ASSEMBLY OF CONNECTORS WITH REAR RELEASE CONTACTS

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ASSEMBLY OF CONNECTORS WITH REAR RELEASE CONTACTS

This Subject gives the general maintenance data for the disassembly and assembly of connectors that have rear release contacts.

1. GENERAL DATA

A. Connector Assembly

Most of the maintenance data for the assembly of connectors with front release contacts is satisfactory for the assembly of connectors with rear release contacts.

Refer to Subject 20-61-00.

2. CONNECTOR DISASSEMBLY

A. Contact Removal

(1) Make a selection of a contact removal tool. Refer to the applicable Subject for the connector.

WARNING: DO NOT USE A TOOL WITH A TIP THAT IS BENT OR BROKEN, OR THAT HAS A CRACK. A TOOL WITH DAMAGE CAN CAUSE INJURY TO PERSONNEL.

CAUTION: DO NOT USE A TOOL WITH A TIP THAT IS BENT OR BROKEN, OR THAT HAS A CRACK. A TOOL WITH DAMAGE CAN CAUSE DAMAGE TO THE GROMMET OR THE CONTACT RETENTION CLIPS OF THE CONNECTOR.

(2) If it is necessary to make space for the removal of the contact:

(a) Loosen or remove the connector components.

(b) Remove wire harness ties or plastic straps near the rear end of the connector.

(3) Put the wire into the slot of the tool.

(4) Axially align the tool and the contact cavity.

(5) Carefully push the tool into the contact cavity until it stops.

NOTE: If the O.D. of the wire is too large for the removal tool to go into the contact cavity, the contact must be replaced. Refer to Paragraph 2.B.

(6) Carefully pull the wire and the tool out of the contact cavity at the same time.

CAUTION: THE WIRE AND THE REMOVAL TOOL MUST NOT BE PULLED WITH TOO MUCH FORCE. DAMAGE TO THE CONTACT RETENTION CLIPS IN THE CONTACT CAVITY CAN OCCUR.

(7) If the removal tool does not release the contact from the contact cavity:

(a) Carefully pull the tool out of the contact cavity.

(b) Turn the removal tool approximately 90 degrees.

CAUTION: THE REMOVAL TOOL MUST BE REMOVED FROM THE CONTACT CAVITY WHEN THE TOOL IS TURNED. IF THE TOOL IS NOT REMOVED, DAMAGE TO THE RETENTION CLIPS IN THE CONTACT CAVITY CAN OCCUR.

(c) Do Step 2.A.(3) through Step 2.A.(6) again.

(d) If the removal tool does not release the contact from the contact cavity a second time, do Step (a) through Step (c) again.

(e) If the removal tool does not release the contact from the contact cavity the third time, do Step (a) through Step (c) again.

(f) If the removal tool does not release the contact from the contact cavity the fourth time, replace the contact. Refer to Paragraph 2.B.

B. Contact Replacement

This Paragraph gives the procedure to replace a contact that cannot be removed from a contact cavity.

(1) Cut the wire approximately 0.25 inch from the rear face of the connector.

(2) Remove the remaining insulation from the wire in the contact cavity with a pair of needle nose pliers.

(3) Align the removal tool with the longitudinal axis of the contact cavity.

(4) Carefully push the tool forward into the contact cavity until it stops.

(5) Hold the end of the remaining wire with the needle nose pliers.

(6) At the same time, pull the wire and the removal tool from the contact cavity.

(7) If the removal tool does not release the contact from the contact cavity:

(a) Carefully pull the tool out of the contact cavity.

(b) Turn the removal tool approximately 90 degrees.

CAUTION: THE REMOVAL TOOL MUST BE REMOVED FROM THE CONTACT CAVITY WHEN THE TOOL IS TURNED. IF THE TOOL IS NOT REMOVED, DAMAGE TO THE RETENTION CLIPS IN THE CONTACT CAVITY CAN OCCUR.

(c) Do Step 2.B.(3) through Step 2.B.(6) again.

(8) Assemble a new contact on the end of the wire. Refer to the applicable Subject for the connector.

ASSEMBLY OF DEUTSCH DL TYPE CONNECTORS

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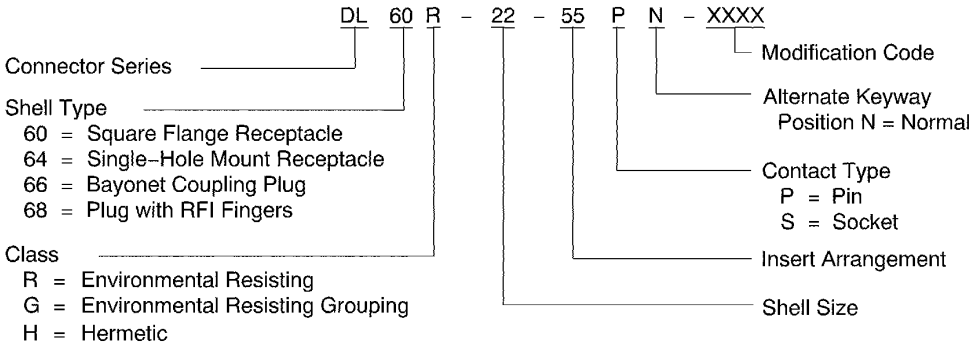
ASSEMBLY OF DEUTSCH DL TYPE CONNECTORS

1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

Table 1
CONNECTOR PART NUMBERS

Part Number	Supplier
DL60()	Deutsch
DL64()	Deutsch
DL66()	Deutsch
DL68()	Deutsch



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DEUTSCH DL CONNECTOR PART NUMBER STRUCTURE
Figure 1

B. Contact Part Numbers

Table 2
CONTACT PART NUMBERS

Contact Size		Contact Type	Part Number	Supplier
Engaging End	Crimp Barrel			
20	20	Pin	0641-1-2031	Deutsch
			M39029/4-110	QPL
		Socket	100503	Deutsch
			M39029/5-115	QPL

Table 2 CONTACT PART NUMBERS (Continued)

Contact Size		Contact Type	Part Number	Supplier
Engaging End	Crimp Barrel			
16	16	Pin	0641-2-1631	Deutsch
			M39029/4-111	QPL
		Socket	100504	Deutsch
			M39029/5-116	QPL
12	12	Pin	0641-3-1231	Deutsch
			M39029/4-113	QPL
		Socket	100505	Deutsch
			M39029/5-118	QPL

2. CONNECTOR DISASSEMBLY

A. Connector Disconnect

(1) Loosen and remove the rear end components.

B. Contact Removal

Table 3
CONTACT REMOVAL TOOLS

Crimp Barrel Size	Removal Tool	Supplier
20	M15570-20	Deutsch
	M81969/14-02	QPL
	NAS1664-20	QPL
16	M15570-16	Deutsch
	M81969/14-03	QPL
	NAS1664-16	QPL
12	M15570-12	Deutsch
	M81969/14-04	QPL
	NAS1664-12	QPL

(1) Make a selection of a removal tool from Table 3.

(2) Snap the tool onto the wire and slide the tool straight into the rear of the contact cavity over the rear of contact until the tool bottoms.

CAUTION: DO NOT ROTATE THE TOOL WHILE IT IS IN THE CONNECTOR GROMMET.

(3) Hold the wire against the tool and pull both tool and wired contact straight out of the rear of the contact cavity.

(4) If contact is not released:

(a) Remove the tool.

(b) Turn the tool a small amount.

(c) Do Step 2.B.(2) and Step 2.B.(3) again.

3. CONNECTOR ASSEMBLY

A. Contact Assembly

Table 4
CONTACT CRIMP TOOLS

Wire Size (AWG)	Crimp Barrel Size	Crimp Tool					
		Basic Unit			Locator		
		Part Number	Setting	Supplier	Part Number	Color	Supplier
24	20	M22520/1-01	2	QPL	M22520/1-02	Red	QPL
		M22520/2-01	5	QPL	M22520/2-02	-	QPL
22	20	M22520/1-01	3	QPL	M22520/1-02	Red	QPL
		M22520/2-01	6	QPL	M22520/2-02	-	QPL
20	20	M22520/1-01	4	QPL	M22520/1-02	Red	QPL
		M22520/2-01	7	QPL	M22520/2-02	-	QPL
	16	M22520/1-01	4	QPL	M22520/1-02	Blue	QPL
18	16	M22520/1-01	5	QPL	M22520/1-02	Blue	QPL
16	16	M22520/1-01	6	QPL	M22520/1-02	Blue	QPL
14	12	M22520/1-01	7	QPL	M22520/1-02	Yellow	QPL
12	12	M22520/1-01	8	QPL	M22520/1-02	Yellow	QPL

(1) Remove the necessary length of insulation from the end of the wire:

(a) For size 20 contacts, remove 5/32 ±1/32 inch of insulation.

(b) For size 16 and 12 contacts, remove 1/4 ±1/32 inch of insulation.

(2) Make a selection of a crimp tool from Table 4.

(3) Insert the wire into the crimp barrel of the contact.

Make sure that all of the conductor strands enter the barrel and that all of the strands are visible through the inspection hole.

(4) With the contact shoulder seated in the locator and the wire bottomed in the contact, close the handles of the crimp tool until the ratchet releases.

(5) Remove the wired contact from the crimp tool.

ASSEMBLY OF DEUTSCH DL TYPE CONNECTORS

B. Contact Insertion

Table 5
CONTACT INSERTION TOOLS

Crimp Barrel Size	Insertion Tool	Supplier
20	M15570-20	Deutsch
	M81969/14-02	QPL
	NAS1664-20	QPL
16	M15570-16	Deutsch
	M81969/14-03	QPL
	NAS1664-16	QPL
12	M15570-12	Deutsch
	M81969/14-04	QPL
	NAS1664-12	QPL

(1) Before any contacts are inserted, thread the wire bundle through the rear end components of the connector.

(2) Make a selection of an insertion tool from Table 5.

(3) Place the insertion tool on the wire and slide the tool against the contact shoulder.

(4) Insert the contact straight into the proper cavity until a slight click and resistance to further motion occur.

CAUTION: DO NOT ROTATE THE TOOL WHILE IT IS IN THE CONNECTOR GROMMET.

(5) Carefully withdraw the tool straight out of the contact cavity.

BACC63DE, BACC63DF, BACC63DG, AND BACC63DH QUICK DISCONNECT CIRCULAR CONNECTORS

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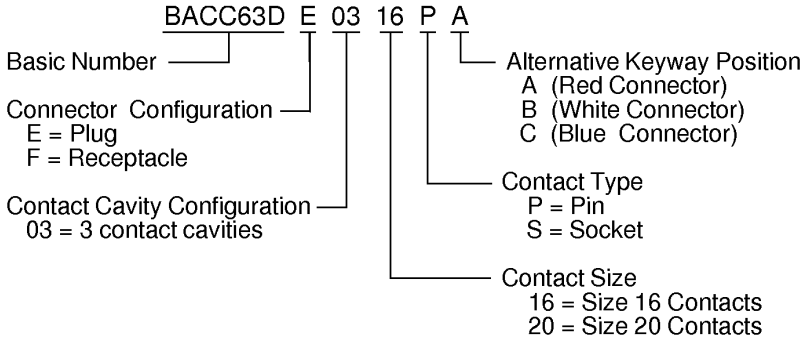
BACC63DE, BACC63DF, BACC63DG, AND BACC63DH QUICK DISCONNECT CIRCULAR CONNECTORS

1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

Table 1
CONNECTOR PART NUMBERS

Part Number	Type	Supplier
BACC63DE()	Plug	Amphenol PCD
BACC63DF()	Receptacle	Amphenol PCD
BACC63DG()	Plug	Amphenol PCD
BACC63DH()	Receptacle	Amphenol PCD



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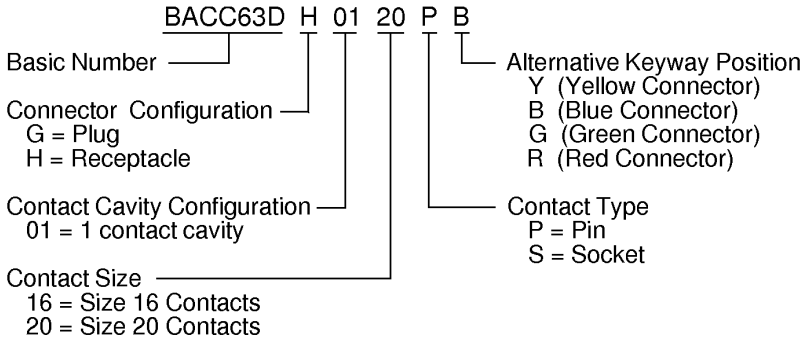
BACC63DE PLUG AND BACC63DF RECEPTACLE PART NUMBER STRUCTURE
Figure 1



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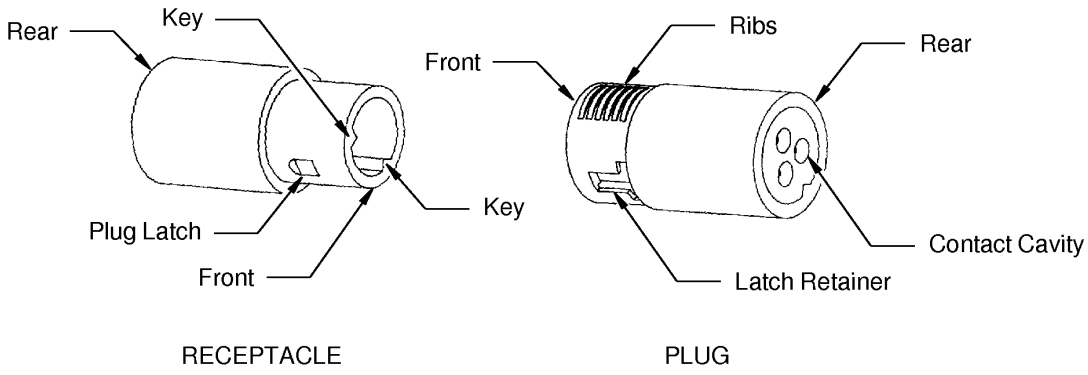
BACC63DG PLUG AND BACC63DH RECEPTACLE PART NUMBER STRUCTURE
Figure 2

NOTE: Red and blue are only available for BACC63DG and BACC63DH connectors that accept size 16 contacts. Yellow and green are only available for BACC63DG and BACC63DH connectors that accept size 20 contacts.

The BACC63DE, BACC63DF, BACC63DG, and BACC63DH connectors have these technical features:

- The connectors have a circular configuration
- The connector shell is plastic
- They have an in-line receptacle
- They have a quick disconnect latch configuration
- The contacts are rear release, rear removable
- The connectors have a color that shows the alternate keyway position.



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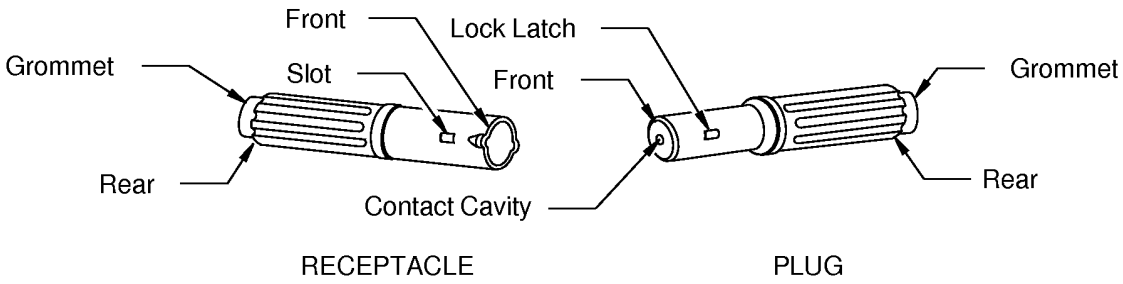
BACC63DE PLUG AND BACC63DF RECEPTACLE CONFIGURATION
Figure 3



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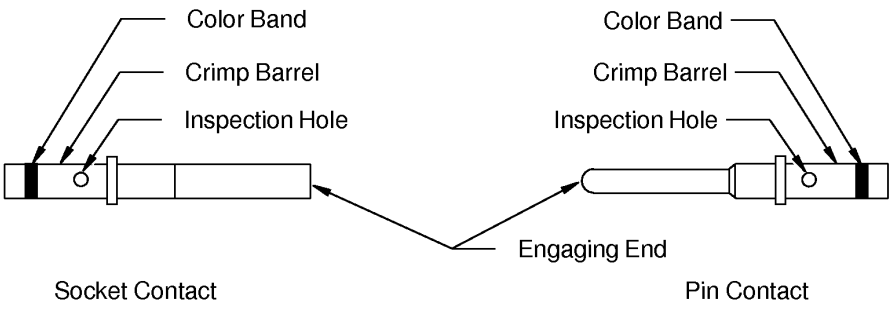
BACC63DG PLUG AND BACC63DH RECEPTACLE CONFIGURATION
Figure 4

B. Contact Part Numbers



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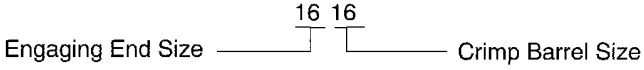
STANDARD SIZE 1616, REAR RELEASE, CRIMP TYPE CONTACTS
Figure 5



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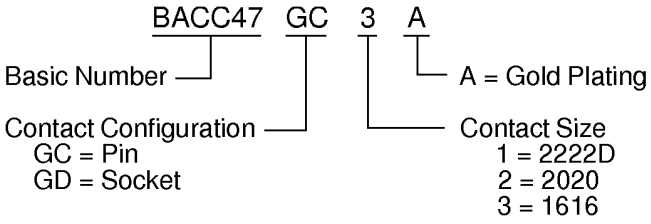
EXAMPLE OF A CONTACT SIZE
Figure 6



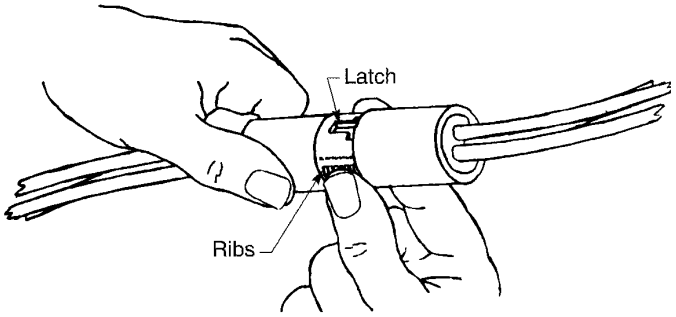
BACC47GC AND BACC47GD CONTACT PART NUMBER STRUCTURE
Figure 7

Table 2
CONTACT PART NUMBERS

Contact Size	Contact Type	Boeing Standard	Color Band	Finish
1616	Pin	BACC47GC3A	Blue	Gold
	Socket	BACC47GD3A	Blue	Gold
2020	Pin	BACC47GC2A	Red	Gold
	Socket	BACC47GD2A	Red	Gold

2. CONNECTOR DISASSEMBLY

A. Separation of the BACC63DE Pug and the BACC63DF Receptacle



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SEPARATION OF THE PLUG AND THE RECEPTACLE
Figure 8

(1) Hold the plug in one hand and the receptacle in the other hand. Refer to Figure 8.

(2) To release the latches, apply pressure on the ribs of both connectors at the same time.

(3) Pull the plug and receptacle apart.

B. Separation of the BACC63DG Plug and the BACC63DH Receptacle

(1) Hold the two ends of the connector at the same time.

(2) Turn one end of the connector approximately 90 degrees.

(3) Pull the plug and receptacle apart.

C. Contact Removal

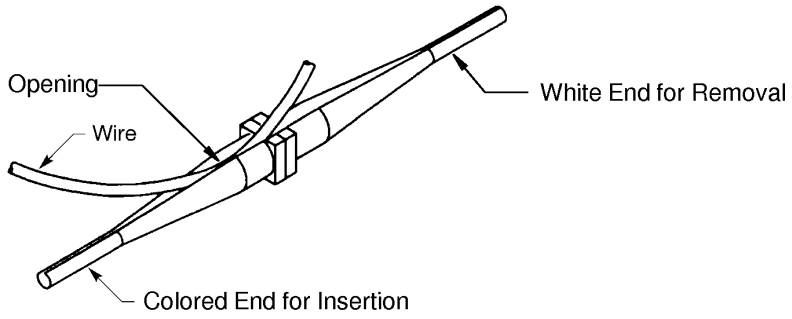
Table 3
CONTACT REMOVAL TOOLS

Contact Size	Removal Tool			
	Color	Material	Part Number	Supplier
2020	-	Metal	11-8675-0	Amphenol
			11-8795-20	Amphenol
			M81969/8-06	QPL
			MS27495R20	QPL
			RX20-3	Burndy
	White	Plastic	10-296943-20	Amphenol
			M81969/14-02	QPL
			MS27509R20	QPL
			MS27534-20	QPL
1616	-	Metal	11-8675-16	Amphenol
			11-8795-16	Amphenol
			M81969/8-08	QPL
			MS27495R16	QPL
			RX16-9	Burndy
	White	Plastic	M81969/14-03	QPL
			MS27534-16	QPL

Table 4
NECESSARY MATERIAL

Material	Description	Specification	Supplier
Lubricant	Isopropyl Alcohol	TT-I-735	An available source

(1) Make a selection of a contact removal tool from Table 3. Refer to Figure 9 for contact removal tool configuration.



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REMOVAL AND INSERTION TOOL CONFIGURATION
Figure 9

(2) Align the removal tool to the contact cavity at the rear of the connector.

(3) Carefully push the tool into the contact cavity until it stops.

Make sure that the tool stays aligned in the contact cavity.

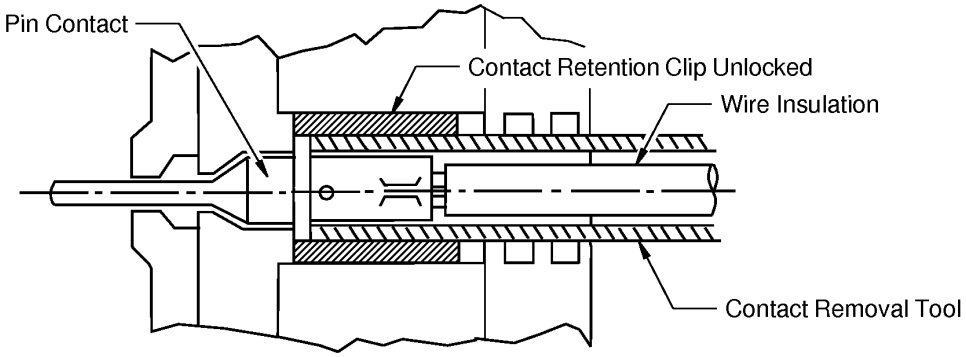
NOTE: To help removal of the contact, use the lubricant to lubricate the removal tool. Refer to Table 4.

CAUTION: DO NOT USE MORE THAN THE NECESSARY AMOUNT OF FORCE TO PUSH THE REMOVAL TOOL INTO THE CONTACT CAVITY. DAMAGE THE CONTACT RETENTION CLIPS OR THE CONNECTOR GROMMET CAN OCCUR.

CAUTION: DO NOT TURN THE TOOL CLOCKWISE OF COUNTERCLOCKWISE WHEN IT IS IN THE CONTACT CAVITY. DAMAGE THE CONTACT RETENTION CLIPS OR THE CONNECTOR OR GROMMET CAN OCCUR.

(4) Hold the wire against the tool.

(5) Pull the tool and the wire out from the contact cavity. Refer to Figure 10



2448419 S00061547053_V1

CROSS SECTION OF EXTRACTION TOOL INSIDE CONTACT CAVITY
Figure 10

(6) Examine the front of the connector for a crack or a chip that extends from:
- One contact cavity to another contact cavity
- A contact cavity to the shell of the connector.

(7) If the contact is not released from the connector:
(a) Pull the removal tool out of the contact cavity.
(b) Turn the removal tool approximately 90 degrees.
(c) Do Step 2.C.(2) through Step 2.C.(6) again.

D. Seal Plug Removal

Table 5
NECESSARY TOOL

Tool	Type
Pliers	Needle Nose

(1) Make a selection of pliers from Table 5.

(2) If the connector has a backshell, remove the backshell from the rear of the connector with a pair of needle nose pliers.

CAUTION: MAKE SURE THAT THE NEEDLE NOSE PLIERS HAVE SMOOTH SURFACES AND NO SHARP EDGES. NEEDLE NOSE PLIERS WITH ROUGH SURFACES OR SHARP EDGES CAN CAUSE DAMAGE TO THE REAR GROMMET.

(3) Hold the end of the seal plug or seal rod tightly in the jaws of the pliers.

(4) Pull the seal plug or seal rod out of the rear grommet in the direction that is perpendicular to the face of the grommet.

(5) Examine the rear grommet for these types of damage:

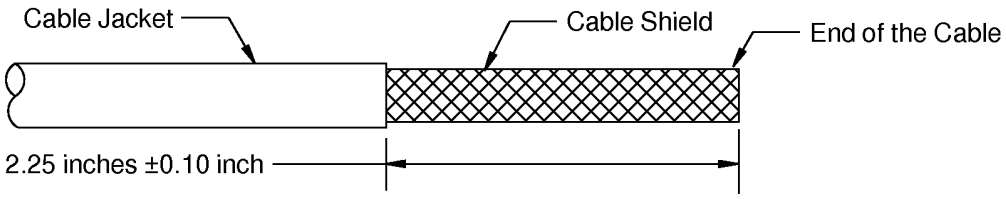
- Gouges between two contact cavities
- Cuts between two contact cavities
- Cracks between two contact cavities
- Cracks between cavities and the shell in the rear grommet.

3. CONNECTOR ASSEMBLY

A. Shield Ground Wire Assembly - At the End of the Cable Jacket

(1) Remove 2.25 inches ±0.1 inch of the cable jacket from the end of the cable. Refer to:

- Figure 11
- Subject 20-00-15 for the procedure to remove the cable jacket.

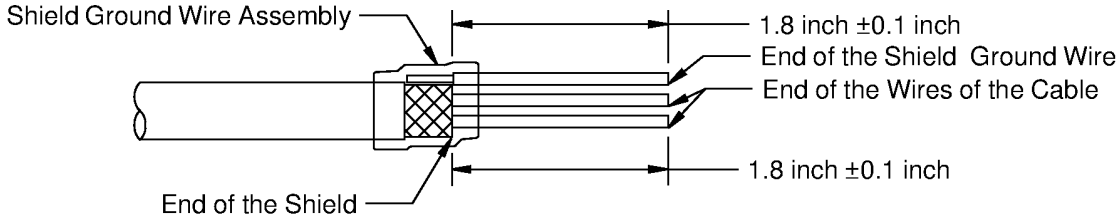


2449010 S00061547055_V1

CABLE JACKET REMOVAL
Figure 11

(2) Assemble an insulated shield ground wire. Refer to Subject 20-10-15.

(3) Remove the unwanted length from the end of the shield ground wire and the wires of the cable. Refer to Figure 12.



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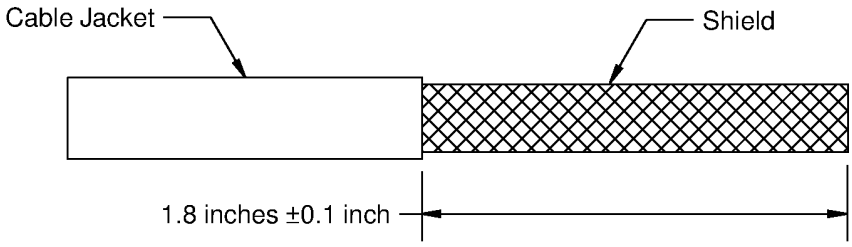
CABLE PREPARATION
Figure 12

B. Shield Ground Wire Assembly - Not at the End of the Cable Jacket

(1) Remove 1.8 inches ±0.1 inch of the cable jacket from the end of the cable.

Refer to:

- Figure 13
- Subject 20-00-15 for the procedure to remove the cable jacket.



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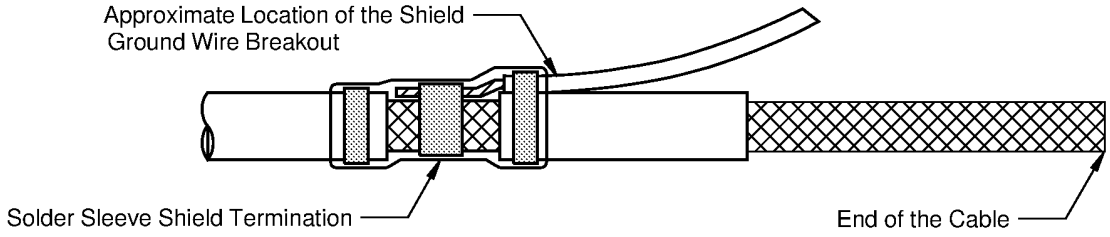
CABLE JACKET REMOVAL
Figure 13

(2) Assemble the shield termination at the specified location.

Refer to:

- Figure 14
- Subject 20-10-11 for the position of the solder sleeve in relation to the specified location of the breakout
- Subject 20-10-15 for the assembly of the shield ground wire that is not at the end of the cable jacket.

Make sure that the shield ground wire is pointed in the direction that is specified for the shield ground wire connection.



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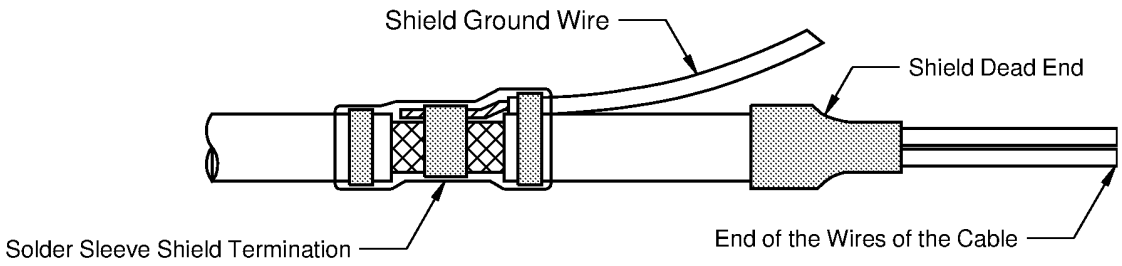
SOLDER SLEEVE SHIELD TERMINATION
Figure 14

(3) Assemble a shield dead end at the end of the cable jacket.

Refer to:

- Figure 15
- Subject 20-10-15 for the procedure to assemble the shield dead end.



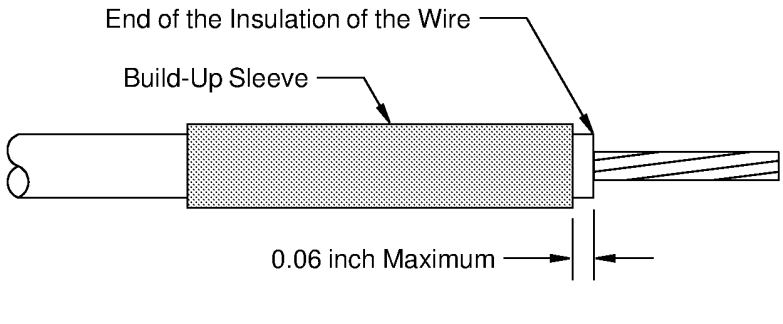
SHIELD DEAD END
Figure 15

C. Increase of the O.D. of a Wire

(1) Put a 0.75 inch ±0.05 inch length of the specified sleeve on the wire. Refer to Figure 16.

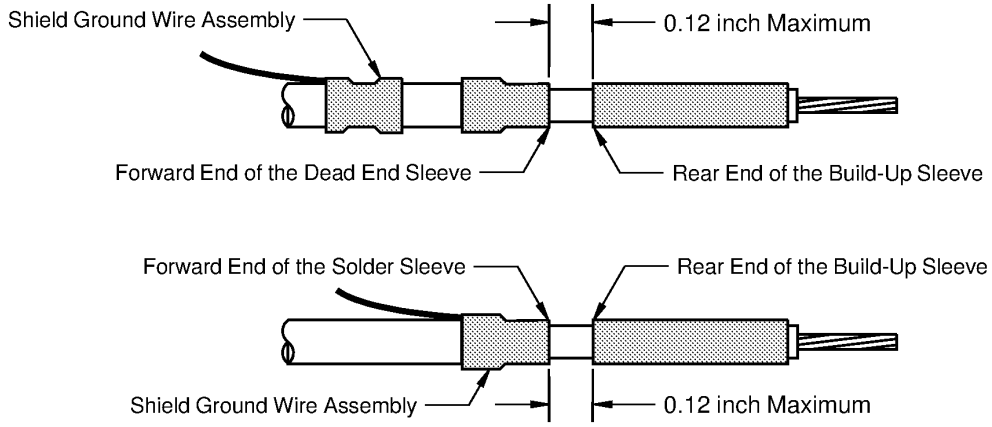
Make sure that the forward end of the sleeve is not more than 0.06 inch from the end of the insulation of the wire.

NOTE: If the location of a shield ground wire assembly prevents correct position of the sleeve, the length of the sleeve can be decreased.



POSITION OF THE SLEEVE ON THE WIRE
Figure 16

(2) If a 0.75 inch ±0.05 inch length of sleeve is not possible, remove the necessary length to make the distance from the rear end of the sleeve to the forward end of the shield termination sleeve equal to 0.12 inch or less. Refer to Figure 17.



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POSITION OF THE SLEEVE ON A CABLE THAT HAS A SHIELD TERMINATION
Figure 17

(3) Shrink the sleeve in position. Refer to Subject 20-10-14.

Make sure that:

- - The sleeve does not move on the wire
- - The forward end of the sleeve is aligned with the end of the wire or 0.06 inch maximum from the end of the insulation. Refer to Figure 16.

(4) If more sleeves are specified, do Step 1 through Step 3 again.

D. Contact Assembly

Table 6
NECESSARY MATERIAL

Material	Specification	Supplier
Filler	Y6051C	ITT Cannon

Table 7
INSULATION REMOVAL LENGTH

Wire Size (AWG)	Crimp Barrel Size	Removal Length L (inch)			Special Instructions
		Target	Minimum	Maximum	
24	20	0.37	0.37	0.40	Fold the conductor back so that the length L of the bare conductor is 1/4 inch
22	20	0.19	0.19	0.22	Put a contact filler into the crimp barrel. Refer to Table 6
20	20	0.19	0.19	0.22	-
22	16	0.37	0.37	0.40	Fold the conductor back so that the length L of the bare conductor is 1/4 inch
20	16	0.37	0.37	0.40	Put a contact filler into the crimp barrel. Refer to Table 6
18	16	0.19	0.19	0.22	-
16	16	0.19	0.19	0.22	-

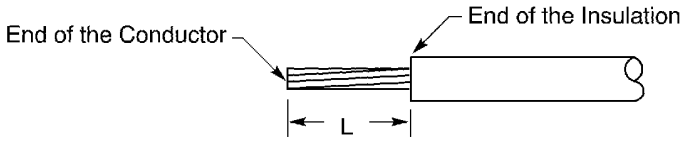
Table 8
CONTACT CRIMP TOOLS

Wire Size (AWG)	Contact Size	Crimp Tool						
		Basic Unit			Locator			
		Part Number	Setting	Supplier	Part Number	Color	Locator Block Color	Supplier
24	2020	612916	-	Balmar	-	Blue	Yellow	-
		M22520/1-01	1	QPL	M22520/1-04	-	-	QPL
		M22520/2-01	4	QPL	M22520/2-10	-	-	QPL
		ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing
22	2020	11148	-	Buchanan	-	Red	Red	-
		612916	-	Balmar	-	Yellow	Red	-
		614019	-	Balmar	-	Red	Red	-
		M22520/1-01	2	QPL	M22520/1-04	-	-	QPL
		M22520/2-01	5	QPL	M22520/2-10	-	-	QPL
		MS3191-1	-	QPL	11-7771-31	-	-	Amphenol
		ST2220-1-Y	-	Boeing	ST2220-1-12	-	-	Boeing

Table 8 CONTACT CRIMP TOOLS (Continued)

Wire Size (AWG)	Contact Size	Crimp Tool						
		Basic Unit			Locator			
		Part Number	Setting	Supplier	Part Number	Color	Locator Block Color	Supplier
20	2020	11148	-	Buchanan	-	Red	Red	-
		612916	-	Balmar	-	Yellow	Blue	-
		614019	-	Balmar	-	Red	Red	-
		M22520/1-01	3	QPL	M22520/1-04	-	-	QPL
		M22522/2-01	6	QPL	M22520/2-10	-	-	QPL
		MS3191-1	-	QPL	11-7771-31	-	-	Amphenol
		ST2220-1-Y	-	Boeing	ST2220-1-12	-	-	Boeing
22	1616	M22520/1-01	4	QPL	M22520/1-04	-	-	QPL
		MS3191-1	-	QPL	11-7771-29	-	-	Amphenol
		ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing
20	1616	11148	-	Buchanan	-	Red	Blue	-
		614019	-	Balmar	-	Red	Blue	-
		M22520/1-01	4	QPL	M22520/1-04	-	-	QPL
		MS3191-1	-	QPL	11-7771-29	-	-	Amphenol
		ST2220-1-Y	-	Boeing	ST2220-1-2	Blue	-	Boeing
18	1616	11148	-	Buchanan	-	Red	Blue	-
		614019	-	Balmar	-	Red	Blue	-
		M22520/1-01	5	QPL	M22520/1-04	-	-	QPL
		MS3191-1	-	QPL	11-7771-29	-	-	Amphenol
		ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing
16	1616	11148	-	Buchanan	-	Red	Blue	-
		614019	-	Balmar	-	Red	Blue	-
		M22520/1-01	6	QPL	M22520/1-04	-	-	QPL
		MS3191-1	-	QPL	11-7771-29	-	-	Amphenol
		ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing

(1) Remove the necessary length L of the insulation from the end of the wire. Refer to Subject 20-00-15, Table 7, and Figure 18.

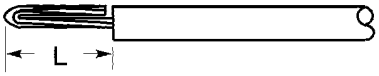


2446159 S00061546266_V1

INSULATION REMOVAL
Figure 18

(2) If it is necessary, fold the conductor back on itself so that the length of the bare conductor is 1/4 inch.

Refer to Table 7 and Figure 19.



2446092 S00061546673_V1

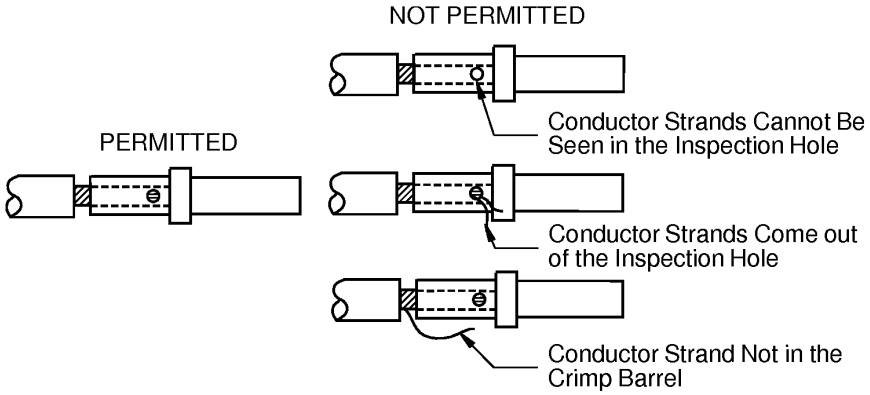
A CONDUCTOR FOLDED BACK ON ITSELF
Figure 19

(3) Make a selection of the crimp tool from Table 8.

(4) Push the conductor into the crimp barrel of the contact until the end of the conductor is against the bottom of the crimp barrel.

Make sure that:

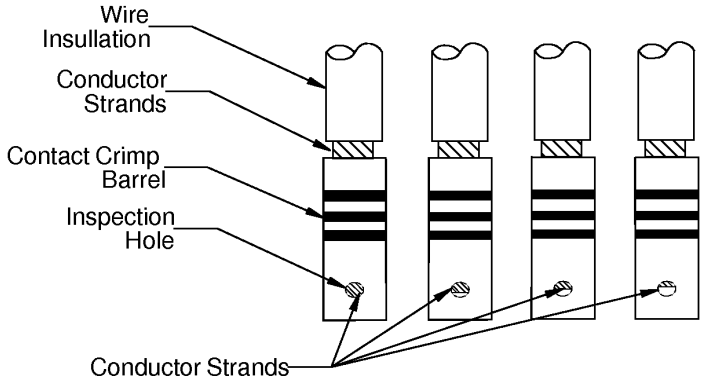
- All of the strands of the conductor are in the crimp barrel. Refer to Figure 20



2448420 S00061547062_V1

POSITION OF THE STRANDS OF THE CONDUCTOR IN THE CRIMP BARREL
Figure 20

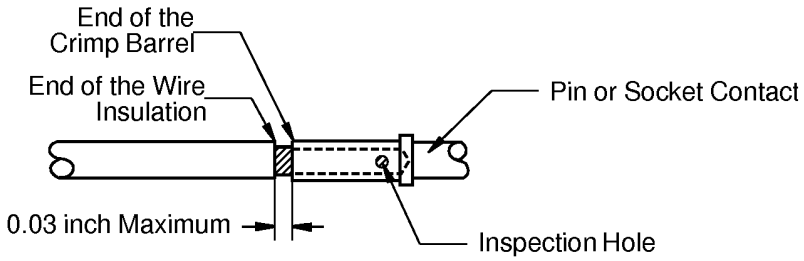
- The strands of the conductor can be seen in the inspection hole. Refer to Figure 21 for permitted conductor installation in inspection hole



2448421 S00061547063_V1

POSITION OF THE END OF THE CONDUCTOR IN THE INSPECTION HOLE
Figure 21

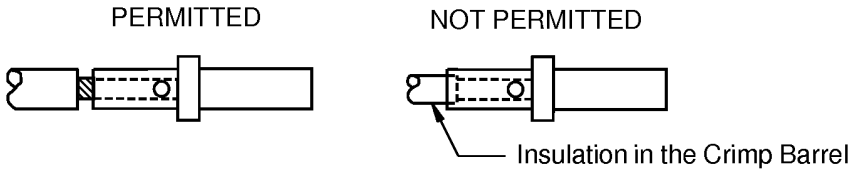
- The distance from the end of the insulation to the end of crimp barrel is less than or equal to 0.03 inch. Refer to Figure 22



2448422 S00061547064_V1

MAXIMUM DISTANCE FROM THE END OF THE WIRE INSULATION TO THE END OF THE CRIMP BARREL
Figure 22

- The insulation is not in the crimp barrel. Refer to Figure 23.



2448423 S00061547065_V1

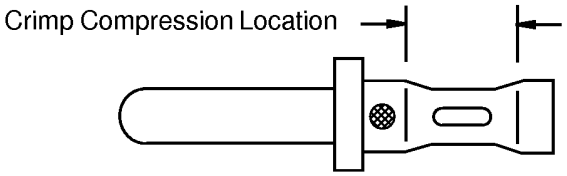
POSITION OF THE END OF THE WIRE INSULATION AND THE END OF THE CRIMP BARREL
Figure 23

(5) Crimp the contact.

(6) Examine the contact assembly:

Make sure that:

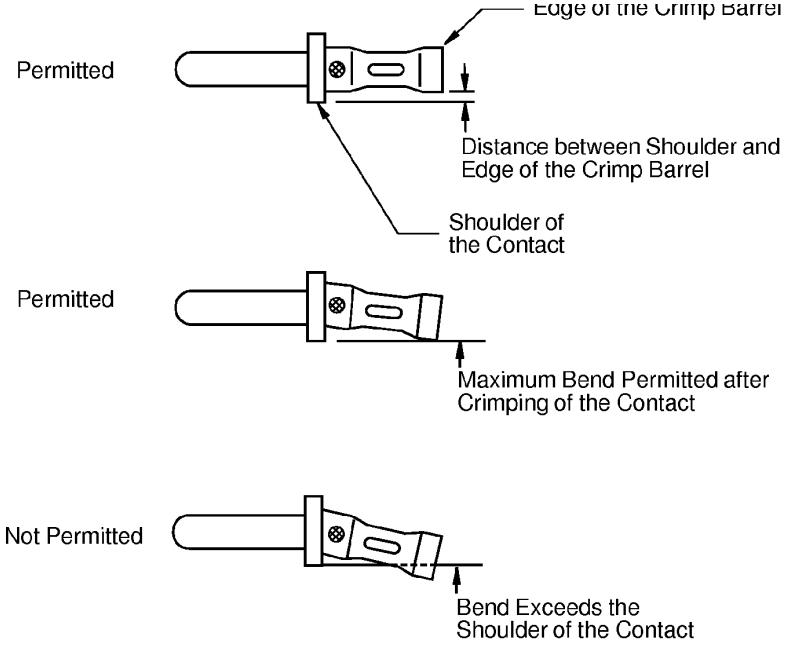
- The crimp barrel has a full crimp compression. Refer to Figure 24



2448424 S00061547066_V1

LOCATION OF THE CRIMP COMPRESSION
Figure 24

- The bend of the contact crimp barrel does not make the position of the edge of the crimp barrel extend farther than the outer end of the shoulder of the contact. Refer to Figure 25



2448425 S00061547067_V1

MAXIMUM BEND OF THE CONTACT CRIMP BARREL
Figure 25

- A crack in the crimp barrel can not be seen without magnification.

CAUTION: DO NOT BEND THE WIRE AT THE END OF THE CRIMP BARREL MORE THAN 15 DEGREES FROM THE LONGITUDINAL AXIS OF THE CONTACT. A BEND THAT IS MORE THAN 15 DEGREES CAN CAUSE DAMAGE TO THE WIRE.

NOTE: The color bands can come off when the contact is crimped. This condition is permitted if the colors of the bands can be seen after the compression.

NOTE: A compression that extends into the inspection hole is permitted if:

- The crimp barrel around the inspection hole does not have a crack
- The wire can be seen in the inspection hole.

NOTE: Damage to the end of the crimp barrel can occur during the crimp process. This condition is permitted if:

- The crimp barrel does not have a crack
- The crimp barrel as a full crimp indentation
- The damage does not prevent the usual installation or removal of the contact.

E. Contact Insertion

Table 9
CONTACT INSERTION TOOLS

Contact Size	Insertion Tool			
	Color	Material	Part Number	Supplier
2020	Red	Metal	11-8674-20	Amphenol
			11-8794-20	Amphenol
			M81969/8-05	QPL
			MS27495A20	QPL
			RTM20-17	Burndy
	Red	Plastic	10-296940-20	Amphenol
			M81969/14-02	QPL
			MS27509A20	QPL
			MS27534-20	QPL
1616	Blue	Metal	11-8674-16	Amphenol
			11-8794-16	Amphenol
			M81969/8-07	QPL
			MS27495A16	QPL
			RX16-4	Burndy
	Blue	Plastic	M81969/14-03	QPL
			MS27534-16	QPL

(1) Make a selection of a contact insertion tool from Table 9.

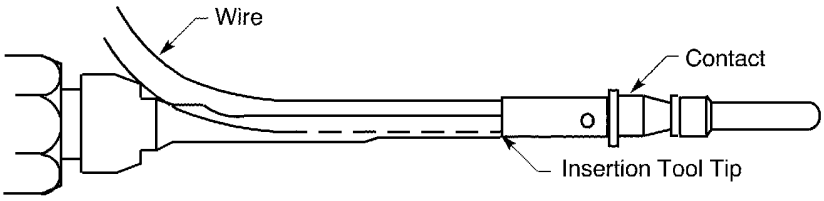
CAUTION: DO NOT USE A TOOL WITH:

- A TIP THAT IS BENT
- A TIP THAT IS FLARED
- A TIP THAT IS BROKEN
- A TIP THAT IS CRACKED
- A BIT THAT IS BENT.

WARNING: A DEFECTIVE TOOL CAN CAUSE INJURY TO THE OPERATOR.

CAUTION: A DEFECTIVE TOOL CAN CAUSE DAMAGE TO THE REAR GROMMET OF THE CONNECTOR OR THE CONTACT RETENTION CLIPS, OR BOTH.

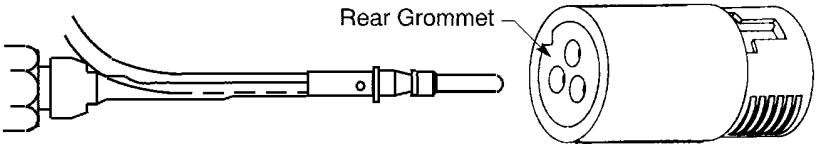
(2) Put the wired contact into the tool so that the tip of the tool is against the end of the wire barrel of the contact. Refer to Figure 26.



2446190 S00061546677_V1

POSITION OF THE WIRED CONTACT IN THE INSERTION TOOL
Figure 26

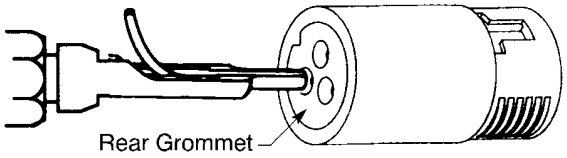
(3) Axially align the tool and the contact with the contact cavity. Refer to Figure 27.



2446191 S00061546678_V1

POSITION OF THE WIRED CONTACT IN RELATION TO THE CONTACT CAVITY
Figure 27

(4) Push the tool straight into the contact cavity until the tool stops. Refer to Figure 28.

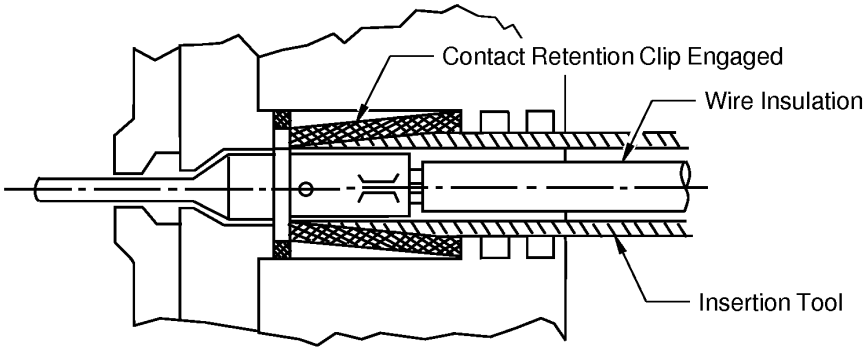


2446192 S00061546679_V1

INSERTION OF THE CONTACT
Figure 28

(5) Carefully remove the tool from the contact cavity.

(6) Lightly pull the wire to make sure that the contact is locked in the contact cavity. Refer to Figure 29.



2448426 S00061547069_V1

CROSS SECTION OF THE INSERTION TOOL INSIDE THE CONTACT CAVITY
Figure 29

CAUTION: DO NOT PULL THE WIRE WITH A STRONG OR A SUDDEN FORCE. THE FORCE CAN CAUSE DAMAGE TO THE CONNECTOR OR THE CONTACT, OR BOTH.

CAUTION: DO NOT MAKE A DENT IN THE WIRE INSULATION WITH THE FINGERNAILS. DAMAGE TO THE WIRE INSULATION CAN CAUSE UNSATISFACTORY PERFORMANCE AND RELIABILITY OF THE WIRE.

(7) If the contact does is not locked in the contact cavity:

(a) Pull the wired contact out of the contact cavity.

(b) Do Step 3.E.(2) through Step 3.E.(6) again.

F. Spare Contact Installation

Refer to Subject 20-60-08.

(1) If it is necessary to install a spare contact in the contact cavities that the process is not going to use:

(a) Make a selection of the contact from Table 2.

(b) Make a selection of a contact insertion tool from Table 9.

(c) Put the contact in the contact cavity.

(d) Axially align the tool and the contact.

(e) Push the tool straight into the contact cavity until the tool stops.

(f) Carefully remove the tool from the contact cavity.

G. Seal Plug or Seal Rod Installation

Table 10
NECESSARY MATERIAL

Material	Specification	Part Number	Supplier	Note
Seal Plug	-	MS27488-16	ITT Cannon	Blue
Seal Rod	AMS3656	-	QPL	-

Refer to Subject 20-60-08.

(1) If it is necessary to install a seal plug or a seal rod in the contact cavities that the process is not going to use:

(a) Make a selection of a seal plug or seal rod from Table 10.

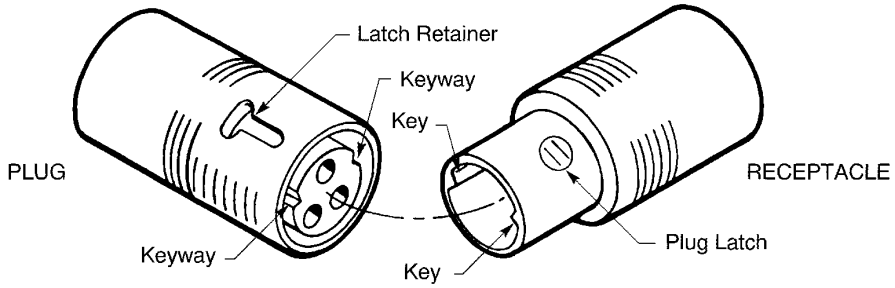
(b) Push the plug or the rod into the contact cavity.

Make sure that the distance from the end of the plug or the rod to the connector grommet is less than 0.1 inch.

