



FEDERAL SIGNAL
Safety and Security Systems

Atkinson Dynamics Intercoms Model AD26-Z

Installation and Maintenance Manual

Limited Warranty

This product is subject to and covered by a limited warranty, a copy of which can be found at www.fedsig.com/SSG-Warranty. A copy of this limited warranty can also be obtained by written request to Federal Signal Corporation, 2645 Federal Signal Drive, University Park, IL 60484, email to info@fedsig.com or call +1 708-534-3400.

This limited warranty is in lieu of all other warranties, express or implied, contractual or statutory, including, but not limited to the warranty of merchantability, warranty of fitness for a particular purpose and any warranty against failure of its essential purpose.



FEDERAL SIGNAL Safety and Security Systems

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Safety Messages

For your safety, read and understand this manual thoroughly before installing, operating, and servicing the Atkinson Dynamics intercom. The safety messages presented in this chapter and throughout the manual are reminders to exercise extreme care at all times. Read and understand the safety instructions to installers (doc. no. 256A692), and keep it close at hand for reference.

To download copies of this manual, go to www.fedsig.com or call the Federal Signal Service Department at 1-800-433-9132 (708-534-3400) 7 a.m. to 5 p.m., Monday through Friday (CT).

Safety Messages to Installers of Sound/Light Systems

WARNING

People's lives depend on your proper installation and servicing of Federal Signal products. It is important to read and follow all instructions shipped with this product. Listed below are some other important safety instructions and precautions you should follow:

Before Installation

Qualifications

- To properly install an electronic siren, you must have a good understanding of automotive electrical procedures and systems, along with proficiency in the installation and service of safety warning equipment. Always refer to the vehicle's service manuals when performing equipment installations on a vehicle.

Sound Hazards

- Your hearing and the hearing of others, in or close to your emergency vehicle, could be damaged by loud sounds. This can occur from short exposures to very loud sounds, or from longer exposures to moderately loud sounds. For hearing conservation guidance, refer to federal, state, or local recommendations. OSHA Standard 1910.95 offers guidance on "Permissible Noise Exposure."
- All effective sirens and horns produce loud sounds (120 dB) that may cause permanent hearing loss. Always minimize your exposure to siren sound and wear hearing protection. Do not sound the siren indoors or in enclosed areas where you and others will be exposed to the sound.
- Federal Signal siren amplifier/relay modules and speakers are designed to work together as a system. Combining a siren and speaker from different manufacturers may reduce the warning effectiveness of the siren system and may damage the components. Verify or test your combination to make sure the system works together properly and meets federal, state and local standards or guidelines.

During Installation

- Do NOT get metal shavings inside the product. Metal shavings in the product can cause the system to fail. If drilling must be done near the unit, place an ESD approved cover over the unit to prevent metal shavings from entering the unit. Inspect the unit after mounting to be sure there are no shavings present in or near the unit.

- Do NOT connect this system to the vehicle battery until ALL other electrical connections are made, mounting of all components is complete, and you have verified that no shorts exist. If wiring is shorted to vehicle frame, high current conductors can cause hazardous sparks, resulting in electrical fires or flying molten metal.
- Ensure that the siren amplifier/relay module and speaker(s) in your installation have compatible wattage ratings.
- In order for the electronic siren to function properly, the ground connection must be made to the NEGATIVE battery terminal.
- Sound output will be severely reduced if any objects are in front of the speaker. If maximum sound output is required for your application, ensure that the front of the speaker is clear of any obstructions.
- Install the speaker(s) as far forward on the vehicle as possible, in a location that provides maximum signaling effectiveness and minimizes the sound reaching the vehicle's occupants. Refer to the National Institute of Justice guide 500-00 for further information.
- Mounting the speakers behind the grille will reduce the sound output and warning effectiveness of the siren system. Before mounting speakers behind the grille, make sure the vehicle operators are trained and understand that this type of installation is less effective for warning others.
- Sound propagation and warning effectiveness will be severely reduced if the speaker is not facing forward. Carefully follow the installation instructions and always install the speaker with the projector facing forward.
- Do NOT install the speaker(s) or route the speaker wires where they may interfere with the operation of airbag sensors.
- Installation of two speakers requires wiring speakers in phase.
- Never attempt to install aftermarket equipment, which connects to the vehicle wiring, without reviewing a vehicle wiring diagram available from the vehicle manufacturer. Ensure that your installation will not affect vehicle operation and safety functions or circuits. Always check vehicle for proper operation after installation.
- Do NOT install equipment or route wiring or cord in the deployment path of an airbag.
- If a vehicle seat is temporarily removed, verify with the vehicle manufacturer if the seat needs to be recalibrated for proper airbag deployment.

Safety Messages for Installers and Operators

⚠ WARNING

People's lives depend on your safe operation of Federal Signal products. It is important to read and follow all instructions shipped with the products. Listed below are some other important safety instructions and precautions you should follow:

- Locate the control head so the vehicle, controls, and microphone can be operated safely.
- When drilling into a vehicle structure, ensure that both sides of the surface are clear of anything that could be damaged. All drilled holes should be deburred and all sharp edges should be smoothed. All wires going through drilled holes should be protected by a grommet or convolute/split-loom tubing. Additionally, all exterior drilled holes

General Intercom Features

must be sealed with Motorcraft seam sealer T-A-2-B or equivalent to prevent the potential exposure to carbon monoxide or other potentially harmful fumes. Failure to observe this warning could cause serious injury or death.

After Installation

- After installation, test the siren and light system to ensure that it is operating properly.
- Test all vehicle functions, including horn operation, vehicle safety functions and vehicle light systems, to ensure proper operation. Ensure that installation has not affected vehicle operation or changed any vehicle safety function or circuit. • After testing is complete, provide a copy of these instructions to the instructional staff and all operating personnel.
- File these instructions in a safe place and refer to them when maintaining or reinstalling the product.
- Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death.

RETAIN AND REFER TO THESE MESSAGES

General Intercom Features

The Atkinson Dynamics intercom is a heavy-duty, two-way or three-way, communications device designed for various heavy-duty applications. The basic model AD26-Z is designed to operate on any 12 Vdc or 24 Vdc negative ground vehicle electrical system. A description of the available models follows.

