

1.2 Standard Configurations

1.2.1 Dash Mount Configuration

NOTE: The dash mount configuration is not applicable for O9 control heads.

There are two versions of the APX mobile dash mount. The first are the O2, O5 and O7 control heads which are mounted on the front of the transceiver housing. The second is the O3 control head which is connected to the transceiver via a coiled cable, which is plugged into the CAN connector on the transceiver.

Electrical connection between the two takes place within the radio via a flexible circuit board between the connectors on the front of the transceiver and at the back of the control head for O2, O5 and O7.

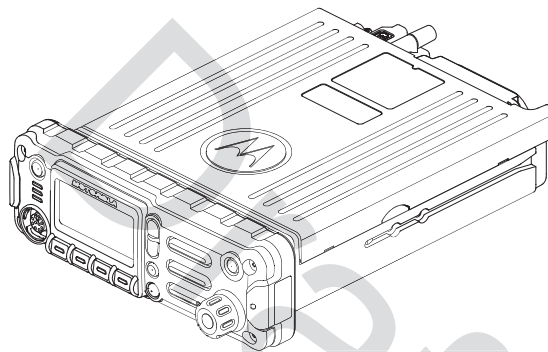


Figure 1-24. Dash Mount Configuration for O2 Control Head

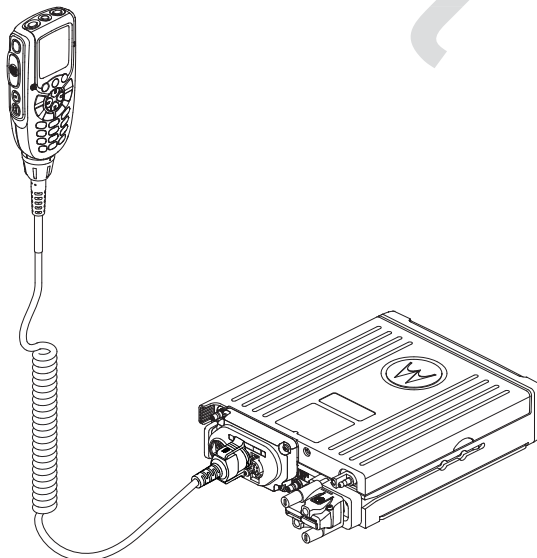


Figure 1-25. Dash Mount Configuration for O3 Control Head
(No Extension Cable Present)

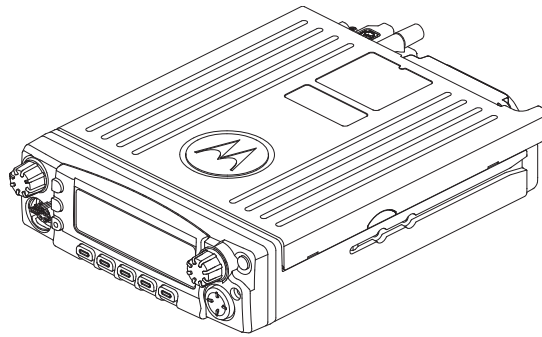


Figure 1-26. Dash Mount Configuration for O5 Control Head

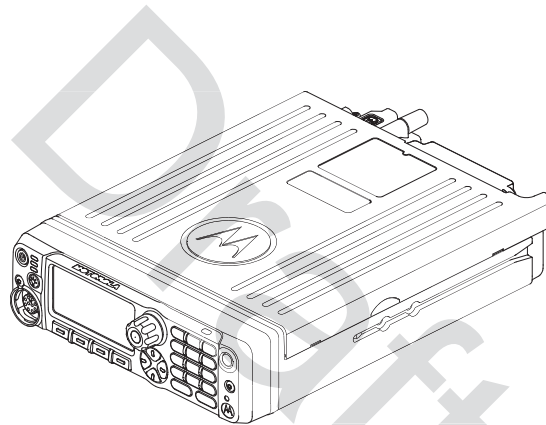


Figure 1-27. Dash Mount Configuration for O7 Control Head

For details on this configuration, see [See 2.2.1](#).

1.2.2 Remote Mount Configuration

In the remote mount configuration, the transceiver and the control head are mounted separately in the vehicle. The O2, O5, O7 and O9 control heads are mounted in remote trunnions near the operator. The transceiver and control head are mounted using a trunnion or other mounting hardware. If the transceiver is located in a car trunk, ensure that it is mounted securely and that sufficient cooling is provided. Do not cover the transceiver with baggage, blankets, etc.

NOTE: The keypad mic should only be plugged into the Mobile Microphone Port (MMP) connector located on the control head, in either dash mount or remote mount configuration.

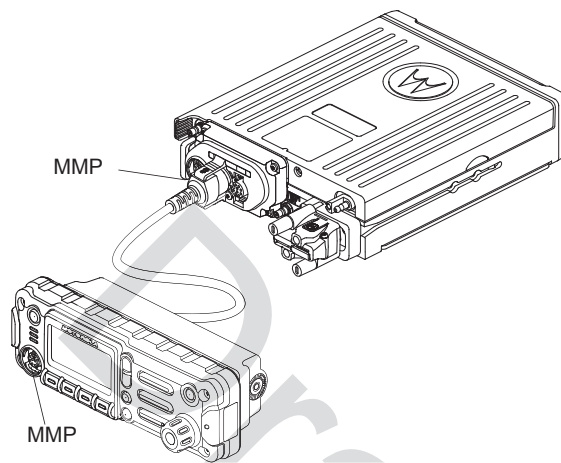


Figure 1-28. Remote Mount Configuration with Mid Power Transceiver, Transceiver Interface Board, CHIB Rear Assembly and O2 Control Head

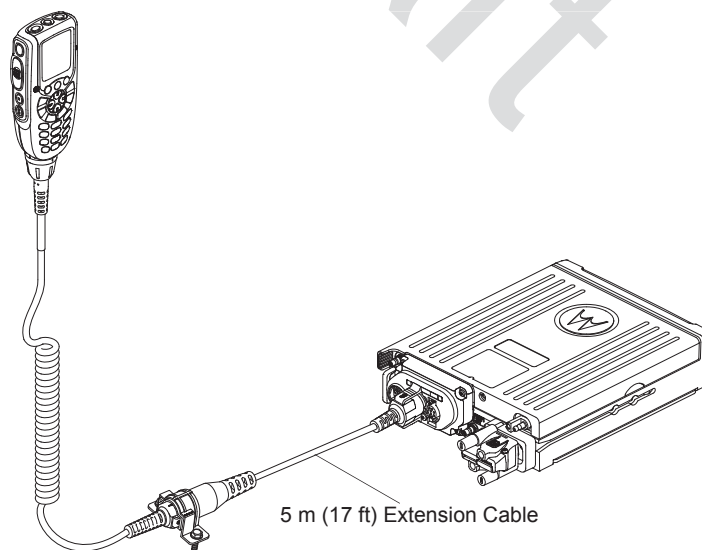


Figure 1-29. Remote Mount Configuration with Mid Power Transceiver, Transceiver Interface Board and O3 Control Head

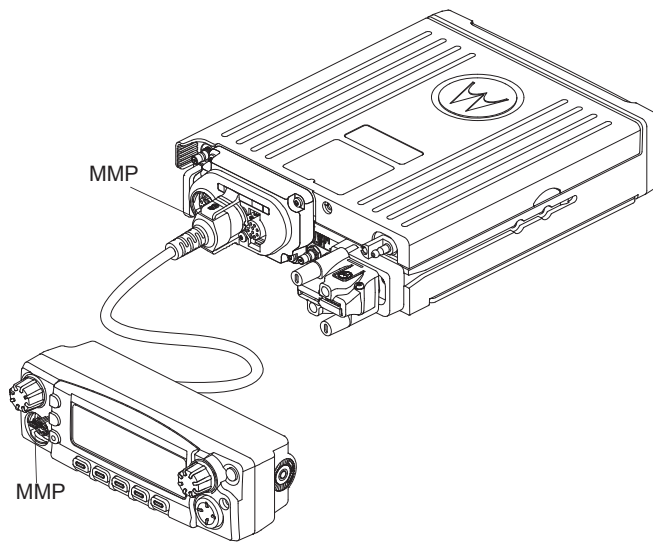


Figure 1-30. Remote Mount Configuration with Mid Power Transceiver, Transceiver Interface Board, CHIB Rear Assembly and O5 Control Head

