



**3020R•3010R  
FIRE APPARATUS INTERCOM SYSTEM**



**3020R INTERCOM**



**3020R REMOTE HEAD**

**INSTALLATION & OPERATION MANUAL**



**3020R•3010R**  
**FIRE APPARATUS INTERCOM SYSTEM**

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**INSTALLATION & OPERATION MANUAL**

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## **FIRECOM IS A DIVISION OF SONETICS CORPORATION**

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# SYSTEM ORIENTATION

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## 3010R SERIES INTERCOMS

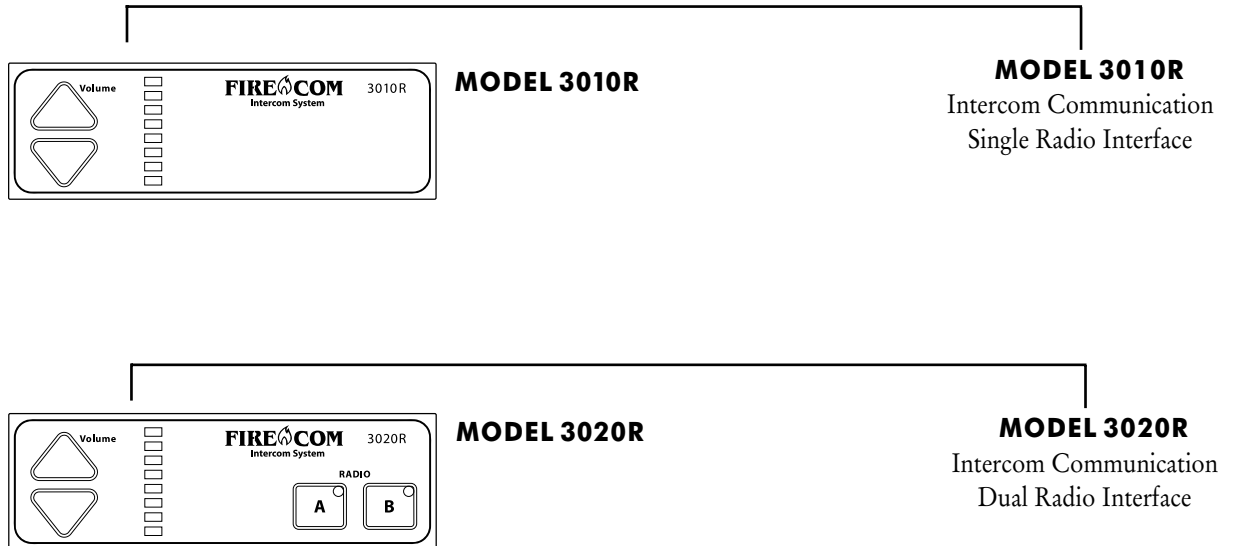
The Firecom 3010R Series Apparatus Intercom Systems, when used with Firecom noise-attenuating headsets, provide protection from hearing loss that can occur from exposure to high noise levels, while also providing each firefighter clear communication with the other crew members.

Each crew member will hear all radio traffic and be able to communicate over the intercom. Crew members wearing Radio-Transmit headsets may transmit over the apparatus radio, from any headset position in the system. "Intercom-Only" headsets will not transmit over the radio.

The 3010R Series Intercoms feature advanced circuitry that effectively suppresses distracting background noise and eliminates clipping without affecting communication. The result is clear, crisp on-board communication like never before.

There are 2 models of intercoms in the Firecom 3010R Series. Figure 1 shows the front of the 2 different models and describes the differences between the different models.

**FIGURE 1:**  
3010R Series Intercoms



# SYSTEM ORIENTATION

## SYSTEM OVERVIEW

This section provides an overview of the 3010R Series Intercom System and an introduction to its individual components. Figure 2 shows a typical system. Refer to this diagram for each component.

### INTERCOM

The main control unit for the 3010R Series Intercom System which contains all the controls and interface circuitry.

### 2-WAY RADIO

The existing 2-way radio in the apparatus.

### MOBILE RADIO INTERFACE CABLE

Provides the interface connections between the 3010R Series Intercom Unit and the 2-way radio in the apparatus. There are many different cable assemblies available; the particular cable needed depends on the make and model of your radio. Contact your local Firecom Dealer for more information regarding an Interface Cable specific to your radio.

### POWER CABLE ASSEMBLY

Provides the power connections for the 3010R Series Intercom Unit. The power connections should be made at the same place as the power connections for your radio.

### HM-10 HEADSET MODULES

Headsets are plugged into the Headset Modules to interface them into the system. The HM-10 is the standard Headset Module for use inside the apparatus.

### PP-20 PUMP PANEL MODULE

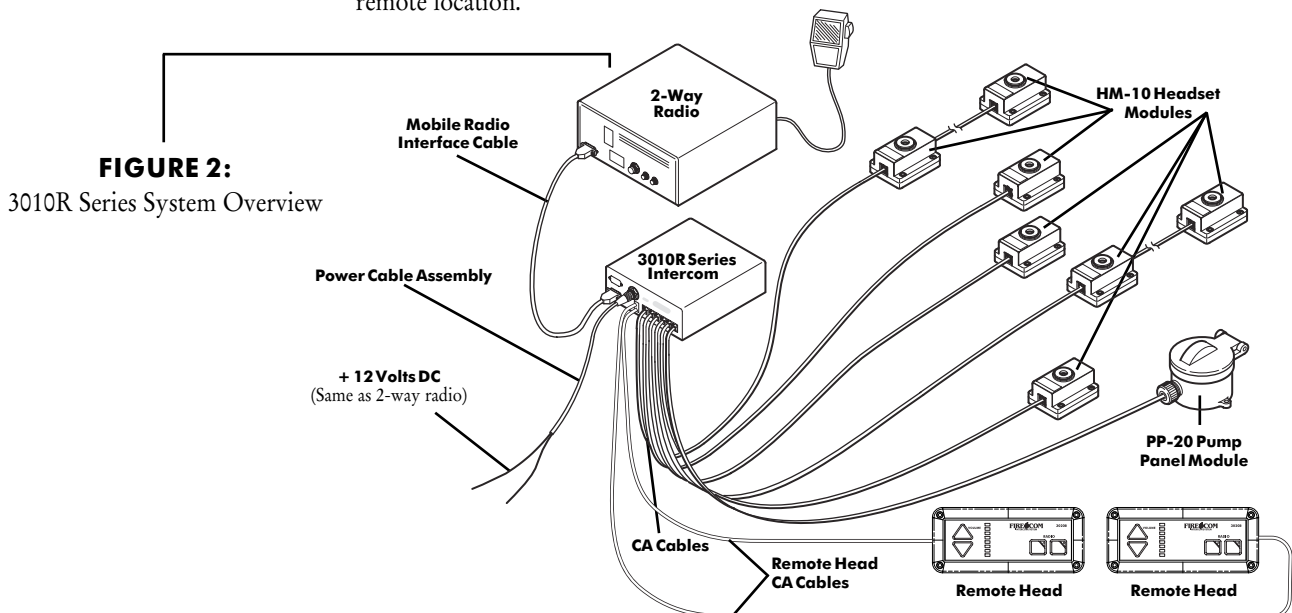
A water-resistant Headset Module for use on the exterior of the apparatus (e.g. at the pump panel, at the tail-board, etc.).

### CA CABLES

Six-conductor flat cable which connects the 3010R Series Intercom Unit to the HM-10, PP-20 Headset Modules and the Remote Heads.

### REMOTE HEADS

One or two Remote Heads can be connected to the main control unit to control the unit from a remote location.



**FIGURE 2:**

3010R Series System Overview

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# SYSTEM ORIENTATION

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## 3010R SERIES FRONT PANEL

Figure 3 shows the Front Panel of the 3010R and the 3020R Intercom. Listed below are the different items on the Front Panel and what they control/signify. These controls are explained further in “Intercom Operation” (pages 24, 25, & 26).

### VOLUME UP & VOLUME DOWN BUTTONS

Adjust the master volume for the Intercom System.

### VOLUME INDICATOR LED'S

8 yellow LED's which indicate the master volume level setting.  
There are 3 volume changes between lights.

### RADIO SELECT BUTTONS (3020R ONLY)

Used to select which radio will be transmitted on when the PTT on a Radio-Transmit Headset is pressed.

### RADIO SELECT LED'S (3020R ONLY)

Light up to show the status of the selected/keyed radio. Green when the radio is selected; Red when the radio is keyed for transmission.

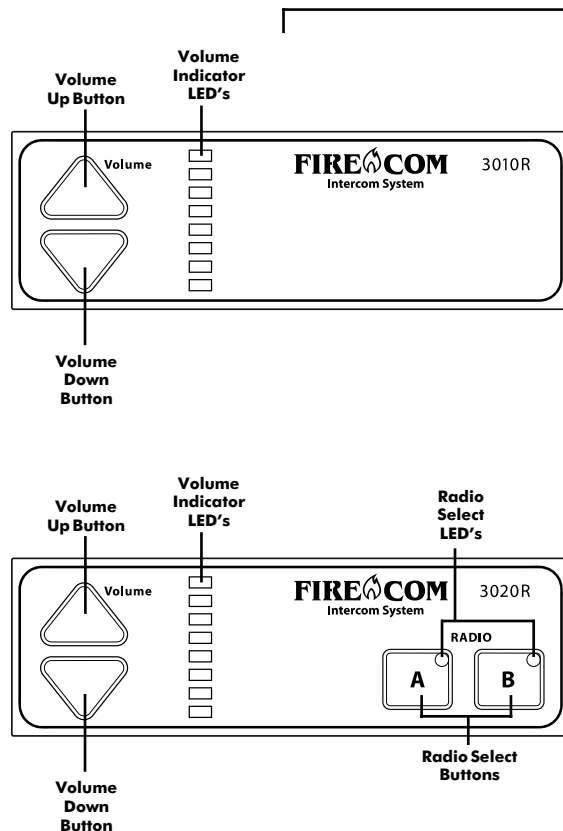


FIGURE 3:

# SYSTEM ORIENTATION

## 3010R SERIES REAR PANEL

Figure 4 shows the Rear Panel of the 3020R Intercom. This section describes the different connectors located on the rear of the intercom.

### RADIO INTERFACE JACK(S)

A 9-Pin D-Sub connector, which provides the attachment point for the Mobile Radio Interface Cable. The jack for radio B is only present on the 3020R.

### POWER CONNECTOR

A 2-Pin connector, where the Power Cable Assembly is plugged in, interfacing the 3010R Series Intercom to the vehicle's power supply.

### MODULAR JACKS

These modular jacks are the connection points for the CA Cables leading from the Intercom Unit to the Headset Modules.

### AUXILIARY INPUT

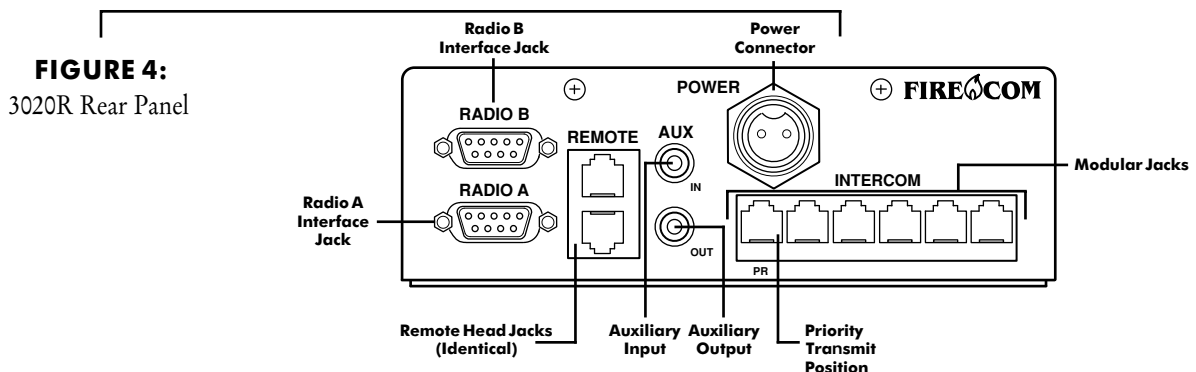
A 3.5 mm stereo (3/2 conductor) jack used to bring miscellaneous audio (such as a CD or a cassette tape player) into the intercom system.

