4.6 REAR COMPARTMENT RELEASE

CIRCUIT DESCRIPTION

Pressing the Rear Compartment Lid Switch closes the switch contacts, providing a ground connection to the BCM. This is seen by the BCM as a rear compartment lid release switch input signal. The BCM actuates the Boot Solenoid Relay unless:

- the vehicle speed is greater than 20 km/h
- the system is armed via the remote coded key
- the driver's door lock microswitch is locked or deadlocked.

The BCM actuates the rear compartment lid release solenoid by energising the Boot Solenoid relay. This supplies battery voltage to actuate and release the Rear Compartment Lid Latch.

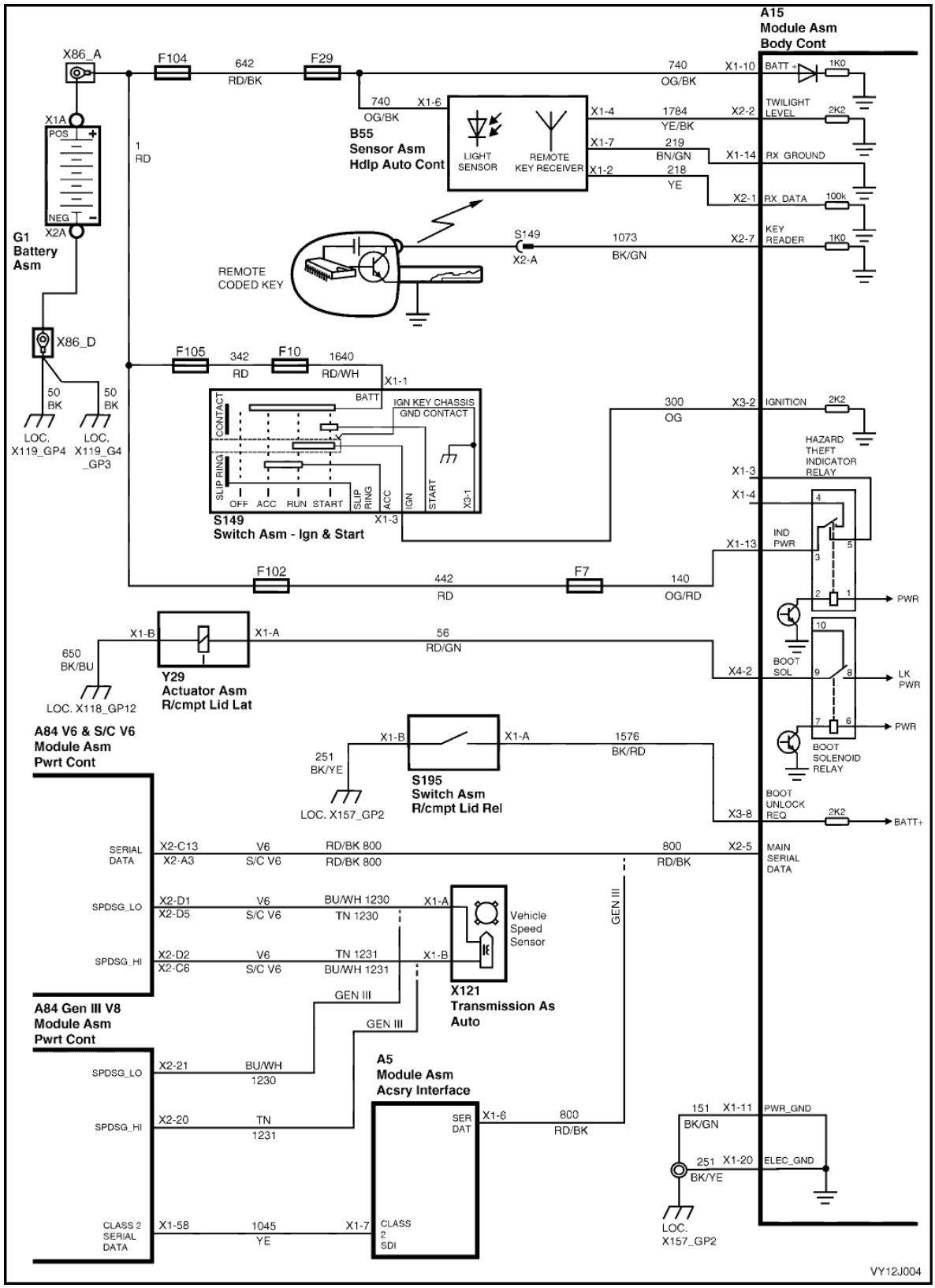

Figure 12J-235

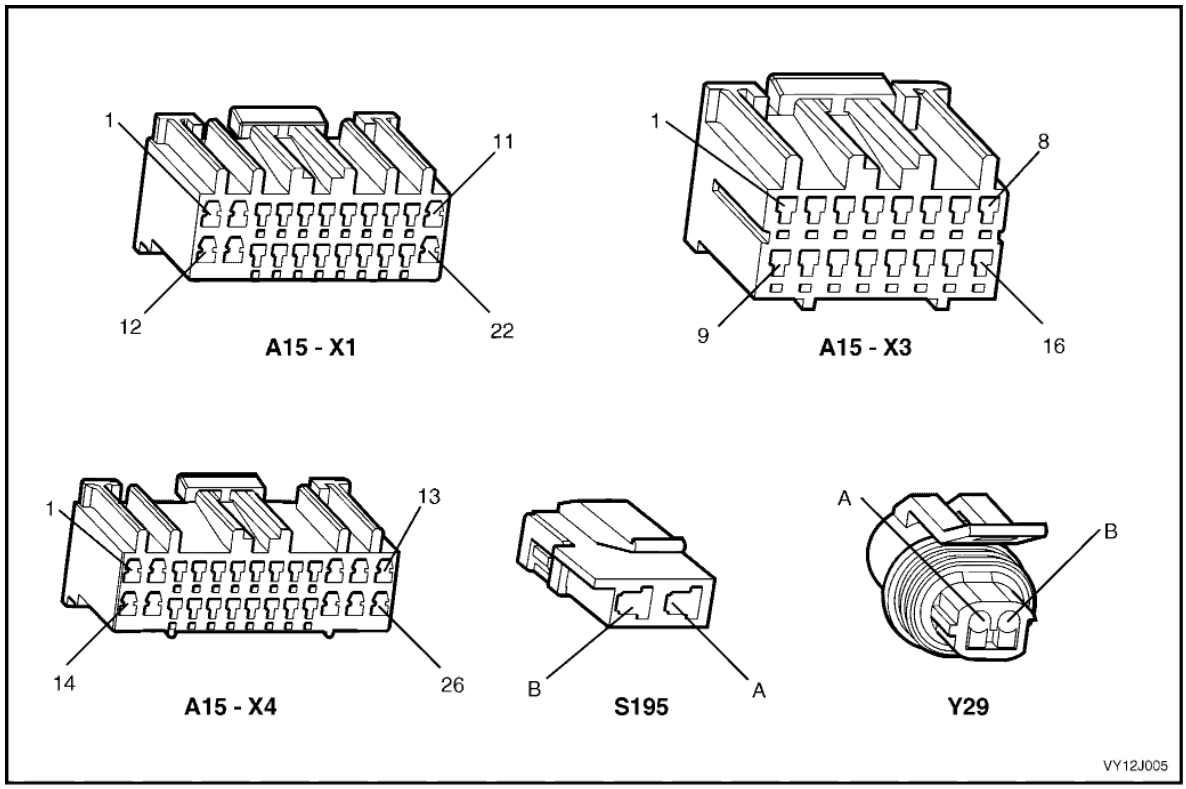

Figure 12J-236

REAR COMPARTMENT RELEASE DIAGNOSTIC CHART

STEP	ACTION	VALUE	YES	NO
1	1. Activate the Rear Compartment Lid release switch (in the glove compartment) with the vehicle speed below 10 km/h, doors unlocked. Does the rear compartment lid open?		Go to Step 2.	Go to Step 3.
2	1. Close the rear compartment lid. 2. Press the rear compartment lid release button on the remote coded key (within two metres of the rear of the vehicle). Does the rear compartment lid open?		System OK.	Go to 3.9 REMOTE RECEIVER KEY in this Section.
3	1. Connect TECH 2 to the DLC. 2. Select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Miscellaneous Tests / Rear Compartment. 3. Perform the test as instructed by TECH 2 and open the rear compartment lid. Does the rear compartment lid open?		Go to Step 4.	Go to Step 10.
4	1. With TECH 2 connected, exit to the Body Menu and select Data Display / Inputs and Outputs / Rear Compartment Release Switch. 2. While reading TECH 2, press the switch fully to close the switch contacts. Does TECH 2 display Off with the switch at rest and On with the switch pressed?		Go to Step 7.	Go to Step 5.
5	1. Back-probe the rear compartment lid release switch connector terminal X1-B, circuit 251 (Black / Yellow wire) with an ohmmeter to ground. Is the value as specified?	Less then 1 ohm	Go to Step 6.	Repair faulty circuit 650.

STEP	ACTION	VALUE	YES	NO
6	1. Disconnect the rear compartment lid release switch connector. 2. Back-probe the rear compartment release switch between terminals X1-A and X1-B with an ohmmeter. 3. While reading the ohmmeter, press the switch to fully close the switch contacts. Is the value as specified?	Switch at rest = open Pressed = less then 1 ohm	Repair faulty circuit 1576.	Replace Rear Compartment Lid Release Switch. Refer to Section 1A3, 3.9 INSTRUMENT PANEL LOWER EXTENSION.
7	1. Close and unlock the doors. 2. With TECH 2 connected, exit to the Body Menu and select BCM Internal Status / Central Door Locking. Does TECH 2 display Unlocked?		Go to Step 8.	Go to 3.3 PART I – UNLOCKING DOORS FROM DEADLOCK in this Section.
8	1. With TECH 2 connected, exit Central Door Locking and select Security Status. Does TECH 2 display Disarmed?		Go to Step 9.	Go to Section 3.5 THEFT DETERRENT in this Section.
9	1. Ensure that the vehicle is stationary. 2. With TECH 2 connected, exit to the Body Menu and select Data Display / Serial Data Inputs / Vehicle Speed. Does TECH 2 display0 km/h?		Inputs correct. Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Refer to Section 6C1 (V6), 6C2 (V6 S/C) or 6C3 DIAGNOSTIC CHART.
10	1. Back-probe BCM connector terminal X4-2, circuit 56 (Red / Green wire) with a voltmeter to ground. 2. Repeat the rear compartment lid release test as per Step 3. Are the values as specified?	Test not conducted: 0 volt Test conducted: 12 volts for 0.7 second	Go to Step 11.	Go to Step 13.
11	1. Back-probe the rear compartment actuator (Y29) connector terminal X1-A, circuit 56 (Red / Green wire) with voltmeter to ground. 2. Repeat rear compartment lid release test as per Step 3. Are the values as specified?	Test not conducted: 0 volt Test conducted: 12 volts for 0.7 second	Go to Step 12.	Repair faulty circuit 56.
12	1. Back-probe the rear compartment lid release actuator connector terminal X1-B, circuit 650 (Black / Blue wire) with an ohmmeter to ground. Is the value as specified?	Less then 1 ohm	Replace rear compartment release solenoid. Refer to Section 1A4, HOOD, REAR COMPARTMENT LID, LIFTGATE AND ENDGATE.	Repair faulty circuit 650.
13	1. Back-probe BCM connector terminal X1-13, circuit 140 (Orange / Red wire) with a voltmeter to ground. Is the voltage as specified?	Battery voltage	Go to Step 14.	Check and repair fuses F102 and F7 and circuit 140.
14	1. Back-probe BCM connector terminals X1-11, X1-20 and X3-1, circuits 151, 251 and 150, with an ohmmeter to ground. Is the value as specified?	Less then 1 ohm	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Repair faulty circuit 151, 251 150 and check for positive ground connections to BCM.
WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETE, VERIFY CORRECT OPERATION				

4.7 THEFT DETERRENT SYSTEM

CIRCUIT DESCRIPTION

The theft deterrent system can be armed by pressing the lock button on the remote coded key or passively armed automatically by the BCM (30 seconds after the ignition is switched off). The driver's door must be closed to allow arming of the system.

When the system is armed, the PCM (V6 and V6 supercharged engines) or PIM (GEN III V8 engine) prevents the engine from starting. The theft deterrent system can be disarmed by:

- pressing the unlock button on the remote coded key (this unlocks the doors, turns on the interior lamp and disarms the system for 30 seconds), or
- inserting the remote coded key into the ignition switch cylinder and turning on the ignition. This allows the BCM to read the security code serial data output from the remote coded key contact pin via the remote coded key reader assembly.

If the system does not disarm when the ignition switch is turned on (security warning LED off), press the lock or unlock button on the remote coded key to disarm the theft deterrent system. This may be caused by a misaligned or faulty remote coded key reader or a faulty key.

The remote coded key is powered by it's own internal battery. If the battery fails however, the key reader can power the key when the key is inserted into the ignition cylinder and the ignition turned on or turned to start.

When arming the system by pressing the lock button on the remote coded key, the indicators flash once and the theft deterrent alert indicator (LED) flashes continually.

When disarming the system by pressing the unlock button on the remote coded key, the indicators flash twice and the theft deterrent alert indicator (LED) remains off.

V6 and V6 Supercharged Engines

On vehicles with a V6 or V6 supercharged engine, the BCM polls the PCM and sends an encrypted BCM / key security code when the ignition is turned on. The security code is received via the BCM slip ring, or via the remote receiver in the event of no slip ring communication.

The PCM compares the received security code with its stored security code and if the codes match, enables injector fuelling and continued engine cranking. The PCM returns an OK TO START message to the BCM, which tells the BCM to jump from SHORT LOOP mode to the LONG LOOP mode.

GEN III V8 Engine

On vehicles with a GEN III V8 engine, the BCM polls the PIM and sends an encrypted BCM / key security code when the ignition is turned on. The security code is received via the BCM slip ring, or via the remote receiver in the event of no slip ring communication. The PIM compares the received security code with its stored security code and if the codes match, enables continued engine cranking and sends a separate encrypted security code to the PCM. The PCM compares this code with its stored security code and if the codes match, enables injector fuelling to continue. The PIM returns an OK TO START message to the BCM, which tells the BCM to jump from SHORT LOOP mode to LONG LOOP mode.

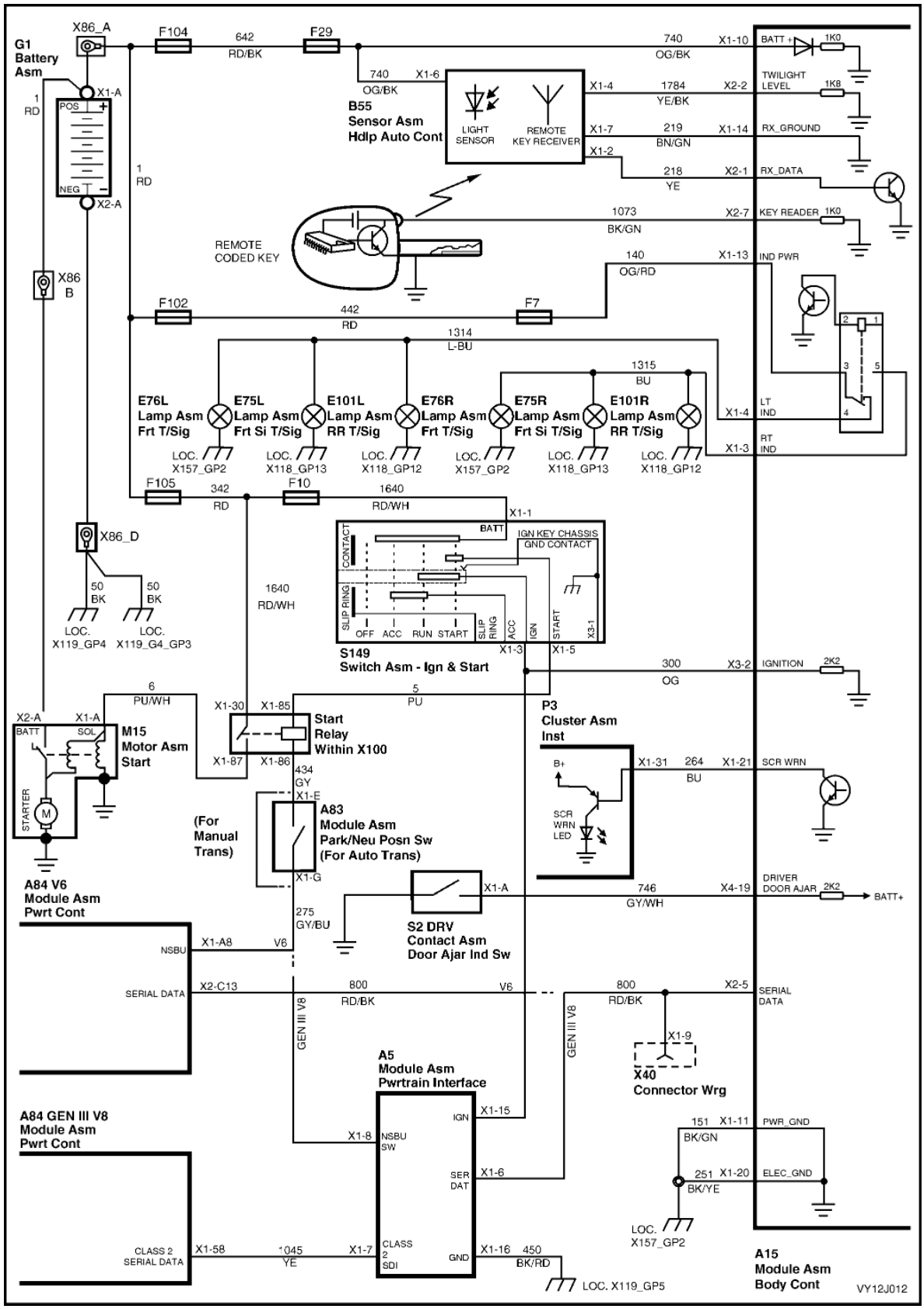

Figure 12J-237

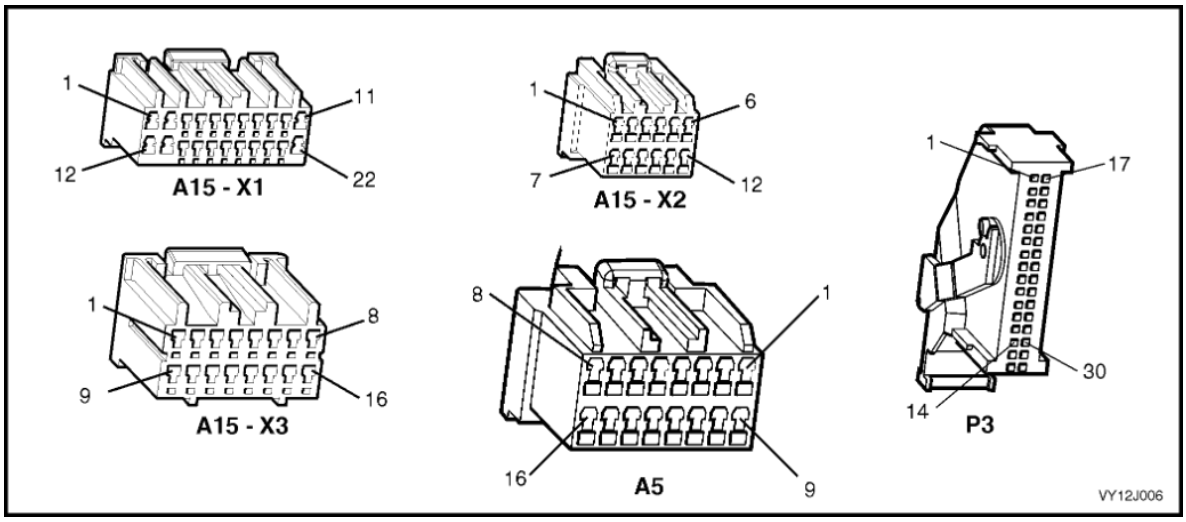

Figure 12J-238

THEFT DETERRENT SYSTEM DIAGNOSTIC CHART

STEP	ACTION	VALUE	YES	NO
1	Is the remote coded key functioning correctly?		Go to Step 2.	Go to 4.3 REMOTE RECEIVER / KEY in this Section.
2	Are all door ajar switches and associated circuits functioning correctly?		Go to Step 3.	Go to 4.5 CENTRAL DOOR LOCKING Part L, Door Ajar Switches in this Section.
3	Does the key in the driver's door switch unlock all doors?		Go to Step 4.	Go to Part A, Unlocking Doors using Driver's Door Lock Microswitch.
4	Does the key in the driver's door switch lock all doors?		Go to Step 5.	Go to Part B, Locking Doors using Driver's Door Lock Microswitch.
5	1. Close and lock all doors. Operate the Unlock button on the remote coded key within 4 metres of the driver's side B-pillar (taking note of any indicator lamp flashes). Does the driver's door unlock (two-stage unlocking) or all doors unlock (single-stage unlocking)?		Go to Step 6.	Go to Step 14.
6	In Step 5, did the left and right hand side indicator lamps flash twice?		Go to Step 7.	Go to Step 15.
7	In Step 5, did the dome lamp illuminate?		Go to Step 8.	Go to 4.12 DOME LAMP DELAY CONTROL in this Section.
8	In Step 5, did the security warning LED extinguish immediately and begin flashing 30 seconds later?		Go to Step 11.	Go to Step 19.
9	1. Operate the Lock button on the remote coded key within 4 metres of the driver's side B-pillar. Did the dome lamp extinguish immediately after the lock button was activated?		Go to Step 10.	Go to 4.12 DOME LAMP DELAY CONTROL in this Section.