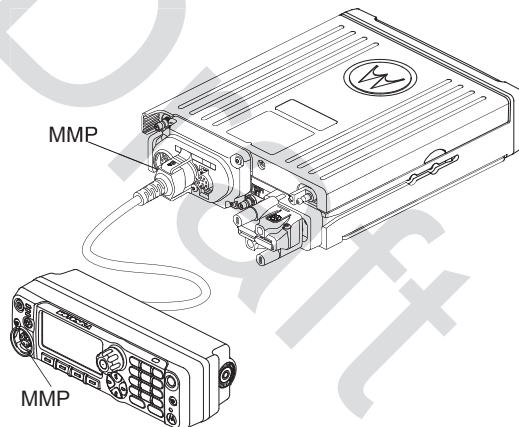


Figure 1-31. Remote Mount Configuration with Mid Power Transceiver, Transceiver Interface Board, CHIB Rear Assembly and O7 Control Head

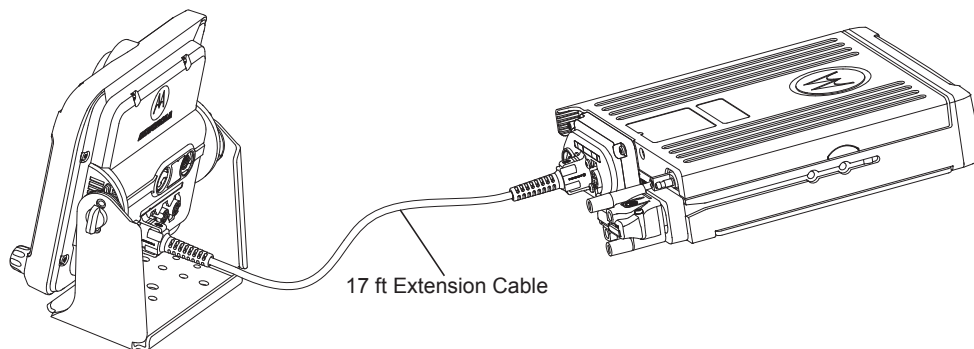


Figure 1-32. Remote Mount Configuration with Mid Power Transceiver, Transceiver Interface Board and O9 Control Head

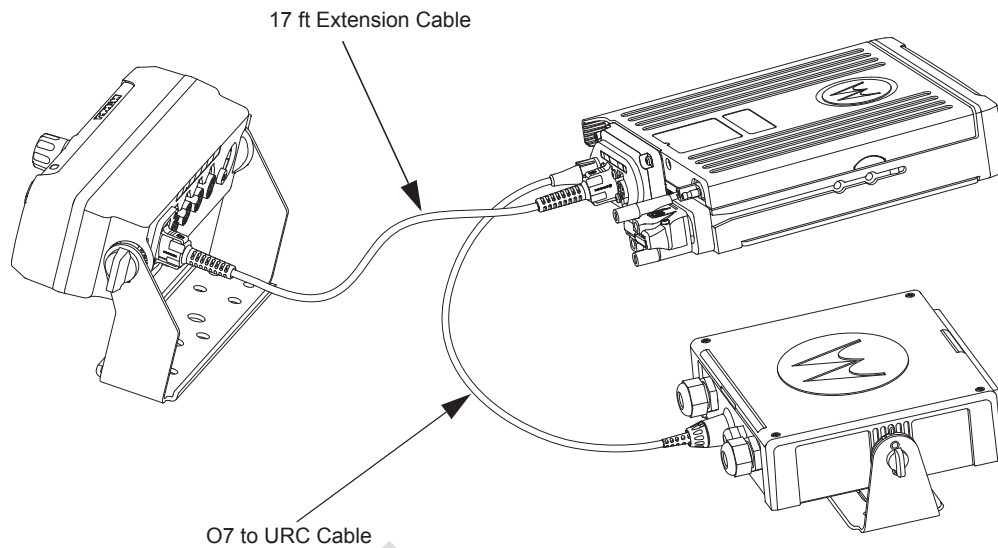


Figure 1-33. Remote Mount Configuration with Mid Power Radio Transceiver, Universal Relay Controller and O7 Control Head (URC is optional) (Also Applicable for O2 and O5 Control Heads)

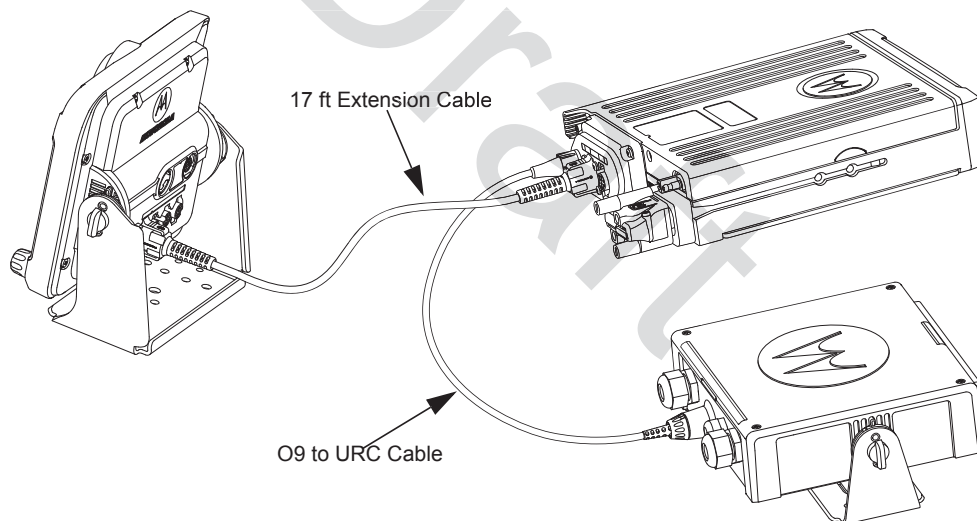


Figure 1-34. Remote Mount Configuration with Mid Power Radio Transceiver, Universal Relay Controller and O9 Control Head (URC is optional)

For details on these configurations, [See 2.2.2.](#)

1.2.3 Multi Control Head

The multi control head option allows separate, remotely operated control heads to operate and control the radio. For example, a fire truck could have a control head located in the cab and on the rear of the truck so that the radio could be operated from outside the vehicle.

1.3 Motorcycle Configurations

NOTE: The motorcycle configurations are not applicable for O9 control heads.

See Chapter 5: Motorcycle Radio Installation for further information.

1.4 Base/Control Stations

NOTE: The base/control station option is not applicable for O9 control heads.

If mobile radio equipment is installed at a fixed location and operated as a control station or as a fixed unit, the antenna installation must comply with the following requirements in order to ensure optimal performance and compliance with the RF energy exposure limits in the standards and guidelines listed in the Safety Manual (refer to related publications):

- The antenna should be mounted outside the building on the roof or a tower if at all possible.
- As with all fixed site antenna installations, it is the responsibility of the licensee to manage the site in accordance with applicable regulatory requirements and may require additional compliance actions such as site survey measurements, signage, and site access restrictions in order to ensure that exposure limits are not exceeded.

