ASSEMBLY OF VEAM 115 SERIES CONNECTORS

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ASSEMBLY OF VEAM 115 SERIES CONNECTORS

This subject gives the procedures to assemble Veam 115 Series connectors with:

- MIL-W-16878 Type EE or Class 2 cable
- ENDEVCO 16833 cable
- BMS 13-10 or BMS 13-16 cable.

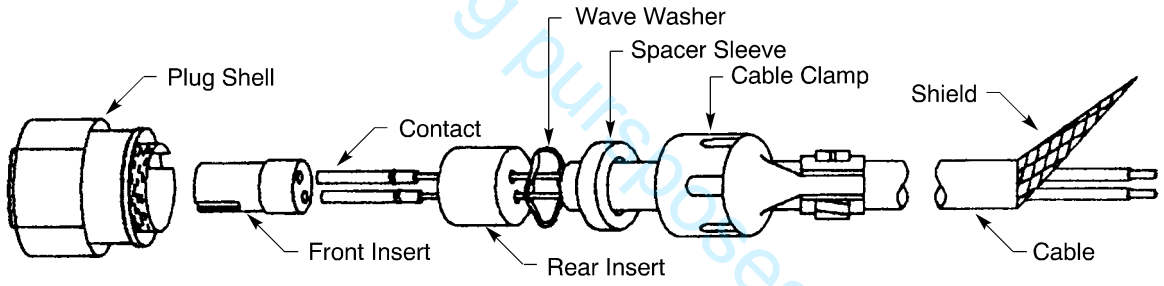
1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

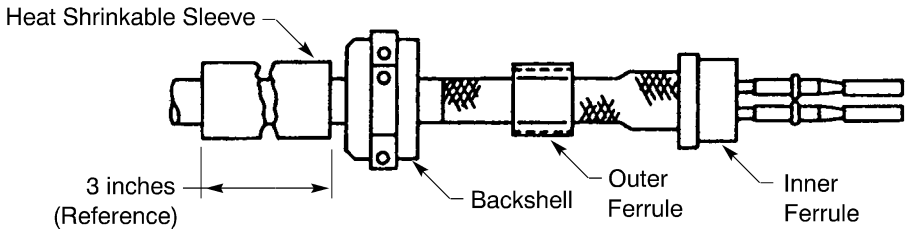
Amphenol no longer makes the 115 Series connectors. The connectors are made by Veam in Apese, Milano, Italy.

Table 1
VEAM 115 SERIES CONNECTOR PART NUMBERS

Part Number	Supplier
115-5051	Veam
115-5051-1	Veam
115-5066	Veam
115-5074	Veam



VEAM 115-5066 AND 115-5074 CONNECTORS
Figure 1



VEAM 115-5051 AND 115-5051-1 CONNECTORS
Figure 2

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B. Contact Part Numbers

Table 2
CONTACT PART NUMBERS

Contact		Connector
Part Number	Supplier	
175-270-02	Veam	115-5051
		115-5051-1
115-2454	Veam	115-5066
115-2522-02	Veam	115-5074

C. Accessory Part Numbers

Table 3
VEAM 115 SERIES CONNECTOR ACCESSORIES

Accessory	Part Number	Supplier
Cable Clamp	10-536997-85	Bendix
	115-2458	Veam
Ferrule, Inner	GSB-134	Thomas & Betts
Ferrule, Outer	GSC-187	Thomas & Betts
	BACS13S232C	Boeing
Insert, Front	115-2320	Veam
Insert, Rear	115-2456	Veam
Kit	20279	ENDEVCO
Shell	115-2445	Veam
Spacer Sleeve	115-2457	Veam
	20215	ENDEVCO
Wave Washer	115-2383	Veam

NOTE: The ENDEVCO 20279 Kit includes the Bendix 10-536997-85 cable clamp and the ENDEVCO 20215 spacer sleeve.

NOTE: Refer to the D-590 Boeing to Vendor Cross Reference Index for the supplier part numbers for the BACS13S ferrules.

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D. Contact Crimp Tools

Table 4
CONTACT CRIMP TOOLS

Basic Unit		Locator		
Part Number	**Supplier**	**Part Number**	**Color**	**Supplier**
MS3191-1	QPL	MS3191-20	Red	QPL
ST2220-1-Y	Boeing	ST2220-1-1	-	Boeing

2. CONNECTOR DISASSEMBLY

A. Veam 115-5051 and 115-5051-1 Connectors with BMS 13-10 or BMS 13-16 Cable

This procedure applies to BMS 13-10 or BMS 13-16 Type III Class 2 AWG 20 cable.

(1) Remove the lockwire and heat shrinkable sleeve.

(2) Remove the backshell from the connector body.

(3) Slide the ferrule assembly away from the connector body.

(4) Cut the wire at the back of the connector.

Refer to Subject 20-61-00.

3. ASSEMBLY OF THE VEAM 115-5066 CONNECTOR WITH MIL-W-16878 CABLE

The MIL-W-16878 cable in this procedure is Type EE or Class 2 cable with AWG 20 wire.

A. Contact Assembly

Table 5
GSC-187 OUTER FERRULE CRIMP TOOLS

Basic Unit		Die		
Part Number	**Supplier**	**Part Number**	**Position**	**Supplier**
44-000	Balmar	44-141	B	Balmar
620175	Buchanan	620309	B	Buchanan
HX4	Daniels	Y141	B	Daniels
M22520/5-01	QPL	M22520/5-43	B	QPL
ST2966M	Boeing	-	5	Boeing
ST965-1	Boeing	-	M	Boeing
ST965A-6	Boeing	-	-	-
ST965B	Boeing	ST965B-6	-	Boeing
WT202-06-08	Thomas & Betts	-	M	-
WT206	Thomas & Betts	-	-	-
WT406	Thomas & Betts	-	-	-
WT440	Thomas & Betts	WT-4406	-	Thomas & Betts

Refer to Figure 1 and Table 3.

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ASSEMBLY OF VEAM 115 SERIES CONNECTORS

(1) Slide the cable clamp down the cable.

(2) Slide a 2-1/2 inch ±1/16 inch length of 1/4 inch diameter TFE sleeving down the cable.

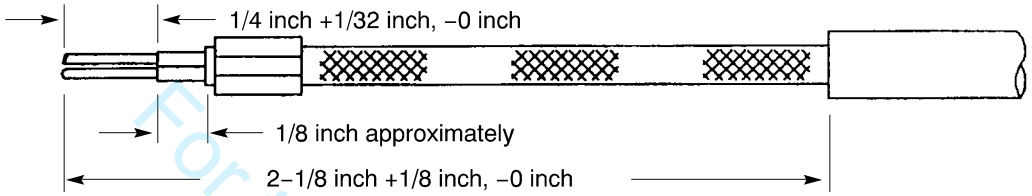
(3) Slide an additional 1-3/8 inch ±1/16 inch length of 3/16 inch diameter TFE sleeving down the cable.

(4) Remove 2-1/8 inches +1/8 inch, -0 inch of the cable jacket. Refer to Figure 3.

Make sure to avoid any nicks on the shield.

(5) Remove approximately 3/8 inch of the shield from end of the cable.

(6) Remove 1/4 inch +1/32 inch, -0 inch of wire insulation.



PREPARATION OF THE MIL-W-16878 CABLE
Figure 3

(7) Slide an outer ferrule over the shield.

(8) Flare the end of the shield.

(9) Slide an inner ferrule under the shield until the outer edge of the ferrule is flush with the end of the shield.

(10) Position the outer ferrule over the shield.

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

(12) Crimp the outer ferrule.

(13) Remove the excess end of the shield so that it is flush with the forward edge of outer ferrule.

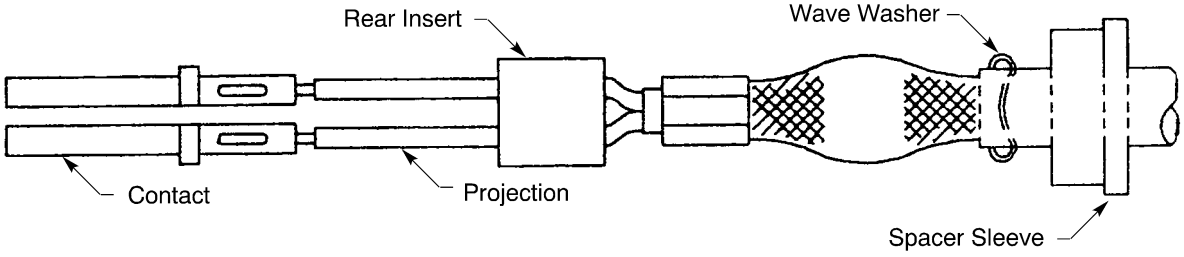
(14) Slide the spacer sleeve and wave washer over the end of the cable.

(15) Push the shield back approximately 1 inch (as far as necessary to do the next step). Refer to Figure 4.

(16) Slide the rear insert over the wires.

Make sure that:

- The lay of the conductor strands is not changed
- The shoulder of the spacer sleeve faces away from the end of the cable
- The face of the rear insert with the two small projections faces toward the end of the cable.



VEAM 115-5066 CONNECTOR ASSEMBLED WITH MIL-W-16878 CABLE
Figure 4

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

(18) Put each conductor completely into the crimp barrel of each contact.

(19) Crimp the contacts onto the wires.

(20) Slide the rear insert forward and carefully seat the contacts in the cavities. Refer to Figure 5.

Make sure that the flats of the contact shoulders face each other.

(21) Reform the shield over the wires so that end of the inner ferrule is as close as possible, approximately 1/8 inch, to the back face of the rear insert. Refer to Figure 5.

(22) Put the short TFE sleeve over the cable so that the end away from the contacts is aligned with the end of the cable jacket.

(23) Shrink the sleeve into place.

The maximum gap between the end of the sleeve and cable jacket is 1/16 inch.

(24) Place the long TFE sleeve so that the forward end is flush with the exposed end of the inner ferrule. Refer to Figure 5.

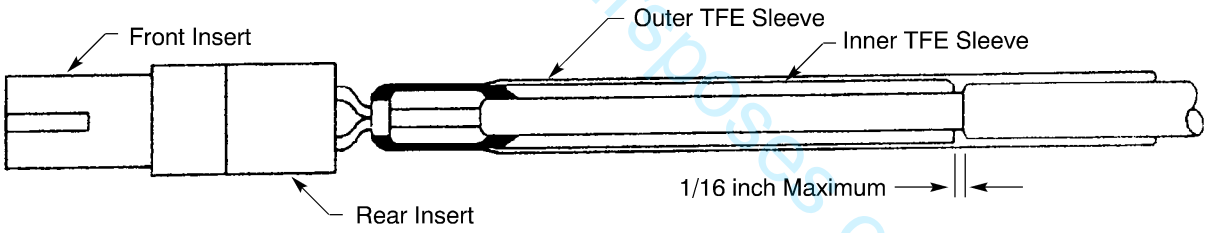
(25) Shrink the sleeve into place.

B. Contact Insertion

(1) Insert the front end of the contacts into the cavities of the front insert.

(2) Rotate the contacts so the flats on the contact shoulder enter the recess of the front insert. Refer to Figure 5.

CAUTION: DO NOT FORCE THE FRONT AND REAR INSERTS TOGETHER.



POSITION OF THE CONTACT AND THE TFE SLEEVE
Figure 5

C. Connector Assembly

(1) Slide the insert assembly into the shell.

If necessary, rotate the assembly to engage the keyway and shell key.

(2) Slide the wave washer and push it against the back face of the rear insert.

(3) Slide the spacer sleeve into the shell so that the shoulder rests against the end of the shell.

(4) Slide the cable clamp down and engage the threads of the clamp with the shell. Refer to Figure 6.

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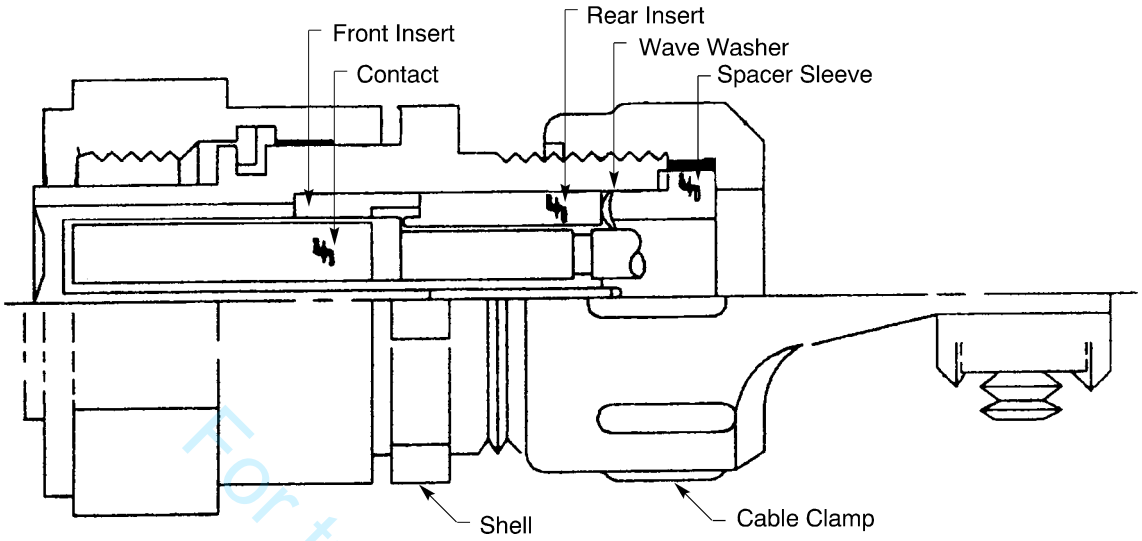
ASSEMBLY OF VEAM 115 SERIES CONNECTORS



POSITION OF THE CONNECTOR CABLE CLAMP
Figure 6

(5) Tighten the clamp.

(6) Remove the clamp bars or saddles.

(7) Build up the cable diameter with filler tape.

(8) Replace the clamp bars and tighten the screw.

4. ASSEMBLY OF THE VEAM 115-5066 CONNECTOR WITH ENDEVCO 16833 CABLE

A. Contact Assembly

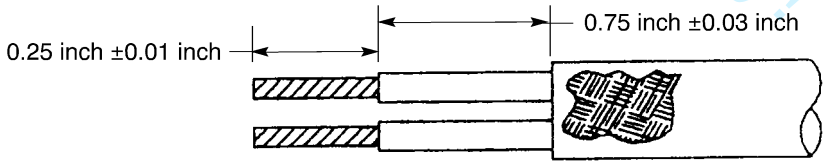
(1) Prepare the cable. Refer to Figure 7.

Make sure that all cuts are square.

(a) Remove 1.0 inch ±0.03 inch of the cable jacket.

(b) Remove 1.0 inch ±0.03 inch of the shield.

(c) Remove 0.25 inch ±0.01 inch of wire insulation from each wire.



PREPARATION OF THE ENDEVCO 16833 CABLE
Figure 7

(2) Untwist the two conductors in the outer carbon layer so that they are parallel. Refer to Figure 8.

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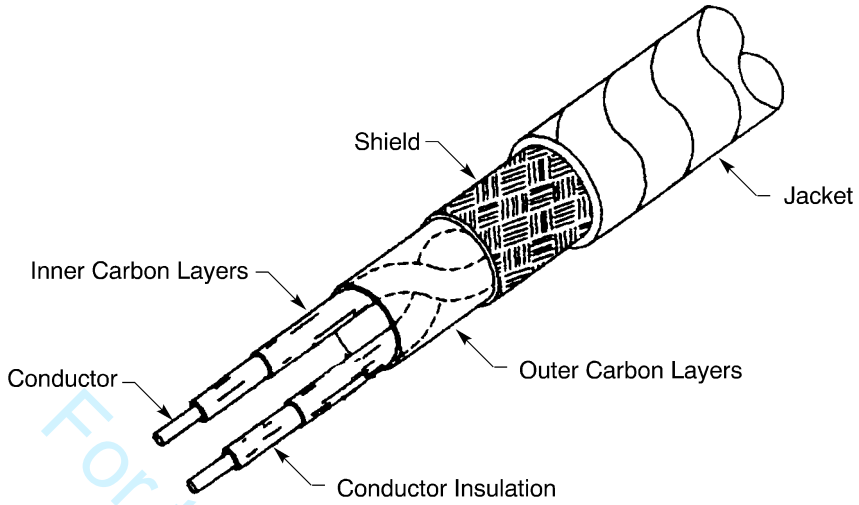

CONFIGURATION OF THE ENDEVCO 16833 CABLE
Figure 8

(3) Cut the outer carbon layer along the groove between the two conductors and peel off the outer carbon layer.

(4) Remove any excess carbon.

(5) Remove the inner carbon layer.

(6) To remove all residue of carbon from the primary insulation of the conductors:

(a) Sandblast the conductors or brush them with a fiberglass eraser

(b) Clean the conductors with acetone or another suitable solvent.

(7) Remove 0.25 inch ±0.01 inch of insulation from each conductor. Refer to Figure 7.

(8) To make sure there are no carbon tracks, check the insulation resistance at 500Vdc between:

- The conductors
- The shield and each conductor.

(9) To make a 6917M19A cable:

(a) Discard the spacer sleeve and cable clamp supplied with the Veam 115-5066 connector

(b) Use the ENDEVCO spacer sleeve and the Bendix cable clamp that is supplied in the ENDEVCO 20279 Kit.

Refer to Table 3.

(10) Push these components over the cable:

- Two 2 inch lengths of 1/4 inch diameter Teflon 4X sleeve
- The cable clamp
- The spacer sleeve
- The wave washer.

Refer to Figure 1.

(11) Push the rear insert over the conductors so that it is against the shield.

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

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(13) Insert the bare conductors into the crimp barrel of each contact.

Make sure that:

- The insulation is against the contact
- The conductor strands are visible in the inspection hole.

(14) Crimp the contacts onto each conductor.

(15) Push the first Teflon sleeve against the rear insert and shrink it into place.

(16) Push the second Teflon sleeve over the first and against the rear insert and shrink it into place.

B. Contact Insertion

(1) Insert the socket contacts into the front insert.

(2) Insert the wired contacts into the connector.

C. Connector Assembly

(1) Engage the cable clamp threads on the connector body and tighten.

5. ASSEMBLY OF THE VEAM 115-5074 CONNECTOR WITH ENDEVCO 16833 CABLE (AVM)

A. Contact Assembly

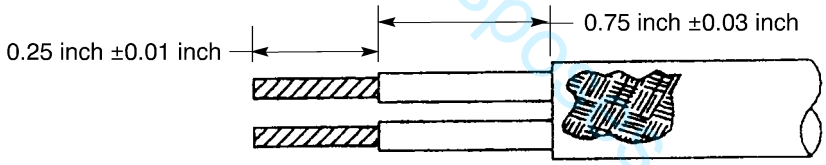
(1) Prepare the cable. Refer to Figure 9.

Make sure that all cuts are square.

(a) Remove 1.0 inch ±0.03 inch of the cable jacket.

(b) Remove 1.0 inch ±0.03 inch of the shield.

(c) Remove 0.25 inch ±0.01 inch of wire insulation from each wire.



PREPARATION OF THE ENDEVCO 16833 CABLE
Figure 9

(2) Untwist the two conductors within the outer carbon layer so that they are parallel. Refer to Figure 10.

(3) Cut the outer carbon layer along the groove between the two conductors and peel off the outer carbon layer.

(4) Remove any excess carbon.

(5) Remove the inner carbon layer.

(6) To remove all residue of carbon from the primary insulation of the conductors:

(a) Sandblast the conductors or brush them with a fiberglass eraser

(b) Clean the conductors with acetone or another suitable solvent.

(7) Remove 0.25 inch ±0.01 inch of insulation from each conductor. Refer to Figure 9.

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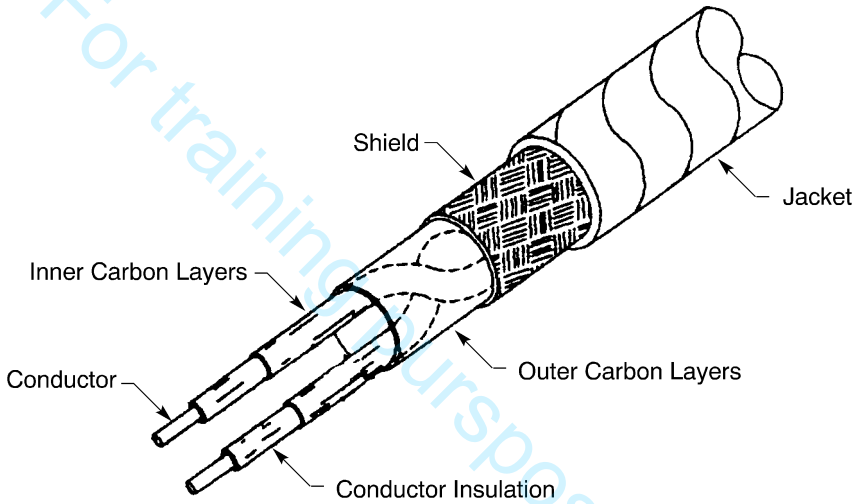
(8) To make sure there are no carbon tracks, check the insulation resistance at 500Vdc between:
- The conductors
- The shield and each conductor.

(9) Put these components on the cable:
- Two 2 inch lengths of 1/4 inch diameter Teflon 4X sleeve
- The cable clamp
- The spacer sleeve
- The wave washer.

Refer to Figure 1.

(10) Push the rear insert over the conductors so that it is against the shield.



CONFIGURATION OF THE ENDEVCO 16833 CABLE
Figure 10

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

(12) Insert each of the bare conductors into the crimp barrel of each contact.
Make sure that:
- The insulation is against the contact
- The conductor strands are visible in the inspection hole.

(13) Crimp the contacts onto each conductor.

(14) Push the first Teflon sleeve against the rear insert and shrink it into place.

(15) Push the second Teflon sleeve over the first and against the rear insert and shrink it into place.

B. Contact Insertion

(1) Insert the socket contacts into front insert.

(2) Insert the wired contacts into the connector.

C. Connector Assembly

(1) Engage the cable clamp threads on the connector body and tighten.

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6. ASSEMBLY OF THE VEAM 115-5051 AND 115-5051-1 CONNECTORS WITH BMS 13-10 OR BMS 13-16 CABLE

This procedure applies to BMS 13-10 or BMS 13-16 Type III Class 2 AWG 20 cable.

A. Contact Assembly

Table 6
CONTACT CRIMP TOOLS

Basic Unit		Locator		
Part Number	Supplier	Part Number	Color	Supplier
ST2220-1-Y	Boeing	ST2220-1-43	-	Boeing

Table 7
BACS13S232C OUTER FERRULE CRIMP TOOLS

Basic Unit		Die		
Part Number	Supplier	Part Number	Position	Supplier
44-000	Balmar	44-143	A	Balmar
612648	Buchanan	612748	-	Buchanan
613214	Buchanan	613846	-	Buchanan
620175	Buchanan	620310	A	Buchanan
HX4	Daniels	Y143	A	Daniels
M22520/5-01	QPL	M22520/5-45	A	QPL
ST2966M	Boeing	-	7	-
ST965-4	Boeing	-	L	-
ST965A-10	Boeing	-	-	-
ST965B	Boeing	ST965B-10	-	Boeing
WT201-03-10	Thomas & Betts	-	L	-
WT210	Thomas & Betts	-	-	-
WT440	Thomas & Betts	WT-4410	-	Thomas & Betts
WT4410	Thomas & Betts	-	-	-

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(1) Prepare the cable. Refer to Figure 11.

Make sure to:

- Make all cuts square
- Avoid nicks on the shield or wire.

(a) Remove 1.50 inches ±0.02 inch of cable jacket.

(b) Remove 0.437 inch ±0.015 inch of shield.

(c) Remove 0.166 inch ±0.020 inch of insulation from each wire.

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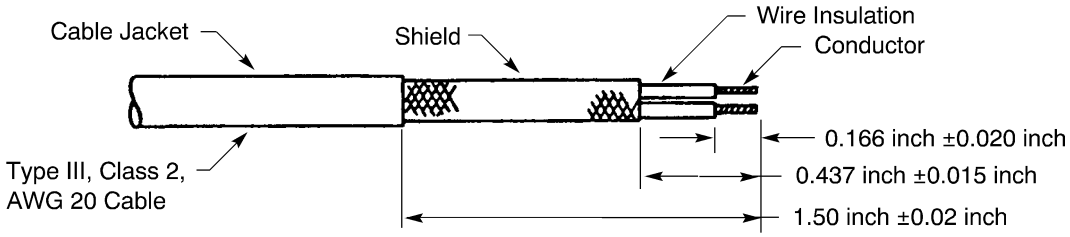
ASSEMBLY OF VEAM 115 SERIES CONNECTORS

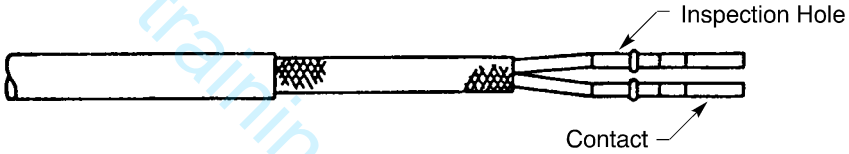


PREPARATION OF BMS 13-10 OR BMS 13-16 CABLE
Figure 11

(2) Insert the bare conductors into the crimp barrel of each contact. Refer to Figure 12.

Make sure that:

- The insulation is against the contact
- The conductor strands can be seen in the inspection hole.



POSITION OF THE CONTACTS ON THE WIRE
Figure 12

(3) Make a selection of a crimp tool from Table 6.

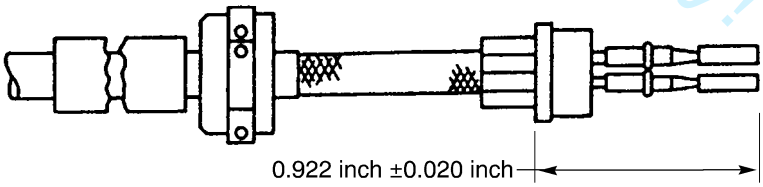
(4) Crimp the contacts onto each conductor.

(5) Push these components over the cable:

- A 3 inch length of heat shrinkable sleeve
- The backshell
- The outer ferrule.

(6) Slide the inner ferrule under the braid. Refer to Figure 2.

(7) Slide the outer ferrule over the shield against the inner ferrule. Refer to Figure 13.



POSITION OF THE OUTER FERRULE CRIMP
Figure 13

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

(9) Crimp the outer ferrule.

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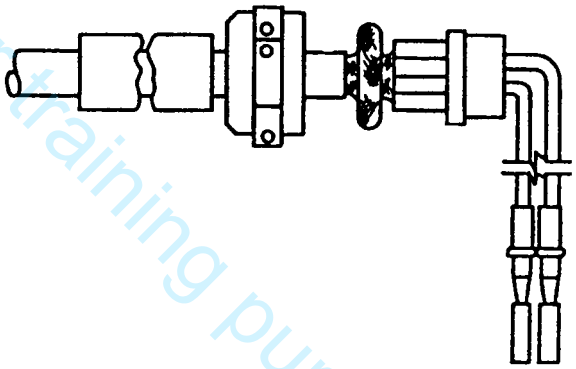
B. Contact Insertion

Table 8
CONTACT INSERTION TOOLS

Insertion Tool	Supplier
294-245	Amphenol
ST2220-2-23	Boeing

(1) Push the crimped ferrule away from the contacts.

(2) Push the shield so it collapses and bend the wires approximately 90 degrees to provide clearance for the contact insertion tool. Refer to Figure 14.



PREPARATION FOR CONTACT INSERTION
Figure 14

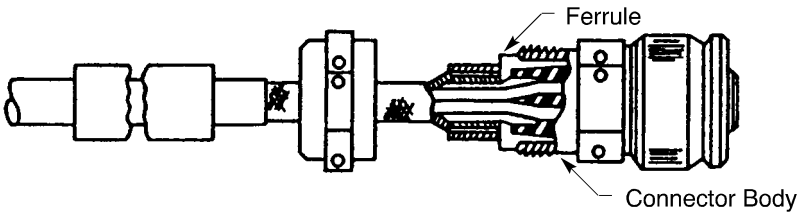
(3) Make a selection of an insertion tool from Table 8.

(4) Insert the contact into each contact cavity.

To make sure that each contact is fully seated, lightly pull on each wire.

C. Connector Assembly

(1) Insert the ferrule assembly into the connector body. Refer to Figure 15.



INSERTION OF THE FERRULE
Figure 15

(2) Thread backshell onto plug shell and tighten into place.

(3) Lockwire the assembly.

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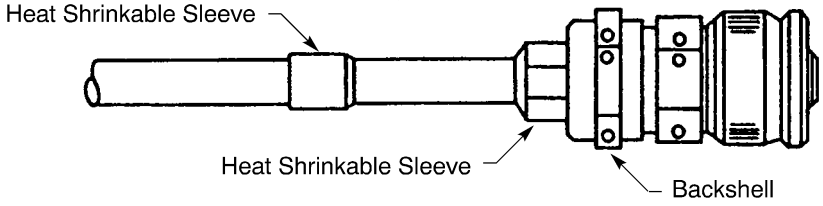
(4) Slide heat shrinkable sleeve over the outer ferrule and up against the backshell.

(5) Shrink the sleeve into place. Refer to Figure 16.



POSITION OF THE HEAT SHRINKABLE SLEEVE
Figure 16

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ASSEMBLY OF BOEING 60B40052-() AND BURNDY MB6, MB10, MB12, MB13, AND MB24 CONNECTORS

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ASSEMBLY OF BOEING 60B40052-() AND BURNDY MB6, MB10, MB12, MB13, AND MB24 CONNECTORS

1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

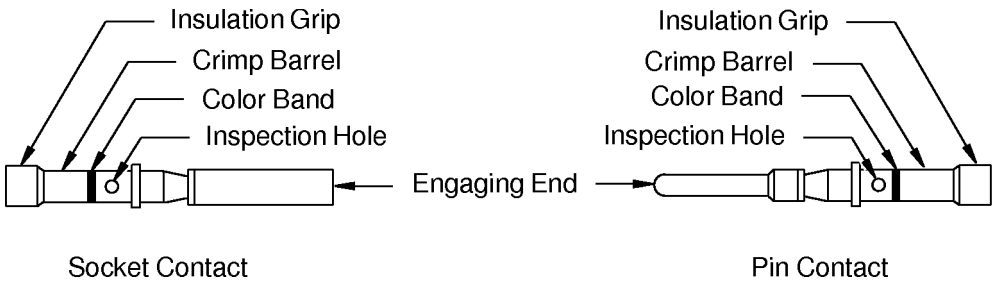
Table 1
CONNECTOR PART NUMBERS

Part Number	Type	Supplier
60B40052-3	Plug	Boeing
60B40052-4	Receptacle	Boeing
MB10P-1	Plug	Burndy
MB10R-6	Receptacle	Burndy
MB12P-1	Plug	Burndy
MB12R-20	Receptacle	Burndy
MB12R-6	Receptacle	Burndy
MB13P-3	Plug	Burndy
MB13R-4	Receptacle	Burndy
MB24P	Plug	Burndy
MB6P-3	Plug	Burndy
MB6R-3	Receptacle	Burndy

Table 2
SUPPLIER PART NUMBERS FOR BOEING STANDARD CONNECTORS

Boeing Standard	Part Number	Supplier
60B40052-3	MB6P-3	Burndy
60B40052-4	MB6R-3	Burndy

B. Standard Contact Part Numbers



FRONT RELEASE CONTACTS
Figure 1

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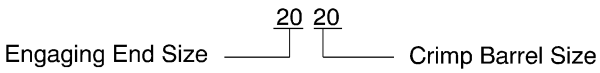

EXAMPLE OF A CONTACT SIZE
Figure 2

Table 3
STANDARD CONTACT PART NUMBERS

Contact Size		Contact Type	Part Number	Supplier
Engaging End	Crimp Barrel			
20	20	Pin	BACC47CN1	Boeing
			BACC47CN1A	Boeing
			BACC47CN1S	Boeing
			LRM20W-5F63	Burndy
		Socket	BACC47CP1A	Boeing
			BACC47CP1S	Boeing
			BACC47CP1T	Boeing
			LRC20W-5F63	Burndy
	18	Pin	48-100-5008P-02	Amphenol
			48-100-5014P-02	Amphenol
		Socket	248-136-2018S-02	Amphenol
	16	Pin	48-100-5007P-02	Amphenol
			48-100-5012P-02	Amphenol
		Socket	248-136-2016S-02	Amphenol

C. Coax Contact Part Numbers

Table 4
COAX CONTACT PART NUMBERS

Size	Part Number	Type	Supplier
12	60B40052-5	Pin	Boeing
	60B40052-6	Socket	Boeing
	CRC280-4	Socket	Cory Components
	CRC280-4	Socket	Tri-Star
	KIT700-42	Pin	Burndy
	KIT700-43	Socket	Burndy

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Table 5
SUPPLIER PART NUMBERS FOR BOEING STANDARD COAX CONTACTS

Boeing Standard	Part Number	Supplier
60B40052-5	KIT700-42	Burndy
60B40052-6	KIT700-43	Burndy

D. Heat Shrinkable Boot Part Numbers

Table 6
HEAT SHRINKABLE BOOT PART NUMBERS

Boot	Supplier
204A121-3-01	Raychem

E. Necessary Materials

Table 7
NECESSARY MATERIALS

Material	Specification or Part Number	Supplier
Adhesive	S-1006	Raychem
	S-1009	Raychem
Emery Cloth	No. 240	Available Source
	No. 320	Available Source
Lacquer Thinner	TT-T-266	Available Source
Sleeve, Heat Shrinkable	MIL-LT	Raychem
	AMS-DTL-23053/5 Class 1	Available Source
Solvent	TT-N-95	Available Source

2. CONNECTOR DISASSEMBLY

A. Removal of Standard Contacts

NOTE: After a standard contact is installed in an MB6P-3 connector, it cannot be removed.

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Table 8
CONTACT REMOVAL TOOLS

Crimp Barrel Size	Removal Tool
20	294-89
	AT 2020
	DRK20
	M81969/19-06
	MS24256R20
	RX20-24V5
	ST2220-3-13

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(1) Make a selection of a removal tool from Table 8.

(2) If the connector has a strain relief leg, remove the wire harness tie that holds the wire harness.

(3) Axially align the tool with the contact cavity at the front face of the connector.
Make sure that the plunger of the removal tool is fully retracted.

CAUTION: DO NOT INSERT THE TOOL INTO THE REAR OF THE CONNECTOR. DAMAGE TO THE CONNECTOR WILL OCCUR.

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

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

(5) Push the plunger of the tool forward until it stops.

(6) Carefully pull the tool out from the contact cavity.
Make sure that the tool stays axially aligned with the contact cavity.

(7) Pull the contact out of the contact cavity from the rear of the connector.

B. Removal of Coax Contacts

NOTE: After a coax contact is installed in an MB6P-3 connector, it cannot be removed.

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Table 9
COAX CONTACT REMOVAL TOOLS

Contact Size	Removal Tool
12	294-73
	AT 2012
	DRK56-12
	M81969/19-02
	MS24256R12
	MS90456-12
	RX12-7
	ST2220-3-15

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

(2) If the connector has a strain relief leg, remove the wire harness tie that holds the wire harness.

(3) Remove the coax contact from the connector.

Make sure that the center contact is not removed from the coax contact.

CAUTION: DAMAGE TO THE COAX CONTACT AND THE CONNECTOR CAN OCCUR IF THE CENTER CONTACT IS REMOVED.

(a) At the front face of the connector, axially align the tool with the contact cavity.

Make sure that the plunger of the removal tool is fully retracted.

CAUTION: DO NOT INSERT THE TOOL INTO THE REAR OF THE CONNECTOR. DAMAGE TO THE CONNECTOR WILL OCCUR.

(b) Push the tool into the contact cavity until it stops.

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

(c) Push the plunger of the tool forward until it stops.

(d) Carefully pull the tool out from the contact cavity.

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

(e) Pull the contact out of the contact cavity from the rear of the connector.

3. ASSEMBLY OF BURNDY MB10, MB12, MB13, AND MB24 SERIES CONNECTORS

A. Assembly of Standard Contacts

For the procedures to assemble a standard contact, refer to Paragraph 6.A.

B. Assembly of Coax Contacts

For the procedure to assemble a coax contact, refer to Paragraph 6.C.

C. Standard Contact Insertion

For the procedure to install a standard contact, refer to Paragraph 7.A.

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D. Coax Contact Insertion

For the procedure to install a coax contact, refer to Paragraph 7.B.

E. Seal of an Empty Contact Cavity

The seal of an empty contact cavity is not necessary.

F. Strain Relief Assembly

(1) Attach the wire harness to the strain relief leg with a plastic tie strap or a wire harness tie material. Refer to Subject 20-10-11 for the procedure to assemble the wire harness tie.

Make sure that the knot or the head of the plastic tie strap is opposite the strain relief leg.

4. ASSEMBLY OF THE BURNDY MB6R-3 CONNECTORS

This paragraph gives the procedure to assemble the MB6R-3 connectors with these wires and cables:

- A BMS13-42 wire
- A BMS13-48 wire
- A Raychem 44A7418 multiconductor cable
- A Raychem 5026A1018 coax cable
- A Raychem 5026A1318 coax cable.

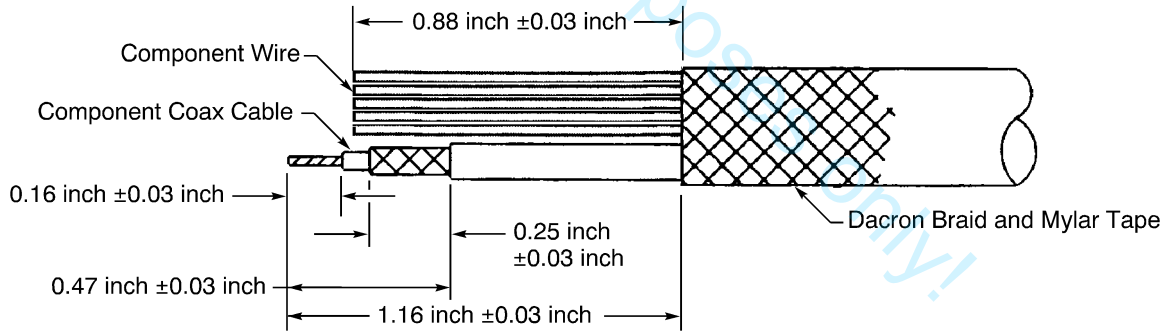
A. Cable Preparation for a Raychem 44A7418 Cable

(1) Make a selection of a heat shrinkable boot from Table 6.

(2) Put the heat shrinkable boot on the cable or the wire harness.

Make sure that the small end of the boot is pointed rearward, away from the connector.

(3) Prepare the cable. Refer to Figure 3.



RAYCHEM 44A7418 CABLE PREPARATION
Figure 3

(a) Remove 1.16 inches ±0.03 inch of the outer layer of Dacron braid and Mylar tape.

(b) Remove necessary length of each component wire to make the distance from the end of the braid to the end of the wire equal to 0.88 inch ±0.03 inch.

(4) Prepare the component coax cable. Refer to Figure 3.

(a) Remove the necessary length of jacket to make the distance from the end of the cable to the end of the jacket equal to 0.47 inch ±0.03 inch.

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(b) Remove the necessary length of shield to make the distance from the end of the cable to the end of the shield equal to 0.25 inch ±0.03 inch.

(c) Remove the necessary length of the dielectric to make the distance from the end of the conductor to the end of the dielectric equal to 0.16 inch ±0.03 inch.

B. Assembly of Standard Contacts

For the procedures to assemble a standard contact, refer to Paragraph 6.A.

C. Assembly of Coax Contacts

For the procedure to assemble a coax contact, refer to Paragraph 6.C.

D. Standard Contact Insertion

For the procedure to install a standard contact, refer to Paragraph 7.A.

E. Coax Contact Insertion

For the procedure to install a coax contact, refer to Paragraph 7.B.

F. Insertion of CRC280-4 Coax Contacts

Table 10
COAX CONTACT INSERTION TOOLS

Contact Size	Insertion Tool
12	294-72
	M81969/17-05
	MS24256A12

(1) Make a selection of a coax contact insertion tool from Table 10.

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 HAS A CRACK.

CAUTION: A DEFECTIVE TOOL CAN CAUSE DAMAGE THE CONTACT RETENTION CLIPS.

(2) Put the necessary connector assembly components on the wire harness.

(3) Examine the contact.

Make sure that the contact:
- Is straight
- Does not have damage.

NOTE: A contact that has a bend or damage must be replaced.

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

(5) Axially align the insertion tool with the contact cavity at the rear of the connector.

(6) Carefully push the tool straight into the correct contact cavity until it stops.

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

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

(7) Carefully pull the tool out from the contact cavity.

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

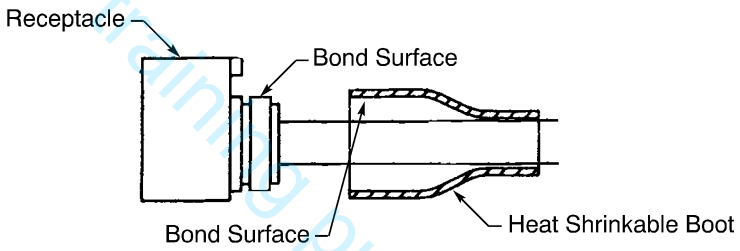
(8) Lightly pull the wire to make sure that the contact is locked.

CAUTION: DO NOT PULL THE CABLE 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 CABLE INSULATION WITH THE FINGERNAILS. DAMAGE TO THE CABLE INSULATION CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE CABLE.

(9) If the contact is not locked in the contact cavity, do Step (5) through Step (8) again.

G. Bond Surface Preparation



BOND SURFACES
Figure 4

Refer to Figure 4.

(1) Make a selection of a solvent from Table 7.

(2) Prepare the surfaces of the boot that must make a bond with the connector.

(a) Wind a piece of emery cloth around an applicable rod or tool.

(b) Make the bond surfaces rough.

(c) Shake the loose particles out of the boot.

(d) Clean the bond surfaces with a clean wiper and solvent.

(e) Dry the boot with a wiper immediately.

CAUTION: DO NOT LET NAPTHA DRY ON THE BOOT. WHEN NAPTHA DRIES, AN UNWANTED FILM STAYS ON THE CLEAN SURFACES.

(3) Clean the receptacle connector surfaces that must make a bond with the adhesive.

(a) Clean the bond surfaces of the connector with a clean wiper and solvent.

(b) Dry the connector with a wiper immediately.

CAUTION: DO NOT LET NAPTHA DRY ON THE CONNECTOR. WHEN NAPTHA DRIES, AN UNWANTED FILM STAYS ON THE CLEAN SURFACES.

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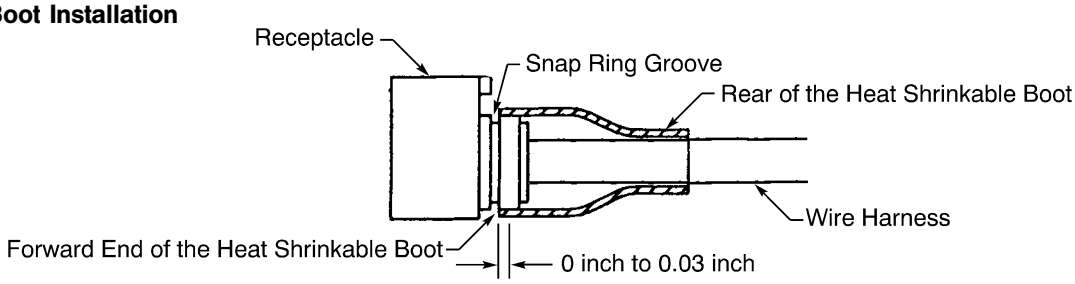
ASSEMBLY OF BOEING 60B40052-() AND BURNDY MB6, MB10, MB12, MB13, AND MB24 CONNECTORS

H. Boot Installation



POSITION OF THE HEAT SHRINKABLE BOOT
Figure 5

(1) Prepare the bond surfaces of the boot and the connector. Refer to Paragraph 4.G.

Make sure that the rear end of the boot that touches the wire harness is not prepared for a bond.

(2) Apply the adhesive to the surfaces of receptacle flange and boot that make a bond.

Make sure that the rear end of the boot that touches the wire harness does not have adhesive.

(3) Push the boot on the receptacle flange until the forward end of the boot is 0 inch to 0.03 inch from the snap ring groove.

(4) Hold the boot until the adhesive cures.

Make sure that the forward edge of the boot is 0 inch to 0.03 inch from the rear edge of the snap ring groove.

(5) Shrink only the rear end of the boot on the wire harness.

I. Seal of an Empty Contact Cavity

The seal of an empty contact cavity is not necessary.

J. Connector Installation

(1) From the front of the panel, put the connector in hole in the panel.

(2) Install the snap ring in the snap ring groove.

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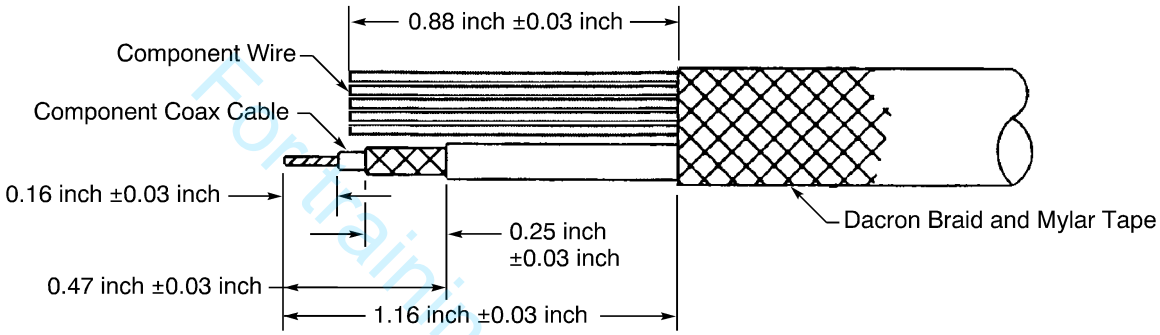
5. ASSEMBLY OF THE BURNDY MB6P-3 CONNECTORS

This paragraph gives the procedure to assemble the MB6P-3 connector with these wires and cables:

- A BMS13-42 wire
- A BMS13-48 wire
- A Raychem 44A7418 multiconductor cable
- A Raychem 5026A1018 coax cable
- A Raychem 5026A1318 coax cable.

A. Cable Preparation for a Raychem 44A7418 Cable



RAYCHEM 44A7418 CABLE PREPARATION
Figure 6

Refer to Figure 6.

(1) Make a selection of a heat shrinkable boot from Table 6.

(2) Put the heat shrinkable boot on the cable or the wire harness.

Make sure that the small end of the boot is pointed rearward, away from the connector.

(3) Prepare the cable.

(a) Remove 1.16 inches ±0.03 inch of the outer layer of Dacron braid and Mylar tape.

(b) Remove necessary length of each component wire to make the distance from the end of the braid to the end of the wire equal to 0.88 inch ±0.03 inch.

(4) Prepare the component coax cable. Refer to Figure 6.

(a) Remove the necessary length of jacket to make the distance from the end of the cable to the end of the jacket equal to 0.47 inch ±0.03 inch.

(b) Remove the necessary length of shield to make the distance from the end of the cable to the end of the shield equal to 0.25 inch ±0.03 inch.

(c) Remove the necessary length of the dielectric to make the distance from the end of the conductor to the end of the dielectric equal to 0.16 inch ±0.03 inch.

B. Assembly of Standard Contacts

For the procedures to assemble a standard contact, refer to Paragraph 6.A.

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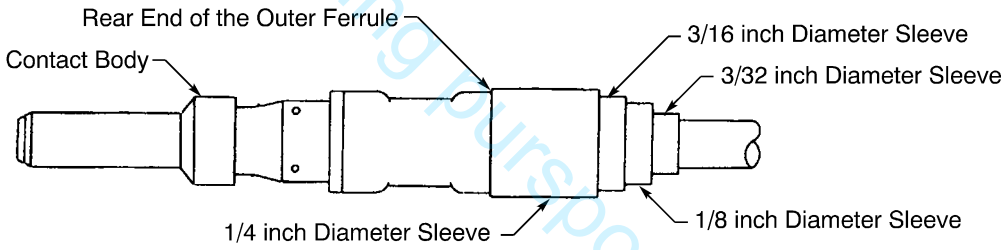
C. Assembly of Coax Contacts

Table 11
CENTER CONTACT CRIMP TOOLS

Crimp Barrel Size	Crimp Tool		
	Basic Unit	Locator	Die Set
26	ST2220-1-Y	ST2220-1-47	-
	M10S-1	SL-72	S-35

Table 12
OUTER FERRULE CRIMP TOOL

Coax Contact	Crimp Tool		
	Basic Unit	Die Set	Locator
KIT700-42	WT 202-06-08	WT 202	-
	M10S-1	S-39	SL-58



POSITION OF THE HEAT SHRINKABLE SLEEVES
Figure 7

Refer to Figure 7.

(1) Make a selection of a center contact crimp tool from Table 11.
(2) Make a selection of a ferrule crimp tool from Table 12.
(3) Make a selection of a heat shrinkable sleeve from Table 7.
(4) Put a 0.75 inch ±0.03 inch length of 3/32 inch diameter heat shrinkable sleeve on the cable.
Make sure that the end of the sleeve is 0 inch to 0.03 inch from the edge of the jacket.
(5) Shrink the sleeve into its position. Refer to Subject 20-10-14.
(6) Put a 0.68 inch ±0.03 inch length of 1/8 inch diameter heat shrinkable sleeve on the first sleeve.
Make sure that the end of the sleeve is 0 inch to 0.03 inch from the edge of the jacket.
(7) Shrink the sleeve into its position. Refer to Subject 20-10-14.
(8) Put the outer ferrule on the cable.
Make sure that the ferrule is not near the contact and the sleeves.
(9) Crimp the inner contact.
(10) Push the inner contact into the outer contact until it locks in position.

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Make sure that the crimp barrel of the outer contact is between the insulation and the shield.

(11) Push the outer ferrule forward on the shield until it is fully against the shoulder of the outer contact.

(12) Crimp the ferrule.

(13) Put a 0.5 inch ±0.03 inch length of 3/16 inch diameter heat shrinkable sleeve on the outer sleeve. Make sure that the forward end of the sleeve is against the ferrule.

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

(15) Put a 0.38 inch ±0.03 inch length of 1/4 inch diameter heat shrinkable sleeve on the outer sleeve. Make sure that the forward end of the sleeve is against the ferrule.

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

D. Standard Contact Insertion

NOTE: After a standard contact is installed in an MB6P-3 connector, it cannot be removed.

(1) Put the snap ring on the wire harness.

(2) If the wire harness has less than five individual BMS 13-42 or BMS 13-48 wires, the put the necessary number of 1.5 inch lengths of heat shrinkable sleeves on the wire harness to make the outer diameter of the wire harness 0.19 inch to 0.21 inch.

(3) Insert each standard contact, refer to Paragraph 7.A.

E. Coax Contact Insertion

For the procedure to install a coax contact, refer to Paragraph 7.B.

NOTE: After a coax contact is installed in an MB6P-3 connector, it cannot be removed.

F. Connector Assembly

Table 13
HEAT SHRINKABLE SLEEVES

Description	Part Number	Supplier
Inner Sleeve	CRN	Raychem
Outer Sleeve	DWP-125	Raychem

(1) If the heat shrinkable sleeves are not supplied with the connector, make a selection of each of these sleeves from Table 13:

- A 2.5 inch length of 3/8 inch diameter inner sleeve
- A 1 inch length of 3/4 inch diameter outer sleeve.

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

(2) If sleeves are supplied with the connector, remove the identification marks from the sleeves:

(a) Make a selection of a lacquer thinner from Table 7.

(b) Apply a small quantity of lacquer thinner to the identification marks with a soft nylon bristle brush or an equivalent tool.

(c) Dry the sleeves with a wiper.

(3) Push the longer inner sleeve forward on the cable until it is approximately 0.2 inch from the rear of the insert. Refer to Figure 8.

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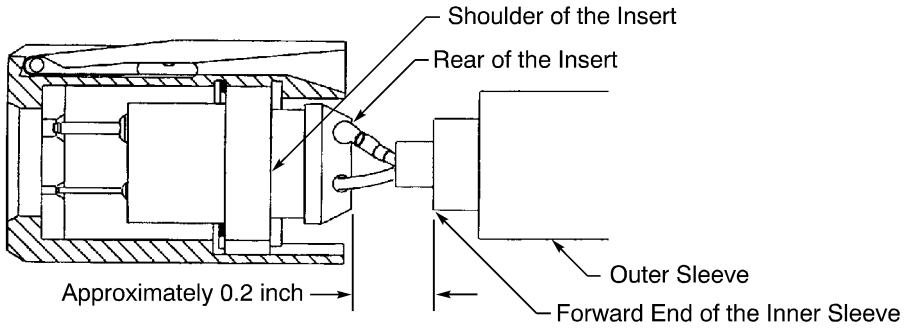


POSITION OF THE INNER AND OUTER SLEEVES
Figure 8

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

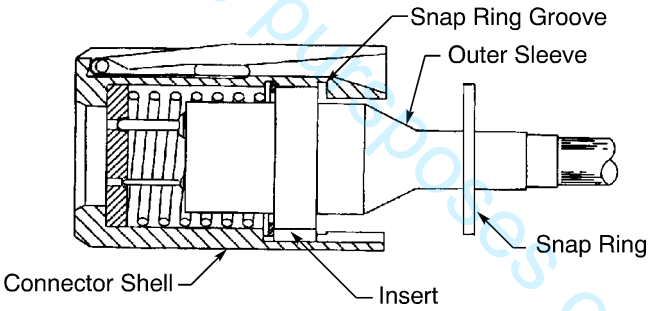
(5) Push the shorter outer sleeve forward until it is 0 inch to 0.06 inch from the shoulder of the insert.

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

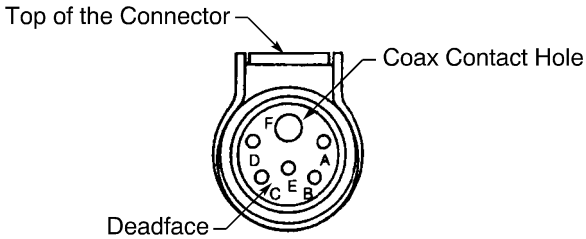
(7) Install the assembled insert into the plug body. Refer to Figure 9 and Figure 10.

Make sure that:

- The coax contact hole in the deadface is aligned with the top of the connector
- The contacts in the insert are aligned with the applicable contact holes in the deadface.



ASSEMBLED MB6P-3 PLUG
Figure 9



ALIGNMENT OF THE INSERT WITH THE DEADFACE
Figure 10

(8) Install the snap ring. Refer to Figure 9.

NOTE: After the snap ring is installed, it cannot be removed.

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(a) Put the connector on a hard surface with the face of the connector against the surface.

(b) Put the snap ring in the rear of the connector at an approximate 45 degree angle.
Make sure that one edge of the ring is in the keyway.

(c) Move the ring into the rear of the connector with the hand.
Make sure to move the side of the ring that is opposite the keyway first.

(d) When the ring is below the edge of the connector, press down on the insert until it hits the bottom.

(e) Push on the snap ring with a small screwdriver or an equivalent tool to move it into its position in the snap ring groove.

(9) To make sure that the snap ring is fully installed, hold the plug tightly and at the same time, lightly pull on the cable.

G. Seal of an Empty Contact Cavity

Empty contact cavities must be sealed with an unwired contact. Refer to Subject 20-60-08.

6. CONTACT ASSEMBLY

A. Assembly of Standard Contacts

Table 14
INSULATION REMOVAL LENGTH

Crimp Barrel Size	Removal Length L (inch)	
	Target	Tolerance
24	0.19	± 0.03
22	0.19	± 0.03
20	0.19	± 0.03
18	0.25	± 0.03
16	0.25	± 0.03

Table 15
WIRE SIZES FOR RAYCHEM 44A7418 MULTICONDUCTOR CABLE

Insulation Color	Wire Size (AWG)
Blue	22
Green	22
Red	20
White	20
Yellow	22

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Table 16
CONTACT CRIMP TOOLS

Wire Size (AWG)	Crimp Barrel Size	Crimp Tool				Special Instructions
		Basic Unit		Locator		
		Part Number	Setting	Part Number	Color	
24	20	M22520/1-01	2	M22520/1-02	Red	-
22	20	11148	-	-	Red Decal	Locator is Red Block
		614019	-	-	Red Decal	Locator is Red Block
		M22520/1-01	3	M22520/1-02	Red	-
		M22520/2-01	6	M22520/2-02	-	-
		MS3191-1	-	MS3191-20	-	-
		ST2220-1-Y	-	ST2220-1-1	-	-
		WA22	6	M22520/2-02	-	-
		WA27F	3	M22520/1-02	Red	-
20	20	M22520/1-01	4	M22520/1-02	Red	-
		M22520/2-01	7	M22520/2-02	-	-
		WA22	7	M22520/2-02	-	-
		WA27F	4	M22520/1-02	Red	-
18	18	M22520/1-01	5	M22520/1-02	Red	-
		M22520/2-01	8	M22520/2-02	-	-
		ST2220-1-Y	-	ST2220-1-1	-	-
16	16	11148	-	-	Red Decal	Locator is Blue Block
		614019	-	-	Red Decal	Locator is Blue Block
		M22520/1-01	6	M22520/1-02	Red	-
		M22520/2-01	8	M22520/2-02	-	-
		ST2220-1-Y	-	ST2220-1-1	-	-

(1) Make a selection of a crimp tool from Table 16.

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

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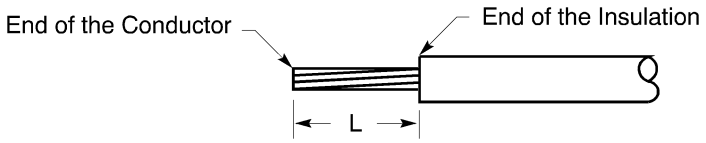
Refer to:

- Figure 11
- Table 15 for wire sizes of Raychem 44A7418 cable
- Table 14
- Subject 20-00-15 for the insulation removal procedures.

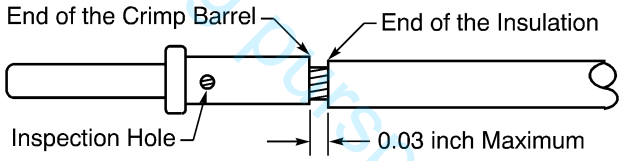


WIRE PREPARATION
Figure 11

(3) Push the conductor into the crimp barrel of the contact. Refer to Figure 12.

Make sure that:

- All of the strands of the conductor are in the crimp barrel
- The strands of 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 a maximum of 0.03 inch.



THE POSITION OF THE WIRE IN THE CRIMP BARREL
Figure 12

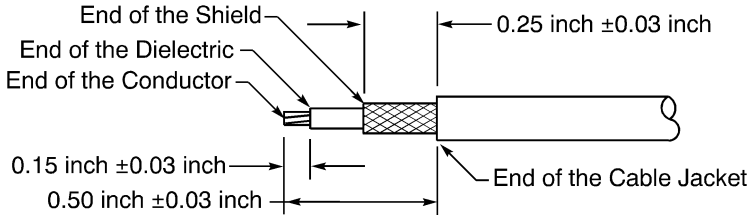
(4) Crimp the contact.

(5) Examine the wired contact for these types of damage:

- A strand of the conductor is broken
- The base metal of a strand of the conductor can be seen
- The crimp barrel of the contact has a crack.

(6) If the contact or the wire has damage, replace the contact.

B. Coax Cable Preparation



CABLE PREPARATION
Figure 13

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Refer to Figure 13.

(1) Remove the necessary length of the cable jacket to make the distance from the end of the jacket to the end of the shield equal to 0.50 inch ±0.03 inch.

(2) Remove the necessary length of shield to make the distance from the end of the jacket to the end of the shield equal to 0.25 inch ±0.03 inch.

(3) Remove the necessary length of the dielectric to make the distance from the end of the dielectric to the end of the center conductor equal to 0.15 inch ±0.03 inch.

C. Assembly of Coax Contacts

This Paragraph gives the procedure to assemble KIT700-() and 60B40052-() coax contacts.

For the procedure to assemble a CRC280-4 coax contact, refer to Paragraph 6.D.

Table 17
CENTER CONTACT CRIMP TOOLS

Crimp Barrel Size	Crimp Tool		
	Basic Unit	Locator	Die Set
26	ST2220-1-Y	ST2220-1-47	-
	M10S-1	SL-72	S-35

Table 18
FERRULE CRIMP TOOLS

Basic Unit	Die Set	Locator
WT 202-06-08	WT 202	-
M10S-1	S-30	SL-58

(1) Make a selection of a center contact crimp tool from Table 17.

(2) Make a selection of a ferrule crimp tool from Table 18.

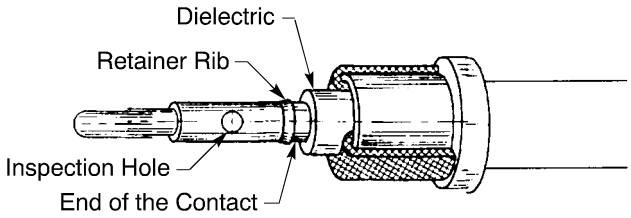
(3) Put the ferrule on the coax cable.

Make sure that the small end of the ferrule is pointed rearward, away from the end of the cable.

(4) Prepare the coax cable. Refer to Paragraph 6.B.

(5) Push the center conductor into the crimp barrel of the center contact until the end of the dielectric is against the end of the center contact. Refer to Figure 14.

Make sure that the strands of the conductor can be seen in the inspection hole.



POSITION OF THE CENTER CONTACT ON THE CENTER CONDUCTOR
Figure 14

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(6) Crimp the center contact.

(7) Put the body of the contact on the cable.

Make sure that:

- The crimp barrel of the contact body is between the insulation of the center conductor and the shield
- The center contact is fully inserted in the body.

(8) Push the outer ferrule forward on the shield until it is fully against the shoulder of the contact body.

(9) Crimp the ferrule.

D. Assembly of CRC280-4 Coax Contacts with BMS13-65 Coax Cable

Table 19
CENTER CONTACT CRIMP TOOLS

Coax Contact	Basic Unit		Locator
	Part Number	Setting	
CRC280-4	M22520/2-01	5	640001
			K709

Table 20
COAX CONTACT BODY CRIMP TOOL

Coax Contact	Basic Unit	Die	
		Part Number	Cavity
CRC280-4	612648	612642	B
	KTH-1000	KTH-2007	A
	M22520/5-01	M22520/5-05	B
		M22520/5-41	B
		Y197	B

(1) Make a selection of a center contact crimp tool from Table 19.

(2) Make a selection of a contact body crimp tool from Table 20.

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

(4) Remove 0.30 inch ±0.05 inch of the outer jacket from the end of the cable. Refer to Figure 15.

CAUTION: DAMAGE TO THE SHIELD, THE DIELECTRIC, OR THE CENTER CONDUCTOR CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE CABLE.

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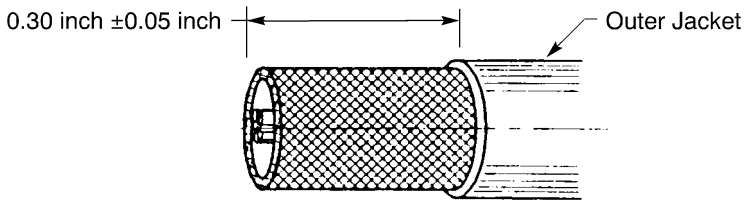
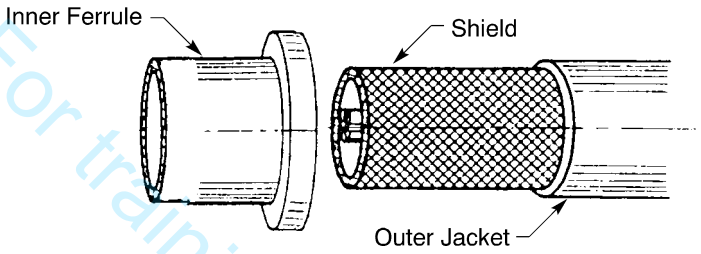


OUTER JACKET REMOVAL LENGTH
Figure 15

(5) Align the inner ferrule and the end of the cable. Refer to Figure 16.



