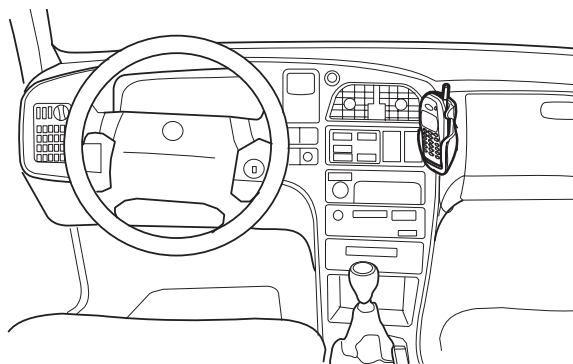


NOKIA

INSTALLATION GUIDE



Complete Car Kit (CARK-91US/CARK-91H)

For use with Nokia 5100 and 6100 Series
Wireless Phones



Introduction

This installation guide has been prepared to provide the basic information necessary to install this car kit. This guide is not intended to be definitive, because different types and models of vehicles will require different installation work. The information given is for general guidance only.

The terms of warranty demand that this car kit be installed by an experienced installation facility. An end user should never attempt to install this car kit without professional assistance as the installation requires special tools and knowledge.

Please refer to the phone's Owner's Manual for instructions on the phone's operation, care and maintenance, including important safety information.

Note: Read the warnings below before beginning the installation procedure.

WARNINGS

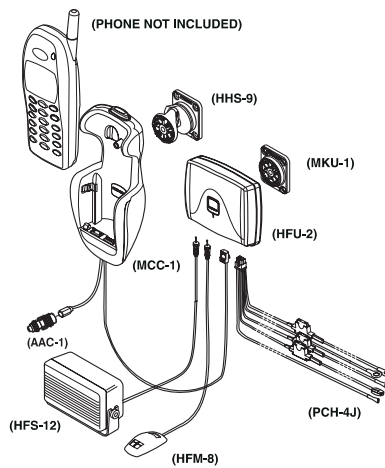
- 1) Ensure that the vehicle's battery is disconnected before you start the installation procedure, and that it remains disconnected during the procedure.
- 2) Do not smoke or use open flames when working near the vehicle's fuel system.
- 3) Ensure that the vehicle's electrical cables, hydraulic lines, fuel lines and safety equipment are not damaged during installation.
- 4) Ensure that normal control and operation of the vehicle is not impaired by the installation, particularly the brakes and steering.
- 5) Electronic and other sophisticated systems (e.g. speed control, abs anti-lock brake, fuel injection, navigation and air bag systems) are relatively immune to malfunction caused by nearby radio transmissions. However, should you experience false operation of these systems or are in any doubt whatsoever as to their functionality, please consult the vehicle's dealer.

- 6) The car kit is suitable for use only in vehicles with a 11-32 V negative grounding. Use on other supply voltages or alternative polarity will damage the equipment.
- 7) The phone should not be left switched on for extended periods without running the vehicle's engine. Failure to comply could drain the vehicle's battery.

Unpacking

Carefully unpack the equipment and ensure that the following items are present.

Advanced Cradle	MCC-1
RF Adapter	AAC-1
Junction Box	HFU-2
Power Cable	PCH-4J
Mounting Plate	MKU-1
Swivel Mount	HHS-9
Microphone	HFM-8
External HF Speaker	HFS-12
Options	
External Audio Handset (included with CARK-91H)	HSU-1



Component Parts

Advanced Cradle MCC-1

The Advanced Cradle firmly holds the phone in a convenient place. The Advanced Cradle is attached to the vehicle's interior using the swivel mount HHS-9.

RF Adapter AAC-1

The RF Adapter converts the FME connector of the MCC-1, Advanced Cradle, into a mini-U connector that attaches to an external antenna.

Junction Box HFU-2

The Junction Box enables the phone to operate in hands-free mode. The unit is attached to the vehicle interior using the Mounting Plate MKU-1, or the Swivel Mount HHS-9. A temporary installation can be achieved using cable ties.

Power is supplied from the vehicle's battery via the Power Cable PCH-4J. The Junction Box provides the power supply to the phone via the system connector.

The HF Microphone HFM-8, connects to the MIC socket and the External HF Speaker HFS-12, connects to the  socket.

Mounting Plate MKU-1 and Swivel Mount HHS-9

MKU-1 is a fixed position mounting plate. The HHS-9 is a Swivel Mount which allows for adjustable fixing. Both mounting plates are interchangeable.

HF Microphone HFM-8

The HF Microphone connects directly to the socket of the Junction Box HFU-2, marked MIC.

HF Speaker HFS-12

The HF Speaker connects directly to the handsfree unit  socket. Insert the plug into the  socket and twist 90° to lock firmly in place.

Power Cable PCH-4J

The power cable connects the Junction Box HFU-2, to the vehicle's power supply. The red wire must be connected to the + voltage on the vehicle's power supply via the supplied fused connector. The black wire must be attached to a good negative GND connection.