STEP	ACTION	VALUE	YES	NO
10	When locking the vehicle in Step 5, did the left and right hand side indicator lamps flash once?		Go to Step 11.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
11	Is the security warning LED flashing?		Go to Step 12.	Go to Step 19.
12	1. Unlock the vehicle with the remote coded key. Wait for the vehicle to passively arm and for the security warning LED to start flashing. With the vehicle passively armed, insert the ignition key into the ignition switch and Turn the ignition on. Does the security warning LED extinguish?		Go to Step 14.	Go to Step 24.
13	1. Turn the ignition key to start the engine. Does the vehicle crank and start?		System OK.	For vehicles with a V6 engine, go to Step 35. For vehicles with a GEN III V8 engine, go to Step 36.
14	**NOTE:** The alarm may sound during this Step. 1. Insert the key into ignition switch and cycle the switch from off to on then off. Remove the key, close all doors and lock all doors using the driver's door lock cylinder switch. Operate the Unlock button on the remote coded key within 4 metres of the driver's door B-pillar (taking note of any indicator lamp flashes). Does the driver's door unlock (two-stage unlocking programmed) or all doors unlock (single-stage unlocking programmed)?		Go to Step 6.	Go to 4.3 REMOTE RECEIVER / KEY in this Section.
15	In Step 1, did any indicator lamps flash twice?		Go to Step 16.	Go to Step 17.
16	1. Back-probe BCM connector terminal X1-4, circuit 1314 (Light-blue wire) with a voltmeter to ground. Connect TECH 2 to the DLC. Select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Miscellaneous Tests / Lamps / Indicators. Perform the test as instructed by TECH 2. Back-probe BCM connector terminal X1-3, circuit 1315, Blue wire with a voltmeter to ground. Repeat the TECH 2 Indicator Illumination test. Are the values as specified?	Battery voltage	Repair faulty LHS indicator circuit 1314 or RHS indicator circuit 1315, as necessary.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
17	1. Connect TECH 2 to the DLC. Select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Miscellaneous Tests / Lamps / Indicators. Close the driver's door. Perform the test as instructed by TECH 2. Do all indicator lamps illuminate?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 18.
18	1. Back-probe BCM connector terminal X1-13, circuit 140 (Orange / Red wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Go to Step 16.	Check and repair faulty circuit 140 (including fuse F7).
19	Is the Security warning LED illuminated continuously?		Go to Step 20.	Go to Step 22.
20	1. Disconnect the Instrument Cluster (P3) connector. Is the Security warning LED still illuminated?		Replace instrument cluster. Refer to Section 12C, 2.3 INSTRUMENT CLUSTER ASSEMBLY.	Install the instrument cluster connector and go to Step 21.

STEP	ACTION	VALUE	YES	NO
21	1. Check the integrity of circuit 264 (Blue wire). Is the circuit OK?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Repair faulty circuit 264.
22	Is the Security warning LED still flashing?		Go to Step 12.	Go to Step 23.
23	1. Connect TECH 2 to the DLC. Select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Miscellaneous Tests / Security System / Security LED. Perform the test as instructed by TECH 2. Does the security warning LED illuminate?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 24.
24	1. Back-probe between BCM connector terminal X1-21, circuit 264 (Blue wire) and terminal X1-22, circuit 440 (Orange / Purple wire) with a voltmeter. Repeat the TECH 2 Security warning LED test. Are the values as specified?	Before test = 0 volts. After test = Approx. battery voltage	Go to Step 25.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
25	1. Back-probe Instrument Cluster Assembly connector terminal X1-31, circuit 264 (Blue wire) with a jumper wire to ground. Does the LED illuminate?		Repair faulty circuit 264.	Replace instrument cluster. Refer to Section 12C, 2.3 INSTRUMENT CLUSTER ASSEMBLY.
26	1. With the ignition on, operate the unlock button on the remote coded key. Does the security warning LED extinguish?		Go to Step 27.	Go to 3.9 REMOTE RECEIVER / KEY in this Section.
27	1. Remove remote coded key, key shaft. Clean the ground contact (shaft ground). Reinstall key shaft and tighten screws to the correct torque specification (0.7 – 0.9 Nm). With the system passively armed and the security warning LED flashing, insert the key into the ignition switch and Turn the ignition on. Does the security warning LED extinguish?		Go to Step 13.	Go to Step 27.
28	1. Turn the ignition on. Visually check to see if the remote coded key contact pin is making good contact with the remote coded key reader slip ring. Is the key contact pin making good contact?		Go to Step 29.	Check the remote coded key reader, key shaft and contact pin. Refer to 2.2 REMOTE CODED KEY in this Section.
29	1. Check the operation of the second remote coded key. Is the second key OK?		Replace suspect key.	Go to Step 30.
30	1. Isolate the remote coded key contact pin using a thick piece of paper to cover the pin. Insert the key into the ignition switch and Turn the ignition on. Measure the voltage between the remote coded key reader slip ring and a known good ground. Is the value as specified?	Fluctuates between 0-10 volts AC	Go to Step 31.	Go to Step 32.
31	1. Back-probe between the ignition switch housing and a known good ground with an ohmmeter. Is the value as specified?	Less then 1 ohm	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	the ignition switch and repair open or poor ground connection at.

STEP	ACTION	VALUE	YES	NO
32	1. Ensure that the ignition is off. Connect TECH 2 to the DLC. Select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Data Display / Inputs and Outputs / Ignition Switch display. Ensure the ignition is on. Does TECH 2 display On?		Go to Step 33.	Go to Step 34.
33	1. Back-probe BCM connector terminal X2-7, circuit 1073 (Purple / Red wire) with a voltmeter to ground. Cover the remote coded key contact pin with thick paper (to isolate it). Insert the key into the ignition switch and Turn the ignition on. Is the value as specified?	Fluctuates between 0-10 volts AC	Repair faulty circuit 1073 or faulty remote key reader.	Go to Step 34.
34	1. Check the integrity of circuit 1073 (Purple / Red wire). Is the circuit OK?		Repair faulty circuit 1073.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
34	1. Back-probe BCM connector terminal X3-2, circuit 300 (Orange wire) with a voltmeter to ground. Turn the ignition on. Is the value as specified?	Approx. 12 volts	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Repair faulty circuit 300.
35	1. Connect TECH 2 to the DLC. With the system disarmed and the security warning LED off, select Body / Body Control Module / Data Display / Alarm/ Theft Deterrent/ Security Status. Does TECH 2 display Disarm?		Go to PCM diagnostics in Section 6C1, POWERTRAIN – V6. For V8 GENIII vehicle Go to Step 38.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
36	1. Turn the ignition key to the start position. Does the engine crank and continue to crank after 1 second?		Go to PCM diagnostics in Section 6C3, POWERTRAIN – GEN III V8.	Go to Step 38.
37	1. With TECH 2 still connected and ignition ON, exit Body Control Module and select Body / Powertrain Interface Module (PIM). Can TECH 2 communicate with the PIM and display the software version number?		Go to Step 39.	Go to Step 41.
38	1. Ensure the BCM has been linked to the PIM. (Refer to 2.1 BODY CONTROL MODULE in this Section.) With TECH 2 connected and the ignition turned on, exit to the Body menu and select Powertrain Interface Module / Data Display / Starter Relay. Exit Starter Relay and select Fuel Disable Timeout Exit Fuel Disable Timeout and select Fuel Disable Cycle Ignition. Does TECH 2 display OFF for each of these items?		Go to Step 40.	Replace the PIM. Refer to 6C3, POWERTRAIN – GEN III V8.
39	1. With TECH 2 connected and the ignition on, exit to the Body menu and select Powertrain Interface Module / Miscellaneous Tests / Starter Relay. Hold the ignition switch in the start position. Perform the starter motor relay test as instructed by TECH 2. Does the engine crank?		Replace the PIM. Refer to 6C3, POWERTRAIN – GEN III V8.	Go to Step 41.
40	1. Back-probe PIM connector terminal X1-15, circuit 300 (Orange wire) with a voltmeter to ground. Turn the ignition on. Is the value as specified?	12 volts	Go to Step 42.	Repair faulty circuit 300.

STEP	ACTION	VALUE	YES	NO
41	1. Turn ignition OFF. Back-probe PIM connector terminal X1-16, circuit 450 (Black / Red wire) with an ohmmeter to ground. Is the value as specified?	Less then 1 ohm	Go to Step 43.	Repair faulty circuit 450.
42	1. Back-probe BCM connector terminal X2-5, circuit 800 (Red / Black wire) and PIM connector terminal X1-6, circuit 800 (Red / Black wire) with an ohmmeter. Is the value as specified?	Less then 1 ohm	Replace the PIM. Refer to 6C3, POWERTRAIN – GEN III V8.	Repair faulty circuit 800 between PIM and BCM.
43	1. Back-probe PIM connector terminal X1-8, circuit 275 (Grey / Blue wire) with a voltmeter to ground. Connect TECH 2 to the DLC. Select Diagnostics / Model Year / Vehicle Model / Body / Powertrain Interface Module / Miscellaneous Tests / Starter Relay. Hold the ignition switch in the start position. Perform the starter relay test as instructed by TECH 2. Is the value as specified?	Less then 1 volt	Go to Section 6D1-2, Starting System – V6, 6D2-2, Starting System – V6 S/C or 6D3-2, Starting System – GEN III V8	Replace the PIM. Refer to 6C3, POWERTRAIN – GEN III V8.
WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETE, VERIFY CORRECT OPERATION				

4.8 ENTRY DETERRENT SYSTEM

CIRCUIT DESCRIPTION

This system provides an audible and visual warning of illegal entry to the vehicle. The entry deterrent system arms when:

- the lock button on the remote coded key is pressed
- all doors lock successfully, and
- 10 seconds has elapsed.

The Entry Deterrent software is TECH 2 programmable and requires a patch harness to enable sensing of boot and bonnet switches and fitment of anti-theft horns.

NOTE: The entry deterrent system does not arm passively.

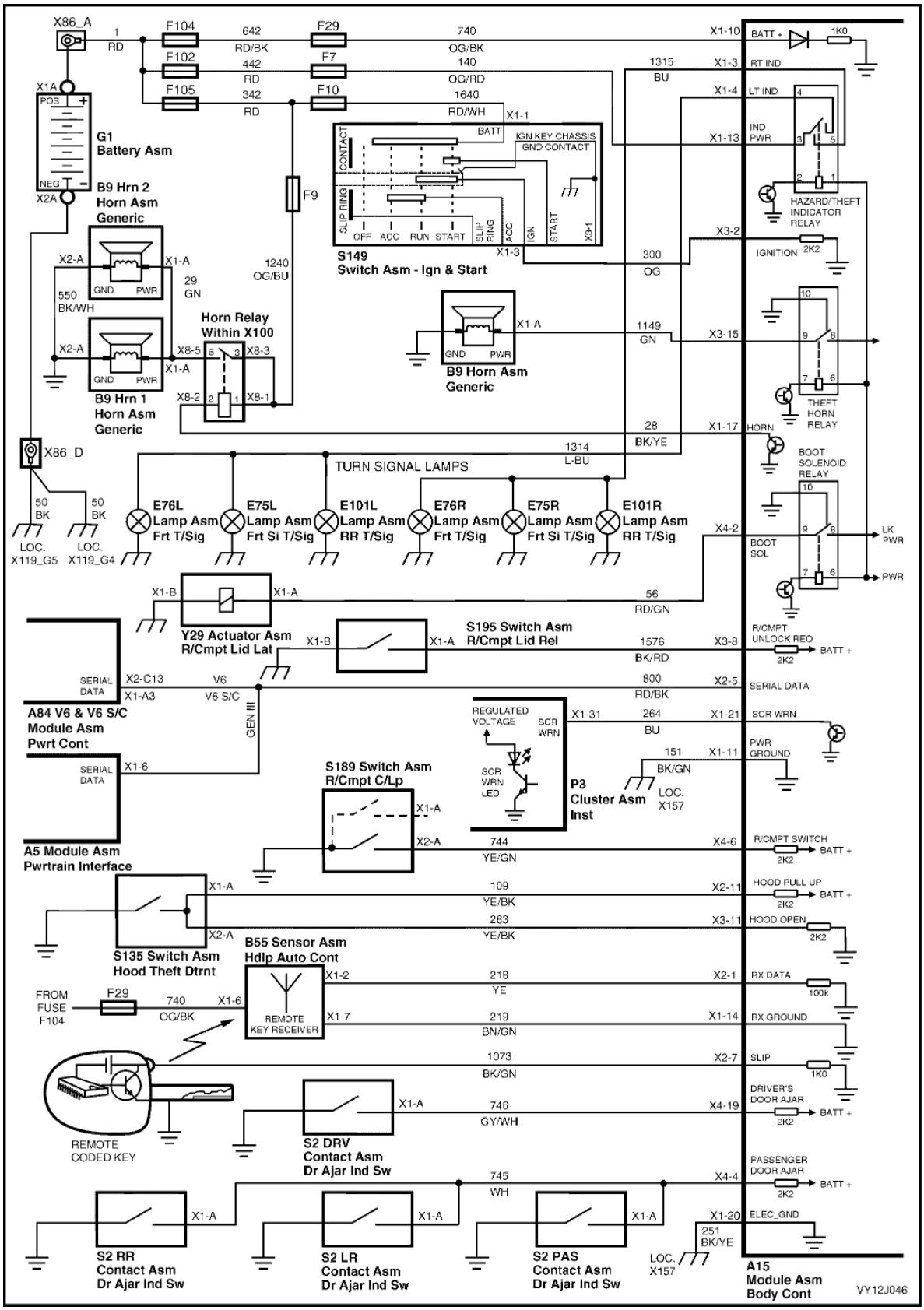

Figure 12J-239

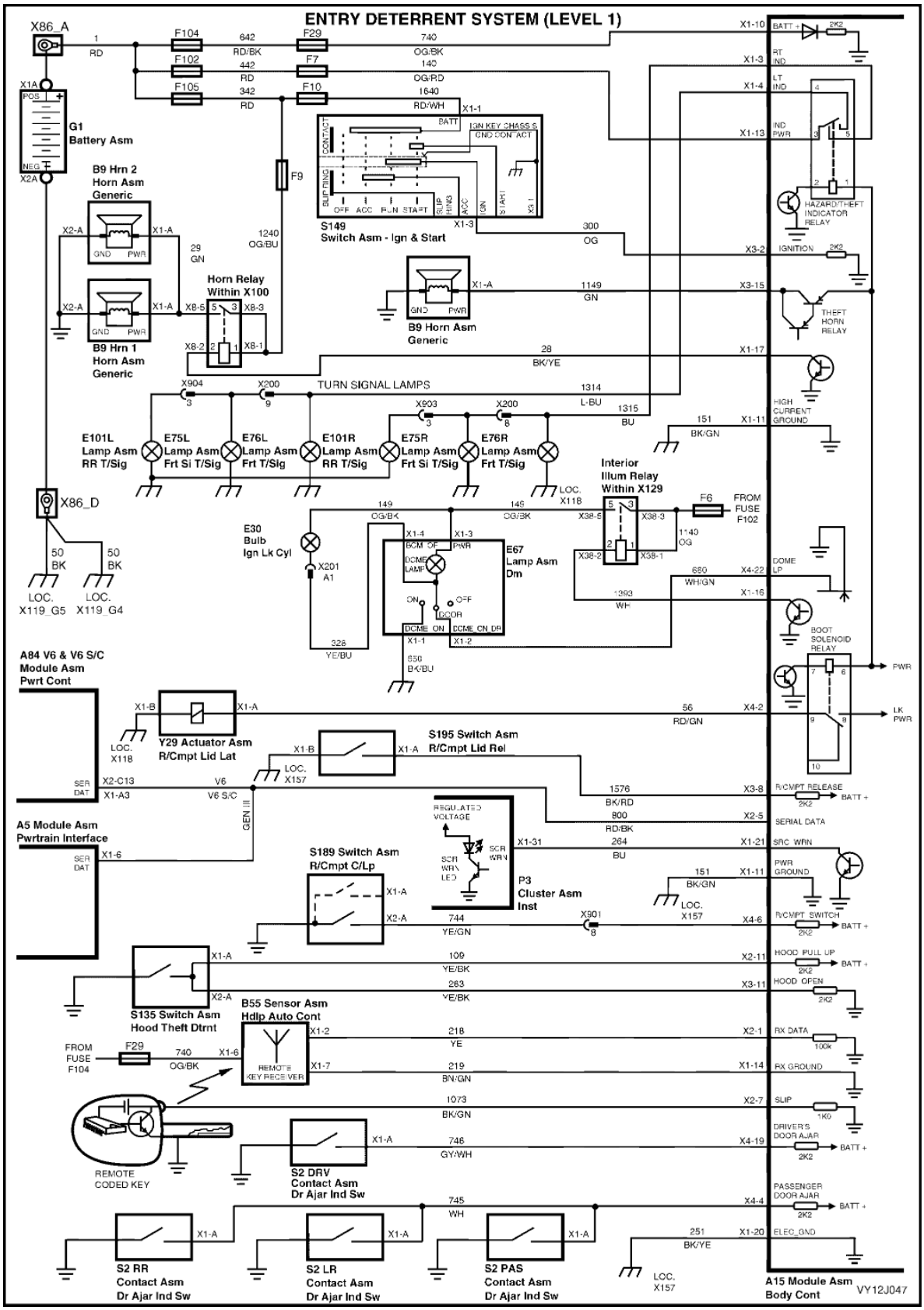

Figure 12J-240

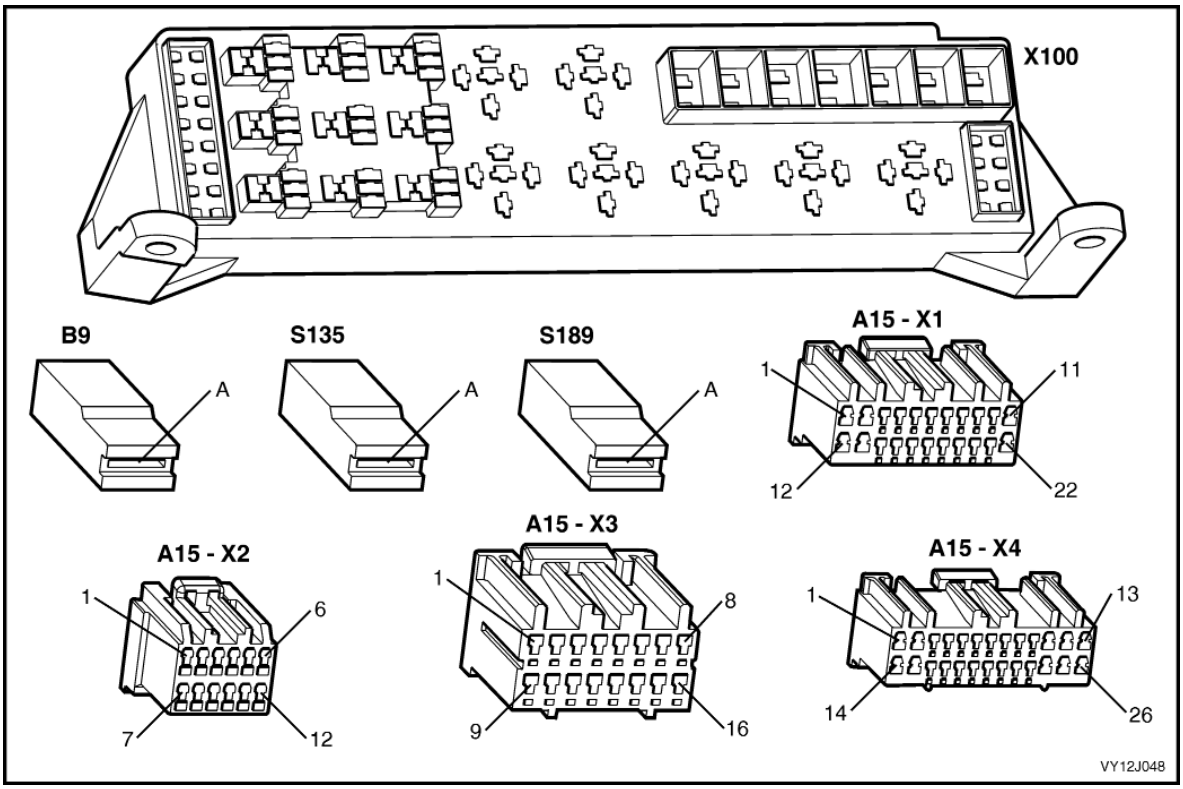

Figure 12J-241

ENTRY DETERRENT SYSTEM DIAGNOSTIC CHART

STEP	ACTION	VALUE	YES	NO
1	Is the Central Door Locking system fully functional?		Go to Step 2.	Go to 4.5 CENTRAL DOOR LOCKING in this Section.
2	Are all door ajar switches and associated circuits functioning correctly?		Go to Step 3.	Go to 4.5 CENTRAL DOOR LOCKING, Part L, in this Section.
3	Is the Theft Deterrent system fully functional?		Go to Step 4.	Go to 4.7 THEFT DETERRENT SYSTEM in this Section.
4	Do all indicators operate correctly?		Go to Step 5.	Go to Section 12B, 3.22 TURN SIGNAL SWITCH ASSEMBLY (& CRUISE CONTROL).
5	Is the dome lamp fully functional using the manual switch?		Go to Step 6.	Go to 4.12 DOME LAMP DELAY CONTROL in this Section.
6	**NOTE:** The alarm may sound in this Step. Fully open the windows. Close the doors. 1. Arm the system by pressing the remote coded key Lock button. 2. Lift the driver's door snib button and open the driver's door. Is the alarm triggered?		Go to Step 7.	Go to Step 14.
7	In Step 6, did both the theft deterrent and standard vehicle horns (alarm) sound?		Go to Step 8.	Go to Step 16.

