



## Installation, Adjustment, and Operation Instructions

Speaker Switch 17-95160-00  
Instruction Part Number: 17-95160-00

Date of Issue: 02/2016



**Larry McGee**

Division of **MILLER INGENUITY**

1155 East Eighth St., Winona, MN  
(507) 452-2461 [www.milleringenuity.com](http://www.milleringenuity.com)

<b>CONTENTS</b>	<b>LOCATION</b>
1. Applicability, General Specs, and Overview	p. 3
2. Schematic Overview of System	p. 4
3. Installation	p. 5
4. Connections	p. 8
5. Use	p. 10

## **1. APPLICABILITY, GENERAL SPECS AND OVERVIEW**

### **APPLICABILITY**

These instructions cover the installation, adjustment and use of Speaker Switch model 17-95160.

### **GENERAL SPECIFICATIONS**

Construction:	Rugged metal enclosure
Enclosure Size:	4.510" wide x 0.875" tall x 3" deep
U-Shape Bracket Size:	4.650" wide x 2" tall x 1.375" deep, partially extends of top of speaker switch
Power Requirement:	+12 VDC (nominal), (10 to 16 volts), less than 50 mA
Line Connections:	Pluggable screw type terminal strip
Audio Input Range:	8V RMS MAX
Audio Input Impedance:	8 ohms ( $\Omega$ )
Audio Output Range:	6W MAX with Speco ASPC20
Internal Mic Pad:	0dB or 32dB, jumper selectable
Mic output to radio:	
High:	2.4V MAX/ 0.190V MIN
Low:	60 mV MAX/ 4.7mV MIN
Temperature range:	-40C to +70C (-40F to +158F)

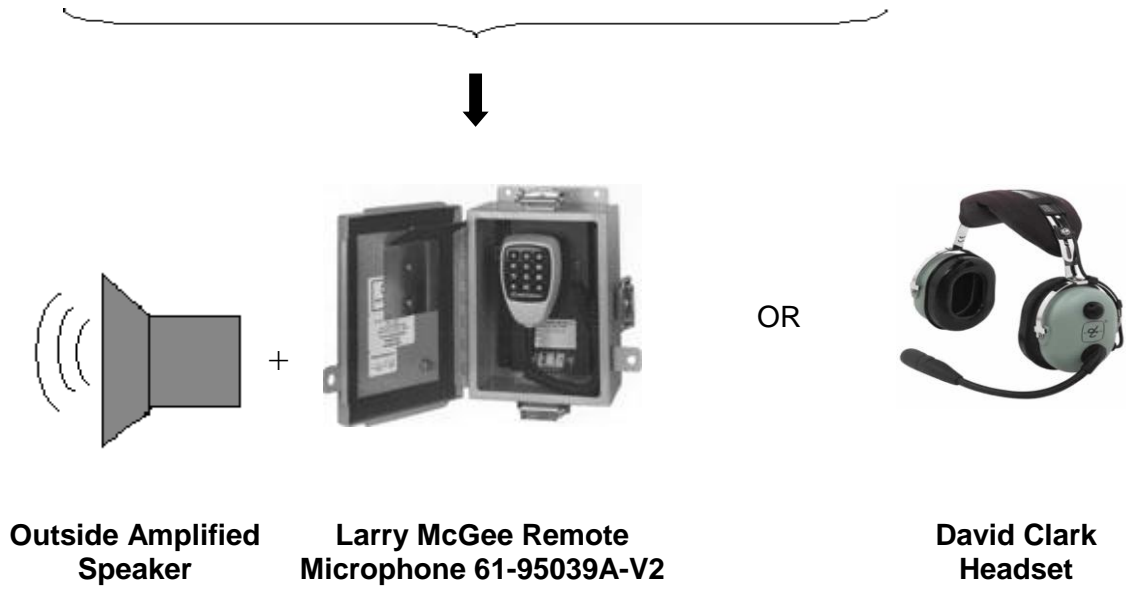
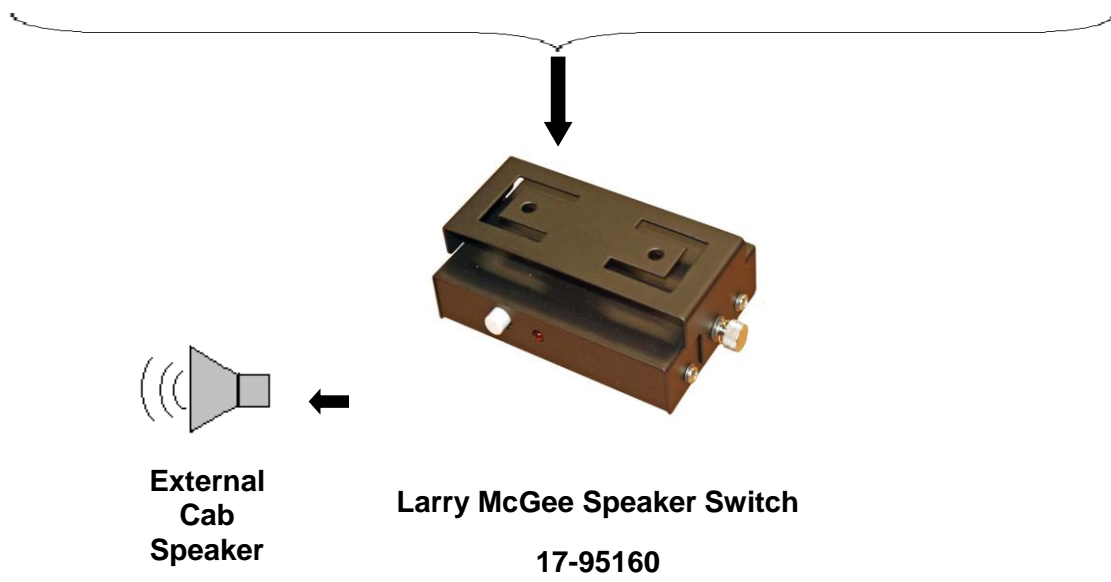
### **OVERVIEW OF INSTALLATION, ADJUSTMENT AND USE**