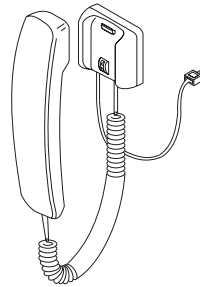
The blue ignition sense (IGNS) wire is connected to +12 V voltage controlled by the vehicle's ignition key via the supplied fused connector. (See section "Ignition Sense".)

The yellow wire is used for car radio muting (XCRM). The line goes down to 0 volts during a call. (See section "Car Radio Muting").

The green wire is used for motor antenna (AMC). The voltage in this output is +12 V whenever the phone is on. (See section "Antenna Motor Control").

HSU-1 External Audio Handset (included with CARK91H, optional for CARK-91US)

The External Audio Handset is a simple handset with no display or keypad. It provides privacy for conversation and comfort in a vehicle's noisy environment. However, do not use the handset while in motion, as both hands are needed for safe driving. The External Audio Handset (HSU-1) is not included in the Complete Car Kit, (CARK-91US).



Handset Operation

To make a call with External Audio Handset (HSU-1)

- 1) Key in the desired number on the keypad of your phone.
- 2) Press **TALK** (6100) or **Call** (5100) and lift the handset.

To receive a call with External Audio Handset

- Lift the handset or press any key except for the power key, **END** or the volume keys.

When you lift the Audio Handset from its holder, the HF-loudspeaker and HF-microphone will be muted and you can speak in privacy.

To end a call with External Audio Handset

- Replace the handset or press **END** (6100) or **End** (5100).

To switch from handsfree (HF) operation to handset operation

- Lift the handset

To switch from handset operation to handsfree (HF) operation

- Press the left **Options** soft key (6100) or **Options** (5100) once and replace the handset in 5 seconds. If you do not press the left **Options** (6100) or **Options** (5100) the call will terminate!

External Mobile Antenna (not included)

The wireless phone is designed to operate with a high quality external antenna. Due to many different types of antennas, an antenna is NOT included as part of this kit. Please, consult the dealer to find out which is the most suitable antenna type for your installation. Please note that the antenna is required for proper operation.

Installation

Special attention must be given to the positioning of the car kit accessories.

The positioning of the Active Cradle MCC-1 is the most important factor when trying to achieve the most comfortable position for the user. The location of the cradle should be selected so that the visibility of the phone's display is good under all lighting conditions, but not so that the driver's attention is easily distracted. The cradle should be located so that the driver can easily reach the keypad. Under no circumstances should the cradle prevent the driver from

controlling or operating the vehicle in any way or obstruct the driver's view of traffic.

The Junction Box HFU-2 can be installed in a hidden location since there is no need to disconnect cables during normal operation. Ensure that the microphone is as close to the driver's mouth as possible, and attached to a surface that is mechanically quiet. The microphone should be mounted at least 3 ft/1 m away from the handsfree unit speaker to avoid acoustic feedback.

Ensure that cables are routed as far away as possible from the vehicle's electronic systems (refer to WARNINGS)*. Also, ensure that cables are not subjected to undue mechanical stress e.g. under seats or against sharp edges. The external antenna unit should always be connected to the antenna via a non-radiating cable (e.g. coax).

* To prevent disturbance, cables should be routed as far away from the interference source as possible

Caution: In order to comply with FCC RF exposure requirements for mobile transmitting devices, a minimum distance of 20 cm must be maintained between the external antenna and all persons, with antenna gain not exceeding 3 dBi.

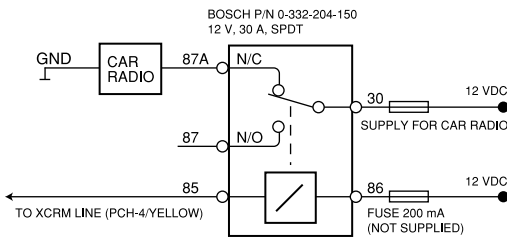
Ignition Sense IGNS

The ignition sense feature prevents the transceiver from draining the car battery by executing an auto power off in 20 seconds after the ignition key has been turned off. The blue wire of the power cable is used for the ignition sense feature. The use of ignition sense is recommended to prevent accidental draining of the car's battery. The wire is connected via a 1 A fuse to a 12/24 volt potential that is controlled by the ignition key. Do not connect it directly to the high voltage sections of the ignition circuit.

Car Radio Muting XCRM

The car kit offers a feature that can mute the car radio automatically during a conversation. This feature is convenient and provides for safer handsfree operation. When in standby, the yellow wire (XCRM) is not grounded and the car radio works normally, but during a call, the line is grounded and the car radio is muted. Note that an auxiliary relay or muting unit must be used when the car radio doesn't have a mute feature available.

When a relay is used, it is connected in series with the car radio main supply. A 200 mA fuse should be used to protect the XCRM output in event of a short circuit. Some radios have separate supplies for amplifiers and motors, and another for memory backup purposes. Very often these radios also have a secret code system, which activates itself if a break in the memory supply is detected. Be careful when installing the relay not to break the memory supply (usually marked ACC or +MEM), but to install the relay in the main supply feed.



