ASSEMBLY OF INTEGRATED WIRING TERMINATION SYSTEMS

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ASSEMBLY OF INTEGRATED WIRING TERMINATION SYSTEMS

1. PART NUMBERS AND DESCRIPTION

A. Assembly Part Numbers

Table 1
ASSEMBLIES THAT USE INTEGRATED WIRING TERMINATION SYSTEMS

Part Number	Description	Supplier
10648()-()	Lighted Pushbutton Switch	Jay-El
285T0112	Autobright Sensor Unit Indicator	Boeing
432-632-1089-00()	Lighted Pushbutton Switch Indicator	Korry Electronics
433-673-()-()	Lighted Pushbutton Switch Indicator	Korry Electronics
434-674-()-()	Lighted Indicator	Korry Electronics
592584-()	Disconnectable Wire Splice	AMP
60B40122-()	Lighted Pushbutton Switch Indicator	Boeing
851-30768-()	Lighted Pushbutton Switch Indicator	MSC
851-30768-()	Lighted Pushbutton Switch Indicator	Eaton
851-35100-()	Lighted Pushbutton Switch Indicator	MSC
851-35100-()	Lighted Pushbutton Switch Indicator	Eaton
AC30-()	Switch	Janco
AC45-()	Switch	Janco
AC60-()	Switch	Janco
AC90-()	Switch	Janco
BACC18AF	Circuit Breaker, Remote Control	Boeing
M27724-23	Toggle Switch	QPL
M27724-24	Toggle Switch	QPL
M81714/11-20	Disconnectable Wire Splice	QPL
MWS()	Disconnectable Wire Splice	AMP
S231T290-()	Lighted Pushbutton Switch Indicator	Boeing
S231T300-()	Lighted Indicator	Boeing
S231T301-()	Lighted Indicator	Boeing
S283T022-()	Switch	Boeing

ASSEMBLY OF INTEGRATED WIRING TERMINATION SYSTEMS

Table 2
ALTERNATIVE PART NUMBERS

Specified Component		Alternative Component	
Part Number	**Supplier**	**Part Number**	**Supplier**
432-632-1089-001	Korry Electronics	432-632-1089-005	Korry Electronics
432-632-1089-002	Korry Electronics	432-632-1089-003	Korry Electronics
433-673-1004-40()	Korry Electronics	433-673-1004-42()	Korry Electronics
433-673-1004-41()	Korry Electronics	433-673-1004-43()	Korry Electronics
434-674-1005-1()	Korry Electronics	434-674-1031-2()	Korry Electronics
851-30768-2()	MSC	851-30768-2()	Eaton
851-30768-3()	MSC	851-30768-3()	Eaton
851-35100-50()	MSC	851-35100-50()	Eaton
S231T290-40()	Boeing	S231T290-42()	Boeing
S231T290-41()	Boeing	S231T290-43()	Boeing
S231T300-1()	Boeing	S231T300-2()	Boeing

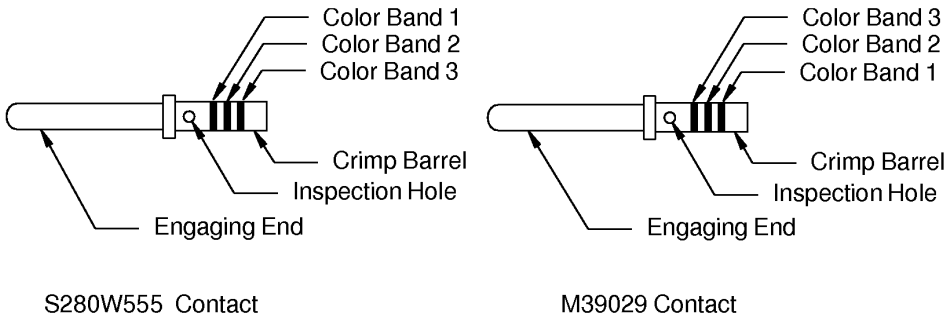
Table 3
SUPPLIER PART NUMBERS FOR BOEING STANDARDS

Boeing Standard Number	Supplier Part Number	Supplier
S231T290-1()	433-673-1001-1()	Korry Electronics
S231T300-10()	434-674-1005-10()	Korry Electronics
S231T301-11()	434-674-1007-10()	Korry Electronics
S231T290-2()	851-30768-2()	Eaton
S231T290-3()	851-30768-3()	Eaton
S231T290-41()	433-673-1004-43()	Korry Electronics
S231T290-50()	433-673-1004-42()	Korry Electronics
S231T300-10()	434-674-1031-20()	Korry Electronics
S231T300-11()	434-674-1031-21()	Korry Electronics
S231T300-11()	434-674-1031-11()	Korry Electronics
S231T300-12()	434-674-1031-12()	Korry Electronics
S231T300-12()	434-674-1031-22()	Korry Electronics
S231T300-20()	434-674-1031-20()	Korry Electronics
S231T300-22()	434-674-1031-22()	Korry Electronics
S231T300-23()	434-674-1031-23()	Korry Electronics
S231T301-12()	434-674-1009-12()	Korry Electronics
S231T301-21()	434-674-1032-22()	Korry Electronics
S231T301-22()	434-674-1033-20()	Korry Electronics
S231T290-40()	433-673-1004-42()	Korry Electronics

Table 3 SUPPLIER PART NUMBERS FOR BOEING STANDARDS (Continued)

Boeing Standard Number	Supplier Part Number	Supplier
S231T290-2()	851-30768-2()	MSC
S231T290-3()	851-30768-3()	MSC
S283T022-()	AC30-()	JANCO
S231T290-42()	433-673-1004-42()	Korry Electronics
S231T290-43()	433-673-1004-43()	Korry Electronics
S231T290-50()	851-35100-50()	Eaton
S231T290-50()	851-35100-50()	MSC

B. Contact Part Numbers



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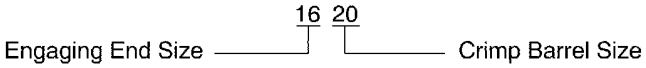
LOCATION OF THE COLOR BANDS ON THE S280W555 AND M39029 PIN CONTACTS
Figure 1



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EXAMPLE OF A CONTACT SIZE
Figure 2

Table 4
CONTACT PART NUMBERS

Contact Size	Part Number	Color Code		Supplier
		Band	Color	
1622	M39029/1-100	1	Brown	QPL
		2	Black	
		3	Black	
1620	M39029/1-101	1	Brown	QPL
		2	Black	
		3	Brown	
	M39029/1-16-20	1	Brown	QPL
		2	Black	
		3	Brown	
	S280W555-920	1	Red	Tri Star
		2	Red	
		3	Red	
1416	M39029/1-102	1	Brown	QPL
		2	Black	
		3	Red	
	M39029/1-14-16	1	Brown	QPL
		2	Black	
		3	Red	
	S280W555-916	1	Blue	Tri Star
		2	Blue	
		3	Blue	

Table 5
ALTERNATIVE CONTACT PART NUMBERS

Specified Contact		Alternative Contact	
Part Number	Supplier	Part Number	Supplier
M39029/1-16-20	QPL	M39029/1-101	QPL
M39029/1-14-16	QPL	M39029/1-102	QPL

C. Seal Plug Part Numbers

Table 6
SEAL PLUG PART NUMBERS

Crimp Barrel Size	Seal Plug	Supplier
22	MS27488-22	QPL
	MS27488-22-1	QPL
20	MS27488-20	QPL
	MS27488-20-1	QPL
16	M83723/28-16	QPL
	MS27488-16	QPL
	MS27488-16-1	QPL
	NAS1668-3	QPL

2. TERMINATION SYSTEM DISASSEMBLY

A. Contact Removal

Table 7
CONTACT REMOVAL TOOLS

Contact Crimp Barrel Size	Removal Tool	
	Part Number	Color
22	M81969/14-11	White
	ST2220-3-29	-
20	M81969/14-11	White
	ST2220-3-29	-
16	M81969/14-03	White
	M83723/31-16	-
	NAS1664-16	-
	ST2220-3-7	-

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

(2) Put the end of the removal tool on the wire.

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

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

(4) Pull the wire and the tool out of the contact cavity at the same time.

(5) If the contact does come out of the contact cavity:

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

(b) Turn the tool 90 degrees.

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

B. Seal Plug Removal

(1) Make a selection of a pair of needle nose pliers that has:

- Jaws with smooth surfaces
- No sharp edges.

CAUTION: ROUGH SURFACES OR SHARP EDGES CAN CAUSE DAMAGE TO THE REAR GROMMET.

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

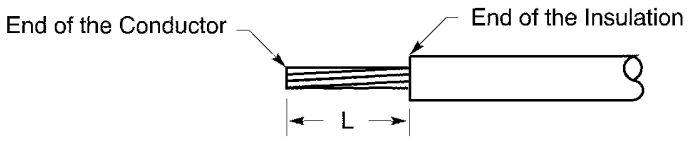
(3) Pull the seal plug straight out of the rear grommet.

3. TERMINATION SYSTEM ASSEMBLY

A. Wire Preparation

Table 8
INSULATION REMOVAL LENGTH

Wire Size (AWG)	Contact Crimp Barrel Size	Removal Length L (inch)		Special Instructions
		Minimum	Maximum	
24	22	0.12	0.15	-
	20	0.12	0.15	-
22	22	0.12	0.15	-
	20	0.12	0.15	-
	16	0.24	0.30	Fold the conductor back
20	20	0.12	0.15	-
	16	0.12	0.15	-
18	16	0.21	0.24	-
16	16	0.21	0.24	-



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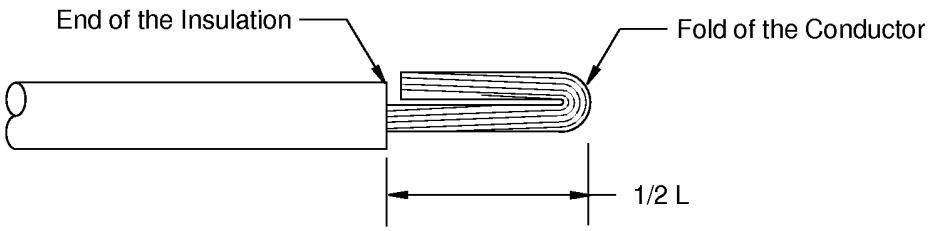
WIRE PREPARATION
Figure 3

(1) Remove the necessary length of insulation from the end of the wire.
Refer to:
- Figure 3
- Table 8 for the insulation removal length
- Subject 20-00-15 for the insulation removal procedures.

(2) If it is specified, fold the conductor back. Refer to Figure 4.



