TRAKIT RADIO INTERFACE MANUAL

Printings

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E.F. Johnson Challenger 7172 Interface

The following items are included in the E.F. Johnson Challenger 7172 cable interface kit:

1. E.F. Johnson Challenger 7172 interface cable assembly.
2. Cable tie.
3. Instruction sheet.

The following steps outline the procedure for interfacing the E.F Johnson Challenger 7172 radio to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

Transmit indicator active:	High
Receive indicator active:	High
PTT output active:	Low
Enable mic mute gate on transmit:	No
Enable Tx indicator as event 2:	No
External output active:	Low
External output mode:	Speaker mute

2. Configure the following jumpers as indicated:

JP1	Remove
JP4	A-B

3. On the TrakIt-20 Board remove D2.

4. Remove cover of the radio.

5. On the Audio/Logic Board of the radio, cut the trace between pin 3 of J403 and the junction of R345 and Q409.

6. Cut hole in rubber plug located on the back of radio and feed Challenger 7172 interface cable through the hole. Secure cable with tie strap to a fixed place inside of radio.

7. Connect the wires of the Challenger 7172 interface cable to the following points in the radio as shown in the following diagrams:

E.F Johnson Challenger 7172 Interface (cont.)

White	U402 pin 2 on Audio/Logic Board
Yellow	Junction of C318 and Q409 on Audio/Logic Board
Orange	U406 pin 26 on Audio/Logic Board
Gray	U404 pin 5 on Audio/Logic Board
Violet	J403 pin 3 on Audio/Logic Board
Blue	J103 pin 4 on Main Board
Red	On/Off Switch on Main Board
Black	J103 pin 1 on Main Board
Brown	Junction of R221, R222, and C238 on Main Board
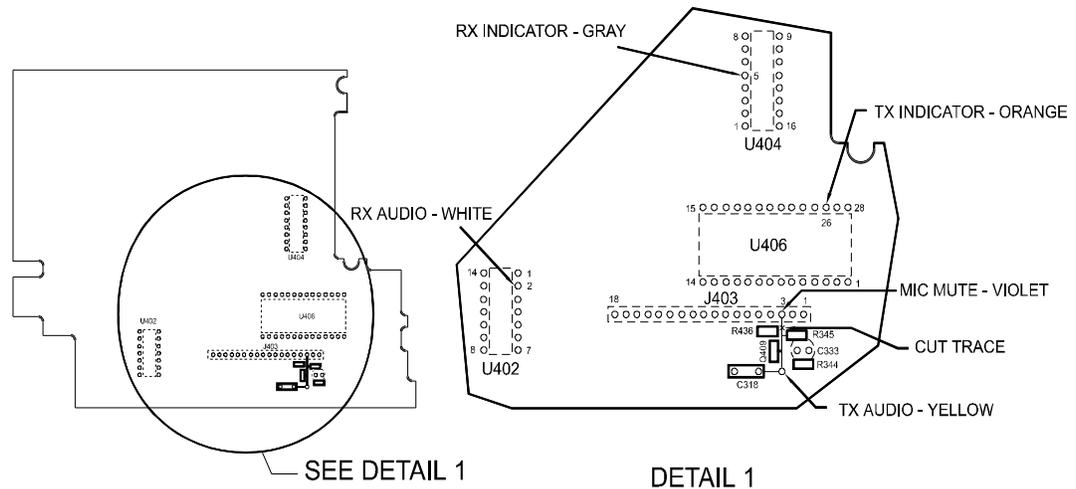
AUDIO/LOGIC BOARD COMPONENT LAYOUT, BOTTOM VIEW
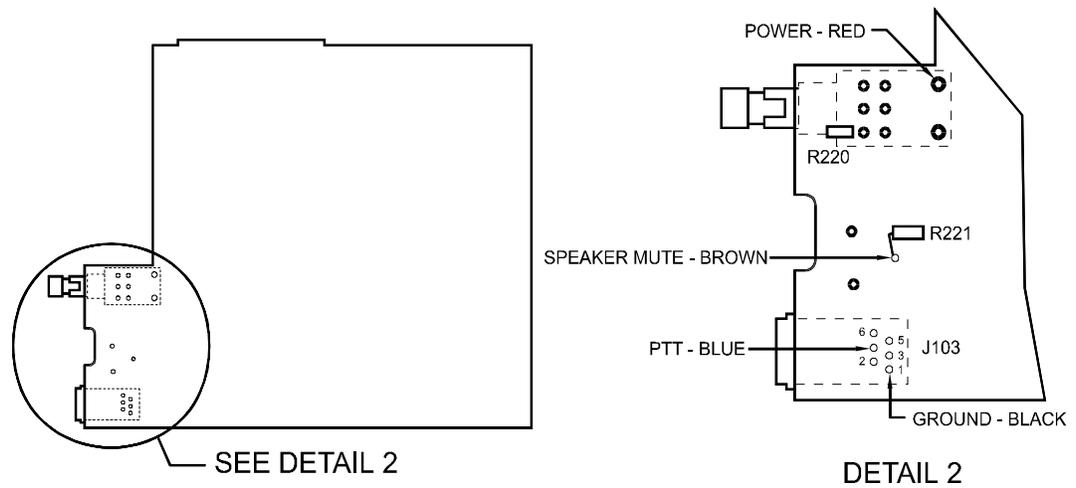
MAIN BOARD COMPONENT LAYOUT, BOTTOM VIEW

8. Replace cover of radio.

E.F Johnson Challenger 7172 Interface (cont.)

9. Connect the DB-15 end of the Challenger 7172 interface cable to the DB-15 connector on the back of the TrakIt-20.

10. Check the TrakIt-20's audio levels by performing the alignment procedure described in the TrakIt-20 manual.

Challenger 7172 Interface Cable

EFJ CHALLENGER 7172
RADIO   DB-15

Signal	Color	Pin
RX AUDIO	WHITE	1
TX AUDIO	YELLOW	2
TX INDICATOR	ORANGE	3
RX INDICATOR	GRAY	4
		6
MIC MUTE	VIOLET	7
POWER	RED	8
GROUND	BLACK	9
PTT	BLUE	10
SPEAKER MUTE	BROWN	13
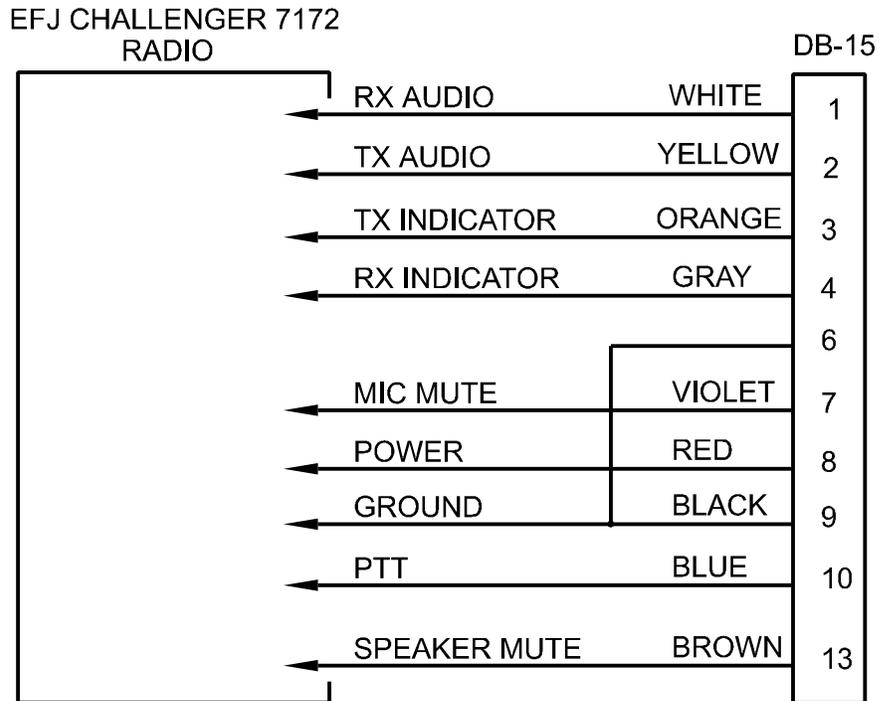
E.F. JOHNSON CHALLENGER 7172 INTERFACE CABLE KIT
106-EFJ7172

Item	Description	Part No.	Qty.
1	CABLE TIE (short)	200-0081	1
2	SCREW/CLIP KIT	231-0014	1
3	CONN DB15 MALE	231-0035	1
4	COVER DB15	231-0036	1
5	10 COND CABLE	800-1115	1'

E.F. Johnson 8605 Interface

The following items are included in the E.F. Johnson 8605 interface kit:

1. 8605 interface cable assembly.
2. Cable tie (short)
3. Instruction sheet.

To interface the E.F. Johnson 8605 radio to the TrakIt-20 the following steps must be performed:

1. Set the TrakIt-20 up for a bench test and use the setup program to set the following operating constants to the indicated value:

Transmit indicator active:	High
Receive indicator active:	Low
PTT output active:	Low
Enable mic mute gate on transmit:	No
Enable Tx indicator as event 2:	No
External output active:	Low
External output mode:	Speaker mute

2. Configure the following jumpers as indicated:

JP1	Installed
JP4	B-C

3. The following connections need to be made between the DB-15 connector on the back of the TrakIt-20 and connector P2 on the audio/logic board of the 8605 radio:

E.F. Johnson 8605 Interface (cont.)

E F JOHNSON 8605 to DB-15 wiring diagram:

8605 Connection	Signal	Wire Color	DB-15 Pin
P2 pin 4	DISC AUDIO	WHITE	1
Jct. C23 and R44 (on Audio Logic Board)	MIC AUDIO	YELLOW	2
P2 pin 1	TX IND	ORANGE	3
P2 pin 7	RX IND	GRAY	4
P2 pin 5	POWER	RED	8
P2 pin 9	GROUND	BLACK	9
		SHIELD	
P2 pin 2	GROUND	BLUE	10
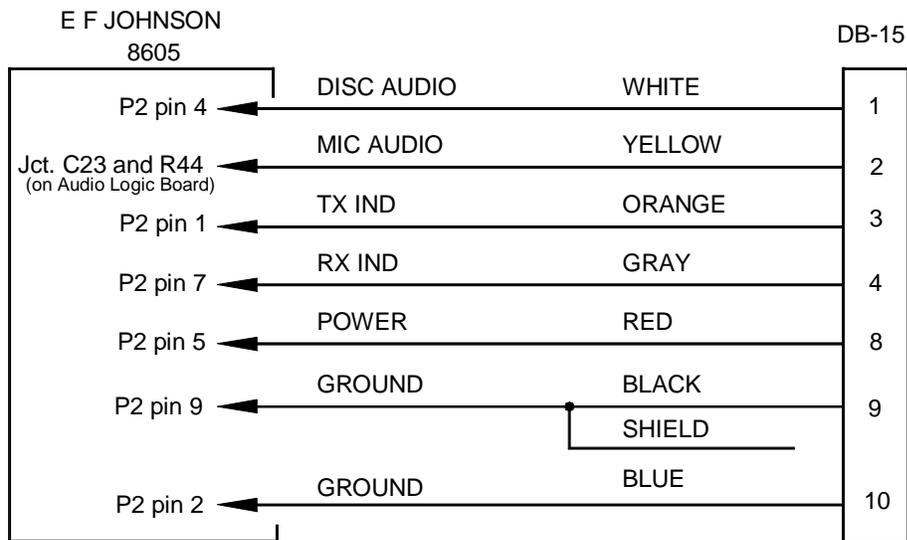
4. Connect pin 2 of the TrakIt-20 DB-15 connector to the junction of C23 and R44 on the audio/logic board of the 8605 radio.

5. Check the TrakIt-20's audio levels by performing the alignment procedure described in this manual.

NOTE: This installation assumes the radio is dedicated to data and does not provide a means of muting the microphone audio.

E.F. JOHNSON 8605 INTERFACE CABLE KIT
106-EFJ7172

Item	Description	Part No.	Qty.
1	CABLE TIE (short)	200-0081	1
2	SCREW/CLIP KIT	231-0014	1
3	CONN DB15 MALE	231-0035	1
4	COVER DB15	231-0036	1
5	10 COND CABLE	800-1115	1'

E.F. Johnson Summit DM Interface

The following items are included in the Summit DM interface kit:

1. Summit DM interface cable assembly.
2. Instruction sheet.

The following steps outline the procedure for interfacing Summit DM radio to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

   Transmit indicator active: Low
   Receive indicator active: Low
   PTT output active: Low
   Enable Tx indicator as event 2:   No
   External output active: Low
   External output mode: 2ND PTT

2. Configure the following jumpers as indicated:

   JP1   Cut
   JP4   BC

3. Connect the DB-15 end of the Summit DM interface cable to the DB-15 connector on the back of the TrakIt-20. Connect the DB-25 end of the cable to the DB-25 accessory cable on the back of the radio.

4. Check the TrakIt-20's audio levels by performing the alignment procedure described in this manual.

TRAKIT 20 DB15			SUMMIT U/I DB25
1	RX AUDIO	WHITE	7
2	TX AUDIO	ORANGE	13
3	TX IND	YELLOW	15
4	RX IND	VIOLET	16
8	POWER	RED	22
9	GROUND	BLACK	19
10	PTT	BLUE	3
13	DATA PTT	GREEN	1

E.F. Johnson Summit DM Interface (cont'd)

This interface is set up for the use of a data channel to be used for the Trakit data.
It is not necessary to use this feature if it is not needed or available. The 2^(ND) PTT output
can also be used to mute the speaker of the radio. This would require different radio
programming as well as different wiring for the green wire (speaker mute).

RADIO PROGRAMMING NOTES:

Under main radio parameters, set the UI OPTIONS for AUDIO RX and AUDIO TX both
for MODE 1.

PTT REQ N = DATA REVERT
INPUT A   = DATA ARQ
OUTPUT A = CLEAR TO SEND
OUTPUT B = RX DATA GROUP

Assign the data system/group under the banks. Under the UI OPTIONS on the data
system, assign AUDIO TX as MODE 3. Also, designate the appropriate group in that
system for data.

Voice must be on one system, and the data must be on another system. Therefore,
system scan is needed. This is because the Summit TX AUDIO MODES are selected
on a system wide basis. MODE 1 is the default mode for normal voice operations.
MODE 3, and other modes are for routing the transmit audio from external devices into
the radio.

E.F. Johnson Summit DM Interface Cable Kit
106-TKEFJSUM

Item	Description	Part No.	Qty.
1	SCREW/CLIP KIT	231-0014	2
2	CONN DB15 MALE	231-0035	1
3	COVER DB15	231-0036	1
4	CBL, 8 CONN 22 AWG STR	800-1115	1'
6	CONN DB25M	231-0005	1
7	COVER DB25	231-0015	1

E.F. Johnson Viking GT Interface

The following items are included in the E.F. Johnson Viking GT cable interface kit:

1. E.F. Johnson Viking GT interface cable assembly.
2. Cable tie.
3. Instruction sheet.
4. 4 pieces of Heat Shrink Tubing
5. 4 pieces of Wire Wrap Wire

The following steps outline the procedure for interfacing the E.F Johnson Viking GT radio to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

Transmit indicator active:	High
Receive indicator active:	High
PTT output active:	Low
Enable mic mute gate on transmit:	Yes
Enable Tx indicator as event 2:	No
External output active:	Low
External output mode:	Speaker mute

2. Configure the following jumpers as indicated:

JP1	Removed
JP4	B-C

3. On the TrakIt-20 Board remove D2.

4. Remove cover of the radio.

5. Remove Audio/Logic Board from the radio and solder the enclosed lenghts of wire wrap wire to the following points on the bottom of the Audio/Logic Board.

Solder Wire Wrap
Wire here
For Connection to GREEN Wire

Solder Wire Wrap
Wire here
For Connection to WHITE Wire
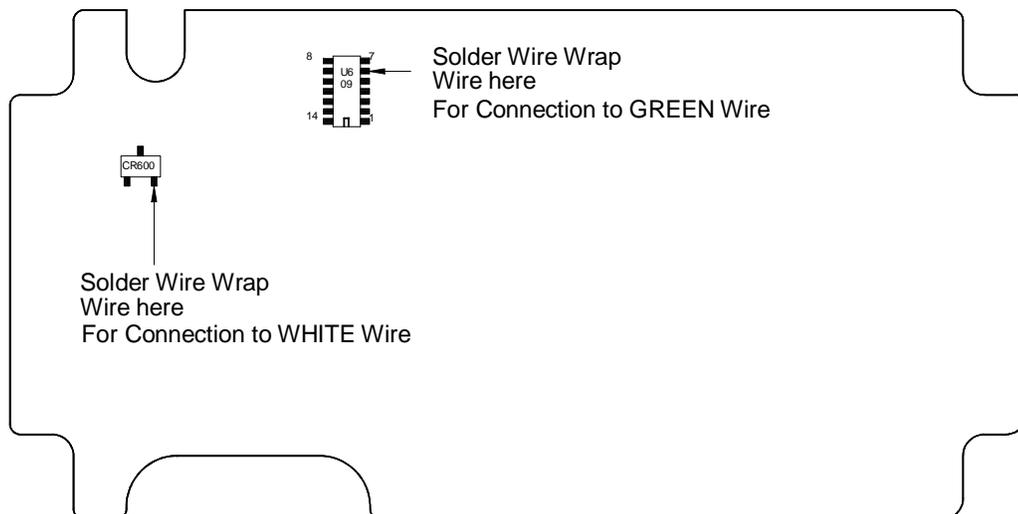
EFJ VIKING GT Audio/Logic Board
BOTTOM VIEW

E.F Johnson Viking GT Interface (cont.)

6. Keeping track of which wire wrap wire is which, pass them through the small hole by J300. Reinstall Audio/Logic PCB.

7. Connect the wires of the Viking GT interface cable to the following points in the radio as shown in the following diagrams:

Blue	J402 pin 1
Orange	W/O 13
Gray	Jct. of R607 and C624
Black	W/O 10 attach and heat shrink shield
Red	J300 pin 8
Yellow	J401 pin 4 attach using wire wrap wire
Violet	J401 pin 8 attach using wire wrap wire
Green	U609 pin 6 from the bottom of the Audio/Logic board (Wire wrap wire passed through board)
White	CR600 from the bottom of the Audio/Logic board (Wire wrap wire passed through board)
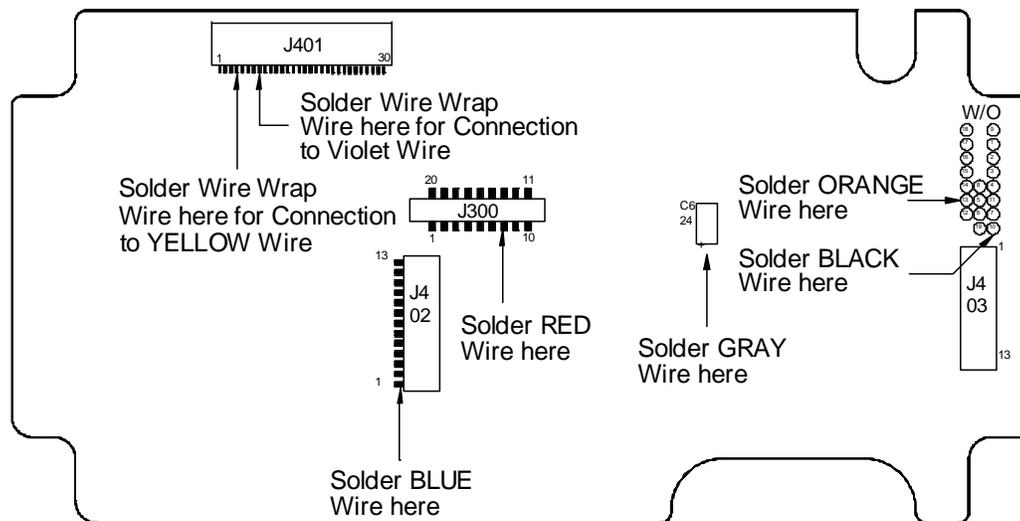
EFJ VIKING GT Audio/Logic Board
TOP VIEW

8. Replace cover of radio.

9. Connect the DB-15 end of the Viking GT interface cable to the DB-15 connector on the back of the TrakIt-20.

E.F Johnson Viking GT Interface (cont.)

