

# ClearCommand<sup>®</sup> HCS Helmet Communications System

## OPERATION AND MAINTENANCE INSTRUCTIONS

Helmet Microphone and  
Ear Speaker Assembly  
P/N 10042902



Lapel Microphone  
(See page 8 for part numbers)



Basic PTT  
(See page 8 for part numbers)



### WARNING

Read this manual carefully if you have or will have the responsibility for using or servicing the product. The ClearCommand Helmet Communication System from MSA will perform as designed only if used and serviced according to the Instructions. Otherwise, the product could fail to perform as designed, and persons who rely on this product could sustain personal injury or death.

Using the MSA Helmet Communications System as an accessory DOES NOT void the ANSI Z89.1 or CSA Z94.1 Helmet certification properties.

NFPA certified as an accessory for MSA CairnsHELMETS<sup>®</sup> Fire Helmets with ratchet type suspension.

The warranties made by MSA with respect to the product are voided if the product is not used according to the instructions in this manual. We encourage our customers to write or call for a demonstration of this equipment prior to use, or for any additional information relative to use or repairs. Call 1-800-MSA-2222 during regular working hours.



For More Information: Call (1-800-MSA-2222) or Visit Our Website at ([www.MSAnet.com](http://www.MSAnet.com))

**MSA**

Be Sure.  
Choose MSA.

**MINE SAFETY APPLIANCES COMPANY  
PITTSBURGH, PENNSYLVANIA, U.S.A. 15230**

# DESCRIPTION

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## WARNINGS AND CAUTIONS

### ⚠ WARNING

- **Do not alter this unit. This will void the intrinsic safety rating, and may affect the intrinsic safety of the device.**
- **Always inspect the Helmet Communications System for damage before use. If damage is found, tag the cable and immediately remove the device from service. Never use a damaged or Non-functional communication system.**
- **To maintain the side impact properties of the Helmet, ensure Ear Speaker is below Helmet's brim line.**
- **Ensure the radio used is rated intrinsically safe before entering a hazardous atmosphere.**

Failure to follow the above Warnings can result in serious personal injury or death.

### ⚠ CAUTION

- **Misuse or abuse of the Helmet Communications System, or the equipment to which it is attached, or using this equipment in a manner or situation not intended by the manufacturers may result in damage to the Helmet Communications System.**
- **Evaluate this unit and any radio transceiver with which it may be used. Be certain the unit is not affected adversely by radio frequency energy.**
- **Evaluate this unit and any radio transceiver with which it may be used as a source of radio interference to other apparatus before entering a hazardous atmosphere.**
- **Ensure radio is at the lowest volume setting. Control the volume for the Helmet Mic. and Ear Speaker Assembly or Lapel Mic. with the volume control on the radio.**
- **Maximum head size of helmet suspension is reduced when the Helmet Mic is attached. Adjust suspension as required**
- **The performance of the Helmet Communications System will only function as well as the Radio performs.**

## DESCRIPTION

The Helmet Communications System allows a user to communicate clearly and easily over a hand held portable radio or truck system while wearing a helmet.

The Helmet Communications System consists of two main components that attach to the user radio.

- The Helmet Microphone Assembly (P/N 10042902)
- Lapel Microphone or optional Basic PTT (Push-To-Talk) with the specific Radio interface connector.

**Note:** To complete the system the user must select and purchase the proper Lapel Microphone or Basic PTT (Push-To-Talk) unit that fits their specific radio.

When the helmet assembly is connected to the Lapel Microphone the communication is the same as with the Basic PTT interface.

However the Lapel Microphone unit can be used alone. The Lapel Microphone interface contains a remote speaker and microphone with a Push-To-Talk button. This unit allows remote, shoulder mounted, radio transmission and reception.

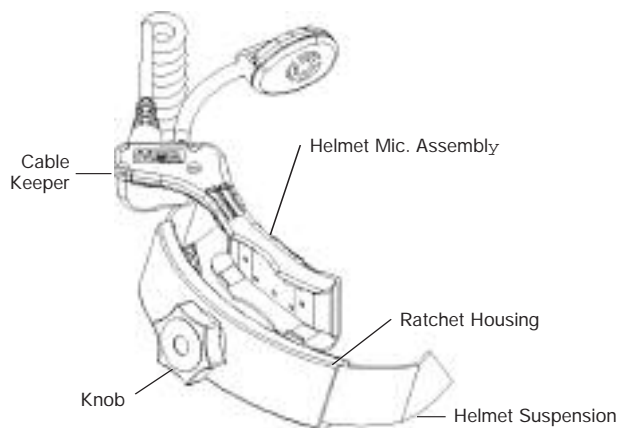
When the Helmet Microphone is connected to the Basic PTT the user presses the button to transmit, and incoming radio messages are heard at the ear speaker.