1.5 Tools Required for APX Mobile Installations

Tool	Part Number
10 mm wrench	–
5 mm Allen wrench	–
Regular slot screwdriver of Phillips #2	–
Pin removal tool	6680163F01

Notes

Draft

Chapter 2 Standard Configurations

2.1 Planning the Installation

The APX mobile radio operates only in negative ground electrical systems with a valid operating range of 13.6V +/- 20%. Before starting the radio installation, make sure that the ground polarity of the vehicle is correct. Accidentally reversing the polarity could damage the radio and cause the cable fuses to blow.

Planning is the key to fast, easy radio installation. Before starting the installation, inspect the vehicle and determine how and where you intend to mount the antenna, radio, and accessories. Plan wire and cable runs to provide maximum protection from pinching, crushing, and overheating.



Caution

Before installing any electrical equipment, check the vehicle manufacturer's user manual for warnings or recommendations.

The installation of this device should be completed by an authorized servicer or installer. Failure to properly install the device may result in damage to the device, or improper operation.

2.1.1 Installation Examples

The mobile two-way radio offers various methods of installation, with accessories placed to the vehicle as desired. The radio can be a dash or remote mount except with O9 control head, which can only be mounted remotely. The O9 control head with the radio and the URC can only be mounted remotely (see [Figure 2-3](#)).

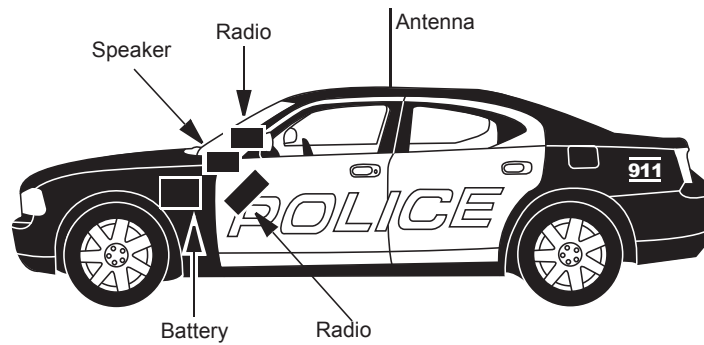


Figure 2-1. Dash Mount Radios Can Be Located in the Middle Console, on the Transmission Hump, or Under the Dash

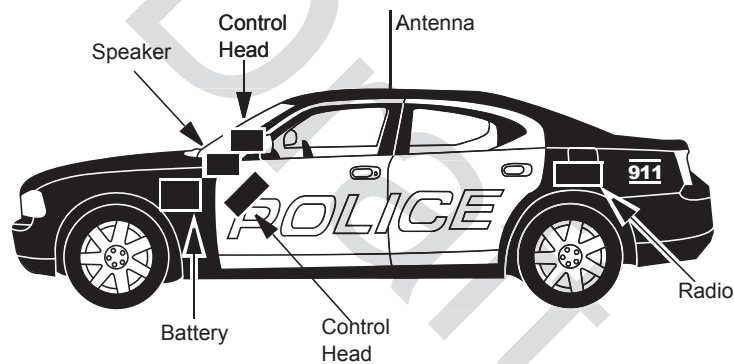


Figure 2-2. Remote Mount Radio Control Heads Can Be Located in the Middle Console, on the Transmission Hump, or Under the Dash

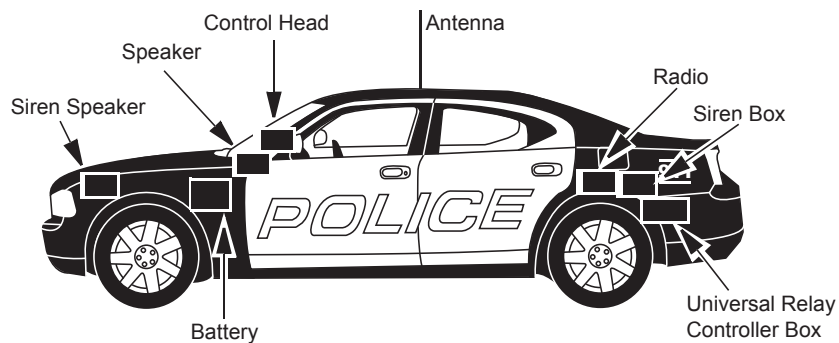


Figure 2-3. Remote Mount of the Radio, O9 Control Head and Universal Relay Controller (URC is optional)

2.1.2 Wiring Diagrams

Figure 2-4 through Figure 2-13 show the wiring diagrams for all the possible configurations. The title under each figure identifies the O2, O3, O5, O7 or O9 control head configurations. Identify which of these figures shows the configuration that you are installing, and use the diagram when planning the installation.

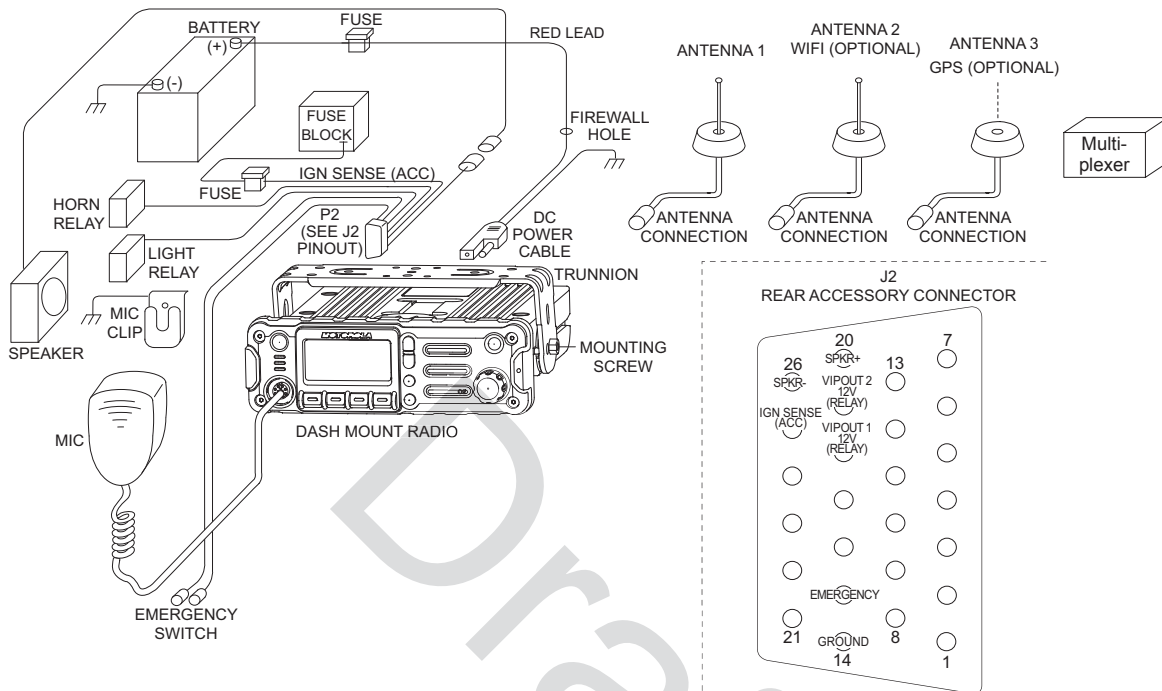


Figure 2-4. Radio Installation (O2 Mid Power Dash Mount)