STEP	ACTION	VALUE	YES	NO
8	In Step 6, did both indicators and the dome lamp flash once every second?		Go to Step 9.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
9	1. Disarm the system by pressing the remote coded key Unlock button. Do the indicators flash 3 times and does the MFD display the alarm trigger point?		Go to Step 10.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
10	**NOTE:** The alarm may sound in this Step. 1. Turn the ignition from off to on to off (to cancel the Alarm trigger point display). 2. Arm the system. 3. Test the front passenger door input by opening the door to trigger an alarm. 4. Disarm the system by operating the Unlock button on the remote coded key. 5. Observe the MFD display for alarm trigger point. 6. Cancel the flash code. 7. Repeat Steps 2 to 6 for the rear passenger doors. Does each passenger door trigger the alarm?		Go to Step 11.	Go to Step 23.
11	**NOTE:** The alarm may sound in this Step. 1. Cancel the Alarm trigger point display. 2. Arm the system. 3. Open the rear compartment using the key in the rear compartment lock. Does opening the rear compartment trigger the alarm?		Go to Step 12.	Go to Step 26.
12	**NOTE:** The alarm may sound in this Step. 1. Cancel the Alarm trigger point display. 2. Arm the system. 3. Open the bonnet. Is the alarm triggered?		Go to Step 13.	Go to Step 25.
13	1. Cancel the Alarm trigger point display. 2. With the driver's window open and the doors closed, arm the system. 3. Place a thick piece of paper over the remote coded key slip ring contact. 4. From outside of the vehicle, insert the key into the ignition switch and Turn the ignition on. Is the alarm triggered?		Go to Step 14.	Go to Step 34.
14	1. Cancel the Alarm trigger point display. 2. Disarm the system by pressing the remote coded key Unlock button. 3. Connect TECH 2 to the DLC. 4. Select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Data Display / Inputs and Outputs / Driver's Door. 5. Open and close the driver's door. Does the screen display the correct driver's door status?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 15.
15	1. Back-probe BCM connector terminal X4-19, circuit 746 (Grey / White wire) with a voltmeter to ground. 2. Open and close the driver's door. Are the values as specified?	Door open = 0 volt Door closed = 3 volts	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Repair faulty circuit 746.

STEP	ACTION	VALUE	YES	NO
16	**NOTE:** The alarm may sound in this Step. 1. Disarm the system. 2. Connect TECH 2 to the DLC. 3. Select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Miscellaneous Tests / Alarm/Theft Deterrent / Horn. 4. Perform the test as instructed by TECH 2. Is the alarm triggered?		Go to Step 17.	Go to Step 18.
17	1. With TECH 2 connected, select Body / Body Control Module / Miscellaneous Tests / Horn. 2. Perform the test as instructed by TECH 2. Is the alarm triggered?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 21.
18	1. Disarm the system. 2. Back-probe BCM connector terminal X3-15, circuit 1149 (Green wire) with a voltmeter to ground. 3. Repeat the TECH 2 Theft Deterrent Horn test. Is the value as specified?	On= Approx. Battery voltage Off = Approx 1 volt	Go to Step 19.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
19	1. Disarm the system. 2. Back-probe the theft deterrent horn connector terminal X1-A, circuit 1149 (Green wire) with a voltmeter to ground. 3. Repeat the TECH 2 Theft Deterrent Horn test. Is the value as specified?	On= Approx. Battery voltage Off = Approx 1 volt	Go to Step 20.	Repair faulty circuit 1149.
20	1. Back-probe between the theft deterrent horn base and a known good ground with an ohmmeter. Is the value as specified?	Less than 1 ohm	Replace the theft deterrent horn (B9).	Repair faulty ground connection.
21	1. Press the horn pad on the steering wheel. Is the horn triggered?		Go to Step 22.	Go to Section 12N, 3.1 Horn Assembly.
22	1. Back-probe BCM connector terminal X1-17, circuit 28 (Black / Yellow wire) with a jumper lead to ground. Is the alarm triggered?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Repair faulty circuit 34.
23	In Step 5, did at least one passenger door trigger the alarm?		Repair faulty circuit 745.	Go to Step 24.
24	1. Disarm the system. 2. Connect TECH 2 to the DLC. 3. Select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Data Display / Inputs and Outputs / Passenger Doors. 4. Open and close the passenger door. Does TECH 2 display the door status?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 25.
25	1. Back-probe BCM connector terminal X4-4, circuit 745 (White wire) with a voltmeter to ground. 2. Open any passenger door. Is the value as specified?	Less than 0.5 volt	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Repair faulty circuit 745.
26	1. Disarm the system. 2. Connect TECH 2 to the DLC. 3. Select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Data Display / Inputs and Outputs / Rear Compartment Status. 4. Open then close the rear compartment lid. Does TECH 2 display the rear compartment status (open then close)?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 27.
27	1. Back-probe BCM connector terminal X4-6, circuit 744 (Yellow / Green wire) with a voltmeter to ground. 2. Open the boot. Is the value as specified?	Less than 0.5 volt	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 28.

STEP	ACTION	VALUE	YES	NO
28	1. Open the rear compartment lid. 2. Disconnect the Rear Compartment Switch (S189) connector. 3. Back-probe the rear compartment switch terminal X2-A, circuit 744 (Yellow / Green wire) with an ohmmeter to ground. Is the value as specified?	Less than 1 ohm	Repair faulty circuit 744.	Go to Step 29.
29	1. With the Rear Compartment Switch connector disconnected, probe between the switch base and a known good ground with an ohmmeter. Is the value as specified?	Less than 1 ohm	Replace rear compartment lamp switch.	Repair faulty ground connection.
30	1. Disarm the system. 2. Connect TECH 2 to the DLC. 3. Select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Data Display / Inputs and Outputs / Bonnet. 4. Open then close the bonnet. Does TECH 2 display the bonnet status (open then closed)?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 31.
31	1. Open the bonnet. 2. Disconnect the Theft Deterrent Hood Switch (S135) connectors X1 and X2. 3. Back-probe the hood switch terminal X1-A, circuit 109 (Yellow / Black wire) with an ohmmeter to ground. 4. Back-probe the hood switch terminal X2-A, circuit 263 (Yellow / Black wire) with an ohmmeter to ground. Are the values as specified?	Less than 1 ohm (both circuits)	Install the Theft Deterrent Hood Switch connectors and go to Step 32.	Go to Step 32.
32	1. With the Theft Deterrent Hood Switch (S135) connectors disconnected, probe between the hood switch base and the battery negative post with an ohmmeter. Is the value as specified?	Less than 1 ohm	Replace the hood switch (S135).	Repair faulty ground connection.
33	1. With the Theft Deterrent Hood Switch (S135) connectors disconnected, check the integrity of circuits 109 and 263 (Yellow / Black wires). Are the circuits OK??		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Repair faulty circuit 109 and / or 263 as necessary.
34	1. Disarm the system. 2. Connect TECH 2 to the DLC. 3. Select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Data Display / Inputs and Outputs / Ignition Switch. 4. Turn the ignition on. Is the value as specified?	On	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 35.
35	1. Back-probe BCM connector terminal X3-2, circuit 300 (Orange wire) with a voltmeter to ground. 2. Turn the ignition on. Is the value as specified?	Battery voltage (ignition on)	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Repair faulty circuit 300.
WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETE, VERIFY CORRECT OPERATION				

4.9 POWER WINDOW SYSTEM

CIRCUIT DESCRIPTION

The BCM controls the power supply to each window motor. It also controls the automatic down function of the driver and front-passenger door windows. This function is activated when the respective power window down button is pressed for more than 0.4 second.

Once activated, the automatic down feature is cancelled by pressing the driver / front-passenger window up switch and then releasing it. The window remains stationary until the up or down button is pressed again.

Power is supplied to the window system continuously when the ignition is on. When the ignition is switched off and no door has been opened, power is supplied to the window system for a maximum of one hour. If any door is opened, power is supplied to the system for a maximum of 45 seconds after the door is opened.

When the doors are unlocked using the remote coded key, power is supplied to the system for 45 seconds after door opening. The delay is cancelled when the doors are locked by the remote coded key.

