

INCH - POUND

MIL-DTL-38999K

AMENDMENT 3

22 August 2003

SUPERSEDING

AMENDMENT 2

19 April 2002

DETAIL SPECIFICATION SHEET

CONNECTORS, ELECTRICAL, CIRCULAR, MINIATURE, HIGH DENSITY, QUICK DISCONNECT (BAYONET, THREADED, AND BREECH COUPLING), ENVIRONMENT RESISTANT, REMOVABLE CRIMP AND HERMETIC SOLDER CONTACTS, GENERAL SPECIFICATION FOR

This amendment forms a part of MIL- DTL- 38999K, dated 17 December 1999, and is approved for use by all Departments and Agencies of the Department of Defense.

PAGE 2

- * 1.3.1c, Series III and IV, add: " L - Environment Resisting - corrosion resistant steel - electrodeposited nickel."

PAGE 3

- * 1.3.1d, Series III and IV, add: " L - Corrosion resistant steel with electrodeposited nickel (conductive) - 65°C to +200°C."

- * 1.3.1e, Delete and substitute the following:
"

e. Contact styles:

- (1) Contact designators for connectors using standard contact arrangements as indicated in MIL-STD-1560 are as follows:

P	-	Pin - Including hermetics with solder cups, 500-cycle contact.
S	-	Socket - Including hermetics with solder cups, 500-cycle contact.
H	-	Pin - 1500-cycle contact.
J	-	Socket - 1500-cycle contact.
X	-	Pin - With eyelet (hermetic).
Z	-	Socket - With eyelet (hermetic).
C	-	Pin - Feedthrough.
D	-	Socket - Feedthrough.

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The P, S, H, J, X, Z, C or D designators are used to indicate that connectors will be used with full compliments of the applicable standard contacts as indicated in MIL-STD-1560.

The connectors that accommodate crimp removable contacts (P, S, H, and J) may be ordered without standard contacts by adding an appropriate note on the purchase order; however, the connector Part or Identifying Number (PIN) and the marking requirements remain unchanged (see 3.4.1.1, 3.43, and 6.2).

PAGE 4

- * 2.2.1: Delete the Federal Specification section and the 2 references under it.

PAGE 5

- * 2.2.1: Delete:

"MIL-C-85049 - MIL-C-85049/80 - MIL-C-85049/81 -	Connector Accessories, Electrical, General Specification For. Connector Accessories, Electrical, Dummy Contact, Sizes 12 and 8 Category 7 (For MIL-DTL-38999 Connectors). Connector Accessories, Electrical, Seal Plug, Size 10 Category 7 (For MIL-DTL-38999 Connectors)."
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PAGE 6

2.3, Electronic Industries Association (EIA): add the following:

" EIA-364-78 - Cavity to Cavity Leakage Bonding Integrity Test Procedure for Electrical Connectors.
 EIA-364-79 - Insert Bond Strength Test Procedure for Electrical Connectors".

- * 2.3, Society of Automotive Engineers (SAE): add the following:

" SAE-AMS-QQ-N-290 SAE-AMS-QQ-P-416 SAE-AS85049 SAE-AS85049/80 SAE-AS85049/81	- Nickel Plating (electrodeposited). - Cadmium Plating (electrodeposited). - Connector Accessories, Electrical, General Specification For. - Connector Accessories, Electrical, Dummy Contact, Sizes 12 and 8 Category 7 (For MIL-DTL-38999 Connectors). - Connector Accessories, Electrical, Seal Plug, Size 10 Category 7 (For MIL-DTL-38999 Connectors).
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- * 3.3.2.2: Delete title and substitute " Classes K, L and S, environment resisting."
- * 3.3.2.3b(2): Delete and substitute " (2) Vitreous seal and rigid dielectric for contact styles D, S and Z."

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- * 3.3.6.2: Delete “QQ-N-290” and substitute (4 places) “ SAE-AMS-QQ-N-290”.
- * 3.3.6.2: Delete “QQ-P-416” and substitute (7 places) “ SAE-AMS-QQ-P-416”.