4. CONNECTOR INSTALLATION

A. Connection of the BACC63DE Plug and the BACC63DF Receptacle

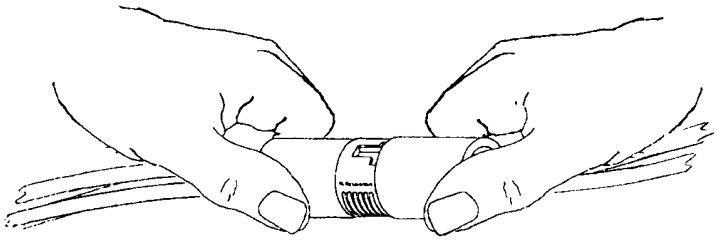
(1) Align the keys of the receptacle with the keyways of the plug.
Refer to Figure 30.



POSITION OF THE KEYS AND THE KEYWAYS
Figure 30

(2) Push the plug into the receptacle until it stops.
When the plug stops:
- A click can be heard
- The plug latches lock in the latch retainers.

(3) Lightly pull the plug and the receptacle apart to make sure that the plug latches are locked. Refer to Figure 31.



2446194 S00061546682_V1

POSITION OF THE HANDS TO PULL AGAINST THE PLUG LATCHES
Figure 31

(4) If the plug moves away from the receptacle, do Step 4.A.(2) and Step 4.A.(3) again.

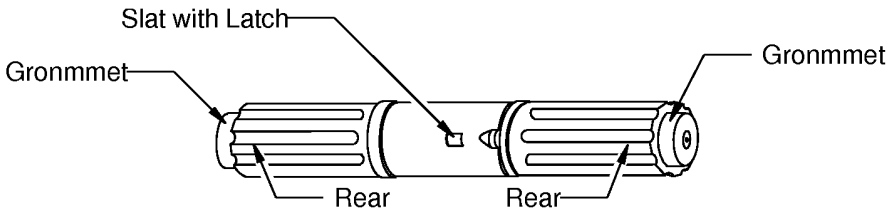
(5) Examine the connector for these types of damage:

- Cracks in the connector shell
- Cracks or chips in the plug latches.

CAUTION: DO NOT INSTALL A WIRE HARNESS TIE OR A WIRE HARNESS CLAMP ON THE MATED CONNECTORS. THIS CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE LATCH RETAINER AND CAUSE THE CONNECTORS TO BECOME DISCONNECTED IN SERVICE.

B. Connection of the BACC63DG Plug and BACC63DH Receptacle

(1) Align the front ends of the plug and the receptacle. Refer to Figure 32.



2448417 S00061547070_V1

BACC63DE PLUG AND BACC63DF RECEPTACLE ASSEMBLY
Figure 32

(2) Push the plug straight into the receptacle until it stops.

(3) Twist each connector in opposite direction until the lock latches in the plug and the slots in the receptacle are fully engaged.

BACC63ED, BACC63EE AND BACC63EF MINIATURE CIRCULAR CONNECTORS

TABLE OF CONTENTS

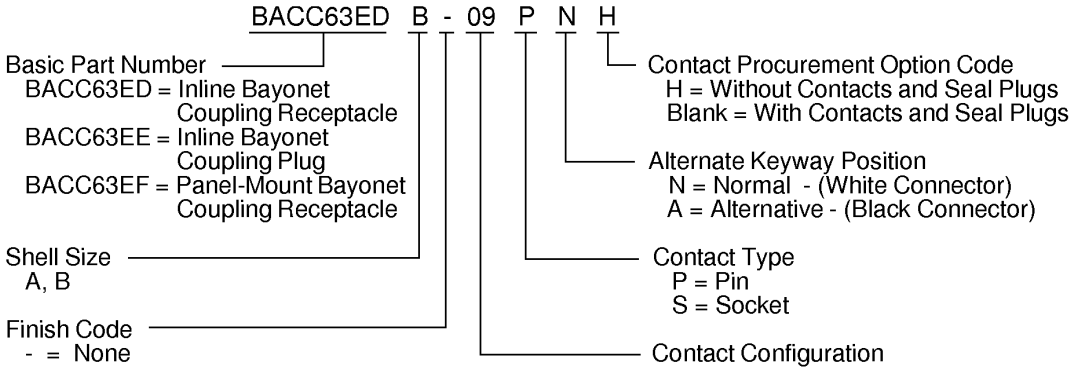
BACC63ED, BACC63EE AND BACC63EF MINIATURE CIRCULAR CONNECTORS

1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

Table 1
CONNECTOR PART NUMBERS

Part Number	Type	Supplier
BACC63ED()	Receptacle	Amphenol PCD
BACC63EE()	Plug	Amphenol PCD
BACC63EF()	Panel Receptacle	Amphenol PCD

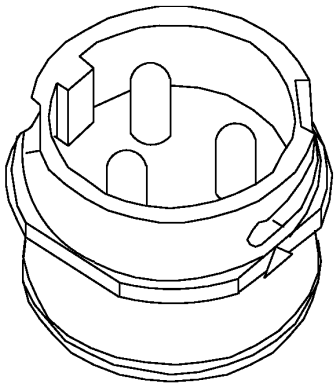


2449244 S00061547072_V1

BACC63ED, BACC63EE AND BACC63EF CONNECTOR PART NUMBER STRUCTURE
Figure 1

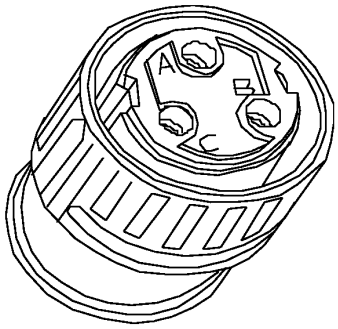
The BACC63ED, BACC63EE, BACC63EF connectors have these technical features:

- The connectors have a circular configuration
- The connector shell is plastic
- They have an in-line or panel mount receptacle
- They have a bayonet coupling
- The contacts are rear release, rear removable
- The connectors have a color that shows the alternate keyway position.



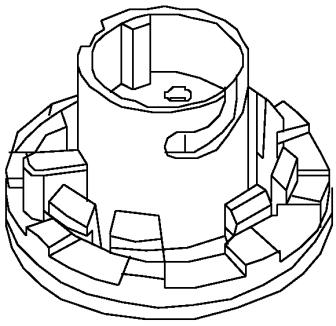
2449245 S00061547073_V1

BACC63ED STRAIGHT RECEPTACLE
Figure 2



2449246 S00061547074_V1

BACC63EE PLUG
Figure 3



2449247 S00061547075_V1

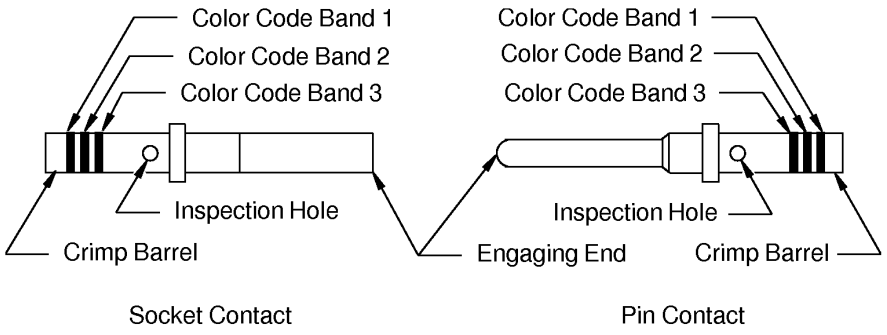
BACC63EF PANEL MOUNT RECEPTACLE
Figure 4

B. Contact Part Numbers

Table 2
CONTACT PART NUMBERS

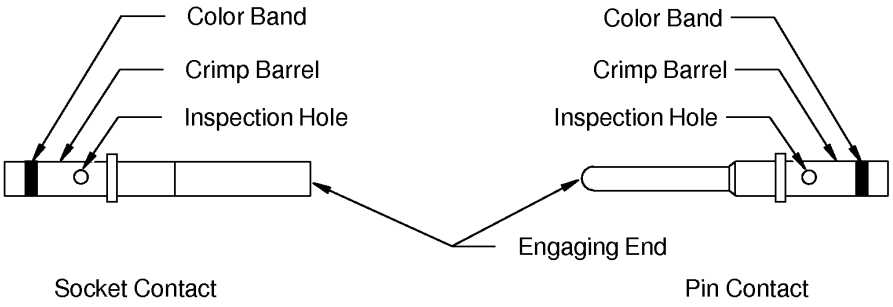
Contact Size	Contact Engaging End Size	Contact Crimp Barrel Size	Contact Type	Part Number	Color Bands			Finish
					Band 1	Band 2	Band 3	
2222D	22	22	Socket	M39029/57-354	Orange	Green	Yellow	Gold
	22	22	Pin	M39029/58-360	Orange	Blue	Black	Gold
	22	22	Pin	BACC47GC1A	Green	-	-	Gold
1616	16	16	Socket	M39029/57-358	Orange	Green	Gray	Gold
	16	16	Pin	M39029/58-364	Orange	Blue	Yellow	Gold
	16	16	Pin	BACC47GC3A	Blue	-	-	Gold

NOTE: The size 2222D contact has a size 22 engaging end and a size 22 crimp barrel.



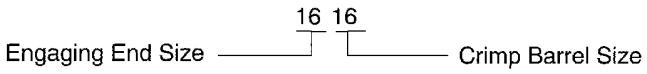
2448999 S00061545899_V1

M39029 REAR RELEASE CONTACTS
Figure 5



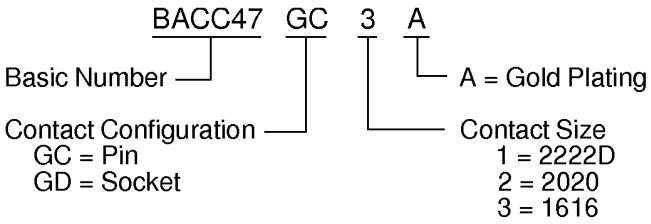
2449029 S00061546903_V1

BACC47GC AND BACC47GD REAR RELEASE CONTACTS
Figure 6



2446183 S00061544383_V1

EXAMPLE OF A CONTACT SIZE
Figure 7



2448415 S00061547049_V1

BACC47GC AND BACC47GD CONTACT PART NUMBER STRUCTURE
Figure 8

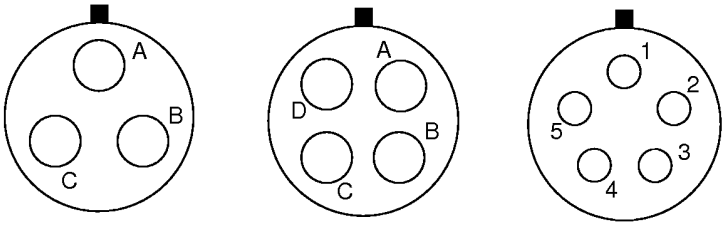
2. INSERT CONFIGURATIONS

A. BACC63ED, BACC63EE, and BACC63EF Connectors

Table 3
CONNECTOR INSERT CONFIGURATIONS

Insert Configuration	Contact Cavity		Applicable Contact Size	Reference
	Count	Size		
03	3	16	1616	Figure 9
04	4	16	1616	Figure 9
05	5	22D	2222D	Figure 9
09	5	22D	2222D	Figure 10
	4	16	1616	

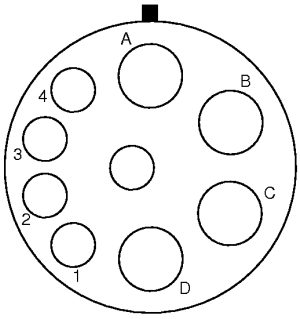
NOTE: Figure 9 and Figure 10 show the rear face of an insert that has pins. The view of the rear face of an insert that has sockets is the mirror image of this view.



INSERT 03 INSERT 04 INSERT 05

2449254 S00061547076_V1

SHELL SIZE A INSERT CONFIGURATIONS
Figure 9



INSERT 09

2449255 S00061547077_V1

SHELL SIZE B INSERT CONFIGURATIONS
Figure 10

3. CONNECTOR DISASSEMBLY

A. Contact Removal

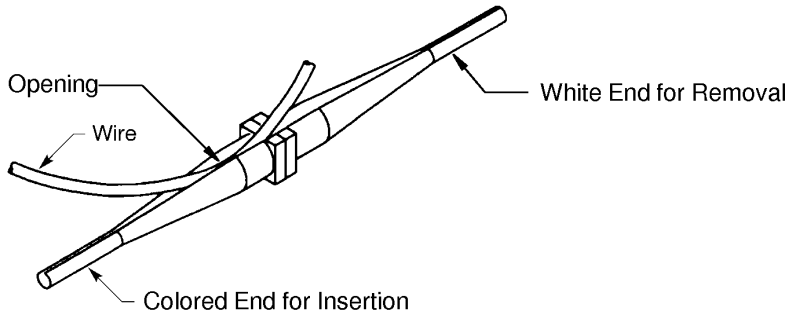
Table 4
CONTACT REMOVAL TOOLS

Contact Size	Removal Tool			
	Color	Material	Part Number	Supplier
2222D	White	Plastic	M81969/14-01	QPL
	-	Metal	M81969/8-02	QPL
1616	-	Metal	11-8675-16	Amphenol
			11-8795-16	Amphenol
			M81969/8-08	QPL
			MS27495R16	QPL
			RX16-9	Burndy
	White	Plastic	M81969/14-03	QPL
			MS27534-16	QPL

Table 5
NECESSARY MATERIAL

Material	Description	Specification	Supplier
Lubricant	Isopropyl Alcohol	TT-I-735	An available source

(1) Make a selection of a contact removal tool from Table 4. Refer to Figure 11 for contact removal tool configuration.



2448418 S00061547050_V1

CONTACT INSERTION AND REMOVAL TOOL CONFIGURATION
Figure 11

(2) At the rear of the connector, put the removal tool on the wire of the contact that is to be removed.

(3) Align the removal tool with the contact cavity near the surface of the grommet.

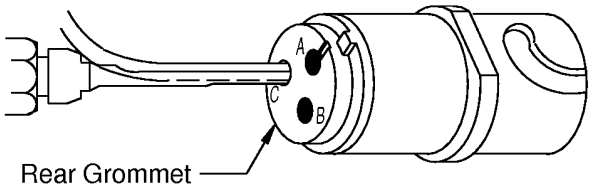
(4) Carefully push the tool into the contact cavity until it stops. Refer to Figure 12.

Make sure that the tool stays aligned with the contact cavity.

NOTE: To help removal of the contact, use the lubricant to lubricate the removal tool. Refer to Table 5.

CAUTION: DO NOT USE MORE THAN THE NECESSARY AMOUNT OF FORCE TO PUSH THE REMOVAL TOOL INTO THE CONTACT CAVITY. DAMAGE THE CONTACT RETENTION CLIPS OR THE CONNECTOR GROMMET CAN OCCUR.

CAUTION: DO NOT TURN THE TOOL CLOCKWISE OF COUNTERCLOCKWISE WHEN THE TOOL IS IN THE CONTACT CAVITY. DAMAGE THE CONTACT RETENTION CLIPS OR THE CONNECTOR OR GROMMET CAN OCCUR.

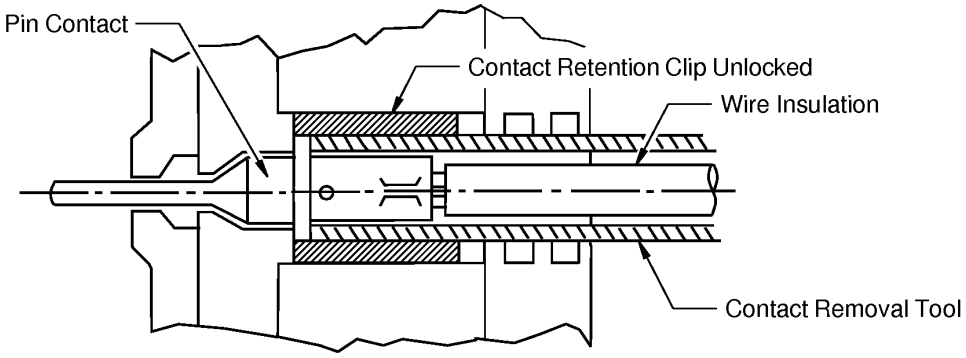


2449252 S00061547079_V1

CONTACT REMOVAL
Figure 12

(5) Hold the wire against the tool.

(6) Pull the tool and the wire out from the contact cavity. Refer to Figure 13



2448419 S00061547053_V1

CROSS SECTION OF THE REMOVAL TOOL INSIDE CONTACT CAVITY
Figure 13

(7) Examine the front of the connector for a crack or a chip that extends from:
- One contact cavity to another contact cavity
- A contact cavity to the shell of the connector.

(8) If the contact is not released from the connector:

(a) Pull the removal tool out of the contact cavity.

(b) Turn the removal tool approximately 90 degrees.

(c) Do Step 3.A.(3) through Step 3.A.(7) again.

B. Seal Plug Removal

Table 6
NECESSARY TOOL

Tool	Type
Pliers	Needle Nose

(1) Make a selection of pliers from Table 6.

CAUTION: MAKE SURE THAT THE NEEDLE NOSE PLIERS HAVE SMOOTH SURFACES AND NO SHARP EDGES. NEEDLE NOSE PLIERS WITH ROUGH SURFACES OR SHARP EDGES CAN CAUSE DAMAGE TO THE REAR GROMMET.

(2) Hold the end of the seal plug or seal rod tightly in the jaws of the pliers.

(3) Pull the seal plug or seal rod out of the rear grommet in the direction that is perpendicular to the face of the grommet.

(4) Examine the rear grommet for these types of damage:

- Gouges between two contact cavities
- Cuts between two contact cavities
- Cracks between two contact cavities
- Cracks between cavities and the shell in the rear grommet.

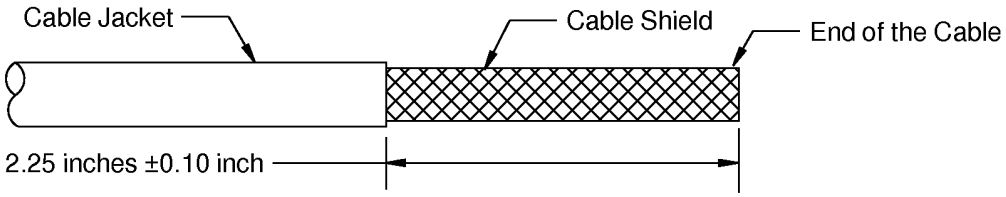
(5) If the connector has damage, replace the connector.

4. CONNECTOR ASSEMBLY

A. Shield Ground Wire Assembly

(1) Remove 2.25 inches ±0.1 inch of the cable jacket from the end of the cable. Refer to:

- Figure 14
- Subject 20-00-15 for the procedure to remove the cable jacket.

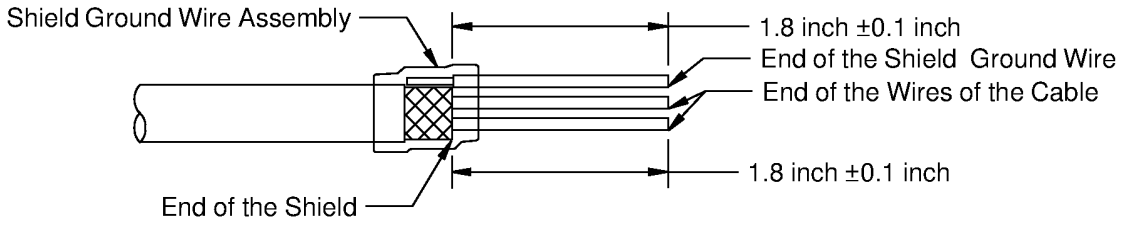


2449010 S00061547055_V1

CABLE JACKET REMOVAL
Figure 14

(2) Assemble an insulated shield ground wire. Refer to Subject 20-10-15.

(3) Remove the unwanted length from the end of the shield ground wire and the wires of the cable. Refer to Figure 15.



CABLE PREPARATION
Figure 15

B. Contact Assembly

Table 7
INSULATION REMOVAL LENGTH

Contact Size	Wire Size (AWG)	Removal Length L (inch)		
		Target	Minimum	Maximum
2222D	24	0.14	0.14	0.17
	22	0.14	0.14	0.17
1616	20	0.18	0.18	0.21
	18	0.18	0.18	0.21
	16	0.18	0.18	0.21

Table 8
CONTACT CRIMP TOOLS

Contact Size	Contact Type	Wire Size (AWG)	Crimp Tool						
			Basic Unit			Locator			
			Part Number	Setting	Supplier	Part Number	Color	Locator Block Color	Supplier
2222D	Pin	24	M22520/2-01	3	QPL	M22520/2-09	-	-	QPL
	Pin	22	M22520/2-01	4	QPL	M22520/2-09	-	-	QPL
	Pin		WA22	4	Daniels	M22520/2-09	-	-	QPL
	Socket	24	M22520/2-01	3	QPL	M22520/2-06	-	-	QPL
	Socket	22	M22520/2-01	4	QPL	M22520/2-06	-	-	QPL
	Socket		WA22	4	Daniels	M22520/2-06	-	-	QPL

Table 8 CONTACT CRIMP TOOLS (Continued)

Contact Size	Contact Type	Wire Size (AWG)	Crimp Tool						
			Basic Unit			Locator			
			Part Number	Setting	Supplier	Part Number	Color	Locator Block Color	Supplier
1616	Pin or Socket	22	M22520/1-01	4	QPL	M22520/1-04	Blue	-	QPL
			MS3191-1	-	Burndy	11-7771-29	-	-	Amphenol
			ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing
		20	ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing
			614019	-	Balmar	-	Red	Blue	-
			M22520/1-01	4	QPL	M22520/1-04	Blue	-	QPL
			MS3191-1	-	Burndy	11-7771-29	-	-	Amphenol
			ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing
			WA27F	4	Daniels	M22520/1-04	Blue	-	QPL
		18	11148	-	QPL	-	Red	Blue	QPL
			614019	-	Balmar	-	Red	Blue	QPL
			M22520/1-01	5	QPL	M22520/1-04	Blue	-	QPL
			MS3191-1	-	Burndy	11-7771-29	-	-	Amphenol
			ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing
			WA27F	5	Daniels	M22520/1-04	Blue	-	QPL
		16	11148	-	QPL	-	Red	Blue	-
			614019	-	Balmar	-	Red	Blue	-
			M22520/1-01	6	QPL	M22520/1-04	Blue	-	QPL
			MS3191-1	-	Burndy	11-7771-29	-	-	Amphenol
			ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing
			WA27F	6	Daniels	M22520/1-04	Blue	-	QPL

Table 9
SATISFACTORY WIRE OUTSIDE INSULATION DIAMETER FOR THE DIFFERENT CONTACT SIZES

Contact Size	Wire Insulation Outside Diameter (inch)	
	Minimum	Maximum
2222D	0.030	0.054
1616	0.065	0.109

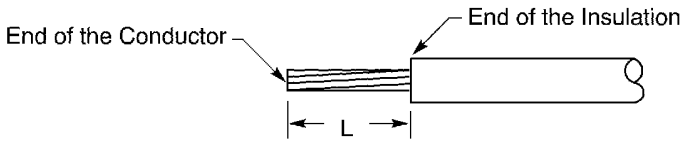
(1) Measure the O.D. of the wire insulation of the wire that will be attached to the selected contact. Refer to Table 9.

(2) If the O.D. of the wire is larger than the maximum, use the procedure in Paragraph 4.C. to prepare the wire.

(3) Remove the necessary length L of the insulation from the end of the wire.

Refer to:

- Subject 20-00-15
- Table 7
- Figure 16.



2446159 S00061546266_V1

INSULATION REMOVAL
Figure 16

(4) If the O.D. of the wire is smaller than the minimum, use the procedure in Paragraph 4.D. to increase the O.D. of the wire.

(5) Make a selection of the crimp tool from Table 8.

(6) Push the conductor into the crimp barrel of the contact until it stops.

Make sure that:

- The strands of the conductor can be seen in the inspection hole
- The insulation is not in the crimp barrel
- If the O.D. of the wire was not decreased, the distance from the end of the crimp barrel to the end of the wire insulation is 0.03 inch maximum.

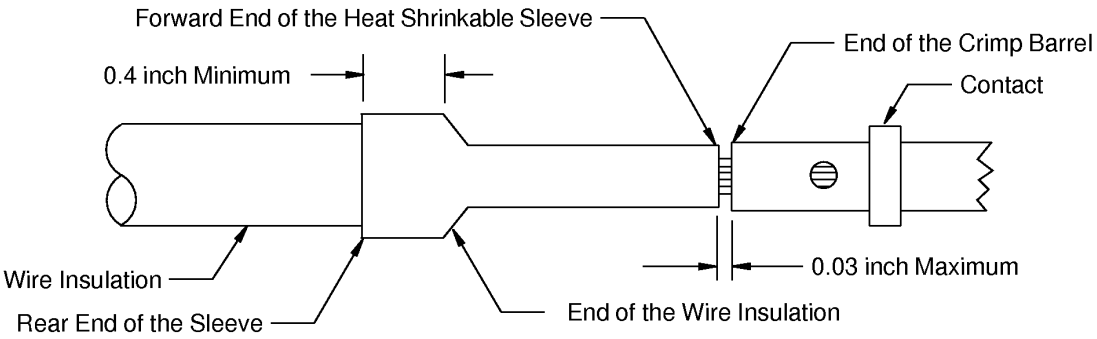
(7) Crimp the contact.

(8) If the O.D. of the wire was decreased, and there is a length of heat shrinkable sleeve on the wire, shrink the sleeve into its position. Refer to:

- Figure 17
- Subject 20-10-14 for the procedure to shrink a heat shrinkable sleeve.

Make sure that:

- The distance between the end of the heat shrinkable sleeve and the end of the contact crimp barrel is not longer than 0.03 inch.
- The heat shrinkable sleeve makes an overlap on the wire insulation of 0.4 inch minimum.



2449250 S00061547080_V1

POSITION OF THE HEAT SHRINKABLE SLEEVE
Figure 17

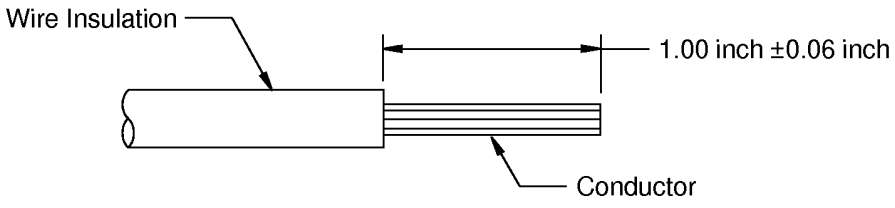
C. Preparation of a Wire that has an Oversize Insulation Diameter

Use this procedure to prepare the wire If the O.D. of the wire is larger than the maximum shown in Table 9.

Table 10
NECESSARY MATERIALS

Material	Color	Part Number
Heat Shrinkable Sleeve	Clear	M23053/8 (RNF-150)

(1) Remove a 1.00 inch ±0.06 inch length of insulation from the end of the wire. Refer to Figure 18.



2449249 S00061547081_V1

INSULATION REMOVAL LENGTH
Figure 18

(2) Make a selection of a heat shrinkable sleeve from Table 10.

Make sure that the sleeve has the smallest diameter that will let the sleeve move easily on the wire insulation

(3) Put a 1.50 inch ±0.06 inch length of the heat shrinkable sleeve on the end of the wire.

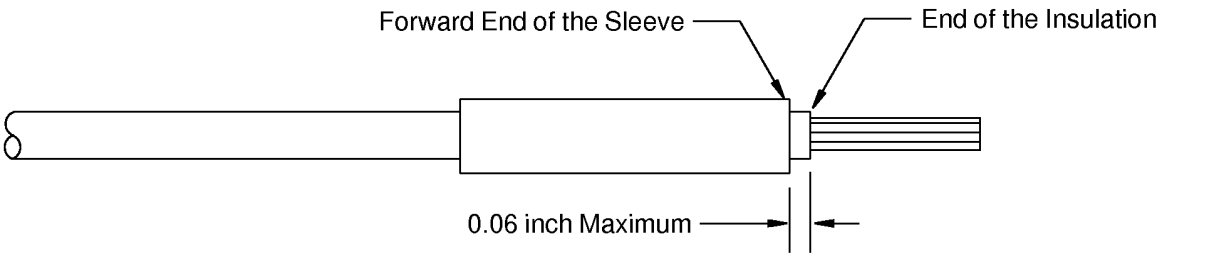
D. Increase the O.D. of an Unshielded Wire

(1) Make a selection of a Grade B, Class 1 heat shrinkable sleeve from Subject 20-00-11.

Make sure that the sleeve has the smallest diameter that will let the sleeve move easily on the wire insulation.

(2) Put a 0.75 inch ±0.05 inch length of the heat shrinkable sleeve on the end of the wire.

(3) Push the sleeve forward until the forward end of the sleeve is 0 inch to 0.06 inch from the end of the insulation of the wire. Refer to Figure 19.



2449226 S00061547082_V1

POSITION OF THE SLEEVE ON THE WIRE
Figure 19

(4) Shrink the sleeve into its position.

Refer to:

- Figure 19
- Subject 20-10-14 for the procedure to shrink a heat shrinkable sleeve.

Make sure that:

- The sleeve does not move on the wire
- The forward end of the sleeve is not farther than 0.06 inch from the end of the insulation of the wire.

E. Contact Insertion

Table 11
CONTACT INSERTION TOOLS

Contact Size	Insertion Tool			
	Color	Material	Part Number	Supplier
2222D	Green	Plastic	M81969/14-01	QPL
	-	Metal	M81969/8-01	QPL

Table 11 CONTACT INSERTION TOOLS (Continued)

Contact Size	Insertion Tool			
	Color	Material	Part Number	Supplier
1616	-	Metal	11-8674-16	Amphenol
			11-8794-16	Astro
			M81969/8-07	QPL
			MS27495A16	QPL
			RX16-4	Astro
	Blue	Plastic	M81969/14-03	QPL
			MS27534-16	QPL

(1) Make a selection of a contact insertion tool from Table 11.

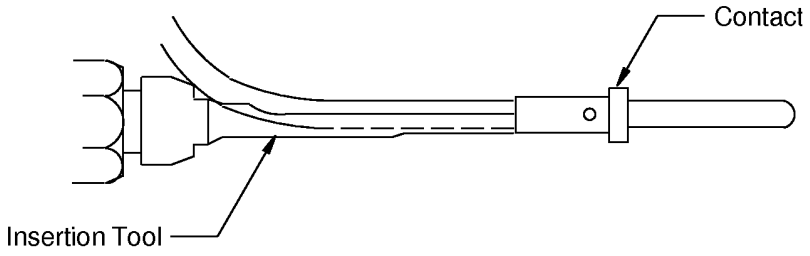
CAUTION: DO NOT USE A TOOL WITH:

- A TIP THAT IS BENT
- A TIP THAT IS FLARED
- A TIP THAT IS BROKEN
- A TIP THAT IS CRACKED
- A BIT THAT IS BENT.

WARNING: A DEFECTIVE TOOL CAN CAUSE INJURY TO THE OPERATOR.

CAUTION: A DEFECTIVE TOOL CAN CAUSE DAMAGE TO THE REAR GROMMET OF THE CONNECTOR OR THE CONTACT RETENTION CLIPS, OR BOTH.

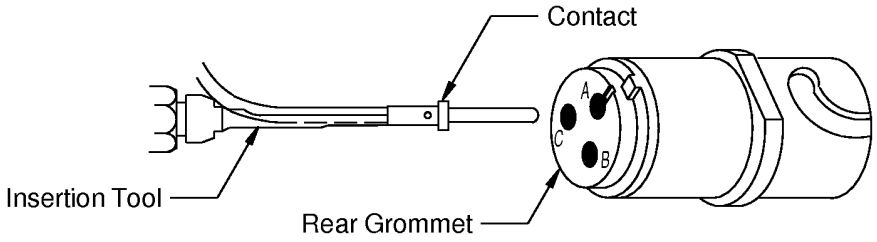
(2) Put the wired contact into the insertion tool. Refer to Figure 20.
Make sure that the tip of the tool is against the end of the wire barrel of the contact.



2449253 S00061547083_V1

POSITION OF THE WIRED CONTACT IN THE INSERTION TOOL
Figure 20

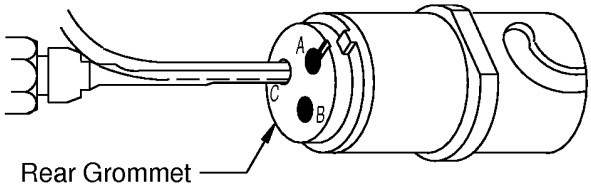
(3) Axially align the contact, the tool and the contact cavity. Refer to Figure 21.



2449251 S00061547084_V1

POSITION OF THE WIRED CONTACT IN RELATION TO THE CONTACT CAVITY
Figure 21

(4) Push the tool into the contact cavity until the tool stops. Refer to Figure 22.
Make sure that the insertion tool stays aligned with the contact cavity.



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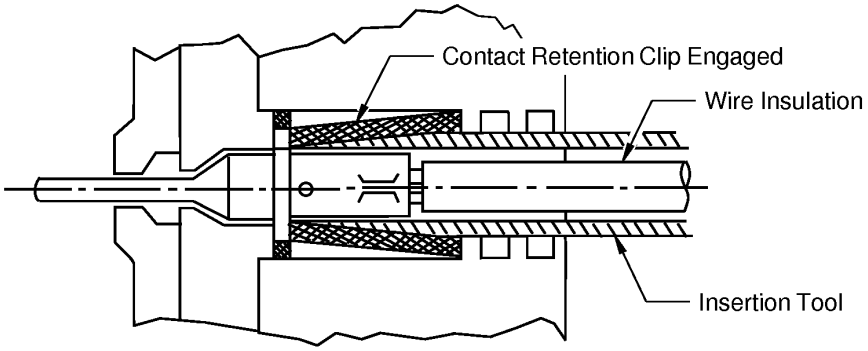
INSERTION OF THE CONTACT
Figure 22

(5) Carefully remove the tool from the contact cavity.

(6) Lightly pull the wire to make sure that the contact is locked in the contact cavity. Refer to Figure 23.



2448426 S00061547069_V1

CROSS SECTION OF THE INSERTION TOOL INSIDE THE CONTACT CAVITY
Figure 23

CAUTION: DO NOT PULL THE WIRE WITH A STRONG OR A SUDDEN FORCE. THE FORCE CAN CAUSE DAMAGE TO THE CONNECTOR OR THE CONTACT, OR BOTH.

CAUTION: DO NOT MAKE A DENT IN THE WIRE INSULATION WITH THE FINGERNAILS. DAMAGE TO THE WIRE INSULATION CAN CAUSE UNSATISFACTORY PERFORMANCE AND RELIABILITY OF THE WIRE.

(7) If the contact is not locked in the contact cavity:

(a) Pull the wired contact out of the contact cavity.

(b) Do Step 4.E.(2) through Step 4.E.(6) again.

F. Seal Plug Installation

Table 12
NECESSARY MATERIALS

Material	Contact Cavity Size	Part Number	Supplier
Seal Plug	22D	MS27488-22	QPL
	16	MS27488-16	QPL

(1) Install a seal plug in the contact cavities that will not have assembled contacts in the connector:

(a) Use the contact cavity size to make a selection of a seal plug from Table 12.

(b) Make a selection of a contact insertion tool from Table 11.

(c) Use the contact insertion tool to push the seal plug into the contact cavity until it stops.

Make sure that the large end of the seal plug goes into the contact cavity first.

(d) Cut and remove the unwanted length of the end of the seal plug.

Make sure that the distance from the connector grommet to the cut end of the seal plug is between 0.1 inch and 0.2 inch.

CAUTION: DO NOT CAUSE DAMAGE TO ADJACENT WIRES IN THE CONNECTOR.

NOTE: The seal plug can be removed from the connector, cut, and then reinstalled to prevent damage to other wires. Make sure that the distance from the connector grommet to the cut end of the seal plug is between 0.1 inch and 0.2 inch.

ASSEMBLY OF MIL-C-83723 SERIES III TYPE CONNECTORS

TABLE OF CONTENTS

ASSEMBLY OF MIL-C-83723 SERIES III TYPE CONNECTORS

ASSEMBLY OF MIL-C-83723 SERIES III TYPE CONNECTORS

1. GENERAL DATA

A. Damage Conditions

These conditions are applicable:

- The insert does not have damage that extends from a contact cavity to a different contact cavity
- The insert does not have damage that extends from a contact cavity to the outer edge of the insert
- The connector shell is not broken
- The connector shell does not have a crack or a chip.

B. Minimum Wire O.D. for an Environmentally Sealed Connector

Refer to:

- Subject 20-60-08 for the identification of an environmentally sealed connector
- Table 1 for the minimum wire O.D. that is necessary for a satisfactory seal of a contact cavity hole
- Subject 20-60-08 for the procedure to increase the diameter of the wire.

Table 1
MINIMUM WIRE O.D. FOR A SATISFACTORY SEAL

Connector	Description	Contact Cavity Size	Minimum Wire O.D. (inch)
52752-()	MIL-C-83723 Series III type	20	0.040
		16	0.053
		12	0.096
52753-()	MIL-C-83723 Series III type	20	0.040
		16	0.053
		12	0.096
52761-()	MIL-C-83723 Series III type	20	0.040
		16	0.053
		12	0.096
BACC63BR	MIL-C-83723 Series III type	20	0.040
		16	0.053
		12	0.096
BACC63BT	MIL-C-83723 Series III type	20	0.040
		16	0.053
		12	0.096
BACC63CM	ESC 10 Class SE	20	0.040
		16	0.053
		12	0.096
BACC63CN	ESC 10 Class SE	20	0.040
		16	0.053
		12	0.096

Table 1 MINIMUM WIRE O.D. FOR A SATISFACTORY SEAL (Continued)

Connector	Description	Contact Cavity Size	Minimum Wire O.D. (inch)
M83723/( )	MIL-C-83723 Series III	20	0.040
		16	0.053
		12	0.096

C. Maximum Wire O.D.

Table 2
MAXIMUM WIRE O.D.

Connector	Description	Contact Cavity Size	Maximum Wire O.D. (inch)
52752-()	MIL-C-83723 Series III type	20	0.078
		16	0.103
		12	0.151
52753-()	MIL-C-83723 Series III type	20	0.078
		16	0.103
		12	0.151
52761-()	MIL-C-83723 Series III type	20	0.078
		16	0.103
		12	0.151
BACC63BR	MIL-C-83723 Series III type	20	0.078
		16	0.103
		12	0.151
BACC63BT	MIL-C-83723 Series III type	20	0.078
		16	0.103
		12	0.151
BACC63CM	ESC 10 Class SE	20	0.078
		16	0.103
		12	0.151
BACC63CN	ESC 10 Class SE	20	0.078
		16	0.103
		12	0.151
M83723/( )	MIL-C-83723 Series III	20	0.078
		16	0.103
		12	0.151

ASSEMBLY OF MIL-C-83723 SERIES III TYPE CONNECTORS

2. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

Table 3
CONNECTOR PART NUMBERS

Boeing Standard	Part Number	Supplier	Reference
-	10-584762	Amphenol	Paragraph 2.F.
-	10-584796	Amphenol	Paragraph 2.F.
-	52752-( )	Matrix	Paragraph 2.D.
-	52753-( )	Matrix	Paragraph 2.D.
-	52761-( )	Matrix	Paragraph 2.D.
-	M83723/( )	QPL	Paragraph 2.E.
BACC63BR()	BSK-12( )	Pyle-National	Paragraph 2.B.
BACC63BR()	HTBMF( )	ITT Cannon UK	Paragraph 2.B.
BACC63BR()	MT37K( )	Matrix	Paragraph 2.B.
BACC63BT()	BSK-17( )	Pyle-National	Paragraph 2.B.
BACC63BT()	HTBMF00( )	ITT Cannon UK	Paragraph 2.B.
BACC63BT()	MT30K( )	Matrix	Paragraph 2.B.
BACC63CM()	-	QPL	Paragraph 2.C.
BACC63CN()	-	QPL	Paragraph 2.C.

Table 4
APPROVED SUPPLIERS OF BOEING STANDARD CONNECTORS

Boeing Standard	Supplier
BACC63BR()	ITT Cannon UK
	Matrix
	Pyle-National
BACC63BT()	ITT Cannon UK
	Matrix
	Pyle-National
BACC63CM()	Deutsch
	Matrix
	Pyle-National
	Souriau
BACC63CN()	Deutsch
	Matrix
	Pyle-National
	Souriau

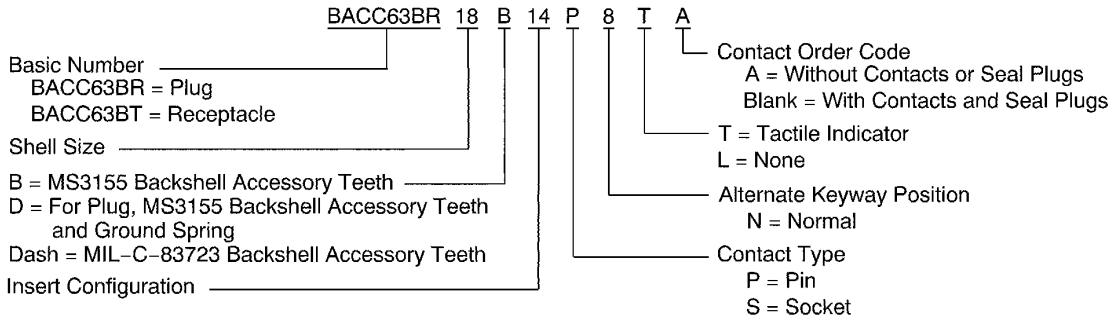
ASSEMBLY OF MIL-C-83723 SERIES III TYPE CONNECTORS

Table 5
ALTERNATIVE CONNECTOR PART NUMBERS

Specified Connector	Alternative Connector
52761-( )	BACC63CM( )
BACC63BR( )	BACC63CM( )
BACC63BT( )	BACC63CN( )

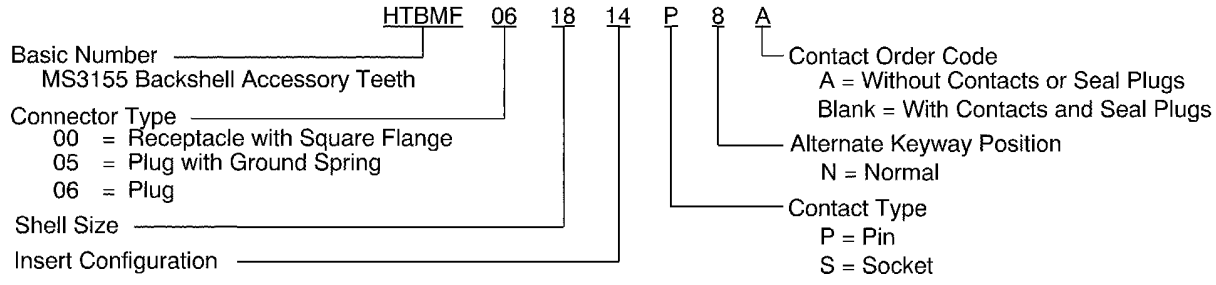
B. BACC63BR and BACC63BT Thread Coupled Firewall Connectors

The BACC63BR and BACC63BT connectors have a self-locking coupling mechanism.



2446295 S00061547087_V1

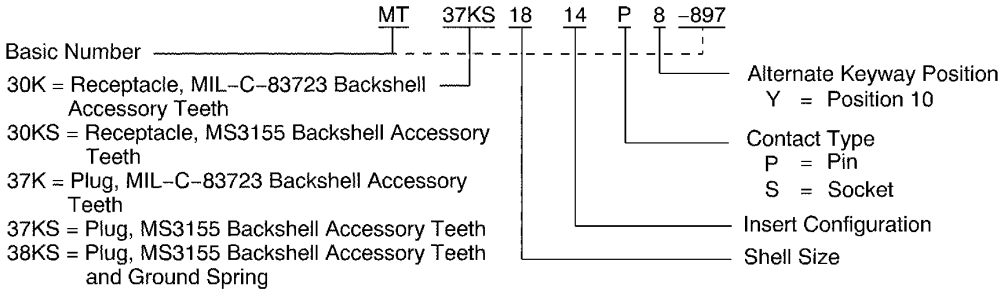
BOEING BACC63BR AND BACC63BT CONNECTOR PART NUMBER STRUCTURE
Figure 1



2446297 S00061547088_V1

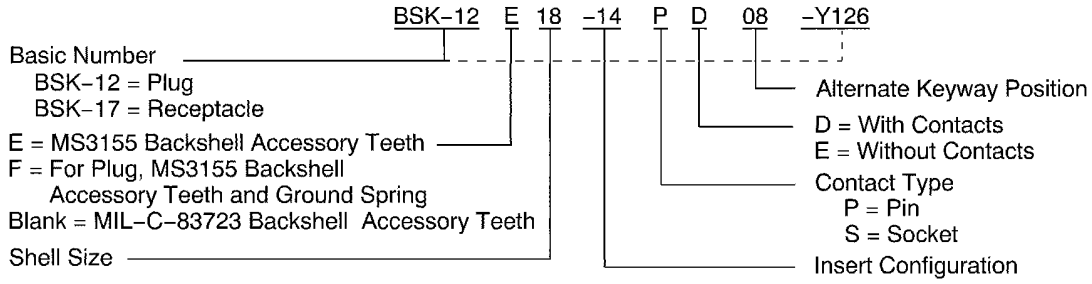
ITT CANNON BACC63BR AND BACC63BT CONNECTOR PART NUMBER STRUCTURE - HTBMF
Figure 2

ASSEMBLY OF MIL-C-83723 SERIES III TYPE CONNECTORS



2446301 S00061547089_V1

MATRIX BACC63BR AND BACC63BT CONNECTOR PART NUMBER STRUCTURE - MT
Figure 3



2446302 S00061547090_V1

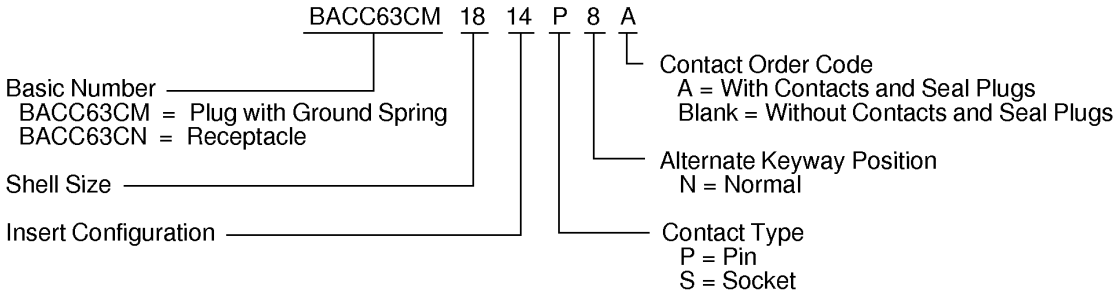
PYLE-NATIONAL BACC63BR AND BACC63BT CONNECTOR PART NUMBER STRUCTURE - BSK-12 AND BSK-17
Figure 4

ASSEMBLY OF MIL-C-83723 SERIES III TYPE CONNECTORS

C. BACC63CM and BACC63CN Thread Coupled Firewall Connectors

The BACC63CM and BACC63CN connectors have:

- A self-locking coupling mechanism
- Have the performance of the British Aerospace Companies Standard ESC 10 Class SE plug and Class KE receptacle.

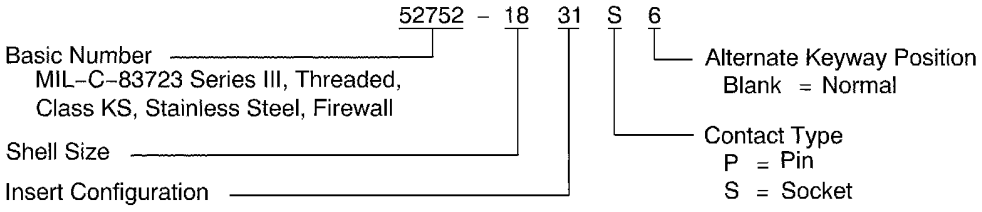


2446296 S00061547091_V1

BOEING BACC63CM AND BACC63CN CONNECTOR PART NUMBER STRUCTURE
Figure 5

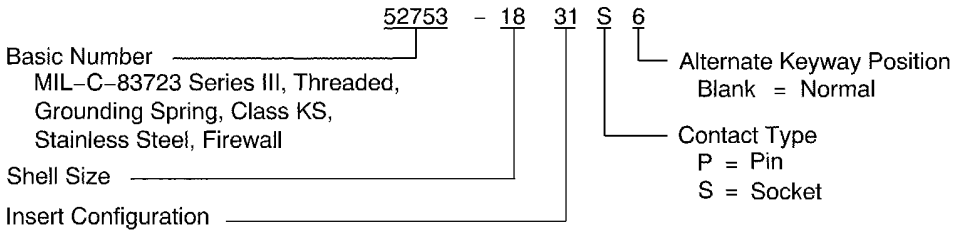
D. Matrix 527() Connectors

The Matrix 527() connectors are the same as the Matrix MT37() plug connectors, but the coupling ring is set back to prevent interference with the threads of the receptacle jam nut.



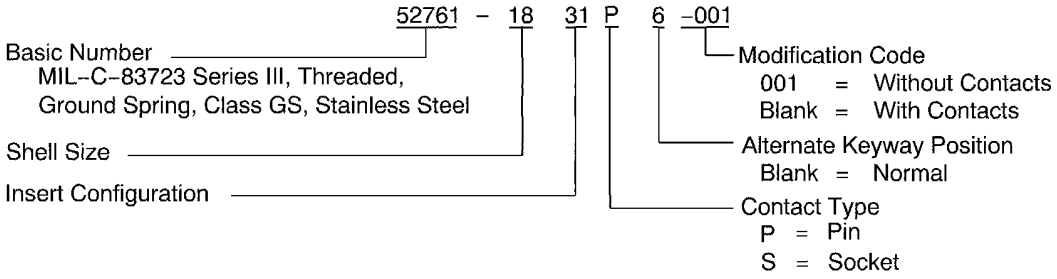
2446298 S00061547092_V1

MATRIX 52752-() CONNECTOR PART NUMBER STRUCTURE
Figure 6



2446299 S00061547093_V1

MATRIX 52753-() CONNECTOR PART NUMBER STRUCTURE
Figure 7

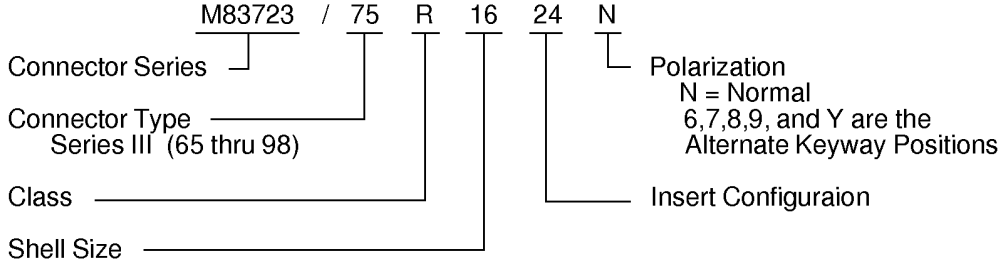


2446300 S00061547094_V1

MATRIX 52761-() CONNECTOR PART NUMBER STRUCTURE
Figure 8

E. MIL-C-83723 Series III Connectors

MIL-C-83723 Series III connectors can be Type T Threaded, or Type B Bayonet coupling.

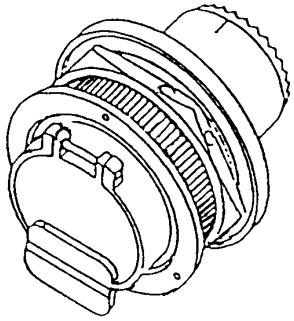


2448254 S00061547095_V1

M83723 CONNECTOR PART NUMBER STRUCTURE
Figure 9

F. Amphenol Special Audio Connector

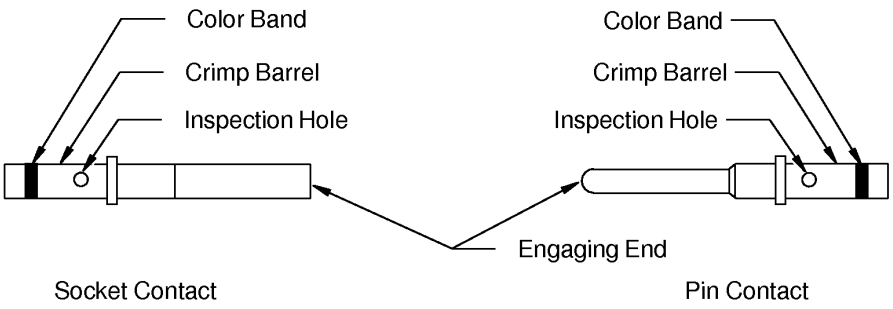
The Amphenol special audio receptacle connector has 10 size 16 stardard socket contacts.