### **The Lapel Microphone is equipped with the following:**

- Female connection for the male connector of the Helmet microphone assembly.
- Belt clip on the back of the Lapel Microphone for attaching the Lapel Microphone to the user's clothing. The clothes clip rotates for convenience.
- An optional clothespin type Clip assembly is also available as an accessory
- Microphone, speaker and a Push-To-Talk button.
- The Push-To-Talk button is protected against inadvertent operation by a guard. The unit is shipped with the taller guard. When the taller guard is removed the Push-To-Talk button becomes fully exposed and easier to access. The shorter guard is provided and available for replacement.
- Cable and connector for a specific radio.
- Connection port for an optional remote finger Push-To-Talk button used when wearing a Level A suit.

# INSTALLATION

## INSTALLATION OF HELMET MICROPHONE ASSEMBLY INTO HELMET



**Note:** The Helmet Microphone assembly can be installed with the ear speaker oriented, either over the right ear or over the left ear.

## FIRE SERVICE HELMET INSTALLATION

**Note:** If installing in a CairnsHELMETS Fire Helmet, the existing Headband Liner cover must be removed before installation (See Replacement Parts).

## FIRE SERVICE HELMET AND INDUSTRIAL HELMET INSTALLATION

- Place the Helmet in lap with the ratchet assembly away from you and facing upward.
- Turn the ratchet to enlarge the suspension fully.
- Position the Helmet Mic. with the Ear Speaker toward your desired listening ear.
- Place the Helmet Mic. Assembly over the ratchet of the Helmet with the rubber pad centered.
- Push down to snap the unit onto the ratchet.

**Note:** For Fire Helmet installation, place the Helmet Mic. over the thin part of Helmet suspension. Slide Helmet Mic onto the large ratchet.

- Attach the flannel headband liner (supplied with the Unit) so that the hole in the headband liner is around the rubber pad.
- Orient the liner so the cut out end fits the speaker side of assembly.

## CONNECTING THE LAPEL MICROPHONE OR BASIC PTT TO THE RADIO.



Lapel Microphone



Basic PTT

- Connect the Lapel Mic. or Basic PTT to the specific radio with the cable located at the bottom of the unit.

**Note:** There are various types of radio cable connectors. Ensure that the radio cable connector is for that radio model. Also be sure the connector is attached securely using the attachment method incorporated in the connector.

- Depress the tab on the Belt clip to open the clip. The belt clip can rotate to position the unit in a convenient position.
- Attach the Belt clip in a convenient location that will make it easy to connect the Helmet Microphone Cable.

**Note:** An optional Clothes-pin style clip assembly is available as an optional spare part to attach Lapel Mic. or Basic PTT to clothing (See Replacement Part).

# SYSTEM OPERATION

## DONNING THE HELMET

### ⚠ CAUTION

Evaluate this unit and any radio transceiver with which it may be used. Be certain the unit is not affected adversely by radio frequency energy.

### ⚠ CAUTION

Evaluate this unit and any radio transceiver with which it may be used as a source of radio interference to other apparatus before entering a hazardous atmosphere.

### ⚠ CAUTION

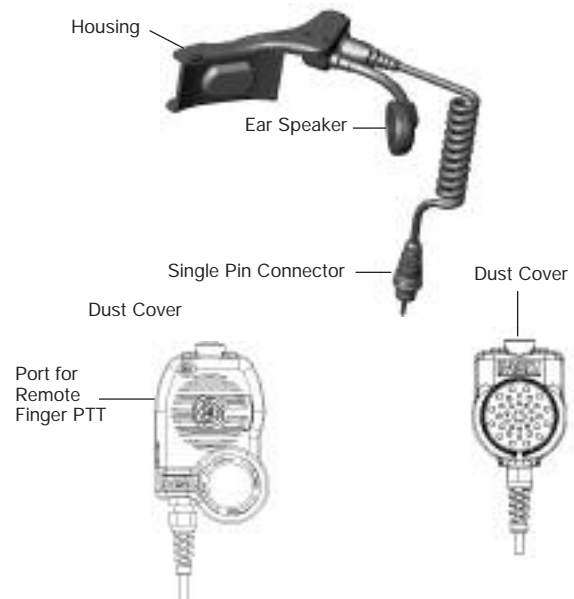
The communication system must be tested before entering a hazardous atmosphere. If the communication system fails to operate as designed, disconnect at the radio and use the radio independently from the communication system.