Speaker Switch 17-95160 has a compact enclosure with a single button to transfer microphone and speaker functions. It can be used to switch either a remote microphone and powered speaker or a David Clark headset. It is usable with Motorola Spectra™ and MCS-2000, Kenwood NX-700, or Icom IC-F5061 Mobile Radios. When switch is in local mode, it can transfer audio received from the internal radio speaker to an external cab speaker. Connections are made via plug-in type screw terminal strips. Speaker switches include the U-shaped mounting bracket and 3.5 mm plug with cord.

The speaker switch controls (turns on and off) power to Remote Microphone and powered external speaker or David Clark headset. It provides high or low level mic audio to the radio based on the user selected jumper. While most radios require the higher level microphone output, the Kenwood NX-700 does require the lower level.

When operating the mobile radio from within the cab; by turning the switch off, power is removed from the external equipment (external speaker, and remote microphone or headset). To operate the radio from the remote location, press the push button on the switch (turning the switch on). The interior speaker is turned off and the external speaker and remote microphone or the headset is activated.

**2. SCHEMATIC OVERVIEW OF SYSTEM**

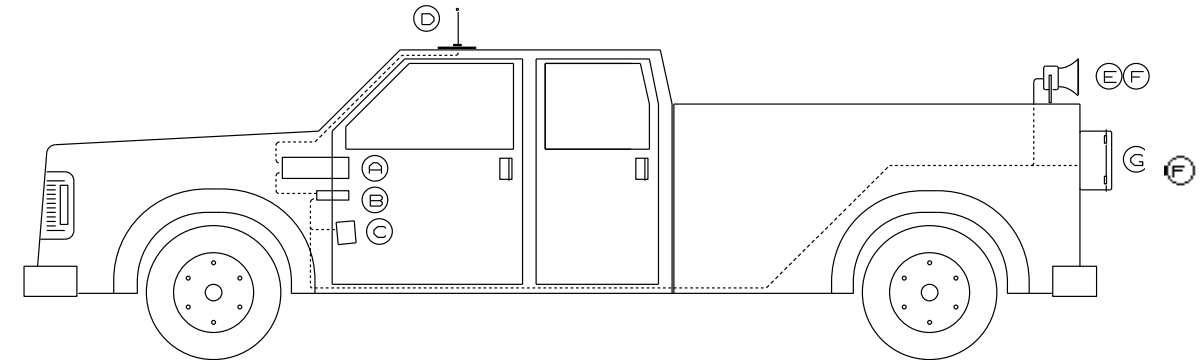


### 3. INSTALLATION

#### Physical Installation

The Speaker Switch, noted as (B) in Figure 1 below, should be mounted inside the cab with included U-Bracket. The unit should be orientated at an angle convenient and accessible to the user.