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CONDUCTOR FOLDED BACK
Figure 4

B. Contact Assembly

Table 9
CONTACT CRIMP TOOLS

Wire Size (AWG)	Contact Crimp Barrel Size	Crimp Tool			
		Basic Unit		Locator	
		Part Number	Setting	Part Number	Color
24	22	M22520/2-01	3	M22520/2-11	-
		ST2220-10	-	ST2220-10-3	-
		WA22	3	M22520/2-11	-
		WA22LC	3	M22520/2-11	-
	20	M22520/1-01	2	M22520/1-02	Red
		M22520/2-01	5	M22520/2-11	-
		ST2220-1-Y	-	ST2220-1-12	-
		WA22	5	M22520/2-11	-
		WA22LC	5	M22520/2-11	-
		WA27F	2	M22520/1-02	Red

Table 9 CONTACT CRIMP TOOLS (Continued)

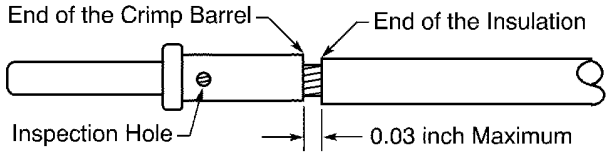
Wire Size (AWG)	Contact Crimp Barrel Size	Crimp Tool			
		Basic Unit		Locator	
		Part Number	Setting	Part Number	Color
22	22	M22520/2-01	4	M22520/2-11	-
		ST2220-10	-	ST2220-10-3	-
		WA22	4	M22520/2-11	-
		WA22LC	4	M22520/2-11	-
	20	M22520/1-01	3	M22520/1-02	Red
		M22520/2-01	6	M22520/2-11	-
		ST2220-10	-	ST2220-10-8	-
		WA22	6	M22520/2-11	-
		WA22LC	6	M22520/2-11	-
		WA27F	3	M22520/1-02	Red
	16	M22520/1-01	4	M22520/1-02	Blue
		MS3191-4	-	MS3191-3T	-
20	20	M22520/1-01	4	M22520/1-02	Red
		M22520/2-01	7	M22520/2-11	-
		ST2220-1	-	ST2220-1-1	-
		WA22	7	M22520/2-11	-
		WA22LC	7	M22520/2-11	-
		WA27F	4	M22520/1-02	Red
	16	M22520/1-01	4	M22520/1-02	Blue
		ST2220-1	-	ST2220-1-2	-
		WA27F	4	M22520/1-02	Blue
		M22520/1-01	4	M22520/1-02	Blue
		MS3191-4	-	MS3191-3T	-
		ST2220-1	-	ST2220-1-2	-
		WA27F	4	M22520/1-02	Blue
18	16	M22520/1-01	5	M22520/1-02	Blue
		MS3191-4	-	MS3191-3T	-
		ST2220-1	-	ST2220-1-2	-
		WA27F	5	M22520/1-02	Blue
16	16	M22520/1-01	6	M22520/1-02	Blue
		MS3191-4	-	MS3191-3T	-
		ST2220-1	-	ST2220-1-2	-
		WA27F	6	M22520/1-02	Blue

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

(2) Put the end the wire into the crimp barrel of the contact. Refer to Figure 5.

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.



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POSITION OF THE WIRE IN THE CRIMP BARREL
Figure 5

(3) Crimp the contact.

(4) Examine the contact assembly for these types of damage:

- A broken strand of the conductor
- A strand of the conductor on which the base metal can be seen
- A crack in the crimp barrel of the contact.

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

C. Contact Insertion

Table 10
CONTACT INSERTION TOOLS

Crimp Barrel Size	Insertion Tool	
	Part Number	Color
22	M81969/14-11	Red
	ST2220-2-30	-
20	DAK83-20	-
	M81969/14-11	Red
	ST2220-2-28	-

Table 10 CONTACT INSERTION TOOLS (Continued)

Crimp Barrel Size	Insertion Tool	
	Part Number	Color
16	DAK83-16	-
	M81969/14-03	Blue
	M83723/31-16	-
	NAS1664-16	-
	ST2220-2-4	-

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

CAUTION: DO NOT USE A TOOL WITH A TIP THAT:

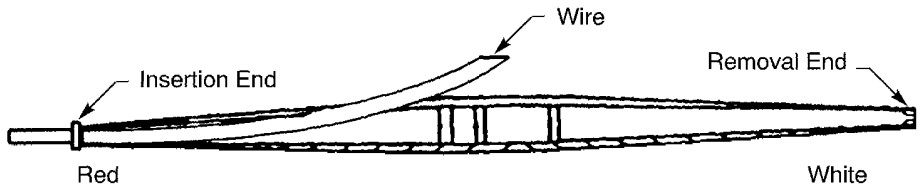
- IS BENT
- IS FLARED
- IS BROKEN
- HAS A CRACK.

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

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

(2) Put the contact assembly in the insertion tool. Refer to Figure 6.

CAUTION: AN UNWIRED CONTACT MUST NOT BE INSTALLED IN A MODULE. IT CANNOT BE REMOVED.



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POSITION OF THE CONTACT IN THE INSERTION TOOL
Figure 6

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

(4) Carefully push the tool into the contact cavity until it stops.
Make sure that the tool and the contact cavity stay axially aligned.

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

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

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

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

(6) Lightly pull the wire to make sure that the contact is locked in position.

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

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

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

(a) Pull the contact out of the cavity.

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

D. Seal Plug Installation

(1) Install seal plugs in all empty contact cavities.

Refer to Subject 20-60-08.

NOTE: Nylon or teflon rods can be used in place of MS() seal plugs.

4. APPROVED TOOL SUPPLIERS

A. Contact Insertion and Removal Tools

Table 11
INSERTION AND REMOVAL TOOL SUPPLIERS

Insertion and Removal Tool	Suppliers
DAK83-16	Daniels
DAK83-20	Daniels
M81969/14-03	QPL
M81969/14-11	QPL
M83723/31-16	QPL
NAS1664-16	QPL
ST2220-2-4	Boeing
ST2220-2-28	Boeing
ST2220-2-30	Boeing
ST2220-3-7	Boeing

Table 11 INSERTION AND REMOVAL TOOL SUPPLIERS (Continued)

Insertion and Removal Tool	Suppliers
ST2220-3-29	Boeing

B. Contact Crimp Tools

Table 12
CRIMP TOOL SUPPLIERS

Crimp Tool	Supplier
M22520/1-01	QPL
M22520/1-02	QPL
M22520/2-01	QPL
M22520/2-11	QPL
MS3191-3T	QPL
MS3191-4	QPL
ST2220-1	Boeing
ST2220-1-1	Boeing
ST2220-1-2	Boeing
ST2220-1-12	Boeing
ST2220-1-Y	Boeing
ST2220-10	Boeing
ST2220-10-3	Boeing
ST2220-10-8	Boeing
WA22	Daniels
WA22LC	Daniels
WA27F	Daniels

ASSEMBLY OF THE M81714() SERIES I TERMINAL JUNCTION SYSTEM

TABLE OF CONTENTS

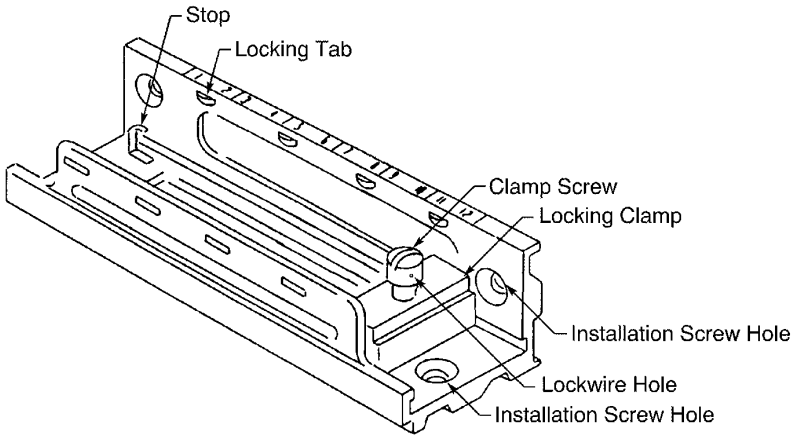
ASSEMBLY OF THE M81714() SERIES I TERMINAL JUNCTION SYSTEM

1. PART NUMBERS AND DESCRIPTION

A. Terminal Junction System Description

The terminal junction system has these components:

- Feedback terminal modules
- Feedthru terminal modules
- Tracks for feedback modules
- Tracks for feedthru modules
- Brackets for feedback modules.



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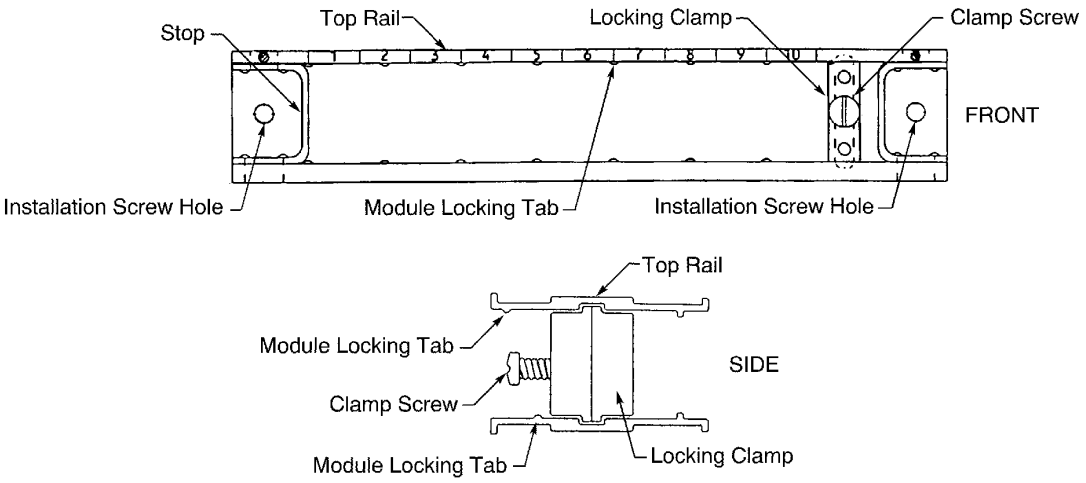
M81714/5 AND M81714/16 FEEDBACK TERMINAL MODULE TRACKS
Figure 1



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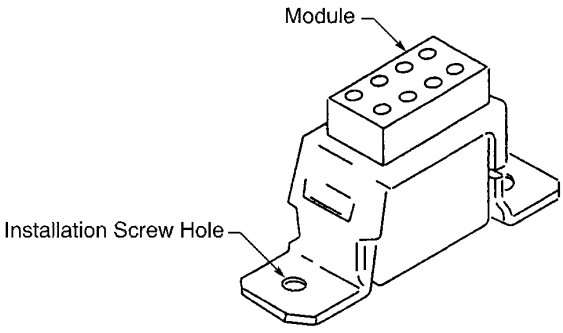
M81714/10 AND M81714/14 FEEDTHRU TERMINAL MODULE TRACKS
Figure 2



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M81714/29 TERMINAL MODULE BRACKET
Figure 3

ASSEMBLY OF THE M81714() SERIES I TERMINAL JUNCTION SYSTEM

B. Terminal Module Part Numbers

Feedback terminal modules have these technical properties:

- One grommet
- Bussed contact cavities.

Feedthru terminal modules have these technical properties:

- Two grommets on opposite sides
- Bussed contact cavities that are connected to the cavities on the opposite side.