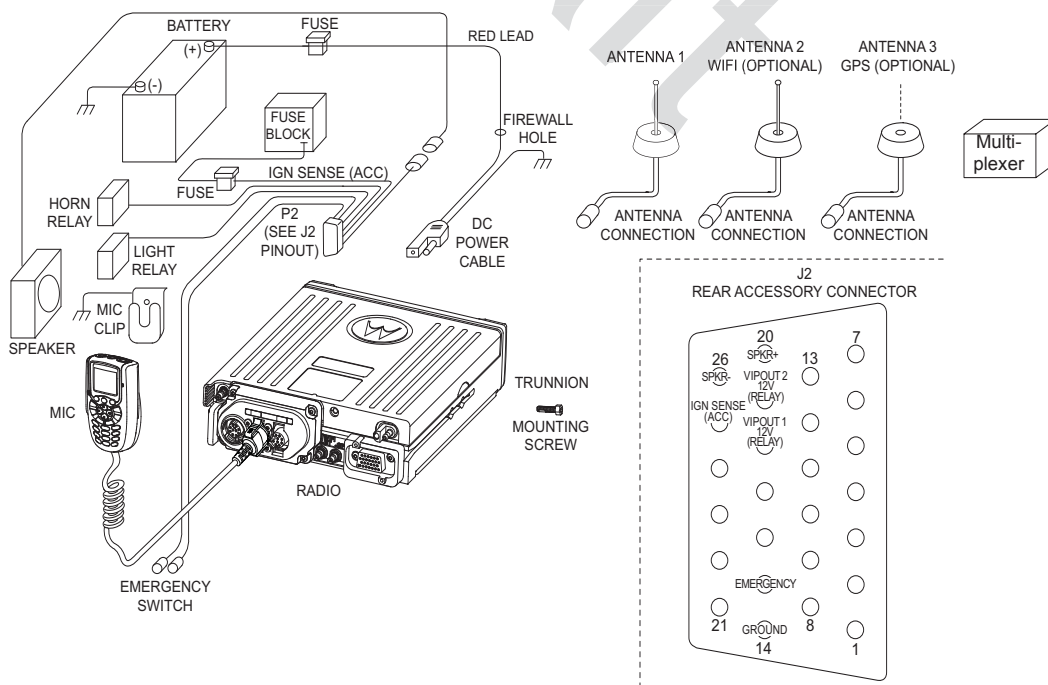


Figure 2-5. Radio Installation (O3 Mid Power Dash Mount)

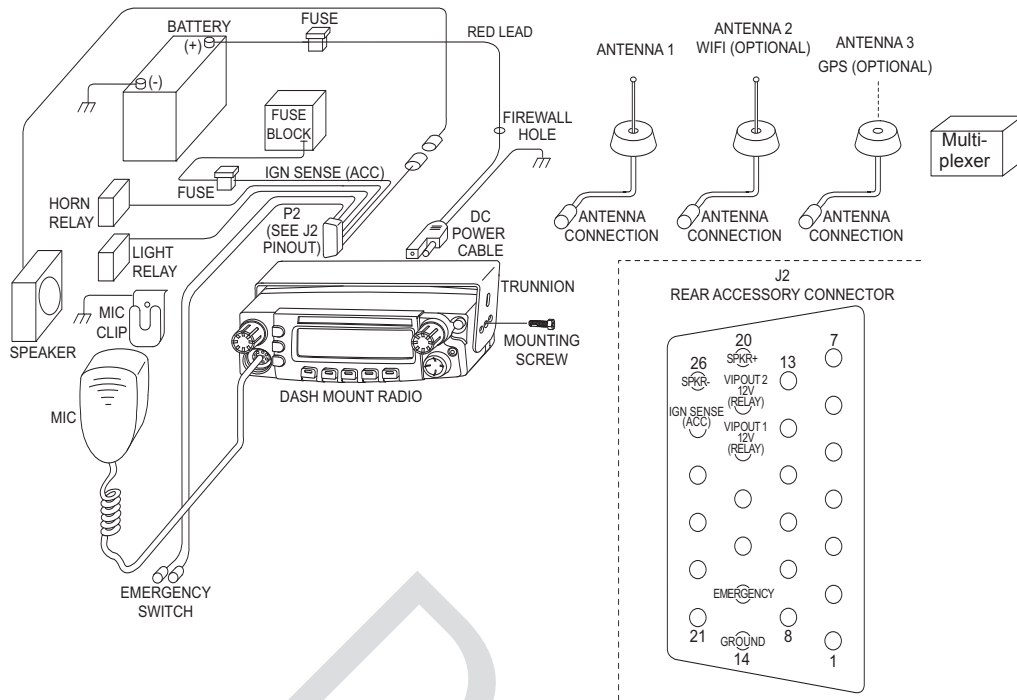


Figure 2-6. Radio Installation (O5 Mid Power Dash Mount)

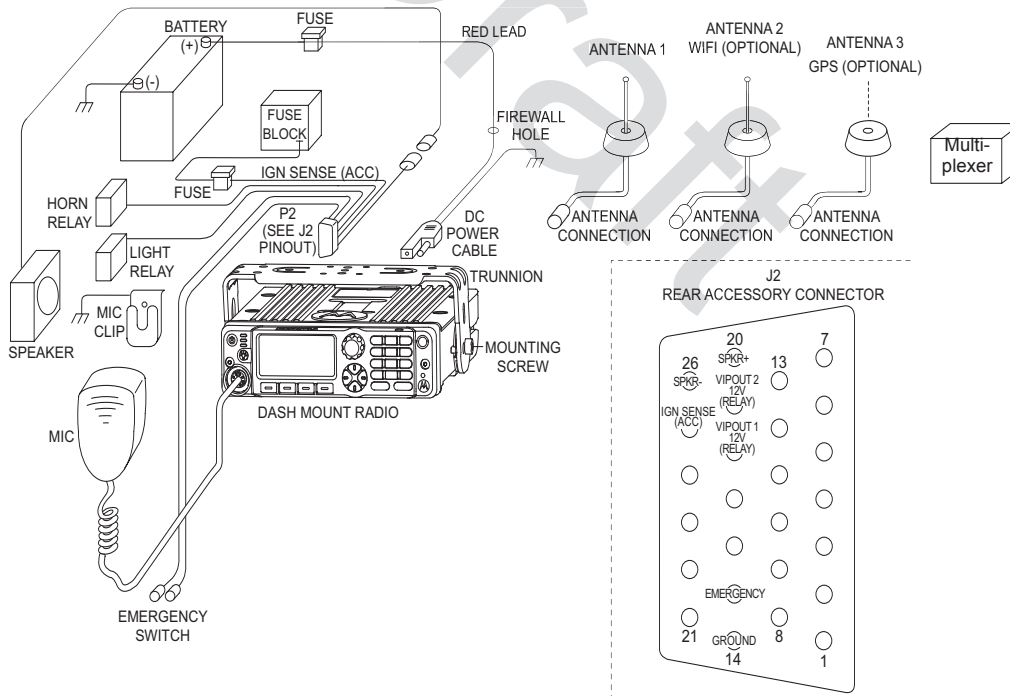


Figure 2-7. Radio Installation (O7 Mid Power Dash Mount)

NOTE: In dash mount configuration, it is mandatory that a rear accessory cable be attached at the back of a mid power transceiver, in order to ground the Emergency pin to GND. Or, an emergency footswitch or pushbutton switch must be attached at the back of a mid power. If the emergency pin is not grounded, upon the attachment of the A+ cable at the DC connector, the radio will detect a HIGH for the emergency pin state, and assume that emergency has been activated. This will attempt to power on the radio, and will result in excessive current draw and incorrect radio operation. Refer to [Section 2.1.3.1](#) for further details and recommended wiring of emergency in dash mount.