ALIGNMENT OF THE INNER FERRULE AND THE END OF THE CABLE
Figure 16

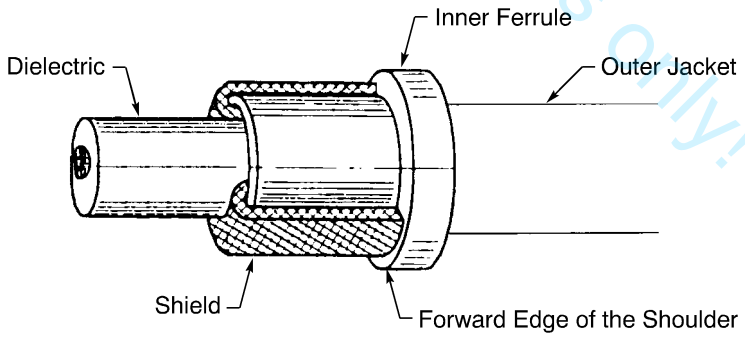
(6) Push the inner ferrule rearward until the shoulder of the ferrule is against the end of the outer jacket.

(7) Cut the flat conductor shield at the forward edge of the inner ferrule.

(8) Fold the shield back on the outer surface of the inner ferrule.

Make sure that the strands of the shield are symmetrical around the circumference of the ferrule.

(9) Cut the strands of the shield at the forward edge of the shoulder of the inner ferrule. Refer to Figure 17.



POSITION OF THE SHIELD ON THE INNER FERRULE
Figure 17

(10) Remove the necessary length of the dielectric to make the distance between the end of the forward end of the shield and the end of the dielectric equal to 0.05 inch ±0.01 inch. Refer to Figure 18.

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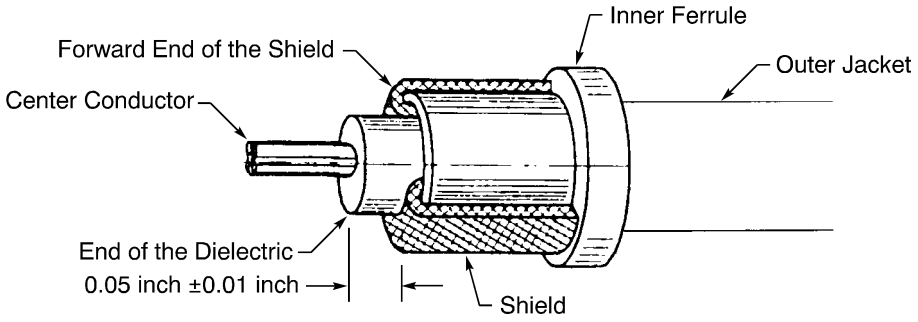
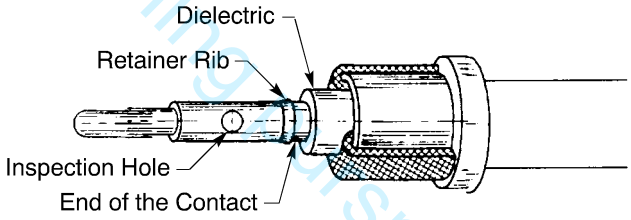


DIELECTRIC REMOVAL
Figure 18

(11) If all of the strands of the center conductor are not together, twist the strands together in their initial direction.

(12) Push the center conductor into the crimp barrel of the center contact until the end of the dielectric is against the end of the center contact. Refer to Figure 19.

Make sure that the strands of the conductor can be seen in the inspection hole.



POSITION OF THE CENTER CONTACT ON THE CENTER CONDUCTOR
Figure 19

(13) Crimp the center contact.

(14) Put the contact body on the center contact.

(15) Push the center contact into the contact body until it is locked in position.

(16) Lightly pull the cable to make sure that the center contact is locked in the contact body.

(17) If the center contact is not locked in the contact body, do Step (15) and Step (16) again.

(18) Put the contact in the crimp die.

Make sure that the rear end of the contact body is aligned with the edge of the crimp die.

(19) Crimp the contact body. Refer to Figure 20.

Make sure that the distance from:

- The rear end of the contact body to the forward end of the crimp area is equal to 0.15 inch ±0.03 inch
- The rear end of the contact body to the shoulder of the inner ferrule is not more than 0.035 inch.

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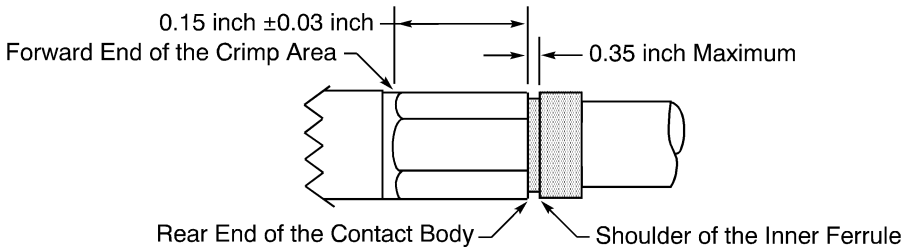


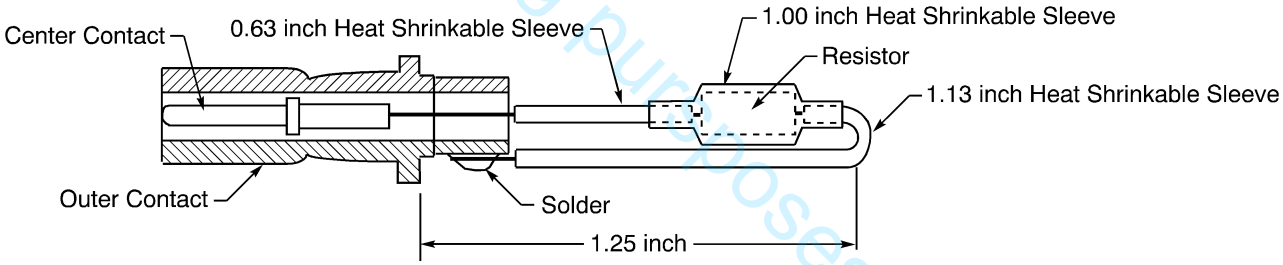
POSITION OF THE CONTACT BODY
Figure 20

(20) Remove the unwanted length of the strands of the shield.
Make sure that the end of the shield is aligned with the rear end of the contact body.

E. Assembly of the Burndy KIT700-() Coax Contacts with an In-Line Resistor

Table 21
IN-LINE RESISTORS

Part Number	Supplier
RLR07C51R1FR	Available Source



ASSEMBLY OF THE COAX CONTACT WITH AN IN-LINE RESISTOR
Figure 21

Refer to Figure 21.

(1) Make a selection of a resistor from Table 21.
(2) Remove 0.50 inch ±0.06 inch from one lead of the resistor.
Make sure that each lead is the same length before the 0.50 inch is removed.
(3) Put a 0.63 inch ±0.06 inch length of 1/16 inch diameter heat shrinkable sleeve on the shortest lead.
(4) Put the end of the shortest lead into the crimp barrel of the center contact.
(5) Apply a small quantity of solder to the of the shortest lead and the crimp barrel of the center contact.
(6) Put a 1.13 inch ±0.06 inch length of 1/16 inch diameter heat shrinkable sleeve on the longest lead of the resistor.
(7) Put a 1.00 ±0.06 inch length of 3/16 inch diameter heat shrinkable sleeve on the resistor.
(8) Install the assembled center contact in the outer contact.
(9) Bend the resistor lead until it touches the side of the outer contact.

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(10) Apply a small quantity of solder to the lead and the side of the outer contact.

(11) Align the center of the 1.00 inch heat shrinkable sleeve with the center of the resistor.

(12) Shrink the sleeve into its position. Subject 20-10-14.

7. CONTACT INSERTION

A. Standard Contact Insertion

Table 22
CONTACT INSERTION TOOLS

Engaging End	Crimp Barrel	Wire O.D. (inch)	Basic Unit	Bit
20	20	Less than 0.06	ATB 1067	-
			DAK351	-
			RTPIT-085B	DAK602-2
			RTPIT-120B	DAK602-2
			ST2220-2	DAK602-2
		More than 0.06	294-88	-
			294-279	-
			AT 1020	-
			DAK20	-
			MS24256A20	-
			M81969/17-03	-
			RTM20-16	-
			RTPIT-085B	ST2220-2-1
			RTPIT-120B	ST2220-2-1
			ST2220-2	ST2220-2-1
			ST2220-2	ST2220-2-30
	18	-	RTPIT-085B	ST2220-2-1
			RTPIT-120B	ST2220-2-1
			ST2220-2	ST2220-2-1
	16		RTPIT-085B	ST2220-2-1
			RTPIT-120B	ST2220-2-1
			ST2220-2	ST2220-2-1

(1) Make a selection of a contact insertion tool from Table 22.
Refer to Subject 20-00-16 to find the O.D. of the wire.

(2) Examine the tool.

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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 HAS A CRACK.

CAUTION: A DEFECTIVE TOOL CAN CAUSE DAMAGE TO THE INSERT OF THE CONNECTOR OR THE CONTACT RETENTION CLIPS.

(3) Put the necessary connector assembly components on the wire harness.

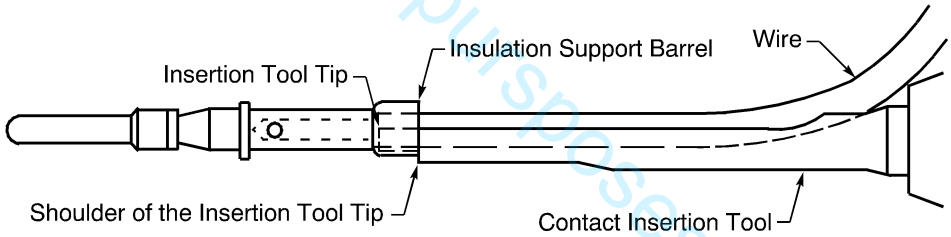
(4) Examine the contact.

Make sure that the contact:
- Is straight
- Does not have damage.

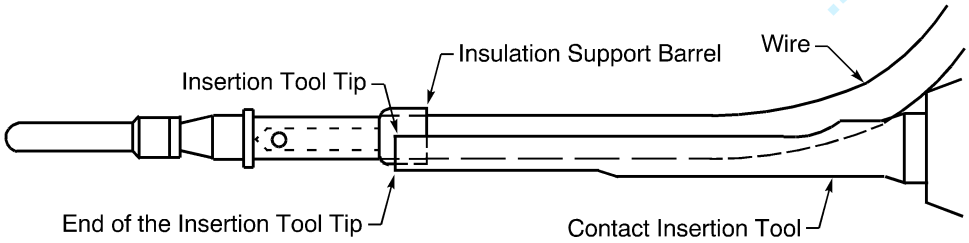
NOTE: A contact with a bend or damage must be replaced.

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

Refer to:
- Figure 22 for the correct position of the insertion tool tip on the contact assembly with a wire O.D. less than 0.06 inch
- Figure 23 for the correct position of the insertion tool tip on the contact assembly with a wire O.D. more than 0.06 inch.



POSITION OF THE INSERTION TOOL TIP INSIDE THE WIRE INSULATION BARREL FOR SIZE 20 CONTACTS AND A WIRE O.D. LESS THAN 0.06 INCH
Figure 22



POSITION OF THE INSERTION TOOL TIP OUTSIDE THE WIRE INSULATION BARREL FOR SIZE 20 CONTACTS AND A WIRE O.D. MORE THAN 0.06 INCH
Figure 23

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

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(7) Carefully push the insertion tool and the contact assembly into the contact cavity until it stops.
Make sure that the tool stays axially aligned with the contact cavity.

CAUTION: DO NOT TURN THE INSERTION TOOL WHEN THE TOOL IS IN THE CONTACT CAVITY. DAMAGE TO THE CONTACT RETENTION CLIPS CAN OCCUR.

(8) Carefully pull the tool out from the contact cavity.
Make sure that the tool stays axially aligned with the contact cavity.

(9) Lightly pull on 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 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.

(10) If the contact is not locked in the contact cavity:
(a) Pull the contact out of the contact cavity.
(b) Do Step (4) through Step (9) again.

B. Coax Contact Insertion

This Paragraph gives the procedure to install KIT700-() and 60B40052-() coax contacts.
For the procedure to install a CRC280-4 coax contact, refer to Paragraph 4.F.

Table 23
COAX CONTACT INSERTION TOOLS

Contact Size	Insertion Tool
12	RTM12-5
	RX12-5
	ST2220-2-29

(1) Make a selection of a coax contact insertion tool from Table 10.

NOTE: As an alternative, the contact can be inserted with the hand.

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 HAS A CRACK.

CAUTION: A DEFECTIVE TOOL CAN CAUSE DAMAGE TO THE INSERT OF THE CONNECTOR OR THE CONTACT RETENTION CLIPS.

(2) Put the necessary connector assembly components on the wire harness.
(3) Examine the contact.

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Make sure that the contact:

- Is straight
- Does not have damage.

NOTE: A contact that has a bend or damage must be replaced.

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

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

(6) Carefully push the tool and the contact assembly into the contact cavity until it stops.

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

CAUTION: DO NOT TURN THE INSERTION TOOL WHEN THE TOOL IS IN THE CONTACT CAVITY. DAMAGE TO THE CONTACT RETENTION CLIPS CAN OCCUR.

(7) Carefully pull the tool out from the contact cavity.

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

(8) Lightly pull the wire to make sure that the contact is locked.

CAUTION: DO NOT PULL THE CABLE 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 CABLE INSULATION WITH THE FINGERNAILS. DAMAGE TO THE CABLE INSULATION CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE CABLE.

(9) If the contact is not locked in the contact cavity, do Step (5) through Step (8) again.

8. APPROVED TOOL SUPPLIERS

A. Contact Crimp Tools

Table 24
CRIMP TOOL SUPPLIERS

Crimp Tool	Supplier
11148	Buchanan
612642	Buchanan
612648	Buchanan
614019	Buchanan
640001	Astro
K709	Daniels
KTH-1000	Kings
KTH-2007	Kings
M10S-1	Burndy
M22520/1-01	QPL
M22520/1-02	QPL
M22520/2-01	QPL

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Table 24 (continued)

Crimp Tool	Supplier
M22520/2-02	QPL
M22520/5-01	QPL
M22520/5-05	QPL
M22520/5-41	QPL
MS3191-1	QPL
MS3191-20	QPL
S-30	Burndy
S-35	Burndy
SL-58	Burndy
SL-72	Burndy
ST2220-1-1	Boeing
ST2220-1-Y	Boeing
ST2220-1-47	Boeing
WA22	Daniels
WA27F	Daniels
WT 202-06-08	Thomas & Betts
WT 202	Thomas & Betts
Y197	Daniels

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B. Contact Insertion Tools

Table 25
INSERTION TOOL SUPPLIERS

Insertion Tool	Supplier
294-279	Amphenol
294-72	Amphenol
294-88	Amphenol
AT 1020	Astro
ATB 1067	Astro
DAK20	Daniels
DAK351	Daniels
DAK602-2	Daniels
M81969/17-03	QPL

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Table 25 (continued)

Insertion Tool	Supplier
M81969/17-05	QPL
MS24256A12	QPL
MS24256A20	QPL
RTPIT-085B	Russtech
RTPIT-120B	Russtech
RTM12-5	Burndy
RTM20-16	Burndy
RX12-5	Burndy
ST2220-2	Boeing
ST2220-2-1	Boeing
ST2220-2-29	Boeing
ST2220-2-30	Boeing

C. Contact Removal Tools

Table 26
REMOVAL TOOL SUPPLIERS

Removal Tools	Supplier
294-73	Amphenol
294-89	Amphenol
AT 2012	Astro
AT 2020	Astro
DRK20	Daniels
DRK56-12	Daniels
M81969/19-02	QPL
M81969/19-06	QPL
MS24256R12	QPL
MS24256R20	QPL
MS90456-12	QPL
RTM20-16	Burndy
RX12-7	Burndy
RX20-24V5	Burndy
ST2220-3-13	Boeing

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Table 26 (continued)

Removal Tools	Supplier
ST2220-3-15	Boeing

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ASSEMBLY OF FENWAL CONNECTORS

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20-62-14 CONTENTS

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ASSEMBLY OF FENWAL CONNECTORS

1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

Table 1
CONNECTOR PART NUMBERS

Part Number	Connector Type	Contact Type	Supplier	Assembly Procedure
04-035303-087	Plug	Socket	Fenwal	Paragraph 7.
35303-8	Receptacle	Pin	Fenwal	Paragraph 3.
35303-9	Plug	Socket	Fenwal	Paragraph 4.
35303-10	Receptacle	Pin	Fenwal	Paragraph 3.
35303-11	Plug	Socket	Fenwal	Paragraph 4.
35303-12	Receptacle	Pin	Fenwal	Paragraph 3.
35303-64	Receptacle	Pin	Fenwal	Paragraph 5.
35303-66	Receptacle	Pin	Fenwal	Paragraph 5.
35303-67	Plug	Socket	Fenwal	Paragraph 7.
35303-68	Receptacle	Pin	Fenwal	Paragraph 5.
35303-73	Receptacle	Pin	Fenwal	Paragraph 3.
35303-75	Receptacle	Pin	Fenwal	Paragraph 6.
35303-77	Plug	Socket	Fenwal	Paragraph 7.
35303-87	Plug	Socket	Fenwal	Paragraph 7.
35303-90	Receptacle	Pin	Fenwal	Paragraph 8.
35303-91	Plug	Socket	Fenwal	Paragraph 9.
35303-94	Receptacle	Pin	Fenwal	Paragraph 8.
35303-95	Plug	Socket	Fenwal	Paragraph 9.
35303-97	Receptacle	Pin	Fenwal	Paragraph 8.
35303-98	Plug	Socket	Fenwal	Paragraph 9.
35303-99	Receptacle	Pin	Fenwal	Paragraph 8.
35303-100	Plug	Socket	Fenwal	Paragraph 9.
35303-141	Plug	Pin	Fenwal	Paragraph 10.
35303-142	Receptacle	Socket	Fenwal	Paragraph 10.

Table 2
ALTERNATIVE CONNECTOR PART NUMBERS

Specified Connector	Alternative Connector
35303-90	35303-97
35303-91	35303-98

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Table 2 (continued)

Specified Connector	Alternative Connector
35303-94	35303-99
35303-95	35303-100

2. NECESSARY TOOLS AND MATERIALS

A. Necessary Materials

Table 3
CEMENTS

Part Number	Minimum Cure Time at 70 Degrees F (hours)	Supplier
No. 1	18	Sauereisen
No. 31	18	Sauereisen
Resbond 940	8	Cotronics

Table 4
HEAT SHRINKABLE SLEEVES

Size (inch)		Part Number or Specification	Supplier
Outer Diameter	Wall Thickness		
0.060 through 0.191	0.016	MIL-DTL-23053/12 Class 2	QPL
		MIL-I-23053/12 Class 2	QPL
		SAE-AMS-DTL-23053/12 Class 2	QPL
		TFE-2X	Chemplast
			Zeus
0.078	0.009	MIL-DTL-23053/12 Class 5	QPL
		MIL-I-23053/12 Class 5	QPL
		SAE-AMS-DTL-23053/12 Class 5	QPL
		TFE-4X	Chemplast
			Zeus
0.125 through 0.250	0.012	MIL-DTL-23053/12 Class 5	QPL
		MIL-I-23053/12 Class 5	QPL
		SAE-AMS-DTL-23053/12 Class 5	QPL
		TFE-4X	Chemplast
			Zeus

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Table 5
TAPES

Description	Part Number	Supplier
Polyimide, 0.75 inch width minimum	2345-2	Fluorglas
		Saint Gobain Performance Plastics
PTFE, 0.75 inch width minimum	P-421	Permacel
PTFE, 0.75 inch width minimum	Scotch 61	3M
Polyimide, 0.75 inch width minimum	Scotch 92	3M

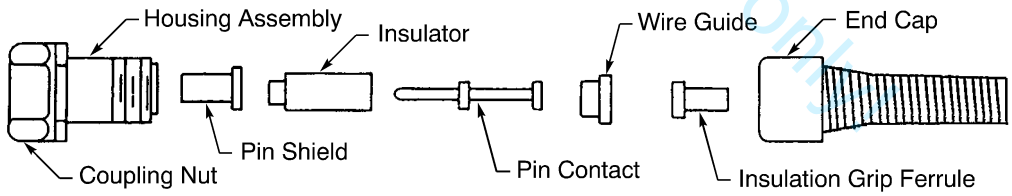
B. Necessary Tools

Table 6
NECESSARY TOOLS

Tool	Size (inch)	Special Instructions
Crow Foot Adapter	3/8	-
	1/2	-
Socket	3/8	-
	1/2	-
Torque Tool	-	Tool must measure 65 inch-pounds minimum
Wrench	1/2	-

3. ASSEMBLY OF FENWAL 35303-8, 35303-10, 35303-12, AND 35303-73 CONNECTORS

A. Connector Description



FENWAL 35303-8 AND 35303-10 CONNECTORS
Figure 1

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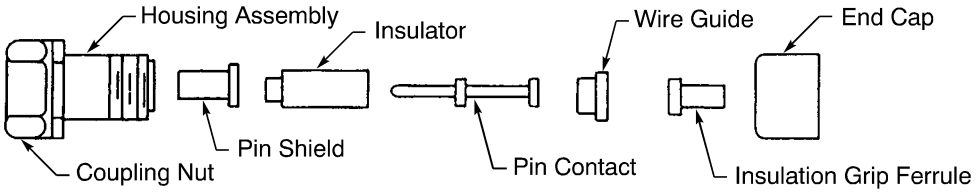
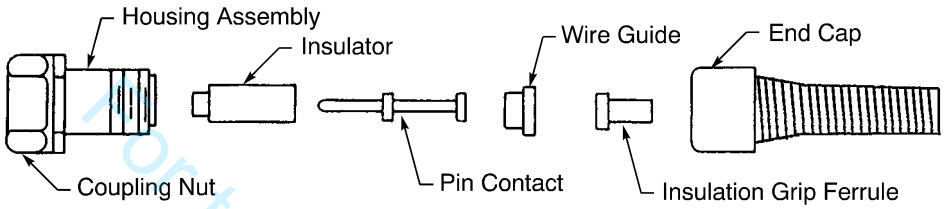
ASSEMBLY OF FENWAL CONNECTORS



FENWAL 35303-73 CONNECTORS
Figure 2



FENWAL 335303-12 CONNECTOR
Figure 3

B. Contact Assembly

Table 7
CONTACT CRIMP TOOLS

Wire Size (AWG)	Crimp Tools			
	Basic Unit		Locator	
	Part Number	Setting	Part Number	Color
20	11921	-	3795-1	-
	85-550	5	TH338	Red
			TP673	-
	M22520/1-01	-	TH338	Red
			TP673	-
	ST2220-1-Y	-	ST2220-1-7	-
	WA27F	5	TH338	Red
			TP673	-

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Table 7 (continued)

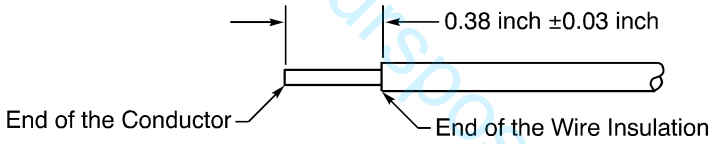
Wire Size (AWG)	Crimp Tools			
	Basic Unit		Locator	
	Part Number	Setting	Part Number	Color
18	11921	-	3795-1	-
	85-550	6	TH338	Red
			TP673	-
	M22520/1-01	-	TH338	Red
			TP673	-
	ST2220-1-Y	-	ST2220-1-7	-
	WA27F	6	TH338	Red
			TP673	-

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

(2) Remove the 0.38 inch ±0.03 inch of insulation from the end of the wire.

Refer to:

- Figure 4
- Subject 20-00-15 for the insulation removal procedures.



WIRE PREPARATION
Figure 4

(3) Put the end cap on the wire.

Make sure that the end of the end cap that has threads is pointed to the end of the wire.

(4) Put the insulation grip ferrule on the wire.

Make sure that the larger end is pointed to the end of the wire.

(5) Increase the O.D. of the wire until the O.D. of the wire is approximately 0.120 inch.

Refer to:

- Paragraph 11.A. for the procedure to increase the O.D. of the wire with one or more heat shrinkable sleeves
- Paragraph 11.B. for the procedure to increase the O.D. of the wire with layers of tape.

(6) Put the wire guide on the wire. Refer to Figure 5.

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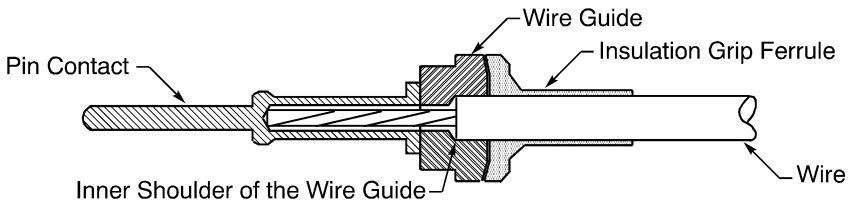
Make sure that:

- The inner shoulder of the wire guide is against the end of the wire insulation
- If a heat shrinkable sleeve or layer of tape is used to increase the wire O.D, the wire guide does not push the heat shrinkable sleeve or the layer of tape out of its shape.



POSITION OF THE CONTACT AND THE WIRE GUIDE ON THE WIRE
Figure 5

(7) Push the conductor into the crimp barrel of the contact until the end of the conductor is against the forward end of the crimp barrel. Refer to Figure 5.

Make sure that all of the conductors are in the crimp barrel.

(8) Crimp the contact.

C. Connector Assembly

Table 8
FERRULE CRIMP TOOLS

Connector	Crimp Tool		
	Basic Unit	Die	
		Part Number	Cavity
35303-8	M22520/5-01	M22520/5-45	B
	WT-409	-	-
35303-10	M22520/5-01	M22520/5-37	B
	WT-401	-	-
35303-12	M22520/5-01	M22520/5-37	B
	WT-401	-	-
35303-73	M22520/5-01	M22520/5-37	B
	WT-401	-	-

Table 9
CONNECTOR ASSEMBLY TOOLS

Tool	Part Number
Pliers	ST2598C
Torque Adapter	ST2575A
	ST2575B

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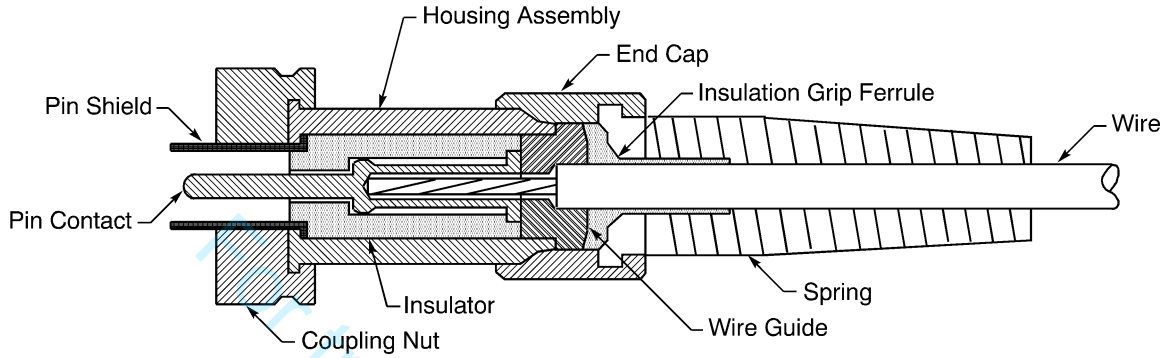
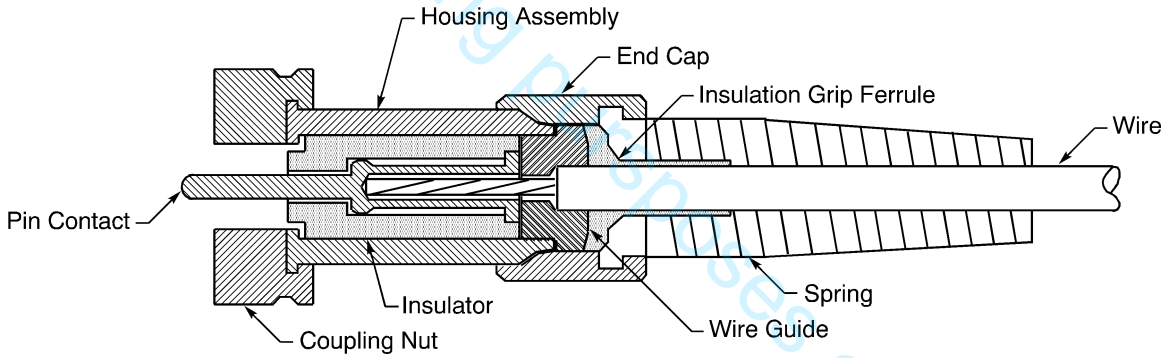
ASSEMBLY OF FENWAL CONNECTORS

Table 9 (continued)

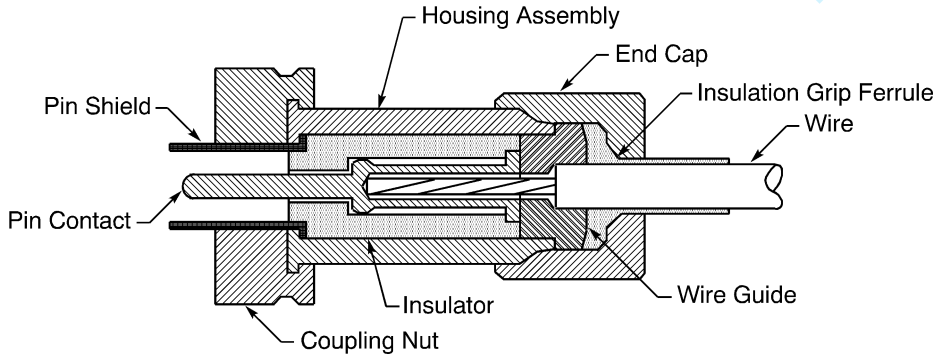
Tool	Part Number
Vice	ST2598C-201



FENWAL 35303-8 AND 35303-10 CONNECTOR ASSEMBLY
Figure 6



FENWAL 35303-12 CONNECTOR ASSEMBLY
Figure 7



FENWAL 35303-73 CONNECTOR ASSEMBLY
Figure 8

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ASSEMBLY OF FENWAL CONNECTORS

Refer to Figure 6, Figure 7, or Figure 8.

(1) Make a selection of these tools from Table 6:
- A torque wrench
- A 1/2 inch wrench
- A 1/2 inch socket or a 1/2 inch crow foot adapter.

(2) Make a selection of a cement from Table 3.

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

(4) Make a selection of a torque adapter from Table 9.

NOTE: The housing assembly of a plug connector is a satisfactory alternative for a torque adapter.

(5) Make a selection of pliers or a vice from Table 9.

(6) Put the insulator on the contact.

Make sure the rear end of the insulator is against the wire guide.

(7) Put the pin shield on the contact.

NOTE: The 35303-12 connector does not have a pin shield.

Make sure that the rear end of the pin shield is against the insulator

(8) Put the housing assembly on the contact assembly.

(9) Push the insulation grip ferrule forward until the ferrule is fully against the wire guide.

(10) Crimp the ferrule.

(11) Apply a layer of cement on the first three threads of the housing assembly.

(12) Push the end cap forward on the ferrule until the end cap is against the housing assembly.

(13) Fully engage the threads of the end cap and the threads of the housing assembly.

(14) Torque the torque adapter and the housing assembly:

(a) Fully engage the threads of the torque adapter and the threads of the coupling nut.

(b) Put the torque wrench with the crow foot adapter or the socket on the torque adapter.

(c) Put the 1/2 inch wrench on the coupling nut.

(d) Torque the adapter 65 inch-pounds to 75 inch-pounds.

(15) Torque the end cap:

(a) Hold the end cap tightly in the pliers or the vice.

(b) Put the torque wrench and the crow foot adapter or the socket on the torque adapter.

(c) Torque the end cap 50 inch-pounds to 60 inch-pounds.

(16) Remove the unwanted cement from the surface of the housing assembly.

(17) Hold the coupling nut with the 1/2 inch wrench.

(18) Remove the torque adapter from the connector.

(19) If the connector is not connected to a sensing element immediately, put a dust cap on the connector.

CAUTION: DO NOT LET FLUID OR CONTAMINATION GO INTO THE CONNECTOR. IF FLUID OR CONTAMINATION GOES INTO THE CONNECTOR, UNSATISFACTORY PERFORMANCE OF THE CONNECTOR CAN OCCUR.

(20) Cure the cement for the minimum cure time at 70 degrees F. Refer to Table 3.

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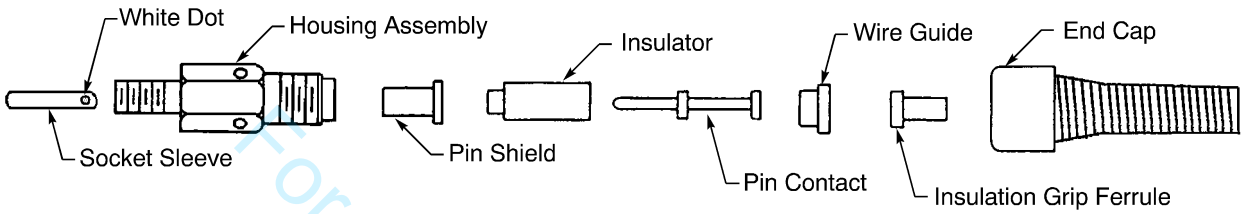
ASSEMBLY OF FENWAL CONNECTORS

CAUTION: THE CONNECTOR IS NOT SERVICEABLE UNTIL THE CEMENT FULLY CURES. IN FLIGHT, TEMPERATURES HIGHER THAN 180 DEGREES F AND HIGH VIBRATIONS CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE CONNECTOR.

NOTE: The receptacle can be connected to the plug before the cement is fully cured.

4. ASSEMBLY OF FENWAL 35303-9 AND 35303-11 CONNECTORS

A. Connector Description



FENWAL 35303-9 AND 35303-11 CONNECTORS
Figure 9

B. Contact Assembly

Table 10
CONTACT CRIMP TOOLS

Wire Size (AWG)	Crimp Tools			
	Basic Unit		Locator	
	Part Number	Setting	Part Number	Color
20	11921	-	3795-1	-
	85-550	5	TH338	Red
			TP673	-
	M22520/1-01	5	M22520/1-02	Red
			TH338	Red
			TP673	-
	ST2220-1-Y	-	ST2220-1-7	-
	WA27F	5	TH338	Red
			TP673	-

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Table 10 (continued)

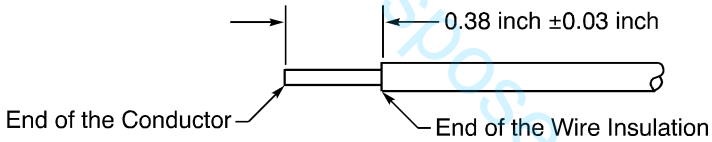
Wire Size (AWG)	Crimp Tools			
	Basic Unit		Locator	
	Part Number	Setting	Part Number	Color
18	11921	-	3795-1	-
	85-550	6	TH338	Red
			TP673	-
	M22520/1-01	6	M22520/1-02	Red
			TH338	Red
			TP673	-
	ST2220-1-Y	-	ST2220-1-7	-
	WA27F	6	TH338	Red
			TP673	-

(1) Make a selection of a crimp tool from Table 10.

(2) Remove the 0.38 inch ±0.03 inch of insulation from the end of the wire.

Refer to:

- Figure 10
- Subject 20-00-15 for the insulation removal procedures.



WIRE PREPARATION
Figure 10

(3) Put the end cap on the wire.

Make sure that the end of the end cap that has threads is pointed to the end of the wire.

(4) Put the insulation grip ferrule on the wire.

Make sure that the larger end is pointed to the end of the wire.

(5) Put the wire guide on the wire. Refer to Figure 11.

Make sure that:

- The inner shoulder of the wire guide is against the end of the wire insulation
- If a heat shrinkable sleeve or layer of tape is used to increase the wire O.D, the wire guide does not push the heat shrinkable sleeve or the layer of tape out of its shape.

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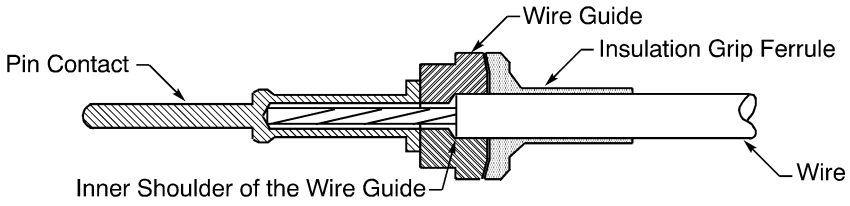
ASSEMBLY OF FENWAL CONNECTORS



POSITION OF THE CONTACT, THE WIRE GUIDE, AND THE FERRULE ON THE WIRE
Figure 11

(6) Increase the O.D. of the wire until the O.D. of the wire is approximately 0.120 inch.

Refer to:

- Paragraph 11.A. for the procedure to increase the O.D. of the wire with one or more heat shrinkable sleeves
- Paragraph 11.B. for the procedure to increase the O.D. of the wire with layers of tape.

(7) Push the conductor into the crimp barrel of the contact until the end of the conductor is against the forward end of the crimp barrel. Refer to Figure 11.

Make sure that all of the conductors are in the crimp barrel.

(8) Crimp the contact.

C. Connector Assembly

Table 11
FERRULE CRIMP TOOLS

Basic Unit	Die	
	Part Number	Cavity
M22520/5-01	M22520/5-37	B
WT-401	-	-

Table 12
CONNECTOR ASSEMBLY TOOLS

Tool	Part Number	Suppler
Pliers	ST2598C	Boeing
Screw Press	ST2575C-1	Boeing
	TZ-2255	Fenwal
Vice	ST2598C-201	Boeing

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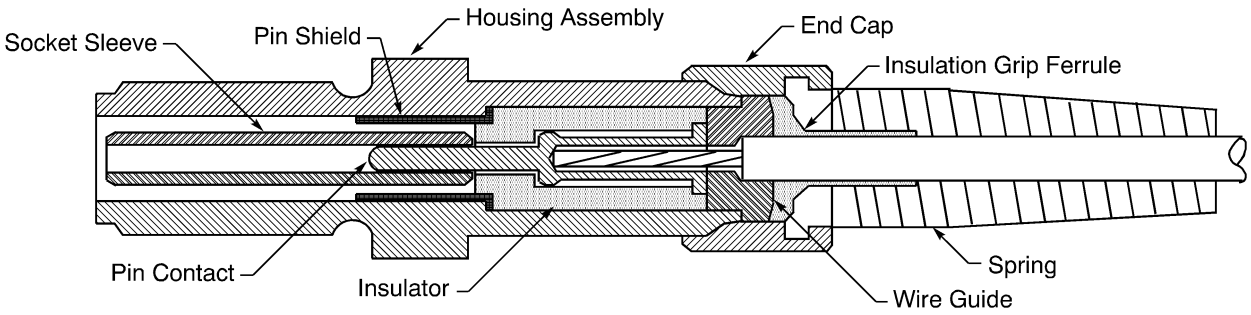
ASSEMBLY OF FENWAL CONNECTORS



FENWAL 35303-9 AND 35303-11 CONNECTOR ASSEMBLY
Figure 12

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Refer to Figure 12.

(1) Make a selection of these tools from Table 6:
- A torque wrench
- A 3/8 inch socket or a 3/8 inch crow foot adapter.

(2) Make a selection of a cement from Table 3.

(3) Make a selection of a ferrule crimp tool from Table 11.

(4) Make a selection of pliers or a vice from Table 12.

(5) Make a selection of a screw press from Table 12.

(6) Put the insulator on the contact.

Make sure the rear end of the insulator is against the wire guide.

(7) Put the pin shield on the contact.

Make sure that the rear end of the pin shield is against the insulator

(8) Put the housing assembly on the contact assembly.

(9) Push the insulation grip ferrule forward until it is fully against the wire guide.

(10) Crimp the ferrule.

(11) Apply a layer of cement on the first three threads of the housing assembly.

(12) Push the end cap forward on the ferrule until the end cap is against the housing assembly.

(13) Tighten the end cap on the housing assembly:

(a) Fully engage the threads of the end cap and the threads of the housing assembly.

(b) Hold the end cap tightly in the pliers or the vice.

(c) Put the torque wrench with the crow foot adapter or the socket on the housing assembly.

(d) Torque the end cap 50 inch-pounds to 60 inch-pounds.

(14) Remove the unwanted cement from the surface of the housing assembly.

(15) Install the socket sleeve with the screw press:

(a) Move the plunger of the screw press to the end of the slot.

(b) Put the end of the socket sleeve without a white dot in the end of the plunger. Refer to Figure 13.

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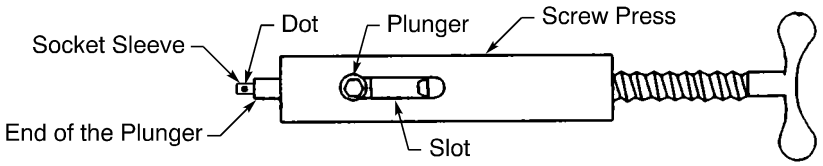
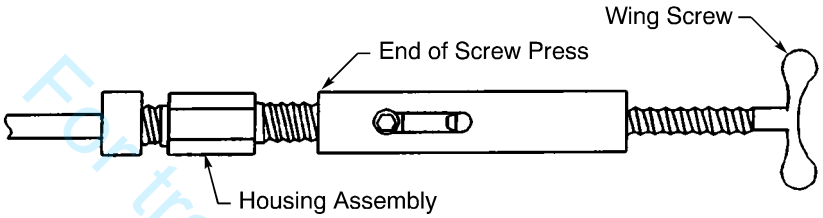
ASSEMBLY OF FENWAL CONNECTORS



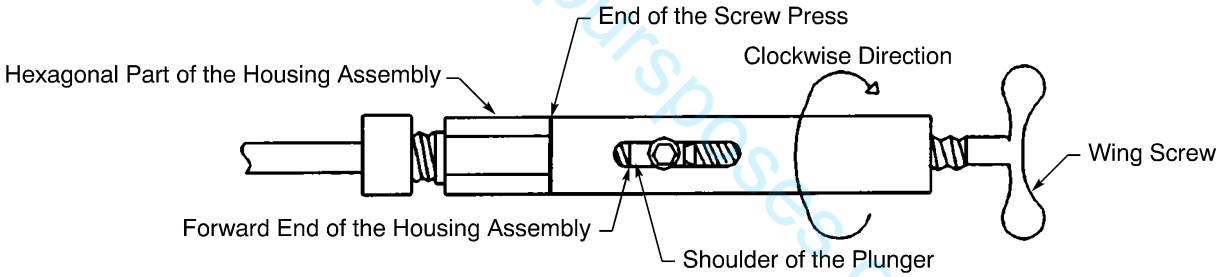
POSITION OF THE SOCKET SLEEVE IN THE SCREW PRESS
Figure 13

(c) Align the end of the screw press and the threads on the housing assembly.



ALIGNMENT OF THE SCREW PRESS AND THE CONNECTOR
Figure 14

(d) Turn the screw press clockwise until the end of the screw press is against the hexagonal part of the housing assembly. Refer to Figure 15.



POSITION OF THE SCREW PRESS AGAINST THE HOUSING ASSEMBLY
Figure 15

(e) Turn the wing screw clockwise until it stops. Refer to Figure 15.

NOTE: When the wing screw stops, the shoulder of the plunger is against the housing assembly.

(f) Turn the screw press counter-clockwise to remove it from the housing assembly.

(16) If the connector is not connected to a sensing element immediately, put a dust cap on the connector.

CAUTION: DO NOT LET FLUID OR CONTAMINATION GO INTO THE CONNECTOR. IF FLUID OR CONTAMINATION GOES INTO THE CONNECTOR, UNSATISFACTORY PERFORMANCE OF THE CONNECTOR CAN OCCUR.

(17) Cure the cement a minimum of 18 hours at 70 degrees F before the connector is put in service.

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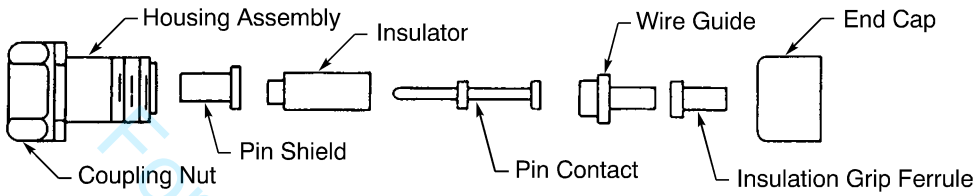
ASSEMBLY OF FENWAL CONNECTORS

CAUTION: THE CONNECTOR IS NOT SERVICEABLE UNTIL THE CEMENT FULLY CURES. IN FLIGHT, TEMPERATURES HIGHER THAN 180 DEGREES F AND HIGH VIBRATIONS CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE CONNECTOR.

NOTE: The plug can be connected to the receptacle before the cement is fully cured.

5. ASSEMBLY OF FENWAL 35303-64, 35303-66 AND 35303-68 CONNECTORS

A. Connector Description



FENWAL 35303-64, 35303-66 AND 35303-68 CONNECTORS
Figure 16

B. Contact Assembly

Table 13
CONTACT CRIMP TOOLS

Wire Size (AWG)	Crimp Tool			
	Basic Unit		Locator	
	Part Number	Setting	Part Number	Color
20	11921	-	3795-1	-
	85-550	5	TH338	Red
			TP673	-
	M22520/1-01	-	TH338	Red
			TP673	-
	ST2220-1-Y	-	ST2220-1-7	-
	WA27F	5	TH338	Red
			TP673	-
18	11921	-	3795-1	-
	85-550	6	TH338	Red
			TP673	-
	M22520/1-01	-	TH338	Red
			TP673	-
	ST2220-1-Y	-	ST2220-1-7	-
	WA27F	6	TH338	Red
			TP673	-

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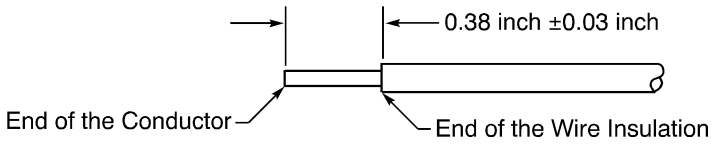
ASSEMBLY OF FENWAL CONNECTORS

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

(2) Remove the 0.38 inch ±0.03 inch of insulation from the end of the wire.

Refer to:

- Figure 17
- Subject 20-00-15 for the insulation removal procedures.



WIRE PREPARATION
Figure 17

(3) Put the end cap on the wire.

Make sure that the end of the end cap that has threads is pointed to the end of the wire.

(4) Put the insulation grip ferrule on the wire.

(5) Increase the O.D. of the wire until the O.D. of the wire is approximately 0.120 inch.

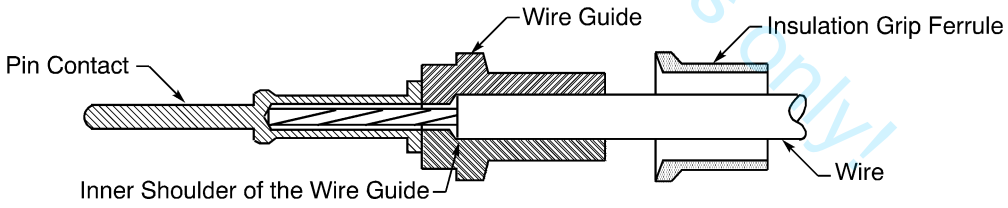
Refer to:

- Paragraph 11.A. for the procedure to increase the O.D. of the wire with one or more heat shrinkable sleeves
- Paragraph 11.B. for the procedure to increase the O.D. of the wire with layers of tape.

(6) Put the wire guide on the wire. Refer to Figure 18.

Make sure that:

- The inner shoulder of the wire guide is against the end of the wire insulation
- If a heat shrinkable sleeve or layer of tape is used to increase the wire O.D, the wire guide does not push the heat shrinkable sleeve or the layer of tape out of its shape.



POSITION OF THE CONTACT AND THE WIRE GUIDE ON THE WIRE
Figure 18

(7) Push the conductor into the crimp barrel of the contact until the end of the conductor is against the forward end of the crimp barrel. Refer to Figure 18.

Make sure that all of the conductors are in the crimp barrel.

(8) Crimp the contact.

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ASSEMBLY OF FENWAL CONNECTORS

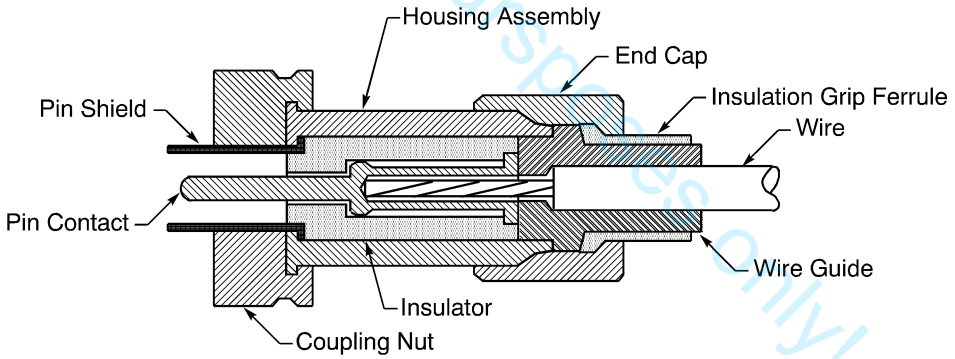
C. Connector Assembly

Table 14
FERRULE CRIMP TOOLS

Basic Unit	Die	
	Part Number	Cavity
M22520/5-01	M22520/5-45	B
WT-409	-	-

Table 15
CONNECTOR ASSEMBLY TOOLS

Tool	Part Number	Suppler
Pliers	ST2598C	Boeing
Screw Press	ST2575C-1	Boeing
	TZ-2255	Fenwal
Torque Adapter	ST2575A	Boeing
	ST2575B	Boeing
Vice	ST2598C-201	Boeing



FENWAL 35303-64, 35303-66 AND 35303-68 CONNECTOR ASSEMBLY
Figure 19

Refer to Figure 19.

(1) Make a selection of these tools from Table 6:
- A torque wrench
- A 1/2 inch wrench
- A 1/2 inch socket or a 1/2 inch crow foot adapter.

(2) Make a selection of a cement from Table 3.

(3) Make a selection of a ferrule crimp tool from Table 14.

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(4) Make a selection of a torque adapter from Table 15.

NOTE: The housing assembly of a plug connector is a satisfactory alternative for a torque adapter.

(5) Make a selection of pliers or a vice from Table 15.

(6) Put the insulator on the pin contact.

Make sure the rear end of the insulator is against the wire guide.

(7) Put the pin shield on the contact.

Make sure that the rear end of the pin shield is against the insulator

(8) Put the housing assembly on the contact assembly.

(9) Apply a layer of cement to the first three threads of the housing assembly.

(10) Push the insulation grip ferrule forward until it is fully on the wire guide.

(11) Push the end cap forward on the ferrule until the end cap is against the housing assembly.

(12) Fully engage the threads of the end cap and the threads of the housing assembly.

(13) Torque the torque adapter and the housing assembly:

(a) Fully engage the threads of the torque adapter and the threads of the coupling nut.

(b) Put the torque wrench and the crow foot adapter or the socket on the torque adapter.

(c) Put the 1/2 inch wrench on the coupling nut.

(d) Torque the adapter 65 inch-pounds to 75 inch-pounds.

(14) Torque the end cap:

(a) Hold the end cap tightly in the pliers or the vice.

(b) Put the torque wrench and the crow foot adapter or the socket on the torque adapter.

(c) Torque the end cap 50 inch-pounds to 60 inch-pounds.

(15) Remove the unwanted cement from the surface of the housing assembly.

(16) Hold the coupling nut with the 1/2 inch.

(17) Remove the torque adapter from the connector.

(18) Crimp the ferrule.

(19) If the connector is not connected to a sensing element immediately, put a dust cap on the connector.

CAUTION: DO NOT LET FLUID OR CONTAMINATION GO INTO THE CONNECTOR. IF FLUID OR CONTAMINATION GOES INTO THE CONNECTOR, UNSATISFACTORY PERFORMANCE OF THE CONNECTOR CAN OCCUR.

(20) Cure the cement a minimum of 18 hours at 70 degrees F before the connector is put in service.

CAUTION: THE CONNECTOR IS NOT SERVICEABLE UNTIL THE CEMENT FULLY CURES. IN FLIGHT, TEMPERATURES HIGHER THAN 180 DEGREES F AND HIGH VIBRATIONS CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE CONNECTOR.

NOTE: The receptacle can be connected to the plug before the cement is fully cured.

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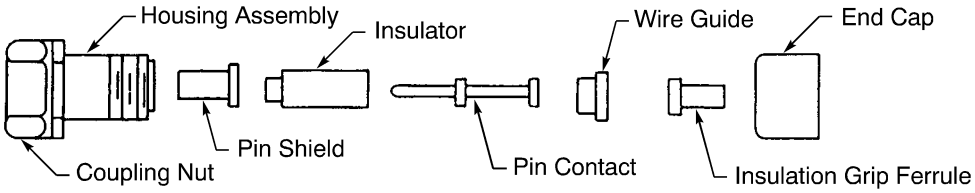
6. ASSEMBLY OF FENWAL 35303-75 CONNECTORS

A. Connector Description



FENWAL 35303-75 CONNECTOR
Figure 20

B. Contact Assembly

Table 16
CONTACT CRIMP TOOLS

Wire Size (AWG)	Crimp Tools			
	Basic Unit		Locator	
	Part Number	Setting	Part Number	Color
20	11921	-	3795-1	-
	85-550	5	TH338	Red
			TP673	-
	M22520/1-01	-	TH338	Red
			TP673	-
	ST2220-1-Y	-	ST2220-1-7	-
	WA27F	5	TH338	Red
			TP673	-
18	11921	-	3795-1	-
	85-550	6	TH338	Red
			TP673	-
	M22520/1-01	-	TH338	Red
			TP673	-
	ST2220-1-Y	-	ST2220-1-7	-
	WA27F	6	TH338	Red
			TP673	-

(1) Make a selection of a crimp tool from Table 16.

(2) Remove the 0.38 inch ±0.03 inch of insulation from the end of the wire.

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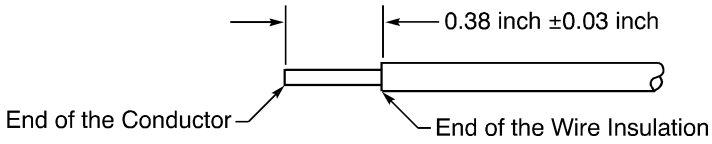
Refer to:

- Figure 21
- Subject 20-00-15 for the insulation removal procedures.



WIRE PREPARATION
Figure 21

(3) Put the end cap on the wire.

Make sure that the end of the end cap that has threads is pointed to the end of the wire.

(4) Put the insulation grip ferrule on the wire. Refer to Figure 20.

(5) Increase the O.D. of the wire until the O.D. of the wire is approximately 0.120 inch.

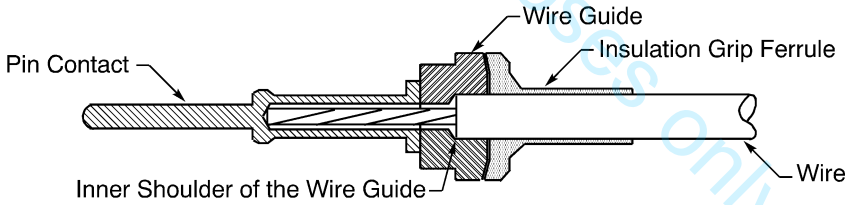
Refer to:

- Paragraph 11.A. for the procedure to increase the O.D. of the wire with one or more heat shrinkable sleeves
- Paragraph 11.B. for the procedure to increase the O.D. of the wire with layers of tape.

(6) Put the wire guide on the wire. Refer to Figure 22.

Make sure that:

- The inner shoulder of the wire guide is against the end of the wire insulation
- If a heat shrinkable sleeve or layer of tape is used to increase the wire O.D, the wire guide does not push the heat shrinkable sleeve or the layer of tape out of its shape.



POSITION OF THE CONTACT AND THE WIRE GUIDE ON THE WIRE
Figure 22

(7) Push the conductor into the crimp barrel of the contact until the end of the conductor is against the forward end of the crimp barrel. Refer to Figure 22.

Make sure that all of the conductors are in the crimp barrel.

(8) Crimp the contact.

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ASSEMBLY OF FENWAL CONNECTORS

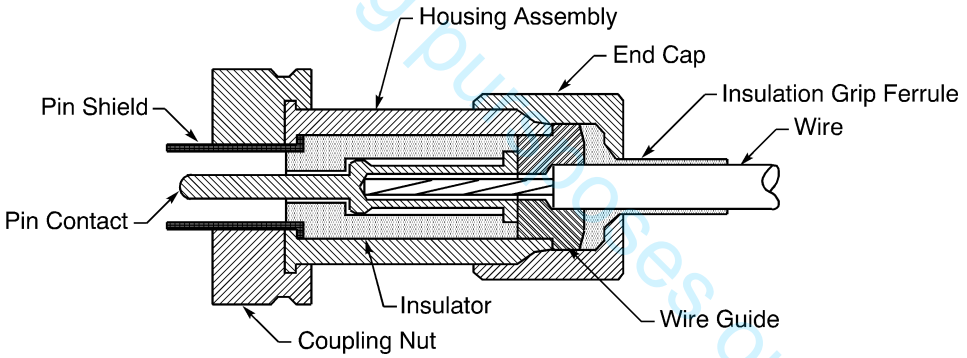
C. Connector Assembly

Table 17
FERRULE CRIMP TOOLS

Basic Unit	Die	
	Part Number	Cavity
M22520/5-01	M22520/5-45	B
WT-409	-	-

Table 18
CONNECTOR ASSEMBLY TOOLS

Tool	Part Number
Pliers	ST2598C
Torque Adapter	ST2575A
	ST2575B
Vice	ST2598C-201



FENWAL 35303-75 CONNECTOR ASSEMBLY
Figure 23

Refer to Figure 23.

(1) Make a selection of these tools from Table 6:
- A torque wrench
- A 1/2 inch wrench
- A 1/2 inch socket or a 1/2 inch crow foot adapter.

(2) Make a selection of a cement from Table 3.

(3) Make a selection of a torque adapter from Table 18.

NOTE: The housing of a plug connector is a satisfactory alternative for a torque adapter.

(4) Make a selection of pliers or a vice from Table 18.

(5) Make a selection of a ferrule crimp tool from Table 17.

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(6) Put the insulator on the pin contact.

Make sure the rear end of the insulator is against the wire guide.

(7) Put the pin shield on the contact.

Make sure that the rear end of the pin shield is against the insulator

(8) Put the housing assembly on the contact assembly.

(9) Apply a layer of cement to the first three threads of the housing assembly.

(10) Push the insulation grip ferrule forward until the is fully on the wire guide.

(11) Push the end cap forward on the ferrule until the end cap is against the housing assembly.

(12) Fully engage the threads of the end cap and the threads of the housing assembly.

(13) Torque the torque adapter and the coupling nut.

(a) Fully engage the threads of the torque adapter and the threads of the coupling nut.

(b) Put the torque wrench and the crow foot adapter or the socket on the torque adapter.

(c) Put the 1/2 inch wrench on the coupling nut.

(d) Torque the adapter 65 inch-pounds to 75 inch-pounds.

(14) Torque the end cap.

(a) Hold the end cap tightly in the pliers or the vice.

(b) Put the torque wrench and the crow foot adapter or the socket on the torque adapter.

(c) Torque the end cap 50 inch-pounds to 60 inch-pounds.

(15) Remove the unwanted cement from the surface of the housing assembly.

(16) Hold the coupling nut with the 1/2 inch wrench.

(17) Remove the torque adapter from the connector.

(18) Crimp the ferrule.

(19) If the connector is not connected to a sensing element immediately, put a dust cap on the connector.

CAUTION: DO NOT LET FLUID OR CONTAMINATION GET INTO THE CONNECTOR. IF FLUID OR CONTAMINATION GOES INTO THE CONNECTOR, UNSATISFACTORY PERFORMANCE OF THE CONNECTOR CAN OCCUR.

(20) Cure the cement a minimum of 18 hours at 70 degrees F before the connector is put in service.

CAUTION: THE CONNECTOR IS NOT SERVICEABLE UNTIL THE CEMENT FULLY CURES. IN FLIGHT, TEMPERATURES HIGHER THAN 180 DEGREES F AND HIGH VIBRATIONS CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE CONNECTOR.

NOTE: The receptacle can connected to the plug before the cement is fully cured.

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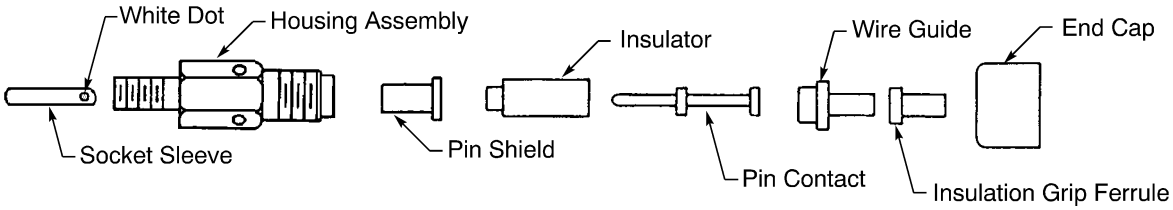
7. ASSEMBLY OF FENWAL 35303-67, 35303-77, 35303-87, AND 04-035303-087 CONNECTORS

A. Connector Description



FENWAL 35303-67, 35303-77, 35303-87, AND 04-035303-087 CONNECTORS
Figure 24

B. Contact Assembly

Table 19
CONTACT CRIMP TOOLS

Wire Size (AWG)	Crimp Tool			
	Basic Unit		Locator	
	Part Number	Setting	Part Number	Color
20	11921	-	3795-1	-
	85-550	5	TH338	Red
			TP673	-
	-	-	TH338	Red
			TP673	-
	ST2220-1-Y	-	ST2220-1-7	-
	WA27F	5	TH338	Red
			TP673	-
18	11921	-	3795-1	-
	85-550	6	TH338	Red
			TP673	-
	-	-	TH338	Red
			TP673	-
	ST2220-1-Y	-	ST2220-1-7	-
	WA27F	6	TH338	Red
			TP673	-

(1) Make a selection of a crimp tool from Table 19.

(2) Remove the 0.38 inch ±0.03 inch of insulation from the end of the wire.

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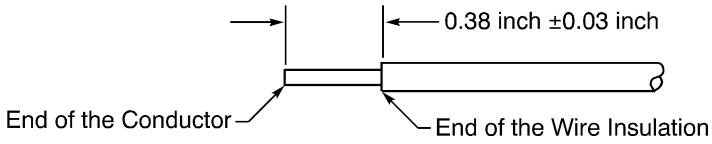
Refer to:

- Figure 25
- Subject 20-00-15 for the insulation removal procedures.



WIRE PREPARATION
Figure 25

(3) Put the end cap on the wire.

Make sure that the end of the end cap that has threads is pointed to the end of the wire.

(4) Put the insulation grip ferrule on the wire. Refer to Figure 24.

(5) Increase the O.D. of the wire until the O.D. of the wire is approximately 0.120 inch.

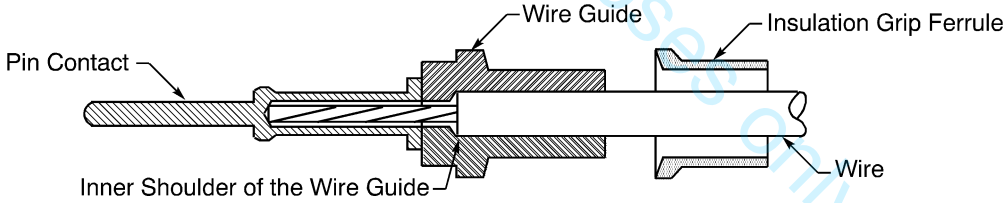
Refer to:

- Paragraph 11.A. for the procedure to increase the O.D. of the wire with one or more heat shrinkable sleeves
- Paragraph 11.B. for the procedure to increase the O.D. of the wire with layers of tape.

(6) Put the wire guide on the wire. Refer to Figure 26.

Make sure that:

- The inner shoulder of the wire guide is against the end of the wire insulation
- If a heat shrinkable sleeve or layer of tape is used to increase the wire O.D, the wire guide does not push the heat shrinkable sleeve or the layer of tape out of its shape.



POSITION OF THE CONTACT, THE WIRE GUIDE, AND THE FERRULE ON THE WIRE
Figure 26

(7) Push the conductor into the crimp barrel of the contact until the end of the conductor is against the forward end of the crimp barrel. Refer to Figure 26.

Make sure that all of the conductors are in the crimp barrel.

(8) Crimp the contact.

