

# Installation Instructions

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## **3M** Model 478DA (D-15) Intercom System 78-9236-3421-2

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78-8050-8476-7 Rev. J

## A. Package Contents

Qty.	Part Number	Description
1	78-8050-8476-7	Installation Instructions
1	78-9236-3421-2	Model 478DA (D-15) Intercom
1	78-8095-0213-7	Cable Assembly
1	78-8028-9283-2	Transformer, 14 VAC, Plug-in
1	78-6912-0130-1	Operating Instructions
1	78-8028-8969-7	Warranty Card
1	34-7016-3597-0	Dealer Receiving Report Card
1	78-8050-8438-7	Wire Cover
2	78-8027-9017-4	Mounting Guide
1	78-8028-8990-3	Mounting Bracket
8	26-1000-4190-9	Screw, Phillips, Self-tapping, 6-20 x 1/4 inch

Check for shipping damage. Notify the shipping company immediately if any is found. Retain all packaging and components for inspection by the shipping company.

## B. Introduction

The Model 478DA “D-15” is a single-channel intercom for point-to-point communication applications. The 478DA includes a visible/audible presence alert and the capability of two units communicating with the same speaker. Follow these instructions carefully to ensure proper installation and reliable operation.

## C. Mounting Methods

The D-15 has four rubber feet for countertop placement, but we suggest permanent surface attachment to prevent movement. Use the enclosed mounting guides and “A” bracket to mount the D-15 to a wall, microphone stand flange mount, junction box or optional pedestal mount (78-8028-9095-0) as shown in figure 2. Use of the pedestal mount positions the unit closer to the operator for better voice clarity and lower listen volume. Install the “A” bracket as follows:

1. Attach the “A” bracket to the pedestal mount, junction box or wall.
2. Attach the two mounting guides to the D-15 bottom using six of the 6-20 x 1/4-inch screws per figure 2-A.
3. Connect power and plug-in cables to the rear of D-15 and mount the rear wire cover.
4. Slide the D-15 onto the “A” bracket and lock it in place with the remaining two 6-20 x 1/4-inch screws.

## D. Connection to Optional System Components

1. **SPEAKER & DETECTION CABLE** The D-15 requires the following cabling from the menu sign to the D-15:

OUTSIDE SPEAKER/MIC - 18-22 AWG twisted pair  
MAGNETIC LOOP – 16-18 AWG twisted pair with shield.  
AIR SWITCH - 18-22 AWG twisted pair.  
OPTIONAL OUTSIDE MICROPHONE - 18-22 AWG twisted pair with shield.

NOTE: If the D-15 is being used as a backup intercom to a wireless system, the wiring requirements of the wireless intercom take precedence.

**WARNING:**

All intercom and vehicle detection cables must route through a CONDUIT THAT IS SEPARATE from that containing sign lighting. Do not, under any circumstances, route audio or low voltage cables in the same conduit with 120 VAC wiring. This violates the National Electrical Code and presents a potential hazard.