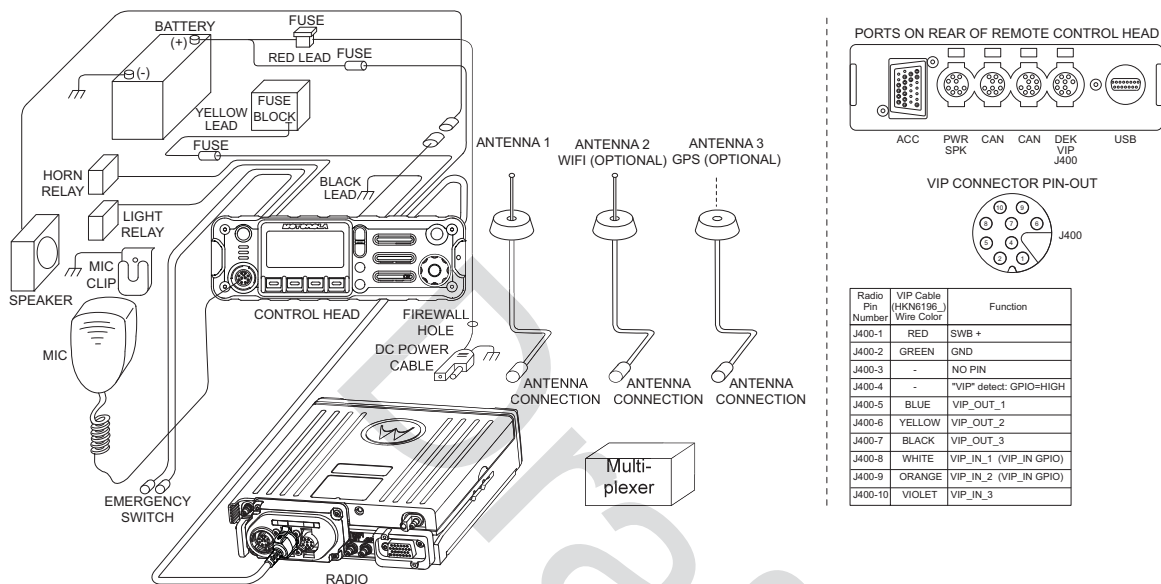


Figure 2-8. Radio Installation (O2 Mid Power Remote Mount)

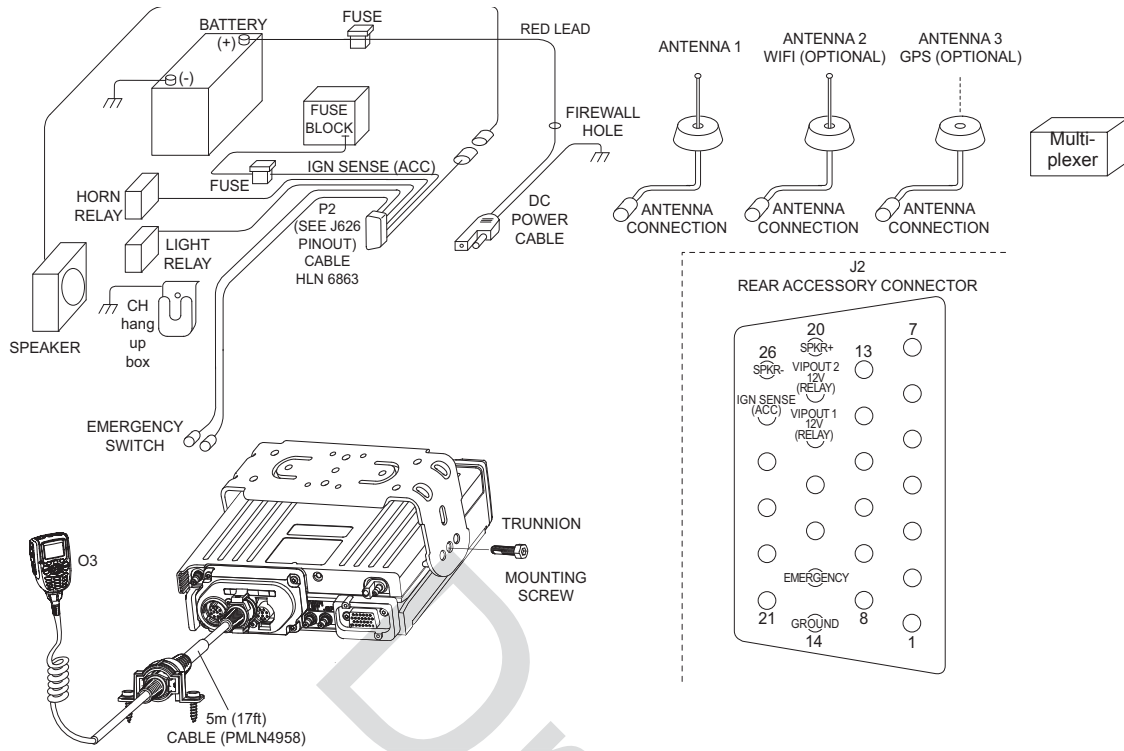


Figure 2-9. Radio Installation (O3 Mid Power Remote Mount)

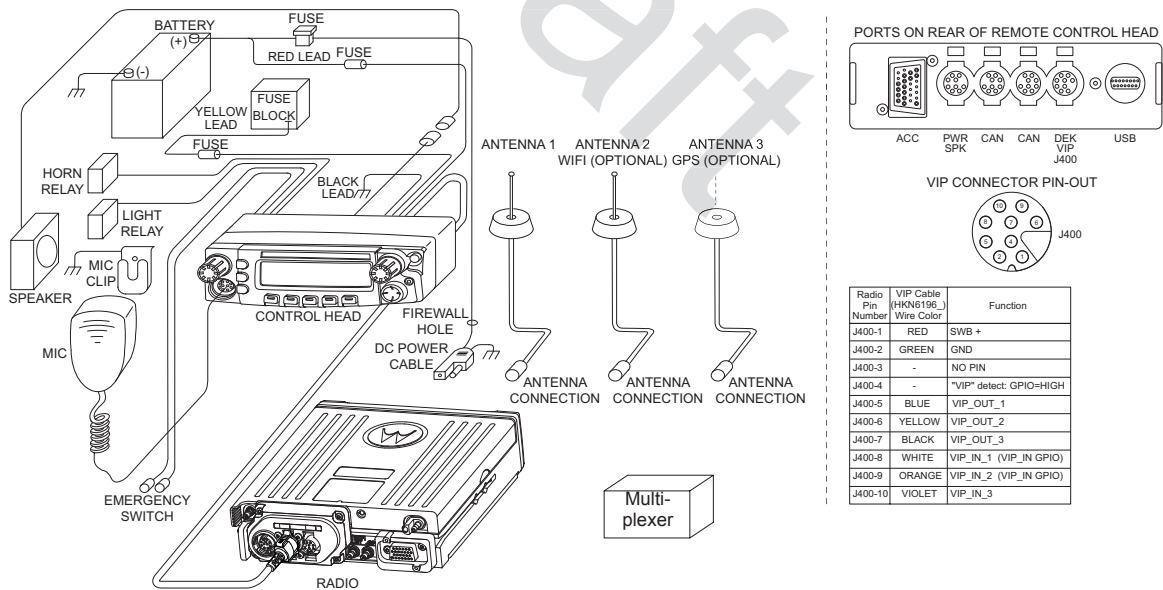


Figure 2-10. Radio Installation (O5 Mid Power Remote Mount)

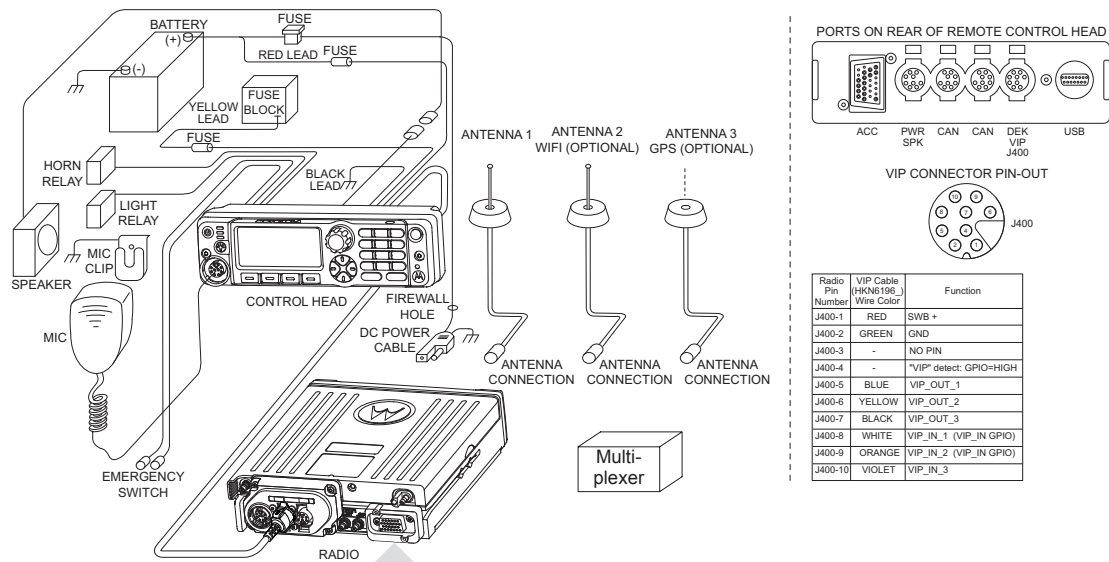


Figure 2-11. Radio Installation (O7 Mid Power Remote Mount)

Refer to Section 2.1.3.2 and Section 4.2.1 for further details and recommended wiring of emergency in remote mount.

