

C-700 MAINTENANCE MANUAL

WEATHERPROOF CONTROL UNIT



SPECIFICATIONS *

| | |
|------------------------|---|
| DIMENSIONS (H X W X D) | 6" x 5-3/8" x 4-3/32" |
| WEIGHT | 6.5 Pounds (includes mounting brackets & microphone hanger) |
| SPEAKER | 20 Watt, 8 Ohms $\pm 10\%$ |
| CONTROLS | Power-OFF/Volume Squelch Optional Frequency Selector Switch Optional Dual Control Switch Optional Channel Guard Monitor Switch Optional Internal/External Speaker Optional Fixed Squelch Switch |
| INDICATORS | Power-On Light (Green) (also used for Dual Control Indicator) Transmit Light (Red) |

*These specifications are intended primarily for the use of the serviceman. Refer to the appropriate Specification Sheet for the complete specifications.

TABLE OF CONTENTS

| | |
|--|-------|
| SPECIFICATIONS | Cover |
| COMBINATION NOMENCLATURE | iii |
| DESCRIPTION | 1 |
| Weatherproof Control Unit | 1 |
| Connections | 2 |
| Ignition Switch | 2 |
| DC Converter | 2 |
| Power/Control Cable | 2 |
| Microphone and Handset | 2 |
| CIRCUIT ANALYSIS | 2 |
| MODIFICATION FOR USE WITH DC CONVERTER | 2 |
| OPTIONS | 4 |
| Multi-Frequency Switch | 4 |
| 2-Frequency Switch | 4 |
| 1-12 Frequency Switch | 4 |
| Internal/External Speaker | 4 |
| Channel Guard Monitor | 4 |
| Dual Control | 4 |
| Fixed Squelch | 4 |
| INSTALLATION | 5 |
| Unpacking and Checking | 5 |
| Equipment List | 5 |
| Mounting The Weatherproof Control Unit | 6 |
| Connecting Ignition Switch Cable | 7 |
| Ignition Switch Connections | 9 |
| Control Unit Ignition Power Cable Connections | 9 |
| Power/Control Cable Connections | 9 |
| External Speaker Installation | 10 |
| External Speaker Mounting | 10 |
| Electrical Connection to the Weatherproof Control Unit | 10 |
| Securing the Rear Cover | 10 |
| Disassembly Instructions | 10 |
| Power Control Cable MASTER II Interface | 11 |
| Power Control Cable Control Unit to Delta Mobile | 12 |
| TRANSMITTER KEYING AND POWER DISTRIBUTION DIAGRAM | 13 |
| OUTLINE DIAGRAM | 14 |
| SCHEMATIC DIAGRAM | 15 |
| PARTS LIST & PRODUCTION CHANGES | 16 |
| SERVICE SHEETS AND PARTS LIST | |
| Microphone | 17 |
| Handset | 18 |
| ILLUSTRATIONS | |
| Figure 1 - Weatherproof Control Unit | 1 |
| Figure 2 - Weatherproof Control Unit Connections | 3 |
| Figure 3 - Mounting Details (Typical) | 7 |
| Figure 4 - Typical Ignition Switch Cable Connections | 8 |
| Figure 5 - Power/Control Cable Connector | 9 |
| Figure 6 - Rear Cover | 10 |

WARNING

Although the highest DC voltage in Mobile Equipment is supplied by the vehicle battery, high currents may be drawn under short circuit conditions. These currents can possibly heat metal objects such as tools, rings, watchbands, etc., enough to cause burns. Be careful when working near energized circuits!

High-level RF energy in the transmitter Power Amplifier assembly can cause RF burns upon contact. Keep away from these circuits when the transmitter is energized!

COMBINATION NOMENCLATURE

| 1st Digit | 2nd Digit | 3rd Digit | 4th Digit | 5th Digit | 6th Digit | 7th Digit |
|--|-------------------------------------|-----------------------------|------------------------|-------------------------------------|---|----------------------------|
| Mechanical Package | System Voltage | Frequency Capability | Number of Freq. | Microphone Type | Options | Control Unit Series |
| W Weatherproof Control Unit (Less Acces) | 1 ±12 VDC | A 1-Freq. | A 1-Freq. | 1 NONE | S Standard | 7 C-700 |
| V Weatherproof Control Unit (MASTR II) | 2 ±24 - 48VDC | C 2-Freq. | C 2-Freq. | 2 Weatherproof Microphone | C Dual Control | |
| Y Weatherproof Control Unit (Exec. II) | 3 -12 VDC (Neg. Gnd only) | F 4-Freq. | E 3-Freq. | 8 Weatherproof Handset | U Channel Guard Monitor | |
| | 4 -12 VDC (Pos. Gnd only) | K 8-Freq. | F 4-Freq. | | E Internal/External Speaker | |
| | | P 12-Freq. | G 5-Freq. | | B Dual Control & Chan. Gd. Mon. | |
| | | | H 6-Freq. | | D Dual Control & Int/Ext. Spkr. | |
| | | | J 7-Freq. | | F Chan. Gd. Monitor Int/Ext. Spkr. | |
| | | | K 8 Freq. | | A Dual Control, Chan. Gd. Mon. & Int/Ext. Spkr. | |
| | | | L 9 Freq. | | | |
| | | | M 10 Freq. | | | |
| | | | N 11 Freq. | | | |
| | | | P 12 Freq. | | | |

GENERAL ELECTRIC COMPANY • MOBILE COMMUNICATIONS DIVISION
WORLD HEADQUARTERS • LYNCHBURG, VIRGINIA 24502 U.S.A.



COMBINATION NOMENCLATURE

(Older Combinations)

| 1st Digit | 2nd Digit | 3rd Digit | 4th Digit | 5th Digit | 6th Digit |
|--|--------------------------|-------------------------|----------------------|---|--|
| Mechanical Package | System Voltage | Frequency Capability | Number of Freq. | Options | Microphone Type |
| W Weatherproof Control Unit | 1 ±12 VDC | A 1-Freq. | A 1-Freq. | S Standard | 1 Weatherproof Microphone |
| | 2 ±24 - ±48VDC | C 2 Freq. | C 2-Freq. | C Dual Control | 3 Weatherproof Handset |
| | | P 12-Freq. | E 3-Freq. | U Channel Guard Monitor | |
| | | | F 4-Freq. | E Internal/External Speaker | |
| | | | G 5-Freq. | B Dual Control & Chan. Gd. Mon. | |
| | | | H 6-Freq. | D Dual Control & Int/Ext. Spkr. | |
| | | | J 7-Freq. | F Chan. Gd. Monitor Int/Ext. Spkr. | |
| | | | K 8 Freq. | A Dual Control, Chan. Gd. Mon. & Int/Ext. Spkr. | |
| | | | L 9 Freq. | | |
| | | | M 10 Freq. | | |
| | | | N 11 Freq. | | |
| | | | P 12 Freq. | | |

DESCRIPTION

WEATHERPROOF CONTROL UNIT

MASTR II Weatherproof Control Units are highly functional units that are enclosed in a weatherproof cast aluminum housing for durability and ease of disassembly.

The Weatherproof Control Unit (see Figure 1) contains an OFF-ON/VOLUME control, SQUELCH control, a weatherproof speaker, power ON indicator (green), Transmit indicator (Red), a printed wire board, and optional controls. All external connections are made to the back plate which attaches to the rear of the cast aluminum housing. The back plate is secured to the cast housing by four (4) #8 screws that pass through the corners of the cast housing. An attaching hood (rear cover) is secured to the back plate by 9 screws. A weatherproof seal between the back plate and the rear cover is provided by a rubber gasket around the edge of the back plate.

The control unit is mounted to the vehicle with two (2) metal brackets which are secured to the back plate assembly by four (4) hex-head screws.

An external Power/Control cable is secured to the back plate assembly with cable clamps and screws. The control cable plugs are equipped with indexing tabs to assure connection to the correct jack.

The microphone/handset hanger bracket (L-bracket) mounts to the left side of the control unit with two (2) screws. Three sets of holes are provided in the hanger bracket, allowing for adjustable angle of mounting. The microphone/handset plug is secured to the mating connector on the back plate assembly by means of a captive locking screw.

All indicator lights are light-emitting diodes (LEDs) for reliability, long life and low power consumption.

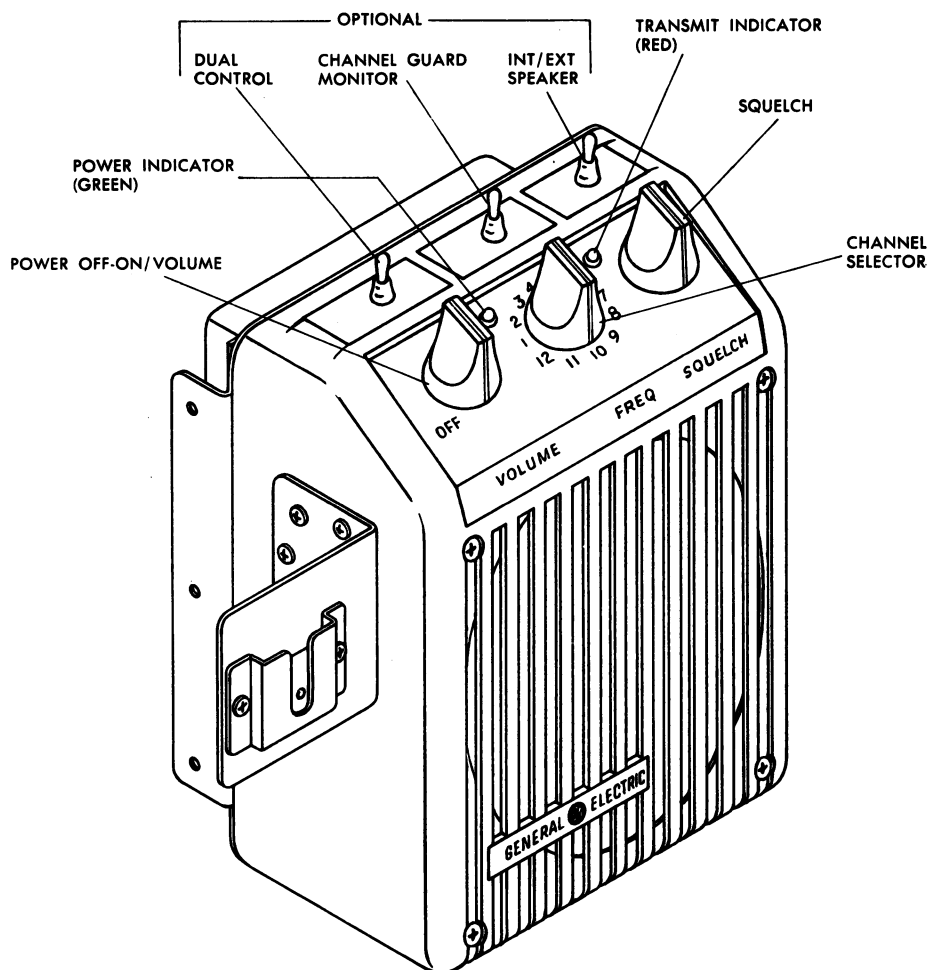


Figure 1 - Weatherproof Control Unit

CONNECTIONS

IGNITION SWITCH

The ignition switch connections are made to the applicable jacks located on the back plate of the Weatherproof Control Unit. Cable Kit 19A130222G1 is provided with the Weatherproof Control Unit for making these connections. Refer to the Installation Section of this manual for cable fabrication and connection details (see Table of Contents).

DC CONVERTER

For mobile combinations equipped with the DC Converter, a single red fused lead is used. The fused lead always connects to battery positive in either positive or negative ground systems. Refer to Installation Section of this Manual for cable fabrication and connection details (see Table of Contents).

CAUTION

When using the DC Converter, do not connect battery ground to Weatherproof Control Unit A-. To do so may cause failure of the current limiting circuit in the DC Converter Unit.

POWER/CONTROL CABLE

Power/control cables utilized with the Weatherproof Control Unit are as follows:

- 18 - conductor
- 30 - conductor
- 38 - conductor

Electrical connections are made to J702 and J703 on the rear plate of the control unit (see Figure 2). A cable clamp is provided to secure the Power/Control Cable to the back plate assembly. The Power/Control cable connectors (P702 and P703) are equipped with indexing tabs to assure connection to the correct jack. Refer to Installation section for connection details (see Table of Contents).

NOTE

In Dual Control applications, vehicle battery is normally connected to only one control unit, refer to the Dual Control Maintenance Manual for details.

MICROPHONE AND HANDSET

The MASTR II Military Microphone or Weatherproof Handset connects to J704 on the back plate of the control unit. The micro-

phone connector is secured to J704 by a captive locking screw on the connector.

When using the handset the receiver audio is monitored by the handset earpiece, along with the control unit's speaker.