### AUXILIARY OUTPUT

A 3.5 mm stereo (3/2 conductor) jack used to bring Intercom Audio and Radio Receive Audio out of the intercom system.

### REMOTE HEAD JACKS

These modular jacks are the connection points from the CA Cables leading from the Intercom Unit to the Remote Head(s). This feature is not available on previous 3010 Series Intercoms.



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# SYSTEM ORIENTATION

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## DEFINITIONS

This section lists some of the more common terms used in this manual and gives their description. Familiarize yourself with these terms before proceeding with the installation of a 3010R Series Intercom.

<b>CA CABLE:</b>	Flat, six conductor cable, which may have RJ-12 Modular Plugs on each end, used to make connections between the intercom unit and the HM-10's, PP-20's or Remote Head(s).
<b>HEADSET LOCATION:</b>	Any combination of CA Cables, HM-10's, PP-20's and headsets connected to a single port on the rear of the intercom.
<b>HM-10:</b>	Black plastic module with a single headset jack used to connect a headset into the intercom system. For use inside the vehicle.
<b>INTERCOM AUDIO:</b>	Audio present when communicating via the intercom system. Intercom audio is heard only on board the apparatus.
<b>INTERCOM-ONLY HEADSET:</b>	The Intercom-Only Headset receives both intercom and receive audio at all times. This headset has a <b>Black</b> or <b>Yellow</b> PTT for intercom communication, and is <b>NOT</b> capable of radio transmission.
<b>INTERCOM PORT:</b>	Any one of the six modular jacks under INTERCOM on the rear of the Intercom.
<b>INTERCOM UNIT:</b>	Any model 3010R Series Intercom.
<b>PP-20:</b>	A round, metal, water resistant module with a single jack for headset connection. For use on the exterior of the vehicle.
<b>RADIO INTERFACE PORT:</b>	A 9-pin D-sub jack on the rear of the Intercom.
<b>RADIO INTERFACE CABLE:</b>	The cable which plugs into the Radio Interface Port on one end, and connects to a 2-way radio on the other.
<b>RADIO-TRANSMIT HEADSET:</b>	The Radio-Transmit Headset receives both intercom and receive audio at all times. The mic is <b>ALWAYS</b> active for intercom communication, and has a Red PTT for radio communication.
<b>RECEIVE AUDIO:</b>	Audio from incoming radio transmissions. This is the same audio that is heard from the radio's speaker.
<b>RJ-12 MODULAR PLUG:</b>	The six conductor plugs on the ends of the CA Cables. These connectors plug into the Headset Modules, Remote Head(s) and the Intercom.
<b>TRANSMIT AUDIO:</b>	Audio signals being transmitted on the radio via a Radio-Transmit Headset with the <b>Red</b> PTT button pressed.
<b>TRANSMIT PRIORITY PORT:</b>	The Intercom Port closest to the AUX OUT connector on the rear of the intercom (labeled PR). This port has transmit priority over the other 5 ports.
<b>REMOTE HEAD:</b>	A panel or bracket mounted device for remotely controlling the intercom.

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# **PRE - INSTALLATION**

Before installing the Firecom 3010R Series Intercom System, it is **VERY IMPORTANT** to take a little time and plan the installation. This section will provide information to assist in planning the installation. You should read **AND UNDERSTAND** all of the information contained in this section as well as the sections on the System Orientation (page 1) and Installation (page 12) **BEFORE** installing the 3010R Series Intercom onto the apparatus.

## **IMPORTANT**

**Taking a little time to plan the installation BEFORE installing the 3010R Series Intercom System may prevent many installation errors which could result in improper system operation.**

If you have any questions regarding the information contained in this section, contact your local Firecom Dealer for clarification **BEFORE** proceeding with the installation.

## **INTERCOM LOCATION**

When choosing a location to mount the 3010R Series Intercom Unit, the following conditions should be considered:

- Remote mounting of the intercom box should not be piggy backed to radio transceiver unit by screws or velcro.
- Power cable should be routed to buss bar power and properly grounded to chassis on a clean surface with no more than 4.0Ω difference in chassis ground and selected spot for Firecom ground.
- The intercom should not be mounted close to the 2-way radio antenna on the vehicle.
- Allow for at least 3 inches clearance on the sides and rear of the intercom unit for service and installation.
- The intercom should be placed where it will be easy to route all the CA Cables from the Headset Modules.
- The intercom should be placed where the controls may be easily accessed.
- If the intercom cannot be located where it is easily accessible, a remote head can be used to allow the base unit to be mounted out of the way yet still have control access where it's more convenient.
- Do not mount the intercom directly above or below the radio transceiver.

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# **PRE - INSTALLATION**

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## **HEADSET MODULES**

There are 2 different types of Headset Modules for the 3010R Series Intercom system (Figure 5). The HM-10 is the standard module and is designed for use inside the apparatus where it is protected from the elements. The HM-10 also has a second connection for Daisy-Chaining (page 8).

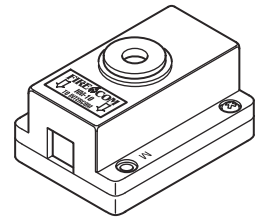
The second type of headset module is the PP-20. The PP-20 is a water and corrosion resistant module for use on the exterior of the apparatus (e.g. the pump panel, the tail-board, etc.).

Listed below are some of the items to consider when choosing the location of the headset modules:

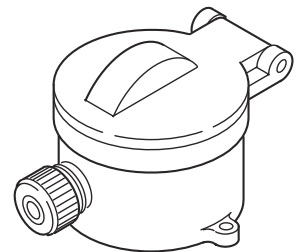
- The module should be placed convenient to the user.
- The module should be placed with the plug facing the direction of exit from the vehicle. This may help to prevent damage to the headset plug, comm cable or the headset module itself if the user attempts to exit the vehicle while still wearing the headset.
- The headset comm cable should hang clear of obstructions.
- The module should be mounted close enough to the windows so the user may look out the window without straining the headset module or the comm cable.
- The module should be positioned so that routing the CA Cables to the modules can be accomplished in a neat and orderly fashion.
- The module should be placed to provide access to the jacks on the module for the CA Cables. The CA Cable from the intercom will be inserted into the jack beneath the label on the headset module.
- If you are connecting two headset modules via a “Daisy-Chain,” allow clearance on the side opposite the label on the HM-10 for the CA Cable to be routed to the second headset module (page 8).

**FIGURE 5:**  
3010R Series Headset Modules

### **HM-10 MODULE**



### **PP-20 MODULE**



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# **PRE - INSTALLATION**

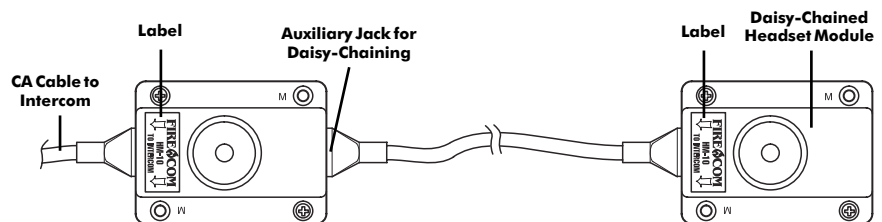
## **DAISY-CHAINING THE HEADSET MODULES**

Daisy-Chaining the Headset Modules is a method used to increase the number of headset positions available, or a method of reducing the number of cable runs and the length of the cable runs. Daisy-Chaining the Headset Modules is easy to accomplish, but must be well thought out in advance considering the following requirements:

- The Headset Modules in a Daisy-Chain must be connected in a **SPECIFIC** manner (Figure 6).
- The CA Cable from the Intercom unit should **ALWAYS** be plugged into the Headset Module via the modular jack under the label.
- The modular jack on the other end of the Headset Module (behind a removable plastic tab), is for the CA Cable which leads to the next Headset Label Module in the Daisy-Chain.
- **DO NOT** mix headset types (Intercom-Only vs. Radio-Transmit) that are plugged into a Daisy-Chain.
- A **maximum** of 2 Intercom-Only Headsets may be plugged into a Daisy-Chain at any time.
  - You may have more Headset Modules in the Daisy-Chain, but **NEVER** plug more than 2 Intercom-Only Headsets into the Daisy-Chain at any one time.
- A **maximum** of 1 Radio-Transmit Headset may be plugged into a Daisy-Chain at any time.
  - You may have more Headset Modules in the Daisy-Chain, but **NEVER** plug more than 1 Radio-Transmit Headset into the Daisy-Chain at any one time.

**IMPORTANT** Improper Daisy-Chains in a system may result in operational problems and reduced system performance. If you have any questions regarding Daisy-Chains, contact your local Firecom Dealer for more information.

**FIGURE 6:**  
Daisy-Chaining The  
Headset Module



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# **P R E - I N S T A L L A T I O N**

## **ROUTING THE CA CABLES**

The path along which you intend to run the CA Cables from the Intercom to the Headset Modules should also be planned **BEFORE** the installation. The items below are some of the items to consider when planning where to route the CA Cables.

- Route the CA Cables away from hot surfaces (such as the vehicle exhaust system).
- Route the CA Cables away from any moving equipment on the vehicle.
- Route the CA Cables away from the antenna or the antenna cable.
- **DO NOT** store excess cable. The length of each CA Cable should allow for approximately 10 inches of excess cable in each run for service loops (**VERY IMPORTANT**, especially in installations with a radio operating in the lower frequencies).
- When routing the CA Cables through bulkheads or other sheet metal, use a rubber grommet in the hole to prevent damage to the cables.

## **REMOTE HEAD**

The base unit has the ability to be remotely controlled by up to two remote heads. These panels function the same as the base unit front panel. Regardless of which button is pressed, all units will respond and update at the same time. Power to the unit is supplied through the CA Cable from the Intercom. The Remote Head can be mounted **INSIDE** the apparatus either flush on a surface or with a special bracket.

# PRE-INSTALLATION

## INTERCOM CONNECTIONS

### AUDIO MODULAR JACKS

On the rear of the intercom, there are 6 modular jacks under INTERCOM (Figure 7). These jacks are for connecting the CA Cables from the Headset Modules to the intercom. All of these modular jacks will provide intercom and radio communication to the headset positions.

### REMOTE MODULAR JACKS

On the rear of the intercom, there are 2 modular jacks under REMOTE (Figure 7). These jacks are for connecting CA Cables for the Remote Head(s). The CA Cables are all the same.

### PRIORITY TRANSMIT

It may be desirable for one member of the crew to have priority for transmitting on the radio. The audio modular jack closest to AUX OUT is the Priority Transmit Position (Figure 7). Any headset position plugged into this jack will have priority for radio transmit over all other headset positions. When the person in this position presses the PTT on the headset, ALL transmissions from any other headset position will be stopped and the person in the priority position will be able to transmit.

### POWER CONNECTIONS

The 3010R Series Intercom requires at least +12 volts DC nominal (with a negative ground) at .5 amps. This Intercom will accept DC voltage as high as 36 volts. The 3010R Series Intercom comes with a Power Cable Assembly and a 1.0 amp, in-line fuse. We suggest connecting the Intercom power and ground to the apparatus power buses.

### RADIO INTERFACE

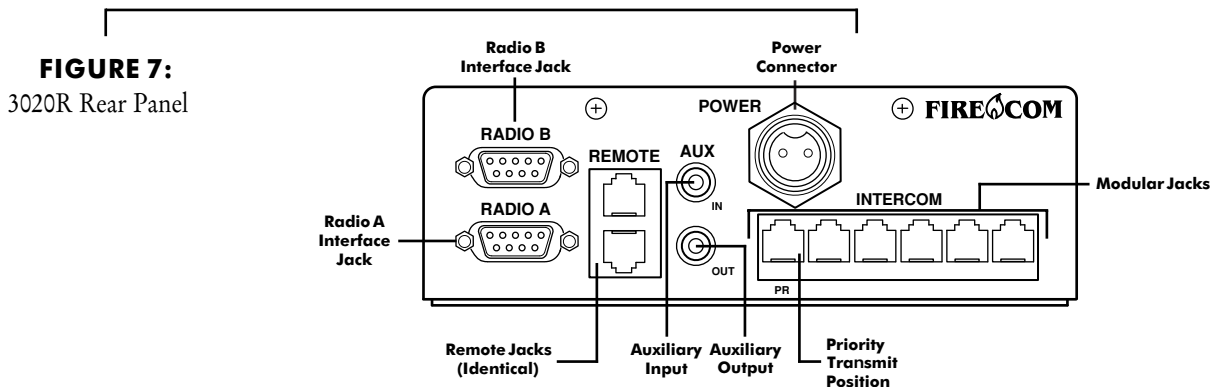
All Radio Interface cables are purchased separately.

