

INCH-POUND

MS51825H
 24 March 2008
 SUPERSEDING
 MS51825G
 30 July 1987

DETAIL SPECIFICATION SHEET

SLEEVES, CLINCHES, TUBE FITTING,
 FLARELESS TYPE, HYDRAULIC

Inactive for new design after 17 August 1991. 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.

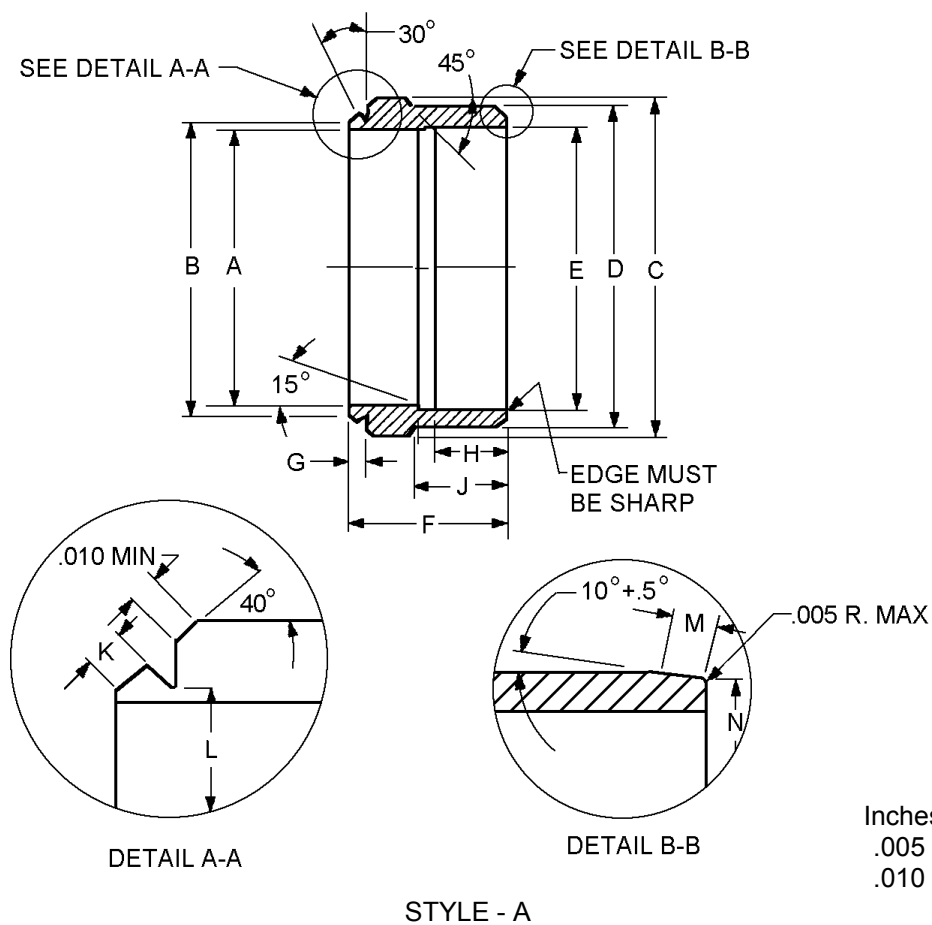


FIGURE 1. Sleeves, clinch, tube fitting.

