

INCH-POUND

MS27615F
w/AMENDMENT 2
9 February 2017
SUPERSEDING
MS27615F
w/AMENDMENT 1
16 May 2011

DETAIL SPECIFICATION SHEET

CONNECTORS, ELECTRICAL, PLUG, RATCHET LOCK COUPLING, FIREWALL SERIES

Inactive for new design after 14 November 1977. For new design, use MIL-DTL-83723, series III, class K, which is interchangeable.

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-DTL-26500.

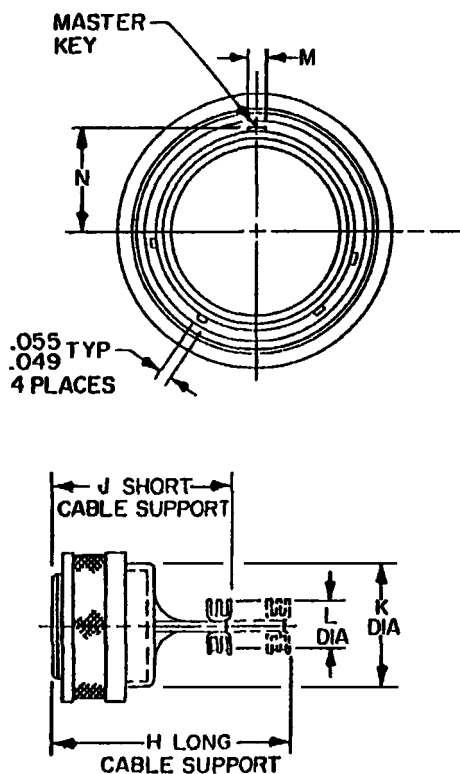
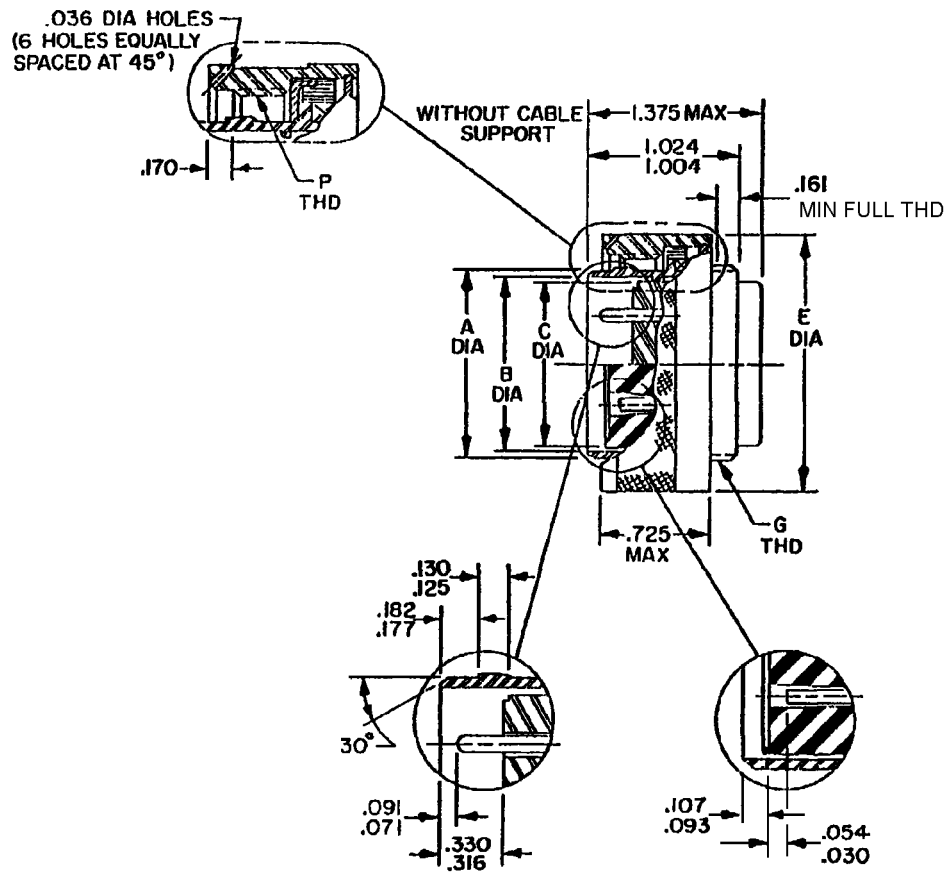


FIGURE 1. Plug dimensions.



