

INSTALLATION INSTRUCTIONS

VEHICLE AND SYSTEM PARAMETERS:

- This security system may be installed into any vehicle with 12 volt DC negative earth wiring.
- The system is capable of operating over a voltage range of 8 to 16 volts DC.
- The operational current drain is less than 25 mA with the system armed.
- The operating temperature range is -20 degrees Celsius to +80 degrees Celsius.

INSTALLATION PARAMETERS:

- The Control Module must be installed in a concealed position inside the vehicle and should be mounted vertically so that the wiring loom exits from the bottom. This is to prevent damage to the unit in the event of water leaking into a vehicle.
- All wiring joints must be soldered and insulated to a high standard and should ideally match the vehicle's OEM wiring.
- When testing a vehicle's wiring, a digital multi-meter or logic probe should be used, as probes with test bulbs can damage safety related systems in a modern vehicle, including air-bags and sensors.
- Do not insert the connector plugs into the control module until all wiring has been completed.

MAIN HARNESS CONNECTIONS:

- 1.0 GROUND CONNECTION (individual black wire)
The ground wire must be connected to an independent bodywork ground point.
- 1.1 +12 VOLT CONNECTION (red wire from pin 12)
Connect this wire via a 5 amp in-line fuse to a suitable +12 volt constant supply.
- 1.2 IGNITION CONNECTION (green wire)
Connect this wire via a 5 amp in-line fuse to a wire that supplies +12 volts when the ignition switch is turned fully on (not the 'auxiliary' position).
Make sure that this connection point remains 'live' when cranking the engine.
- 1.3a FOUR-WAY FLASHER / PARKING LIGHT SUPPLY CONNECTION (red wire from pin 6)
For vehicles with positive 4-way flasher or parking light switching, connect this wire via a 15 amp in-line fuse to a suitable +12 volt constant supply. For vehicles with negative 4-way flasher or parking light switching, connect this wire to a good ground point.
- 1.3b FOUR-WAY FLASHER / PARKING LIGHT OUTPUT CONNECTION (yellow wire x 2)
For vehicles with positive 4-way flasher switching, connect one wire to the right indicator output and the other to the left indicator output. For vehicles with negative 4-way flasher switching, connect these wires to the ground-switched feed of each indicator circuit. For use with parking lights, connect one yellow wire to the parking light circuit as described above.
- 1.4 SIREN OUTPUT CONNECTION (white wire)
Connect this wire to the white wire in the siren cable, which is the trigger wire. The red wire in the siren cable should be connected to a suitable +12 volt constant supply. Any additional wires from the siren should be connected according to the wiring diagram on page 23, as different sirens are available.
Notes: 1. This security system has a programmable siren output and may be configured for 'audio' or 'switched negative' operation. (default is 'audio')
2. The processor must be programmed for 'switched negative' when an S88 or S88B siren is to be connected. (refer to Selection Chart (a) & notes 8.0 + 8.1)

MAIN HARNESS CONNECTIONS (cont):

- 1.5 STATUS LED CONNECTION (black/red rip-cord)
The LED is pre-wired into the main harness and requires no further connection. Mount the LED in a prominent position using a blank switch or other suitable panel, which should be drilled with a 7.5mm bit. The LED should be fed through the hole from the rear and introduced into the bezel. The complete LED and bezel assembly may then be pushed back into the hole, which is held in place by molded ribs.
- 1.6a HOOD CONNECTION (pink wire)
When the installation incorporates an S88 or S88B siren, the hood wire should be routed with the siren cable and connected to the pink siren wire. This wire is looped through the siren and exits on the separate black wire. Connect this black wire to the center terminal of the hood switch to provide a negative trigger for the alarm when the switch closes to ground. For other types of siren, connect the trigger wire directly to the hood switch.
- 1.6b TRUNK CONNECTION (pink wire)
The pink negative trigger wire that is used for the hood switch should also be used to connect the trunk light switch to the alarm. A blocking diode should be used to isolate the two circuits (see Wiring Diagram A).
- 1.7a NEGATIVE DOOR SWITCH CONNECTION (blue wire)
Use this wire to connect to the door switches of vehicles which employ ground switching to activate the dome light. More than one connection point may be required on certain vehicles (test each door for ground switching to blue wire).
- 1.7b POSITIVE DOOR SWITCH CONNECTION (orange wire)
Use this cable to connect to the door switches of vehicles which employ positive switching to activate the dome light. More than one connection point may be required on certain vehicles (test each door for +12v switching to orange wire).
- 1.8 EXTERNAL IMMOBILIZER (brown wire) - *OPTIONAL*
This security system has the facility to control an optional IR1 relay, which can be used to isolate a third circuit (30 amp max.). Where installed, this circuit will become active when the alarm is armed and the ignition is switched on.
- 1.9a SERVICE OVERRIDE (violet wire) - *OPTIONAL*
The alarm includes an input for an override switch. Where a switch is required, connect one side of the override switch to the violet wire and the other side to a good ground point. When activated, the alarm and immobilizer arming will be disabled, although power door locking and remote convenience features will still operate.
- 1.9b TOUCH-KEY OVERRIDE (brown/black wire) - *OPTIONAL*
Where required, a touch-key receptacle may be connected to the alarm as a quick and easy way to disarm the security system in an emergency, such as a flat battery in a transmitter. Connect the red wire to the brown/black wire and the brown wire to a chassis ground.
 - i) Select a suitable flat surface that will accommodate the receptacle.
 - ii) Attach the self-adhesive drilling template and drill three holes with a 2mm bit.
 - iii) Enlarge the centre hole to 10mm and remove the drilling template.
 - iv) Feed the cable through the 10mm hole until the receptacle base is positioned correctly on the mounting surface and secure the base with the supplied self-tapping screws.
 - v) Position the cover over the receptacle base and push firmly to locate it.

MAIN HARNESS CONNECTIONS (cont):

- 2.0 HIJACK CANCEL CONNECTION (grey wire) - *OPTIONAL*
The alarm includes an anti-hijack facility, which requires an optional 'cancel' switch. If this feature is selected, the user must be able to cancel the anti-hijack activation, which will be triggered when one of the vehicle doors is opened. One side of the hijack cancel switch should be connected to the grey wire and the other side connected to a good ground point. This switch only needs to be closed to ground momentarily to cancel hijack activation.

Notes: 1. The processor must be programmed to enable Anti-Hijack.
2. The anti-hijack timing must be selected (30 or 60 seconds).

- 2.1a BRAKE INPUT (white/red wire) - *OPTIONAL*

The alarm includes a facility to start a vehicle engine via remote control. If this facility is required, the white/red wire should be connected to the brake light circuit as shown in Wiring Diagram 'C' (see paragraphs 10.0 and 10.1 for further details).

- 2.1b RPM INPUT (grey/red wire) - *OPTIONAL*

Where Remote Start is required, the grey/red wire should be connected to the distributor as shown in Wiring Diagram 'C' (see paragraph 10.0 and 10.1 for further details).

CONVENIENCE HARNESS CONNECTIONS:

- 3.0 WINDOW CLOSING CONNECTION (white/black wire) - *OPTIONAL*

To activate this function, the ON button must be held down for an extended time (one and a half seconds) when arming the system. The unit will give a brief audible tone to indicate that the window-close signal has been received and the white/black wire will switch to ground for the duration programmed (see Feature Selection Chart 1a). This timed output (max 400 mA) is used to close the vehicle's electric windows via an additional interface module, where required.

Notes: 1. The processor must be programmed to allow sufficient time for all electric windows (and sunroof, where appropriate) to fully close. See paragraph 7.2.
2. If the timing is not set, the default timing of 0.5 seconds will be applied.