10. Check the TrakIt-20's audio levels by performing the alignment procedure described in the TrakIt-20 manual.

EFJ VIKING GT
RADIO AUDIO/LOGIC PCB   DB-15

RX AUDIO	ORANGE	1
TX AUDIO	BLUE	2
TX INDICATOR	GREEN	3
RX INDICATOR	WHITE	4
		6
MIC MUTE	VIOLET	7
POWER	RED	8
GROUND	BLACK	9
PTT	YELLOW	10
SPEAKER MUTE	GRAY	13
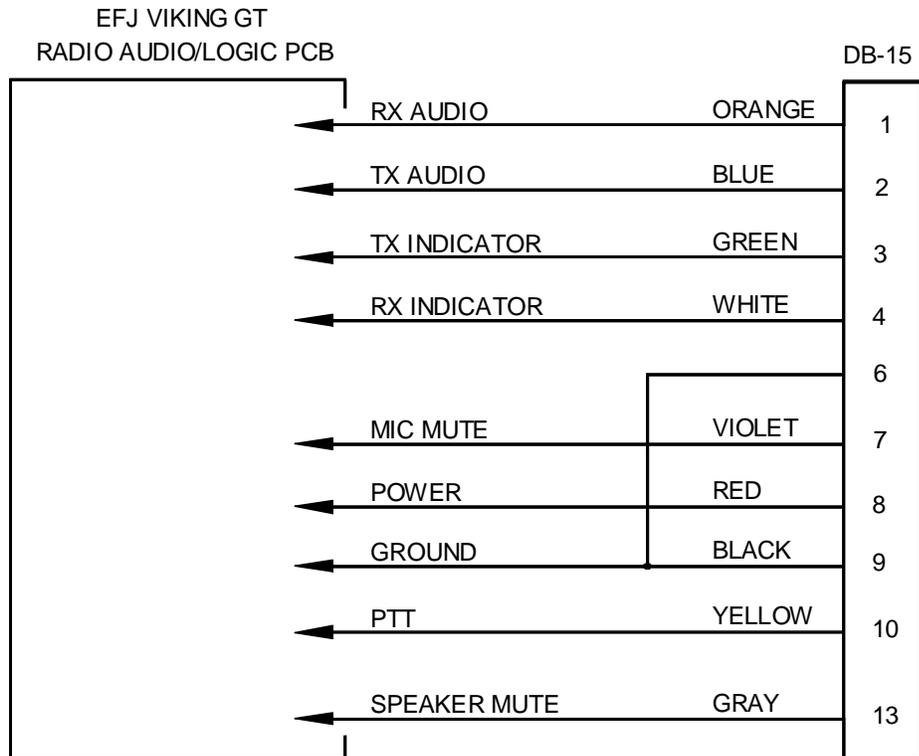
E.F. JOHNSON VIKING GT INTERFACE CABLE KIT
106-EFJVIKGT

Item	Description	Part No.	Qty.
1	CABLE TIE (short)	200-0081	1
2	SCREW/CLIP KIT	231-0014	1
3	CONN DB15 MALE	231-0035	1
4	COVER DB15	231-0036	1
5	10 COND CABLE	800-1115	1'

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GE MLSU241 Interface

The following items are included in the GE MLSU241 interface kit:

1. GE MLSU241 interface cable assembly.
2. Cable tie.
3. Instruction sheet.

The following steps outline the procedure for interfacing the GE MLSU241 radio to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

Transmit indicator active:	High
Receive indicator active:	High
PTT output active:	Low
Enable Tx indicator as event 2:	No
External output active:	Low
External output mode:	Speaker mute
Enable mic mute gate on TX	No

2. Configure the following jumpers as indicated:

JP1	Removed
JP4	A-B

3. Remove the top cover of the GE MLSU241 radio by following instructions in the radio service manual.

4. Pass the lose wires through the slot above the microphone connector and secure with a tie strap on the inside of the radio for strain relief.

5. Solder the orange wire of the GE MLSU241 interface cable to the positive side of C601.

6. Solder the blue wire of the GE MLSU241 interface cable to pin 4 of J701.

7. Solder the green wire of the GE MLSU241 interface cable to pin 13 of IC 603.

8. Solder the white wire of the GE MLSU241 interface cable to pin 10 of IC 705.

9. Remove the white wire & pin from the microphone molex connector.

10. Solder the violet wire of the GE MLSU241 interface cable to the white wire on the microphone cord and heat shrink over the connection.

11. Solder the black wire & shield of the GE MLSU241 interface cable to pin 5 of J701.

12. Solder the yellow wire of the GE MLSU241 interface cable to pin 2 of J701.

13. Solder the gray wire of the GE MLSU241 interface cable to pin 8 of IC 603.

14. Solder the red wire of the GE MLSU241 interface cable to SW A+ as shown in the following diagram.

15. Connect the DB-15 end of the GE MLSU241 interface cable to the DB-15 connector on the back of the TrakIt-20.

GE MLSU241 Interface (cont.)

16. Check the TrakIt-20's audio levels by performing the alignment procedure described in this manual.

17. Re-assemble radio as needed.

18. Below is a block diagram of the GE MLSU241 interface cable:

GE MLSU241 RADIO — DB-15

Signal	Color	Pin
RX AUDIO	ORANGE	1
TX AUDIO	BLUE	2
TX INDICATOR	GREEN	3
RX INDICATOR	WHITE	4
	EVENT	5
		6
MIC AUDIO	VIOLET	7
POWER	RED	8
GROUND	BLACK	9
	SHIELD	
PTT	YELLOW	10
	TXD	11
	RXD	12
SPEAKER MUTE	GRAY	13
	N/C	14
	5V	15
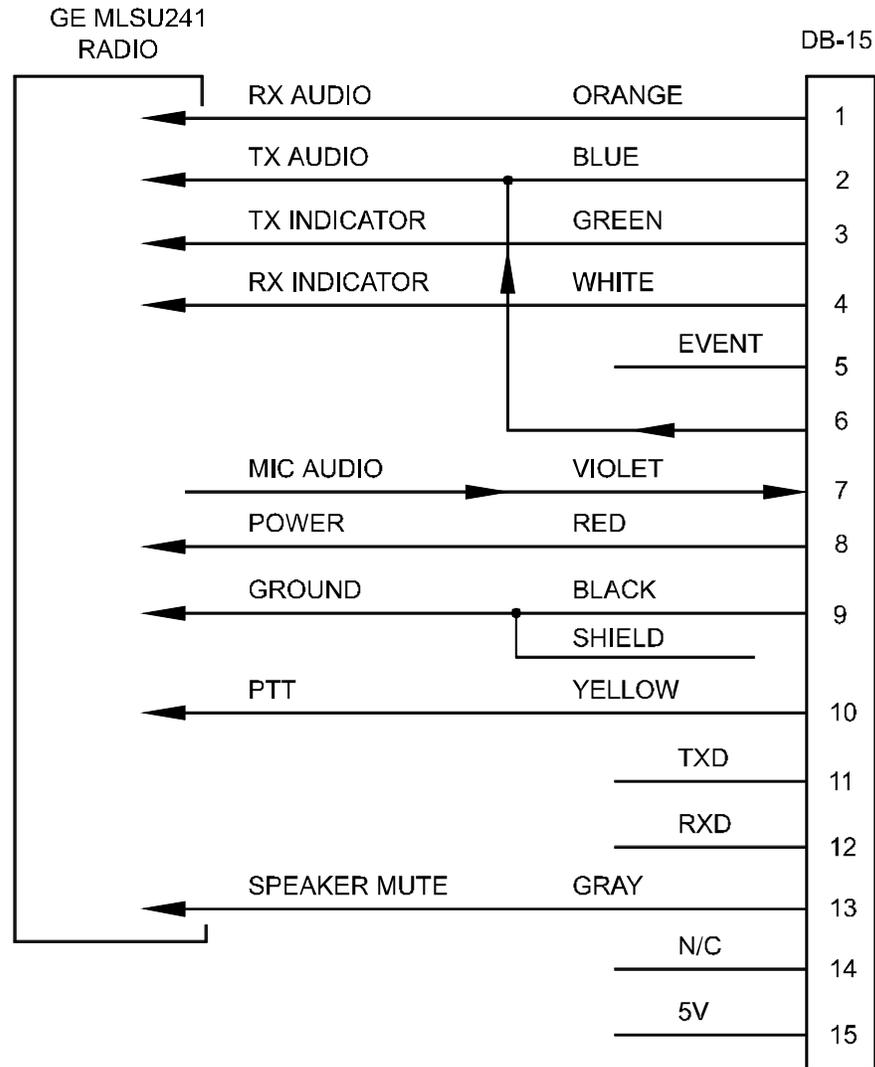
19. Below is the component side of the GE MLSU241 System Control Board

12

Mic Cable

Solder violet wire to the
white wire of the Mic Cable

Molex Connector

Solder blue wire to
pin 4 of J701

Solder yellow wire to pin 2 of J701

Solder gray wire to pin 8 of IC 603

Solder green wire to pin 13 of IC 603

Solder black wire and
shield to pin 5 of J701

IC603

IC606

J701

C613   IC607

C615   IC608

C618

C624

IC610

Solder red wire
here to SW A+ net
* Scrape trace with straight edge
so solder will adhere to trace

L601

Solder orange wire to
positive side of C601

C601

J703

IC707

IC704   IC702

IC701   IC705

Solder white wire to
pin 10 of IC 705

GE MLSU241 Interface Cable Kit
106-GEMLS241

Item	Description	Part No.	Qty.
1	HEAT SHRINK	199-6017	1
2	CABLE TIE (SHORT)	200-0081	1
3	SCREW/CLIP KIT	231-0014	1
4	CONN DB15 MALE	231-0035	1
5	COVER DB15	231-0036	1
6	CBL, 10 CONN 24 AWG STR	800-1115	2'

Kenwood TK-230/330 Interface

The following items are included in the Kenwood TK-230/330 cable interface kit:

1. Kenwood TK-230/330 interface cable assembly.
2. 2 wire jumpers
3. Instruction sheet.

The following steps outline the procedure for interfacing the Kenwood TK-230/330 radio to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:
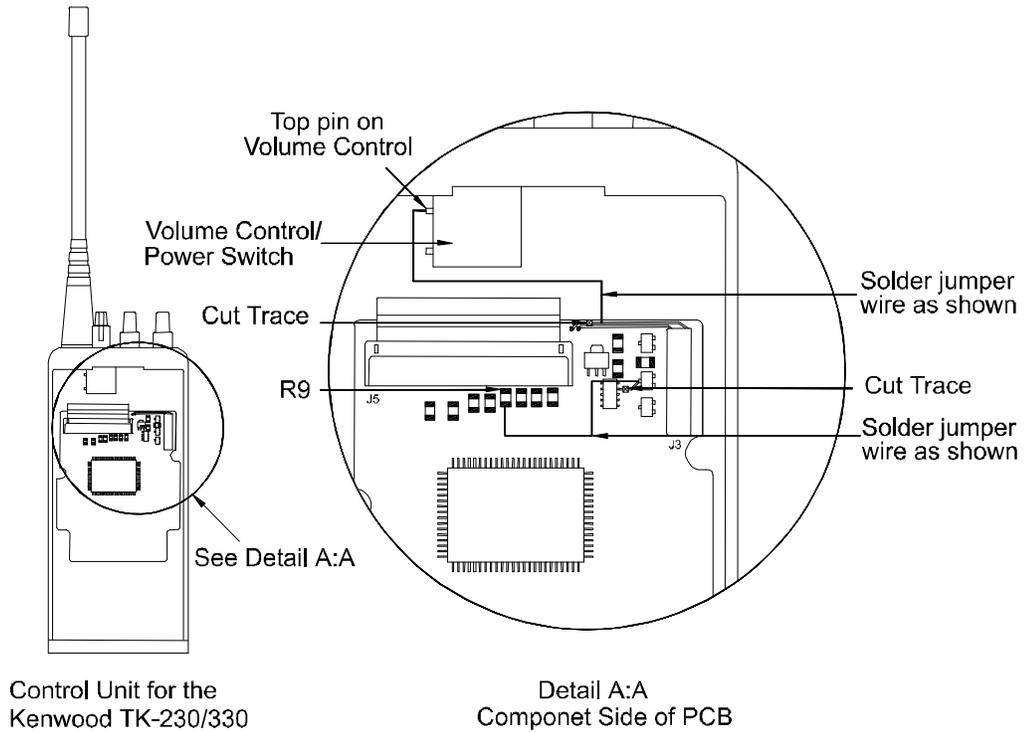
Transmit indicator active:	Low
Receive indicator active:	High
PTT output active:	Low
Enable mic mute gate on transmit:	No
Enable Tx indicator as event 2:	No
External output active:	Low
External output mode:	Speaker mute

2. Configure the following jumpers as indicated:

JP1	Removed
JP4	A-B

3. On the TrakIt-20 Board remove D4.

4. Remove covers from radio and place radio flat on back.

5. Remove shield plate covering control unit.

6. Cut the trace from D5 to R84 as shown on the following page:

7. Solder a jumper from the bottom of R9 to D5. (This removes monitor from the accessory connector an puts COR in its place.)

8. Cut the trace from SP2 to the feed through as shown on the following page:

9. Solder a jumper from the top pin on volume control to the J3 side of the cut trace as shown below: (steps 8 and 9 removes SP2 from the accessory connector and put RX audio in its place, so the volume control does not effect audio).

10. Unplug the microphone/speaker from the control board in the radio.

11. Re-assemble radio.

12. Connect the interface cable between the radio and the TrakIt-20.

13. Connect the black wire to the external power supply ground.

14. Connect the red wire to the external power supply B+ (11-18VDC) (the TrakIt-20 units are fused internally)

Kenwood TK-230/330 Interface (cont.)

Top pin on
Volume Control

Volume Control/
Power Switch

Cut Trace

R9

Solder jumper
wire as shown

Cut Trace

Solder jumper
wire as shown

See Detail A:A

Control Unit for the
Kenwood TK-230/330

Detail A:A
Componet Side of PCB

**Interface cable using Kenwood KCT-1 clone cable.
(the KCT-1 clone cable needs to be rewired on the radio
end to macth the colors below)**

TRAKIT DB15

KENWOOD ACCESSORY
CONNECTOR

DB15	Signal		Color	Kenwood
1	RX AUDIO		GREEN	6
2	TX AUDIO	470K *	WHITE	4
3	TX INDICATOR		ORANGE	7
10	PTT			
4	RX INDICATOR		YELLOW	9
9	GROUND		BROWN	2
			SHIELD	
8	POWER		BLACK	
			RED	

* 470K resistor is used for the UHF TK330 only.

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Kenwood TK-230/330 Interface (cont.)

Interface cable using Kenwood KCT-3 metering cable.

TRAKIT DB15   KENWOOD ACCESSORY CONNECTOR

1	RX AUDIO		RED	6
2	TX AUDIO	470K *	WHITE	4
3	TX INDICATOR		GREEN	7
10	PTT			
4	RX INDICATOR		YELLOW	9
9	GROUND		BLACK	2
8	POWER			

BLACK

RED
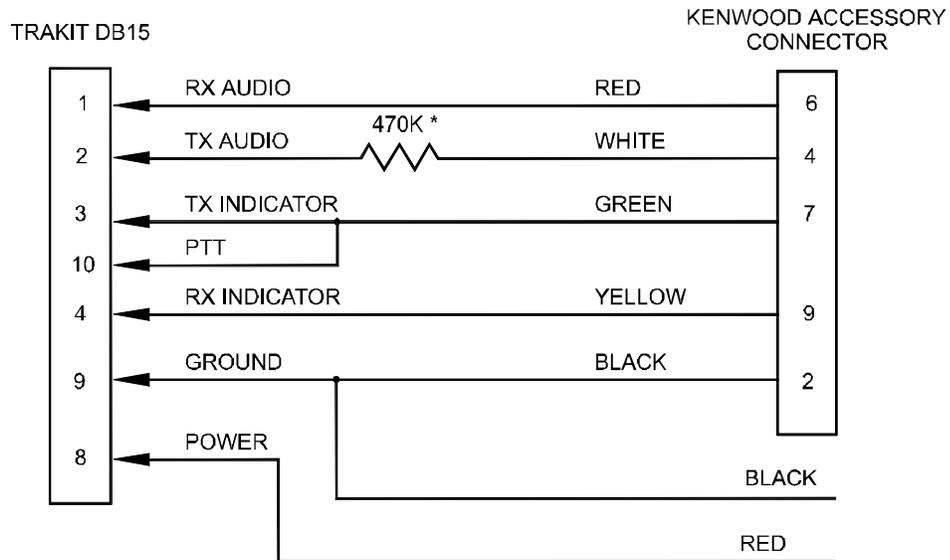
* 470K resistor is used for the UHF TK330 only.

KENWOOD TK-230/330 INTERFACE CABLE KIT
106-KEN230

Item	Description	Part No.	Qty.
1	WIRE RED 22 AWG	222-0017	2'
2	WIRE BLACK 22 AWG	222-0021	2'
3	SCREW/CLIP KIT	231-0014	1
4	CONN DB15 MALE	231-0035	1
5	COVER DB15	231-0036	1

NOTE: Use Kenwood's KCT-3 or KCT-1 as desired to connect to the radio's accessory connector.

Kenwood TK-790/890 Interface

The following items are included in the Kenwood TK-790/890 interface kit:
1. Kenwood TK-790/890 interface cable assembly.
2. Instruction sheet.

The following steps outline the procedure for interfacing the Kenwood TK-790/890 radio to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:
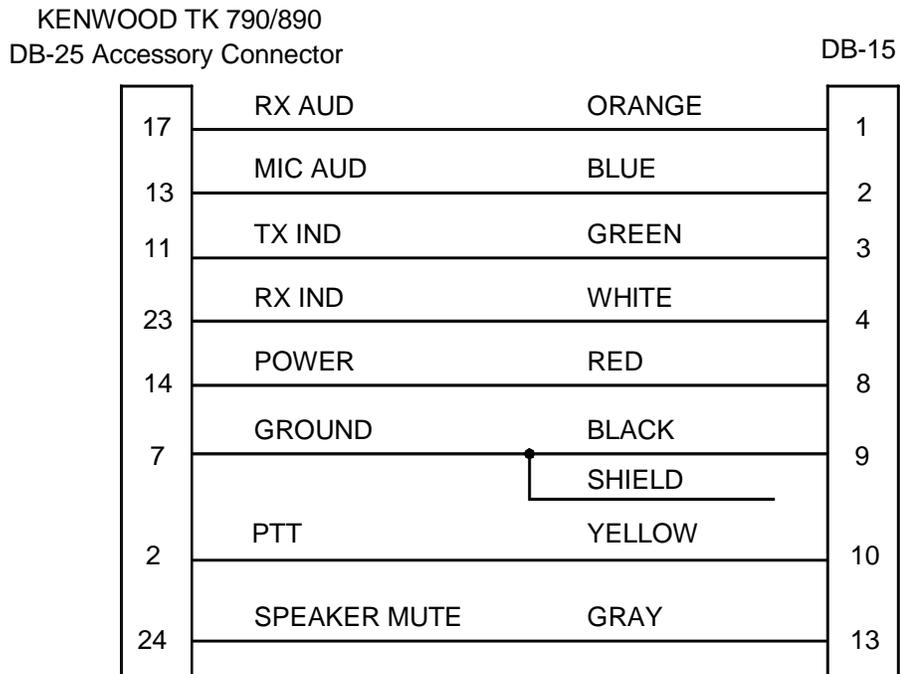
Transmit indicator active:	High
Receive indicator active:	Low
PTT output active:	Low
Enable Tx indicator as event 2:	No
External output active:	Low
External output mode:	Speaker mute

2. Configure the following jumpers as indicated:

JP1	Removed
JP4	A-B
D2	Removed

3. Program pin 2 of the radio's DB25 accessory connector for PTT.

4. Short the switched B+ jumper pads in the radio to get switched B+ out to the accessory connector.

5. Connect the DB15 end of the Kenwood TK790/890 interface cable to the DB15 connector on the back of the TRAKIT-20.

6. Connect the DB25 end of the Kenwood TK790/890 interface cable to the DB25 connector on the back of the Kenwood TK790/890 radio.

7. Check the TRAKIT-20 audio levels by performing the alignment procedure described in the TRAKIT-20 manual.

Kenwood TK-790/890 Interface (cont.)

KENWOOD TK 790/890
DB-25 Accessory Connector   DB-15

DB-25	Signal	Color	DB-15
17	RX AUD	ORANGE	1
13	MIC AUD	BLUE	2
11	TX IND	GREEN	3
23	RX IND	WHITE	4
14	POWER	RED	8
7	GROUND	BLACK	9
		SHIELD	
2	PTT	YELLOW	10
24	SPEAKER MUTE	GRAY	13

Kenwood TK-790/890 Interface Cable Kit
106-KENTK790

Item	Description	Part No.	Qty.
1	CONN DB25 MALE	231-0005	1
2	SCREW/CLIP KIT	231-0014	2
3	COVER DB25	231-0015	1
4	CONN DB15 MALE	231-0035	1
5	COVER DB15	231-0036	1
6	CABLE 10 COND. 24 AWG	800-1115	2'

Kenwood TK-805 Interface

The following items are included in the Kenwood TK-805 cable interface kit:

1. Kenwood TK-805 interface cable assembly.
2. Instruction sheet.

The following steps outline the procedure for interfacing the Kenwood TK-805 to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:
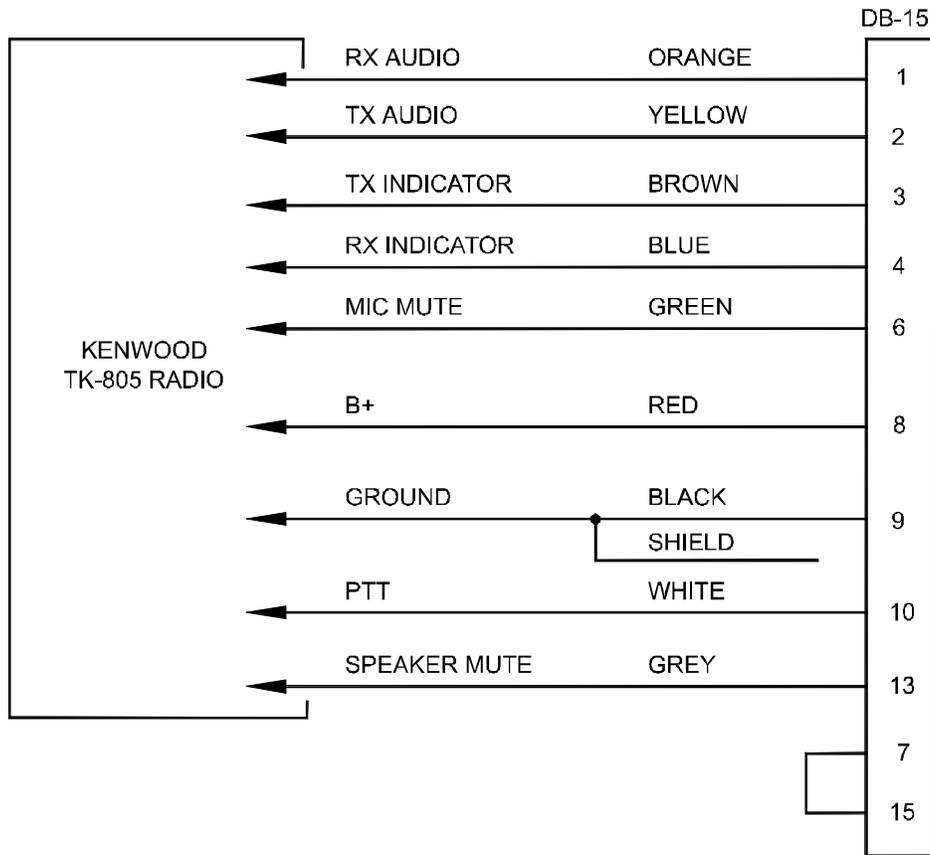
Transmit indicator active:	Low
Receive indicator active:	Low
PTT output active:	Low
Enable mic mute gate on transmit:	Yes
Enable Tx indicator as event 2:	No
External output active:	Low
External output mode:	Speaker mute

2. Configure the following jumpers as indicated:

JP1	In
JP4	A-B

3. Remove Kenwood TK-805 radio top cover and raise the power wires out of the slot in the back of the radio. Insert the Kenwood TK-805 interface cable below the power cable with a tie strap for strain relief.