2. **OUTSIDE SPEAKER/MIC** - The D-15 intercom provides two-way communication to a remote 8-ohm speaker. A weatherproof horn-type speaker is acceptable for most drive-thru applications, although best audio clarity is achieved with the use of a separate speaker and microphone. The 3M OSM (78-8016-9810-7) can be used for most menu sign and point-to-point communications. The 3M Security Speaker/Mic (78-8028-9047-1) is recommended for pass-through window applications. Place the speaker at a height of 42 to 54 inches above the driveway surface to reduce vehicle noise. Connect to the SPEAKER outputs as shown in figure 3.
3. **SPLIT SPEAKER AND MICROPHONE** - The D-15 allows the connection of separate components for incoming and outgoing audio. To select this option, set SW104 and SW105 to the OUTSIDE MIC position (see figure 1). A low-impedance dynamic microphone may be connected to the OUTSIDE MIC inputs and the outgoing audio will still be on the SPEAKER outputs (see figure 3).
4. **FLEX MICROPHONE** - A low-impedance microphone may be substituted for the internal D-15 mic to place the microphone closer to the operator for better voice clarity in noisy situations. Set SW102 & SW103 to the EXTERNAL MIC position (see figure 1) and connect the microphone to the FLEX MIC and SHIELD inputs (see figure 3).
5. **MONITOR SPEAKER** - An 8-ohm speaker may be connected to the monitor outputs to monitor the incoming conversation. Use twisted pair wire to connect this monitor speaker to the MONITOR HI (or MONITOR LO) and COMMON outputs (see figure 3). MONITOR LO is the same power output as the internal speaker, MONITOR HI outputs a higher level.
6. **FOOTSWITCH** - The Talk/Listen function of the D-15 can be controlled by an external footswitch normally open contact. Connect the footswitch(s) to the FOOTSWITCH and COMMON inputs (see figure 4). The D-15 Talk/Listen switch remains functional.
7. **MULTIPLE MASTER SYSTEM** - The Model 478DA allows the connection of two units to the same outside speaker/microphone. Connect the speaker outputs per figure 5. Route 2 twisted pair cables between the units and connect to the BUSY, ALERT CANCEL, VEHICLE DET. +20VDC and COMMON inputs of each unit.
8. **MUSIC/MESSAGE PLAYBACK SYSTEM** - The 8-ohm output from the power amplifier of a music or message playback system may be routed through the D-15 to the outside speaker/mic. This signal will be muted during D-15 talk/listen functions and fed through when the unit is in standby. Connect the music/message source's amplified output to the "MUSIC IN" inputs per figure 4. NOTE: THIS OPTION CANNOT BE USED WITH SYSTEMS IN THE MULTIPLE MASTER CONFIGURATION.
9. **HEAVY-DUTY HANDSET (OUTSIDE)** - Connect as shown in Figure 4.
10. **VEHICLE DETECTION** - Install the vehicle detection system per individual instructions. Set the Magnetic Loop Detector to "Presence" mode.

## E. System Checkout and Volume Balancing

1. Plug the power transformer in a 120 VAC, 50/60Hz outlet and turn the front panel OFF/ON switch to ON. The green front panel LED should light.
2. Turn up the front panel volume control and check for incoming audio. Upon power up, the unit should be in standby mode.
3. Push the TALK switch and adjust the talk volume control on the bottom of the unit for the desired sound level at the outside speaker.
4. Press the STANDBY switch and confirm that the unit enters standby (silent) mode.
5. If a single presence alert tone is desired, change the internal switch SW106 to SINGLE position (see figure 2). The unit is set at the factory for repeat tones.
6. Activate the vehicle detection system. Confirm that (1) the unit comes out of standby into the listen mode (2) the yellow vehicle light stays lit until the car leaves. (NOTE: VEHICLE LIGHT WILL NOT STAY LIT WHEN USED WITH AN AIRSWITCH OR OTHER PULSE- SYSTEM) (3) The presence alert tone is heard over the internal speaker.
7. Adjust the ALERT VOLUME control on the bottom of the unit for the desired level.
8. Press the TALK switch and confirm that the tone is canceled. NOTE: D-15 does not self-cancel.
9. If using a multiple master system, press and hold the TALK switch of one unit. The red and green lights of the other units should light and those units should emit a low "busy" tone if their TALK switch is pressed. Pressing the TALK switch of one unit should cancel the alert tone in all units. (see figure 5).
10. Check the operation of all optional accessories installed with the unit.
11. Instruct the operator and present the operating instructions.
12. Complete the Dealer Receiving Report card and place it in the mail.

## F. Service Information

Customers should contact their local authorized 3M Sound Products dealer for service on this product. For the name of your local dealer, repair or installation assistance, contact 3M Food Services Trade Technical Service at **1-800-328-0033**.