CIRCUIT ANALYSIS

The Weatherproof Control Units are equipped with a combined OFF-ON/VOLUME control (S701 and R705), a SQUELCH control (R704) and an Optional Multi-frequency (FREQ) switch. Other optional controls are as described under OPTIONS (see Table of Contents).

When the power switch (S701) is in the OFF position, power is removed from the radio except for the transmitter PA, which is connected to the vehicle battery at all times. Placing the switch to the on position applies power to the radio, provides power for the push-to-talk (PTT) circuit and lights the GREEN power on indicator (LED), except when used as part of a Dual Control installation where it is ON only when the Weatherproof Control Unit has control of the radio.

Pressing the PTT switch on the microphone or handset energizes the antenna switch, keys the transmitter, mutes the receiver, and lights the RED transmit indicator (LED).

Releasing the PTT switch un-keys the transmitter and turns off the RED transmit indicator, de-energizes the antenna switch and un-mutes the receiver. Refer to Table of Contents for a simplified Transmitter Keying and Power Distribution Diagram.

CR701 and CR702 are protective diodes. CR701 will cause the fuse in the yellow lead to blow if the polarity is reversed. Diode CR702 inhibits the PTT circuit if the polarity of the red lead is reversed.

Single frequency control units contain a DA jumper between holes H1 and H2. This provides the A- connection required by the ICOM in the radio.

DC CONVERTER MODIFICATIONS

In radios equipped with the DC Converter, the Weatherproof Control Unit is modified so that placing the power switch to the ON position applies the ignition switch voltage to the DC converter control line.

The DC source input voltage to the DC converter is applied directly from the vehicle battery to the DC Converter. Thus, the DC converter is turned on and off by the power on-off switch on the Weatherproof Control Unit. Modification instructions are shown on the Weatherproof Control Unit Schematic Diagram.

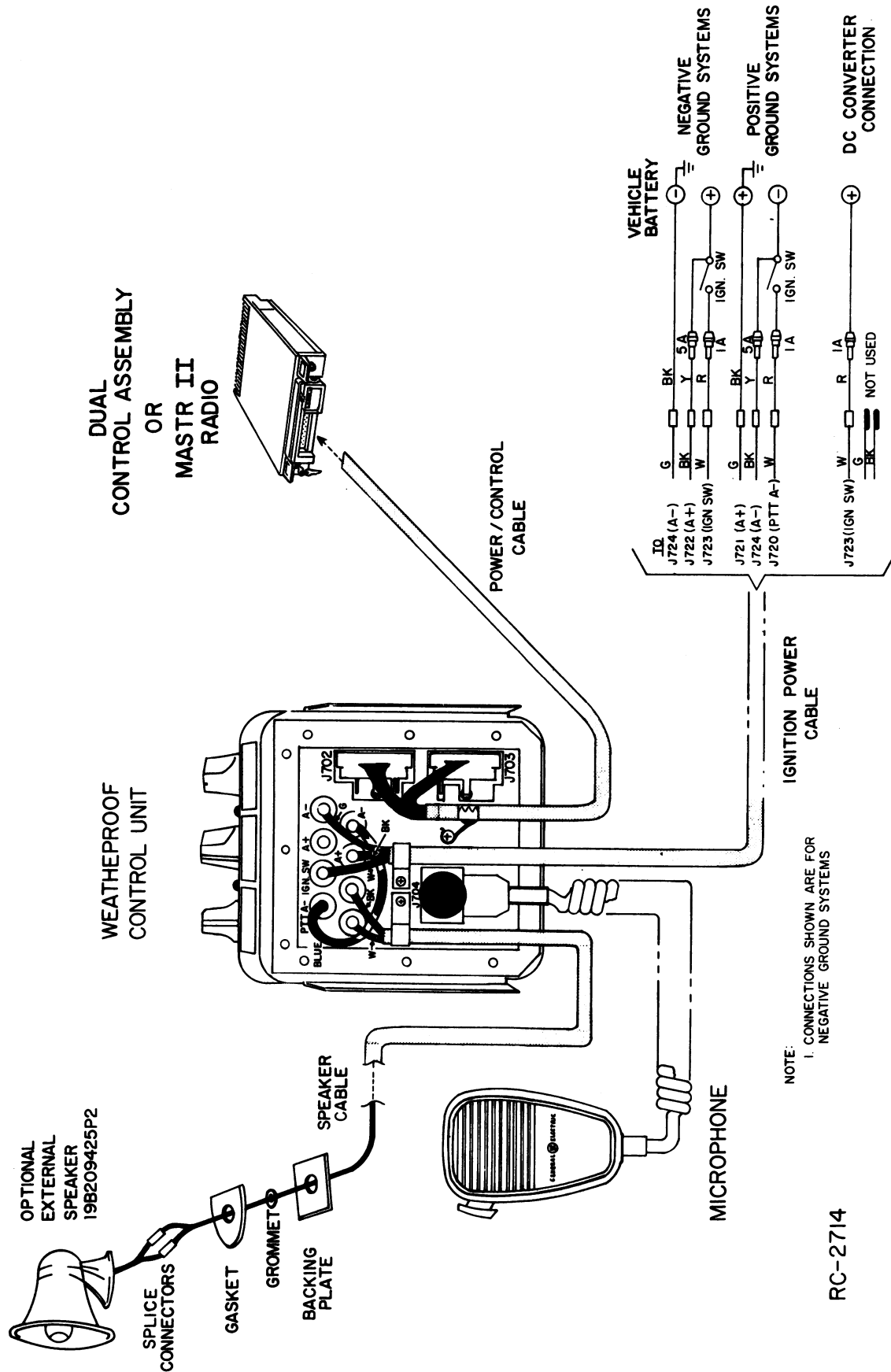


Figure 2 - Typical Weatherproof Control Unit Connections

OPTIONS

MASTR II Weatherproof Control Units may be equipped with different options. All controls and indicator lights are shown in Figure 1.

Multi-Frequency (FREQ) Switch

The frequency selector switch may be either a 2-frequency selector switch (S707) or a 1-thru 12 frequency selector switch (S702) with mechanical stops that limit rotation from 2-thru 12 positions as required.

2-Frequency Selector Switch

The 2-frequency selector switch (S707) is a two position wafer switch which selects the desired operating channel (frequency F1 or F2). The switch connects control A- to the selected transmitter and receiver ICOM so that the radio operates on the selected channel.

1 thru 12-Frequency Selector Switch

The 12-frequency selector switch (S702) is a 12-position rotary switch equipped with adjustable mechanical stops that limit switch rotation from positions 2 thru 12, depending upon the number of channels utilized. A 30-conductor control cable is required for frequencies up to F8. For F9 thru F12, a 38 conductor control cable is required.

The frequency selector switch connects the selected F1 thru F12 control leads to control A-, enabling the transmitter and receiver ICOM, so that the radio operates on the desired channel.

Internal/External Speaker

The Internal/External Speaker Option consists of an optional SPEAKER switch S705 (marked INT-EXT), an external speaker (19B209425P2) designed for remote external mounting, and an interconnecting cable assembly with mounting hardware (19B226453G1).

With the SPEAKER switch in the INT (Internal) position, all of the messages received will be heard on the internal speaker mounted in the Weatherproof Control Unit.

Placing the SPEAKER switch in the EXT (External) position applies all received messages to both the external and internal speaker. Up to 9-watts of receiver audio is applied to the external speaker, while up to 1-watt is applied to the internal speaker. A maximum of 2-watts of Audio is dissipated internally by dropping resistor R703. (R703 is present only in control units equipped with the Internal/External speaker option).

The DA jumper wire between holes H8 and H9 in the Weatherproof Control Unit replaces R703, when not present. (Refer to Schematic and Outline Diagrams).

Channel Guard Monitor Switch

The Channel Guard MONITOR switch (S704) enables the operator to disable the Channel Guard circuitry in the radio, allowing the receiver to be monitored. When S704 is in the ON position, the Channel Guard disable lead (P702-8 to J702-12) is connected to control A-. When the MONITOR switch is in the OFF position, the Channel Guard circuitry functions normally.

DUAL CONTROL

In Weatherproof Control Units equipped with the Dual Control Option, CONTROL switch S703 (momentary switch) allows control of the radio to be switched to the Weatherproof Control Unit.

When the CONTROL switch is momentarily placed to the ON position, Control A- is switched to the Weatherproof Control Unit, and the GREEN power-on indicator (LED) is illuminated, thus indicating Control of the radio. Normal operation of the radio is maintained from the Weatherproof Control Unit until an alternate (or Master) Control Unit assumes control of the radio when its similar CONTROL switch is operated. A 30-conductor control cable is required for this option.

Refer to the Dual Control Maintenance Manual for details of Dual Control applications.

FIXED SQUELCH

In radios equipped with the Fixed Squelch Option, a two-position rotary switch (S706) replaces the standard variable SQUELCH potentiometer (R704) on the Weatherproof Control Unit. A variable potentiometer is then mounted on J904 of the system board in the radio.

Turning the Optional SQUELCH switch on the Control Unit to the right (clockwise) applies A- to the squelch disable lead. The A- is connected to pin-2 of the receiver audio IC (U604), disabling the squelch circuit (and Channel Guard if present). Turning the switch to the left (counterclockwise) removes the A- to Pin-2 of the squelch IC, enabling the squelch circuit (and Channel Guard). This option will function properly with any of the control cables.

INSTALLATION

UNPACKING AND CHECKING EQUIPMENT

The Weatherproof Control Unit is packed with all hardware and cables required for installation. When ready for installation, carefully unpack the Control Unit. It is recommended that you identify the items in the packing case and check them off in the appropriate column below before discarding the packing material. If any damage has occurred to the equipment during shipment, file a damage claim with the carrier immediately.

EQUIPMENT LIST

WEATHERPROOF CONTROL UNIT ☐

Microphone (19C320270G2) or ☐

Handset (19C320478G1) ☐

| <u>Qty.</u> | <u>Item</u> | <u>Part No.</u> | |
|-------------|--------------------------------|-------------------|--------------------------|
| | Ignition Cable Kit | 19A130222G1 | <input type="checkbox"/> |
| | Kit consists of the following: | | |
| 1 | 3-Conductor Cable (20 ft.) | 19B226452G1 | <input type="checkbox"/> |
| 1 | Fuse Assembly (Yellow wire) | 19B226454G1 | <input type="checkbox"/> |
| 1 | Fuse Assembly (Red Wire) | 19B226454G2 | <input type="checkbox"/> |
| 1 | Ground Cable (Black) | 19A130225G1 | <input type="checkbox"/> |
| 6 | Cable Retaining Straps | 19A115185P3 | <input type="checkbox"/> |
| 9 | Terminals | | <input type="checkbox"/> |
| 3 | Splice Connectors | | <input type="checkbox"/> |

Customer Hardware Kit

(For use with Microphone) 19A130199G1 ☐

| <u>Qty.</u> | <u>Item</u> | <u>Part No.</u> | |
|-------------|---------------------------------------|-------------------|--------------------------|
| 1 | L-Bracket | 19B226290P1 | <input type="checkbox"/> |
| 1 | Microphone Hanger | 7141414G2 | <input type="checkbox"/> |
| 1 | Rear Cover | 19B226429G1 | <input type="checkbox"/> |
| 2 | Control Unit Mounting Brackets | 19A121521G1 | <input type="checkbox"/> |
| 1 | Cable Clamp | 5491480P5 | <input type="checkbox"/> |
| 4 | Cable Retaining Straps | 19A115185P3 | <input type="checkbox"/> |
| - | Miscellaneous Mounting Hardware | | <input type="checkbox"/> |

Customer Hardware Kit

(For use with Handset) 19A130199G1 ☐

| <u>Qty.</u> | <u>Item</u> | <u>Part No.</u> | |
|-------------|-----------------------------|-------------------|--------------------------|
| 1 | Handset Hanger Hardware Kit | 19A130200G1 | <input type="checkbox"/> |
| 1 | Handset Holder L-Bracket | 19B226290P1 | <input type="checkbox"/> |

INSTALLATION

| <u>Qty.</u> | <u>Item</u> | <u>Part No.</u> | |
|-------------|---------------------------------------|-------------------|--------------------------|
| 1 | Rear Cover | 19B226429G1 | <input type="checkbox"/> |
| 2 | Control Unit Mounting Brackets | 19A121521G1 | <input type="checkbox"/> |
| 1 | Cable Clamp | 5491480P5 | <input type="checkbox"/> |
| 4 | Cable Retaining Straps | 19A115185P3 | <input type="checkbox"/> |
| - | Miscellaneous Mounting Hardware | | <input type="checkbox"/> |