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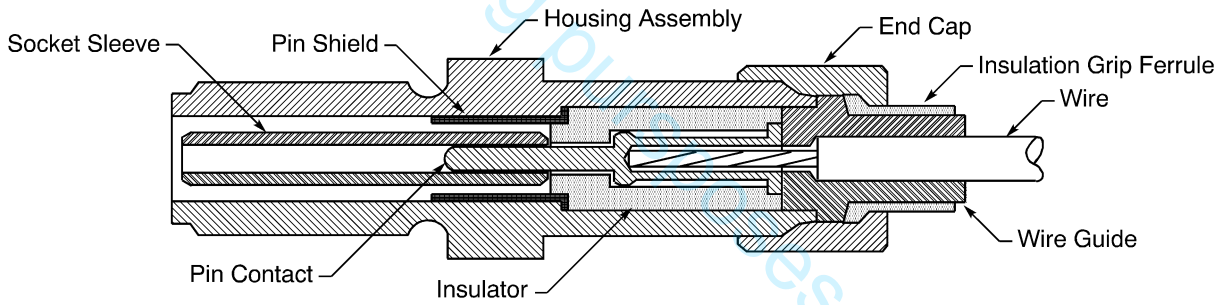
C. Connector Assembly

Table 20
FERRULE CRIMP TOOLS

Basic Unit	Die	
	Part Number	Cavity
M22520/5-01	M22520/5-45	B
WT-409	-	-

Table 21
CONNECTOR ASSEMBLY TOOLS

Tool	Part Number	Suppler
Pliers	ST2598C	Boeing
Screw Press	ST2575C-1	Boeing
	TZ-2255	Fenwal
Vice	ST2598C-201	Boeing



FENWAL 35303-67, 35303-77, 35303-87, AND 04-035303-087 CONNECTOR ASSEMBLY
Figure 27

Refer to Figure 27.

(1) Make a selection of these tools from Table 6:
- A torque wrench
- A 3/8 inch socket or a 3/8 inch crow foot adapter.

(2) Make a selection of a cement from Table 3.

(3) Make a selection of a ferrule crimp tool from Table 20.

(4) Make a selection of pliers or a vice to hold the end cap from Table 21.

(5) Make a selection of a screw press from Table 21.

(6) Put the insulator on the pin contact.
Make sure the rear end of the insulator is against the wire guide.

(7) Put the pin shield on the contact.
Make sure that the rear end of the pin shield is against the insulator

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(8) Put the housing assembly on the contact assembly.

(9) Apply a layer of cement to the first three threads of the housing assembly.

(10) Push the ferrule forward until it is fully on the wire guide.

(11) Push the end cap forward on the ferrule until the end cap is against the housing assembly.

(12) Tighten the end cap on the housing assembly:

(a) Fully engage the threads of the end cap and the threads of the housing assembly.

(b) Hold the end cap tightly in the pliers or the vice.

(c) Put the torque wrench with the crow foot adapter or the socket on the housing assembly.

(d) Torque the end cap 50 inch-pounds to 60 inch-pounds.

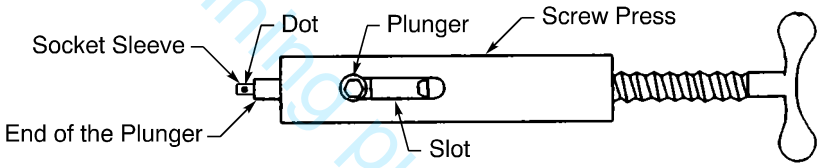
(13) Remove the unwanted cement from the surface of the housing assembly.

(14) Crimp the insulation grip ferrule.

(15) Install the socket sleeve with the screw press:

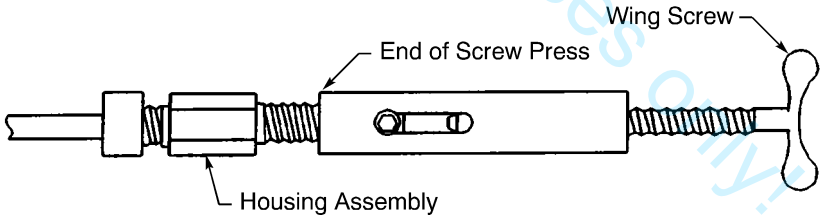
(a) Move the plunger of the screw press to the end of the slot.

(b) Put the end of the socket sleeve without a white dot in the plunger. Refer to Figure 28.



POSITION OF THE SOCKET SLEEVE IN THE SCREW PRESS
Figure 28

(c) Align the end of the screw press with the threads on the housing assembly.



ALIGNMENT OF THE SCREW PRESS AND THE CONNECTOR
Figure 29

(d) Turn the screw press clockwise until the end of the screw press is against the hexagonal part of the housing assembly.

(e) Turn the wing screw clockwise until it stops. Refer to Figure 30.

NOTE: When the wing screw stops, the shoulder of the plunger is against the housing assembly.

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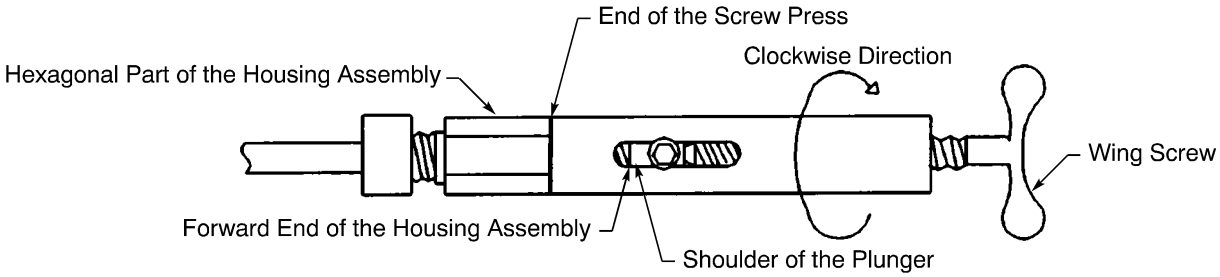
ASSEMBLY OF FENWAL CONNECTORS



POSITION OF THE SCREW PRESS AGAINST THE HOUSING ASSEMBLY
Figure 30

(f) Turn the screw press counter-clockwise to remove it from the housing assembly.

(16) If the connector is not connected to a sensing element immediately, put a dust cap on the connector.

CAUTION: DO NOT LET FLUID OR CONTAMINATION GET INTO THE CONNECTOR. IF FLUID OR CONTAMINATION GOES INTO THE CONNECTOR, UNSATISFACTORY PERFORMANCE OF THE CONNECTOR CAN OCCUR.

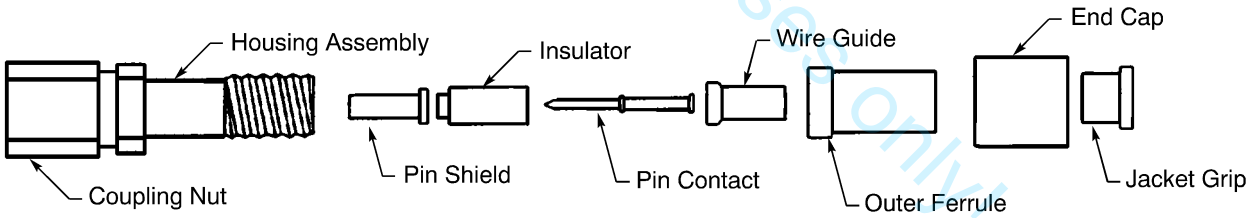
(17) Cure the cement a minimum of 18 hours at 70 degrees F before the connector is put in service.

CAUTION: THE CONNECTOR IS NOT SERVICEABLE UNTIL THE CEMENT FULLY CURES. IN FLIGHT, TEMPERATURES HIGHER THAN 180 DEGREES F AND HIGH VIBRATIONS CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE CONNECTOR.

NOTE: The plug can be connected to the receptacle before the cement is fully cured.

8. ASSEMBLY OF FENWAL 35303-90, 35303-94, 35303-97, AND 35303-99 CONNECTORS

A. Connector Description



FENWAL 35303-90, 35303-94, 35303-97, AND 35303-99 CONNECTORS
Figure 31

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B. Contact Assembly

Table 22
CONTACT CRIMP TOOLS

Wire Size (AWG)	Crimp Tool			
	Basic Unit		Locator	
	Part Number	Setting	Part Number	Color
18	11921	-	3795-1	-
	M22520/1-01	6	TH338	Red
			TP673	-
	ST2220-1-Y	-	ST2220-1-7	-
	WA27F	6	TH338	Red
			TP673	-

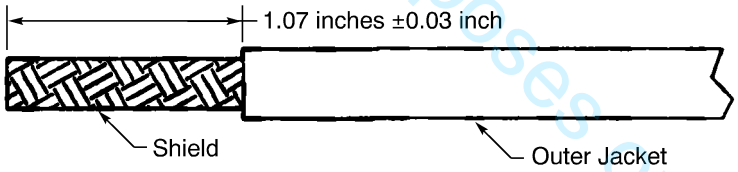
(1) Make a selection of the crimp tool from Table 22.

(2) Remove 1.07 inches ±0.03 inch of the outer jacket from the end of the wire.

Refer to:

- Figure 32
- Subject 20-00-15 for the insulation removal procedures.

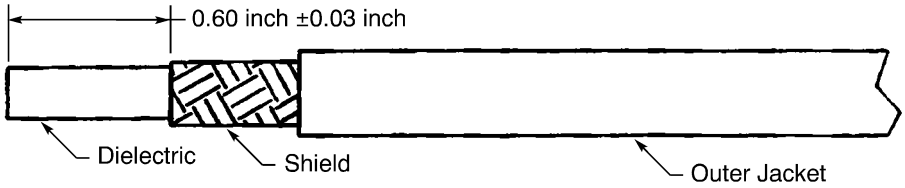
CAUTION: DO NOT CAUSE DAMAGE TO THE SHIELD. UNSATISFACTORY PERFORMANCE OF THE WIRE CAN OCCUR.



OUTER JACKET REMOVAL LENGTH
Figure 32

(3) Remove 0.60 inch ±0.03 inch of the shield from the end of the wire. Refer to Figure 33.

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



SHIELD REMOVAL LENGTH
Figure 33

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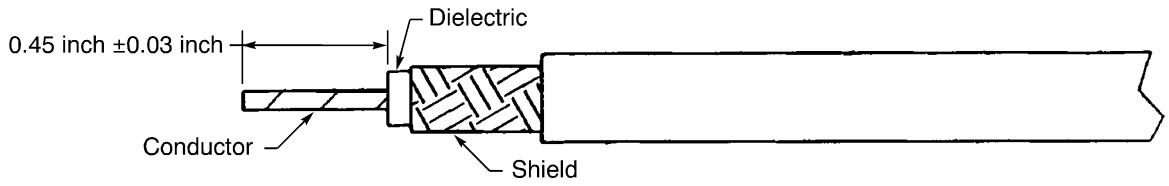
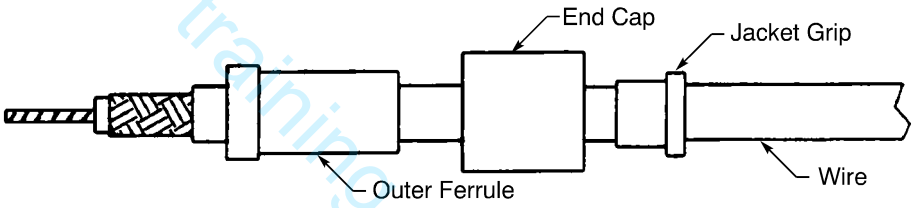
(4) Remove 0.45 inch ±0.03 inch of the dielectric from the end of the wire. Refer to Figure 34.

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



DIELECTRIC REMOVAL LENGTH
Figure 34

(5) Put the jacket grip on the wire. Refer to Figure 35.

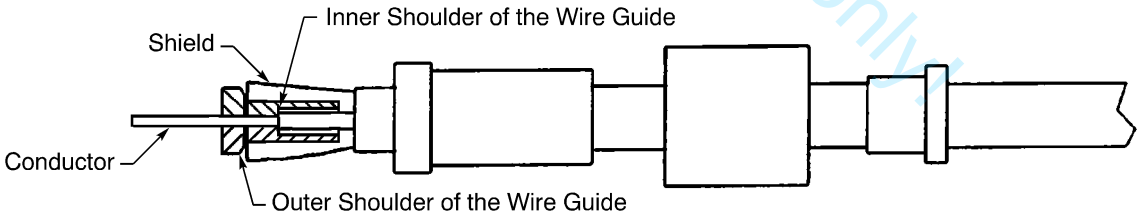


POSITION OF THE JACKET GRIP, THE END CAP, AND THE OUTER FERRULE ON THE WIRE
Figure 35

(6) Put the end cap on the wire. Refer to Figure 35.
Make sure that the end of the end cap that has threads is pointed to the end of the wire.

(7) Put the outer ferrule on the wire. Refer to Figure 35.

(8) Put the wire guide on the wire between the dielectric and the shield. Refer to Figure 36.
Make sure that the inner shoulder of the wire guide is against the end of the dielectric.



POSITION OF THE WIRE GUIDE BETWEEN THE DIELECTRIC AND THE SHIELD
Figure 36

(9) If the shield makes an overlap with the outer shoulder of the wire guide, remove the necessary length of shield to make the shield go against the wire guide. Refer to Figure 36.

(10) Push the conductor into the crimp barrel of the contact until the end of the conductor is against the forward end of the crimp barrel. Refer to Figure 37.

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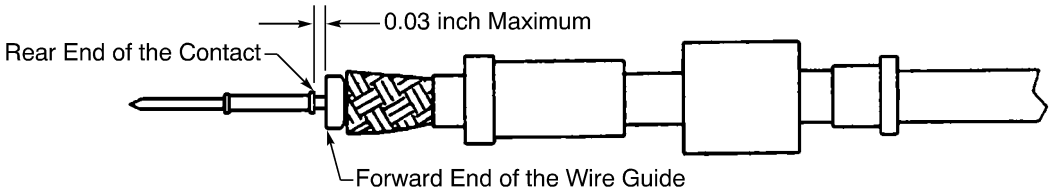
Make sure that:

- All of the conductor strands are in the crimp barrel
- The distance from the forward end of the wire guide to the rear end of the contact is 0.03 inch maximum.



POSITION OF THE CONTACT ON THE WIRE
Figure 37

(11) Crimp the contact.

C. Connector Assembly

Table 23
FERRULE CRIMP TOOLS

Crimp Tool	
Basic Unit	**Die**
HD37	Y870H

Table 24
CONNECTOR ASSEMBLY TOOLS

Tool	Part Number
Pliers	ST2598C
Torque Adapter	ST2575A
	ST2575B
Vice	ST2598C-201

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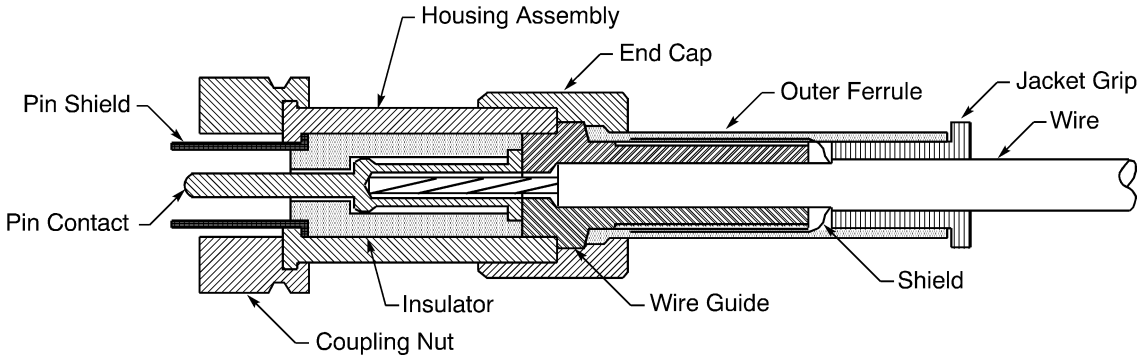
ASSEMBLY OF FENWAL CONNECTORS



FENWAL 35303-90, 35303-94, 35303-97, AND 35303-99 CONNECTOR ASSEMBLY
Figure 38

Refer to Figure 38.

(1) Make a selection of these tools from Table 6:
- A torque wrench
- A 1/2 inch wrench
- A 1/2 inch socket or a 1/2 inch crow foot adapter.

(2) Make a selection of a ferrule crimp tool from Table 23.

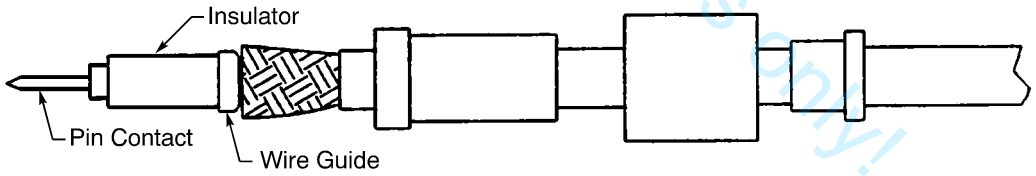
(3) Make a selection of a torque adapter from Table 24.

NOTE: The housing assembly of a plug connector is a satisfactory alternative for a torque adapter.

(4) Make a selection of pliers or a vice from Table 24.

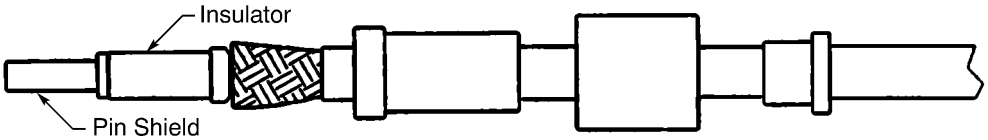
(5) Make a selection of a cement from Table 3.

(6) Put the insulator on the pin contact. Refer to Figure 39.
Make sure that the rear end of the insulator is against the wire guide.



POSITION OF THE INSULATOR
Figure 39

(7) Put the pin shield on the contact. Refer to Figure 40.
Make sure the end of the pin shield is against the insulator.



POSITION OF THE PIN SHIELD
Figure 40

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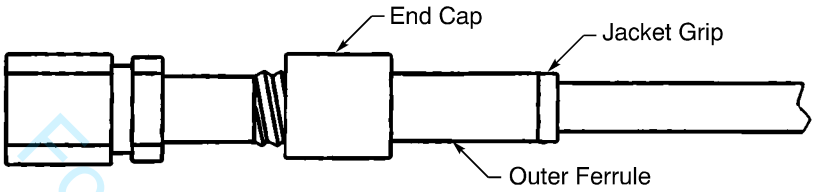
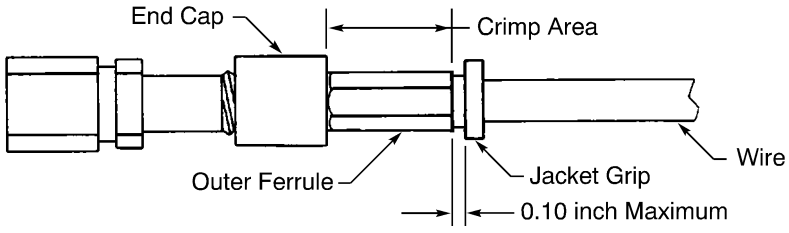
(8) Put the housing assembly on the contact assembly.
Make sure that the housing assembly is against the pin shield.
(9) Apply a layer of cement to the first three threads of the housing assembly.
(10) Push the outer ferrule forward until it is fully on the wire guide.
(11) Push the end cap forward on the ferrule until the end cap is against the housing assembly.
(12) Fully engage the threads of the end cap and the housing assembly. Refer to Figure 41.



POSITION OF THE END CAP AND THE HOUSING ASSEMBLY
Figure 41

(13) Torque the torque adapter and the coupling nut.
(a) Fully engage the threads of the torque adapter and the threads of the coupling nut.
(b) Put the torque wrench with the crow foot adapter or the socket on the torque adapter and hold it in its position.
(c) Put the 1/2 inch wrench on the coupling nut.
(d) Torque the adapter 65 inch-pounds to 75 inch-pounds.
(14) Torque the end cap.
(a) Hold the end cap tightly in the pliers or the vice.
(b) Hold the torque wrench in its position on the torque adapter.
(c) Torque the end cap 50 inch-pounds to 60 inch-pounds.
(15) Hold the coupling nut with the 1/2 inch wrench.
(16) Remove the torque adapter from the connector.
(17) Remove the unwanted cement from the surface of the housing assembly.
(18) Push the jacket grip forward until it is fully against the ferrule.
(19) Crimp the ferrule. Refer to Figure 42.



CRIMP AREA ON THE FERRULE
Figure 42

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(20) Examine the ferrule for these types of damage:

- The base metal of the ferrule can be seen
- The ferrule has a crack.

NOTE: These items are permitted:

- Flash on the crimp area of the ferrule
- A dimple on all sides of the crimp area
- Deformation of the jacket grip.

(21) If the ferrule has damage, replace the ferrule.

(22) If the connector is not connected to a sensing element immediately, put a dust cap on the connector.

CAUTION: DO NOT LET FLUID OR CONTAMINATION GO INTO THE CONNECTOR. IF FLUID OR CONTAMINATION GOES INTO THE CONNECTOR, UNSATISFACTORY PERFORMANCE OF THE CONNECTOR CAN OCCUR.

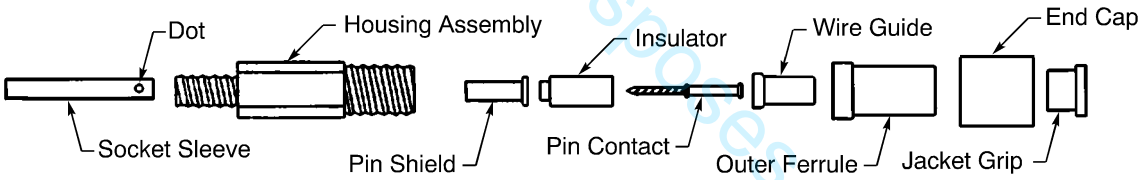
(23) Cure the cement a minimum of 18 hours at 70 degrees F before the connector is put in service.

CAUTION: THE CONNECTOR IS NOT SERVICEABLE UNTIL THE CEMENT FULLY CURES. IN FLIGHT, TEMPERATURES HIGHER THAN 180 DEGREES F AND HIGH VIBRATIONS CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE CONNECTOR.

NOTE: The receptacle can be connected to the plug before the cement is fully cured.

9. ASSEMBLY OF FENWAL 35303-91, 35303-95, 35303-98, AND 35303-100 CONNECTORS

A. Connector Description



FENWAL 35303-91, 35303-95, 35303-98, AND 35303-100 CONNECTORS
Figure 43

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B. Contact Assembly

Table 25
CONTACT CRIMP TOOLS

Wire Size (AWG)	Crimp Tool			
	Basic Unit		Locator	
	Part Number	Setting	Part Number	Color
18	11921	-	3795-1	-
	M22520/1-01	6	TH338	Red
			TP673	-
	ST2220-1-Y	-	ST2220-1-7	-
	WA27F	6	TH338	Red
			TP673	-

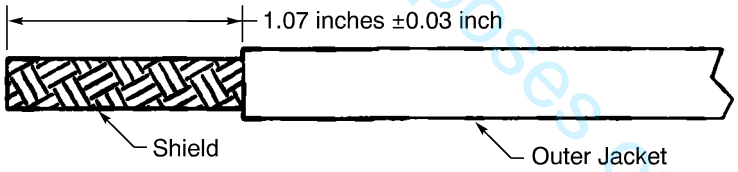
(1) Make a selection of the crimp tool from Table 25.

(2) Remove 1.07 inches ±0.03 inch of the outer jacket from the end of the wire.

Refer to:

- Figure 44
- Subject 20-00-15 for the insulation removal procedures.

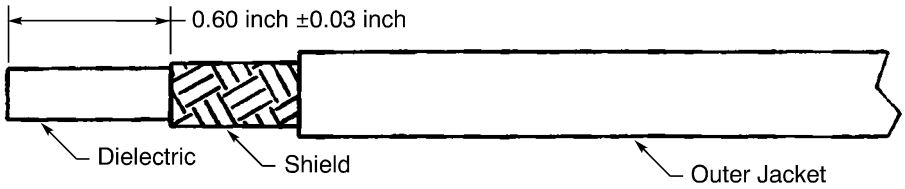
CAUTION: DO NOT DAMAGE THE SHIELD. UNSATISFACTORY PERFORMANCE OF THE WIRE CAN OCCUR.



OUTER JACKET REMOVAL LENGTH
Figure 44

(3) Remove 0.60 inch ±0.03 inch of the shield from the end of the wire. Refer to Figure 45.

CAUTION: DO NOT DAMAGE THE DIELECTRIC. UNSATISFACTORY PERFORMANCE OF THE WIRE CAN OCCUR.



SHIELD REMOVAL LENGTH
Figure 45

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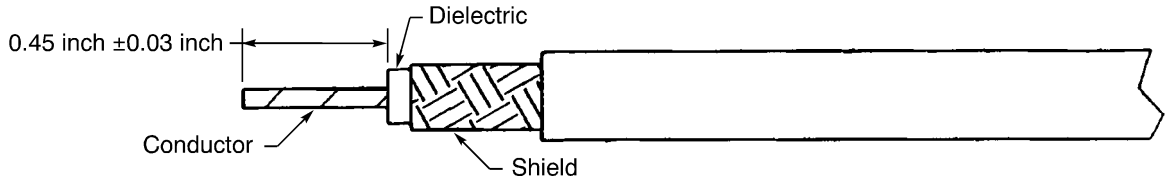
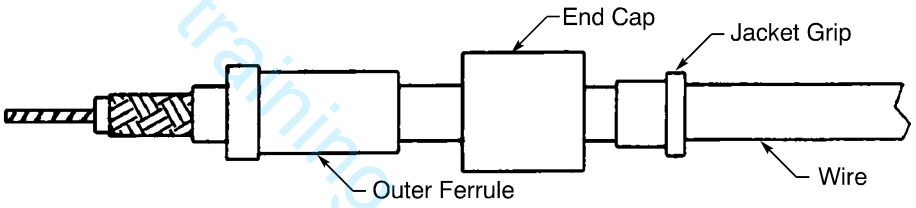
(4) Remove 0.45 inch ±0.03 inch of the dielectric from the end of the wire. Refer to Figure 46.

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



DIELECTRIC REMOVAL LENGTH
Figure 46

(5) Put the jacket grip on the wire. Refer to Figure 47.

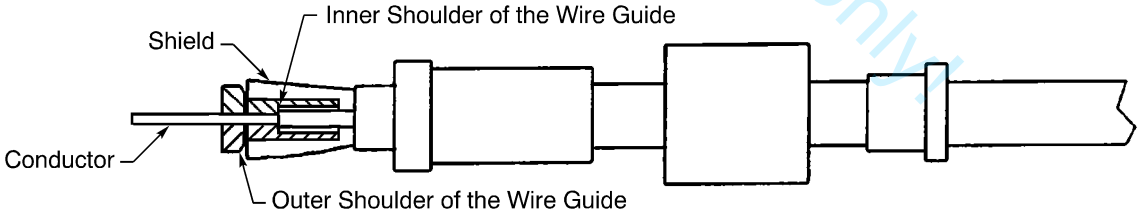


POSITION OF THE JACKET GRIP, THE END CAP, AND THE OUTER FERULE
Figure 47

(6) Put the end cap on the wire. Refer to Figure 47.
Make sure that the end of the end cap that has threads is pointed to the end of the wire.

(7) Put the outer ferrule on the wire. Refer to Figure 47.

(8) Put the wire guide on the wire between the dielectric and the shield. Refer to Figure 48.
Make sure that the inner shoulder of the wire guide is against the end of the dielectric.



POSITION OF THE WIRE GUIDE BETWEEN THE DIELECTRIC AND THE SHIELD
Figure 48

(9) If the shield makes an overlap with the outer shoulder of the wire guide, remove the necessary length of shield to make the shield go against the wire guide. Refer to Figure 48.

(10) Push the conductor into the crimp barrel of the contact until the end of the conductor is against the forward end of the crimp barrel. Refer to Figure 49.

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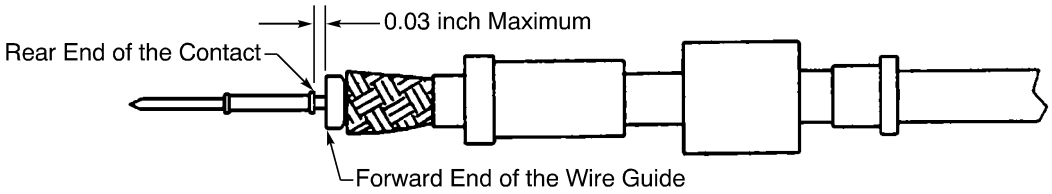
Make sure that:

- All of the conductor strands are in the crimp barrel
- The distance from the forward end of the wire guide to the rear end of the contact is 0.03 inch maximum.



POSITION OF THE CONTACT ON THE WIRE
Figure 49

(11) Crimp the contact.

C. Connector Assembly

Table 26
FERRULE CRIMP TOOLS

Crimp Tool	
Basic Unit	**Die**
HD37	Y870H

Table 27
CONNECTOR ASSEMBLY TOOLS

Tool	Part Number	Suppler
Pliers	ST2598C	Boeing
Screw Press	ST2575C-1	Boeing
	TZ-2255	Fenwal
Torque Adapter	ST2575A	Boeing
	ST2575B	Boeing
Vice	ST2598C-201	Boeing

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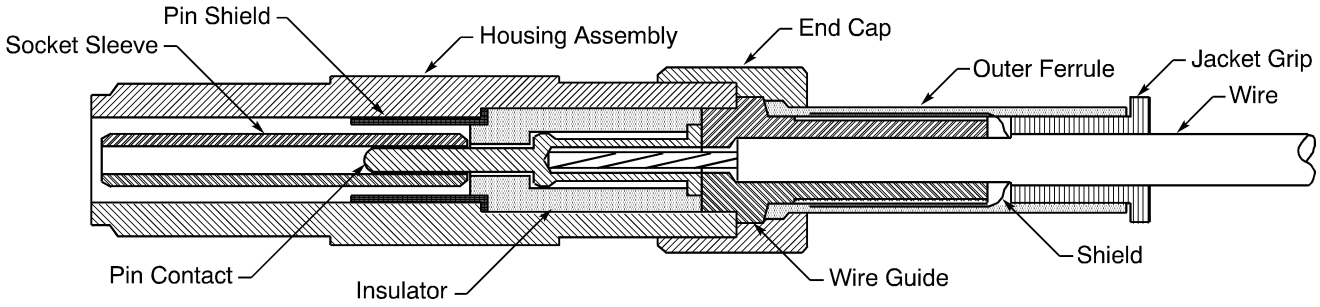
ASSEMBLY OF FENWAL CONNECTORS



FENWAL 35303-91, 35303-95, 35303-98, AND 35303-100 CONNECTOR ASSEMBLY
Figure 50

Refer to Figure 50.

(1) Make a selection of these tools from Table 6:
- A torque wrench
- A 3/8 inch socket or a 3/8 inch crow foot adapter.

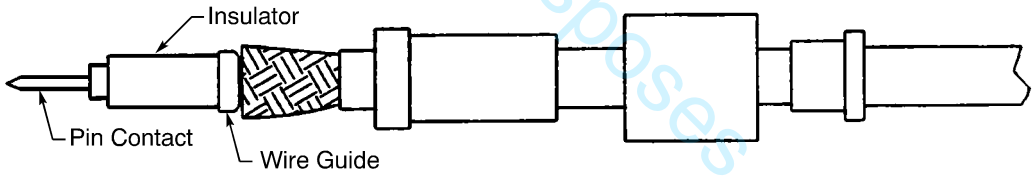
(2) Make a selection of a cement from Table 3.

(3) Make a selection of a ferrule crimp tool from Table 26.

(4) Make a selection of a screw press from Table 27.

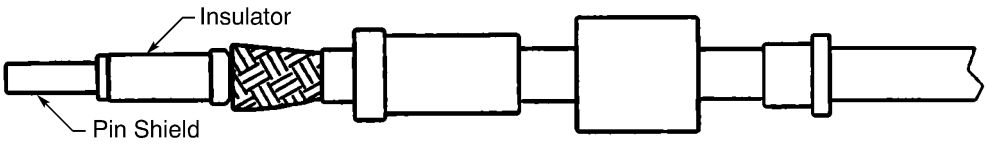
(5) Make a selection of pliers or a vice from Table 27.

(6) Put the insulator on the pin contact. Refer to Figure 51.
Make sure that the rear end of the insulator is against the wire guide.



POSITION OF THE INSULATOR
Figure 51

(7) Put the pin shield on the contact. Refer to Figure 52.
Make sure the end of the pin shield is against the insulator.



POSITION OF THE PIN SHIELD
Figure 52

(8) Put the housing assembly on the contact assembly.
Make sure that the housing assembly is against the pin shield.

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(9) Apply a layer of cement to the first three threads of the housing assembly.

(10) Push the outer ferrule forward until it is fully on the wire guide.

(11) Push the end cap forward on the ferrule until the end cap is against the housing assembly.

(12) Tighten the end cap on the housing assembly.

(a) Fully engage the threads of the end cap and the housing assembly.

(b) Hold the end cap tightly in the pliers or the vice.

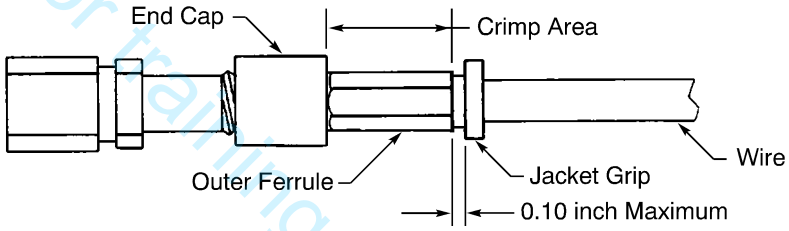
(c) Put the torque wrench with the crow foot adapter or the socket on the housing assembly.

(d) Torque the end cap 50 inch-pounds to 60 inch-pounds.

(13) Remove the unwanted cement from the surface of the housing assembly.

(14) Push the jacket grip forward until it is fully against the ferrule.

(15) Crimp the ferrule. Refer to Figure 53.



CRIMP AREA ON THE OUTER FERRULE
Figure 53

(16) Examine the ferrule for these types of damage:

- The base metal of the ferrule can be seen
- The ferrule has a crack.

NOTE: These items are permitted:

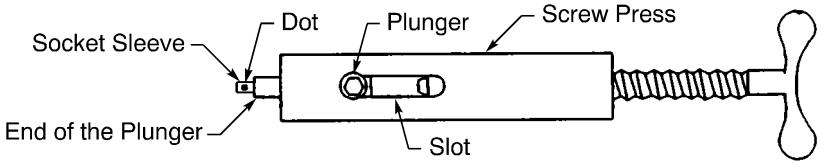
- Flash on the crimp area of the ferrule
- A dimple on all sides of the crimp area
- Deformation of the jacket grip.

(17) If the ferrule has damage, replace the ferrule.

(18) Install the socket sleeve with the screw press:

(a) Move the plunger of the screw press to the end of the slot.

(b) Put the end of the socket sleeve without a black dot in the plunger. Refer to Figure 54.



POSITION OF THE SOCKET SLEEVE IN THE SCREW PRESS
Figure 54

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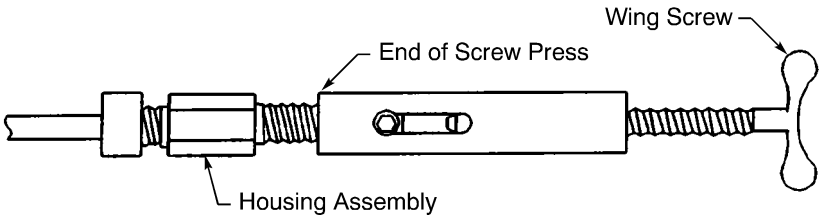
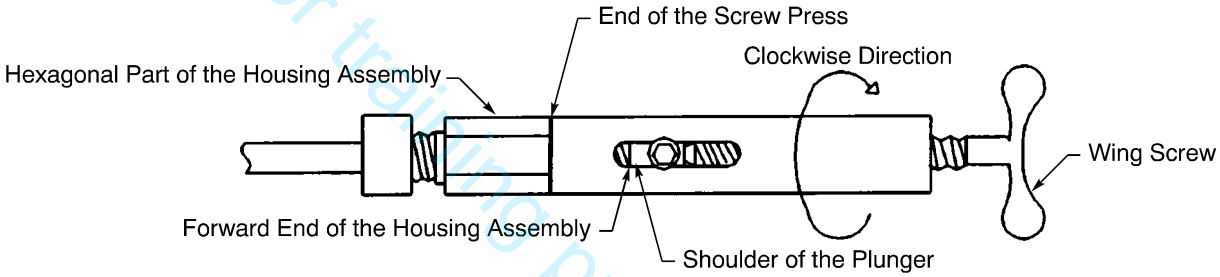
(c) Align the end of the screw press with the threads on the housing assembly. Refer to Figure 55.



ALIGNMENT OF THE SCREW PRESS AND THE CONNECTOR
Figure 55

(d) Turn the screw press clockwise until the end of the screw press is against the hexagonal part of the housing assembly. Refer to Figure 56.



POSITION OF THE SCREW PRESS AGAINST THE HOUSING ASSEMBLY
Figure 56

(e) Turn the wing screw clockwise until it stops. Refer to Figure 56.

NOTE: When the wing screw stops, the shoulder of the plunger is against the housing assembly.

(f) Turn the screw press counter-clockwise to remove it from the housing assembly.

(19) If the connector is not connected to a sensing element immediately, put a dust cap on the connector.

CAUTION: DO NOT LET FLUID OR CONTAMINATION GO INTO THE CONNECTOR. IF FLUID OR CONTAMINATION GOES INTO THE CONNECTOR, UNSATISFACTORY PERFORMANCE OF THE CONNECTOR CAN OCCUR.

(20) Cure the cement a minimum of 18 hours at 70 degrees F before the connector is put in service.

CAUTION: THE CONNECTOR IS NOT SERVICEABLE UNTIL THE CEMENT FULLY CURES. IN FLIGHT, TEMPERATURES HIGHER THAN 180 DEGREES F AND HIGH VIBRATIONS CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE CONNECTOR.

NOTE: The plug can connected to the receptacle before the cement is fully cured.

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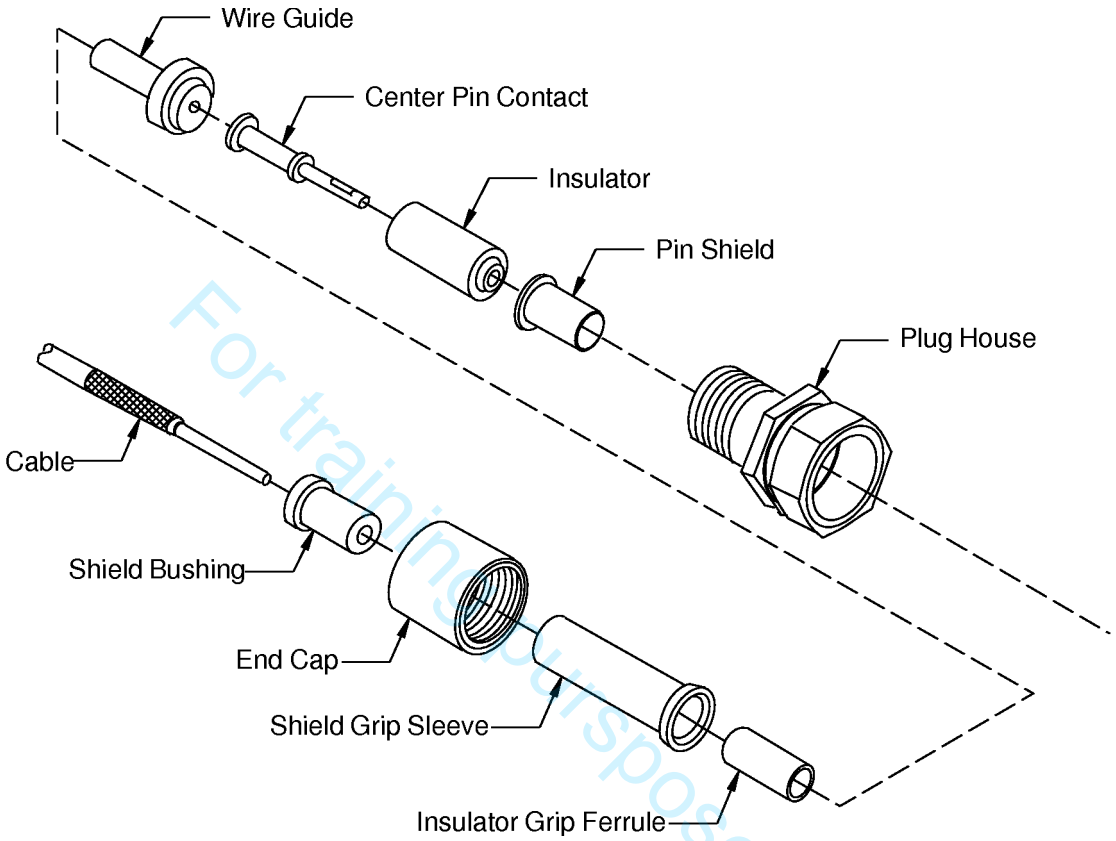
10. ASSEMBLY OF FENWAL 35303-141, 35303-142 CONNECTORS

A. Connector Components



FENWAL 35303-141 PLUG CONNECTOR COMPONENTS
Figure 57

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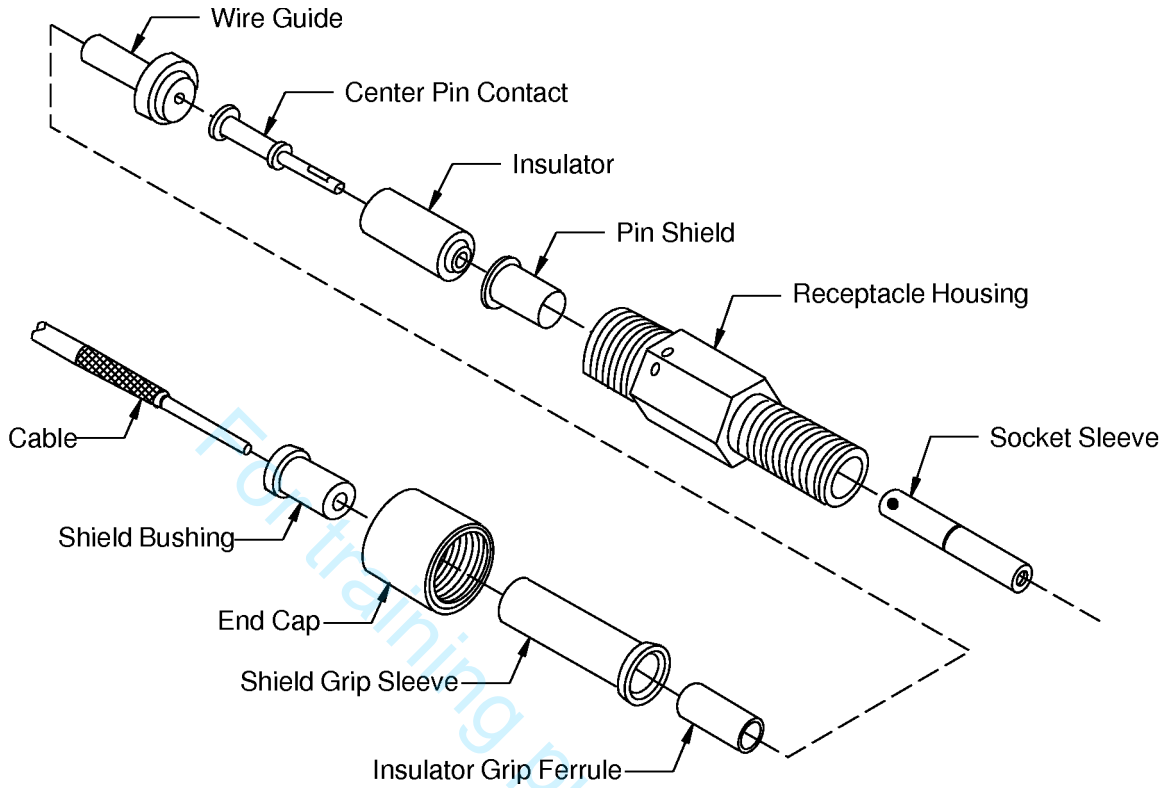
ASSEMBLY OF FENWAL CONNECTORS



FENWAL 35303-142 RECEPTACLE CONNECTOR COMPONENTS
Figure 58

B. Contact Assembly

Table 28
CENTER CONTACT PART NUMBERS

Connector		Center Contact	
Part Number	**Supplier**	**Part Number**	**Supplier**
35303-141	Fenwal	06-134724-004	Fenwal
35303-142	Fenwal	06-232356-003	Fenwal

Table 29
CENTER CONTACT CRIMP TOOLS

Basic Unit			Locator	
Part Number	**Setting**	**Supplier**	**Part Number**	**Supplier**
AF8	3	Daniels	TP673	Daniels
M22520/1-01	3	Any available source	TP673	Daniels

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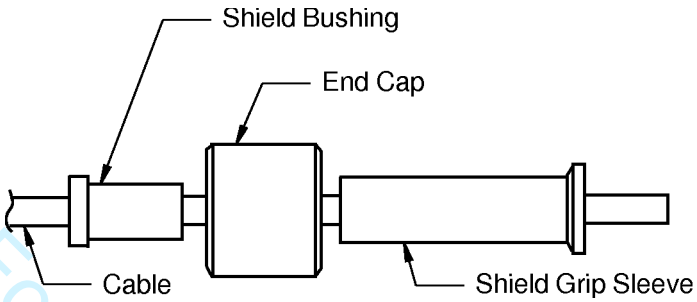
ASSEMBLY OF FENWAL CONNECTORS

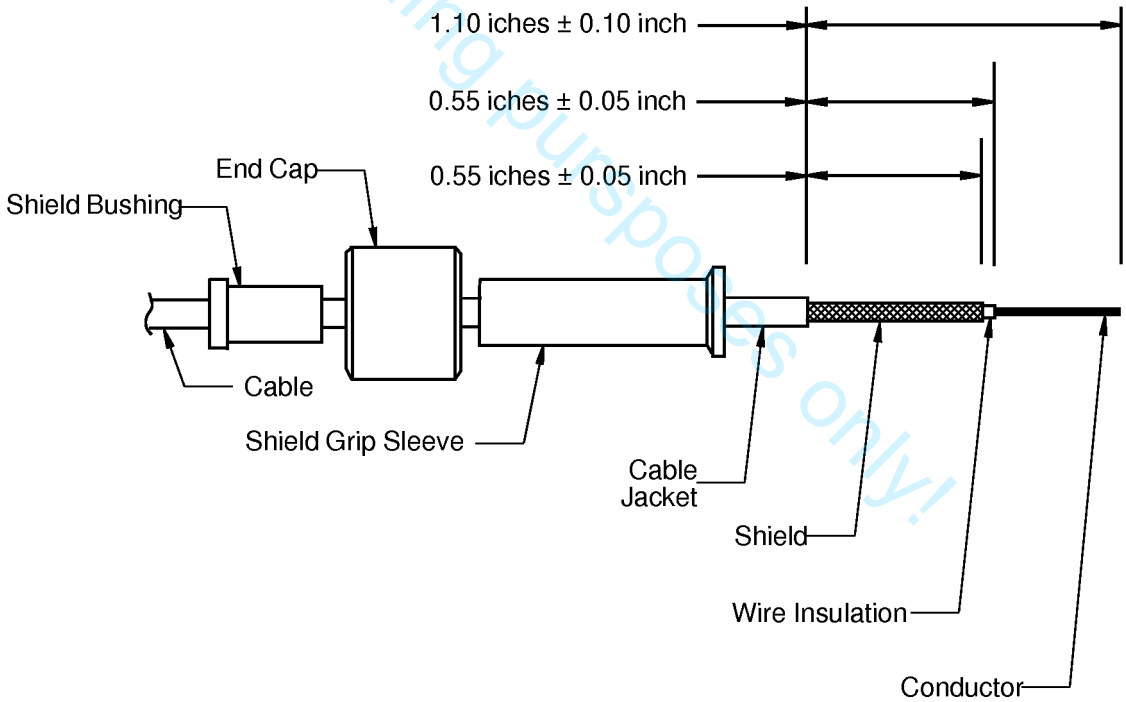
(1) Put these components on the cable in this sequence. Refer to Figure 59.

- The shield bushing
- The end cap
- The shield grip sleeve.



POSITION OF THE ASSEMBLY COMPONENTS ON THE CABLE
Figure 59

(2) Prepare the cable. Refer to Figure 60.



CABLE PREPARATION
Figure 60

(a) Remove 1.10 inches ±0.1 inch of jacket from the end of the cable.

(b) Remove the necessary length of the shield to make the distance form the end of the cable jacket to the end of the shield equal to 0.55 inch ± 0.05 inch.

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(c) Remove the necessary length of the wire insulation to make the distance from the end of the cable jacket to the end of the insulation equal to 0.50 inch ±0.05 inch.

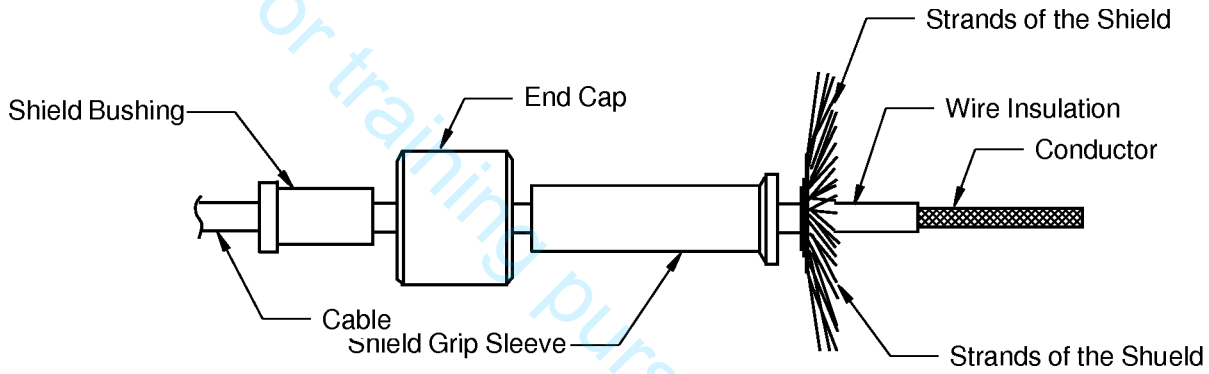
(d) Examine the cable.

Make sure that:

- The strands of the conductor are not moved apart
- The cable has no remaining unwanted jacket material, shield material, or insulation material
- The shield has no contamination.

CAUTION: UNWANTED MATERIAL OR CONTAMINATION CAN CAUSE A DEFECTIVE ELECTRICAL CONNECTION.

(3) Move the strands of the shield apart. Refer to Figure 61.

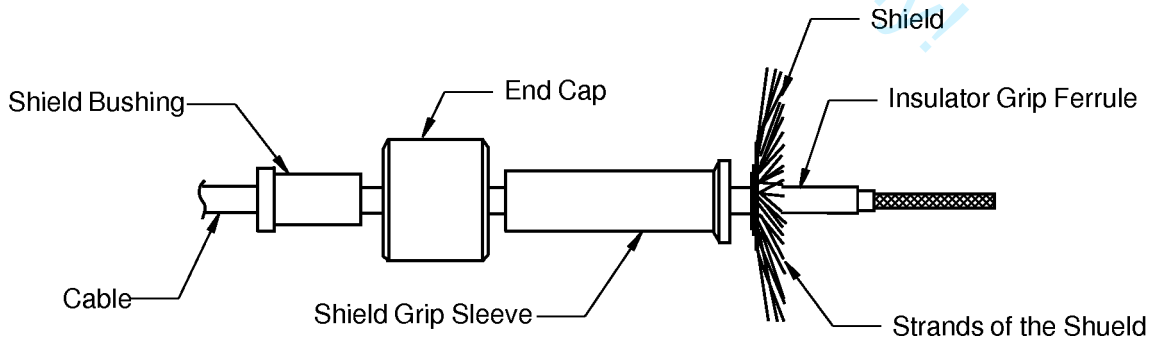


POSITION OF THE STRANDS OF THE SHIELD
Figure 61

(4) Put the insulator grip ferrule on the wire. Refer to Figure 62.

Make sure that:

- The rear end of the ferrule is against the strands of the shield at the cable jacket
- The strands of the shield are not between the wire insulation and the ferrule.



POSITION OF THE INSULATOR GRIP FERRULE ON THE WIRE
Figure 62

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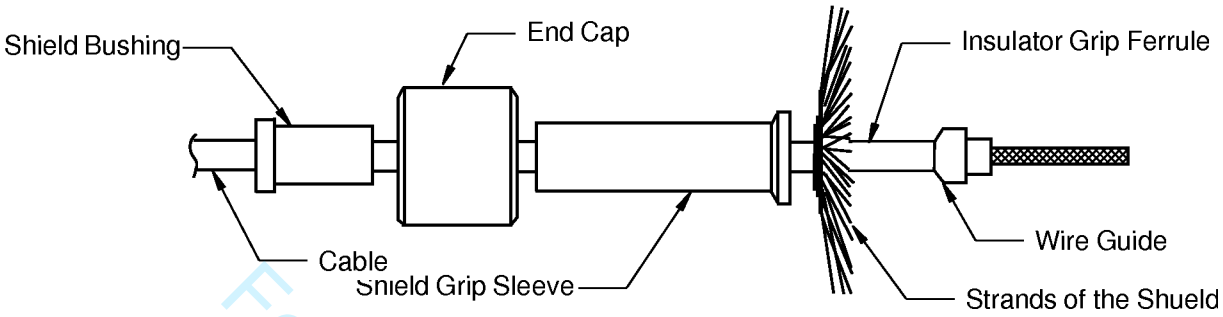
ASSEMBLY OF FENWAL CONNECTORS

CAUTION: THE STRANDS OF THE SHIELD BETWEEN THE WIRE INSULATION AND THE FERRULE CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE ASSEMBLY.

(5) Put the wire guide on the insulator grip ferrule. Refer to Figure 63.



POSITION OF THE WIRE GUIDE ON THE WIRE
Figure 63

(6) Make a selection of a center contact from Table 28.

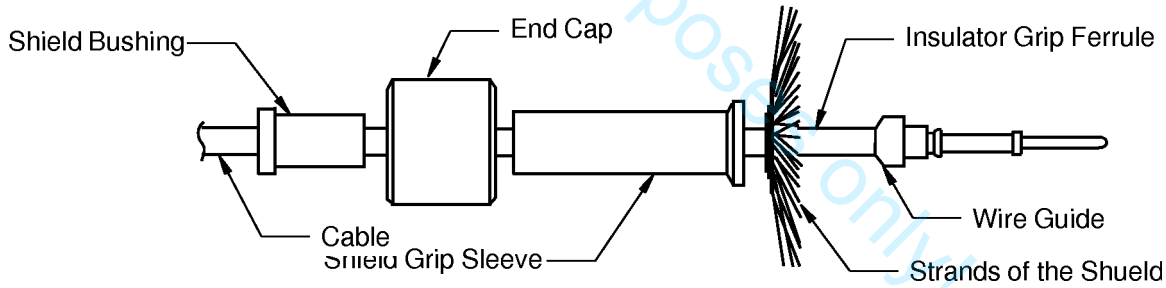
(7) Make a selection of a center contact crimp tool from Table 29.

Make sure that crimp tool has the correct setting.

(8) Put the center contact on the conductor.

Make sure that all of the conductor strands are in the contact crimp barrel.

(9) Push the contact rearward until it is tight against the wire guide and the wire guide is tight against insulator grip ferrule. Refer to Figure 64.



POSITION OF THE CENTER CONTACT ON THE WIRE
Figure 64

(10) Hold all of the components tightly together and crimp the contact.

(11) Lightly full the contact to make sure that the contact is fully installed.

Make sure that:

- The contact does not have a crack
- The contact does not move on the conductor.

(12) If the contact moves on the conductor:

(a) Remove the contact from the conductor.

(b) Make a selection of a center pin contact from Table 28.

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(c) Repeat Step (7) to Step (11) again.

C. Plug Connector Assembly

Table 30
NECESSARY MATERIALS

Description	Part Number	Supplier
Adhesive	Cement No. 31	Sauereisen

Table 31
ADAPTER TOOLS

Tool	Part Number	Supplier
Adapter, Torque Wrench	TH-1599	Fenwal
	ST2575	Boeing

Table 32
END CAP HOLDING TOOLS

Tool	Part Number	Supplier
Wrench, Strap	SW12A	Reed
Pliers	ST2598C	Boeing

Table 33
TORQUE TOOLS

Tool		Supplier
Type	Description	
Torque Wrench	80 inch-pounds minimum torque capability	An available source
Wrench	5/16 inch socket	An available source

Table 34
SHIELD GRIP SLEEVE CRIMP TOOLS

Basic Unit		Die	
Part Number	Supplier	Part Number	Supplier
HX4	Daniels	Y1661P	Daniels
M22520/5-01	An approved source	Y1661P	Daniels

(1) Assemble the center contact. Refer to Paragraph 10.B..

(2) Put the insulator on the center contact. Refer to Figure 65.

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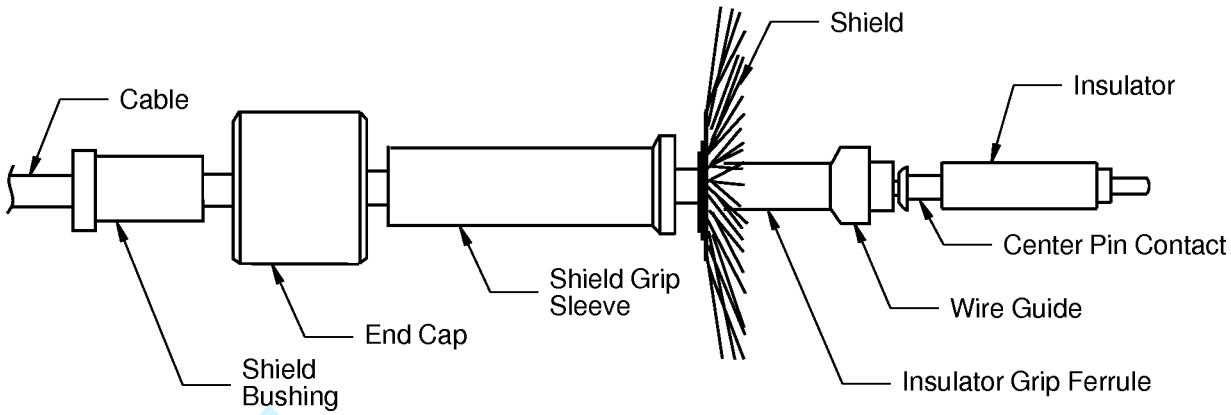
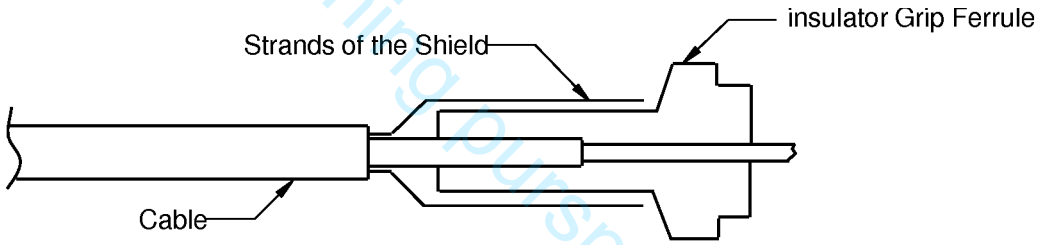
ASSEMBLY OF FENWAL CONNECTORS



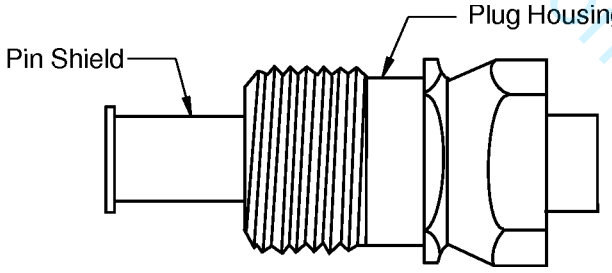
POSITION OF THE INSULATOR ON THE CENTER CONTACT
Figure 65

(3) Put the strands of the shield against the insulator grip ferrule. Refer to Figure 66.
Make sure that the wire strands are equal around the insulator grip ferrule.



POSITION OF THE STRANDS OF THE SHIELD AGAINST THE INSULATOR GRIP FERRULE
Figure 66

(4) Put the pin shield in the Plug housing. Refer to Figure 67.



POSITION OF THE PIN SHIELD IN THE PLUG HOUSING
Figure 67

(5) Make a selection of adhesive from Table 30.

(6) Apply the adhesive on the first three threads at the rear end of the housing. Refer to Figure 68.

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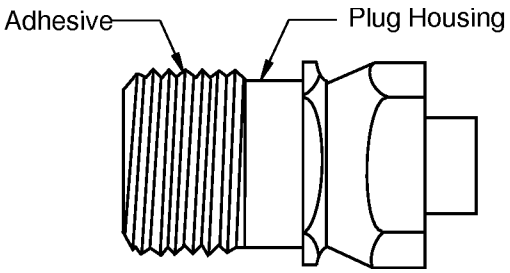
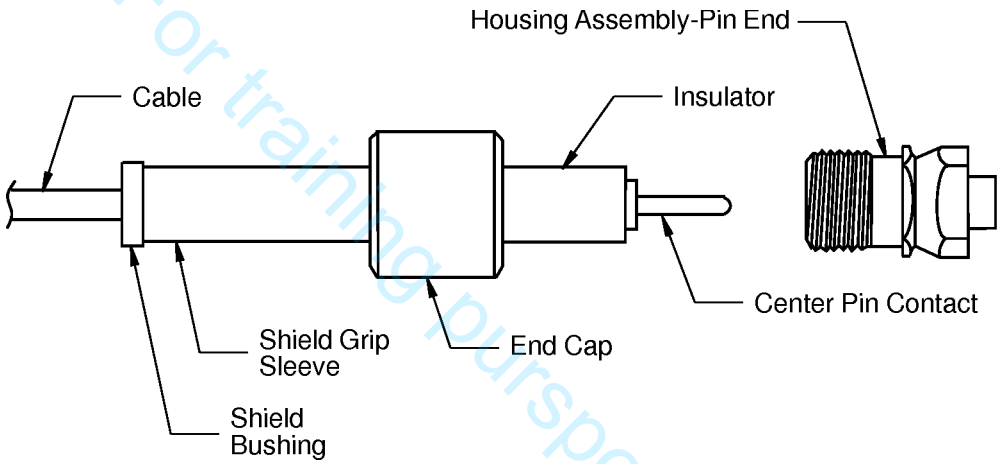
ASSEMBLY OF FENWAL CONNECTORS



LOCATION OF THE ADHESIVE ON THE THREADS OF THE HOUSING
Figure 68

(7) Align the housing and the center contact. Refer to Figure 69.



ALIGNMENT OF THE HOUSING AND THE CENTER CONTACT
Figure 69

(8) Put the housing on the center contact.

(9) Install the end cap. Refer to Figure 70.

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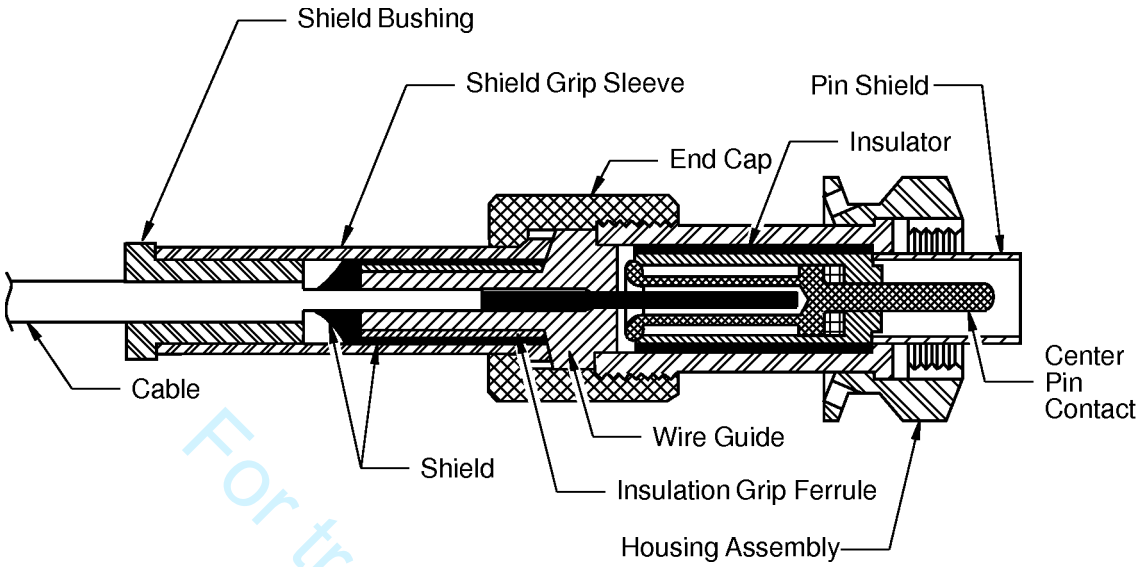
ASSEMBLY OF FENWAL CONNECTORS



INSTALLATION OF THE END CAP
Figure 70

(a) Make a selection of a torque wrench and a 5/16 wrench from Table 33.
(b) Make a selection of an end cap holding tool from Table 32.
(c) Make a selection of a torque wrench adapter from Table 31.
(d) Push the end cap forward until it is against the housing.