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- * 3.3.6.2, Series III & IV Classes:
Delete:
” N,S - Electrodeposited nickel in accordance with QQ-N-290, class 2, .0001 to .0002 inch (0.003 to 0.005 mm) thickness.”
and substitute:
“ L,N,S - Electrodeposited nickel in accordance with SAE-AMS-QQ-N-290, class 2, .0001 to .0002 inch (0.003 to 0.005 mm) thickness.”

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- * 3.4: Delete “MIL-C-85049” and substitute “ SAE-AS85049”.

PAGE 12

Table II, contact size 20, wire size (AWG): Delete “24, 22, 10” and substitute “24, 22, 20.”

PAGE 13

- * 3.4.3.2: Delete “MIL-C-85049/80 or MIL-C-85049/81” and substitute “ SAE-AS85049/80 or SAE-AS85049/81”.

PAGE 18

- * 3.28c(2): add class “L”.

PAGE 19

Table VII, group 1, following the “Altitude immersion (except hermetics 1)”: Subgroup “Insulation resistance at ambient temperature” and “Dielectric withstand voltage at sea level” tests.

Table VII, group 1, shell-to-shell conductivity and salt spray (corrosion): Delete class “S” and finish “X” (2 places).

Table VII, group 1, salt spray (corrosion): Delete “4.5.12” and substitute “4.5.12.1.”

Table VII, group 2, contact retention: Delete “4.5.19” and substitute “4.5.19.1” (2 places).

Table VII, group 2, following the “Altitude-low temperature”: Subgroup “Insulation resistance at ambient temperature” and “Dielectric withstand voltage at sea level” tests.

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Table VII, group 2, shock test: Delete “4.5.23” and substitute “4.5.23.1”.

Table VII, group 2, following the “Humidity” test: Subgroup “Insulation resistance at ambient temperature” and “Dielectric withstand voltage at sea level” tests.

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Table VII, group 3, following the “Humidity” test: Subgroup “Insulation resistance at ambient temperature” and “Dielectric withstanding voltage at sea level” tests.

Table VII, group 5, following the “Fluid immersion” test: Subgroup “Dielectric withstanding voltage at sea level” and “Coupling torque” tests.

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Table VII, group 6, following the “Retention system fluid immersion” test: Subgroup “Contact retention”.

Table VII, group 9, title: Delete finishes R & U for series I & II.

* Table VII, group 9, title: Add class L to series III & IV.

Table VII, group 9, shell-to-shell conductivity and salt spray (corrosion) tests: Delete class “S” and substitute class “R” (2 places).

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Table VII, group 12: Delete and substitute:

“

Inspection	Requirement paragraph	Test paragraph
<u>Group 12 (series I, II, III, and IV)</u>		
Visual and mechanical examination	3.1, 3.3, 3.4, 3.5 3.43 and 3.44	4.5.1
Cavity to cavity insert bonding integrity 1/ 2/	3.49	4.5.45
Insert bonding integrity 2/	3.51	4.5.47
Thermal vacuum outgassing (classes G & H only) 1/ 2/	3.47	4.5.43
Post test examination	3.43 and 3.44	4.5.42

1/ Initial qualification only.

2/ Additional parts may be used.

“

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* Table IX, Series III & IV column, middle sub-column: Replace title with “Classes F, G, L, N, M, R and S.”

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3.43, marking: Delete last two sentences and substitute:

"A single digit shell size and/or insert arrangement shall be marked with a single digit (example: shell size 8 shall be marked "8" not "08"), however, to allow existing stock to be exhausted, the use of 2 digits is allowed (example: shell size "8" maybe marked "08") for a period of one year from the date of this amendment 2. The following examples are illustrative:".

3.43a, finish: Delete "(see 3.4.8.2)" and substitute "(see 3.3.6.2)".