OPTIONAL EQUIPMENT

| <u>Qty.</u> | <u>Item</u> | <u>Part No.</u> | |
|---------------|------------------------------|-------------------|--------------------------|
| 1 | External Speaker | 19B209425P2 | <input type="checkbox"/> |
| 1 | External Speaker Cable Kit | 19B226453G1 | <input type="checkbox"/> |
| Kit Contents: | | | |
| 2 | Splice Connectors | 4033347G1 | <input type="checkbox"/> |
| 4 | Cable Straps | 19A115185P3 | <input type="checkbox"/> |
| 1 | Rubber Grommet | 5490407P10 | <input type="checkbox"/> |
| 1 | Backing Plate | 19A122633G1 | <input type="checkbox"/> |
| 1 | Cable Clamp | 5491480P5 | <input type="checkbox"/> |
| - | Miscellaneous Hardware | | <input type="checkbox"/> |
| 1 | Cable Assembly | 19B226453G2 | <input type="checkbox"/> |

WEATHERPROOF CONTROL UNIT MOUNTING

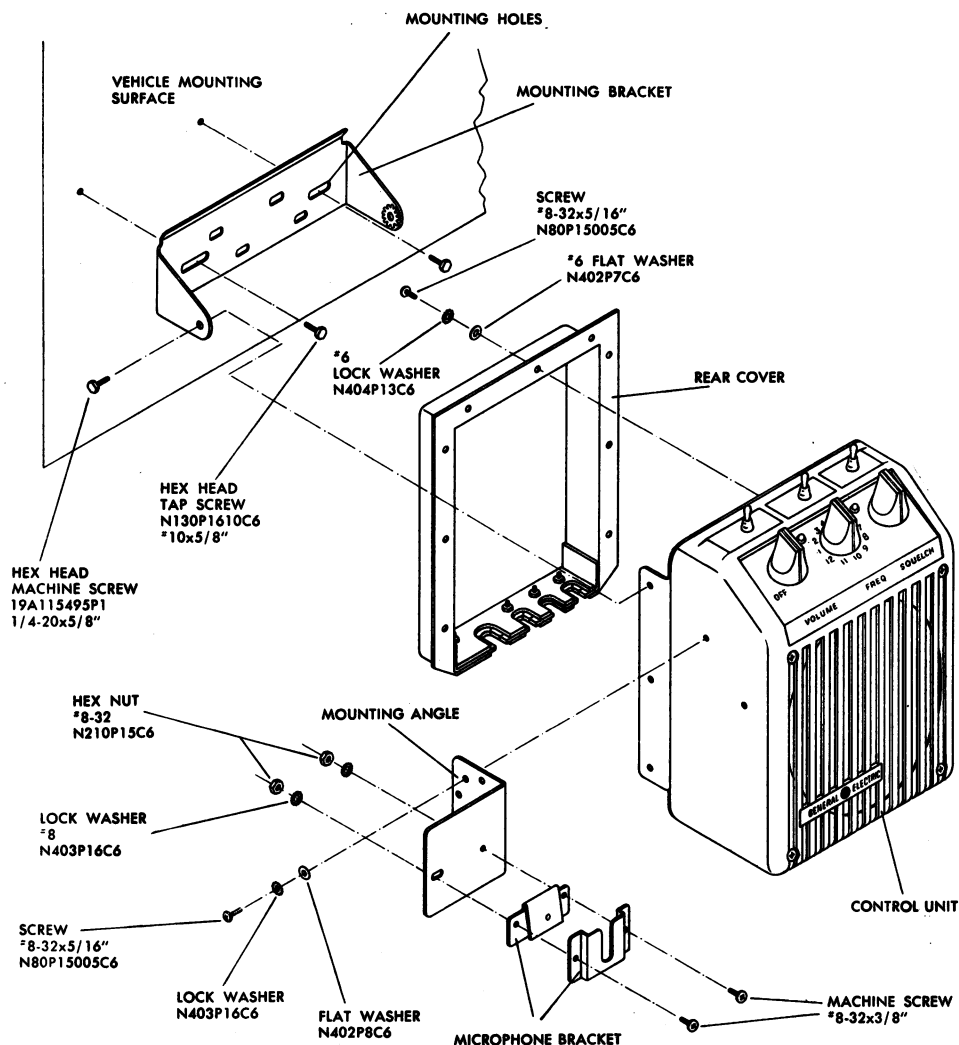
The Weatherproof Control Unit should be mounted within convenient reach of the operator, and where it will not interfere with the safe operation of the vehicle or present a hazard to the vehicle passengers in case of an accident.

1. Use the mounting bracket (see Figure 3) as a template for locating the mounting holes. Secure one mounting bracket with two (2) #10 x 5/8" (N130P1610C6) sheet metal screws.
2. Temporarily attach the second mounting bracket to the Control Unit, then mount the Control Unit to the previously mounted bracket. Locate and mark the mounting holes for the second bracket. Remove the Control Unit and secure the second mounting bracket with two (2) #10 x 5/8" (N130P1610C6) sheet metal screws. Do not mount the Control Unit at this time.
3. Attach the microphone hanger clip to the preferred side of the L-bracket using two (2) #8 - 32 x 3/8" screws, lockwashers and hex nuts.

4. If the Control Unit is equipped with the handset option, the handset hanger bracket should be attached to the L-bracket in place of the microphone hanger clip. Secure in place with two (2) #6 - 32 x 3/8" screws, lockwashers and hex nuts.

INSTALLATION NOTE: Microphone and Handset hanger brackets may be mounted to the vehicle. Mount using #6 - 20 x 1/2" sheet metal screws. If mounted other than on the Control Unit, insert two (2) #8 - 32 x 5/16" screws (with lockwashers and flatwashers) into the microphone L-bracket mounting holes in the housing. These screws must be in place to maintain weatherproof characteristics. A small amount of Petroleum Jelly in the threaded casting holes will further help to weatherproof the control unit.

5. Attach the L-bracket to the control unit using two (2) #8 - 32 x 5/16" screws, lockwashers and flat washers. Select the adjustment holes in the L-Bracket which provides the desired microphone mounting angle. Use a small amount of Petroleum Jelly in the threaded casting holes to aid in weatherproofing the control unit.



RC-2735

Figure 3 - Mounting Details (Typical)

CONNECTING IGNITION SWITCH CABLE

INSTALLATION NOTE: In Dual Control applications, ignition power and vehicle battery power need only be connected to one of the associated control units. Therefore, the ignition switch connections may not apply for installing the Weatherproof Control Unit.

The Control Unit may be connected for three different modes of operation depending on the way the three ignition switch cables are connected in the vehicle system. The black cable provides the system ground connection. The yellow fused lead provides the receiver hot connections, and the red fused lead provides the transmitter Push-To-Talk hot connection. The three types of operation are:

1. **Ignition Switch Standby** - For this type of operation, the red fused lead (PTT) is connected to the ACCESSORY or ON terminal of the ignition switch. The

yellow fused lead (receiver hot) is connected to the hot side of the ignition switch, and the black lead connects to vehicle ground.

With the ignition switch OFF and the POWER-ON switch on, the Power-On indicator light turns on, and the receiver is on ready to receive messages. Turning the ignition switch to the ON or ACCESSORY position permits the transmitter to be keyed. Turning the power ON switch to OFF removes power to the Two-Way Radio.

2. **Ignition Switch Control** - For ignition switch control, the yellow and red fused leads are connected to the ACCESSORY or ON terminal of the ignition switch. The transmitter and receiver will operate only when the ignition switch is in the ACCESSORY or ON position. Turning the ignition switch OFF removes all power to the radio.

3. **Ignition Switch Bypass** - For ignition bypass, the yellow and red fused leads connect to the "hot" side of the ignition switch or the vehicle fuse block assembly. Both the transmitter and receiver operate independently of the ignition switch and are turned on and off only by the power ON switch on the Control Unit.

INSTALLATION NOTE

When making ignition switch connections, it is suggested that the vehicle battery cable be disconnected to avoid any electrical damage which may occur due to accidental shorting of energized 12 Volt circuits.

Fabricating Ignition Cable (Kit 19A130222G1)

INSTALLATION NOTE

If the radio contains a DC converter option, then fabricate only the red wire Fuse Assembly and connect as shown in Figure 4.

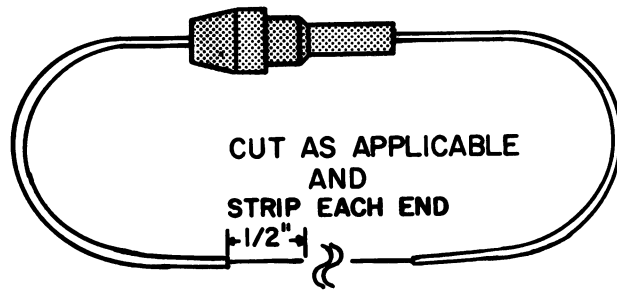
1. The red wire fuse assembly and the yellow wire fuse assembly, provided in the customer's Hardware Kit, is supplied in a continuous wire loop. Cut the wire loop where desired, and strip each end as shown in the following illustration.

Running Cables

To assure the feasibility of the cable routings selected, it is suggested that the ignition power cable be installed before mounting the Weatherproof Control Unit. Be sure to leave some slack in each end of the cable for ease of making connections to the Control Unit and the ignition switch.

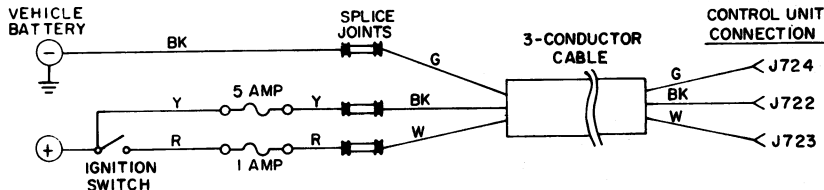
In most installations, the ignition cable can be routed along side of the Power/Control cable which goes to the radio. Cable tie-straps are provided for securing the ignition cable to the Power/Control Cable.

YELLOW OR RED WIRE FUSE ASSEMBLY

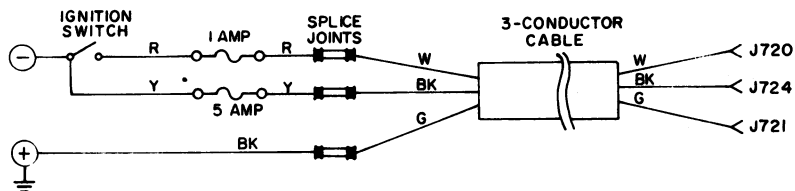


Fuse Assembly

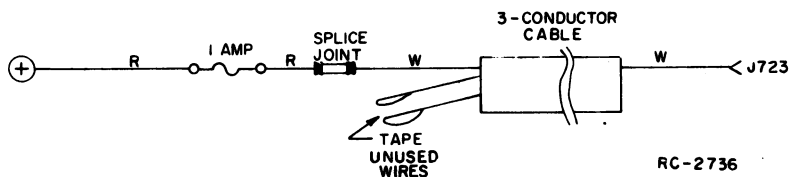
12-VOLT NEG. GROUND



12-VOLT POSITIVE GROUND

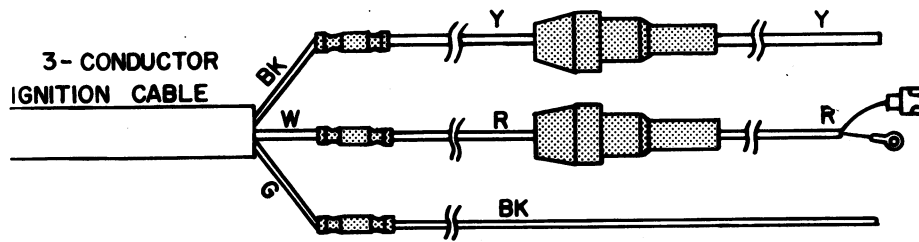


DC CONVERTER



RC-2736

Figure 4 - Typical Ignition Switch Cable Connections



USE RING TERMINAL LUG OR AUTOMOTIVE TYPE TERMINAL FOR IGNITION SWITCH CONNECTIONS.

Ignition Cable and Fuse Assemblies

2. Strip each end of the black wire provided in the Kit.
3. Using splice connectors provided, attach the black wire and one end of each fuse assembly to the ignition power cable as shown in the illustration above.
4. Crimp an appropriate size ring-terminal or automotive type terminal to the remaining end of each fuse assembly wire and to the end of the black wire.

2. Connect the ignition power cable as shown in Figure 2 and as follows:

Negative Ground Systems

Positive Ground Systems

| | |
|-------------------------------|-------------------------------|
| Blue Jumper from J720 to J725 | Blue Jumper from J722 to J723 |
| Green to J724 (A-) | Green to J721 (A+) |
| Black to J722 (A+) | Black to J724 (A-) |
| White to J723 (From IGN. SW.) | White to J720 (From IGN. SW.) |

Ignition Switch Connections

Select the applicable mode of operation as described for "Connecting Ignition Switch Cable". Refer to Figure 4 for connections.

Power/Control Cable Connections

The Power Control Cable may be either an 18-conductor, a 30-conductor cable or a 38-conductor cable. The 18-conductor cable has only one plug (P702). The 30-conductor and 38-conductor cables have two (2) plugs (P702 & P703). These plugs contain indexing tabs which prevent inadvertently connecting the plugs to an incorrect jack on the Control Unit (see Figure 5).