Table 1
TERMINAL MODULE PART NUMBERS

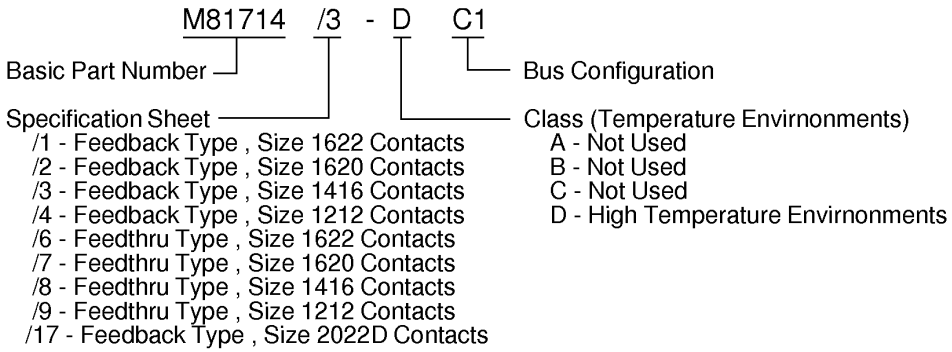
Part Number	Module Type	Supplier
M81714/1-()	Feedback	QPL
M81714/2-()	Feedback	QPL
M81714/3-()	Feedback	QPL
M81714/4-()	Feedback	QPL
M81714/6-()	Feedthru	QPL
M81714/7-()	Feedthru	QPL
M81714/8-()	Feedthru	QPL
M81714/9-()	Feedthru	QPL
M81714/17-()	Feedback	QPL
MRFB()E()	Feedthru	Matrix Science
MRTB()E()	Feedback	Matrix Science
TJM11260()	Feedback	Precision Connector Design

Table 2
ALTERNATIVE TERMINAL MODULE PART NUMBERS

Specifed Module	Alternative Module
MRFB12E01-()	M81714/9-DH1
MRFB12E02-()	M81714/9-DD1
MRFB12E03-()	M81714/9-DB1
MRFB12E04-()	M81714/9-DA1
MRTB16E02-()	M81714/3-DD1
MRTB16E03-()	M81714/3-DB1
MRTB16E04-()	M81714/3-DA1
MRTB20E09-()	M81714/2-DE1
M81714/4-DA1	TJM112601
M81714/4-DB1	TJM112602
M81714/4-DB2	TJM112603
M81714/4-DC1	TJM112605

Table 2 ALTERNATIVE TERMINAL MODULE PART NUMBERS (Continued)

Specifed Module	Alternative Module
M81714/4-DC2	TJM112606
M81714/4-DD1	TJM112607



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M81714 SERIES I TERMINAL MODULE PART NUMBER STRUCTURE
Figure 4

C. Track Part Numbers

Table 3
TRACK PART NUMBERS

Part Number	Description	Module Type	Configuration	Supplier
99537-()	Track, Light Weight	Feedback	-	Matrix Science
M81714/5-()	Track, Standard Weight	Feedback	Table 5	QPL
M81714/10-()	Track, Standard Weight	Feedthru	Table 6	QPL
M81714/14-()	Track, Light Weight	Feedthru	Table 6	QPL
M81714/16-()	Track, Light Weight	Feedback	Table 5	QPL

ASSEMBLY OF THE M81714() SERIES I TERMINAL JUNCTION SYSTEM

Table 4
ALTERNATIVE TRACK PART NUMBERS

Specified Track	Alternative Track
99537-()	M81714/16-()

Table 5
M81714/5 AND M81714/16 TRACK CONFIGURATIONS

Track	Length (inch)	Maximum Number of Modules	
		M81714/17() Modules	Other M81714 Modules
M81714/16-1	5.3	-	10
M81714/16-2	2.6	4	3
M81714/16-3	3.0	5	4
M81714/16-4	3.3	6	5
M81714/16-5	3.7	-	6
M81714/16-6	4.1	-	7
M81714/16-7	4.5	-	8
M81714/16-8	4.9	-	9
M81714/16-9	5.7	-	11
M81714/16-10	6.0	-	12
M81714/16-11	6.5	-	13
M81714/16-12	6.9	-	14
M81714/16-13	7.2	-	15
M81714/5-1	5.3	-	10
M81714/5-2	2.6	-	3
M81714/5-3	3.0	-	4
M81714/5-4	3.3	-	5
M81714/5-5	3.7	-	6
M81714/5-6	4.1	-	7
M81714/5-7	4.5	-	8
M81714/5-8	4.9	-	9
M81714/5-9	5.7	-	11
M81714/5-10	6.0	-	12
M81714/5-11	6.5	-	13
M81714/5-12	6.9	-	14
M81714/5-13	7.2	-	15

ASSEMBLY OF THE M81714() SERIES I TERMINAL JUNCTION SYSTEM

Table 6
M81714/10 AND M81714/14 TRACK CONFIGURATIONS

Track	Maximum Number of Modules	Length (inch)
M81714/()-1	10	5.6
M81714/()-2	3	2.8
M81714/()-3	4	3.2
M81714/()-4	5	3.6
M81714/()-5	6	4.0
M81714/()-6	7	4.4
M81714/()-7	8	4.8
M81714/()-8	9	5.6
M81714/()-9	11	6.0
M81714/()-10	12	6.3
M81714/()-11	13	6.7
M81714/()-12	14	7.1
M81714/()-13	15	7.5

Table 7
TRACK INSTALLATION FASTENERS

Track	Fastener	Size	Quantity
M81714/5-()	Screw, Flathead	6	2
M81714/10-()	Screw, Flathead	6	2
M81714/14-()	Screw, Flathead	6	2
M81714/16-()	Screw, Flathead	6	2

D. Bracket Part Numbers

Table 8
BRACKET PART NUMBERS

Part Number	Module Type	Supplier
8400-0()-()	Feedback	Matrix Science
M81714/29-()	Feedback	QPL

ASSEMBLY OF THE M81714() SERIES I TERMINAL JUNCTION SYSTEM

Table 9
ALTERNATIVE BRACKET PART NUMBERS

Specifed Bracket	Alternative Bracket
8400-041-020	M81714/29-1
8400-095-0020	M81714/29-1

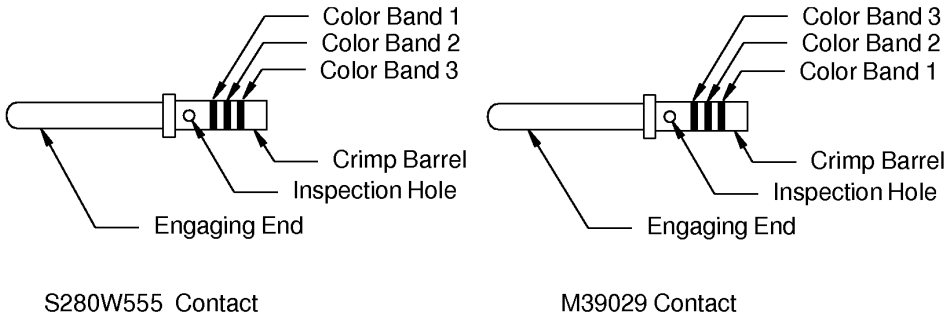
Table 10
M81714/29 BRACKET CONFIGURATIONS

Bracket	Maximum Number of Modules
M81714/29-1	1

Table 11
BRACKET INSTALLATION FASTENERS

Bracket	Fastener	Size	Quantity
M81714/29-()	Screw, Flathead	6	2

E. Contact Part Numbers

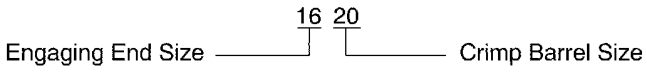


S280W555 Contact

M39029 Contact

2448998 S00061547479_V1

PIN CONTACTS
Figure 5



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EXAMPLE OF A CONTACT SIZE
Figure 6

The contacts have these technical properties:

- A pin configuration
- A gold finish.

Table 12
CONTACT PART NUMBERS

Contact					Applicable Terminal Modules (Reference)
Size	Part Number	Supplier	Color Code		
			Band	Color	
2022D	M39029/1-507	QPL	1	Green	Figure 10, Figure 11, and Figure 12
			2	Black	
			3	Violet	
	M39029/1-20-22D		1	Green	
			2	Black	
			3	Violet	
1622	M39029/1-100	QPL	1	Brown	Figure 7
			2	Black	
			3	Black	
	M39029/1-16-22		1	Brown	
			2	Black	
			3	Black	
1620	M39029/1-101	QPL	1	Brown	Figure 7
			2	Black	
			3	Brown	
	S280W555-920	Tri Star	1	Red	
			2	Red	
			3	Red	

ASSEMBLY OF THE M81714() SERIES I TERMINAL JUNCTION SYSTEM

Table 12 CONTACT PART NUMBERS (Continued)

Contact					Applicable Terminal Modules (Reference)
Size	Part Number	Supplier	Color Code		
			Band	Color	
1416	S280W555-916	Tri Star	1	Blue	Figure 8
			2	Blue	
			3	Blue	
	M39029/1-102	QPL	1	Brown	
			2	Black	
			3	Red	
	M39029/1-14-16	QPL	1	Brown	
			2	Black	
			3	Red	
1212	M39029/1-103	QPL	1	Brown	Figure 9
			2	Black	
			3	Orange	
	M39029/1-12-12	QPL	1	Brown	
			2	Black	
			3	Orange	

Table 13
ALTERNATIVE CONTACT PART NUMBERS

Specified Contact		Alternative Contact	
Part Number	Supplier	Part Number	Supplier
M39029/1-100	QPL	M39029/1-16-22	QPL
M39029/1-101	QPL	M39029/1-16-20	QPL
M39029/1-102	QPL	M39029/1-14-16	QPL
M39029/1-102	QPL	S280W555-916	QPL
M39029/1-103	QPL	M39029/1-12-12	QPL
M39029/1-507	QPL	M39029/1-20-22D	QPL
M39029/1-12-12	QPL	M39029/1-103	QPL
M39029/1-14-16	QPL	M39029/1-102	QPL
M39029/1-16-20	QPL	M39029/1-101	QPL
M39029/1-16-22	QPL	M39029/1-100	QPL
M39029/1-20-22D	QPL	M39029/1-507	QPL
S280W555-916	QPL	M39029/1-102	QPL

ASSEMBLY OF THE M81714() SERIES I TERMINAL JUNCTION SYSTEM

F. Seal Plug Part Numbers

Table 14
SEAL PLUG PART NUMBERS

Terminal Module		Seal Plug	
Part Number	**Contact Size**	**Part Number**	**Supplier**
M81714/1-()	1622	MS27488-22	QPL
		MS27488-22-1	QPL
M81714/6-()		MS27488-22	QPL
		MS27488-22-1	QPL
M81714/2-()	1620	MS27488-20	QPL
		MS27488-20-1	QPL
M81714/7-()		MS27488-20	QPL
		MS27488-20-1	QPL
M81714/3-()	1416	M83723/28-16	QPL
		MS27488-16	QPL
		MS27488-16-1	QPL
		NAS1668-3	QPL
M81714/8-()		M83723/28-16	QPL
		MS27488-16	QPL
		MS27488-16-1	QPL
		NAS1668-3	QPL
M81714/4-()	1212	M83723/28-12	QPL
		MS27488-12	QPL
		MS27488-12-1	QPL
		NAS1668-2	QPL
M81714/9-()		M83723/28-12	QPL
		MS27488-12	QPL
		MS27488-12-1	QPL
		NAS1668-2	QPL
M81714/17-()	2022D	MS27488-22	QPL