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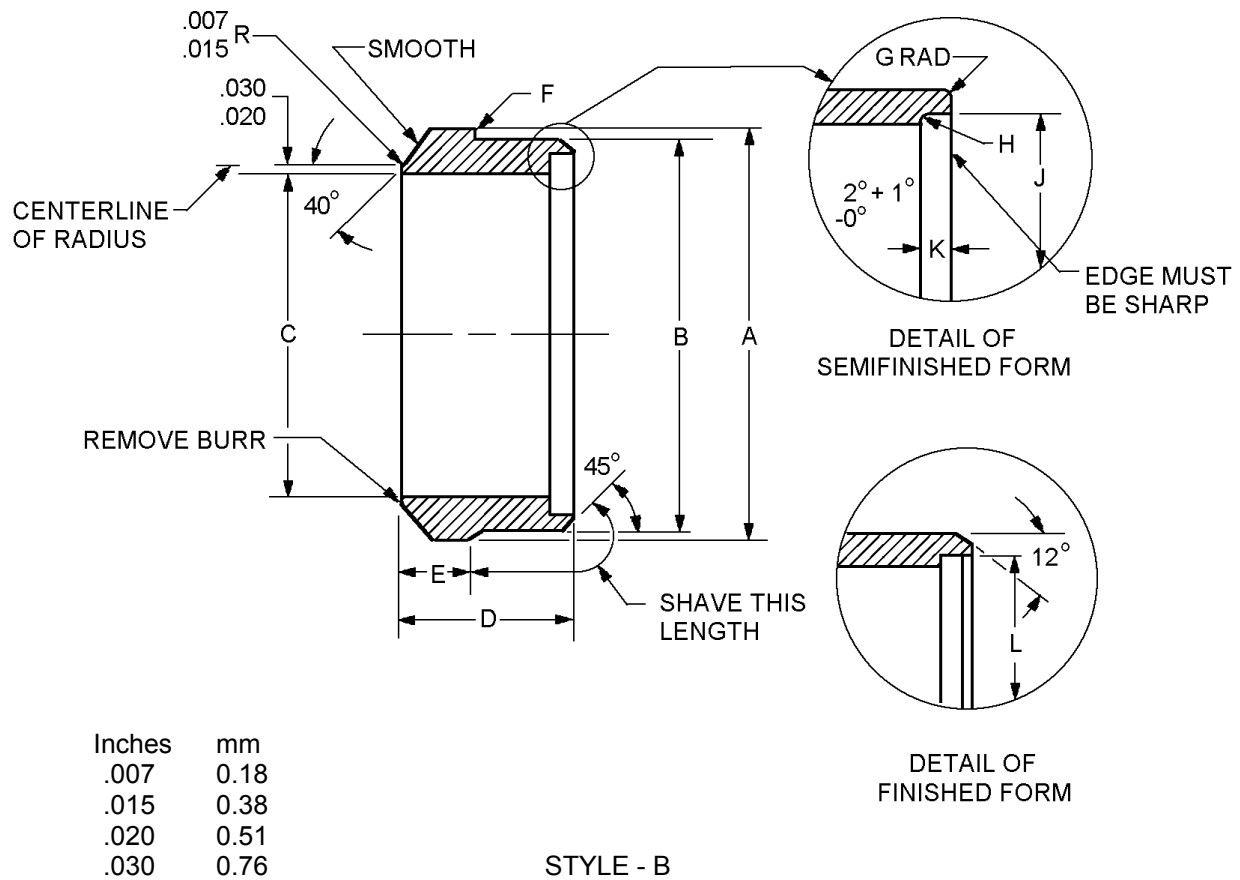
Dash number style A	Tube O.D.	A dia. Inches (mm) +.003 (0.08) -.000	C dia. Inches (mm) +.005 (0.13) -.000	D dia. Inches (mm) +.000 -.003 (0.08)	E dia. Inches (mm) +.003 (0.08) -.000	F Inches (mm) ±.003 (0.08)
-1	1/8	.130 (3.30)	.237 (6.02)	.178 (4.52)	.140 (3.56)	.288 (7.32)
-2	3/16	.193 (4.90)	.307 (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. ±.005 (0.13) Inches (mm)	B dia.		C dia. +.003 (0.08) -.000 Inches (mm)	D ±.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.

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

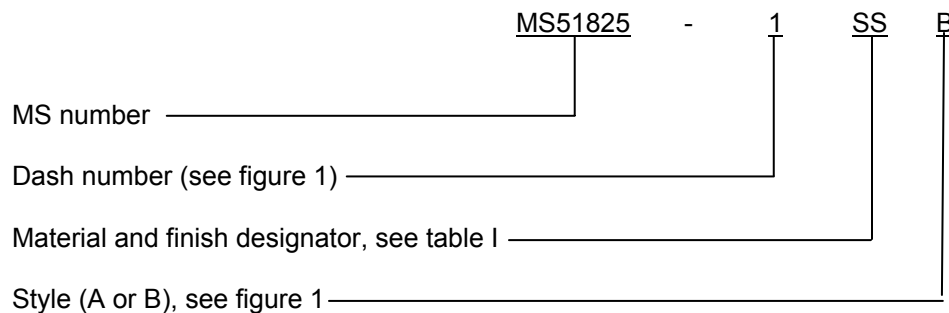
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TABLE I. Material and finish designators.