Table 1 Basic Model AD26-Z Specifications

Supply Voltage	12 Vdc-24 Vdc
Current Draw	1.47 A max. at 13.6VDC, 100 mA standby
Amplifier Specifications	
Frequency Response (-6 dB)	320 Hz to 8.0 kHz
Input Impedance	10,000 ohms
Max. Output Voltage	
Sine Wave Unbalanced Output	7.9 V _{RMS}
Square Wave Unbalanced Output	9.5 V _{RMS}

Table 2 Wall Mount Intercom Specifications

Speaker Rating	25 watts
Speaker Impedance	8 ohms
Temperature Range	-50 to +150°F
Shipping Weight	10 lb, 11 oz
Net Weight	9 lb, 2 oz
Housing Dimensions	6.50 x 9.88 x 3.88 inches (16.51 x 25.10 x 9.86 cm)
Conduit Entrances	Dual 1/2-14 IPS
Housing Material	Aluminum
Finish	Dark Grey Epoxy

Table 3 Panel Mount Intercom Specifications

Shipping Weight	3 lb
Dimensions	6.5 x 4.4 x 3.4 inches (See Figure 12 on page 22.)

Table 4 Additional intercom model information

Letter Group	Function/Feature
C	Master Mode
D	Hands-Free Mode
P	Panel Mount
Number Group	Function/Feature
-1	Remote Power (Audio and Power lines in same cable)
-2	Provisions for external talk/listen switch (footswitch)
-7	Provisions for hand-held noise canceling microphone
-8	Additional pre-amp for use with remote hands-free speaker
Miscellaneous	Function/Feature
-M34	Provisions for headset microphone with belt switch
-M44	Remote speaker volume control
-M78	Combine -M34 and -M44 options

Master Units

“C” Models default to Master, or speaker, mode. In Master mode, the unit acts as a speaker and broadcasts audio signals generated elsewhere in the intercom system. Depressing the Talk switch turns the unit into a microphone and enables the user to broadcast to all other intercoms in the system. Releasing the switch returns the unit to Master mode. Figures 2, 3, and 6 illustrate a Master/Hands-Free intercom system.

Hands-Free Units

“D” Models default to Hands-Free, or microphone, mode. In Hands-Free mode, the unit is designed to serve as a hands-free microphone with transmission to all Master units in the intercom system. The Hands-Free unit will act as a speaker and broadcast audio transmissions only when the Talk switch of any Master unit in the intercom system is depressed. Figures 2, 3, and 6 illustrates a Master/Hands-Free intercom system.

MICROPHONE

“-7” Hand-Held Noise Canceling Microphones are recommended for use in environments with high levels of ambient noise. Keying the microphone overrides the default mode of the intercom and enables audio transmission to all units in the intercom system. Figure 2 on page 13 illustrates a common intercom system where hand-held microphones are used.

Headset Microphone with-Belt-Switch

“-M34” Headset Microphones and Belt Switches are an additional option for environments with a high level of ambient noise. Keying the belt switch overrides the default mode of the intercom and enables audio transmission to all units in the intercom system. Figure 3 on page 14 illustrates a common intercom system where a headset with microphone and belt switch are used.

General Speaker Specifications

Remote Power

“-1” Models are designed to have one cable rather than two, with power and audio signals in the same cable. Figure 6 on page 17 illustrates this configuration.

Pre-Amplifier

“-8” Models are equipped with a pre-amplifier and are designed for use with Hands-Free speaker units such as the ADSV-25-Z Remote Speaker with Volume Control. The “-M44” option equips the “-8” Master unit with a knob for controlling the volume of remote speakers such as the ADSF-25-Z Flush Mount Speaker or the ADSS-25-Z Swivel Mount Speaker. Figures 4, 5, and 7 illustrate intercom systems with the “-8” and “-M44” options.

Surge Protection

Metal Oxide Varistor (MOV) devices are used to protect the audio lines. The intercom must have Earth or Chassis Ground terminated to it to ensure surge protection.

The output amplifier of the Atkinson Dynamics intercom offers full short circuit and overheat protection.

FOOT PEDAL READY

Models with the “-2” option are designed for hands-free activation of the Talk/Listen switch. Figure 6 on page 17 shows an example of intercoms with this option.

General Speaker Specifications

The Atkinson Dynamics product line consists of a variety of speaker models. Model ADSV-25 is a remote speaker station with volume control for use with “-8” intercom models. Models ADSS-25-Z and ADSF-25-Z are remote speakers for use with intercoms with the “-M44” option. The volume control for these speakers is located on the intercom. Model ADSS-25-Z has a swivel-mounting bracket, while Model ADSF-25-Z has holes in its outer flange for flush mounting. All speakers are rated for 25 watts.

Table 5 Specifications

Speaker Specifications	ADSV-25-Z	ADSS-25-Z	ADSF-25-Z
Frequency Response (Hz)	800 – 5,000	800 – 5,000	800 – 5,000
Power Handling (Watts)	25	25	25
Shipping Weight (lb.)	10.0	6.0	9.0
Dimensions (inches)	10.0 x 6.4 x 4.4 inches 25.4 x 16.26 x 11.18 cm (H x W x D)	6.4 x 5.1 inches 16.26 x 12.95 cm (Dia x D)	7.3 x 3.8 inches 18.54 x 9.65 cm (Dia x D)

Unpacking the Kit

After unpacking the unit, examine it for damage that may have occurred in transit. If the equipment has been damaged, do not attempt to install or operate it, and file a claim immediately with the carrier stating the extent of the damage. Carefully check all envelopes, shipping labels and tags before removing or destroying them. Before attempting to install the intercom, be sure that all parts listed in the Kit Contents List in Table 6 have been supplied.

Table 6 Kit Contents List

Qty.	Description	Part Number
1	Resistor, 1 K, 1 W	101216

Intercom and Model ADSV-25-Z Mounting

⚠ CAUTION

The selection of the mounting location for the device, its controls, and the routing of the wiring are to be accomplished by someone with a good understanding of automotive electrical procedures and systems.

The intercom is intended to be mounted on any relatively flat and rigid surface by the two mounting ears on the exterior of the housing. Figure 9 on page 20 is a dimensional outline drawing showing the proper mounting configuration. The two mounting ears are 13/32-inch diameter holes spaced 5.68 inches apart. Hardware for mounting the intercom to the surface shall be provided by the installer.

⚠ WARNING

This unit is heavy and should be mounted on a rigid surface capable of supporting the weight of the intercom.

Model ADSS-25-Z Mounting

Speaker Model ADSS-25-Z is equipped with a serrated swivel-mounting bracket with a locking nut that allows the speaker to be adjusted through an angle of 90 degrees. Figure 11 on page 21 is a dimensional outline drawing of the speaker. The speaker-mounting bracket is intended to be mounted on any relatively flat and rigid surface. There are three mounting holes present in the base of the mount. Hardware for mounting the speaker shall be provided by the installer.

Model ADSF-25-Z Mounting

Speaker Model ADSF-25-Z is intended for flush mounting. Figure 10 on page 20 is a dimensional outline drawing of the speaker. There are six mounting holes approximately 0.200 inches in diameter in its outer flange. Install the speaker behind a 6-1/8-inch diameter hole. Hardware for mounting the speaker shall be provided by the installer.

