

APPLICANT: MOTOROLA, INC.

FCC ID: IHDT5ZX1

A draft copy of the installation manual follows.

Note: RF exposure information is provided on page 33.



MOTOROLA

Cellular Mobile and Attache Accessory



Installation Manual

Installation Manual

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Attache Accessory

NOTE *Not all Motorola models are available for purchase as Attaches. Check with your cellular dealer for information regarding the purchase of the Attache accessory to convert your mobile into an Attache.*

Introduction

This section of your manual describes the assembly and installation of the Motorola Attache. The Motorola Attache is a lightweight, three-watt unit that is powered by your vehicle's electrical system through the cigarette lighter socket. This phone is completely self-contained, and may be moved easily between your personal car(s), a company truck or car, or a rental car because it requires no complex wiring installation within the vehicle. The unit is installed in the vehicle by simply securing it to a spare seat with a lap belt and plugging it into the vehicle's cigarette lighter socket. For further information about the features and capabilities of your cellular telephone, see the accompanying user manual.

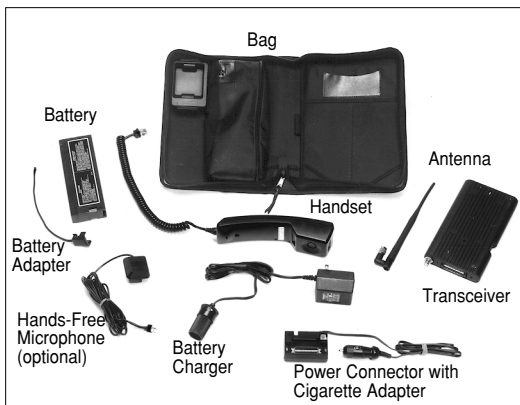


Figure 1

Attache Models

Two Attache models are offered. The standard version is powered by your vehicle's electrical system and does not come equipped with a battery. The power connector assembly contains connectors for an optional battery and an external hands-free microphone, if so desired.

The deluxe version comes complete with a battery, an AC charger, and an integrated hands-free microphone contained in the connector assembly. An external full-duplex hands-free microphone can be purchased separately.

The hands-free feature allows you to place or answer calls without removing your hands from the steering wheel (except to enter the number to be called). See



Digital Hands-Free Operation in the User Manual for more information about hands-free calling.

Attache Assembly

The items included with your Motorola Attache are shown in Figure 1. The following procedure will guide you through the assembly of your Attache.

Assembly Procedure

Step 1 Remove the transceiver from its Attache compartment.

Step 2 Carefully connect the 25-pin connector of the power connector assembly to the front of the transceiver and tighten the two thumbscrews as shown in Figure 2.



Figure 2

Step 3 Locate the antenna and screw it tightly onto the connector as shown in Figure 3.



Figure 3

If your Attache is equipped with a battery, proceed to step 5.

Step 4 Carefully place the transceiver, antenna, and connector assembly into the transceiver pocket as shown in Figure 4a, and zip the pocket closed, leaving the antenna outside of the pocket as shown in Figure 4b.

Be sure to connect the cigarette lighter plug to the cigarette lighter socket on your vehicle dashboard when you are ready to use your phone.



Figure 4a



Figure 4b

Installation Manual

Steps 5 and 6 should be followed if your Attache is equipped with a battery.

Step 5 Locate the battery adapter cable and snap the battery connector clip onto the battery as shown in Figure 5a. Attach the other end to the battery connector assembly as shown in Figure 5b.



Figure 5a



Figure 5b



Step 6 Carefully place the transceiver/battery assembly into the transceiver pocket as shown in Figure 6, and zip closed.



Figure 6

Step 7 Plug the handset modular connector into the jack located on the side of the transceiver as shown in Figure 7, and place the handset into the hang-up cup.



Figure 7

Step 8 Finally, use your pocket system for business planning tools such as calendars, notepads, business cards, etc. as shown in Figure 8.

NOTE *These items are purchased separately.*

NOTE *Be sure to charge the battery for at least 10 hours, or overnight, using the AC charger before attempting to use the cellular telephone.*



Figure 8



Secure the Unit

To secure the unit in your vehicle, run a standard lap belt through the loop located on the outside of the carry case as shown in Figure 9.



Figure 9

Disassembly

If you wish to remove the handset and transceiver from the Attache accessory for servicing, or to place them in a vehicle equipped with a permanent mobile installation, use the following procedure.

Step 1 Turn the unit off by pressing **PWR** on the handset.

Step 2 Unplug the handset from the modular connector jack on the side of the transceiver and remove it from the hang-up cup.

Step 3 Unzip the transceiver compartment and carefully lift the transceiver/connector assembly out of the pocket.

Step 4 Unscrew and remove the antenna.

Step 5 Unscrew the two thumbscrews on the front of the power connector and remove the power connector assembly from the transceiver by gently pulling it away from the transceiver front plate.

Step 6 Return the antenna and power connector assembly into the carrying case for safe keeping.

Reverse the above procedure to re-assemble. See page 20 for Basic Operation.