2446303 S00061547096_V1

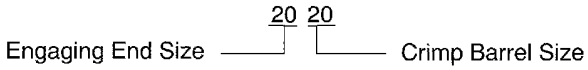
AMPHENOL 10-584762 RECEPTACLE CONNECTOR
Figure 10

G. Contact Part Numbers



2449029 S00061546903_V1

BOEING STANDARD CONTACTS
Figure 11



2446651 S00061545900_V1

EXAMPLE OF A CONTACT SIZE
Figure 12

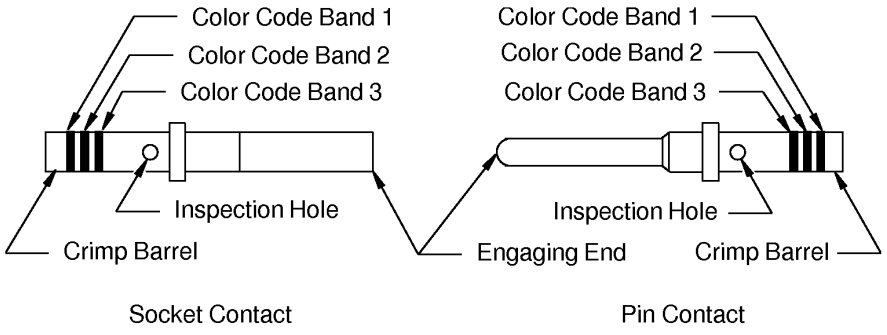
ASSEMBLY OF MIL-C-83723 SERIES III TYPE CONNECTORS

Table 6
BOEING STANDARD CONTACT PART NUMBERS

Contact Size		Contact Type	Boeing Standard	Color Band
Engaging End	Crimp Barrel			
20	20	Pin	BACC47ES1	Red
		Socket	BACC47ET1	Red
16	16	Pin	BACC47ES2	Blue
		Socket	BACC47ET2	Blue
12	12	Pin	BACC47ES3	Yellow
		Socket	BACC47ET3	Yellow

Table 7
APPROVED SUPPLIERS OF BOEING STANDARD CONTACTS

Boeing Standard	Supplier
BACC47ES()	Amphenol
	Pyle-National
	Tri-Star
BACC47ET()	Amphenol
	Pyle-National
	Tri-Star



2448999 S00061545899_V1

MILITARY STANDARD CONTACTS
Figure 13

ASSEMBLY OF MIL-C-83723 SERIES III TYPE CONNECTORS

Table 8
ALTERNATIVE EQUIVALENT MILITARY STANDARD CONTACT PART NUMBERS

Contact Size		Contact Type	Part Number	Supplier	Color Code		
Engaging End	Crimp Barrel				Band 1	Band 2	Band 3
20	20	Pin	M39029/4-110	QPL	Brown	Brown	Black
		Socket	M39029/5-115	QPL	Brown	Brown	Green
16	16	Pin	M39029/4-111	QPL	Brown	Brown	Brown
		Socket	M39029/5-116	QPL	Brown	Brown	Blue
12	12	Pin	M39029/4-113	QPL	Brown	Brown	Orange
		Socket	M39029/5-118	QPL	Brown	Brown	Gray

Table 9
THERMOCOUPLE CONTACT PART NUMBERS

Contact Size		Contact Type	Contact	Part Number	Supplier
Engaging End	Crimp Barrel				
20	20	Pin	Alumel	5000-070-120	Matrix
			Chromel	5000-070-220	Matrix
		Socket	Alumel	5100-108-120	Matrix
			Chromel	5100-108-220	Matrix
16	16	Pin	Alumel	5000-070-116	Matrix
				M39029/9-516	QPL
			Chromel	5000-070-216	Matrix
				M39029/9-517	QPL
		Socket	Alumel	5100-108-116	Matrix
				M39029/10-521	QPL
			Chromel	5100-108-216	Matrix
				M39029/10-522	QPL
12	12	Pin	Alumel	5000-070-112	Matrix
			Chromel	5000-070-212	Matrix
		Socket	Alumel	5100-108-112	Matrix
			Chromel	5100-108-212	Matrix

ASSEMBLY OF MIL-C-83723 SERIES III TYPE CONNECTORS

3. INSERT CONFIGURATIONS

A. Insert Configurations for MIL-C-83723 Series III Type Connectors

NOTE: The insert configurations that are specified in Table 10 include the connector shell size as the first part of the configuration. Refer to Table 6 for the part number structure that is applicable for the connector.

NOTE: The contact cavity size that is specified in Table 10 is equivalent to the size of the engaging end of the contact.

Table 10
CONNECTOR INSERT CONFIGURATIONS

Insert Configuration	Contact Cavity		Reference
	Count	Size	
8-2 or 08-02	2	20	Figure 14
8-3 or 08-03	3	20	Figure 14
10-2 or 10-02	2	20	Figure 15
10-20	2	16	Figure 15
10-5 or 10-05	5	20	Figure 15
10-6 or 10-06	6	20	Figure 15
12-3 or 12-03	3	16	Figure 16
12-12	12	20	Figure 16
14-4 or 14-04	4	12	Figure 17
14-7 or 14-07	7	16	Figure 17
14-12	3	16	Figure 17
	9	20	
14-15	15	20	Figure 17
16-10	10	16	Figure 18
16-24	24	20	Figure 18
18-8 or 18-08	8	12	Figure 19
18-14	14	16	Figure 19
18-31	31	20	Figure 19
20-16	16	16	Figure 20
20-25	19	20	Figure 20
	6	12	
20-28	24	20	Figure 20
	4	12	
20-39	2	16	Figure 20
	37	20	
20-41	41	20	Figure 20

ASSEMBLY OF MIL-C-83723 SERIES III TYPE CONNECTORS

Table 10 CONNECTOR INSERT CONFIGURATIONS (Continued)

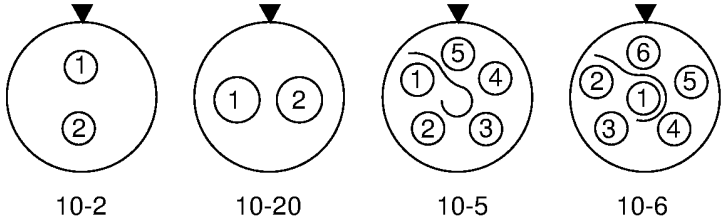
Insert Configuration	Contact Cavity		Reference
	Count	Size	
22-12	12	12	Figure 21
22-19	19	16	Figure 21
22-32	26	20	Figure 21
	6	12	
22-55	55	20	Figure 21
24-30	30	16	Figure 22
24-43	20	16	Figure 22
	23	20	
24-57	2	12	Figure 22
	55	20	
24-61	61	20	Figure 22
28-40	36	16	Figure 23
	4	12	
28-42	42	16	Figure 23

NOTE: Figure 14 through Figure 23 show the front face of an insert that has sockets. The view of the front face of an insert that has pins is the mirror image of this view.

8-2 8-3

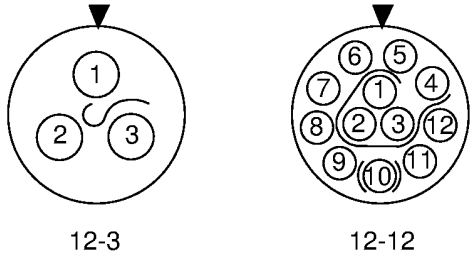
2446304 S00061547097_V1

8-() INSERT CONFIGURATIONS
Figure 14



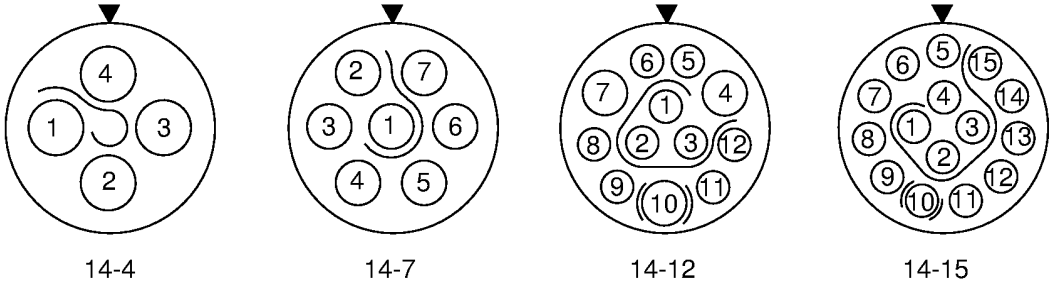
2446305 S00061547098_V1

10-() INSERT CONFIGURATIONS
Figure 15



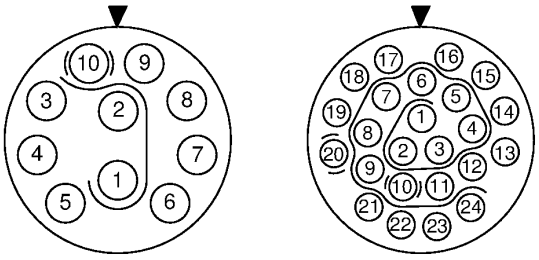
2446306 S00061547099_V1

12-() INSERT CONFIGURATIONS
Figure 16



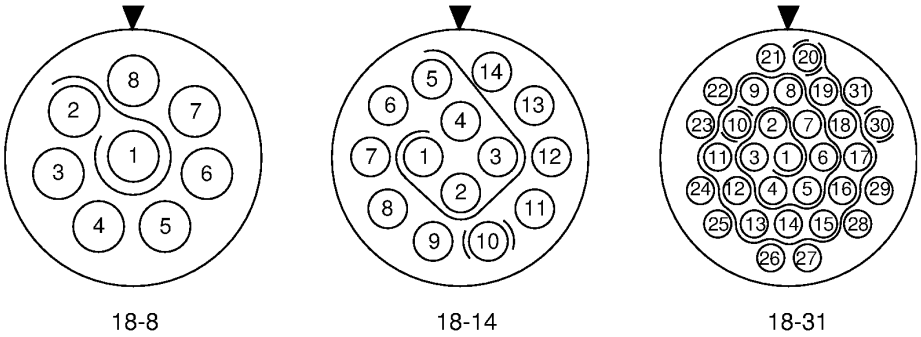
2446307 S00061547100_V1

14-() INSERT CONFIGURATIONS
Figure 17



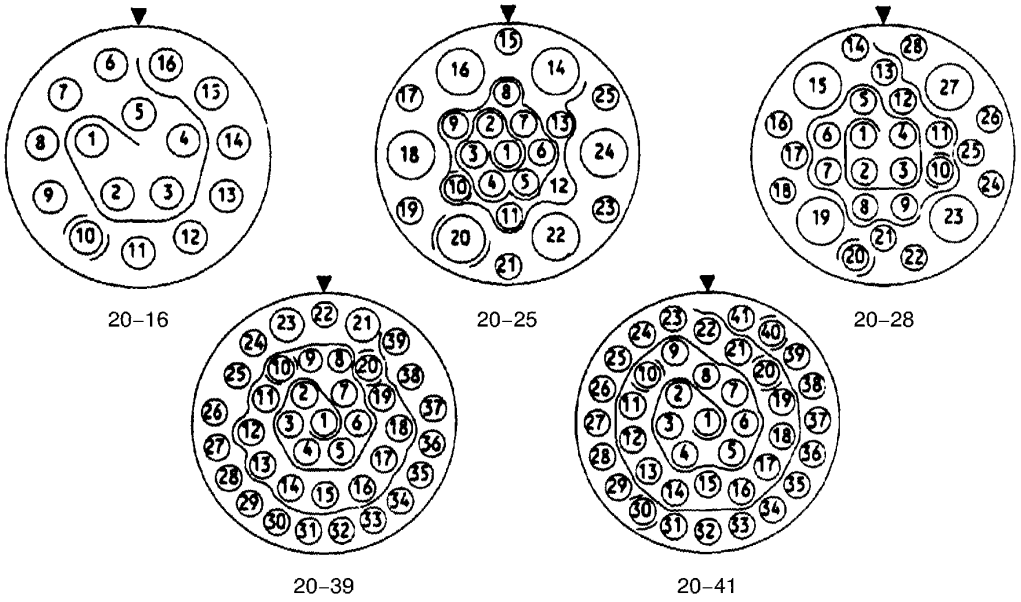
2446308 S00061547101_V1

16-() INSERT CONFIGURATIONS
Figure 18

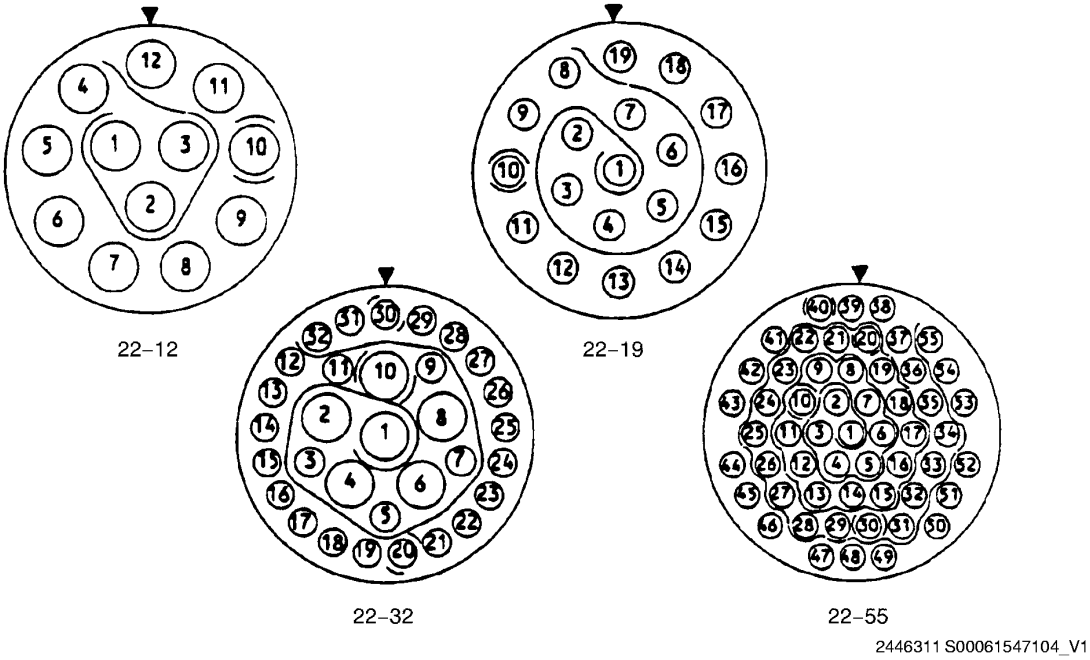


2446309 S00061547102_V1

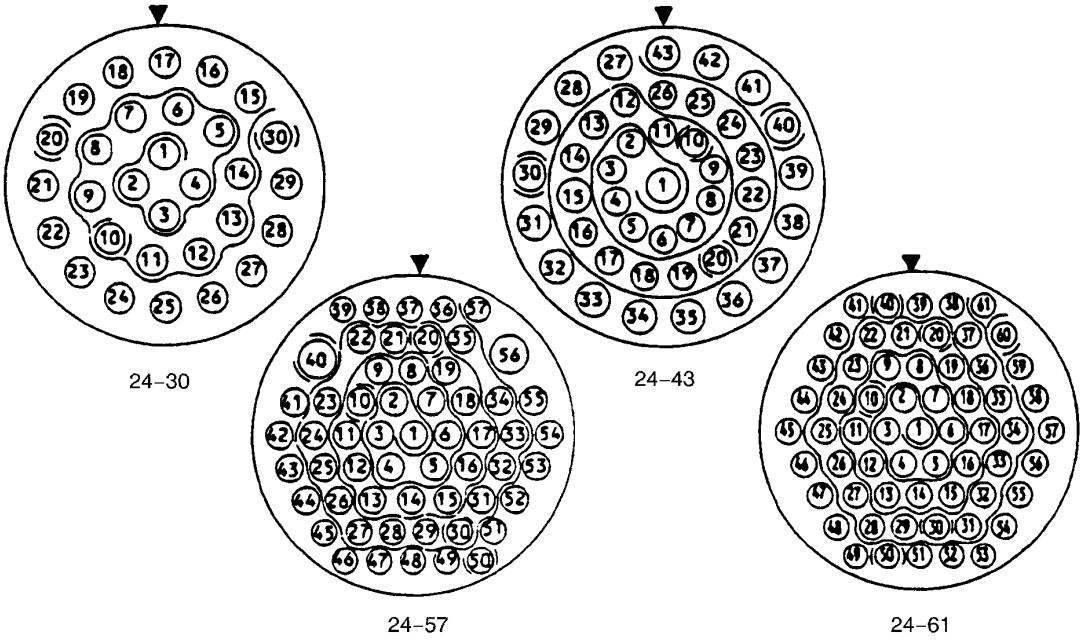
18-() INSERT CONFIGURATIONS
Figure 19



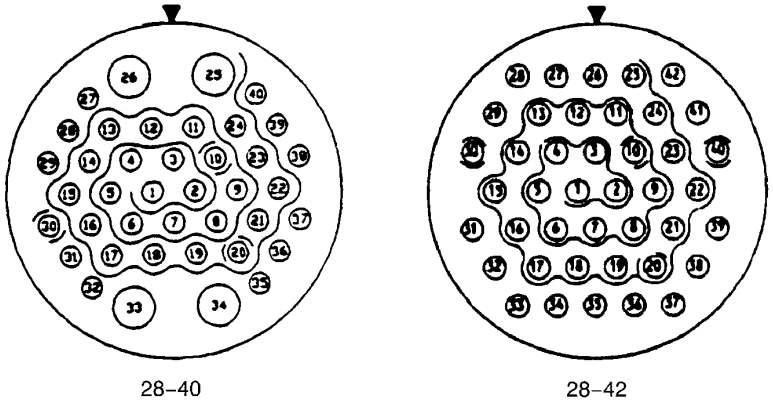
20-() INSERT CONFIGURATIONS
Figure 20



22-() INSERT CONFIGURATIONS
Figure 21



24-() INSERT CONFIGURATIONS
Figure 22



28-() INSERT CONFIGURATIONS
Figure 23

ASSEMBLY OF MIL-C-83723 SERIES III TYPE CONNECTORS

4. CONNECTOR DISASSEMBLY

A. Seal Plug and Seal Rod Removal

Table 11
NECESSARY TOOLS

Tool	Type
Pliers	Needle Nose

(1) Make a selection of a pliers from Table 11.

CAUTION: MAKE SURE THE PLIERS HAVE SMOOTH SURFACES AND NO SHARP EDGES. PLIERS WITH A ROUGH SURFACE OR A SHARP EDGE CAN CAUSE DAMAGE TO THE REAR GROMMET.

(2) If it is necessary, remove a plastic tie strap or a wire harness tie that is less than 6 inches from the connector.

(3) Hold the end of the seal plug or the seal rod tightly in the jaws of the pliers.

(4) Pull the seal plug or the seal rod from the contact cavity.

B. Contact Removal

This paragraph gives the procedure to remove a contact assembly from the connector.

For the procedure to remove an unwired contact, refer to Paragraph 4.C..

Table 12
CONTACT REMOVAL TOOLS

Contact Size	Removal Tool	Supplier	Special Instructions
2020	6500-001-20	Matrix	-
	CIET-20	ITT Cannon	-
	M81969/14-02	QPL	-
	M81969/14-11	QPL	-
	M83723/31-20	QPL	-
	ATR 2080	Astro	Applicable for contacts assembled with Champlain 24-00034 wire
1616	6500-001-16	Matrix	-
	6500-037-016	Matrix	-
	ATR 2112	Astro	Applicable for contacts assembled with Champlain 24-00034 wire
	CIET-16	ITT Cannon	Not applicable for contacts assembled with wire that has thick wall insulation
	M81969/14-03	QPL	-
	M83723/31-16	QPL	-

Table 12 CONTACT REMOVAL TOOLS (Continued)

Contact Size	Removal Tool	Supplier	Special Instructions
1212	6500-001-12	Matrix	-
	ATR 2160	Astro	Applicable for contacts assembled with Champlain 24-00034 wire
	CIET-12	ITT Cannon	-
	M81969/14-04	QPL	-
	M83723/31-12	QPL	-

(1) Make a selection of the removal tool from Table 12.

(2) At the rear of the connector, put the removal tool on the wire.

(3) Axially align the tool and the contact cavity at the rear of the connector.

(4) Carefully push the tool into the contact cavity until it stops.
Make sure that the tool stays aligned with the contact cavity.

CAUTION: DO NOT USE MORE THAN THE NECESSARY AMOUNT OF FORCE TO PUSH THE TOOL INTO THE CONTACT CAVITY. DAMAGE TO THE CONTACT RETENTION CLIPS CAN OCCUR.

CAUTION: DO NOT TURN THE TOOL CLOCKWISE OR COUNTERCLOCKWISE WHEN IT IS IN THE CONTACT CAVITY. DAMAGE TO THE CONTACT RETENTION CLIPS CAN OCCUR.

(5) Hold the wire against the tool.

(6) Pull the tool and the wire out from the contact cavity at the same time.
Make sure that the tool stays aligned with the contact cavity.

C. Unwired Contact Removal

This paragraph gives the procedure to remove an unwired contact from the connector.

For the procedure to remove a contact assembly, refer to Paragraph 4.B..

Table 13
CONTACT REMOVAL TOOLS

Crimp Barrel Size	Removal Tool	
	Part Number	Supplier
20	CET-20-24	ITT Cannon
16	CET-16-21	ITT Cannon
	DRK 110-16	Daniels
12	CET-12-16	ITT Cannon

(1) Make a selection of a contact removal tool from Table 13.

(2) Remove the seal plug from the contact cavity.

(3) Axially align the tool and the contact cavity at the rear of the connector.

(4) Carefully push the tool into the contact cavity until it stops.

Make sure that:

- The end of the tool is between the contact cavity and the crimp barrel of the contact
- The tool stays aligned with the contact cavity
- Pressure is not applied on the plunger of the tool.

CAUTION: DO NOT USE MORE THAN THE NECESSARY AMOUNT OF FORCE TO PUSH THE TOOL INTO THE CONTACT CAVITY. DAMAGE TO THE CONTACT RETENTION CLIPS CAN OCCUR.

CAUTION: DO NOT TURN THE TOOL CLOCKWISE OR COUNTERCLOCKWISE WHEN IT IS IN THE CONTACT CAVITY. DAMAGE TO THE CONTACT RETENTION CLIPS CAN OCCUR.

CAUTION: DO NOT APPLY PRESSURE ON THE PLUNGER OF THE TOOL WHEN THE TOOL IS IN THE CONTACT CAVITY. DAMAGE TO THE CONNECTOR CAN OCCUR.

(5) Pull the tool and the contact out of the contact cavity.

Make sure that the tool stays aligned with the contact cavity.

(6) Apply pressure on the plunger to eject the contact from the tool.

5. CONNECTOR ASSEMBLY

A. Wire Preparation

For the preparation of:

- Champlain 24-00033 and Champlain 24-00034 wire, refer to Paragraph 5.E.
- Rockbestos or Cerro H22-4000 wire, refer to Paragraph 5.F.
- Vibro-Meter 50-116-00 and Vibro-Meter 80-116-0() cable assembly wire, refer to Paragraph 5.G.
- Specialty Cable 852-4985339 cable wire, refer to Paragraph 5.H.

Table 14
INSULATION REMOVAL LENGTH

Wire Size (AWG)	Crimp Barrel Size	Removal Length L (inch)		Special Instructions
		Target	Tolerance	
24	20	0.19	±0.03	-
22	20	0.19	±0.03	-
	16	0.50	±0.03	Fold the conductor back.
20	20	0.19	±0.03	-
	16	0.25	±0.03	-
18	16	0.25	±0.03	-

Table 14 INSULATION REMOVAL LENGTH (Continued)

Wire Size (AWG)	Crimp Barrel Size	Removal Length L (inch)		Special Instructions
		Target	Tolerance	
16	16	0.25	±0.03	-
	12	0.50	±0.03	Fold the conductor back.
14	12	0.25	±0.03	-
12	12	0.25	±0.03	-

(1) Measure the O.D. of the wire.

(2) If the O.D. of the wire is larger than the maximum wire diameter shown in Table 2, or if it is specified to decrease the O.D. of the wire, decrease the O.D. of the wire.

Refer to:

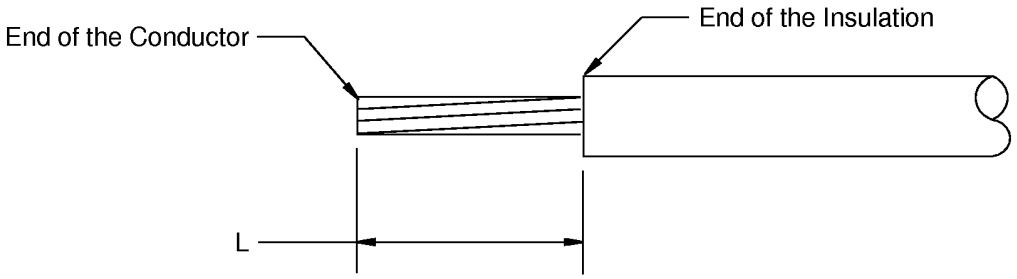
- Table 2 for the maximum wire O.D.
- Paragraph 5.D. for the procedure to decrease the O.D. of the wire.

(3) If the decrease of the wire O.D. is not specified, or is not necessary:

Remove the necessary length of insulation from the end of the wire.

Refer to:

- Table 14 for the insulation removal length
- Figure 24
- Subject 20-00-15 for the insulation removal procedure.



2447876 S00061547108_V1

INSULATION REMOVAL LENGTH
Figure 24

(4) If the O.D. of the wire is less than the minimium wire O.D. shown in Table 1,or if it is specified to increase the O.D. of the wire, increase the O.D. of the wire.

Refer to:

- Paragraph 1.B. for the minimum wire O.D.
- Paragraph 5.B. for the procedure to increase the O.D. of a shielded wire
- Paragraph 5.C. for the procedure to increase the O.D. of an unshielded wire.

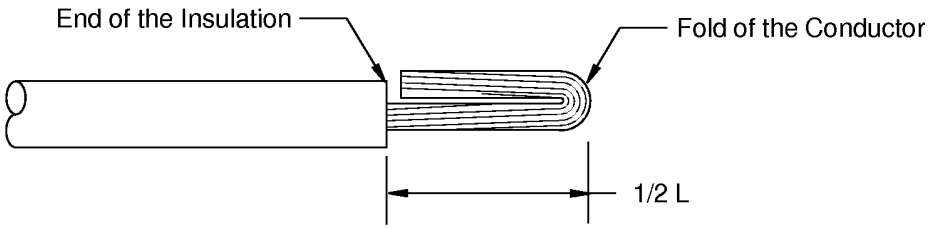
(5) If it is specified in Table 14, fold the conductor back on itself.

ASSEMBLY OF MIL-C-83723 SERIES III TYPE CONNECTORS

Refer to:

- Table 14
- Figure 25

.

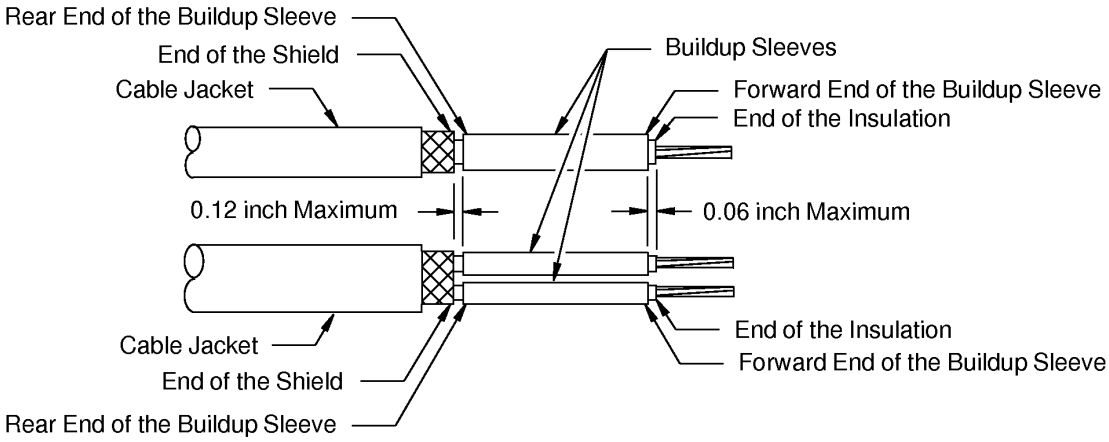


2446657 S00061544480_V1

FOLDED BACK CONDUCTOR
Figure 25

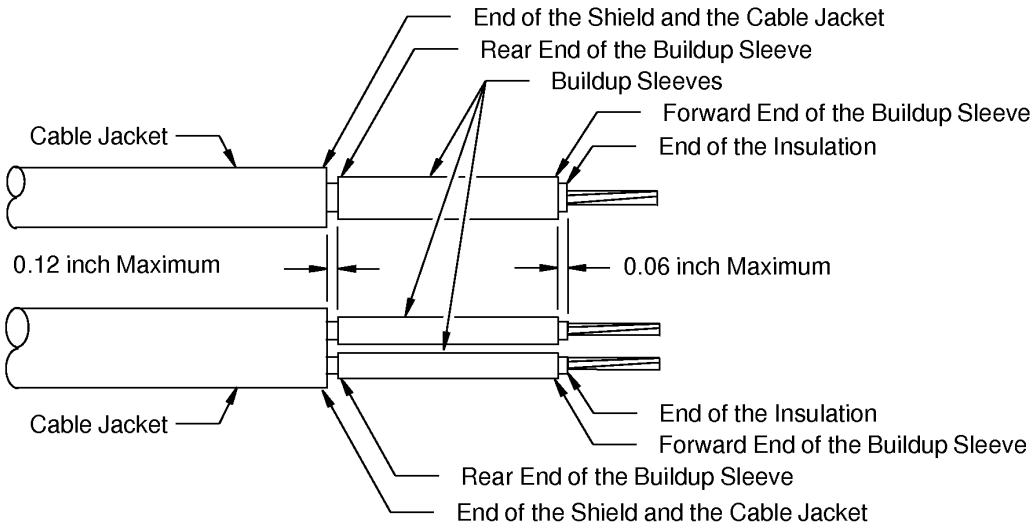
(6) Assemble the contact. Refer to Paragraph 5.M..

B. Increase of the O.D. of the Wire - Shielded Wire



2449076 S00061547109_V1

NECESSARY LENGTH OF THE BUILDUP SLEEVE ON THE WIRE - SHIELD TERMINATION AT THE END OF THE CABLE JACKET
Figure 26



2449077 S00061547110_V1

NECESSARY LENGTH OF THE BUILDUP SLEEVE ON THE WIRE - SHIELD DEAD END AT THE END OF THE CABLE JACKET
Figure 27

Refer to Figure 26 and Figure 27:

(1) Select the buildup sleeve:

(a) If the buildup sleeve is specified in the wire data, select the specified sleeve.

(b) If a buildup sleeve is necessary, but is not specified, make a selection of a Grade B, Class 1 heat shrinkable sleeve from Subject 20-00-11.

Make sure that the sleeve has the smallest diameter that will fit over the insulation of the inner wire.

(2) For a solder sleeve shield termination that is not at the end of the cable jacket, select the outer shield dead end sleeve:

(a) If the shield dead end sleeve is specified in the wire data, select the specified sleeve.

(b) If an outer shield dead end sleeve is not specified, make a selection of a Grade B, Class 1 heat shrinkable sleeve from Subject 20-00-11.

Make sure that this outer sleeve has the smallest diameter that will fit over the cable jacket.

(3) For a solder sleeve shield termination that is not at the end of the cable jacket, put a 0.75 inch ±0.10 inch length of the shield dead end sleeve on the cable.

(4) Cut the necessary length of the buildup sleeve.

Make sure that:

- The forward end of the sleeve is 0 inch to 0.06 inch from the end of the insulation
- The distance from the rear end of the sleeve to the end of the shield is 0.12 inch or less.

(5) Put the necessary length of the buildup sleeve on the wire of the cable.

(6) Shrink the buildup sleeve into its position. Refer to Subject 20-10-14.

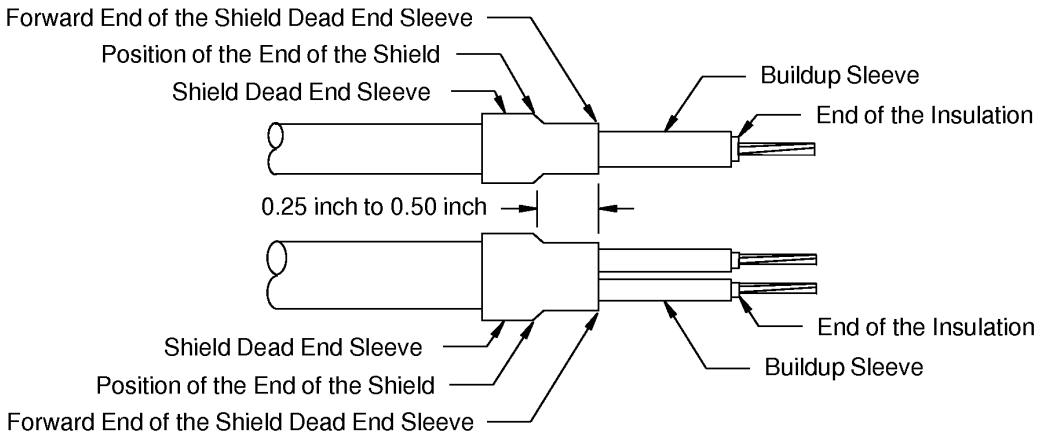
Make sure that:

- The buildup sleeve does not move on the wire
- The forward end of the sleeve is 0 inch to 0.06 inch from the end of the insulation
- The distance from the rear end of the sleeve to the end of the shield is 0.12 inch or less

Make sure that the final diameter of the buildup sleeve is:

- Larger than the minimum diameter for the seal of a contact cavity shown in Table 1
- Smaller than the maximum wire diameter shown in Table 2.

(7) For a solder sleeve shield termination that is not at the end of the cable jacket, install the outer shield dead end sleeve. Refer to Figure 28.



2449079 S00061547111_V1

POSITION OF THE SHIELD DEAD END SLEEVE ON THE CABLE
Figure 28

(a) Push the shield dead end sleeve forward until the forward end of the sleeve makes a 0.25 inch to 0.50 inch overlap with the rear end of the buildup sleeve.

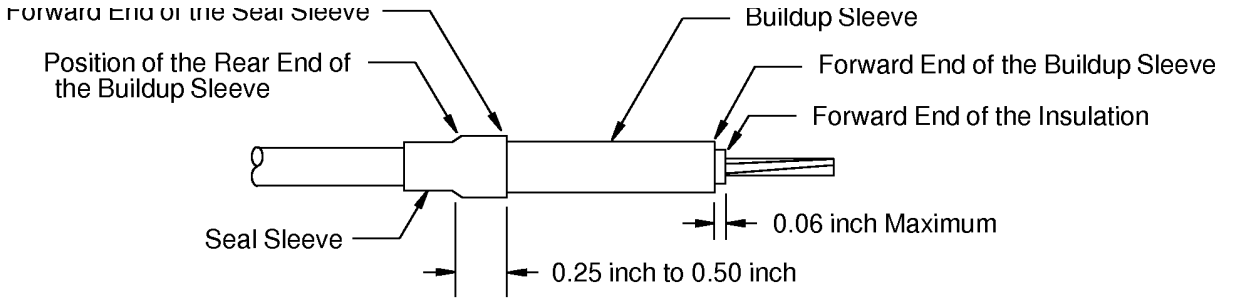
(b) Shrink the shield dead end sleeve into its position. Refer to Subject 20-10-14.

Make sure that:

- The outer shield dead end sleeve does not move on the cable
- The forward end of the shield dead end sleeve is 0.25 inch to 0.50 inch from the end of the shield.

ASSEMBLY OF MIL-C-83723 SERIES III TYPE CONNECTORS

C. Increase of the O.D. of the Wire - Unshielded Wire



POSITION OF THE BUILDUP SLEEVE AND THE SEAL SLEEVE ON THE WIRE
Figure 29

Refer to Figure 29:

(1) Select the outer seal sleeve:

(a) If an outer seal sleeve is specified in the wire data, use the specified sleeve.

(b) If an outer seal sleeve is not specified, make a selection of a Grade B, Class 1 heat shrinkable sleeve from Subject 20-00-11.

Make sure that this outer sleeve has the smallest diameter that will fit over the cable jacket.

(2) Put a 0.75 inch ±0.10 inch length of the seal sleeve on the wire.

(3) Select the buildup sleeve:

(a) If a buildup sleeve specified in the wire data, use the specified sleeve.

(b) If a buildup sleeve is not specified, make a selection of a Grade B, Class 1 heat shrinkable sleeve from Subject 20-00-11.

Make sure that the sleeve has the smallest diameter that will fit over the insulation of the inner wire.

(4) Put a 1.50 inch ±0.10 inch length of the buildup sleeve on the wire.

(5) Push the buildup sleeve forward until the forward end of the sleeve is 0 inch to 0.06 inch from the end of the insulation.

(6) Shrink the buildup sleeve into its position. Refer to Subject 20-10-14.

Make sure that:

- The sleeve does not move on the wire
- The forward end of the sleeve is 0 inch to 0.06 inch from the end of the insulation.

Make sure that the final diameter of the buildup sleeve is:

- Larger than the minimum diameter for the seal of a contact cavity shown in Table 1
- Smaller than the maximum wire diameter shown in Table 2.

(7) Push the seal sleeve forward until the forward end of the seal sleeve makes a 0.25 inch to 0.50 inch overlap with the rear end of the buildup sleeve.

(8) Shrink the seal sleeve into its position. Refer to Subject 20-10-14.

Make sure that:

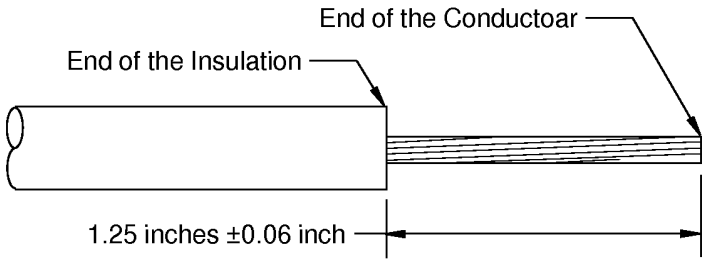
- The sleeve does not move on the wire
- The forward end of the sleeve is 0.25 inch to 0.50 inch from the rear end of the buildup sleeve.

D. Decrease of the O.D. of the Wire

(1) If one sleeve is specified in the wire data for the decrease of the wire O.D:

NOTE: If it is not possible to shrink a single heat shrinkable sleeve down tightly against the conductor of the wire and against the wire insulation, then two sleeves must be used. Refer to Step 5.D.(2).

(a) Remove 1.25 inches ±0.06 inch of insulation from the end of the wire. Refer to Figure 30.



2449081 S00061547113_V1

INSULATION REMOVAL LENGTH
Figure 30

(b) Put a 1.75 inch to 1.8 inch length of the specified single heat shrinkable sleeve on the wire.

(c) Push the heat shrinkable sleeve rearward on the wire.

(2) If it is necessary to decrease the O.D. of the wire, or if two sleeves are specified to decrease the O.D. of the wire in the wire data, decrease the O.D. of the wire with two sleeves:

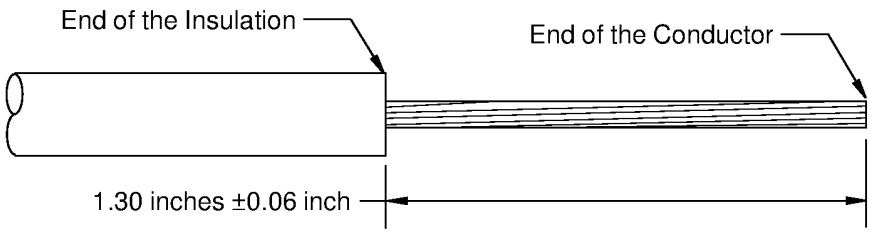
(a) Use the specified inner sleeve, or make a selection of a Grade B, Class 1 heat shrinkable sleeve from Subject 20-00-11.

Make sure that this inner sleeve has the smallest diameter that will fit over the conductor of the wire.

(b) Use the specified outer sleeve, or make a selection of a Grade B, Class 1 heat shrinkable sleeve from Subject 20-00-11.

Make sure that this outer sleeve has the smallest diameter that will fit over the insulation of the wire.

(c) Remove 1.55 inches ±0.03 inch of insulation from the end of the wire. Refer to Figure 31.



2449082 S00061547114_V1

INSULATION REMOVAL LENGTH
Figure 31

(d) Put a 1.25 inch to 1.30 inch length of the inner heat shrinkable sleeve on the conductor of the wire.

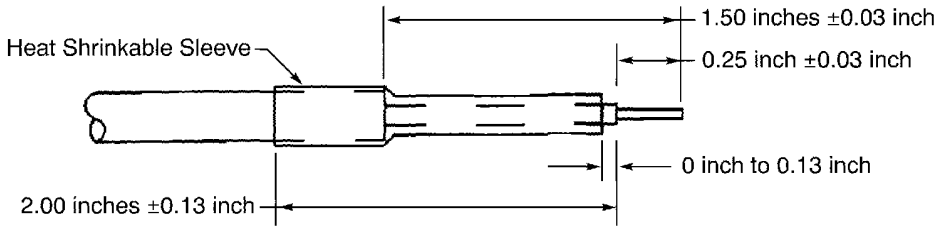
(e) Put a 0.75 inch to 0.80 inch length of the outer heat shrinkable sleeve on the insulation of the wire.

(f) Push the heat shrinkable sleeves rearward on the wire.

E. Preparation of Champlain 24-00033 and Champlain 24-00034 Wire

Table 15
NECESSARY MATERIALS

Material	Part Number	Size (inch)	Supplier
Sleeve, Heat Shrinkable	AMS-DTL-23053/12 Class 5	3/16	Available source
	TFE 4X	3/16	Chemplast
	TFE 4X	3/16	Zeus Industrial Products



2446160 S00061546629_V1

CHAMPLAIN 24-00033 AND CHAMPLAIN 24-00034 WIRE PREPARATION
Figure 32

Refer to Figure 32.

(1) Make a selection of a heat shrinkable sleeve from Table 15.

NOTE: For alternative heat shrinkable sleeves, refer to Subject 20-00-11.

(2) Remove 1.50 inch ±0.03 inch of the outer jacket from the end of the wire. Refer to Subject 20-00-15.

(3) Remove 1.50 inch ±0.03 inch of the layer of braid from the end of the wire. Refer to Subject 20-00-15.

CAUTION: DO NOT CAUSE DAMAGE TO THE RUBBER INSULATION LAYER. DAMAGE TO THE RUBBER INSULATION LAYER CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE WIRE.

(4) Remove 0.25 inch ±0.03 inch of the rubber insulation layer from the end of the wire. Refer to Subject 20-00-15.

(5) Remove 0.25 inch ±0.03 inch of the inner tape wrap from the end of the wire. Refer to Subject 20-00-15.

CAUTION: DO NOT CAUSE DAMAGE TO THE CONDUCTOR. DAMAGE TO THE CONDUCTOR CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE WIRE.

(6) Put a 2.0 inch ±0.13 inch length of heat shrinkable sleeve on the wire.

(7) Align the forward end of the sleeve and the end of the inner rubber layer.

Make sure that:

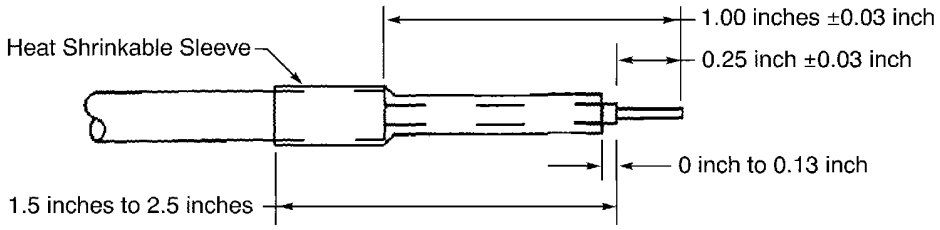
- The forward end of the sleeve does not extend farther than the end of the rubber insulation layer
- The distance from the forward end of the sleeve to the end of the rubber insulation layer is not more than 0.13 inch.

(8) Shrink the sleeve into its position. Refer to Subject 20-10-14.

F. Preparation of Rockbestos or Cerro H22-4000 Wire

Table 16
NECESSARY MATERIALS

Material	Part Number	Size (inch)	Supplier
Sleeve, Heat Shrinkable	AMS-DTL-23053/12 Class 5	1/4	Available source
	TFE 4X	1/4	Chemplast
	TFE 4X	1/4	Zeus Industrial Products



2446161 S00061546481_V1

ROCKBESTOS OR CERRO H22-4000 WIRE PREPARATION
Figure 33

Refer to Figure 33.

(1) Make a selection of a heat shrinkable sleeve from Table 16.

NOTE: For alternative heat shrinkable sleeves, refer to Subject 20-00-11.

(2) Remove 1.00 inch ±0.03 inch of the outer braid from the end of the wire. Refer to Subject 20-00-15.

(3) Remove 1.00 inch ±0.03 inch of the clear inner wrap from the end of the wire. Refer to Subject 20-00-15.

CAUTION: DO NOT CAUSE DAMAGE TO THE INNER INSULATION LAYER. DAMAGE TO THE INNER LAYER CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE WIRE.

(4) Remove 0.25 inch ±0.03 inch of the inner insulation from the end of the wire. Refer to Subject 20-00-15.

CAUTION: DO NOT CAUSE DAMAGE TO THE CONDUCTOR. DAMAGE TO THE CONDUCTOR CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE WIRE.

(5) Put a 1.5 inch to 2.5 inch length of heat shrinkable sleeve on the wire.

(6) Align the forward end of the sleeve and the end of the inner insulation.

Make sure that:

- The forward end of the sleeve does not extend farther than the end of the inner insulation
- The distance from the forward end of the sleeve to the end of the inner insulation is not more than 0.13 inch.

(7) Shrink the sleeve into its position. Refer to Subject 20-10-14.

ASSEMBLY OF MIL-C-83723 SERIES III TYPE CONNECTORS

G. Preparation of Vibro-Meter 50-116-00 and Vibro-Meter 80-116-0() Cable Assembly Wire

Table 17
NECESSARY MATERIALS

Material	Part Number	Size (inch)	Supplier
Sleeve, Heat Shrinkable	AMS-DTL-23053/12 Class 5	1/8	Available source
	TFE 4X	1/8	Chemplast
	TFE 4X	1/8	Zeus Industrial Products

(1) Make a selection of a heat shrinkable sleeve from Table 17.

NOTE: For alternative heat shrinkable sleeves, refer to Subject 20-00-11.

(2) Remove a 1.5 inch ±0.03 inch length of these layers from the end of the cable:

- The white outer jacket
- The yellow polyimide layer
- The shield
- The outer layer of black graphite tape
- The fiberglass binder and filler.

(3) Remove 1.0 inch ±0.06 inch of the inner layer of black graphite tape from each wire.

(4) Remove all of the carbon residue from the primary insulation of each wire with one or more of these cleaners:

- A brush with a fiberglass eraser
- A sandblaster
- Acetone or an equivalent solvent; refer to Subject 20-00-11.

(5) Assemble a shield dead end. Refer to Subject 20-10-15.

(6) For each wire:

(a) Remove 0.5 inch ±0.03 inch of insulation from the end of the wire.

(b) Put the necessary length of heat shrinkable sleeve on the wire.

Make sure that:

- The rear end of the sleeve is aligned with the forward end of the shield dead end
- The forward end of the sleeve is aligned with the end of the insulation.

(c) Shrink the sleeve into its position. Refer to Subject 20-10-14.

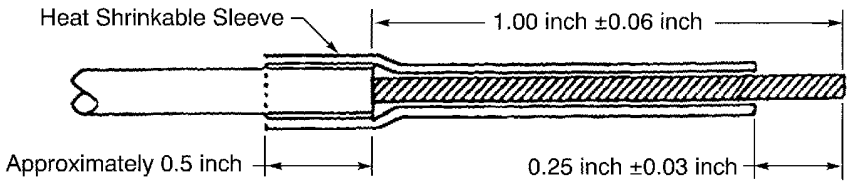
(d) Fold the conductor back on itself.

NOTE: When the conductor is folded back on itself, the size of the conductor becomes AWG 18.

H. Preparation of Specialty Cable 852-4985339 Cable Wire

Table 18
NECESSARY MATERIALS

Material	Part Number	Size (inch)	Supplier
Sleeve, Heat Shrinkable	AMS-DTL-23053/12 Class 2	1/8	Available source
	TFE 2X Standard Wall	1/8	Chemplast
	TFE 2X Standard Wall	1/8	Zeus Industrial Products



2446314 S00061547115_V1

SPECIALTY CABLE 852-4985339 WIRE PREPARATION
Figure 34

Refer to Figure 34.

(1) Make a selection of a heat shrinkable sleeve from Table 18.

NOTE: For alternative heat shrinkable sleeves, refer to Subject 20-00-11.

(2) Remove 1.00 inch ±0.06 inch of the insulation from the end of the wire.

(3) Put a 1.3 inch ±0.1 inch length of the heat shrinkable sleeve on the wire.

Make sure that:

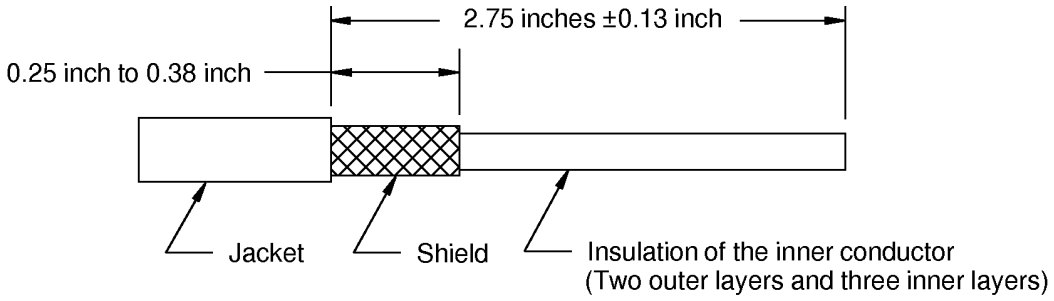
- The distance from the forward end of the sleeve to the end of the conductor is 0.25 inch ±0.03 inch
- The sleeve makes an overlap of approximately 0.5 inch with the insulation.

(4) Shrink the sleeve into its position. Refer to Subject 20-10-14.

I. Preparation of BMS 13-67 Type 2, Class 1 Cable (Wire Type Code 9U)) for Termination in a BACC63CM or CN Connector

Refer to Figure 35:

ASSEMBLY OF MIL-C-83723 SERIES III TYPE CONNECTORS



2449181 S00061547116_V1

WIRE PREPARATION
Figure 35

(1) Remove 2.75 inches ±0.13 inch of the jacket from the end of the wire.

(2) Remove the necessary length of the shield to make the distance from the end of the shield to the end of the jacket 0.25 inch to 0.35 inch.

(3) Assemble a shield dead end.

Refer to:

- Subject 20-10-15.
- Figure 36.

(4) Remove 1.00 inch ±0.03 inch of the outside insulation layer from the inner conductor.

(5) Remove 0.25 inch ±0.03 inch of the inner insulation layer from the end of the inner conductor.

(6) Make a selection of a 0.25 inch diameter TFE-4X heat shrinkable sleeve from Subject 20-00-11.

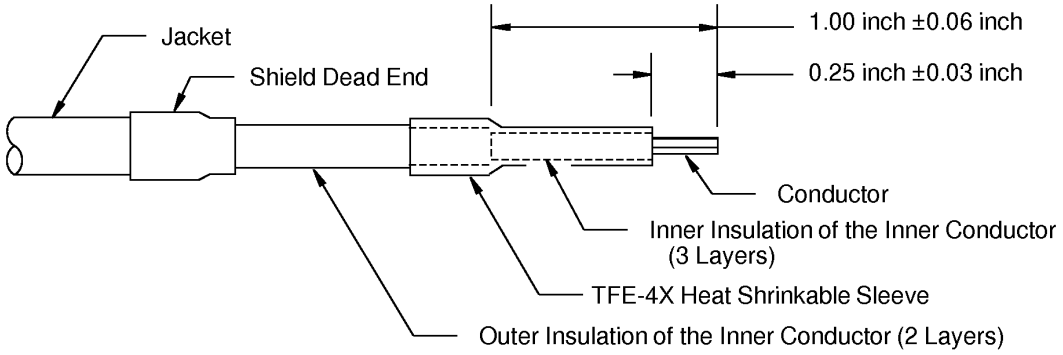
(7) Put a 1.10 inch ±0.06 inch length of the TFE-4X heat shrinkable sleeve on the inner conductor.

(8) Shrink the sleeve into its position.

Refer to:

- Subject 20-10-14.
- Figure 36.

Make sure that the end of the sleeve is aligned with the end of the inner layer of insulation.

