OPERATION

Power supplies

Fuse 2 (C0571) in the under bonnet fuse box supplies a permanent feed to the inertia switch (C0123) on a N wire. The inertia switch (C0123) supplies the feed to the alarm ECU (C0057) and the engine management relay module (C0157) on NS wires.

Fuse 3 (C0571) in the under bonnet fuse box supplies a permanent feed to the alarm ECU (C0061) on a P wire.

Fusible link 4 (C0570) in the under bonnet fuse box supplies a permanent feed to the ignition switch (C0028) on a NP wire. When the ignition switch is in position II, the power is fed to fuse 14 (C0586) in the passenger compartment fuse box on a BY wire. Fuse 14 (C0585) supplies the feed to the alarm ECU (C0061) and the ECM (C0159) on W wires.

System earths are provided by a B wire connected between the alarm ECU (C0061) and an earth point on the body (C0564 on LHD; C0556 on RHD) via a header (C0286) and the passenger compartment fuse box (C0584 and C0583).

Anti-theft alarm system

To determine when to arm, disarm and activate the anti-theft alarm system, the alarm ECU monitors the ignition feed and inputs from the:

- Remote handset.
- Driver's door lock barrel switch.
- Door, bonnet and load space lamp switches.

Lock and unlock requests from the remote handset are input to the alarm ECU on the Y aerial wire integrated into the vehicle harness between the hazard warning switch (C0096) and the alarm ECU (C0061).

A switch in the driver's door lock barrel connect earths to the alarm ECU to provide lock and unlock position signals, as appropriate. The door lock barrel switch (C1450) is earthed on a B wire connected to an earth point (C0564 on LHD) or earth header (C0018 on RHD). When the door lock is in the locked position, the B wire is connected to a BO wire between the door lock barrel switch (C1450) and the alarm ECU (C0061). When the door lock is in the unlocked position, the B wire is connected to a BK wire between the door lock barrel switch (C1449) and the alarm ECU (C0061).

Each door and the boot incorporate a switch in the latch that closes as the door/boot lid is opened. Opening and closing the bonnet operates a plunger switch that closes when the bonnet is opened. When either the door, bonnet or boot lid opens, an earth is connected to the alarm ECU (C0061):

- On a PW (LHD) or PS (RHD) wire from the driver's door switch (C1449); a B wire connects the driver's door switch (C1450) to an earth point (C0564 on LHD) or earth header (C0018 on RHD).
- On a PS (LHD) or PW (RHD) wire from the passenger door switch (C1451); a B wire connects the passenger's door switch (C1451) to an earth header (C0018 on LHD, C0017 on RHD).
- On a PR wire from the load space lamp switch (C0107); a B wire connects the load space lamp switch (C0110) to an earth header (C0550).
- On a BP wire from the bonnet switch (C0007), which is earthed through the switch fixing.

When the doors are open, the door switches also output an earth to the multi function ECU to operate the interior lamps.

Perimetric protection

When the vehicle is locked or superlocked, provided the ignition is off the alarm ECU arms the perimetric protection system. To indicate that perimetric protection has armed, the alarm ECU (C0061) intermittently earths the UK wire from the alarm LED (C0234) in the instrument pack. The alarm LED flashes rapidly for approximately 10 seconds and then flashes at a slower rate while the system remains armed. The alarm ECU (C0057) also connects momentary feeds to the header (C0287) in the direction indicator circuit, on the GR wire (LH indicators) and the GW wire (RH indicators), to flash all of the direction indicator lamps. The alarm ECU flashes the indicator lamps once if the vehicle is locked and four times if the vehicle is superlocked.

If a door, bonnet or boot lid is open when the vehicle is locked, the alarm ECU withholds the indicator lamp flash and continuously illuminates the alarm LED to indicate that the system is not fully armed. However, perimetric protection will be armed for those doors/ bonnet/ boot lid that are closed and engine immobilisation will be set, but volumetric protection will not be armed. If the open door/ bonnet/ boot lid is subsequently closed, the alarm ECU flashes the direction indicator lamps and proceeds to flash the alarm LED to indicate that the system is now fully armed.