Carry Phone Accessory

NOTE *Not all Motorola models are available for purchase as carry phones. Check with your cellular dealer for information regarding the purchase of the carry phone accessory to convert your mobile into a carry phone.*

Introduction

This section of your manual describes the assembly and installation of the Motorola cellular carry phone. The Motorola cellular carry phone is a lightweight, three-watt unit that is powered by your vehicle's electrical system through the cigarette lighter socket. This phone is completely self-contained, and may be moved easily between your personal car(s), a company truck or car, or a rental car because it requires no complex wiring installation within the vehicle. The unit is installed in the vehicle by simply securing it to a spare seat with a lap belt and plugging it into the vehicle's cigarette lighter socket. For further information about the features and capabilities of your cellular telephone, see the accompanying user manual.



Figure 10

Carry Phone Models

Two carry phone models are offered. The standard version is powered by your vehicle's electrical system and does not come equipped with a battery. The power connector assembly contains connectors for an optional battery and an external hands-free microphone, if so desired.

The deluxe version comes complete with a battery, an AC charger, and an integrated hands-free microphone contained in the connector assembly. An external full-duplex hands-free microphone can be purchased separately.

The hands-free feature allows you to place or answer calls without removing your hands from the steering wheel (except to enter the number to be called). See Digital Hands-Free Operation on page 22 for more information about hands-free calling.



Carry Phone Assembly

The items included with your Motorola cellular carry phone are shown in Figure 10. The following procedure will guide you through the assembly of your carry phone.

Assembly Procedure

Step 1 Remove all components from the bag.

Step 2 Carefully connect the 25-pin connector of the power connector assembly to the front of the transceiver and tighten the two thumbscrews as shown in Figure 11.

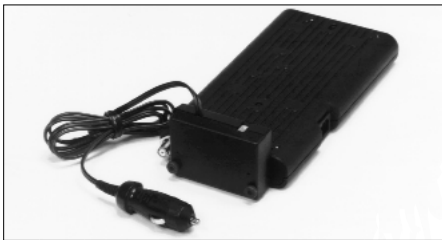


Figure 11

Step 3 Locate the antenna and screw it tightly onto the connector as shown in Figure 12.



Figure 12

Step 4 Take the vinyl sleeve and slide the transceiver assembly into the sleeve, wrapping the Velcro tab over the power connector. Be sure the telephone jack located on the side of the transceiver lines up with the opening in the sleeve. See Figure 13.



Figure 13

Step 5 Place the handset in the hang-up cup and plug the handset modular connector into the jack located on the side of the transceiver. See Figure 14.



Figure 14



Step 6 Place the transceiver assembly into the bag allowing enough room for clearance of the handset coil cord. See Figures 15a and 15b. Note that the antenna folds conveniently down into the bag to prevent possible damage.

NOTE *Be sure to connect the cigarette lighter plug to the cigarette lighter socket on your vehicle dashboard when you are ready to use your phone.*



Figure 15a



Figure 15b

Steps 7 and 8 should be followed if your carry phone is equipped with a battery.

Step 7 Locate the battery adapter cable and attach the modular end to the battery connector assembly as shown below.



Figure 16

Feed the cable through the opening to the battery compartment in the lower corner of the bag.

Place the battery into the battery compartment and snap the battery connector clip onto the battery as shown in Figure 17.



Figure 17



Step 8 Zip the battery compartment closed. See Figure 18.



Figure 18

Step 9 The battery should now be charged for at least 10 hours or overnight using the AC charger before attempting to use the cellular telephone.

Please note that there is an opening in the lower left corner of the bag to allow for connection of an external antenna. The transceiver unit can be positioned in either direction when placed in the bag. See Figures 19a and 19b.



Figure 19a



Figure 19b

Secure the Unit


To secure the unit in your vehicle, run a standard lap belt through the loop located on the outside of the carry case as shown in Figure 20.



Figure 20

**Disassembly**

If you wish to remove the handset and transceiver from the carry phone accessory for servicing, or to place them in a vehicle equipped with a permanent mobile installation, use the following procedure.

- Step 1** Turn the unit off by pressing  on the handset.
- Step 2** Unplug the handset from the modular connector jack on the side of the transceiver and remove it from the hang-up cup.
- Step 3** Lift the transceiver assembly out of the carry bag using the loop handle. Unwrap the Velcro tab and slide the transceiver out of the Velcro sleeve.
- Step 4** Unscrew and remove the antenna.
- Step 5** Unscrew the two thumbscrews on the front of the power connector and remove the power connector assembly from the transceiver by gently pulling it away from the transceiver front plate.
- Step 6** Return the antenna and power connector assembly into the carrying case for safe keeping.

Reverse the above procedure to re-assemble.

Basic Operation

Power the Unit

This unit is designed to operate in two different modes. The first operating mode is standard mode, and the second is battery saving mode. If your Attache/Carry phone is not equipped with a battery, it will always operate in the standard mode.

Standard Mode

When you plug your unit into the vehicle cigarette lighter socket and press **PWR** on the handset, the unit will sense the voltage present at the cigarette lighter socket and automatically behave exactly as it would in a standard mobile installation. The handset backlighting will remain lit, and the handset display will stay 'on' as long as the telephone remains 'on'.

Battery Saving Mode

When you press **PWR** on the handset, and the cigarette lighter plug is not plugged in (or there is no voltage present at the cigarette lighter socket) your Attache/Carry phone will automatically shut off the handset backlighting and blank the display after six seconds. Pressing any key will turn the display and backlighting back on for another six seconds.