Panel Mount Intercom Mounting

⚠ CAUTION

The selection of the mounting location for the device, its controls, and the routing of the wiring are to be accomplished under the direction of someone who has a good understanding of automotive electrical procedures and systems, along with proficiency in the installation and service of safety warning equipment.

To mount the intercom panel:

1. The panel mount intercom is designed to be mounted behind a customer-supplied panel. The panel is designed to mount on a panel cut out mounting pattern as shown in Figure 12 on page 22.
2. Secure the panel mount intercom by installing the screws in to the four (4) mounting holes. The four mounting holes are 0.203 inches in diameter and will accept 1/4-20 screws. Hardware for mounting the intercom to the surface is left up to the installer.

Electrical Connections

Plug each intercom into a nearby power source. Connect the audio inputs in parallel.

Audio wires should be sized properly for your specified application.

⚠ CAUTION

The (+) and (-) DC power leads should be connected to the vehicle's battery terminals.

Optional: A 1 K, 1 W resistor is included in a kit with each intercom. Installing the resistor across the audio lines may help to reduce noise in certain environments. Only one resistor needs to be installed on the lines for any system installation.

See Figures 1 through 12 for typical intercom connections and wiring information.

NOTICE

For optimum performance, the “audio common” should not be connected to chassis ground.

Getting Technical Support and Service

For technical support and service, please contact:

Service Department
Federal Signal Corporation
Phone: 1-800-433-9132
Email: empserviceinfo@fedsig.com

Getting Repair Service

The Federal Signal factory provides technical assistance with any problems that cannot be handled locally.

Any units returned to Federal Signal for service, inspection, or repair must be accompanied by a Return Material Authorization (RMA). Obtain a RMA from a local Distributor or Manufacturer's Representative.

Provide a brief explanation of the service requested, or the nature of the malfunction.

Address all communications and shipments to the following:

Federal Signal Corporation
Service Department
2645 Federal Signal Drive
University Park, IL 60484-3167

Ordering Replacement Parts

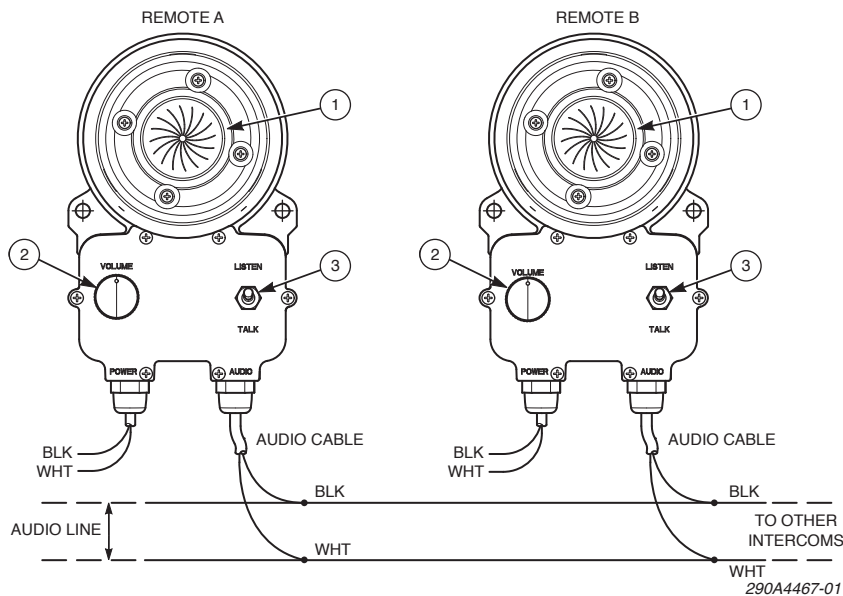
To order replacement parts, call Customer Support at 1-800-264-3578, 7 a.m. to 5 p.m., Monday through Friday (CT) or contact your nearest distributor.

Table 7 Replacement Parts.

Description	Part Number
Cover plate gasket	Z8590013B
Knob, volume control	Z141A129A
PC board, 12-24 V, AD26-Z	Z2005164A-S
Resistor, 1 K, 1 W (accessory kit)	Z101216A
Rubber boot, toggle switch	Z288696A
Potentiometer with on/off switch	Z106125A
Momentary toggle switch DPDT	Z122339A
Toggle switch 3PDT	Z122369A
Button switch 3-pole 9-terminal	Z122351A

Figures

Figure 1



Legend

1. Speaker/Microphone
2. Off/On/Speaker Volume Control
3. Talk/Listen Switch

Operation

- When one talks, all intercoms will hear.
- To talk to other stations, press the talk/listen switch and speak into the speaker/microphone. Release talk switch to listen.

Power	Remote A	Remote B
12–24 Vdc	AD26-Z	AD26-Z

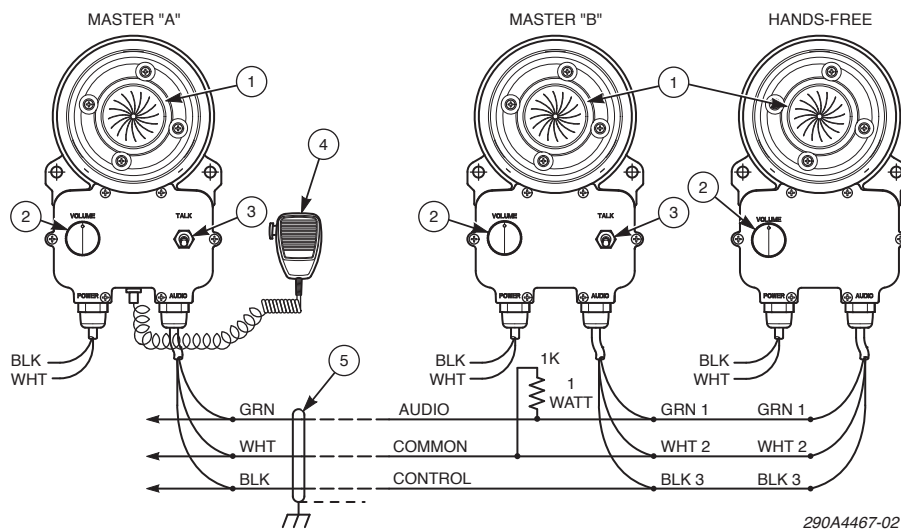
Power Connections

Black	+DC Power	12/24 V Models
White	–DC Power	12/24 V Models

Reminders

- Before installing remote intercoms, precautions should be taken to prevent feedback between two or more remotes in close proximity and acoustically reflective areas.
- 16–20 gauge low voltage audio cable. Shielded twisted pair may improve performance.
- Shielded audio cable would improve performance when operating in high electromagnetic fields. Ground one end of the shield to earth ground.
- Type of power cable depends on intercom model.
- 7-foot cable provided for audio and power.