A boot lock switch is installed in order to allow access to the luggage compartment while the alarm is armed. When the key is turned in the boot lock, contacts in the boot lock switch (C0831) close and input an earth to the alarm ECU (C0061) on a BR wire. The boot lock switch (C0831) is earthed by a B wire connected to an earth header (C0550). When the alarm ECU senses the earth it allows the boot lid to open without activating the alarm.

If a door, bonnet or boot lid is opened when perimetric protection is armed, the alarm ECU activates the alarm, which consists of flashing the indicator lamps and sounding the vehicle horns. To sound the vehicle horns the alarm ECU (C0061) earths the PB wire connected to the multi function ECU (C0062). Once triggered, the alarm operates for a period of 25 to 30 seconds and can be triggered up to three times. The alarm can be de-activated by pressing one of the buttons on the remote handset, or operating the driver's door lock (locking or unlocking).

Volumetric protection (where fitted)
When the vehicle is locked or superlocked using the remote handset, the alarm ECU arms volumetric protection, provided:

- The ignition is off.
- The doors, bonnet and boot lid are all closed.

Volumetric protection is armed by the alarm ECU supplying two feeds to activate the volumetric sensor: One on the SW wire between the alarm ECU (C0057) and the volumetric sensor (C0358); one on the WB wire between the alarm ECU (C0061) and the volumetric sensor (C0358). The volumetric sensor (C0358) is earthed on a B wire via the passenger compartment fuse box (C0584 and C0583) to an earth point on the body (C0564 on LHD; C0556 on RHD) via a header (C0286). To minimise false alarms, volumetric protection is not armed until 15 seconds after the alarm has received a lock request. The alarm ECU flashes the indicator lamps once if the vehicle is locked and four times if the vehicle is superlocked.

With volumetric protection armed, if any movement in the passenger compartment is detected the volumetric sensor (C0358) sends a signal to the alarm ECU (C0061) on the NB wire. The alarm ECU then activates the alarm as detailed above.

Engine immobilisation
Active immobilisation
The engine is immobilised when the perimetric protection function is armed, inhibiting the engine starter and fuel pump circuits. The engine is re-mobilised when the unlock button on the remote handset is pressed.

Passive immobilisation (where fitted)
If the car is not locked, the engine is immobilised 30 seconds after the ignition is switched off and the driver's door opens. When the engine is immobilised, the LED on the instrument pack flashes.

The engine is re-mobilised when the ignition switch is turned to position II, provided the remote handset is attached to the ignition key. When the ignition switch is turned to position II, the alarm ECU (C0057) activates the passive coil (C0672) on the SR and PK wires. This causes the transponder in the remote handset to transmit a signal containing the ignition key and rolling code data, which is received by the alarm ECU from the passive coil. Provided the data is correct, the alarm ECU then re-mobilises the engine. If the data from the transponder is incorrect or missing, the alarm ECU (C0061) signals the multi function ECU (C0062) on a WG wire to sound a warning buzzer. The alarm ECU also continuously illuminates the alarm LED.

Re-mobilisation
Non EM-CVT:When a valid unlock signal is received from the remote handset, the alarm ECU (C0061) connects the BW wire from the engine management relay module (C0154) to earth, to enable the engine starter. The alarm ECU (C0061) also signals the ECM (C0159) on the YR wire to enable operation of the fuel pump.

EM-CVT: When a valid unlock signal is received from the remote handset, the alarm ECU (C0061) connects the BU wire to the park/neutral switch (C0268). With the selector lever in any position other than Park or Neutral, the park/neutral switch interrupts the starter relay coil earth path to the alarm ECU to prevent starter operation even though the re-mobilisation signal has been successfully received.