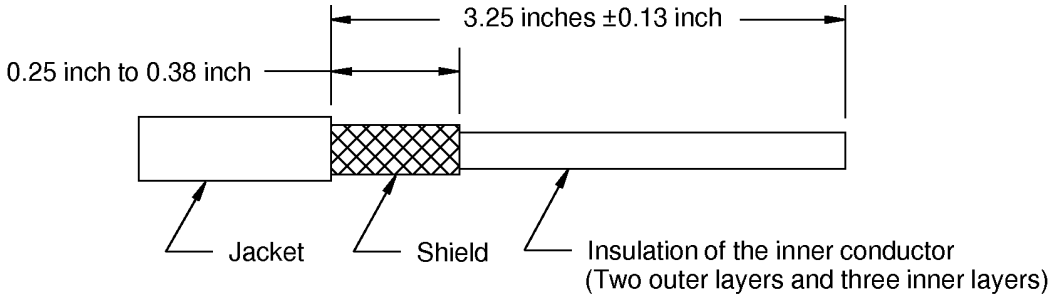


2449188 S00061547117_V1

POSITION OF THE HEAT SHRINKABLE SLEEVES
Figure 36

J. Preparation of BMS 13-67 Type 2, Class 1 Cable (Wire Type Code 9U) for Termination in a BACC63CM or CN Connector with a Shield Ground Wire

Refer to Figure 37:



2449192 S00061547118_V1

WIRE PREPARATION
Figure 37

(1) Remove 3.25 inches ±0.13 inch of the jacket from the end of the wire.

(2) Remove the necessary length of the shield to make the distance from the end of the shield to the end of the jacket 0.25 inch to 0.35 inch.

(3) Assemble a shield ground wire shield termination with mechanical ferrules.

Refer to:

- Subject 20-10-15.

- Figure 38.

(4) Remove 1.00 inch ±0.06 inch of the two outside insulation layers from the inner conductor.

(5) Remove 0.25 inch ±0.03 inch of the three inner insulation layers from the end of the inner conductor.

(6) Make a selection of a 0.25 inch diameter TFE-4X heat shrinkable sleeve from Subject 20-00-11.

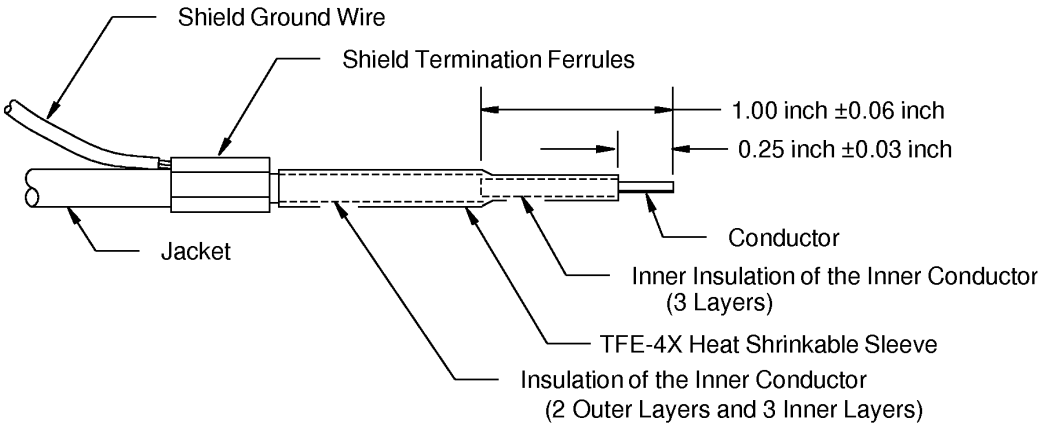
(7) Put a length of the TFE-4X heat shrinkable sleeve on the inner conductor.

(8) Shrink the sleeve into its position.

Refer to:

- Subject 20-10-14.
- Figure 38.

Make sure that the end of the sleeve is aligned with the end of the inner layer of insulation.



2449193 S00061547119_V1

POSITION OF THE SHIELD TERMINATION FERRULES AND THE HEAT SHRINKABLE SLEEVE
Figure 38

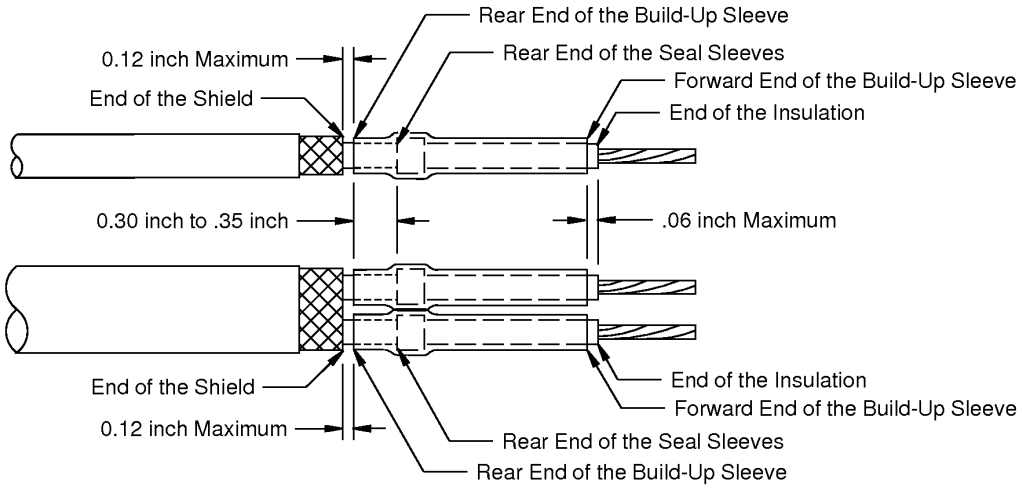
ASSEMBLY OF MIL-C-83723 SERIES III TYPE CONNECTORS

K. Increase of the O.D. of a Wire - Shielded Cable, Firewall Leakage Configuration

This section gives the procedure for the increase of the O.D. the wires of a shielded cable when the firewall leakage condition is specified.

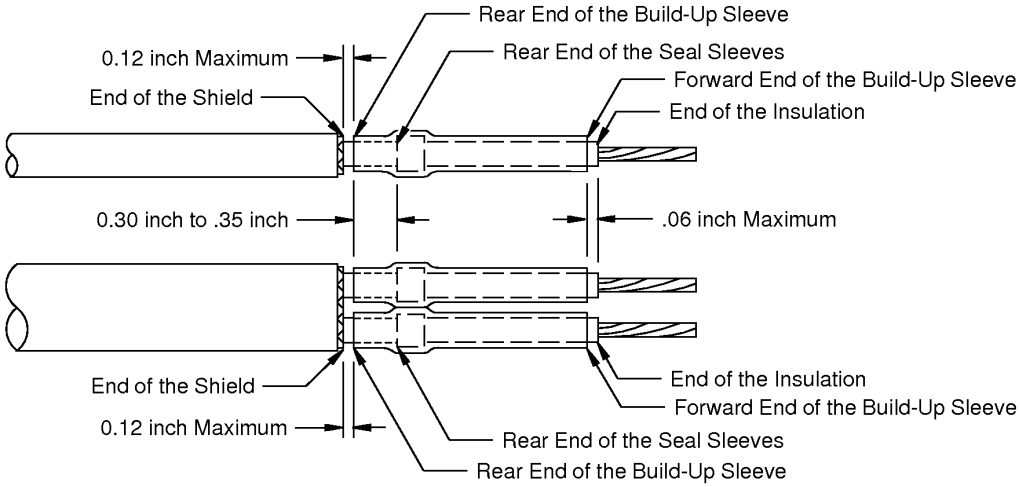
Table 19
HEAT SHRINKABLE SLEEVE TYPES

Sleeve	Type
D-150-C-12	Seal Sleeve, Inner and Outer
M23053/12	Build-Up
WTF	Shield Dead End



2449542 S00061547120_V1

POSITION OF THE SLEEVES ON THE WIRE - SHIELD TERMINATION AT THE END OF THE CABLE JACKET
Figure 39



2449543 S00061547121_V1

POSITION OF THE SLEEVES ON THE WIRE - SHIELD DEAD END AT THE END OF THE CABLE JACKET
Figure 40

Refer to Figure 39,Figure 40 and Table 19.

(1) For a solder sleeve shield termination that is at the end of the cable jacket move the shield rearward on to the cable jacket

(2) For a solder sleeve shield termination that is not at the end of the cable jacket put a 0.80 inch ±0.05 inch length of the specified shield dead end sleeve on the cable.

(3) Put a 0.19 inch to 0.22 inch length of the inner and outer seal sleeves on the wire. Make sure that:

Make sure that:

- The ends of the sleeves are aligned
- For a solder sleeve that is at the end of the cable jacket, the rear end of the seal sleeves is 0.65 inch to 0.70 inch from the shield
- For a solder sleeve that is not at the end of the cable jacket, the rear end of the seal sleeves is 0.42 inch to 0.47 inch from the end of the shield and cable jacket.

(4) Put the necessary length of the specified build-up sleeve on the wire.

Make sure that:

- The forward end of the sleeve is 0 inch to 0.06 inch from the end of the insulation
- For a solder sleeve that is at the end of the cable jacket, the distance from the rear end of the sleeve to the end of the shield is 0.20 inch to 0.25 inch
- For a solder sleeve that is not at the end of the cable jacket, the distance from the rear end of the sleeve to the end of the shield is not more than 0.12 inch.

(5) Shrink the sleeves into their position. Refer to Subject 20-10-14.

ASSEMBLY OF MIL-C-83723 SERIES III TYPE CONNECTORS

Make sure that:

- The build-up sleeve does not move on the seal sleeve
- The sleeves do not move on the wire
- The rear end of the inner sleeve does not make an overlap with the shield
- The assembly does not have an air pocket between the inner seal sleeve and the build-up sleeve
- The rear end of the outer seal sleeve is 0.30 inch to 0.35 inch from the rear end of build-up sleeve
- The forward end of the build-up sleeve is 0.06 inch maximum from the end of the insulation
- For a solder sleeve that is at the end of the cable jacket, the distance from the rear end of the sleeve to the end of the shield is 0.20 inch to 0.25 inch
- For a solder sleeve that is not at the end of the cable jacket, the distance from the rear end of the sleeve to the end of the shield is not more than 0.12 inch.

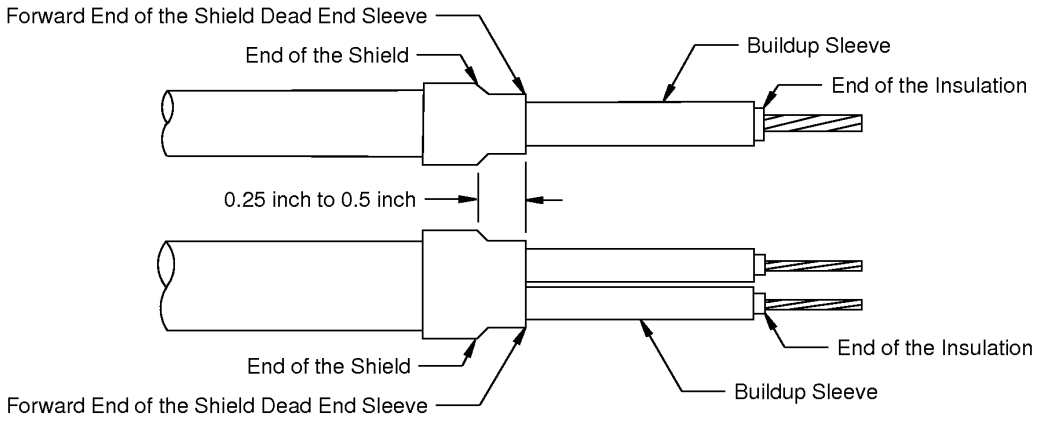
NOTE: An air pocket between the outer seal sleeve and the build-up sleeve is permitted.

NOTE: The length of the build-up sleeve, between the end of the seal sleeve and the end of the cable jacket, that is not fully shrunk on the wire is a satisfactory condition.

(6) Do Step 3 and Step 5 for each wire of the cable.

(7) For a solder shield termination that is at the end of the cable jacket move the shield forward toward the end of the cable.

(8) For a solder sleeve shield termination that is not at the end of the cable jacket, install the shield dead end sleeve. Refer to Figure 41.



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POSITION OF THE SHIELDED DEAD END SLEEVE ON THE CABLE
Figure 41

(a) Push the sleeve forward until the forward end of the sleeve makes a 0.25 inch to 0.5 inch overlap with the rear end of the build-up sleeve.

(b) Shrink the sleeve into its position. Refer to Subject 20-10-14.

Make sure that:

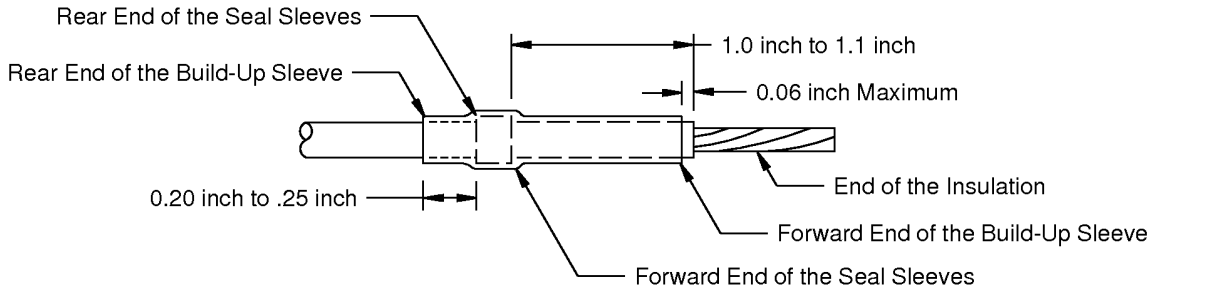
- The sleeve does not move on the cable
- The forward end of the sleeve is 0.25 inch to 0.5 inch from the end of the shield and cable jacket.

L. Increase of the O.D. of a Wire - Unshielded Wire and Cable, Firewall Leakage Configuration

This section gives the procedure for the increase of the O.D. of an unshielded wire or the wires of an unshielded cable when the firewall leakage condition is specified.

Table 20
HEAT SHRINKABLE SLEEVE TYPES

Sleeve	Type
D-150-C-12	Seal Sleeve, Inner and Outer
M23053/12	Build-Up



INCREASE OF THE O.D. OF A WIRE - UNSHIELDED WIRE AND CABLE, FIREWALL LEAKAGE CONFIGURATION
Figure 42

Refer to Figure 42.

(1) Put a 1.75 inch ±0.10 inch length of the specified build-up sleeve on the wire.

(2) Put a 0.19 inch to 0.22 inch length of the inner and outer seal sleeves on the wire.

Make sure that:

- The ends of the sleeves are aligned
- The forward end of the seal sleeves are 1.0 inch to 1.1 inch from the end of the insulation.
- The forward end of the seal sleeves are 1.0 inch to 1.1 inch from the end of the insulation.

(3) Shrink the sleeves into their position. Refer to Subject 20-10-14.

Make sure that:

- The build-up sleeve does not move on the wire
- The seal sleeves do not move on the wire

ASSEMBLY OF MIL-C-83723 SERIES III TYPE CONNECTORS

- The forward end of the seal sleeves is 1.0 inch to 1.1 inch from the end of the insulation
- The assembly does not have an air pocket between the inner seal sleeve and the build-up sleeve
- The forward end of the build-up sleeve is 0 inch to 0.06 inch from the end of the insulation
- The rear end of the inner sleeve does not extend more than 0.1 inch from the rear end of the build-up sleeve.

NOTE: An air pocket between the outer seal sleeve and the build-up sleeve is permitted.

M. Contact Assembly

Table 21
CONTACT CRIMP TOOLS

Wire Size (AWG)	Crimp Barrel Size	Crimp Tool						
		Basic Unit			Locator			
		Part Number	Setting	Supplier	Part Number	Color	Turret Position	Supplier
24	20	M22520/1-01	2	QPL	M22520/1-02	Red	Red	QPL
		WA27F	2	Daniels	TH1A	Red	Red	Daniels
		M22520/2-01	5	QPL	M22520/2-02	-	-	QPL
		WA22	5	Daniels	K1S	-	-	Daniels
		WA22LC	5	Daniels	M22520/2-02	-	-	QPL
					K1S	-	-	Daniels
		612916	Fixed	Buchanan	-	Yellow Black	-	-
22	20	M22520/1-01	3	QPL	M22520/1-02	Red	Red	QPL
		WA27F	3	Daniels	TH1A	Red	Red	Daniels
		M22520/2-01	6	QPL	M22520/2-02	-	-	QPL
		WA22	6	Daniels	K1S	-	-	Daniels
		WA22LC	6	Daniels	M22520/2-02	-	-	QPL
					K1S	-	-	Daniels
		ST2220-1-Y	-	Boeing	ST2220-1-1	-	-	Boeing
		MS3191-1	-	QPL	MS3191-20A	-	-	QPL
		11148	Fixed	Buchanan	-	Red Black	-	-
	16	M22520/1-01	5	QPL	M22520/1-02	Blue	Blue	QPL
		WA27F		Daniels	TH1A	Blue	Blue	Daniels

ASSEMBLY OF MIL-C-83723 SERIES III TYPE CONNECTORS

Table 21 CONTACT CRIMP TOOLS (Continued)

Wire Size (AWG)	Crimp Barrel Size	Crimp Tool						
		Basic Unit			Locator			
		Part Number	Setting	Supplier	Part Number	Color	Turret Position	Supplier
20	20	M22520/1-01	4	QPL	M22520/1-02	Red	Red	QPL
		WA27F		Daniels	TH1A	Red	-	Daniels
		M22520/2-01	7	QPL	M22520/2-02	-	-	QPL
		WA22		Daniels	K1S	-	-	Daniels
		WA22LC	7	Daniels	M22520/2-02	-	-	QPL
					K1S	-	-	Daniels
		ST2220-1-Y	-	Boeing	ST2220-1-1	-	-	Boeing
		MS3191-1	-	QPL	MS3191-20A	-	-	QPL
		11148	Fixed	Buchanan	-	Red Black	-	-
	16	M22520/1-01	4	QPL	M22520/1-02	Blue	Blue	QPL
		WA27F		Daniels	TH1A	Blue	Blue	Daniels
18	16	M22520/1-01	5	QPL	M22520/1-02	Blue	Blue	QPL
		WA27F		Daniels	TH1A	Blue	-	Daniels
16	16	M22520/1-01	6	QPL	M22520/1-02	Blue	Blue	QPL
		WA27F		Daniels	TH1A	Blue	-	Daniels
		ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing
		MS3191-1	-	QPL	MS3191-16A	-	-	QPL
	12	M22520/1-01	7	QPL	M22520/1-02	Yellow	-	QPL
		WA27F		Daniels	M22520/1-02	Yellow	-	QPL
14	12	M22520/1-01	7	QPL	M22520/1-02	Yellow	Yellow	QPL
		WA27F		Daniels	TH1A	Yellow	-	Daniels
12	12	M22520/1-01	8	QPL	M22520/1-02	Yellow	Yellow	QPL
		WA27F		Daniels	TH1A	Yellow	-	Daniels
		ST2220-1-Y	-	Boeing	ST2220-1-3	-	-	Boeing
		MS3191-1	-	QPL	MS3191-12A	-	-	QPL

(1) Make a selection a crimp tool from Table 21.

(2) Put the end of the wire in the crimp barrel of the contact.

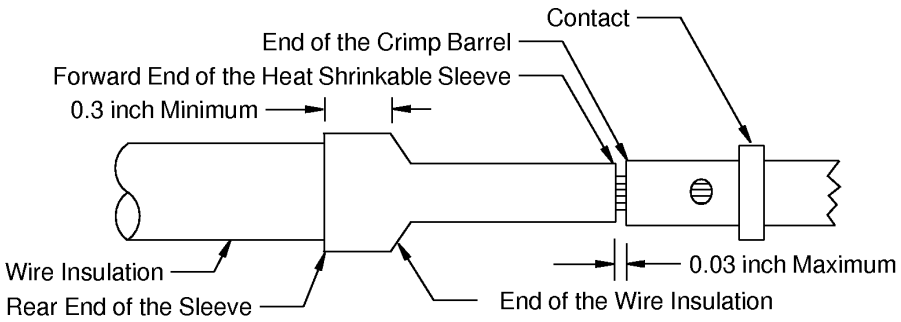
Make sure that:

- All of the strands of the conductor are in the crimp barrel
- The conductor can be seen in the inspection hole
- For a wire with thick wall insulation, the distance from the end of the insulation to the crimp barrel is approximately 0.13 inch
- For all other wire, the end of the insulation is against the end of the crimp barrel.

(3) Crimp the contact.

(4) If there is one heat shrinkable sleeve on the wire, and the sleeve has not been heated:

(a) Push the heat shrinkable sleeve forward until the forward end of the sleeve is 0.03 inch maximum from the end of the crimp barrel. Refer to Figure 43.



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POSITION OF THE SINGLE HEAT SHRINKABLE SLEEVE
Figure 43

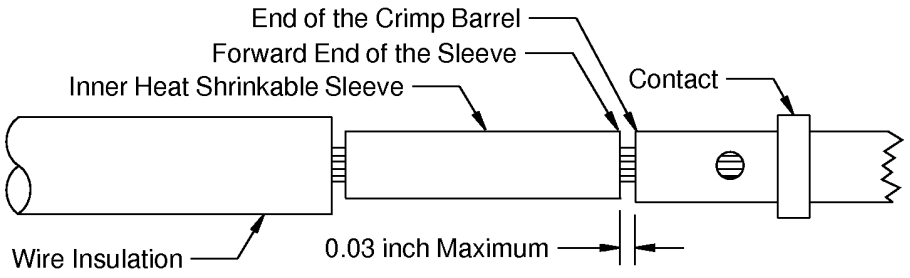
(b) Shrink the sleeve in its position. Refer to Subject 20-10-14

Make sure that:

- The distance from the forward end of the sleeve to the crimp barrel of the contact is not farther than 0.03 inch
- The sleeve makes a 0.3 inch minimum overlap with the end of the wire insulation.

(5) If there are two heat shrinkable sleeves on the wire, and the sleeves have not been heated:

(a) Push the inner sleeve forward until the forward end of the sleeve is 0.03 inch maximum from the end of the crimp barrel. Refer to Figure 44.

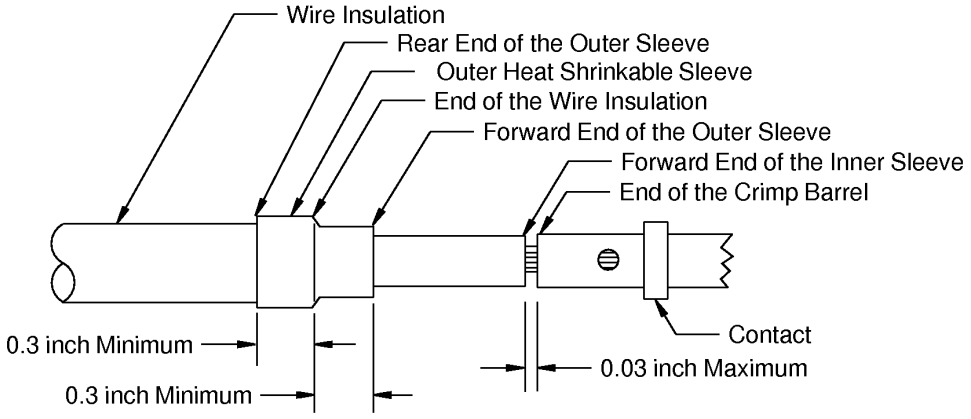


POSITION OF THE INNER HEAT SHRINKABLE SLEEVE
Figure 44

(b) Shrink the inner sleeve into its position. Refer to Subject 20-10-14.

Make sure that the distance between the forward end of the sleeve and the crimp barrel is not more than 0.03 inch.

(c) Push the outer sleeve forward until the rear end of the sleeve makes a 0.3 inch minimum overlap with the insulation of the wire. Refer to Figure 45.



POSITION OF THE OUTER HEAT SHRINKABLE SLEEVE
Figure 45

(d) Shrink the outer sleeve into its position. Refer to Subject 20-10-14.

Make sure that:

- The forward end of the outer sleeve extends 0.3 inch minimum from the end of the insulation of the wire

• The outer sleeve makes an overlap of 0.3 inch or more with the insulation of the wire.

N. Contact Insertion

NOTE: If a backshell is specified, the necessary backshell components must be installed on the wire harness before the insertion of the contacts into the connector. Refer to Paragraph 5.P..

Table 22
CONTACT INSERTION TOOLS

Contact Size	Insertion Tool		Special Instructions
	Part Number	Supplier	
2020	6500-001-20	Matrix	-
	ATR 1078	Astro	Applicable for Champlain 24-00034 wire
	CIET-20	ITT Cannon	-
	M81969/14-02	QPL	-
	M81969/14-11	QPL	-
	M83723/31-20	QPL	-
1616	6500-001-16	Matrix	-
	6500-037-016	Matrix	-
	ATR 1105	Astro	Applicable for Champlain 24-00034 wire
	CIET-16	ITT Cannon	-
	M81969/14-03	QPL	-
	M83723/31-16	QPL	-
1212	6500-001-12	Matrix	-
	ATR 1153	Astro	Applicable for Champlain 24-00034 wire
	CIET-12	ITT Cannon	-
	M81969/14-04	QPL	-
	M83723/31-12	QPL	-

(1) Make a selection of an insertion tool from Table 22.

(2) Lubricate the rear grommet of the connector with isopropyl alcohol.

CAUTION: DO NOT PUT THE CONNECTOR GROMMET OR CONTACT ASSEMBLY FULLY INTO THE ALCOHOL. TOO MUCH LUBRICANT CAN CAUSE DAMAGE TO THE CONNECTOR.

(3) Put the contact assembly in the insertion tool.

(4) At the rear of the connector, axially align the tool and the contact cavity.

(5) Carefully push the contact into the contact cavity until it stops.

Make sure that the tool and the contact cavity stay axially aligned.

CAUTION: DO NOT USE MORE THAN THE NECESSARY AMOUNT OF FORCE TO PUSH THE TOOL INTO THE CONTACT CAVITY. DAMAGE TO THE CONTACT RETENTION CLIPS CAN OCCUR.

CAUTION: DO NOT TURN THE TOOL CLOCKWISE OR COUNTERCLOCKWISE WHEN IT IS IN THE CONTACT CAVITY. DAMAGE TO THE CONTACT RETENTION CLIPS CAN OCCUR.

(6) Carefully pull the tool out of the contact cavity.

Make sure that the tool and the contact cavity stay axially aligned.

(7) Lightly pull the wire to make sure the contact is locked in the connector.

CAUTION: DO NOT PULL THE WIRE WITH A STRONG OR A SUDDEN FORCE. THE FORCE CAN CAUSE DAMAGE TO THE CONNECTOR OR THE CONTACT.

CAUTION: DO NOT MAKE A DENT IN THE WIRE INSULATION WITH THE FINGERNAILS. DAMAGE TO THE WIRE INSULATION CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE WIRE.

(8) If the contact is not locked in the contact cavity:

(a) Pull the contact assembly out of the contact cavity.

(b) Do Step 5.N.(3) through Step 5.N.(7) again.

O. Seal of an Empty Contact Cavity

All empty contact cavities must be sealed. Refer to Subject 20-60-08.

If a stub wire is specified, the minimum length of the stub wire is 12.0 inches.

P. Backshell and Strain Relief Assembly

Refer to Subject 20-60-09.

6. CONNECTOR INSTALLATION

A. Connector Installation

Refer to Subject 20-60-06.

ASSEMBLY OF MIL-C-5015 TYPE CONNECTORS WITH REAR RELEASE CONTACTS

TABLE OF CONTENTS

ASSEMBLY OF MIL-C-5015 TYPE CONNECTORS WITH REAR RELEASE CONTACTS

1. GENERAL DATA

A. Minimum Wire O.D. for an Environmentally Sealed Connector

Refer to:

- Subject 20-60-08 for the identification of an environmentally sealed connector
- Table 1 for the minimum wire O.D. that is necessary for a satisfactory seal of a contact cavity hole
- Subject 20-60-08 for the procedure to increase the diameter of the wire.

Table 1
MINIMUM WIRE O.D. FOR A SATISFACTORY SEAL

Connector	Description	Contact Cavity Size	Minimum Wire O.D. (inch)
MIL-C-5015	Rear release, rear removal contacts	16	0.066
		12	0.097
		8	0.132
		4	0.237
		0	0.360

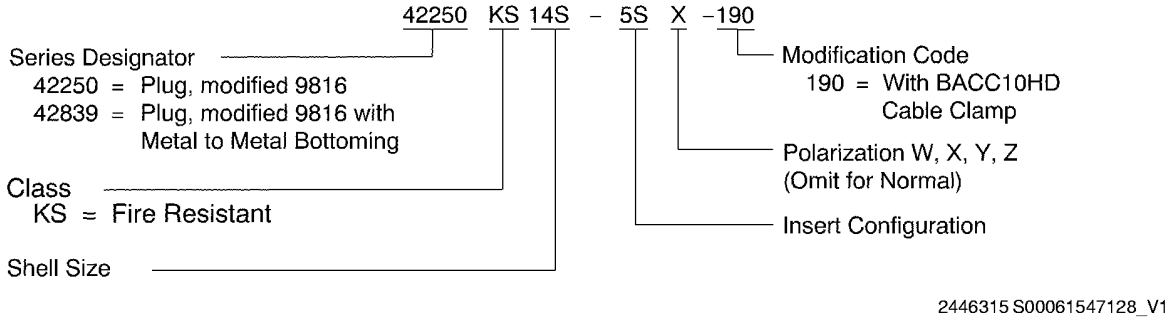
2. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

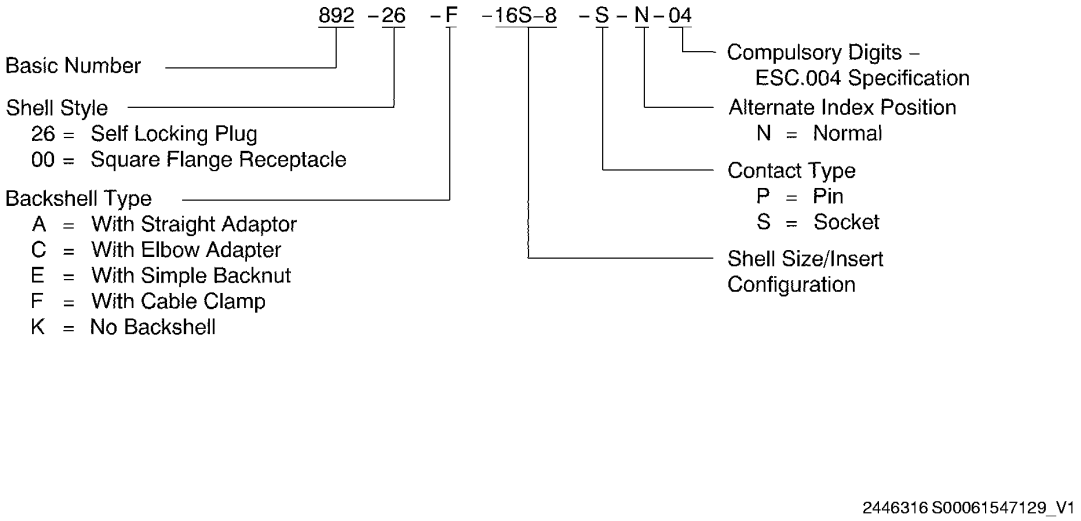
Table 2
CONNECTOR PART NUMBERS

Part Number	Supplier	Notes
42839KS()	Matrix	-
42250KS()	Matrix	-
44267KS-10SL-3BN-745	Hi-Rel	Refer to Table 4 for the applicable contacts for these connectors
71550SE-12T-03SN-960	Hi-Rel	Refer to Table 4 for the applicable contacts for these connectors
892()	Souriau	-
9440()	Matrix	-
9446()	Matrix	-
9816()	Matrix	-
MS3450()	QPL	-
MS3452()	QPL	-
MS3454()	QPL	-
MS3456()	QPL	-
MS3459()	QPL	-

ASSEMBLY OF MIL-C-5015 TYPE CONNECTORS WITH REAR RELEASE CONTACTS

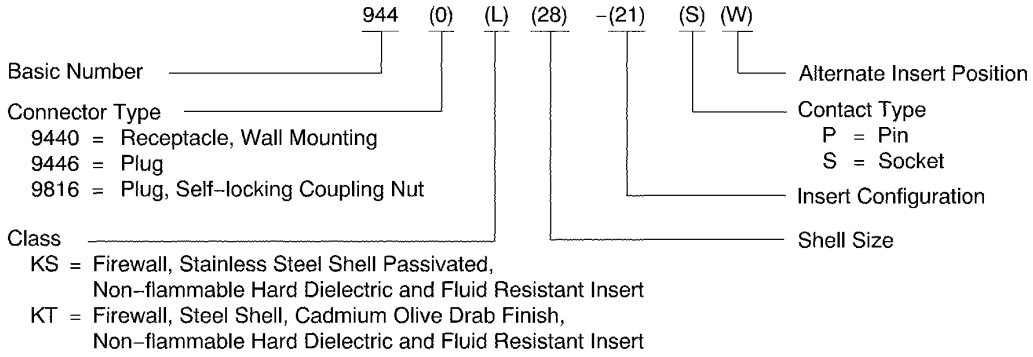


MATRIX 42250 AND 42839 SERIES CONNECTOR PART NUMBER STRUCTURE
Figure 1



SOURIAU 892 SERIES CONNECTOR PART NUMBER STRUCTURE
Figure 2

ASSEMBLY OF MIL-C-5015 TYPE CONNECTORS WITH REAR RELEASE CONTACTS



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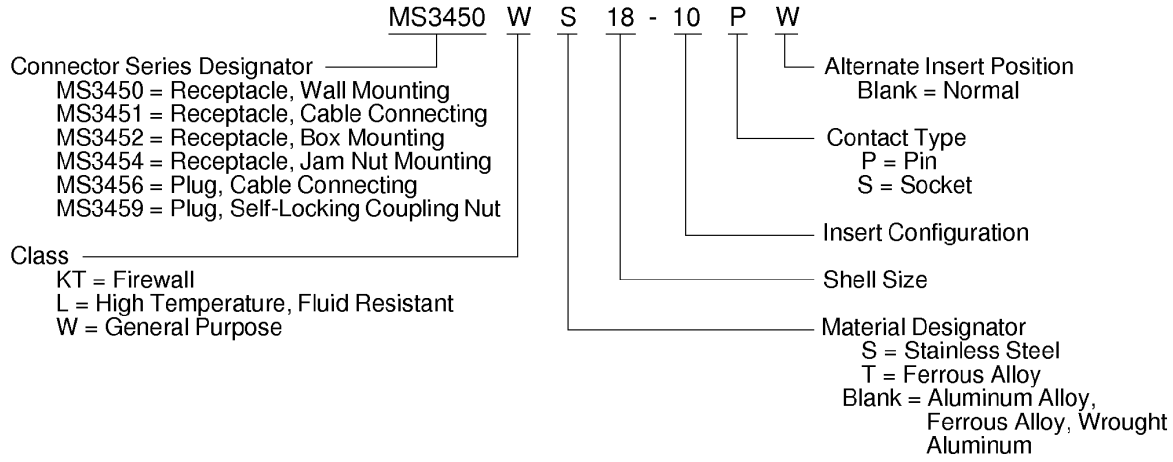
MATRIX 944 SERIES CONNECTOR PART NUMBER STRUCTURE
Figure 3



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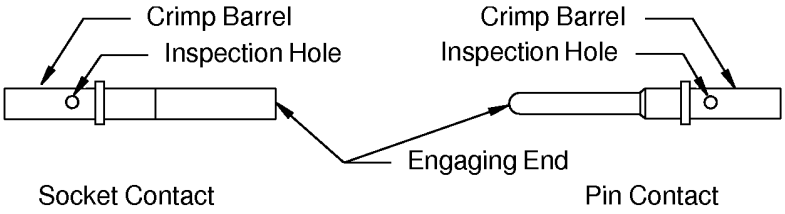
MS3450 THROUGH MS3459 MIL-C-5015 REAR RELEASE CONNECTOR PART NUMBER STRUCTURE
Figure 4

ASSEMBLY OF MIL-C-5015 TYPE CONNECTORS WITH REAR RELEASE CONTACTS

B. Contact Part Numbers



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REAR RELEASE CONTACTS
Figure 5

NOTE: If the connector insert arrangement has one or more size 16 contact cavities:

- Contact size 16 is used in connector shell size 8, 10, 12, 16, 18, 20, 22, 24, 28, 32, 36, 40, 44 and 48.
- Contact size 16S is used in connector shell size 8S, 10S, 10SL, 12S, 14S, and 16S.

NOTE: The Matrix 5100-179-16-1 contact has a high engaging force.

NOTE: Souriau 8950-5052A and 8950-5053A contacts are used in the Souriau 892 type connector.

Table 3
CONTACT PART NUMBERS

Contact Size	Contact Engaging End Size	Contact Crimp Barrel Size	Contact Type	Part Number	Supplier
16S	16	16	Socket	5100-033-16-1	Matrix
				5100-179-16-1	
				8950-5052A	Souriau
				M39029/30-217	QPL
16	16	16	Pin	5000-029-16	Matrix
				BACC47GE1A	Boeing
				M39029/29-212	QPL
			Socket	5100-033-16-2	Matrix
				8950-5053A	Souriau
				BACC47GF1A	Boeing
				M39029/30-218	QPL

ASSEMBLY OF MIL-C-5015 TYPE CONNECTORS WITH REAR RELEASE CONTACTS

Table 3 CONTACT PART NUMBERS (Continued)

Contact Size	Contact Engaging End Size	Contact Crimp Barrel Size	Contact Type	Part Number	Supplier
12	12	12	Pin	5000-029-12	Matrix
				BACC47GE2A	Boeing
				M39029/29-213	QPL
			Socket	5100-033-12	Matrix
				BACC47GF2A	Boeing
				M39029/30-219	QPL
8	8	8	Pin	5000-029-08	Matrix
				BACC47GE3A	Boeing
				M39029/29-214	QPL
			Socket	5100-033-08	Matrix
				BACC47GF3A	Boeing
				M39029/30-220	QPL
4	4	4	Pin	5000-029-04	Matrix
				BACC47GE4A	Boeing
				M39029/29-215	QPL
			Socket	5100-033-04	Matrix
				BACC47GF4A	Boeing
				M39029/30-221	QPL
1/0	1/0	1/0	Pin	5000-029-0	Matrix
				M39029/29-216	QPL
			Socket	5100-033-0	Matrix
				M39029/30-222	QPL

NOTE: The contact part numbers in Table 4 are intended for Hi-Rel connectors only.

Table 4
CONTACT PART NUMBERS FOR HI-REL CONNECTORS

Connector Part Number	Contact Part Number	Contact Size	Supplier
71550SE-12T-03SN-960	0012-136-004	16	Hi-Rel
44267KS-10SL-3BN-745	0012-217-016S	16S	Hi-Rel

ASSEMBLY OF MIL-C-5015 TYPE CONNECTORS WITH REAR RELEASE CONTACTS

3. INSERT CONFIGURATIONS

A. MIL-C-5015 Series Connectors

Refer to Subject 20-61-19.

4. CONNECTOR DISASSEMBLY

A. Contact Removal

Table 5
CONTACT REMOVAL TOOLS

Crimp Barrel Size	Removal Tool	
	Part Number	Supplier
16	6500-001-16	Matrix
	CIET-16-03	ITT Cannon
	MS3447-16	QPL
	M81969/14-03	QPL
12	6500-001-12	Matrix
	CIET-12-04	ITT Cannon
	MS3447-12	QPL
8	6500-018-08	Matrix
	CET8-2	ITT Cannon
	MS3165-8	QPL
4	6500-018-04	Matrix
	CET4-8	ITT Cannon
	MS3165-4	QPL
1/0	6500-018-0	Matrix
	MS3165-0	QPL

5. CONNECTOR ASSEMBLY

A. Wire Preparation

Table 6
INSULATION REMOVAL LENGTH

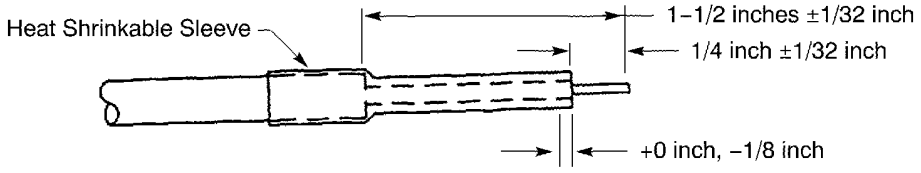
Crimp Barrel Size	Removal Length (inch)		Special Instructions
	Target	Tolerance	
16	0.28	±0.03	-
12	0.28	±0.03	-
8	0.50	±0.06	-

ASSEMBLY OF MIL-C-5015 TYPE CONNECTORS WITH REAR RELEASE CONTACTS

Table 6 INSULATION REMOVAL LENGTH (Continued)

Crimp Barrel Size	Removal Length (inch)		Special Instructions
	Target	Tolerance	
4	0.50	±0.06	-
1/0	0.62	±0.06	-

(1) To prepare BMS 13-8, BMS 13-55, Champlain 24-00033, or Champlain 24-00034 wire, the wire diameter must be decreased. Refer to Figure 6.



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REDUCTION OF THE DIAMETER OF THE WIRE
Figure 6

(a) Put a 2.0 inch ±0.1 inch length of 3/16 inch diameter TFE 4X heat shrinkable sleeve on the wire.

(b) Remove 1.50 inches ±0.03 inch of the outer Teflon jacket from the end of the wire.

(c) Remove 1.50 inches ±0.03 inch of the insulation yarn from the end of the wire.

CAUTION: DO NOT CUT THE EXTRUDED SILICONE RUBBER DIELECTRIC MATERIAL.

(d) Remove 0.25 inch ±0.03 inch of extruded silicone rubber and Kapton tape insulation materials from the conductor.

(2) To prepare the wire for the assembly of the Souriau 8950-5052A and 8950-5053A contacts, remove 0.40 inch ±0.03 inch of insulation from the end of the wire.

(3) Measure the O.D. of the wire.

(4) If the O.D. of the wire is less than the minimum seal diameter of the connector grommet hole, or if it is specified, increase the O.D. of the wire. Refer to Paragraph 1.A.

(5) To prepare all other wire, remove the necessary length of insulation from the end of the wire. Refer to Table 6.

(6) Measure the O.D. of the wire.

(7) If the O.D. of the wire is less than the minimum seal diameter of the connector grommet holes, or if it is specified, increase the O.D. of the wire. Refer to Paragraph 1.A.

ASSEMBLY OF MIL-C-5015 TYPE CONNECTORS WITH REAR RELEASE CONTACTS

B. Contact Assembly

Table 7
CONTACT CRIMP TOOLS

Crimp Barrel Size	Wire Size (AWG)	Filler Wire		Crimp Tool				
		Size (AWG)	Quantity	Basic Unit		Die Set	Locator	
				Part Number	Setting		Part Number	Color
16	20	-	-	294-126	-	-	-	-
				M22520/1-01	4	-	M22520/1-02	Blue
				MS3191-1	-	-	MS3191-16A	Blue
				ST2220-1-Y	-	-	ST2220-1-2	-
				WA27F	4	-	M22520/1-02	Blue
	18	-	-	294-126	-	-	-	-
				M22520/1-01	5	-	M22520/1-02	Blue
				MS3191-1	-	-	MS3191-16A	Blue
				ST2220-1-Y	-	-	ST2220-1-2	-
				WA27F	5	-	M22520/1-02	Blue
	16	-	-	294-126	-	-	-	-
				M22520/1-01	-	-	M22520/1-02	Blue
				M22520/1-01	6	-	M22520/1-02	Blue
				MS3191-1	-	-	MS3191-16A	Blue
				ST2220-1-Y	-	-	ST2220-1-2	-
				WA27F	6	-	M22520/1-02	Blue
12	12	-	-	294-126	-	-	-	-
				M22520/1-01	-	-	M22520/1-02	Yellow
				MS3191-1	-	-	MS3191-12A	Yellow
				WA27F	6	-	M22520/1-02	Yellow

ASSEMBLY OF MIL-C-5015 TYPE CONNECTORS WITH REAR RELEASE CONTACTS

Table 7 CONTACT CRIMP TOOLS (Continued)

Crimp Barrel Size	Wire Size (AWG)	Filler Wire		Crimp Tool				
		Size (AWG)	Quantity	Basic Unit		Die Set	Locator	
				Part Number	Setting		Part Number	Color
8	12	10	1	13642	-	-	-	-
				400B	-	414DA-8N	4046A	-
				M22520/23-01	-	-	-	-
				Y29H	-	-	-	-
	10	12	1	13642	-	-	-	-
				400B	-	414DA-8N	4046A	-
				M22520/23-01	-	-	-	-
				Y29H	-	-	-	-
	8	-	-	13642	-	ST2354-5	-	-
				400B	-	414DA-8N	4046A	-
				M22520/23-01	-	M22520/23-02	M22520/23-09	-
				Y29H	-	ST2354B-5	-	-
4	10	One 6AWG filler wire and one 12AWG filler wire	2	400B	-	414DA-4N	4112	-
				M22520/23-01	-	M22520/23-04	M22520/23-11	-
	8	12	4	400B	-	414DA-4N	4112	-
				M22520/23-01	-	M22520/23-04	M22520/23-11	-
	6	-	-	400B	-	414DA-4N	4112	-
				M22520/23-01	-	M22520/23-04	M22520/23-11	-
	4	-	-	13642	-	ST2354-2	-	-
				M22520/23-01	-	M22520/23-04	M22520/23-11	-
				Y29H	-	ST2354B-2	-	-
1/0	1/0	-	-	13642	-	11738	-	-
				M22520/23-01	-	M22520/23-05	M22520/23-13	-

Table 8
CONTACT CRIMP TOOL SUPPLIERS

Crimp Tool	Supplier
11738	Thomas & Betts
13642	Thomas & Betts
294-126	Amphenol
400B	Pico

Table 8 CONTACT CRIMP TOOL SUPPLIERS (Continued)

Crimp Tool	Supplier
4046A	Pico
4112	Pico
414DA-4N	Pico
414DA-8N	Pico
M22520/1-01	QPL
M22520/1-02	QPL
M22520/23-01	QPL
M22520/23-02	QPL
M22520/23-04	QPL
M22520/23-05	QPL
M22520/23-09	QPL
M22520/23-11	QPL
M22520/23-13	QPL
MS3191-1	QPL
MS3191-12A	QPL
MS3191-16A	QPL
ST2220-1-2	Boeing
ST2220-1-Y	Boeing
ST2354-2	Boeing
ST2354-5	Boeing
ST2354B-2	Boeing
ST2354B-5	Boeing
WA27F	Daniels
Y29H	Burndy

(1) Make a selection of a crimp tool from Table 7.

(2) Remove the necessary length of insulation from the end of the wire.
Refer to:
- Table 6 for the insulation removal length
- Subject 20-00-15 for the insulation removal procedures.

(3) If a filler wire is specified:

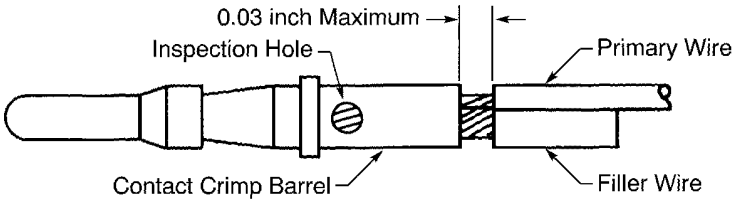
(a) Remove 0.7 inch of insulation from the end of the filler wire.
Refer to Subject 20-00-15 for the insulation removal procedures.

(b) Put the filler wire in the crimp barrel of the contact.

(4) Put the conductor in the crimp barrel. Refer to Figure 7.
Make sure that:

ASSEMBLY OF MIL-C-5015 TYPE CONNECTORS WITH REAR RELEASE CONTACTS

- All of the strands of the conductor are in the crimp barrel or in the adapter sleeve
- If a filler wire is specified, all of the strands of the filler wire are in the crimp barrel
- The conductor can be seen in the inspection hole
- The distance from the end of the insulation to the end of the crimp barrel is not more than 0.03 inch.



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CONTACT ASSEMBLY WITH FILLER WIRE
Figure 7

(5) Crimp the contact.

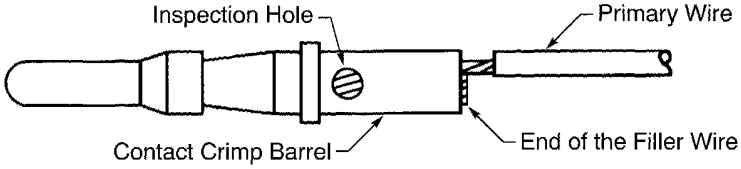
NOTE: A pneumatic indenter crimp tool cannot be used to assemble a size 8 contact that has an adapter sleeve in the crimp barrel.

(6) Examine the contact.

Make sure that:

- All of the strands of the conductor are in the crimp barrel
- If a filler wire is specified, all of the strands of the filler wire are in the crimp barrel
- The conductor can be seen in the inspection hole
- The distance from the end of the insulation to the end of the crimp barrel s not more than 0.03 inch.

(7) If the contact has a filler wire, remove the unwanted length of the filler wire as close as possible to the end of the crimp barrel. Refer to Figure 8.



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REMOVAL OF THE UNWANTED LENGTH OF THE FILLER WIRE
Figure 8

ASSEMBLY OF MIL-C-5015 TYPE CONNECTORS WITH REAR RELEASE CONTACTS

CAUTION: DO NOT CAUSE DAMAGE TO THE STRANDS OF THE CONDUCTOR. DAMAGE TO THE CONDUCTOR CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE WIRE.

(8) If the wire has a heat shrinkable sleeve on it:

(a) Push the heat shrinkable sleeve forward on the wire. Refer to Figure 6.

Make sure that the end of the sleeve is 0.25 inch ±0.03 inch from the end of the insulation.

(b) Shrink the sleeve into its position. Refer to Subject 20-10-14.

C. Contact Insertion

Table 9
CONTACT INSERTION TOOLS

Crimp Barrel Size	Insertion Tool	
	Part Number	Supplier
16	6500-001-16	Matrix
	MS3447-16	QPL
	M81969/14-03	QPL
12	6500-001-12	Matrix
	MS3447-12	QPL
8	6500-018-08	Matrix
	MS3165-8	QPL
4	6500-018-04	Matrix
	MS3165-4	QPL
1/0	6500-018-0	Matrix
	MS3165-0	QPL

(1) Make a selection of contact insertion tool from Table 9.

(2) Put the wired contact into the applicable contact cavity.

D. Spare Contact and Seal Plug Installation

All contact cavities that are not used must be sealed. Refer to Subject 20-60-08.

ASSEMBLY OF MIL-C-81511 SERIES 1 AND SERIES 2 CONNECTORS

TABLE OF CONTENTS

ASSEMBLY OF MIL-C-81511 SERIES 1 AND SERIES 2 CONNECTORS

1. ASSEMBLY OF MIL-C-81511 SERIES 1 AND SERIES 2 CONNECTORS

This Subject is now located in Subject 20-61-30.

ASSEMBLY OF MIL-C-38999 CONNECTORS

TABLE OF CONTENTS

ASSEMBLY OF MIL-C-38999 CONNECTORS

1. GENERAL DATA

A. Minimum Wire O.D. for an Environmentally Sealed Connector

Refer to:

- Subject 20-60-08 for the identification of an environmentally sealed connector
- Table 1 for the minimum wire O.D. that is necessary for a satisfactory seal of a contact cavity hole
- Subject 20-60-08 for the procedure to increase the diameter of the wire.