4. Solder the ORANGE wire to CN4 pin 5.

5. Solder the YELLOW wire to collector of Q11.

6. Solder the BROWN wire to CN3 pin 5.

7. Solder the BLUE wire to CN4 pin 7.

8. Solder the GREEN wire to CN2 pin 6.

9. Solder the RED wire to J201 pin 1.

10. Solder the BLACK wire to the ground where the black power supply wire is connected to the board.

11. Solder the WHITE wire to J201 pin 3

12. Solder the GREY wire to collector of Q4

13. Align TrakIt-20 levels as described in TrakIt-20 manual.

Kenwood TK-805 Interface (cont.)

			DB-15
RX AUDIO	ORANGE	←	1
TX AUDIO	YELLOW	←	2
TX INDICATOR	BROWN	←	3
RX INDICATOR	BLUE	←	4
MIC MUTE	GREEN	←	6
B+	RED	←	8
GROUND	BLACK	←	9
	SHIELD		
PTT	WHITE	←	10
SPEAKER MUTE	GREY	←	13
			7
			15

KENWOOD
TK-805 RADIO

KENWOOD TK-805 INTERFACE CABLE KIT
106-KENTK805

Item	Description	Part No.	Qty.
1	CABLE TIE (SHORT)	200-0081	1
2	SCREW/CLIP KIT	231-0014	1
3	CONN DB15 MALE	231-0035	1
4	COVER DB15	231-0036	1
5	10 COND CABLE	800-1115	2'

Kenwood TK-840/940/941 Interface

The following items are included in the Kenwood TK-840/940/941 interface kit:

1. TK-840/940/941 interface cable assembly.
2. 3 short pieces of wire.
3. 3 short pieces of heat shrink tubing.
4. Instruction sheet.

The following steps outline the procedure for interfacing the Kenwood TK-840/940/941 radio to the TrakIt-20. The Kenwood TK-840/940/941 radio can operate in either trunking or conventional mode but the interface will depend upon the mode selected as detailed in the following steps.

1. The enclosed interface cable needs to have one pin installed in the appropriate location. For a Kenwood **TK-840/940/941**, install the loose pin (brown wire) into pin number **10** on the molex end of the interface cable. For a Kenwood **TK-880/980/981**, install the loose pin (brown wire) into pin number **2** on the molex end of the interface cable.

2. For a Kenwood **TK-840/940/941**, the resistor inside of the hood on the DB15 connector needs to be removed. Disassemble the hood, cut the resistor out and reassemble the hood.

3. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

Trunking	
Transmit indicator active:	Low
Receive indicator active:	High
PTT output active:	Low
Enable mic mute gate on transmit:	Yes
External output active:	Low
External output mode:	Speaker mute

Conventional	
Transmit indicator active:	High
Receive indicator active:	High
PTT output active:	Low
Enable mic mute gate on transmit:	Yes
Enable Tx indicator as event 2:	No
External output active:	Low
External output mode:	Speaker mute

Kenwood TK-840/940/941 Interface (cont.)

4. Configure the following jumpers as indicated:

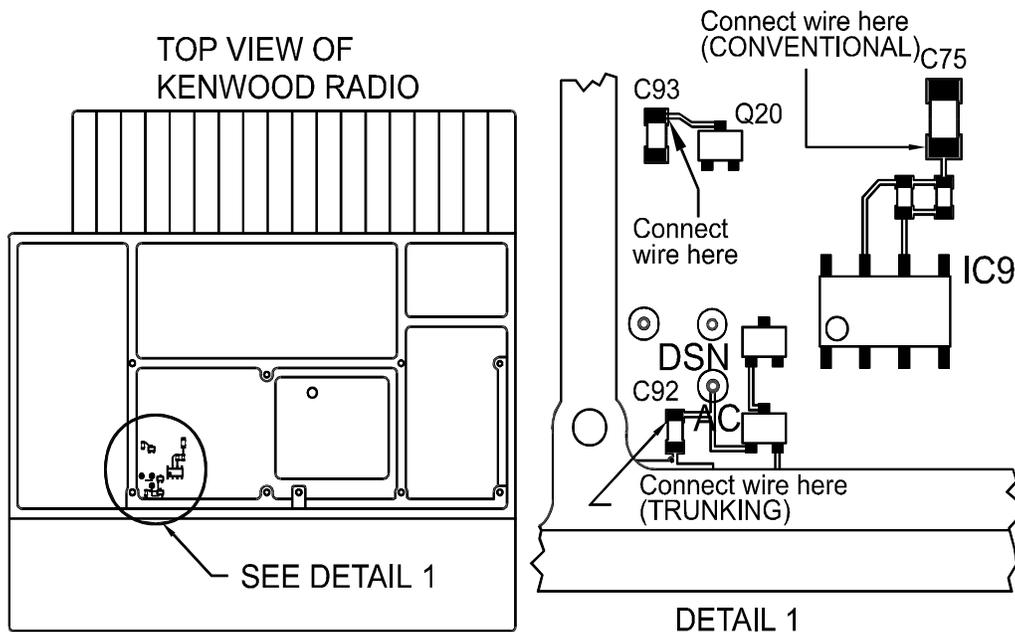| Trunking		Conventional	
JP1	Installed	JP1	Installed
JP4	B-C	JP4	A-B

5. Install the KCT-19 accessory connection cable into the TK-840/940/941 radio by following the instructions in the TK-840/940/941 service manual. The cable connectors should be connected to the TX-RX unit as follows:

Cable	TX-RX unit
B	CN4
C	No connection
D	CN1
E	CN2

6. Place the speaker and speaker holder off to the side and remove the shield cover located beneath the speaker.

7. Locate capacitor C93 and solder a piece of wire to the side of C93 that is connected to Q20 as shown in the following diagram.

8. **Trunking only**: Locate capacitor C92 and solder a piece of wire to the side of C92 that is connected to the hole labeled "AC" as shown in the following diagram.
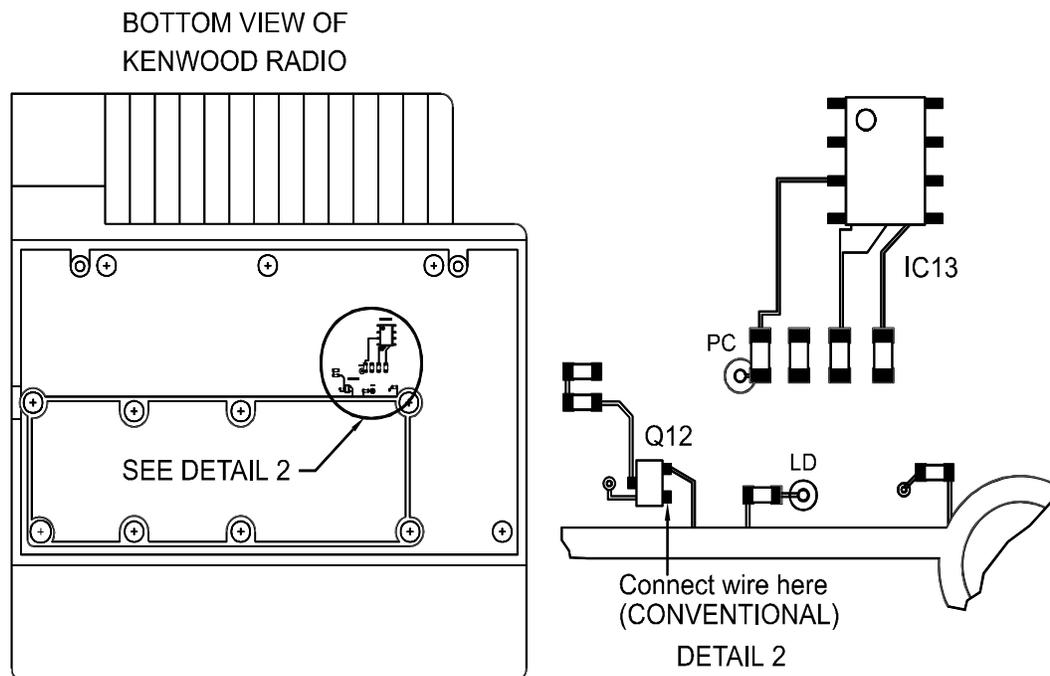
    Conventional only: Locate capacitor C75 and solder a piece of wire to the side of C75 that is connected to pin 7 of IC9 as shown in the following diagram.

TOP VIEW OF
KENWOOD RADIO

SEE DETAIL 1

Connect wire here
(CONVENTIONAL)C75

C93

Q20

Connect
wire here

IC9

DSN

C92

AC

Connect wire here
(TRUNKING)

DETAIL 1

9. Cut the brown wire going to pin 1 of connector B (the larger 3 position connector) on the KCT-19 cable. Place a piece of heat shrink tubing on this wire and solder this wire to the wire that was soldered to C93.

10. **Trunking only**: Cut the gray wire going to pin 8 of connector D (the 8 position connector) on the KCT-19 cable. Place a piece of heat shrink tubing on this wire and solder this wire to the wire that was soldered to C92.

    Conventional only: Cut the brown wire going to pin 1 of connector D (the 8 position connector) on the KCT-19 cable. Place a piece of heat shrink tubing on this wire and solder this wire to the wire that was soldered to C75.

11. Move the heat shrink tubing into place and shrink it.

12. Replace the shield cover making sure the wires pass through slots in the cover without being pinched.

13. **Conventional only**: On the bottom side of the radio, locate transistor Q12 and solder a piece of wire to Q12 as indicated in the following diagram. Pass this wire through a hole in the PC board to the top side of the radio.

BOTTOM VIEW OF
KENWOOD RADIO

SEE DETAIL 2

IC13
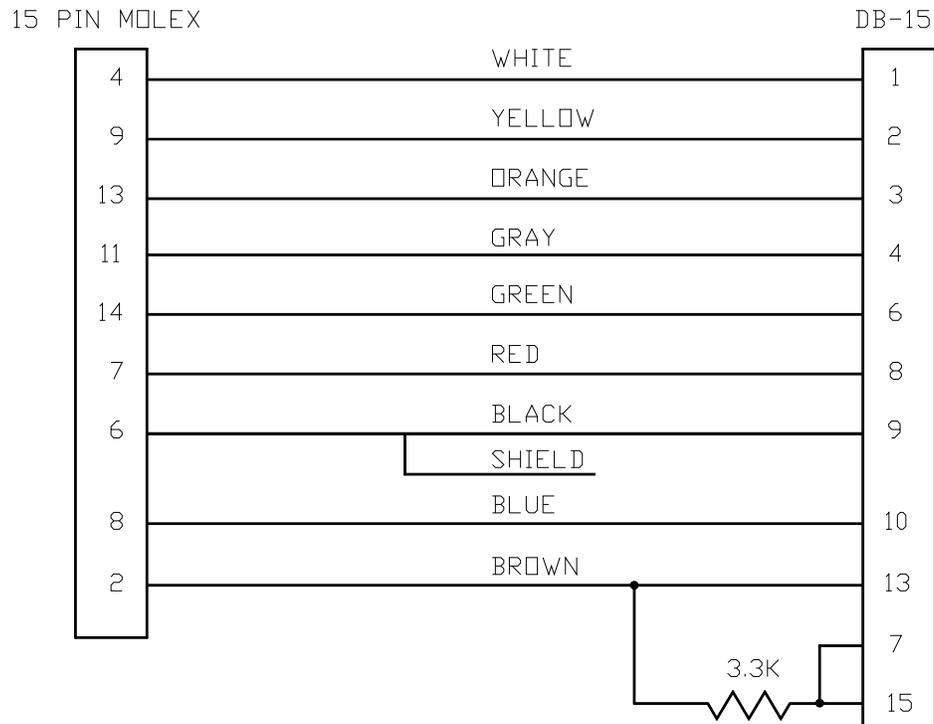
PC

Q12

LD

Connect wire here
(CONVENTIONAL)
DETAIL 2

14. **Conventional only**: Cut the white wire going to pin 1 of connector E (the smaller 3 position connector) on the KCT-19 cable. Place a piece of heat shrink tubing on this wire and solder this wire to the wire that was soldered to Q12 in the previous step. Move the heat shrink tubing into place and shrink it.

15. Replace the speaker holder, speaker, and the radio covers.

16. Connect the DB-15 end of the TK-840/940/941 interface cable to the DB-15 connector on the back of the TrakIt-20.

17. Connect the Molex plug end of the TK-840/940/941 interface cable to the KCT-19 cable.

18. Check the TrakIt-20's audio levels by performing the alignment procedure described in the TrakIt-20 manual.

NOTE: When programming the TK-840/940/941 radio, be sure to set "Access logic sig" in the Feature Option screen to continuous if the radio is being used in trunking mode. This will allow the TrakIt-20 to detect when the TK-840/940/941 radio is transmitting. If the radio is being used in conventional mode, set "Off hook decode" in the Feature Option screen to enabled. This will prevent the TrakIt-20 from receiving data transmissions that are being sent to mobiles with a different ID. Also, for either mode, if there will not be any voice transmissions, set "Minimum volume" to 0 in the Feature Option screen.

Kenwood TK-840/940/941 Interface (cont.)

TK-840/940/941 Interface Cable

```
15 PIN MOLEX                                              DB-15

  4  ┌──────────── WHITE ─────────────┐  1
     │                                │
  9  │             YELLOW             │  2
     │                                │
 13  │             ORANGE             │  3
     │                                │
 11  │              GRAY              │  4
     │                                │
 14  │             GREEN              │  6
     │                                │
  7  │              RED               │  8
     │                                │
  6  │             BLACK              │  9
     │            SHIELD              │
  8  │              BLUE              │ 10
     │                                │
  2  └──────────── BROWN ─────────────┘ 13

                                         7
                              3.3K
                            ──/\/\/──     15
```

KENWOOD TK-840/940/941 INTERFACE CABLE KIT
800-2080

Item	Description	Part No.	Qty.
1	HEAT SHRINK TUBE 3/8	199-6099	1
2	SCREW/CLIP KIT	231-0014	1
3	MOLEX PIN MALE	231-0034	9
4	CONN DB15 MALE	231-0035	1
5	COVER DB15	231-0036	1
6	CONN 15 POS MOLEX	231-0054	1
7	3.3K RESISTOR	312-0035	1
8	10 COND CABLE	800-1115	6"

Kenwood TK-860 Interface

The following items are included in the Kenwood TK-860 cable interface kit:

4. Kenwood TK-860 interface cable assembly.
5. Instruction sheet.

The following steps outline the procedure for interfacing the Kenwood TK-860 radio to the TrakIt-20.

2. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

Transmit indicator active:	Low
Receive indicator active:	High
PTT output active:	Low
Enable mic mute gate on transmit:	Yes
Enable Tx indicator as event 2:	No
External output active:	High
External output mode:	Speaker mute

3. Configure the following jumpers as indicated:

|	
JP1	In
JP4	B-C

15. On the TrakIt-20 Board remove C58.

16. Install the KCT-19 accessory cable into the radio as specified in the radio manual.

17. Connect the interface cable between the radio's accessory connector and the TrakIt-20.

18. Align TrakIt-20 levels as described in TrakIt-20 manual.

NOTE: If PL or DPL is used, cut yellow wire on accessory connector CN1. Solder and heat shrink a 6-inch piece of wire wrap wire to it. Solder the other end of the wire wrap wire to IC6 pin 3 under cover in radio as shown below.

IC6

Solder wire wrap wire here
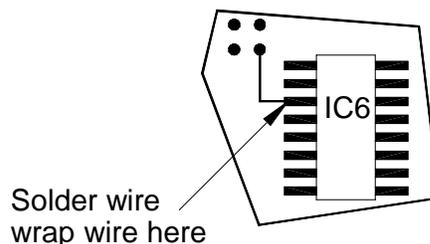
Kenwood TK-860 Interface (cont.)
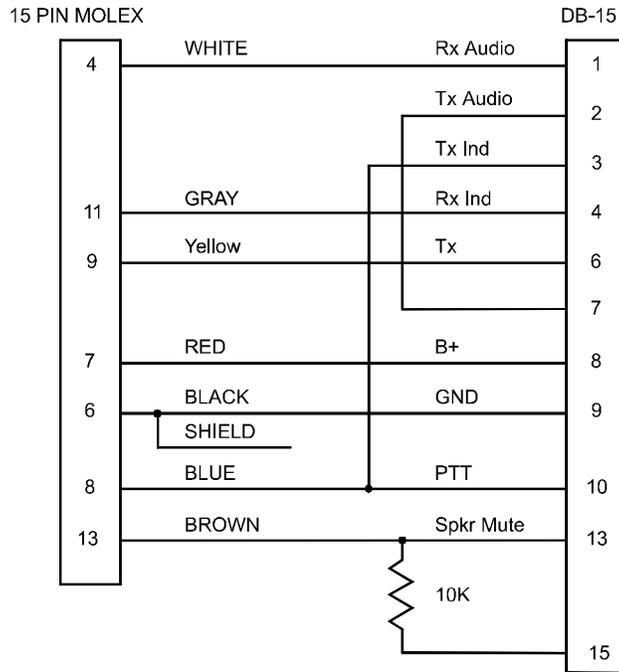
KENWOOD TK-860 INTERFACE CABLE KIT
106-KENTK860

Item	Description	Part No.	Qty.
6	HEAT SHRINK TUBE 3/8	199-6099	1
7	SCREW/CLIP KIT	231-0014	1
8	MOLEX PIN MALE	231-0034	7
9	CONN DB15 MALE	231-0035	1
10	COVER DB15	231-0036	1
11	CONN 15 POS MOLEX	231-0054	1
12	10K RESISTOR	312-0011	1
13	10 COND CABLE	800-1115	6"

Kenwood TK-880/980/981 Interface

The following items are included in the Kenwood TK-880/980/981 cable interface kit:

1. Kenwood TK-880/980/981 interface cable assembly.
2. Instruction sheet.

The following steps outline the procedure for interfacing the Kenwood TK-880/980/981 radio to the TrakIt-20.

1. The enclosed interface cable needs to have one pin installed in the appropriate location. This cable can be used for a variety of applications. For a Kenwood **TK-840/940/941**, install the loose pin (brown wire) into **Pin 10** on the molex end of the interface cable (speaker mute). For a **TK-880/980/981**, the loose pin can be used for speaker mute or for data channel selection. Insert it into **Pin 2** of the molex connector for speaker mute. Insert it into **Pin 15** of the molex connector for data channel selection. If data channel selection is used, the **Trakit-20** can automatically switch the radio to the system/group that has been designated for data. In data mode, the radio mutes the speaker automatically when the data system/group is selected. This is a function of radio programming. The desired system/group must be designated for data.

2. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

Transmit indicator active:	Low
Receive indicator active:	Low
PTT output active:	Low
Enable mic mute gate on transmit:	Yes
Enable Tx indicator as event 2:	No
External output active:	High/Low
External output mode:	Speaker mute/ Second PTT

   *For speaker mute, use active **High**. For data channel selection (Second PTT), use active **Low**.

3. Configure the following jumpers as indicated:

JP1	Out
JP4	B-C

4. Program the Kenwood TK-880/980/981 Optional Features for the following:

Com 2	(AuxHook / PTT)
Logic Signaling :	
Squelch Logic Type	Active Low
Squelch Logic Signal	TOR
Access Logic Type	Active Low
Access Logic Signal	Continuous

5. Install the Accessory Cable KCT-19 in the Kenwood TK-880/980/981.

    Insert the cable connectors in CN1, CN2, and CN3.

    ** R17 in the Kenwood TK-880/980/981 may need to be removed if the radio is an "early" version. (This needs to be done if the external PTT does not work.)

6. Connect the DB-15 end of the Kenwood TK-880/980/981 interface cable to the DB-15 connector on the back of the TrakIt-20.