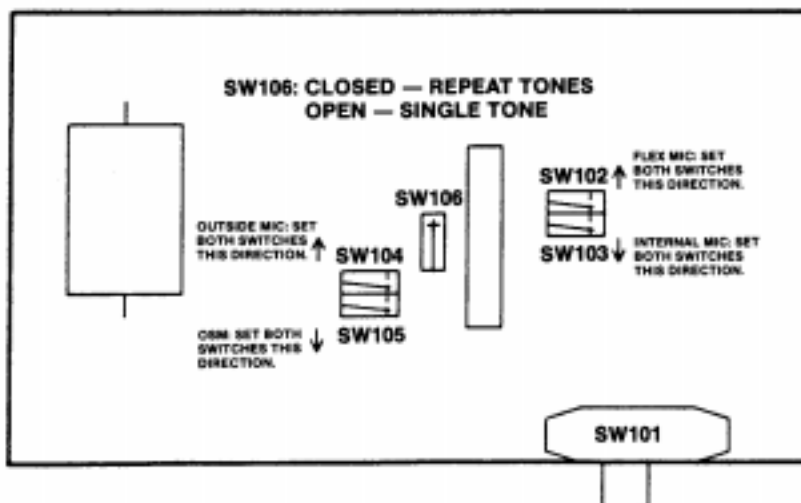


Figure 1. Model 478DA Internal Switches

