

Foreword

This manual covers the O3, O5, and O9 models of the ASTRO® APX™ 7500 digital mobile radios. It includes all the information necessary to install mid power and high power radios, and configure radio installation inside vehicles.

For details on radio operation or component-level troubleshooting, refer to the applicable manuals available separately. A list of related publications is provided in the section “[Related Publications](#),” on page vi.

Product Safety and RF Exposure Compliance

See “[Installation Requirements for Compliance with Radio Frequency \(RF\) Energy Exposure Safety Standards](#),” on page ii.

Manual Revisions

Changes which occur after this manual is printed are described in PMRs (Publication Manual Revisions). These PMRs provide complete replacement pages for all added, changed, and deleted items.

To obtain PMRs, go to <https://businessonline.motorola.com>.

Parts Ordering

See [Appendix A: Replacement Parts Ordering](#) for information on how to obtain replacement parts. For part numbers, refer to the ASTRO APX 7500 Digital Mobile Radio Basic Service Manual (Motorola publication part number 6875964M01).

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Installation Requirements for Compliance with Radio Frequency (RF) Energy Exposure Safety Standards

ATTENTION!

This radio is intended for use in occupational/controlled conditions, where users have full knowledge of their exposure and can exercise control over their exposure to meet FCC limits. This radio device is NOT authorized for general population, consumer, or any other use.

To ensure compliance to RF Energy Safety Standards:

- Install only Motorola approved antennas and accessories
- Be sure that antenna installation is per "[Antenna Installation](#)," on page 2-33 of this manual
- Be sure that Product Safety and RF Safety Booklet enclosed with this radio is available to the end user upon completion of the installation of this radio

Before using this product, the operator must be familiar with the RF energy awareness information and operating instructions in the Product Safety and RF Exposure booklet enclosed with each radio (Motorola Publication part number 6881095C99) to ensure compliance with Radio Frequency (RF) energy exposure limits.

For a list of Motorola-approved antennas and other accessories, visit the following web site which lists approved accessories for your radio model: <http://www.motorola.com/governmentandenterprise>.

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Related Publications

ASTRO APX 7500 Digital Mobile Radio O3 Control Head User Guide	6875946M01
ASTRO APX 7500 Digital Mobile Radio O5 Control Head User Guide	6875947M01
ASTRO APX 7500 Digital Mobile Radio O9 Control Head User Guide	68007024014
ASTRO APX 7500 Digital Mobile Radio Basic Service Manual	6875964M01
ASTRO APX 7500 Digital Mobile Radio Detailed Service Manual	6875963M01