7. Connect the Molex plug end of the Kenwood TK-880/980/981 interface cable to the KCT-19 cable.

8. Check the TrakIt-20's audio levels by performing the alignment procedure described in the TrakIt-20 manual.
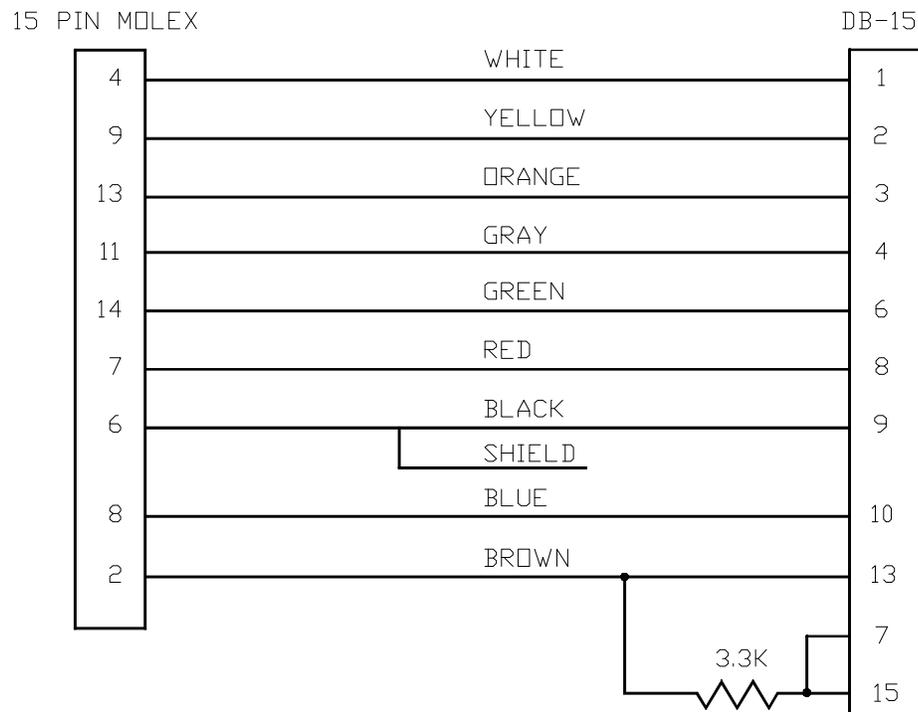
KENWOOD TK-880/980/981 INTERFACE CABLE KIT
800-2080

Item	Description	Part No.	Qty.
1	HEAT SHRINK TUBE 3/8	199-6099	1
2	SCREW/CLIP KIT	231-0014	1
3	MOLEX PIN MALE	231-0034	7
4	CONN DB15 MALE	231-0035	1
5	COVER DB15	231-0036	1
6	CONN 15 POS MOLEX	231-0054	1
7	3.3K RESISTOR	312-0035	1
8	10 COND CABLE	800-1115	6"

Kenwood TK-930 Interface

The following items are included in the Kenwood TK-930 interface kit:
1. Kenwood TK-930 interface cable assembly.
2. Instruction sheet.

The following steps outline the procedure for interfacing the Kenwood TK-930 to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

Transmit indicator active:	Low
Receive indicator active:	Low
PTT output active:	Low
Enable Tx indicator as event 2:	No
External output active:	Low
External output mode:	Speaker mute

2. Configure the following jumpers as indicated:

JP1	Removed
JP4	A-B

3. Remove top cover from radio.

4. Locate the accessory cable wires (near CN2), cut the following wires and attach them to locations shown below using wire wrap wire and heat shrink.

Green	IC601 pin 1
Red	IC200 pin 7
Yellow	IC200 pin 8
Brown	IC107 pin 2
White/Green	Jct. C123 & R119
Orange	IC107 pin 6 *install 100K resistor in series with this wire

5. Replace top radio cover.

6. Connect the DB15 end of the Kenwood TK-930 interface cable to the DB15 connector on TRAKIT-20.

7. Connect the 15 pin Molex connector to the Kenwood TK-930 radio.

8. Check the Trakit-20 audio levels by performing the alignment procedures described in the TRAKIT-20 manual.

Kenwood TK-930 Interface (cont.)

15 PIN MOLEX   DB-15

Molex Pin	Wire	DB-15 Pin
1	WHITE	1
2	YELLOW	2
3	ORANGE	3
4	GRAY	4
5	GREEN	6
7	RED	8
6	BLACK	9
	SHIELD	
8	BLUE	10
10	BROWN	13
9		7
12		15
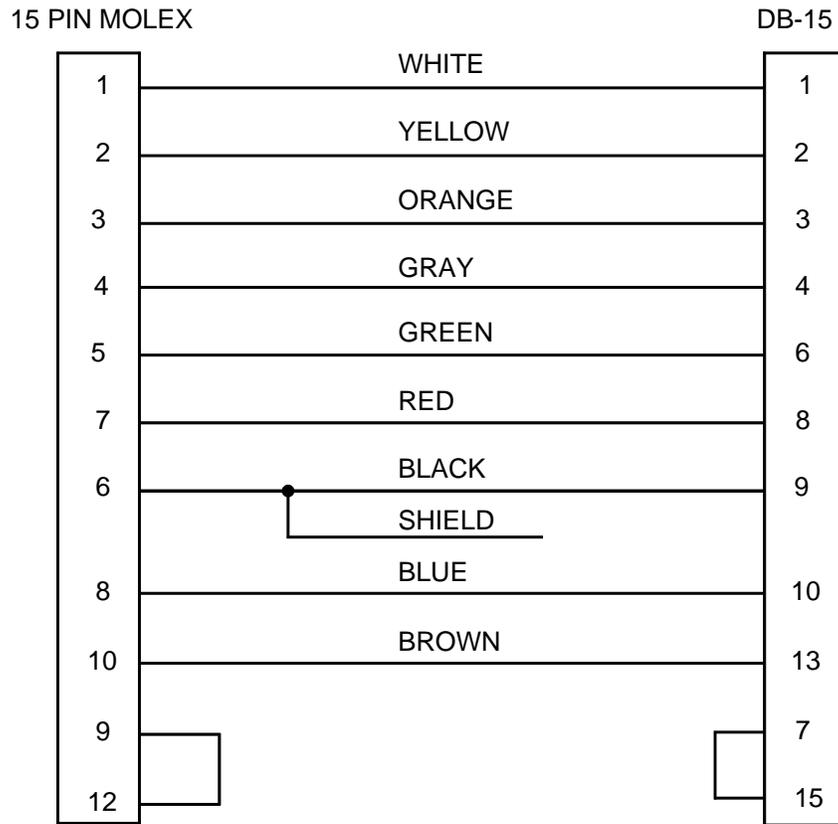
Kenwood TK-930 Interface Cable Kit
106-KENTK930

Item	Description	Part No.	Qty.
1	HEAT SHRINK TUBE 3/8	199-6099	1
2	SCREW/CLIP KIT	231-0014	1
3	MOLEX PIN MALE	231-0034	11
4	CONN DB15 MALE	231-0035	1
5	COVER DB15	231-0036	1
6	CONN 15 POS MOLEX	231-0054	1
7	10 COND CABLE	800-1115	1'

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Maxon SM-4450 Interface

The following items are included in the Maxon SM-4450 interface kit:

1. Maxon SM-4450 interface cable assembly.
2. Cable tie.
3. Instruction sheet.

The following steps outline the procedure for interfacing the Maxon SM-4450 to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

Transmit indicator active:	Low
Receive indicator active:	High
PTT output active:	Low
Enable Tx indicator as event 2:	No
External output active:	Low
External output mode:	Speaker mute

2. Configure the following jumpers as indicated:

JP1	Removed
JP4	A-B

3. Install a 10K Resistor across R45 in the TRAKIT-20.

4. Remove the covers of the Maxon SM-4450 radio.

5. Solder the orange wire of the MAXON SM-4450 interface cable to pin 9 of SK1.

6. Solder the blue wire of the MAXON SM-4450 interface cable to pin 4 of SK2 with a 100K resistor in series.

7. Solder the green wire of the MAXON SM-4450 interface cable to pin 5 of SK2.

8. Solder the white wire of the MAXON SM-4450 interface cable to pin 1 PL2.

9. Solder the red wire of the MAXON SM-4450 interface cable to pin 5 of PL2.

10. Connect the black and shield wire of the MAXON SM-4450 interface cable to pin 10 of PL2. Heat shrink any exposed portion of the shield wire.

11. Solder the white/black wire of the MAXON SM-4450 interface cable to pin 5 of SK2.

12. Solder the red/black wire of the MAXON SM-4450 interface cable to the backside of R217.

13. Secure the MAXON SM-4450 interface cable with the cable tie strap.

14. Replace the covers of the radio.

15. Connect the DB-15 end of the MAXON SM-4450 interface cable to the DB-15 connector on the back of the TrakIt-20.

16. Check the TrakIt-20's audio levels by performing the alignment procedure described in this manual.

		DB-15
RX AUDIO	ORANGE	1
TX AUDIO 100K	BLUE	2
TX INDICATOR	GREEN	3
RX INDICATOR	WHITE	4
B+	RED	8
GROUND	BLACK	9
	SHIELD	
PTT	WHITE/BLACK	10
SPEAKER MUTE	RED/BLACK	13
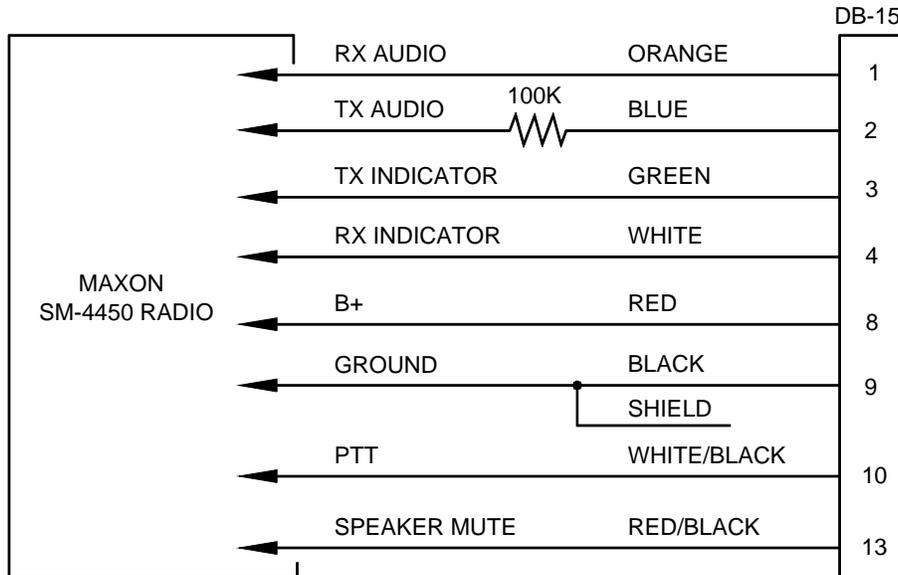
MAXON SM-4450 RADIO

Maxon SM-4450 Interface Cable Kit
106-MXSM4450

Item	Description	Part No.	Qty.
1	CABLE TIE (SHORT)	200-0081	1
2	SCREW/CLIP KIT	231-0014	1
3	CONN DB15 MALE	231-0035	1
4	COVER DB15	231-0036	1
5	100K RESISTOR	312-0003	1
6	10K RESISTOR	312-0011	1
7	CBL, 8 CONDUCTOR	800-1114	2'

Midland 70-9020 Interface

The following items are included in the Midland 70-9020 interface kit:

1. Midland 70-9020 interface cable assembly.
2. Cable tie.
3. Instruction sheet.

The following steps outline the procedure for interfacing Midland 70-9020 radio to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

Transmit indicator active:	High
Receive indicator active:	High
PTT output active:	Low
Enable Tx indicator as event 2:	No
External output active:	Low
External output mode:	Speaker mute

2. Configure the following jumpers as indicated:

JP1	IN
JP4	BC

3. Solder the following wires to the points described below:

   Solder the ORANGE wire to J408 pin 12.
   Solder the BLUE wire to J410 pin 6.
   Solder the GREEN wire to the tab of Q704.
   Solder the WHITE wire to IC 901 pin 21.
   Solder the RED wire to IC401 pin 1.
   Solder the BLACK wire to J415 pin 7.
   Solder the WHITE/BLACK wire to J407 pin 7.
   Solder the RED/BLACK wire to J408 pin 7.

4. Connect the DB-15 end of the Midland 70-9020 interface cable to the DB-15 connector on the back of the TrakIt-20.

5. Check the TrakIt-20's audio levels by performing the alignment procedure described in this manual.

Midland 70-9020 Interface (cont'd)

TRAKIT DB-15			MIDLAND 70-9020
1	RX Audio	ORANGE	J408 pin 12
2	TX Audio	BLUE	J410 pin 6
3	TX Indicator	GREEN	Q704 Tab
4	RX Indicator	WHITE	Pin 21 IC901
8	Power	RED	IC401 pin 1
9	Ground	BLK/SHLD	J415 pin 7
10	PTT	WHT/BLK	J407 pin 7
13	SPKR Mute	RED/BLK	J408 pin 7

Midland 70-9020 Interface Cable Kit
106-MID9020

Item	Description	Part No.	Qty.
1	CABLE TIE (SHORT)	200-0081	1
2	SCREW/CLIP KIT	231-0014	1
3	CONN DB15 MALE	231-0035	1
4	COVER DB15	231-0036	1
5	CBL, 8 CONN 22 AWG STR	800-1114	2'

Motorola CDM 750/1550 (PRO3100) Interface

The following items are included in the CDM1550 interface kit:

1. CDM1550 interface cable assembly.
2. Cable tie.
3. Instruction sheet.

The following steps outline the procedure for interfacing CDM1500 radio to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

Transmit indicator active:	Low
Receive indicator active:	High
PTT output active:	Low
Enable Tx indicator as event 2:	No
External output active:	Low
External output mode:	Speaker mute

2. Configure the following jumpers as indicated:

JP1	Cut
JP4	BC

3. Insert the wires of the CDM1550 interface cable into the 16 pin accessory connector as shown in the following diagram:

    <u>CDM 1550 ACC 16</u>

WHITE	11	
YELLOW	2	
ORANGE	4	
GRAY	8	
RED	13	
BLK/SHIELD	7	
BLUE	3	
GREEN	12	* Oprional for data channel, see below.
BROWN	6	

4. Secure the cable to the accessory connector with the tie strap.

5. Connect the DB-15 end of the CDM1550 interface cable to the DB-15 connector on the back of the TrakIt-20. Connect the 16 pin accessory plug to the connector on the back of the radio.

6. Check the TrakIt-20's audio levels by performing the alignment procedure described in this manual.

SPECIAL RADIO PROGRAMMING:

PROGRAM THE FOLLOWING ACCESSORY PINS AS FOLLOWS:

PIN 4 – CLEAR TO TALK ACTIVE LOW
PIN 6 – RX AUDIO MUTE ACTIVE LOW
PIN 8 – TALK GROUP DETECT ACTIVE HIGH
PIN 12 – A1 CHANNEL SELECT ACTIVE LOW – FOR CHANNEL 1 DATA. *Optional.

MAKE SURE THAT THE RECEIVE AUDIO IS SET FOR **FLAT**.

If the receive audio is **not** set for FLAT and it is set for FILTERED, the RX AUDIO MUTE signal will mute the rx audio to the Trakit and it will not function. If FILTERED audio is used, the wire going to pin 6 on the radio accessory connector must be removed and JP4 must be moved to the AB position. Doing this will disable the speaker mute function of the Trakit.

If it is desired that the Trakit select channel 1 for its transmissions, then use the green wire as specified above, as well as the programming for pin 12 on the radio. If not, then the green wire need not be used and pin 12 can be left as null in the radio programming. If this method is used, users must be aware of the following items. It will work very well if the Trakit is programmed to automatically send its location information based on timers or events. The radio users may select any channel that they wish and carry on a conversation. When the Trakit sends a location message, it will select channel 1 on the radio, send the data, then revert the radio back to where the user had set it earlier. Using the channel select pin on the radio disables scan. As a result, the Trakit at the base will not be able to contact this vehicle unit unless channel 1 has been selected by the person in the vehicle.

Motorola CDM 750/1550 (PRO3100) Interface (cont'd)

Trakit 20 DB15			CMD 1550 ACC 16
1	RX AUDIO	WHITE	11
2	TX AUDIO	YELLOW	2
3	TX IND	ORANGE	4
4	RX IND	GRAY	8
8	POWER	RED	13
9	GROUND	BLK/SHIELD	7
10	PTT |---(diode)----	BLUE	3
	|---(doide)----	GREEN	12
13	SPKR MUTE	BROWN	6

Motorola CDM1550 Interface Cable Kit
106-MOTOCDM

Item	Description	Part No.	Qty.
1	CABLE TIE (SHORT)	200-0081	1
2	SCREW/CLIP KIT	231-0014	1
3	CONN DB15 MALE	231-0035	1
4	COVER DB15	231-0036	1
5	CBL, 10 CONN 22 AWG STR	800-1115	1'
6	AMP PINS	234-0096	9
7	DIODE 1N914	110-0001	2

Motorola GM300 Interface

The following items are included in the Motorola GM300 interface kit:
1. GM300 interface cable assembly.
2. Cable tie.
3. Instruction sheet.

The following steps outline the procedure for interfacing the Motorola GM300 to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

Transmit indicator active:	Low
Receive indicator active:	High *
PTT output active:	Low
Enable Tx indicator as event 2:	No
External output active:	Low
External output mode:	Speaker mute

2. Configure the following jumpers as indicated:

JP1	Removed
JP4	A-B

3. Program pin 8 of the accessory connector of the GM300 radio for CSQ output active high. *

4. Remove the control head and the top and bottom covers of the GM300 radio by following the instructions in the GM300 service manual.

5. Pass the green and red/black wires from the GM300 interface cable through the accessory connector hole in the radio chassis before connecting them to points internal to the radio

6. Solder the green wire of the GM300 interface cable to pin 1 of J9.

7. Solder the red/black wire of the GM300 interface cable to pin 1 of U501.

8. Insert the remaining wires of the GM300 interface cable into the radio's accessory connector as follows:
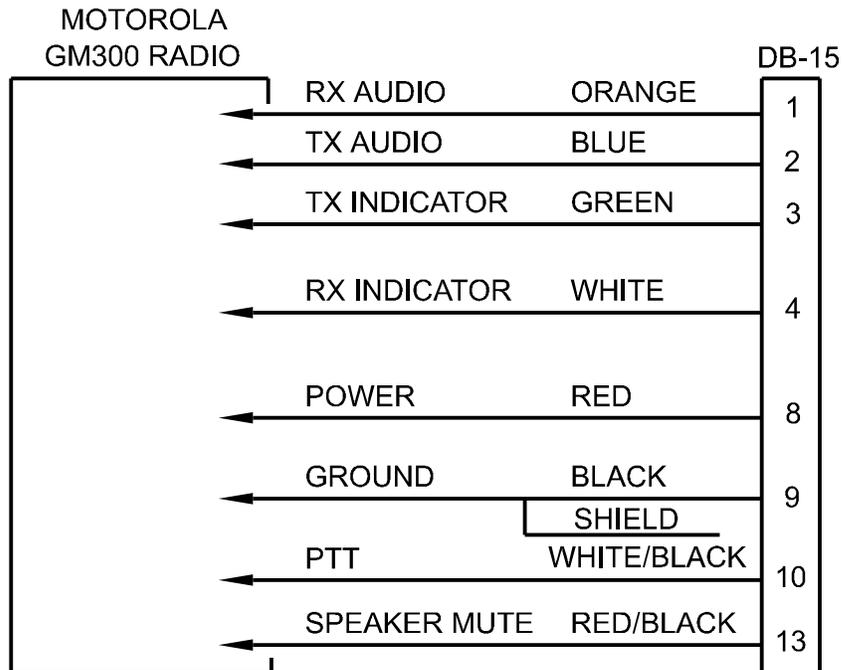
Pin #	Wire
2	Blue
3	White/Black
7	Black/Shield
8	White
11	Orange
13	Red

Motorola GM300 Interface (cont.)

9. Secure the GM300 interface cable to the accessory connector with the cable tie strap and connect the accessory connector to the radio.

10. Replace the control head and the top and bottom covers of the radio.

11. Connect the DB-15 end of the GM300 interface cable to the DB-15 connector on the back of the TrakIt-20.

12. Check the TrakIt-20's audio levels by performing the alignment procedure described in this manual.

* Depending on logic board in radio, this may not be a programmable pin. It may be COR only - active low. This application note was done with HLN8070D logic board.

Note: If the microphone being used with the GM300 radio is a newer version and has power and/or transmit LED's, be aware that it may have an effect on the TX audio level from the TRAKIT-20. The level will change as the microphone is plugged in or removed as it tends to load down the TRAKIT-20's audio output.

MOTOROLA
GM300 RADIO   DB-15

RX AUDIO   ORANGE   1
TX AUDIO   BLUE   2
TX INDICATOR   GREEN   3
RX INDICATOR   WHITE   4
POWER   RED   8
GROUND   BLACK   9
                  SHIELD
PTT   WHITE/BLACK   10
SPEAKER MUTE   RED/BLACK   13

Motorola GM300 Interface Cable Kit
106-MOTGM300

Item	Description	Part No.	Qty.
1	CABLE TIE (SHORT)	200-0081	1
2	SCREW/CLIP KIT	231-0014	1
3	CONN DB15 MALE	231-0035	1
4	COVER DB15	231-0036	1
5	AMP, PINS	234-0096	6
6	CBL, 8 CONN 22 AWG STR	800-1114	1'

Motorola GTX Interface

The following items are included in the Motorola GTX interface kit:
1. GTX interface cable assembly.
2. Cable tie.
3. Instruction sheet.

The following steps outline the procedure for interfacing the Motorola GTX radio to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

   Transmit indicator active: High
   Receive indicator active: Low
   PTT output active: Low
   Enable Tx indicator as event 2:   No
   External output active: Low
   External output mode: Speaker mute

2. Configure the following jumpers as indicated:
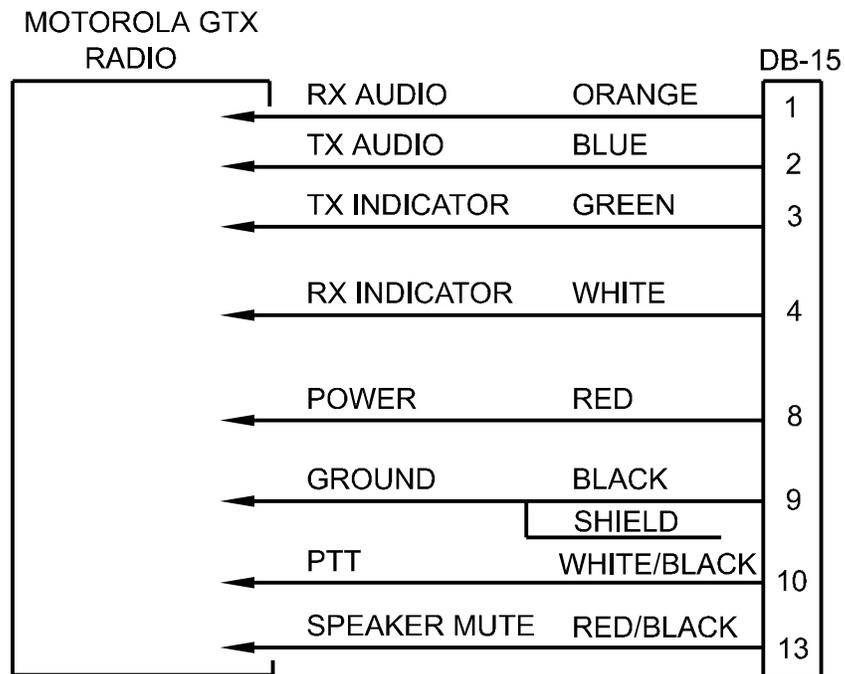
   JP1   Removed
   JP4   B-C

3. Remove the control head, the top cover, and the main board of the GTX radio by following the instructions in the GTX service manual.

