designs that use clinch sleeves in accordance with MS51825, tables II and III show supersession data to clinch sleeves in accordance with SAE-J514. Users are cautioned to evaluate replacements for their particular application.

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TABLE II. Supersession data for MS51825 style - A.

Inactive PIN	Active SAE	Inactive PIN	Active SAE
Hydraulic	PIN 1/	Hydraulic	PIN 2/
MS51825-1A	J514-2-080115AQ	MS51825-1PA	J514-2-080115AP
MS51825-2A	J514-3-080115AQ	MS51825-2 PA	J514-3-080115AP
MS51825-3A	J514-4-080115AQ	MS51825-3 PA	J514-4-080115AP
MS51825-4A	J514-5-080115AQ	MS51825-4 PA	J514-5-080115AP
MS51825-5A	J514-6-080115AQ	MS51825-5 PA	J514-6-080115AP
MS51825-6A	J514-8-080115AQ	MS51825-6 PA	J514-8-080115AP
MS51825-7A	J514-10-080115AQ	MS51825-7 PA	J514-10-080115AP
MS51825-8A	J514-12-080115AQ	MS51825-8 PA	J514-12-080115AP
MS51825-9A	J514-14-080115AQ	MS51825-9 PA	J514-14-080115AP
MS51825-10A	J514-16-080115AQ	MS51825-10 PA	J514-16-080115AP
MS51825-11A	J514-20-080115AQ	MS51825-11 PA	J514-20-080115AP
MS51825-12A	J514-24-080115AQ	MS51825-12 PA	J514-24-080115AP
MS51825-13A	J514-32-080115AQ	MS51825-13 PA	J514-32-080115AP
Inactive PIN	Active SAE	Inactive PIN	Active SAE
Hydraulic	PIN 3/	Hydraulic	PIN 4/
MS51825-1 (JA or RA)	J514-2-080115AZ	MS51825-1SA	J514-2-080115AS
MS51825-2 (JA or RA)	J514-3-080115AZ	MS51825-2SA	J514-3-080115AS
MS51825-3 (JA or RA)	J514-4-080115AZ	MS51825-3SA	J514-4-080115AS
MS51825-4 (JA or RA)	J514-5-080115AZ	MS51825-4SA	J514-5-080115AS
MS51825-5 (JA or RA)	J514-6-080115AZ	MS51825-5SA	J514-6-080115AS
MS51825-6 (JA or RA)	J514-8-080115AZ	MS51825-6SA	J514-8-080115AS
MS51825-7 (JA or RA)	J514-10-080115AZ	MS51825-7SA	J514-10-080115AS
MS51825-8 (JA or RA)	J514-12-080115AZ	MS51825-8SA	J514-12-080115AS
MS51825-9 (JA or RA)	J514-14-080115AZ	MS51825-9SA	J514-14-080115AS
MS51825-10 (JA or RA)	J514-16-080115AZ	MS51825-10SA	J514-16-080115AS
MS51825-11 (JA or RA)	J514-20-080115AZ	MS51825-11SA	J514-20-080115AS
MS51825-12 (JA or RA)	J514-24-080115AZ	MS51825-12SA	J514-24-080115AS
MS51825-13 (JA or RA)	J514-32-080115AZ	MS51825-13SA	J514-32-080115AS

1/ Designator "C" is for steel, "Q" is for cadmium plating.

2/ Designator "C" is for steel, "P" is for zinc phosphate plating.

3/ Designator "C" is for steel, "Z" is for zinc plating.

4/ Designator "S" is for corrosion resistant steel.

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TABLE III. Supersession data for MS51825 style - B.

Inactive PIN	Active SAE	Inactive PIN	Active SAE
Hydraulic	PIN 1/	Hydraulic	Active PIN 2/
MS51825-1B	J514-2-080115BQ	MS51825-1PB	J514-2-080115BP
MS51825-2B	J514-3-080115BQ	MS51825-2PB	J514-3-080115BP
MS51825-3B	J514-4-080115BQ	MS51825-3PB	J514-4-080115BP
MS51825-4B	J514-5-080115BQ	MS51825-4PB	J514-5-080115BP
MS51825-5B	J514-6-080115BQ	MS51825-5PB	J514-6-080115BP
MS51825-6B	J514-8-080115BQ	MS51825-6PB	J514-8-080115BP
MS51825-7B	J514-10-080115BQ	MS51825-7PB	J514-10-080115BP
MS51825-8B	J514-12-080115BQ	MS51825-8PB	J514-12-080115BP
MS51825-9B	J514-14-080115BQ	MS51825-9PB	J514-14-080115BP
MS51825-10B	J514-16-080115BQ	MS51825-10PB	J514-16-080115BP
MS51825-11B	J514-20-080115BQ	MS51825-11PB	J514-20-080115BP
MS51825-12B	J514-24-080115BQ	MS51825-12PB	J514-24-080115BP
MS51825-13B	J514-32-080115BQ	MS51825-13PB	J514-32-080115BP
Inactive PIN	Active SAE	Inactive PIN	Active SAE
Hydraulic	PIN 3/	Hydraulic	PIN 4/
MS51825-1(JB or RB)	J514-2-080115B (J or R)	MS51825-1SB	J514-2-080115BS
MS51825-2(JB or RB)	J514-3-080115B (J or R)	MS51825-2SB	J514-3-080115BS
MS51825-3(JB or RB)	J514-4-080115B (J or R)	MS51825-3SB	J514-4-080115BS
MS51825-4(JB or RB)	J514-5-080115B (J or R)	MS51825-4SB	J514-5-080115BS
MS51825-5(JB or RB)	J514-6-080115B (J or R)	MS51825-5SB	J514-6-080115BS
MS51825-6(JB or RB)	J514-8-080115B (J or R)	MS51825-6SB	J514-8-080115BS
MS51825-7(JB or RB)	J514-10-080115B (J or R)	MS51825-7SB	J514-10-080115BS
MS51825-8(JB or RB)	J514-12-080115B (J or R)	MS51825-8SB	J514-12-080115BS
MS51825-9(JB or RB)	J514-14-080115B (J or R)	MS51825-9SB	J514-14-080115BS
MS51825-10(JB or RB)	J514-16-080115B (J or R)	MS51825-10SB	J514-16-080115BS
MS51825-11(JB or RB)	J514-20-080115B (J or R)	MS51825-11SB	J514-20-080115BS
MS51825-12(JB or RB)	J514-24-080115B (J or R)	MS51825-12SB	J514-24-080115BS
MS51825-13(JB or RB)	J514-32-080115B (J or R)	MS51825-13SB	J514-32-080115BS

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3/ Designator "C" is for steel, "Z" is for zinc plating.

4/ Designator "S" is for corrosion resistant steel.

Amendment notations. The margins of this specification are marked with vertical lines to indicate where modifications from this amendment were made. 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.

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

MIL-DTL-16232	SAE-AMS-C-81562
MIL-DTL-81706	SAE-AMS-QQ-P-416
ASTM B117	SAE-AMS2417
ASTM B633	SAE-AMS2700
ASTM B695	SAE-J514

CONCLUDING MATERIAL

Custodians:

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

Preparing activity:
DLA - CC

(Project 4730-2008-087)

Review activities:

Army - AT, AV, GL, MI
Navy - AS, MC, SA

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