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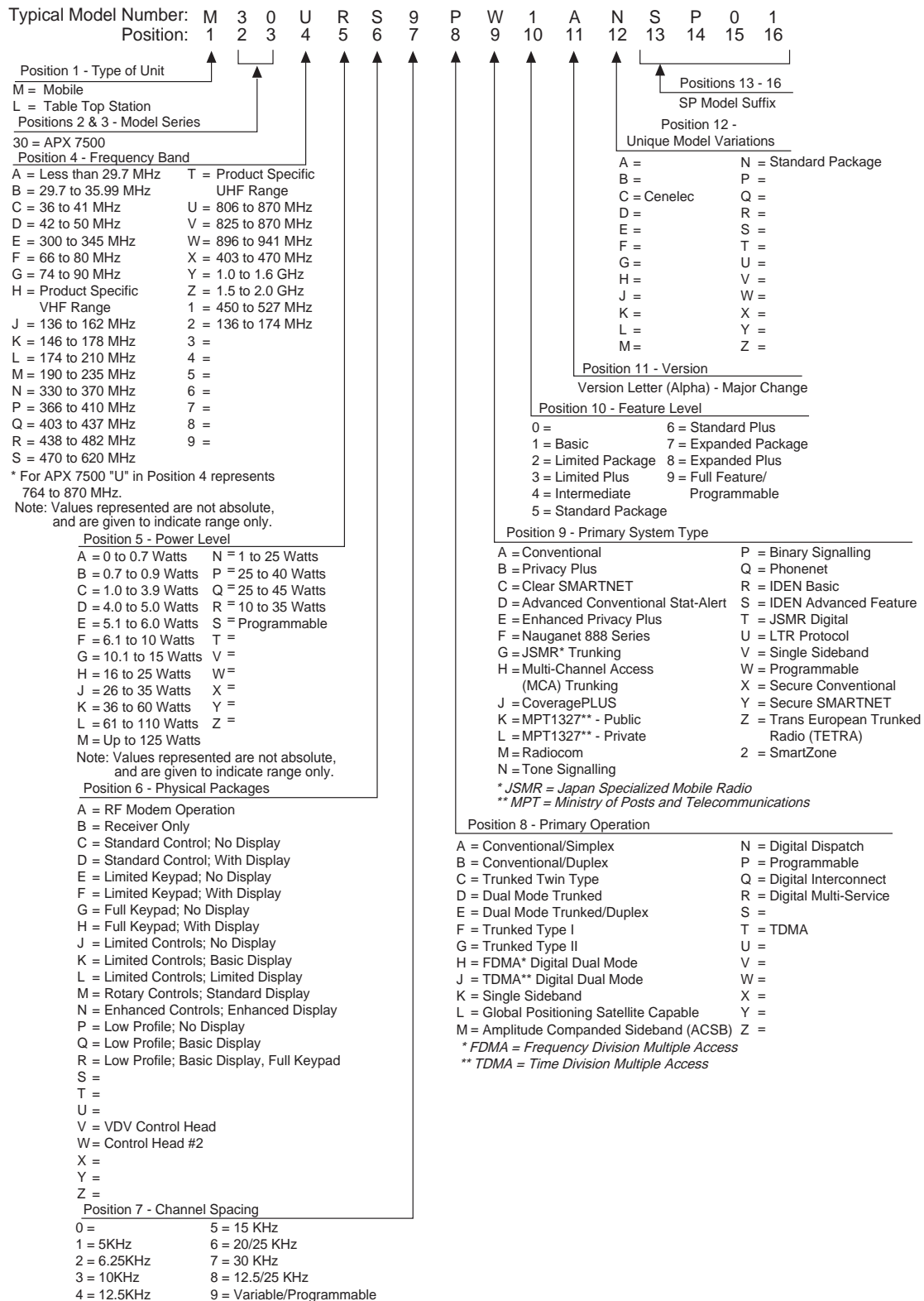
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Mobile Radio Model Numbering Scheme



Chapter 1 Introduction

This manual covers the installation procedures for ASTRO APX 7500 mobile and motorcycle radios with O3, O5 and O9 control heads, and accessories required to complete the radio system. The radio system consists of a control head, radio, antenna, microphone, speaker, cabling, Universal Relay Controller (URC), and accessories.

1.1 Mobile Radio Description

1.1.1 Dimensions

Figure 1-1 and Figure 1-2 show the basic dimensions of the dash mount transceiver trunnion APX 7500 radio. The transceiver portion of a remote mount APX 7500 is sized similarly.

When installing the radio, make sure to plan the installation carefully and leave additional room in the rear of the radio for cabling and accessory connections; in the front of the radio for access, controls, and cabling (if remote mount); and to the sides of the radio so that you may access and install the trunnion screws/wing screws.

NOTE: The measurement unit used in Figure 1-1 to Figure 1-12 is millimeter.

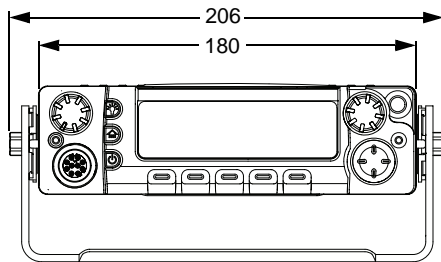


Figure 1-1. Front View of Mid Power Dash Mount Transceiver and Trunnion

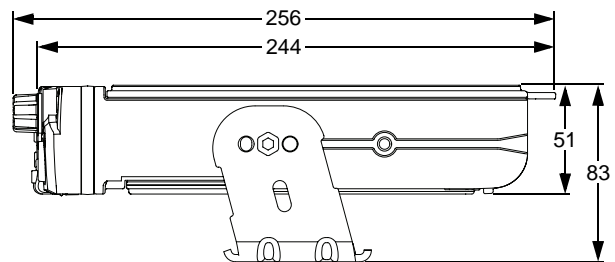


Figure 1-2. Side View of Mid Power Dash Mount Transceiver and Trunnion

NOTE: The rear accessory connector adds 0.75 in to the overall length. The remote mount length is 244 mm.