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3.43a, class: Delete "(see 1.3.1c & 3.4.8.2)" and substitute "(see 1.3.1c & 3.3.6.2)".

PAGE 27

3.49: Delete and substitute:

"3.49 Cavity to cavity insert bonding integrity. When tested as specified in 4.5.45, there shall be no air leakage between contact cavities."

* 3.50: Delete "MIL-C-85049" and substitute " SAE-AS85049".

3.51: Delete and substitute:

"3.51 Insert bonding integrity. When tested as specified in 4.5.47, there shall be no visible separation or cracks at the bond joint while an axial load is applied."

Add the following:

"3.52 Change effectivity. Unless otherwise specified by the preparing activity and/or the qualifying activity, all changes from the previous revision of MIL-DTL-38999 shall become effective at the date of publication of the latest revision.

3.53 Disposition of stock. Unless otherwise specified by the preparing activity and/or the qualifying activity, qualified manufacturers and their selling agents or distributors may ship from stock; connectors and accessories which were manufactured in accordance with the previous revision of MIL-DTL-38999 for a period of 18 months from the date of the latest revision."

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* 4.3.1a: Delete "MIL-C-85049" and substitute " SAE-AS85049".

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* 4.3.1 sub-paragraphs i and j: Delete "MIL-C-85049" and substitute " SAE-AS85049".

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- * 4.3.2a: Delete "MIL-C-85049/80 or 81" and substitute " SAE-AS85049/80 or SAE-AS85049/81".

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Table XIII, visual inspection, requirement paragraph column: Delete "3.1, 3.3, 3.4, 3.5, 3.43 and 3.4" and substitute "3.1, 3.3, 3.4, 3.5, 3.43 and 3.44".

PAGE 37

- * 4.5.9.2.b(2): add class "L".

PAGE 38

- * 4.5.12.2: add class "L" to the title for series III & IV.
- * 4.5.12.2a, Delete and substitute the following:
"
a. The connectors (series I and II, finishes B, C, and E; and series III and IV, classes C, H, K, S, W, and Y) shall be tested for 452 hours mated followed by 48 hours unmated. The connectors (all series, class X) shall be tested for 952 hours mated followed by 48 hours unmated. For initial qualification, the connectors (series III and IV, classes J and M), shall be subjected to 50 cycles durability followed by 1952 hours salt spray mated, then 48 hours salt spray unmated followed by 1450 cycles durability. For periodic inspection, the connectors (series III and IV, classes J and M) shall be tested 452 hours mated followed by 48 hours unmated."

PAGE 41

- * 4.5.22.2.1: add class "L" to the last sentence after class "K".

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- * 4.5.22.2.3b(1): add class "L" after class "K".
- * 4.5.22.2.3c: add class "L" after class "K".
- * 4.5.23.2: Delete "MIL-C-85049" and substitute " SAE-AS85049".

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4.5.45, Delete and substitute:

"4.5.45 ~~Cavity to cavity insert bonding integrity (see 3.49).~~ Unmated connectors shall be subjected to test procedure 78 of EIA-364."

- * 4.5.46: Delete "MIL-C-85049" and substitute " SAE-AS85049".
- 4.5.46a: Delete "(1.829)" and substitute "(1.219 meters)".

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4.5.47: Delete and substitute:

“4.5.47 Insert bonding integrity (see 3.51). The connector’s bonded insert assembly shall be subjected to test procedure 79 of EIA-364.”

PAGE 47

- * 6.1c: add the following sentence:
“Class L - Provides a stainless steel connector.”

