

APX NEXT™ Vehicular Adapter With Bracket User Guide

JUNE 2026

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Safety and Legal

This section provides the safety and legal information for this product.

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RF Energy Exposure Awareness and Control Information, and Operational Instructions for Federal Communication Commission (FCC) Occupational Use Requirements

 **NOTE:** This radio is intended for use in occupational or controlled conditions, where users have full knowledge of their exposure and can exercise control over their exposure to meet Federal Communication Commission (FCC) limits. This radio device is NOT authorized for general population, consumer, or any other user.

Federal Communication Commission (FCC) Regulations

The FCC rules require manufacturers to comply with the FCC RF energy exposure limits for two-way radios before they can be marketed in the U.S.

When two-way radios are used as a consequence of employment, the FCC requires users to be fully aware of and able to control their exposure to meet occupational requirements. The use of a product label directing users to specific user awareness information can facilitate exposure awareness. Your Motorola Solutions two-way radio has Exposure Product Label. Do not remove this RF Exposure Label from the device. Also, your Motorola Solutions user manual, or separate safety booklet includes information and operating instructions required to control your RF exposure and to satisfy compliance requirements.

Driver Safety

Check the laws and regulations on the use of radios in the area where you drive. Always obey them.

When you use your radio while driving, ensure you obey the following:

- Pay full attention to driving and the road.
- Pull over to the side of the road and park before you make or answer a call if driving conditions require.

Supplier's Declaration of Conformity

Supplier's Declaration of Conformity

Per FCC CFR 47 Part 2 Section 2.1077(a)



Responsible Party

Name: Motorola Solutions, Inc.

Address: 2000 Progress Pkwy, Schaumburg, IL. 60196

Phone Number: 1-800-927-2744

Hereby declares that the product:

Model Name: **APX NEXT Vehicular Adapter With Bracket**

conforms to the following regulations:

FCC Part 15, subpart B, and section 15.109(a)

Class B Digital Device

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.



NOTE:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or TV technician for help.

Contact Us

The Centralized Managed Support Operations (CMSO) is the primary contact for technical support included in your organization's service agreement with Motorola Solutions. To enable faster response time to customer issues, Motorola Solutions provides support from multiple countries around the world.

Service agreement customers should be sure to call the CMSO in all situations listed under Customer Responsibilities in their agreement, such as:

- To confirm troubleshooting results and analysis before taking action.

Your organization received support phone numbers and other contact information appropriate for your geographic region and service agreement. Use that contact information for the most efficient response. However, if needed, you can also find general support contact information on the Motorola Solutions website, by following these steps:

Procedure:

1. Enter `motorolasolutions.com` in your browser.
2. Ensure that the country or region of your organization is displayed on the page.
3. Clicking or tapping the name of the region provides a way to change the region.
4. Select **Support** on the `motorolasolutions.com` page.

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Discover the many learning opportunities within the MSI Learning Center to explore your curiosities, shape your career and maximize your impact, go to <https://learningcenter.motorolasolutions.com/>.

Icon Conventions

The documentation set is designed to give the reader more visual clues. The following graphic icons are used throughout the documentation set.



DANGER: The signal word DANGER with the associated safety icon implies information that, if disregarded, will result in death or serious injury.



WARNING: The signal word WARNING with the associated safety icon implies information that, if disregarded, could result in death or serious injury, or serious product damage.



CAUTION: The signal word CAUTION with the associated safety icon implies information that, if disregarded, may result in minor or moderate injury, or serious product damage.



IMPORTANT: IMPORTANT statements contain information that is crucial to the discussion at hand, but is not a CAUTION or WARNING. There is no warning level associated with the IMPORTANT statement.



NOTE: NOTICE contains information more important than the surrounding text, such as exceptions or preconditions. They also refer the reader elsewhere for additional information, remind the reader how to complete an action (when it is not part of the current procedure, for instance), or tell the reader where something is on the screen. There is no warning level associated with a notice.

Style Conventions

The following style conventions are used:

Convention	Description
Bold	This typeface is used for names of, for instance, windows, buttons, and labels when these names appear on the screen (example: the Alarms Browser window). When it is clear that we are referring to, for instance, a button, the name is used alone (example: Click OK).
Monospacing font in bold	This typeface is used for words to be typed in exactly as they are shown in the text (example: In the Address field, type <code>http://ucs01.ucs:9080/</code>).
Monospacing font	This typeface is used for messages, prompts, and other text displayed on the computer screen (example: A new trap destination has been added).
<i><Monospacing font in bold Italic></i>	This typeface is used with angle brackets as placeholders for a specific member of the group that the words represent (example: <i><router number></i>).  NOTE: In sequences to be typed in, the angle brackets are omitted to avoid confusion whether to include the angle brackets in the text to be typed.
CAPITAL LETTERS	This typeface is used for keyboard keys (example: Press Y, and then press ENTER).
<i>Italic</i>	This typeface is used for citations. A citation usually is the name of a document or a phrase from another document (example: <i>Dimetra IP System Overview</i>).
→	An → (arrow pointing right) is used for indicating the menu or tab structure in instructions on how to select a certain menu item (example: File → Save) or a certain subtab.

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Chapter 1

Overview

This publication describes the complete installation procedure for the APX NEXT Vehicular Adapter With Bracket (APX NEXT VA) used with APX NEXT and APX NEXT XE series radios. The VA is an accessory that adapts the APX Next and APX Next XE series radios to operate in a vehicular (mobile) environment, and allows in-vehicle battery charging. Installation includes planning, mounting and verification.

1.1

Introduction

Figure 1: APX NEXT Vehicular Adapter Overview

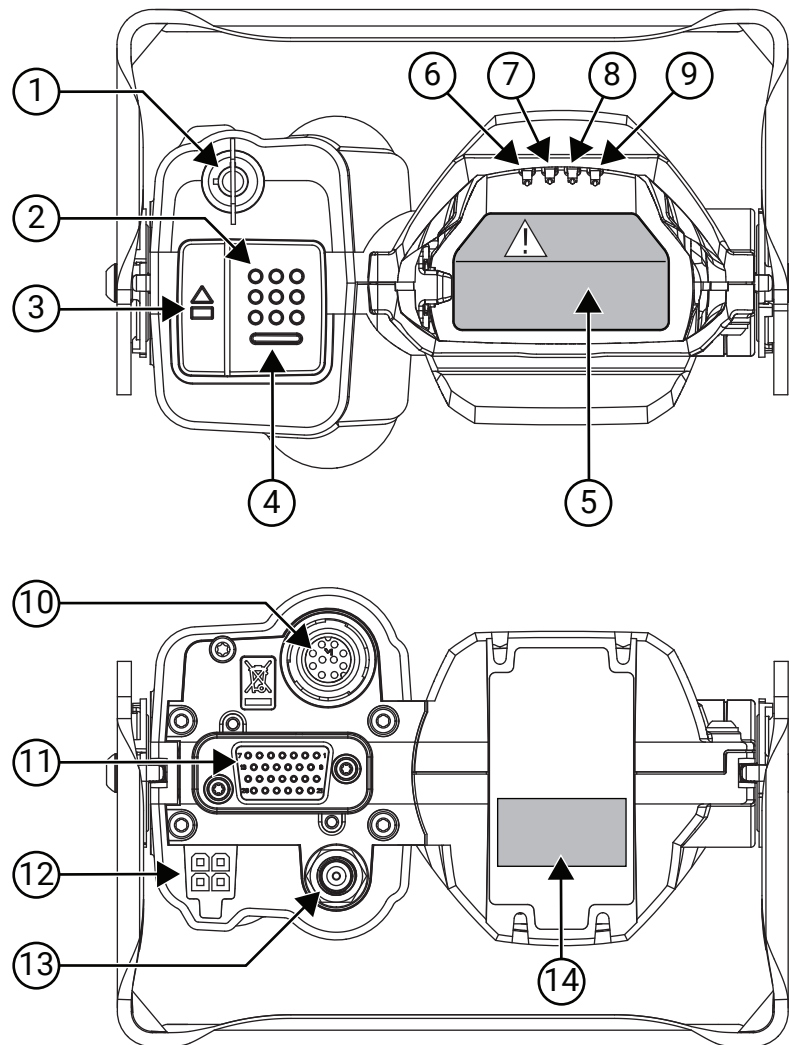


Table 1: VA Overview

Number	Description
1	Lock
2	GCAI Engage Button
3	GCAI Disengage Button
4	LED Status Indicator
5	Caution Label
6	Battery +
7	Thermistor Contact
8	Data Contact
9	Battery -
10	MMP
11	MAP
12	Power
13	External Antenna
14	Product Label

1.2

VA Installation Planning

The APX NEXT VA requires the APX NEXT and APX NEXT XE radios to have at least Radio Firmware version and above for full compatibility. Before installing this product, read the Product Safety and RF Energy Exposure Booklet for Mobile Two-Way Radios Installed in Vehicles or as Fixed Site Control Stations (6881095C99 for North America and 6866537D37 for Europe) from <http://www.motorolasolutions.com> which contains important operating instructions for safe usage and RF energy awareness and control for compliance with applicable standards and regulations.