- 3.1a TRUNK RELEASE OUTPUT CONNECTION (black/yellow wire) - *OPTIONAL*

This security system has the facility to control a trunk release solenoid by remote control. The black/yellow wire provides a timed negative output and may be connected via an optional GP relay to a trunk release solenoid, which can then be activated by pressing the "Trunk/Auxiliary" button on the remote control twice within one second.

If the "Trunk/Auxiliary" button is to be used for a separate function (such as Headlight Illumination), the "OFF" button may be programmed to activate the trunk release, which would then be activated by pressing the "OFF" button twice within one second. In this instance, the blue/grey (Selective Unlocking wire) must be connected to the trunk release solenoid instead of the black/yellow wire. Selective Unlocking cannot then be connected.

When the alarm is set, the action of pressing the button twice within one second will also disarm the alarm system and unlock the doors (where connected). If the alarm system is off, this facility will still operate the trunk release solenoid. The current available via the black/yellow and blue/grey wires is limited to 400 mA, therefore a GP relay will be required.

Notes: 1. The processor may be programmed to accommodate the latch-release timing of an individual vehicle. See paragraph 7.2 and Feature Selection Chart 1(a).
2. If the timing is not set, the default timing of 0.5 seconds will be applied.
3. The trunk release function will be disabled when the ignition is turned on.

CONVENIENCE HARNESS CONNECTIONS (cont):

- 3.1b AUXILIARY OUTPUT CONNECTION (black/yellow wire) - *OPTIONAL*

The security system has the facility to control an auxiliary circuit by remote control and may be installed if the black/yellow wire is not being used for trunk release. The black/yellow wire provides a timed negative output and may be connected via an optional GP relay to a suitable circuit, such as the vehicle's headlights.

When the alarm is set, pressing the "Trunk/Auxiliary" button on the remote control twice within one second will activate the auxiliary circuit (the alarm system will not be turned off). If the alarm system is off, this facility will still operate the auxiliary circuit. The current available via the black/yellow wire is limited to 400 mA, therefore a GP relay is required.

Notes: 1. The processor must be programmed for the duration that the auxiliary circuit is required to remain active (see 7.2). The default timing is set to 0.5 seconds.
2. The auxiliary output function will be disabled when the ignition is turned on.

- 3.2 INTERIOR (DOME) LIGHT CONNECTION (blue/orange wire) - *OPTIONAL*

When the security system is disarmed, a timed output switches the blue/orange wire to ground for 120 seconds. This output can be used to turn on a vehicle's dome light via an optional GP relay. If the ignition is turned on whilst the timed output is active, the illumination will be canceled immediately. The current available via the blue/orange wire is limited to 400 mA, therefore a relay must be used to protect the control unit.

- 3.3 POWER DOOR LOCKING CONNECTIONS

This security system incorporates relays to provide full power door locking capability via a six-wire output, which can be configured to control virtually any type of vehicle locking. Typical examples of central locking configurations can be seen on page 16.

Notes: 1. Certain types of locking systems, including some vacuum operated systems, require the activation time to be changed from 0.33 seconds to 3.5 seconds. See Feature Selection Chart 1(b).
2. Do not select the extended lock time if driving door actuators directly.
3. If required, the control unit may be programmed to automatically lock the vehicle's doors as the ignition is turned on and to unlock the doors when the ignition is turned off. See section Feature Selection Chart 1(b).
4. When power door locks are connected and the ignition is on, pressing any of the remote control buttons will lock or unlock the vehicle doors.

- 3.4 SELECTIVE DOOR UNLOCKING CONNECTION - *OPTIONAL*

This system may be configured to provide a selective unlocking facility for enhanced personal safety. When installed, this allows the driver to unlock all the doors by pressing the "OFF" button once, or to unlock just their door by pressing the "OFF" button twice. A double press will also operate the selective unlock feature when the system is disarmed.

Selective Unlocking may be installed with virtually any type of power door lock systems, including the following options.

Option 1a: Slave door motors (see wiring diagram on page 17)

Option 1b: Power door lock kit (see wiring diagram on page 22)

Option 2: OEM locking module (see wiring diagram on page 22)

When the vehicle's locking system has been modified by one of the methods referred to above, the processor must be programmed to provide Selective Unlocking (default is OFF). This can be enabled by selecting 'Option 1' or 'Option 2', according to the type of power door locking system installed. See paragraph 12.8 for 'second lock / unlock pulse'.

CONVENIENCE HARNESS CONNECTIONS (cont):

- 3.5a **START RELAY OUTPUT (green/grey wire) - OPTIONAL**
The alarm includes a facility to start a vehicle engine via remote control. If this facility is required, the Green/Grey wire should be connected to the starter solenoid via an optional GP relay as shown in Wiring Diagram 'C' (see paragraphs 10.0 and 10.1 for further details).
- 3.5b **START IGNITION OUTPUT (green/yellow wire) - OPTIONAL**
Where Remote Start is required, the green/yellow wire should be connected to the ignition circuit via an optional GP relay as shown in Wiring Diagram 'C' (see paragraphs 10.0 and 10.1 for further details).

HIGH CURRENT (IMMOBILIZATION) HARNESS CONNECTIONS:

- 4.0 The system employs high-current relays, which provides two Normally Open immobilization circuits. Each circuit is provided with two wires for either side of the cut, which are the same gauge as the main harness wires for security reasons. The current load of up to 30 Amps is shared by both wires and are identified as pairs by white marker labels, which should be removed after the wires have been connected.
- 4.1 **CIRCUITS 1 and 2 (black wire x 4 for each cut)**
These circuits can be used to immobilize any suitable circuit in the vehicle, such as the starter solenoid and the fuel pump supply.
- 4.2 **IMMOBILIZER AUTO-ARMING**
The system is pre-configured so that the Immobilizer circuits will arm automatically one minute after the ignition is turned off, or immediately that the alarm is turned on.
- 4.3 **IMMOBILIZER MANUAL ARMING**
If auto-arming immobilization is not required, the system processor can be programmed to activate the immobilization circuits only when the system is armed (see TABLE 1a).
- 4.4 **IMMOBILISER DISARMING (auto-arming enabled)**
The immobilization circuits will disarm for one minute after the alarm is turned off, to allow the vehicle to be started. The immobilizer will also be disarmed if the ignition is turned on and any remote control button is pressed.
- 4.5 **IMMOBILISER DISARMING (auto-arming disabled)**
The immobilization circuits will remain disarmed after the alarm is turned off and will not re-arm until the alarm system is turned on again. The immobilizer will also be disarmed if the ignition is turned on and any remote control button is pressed.

SENSOR CONNECTIONS:

- 5.0 This security system incorporates dual sensor ports, which enables two sensors to be plugged directly into the control module, or one sensor and a Micro High-Gain Receiver (see paragraph 10.8). A range of compatible movement sensors are available for this system, including the following:
- 5.1a **ULTRASONIC MOVEMENT SENSOR**
The twin-eye sensors detect movement inside the vehicle and will trigger an alarm cycle when movement is detected whilst the alarm is set. A plug terminated interconnect cable links the alarm control module to the ultrasonic interface box and the ultrasonic transducers plug into individual Tx and Rx ports in the box. Ensure that the transducer plugs are installed into the correct sockets by matching the cable colors to the 'RED' and 'BLACK' socket markings on the interface box. Mount the box in a concealed location and secure the sensor cables to the main loom to prevent the plugs from becoming disconnected.

