



**MOBILE ELECTRONIC &
SECURITY FEDERATION**

CODE OF PRACTICE

INSTALLATION AND CUSTOMER SERVICE

CARS AND LIGHT COMMERCIAL VEHICLES

This document has been produced by the
MOBILE ELECTRONIC & SECURITY FEDERATION

ACKNOWLEDGEMENTS
The Directors and Administrators of MESF

PREFACE

This Code of Practice is intended to establish the minimum standards of installation and customer service practices of Mobile Electronic & Security Federation Approved Installer members.

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Code of Practice
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**MOBILE ELECTRONIC & SECURITY FEDERATION
INSTALLATION AND CUSTOMER SERVICE CODE OF PRACTICE**

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A. REQUIREMENTS

i. General

This Code of Practice provides guidance for the installation of mobile electronics incorporating audio, security, telematics devices, mobile multi media, cellular equipment and other such electronic equipment.

The Code details the requirements for the efficient installation of the equipment in the vehicle. Those aspects of safety relating to installation of additional physical equipment in vehicles, radio frequency radiation and electrical equipment are covered. The electromagnetic compatibility between the radio equipment and vehicle electrical and electronic systems is also dealt with.

Where equipment and vehicle manufacturers' procedures for installation exist, they take precedence over procedures stated in this document.

ii. Introduction

Successful equipment installation relies to a great extent on the skill, craftsmanship and common sense of the installation technician. There are, however, certain guidelines that will help achieve the ultimate aim of:

A SATISFIED CUSTOMER WITH AN EFFICIENT AND RELIABLE INSTALLATION

This Code of Practice provides a minimum standard for the installation of mobile electronics.

The equipment should harmonise with the vehicle's interior and exterior. It should appear as an integral part of the vehicle, not a crudely bolted-on extra.

This Code of Practice is under constant revision and alterations to this Code may be suggested to the MESF.

iii. Vehicle Inspection.

When accepting the vehicle, the bodywork, interior and electrical fittings must be checked. Any defects must be brought to the attention of the customer. Whilst inspecting the vehicle should any installation problems be identified they are to be noted and discussed during consultation with the customer, and a solution agreed.

The points to be checked are set out in Appendix A, along with check forms.

iv. Customer installation requirements.

The customer is to:

- a) Be made aware of the range of options and mounts that are available for the items to be fitted
- b) Be advised of the optimum positions for items, especially those regarding the siting of aerials, speakers, handsets, alarm systems, switches etc.

- c) Be asked if a switched supply to the equipment is required. Where a vehicle is fitted with a 'master switch', the supply for the installation should not by-pass this switch unless written authority is given by the customer. The Technician must ensure in consultation with the customer that the installation will comply with any regulations pertaining to that class of vehicle.

In certain cases, when the vehicle battery is disconnected, problems may occur with certain types of electrical equipment. Ensure that manufacturer's installation instructions are followed and if in doubt contact their technical departments. This is most important with:

- a) In-car entertainment fitted with an anti-theft security code
- b) Vehicle alarm systems
- c) In-car data management systems
- d) Airbags and SRS systems
- e) ABS systems

Ensure that the customer has the necessary information to make the equipment function correctly if the battery is disconnected. Specific instructions are to be available to the installing technician should any of the above listed equipment be fitted already.

The customer's signature must be obtained to record they agree with the proposed installation before work may proceed.

This information, including customer's signature of authority, can be on one form as in Appendix A.

MESF members are strongly advised to issue an MESF National Installation/Warranty Certificate with every installation.

v. Legal and Safety Requirements

Full consideration is to be given to ensure that the proposed installation and equipment conforms to current legal and safety standards.

vi. Vehicle Manufacturer's / Supplier's Warranty.

Problems caused by the connection of equipment to any part of a vehicle's wiring other than an authorised connection point may invalidate the vehicle's warranty to the affected parts. Consult the vehicle manufacturer or supplier.

**PARTICULAR CARE MUST BE TAKEN WHEN WORKING ON VEHICLES
LIKELY TO BE EQUIPPED WITH MULTIPLEX WRING
IF IN DOUBT CONSULT THE VEHICLE MANUFACTURER OR AGENT**

B. PRECAUTIONS

i. General

Before commencing the installation work on the customer's vehicle the Technician must ensure:

- a) Suitable tools are available (see Appendix E)
- b) A clean overall/dust coat, free from sharp buttons and zip fasteners, is worn
- c) A watch or other metallic item, which could damage paintwork or come in contact with the battery supply is not worn
- d) Tools are not being carried in any pockets

Before drilling any hole the technician must ascertain what is behind the material to be drilled. It may be a petrol tank, fuel line, brake pipe, battery, etc.

If holes are drilled through any panels that may allow dirt or water through, then these must be sealed. In the case of double skinned panels the technician must satisfy himself that it is safe to drill through both skins. Self-tapping screws should be used with care. They leave a sharp protrusion on the other side of the material and sometimes work loose. Where possible use bolts with locking nuts, plain nuts with shake-proof washers or with hank-bushes. This is particularly important when securing large units. All drilled holes must be treated to prevent corrosion.

ii. Battery isolation

Where possible the vehicle's battery is to be disconnected. Where the customer or vehicle manufacturer/supplier's instructions specifically prohibit this action, then additional care must be taken during the installation. Ensure all relevant cables are subsequently reconnected to the battery.

**WHEN WORKING ON OR AROUND AIRBAG AND OTHER SRS SYSTEMS
ALWAYS DISCONNECT THE VEHICLE'S BATTERY AND WAIT A MINIMUM
OF 30 MINUTES BEFORE COMMENCING WORK.**

iii. Gas propelled vehicles

When installing in this type of vehicle it is considered safe practice to close the manual shut-off valve located near to the gas cylinder.

iv. Protection of bodywork and interior

Protect the customer's property throughout the installation work, by using protective covers on the seats, steering wheel and wings and by removing items from the vehicle and storing them in a safe, clean dry place.

If you cause any damage to the customer's property they must be informed as soon as possible. Do not assume that it will not be noticed. Sooner or later it will.

**THE INSTALLER MUST HAVE ADEQUATE INSURANCE TO COVER AGAINST
ANY POSSIBLE CLAIMS.**

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C. INSTALLATION OF AERIAL AND CO-AXIAL CABLE

i. General

Although the aerial is probably one of the least expensive items of the whole installation, it affects the entire quality of operation of the system. Too much care cannot be exercised in: -

- a) Choosing the right aerial
- b) Choosing the right mounting place
- c) Installing it correctly

When fitting the aerial and co-axial connectors, the manufacturer's instructions must be followed.

ii. Installation of Transmission Aerials and Safety Requirements.

To create a symmetrical, non-directional radiation pattern, an aerial must be mounted vertically on a horizontal ground plane. It must not be close to any vertical structure, windscreen pillar, or any structure on the roof, etc., which could act as a screen or reflector. It must be located as high as possible; the ideal location is on the roof of the vehicle. Any other position may have a marked affect on the radiation pattern of the aerial.

The aerial must not be located near to the fuel filler area because of the fire risk from electrical discharge.

The aerial must not be installed on a vehicle in such a way that the rod may protrude out from the side of the vehicle and cause accidents.