CONTROL UNIT

Ignition Power Cable Connections

1. Place the cable clamp provided onto the ignition power cable and secure it in

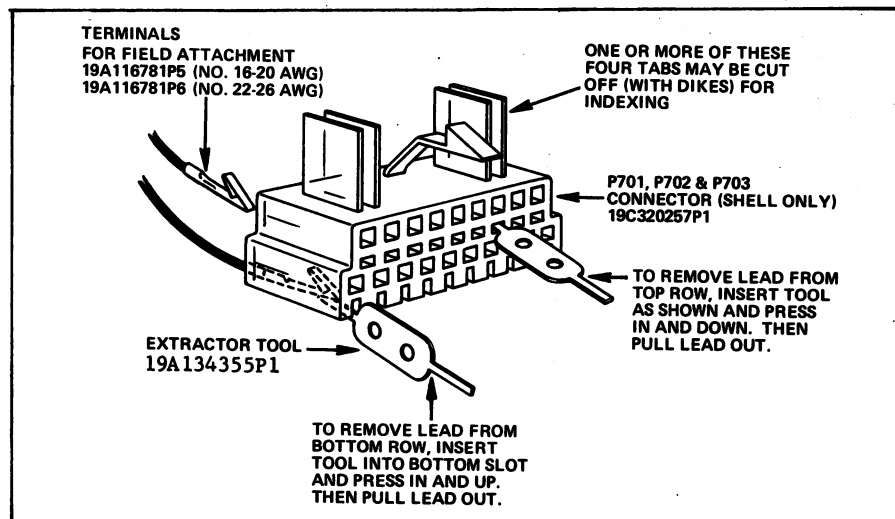


Figure 5 - Power/Control Cable Connector

1. Secure the Power/Control cable strain relief hook in place on the Control Unit back plate with a #6-32 x 5/16" screw (see Figure 2).
2. Connect P702 and P703 (if present) to J702 and P703, respectively.
3. If the Weatherproof Control Unit is used in a Dual Control application, then tape the two unused Power cable leads of the Dual Control Assembly Power/Control Cable (TX A+ and TX A- leads) to prevent shorting.

EXTERNAL SPEAKER INSTALLATION

Weatherproof Control Units equipped with the External Speaker Option are supplied with an External Speaker (19B209425P2) and a Speaker Cable Kit (19B226453G1). Mount the external speaker in the desired location and make the speaker electrical connections to the control unit using the cable kit in accordance with the following:

EXTERNAL SPEAKER MOUNTING

1. Using the backing plate as a template, mark and drill two 13/64-inch holes for the backing plate retaining screws, and four 9/32-inch holes for the speaker mounting screws. Next, drill a 5/8-inch hole for the speaker cable and insert the rubber grommet in the hole.
2. Attach the backing plate to the under side of the mounting surface with two #8-32 threadforming screws and lockwashers.
3. Route cable from the control unit through backing plate (under mounting surface), grommet, and gasket, to the speaker (see Figure 2).
4. Connect the speaker cable leads and the speaker leads using the two splice connectors furnished.

CAUTION

Do not ground either side of the External Speaker leads.

5. Mount the speaker using four 1/4" x 7/8" screws, and lockwashers supplied.

ELECTRICAL CONNECTION TO THE WEATHERPROOF CONTROL UNIT

1. Place the cable clamp provided onto the speaker cable and secure in place on back plate of the Control Unit with a #6-32 x 5/16" screw.
2. Connect the black wire and the white wire of the speaker cable to the EXT SPKR jacks on the back plate of the Control Unit (J718 and J719), polarity is not critical.

SECURING THE REAR COVER

1. When all electrical connections to the back plate have been completed, place the rear cover in position with the back plate and note the location of the cables connecting to the back plate. Using a sharp knife, slit the rear cover bottom gasket for the ignition power and external speaker cables, if present. Make slits as shown in Figure 6.
2. Place the rear cover in position and secure with nine (9) #6-32 x 5/16" screws, lockwashers and flatwashers.
3. Mount the control unit to the mounting brackets (previously installed) using four (4) 1/4 - 20 x 5/8" machine screws (19A115495P1). Refer to Figure 3 for typical mounting details.

DISASSEMBLY INSTRUCTIONS

1. To remove the control unit from the mounting brackets, remove the four (4) machine screws attaching the control unit to both mounting brackets.
2. To gain access to the back plate of the Weatherproof Control Unit, remove the nine (9) screws securing the rear cover to the back plate assembly.
3. To remove the back plate assembly from the control unit housing, remove the four (4) screws from the front of the control unit housing.

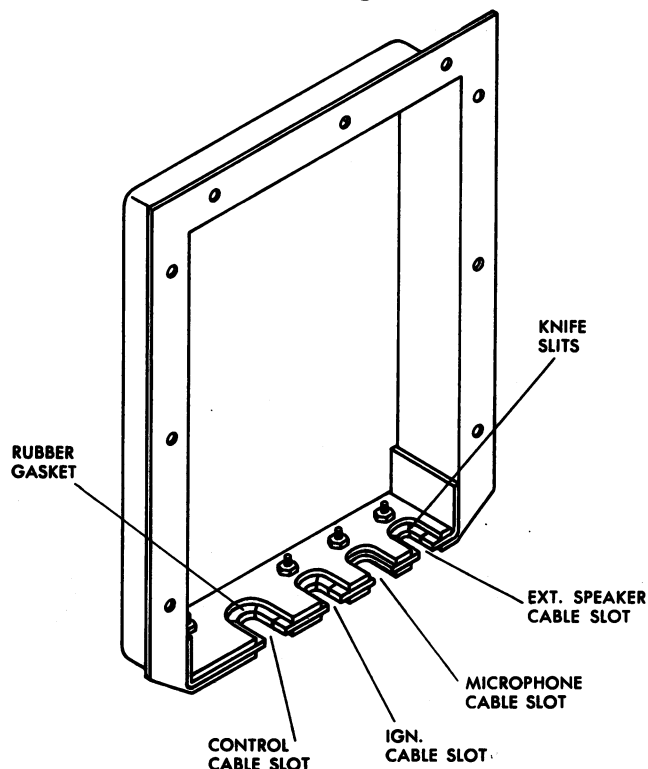
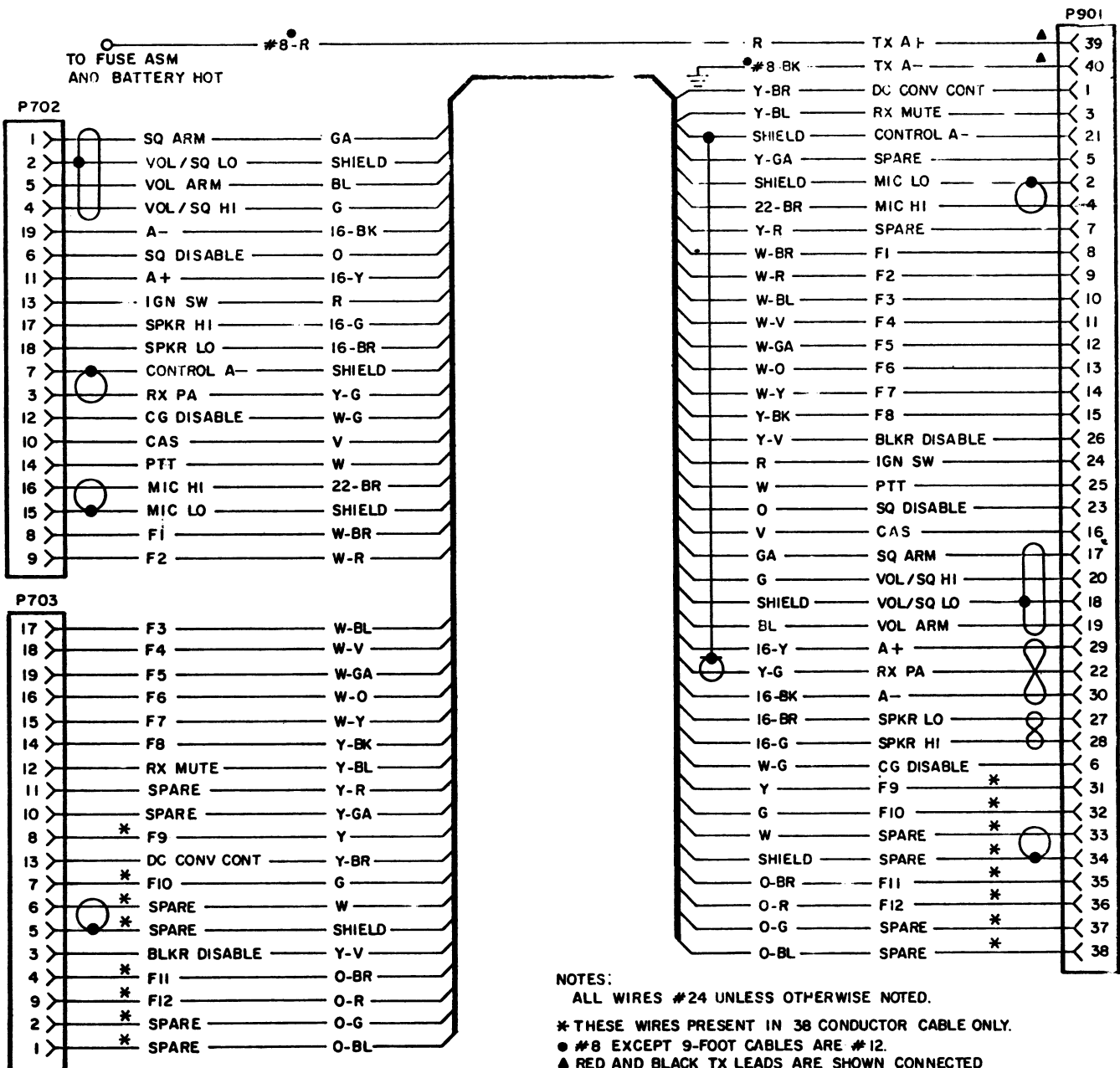


Figure 6 - Rear Cover



NOTES:

ALL WIRES #24 UNLESS OTHERWISE NOTED.

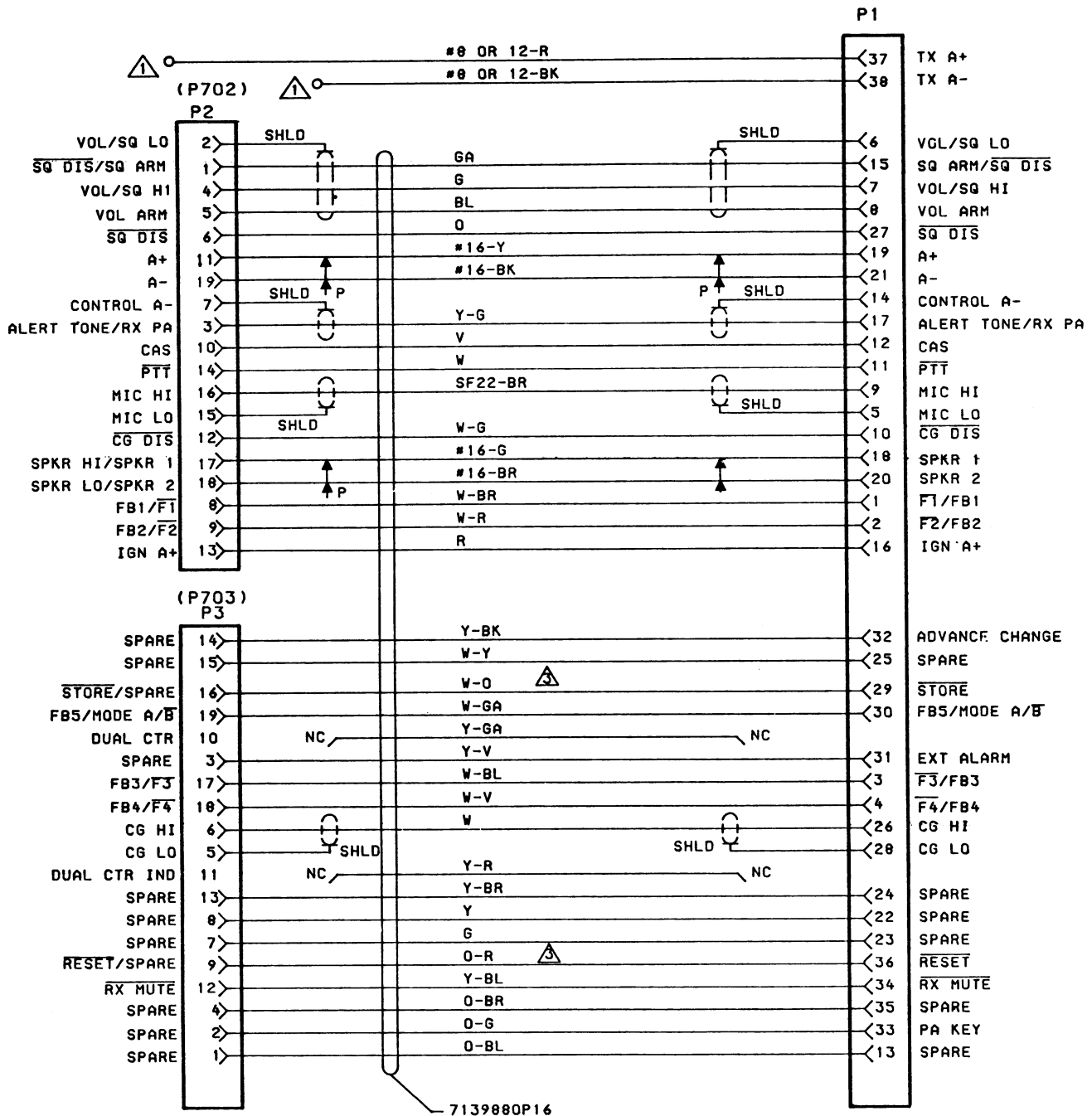
* THESE WIRES PRESENT IN 38 CONDUCTOR CABLE ONLY.