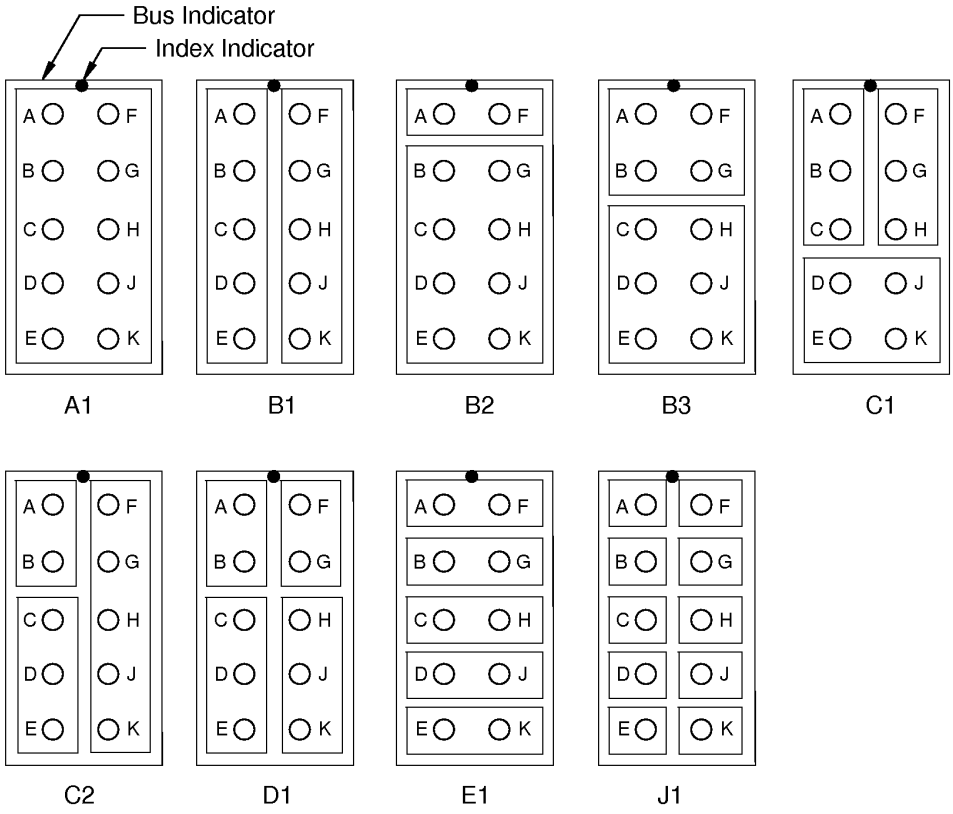
ASSEMBLY OF THE M81714() SERIES I TERMINAL JUNCTION SYSTEM

2. TERMINAL MODULE CONFIGURATIONS

A. M81714 Series I Terminal Module Configurations

Table 15
TERMINAL MODULE CONFIGURATIONS

Terminal Module	Contact		Buss Configuration	Reference
	Quantity	Size		
M81714/1-()	10	1622	A1 thru J1	Figure 7
M81714/2-()	10	1620	A1 thru J1	Figure 7
M81714/3-()	8	1416	A1 thru D1	Figure 8
M81714/4-()	8	1212	A1 thru D1	Figure 9
M81714/6-()	10	1622	A1 thru J1	Figure 7
M81714/7-()	10	1620	A1 thru J1	Figure 7
M81714/8-()	8	1416	A1 thru D1	Figure 8
M81714/9-()	8	1212	A1 thru D1	Figure 9
M81714/17-()	21	2022D	30 thru 34	Figure 10
			35 thru 39	Figure 11
			40 thru 45	Figure 12



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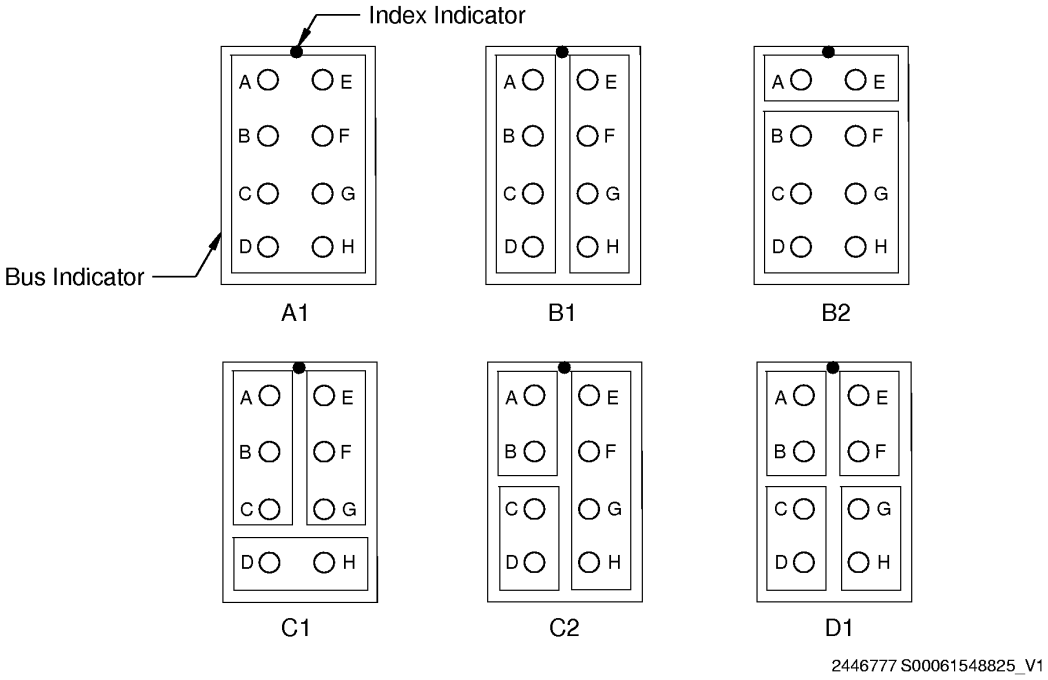
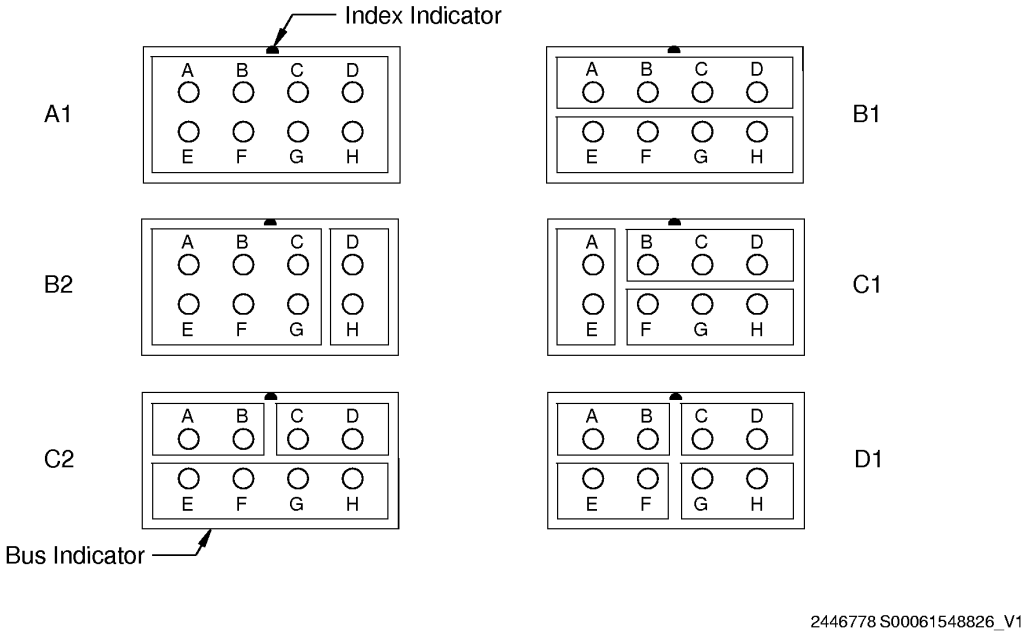
BUS CONFIGURATIONS FOR SIZE 1622 AND SIZE 1620 CONTACTS
Figure 7

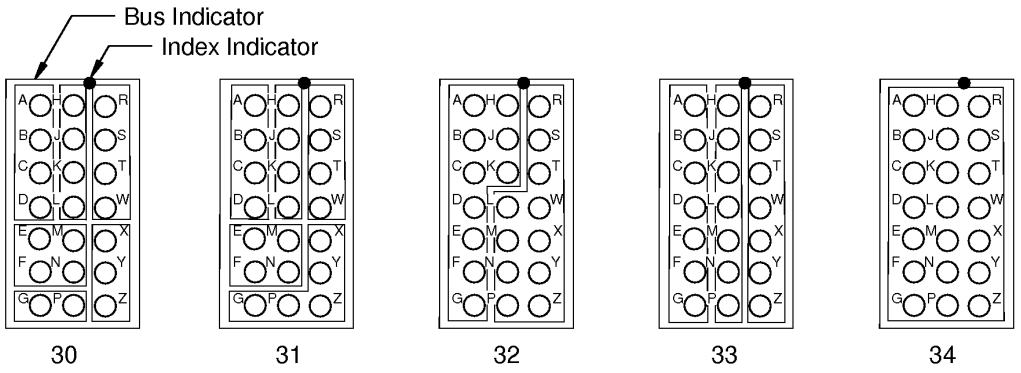
ASSEMBLY OF THE M81714() SERIES I TERMINAL JUNCTION SYSTEM