NOTE: The shield grip sleeve moves with the end cap.

(e) Push the shield bushing forward into the shield grip sleeve.
(f) Fully engaged the threads of the end cap and the threads of the housing.
(g) Tighten the assembly with the hand.
(h) Install the torque wrench adapter on the swivel nut of the housing.
(i) Put the torque wrench on the torque adapter and hold it in its position.
(j) Put the 5/16 inch wrench on the swivel nut.
(k) Torque the adapter 70 inch-pounds ±5 inch-pounds.
(l) Put the holding tool on the end cap.
(m) Hold the end cap tightly with the holding tool.
(n) Hold the torque wrench in its position on the torque adapter.
(o) Torque the end cap 55 inch-pounds ± 5 inch-pounds.
(p) Remove the torque adapter from the swivel nut.
(q) Remove the torque wrench and the 5/16 inch wrench.
(r) Remove the holding tool from the end cap.

(10) Crimp the shield grip sleeve. Refer to Figure 71.

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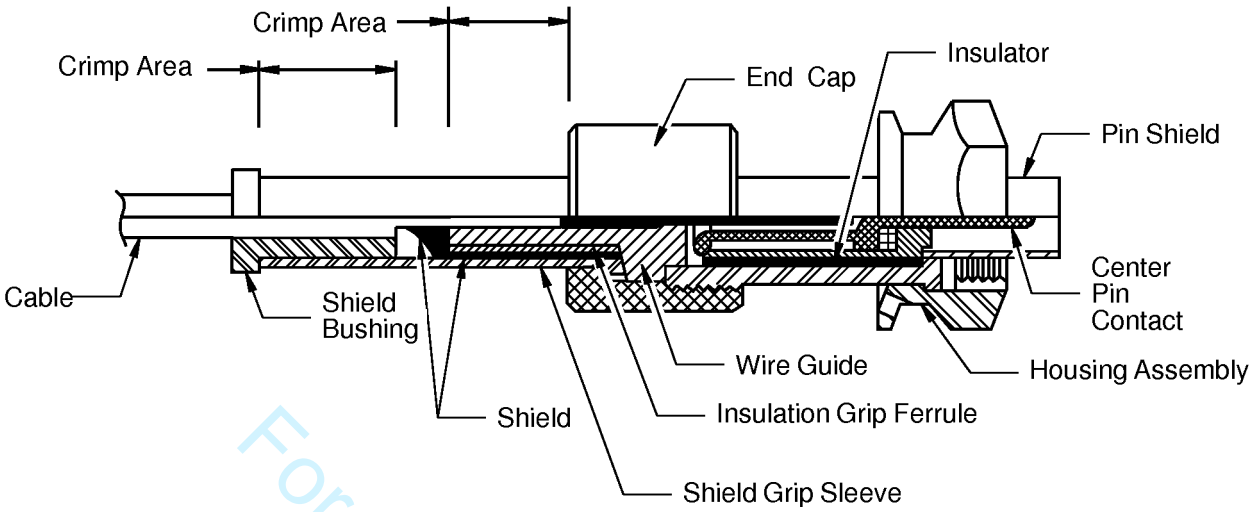
ASSEMBLY OF FENWAL CONNECTORS



LOCATION OF THE CRIMP AREA
Figure 71

(a) Make a selection of crimp tool from Table 34.

(b) Align the forward edge of the crimp tool with the rear edge of the end cap.

(c) Crimp the shield grip sleeve.

(d) Align the rear edge of the crimp tool with the forward edge of the shoulder of the shield grip sleeve.

(e) Crimp the shield grip sleeve again.

(11) Install a protective cap on the connector.

D. Receptacle Connector Assembly

Table 35
END CAP HOLDING TOOLS

Tool	Part Number	Supplier
Wrench, Strap	SW12A	Reed
Pliers	ST2598C	Boeing

Table 36
TORQUE TOOLS

Tool		Supplier
Type	Description	
Torque Wrench	80 inch-pounds minimum torque capability	An available source
Wrench	3/8 inch socket	An available source

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ASSEMBLY OF FENWAL CONNECTORS

Table 37
SHIELD GRIP SLEEVE CRIMP TOOLS

Basic Unit		Die	
Part Number	**Supplier**	**Part Number**	**Supplier**
HX4	Daniels	Y1661P	Daniels
M22520/5-01	An approved source	Y1661P	Daniels

Table 38
SOCKET SLEEVE INSTALLATION TOOLS

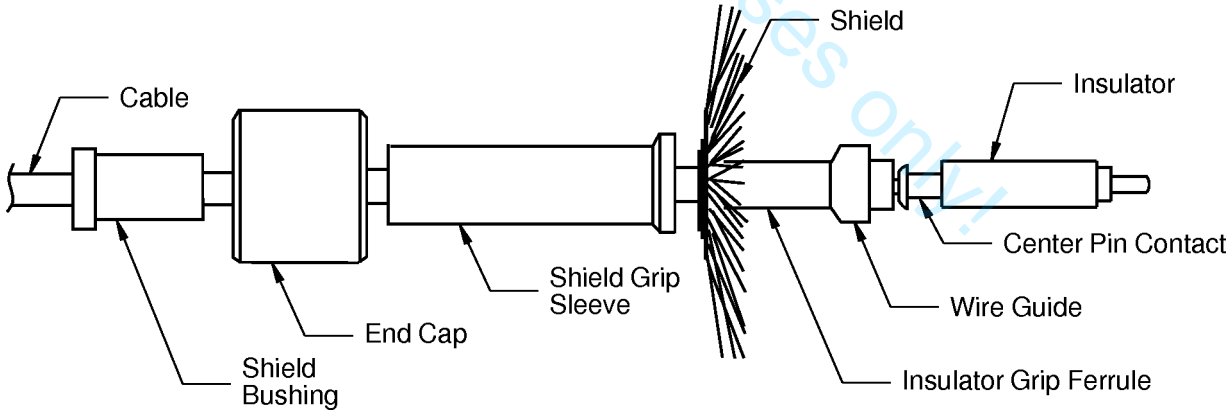
Tool	Part Number	Supplier
Insertion Tool	TZ-3600	Fenwal
Straightening Tool	TZ-3658	Fenwal
Screw Press	ST2575C-1	Boeing
	TZ-2255	Fenwal

Table 39
NECESSARY MATERIAL

Description	Part Number	Supplier
Adhesive	Cement No. 31	Sauereisen

(1) Assemble the center contact. Refer to Paragraph 10.B..

(2) Put the insulator on the center contact. Refer to Figure 72.



POSITION OF THE INSULATOR ON THE CENTER CONTACT
Figure 72

(3) Put the strands of the shield against the insulator grip ferrule. Refer to Figure 73. Make sure that the wire strands are equal around the insulator grip ferrule.

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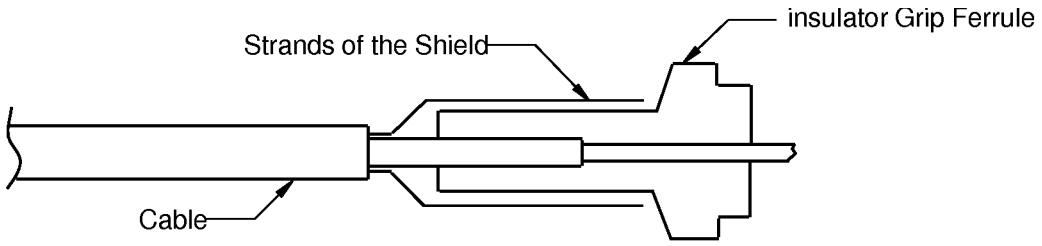
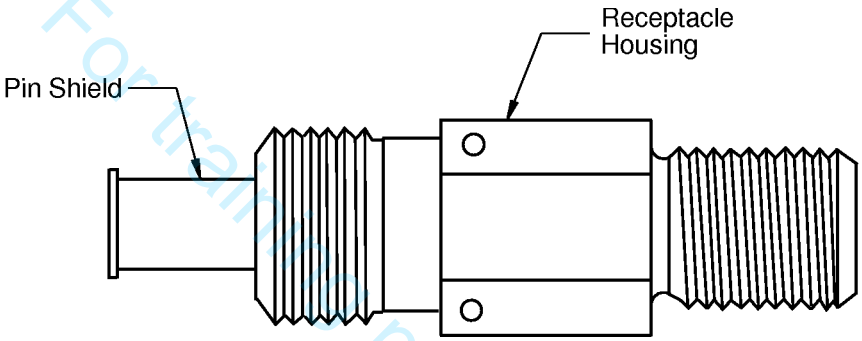
ASSEMBLY OF FENWAL CONNECTORS



POSITION OF THE STRANDS OF THE SHIELD AGAINST THE INSULATOR GRIP FERRULE
Figure 73

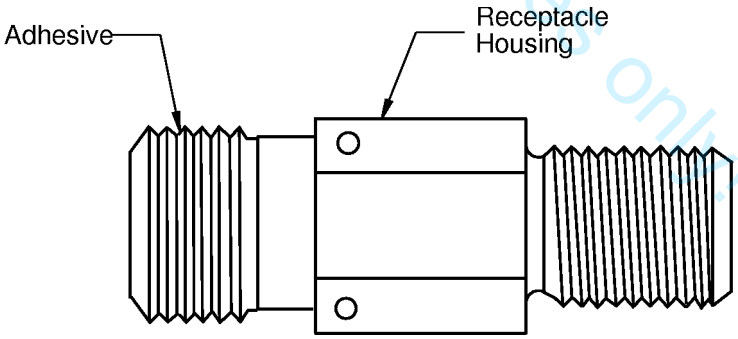
(4) Put the pin shield in the receptacle housing. Refer to Figure 76.



POSITION OF THE PIN SHIELD IN THE RECEPTACLE HOUSING
Figure 74

(5) Make a selection of adhesive from Table 39.

(6) Apply the adhesive on the first three threads at the rear end of the housing. Refer to Figure 79.



LOCATION OF THE ADHESIVE ON THE THREADS OF THE HOUSING
Figure 75

(7) Align the housing and the center contact. Refer to Figure 80.

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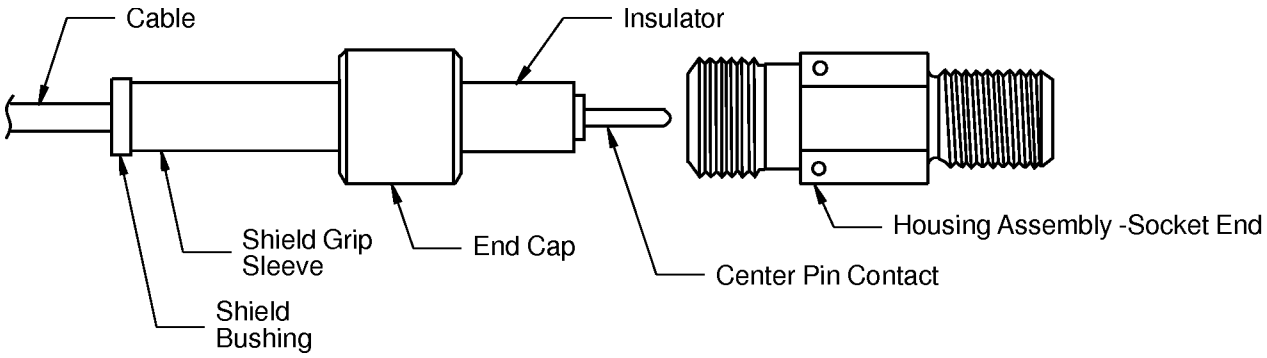
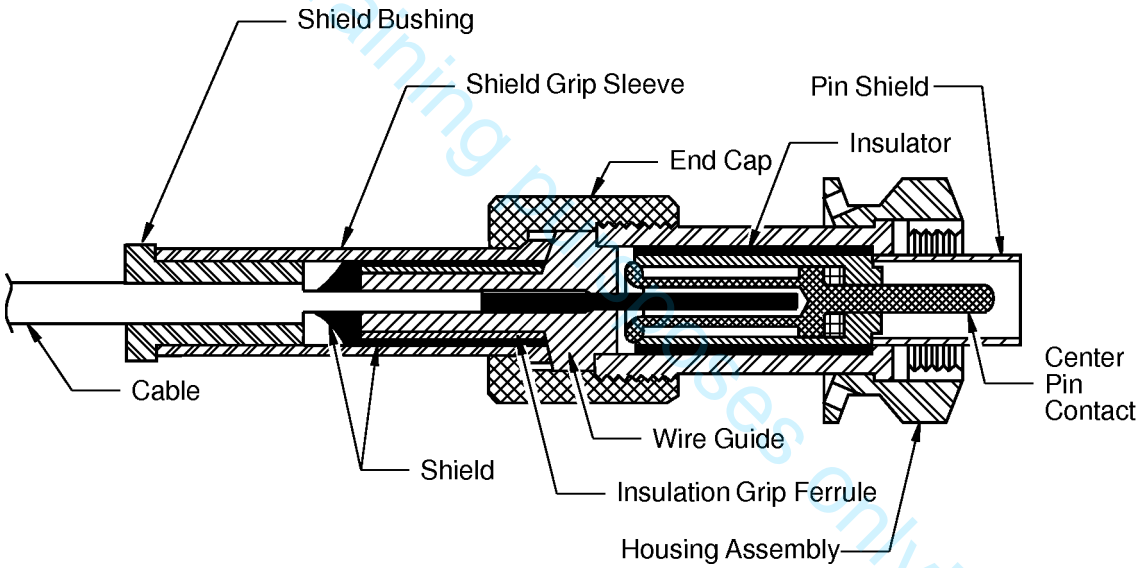
ASSEMBLY OF FENWAL CONNECTORS



ALIGNMENT OF THE HOUSING AND THE CENTER CONTACT
Figure 76

(8) Put the housing on the center contact.

(9) Install the end cap. Refer to Figure 81



INSTALLATION OF THE END CAP
Figure 77

(a) Make a selection of a torque wrench and a 3/8 wrench from Table 36.

(b) Make a selection of an end cap holding tool from Table 35.

(c) Push the end cap forward until it is against the housing.

NOTE: The shield grip sleeve moves with the end cap.

(d) Push the shield bushing forward into the shield grip sleeve.

(e) Fully engaged the threads of the end cap and the threads of the housing.

(f) Tighten the assembly with the hand.

(g) Put the end cap holding tool on the end cap.

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(h) Hold the end cap tightly with the holding tool.

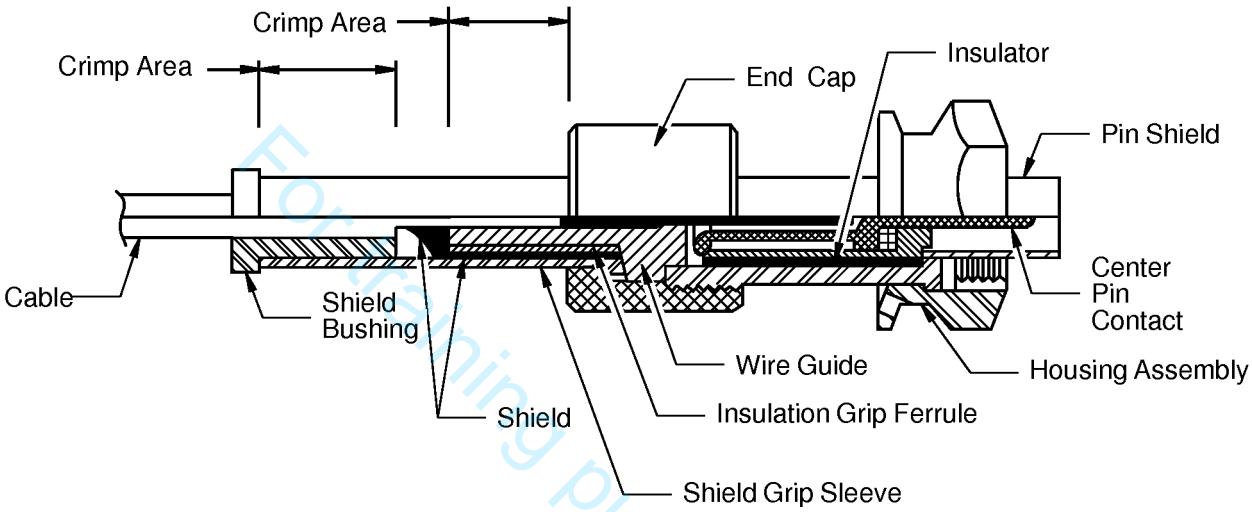
(i) Put the torque wrench with a 3/8 inch socket on the housing.

(j) Torque the end cap 55 inch-pounds ±5 inch-pounds.

(k) Remove the torque wrench and the 5/16 inch wrench.

(l) Remove the holding tool from the end cap.

(10) Crimp the shield grip sleeve. Refer to Figure 82.



LOCATION OF THE CRIMP AREA
Figure 78

(a) Make a selection of crimp tool from Table 37.

(b) Align the forward edge of the crimp tool with the rear edge of the end cap.

(c) Crimp the shield grip sleeve.

(d) Align the rear edge of the crimp tool with the forward edge of the shoulder of the shield grip sleeve.

(e) Crimp the shield grip sleeve again.

(11) Install the socket sleeve with the insertion tool:

(a) Make a selection of these tools from Table 38.

- A contact straightening tool
- An insertion tool.

(b) Examine the pin contact in the housing.

(c) If the pin contact is not straight, put the open end of the straightening tool on the pin contact to make straight. Refer to Figure 79.

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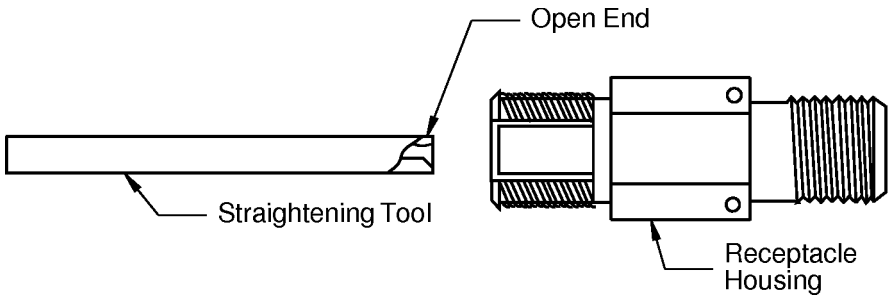
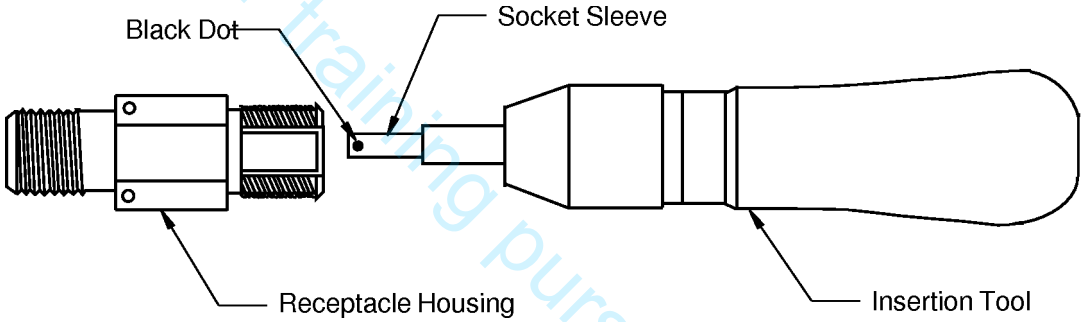


STRAIGHTENING TOOL ALIGNED WITH THE HOUSING ASSEMBLY
Figure 79

(d) Remove the straightening tool.

(e) Put the socket sleeve in the insertion tool. Refer to 80.



SOCKET SLEEVE INSTALLATION
Figure 80

Make sure that the black dot is pointed away from the tool.

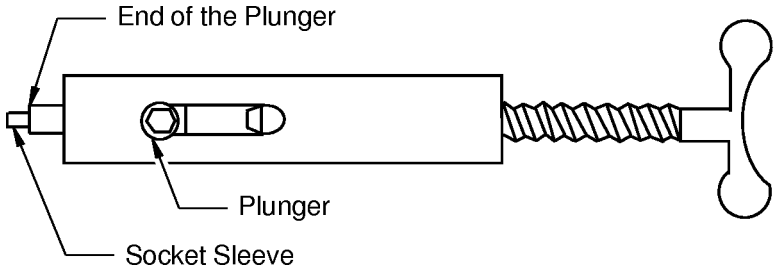
(f) Push the socket sleeve into the housing until the end of the sleeve is against the insulator.

NOTE: Longitudinal movement of the pin contact relative to the insulator after installation of the socket sleeve is permitted if it does not exceed 0.03 inch.

(12) Install the socket sleeve with the screw press:

(a) Make a selection of a screw press from Table 38.

(b) Move the plunger of the screw press to the end of the slot. Refer to Figure 81.



POSITION OF THE SOCKET SLEEVE IN THE PLUNGER
Figure 81

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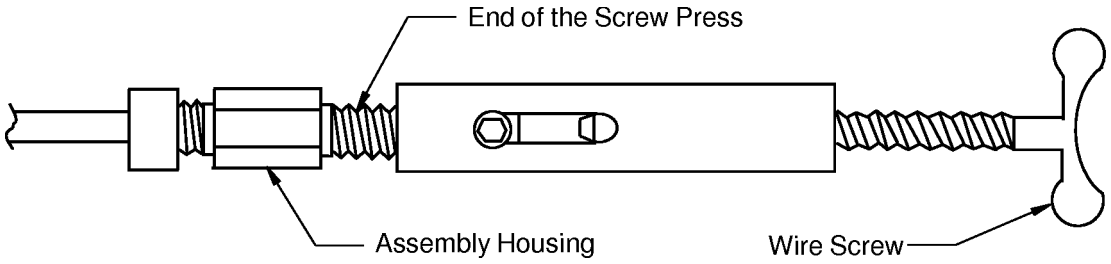
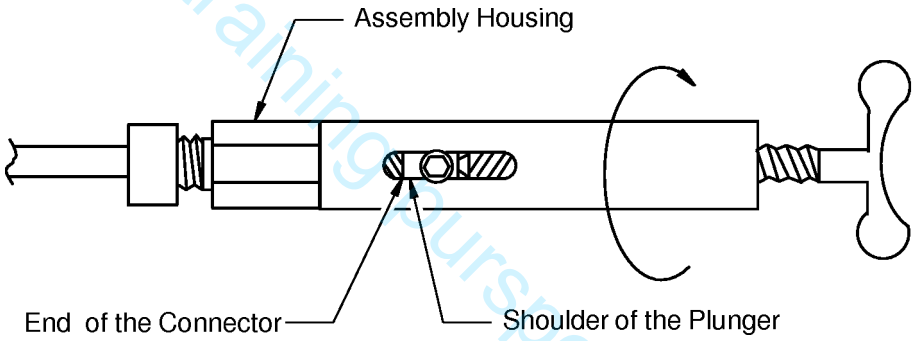
(c) Put the end of the socket sleeve that does not have a black dot in the plunger. Refer to Figure 81.

(d) Align the end of the screw press with the thread of the connector. Refer to Figure 82.



ALIGNMENT OF THE SCREW PRESS AND THE CONNECTOR
Figure 82

(e) Turn the wing screw press clockwise until it stops. Refer to Figure 83.



POSITION OF THE SHOULDER OF THE PLUNDER
Figure 83

(f) Turn the screw press counterclockwise to remove it from the connector.

NOTE: A maximum of 0.03 inch longitudinal movement of the pin contact in relation to the insulator after the installation of the socket sleeve is satisfactory.

(13) Install a protective cap on the connector.

11. ADJUSTMENT OF THE WIRE O.D.

A. Installation of a Heat Shrinkable Sleeve

This paragraph gives the procedure to increase the O.D. of a wire.

Table 40
SLEEVE LENGTHS

Layer	Length (inch)
First	2.25
Second	1.75
Third	1.50

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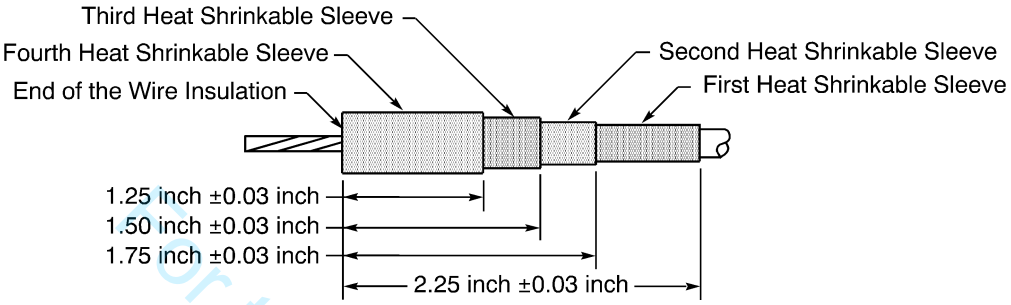
Table 40 (continued)

Layer	Length (inch)
Fourth	1.25



POSITION OF THE HEAT SHRINKABLE SLEEVE ON THE WIRE
Figure 84

Refer to Figure 84.

(1) Make a selection of a heat shrinkable sleeve from Table 4.

Make sure that the sleeve has an O.D. that can move easily on the wire.

(2) Cut the necessary length of sleeve. Refer to Table 40.

NOTE: If more than four sleeves are installed, each subsequent sleeve should be approximately 0.25 inch shorter than the last sleeve that is installed.

(3) Put the sleeve on the wire.

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

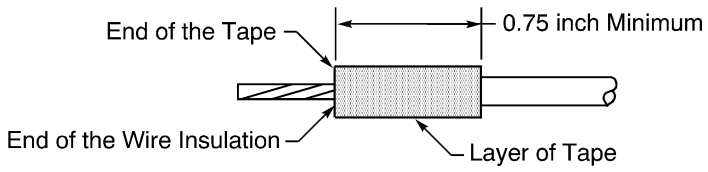
(4) Shrink the sleeve into its position. Refer to Subject 20-10-14.

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

(6) If the O.D. of the wire is not approximately 0.120 inch, do Step (1) through Step (5) again.

B. Installation of a Layer of Tape

This paragraph gives the procedure to increase the O.D. of a wire.



POSITION OF THE LAYER OF TAPE ON THE WIRE
Figure 85

Refer to Figure 85.

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

(2) Wind one layer of tape around the end of the wire insulation.

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Make sure that:

- The forward end of the tape is aligned with the end of the insulation
- Each subsequent layer of tape make a 100 percent overlap with the last layer of tape that is installed.

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

(4) If the O.D. of the wire is not approximately 0.120 inch, do Step (2) through Step (3) again.

12. APPROVED TOOL SUPPLIERS

A. Crimp Tools

Table 41
CRIMP TOOL SUPPLIERS

Crimp Tool	Supplier
11921	Buchanan
3795-1	Buchanan
85-550	Balmer
HD37	Daniels
M22520/1-01	QPL
M22520/1-02	QPL
M22520/5-01	QPL
M22520/5-37	QPL
M22520/5-45	QPL
ST2220-1-7	Boeing
ST2220-1-Y	Boeing
TH338	Daniels
TP673	Daniels
WA27F	Daniels
WT-401	Thomas&Betts
WT-409	Thomas&Betts
Y870H	Daniels

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B. Connector Assembly Tools

Table 42
CONNECTOR ASSEMBLY TOOL SUPPLIERS

Tool	Supplier
ST2575A	Boeing
ST2575B	Boeing

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Table 42 (continued)

Tool	Supplier
ST2575C-1	Boeing
ST2598C	Boeing
ST2598C-201	Boeing
TZ-2255	Fenwal

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ASSEMBLY OF GRAVINER CONNECTORS

Paragraph			Page
1.	**PART NUMBER AND DESCRIPTION**		**1**
	A.	Connector Part Numbers	1
	B.	Wire Part Numbers	2
	C.	Connector Assembly Procedures	2
2.	**CONNECTOR ASSEMBLY WITH BMS 13-8 TYPE 1 CLASS A AWG 18 WIRE**		**3**
	A.	Assembly of Graviner D5653 and D5922 Connectors	3
3.	**CONNECTOR ASSEMBLY WITH BMS 13-31 AWG 18 WIRE**		**4**
	A.	Assembly of Graviner 51444-129 and 51444-130 Connectors	4
4.	**CONNECTOR ASSEMBLY WITH BMS 13-55 TYPE 1 AND TYPE 2 AWG 18 WIRE**		**6**
	A.	Assembly of Graviner 51444-137 and 51444-138 Connectors	6
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	A.	Assembly of Graviner D5653 and D5922 Connectors	17
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20-62-15 CONTENTS

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ASSEMBLY OF GRAVINER CONNECTORS

This subject gives the procedures to assemble Graviner connectors with these wires:

- BMS 13-8
- BMS 13-31
- BMS 13-55
- Cerro H22-4000
- Champlain 24-00034.

1. PART NUMBER AND DESCRIPTION

A. Connector Part Numbers

Table 1
CONNECTOR PART NUMBERS

Part Number	Supplier
51444-103	Graviner
51444-106	Graviner
51444-118	Graviner
51444-123-1D	Graviner
51444-124-1D	Graviner
51444-129	Graviner
51444-129-1D	Graviner
51444-130	Graviner
51444-130-1D	Graviner
51444-137	Graviner
51444-138	Graviner
51444-144	Graviner
51444-145	Graviner
D5653	Graviner
D5653-1	Graviner
D5653-2	Graviner
D5922	Graviner
D5922-1	Graviner
D5922-2	Graviner

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B. Wire Part Numbers

Table 2
WIRE PART NUMBERS

Part Number	Supplier
24-00034	Champlain
BMS 13-8	Boeing
BMS 13-31	Boeing
BMS 13-55	Boeing
H22-4000	Cerro

C. Connector Assembly Procedures

Table 3
CONNECTOR ASSEMBLY PROCEDURES

Wire	Connector	Location
BMS 13-8, Type 1, Class A, AWG 18	D5653	Paragraph 2.A.
	D5922	
BMS 13-31, AWG 18	51444-129	Paragraph 3.A.
	51444-130	
BMS 13-55, Type 1 and Type 2, AWG 18	51444-137	Paragraph 4.A.
	51444-138	
	D5653	Paragraph 4.B.
	D5653-1	
	D5653-2	
	D5922	
	D5922-1	
	D5922-2	
BMS 13-55, Type 3, AWG 18	51444-130	Paragraph 5.A.
BMS 13-55, Type 5, AWG 16 and AWG 18	51444-129	Paragraph 6.A.
	51444-130	

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Table 3 (continued)

Wire	Connector	Location
Cerro H22-4000, AWG 18	D5653	Paragraph 7.A.
	D5922	
	51444-103	Paragraph 7.B.
	51444-106	
	D5653-1	
	D5922-1	
	51444-118	Paragraph 7.C.
	D5653-2	
	D5922-2	
Champlain 24-00034	51444-123-1D	Paragraph 8.A.
	51444-124-1D	
	51444-129-1D	
	51444-130-1D	
	51444-144	Paragraph 8.B.
	51444-145	

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2. CONNECTOR ASSEMBLY WITH BMS 13-8 TYPE 1 CLASS A AWG 18 WIRE

A. Assembly of Graviner D5653 and D5922 Connectors

Refer to Figure 1.

Table 4
CONTACT CRIMP TOOLS

Basic Unit		Locator		
Part Number	Supplier	Part Number	Color	Supplier
M22520/1-01	QPL	M22520/1-02	Blue	QPL

Table 5
FERRULE CRIMP TOOLS

Basic Unit		Die	
Part Number	Supplier	Part Number	Supplier
M22520/5-01	QPL	M22520/5-37	QPL

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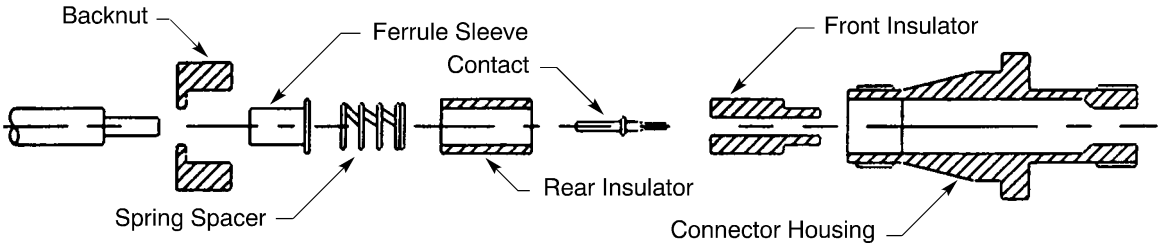
ASSEMBLY OF GRAVINER CONNECTORS



GRAVINER D5653 AND D5922 CONNECTORS
Figure 1

(1) In this order, put these components on the wire:
- The backnut
- The ferrule sleeve
- The spring spacer
- The rear insulator.

(2) Remove 9/32 inch ± 1/32 inch of insulation from the end of the wire.

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

(4) Put the contact in the crimp tool.

(5) Put the conductor in crimp barrel of the contact.

(6) Crimp the contact.

(7) Put the wired contact in the large end of the front insulator.

(8) Put the connector housing over front insulator and wired contact.

(9) Push the rear insulator, the spring, and the ferrule into the connector housing.

(10) Apply a light coat of Sauereisen 31 or Sauereisen 1 adhesive to the first two or three threads of the connector housing.

(11) Push the nut against the connector housing.

(12) Turn the nut so that the threads engage the threads of the housing.

(13) Torque the nut 100 inch-pounds to 120 inch-pounds.

(14) Make a selection of a ferrule crimp tool from Table 5.

(15) Crimp the ferrule.

Make sure to use the small die opening on the locator.

3. CONNECTOR ASSEMBLY WITH BMS 13-31 AWG 18 WIRE

A. Assembly of Graviner 51444-129 and 51444-130 Connectors

Table 6
CONTACT CRIMP TOOLS

Basic Unit		Locator	
Part Number	**Supplier**	**Part Number**	**Supplier**
ST2220-1-Y	Boeing	ST2220-1-2	Boeing
M22520/1-01	QPL	TP875	Daniels

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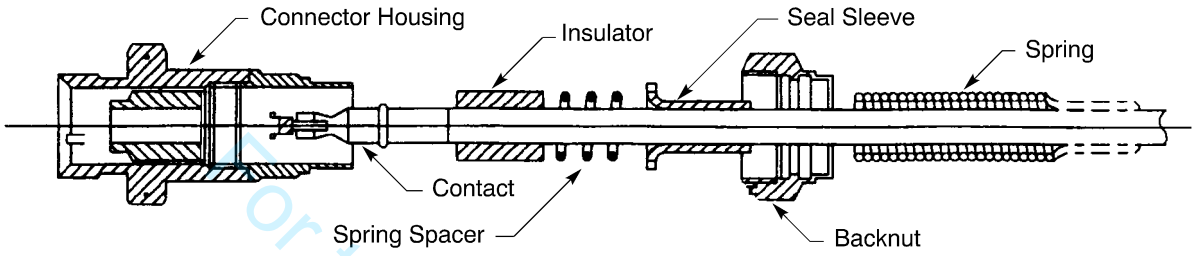
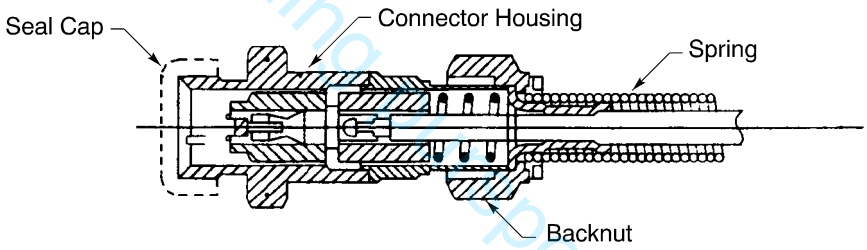
ASSEMBLY OF GRAVINER CONNECTORS

Table 7
SEAL SLEEVE CRIMP TOOLS

Basic Unit		Die	
Part Number	**Supplier**	**Part Number**	**Supplier**
M22520/5-01	QPL	M22520/5-37	QPL



GRAVINER 51444-129 AND 51444-130 CONNECTORS
Figure 2



ASSEMBLED CONNECTOR
Figure 3

(1) Remove 0.30 inch ±0.03 inch of wire insulation.

(2) In this order, put these components on the wire:
- The spring (if supplied)
- The backnut
- The seal sleeve
- The spring spacer
- The insulator.

Refer to Figure 2.

(3) Make a selection of a crimp tool from Table 6.

(4) Push the wire into the crimp barrel of the contact until it touches the bottom.

(5) Crimp the contact.

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(6) Remove these components from the end of the connector:
- The seal cap
- The seal cup
- The washer.

(7) Apply a light coat of a thread locking compound to the length of wire that the crimp seal sleeve covers when the sleeve is in position.

Refer to:
- Subject 20-00-11
- Figure 3.

(8) Apply a light coat of the thread locking compound to the first three external threads on the connector housing.

(9) Move the insulator over the contact.

(10) Push the spring spacer and the sleeve against the insulator.

(11) Push the backnut against the connector housing.

(12) Turn the backnut so that the threads engage the threads of the housing.

(13) Torque the backnut 110 inch-pounds ± 10 inch-pounds.

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

(15) Crimp the seal sleeve.

Make sure that the locator is in position B.

(16) If the spring is supplied with the connector:

(a) Push the spring forward until it is against the backnut.

(b) Turn the spring clockwise a minimum of one turn so that the end of the spring is attached to the backnut.

(17) Cure the thread locking compound under either of these conditions:
- 68 degrees F for 5 hours
- 250 degrees F for 10 minutes.

(18) Install these components:
- The washer
- The seal cup
- The seal cap.

4. CONNECTOR ASSEMBLY WITH BMS 13-55 TYPE 1 AND TYPE 2 AWG 18 WIRE

A. Assembly of Graviner 51444-137 and 51444-138 Connectors

Table 8
CONTACT CRIMP TOOLS

Basic Unit		Locator	
Part Number	**Supplier**	**Part Number**	**Supplier**
ST2220-1-Y	Boeing	ST2220-1-2	Boeing
M22520/1-01	QPL	TP875	Daniels

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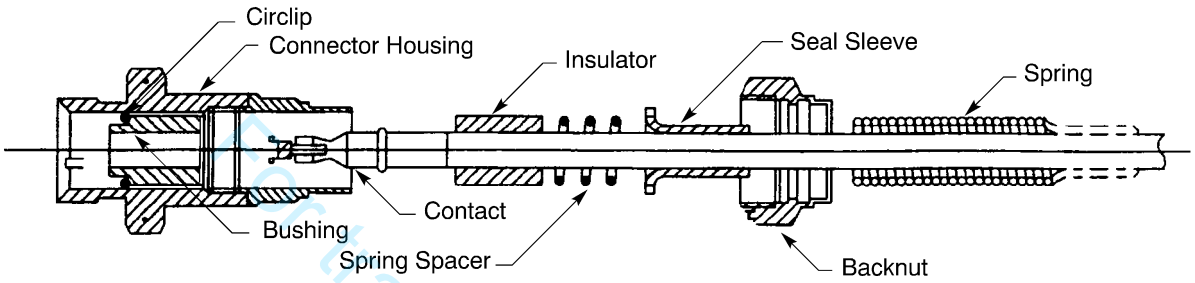
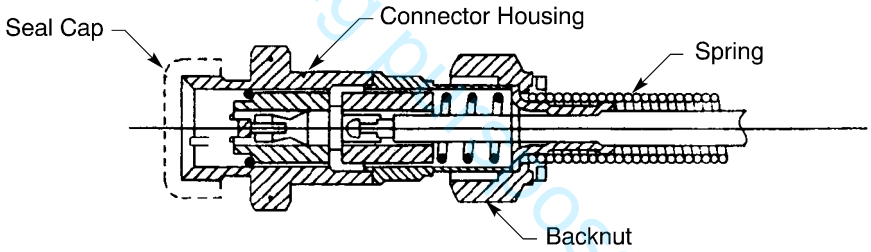
ASSEMBLY OF GRAVINER CONNECTORS

Table 9
SEAL SLEEVE CRIMP TOOLS

Basic Unit		Die	
Part Number	**Supplier**	**Part Number**	**Supplier**
M22520/5-01	QPL	M22520/5-37	QPL



GRAVINER 51444-137 AND 51444-138 CONNECTORS
Figure 4



ASSEMBLED CONNECTOR
Figure 5

(1) Remove 0.30 inch ±0.03 inch of wire insulation.

(2) In this order, put these components on the wire:
- The spring (if supplied)
- The backnut
- The seal sleeve
- The spring spacer
- The insulator.

Refer to Figure 4.

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

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

(5) Crimp the contact.

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(6) Remove these components from the end of the connector:
- The seal cap
- The seal cup
- The washer.

(7) Examine the connector housing.

Make sure that the shoulder of the bushing is against the circlip.

(8) Apply a light coat of a thread locking compound to the length of wire that the crimp seal sleeve covers when the sleeve is in position.

Refer to:
- Subject 20-00-11
- Figure 5.

(9) Apply a light coat of the thread locking compound to the first three external threads on the connector housing.

(10) Move the insulator over the contact.

(11) Push the spring spacer and the sleeve against the insulator.

(12) Push the backnut against the connector housing.

(13) Turn the backnut so that the threads engage the threads of the housing.

(14) Torque the backnut 110 inch-pounds ± 10 inch-pounds.

(15) Make a selection of a crimp tool from Table 9.

(16) Crimp the seal sleeve.

Make sure that the locator is in position B.

(17) If the spring is supplied with the connector:

(a) Push the spring forward until it is against the backnut.

(b) Turn the spring clockwise a minimum of one turn so that the end of the spring is attached to the backnut.

(18) Cure the thread locking compound under either of these conditions:
- 68 degrees F for 5 hours
- 250 degrees F for 10 minutes.

(19) Install these components:
- The washer
- The seal cup
- The seal cap.

B. Assembly of Graviner D5653, D5653-(), D5922, and D5922-() Connectors

Table 10
CONTACT CRIMP TOOLS

Basic Unit		Locator	
Part Number	**Supplier**	**Part Number**	**Supplier**
ST2220-1-Y	Boeing	ST2220-1-2	Boeing
M22520/1-01	QPL	TP875	Daniels

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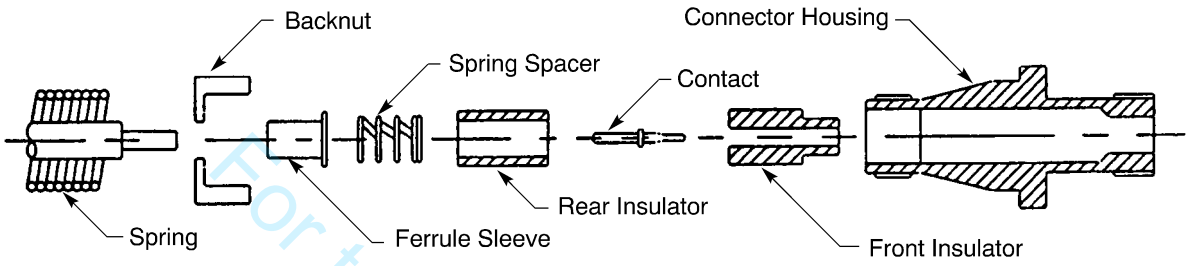
ASSEMBLY OF GRAVINER CONNECTORS

Table 11
FERRULE CRIMP TOOLS

Basic Unit		Die	
Part Number	**Supplier**	**Part Number**	**Supplier**
M22520/5-01	QPL	M22520/5-43	QPL



GRAVINER D5653-1 AND D5922-1 CONNECTORS
Figure 6

(1) In this order, put these components on the wire:
- The spring (if supplied)
- The backnut
- A 2-1/4 inch ±1/16 inch length of 1/4 inch diameter TFE 2X heat shrinkable sleeve
- A 6.0 inch ±1/16 inch length of 1/4 inch diameter TFE 4X heat shrinkable sleeve
- Two 1-1/2 inch lengths of 1/8 inch diameter TFE 4X heat shrinkable sleeve
- The ferrule sleeve
- The spring spacer
- The rear insulator.

Refer to Figure 6.

NOTE: The Scotch 1205 anti-friction tape that is supplied with connector is not used.

(2) Remove 9/32 inch ±1/32 inch of insulation from the end of the wire.

(3) Make a selection of a crimp tool from Table 10.

(4) Put the conductor in the crimp barrel of the contact until it touches the bottom.

(5) Crimp the contact.

(6) Put the wired contact in the large end of the front insulator.

(7) Push the connector housing over the front insulator until it is against the back of the wired contact.

(8) Push the rear insulator and the spring spacer against the housing.

(9) Increase the diameter of the wire.

Refer to:
- Subject 20-10-14
- Figure 7.

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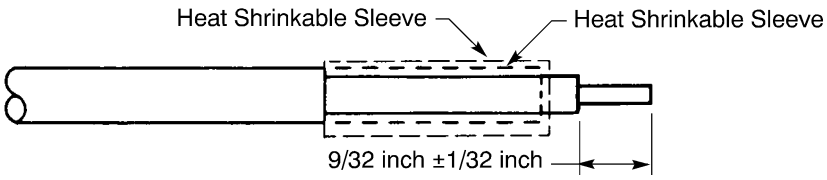
ASSEMBLY OF GRAVINER CONNECTORS



WIRE DIAMETER BUILDUP
Figure 7

(a) Move the first 1-1/2 inch length of 1/8 inch diameter heat shrinkable sleeve so that the end of the sleeve is against the end of the crimp barrel of the contact.

(b) Shrink the sleeve in position.

(c) Move the second 1-1/2 inch length of 1/8 inch diameter heat shrinkable sleeve so that the end of the sleeve is against the end of the crimp barrel of the contact.

(d) Shrink the sleeve in position.

(10) Make a selection of a ferrule crimp tool from Table 11.

(11) Push the ferrule over the sleeves against the spring spacer and the rear insulator.

(12) Crimp the ferrule.

Make sure to use the small die opening on the locator.

(13) Push the 6.0 inch length of heat shrinkable sleeve until the end of the sleeve is against the end of the crimp barrel of the ferrule.

(14) Shrink the sleeve in position.

(15) Push the 2-1/4 inch length of heat shrinkable sleeve until the end of the sleeve is against the flange end of the ferrule.

(16) Shrink the sleeve in position.

(17) Apply a light coat of Sauereisen 32 or Sauereisen 1 adhesive to the first two or three threads of the wire end of the connector housing.

(18) Push the backnut against the connector housing.

(19) Turn the backnut so that the threads engage the threads of the housing.

(20) Torque the backnut 100 inch-pounds to 120 inch-pounds.

(21) If the spring is supplied with the connector:

(a) Push the spring forward until it is against the backnut.

(b) Turn the spring clockwise a minimum of one turn so that the end of the spring is attached to the backnut.

5. CONNECTOR ASSEMBLY WITH BMS 13-55 TYPE 3 AWG 18 WIRE

A. Assembly of Graviner 51444-130 and 51444-138 Connectors

Table 12
CONTACT CRIMP TOOLS

Basic Unit		Locator	
Part Number	**Supplier**	**Part Number**	**Supplier**
ST2220-1-Y	Boeing	ST2220-1-2	Boeing

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Table 12 (continued)

Basic Unit		Locator	
Part Number	Supplier	Part Number	Supplier
M22520/1-01	QPL	TP875	Daniels

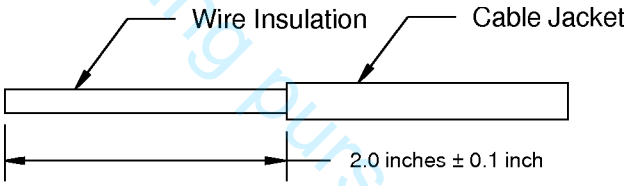
Table 13
SEAL SLEEVE CRIMP TOOLS

Basic Unit		Die	
Part Number	Supplier	Part Number	Supplier
M22520/5-01	QPL	M22520/5-37	QPL

(1) Remove 2.0 inches ±0.1 inch of the PTFE cable jacket, TFE coated fiber glass braid and the nickel-clad copper braid from the end of the cable.

Refer to:

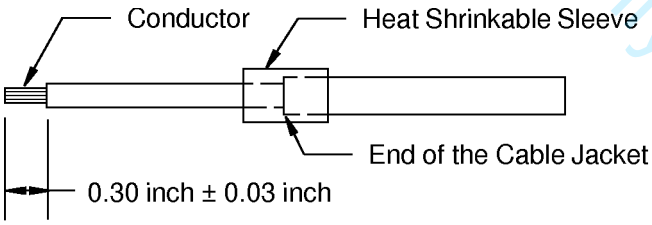
- Figure 8
- 20-00-15 for the procedure to remove the cable jacket and braids.



WIRE PREPARATION
Figure 8

(2) Put a 0.5 inch ±0.1 inch length of 1/4 inch diameter TFE 4X heat shrinkable sleeve on the cable. Refer to Figure 9.

Make sure that the middle of the sleeve is located on the end of the cable jacket.



POSITION OF THE HEAT SHRINKABLE SLEEVE
Figure 9

(3) Shrink the sleeve into its position. Refer to Subject 20-10-14 for the procedure to install the heat shrinkable sleeve.

(4) Remove 0.30 inch ±0.03 inch of the PTFE tape, the PTEF-coated glass braid and the inorganic fiber from the end of the wire. Refer to Figure 9.

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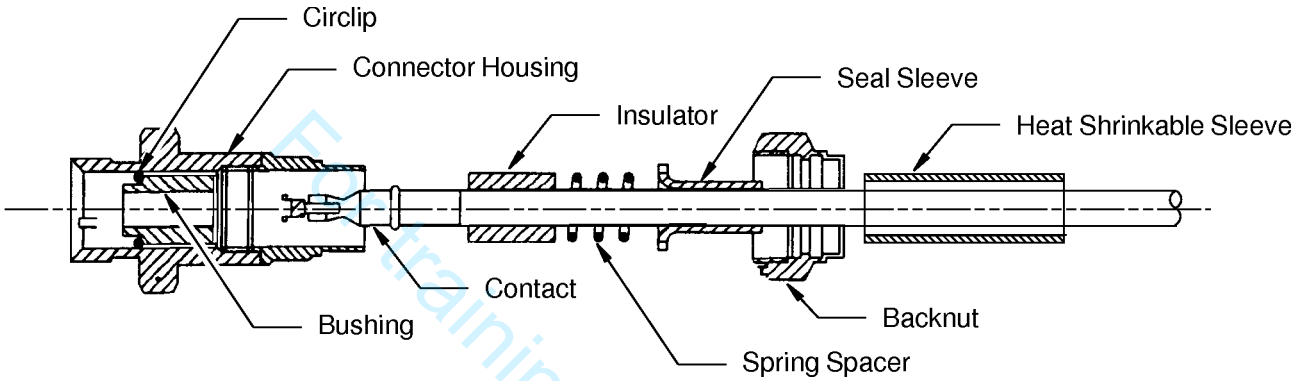
(5) In this order, put these components on the wire:
- The heat shrinkable sleeve
- The backnut
- The seal sleeve
- The spring spacer
- The insulator.

Refer to Figure 10.



GRAVINER 51444-137 AND 51444-138 CONNECTORS
Figure 10

(6) Make a selection of a crimp tool from Table 12.

(7) Put the conductor in the crimp barrel of the contact.

(8) Crimp the contact.

(9) Remove these components from the end of the connector:
- The seal cap
- The seal cup
- The washer.

(10) Examine the connector housing.

Make sure that the shoulder of the bushing is against the circlip.

(11) Apply a light coat of a thread locking compound to the length of wire that the crimp seal sleeve covers when the sleeve is in position.

Refer to:
- Subject 20-00-11
- Figure 11.

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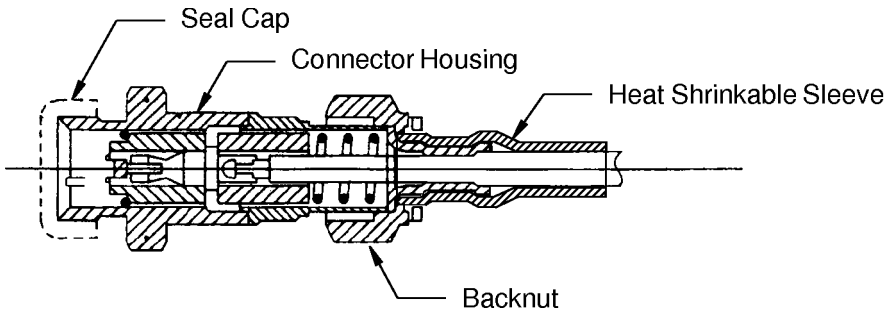
ASSEMBLY OF GRAVINER CONNECTORS



ASSEMBLED CONNECTOR
Figure 11

(12) Apply a light coat of the thread locking compound to the first three external threads on the connector housing.

(13) Push the insulator on the contact.

(14) Push the spring spacer and the seal sleeve against the insulator.

(15) Push the backnut against the connector housing.

(16) Turn the backnut so that the threads engage the threads of the housing.

(17) Torque the backnut 110 inch-pounds ± 10 inch-pounds.

(18) Make a selection of a crimp tool from Table 13.

(19) Crimp the seal sleeve.

Make sure that the locator is in position B.

(20) Push the heat shrinkable sleeve on the seal sleeve.

(21) Shrink the heat shrinkable sleeve into its position.

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Refer to:

- Subject 20-10-14
- Figure 11.

(22) Cure the thread locking compound under either of these conditions:

- 68 degrees F for 5 hours
- 250 degrees F for 10 minutes.

(23) Install these components:

- The washer
- The seal cup
- The seal cap.

6. CONNECTOR ASSEMBLY WITH BMS 13-55 TYPE 5 AWG 16 AND AWG 18 WIRE

A. Assembly of Graviner 51444-129 and 51444-130 Connectors

Table 14
NECESSARY MATERIALS

Description	Part Number	Supplier
Heat Shrinkable Sleeving	TFE-4X, 0.13 inch diameter	Chemplast
		Zeus
	TFE-4X, 0.25 inch diameter	Chemplast
		Zeus
Ceramic Adhesive	Sauereisen 31	Sauereisen

Table 15
CONTACT CRIMP TOOLS

Wire Size (AWG)	Basic Unit		Locator	
	Part Number	Setting	Part Number	Supplier
18	85-550	5	TP875	Balmar
	M22520/1-01	5	TP875	Daniels
	ST2220-1-Y	-	ST2220-1-2	Boeing
	WA27F	5	TP875	Daniels
16	M22520/1-01	6	TP875	Daniels

Table 16
SEAL SLEEVE CRIMP TOOLS

Basic Unit		Die	
Part Number	Supplier	Part Number	Supplier
M22520/5-01	QPL	M22520/5-37	QPL
ST965-4	QPL	-	Boeing

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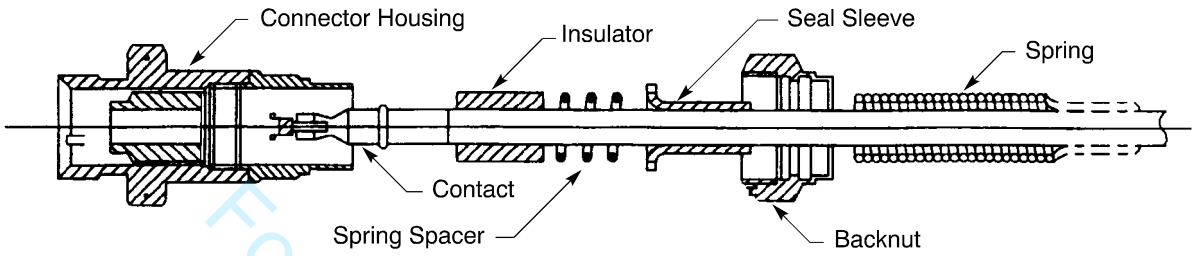
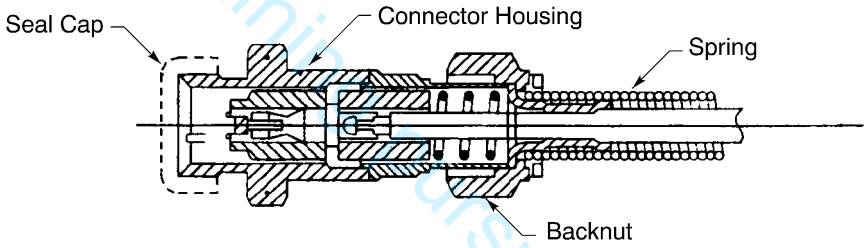
ASSEMBLY OF GRAVINER CONNECTORS

Table 17
NECESSARY TOOLS

Description	Supplier
Torque Wrench	An available source



GRAVINER 51444-129 AND 51444-130 CONNECTORS
Figure 12

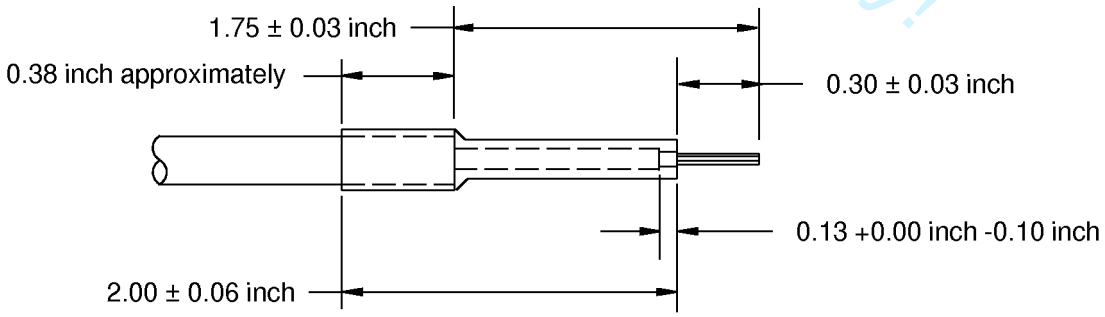


ASSEMBLED CONNECTOR
Figure 13

(1) Prepare the wire.

Refer to:

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



WIRE PREPARATION
Figure 14

(a) Remove 1.75 ±0.03 inch of the outer layer of insulation from the end of the wire.

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(b) Remove 0.30 ±0.03 inch of the inner layer of insulation from the end of the wire.

(2) Put a 1.60 ± 0.30 inch length of 0.13 inch diameter TFE 4X heat shrinkable sleeve on the inner layer of insulation. Refer to Table 14.

Make sure that:

- One end of the sleeve touches the edge of the outer layer of insulation
- The other end of the sleeve makes an overlap with the free end of the inner layer of insulation.

(3) Shrink the sleeve into its position. Refer to Subject 20-10-14 for the procedure to install the heat shrinkable sleeve.

(4) Put a 2.00 ± 0.06 inch length of 0.25 inch diameter TFE-4X heat shrinkable sleeve on the wire. Refer to Table 14

Make sure that:

- The TFE-4X sleeving makes a 0.13 +0.00/-0.10 inch overlap on the conductor adjacent to the inner layer of insulation
- The TFE-4X sleeve makes an approximately 0.38 inch overlap on the outer layer of insulation.

(5) Shrink the sleeve into its position. Refer to Subject 20-10-14 for the procedure to install the heat shrinkable sleeve.

(6) In this order, put these components on the wire:

- The spring (when supplied)
- The backnut
- The seal sleeve
- The spring spacer
- The insulator.

Refer to Figure 12.

(7) Make a selection of a crimp tool from Table 15.

(8) Put the conductor in the crimp barrel of the contact.

(9) Crimp the contact.

(10) Remove these components from the end of the connector:

- The seal cap
- The seal cup
- The washer.

(11) Mix the Sauereisen 31 adhesive 35 ± 5 percent liquid by weight to 65 ± 5 percent powder by weight. Refer to Table 14

(12) Apply the adhesive to the length of wire that will be within the crimp seal sleeve and put the sleeve in position.

(13) Before the backnut is put in position:

(a) Coat the first three external threads on the slip backnut with the Sauereisen 31 adhesive.

(b) Put the insulator into position.

Refer to Figure 12.

(14) Install the backnut:

(a) Make a selection of a torque tool. Refer to Table 17.

(b) Engage the threads of the backnut.

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(c) Torque the backnut to 110 ± 10 inch pounds.

(15) Crimp the seal sleeve to the wire:

(a) Make a selection of a seal sleeve crimp tool. Refer to Table 16.

(b) Crimp the seal sleeve to the wire. Use the small die opening on the seal sleeve crimp tool.

(16) Push the spring forward into the back of the backnut and rotate the backnut in the clockwise direction a minimum of one turn.

(17) Install the sealing cap, the sealing cup, and the washer on the end of the connector.

7. CONNECTOR ASSEMBLY WITH CERRO H22-4000 AWG 18 WIRE

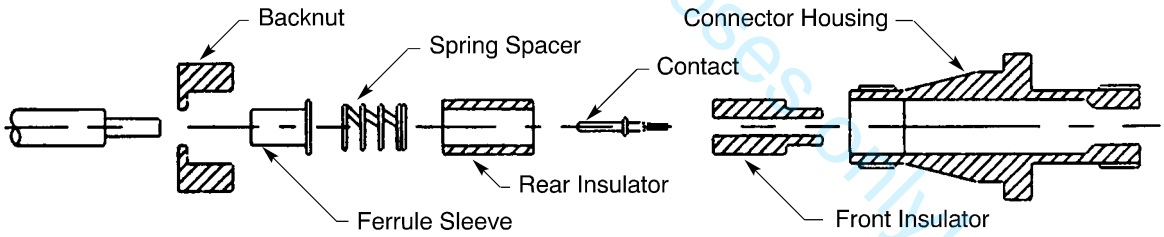
A. Assembly of Graviner D5653 and D5922 Connectors

Table 18
CONTACT CRIMP TOOLS

Basic Unit		Locator		
Part Number	Supplier	Part Number	Color	Supplier
M22520/1-01	QPL	M22520/1-02	Blue	QPL

Table 19
FERRULE CRIMP TOOLS

Basic Unit		Die	
Part Number	Supplier	Part Number	Supplier
M22520/5-01	QPL	M22520/5-37	QPL



GRAVINER D5653 AND D5922 CONNECTORS
Figure 15

(1) In this order, put these components on the wire:

- A 1-1/2 inch length of 1/4 inch diameter TFE 4X heat shrinkable sleeve
- The backnut
- The ferrule sleeve
- The spring spacer
- The rear insulator.

Refer to Figure 15.

(2) Prepare the wire. Refer to Figure 16.

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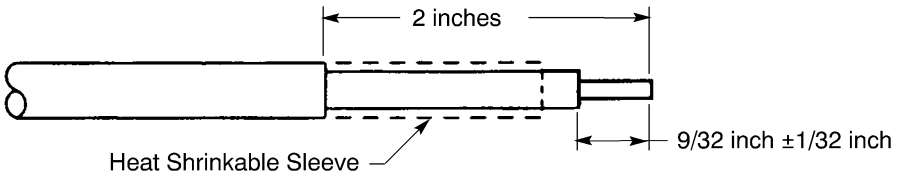
ASSEMBLY OF GRAVINER CONNECTORS



CERRO H22-4000 WIRE TRIM DIMENSIONS
Figure 16

(a) Remove 2 inches of the shield from the wire.

(b) Remove 2 inches of the clear teflon inner wrap from wire.

CAUTION: DO NOT CUT OR DAMAGE THE DIELECTRIC MATERIAL.

(c) Remove 9/32 inch ±1/32 inch of insulation from the end of the wire.

(3) Put a 1-1/2 inch length of 1/8 inch diameter TFE 4X heat shrinkable sleeve over the dielectric and against the shield.

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

(5) Make a selection of a crimp tool from Table 18.

(6) Put the contact in the crimp tool.

(7) Put the conductor in crimp barrel of the contact.

(8) Crimp the contact.

(9) Put the wired contact in the large end of the front insulator.