LARRY MCGEE REMOTE MICROPHONE SYSTEM  
 TYPICAL VEHICLE INSTALLATION DIAGRAM



- |   |  |
|---|--|
| (A) Vehicle Radio   | (D) Radio Antenna                                      |
| (B) Larry McGee Speaker Switch 17-95160 (without amplifier) | (E) Amplified Remote Speaker, use with 17-95160 switch |
| (C) Cab Speaker   | (F) Larry McGee Remote Microphone, 61-95039A-V2        |

**Figure 1: Locations of Speaker Switch and Remote Microphone installation in vehicle**

#### Electrical Installation

Electrical connections are made with pluggable connectors which facilitate the initial installation of the Switch. Any jumpers not in use should be stored on the jumper storage header provided. Table 1 below lists the appropriate radio connector pins for specific Motorola, Kenwood and Icom radios. For a radio not listed, consult the radio manual for connections.

Radio and Connector	Radio Pin No.		
	PTT	MIC+	MIC -
Motorola Spectra DB15	13	15	8
Motorola MCS-2000 DB25	21	23	4 & 9
Motorola GM300	3	2	7
Kenwood NX-700 DB25	12	6	25
Icom IC-F5061 DB25	19	8	7

**Table 1: Summary of radio pin connections for 17-95160**

#### Typical Customer Installation

The following diagrams on page 6 illustrate the typical customer installation of Speaker Switch 17-95160 to Motorola Spectra, Motorola MCS-2000, Motorola GM300, Kenwood NX-700, and Icom IC-F5061 radios using Belden cable 8777. Since these diagrams represent the “typical” or common installation, please verify the diagrams with your radio model before installation. When using a Kenwood NX-700 or Icom IC-F5061, the speaker switch must be powered from the vehicle battery.