CAUTION: Before drilling, check the opposite sides of all mounting surfaces for obstruction, such as vehicle wiring and fluid lines.

Before starting the installation, plan the location of the VA, microphone, antenna and optional external speaker. Identify the routing path for all cables. Verify that the cable lengths are sufficient.

Check the mounting penetrations required. On most vehicles, it is necessary to penetrate the firewall to reach the battery. Check the opposite side of the firewall for cable clearance before drilling holes, and protect the cable where it passes through the firewall by using grommets (not provided) or other similar protective measures. Survey the firewall for existing holes occupied by vehicle wire harnesses. Often there is an opportunity to route other cables using the same path. Because of the wide variations in vehicle design, these instructions may be modified to suit each particular installation.



NOTE: This manual assumes that the VA is mounted under the dash. Other mounting configurations are possible but not addressed in this manual.

A properly installed VA minimizes service calls and equipment downtime. Motorola Solutions recommends adherence to all of the guidelines and instruction when planning the installation:

- Insert S-hooks (not provided) on cables into restraining holes for strain relief.
- Use heat-shrink tubing (not provided) on all splices.
- Ensure that the VA's cables are not placed under stress, are not exposed to weather, and are not subjected to damage due to engine heat.

- Retain in-line cable fuses when trimming cables to fit. Locate in-line fuses as close as practical to the supply voltage connection.
- Do not attach the VA to any part of the vehicle that is not rigid or is subject to excessive vibration.
- Do not expose the VA to rain or snow, such as when next to an open vehicle window.
- Do not dress cables over sharp edges that could cause wear or tearing of cable insulation.
- Do not install the VA at locations where they might interfere with the vehicle operator or operating controls.
- Do not install the VA where it is difficult for the operator to reach.
- Do not install the VA where it interferes with vehicle safety air bag deployment.

1.2.1

VA Setup

The APX NEXT VA supports radios equipped with either Standard or High-Capacity (HiCap) batteries. Due to the size difference between the battery types, the charging platform must be configured to match the battery type primarily attached to the radio to ensure proper function. Perform the necessary adjustments to charging platform prior to mounting the VA.



NOTE:

- When the VA is configured for a radio that has a HiCap battery, it cannot charge a radio that has a Standard battery. The charging indicator LED does not illuminate.
- When the VA is configured for a radio equipped with a Standard battery, it cannot establish connection (engage) with a radio equipped with a HiCap battery.
- Reconfiguration access after installation: If the installed VA's access is restricted by surrounding vehicle components, re-configuration of the charging pocket will necessitate removing the VA from the U-shaped bracket. This step is required to achieve working access for cover removal, screw manipulation, and pocket adjustment.

1.2.2

VA Location



CAUTION:

- Do not reuse mounting bracket screws from a legacy product (NTN8940).
- Use the U-shaped mounting bracket screws provided with the APX NEXT VA kit (PMPN5045).

The included U-shaped mounting bracket can be used to mount the VA either off the vehicle floor or under the vehicle dash. The mounting location can only be determined after attaching the VA to the bracket. Clearances on either side of the VA are necessary for securing the VA to the bracket. The VA requires the following clearances for mounting:

- 15 inches (38.10 cm) of clearance in front of the VA for inserting and removing the radio.
- 6-inch (15.24 cm) clearance behind the VA for power, microphone, antenna, and speaker cable connection.
- 1-inch (2.54 cm) clearance above the vents on the top of the VA.

Ensure that the controls are accessible by the operator. Consider the following when deciding on the best mounting location:

- The hang-up location for the microphone.
- The microphone coil cord length (extended) during operation.

- The operability of the radio controls while it is in the VA.
- A substantial structure for accepting mounting screws.
- The speaker mounting location and cable length.

When possible, mount the VA on the floor near the center of the vehicle within easy reach of the operator.

1.2.3

Microphone Bracket Location



CAUTION: Do not attach the microphone bracket to the VA housing.

Ensure that the microphone bracket is mounted on the dash near the operator side of the VA. This position allows the operator to reach, remove, and store the microphone without interfering with vehicle controls.

1.2.4

Visor Microphone Location

The hands-free visor microphone is designed to clip onto the vehicle sun visor.

1.2.5

Antenna Location

Follow the guidelines stated in the [RF Energy Exposure Awareness and Control Information, and Operational Instructions for Federal Communication Commission \(FCC\) Occupational Use Requirements](#) on page 3 to ensure compliance with RF Exposure standards.

1.2.6

Vehicle Battery Connections

The optimal cable route follows the shortest path from the rear of the VA to the vehicle battery through the engine compartment firewall. This route provides protection from engine heat, and cable length is limited to the necessary connection distance. Grommets or similar protective measures prevent damage where cables pass through metal panels. The routing protects power cables from pinching, chafing, or crushing. Cable fuses are located in close proximity to the battery to protect against shorts. The cable is secured throughout the engine compartment to prevent displacement during vehicle operation or service.

1.2.7

Optional Speaker Location

The speaker location is safe for the operator and protects the equipment from damage. The supplied mounting bracket supports installation under the dashboard or against vertical surfaces. Positioning the speaker near the operator, such as on a door pillar, minimizes the need for volume adjustments during high ambient noise conditions (e.g., siren use). This location also maintains lower volume levels outside the vehicle.



NOTE: Mounting the speaker on the dashboard or rear package tray is not recommended.

1.3

Installing the VA

Install the VA using the following procedure, or modify the procedure as necessary to conform to the vehicle type. Using the optional U-shaped mounting bracket as a template, drill the mounting holes and mount the bracket with the hardware supplied. See [VA Installation Detail](#).



NOTE:

- The hardware for mounting the bracket to the vehicle is included in the PMPN5044 APX NEXT VA kit. If required, the mounting bracket and its hardware can be purchased separately as PMPN5045.
- Failure to use the four outermost holes on the mounting bracket, or mounting the bracket on a non-flat surface (such as a transmission hump) could degrade vibration performance. The Vehicular Adapter mounting bracket must be mounted on a metal surface.
- When the bracket is mounted in carpet, the self-tapping screws tend to bind up. To overcome this, tap the screw through the carpet, back out the screw, then tighten the screw down.

Procedure:

1. Use the VA to mount bracket screws from the kit packaging unit box.
2. Ensure that the plastic guides of the mounting bracket are aligned horizontally with the corresponding grooves of the VA. See [VA Installation Detail](#).
3. Slide the VA into the plastic guides until it reaches the mechanical stop.
4. Verify that the holes in the mounting bracket are aligned with the holes on the VA.
5. Insert the Allen-screws provided through the mounting bracket and screw them into the VA. Do not tighten the screws as you need to remove the VA to connect the cables.