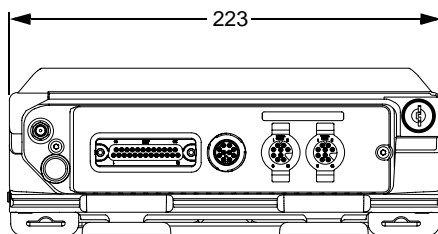


Figure 1-3. Front View of High Power (100W) Transceiver and Trunnion

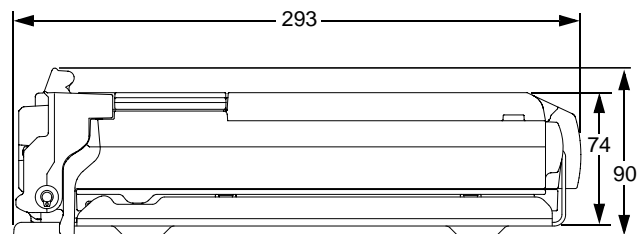


Figure 1-4. Side View of High Power (100W) Transceiver and Trunnion

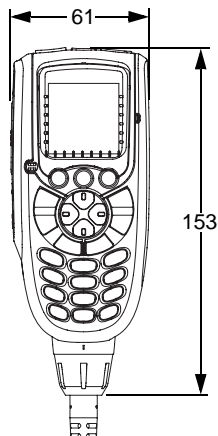


Figure 1-5. Front View of O3 Control Head with Coiled Cable



Figure 1-6. Side View of O3 Control Head with Coiled Cable

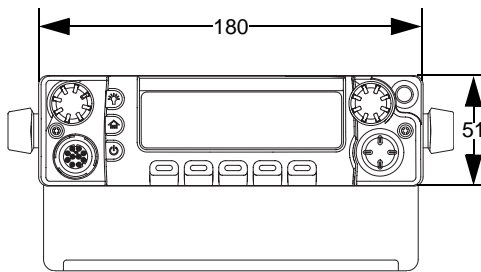


Figure 1-7. Front View of O5 Control Head with Trunnion

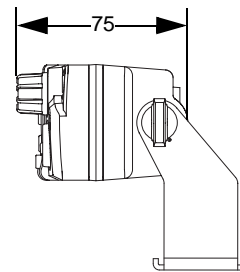


Figure 1-8. Side View of O5 Control Head with Trunnion

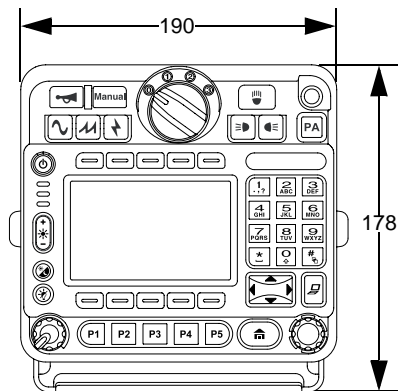


Figure 1-9. Front View of O9 Control Head with Trunnion

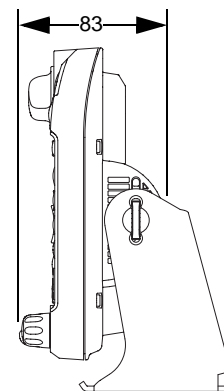


Figure 1-10. Side View of O9 Control Head with Trunnion

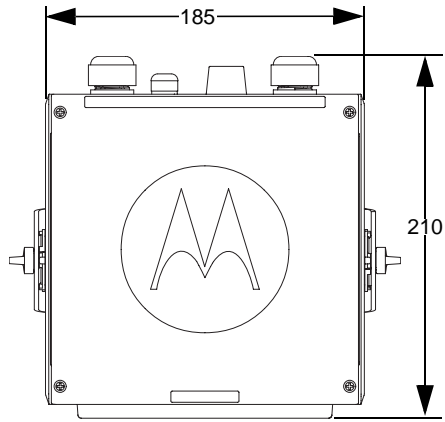


Figure 1-11. Top View of O9 Universal Relay Controller with Trunion (URC is an orderable accessory.)