Table 1
MINIMUM WIRE O.D. FOR A SATISFACTORY SEAL

Connector	Description	Contact Cavity Size	Minimum Wire O.D. (inch)
MIL-C-38999	Rear release, rear removal contacts	22M	0.030
		22D	0.030
		22	0.034
		20	0.040
		16	0.065
		12	0.097

2. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

Table 2
CONNECTOR PART NUMBERS

MIL-C-38999 Series	Connector			
	Type	Part Number	Description	Supplier
I	Bayonet Coupling Plug	MS27467	Straight	QPL
	Bayonet Coupling Receptacle	MS27466	Wall Mounting Flange	QPL
		MS27468	Jam Nut Mounting	QPL
		MS27496	Box Mounting	QPL
		MS27505	Back Panel, Box Mounting Flange	QPL
		MS27656	Back Panel, Wall Mounting Flange	QPL

Table 2 CONNECTOR PART NUMBERS (Continued)

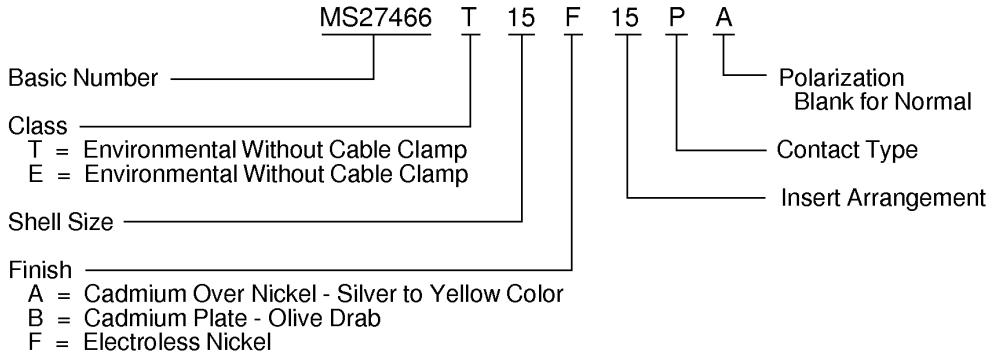
MIL-C-38999 Series	Connector			
	Type	Part Number	Description	Supplier
II	Bayonet Coupling Plug	MS27473	Straight	QPL
		MS27484	Straight, EMI	QPL
	Bayonet Coupling Receptacle	MS27472	Wall Mounting Flange	QPL
		MS27474	Jam Nut Mounting	QPL
		MS27497	Back Panel, Wall Mounting Flange	QPL
		MS27499	Box Mounting Flange	QPL
		MS27508	Back Panel, Box Mounting Flange	QPL

Table 2 CONNECTOR PART NUMBERS (Continued)

MIL-C-38999 Series	Connector			
	Type	Part Number	Description	Supplier
III	Threaded Coupling Plug	D38999/26	Straight, Metric	QPL
		BACC63CT	Composite	Boeing
		BACC63DB	Stainless Steel	Boeing
		BACC63EK	Stainless Steel, Enhanced Vibration	Boeing
		8D513J	Olive Green Cadmium Plated Composite, Shell Size 13	Souriau
		8D513M	Nickel Plated Composite, Shell Size 13	Souriau
		8D521M	Nickel Plated Composite, Shell Size 21	Souriau
		8D521X	Composite, Shell Size 21	Souriau
		8D525J	Olive Green Cadmium Plated Composite, Shell Size 25	Souriau
		8D525M	Nickel Plated Composite, Shell Size 25	Souriau
		8D525X	Composite, Shell Size 25	Souriau
		TV26RK9-98SN	Stainless Steel Shell	Amphenol
	Threaded Coupling Receptacle	D38999/20	Wall Mounting Flange, Metric	QPL
		D38999/24	Jam-Nut Mounting, Metric	QPL
		BACC63CU	Composite	Boeing
		BACC63DC	Stainless Steel	Boeing
		8D013J	Olive Green Cadmium Plated Composite	Souriau
		8D013M	Nickel Plated Composite, Shell Size 13	Souriau
		8D021M	Nickel Plated Composite, Shell Size 21	Souriau
		8D021W	Aluminum Shell, Shell Size 21	Souriau
		8D021X	Composite, Shell Size 21	Souriau
		8D025J	Olive Green Cadmium Plated Composite, Shell Size 25	Souriau
		8D025M	Nickel Plated Composite, Shell Size 25	Souriau
		8D025W	Aluminum Shell, Shell Size 25	Souriau
		8D025X	Composite, Shell Size 25	Souriau
		10-628485-472	Composite, Insert Configuration 21-84.	Amphenol
		10-695105	Stainless Steel, Jam Nut Mounting, Shell Size 17	Amphenol
		10-695106	Stainless Steel, Jam Nut Mounting, Shell Size 19	Amphenol

Table 2 CONNECTOR PART NUMBERS (Continued)

MIL-C-38999 Series	Connector			
	Type	Part Number	Description	Supplier
IV	Breech Coupling Plug	D38999/46	EMI Grounding, Metric	QPL
	Breech Coupling Receptacle	D38999/49	In-Line Cable, Metric	QPL



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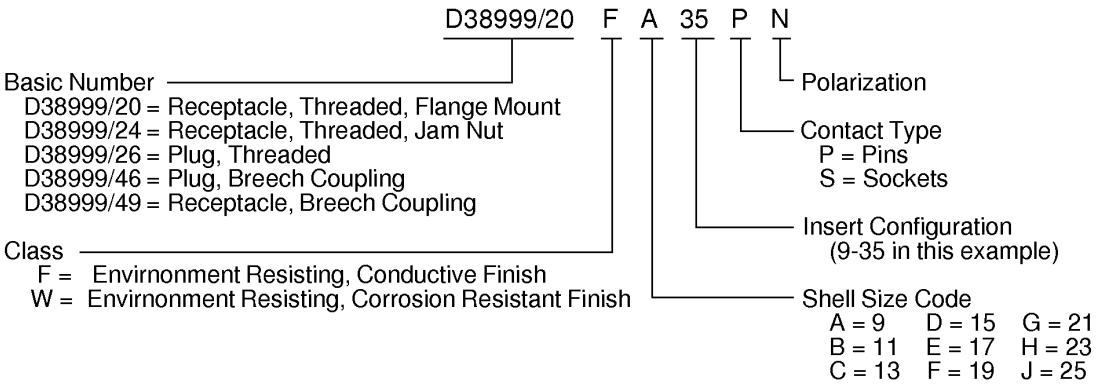
MIL-C-38999 SERIES I AND II CONNECTOR PART NUMBER STRUCTURE - MS27466
Figure 1



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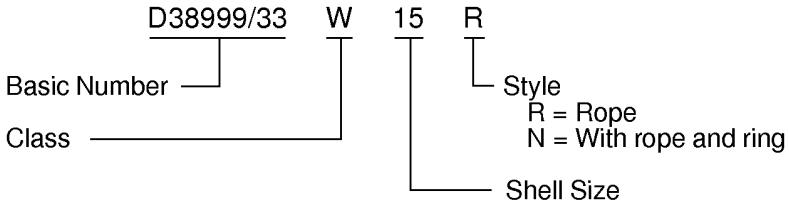
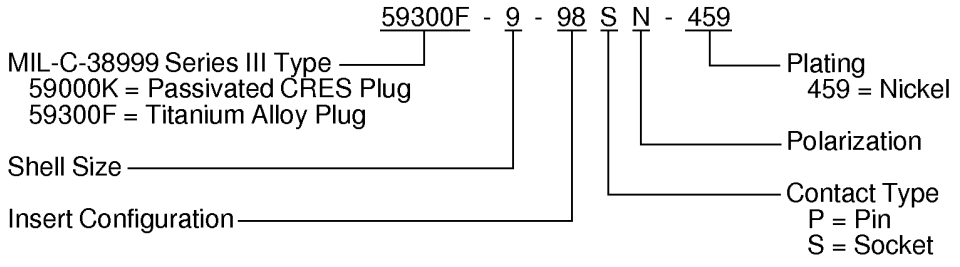
D38999 CONNECTOR PART NUMBER STRUCTURE
Figure 2

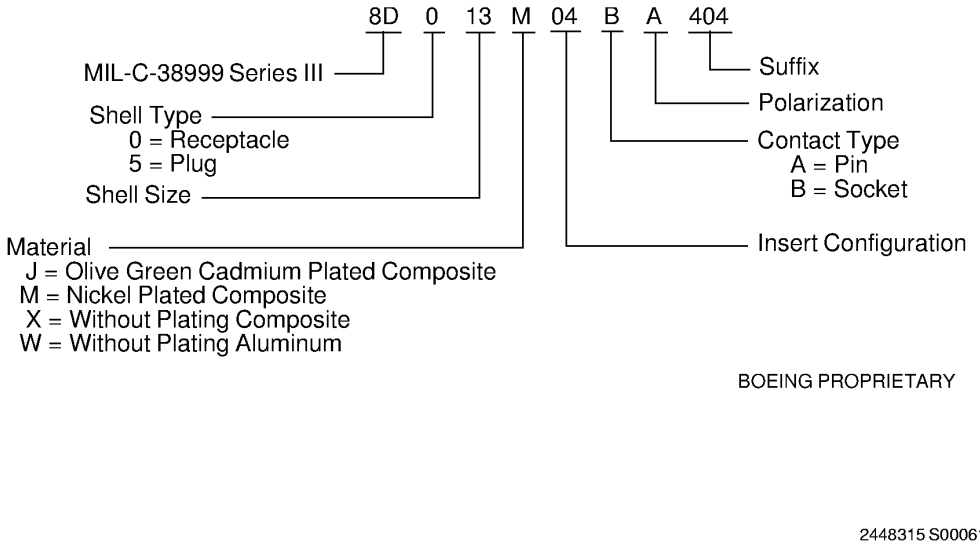


2449541 S00061547139_V1

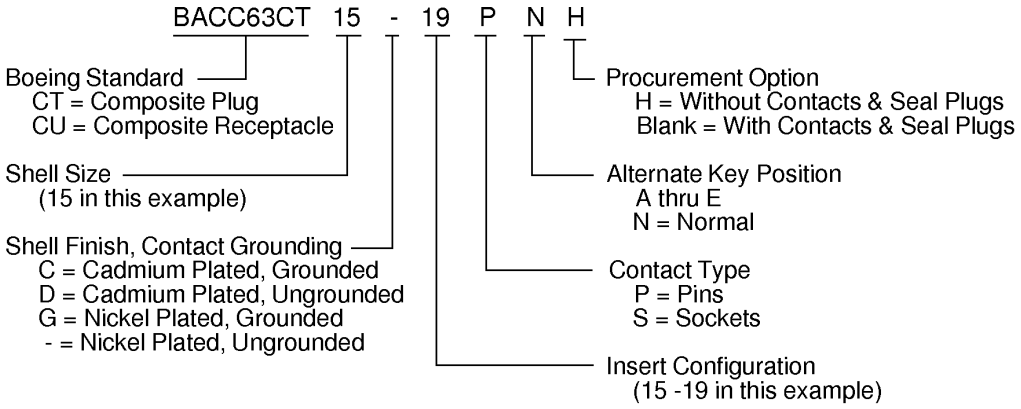
D38999/33 PROTECTIVE THREADED RECEPTACLE CAP PART NUMBER STRUCTURE
Figure 3



HIREL 59300F AND 59300K CONNECTOR PART NUMBER STRUCTURE
Figure 4

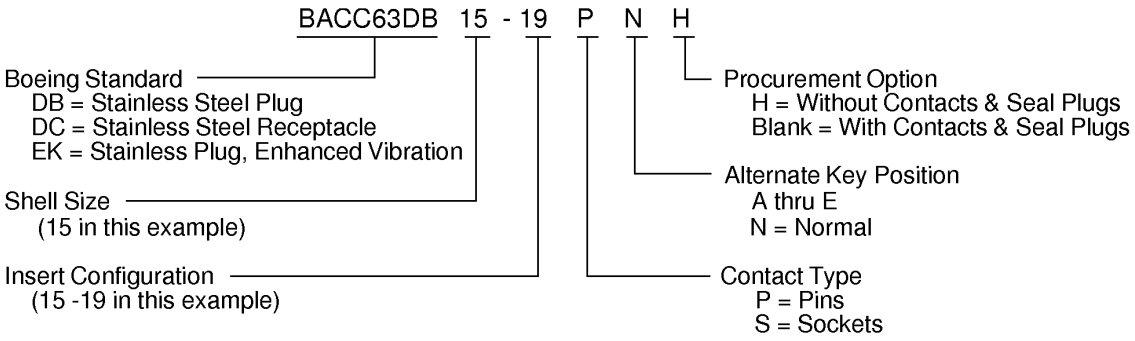


SOURIAU 8D CONNECTOR PART NUMBER STRUCTURE
Figure 5



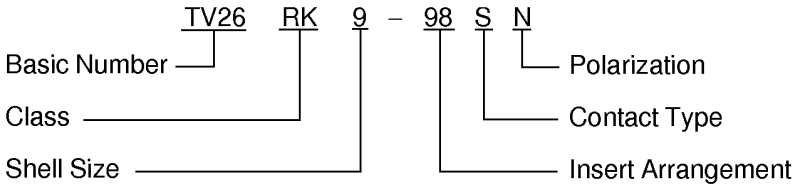
BACC63CT AND BACC63CU CONNECTOR PART NUMBER STRUCTURE
Figure 6

CAUTION: DAMAGE TO THE FRONT FACE OF COMPOSITE CIRCULAR CONNECTOR PLUG SHELLS OF THE WIRE HARNESS OF THE WING ICE PROTECTION SYSTEM IS POSSIBLE. DAMAGE TO THE FRONT FACE OF THE CONNECTOR SHELL CAN OCCUR DURING THE ALIGNMENT OF THE PLUG AND RECEPTACLE CONNECTOR KEYWAYS DURING A BLIND MATE. THIS DAMAGE WILL NOT AFFECT THE ENVIRONMENTAL SEAL OF THE CONNECTOR AFTER THE PLUG AND RECEPTACLE ARE FULLY MATED. IT IS SATISFACTORY TO USE A PLUG THAT HAS DAMAGE IN SERVICE UP TO 100 FLIGHT CYCLES.



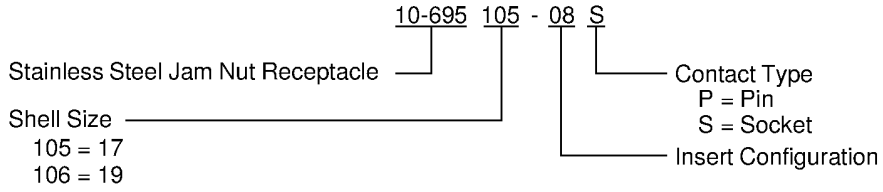
2450298 S00061547144_V1

BACC63DB, BACC63DC, AND BACC63EK CONNECTOR PART NUMBER STRUCTURE
Figure 7



2449141 S00061547145_V1

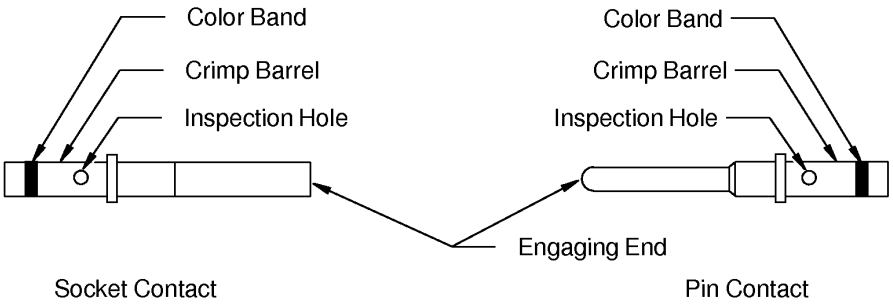
AMPHENOL TV26 CONNECTOR PART NUMBER STRUCTURE
Figure 8



2449860 S00061547146_V1

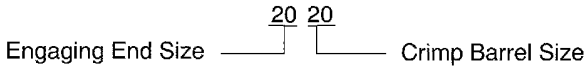
Amphenol 10-695() Type Connector Part Number Structure
Figure 9

B. Contact Part Numbers



2449029 S00061546903_V1

BOEING STANDARD CONTACTS
Figure 10

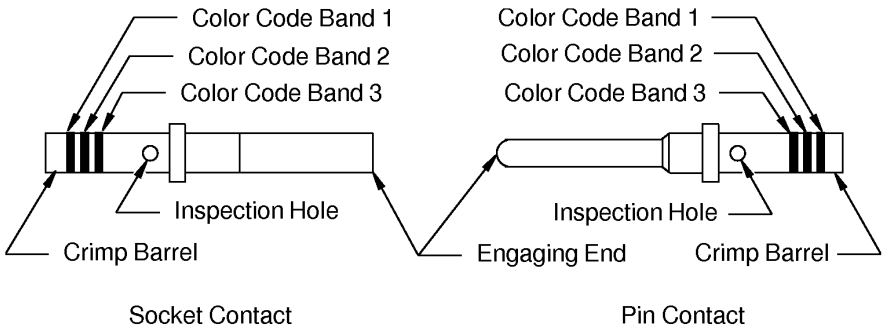


2446651 S00061545900_V1

EXAMPLE OF A CONTACT SIZE
Figure 11

Table 3
BOEING STANDARD CONTACT PART NUMBERS

Contact Size	Contact Engaging End Size	Contact Crimp Barrel Size	Contact Type	Boeing Standard	Color Band
2222D	22	22	Pin	BACC47GC1A	Green
			Socket	BACC47GD1A	Green
2020	20	20	Pin	BACC47GC2A	Red
			Socket	BACC47GD2A	Red
1616	16	16	Pin	BACC47GC3A	Blue
			Socket	BACC47GD3A	Blue
1212	12	12	Pin	BACC47GC4A	Yellow
			Socket	BACC47GD4A	Yellow
1614	16	14	Pin	BACC47GC6A	Blue-Black
			Socket	BACC47GD6A	Blue-Black



2448999 S00061545899_V1

LOCATION OF COLOR BANDS ON M39029 CONTACTS
Figure 12

Table 4
CONTACT PART NUMBERS FOR MIL-C-38999 SERIES I AND SERIES III CONNECTORS

Contact Size		Type	Color Code		Part Number	Supplier
Engaging End	Crimp Barrel		Band	Color		
22M	22	Pin	1	Orange	M39029/58-361	QPL
			2	Blue		
			3	Brown		
		Socket, long	1	Orange	M39029/56-349	QPL
			2	Yellow		
			3	White		
22D	22	Pin	1	Orange	M39029/58-360	QPL
			2	Blue		
			3	Black		
		Socket, long	1	Orange	M39029/56-348	QPL
			2	Yellow		
			3	Gray		

ASSEMBLY OF MIL-C-38999 CONNECTORS

Table 4 CONTACT PART NUMBERS FOR MIL-C-38999 SERIES I AND SERIES III CONNECTORS (Continued)

Contact Size		Type	Color Code		Part Number	Supplier
Engaging End	Crimp Barrel		Band	Color		
22	22	Pin	1	Orange	M39029/58-362	QPL
			2	Blue		
			3	Red		
		Socket, long	1	Orange	M39029/56-350	QPL
			2	Green		
			3	Black		
20	20	Pin	1	Orange	M39029/58-363	QPL
			2	Blue		
			3	Orange		
		Socket, long	1	Orange	M39029/56-351	QPL
			2	Green		
			3	Brown		
16	16	Pin	1	Orange	M39029/58-364	QPL
			2	Blue		
			3	Yellow		
		Socket, long	1	Orange	M39029/56-352	QPL
			2	Green		
			3	Red		
12	12	Pin	1	Orange	M39029/58-365	QPL
			2	Blue		
			3	Green		
		Socket, long	1	Orange	M39029/56-353	QPL
			2	Green		
			3	Orange		

ASSEMBLY OF MIL-C-38999 CONNECTORS

Table 5
THERMOCOUPLE CONTACT PART NUMBERS FOR MIL-C-38999 SERIES I AND SERIES III CONNECTORS

Contact Size		Type	Material	Color Code		Part Number	Supplier
Engaging End	Crimp Barrel			Band	Color		
20	20	Pin	Alumel	1	Yellow	M39029/87-475	QPL
				2	Violet		
				3	Green		
			Chromel	1	Yellow	M39029/87-476	QPL
				2	Violet		
				3	Blue		
		Socket, long	Alumel	1	Yellow	M39029/88-487	QPL
				2	Gray		
				3	Violet		
			Chromel	1	Yellow	M39029/88-488	QPL
				2	Gray		
				3	Gray		

Table 6
CONTACT PART NUMBERS FOR MIL-C-38999 SERIES II CONNECTORS

Contact Size		Type	Color Code		Part Number	Supplier
Engaging End	Crimp Barrel		Band	Color		
22M	22	Pin	1	Orange	M39029/58-361	QPL
			2	Blue		
			3	Brown		
		Socket, short	1	Orange	M39029/57-355	QPL
			2	Green		
			3	Green		
22D	22	Pin	1	Orange	M39029/58-360	QPL
			2	Blue		
			3	Black		
		Socket, short	1	Orange	M39029/57-354	QPL
			2	Green		
			3	Yellow		

ASSEMBLY OF MIL-C-38999 CONNECTORS

Table 6 CONTACT PART NUMBERS FOR MIL-C-38999 SERIES II CONNECTORS (Continued)

Contact Size		Type	Color Code		Part Number	Supplier
Engaging End	Crimp Barrel		Band	Color		
22	22	Pin	1	Orange	M39029/58-362	QPL
			2	Blue		
			3	Red		
		Socket, short	1	Orange	M39029/57-356	QPL
			2	Green		
			3	Blue		
20	20	Pin	1	Orange	M39029/58-363	QPL
			2	Blue		
			3	Orange		
		Socket, short	1	Orange	M39029/57-357	QPL
			2	Green		
			3	Violet		
16	16	Pin	1	Orange	M39029/58-364	QPL
			2	Blue		
			3	Yellow		
		Socket, short	1	Orange	M39029/57-358	QPL
			2	Green		
			3	Gray		
12	12	Pin	1	Orange	M39029/58-365	QPL
			2	Blue		
			3	Green		
		Socket, short	1	Orange	M39029/57-359	QPL
			2	Green		
			3	White		

ASSEMBLY OF MIL-C-38999 CONNECTORS

Table 7
THERMOCOUPLE CONTACT PART NUMBERS FOR MIL-C-38999 SERIES II CONNECTORS

Contact Size		Type	Material	Color Code		Part Number	Supplier
Engaging End	Crimp Barrel			Band	Color		
20	20	Pin	Alumel	1	Yellow	M39029/87-475	QPL
				2	Violet		
				3	Green		
			Chromel	1	Yellow	M39029/87-476	QPL
				2	Violet		
				3	Blue		
		Socket, short	Alumel	1	Yellow	M39029/89-499	QPL
				2	White		
				3	White		
			Chromel	1	Green	M39029/89-500	QPL
				2	Black		
				3	Black		

Table 8
SUPERSEDED CONTACT PART NUMBERS

Superseded Contact		New Contact	
Part Number	Supplier	Part Number	Supplier
MS27490-22D	QPL	M39029/56-348	QPL
MS27490-22M	QPL	M39029/56-349	QPL
MS27490-22	QPL	M39029/56-350	QPL
MS27490-20	QPL	M39029/56-351	QPL
MS27490-16	QPL	M39029/56-352	QPL
MS27490-12	QPL	M39029/56-353	QPL
MS27491-22D	QPL	M39029/57-354	QPL
MS27491-22M	QPL	M39029/57-355	QPL
MS27491-22	QPL	M39029/57-356	QPL
MS27491-20	QPL	M39029/57-357	QPL
MS27491-16	QPL	M39029/57-358	QPL
MS27491-12	QPL	M39029/57-359	QPL
MS27493-22D	QPL	M39029/58-360	QPL
MS27493-22M	QPL	M39029/58-361	QPL
MS27493-22	QPL	M39029/58-362	QPL
MS27493-20	QPL	M39029/58-363	QPL

Table 8 SUPERSEDED CONTACT PART NUMBERS (Continued)

Superseded Contact		New Contact	
Part Number	**Supplier**	**Part Number**	**Supplier**
MS27493-16	QPL	M39029/58-364	QPL
MS27493-12	QPL	M39029/58-365	QPL
M39029/872020C2	QPL	M39029/87-475	QPL
M39029/872020C3	QPL	M39029/87-476	QPL
M39029/882020C2	QPL	M39029/88-487	QPL
M39029/882020C3	QPL	M39029/88-488	QPL
M39029/892020C2	QPL	M39029/89-499	QPL
M39029/892020C3	QPL	M39029/89-500	QPL

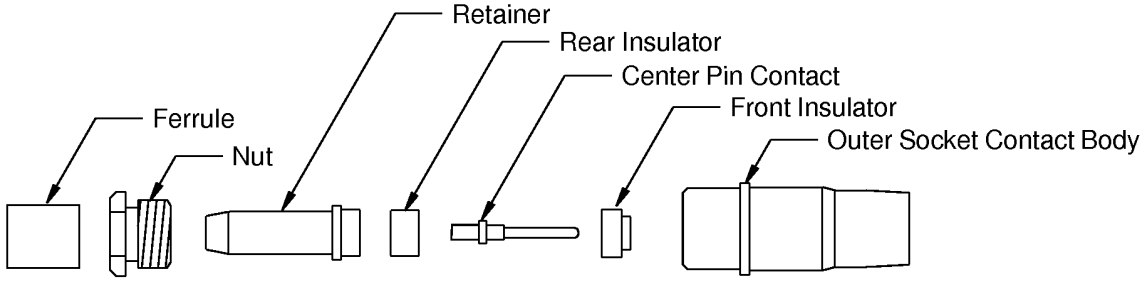
C. Coax Contact Part Numbers and Components

Table 9
COAX CONTACT PART NUMBERS

Contact Size	Type	Part Number	Supplier	Reference
8	Socket	21-33101-37	Amphenol	Figure 13
	Pin	21-33102-37	Amphenol	Figure 14

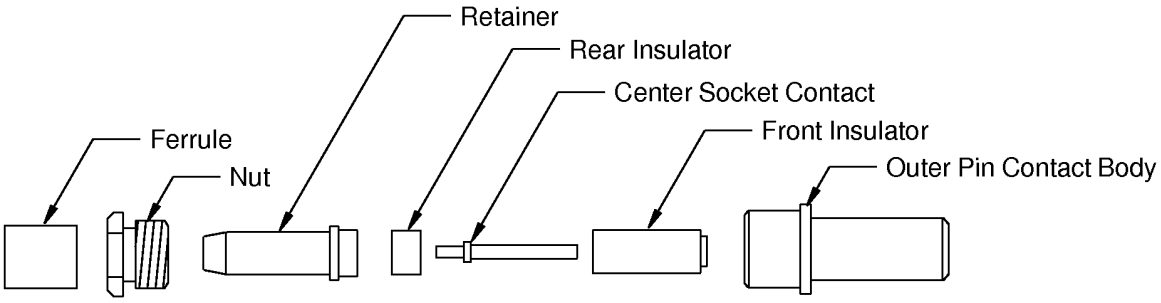
Table 10
NECESSARY PARTS

Description	Part Number	Size	Supplier	Reference
Seal Boot	10-452952	8	Amphenol	Figure 15

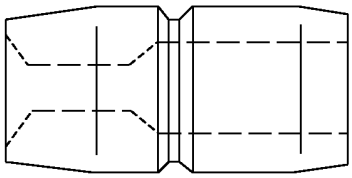


2449296 S00061547147_V1

21-33101-37 COAX SOCKET CONTACT COMPONENTS
Figure 13



21-33102-37 COAX PIN CONTACT COMPONENTS
Figure 14

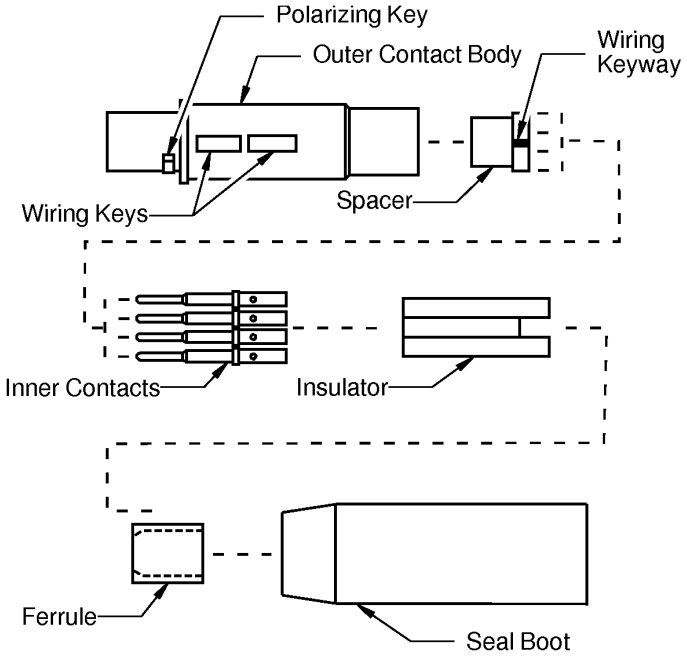


AMPHENOL 10-452952 SEAL BOOT
Figure 15

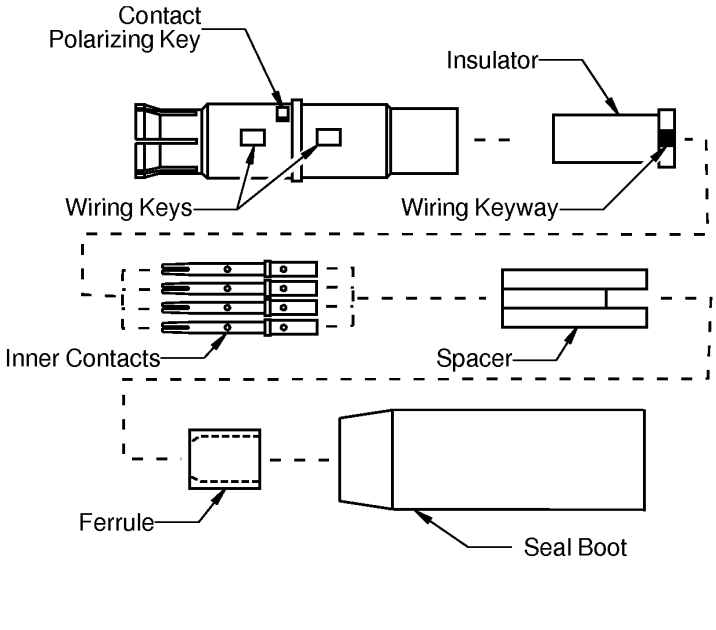
D. Quadrax Contact Part Numbers

Table 11
QUADRAX CONTACT PART NUMBERS FOR MIL-DTL-38999 SERIES III CONNECTORS

Contact Size	Type	Boeing Standard
8	Pin	BACC47GM1
8	Socket	BACC47GN1



COMPONENTS OF THE QUADRAX PIN CONTACT
Figure 16



COMPONENTS OF THE QUADRAX SOCKET CONTACT
Figure 17

Table 12
SUPPLIER PART NUMBERS FOR BOEING STANDARD SIZE 8 QUADRAX CONTACTS

Boeing Standard	Alternative Contact	
	Part Number	Supplier
BACC47GM1	670175011	Radiall
BACC47GN1	670075011	Radiall

3. INSERT CONFIGURATIONS

A. Insert Configurations for MIL-C-38999 Series I and Series III Connectors

Table 13
INSERT CONFIGURATIONS

Insert Configuration	Contact Cavity		Reference
	Count	Size	
9-35	6	22D	Figure 18
9-98	3	20	Figure 18
11-35	13	22D	Figure 19
11-98	6	20	Figure 19
13-4	4	16	Figure 20
13-8	8	20	Figure 20
13-35	22	22D	Figure 20
13-98	10	20	Figure 20
14-35	37	22D	Figure 21
15-5	5	16	Figure 22
15-15	14	20	Figure 22
	1	16	
15-18	18	20	Figure 22
15-19	19	20	Figure 22
15-35	37	22D	Figure 22
15-97	8	20	Figure 22
	4	16	
16-35	55	22D	Figure 23
17-6	6	12	Figure 24
17-8	8	16	Figure 24
17-26	26	20	Figure 24
17-35	55	22D	Figure 24
17-82	2	8 Quadrax	Figure 30

Table 13 INSERT CONFIGURATIONS (Continued)

Insert Configuration	Contact Cavity		Reference
	Count	Size	
17-99	21	20	Figure 24
	2	16	
18-53	53	22	Figure 25
19-11	11	16	Figure 26
19-32	32	20	Figure 26
19-35	66	22D	Figure 26
21-11	11	12	Figure 27
21-16	16	16	Figure 27
21-35	79	22D	Figure 27
21-39	37	20	Figure 27
	2	16	
21-41	41	20	Figure 27
21-75	4	8	Figure 27
21-76	17	22D	Figure 30
	2	8 Quadrax	
21-84	4	8 Quadrax	Figure 30
23-21	21	16	Figure 28
23-35	100	22D	Figure 28
23-53	53	20	Figure 28
25-4	48	20	Figure 29
	8	16	
25-19	19	12	Figure 29
25-24	12	16	Figure 29
	12	12	
25-29	29	16	Figure 29
25-35	128	22D	Figure 29
25-37	37	16	Figure 29
25-43	23	20	Figure 29
	20	16	
25-46	40	20	Figure 29
	4	16	
	2	8	
25-61	61	20	Figure 29

NOTE: Figure 18 through Figure 30 show the rear face of an insert that has sockets. The view of the rear face of an insert that has pins is the mirror image of this view.

9-35 9-98

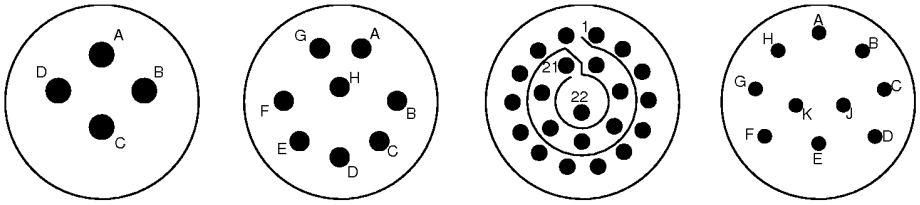
2446325 S00061547152_V1

9-() INSERT CONFIGURATIONS
Figure 18

11–35 11–98

2446326 S00061547153_V1

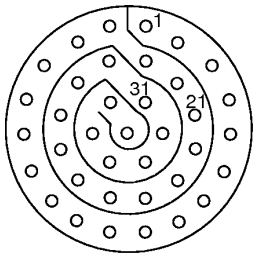
11-() INSERT CONFIGURATIONS
Figure 19



13-4 13-8 13-35 13-98

2449535 S00061547154_V1

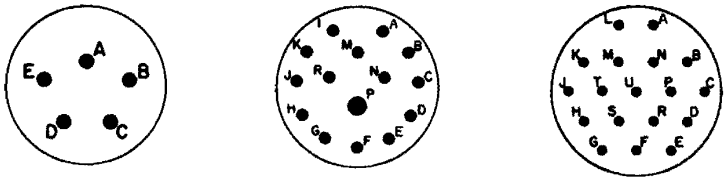
13-() INSERT CONFIGURATIONS
Figure 20



14-35

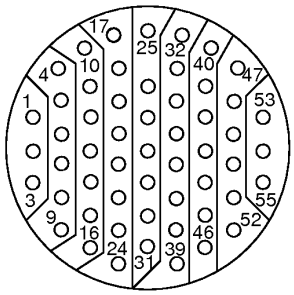
2449134 S00061547155_V1

14-() INSERT CONFIGURATIONS
Figure 21



2446327 S00061547156_V1

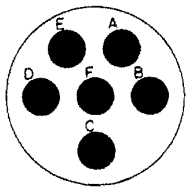
15-() INSERT CONFIGURATIONS
Figure 22



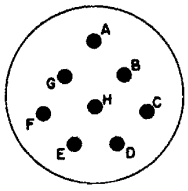
16-35

2449135 S00061547157_V1

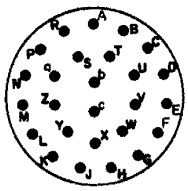
16-() INSERT CONFIGURATIONS
Figure 23



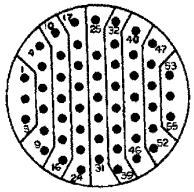
17–6



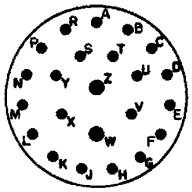
17–8



17–26



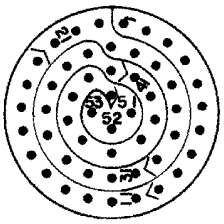
17–35



17–99

2446328 S00061547158_V1

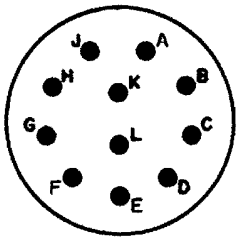
17-() INSERT CONFIGURATIONS
Figure 24



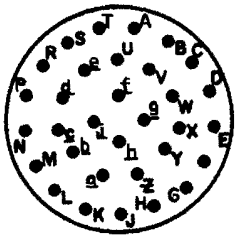
18–53

2447877 S00061547159_V1

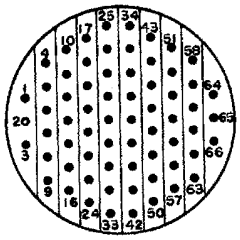
18-() INSERT CONFIGURATIONS
Figure 25



19–11



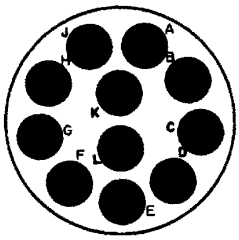
19–32



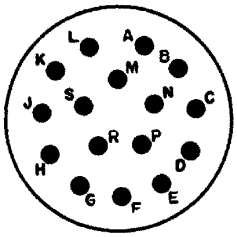
19–35

2446329 S00061547160_V1

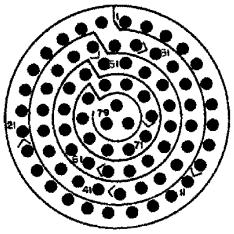
19-() INSERT CONFIGURATIONS
Figure 26



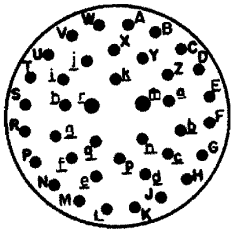
21–11



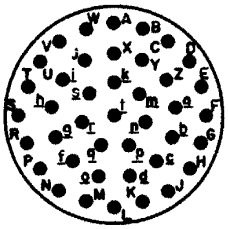
21–16



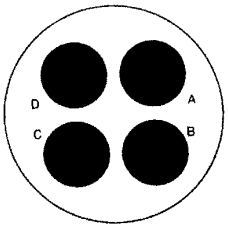
21–35



21–39



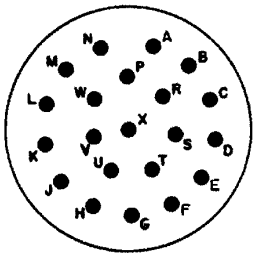
21–41



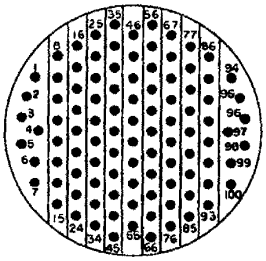
21–75

2446330 S00061547161_V1

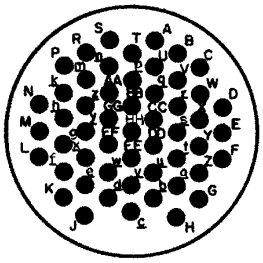
21-() INSERT CONFIGURATIONS
Figure 27



23–21



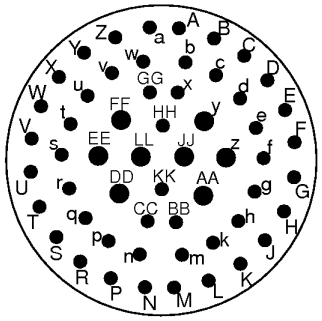
23–35



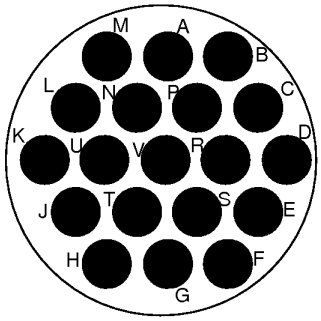
23–53

2446331 S00061547162_V1

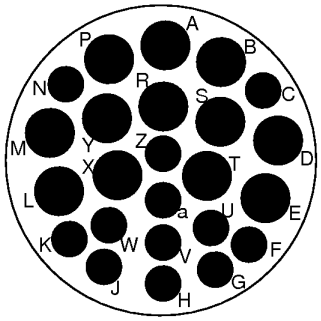
23-() INSERT CONFIGURATIONS
Figure 28



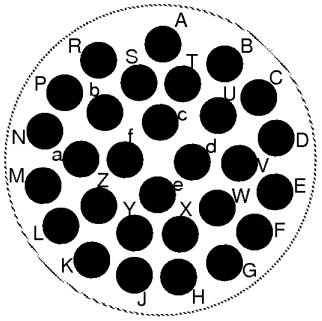
25-4



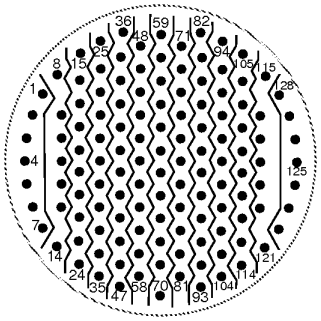
25-19



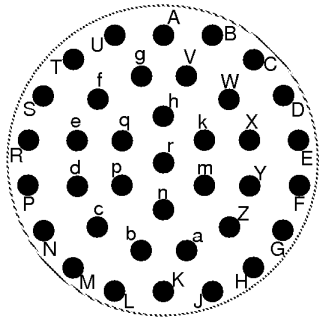
25-24



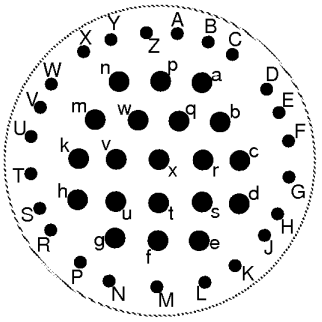
25-29



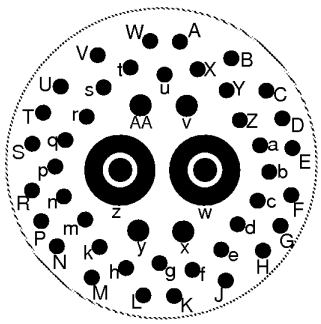
25-35



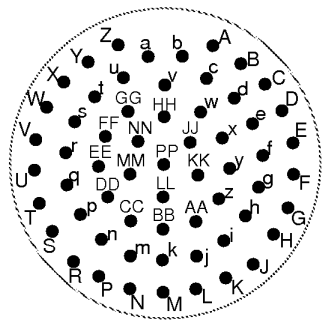
25-37



25-43



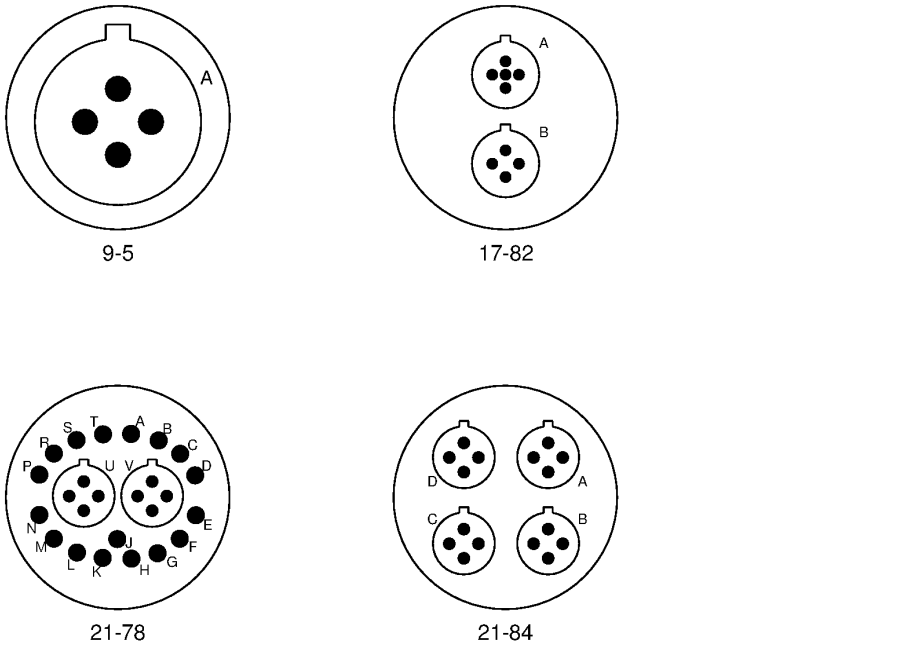
25-46



25-61

2443688 S00061547163_V1

25-() INSERT CONFIGURATIONS
Figure 29



QUADRAX INSERT CONFIGURATIONS
Figure 30

4. CONNECTOR DISASSEMBLY

A. Contact Removal

Table 14
CONTACT REMOVAL TOOLS

Contact Size	Removal Tool			
	Material	Part Number	Supplier	Color
22M	Metal	11-8675-24	Bendix	-
		11-8795-24	Bendix	
		ATBX2052	Astro	
		M81969/8-02	QPL	
		MS27495R22M	QPL	
		RX24-3	Burndy	
	Plastic	10-296943-23	Bendix	White
		M81969/14-01	QPL	
		MS27509R22M	QPL	
		MS27534-22D	QPL	

Table 14 CONTACT REMOVAL TOOLS (Continued)

Contact Size	Removal Tool			
	Material	Part Number	Supplier	Color
22D	Metal	11-8675-24	Bendix	-
		11-8795-24	Bendix	
		ATBX2052	Astro	
		M81969/8-02	QPL	
		MS27495R22M	QPL	
		RX24-3	Burndy	
	Plastic	10-296943-23	Bendix	White
		M81969/14-01	QPL	
		MS27509R22M	QPL	
		MS27534-22D	QPL	
22	Metal	11-8675-22	Bendix	-
		11-8795-22	Bendix	
		M81969/8-04	QPL	
		MS27495R22	QPL	
		RX22-1	Burndy	
	Plastic	10-296943-22	Bendix	White
		MS27509R22	QPL	
20	Metal	11-8675-20	Bendix	-
		11-8795-20	Bendix	
		M81969/8-06	QPL	
		MS27495R20	QPL	
		RX20-3	Burndy	
	Plastic	10-296943-20	Bendix	White
		M81969/14-02	QPL	
		MS27509R20	QPL	
		MS27534-20	QPL	
16	Metal	11-8675-16	Bendix	-
		11-8795-16	Bendix	
		M81969/8-08	QPL	
		MS27495R16	QPL	
		RX16-9	Burndy	
	Plastic	M81969/14-03	QPL	White
		MS27534-16	QPL	

Table 14 CONTACT REMOVAL TOOLS (Continued)

Contact Size	Removal Tool			
	Material	Part Number	Supplier	Color
12	Metal	11-8675-12	Bendix	-
		11-8795-12	Bendix	
		M81969/8-10	QPL	
		MS27495R12	QPL	
		RX12-9	Burndy	
	Plastic	M81969/14-04	QPL	White
		MS27534-12	QPL	
8	Metal	M81969/28-03	QPL	-
		1738894-1	Tyco	-
		1738196-1	Tyco	-

NOTE: For plastic tools, the color given in Table 14 is the color of the removal end of the combination tools that are both insertion and removal tools.

(1) Make a selection of a contact removal tool from Table 14.

CAUTION: DO NOT USE A REMOVAL TOOL THAT HAS A DEFECT. A REMOVAL TOOL THAT HAS A DEFECT CAN CAUSE DAMAGE TO THE GROMMET OR THE RETENTION CLIP.

(2) At the rear of the connector, put the removal tool on the wire.

(3) Axially align the removal tool and the contact cavity.

(4) Carefully push the removal tool into the rear of the contact cavity until it stops.

CAUTION: DO NOT ROTATE THE TOOL OR SPREAD THE TOOL TIPS WHILE THE TOOL IS STILL IN THE GROMMET.

(5) Carefully pull the wire and the removal tool from the contact cavity at the same time.

Make sure that the removal tool and the contact cavity stay axially aligned.

(6) If the contact does not release:

(a) Pull the removal tool out of the contact cavity.

(b) Turn the removal tool approximately 90 degrees.

(c) Do Step 4.A.(2) through Step 4.A.(5) again.