## IMPORTANT

**ALL connections to the 2-way radio should be performed by a Qualified Radio Technician to ensure proper interface between the 2-way radio and the 3010R Series Intercom System.**

There are many interface cables available from Firecom to interface the 3010R series intercoms with specific radios. These custom interface cables will make interfacing the radio easier, but should still be done by a qualified radio technician. Contact your local Firecom Dealer for more information regarding the availability of an interface cable for your radio. The 3010R series intercoms are compatible with radio interface cables used with the 3010 series intercoms.

If a radio specific cable is not available for a particular radio, a MR-0X cable will be required to interface the radio and intercom. This cable is a 9-wire, shielded cable with a 9 pin D-sub to connect to the intercom and unterminated wires to be connected to the radio.



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# **PRE - INSTALLATION**

## **INTERCOM ADJUSTMENTS**

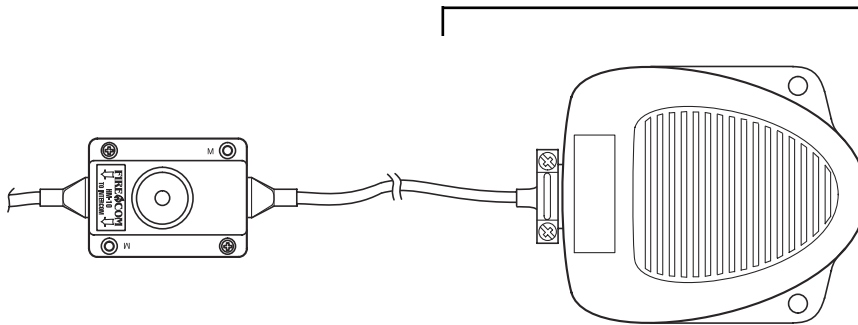
After the Intercom System and the radio interface have been properly installed, there are some adjustments which **MUST** be performed for proper operation of the system. These adjustments are outlined starting on page 16 in this manual.

**These adjustments to the intercom MUST be performed by a Qualified Radio Technician to ensure proper operation of the 2-way radio and 3010R Series Intercom System.**

**IMPORTANT**

## **OPTIONAL FOOT SWITCH**

The optional Foot Switch (FS-1) is used in situations where the user cannot, or does not wish to, use the headset mounted Push-To-Talk (PTT). The Foot Switch is plugged into the Daisy-Chain Jack (Figure 8) on the Headset Module of the person using the Foot Switch. When selecting the location of the Foot Switch, it should be convenient to the user, but in a location where it will not be accidentally depressed. Routing the CA Cable to that headset module must also be considered when choosing a location.



**FIGURE 8:**  
Foot Switch  
(Remote PTT)

# INSTALLATION

## IMPORTANT

**BEFORE INSTALLING** the Firecom 3010R Series Intercom, make sure you have read **AND UNDERSTOOD** the **ENTIRE** installation procedure. You should also read the sections on **Pre-Installation** (page 6) and **System Orientation** (page 1). If any item in the **Installation Procedure** is not understood, or if you have any questions which are not addressed in this manual, contact your local Firecom Dealer for more information **BEFORE** you proceed with the installation.

## MOUNTING THE INTERCOM

1. Using the mounting bracket as a template, mark the location of the mounting holes.
2. Using a 3/16" drill bit, drill 2 holes for the #8 sheet metal screws (supplied).

## IMPORTANT

**Be sure the area behind the panel you are drilling into is free of wires or other obstructions that could be damaged while drilling the holes.**

3. Install the mounting bracket with the sheet metal screws (Figure 9).
4. Remove the 4 screws (2 on each side) closest to the rear of the intercom unit and mount the intercom on the mounting bracket with the 4 screws.

## IMPORTANT

**DO NOT completely tighten the intercom mounting hardware until the entire installation is complete.**

## MOUNTING THE HEADSET MODULES

5. Using the Headset Module as a template (Figure 10), mark the location of the mounting holes. The holes in the HM-10 used for mounting the module are marked with a letter "M".
6. Using a 5/32" drill bit, drill 2 holes for the #6 sheet metal screws (supplied).

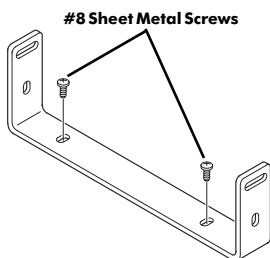
## IMPORTANT

**Be sure the area behind the panel you are drilling into is free of wires or other obstructions that could be damaged while drilling the holes.**

7. Position the Headset Module and secure with the provided sheet metal screws.

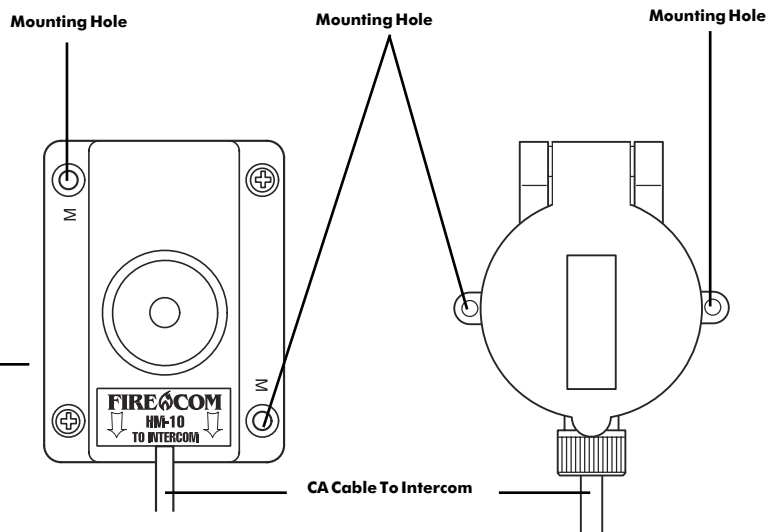
**FIGURE 9:**

The Mounting Bracket



**FIGURE 10:**

Headset Modules



# INSTALLATION

## INSTALLING THE CA CABLES

- Slide a Bend-Relief Grommet over one end of the flat CA Cable, small end first.
- Attach a RJ-12 Modular Plug to the end of the flat CA Cable (see page 28 for instructions if necessary).

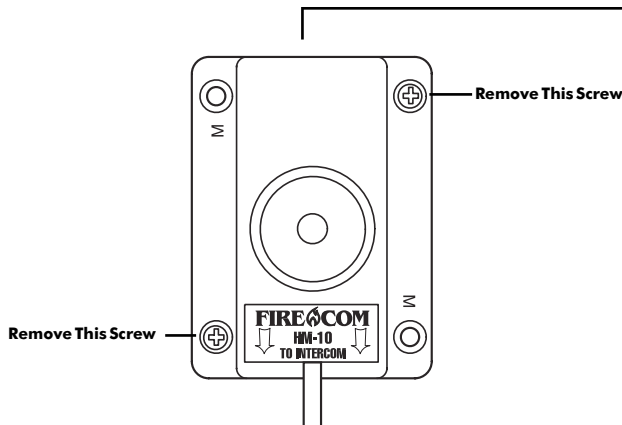
**ALWAYS make sure the printed side of the cable is facing the release-tab on the RJ-12 Modular Plug (Figure 13). This ensures proper orientation of the plug on each end of the cable.**

**IMPORTANT**

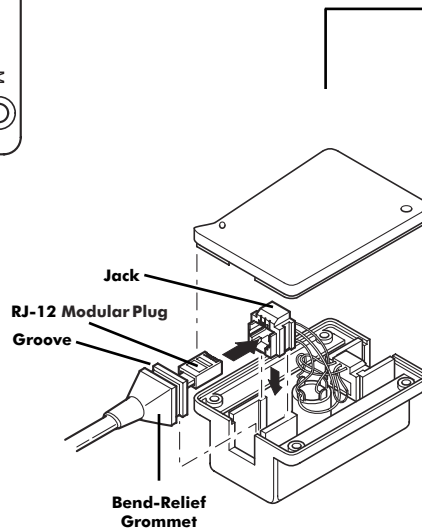
- Remove the screws holding the HM-10 together (Figure 11) and remove the bottom plate of the HM-10.
- Lift the modular jack slightly out of the HM-10 and insert the RJ-12 Modular Plug into the jack in the HM-10 as shown in Figure 12.

**If the CA Cable is going from the Headset Module to the Intercom, it MUST be inserted into the Modular Jack on the same side of the HM-10 as the "Firecom" label. If the CA Cable is part of a "daisy-chain", you will need to remove the plastic tab which covers the access hole to the second Modular Jack on the HM-10. See "Daisy-Chaining" the Headset Modules (page 8).**

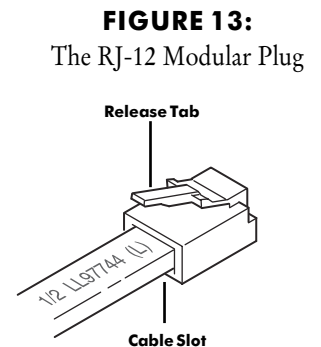
**IMPORTANT**



**FIGURE 11:**  
Opening The HM-10



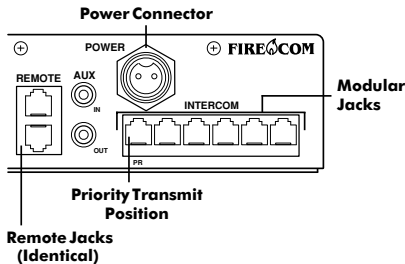
**FIGURE 12:**  
Installing a CA Cable into a  
HM-10 Module



**FIGURE 13:**  
The RJ-12 Modular Plug

# INSTALLATION

**FIGURE 14:**  
Modular Jacks



12. Insert the Bend-Relief Grommet into the HM-10 so the groove in the grommet is over the side case of the HM-10 (Figure 12).
13. Replace the bottom plate of the HM-10 and secure with the 2 screws.
14. Mount the HM-10 in place on the apparatus.
15. Route the CA Cables to the rear of the Intercom Unit (or the next Headset Module in a Daisy-Chain).
16. Attach an RJ-12 Modular Plug to the end of the flat CA Cable (see page 28 for instructions if necessary).
17. With the “release-tab” on the RJ-12 Modular Plug facing up (Figure 13), insert the RJ-12 Modular Plug into a modular jack on the rear of the intercom unit (Figure 14).

## IMPORTANT

**The Modular Jack closest to the AUX OUT connector (Figure 14) is the Priority Transmit Position. The Headset Location plugged into this jack will have priority over all other Headset Locations for transmitting on the radio.**

18. Repeat steps 8 through 17 until all remaining Headset Modules have been connected with the CA Cable to the Intercom Unit or the next Headset Module in a Daisy-Chain.

## POWER & GROUND CONNECTIONS

**Before making the power connections, make sure the apparatus master switch is OFF!**

## IMPORTANT

19. Connect the Power Cable Assembly (Figure 15) to the rear of the Intercom Unit.
20. Connect the black wire (from pin 1) to the vehicle's negative ground, or use the supplied self tapping screw and star washers as shown in Figure 15.