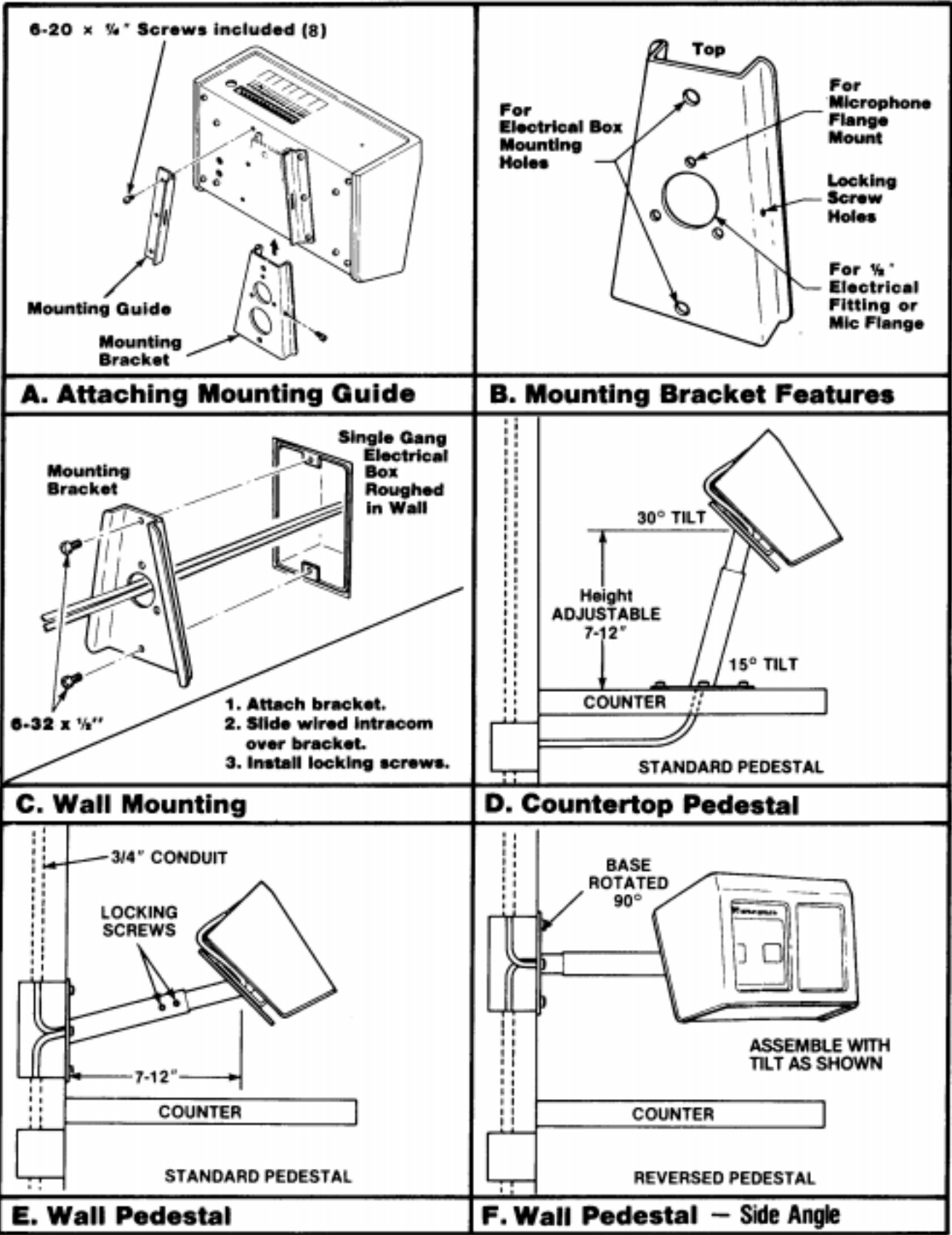


Figure 2. Intercom Mounting Methods