BUS CONFIGURATIONS FOR SIZE 1416 CONTACTS
Figure 8

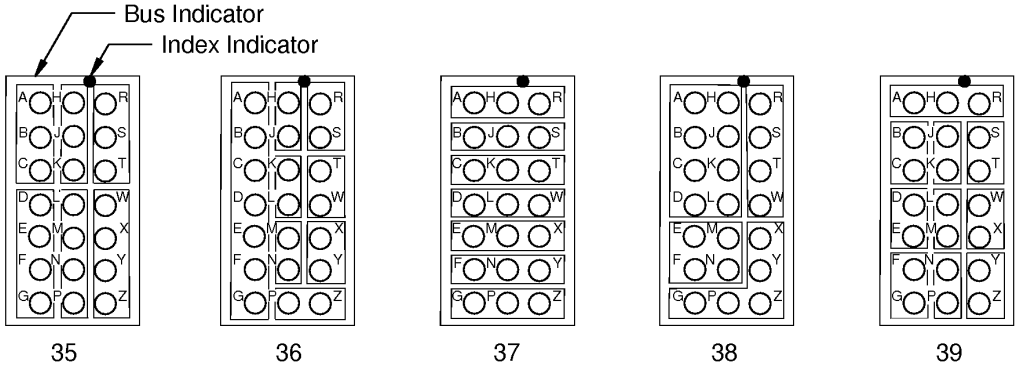


BUS CONFIGURATIONS FOR SIZE 1212 CONTACTS
Figure 9



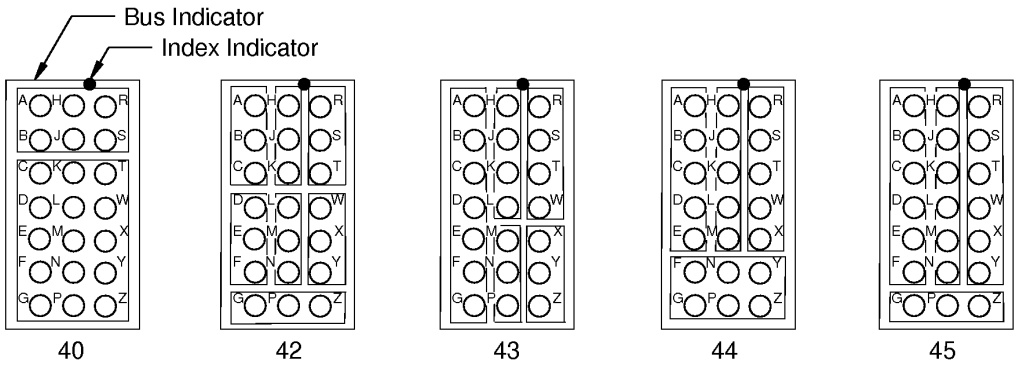
2449419 S00061548827_V1

BUS CONFIGURATIONS 30 THRU 34 FOR SIZE 2022D CONTACTS
Figure 10



2449420 S00061548828_V1

BUS CONFIGURATIONS 35 THRU 39 FOR SIZE 2022D CONTACTS
Figure 11



2449421 S00061548829_V1

BUS CONFIGURATIONS 40 THRU 45 FOR SIZE 2022D CONTACTS
Figure 12

3. TERMINAL JUNCTION SYSTEM DISASSEMBLY

A. Contact Removal

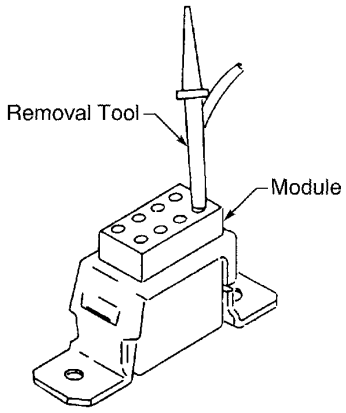
Table 16
CONTACT REMOVAL TOOLS

Terminal Module		Removal Tool	
Contact Size	**Part Number**	**Part Number**	**Color**
2022D	M81714/17-()	M81969/14-01	White
1622	M81714/1-()	M81969/18-02	White
		M81969/14-11	White
		ST2220-3-29	-
	M81714/6-()	M81969/14-02	White
		M81969/14-11	White
		ST2220-3-29	-

ASSEMBLY OF THE M81714() SERIES I TERMINAL JUNCTION SYSTEM

Table 16 CONTACT REMOVAL TOOLS (Continued)

Terminal Module		Removal Tool	
Contact Size	**Part Number**	**Part Number**	**Color**
1620	M81714/2-()	M81969/14-02	White
		M81969/14-10	White
		M81969/14-11	White
		M83723/31-20	White
		ST2220-3-29	-
	M81714/7-()	M81969/14-02	White
		M81969/14-10	White
		M81969/14-11	White
		M83723/31-20	White
		ST2220-3-29	-
1416	M81714/3-()	M81969/14-03	White
		M83723/31-16	-
		NAS1664-16	-
		ST2220-3-7	-
	M81714/8-()	M81969/14-03	White
		M83723/31-16	-
		NAS1664-16	-
		ST2220-3-7	-
1212	M81714/4-()	M81969/14-04	White
		M81969/8-10	-
		M83723/31-12	-
		NAS1664-16	-
		ST2220-3-28	-
	M81714/9-()	M81969/14-04	White
		M81969/8-10	-
		M83723/31-12	-
		NAS1664-16	-
		ST2220-3-28	-



2446779 S00061548830_V1

CONTACT REMOVAL
Figure 13

Refer to Figure 13.

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

(2) Put the end of the removal tool on the wire.

(3) Align the tool and the contact cavity.

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

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

(5) Pull the wire and the tool out of the contact cavity at the same time.

(6) If the contact does come out of the contact cavity:

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

(b) Turn the tool 90 degrees.

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

ASSEMBLY OF THE M81714() SERIES I TERMINAL JUNCTION SYSTEM

B. Seal Plug Removal

(1) Make a selection of a pair of needle nose pliers that has:

- Jaws with smooth surfaces
- No sharp edges.

CAUTION: ROUGH SURFACES OR SHARP EDGES CAN CAUSE DAMAGE TO THE REAR GROMMET.

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

(3) Pull the seal plug out of the rear grommet.

Make sure that the seal plug and the contact cavity stay aligned.

C. Removal of the Terminal Module from a Bracket

(1) Remove the two bracket installation screws.

(2) Pull the bracket from the module.

D. Removal of the Terminal Module from a Track

(1) If the clamp screw has lockwire, remove the wire.

(2) Loosen the clamp screw until it can be moved freely in the track.

(3) Push the clamp away from the terminal module a minimum of one half the width of the module.

(4) Horizontally align the module between two locking tabs on each side of the track.

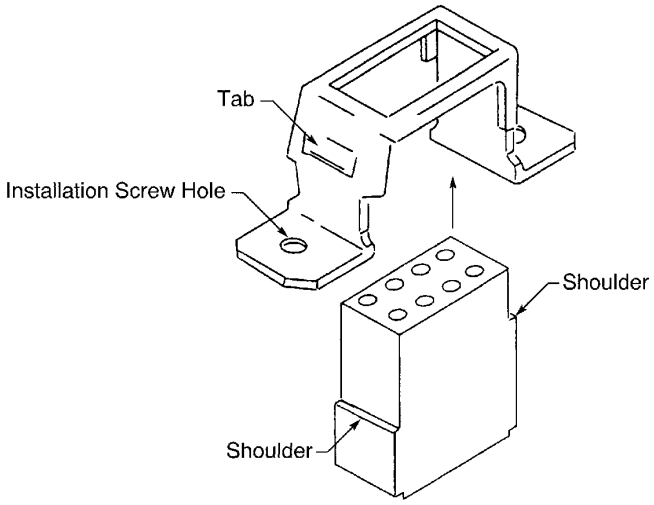
(5) Pull the module out of the track.

4. TERMINAL JUNCTION SYSTEM ASSEMBLY

A. Installation of a Terminal Module and a Bracket

(1) Put the module into the bracket. Refer to Figure 14.

Make sure that each shoulder of the module is against the applicable tab of the bracket.



2446780 S00061548831_V1

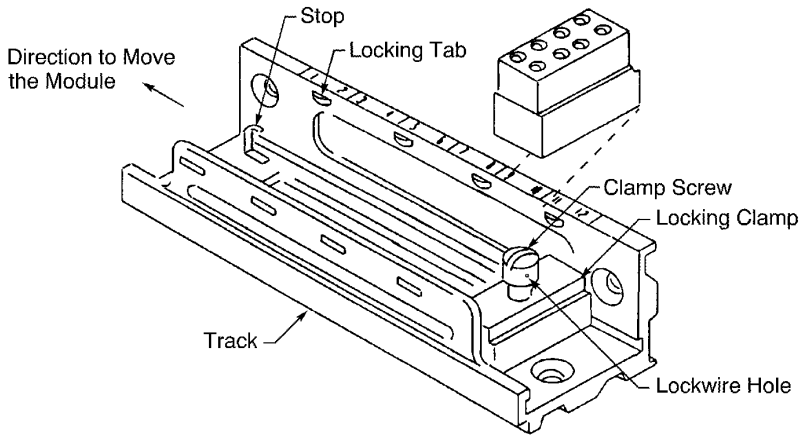
TERMINAL MODULE INSTALLATION IN A BRACKET
Figure 14

(2) Align the installation screw holes of the bracket and the structure.

(3) Install the screws in the installation screw holes.

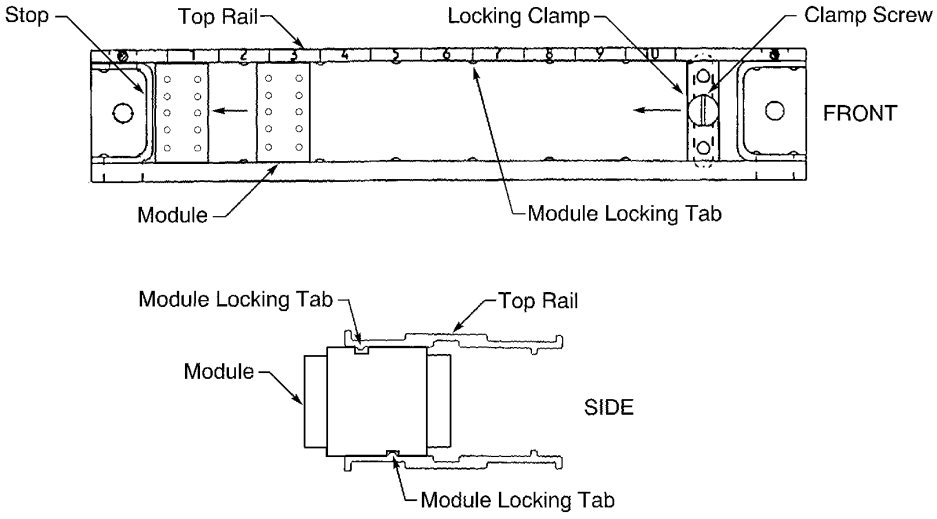
ASSEMBLY OF THE M81714() SERIES I TERMINAL JUNCTION SYSTEM

B. Installation of a Terminal Module into a Track



2446781 S00061548832_V1

INSTALLATION OF A TERMINAL MODULE IN AN M81714/5 OR AN M81715/16 TRACK
Figure 15



2447279 S00061548833_V1

INSTALLATION OF A TERMINAL MODULE IN AN M81714/10 OR AN M81715/14 TRACK
Figure 16

ASSEMBLY OF THE M81714() SERIES I TERMINAL JUNCTION SYSTEM

For the installation of a module in:

- An M81714/5 or an M81714/16 track; refer to Figure 15
- An M81714/10 or an M81714/14 track; refer to Figure 16.

(1) Horizontally align the module between two module locking tabs in each side of the track.

(2) Push the module down between the module locking tabs.

(3) Push the module in the direction that is opposite the locking clamp until the module is against the stop or the last installed module.

Make sure that the bottom of the module is flat against the track.

(4) Do Step 4.B.(1) thru Step 4.B.(3) again for each module that must be installed.

(5) Push the locking clamp tightly against the last module that is installed.

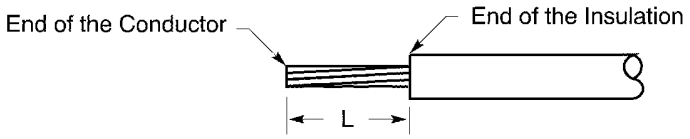
(6) Tighten the clamp screw.

(7) If the installation is in a high vibration area, install lockwire on the clamp screw.

C. Wire Preparation

Table 17
INSULATION REMOVAL LENGTH

Wire Size (AWG)	Contact Size	Removal Length L (inch)		Special Instructions
		Minimum	Maximum	
24	2022D	0.12	0.18	-
	1622	0.12	0.15	-
	1620	0.12	0.15	-
22	2022D	0.12	0.18	-
	1622	0.12	0.15	-
	1620	0.12	0.15	-
	1416	0.24	0.30	Fold the conductor back
20	1620	0.12	0.15	-
	1416	0.12	0.15	-
18	1416	0.21	0.24	-
16	1416	0.21	0.24	-
	1212	0.21	0.24	-
14	1212	0.21	0.24	-
12	1212	0.21	0.24	-



2446656 S00061544391_V1

WIRE PREPARATION
Figure 17

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

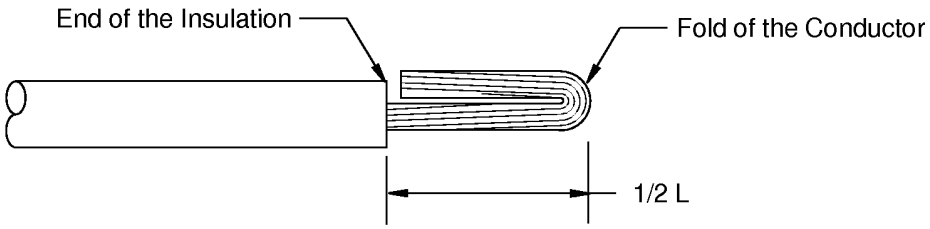
Refer to:

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

(2) If it is specified, fold the conductor back.