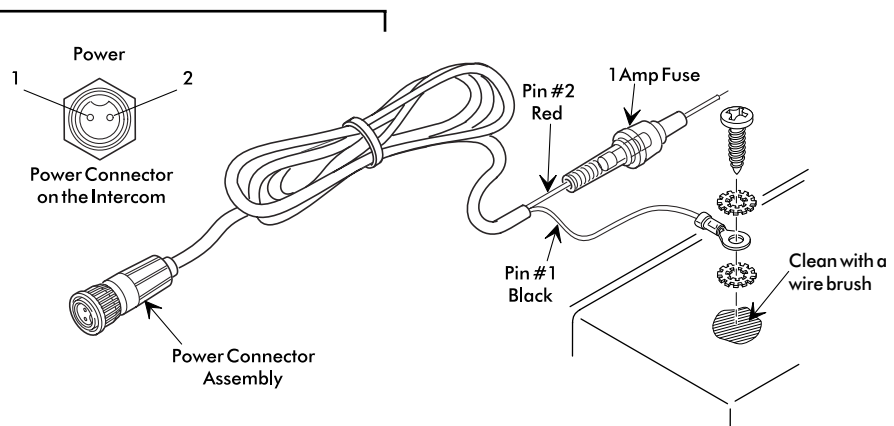
## IMPORTANT

**We suggest connecting the intercom power connections to the apparatus power buses (preferably, to the same point that the 2-way radio is connected).**

21. Connect the red wire (from pin 2) to one end of the supplied in-line fuse holder.
22. Connect the other end of the fuse holder to the vehicle's switched positive power supply.

The 3010R Series Intercom System is installed and ready for connection to the radio.

**FIGURE 15:**  
Power Cable Assembly



# INSTALLATION

## RADIO CONNECTIONS

To ensure proper operation, the connection to the radio should be performed by a Qualified Radio Technician.

**IMPORTANT**

23. If you are using a radio-specific interface cable, follow the directions included with the interface cable, then proceed with step 27 in this Installation Procedure.

**If you are unsure if your Interface Cable is the proper one, or if you want to know if Firecom manufactures a Radio-Specific Interface Cable for your radio(s), contact your local Firecom Dealer.**

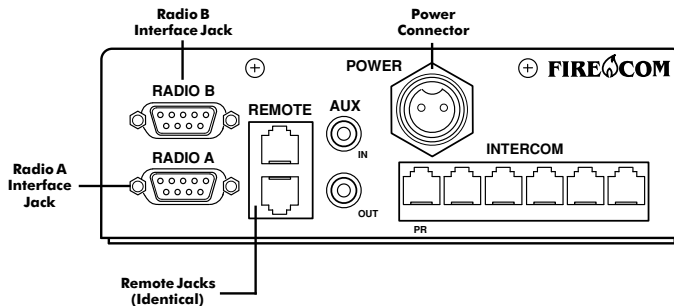
**IMPORTANT**

24. Plug the 9-Pin plug on the end of the MR-0X Mobile Radio Interface Cable into the desired Radio Interface Jack on the rear of the intercom (Figure 16).

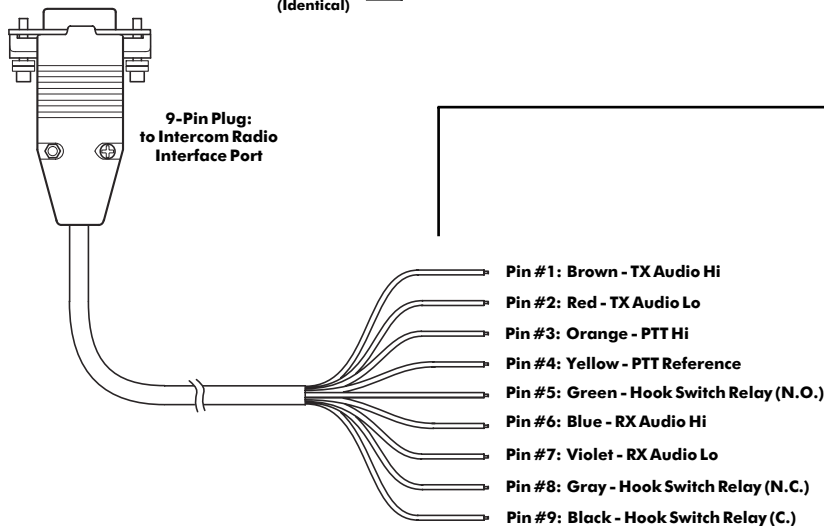
**Tighten the 2 screws on the plug of the MR-0X. If these screws are not tightened, the 9-pin plug may vibrate loose and cause problems with transmission, reception or other radio problems.**

**IMPORTANT**

25. Using the information in Figure 17, connect the wires on the MR-0X Mobile Radio Interface Cable to the appropriate places on the 2-way radio.
26. If the intercom is a 3020R repeat steps 23 to 25 for the second radio.



**FIGURE 16:**  
3020R Rear Panel



**FIGURE 17:**  
MR-0X Universal Radio  
Interface Cable

# INSTALLATION

## INTERCOM ADJUSTMENTS

In order to match the Transmit and Receive Audio to the radio, it will be necessary to perform some adjustments. These items are adjusted by switches and variable resistors located on the circuit board inside the intercom unit (Figure 18).

### IMPORTANT

**These adjustments MUST be performed by a Qualified Radio Technician. Failure to perform these adjustments may result in problems hearing and transmitting radio signals when using the Intercom System.**

### RECEIVE AUDIO ADJUSTMENT:

27. Turn the 2-way radio on, and adjust the radio volume to the normal volume level for use **WITHOUT THE INTERCOM INSTALLED**.
28. **Radio A (all models):** Adjust VR3 to set the Receive Audio so that it is at the same level as the audio heard when listening to someone speak over the intercom.
29. **Radio B (3020R only):** Adjust VR4 to set the Receive Audio so that it is at the same level as the audio heard when listening to someone speak over the intercom.

### HOOK SWITCH ADJUSTMENT:

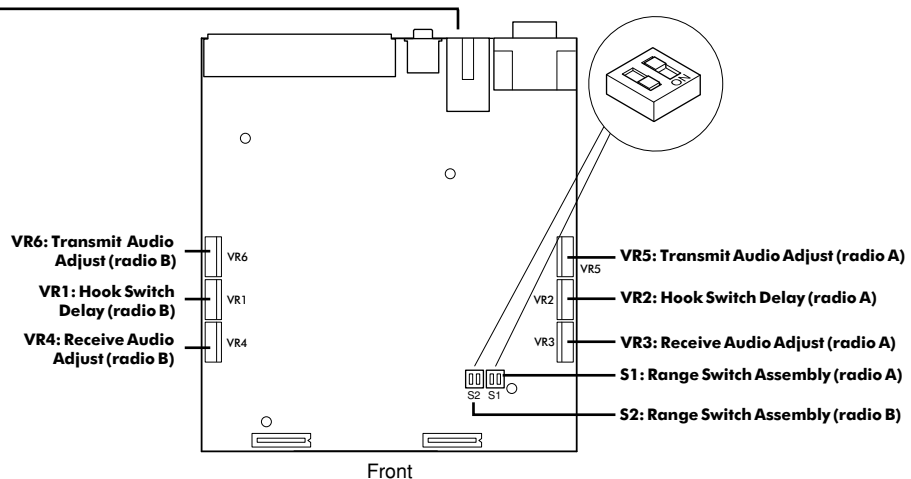
The Hook Switch is used by some radios to sense when the hand mic has been taken “off-hook.” This information is for many different functions, including disabling a programmed or scanning function. If the radio is a multi-channel radio with a scanning mode, it may be necessary to make the proper hook switch connections and adjustments to the intercom. A change to the radio programming may also be needed. The Firecom 3010R Series Intercoms have an adjustable delay between pressing the Push-To-Talk on the headset and the keying of the radio. The minimum delay is 0.2 second, the maximum is 3.5 seconds.

30. **Radio A (all models):** Adjust VR2 for the proper delay time.
31. **Radio B (3020R only):** Adjust VR1 for the proper delay time.

### IMPORTANT

**If a delay between pressing the PTT and keying the radio is NOT necessary for your radio, make sure it is set to the minimum time.**

**FIGURE 18:**  
3010R Series Adjustments



# INSTALLATION

## TRANSMIT AUDIO ADJUSTMENT:

The Transmit Audio is adjusted using the Range Switch Assemblies, and Variable Resistors VR5 & VR6. Each range switch assembly has 2 switches which select ranges for the Transmit Audio adjustment (see Table 1 for the range switch settings), and the Variable Resistors adjust the Transmit Audio level within these ranges.

32. **Radio A (all models):** Using a Service Monitor, adjust Range Switch Assembly S1 and VR5 for proper transmitter deviation and no transmitted audio clipping.
33. **Radio B (3020R only):** Using a Service Monitor, adjust Range Switch Assembly AS2 and VR6 for proper transmitter deviation and no transmitted audio clipping.

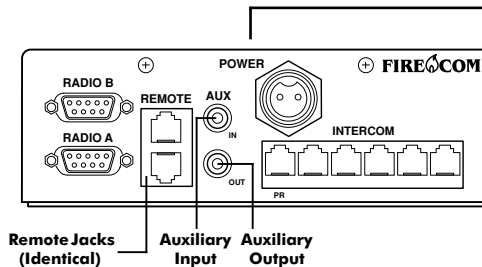
S1	S2	Mic To Output Gain
On	On	+22.8 dB to +2.9 dB
Off	On	+3.7 dB to -16.7 dB
Off	Off	-15.7 dB to -37.1 dB

(Maximum Signal At Mic Jack: 1.1 v pk-pk)

**TABLE 1**  
Range Switch Settings

## AUXILIARY INPUT & OUTPUT

On the back of the 3010R Series Intercom, there are 2 jacks labeled “Aux In” and “Aux Out” (Figure 19). These jacks are 3.5 mm stereo (conductor) jacks. If a mono plug is inserted in this jack, it may damage the auxiliary device. A mono to stereo adapter is required. The auxiliary input signal will be mixed with the radio and the intercom audio. The auxiliary input signal **CANNOT** be directed to the transmit circuits for radio broadcast. The auxiliary output signal strength will be exactly 1/2 the strength of the signal in the headsets. The auxiliary output signal will consist of intercom audio, receive audio from radios A & B, and any audio from the auxiliary input.



**FIGURE 19:**  
3020R Rear Panel

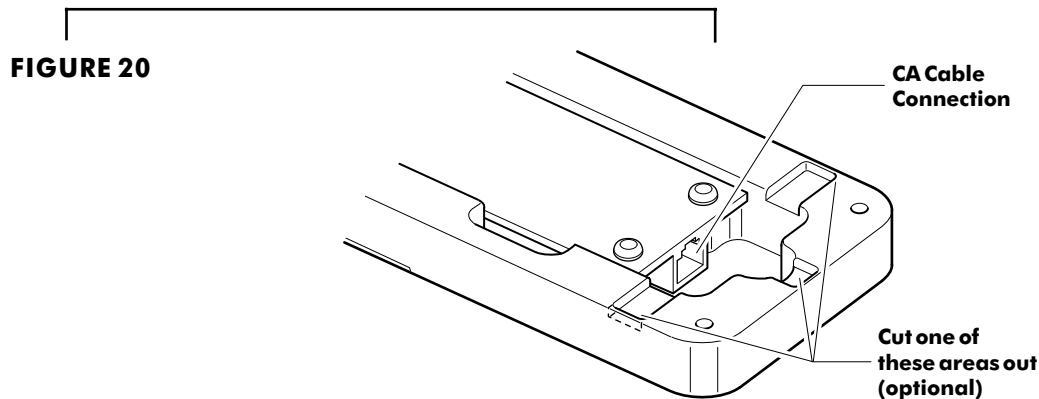
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# **INSTALLATION**

## **INSTALLING THE REMOTE HEAD**

One or two Remote Heads can be connected to the main base unit. The connections at the rear of the unit are identical in function. CA Cables of the style and pin-outs as the audio CA Cables will work to mount the remotes.

34. When mounting the Remote Head flush to a flat surface, use the unit as a template to mark and drill (4) mounting holes  $7/64$ " diameter for sheet metal screws or  $5/32$ " for machine screws.
35. The cable can exit the unit in (4) directions: Flush to the outside of the mounting plane in the Up, Down and Right side direction or through the mounting plane out the Back. When exiting Up, Down and Right, a small wire groove is provided.
36. Cut a small piece of plastic from the desired groove to clear the wire (Figure 20).