- Before donning the helmet turn the ratchet counter clockwise to increase the head sizing of the suspension.
- Adjust the ratchet by turning the large knob on the headband clockwise, until comfortable.
- The Helmet must be snug to ensure optimal radio transmission.
- Follow the Helmet Users Instructions for proper suspension adjustment.
- Attach the Connector from the Helmet Microphone to the Lapel Microphone or Basic PTT Radio Interface.

## ATTACHING HELMET MIC. TO LAPEL MIC. OR BASIC PTT

- Lift the dust cover, revealing the connector at the top of the Lapel Microphone or Basic PTT.
- Insert single-pin connector into the receptacle at the top of the Lapel Microphone or Basic PTT.
- Ensure the connector is fully inserted.

**Note:** If the Lapel Mic. or the Basic PTT requires a twopin connector, the wrong Lapel Mic. or Basic PTT is being used.



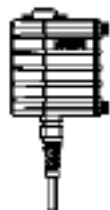
### ⚠ WARNING

Do not attempt any repairs beyond those specified in this manual; otherwise, serious injury or death could result. Only trained or certified personnel, authorized by MSA, are permitted to maintain this Helmet Communications system.

## OPERATIONS/REMOVAL

### CONNECTION OF HELMET MIC. TO A TRUCK COMMUNICATIONS SYSTEM

- The Helmet Mic. system is compatible with most truck systems.
- Ensure the Helmet Mic. Assembly (Single-Pin) connector is disconnected from other devices.
- Plug connector into Truck Jack Plug.



### USING THE HELMET COMMUNICATIONS SYSTEM

#### ⚠ CAUTION

Additional materials between the Helmet Mic. Assembly sensor and users head may reduce the performance of the Helmet Mic. MSA has determined the NFPA Fire Fighter hoods and Facepiece Harness perform satisfactory with the Helmet Mic. Assembly. Other bulk gear materials between the sensor and the user head may interfere with the performance of the Helmet Communications System.

#### ⚠ CAUTION

Ear damage could occur if radio volume level is too high.

- Adjust the ear speaker boom to position the ear speaker near your ear.
- The volume of the Helmet Mic. ear speaker may be adjusted using the radio volume control.
- Press and hold the Push-To-Talk (PTT) button on the Lapel Microphone or Basic PTT to transmit your conversation.
- Release the button to end the transmission and allow incoming radio messages to be heard at the ear speaker.

**Note:** When not connected to a Lapel Microphone or Basic PTT interface, the helmet cable should be clipped into the cable keeper. This provides a convenient way of storing the cable to prevent entanglement.

### USING THE LAPEL MICROPHONE WITHOUT THE USE OF THE HELMET MICROPHONE.

- Connect the Lapel Microphone to the radio as described in preparation for use.
- To transmit a message, Press and hold the Push-To-Talk button. Hold the Lapel Microphone approximately 2 inches from your mouth and speak into the microphone.
- Release the Push-To-Talk button to end the transmission and allow incoming radio messages to be heard at the Lapel Microphone speaker.

### REMOVING THE HELMET COMMUNICATIONS SYSTEM.

- Remove the headband liner.
- Remove Helmet Communications System, by reversing the installation procedures.

### CLEANING

Clean the system components using damp sponge or cloth. Follow an established maintenance program.

### STORAGE

The Helmet Microphone Assembly may be stored in the helmet.

# INTRINSICALLY SAFE

## INTRINSICALLY SAFE RATING

The Helmet Communications System including the Helmet Mic., Lapel Mic. and Stand Alone PTT are Certified Intrinsically Safe in the United States PER UL913 for use in Class 1, Division 1, Groups A, B, C, D, E, F and G hazardous locations. The Truck System is not intended to be used in a hazardous environment, therefore the Truck System is not Certified Intrinsically Safe.

**Note:** The Intrinsically safe level of any system, which uses the Helmet Communications System, is that of the lowest intrinsically safe rating of any single component in the system.

The Helmet Communications System is certified intrinsically safe in Canada CAN CSA- C22-2 No. 157-92. Per CL I, II, III, Division 1, Groups A, B, C, D, E, F and G hazardous locations.