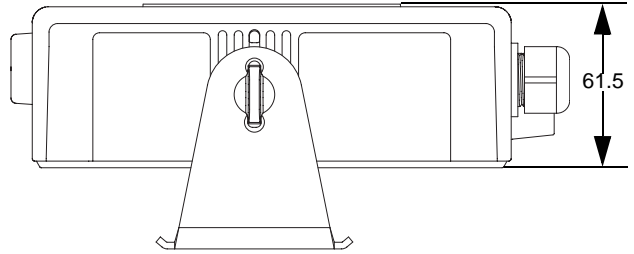


Figure 1-12. Side View of O9 Universal Relay Controller with Trunion (URC is an orderable accessory.)

1.2 Standard Configurations

1.2.1 Dash Mount Configuration

NOTE: The dash mount configuration is not applicable for 100W radios and O9 control heads.

There are two versions of the APX 7500 dash mount. The first is the O5 control head which is 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 the O5 and between the connectors on the front of the transceiver and at the back of the TIB for the O3.

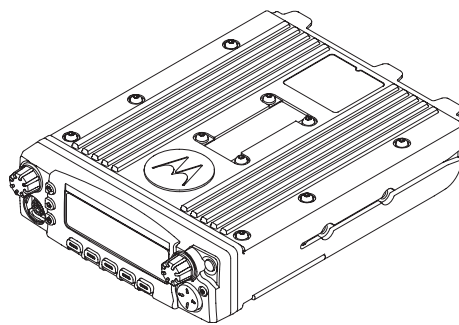


Figure 1-13. Dash Mount Configuration with O5 Control Head

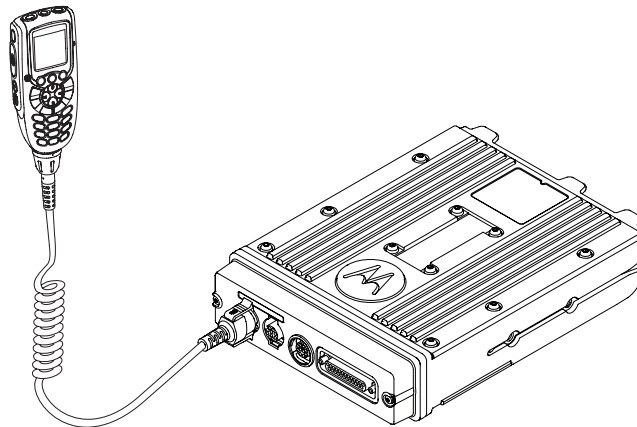


Figure 1-14. Dash Mount Configuration with Transceiver Interface Board and O3 Control Head

For details on this configuration, see [Section 2.2.1 on page 2-16](#).

1.2.2 Remote Mount Configuration

In the remote control version, the transceiver and the control head are mounted separately in the vehicle. The O5 control head is mounted in a remote trunnion near the operator, and the O3 and O9 control heads are also mounted near the operator using an extension cable. The transceiver and control head are mounted by means of a trunnion or other mounting hardware. If the transceiver is located in a car trunk, be sure that secure mounting and sufficient cooling are provided. Do not cover the transceiver with baggage, blankets, etc.

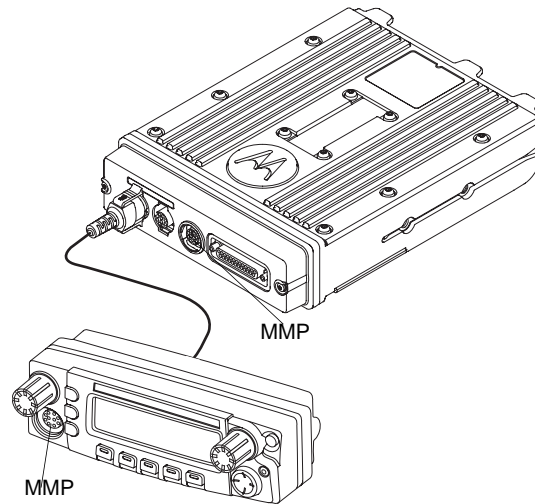


Figure 1-15. Remote Mount Configuration with Mid Power Transceiver and O5 Control Head