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Inches	mm	Inches	mm
.030	0.08	.161	4.09
.036	0.91	.170	4.32
.049	1.24	.177	4.50
.054	1.37	.181	4.60
.055	1.40	.182	4.62
.071	1.80	.316	8.03
.091	2.31	.330	8.38
.093	2.36	.725	18.42
.107	2.72	1.004	25.50
.125	3.18	1.024	26.01
.130	3.30	1.375	34.92

FIGURE 1. Plug dimensions – Continued.

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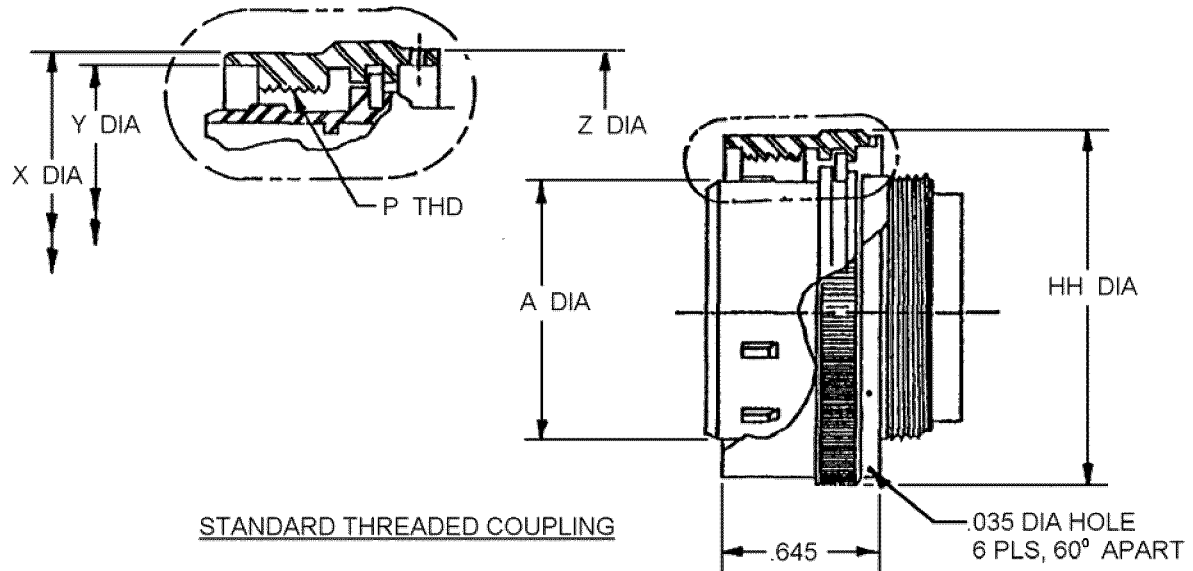
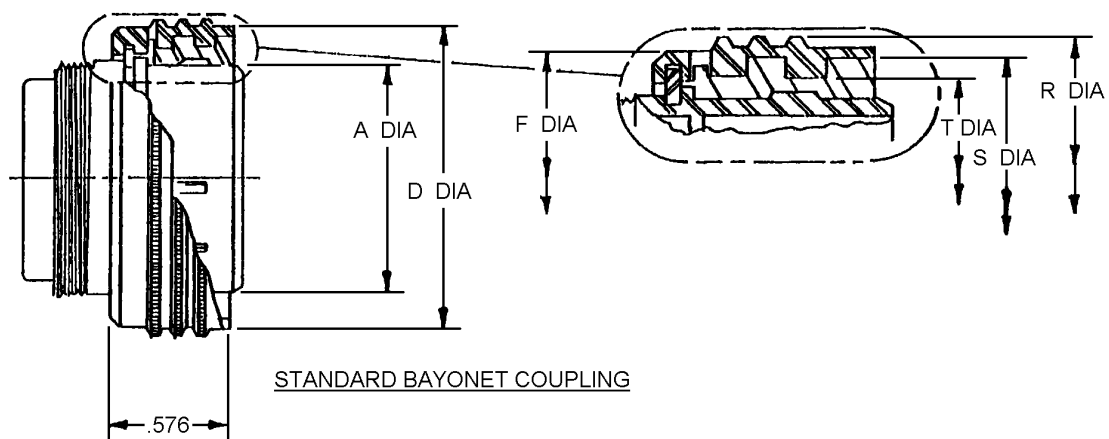


FIGURE 1. Plug dimensions – Continued.