4. Pass all the free wires of the GTX interface cable through the same hole in the accessory connector gasket and slide the gasket up the cable and out of the way.

5. Pass the white, red, and green wire from the GTX interface cable through the accessory connector hole in the radio chassis before connecting them to points internal to the radio.

6. Locate R0404 and R0405 on the bottom of the main board. Solder the white wire to the side of R0404 that is connected with a trace to R0405.

7. The red wire of the GTX interface cable should be soldered to the mounting tab of Q0611 on the top of the main board.

8. The green wire of the GTX interface cable should be threaded through the chassis opening provided for the flat cable from the control head. This wire should then be soldered to the pin of Q0943 that is connected with a trace to R0945 on the control head.

9. The red and black wire of the GTX interface cable should be soldered to the junction of R0401 and R0402 on the bottom side of the main board.

Motorola GTX Interface (cont.)

10. Secure the main board and replace the control head and the top cover. Insert the remaining wires of the GTX interface cable into the radio's accessory connector as follows:

Pin #	Wire
2	Blue
3	White/Black
7	Black/Shield
11	Orange

11. Secure the GTX interface cable to the accessory connector with the cable tie strap. Connect the accessory connector to the radio and slide the accessory connector gasket into place.

12. Connect the DB-15 end of the GTX interface cable to the DB-15 connector on the back of the TrakIt-20.

13. Check the TrakIt-20's audio levels by performing the alignment procedure described in this manual.

MOTOROLA GTX
RADIO   DB-15

RX AUDIO   ORANGE   1
TX AUDIO   BLUE   2
TX INDICATOR   GREEN   3
RX INDICATOR   WHITE   4
POWER   RED   8
GROUND   BLACK   9
                  SHIELD
PTT   WHITE/BLACK   10
SPEAKER MUTE   RED/BLACK   13

Motorola GTX Interface Cable Kit
106-TRCBLGTX

Item	Description	Part No.	Qty.
1	CABLE TIE (SHORT)	200-0081	1
2	SCREW/CLIP KIT	231-0014	1
3	CONN DB15 MALE	231-0035	1
4	COVER DB15	231-0036	1
5	AMP, PINS	234-0096	4
6	CBL, 8 CONN 22 AWG STR	800-1114	1'

Motorola M100 Interface

The following items are included in the Motorola M100 interface kit:

1. M100 interface cable assembly.
2. Cable tie.
3. Instruction sheet.

The following steps outline the procedure for interfacing the Motorola M100 to the TrakIt-20.

This interface is for a M100 with a HLN9123A Logic Board.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

Transmit indicator active:	Low
Receive indicator active:	High
PTT output active:	Low
Enable Tx indicator as event 2:	No
External output active:	Low
External output mode:	Speaker mute

2. Configure the following jumpers as indicated:

JP1	Removed
JP4	A-B

3. Remove the control head and the top and bottom covers of the M100 radio by following the instructions in the M100 service manual.

4. Pass all the wires from the M100 interface cable through the accessory connector hole in the radio chassis before connecting them to points internal to the radio. It maybe necessary to bend or cut the metal tab above the accessory connector on the inside of the radio.

5. Solder the orange wire of the M100 interface cable to pin 1 of J8.

6. Solder the blue wire of the M100 interface cable to pin 12 of J8.

7. Solder the green wire of the M100 interface cable to pin 1 of J9.

8. Solder the white wire of the M100 interface cable to pin 46 of Microprocessor. (there is a solder pad marked CSQ for connecting the wire)

9. Solder the red wire of the M100 interface cable to pin 5 of J8.

10. Connect the black and shield wire of the M100 interface cable to pin 10 of J8. Heat shrink any exposed portion of the shield wire.

Motorola M100 Interface (cont.)

11. Connect the yellow wire of the M100 interface cable to pin 11 of J8.

12. Connect the gray wire of the M100 interface cable to pin 2 of J8.

17. Secure the M100 interface cable with the cable tie strap.

18. Replace the control head and the top and bottom covers of the radio.

19. Connect the DB-15 end of the M100 interface cable to the DB-15 connector on the back of the TrakIt-20.

20. Check the TrakIt-20's audio levels by performing the alignment procedure described in this manual.

M100 RADIO WITH
HLN9123A LOGIC BD.   DB-15

J8 pin 1	RX AUDIO	ORANGE	1
J8 pin 12	TX AUDIO	BLUE	2
J9 pin 1	TX INDICATOR	GREEN	3
Pin 46 on Micro (CSQ solder pad by Crystal)	RX INDICATOR	WHITE	4
J8 pin 5	POWER	RED	8
J8 pin 10	GROUND	BLACK	9
		SHIELD	
J8 pin 11	PTT	YELLOW	10
J8 pin 2	SPEAKER MUTE	GRAY	13
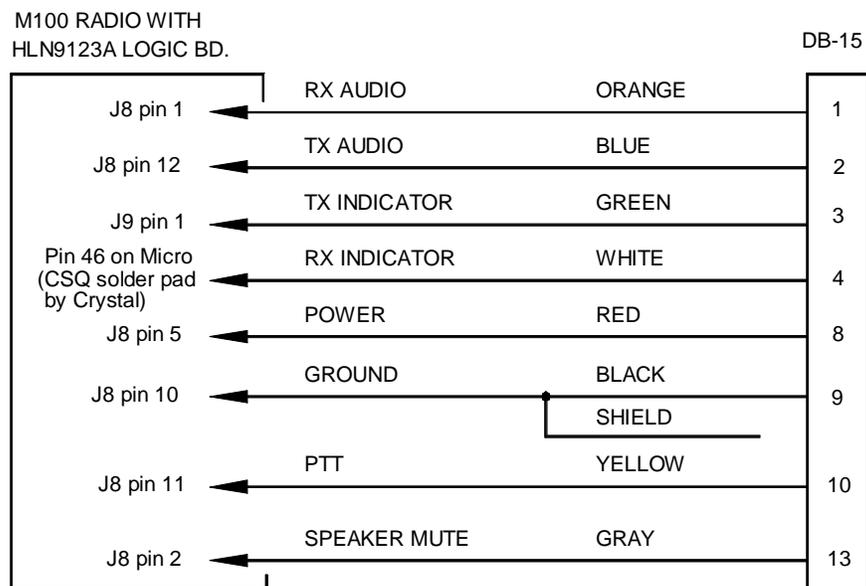
Motorola M100 Interface Cable Kit
106-MOTOM100

Item	Description	Part No.	Qty.
1	CABLE TIE (SHORT)	200-0081	1
2	SCREW/CLIP KIT	231-0014	1
3	CONN DB15 MALE	231-0035	1
4	COVER DB15	231-0036	1
5	CBL, 10 CONDUCTOR	800-1115	2'

Motorola M120 Interface

The following items are included in the Motorola M120 interface kit:
1. M120 interface cable assembly.
2. Cable tie.
3. Instruction sheet.

The following steps outline the procedure for interfacing the Motorola M120 radio to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

Transmit indicator active:	High
Receive indicator active:	Low
PTT output active:	Low
Enable Tx indicator as event 2:	No
External output active:	Low
External output mode:	Speaker mute

2. Configure the following jumpers as indicated:
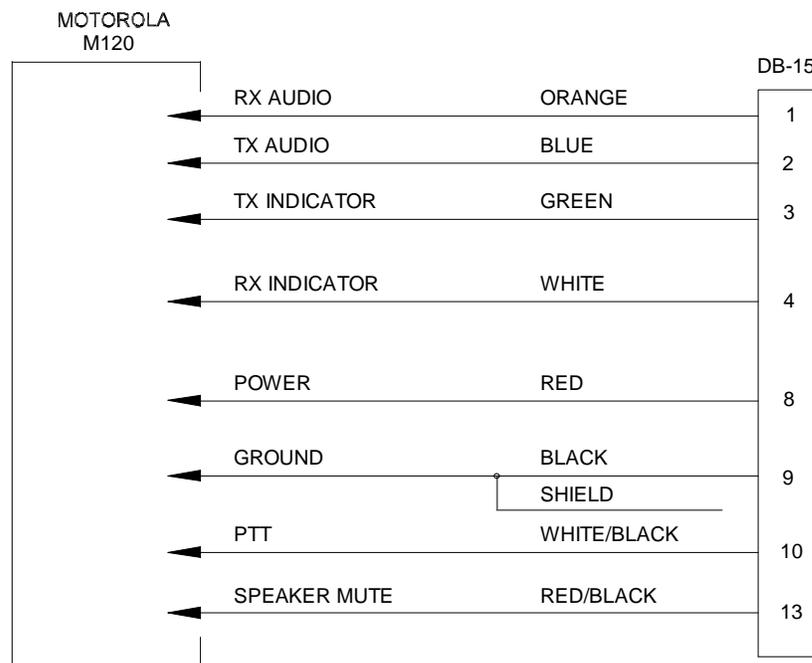
JP1	Removed
JP4	A-B

3. Remove the control head and the top and bottom covers of the M120 radio by following the instructions in the M120 service manual.

4. Pass the green and red/black wires from the M120 interface cable through the accessory connector hole in the radio chassis before connecting them to points internal to the radio

5. Solder the green wire of the M120 interface cable to pin 42 of U802.

6. Solder the red/black wire of the M120 interface cable to pin 1 of U501.

7. Insert the remaining wires of the M120 interface cable into the radio's accessory connector as follows:

Pin #	Wire
2	Blue
3	White/Black
7	Black/Shield
8	White
11	Orange
13	Red

Motorola M120 Interface (cont.)

8. Secure the M120 interface cable to the accessory connector with the cable tie strap and connect the accessory connector to the radio.

9. Replace the control head and the top and bottom covers of the radio.

10. Connect the DB-15 end of the M120 interface cable to the DB-15 connector on the back of the TrakIt-20.

11. Check the TrakIt-20's audio levels by performing the alignment procedure described in this manual.

Note: If the microphone being used with the M120 radio is a newer version and has power and/or transmit LED's, be aware that it may have an effect on the TX audio level from the TRAKIT-20. The level will change as the microphone is plugged in or removed as it tends to load down the TRAKIT-20's audio output.

MOTOROLA
M120

Signal	Color	DB-15 Pin
RX AUDIO	ORANGE	1
TX AUDIO	BLUE	2
TX INDICATOR	GREEN	3
RX INDICATOR	WHITE	4
POWER	RED	8
GROUND	BLACK	9
	SHIELD	
PTT	WHITE/BLACK	10
SPEAKER MUTE	RED/BLACK	13

Motorola M120 Interface Cable Kit
106-MOTOM120

Item	Description	Part No.	Qty.
1	CABLE TIE (SHORT)	200-0081	1
2	SCREW/CLIP KIT	231-0014	1
3	CONN DB15 MALE	231-0035	1
4	COVER DB15	231-0036	1
5	AMP, PINS	234-0096	4
6	CBL, 8 CONN 22 AWG STR	800-1114	1'

Motorola M1225 Interface

The following items are included in the Motorola M1225 interface kit:

1. M1225 interface cable assembly.
2. Cable tie.
3. One short piece of heat shrink.
4. One short piece of wire wrap wire.
5. Instruction sheet.

The following steps outline the procedure for interfacing the Motorola M1225 to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

   Transmit indicator active: 4ch   Low
   Transmit indicator active: 20ch   High
   Receive indicator active: High
   PTT output active: Low
   Enable Tx indicator as event 2:   No
   External output active: Low
   External output mode: Speaker mute

2. Configure the following jumpers as indicated:

   JP1   Removed
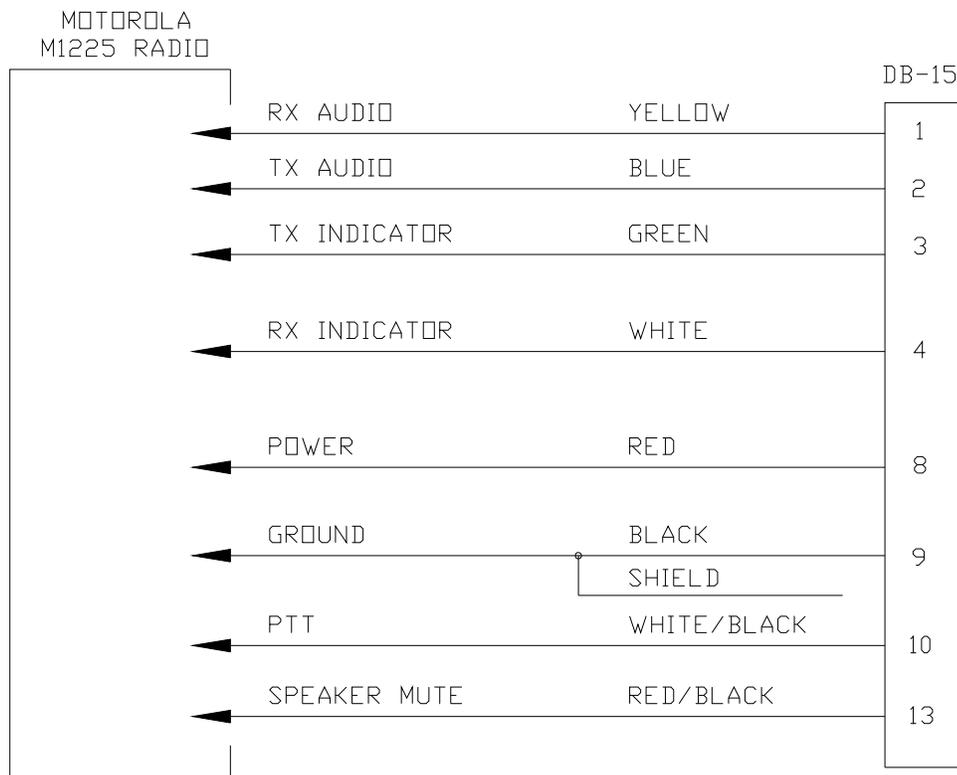   JP4   A-B 1225
   JP4   B-C 1225 LS

3. Program pin 8 of the accessory connector of the M1225 radio for CSQ output active high.

4. Remove the top cover of the M1225 radio.

5. Pass the green wire and red/black wire through the slot next to the accessory connector in the back of the M1225 radio.

6. The green wire of the M1225 interface cable for a 20-channel radio should be connected to the right side of L284 on the Main Board. Use a piece of wire wrap wire to make this connection and heat shrink.

7. The green wire of the M1225 interface cable for a 4-channel radio should be connected to the junction of DS1005 and Q1005 on the Display Board. Use a piece of wire wrap wire to make this connection and heat shrink.

8. The red/black wire of the M1225 interface cable should be connected to U501 pin 8.

9. Insert the remaining wires of the M1225 interface cable into the radio's accessory connector as follows:

Pin #	Wire
2	Blue
3	White/Black
7	Black/Shield
8	White
11	Orange
13	Red

10. Secure the M1225 interface cable to the accessory connector with the cable tie strap. Connect the accessory connector to the radio.

11. Replace radio cover.

12. Connect the DB-15 end of the M1225 interface cable to the DB-15 connector on the back of the TrakIt-20.

13. Check the TrakIt-20's audio levels by performing the alignment procedure described in this manual.

```
   MOTOROLA
  M1225 RADIO
                                                      DB-15

              RX AUDIO            YELLOW              1

              TX AUDIO            BLUE                2

              TX INDICATOR        GREEN              3

              RX INDICATOR        WHITE              4

              POWER               RED                8

              GROUND              BLACK              9
                                  SHIELD
              PTT                 WHITE/BLACK        10

              SPEAKER MUTE        RED/BLACK          13
```

Motorola M1225 Interface Cable Kit
106-MOTOSM50

Item	Description	Part No.	Qty.
1	CABLE TIE (SHORT)	200-0081	1
2	SCREW/CLIP KIT	231-0014	1
3	CONN DB15 MALE	231-0035	1
4	COVER DB15	231-0036	1
5	AMP, PINS	234-0096	6
6	CBL, 8 CONN 22 AWG STR	800-1114	1'

Motorola MaxTrac Interface

The following items are included in the Motorola MaxTrac interface kit:

1. MaxTrac interface cable assembly.
2. Cable tie.
3. Instruction sheet.

The following steps outline the procedure for interfacing the Motorola MaxTrac radio to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

Transmit indicator active:	Low
Receive indicator active:	High
PTT output active:	Low
Enable Tx indicator as event 2:	No
External output active:	Low
External output mode:	Speaker mute

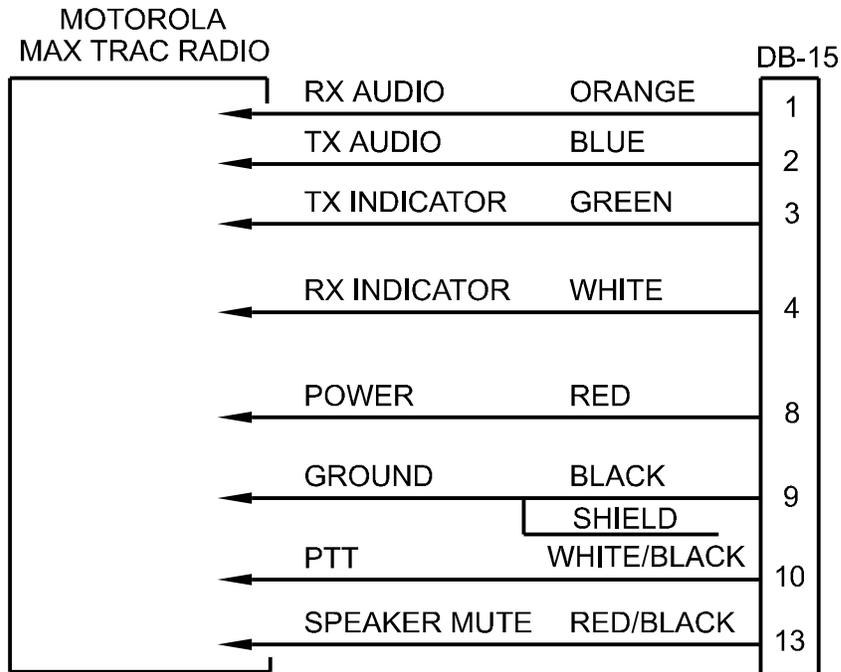2. Configure the following jumpers as indicated:

JP1	Removed
JP4	B-C

3. Remove the control head and the top and bottom covers of the MaxTrac radio by following the instructions in the MaxTrac service manual.

4. Pass the white, red, green, and red/black wire from the MaxTrac interface cable through the accessory connector hole in the radio chassis before connecting them to points internal to the radio.

5. Solder the white wire of the MaxTrac interface cable to pin 6 of U803.

6. Solder the red wire of the MaxTrac interface cable to pin 5 of J8.

7. Solder the green wire of the MaxTrac interface cable to pin 1 of J9.

8. Solder the red/black wire of the MaxTrac interface cable to the junction of C804 and R827.

9. Insert the remaining wires of the MaxTrac interface cable into the radio's accessory connector as follows:

Pin #	Wire
2	Blue
3	White/Black
7	Black/Shield
11	Orange

Motorola MaxTrac Interface (cont.)

10. Secure the Max Trac interface cable to the accessory connector with the cable tie strap and connect the accessory connector to the radio.