Figure 2: APX NEXT VA

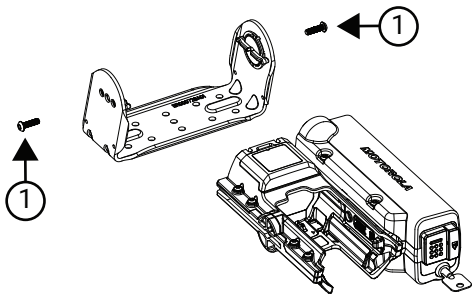


Table 2: Associated Components

Number	Description
1	M5 x 18 mm Mounting Bracket Hardware  NOTE: Use only the M5 x 18 mm screws supplied with the unit.

1.4

Installing the Handheld Palm Microphone Bracket

Procedure:

1. Mount the microphone bracket, supplied with the microphone kit (HMN1090) on a rigid and structurally sound surface within the vehicle.
Repeated insertion and removal of the microphone can loosen the bracket.
2. Use the microphone bracket as a template and drill two 1/8-inch (0.32cm) holes.
3. Attach the microphone bracket to the mounting surface with the two self-tapping screws provided.
Ensure to leave sufficient room above the bracket for inserting and removing the microphone.

Figure 3: Microphone Bracket Installation Detail

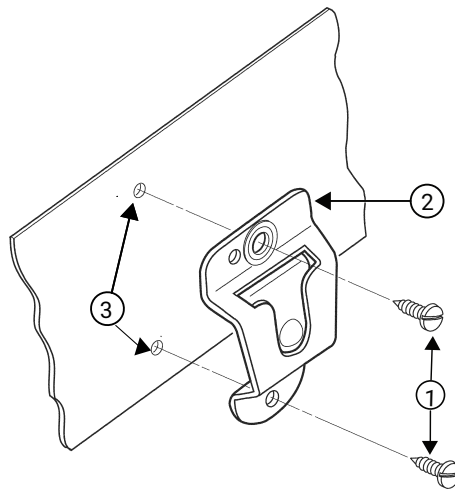


Table 3: Associated Components

Number	Description
1	Self-tapping screws (No. 8–15 x ½")
2	Bracket
3	1/8" DIA holes

1.5

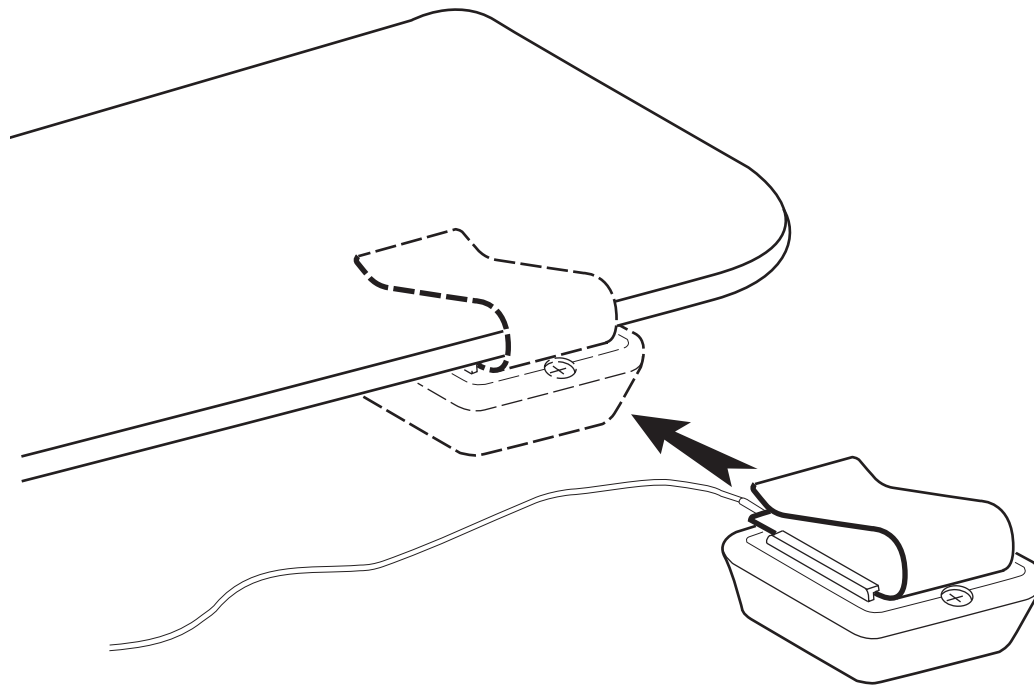
Installing the Visor Microphone



NOTE: When connecting the Visor Microphone (RMN5054) to the APX NEXT VA, do not connect any wire of the Visor Microphone to pin 17 of Connector J1 on the VA. The instructions to do this in the IMPRES Visor Microphone User Guide do not apply to the VA. Two other wires must be connected to pins 1 and 23.

Procedure:

1. Clip the microphone to the vehicle visor.



2. To avoid visual or physical obstruction, route the microphone cable down inside the door molding and beneath the seat. Allow sufficient slack in the connector end of the cable to reach the VA.

1.6

Antenna Installation Considerations

 **IMPORTANT:** To ensure optimum performance and compliance with RF Energy Safety Standards, the antenna installation guidelines and instructions are limited to metal body vehicles with appropriate ground planes and take into account the potential exposure of back seat passengers and bystanders outside the vehicle.

VHF and UHF 1/4 wave antennas must be mounted in the center area of the vehicle roof to maintain compliance with RF Energy Safety Standards. This placement excludes the trunk lid and provides a clear route for the antenna cable to the APX NEXT VA. Cable routing maintains maximum separation from vehicle electronic control units and associated wiring to prevent signal degradation.

The antenna location is free from electrical interference and maintains a minimum distance of 3 feet (92 cm) from other transmitting antennas, the radio, and accessories. Signal integrity is further preserved by ensuring that metal components in close proximity to the antenna—such as seat springs, shift levers, lids, or exhaust pipes—do not rub together, as this contact causes severe receiver interference.

Procedure:

1. To select an antenna site or location on a metal body vehicle, perform the following:
 - a. Check the requirements of the antenna supplier and install the vehicle antenna external to a metal body vehicle in accordance with those requirements.
 - b. For optimum performance and compliance with RF Energy Safety Standards, mount the antenna in the center area of the roof.

- c. On some vehicles with clearly defined, flat trunk lids, the antennas can be mounted on the center area of the trunk lid. For vehicles without clearly defined, flat trunk lids (such as hatchback autos, sports utility vehicles, and pick-up trucks), mount the antenna in the center area of the roof.
2. Before installing the antenna on the trunk lid, perform the following:



CAUTION: If the following listed conditions cannot be fulfilled, then mount the antenna on the roof top.

- Ensure that the distance from the antenna location on the trunk lid is at least 36 inches (90 cm) from the front surface of the rear seat-back to ensure compliance with RF Energy Safety Standards.

Ensure that the trunk lid is grounded by connecting grounding straps between the trunk lid and the vehicle chassis.

1.6.1

Mounting Restrictions

Procedure:

1. For all VHF and UHF models, the 1/4 wave antenna must be mounted only in the center area of the roof, not on the trunk lid, to ensure compliance with RF Energy Safety Standards.
2. Ensure that the antenna cable can be easily routed to the APX NEXT VA.
3. Route the antenna cable as far away as possible from any vehicle electronic control units and associated wiring.
4. Check that the antenna location for any electrical interference.
5. Ensure that any transmitting radio antennas on this vehicle are separated from each other by at least 3 feet (92 cm).



6. The minimum distance between the antenna and the radio or accessories should be at least 3 feet (92 cm).



NOTE: Any two metal pieces rubbing against each other (such as seat springs, shift levers, trunk and hood lids, exhaust pipes, and others) in close proximity to the antenna can cause severe receiver interference.

1.6.2

Connecting the Mini-UHF

- The RF connector (J3) on APX NEXT VA is a mini-UHF jack, and must be mated with either an antenna mini-UHF plug (P3) or an appropriate adapter (part numbers: 5880367B21 [mini-UHF-to-N]; 5880367B22 [mini-UHF-to-UHF]).
- To ensure a secure connection of an antenna cable mini-UHF plug to the VA mini-UHF jack, their interlocking features must be properly engaged. If they are not properly engaged, the system loosens. Using a tool (pliers or wrench) does not overcome a poor engagement, and is not recommended.