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Inches	mm
.035	0.89
.576	14.63
.645	16.38

FIGURE 1. Plug dimensions – Continued.

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Shell size (see note 3)	A dia + .000 (0.00) - .005 (0.13)	B dia + .003 (0.08) - .006 (0.15)	C dia max	D dia ± .005 (0.13)	E dia ± .005 (0.13)
12	.696 (17.68)	.634 (16.10)	.508 (12.90)	N/A	1.11 (28.2)
14	.765 (19.43)	.703 (17.86)	.627 (15.92)	1.059 (26.90)	1.175 (29.84)
16	.892 (22.66)	.830 (21.08)	.754 (19.15)	1.186 (30.12)	1.302 (33.07)
18	.998 (25.35)	.936 (23.77)	.860 (21.84)	1.292 (32.82)	1.408 (35.76)
22	1.248 (31.70)	1.186 (30.12)	1.110 (28.19)	1.542 (39.17)	1.658 (42.11)
24	1.373 (34.87)	1.311 (33.30)	1.235 (31.37)	1.667 (42.34)	1.78 (45.2)
28	1.623 (41.22)	1.561 (39.65)	1.488 (37.80)	N/A	2.038 (51.76)

FIGURE 1. Plug dimensions – Continued.

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Shell size (see note 3)	F dia $\pm .005$ (0.13)	G THD 36NS-2A	G min dia (see note 4)	H max	HH dia max	J max
12	N/A	.7334	.728 (18.49)	2.045 (51.94)	1.086 (27.58)	N/A
14	1.016 (25.81)	.8032	.796 (20.22)	2.145 (54.48)	1.149 (29.18)	1.875 (47.62)
16	1.143 (29.03)	.9302	.923 (23.44)	2.245 (57.02)	1.275 (32.38)	1.875 (47.62)
18	1.249 (31.72)	1.0362	1.029 (26.14)	2.345 (59.56)	1.383 (35.13)	1.875 (47.62)
22	1.499 (38.07)	1.2862	1.279 (32.49)	2.575 (65.40)	1.633 (41.49)	1.875 (47.62)
24	1.624 (41.25)	1.4111	1.406 (35.71)	2.675 (67.94)	1.758 (44.65)	N/A
28	N/A	1.6611	1.656 (42.06)	2.645 (67.18)	2.008 (51.00)	N/A

FIGURE 1. Plug dimensions – Continued.

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Shell size (see note 3)	K dia	L dia	M ± .003 (0.08)	N ± .003 (0.08)	P THD UNEF-2B	R dia max
12	.788 (20.02)	.435 (11.05)	.084 (2.13)	.370 (9.40)	.875-20	N/A
14	.862 (21.89)	.504 (12.80)	.084 (2.13)	.405 (10.29)	.937-20	1.087 (27.61)
16	.989 (25.12)	.686 (17.42)	.115 (2.92)	.468 (11.87)	1.062-18	1.214 (30.84)
18	1.095 (27.81)	.794 (20.17)	.115 (2.92)	.521 (13.23)	1.187-18	1.320 (33.53)
22	1.345 (34.16)	1.038 (26.36)	.115 (2.92)	.646 (16.41)	1.437-18	1.570 (39.88)
24	1.595 (40.51)	1.162 (29.51)	.115 (2.92)	.708 (17.98)	1.562-18	1.695 (43.05)
28	1.845 (46.86)	1.412 (35.86)	.115 (2.92)	.833 (21.16)	1.812-16	N/A

FIGURE 1. Plug dimensions – Continued.