(10) Put the connector housing over front insulator and wired contact.

(11) Push the rear insulator, the spring, and the ferrule into the connector housing.

(12) Apply a light coat of Sauereisen 31 or Sauereisen 1 adhesive to the first two or three threads of the connector housing.

(13) Push the nut against the connector housing.

(14) Turn the nut so that the threads engage the threads of the housing.

(15) Torque the nut 100 inch-pounds to 120 inch-pounds.

(16) Make a selection of a ferrule crimp tool from Table 19.

(17) Crimp the ferrule.

Make sure to use the small die opening on the locator.

(18) Move the 1-1/2 inch length of 1/4 inch diameter TFE 4X heat shrinkable sleeve so that the end of the sleeve is against the ferrule.

(19) Shrink the sleeve in position.

B. Assembly of Graviner 51444-103, 51444-106, D5653-1, and D5922-1 Connectors

Table 20
CONTACT CRIMP TOOLS

Basic Unit		Locator	
Part Number	**Supplier**	**Part Number**	**Supplier**
ST2220-1-Y	Boeing	ST2220-1-2	Boeing

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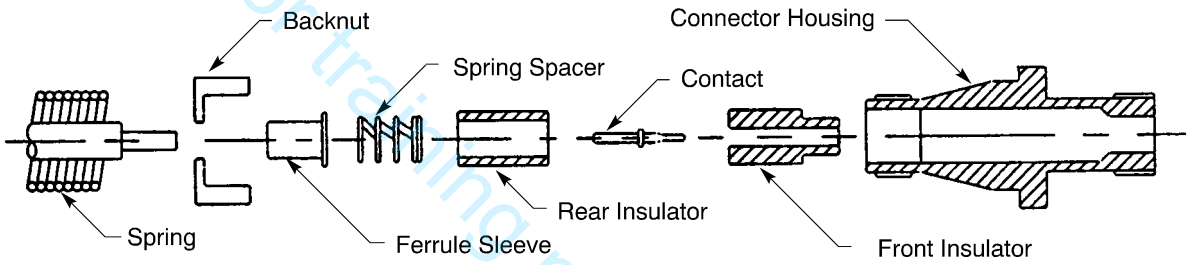
Table 20 (continued)

Basic Unit		Locator	
Part Number	Supplier	Part Number	Supplier
M22520/1-01	QPL	TP875	Daniels

Table 21
FERRULE CRIMP TOOLS

Basic Unit		Die	
Part Number	Supplier	Part Number	Supplier
M22520/5-01	QPL	M22520/5-43	QPL



GRAVINER D5653-1, D5922-1, 51444-103, AND 51444-106 CONNECTORS
Figure 17

(1) In this order, put these components on the wire:
- The spring
- The backnut
- A 2-1/4 inch ±1/16 inch length of 1/4 inch diameter TFE 2X heat shrinkable sleeve
- A 6.0 inch ±1/16 inch length of 1/4 inch diameter TFE 4X heat shrinkable sleeve
- The ferrule sleeve
- The spring spacer
- The rear insulator.

Refer to Figure 17.

NOTE: The Scotch 1205 anti-friction tape that is supplied with connector is not used.

(2) Remove 9/32 inch ±1/32 inch of insulation from the end of the wire.

(3) Make a selection of a crimp tool from Table 20.

(4) Put the conductor in the crimp barrel of the contact until it touches the bottom.

(5) Crimp the contact.

(6) Put the wired contact in the large end of the front insulator.

(7) Push the connector housing over the front insulator until it is against the back of the wired contact.

(8) Push the rear insulator and the spring spacer against the housing.

(9) Make a selection of a ferrule crimp tool from Table 21.

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(10) Push the ferrule over the sleeves against the spring spacer and the rear insulator.

(11) Crimp the ferrule.

Make sure to use the small die opening on the locator.

(12) Push the 6.0 inch length of heat shrinkable sleeve until the end of the sleeve is against the end of the crimp barrel of the ferrule.

(13) Shrink the sleeve in position.

(14) Push the 2-1/4 inch length of heat shrinkable sleeve until the end of the sleeve is against the flange end of the ferrule.

(15) Shrink the sleeve in position.

(16) Apply a light coat of Sauereisen 31 or Sauereisen 1 adhesive to the first two or three threads of the wire end of the connector housing.

(17) Push the backnut against the connector housing.

(18) Turn the backnut so that the threads engage the threads of the housing.

(19) Torque the backnut 100 inch-pounds to 120 inch-pounds.

(20) Push the spring forward until it is against the backnut.

(21) Turn the spring clockwise a minimum of one turn so that the end of the spring is attached to the backnut.

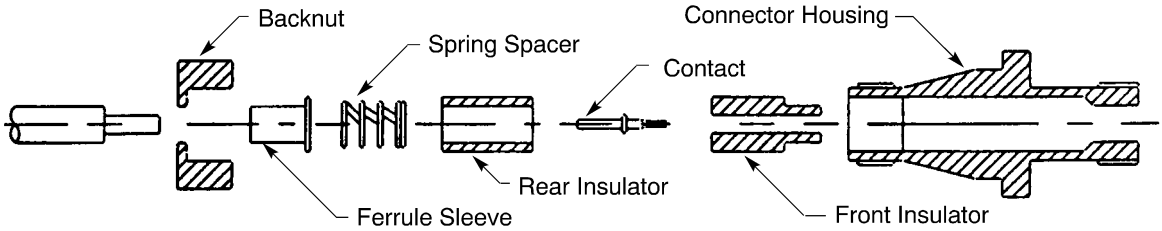
C. Assembly of Graviner D5653-2, D5922-2, and 51444-118 Connectors

Table 22
CONTACT CRIMP TOOLS

Basic Unit		Locator	
Part Number	**Supplier**	**Part Number**	**Supplier**
ST2220-1-Y	Boeing	ST2220-1-2	Boeing
M22520/1-01	QPL	TP875	Daniels

Table 23
FERRULE CRIMP TOOLS

Basic Unit		Die	
Part Number	**Supplier**	**Part Number**	**Supplier**
M22520/5-01	QPL	M22520/5-43	QPL



GRAVINER D5653-2, D5922-2, AND 51444-118 CONNECTORS
Figure 18

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(1) In this order, put these components on the wire:
- The backnut
- The ferrule sleeve
- The spring spacer
- The rear insulator.

Refer to Figure 18.

(2) Remove 9/32 inch ±1/32 inch of insulation from the end of the wire.

(3) Make a selection of a crimp tool from Table 18.

(4) Put the contact in the crimp tool.

(5) Put the conductor in crimp barrel of the contact.

(6) Crimp the contact.

(7) Put the wired contact in the large end of the front insulator.

(8) Put the connector housing over front insulator and wired contact.

(9) Push the rear insulator, the spring, and the ferrule into the connector housing.

(10) Apply a light coat of Sauereisen 32 or Sauereisen 1 adhesive to the first two or three threads of the connector housing.

(11) Push the nut against the connector housing.

(12) Turn the nut so that the threads engage the threads of the housing.

(13) Torque the nut 100 inch-pounds to 120 inch-pounds.

(14) Make a selection of a ferrule crimp tool from Table 19.

(15) Crimp the ferrule.

Make sure to use the small die opening on the locator.

8. CONNECTOR ASSEMBLY WITH CHAMPLAIN 24-00034 WIRE

A. Assembly of Graviner 51444-123-1D, 51444-124-1D, 51444-129-1D, and 51444-130-1D Connectors

NOTE: The data in this paragraph:
- Is applicable to the wire harnesses for the Rolls-Royce engines
- Is supplied to Boeing by Rolls-Royce.

Table 24
CONTACT CRIMP TOOLS

Basic Unit		Locator	
Part Number	**Supplier**	**Part Number**	**Supplier**
M22520/1-01	QPL	M22520/1-02	QPL
MS27828/1-01	QPL	MS27828-1	QPL

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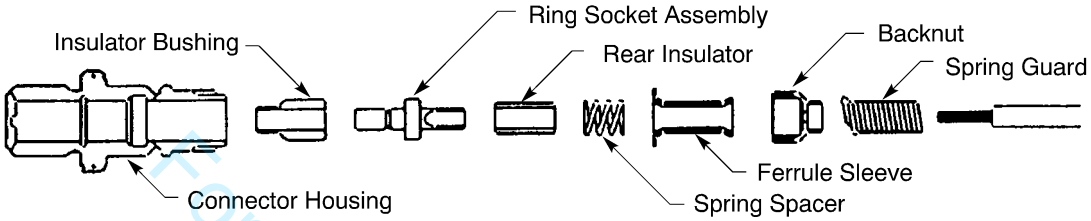
Table 25
FERRULE CRIMP TOOLS

Basic Unit		Die	
Part Number	**Supplier**	**Part Number**	**Supplier**
HX4	Daniels	Y295	Daniels



GRAVINER 51444-12()-1D CONNECTORS
Figure 19

(1) In this order, put these components on the wire:
- The spring guard
- The backnut
- The ferrule sleeve
- The spring spacer
- The rear insulator.

Refer to Figure 19.

(2) Remove 0.30 inch ±0.03 inch of insulation from the end of the wire.

(3) Make a selection of a crimp tool from Table 18.

(4) Put the ring socket assembly in the crimp tool.

(5) Put the conductor in crimp barrel of the socket.

(6) Crimp the contact.

(7) Put the ring socket assembly in the insulator bushing of the connector housing.

(8) Push the rear insulator, the spring, and the ferrule sleeve into the connector housing.

(9) Push the nut against the connector housing.

(10) Turn the nut so that the threads engage the threads of the housing.

(11) Torque the nut 100 inch-pounds to 120 inch-pounds.

(12) Make a selection of a ferrule crimp tool from Table 25.

(13) Crimp the ferrule.

(14) Push the spring guard forward until it is against the backnut.

(15) Turn the spring clockwise a minimum of one turn so that the end of the spring is attached to the backnut.

B. Assembly of Graviner 51444-144 and 51444-145 Connectors

This paragraph gives the procedure to assemble the connectors with AWG 16 wire.

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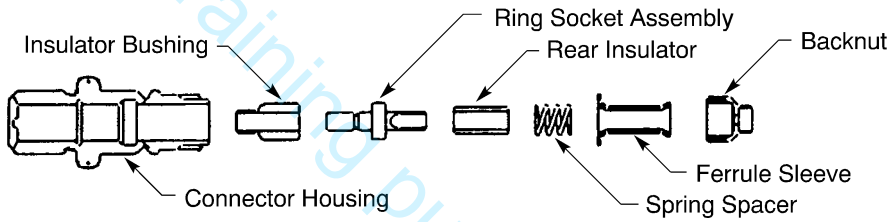
ASSEMBLY OF GRAVINER CONNECTORS

Table 26
CONTACT CRIMP TOOLS

Basic Unit		Locator	
Part Number	**Supplier**	**Part Number**	**Supplier**
ST2220-1-Y	Boeing	ST2220-1-2	Boeing
M22520/1-01	QPL	TP875	Daniels

Table 27
FERRULE CRIMP TOOLS

Basic Unit		Die	
Part Number	**Supplier**	**Part Number**	**Supplier**
WT 401	Thomas & Betts	-	-



GRAVINER 51444-144 AND 51444-145 CONNECTORS
Figure 20

(1) Put these TFE 4X heat shrinkable sleeves on the wire:
- A 2 inch length
- A 3-1/2 inch length.

Make sure that the diameter of the sleeve is large enough so that the sleeve can be installed over the ferrule sleeve.

(2) In this order, put these components on the wire:
- The backnut
- The ferrule sleeve
- The spring spacer
- The rear insulator.

Refer to Figure 20.

(3) Remove 5/16 inch +0 inch, -1/16 inch of insulation from the end of the wire.

(4) Make a selection of a crimp tool from Table 26.

(5) Put the ring socket assembly in the crimp tool.

(6) Put the conductor in crimp barrel of the socket.

(7) Crimp the contact.

(8) Put the ring socket assembly in the insulator bushing of the connector housing.

(9) Push the rear insulator, the spring, and the ferrule sleeve into the connector housing.

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(10) Push the nut against the connector housing.

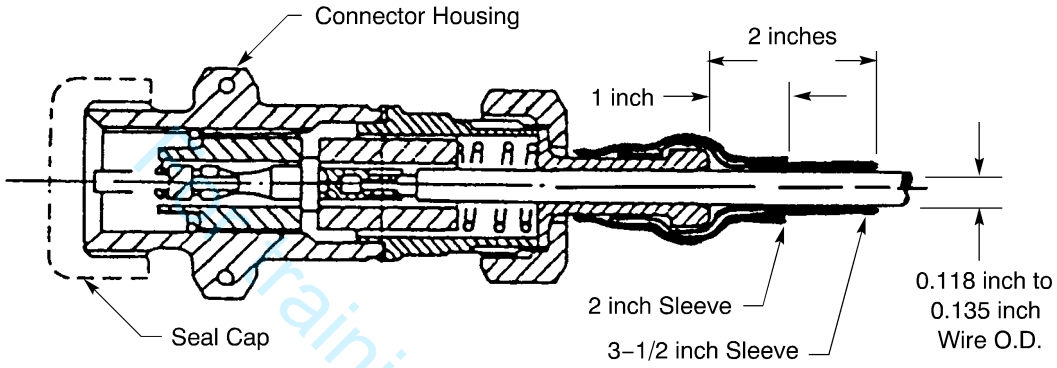
(11) Turn the nut so that the threads engage the threads of the housing.

(12) Torque the nut 100 inch-pounds to 120 inch-pounds.

(13) Make a selection of a ferrule crimp tool from Table 27.

(14) Crimp the ferrule.

(15) Install the wire support sleeves. Refer to Figure 21.



SUPPORT SLEEVE INSTALLATION
Figure 21

(a) Push the 3-1/2 inch TFE 4X sleeve over the ferrule sleeve until the end of the sleeve is approximately 2 inches from the end of the ferrule.

(b) Shrink the sleeve in position.

(c) Push the 2 inch TFE 4X sleeve over the first sleeve until the end of the sleeve is approximately 2 inches from the end of the ferrule.

(d) Shrink the sleeve in position.

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ASSEMBLY OF WALTER KIDDE CONNECTORS

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ASSEMBLY OF WALTER KIDDE CONNECTORS

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ASSEMBLY OF WALTER KIDDE CONNECTORS

This subject gives the procedures to assemble Walter Kidde connectors with fire resistant wires.

1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

Table 1
CONNECTOR PART NUMBERS

Part Number	Contact Configuration	Supplier
875564	Pin	Walter Kidde
876288	Socket	Walter Kidde
876633	Pin	Walter Kidde
876635	Socket	Walter Kidde
877535	Socket	Walter Kidde
877536	Pin	Walter Kidde
878238-01	Socket	Walter Kidde
878238-02	Pin	Walter Kidde
878239-01	Pin	Walter Kidde
878239-02	Socket	Walter Kidde
878550-01	Pin	Walter Kidde
878551-01	Socket	Walter Kidde
878581-01	Pin	Walter Kidde
878582-01	Socket	Walter Kidde

Table 2
ALTERNATIVE CONNECTOR PART NUMBERS

Specified Connector	Alternative Connector
878238-01	878238-02
878239-01	878239-02

Table 3
ALTERNATIVE CONNECTOR PART NUMBERS

Specified Connector	Alternative Connector
875564	878238-02
876288	878239-02
876633	878581-01
876635	878582-01
877535	878551-01
877536	878550-01

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B. Necessary Materials

Table 4
NECESSARY MATERIALS

Description	Part Number or Specification	Supplier
Cement	No. 1	Sauereisen
	No. 31	Sauereisen
Grease, Silicone	DC-4	Dow Corning
Washer, Brass	209592	Walter Kidde
Sleeve, Heat Shrinkable	MIL-DTL-23053/12 Class 5	Any Source
	SAE-AMS-23053/12 Class 5	Any Source
	TFE 4X	Chemplast
		Zeus
Tube, Heat Shrinkable with Meltable Inner Liner	MWSF Polyolefin	Remtek
	WTF Teflon	Penntube Plastics
		Saint-Gobain Performance Plastics

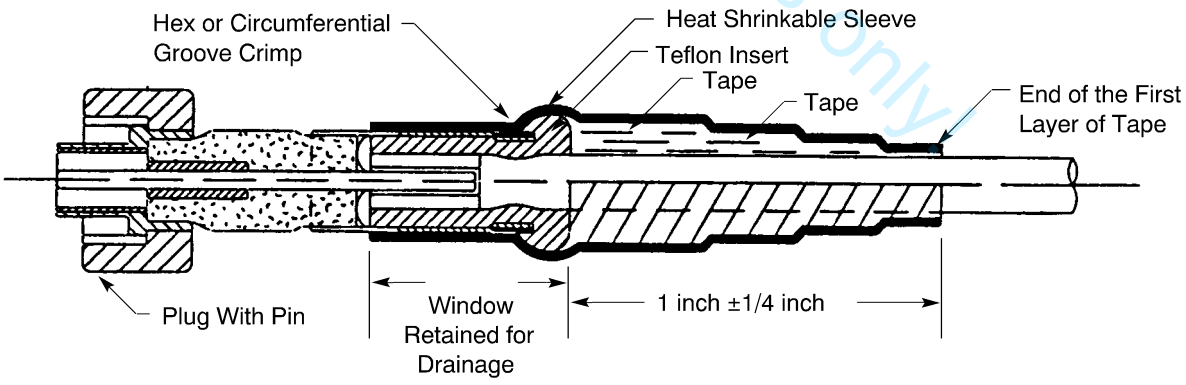
2. GENERAL DATA

A. Connector Cleaning

For the procedures to clean Walter Kidde connectors, refer to Subject 20-60-01.

B. Installation of Strain Relief

This paragraph gives the procedure to assemble more strain relief if the strain relief given by the grommet insert is not sufficient.



INSTALLATION OF MORE STRAIN RELIEF
Figure 1

Refer to Figure 1.

(1) Put tape on the cable or wire at the rear of the connector.

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ASSEMBLY OF WALTER KIDDE CONNECTORS

CAUTION: TAPE BY ITSELF DOES NOT GIVE THE NECESSARY STRAIN RELIEF. THE INSTALLATION OF A HEAT SHRINKABLE SLEEVE ON THE TAPE IS NECESSARY TO GIVE THE NECESSARY STRAIN RELIEF. IF THE STRAIN RELIEF IS NOT SUFFICIENT, DAMAGE TO THE WIRE HARNESS CAN OCCUR.

(a) Make a selection of Temperature Grade D tape. Refer to Subject 20-00-11.

(b) Put rear end of the first layer of tape on the cable or wire approximately 1-1/4 inches from the collar of the Teflon insert.

(c) Put more layers of tape on the cable or wire to increase the diameter slowly and continuously from the end of the first layer of tape.

Make sure that:

- The tape is smooth and symmetrical around the wire or cable
- The diameter of the wire or cable at the end of the connector is almost as large as the collar of the Teflon insert.

(2) Install the necessary quantity of sleeves.

NOTE: If the sleeve is TFE 4X, installation of 2 or 3 sleeves is necessary.

(a) Make a selection of an approximately 0.5 inch diameter Teflon heat shrinkable sleeve. Refer to Subject 20-00-11.

Make sure that:

- The sleeve can move on the Teflon insert easily
- The length of the sleeve is sufficient to extend from the forward end of the Teflon insert to the rear end of the layers of tape.

(b) Put the sleeve on the layers of tape and the Teflon insert.

(c) Align the rear end of the sleeve with the rear end of the tape.

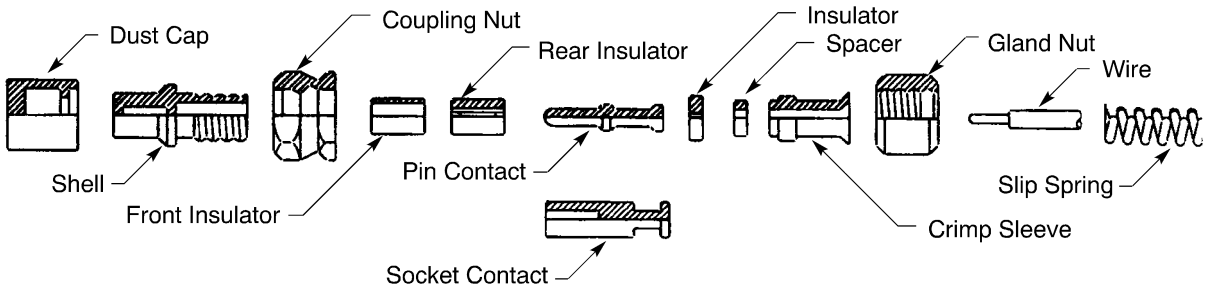
(d) To prevent damage to the cable or wire caused by the application of heat, put sufficient layers of protection on 4 to 6 inches of the cable or wire that does not have tape on it.

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

(f) Do Step (b) through Step (e)again for each sleeve.

3. ASSEMBLY OF WALTER KIDDE 875564 AND 876288 CONNECTORS WITH BMS 13-8A TYPE I CLASS A AWG 18 WIRE

A. Connector Description



WALTER KIDDE 875564 AND 876288 CONNECTORS
Figure 2

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B. Contact Assembly

Table 5
CONTACT CRIMP TOOLS

Contact	Crimp Tool			
	Basic Unit		Locator	
	Part Number	Supplier	Part Number	Supplier
Pin	MS3191A	QPL	3630-2	Astro
			3630-2	Buchanan
	ST2220-1-Y	Boeing	ST2220-1-7	Boeing
Socket	MS3191A	QPL	3630-4	Astro
			3630-4	Buchanan
	ST2220-1-Y	Boeing	ST2220-1-58	Boeing

Refer to Figure 2.

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

(2) Remove 0.35 inch ±0.03 inch of insulation from the end of the wire.

(3) In this sequence, put these components on the wire:
- The slip spring
- The gland nut
- The crimp sleeve
- The spacer.

(4) Put the insulator on the wire.

Make sure that it is against the wire insulation.

(5) Put the contact in the tool.

(6) Hold the tool with the crimp barrel of the contact pointed up.

(7) Push the wire into the crimp barrel of the contact until the end of the wire is against the bottom of the crimp barrel.

(8) Crimp the contact.

C. Connector Assembly

Table 6
NECESSARY TOOLS

Tool	Part Number
Pliers	ST2598C
Torque Adapter	ST2575

Refer to Figure 2.

(1) Make a selection of a torque adapter from Table 6.

(2) Make a selection of a pair of pliers from Table 6.

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(3) Make a selection of a cement from Table 4.

(4) For protection for the pin to shell seal surface when the gland nut is torqued, make a selection of a washer from Table 4.

NOTE: An equivalent washer is a satisfactory alternative.

(5) Put the coupling nut on the end of the shell that has threads.

(6) Put a small quantity of cement on the first three threads of the shell.

(7) Put the front insulator and the rear insulator into the shell.

Make sure that the flange of the contact is aligned correctly in the counterbore of the rear insulator.

(8) Push the wired contact into the rear insulator.

(9) Fill the space at the end of the insulator in the shell with the cement.

(10) Move the spacer forward.

(11) Push the gland nut on the sleeve.

Make sure it is against the shell.

(12) Tighten the gland nut:

(a) Fully engage the threads of the gland nut with the threads of the shell.

(b) Put the washer on the shell.

(c) Fully engage the threads of the torque adapter with the threads of the shell.

(d) Torque the adapter to the shell 32 inch-pounds to 38 inch-pounds.

(e) Put the pliers on the gland nut.

(f) Torque the gland nut 12 inch-pounds to 18 inch-pounds.

(13) Remove the washer and the unwanted cement.

(14) Turn the spring on the crimp sleeve until it is against the gland nut.

(15) Put a dust cap on the end of the shell.

(16) Cure the Sauereisen cement a minimum of 18 hours at 70 degrees F.

CAUTION: THE CONNECTOR IS NOT SERVICEABLE UNTIL THE CEMENT FULLY CURES. IN FLIGHT, TEMPERATURES HIGHER THAN 180 DEGREES F AND HIGH VIBRATIONS CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE CONNECTOR.

NOTE: The connector can be installed before the cement fully cures.

4. ASSEMBLY OF WALTER KIDDE 875564 AND 876288 CONNECTORS WITH ROCKBESTOS H22-4000 AWG 18 WIRE

NOTE: These alternatives are permitted:

- The 877535 connector for the 876288 connector
- The 877536 connector for the 875564 connector.

Refer to Paragraph 7. for the procedure to assemble the Walter Kidde 877535 and 877536 connectors with Rockbestos H22-4000 AWG 18 wire.

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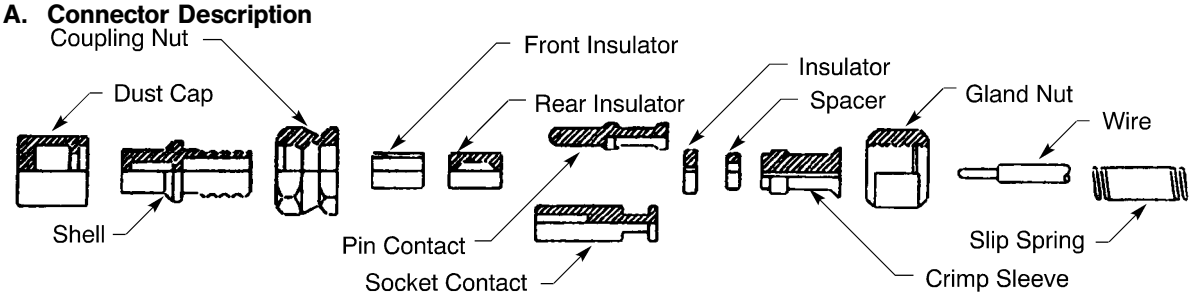
ASSEMBLY OF WALTER KIDDE CONNECTORS

A. Connector Description



WALTER KIDDE 875564 AND 876288 CONNECTORS
Figure 3

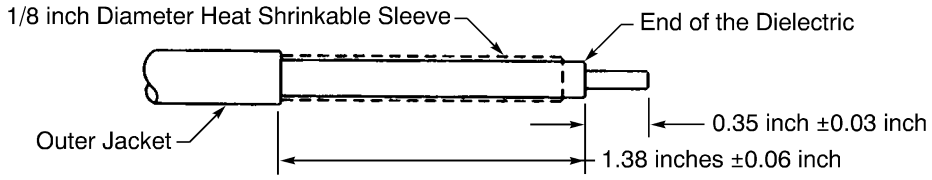
B. Contact Assembly

Table 7
CONTACT CRIMP TOOLS

Contact	Crimp Tool			
	Basic Unit		Locator	
	Part Number	Supplier	Part Number	Supplier
Pin	MS3191A	QPL	3630-2	Astro
			3630-2	Buchanan
	ST2220-1-Y	Boeing	ST2220-1-7	Boeing
Socket	MS3191A	QPL	3630-4	Astro
			3630-4	Buchanan
	ST2220-1-Y	Boeing	ST2220-1-58	Boeing

Refer to Figure 3.

(1) Make a selection of a 1/8 inch diameter heat shrinkable sleeve from Table 4.
(2) Make a selection of a 1/4 inch diameter heat shrinkable sleeve from Table 4.
(3) Make a selection of a crimp tool from Table 7.
(4) Prepare the wire. Refer to Figure 4.



WIRE TRIM DIMENSIONS
Figure 4

(a) Remove 1.38 inches ±0.06 inch of the outer braid from the wire.
(b) Remove 1.38 inches ±0.06 inch of the Teflon tape from the wire.

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CAUTION: DO NOT CUT THE DIELECTRIC MATERIAL.

(c) Remove 0.35 inch ±0.03 inch of the dielectric from the end of the wire.

(d) Put a 1 inch ±0.06 inch length of 1/8 inch diameter heat shrinkable sleeve on the dielectric.

Make sure that the end of the sleeve is against the end of the braid.

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

(5) In this sequence, put these components on the wire:

- A 1 inch ±0.06 inch length of 1/4 inch diameter heat shrinkable sleeve
- The slip spring
- The gland nut
- The crimp sleeve
- The spacer.

(6) Put the insulator on the wire.

Make sure that it is against the wire insulation.

(7) Put the contact in the tool.

(8) Hold the tool with the crimp barrel of the contact pointed up.

(9) Push the wire into the crimp barrel of the contact until the end of the wire is against the bottom of the crimp barrel.

(10) Crimp the contact.

C. Connector Assembly

Table 8
NECESSARY TOOLS

Tool	Part Number
Pliers	ST2598C
Torque Adapter	ST2575

Refer to Figure 3.

(1) Make a selection of a torque adapter from Table 8.

(2) Make a selection of a pair of pliers from Table 6.

(3) Make a selection of a cement from Table 4.

(4) For protection for the pin to shell seal surface when the gland nut is torqued, make a selection of a washer from Table 4.

NOTE: An equivalent washer is a satisfactory alternative.

(5) Put the coupling nut on the end of the shell that has threads.

(6) Put a small quantity of cement on the first three threads of the shell.

(7) Put the front insulator and the rear insulator into the shell.

Make sure that the flange of the contact is aligned correctly in the counterbore of the rear insulator.

(8) Push the wired contact into the rear insulator.

(9) Fill the space at the end of the insulator in the shell with the cement.

(10) Move the spacer forward.

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(11) Push the gland nut on the sleeve.

Make sure that it is against the shell.

(12) Tighten the gland nut:

(a) Fully engage the threads of the gland nut with the threads of the shell.

(b) Put the washer on the shell.

(c) Fully engage the threads of the torque adapter with the threads of the shell.

(d) Torque the adapter to the shell 32 inch-pounds to 38 inch-pounds.

(e) Put the pliers on the gland nut.

(f) Torque the gland nut 12 inch-pounds to 18 inch-pounds.

(13) Remove the washer and unwanted cement.

(14) Push the 1 inch length of 1/4 inch diameter heat shrinkable sleeve to the connector until the end of the sleeve is against the end of crimp sleeve.

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

(16) Turn the spring on the crimp sleeve until it is against the gland nut.

(17) Put a dust cap on the end of the shell.

(18) Cure the Sauereisen cement a minimum of 18 hours at 70 degrees F.

CAUTION: THE CONNECTOR IS NOT SERVICEABLE UNTIL THE CEMENT FULLY CURES. IN FLIGHT, TEMPERATURES HIGHER THAN 180 DEGREES F AND HIGH VIBRATIONS CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE CONNECTOR.

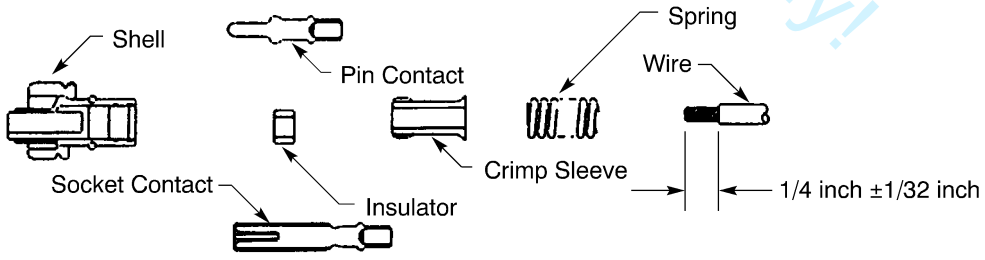
NOTE: The connector can be installed before the cement fully cures.

5. ASSEMBLY OF WALTER KIDDE 876633 AND 876635 CONNECTORS

This paragraph gives the procedures to assemble the connectors with these wires:

- Boeing 10-60816-17
- Filotex TMF
- Haveg 24-00033.

A. Connector Description



WALTER KIDDE 876633 AND 876635 CONNECTORS
Figure 5

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B. Contact Assembly

Table 9
CONTACT CRIMP TOOLS

Contact	Crimp Tool					
	Basic Unit			Locator		
	Part Number	Setting	Supplier	Part Number	Color	Supplier
Pin	M22520/1-01	6	QPL	56-302	Red	Balmar
				TH302	Red	Daniels
	ST2220-1-Y	-	Boeing	3630-2	-	Astro
				3630-2	-	Buchanan
Socket	M22520/1-01	6	QPL	56-302	Red	Balmar
				TH302	Red	Daniels
	ST2220-1-Y	-	Boeing	3630-4	-	Astro
				3630-4	-	Buchanan

Refer to Figure 5.

(1) Make a selection of heat shrinkable tube from Table 4.

(2) Make a selection of a crimp tool from Table 9.

(3) Prepare the wire.

CAUTION: DO NOT CUT OR CAUSE DAMAGE TO:
- THE RUBBER TAPE
- THE GLASS WRAPPED LAYER.

(a) Remove 1.50 inches ±0.06 inch of the jacket from the wire.

(b) Remove 1.50 inches ±0.06 inch of the Teflon tapes from the wire.

(c) Remove 1.50 inches ±0.06 inch of the braid from the wire.

(d) Put a 1.13 inch ±0.06 inch length of 0.13 inch diameter heat shrinkable tube on the wire.

(e) Move the inner and the outer layers of the sleeve until the ends of the sleeve are against the end of outer jacket.

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

Make sure to use a heat source of 750 degrees F to shrink the tube.

(4) Remove 0.35 inch ±0.03 inch of insulation from the end of the wire.

(5) In this sequence, put these components on the wire:
- A 0.75 inch ±0.10 inch length of 0.35 inch diameter heat shrinkable tube
- A 0.75 inch ±0.10 inch length of 0.19 inch diameter heat shrinkable tube
- A 1.25 inch ±0.10 inch length of 0.13 inch diameter heat shrinkable tube.
- The sleeve
- The insulator.

The spring can be discarded; it is not used.

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(6) Push the wire into the crimp barrel of the contact until the end of the wire is against the bottom of the crimp barrel.

(7) Crimp the contact.

C. Connector Assembly

Refer to Figure 5.

(1) Make a selection of a cement from Table 4.

(2) Apply a small quantity of cement around the bare wire where the wire goes in the crimp barrel of the contact.

CAUTION: DO NOT APPLY THE CEMENT TO THE CONTACT FARTHER THAN THE FLANGE OF THE CONTACT.

(3) Hold the sleeve and the insulator away from the shell.

(4) Push the contact into the shell until the contact is fully inserted.

(5) Hold the contact in position.

(6) Use a syringe to fill the rear of the shell with the cement.

(7) Push the insulator into the shell.

(8) Push the sleeve against the shell.

(9) Turn the sleeve counterclockwise until the threads of the sleeve engage the threads of the shell.

Make sure that:

- The contact does not move backward
- The shell and the wire do not turn.

(10) Tighten the sleeve with the hand.

Make sure that the center contact is centered in the connector shell.

(11) Remove the unwanted cement.

(12) Push the 0.13 inch diameter tube forward until the end of the tube is against the flare on connector sleeve.

(13) Shrink the tube in its position. Refer to Subject 20-10-14.

(14) Push the 0.19 inch diameter tube on the flare on the connector sleeve until the end of the tube is against the connector shell.

(15) Shrink the tube in its position. Refer to Subject 20-10-14.

(16) Push the 0.35 inch diameter tube on the connector shell until the end of the tube is against retainer ring of the coupling nut.

(17) Shrink the tube in its position. Refer to Subject 20-10-14.

(18) Put a dust cap on the end of the shell.

(19) Attach the Walter Kidde 241833 envelope that contains the Walter Kidde 209592 seal gaskets to the connector with the tie material. Refer to Subject 20-10-11 for the procedure to assemble a wire harness tie.

(20) Cure the Sauereisen cement a minimum of 18 hours at 70 degrees F.

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ASSEMBLY OF WALTER KIDDE CONNECTORS

CAUTION: THE CONNECTOR IS NOT SERVICEABLE UNTIL THE CEMENT FULLY CURES. IN FLIGHT, TEMPERATURES HIGHER THAN 180 DEGREES F AND HIGH VIBRATIONS CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE CONNECTOR.

NOTE: The connector can be installed before the cement fully cures.

D. Connector Installation

(1) Install one gasket when the plug is attached to the sensor element. Refer to the instructions on the Walter Kidde 241833 envelope.

NOTE: When the plug is disconnected from the receptacle, it is necessary to install a new gasket before the plug and the receptacle are attached again.

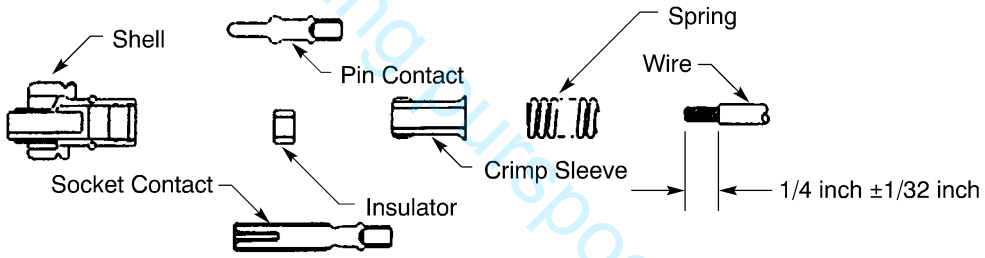
(2) When it is necessary, attach more gaskets to the cable assembly with a Temperature Grade D tie material. Refer to Subject 20-10-11 for the procedure to assemble a wire harness tie.

Make sure that the tie material is Temperature Grade D material.

6. ASSEMBLY OF WALTER KIDDE 876633 AND 876635 CONNECTORS ON ROLLS-ROYCE WIRE HARNESSES

NOTE: The data is in this paragraph is supplied to Boeing by Rolls-Royce.

A. Connector Description



WALTER KIDDE 876633 AND 876635 CONNECTORS
Figure 6

B. Contact Assembly

Table 10
CONTACT CRIMP TOOLS

Contact	Basic Unit		Die		Locator	
	Part Number	Supplier	Part Number	Supplier	Part Number	Supplier
Pin	M22520/1-01	QPL	-	-	M22520/1-02	QPL
	MS27828	QPL	MS27828-1	QPL	-	-
	MS3191A	QPL	-	-	3630-2	Astro
			-	-	3630-2	Buchanan

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Table 10 (continued)

Contact	Basic Unit		Die		Locator	
	Part Number	Supplier	Part Number	Supplier	Part Number	Supplier
Socket	M22520/1-01	QPL	-	-	M22520/1-02	QPL
	MS27828	QPL	MS27828-1	QPL	-	-
	MS3191A	QPL	-	-	3630-4	Astro
			-	-	3630-4	Buchanan

Refer to Figure 6.

(1) Make a selection of a crimp tool from Table 10.

(2) Remove 0.25 inch ±0.03 inch of the insulation from the end of the wire.

(3) In this sequence, put these components on the wire:

- The spring
- The crimp sleeve
- The insulator.

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

(5) Crimp the contact.

C. Connector Assembly

Table 11
CRIMP SLEEVE CRIMP TOOLS

Basic Unit		Die	
Part Number	Supplier	Part Number	Supplier
612648	Astro	614499	Astro
612648	Buchanan	614499	Buchanan
M22520/5-01	QPL	M22520/5-37	QPL
HX4	Daniels	Y715	Daniels

Refer to Figure 6.

(1) Make a selection of a cement from Table 4.

(2) Make a selection of a crimp tool from Table 11.

(3) Put a small quantity of cement on the first three threads of the crimp sleeve.

(4) Push the contact into the shell.

Make sure that the flange of the contact is aligned correctly in the counterbore of the insulator.

(5) Push the crimp sleeve forward into the shell.

(6) Turn the sleeve counterclockwise until it is tight.

CAUTION: DO NOT USE A PAIR OF PLIERS TO TURN THE CRIMP SLEEVE.

(7) Crimp the sleeve.

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(8) Push the spring to the connector until it is against the flared end of the crimp sleeve.

(9) Turn the spring counterclockwise on the end of the sleeve until the end of the spring is against the shell.

NOTE: Some force can be necessary to start the first coil of the spring on the flared end of the crimp sleeve.

(10) Put a dust cap on the end of the shell.

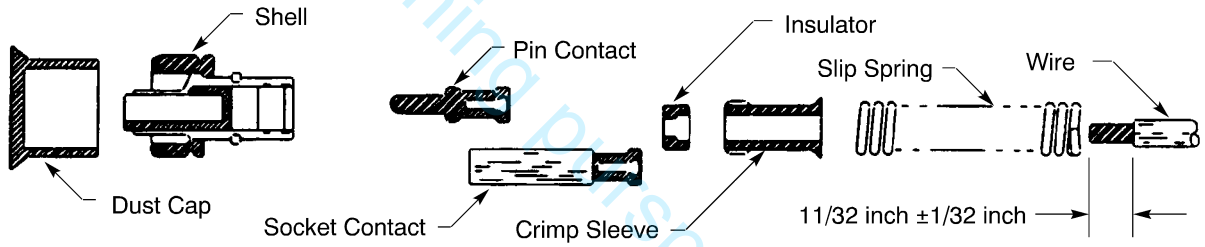
(11) Cure the Sauereisen cement a minimum of 18 hours at 70 degrees F.

CAUTION: THE CONNECTOR IS NOT SERVICEABLE UNTIL THE CEMENT FULLY CURES. IN FLIGHT, TEMPERATURES HIGHER THAN 180 DEGREES F AND HIGH VIBRATIONS CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE CONNECTOR.

NOTE: The connector can be installed before the cement fully cures.

7. ASSEMBLY OF WALTER KIDDE 877535 AND 877536 CONNECTORS WITH ROCKBESTOS H22-4000 AND BMS 13-55 AWG 18 WIRE

A. Connector Description



WALTER KIDDE 877535 AND 877536 CONNECTORS
Figure 7

B. Contact Assembly

Table 12
CONTACT CRIMP TOOLS

Contact	Crimp Tool			
	Basic Unit		Locator	
	Part Number	Supplier	Part Number	Supplier
Pin	ST2220-1-Y	Boeing	ST2220-1-33	Boeing
Socket	ST2220-1-Y	Boeing	ST2220-1-58	Boeing
			ST2220-1-30	Boeing

NOTE: The ST2220-1-58 locator is a modified ST2220-1-30 locator. A metal stop is used in the bottom of the contact cavity. The metal stop has these dimensions:

- A diameter of 0.125 inch to 0.140 inch
- A thickness of 0.035 inch to 0.045 inch.

Refer to Figure 7.

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(1) Make a selection of a 1/4 inch diameter heat shrinkable sleeve from Table 4.

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

(3) In this sequence, put these components on the wire:
- The slip spring
- The crimp sleeve.

(4) Remove 0.35 inch ±0.03 inch of the insulation from the end of the wire.

(5) For Rockbestos H22-4000 wire, put a 1.50 inch ±0.06 inch length of 1/4 inch diameter heat shrinkable sleeve on the wire.

(6) For BMS 13-55 wire, put four 1.50 inch ±0.06 inch lengths of 1/4 inch diameter heat shrinkable sleeve on the wire.

(7) Put the insulator on the wire.

Make sure that the end of the insulator is against the wire insulation.

(8) Put the contact in the tool.

(9) Hold the tool with the crimp barrel of the contact pointed up.

(10) Push the wire into the crimp barrel of the contact until the end of the wire is against the bottom.

(11) Crimp the contact.

C. Connector Assembly

Table 13
CRIMP SLEEVE CRIMP TOOLS

Basic Unit		Die	
Part Number	**Supplier**	**Part Number**	**Supplier**
612648	Astro	616229	Astro
612648	Buchanan	616229	Buchanan
612648	Buchanan	ST965-4	Boeing

Refer to Figure 7.

(1) Make a selection of a cement from Table 4.

(2) Make a selection of a hex crimp tool from Table 13.

(3) Put a small quantity of the cement around the wire where the wire goes into the insulator.

(4) Push the contact into the shell.

Make sure that the flange of the contact is aligned correctly in the counterbore of the insulator.

(5) Put a small quantity of the cement on the first three threads of the crimp sleeve.

(6) Push the crimp sleeve forward into the shell.

(7) Turn the sleeve counterclockwise until it is tight.

CAUTION: DO NOT USE A PAIR OF PLIERS TO TURN THE CRIMP SLEEVE.

Make sure that the end of the sleeve that has threads aligns correctly with the rear face of the shell.

(8) Crimp the sleeve on the wire.

Make sure that the distance across the hex crimp flats is approximately 0.175 inch to 0.181 inch.

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(9) For Rockbestos H22-4000 wire:

(a) Move the 1.50 inch length of heat shrinkable sleeve until the end of the sleeve is against the edge of the crimp sleeve.

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

(10) For BMS 13-55 wire:

(a) Move one of the 1.50 inch length of heat shrinkable sleeves until the end of the sleeve is against the edge of the crimp sleeve.

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

(c) Do Step (a) and Step (b) for the remaining sleeves.

(11) Push the spring to the connector until it is against the flared end of the crimp sleeve.

(12) Turn the spring counterclockwise on the end of the sleeve until the end of the spring is against the shell.

NOTE: Some force can be necessary to start the first coil of the spring on the flared end of the crimp sleeve.

(13) Put a dust cap on the end of the shell.

(14) Cure the Sauereisen cement a minimum of 18 hours at 70 degrees F.

CAUTION: THE CONNECTOR IS NOT SERVICEABLE UNTIL THE CEMENT FULLY CURES. IN FLIGHT, TEMPERATURES HIGHER THAN 180 DEGREES F AND HIGH VIBRATIONS CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE CONNECTOR.

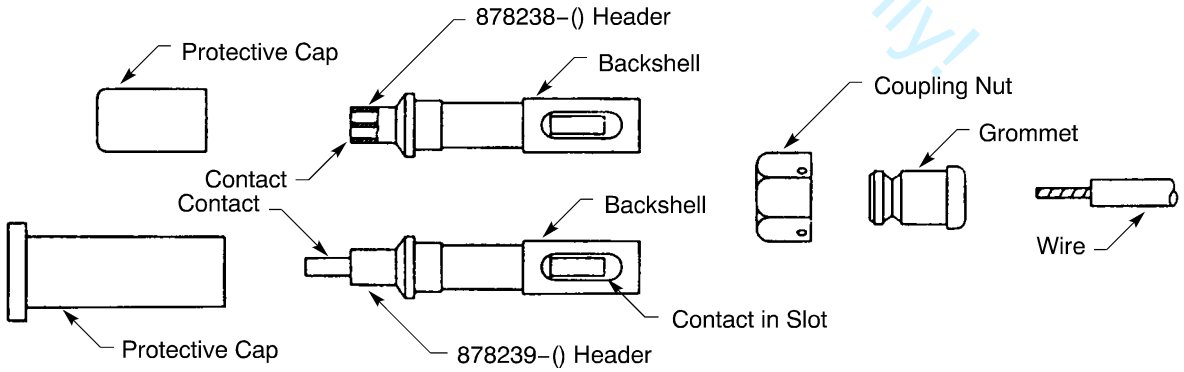
NOTE: The connector can be installed before the cement fully cures.

8. ASSEMBLY OF WALTER KIDDE 878238-() AND 878239-() CONNECTORS

This paragraph give the procedures to assemble the connectors with AWG 18 and AWG 16 wire with an O.D. of:

- 0.096 inch minimum
- 0.160 inch maximum.

A. Connector Description



WALTER KIDDE 878238-() AND 878239-() CONNECTORS
Figure 8

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B. Wire Preparation

(1) Make a selection of a 1/8 inch diameter heat shrinkable sleeve from Table 4.

(2) Remove 0.31 inch ±0.02 inch of insulation from the end of the wire.

(3) For wire with an O.D. between 0.096 inch and 0.126 inch, increase the O.D. of the wire:

(a) Put a 1 inch length of 1/8 inch diameter heat shrinkable sleeve on the wire.

(b) Align the end of the sleeve with the end of the wire insulation.

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

C. Contact Assembly

Table 14
CONTACT CRIMP TOOLS

Basic Unit		Die	
Part Number	**Supplier**	**Part Number**	**Supplier**
612648	Astro	620770	Astro
612648	Buchanan	620770	Buchanan
HX4	Daniels	Y715	Daniels
M22520/5-01	QPL	Y715	Daniels

Refer to Figure 8.

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

(2) Put the grommet on the wire.

(3) Put the nut on the header.

(4) Push the wire into the contact until the wire insulation is against the crimp barrel.

(5) Crimp the contact.

Make sure that the tool is against the ceramic face of the backshell.

NOTE: The contact is crimped through the slots in the backshell of the header.

D. Connector Assembly

Table 15
BACKSHELL CRIMP TOOLS

Basic Unit		Die	
Part Number	**Supplier**	**Part Number**	**Supplier**
612648	Astro	620963	Astro
612648	Buchanan	620963	Buchanan
HX4	Daniels	Y715	Daniels
M22520/5-01	QPL	Y715	Daniels

Refer to Figure 8.

(1) Make a selection of a crimp tool from Table 15.

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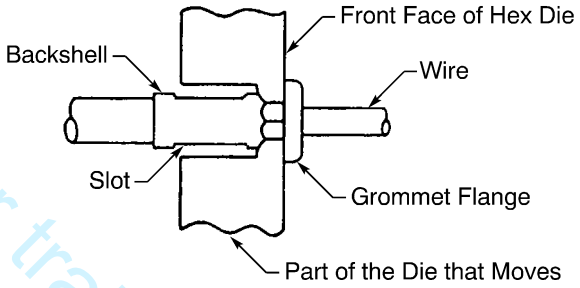
(2) Push the grommet forward into the backshell of the header until the face of the grommet flange is against the end of the backshell.

(3) Crimp the backshell down into the V groove of the grommet. Refer to Figure 9.

Make sure that:

- The flange of the grommet is fully against the end of the backshell
- The flange of the grommet is against the front face of the hex die
- A side of the backshell with a slot is pointed to the part of the die that moves.



POSITION THE BACKSHELL IN THE CRIMP TOOL
Figure 9

(4) Put a dust cap on the end of the shell.

E. Connector Installation

(1) Make a selection of a silicone grease from Table 4.

(2) Put a light, smooth layer of the grease on the copper seal gasket that is in the coupling nut.

CAUTION: DO NOT APPLY GREASE ON THE CONTACT. THE GREASE CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE CONNECTOR.

(3) Connect the plug with the receptacle.

(4) Torque the coupling nut of the plug 50 inch-pounds to 60 inch-pounds.

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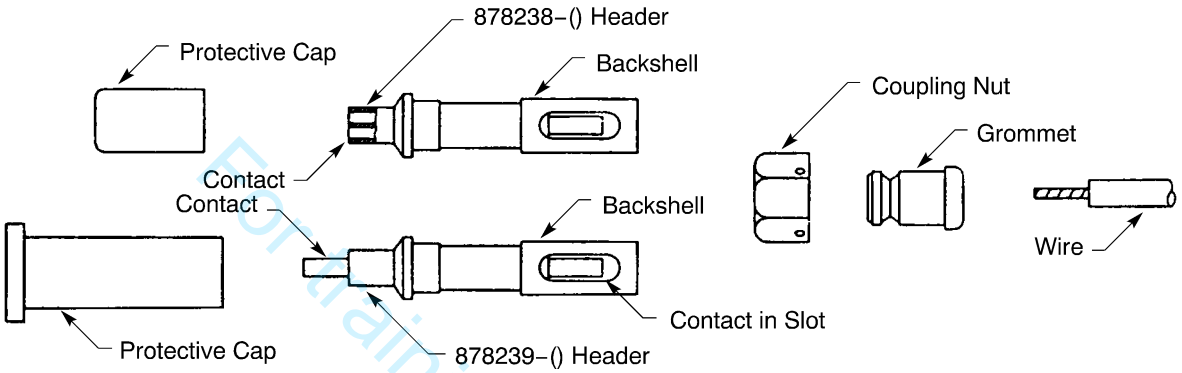
9. ASSEMBLY OF WALTER KIDDE 878550-() AND 878551-() CONNECTORS

This paragraph give the procedures to assemble the connectors with AWG 18 and AWG 16 wire with an O.D. of:

- 0.15 inch minimum
- 0.17 inch maximum.

A. Connector Description



WALTER KIDDE 878550-() AND 878551-() CONNECTORS
Figure 10

B. Contact Assembly

Table 16
CONTACT CRIMP TOOLS

Basic Unit		Die	
Part Number	**Supplier**	**Part Number**	**Supplier**
612648	Astro	620770	Astro
612648	Buchanan	620770	Buchanan
HX4	Daniels	Y715	Daniels
M22520/5-01	QPL	Y715	Daniels

Refer to Figure 10.

(1) Make a selection of a contact crimp tool from Table 16.

(2) Remove 0.31 inch ±0.02 inch of insulation from the end of the wire.

(3) Put the grommet on the wire.

(4) Slide the nut forward on the connector assembly.

(5) Push the wire into the contact until the wire insulation is against the contact crimp barrel.

(6) Crimp the contact.

Make sure that the tool is against the ceramic face of the backshell.

NOTE: The contact is crimped through the slots in the backshell of the header.

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C. Connector Assembly

Table 17
BACKSHELL CRIMP TOOLS

Basic Unit		Die	
Part Number	**Supplier**	**Part Number**	**Supplier**
612648	Astro	620784	Astro
612648	Buchanan	620784	Buchanan
HX4	Daniels	Y715	Daniels
M22520/5-01	QPL	Y715	Daniels

Refer to Figure 10.

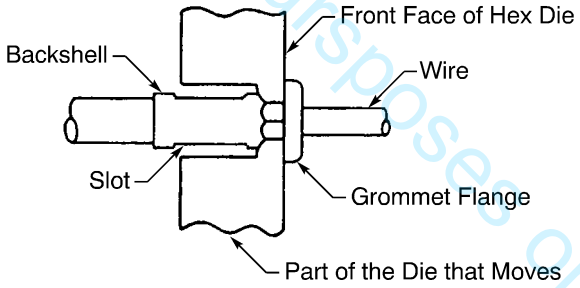
(1) Make a selection of a crimp tool from Table 17.

(2) Push the grommet forward into the backshell of the header until the face of the grommet flange is against the end of the backshell.

(3) Crimp the backshell down into the V groove of the grommet. Refer to Figure 11.

Make sure that:

- The flange of the grommet is fully against the end of the backshell
- The flange of the grommet is against the front face of the hex die
- A side of the backshell with a slot is pointed to the part of the die that moves.



POSITION THE BACKSHELL IN THE CRIMP TOOL
Figure 11

(4) Put a dust cap on the end of the shell.

D. Connector Installation

(1) Make a selection of a silicone grease from Table 4.

(2) Put a light, smooth layer of the grease on the copper seal gasket that is in the coupling nut.

CAUTION: DO NOT APPLY GREASE ON THE CONTACT. THE GREASE CAN CAUSE UNSATISFACTORY PERFORMANCE OF THE CONNECTOR.

(3) Connect the plug with the receptacle.

(4) Torque the coupling nut of the plug 50 inch-pounds to 60 inch-pounds.

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10. ASSEMBLY OF WALTER KIDDE 878581-01, 878582-01, AND 878598-01 CONNECTORS

This paragraph gives the procedures to assemble the connectors with these wires:

- BMS 13-8 Type 1 Class A AWG 18
- Champlain 24-00033
- Filotex TMF.

A. Contact Assembly

Table 18
CONTACT CRIMP TOOLS

Basic Unit		Die	
Part Number	**Supplier**	**Part Number**	**Supplier**
HX4	Daniels	Y715	Daniels
M22520/5-01	QPL	Y715	Daniels
M22910/7-1	QPL	620770	Astro
		620770	Buchanan

(1) Make a selection of a crimp tool from Table 18.

(2) If the wire has a braided jacket, cut the end of the wire at an angle to make the installation of the Teflon grommet easier.

(3) Put the Teflon grommet on the wire.

Make sure to put the large end of the grommet on the wire first.

(4) If the wire was cut at an angle, cut the wire to make the end of the wire perpendicular to its longitudinal axis.

(5) Remove 0.31 inch ±0.02 inch of the insulation from the end of the wire.

(6) Put the coupling nut on the wire.

Make sure that the end of the nut that has threads points to the bare end of the wire.

(7) Put the body of the connector in the die of the crimp tool. Refer to Figure 12.

Make sure that:

- The point of each anvil goes into the slots in the backshell
- The top of each anvil is against the ceramic body.

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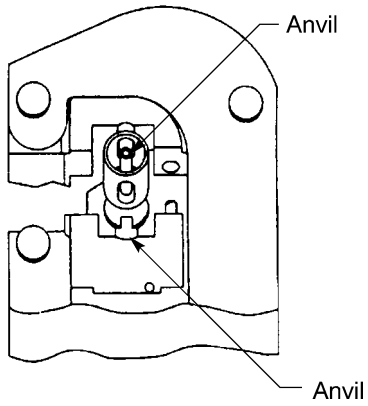
ASSEMBLY OF WALTER KIDDE CONNECTORS



POSITION OF THE CONNECTOR BODY IN THE CRIMP TOOL
Figure 12

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(8) Lightly close the handles of the tool to the distance that is sufficient to hold the connector in position.
Make sure that the anvils start to close around the crimp barrel of the contact.

(9) Push the bare end of the wire into the crimp barrel of the contact.

(10) Crimp the contact.
Make sure that all of the strands of the conductor are in the crimp barrel.

B. Connector Assembly

Table 19
BACKSHELL CRIMP TOOLS

Basic Unit		Die	
Part Number	**Supplier**	**Part Number**	**Supplier**
M22910/7-1	QPL	620963	Astro
		620963	Buchanan

(1) Make a selection of a crimp tool from Table 19.

(2) Push the coupling nut on the connector body.

(3) Push the Teflon grommet into the connector shell.

(4) Put the body of the connector in the die of the crimp tool. Refer to Figure 13.
Make sure that:

- The flange of the grommet is fully against the end of the backshell
- The flange of the grommet is against the front face of the hex die
- A side of the backshell with a slot is pointed to the part of the die that moves.

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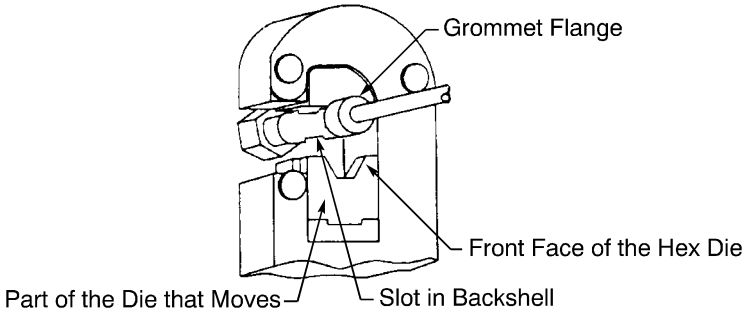

CONNECTOR SHELL CRIMP
Figure 13

(5) Crimp the backshell.

(6) Put a dust cap on the end of the shell.

11. APPROVED TOOL SUPPLIERS

A. Connector Assembly Tools

Table 20
CONNECTOR ASSEMBLY TOOL SUPPLIERS

Tool	Supplier
ST2575	Boeing
ST2598C	Boeing

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ASSEMBLY OF LINDBERG 1039, 2564-3, AND 2564-4 CONNECTORS

Paragraph			Page
1.	**PART NUMBERS AND DESCRIPTION**		**1**
	A.	Connector Part Numbers	1
2.	**ASSEMBLY OF THE LINDBERG 1039 CONNECTOR**		**1**
	A.	Wire Preparation	1
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	D.	Installation of the Lindberg Sensor	4
3.	**ASSEMBLY OF THE LINDBERG 2564-3 AND 2564-4 CONNECTORS**		**4**
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ASSEMBLY OF LINDBERG 1039, 2564-3, AND 2564-4 CONNECTORS

This Subject gives the procedure to assemble the connectors with BMS 13-8 wire.

1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

Table 1
CONNECTOR PART NUMBERS

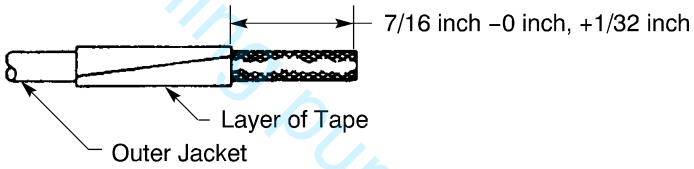
Part Number	Supplier
1039	Lindberg
2564-3	Lindberg
2564-4	Lindberg

2. ASSEMBLY OF THE LINDBERG 1039 CONNECTOR

This paragraph gives the procedure to assemble the connector with BMS 13-8 Type 3 Class A AWG 18 wire.

A. Wire Preparation

(1) Remove 7/16 inch -0 inch, +1/32 inch of the outer jacket. Refer to Figure 1.



OUTER JACKET REMOVAL LENGTH
Figure 1

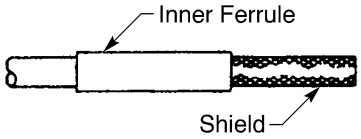
(2) If the outer diameter of the wire is less than 0.165 inch:

(a) Make a selection of a 3/4 inch Grade D Class 2 tape. Refer to Subject 20-00-11.

(b) Put a layer of tape on the end of the outer jacket so that the diameter of the wire is increased to 0.175 inch.

(3) Put the inner ferrule on the wire. Refer to Figure 2.

If the inner ferrule cannot be put on the wire, remove the length of the outer jacket that is equal to length of the inner ferrule.



POSITION OF THE INNER FERRULE
Figure 2

(4) Move the ferrule on the wire so that the end of the ferrule is aligned with the end of the outer jacket or the end of the tape.

(5) Fold the shield back so that the folded end of the shield is 3/8 inch -0 inch, + 1/32 inch from the end of the wire. Refer to Figure 3.

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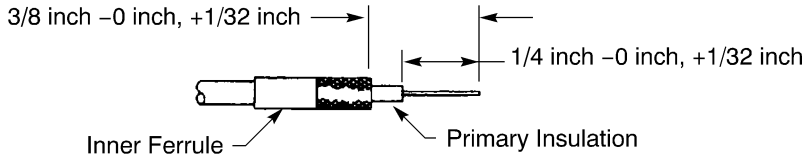
Make sure that the strands of the shield are not fully moved apart.



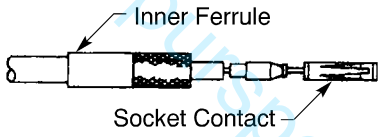
SHIELD AND INSULATION REMOVAL LENGTH
Figure 3

(6) Remove 1/4 inch -0 inch, +1/32 inch of the primary insulation. Refer to Figure 3.

B. Contact Assembly

Table 2
CONTACT CRIMP TOOLS

Basic Unit		Locator	
Part Number	**Supplier**	**Part Number**	**Supplier**
MS3191-1	QPL	3242	Buchanan
ST2220-1-Y	Boeing	ST2220-1-30	Boeing



CONTACT ASSEMBLY
Figure 4

(1) Make a selection of a contact crimp tool from Table 2.
(2) Put the contact in the crimp tool.
(3) Put the wire in the crimp barrel of the contact so that the wire touches the bottom. Refer to Figure 4.
(4) Crimp the contact.

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ASSEMBLY OF LINDBERG 1039, 2564-3, AND 2564-4 CONNECTORS

C. Connector Assembly

Table 3
FERRULE CRIMP TOOLS

Ferrule	Crimp Tool			
	Basic Unit		Die	
	Part Number	Supplier	Part Number	Supplier
Outer	WT201-03-10	Thomas & Betts	WT209	Thomas & Betts
			WT210	Thomas & Betts
	ST965-4	Boeing	WT209	Thomas & Betts
			WT210	Thomas & Betts
	M22520/5-01	QPL	M22520/5-45	QPL
Inner	WT201-03-10	Thomas & Betts	WT203	Thomas & Betts
	ST965-4	Boeing		
	M22520/5-01	QPL	M22520/5-41	QPL

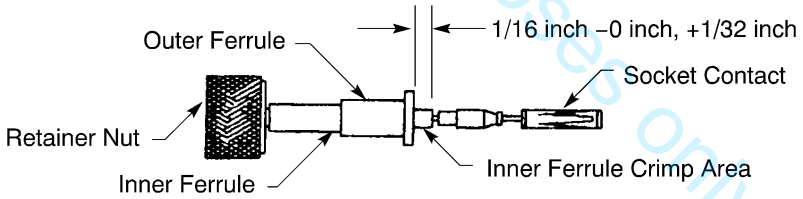
(1) Make a selection of an outer ferrule crimp tool from Table 3.

(2) Make a selection of an inner ferrule crimp tool from Table 3.

(3) Put the retainer nut on the wire so that:

- The the large thread end of the retainer nut is pointed toward the end of the wire
- The retainer nut is over the inner ferrule.

Refer to Figure 5.



POSITION OF THE OUTER FERRULE
Figure 5

(4) Put the outer ferrule on the wire so that the end of the inner ferrule is 1/16 inch -0 inch, + 1/32 inch beyond the end of the outer ferrule.

(5) Crimp the outer ferrule.

(6) Crimp the inner ferrule on the end that points toward the end of the wire.

(7) Assembly the remaining components of the connector. Refer to Figure 6.