Refer to:

- Table 17
- Figure 18.



2446657 S00061544480_V1

CONDUCTOR FOLDED BACK
Figure 18

(3) If the O.D. of the wire is less than the minimum seal diameter of the grommet hole, increase the O.D of the wire. Refer to Table 18.

ASSEMBLY OF THE M81714() SERIES I TERMINAL JUNCTION SYSTEM

Table 18
MINIMUM SEAL DIAMETERS

Contact Size	Contact Cavity Size	Minimum Seal Diameter (inch)
2022D	22	0.034
1622	22	0.034
1620	20	0.038
1416	16	0.060
1212	12	0.087

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

(b) Put a 0.5 inch length of 1/8 inch diameter heat shrinkable sleeve on the wire.

Make sure that the distance from the forward end of the sleeve to the end of the insulation is a maximum of 0.1 inch.

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

D. Contact Assembly

Table 19
CONTACT CRIMP TOOLS

Wire Size (AWG)	Contact Size	Crimp Tool			
		Basic Unit		Locator	
		Part Number	Setting	Part Number	Color
24	2022D	M22520/2-01	4	M22520/2-32	-
	1622	M22520/2-01	3	M22520/2-11	-
		ST2220-10	-	ST2220-10-3	-
		WA22	3	M22520/2-11	-
		WA22LC	3	M22520/2-11	-
	1620	M22520/1-01	2	M22520/1-02	Red
		M22520/2-01	5	M22520/2-11	-
		ST2220-1-Y	-	ST2220-1-12	-
		WA22	5	M22520/2-11	-
		WA22LC	5	M22520/2-11	-
		WA27F	2	M22520/1-02	Red

ASSEMBLY OF THE M81714() SERIES I TERMINAL JUNCTION SYSTEM

Table 19 CONTACT CRIMP TOOLS (Continued)

Wire Size (AWG)	Contact Size	Crimp Tool			
		Basic Unit		Locator	
		Part Number	Setting	Part Number	Color
22	2022D	M22520/2-01	4	M22520/2-32	-
	1622	M22520/2-01	4	M22520/2-11	-
		ST2220-10	-	ST2220-10-3	-
		WA22	4	M22520/2-11	-
		WA22LC	4	M22520/2-11	-
	1620	M22520/1-01	3	M22520/1-02	Red
		M22520/2-01	6	M22520/2-11	-
		ST2220-10	-	ST2220-10-8	-
		WA22	6	M22520/2-11	-
		WA22LC	6	M22520/2-11	-
		WA27F	3	M22520/1-02	Red
	1416	M22520/1-01	4	M22520/1-02	Blue
		MS3191-4	-	MS3191-3T	-
20	1620	M22520/1-01	4	M22520/1-02	Red
		M22520/2-01	7	M22520/2-11	-
		ST2220-1	-	ST2220-1-1	-
		WA22	7	M22520/2-11	-
		WA22LC	7	M22520/2-11	-
		WA27F	4	M22520/1-02	Red
	1416	M22520/1-01	4	M22520/1-02	Blue
		ST2220-1	-	ST2220-1-2	-
		WA27F	4	M22520/1-02	Blue
		M22520/1-01	4	M22520/1-02	Blue
		MS3191-4	-	MS3191-3T	-
		ST2220-1	-	ST2220-1-2	-
		WA27F	4	M22520/1-02	Blue
18	1416	M22520/1-01	5	M22520/1-02	Blue
		MS3191-4	-	MS3191-3T	-
		ST2220-1	-	ST2220-1-2	-
		WA27F	5	M22520/1-02	Blue

ASSEMBLY OF THE M81714() SERIES I TERMINAL JUNCTION SYSTEM

Table 19 CONTACT CRIMP TOOLS (Continued)

Wire Size (AWG)	Contact Size	Crimp Tool			
		Basic Unit		Locator	
		Part Number	Setting	Part Number	Color
16	1416	M22520/1-01	6	M22520/1-02	Blue
		MS3191-4	-	MS3191-3T	-
		ST2220-1	-	ST2220-1-2	-
		WA27F	6	M22520/1-02	Blue
	1212	612548	-	4763-2	-
		M22520/1-01	6	M22520/1-02	Yellow
		ST2220-1-Y	-	ST2220-1-3	-
14	1212	612548	-	4763-2	-
		M22520/1-01	7	M22520/1-02	Yellow
		ST2220-1	-	ST2220-1-3	-
		ST2220-1-Y	-	ST2220-1-3	-
		WA27F	7	M22520/1-02	Yellow
12	1212	612548	-	4763-2	-
		M22520/1-01	8	M22520/1-02	Yellow
		ST2220-1	-	ST2220-1-3	-
		ST2220-1-Y	-	ST2220-1-3	-
		WA27F	8	M22520/1-02	Yellow

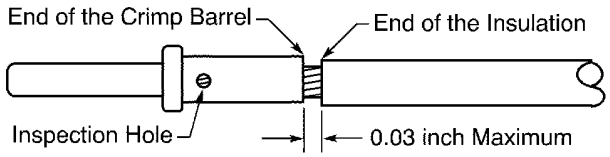
(1) Make a selection of a crimp tool from Table 19.

Refer to Paragraph 1.E. for contact part numbers and sizes.

(2) Put the end the wire into the crimp barrel of the contact. Refer to Figure 19.

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.



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POSITION OF THE WIRE IN THE CRIMP BARREL
Figure 19

(3) Crimp the contact.

(4) Examine the contact assembly for these types of damage:

- A broken strand of the conductor
- A strand of the conductor on which the base metal can be seen
- A crack in the crimp barrel of the contact.

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

E. Contact Insertion

Table 20
CONTACT INSERTION TOOLS

Terminal Module	-	Insertion Tool	
Contact Size	**Part Number**	**Part Number**	**Color**
2022D	M81714/17-()	M81969/14-01	-
1622	M81714/1-()	M81969/14-11	Red
		ST2220-2-30	-
	M81714/6-()	M81969/14-11	Red
		ST2220-2-30	-
1620	M81714/2-()	DAK83-20	-
		M81969/14-11	Red
		ST2220-2-28	-
	M81714/7-()	DAK83-20	-
		M81969/14-11	Red
		ST2220-2-28	-

ASSEMBLY OF THE M81714() SERIES I TERMINAL JUNCTION SYSTEM

Table 20 CONTACT INSERTION TOOLS (Continued)

Terminal Module	-	Insertion Tool	
Contact Size	Part Number	Part Number	Color
1416	M81714/3-()	DAK83-16	-
		M81969/14-03	Blue
		M83723/31-16	-
		NAS1664-16	-
		ST2220-2-4	-
	M81714/8-()	DAK83-16	-
		M81969/14-03	Blue
		M83723/31-16	-
		NAS1664-16	-
		ST2220-2-4	-
1212	M81714/4-()	M81969/14-04	Yellow
		M81969/8-10	-
		NAS1664-16	-
		M83723/31-12	-
		ST2220-2-5	-
	M81714/9-()	M81969/14-04	Yellow
		M81969/8-10	-
		NAS1664-16	-
		M83723/31-12	-
		ST2220-2-5	-

(1) Make a selection of a contact insertion tool from Table 20.

CAUTION: DO NOT USE A TOOL WITH A TIP:

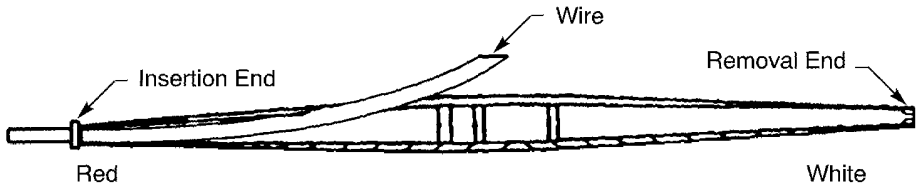
- IS BENT
- IS FLARED
- IS BROKEN
- HAS A CRACK.

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

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

(2) Put the contact into the insertion end of the insertion tool. Refer to Figure 20.

CAUTION: AN UNWIRED CONTACT MUST NOT BE INSTALLED IN A MODULE. IT CANNOT BE REMOVED.



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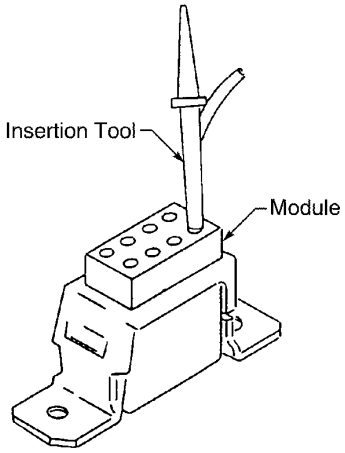
POSITION OF THE CONTACT IN THE INSERTION TOOL
Figure 20

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



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ALIGNMENT OF THE INSERTION TOOL AND THE CONTACT CAVITY
Figure 21

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

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

(5) Carefully pull the tool out of the contact cavity.
Make sure that the tool and the contact cavity stay aligned.

(6) Lightly pull the wire to make sure that the contact is locked in position.

ASSEMBLY OF THE M81714() SERIES I TERMINAL JUNCTION SYSTEM

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

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

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

(a) Pull the contact out of the cavity.

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

F. Seal of an Empty Contact Cavity

All empty contact cavities must be sealed.

(1) Make a selection of a seal plug from Table 14.

(2) Install seal plugs in each empty contact cavity. Refer to Subject 20-60-08.

5. APPROVED TOOL SUPPLIERS

A. Contact Insertion and Removal Tools

Table 21
INSERTION AND REMOVAL TOOL SUPPLIERS

Insertion and Removal Tool	Suppliers
DAK83-16	Daniels
DAK83-20	Daniels
M81969/8-10	QPL
M81969/14-01	QPL
M81969/14-02	QPL
M81969/14-03	QPL
M81969/14-04	QPL
M81969/14-10	QPL
M81969/14-11	QPL
M83723/31-12	QPL
M83723/31-16	QPL
M83723/31-20	QPL
NAS1664-12	QPL
NAS1664-16	QPL
ST2220-2-4	Boeing
ST2220-2-5	Boeing
ST2220-2-28	Boeing
ST2220-2-30	Boeing
ST2220-3-7	Boeing

Table 21 INSERTION AND REMOVAL TOOL SUPPLIERS (Continued)

Insertion and Removal Tool	Suppliers
ST2220-3-28	Boeing
ST2220-3-29	Boeing

B. Contact Crimp Tools

Table 22
CRIMP TOOL SUPPLIERS

Crimp Tool	Supplier
4763-2	Astro
4763-2	Buchanan
612548	Astro
612548	Buchanan
M22520/1-01	QPL
M22520/1-02	QPL
M22520/2-01	QPL
M22520/2-11	QPL
M22520/2-32	QPL
MS3191-3T	QPL
MS3191-4	QPL
ST2220-1	Boeing
ST2220-1-1	Boeing
ST2220-1-2	Boeing
ST2220-1-3	Boeing
ST2220-1-12	Boeing
ST2220-1-Y	Boeing
ST2220-10	Boeing
ST2220-10-3	Boeing
ST2220-10-8	Boeing
WA22	Daniels
WA22LC	Daniels
WA27F	Daniels

ASSEMBLY OF THE M81714() SERIES II TERMINAL JUNCTION SYSTEM

TABLE OF CONTENTS

ASSEMBLY OF THE M81714() SERIES II TERMINAL JUNCTION SYSTEM

This Subject gives the procedures:

- To assemble the M81714 Series II terminal block modules
- To install the terminal block modules in the terminal junction system racks.