● #8 EXCEPT 9-FOOT CABLES ARE #12.

▲ RED AND BLACK TX LEADS ARE SHOWN CONNECTED FOR NEGATIVE GROUND. FOR POSITIVE GROUND, CONNECT RED LEAD TO P901-40 AND BLACK TO P901-39.

(19C321784, Rev. 2)

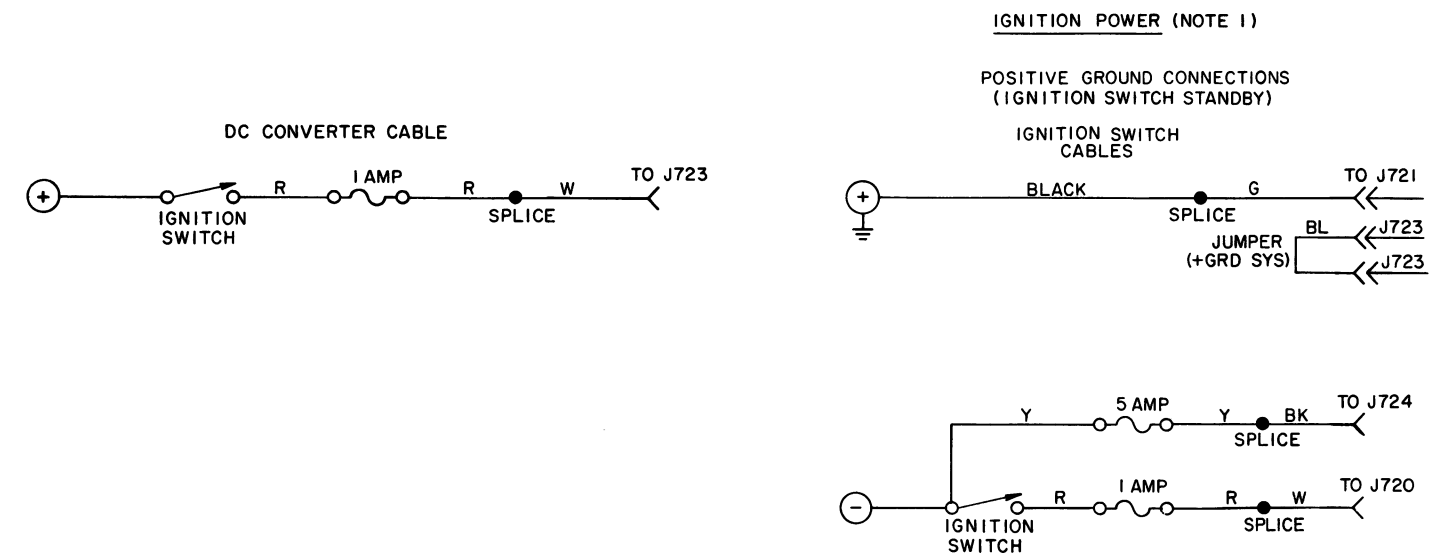
POWER/CONTROL CABLE
MASTER II INTERFACE



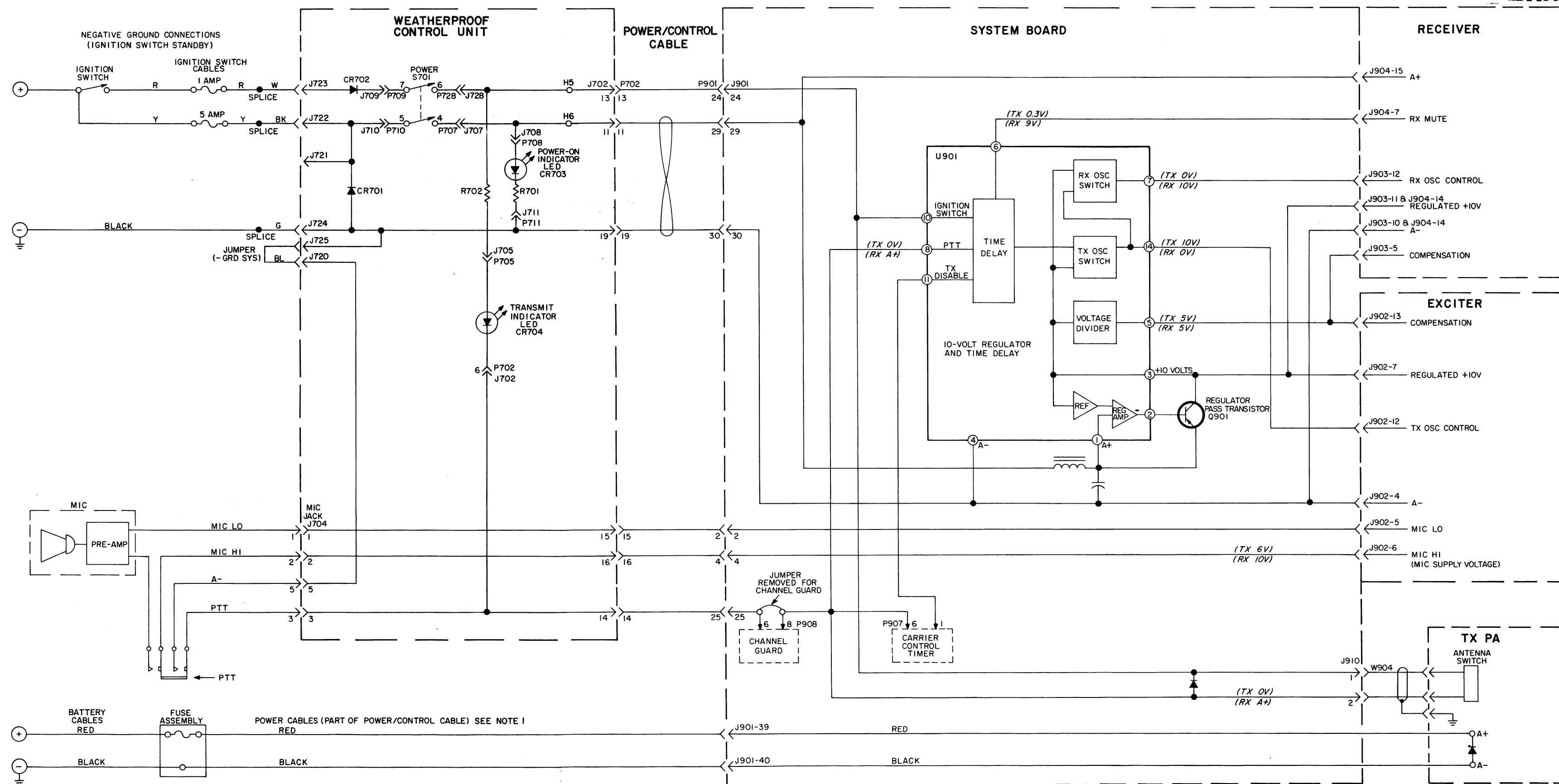
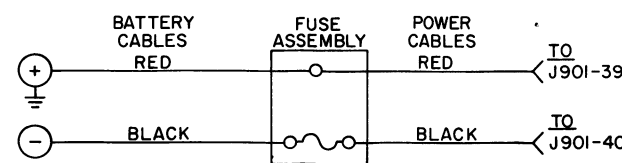
- ⚠ ELECTRICALLY UNCONNECTED UNTIL INSTALLED
BUT TERMINATED PER ASM 19D900447.
2. ALL WIRES ARE #SF24 AWG UNLESS OTHERWISE SPECIFIED.
- ⚠ FOR GROUPS 1-6, W-O AND O-R WIRES ARE
NOT CONNECTED AT EITHER END.

(19D433081, Sh. 1, Rev. 6)

POWER/CONTROL CABLE
CONTROL UNIT TO DELTA MOBILE



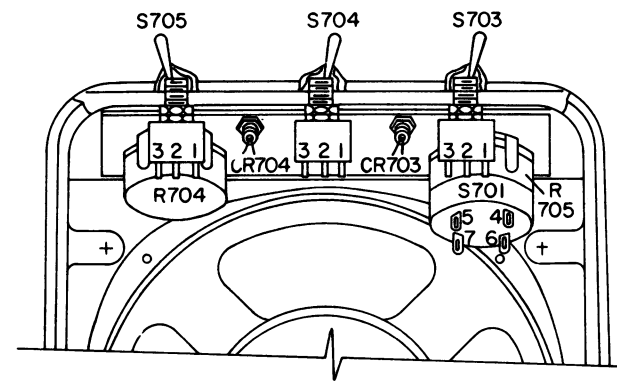
NOTES:
1. POWER CABLE AND IGNITION POWER CONNECTIONS TO THE WEATHERPROOF CONTROL UNIT MAY NOT BE REQUIRED WHEN USED IN DUAL CONTROL APPLICATIONS.



TRANSMITTER KEYING & POWER DISTRIBUTION DIAGRAM

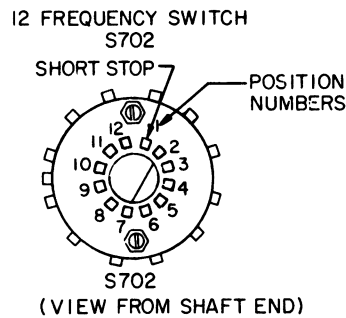
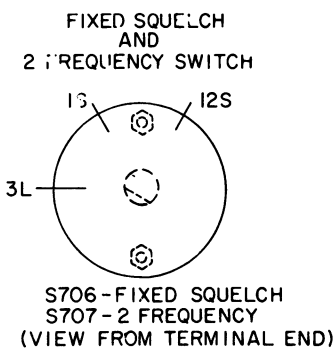
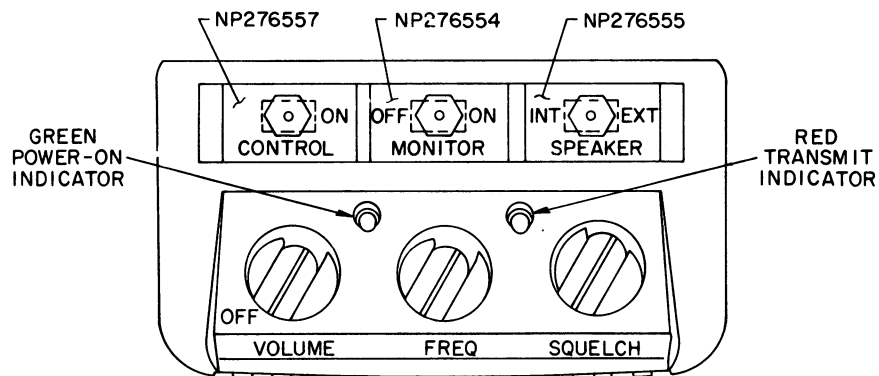
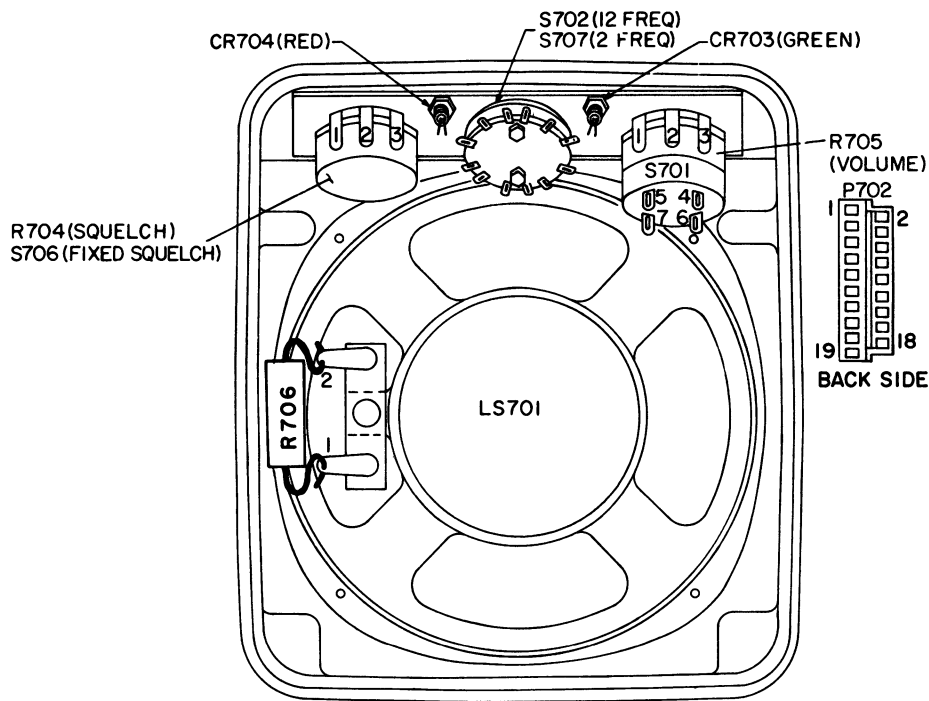
OUTLINE DIAGRAM