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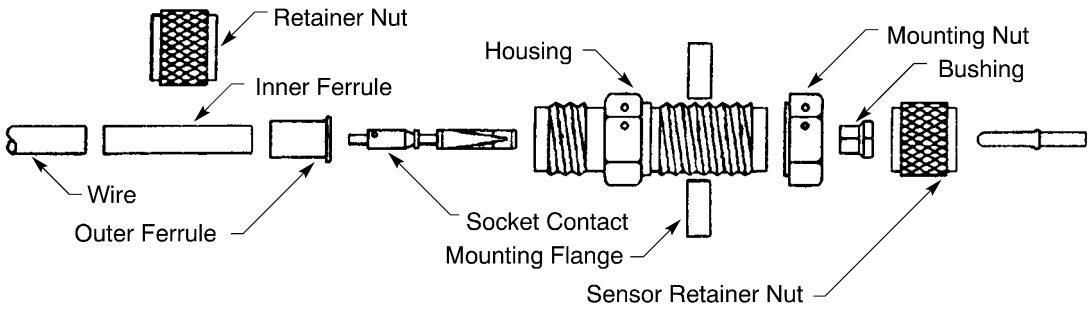
ASSEMBLY OF LINDBERG 1039, 2564-3, AND 2564-4 CONNECTORS



LINDBERG 1039 CONNECTOR
Figure 6

(a) Put the socket contact in the end of the housing with the porcelain insulator and the shorter threads.

(b) Put the wire retainer nut on the housing and tighten the nut.

(c) Put the bushing in the housing.

(d) Put the sensor retainer nut on the housing and tighten the nut.

D. Installation of the Lindberg Sensor

(1) Remove these components from the connector assembly:

- The sensor retainer nut
- The bushing
- The mounting nut.

Refer to Figure 6.

(2) Put the connector housing in the mounting flange hole.

(3) Put the mounting nut on the housing and tighten.

(4) Install the sensor.

(5) Put the sensor retainer nut on the sensor.

(6) Open the slot in the bushing and push it over the Teflon insulated area of the sensor until the bushing is:

- In the housing
- Against the shoulder of the sensor.

(7) Engage the threads of the sensor retainer nut and the housing and tighten.

(8) Install lockwire on the connector.

3. ASSEMBLY OF THE LINDBERG 2564-3 AND 2564-4 CONNECTORS

This paragraph gives the procedure to assemble the connector with BMS 13-8 Type 1 Class A AWG 18 wire.

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ASSEMBLY OF LINDBERG 1039, 2564-3, AND 2564-4 CONNECTORS

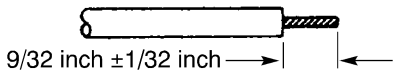
A. Contact Assembly

Table 4
CONTACT CRIMP TOOLS

Basic Unit		Locator	
Part Number	**Supplier**	**Part Number**	**Supplier**
MS3191-1	QPL	5004-1	Buchanan
		11-7771-23	Bendix

(1) Put the wire through the connector housing assembly.

(2) Remove 9/32 inch ±1/32 inch of the wire insulation. Refer to Figure 7.



INSULATION REMOVAL LENGTH
Figure 7

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

(4) Put the contact in the crimp tool.

(5) Put the wire in the crimp barrel of the contact so that the wire touches the bottom.

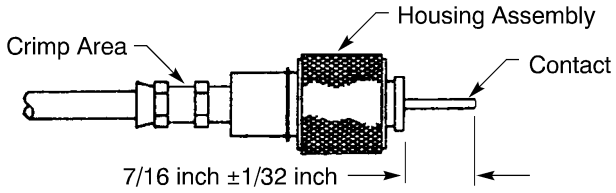
(6) Crimp the contact.

B. Connector Assembly

Refer to Figure 8.

Table 5
FERRULE CRIMP TOOLS

Basic Unit		Locator	
Part Number	**Supplier**	**Part Number**	**Supplier**
WT201-03-10	Thomas & Betts	CTR	Thomas & Betts



POSITION OF THE CONTACT AND LOCATION OF THE CRIMP
Figure 8

(1) Make a selection of a ferrule crimp tool from Table 5.

(2) Pull the housing assembly toward the end of the wire until the end of the contact is 7/16 inch ±1/32 inch from the housing.

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(3) Crimp the rear part of the housing assembly. Refer to Figure 8.

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ASSEMBLY OF WAVE LAB 169493 AND 400015 CONNECTORS

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ASSEMBLY OF WAVE LAB 169493 AND 400015 CONNECTORS

1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

Table 1
CONNECTOR PART NUMBERS

Part Number	Supplier
169493	Wave Lab
400015	Wave Lab

2. ASSEMBLY OF THE WAVE LAB 169493 CONNECTOR

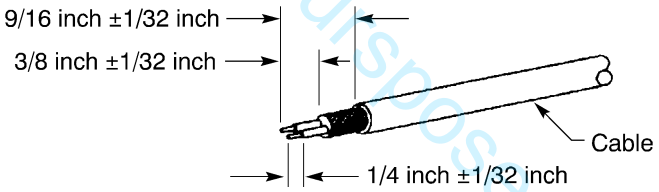
This paragraph gives the procedures to assemble the connector with BMS 13-18 Type 3 Class 2 AWG 20 wire.

A. Contact Assembly

Table 2
CONTACT CRIMP TOOLS

Basic Unit		Locator		
Part Number	Supplier	Part Number	Color	Supplier
MS3191-1	QPL	MS3191-20	Red	QPL

(1) Prepare the cable. Refer to Figure 1.



CABLE PREPARATION
Figure 1

(a) Remove 9/16 inch ± 1/32 inch of the outer jacket from the end of the cable.
(b) Remove 3/8 inch ± 1/32 inch of the shield.
(c) Remove 1/4 inch ± 1/32 inch of the primary insulation from each wire.

(2) Make a selection of a crimp tool from Table 2.
(3) For each contact:
(a) Put the wire in the crimp barrel of the contact.
(b) Crimp the contact.

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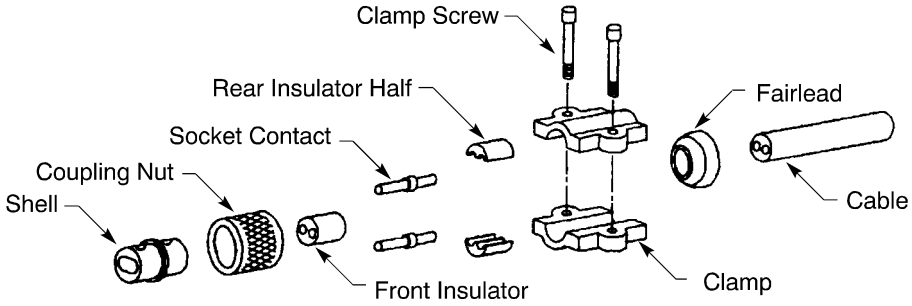
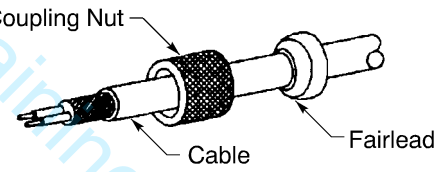
ASSEMBLY OF WAVE LAB 169493 AND 400015 CONNECTORS

B. Connector Assembly



WAVE LAB 169493 CONNECTOR
Figure 2

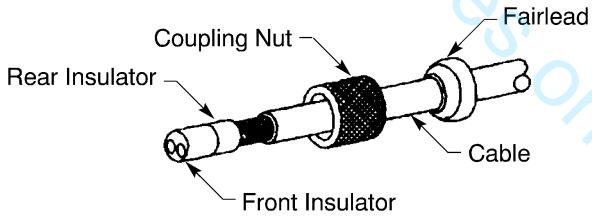
(1) Put the fairlead on the cable so that the smaller end points toward the contacts. Refer to Figure 3.



POSITION OF THE FAIRLEAD AND THE COUPLING NUT
Figure 3

(2) Put the coupling nut on the cable so that the threaded end points toward the contacts. Refer to Figure 3.

(3) Put the front insulator on the contacts so that the flange of each contact is against the insulator. Refer to Figure 4.



POSITION OF THE INSULATORS
Figure 4

(4) Put each half of the rear insulator on the crimp barrels of the contacts. Refer to Figure 2.

(5) Push the shell onto the insulator so that the keyway of the shell is aligned with the key of the insulator. See Figure 5.

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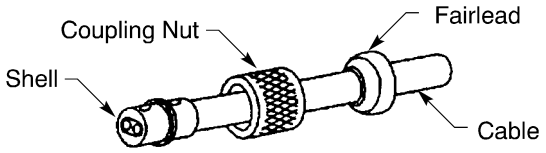
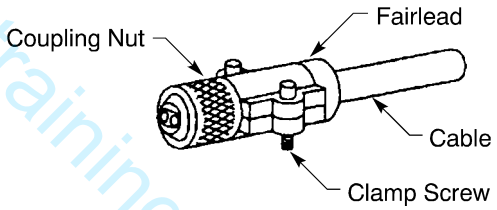


POSITION OF THE SHELL
Figure 5

(6) Move the coupling nut toward the end of the wire so that the nut is against the shoulder of the shell.

(7) Put the clamp on the shell so that:
- The smaller end of the fairlead is held in the groove of the clamp
- Each clamp pin is aligned with a hole of the shell.

Refer to Figure 6.



POSITION OF THE CLAMP
Figure 6

(8) Engage the threads of the screws and the clamp.

(9) Tighten the screws.

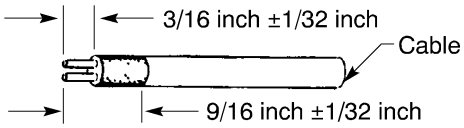
(10) Install a lockwire on each screw.

3. ASSEMBLY OF THE WAVE LAB 400015 CONNECTOR

This paragraph gives the procedures to assemble the connector with a cable that has these properties:
- Shielded wire
- Twisted pair
- High temperature wire
- AWG 18 or AWG 20 wire.

A. Cable Preparation

(1) Prepare the cable. Refer to Figure 7.



CABLE PREPARATION
Figure 7

(a) Remove 9/16 inch ± 1/32 inch of the outer jacket from the end of the cable.

(b) Remove 3/16 inch ± 1/32 inch of the shield.

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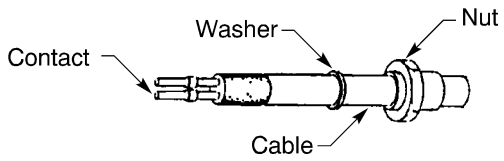
(c) Remove 3/16 inch ±1/32 inch of the primary insulation from each wire.

(2) In this order, put these components on the cable:

- The nut
- The washer.

Make sure that the end of the nut with the threads points toward the contacts. Refer to Figure 8.



POSITION OF THE NUT AND THE WASHER
Figure 8

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B. Contact Assembly

Table 3
CONTACT CRIMP TOOLS

Basic Unit		Locator		
Part Number	Supplier	Part Number	Color	Supplier
MS3191-1	QPL	MS3191-20	Red	QPL

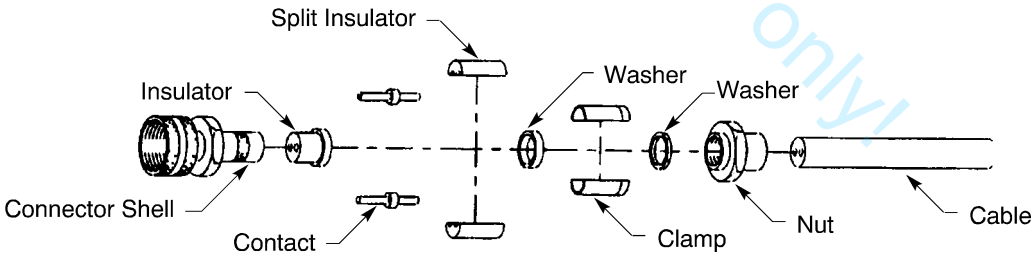
(1) Make a selection of a crimp tool from Table 3.

(2) For each contact:

(a) Put the wire in the crimp barrel of the contact.

(b) Crimp the contact.

C. Connector Assembly



WAVE LAB 400015 CONNECTOR
Figure 9

(1) Put the clamp on the cable so that the forward edge of the clamp is 1/16 inch ±1/32 inch from the end of the shield. Refer to Figure 10.

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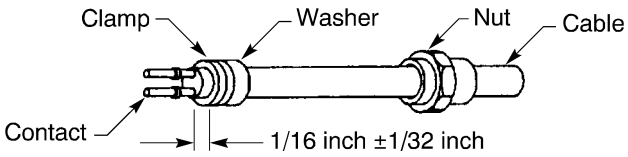
ASSEMBLY OF WAVE LAB 169493 AND 400015 CONNECTORS



POSITION OF THE SPLIT CLAMP
Figure 10

(2) Hold the clamp in position with the washer.

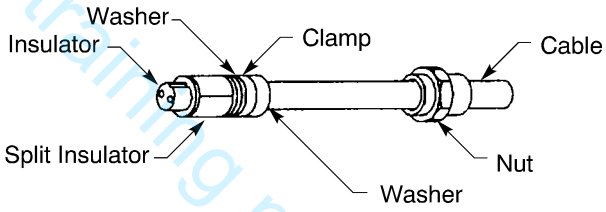
(3) At the end of the shield, move the strands of the shield apart.

(4) Fold the strands of the shield back over the clamp so that they even and symmetrical.

(5) Put the second washer on the cable. Refer to Figure 9.

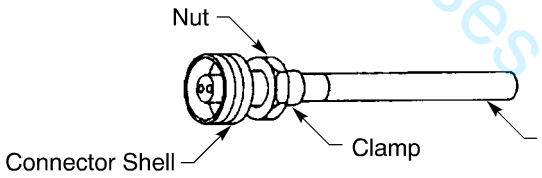
(6) Put the insulator on the contact so that the flange of each contact is against the insulator.

(7) Put each half of the split insulator on the crimp barrels of the contacts. Refer to Figure 11.



POSITION OF THE INSULATORS
Figure 11

(8) Push the shell onto the insulator so that the keyway of the shell is aligned with the key of the insulator. Refer to Figure 12.



POSITION OF THE CONNECTOR SHELL
Figure 12

(9) Engage the threads of the nut and the shell.
Make sure that the end of the shield is under the clamp.

(10) Tighten the nut.

(11) Install a lockwire on the nut and the shell.

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ASSEMBLY OF AN3115 TYPE CONNECTORS

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2.	**CONNECTOR ASSEMBLY**		1
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ASSEMBLY OF AN3115 TYPE CONNECTORS

1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

Table 1
CONNECTOR PART NUMBERS

Part Number	Connector Type	Supplier
AN3115-1	Receptacle	QPL

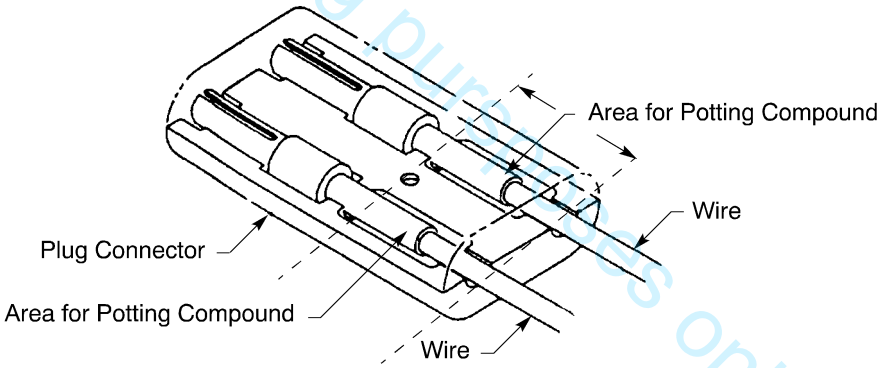
B. Necessary Materials

Table 2
NECESSARY MATERIALS

Description	Part Number	Supplier
Potting Compound	3110 RTV	Dow Corning

2. CONNECTOR ASSEMBLY

A. Connector Assembly



AN3115-1 PLUG CONNECTOR
Figure 1

(1) Assemble each contact:

(a) Remove the insulation from the end of the wire.

Make sure that the length of insulation removed is the same as the length of the solder cup of the contact.

(b) Tin these components of the contact assembly:

- The bare conductors of the wire
- The contact solder cup.

(c) Solder the end of the wire in the solder cup.

(d) Do Steps (a) through (c) again for the other contact assembly.

(2) Put the wired contacts in one half of the connector body.

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(3) If a potting compound is specified:

(a) Make a selection of a potting compound from Table 2.

(b) Apply the necessary amount of potting compound to fill the cavity around the solder pot and wire insulation of each contact. Refer to Figure 1.

CAUTION: DO NOT PUT ANY POTTING COMPOUND BEYOND THE KNURLED AREA OF EACH CONTACT.

(4) Install the other half of the connector body.

(5) If necessary, add more potting compound fill the area around the wires at the body of the connector.

(6) Let the potting compound cure.

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ASSEMBLY OF AVIBANK AV667 AND AV697 CONNECTORS

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	B.	Contact Assembly	1
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ASSEMBLY OF AVIBANK AV667 AND AV697 CONNECTORS

1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

Table 1
CONNECTOR PART NUMBERS

Part Number	Supplier
AV667	Avibank
AV697	Avibank

B. Connector Adapter Part Numbers

Table 2
ADAPTER PART NUMBERS

Part Number	Supplier
3651-1604-0603	Avibank
3651-1804-0603	Avibank

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2. CONNECTOR ASSEMBLY

A. Wire Harness Preparation

(1) Make a selection of a 0.75 inch diameter Grade B, Class 1 heat shrinkable sleeve from Subject 20-00-11.

(2) Put a 30 inch ±1/4 inch length of the sleeve on the wire harness.

(3) Put a 2 inch ±1/8 inch length of 1 inch diameter DWP-125 heat shrinkable sleeve on the wire harness.

NOTE: Refer to Subject 20-00-11 for alternative heat shrinkable sleeve.

(4) Put a 2 inch ±1/8 inch length of 1/2 inch diameter DWP-125 heat shrinkable sleeve on the wire harness.

NOTE: Refer to Subject 20-00-11 for alternative heat shrinkable sleeve.

(5) Put the specified adapter on the wire harness. Refer to Table 2.

B. Contact Assembly

Refer to Subject 20-61-11.

C. Spare Contact and Seal Plug Installation

Refer to Subject 20-61-11.

D. Connector Assembly

(1) Engage the threads of the adapter and the connector.

(2) Tighten the adapter.

(3) Install the heat shrinkable sleeves. Refer to Figure 1.

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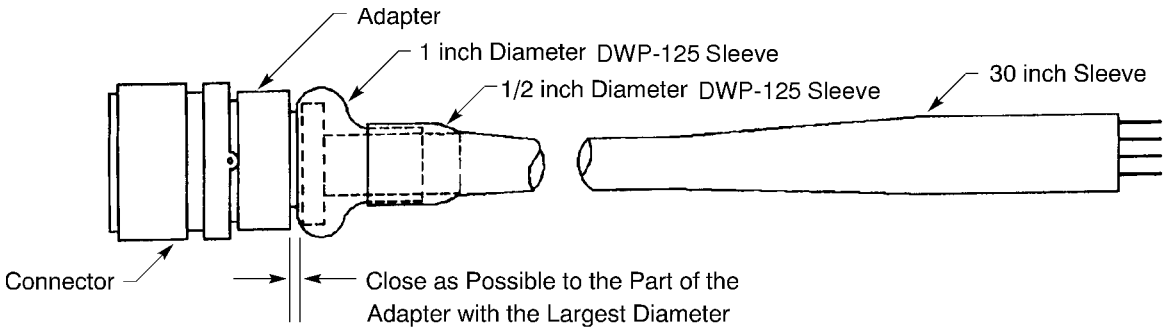
ASSEMBLY OF AVIBANK AV667 AND AV697 CONNECTORS



POSITION OF THE HEAT SHRINKABLE SLEEVES
Figure 1

(a) Push the length of the 1/2 inch diameter DWP-125 sleeve forward until the end of the sleeve is against the rear of the adapter.

NOTE: Refer to Subject 20-00-11 for alternative heat shrinkable sleeve.

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

(c) Push the length of the 1 inch diameter DWP-125 sleeve forward until the end of the sleeve is aligned with the part of the adapter that has the largest diameter.

Refer to Subject 20-00-11 for alternative heat shrinkable sleeve.

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

(e) Push the 30 inch sleeve on the DWP-125 sleeves until the end of the sleeve is aligned with the end of the 1/2 inch diameter DWP-125 sleeve.

(f) Shrink only the end of the sleeve into position. Refer to Subject 20-10-14.

(g) Assemble the necessary number of wire harness ties on the remaining length of the 30 inch sleeve to which no heat was applied.

NOTE: Drain holes in the 30 inch sleeve are not necessary.

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ASSEMBLY OF THE CINCH S345T002-156 CONNECTOR

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ASSEMBLY OF THE CINCH S345T002-156 CONNECTOR

This Subject gives the procedure to assemble the connector with Boeing 10-60875-8 cables with AWG 18 or AWG 20 wire.

1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

Table 1
CONNECTOR PART NUMBERS

Part Number	Supplier
S345T002-156	Cinch

B. Backshell Part Numbers

Table 2
BACKSHELL PART NUMBERS

Part Number	Supplier
50031004-001	Cinch

C. Necessary Materials

Table 3
NECESSARY MATERIALS

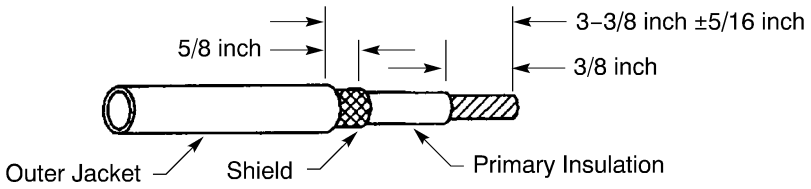
Material	Specification	Description	Supplier
Fuel Tank Sealant	BMS 5-26	Class B-2	Courtaulds Aerospace
Heat Shrinkable Sleeve	-	Grade B, Class 1	Refer to Subject 20-00-11.

2. CONNECTOR ASSEMBLY

A. Cable Preparation

(1) Put the strain relief clamp on both cables.

(2) Prepare each cable. Refer to Figure 1.



CABLE PREPARATION
Figure 1

(a) Remove 3-3/8 inches ± 5/16 inch of the outer jacket from the end of the cable.

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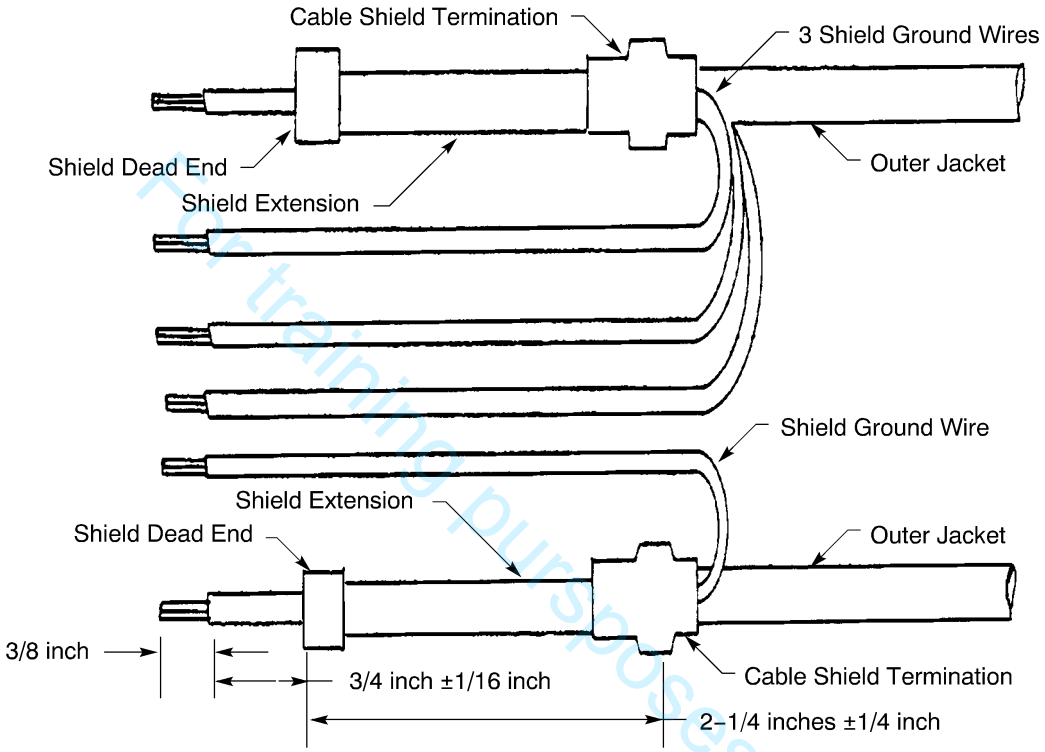
(b) Remove the necessary length of the shield so that the end of the shield is 5/8 inch or less from the end of the outer jacket.

CAUTION: MAKE SURE THAT DAMAGE TO THE PRIMARY INSULATION DOES NOT OCCUR.

(c) Remove 3/8 inch of the primary insulation from the end of the cable.

B. Shield Ground Wire Assembly



CONFIGURATION OF THE SHIELD GROUND WIRES
Figure 2

(1) Assemble a shield extension on each cable with:

- 1 shield ground wire on one shield extension
- 3 shield ground wires on the other shield extension.

Refer to Subject 20-10-15 and Figure 2.

Make sure that:

- The wires for the 4 ground wires are 8 inches in length
- The extension shields are 2-1/2 inches ±1/4 inch in length
- The shield terminations are correctly insulated.

(2) Assemble a shield dead end on the end of each cable.

Refer to Subject 20-10-15 and Figure 2.

Make sure that the shield dead end is correctly insulated.

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ASSEMBLY OF THE CINCH S345T002-156 CONNECTOR

C. Contact Assembly

(1) Tin each conductor.

(2) Solder each conductor in a connector pin. Refer to Subject 20-40-00.

(3) Make a selection of a heat shrinkable sleeve from Table 3.

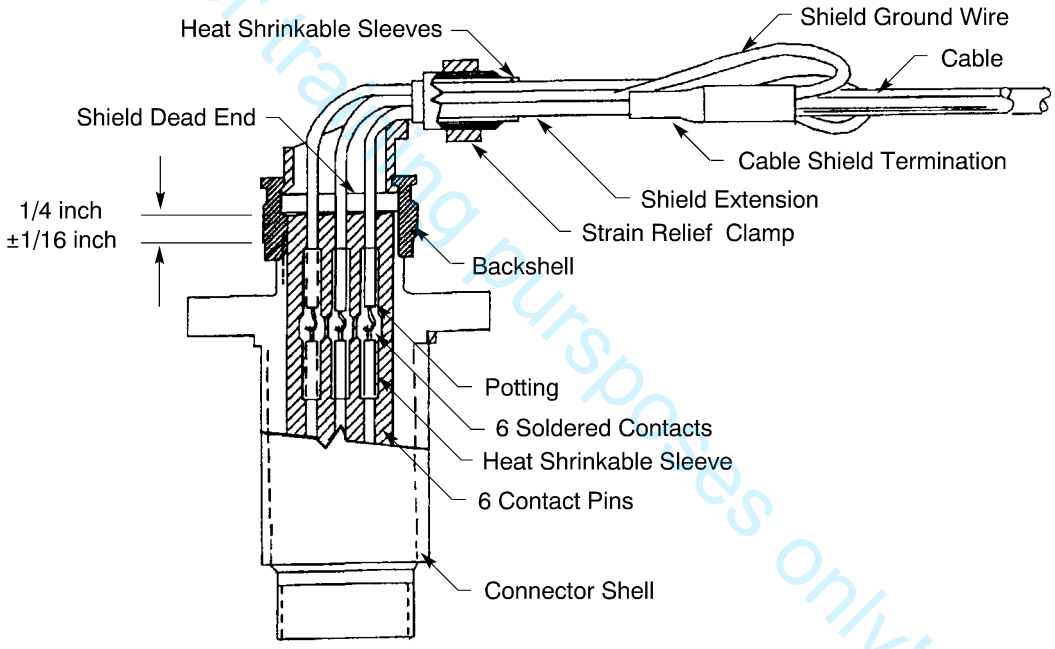
Make sure that the sleeve has the smallest diameter that can be moved over each cable.

(4) Put a 1 inch ±1/8 inch length of the sleeve on each cable so that the center of the sleeve is aligned with the center of the soldered area.

(5) Shrink each sleeve in position. Refer to Subject 20-10-14.

CAUTION: DO NOT APPLY MORE THAN THE NECESSARY AMOUNT OF HEAT FOR LONGER THAN THE NECESSARY TIME TO SHRINK THE SLEEVE.

D. Connector Assembly



CINCH S345T002-156 CONNECTOR ASSEMBLY
Figure 3

(1) Make a selection of a heat shrinkable sleeve from Table 3.

Make sure that the sleeve has the smallest diameter that can be moved over each cable.

(2) In this order, put these lengths of the sleeve on the two cables and all of the shielded ground wires:

- Two 3/4 inch lengths
- Two 1/2 inch lengths.

(3) Put each contact into the applicable contact cavity of the connector.

(4) Install the heat shrinkable sleeves at the installation location of the strain relief clamp:

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(a) Move one 3/4 inch length of sleeve so that the center of the sleeve is aligned with the center of the clamp area on the bundle.

(b) Shrink the sleeve in position. Refer to Subject 20-00-14.

(c) Move the other 3/4 inch length of sleeve so that the center of the sleeve is aligned with the center of the clamp area on the bundle.

(d) Shrink the sleeve in position. Refer to Subject 20-00-14.

(e) Do Step (a) through Step (d) again for each 1/2 inch length of sleeve.

(5) Make a selection of a fuel tank sealant from Table 3.

(6) Fill the connector shell cavity with the sealant.

Make sure that the surface of the sealant is at or within 1/16 inch of the edge of the connector shell. Refer to Figure 3.

(7) Install the strain relief clamp.

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ASSEMBLY OF AN3116 TYPE CONNECTORS

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ASSEMBLY OF AN3116 TYPE CONNECTORS

1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

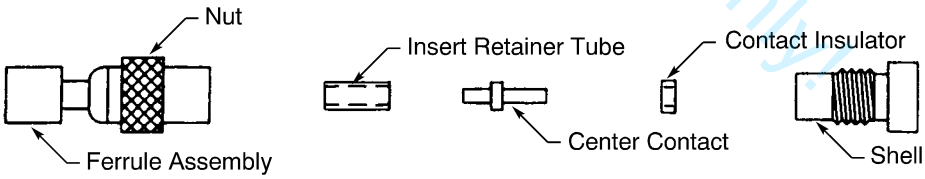
Table 1
CONNECTOR PART NUMBERS

Specification	Part Number	Type	Supplier	Reference
AN3116-2	CA270-8	Plug, Straight	ITT Cannon	Figure 1
-	K-4932	Plug, 90 Degree	Kings Electronics	Figure 2
-	K-4941	Plug, 45 Degree	Kings Electronics	Figure 3
-	K-4942	Plug, 90 Degree	Kings Electronics	Figure 4
-	K-4943	Plug, Straight	Kings Electronics	Figure 5

Table 2
ALTERNATIVE CONNECTOR PART NUMBERS

Specified Connector		Alternative Connector	
Part Number	**Supplier**	**Part Number**	**Supplier**
AN3116-2	QPL	CA270-8	ITT Cannon
		K-4943	Kings
CA270-8	ITTCE	AN3116-2	QPL
		K-4943	Kings
K-4943	Kings	An3116-2	QPL
		CA270-8	ITT Cannon

B. AN3116-2 Connectors



AN3116-2 AND ITT CANNON CA270-8 CONNECTOR
Figure 1

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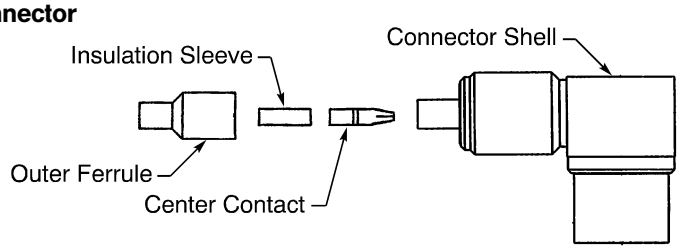
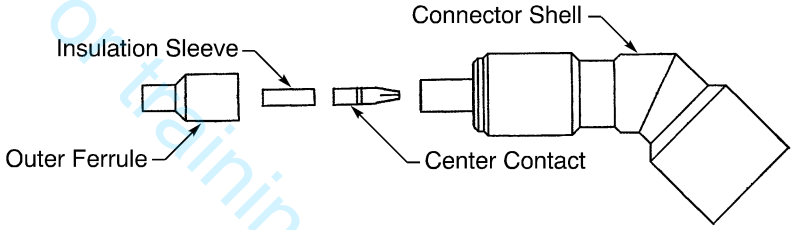
C. Kings K-4932 Connector

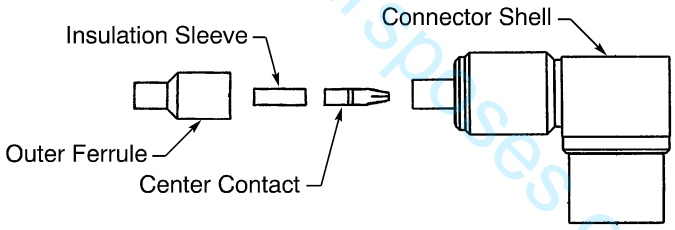


KINGS K-4932 CONNECTOR
Figure 2

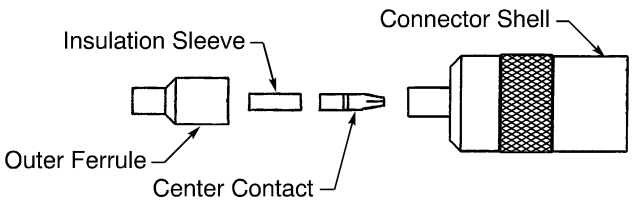
D. Kings K-494() Connectors



KINGS K-4941 CONNECTOR
Figure 3



KINGS K-4942 CONNECTOR
Figure 4



KINGS K-4943 CONNECTOR
Figure 5

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E. Necessary Parts and Materials

Table 3
NECESSARY MATERIALS

Material	Description	Part Number or Specification	Supplier
Sleeve, Heat Shrinkable	3/16 inch diameter	MIL-DTL-23053/12 Class 2	QPL
		TFE-2X	Zeus
Sleeve	Meltable Inner Liner	D415-00	Raychem
		D415-02	Raychem
		D-436-48	Raychem
Solvent	Aliphatic Naptha	TT-N-95	Any Source

Table 4
MECHANICAL FERRULE PART NUMBERS

Type	Boeing Standard	Color
Inner Ferrule	BACS13S194B	Blue
Outer Ferrule	BACS13S261C	Yellow

NOTE: Refer to the D-590 Boeing to Vendor Cross Reference Index for the supplier part numbers for the BACS13S ferrules.

Table 5
APPROVED SUPPLIERS OF BOEING STANDARD MECHANICAL FERRULES

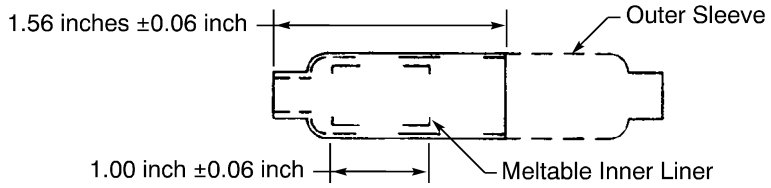
Boeing Standard	Supplier
BACS13S	Thomas & Betts

2. ASSEMBLY OF AN3116-2 AND ITT CANNON CA270-8 CONNECTORS

A. Wire Preparation

(1) Make a selection of a sleeve with a meltable inner liner from Table 3.

(2) If the selection is the Raychem D415-00 sleeve, prepare the sleeve. Refer to Figure 6.



PREPARATION OF A SLEEVE WITH A MELTABLE INNER LINER
Figure 6

(a) Remove the necessary length from one end of the outer sleeve to make the length of the sleeve equal to 1.56 inches ±0.06 inch.

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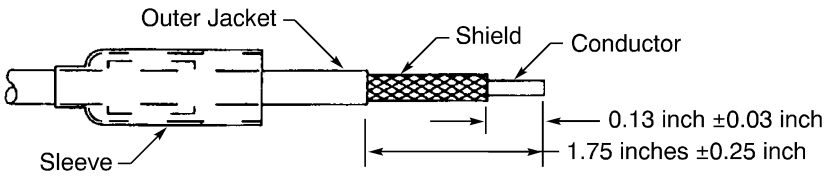
(b) Remove the necessary length from the end of the inner sleeve to make the length of the inner sleeve equal to 1.00 inch ±0.06 inch.

(3) Put the sleeve on the wire.

Make sure that smaller end of the sleeve is pointed away from the end of the wire.

(4) Prepare the wire. Refer to Figure 7.



PREPARATION OF THE WIRE
Figure 7

(a) Remove 1.75 inches ±0.25 inch of the outer jacket from the end of the wire.

(b) Remove 0.13 inch ±0.03 inch of shield from the end of the wire.

B. Center Contact Assembly

Table 6
OUTER FERRULE CRIMP TOOLS

Basic Unit	Die	
	Part Number	Cavity
44-000	44-142	A
612648	612675	L
612648	612766	-
613214	613850	-
620175	620299	A
HX4	Y142	A
M22520/5-01	M22520/5-19	A
ST2966M	-	8
ST965-2	-	S
ST965A-11	-	-
ST965B	ST965B-11	-
WT211	-	-
WT211-14	-	S
WT411	-	-
WT440	4411	-

(1) Make a selection of an inner ferrule and an outer ferrule from Table 4.

(2) Make a selection of a heat shrinkable sleeve from Table 3.

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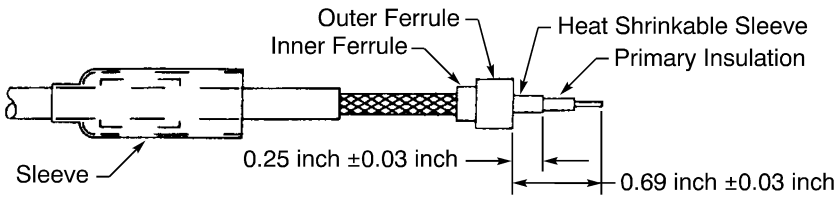
(3) Make a selection of a solvent from Table 3.

NOTE: A satisfactory alternative is an equivalent solvent.

(4) Remove the color band from each ferrule with solvent.

(5) Install the ferrules. Refer to Figure 8.



POSITION OF THE FERRULES AND HEAT SHRINKABLE SLEEVES
Figure 8

(a) Make a selection of a ferrule crimp tool from Table 6.

(b) Put the inner ferrule on the wire.

Make sure that:

- The ferrule is on the shield
- The forward end of the ferrule is 0.69 inch ±0.03 inch from the end of the wire.

(c) Move the strands of the shield apart on the length of the shield that extends farther than the forward end of the inner ferrule.

(d) Fold the strands back on the inner ferrule.

Make sure that the strands are even and symmetrical around the surface of the ferrule.

(e) Put the outer ferrule on the inner ferrule.

Make sure that:

- The strands of the shield are between the inner ferrule and the outer ferrule
- The forward edge of the outer ferrule is aligned with the forward edge of the inner ferrule.

(f) Crimp the outer ferrule.

(g) Remove the unwanted strands of the shield at the rear end of the outer ferrule.

(6) Install two 0.25 inch ±0.03 inch heat shrinkable sleeves on the wire. Refer to Figure 8.

(a) Put a heat shrinkable sleeve on the wire.

Make sure that:

- The sleeve is on the wire insulation
- The rear end of the sleeve is against the forward edge of the ferrules.

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

(c) Do Step (a) and Step (b) again for the other sleeve.

(7) Put the insert retainer tube on the wire.

Make sure that:

- The tube is on the primary insulation and the heat shrinkable sleeves
- The rear end of the tube is against the ferrules.

(8) Apply a small amount of solder on the end of the conductor.

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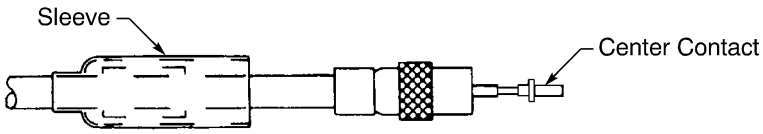
(9) Apply a small amount of solder in the wire barrel of the contact.

(10) Put the center contact on the conductor. Refer to Figure 9.



POSITION OF THE CENTER CONTACT ON THE CONDUCTOR
Figure 9

(11) Solder the contact.

C. Connector Shell Installation

(1) Push the contact insulator into the plug shell.

(2) Engage the threads of the plug shell and the ferrule assembly nut.

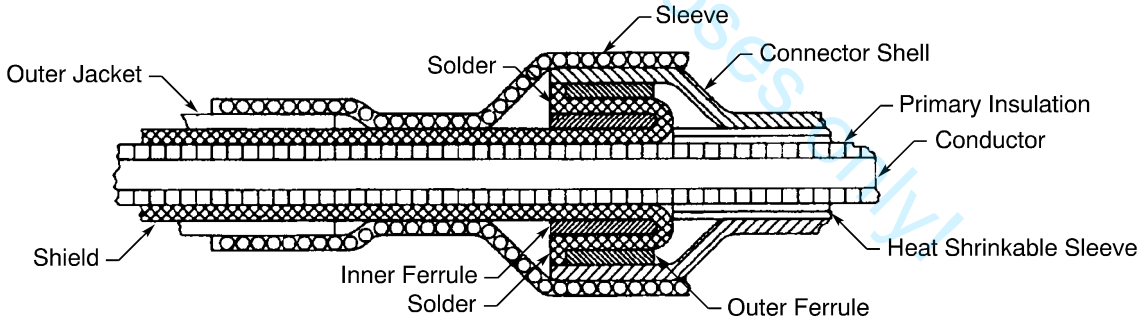
(3) Push the ferrule assembly forward until the rear end of the ferrule assembly is aligned with the rear end of the inner ferrule.

(4) Solder the ends of:

- The ferrule assembly
- The inner ferrule
- The shield.

Refer to Figure 10.

CAUTION: DO NOT APPLY SOLDER BETWEEN THE OUTER JACKET OF THE WIRE AND THE FERRULES.



LOCATION OF THE SOLDER ON THE FERRULE ASSEMBLY
Figure 10

(5) Push the sleeve forward until the forward end of the sleeve extends 0.06 inch minimum farther than the end of the ferrule assembly. Refer to Figure 11.

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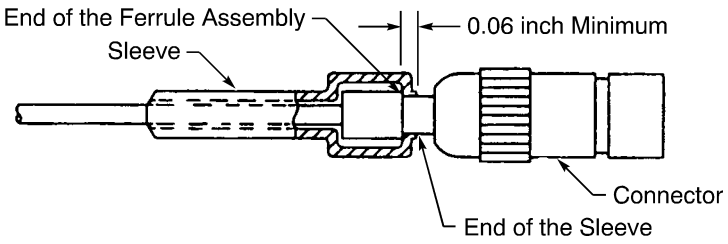
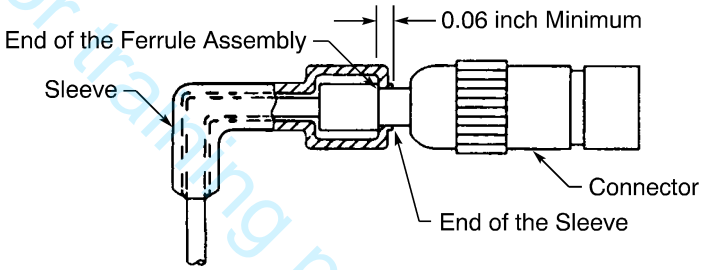
ASSEMBLY OF AN3116 TYPE CONNECTORS



POSITION OF THE SLEEVE ON THE FERRULE ASSEMBLY
Figure 11

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

(7) While the sleeve is hot, bend the wire near the rear end of the sleeve to make a 90 degree angle. Refer to Figure 12.



LOCATION OF THE BEND OF THE WIRE
Figure 12

3. ASSEMBLY OF THE KINGS K-4932 CONNECTOR

A. Center Contact Assembly

Table 7
CENTER CONTACT CRIMP TOOLS

Basic Unit	Die	
	Part Number	Cavity
KTH-1000	KTH-2208	Small
KTM-3000	KTH-2208	Small

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

(2) Put the outer ferrule on the wire.

Make sure that the larger end of the outer ferrule is pointed forward to the end of the wire.

(3) Prepare the wire.

Refer to:

- Figure 13
- Subject 20-00-15.

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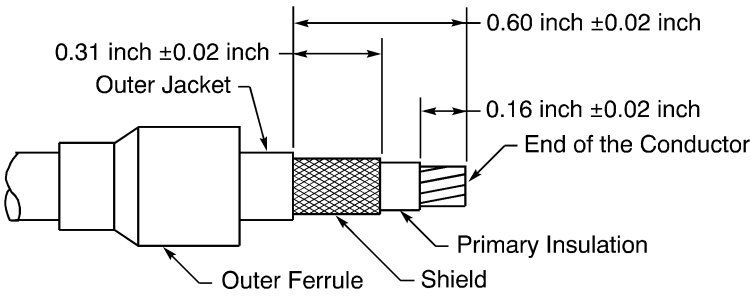
ASSEMBLY OF AN3116 TYPE CONNECTORS



WIRE PREPARATION
Figure 13

(a) Remove 0.60 inch ±0.02 inch of the outer jacket from the end of the wire.

(b) Remove the necessary length of the shield to make the distance from the end of the outer jacket to the end of the shield equal to 0.31 inch ±0.02 inch.

(c) Remove 0.16 inch ±0.02 inch of the primary insulation from the end of the wire.

(4) Move the strands of the shield apart.

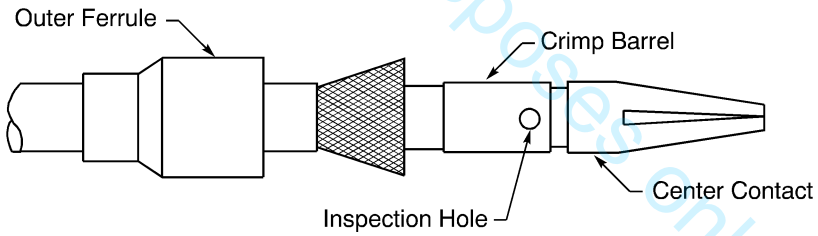
(5) Put the plastic insulation sleeve on the primary insulation.

Make sure that the rear end of the insulation sleeve is against the end of the outer jacket.

(6) Put the end of the wire in the crimp barrel of the center contact. Refer to Figure 14.

Make sure that:

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



POSITION OF THE CENTER CONTACT ON THE WIRE
Figure 14

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(7) Crimp the contact.

B. Connector Shell Installation

Table 8
OUTER FERRULE CRIMP TOOLS

Basic Unit	Die	
	Part Number	Cavity
KTH-1000	KTH-2208	Large
KTM-3000	KTH-2208	Large

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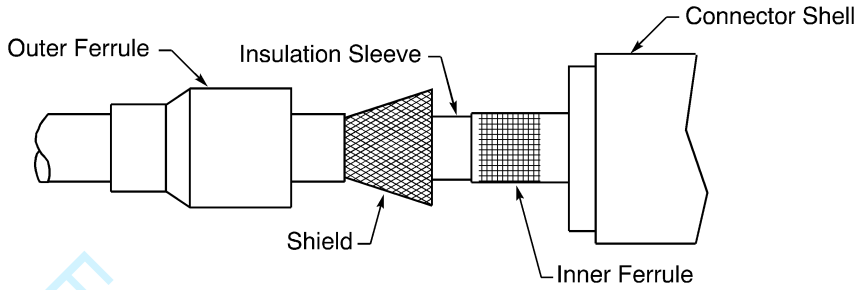
ASSEMBLY OF AN3116 TYPE CONNECTORS

(1) Make a selection of a ferrule crimp tool from Table 8.

(2) Put the connector shell on the contact assembly. Refer to Figure 15.

Make sure that the inner ferrule is between the insulation sleeve and the shield.

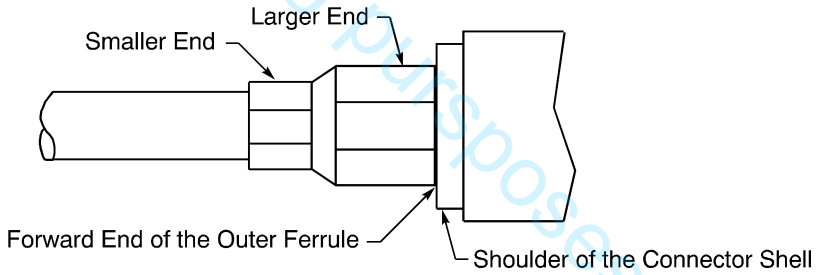


ALIGNMENT OF THE INNER FERRULE AND THE SHIELD
Figure 15

(3) Push the connector shell rearward until the contact is locked in the shell.

(4) Make the strands of the shield flat against the inner ferrule.

(5) Push the outer ferrule forward until the forward end of the ferrule is against the shoulder of the connector shell. Refer to Figure 16.



POSITION OF THE OUTER FERRULE AGAINST THE CONNECTOR SHELL
Figure 16

(6) Crimp the outer ferrule. Refer to Figure 16.

Make sure that:

- The larger part of the die cavity is on the larger end of the outer ferrule
- The smaller part of the die cavity is on the smaller end of the outer ferrule.

4. ASSEMBLY OF KINGS K-494() CONNECTORS

A. Center Contact Assembly

Table 9
CENTER CONTACT CRIMP TOOLS

Basic Unit	Die	
	Part Number	Cavity
KTH-1000	KTH-2223	Small

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Table 9 (continued)

Basic Unit	Die	
	Part Number	Cavity
KTM-3000	KTH-2223	Small

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

(2) Make a selection of a heat shrinkable sleeve from Table 3.

(3) Put a 1.50 inch ±0.30 inch length of heat shrinkable sleeve on the wire.

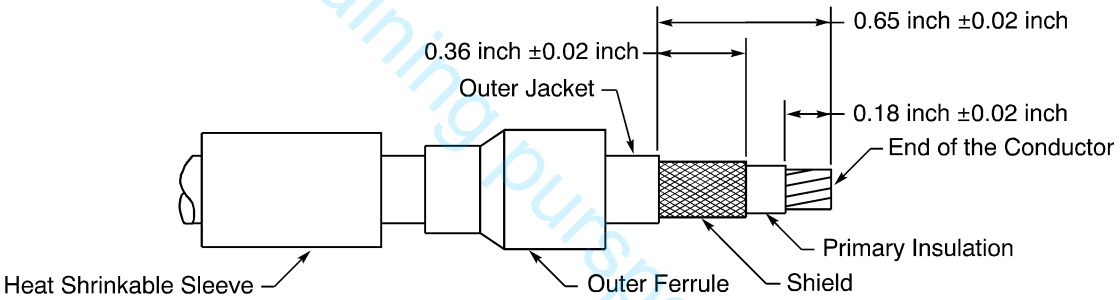
(4) Put the outer ferrule on the wire.

Make sure that the larger end of the outer ferrule is pointed forward to the end of the wire.

(5) Prepare the wire.

Refer to:

- Figure 17
- Subject 20-00-15.



WIRE PREPARATION
Figure 17

(a) Remove 0.65 inch ±0.02 inch of the outer jacket from the end of the wire.

(b) Remove the necessary length of the shield to make the distance from the end of the outer jacket to the end of the shield equal to 0.36 inch ±0.02 inch.

(c) Remove 0.18 inch ±0.02 inch of the primary insulation from the end of the wire.

(6) Move the strands of the shield apart.

(7) Put the plastic insulation sleeve on the primary insulation.

Make sure that the rear end of the insulation sleeve is against the end of the outer jacket.

(8) Put the end of the wire in the crimp barrel of the center contact. Refer to Figure 18.

Make sure that:

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

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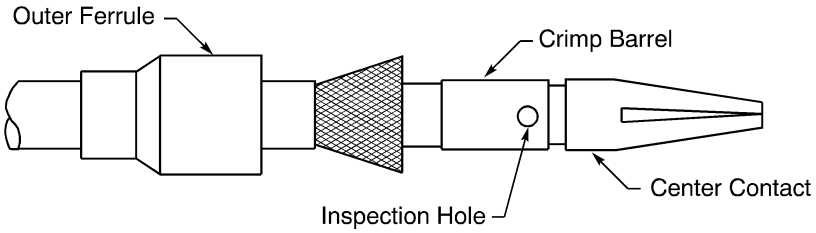
ASSEMBLY OF AN3116 TYPE CONNECTORS



POSITION OF THE CENTER CONTACT ON THE WIRE
Figure 18

(9) Crimp the contact.

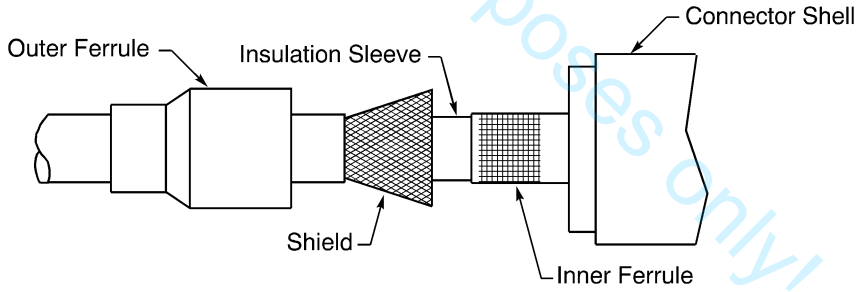
B. Connector Shell Installation

Table 10
OUTER FERRULE CRIMP TOOLS

Basic Unit	Die	
	Part Number	Cavity
KTH-1000	KTH-2223	Large
KTM-3000	KTH-2223	Large

(1) Make a selection of a ferrule crimp tool from Table 10.

(2) Put the connector shell on the contact assembly. Refer to Figure 19.
Make sure that the inner ferrule is between the insulation sleeve and the shield.



ALIGNMENT OF THE INNER FERRULE AND THE SHIELD
Figure 19

(3) Push the connector shell rearward until the contact is locked in the shell.

(4) Make the strands of the shield flat against the inner ferrule.

(5) Push the outer ferrule forward until the forward end of the ferrule is against the shoulder of the connector shell. Refer to Figure 20.

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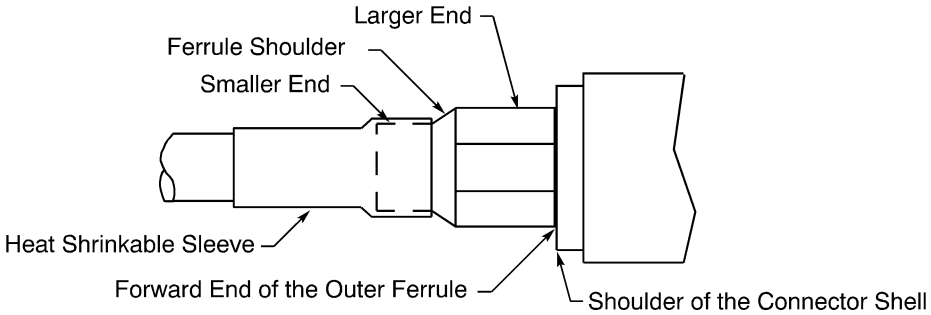
ASSEMBLY OF AN3116 TYPE CONNECTORS



POSITION OF THE OUTER FERRULE AGAINST THE CONNECTOR SHELL
Figure 20

(6) Crimp the outer ferrule. Refer to Figure 20.

Make sure that:

- The larger part of the die cavity is on the larger end of the outer ferrule
- The smaller part of the die cavity is on the smaller end of the outer ferrule.

(7) Push the heat shrinkable sleeve forward until the forward end of the sleeve is against the ferrule shoulder. Refer to Figure 20.

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

5. APPROVED TOOL SUPPLIERS

A. Crimp Tools

Table 11
CRIMP TOOL SUPPLIERS

Crimp Tool	Supplier
44-000	Balmar
44-142	Balmar
4411	Thomas&Betts
612648	Astro
612675	Astro
612766	Astro
613214	Astro
613850	Astro
620175	Astro
620299	Astro
HX4	Daniels
KTH-1000	Kings Electronics
KTH-2208	Kings Electronics
KTH-2223	Kings Electronics

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Table 11 (continued)

Crimp Tool	Supplier
KTM-3000	Kings Electronics
M22520/5-01	QPL
M22520/5-19	QPL
ST2966M	Boeing
ST965-2	Boeing
ST965A-11	Boeing
ST965B	Boeing
ST965B-11	Boeing
WT211	Thomas&Betts
WT211-14	Thomas&Betts
WT411	Thomas&Betts
WT440	Thomas&Betts
Y142	Daniels

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ASSEMBLY OF BACC63DP, DR, DT, DU, DV AND GLENAIR SERIES 800 MIGHTY MOUSE CONNECTORS

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ASSEMBLY OF BACC63DP, DR, DT, DU, DV AND GLENAIR SERIES 800 MIGHTY MOUSE CONNECTORS

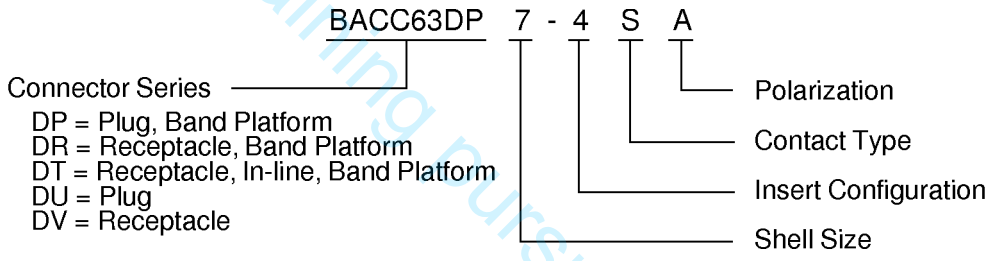
This Subject gives the procedures to assemble BACC63DP, DR, DT, DU, DV and Glenair Series 800 Mighty Mouse connectors.

1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

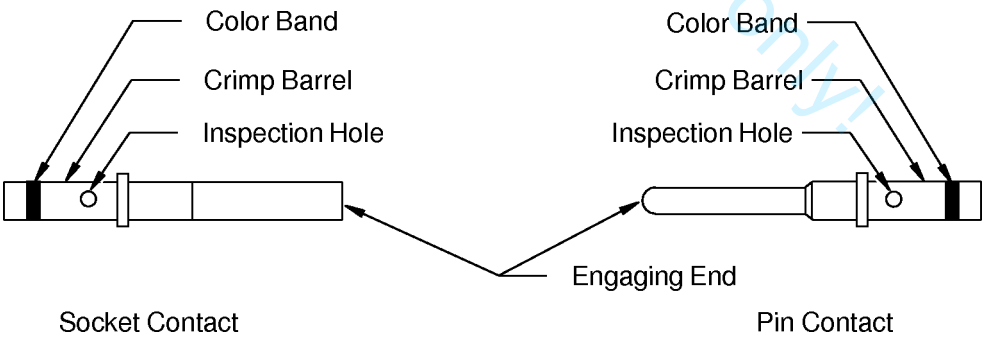
Table 1
CONNECTOR PART NUMBERS

Part Number	Description	Supplier
BACC63DP	Plug, Band Platform	Glenair
BACC63DR	Receptacle, Band Platform	Glenair
BACC63DT	Receptacle, In-line, Band Platform	Glenair
BACC63DU	Plug	Glenair
BACC63DV	Receptacle	Glenair



BOEING STANDARD CONNECTOR PART NUMBER STRUCTURE
Figure 1

B. Contact Part Numbers



REAR RELEASE CONTACTS
Figure 2

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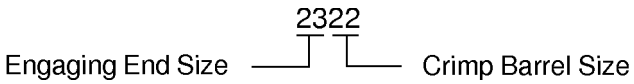

EXAMPLE OF A CONTACT SIZE
Figure 3

Table 2
CONTACT PART NUMBERS

Contact Size	Contact Type	Color Band	Part Number
2322	Pin	White	BACC47HA1
	Socket	White	BACC47HB1
2324	Pin	Black	BACC47HA2
	Socket	Black	BACC47HB2

2. INSERT CONFIGURATIONS

A. Insert Configurations for Glenair Series 800 Connectors

NOTE: The insert configurations that are specified in Table 3 include the connector shell size as the first part of the configuration. Refer to Figure 1 for the connector part number structure.

NOTE: The contact cavity size that is specified in Table 3 is equivalent to the size of the engaging end of the contact.

Table 3
GLENAIR SERIES 800 CONNECTOR INSERT CONFIGURATIONS

Insert Configuration	Connector Shell Size	Contact Cavity		Reference
		Count	Size	
6-7	6	7	23	Figure 4
7-4	7	4	23	Figure 5
9-19	9	19	23	Figure 6

NOTE: Figure 4 through Figure 6 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.

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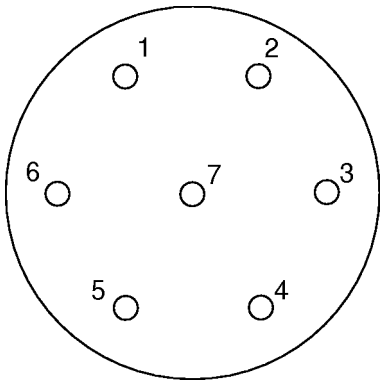
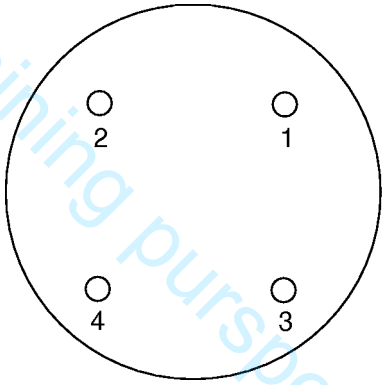
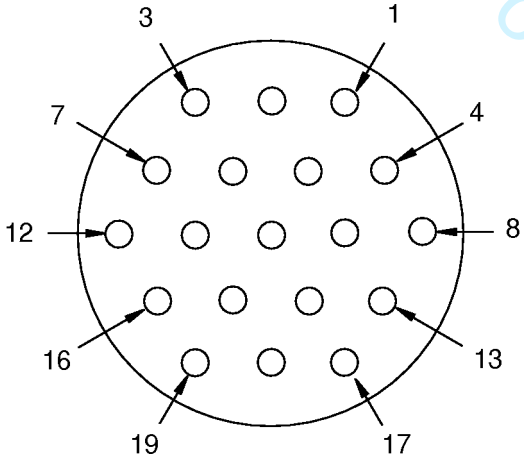


6-7 INSERT CONFIGURATION
Figure 4



7-4 INSERT CONFIGURATION
Figure 5



9-19 INSERT CONFIGURATION
Figure 6

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3. CONNECTOR DISASSEMBLY

A. Contact Removal

Table 4
CONTACT REMOVAL TOOLS

Contact Cavity Size	Removal Tool	
	Part Number	Supplier
23	GTR2047	Daniels
	809-088	Glenair

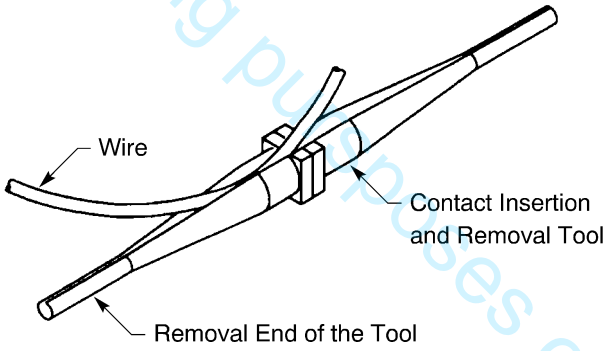
(1) Make a selection of a removal tool from Table 4.

(2) Examine the contact removal 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 removal tool on the wire. Refer to Figure 7 and Figure 8.