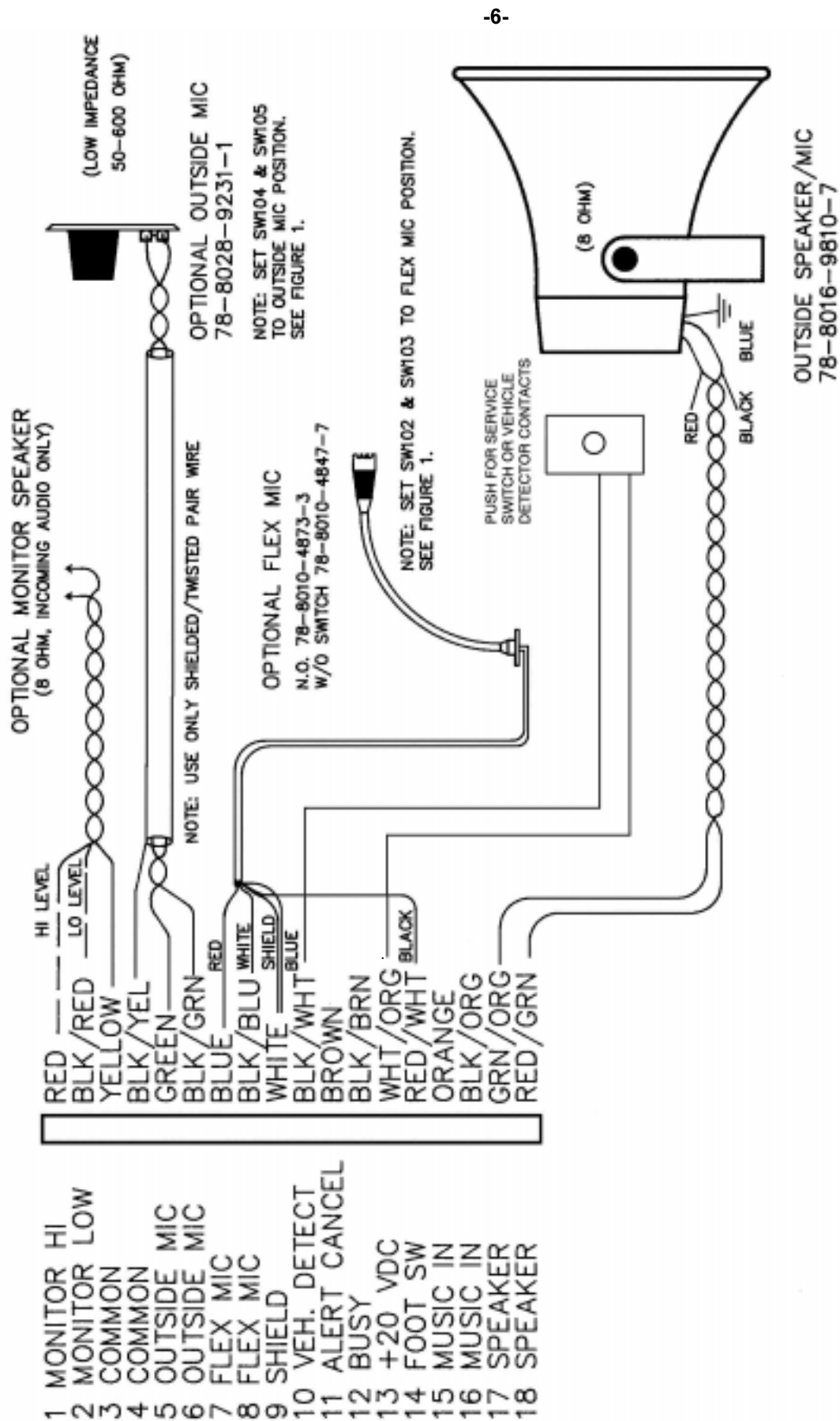


Figure 3. Model 478DA Speaker/Mic Connections