- Applying excessive force with a tool can cause damage to the antenna or the connector (such as stripping threads, deforming the collar or connector, or causing the connector to twist in the housing opening and break).
- The mini-UHF connector tool (part number: HLN6695) is designed to securely tighten the antenna plug-VA jack connection without damaging either the plug or the jack.

Motorola Solutions recommends the following sequence to ensure proper attachment of the system.

Figure 4: Antenna or Mini-UHF Connection

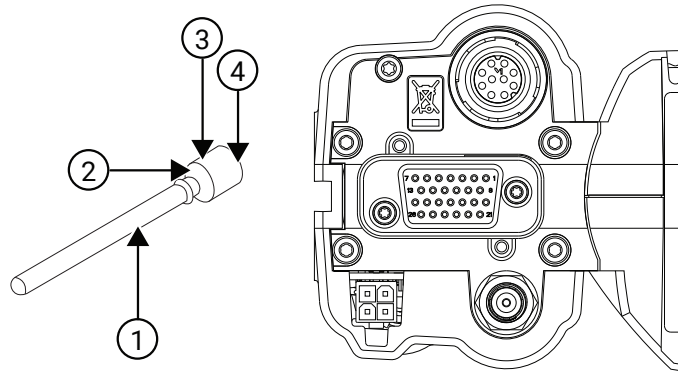


Table 4: Associated Components

Number	Description
1	External antenna
2	Flange
3	Collar Pulled Back to Flange
4	Coax Conductor Plug (Pin)

Procedure:

1. Ensure that there is sufficient slack in the antenna cable.
2. Ensure that the collar of the antenna cable plug is loose and does not bind.
3. Ensure that the mini-UHF jack is tight in the VA housing.
4. Slide the collar back against the flange. Insert the antenna cable plug pin fully into the VA jack, but do not engage the threads.
5. Ensure that the plug and jack interlocking features are fully seated. Check by grasping the crimp on the cable jack, rotating the cable, and noting any movement. If the features are seated correctly, there is no movement.
6. Finger-tighten the antenna cable plug collar onto the VA jack.
7. Give a final tug, by hand, to the collar, and retighten by hand as firmly as possible.



NOTE: Do not use pliers or any other device to grip the tightening tool. Over tightening the collar can damage the connector and the VA.

1.7

VA Cable Considerations



CAUTION:

- The APX NEXT VA is designed for a 12-volt, negative-ground system.
- Remove the 7.5-amp fuse from the power cable red wire and the 1.0-amp fuse from the yellow wire before proceeding.



NOTE:

- Due to space restrictions, remove the VA before making connections to the connectors at the back of the VA. If this is the case, make all connections and remount the VA before replacing the 7.5-amp and 1.0-amp fuses.
- For applications where the mounting structure of the VA is hinged such as swing cabs, ensure to provide sufficient service length for cables.
- Do not reuse cable 3005297Y03 from a legacy product.
- Use the power cable CB001376A01 that comes with the VA.

Figure 5: VA Components

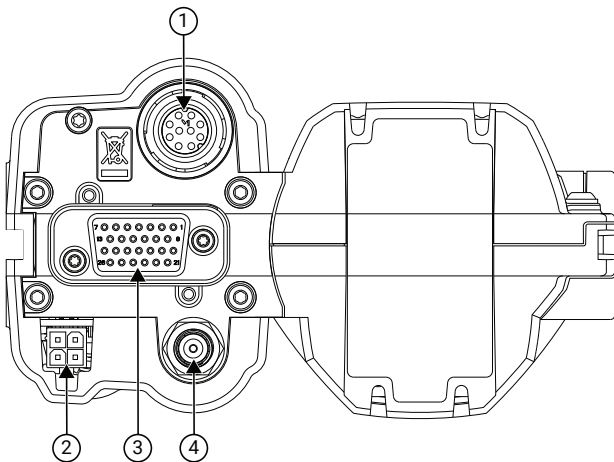
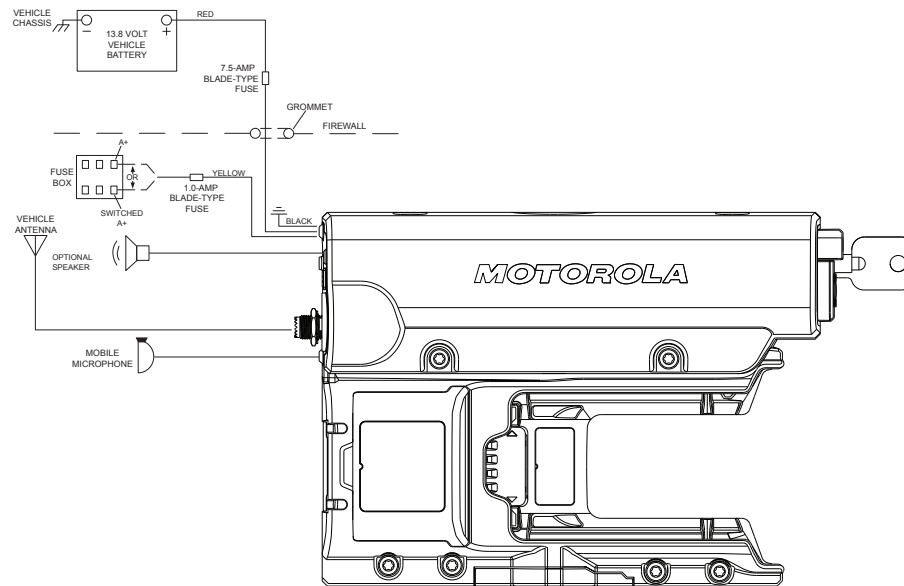


Table 5: Associated Components

Number	Description
1	Microphone Connector (J4) MMP
2	Supply Connector (J2)
3	Speaker and Interface Connector (J1) MAP
4	Antenna Connector (J3)

Figure 6: VA Cable Connections



1.7.1 Wiring Types

Wire Color	Connect to
Red	Vehicle battery (+)
Black	Vehicle Chassis (GND)
Yellow	Fuse box

The yellow wire controls whether or not the APX NEXT VA is live at all times. Consider the functionality and vehicle battery drain current below during installation.

Standard Wiring to Vehicle Switched A+ – Charging OFF with Vehicle OFF

For installations where the radio is left in the VA with the vehicle ignition switched off and minimal vehicle battery drain current is important, the standard wiring connection of the yellow wire to vehicle switched A+ disables charging.

Optional Wiring to Vehicle A+ – Charging ON with Vehicle OFF

When the radio is left in the VA for charging with the vehicle ignition switched OFF, the optional wiring connection of the yellow wire to always-live vehicle (A+) keeps the charger ON.



CAUTION: Vehicle battery can drain to a low state. See [Table 6: Current Drain of APX NEXT VA Vehicle Battery](#) on page 22.

Table 6: Current Drain of APX NEXT VA Vehicle Battery

Condition	Standard Wiring		Optional Wiring
	Vehicle = ON	Vehicle = OFF ¹	Vehicle = ON
Battery Charging	Yes	No	Yes
Vehicle Battery Drain			
Radio OUT	15–20 mA	2–2.5 mA	15–20 mA
Radio IN but OFF	25–2200 mA	7–10 mA	25–2200 mA
Radio IN and ON ²	145–3300 mA	30–1200 mA	145–3300 mA

1.7.2

Cabling the VA

Procedure:

1. Set aside the 2-foot (61 cm) section of the main power cable red lead for later use.
2. Route the main power cable through the firewall and into the vehicle battery area.
3. Use an existing opening or, if necessary, drill a 3/8-inch (1 cm) hole through the firewall.
4. Insert a grommet (not provided) into the hole to prevent damage to the power cable.
 **IMPORTANT:** Failure to mount the red lead of the power cable kit directly to the battery can result in severe alternator whine interference.
5. Connect the supply cable wires as shown in the following table.
6. Cut the long red lead to the desired length (as long as possible so that the in-line fuse is located as close as practical to the vehicle battery).
7. Run the lead through the firewall and connect (crimp) it to the plug on the 2-foot (61 cm) red lead section that was set aside in [step 1](#).
8. Ensure that the plug and jack in the lead are connected securely together.
9. Cut the yellow lead to the desired length, and then connect it to the supply side of the fuse box, according to the above table. Do not connect the yellow wire to the red lead.
10. Cut the black lead to the desired length.
11. Connect the black lead to the vehicle chassis.
 **CAUTION:** Do not connect the supply cable black lead directly to the negative (-) battery terminal as the VA can be damaged if there is a malfunction in the vehicle electrical system.
12. Dress the cable so that it does not obstruct any vehicle controls nor touch any hot or moving parts of the engine.
13. Connect power cable plug to VA jack J2.
14. If the optional external speaker is being installed, connect speaker cable plug to VA jack J1.
15. Attach strain-relief S-hook (not provided) to the VA.
16. Crimp the S-hook with a pair of pliers.
17. Connect external antenna cable plug to VA jack J3.