Turn Off the Unit

Your Attache/Carry phone should always be turned off using **PWR** on the handset.

NOTE *If the handset is unplugged from the transceiver prior to turning off the unit with the handset **PWR**, the unit will continue to drain its (or your*



vehicle's) battery. It is very important to turn off the unit using **PWR** on the handset.

Release the Handset

Lift up and remove the handset, as shown in Figure 21.

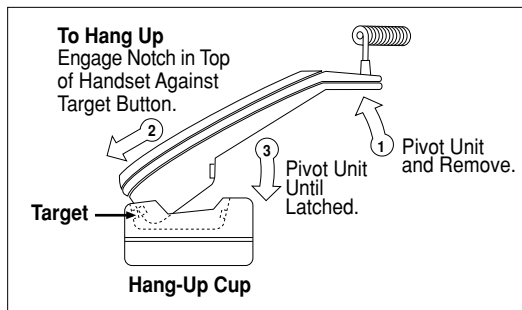


Figure 21

Antenna Position

If your Attache/Carry phone is equipped with a folding antenna, the antenna may be folded downward for convenient storage when the Attache/Carry phone is not in use. However, **for best performance** when using the Attache/Carry phone, you should always place the antenna in the full upright position. Also, when using the Attache/Carry phone, remember to keep the cigarette lighter cord, handset coil cord, and optional hands-free microphone cord as far away from the antenna as possible.

Optional Features

Digital Hands-Free Operation

Your Attache/Carry phone may be equipped with a hands-free wireless microphone integrated into the connector attached to the transceiver. This is a safety feature which offers the convenience of hands-free conversation without the use of an external microphone.

For optimum hands-free sound quality while using the integrated microphone, Enhanced Simplex Hands-Free operation should be enabled through the menu. See page 15 in the User Manual for further details.

For enhanced hands-free sound quality, an external microphone can be purchased as an accessory and is typically positioned on your sun visor.

Full Duplex Hands-Free provides improved audio quality relative to Enhanced Simplex Hands-Free and makes it easier to enter the conversation while the other party is talking.

Detailed instructions for placing and receiving hands-free calls are in your Cellular Telephone User Manual.

Battery Option

Description

You may purchase a battery option for your Attache/Carry phone which allows you to operate the Attache/Carry phone away from the vehicle. In the Attache model, the battery mounts on top of the



transceiver inside the carrying case. In the Carry model, the battery mounts in the battery compartment located outside the carry case. Under normal operating conditions, a fully charged unit will provide 70 minutes of continuous talk time before requiring recharging. The actual time between charges will depend on many factors, such as the age of the battery, how often it is recharged, the length and frequency of phone calls, and the air temperature.

Charging the Battery

The battery in your Attache/Carry phone can be charged using the cigarette lighter receptacle in your vehicle or the AC charger included with the unit.

When charging the Attache/Carry phone using the vehicle cigarette lighter receptacle, the battery will charge at various rates depending upon whether the telephone is 'on', whether it is being used to place a call, your vehicle's engine speed, and the number of accessories (e.g., air conditioning, blower, window defrosters, etc.) that are in operation in your vehicle. The best circumstances for charging your battery are when your vehicle is operating at highway speed, there are few accessories in operation, and the telephone is either 'off', or 'on' but not in a call. Under these circumstances, the battery will fully charge in about 3 hours. In other circumstances, your vehicle will provide a trickle charge to your battery, so you can use the Attache/Carry phone in your vehicle while its battery is recharging, but the recharging time will be extended.

It should be noted that the Attache/Carry phone will operate in a vehicle, using the cigarette lighter receptacle, even if the Attache/Carry phone battery is completely discharged.

The AC charger will fully charge your Attache/Carry phone battery in about 10 hours. There is also an optional rapid charger available that will charge your Attache/Carry phone battery in 3 hours.

The Attache/Carry phone can be used while it is connected to the AC charger, provided that the battery is at least partially charged. When connected to the AC charger, if the battery is completely discharged, the battery should be partially recharged before you attempt to use the Attache/Carry phone.

Battery Care

The useful lifetime of a rechargeable battery is affected by how it is used and how often it is recharged. The Attache/Carry phone battery is a sealed lead acid battery that is somewhat similar to the battery used in your car. Unlike some other types of batteries, your Attache/Carry phone battery is not subject to the 'memory affect' associated with frequent charging. In fact, it is best to charge your battery as often as possible. Your battery's lifetime will also be extended if you avoid fully discharging the battery.

It is also important to remember to always store, operate, and charge your battery in a well ventilated area. This battery should NEVER be placed in an airtight container. Also, to avoid damaging the battery, NEVER allow a paper clip, or other metal object to



rest across the terminals of the battery. In addition, DO NOT puncture the battery, or dispose of it in a fire.

Using Spare Batteries

You may remove the battery and replace it with a charged spare battery. See your cellular telephone sales representative to purchase spare batteries.

WARNING *Do not use a nickel cadmium battery with this product. It is not compatible with the charging method, and may burst.*

Field Installation of the Battery Option for Attache Phone Model

If your unit was purchased without the battery option, a battery conversion kit may be purchased and installed. This kit consists of a battery, battery charger, and a battery clip connector. The installation should be performed according to the instructions below.