5. CONNECTOR ASSEMBLY

A. Standard Contact Crimp Tools

Table 15
CRIMP TOOLS FOR LONG SOCKET CONTACTS

Wire Size (AWG)	Contact Size	Crimp Tool						
		Basic Unit			Locator			
		Part Number	Setting	Supplier	Part Number	Color	Block Color	Supplier
28	22M	M22520/2-01	2	QPL	M22520/2-07	-	-	QPL
	22D	M22520/2-01	1	QPL	M22520/2-07	-	-	QPL
26	22M	M22520/2-01	3	QPL	M22520/2-07	-	-	QPL
	22D	M22520/2-01	2	QPL	M22520/2-07	-	-	QPL
		WA22	2	Daniels	M22520/2-07	-	-	QPL
	22	M22520/2-01	2	QPL	M22520/2-07	-	-	QPL
	20	M22520/2-01	5	QPL	M22520/2-10	-	-	QPL
		WA22	5	Daniels	M22520/2-10	-	-	QPL
24	22M	M22520/2-01	4	QPL	M22520/2-07	-	-	QPL
	22D	612118	-	Buchanan	613194	-	-	Buchanan
		612916	-	Buchanan	-	Blue	Red	-
		M22520/2-01	3	QPL	M22520/2-07	-	-	QPL
		WA22	3	Daniels	M22520/2-07	-	-	QPL
		ST2220-10	-	Boeing	ST2220-10-2	-	-	Boeing
	22	612118	-	Buchanan	613194	-	-	Buchanan
		612916	-	Buchanan	-	Blue	Red	-
		M22520/2-01	3	QPL	M22520/2-07	-	-	QPL
		ST2220-10	-	Boeing	ST2220-10-2	-	-	Boeing
	20	612916	-	Buchanan	-	Blue	Yellow	-
		M22520/1-01	1	QPL	M22520/1-04	-	-	QPL
		WA27F	1	Daniels	M22520/1-04	-	-	QPL
		M22520/2-01	4	QPL	M22520/2-10	-	-	QPL
		WA22	4	Daniels	M22520/2-10	-	-	QPL
		ST2220-1-Y	-	Boeing	ST2220-1-12	-	-	Boeing

ASSEMBLY OF MIL-C-38999 CONNECTORS

Table 15 CRIMP TOOLS FOR LONG SOCKET CONTACTS (Continued)

Wire Size (AWG)	Contact Size	Crimp Tool						
		Basic Unit			Locator			
		Part Number	Setting	Supplier	Part Number	Color	Block Color	Supplier
22	22D	612118	-	Buchanan	613194	-	-	Buchanan
		M22520/2-01	4	QPL	M22520/2-07	-	-	QPL
		WA22	4	Daniels	M22520/2-07	-	-	QPL
		ST2220-10	-	Boeing	ST2220-10-2	-	-	Boeing
	22	612118	-	Buchanan	613194	-	-	Buchanan
		612916	-	Buchanan	-	Blue	Blue	-
		M22520/2-01	4	QPL	M22520/2-07	-	-	QPL
		ST2220-10	-	Boeing	ST2220-10-2	-	-	Boeing
	20	11148	-	Buchanan	-	Red	Red	-
		612916	-	Buchanan	-	Yellow	Red	-
		614019	-	Buchanan	-	Red	Red	-
		M22520/1-01	2	QPL	M22520/1-04	-	-	QPL
		WA27F	2	Daniels	M22520/1-04	Red	Red	QPL
		M22520/2-01	5	QPL	M22520/2-10	-	-	QPL
		WA22	5	Daniels	M22520/2-10	-	-	QPL
		MS3191-1	-	QPL	11-7771-31	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-12	-	-	Boeing
	16	M22520/1-01	4	QPL	M22520/1-04	-	-	QPL
		WA27F	4	Daniels	M22520/1-04	Blue	Blue	QPL
		MS3191-1	-	QPL	11-7771-29	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing

ASSEMBLY OF MIL-C-38999 CONNECTORS

Table 15 CRIMP TOOLS FOR LONG SOCKET CONTACTS (Continued)

Wire Size (AWG)	Contact Size	Crimp Tool						
		Basic Unit			Locator			
		Part Number	Setting	Supplier	Part Number	Color	Block Color	Supplier
20	20	11148	-	Buchanan	-	Red	Red	-
		612916	-	Buchanan	-	Yellow	Blue	-
		614019	-	Buchanan	-	Red	Red	-
		M22520/1-01	3	QPL	M22520/1-04	-	-	QPL
		WA27F	3	Daniels	M22520/1-04	Red	Red	QPL
		M22520/2-01	6	QPL	M22520/2-10	-	-	QPL
		WA22	6	Daniels	M22520/2-10	-	-	QPL
		MS3191-1	-	QPL	11-7771-31	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-12	-	-	Boeing
	16	11148	-	Buchanan	-	Red	Blue	-
		614019	-	Buchanan	-	Red	Blue	-
		M22520/1-01	4	QPL	M22520/1-04	-	-	QPL
		WA27F	4	Daniels	M22520/1-04	Blue	Blue	QPL
		MS3191-1	-	QPL	11-7771-29	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing
18	16	11148	-	Buchanan	-	Red	Blue	-
		614019	-	Buchanan	-	Red	Blue	-
		M22520/1-01	5	QPL	M22520/1-04	-	-	QPL
		WA27F	5	Daniels	M22520/1-04	Blue	Blue	QPL
		MS3191-1	-	QPL	11-7771-29	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing

Table 15 CRIMP TOOLS FOR LONG SOCKET CONTACTS (Continued)

Wire Size (AWG)	Contact Size	Crimp Tool						
		Basic Unit			Locator			
		Part Number	Setting	Supplier	Part Number	Color	Block Color	Supplier
16	16	11148	-	Buchanan	-	Red	Blue	-
		614019	-	Buchanan	-	Red	Blue	-
		M22520/1-01	6	QPL	M22520/1-04	-	-	QPL
		WA27F	6	Daniels	M22520/1-04	Blue	Blue	QPL
		MS3191-1	-	QPL	11-7771-29	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing
	12	11148	-	Buchanan	-	Red	Yellow	-
		614019	-	Buchanan	-	Red	Yellow	-
		M22520/1-01	7	QPL	M22520/1-04	-	-	QPL
		WA27F	7	Daniels	M22520/1-04	Yellow	Yellow	QPL
		MS3191-1	-	QPL	11-7771-43	-	-	Amphenol/ Bendix
14	12	11148	-	Buchanan	-	Red	Yellow	-
		614019	-	Buchanan	-	Red	Yellow	-
		M22520/1-01	7	QPL	M22520/1-04	-	-	QPL
		WA27F	7	Daniels	M22520/1-04	Yellow	Yellow	QPL
		MS3191-1	-	QPL	11-7771-43	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-3	-	-	Boeing
12	12	11148	-	Buchanan	-	Red	Yellow	-
		614019	-	Buchanan	-	Red	Yellow	-
		M22520/1-01	8	QPL	M22520/1-04	-	-	QPL
		WA27F	8	Daniels	M22520/1-04	Yellow	Yellow	QPL
		MS3191-1	-	QPL	11-7771-43	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-3	-	-	Boeing

ASSEMBLY OF MIL-C-38999 CONNECTORS

Table 16
CRIMP TOOLS FOR SHORT SOCKET CONTACTS

Wire Size (AWG)	Contact Size	Crimp Tool						
		Basic Unit			Locator			
		Part Number	Setting	Supplier	Part Number	Color	Block Color	Supplier
28	22M	M22520/2-01	2	QPL	M22520/2-06	-	-	QPL
	22D	M22520/2-01	1	QPL	M22520/2-06	-	-	QPL
26	22M	M22520/2-01	3	QPL	M22520/2-06	-	-	QPL
	22D	M22520/2-01	2	QPL	M22520/2-06	-	-	QPL
		WA22	2	Daniels	M22520/2-06	-	-	QPL
	22	M22520/2-01	2	QPL	M22520/2-06	-	-	QPL
24	22M	M22520/2-01	4	QPL	M22520/2-06	-	-	QPL
	22D	612118	-	Buchanan	612521	-	-	Buchanan
		612916	-	Buchanan	-	Blue	Red	-
		M22520/2-01	3	QPL	M22520/2-06	-	-	QPL
		WA22	3	Daniels	M22520/2-06	-	-	QPL
		ST2220-10	-	Boeing	ST2220-10-1	-	-	Boeing
	22	612118	-	Buchanan	612521	-	-	Buchanan
		612916	-	Buchanan	-	Blue	Red	-
		M22520/2-01	3	QPL	M22520/2-06	-	-	QPL
		ST2220-10	-	Boeing	ST2220-10-1	-	-	Boeing
	20	612916	-	Buchanan	-	Blue	Yellow	-
		M22520/1-01	1	QPL	M22520/1-04	-	-	QPL
		WA27F	1	Daniels	M22520/1-04	-	-	QPL
		M22520/2-01	4	QPL	M22520/2-10	-	-	QPL
		WA22	4	Daniels	M22520/2-10	-	-	QPL
		ST2220-1-Y	-	Boeing	ST2220-1-12	-	-	Boeing

Table 16 CRIMP TOOLS FOR SHORT SOCKET CONTACTS (Continued)

Wire Size (AWG)	Contact Size	Crimp Tool						
		Basic Unit			Locator			
		Part Number	Setting	Supplier	Part Number	Color	Block Color	Supplier
22	22D	612118	-	Buchanan	612521	-	-	Buchanan
		612916	-	Buchanan	-	Blue	Blue	-
		M22520/2-01	4	QPL	M22520/2-06	-	-	QPL
		WA22	4	Daniels	M22520/2-06	-	-	QPL
		ST2220-10	-	Boeing	ST2220-10-1	-	-	Boeing
	22	612118	-	Buchanan	612521	-	-	Buchanan
		612916	-	Buchanan	-	Blue	Blue	-
		M22520/2-01	4	QPL	M22520/2-06	-	-	QPL
		ST2220-10	-	Boeing	ST2220-10-1	-	-	Boeing
	20	11148	-	Buchanan	-	Red	Red	-
		612916	-	Buchanan	-	Yellow	Red	-
		614019	-	Buchanan	-	Red	Red	-
		M22520/1-01	2	QPL	M22520/1-04	-	-	QPL
		WA27F	2	Daniels	M22520/1-04	-	-	QPL
		M22520/2-01	5	QPL	M22520/2-10	-	-	QPL
		WA22	5	Daniels	M22520/2-10	-	-	QPL
		MS3191-1	-	QPL	11-7771-31	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-12	-	-	Boeing
	16	M22520/1-01	4	QPL	M22520/1-04	-	-	QPL
		WA27F	4	Daniels	M22520/1-04	-	-	QPL
		MS3191-1	-	QPL	11-7771-29	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing

Table 16 CRIMP TOOLS FOR SHORT SOCKET CONTACTS (Continued)

Wire Size (AWG)	Contact Size	Crimp Tool						
		Basic Unit			Locator			
		Part Number	Setting	Supplier	Part Number	Color	Block Color	Supplier
20	20	11148	-	Buchanan	-	Red	Red	-
		612916	-	Buchanan	-	Yellow	Blue	-
		614019	-	Buchanan	-	Red	Red	-
		M22520/1-01	3	QPL	M22520/1-04	-	-	QPL
		WA27F	3	Daniels	M22520/1-04	-	-	QPL
		M22520/2-01	6	QPL	M22520/2-10	-	-	QPL
		WA22	6	Daniels	M22520/2-10	-	-	QPL
		MS3191-1	-	QPL	11-7771-31	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-12	-	-	Boeing
	16	11148	-	Buchanan	-	Red	Blue	-
		614019	-	Buchanan	-	Red	Blue	-
		M22520/1-01	4	QPL	M22520/1-04	-	-	QPL
		WA27F	4	Daniels	M22520/1-04	-	-	QPL
		MS3191-1	-	QPL	11-7771-29	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing
18	16	11148	-	Buchanan	-	Red	Blue	-
		614019	-	Buchanan	-	Red	Blue	-
		M22520/1-01	5	QPL	M22520/1-04	-	-	QPL
		WA27F	5	Daniels	M22520/1-04	-	-	QPL
		MS3191-1	-	QPL	11-7771-29	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing

ASSEMBLY OF MIL-C-38999 CONNECTORS

Table 16 CRIMP TOOLS FOR SHORT SOCKET CONTACTS (Continued)

Wire Size (AWG)	Contact Size	Crimp Tool						
		Basic Unit			Locator			
		Part Number	Setting	Supplier	Part Number	Color	Block Color	Supplier
16	16	11148	-	Buchanan	-	Red	Blue	-
		614019	-	Buchanan	-	Red	Blue	-
		M22520/1-01	6	QPL	M22520/1-04	-	-	QPL
		WA27F	6	Daniels	M22520/1-04	-	-	QPL
		MS3191-1	-	QPL	11-7771-29	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing
	12	11148	-	Buchanan	-	Red	Yellow	-
		614019	-	Buchanan	-	Red	Yellow	-
		M22520/1-01	7	QPL	M22520/1-04	-	-	QPL
		WA27F	7	Daniels	M22520/1-04	-	-	QPL
		MS3191-1	-	QPL	11-7771-43	-	-	Amphenol/ Bendix
14	12	11148	-	Buchanan	-	Red	Yellow	-
		614019	-	Buchanan	-	Red	Yellow	-
		M22520/1-01	7	QPL	M22520/1-04	-	-	QPL
		WA27F	7	Daniels	M22520/1-04	-	-	QPL
		MS3191-1	-	QPL	11-7771-43	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-3	-	-	Boeing
12	12	11148	-	Buchanan	-	Red	Yellow	-
		614019	-	Buchanan	-	Red	Yellow	-
		M22520/1-01	8	QPL	M22520/1-04	-	-	QPL
		WA27F	8	Daniels	M22520/1-04	-	-	QPL
		MS3191-1	-	QPL	11-7771-43	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-3	-	-	Boeing

ASSEMBLY OF MIL-C-38999 CONNECTORS

Table 17
CRIMP TOOLS FOR PIN CONTACTS

Wire Size (AWG)	Contact Size	Crimp Tool						
		Basic Unit			Locator			
		Part Number	Setting	Supplier	Part Number	Color	Block Color	Supplier
28	22M	M22520/2-01	2	QPL	M22520/2-09	-	-	QPL
	22D	M22520/2-01	1	QPL	M22520/2-09	-	-	QPL
26	22M	M22520/2-01	3	QPL	M22520/2-09	-	-	QPL
	22D	M22520/2-01	2	QPL	M22520/2-09	-	-	QPL
		WA22	2	Daniels	M22520/2-09	-	-	QPL
	22	M22520/2-01	2	QPL	M22520/2-09	-	-	QPL
24	22M	M22520/2-01	4	QPL	M22520/2-09	-	-	QPL
	22D	612118	-	Buchanan	613192	-	-	Buchanan
		612916	-	Buchanan	-	Blue	Red	-
		M22520/2-01	3	QPL	M22520/2-09	-	-	QPL
		WA22	3	Daniels	M22520/2-09	-	-	QPL
		ST2220-10	-	Boeing	ST2220-10-1	-	-	Boeing
	22	612118	-	Buchanan	613192	-	-	Buchanan
		612916	-	Buchanan	-	Blue	Red	-
		M22520/2-01	3	QPL	M22520/2-09	-	-	QPL
		ST2220-10	-	Boeing	ST2220-10-1	-	-	Boeing
	20	612916	-	Buchanan	-	Blue	Yellow	-
		M22520/1-01	1	QPL	M22520/1-04	-	-	QPL
		WA27F	1	Daniels	M22520/1-04	-	-	QPL
		M22520/2-01	4	QPL	M22520/2-10	-	-	QPL
		WA22	4	Daniels	M22520/2-10	-	-	QPL
		MS3191-1	-	QPL	11-7771-30	-	-	Amphenol/ Bendix

ASSEMBLY OF MIL-C-38999 CONNECTORS

Table 17 CRIMP TOOLS FOR PIN CONTACTS (Continued)

Wire Size (AWG)	Contact Size	Crimp Tool						
		Basic Unit			Locator			
		Part Number	Setting	Supplier	Part Number	Color	Block Color	Supplier
22	22D	612118	-	Buchanan	613192	-	-	Buchanan
		612916	-	Buchanan	-	Blue	Blue	-
		M22520/2-01	4	QPL	M22520/2-09	-	-	QPL
		WA22	4	Daniels	M22520/2-09	-	-	QPL
		ST2220-10	-	Boeing	ST2220-10-1	-	-	Boeing
	22	612118	-	Buchanan	613192	-	-	Buchanan
		612916	-	Buchanan	-	Blue	Blue	-
		M22520/2-01	4	QPL	M22520/2-09	-	-	QPL
		ST2220-10	-	Boeing	ST2220-10-1	-	-	Boeing
	20	11148	-	Buchanan	-	Red	Red	-
		612916	-	Buchanan	-	Yellow	Red	-
		614019	-	Buchanan	-	Red	Red	-
		M22520/1-01	2	QPL	M22520/1-04	-	-	QPL
		WA27F	2	Daniels	M22520/1-04	Red	Red	QPL
		M22520/2-01	5	QPL	M22520/2-10	-	-	QPL
		WA22	5	Daniels	M22520/2-10	-	-	QPL
		MS3191-1	-	QPL	11-7771-30	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-12	-	-	Boeing
	16	M22520/1-01	4	QPL	M22520/1-04	-	-	QPL
		WA27F	4	Daniels	M22520/1-04	-	-	QPL
		MS3191-1	-	QPL	11-7771-28	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing

ASSEMBLY OF MIL-C-38999 CONNECTORS

Table 17 CRIMP TOOLS FOR PIN CONTACTS (Continued)

Wire Size (AWG)	Contact Size	Crimp Tool						
		Basic Unit			Locator			
		Part Number	Setting	Supplier	Part Number	Color	Block Color	Supplier
20	20	11148	-	Buchanan	-	Red	Red	-
		612916	-	Buchanan	-	Yellow	Blue	-
		614019	-	Buchanan	-	Red	Red	-
		M22520/1-01	3	QPL	M22520/1-04	-	-	QPL
		WA27F	3	Daniels	M22520/1-04	-	-	QPL
		M22520/2-01	6	QPL	M22520/2-10	-	-	QPL
		WA22	6	Daniels	M22520/2-10	-	-	QPL
		MS3191-1	-	QPL	11-7771-30	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-12	-	-	Boeing
	16	11148	-	Buchanan	-	Red	Blue	-
		614019	-	Buchanan	-	Red	Blue	-
		M22520/1-01	4	QPL	M22520/1-04	-	-	QPL
		WA27F	4	Daniels	M22520/1-04	-	-	QPL
		MS3191-1	-	QPL	11-7771-28	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing
18	16	11148	-	Buchanan	-	Red	Blue	-
		614019	-	Buchanan	-	Red	Blue	-
		M22520/1-01	5	QPL	M22520/1-04	-	-	QPL
		WA27F	5	Daniels	M22520/1-04	-	-	QPL
		MS3191-1	-	QPL	11-7771-28	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing

ASSEMBLY OF MIL-C-38999 CONNECTORS

Table 17 CRIMP TOOLS FOR PIN CONTACTS (Continued)

Wire Size (AWG)	Contact Size	Crimp Tool						
		Basic Unit			Locator			
		Part Number	Setting	Supplier	Part Number	Color	Block Color	Supplier
16	16	11148	-	Buchanan	-	Red	Blue	-
		614019	-	Buchanan	-	Red	Blue	-
		M22520/1-01	6	QPL	M22520/1-04	-	-	QPL
		WA27F	6	Daniels	M22520/1-04	-	-	QPL
		MS3191-1	-	QPL	11-7771-28	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-2	-	-	Boeing
	12	11148	-	Buchanan	-	Red	Yellow	-
		614019	-	Buchanan	-	Red	Yellow	-
		M22520/1-01	7	QPL	M22520/1-04	-	-	QPL
		WA27F	7	Daniels	M22520/1-04	-	-	QPL
		MS3191-1	-	QPL	11-7771-43	-	-	Amphenol/ Bendix
14	12	11148	-	Buchanan	-	Red	Yellow	-
		614019	-	Buchanan	-	Red	Yellow	-
		M22520/1-01	7	QPL	M22520/1-04	-	-	QPL
		WA27F	7	Daniels	M22520/1-04	-	-	QPL
		MS3191-1	-	QPL	11-7771-43	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-3	-	-	Boeing
12	12	11148	-	Buchanan	-	Red	Yellow	-
		614019	-	Buchanan	-	Red	Yellow	-
		M22520/1-01	8	QPL	M22520/1-04	-	-	QPL
		WA27F	8	Daniels	M22520/1-04	-	-	QPL
		MS3191-1	-	QPL	11-7771-43	-	-	Amphenol/ Bendix
		ST2220-1-Y	-	Boeing	ST2220-1-3	-	-	Boeing

B. Cable Preparation for Shield Termination in the Connector Insert

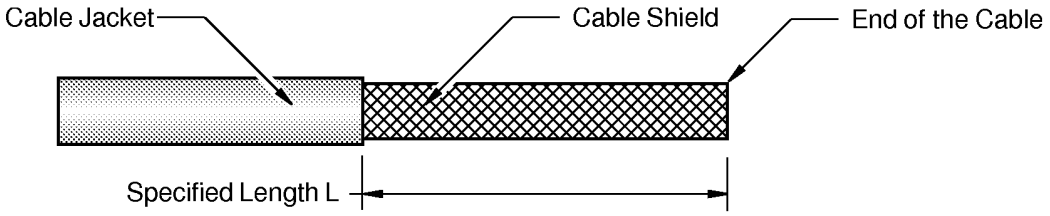
Table 18
Cable Jacket Removal Length

Solder Sleeve	Removal Length L (inch)	
	Target	Tolerance
BACS13CT	2.05	0.06
BACS13DG	2.05	0.06
D-104	2.15	0.06
D-108	2.22	0.06

(1) Remove the necessary length of the cable jacket from the end of the cable.

Refer to:

- Table 18
- Figure 31
- Subject 20-00-15 for the procedure to remove the cable jacket.



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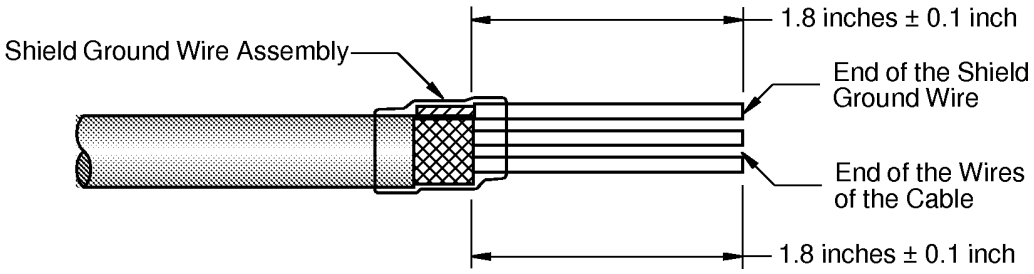
Cable Jacket Removal
Figure 31

(2) Assemble the insulated shield ground wire at the end of the cable jacket.

Refer to:

- Figure 32
- Subject 20-10-15 for the procedure to assemble a shield ground wire.

Make sure that the free end of the shield ground wire is pointed forward to the end of the cable.



Length of the Shield Ground Wire and the Wires of the Cable
Figure 32

(3) Remove the necessary length from the end of the shield ground wire to make the distance from the end of the shield to the end of the shield ground wire equal to 1.8 inches ±0.1 inch. Refer to Figure 32.

(4) Remove the necessary length from the end of each wire of the cable to make the distance from the end of the shield to the end of the wire equal to 1.8 inches ±0.1 inch. Refer to Figure 32.

C. Cable Preparation for Shield Termination - Isolated Shields, Solder Sleeve and Dead End

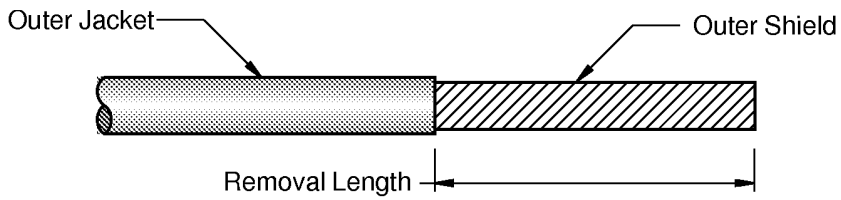
Table 19
Cable Jacket Removal Length

Solder Sleeve	Removal Length L (inch)		
	Target	Minimum	Maximum
BACS13CT	2.55	2.45	2.65
BACS13DG	2.55	2.45	2.65
D-104	2.65	2.55	2.75
D-108	2.72	2.62	2.82

(1) Remove the necessary length of the cable jacket from the end of the cable.

Refer to:

- Table 19
- Figure 33
- Subject 20-00-15



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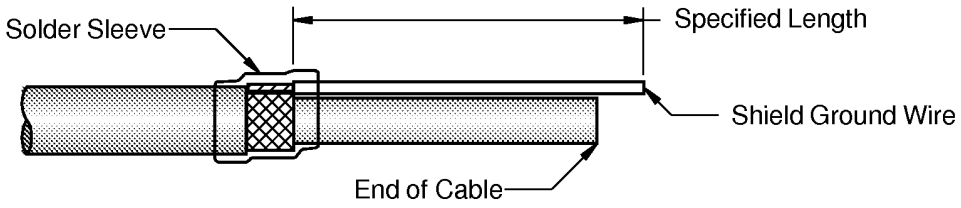
Outer Jacket Removal
Figure 33

(2) Assemble the insulated shield ground wire at the end of the cable outer jacket.

Refer to:

- Figure 34
- Subject 20-10-15 for the shield ground wire assembly procedures.

Make sure that the free end of the shield ground wire is pointed in the direction that is specified for the shield ground wire connection.



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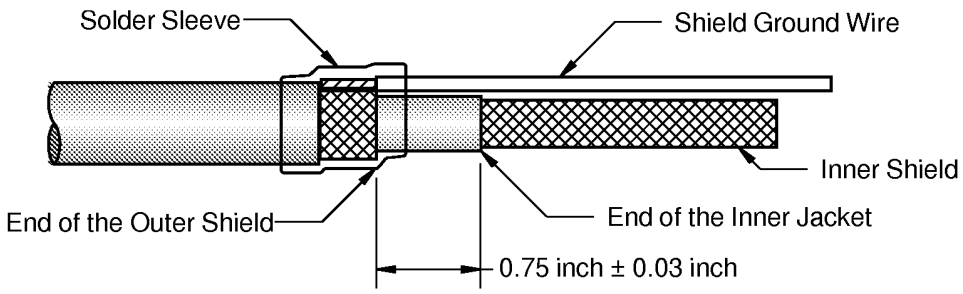
Solder Sleeve Shield Ground Wire of the Outer Shield
Figure 34

(3) Remove the necessary length of the inner jacket from the end of the cable to make the distance from the end of the outer shield to the end of the inner jacket equal to 0.75 inch ±0.03 inch.

Refer to:

- Figure 35.
- Subject 20-00-15 for the cable jacket removal procedures.



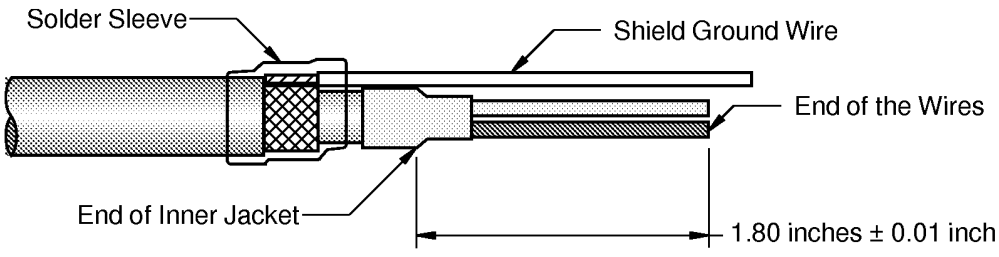
Inner Jacket Removal
Figure 35

(4) Remove the length of the inner shield from the end of the cable to the end of the inner jacket.

(5) Assemble the shield dead end of the inner shield.

Refer to:

- Figure 36
- Subject 20-10-15 for the procedure to assemble the shield dead end.



Shield Dead End of the Inner Shield
Figure 36

(6) Remove the necessary length from the end of the wires of the cable to make the distance from the end of the inner jacket to the end of the wires equal to 1.8 inches ±0.1 inch. Refer to Figure 36.

D. Standard Contact Assembly

Table 20
INSULATION REMOVAL LENGTH

Wire Size (AWG)	Contact Size	Removal Length L (inch)			Special Instructions
		Maximum	Target	Minimum	
28	22	0.17	0.14	0.14	-

Table 20 INSULATION REMOVAL LENGTH (Continued)

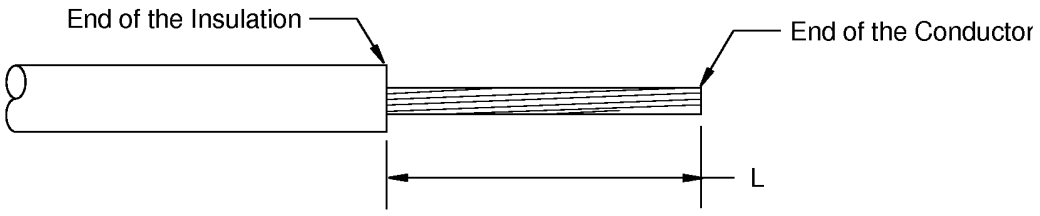
Wire Size (AWG)	Contact Size	Removal Length L (inch)			Special Instructions
		Maximum	Target	Minimum	
26	22	0.17	0.14	0.14	-
	20	.39	.36	.36	Fold the conductor back on itself
24	22	0.17	0.14	0.14	-
	20	0.39	0.36	0.36	Fold the conductor back on itself
22	22	0.17	0.14	0.14	-
	20	0.21	0.18	0.18	-
	16	0.39	0.36	0.36	Fold the conductor back on itself
20	20	0.21	0.18	0.18	-
	16	0.39	0.36	0.36	Fold the conductor back on itself
18	16	0.21	0.18	0.18	-
16	16	0.21	0.18	0.18	-
	12	0.39	0.36	0.36	Fold the conductor back on itself
14	12	0.21	0.18	0.18	-
12	12	0.21	0.18	0.18	-

(1) Make a selection of a crimp tool from Table 15, Table 16, or Table 17.

(2) Remove the necessary length of insulation from the end of the wire.

Refer to:

- Figure 37
- Table 20 for the insulation removal length
- Subject 20-00-15 for the insulation removal procedures.



2446140 S00061544325_V1

INSULATION REMOVAL LENGTH
Figure 37

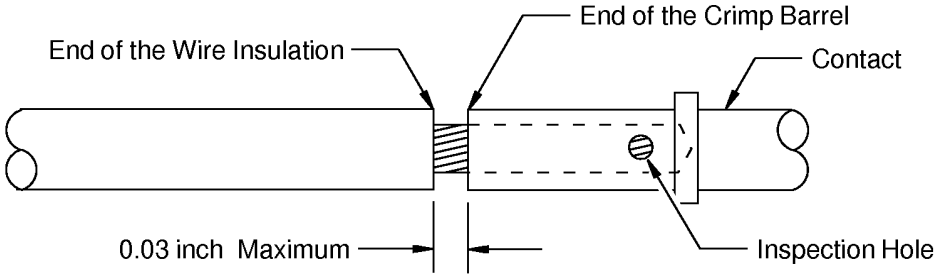
(3) Measure the O.D. of the wire.

(4) If the O.D. of the wire is less than the minimum seal diameter of the connector grommet hole, increase the O.D. of the wire. Refer to Paragraph 1.A.

(5) Put the end of the conductor in the crimp barrel of the contact. Refer to Figure 38.

Make sure that:

- All the conductor strands are in the crimp barrel
- The conductor strands are visible in the inspection hole of the contact
- The distance from the end of the insulation to the crimp barrel is not more than 0.03 inch.



POSITION OF THE CONDUCTOR IN THE CRIMP BARREL OF THE CONTACT
Figure 38

(6) Crimp the contact.

Make sure that:

- All the conductor strands are in the crimp barrel
- The conductor strands are visible in the inspection hole of the contact
- The distance from the end of the insulation to the crimp barrel is not more than 0.03 inch.

E. Assembly of a Contact with Oversize Wire

This procedure is applicable if the outside diameter of the wire insulation is larger than the maximum wire O.D. specified in Table 21.

Table 21
MAXIMUM WIRE OUTSIDE DIAMETER

Connector	Description	Contact Cavity Size	Maximum Wire O.D. (inch)
MIL-C-38999	Rear release, rear removal contacts	22M	0.050
		22D	0.054
		22	0.060
		20	0.083
		16	0.109
		12	0.142

Table 22
NECESSARY MATERIALS

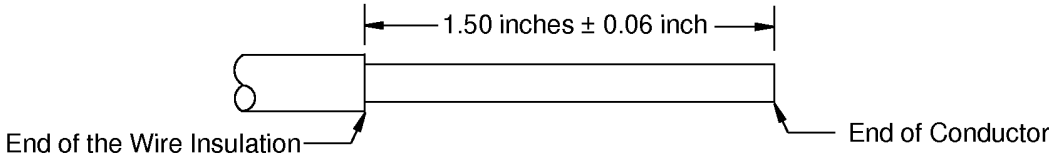
Material	Part Number	Supplier
Sleeve, Heat Shrinkable	AMS-DTL-23053/12 Class 5	An available source
	RT850	Raychem
	RW175	
	TFE 4X	Chemplast
		Zeus

(1) Make a selection of a 1.75 inch ±0.06 inch length of heat shrinkable sleeve from Table 22.

NOTE: An equivalent heat shrinkable sleeve is a satisfactory alternative. Refer to Subject 20-00-11.

Make sure that the sleeve has the smallest diameter that can move easily on the wire.

(2) Remove 1.50 inch ±0.06 inch length of insulation from the end of the wire. Refer to Figure 39.



2448348 S00061547172_V1

INSULATION REMOVAL LENGTH
Figure 39

(3) Put the sleeve on the wire.

(4) Put the conductor into the crimp barrel of the contact.

Make sure that:

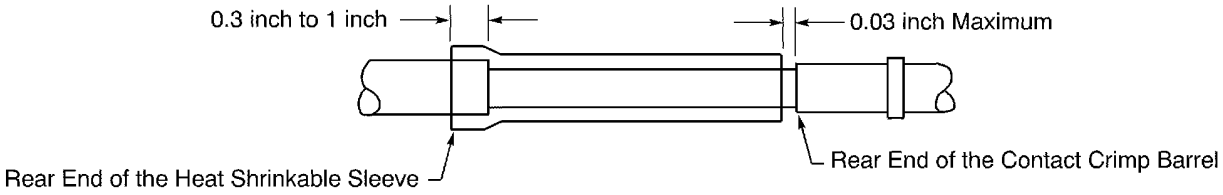
- All of the strands of the conductor are in the crimp barrel
- The conductor can be seen in the inspection hole of the contact.

(5) Crimp the contact.

(6) Align the sleeve. Refer to Figure 40.

Make sure that:

- The sleeve makes a 0.3 inch to 1 inch overlap with the wire insulation
- The distance from the forward end of the sleeve to the rear end of the contact crimp barrel is not more than 0.03 inch.



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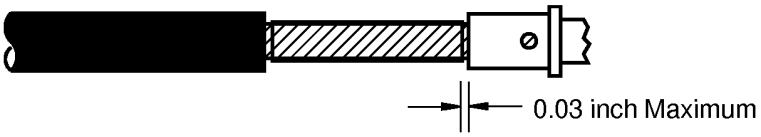
POSITION OF THE HEAT SHRINKABLE SLEEVE
Figure 40

(7) Shrink the sleeve into its position. Refer to Subject 20-10-14.

(8) Install two sleeves if a single sleeve will not shrink tightly against both the wire and the insulation of the wire.

(a) Push the inner sleeve forward until the forward end of the sleeve is 0.03 inch or less from the crimp barrel. Refer to Figure 41.



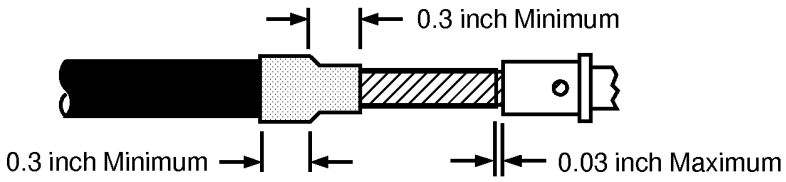
2448362 S00061547174_V1

POSITION OF THE INNER HEAT SHRINKABLE SLEEVE
Figure 41

(b) Shrink the sleeve into its position. Refer to Subject 20-10-14.

Make sure that the distance between the forward end of the sleeve and the crimp barrel is not more than 0.03 inch.

(c) Push the outer sleeve forward until the forward end of the sleeve extends 0.3 inch minimum from the end of the wire insulation. Refer to Figure 42.



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POSITION OF THE OUTER HEAT SHRINKABLE SLEEVE
Figure 42

(9) Shrink the sleeve into its position. Refer to Subject 20-10-14

Make sure that:

- The forward end of the outer sleeve extends 0.3 inch minimum from the end of the insulation of the wire.
- The outer sleeve makes an overlap of 0.3 inch or more with the insulation of the wire.

F. Assembly of Amphenol 21-33101-37 and 21-33102-37 Coax Contacts

Table 23
CENTER CONTACT CRIMP TOOLS

Basic Unit			Locator	
Part Number	**Setting**	**Suppler**	**Part Number**	**Supplier**
M22520/2-01	3	QPL	M22520/2-31	QPL

Table 24
FERRULE CRIMP TOOLS

Basic Unit		Die	
Part Number	**Supplier**	**Part Number**	**Supplier**
M22520/5-01	QPL	M22520/5-05	QPL

Table 25
NECESSARY TOOLS

Description	Part Number	Supplier
Expander Tool	11-10136	Pacific Tool
Push Tool	11-10135	Pacific Tool

Table 26
ALTERNATIVE TOOLS AND MATERIALS

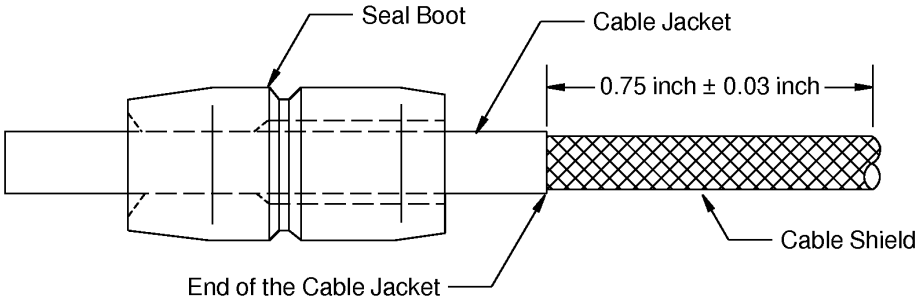
Specified Tool			Alternative Tool		
Description	**Range**	**Supplier**	**Description**	**Part Number**	**Supplier**
Torque Tool	0 - 10 in-lbs	An available source	Thread Lock Compound	222	Loctite
				242	Loctite

(1) Cut the end of the cable perpendicular to the longitudinal axis of the cable.

(2) Make a selection of a seal boot from Table 10.

(3) Put the seal boot on the cable. Refer to Figure 43.

Make sure that the end of the seal boot that has the larger opening points forward toward the end of the cable.



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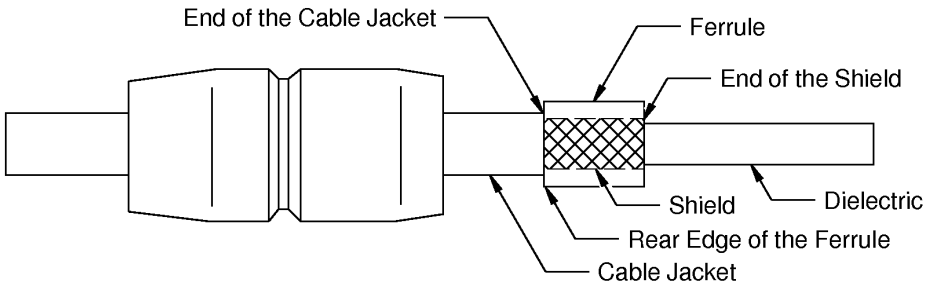
THE SEAL BOOT ON THE CABLE AND THE JACKET REMOVAL LENGTH
Figure 43

(4) Remove 0.75 inch ±0.03 inch of the cable jacket from the end of the coax cable. Refer to Figure 43.

(5) Use the ferrule to prepare the shield:

(a) Put the ferrule on the cable shield.

Make sure that the rear edge of the ferrule and the end of the cable jacket are aligned. Refer to Figure 44.



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THE POSITION OF THE FERRULE ON THE CABLE
Figure 44

(b) Cut the shield strands at the forward edge of the ferrule.

Make sure that the forward end of the shield and the forward edge of the ferrule are aligned. Refer to Figure 44.

(c) Push the seal boot and the ferrule rearward on the cable away from the end of the jacket.

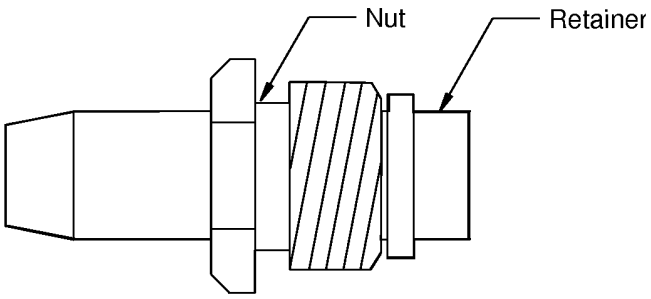
(6) Move the strands of the cable shield apart and move the shield toward the cable jacket. Refer to Figure 46

(7) Cut and remove the inner flat shield strands adjacent to end of the jacket.

Make sure that you do not cut the round shield strands.

(8) Use the retainer to prepare the dielectric:

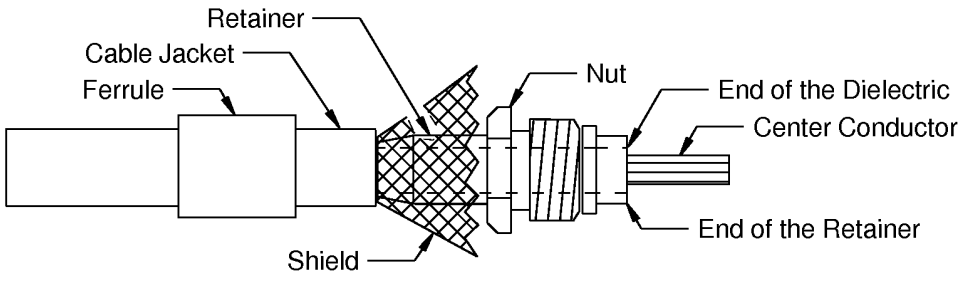
(a) Put the nut on the retainer. Refer to Figure 45.



2449299 S00061547178_V1

THE NUT ON THE RETAINER
Figure 45

(b) Push the nut and retainer assembly on the dielectric until it stops against the end of the cable jacket. Refer to Figure 46.



2449288 S00061547179_V1

THE NUT AND RETAINER ON THE CABLE
Figure 46

(c) Remove the length of the dielectric from the forward end of the retainer to the end of the cable. Refer to Figure 46.

Make sure that the end of the dielectric and the end of the retainer are aligned.

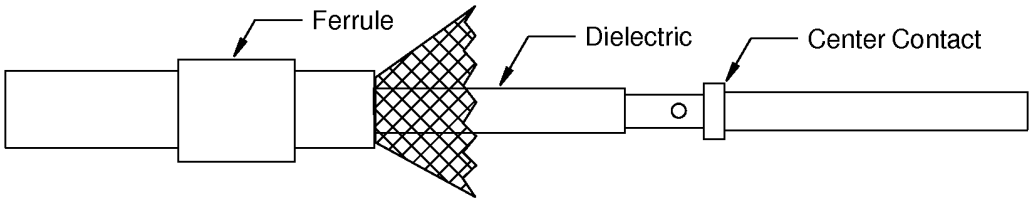
(d) Remove the retainer and the nut from the cable

(9) Assemble the center contact:

(a) Put the center conductor into the center contact crimp barrel.

(b) Make a selection of a Center Contact Crimp Tool and Locator from Table 23.

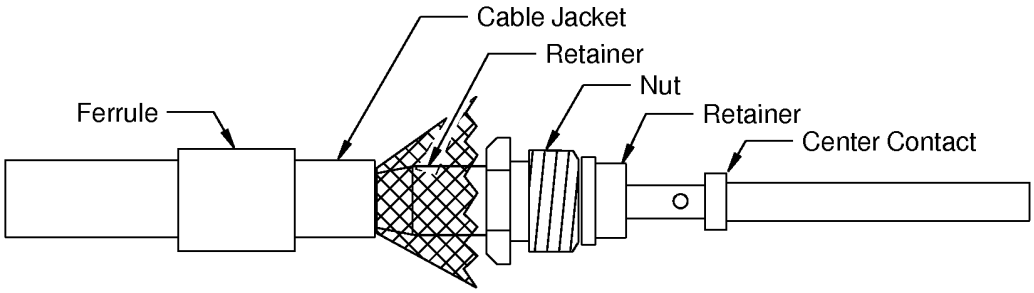
(c) Crimp the center contact. Refer to Figure 47.



2449289 S00061547180_V1

CENTER CONTACT ON THE CENTER CONDUCTOR
Figure 47

(10) Push the retainer and nut assembly on the center contact and onto the dielectric until the retainer is against the end of the cable jacket. Refer to Figure 48.



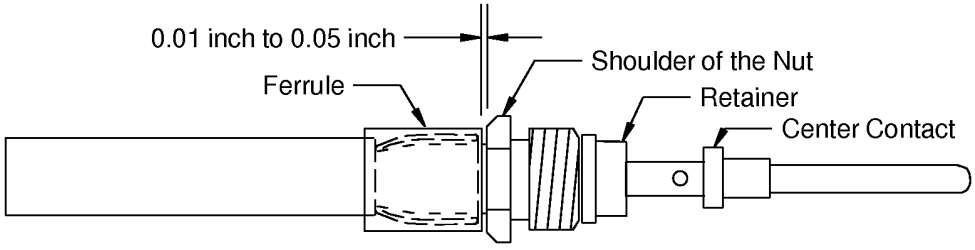
2453121 S00061547181_V1

THE NUT, THE RETAINER AND THE CENTER CONTACT ON THE CABLE
Figure 48

(11) Assemble the ferrule on the shield and the retainer:

(a) Push the ferrule forward on the shield until the forward edge of the ferrule is 0.01 inch to 0.05 inch from the shoulder of the nut.

Refer to Figure 49.



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THE FERRULE ON THE SHIELD
Figure 49

(b) Make a selection of a Ferrule Crimp Tool from Table 24.

(c) Put the crimp tool die on the ferrule

Make sure that the edge of the die and the rear edge of the ferrule are aligned.

(d) Hold the contact assembly together, and at the same time, crimp the ferrule.

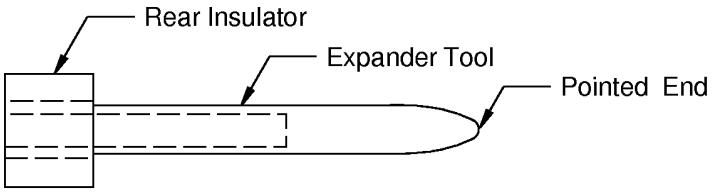
(e) Remove the shield strands that come out from between the ferrule and the nut.

Make sure that the nut is free to rotate.

(12) Make a selection of an Expander Tool from Table 26.

(13) Put the rear insulator on the pointed end of the Expander Tool.

(14) Push the rear insulator to the other end of the Expander Tool. Refer to Figure 50.



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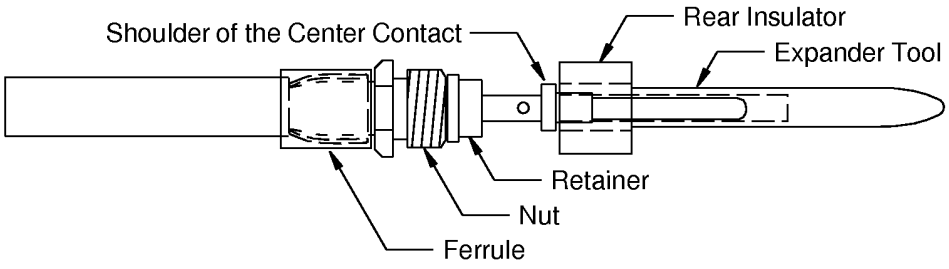
THE REAR INSULATOR ON THE EXPANDER TOOL
Figure 50

(15) Put the Expander Tool and rear insulator on the center contact. Refer to Figure 51.



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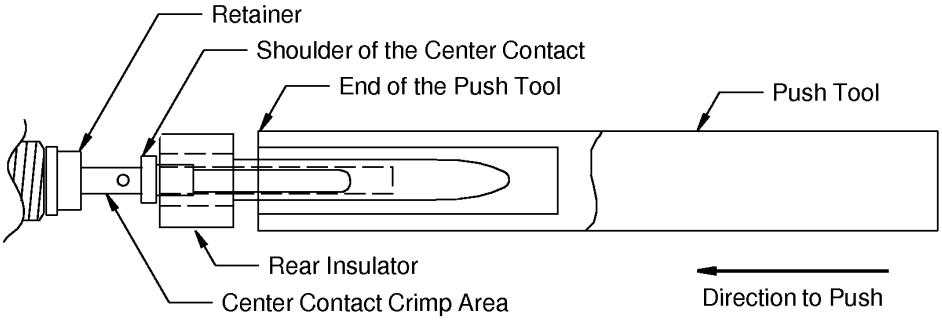
THE EXPANDER TOOL ON THE CENTER CONTACT
Figure 51

(16) Make a selection of a Push Tool from Table 26.

(17) Put the end of the Push Tool on the pointed end of the Expander Tool. Refer to Figure 52.

(18) Hold the center contact crimp area and, at the same time, push the push tool until the rear insulator is between the shoulder of the center contact and the retainer. Refer to Figure 52.

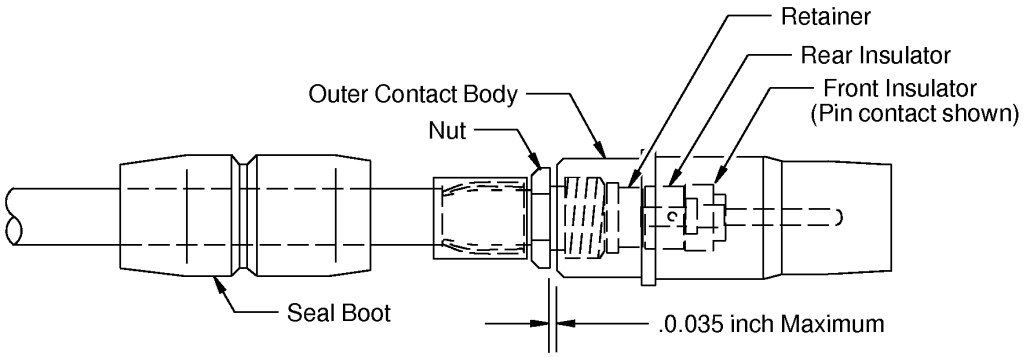


2449294 S00061547185_V1

THE REAR INSULATOR, THE EXPANDER TOOL AND THE PUSH TOOL ON THE CENTER CONTACT
Figure 52

(19) Put the front insulator, large end first, on the center contact

(20) Push the front insulator rearward until the front insulator is against the shoulder of the center contact. Refer to Figure 53.



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THE FRONT INSULATOR AND THE OUTER CONTACT BODY ON THE CABLE
Figure 53

(21) Push the outer contact body onto the center contact assembly. Refer to Figure 53.

(22) Engage the threads of the nut with the threads in the outer contact body. Refer to Figure 53.

(23) If an applicable torque tool is available:

(a) Torque the nut 2 in-lbs to 5 in-lbs.

Make sure that the distance between the nut and the outer contact body is 0.035 inch maximum. Refer to Figure 53.

(24) If an applicable torque tool is not available:

(a) Make a selection of a Thread Lock Compound from Table 26.

(b) Apply 1 or 2 drops of the Thread Lock Compound to the thread of the nut nearest the shoulder of the nut.

(c) Hand tighten the nut to the outer contact body.

Make sure that the distance between the nut and the outer contact body is 0.035 inch maximum. Refer to Figure 53.

(25) Push the seal boot against the contact assembly until it stops.

ASSEMBLY OF MIL-C-38999 CONNECTORS

G. Assembly of Size 8 BACC47GM1 and BACC47GN1 Quadrax Contacts

Table 27
QUADRAX CONTACT INNER CONTACT CRIMP TOOLS

Quadrax Contact	Crimp Tool				
	Basic Unit			Locator	
	Part Number	Setting	Supplier	Part Number	Supplier
BACC47GM1	M22520/2-01	5	QPL	M22520/2-37	QPL
				K709	Daniels
BACC47GN1	M22520/2-01	5	QPL	M22520/2-37	QPL
				K709	Daniels

Table 28
QUADRAX CONTACT OUTER CONTACT CRIMP TOOLS

Quadrax Contact Part Number	Crimp Tool				
	Basic Unit		Die		
	Part Number	Supplier	Part Number	Cavity	Supplier
BACC47GM1	M22520/5-01	QPL	M22520/5-45	B	QPL
			Y143	B	Daniels
	HX4	Daniels	M22520/5-45	B	QPL
			Y143	B	Daniels
	HX23	Daniels	M22520/5-45	B	QPL
			Y143	B	Daniels
	HXE4B	Daniels	M22520/5-45	B	QPL
			Y143	B	Daniels
BACC47GN1	M22520/5-01	QPL	M22520/5-45	B	QPL
			Y143	B	Daniels
	HX4	Daniels	M22520/5-45	B	QPL
			Y143	B	Daniels
	HX23	Daniels	M22520/5-45	B	QPL
			Y143	B	Daniels
	HXE4B	Daniels	M22520/5-45	B	QPL
			Y143	B	Daniels

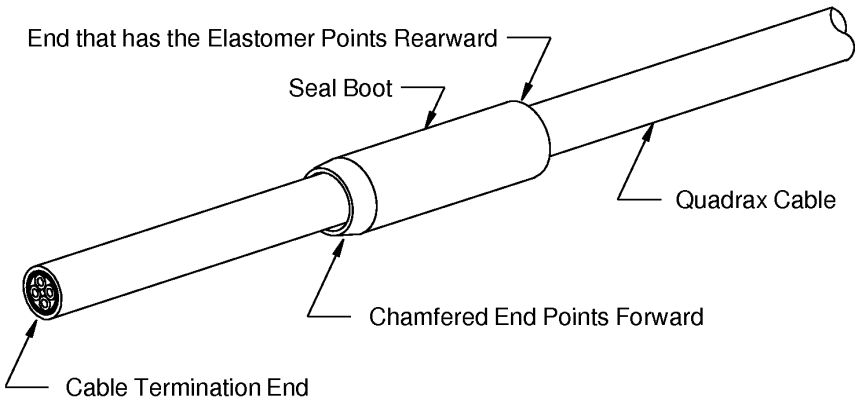
(1) Make a selection of an inner contact crimp tool from Table 27.

(2) Make a selection of an outer contact crimp tool from Table 28.

(3) Cut the cable perpendicular to its longitudinal axis.

(4) Put the seal boot on the cable. Refer to Figure 54.

Make sure that the end of the seal boot that has the elastomer seal points rearward, away from the end of the cable.

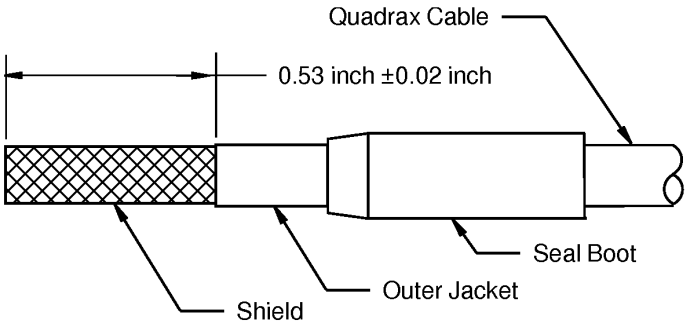


2448172 S00061547187_V1

THE SEAL BOOT ON THE CABLE
Figure 54

(5) Move the seal boot away from the end of the cable.

(6) Remove 0.53 inch ±0.02 inch of the outer jacket from the end of the cable. Refer to Figure 55.

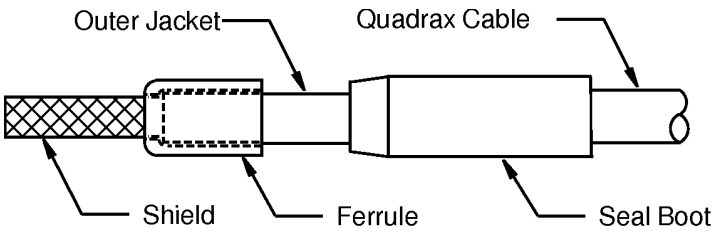


2448161 S00061547188_V1

OUTER JACKET TRIM DIMENSIONS
Figure 55

(7) Put the ferrule on the cable. Refer to Figure 56.

Make sure that the end of the ferrule that has the smaller diameter is pointed forward toward the end of the cable.



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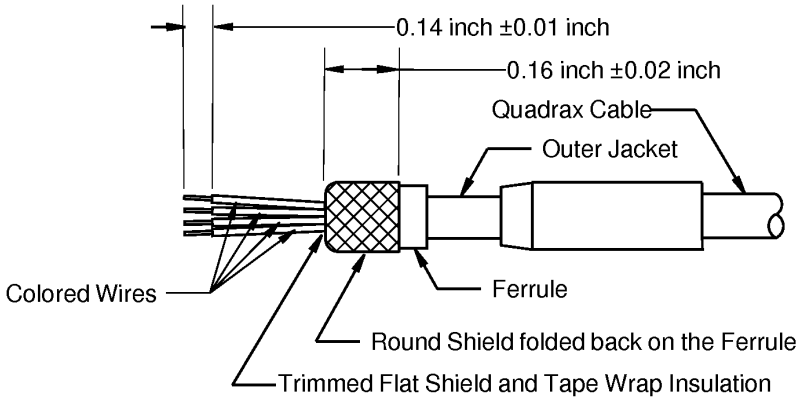
POSITION OF THE FERRULE ON THE CABLE
Figure 56

(8) Push the ferrule rearward until it is against the end of the outer jacket. Refer to Figure 56.

(9) Fold the outer round shield back on the ferrule. Refer to Figure 57.



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COLORED WIRE INSULATION REMOVAL LENGTH AND SHEILD PREPARATION
Figure 57

(10) Remove the necessary length of the outer round shield.

Make sure that the length of the round shield folded back is 0.16 inch ±0.02 inch. Refer to Figure 57.

(11) Remove the necessary length of:

- The inner flat shield
- The cable fillers
- The tape wrap insulation.

Make sure that the ends of the flat shield, the fillers, and the tape wrap are all approximately aligned with the front end of the ferrule.

(12) Move the four colored wires apart.

Make sure that:

- The colored wires do not cross each other
- The initial positions of the colored wires in the cable is not changed.

(13) Remove the necessary length of the fillers of the cable.

Make sure that the ends of the filler rods are approximately aligned with the front end of the ferrule.

(14) Remove 0.14 inch ±0.02 inch of insulation from the end of each of the four colored wires.