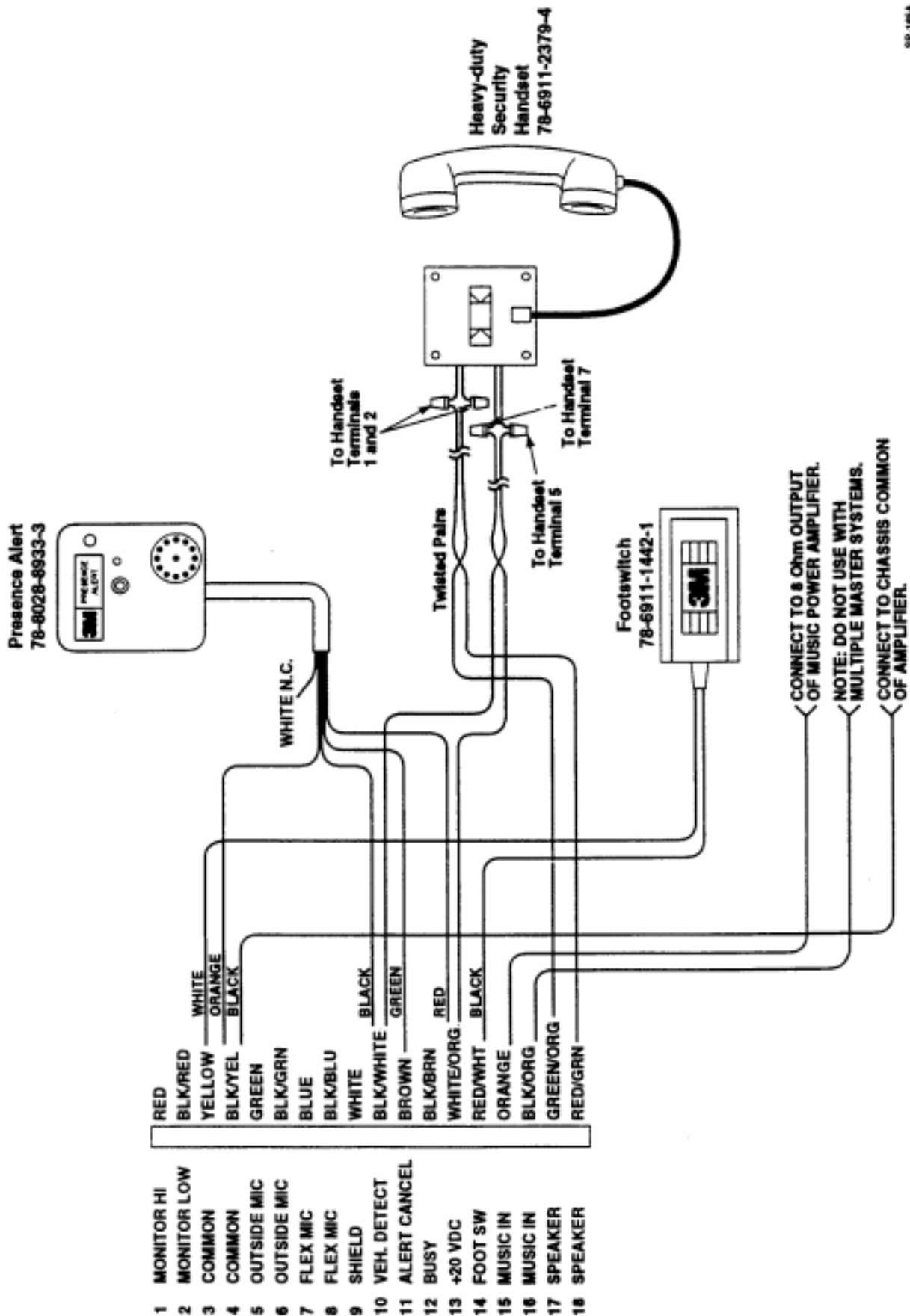
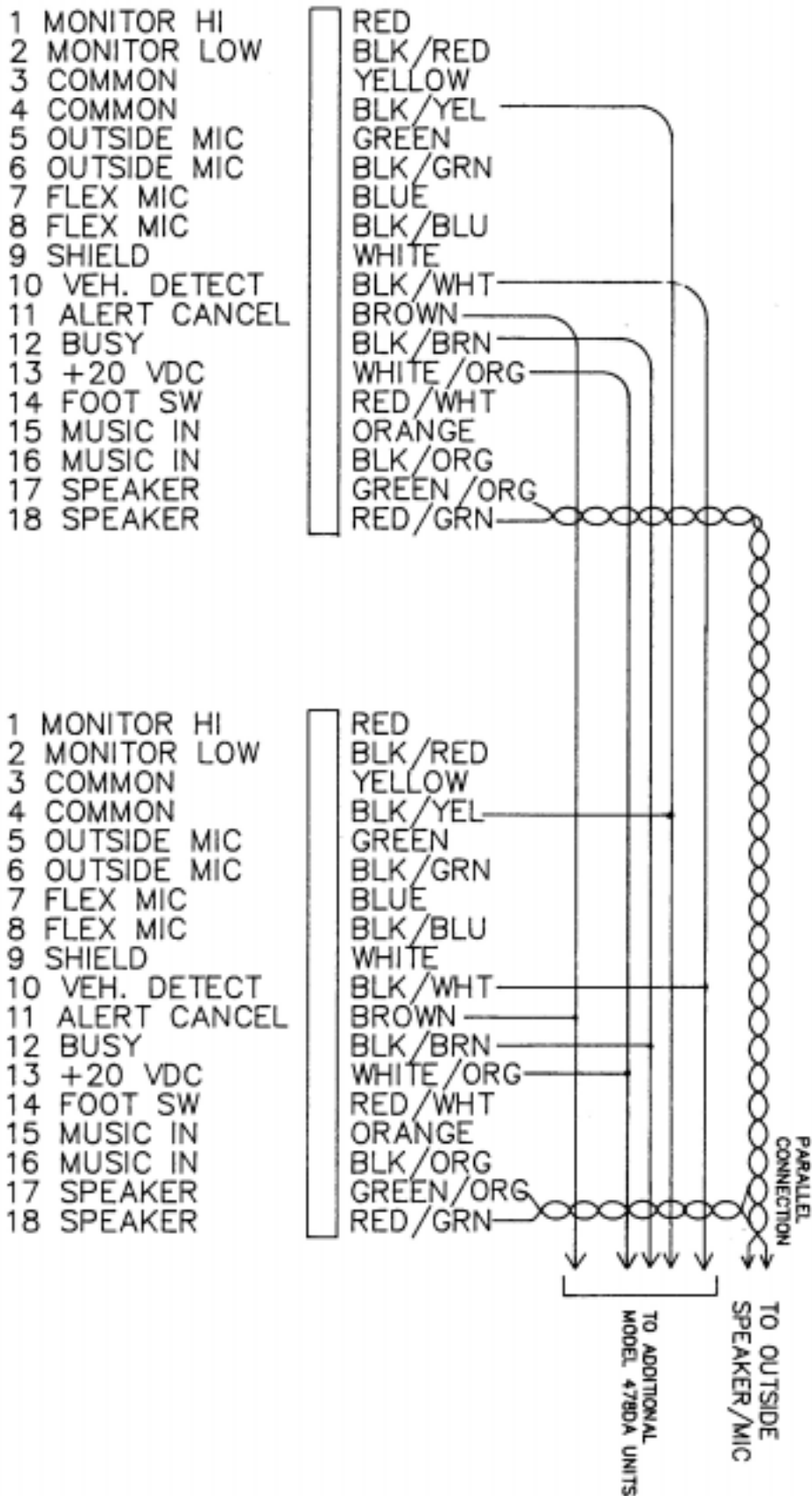