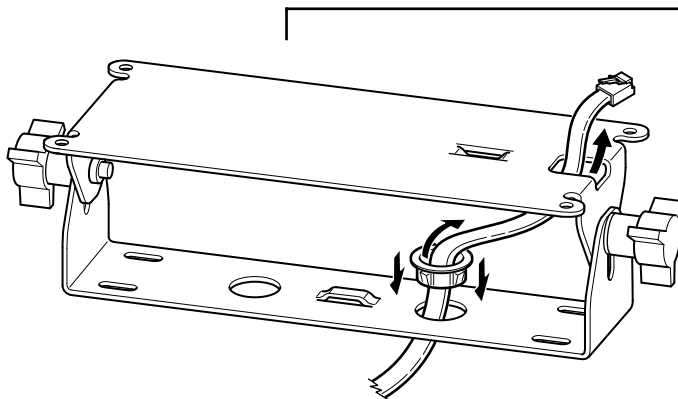


37. For an installation where the wire is to pass through the mounting surface, drill a  $3/8$ " hole and install the rubber grommet and pass the wire through.
38. Click the CA Cable into the modular jacks.
39. For inside installation mount the panel with (4) screws making sure the cable is not pinched in the groove.

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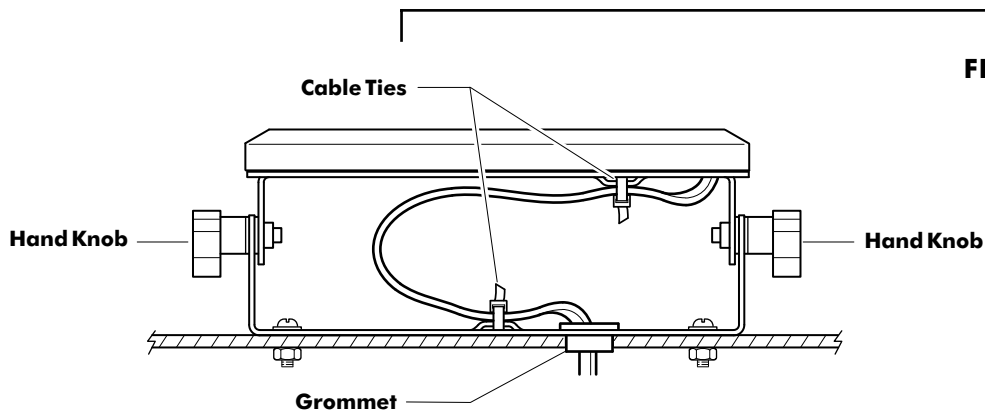
# INSTALLATION

40. When mounting the Remote Head using the brackets, first plug in and thread the cable through the bracket assembly as shown in (Figure. 21).
41. Plug the CA Cable into the Remote Head and secure the panel with (4) machine screws and nuts to the front of the bracket.



**FIGURE 21:**  
Remote Bracket

42. Using the supplied cable ties secure the CA Cable to the bracket anchors as shown in (Figure 22).



**FIGURE 22:**

43. Before installing the bracket to the mounting surface, drill a 3/4" hole at the wire location. Snap the grommet into the bracket as shown in (Figure 22) and then use the bracket as a template to mark the mounting holes.
44. Drill (4) mounting holes at 7/64" for #6 sheet metal screws or 9/64" for #6 machine screws.
45. Mount the bracket and adjust the panel to a desirable viewing angle with the two hand knobs.

# SYSTEM TEST

This procedure tests all functions of the 3010R Series Intercom System and should be used to test the system for proper operation after installation. In the event of a system failure, it may also be used to help identify and isolate the exact symptoms before troubleshooting a problem, and to test the system after repair work has been performed.

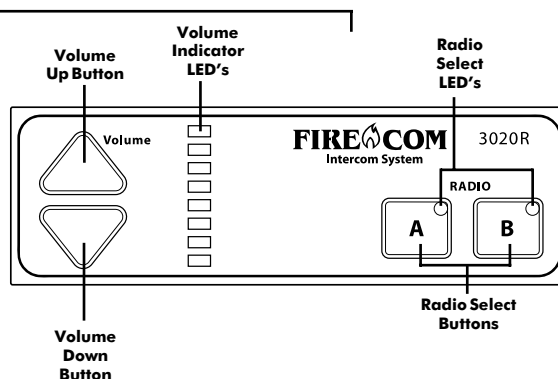
## POWER ON

1. Turn on the apparatus master switch.
2. Confirm that power is applied to the intercom by observing that at least one Volume Indicator LED (Figure 23) is lit.
3. Using the Up and Down Buttons, adjust the Volume Control (Figure 23) to the middle of its range.

## TEST INTERCOM OPERATION

4. Plug a headset into the appropriate Headset Module.
5. Turn the headset Volume Control all the way down (counterclockwise).
6. Put a headset on your head and adjust the headband/headstrap for a comfortable fit.
7. Adjust the microphone boom to place the microphone in front of your mouth and approximately 1/8" from your lips.
8. Speak into the microphone to confirm intercom operation. You should hear your self through the headset speakers.
  - If the headset is a UH-20 or FH-20, press and hold the black Push-To-Talk (PTT) button on the ear dome while speaking into the microphone.
  - If the headset is a UH-40 or FH-40, you may need to press, and release, the yellow PTT button on the ear dome to turn the microphone on before speaking into the headset.
9. Turn the headset Volume Control fully clockwise.
10. While speaking into the microphone, adjust the volume control on the intercom unit slightly louder than a comfortable listening level.

**FIGURE 23:**  
3020R Face Panel



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# **SYSTEM TEST**

11. Adjust the headset volume for a comfortable listening level.
12. Monitor radio communications. Verify that the incoming radio transmissions are the same volume as the intercom volume.
13. Repeat steps 4 to 12 for each headset/headset position on the apparatus.

## **TEST RADIO COMMUNICATION**

**Steps 14 to 16 are for Radio-Transmit Headsets only! These are the models FH-10 and UH-10, and have a red PTT on the ear dome.**

**IMPORTANT**

14. Put on a Radio-Transmit Headset (Model FH-10 or UH-10).
15. Test radio transmission by pressing the red PTT button on the ear dome and speaking into the microphone. You should transmit on the radio.
16. If there is an optional foot switch installed, test radio transmission by pressing the foot switch and speaking into the microphone on the headset.
17. Repeat steps 14 to 16 for each Radio-Transmit Headset on the apparatus.

## **SYSTEM DYNAMIC TEST**

18. Start the apparatus engine.
19. Using a Radio-Transmit Headset close to the intercom unit, check the intercom and radio functions.

Final adjustment of the Volume Controls may be required under actual apparatus operating conditions.

**If excessive engine/siren noise is present in the headsets, the intercom volume level should be reduced slightly. To compensate for this reduced volume, you must speak louder into the microphone.**

**IMPORTANT**

## **REMOTE HEAD TEST**

20. Press the Volume Up and Down arrow. Note the same changes on the base unit.
21. Press the radio select buttons. Note the same changes on the base unit.

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# INTERCOM OPERATION

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## HEADSETS

Firecom offers many different styles of headsets for use with the 3010R Series Intercom System. Headsets are available in an Over-The-Head (Figure 24), or Under-The-Helmet (Figure 25) style. Either of these styles can be Radio-Transmit capable, or Intercom-Only.

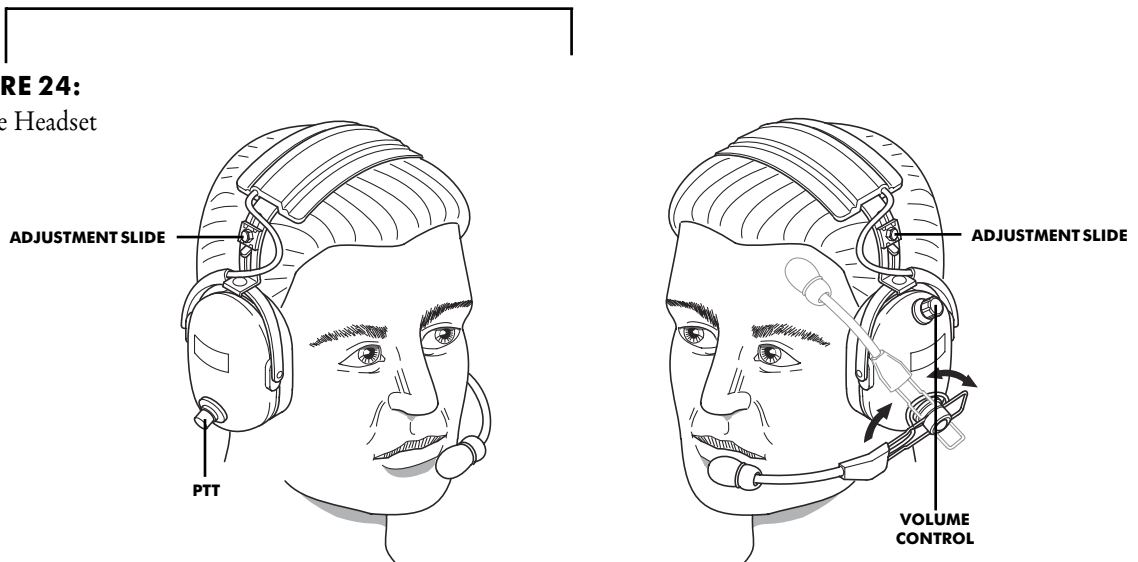
For more information regarding the different models of headsets available, contact your local Firecom Dealer.

## RADIO-TRANSMIT HEADSETS

The Radio-Transmit Headsets receive both intercom and radio communications at all times. The mic is always active for intercom communications. Radio-Transmit Headsets are typically used at the Driver, Officer and Pump Panel positions.

There are 4 models of Radio-Transmit Headsets available for use with the 3010R Series Intercom System: the UH-10, UH-10S, FH-10 and the FH-10S. There is a RED Push-To-Talk (PTT) button located on the ear dome which allows communication on the radio.

**FIGURE 24:**  
FH Style Headset



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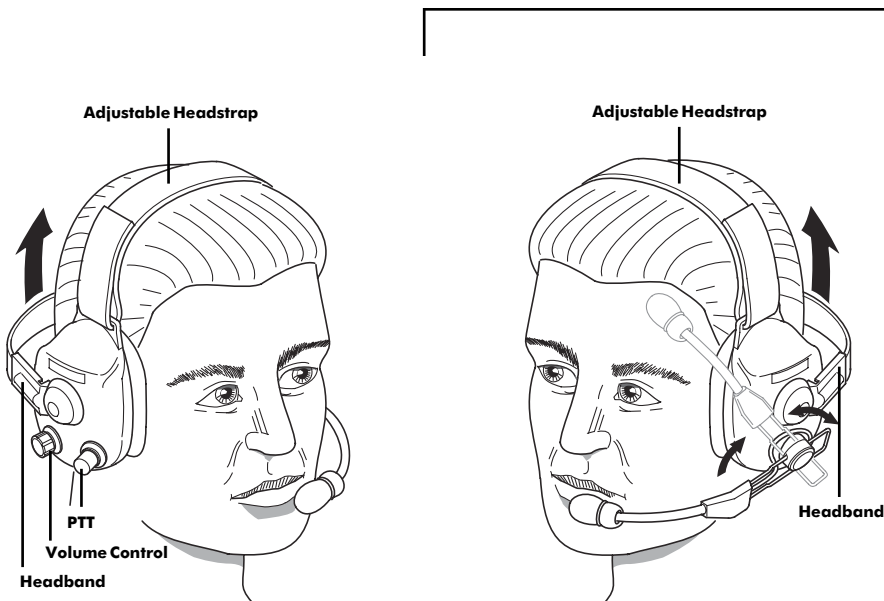
# INTERCOM OPERATION

## **INTERCOM-ONLY HEADSETS**

The Intercom-Only Headsets receive both intercom and radio communications at all times, but are **NOT** radio-transmit capable. Intercom-Only Headsets are typically used at the jumpseat positions, due to the high ambient noise level at these locations (engine noise, etc.).

There are 4 models of Intercom-Only Headsets: the UH-20, the FH-20, the UH-40 and the FH-40.