Figure 2



Legend

1. Speaker/Microphone
2. Off/On/Speaker volume control
3. Press-to-talk Switch
4. ADNCM hand-held, noise cancelling microphone
5. 3-conductor/16–22 gauge cable. Use shielded cable in electrically noisy areas Ground one end of the shield to “earth” ground. Ground chassis of DC unit to ground.

Power	Master A	Master B	Hands-Free
12–24 Vdc	AD26C-7-Z	AD26C-Z	AD-26D-Z

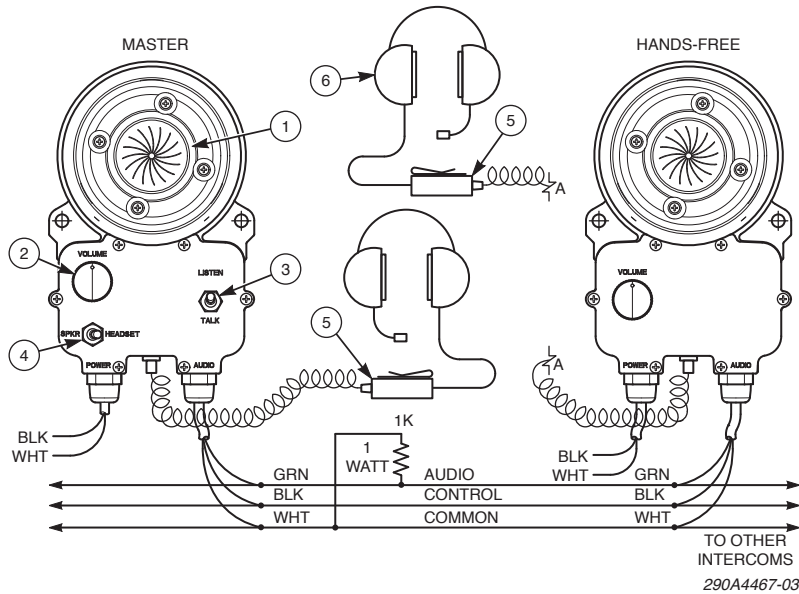
Power Connections

Black	+DC Power	12/24V Models
White	–DC Power	12/24V Models

Operation

- Masters normally listen to Hands-Free.
- Hands-Free talks to master hands-free, without having to press a talk switch.
- When any master talks, Hands-Free hears. Other masters will hear.
- To talk into master, press talk switch and speak into speaker/microphone. Release talk switch to listen.
- To talk into hand-held microphone, press talk switch on microphone and speak into microphone element.

Figure 3



Legend

1. Speaker/Microphone
2. Off/On/Speaker volume control
3. Talk/Listen switch
4. Headset/Speaker selector switch
5. ADHSB Belt switch w/15-foot cord w/noise cancelling microphone in headset.

Operation

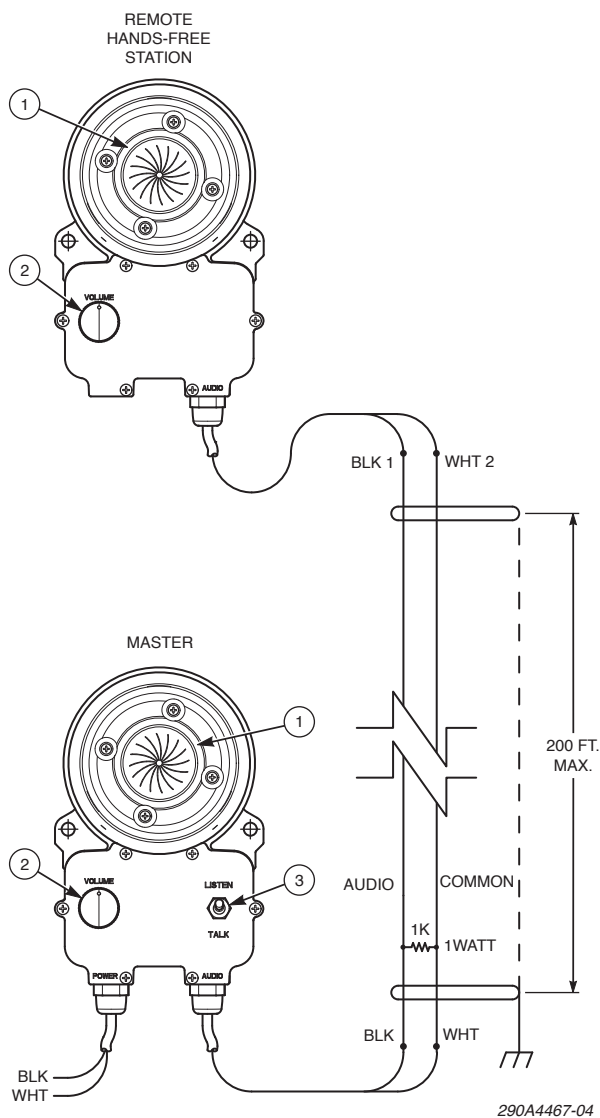
- When one talks, all remotes will hear.
- To talk into remote, press talk switch and talk into speaker/microphone. Release talk switch to listen. (The headset speaker selector switch must be in “speaker” position to hear received audio signal on speaker.)
- To talk into headset, press belt “talk” switch and talk into headset microphone. Release belt switch to listen. (The selector switch must be in “headset” position.)
- 16–20 gauge low voltage audio cable. Shielded twisted pair may improve performance.
- Shielded audio cable would improve performance when operating in high electromagnetic fields. Ground one end of the shield to earth ground.

Power Connections

Black	+DC Power	12/24 V Models
White	–DC Power	12/24 V Models

Master	Hands Free
AD26C-M34-Z	AD26D-M34-Z

Figure 4



Legend

1. Speaker/Microphone
2. Off/On Speaker Volume Control
3. Talk/Listen Switch
4. Remote Hands-Free Station Model ADSV-25-Z
5. 16–20 gauge low voltage audio cable. Shielded twisted pair may improve performance.
6. Shielded audio cable would improve performance when operating in high electromagnetic fields. Ground one end of the shield to earth ground.