SENSOR CONNECTIONS (cont):

- 5.1b **DUAL-STAGE SHOCK SENSOR**
This sensor detects impact to a vehicle and will trigger an alarm cycle when a heavy bump is detected whilst the alarm is set. The shock sensor should be mounted in a concealed location and fixed firmly against a rigid part of the vehicle to provide the maximum impact sensitivity. A plug terminated interconnect lead links the shock sensor to the control module, which should be secured to the main loom to stop the plugs from becoming disconnected.
- 5.1c **DUAL-ZONE MICROWAVE SENSOR**
This sensor detects movement inside the vehicle and will trigger an alarm cycle when movement is detected whilst the alarm is set. Please refer to the installation instructions supplied with the sensor.
- 5.2 **SENSITIVITY SETTING**
The sensitivity of each type of sensor has been pre-set for an average automobile but can be adjusted as required using the supplied tool or a small flat-blade screwdriver. Each sensor module has an adjustment potentiometer which is accessed via a small hole in the front casing. Turning this potentiometer clockwise will increase the sensitivity, whilst turning it anti-clockwise will decrease the sensitivity. The dual-zone microwave sensor has individual adjustment potentiometers for the external (warn) and internal (alarm) zones.
- 5.3 **EARLY WARNING INPUT**
The alarm system incorporates an early warning feature to discourage people from tampering with the vehicle prior to an alarm cycle being triggered. This 'warn away' facility will not operate with ultrasonic or glass-break sensors, but will work with the dual-stage shock or dual-zone microwave sensors (see 12.3 for further details).
When the alarm is set, the early warning input will cause the siren to emit a warning sound when the vehicle is bumped (shock sensor) or if movement is detected in close proximity to the vehicle (microwave sensor).
Note: The processor must be programmed for Early Warning (default is 'OFF')
Please refer to TABLE 1 - Feature Selection Chart
- 5.4 **SENSOR LEAD CONNECTIONS**
Red wire = +12 Volts supply from control module
Blue wire = Trigger input from movement sensor
Black wire = Negative supply (when system is armed)
Green wire = Early warning trigger input
- 5.5 **MILLIVOLT SENSING (applicable if selected)**
When turning the alarm on, the millivolt sensor is monitored during the last five seconds of the settling time. If millivolt sensing is triggered during this period (for example, by an electric cooling fan) it will be disabled until the next time the alarm is turned on.
If the millivolt sensing is not disabled after arming the alarm, it will detect any interference to the vehicle that results in an instantaneous change in the electrical 'load' on the battery (such as a dome light turning on or off) and will trigger an alarm cycle.
Note: Millivolt sensing is not selected in default programming.
- 5.6 **TRIGGER ZONE ISOLATION**
If an alarm zone is triggered (door/movement etc.) the siren will sound for 30 seconds, then the system will reset 10 seconds later. If any alarm zone is triggered 5 times, that zone will be isolated until the system is turned on again, or another zone is triggered.

ANTENNA:

6.0 POSITIONING

To ensure optimum working range, the antenna must be kept away from the main harness and not taped into the wiring loom, keeping it away from any metalwork.

PROGRAMMABLE FEATURES:

Once the installation has been completed, each function should be tested to ensure that the essential elements of the installation are working correctly. When the testing is complete, the system may then be programmed.

7.0 PROGRAMMING MADE SIMPLE

This system does not require any special equipment to access and change the default system programming to suit individual customer and vehicle requirements. Accessing the selectable features is achieved by simply using the status LED in conjunction with the ignition switch.

7.1a ENTERING PROGRAM MODE

The procedure for entering Program Mode is dependant upon how the Immobiliser programming has been configured:

i) Auto-Arming Immobiliser (default)

The LED must be flashing before Programming Mode can be entered.

If the alarm system has just been disarmed, wait for the LED to start flashing (approx. 60 seconds), then follow the procedure described in paragraph 7.1b

ii) No Auto-Arming Immobiliser

The LED must be flashing before Programming Mode can be entered, therefore the following procedure must be carried out to make it flash:

Ensure that the alarm is off, then turn the ignition on and off five times within five seconds. When this sequence has been entered, the LED will start to flash once every second and Programming Mode can be entered by following the procedure described below:

7.1b

When the LED has started to flash once every second, entering the programming code "1-2-3" will place the processor into Programming Mode. It is then possible to select or de-select features by entering the two additional digits which correspond to the selection code of the feature required. See the Feature Selection Charts on pages 26 and 27.

- Notes:
1. If the ignition is not switched on after 21 flashes, system programming will be aborted.
 2. If the alarm is turned on, system programming will be aborted.

The following guide of how to enter a selection code uses (1-2-3) "2-3" as an example:

- a) When the status LED has started to flash once every second, turn the ignition ON. The LED will turn ON (steady illumination).
- b) Switch the ignition OFF. The LED will start to flash. After 1 flash, turn the ignition ON. The LED will turn ON (steady). Digit "1" has now been entered.
- c) Switch the ignition OFF. The LED will start to flash. After 2 flashes, turn the ignition ON. The LED will turn ON (steady). Digit "2" has now been entered.
- d) Switch the ignition OFF. The LED will start to flash. After 3 flashes, turn the ignition ON. The LED will flash rapidly to indicate that digit "3" has been entered correctly and that the system is now in Program Mode. Wait until the LED turns ON (steady) again.

PROGRAMMABLE FEATURES (cont):

- e) Now enter the two digits of the Feature Selection Code that is required. For this example, Feature Code "2-3" (selecting Early Warning Tones) is being used.
 - i) Switch the ignition OFF. The LED will start to flash. After 2 flashes, turn the ignition ON. The LED will turn ON (steady). The first Function Digit "2" has now been entered.
 - ii) Switch the ignition OFF. The LED will start to flash. After 3 flashes, turn the ignition ON. The LED will flash rapidly to indicate that the second Function Digit "3" has been entered correctly. The siren will beep once to confirm that the "Early Warning Tones" function has been selected.

At this stage, other features may be selected or de-selected simply by entering the appropriate two-digit Feature Selection Code, as above. It is not necessary to re-enter the programming code "1-2-3" before selecting an additional feature.

Note: A zero is represented by 10 flashes. If the correct number of flashes is confused, simply wait for ten flashes and start again from the beginning.

7.2 PROGRAMMING 'LEARN TIMES'

After entering the program code for the time to be learned, such as 'window close', the alarm's receiver will monitor remote transmissions for a valid transmitter code. To start the 'learn time', simply press any button on a pre-programmed remote transmitter and when a valid code is received by the processor, the siren will sound a warning tone. When the required time has elapsed, press the remote button again. When a second valid transmitter code is received by the alarm system, 'learn time' will be stopped. This will be confirmed by a warning tone from the siren. If a valid code is not received within 10 seconds of entering the program code, the learn routine will be aborted and the time will revert to 0.5 seconds.

- Notes:
1. The maximum programmable 'learn times' are 40 seconds for Window Closing and 30 seconds for Trunk Release and Auxiliary.
 2. If a learn time is not set for options "4-1", "4-2" or "4-3", the system will revert to the default time of 0.5 seconds.
 3. When in the learn routine, the output time being learned switches negative for the learn duration.

SIREN OUTPUT PROGRAMMING

8.0 SELECTING 'AUDIO' OR 'SWITCHED NEGATIVE' OUTPUT

This alarm system is pre-programmed to provide an audio output for a 'speaker' siren that will reproduce the alarm sound and warning tones generated by the processor. When a siren is to be installed that has a built-in tone generator ("external" siren), the default programming must be changed to provide a 'switched negative' siren output.

To operate an "external" siren, enter the programming code "1-2-3" as described in section 7.1, then enter the selection code "7-2" (suitable for most "external" sirens). With this output selected, the white siren wire will switch negative for the full duration of an alarm cycle (30 seconds) when the alarm system is triggered.

8.1 SELECTING 'EXTENDED TIME' FOR "EXTERNAL" SIREN

The system provides two different sets of timing characteristics to ensure compatibility with a wide range of voltage driven sirens. If an "external" siren is to be installed that does not respond instantly to an input signal, "Time 2" should be selected. If in doubt, arm the system with the driver's door open and check if the 'door open' warning tones can be heard. To select 'output time 2', enter the programming code "1-2-3" as described in section 7.1, then enter the selection code "7-3".