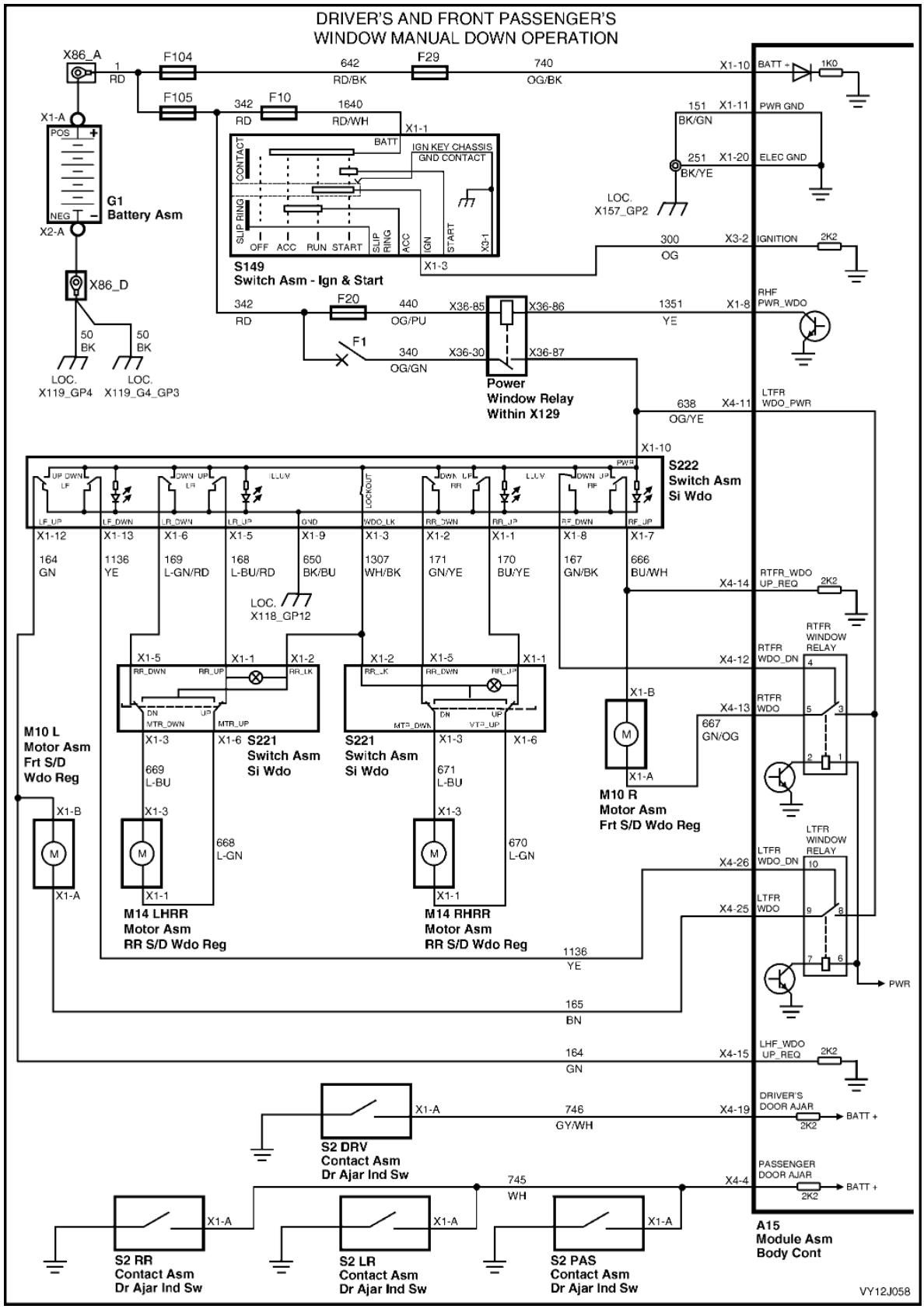

Figure 12J-242

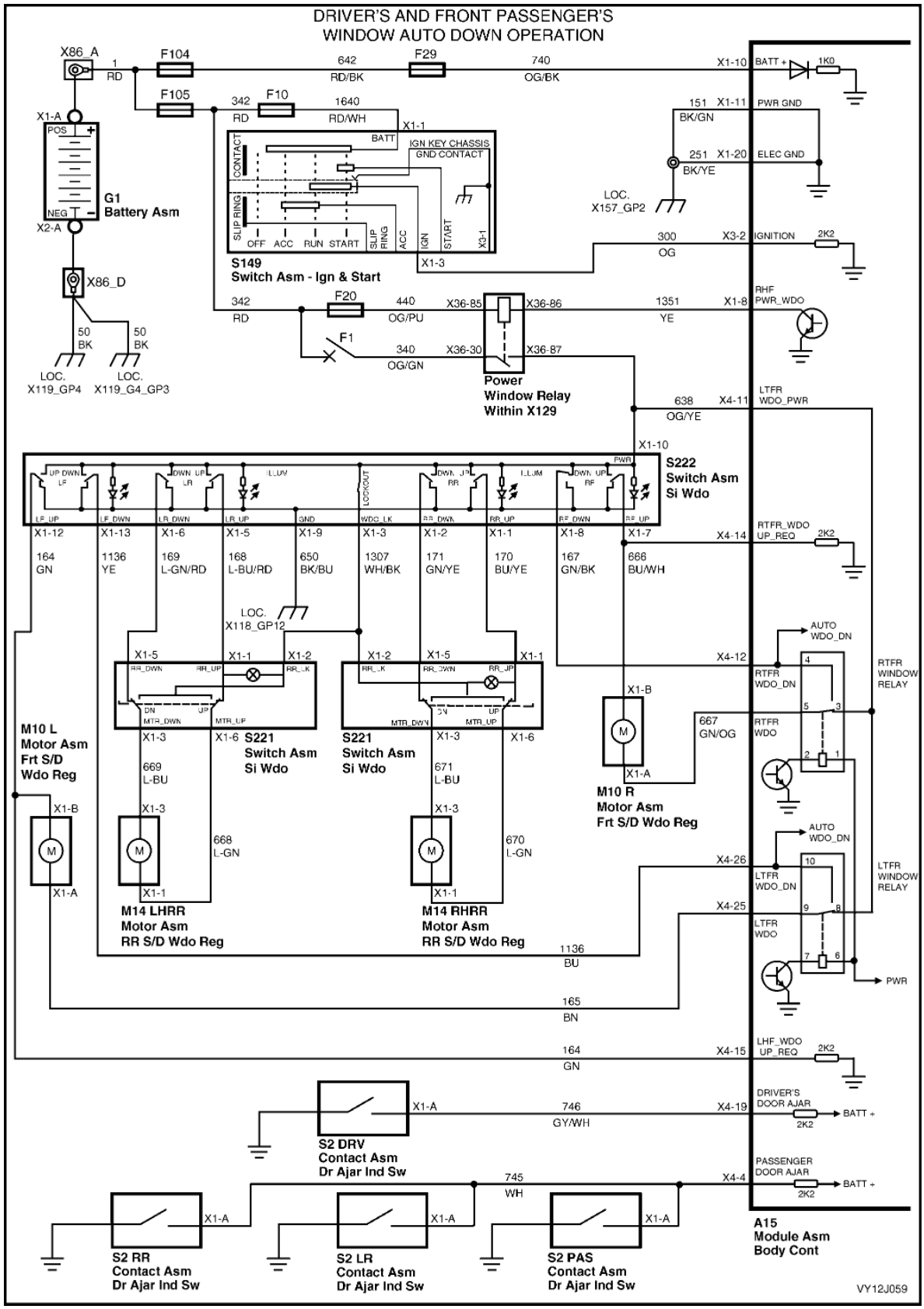

Figure 12J-243

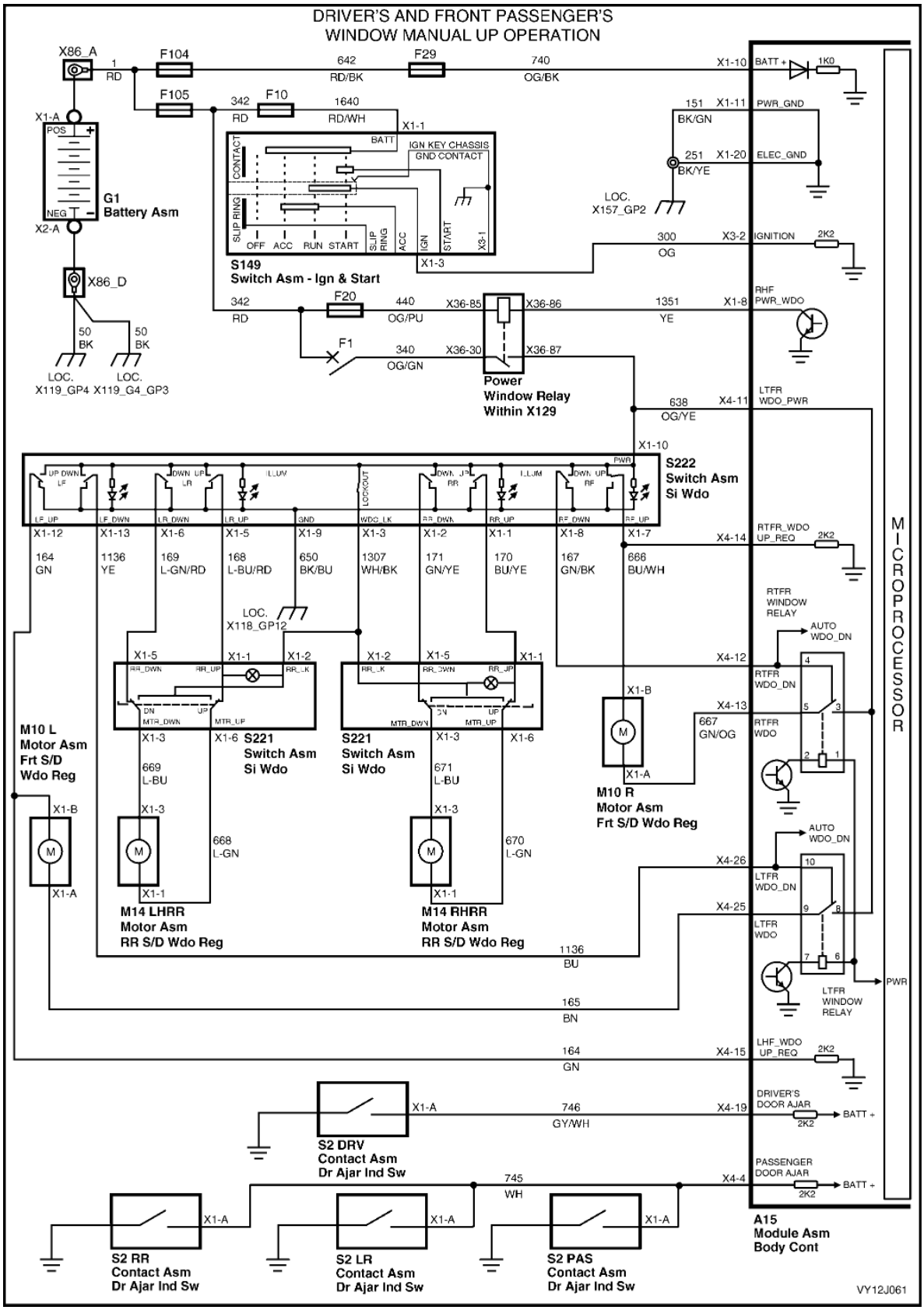

Figure 12J-244

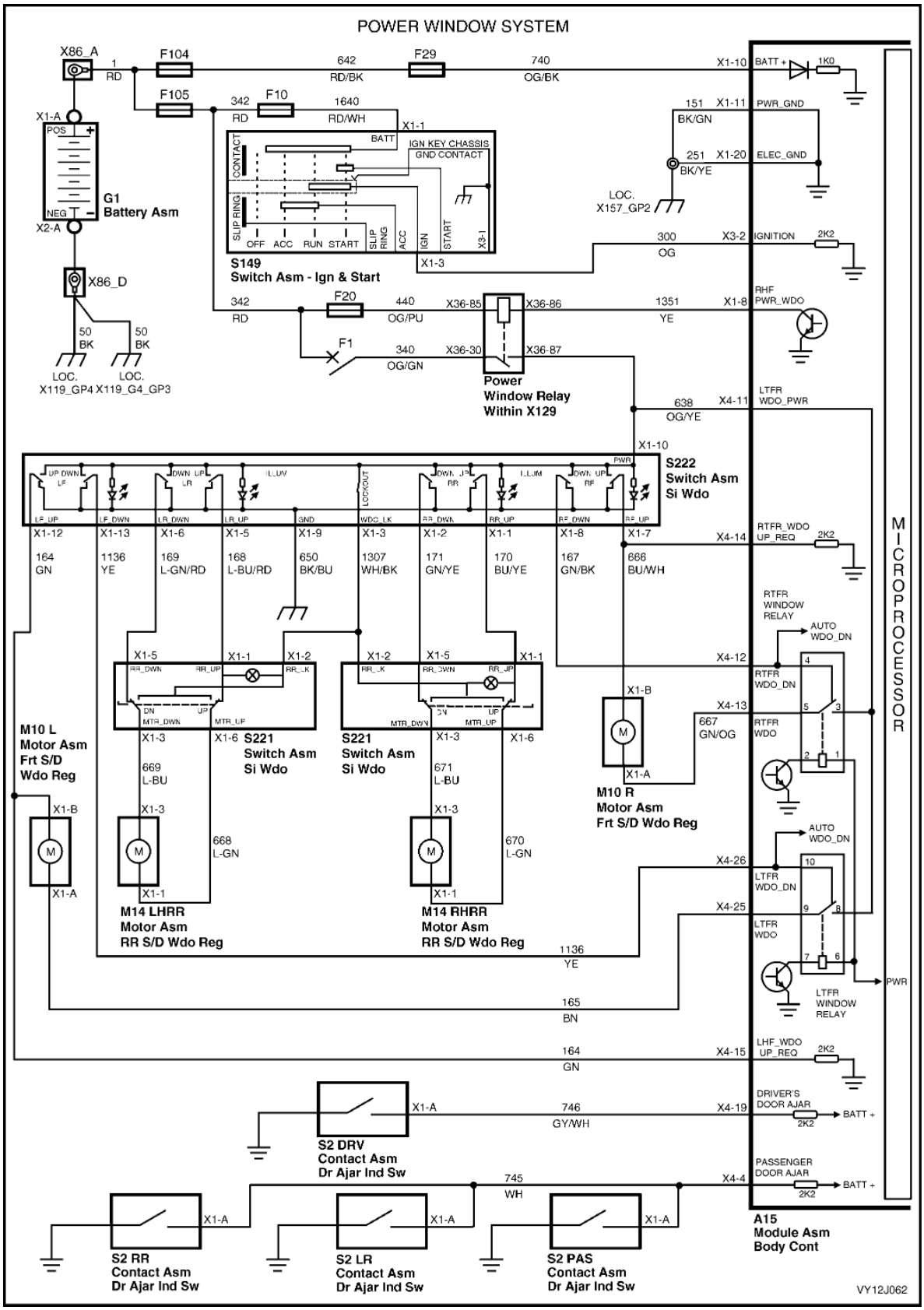

Figure 12J-245

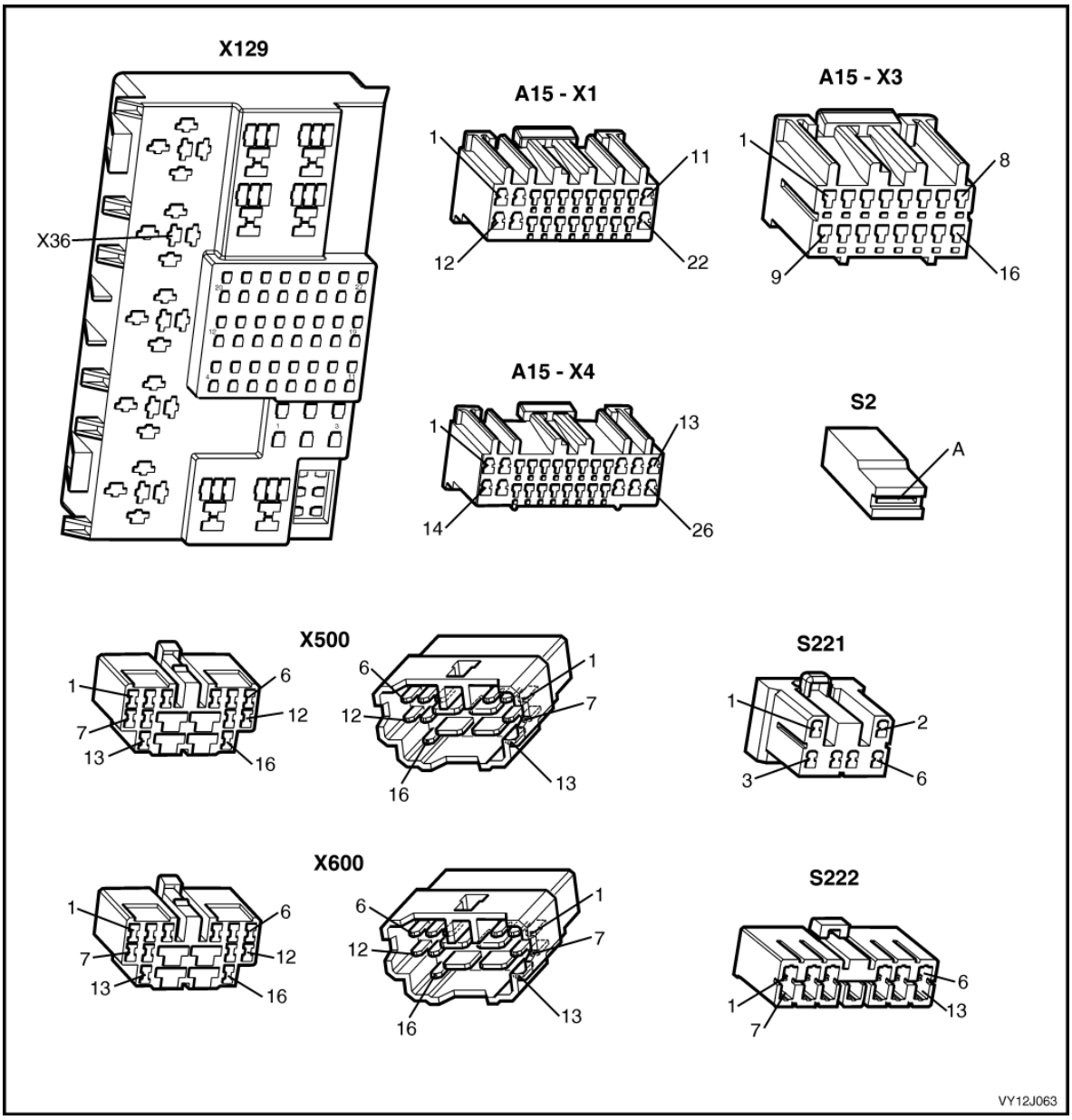

Figure 12J-246

POWER WINDOW SYSTEM DIAGNOSTIC CHART

NOTE: To access the internal components of the door assemblies, refer to **Section 1A5**.

Test description

The numbered description below refers to the selected step in the following diagnostic chart.

39. Checks for the presence of a battery voltage signal (false signal).

STEP	ACTION	VALUE	YES	NO
1	Are all power windows free from mechanical faults such as a damaged window regulator or badly worn guide rubbers?		Go to Step 2.	Repair the power windows.
2	Are all door ajar switches and associated circuits functioning correctly?		Go to Step 3.	Go to 4.5, Part L, Door Ajar Switches.
3	1. Turn the ignition on. 2. Close the doors. 3. Operate the driver's window down button for 1 second. Does the window travel all the way down automatically?		Go to Step 4.	Go to Step 23.

STEP	ACTION	VALUE	YES	NO
4	1. With the ignition on and the doors closed, operate the driver's window up button. Does the window travel up while activating the button?		Go to Step 5.	Go to Step 37.
5	1. With the ignition on, operate the driver's window down button for 1 second. 2. As the window is travelling down automatically, operate the up button momentarily. Does the window stop?		Go to Step 6.	Go to Step 40.
6	1. Turn the ignition off. 2. With the doors closed, use the button on the remote coded key to lock the doors. Is the window system power supply interrupted? (The green indicator lamps in the front and rear window switches go out.)		Go to Step 7.	Go to Step 67.
7	1. Use the button on the remote coded key to unlock the doors. Is the window system power supply restored? (The green indicator lamps in the window switches turn on.)		Go to Step 8.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
8	1. With the doors closed, turn the ignition on then off. 2. Open the driver's door. Is the window system power supply interrupted after 45 seconds?		Go to Step 9.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
9	1. Close the doors. 2. Turn the ignition on then off. 3. Open any passenger door. Is the window system power supply interrupted after 45 seconds?		Go to Step 10.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
10	1. Turn the ignition on. 2. With the doors closed, operate the front passenger door window down button for 1 second. Does the window travel all the way down automatically?		Go to Step 11.	Go to Step 41.
11	1. With the ignition on, operate the front passenger window up button. Does the window travel up while the button is activated?		Go to Step 12.	Replace the centre console switch (S222). Refer to 1A3, 2.1 FLOOR CONSOLE COVER ASSEMBLY.
12	1. With the ignition on, operate the front passenger window down button for 1 second. 2. As the window is travelling down automatically, operate the up button momentarily. Does the window stop?		Go to Step 13.	Go to Step 48.
13	Do any rear door windows operate while the lockout switch is on (rear door window switched disabled)?		Go to Step 14.	Go to Step 15.
14	1. Turn the ignition on. 2. Ensure the power window override switch is off. 3. Back-probe the centre console power window switch connector terminal X1-3, circuit 1307 (White / Black wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Replace the centre console switch (S222). Refer to 1A3, 2.1 FLOOR CONSOLE COVER ASSEMBLY.	Check and repair circuit 1307 (White / Black wire) for short circuit to power supply.
15	1. Turn off the lockout switch (enable the rear door window switches). 2. With the ignition on, operate the centre console RHR window down button. Does the RHR window travel down while the button is activated?		Go to Step 16.	Go to Step 49.

STEP	ACTION	VALUE	YES	NO
16	1. With the ignition on and the lockout switch off, operate the RHR power window up button on the centre console power window switch. Does the RHR window travel up while the button is activated?		Go to Step 17.	Replace the centre console switch (S222). Refer to 1A3, 2.1 FLOOR CONSOLE COVER ASSEMBLY.
17	1. With the ignition on and the lockout switch off, operate the LHR power window down button on the centre console power window switch. Does the LHR window travel down while the button is activated?		Go to Step 18.	Go to Step 56.
18	1. With the ignition on, operate the LHR power window up button on the centre console power window switch. Does the LHR window travel up while the button is activated?		Go to Step 19.	Replace the centre console switch (S222). Refer to 1A3, 2.1 FLOOR CONSOLE COVER ASSEMBLY.
19	1. Turn off the power window override switch. (Enable the rear door window switches.) 2. With the ignition on, operate the window down button on the RHR door. Does the RHR window travel down while the button is activated?		Go to Step 20.	Go to Step 63.
20	1. With the power window override switch turned off and the ignition on, operate the window up button on the RHR door. Does the RHR window travel up while the button is activated?		Go to Step 21.	Replace the RHR power window switch. Refer to 2.5 POWER WINDOW DOOR SWITCHES in this Section.
21	1. With the power window override switch turned off and the ignition on, operate the window down button on the LHR door. Does the LHR window travel down while the button is activated?		Go to Step 22.	Go to Step 65.
22	1. With the power window override switch turned off and the ignition on, operate the window up button on the LHR door. Does the LHR window travel up while the button is activated?		System OK.	Replace LHR power window switch. Refer to 2.5 POWER WINDOW DOOR SWITCHES in this Section.
23	1. With the ignition on, press and hold the driver's window down button. Does the driver's window travel down?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 24.
24	With the ignition on, are the green indicator lamps illuminated in the centre console power window switch?		Go to Step 25.	Go to Step 31.
25	1. With the ignition on, back-probe centre console switch assembly connector terminal X1-8, circuit 167 (Green / Black wire) with a voltmeter to ground. 2. Operate the driver's window down button. Is the value as specified?	Battery voltage	Go to Step 26.	Replace the centre console switch (S222). Refer to 1A3, 2.1 FLOOR CONSOLE COVER ASSEMBLY.
26	1. Back-probe centre console switch assembly connector terminal X1-7, circuit 666 (Blue / White wire) with a voltmeter to ground. Is the value as specified?	Less than 1 volt	Go to Step 27.	Go to Step 32.

STEP	ACTION	VALUE	YES	NO
27	1. Back-probe BCM connector terminal X4-12, circuit 167 (Green / Black wire) with a voltmeter to ground. 2. Operate the driver's door window down button. Is the value as specified?	Battery voltage	Go to Step 28.	Repair faulty circuit 167.
28	1. Turn the ignition off. 2. Disconnect BCM connector X4. 3. Back-probe between BCM terminals X4-12 and X4-13 with an ohmmeter. Is the value as specified?	Less than 1 ohm	Install BCM connector X4 and go to Step 29.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
29	1. Back-probe the driver's door power window motor connector X1-A, circuit 667 (Green / Orange wire) with a voltmeter to ground. 2. Turn the ignition on. 3. Operate the driver's door window down button. Is the value as specified?	Battery voltage	Go to Step 30.	Repair faulty circuit 667.
30	1. Back-probe the driver's door power window motor connector X1-B, circuit 666 (Blue / White wire) with a voltmeter to ground. 2. With the ignition on, operate the driver's door window down button. Is the value as specified?	Less than 1 volt	Replace the driver's door power window motor (M10). Refer to Section 1A5, 2.9 FRONT DOOR WINDOW REGULATOR ASSEMBLY.	Repair faulty circuit 666.
31	1. With the ignition on, back-probe the centre console power window switch assembly connector terminal X1-10, circuit 638 (Orange / Yellow wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Go to Step 32.	Go to Step 33.
32	1. Turn the ignition off. 2. Back-probe the centre console power window switch assembly connector terminal X1-9, circuit 650 (Black / Blue wire) with an ohmmeter to ground. Is the value as specified?	Less than 1 ohm	Replace the centre console switch (S222). Refer to 1A3, 2.1 FLOOR CONSOLE COVER ASSEMBLY.	Repair open in circuit 650.
33	1. With the ignition on, back-probe power window relay terminal X36-87, circuit 638 (Orange / Yellow wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Repair faulty circuit 638.	Go to Step 34.
34	1. With the ignition on, back-probe power window relay terminal X36-85, circuit 440 (Orange / Purple wire) and terminal X36-30, circuit 340 (Orange / Green wire) with a voltmeter to ground. Are the values as specified?	Battery voltage	Go to Step 35.	Check and repair faulty circuit 440, 342, 340 fuse F20 and / or circuit breaker F1. (Check for excessive current if F1 is tripped.)
35	1. With the ignition on, back-probe power window relay terminal X36-86, circuit 1351 (Yellow wire) with a jumper lead to ground. Do the green front and rear window switch indicator lamps turn on?		Go to Step 36.	Replace the power window relay (R22 in X129).
36	1. Turn the ignition on. 2. Back-probe BCM connector terminal X1-8, circuit 1351 (Blue wire) with a jumper lead to ground. Do the green front and rear window switch indicator lamps turn on?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Repair faulty circuit 1351.

STEP	ACTION	VALUE	YES	NO
37	1. Back-probe the centre console power window switch connector terminal X1-7, circuit 666 (Blue / White wire) with a voltmeter to ground. 2. With the ignition on, operate the driver's window up button. Is the value as specified?	Battery voltage	Go to Step 38.	Replace the centre console switch (S222). Refer to 1A3, 2.1 FLOOR CONSOLE COVER ASSEMBLY.
38	1. With the ignition on, back-probe centre console power window switch connector terminal X1-8, circuit 667 (Green / Orange wire) with a voltmeter to ground. Is the value as specified?	Less than 1 volt	Go to Step 39.	Replace the centre console switch (S222). Refer to 1A3, 2.1 FLOOR CONSOLE COVER ASSEMBLY.
39	1. Back-probe BCM connector terminal X4-13, circuit 667 (Green / Orange wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	False signal. Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Replace the centre console switch (S222). Refer to 1A3, 2.1 FLOOR CONSOLE COVER ASSEMBLY.
40	1. Back-probe BCM connector terminal X4-14, circuit 666 (Blue / White wire) with a voltmeter to ground. 2. With the doors closed and the ignition on, operate the driver's window up button. Is the value as specified?	Battery voltage	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Repair faulty circuit 666.
41	1. With the ignition on, press and hold the front passenger window down button. Does the front passenger window travel down?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 42.
42	With the ignition on, are the green indicator lamps illuminated in the centre console power window switch?		Go to Step 43.	Go to Step 31.
43	1. Back-probe centre console switch assembly connector terminal X1-13, circuit 1136 (Yellow wire) with a voltmeter to ground. 2. Operate the front passenger window down button. Is the value as specified?	Battery voltage	Go to Step 44.	Replace the centre console switch (S222). Refer to 1A3, 2.1 FLOOR CONSOLE COVER ASSEMBLY.
44	1. Back-probe centre console switch assembly connector terminal X1-12, circuit 164 (Green wire) with a voltmeter to ground. 2. Operate the front passenger window down button. Is the value as specified?	Less than 1 volt	Go to Step 45.	Replace the centre console switch (S222). Refer to 1A3, 2.1 FLOOR CONSOLE COVER ASSEMBLY.
45	1. Turn the ignition off. 2. Disconnect BCM connector X4. 3. Back-probe between BCM terminals X4-25 and X4-26 with an ohmmeter. Is the value as specified?	Less than 1 ohm	Install BCM connector X4 and go to Step 46.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
46	1. Back-probe the front passenger window motor connector terminal X1-A, circuit 165 (Brown wire) with a voltmeter to ground. 2. With the ignition on, operate the front passenger window down button. Is the value as specified?	Battery voltage	Go to Step 47.	Repair faulty circuit 165.