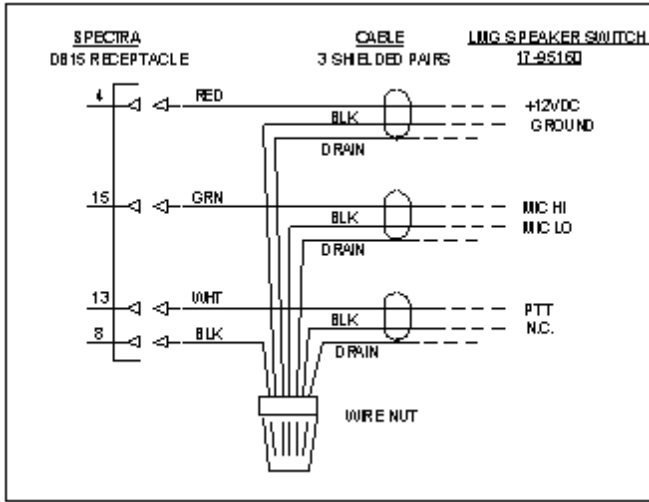


Figure 2: 17-95160 installation to Spectra™ radio

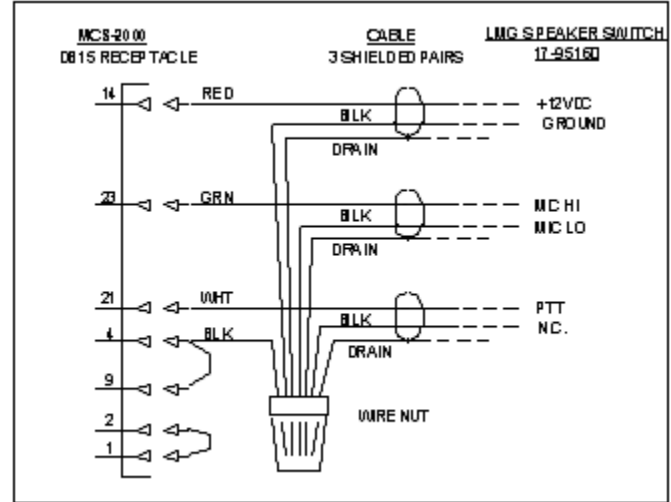


Figure 3: Typical 17-95160 installation to MCS-2000 radio

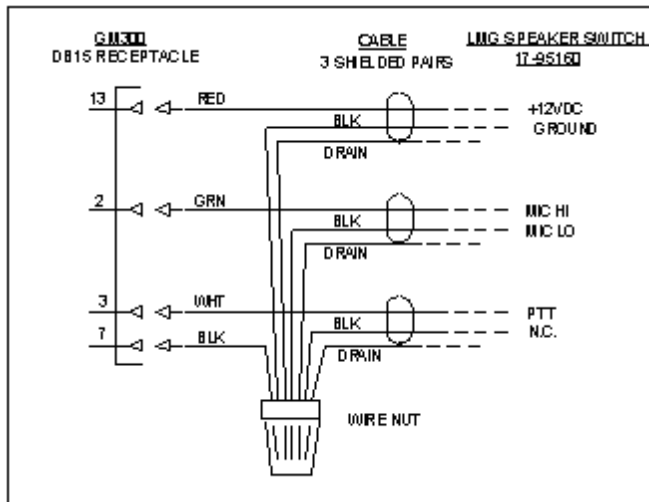


Figure 4: Typical 17-95160 installation to GM-300 radio

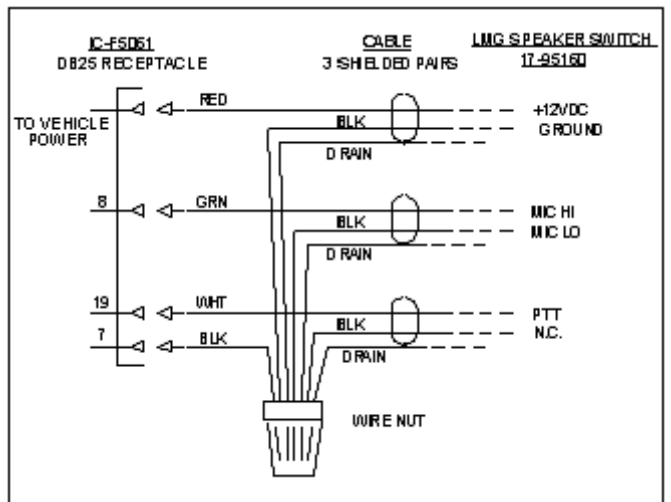


Figure 5: Typical 17-95160 installation to IC-F5061 radio

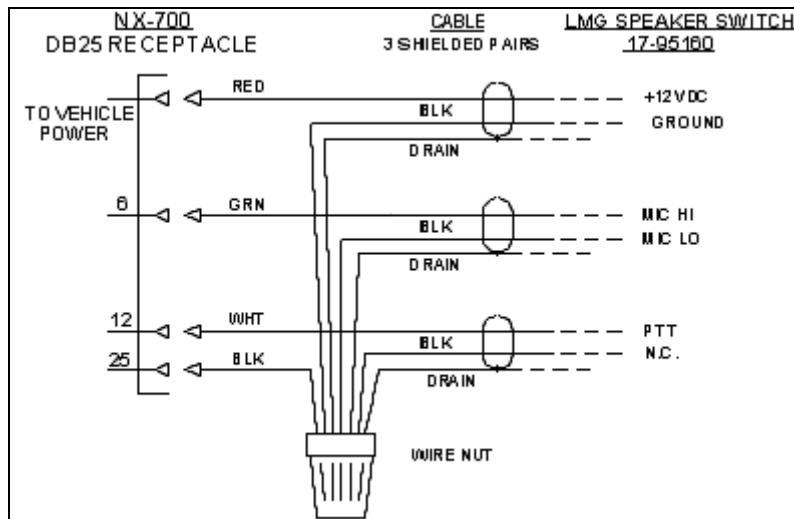
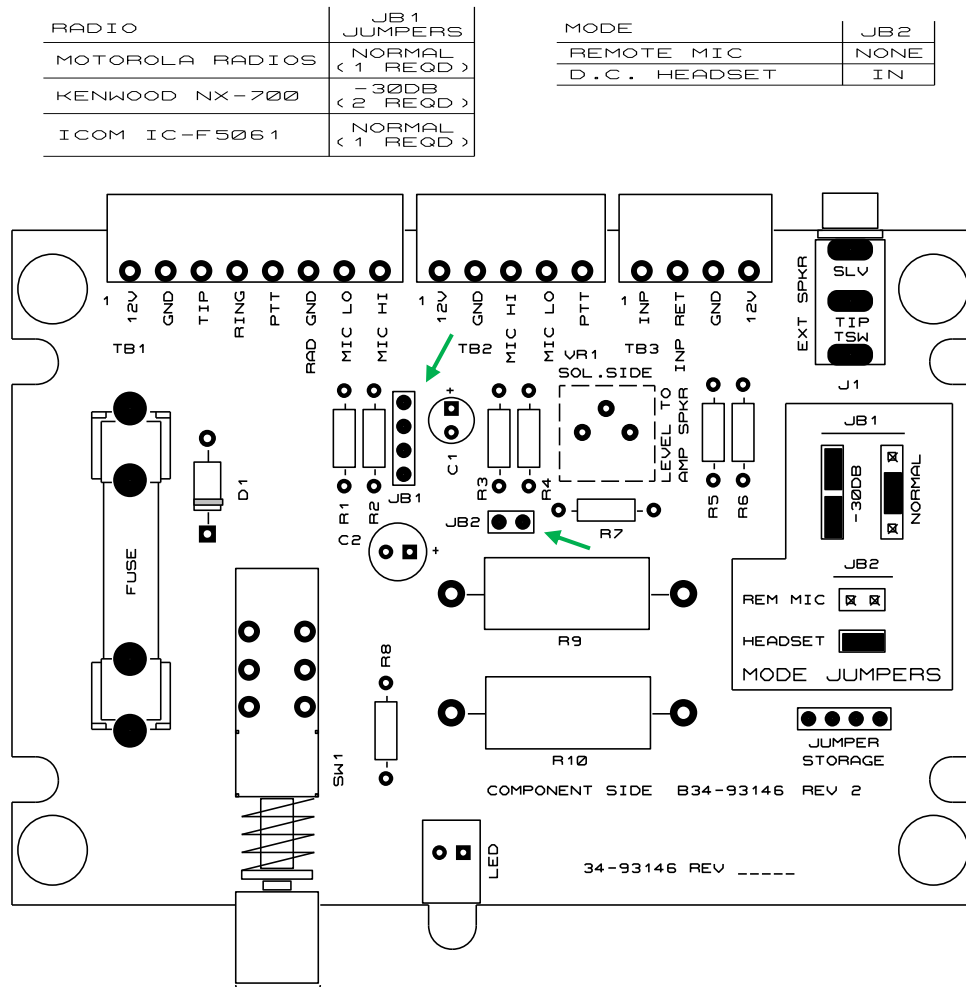


Figure 6: Typical 17-95160 installation to NX-700 radio

The appropriate operational mode is based on the desired mode of the output audio as listed in Figure 7 below. Jumper JB1 determines the microphone level to the radio. For most radios, one jumper is placed over the two center pins of JB1. For Kenwood NX-700, use two jumpers to cover all four pins of JB1. Jumper JB2 is used to provide bias voltage to the microphone of the headset. Ensure JB2 is inserted ONLY when using the switch with a DC headset or improper usage may/will result. The locations of PCB jumpers are also shown in Figure 7.