TRANSMITTER PROGRAMMING

9.0 PROGRAMMING NEW REMOTE CONTROL UNITS

The system processor has the ability to learn remote control codes.

New codes can be programmed by entering an individual 3-digit user code, which is provided on a card that is supplied with the system. Enter this code as follows:

- a) Enter each digit of the user code using the ignition switch and LED. After entering the last digit, the LED will flash rapidly for two seconds.
- b) Enter the two-digit code "1-1". The LED will flash rapidly for two seconds.
- c) Hold down the arm/disarm button on the new remote control for half a second. Repeat this action after a brief pause until the LED begins to flash rapidly, which indicates that the new remote code has been programmed.
- d) To exit program mode, switch OFF the ignition, or simply wait ten seconds for system auto-exit (without pressing a transmitter button).

9.1 DELETING REMOTE CODES FROM MEMORY

Individual remote transmitters can both be erased from the system memory to prevent them from operating the security system. After entering the 3-digit user code as described in section 9.0, proceed as follows:

- a) Enter the two-digit code "5-5". The LED will flash rapidly for two seconds. All remote control units previously programmed will be erased.
- b) Any new remote control unit can now be re-programmed into the system memory as described in section 9.0 proceeding from paragraph 'c'.

REMOTE ENGINE START

10.0 This feature provides a facility to start an automobile engine by remote control and may be installed into any suitable vehicle, provided that the vehicle cannot be started in gear (such as vehicles with an automatic transmission). In addition to installing wiring, the alarm processor must also be programmed to match the requirements of an individual vehicle.

10.1 WIRING CONNECTIONS

The alarm system includes two input wires in the main wiring harness (see 2.1) and two output wires in the secondary harness (see 3.5). These wires must be installed as shown in Wiring Diagram 'C' on pages 18 and 19. Note that additional GP relays will be required.

10.2 SETTING 'ENGINE CRANK' DURATION

Prior to installation, establish the typical cranking time before the engine fires, as the processor may be need to be programmed to crank the engine for either 1.0, 2.0 or 3.0 seconds. See Feature Selection Chart (b). The system would normally be programmed for Idle Speed Learning, which on many vehicles will detect that the engine has started and will then cancel the cranking voltage (see 10.3). It should only be necessary to select one of the three crank timings if the method described below is unsuccessful.

10.3 IDLE SPEED LEARNING (rev input monitor)

To enter Idle Speed Learn mode, enter the program code "1-2-3" followed by the Feature Selection code "8-5". When the code has been entered correctly, the LED will flash rapidly and the siren will emit a confirmation tone. Turn the ignition on and the LED will turn steady on. Then press any button on the remote control (the LED will extinguish) and immediately start the vehicle engine in the normal way. Twenty seconds after pressing the remote button the system processor will monitor the number of pulses on the RPM input wire for five seconds and determine the average number of pulses. This is regarded as the idling speed. After learning this rev input, the alarm will automatically exit from Learn mode.

REMOTE ENGINE START (cont):

10.4 SETTING 'IGNITION ON' PRIOR TO CRANKING

Certain vehicles, such as those with diesel engines, may require the ignition to be turned on for a few seconds before the engine can be started. If this is required, the system processor may be programmed to supply voltage to the ignition circuit for 10 seconds before the starter circuit is energized. This facility can be selected by changing the default system programming in "8-8". See Feature Selection Chart (b) on page 27.

10.5 SETTING REMOTE START 'RUN TIME'

When the engine has been started by remote control, the system processor will allow the engine to run for either 10 minutes or 20 minutes, as required. The default 'run time' is 10 minutes, which may be changed in system programming. See Feature Selection Chart (b).

10.6 REMOTE START OPERATION

To engage the remote starting function, depress the Remote Start button twice within one second. Upon receipt of this instruction, the following occurs:

- a) The alarm disables the movement sensor zones.
- b) The alarm disables the ignition trigger zone.
- c) The auxiliary output relay is energized.
- d) The on-board ignition relay is energized.
- e) The immobilization is canceled and the alarm remains armed.

The external starter relay is energized with the following options:

- a) For 1.0, 2.0 or 3 seconds (Selectable)
- b) Until the rev input reached a programmed idle speed less 20 %, or a time-out period of 5 seconds.

If the revolution input is connected, the alarm will indicate successful starting as follows:

- a) The siren gives a 2 second warning tone
- b) The 4-way flashers flash until the remote run-time expires or ignition is turned on.

If the RPM input is not connected, the alarm will indicate attempt at starting as follows:

- a) The 4-way flashers flash until the remote run-time expires or ignition is turned on.

Once the vehicle has been started using the remote start feature, it will allow the vehicle to run for 10 or 20 minutes (Program Selectable.)

The vehicle will stall when running via Remote Start under the following conditions:

- a) Immediately that the hood is opened.
- b) Immediately that the remote start button is again depressed.
- c) Immediately that the rev input exceeds a predetermined level.
- d) Immediately that the brake is depressed.
- e) Immediately that any door is open, unless prior to that the alarm is disarmed via the remote control, in which case the alarm disarms as normal and the doors unlock.

10.7 AUXILIARY RELAY DISABLE WHILE CRANKING

If required, this facility may be selected when using the optional Remote Start Relay Module (PFK part No: 287-000).

10.8 MICRO HIGH-GAIN RECEIVER

In the event of the remote range being inadequate, an external 'Micro High-Gain' receiver may be installed as an option. When programmed, this will disable the internal receiver and configure the alarm to operate using the external receiver and antenna.

ANTI-HIJACK SYSTEM:

11.0 ANTI-HIJACK OPTIONS

The system may be programmed so that the anti-hijack feature operates either 30 seconds or 60 seconds after being activated:

i) Time 1.

Thirty seconds after opening a door (while the ignition is on) four warning tones will be given four seconds apart and the 4-way flashers will flash, unless the 'cancel' button is depressed. After the four warning tones, the siren will switch on continuously and the 4-way flashers will continue to flash. The vehicle will be stopped over a 30 second period by the immobilizer relay switching on and off rapidly and thereafter becoming immobilized, until the 'cancel' button is depressed. The siren will sound for 30 seconds after immobilization and the 4-way flashers will flash until the 'cancel' button is depressed. If the ignition is turned on again without resetting the anti-hijack system, the siren will be triggered for a further 30 seconds.

ii) Time 2.

As above, with sixty seconds prior to the warning tones and sixty second slow-down time.

The anti-hijack system can be temporarily disabled by holding down the 'cancel' button and pressing any button on the remote control. The siren will chirp twice to confirm that this feature has been turned off. Anti-hijack can be turned back on in the same way and the siren will then chirp once. When in valet mode or override mode, anti-hijack will be disabled.

SECURITY SYSTEM OPERATION:

12.0 AUTO ARMING ALARM - *SELECTABLE*

After switching the ignition off, the alarm will monitor the doors (if this function has been programmed). If the doors are opened then closed, the movement sensor will be switched on to detect movement within the vehicle. If movement is detected, auto arming is aborted until the doors are again opened. If no movement is detected, the sensor continues to monitor the interior for 2 minutes. After 2 minutes, provided that no door has been opened or no movement detected, the alarm will give a warning tone indicating that the auto arm sequence has been entered. Thirty seconds later the alarm will arm and the doors will lock.

Note: This feature can be enabled with auto-door locking (program code "5-3") or without auto-door locking (program code "5-2").

12.1 AUTO-REARM - *SELECTABLE*

When programmed, this feature will activate automatically if the alarm is turned off but none of the vehicle doors are opened within two minutes.