WEATHERPROOF CONTROL UNIT



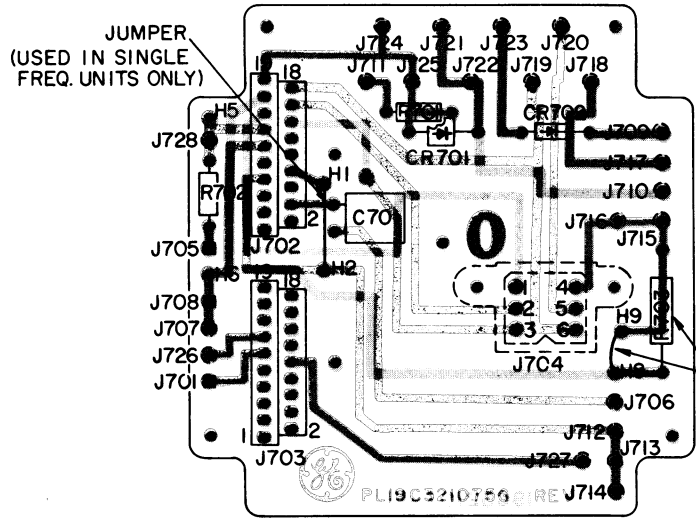
WEATHERPROOF CONTROL UNIT HOUSING

19D417729

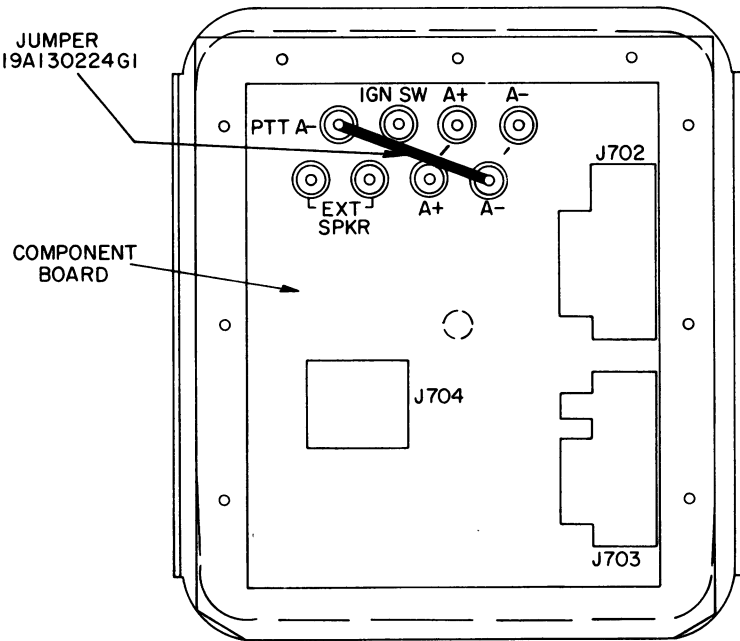


COMPONENT BOARD

19C321075G1



WITH INT/EXT SPEAKER OPTION, R703 IS PRESENT AND JUMPER BETWEEN HOLES H8 & H9 IS REMOVED.



BACK PLATE ASSEMBLY

(19D423292, Rev. 2)
(19C321074, Sh. 2, Rev. 0)
(19C321074, Sh. 3, Rev. 0)

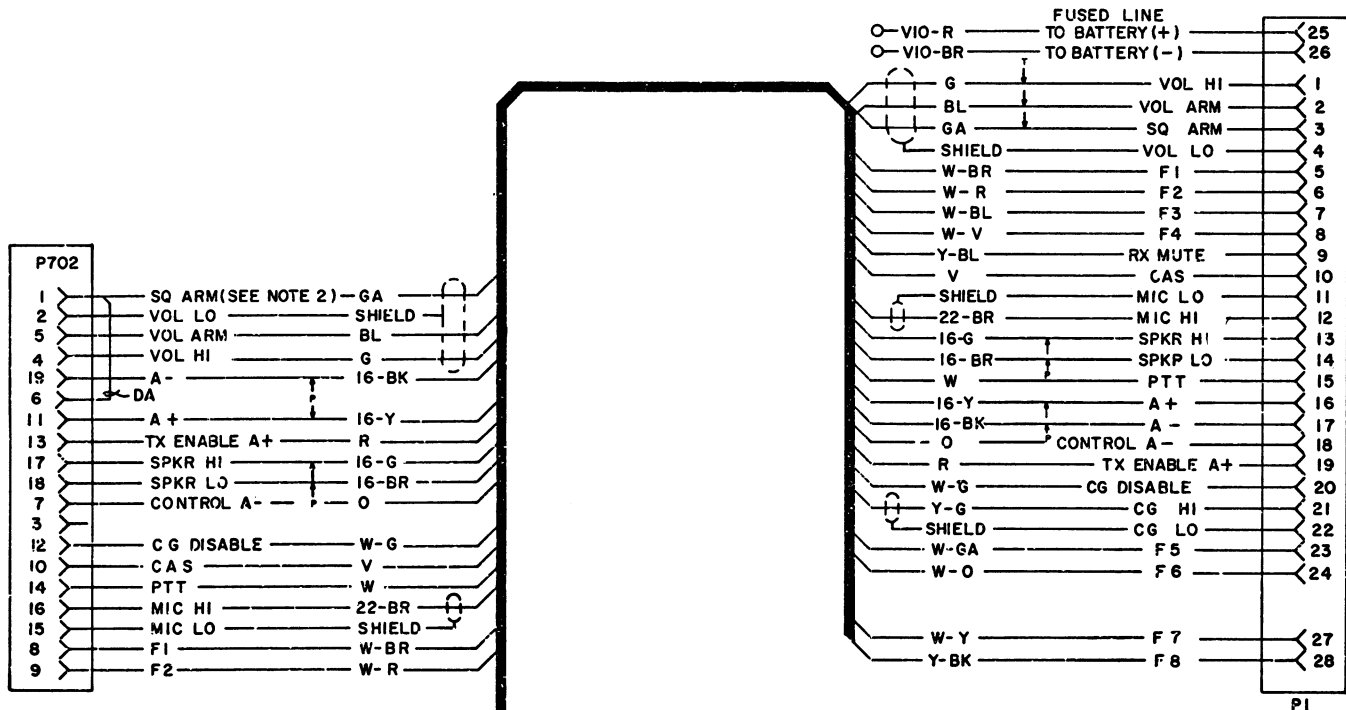
I-12 FREQ SELECTOR SWITCH STOP SETTINGS

IF THE NUMBER OF OPERATING FREQUENCIES IS CHANGED, IT WILL BE NECESSARY TO CHANGE THE STOP SETTINGS ON THE FREQUENCY SELECTOR SWITCH. TO SET THE STOPS:

1. REMOVE THE CONTROL UNIT HOUSING FROM THE BACK PLATE ASSEMBLY (SEE DISASSEMBLY PROCEDURE).
2. REMOVE THE 3/8-INCH SEALING NUT HOLDING THE SWITCH IN PLACE.
3. MAKE SURE THAT THE SHORT ADJUSTMENT STOP IS IN POSITION 1 (SEE OUTLINE DIAGRAM).
4. ROTATE THE SWITCH SHAFT FULLY COUNTERCLOCKWISE TO THE SHORT STOP POSITION.
5. FOR ONE FREQUENCY OPERATION, PLACE THE LONG STOP IN POSITION 2.
6. FOR TWO THROUGH ELEVEN FREQUENCIES, PLACE THE LONG STOP IN THE POSITION NUMBERED ONE HIGHER THAN THE NUMBER OF CHANNELS TO BE SELECTED.
7. FOR TWELVE FREQUENCIES, BREAK OFF TABS FROM BOTH STOPS.
8. REPLACE THE 3/8-INCH NUT.

SCHEMATIC DIAGRAM

POWER/CONTROL CABLE 19C321890G1
(MASTR II/EXECUTIVE II INTERFACE)



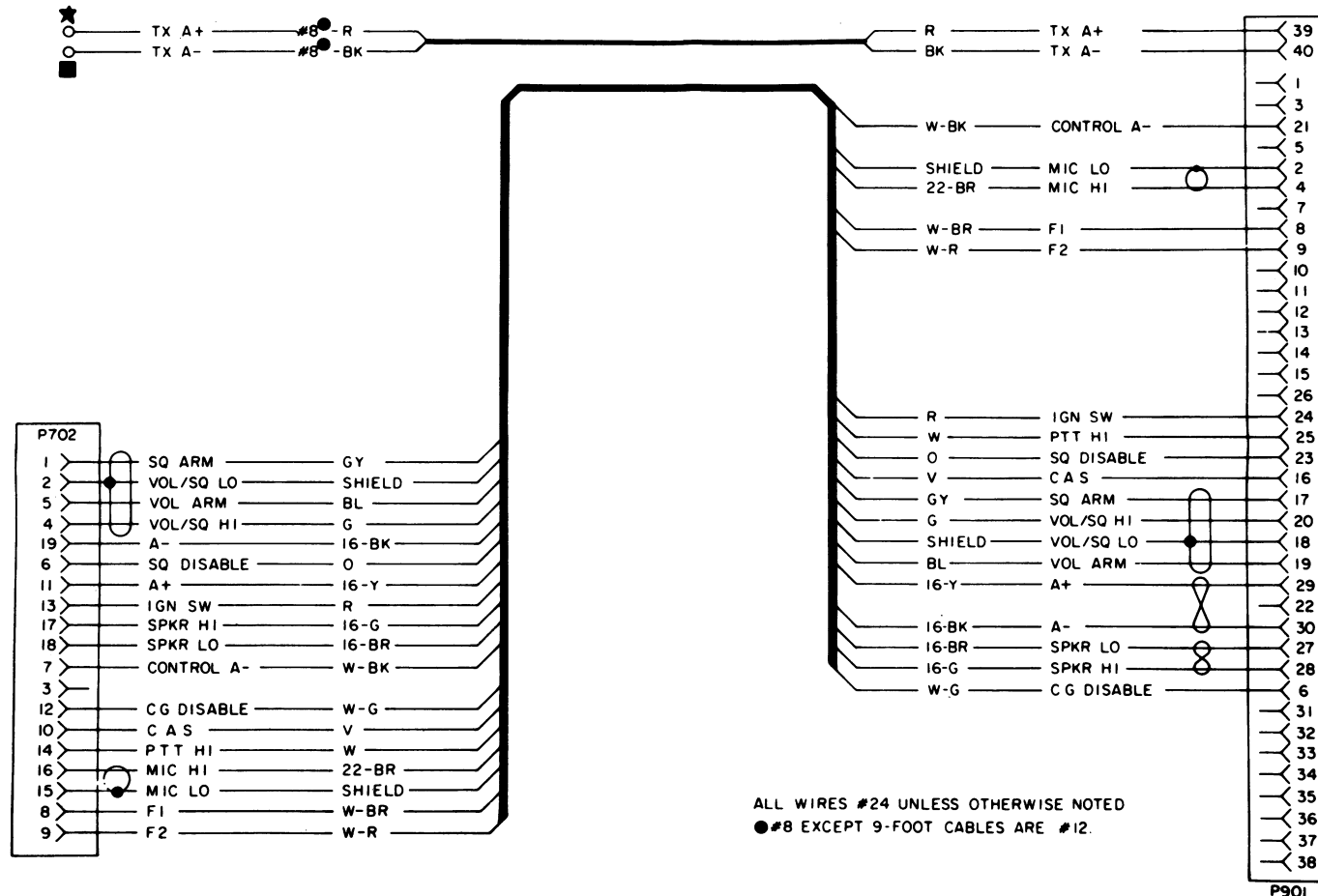
- NOTES:
1. ALL WIRES ARE # 24 UNLESS OTHERWISE NOTED.
 2. IF FIXED SQUELCH OPTION IS PRESENT, SQ ARM IS USED. FOR SQ MONITOR.
 3. BATTERY CONNECTIONS SHOWN ARE FOR NEGATIVE GROUND; FOR POSITIVE GROUND CONNECT VIO-R TO PI-26 & VIO-BR TO PI-25.