## PCB JUMPER OPTIONS &amp; LOCATIONS


**Figure 7: Main Circuit Board Jumpers for 17-95160**

#### 4. CONNECTIONS

The connections for the Speaker Switch depend on the desired mode of audio output. Figure 8 below shows general connections for TB1, TB2, and TB3. Additional TB1 connections are shown in Figure 9 on page 9. If audio output from radio is configured as Bridge Tied Load, connect either side of the audio output to TB 1-3 and make no connection to TB1-4. Connecting an output terminal of a Bridge Tied Load Amplifier to TB1-4 will result in damage to the amplifier or cause the amplifier to shut down.

\*Please note: Since Remote Microphone passes through Speaker Switch as double ended, in order to convert to single ended and maintain clear MIC audio and PTT connections please see application instructions following Figure 10, page 9.

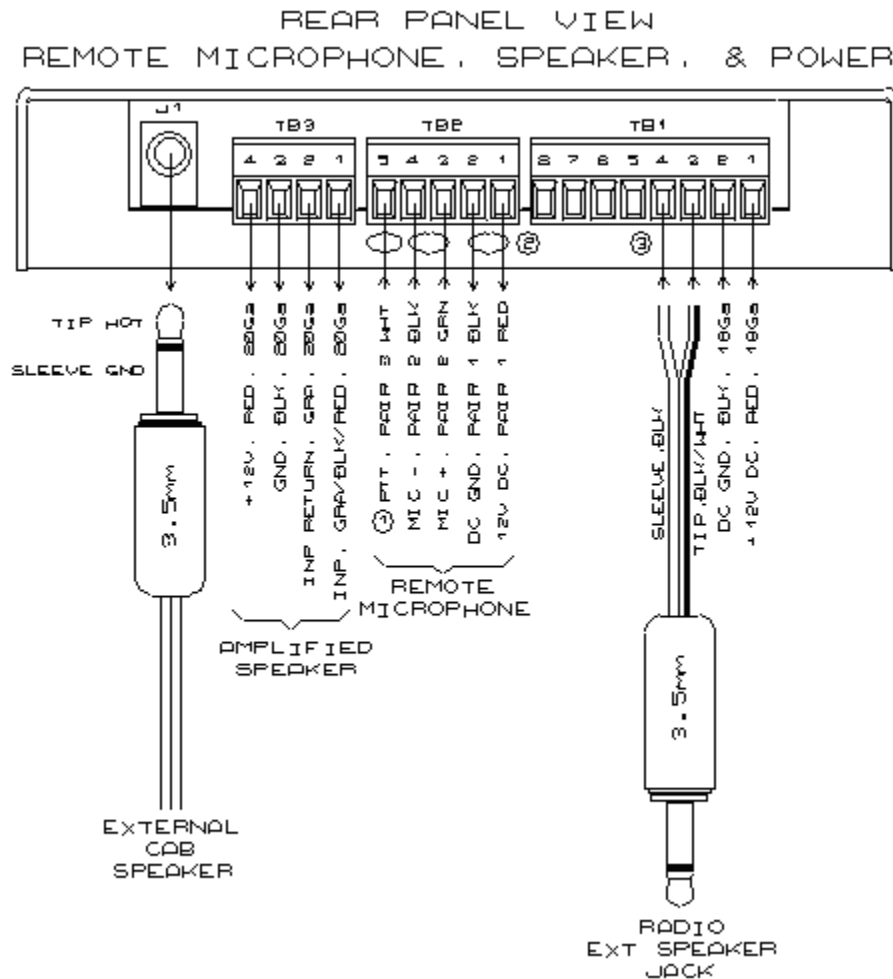
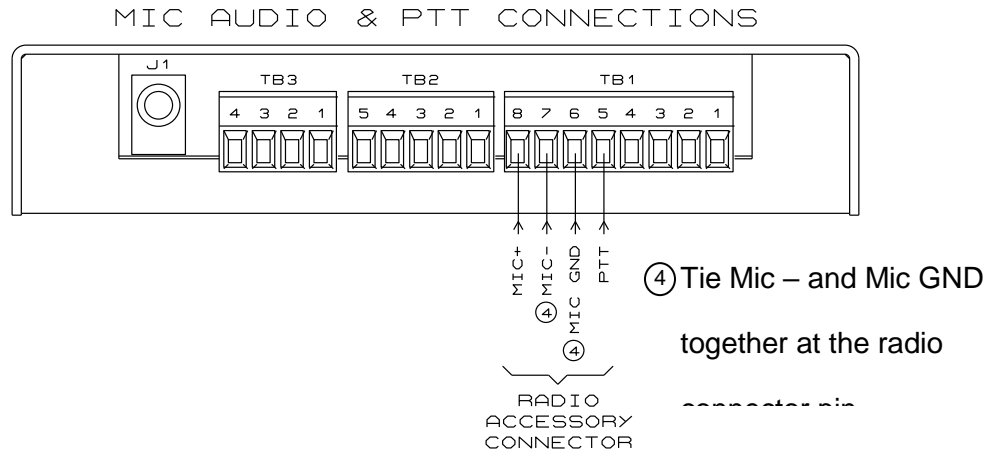
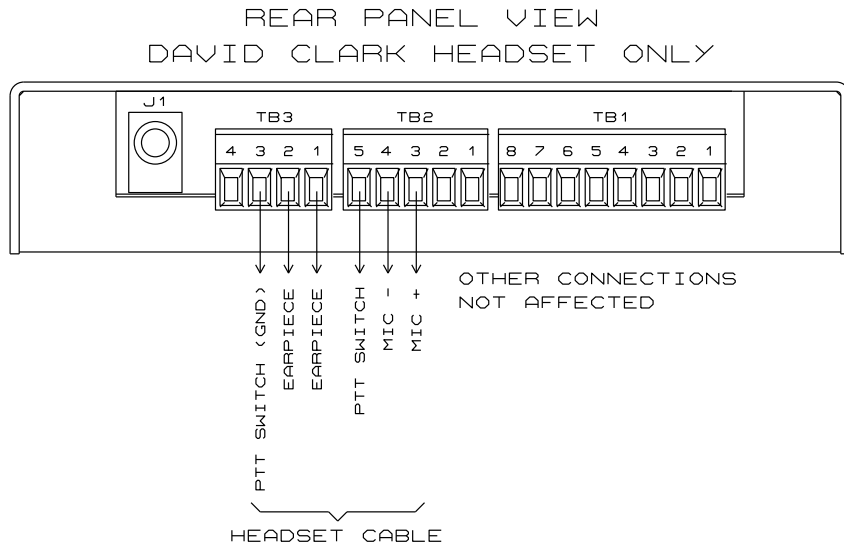