1. PART NUMBERS AND DESCRIPTION

A. Terminal Block Module Part Numbers

Table 1
TERMINAL BLOCK MODULE PART NUMBERS

Part Number	Supplier
M81714/6()	QPL
280-30001-()	Boeing

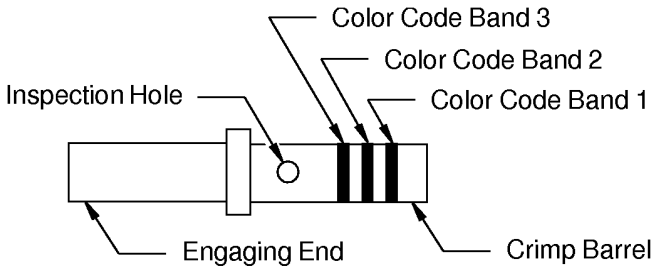
B. Assembly Part Numbers

Table 2
ASSEMBLIES THAT USE THE M81714 SERIES II TERMINAL BLOCK MODULES

Part Number	Description	Supplier
117432-2001	Connector, ARINC 404	Sabritec

ASSEMBLY OF THE M81714() SERIES II TERMINAL JUNCTION SYSTEM

C. Contact Part Numbers



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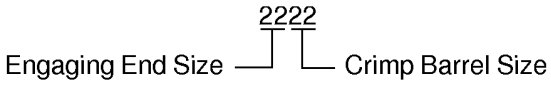
SOCKET CONTACTS
Figure 1



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EXAMPLE OF A CONTACT SIZE
Figure 2

Table 3
CONTACT PART NUMBERS

Contact				Color Code		Supplier
Engaging End Size	Crimp Barrel Size	Type	Part Number	Band	Color	
22	22	Socket	M39029/22-191	1	Brown	QPL
				2	White	
				3	Brown	
20	20	Socket	M39029/22-192	1	Brown	QPL
				2	White	
				3	Red	
16	16	Socket	M39029/22-193	1	Brown	QPL
				2	White	
				3	Orange	
12	12	Socket	CT5-512/12	-	-	Deutsch

ASSEMBLY OF THE M81714() SERIES II TERMINAL JUNCTION SYSTEM

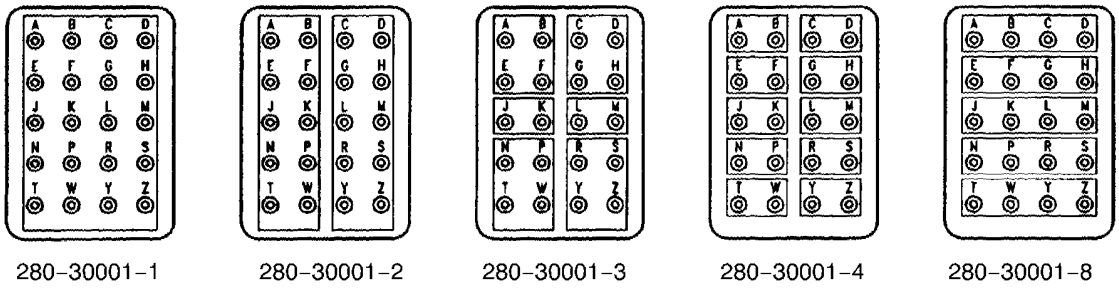
D. Seal Plug Part Numbers

Table 4
SEAL PLUG PART NUMBERS

Contact		Seal Plug	Supplier
Engaging End Size	Crimp Barrel Size		
22	22	1613-03-2205	QPL
20	20	81539-20	QPL
16	16	81539-16	QPL
12	12	81539-12	QPL

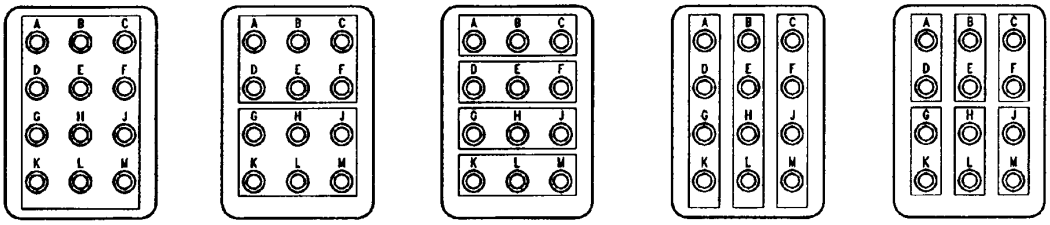
2. INSERT CONFIGURATIONS

A. Boeing 280-30001-() Terminal Block Modules



280-30001-() INSERT CONFIGURATIONS WITH 20 SIZE 22 CONTACTS
Figure 3

ASSEMBLY OF THE M81714() SERIES II TERMINAL JUNCTION SYSTEM



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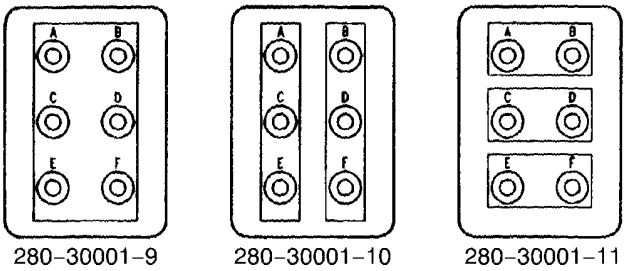
280-30001-() INSERT CONFIGURATIONS WITH 12 SIZE 20 CONTACTS
Figure 4



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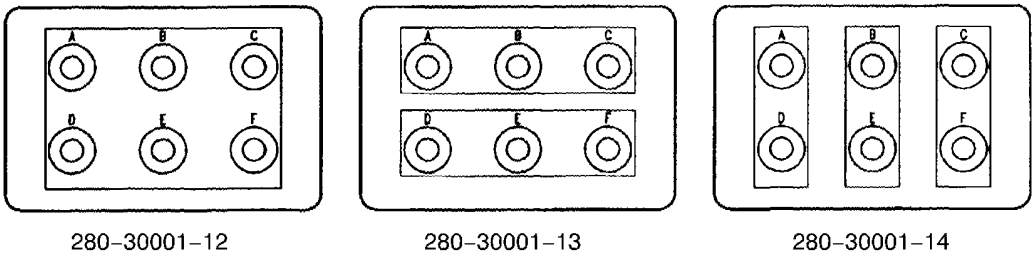
280-30001-() INSERT CONFIGURATIONS WITH 6 SIZE 16 CONTACTS
Figure 5

ASSEMBLY OF THE M81714() SERIES II TERMINAL JUNCTION SYSTEM



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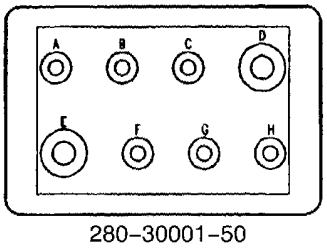
280-30001-() INSERT CONFIGURATIONS WITH 6 SIZE 12 CONTACTS
Figure 6



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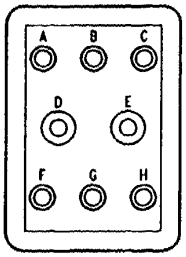
280-30001-50 INSERT CONFIGURATION WITH 6 SIZE 16 AND 2 SIZE 12 CONTACTS
Figure 7

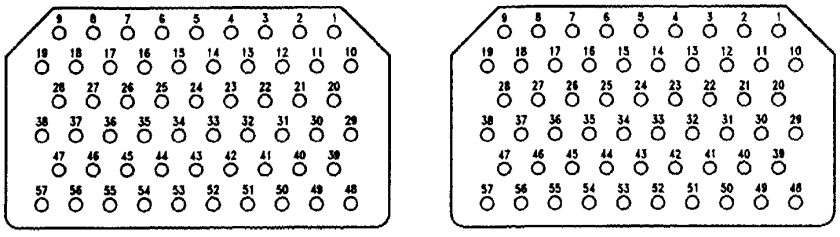


280–30001–51

2446788 S00061548842_V1

280-30001-51 INSERT CONFIGURATION WITH 2 SIZE 16 AND 6 SIZE 20 CONTACTS
Figure 8

B. Sabritec ARINC 404 Connector



Cavity A Cavity B

2446789 S00061548843_V1

117432-2001 INSERT CONFIGURATION WITH 57 SIZE 20 CONTACTS
Figure 9

ASSEMBLY OF THE M81714() SERIES II TERMINAL JUNCTION SYSTEM

3. TERMINAL JUNCTION SYSTEM DISASSEMBLY

A. Contact Removal

Table 5
CONTACT REMOVAL TOOLS

Crimp Barrel Size	Removal Tool	Supplier
22	MS3160-22	QPL
20	M81969/14-02	QPL
	M81969/14-10	QPL
	M81969/14-11	QPL
	M83723/31-20	QPL
16	M81969/14-03	QPL
	M83723/31-16	QPL
12	MS3160-12	QPL

(1) Make a selection of a removal tool from Table 5.

(2) Put the white end of the tool on the wire.

(3) Hold the tool so that it is perpendicular to the module.

(4) Push the tool down the wire and into the module contact cavity until the end of the tool is against the bottom.

(5) Hold the tool tightly against the bottom and push the wire against the serrations in the tool handle.

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

B. Terminal Block Module Removal

Table 6
TERMINAL JUNCTION MODULE REMOVAL TOOLS

Removal Tool	Supplier
CTJ-R06	Deutsch

(1) Make a selection of the module removal tool from Table 6.

(2) Put the tool into the grooves on the sides of the module.

(3) Lightly push the tool until the tool is fully inserted.

(4) Hold the tines of the tool tightly and pull the tool up.

ASSEMBLY OF THE M81714() SERIES II TERMINAL JUNCTION SYSTEM

4. TERMINAL JUNCTION SYSTEM ASSEMBLY

A. Terminal Block Module Installation

(1) Put the module in the correct position on the top of the rail.

(2) Lightly push the module down until it makes a click.

B. Contact Assembly

Table 7
CONTACT CRIMP TOOLS

Contact		Crimp Tool			
Engaging End Size	Crimp Barrel Size	Basic Unit		Locator	
		Part Number	Supplier	Part Number	Supplier
22	22	M22520/7-01	QPL	M22520/7-11	QPL
20	20	M22520/7-01	QPL	M22520/7-12	QPL
16	16	M22520/7-01	QPL	M22520/7-13	QPL
12	12	M22520/1-01	QPL	M22520/1-04	QPL

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

(2) Remove 3/16 inch ±1/32 inch of the insulation from the end of the wire. Refer to Subject 20-00-15.

(3) Put the contact in the crimp tool.

NOTE: The wire can be put in the contact before the contact is put into the crimp tool.

(4) Put the bare end of the wire into the crimp barrel of the contact so that:

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

(5) Crimp the contact.