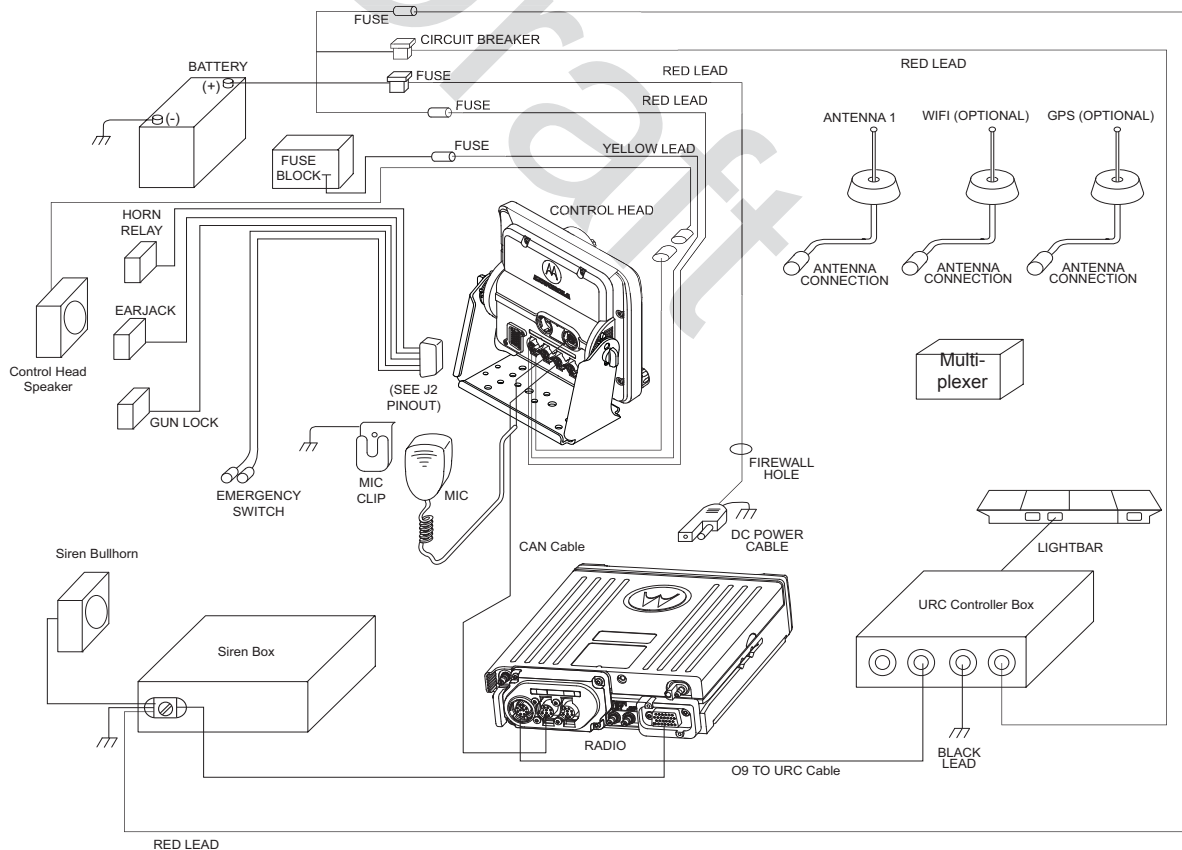


Figure 2-12. Radio Installation of O9 Remote Mount with Transceiver (URC is optional)

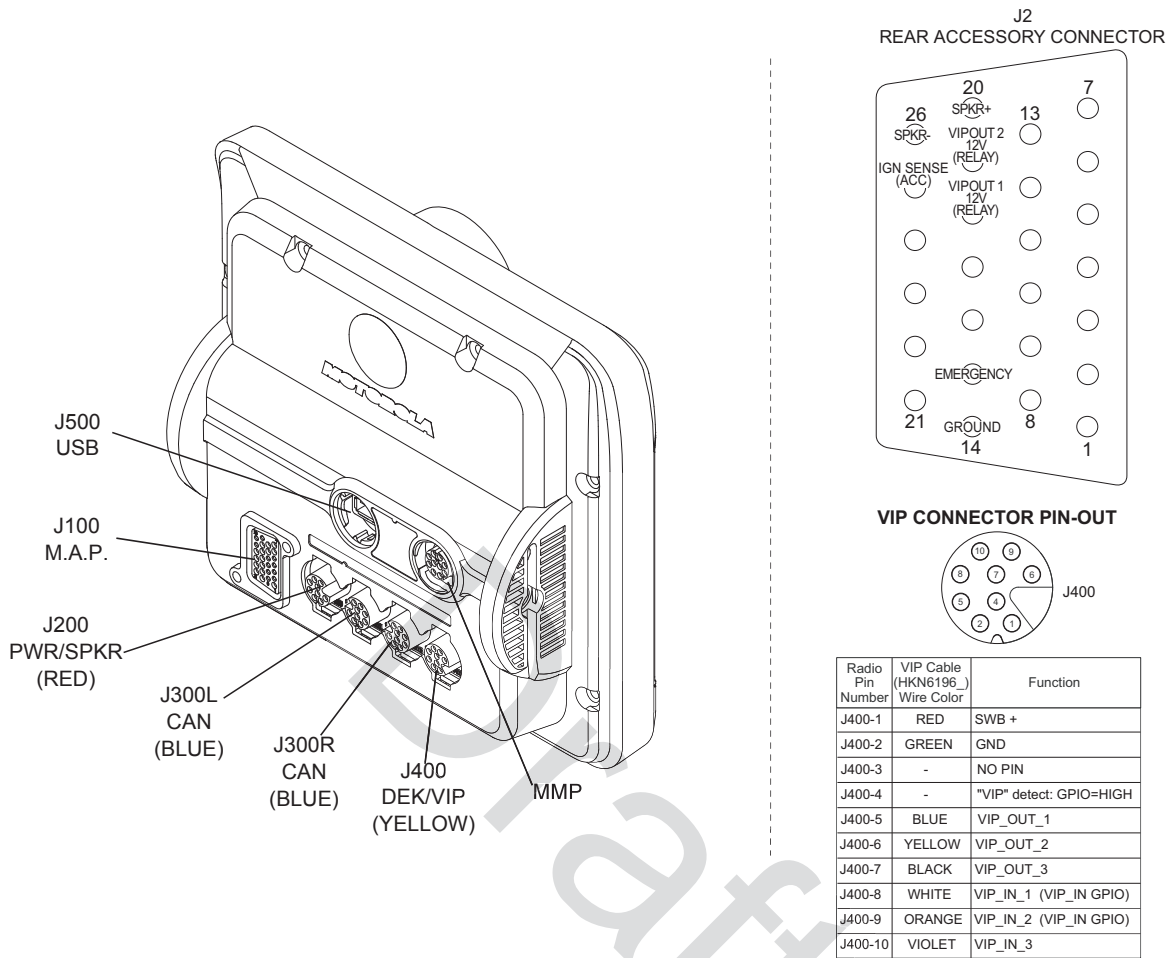


Figure 2-13. Radio Installation (O9 Remote Mount with Pinouts)

Refer to [Section 2.1.3.2](#) and [Section 4.2.1](#) for further details and recommended wiring of emergency in remote mount.