Figure 8: Rear connections for 17-95160, General





**Figure 9: Radio connections for 17-95160**

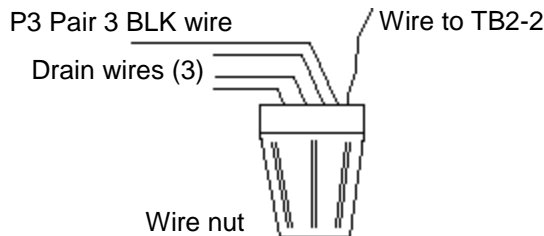


**Figure 10: Headset connection for 17-95160 with change in internal jumper**

**APPLICATION INSTRUCTIONS**

To use remote microphone with speaker:

- ① Take extra BLK wire from pair 3 of TB2 (WHT wire of pair is denoted by ① in Figure 8, p.8)
- ② Twist BLK wire with all 3 drain wires from 3 TB2 pairs, add another 2-3" piece of stranded wire into a wire nut as shown in Figure 7 below. Insert the loose wire end into TB2-2.



**Figure 11: Remote Microphone connections for 17-95160**

## **5. USE OF SPEAKER SWITCHES**

### **GENERAL USE**

Push red button, LED will light up and remote/external equipment is activated.

### **WITH 61-95039A-V2 REMOTE MICROPHONE AND AMPLIFIED SPEAKER**

When switch is in “OFF” position, LED is not illuminated and mobile radio operates normally from within the cab. When white button is pushed, interior cab speaker is turned off and power is sent to remote microphone and external speaker. LED will illuminate when power is being sent to the external equipment.

### **WITH HEADSET**

When switch is in “OFF” position, LED is not illuminated and mobile radio operates normally from within the cab. When white button is pushed, interior cab speaker is turned off and power is sent to David Clark headset. LED will illuminate when power is being sent to the external equipment.