STEP	ACTION	VALUE	YES	NO
47	1. With the window switch in the rest position, back-probe the front passenger window motor connector terminal X1-B, circuit 164 (Green wire) with a voltmeter to ground. Is the value as specified?	Less than 1 volt	Replace the LHF door power window motor (M10). Refer to Section 1A5, 2.9 FRONT DOOR WINDOW REGULATOR ASSEMBLY.	Repair faulty circuit 164.
48	1. Back-probe BCM connector terminal X4-15, circuit 164 (Green wire) with a voltmeter to ground. 2. With the ignition on, operate the front passenger window down button. Is the value as specified?	Battery voltage	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Repair faulty circuit 164.
49	1. Back-probe the centre console switch connector terminal X1-2, circuit 171 (Green / Yellow wire) with a voltmeter to ground. 2. With the ignition on, operate the RHR power window down button on the centre console switch. Is the value as specified?	Battery voltage	Go to Step 50.	Replace the centre console switch (S222). Refer to 1A3, 2.1 FLOOR CONSOLE COVER ASSEMBLY.
50	1. Back-probe RHR door power window switch connector S221, terminal X1-5, circuit 171 (Green / Yellow wire) with a voltmeter to ground. 2. With the ignition on, operate the RHR power window down button on the centre console switch. Is the value as specified?	Battery voltage	Go to Step 51.	Repair faulty circuit 171.
51	1. Back-probe the RHR door power window switch connector terminal X1-3, circuit 671 (Light-blue wire) with a voltmeter to ground. 2. With the ignition on, operate the RHR window down button on the centre console switch. Is the value as specified?	Battery voltage	Go to Step 52.	Replace the RHR power window switch. Refer to 2.5 POWER WINDOW DOOR SWITCHES in this Section.
52	1. Back-probe the centre console switch connector terminal X1-1, circuit 170 (Blue / Yellow wire) with an ohmmeter to ground. Is the value as specified?	Less than 1 ohm	Go to Step 53.	Replace the centre console switch (S222). Refer to 1A3, 2.1 FLOOR CONSOLE COVER ASSEMBLY.
53	1. Back-probe RHR door power window switch connector terminal X1-1, circuit 170 (Blue / Yellow wire) with an ohmmeter to ground. Is the value as specified?	Less than 1 ohm	Go to Step 54.	Repair faulty circuit 170.
54	1. Back-probe the RHR door power window switch connector terminal X1-6, circuit 670 (Light-green wire) with an ohmmeter to ground. Is the value as specified?	Less than 1 ohm	Go to Step 55.	Replace the RHR power window switch. Refer to 2.5 POWER WINDOW DOOR SWITCHES in this Section.
55	1. Check the integrity of circuit 670 (Light-green wire). Is the circuit OK?		Replace the RHR door power window motor (M14). Refer to Section 1A5, 3.13 REAR DOOR WINDOW REGULATOR ASSEMBLY.	Repair faulty circuit 670.

STEP	ACTION	VALUE	YES	NO
56	1. Back-probe the centre console power window switch connector terminal X1-6, circuit 169, (Light-green / Red wire) with a voltmeter to ground. 2. With the ignition on, operate the LHR window down button on the centre console power window switch. Is the value as specified?	Battery voltage	Go to Step 57.	Replace the centre console switch (S222). Refer to 1A3, 2.1 FLOOR CONSOLE COVER ASSEMBLY.
57	1. Back-probe the LHR door power window switch connector terminal X1-5, circuit 169 (Light-green / Red wire) with a voltmeter to ground. 2. With the ignition on, operate the LHR window down button on the centre console power window switch. Is the value as specified?	Battery voltage	Go to Step 58.	Repair faulty circuit 169.
58	1. Back-probe the LHR door power window switch connector terminal X1-3, circuit 669 (Light-blue wire) with a voltmeter to ground. 2. With the ignition on, operate the LHR window down button on the centre console power window switch. Is the value as specified?	Battery voltage	Go to Step 59.	Replace LHR power window switch. Refer to 2.5 POWER WINDOW DOOR SWITCHES in this Section.
59	1. Back-probe the centre console power window switch connector terminal X1-5, circuit 168 (Light-blue / Red wire) with an ohmmeter to ground. Is the value as specified?	Less than 1 ohm	Go to Step 60.	Replace the centre console switch (S222). Refer to 1A3, 2.1 FLOOR CONSOLE COVER ASSEMBLY.
60	1. Back-probe the LHR door power window switch connector terminal X1-1, circuit 168 (Light-blue / Red wire) with an ohmmeter to ground. Is the value as specified?	Less than 1 ohm	Go to Step 61.	Repair faulty circuit 168.
61	1. Back-probe the LHR door power window switch connector terminal X1-6, circuit 668 (Light-green wire) with an ohmmeter to ground. Is the value as specified?	Less than 1 ohm	Go to Step 62.	Replace LHR power window switch. Refer to 2.5 POWER WINDOW DOOR SWITCHES in this Section.
62	1. Check the integrity of circuit 668 (Light-green wire). Is the circuit OK?		Replace the LHR door power window motor (M14). Refer to Section 1A5, 3.13 REAR DOOR WINDOW REGULATOR ASSEMBLY.	Repair faulty circuit 668.
63	With the ignition on, is the green indicator lamp illuminated in the RHR door power window switch?		Replace RHR power window switch. Refer to 2.5 POWER WINDOW DOOR SWITCHES in this Section.	Go to Step 64.
64	1. With the ignition on, back-probe the RHR power window door switch connector terminal X1-2, circuit 1307 (White / Black wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Replace RHR power window switch. Refer to 2.5 POWER WINDOW DOOR SWITCHES in this Section.	Repair open in circuit 1307

STEP	ACTION	VALUE	YES	NO
65	With the ignition on, is the green indicator lamp illuminated on the LHR door power window switch?		Replace LHR power window switch. Refer to 2.5 POWER WINDOW DOOR SWITCHES in this Section.	Go to Step 66.
66	1. With the ignition on, back-probe the LHR power window door switch connector terminal X1-2, circuit 1307 (White / Black wire) with a voltmeter to ground. Is the value as specified?		Replace LHR power window switch. Refer to 2.5 POWER WINDOW DOOR SWITCHES in this Section.	Repair open in circuit 1307.
67	1. Check the integrity of circuit 1351 (Yellow wire) especially for short circuit to ground. Is the circuit OK?		Go to Step 68.	Repair faulty circuit 1351.
68	1. Check the integrity of circuit 638 (Orange / Yellow wire) especially for short circuit to voltage supply. Is the circuit OK?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Repair faulty circuit 638.
WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETE, VERIFY CORRECT OPERATION				

4.10 ENGINE COOLING FAN LOW-SPEED CONTROL

CIRCUIT DESCRIPTION

The cooling fan low-speed operates when the engine cooling fan low-speed micro-relay (in the engine compartment relay housing, labelled COOL FAN RELAY 1) is energised. The BCM energises the relay in response to a request from the PCM. The PCM requests low-speed fan enable (and disable) using serial data communication to the BCM on circuit 800 (Red / Black wire).

The PCM determines when to enable the low-speed fan relay based on inputs from the A/C request signal, the Cooling Temperature Sensor (CTS) and the Vehicle Speed Sensor (VSS).

When the ignition switch is turned from on to off and the engine coolant temperature is above 117°C (V6 or V6 supercharged engine) or above 113°C (GEN III V8 engine), the BCM continues to energise the relay for 4 minutes.

NOTE: On vehicles with a GEN III V8 engine, the low-speed cooling fan run-on time has a minimum default value of 30 seconds.

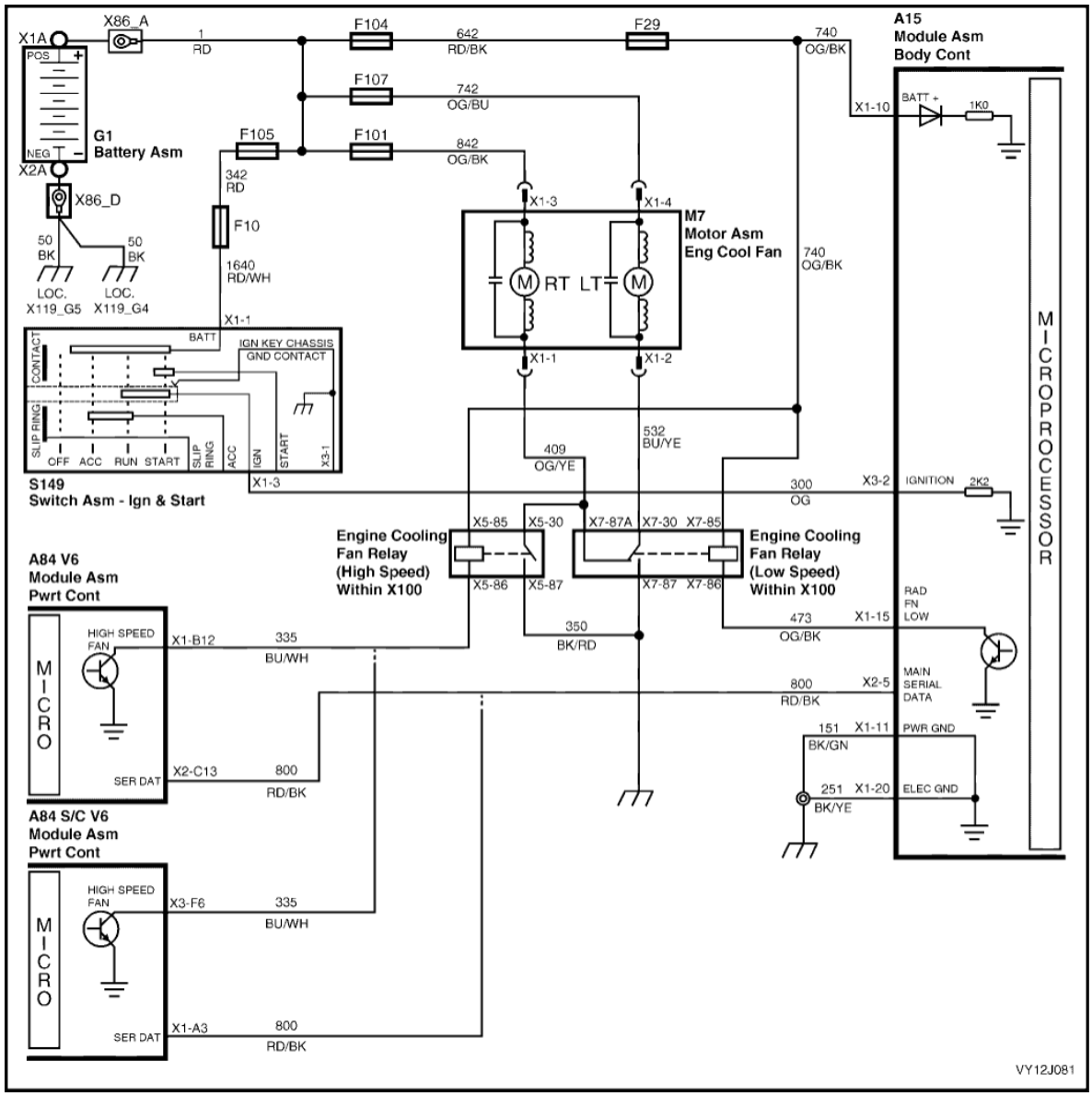

Figure 12J-247

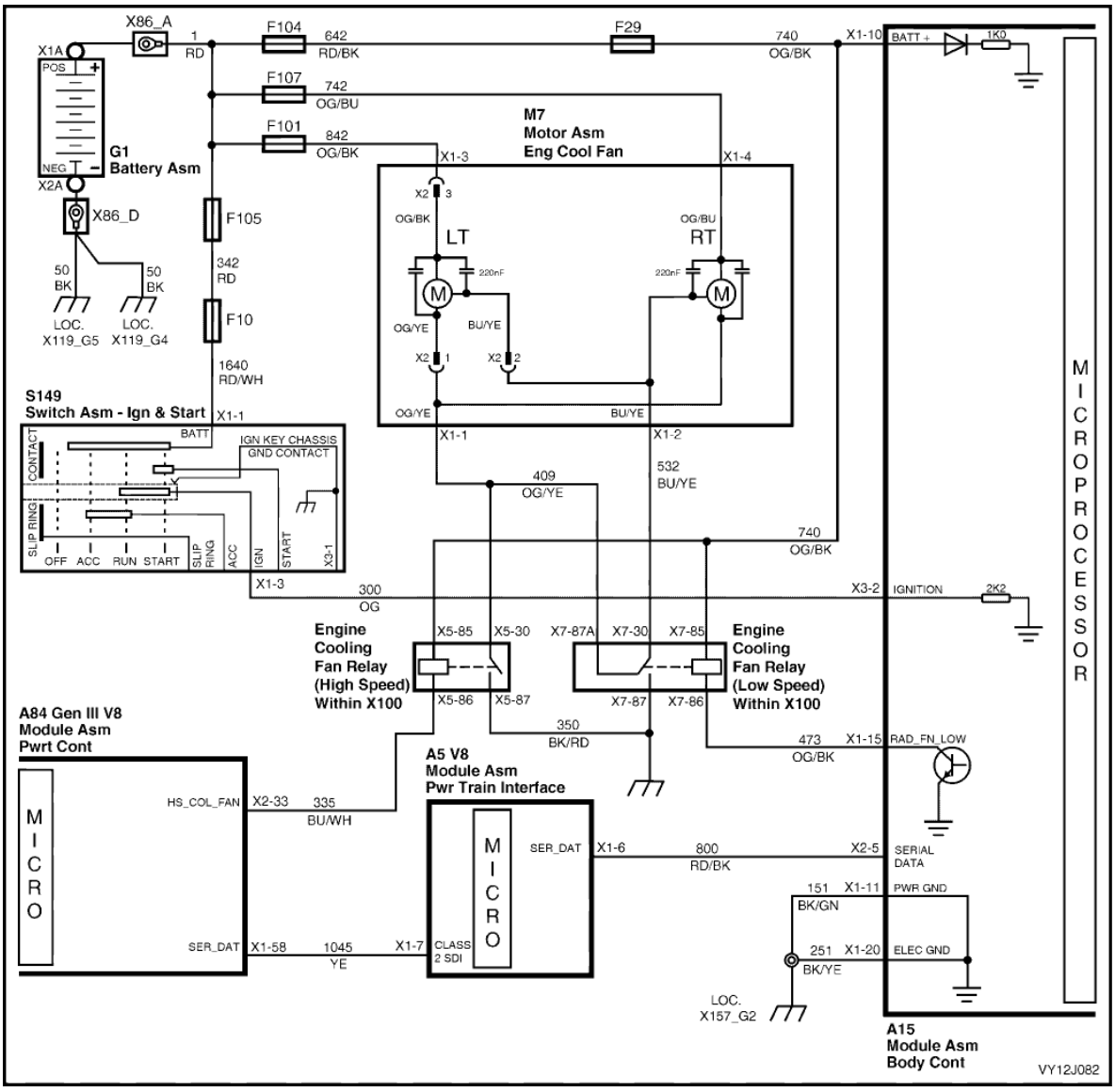

Figure 12J-248

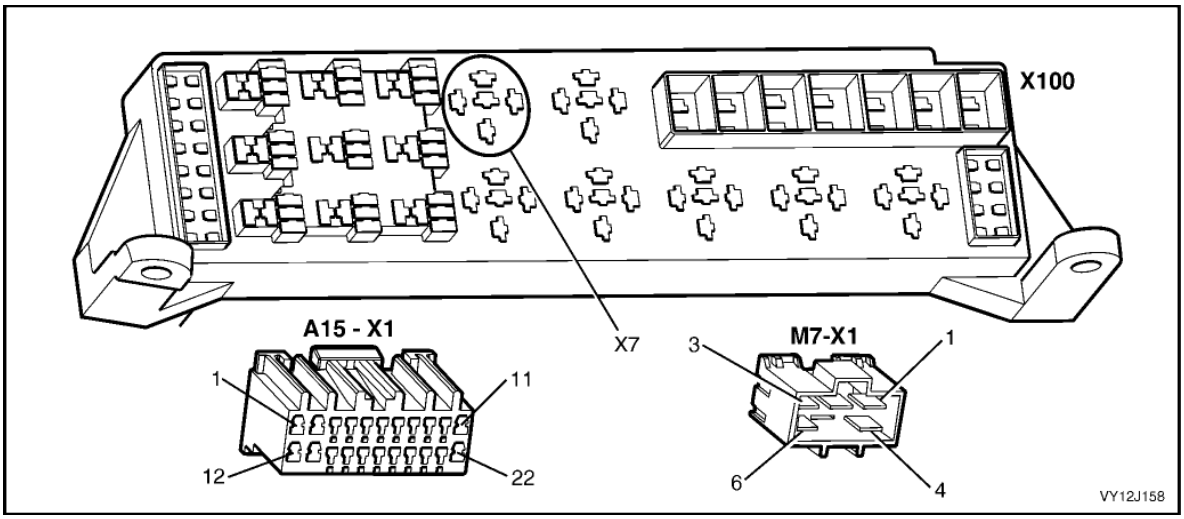

Figure 12J-249

ENGINE COOLING FAN LOW-SPEED CONTROL DIAGNOSTIC CHART

STEP	ACTION	VALUE	YES	NO
1	Is the low-speed fan running continuously?		Go to Step 13.	Go to Step 2.
2	1. Connect TECH 2 to the DLC. 2. Select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Miscellaneous Tests / Low Speed Cooling Fan. 3. Perform the test as instructed by TECH 2 and turn on the low-speed fan. Does the fan run?		Go to Step 3.	Go to Step 5.
3	1. With TECH 2 connected and Low Speed Cooling Fan selected, Perform the test as instructed by TECH 2 and turn off the low-speed fan. Does the fan stop?		Go to Step 4.	Go to Step 10.
4	1. With TECH 2 connected, exit to the Body Control Module menu and select Data Display / Serial Data Inputs / Low Speed Fan Request. 2. Start and run the engine. 3. Use TECH 2 to turn the fan on and off. Does TECH 2 display On (fan running) and Off (fan stopped)?		System OK.	PCM / PIM fault. Go to: • (V6) Section 6C1 • (V6 S/C) Section 6C2 • (GEN III V8) Section 6C3.
5	1. Back-probe the engine cooling fan motor connector terminal X1-4, circuit 742 (Orange / Blue wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Go to Step 6.	Check and repair fuse F107 and power circuit 742.
6	1. Back-probe BCM connector terminal X1-15, circuit 335 (Orange / Black wire) with a jumper lead to ground. Does the low-speed fan turn on?	0 volt	Go to Step 7.	Go to Step 8.
7	1. With TECH 2 connected, exit to the Body Control Module menu and select Data Display / Serial Data Inputs / Low Speed Fan Request. Does TECH 2 display On (fan running) and Off (fan stopped)?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	PCM / PIM fault. Go to: • (V6) Section 6C1 • (V6 S/C) Section 6C2 (GEN III V8) Section 6C3.
8	1. Back-probe COOL FAN RELAY 1 connector (X100 X7) terminal X7-86, circuit 335 (Orange / Black wire) with a jumper lead to ground. Does the low-speed fan turn on?	0 volt	Check and repair open in circuit 473.	Go to Step 9.
9	1. Back-probe COOL FAN RELAY 1 connector terminal X7-85, circuit 740 (Orange / Black wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Go to Step 10.	Check and repair open in circuit 740.
10	1. Back-probe COOL FAN RELAY 1 connector terminal X7-87, circuit 350 (Black / Red wire) with an ohmmeter to ground. Is the value as specified?	Less than 1 ohm	Go to Step 11.	Check and repair open in circuit 350.
11	1. Back-probe COOL FAN RELAY 1 connector terminal X7-30, circuit 532 (Blue / Yellow wire) with a jumper lead to ground. Does the low-speed fan turn on?		Replace the Engine Cooling Fan Relay 1.	Go to Step 12.