- The UH-20 and the FH-20 have a **BLACK PTT** button on the ear dome. Press and hold this black PTT to speak on the intercom.
- The UH-40 and the FH-40 have a **YELLOW PTT** on the ear dome. Press and release the yellow PTT to turn the microphone on. Press and release the yellow PTT again to turn the microphone off.



**FIGURE 25:**  
UH Style Headset

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# INTERCOM OPERATION

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## HEADSET ADJUSTMENT

The vertical fit of the headset is changed by adjusting the headband (FH models) or the headstrap (UH models).

- Over-The-Head (FH) style headsets (Figure 24): These headsets have adjustable headbands with slide mechanisms located at each side above the ear domes. If the adjustment slides become loose, gently tighten the self-locking nuts on the slide mechanisms.
- Under-The-Helmet (UH) style headsets (Figure 25): These headsets have an adjustable headstrap to adjust the height of the ear domes.

For maximum comfort, wear the headset as far back on the head as possible, while ensuring that the ear domes still completely cover the ears. If discomfort is felt in the jawbone, you are wearing the headset too far forward.

**FIGURE 26:**

Microphone Placement



No More Than 1/8" From Lips

## MICROPHONE PLACEMENT

The microphones used on Firecom headsets are noise-canceling electret microphones. The placement of the microphone is **VERY** important. For proper operation, the microphone should be positioned in front of the mouth and no more than 1/8" away from the lips (Figure 26).

**IMPORTANT**

**Placement of the microphone is CRITICAL. If the microphone is positioned incorrectly, you will experience drastic reduction in volume and clarity of the intercom and radio communication.**

## LEFT & RIGHT DRESS

The Firecom headsets may be adjusted so that the mic is on the right side (right dress) or left side (left dress).

- Over-The-Head (FH) style headsets: Rotate the Mic Boom **ONLY** in an upward direction (Figure 24), page 22.

**IMPORTANT**

**ALWAYS rotate the Mic boom upwards as shown to prevent damage to the Mic Boom and the Mic Cable.**

- Under-The-Helmet (UH) style headsets: Rotate the Mic Boom and the rear headband **ONLY** in an upward direction (Figure 25), page 23.

**IMPORTANT**

**ALWAYS rotate the Mic Boom and the rear Headband upwards as shown to prevent damage to the Mic Boom, the Mic Cable and the Headband Cable.**

## HEADSET VOLUME CONTROL

Located on the ear dome of each Firecom Headset is a volume control for adjusting the volume of headset speakers. This allows each user to adjust the volume to the preferred level. Turning the Volume Control clockwise increases the volume, turning the control counter-clockwise decreases the volume.

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# INTERCOM OPERATION

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## VOLUME CONTROLS (ALL MODELS)

### VOLUME INDICATOR

The Volume Indicator is a vertical row of 8 colored LED's. Minimum volume is indicated by only the bottom yellow indicator being lit. Maximum volume is indicated by all eight LED's being lit.

**When power is turned off to the intercom, the intercom and Remote Heads "remember" the last volume setting and will return to that volume level when power is turned on again.**

**IMPORTANT**

### VOLUME UP BUTTON (ALL MODELS)

Pressing this button once increases the intercom volume by one step. After pressing the button three times one more LED in the Volume Indicator lights. Once maximum volume has been reached (all LED's in the Volume Indicator are lit), pressing the Volume Up Button will have no effect.

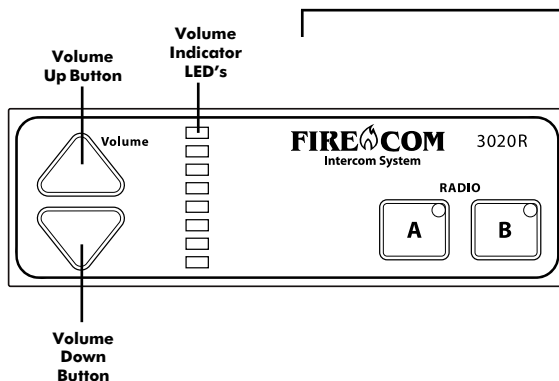
### VOLUME DOWN BUTTON (ALL MODELS)

Pressing this button once decreases the intercom volume by one step. After pressing the button three times one less LED in the Volume Indicator lights. Once minimum volume has been reached (only the bottom LED in the Volume Indicator is lit), pressing the Volume Down Button will have no effect.

**The minimum volume level is not "zero" volume. It is NOT possible to turn the intercom audio off using the Volume Control Buttons.**

**IMPORTANT**

**The Volume Controls on the 3010R Series Intercoms adjust the volume of INTERCOM COMMUNICATION ONLY! The Volume Controls DO NOT adjust the volume of the Receive Audio from the radio(s). To adjust the volume of the Receive Audio, adjust the Receive Audio Adjustment (page 16) or the radio's volume control.**



**FIGURE 27:**  
Volume Controls  
and Indicators

# INTERCOM OPERATION

## RADIO SELECT CONTROLS (3020R ONLY)

The Radio Select Controls/Indicators on the 3020R ONLY control which radio will be used to transmit when a PTT Button on a Radio-Transmit Headset is pressed. They do **NOT** control which radio is heard in the headsets. **BOTH** radios are monitored at all times in the headsets.

### RADIO A SELECT BUTTON

Pressing the Radio A Select Button, selects radio A as the radio for transmission. The green Radio A Selected Indicator will then light.

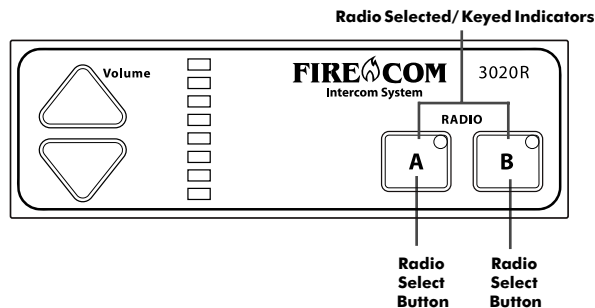
### RADIO B SELECT BUTTON

Pressing the Radio B Select Button, selects radio B as the radio for transmission. The green Radio B Selected Indicator will then light.

### RADIO SELECTED/KEYED INDICATORS

The Radio Select Indicators will light with a green color when that radio is selected. It will change to red when the PTT Button on a Radio-Transmit Headset is pressed. The indicator will return to green when the PTT Button is released (Figure 28).

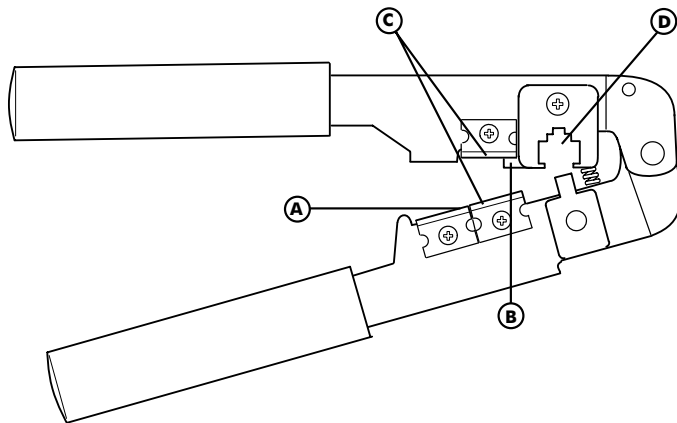
**FIGURE 28:**  
Radio Select  
Controls & Indicators



# MODULAR PLUG INSTALLATION

This section describes the installation of the RJ-12 Modular Plugs onto the flat CA Cable.

1. Using the cutter blade on the crimping tool (labeled “A” in Figure 29), cut the flat CA Cable so the cut is clean and 90 degrees to the sides of the cable.
2. Fully insert one end of the CA Cable between the stripping blades (labeled “C” in Figure 29) until the end of the cable hits the stop (labeled “B” in Figure 29).



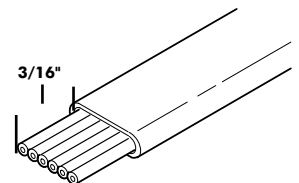
**FIGURE 29:**  
RJ-12 Modular Plug  
Crimping Tool

3. Squeeze the handles of the crimping tool together until the tool bottoms out.
4. While holding the handles together, pull the cable out of the tool.
5. The stripped insulation should expose approximately 3/16” of wire (Figure 30).
6. Push a RJ-12 Modular Plug into the plug holder on the crimping tool (labeled “D” in Figure 29) until the release tab on the plug locks into position.
7. Holding the cable so that the printed side of the cable is toward the release-tab on the plug, push the cable into the plug as far as it will go.

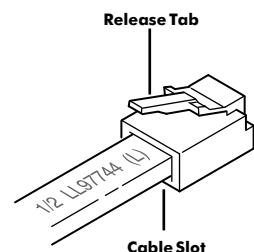
**ALWAYS make sure the printed side of the cable is facing the release-tab on the RJ-12 Modular Plug (Figure 31). This ensures proper orientation of the plug on each end of the cable.**

8. Squeeze the tool handles **COMPLETELY** together. You may feel the crimper finish punching the contacts through the insulation on the wires.
9. Let the handles spring open.
10. Push down on the release-tab on the RJ-12 Modular Plug (Figure 31) and remove the RJ-12 Modular Plug from the crimping tool.
11. Inspect the plug to ensure that the cable is held securely in place.
12. Repeat this procedure as necessary to install a RJ-12 Modular Plug on each end of each CA Cable.

**FIGURE 30:**  
The Stripped CA Cable



**FIGURE 31:**  
The RJ-12 Modular Plug



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## **TROUBLESHOOTING**

The Firecom 3010R Series Intercom System, when installed properly and adjusted according to specifications, will perform reliably and offer you the finest in hearing protection and enhanced communication. However, as with any electronic equipment, occasionally a malfunction may occur.

In the following sections, you will find information that will help familiarize you with the intercom system and aid in the troubleshooting process.

If the symptoms you are experiencing are not covered in this manual, or if you are having difficulty troubleshooting your system, contact your local Firecom Dealer for assistance.

### **IF THE SYSTEM DOES NOT OPERATE AS EXPECTED, CHECK THE FOLLOWING ITEMS FIRST**

- Check that the apparatus master switch is on.
- Check the fuse or circuit breaker.
- Check system wiring and interconnections.
- Check the orientation of **ALL** RJ-12 Modular Connectors on **BOTH** ends of each CA Cable. See “Modular Plug Installation” (page 27).
- Check that the headsets are plugged in all the way.
- Check intercom and headset control settings.
- Check for corrosion on headset plugs.
- Check all intercom ports for bent or stuck pins that can be straightened.

If these steps do not correct the problem, continue with the advanced troubleshooting procedures on page 31.

---

# **TROUBLESHOOTING**

## **ALTERNATOR WHINE & OTHER DISTRACTING NOISES**

Because of the level of ambient noise present with the apparatus motor running, alternator whine and other noises may not be noticed in the communications systems until an intercom is added. A noisy system will always be more apparent, once an intercom is installed.

### **COMMON CAUSES OF NOISE ON THE COMMUNICATION CIRCUIT**

- Improper installation
- Intercom adjusted improperly
- Radio Interface not connected properly
- Intercom power connections dirty, loose or connected to the wrong location
- Battery terminals corroded
- A faulty alternator

Generally, the problem is not caused by the alternator. It is usually the result of a difference in potential between the apparatus radio signal ground and the intercom signal ground. Additional sources may also exist in the apparatus electrical system.

### **TO REDUCE OR ELIMINATE ALTERNATOR WHINE**

- Connect the apparatus radio to the cleanest power source possible: a source without motors (e.g. heaters, windshield wipers, etc.), sirens, strobes or flashers.
- Use the same precautions when connecting the intercom power.
- Ensure that the power and ground connections for the radio and the intercom are clean and tight.
- Ensure that the power and ground wires for the radio and the intercom are no smaller in diameter than 18 AWG.
- Keep all battery connections clean and free from dirt and corrosion.
- Use separate noise filters on radio and/or intercom power as needed.

---

# **TROUBLESHOOTING**

## **TROUBLESHOOTING A HEADSET LOCATION**

This procedure will help determine if a problem exists in a particular headset location, and which component in the headset location is faulty.