Refer to:

- Figure 57.
- Subject 20-00-15 for the procedure to remove the wire insulation.

(15) Crimp an inner contact on the conductor of each of the four colored wires.

Make sure that:

- The distance on each conductor between the end of the wire insulation and the end of the inner contact crimp barrel is 0.02 inch maximum
- The wire insulation is not in the crimp barrel
- The conductor strands can be seen in the inspection hole
- All conductor strands are in the crimp barrel
- The conductor strands do not go out of the inspection hole
- The plating of each inner contact is not removed
- The inner contacts have no cracks.

(16) Put the colored wires into the channels of the spacer.

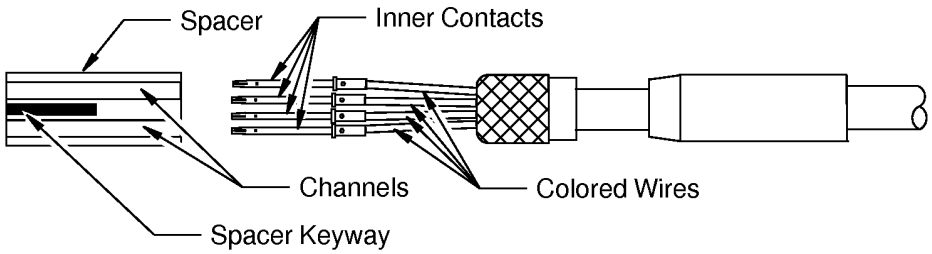
Refer to:

- Figure 58,
- Figure 59,
- Figure 60, and
- Figure 61.

Make sure that:

- The spacer keyway is between the red wire and the yellow wire
- The position of the colored wires in the spacer is the same as the position of the colored wires in the cable
- The colored wires do not cross each other
- The shoulders of the contacts are against the front of the spacer. Refer to Figure 62.

NOTE: All four of the wire color position configurations in Figure 60 and Figure 61 are correct. Only one of these configurations is possible at each end of the quadrax cable.



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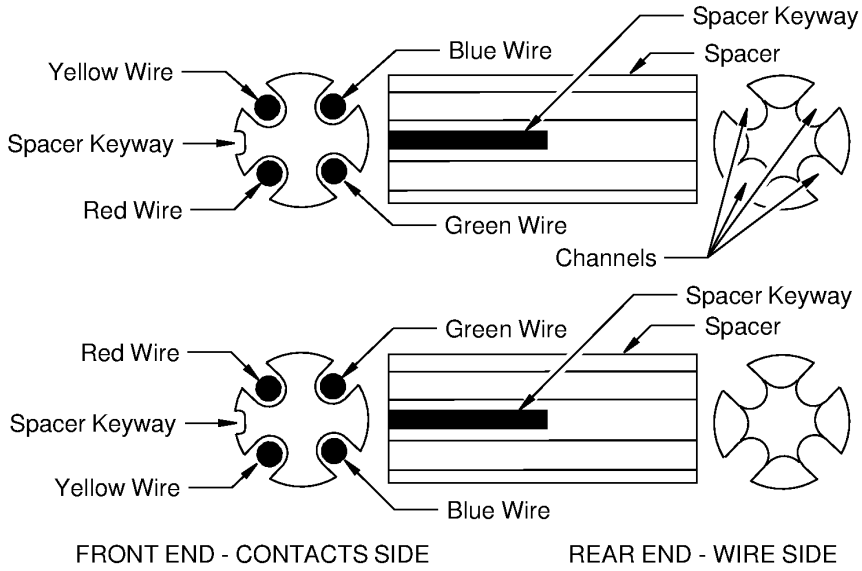
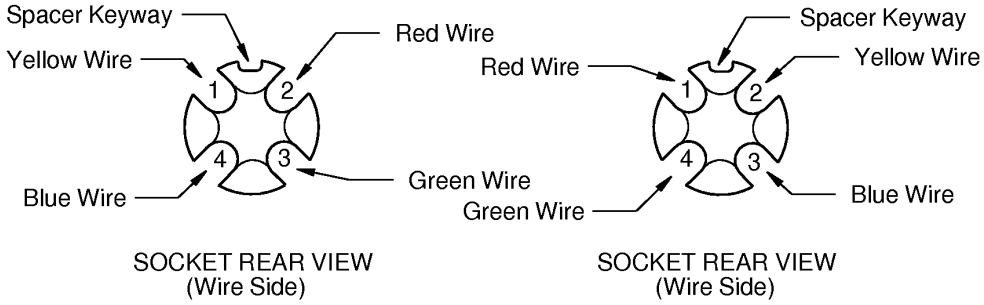
INSTALLATION OF THE INNER CONTACTS IN THE SPACER CHANNELS
Figure 58



2448175 S00061547192_V1

SATISFACTORY POSITIONS OF THE COLORED WIRES IN THE SPACER - KEYWAY BETWEEN THE RED AND YELLOW WIRES
Figure 59



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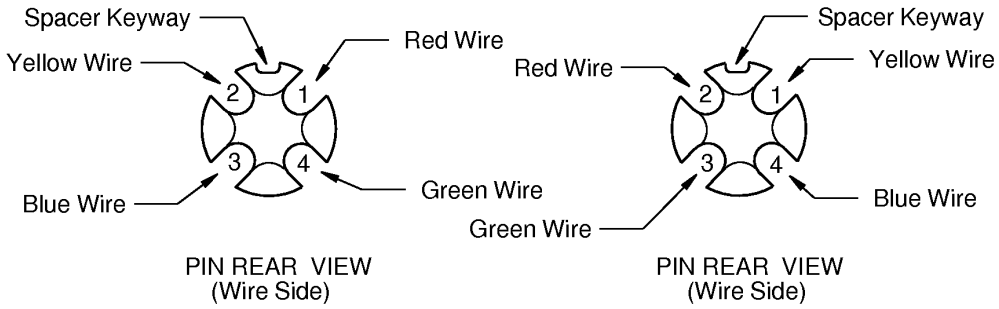
SATISFACTORY POSITIONS OF THE COLORED WIRES IN THE BACC47GN SOCKET SPACER
Figure 60

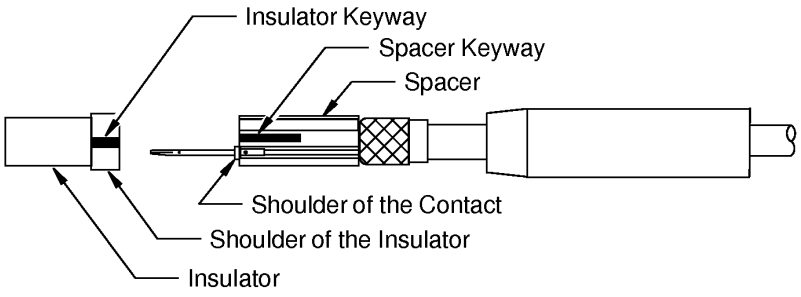


2449321 S00061547194_V1

SATISFACTORY POSITIONS OF THE COLORED WIRES IN THE BACC47GM PIN SPACER
Figure 61

(17) Align the insulator and the spacer. Refer to Figure 62.

Make sure that the insulator keyway and the spacer keyway are aligned.



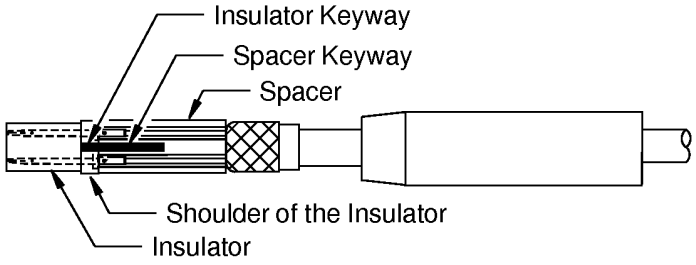
2448174 S00061547195_V1

POSITION OF THE INNER CONTACTS ON THE SPACER
Figure 62

(18) Install the insulator on the inner contacts. Refer to Figure 63.

Make sure that:

- The shoulders of the contacts are against the spacer
- The insulator is against the spacer
- The insulator keyway and the spacer keyway are aligned.



2448176 S00061547196_V1

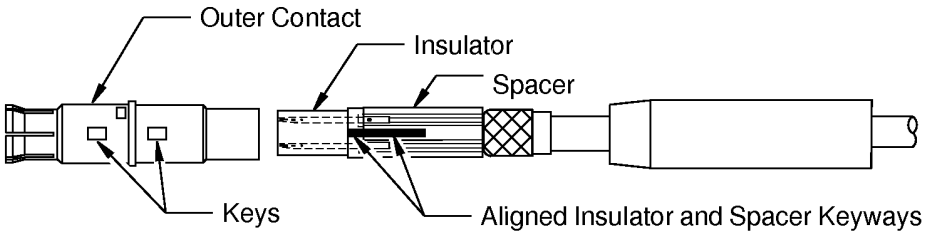
POSITION OF THE INSULATOR AND THE SPACER
Figure 63

(19) Align the key of the outer contact and the keyways of the insulator and the spacer. Refer to Figure 64.

(20) Push the insulator assembly into the outer contact until it stops. Refer to Figure 64.

Make sure that:

- The key of the outer contact and the keyways of the insulator and spacer are aligned
- The rear of the insulator is against the shield that is folded back on the ferrule
- The distance from the rear edge of the outer contact to the shoulder of the ferrule is not more than 0.02 inch
- The distance from the rear end of the ferrule to the end of the cable jacket is not more than 0.02 inch.



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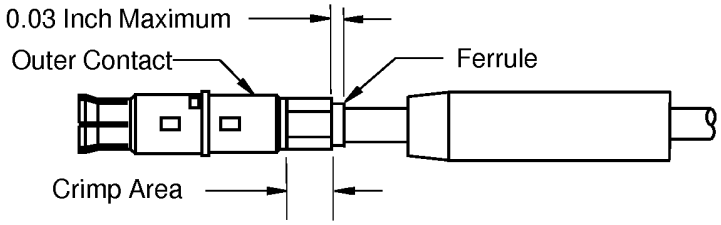
ALIGNMENT OF THE OUTER CONTACT AND THE INSULATOR AND SPACER
Figure 64

(21) Crimp the outer contact. Refer to Figure 65.



2448173 S00061547198_V1

QUADRAX CONTACT ASSEMBLY
Figure 65

(22) Remove all of the strands of the shield that extend beyond the rear edge of the outer contact.

ASSEMBLY OF MIL-C-38999 CONNECTORS

H. Contact Insertion

Table 29
CONTACT INSERTION TOOLS

Contact Size	Insertion Tool			
	Material	Part Number	Supplier	Color
22M	Metal	11-8674-24	Bendix	Black
		11-8794-24	Bendix	
		M81969/8-01	QPL	
		MS27495A22M	QPL	
		RTM24-3	Burndy	
	Plastic	10-296940-23	Bendix	Black
		M81969/14-01	QPL	Green
		MS27509A22M	QPL	Black
		MS27534-22D	QPL	Green
22D	Metal	11-8674-24	Bendix	Black
		11-8794-24	Bendix	
		M81969/8-01	QPL	
		MS27495A22M	QPL	
		RTM24-3	Burndy	
	Plastic	10-296940-23	Bendix	Black
		M81969/14-01	QPL	Green
		MS27509A22M	QPL	Black
		MS27534-22D	QPL	Green
22	Metal	11-8674-22	Bendix	Brown
		11-8794-22	Bendix	
		M81969/8-03	QPL	
		MS27495A22	QPL	
		RTM22-1	Burndy	
	Plastic	10-296940-22	Bendix	Brown
		MS27509A22	QPL	

Table 29 CONTACT INSERTION TOOLS (Continued)

Contact Size	Insertion Tool			
	Material	Part Number	Supplier	Color
20	Metal	11-8674-20	Bendix	Red
		11-8794-20	Bendix	
		M81969/8-05	QPL	
		MS27495A20	QPL	
		RTM20-17	Burndy	
	Plastic	10-296940-20	Bendix	Red
		M81969/14-02	QPL	
		MS27509A20	QPL	
		MS27534-20	QPL	
16	Metal	11-8674-16	Bendix	Blue
		11-8794-16	Bendix	
		M81969/8-07	QPL	
		MS27495A16	QPL	
		RX16-4	Burndy	
	Plastic	M81969/14-03	QPL	Blue
		MS27534-16	QPL	
12	Metal	11-8674-12	Bendix	Yellow
		11-8794-12	Bendix	
		M81969/8-09	QPL	
		MS27495A12	QPL	
		RX12-8	Burndy	
	Plastic	M81969/14-04	QPL	Yellow
		MS27534-12	QPL	

NOTE: For metal tools, the color given in Table 29 is the color code on the handle of the tool.

NOTE: For plastic tools, the color given in Table 29 is the color of the insertion end of the combination tools that are both insertion and removal tools.

(1) Make a selection of an insertion tool from Table 29.

CAUTION: DO NOT USE DAMAGED TOOLS.

NOTE: Contacts with AWG 20 or larger wire can be inserted by hand.

(2) Lubricate the rear grommet of the connector with isopropyl alcohol.

CAUTION: DO NOT PUT THE CONNECTOR GROMMET OR CONTACT ASSEMBLY FULLY INTO THE ALCOHOL. TOO MUCH LUBRICANT CAN CAUSE DAMAGE TO THE CONNECTOR.

(3) Put the contact assembly in the insertion tool.

(4) Axially align the insertion tool and the contact cavity at the rear of the connector.

(5) Carefully push the contact assembly into the contact cavity until it stops.

Make sure that the insertion tool stays axially aligned with the contact cavity.

CAUTION: DO NOT USE MORE THAN THE NECESSARY AMOUNT OF FORCE TO PUSH THE TOOL INTO THE CONTACT CAVITY. DAMAGE TO THE CONTACT RETENTION CLIPS CAN OCCUR.

CAUTION: DO NOT TURN THE TOOL CLOCKWISE OR COUNTERCLOCKWISE WHEN IT IS IN THE CONTACT CAVITY. DAMAGE TO THE CONTACT RETENTION CLIPS CAN OCCUR.

(6) Carefully pull the tool out of the contact cavity.

Make sure that the tool and the contact cavity stay axially aligned.

(7) Lightly pull the wire to make sure that the contact is locked in the connector.

CAUTION: DO NOT PULL THE WIRE WITH A STRONG OR SUDDEN FORCE. THE FORCE CAN CAUSE DAMAGE TO THE CONNECTOR OR THE CONTACT.

CAUTION: DO NOT MAKE A DENT IN THE WIRE INSULATION WITH THE FINGERNAILS. DAMAGE TO THE WIRE INSULATION CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE WIRE.

(8) If the contact is not locked in the contact cavity:

(a) Pull the contact assembly out of the contact cavity.

(b) Do Step 5.H.(3) through Step 5.H.(7) again.

I. Installation of Size 8 Quadrax Contacts

Table 30
LUBRICANTS

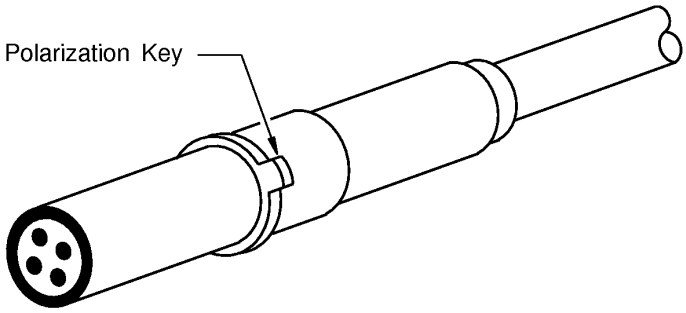
Lubricant	Specification	Supplier
Alcohol, Isopropyl	TT-I-735	An available source

(1) At the rear of the connector, align the contact polarization key and the keyway of the quadrax contact cavity.

Make sure that the longitudinal axis of the contact assembly is perpendicular to the rear face of the connector.

Refer to:

- Figure 66 for the polarization key of the quadrax contact
- Figure 67 for the keyway of the quadrax contact cavity.



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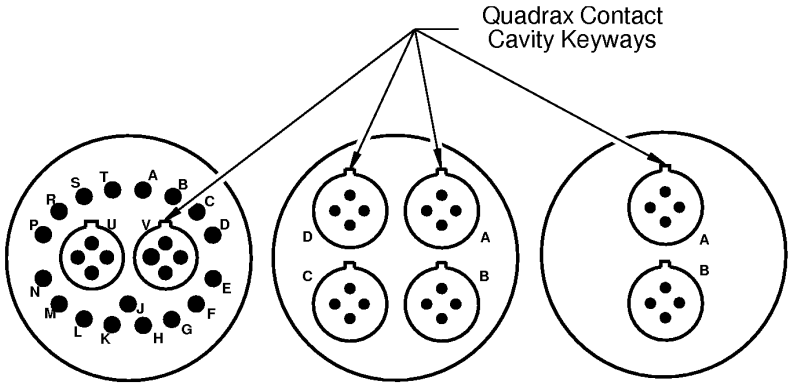
POLARIZATION KEY OF THE QUADRAX CONTACT
Figure 66



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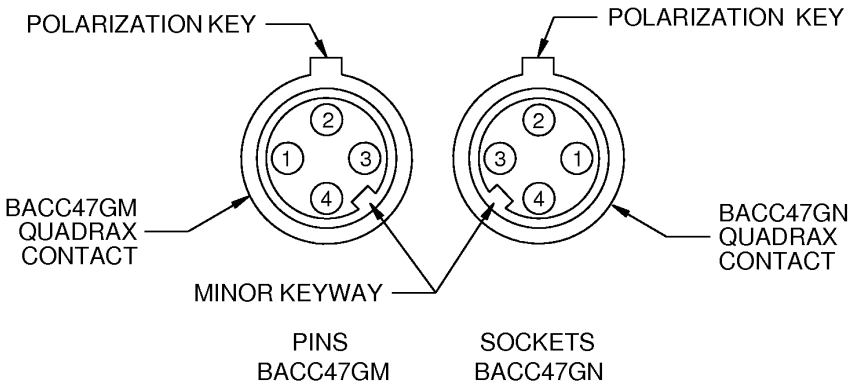
QUADRAX CONTACT CAVITY KEYWAY - REAR FACE OF THE CONNECTOR
Figure 67



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QUADRAX INNER CONTACT IDENTIFICATION NUMBERS - ENGAGING FACE OF THE CONNECTOR
Figure 68

NOTE: The minor keyway shown in Figure 68 can be seen on the quadrax contact engaging face after the quadrax contacts are installed in the connector.

(2) Push the contact into the contact cavity until the contact stops and is locked.

NOTE: A lubricant can be used to make it easier to push the contact into the contact cavity. Refer to Table 30.

(3) Align the seal boot key with the contact cavity keyway. Refer to Figure 67.

(4) Push the seal boot into the contact cavity.

Make sure that the rear edge of the seal boot key is aligned with athe rear face of the connector.

NOTE: A lubricant can be used to make it easier to push the seal boot into the contact cavity. Refer to Table 30.

(5) Lightly pull on the cable.

Make sure that the contact is locked in the contact cavity.

CAUTION: DO NOT PULL THE WIRE WITH A STRONG OR A SUDDEN FORCE. THE FORCE CAN CAUSE DAMAGE TO THE CONNECTOR OR THE CONTACT.

CAUTION: DO NOT MAKE A DENT IN THE WIRE INSULATION WITH THE FINGERNAILS. DAMAGE TO THE WIRE INSULATION CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE WIRE.

(6) If the contact is not locked in the contact cavity:

(a) Pull the contact assembly out of the contact cavity.

(b) Do Step 5.I.(2) through Step 5.I.(5) again.

J. Spare Contact and Seal Plug Installation

(1) Install unwired contacts and seal plugs in all unused contact cavities. Refer to Subject 20-60-08.

6. PLUG AND RECEPTACLE CONNECTION

A. Connection of the Plug and the Receptacle

Refer to Subject 20-60-06 for the procedure for the connection of the plug and the receptacle.

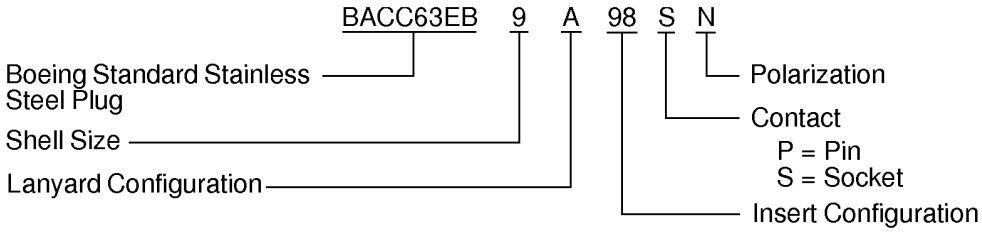
ASSEMBLY OF BACC63EB CONNECTORS

TABLE OF CONTENTS

ASSEMBLY OF BACC63EB CONNECTORS

1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers



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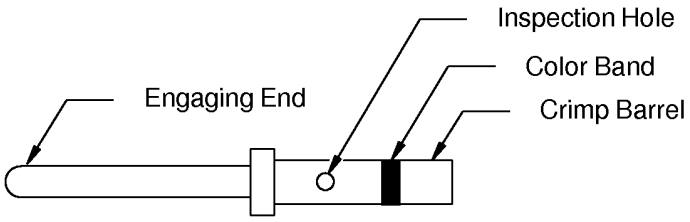
BACC63EB CONNECTOR PART NUMBER STRUCTURE
Figure 1

B. Contact Part Numbers



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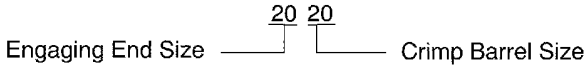
BACC47GC CONTACT
Figure 2



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EXAMPLE OF A CONTACT SIZE
Figure 3

ASSEMBLY OF BACC63EB CONNECTORS

Table 1
CONTACT PART NUMBERS

Contact Size		Contact Type	Boeing Standard	Color Band
Engaging End	Crimp Barrel			
20	20	Pin	BACC47GC2A	Red

C. Backshell Part Numbers

Table 2
BACKSHELL PART NUMBERS

Part Number	Backshell Configuration			
	Shell Size	Shell Material	Cable Exit	Strain Relief
319-139W1	9	Composite	Straight	45 Degree Boot

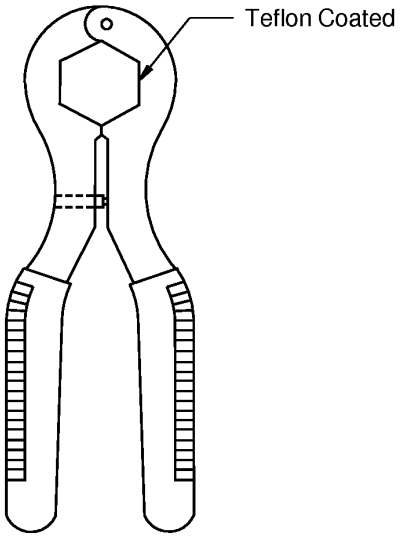
D. Wiring Assembly Components

Table 3
WIRING ASSEMBLY COMPONENTS

Component	Type	Specification
Tape	PTFE	A-A-59474
	Silicone, Type I	A-A-59163
	Silicone, Type II	A-A-59163

2. NECESSARY TOOLS

A. Necessary Tools



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BACKSHELL HEX NUT TOOL
Figure 4

CAUTION: DO NOT USE A STRAP WRENCH TO APPLY TORQUE TO A COMPOSITE COUPLING NUT.ONLY USE A BACKSHELL HEX NUT TOOL TO APPLY TORQUE TO A COMPOSITE COUPLING NUT. FAILURE TO USE THE SPECIFIED BACKSHELL HEX NUT TOOL CAN CAUSE DAMAGE TO THE COUPLING NUT AND UNSATISFACTORY PERFORMANCE OF THE BACKSHELL.

Table 4
HEX COUPLING NUT TOOLS

Shell Size	Tool	
	Part Number	Supplier
9	600-091-08	Glenair

ASSEMBLY OF BACC63EB CONNECTORS

Table 5
TORQUE TOOL

Backshell Shell Size		Tool		
Minimum	Maximum	Type	Minimum Torque Capability (inch-pounds)	Supplier
08	19	Torque Driver	35	An Available Source

Table 6
CONNECTOR ADAPTER TOOL SETS

Connector Series	Tool Set		Refer to
	Part Number	Supplier	
BACC68EB	CM-S-389T	Daniels	Table 7

Table 7
ADAPTER PART NUMBERS AND DRIVE HANDLE SIZES FOR THE DANIELS CM-S-389T TOOL SET

Connector Shell Size	Connector Keyway Position	Adapter Part Number	Handle Drive Size (inch)
9	N, C, D	CM389T-9A	1/4
	A, B, E	CM389T-9B	

3. CONNECTOR DISASSEMBLY

A. Contact Removal

NOTE: The accessory adapter must be removed from the connector before the contacts are removed.

Table 8
CONTACT REMOVAL TOOLS

Crimp Barrel Size	Part Number	Color
20	M81969/14-10	Orange

(1) Make a selection of a contact removal tool from Table 8.

(2) Remove the contact. Refer to Subject 20-63-00.

B. Seal Plug Removal

(1) Make a selection of needle nose pliers.

CAUTION: MAKE SURE THAT THE PLIERS HAVE SMOOTH SURFACES AND NO SHARP EDGES. PLIERS WITH A ROUGH SURFACE OR A SHARP EDGE CAN CAUSE DAMAGE TO THE GROMMET.

NOTE: The removal of a seal plug with the hand is a satisfactory alternative to the removal with the pliers.

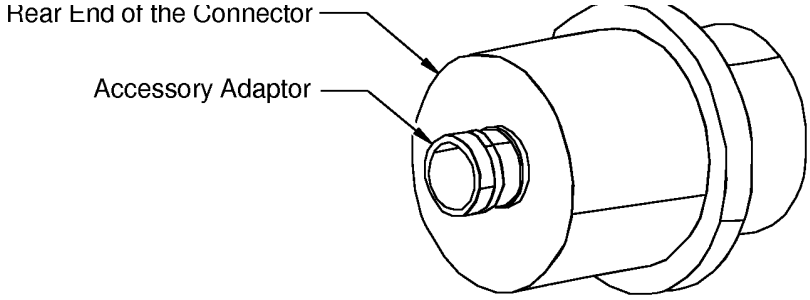
(2) Tightly hold the end of the seal plug.

(3) Pull the seal plug straight out of the contact cavity.

C. Accessory Adapter Removal

(1) Remove the accessory adapter from the rear of the connector. Refer to Figure 5.

NOTE: A BACC63DC9 receptacle connector can be used to prevent the movement of the insert of the plug.



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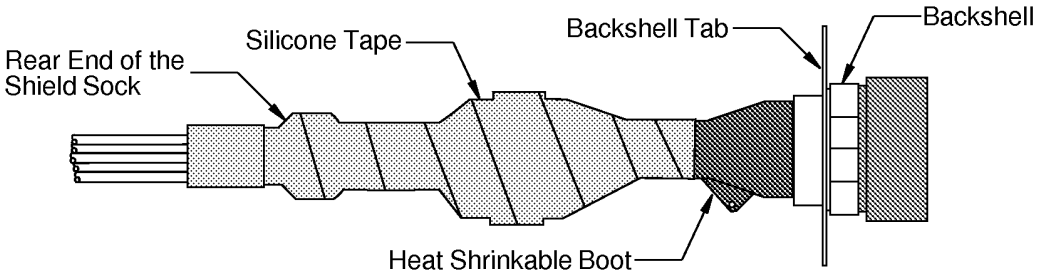
ACCESSORY ADAPTER REMOVAL
Figure 5

4. BACKSHELL DISASSEMBLY

A. Separation of the Backshell from the Connector



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BACKSHELL WITH STRAIN RELIEF BOOT
Figure 6

Refer to Figure 6.

(1) Carefully make a longitudinal cut from one end of the layers of silicone tape to the other end.

CAUTION: DO NOT FULLY CUT THROUGH THE BOOT. DAMAGE TO WIRES, CABLES, OR OTHER COMPONENTS OF THE WIRE HARNESS CAN OCCUR.

(2) Remove the tape from the strain relief boot and the shield sock.

(3) Carefully make a longitudinal cut from one end of the strain relief boot to the other end of the boot.

CAUTION: DO NOT FULLY CUT THROUGH THE BOOT. DAMAGE TO WIRES, CABLES, OR OTHER COMPONENTS OF THE WIRE HARNESS CAN OCCUR.

(4) Apply heat to the area that is cut to split the boot.

(5) Remove the boot from the assembly.

(6) Examine the shield sock.

Make sure that the shield sock does not have damage.

(7) Remove the tape that is:

- Around the end of the shield sock
- Around the shield terminator band.

NOTE: A black stick can be used to make the removal of the tape easier.

(8) Remove the string tie from the end of the shield sock.

(9) Remove the shield terminator band.

(a) Hold the free end of the buckle on the band with a pair of needle nose pliers.

(b) Pull the free end of the buckle in a direction that is up and away from the band until the end of the band is free from the buckle.

(c) Remove the band from the assembly.

(10) Remove the backshell from the connector.

(a) Make a selection of a hex coupling nut tool from Table 4.

(b) Make a selection of a connector adapter tool set from Table 6.

(c) Hold the connector with the connector adapter, and at the same time, loosen the backshell with the hex coupling nut holding tool.

(d) Disengage the backshell from the connector.

(11) Push the backshell rearward on the wire harness.

B. Shield Termination Ring Removal

Table 9
SHIELD TERMINATION RING REMOVAL

Removal Tool	Part Number
Black Stick	SP3010

(1) Make a selection of a shield termination ring removal tool from Table 9.

NOTE: A different tool that gives equivalent results is a satisfactory alternative.

(2) Push the rear end of the shield sock forward toward the connector.

(3) Press the tip of the tool against the lock mechanism of the shield termination ring.

(4) Remove the shield termination ring from the wire harness.

(5) Remove the layers of silicone tape from the wire harness.

ASSEMBLY OF BACC63EB CONNECTORS

5. CONNECTOR ASSEMBLY

A. Contact Assembly

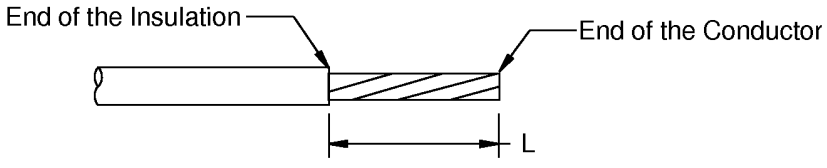
Table 10
INSULATION REMOVAL LENGTH

Wire Size (AWG)	Crimp Barrel Size	Removal Length L (inch)		Special Instructions
		Target	Tolerance	
22	20	0.21	±0.02	-

Table 11
CONTACT CRIMP TOOLS FOR PIN CONTACTS

Wire Size (AWG)	Crimp Barrel Size	Crimp Tool			
		Basic Unit		Locator	
		Part Number	Setting	Part Number	Color
22	20	M22520/1-01	2	M22520/1-04	Red
				TH163	Red
		WA27F	2	M22520/1-04	Red
				TH163	Red
		M22520/2-01	5	M22520/2-10	-
		WA22	5	M22520/2-10	-

(1) Remove the necessary length of insulation from the end of the wire.
Refer to:
- Table 10.
- Figure 7.
- Subject 20-00-15 for the procedure to remove the insulation.



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INSULATION REMOVAL LENGTH
Figure 7

(2) Make a selection of a crimp tool from Table 11.

(3) Assemble the contact. Refer to Subject 20-63-00.

B. Contact Insertion

NOTE: Before the contacts are installed, the accessory adapter must be:

- Removed from the connector
- In the correct position on the cable.

Table 12
CONTACT INSERTION TOOLS

Crimp Barrel Size	Part Number	Color
20	M81969/14-10	Red

Table 13
LUBRICANTS

Material	Description	Specification	Supplier
Lubricant	Isopropyl Alcohol	TT-I-735	An available source

(1) Make a selection of a contact insertion tool from Table 12.

(2) Examine the insertion tool.

Make sure that:

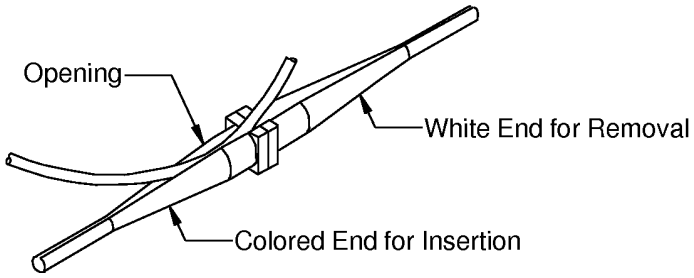
- The tool is not broken
- The tool tip does not have a bend
- The tool tip does not have burrs, nicks, or sharp edges.

(3) Put the contact assembly in the insertion tool. Refer to Figure 8.

NOTE: To help make the insertion easier, a lubricant can be applied on the contact assembly and the insertion tool. Refer to Table 13.

CAUTION: DO NOT PUT THE CONTACT ASSEMBLY FULLY INTO THE LUBRICANT. TOO MUCH LUBRICANT CAN CAUSE DAMAGE TO THE CONNECTOR.

CAUTION: DO NOT APPLY LUBRICANT ON THE CONNECTOR GROMMET. TOO MUCH LUBRICANT CAN CAUSE DAMAGE TO THE CONNECTOR.



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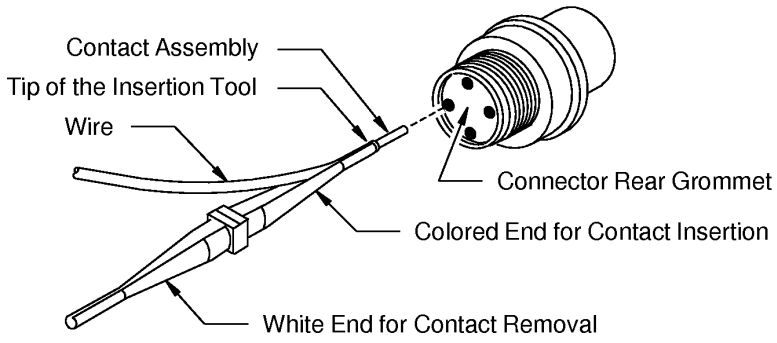
CONTACT INSERTION TOOL
Figure 8

(4) Align the contact assembly and the contact cavity. Refer to Figure 9.



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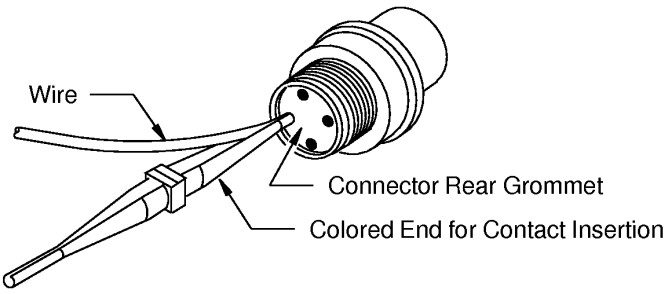
ALIGNMENT OF THE CONTACT ASSEMBLY AND THE CONTACT CAVITY
Figure 9

(5) Carefully push the contact assembly into the contact cavity until it stops. Refer to Figure 10. Make sure that the contact assembly and the contact cavity stay aligned.

CAUTION: DO NOT USE MORE THAN THE NECESSARY AMOUNT OF FORCE TO PUSH THE INSERTION TOOL INTO THE CONTACT CAVITY. DAMAGE TO THE CONTACT RETENTION CLIPS OR THE CONNECTOR GROMMET CAN OCCUR.

CAUTION: DO NOT TURN THE TOOL CLOCKWISE OR COUNTERCLOCKWISE WHILE IT IS IN THE CONTACT CAVITY. DAMAGE TO THE CONTACT RETENTION CLIPS OR THE CONNECTOR GROMMET CAN OCCUR.



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INSERTION OF THE CONTACT INTO THE CAVITY
Figure 10

(6) Carefully pull the tool out of the contact cavity.

Make sure that the tool and the contact cavity stay aligned.

(7) Pull the wire lightly to make sure the contact is locked in the connector.

CAUTION: DO NOT PULL THE WIRE WITH A STRONG OR A SUDDEN FORCE. DAMAGE TO CONTACT ASSEMBLY OR THE CONNECTOR CAN OCCUR.

CAUTION: DO NOT MAKE A DENT IN THE INSULATION OF THE WIRE WITH THE FINGERNAILS. UNSATISFACTORY PERFORMANCE OF THE WIRE CAN OCCUR.

(8) If the contact is not locked in the contact cavity:

(a) Remove the contact assembly from the contact cavity

(b) Do Step 3 through Step 7 again.

C. Seal Plug Installation

Seal all unused contact cavities. Refer to Subject 20-60-08.

D. Accessory Adapter Installation

(1) Push the accessory adapter forward until it is against the rear of the connector.

(2) Engage the threads of the adapter and the connector.

(3) Tighten the adapter with the hand.

Make sure the gasket is not between the adapter and the connector shell.

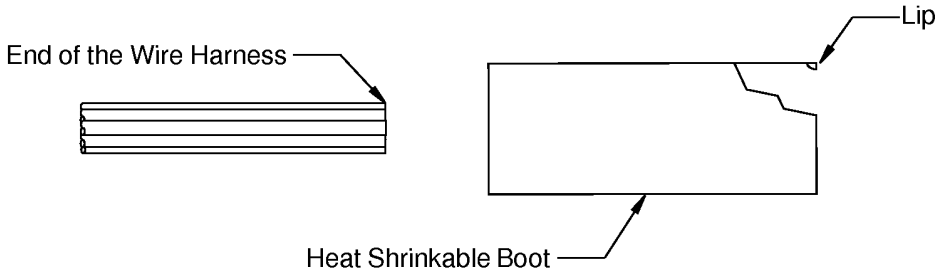
6. ASSEMBLY OF THE 319-139W1 BACKSHELL

A. Standard Strain Relief Assembly

(1) If a heat shrinkable sleeve is specified, put the sleeve on the wire harness.

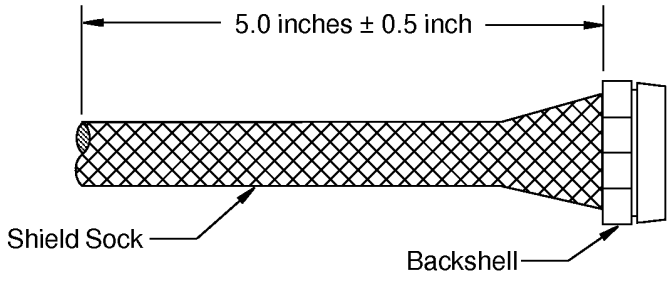
(2) Put the heat shrinkable boot on the wire harness. Refer to Figure 11.

Make sure that the end of the boot with the lip is pointed forward toward the end of the wire harness.



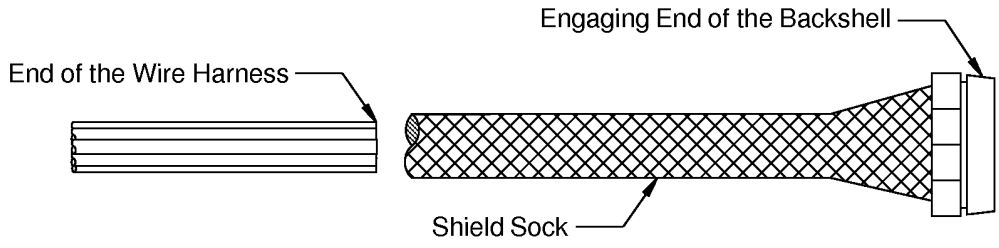
POSITION OF THE LIP ON THE END OF THE STRAIN RELIEF BOOT
Figure 11

(3) Remove the necessary length of the shield sock. Refer to Figure 12.



LENGTH OF THE SHIELD SOCK FOR A STRAIN RELIEF BOOT BACKSHELL
Figure 12

(4) Put the wire harness in the shield sock. Refer to Figure 13.



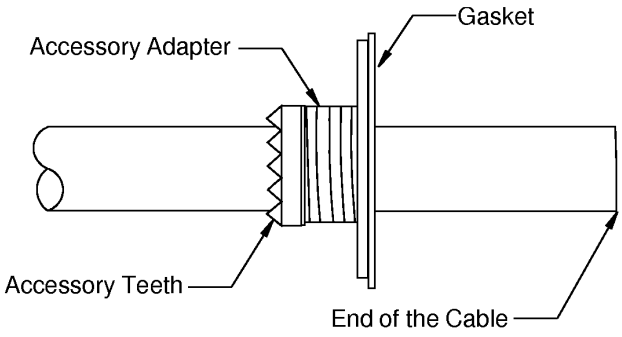
POSITION OF THE BACKSHELL IN RELATION TO THE WIRE HARNESS
Figure 13

(5) Move the backshell rearward away from the end of the wire harness.

Make sure that the engaging end of the backshell is pointed forward toward the end of the wire harness.

(6) Remove the adapter assembly from the rear of the connector.

(7) Put the adapter assembly on the wire harness. Refer to Figure 14.



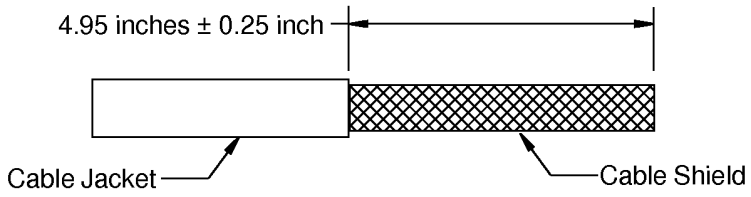
POSITION OF THE ACCESSORY ADAPTER ON THE CABLE
Figure 14

B. Cable Preparation - Shield Pull Through Shield Termination

(1) Remove the necessary length of the jacket from the end of the cable.

Refer to:

- Figure 15 for the shield ground wire for a strain relief boot backshell.
- Subject 20-00-15 for the procedure to remove the cable jacket.



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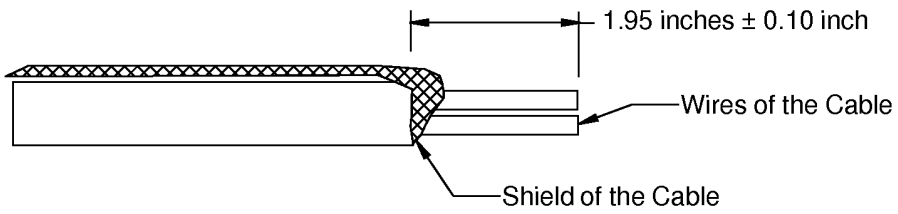
CABLE PREPARATION - STANDARD CONFIGURATION
Figure 15

(2) Assemble the shield pull through shield ground wire.

Refer to:

- Figure 16.
- Subject 20-10-15 for the procedure to assemble the shield ground wire.



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SHIELD PULL THROUGH SHIELD GROUND WIRE - STANDARD CONFIGURATION
Figure 16

(3) Remove the necessary length from the end of the wires. Refer to Figure 16..

C. Backshell Assembly

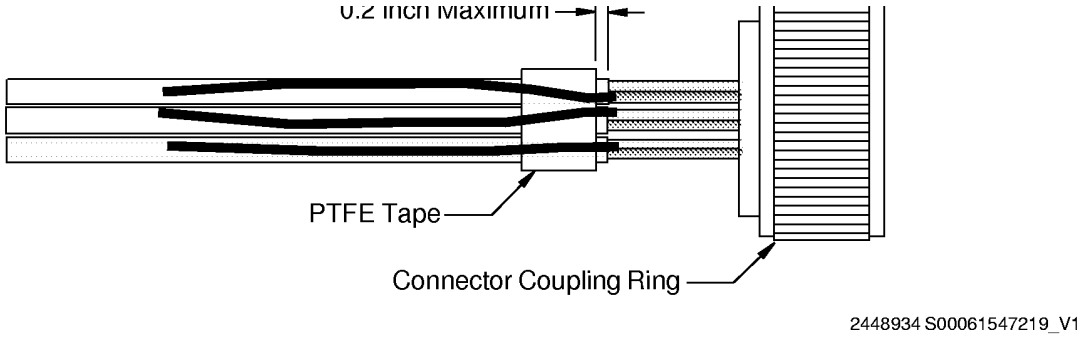
Table 14
BACKSHELL INSTALLATION TORQUE VALUES

Shell Size	Torque (inch-pound)	
	Minimum	Maximum
9	35	40

(1) Wind two to three layers of PTFE tape on the wire harness at the end of the cable jacket. Refer to Figure 17.

Make sure that:

- The forward edge of the tape is not more than 0.20 inch from the end of the cable jacket
- The tape makes an overlap with itself
- The tape is not on top of a shield ground wire.



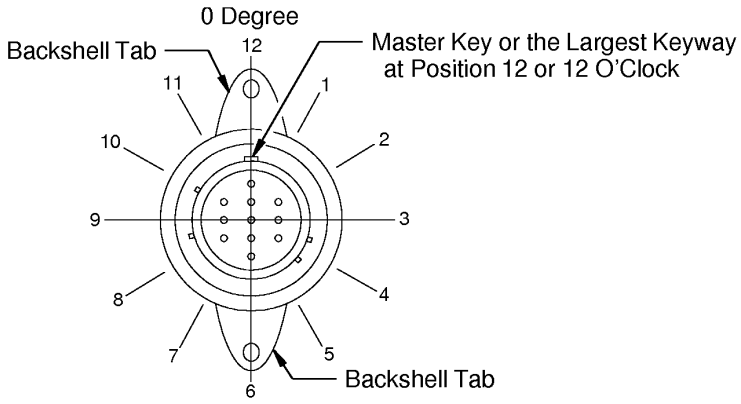
POSITION OF THE PTFE TAPE ON THE WIRE HARNESS
Figure 17

(2) Fold each shield ground wire back on the tape. Refer to Figure 17.

(3) Push the backshell forward until it is against the rear of the connector.

NOTE: If the diameter of the shield termination ring is smaller than the inside diameter of the backshell, the backshell can be assembled after the shield ground wire termination to make the assembly easier.

(4) Align the backshell tab and the master key or keyway of the connector. Refer to Figure 18.



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POSITION OF THE BACKSHELL TAB
Figure 18

(5) Make a selection of a hex coupling nut tool from Table 4.

(6) Make a selection of a torque tool from Table 5.

(7) Make a selection of a connector adapter tool set from Table 6.

(8) Set the necessary torque of the torque tool. Refer to Table 14.

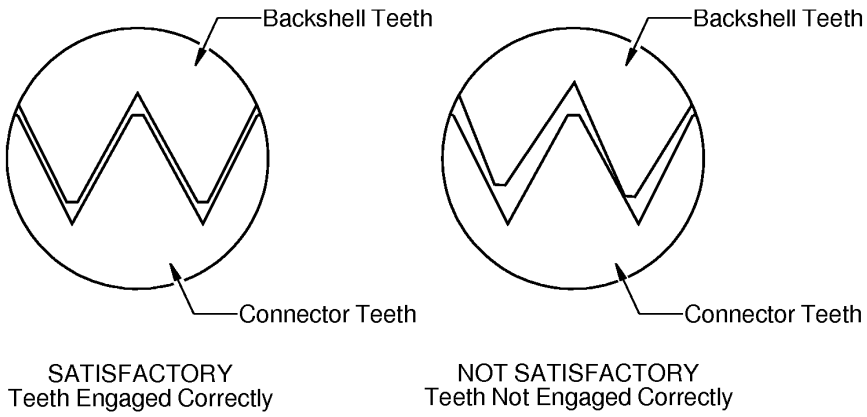
(9) Put the holder on the square drive of the torque tool.

(10) Fully engage the threads of the backshell and the connector.

(11) Tighten the backshell coupling nut with the hand.

(12) Examine the teeth of the backshell and the connector through the inspection hole. Refer to Figure 19.

Make sure that the backshell teeth are fully engaged with the connector teeth.



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ENGAGEMENT OF THE BACKSHELL TEETH AND THE CONNECTOR TEETH
Figure 19

(13) Fully engage the connector adapter and the connector.

(14) Tighten the backshell coupling nut with the hex coupling nut tool.

(15) When the coupling nut starts to tighten:

(a) Open the hex coupling nut tool and rotate it back 90 degrees.

(b) Continue to tighten the coupling nut.

(c) Do Step a and Step b again until the specified torque is applied.

CAUTION: DO NOT APPLY TOO MUCH TORQUE. DAMAGE TO THE COUPLING NUT CAN OCCUR.

CAUTION: FOR AN ELECTRONIC TORQUE TOOL, DO NOT APPLY MORE TORQUE THAN THE INITIAL SETTING. TOO MUCH TORQUE CAN RESET THE INITIAL SETTING WHICH CAN CAUSE AN INCORRECT TORQUE INDICATION.

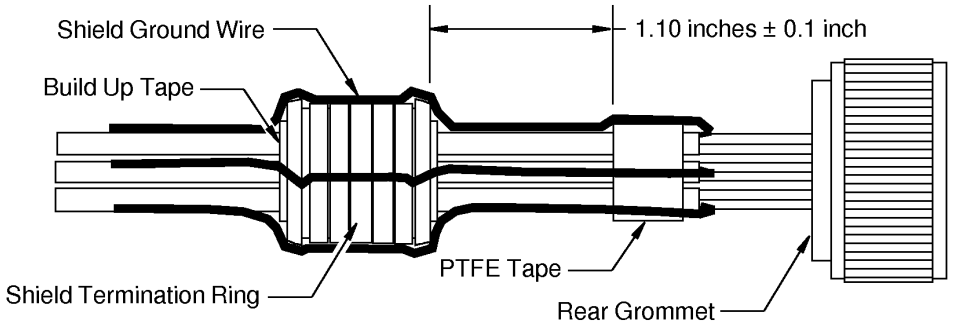
D. Assembly of the Shield Termination Ring

(1) Push the end of the shield sock forward until the end of the sock is before the rear of the backshell.

(2) Wind a minimum of one layer of Type I silicone tape around the wire harness at the location of the shield termination ring. Refer to Figure 20.

Make sure that:

- The edges of the tape are approximately aligned
- The tape is not on a shield ground wire.



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SHIELD TERMINATION RING - SHIELD PULL THROUGH SHIELD GROUND WIRES
Figure 20

(3) Assemble the two halves of the shield termination ring on the center of the silicone tape.

Make sure that:

- The keys of one half are aligned with the keyholes of the other half
- A minimum of one side of the shield termination ring has a key and key hole that does not have a change
- The shield termination ring is fully closed
- The shield termination ring does not move on the wire harness
- The shield ground wires are not between the tape and the shield termination ring.

NOTE: The shield termination ring makes a click when it is assembled correctly.

(4) If the tape does not prevent the movement of the shield termination ring, wind more layers of the tape on the harness.

Make sure that:

- The keys of one half are aligned with the keyholes of the other half
- The shield termination ring is fully closed
- The shield termination ring does not move on the wire harness
- The shield ground wires are not between the tape and the shield termination ring.

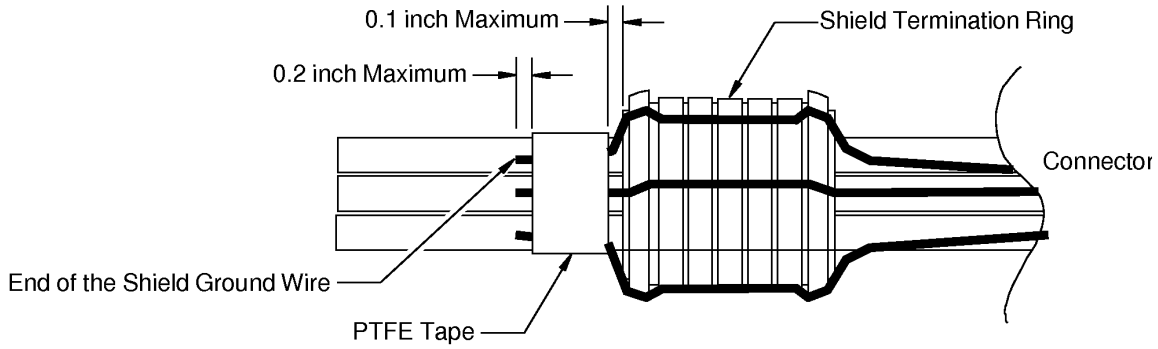
(5) Put the shield ground wires on the shield termination ring at approximately equal intervals.

Make sure that the shield ground wires do not go across each other.

(6) Wind 2 to 4 layers of PTFE tape on the end of the shield ground wires and the wire harness. Refer to Figure 21.

Make sure that:

- The tape does not make an overlap with the shield termination ring
- The layers of tape make an approximately 100 percent overlap
- The shield ground wires are not loose.