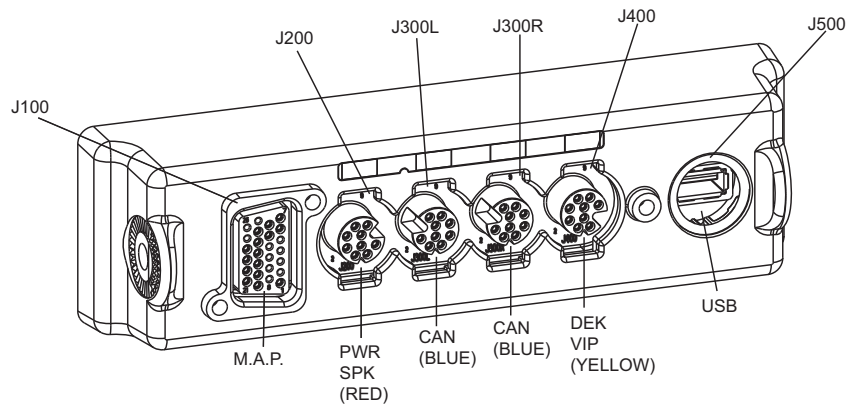
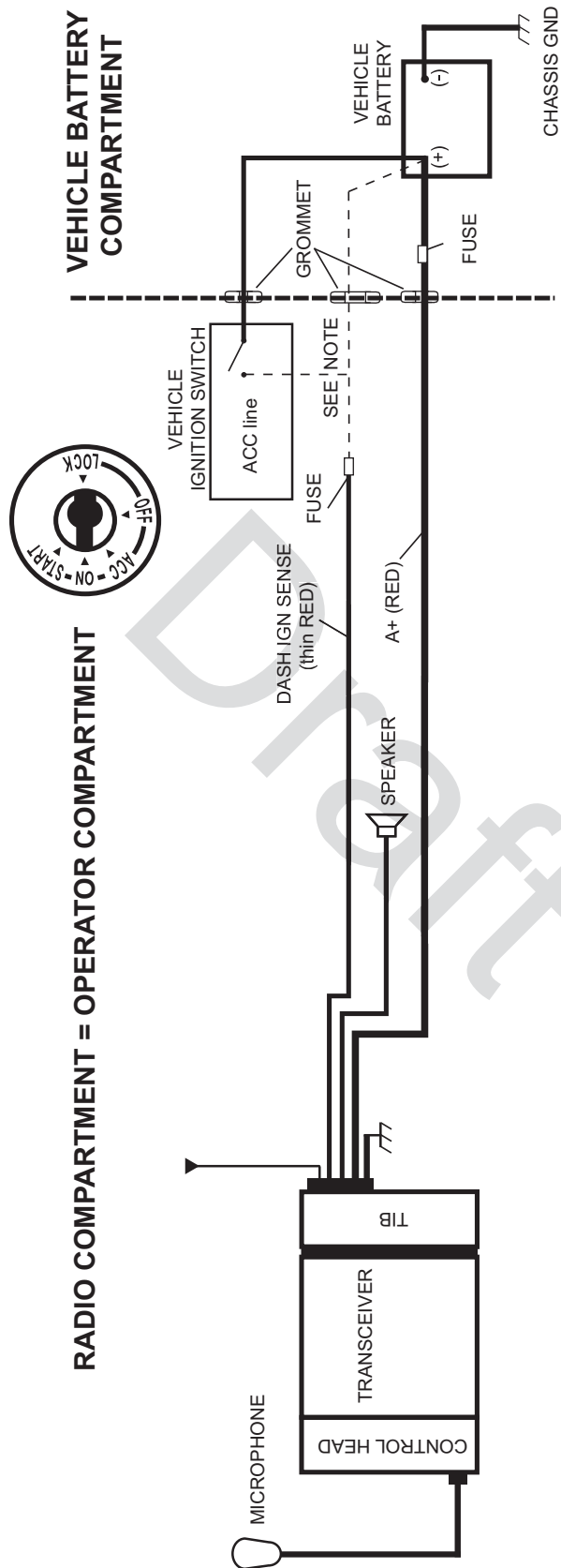


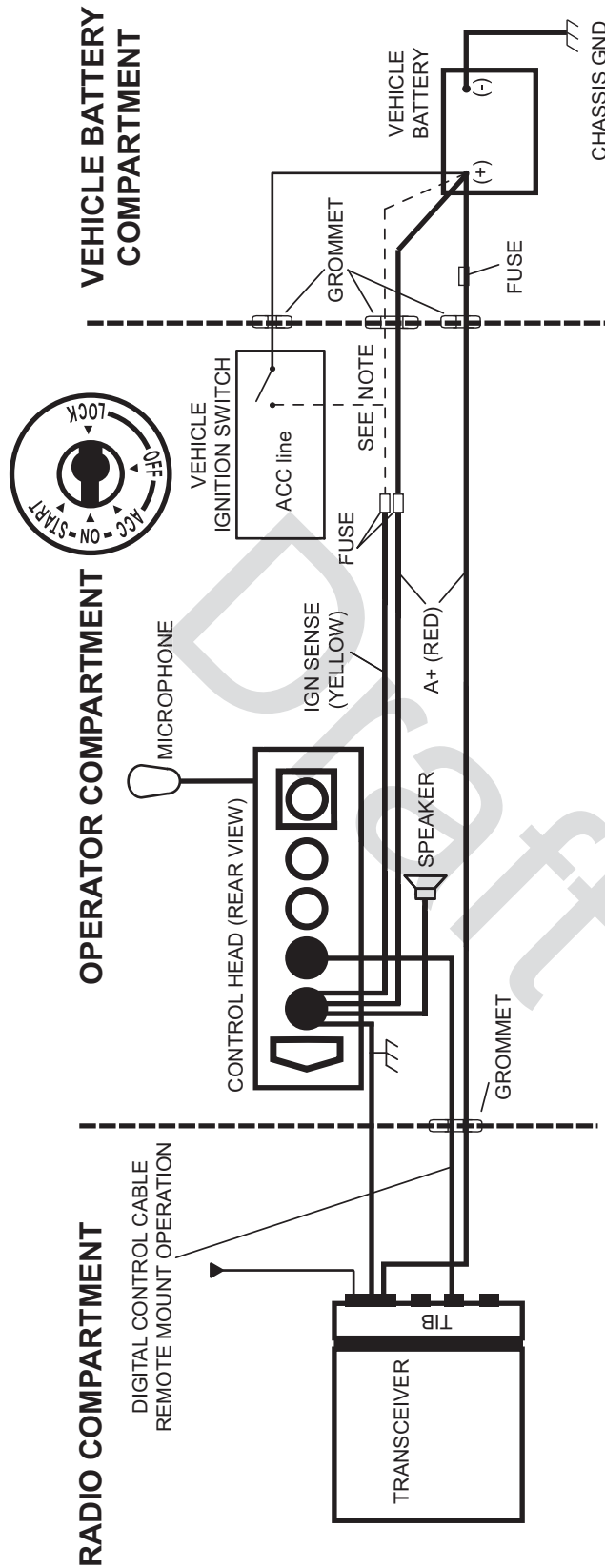
Figure 2-14. Remote Control Head Pinouts



NOTE:
See TABLE 2-1 for wiring of the thin RED wire on rear accessory plug. A good GROUND connection to the car chassis is required for correct radio operation.