CONTACT REMOVAL TOOL
Figure 7

(4) Align the removal tool and the contact cavity. Refer to Figure 8

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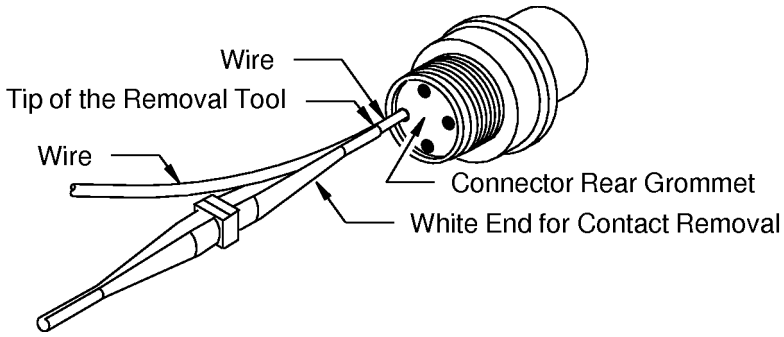
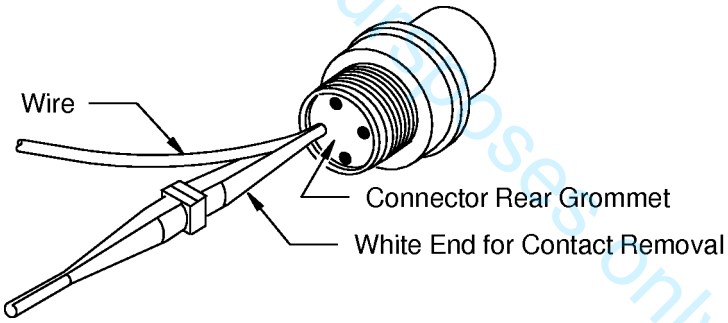


CONTACT REMOVAL TOOL ON THE WIRE ALIGNED WITH THE CONTACT CAVITY
Figure 8

(5) Carefully push the tool into the contact cavity until it stops. Refer to Figure 9
Make sure that the tool and the contact cavity stay aligned.

CAUTION: DO NOT USE MORE THAN THE NECESSARY AMOUNT OF FORCE TO PUSH THE REMOVAL 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.



CONTACT REMOVAL TOOL ON THE WIRE IN THE CONTACT CAVITY
Figure 9

(6) Hold the wire against the tool.

(7) Pull the tool and the wire out of the contact cavity. Refer to Figure 10
Make sure that the tool and the contact cavity stay aligned.

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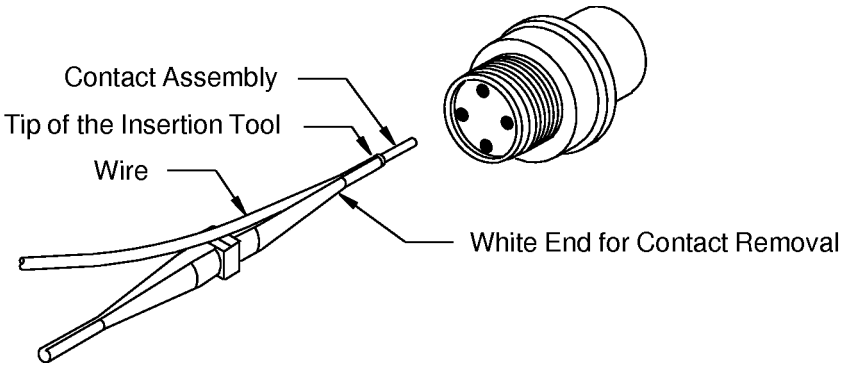

CONTACT REMOVED FROM THE CONNECTOR
Figure 10

(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 (2) through Step (7) again.

(9) Examine the connector and the contact assembly.
Make sure that:
- The connector grommet does not have damage
- The contact does not have damage or a bend.

B. Separation of the Plug and Receptacle

(1) Hold the plug in one hand and the receptacle in the other hand.

(2) Disengage the threads of the plug from the threads of the receptacle.

(3) Separate the plug and receptacle.

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4. CONNECTOR ASSEMBLY

A. Necessary Materials

Table 5
NECESSARY MATERIALS

Material	Temperature Grade	Fluid Class	Type	Part Number or Specification	Supplier
Insulation Sleeve, Heat Shrinkable	-	-	-	Refer to Subject 20-00-11	-
Insulation Tape	B	1	PTFE	A-A-59474	QPL
				Scotch 63	3M
	D	2	Silicone, Type 1 Rectangular Cross Section	A-A-59163	QPL
				Scotch 70	3M
			Silicone, Type 2 Triangular Cross Section	A-A-59163	QPL

B. Cable Preparation - Solder Sleeve Shield Ground Wire

(1) If there is not a 2.50 inch ±0.25 inch length heat shrinkable sleeve on the wire harness:

(a) Make a selection of a heat shrinkable sleeve from Subject 20-00-11.

Make sure that:

- The temperature grade and fluid class of the sleeve is applicable for the location of the connector in the airplane
- The sleeve has the smallest diameter that will let the sleeve move easily on the wire harness and on the rear shoulder of the connector.

(b) Put a 2.50 inch ±0.25 inch length of the heat shrinkable sleeve on the wire harness.

(2) Move the sleeve away from the end of the harness.

(3) Remove 2.0 inches ±0.2 inch of the jacket from the end of the cable that will have a solder sleeve shield ground wire.

Refer to:

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

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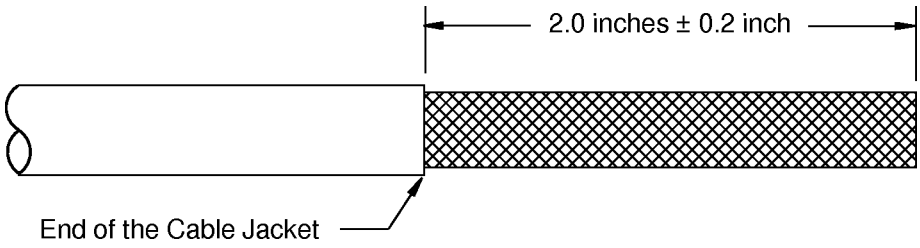


CABLE JACKET REMOVAL - SOLDER SLEEVE SHIELD GROUND WIRE
Figure 11

(4) Assemble the shield ground wire. Refer to Subject 20-10-15.

Make sure the shield ground wire is pointed forward toward the end of the cable.

C. Cable Preparation - Shield Pull Through Shield Ground Wire

(1) If there is not a 2.50 inch ±0.25 inch length heat shrinkable sleeve on the wire harness:

(a) Make a selection of a heat shrinkable sleeve from Subject 20-00-11.

Make sure that:

- The temperature grade and fluid class of the sleeve is applicable for the location of the connector in the airplane
- The sleeve has the smallest diameter that will let the sleeve move easily on the wire harness and on the rear shoulder of the connector.

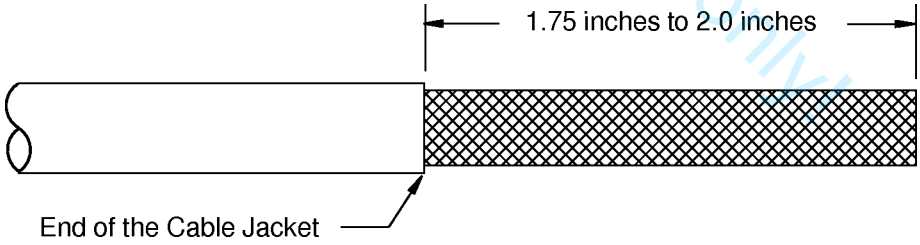
(b) Put a 2.50 inch ±0.25 inch length of the heat shrinkable sleeve on the wire harness.

(2) Move the sleeve away from the end of the harness.

(3) Remove 1.75 inches to 2.0 inches of the jacket from the end of the cable that will have a shield pull through shield ground wire.

Refer to:

- Figure 12
- Subject 20-00-15 for the procedure to remove the cable jacket.



CABLE JACKET REMOVAL
Figure 12

(4) Assemble the shield ground wire.

- Figure 13
- Subject 20-10-15 for the procedure to assemble a shield pull through shield ground wire.

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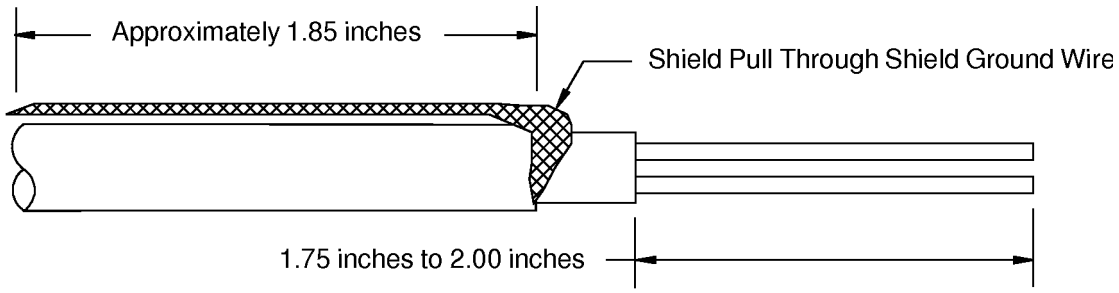
ASSEMBLY OF BACC63DP, DR, DT, DU, DV AND GLENAIR SERIES 800 MIGHTY MOUSE CONNECTORS



SHIELD PULL THROUGH SHIELD GROUND WIRE
Figure 13

D. Contact Assembly

Table 6
INSULATION REMOVAL LENGTH

Wire Size (AWG)	Crimp Barrel Size	Insulation Removal Length L (inch)	
		Target	Tolerance
26	24	0.15	±0.02
	22	0.15	±0.02
24	24	0.15	±0.02
	22	0.15	±0.02
22	22	0.15	±0.02

Table 7
CONTACT CRIMP TOOLS

Wire Size (AWG)	Crimp Barrel Size	Crimp Tool			
		Basic Unit		Locator	
		Part Number	Setting	Part Number	Color
26	24	M22520/2-01	2	809-077	-
	22	M22520/2-01	2	K1461	-
24	24	M22520/2-01	3	809-077	-
	22	M22520/2-01	3	K1461	-
22	22	M22520/2-01	4	K1461	-

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Table 8
CRIMP TOOL SUPPLIERS

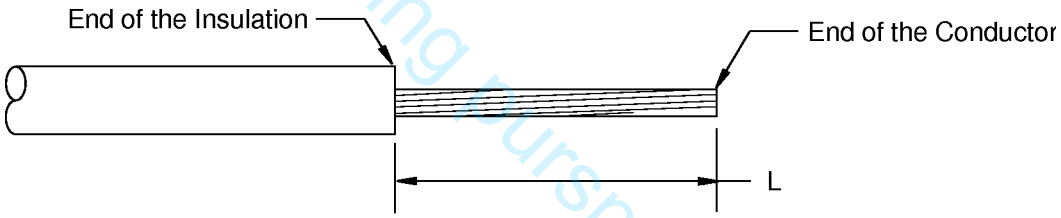
Crimp Tool	
Part Number	**Supplier**
809-077	Glenair
K1461	Daniels
M22520/2-01	QPL

(1) If the O.D. of the wire is larger than the wire seal range for the connector contact cavity, decrease the O.D. of the wire. Refer to Paragraph 4.E..

(2) If the O.D. of the wire is not larger than the wire seal range for the connector contact cavity, remove the necessary length of insulation from the end of the wire.

Refer to:

- Figure 14
- Table 6 for the insulation removal length
- Subject 20-00-15 for the procedure to remove the insulation.

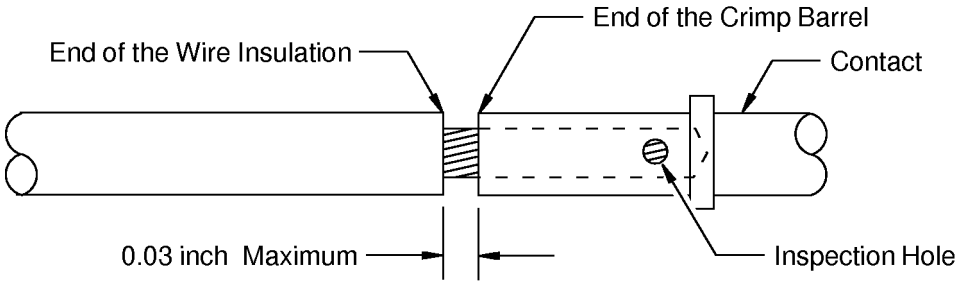


INSULATION REMOVAL LENGTH
Figure 14

(3) Put the conductor into the crimp barrel of the contact. Refer to Figure 15.

Make sure that:

- All of the strands of the conductor are in the contact 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 than 0.03 inch.



POSITION OF THE WIRE IN THE CONTACT CRIMP BARREL
Figure 15

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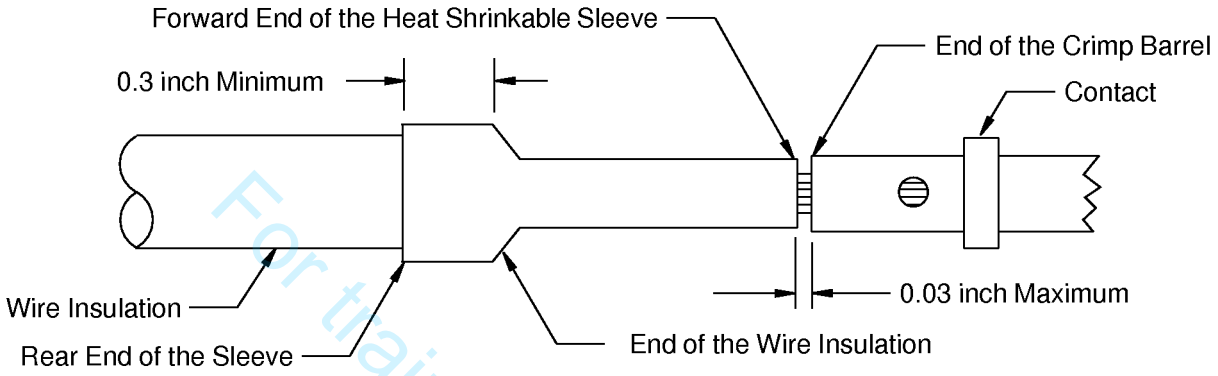
(4) Make a selection of a contact crimp tool from Table 7.

(5) Crimp the contact.

(6) If the O.D. of the wire was decreased, and there is a length of heat shrinkable sleeve on the wire:

(a) Push the heat shrinkable sleeve forward until the forward end of the sleeve is 0.03 inch or less from the crimp barrel. Refer to Figure 16.



POSITION OF THE HEAT SHRINKABLE SLEEVE
Figure 16

(b) Shrink the sleeve in position.

Refer to:

- Figure 16
- Subject 20-10-14 for the procedure to shrink a heat shrinkable sleeve.

Make sure that:

- The distance between the heat shrinkable sleeve and the contact is not more than 0.03 inch
- The heat shrinkable sleeve makes an overlap of 0.30 inch or more with the wire insulation.

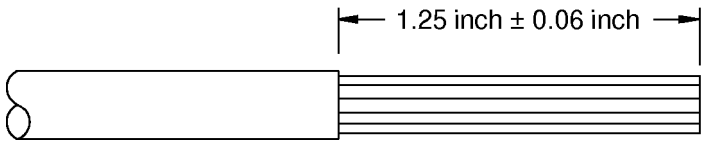
E. Decrease of the O. D. of the Wire

(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 1.60 inch ±0.20 inch length of the heat shrinkable sleeve on the wire.

(3) Remove a 1.25 inch ±0.06 inch length of insulation from the end of the wire. Refer to Figure 17.



INSULATION REMOVAL LENGTH
Figure 17

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F. Contact Insertion

NOTE: If a backshell is specified, the necessary backshell components must be put on the wire harness before the contacts are installed.

NOTE: Contact assemblies with AWG 20 or larger wire can be installed without an insertion tool.

Table 9
CONTACT INSERTION TOOLS

Part Number	Supplier
DAK225-22	Daniels
809-088	Glenair

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

(2) Examine the insertion tool.

Make sure that:

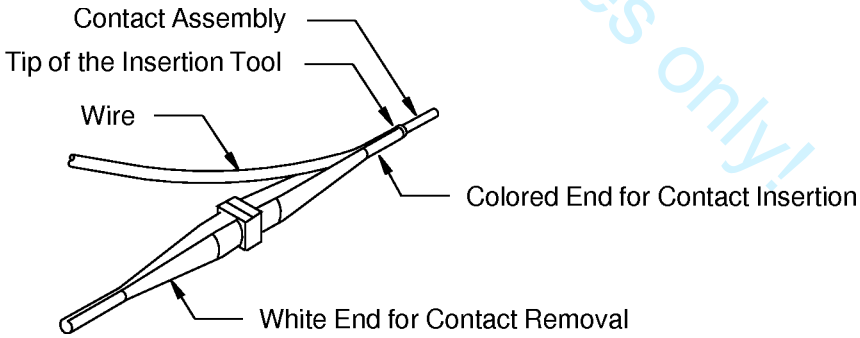
- The tool is not broken
- The tool tip does not have a bend
- The tool tip does not have burrs, nicks, or sharp edges.

(3) Put the contact assembly in the insertion tool. Refer to Figure 18.

NOTE: To help make the insertion easier, a lubricant can be applied on the contact assembly and the insertion tool.

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.



CONTACT INSERTION TOOL
Figure 18

NOTE: The removal end of the M81969/14-10 tool is orange.

(4) Align the contact assembly and the contact cavity. Refer to Figure 19.

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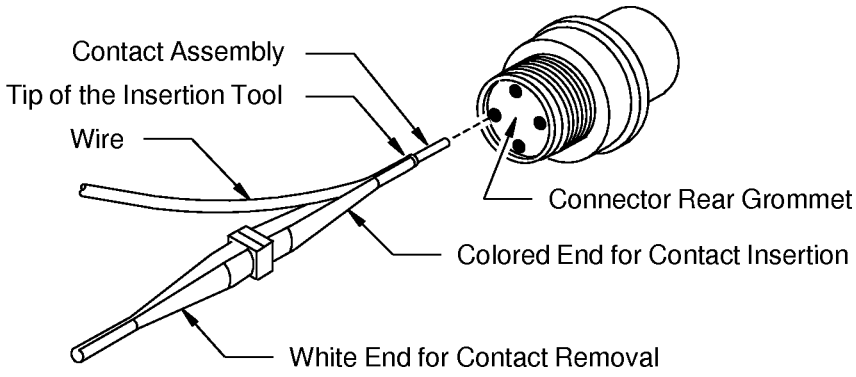
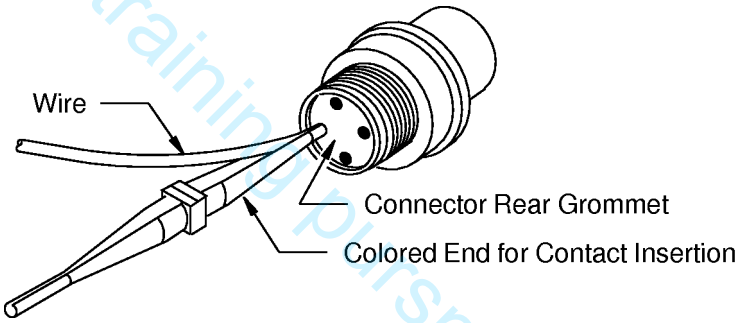


ALIGNMENT OF THE CONTACT ASSEMBLY AND THE CONTACT CAVITY
Figure 19

(5) Carefully push the contact assembly into the contact cavity until it stops. Refer to Figure 20.



INSERTION OF THE CONTACT INTO THE CAVITY
Figure 20

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.

(6) 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.

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

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

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

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(a) Remove the contact assembly from the contact cavity

(b) Do Step (3) through Step (8) again.

G. Shield Termination

(1) Put each shield ground wire on the shield termination platform at the rear of the connector.

Make sure that the shield ground wires:

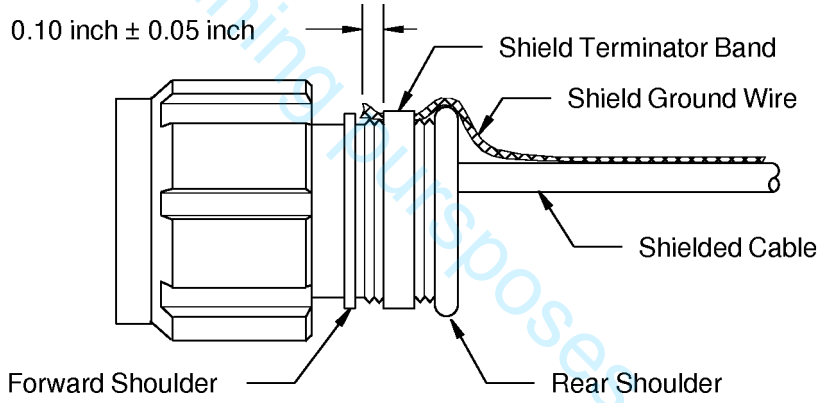
- Are parallel to the longitudinal axis of the connector
- Are approximately at equal distances from each other
- Do not make an overlap with each other.

(2) Install the shield terminator band on the shield ground wires approximately in the center between the forward shoulder and the rear shoulder of the shield termination platform.

Make sure that each shield ground wire has a slack of approximately 0.6 inch between the band and the cable.

Refer to:

- Figure 21
- Subject 20-25-14 for the procedures to install the band.



POSITION OF THE SHIELD TERMINATOR BAND
Figure 21

(3) Remove the necessary length of each shield ground wire to make the distance from the end of the shield ground wire to the forward edge of the band equal to 0.10 inch ±0.05 inch.

(4) Make a selection of a PTFE tape from Table 5.

Make sure that the temperature grade and fluid class of the tape is applicable for the location of the connector in the airplane.

(5) Put 2 to 3 layers of the PTFE tape on the shield terminator band.

NOTE: The tape can be cut longitudinally to decrease the width for a good fit on the shield termination platform.

(6) Make a selection of a Type 1 silicone tape from Table 5.

Make sure that the temperature grade and fluid class of the tape is applicable for the location of the connector in the airplane.

(7) Put 2 to 3 layers of the Type 1 silicone tape on the PTFE tape.

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Make sure that:

- The forward edge of the tape is against the rear surface of the connector
- The tape does not extend farther than the rear shoulder of the shield termination platform.

NOTE: The tape can be cut longitudinally to decrease the width for a good fit on the shield termination platform.

H. Strain Relief Assembly

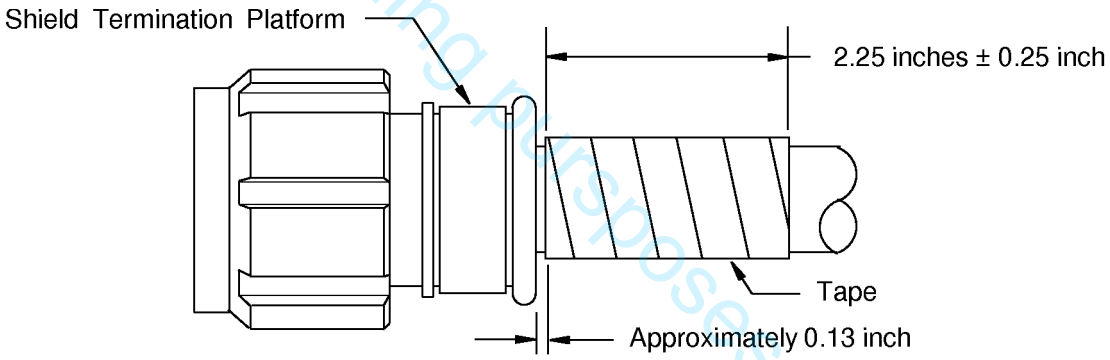
(1) Make a selection of a Type 2 silicone tape from Table 5.

Make sure that the temperature grade and fluid class of the tape is applicable for the location of the connector in the airplane.

(2) Put the necessary layers of Type 2 silicone tape on the wire harness to make the diameter of the wire harness a small amount less that the O.D. of the cable exit of the connector. Refer to Figure 22.

Make sure that each layer of tape:

- Starts approximately 0.13 inch from the cable exit of the connector
- Extends rearward 2.25 inches ±0.25 inch from the cable exit
- Makes a 50 percent overlap
- Does not make an overlap with the connector



POSITION OF THE TAPE ON THE WIRE HARNESS
Figure 22

(3) Push the 2.5 inch length of heat shrinkable sleeve forward until the forward end of the sleeve is between the rear end of the coupling ring and the forward shoulder of the shield termination platform. Refer to Figure 23.

Make sure that the sleeve does not make an interference with the coupling ring of the connector.

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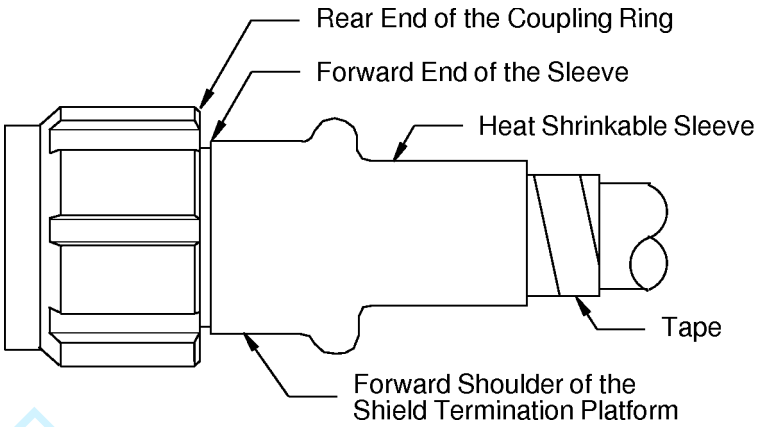


POSITION OF THE HEAT SHRINKABLE SLEEVE
Figure 23

(4) Shrink the sleeve into its position.

Refer to:

- Figure 23
- Subject 20-10-14 for the procedures to install heat shrinkable sleeve.

I. Connection of the Plug and Receptacle

(1) Hold the plug in one hand and the receptacle in the other hand.

(2) Align the keyways of the receptacle and keys of the plugs.

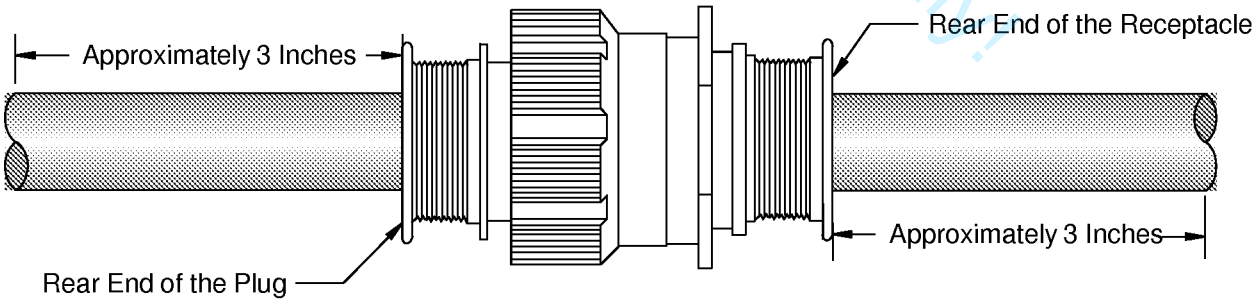
(3) Engage the threads of the plug with the threads of the receptacle.

(4) Tighten the threads until the plug is fully engaged with the receptacle.

J. Connector Installation

NOTE: The plug must be connected to the receptacle before the receptacle is installed.

(1) Remove the wire harness ties that are less than 3 inches from the rear end of the plug and receptacle. Refer to Figure 24.



WIRE HARNESS TIE REMOVAL
Figure 24

(2) Put the spacer tie on the wire harness and the receptacle. Refer to Figure 25.

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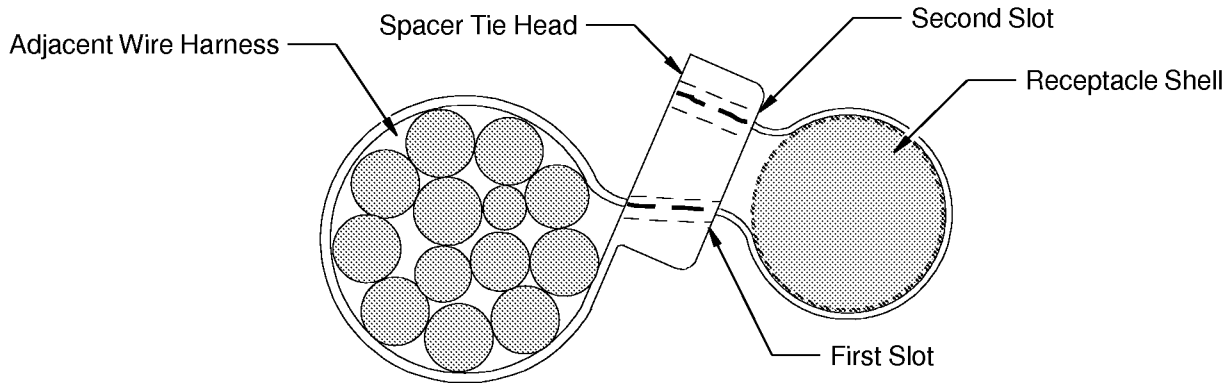


POSITION OF THE SPACER TIE
Figure 25

(a) Wrap the end of the spacer tie around the adjacent wire harness.

(b) Push the end of the spacer tie through the first slot in the head.

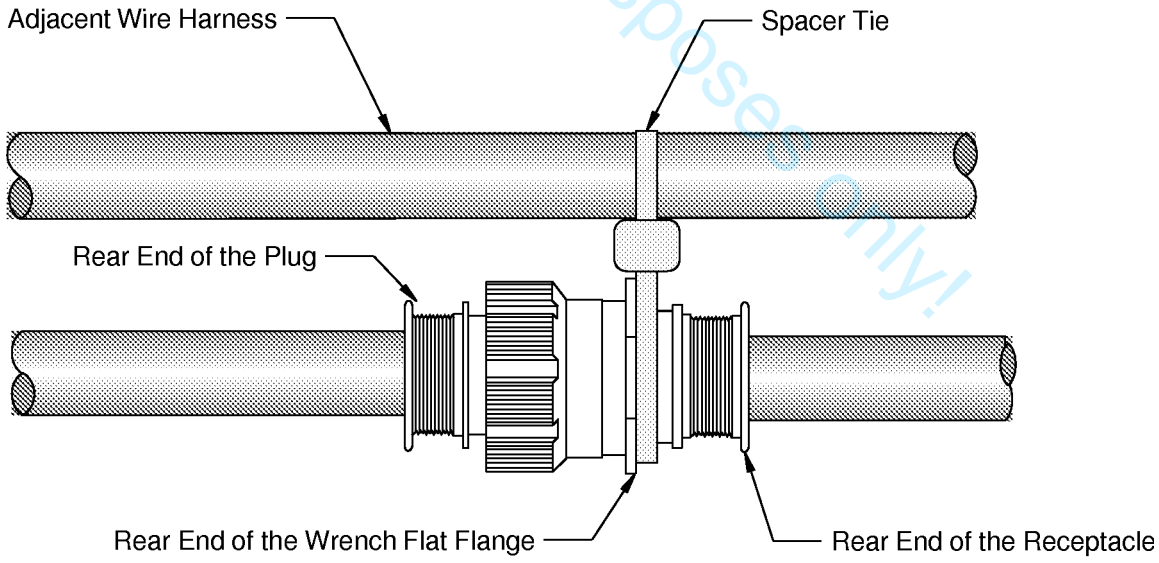
(c) If the spacer tie is against a fiber optic cable, wind a minimum of 2 layers of silicone tape on the harness at the location.

(d) Pull the end of the spacer tie until the tie is tight around the wire harness.

(e) Wrap the end of the spacer tie around the receptacle shell.

(f) Push the end of the spacer tie through the second slot of the head.

(3) Align the forward edge of spacer tie and the rear end of the wrench flat flange. Refer to Figure 26.



POSITION OF THE SPACER TIE ON THE RECEPTACLE
Figure 26

(4) Pull the end of the spacer tie until the tie is tight around the receptacle.

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Make sure that the forward edge of the spacer tie and the rear end of the wrench flat flange stay aligned.

(5) Install the spacer tie.

5. APPROVED TOOL SUPPLIERS

A. Contact Removal Tools

Table 10
REMOVAL TOOL SUPPLIERS

Removal Tool	Supplier
GTR2047	Daniels
809-088	Glenair

B. Contact Crimp Tools

Table 11
CRIMP TOOL SUPPLIERS

Crimp Tool	Supplier
809-077	Glenair
K1461	Daniels
M22520/2-01	QPL

C. Contact Insertion Tools

Table 12
INSERTION TOOL SUPPLIERS

Insertion Tool	Supplier
DAK225-22	Daniels
809-088	Glenair

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ASSEMBLY AND INSTALLATION OF BACC65BL EXTERNAL POWER CONNECTORS

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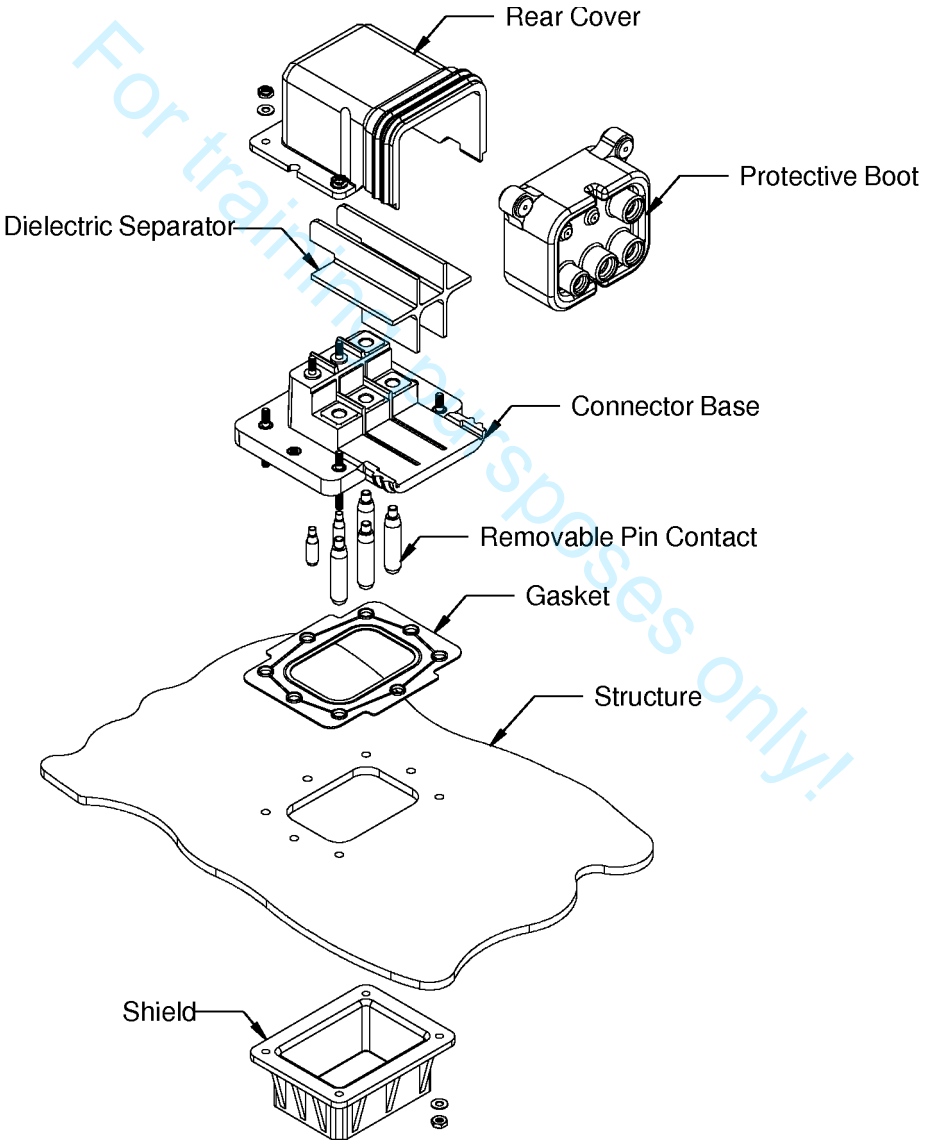
ASSEMBLY AND INSTALLATION OF BACC65BL EXTERNAL POWER CONNECTORS

1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

Table 1
CONNECTOR PART NUMBERS

Part Number	Description
BACC65BL-1	External Power Receptacle, Left Flowing
BACC65BL-2	External Power Receptacle, Right Flowing



BACC65BL CONNECTOR COMPONENTS
Figure 1

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Table 2
CONNECTOR COMPONENT PART NUMBERS

Part Number	Description
BACC65BL-3	Shield
BACC65BL-4	Gasket
BACC65BL-5	Protective Boot for BACC65BL-1
BACC65BL-6	Protective Boot for BACC65BL-2
BACC65BL-301	Rear Cover
BACC65BL-302	Dielectric Separator

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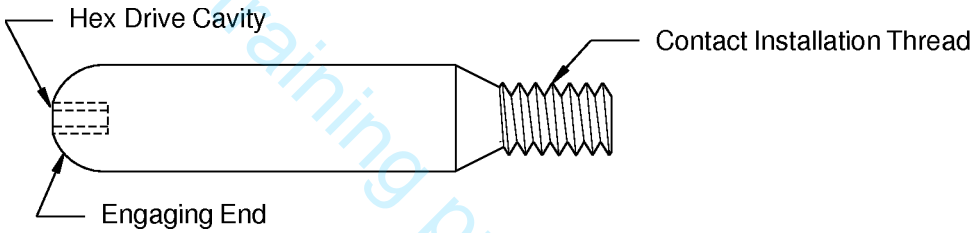
B. Contact Part Numbers



PIN CONTACT FOR THE EXTERNAL POWER CONNECTOR
Figure 2

Table 3
CONTACT PART NUMBERS

Contact Type	Description	Quantity in Each Connector	Part Number	Supplier
Pin	Power Contact	4	BACC65BL-7	Viking
	Control Contact	2	BACC65BL-8	Viking

2. CONNECTOR DISASSEMBLY

A. Contact Removal

Table 4
NECESSARY TOOLS

Tool	Size (inch)	Supplier
Driver, Hex	1/8	An available source
	3/16	An available source

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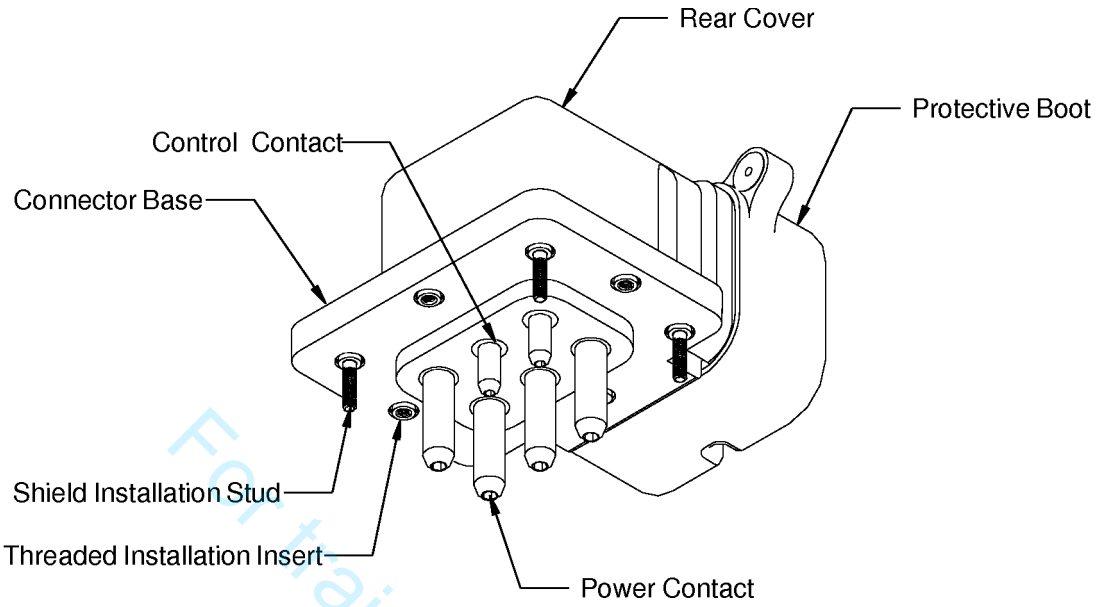
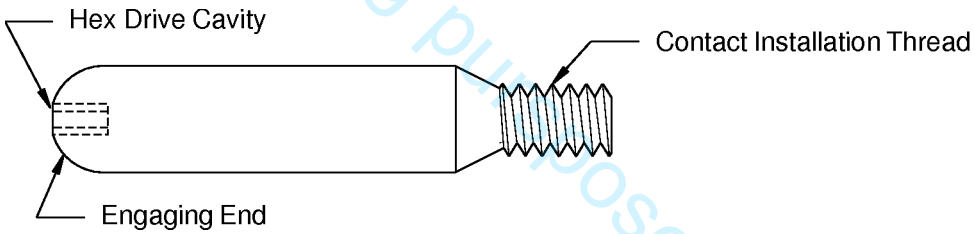
ASSEMBLY AND INSTALLATION OF BACC65BL EXTERNAL POWER CONNECTORS



CONNECTOR ASSEMBLY
Figure 3



LOCATION OF THE HEX DRIVE CAVITY IN THE ENGAGING END OF THE CONTACT
Figure 4

(1) Make a selection of a hex driver from Table 4.

(2) Put the tip of the hex driver into the hex drive cavity in the engaging end of the contact. Refer to Figure 4.

(3) Turn the tool and the contact in the counterclockwise direction to loosen it.

(4) Continue to turn the contact until the contact can be removed from the connector.

B. Removal of the Rear Cover

Table 5
NECESSARY TOOLS

Tool	Size (inch)	Supplier
Socket	3/8	An available source
Socket Wrench	-	An available source

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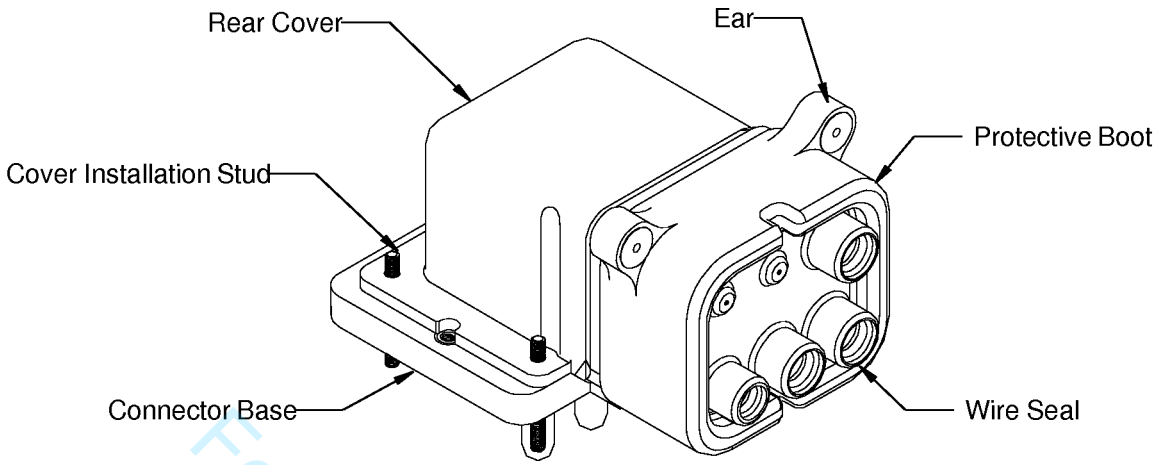

REAR COVER REMOVAL
Figure 5

(1) Make a selection of these tools from Table 5.
- A 3/8 inch socket
- A socket wrench.

(2) Bend the ears of the protective boot rearward and pull the boot from the rear end of the rear cover.

(3) Remove the nuts from the four cover installation studs.

(4) Lift the cover from the connector base.

(5) Lift the rear end of the dielectric separator and pull the separator rearward away from the studs.

C. Removal of a Control Contact Terminal Lug

Table 6
NECESSARY TOOLS

Tool	Size (inch)	Supplier
Socket	3/8	An available source
Wrench, Socet	-	An available source

(1) Make a selection of these tools from Table 6.
- A 3/8 inch socket
- A socket wrench.

(2) Remove the nut from the stud.

(3) Remove the lock washer and the flat washer from the stud.

(4) Remove the terminal lug from the stud.

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D. Removal of a Power Contact Terminal Lug

Table 7
NECESSARY TOOLS

Tool	Size (inch)	Supplier
Socket	9/16	An available source
Wrench, Socket	-	An available source

(1) Make a selection of these tools from Table 7.
- A 9/16 inch socket
- A socket wrench.

(2) Remove the bolt and flat washer, and the lock washer from the contact.

E. Removal of the Shield

Table 8
NECESSARY TOOLS

Tool	Size (inch)	Supplier
Socket	3/8 inch	An available source
Wrench, Socket	-	An available source

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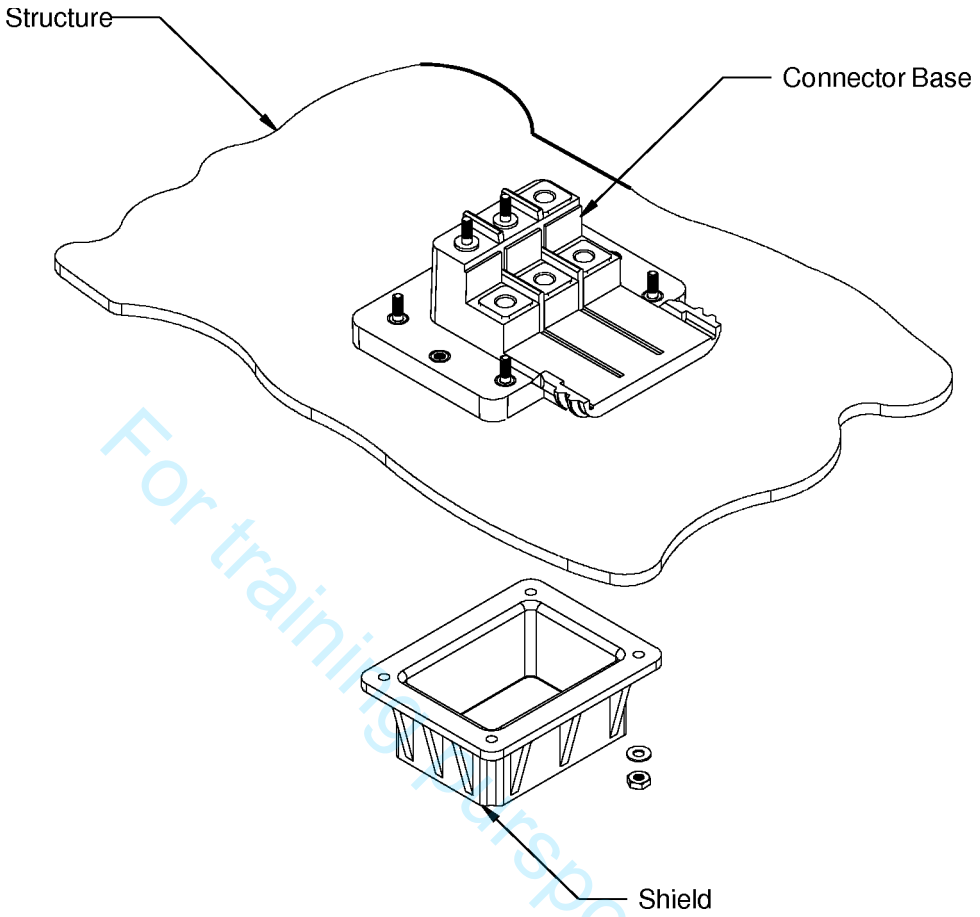

SHIELD REMOVAL
Figure 6

(1) Make a selection of these tools from Table 8.
- A 3/8 inch socket
- A socket wrench.

(2) On the engaging end of the connector, remove the nuts from the four shield installation studs.

(3) Pull the shield away from the structure.

F. Removal of the Connector Base

Table 9
NECESSARY TOOLS

Tool	Size	Supplier
Screwdriver, Phillips	-	An available source

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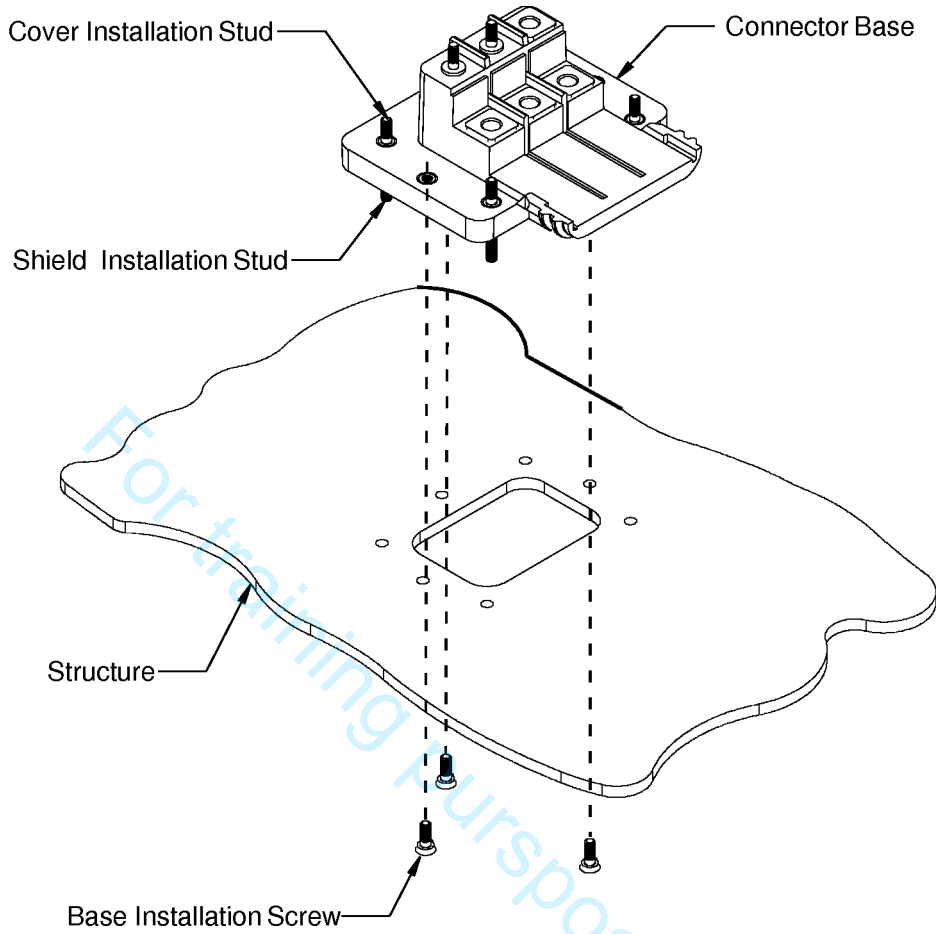

CONNECTOR BASE REMOVAL
Figure 7

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(1) Make a selection of a screwdriver from Table 9.
(2) From the engaging end of the connector, remove the three connector installation screws.
(3) Pull the connector away from the structure.

3. CONNECTOR ASSEMBLY

A. Contact Installation

Table 10
CONNECTOR ASSEMBLY TOOLS

Tool	Size (inch)	Supplier
Driver, Hex	1/8	An available source
	3/16	An available source
Torque Tool	-	An available source

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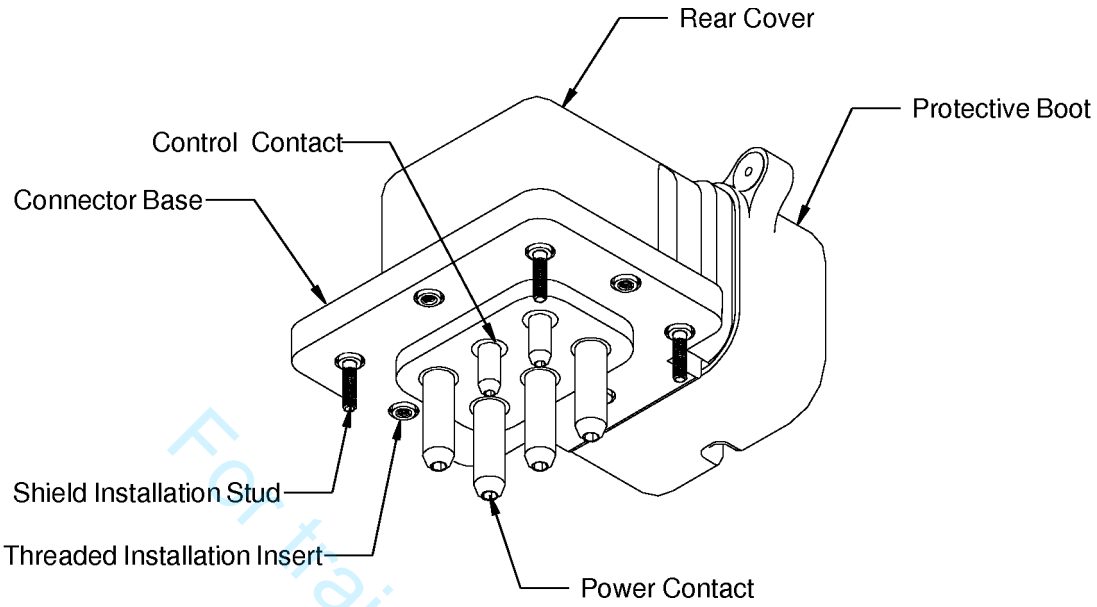
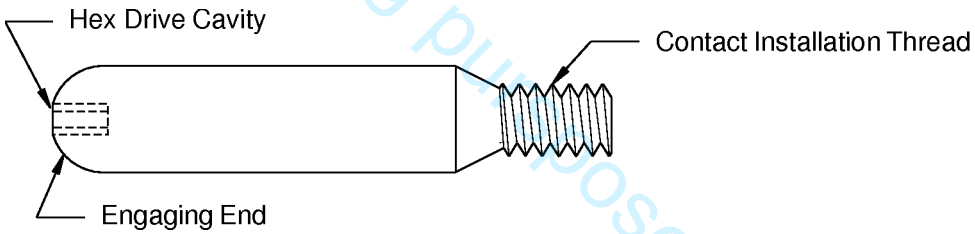
ASSEMBLY AND INSTALLATION OF BACC65BL EXTERNAL POWER CONNECTORS



BACC65BL CONNECTOR
Figure 8



EXTERNAL POWER CONNECTOR CONTACT
Figure 9

Refer to Figure 10 and Figure 9:

(1) Make sure that the connector is clean.

(2) Install a power contact:

(a) Engage the threads of the contact and the threads of the connector contact cavity.

(b) Make a selection of these tools from Table 10.

- A 3/16 inch hex driver
- A torque tool.

(c) Torque the contact 96 inch-pounds ± 6 inch-pounds.

CAUTION: DO NOT TIGHTEN A CONTACT MORE THAN THE SPECIFIED TORQUE. DAMAGE TO THE CONNECTOR THREADS CAN OCCUR.

(3) Install a control contact:

(a) Engage the threads of the contact and the threads of the connector contact cavity.

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(b) Make a selection of these tools from Table 10
- A 1/8 inch hex driver
- A torque tool.

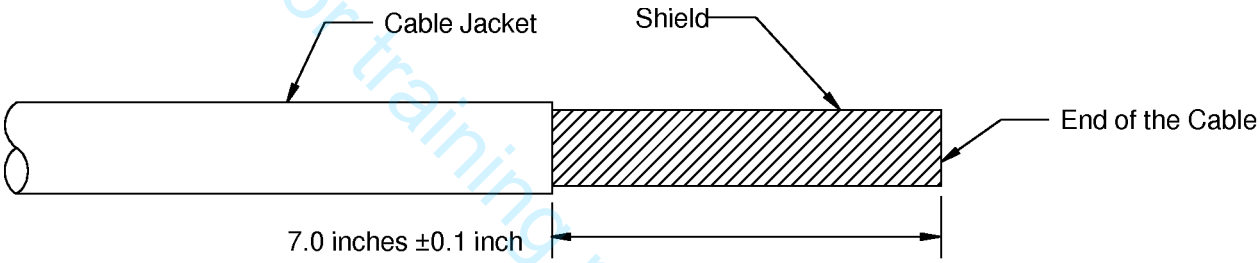
(c) Torque the contact 24 inch-pounds ± 4 inch pounds.

CAUTION: DO NOT TIGHTEN A CONTACT MORE THAN THE SPECIFIED TORQUE. DAMAGE TO THE CONNECTOR THREADS CAN OCCUR.

B. Cable Preparation - Solder Sleeve Shield Termination

(1) Remove 7.0 inches ± 0.1 inch of the jacket from the end of the cable.

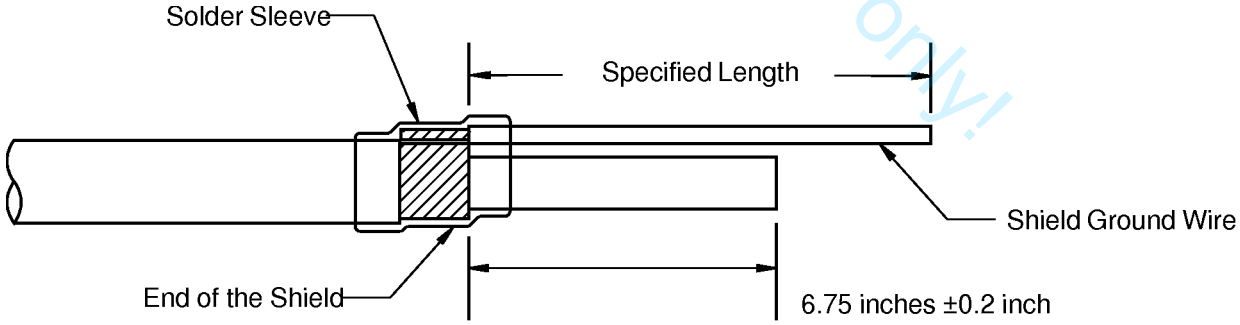
Refer to:
- Figure 10
- Subject 20-00-15.



CABLE JACKET REMOVAL
Figure 10

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

Refer to:
- Figure 11
- Subject 20-10-15.



SOLDER SLEEVE SHIELD GROUND WIRE
Figure 11

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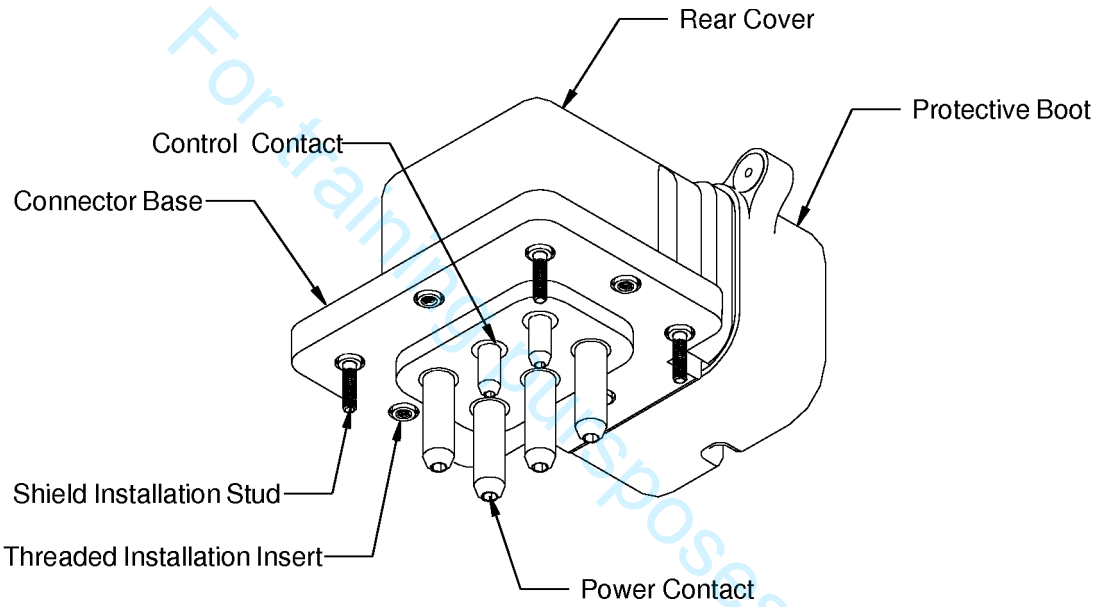
C. Connector Installation Preparation

Table 11
CONNECTOR ASSEMBLY TOOLS

Tool	Size (inch)	Supplier
Driver, Hex	1/8	An available source
	3/16	An available source
Torque Tool	-	An available source



BACC65BL CONNECTOR
Figure 12

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Refer to Figure 11

(1) If the rear cover is installed, remove it. Refer to Paragraph 2.B..

(2) Examine the connector for cleanliness.

(3) Examine the contacts for damage.

NOTE: Damaged pin contacts must be removed and replaced.

(4) Examine the power contacts for tightness.

(5) If a power contact is loose:

(a) Make a selection of these tools from Table 11.

- A 3/16 inch hex driver
- A torque tool.

(b) Torque the contact 96 inch-pounds ± 6 inch-pounds.

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CAUTION: DO NOT TIGHTEN A CONTACT MORE THAN THE SPECIFIED TORQUE. DAMAGE TO THE CONNECTOR THREADS CAN OCCUR.

(6) If a control contact is loose:

(a) Make a selection of these tools from Table 11

- A 1/8 inch hex driver
- A torque tool.

(b) Torque the contact 24 inch-pounds ± 4 inch pounds.

CAUTION: DO NOT TIGHTEN A CONTACT MORE THAN THE SPECIFIED TORQUE. DAMAGE TO THE CONNECTOR THREADS CAN OCCUR.

(7) Examine the mounting gasket.

Make sure that it is on the connector with the cork side of the gasket against the bottom surface of the connector.

D. Installation of the Connector Base

Table 12
CONNECTOR INSTALLATION TOOLS

Tool	Size	Supplier
Screwdriver, Phillips	-	An available source
Torque Tool	-	An available source

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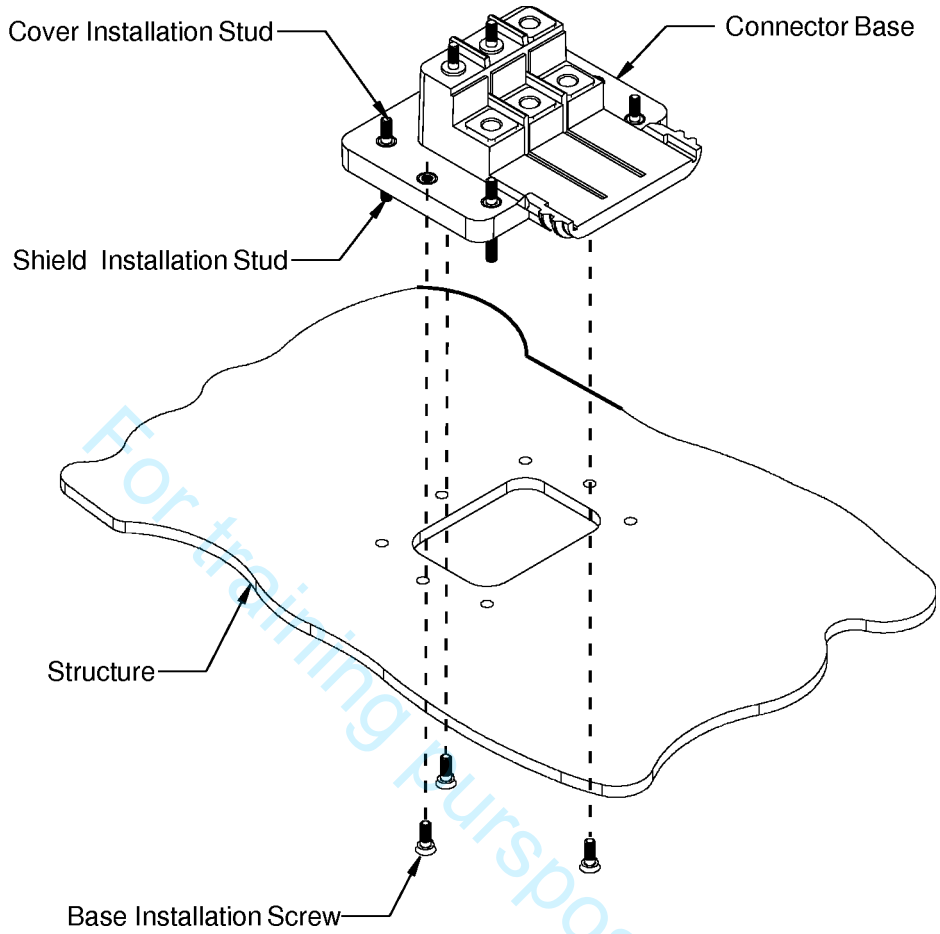

CONNECTOR BASE INSTALLATION
Figure 13

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Refer to Figure 13

(1) Make a selection of these tools from Table 12.
- A 3/8 inch socket
- A socket wrench
- A torque tool.

(2) Align the installation holes in the shield and the four shield installation studs of the connector base.

(3) Push the shield forward toward the structure.

(4) Pull a flat washer and a nut on each stud.

(5) Torque each nut 25 inch-pounds to 35 inch-pounds.