¹ After vehicle has been off for 30 minutes (Note: Standard Wiring Configuration)

² Does not include Boost Current (to support transmit) under totally discharged battery.

If your model has a mini-UHF type connector, use Mini-UHF Connector Tool (part number REX4584) to tighten the connector.

18. Connect microphone cable plug to VA jack J4.
19. Attach a strain-relief S-hook (not provided) to the VA.
20. Crimp the S-hook with a pair of pliers (Required when a hand microphone is installed.)
21. Ensure that no radio is installed in the VA, and then replace the two cable wire 7.5-amp and 1.0-amp fuses for the respective cables.

1.8

Installing the Optional External Speaker

The optional external speaker is supplied with a speaker mounting bracket that permits the speaker to be mounted in a variety of configurations.

Figure 7: External Speaker Installation Detail

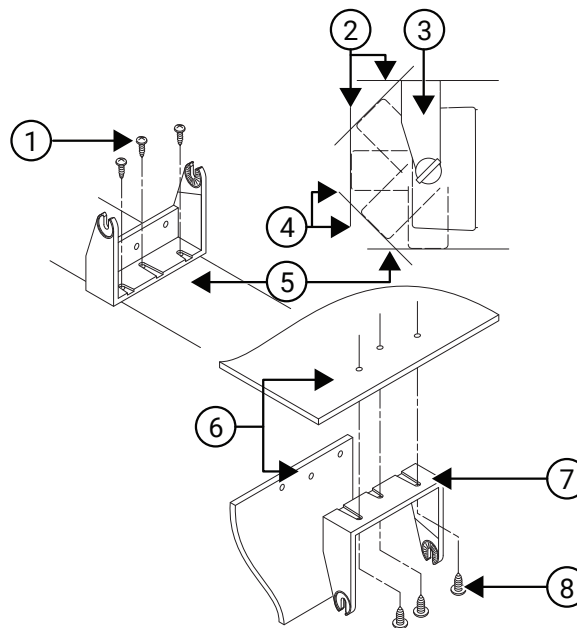


Table 7: Associated Components

Number	Description
1	10–16 x 5/8" Self-Tapping Screw
2	Dashboard
3	Mounting Bracket
4	Firewall
5	VA Floor
6	Dashboard
7	Mounting Bracket

Number	Description
8	10–16 x 5/8" Self-Tapping Screw



NOTE: The speaker mounting bracket is used to permanently mount the speaker under the dashboard or other accessible areas, while permitting the speaker to be tilted to a desired angle.

Procedure:

1. Using the speaker mounting bracket as a template, drill the necessary mounting holes and secure the bracket with the self-tapping screws provided.
2. Position the external speaker onto the mounting bracket, and secure it using the wing screws provided.

1.9

LED Surveillance Configuration (User Configurable Optional Wiring)

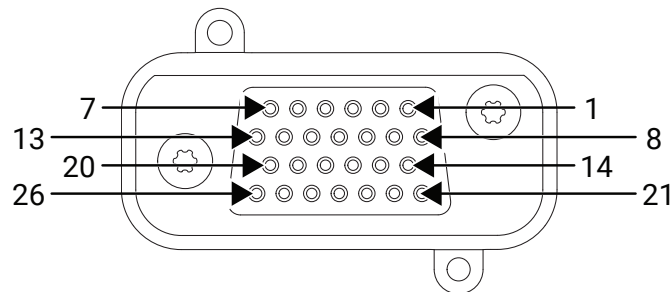
Certain wiring configurations allow users to disable the LED indicators on the APX NEXT VA for night use or surveillance operations.

- Disable the LED indicators by adding a jumper wire between J1 Connector Pin 17 (SURV) to Pin 14 (GND)

- You can install a wired toggle switch (not provided) between J1 Connector Pin 17 (SURV) to Pin 14 (GND) to enable or disable the LED Surveillance Mode. In the LED Surveillance Mode, all LED indicators are disabled, including error indications.

 **NOTE:** If the switch option is chosen, a switch change only takes effect when the radio is inserted.

Figure 8: J1 Connector Definition



 **NOTE:** Unlabeled pins are not connected and unsupported.

Table 8: J1 Connector Definition

Pin No.	Pin Name	Signal Definition
1	Ground	Ground return, power
6	D-	USB D- signal (USB white wire)
7	D+	USB D+ signal (USB green wire)
12	Vbus	USB Vbus power (USB red wire)
14	Ground	Ground return, audio
15	Emergency	Emergency switch input
16	PTT	PTT input
17 ³	Surveillance	Surveillance mode input
20	Spkr+	Speaker+
23	Visor Mic	Visor microphone input
26	Spkr-	Speaker-

1.10

Installation Verification

Perform the following checks after installing the VA

Procedure:

1. Verify that all electrical wiring connections are tight.

³ When connecting the Visor Microphone (RMN5054) to the VA, do not connect any wire of the Visor Microphone to pin 17 of Connector J1 on the VA. The instructions to do this in the IMPRES Visor Microphone User Guide do not apply to the VA product. Two other wires should be connected to pins 1 and 23 as instructed.

2. Ensure all mechanical parts and wiring are securely mounted.
3. Remove the universal connector cover from the radio universal connector before placing the radio in the VA.
4. Test the VA, microphone, speaker, and radio for proper operation as described in the Product Safety, Installation, and User Guide.
5. Verify the operation of all existing equipment, including sirens, lights, and other radio systems.

1.11

Efficient System Operation

- Do not operate your APX NEXT VA unless all RF connectors are properly terminated.
- All equipment must be properly grounded according to Motorola Solutions installation instructions for safe operation.
- All equipment should be serviced only by an authorized technician.

Chapter 2

Operating the VA

 **NOTE:** The APX NEXT VA requires the APX NEXT and APX NEXT XE radios to have at least Radio Firmware version and above for full compatibility.

The VA is designed to operate only with the combination of an APX Next and APX NEXT XE series radio and one of the batteries as specified in APX NEXT Vehicular Adapter (VA) System Compatibility Matrix.

Table 9: Replacement battery list (from system compatibility matrix)

Battery	Kit Number
IMPRES 2 Li-Ion IP68 4400T	NNTN9216A
IMPRES 2 Li-Ion UL2054 DIV2 IP68 4400T	NNTN9217A
IMPRES 2 Li-Ion IP68 4400T	NNTN9216B
IMPRES 2 Li-Ion IP68 4400T, UL2054 DIV 2	NNTN9217B
IMPRES 2 Li-Ion IP68 5500T	PMNN4895A
IMPRES 2 Li-Ion IP68 UL2054 DIV 2 5550T	PMNN4896A

The use of batteries not made by Motorola Solutions is not recommended.

The VA has no on or off switch. The radio battery charges when the vehicle ignition is off, if the optional wiring configuration is used. See [Optional Wiring to Vehicle A+ – Charging ON with Vehicle OFF](#). However, the transmit and receive audio functions of the VA are always operational regardless of the ignition switch condition. These circuits activate whenever the VA detects that a radio is loaded and turned on.