STEP	ACTION	VALUE	YES	NO
12	1. Back-probe the engine cooling fan motor connector terminal X1-2, circuit 532 (Blue / Yellow wire) with a jumper lead to ground. Does the low-speed fan turn on?		Repair faulty circuit 532.	Check / replace the Low Speed Cooling Fan (M7). Refer to Section 6B1, ENGINE COOLING – V6, 6B2, ENGINE COOLING – V6 S/C or 6B3, ENGINE COOLING – GENIII V8.
13	1. Connect TECH 2 to the DLC. 2. Select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Data Display / Inputs and Outputs / Low Speed Cooling Fan. Does TECH 2 display On?		Go to Step 14.	Go to Step 16.
14	1. With the TECH 2 connected, exit to the Data Display menu and select Serial Data Inputs / Low Speed Fan Request. Does TECH 2 display Off?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 15.
15	1. Check the integrity of circuit 800 (Red / Black wire). Is the circuit OK?		PCM / PIM fault. Go to: • (V6) Section 6C1 • (V6 S/C) Section 6C2 • (GEN III V8) Section 6C3.	Repair faulty circuit 800.
16	1. Check circuit 473 (Orange / Black wire) for a short to ground. Is the circuit OK?		Go to Step 17.	Repair faulty circuit 473.
17	1. Disconnect Low Speed Cooling Fan relay (R7). Does the cooling fan stop?		Replace the Low Speed Cooling Fan relay.	Install the relay and go to Step 18.
18	1. Check circuit 532 (Blue / Yellow wire) for a short to ground. Is the circuit OK?		Check / replace the Low Speed Cooling Fan (M7). Refer to Section 6B1, ENGINE COOLING – V6, 6B2, ENGINE COOLING – V6 S/C or 6B3, ENGINE COOLING – GENIII V8.	Repair faulty circuit 532.
WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETE, VERIFY CORRECT OPERATION				

4.11 WIPER SYSTEM

CIRCUIT DESCRIPTION

This system controls the front intermittent wiper and the rear wiper function. The front wiper dwell on level 2 and level 3 model vehicles is dependent on the vehicle road speed as well as the position of the adjustable potentiometer (located on the wiper control stalk). Within limits, the faster the vehicle speed, the shorter the dwell time.

On Low and Mid series BCM, the customer can choose from fixed or speed dependent dwell when in the intermittent wiper position. This can be performed through the vehicle customisation menu or TECH 2. In the event of speed data loss, the system will revert back to the fixed 8-second dwell irrespective of vehicle speed. The OE default is speed sensitive dwell.

The operation of the intermittent rear wiper is independent of the operation of the front intermittent wiper except when the vehicle is stationary with the ignition switch in the Accessories position. In this situation, the front and rear intermittent wipers are synchronised. Due to a different wipe action between the front and rear wipers, the rear wiper starts 0.25 second before the front wiper.

The rear wiper has an optional function of wiping continuously when the vehicle is in reverse gear with the rear wiper switch turned on. This option is set using communication between the PCM and BCM via the serial data bus, circuit 800.

The front and rear wipers use a 'wipe after wash' function. When a washer pump switch is pressed for more than 0.5 second, the associated wipers sweep continuously at low speed until the washer pump has been deactivated. The wiper is then energised for a calculated time period to enable the wiper sweeps to be completed, as follows:

- One additional sweep if the washer switch is pressed for less than 1 second.
- Two additional sweeps if the washer switch is pressed for less than 1.5 seconds.
- Three additional sweeps if the washer switch is pressed for more than 1.5 seconds.

To perform the correct number of additional sweeps, the wiper motor park switch is monitored by the BCM via circuit 196. This ensures that the wiper power is supplied to the park switch at the optimum time.

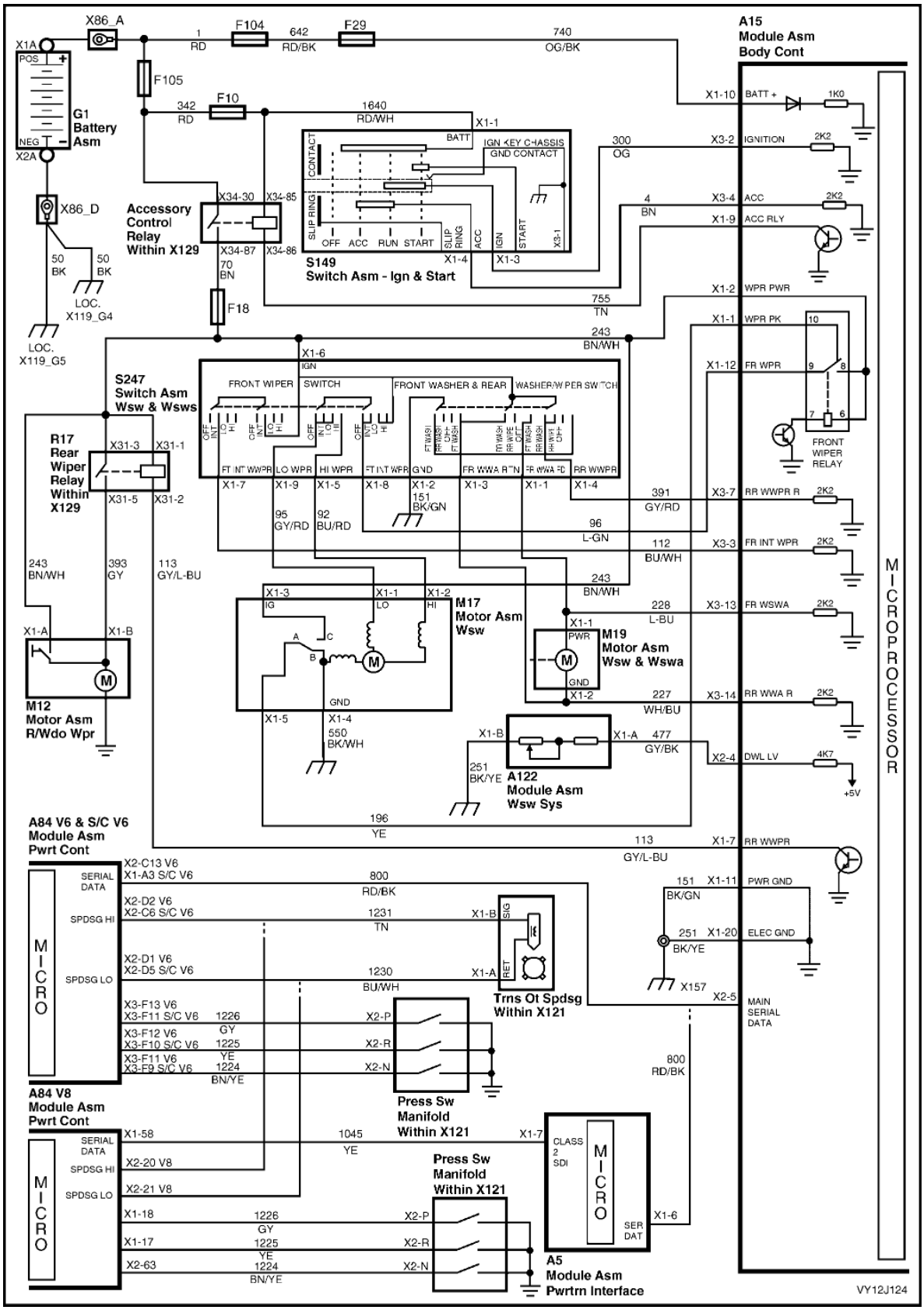

Figure 12J-250

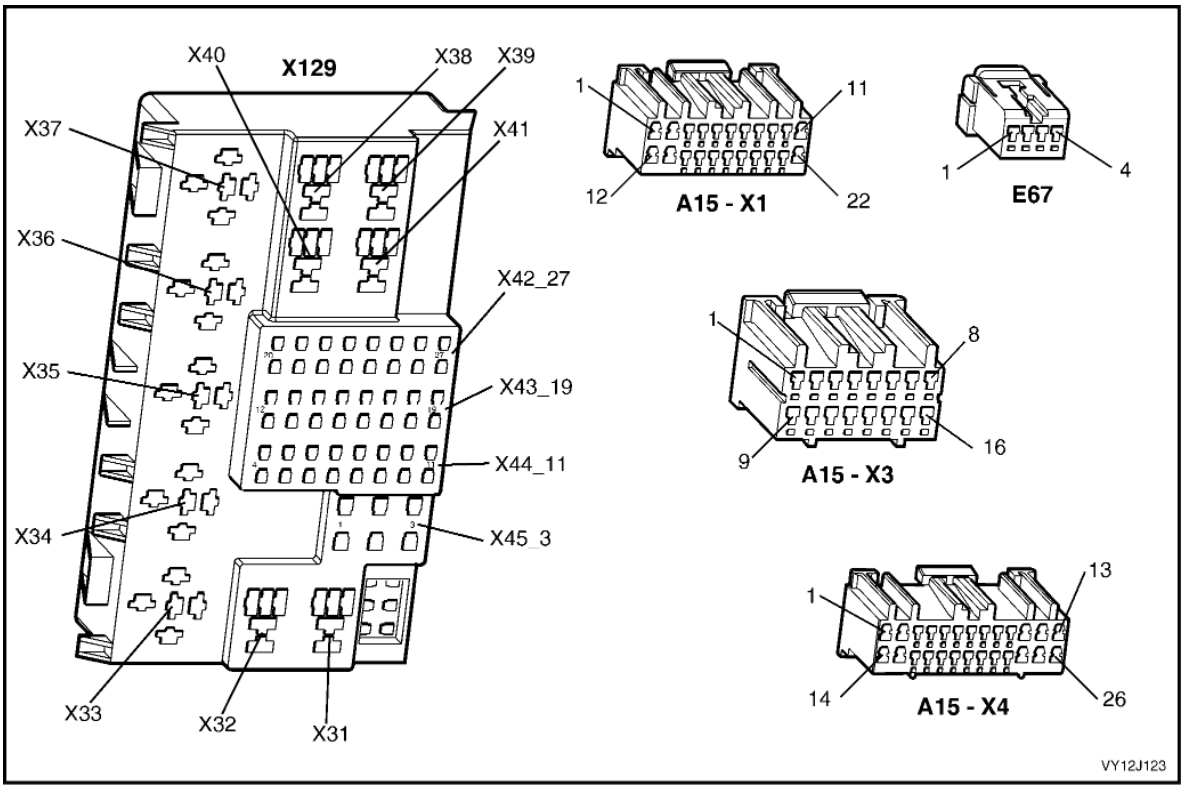

Figure 12J-251

WIPER SYSTEM DIAGNOSTIC CHART

STEP	ACTION	VALUE	YES	NO
1	Is the Accessory Power Control system is functioning correctly?		Go to Step 2.	Go to 4.4 ACCESSORY POWER CONTROL in this Section.
2	1. Connect TECH 2 to the DLC. 2. Select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Miscellaneous Tests / Wipers / Front Wipers. 3. Turn the ignition switch to Accessories. 4. Perform the test as instructed by TECH 2. Do the front wipers sweep continuously?		Go to Step 3.	Go to Step16.
3	1. With the ignition switch turned to Accessories, turn the wiper / washer switch to the intermittent position. Do the front wipers sweep?		Go to Step 4.	Go to Step 16.
4	1. Adjust the wiper dwell control to the fastest setting. Are the wiper sweeps intermittent (not continuous)?		Go to Step 5.	Go to Step 26.
5	1. Turn the ignition on. 2. Turn the wiper switch to the intermittent position and vary the wiper dwell control setting from minimum to maximum. Are the values as specified?	Minimum dwell time: 3 seconds. Maximum dwell time: 24 seconds	Go to Step 6.	Go to Step 49.
6	1. Road test the vehicle with the wiper switch set to the intermittent position. 2. Do not adjust the wiper dwell control. Does the wiper dwell vary as the vehicle speed is varied?		Go to Step 7.	Go to Step 53.
7	1. Turn the ignition switch to Accessories. 2. Operate the front washer switch for 2 seconds. Do the front wipers commence continuous operation?		Go to Step 8.	Go to Step 30.

STEP	ACTION	VALUE	YES	NO
8	1. With the ignition switch turned to Accessories, again operate the front washer switch (for 2 seconds). 2. Release the switch and count the number of wiper sweeps. Did the front wipers continue for three additional sweeps after the washer switch was released?		For sedan, system OK. For wagon, go to Step 9.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
9	1. Turn the ignition switch to Accessories. 2. Turn on the rear wiper. Does the rear wiper sweep?		Go to Step 10.	Go to Step 32.
10	In Step 9, were the rear wiper sweeps intermittent (not continuous)?		Go to Step 11.	Go to Step 42.
11	1. With the ignition turned to Accessories, again operate the rear wiper. 2. Time the period between each sweep. Is the value as specified?	Approx. 8 seconds	Go to Step 12.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
12	1. With the ignition turned to Accessories, operate the rear washer switch for 2 seconds. Does the rear washer commence operation?		Go to Step 13.	Go to Step 45.
13	1. With the ignition turned to Accessories, operate the rear washer switch for 2 seconds. Does the rear wiper commence continuous operation?		Go to Step 14.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
14	1. With the ignition turned to Accessories, turn the wiper / washer switch to the intermittent position and turn on the rear wiper. 2. Keep the vehicle stationary. Are the front and rear wipers synchronised?		Go to Step 15.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
15	1. With TECH 2 connected, exit to the Body Control Module menu and select Program / Options / Rear Wiper Continuous in Reverse. 2. Ensure the Rear Wiper Continuous in Reverse option is enabled. 3. Turn the ignition on. 4. Turn the front wipers on to the intermittent position. 5. Select reverse gear. Does the rear wiper operate continuously when reverse gear is selected?		System OK.	For a V6 engine, go to Step 47. For a GEN III V8 engine, go to Step 48.
16	1. With TECH 2 connected, exit to the Body Control Module menu and select Data Display / Wipers / Front Wiper Intermittent Switch. 2. Turn the ignition switch to Accessories. 3. Turn the wiper / washer switch to the intermittent position. Does TECH 2 display Front Wiper Intermittent On?		Go to Step 17.	Go to Step 23.
17	1. Turn the ignition switch to Accessories. 2. Back-probe BCM connector terminal X1-2, circuit 243 (Brown / White wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Go to Step 18.	Check and repair circuit 243 and / or fuse F18.
18	1. Back-probe BCM connector terminal X1-12, circuit 96 (Light-green wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Go to Step 19.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
19	1. Back-probe wiper / washer switch (S247) connector terminal X1-8, circuit 96 (Light-green wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Go to Step 20.	Repair faulty circuit 96.

STEP	ACTION	VALUE	YES	NO
20	1. Back-probe wiper / washer switch (S247) connector terminal X1-9, circuit 95 (Grey / Red wire) with a voltmeter to ground. 2. Turn the ignition on. 3. With TECH 2 connected, exit to the Body Control Module menu and select Miscellaneous Tests / Wipers / Front Wipers and Perform the test as instructed by TECH 2. Is the value as specified?	Battery voltage	Go to Step 21.	Replace wiper / washer switch assembly.
21	1. With TECH 2 connected and the ignition switch in the Accessories position, back-probe wiper motor (M17) connector terminal X1-1, circuit 95 (Grey / Red wire) with a voltmeter to ground. 2. Repeat the TECH 2 Front Wiper test as in Step 18. Is the value as specified?	Battery voltage	Go to Step 22.	Repair faulty circuit 95.
22	1. Back-probe front wiper motor connector terminal X1-4, circuit 550 (Black / White wire) with an ohmmeter to ground. Is the value as specified?	Less than 1 ohm	Replace front wiper motor assembly. Refer to Section 12N, WIPERS / WASHERS & HORN.	Repair faulty circuit 550.
23	1. With the ignition switch turned to Accessories, back-probe BCM connector terminal X3-3, circuit 112 (Blue / White wire) with a voltmeter to ground. 2. Turn the wiper / washer switch to the intermittent position. Is the value as specified?	Battery voltage	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 24.
24	1. With the ignition switch turned to Accessories, back-probe wiper / washer switch connector terminal X1-7, circuit 112 (Blue / White wire) with a voltmeter to ground. 2. Turn the wiper / washer switch to the intermittent position. Is the value as specified?	Battery voltage	Repair faulty circuit 112.	Go to Step 25.
25	1. With the ignition switch turned to Accessories, back-probe wiper / washer switch connector terminal X1-6, circuit 243 (Brown / White wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Replace wiper / washer switch. Refer to Section 12N, WIPERS / WASHERS & HORN.	Check and repair circuit 243 and / or fuse F18.
26	1. With TECH 2 connected and the ignition switch turned to Accessories, exit to the Body Control Module menu and select Data Display / Wipers / Front Wiper Park Switch. 2. Turn the wiper / washer switch to the intermittent position. Does TECH 2 display Wiper Park Switch Off (wiper parked) and Wiper Park Switch On (wiper operating)?		Go to Step 27.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
27	1. With the ignition switch turned to Accessories, turn the wiper / washer switch to the intermittent position. 2. Back-probe BCM connector terminal X1-1, circuit 196 (Yellow wire) with a voltmeter to ground. Are the values as specified?	Operating = Battery voltage Park = 0 volt	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 28.
28	1. With the ignition switch turned to Accessories, back-probe the wiper motor connector terminal X1-3, circuit 243 (Brown / White wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Go to Step 29.	Repair faulty circuit 243.

STEP	ACTION	VALUE	YES	NO
29	1. With the ignition switch turned to Accessories, turn the wiper / washer switch to the intermittent position. 2. Back-probe the wiper motor connector terminal X1-5, circuit 196 (Yellow wire) with a voltmeter to ground. Are the values as specified?	Operating = Battery voltage Park = 0 volt	Repair faulty circuit 196.	Replace front wiper motor. Refer to Section 12N, WIPERS / WASHERS & HORN.
30	1. With the ignition switch turned to Accessories, back-probe BCM connector terminal X3-13, circuit 228 (Light-blue wire) with a voltmeter to ground. 2. Operate the front washer switch. Is the value as specified?	Battery voltage	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 31.
31	1. Turn the ignition switch to Accessories. 2. Back-probe the wiper / washer switch (S247) connector terminal X1-1, circuit 228 (Light-blue wire) with a voltmeter to ground. 3. Operate the front washer switch. Is the value as specified?	Battery voltage	Repair faulty circuit 228.	Replace wiper / washer switch. Refer to Section 12N, WIPERS / WASHERS & HORN.
32	1. With TECH 2 connected and the ignition turned to Accessories, exit to the Body Control Module menu and select Miscellaneous Tests / Wipers / Rear Wiper. 2. Perform the test as instructed by TECH 2. Does the rear wiper operate?		Go to Step 33.	Go to Step 34.
33	1. With TECH 2 connected and the ignition turned to Accessories, exit to the Body Control Module menu and select Data Display / Wipers / Rear Wiper. 2. Turn on the rear wiper. Does TECH 2 display Rear Wiper Switch On?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 40.
34	1. With the ignition switch turned to Accessories, back-probe the rear wiper relay terminals X31-1 and X31-3, circuit 243 (Brown / White wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Go to Step 35.	Repair faulty circuit 243.
35	1. With the ignition switch turned to Accessories, back-probe the rear wiper relay terminal X31-2, circuit 113 (Grey / Light-blue wire) with a jumper lead to ground. Does the rear wiper operate?		Go to Step 39.	Go to Step 36.
36	1. With the ignition switch turned to Accessories and terminal X31-2 connected to ground via a jumper lead, back-probe the rear wiper relay terminal X31-5, circuit 393 (Grey wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Go to Step 37.	Replace rear wiper relay.
37	1. With the ignition switch turned to Accessories and terminal X31-2 connected to ground via a jumper lead, back-probe the rear wiper motor (M12) connector terminal X1-B, circuit 393 (Grey wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Go to Step 38.	Repair faulty circuit 393.
38	1. Check the rear wiper motor ground connection with an ohmmeter to ground. Is the value as specified?	Less than 1 ohm	Replace rear wiper motor. Refer to Section 12N, WIPERS / WASHERS & HORN.	Repair rear wiper motor ground connection.
39	1. Turn the ignition switch to Accessories. 2. Back-probe BCM connector terminal X1-7, circuit 113 (Grey / Light-blue wire) with a jumper lead to ground. Does the rear wiper operate?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Repair faulty circuit 113.