PARTS LIST

LBI4869D
WEATHERPROOF CONTROL UNIT
AND
ASSOCIATED ASSEMBLIES

| SYMBOL | GE PART NO. | DESCRIPTION |
|---------------|---------------|---|
| | | CONTROL UNIT 19D417729G1 |
| CR703 | 19A130208G1 | Diode, green light emitting: clear lens. |
| CR704 | 19A130208G2 | Diode, red light emitting: red lens. |
| LS701 | 19A116694P2 | Permanent magnet: 5 inch, 8 ohms $\pm 10\%$ imp, 20 w. max operating; sim to Oaktron T3450. |
| P702 | 19A130266G1 | Connector, printed wiring. |
| P706 | 19A702402P2 | Contact, electrical; sim to AMP 42827-2. |
| P707 | 19A702402P1 | Contact, electrical: sim to AMP 41854. |
| P709 and P710 | 19A702402P1 | Contact, electrical: sim to AMP 41854. |
| P715 | 19A702402P1 | Contact, electrical: sim to AMP 41854. |
| P728 | 19A702402P1 | Contact, electrical: sim to AMP 41854. |
| R704 | 19B209256P9 | Variable, carbon film: 10K ohms $\pm 20\%$, 0.5 w; sim to CTS Series 45. |
| R705 | 19B209256P10 | Resistor/switch: includes Resistor, variable, 10K ohms $\pm 20\%$, 0.25 w; Switch, rotary, DPST, 7.5 amps at 20 v; sim to CTS Series 45. |
| R706* | 5493035P24 | Wirewound: 47 ohms $\pm 5\%$, 5 w; sim to Hamilton Hall Type HR. Added by REV A. |
| S701 | | SWITCHES (Part of R705). |
| | | HARNESS ASSEMBLY 19D417729G2 (Includes P702, P706, P707, P709, P710, P715, P728, R704, R705, S701) |
| | | COMPONENT BOARD 19C321075G1 |
| C701 | 19A116080P106 | Polyester: 0.068 μ F $\pm 10\%$, 50 VDCW. |
| CR701* | 19A116783P1 | Rectifier, silicon: 100 VDC blocking, 6 amp; sim to M751. |
| | 4037822P1 | Earlier than REV A: Silicon, 1000 mA, 400 PIV. |
| CR702 | 4037822P1 | Silicon, 1000 mA, 400 PIV. |
| J701 | 19A701785P1 | Contact, electrical; sim to Molex 08-50-0404. |
| J702 and J703 | 19A116659P41 | Connector, printed wiring: 9 contacts rated at 5 amps; sim to Molex 09-67-1091. |
| | 19A116659P42 | Connector, printed wiring: 10 contacts rated at 5 amps; sim to Molex 09-67-1101. |

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

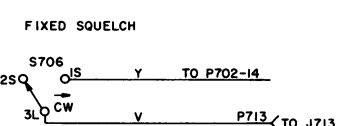
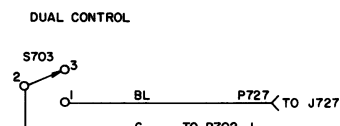
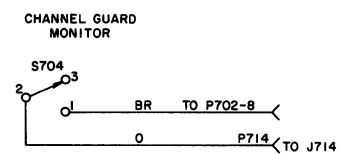
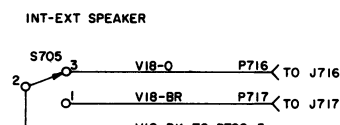
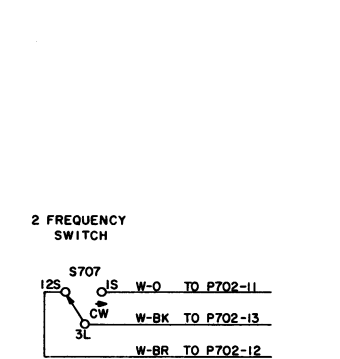


(19C320397, Rev. 2)

WIRING DIAGRAM

18-CONDUCTOR
POWER/CONTROL CABLE

OPTION CONTROLS



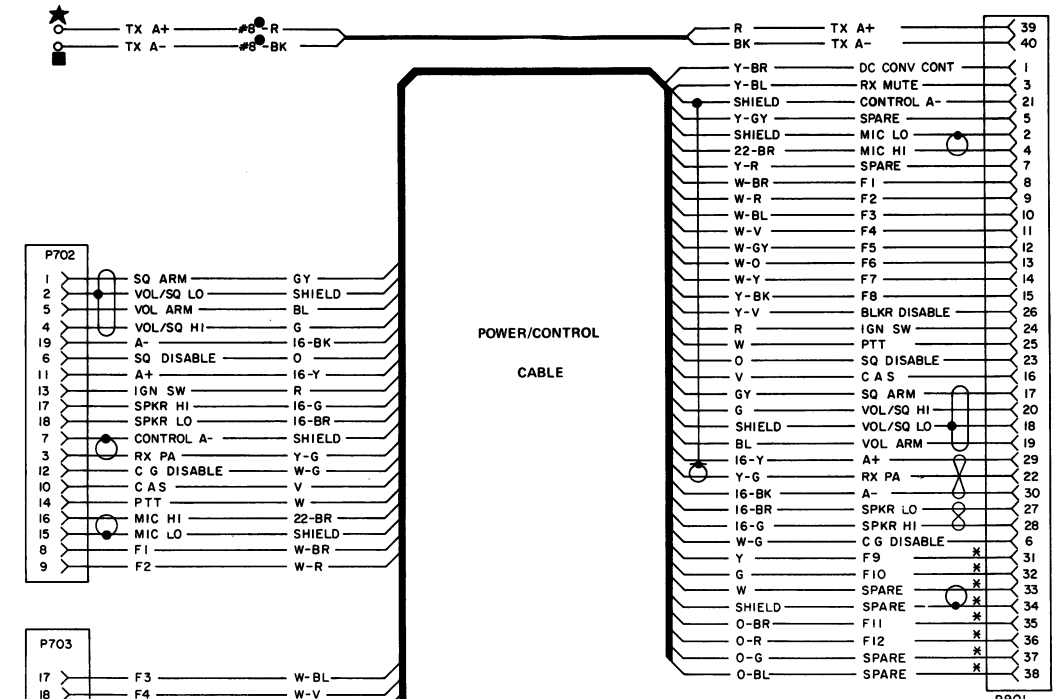
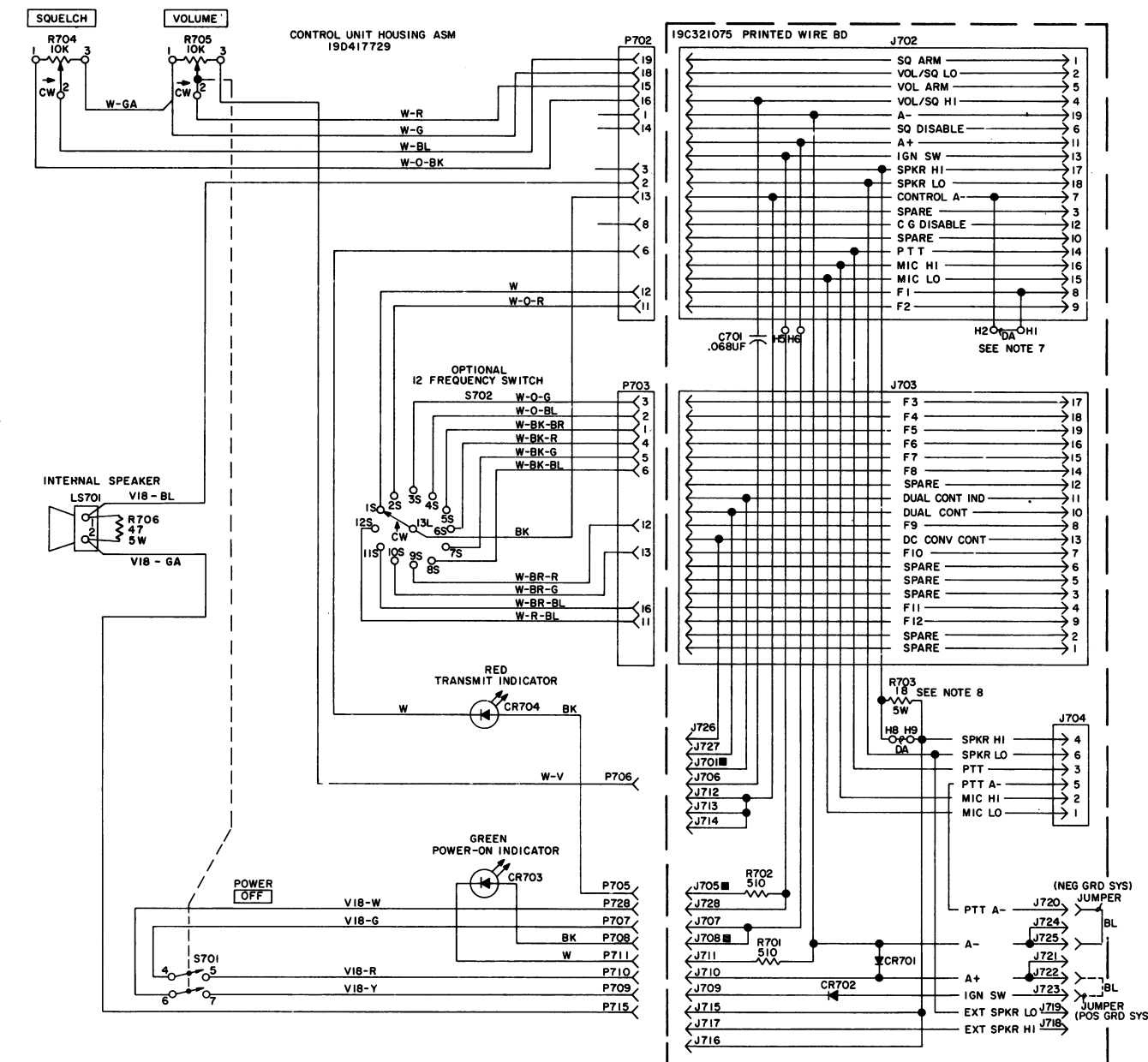
(19D417180, Rev. 6)

| COMPONENT BD | REV LTR |
|--------------|---------|
| 19C321075G1 | A |
| CONTROL UNIT | REV LTR |
| 19D417729G1 | A |

ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS. CAPACITOR VALUES IN MICROFARADS (EQUAL TO MICROFARADS) UNLESS FOLLOWED BY UF= MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR H=HENRYS.

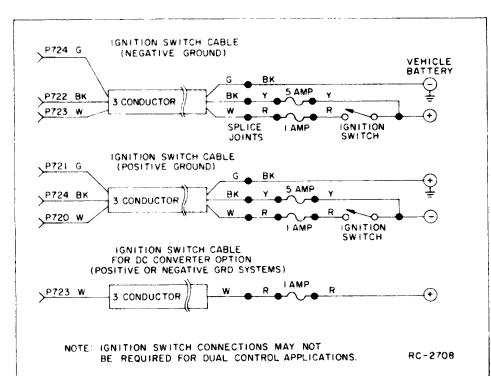
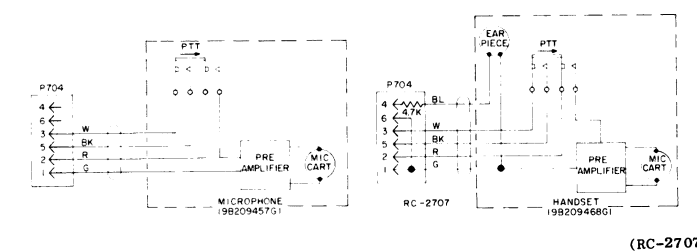
IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

WEATHERPROOF CONTROL UNIT



* THESE WIRES PRESENT IN 36 CONDUCTOR CABLE ONLY.
ALL WIRES #24 UNLESS OTHERWISE NOTED.
● #8 EXCEPT 9-FOOT CABLES ARE #12

(19C320934, Rev. 0)



(RC-2708)

SCHEMATIC DIAGRAM

WEATHERPROOF CONTROL UNIT

Issue 5

15

PRODUCTION CHANGES

Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter", which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for descriptions of parts affected by these revisions.

Rev. A - Component Board 19C321075.
To increase reliability. Changed CR701.

Rev. A - Control Unit 19D417729g1.
To improve speaker operation. Added R706.