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

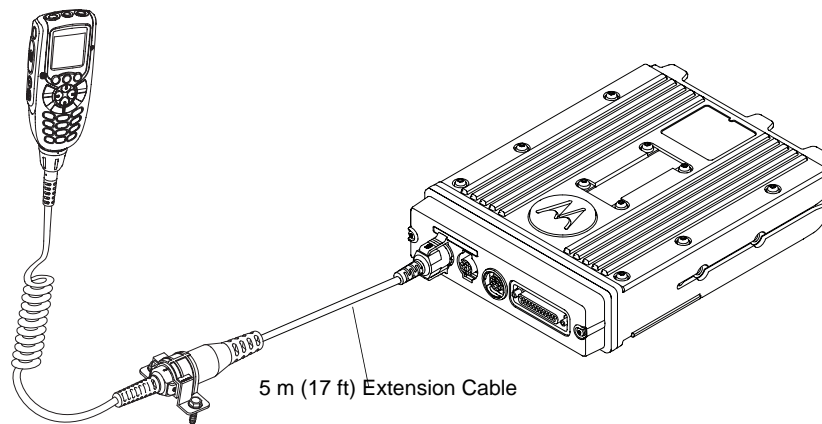


Figure 1-16. Remote Mount Configuration with Mid Power Transceiver, Transceiver Interface Board, and O3 Control Head

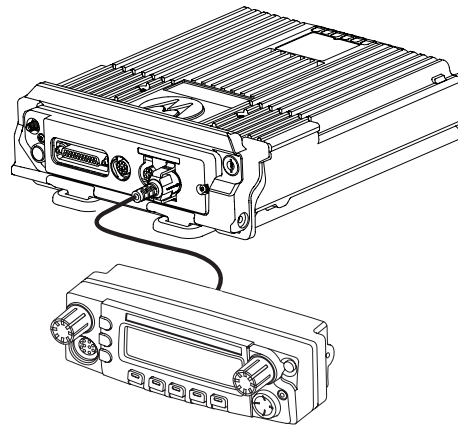


Figure 1-17. Remote Mount Configuration with High Power (100W) Radio Transceiver and O5 Control Head

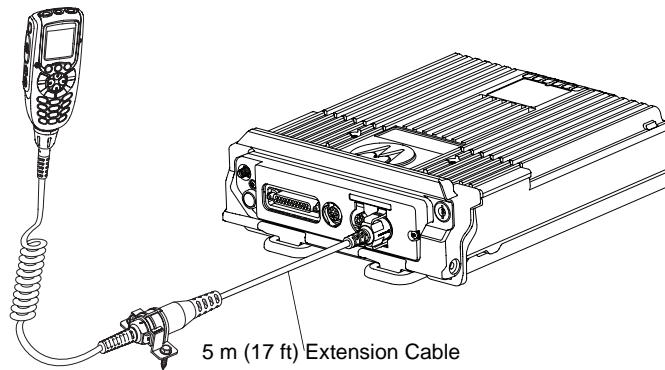


Figure 1-18. Remote Mount Configuration with High Power (100W) Radio Transceiver and O3 Control Head

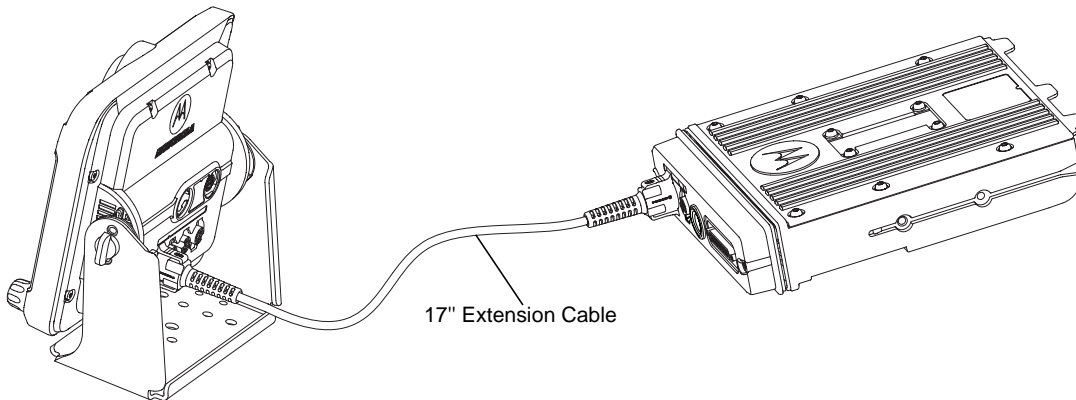


Figure 1-19. Remote Mount Configuration with Radio Transceiver and O9 Control Head