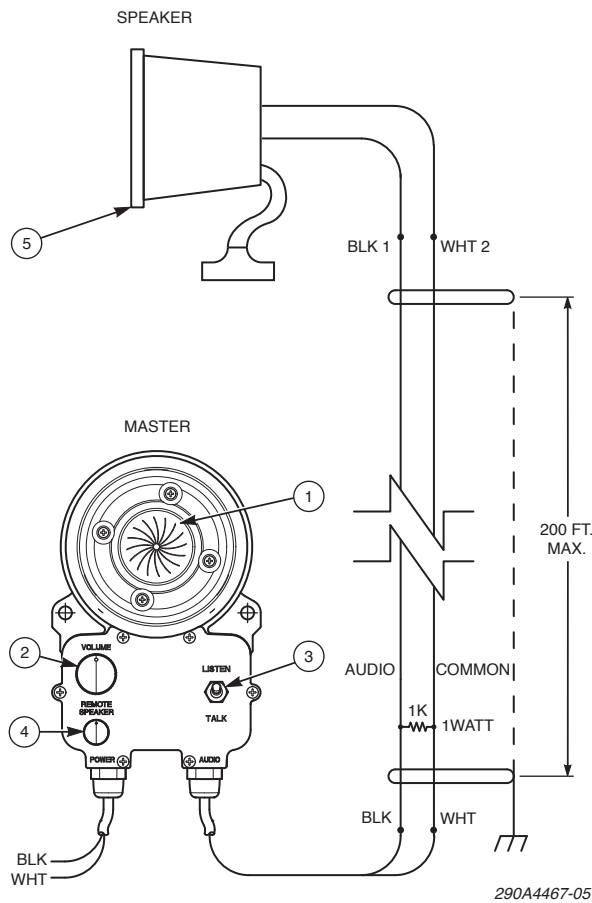
Operation

- Hands-Free station is both a speaker and a microphone.
- Master is normally in “Listen” mode until the talk button is pressed to talk to remote.
- Volume controls are for received signal volume only.
- They do not control transmitted signals

Power Connections

Black	+DC Power	12/24 V Models
White	–DC Power	12/24 V Models

Figure 5



Legend

1. Speaker/Microphone
2. Off/On/Speaker volume control
3. Talk/Listen switch
4. Outgoing Volume Control
5. Speaker Model ADSS-25-Z with swivel mounting bracket or Speaker Model ADSF-25-Z with holes in outer flange for flush mounting
6. 16–20 gauge low voltage audio cable. Shielded twisted pair may improve performance.
7. Shielded audio cable would improve performance when operating in high electromagnetic fields. Ground one end of the shield to earth ground

Operation

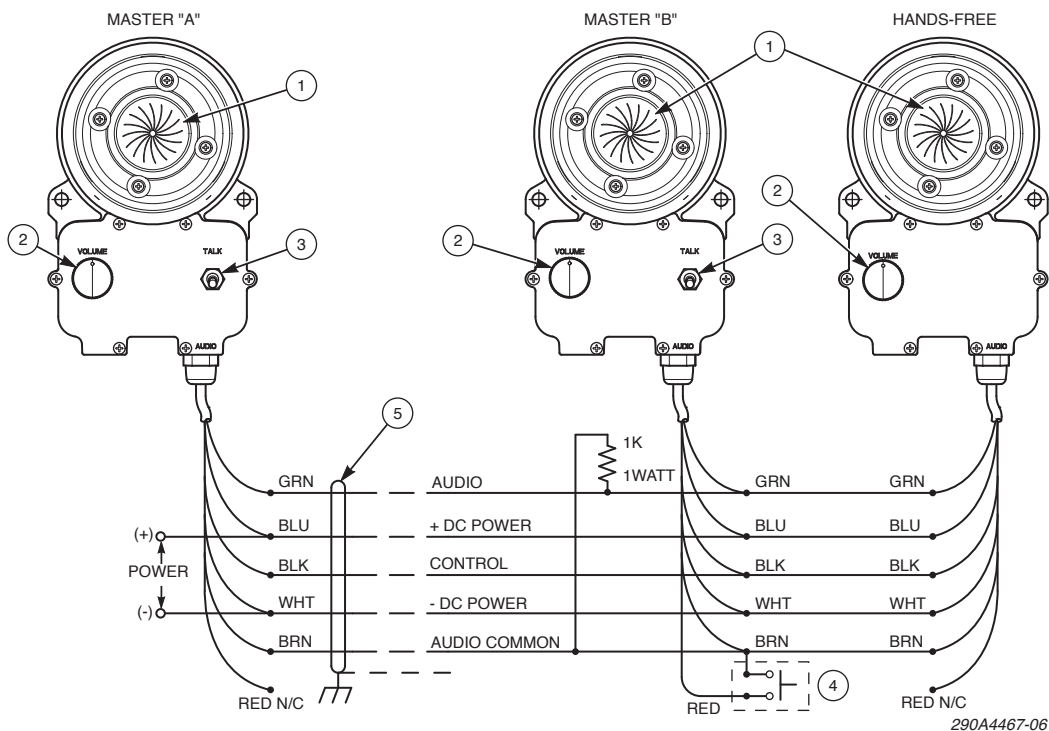
- Hands-Free station is both a speaker and a microphone.
- Master is normally in “Listen” mode until the talk button is pressed to talk to remote.
- Outgoing and incoming volumes are controlled by separate controls on master.

Power Connections

Black	+DC Power	12/24 V Models
White	–DC Power	12/24 V Models

Power	Master
12/24 Vdc	AD26-8-M44-Z

Figure 6



Legend

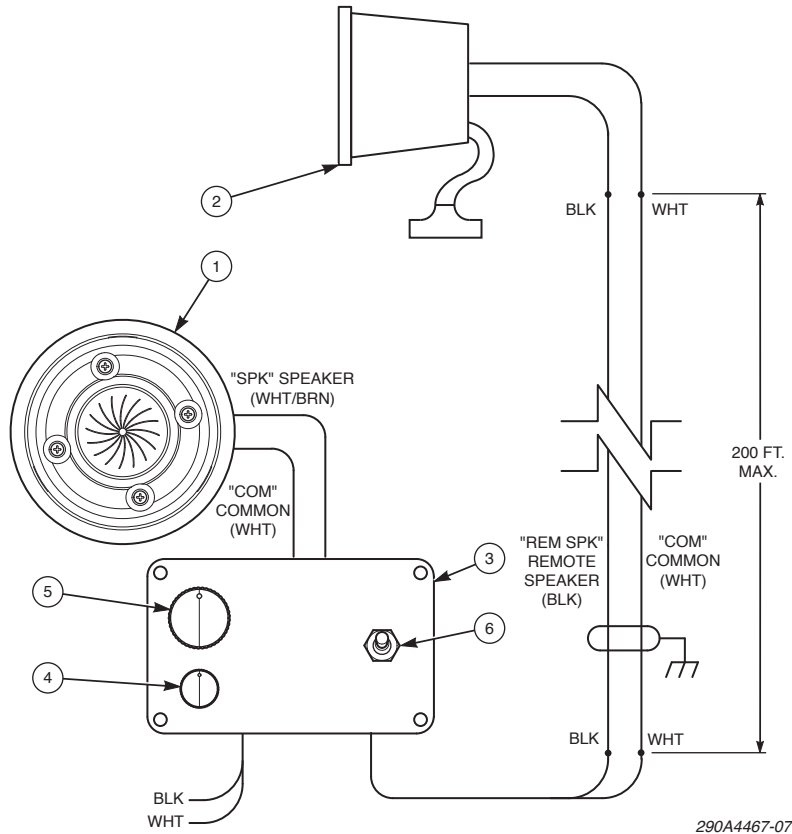
1. Speaker/Microphone
2. Off/On/Speaker Volume Control
3. Press-to-Talk Switch
4. Red wire connected in “-2” model only. External Press-To-Talk switch, momentary (e.g., footswitch)