Figure 4. Model 478DA Music/Alert/Footswitch Connections



NOTE: DO NOT CONNECT THIS UNIT TO UNITS BELOW S/N 221445.  
NOTE: DO NOT CONNECT MUSIC/MESSAGES TO MULTIPLE MASTER SYSTEM.

Figure 5. Model 478DA Multiple Master Connection

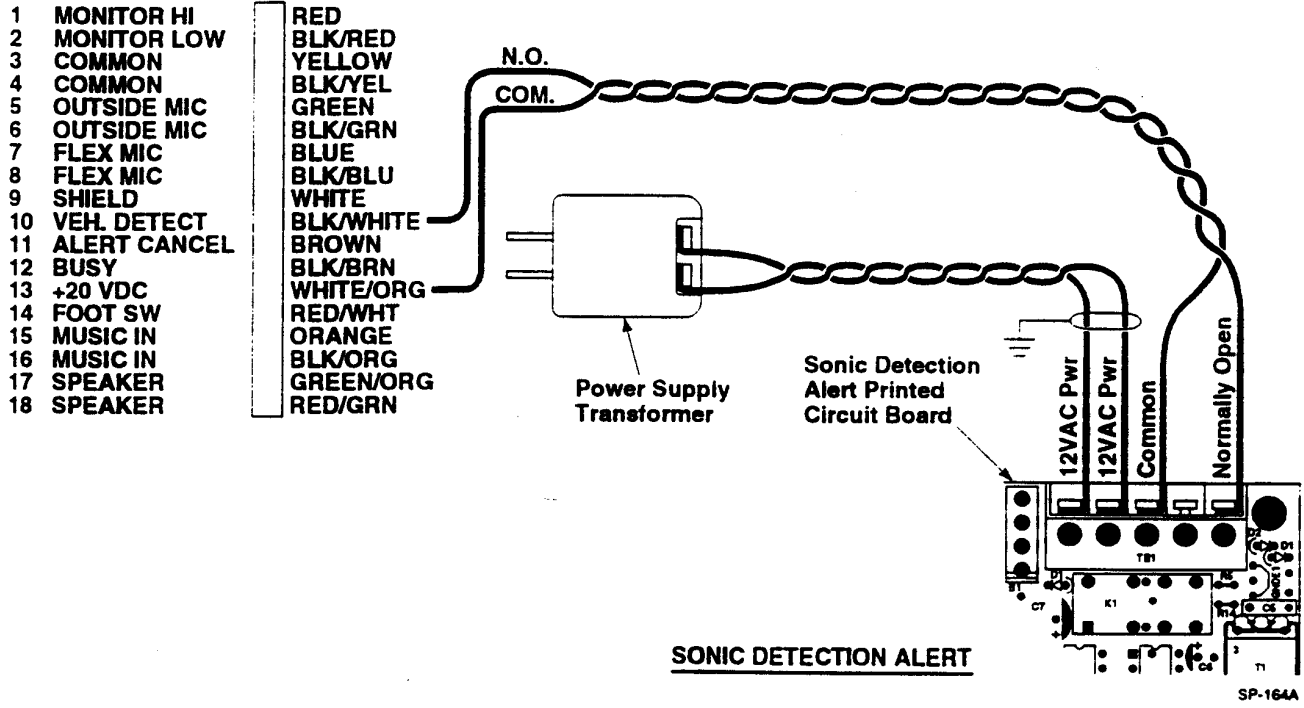


Figure 6. Model 478DA Vehicle Detection Connection for Units S/N 22145 and Above