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Shell size (see note 3)	S dia $\pm .0035$ (0.089)	T dia $+ .005$ (0.13) $- .000$ (0.00)	W $\pm .006$ (0.15)	X dia $\pm .005$ (0.13)	Y dia $\pm .004$ (0.10)	Z dia $\pm .004$ (.010)
12	N/A	N/A	N/A	.984 (25.0)	.928 (23.57)	.982 (24.94)
14	1.0055 (25.540)	.900 (22.86)	.282 (7.16)	1.054 (26.77)	.998 (25.34)	.962 (24.43)
16	1.1335 (28.790)	1.028 (26.11)	.402 (10.21)	1.181 (30.00)	1.125 (28.57)	1.089 (27.66)
18	1.2395 (31.483)	1.134 (28.80)	.556 (14.12)	1.287 (32.68)	1.231 (31.27)	1.195 (30.35)
22	1.4895 (37.833)	1.384 (35.15)	.608 (15.44)	1.537 (39.03)	1.481 (37.61)	1.445 (36.70)
24	1.6148 (41.016)	1.511 (38.38)	N/A	1.662 (42.21)	1.606 (40.79)	1.570 (39.87)
28	N/A	N/A	N/A	1.912 (48.56)	1.856 (47.14)	1.820 (46.22)

FIGURE 1. Plug dimensions – Continued.

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Maximum weights of connector assembly (in pounds) less contacts and cable support.

Shell size	12	12	14	14	14	14	16	16	18	18
Configuration (insert arrangement)	03	12	04	07	12	15	10	24	08	14
Assembly with pin insert in pounds (grams)	.068 (30.84)	.066 (29.94)	.069 (31.30)	.067 (30.39)	.068 (30.84)	.069 (31.30)	.094 (42.64)	.086 (39.01)	.097 (44.00)	.095 (43.09)
Assembly with socket insert in pounds (grams)	.072 (32.66)	.071 (32.21)	.072 (32.66)	.071 (32.21)	.072 (32.66)	.073 (33.11)	.097 (44.00)	.093 (42.18)	.102 (46.27)	.101 (45.81)

Shell size	18	22	22	22	24	24	28	28	22	22
Configuration (insert arrangement)	31	19	12	55	30	43	40	42	12	55
Assembly with pin insert in pounds (grams)	.092 (41.73)	.132 (59.87)	.135 (61.23)	.138 (62.60)	.160 (72.57)	.162 (73.48)	.209 (94.80)	.208 (94.35)	.135 (61.23)	.138 (62.60)
Assembly with socket insert in pounds (grams)	.098 (44.45)	.136 (61.69)	.140 (63.50)	.144 (65.32)	.165 (74.84)	.188 (85.28)	.211 (95.71)	.214 (97.07)	.140 (63.50)	.144 (65.32)

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for information only.
3. Form size (shell size) 12, 24 and 28 in bayonet series not released.
4. The accessory threads may be formed with an optional modified major diameter. The following details apply: The major diameter of accessory thread "G" may be modified by truncation. The truncated major diameter shall be greater than "G min". The width of the flat across the top of the thread may increase as the truncation approaches "G min". All other features of the accessory thread, including the theoretical crest apex and the flank angle, shall meet standard thread form limits. The truncation of the major diameter shall not be less than the pitch diameter.

FIGURE 1. Plug dimensions – Continued.

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REQUIREMENTS:

Dimensions and configurations: See figure 1.

Connector mating: This connector mates with MS24264, MS24265, MS27034, MS27613 and MS27614.

The contacts shall be crimp type contacts and shall conform to SAE-AS39029.

Contacts are not assembled into the connectors, but are furnished separately in containers.

The contacts shall be crimped with a tool conforming to MIL-C-22520/1 crimping tool.

For insert arrangements and alternate insert (keying) positions. See MIL-STD-1554.

The dimensions and weight requirements shall be as specified in the tables shown on the MS drawings.

Dust caps are supplied for front and back end of the connectors.

When Part or Identifying Number (PIN) designates a cable support, the connector and cable support shall be furnished unassembled.