CAUTION:

Keep foreign objects from falling into the VA. Trying to retrieve items that have accidentally fallen into the VA is not recommended. Consult a service technician for maintenance. Retrieve radio and disconnect VA until serviced.

In some installations, the ignition switch is bypassed so that the VA charges the radio battery with the ignition switch turned off. If this describes your installation, be careful not to discharge the vehicle battery by allowing the VA to operate for extended periods of time with a radio loaded and the vehicle ignition switch turned off.



NOTE: Turning the vehicle ignition switch off does not turn the radio off. To avoid long-term radio battery run-down, do not leave the radio in the VA with the vehicle ignition off. Even when radio is off, the system still draws current from the car battery.

2.1

Motorola Solutions Authorized Devices, Batteries, and Accessories

Table 10: APX NEXT Vehicular Adapter Compatible Radios

Compatible Devices	Description
APX NEXT	Portable radio, all band frequencies

Compatible Devices	Description
APX NEXT XE	

Table 11: APX NEXT Vehicular Adapter Compatible Batteries

Compatible Batteries	Kit Number
IMPRES 2 Li-Ion IP68 4400T	NNTN9216A
IMPRES 2 Li-Ion UL2054 DIV2 IP68 4400T	NNTN9217A
IMPRES 2 Li-Ion IP68 4400T	NNTN9216B
IMPRES 2 Li-Ion IP68 4400T, UL2054 DIV 2	NNTN9217B
IMPRES 2 Li-Ion IP68 5550T	PMNN4895A
IMPRES 2 Li-Ion IP68 UL2054 DIV 2 5550T	PMNN4896A

Table 12: APX NEXT Vehicular Adapter Compatible Accessories

Compatible Accessories	Kit Number
Handheld Palm Microphone	HMN1090
IMPRES Visor Microphone	RMN5054
External Speaker, 7.5 Watt	HSN4038
Emergency Footswitch	HLN5113
WM800 Wireless RSM	PMMN4158
Mounting Bracket	PMPN5045
SVX Video Remote Speaker Mic	PMMN8199
Push button PTT	RLN5926
Emergency Push button Switch	HLN5131

Table 13: APX NEXT Vehicular Adapter Compatible Antennas

Description	Kit Number
¼-wave (136–144 MHz)	HAD4006
¼-wave (144–150.8 MHz)	HAD4007
¼-wave (150.8–162 MHz)	HAD4008
¼-wave (162–174 MHz)	HAD4009
¼-wave (136–162) MHz	HAD4016
¼-wave (146–174 MHz)	HAD4017
Wideband (136–174 MHz)	HAD4021
3 dB gain (136–174 MHz)	HAD4022
¼-wave (450–470 MHz)	HAE4003
¼-wave (470–512 MHz)	HAE4004
3.5 dB gain (450–470 MHz)	HAE4011
3.5 dB gain (470–495 MHz)	HAE4012

Description	Kit Number
3.5 dB gain (494–512 MHz)	HAE4013
3.5 dB gain (380–433 MHz)	HAE6010
5 dB gain (380–433 MHz)	HAE6011
¼-wave (380–433 MHz)	HAE6012
2 dB gain (380–470 MHz)	HAE6013
Low Profile (450–512 MHz)	HAE6016
2 dB Gain (380–520 MHz)	HAE6031
3 dB gain, Stubby (762–870 MHz)	HAF4013
3 dB gain, Elevated Feed (762–870 MHz)	HAF4014
¼-wave (762–870 MHz)	HAF4016
3 dB gain, Co – Linear (762–870 MHz)	HAF4017*
Whip, all-band flexible antenna	AN000131A02***
Whip, all-band flexible antenna (Replacement Whip)	AN000131A03***



IMPORTANT: The VA is not authorized for use in Maritime Part 80 services.

*Not permitted for **Part 90 itinerant channels.

**Itinerant channels:

- 764.000000 - 764.075000 MHz
- 775.925000 - 776.000000 MHz
- 794.000000 - 794.075000 MHz
- 805.925000 - 805.999950 MHz
- 774.925000 - 775.075000 MHz
- 774.925000 - 775.000000 MHz
- 799.000000 - 799.075000 MHz
- 804.925000 - 804.999995 MHz

***The Amphenol RF 182110 kit must be purchased separately and installed on the all-band antenna cables (CB001295A01) for connection to the VA.

Table 14: APX NEXT Vehicular Adapter Associated Components

Associated Components	Kit Number	
Mounting bracket mount kit	In-Box	PMPN5045
Lock Keys		5586126A02
Power Cable		CB001376A01
RF Energy Exposure and Product Safety Information for NA Region		6881095C99
RF Energy Exposure and Product Safety Information for EMEA Region		6866537D37
Quick Start Guide Leaflet		MN011662A01

Associated Components	Kit Number	
mounting bracket Mount Kit	Compatible Option/Kit	PMPN5045
Mobile rear accessory port connection with USB cable		HKN6163
Mobile rear accessory port connection with speaker cable		HLN6863
Online Product Safety, Installation and User Guide		MN011661A01
Online Mobile Safety Booklet https://docs.motorolasolutions.com/bundle/18364/		6881095C99
Online Safety Leaflet EMEA https://docs.motorolasolutions.com/bundle/18327/		6866537D37

2.2

Charging Platform Configuration

The APX NEXT VA supports radios equipped with either Standard or High-Capacity (HiCap) batteries. To ensure system compatibility, the radio battery must match the charging platform configuration of the VA.



CAUTION:

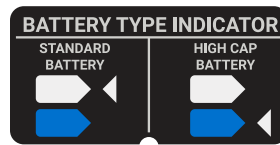
- Before operating the system, verify that the radio battery is compatible with the VA charging platform setup by checking the following:
 - The Engage button remains in the engaged position.
 - The LED indicator illuminates when the vehicle ignition is on and the radio is in the VA.

The charging platform of the VA is configured during installation to match the primary battery type (Standard or HiCap) equipped to the radio. Refer to [Table 15: Charging Platform Configuration on page 30](#) for the color codes of the charging platform to verify the current configuration.

Table 15: Charging Platform Configuration

Charging Platform Configuration	Charging Platform Color Code	Battery Type
Upper position	White	Standard battery
Lower position	Blue	HiCap battery

Figure 9: Battery Indicator



 **NOTE:** Unlabeled pins are not connected and unsupported.

 **CAUTION:** Charging platform can be adjusted from upper position to lower position or vice versa. If the front access of the VA is restricted by surrounding vehicle components, there can be insufficient space to perform the necessary tasks to adjust the charging platform (cover removal, screw manipulation, and charging platform adjustment). In this scenario, it can be necessary to remove the VA from the U-shaped bracket to adjust the charging pocket. If VA removal is required, the charging platform adjustment must be performed by the installer.

2.2.1

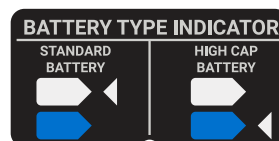
Adjusting the Charging Platform for Radio Equipped with High Cap Battery

To change the charging platform from the factory setting (Standard) to the lower position (HiCap), perform the following actions:

Procedure:

1. Remove the latch cover by sliding the cover up.
2. Remove the two screws located in the top screw positions.
3. Pinch the snap lock and slide the charging platform down to move it to the lower position.
4. Reinstall the two screws into the bottom screw positions.
5. Reinstall the latch cover.
6. Verify the configuration by ensuring that the arrow on the charging platform aligns with the blue coded marker. This confirms the charging platform is set up for a radio equipped with a High Cap battery.

Figure 10: Battery Indicator



 **NOTE:** Unlabeled pins are not connected and unsupported.

2.2.2

Adjusting the Charging Platform for Radio Equipped with Standard Battery

To change the charging platform from the lower position (HiCap) back to the upper setting (Standard), perform the following actions:

Procedure:

1. Remove the latch cover by sliding the cover up.
2. Remove the two screws located in the bottom screw positions.
3. Slide the charging platform up to move it to the upper position.
4. Reinstall the two screws into the top screw positions.
5. Reinstall the latch cover.
6. Verify the configuration by ensuring that the arrow on the charging platform aligns with the white coded marker. This confirms the charging platform is set up for a radio equipped with a Standard battery.