11. Replace the control head and the top and bottom covers of the radio.

12. Connect the DB-15 end of the MaxTrac interface cable to the DB-15 connector on the back of the TrakIt-20.

13. Check the TrakIt-20's audio levels by performing the alignment procedure described in this manual.

MOTOROLA
MAX TRAC RADIO   DB-15

RX AUDIO	ORANGE	1
TX AUDIO	BLUE	2
TX INDICATOR	GREEN	3
RX INDICATOR	WHITE	4
POWER	RED	8
GROUND	BLACK	9
	SHIELD	
PTT	WHITE/BLACK	10
SPEAKER MUTE	RED/BLACK	13

Motorola Max Trac Interface Cable Kit
106-TRCBLMAX

Item	Description	Part No.	Qty.
1	CABLE TIE (SHORT)	200-0081	1
2	SCREW/CLIP KIT	231-0014	1
3	CONN DB15 MALE	231-0035	1
4	COVER DB15	231-0036	1
5	AMP, PINS	234-0096	4
6	CBL, 8 CONN 22 AWG STR	800-1114	1'

Motorola SM-50 / SM-120 Interface

The following items are included in the Motorola SM-50 interface kit:

1. SM-50 interface cable assembly.
2. Cable tie.
3. Instruction sheet.

The following steps outline the procedure for interfacing the Motorola SM-50 radio to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

Transmit indicator active:	High
Receive indicator active:	High
PTT output active:	Low
Enable Tx indicator as event 2:	No
External output active:	Low
External output mode:	Speaker mute

2. Configure the following jumpers as indicated:
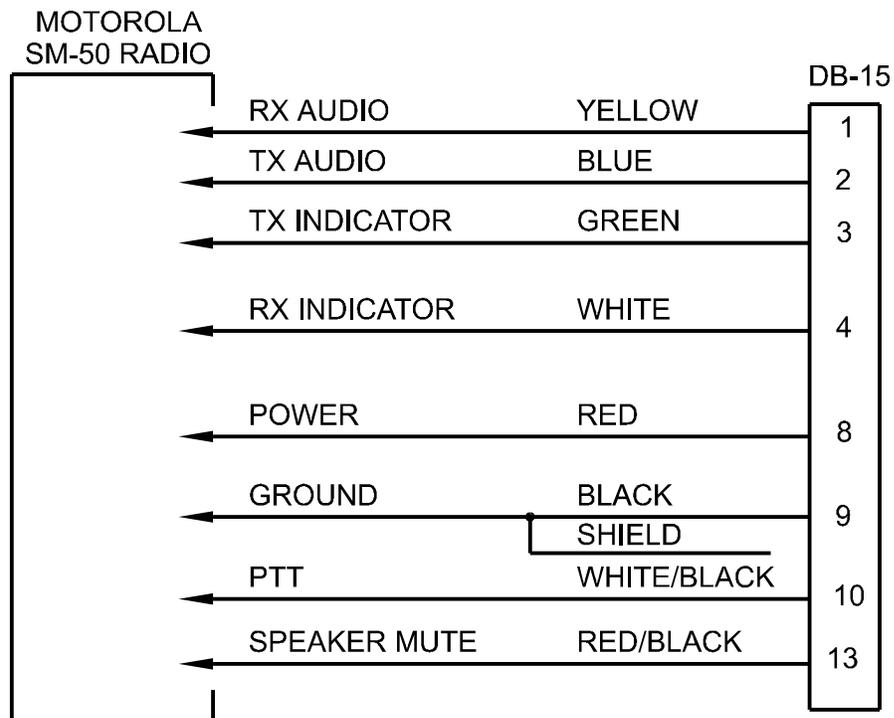
JP1	Removed
JP4	A-B

3. Program pin 8 of the accessory connector of the SM-50 radio for CSQ output active high.

4. Remove the top cover of the SM-50 radio.

5. Pass the green wire and red/black wire through the slot next to the accessory connector in the back of the SM-50 radio.

6. The green wire of the SM-50 interface cable should be connected to J8 pin 5.

7. If the radio is an SM-120, the green wire should be connected to the right side of R434 with a piece of wire wrap wire. There is a feed through a short distance away connected to R434. Solder the wire wrap wire here.

8. The red/black wire of the SM-50 interface cable should be connected to U501 pin 8.

9. Insert the remaining wires of the SM-50 interface cable into the radio's accessory connector as follows:

Pin #	Wire
2	Blue
3	White/Black
7	Black/Shield
8	White
11	Orange
13	Red

Motorola SM-50 / SM-120 Interface (cont.)

10. Secure the SM-50 interface cable to the accessory connector with the cable tie strap. Connect the accessory connector to the radio.

11. Replace radio cover.

12. Connect the DB-15 end of the SM-50 interface cable to the DB-15 connector on the back of the TrakIt-20.

13. Check the TrakIt-20's audio levels by performing the alignment procedure described in this manual.

MOTOROLA
SM-50 RADIO

DB-15

RX AUDIO	YELLOW	1
TX AUDIO	BLUE	2
TX INDICATOR	GREEN	3
RX INDICATOR	WHITE	4
POWER	RED	8
GROUND	BLACK	9
	SHIELD	
PTT	WHITE/BLACK	10
SPEAKER MUTE	RED/BLACK	13

Motorola SM-50 Interface Cable Kit
106-MOTOSM50

Item	Description	Part No.	Qty.
1	CABLE TIE (SHORT)	200-0081	1
2	SCREW/CLIP KIT	231-0014	1
3	CONN DB15 MALE	231-0035	1
4	COVER DB15	231-0036	1
5	AMP, PINS	234-0096	6
6	CBL, 8 CONN 22 AWG STR	800-1114	1'

Motorola SPECTRA Interface

The following items are included in the Motorola SPECTRA interface kit:
1. SPECTRA interface cable assembly.
2. Cable tie.
3. Instruction sheet.

The following steps outline the procedure for interfacing the Motorola SPECTRA radio to the TrakIt-20.
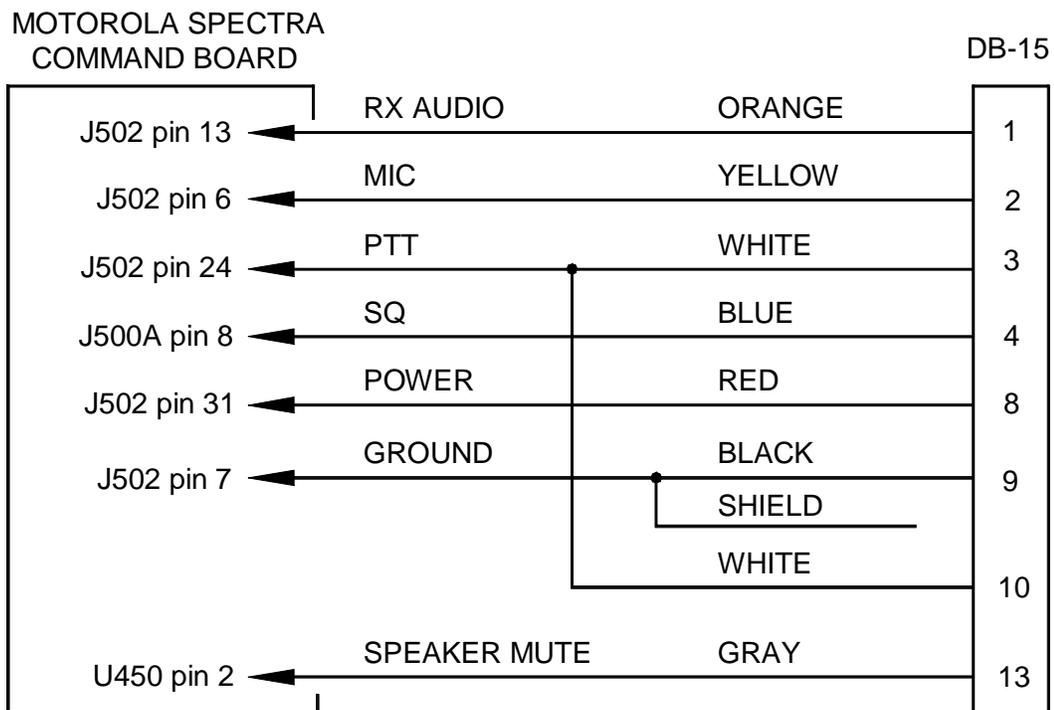
1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

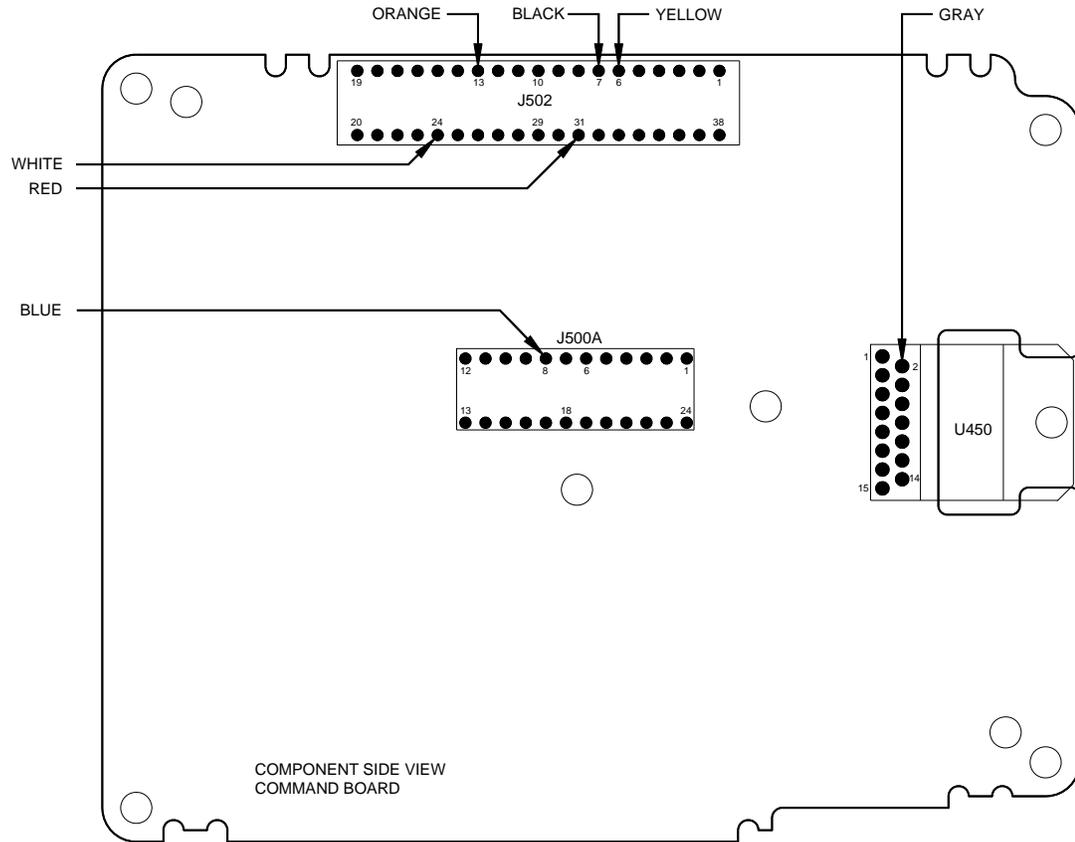|	
Transmit indicator active:	Low
Receive indicator active:	High
PTT output active:	Low
Enable Tx indicator as event 2:	No
External output active:	Low
External output mode:	Speaker mute

2. Configure the following jumpers as indicated:

JP1   Removed

JP4   A-B

MOTOROLA SPECTRA
COMMAND BOARD   DB-15

J502 pin 13	RX AUDIO	ORANGE	1
J502 pin 6	MIC	YELLOW	2
J502 pin 24	PTT	WHITE	3
J500A pin 8	SQ	BLUE	4
J502 pin 31	POWER	RED	8
J502 pin 7	GROUND	BLACK	9
		SHIELD	
		WHITE	10
U450 pin 2	SPEAKER MUTE	GRAY	13

3. Solder the SPECTRA interface cable wires to the Command Board as shown below.

COMPONENT SIDE VIEW
COMMAND BOARD

Motorola SPECTRA Interface Cable Kit
106-SPECTRA

Item	Description	Part No.	Qty.
1	CABLE TIE (SHORT)	200-0081	1
2	SCREW/CLIP KIT	231-0014	1
3	CONN DB15 MALE	231-0035	1
4	COVER DB15	231-0036	1
5	CABLE 10 COND. 24 AWG	800-1115	2'

RELM SLV40 Interface

The following items are included in the RELM SLV40 cable interface kit:

1. RELM SLV40 interface cable assembly.
2. Cable tie.
3. Instruction sheet.

The following steps outline the procedure for interfacing the RELM SLV40 radio to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

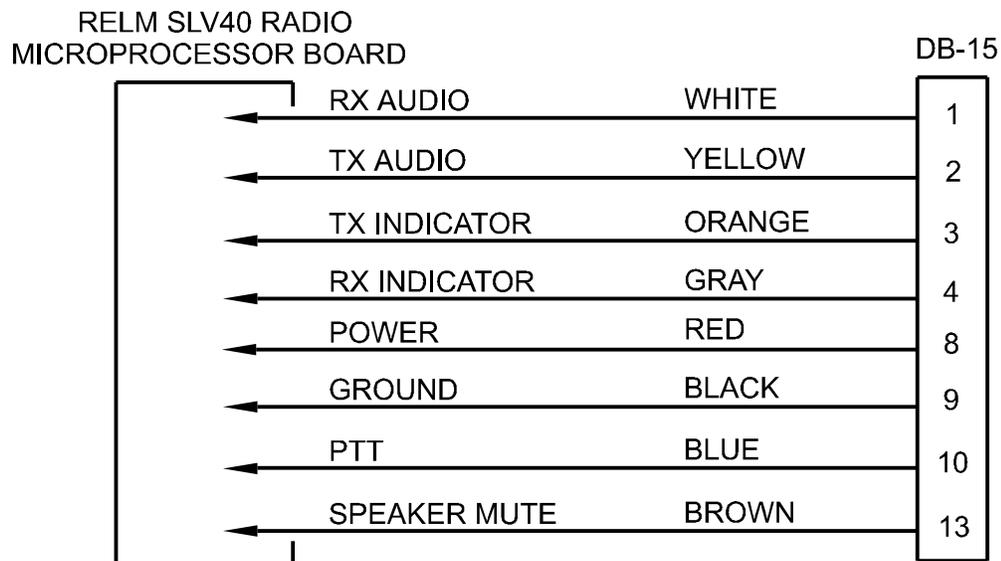 | | |
    |---|---|
    | Transmit indicator active: | Low |
    | Receive indicator active: | Low |
    | PTT output active: | Low |
    | Enable mic mute gate on transmit: | No |
    | Enable Tx indicator as event 2: | No |
    | External output active: | Low |
    | External output mode: | Speaker mute |

2. Configure the following jumpers as indicated:

JP1	Add 2M ohm resistor
JP4	A-B

3. On the TrakIt-20 Board remove R49.

4. Install 22uF 16V capacitor across Q1. Positive lead of the capacitor goes to the base (center lead) of Q1. Negative lead of capacitor goes to the emitter (ground). This capacitor is needed to prevent radio from going into program upon power up.

5. Remove covers from radio.

6. Remove hole plug in back of radio and feed RELM SLV40 cable through hole and tie strap on inside for strain relief.

7. Connect the wires of the RELM SLV40 interface cable to the following points on the Microprocessor Board in the radio as shown below:

White	P202 pin 12
Yellow	P201 pin 4
Orange	P201 pin 1
Gray	P201 pin 10
Blue	P201 pin 1
Red	Positive side of C347
Black	P201 pin 3
Brown	U201 pin 13

RELM SLV40 RADIO
MICROPROCESSOR BOARD   DB-15

RX AUDIO	WHITE	1
TX AUDIO	YELLOW	2
TX INDICATOR	ORANGE	3
RX INDICATOR	GRAY	4
POWER	RED	8
GROUND	BLACK	9
PTT	BLUE	10
SPEAKER MUTE	BROWN	13

8. Replace radio covers.

9. Connect the DB-15 end of the RELM SLV40 interface cable to the DB-15 connector on the back of the TrakIt-20.

10. Check the TrakIt-20's audio levels by performing the alignment procedure described in the TrakIt-20 manual.

RELM SLV40 INTERFACE CABLE KIT
106-RELMSLV

Item	Description	Part No.	Qty.
1	CABLE TIE (SHORT)	200-0081	1
2	SCREW/CLIP KIT	231-0014	1
3	CONN DB15 MALE	231-0035	1
4	COVER DB15	231-0036	1
5	10 COND CABLE	800-1115	1'

RELM SMV40 Interface

The following items are included in the RELM SMV40 cable interface kit:

1. RELM SMV40 interface cable assembly.
2. Cable tie.
3. Instruction sheet.

The following steps outline the procedure for interfacing the RELM SMV40 radio to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

   Transmit indicator active: Low
   Receive indicator active: High
   PTT output active: Low
   Enable mic mute gate on transmit: No
   Enable Tx indicator as event 2:   No
   External output active: Low
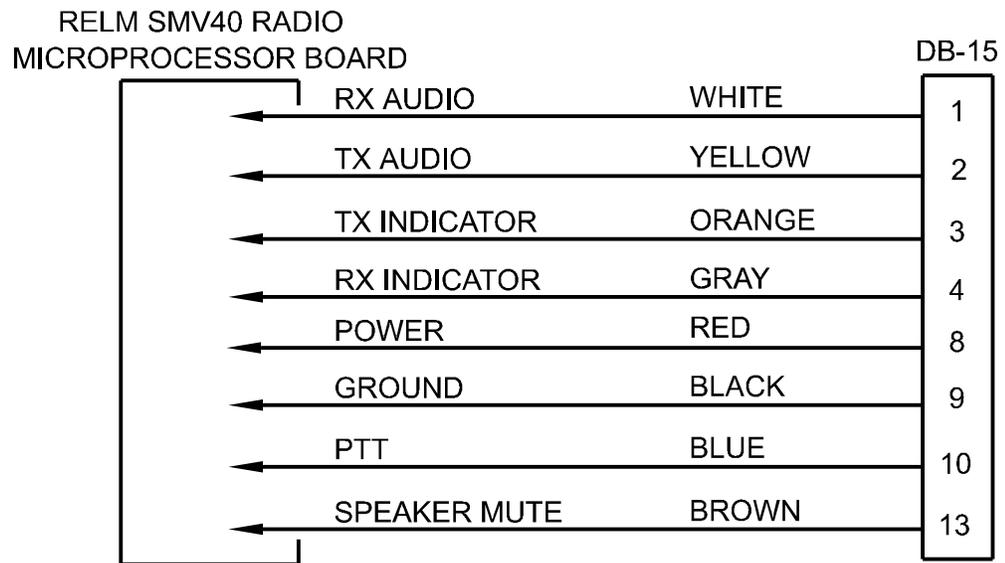   External output mode: Speaker mute

2. Configure the following jumpers as indicated:

   JP1   Add 2M ohm resistor
   JP4   A-B

3. On the TrakIt-20 Board remove R49 and cut D4.

4. Install 22uF 16V capacitor across Q1. Positive lead of the capacitor goes to the base (center lead) of Q1. Negative lead of capacitor goes to the emitter (ground). This capacitor is needed to prevent radio from going into program upon power up.

5. Remove covers from radio.

6. Remove hole plug in back of radio and feed RELM SMV40 cable through hole and tie strap on inside for strain relief.

7. Connect the wires of the RELM SMV40 interface cable to the following points on the Microprocessor Board in the radio as shown below:

   White   P202 pin 12
   Yellow   P201 pin 4
   Orange   P201 pin 10
   Gray   R267
   Blue   P201 pin 10
   Red   Positive side of C347
   Black   P201 pin 3
   Brown   U201 pin 13

RELM SMV40 RADIO
MICROPROCESSOR BOARD   DB-15

RX AUDIO	WHITE	1
TX AUDIO	YELLOW	2
TX INDICATOR	ORANGE	3
RX INDICATOR	GRAY	4
POWER	RED	8
GROUND	BLACK	9
PTT	BLUE	10
SPEAKER MUTE	BROWN	13

8. Replace radio covers.

9. Connect the DB-15 end of the RELM SLV40 interface cable to the DB-15 connector on the back of the TrakIt-20.

10. Check the TrakIt-20's audio levels by performing the alignment procedure described in the TrakIt-20 manual.

RELM SLM40 INTERFACE CABLE KIT
106-RELMSMV

Item	Description	Part No.	Qty.
1	CABLE TIE (SHORT)	200-0081	1
2	SCREW/CLIP KIT	231-0014	1
3	CONN DB15 MALE	231-0035	1
4	COVER DB15	231-0036	1
5	10 COND CABLE	800-1115	1'

Ritron DTX-150 Interface

The following items are included in the Ritorn DTX-150 cable interface kits.

1. Ritron DTX-150 interface cable assembly.
2. Instruction sheet.

The following steps outline the procedure for interfacing the Rirtron DTX-150 to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

Transmit indicator active:	Low
Receive indicator active:	Low
PTT output active:	Low
Enable mic mute gate on transmit:	Yes
Enable Tx indicator as event 2:	No
External output active:	Low
External output mode:	Speaker mute

2. Configure the following jumpers as indicated:

JP1	Cut
JP4	A-B

3. Connect the Ritron DTX-150 interface cable to the Ritron DTX-150 radios 10 pin connector as shown in the following diagrams:
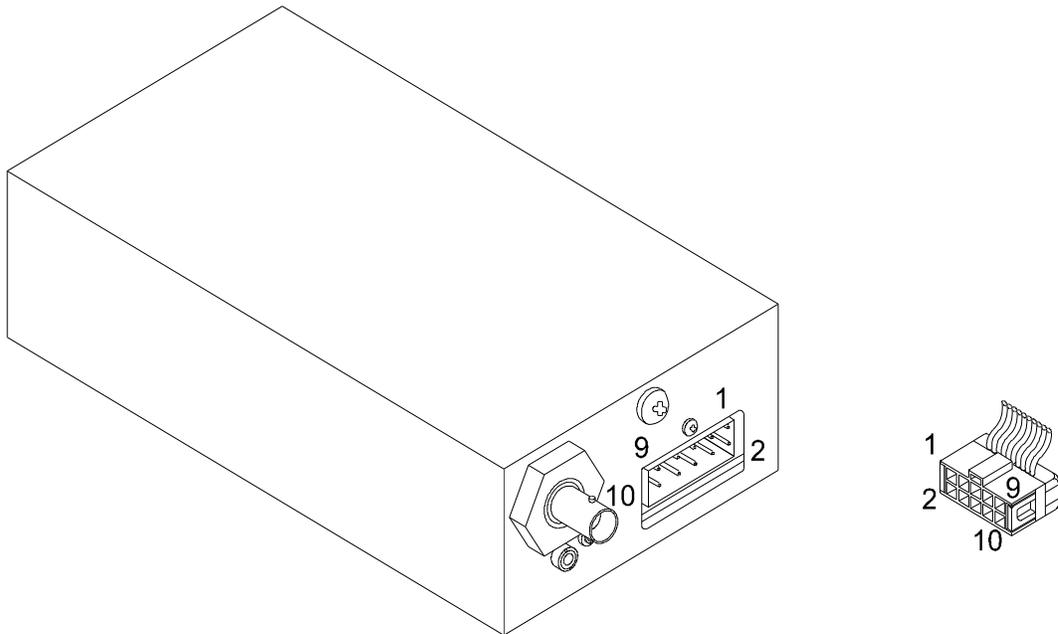
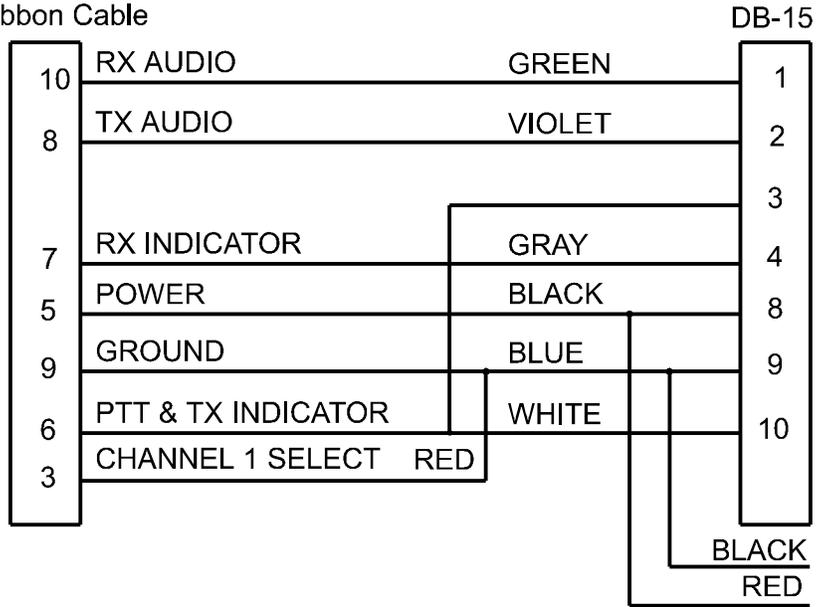RITRON DTX-150 RADIO & 10 POS. CABLE CONNECTOR

Ritron DTX-150 Interface (cont.)