Material and finishes:

- a. The shells shall be of stainless steel material, Type 300 series in accordance with DOD-F-24669/6, and shall be passivated in accordance with MIL-STD-171.
- b. The contacts shall be of telnic bronze and shall be rhodium plated in accordance with SAE-AS39029.
- c. The rigid insulation shall be of fired aluminum oxide (ceramic) material.
- d. Cable supports shall be of 310 stainless steel, casting alloy and shall be passivated in accordance with MIL-STD-171.
- e. Contact retainers: Material optional.
- f. Seals and grommets shall be of silicone rubber.

For class K connectors:

- a. The connectors described herein shall meet all the environmental and electrical requirements specified in MIL-DTL-26500.
- b. In addition to the requirements specified in MIL-DTL-26500, the connectors shall meet the following requirements.
 1. Fireproof: A connector plug mated to its applicable receptacle assembly shall be mounted as used in service on a fixture fabricated in accordance with SAE-AS50151 and subjected to a 1,093°C flame for a period of 60 minutes. The flame shall be directed at the connector, and shall completely encompass the connector. The temperature of the flame shall be measured at .250 inches (6.35 mm), vertical distance from the rear of the connector. The flame shall be produced by using propane fuel with a high air-to-fuel mixture at a flow rate equivalent to an input of 33,000 to 37,000 BTU/HR. The assembly shall be vibrated continuously at 33 Hz with total excursion of .250 inch for 60 minutes. The contacts shall carry the following dc current for the first 5 minutes of the test.

Contact size	Amperes
12	41
16	22
20	7.5

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During the next minute of the test, 110/125 volts at 60 Hz shall be applied between adjacent contacts and between contacts and the shell without exceeding 2 amperes of line current.

Throughout the test, there shall be no passing of flames through the connector, nor shall there be any secondary combustion at the rear of the panel mounted connector.

There shall be no adapters or extensions other than the standard cable clamp assembled to the connectors during the fireproof test.

2. Insulation resistance, fireproof: After the flame test, the connectors shall be allowed to cool to room temperature, the mated connectors shall then be subjected to a test potential of 500 Vdc. The insulation resistance of the connectors shall be greater than 2,000 megohms.
3. Dielectric withstanding voltage, fireproof. After exposure to the flame and insulation resistance tests, the mated connectors shall be subjected to 1500 Vac rms which shall be applied between adjacent contacts and the contacts closest to the shell. There shall be no evidence of breakdown or flashover.
4. Contact retention, fireproof. After exposure to the flame, insulation resistance and dielectric withstanding tests, the individual contact locking mechanism shall withstand the axial loads specified in the table.

Contact size	Axial load (lbs.) (fireproof)
12	23
16	18
20	12

The load shall be applied to the contact as specified in MIL-DTL-26500 and shall be applied at a rate of one pound per second.

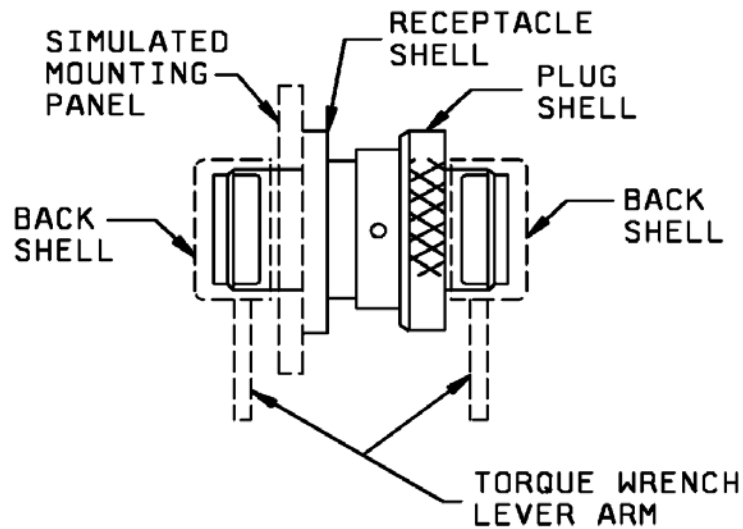
All dimensions are in inches and apply after plating.

The four minor keys shall be within .004 inches (0.10 mm) true position relative to the master key.

The connector described in this MS drawing is classified as a class K firewall connector.

The shell sizes range from 12 to 28 and shall conform to the applicable portions of MIL-DTL-26500.