1. Examine the headset's label to determine if the headset is an Intercom-Only Headset or a Radio-Transmit Headset.
  - If the headset is a FH-10 or a UH-10, it is a Radio-Transmit headset. The speakers should always be active. The mic should always be active for intercom communication and pressing the **Red** PTT button on the ear dome should key the radio for radio transmission.
  - If the headset is a FH-20 or a UH-20, it is an Intercom-Only Headset. The speakers should always be active. The mic should be active for intercom communication only when the **Black** PTT button on the ear dome is pressed. The headset should never cause the radio to key.
  - If the headset is a FH-40 or a UH-40, it is an Intercom-Only Headset. The speakers should always be active. Pressing the **Yellow** PTT on the ear dome will activate the mic for intercom communication. The mic will remain active until the **Yellow** PTT is pressed again.
2. Plug the headset into another good headset location.
  - If the headset fails to perform properly in the new location, the headset is faulty. Contact Firecom Service for a Return Material Authorization (RMA) Number to return the headset for repair.
3. Unplug the CA Cable from the intercom unit and exchange intercom ports with a known good headset location.
  - If the headset location works properly, check the intercom port for bent or stuck pins which can be straightened.
  - If the headset fails to perform properly, the headset location has a faulty component and you should continue troubleshooting the headset location.
4. Check the HM-10 by exchanging it with a known good one.
  - If the new HM-10 works, check the RJ-12 Modular Jack of the faulty HM-10 for bent or stuck pins. If the pins look good and the HM-10 fails to perform properly, it will need to be replaced.
5. Install new RJ-12 Modular Plugs on **BOTH** ends of the CA Cable (page 28).
6. Replace the CA Cable.

---

# **ADVANCED TROUBLESHOOTING**

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**This section is designed for use by a QUALIFIED RADIO TECHNICIAN only!!!**

**IMPORTANT**

This section is designed to aid in the troubleshooting process of an intercom system that has been working properly, but has now failed. Make sure you read and understand **THE ENTIRE** procedure **BEFORE** attempting any of the troubleshooting steps in this section. If there are questions regarding this information, contact your local Firecom Dealer for more information **BEFORE** proceeding with the troubleshooting steps.

The System Test on page 20 is also a helpful tool in isolating and determining the actual symptoms of the problem.

## **A) THERE IS NO SOUND IN THE HEADSET FROM EITHER THE INTERCOM OR THE RADIO**

1. Check the headset Volume Control. Make sure it is not turned all the way down.
2. Check the headset location for faulty connections or components. See “Troubleshooting a Headset Location” (page 30).
3. Verify that some of the Volume Indicator LEDs on the front panel of the intercom unit are lit, indicating that the intercom is powered on.
4. Measure the voltage between pins 1 & 2 on the Power Cable. There should be at least 12 volts DC present, and not more than 36 volts DC.
5. Check the wiring to the intercom and any fuses or circuit breakers in the power circuits to the intercom and correct any faults.
6. If there is sufficient power to the intercom, and it doesn’t work, the Intercom Unit is faulty. Contact Firecom Service for a Return Material Authorization (RMA) Number to return the Intercom Unit for repair

## **B) THERE IS SOUND IN THE HEADSET FROM THE INTERCOM, BUT NOT FROM THE RADIO (Perform one or more of the following as needed.)**

1. Check the radio volume. Make sure it is not turned all the way down.
2. If there is no audio from the radio’s speaker:
  - a. Disconnect the Radio Interface Cable from the radio. If there is audio from the radio’s speaker, the Radio Interface Cable is faulty.
  - b. If there is still no audio from the radio’s speaker, the radio is faulty.
  - c. Disconnect the Radio Interface Cable from the back of the intercom unit. If there is audio from the radio’s speaker, the Intercom Unit is faulty. Contact Firecom Service for a Return Material Authorization (RMA) Number to return the Intercom Unit for repair.
3. Adjust the Receive Audio adjustment. See “Intercom Adjustments” (page 16).
4. If there is audio from the radio’s speaker, check the connections to pins 6 & 7 on the Radio Interface Port on the back of the intercom unit.
5. Verify that Receive Audio is present by listening to the radio’s speaker.

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# **ADVANCED TROUBLESHOOTING**

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6. Try swapping the intercom unit with a known good one (if one is available). If the problem persists, the problem is in the Radio or the Mobile Radio Interface wiring.
7. If no fault can be found, then the fault must lie in the Intercom Unit. Contact Firecom Service for a Return Material Authorization (RMA) Number to return the Intercom Unit for repair.

## **C) THERE IS SOUND IN THE HEADSET FROM THE RADIO, BUT NOT FROM THE INTERCOM**

1. Check the headset location for faulty connections or components. See “Troubleshooting a Headset Location” (page 30).
2. The Intercom Unit is faulty. Contact Firecom for a Return Material Authorization (RMA) Number to return the Intercom Unit for repair.

## **D) THERE IS SOUND IN ONLY ONE EAR**

1. Check to see if the headset is a model UH-10S headset. The UH-10S has one “slotted” ear dome without a speaker in it. This is normal operation for a UH-10S.
2. The headset is faulty. Contact Firecom for a Return Material Authorization (RMA) Number to return the headset for repair.

## **E) YOU CAN HEAR OTHERS ON THE INTERCOM, BUT THEY CANNOT HEAR YOU**

1. If the headset is an Intercom-Only Headset with a Black PTT, be sure that the PTT button is fully depressed when trying to talk on the intercom.
2. If the headset is an Intercom-Only Headset with a Yellow PTT, press and release the PTT and test again.
3. Check the headset location for faulty connections or components. See “Troubleshooting a Headset Location” (page 30).
4. The headset is faulty. Contact Firecom for a Return Material Authorization (RMA) Number to return the headset for repair.

## **F) YOU CAN'T HEAR OTHERS ON THE INTERCOM, BUT THEY CAN HEAR YOU**

1. Check the headset location for faulty connections or components. See “Troubleshooting a Headset Location” (page 30).
2. The Intercom Unit is faulty. Contact Firecom for a Return Material Authorization (RMA) Number to return the Intercom Unit for repair.

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# **ADVANCED TROUBLESHOOTING**

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## **G) THERE IS A LOUD SQUEAL IN THE INTERCOM SYSTEM WHEN THE INTERCOM VOLUME IS TURNED UP**

1. Check for an open mic too near the speakers of a headset. Feedback problems are often fixed by turning the intercom volume down, moving the mic away from the headset speakers, or unplugging a headset when not in use.
2. If the problem persists, unplug the headset locations one at a time from the rear of the Intercom Unit until the squeal stops.
3. Check the headset location for faulty connections or components. See “Troubleshooting a Headset Location” (page 30).

## **H) THE RADIO RECEIVE AUDIO IS WEAK**

1. Check the setting of the radio’s volume control. The radio’s volume should be set at the normal volume for use with **NO** intercom system present.
2. Adjust the Receive Audio adjustment. See “Intercom Adjustments” (page 16).
3. Verify proper connection to pins 6 & 7 on the Radio Interface Cable.
4. Try swapping the Intercom Unit with a known good one (if one is available). If the problem persists, the problem is in the radio or the Mobile Radio Interface wiring.
5. If no fault can be found, then the fault must lie in the Intercom Unit. Contact Firecom for a Return Materials Authorization (RMA) Number to return the Intercom Unit for repair.

## **I) THE RADIO KEYS BUT HAS NO TRANSMIT AUDIO (CARRIER BUT NO AUDIO)**

1. Check the affected headset location for faulty connections or components. See “Troubleshooting a Headset Location” (page 31).
2. Check the Transmit Audio adjustment. See “Intercom Adjustments” (page 17).
3. Verify connection of pins 1 & 2 on the Radio Interface Cable and the Radio Interface Port.
4. Try swapping the Intercom Unit with a known good one (if one is available). If the problem persists, the problem is in the Mobile Radio Interface wiring.
5. If no fault can be found, then the fault must lie in the Intercom Unit. Contact Firecom for a Return Materials Authorization (RMA) Number to return the Intercom Unit for repair.

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# **ADVANCED TROUBLESHOOTING**

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## **J) THE RADIO DOESN'T KEY**

1. Check the affected headset location for faulty connections or components. See "Troubleshooting a Headset Location" (page 30).
2. Verify proper connection of radio interface pins 3 & 4.
3. Try swapping the Intercom Unit with a known good one (if one is available). If the problem persists, the problem is in the radio or the Mobile Radio Interface wiring.
4. If no fault can be found, then the fault must lie in the Intercom Unit. Contact Firecom for a Return Materials Authorization (RMA) Number to return the Intercom Unit for repair.

## **K) ALTERNATOR AND/OR STROBE NOISE IS PRESENT IN TRANSMIT AUDIO ONLY**

1. Verify that the radio interface pins 1 & 2 are connected properly and that all connections are clean and tight.
2. Check adjustment of the Transmit Audio. See "Intercom Adjustments" (page 17). Too much gain here will cause excessive background noise to be transmitted along with the voice. In the worst case, the voice will be somewhat distorted when transmitting from a quiet place, and will become unintelligible in the presence of background noise.
3. Using a voltmeter, measure the incoming power to the intercom, looking for an AC signal. There should be less than 300 mV AC present on the power lines.

## **L) ALTERNATOR AND/OR STROBE NOISE IS PRESENT IN ALL INTERCOM AUDIO**

1. Check for proper positioning of the mic in relation to the speaker's mouth. See "Microphone Placement" (page 24). Improper mic positioning will defeat the noise canceling characteristics of the mics.
2. Inspect the headset microphones, making sure that all slots on both sides of the mic are clean and unobstructed. Obstruction of these slots will hamper or defeat the noise canceling characteristics of the mics.
3. Disconnect any exterior headset locations. If the noise stops, inspect that location for water or other contamination. If contamination is present, contact Firecom for a Return Materials Authorization (RMA) Number for repair of the unit.

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# **ADVANCED TROUBLESHOOTING**

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## **M) ENGINE NOISE AND SIRENS ARE PRESENT IN TRANSMIT AUDIO**

1. Review the set up and operation of the intercom volume. See “Volume Controls” (page 25). The intercom volume is possibly set too high.
2. Inspect the headset microphones, making sure that all slots on both sides of the mic are clean and unobstructed. Obstruction of these slots will hamper or defeat the noise canceling characteristics of the mics.
3. Check adjustment of the Transmit Audio. See “Intercom Adjustments” (page 17). Too much gain here will cause excessive background noise to be transmitted along with the voice. In the worst case, the voice will be somewhat distorted when transmitting from a quiet place, and will become unintelligible in the presence of background noise.

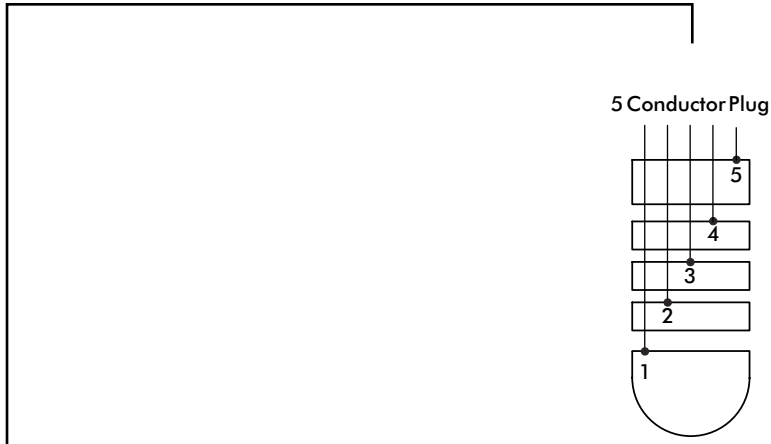
## **N) INTERCOM VOLUME CONTROL HAS NO EFFECT**

- Contact Firecom for a Return Materials Authorization (RMA) Number to return the Intercom Unit for repair.