- Step 1** Turn the unit off by pressing **PWR** on the handset.
- Step 2** Disconnect the handset modular connector from the jack located on the side of the transceiver.
- Step 3** Unzip the transceiver compartment and carefully remove the transceiver and power connector assembly.
- Step 4** Follow steps 5 – 7 of the assembly procedure, beginning on page 2.

Field Installation of the Battery Option for Carry Phone Model

If your unit was purchased without the battery option, a battery conversion kit may be purchased and installed. This kit consists of a battery, battery charger, and a battery clip connector. The installation should be performed by following Steps 7-8 of the assembly procedure beginning on page 7.



Mobile Installation

Planning and Installation

Transceiver Location

In many vehicles the best location for the transceiver unit is the floor of the trunk compartment; alternate locations are under the dash, under the front or rear seat, and under the rear speaker deck panel.

Regardless of the location choice, be sure the transceiver unit is protected from dirt and moisture and that there is sufficient space around the transceiver unit to allow airflow and removal. Also, allow for adequate clearances for the control/power cable connector and antenna coaxial cable.

Standard Transceiver

Mounting Bracket Installation

Install the standard mounting bracket as follows:

Horizontal Mounting

Step 1 Use the mounting bracket fitted over the transceiver as a template to determine the mounting screws' (2) locations. Be sure to first snap the mounting bracket over the transceiver, since the bracket will flex. Also note the mounting bracket only fits one way. Be sure that the selected mounting location allows for adequate airflow for the transceiver.

Step 2 Place the mounting bracket on the selected mounting surface. Mark the locations for the two mounting screws.

Step 3 Center punch the screws' locations. Drill 1/8 inch holes for the mounting screws.

WARNING *Be careful to avoid drilling into the fuel tank or other vital part of the vehicle.*

Step 4 With the transceiver in place under the mounting bracket, secure the bracket to the mounting surface using the self-tapping screws and lock washers provided in the fuse kit.

Vertical Mounting

Follow the same procedures for horizontal mounting except for the two mounting screws. In place of the mounting screws, use two suitable size bolts, nuts, and washers (installer supplied). Place a lock washer between each bolt and the mounting bracket, insert the bolts through the bracket and holes drilled in mounting surface, and secure with flat washers and nuts.

Handset Location

Consider the following factors when deciding the handset mounting location:

- The mounting surface must have sufficient strength to support the handset.
- The handset must be within easy reach of the driver during normal operation of the vehicle and should not interfere with the driver's or passenger's seating or leg space.
- The handset must also be within reach of the handset end of the control/power cable.

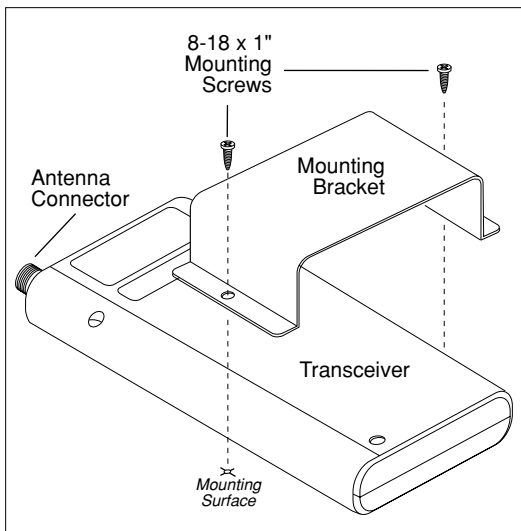


Figure 22

Control Unit Mounting Cup Installation

The control unit mounting cup is used to hold the control unit handset.

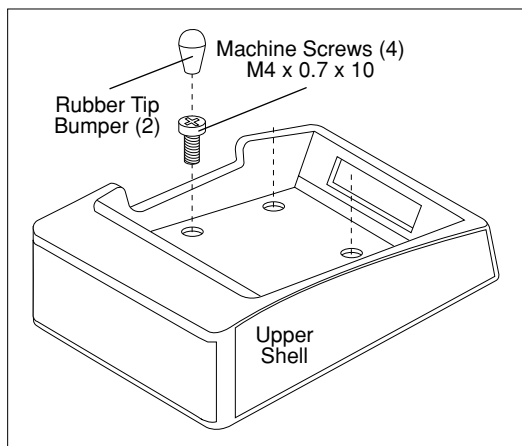


Figure 23

Adjustable Angle

Mounting Bracket Installation (optional)

The adjustable angle mounting bracket provides a convenient means for mounting the control unit. In a typical application, the control unit hang-up cup mounts directly to the adjustable angle mounting bracket. Install the adjustable angle mounting bracket as follows:

Step 1 Temporarily position the control unit and mounting bracket to verify the desired mounting location. Check for clearance and



operating convenience. Using the surface base as a guide, mark four holes on the transmission hump or other selected location. The four mounting tabs on the surface base are somewhat flexible to conform to a curved surface as necessary.

- Step 2** Using an awl or similar device, open four holes in the carpet at marked locations. This must be done prior to drilling to avoid ruining the carpet.
- Step 3** Using a 3.2 mm (1/8") bit, drill the four mounting holes and secure the surface base using the four 8-1/8 x 3/4" tapping screws provided.
- Step 4** Mount the base to the surface base at the desired angle and securely tighten the angle-adjusting screws.