The diagram illustrates the rear panel of a radio receiver. On the left, a schematic layout shows the placement of various components, with callouts 1 through 11 pointing to specific areas. Callout 1 points to the 'VOLUME' control knob, 4 to the 'FREQ' control knob, and 5 to the 'SQUELCH' control knob. Callout 6 points to the 'GENERAL ELECTRIC' logo. Callouts 7 through 11 point to other internal components. On the right, a circular speaker grille is shown with callouts 17 through 22 pointing to its various parts, including the outer ring and the central speaker cone.

PARTS LIST

30 CONDUCTOR CONTROL CABLES
19D900447G1 3 METER SHORT GROUND
19D900447G2 3 METER LONG GROUND
19D900447G3 6 METER SHORT GROUND
19D900447G4 6 METER LONG GROUND
19D900447G5 9 METER SHORT GROUND
19D900447G6 9 METER LONG GROUND
ISSUE 3

| SYMBOL | GE PART NO. | DESCRIPTION |
|--------|---------------|--|
| P1 | | Connector. Includes: |
| | 19D900037P1 | Shell. |
| | 19A701376P1 | Contact, electrical rated @ 4 amps; sim to AMP 350657-1. (P1-1 thru 17, 26 thru 34). |
| | 19A701376P2 | Contact, electrical rated @ 4 amps; sim to AMP 350656-1. (P1-18 thru 21). |
| | 19A701376P3 | Contact, electrical rated @ 35 amps; sim to AMP 350655-1. (P1-37 & 38). |
| | 19D900015P1 | Housing. |
| | 19C850508P1 | Cover. |
| | 19B800882P1 | Thumbscrew: thd. size M4 x 0.7. |
| | 19A701488P4 | Retaining ring. (Located on thumbscrew). |
| | 19A701312P6 | Flat washer: 1.7-1.85 ID. (Located on thumbscrew) |
| | 19A701507P608 | Screw, thd. forming: No. 3.5-1.27 x 12.7. (Secures housing to shell). |
| | 19A701507P606 | Screw, thread forming: No. 3.5-1.27 x 9.60. (Secures cover to housing). |
| | 19A700031P425 | Machine screw, POZIDRIV®: M3-0.5 x 25. (Secures cable to P1). |
| | 19A700034P4 | Hex nut: No. M3.5 x 0.5MM. (Secures cable to P1). |
| | 19A700032P5 | Lockwasher, internal tooth: No. 3MM. (Secures cable to P1). |
| | 19B800513P1 | Gasket. (Located at cable clamp). |
| | 19A701077P1 | Cable clamp. |
| P2 | | Connector. Includes: |
| | 19B226516G1 | Shell. |
| | 19A116781P5 | Contact, electrical: wire range No. 18-24 AWG; sim to Molex 08-50-0106. (P2-11, 17 thru 19). |
| P3 | | Connector. Includes: |
| | 19B226516G2 | Shell. |
| | 19A116781P6 | Contact, electrical: wire range No. 22-26 AWG; sim to Molex 08-50-0108. (P3-1 thru 3, 5, 6, 10 thru 13, 17, 18). |
| | | ----- MISCELLANEOUS ----- |
| | 7139880P16 | Cable, special purpose: 34 conductors. (Specify length). |
| | 19A701460P2 | Cable battery, red. (Used in G1 & G2 - Specify length). |
| | 19A701460P10 | Cable battery, black. (Used in G1 & G2 - Specify length). |
| | 19A701460P2 | Cable battery, red. (Used in G3-G6- specify length). |
| | 19A701460P10 | Cable battery, black. (Used in G3-G6- specify length). |
| | 19B800629P1 | Solderless terminal. (Located on black battery cable in G1, G3 & G5). |
| | 19B800629P3 | Solderless terminal. (Located on black battery cable in G2, G4 & G6, on red battery cable in G1 - G6). |
| | 7142878G1 | Clip loop. (Secures cable at P2 & P3). |

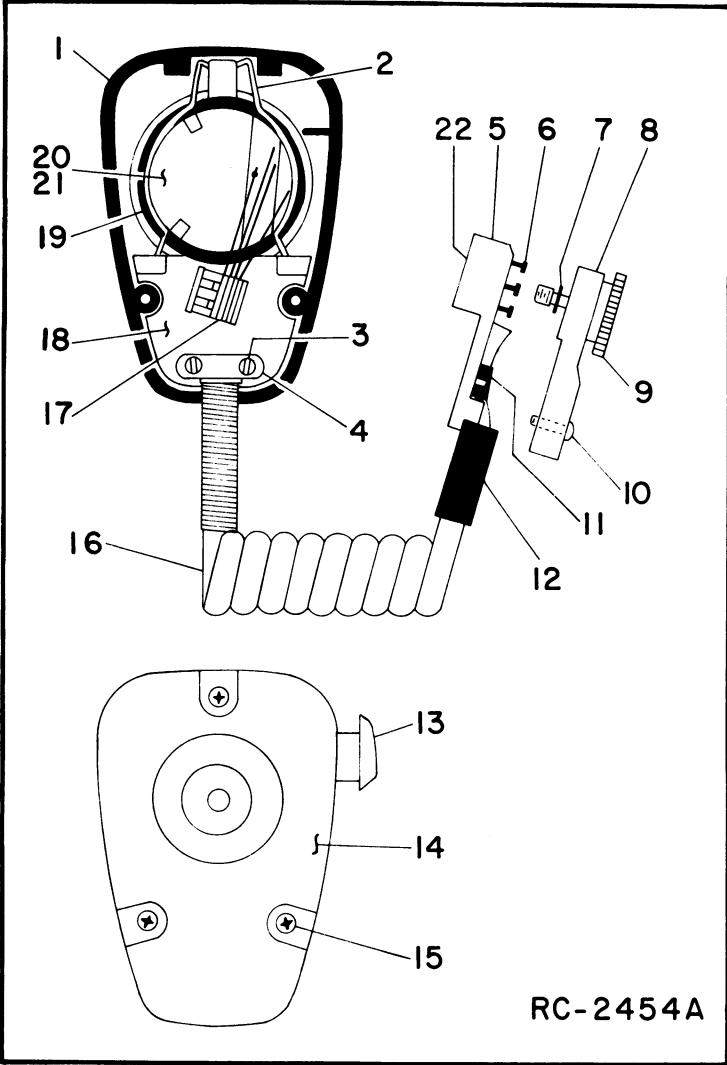
*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

PARTS LIST

LBI4481D
TRANSISTORIZED DYNAMIC MICROPHONE
19C320270G1, G2
(SEE RC2454)

| SYMBOL | GE PART NO. | DESCRIPTION |
|--------|-------------|---|
| 1 | RP127 | Front Case Assembly. (Includes items 14, & 15). |
| 2 | | Retaining spring. (Part of item 18). |
| 3 | | Tap screw, phillips. (Part of item 16). |
| 4 | | Retaining bar. (Part of item 16). |
| 5 | 19D416766P1 | Connector case. |
| 6 | 19A129435P1 | Pin contact. |
| 7 | 19A701289P1 | Retaining ring: 3/16 inches; sim to National Lockwasher WA 510. |
| 8 | 19D416767P1 | Connector Cover. |
| 9 | 19B219723G1 | Thumb screw: lexan. |
| 10 | N136AP905Y6 | Tap screw: No. 4-24 x 5/16. |
| 11 | 19A116937P1 | Cable clamp: sim to Malco 21012-3. |
| 12 | 19B219749P1 | Flex relief. |
| 13 | RP126 | Switch button kit. |
| 14 | | Rear Case Assembly. (Part of item 1). |
| 15 | | Tap screw, phillips. (Part of item 1). |
| 16 | 19C321016G1 | Cable assembly: Includes items 3-12 & cable RP129. |
| 17 | RP128 | Switch assembly. |
| 18 | RP130 | Grille Assembly. (Includes items 2, 19, 21). |
| 19 | | "O" Ring. (Part of item 18). |
| 20 | RP117 | Transistorized cartridge. |
| 21 | | Washer. (Located under cartridge - Part of item 18). |
| 22 | 19C321016G3 | Connector Assembly: Includes items 5-12. |

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

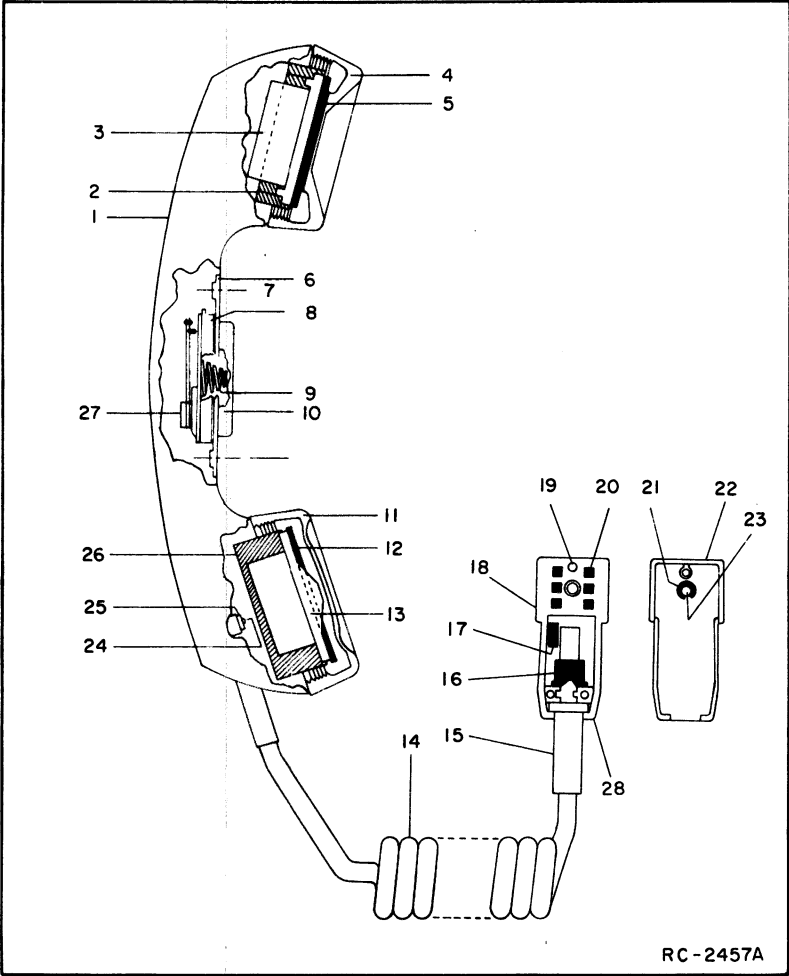


SERVICE SHEET
MICROPHONE

PARTS LIST

LBI4482F
TRANSISTORIZED DYNAMIC HANDSET
19C320478G1,3,5,6

| SYMBOL | GE PART NO. | DESCRIPTION |
|--------|--------------|---|
| 1 | RP142 | Case Assembly. Includes items 1, 2, 4, 5, 11, 12, & 26. |
| 2 | RP140 | Adapter. Part of item 1. |
| 3 | | Receiver Cartridge. |
| 4 | | Receiver Cap. Part of item 1. |
| 5 | | Washer. Part of item 1. |
| 6 | | Escutcheon. Part of item 27. |
| 7 | | Flat head screw, socket cap: No. 4-40 x 1/4. Part of item 27. |
| 8 | | Actuator. Part of item 27. |
| 9 | | Spring. Part of item 27. |
| 10 | | Plunger bar. Part of item 27. |
| 11 | | Transmitter cap. Part of item 1. |
| 12 | | Washer. Part of item 1. |
| 13 | | Transmitter cartridge. |
| 14 | | Cable assembly: Includes items 14-25 and cable RP141. |
| 15 | | Flex relief. |
| 16 | | Cable clamp: sim to Malco 21012-3. |
| 17 | 3R77P472K | Resistor, (R1 - Used in G1,G3,G5) Composition: 4.7K ohms $\pm 10\%$, 1/2 w. |
| | 19A700019P43 | Resistor, (R1 - Used in G6) Deposited carbon: 3.3K ohms $\pm 5\%$, 1/4 w. |
| 18 | 19D416766P1 | Connector case. |
| 19 | N136AP905Y6 | Tap screw: No. 4-24 x 5/16. |
| 20 | 19A129435P1 | Pin contact. |
| 21 | 19A701289P1 | Retaining ring: 3/16 inches; sim to National Lockwasher WA 510. |
| 22 | 19D416767P1 | Connector Cover. |
| 23 | 19B219723G1 | Thumb screw: lexan. (Secures cover, item 22 to case, item 18). |
| 24 | | Screw. Part of item 14. |
| 25 | | Cable clamp. Part of item 14. |
| 26 | | Shield. Part of item 1. |
| 27 | RP143 | Switch Assembly. Includes items 6-10. |
| 28 | 19C321016G3 | Connector Assembly: Includes items 15, 16, 18-23. Does not include resistor, item 17. |



SERVICE SHEET

WEATHERPROOF HANDSET

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.