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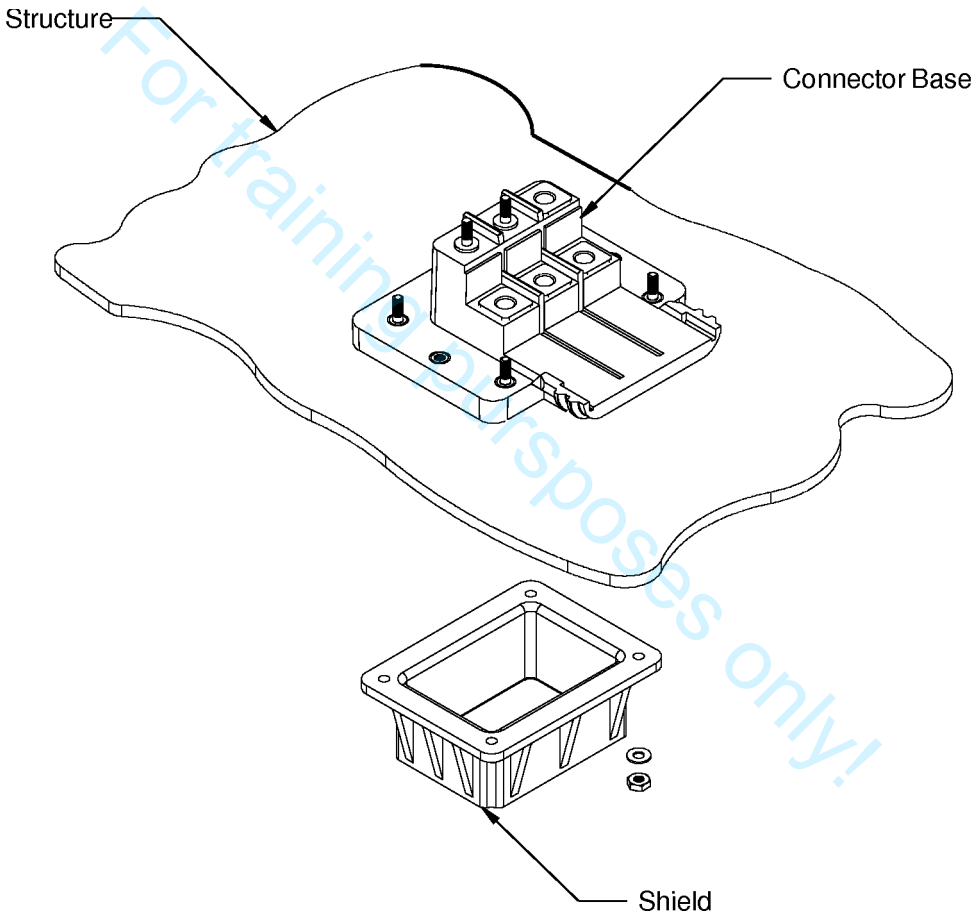
E. Installation of the Shield

Table 13
CONNECTOR INSTALLATION TOOLS

Tool	Size (inch)	Supplier
Socket	3/8	An available source
Wrench, Socket	-	An available source
Torque Tool	-	An available source



CONNECTOR SHIELD INSTALLATION
Figure 14

(1) Make a selection of these tools from Table 13.
- A 3/8 inch socket
- A socket wrench
- A torque tool.

(2) Align the installation holes in the shield and the four shield installation studs of the connector base.

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(3) Push the shield forward toward the structure.

(4) Pull a flat washer and a nut on each stud.

(5) Torque each nut 25 inch-pounds to 35 inch-pounds.

F. Terminal Lug Installation

NOTE: For MS90362 external power connectors, refer to Subject 20-30-00 for the installation torque for the attachment of the terminal lugs.

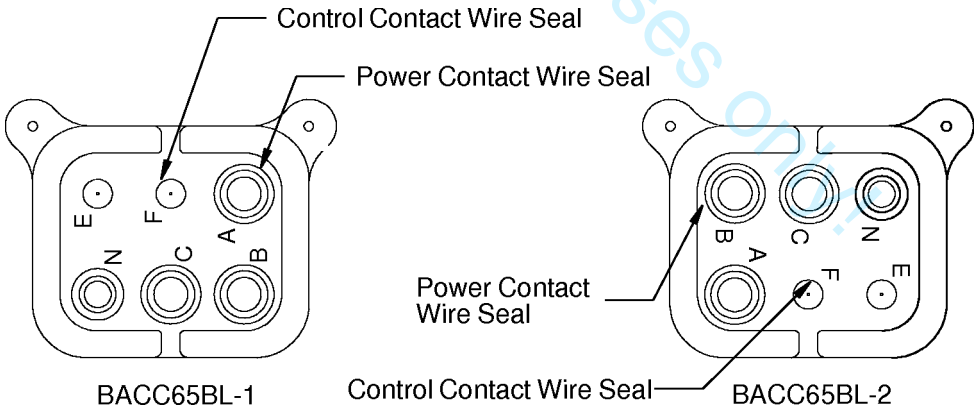
NOTE: The terminal lug for a control contact connection must be assembled after the wire is put through the applicable wire seal hole in the protective boot.

Table 14
TERMINAL LUG INSTALLATION TOOLS

Tool	Size (inch)	Supplier
Socket	3/8	An available source
Socket	9/16	An available source
Wrench, Socket	-	An available source
Torque Tool	-	An available source

Table 15
NECESSARY MATERIAL

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



REAR END OF THE BACC65BL PROTECTIVE BOOT
Figure 15

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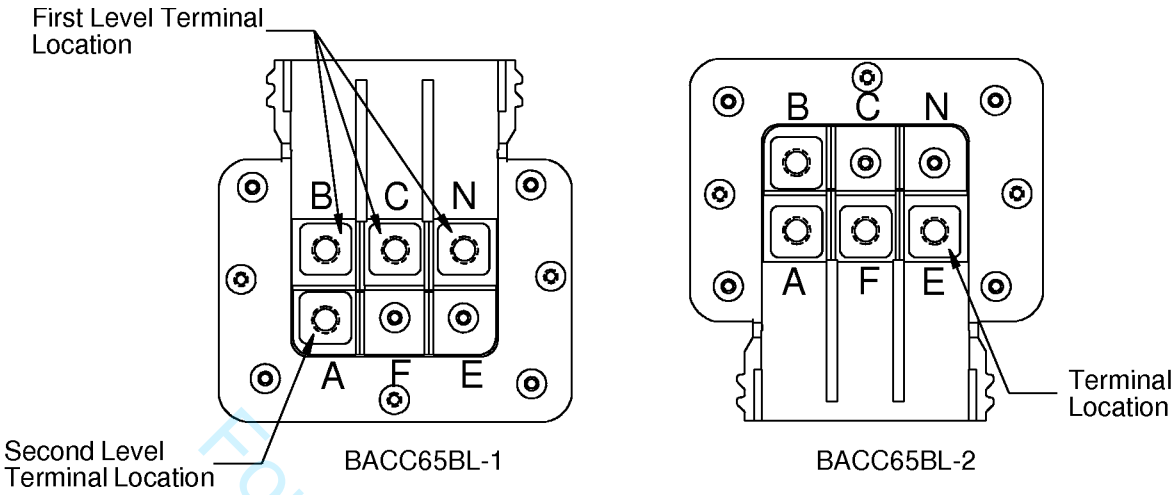
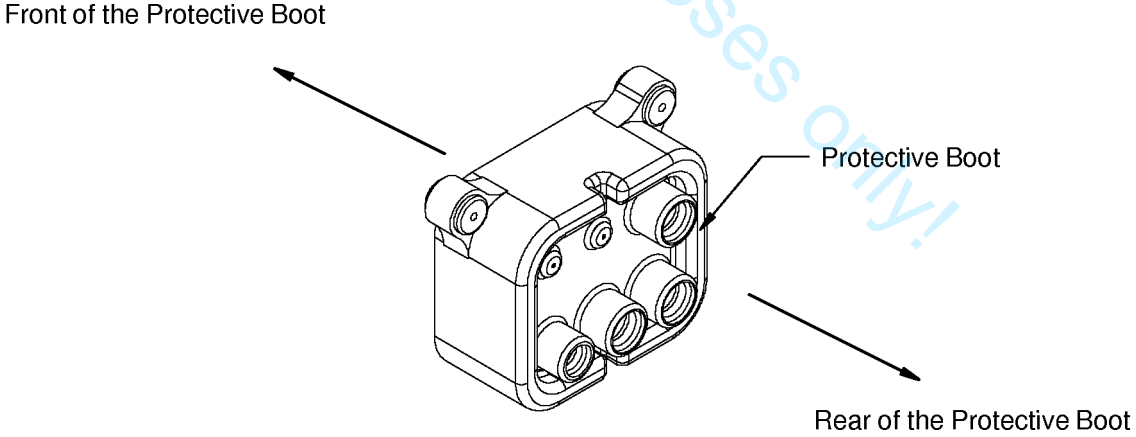


BACC65BL TERMINAL LUG STUD POSITIONS
Figure 16

(1) Make a selection of these tools from Table 14.
- A 3/8 inch socket
- A 9/16 inch socket
- A socket wrench
- A torque tool.

(2) For a power contact connection, if the wires are crimped into the terminal lugs:

(a) From the rear of the protective boot, push the terminal lug assembly through the applicable wire seal hole. Refer to Figure 15 and Figure 17.



FRONT AND REAR SIDES OF THE PROTECTIVE BOOT
Figure 17

NOTE: A lubricant can be applied to the wire seal hole to make it easier to push the lug assembly through. Refer to table 15.

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(b) If the wire seal is moved inward after the lug assembly is pushed through, carefully push the seal back into its correct position on the wire.

(3) For a power contact connection, if the wires have not been crimped into the terminal lugs:

(a) Push the wires through the applicable wire seal holes.

(b) Crimp the wires into the terminal lugs.

(c) Install the terminal lug assemblies onto the connector base. Refer to Step (5) and Step (6).

(4) For a control contact connection:

NOTE: For BACC65BL-1, control contact terminal lug positions are F and E. For BACC65BL-2, control contact terminal lug positions are C and N.

(a) From the rear of the protective boot, push the wire through the applicable wire seal hole. Refer to Figure 15. and Figure 17.

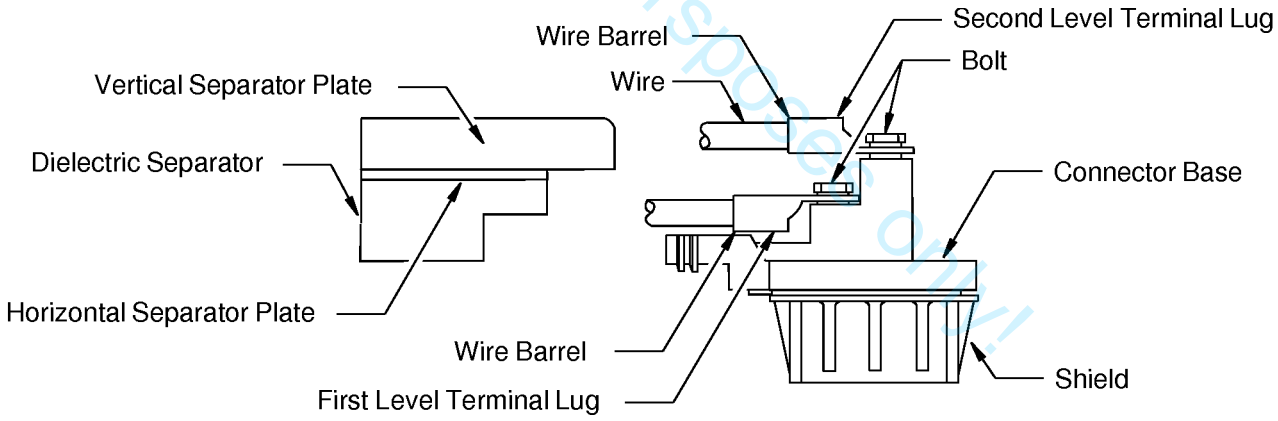
(b) Assemble the terminal lug. Refer to Subject 20-30-11 for BACT12AV terminal lugs assembly and installation.

(5) Install the first level power contact terminal lug assemblies. Refer to Figure 16.

NOTE: For BACC65BL-1, first level terminal lug positions are B, C, and N. For BACC65BL-2, first level terminal lug positions are A, F, and E.

(a) Put a lock washer, a flat washer, and a terminal lug on the terminal location. Make sure that the wire barrel of the terminal lugs points toward the connector base to leave enough space for dielectric separator installation. Refer to Figure 16 and Figure 18.

NOTE: The space is for the horizontal separator plate. Refer to Figure 18.



INSTALLATION OF FIRST AND SECOND LEVEL TERMINAL LUGS
Figure 18

(b) Install the bolt in the applicable position.

(c) Torque the bolt 20 foot-pounds to 25 foot-pounds.

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CAUTION: DO NOT TIGHTEN A BOLT MORE THAN THE SPECIFIED TORQUE. DAMAGE TO THE CONNECTOR CAN OCCUR.

(6) Install the second level power contact terminal lug assemblies. Refer to Figure 16

NOTE: For BACC65BL-1, second level terminal lug position is A. For BACC65BL-2, second level terminal lug position is B.

(a) Put a lock washer, a flat washer, and a terminal lug on the terminal location. Make sure that the wire barrel of the terminal lugs points away from the connector base to leave enough space for dielectric separator installation. Refer to Figure 16 and Figure 18.

NOTE: The space is for the horizontal separator plate. Refer to figure 18.

(b) Install the bolt in the applicable position.

(c) Torque the bolt 20 foot-pounds to 25 foot-pounds.

CAUTION: DO NOT TIGHTEN A NUT MORE THAN THE SPECIFIED TORQUE. DAMAGE TO THE CONNECTOR CAN OCCUR.

G. Installation of the Rear Cover

Table 16
REAR COVER INSTALLATION TOOLS

Tool	Size (inch)	Supplier
Socket	3/8	An available source
Wrench, Socket	-	An available source

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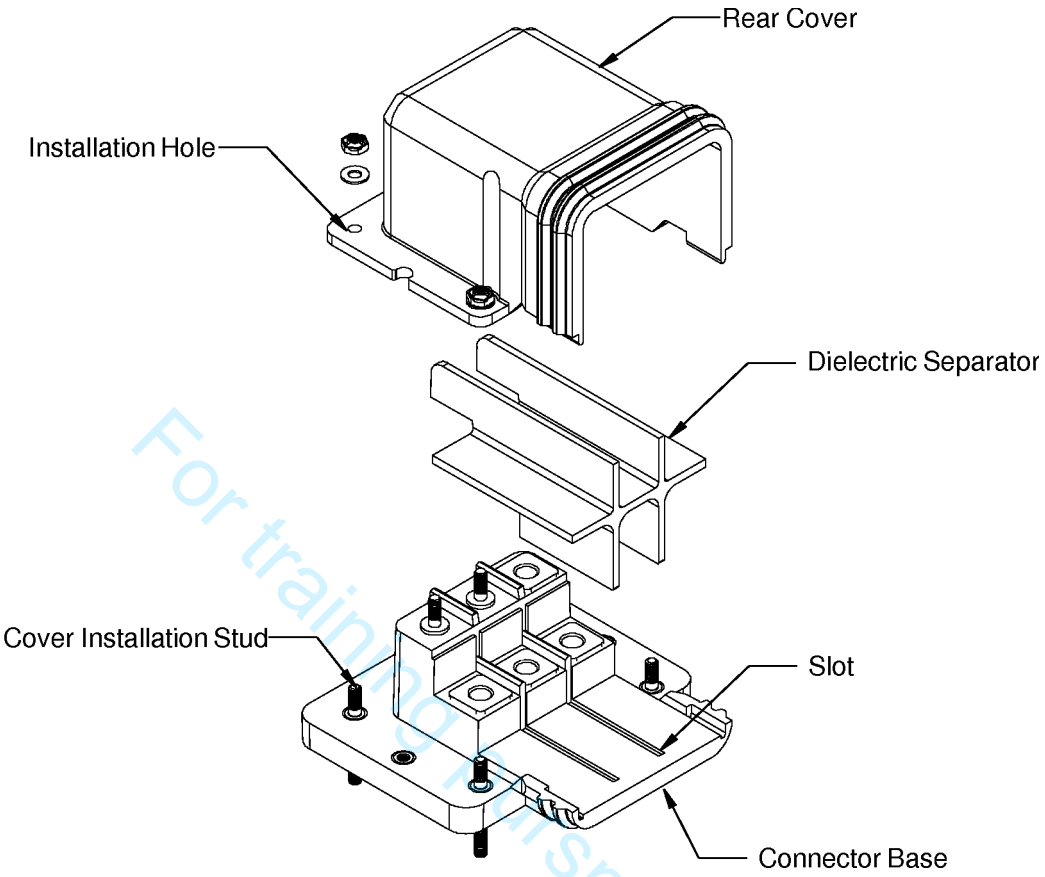

REAR COVER INSTALLATION
Figure 19

(1) Make a selection of these tools from Table 16:
- A 3/8 inch socket
- A socket wrench.

(2) Put the dielectric separator between the two levels of the wires.

Make sure that the long edges of the separator are on top.

(3) Push the separator forward between the terminal lug assemblies until the bottom and forward edges are fully installed in the slots in the connector base.

Make sure that the forward edges of the separator are aligned with the forward edge of the connector.

(4) Put the cover installation holes on the cover installation studs on the connector base.

(5) Push the cover down until it is against the connector base.

Make sure that the dielectric separator stays in the slots in the connector base.

(6) Install the washers and nuts on the studs.

(7) Torque each nut 25 inch pounds to 30 inch pounds.

(8) Push the protective boot forward on the wires until it is against the rear cover.

(9) Put the bottom edge of the boot on the bottom edge of the cover.

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(10) Put the side edges of the boot on the cover.

(11) Put the top edge of the boot on the cover.

Make sure that the forward edge of the protective boot is against the shoulder of the cover.

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ASSEMBLY OF MS25182 BATTERY CONNECTORS

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2.	**CONNECTOR DISASSEMBLY**		2
	A.	Separation of the Upper Housing from the Lower Housing	2
3.	**CONNECTOR ASSEMBLY**		2
	A.	Terminal Lug Installation	2
	B.	Connector Body Assembly	4

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20-62-25 CONTENTS

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ASSEMBLY OF MS25182 BATTERY CONNECTORS

This Subject gives the procedure to assemble the MS25182 battery connector.

1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

Table 1
CONNECTOR PART NUMBERS

Part Number	Specification	Connector Type	Supplier
MS25182-2	MIL-P-18148	Plug, Electric, Aircraft Storage Battery, Quick Disconnect	QPL

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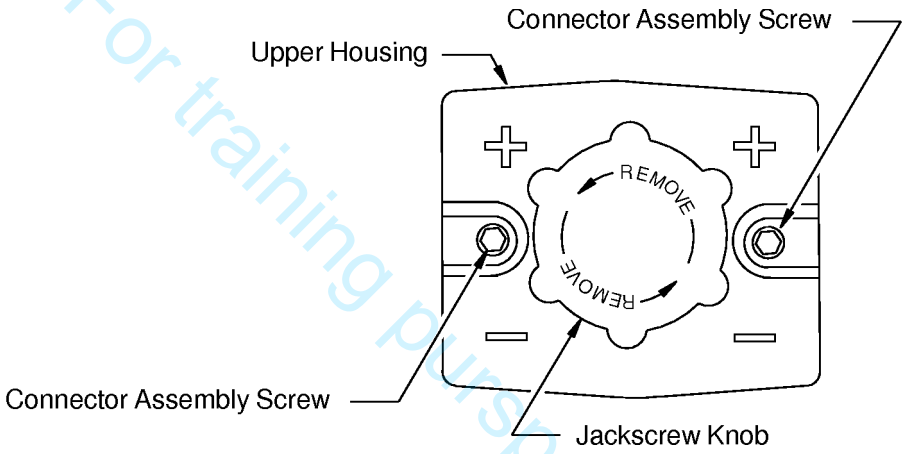
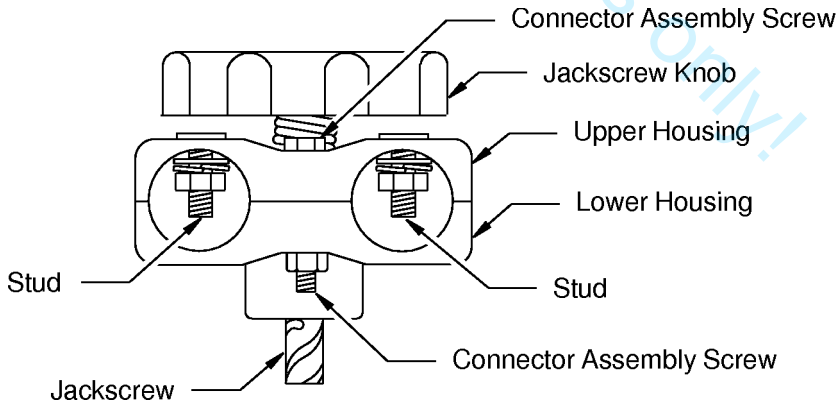


MS25182-2 CONNECTOR TOP VIEW
Figure 1



MS25182-2 CONNECTOR END VIEW
Figure 2

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2. CONNECTOR DISASSEMBLY

A. Separation of the Upper Housing from the Lower Housing

Table 2
NECESSARY TOOLS

Tool	Size (inch)	Supplier
Nut Driver	5/16	An available source

Refer to Figure 1 and Figure 2:

(1) Make a selection of a nut driver from Table 2.

(2) Loosen and remove the two connector assembly screws and their nuts from the upper and lower housings.

Make sure to keep the screws and the nuts for the reassembly of the connector.

(3) Remove the lower housing from the upper housing.

3. CONNECTOR ASSEMBLY

A. Terminal Lug Installation

Table 3
NECESSARY TOOLS

Tool	Size (inch)	Torque Range (inch-pounds)	Supplier
Nut Driver	1/2	-	An available source
Torque tool	1/2	0 to 160	An available source

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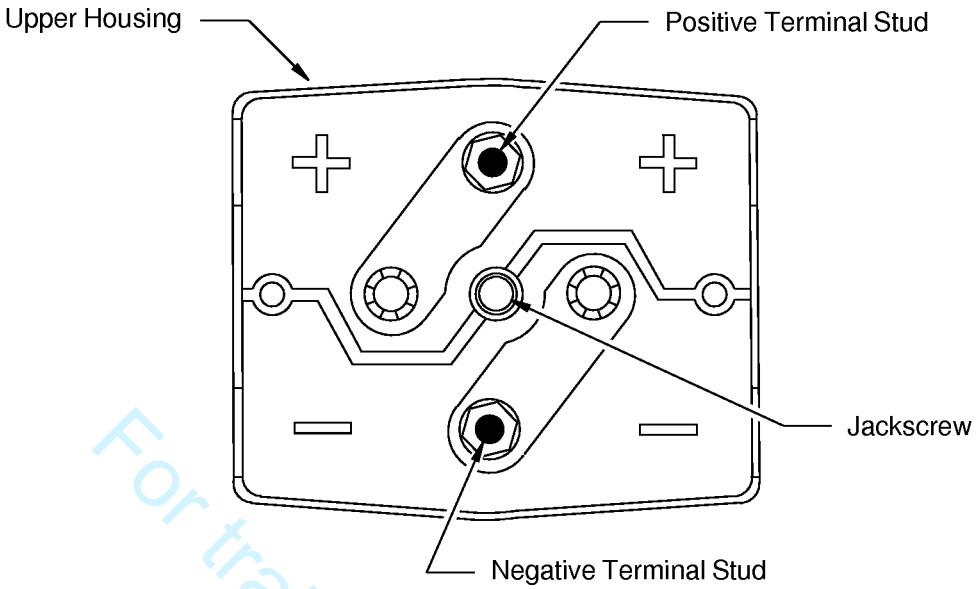
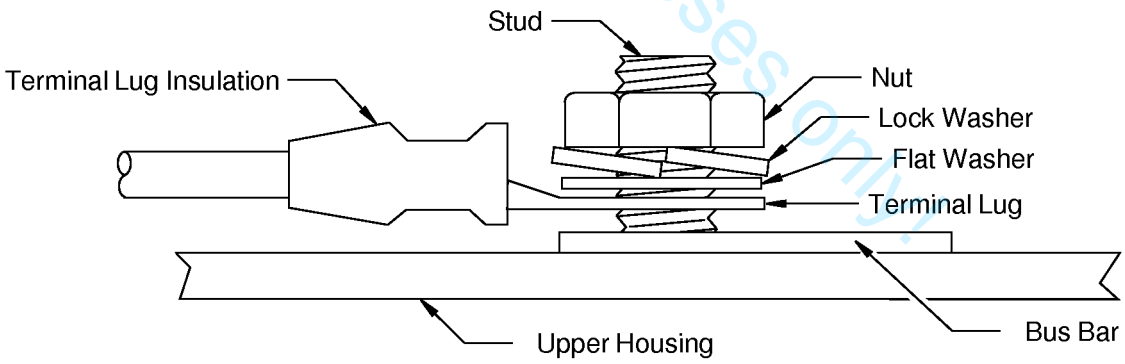
ASSEMBLY OF MS25182 BATTERY CONNECTORS



INNER VIEW OF THE UPPER HOUSING
Figure 3

Refer to Figure 3:

(1) On the inner side of the upper housing, remove the nuts and washers from the studs.
(2) Put each terminal lug on the applicable stud.
(3) Put the washers on each stud. Refer to Figure 4.
(4) Engage the threads of each nut with each stud. Refer to Figure 4.



TERMINAL LUG INSTALLATION
Figure 4

(5) Make a selection of a torque tool from Table 3.
(6) Torque each nut 135 inch-pounds to 155 inch-pounds.

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B. Connector Body Assembly

Table 4
NECESSARY TOOLS

Tool	Size (inch)	Torque Range (inch-pounds)	Supplier
Nut Driver	5/16	-	An available source
Torque tool	5/16	0 to 40	An available source

(1) Put the lower housing on the upper housing.

(2) If the edges of the upper housing and the lower housing do not touch on all sides:

(a) Pull the lower housing from the upper housing.

(b) Turn the lower housing 180 degrees on the axis of the jackscrew.

(c) Put the lower housing against the upper housing.

Make sure that the edges of the upper and lower housings touch on all sides of the connector.

(3) Put the connector assembly screws into their holes on the upper housing.

(4) Engage the threads of the connector assembly screws and nuts. Refer to Figure 1 and Figure 2. Make sure that the heads of the screws are on the upper housing.

(5) Torque each screw 30 inch-pounds ±2 inch-pounds.

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ITT CANNON CA()KR FIREWALL CONNECTORS

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	B.	Contact Part Numbers	1
	C.	Crimp Barrel Adapter Part Numbers	1
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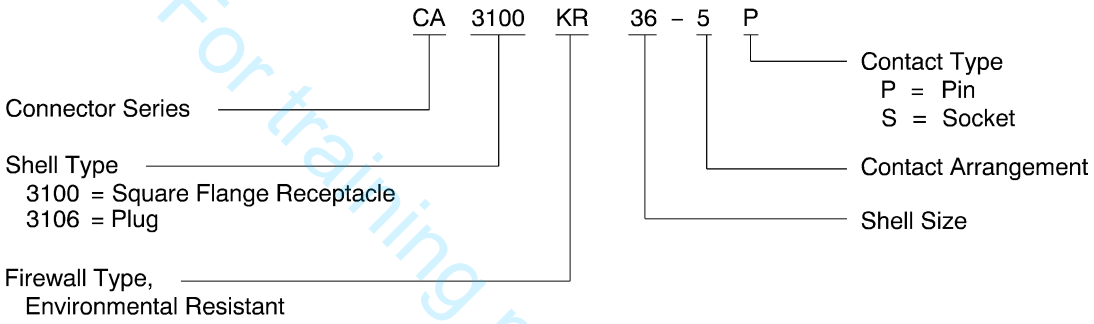
ITT CANNON CA()KR FIREWALL CONNECTORS

1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

Table 1
FIREWALL CONNECTOR PART NUMBERS

Firewall Connector		Supplier
Part Number	Type	
CA3100KR()	Receptacle	ITT Cannon
CA3106KR()	Plug	ITT Cannon



ITT CANNON FIREWALL CONNECTOR PART NUMBER STRUCTURE
Figure 1

B. Contact Part Numbers

Table 2
CONTACT PART NUMBERS

Contact	Type	Size	Supplier
030-1734-000	Pin	1/0	ITT Cannon
031-0975-000	Socket	1/0	ITT Cannon

C. Crimp Barrel Adapter Part Numbers

Table 3
CRIMP BARREL ADAPTER PART NUMBERS

Wire Size (AWG)	Contact Size	Adapter	
		Part Number	Supplier
2	1/0	252-1230-000	ITT Cannon

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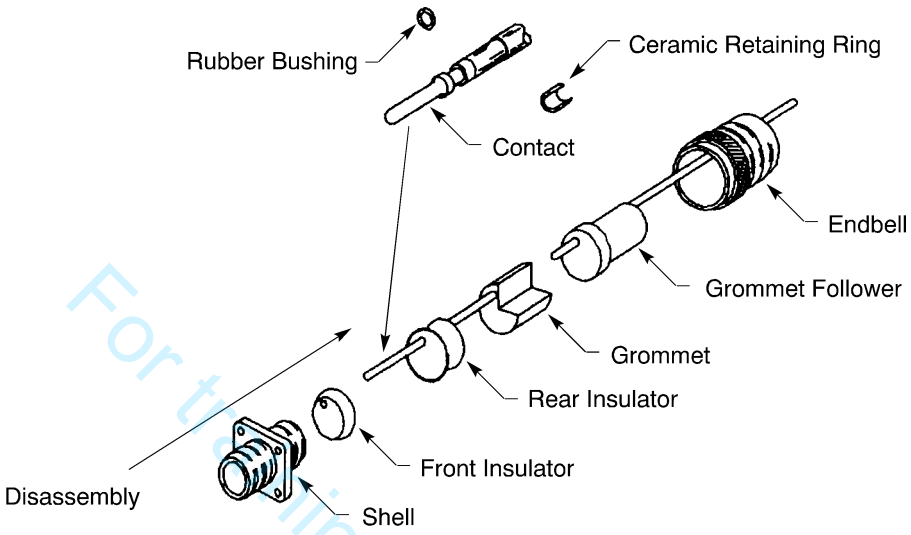
2. CONNECTOR DISASSEMBLY

A. Contact Removal



CA-KR FIREWALL CONNECTOR DISASSEMBLY
Figure 2

(1) Loosen the cable clamp.

(2) Unscrew the endbell.

(3) Move the endbell and grommet follower back over the wires and, at the same time, push the insert assembly out of the shell. Refer to Figure 2.

NOTE: The endbell holds these parts in the connector shell:

- Grommet Follower
- Grommet
- Rear Insulator
- Front Insulator.

(4) Remove the front insulator from the rear insulator.

NOTE: The front and the rear insulators hold the contacts.

(5) Pull the contacts forward from the rear insulator.

(6) Remove the ceramic retaining ring from the contact:

(a) Move the ring back against the silicone bushing.

(b) Pull the ring free when it is over the small diameter of the contact.

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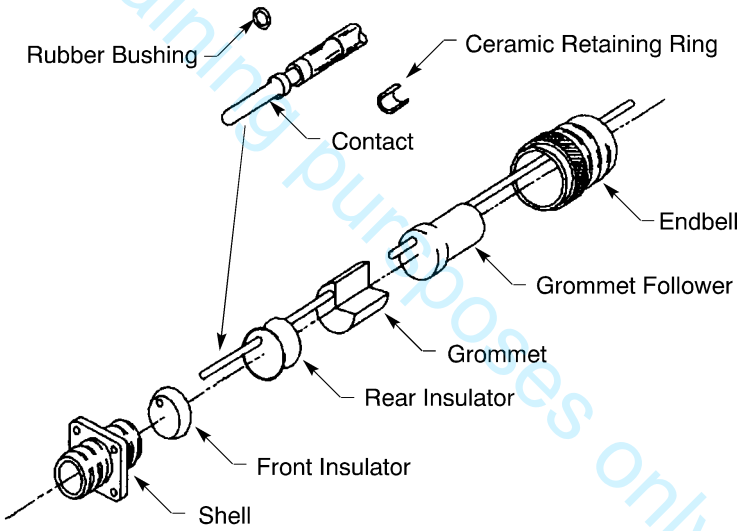
(7) Pull the wired contact through these components:
- The rear insulator
- The grommet
- The grommet follower.

3. CONNECTOR ASSEMBLY

A. Contact Assembly

Table 4
CONTACT CRIMP TOOLS

Contact Size	Crimp Tool			
	Basic Unit	Die	Locator	Supplier
1/0	13642	11738	-	Thomas & Betts
	CBT600B	CCH-0-1	CCHP-8-6	ITT Cannon



CANNON CA-KR FIREWALL1 CONNECTOR ASSEMBLY
Figure 3

(1) Put the cable clamp, the wire separator, the endbell, and the grommet follower on the wires.

(2) Put the wires through the grommet and rear insulator.
Make sure the length is sufficient to allow the insulation removal and the crimp operations.

(3) Remove a sufficient length of the wire insulation.
Make sure that:
- The edge of the insulation is against the contact
- The conductor is visible in the inspection hole.

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

(5) For AWG 2 wire:

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(a) Put a 2-1/2 inch length of heat shrinkable sleeve over each wire.

(b) Put the conductor into a crimp barrel adapter. Refer to Table 3.

(c) Put the adapter and the conductor into the crimp barrel of the contact.

(6) Crimp the contact.

(7) For AWG 2 wire:

(a) Move the sleeve against the back of the contact.

(b) Shrink the sleeve in position.

B. Connector Assembly

(1) Put the ceramic retaining ring on the small diameter of the contact.

(2) Push the retaining ring forward until the ring is fully installed on the larger diameter of the contact.

(3) Carefully pull each wire through the grommet so that:

- The rear insulator is against the grommet
- The retaining ring on the contact is fully inserted into the rear insulator.

(4) Install the front insulator over the contacts:

(a) Align the keyways in the two insulators.

(b) Move the front insulator evenly over the contacts until it meets the rear insulator.

The front and the rear insulators hold the ceramic retaining rings on the contacts.

Align the slot in the grommet follower with the keyways of the front and the rear insulators.

(5) Move the grommet follower over the grommet.

NOTE: The outer surface of the grommet follower can be lubricated with denatured alcohol to help move the grommet follower over the grommet.

(6) Install the insulators in the shell:

(a) Align the keyways of the insulators with the key of the shell.

(b) Carefully push the assembly into the shell.

(7) Connect the endbell to the shell.

(8) Torque the endbell 90 inch-pounds ±10 inch-pounds.

(9) Move the cable clamp and wire separator forward.

(10) Attach the cable clamp to the endbell.

(11) Put approximately 12 layers of Scotch 61 tape under the clamp saddles.

(12) Tighten the clamp screws.

C. Connector Installation

Table 5
COUPLING RING TORQUE WRENCHES

Part Number	Supplier
ST2580-148B	Boeing

(1) Engage the plug connector threads with the receptacle connector threads.

(2) Tighten the coupling ring with the hand.

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(3) Make a selection of a torque wrench from Table 5.

(4) For the shell size 36 connector, torque the coupling ring 190 inch-pounds ±10 inch-pounds.

(5) Put a lockwire on the coupling ring. Refer to Subject 20-60-07.

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WTDX SERIES HIGH DENSITY RECTANGULAR CONNECTORS

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2.	**CONNECTOR DISASSEMBLY**		**2**
	A.	Contact Removal	2
3.	**CONNECTOR ASSEMBLY**		**3**
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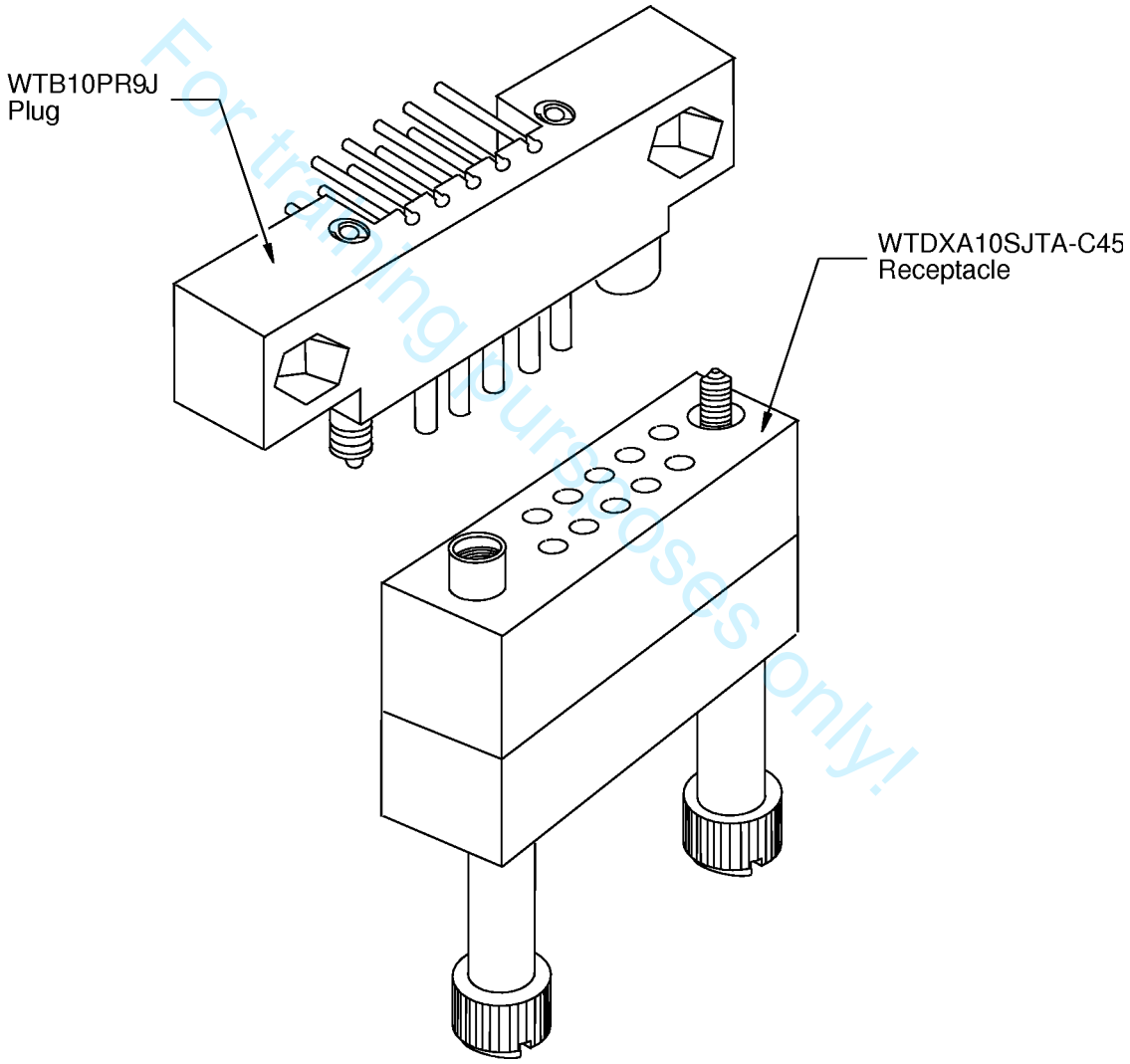
WTDX SERIES HIGH DENSITY RECTANGULAR CONNECTORS

1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

Table 1
CONNECTOR PART NUMBER

Part Number	Type	Contact Information	Supplier
WTDXA10SJTA-C45	Receptacle	10 Rear Release Socket Contacts	Airborn
WTB10PR9J	Plug	10 Rear Release Socket Contacts	Airborn



WTB PLUG AND WTDXA RECEPTACLE
Figure 1

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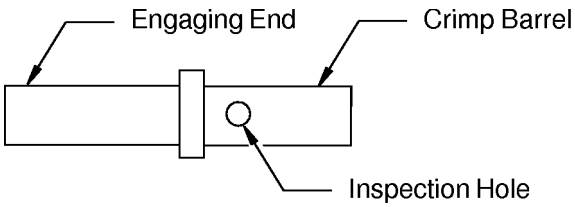
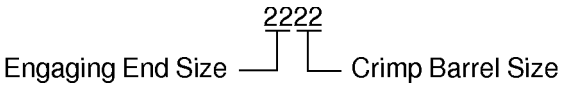
B. Contact Part Numbers



REAR RELEASE SOCKET CONTACT
Figure 2



EXAMPLE OF A CONTACT SIZE
Figure 3

Table 2
CONTACT PART NUMBERS

Contact Size	Contact Engaging End Size	Contact Crimp Barrel Size	Contact Type	Part Number	Supplier
2222	22	22	Socket	WTK222S	Airborn

2. CONNECTOR DISASSEMBLY

A. Contact Removal

Table 3
CONTACT REMOVAL TOOLS

Crimp Barrel Size	Removal Tool		
	Part Number	Color	Supplier
22	M81969/14-01	White	QPL
	TR1883	-	Airborn

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

(2) Examine the removal tool.

Make sure that:

- The tool is not broken
- The tool tip is not bent of damaged
- The tool tip does not have a burr, a nick, or a sharp edge.

(3) Put the contact removal tool on the wire.

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

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

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

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CAUTION: DO NOT USE MORE THAN THE NECESSARY AMOUNT OF FORCE TO PUSH THE REMOVAL 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) Hold the wire against the tool.

(7) Pull the tool and the wire from the contact cavity.
Make sure that the tool and contact cavity stay aligned.

(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) through Step (7) again.

3. CONNECTOR ASSEMBLY

A. Contact Assembly

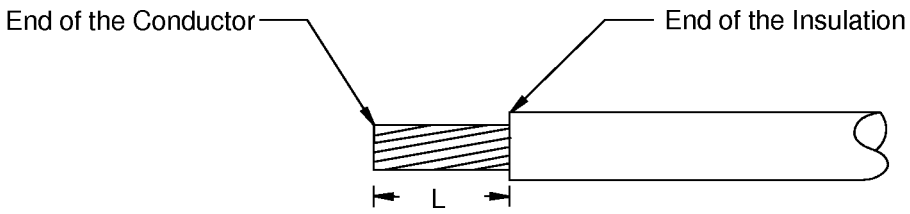
Table 4
INSULATION REMOVAL LENGTH

Wire Size(AWG)	Crimp Barrel Size	Removal Length L (inch)		Special Instructions
		Target	Tolerance	
22	22	0.16	±0.02	-

Table 5
CONTACT CRIMP TOOLS

Wire Size (AWG)	Crimp Barrel Size	Basic Unit			Locator	
		Part Number	Setting	Supplier	Part Number	Supplier
22	22	M22520/2-01	5	QPL	M22520/2-06	QPL

(1) Remove the necessary length of insulation from the end of the wire.
Refer to:
- Table 4
- Figure 4
- Subject 20-00-15 for the procedure to remove the insulation.



INSULATION REMOVAL LENGTH
Figure 4

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

(3) Put the contact in the crimp tool.

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

Make sure that:

- All the strands of the conductor are in the crimp barrel
- The end of the insulation of the wire is in the insulation support of the contact
- The conductor strands can be seen in the inspection hole
- A conductor strand does not come out of the inspection hole.

(5) Crimp the contact.

Make sure that:

- All the strands of the conductor are in the crimp barrel
- The end of the insulation of the wire is in the insulation support of the contact
- The conductor strands can be seen in the inspection hole
- A conductor strand does not come out of the inspection hole.

(6) Examine the contact.

Make sure that:

- All the strands of the conductor are in the crimp barrel
- The end of the insulation of the wire is in the insulation support of the contact
- The strands of the conductor can be seen in the inspection hole
- A conductor strand does not come out of the inspection hole
- The crimp barrel has a full crimp indent
- The crimp barrel around the inspection hole does not have a crack if the crimp indent extends into the inspection hole
- A crack in the crimp barrel cannot be seen without magnification
- The color of the bands can be seen if the color bands are flaked after the crimp operation.

NOTE: A small bend of the crimp barrel is permitted if it does not prevent:

- The insertion of the contact into the contact cavity
- The removal of the contact from the contact cavity.

B. Contact Insertion

Table 6
CONTACT INSERTION TOOLS

Crimp Barrel Size	Insertion Tool		
	Part Number	Color	Supplier
22	M81969/14-01	Green	QPL
	TR1610	-	Airborn

(1) Make a selection of a contact insertion tool from Table 6.

(2) Examine the insertion tool.

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Make sure that:

- The tool is not broken
- The tool tip is not bent or damaged
- The tool tip does not have a burr, a nick, or a sharp edge.

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

(4) At the rear of the connector, align the contact assembly with the contact cavity.

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

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 THE CONTACT RETENTION CLIPS CAN OCCUR.

CAUTION: DO NOT TURN THE TOOL CLOCKWISE OR COUNTERCLOCKWISE WHEN IT IS IN THE CONTACT CAVITY. DAMAGE 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 aligned.

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

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

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

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SGMC SERIES HIGH DENSITY RECTANGULAR CONNECTORS

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SGMC SERIES HIGH DENSITY RECTANGULAR CONNECTORS

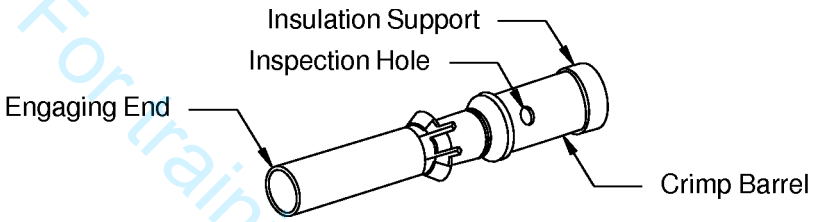
1. PART NUMBERS AND DESCRIPTION

A. Connector Part Numbers

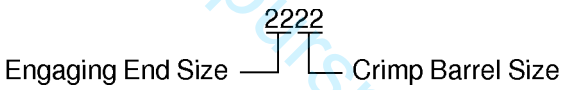
Table 1
CONNECTOR PART NUMBERS

Part Number	Type	Contact Data	Supplier
SGMC20F000000	Receptacle	20 Front Release Socket Contacts	Positronic Industries

B. Contact Part Numbers



SOCKET CONTACT
Figure 1



EXAMPLE OF A CONTACT SIZE
Figure 2

Table 2
CONTACT PART NUMBER

Contact Size	Contact Engaging End Size	Contact Crimp Barrel Size	Contact Type	Part Number	Supplier
2222	22	22	Socket	FC422N2	Positronic Industries

C. Backshell Part Numbers

Table 3
BACKSHELL PART NUMBERS

Part Number	Description	Supplier
SG2000E100J0	Backshell with Strain Relief Clamp	Positronic Industries

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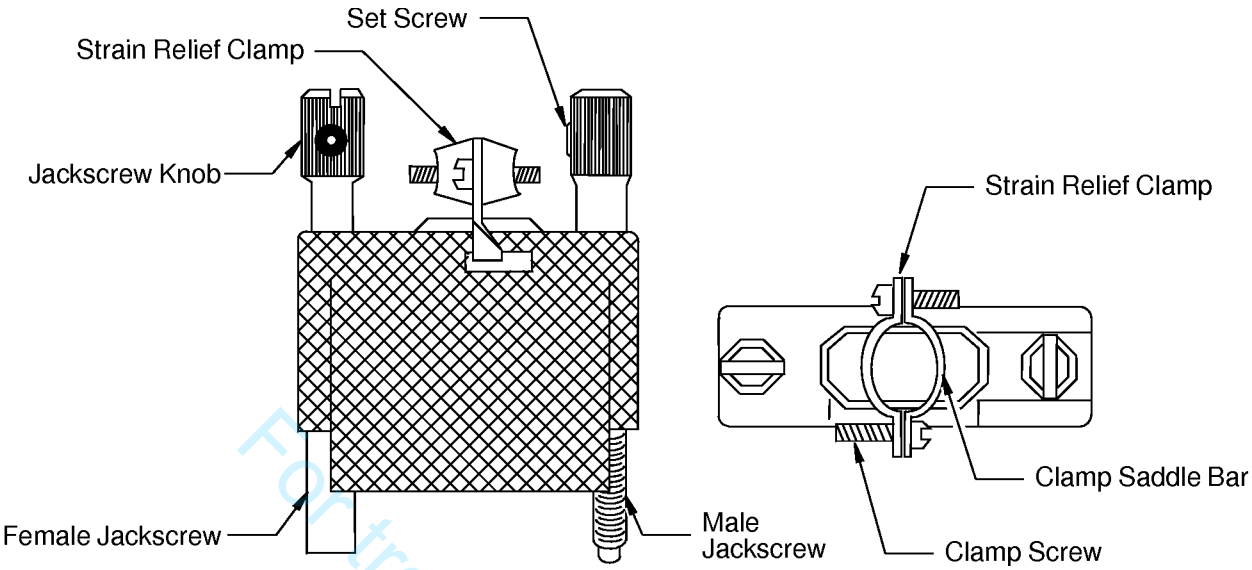

STRAIN RELIEF BACKSHELL
Figure 3

D. Wiring Assembly Components

Table 4
WIRING ASSEMBLY COMPONENTS

Component	Description	Part Number
Tape	Silicone, Type I	A-A-59163

E. Contact Configuration

Figure 4 shows the rear face of the receptacle connector.

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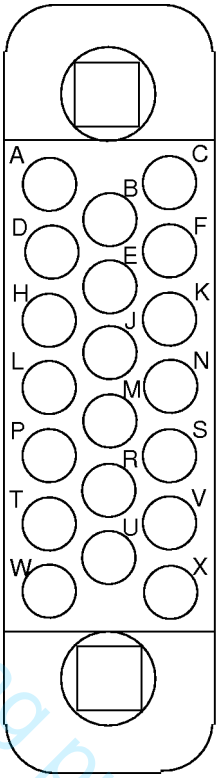

SGMC 20F CONTACT CONFIGURATION
Figure 4

2. CONNECTOR DISASSEMBLY

A. Backshell Removal

Table 5
BACKSHELL REMOVAL TOOLS

Tool	Screw Size	Supplier
Screwdriver, Flat Head	2	An available source
Wrench, Hex	2	An available source

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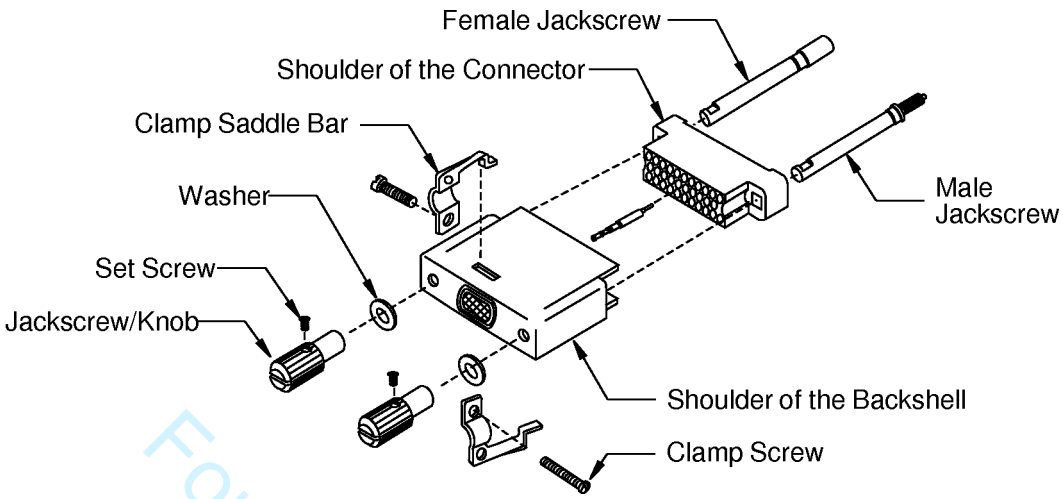

BACKSHELL REMOVAL
Figure 5

Refer to Figure 5:

(1) Make a selection of these tools from Table 5:
- A screwdriver
- A hex wrench.

(2) Remove the clamp screws from the strain relief clamp.

(3) Remove the clamp saddle bars from the backshell.

(4) Loosen the set screw in each jackscrew knob.

(5) Remove the jackscrew knobs and the washers from the jackscrews.

(6) Remove the jackscrew from the backshell and the connector.

(7) Push the backshell rearward away from the connector insert.

B. Contact Removal

Table 6
CONTACT REMOVAL TOOLS

Crimp Barrel Size	Removal Tool	
	Part Number	Supplier
22	9081-1	Positronic Industries
	M81969/20-02	QPL

(1) Make a selection of a contact removal tool from Table 6.

(2) Examine the removal tool.

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Make sure that:

- The tool is not broken
- The tool tip is not bent of damaged
- The tool tip does not have a burr, a nick, or a sharp edge.

(3) Put the contact removal tool on the wire.

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

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

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

CAUTION: DO NOT USE MORE THAN THE NECESSARY AMOUNT OF FORCE TO PUSH THE REMOVAL 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) Hold the wire against the tool.

(7) Pull the tool and the wire from the contact cavity.

Make sure that the tool and contact cavity stay aligned.

(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) through Step (7) again.

3. CONNECTOR ASSEMBLY

A. Cable Preparation

(1) If the backshell is attached to the connector, remove it. Refer to Paragraph 2.A..

(2) Put the backshell on the wires and cables of the wire harness.

(3) Move the backshell away from the end of the wire harness.

B. Contact Assembly

Table 7
INSULATION REMOVAL LENGTH

Wire Size (AWG)	Crimp Barrel Size	Removal Length L (inch)	
		Target	Tolerance
26	22	0.13	±0.02
24	22	0.13	±0.02
22	22	0.13	±0.02

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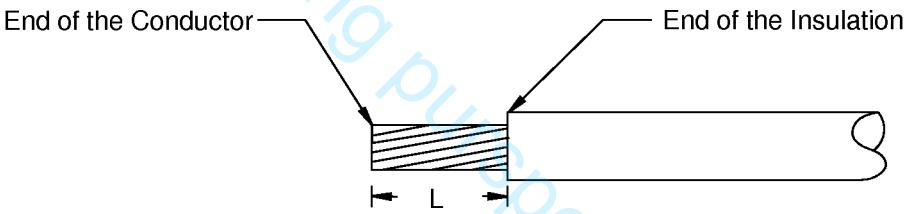
Table 8
CONTACT CRIMP TOOLS

Wire Size (AWG)	Crimp Barrel Size	Basic Unit		Locator	
		Part Number	Setting	Part Number	Supplier
26	22	M22520/2-01	4	K280	Daniels
				9502-13	Positronic Industries
24	22	M22520/2-01	5	K280	Daniels
				9502-13	Positronic Industries
22	22	M22520/2-01	6	K280	Daniels
				9502-13	Positronic Industries

(1) Remove the necessary length of insulation from the end of the wire.
Refer to:
- Table 7
- Figure 6
- Subject 20-00-15 for the procedure to remove the insulation.



INSULATION REMOVAL LENGTH
Figure 6

(2) Make a selection of a crimp tool from Table 8.
(3) Put the contact in the crimp tool.
(4) Put the end of the wire in the crimp barrel of the contact.
Make sure that:
- All the strands of the conductor are in the crimp barrel
- The end of the insulation of the wire is in the insulation support of the contact
- The conductor strands can be seen in the inspection hole
- A conductor strand does not come out of the inspection hole.

(5) Crimp the contact.
Make sure that:
- All the strands of the conductor are in the crimp barrel
- The end of the insulation of the wire is in the insulation support of the contact
- The conductor strands can be seen in the inspection hole
- A conductor strand does not come out of the inspection hole.

(6) Examine the contact. Refer to Figure 7, Figure 8, and Figure 9.

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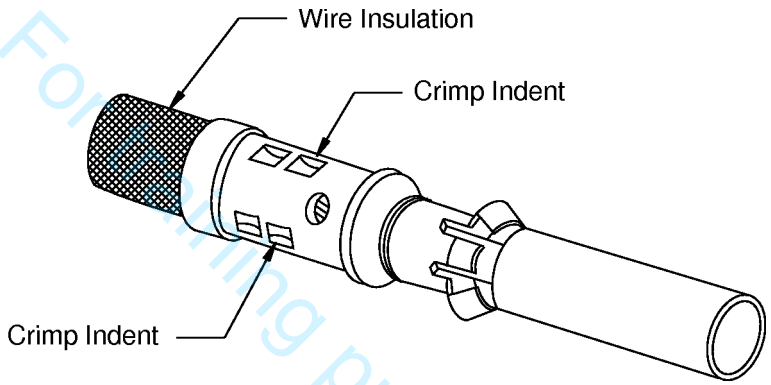
Make sure that:

- All the strands of the conductor are in the crimp barrel
- The end of the insulation of the wire is in the insulation support of the contact
- The strands of the conductor can be seen in the inspection hole
- A conductor strand does not come out of the inspection hole
- The crimp barrel has a full crimp indent
- The crimp barrel around the inspection hole does not have a crack if the crimp indent extends into the inspection hole
- A crack in the crimp barrel cannot be seen without magnification
- The color of the bands can be seen if the color bands are flaked after the crimp operation.



POSITION OF THE CONTACT CRIMP INDENTS AND THE WIRE INSULATION
Figure 7

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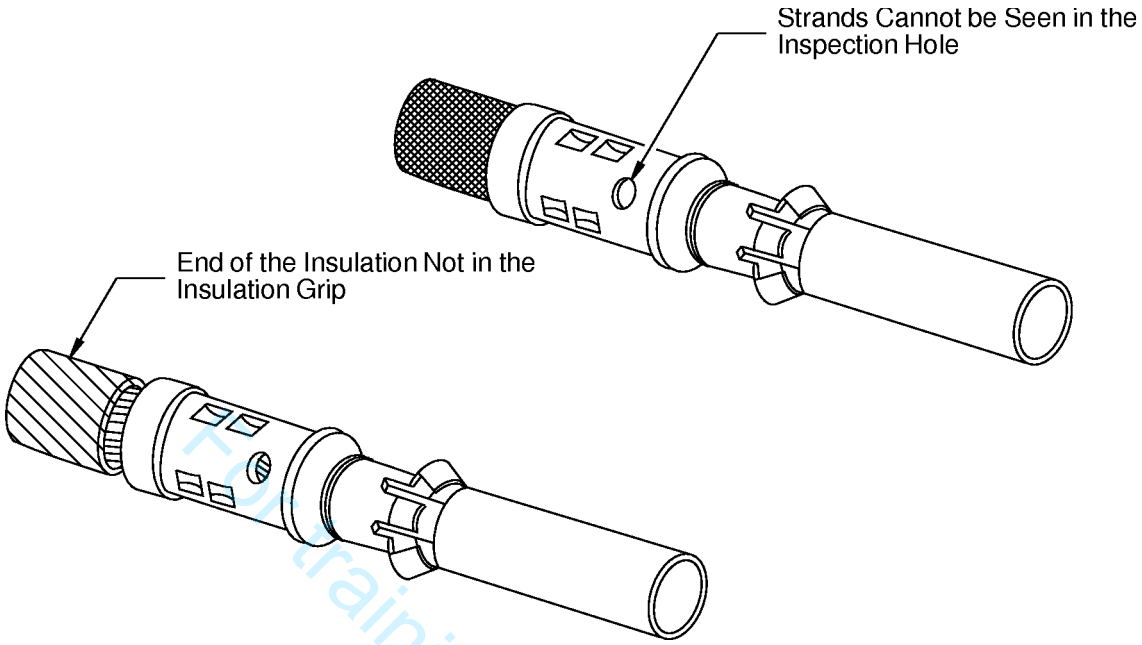
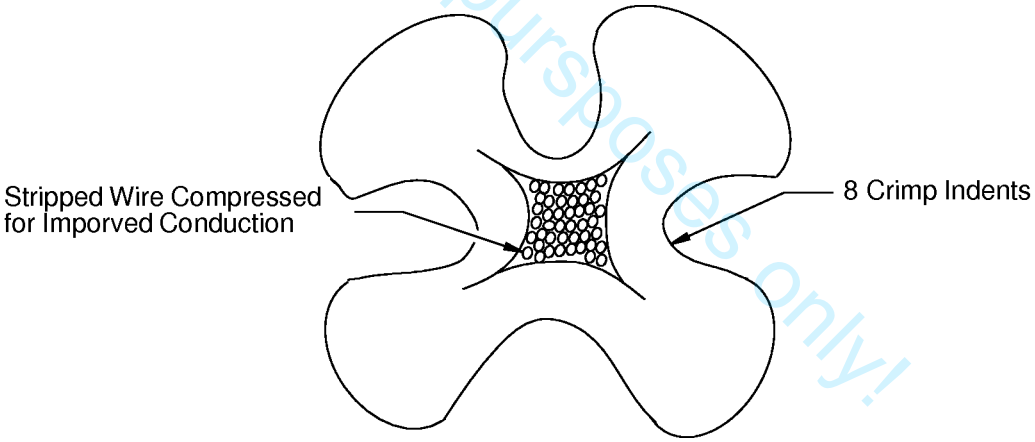


INCORRECT POSITION OF THE WIRE
Figure 8



CROSS SECTION OF CORRECTLY CRIMPED CONTACT
Figure 9

NOTE: A small bend of the crimp barrel is permitted if it does not prevent:

- The insertion of the contact into the contact cavity
- The removal of the contact from the contact cavity.

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C. Contact Insertion

Table 9
CONTACT INSERTION TOOLS

Crimp Barrel Size	Insertion Tool	
	Part Number	Supplier
22	9099-1	Positronic Industries
	M81969/18-02	QPL

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

(2) Examine the insertion tool.

Make sure that:

- The tool is not broken
- The tool tip is not bent or damaged
- The tool tip does not have a burr, a nick, or a sharp edge.

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

(4) Align the contact assembly with the contact cavity.

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

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 THE CONTACT RETENTION CLIPS CAN OCCUR.

CAUTION: DO NOT TURN THE TOOL CLOCKWISE OR COUNTERCLOCKWISE WHEN IT IS IN THE CONTACT CAVITY. DAMAGE 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 aligned.

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

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

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

D. Backshell Installation

Table 10
BACKSHELL REMOVAL TOOLS

Tool	Screw Size	Supplier
Screwdriver, Flat Head	2	An available source
Wrench, Hex	2	an available source

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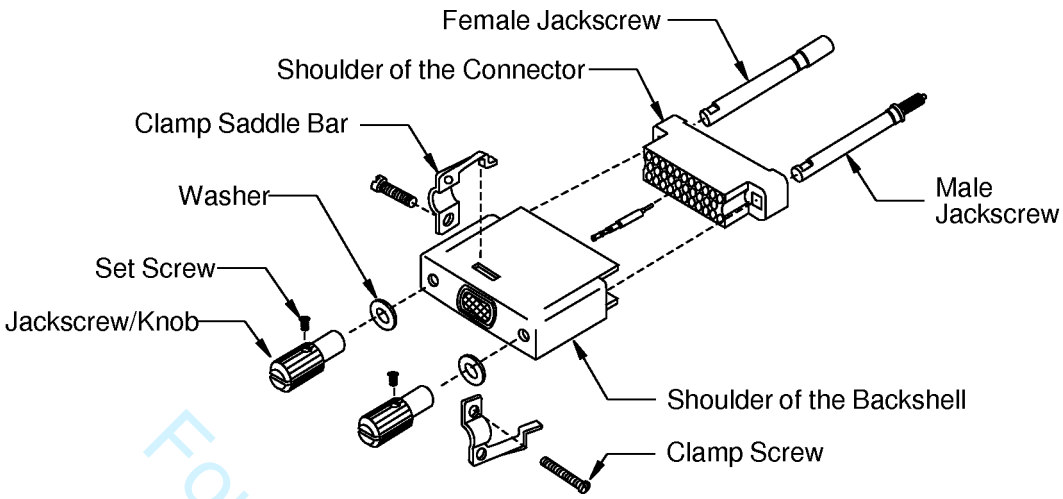

BACKSHELL INSTALLATION
Figure 10

Refer to Figure 10:

(1) Make a selection of these tools from Table 10:
- A screwdriver
- A hex wrench.

(2) Push the backshell forward until the front shoulder of the backshell is against the shoulder of the connector.

(3) At the engaging end of the connector, install the applicable jackscrew in each jackscrew installation hole in the connector.

(4) At the rear of the backshell, put a washer and a jackscrew knob on the rear end of each jackscrew.

(5) Torque the each set screw 2.0 inch-pounds ±0.5 inch-pound.

(6) Wind a minimum of two layers of the specified Type 1 silicone tape on the wire harness at the location of the saddle bars of the strain relief clamp.

(7) Put the saddle bars of the strain relief clamp together.

(8) Install each strain relief clamp screw.

(9) Torque each clamp screw 2.0 inch-pounds ± 0.5 inch-pound.

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