Figure 11: Charging Platform

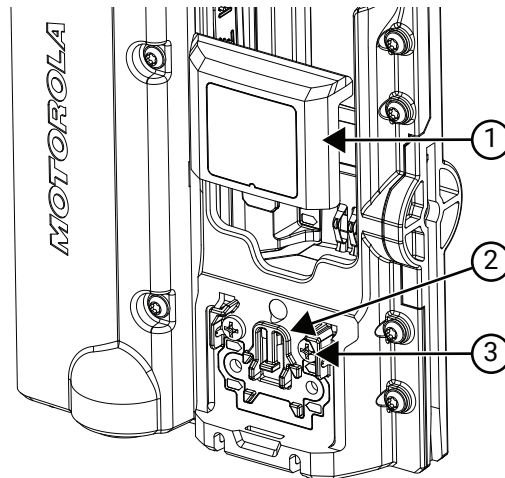
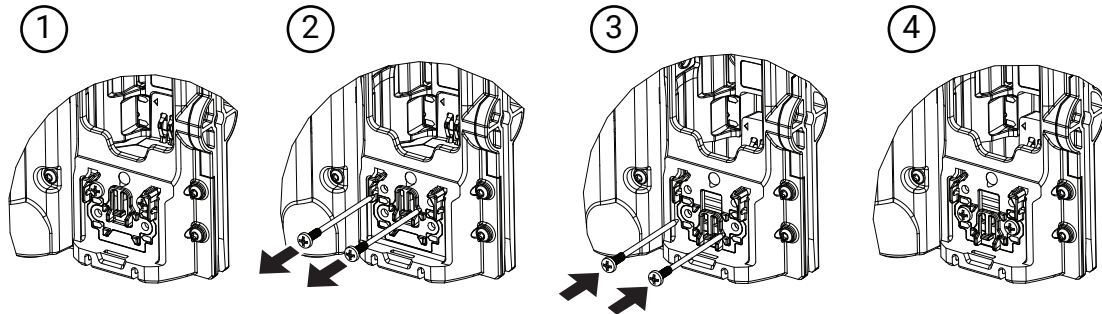


Table 16: Charging Platform Components

Number	Description
1	Latch cover
2	Latch
3	Platform screw

Figure 12: Changing the charging platform from HiCap to Standard



2.3

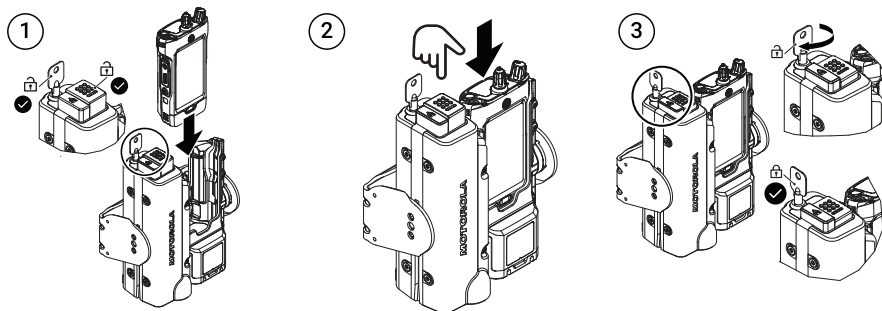
Loading the Radio into the VA

CAUTION: Ensure that all the labels on the radio and battery that are not shipped with the standard product are removed. These labels, if not removed, can peel off and interfere with proper operation or damage the APX NEXT VA.

Procedure:

1. Remove the universal connector cover or any accessories attached to the radio universal connector.
2. Position the radio with the LCD screen facing outward.
3. Slide the radio into the VA radio pocket as far as it can go until the radio is fully inserted in the pocket.

Figure 13: Loading the radio into the APX NEXT VA



CAUTION: Do not insert the battery alone for charging.

4. Push inward on the Engage Button until the radio is securely latched into the VA pocket.



NOTE:

For proper VA operation, insert the radio without pressing the purple disengage button to ensure secure latching. Power the radio before or after insertion, but do not start the vehicle engine during this process to prevent false LED indications. The radio is unlocked when the key is horizontal and locked when vertical.

2.4

Keylock Security

The APX NEXT VA keylock secures the radio in the VA when the vehicle is left unattended. To lock the radio into the VA, turn the security key clockwise. You must remove the key after locking or unlocking the VA.

2.5

LED Indications

A light-emitting diode (LED), located within the Engage Button of the APX NEXT VA, indicate charging conditions and microphone operating modes.

Table 17: LED Indications

LED Status	Description
No LED indication	Not charging because: • The radio or battery is not inserted properly. • The charging platform is not set correctly. • The ignition is off or in covert mode. Is charging but without any LED indication because: • A compatible battery (without radio attached) is inserted. • Radio is inserted without pushing the engage button.
Green LED blinks once 	Power is applied to the charger and the ignition switch is turned on.
Red LED illuminates 	Battery is in rapid charge mode.
Green LED blinks 	Battery is charged to 90% capacity or above. Charger is in trickle mode.
Green LED illuminates 	Battery is charged to 95% capacity or above. Charger is in maintenance charge mode.

LED Status	Description
Red LED blinks 	A charging fault condition exists. Check radio battery and the charging contacts. If the fault condition continues, contact your local Motorola Solutions representative for assistance.
Amber LED blinks 	The charger recognizes the battery but waits for rapid charging due to extreme battery temperature, low battery voltage, or high charger temperature. Rapid charging begins automatically when these conditions return to the operating range.
Red and Green LEDs blink alternately 	Battery end-of-service indication.
Amber and Green LEDs blink alternately (for the first four seconds after insertion and after charging is complete) 	Battery re-calibration or reconditioning required. See IMPRES 2 Battery Recalibration and Reconditioning on page 36.
Purple LED illuminates 	Audio accessory error. Possible causes: • No microphone is connected. • Incompatible microphone connected. • Microphone connected or disconnected after the radio is inserted into the VA and turned on.

 **NOTE:** To maintain battery life and avoid charging delays, do not store the radio in extreme vehicle temperatures. The VA includes an LED indicator label that can be positioned for visibility. Note that LED indications require Surveillance Mode to be disabled. If the Surveillance Mode switch is reconfigured, the change only takes effect after the radio is reinserted.

2.6

Battery Charging

The VA supplies power to the radio and its battery. To charge the radio battery, turn on the vehicle ignition switch. When the ignition switch turns off, the VA continues to charge for up to 30 minutes or until the radio battery is fully charged, whichever occurs first. Turning the radio on or off does not affect the charging cycle.

While the battery charges, the red LED indicator illuminates. When battery charging completes, the indicator switches from red to blinking green to steady green, indicating that charging is complete. If the charge indicator is not on, the battery does not charge. If this occurs, ensure that:

- The radio is properly installed in the VA and the Engage Button is latched.
- The battery is Motorola Solutions compatible batteries.
- The battery contacts are clean and free from foreign material.
- The vehicle ignition switch is turned on.
- The charging platform is adjusted to upper position if the radio installed with standard battery. For more details, see [Charging Platform Configuration](#) on page 30.

If the battery temperature is out-of-range, the LED illuminates blinking amber and charging temporarily stops. If a fully charged battery is reinserted, the charger may take several minutes to verify the state and illuminate the solid green LED.

2.7

IMPRES 2 Battery Recalibration and Reconditioning

The vehicle charger LED flashes alternating amber and green for four seconds to indicate that an IMPRES 2 battery requires recalibration. This indication appears after the battery is first inserted into the vehicle charger or after charging completes.