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Replace paragraph 6.10 with the following 2 paragraphs:

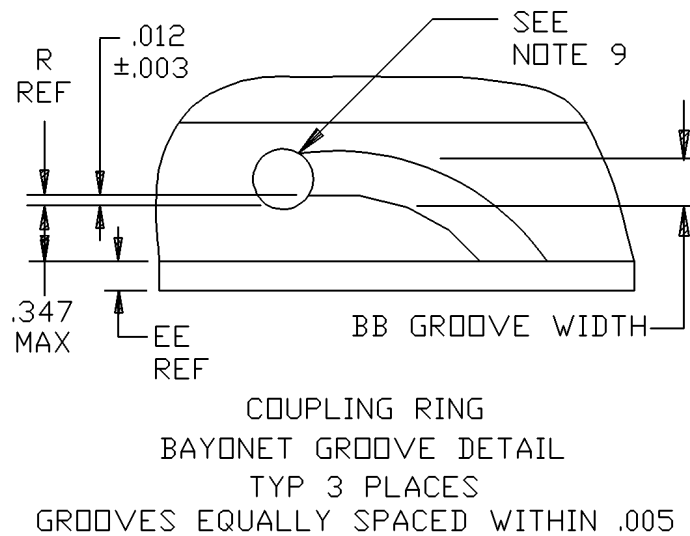
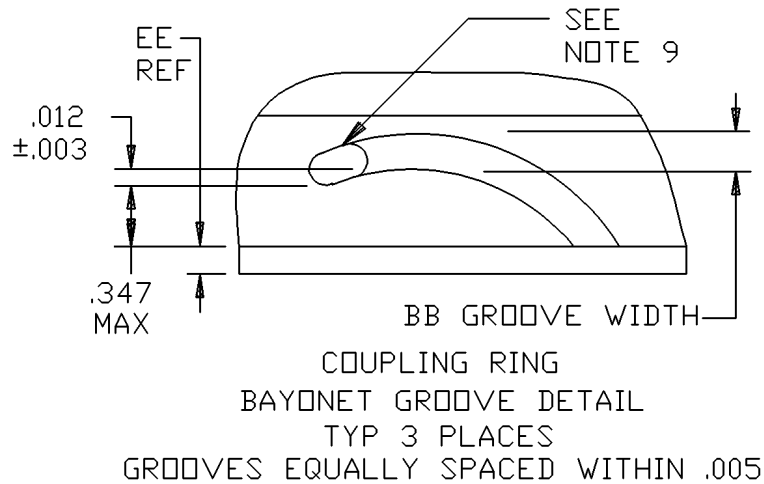
- * “6.10 Guidance on the use of alternative parts with less hazardous or nonhazardous materials. This specification provides for a number of alternative plating materials via the PIN. Users should select the PIN with the least hazardous material that meets the form, fit and function requirements of their application.”
- * “6.11 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.”
- * Add a new paragraph 6.12 as follows:
“6.12 Guidance on performance determination of connectors. Users and suppliers of connectors should be cognizant of the fact that the lowest performing member of a connector assembly, determines the performance characteristics of the connector. Certain combinations of connector components can be selected in the PIN system of the document in such a manner as to create a connector with degraded performance. Following are just a few of the examples:
 - a. D38999/26KJ20PN, is a series III stainless steel plug with twin axial and coaxial contacts that may not meet the firewall requirement of the specification.
 - b. D38999/26KJ61HN, is a series III stainless steel plug with high durability contacts. However, the connector will be limited to 500 cycles of durability.”

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Figure 1, Delete and substitute:

“

ALTERNATE DESIGNFIGURE 1. Connector intermateability dimensions (series I) - Continued.

”

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* Figure 1, delete NOTE 5 and substitute: “5. Details “A” and “B” apply to plugs only.”