STEP	ACTION	VALUE	YES	NO
40	1. With the ignition switch turned to Accessories, back-probe BCM connector terminal X3-7, circuit 391 (Grey / Red wire) with a voltmeter to ground. 2. Turn on the rear wiper. Is the value as specified?	Battery voltage	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 41.
41	1. With the ignition switch turned to Accessories, back-probe the wiper / washer switch connector terminal X1-4, circuit 391 (Grey / Red wire) with a voltmeter to ground. 2. Turn on the rear wiper. Is the value as specified?	Battery voltage	Repair faulty circuit 391.	Replace wiper / washer switch. Refer to Section 12N, WIPERS / WASHERS & HORN.
42	1. Check the integrity of circuit 113 (Grey / Light-blue wire). Is the value as specified?	Less than 1 ohm	Go to Step 43.	Repair faulty circuit 113.
43	1. Replace the rear wiper relay with a known good relay. 2. Turn the ignition switch to Accessories. 3. Turn on the rear wiper. Does the rear wiper sweep only once (not continuous)?		Replace rear wiper relay.	Install the original relay and go to Step 44.
44	1. With TECH 2 connected, exit to the Body Control Module menu and select Data Display / Wipers / Rear Wiper Switch. 2. Turn off the rear wiper switch. Does TECH 2 display On?		For a V6 engine, go to Step 54. For a GEN III V8 engine, go to Step 55.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
45	1. Turn the ignition switch to Accessories. 2. Back-probe BCM connector terminal X3-14, circuit 227 (White / Blue wire) with a voltmeter to ground. 3. Operate the rear washer switch. Is the value as specified?	Battery voltage	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 46.
46	1. Turn the ignition switch to Accessories. 2. Back-probe wiper / washer switch connector terminal X1-3, circuit 227 (White / Blue wire) with a voltmeter to ground. 3. Operate the rear washer switch. Is the value as specified?	Battery voltage	Repair faulty circuit 227.	Replace wiper / washer switch. Refer to Section 12N, WIPERS / WASHERS & HORN.
47	1. With TECH 2 connected, exit from the Body menu and select Engine / V6 / Normal Mode / Commanded Gear. 2. Start the engine. 3. Put the vehicle in reverse gear. Does TECH 2 display –R–?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to the relevant PCM diagnostics in either Section 6C1, POWERTRAIN – V6 or Section 6C2 POWERTRAIN– V6 S/C.
48	1. With TECH 2 connected, exit to the Body menu and select Powertrain Interface Module / Normal Mode / Commanded Gear. 2. Start the engine. 3. Put the vehicle in reverse gear. Does TECH 2 display –R–?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to PCM diagnostics in Section 6C3, POWERTRAIN – GEN III V8.
49	1. Turn the ignition switch to Accessories. 2. With TECH 2 connected, exit to the Body Control Module menu and select Data Display / Wipers / Front Wiper Intermittent Switch. 3. Vary the wiper dwell control switch on wiper washer switch stalk from maximum to minimum dwell time. Is the value as specified?	Ranging between 5 volts and 0 volt	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 50.

STEP	ACTION	VALUE	YES	NO
50	1. Turn the ignition off. 2. Back-probe BCM connector terminal X2-4, circuit 477 (Grey / Black wire) with a voltmeter to ground. 3. Turn the ignition on. 4. Adjust the wiper dwell control from minimum to maximum. Is the value as specified?	Ranging between 5 volts and 0 volt	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 51.
51	1. Turn the ignition off. 2. Back-probe the dwell control (A122) connector terminal X1-A, circuit 477 (Grey / Black wire) with a voltmeter to ground. 3. Turn the ignition on. 4. Adjust the wiper dwell control from minimum to maximum. Is the value as specified?	Ranging between 5 volts and 0 volt	Repair faulty circuit 477.	Go to Step 52.
52	1. Back-probe the dwell control (A122) connector terminal X1-B, circuit 251 (Black / Yellow wire) with an ohmmeter to ground. Is the value as specified?	Less than 1 ohm	Replace the dwell control assembly (A122).	Repair faulty circuit 251.
53	1. With TECH 2 connected, exit to the Body Control Module menu and select Data Display / Serial Data Inputs / Vehicle Speed. 2. Road test the vehicle. Does TECH 2 indicate the correct road speed?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to the relevant PCM diagnostics in either Section 6C1, POWERTRAIN – V6, Section 6C2, POWERTRAIN– V6 S/C or Section 6C3, POWERTRAIN – GEN III V8.
54	1. Place the vehicle in neutral gear. 2. With TECH 2 connected, exit from the Body menu and select Engine / Normal Mode / Commanded Gear. Does TECH 2 display –R–?		Go to the relevant PCM diagnostics in either Section 6C1, POWERTRAIN – V6 or Section 6C2, POWERTRAIN– V6 S/C.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
55	1. Place the vehicle in neutral gear. 2. With TECH 2 connected, exit to the Body menu and select Powertrain Interface Module / Normal Mode / Commanded Gear. Does TECH 2 display –R–?		Go to Section 6C3, POWERTRAIN – GEN III V8.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETE, VERIFY CORRECT OPERATION				

4.12 DOME LAMP DELAY CONTROL

CIRCUIT DESCRIPTION

The interior lighting is controlled by the BCM or by the dome lamp switch incorporated in the overhead dome lamp and switch assembly. When controlled by the BCM, the dome lamp is switched to ground via two diodes which are internal to the switch assembly. Therefore, the dome lamp is brighter when turned on at the dome lamp and switch assembly (the reading lamp switches), which bypasses these diodes.

NOTE: For level 1 model vehicles, refer to Figure 12J-252. For level 2 and 3 model vehicles, refer to Figure 12J-254.

Lighting Activation

The interior lighting is activated when:

- any door is opened
- any door is unlocked with the remote coded key (night only)
- the ignition is switched from on to the Accessories position or off (provided the feature is enabled or the conditions are sufficiently dark)
- the dome lamp switch is operated.

The interior lighting (including the dome lamp) is activated when any door is open. After all the doors have been closed, the lighting remains activated for an additional 30 seconds at night only.

The BCM monitors the doors and the switch settings and controls the dome lamp accordingly.

If the interior lighting has been activated by a BCM control system action, the dome lamp switch turns the interior lighting off when it is switched from the Door to the Off position. Therefore, this switch can cancel any delay time and switch the lighting off while a door is open, except if the theft deterrent system has been triggered. In this case, even with the switch in the Off position, the dome lamp flashes.

With central door unlocking, the interior lighting is switched on for 30 seconds at night only. If the ignition is turned on during this period, the interior lighting is switched off immediately. Interior lighting is also switched off with central door locking (unless the dome lamp switch is turned on or if a door remains open).

There are two interior lamp delay modes: ignition off (Ignition OFF interior lamp time out) and Door Unlock / Close delay (Interior Lamp timeout). These modes of delay times (default 30 seconds) are adjustable by the use of TECH 2 (BCM / Program / User Settings / Interior Lamp Timeout) or via the MFD mode button.

Battery Saver Mode

As part of the battery saver function, the BCM controls internal, dome, ignition lock surround, glove compartment and door lamps. The BCM controls battery voltage to these circuits via the interior illumination relay.

There is a delay period before the battery saver function of the BCM deactivates the interior illumination relay. The delay default time is set to 60 minutes. The delay can be reprogrammed with TECH 2 from 3 – 180 minutes. The delay period starts when the ignition is switched off.

The system will also shut down after a remote lock (and arm) signal is received as well as a driver's door lock signal (10 seconds stabilisation time).

Note that the delay default time is set to 3 minutes when the BCM is in pre-delivery mode. The delay time reverts to 60 minutes after the vehicle has exceeded 20 km/h for a total of 30 minutes.

When in from battery saver mode, the BCM activates the interior lighting relay when:

- the bonnet, boot or a door is opened
- a valid remote signal is received
- the ignition is switched on or to Accessories
- the doors are unlocked via the driver’s door microswitch
- TECH 2 is connected and communicating with the BCM
- the headlamp switch is cycled from Off to On or On to Off
- the deadlock switch is activated
- the alarm is activated
- the boot release button is pressed
- the hazard switch is activated
- there is an accessories power request from the radio via serial communications
- there is a hardwired antenna request.

NOTE: If an input is active during a remote lock i.e. Dome Lamp On, Accessories on, door open, Hazard switch or boot open, the system is to shut down after the default time of 1 hour unless it has been re-triggered where the timer is re-set for a further 1 hour.

Level 1 model vehicles

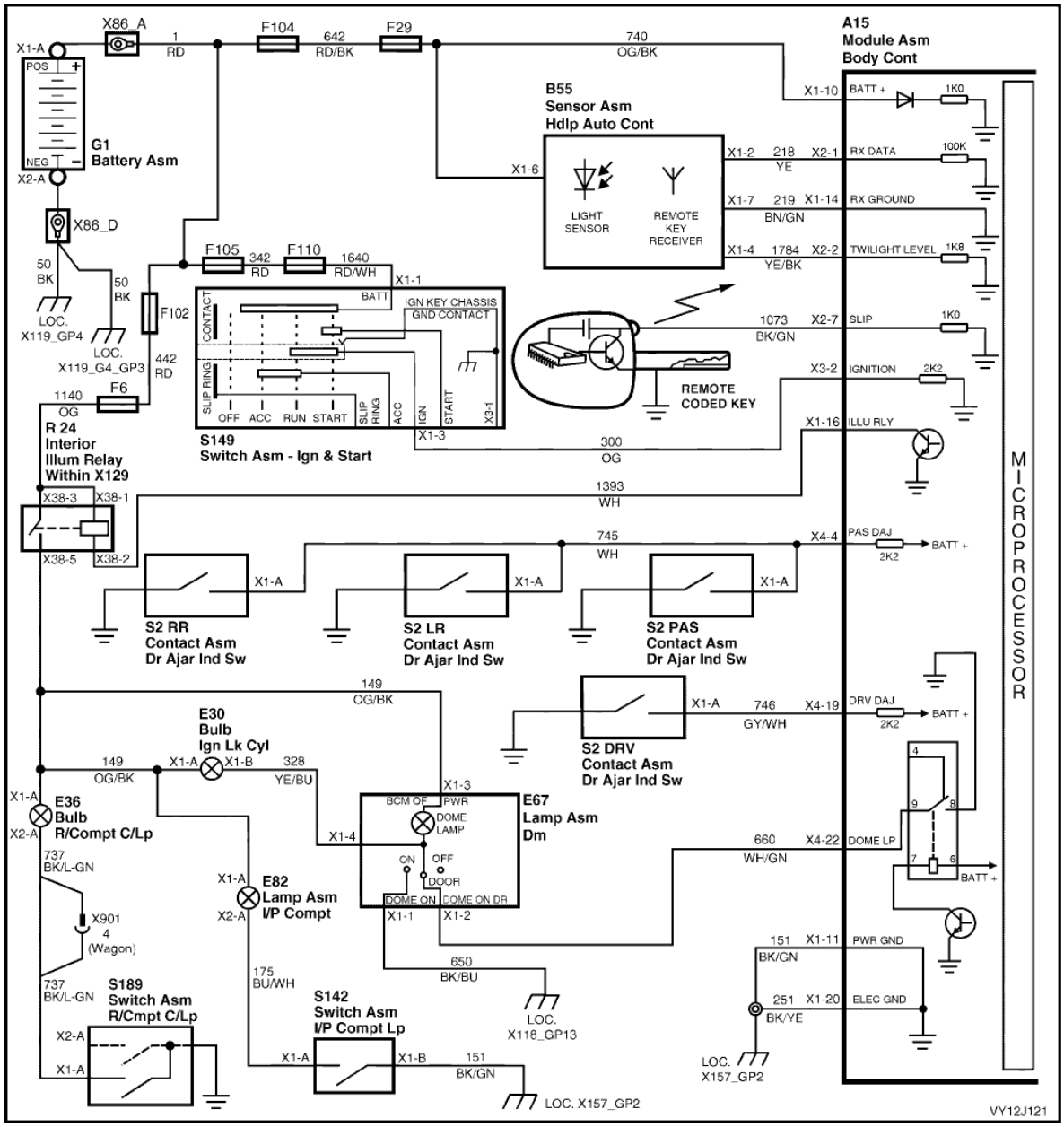

Figure 12-252

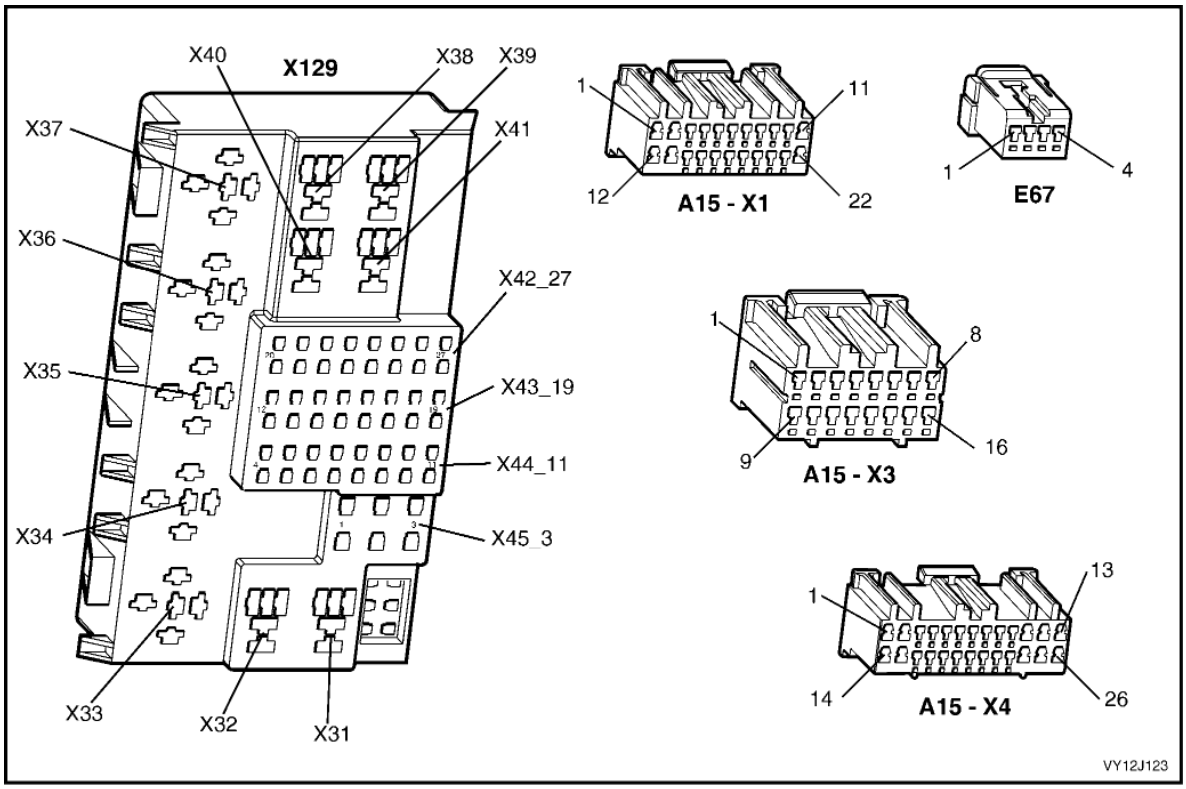

Figure 12J-253

DOME LAMP DELAY CONTROL DIAGNOSTIC CHART (LEVEL 1 MODEL VEHICLES)

STEP	ACTION	VALUE	YES	NO
1	Are all door ajar switches and associated circuits functioning correctly?		Go to Step 2.	Go to 4.5, Part L, Door Ajar Switches in this Section.
2	1. Close all the doors. 2. Set the dome lamp switch to the On position. Does the dome lamp illuminate?		Go to Step 3.	Go to Step 8.
3	1. Set the dome lamp switch to the Door position. 2. Lock all the doors. 3. Unlock the doors by pressing the remote key Unlock button. Does the dome lamp illuminate?		Go to Step 4.	Go to Step 15.
4	1. With the dome lamp switch set to Door, close the doors but do not lock them (wait for dome lamp off). 2. Open the driver's door. Does the dome lamp illuminate?		Go to Step 5.	Go to Step 16.
5	1. With the dome lamp switch set to Door, open a door to illuminate the dome lamp. 2. Close all doors. Does the dome lamp extinguish after 30 seconds?		Go to Step 6.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
6	1. With the dome lamp switch set to Door, close the doors but do not lock them (wait for the dome lamp to extinguish). 2. Use the remote coded key to lock and then unlock the doors. 3. Within 30 seconds, Turn the ignition on. Does the dome lamp turn off immediately?		Go to Step 7.	Go to Step 18.

STEP	ACTION	VALUE	YES	NO
7	1. Turn the ignition off. 2. With the dome lamp switch set to Door, close the doors but do not lock them (wait for the dome lamp to extinguish). 3. Turn the ignition on. 4. Turn the ignition off. Does the dome lamp illuminate?		System OK	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
8	1. Check the dome lamp globe. Is the globe OK?		Go to Step 9.	Replace globe.
9	1. Back-probe the dome lamp and switch assembly (E67) connector terminal X1-3, circuit 149 (Orange / Black wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Go to Step 14.	Go to Step 10.
10	1. Back-probe the interior illumination relay (R24) connector terminals X38-1 and X38-3, circuit 1140 (Orange wire) with a voltmeter to ground. 2. Turn the ignition off. Is the value as specified?	Battery voltage	Go to Step 11.	Repair faulty circuit 1140 or fuse F6, as required.
11	1. Back-probe the interior illumination relay (R24) connector terminal X38-5, circuit 149 (Orange / Black wire) with a voltmeter to ground. 2. Turn the ignition on. Is the value as specified?	Battery voltage	Repair faulty circuit 149.	Go to Step 12.
12	1. With the dome lamp switch set to On, back-probe the interior illumination relay connector terminal X38-2, circuit 1393 (White wire) with a jumper lead to ground. Does the dome lamp illuminate?		Go to Step 13.	Replace the interior illumination relay (R24).
13	1. Back-probe BCM terminal X1-16, circuit 1393 (White wire) with a jumper lead to ground. Does the dome lamp illuminate?		Go to Step 19.	Repair faulty circuit 1393.
14	1. Back-probe the dome lamp and switch assembly (E67) connector terminal X1-1, circuit 650 (Black / Blue wire) with an ohmmeter to ground. Is the value as specified?	Less than 1 ohm	Replace dome lamp and switch assembly. Refer to Section 12B, 3.8 DOME LAMP ASSEMBLY.	Repair faulty circuit 650.
15	1. Turn the ignition off. 2. Connect TECH 2 to the DLC. 3. Select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Miscellaneous Tests / Lamps / Interior Lamp. 4. Perform the teat as instructed by TECH 2. Does the dome lamp illuminate?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 16.
16	1. Back-probe BCM terminal X4-22, circuit 660 (White / Green wire) with a voltmeter to ground. 2. Repeat the TECH 2 Interior Lamp test (in Step 17). Is the value as specified?	On = less than 0.5 volt Off = Battery voltage	Go to Step 17.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
17	1. Check the integrity of circuit 660 (White / Green wire). Is the circuit OK?		Replace dome lamp and switch assembly. Refer to Section 12B, 3.8 DOME LAMP ASSEMBLY.	Repair faulty circuit 660.
18	1. With the dome lamp switch set to Door, disconnect BCM connector X4. Does the dome lamp turn off?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 16.