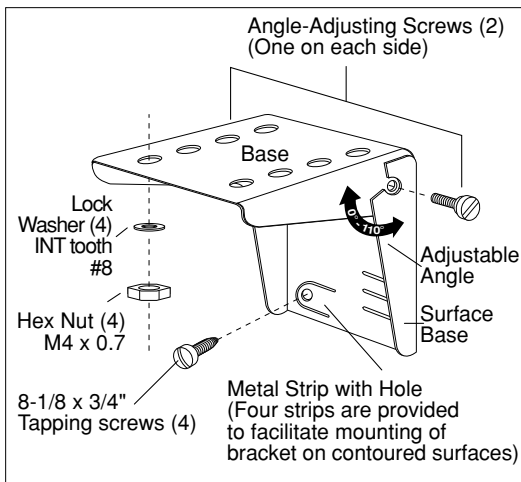


Figure 24

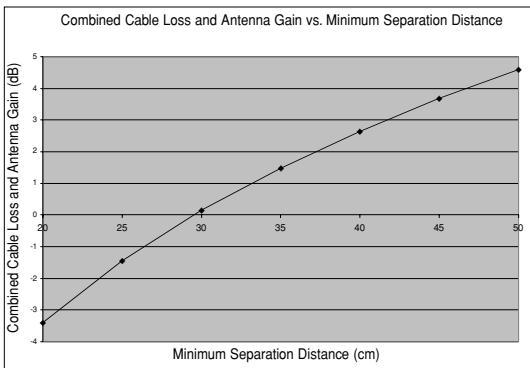
Antenna Location

The best location for the antenna is at the center of the vehicle roof, or on glass near the roof. Motorola offers (as an option) a 'thru-the-glass' type antenna which should be mounted on the vehicle rear window. This type of antenna should be positioned as high on the window as possible. The inductive 'button' on the mounting foot must not be crossed by a rear window defogger element.



Antenna Installation

IMPORTANT: To meet the FCC's RF Exposure Guidelines, the antenna should be installed to ensure a minimum distance between the body of the user and nearby persons and the antenna. To determine the minimum distance, calculate the combined cable loss and antenna gain and refer to the graph below to identify the required minimum separation distance in centimeters.



Hands-Free Microphone Installation

The mounting position of the Digital HF hands-free microphone within the vehicle has a definite influence on the performance of the Vehicular Speaker Phone (V.S.P.) hands-free operation. The microphone should be mounted either on the sun visor (directly above the driver) or on the headliner (above the driver). The microphone should never be mounted near the window or in a location where the road and ambient background noise would be substantially high (above 85 dB SPL).

The visor clip mounting bracket provides the simplest and most effective mounting of the hands-free microphone. See Figure 25. The clip slides into channels on the microphone housing, and then clips on to the sun visor. The cable may then be unobtrusively routed to the Digital HF microphone jack located near the power cable connector on the DHFA.

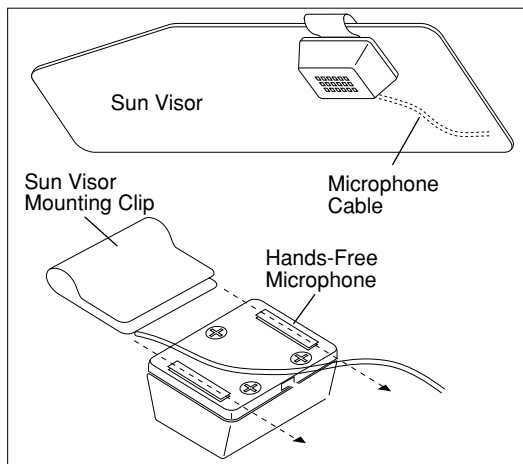


Figure 25

Optional External Speaker Installation

The external speaker should be mounted under the dash, on the transmission hump, or in any other suitable location using the mounting bracket supplied with the speaker assembly. The proposed location must not interfere with the operation of the vehicle. Also, the speaker must be securely attached to its



mounting bracket. Every effort should be made to avoid locating the speaker behind a sound absorptive barrier (e.g., facing upward under the seat or behind a dashboard panel).

CAUTION *Do not install either the speaker or DHFA unsupported to prevent shifting of the unit which could interfere with the proper operation of the vehicle. Always use the supplied mounting hardware.*

Control/Power Cable Routing

Many vehicles are equipped with wire troughs in the door sills. If the vehicle has this feature, use it to provide maximum protection for the cables and to simplify installation. In vehicles without wiring troughs, the power cable must be routed where it will be protected from pinching, sharp edges, and crushing. To avoid interference with the vehicle's electronics, do not run cables above the catalytic converter or near the vehicle's electronic modules. Use grommets whenever a cable must pass through a hole in a metal panel. No matter what method of cable routing is implemented, all in-line connectors must be kept accessible.

The mobile telephone system is designed to operate in negative ground 12-volt electrical systems only.

To minimize electrical noise that interferes with the cellular telephone operation, be sure to check the condition of the ignition wiring and the connections to the vehicle battery. All wire connections should be clean and tight.