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Figure 2: Delete and substitute:

“

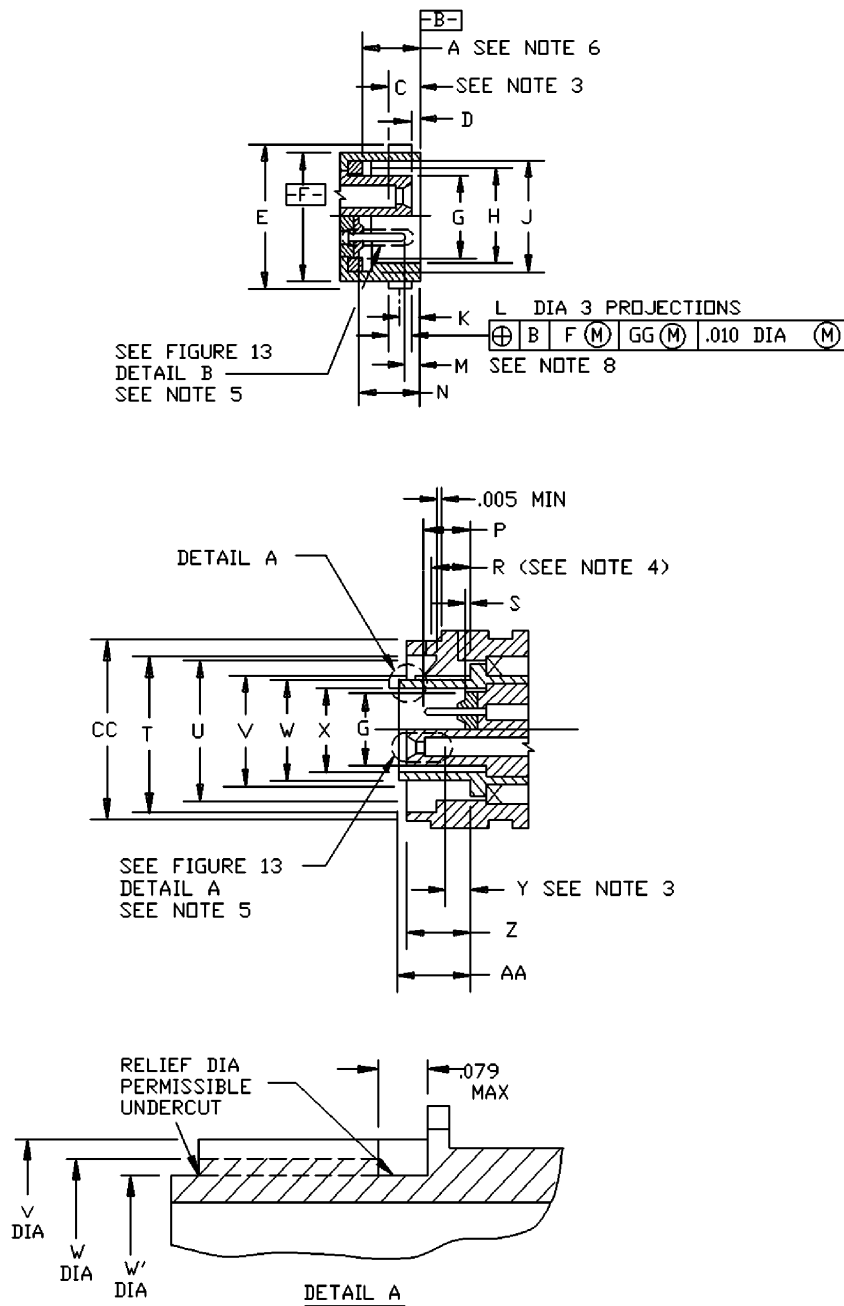


FIGURE 2. Connector intermateability dimensions (series II).

”

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Figure 3, bottom table: Add the following column to the end of the table:

“

FF dia min
11.35
14.61
17.58
20.75
23.92
26.59
29.77
32.94
36.12

”

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Figure 5, bottom table heading: Delete “Series I Assemblies” and substitute “Series II Assemblies”.

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- * Figure 7, top figure, delete “KK°” and substitute “KK Ø”.

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Figure 7, top table, shell size code F, QQ°: Delete “151°27’ ” and substitute “150°27’ ”.