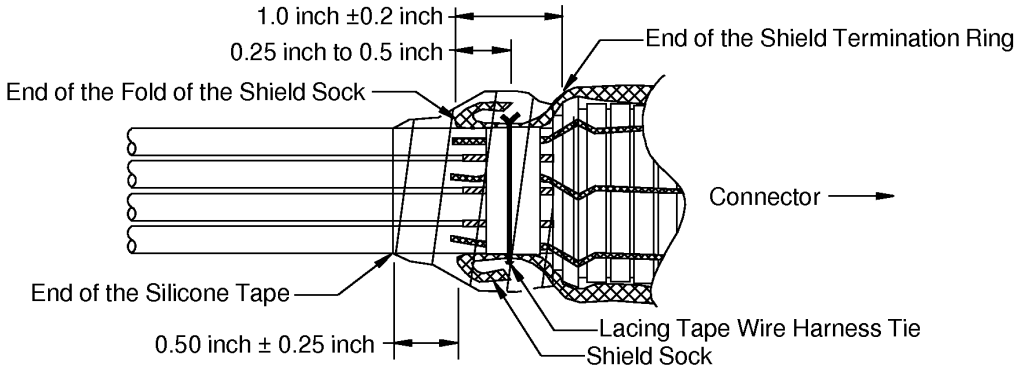
POSITION OF THE PTFE TAPE ON THE SHIELD GROUND WIRES
Figure 21

(7) Remove the unwanted length from the end of the shield ground wires. Refer to Figure 21.

Make sure that:

- The end of the shield ground wire does not extend farther than 0.2 inch from the rear end of the tape
- The shield ground wires are not loose.

E. Shield Sock Termination



SHIELD SOCK TERMINATION
Figure 22

Refer to Figure 22.

(1) Fully extend the shield sock rearward on the shield termination ring and the wire harness.

(2) Install a shield terminator band on the shield sock at the center of the shield termination ring. Refer to Subject 20-25-14.

(3) Assemble a lacing tape wire harness tie on the shield sock at the end of the shield sock to hold its position on the wire harness. Refer to Subject 20-10-11.

(4) Fold the end of the shield sock forward on the lacing tape wire harness tie.

(5) Remove the necessary length from the end of the shield sock to make the distance from the end of the fold to the end of the shield sock equal to 0.25 inch to 0.5 inch.

NOTE: A broken strand of the shield sock can be cut to align the end of the strand with the surface of the shield sock.

NOTE: A maximum of five damaged shield sock strands is permitted.

(6) Wind a layer of Type II silicone tape on the end of the shield sock.

Make sure that:

- The end of the fold of the shield sock extends 1.0 inch ±0.2 inch from the end of the shield termination ring
- The tape extends 0.50 inch ±0.25 inch farther than the end of the fold of the shield sock
- The end of the shield sock has tape on it
- The tape has a minimum of 50 percent overlap

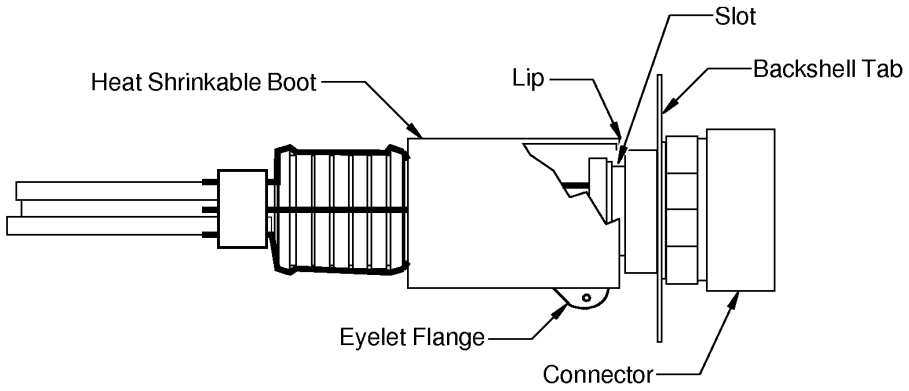
• The tape has an approximately 100 percent overlap at the end.

(7) Wind 2 to 3 layers of 0.50 inch wide PTFE tape on the shield terminator band.

F. Installation of the Strain Relief Boot

(1) Push the strain relief boot forward until the forward end of the boot is against the rear of the backshell.

(2) Align the lip of the boot with the slot in backshell. Refer to Figure 23.



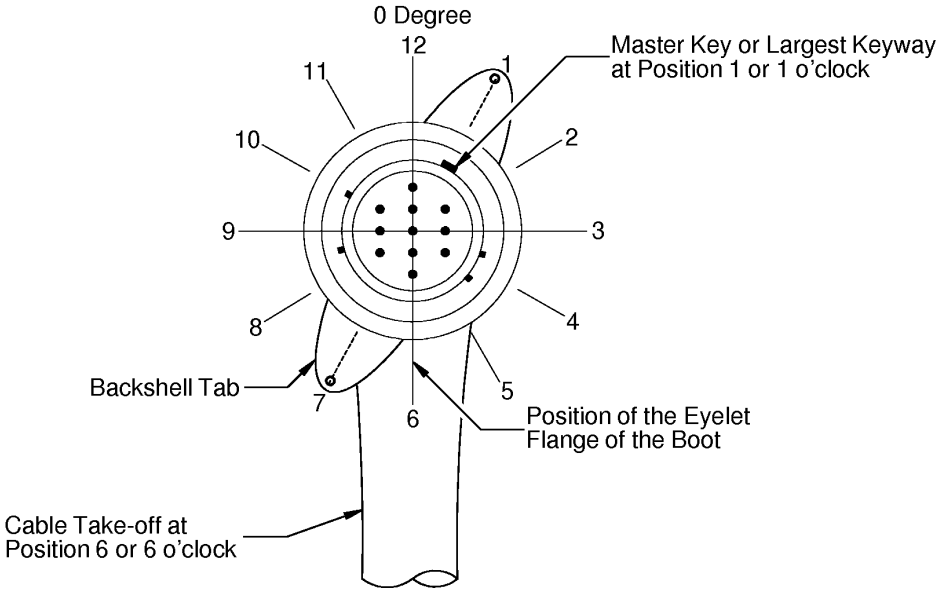
2449164 S00061547225_V1

POSITION OF THE STRAIN RELIEF BOOT AGAINST THE BACKSHELL
Figure 23

(3) Put the Master Key or Keyway of the conector in the specified clock position. Refer to Figure 24.

NOTE: If the clock position is not specified, put the Master Key or Keyway in clock position 12.

ASSEMBLY OF BACC63EB CONNECTORS



ONE O'CLOCK POSITION OF THE CONNECTOR AND THE BACKSHELLI
Figure 24

(4) For a backshell with a 45 degree or a 90 degree angle of the strain relief, put the eyelet flange of the heat shrinkable boot in the 6 o'clock position ±0.1 hour or ±30 degrees. Refer to Figure 24.

(5) Shrink the boot into its position.

Make sure the lip of the boot stays in the groove of the backshell.

Refer to:

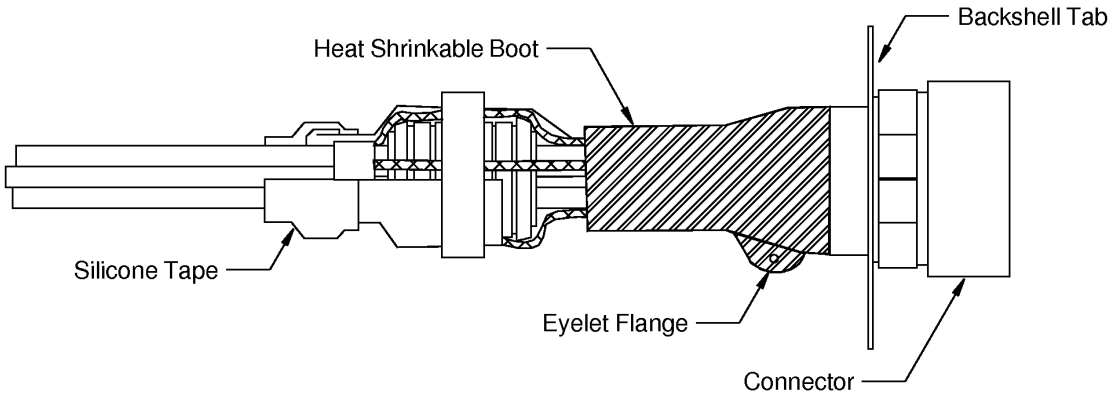
- Figure 25.
- Subject 20-10-14 for the procedure to install the boot.

Make sure that:

- The lip of the boot stays in the groove of the backshell
- The eyelet flange of the boots stays in the 6 o'clock position.

NOTE: It is satisfactory if the location of the end of the boot on the shield termination ring assembly is different than the location that is shown in Figure 25.

NOTE: The boot can be turned manually around the backshell and the wire harness.



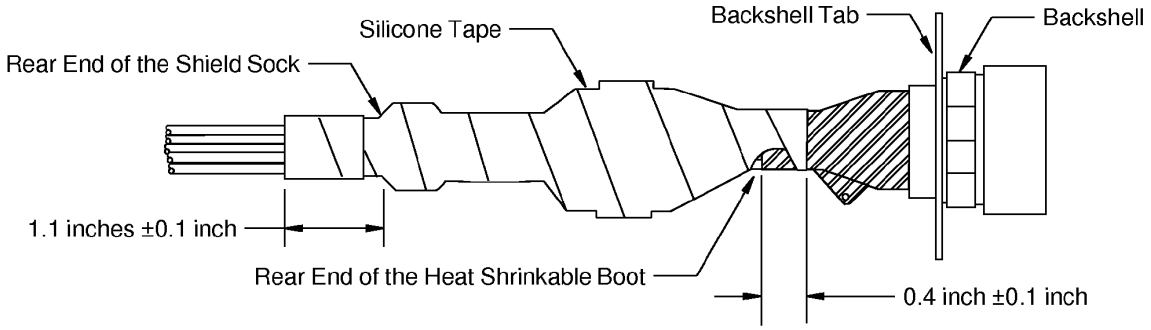
2449166 S00061547227_V1

STRAIN RELIEF BOOT INSTALLATION - SHIELD PULL THROUGH SHIELD GROUND WIRES
Figure 25

(6) Put a layer of Type II silicone tape on the strain relief boot and the wire harness. Refer to Figure 26.

Make sure that the tape:

- Starts 0.4 inch ±0.1 inch forward from the rear end of the strain relief boot
- Stops 1.1 inch ±0.1 inch farther than the end of the shield sock
- Has an approximately 50 percent overlap
- Has an approximately 100 percent overlap at the end.



POSITION OF THE SILICONE TAPE ON THE BACKSHELL ASSEMBLY
Figure 26

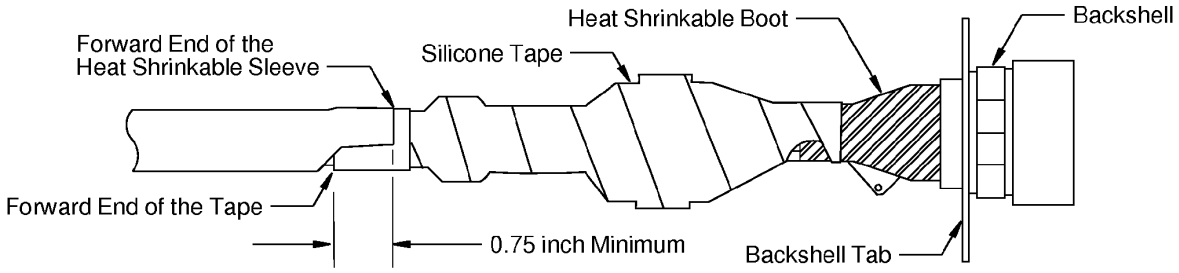
(7) If a heat shrinkable sleeve is on the wire harness:

(a) Move the heat shrinkable sleeve forward until the forward end of the sleeve makes a minimum of 0.75 inch overlap with the rear end of the tape.

(b) Shrink the sleeve into its position.

Refer to:

- Figure 27.
- Subject 20-10-14 for the procedure to install the sleeve.



POSITION OF THE HEAT SHRINKABLE SLEEVE
Figure 27

ASSEMBLY OF MIL-C-26482 SERIES II REAR RELEASE CONNECTORS

TABLE OF CONTENTS

ASSEMBLY OF MIL-C-26482 SERIES II REAR RELEASE CONNECTORS

This rear release connector subject is relocated from:

- 20-61-17 "Assembly of MIL-C-26482 Series II Connectors"

to:

- 20-63-21 "Assembly of MIL-C-26482 Series II Rear Release Connectors"

1. GENERAL DATA

A. Minimum Wire O.D. for an Environmentally Sealed Connector

Refer to:

- Subject 20-60-08 for the identification of an environmentally sealed connector
- Table 1 for the minimum wire O.D. that is necessary for a satisfactory seal of a contact cavity hole
- Subject 20-60-08 for the procedure to increase the diameter of the wire.

Table 1
MINIMUM WIRE O.D. FOR A SATISFACTORY SEAL

Connector	Description	Contact Cavity Size	Minimum Wire O.D. (inch)
MIL-C-26482	Series II; rear release, rear removal contacts	20	0.040
		16	0.053
		12	0.097

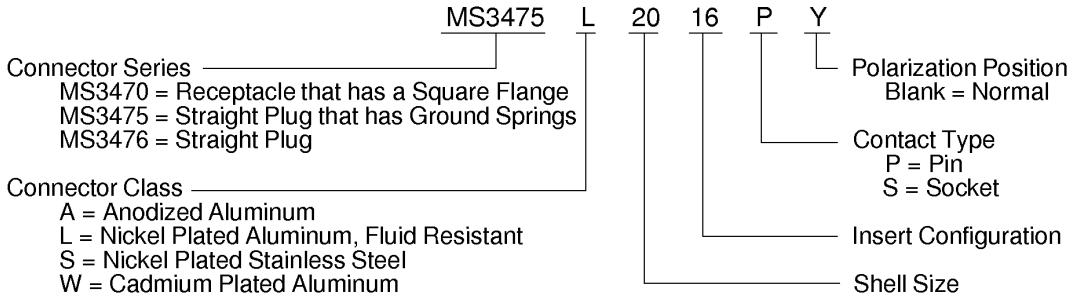
2. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

Table 2
CONNECTOR PART NUMBERS

Part Number	Supplier	Reference
MS3470()	QPL	Figure 1
MS3475()	QPL	Figure 1
MS3476()	QPL	Figure 1

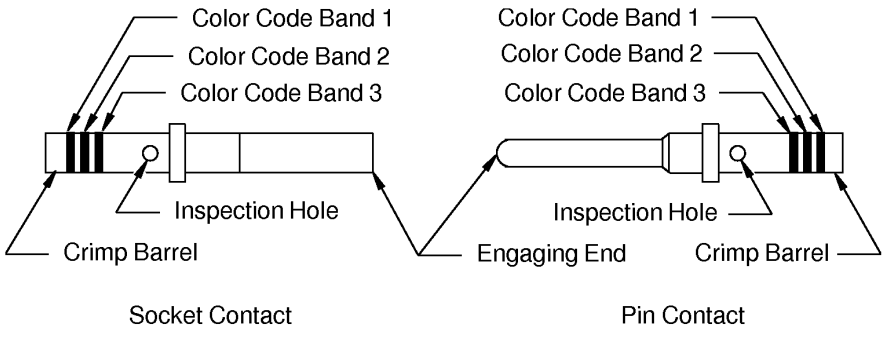
ASSEMBLY OF MIL-C-26482 SERIES II REAR RELEASE CONNECTORS



2446142 S00061547231_V1

MIL-C-26482 SERIES II CONNECTOR PART NUMBER STRUCTURE
Figure 1

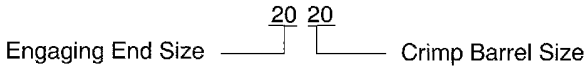
B. Contact Part Numbers



2448999 S00061545899_V1

LOCATION OF THE COLOR BANDS ON THE M39029/4 AND /5 REAR RELEASE CONTACTS
Figure 2

ASSEMBLY OF MIL-C-26482 SERIES II REAR RELEASE CONNECTORS



2446651 S00061545900_V1

EXAMPLE OF A CONTACT SIZE
Figure 3

Table 3
CONTACT PART NUMBERS

Contact Size		Contact Type	Part Number	Supplier	Color Code	
Engaging End	Crimp Barrel				Band	Color
20	20	Pin	M39029/4-110	QPL	1	Brown
					2	Brown
					3	Black
			M39029/4-20-20	QPL	1	Brown
					2	Brown
					3	Black
		Socket	M39029/5-115	QPL	1	Brown
					2	Brown
					3	Green
			M39029/5-20-20	QPL	1	Brown
					2	Brown
					3	Green

ASSEMBLY OF MIL-C-26482 SERIES II REAR RELEASE CONNECTORS

Table 3 CONTACT PART NUMBERS (Continued)

Contact Size		Contact Type	Part Number	Supplier	Color Code	
Engaging End	Crimp Barrel				Band	Color
16	16	Pin	M39029/4-111	QPL	1	Brown
					2	Brown
					3	Brown
			M39029/4-16-16	QPL	1	Brown
					2	Brown
					3	Brown
		Socket	M39029/5-116	QPL	1	Brown
					2	Brown
					3	Blue
			M39029/5-16-16	QPL	1	Brown
					2	Brown
					3	Blue
12	12	Pin	M39029/4-113	QPL	1	Brown
					2	Brown
					3	Orange
			M39029/4-12-12	QPL	1	Brown
					2	Brown
					3	Orange
		Socket	M39029/5-118	QPL	1	Brown
					2	Brown
					3	Gray
			M39029/5-12-12	QPL	1	Brown
					2	Brown
					3	Gray

Table 4
ALTERNATIVE CONTACT PART NUMBERS

Specified Contact		Alternative Contact	
Part Number	Supplier	Part Number	Supplier
M39029/4-12-12	QPL	M39029/4-113	QPL
M39029/4-16-16	QPL	M39029/4-111	QPL
M39029/4-20-20	QPL	M39029/4-110	QPL
M39029/5-12-12	QPL	M39029/5-118	QPL
M39029/5-16-16	QPL	M39029/5-116	QPL

Table 4 ALTERNATIVE CONTACT PART NUMBERS (Continued)

Specified Contact		Alternative Contact	
Part Number	**Supplier**	**Part Number**	**Supplier**
M39029/5-20-20	QPL	M39029/5-115	QPL

3. INSERT CONFIGURATIONS

A. MIL-C-26482 Series II Connectors

NOTE: The insert configurations that are specified in Table 5 include the connector shell size as the first part of the configuration. Refer to Table 2 for the part number structure that is applicable for the connector.

NOTE: The contact cavity size that is specified in Table 5 is equivalent to the size of the engaging end of the contact.

Table 5
CONNECTOR INSERT CONFIGURATIONS

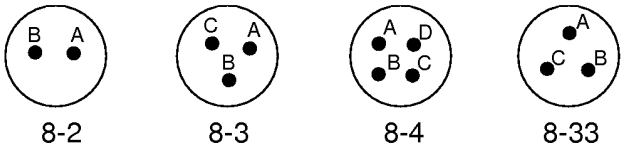
Insert	Contact Cavity		Reference
	Count	**Size**	
8-2	2	20	Figure 4
8-3	3	20	Figure 4
8-4	4	20	Figure 4
8-33	3	20	Figure 4
10-6	6	20	Figure 5
10-98	6	20	Figure 5
12-3	3	16	Figure 6
12-8	8	20	Figure 6
12-10	10	20	Figure 6
14-5	5	16	Figure 7
14-12	8	20	Figure 7
	4	16	
14-15	14	20	Figure 7
	1	16	
14-18	18	20	Figure 7
14-19	19	20	Figure 7
16-8	8	16	Figure 8
16-23	22	20	Figure 8
	1	16	
16-26	26	20	Figure 8
16A99	21	20	Figure 8

ASSEMBLY OF MIL-C-26482 SERIES II REAR RELEASE CONNECTORS

Table 5 CONNECTOR INSERT CONFIGURATIONS (Continued)

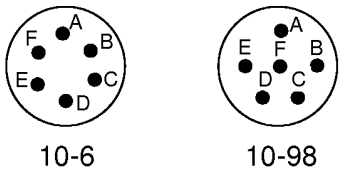
Insert	Contact Cavity		Reference
	Count	Size	
18-8	8	12	Figure 9
18-11	11	16	Figure 9
18A28	26	20	Figure 9
	2	16	
18-30	29	20	Figure 9
	1	16	
18-32	32	20	Figure 9
20-16	16	16	Figure 10
20-24	24	20	Figure 10
20-39	37	20	Figure 10
	2	16	
20-41	41	20	Figure 10
22-12	12	12	Figure 11
22-21	21	16	Figure 11
22-32	32	20	Figure 11
22-34	34	20	Figure 11
22-36	36	20	Figure 11
22-41	27	20	Figure 11
	14	16	
22-55	55	20	Figure 11
24A8	1	20	Figure 12
	7	Coax	
24A31	31	16	Figure 12
24A57	55	20	Figure 12
	2	12	
24-61	61	20	Figure 12

NOTE: Figure 4 through Figure 12 show the front face of an insert that has pins. The view of the front face of an insert that has sockets is the mirror image of this view.



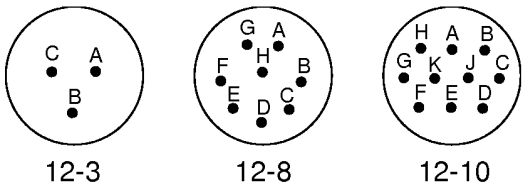
2446131 S00061546576_V1

8-() INSERT CONFIGURATIONS
Figure 4



2446132 S00061546577_V1

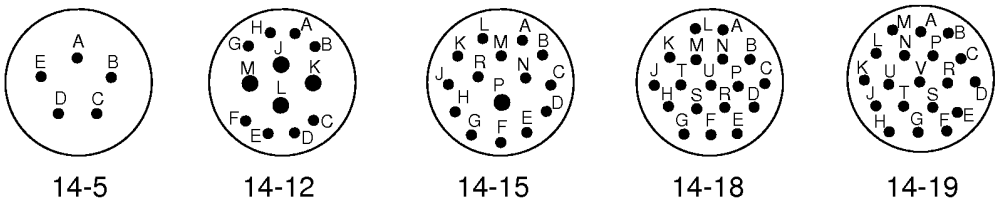
10-() INSERT CONFIGURATIONS
Figure 5



2446133 S00061546578_V1

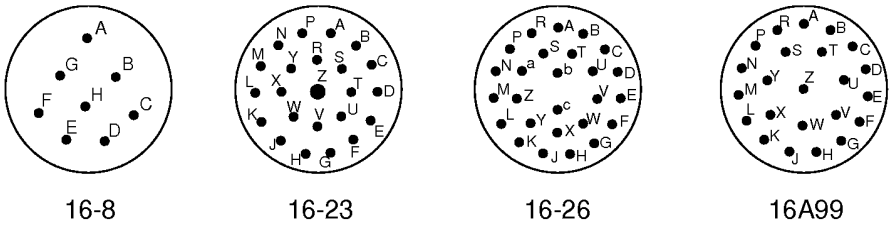
12-() INSERT CONFIGURATIONS
Figure 6

ASSEMBLY OF MIL-C-26482 SERIES II REAR RELEASE CONNECTORS



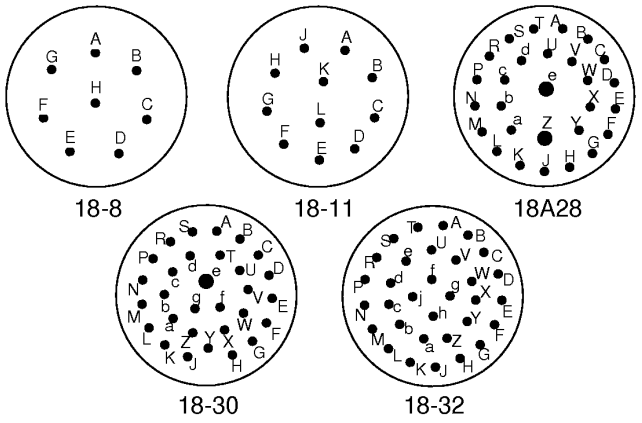
2446134 S00061546579_V1

14-() INSERT CONFIGURATIONS
Figure 7



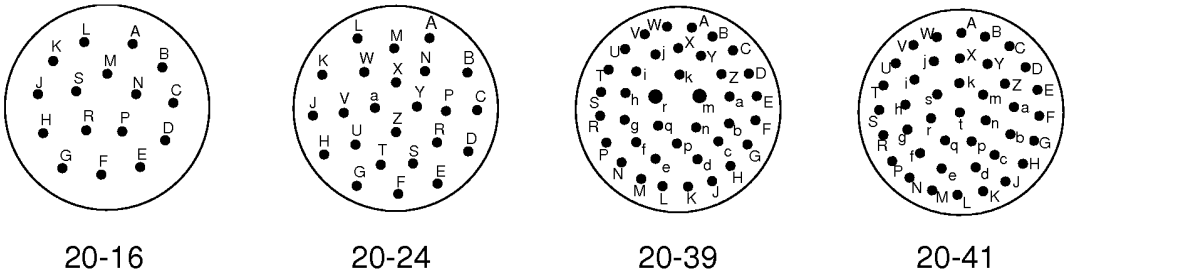
2446135 S00061546580_V1

16-() INSERT CONFIGURATIONS
Figure 8



2446136 S00061546581_V1

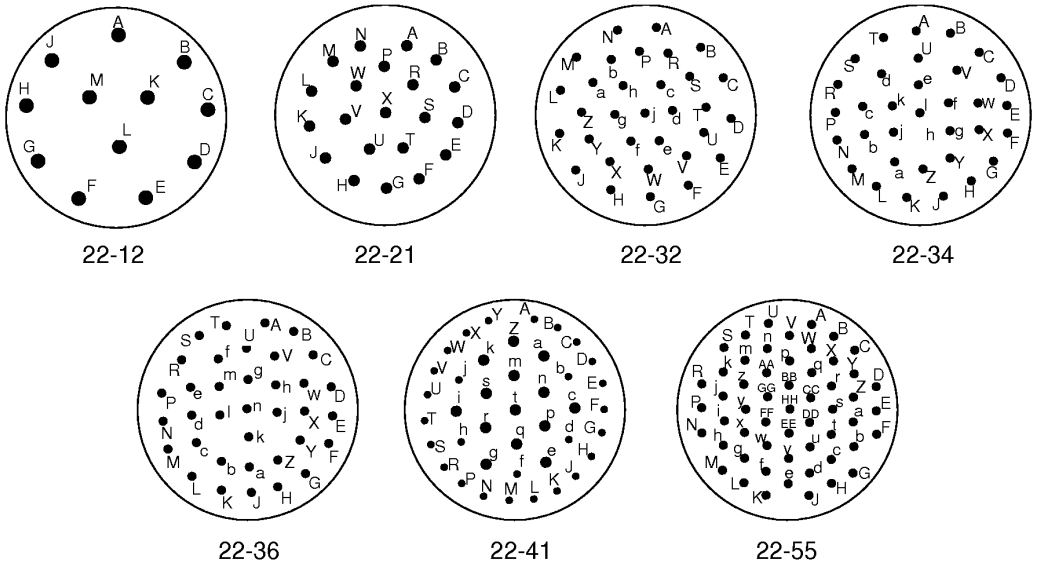
18-() INSERT CONFIGURATIONS
Figure 9



2446137 S00061546582_V1

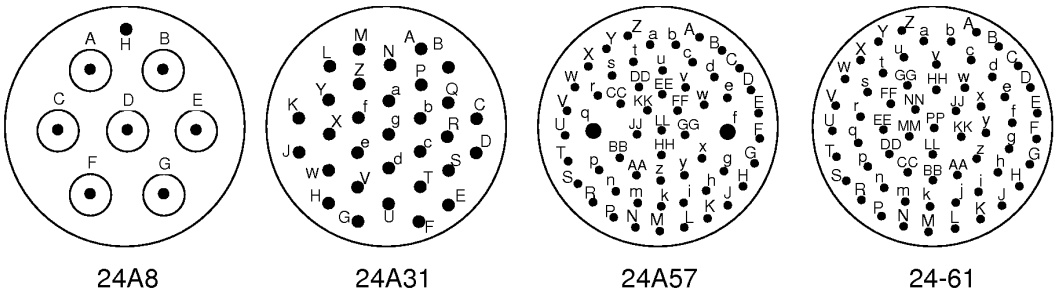
20-() INSERT CONFIGURATIONS
Figure 10

ASSEMBLY OF MIL-C-26482 SERIES II REAR RELEASE CONNECTORS



2446138 S00061546583_V1

22-() INSERT CONFIGURATIONS
Figure 11



2446139 S00061546584_V1

24-() INSERT CONFIGURATIONS
Figure 12

ASSEMBLY OF MIL-C-26482 SERIES II REAR RELEASE CONNECTORS

4. CONNECTOR DISASSEMBLY

A. Seal Plug and Seal Rod Removal

Table 6
NECESSARY TOOLS

Tool	Type
Pliers	Needle Nose

(1) Make a selection of a pliers from Table 6.

CAUTION: MAKE SURE THE PLIERS HAVE SMOOTH SURFACES AND NO SHARP EDGES. PLIERS WITH A ROUGH SURFACE OR A SHARP EDGE CAN CAUSE DAMAGE TO THE REAR GROMMET.

(2) If it is necessary, remove a plastic tie strap or a wire harness tie that is less than 6 inches from the connector.

(3) Hold the end of the seal plug or the seal rod tightly in the jaws of the pliers.

(4) Pull the seal plug or the seal rod from the contact cavity.

B. Contact Removal

This paragraph gives the procedure to remove a contact assembly from the connector.

For the procedure to remove an unwired contact, refer to Paragraph 4.C..

Table 7
CONTACT REMOVAL TOOLS

Crimp Barrel Size	Removal Tool	Color
20	CIET20-1	White
	M81969/14-02	White
	M83723/31-20	White
	MS27534-20	White
	NAS1664-20	White
16	CIET16-3	White
	M81969/14-03	White
	M83723/31-16	White
	MS27534-16	White
	NAS1664-16	White
12	M81969/14-04	White
	M83723/31-12	White
	MS27534-12	White
	NAS1664-12	White

(1) Make a selection of a removal tool from Table 7.

(2) Put the removal tool on the wire.

(3) Axially align the tool and the contact cavity at the rear of the connector.

(4) Carefully push the tool into the contact cavity until it stops.

Make sure that the tool stays aligned with the contact cavity.

CAUTION: DO NOT USE MORE THAN THE NECESSARY AMOUNT OF FORCE TO PUSH THE TOOL INTO THE CONTACT CAVITY. DAMAGE TO THE CONTACT RETENTION CLIPS CAN OCCUR.

CAUTION: DO NOT TURN THE TOOL CLOCKWISE OR COUNTERCLOCKWISE WHEN IT IS IN THE CONTACT CAVITY. DAMAGE TO THE CONTACT RETENTION CLIPS CAN OCCUR.

(5) Hold the wire against the tool.

(6) Pull the tool and the wire out of the contact cavity.

Make sure that the tool stays aligned with the contact cavity.

C. Unwired Contact Removal

This paragraph gives the procedure to remove an unwired contact from the connector.

For the procedure to remove a contact assembly, refer to Paragraph 4.B..

Table 8
CONTACT REMOVAL TOOLS

Crimp Barrel Size	Removal Tool
20	CET20-24
	M81969/30-02
16	CET16-21
	M81969/30-03
12	CET12-16
	M81969/30-04

(1) Make a selection of a contact removal tool from Table 8.

(2) Remove the seal plug from the contact cavity.

(3) Axially align the tool and the contact cavity at the rear of the connector.

(4) Carefully push the tool into the contact cavity until it stops.

Make sure that:

- The end of the tool is between the contact cavity and the crimp barrel of the contact
- The tool stays aligned with the contact cavity
- Pressure is not applied on the plunger of the tool.

CAUTION: DO NOT USE MORE THAN THE NECESSARY AMOUNT OF FORCE TO PUSH THE INTO THE CONTACT CAVITY. DAMAGE TO THE CONTACT RETENTION CLIPS CAN OCCUR.

ASSEMBLY OF MIL-C-26482 SERIES II REAR RELEASE CONNECTORS

CAUTION: DO NOT TURN THE TOOL CLOCKWISE OR COUNTERCLOCKWISE WHEN IT IS IN THE CONTACT CAVITY. DAMAGE TO THE CONTACT RETENTION CLIPS CAN OCCUR.

CAUTION: DO NOT APPLY PRESSURE ON THE PLUNGER OF THE TOOL WHEN THE TOOL IS IN THE CONTACT CAVITY. DAMAGE TO THE CONNECTOR CAN OCCUR.

(5) Pull the tool and the contact out of the contact cavity.

Make sure that the tool stays aligned with the contact cavity.

(6) Apply pressure on the plunger to eject the contact from the tool.

5. CONNECTOR ASSEMBLY

A. Wire Preparation

For the assembly of a MIL-C-26482 Series II connector with triax cable, refer to Subject 20-53-05.

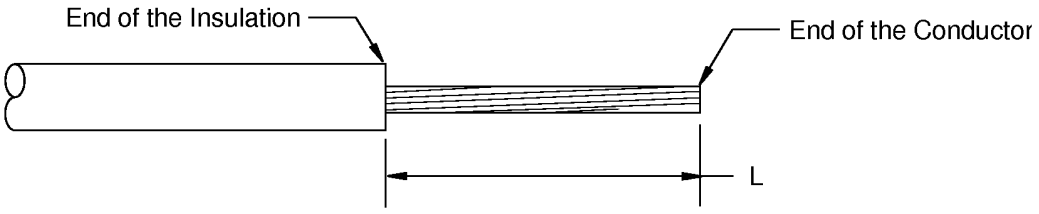
Table 9
INSULATION REMOVAL LENGTH

Crimp Barrel Size	Removal Length L (inch)		Special Instructions
	Target	Tolerance	
20	0.15	+0.03, -0	-
16	0.25	+0.03, -0	-
12	0.25	+0.03, -0	-

(1) Remove the necessary length of insulation from the end of the wire.

Refer to:

- Figure 13
- Table 9 for the insulation removal length
- Subject 20-00-15 for the insulation removal procedure.



2446140 S00061544325_V1

INSULATION REMOVAL LENGTH
Figure 13

(2) Measure the O.D. of the wire.

(3) If the O.D. of the wire is less than the minimum seal diameter of the connector grommet hole, increase the O.D. of the wire. Refer to Paragraph 1.A..

B. Contact Assembly

Table 10
CONTACT CRIMP TOOLS

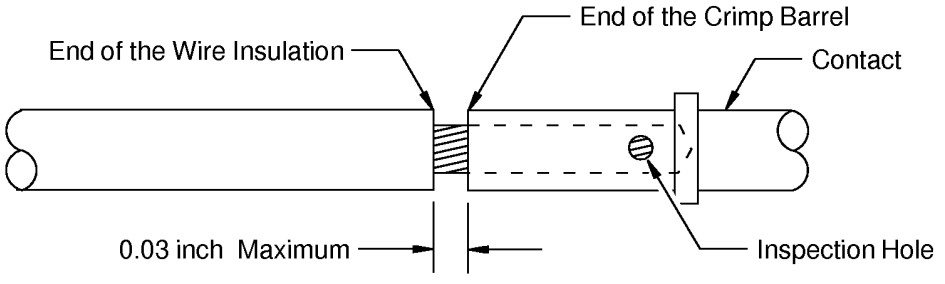
Wire Size (AWG)	Crimp Barrel Size	Crimp Tool			
		Basic Unit		Locator	
		Part Number	Setting	Part Number	Color
24	20	M22520/1-01	2	M22520/1-02	Red
		M22520/2-01	5	M22520/2-02	-
22	20	M22520/1-01	3	M22520/1-02	Red
		M22520/2-01	6	M22520/2-02	-
20	20	M22520/1-01	4	M22520/1-02	Red
		M22520/2-01	7	M22520/2-02	-
	16	M22520/1-01	4	M22520/1-02	Blue
18	16	M22520/1-01	5	M22520/1-02	Blue
16	16	M22520/1-01	6	M22520/1-02	Blue
14	12	M22520/1-01	7	M22520/1-02	Yellow
12	12	M22520/1-01	8	M22520/1-02	Yellow

(1) Make a selection of a crimp tool from Table 10.

(2) Put the end of the wire in the crimp barrel of the contact. Refer to Figure 14.

Make sure that:

- All of the strands of the conductor are in the crimp barrel
- The conductor can be seen in the inspection hole
- The distance from the end of the insulation to the crimp barrel is not more that 0.03 inch.



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POSITION OF THE WIRE IN THE CRIMP BARREL OF THE CONTACT
Figure 14

(3) Crimp the contact.

Make sure that:

- All of the strands of the conductor are in the crimp barrel
- The conductor can be seen in the inspection hole
- The distance from the end of the insulation to the crimp barrel is not more that 0.03 inch.

C. Contact Insertion

NOTE: If a backshell is specified, the necessary backshell components must be installed on the wire harness before the insertion of the contacts into the connector. Refer to Paragraph 5.E..

Table 11
CONTACT INSERTION TOOLS

Crimp Barrel Size	Insertion Tool	
	Part Number	Color
20	CIET20-1	Red
	M81969/14-02	Red
	M83723/31-20	Red
	MS27534-20	Red
	NAS1664-20	Red
16	CIET16-3	Blue
	M81969/14-03	Blue
	M83723/31-16	Blue
	MS27534-16	Blue
	NAS1664-16	Blue
12	M81969/14-04	Yellow
	M83723/31-12	Yellow
	MS27534-12	Yellow
	NAS1664-12	Yellow

(1) Make a selection of an insertion tool from Table 11.

(2) Put the contact assembly in the insertion tool.

(3) Axially align the tool and the contact cavity.

(4) Carefully push the contact into the contact cavity until it stops.

Make sure that the tool and the contact cavity stay axially aligned.

CAUTION: DO NOT USE MORE THAN THE NECESSARY AMOUNT OF FORCE TO PUSH THE TOOL INTO THE CONTACT CAVITY. DAMAGE TO THE CONTACT RETENTION CLIPS CAN OCCUR.

CAUTION: DO NOT TURN THE TOOL CLOCKWISE OR COUNTERCLOCKWISE WHEN IT IS IN THE CONTACT CAVITY. DAMAGE TO THE CONTACT RETENTION CLIPS CAN OCCUR.

(5) Carefully pull the tool out of the contact cavity.

Make sure that the tool and the contact cavity stay axially aligned.

(6) Lightly pull the wire to make sure the contact is locked in the connector.

CAUTION: DO NOT PULL THE WIRE WITH A STRONG OR A SUDDEN FORCE. THE FORCE CAN CAUSE DAMAGE TO THE CONNECTOR OR THE CONTACT.

CAUTION: DO NOT MAKE A DENT IN THE WIRE INSULATION WITH THE FINGERNAILS. DAMAGE TO THE WIRE INSULATION CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE WIRE.

(7) If the contact is not locked in the contact cavity:

(a) Pull the contact assembly out of the contact cavity.

(b) Do Step 5.C.(2) through Step 5.C.(6) again.

D. Seal of an Empty Contact Cavity

All empty contact cavities must be sealed. Refer to Subject 20-60-08.

E. Backshell and Strain Relief Assembly

Refer to Subject 20-60-09.

6. APPROVED TOOL SUPPLIERS

A. Contact Removal Tools

Table 12
CONTACT REMOVAL TOOL SUPPLIERS

Removal Tool	Supplier
CET12-16	ITT Cannon
CET16-21	ITT Cannon
CET20-24	ITT Cannon
CIET16-3	ITT Cannon
CIET20-1	ITT Cannon
M81969/14-02	QPL
M81969/14-03	QPL
M81969/14-04	QPL
M81969/30-02	QPL
M81969/30-03	QPL
M81969/30-04	QPL
M83723/31-12	QPL
M83723/31-16	QPL
M83723/31-20	QPL
MS27534-12	QPL
MS27534-16	QPL
MS27534-20	QPL

Table 12 CONTACT REMOVAL TOOL SUPPLIERS (Continued)

Removal Tool	Supplier
NAS1664-12	QPL
NAS1664-16	QPL
NAS1664-20	QPL

B. Contact Crimp Tools

Table 13
CONTACT CRIMP TOOL SUPPLIERS

Crimp Tool	Supplier
M22520/1-01	QPL
M22520/1-02	QPL
M22520/2-01	QPL
M22520/2-02	QPL

C. Contact Insertion Tools

Table 14
CONTACT INSERTION TOOL SUPPLIERS

Insertion Tool	Supplier
CIET16-3	ITT Cannon
CIET20-1	ITT Cannon
M81969/14-02	QPL
M81969/14-03	QPL
M81969/14-04	QPL
M83723/31-12	QPL
M83723/31-16	QPL
M83723/31-20	QPL
MS27534-12	QPL
MS27534-16	QPL
MS27534-20	QPL
NAS1664-12	QPL
NAS1664-16	QPL
NAS1664-20	QPL

CORY AND TRI-STAR CSLT2-21P() CONNECTORS

TABLE OF CONTENTS

CORY AND TRI-STAR CSLT2-21P() CONNECTORS

This rear release connector subject is relocated from:

- 20-61-29 "Cory and Tri-Star CSLT2-21P() Connectors"

to:

- 20-63-22 "Cory and Tri-Star CSLT2-21P() Connectors"

1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

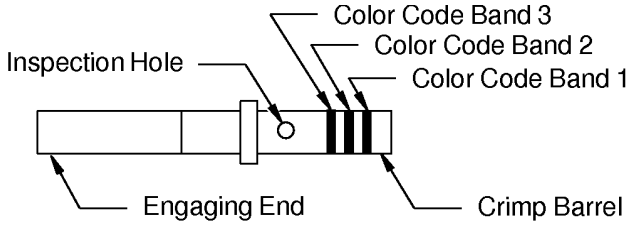
Table 1
CONNECTOR PART NUMBERS

Part Number	Type	Supplier
CSLT2-21P()	Plug	Cory Components
CSLT2-21P()	Plug	Tri-Star

Table 2
ALTERNATIVE CONNECTOR PART NUMBERS

Specified Connector		Alternative Connector	
Part Number	**Supplier**	**Part Number**	**Supplier**
CSLT2-21P()	Cory Components	CSLT2-21P()	Tri-Star

B. Contact Part Numbers



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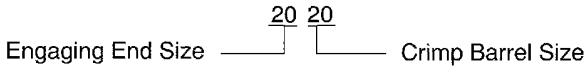
LOCATION OF THE CONTACT COLOR BANDS
Figure 1



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EXAMPLE OF A CONTACT SIZE
Figure 2

Table 3
CONTACT PART NUMBERS

Contact Size		Contact Type	Color Code		Part Number	Supplier
Engaging End	Crimp Barrel		Band	Color		
20	18	Socket	-	-	CB005-5P	Cory Components
					CB005-5P	Tri-Star
	20	Socket	1	Orange	M39029/63-368	QPL
			2	Blue	M39029/63-368	QPL
			3	Gray	M39029/63-368	QPL

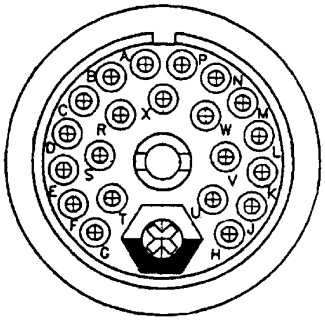
Table 4
ALTERNATIVE CONTACT PART NUMBERS

Specified Contact		Alternative Contact	
Part Number	Supplier	Part Number	Supplier
CB005-5P	Cory Components	CB005-5P	Tri-Star

C. Insert Configurations

Table 5
INSERT CONFIGURATIONS

Insert Configuration	Contact Cavity		Reference
	Count	Size	
21	21	20	Figure 3



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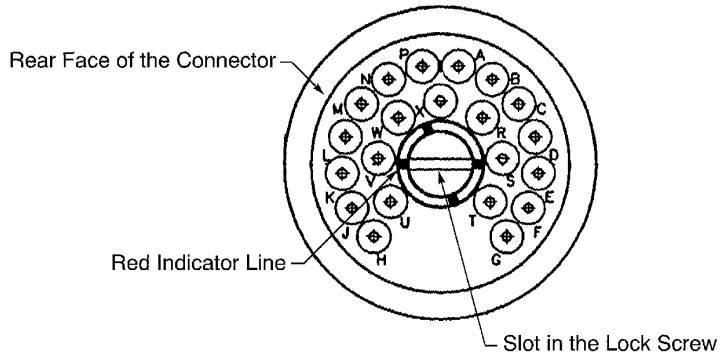
21 INSERT CONFIGURATION
Figure 3

2. CONNECTOR DISASSEMBLY

A. Connector Separation

(1) Make a selection of a screwdriver.

(2) Turn the screw counterclockwise to align the slots on the screw head with the red indicator lines. Refer to Figure 4.



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POSITION OF THE LOCK SCREW
Figure 4

(3) Pull the plug from the receptacle.

B. Contact Removal

Table 6
CONTACT REMOVAL TOOLS

Removal Tool	Color
DRK145	-
M81969/1-02	White

(1) Make a selection of a contact removal tool from Table 6.

(2) Put the tip of the tool on the wire.

(3) At the rear of the connector, axially align the tool and the contact cavity.

(4) Carefully push the tool into the contact cavity until it stops.

Make sure that the tool stays aligned with the contact cavity.

CAUTION: DO NOT USE MORE THAN THE NECESSARY AMOUNT OF FORCE TO PUSH THE TOOL INTO THE CONTACT CAVITY. DAMAGE TO THE CONTACT RETENTION CLIPS CAN OCCUR.

CAUTION: DO NOT TURN THE TOOL CLOCKWISE OR COUNTERCLOCKWISE WHEN IT IS IN THE CONTACT CAVITY. DAMAGE TO THE CONTACT RETENTION CLIPS CAN OCCUR.

(5) Hold the wire against the tool.

(6) Pull the tool and the wire out from the contact cavity at the same time. Make sure that the tool stays aligned with the contact cavity.

(7) If the contact is not released:

(a) Carefully remove the tool.

(b) Turn the tool approximately 90 degrees.

(c) Do Step 2.B.(2) through Step 2.B.(6) again.

3. CONNECTOR ASSEMBLY

A. Contact Assembly

Table 7
INSULATION REMOVAL LENGTH

Wire Size (AWG)	Crimp Barrel Size	Removal Length L (inch)		Special Instructions
		Target	Tolerance	
26	20	0.40	±0.03	Fold back conductor
24	20	0.20	±0.03	-
22	20	0.20	±0.03	-
20	20	0.20	±0.03	-

Table 8
CONTACT CRIMP TOOLS

Wire Size (AWG)	Contact Crimp Barrel Size	Crimp Tool		
		Basic Unit		Locator
		Part Number	Setting	
26	20	AFM 8	6	K13-1
			6	M22520/2-08
		M22520/2-01	6	K13-1
			6	M22520/2-08
		WA22	6	K13-1
			6	M22520/2-08
		WA22LC	6	K13-1
			6	M22520/2-08

CORY AND TRI-STAR CSLT2-21P() CONNECTORS

Table 8 CONTACT CRIMP TOOLS (Continued)

Wire Size (AWG)	Contact Crimp Barrel Size	Crimp Tool		
		Basic Unit		Locator
		Part Number	Setting	
24	20	AFM 8	5	K13-1
			5	M22520/2-08
		M22520/2-01	5	K13-1
			5	M22520/2-08
		MS3191-1	-	P20-3191-1
		ST2220-1-Y	-	11697-1
			-	ST2220-1-43
		WA22	5	K13-1
			5	M22520/2-08
		WA22AP	5	KAP13-1
		WA22LC	5	K13-1
			5	M22520/2-08
22	20	AFM 8	6	K13-1
			6	M22520/2-08
		M22520/2-01	6	K13-1
			6	M22520/2-08
		MS3191-1	-	P20-3191-1
		ST2220-1-Y	-	11697-1
			-	ST2220-1-43
		WA22	6	K13-1
			6	M22520/2-08
		WA22AP	6	KAP13-1
		WA22LC	6	K13-1
			6	M22520/2-08

CORY AND TRI-STAR CSLT2-21P() CONNECTORS

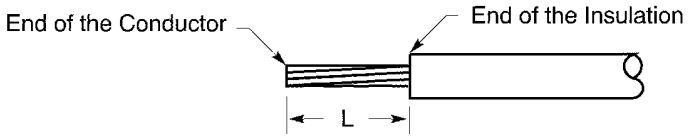
Table 8 CONTACT CRIMP TOOLS (Continued)

Wire Size (AWG)	Contact Crimp Barrel Size	Crimp Tool		
		Basic Unit		Locator
		Part Number	Setting	
20	20	AFM 8	7	K13-1
			7	M22520/2-08
		M22520/2-01	7	K13-1
			7	M22520/2-08
		MS3191-1	-	P20-3191-1
		ST2220-1-Y	-	11697-1
			-	ST2220-1-43
		WA22	7	K13-1
			7	M22520/2-08
		WA22AP	7	KAP13-1
		WA22LC	7	K13-1
			7	M22520/2-08
18	18	M22520/2-01	8	K250

(1) Remove the necessary length of insulation from the end of the wire.

Refer to:

- Figure 5
- Table 7 for the insulation removal length
- Subject 20-00-15 for the insulation removal procedures.



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WIRE PREPARATION
Figure 5

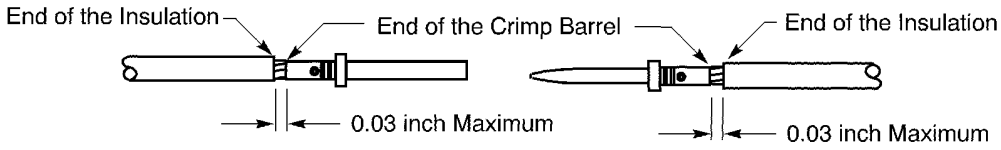
(2) Make a selection of a crimp tool from Table 8.

(3) Push the conductor into the crimp barrel of the contact until the end of the conductor is against the end of the crimp barrel. Refer to Figure 6.

Make sure that:

- All the strands of the conductor are in the crimp barrel

- The conductor can be seen in the inspection hole
- The distance from the end of the insulation to the end of the crimp barrel is not more than 0.03 inch.



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POSITION OF WIRE IN THE CRIMP BARREL OF THE CONTACT
Figure 6

(4) Crimp the contact.

Make sure that:

- All the strands of the conductor are in the crimp barrel
- The conductor can be seen in the inspection hole
- The distance from the end of the insulation to the end of the crimp barrel is not more than 0.03 inch.

B. Contact Insertion

Table 9
CONTACT INSERTION TOOLS

Insertion Tool	Color
DAK145	-
M81969/1-02	Red

(1) Make a selection of a contact removal tool from Table 9.

(2) Put the contact assembly in the tool.

(3) Axially align the insertion tool and the contact cavity at the rear of the connector.

(4) Carefully push the contact assembly into the contact cavity until it stops.

(5) Lightly pull the wire to make sure that the contact is locked in the contact cavity.

CAUTION: DO NOT PULL THE WIRE WITH A STRONG OR A SUDDEN FORCE. THE FORCE CAN CAUSE DAMAGE TO THE CONNECTOR OR THE CONTACT.

CAUTION: DO NOT MAKE A DENT IN THE WIRE INSULATION WITH THE FINGERNAILS. DAMAGE TO THE WIRE INSULATION CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE WIRE.

(6) If the contact is not locked in the contact cavity:

(a) Pull the contact assembly out of the contact cavity.

(b) Do Step 3.B.(2) through Step 3.B.(5) again.

4. CONNECTOR INSTALLATION

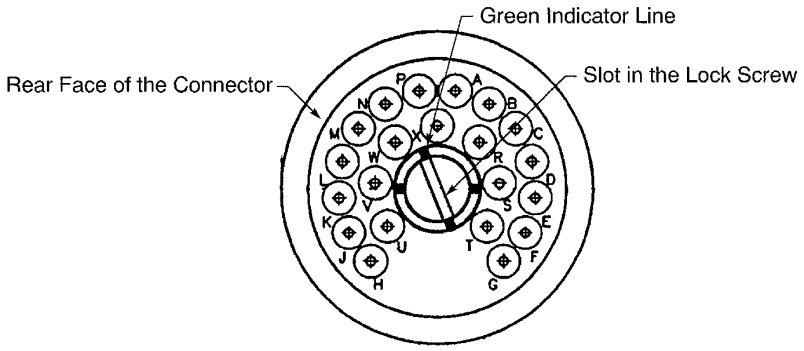
A. Plug and Receptacle Connection

(1) Make a selection of a screwdriver.

(2) Align the plug and the receptacle.

(3) Push the plug into the receptacle until it stops.

(4) From the rear of the plug, turn the locking screw clockwise until the slot in the screw are aligned with the green indicator lines. Refer to Figure 7.



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POSITION OF THE LOCK SCREW
Figure 7

5. APPROVED TOOL SUPPLIERS

A. Crimp Tools

Table 10
CRIMP TOOL SUPPLIERS

Crimp Tool	Supplier
11697-1	Buchanan
AFM 8	Daniels
K13-1	Daniels

CORY AND TRI-STAR CSLT2-21P() CONNECTORS

Table 10 CRIMP TOOL SUPPLIERS (Continued)

Crimp Tool	Supplier
K250	Daniels
K41	Daniels
KAP13-1	Daniels
M22520/2-01	QPL
M22520/2-06	QPL
MS3191-1	QPL
P20-3191-1	ITT Cannon
ST2220-1-43	Boeing
ST2220-1-Y	Boeing
WA22	Daniels
WA22AP	Daniels
WA22LC	Daniels

B. Insertion and Removal Tools

Table 11
INSERTION AND REMOVAL TOOL SUPPLIERS

Tool	Supplier
DAK145	Daniels
DRK145	Daniels
M81969/1-02	QPL