If the remote handset fails to operate or is lost while the engine is immobilised, re-mobilisation can be achieved by using the door key to enter the four digit Emergency Key Access (EKA) code (shown on the security card in the vehicle's literature pack). With the driver's door locked, enter the EKA code as follows:

1. Insert the key into the door lock.
2. Turn the key to the lock position and release the key.
3. Turn the key to the unlock position the number of times indicated by the first digit of the code.
4. Turn the key to the lock position the number of times indicated by the second digit of the code.
5. Repeat steps 3 and 4 for the third and fourth digits.
6. Turn the key to the unlock position to unlock the doors and mobilise the engine.

If the EKA code has been entered successfully, the LED on the instrument pack will stop flashing and the engine can be started. If the operation is unsuccessful, the horns will sound a warning beep when the key is turned to the final unlock position.

If an error is made during the process of entering the EKA code, the act of opening and closing the door will cancel the operation and the EKA code sequence can be re-entered. The system permits three attempts at entering the EKA code, after which a 10 minute lock-out period is initiated.

If the engine is mobilised using the EKA code, the engine immobilisation function is de-activated until the next time the remote handset is used to lock the doors.

Alarm system test

The alarm system can be tested by following the procedure described below:

1. Ensure doors, bonnet and boot lid are closed.
2. Sit in the driver's seat and close the door.

   NOTE: The next three actions must be carried out within 2 seconds.
3. Depress the driver's door sill button.
4. Switch the ignition on, off and on again.
5. Raise the driver's door sill button.

If the test mode has been entered correctly, the horns will give a short beep and the engine immobilisation buzzer will sound.

Opening either door, the bonnet or the boot lid, or operating the driver's door sill button, will cause the alarm LED to illuminate for approximately one second. If the LED does not illuminate, there is a system fault.

The volumetric sensor can also be tested while in test mode. To test the volumetric sensor, press the unlock button on the remote handset several times. The alarm LED will illuminate for approximately 1 second each time movement is detected in the vehicle.

The test mode is cancelled by switching the ignition OFF.

Handset battery replacement

Depending on usage, the battery in the remote handset should last for approximately three years. When the battery is near the end of its life, unlocking the doors will result in a rapid flashing of the instrument pack LED until a door is opened. A reduction in operating range may also be noticed.

To change the battery, first carefully prise open the remote handset casing at the key ring end, taking care not to damage the seal. Slide the battery out, without bending the clip or touching any of the contact surfaces. Press and hold each remote handset button for five seconds, to allow residual power to discharge.

Without touching the contact surfaces, carefully slide a new battery into the clip, ensuring that the side marked '+' faces the clip. Close the two halves of the remote handset case.

Ensure that the vehicle is unlocked using the key. Operate the lock button at least four times, until the vehicle is locked and the remote handset is synchronised to the car. The vehicle can then be unlocked with the remote handset and will operate normally.

Central Door Locking (CDL)

Locking

When the alarm ECU receives a lock signal, from the remote handset or the driver's door lock barrel switch, a feed is connected to the O wire between the alarm ECU (C0061) and the door locking motors (C1449 and C1451). The alarm ECU (C0061) also earths the K wire from the locking/ superlocking motors (C1449 and C1451), the locking motors then lock the doors.

Superlocking

When the alarm ECU receives two lock signals from the remote handset in quick succession, a feed is connected to the NK wire between the alarm ECU (C0057) and the door superlocking motors (C1449 and C1451). The alarm ECU (C0061) also earths the K wire from the locking/ superlocking motors (C1449 and C1451), the superlocking motors then lock the doors and disengage the door sill buttons.

NOTE: Pressing down the passenger door sill button will lock the passenger door but will not operate the central door locking system.

Unlocking

The car is unlocked by pressing the unlock button on the remote handset, turning the key in the driver's door in the unlock direction or, provided the vehicle is not superlocked, by raising the driver's door sill button. When an unlock signal is received, from the remote handset or the driver's door lock barrel switch, the alarm ECU reverses the polarity of the locking/ superlocking motor connections and the locking/ superlocking motors unlock the doors. The alarm ECU also operates the direction indicator lamps to give one long flash.

In the event of a severe crash, both doors will be unlocked by the operation of the inertia switch. When the inertia switch opens, the supply to the alarm ECU is disconnected and the alarm ECU operates the locking or superlocking circuit as appropriate.