4. The colored ribbon wires used for Ritron DTX-150 interface cable is described in the table below:

Red   Pin 3 - Channel 1 Select

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Black   Pin 5 - Power
White   Pin 6 - PTT & TX Indicator
Gray   Pin 7 - RX Indicator
Violet   Pin 8 - TX Audio
Blue   Pin 9 - Ground
Green   Pin 10 - RX Audio

10 POS. Connector
with Ribbon Cable   DB-15

10	RX AUDIO	GREEN	1
8	TX AUDIO	VIOLET	2
			3
7	RX INDICATOR	GRAY	4
5	POWER	BLACK	8
9	GROUND	BLUE	9
6	PTT & TX INDICATOR	WHITE	10
3	CHANNEL 1 SELECT RED		

BLACK
RED

RITRON DTX-150 CABLE KIT
106-DTX150

Item	Description	Part No.	Qty.
1	WIRE, 22 AWG RED	222-0014	1'
2	WIRE, 22 AWG BLACK	222-0021	1'
3	SCREW/CLIP KIT	231-0014	1
4	CONN DB15 MALE	231-0035	1
5	COVER DB15	231-0036	1
6	10 POS. CONNECTOR	231-3310	1
7	10 WIRE RIBBON CABLE	800-0034	1'

SEA 520D Interface

The following items are included in the SEA 520D cable interface kit:

1. SEA 520D interface cable assembly.
2. Instruction sheet.

The following steps outline the procedure for interfacing the SEA 520D radio to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

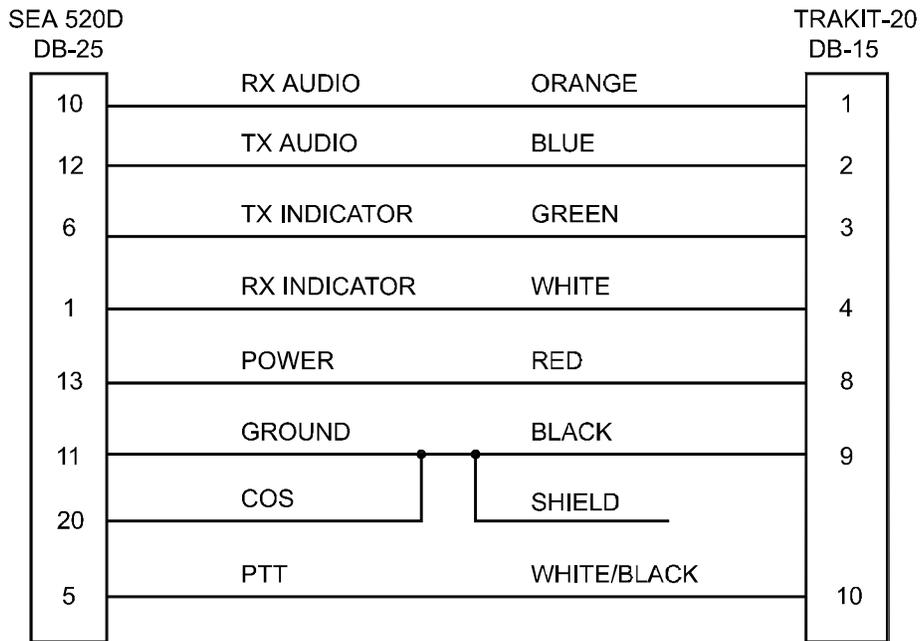 | | |
    |---|---|
    | Transmit indicator active: | Low |
    | Receive indicator active: | Low |
    | PTT output active: | Low |
    | Enable mic mute gate on transmit: | No |
    | External output active: | Low |
    | External output mode: | Speaker mute |

    ** Enable TX while RX and enable TX while TX using the TrakIt-20 installer software.

2. Configure the following jumpers as indicated:

JP1	IN
JP4	B-C

3. In the SEA RSS, set data LTR code in the system menu.

4. Connect the interface cable between the radio and the TrakIt-20.

5. Adjust R2 on the TrakIt-20 board about ¼ turn from full counter-clockwise.

6. Adjust R3 on the TrakIt-20 board to read about 300mV, or until proper operation is achieved.

SEA 520D Interface (cont.)

SEA 520D DB-25			TRAKIT-20 DB-15
10	RX AUDIO	ORANGE	1
12	TX AUDIO	BLUE	2
6	TX INDICATOR	GREEN	3
1	RX INDICATOR	WHITE	4
13	POWER	RED	8
11	GROUND	BLACK	9
20	COS	SHIELD	
5	PTT	WHITE/BLACK	10

SEA 520D INTERFACE CABLE KIT
106-SEA520D

Item	Description	Part No.	Qty.
1	CONN DB25 MALE	231-0005	1
2	SCREW/CLIP KIT	231-0014	1
3	COVER DB25	231-0015	1
4	CONN DB15 MALE	231-0035	1
5	COVER DB15	231-0036	1
6	CBL, 8 CONN 22 AWG STR	800-1114	1'

Standard GX1710U Interface

The following items are included in the GX1710u interface kit:

1. GX1710u interface cable assembly.
2. Instruction sheet.

The following steps outline the procedure for interfacing GX1710U to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

Transmit indicator active:	Low
Receive indicator active:	Low
PTT output active:	Low
Enable Tx indicator as event 2:	No
External output active:	Low
External output mode:	Speaker mute

2. Configure the following jumpers as indicated:

JP1	Cut
JP4	AB

3. Install a 10K resistor across R20 in the Trakit.

4. Modiy the radio for switched B+ at Pin 4 on the accessory connector. Switched B+ is available at Pin 2 of J7.

5. Connect the DB-15 end of the GX1710u interface cable to the DB-15 connector on the back of the TrakIt-20. Connect the DB-9 connector to the back of the radio.

6. Check the TrakIt-20's audio levels by performing the alignment procedure described in this manual.

These notes assume that the radio is being used strictly for Trakit data.

The microphone should not be installed due to the fact that the mic element is hot all of the time.

The radio could possibly be modified for Mic Mute by connecting Pin 9 of the DB-9 accessory connector to Pin 9 of J7. It could also be modified for Speaker Mute by connecting Pin 6 of the DB-9 accessory connector to Q1003 pin 1 (audio amp).

Although they should work, neither Mic Mute or Speaker Mute have been factory tested at this point.

Standard GX1710U Interface (cont'd)

TRAKIT 20 DB-15			STANDARD GX 1710U DB-9
1	RX Audio	Orange	2
2	TX Audio	Blue (*1 Meg in series*)	3*
3	TX IND	*Connect to PTT*	7**
4	RX IND	White	1
8	Power	Red	4
9	Ground	Black	5
10	PTT	Gray	7

* Install a 1 MEG OHM resistor in series with the TX audio line.

** There was not a suitable point found for the TX indicator. It was connected derectly to PTT.

Standard GX1710U Interface Cable Kit
106-GX1710U

Item	Description	Part No.	Qty.
1	CABLE TIE (SHORT)	200-0081	1
2	SCREW/CLIP KIT	231-0014	1
3	CONN DB15 MALE	231-0035	1
4	COVER DB15	231-0036	1
5	CBL, 8 CONN 22 AWG STR	800-1114	1'

Tait 2000 with T2050 Control & Control Head Interface

The following items are included in the Tait 2000 with T2050 Control & Control Head cable interface kits.

1. Tait 2000 with T2050 Control & Control Head interface cable assembly.
2. Instruction sheet.
3. 10K Resistor

The following steps outline the procedure for interfacing the Tait 2000 with T2050 Control & Control Head radio to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

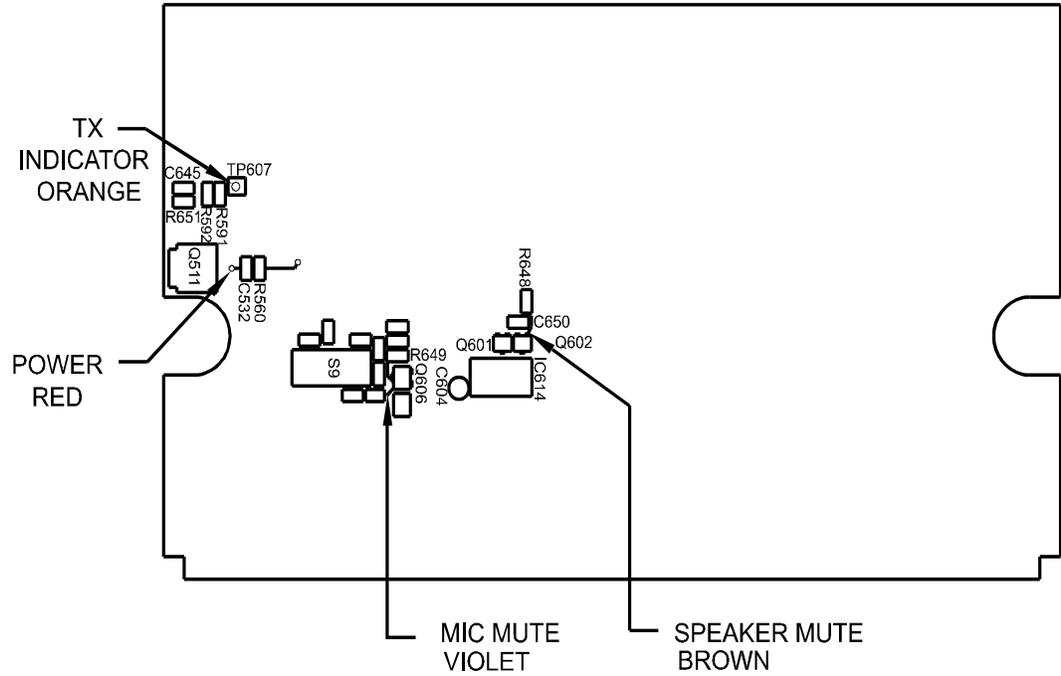 | | |
   |---|---|
   | Transmit indicator active: | High |
   | Receive indicator active: | Low |
   | PTT output active: | Low |
   | Enable mic mute gate on transmit: | Yes |
   | Enable Tx indicator as event 2: | No |
   | External output active: | Low |
   | External output mode: | Speaker mute |

2. Configure the following jumpers as indicated:

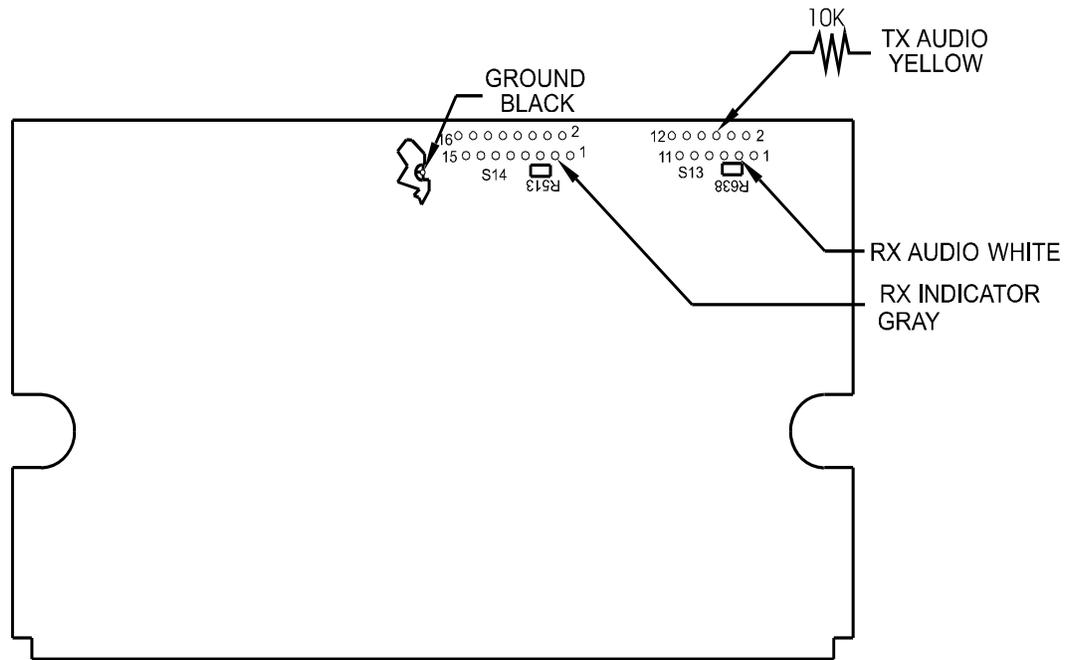 | | |
   |---|---|
   | JP1 | Cut |
   | JP4 | B-C |

3. Remove top cover of the radio.

4. Bring the cable interface wires in through the slot in the back of the radio.

5. Connect the wires of the Tait 2000 with T2050 Control & Control Head interface cable to the following points in the radio as shown in the following diagrams:

White	S13 pin 3 on T2050 Control Board
Yellow	S13 pin 6 on T2050 Control Board
Orange	TP607 on T2050 Control Board
Gray	S14 pin 3 on T2050 Control Board
Violet	Junction of Q606,R649, and R664 on T2050 Control Board
Blue	P12 pin 2 on Control Head Board2
Red	Q511 Collector (center pin) on T2050 Control Board
Black	Negative side of C537 on T2050 Control Board
Brown	Junction of R648, C650, and Q602 on T2050 Control Board

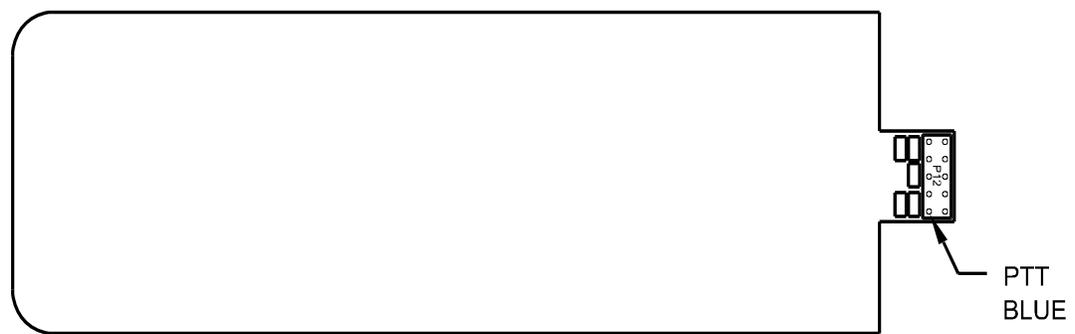**Tait 2000 with T2050 Control & Control Head Interface (cont.)**

TX
INDICATOR
ORANGE

TP607

C645
R651
R592
R591
Q511
C532
R560

POWER
RED

R648
C650
Q601
Q602
R649
S9
Q606
C604
IC614

MIC MUTE
VIOLET

SPEAKER MUTE
BROWN

T2050 CONTROL BOARD TOP VIEW

10K
TX AUDIO
YELLOW

GROUND
BLACK

6 o o o o o o o o 2
15 o o o o o o o o 1
S14
R513

12 o o o o o 2
11 o o o o o 1
S13
R638

RX AUDIO WHITE

RX INDICATOR
GRAY

T2050 CONTROL BOARD BOTTOM VIEW

Tait 2000 with T2050 Control & Control Head Interface (cont.)
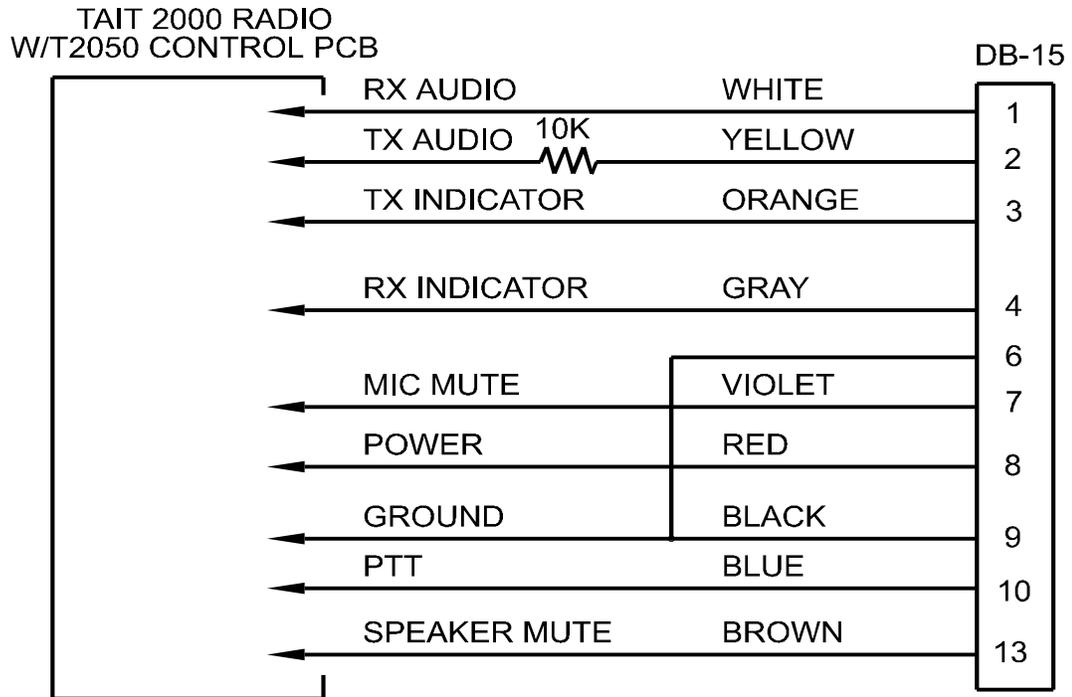

PTT
BLUE

T2050 CONTROL HEAD BOARD TOP VIEW

6. Replace any covers or any parts removed.

7. Connect the DB-15 end of the Tait 2000 with T2050 Control & Control Head interface cable to the DB-15 connector on the back of the TrakIt-20.

8. Check the TrakIt-20's audio levels by performing the alignment procedure described in the TrakIt-20 manual.

Tait 2000 with T2050 COTROL and CONTROL HEAD Interface Cable

TAIT 2000 RADIO
W/T2050 CONTROL PCB

DB-15

RX AUDIO	WHITE	1
TX AUDIO 10K	YELLOW	2
TX INDICATOR	ORANGE	3
RX INDICATOR	GRAY	4
		6
MIC MUTE	VIOLET	7
POWER	RED	8
GROUND	BLACK	9
PTT	BLUE	10
SPEAKER MUTE	BROWN	13

TAIT 2000 with T2050 CONTROL and CONTROL HEAD CABLE KIT
106-TAIT2000

Item	Description	Part No.	Qty.
1	SCREW/CLIP KIT	231-0014	1
2	CONN DB15 MALE	231-0035	1
3	COVER DB15	231-0036	1
4	10 K RESISTOR	312-0011	1
5	10 COND CABLE	800-1115	1'

Uniden SMS 925 Interface

The following items are included in the SMS 925 interface kit:

1. SMS 925 interface cable assembly.
2. Instruction sheet.

The following steps outline the procedure for interfacing SMS 925 radio to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

      Transmit indicator active: Low
      Receive indicator active: Low
      PTT output active: Low
      Enable Tx indicator as event 2:   No
      External output active: Low
      External output mode: Speaker mute

2. Configure the following jumpers as indicated:

      JP1   Cut
      JP4   BC

3. Change R20 in the Trakit to a 1K resistor.

4. There are several wires that need to be inserted to the 12 pin Molex connector on the back of the radio and soldered to various points in the radio. They are as follows:

   1. Solder the tinned end of the RED wire to IC251 pin 2 and insert the pin into pin 12 of the Molex accessory connector.
   2. Solder the BLACK wire to the GROUND lead of the power cable and insert the pin into pin 11 of the Molex accessory connector.
   3. Solder the ORANGE wire to the junction of Q105 and R130 and insert the pin into pin 10 of the Molex accessory connector.
   4. Solder the BROWN wire to the Blue wire on W4. (W4 plugs into J3) and insert the pin into pin 9 of the Molex accessory connector.
   5. Solder the YELLOW wire to J603 pin 5 on the Logic board and instert the pin into pin 8 of the Molex accessory connector.
   6. Solder the BLUE wire to the Orange wire on W4 and insert the pin into pin 7 of the Molex accessory connector.
   7. Solder the GRAY wire to the junction of Q105 and R130 and insert the pin into pin 6 of the Molex accessory connector.
   8. Solder the WHITE wire to the White wire on W5 and insert the pin into pin 5 of the Molex accessory connector.