Control/Power Cable Installation

The control/power cable provides interconnection of the transceiver, handset, microphone (if equipped), and the external speaker (if equipped). See Figure 26 for installation diagram. Install the control/power cable as follows:

- Step 1** Route the control/power cable as previously specified. Do not pull on the connector housings while routing the cable.
- Step 2** Install and route the antenna coaxial cable as previously noted. Connect the coaxial cable to the transceiver and to the antenna.
- Step 3** Remove all fuses and tape them to their respective holders.
- Step 4** Bolt the black lead(s) of the power/control cable to a suitable grounded point on the vehicle frame using the ring lug provided.

NOTE *Special attention should be given to locating a good vehicle ground. Optimum radio performance can only be achieved with a ground connection having a very low resistance. The vehicle frame makes the best ground, but body structural reinforcement members are also suitable for grounding purposes. Verify that the connections between the battery negative terminal, vehicle chassis, and engine block have low resistance. If it becomes necessary to run the black lead to the battery, the lead must be fused with a 10-amp fuse.*

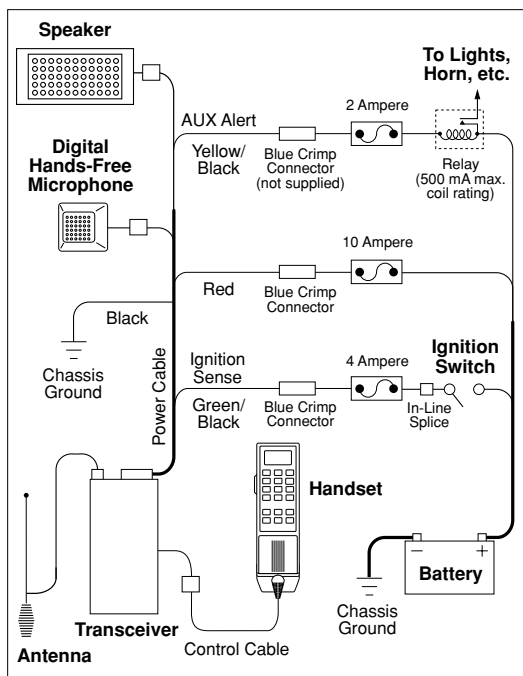


Figure 26

- Step 5** Connect the D-type connector on the power cable, and the modulator connector on the control cable, to the transceiver.
- Step 6** Check the power cable fuses and make sure that the correct sizes and types are supplied.
- Step 7** The green/black ignition sense lead of the power cable should normally be connected to

an accessory terminal at the vehicle fuse block, through the green wire of the fuse holder assembly. For proper operation of the convenience on/off feature, the accessory terminal voltage should go to A + with the ignition switch on, then go low while cranking the starter, then return to A + with the vehicle running. If the ignition sense lead is left unterminated, the mobile must be turned on with **PWR** on the handset, and it will always turn on locked. Cut and strip the green wire connected to the fuse holder (to position the fuse in the desired location) and connect one end to a convenient point on the wire coming from the appropriate accessory terminal using the in-line splice. Connect the other end to the green/black ignition sense lead on the power cable, using the blue crimp-style connector.

Step 8 The yellow/black auxiliary alert lead of the power cable provides a ground for the first five times that the mobile unit rings. The ground has a fixed duration of one second for each ring. Although the auxiliary alert line has a 1/2 ampere capacity, it is recommended that the connection to the auxiliary alert device (such as the vehicle horn, headlights, etc.) be made through a suitable relay using a 2A slow-blow fuse for circuit protection. The auxiliary alert feature must be activated by the telephone user prior to turning off the car. Ignition sense must be low in order to use the auxiliary alert feature. If this feature is not desired, the



yellow/black lead may be left unterminated.

NOTE *Local regulations may forbid the use of horns and/or flashing headlights as auxiliary alert devices. Consequently, the auxiliary alert external signaling feature should not be used in these areas.*

Step 9 Cut and strip the red wire(s) connected to the fuse holder (to position the fuse in the desired location) and connect one end to the positive battery terminal using the lug supplied.

Connect the other end to the red A + wire on the power cable, using the blue crimp-style connector.

Step 10 Connect the external speaker and microphone connectors (if equipped) to the speaker and microphone jacks on the control/power cables. (It is recommended that the plugs not be installed in an area exposed to excessive moisture.)

Step 11 Carefully inspect all cables and connections; then insert the 10A fuse into the fuse holder on the red lead and the 4A fuse into the fuse holder on the green/black lead.

Performance Checks

Checking Performance

Once the mobile telephone has been installed, its performance should be checked using the following procedure. Refer to the User Manual for instructions on how to turn on, unlock, and place calls.

- Step 1** Place a call from the mobile and confirm proper operation. Use both the handset and the optional hands-free during this call if the phone is so equipped.
- Step 2** Have a call placed to the mobile and confirm proper operation. Use both the handset and the optional hands-free during this call if the phone is so equipped.
- Step 3** If you experience difficulty placing and receiving calls, check the voltage standing wave ratio (VSWR) using the following method. Measure the power output of the radio with the radio connected to the vehicle antenna through a directional watt meter. Measure the forward power and reflected power with the watt meter and compute the VSWR as follows:

$$\text{voltage standing wave ratio} = \frac{1+R}{1-R}$$

where $R = \sqrt{\frac{\text{reflected power}}{\text{forward power}}}$

The VSWR should be less than 2:1. If the VSWR is greater than 2, check the antenna and its cable connector.