Accessory thread strength: Connectors with rear accessory threads with optional modified major diameters shall be capable of withstanding the accessory thread strength test. The following details apply: The accessory thread torque for shell size 8 shall be 75 ± 5 inch-pounds. The accessory thread torque for shell size 10 shall be 100 ± 5 inch-pounds. The accessory thread torque for shell size 12 shall be 140 ± 5 inch-pounds. The accessory thread torque for shell sizes 14 through 18 shall be 150 ± 5 inch-pounds. The accessory thread torque for shell sizes 20 through 24 shall be 175 ± 10 inch-pounds. Mated connector pairs shall be mounted as in normal service to a rigid panel. The torque wrench shall be attached as shown in the figure below. After mating the plug and receptacle connectors, a torque shall be applied to the accessory end of the plug at a rate of approximately 10 pound-inches per second until the required torque is achieved. The applied load shall be held for 1 minute, then the load shall be released. The test shall then be repeated on the accessory end of the receptacle.



TEST SET-UP - REAR ACCESSORY THREAD STRENGTH

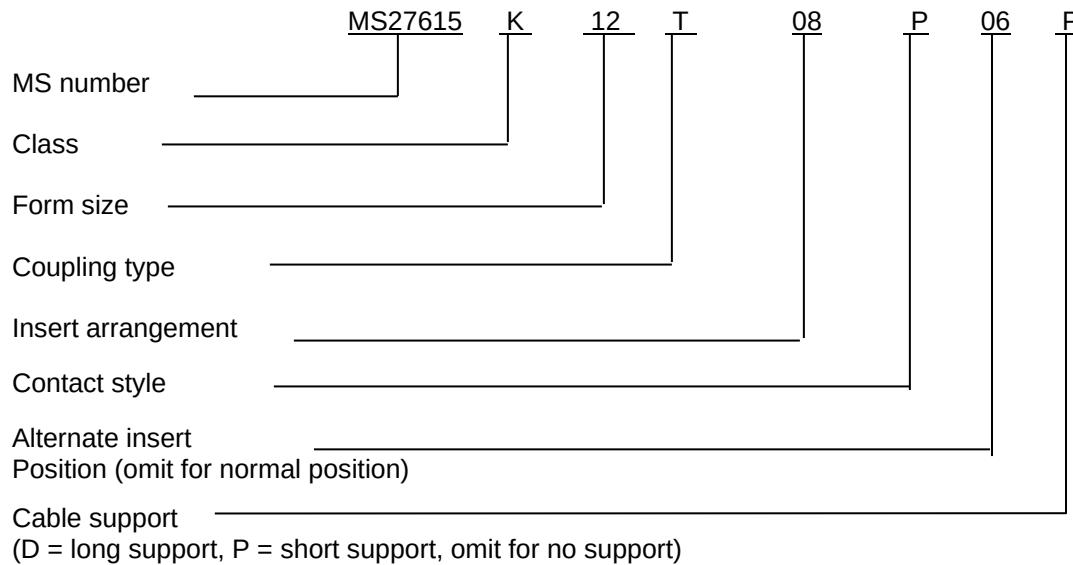
Following accessory thread strength testing, connectors shall be unmated and inspected for damage or breakage through a device having approximately 3X magnification.

Initial qualification and group C requalification (connectors with accessory threads with modified major diameters): Qualification shall be in accordance with MIL-DTL-26500, except the following additional test group shall be required on two mated pairs in each shell size with the sequence as specified. For initial qualification, accessory thread strength testing may be included in group 1, following the initial visual and mechanical examination:

- Visual and mechanical examination
- Accessory thread strength
- Visual and mechanical examination.

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PIN example:



Amendment Notations. The margins of this specification are marked with vertical lines to indicate modifications generated by this amendment. 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.

Referenced documents. In addition to MIL-DTL-26500, this document references the following:

DOD-F-24669/6
MIL-C-22520/1
MIL-DTL-83723
MIL-STD-171
MIL-STD-1554
MS24264
MS24265
MS27034
MS27613
MS27614
SAE-AS39029
SAE-AS50151

CONCLUDING MATERIAL

Custodians:
Air Force – 85
DLA – CC

Preparing activity:
DLA – CC

Review activity:
Air Force – 99

(Project 5935-2016-182)

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