Functions

1. Masters normally listen to Hands-Free.
2. Slave talks to masters “hands-free”, without having to press a talk switch.
3. When any master talks, Hands-Free hears. Other master will hear.
4. To talk into master, press talk switch and speak into speaker/ microphone. Release talk switch to listen.
5. 16–20 gauge low voltage audio cable. Shielded twisted pair may improve performance. Shielded audio cable would improve performance when operating in high electromagnetic fields. Ground one end of the shield to earth ground.

Power	Master A	Master B	Hands-Free
12-24VDC	AD26C-1-Z	AD26C-1-2-Z	AD26D-1-Z

Figure 7



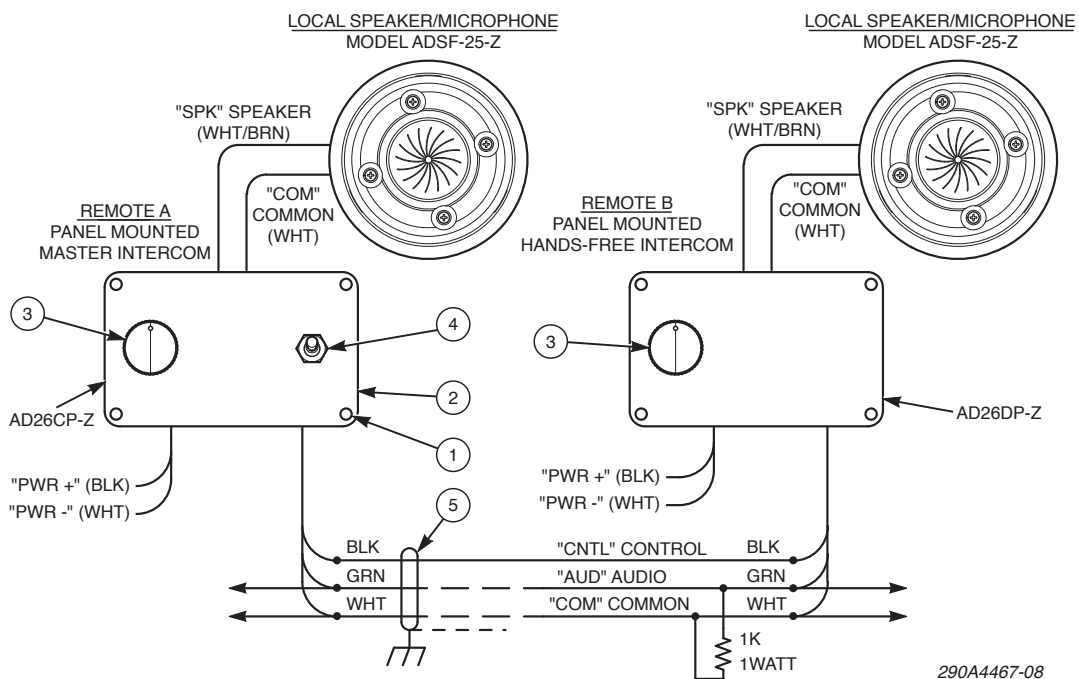
Legend

1. Speaker/Microphone Model ADSF-25-Z
2. Remote Speaker Model ADSS-25-Z
3. Panel Mount Intercom Model AD26-8-M44P-Z
4. Remote Speaker Volume
5. Off/On/Speaker Volume Control
6. Talk/Listen Switch
7. 16–20 gauge low voltage audio cable. Shielded twisted pair may improve performance. Shielded audio cable would improve performance when operating in high electromagnetic fields. Ground one end of the shield to earth ground.

Power Connections

Black	+DC Power	12/24 V Models
White	–DC Power	12/24 V Models

Figure 8



290A4467-08

NOTES:

Legend

1. Mounting Holes
2. Cover Plate
3. On/Off/Speaker Volume Control
4. Talk/Listen Switch
5. Use shielded audio cable in electrically noisy areas. Ground one end of the shield to chassis ground.

Operation

1. Hands-Free constantly talks to all master intercoms. For master to talk to Hands-Free stations, press the talk/listen switch and speak into the speaker/microphone.
2. Release talk/listen switch to listen.