Checking Auxiliary Alert Feature

- Step 1** Prepare the unit to receive test calls by enabling the auxiliary alert feature, in accordance with the procedures provided in the User Manual. Place a test call to the mobile.



Step 2 Verify the alert device has been activated by the incoming call and then answer the call.

Step 3 With the auxiliary alert feature enabled, place a second test call to the mobile. Do not answer the call. Verify that after approximately 20 seconds (5-6 rings), the alert device has been deactivated and that the handset displays *CALL* after being enabled in the manner described in the User Manual.

Before Calling for Service

After installation, programming, and performance checkout, your cellular telephone is ready for operation. If you experience operating difficulties, check the following before making a call for service:

Have you read your User Manual?

Everything you need to know to operate your cellular telephone is in your User Manual. Take the time to read it and become familiar with all the features of your telephone before calling for service. Note that not all of the features discussed below are included in all telephone models.

If your telephone is equipped with digital hands-free (with an external microphone), do you hear excessive feedback noise during a hands-free call?

Because of audio variations in the cellular system, excessive feedback noise or howling may sometimes be heard when a full duplex (if your telephone is so equipped) hands-free call is placed or received. If this occurs, decrease the speaker volume using the volume control on the handset. Also, verify that the microphone was not installed in an area of the vehicle that is subject to high background noise (above 85 dB SPL). More information about hands-free operation can be found in your User Manual.



If your telephone is equipped with the integrated hands-free microphone, do you hear excessive feedback noise during a hands-free call?

Check your User Manual to be sure you have enabled Enhanced Simplex Hands-free Operation. See your User Manual for further details.

Have you unlocked your unit?

Your cellular telephone is inoperative when locked. This state is indicated by *LOCKED* in the display. To unlock the telephone, enter your three-digit unlock code. *LOCKED* will disappear.

Does the red No Svc message continue to display?

This may indicate that you are outside of the service area, or in a marginal reception area. Marginal reception may also be indicated by the fast busy or alternating high-low sound when attempting to place a call.

Have you programmed a unique operating mode into the unit?

Constant flashing of the *Roam* indicator or illumination of the *No Svc* indicator while in your home service area may indicate an undesired roam characteristic choice has been selected. See 'Selectable System Registration' or 'Roaming', in the User Manual.

General Safety Information

Read this information before using your mobile cellular car telephone.

The cellular telephone is one of the most exciting and innovative electronic products ever developed. With it you can stay in contact with your office, your home, emergency services, and others.

For the safe and efficient operation of your phone, observe these guidelines.

Your mobile cellular telephone is a radio transmitter and receiver. When the phone is on, the externally mounted antenna is the part of the phone that sends out and receives radio frequency (RF) energy. The phone operates in the frequency range of 824 MHz to 894 MHz and employs commonly used frequency modulation (FM) techniques. When you use your phone, the cellular system handling your call controls the power level at which your phone transmits. The power level can range from 0.005 of a watt to 3 watts.

Exposure to Radio Frequency Energy

In 1991 the Institute of Electrical and Electronics Engineers (IEEE), and in 1992 the American National Standards Institute (ANSI), adopted the 1982 ANSI Standard for safety levels with respect to human exposure to RF energy. Over 120 scientists, engineers, and physicians from universities, government health agencies, and industry, after reviewing the available body of research, developed this updated Standard. In March, 1993 the Federal Communications Commission (FCC) proposed the



adoption of this updated Standard. To operate within this updated ANSI Standard, use your phone as described under 'Safe and Efficient Phone Operation'.

Safe and Efficient Phone Operation

Do not operate your mobile cellular telephone when a person is within 4 inches (10 centimeters) of the antenna unless that person is shielded from the antenna by a metal surface such as the roof of the car. Otherwise you may impair call quality, may cause your phone to operate at a higher power level than is necessary, and may expose that person to RF energy in excess of that established by the updated ANSI Standard.

Antenna Care and Replacement

Do not use the phone with a damaged antenna. Replace a damaged antenna immediately. Consult your manual to see if you may change the antenna yourself. If so, use only a manufacturer-approved antenna. Otherwise, have your antenna repaired by a qualified technician.

Use only the supplied or approved antenna. Unauthorized antennas, modifications or attachments could damage the phone and may violate FCC regulations.

Driving

Check the laws and regulations on the use of cellular telephones in the areas where you drive. Always obey them. Also, when using your phone while driving, please:

- give full attention to driving,
- use hands-free operation, if available, and
- pull off the road and park before making or answering a call if driving conditions so require.

Vehicle Electronic Equipment

RF energy may affect some electronic systems in motor vehicles. Check with your vehicle manufacturer's representative to be sure your phone will not affect the electronic systems of your vehicle.

Children

Do not allow children to play with your phone. It is not a toy. Children could damage the phone, or make calls that increase your telephone bills.

Blasting Areas

To avoid interfering with blasting operations, turn your unit off when in a 'blasting area' or in areas posted: 'turn off two-way radio'. Construction crews often use remote control RF devices to set off explosives.