In the case of Class 1 cellular radio systems, care must be taken in mounting the aerial. No part of the human body may normally rest within 20 cm of any part of the aerial for more than a few minutes whilst the equipment is in use, unless there is an intervening metallic screen (e.g. metallic roof) at least 30 sq. cm in area.

When the aerial installation is to be carried out on a non-metallic surface, either:

- a) A ground plane may be used which is fixed to the inside of the vehicle below the aerial, or
- b) A ground plane independent aerial can be fitted directly to any surface (Glass-fibre, etc.) or on to a mounting bracket as approved by the manufacturer

iii. Mounting Aerials

Begin the mounting of the aerial in the desired position by marking the centre of the hole with a centre punch. Use a small piece of tape to prevent the drill from slipping. Protect the surrounding area inside and out from swarf and ensure that there is sufficient clearance to prevent the drill bit from damaging anything on penetration of the bodywork, e.g. the headlining. If in doubt fit a stop to the bit.

Where necessary remove a small section of paint from the underside of the hole to provide a good aerial mount earth point.

Petroleum jelly or red oxide must be applied to the exposed metal to prevent corrosion occurring.

iv. Fitting Glass mount Aerials

Scrupulous cleanliness must be observed and care must be taken not to touch the adhesive surface or the glass after cleaning prior to fixing.

v. Routing of the Co-axial Cable

Ensure that the co-axial cable is properly secured, and routed in a way that avoids sharp bends and, where possible, existing vehicle wiring. When vehicle trim is replaced make sure that the panels or trim do not trap the co-axial cable.

TAKE CARE WITH AIR BAGS

vi. Connection of the Co-axial Connectors

Fit the correct aerial connectors at the radio end of the co-axial using either crimp or soldered connectors as appropriate. Ensure that the joints are electrically and mechanically sound.

NOTE: Also refer to MPT 1362, the mobile radio installation code of practice of the Radiocommunications Agency.

D. INSTALLATION OF EQUIPMENT – AUDIO, TELEMATICS AND MOBILE MULTI MEDIA

i. General

Full consideration must be given to ensuring that the installation conforms to current safety standards. The installation in certain specialised vehicles, such as Petrol Tankers, Fire Appliances, Public Service Vehicles and gas propelled vehicles, may be subject to further safety regulations. In general the information contained in this Code of Practice covers vehicles of any type, but there may be additional regulations pertinent to the customer or his type of business.

All equipment installed should meet the necessary statutory and type approvals.

COMMON SENSE ABOUT SAFETY MUST ALWAYS PREVAIL

The control, display and cabling must never obscure nor obstruct instruments or vehicle controls, neither may they distract a driver by their operation or impede upon the driver's vision through the windscreen to the road ahead. The prime requirement is that the equipment is to be in such a position as to be suitable for use by the occupants of the vehicle. Legends and displays must be correctly orientated for use by the principle user.

Screens must not provide entertainment to the driver unless the vehicle's handbrake is fully applied.

UNDER NO CIRCUMSTANCES MAY THE EQUIPMENT BE LEFT LOOSE IN THE VEHICLE. IT MUST BE SECURELY MOUNTED IN POSITION

ii. Pre-check of equipment

It is recommended that the equipment is bench tested before it is installed in the vehicle. At this stage all the basic functions and levels can be checked and adjusted if necessary.

iii. Location of equipment in load (boot) area of vehicle

Equipment must be mounted in such a manner that:

- a) It cannot be damaged, or ventilation restricted, by items carried in the load area
- b) It cannot cause damage to items carried in the load area
- c) Access is not barred to items stowed in the load area, e.g. spare-wheel, jack, etc.
- d) The connections to the equipment are easily accessible in order that the equipment can be removed for repair or servicing.

iv. Mounting of equipment to the interior of the vehicle

The equipment must be installed in the vehicle in accordance with the job sheet agreed with the customer. However, before fitting the equipment in the selected position, ensure that, as far as it is reasonable to know, the vehicle safety design will not be modified.

If the vehicle is designed such that the fascia, glove pocket, parcel shelf etc, can collapse under impact in the event of an accident, the fitting of any item of the equipment to these may modify this feature. (If in doubt contact the vehicle manufacturer). Similarly, this also applies to any external facility equipment used in conjunction with installations.

Fitting positions above the head of the driver are to be avoided.

If the equipment must be fitted to the floor, then it is to be adequately protected and fitted over the carpet (this removes the temptation of replacing the carpet over the installation and restricting ventilation). Ensure that there are no brake lines, fuel lines etc. under the floor.

v. Routing of cables

Where possible all cables are to pass under carpets and through mouldings in such a way as to afford maximum protection. If necessary, use some form of sleeving or proprietary protector. They must not be subject to continued bending, stress or abrasion whilst in service.

The cables must not impede the occupants of the car or present a hazard.

Whenever the cables pass through a bulkhead, a grommet must be fitted. It is always better to use an existing hole rather than drill another, provided it is in the right position, is large enough and has a grommet. Select a route for the cables, ideally on the opposite side of the vehicle to the fuel pipe, clear of brake pipes and cable, and particularly vehicle wiring etc. Where this is not possible, then under no circumstances must any cables be attached to these.

The routing of cables carrying audio signal to amps from head units, power to amps or audio signal to speakers should wherever possible be routed a minimum of 150cm from any wiring harness through the vehicle to avoid induced noise.

Due consideration must be given to cable routing into doors through door pillars to ensure long term use does not cause damage to wires through "crushing" or "flexing" when the door opens or closes.

E. MOUNTING OF SPEAKERS

i. Considerations

When assessing possible speaker mounting positions in the doors the following points are to be considered:

- a) Will the window winder foul the speaker?
- b) Will the window glass or lifting mechanism foul the rear of the speaker?
- c) Will the speaker be masked by the seat, the corner of the dash or the occupant?
- d) Will the winder mechanism or door check strap cut or damage any speaker cables when in use?
- e) Will the door speaker be affected by water ingress in the rear of the vehicle?

When assessing possible speaker mounting positions in the doors in the rear of the vehicle:

- f) Can the speaker "breathe" into the boot area?
- g) Is there a petrol tank or boot-lid spring under the shelf?

ii. Mounting

- a) To gain maximum bass performance from speakers they should always be fixed to the steel paneling of the car. Do not rely on fixing only to the trim
- b) Always treat with anti rust type primer any bare metal edges.
- c) Always create additional water shielding for door speakers if water is likely to penetrate the speakers.
- d) Always replace vehicle manufacturer's waterproof skin on doors as vehicle warranty will be affected by damage to this membrane and door trims will absorb moisture.
- e) Replace broken or damaged fixing studs on trim panels to avoid vibration from panels.
- f) In the absence of manufacturer's colour coding it is suggested that the lead with the colour tracer be used as the feeder.

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F. CABLE CONNECTIONS

The ideal way to join cables is by soldering and the joint protected with heat shrink sleeving.

If this is not practical a good quality crimp connector of the correct diameter fitted to a cable with a ratchet type crimping tool - not pliers - should be used.

The use of dedicated wiring interfaces when dealing with multiplex wiring systems is recommended.

IDC ("Scotchlock" type) connectors may not be used for audio, communications or alarm cables. They can suffer from high resistance connections due to corrosion, incorrect conductor size and insufficient surface area contact. IDCs cannot be considered a long-term reliable connection.