Note: This feature can be programmed to operate the vehicle's power door locks (program code "5-7") or not operate them (program code "5-6") when the system auto-rearms.

12.2 ARMING DELAY

When the system is armed, it will not respond to an alarm trigger until 30 seconds after the remote control 'ON/OFF' button is pressed.

12.3 EARLY WARNING FACILITY - *SELECTABLE*

The system can be programmed to enable this function, which will become operational when the alarm is set and a dual sensor is installed (See 5.3). Following the detection of movement, the sensor will remain receptive to continued movement for one minute after movement is first detected and each time additional movement is detected. To limit noise pollution, this will occur for three cycles only, each time the alarm is armed. Two further cycles will then be allowed and the warning tones will then be turned off to limit noise pollution. Early warning will be re-set each time the system is armed.

SECURITY SYSTEM OPERATION (cont):

12.4 MOVEMENT SENSOR ISOLATION

If required, the sensor/sensors may be isolated by pressing the 'ON/OFF' button twice when arming the alarm system. Other alarm zones will remain active. Sensor isolation will be canceled when the alarm is turned off.

12.5 VALET MODE

If any button is depressed for two seconds, two seconds prior to switching the ignition off, the alarm will enter 'valet' or 'parking attendant' mode. In this mode, the immobiliser will not arm. The next time the remote transmitter is used, the alarm will exit from valet mode.

12.6 TRIGGER REPORT BACK

The system also includes a Trigger Report Back facility which retains details of how the alarm was last triggered. To access this information, enter the program code "1-2-3", followed by the code "1-1". To confirm that the system has entered this mode, the LED will flash rapidly for two seconds, followed by a series of slow flashes. Count the slow flashes and refer to the chart below to find the cause of the last trigger. To exit from Memory Report Back mode, simply turn off the ignition.

Number of flashes:

- 1 Flash
- 2 Flashes
- 3 Flashes
- 4 Flashes
- 6 Flashes

Alarm triggered by:

- Movement Sensor
- Door Switch
- Trunk or Hood Switch
- Ignition Switch (hot-wire attempt)
- Panic (remote control)

Note: This information will be cleared after the system has been armed and disarmed ten times without further alarm triggers.

12.7 PANIC FACILITY

If the auxiliary remote control button is held down for 3 seconds whilst the ignition is off, the system will trigger a 'panic alarm'.

12.8 SECOND LOCK / UNLOCK PULSES - *SELECTABLE*

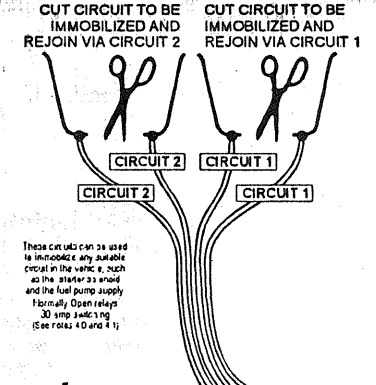
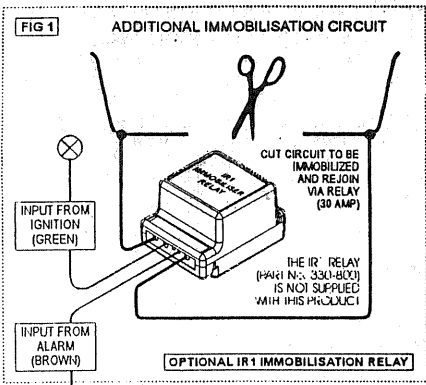
If a vehicle requires a second lock pulse, this can be enabled by entering the program code "9-4". Where required, a second unlock pulse can be enabled by entering the program code "9-5" (note that Selective Unlocking will be disabled if this code is selected).

SECURING THE CONTROL MODULE:

13.0 FITTING THE END CAP

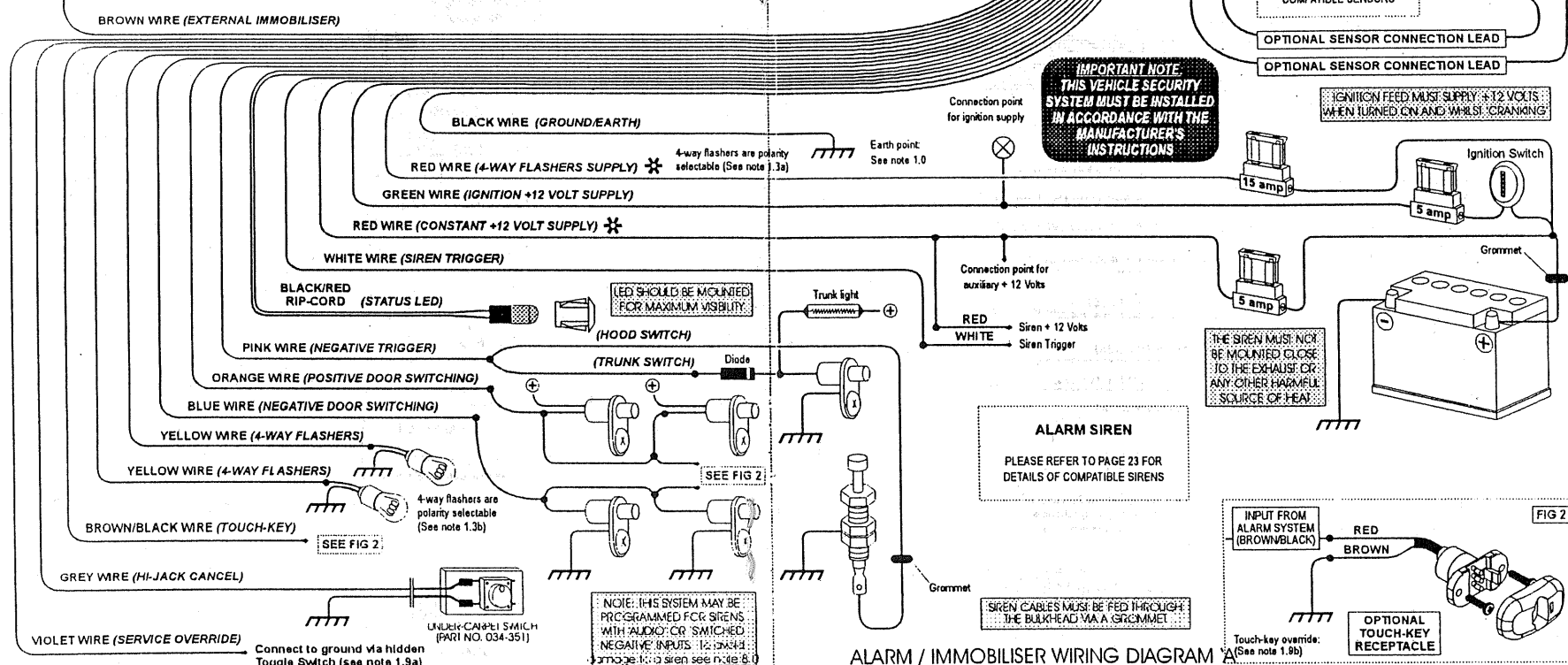
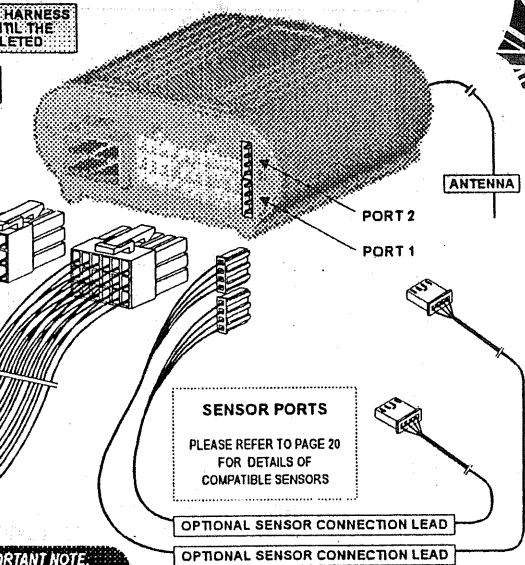
Once the installation has been completed, check to ensure that each element of the security system is functioning correctly prior to fitting the end cap.