Potentially Explosive Atmospheres

Turn your phone off when in any area with a potentially explosive atmosphere. It is rare, but your phone or its accessories could generate sparks. Sparks in such areas could cause an explosion or fire resulting in bodily injury or even death.



Areas with a potentially explosive atmosphere are often, but not always, clearly marked. These areas may include fueling areas such as gas stations; fuel or chemical transfer or storage facilities; and areas where you would normally be advised to turn off your engine.

Do not transport or store flammable gas, liquid, or explosives in the compartment of your vehicle which contains your phone or accessories.

Vehicles powered by liquefied petroleum gas (such as propane or butane) must comply with National Fire Protection Standard (NFPA-58). For a copy of this standard, contact the National Fire Protection Association, One Batterymarch Park, Quincy, MA 02269, Attn: Publications Sales Division.

Other Electronic Equipment

Most modern electronic equipment - for example, personal medical devices, equipment in hospitals and cars - is shielded from RF energy. However, RF energy from cellular telephones may affect some electronic equipment.

Consult your physician or ask the manufacturer of any personal medical device (such as pacemakers, hearing aids, etc.) to determine if they are adequately shielded from external RF.

When using your phone as a carry phone, turn it off in health care facilities when any regulations posted in the areas instruct you to do so. Always request permission before using your carry phone near medical equipment.

Aircraft (Carry Phone Configuration Only)

Turn your phone off before boarding any aircraft.

- Use it on the ground only with crew permission.
- Do not use it in the air.

To prevent interference with critical aircraft systems, Federal Aviation Administration (FAA) regulations require you to have permission from a crew member to use your phone while the plane is on the ground. To prevent interference with cellular systems, FCC regulations prohibit using your phone while the plane is in the air.

The design of Motorola's cellular telephones complies with all applicable RF Safety Standards.

Motorola meets the standards and recommendations for the protection of public exposure to RF electromagnetic energy established by governmental bodies and other qualified organizations, such as the following:

- National Council on Radiation Protection and Measurements (NCRP). Report 86.
- Department of Health and Welfare Canada Safety Code 6.
- Verband Deutscher Elektroingenieure (VDE) DIN-0848.
- Directives of the European Community, Directorate General V in Matters of Radio Frequency Electromagnetic Energy.
- National Radiological Protection Board of the United Kingdom GS-11, 1988.
- American National Standards Institute (ANSI) / IEEE C95.1-1992.

**Magnetic Storage Media**

Your phone contains a magnet. Do not place your phone in close proximity to magnetic storage media such as diskettes or credit cards for extended periods of time.

Batteries

CAUTION *To prevent injuries or burns, do not allow metal objects to contact or short circuit the battery terminals.*

Rules, Regulations, and Precautions

The U. S. Federal Communications Commission and the Canadian Department of Communications regulate cellular radiotelephone service in their respective countries. It is important for you, the cellular radiotelephone user, to observe the applicable regulations when operating your cellular phone in either country. In addition to these U.S. and Canadian regulations, you may also be bound by certain state, provincial, territorial, and local rules and regulations, as well as by your cellular carrier's tariff (the rates, terms, and conditions of its service). If you wish to use your cellular radiotelephone in both the U.S. and Canada, please consult with your system operator.

Furthermore, you should remember that your cellular phone is a radiotelephone, – i.e., it combines both wireline technology, as used in your home or office telephone system, and radio technology – and that the scope of regulations and precautions is therefore broader than the scope of regulations and precautions relating to wireline-only telephone usage.

Some of the major points of consideration are set out below. Please note, however, that this “Rules, Regulations, and Precautions” section does not constitute legal advice; and is intended merely for general information purposes. If you have any specific questions, please contact your Cellular Carrier (System Operator).



License - If your home system is in the U. S., you do not require a separate license to operate your cellular telephone; obtaining a cellular telephone access number is sufficient to register you as a user. If your home system is in Canada, a separate license is required; your carrier will assist you in the licensing process. If you wish to use your cellular phone on both sides of the border, please contact your Cellular Carrier (System Operator).

Denial of Service - A cellular carrier may deny service temporarily, or terminate service for violation of any government regulations or of its tariff.

Consumer Responsibilities - Remember that the wireline and radio regulations with respect to harassing calls, false distress calls, obscene language, etc. apply to cellular phone usage.

Privacy - As a telephone user, you have come to assume a certain standard of privacy when you place or receive a telephone call via the traditional wireline systems. However, because cellular radiotelephones utilize radio transmissions to effect calls, the same standard cannot always be assured. While it is unlawful for an unauthorized person to divulge or use any information obtained from intercepting or "listening in on" conversations intended for others, you should not assume that your conversation is completely secure. Commercially available scanning equipment can permit a third party to monitor the radio channels used for cellular telephone calls.

Interference - No person shall interfere with or cause interference to any radio communication or signal.

Equipment Modifications - The U.S. Federal Communications Commission has type-approved and the Canadian Department of Communications has granted technical acceptance to the model of cellular telephone which you have purchased, and both have allocated a specific frequency range for cellular service. No changes or adjustments are to be made to your cellular phone.



MOTOROLA

Pan American Cellular Subscriber Group
600 North U.S. Highway 45
Libertyville, Illinois 60048

1-800-331-6456 – U.S.A.
1-800-461-4575 – Canada

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