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G. ALARMS

The alarm electronics should always be mounted within the passenger area of the vehicle except the audible warning device, with or without the alarm electronics built in, that is to be mounted in the engine bay. Keep this away from excessive heat, near manifolds etc., and away from direct exposure to rain ingress, i.e. in front of the radiator. All cable connections must be sealed and protected from corrosion by heat shrink sleeving. Battery connections must be sealed and protected from corrosion by petroleum jelly.

i. Pin Switches (Existing)

Ensure that all existing pin switches are operational and cannot be closed by hand or tool when opening doors. If they can, re-adjust, replace, re-locate or install additional to give protection as required.

ii. Secure System Placement

Electrical and electronic components of the security system are to be installed:

- a) In an enclosed area protected by a mechanical locking system, or by the security system, or by having the access mechanism located in a secure area.
- b) With all component parts of the system positioned where outside interference or damage is avoided.
- c) Unless otherwise so designed and intended (i.e. visible indicators), in such a way that they and their fixings are concealed from view. These parts must be securely fitted using screws or bolts with either locking nuts or nuts with shake-proof washers, or with metal rivets. Components are not to be fitted to harnesses or hoses and pipes. All fixings should be disguised to match existing equipment.

iii. Control Unit

- a) When the electrical and electronic control unit (ECU) is separate from the audible warning device, the ECU should be mounted behind the dashboard or in a secure position that is not accessible without the removal of trim using tools. It may not be mounted in the engine compartment. If an immobilisation function is incorporated, the control unit immobiliser module and wiring is to be similarly protected.

iv. Audible Warning Device.

- c) At least one audible warning device/siren should be securely mounted in the engine compartment or suitable location that cannot be accessed without the removal of trim.
- b) Units must be protected from attack and environmental conditions, corrosion and excessive heat i.e., at least 200mm away from exhaust manifolds and catalytic converters.

- c) Units should not be positioned, where possible, within 300mm of the front or rear bumper, unless designed for location within these areas.
- d) Pin switches to bonnet and boot should be installed to the requirements of g) above where allowing no more than 50mm of movement before activating is possible.

v. Connections

General cabling and connections is covered in sections: **D.v.** and **F.**

vi. Aerials

- a) Aerials for remote control devices and tracking and location systems must be installed in accordance with the manufacturers/importers instructions. NB. For tracking systems the aerial installation may affect the efficiency of the system.

vii. Detectors

- a) Ultrasonic detectors are to be positioned at least 300 mm from air vents, directed in line of sight of the furthest glazed area and positioned in such a way as to give the best coverage in accordance with the manufacturer's instructions. They should be tamper proof and must cause no danger to vehicle occupants in an accident.
- b) Microwave detectors are to be powered to be active only when the system is set and mounted to give the best coverage in accordance with the manufacturer's instructions. They should be tamper proof and be adjusted to operate within the confines of the vehicle.
- c) Other detectors are to be installed in accordance with security or locating and recovery system manufacturer's instructions

H. PROVISION OF POWER SUPPLY

i. Audio

A dedicated supply cable is to be used for equipment drawing more than 3 amps and be fused as close as possible to the battery. The supply cable should be connected to the battery connections only when both the positive and negative supply lines are fused.

ii. Security

Except in the case of some location and recovery devices, the power supply wire(s) are to be connected to an unfused power supply in a secure area via a dedicated fuse or circuit breaker with the correct rating, in accordance with the security system manufacturer's instructions.

The chassis of the vehicle is to be used as the negative return path for the system. Consult manufacturer's instructions for positive earth and isolated chassis vehicles. Earth wires must be securely connected and if the equipment has more than one wire, these should be connected at separate locations.

iii. Location and Recovery Systems

Earth bonding of the ECU should be made in accordance with the manufacturer's instructions to take account of EMC.

No other equipment is to be connected to the fuse protected side of the security system or locating and recovery device power supply, and all connections are to be in an enclosed or secure area.

iv. Provision of a Switched Supply via the Ignition Switch.

A suitable relay must be used to provide a switched supply when more than 3 amps are required. The supply for the energising coil must be fused; this supply may be taken from one of the vehicle's fuses which is live when the ignition switch is on. If a change-over relay is used, then the normally open contact is to be connected to the live side, and the change-over contact is to be connected to the equipment side of the supply cable.

v. Fuse Protection

All power cables and relay feeds must be fused as close to their source connection as possible.

vi. Supply Cable and its Routing

If fitting a supply cable not supplied by the manufacturer, the following are to be considered:

- a) Have due regard for the voltage drop, especially on long runs when heavy-duty cable is used.
- b) The cable must be of a higher current capacity than the protection fuse.
- c) The cable must be as short as possible.

- d) The cable must be clear of moving parts, i.e. shock absorbers, steering column, drive-shafts, etc.
- e) The cable must be well clear of the engine, exhaust or other hot items.
- f) The supply cable run is to be separate from other wiring. More than one cable may pass through the same hole in the chassis and body only if unavoidable. Fit suitable grommets when special holes are drilled.
- g) The cables are to be well supported, without sharp bends and not under strain.
- h) The cable must be sited away from ignition, HT circuits, and where possible, other vehicle wiring.

It is also recommended that, unless a moulded twin supply cable is used, the two supply lines be twisted together along their length in order to reduce induced noise.

- i) With regard to security devices: Where vehicle indicator circuits are connected to the security system, interconnecting wiring is protected by in-line fuses, or by other current limiting devices as specified by the security device manufacturer.

vii. 24-Volt (or greater) Vehicle Supply

Most equipment operates on a 12-volt supply. If a vehicle has a 24-volt (or greater) supply then an appropriate regulator or converter must be used.

A 12-VOLT TAP-OFF MUST NOT BE TAKEN FROM THE VEHICLE BATTERY

The supply cable to the regulator or converter unit must be fused and as short as practicable. The unit must be mounted in accordance with the manufacturer's instructions. Unless the unit is environmentally protected it must be mounted in a dry and well-ventilated position.

Ensure that the equipment is off when the unit is switched to the off position.

I. SETTING UP AND CHECKING PROCEDURE

i. Equipment Supply

Where an ignition switched supply is used, ensure that the equipment turns off when the ignition is switched off.

ii. Equipment

All functions of the equipment must be checked when the equipment is fully installed, with all doors, windows, bonnet, boot etc. both open and closed.

iii. Vehicle Equipment

Check, where possible, that the entire vehicle's electrical equipment functions correctly.

iv. Interference Checks to the Equipment

Check for interference from all electrical equipment installed in the vehicle. This is to be carried out initially with the engine turned off; all tests are to be repeated with the engine running.

If any interference occurs the fault must be identified and the problem rectified.

v. Interference to Electronic Devices Fitted to the Vehicle

If a problem is found, and it is suspected that the equipment or the installation is out of specification, then the equipment manufacturer, agent or supplier is to be consulted.

**UNDER NO CIRCUMSTANCES MAY AN UNQUALIFIED PERSON ATTEMPT TO
MODIFY THE DEVICE WHICH IS BEING AFFECTED**

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J. HAND-OVER TO CUSTOMER

i. Demonstration and Instructions - General

Correct operation of the equipment and all the facilities of the installation must be demonstrated to the customer.

ii. Safety Instructions

The customer is to be made aware of Rules 127 and 128 of the Highway Code, or any current regulation, which refers to the use of hand-held mobile phones, microphones and other in-vehicle systems, if applicable.