The end cap incorporates a slot with a removable cover to make the routing of cables easier. This cover must be replaced prior to fitting the end cap to the processor casing, which will then cover the wiring connectors. After the two screws have been tightened, the anti-tamper screw caps must be inserted firmly into each recess to impede unauthorized access to the wiring.



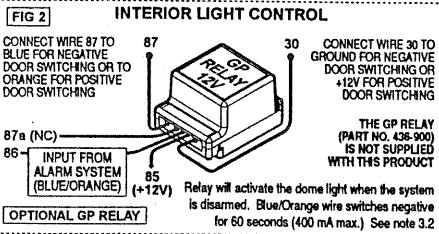
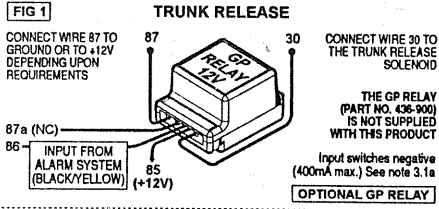
DO NOT PLUG THE MAIN WIRING HARNESS INTO THE CONTROL MODULE UNTIL THE INSTALLATION HAS BEEN COMPLETED.

*** +12 VOLT WIRES SHOULD BE CONNECTED LAST**



ALARM / IMMOBILISER WIRING DIAGRAM

CONVENIENCE WIRING



WINDOW LIFT INTERFACE (where required)

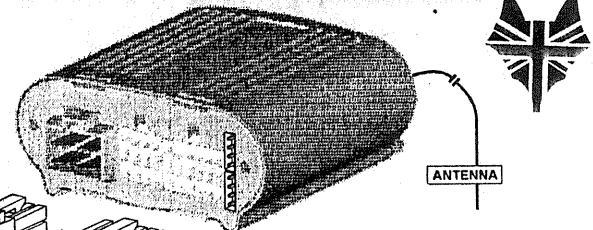
AN INTERFACE IS NOT SUPPLIED WITH THIS PRODUCT

Please consult your supplier for details of compatible interfaces

* The window closing output switches negative for 30 seconds (400 mA maximum); see note 3.0

- WHITE / BLACK WIRE (WINDOW CLOSING) *
- BLUE / ORANGE WIRE (INTERIOR LIGHT)
- BLACK / YELLOW WIRE (TRUNK RELEASE)
- GREEN - LOCK RELAY (COMMON)
- BROWN - NORMALLY OPEN
- VIOLET - NORMALLY CLOSED
- BLUE - UNLOCK RELAY (COMMON)
- GREY - NORMALLY OPEN
- YELLOW - NORMALLY CLOSED

BLUE / GREY WIRE (SELECTIVE UNLOCKING)



IMPORTANT NOTE:
THIS VEHICLE SECURITY SYSTEM MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS

POWER DOOR LOCKING

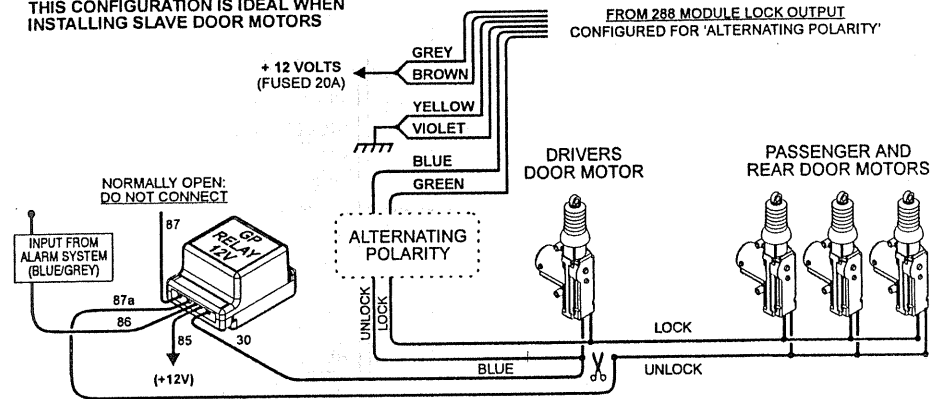
TYPICAL CONFIGURATIONS

ALTERNATING POLARITY		VACUUM PUMP	
		BLUE	PUMP
		VIOLET	SWITCH
		BROWN	GROUND
		GREY	+ 12 VOLTS
		GREEN	} JOIN
		YELLOW	
NEGATIVE PULSE		POSITIVE PULSE	
GREEN	LOCK	GREEN	LOCK
BLUE	UNLOCK	BLUE	UNLOCK
BROWN	GROUND	BROWN	+ 12 VOLTS
GREY	GROUND	GREY	+ 12 VOLTS

SELECTIVE UNLOCKING

SELECTIVE UNLOCKING - OPTION 1A

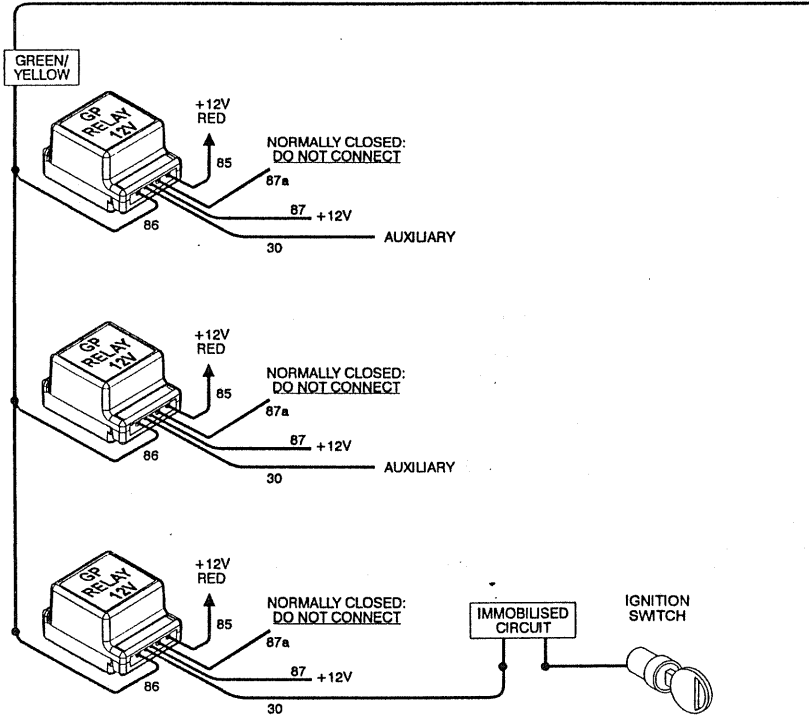
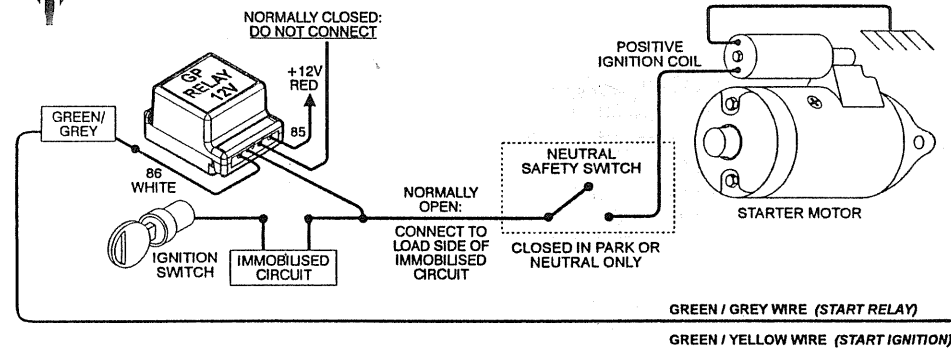
THIS CONFIGURATION IS IDEAL WHEN INSTALLING SLAVE DOOR MOTORS