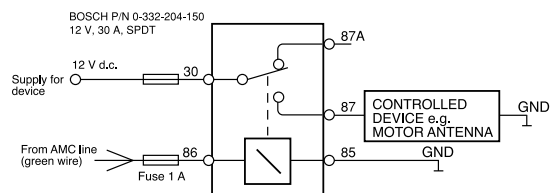
Another possibility is to use a special muting unit, which mutes the radio by connecting load resistors (not included) to the speaker lines of the car radio.

Note: The Car Radio Mute option might not interface with certain OEM and Aftermarket car stereos due to differing electronics.

Antenna Motor Control AMC

The Antenna Motor Control offers the option to retract a power AM/FM cellular antenna when the phone is in the

cradle (the system cable's green wire). This allows the phone to operate with the antenna without having to turn on the car's ignition. The voltage in this output is +12 V whenever the phone is on. If the phone is turned off, the voltage disappears. The maximum output current is 200 mA, therefore for example the motorized antenna must be controlled via a relay, see picture on next page.



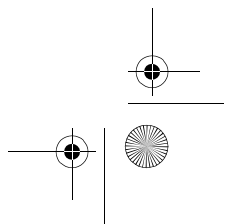
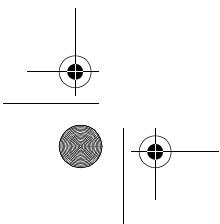
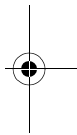
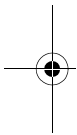
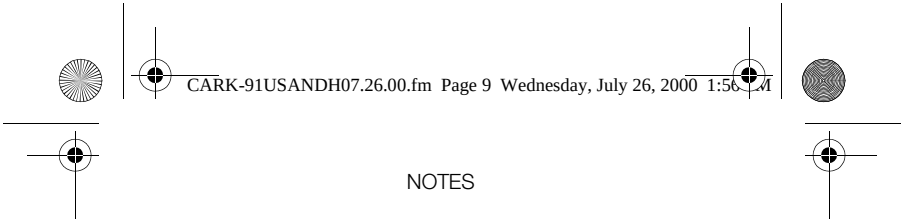
Note: Please consult the dealer or car manufacturer about antenna options available for your automobile. A dual mode antenna is recommended when using a Nokia 6160 wireless phone.

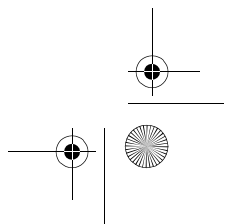
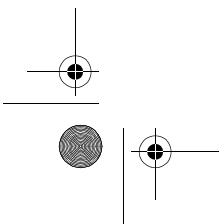
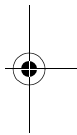
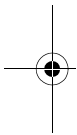
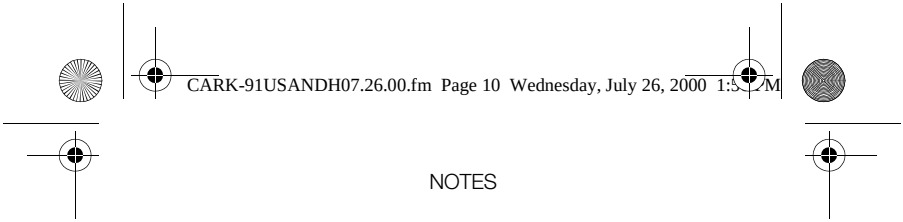
All installations should take into account any special requirements of the customer. However, should the customer require an installation that is illegal or unsafe these facts must be pointed out to the customer and a policy of non-compliance adopted.

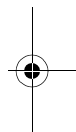
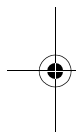
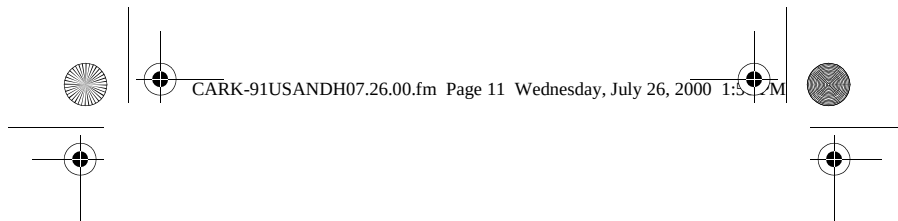
Testing

Once installed, the equipment should be tested to ensure that it is operating satisfactorily and that the position of the unit does not impair on the driver's ability to control and operate the vehicle in any way.

Use the phone to make a call when the vehicle is parked with the engine running. During the call, switch off the engine. Ensure that the phone is operational with the engine running and with the engine switched off. For operating information refer to the phone's owner's manual.







NOKIA

CONNECTING PEOPLE

© 1998 Nokia Mobile Phones. All rights reserved.
Nokia, Connecting People and the Original Accessories logos are
trademarks of Nokia Corporation and/or its affiliates.
Version 3 Printed in Canada 07/00 9358455