Where electronic devices are fitted to the customer's vehicle such as electronic ignition, fuel injection, anti-lock braking, etc., the customer is to be warned that any such device may be affected whilst in the presence of a radio frequency field.

Note the source of a radio frequency field may be due to a transmission from another vehicle alongside.

iii. Hand-over

All documents associated with the installation must be handed over to the customer. The customer must sign the vehicle release report (i.e. MESF Installation Certificate) to state that he is satisfied with the installation. Note however that no technical information relating to security systems shall be communicated to unauthorised persons.

The installation company is to issue the following:

- a) Warranty of at least twelve months on product, installation and labour
- b) Service record for annual function checks on product where appropriate
- c) Full user instructions of Audio and Security System including override facilities
- d) MESF certificate of installation validated with a stamp listing the Member's trading name and MESF Approved Installer member number. An MESF embossing stamp is mandatory for Single Vehicle Approval purposes and recommended for use in all other cases. This certificate may only be signed by a competent person qualified at MESF Accredited Technician grade or higher
- e) The product's EC approval number must be listed on the MESF certificate of installation
- f) Invoice and MESF guarantee (See Appendix D)
- g) Suitable daytime and 24 hour contact telephone numbers

iv. Repair and servicing

Where the Approved Installer is the supplier and/or will be responsible for maintenance or repair, then the customer is to be made aware of the servicing and repair facilities available. This is to be incorporated in the documentation given to the customer.

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K. ADMINISTRATION/BUSINESS

i. General

Each Approved Installer member must:

- a) Be in full time business
- b) Have a business principle over 21 years of age
- c) Have adequate Public Liability, Motor Traders or Traders Combined Insurance as determined by the MESF and display the necessary certificates
- d) Conform to the current MESF Code of Practice and have a copy available for employees
- e) Have a permanent business address with either full installation and demonstration facilities or in the case of mobile Approved Installers have access to a permanent workshop and work from a suitable vehicle as determined by the MESF
- f) Have directly employed, suitably trained and qualified staff as determined by the MESF. The use of suitably trained and qualified specialist sub-contractors is permitted.
- g) Provide all possible training and technical information to staff so as to continue to raise and maintain installation standards and operate a continuous personal development system for employees
- h) Prominently display the MESF membership certificate and logos
- i) Have at least one direct supply account with a mobile electronics manufacturer/distributor
- j) Have a Health and Safety policy in accordance with the current Health and Safety Regulations. The policy must be on display
- k) Have a secure store for customer records (see K. ii) a))
- l) Use pre/post installation vehicle inspection forms and customer work request forms *These may be incorporated on one form*
- m) Have a supply of MESF Installation/Warranty Certificates, kept in a secure store together with validation and embossing stamps (see K. ii) a))
- n) Have an accident book
- o) Mobile Approved Installers must undertake not to work in adverse conditions
- p) Agree to submit to and abide by an annual MESF audit and installation inspection as described on the MESF Audit and Installation Inspection Forms and have a customer vehicle available at an inspection

ii. Records

The installation company must:

- a) Provide a secure area for the storage of all blank MESF and security manufacturers' certificates, validation and embossing stamps and records relating to system fitment and customer details, and further ensure that they are fully conversant with the Data Protection Act with regard to the storage and use of such data.
- b) Provide the customer with after sales service and assistance as outlined in the MESF guarantee.
- c) Require all employees to abide by a signed confidentiality clause within their contract of employment relating to:
 - 1) Security technical information.
 - 2) Methods of equipment installation
 - 3) Customer database

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APPENDIX A
VEHICLE PRE/POST INSTALLATION INSPECTION AND WORK REQUEST

The paperwork to cover the installation of equipment in vehicles is in two parts:

- a) Vehicle acceptance - pre-installation
- b) Vehicle release - post-installation

A. Vehicle Acceptance Check

The general items to be covered are:

i. Vehicle pre-installation inspection

This is to cover the inspection of the external bodywork and internal trim and seating. All electrical fittings both external and internal must be checked, any defects must be clearly indicated on the paperwork and reported to the customer/owner.

All existing wiring/electrical fittings should be made good before continuation with installation of new systems.

ii. Customer's instructions

The positions of the equipment and the type of supply, e.g. ignition switched or permanent supply should be discussed with the customer. All requirements should be clearly stated on the paperwork. It is also recommended that make/model numbers should also be record.

Statements must be included on the vehicle acceptance form whereby the customer agrees with the vehicle inspection and the position of the equipment and agrees for the work to be carried out.

It is recommended that a multi-copy form should be used, one copy to be given to the customer and one to the installation technician.

B. Vehicle Release Check

The general items to be covered are:-

i. Vehicle post-installation inspection

All items inspected at the pre-installation inspection must be re-checked.

Any identified EMC problems with the vehicle electronic equipment are to be stated.

ii. Installation inspection

This is to include a check that the installation is to the customer's requirements, and the installation complies with the recommendations in this Code of Practice.

The make/model/serial numbers and EC approval numbers are to be recorded. All functions of the equipment must also be checked.

Any interference with the equipment from the vehicle electrical devices must be assessed and dealt with.

The Technician, or his supervisor, is to sign the release report to say that the work has been carried out, and the customer must sign to state that the work has been carried out to his satisfaction.

The person signing the report must be competent and qualified to MESF Accredited Technician grade or higher

It is recommended that the MESF National Installation/Warranty Certificate is used for this purpose.

C. Form

An example of the information requirements for a Vehicle Inspection and Work Request form is set out in the following pages.

VEHICLE INSPECTION and WORK REQUEST

Customer

Address

Daytime telephone number

Vehicle details

MAKE	MODEL	Registration number	VIN number

Vehicle pre and post-installation inspections check list

ITEM	IN	OUT	ITEM	IN	OUT
External Lights and Indicators			Steering Wheel		
Interior Lights			Interior Condition		
Instrument Panel Lights			Radio Head Unit and Player		
Instrument Panel Warnings			CD Multichanger		
Clock			Electric Aerial		
Electric Windows			Speakers		
Heated Windows			Amplifier(s)		
Wipers			Mobile Multi Media		
Trip Counter			Interference		
Horn			Hands-Free Telephone		
Upholstery			Bodywork (use chart)		
Headlining			Locks (manual and power)		
Security codes and keys			Other (list separately)		
Mileage in			Mileage out		

Item checked Item checked and fault found (list separately)

IN DATE
I confirm the above check.
Please carry out the work.