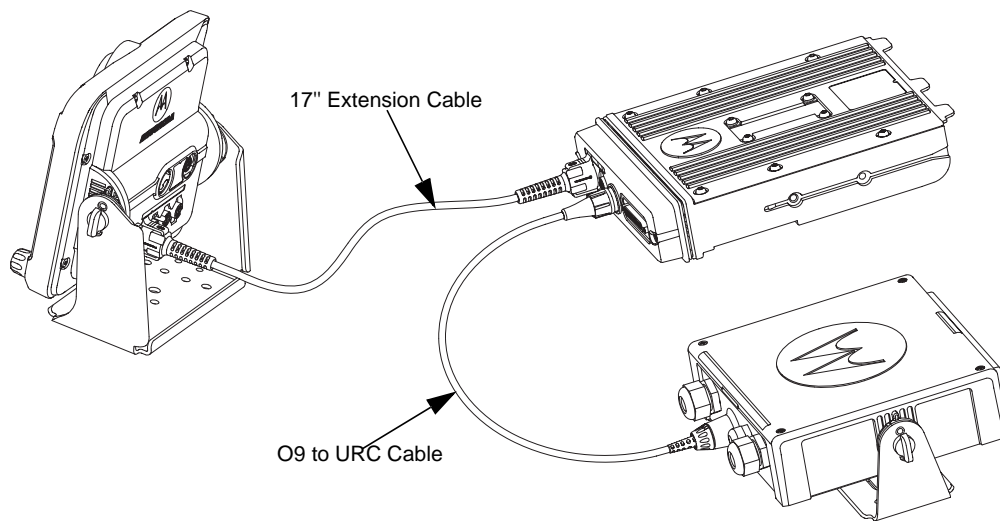


Figure 1-20. Remote Mount Configuration with Mid Power Radio Transceiver, Universal Relay Controller and O9 Control Head (URC is optional.)

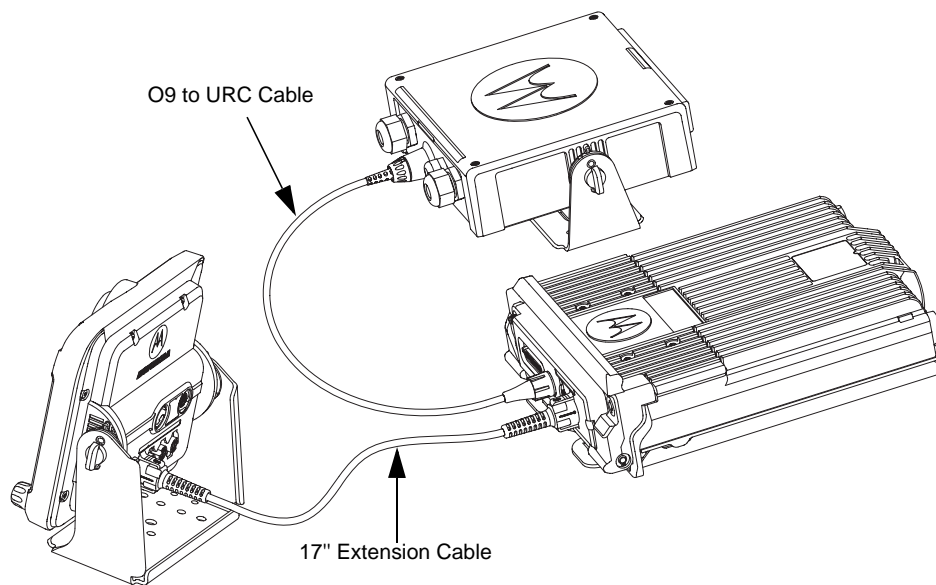


Figure 1-21. Remote Mount Configuration with High Power (100W) Radio Transceiver, Universal Relay Controller and O9 Control Head (URC is optional.)

For details on these configurations, see [Section 2.2.2 on page 2-17](#).

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.

NOTE: The dual control head can be used together in the future.

1.3 Motorcycle Configurations

NOTE: The motorcycle configurations are not applicable for 100W radios and O9 control heads.