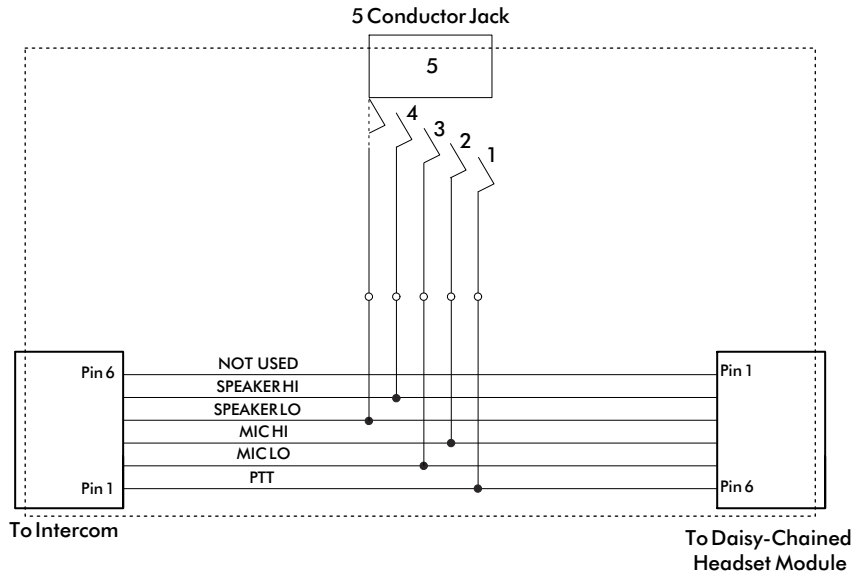
## **O) REMOTE HEAD DOESN'T WORK**

1. Make sure the CA Cable is inserted all the way.
2. Make sure the cable ends were installed correctly, see (Figure 31) on page 27.
3. Check that the ribbon cable from the membrane switch is fully inserted into the edge connectors on the circuit board.
4. Contact Firecom for a Return Materials Authorization (RMA) Number to return the head for repair.

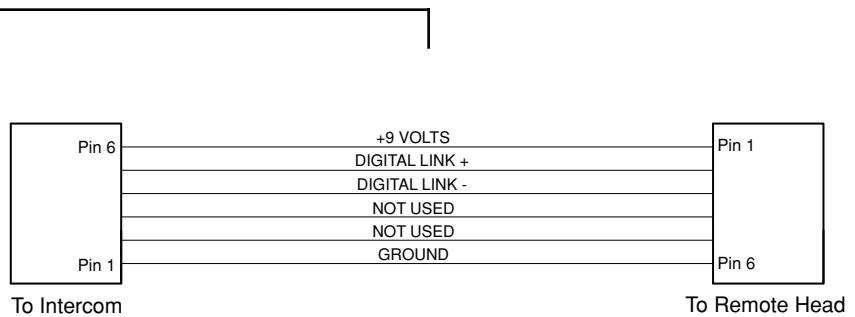
# WIRING DIAGRAMS & SCHEMATICS



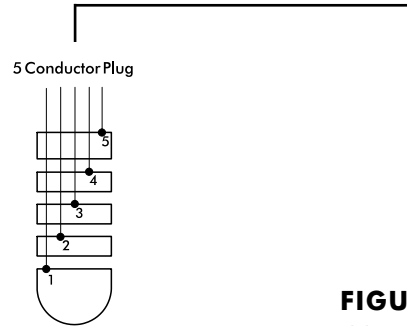
**FIGURE 32:**  
HM-10 Wiring



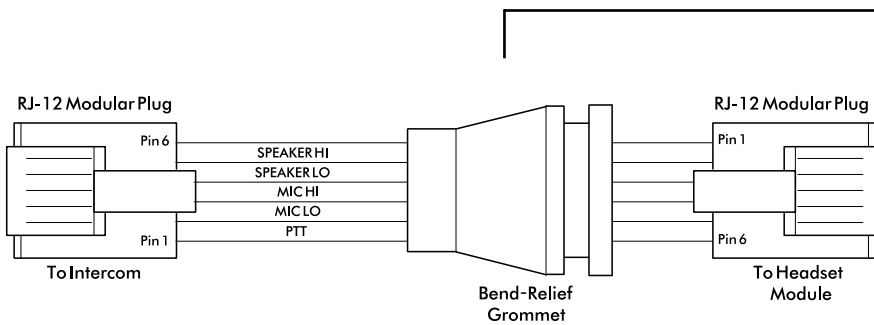
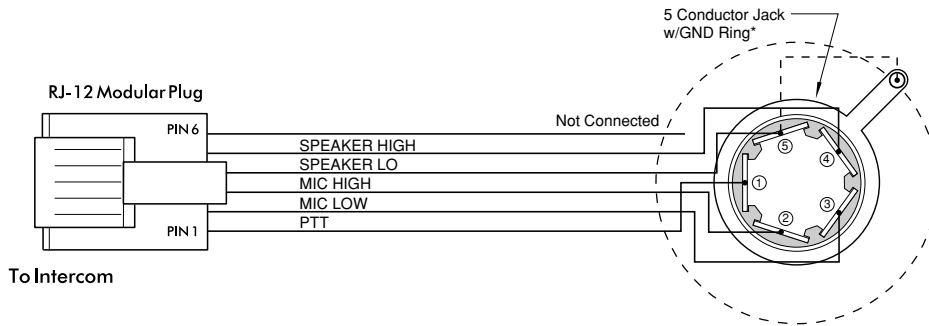
**FIGURE 33:**  
Remote Head  
Wiring



# WIRING DIAGRAMS & SCHEMATICS



**FIGURE 34:**  
PP-20 Wiring



**FIGURE 35:**  
CA Cable Wiring

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# **S P E C I F I C A T I O N S**

## **HEADSETS:**

Sensitivity: ..... 104 dB re .0002 microbar @ 1000 Hz, 1 mW  
Frequency Response: ..... 100-17,000 Hz +5 dB in 6 cc coupler  
Impedance: ..... 600 ohms nominal, 150 to 1200 ohm source  
Weight: ..... 21.2 oz. (FH models) 19.6 oz (UH models)

## **MICROPHONE:**

DC Bias Supply: ..... 8-16 volts, not polarity sensitive  
Source Resistance: ..... 200 to 2200 ohms  
Output Voltage: ..... 370 mV @ 114 SPL re .0002 microbar  
Frequency Response: ..... Optimized for speech clarity and noise reduction  
Max. Amb. Noise Level: ..... 125 dB SPL re .0002 microbar  
Weight: ..... 0.2 oz.

## **INTERCOM:**

Size: ..... 6.6" L x 6.1" W x 2" H (with mounting bracket)  
Weight: ..... 42.6 oz. (without mounting bracket)  
Output: ..... 375 milliwatts into a total of 6  
150 ohm headsets (1 each channel)  
Power Requirements: ..... 0.5 amp at 12 volt nominal, negative ground  
(Operating range from 11-36 VDC)

## **REMOTE HEAD:**

Size: ..... 7.125" L x 3" W x .875 Deep  
Weight: ..... 15 oz.  
Power Requirements: ..... Supplied by Intercom

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## **OPTIONS & ACCESSORIES**

### **HEADSETS:**

All Firecom Headsets for the 3010R Series Intercom System are equipped with a noise-canceling electret condenser microphone on a solid, flexible boom, Glove Rugged™ plug, volume control, adjustable headstrap/headband and liquid foam ear seals.

#### **FH-10:**

Over-the-head style, Radio-Transmit Headset (Red PTT). Part Number: 105-0190-00

#### **FH-20:**

Over-the-head style, Intercom-Only Headset (Black PTT).

Part Number: 105-0191-00.

#### **FH-10S:**

Over-the-head style, single ear, Radio-Transmit Headset (Red PTT).

Part Number: 105-0194-00

#### **FH-40:**

Over-the-head style, Intercom-Only Headset with alternating push-on, push-off PTT (Yellow PTT). Part Number: 105-0191-10

#### **UH-10:**

Under-the-helmet style, Radio-Transmit Headset (Red PTT).

Part Number: 105-0192-00

#### **UH-20:**

Under-the-helmet style, Intercom-Only Headset (Black PTT).

Part Number: 108-0193-00

#### **UH-10S:**

Under-the-helmet style, Radio-Transmit Headset, one slotted ear dome without speaker. (Red PTT). Part Number: 105-0196-00

#### **UH-40:**

Under-the-helmet style, Intercom-Only Headset with alternating push-on, push-off PTT (Yellow PTT). Part Number: 105-0193-10

### **HEADSET MODULES & EXTENSION CORDS:**

#### **HM-10:**

Interior headset module for use with all headsets listed above.

Part Number: 107-0407-00

#### **PP-20:**

A water-resistant headset module for use with all headsets listed above.

Part Number: 107-0413-00

#### **HE-150:**

15-foot coiled headset extension cord. For use with all headsets listed above.

Part Number: 108-0675-00

#### **HE-150J:**

15-foot coiled extension cord with a male connector at each end, to be used as a jumper between two PP-20 Headset Modules. Part Number: 108-0675-10

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## **OPTIONS & ACCESSORIES**

### **OTHER ACCESSORIES:**

#### **CLOTH COVERS:**

Replacement cloth covers, sold only by the dozen. Part Number: 108-0003-00

#### **CRIMPER:**

Crimping tool used for installing the RJ-12 Modular Plugs onto the CA Cables (instructions included). Part Number: 108-0023-00

#### **EAR SEAL:**

Replacement liquid foam ear seals, sold by the pair. Part Number: 108-0012-10

#### **FOOT SWITCH:**

A heavy duty foot switch, for use as a remote PTT. Part Number: 108-0670-10

#### **HEADSTRAP:**

Cloth headstrap used on the UH-10, UH-10S, UH-20 & UH-40 model headsets. Part Number: 108-0025-00

#### **HEADSET HANGER HOOKS:**

Rubber-coated, steel headset hanger hook. Part Number: 108-0676-00

#### **HANDHELD RADIO INTERFACE:**

Works with all Firecom headsets. Contact your local Firecom Dealer for specific information regarding your particular handheld radios.

#### **HS-1:**

System Selector Switch. Part Number: 108-0677-10

#### **MIC MUFFS (DOZEN):**

Replacement mic muffs with O-rings, sold only by the dozen. Part Number: 108-0004-00

#### **RJ-12:**

Modular connectors used with the CA Cable to make the interface cables between the intercom and the headset modules or Remote Head. Part Number: 351-0002-00

#### **TRI-COM:**

Triple radio interface for use with the Firecom intercoms. Part Number: 108-0672-10

#### **POWER CABLE:**

15 ft. power cable. Part Number: 108-0036-00

#### **REMOTE HEADS:**

##### **REMOTE CONTROL 3010R:**

This will control the 3010R Intercom Part Number: 108-1310-00

##### **REMOTE CONTROL 3020R:**

This will control the 3020R Intercom Part Number: 108-1320-00

#### **BRACKET ASSEMBLY:**

Remote Kit Part Number: 108-0303-00

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# **WARRANTY**

## **TWO-YEAR LIMITED WARRANTY TO ORIGINAL PURCHASER**

Sonetics Corporation warrants to the original purchaser of its products, that they will be free from defects in materials and workmanship, under normal and proper use, for the period of two years from date of purchase. Sonetics Corporation will repair or replace, at its option, any parts showing factory defects during this warranty period, subject to the following provisions. This warranty applies only to a new product which has been sold through authorized channels of distribution. All work under warranty must be performed by Sonetics Corporation. All returned products must be shipped to our address, freight prepaid, accompanied by a dated proof of purchase. This warranty is void if the purchaser or others attempt to repair, service or alter the product in any way. This warranty does not apply in the event of accident, abuse, improper installation, unauthorized repair, tampering, modification, fire, flood, collision, or other damage from external sources, including damage which is caused by user replaceable parts (leaking batteries, etc.). This warranty does not extend to any other equipment or apparatus to which this product may be attached or connected. The foregoing is your sole remedy for failure in service or defects. Sonetics Corporation shall not be liable under this or any implied warranty for incidental or consequential damages, nor for any installation or removal costs or other service fees. This warranty is in lieu of all other warranties, express or implied, including the warranty of merchantability or fitness of use, which are hereby excluded. To the extent that this exclusion is not legally enforceable, the duration of such implied warranties shall be limited to two years from date of purchase. No suit for breach of express or implied warranty may be brought after two years from date of purchase.