IMPORTANT:

- To maintain optimal battery performance, calibrate IMPRES 2 batteries in an IMPRES 2 desktop charger in a few charge cycles or days.
- If you transfer a battery needing recalibration from the vehicle charger to an IMPRES 2 desktop charger within 30 minutes, manually trigger the recalibration by removing and reinserting the battery within 5 seconds.
- Manual reconditioning prevents overcharging and extends battery cycle life.
- Automatic reconditioning starts when a battery is removed from the vehicle charger for over 30 minutes. This process begins after the battery is inserted into an IMPRES 2 desktop charger.

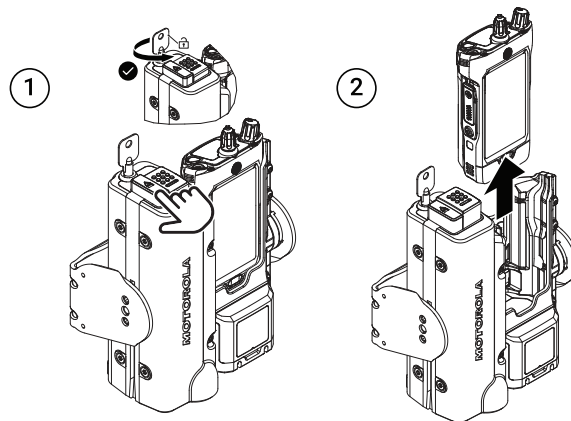
2.8

Removing the Radio from the VA

Procedure:

1. Unlock the radio by turning the key clockwise.
2. Press the purple disengage button to release the radio from the VA.

Figure 14: Removal of radio from APX NEXT VA



NOTE: If the radio fails to eject, hold down the purple disengage button and pull out the radio. To ensure proper ejection in the future, insert and remove the radio several times.

Chapter 3

Maintenance and Troubleshooting

3.1

Recommended Maintenance and Cleaning

Contact material technologies used in the APX NEXT VA and APX Next Radios are engineered to provide reliable interconnect. It is important that the electrical contact interface remains clean and free of foreign material to ensure reliable performance. To maintain optimal performance of the contact interface, Motorola Solutions recommends inspecting and cleaning the contacts every 6 months with DeoxIT® GOLD cleaner/lubricant pen (Supplier CAIG Labs, P/N G100P). DeoxIT® GOLD cleaner/lubricant is available at numerous electronics suppliers and directly from the manufacturer. The pen based package is recommended as it provides better cleaning action and access to the contacts. Prior to applying the lubricant or cleaner, wipe the contacts with lint-free swabs to remove any dirt or foreign material. According to the manufacturer's instructions, shake the pen, depress the pen tip until fluid begins to flow and saturates the felt tip. Apply the lubricant or cleaner to the contacts with short wiping strokes .

3.2

Troubleshooting



NOTE: To facilitate troubleshooting, ensure that the vehicle ignition is on, Surveillance Mode disabled, and Engage Button fully depressed.

Table 18: LED Connection Error for the APX NEXT Vehicular Adapter

Indication	Possible issue	Solution
The purple LED illuminates when the radio is turned on, and displays charging status when the radio is turned off. The radio does not detect the APX NEXT VA.	Neither a hand mic, nor a Visor Mic is connected prior to turning the radio on.	 NOTE: Microphone accessory should be installed by the installer. To clear the error after removing accessories, perform these actions: 1. Turn off the radio. 2. Attach at least one accessory. 3. Turn on the radio. 4. The LED shows charging status after the radio is turned off and continue to do so after the radio is turned on. If the error persists, contact the installer.

Indication	Possible issue	Solution
The purple LED illuminates when the radio is turned on, and displays charging status when the radio is turned off. The radio does not detect the APX NEXT VA.	There is an unsupported IMPRES accessory connected to the Microphone connector on the APX NEXT VA prior to turning the radio on.	 NOTE: Microphone accessory must be installed by the installer. The installer ensures that the correct accessory is installed. Clear the error caused by an unsupported accessory by performing these actions: 1. Turn off the radio. 2. Remove the unsupported accessory. 3. Turn on the radio. 4. If there is at least one attached accessory, the LED switches to showing charging status when the radio is turned off and continue to do so after the radio is turned on. If there is no attached accessory, this is covered by the case in which no mic is attached. If the error persists, contact the installer.
The purple LED illuminates when the radio is turned on. The APX NEXT VA disconnects itself from the radio.	A hand mic or Visor Mic is added or removed after the radio is turned on.	 NOTE: Microphone accessory must be installed by the installer. Clear the error caused by removed cables by performing these actions: 1. Turn off the radio. 2. Turn on the radio. 3. If there is at least one attached accessory, the LED switches to showing charging status when the radio is turned off and continue to do so after the radio is turned on. If there is no attached accessory, this is covered by the case in which no mic is attached. If the error persists, contact the installer.
The purple LED illuminates when the radio is turned on, and dis-	When the radio is turned on, there is no unsupported IMPRES	If at least one microphone accessory is correctly connected,

Indication	Possible issue	Solution
plays charging status when the radio is turned off. The radio does not detect the APX NEXT VA.	accessory present, and there is a supported hand mic or Visor Mic present, but the LED lights solid purple.	and no unsupported accessory is connected, then there is a problem with the connection, the accessory, or the APX NEXT VA. The accessory or the APX NEXT VA requires factory service.
The LED does not light. The radio does not detect the APX NEXT VA. If the APX NEXT VA is attached to the radio, it disconnects itself from the radio.  NOTE: In some cases, the LED might intermittently flicker.	The VA has experienced a failure.	To clear the error, perform the following actions: 1. Turn off the radio. 2. Remove the radio. 3. Reinsert the radio. 4. Turn on the radio. The LED shows charging status in a few seconds. If it does not, the APX NEXT VA requires factory service.
LED does not illuminate, but audio and RF antenna connection are functional.  NOTE: Continuing to use in this state is not recommended. The battery does not charge and LED is not functional to facilitate proper monitoring of the VA condition.	The VA charging platform is configured for Hi-Cap battery (lower position) but radio is equipped with Standard battery.	Ensure that the radio is equipped with a Hi-Cap battery for use with the current VA setting. If continued use of the Standard battery is required, the charging pocket must be raised to upper position according to the instructions provided in the Charging Platform Configuration on page 30.  NOTE: If re-configuring the charging platform requires the APX NEXT VA to be removed from the mounting bracket U-bracket, please contact the installer.
The purple LED illuminates if starter motor runs while turning the radio on or inserting it into the APX NEXT VA.	False Error Indication.	To clear the error, perform the following actions: 1. Turn off the radio. 2. Remove the radio. 3. Reinsert the radio. 4. Turn on the radio. If the error persists, contact the installer.
Engage Button does not lock.	The engage button and associated APX NEXT VA Connector has an issue locking onto the APX radios.	Check that the battery is fully seated and the radio is pushed fully into the charger.

Indication	Possible issue	Solution
Engage Button does not lock.	The VA charging platform is configured for Standard battery (upper position) but radio is equipped with Hi-Cap or taller battery.	Ensure that the radio is equipped with a Standard battery for use with the current VA setting. If continued use of the Hi-Cap battery is required, the charging platform must be lowered according to the instructions provided in the Charging Platform Configuration on page 30.  NOTE: If re-configuring the charging platform requires the APX NEXT VA to be removed from the mounting bracket U-bracket, please contact the installer.
Difficult to depress Engage and Disengage Buttons during radio installation and extraction.	The VA mechanism does not move after installation.	 NOTE: Microphone accessory must be installed by the installer. Check that the correct mounting screws were used. These are the ones that are shipped with the VA.
The radio only slides partially into the charger.	Radio does not fully seat into the APX NEXT VA pocket.	Rotate the radio 180° and re-insert into the unit.

3.3

Software Updates

There are two software components that can be updated independently:

- Charger software
- Audio software

Use the following links to download the appropriate tool to perform the software update. To update the charger software, use the MSI Charger Reprogrammer tool:

- https://www.motorolasolutions.com/en_us/products/two-way-radio-accessories/batteries/impres.html

To update the audio software, use the APS Tool:

- https://www.motorolasolutions.com/en_us/products/two-way-radio-accessories/accessory-software.html