Inspector Name, Accreditation Number and Signature

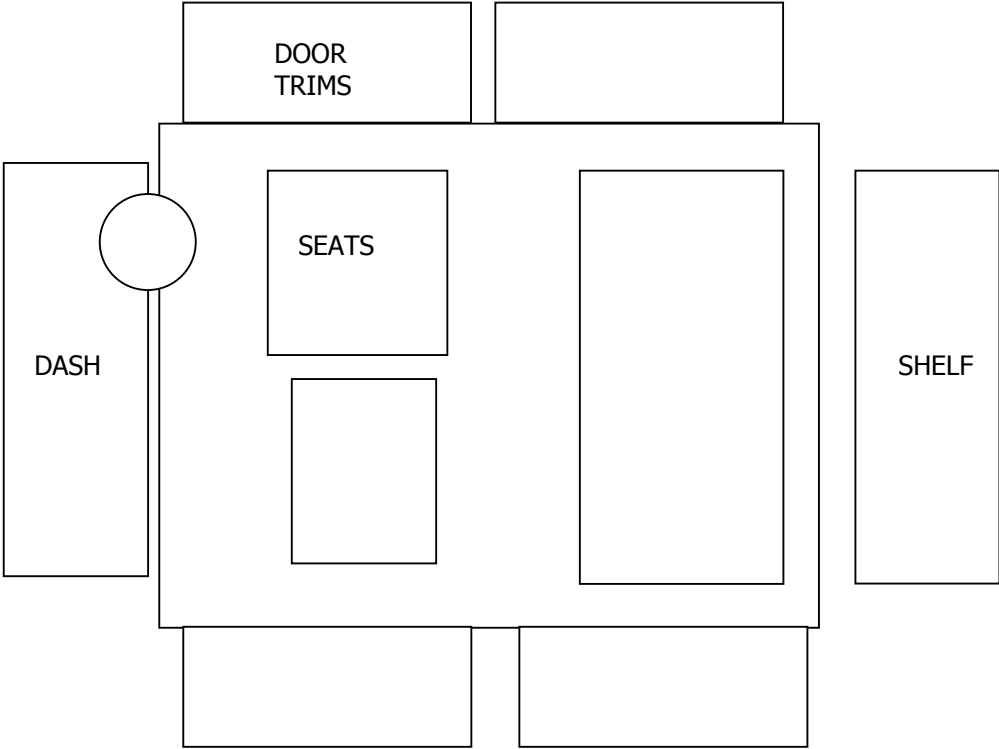
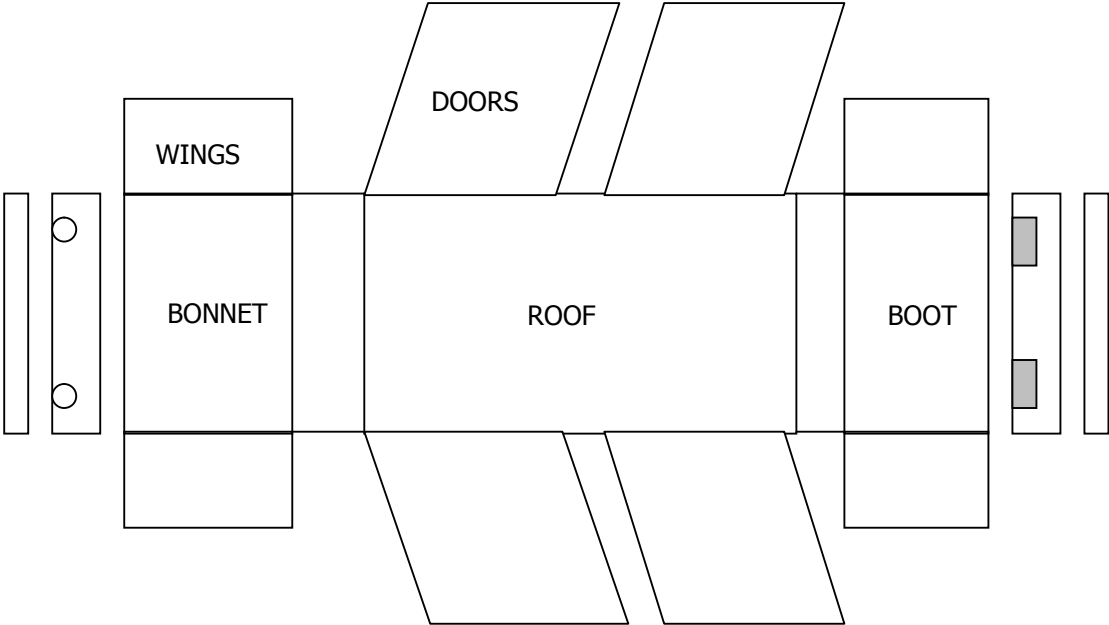
Customer Signature

OUT DATE
I confirm the above check.
The work has been carried out
to my satisfaction

Inspector Name, Accreditation Number and Signature

Customer Signature

VEHICLE INSPECTION and PRODUCT LOCATION



Indicate dents, scratches, cuts and marks 

Mark location of installed products 

APPENDIX B

A. SYSTEM/DETECTOR FUNCTION TESTS

Prior to proceeding with the test ensure that the vehicle battery is fully charged and that you have understood the security system operation as set out in the manufacturers instructions.

i. Checks are to be made on:

- a) All audible and visible indications while the system is:
 - i. Set
 - ii. Active
 - iii. Unset
- b) Engine immobilisation of the vehicle (on multi-circuit immobilisation, check each circuit), and that engine re-starts after immobilisation
- c) Correct operation of passive setting
- d) The operation of remote central locking, window closure, panic function and other peripheral functions, if part of the security installation
- e) Any override facility and that the vehicle returns to normal operation
- f) Interference with any part of the vehicle's original design or equipment

With regard to locating and recovery systems check the operation of these devices in accordance with the manufacturer's instructions.

ii. Checks should also be made on:

- a) Vehicle warning lights
- b) Interference with the audio system
- c) All other vehicle electrical equipment

B. DETECTOR FUNCTIONAL TEST

i. Ultrasonic Detectors.

Open one side window, set the system adjust sensitivity before reaching into the vehicle. Check alarm condition occurs and repeat for all windows. Once set, lock ultrasonic detector heads in position and seal adjustment apertures.

ii. Microwave detectors.

Open side window and set system. With reference to the manufacturer's guide to the field of coverage adjust sensitivity before reaching into the vehicle. Check alarm conditions occur and repeat test for all areas within the field coverage. Check that the alarm condition does not occur due to passing outside the vehicle.

iii. Perimeter Detector (Pin Switches)

Set the system. If the switch is located on hinge side of door, open no more than 100mm and check alarm condition occurs. Open no more than 50mm if located on opening door edge.

Check the bonnet switch. This should also conform as above.
If the alarm condition fails to occur, adjust switches and repeat tests.

iv. Other Detectors

Detectors not covered by this Code of Practice are to be tested according to the manufacturer's instructions.

The next page shows an example of a security system check list

SECURITY SYSTEM TEST

Customer

Address

Daytime telephone number

Vehicle details

MAKE	MODEL	Registration number	VIN number

Vehicle pre and post-installation inspections check list

ITEM	IN	OUT	ITEM	IN	OUT
Battery Fully Charged			DETECTORS		
SYSTEM SET REMOTE			Pin Switches		
Indicator Flash			Ultrasonic		
Audible Chirp			Microwave		
LED Flash			Other		
Immobiliser Arm			SYSTEM UNSET		
Alarm Arm			Indicator Flash		
Central Locking			Audible Chirp		
Window Close			LED Flash		
SYSTEM SET PASSIVE			Immobiliser Disarm		
Immobiliser Arm			Alarm Disarm		
Alarm Arm			Central Locking		
Alarm sound			Panic Function		
Mileage in			Mileage out		

LIST OTHER ITEMS SEPARATELY

Item checked Item checked and fault found (list separately)

DATE

Inspector Name, Accreditation Number and Signature

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APPENDIX C

HANDS-FREE FACILITY

A typical installation may consist of:

- i. A remote mountable microphone
- ii. A loudspeaker. This may be incorporated in the handset or on a separate mount.
- iii. A distribution box (not all products) to allow interconnection of the various components.
- iv. A mute button for the microphone (where there is no mute control on the handset)
- v. A volume control for the hands-free loudspeaker.