Power Connections

Black	+DC Power	12/24 V Models
White	-DC Power	12/24 V Models

Master	Hands-Free
AD26CP-Z	AD26DP-Z

Figure 9

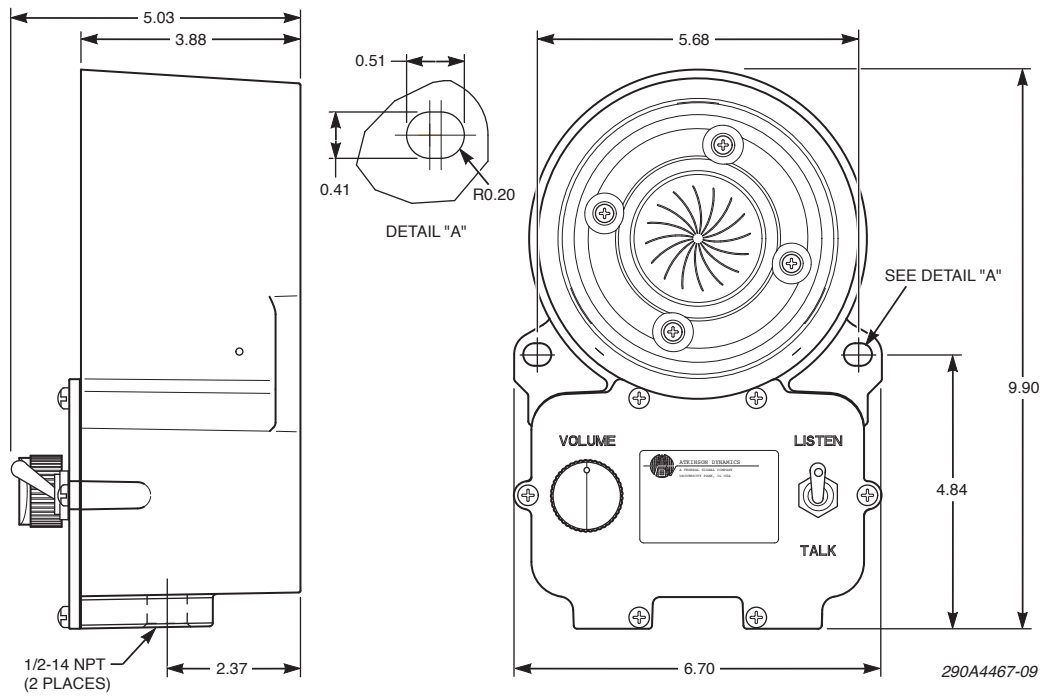


Figure 10

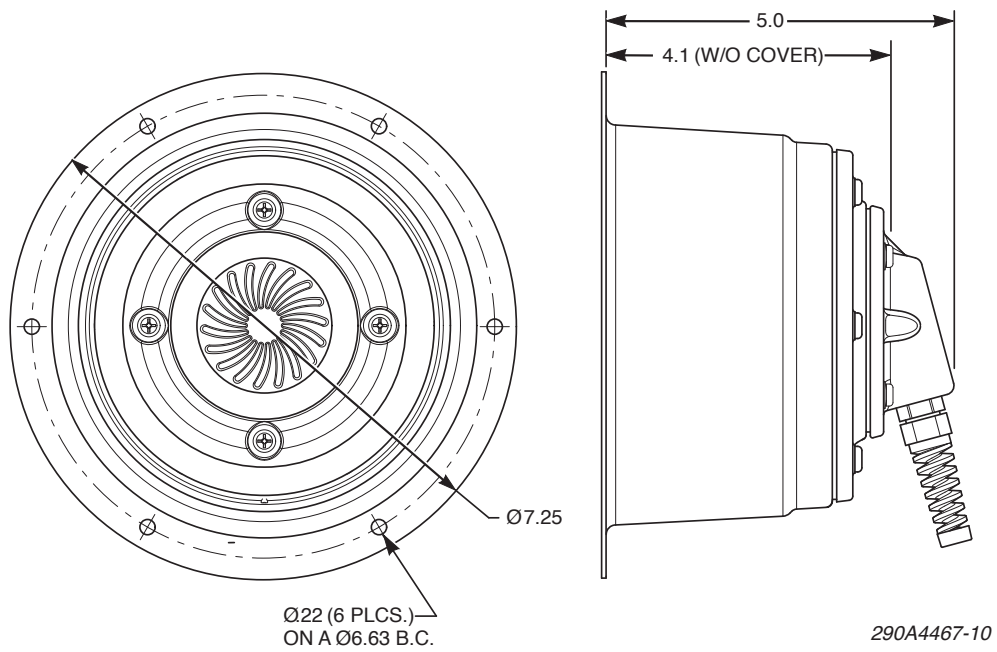
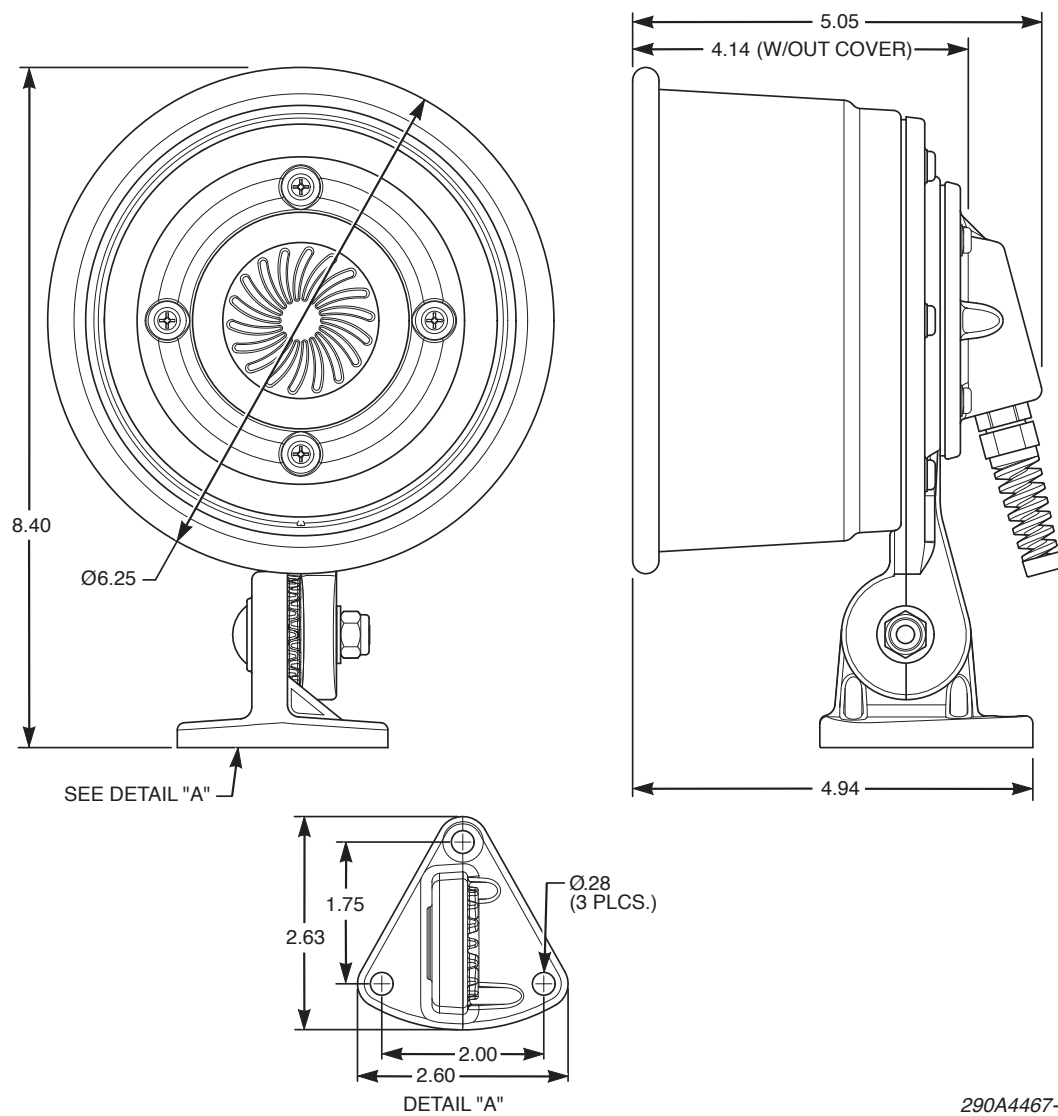
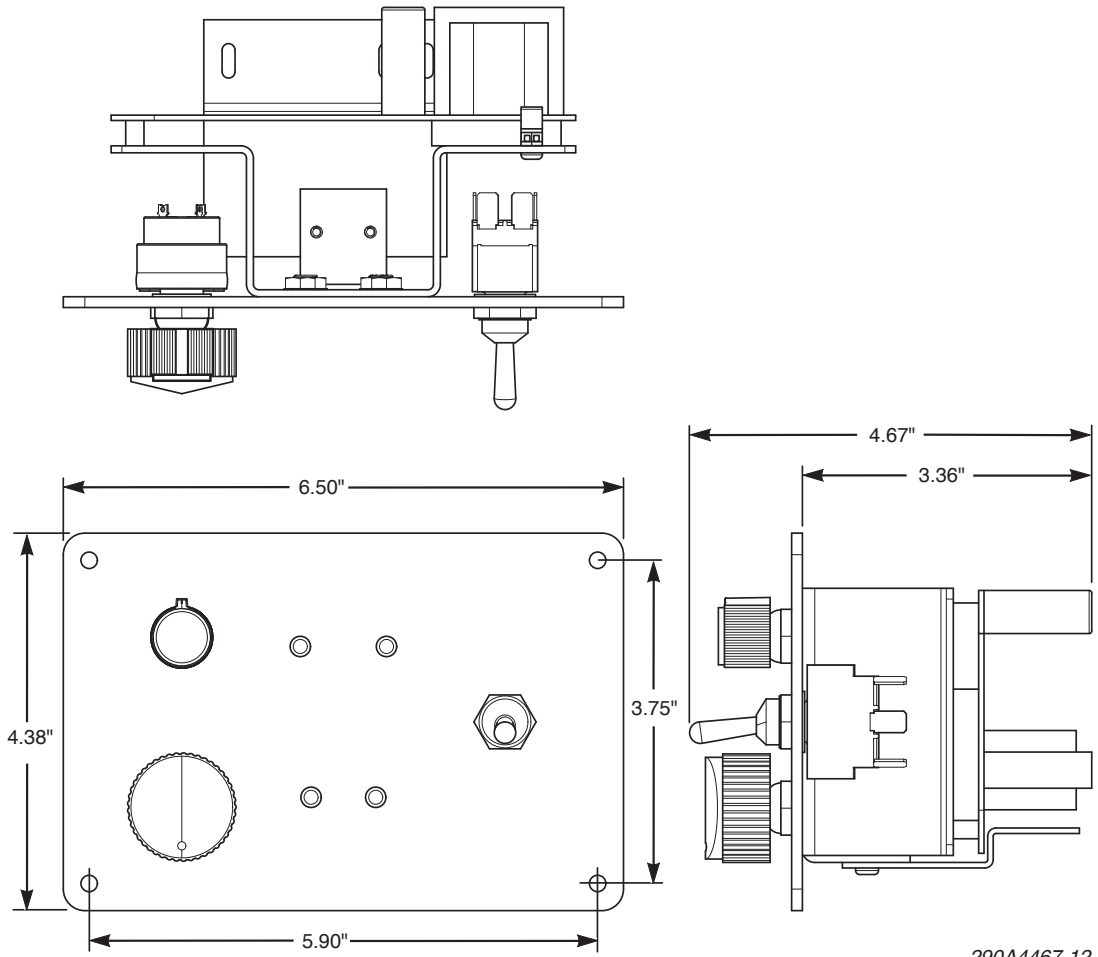