### **⚠ WARNING**

**Risk of Explosion - Use only Helmet Communications Systems with the properly intrinsically safe rating in hazardous environments. Misuse can result in serious personal injury or death.**

## CONTROL DRAWING

A copy of the Control Drawing may be obtained by downloading it from MSA's website, [www.msanet.com/catalog/products852.html](http://www.msanet.com/catalog/products852.html) or by contacting MSA's Customer Service Department directly:

Phone: 1-800-MSA-2222

Fax: 1-800-967-0398

Email: [info@msanet.com](mailto:info@msanet.com)

Mail: Attn: Customer Service

Mine Safety Appliances Company

PO Box 426

Pittsburgh, PA 15230

### **⚠ CAUTION**

**Substitution of components may eliminate or compromise intrinsic safety.**

### **⚠ WARNING**

**Ensure the radio used is intrinsically safe before entering a hazardous atmosphere. Failure to follow this warning can result in serious personal injury or death.**

### **⚠ CAUTION**

**The Helmet Communications System must be tested before entering a hazardous atmosphere. If the Helmet Communications System fails to operate as designed, disconnect at the radio and use the radio independently from the communication system.**

## REPAIR PROCEDURES

The Helmet Communications System contains limited numbers of user serviceable parts (See Replacement Parts List). The apparatus should be removed from service if any malfunction is detected. Contact MSA 1-800-MSA-2222 for information on use or repair.

## GUARD RING FOR LAPEL MIC. PUSH-TO-TALK

**Note:** Each Lapel Microphone has the taller ring installed at the factory. The user can remove the taller ring and replace it with the shorter ring.

- The taller ring provides better protection against accidentally activating the Push-To-Talk button.
- The shorter ring guard allows the user to activate the Push-To-Talk button with the palm of hand.

### **Replacing the Guard Ring for Push-To-Talk Button**

- Turn guard ring counter clockwise and lift out of housing.
- Insert other guard ring into housing and turn clockwise to lock guard into housing. Finger tight until it clicks into place.

# MAINTENANCE/TROUBLESHOOTING

## TROUBLE SHOOTING

### EAR SPEAKER NOT RECEIVING

- Verify that radios communicate with each other with no accessories attached.
- Verify that all connectors are fully engaged.
- Adjust receiving radio volume.
- Position ear speaker near ear by bending flexible boom.

### RADIO NOT TRANSMITTING

- Verify that radios communicate with each other with no accessories attached.
- Verify that all connectors are fully engaged.
- Adjust receiving radio volume.
- Adjust position of the Helmet Mic. along the nape strap of the helmet.
- Tighten ratchet suspension

### GARBLED OR UNCLEAR COMMUNICATIONS

- Verify that radios communicate with each other when no accessories attached.
- Verify that all connectors are fully engaged.
- Adjust receiving radio volume. Some radios will produce distorted sound at full volume.
- Adjust position of the Helmet Mic. along the nape strap of the helmet.
- Check for wrinkles or folds of excess material between Helmet Mic. and head.
- Tighten ratchet suspension.

## INSTRUCTION MANUAL

10046197

## HELMET MIC. ASSEMBLY

10042902

**Note:** The radio must be specified when ordering the Lapel Microphone (See Radio Interface Kits).

## REPLACEMENT PARTS

Item Part	Number
DUST COVER	10046087
TALL GUARD	10046123
SHORT GUARD	10046122
BELT CLIP ASSY STANDARD	10046089
BELT CLIP ASSY CLOTHESPIN TYPE	10046120
O-RING, SINGLE-PIN CONNECTOR Pkg. of 10	10046121
FLANNEL HEADBAND LINER	10045778

## ASSEMBLIES/REPLACEMENT PARTS

LAPEL Mic. and Basic PTT Mic. Kits  
for Radio interface.  
(Contact MSA Customer Service if specific  
radio is not listed below).

RADIO	LAPEL Mic. Part Number	Basic PTT Part Number
<b>Maxon</b> SP120 SP130 SP140	10042908	10045667
<b>Motorola</b> HT600 MT1000 MTX820 MTX900 Radius P200 P500	10042909	10045668
<b>Motorola</b> HT1000 JEDI MT2000 MTS2000 MTX838 MTX839 MTX8000 MTX9000	10042903	10045662
<b>Motorola</b> Astro / Saber	10042904	10045663
<b>Motorola</b> Radius GP300 P110 SP50 LTS2000	10042905	10045664
<b>Spirit-III GTX</b> SP21		
<b>Motorola</b> STX MX800 MX840	10042912	10045669
<b>GE Ericsson</b> PCS PC2005	10042906	10045665
<b>GE Ericsson</b> MRK, Prism LPE-200 PX126T	10042907	10045666
<b>TRUCK SYSTEM</b>		
Nexus adapter David Clarke	10045732	
Switch Craft adapter David Clarke	10045731	
Remote Finger PTT	10046574	