If a distribution box is provided, it should be attached and the various components plugged in as detailed in the manufacturer's instructions. Mount the microphone on a non-resonating panel in the vehicle in a position which is close to the user's head - the driver's sun visor is generally the best option, but make sure the wire to the microphone is free to move with the visor. (Most sun-visors rotate horizontally to cover the driver's door window as well as the windscreen).

The microphone feed wire should be hidden behind the windscreen rubber or within the headlining. It must not be loose or distract the driver.

Fix any volume and mute controls in a position which is convenient for the operator. Mount the hands-free loudspeaker to a firm surface observing all rules about obstruction, safety and user convenience. Adjustment of both microphone and loudspeaker position may be necessary to overcome 'clipping' or feedback problems which can be caused by:-

- i. The units being too close together
- ii. The units directly facing each other.
- iii. Mounting the microphone on a resonating panel.

NOTE: Also refer to MPT 1362, the mobile radio installation code of practice of the Radiocommunications Agency.

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APPENDIX D

NATIONWIDE GUARANTEE

This guarantee is additional to the customer's statutory rights. It is operational when a valid MESF National Installation/Warranty Certificate is issued to the customer by an MESF Approved Installer member.

General

New Units supplied by but not fitted by MESF Approved Installer members are covered by a 12 months parts warranty from the date of purchase. New Units supplied by and fitted by MESF Approved Installer members are covered by a 12 months parts and labour warranty from the date of purchase.

Additionally, during this period of 12 months, warranty work will be carried out by another MESF Approved Installer member if the supplying MESF Approved Installer member is no longer in business or unable to provide after sales service because of distance.

Furthermore, should any repair or replacement again be defective within the original 12 month period the MESF will ensure those faults will be rectified.

Exceptions

- a) Work covered by a manufacturer recall of the product;
- b) Consumer replaceable items including, but not limited to, batteries, light bulbs and other consumable items;
- c) Cosmetic items such as trim, scratches and rust;
- d) Breakdown caused by abnormal use;
- e) Deliberate damage or neglect;
- f) If the product has been supplied (but not installed) by a MESF Approved Installer member removal and refitting will be chargeable;
- g) This warranty does not extend to upgrading faulty equipment or the labour involved in upgrading performance beyond that originally specified. Nor, does it cover suppression problems.

Note: The MESF and its members shall not be responsible for any loss suffered as a result of any installation or operation of the product whether direct or indirect, or for any loss other than the repair and/or the replacement cost of the product alone.

Procedure

Should a fault be suspected then the customer must contact the supplying MESF Approved Installer member without delay.

If the MESF Approved Installer member is no longer in business then a copy of this Warranty should be sent to the MESF at the address below. Arrangements will then be made to provide alternative help via the nearest or most suitable MESF Approved Installer member.

Statutory Rights are unaffected by the terms of this Warranty.

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APPENDIX E **TOOLS AND EQUIPMENT**

MESF members routinely undertake a wide range of work. As professionals they ensure that their workshop and mobile Technicians have the correct tools and equipment to hand before starting work.

Specific installations may require special tools, equipment and consumables. Always consult the product manufacturer.

Members will ensure that all installation staff are trained in the safe and correct use of tools and equipment and that they have policies and procedures in place to ensure their safe use and maintenance.

Particular attention must be given to the environment in which tools and equipment are to be used. Health and Safety regulations vary from work site to work site and it is the responsibility of the employer, the employee and the customer to ensure these regulations can and are complied with.

A suggested minimum tool list is shown on the MESF Audit Form see Appendix G

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APPENDIX F

INSTALLATION OF PHYSICAL SECURITY TO LIGHT COMMERCIAL VEHICLES

i. Rear Window Protection (Vans)

- a) Window plates and grills should be of 18G galvanized steel or appropriately protected against corrosion and riveted in position every 100mm with a minimum size of 5mm blind rivet.
- b) On high-risk vehicles, consideration should be given to stitch welding to existing bodywork.
- c) Where window bars are fitted they must be protected against corrosion and spaced so as to stop the size of load carried being pulled through the aperture created by the spacing of the bars.

ii. Bulkheads (Vans)

- a) Aftermarket fitted bulkheads should be of either sheet steel or steel mesh designed specifically for the make and model of vehicle.
- b) It is recommended that wooden bulkheads be constructed using plywood or M.D.F. sheet no less than 12.5mm thick.
- c) Due consideration should be given to the fixing points and method of fixing bulkheads so that their strength is suitable for the type of bulkhead being fitted.

iii. Supplementary locks

- a) Where supplementary locks are to be fitted, particularly mortice locks, due consideration must be given to the structural integrity of the vehicle PRIOR to cutting into the bodywork.
- b) Additional care must be exercised that the locks do not foul or obstruct existing vehicle components.
- c) Any holes or slots cut into the vehicle metal work should be de-burred and treated with an anti corrosion treatment.
- d) Customers must be made aware of any necessary maintenance measure that should be carried out in order to comply with standard warranty conditions.

iv. Deadlocks

- a) The lock case or body must be securely attached to the bodywork in strict accordance with the lock manufacture's specification.

- b) The receiver or striking plate must be of adequate size and material (including fixings) so as not to bend or give when subjected to a minimum acceptable sheer stress or reasonable force. Reasonable force can be defined as requiring the Original Equipment Manufacturer's doors to deform prior to any part of the supplementary lock mechanism failing.
- c) When fitting the receiving bracket or plate, adequate minimum clearance must be allowed between the bolt or latch and the receiving bracket to allow for vehicle body twist and to avoid strain on the lock whilst the vehicle is being driven.

vi. High Security Slam Locks

- a) Slam lock kits to be fitted should achieve the following enhancements to the existing door lock facility.
 - a) The slam lock release should be achieved by a high-security key with no less than 100,000 useable differs.
 - b) The slam lock conversion should include additional metal work (brackets/plates, etc.) to physically strengthen the vehicle bodywork in order to prevent locks being overcome by the door skin being ruptured.
 - c) The slam lock key barrel should be fitted in a manner that makes it secure against attack where the objective would be to turn the key barrel in the door skin in order to overcome the locking mechanism.
 - d) All additional metal work to be fitted as a slam lock conversion should be manufactured from non-corrosive material or plated to protect against corrosion.
- b) When fitting slam lock conversions, thought must be given to exit routes from the vehicle assuming personnel could be locked in.

vii. Shoot Bolts

- a) Should additional shoot bolts be introduced to further enhance security, consideration should be given to future adjustments assuming wear and tear on door seals, hinges, etc.
- b) Shoot bolts should ideally be installed into the door skin box for added strength.
- c) Location holes for shoot bolts should, where necessary, be reinforced with additional plates.