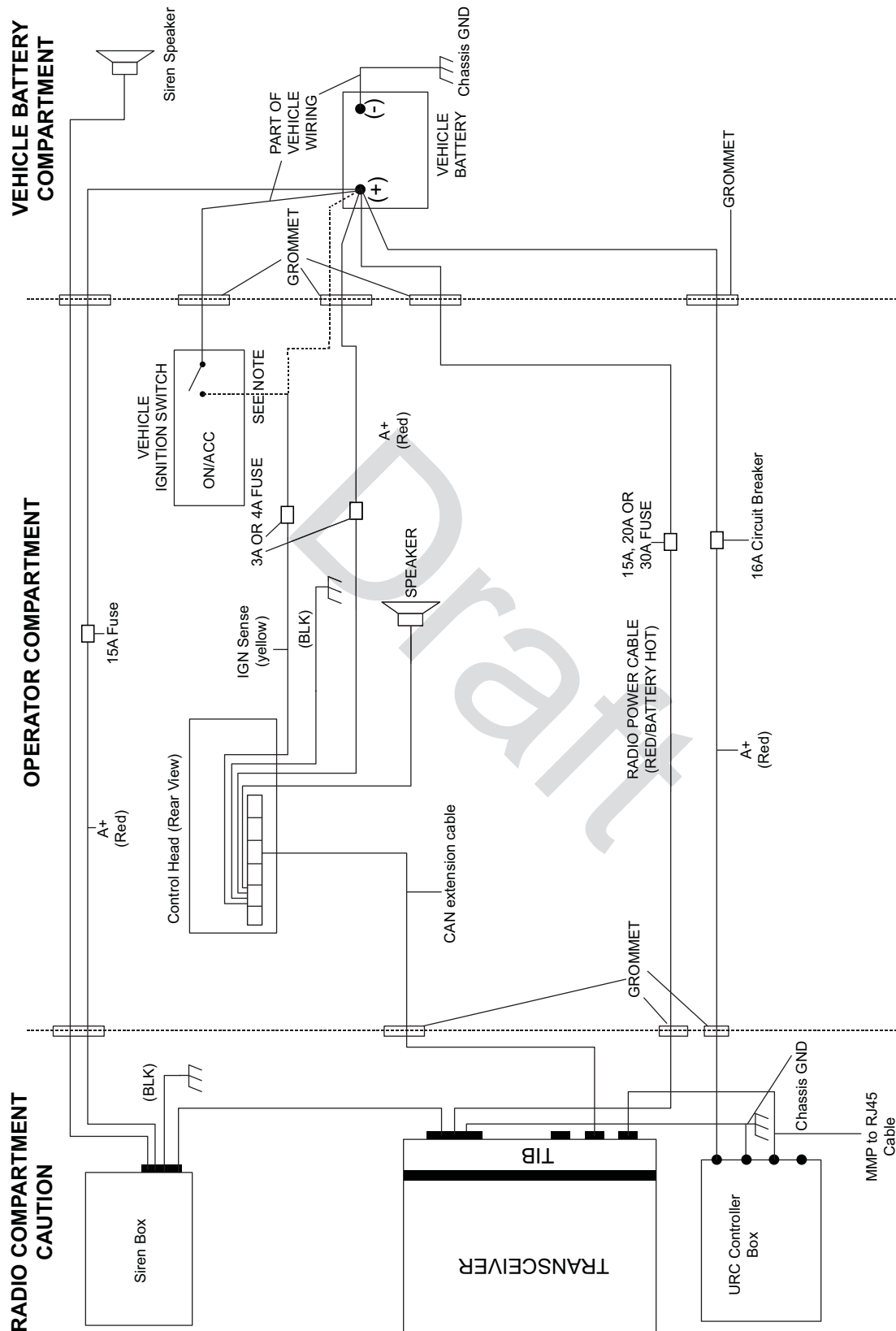
NOTE:
Ignition sense cable uses either 3-amp fuse (6580283E01) or 4-amp fuse (6580283E02)

Figure 2-15. Cabling Interconnect Diagram for Dash Mount



NOTE:
See TABLE 2-1 for wiring of the YELLOW wire. A good GROUND connection to the car chassis is required for correct radio operation.

Figure 2-16. Cabling Interconnect Diagram for Remote Mount



NOTE:
For remote mount configurations, do not supply IGNITION at the radio's rear accessory connector. See TABLE 2-2 for combinations of wiring the RED and YELLOW cables. Alternator whine and other noise problems may occur. Isolate the RED cable with a Motorola relay (5900813674).

Figure 2-17. Cabling Interconnect Diagram for 09 Remote Mount (URC is optional)

2.1.3 Radio Operation Wiring for Dash and Remote Configurations

Determine from [Table 2-1](#) or [Table 2-2](#) the radio functionality you wish to achieve, which is controlled by the vehicle's ignition switch state, the physical wiring of the radio's ignition sense (ACC) wire, and by the programmed CPS setting. For additional radio functionality as determined by the programming of the ignition switch in CPS, refer to the HELP menu in your CPS (i.e. Ignition as: Required, Blank, Soft Power Off, TX Inhibit, PTT TX Inhibit, Ignition Only Power Up).

Choose a clean ignition point which is not shared in the immediate vicinity by other high current accessories/devices. This will help to reduce the transients on the ignition line. Examples of high-current accessories/devices are: Air Horn, relays, lightbars and etc. It is recommended to wire to the vehicle's ACC line, not the START or the solenoid side of the ignition circuit. Refer to chapter 6 for best installation practices. The Ignition sense (ACC) cable uses either a 3-amp fuse (6580283E01) or 4-amp fuse (6580283E02).

2.1.3.1 Dash Mount: Power, Ignition, and Emergency Cable Installation

The standard dash mount rear ignition sense cable HLN6863 contains a "thin red" ignition wire, a jumper wire that shorts emergency to ground, and two gray wires attached to an external speaker plug. The thin RED wire is the ignition sensed wire. Refer to [Table 2-1](#) or [Table 2-2](#) for its correct wiring configurations.

NOTE: This cable **MUST** be attached in order for the radio to operate in Dash mount, regardless of how emergency is programmed in CPS or wired inside the vehicle. Either the emergency jumper wire or an emergency accessory (footswitch or button) must be wired to the rear of the transceiver in Dash mount. Otherwise, upon attachment of the radio's power cable to the vehicle battery, the radio will incorrectly determine that emergency operation has been activated, such as when an emergency footswitch is de-pressed and the emergency pin is ungrounded.

2.1.3.2 Remote Mount: Power, Ignition, and Emergency Cable Installation

The single control head O2, O5, O7 or O9 remote mount configurations receive power from the J200 connector's red and black wires. The yellow wire at J200 is one ignition sense wire. On mid power radios, the J2 connector can also be used for ignition sense. If the HLN6863 is attached at J100 of the O2, O5, O7 or O9 control head, the "thin red" wire will NOT function as an ignition sense wire, since the J100 connector has no ignition sense electrical connection.

NOTE: It is incorrect for installation to attach ignition sense at more than one wire or connector. Refer to [Table 2-1](#) or [Table 2-2](#) for its correct wiring configurations.

The O3 control head receives its power down the CAN cable, and detects the ignition state by the ignition sense pin at J2. On mid power radios, the J2 connector can also be used for ignition sense.

In Multi-Control Head installations, the yellow ignition wire must be connected to the head assigned ID # 1. [Section 2.2.2.4: "Setting the Initial Control Head ID"](#) for further information.

The design of the control head is different compared to the transceiver, therefore it is also **NOT** necessary to attach HLN6863 at J100 to prevent accidental emergency operation. The control head can have an emergency accessory attached at connector J100 instead of at the transceiver connector J2. Wherever the emergency accessory is placed, it is recommended to only attach at one location rather than multiple emergency accessories attached at different points of the radio.