The ASTRO APX 7500 motorcycle radio models provide most of the equipment needed for installing a standard ASTRO APX 7500 radio on a motorcycle. Most of this radio system is standard equipment. See Chapter 5: Motorcycle Radio Installation for further information.

1.4 Base/Control Stations

NOTE: The base/control station option is not applicable for 100W radios and 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 6881095C99 manual:

- 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 7500 Installations

Tool	Part Number
10 mm wrench	–
5 mm Allen wrench	–
Rubber-coated pliers	–
Regular slot screwdriver of Phillips #2	–
Pin removal tool	6680163F01
RF antenna tool	HLN6695_

Chapter 2 Standard Configurations

2.1 Planning the Installation

The APX 7500 radio operates only in negative ground electrical systems with a valid operating range of 10.8VDC to 16.3VDC. Before starting the radio installation, make sure that the ground polarity of the vehicle is correct. Accidentally reversing the polarity will not damage the radio, but will 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 inching, 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 for the 100W radio or 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](#)).

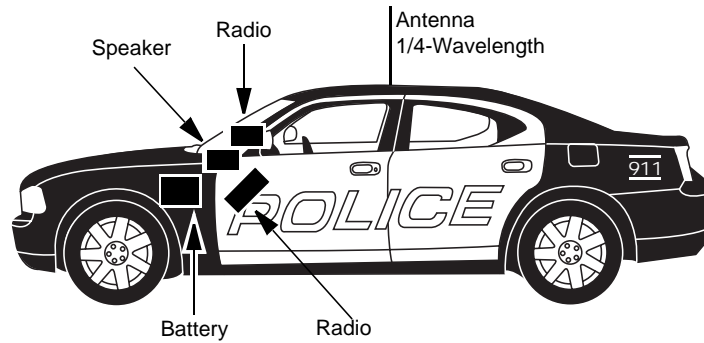


Figure 2-1. Dash Mount Radios Can Be Located in the Middle Console, on the Transmission Hump, or Under the Dash (See [Figure 2-2](#) for 100W Radio Install)

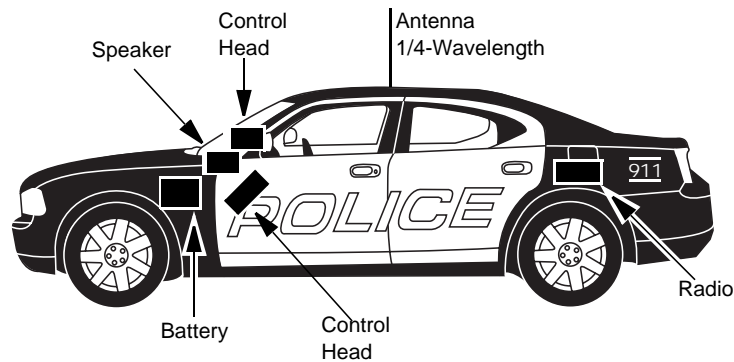


Figure 2-2. Remote Mount Radio Control Heads Can Be Located in the Middle Console, on the Transmission Hump, or Under the Dash

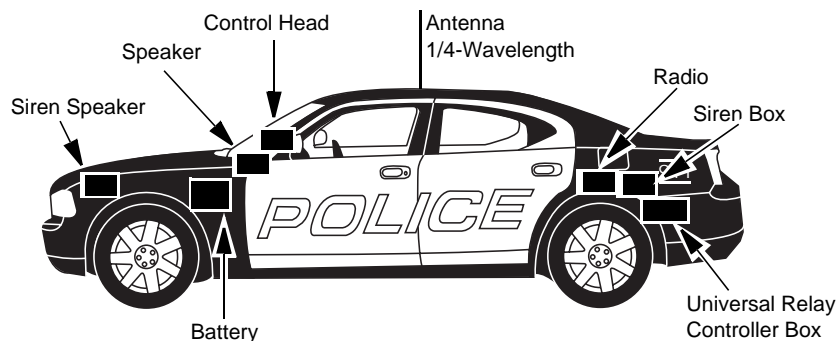


Figure 2-3. Remote Mount of the Radio, O9 Control Head, and Universal Relay Controller (URC is optional.)

NOTE: 100W radio install is typically at the rear vehicle compartment.