APPENDIX G

SAMPLE AUDIT FORM AND NON-COMPLIANCE PROCEDURES

MANDATORY REQUIREMENTS

INSURANCE	Public Liability/Motor Traders or Traders Combined	<input type="checkbox"/>
	Employees Liability (if employer)	
CODE OF PRACTICE	Current MESF Code of Practice available for employees	<input type="checkbox"/>
TRAINING	Evidence of employee qualifications, training and continuous personal development	<input type="checkbox"/>
STORAGE	Secure storage of customer information, blank installation certificates and validation and embossing stamps	<input type="checkbox"/>
SUPPLIERS	Direct account with manufacturer/distributor	<input type="checkbox"/>
INSPECTION FORM	Pre/post installation vehicle inspection forms	<input type="checkbox"/>
WORK ORDER	Customer work request forms	<input type="checkbox"/>
CERTIFICATES	MESF National Installation/Warranty Certificates	<input type="checkbox"/>
HEALTH & SAFETY	Accident Book and Health and Safety Policy displayed	<input type="checkbox"/>
CONFORMITY	Customer vehicle for Installation Inspection	<input type="checkbox"/>

TOOL REQUIREMENTS

all tools must be in good working order and suitable for purpose

Multimeter	<input type="checkbox"/>	Wire Strippers	<input type="checkbox"/>	Trim Tool	<input type="checkbox"/>	Crimp Tool/Crimps	<input type="checkbox"/>
Screwdrivers (various)	<input type="checkbox"/>	Pliers (various)	<input type="checkbox"/>	Steel Rule	<input type="checkbox"/>	Trimming Knife	<input type="checkbox"/>
Socket Set AF/Metric	<input type="checkbox"/>	Torx Key Set	<input type="checkbox"/>	Spanner Set AF	<input type="checkbox"/>	Spanner Set Metric	<input type="checkbox"/>
Pop Rivet Gun/Rivets	<input type="checkbox"/>	Hacksaw	<input type="checkbox"/>	Hammer	<input type="checkbox"/>	Pull Through Cord	<input type="checkbox"/>
Allen Key Set	<input type="checkbox"/>	Side Cutters	<input type="checkbox"/>	Heat Gun	<input type="checkbox"/>	Vacuum Cleaner	<input type="checkbox"/>
Safety Equipment (HSE)	<input type="checkbox"/>	Drill and Bits	<input type="checkbox"/>	Hole Cutters	<input type="checkbox"/>	Insulating Tape	<input type="checkbox"/>
Silicone Sealant	<input type="checkbox"/>	Metal Files	<input type="checkbox"/>	Inspection Lamp	<input type="checkbox"/>	Self Amalg'ing Tape	<input type="checkbox"/>
Mains Ext'n Lead RCD	<input type="checkbox"/>	Solder Kit	<input type="checkbox"/>	Heat Shrink Tube	<input type="checkbox"/>	Insulating Tubing	<input type="checkbox"/>

GENERAL REQUIREMENTS

MESF Membership Certificate displayed in showroom or office		<input type="checkbox"/>				
MESF Window Sticker or Vehicle Logo displayed		<input type="checkbox"/>				
Employees Training/Qualification Certificates displayed in showroom or office		<input type="checkbox"/>				
Permanent workshop (or evidence of access to if mobile business)		<input type="checkbox"/>				
Workshop condition	good	<input type="checkbox"/>	reasonable	<input type="checkbox"/>	poor	<input type="checkbox"/>
<i>or if mobile business</i>						
Vehicle work area condition	good	<input type="checkbox"/>	reasonable	<input type="checkbox"/>	poor	<input type="checkbox"/>
Showroom condition	good	<input type="checkbox"/>	reasonable	<input type="checkbox"/>	poor	<input type="checkbox"/>
<i>or if mobile business</i>						
Vehicle demo area condition	good	<input type="checkbox"/>	reasonable	<input type="checkbox"/>	poor	<input type="checkbox"/>
Protective clothing provision	good	<input type="checkbox"/>	reasonable	<input type="checkbox"/>	poor	<input type="checkbox"/>

AUDIT NON-COMPLIANCE PROCEDURES

MANDATORY REQUIREMENTS

INSURANCE	Public Liability/Motor Traders or Traders Combined Employees Liability (if employer)
CODE OF PRACTICE	Current MESF Code of Practice available for employees
TRAINING	Evidence of employee qualifications, training and continuous personal development
STORAGE	Secure storage of customer information, blank installation certificates and validation and embossing stamps
SUPPLIERS	Direct account with manufacturer/distributor
INSPECTION FORM	Pre/post installation vehicle inspection forms
WORK ORDER	Customer work request forms
CERTIFICATES	MESF National Installation/Warranty Certificates
HEALTH & SAFETY	Accident Book and Health and Safety Policy displayed
CONFORMITY	Customer vehicle for Installation Inspection

Should there be a non-compliance with any one or more of the above Mandatory Requirements the MESF Auditor must mark the Audit Form accordingly and inform the Member of non-compliance.

If the non-compliance is because of no or insufficient insurance cover the Member must immediately stop all work and cease to issue MESF National Installation/Warranty Certificates. The Audit must not continue. The Member must not recommence work or issue MESF National Installation/Warranty Certificates until complying insurance cover is in effect. The Member must produce evidence to the Auditor that complying insurance cover is in effect and submit to another Audit within 28 days.

If the non-compliance is one or more of the other Mandatory Requirements the Member must immediately cease to issue MESF National Installation/Warranty Certificates. The Member must rectify the non-compliance as soon as possible, produce evidence of rectification to the Auditor and submit to another Audit within 28 days.

Failure to rectify non-compliance with a Mandatory Requirement and successfully complete an Audit within 28 days of the original failed Audit will result in the Member being removed from the Register of MESF Approved Installers.

A Member who has been removed from the Register of MESF Approved Installers has the right to appeal to the MESF Board of Directors to be re-instated.

TOOL REQUIREMENTS and GENERAL REQUIREMENTS

Should there be a non-compliance with any one or more of the above Tool Requirements and General Requirements the MESF Auditor must mark the Audit Form accordingly and inform the Member of non-compliance.

All non-compliances with Tool Requirements and General Requirements must be rectified as soon as possible but take no longer than 28 days.

A 'poor' rating is non-compliance.

Up to five non-compliances will not require any further action from the Auditor.

Six to ten non-compliances will require the Member to cease to issue MESF National Installation/Warranty Certificates until they have been rectified and provide evidence that they have been rectified to the Auditor within 28 days.

Eleven or more non-compliances will require the Member to cease to issue MESF National Installation/Warranty Certificates until they have been rectified and provide evidence that they have been rectified to the Auditor and submit to another Audit within 28 days.

An extra Audit Fee will be imposed on a Member requiring a subsequent Audit after non-compliance.