Uniden SMS 925 Interface (cont'd)

5. Connect the DB-15 end of the SMS 925 interface cable to the DB-15 connector on the back of the TrakIt-20. Connect the Molex end of the SMS 925 interface cable to the Molex accessory connector on the back of the radio.

6. Check the TrakIt-20's audio levels by performing the alignment procedure described in this manual.

7. The Transmit Indicator point in the radio is actually TX active and not a channel access signal. When using this radio on a trunking system, the Trakit should be programmed for a longer DELAY BEFORE DATA SEND time using the Trakit Installer software to allow for channel access time.

TRAKIT DB15			SMS 925 12 PIN MOLEX
1	RX Audio	Orange	10
2	TX Audio	Blue	7
3	TX IND	Green	9
4	RX IND	White	5
8	POWER	Red	12
9	GROUND	Black	11
10	PTT	Yellow	8
13	SPKR Mute	Gray	6

Uniden SMS 925 Interface Cable Kit
106-SMS925

Item	Description	Part No.	Qty.
1	SCREW/CLIP KIT	231-0014	1
2	CONN DB15 MALE	231-0035	1
3	COVER DB15	231-0036	1
4	CBL, 8 CONN 22 AWG STR	800-1115	1'
5	Molex Connector 12 Pin	231-0059	1
6	Molex Pins (F)	231-0038	8
7	Molex Pins (M)	231-0034	8
8	WIRE, 22 AWG RED	222-0014	9"
9	WIRE, 22 AWG BLUE	222-0015	9"
10	WIRE, 22 AWG YELLOW	222-0018	9"
11	WIRE, 22 AWG GREY	222-0019	9"
12	WIRE, 22 AWG BROWN	222-0020	9"
13	WIRE, 22 AWG ORANGE	222-0023	9"
14	WIRE, 22 AWG WHITE	222-0026	9"

Uniden SMU 4525KT/SMH 1525DT Interface

The following items are included in the Uniden SMU 4525KT/SMH 1525DT interface kit:

1. SMU 4525KT/SMH 1525DT interface cable assembly.
2. Cable tie.
3. 7 lengths of wire with Molex pins.
4. 2 short pieces of heat shrink tubing.
5. 2M ohm resistor.
6. Instruction sheet.

The following steps outline the procedure for interfacing the Uniden SMU 4525KT/SMH 1525DT to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

Transmit indicator active:	High
Receive indicator active:	Low
PTT output active:	Low
Enable mic mute gate on transmit:	No
Enable Tx indicator as event 2:	No
Delay before data send: (if using a repeater)	1 sec.

2. Configure the following jumper as indicated:

   JP4   B-C

3. On the TrakIt-20 board, remove JP1 and replace it with a 2M ohm resistor. Remove R49 and remove C25.

4. Remove top and bottom covers of the radio and un-snap the faceplate from the main body of the radio.

5. Remove the radio's power connector from the rear of the radio for easier access to the accessory jack. Re-install the power connector when all connections to the accessory jack are complete.

6. Install the wires with Molex pins into the accessory connector from the inside of the radio as follows:

Pin #	Wire
4	Red
5	Blue
6	Brown
7	Orange
8	Yellow
9	White
10	Gray

7. Locate the wire connected to pin 4 of J401 that is labeled as "MIC". Cut this wire at the center of its length.

8. Place a piece of heat shrink tubing onto both the yellow and gray wires that were installed into the accessory connector.

9. Solder the yellow wire to the side of the cut wire that goes to the main board and solder the gray wire to the side of the cut wire that goes to the faceplate.

10. Move the heat shrink tubing into place on both wires and shrink it.

11. Connect the remaining wires that were installed into the accessory connector to the following points in the radio as shown in the diagram that follows:

Red	positive side of C405 (on main board)
Blue	J603 pin 3
Brown	WA603 pin 1
Orange	J601 pin 3
White	J604 pin 3

LOGIC BOARD LOCATOR (BOTTOM VIEW)
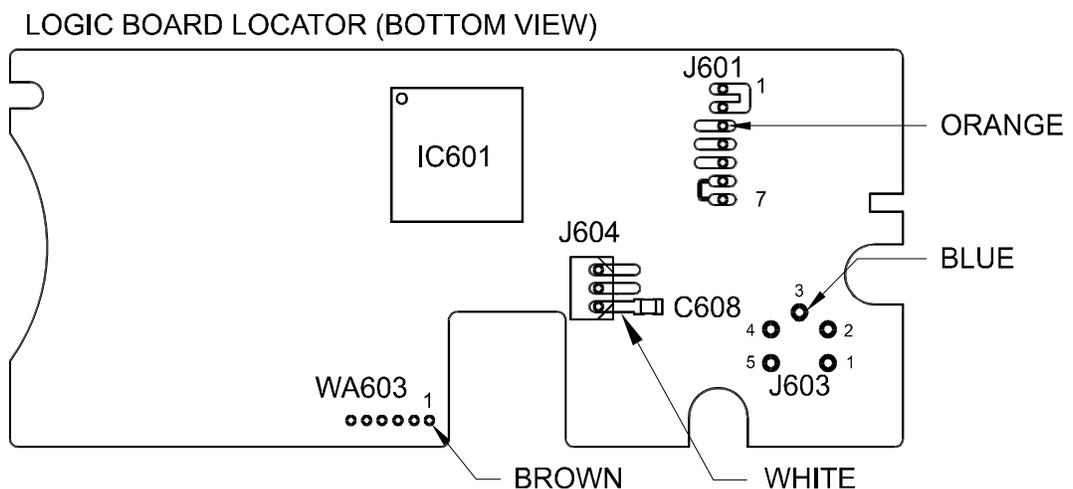
12. Position the wires through the slot with the existing wires and replace the faceplate and the radio covers.

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13. Connect the Molex plug end of the SMU 4525KT/SMH 1525DT interface cable to the 12 pin accessory jack on the back of the radio.

14. Connect the DB-15 end of the SMU 4525KT/SMH 1525DT interface cable to the DB-15 connector on the back of the TrakIt-20.

15. Check the TrakIt-20's audio levels by performing the alignment procedure described in the TrakIt-20 manual.

SMU 4525KT/SMH 1525DT Interface Cable
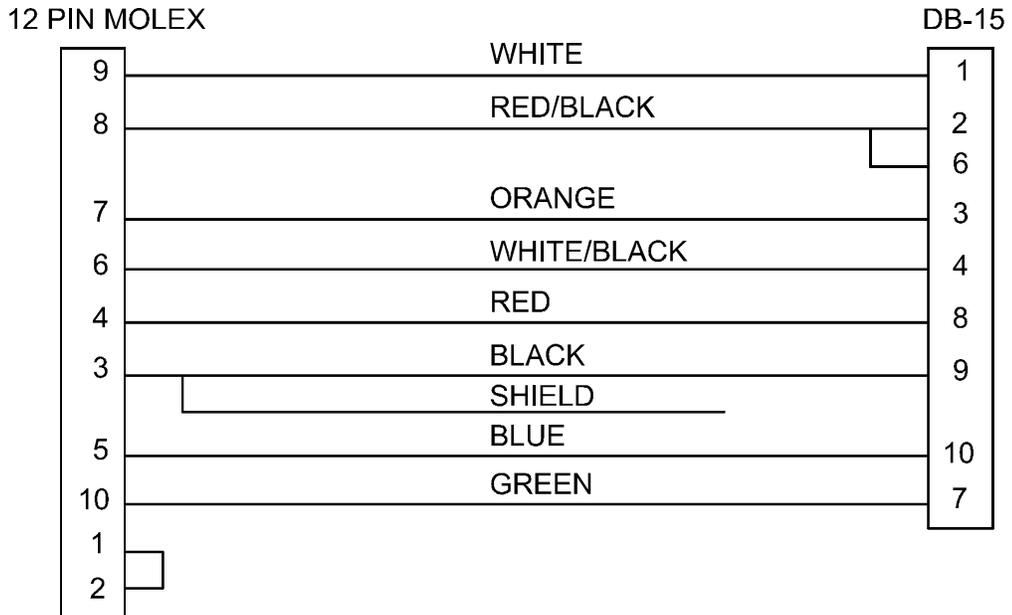
12 PIN MOLEX   DB-15

Molex	Wire	DB-15
9	WHITE	1
8	RED/BLACK	2
		6
7	ORANGE	3
6	WHITE/BLACK	4
4	RED	8
3	BLACK	9
	SHIELD	
5	BLUE	10
10	GREEN	7
1		
2		

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UNIDEN SMU 4525KT/SMH 1525DT INTERFACE CABLE KIT
800-2083

Item	Description	Part No.	Qty.
1	HEAT SHRINK TUBE 3/8	199-6099	1
2	CABLE TIE (SHORT)	200-0081	1
3	WIRE, 22 AWG RED	222-0014	9"
4	WIRE, 22 AWG BLUE	222-0015	9"
5	WIRE, 22 AWG YELLOW	222-0018	9"
6	WIRE, 22 AWG GREY	222-0019	9"
7	WIRE, 22 AWG BROWN	222-0020	9"
8	WIRE, 22 AWG ORANGE	222-0023	9"
9	WIRE, 22 AWG WHITE	222-0026	9"
10	WIRE, 22 AWG WHITE	222-0026	3"
11	SCREW/CLIP KIT	231-0014	1
12	MOLEX PIN MALE	231-0034	10
13	CONN DB15 MALE	231-0035	1
14	COVER DB15	231-0036	1
15	MOLEX PIN FEMALE	231-0038	7
16	CONN 12 POS MOLEX	231-0059	1
17	2M 5% 1/4 W RES	312-0048	1
18	CBL, 8 CONN 22 AWG STR	800-1114	1'

Vertex VX-2000 Interface

The following items are included in the VERTEX VX-2000 interface kit:

1. VERTEX VX-2000 interface cable assembly.
2. Cable tie.
3. 100K Resistor
4. Instruction sheet.

The following steps outline the procedure for interfacing the VERTEX VX-2000 to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

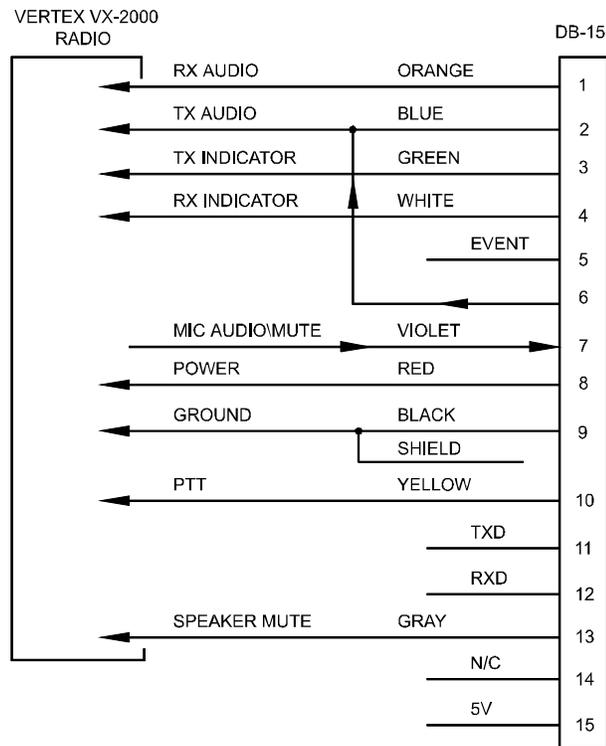 | | |
   |---|---|
   | Transmit indicator active: | High |
   | Receive indicator active: | Low |
   | PTT output active: | Low |
   | Enable mic mute gate on TX | No |
   | Enable Tx indicator as event 2: | No |
   | External output active: | Low |
   | External output mode: | Speaker mute |

2. Configure the following jumpers as indicated:

JP1	100K Resistor
JP4	B-C

3. Remove R49 form the TRAKIT printed circuit board.

4. Remove the top cover of the VERTEX VX-2000 radio by following instructions in the radio service manual.

5. Remove the external speaker jack from back of radio and cover the wires & connector with tape or unplug and remove it completely.

6. Insert the VERTEX VX-2000 interface cable in the slot where the speaker jack was removed with the tie strap installed on the inside of the radio as strain relief.

7. Solder the orange wire of the VERTEX VX-2000 interface cable to the left side of R 1049.

8. Cut the wire going from JP5001 pin 3 on the MIC UNIT to J1006 pin 3 on the MAIN UNIT.

9. Solder the blue wire of the VERTEX VX-2000 interface cable to the MAIN UNIT side of the wire cut in the previous step and heat shrink.

10. Solder the green wire of the VERTEX VX-2000 interface cable to the connector side of R2009 on DISPLAY 1 UNIT.

11. Solder the white wire of the VERTEX VX-2000 interface cable to pin 1 of J1003.
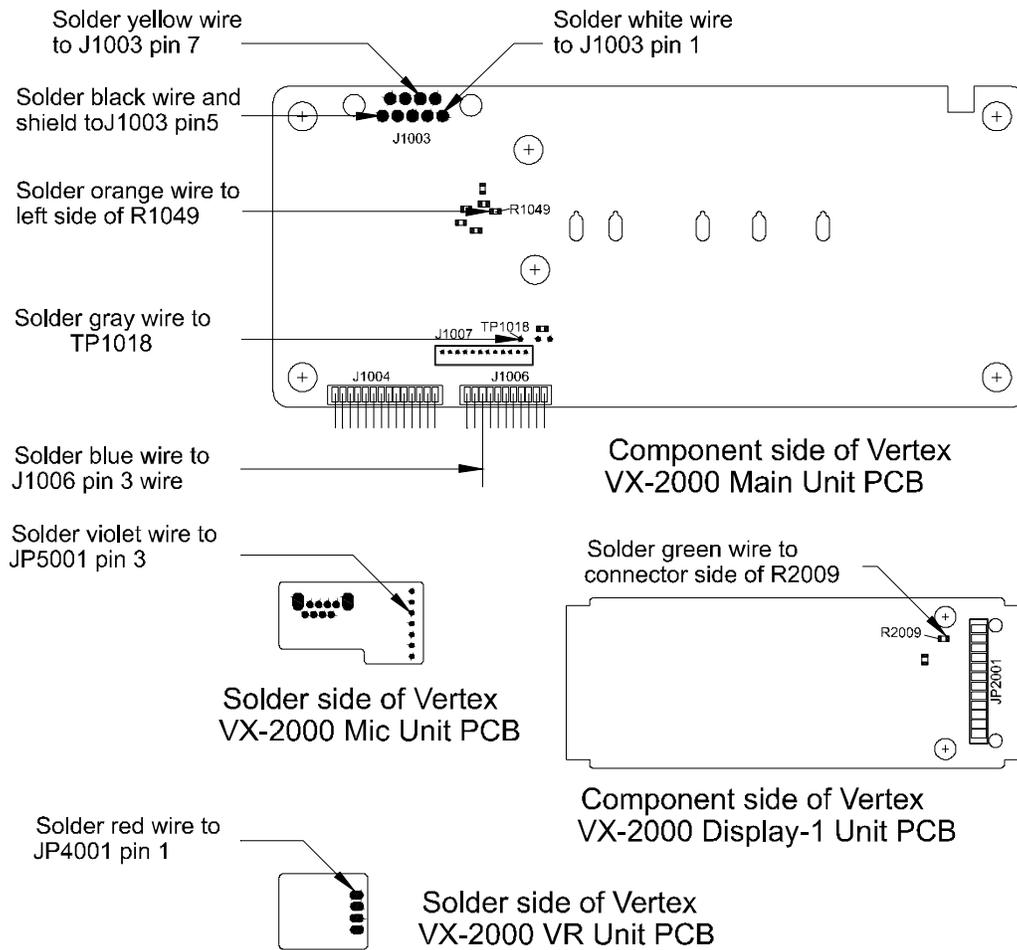
12. Solder the violet wire of the VERTEX VX-2000 interface cable to pin 3 of JP5001 on the MIC UNIT.

13. Solder black wire & shield of the VERTEX VX-2000 interface cable to pin 5 of J1003.

14. Solder the yellow wire of the VERTEX VX-2000 interface cable to pin 7 of J1003.

15. Solder the gray wire of the VERTEX VX-2000 interface cable to TP 1018.

16. Solder the red wire of the VERTEX VX-2000 interface cable to J4001 pin 1 on VR UNIT. (SW B+)

17. Connect the DB-15 end of the VERTEX VX-2000 interface cable to the DB-15 connector on the back of the TrakIt-20.

18. Check the TrakIt-20's audio levels by performing the alignment procedure described in this manual.

19. Re-assemble radio as needed.

20. Below is a block diagram of the VERTEX VX-2000 interface cable:

21. Below is a diagram for the VERTEX VX-2000 interface cable locator:

Solder yellow wire
to J1003 pin 7

Solder white wire
to J1003 pin 1

Solder black wire and
shield to J1003 pin5

J1003

Solder orange wire to
left side of R1049

R1049

Solder gray wire to
TP1018

J1007 TP1018

J1004   J1006

**Component side of Vertex
VX-2000 Main Unit PCB**

Solder blue wire to
J1006 pin 3 wire

Solder violet wire to
JP5001 pin 3

Solder green wire to
connector side of R2009

R2009

JP2001

**Solder side of Vertex
VX-2000 Mic Unit PCB**

**Component side of Vertex
VX-2000 Display-1 Unit PCB**

Solder red wire to
JP4001 pin 1

**Solder side of Vertex
VX-2000 VR Unit PCB**

**VERTEX VX-2000 Interface Cable Kit
106-VX2000**

Item	Description	Part No.	Qty.
1	HEAT SHRINK 1/16"	199-6098	2"
2	HEAT SHRINK 3/8"	199-6099	2"
3	CABLE TIE (SHORT)	200-0081	1
4	SCREW/CLIP KIT	231-0014	1
5	CONN DB15 MALE	231-0035	1
6	COVER DB15	231-0036	1
7	100 K RESISTOR	312-0003	1
8	CBL, 10 CONN 24 AWG STR	800-1115	2'

Vertex VX3000 Interface

The following items are included in the VX3000 interface kit:

1. VX3000 interface cable assembly.
2. Cable tie.
3. 100K Resistor.
4. Instruction sheet.

The following steps outline the procedure for interfacing VX3000 radio to the TrakIt-20.

1. Set the TrakIt-20 up for a bench test and use the AVL Installer program to set the following operating constants in the installer table to the indicated value:

Transmit indicator active:	Low
Receive indicator active:	Low
PTT output active:	Low
Enable Tx indicator as event 2:	No
Enable mic mute gate on TX	No
External output active:	Low
External output mode:	Speaker mute

2. Configure the following jumpers as indicated:

JP1	Cut
JP4	AB

3. Install a 10K resistor across R20 on the Trakit.

4. Most of the connection points in the radio require using wire wrap wire to make the actual connections on the board of the radio. Remove the external speaker jack from the back of the radio and install the interface cable in its place. Use the tie strap for adequate strain releif. Cover the speaker jack and the exposed wires with tape and secure. If the radio is for data only (no voice), the jack can be removed from J1001 (this also disables the speaker). The proper pins on J1001 could be shorted to re-activate the speaker.

5. Power for the Trakit must be Connected directly to B+ (The positive side of C1289). Using switched B+ causes problems with the radio. Use of an external delay off timer is recommended for the radio and Trakit.

6. Connect the DB-15 end of the VX3000 interface cable to the DB-15 connector on the back of the TrakIt-20.

7. Check the TrakIt-20's audio levels by performing the alignment procedure described in this manual.

Vertex VX3000 Interface (cont'd)

Additional notes:

If the radio is for voice and data, mic mute must be used. The mic element is hot all the time and it would interfere with the Trakit data. **MAKE SURE THAT THE BOX FOR MIC MUTE ON TX IS NOT CHECKED USING THE INSTALLER SOFTWARE**.

If the radio is dedicated for data only, remove the external speaker jack from J1001. This will disable the speaker. Also, the mic mute and speaker mute connections do not need to be made.

TRAKIT 20 DB15			Vertex VX3000
1	RX Audio	Orange	J1003 Pin 5
2	TX Audio	Blue	***Solder to pad connected to J1003 Pin 2 through 100K resistor
3	TX IND	Green	Q6003 Pin 5 (front B unit)
4	RX IND	White	Q6003 Pin 6 (front B unit)
6	Mic Mute		*** Connect to radio side of 100K resistor.
7	Mic Mute	Violet	J1003 Pin 2 (cut trace to blue wire's pad)
8	Power	Red	Positive side of C1289
9	Ground	Black/shield	Ground
10	PTT	Yellow	J1003 Pin 3
13	Spkr Mute	Gray	Q1045 Pin 1 (audio amp)

***Note the 100K resistor in the TX audio line. It should be installed in the hood of the DB15 connector between pin 2 and the blue wire. The wire from pin 6 (Mic Mute) is connected to the junction of the blue wire and the 100K resistor.

The blue wire is connected to the pad in the radio that the circuit trace connects to J1003 Pin 2.

VX3000 Interface Cable Kit
106-VX2000

Item	Description	Part No.	Qty.
1	HEAT SHRINK 1/16"	199-6098	2"
2	HEAT SHRINK 3/8"	199-6099	2"
3	CABLE TIE (SHORT)	200-0081	1
4	SCREW/CLIP KIT	231-0014	1
5	CONN DB15 MALE	231-0035	1
6	COVER DB15	231-0036	1
7	100 K RESISTOR	312-0003	1
8	CBL, 10 CONN 24 AWG STR	800-1115	2'