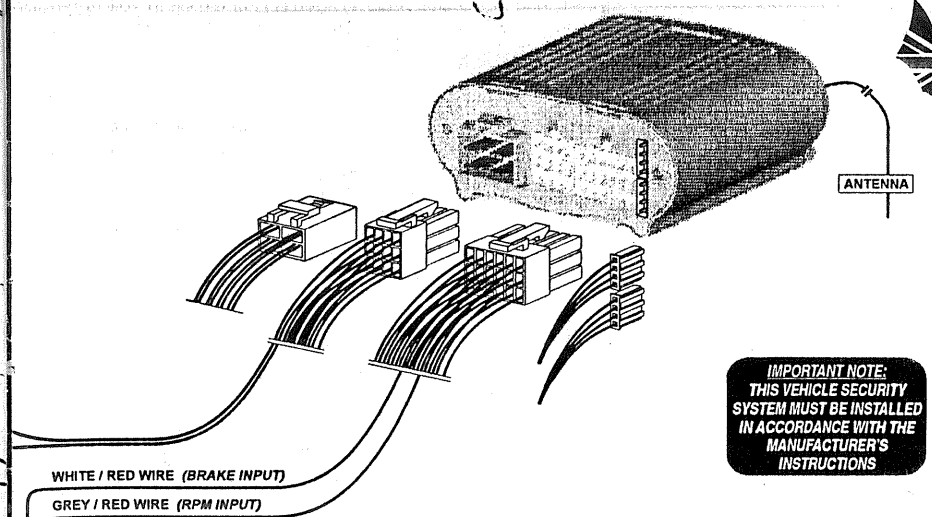
PLEASE SEE PAGE 22 FOR OTHER CONFIGURATION OPTIONS



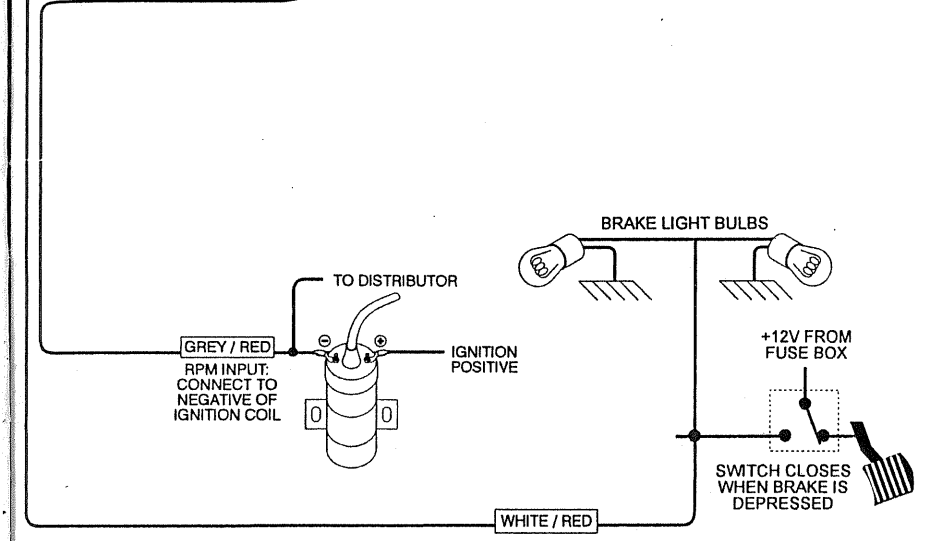
REMOTE START WIRING



ALARM / IMMOBILISER WIRING DIAGRAM 'C'



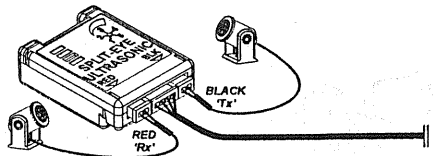
IMPORTANT NOTE:
THIS VEHICLE SECURITY SYSTEM MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS



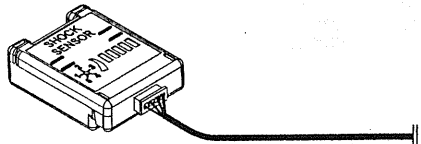


SENSORS AND SENSOR PORTS

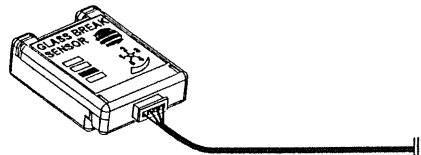
Ultrasonic Sensor
PFK Part No:
162-000



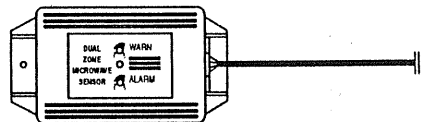
Shock Sensor
PFK Part No:
168-000



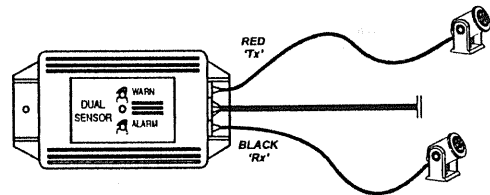
Glass Break Sensor
PFK Part No:
196-000



Dual-Zone Microwave Sensor
PFK Part No:
167-000



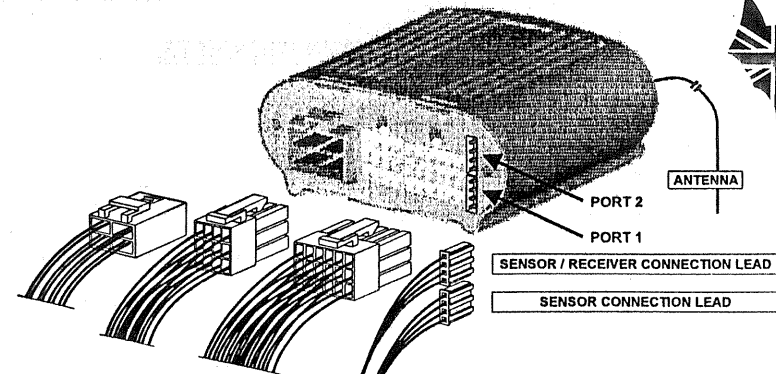
Dual-Tech Sensor
PFK Part No:
262-000



SENSOR CONNECTIONS:

- Red wire = Positive supply (+12 Volts)
- Black wire = Constant Negative supply
- Blue wire = Alarm trigger
- Green wire = Early warning (where applicable)
- See note 5.3

SENSORS ARE PLUG COMPATIBLE



EXTERNAL 'MICRO HIGH-GAIN' LONG RANGE RECEIVER AVAILABLE AS AN OPTION (See Note 10.8)

SENSOR PORT 2
THIS PORT SUPPORTS:
1. EXTERNAL RECEIVER (see note 5.0)
2. ALARM SENSORS (without 'Early Warning' input)

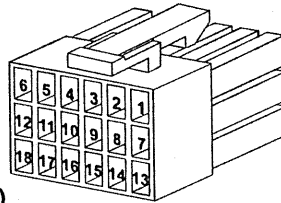
SENSOR PORT 1
THIS PORT SUPPORTS:
1. ALARM SENSORS (with 'Early Warning' input)
2. ALARM SENSORS (without 'Early Warning' input)

LOOM CONNECTIONS:

MAIN WIRING LOOM CONNECTOR (view from rear)

CONNECTOR PIN SEQUENCE AND WIRE COLOURS

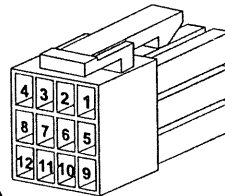
- | | |
|--------------------------------|-----------------------------------|
| 1 = Grey (Hi-jack cancel) | 10 = Grey/Red (RPM input) |
| 2 = Orange (Doors positive) | 11 = White (Siren output) |
| 3 = Black (LED rip-cord) | 12 = Red (+ 12 Volts) |
| 4 = Yellow (Indicator output) | 13 = Blue (Doors negative) |
| 5 = Yellow (Indicator output) | 14 = Violet (Override switch) |
| 6 = Red/Ind (Indicator supply) | 15 = Brown/Black (Touch-key) |
| 7 = Pink (Boot) | 16 = Black (Ground) |
| 8 = White/Red (Brake input) | 17 = Brown (External immobiliser) |
| 9 = Red (LED rip-cord) | 18 = Green (Ignition +) |



SECONDARY WIRING LOOM CONNECTOR (view from rear)

CONNECTOR PIN SEQUENCE AND WIRE COLOURS

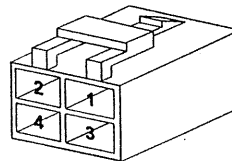
- | | |
|------------------------------|-----------------------------------|
| 1 = Violet (Lock N/C) | 7 = White/Black (Window close) |
| 2 = Yellow (Unlock N/C) | 8 = Green/Yellow (Start Ign.) |
| 3 = Black/Yellow (Boot rel.) | 9 = Green (Lock common) |
| 4 = Green/Grey (Start relay) | 10 = Blue (Unlock common) |
| 5 = Brown (Lock N/O) | 11 = Blue/Grey (Selective unlock) |
| 6 = Grey (Unlock N/C) | 12 = Blue/Orange (Courtesy light) |



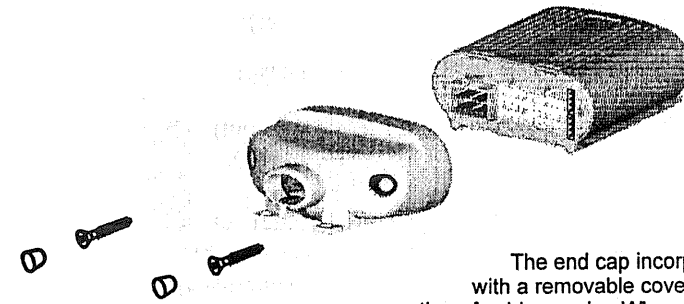
HIGH CURRENT LOOM CONNECTOR (view from rear)

CONNECTOR PIN SEQUENCE AND WIRE FUNCTIONS

- | | |
|---------------------------|------------------------------|
| 1 = Circuit 2 (Black x 2) | } Fuel pump (or alternative) |
| 2 = Circuit 2 (Black x 2) | |
| 3 = Circuit 1 (Black x 2) | } Starter solenoid |
| 4 = Circuit 1 (Black x 2) | |



SECURITY HOUSING ASSEMBLY:



The end cap incorporates a slot with a removable cover to make the routing of cables easier. When fixing the end cap, make sure that the cover for the access-slot has been slid into place to protect the loom, then secure the end cap to the main casing and insert the anti-tamper screw caps.

FEATURE SELECTION CHART (a)

OPTION	Enter the program code 1-2-3, followed by the Feature Selection Code			
	FEATURE	FEATURE SELECTION CODE	INDICATION	
			SELECTED	DESELECTED
1	Trigger Report Back (See Note 12.6)	1-1	LED FLASHES RAPIDLY- 2SECS	WHEN IGNITION ^e IS SWITCHED OFF
2	Door Open - Audible Warning Tones	2-1	ONE BEEP ^e	TWO BEEPS
2	Alarm On / Off Confirmation Tones	2-2	ONE BEEP ^e	TWO BEEPS
2	Early Warning Tones (See Note 12.3)	2-3	ONE BEEP	TWO BEEPS ^e
2	Remote Start tone	2-4	ONE BEEP ^e	TWO BEEPS
3	External Receiver (See Note 10.8)	3-1	ONE BEEP	TWO BEEPS ^e
3	Millivolt Sensing (See Note 5.5)	3-2	ONE BEEP	TWO BEEPS ^e
4	Boot Release - Learn Time (See 7.2)	4-1	ONE BEEP ^e (0.5 sec)	TWO BEEPS
4	Auxiliary output - Learn Time	4-2	ONE BEEP ^e (0.5 sec)	TWO BEEPS
4	Window Closing - Learn Time	4-3	ONE BEEP ^e (0.5 sec)	TWO BEEPS
5	No Auto-Arming alarm	5-1	ONE BEEP ^e	TWO BEEPS
5	Auto-Arming alarm without lock	5-2	} See Note: 12.0	
5	Auto-Arming alarm with lock	5-3		
5	Auto-Arming immobiliser (See 4.2)	5-4	ONE BEEP ^e	TWO BEEPS
5	No Auto Re-arm	5-5		^e
5	Auto Re-arm without lock	5-6	} See Note: 12.1	
5	Auto Re-arm with lock	5-7		
6	No Anti-hijack	6-1		^e
6	Anti-hijack with 30 second timing	6-2	} See Note: 11.0	
6	Anti-hijack with 60 second timing	6-3		
7	Audio Output to Siren	7-1		^e
7	External Siren Time 1	7-2	} See Notes: 8.0 + 8.1	
7	External Siren Time 2	7-3		
0	Revert to factory default settings ^e	0-0	LED FLASHES RAPIDLY FOR 2 SECONDS	

TABLE 1a

^e INDICATES THE STANDARD FACTORY SETTINGS (OPTION '0')

Note : A zero is represented by 10 flashes.

FEATURE SELECTION CHART (b)

OPTION	Enter the program code 1-2-3, followed by the Feature Selection Code			
	FEATURE	FEATURE SELECTION CODE	INDICATION	
			SELECTED	DESELECTED
8	No Remote Start	8-1		^e
8	Remote Start - crank time 1.0 Sec.	8-2	} See Notes: 10.2 + 10.3	
8	Remote Start - crank time 2.0 Sec.	8-3		
8	Remote Start - crank time 3.0 Sec.	8-4		
8	Remote Start - rev input monitor	8-5		
8	Remote Start run time: 10 or 20 min.	8-6	10 MINUTES ^e	20 MINUTES
8	Auxiliary relay disable while cranking	8-7	ONE BEEP	TWO BEEPS ^e
8	Ignition on 10 sec. prior to cranking	8-8	ONE BEEP	TWO BEEPS ^e
9	Doors lock with ignition (See 3.3)	9-1	ONE BEEP	TWO BEEPS ^e
9	Doors unlock with ignition	9-2	ONE BEEP	TWO BEEPS ^e
9	Extended lock/unlock time (3.5 sec.)	9-3	ONE BEEP	TWO BEEPS ^e
9	Second lock pulse (See Note 12.8)	9-4	ONE BEEP	TWO BEEPS ^e
9	Second unlock pulse #	9-5	ONE BEEP	TWO BEEPS ^e
9	No selective locking	9-6		^e
9	Selective unlocking (Option 1)	9-7	} See Note: 3.4	
9	Selective unlocking (Option 2)	9-8		
0	Revert to factory default settings ^e	0-0	LED FLASHES RAPIDLY FOR 2 SECONDS	

TABLE 1b

^e INDICATES THE STANDARD FACTORY SETTINGS (OPTION '0')

Note : A zero is represented by 10 flashes.

If selected, Selective Unlocking will be disabled