APPENDIX H

SAMPLE INSTALLATION INSPECTION FORM AND NON-COMPLIANCE PROCEDURES

SECTION B.	PRECAUTIONS	refer to page B
	Battery Isolation	<input type="checkbox"/>
	Gas Propelled Vehicles	<input type="checkbox"/>
	Protection of Bodywork and Interior	<input type="checkbox"/>
SECTION C.	INSTALLATION OF AERIALS AND CO-AXIAL CABLE	refer to page C1
	Location of Transmission Aerials on Vehicles and Safety Requirements	<input type="checkbox"/>
	Mounting Aerials	<input type="checkbox"/>
	Fitting Glass-mount Aerial	<input type="checkbox"/>
		refer to page C2
	Routing of the Co-axial Cable	<input type="checkbox"/>
	Connection of the Co-axial Connectors	<input type="checkbox"/>
SECTION D	INSTALLATION OF EQUIPMENT – HEAD UNITS, AMPLIFIERS AND GRAPHIC EQUALISERS	refer to page D1
	Pre-check of Equipment	<input type="checkbox"/>
	Locations of equipment in the Load (Boot) Area of the Vehicle	<input type="checkbox"/>
	Mounting of Equipment to Interior of the Vehicle	<input type="checkbox"/>
		refer to page D2
	Routing of Cables	<input type="checkbox"/>
SECTION E	MOUNTING OF SPEAKERS	refer to page E1
	Mounting	<input type="checkbox"/>
SECTION F	CABLE CONNECTIONS	refer to page F1
	Cable connections	<input type="checkbox"/>
SECTION G	ALARMS/SECURITY DEVICES	refer to page G1
	Pin Switches	<input type="checkbox"/>
	Secure System Placement	<input type="checkbox"/>
	Control Unit	<input type="checkbox"/>
	Audible Warning Device	<input type="checkbox"/>
		refer to page G2
	Aerials	<input type="checkbox"/>
	Detectors	<input type="checkbox"/>
SECTION H	PROVISION OF POWER SUPPLY	refer to page H1
	Audio	<input type="checkbox"/>
	Security	<input type="checkbox"/>
	Location and Recovery	<input type="checkbox"/>
	Provision of a Switched Supply via the Ignition Switch	<input type="checkbox"/>
	Fuse Protection	<input type="checkbox"/>
	Supply Cable and its Routing	<input type="checkbox"/>
		refer to page H2
	24-volt (or greater) Vehicle Supply	<input type="checkbox"/>
SECTION I.	SETTING UP AND CHECKING PROCEDURE	refer to page I1
	Equipment Supply	<input type="checkbox"/>
	Equipment	<input type="checkbox"/>
	Vehicle Equipment	<input type="checkbox"/>
	Interference Checks to the Equipment	<input type="checkbox"/>
	Interference Checks to Electronic Devices Fitted to the Vehicle	<input type="checkbox"/>
SECTION J	HANDBOVER TO CUSTOMER	refer to page J1
	Demonstration and Instructions	<input type="checkbox"/>
	Safety Instructions	<input type="checkbox"/>
	Handover	<input type="checkbox"/>
	Repair and Servicing	<input type="checkbox"/>

INSTALLATION INSPECTION NON-COMPLIANCE PROCEDURES

Should there be a safety critical non-compliance with any one or more items of a Section the MESF Auditor must mark the Installation Inspection Form accordingly and inform the Member they have Mandatory Requirement non-compliance. The Member must immediately take steps to rectify the non-compliance.

The Member must immediately cease to issue MESF National Installation/Warranty Certificates. The Member must rectify the non-compliance, produce evidence of rectification to the Auditor and submit to another Audit within 28 days.

Failure to rectify non-compliance with a Mandatory Requirement and successfully complete an Audit within 28 days of the original failed Audit will result in the Member being removed from the Register of MESF Approved Installers.

A Member who has been removed from the Register of MESF Approved Installers has the right to appeal to the MESF Board of Directors to be re-instated.

Should there be a non-compliance which is not safety critical the MESF Auditor must mark the Installation Inspection Form accordingly and inform the Member of non-compliance.

All non-compliances must be rectified as soon as possible but take no longer than 28 days.

Up to five non-safety critical non-compliances will not be listed as a Mandatory Requirement non-conformity and will not require any further action from the Auditor.

Six or more non-safety critical non-compliances will be listed as Mandatory Requirement non-compliance and be dealt with as listed above and on the Audit Form Non-Compliance Procedures document.

An extra Audit Fee will be imposed on a Member requiring a subsequent Audit after non-compliance.

APPENDIX I

HEALTH AND SAFETY

As an employer, partner or sole trader you have a duty under the law to ensure, so far as is reasonably practicable, the health, safety and welfare at work of your employees, customers and others.

In general, as an employer, partner or sole trader your duties include:

- a. Making your workplace safe and without risks to health;
- b. Ensuring plant and machinery are safe and that safe systems of work are set and followed;
- c. Ensuring articles and substances are moved, stored and used safely: providing adequate welfare facilities;
- d. Giving your employees the information, instruction, training and supervision necessary for their health and safety.

In particular, as an employer, partner or sole trader you must:

- a. Assess the risks to your employees, customers and others' health and safety;
 - i. if you have five or more employees, record the significant findings of the risk assessment and the arrangements for health and safety measures;
 - ii. draw up a health and safety policy statement, including the health and safety organisation and arrangements in force, and bring it to your employees' attention;
- b. Make arrangements for implementing the health and safety measures identified as being necessary by the assessment;
- c. Appoint someone competent to assist with health and safety responsibilities, and consult your employees or their safety representative about this appointment;
- d. Co-operate on health and safety with other employers sharing the same workplace;
- e. Set up emergency procedures;
- f. Provide adequate first-aid facilities;
- g. Make sure that the workplace satisfies health, safety and welfare requirements, e.g. for ventilation, temperature, lighting, and sanitary, washing and rest facilities;
- h. Make sure that work equipment is suitable for its intended use, so far as health and safety is concerned, and that it is properly maintained and used;
 - i. Prevent or adequately control exposure to substances which may damage your employees, customers and others' health;
 - j. Take precautions against danger from flammable or explosive hazards, electrical equipment, noise and radiation; , customers and others
- k. Avoid hazardous manual handling operations, and where they cannot be avoided, reduce the risk of injury;
- l. Provide health surveillance as appropriate;
- m. Provide free any protective clothing or equipment, where risks are not adequately controlled by other means;
- n. Ensure that appropriate safety signs are provided and maintained;
- o. Report certain, injuries, diseases and dangerous occurrences to the appropriate health and safety enforcing authority (you can get details from the HSE InfoLine on 0541 545500).

You have a duty to consult your employee safety representative on matters relating to health and safety at work, including:

- a. Any change which may substantially affect health and safety at work, e.g. in procedures, equipment or ways of working;
- b. Your arrangements for getting competent people to help satisfy health and safety laws;
- c. The information you have to give on the likely risks and dangers arising from work, measures to reduce or get rid of these risks and what needs to be done if your employees have to deal with a risk or danger;
- d. The planning of health and safety;
- e. The health and safety consequences of introducing new technology.

Your employees have legal duties too. They include:

- a. Taking reasonable care for their own health and safety and that of others who may be affected by what they do or do not do;
- b. Co-operating with you on health and safety;
- c. Correctly using work items provided by you, including personal protective equipment, in accordance with training or instructions; and
- d. Not interfering with or misusing anything provided for their health, safety or welfare.

Health and Safety inspectors can give advice on how to comply with the law. They also have powers to enforce it.

HSE's Employment Medical Advisory Service can give advice on health at work.

You can get advice on general fire precautions etc. from the Fire Brigade or your fire officer.