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 ^{1/}	No additional finish. Passivation in accordance with SAE-AMS2700, type 6 or 7. ^{1/}
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	J514-2-080115ACQ	MS51825-1AP	J514-2-080115ACP
MS51825-2A	J514-3-080115ACQ	MS51825-2AP	J514-3-080115ACP
MS51825-3A	J514-4-080115ACQ	MS51825-3AP	J514-4-080115ACP
MS51825-4A	J514-5-080115ACQ	MS51825-4AP	J514-5-080115ACP
MS51825-5A	J514-6-080115ACQ	MS51825-5AP	J514-6-080115ACP
MS51825-6A	J514-8-080115ACQ	MS51825-6AP	J514-8-080115ACP
MS51825-7A	J514-10-080115ACQ	MS51825-7AP	J514-10-080115ACP
MS51825-8A	J514-12-080115ACQ	MS51825-8AP	J514-12-080115ACP
MS51825-9A	J514-14-080115ACQ	MS51825-9AP	J514-14-080115ACP
MS51825-10A	J514-16-080115ACQ	MS51825-10AP	J514-16-080115ACP
MS51825-11A	J514-20-080115ACQ	MS51825-11AP	J514-20-080115ACP
MS51825-12A	J514-24-080115ACQ	MS51825-12AP	J514-24-080115ACP
MS51825-13A	J514-32-080115ACQ	MS51825-13AP	J514-32-080115ACP
Inactive PIN	Active SAE	Inactive PIN	Active SAE
Hydraulic	PIN 3/	Hydraulic	PIN 4/
MS51825-1AJ or R	J514-2-080115ACZ	MS51825-1AS	J514-2-080115AS
MS51825-2AJ or R	J514-3-080115ACZ	MS51825-2AS	J514-3-080115AS
MS51825-3AJ or R	J514-4-080115ACZ	MS51825-3AS	J514-4-080115AS
MS51825-4AJ or R	J514-5-080115ACZ	MS51825-4AS	J514-5-080115AS
MS51825-5AJ or R	J514-6-080115ACZ	MS51825-5AS	J514-6-080115AS
MS51825-6AJ or R	J514-8-080115ACZ	MS51825-6AS	J514-8-080115AS
MS51825-7AJ or R	J514-10-080115ACZ	MS51825-7ASS	J514-10-080115AS
MS51825-8AJ or R	J514-12-080115ACZ	MS51825-8ASS	J514-12-080115AS
MS51825-9AJ or R	J514-14-080115ACZ	MS51825-9ASS	J514-14-080115AS
MS51825-10AJ or R	J514-16-080115ACZ	MS51825-10AS	J514-16-080115AS
MS51825-11AJ or R	J514-20-080115ACZ	MS51825-11AS	J514-20-080115AS
MS51825-12AJ or R	J514-24-080115ACZ	MS51825-12AS	J514-24-080115AS
MS51825-13AJ or R	J514-32-080115ACZ	MS51825-13AS	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	J514-2-080115BCQ	MS51825-1BP	J514-2-080115BCP
MS51825-2B	J514-3-080115BCQ	MS51825-2BP	J514-3-080115BCP
MS51825-3B	J514-4-080115BCQ	MS51825-3BP	J514-4-080115BCP
MS51825-4B	J514-5-080115BCQ	MS51825-4BP	J514-5-080115BCP
MS51825-5B	J514-6-080115BCQ	MS51825-5BP	J514-6-080115BCP
MS51825-6B	J514-8-080115BCQ	MS51825-6BP	J514-8-080115BCP
MS51825-7B	J514-10-080115BCQ	MS51825-7BP	J514-10-080115BCP
MS51825-8B	J514-12-080115BCQ	MS51825-8BP	J514-12-080115BCP
MS51825-9B	J514-14-080115BCQ	MS51825-9BP	J514-14-080115BCP
MS51825-10B	J514-16-080115BCQ	MS51825-10BP	J514-16-080115BCP
MS51825-11B	J514-20-080115BCQ	MS51825-11BP	J514-20-080115BCP
MS51825-12B	J514-24-080115BCQ	MS51825-12BP	J514-24-080115BCP
MS51825-13B	J514-32-080115BCQ	MS51825-13BP	J514-32-080115BCP
Inactive PIN	Active SAE	Inactive PIN	Active SAE
Hydraulic	PIN 3/	Hydraulic	PIN 4/
MS51825-1BJ or R	J514-2-080115BCJ or R	MS51825-1BSS	J514-2-080115BS
MS51825-2BJ or R	J514-3-080115BCJ or R	MS51825-2BSS	J514-3-080115BS
MS51825-3BJ or R	J514-4-080115BCJ or R	MS51825-3BSS	J514-4-080115BS
MS51825-4BJ or R	J514-5-080115BCJ or R	MS51825-4BSS	J514-5-080115BS
MS51825-5BJ or R	J514-6-080115BCJ or R	MS51825-5BSS	J514-6-080115BS
MS51825-6BJ or R	J514-8-080115BCJ or R	MS51825-6BSS	J514-8-080115BS
MS51825-7BJ or R	J514-10-080115BCJ or R	MS51825-7BSS	J514-10-080115BS
MS51825-8BJ or R	J514-12-080115BCJ or R	MS51825-8BSS	J514-12-080115BS
MS51825-9BJ or R	J514-14-080115BCJ or R	MS51825-9BSS	J514-14-080115BS
MS51825-10BJ or R	J514-16-080115BCJ or R	MS51825-10BSS	J514-16-080115BS
MS51825-11BJ or R	J514-20-080115BCJ or R	MS51825-11BSS	J514-20-080115BS
MS51825-12BJ or R	J514-24-080115BCJ or R	MS51825-12BSS	J514-24-080115BS
MS51825-13BJ or R	J514-32-080115BCJ or R	MS51825-13BSS	J514-32-080115BS

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.

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-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

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CONCLUDING MATERIAL

Custodians:

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

Preparing activity:
DLA - CC

(Project 4730-2008-088)

Review activities:

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

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