Figure 11



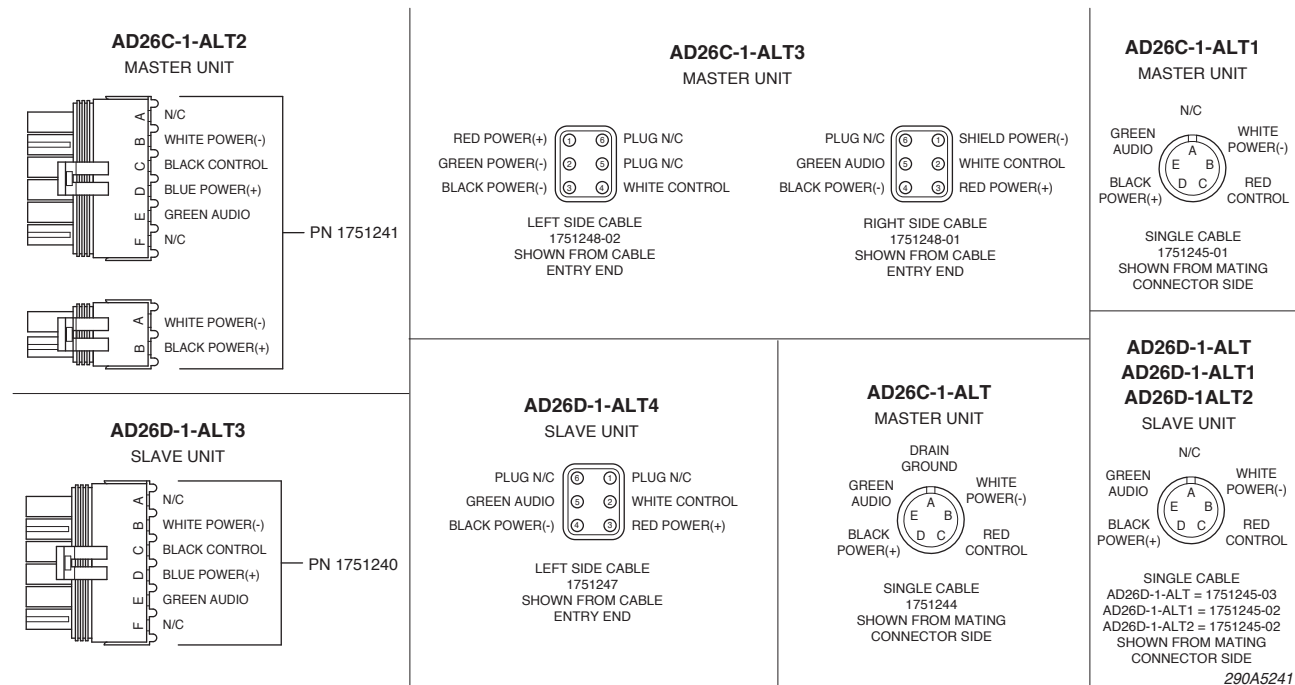
290A4467-11

Figure 12



290A4467-12

Figure 13



Federal Signal Corporation manufactures several different versions of the Atkinson Dynamics Intercom for Altec Industries Incorporated. Although each of these models are functionally the same as the standard single cable master (AD26C-1-Z) and slave (AD26D-1-Z) units, each has its own cable connector(s) and wire colors.

This figure illustrates each of the different connectors, the models that use them, and the functions and wire colors associated with each one.



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