- * Figure 7, bottom table, delete and substitute:
“

Polarity dimensions		
Key and keyway arrangement	X° XX°	Y° YY°
N	110°	250°
A	100°	260°
B	90°	270°
C	80°	280°
D	70°	290°
K (see note 16)	120°	255°
L	120°	265°
M	120°	275°
R	120°	285°
U	0°	0°

Main key/keyway polarization

“

PAGE 86

- * Figure 10, top left drawing, remove the “MIN FULL THD.” statement and place it under the “7.11” dimension.
- * Figure 10, for the “ENLARGED VIEW OF PROJECTIONS AT HH DIA” drawing detail, change “.3 ±.13 R” to “.4 ±.23 R”.

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Figure 12, style S, c dimension: Delete “(ENTRANCE HOLD SEE NOTE 3)” and substitute: “(ENTRANCE HOLE SEE NOTE 3)”.

- * Figure 12, under “Solder Cup”, “Style P”, add the following SPHERICAL RADIUS and FLAT-SIZE:
 “SPHERICAL RADIUS: 10 .025 +.005/-.000
 FLAT-SIZE: 10 .075 +.000/-.015”

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- * Figure 12, delete figure label and substitute: " Style C, Pin – Feedthrough."
- * Figure 12, under "Style C Feed Through", add the following SPHERICAL RADIUS and FLAT-SIZE:
 "SPHERICAL RADIUS: 10 .025 +.005/-.000
 FLAT-SIZE: 10 .075 +.000/-.015"

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- * Figure 12, in the table at the top of the page, add the 10 gage contact data:

Contact Size	A	C Min	D	E	F	G	H +.005 -.000	R ±.002	J Min	K Max	L Min	M Min
10	.126 .124	.130	.146 .138	.188 .157	.173 .167	.145 .097	.171	---	.040	.250	.127	.030

- * Figure 12, delete "NOTE 3" and substitute:
 " 3. Size 10 contacts shall refuse entry to a .133 minimum diameter pin.
 Size 12 contacts shall refuse entry to a .102 minimum diameter pin.
 Size 16 contacts shall refuse entry to a .071 minimum diameter pin.
 Size 20 contacts shall refuse entry to a .048 minimum diameter pin.
 Size 22D contacts shall refuse entry to a .038 minimum diameter pin.
 C dimension to be maintained for .060 minimum."
- * Figure 12, delete "NOTE 5" and substitute:
 " 5. A .0300 ±.0005 diameter pin for size 22D contacts, a .040 ±.001 diameter pin for size 20 contacts,
 a .0625 ±.001 diameter pin for size 16 contacts, a .094 ±.001 diameter pin for size 12 contacts,
 or a .125 ±.001 diameter pin for size 10 contacts shall enter socket to the depth indicated. "
- * Figure 12, delete "NOTE 8" and substitute:
 " 8. Dimensions shown are not applicable to size 10, 12 and 16 contacts. The termination end for
 style C, size 10, 12 and 16 contacts is dimension "A" throughout. Size 20 contacts are applicable
 to this design, but is inactive for new design. "

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Figure 13, metric equivalent, second column: Delete and substitute:

“

Inches	mm
.0640	1.626
.0665	1.689
.067	1.70
.069	1.75
.071	1.80
.074	1.88
.077	1.96
.0830	2.108
.085	2.16

”

- * Figure 13, delete the “Y” dimension from the top figure and from the table.

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- * Figure 14, delete the “Y” dimension from the top figure and from the table.

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- * Figure 15, delete the “Y” dimension from the top figure.

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Figure 26, bottom drawing: Delete “(2 Push rods for adjusting slidind short)” and substitute “(2 Push rods for adjusting sliding short)”.

The margins of this amendment are marked with an asterisk to indicate where changes from the previous 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 and relation ship to the last previous amendment.

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CONCLUDING MATERIAL

Custodians:

Army - CR
Navy - AS
Air Force - 11
DLA - CC

Preparing activity:

DLA - CC

(Project 5935-4577)

Review activities:

Army - AR, MI
Navy - EC, MC, OS
Air Force - 19, 99
DLA - IS