C. Contact Insertion

Table 8
CONTACT INSERTION TOOLS

Crimp Barrel Size	Insertion Tool	Supplier
22	MS3160-22	QPL
20	M83723/31-20	QPL
16	M83723/31-16	QPL
12	MS3160-12	QPL

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

(2) Install each wired contact one at a time:

(a) Examine the contact to make sure that it is straight.

(b) Put the colored end of the insertion tool on the wire.

(c) Push the end of the tool over the contact so that the tip end of the tool is against the shoulder of the contact.

NOTE: For size 22 contacts, the end of the tool must be against the end of the crimp barrel.

(d) Align the tool so that it is perpendicular to the rear face of the module.

(e) Carefully push the tool straight into the contact cavity until the contact is fully inserted.

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

(4) Lightly pull the wire to make sure that the contact is locked in the contact cavity.

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

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

D. Seal Plug Installation

Seal plugs must be installed in all contact cavities that are not used. Refer to Subject 20-60-08.

(1) Make a selection of a seal plug from Table 3.

(2) Push the seal plug into the contact cavity.

ASSEMBLY OF MICRO SWITCH 10()TL() SERIES TOGGLE SWITCH

TABLE OF CONTENTS

ASSEMBLY OF MICRO SWITCH 10()TL() SERIES TOGGLE SWITCH

1. PART NUMBERS AND DESCRIPTION

A. Switch Part Numbers

Table 1
MICRO SWITCH TOGGLE SWITCH PART NUMBERS

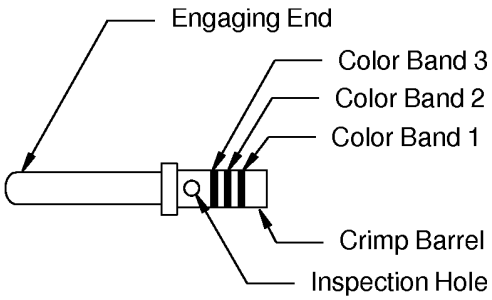
Part Number	Supplier
101TL()	Micro Switch/Honeywell
102TL()	Micro Switch/Honeywell
104TL()	Micro Switch/Honeywell
101TL2887-3	Micro Switch/Honeywell
101TL2887-51	Micro Switch/Honeywell
102TL2887-3	Micro Switch/Honeywell
102TL2887-3D	Micro Switch/Honeywell
102TL2887-7E	Micro Switch/Honeywell
8856K515	Eaton Aerospace
8868K56	Eaton Aerospace
MS21346-281	QPL
MS21347-A211	QPL
MS27789-21A	QPL

Table 2
ALTERNATIVE SWITCH PART NUMBERS

Specified Switch		Alternative Switch	
Part Number	**Supplier**	**Part Number**	**Supplier**
8856K515	Eaton Aerospace	MS21347-F271	QPL
8868K56	Eaton Aerospace	MS21346-281	QPL
MS21347-F271	QPL	8856K515	Eaton Aerospace
MS21346-281	QPL	8868K56	Eaton Aerospace

ASSEMBLY OF MICRO SWITCH 10()TL() SERIES TOGGLE SWITCH

B. Contact Part Numbers



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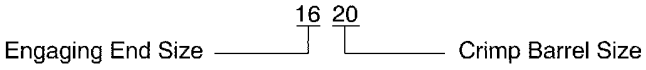
M39029/1 PIN CONTACTS
Figure 1



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EXAMPLE OF A CONTACT SIZE
Figure 2

Table 3
CONTACT PART NUMBERS

Contact		Contact Type	Part Number	Color Code		Supplier
Engaging End Size	Crimp Barrel Size			Band	Color	
16	20	Pin	M39029/1-101	1	Brown	QPL
				2	Black	QPL
				3	Brown	QPL
14	16	Pin	M39029/1-102	1	Brown	QPL
				2	Black	QPL
				3	Red	QPL
			M39029/1-14-16	-	-	QPL

ASSEMBLY OF MICRO SWITCH 10()TL() SERIES TOGGLE SWITCH

Table 4
ALTERNATIVE CONTACT PART NUMBERS

Specified Contact		Alternative Contact	
Part Number	**Supplier**	**Part Number**	**Supplier**
M39029/1-14-16	QPL	M39029/1-102	QPL

C. Seal Plug Part Numbers

Table 5
SEAL PLUG PART NUMBERS

Crimp Barrel Size	Seal Plug	Supplier
20	MS27488-20	QPL
	MS27488-20-1	QPL
16	M83723/28-16	QPL
	MS27488-16	QPL
	MS27488-16-1	QPL
	NAS1668-3	QPL

2. SWITCH DISASSEMBLY

A. Contact Removal

Table 6
CONTACT REMOVAL TOOLS

Crimp Barrel Size	Removal Tool		Supplier
	Part Number	**Color**	
20	M81969/14-11	White	QPL
	ST2220-3-29	-	Boeing
16	M81969/14-03	White	QPL
	M83723/31-16	-	QPL
	NAS1664-16	-	QPL
	ST2220-3-7	-	Boeing

(1) Make a selection of a contact removal tool from Table 6.

(2) Put the end of the removal tool on the wire.

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

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

(4) Pull the wire and the tool out of the contact cavity at the same time.

(5) If the contact does come out of the contact cavity:

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

(b) Turn the tool 90 degrees.

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

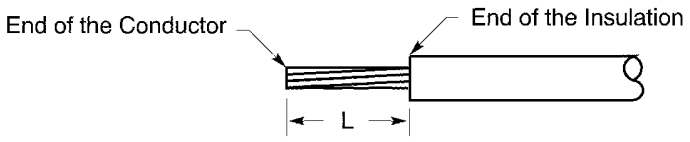
(6) Remove the wire and removal tool from the insert cavity at the same time.

3. SWITCH ASSEMBLY

A. Wire Preparation

Table 7
INSULATION REMOVAL LENGTH

Wire Size (AWG)	Crimp Barrel Size	Removal Length L (inch)		Special Instructions
		Minimum	Maximum	
22	20	0.12	0.15	-
	16	0.24	0.30	Fold the conductor back
20	20	0.12	0.15	-
	16	0.12	0.15	-
18	16	0.21	0.24	-
16	16	0.21	0.24	-



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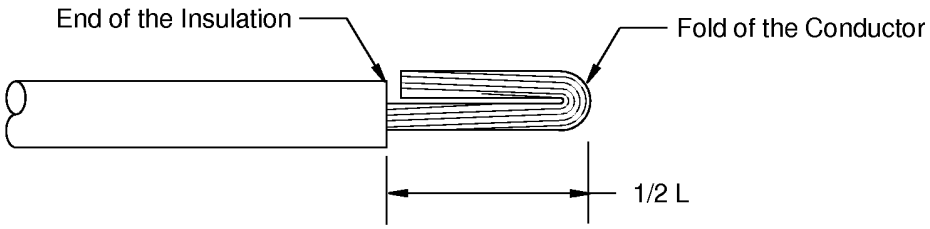
WIRE PREPARATION
Figure 3

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

- Figure 3
- Table 7 for the insulation removal length.
- Subject 20-00-15 for the insulation removal procedures.

(2) If it is specified, fold the conductor back. Refer to Figure 4.



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CONDUCTOR FOLDED BACK
Figure 4

(3) If the O.D. of the wire is less than the minimum seal diameter of the grommet hole, increase the O.D of the wire. Refer to Table 8.

Table 8
MINIMUM SEAL DIAMETERS

Contact Cavity Size	Minimum Seal Diameter (inch)
20	0.038
16	0.060

(a) Put a 0.5 inch length of 1/8 inch diameter MIL-LT or equivalent heat shrinkable sleeve on the wire.

Make sure that the distance from the forward end of the sleeve to the end of the insulation is a maximum of 0.1 inch.

(b) Shrink the sleeve into position. Refer to Subject 20-60-08.

B. Contact Assembly

Table 9
CONTACT CRIMP TOOLS

Wire Size (AWG)	Crimp Tool					
	Basic Unit			Locator		
	Part Number	Setting	Supplier	Part Number	Color	Supplier
22	M22520/1-01	3	QPL	M22520/1-02	Blue	QPL
	MS3191-4	-	QPL	MS3191-3T	-	QPL
20	M22520/1-01	4	QPL	M22520/1-02	Blue	QPL
	MS3191-4	-	QPL	MS3191-3T	-	QPL
18	M22520/1-01	5	QPL	M22520/1-02	Blue	QPL
	MS3191-4	-	QPL	MS3191-3T	-	QPL

Table 9 CONTACT CRIMP TOOLS (Continued)

Wire Size (AWG)	Crimp Tool					
	Basic Unit			Locator		
	Part Number	Setting	Supplier	Part Number	Color	Supplier
16	M22520/1-01	6	QPL	M22520/1-02	Blue	QPL
	MS3191-4	-	QPL	MS3191-3T	-	QPL

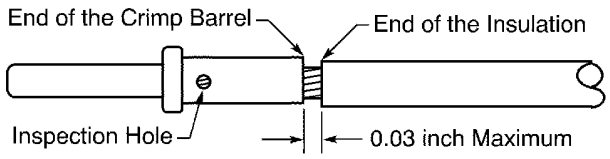
(1) Make a selection of a contact from Table 3.

(2) Make a selection of a crimp tool from Table 9.

(3) Put the end of the wire into the crimp barrel of the contact. Refer to Figure 5.

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.



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POSITION OF THE WIRE IN THE CRIMP BARREL
Figure 5

(4) Crimp the contact.

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

- A broken strand of the conductor
- A strand of the conductor on which the base metal can be seen
- A crack in the crimp barrel of the contact

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

ASSEMBLY OF MICRO SWITCH 10()TL() SERIES TOGGLE SWITCH

C. Contact Insertion

Table 10
CONTACT INSERTION TOOLS

Crimp Barrel Size	Insertion Tool		Supplier
	Part Number	Color	
20	DAK83-20	-	Daniels
	M81969/14-11	Red	QPL
	ST2220-2-28	-	Boeing
16	DAK83-16	-	Daniels
	M81969/14-03	Blue	QPL
	M83723/31-16	-	QPL
	NAS1664-16	-	QPL
	ST2220-2-4	-	Boeing

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

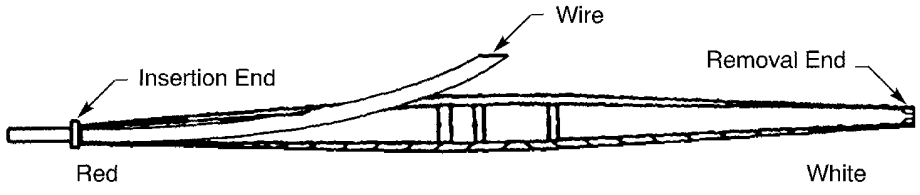
CAUTION: DO NOT USE A TOOL WITH A TIP:
- IS BENT
- IS FLARED
- IS BROKEN
- HAS A CRACK

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

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

(2) Put the contact into the insertion end of the insertion tool. Refer to Figure 6.

CAUTION: AN UNWIRED CONTACT MUST NOT BE INSTALLED IN A CONTACT CAVITY. IT CANNOT BE REMOVED.



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POSITION OF THE CONTACT IN THE INSERTION TOOL
Figure 6

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

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

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

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

(6) Lightly pull the wire to make sure that the contact is locked in position.

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

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

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

(a) Pull the contact out of the cavity.

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

D. Seal of an Empty Contact Cavity

(1) Make a selection of a seal plug from Table 5.

(2) Install seal plugs in each empty contact cavity. Refer to Subject 20-60-08.