STEP	ACTION	VALUE	YES	NO
19	1. Back-probe BCM terminal X3-2, circuit 300 (Orange wire) with a voltmeter to ground. 2. Turn the ignition on. Is the value as specified?	Battery voltage	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Repair faulty power supply (including circuit 300, and the ignition switch).
WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETE, VERIFY CORRECT OPERATION				

Level 2 and 3 model vehicles

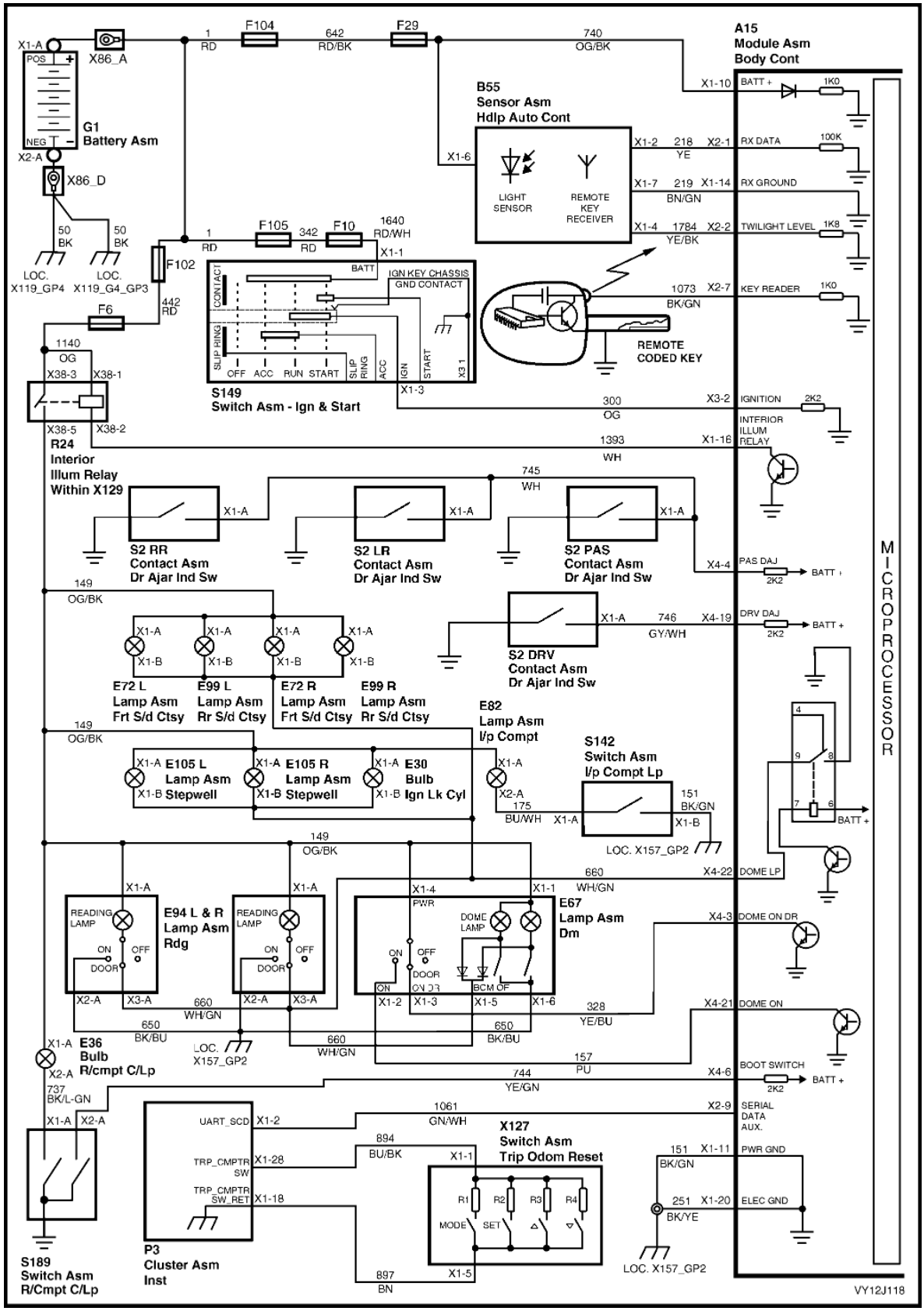

Figure 12J-254

DOME LAMP DELAY CONTROL DIAGNOSTIC CHART (LEVEL 2 AND 3 MODEL VEHICLES)

STEP	ACTION	VALUE	YES	NO
1	Are all door ajar switches and associated circuits functioning correctly?		Go to Step 2.	Go to 4.5, Part L, Door Ajar Switches in this Section.
2	Is the Accessory power supply and associated circuits functioning correctly?		Go to Step 3.	Go to 4.4, ACCESSORY CONTROL in this Section.
3	1. Turn the ignition switch to the Accessories position. 2. Turn the dome lamp assembly (E67) reading lamps on. Do the lamps illuminate?		Go to Step 4.	Go to Step 13.
4	1. Turn the reading lamps off. 2. Set the dome lamp switch to the On position. Does the dome lamp illuminate?		Go to Step 5.	Go to Step 20.
5	1. Close the doors. 2. Set the dome lamp switch to the Off position. Does the dome lamp turn off?		Go to Step 6.	Go to Step 25.
6	1. With the doors closed, set the dome lamp switch from the Off position to the Door position. 2. Open the driver's door. Does the dome lamp illuminate?		Go to Step 7.	Go to Step 28.
7	1. Turn the ignition off. 2. Connect TECH 2 to the DLC. 3. Select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Program / Interior Lamp Timeout. 4. Set the interior lamp timeout delay to 10 seconds. 5. Exit and turn off TECH 2. 6. With the dome lamp switch set to the Door position, open a door to turn the dome lamp on. 7. Close the door. Does the dome lamp turn off after 10 seconds?		Go to Step 8.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
8	1. With the dome lamp switch set to Door and the doors closed, wait for the dome lamp to turn off and then open a passenger door. Does the dome lamp illuminate?		Go to Step 9.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
9	1. With the dome lamp switch set to Door and the doors closed, open a door to illuminate the dome lamp. 2. Close the door. 3. Turn the ignition on. Does the dome lamp turn off immediately?		Go to Step 10.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
10	1. With the dome lamp switch set to Door, lock all the doors. 2. Unlock the doors using the remote coded key Unlock button. Does the dome lamp illuminate?		Go to Step 11.	Go to Step 32.
11	1. With the dome lamp switch set to Door and the doors closed, lock and then unlock the doors with the remote coded key. 2. Turn the ignition on within 30 seconds. Does the dome lamp turn off immediately?		Go to Step 12.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
12	1. With the ignition off and the dome lamp switch set to Door, close the doors. 2. Turn the ignition on and then off. Does the dome lamp illuminate?		System OK	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
13	1. Check the dome lamp globes. Are the globes OK?		Go to Step 14.	Replace globes as necessary.

STEP	ACTION	VALUE	YES	NO
14	1. With the ignition switch turned to Accessories, back-probe the dome lamp and switch assembly connector terminal X1-1, circuit 149 (Orange / Black wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Go to Step 15.	Go to Step 16.
15	1. Turn the ignition off. 2. Back-probe dome lamp and switch assembly connector terminal X1-6, circuit 650 (Black / Blue wire) with an ohmmeter to ground. Is the value as specified?	Less than 1 ohm	Replace dome lamp and switch assembly. Refer to Section 12B, 3.8 DOME LAMP ASSEMBLY, 3.9 DOME AND READING LAMP ASSEMBLY or 3.10 ROOF CONSOLE depending on the vehicle level.	Repair faulty circuit 650.
16	1. Turn the ignition switch to the Accessories position. 2. Back-probe the interior illumination relay (R24) connector terminal X38-5, circuit 149 (Orange / Black wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Repair faulty circuit 149.	Go to Step 17.
17	1. Back-probe the interior illumination relay connector terminals X38-1 and X38-3, circuit 1140 (Orange wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Go to Step 18.	Repair faulty power supply including circuits 1140 and 442, and fuses F6 and F102.
18	1. With the ignition switch turned to the Accessories position and the reading lamps turned on, back-probe the interior illumination relay connector terminal X38-2, circuit 1393 (White wire) with a jumper lead to ground. Do the reading lamps illuminate?		Go to Step 19.	Replace the interior illumination relay (R24).
19	1. Back-probe BCM connector terminal X1-16, circuit 1393 (White wire) with a jumper lead to ground. Do the reading lamps illuminate?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Repair faulty circuit 1393.
20	1. Turn the ignition off. 2. Connect TECH 2 to the DLC. 3. With the dome lamp switch set to the On position and the doors closed, select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Data Display / Inputs and Outputs / Dome Lamp Switch. Does TECH 2 display On?		Go to Step 21.	Go to Step 24.
21	1. With TECH 2 connected, exit to the Body Control Module menu and select Miscellaneous Tests / Lamps / Interior Lamp. 2. With the doors closed, perform the test as instructed by TECH 2 and turn on the dome lamp. Does the dome lamp illuminate?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 22.
22	1. With the ignition switch turned to the Accessories position and the dome lamp switch in the On position, back-probe BCM terminal X4-22, circuit 660 (White / Green wire) with a jumper lead to ground. Does the dome lamp illuminate?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 23.

STEP	ACTION	VALUE	YES	NO
23	1. With the ignition switch turned to the Accessories position and the dome lamp switch in the On position, back-probe dome lamp and switch assembly connector terminal X1-5, circuit 660 (White / Green wire) with a jumper lead to ground. Does the dome lamp illuminate?		Repair faulty circuit 660.	Replace dome lamp and switch assembly. Refer to Section 12B, 3.8 DOME LAMP ASSEMBLY, 3.9 DOME AND READING LAMP ASSEMBLY or 3.10 ROOF CONSOLE depending on the vehicle level.
24	1. Turn the ignition off. 2. Disconnect BCM connector X4. 3. Turn the ignition switch to the Accessories position. 4. With the dome lamp switch set to the On position and the doors closed, back-probe the connector terminal X4-21, circuit 157 (Purple wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Turn the ignition off, install BCM connector X4 and go to Step 27.
25	1. Connect TECH 2 to the DLC. 2. With the dome lamp switch set to the Off position, select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Data Display / Inputs and Outputs / Dome Lamp Switch. Does TECH 2 display Off?		Go to Step 33.	Go to Step 26.
26	1. With the dome lamp switch set to the Off position and the doors closed, back-probe BCM connector terminal X4-21, circuit 157 (Purple wire) with a voltmeter to ground. Is the value as specified?	0 volt	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 27.
27	1. Check the integrity of circuit 157 (Purple wire). Is the circuit OK?		Replace dome lamp and switch assembly. Refer to Section 12B, 3.8 DOME LAMP ASSEMBLY, 3.9 DOME AND READING LAMP ASSEMBLY or 3.10 ROOF CONSOLE depending on the vehicle level.	Repair faulty circuit 157.
28	1. Connect TECH 2 to the DLC. 2. With the dome lamp switch set to the Door position and the doors closed, select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Data Display / Inputs and Outputs / Dome Lamp Switch. Does TECH 2 display Door?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 29.
29	1. Check the integrity of circuit 328 (Yellow / Blue wire). Is the circuit OK?		Go to Step 30.	Repair faulty circuit 328.
30	1. Turn off the ignition. 2. Disconnect BCM connector X4. 3. With the dome lamp switch set to the Door position, back-probe the connector terminal for X4-3, circuit 328 (Yellow / Blue wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Install BCM connector X4 and go to Step 31.

STEP	ACTION	VALUE	YES	NO
31	1. With the ignition switch turned to Accessories, back-probe the dome lamp and switch assembly connector terminal X1-4, circuit 149 (Orange / Black wire) with a voltmeter to ground. Is the value as specified?	Battery voltage	Replace dome lamp and switch assembly. Refer to Section 12B, 3.8 DOME LAMP ASSEMBLY, 3.9 DOME AND READING LAMP ASSEMBLY or 3.10 ROOF CONSOLE depending on the vehicle level.	Repair faulty circuit 149.
32	In Step 10, did the doors unlock?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to 4.5 CENTRAL DOOR LOCKING in this Section.
33	1. Check the integrity of circuit 660 (White / Green wire). Is the circuit OK?		Go to Step 34.	Repair faulty circuit 660.
34	1. Turn the ignition off. 2. Disconnect BCM connector X4. Does the dome lamp turn off?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Replace dome lamp and switch assembly. Refer to Section 12B, 3.8 DOME LAMP ASSEMBLY, 3.9 DOME AND READING LAMP ASSEMBLY or 3.10 ROOF CONSOLE depending on the vehicle level.
WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETE, VERIFY CORRECT OPERATION				

4.13 AUTOMATIC LAMP CONTROL

CIRCUIT DESCRIPTION

The automatic lamp control includes Automatic Lamps Off, Automatic Lamps On and Approach Illumination features.

Automatic Lamps Off

This feature switches the headlamps and park lamps off automatically; the BCM must sense the following sequence of events before the lamps are switched off automatically:

- A vehicle road-speed of less than 10 km/h without a sudden loss of speed (ignition being switched off with the vehicle travelling above 10 km/h).
- The ignition has been switched from on to off or accessories and remains at this position.
- The headlamp switch has not been turned on after the ignition switch was turned off.
- The driver's door has been opened.

When the ignition is switched back on, the lamps turn on again based on the mode of headlamp operation and the position selected on the headlamp switch. Turning the headlamp switch to Off deactivates the Automatic Lamps Off feature.

In the event of a system failure, the BCM default status of the lamp control output is to On. This gives direct control of the lamps to the headlamp switch.

Automatic Lamps On

This feature switches the headlamps and park lamps on and off automatically based on the outside light level. The headlamp switch must be in the AUTO position and the ignition switched on to enable this feature. The lamps operate as per normal in other switch positions.

A light sensor, located in the instrument panel pad between the demist ducts, monitors the amount of light in front of the vehicle. The BCM monitors the output of this sensor via BCM connector terminal X2-2, circuit 1784 (Yellow / Black wire) and determines when the light level is low enough to turn the lamps on. The Automatic Lamps Off feature works as per normal when Automatic Lamp On is enabled.

NOTE: The light sensor is part of the remote receiver module.

ADJUSTMENT

If the headlamps are turning on too early (during daylight) or too late (after dusk), adjust the on / off light level to suit the customer preferences. TECH 2 can be used to select the sensitivity value; adjust the value down to turn the headlamps on later or up to turn the headlamps on earlier.

NOTE: The sensitivity range is 0 – 7. If a sensitivity value of 8 or 9 is selected, the value will default to 0.

Approach Illumination

This feature turns the vehicle headlamps and / or park lamps on (based on the position of the headlamp switch) for 30 seconds when the doors are unlocked using the remote coded key, to provide additional security when approaching the vehicle at night.

The lamps turn off again if the vehicle is locked with the remote coded key within 30 seconds of the approach illumination feature being activated. The lamps turn on for a further 30 seconds with subsequent operation of the remote coded key unlock button.

The approach illumination feature only operates during dark conditions, as determined by the BCM via the light sensor. TECH 2 can be used to enable and disable this feature.

The lamps resume to normal operation when the ignition is switched on.

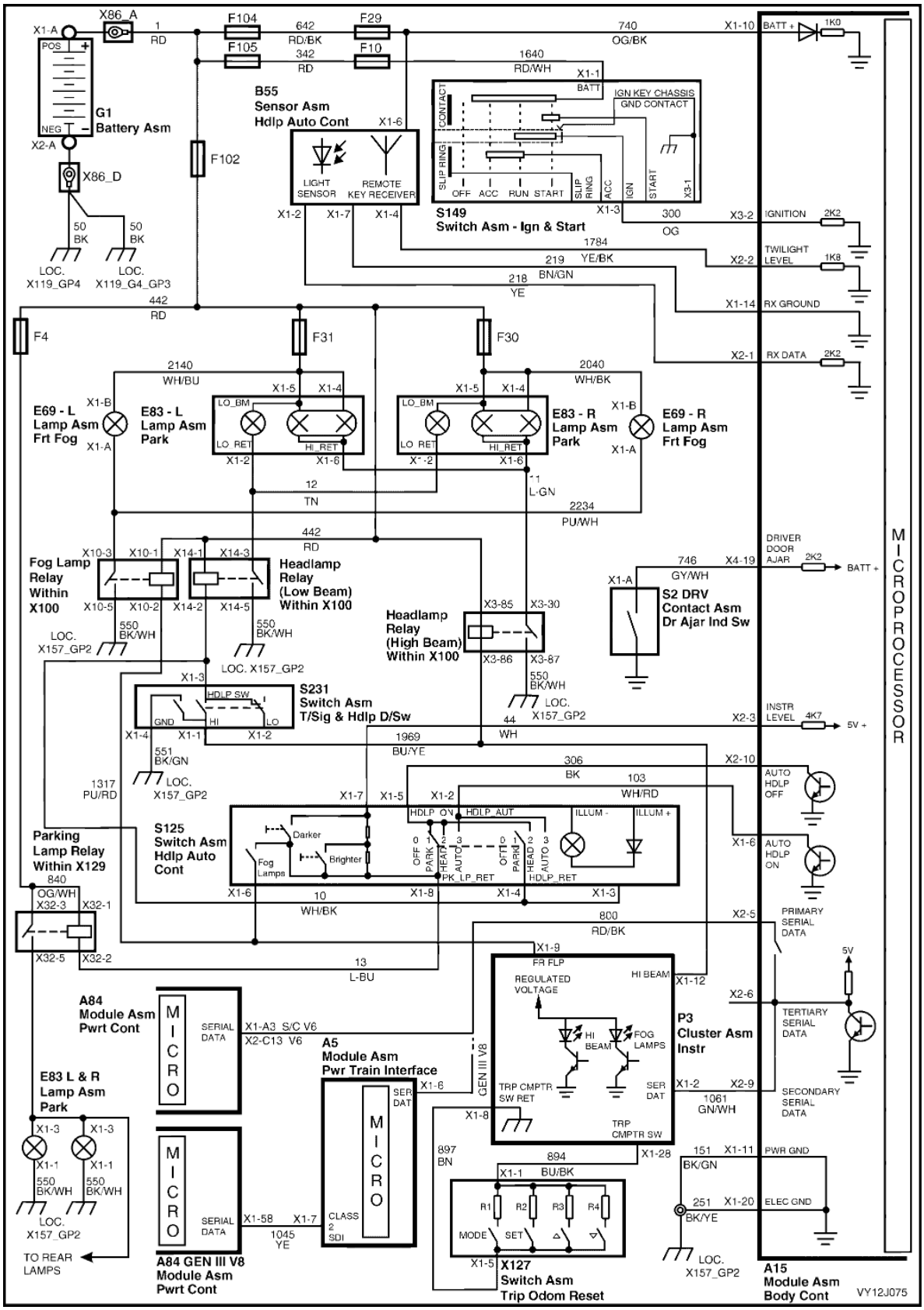

Figure 12J-255

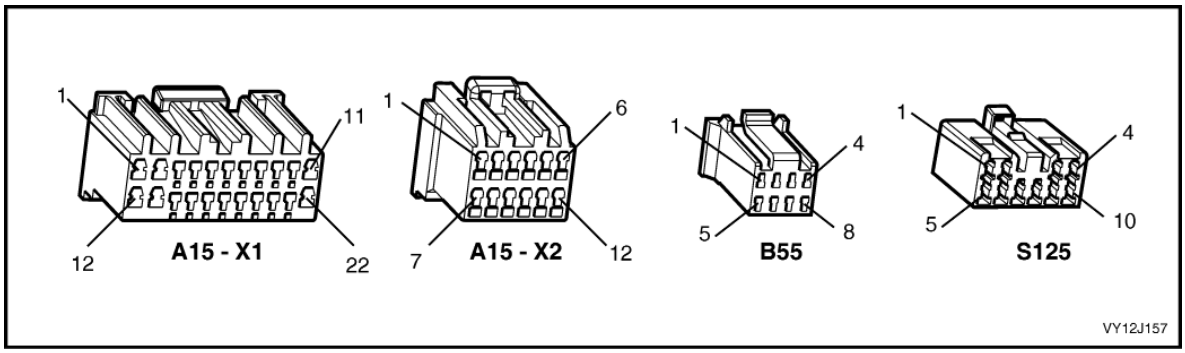

Figure 12J-256

AUTOMATIC LAMP CONTROL DIAGNOSTIC CHART

STEP	ACTION	VALUE	YES	NO
1	Is the remote coded key operating correctly?		Go to Step 2.	Go to 4.3 REMOTE RECEIVER / KEY in this Section.
2	Do the headlamps function correctly when the headlamp switch is in the ON or OFF position?		Go to Step 3.	Go to Section 12B, LIGHTING SYSTEM.
3	1. Turn the ignition on. 2. Turn the headlamp switch to AUTO. 3. Cover the light sensor (B55). Do the headlamps turn on?		Go to Step 4.	Go to Step 7.
4	1. With the ignition on and the headlamp switch (S125) in the AUTO position, uncover the light sensor. 2. Shine a torch on the light sensor. Do the headlamps turn off?		Go to Step 5.	Go to Step 17.
5	1. Turn the ignition off. 2. Connect TECH 2 to the DLC. 3. Turn the ignition on. 4. Select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Program / User Settings / Headlamps Off Delay. 5. Set the delay time to 5 seconds. 6. With the headlamp switch in the AUTO position, cover the light sensor to turn on the headlamps. 7. Turn the ignition off. 8. Open then close the driver's door. Do the headlamps turn off after 5 seconds?		Go to Step 6.	Go to Step 14.
6	1. With TECH 2 connected, exit to the User Settings menu and select Approach Illumination Delay Time. 2. Set the delay time to 10 seconds. 3. Turn the headlamp switch to the ON position. 4. Turn the ignition off. 5. Close all doors. 6. Open then close the driver's door. 7. Wait for the headlamps to turn off. 8. Lock the doors using the lock button on the remote coded key. 9. Unlock the doors using the unlock button on the remote coded key. Do the headlamps turn on for 10 seconds?		System OK.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.

STEP	ACTION	VALUE	YES	NO
7	1. Turn the ignition off. 2. Connect TECH 2 to the DLC. 3. Select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Miscellaneous Tests / Lamps / Auto Lights On. 4. Turn the headlamp switch to the AUTO position. 5. Perform the test as instructed by TECH 2 and turn on the headlamps. Do the headlamps turn on?		Go to Step 11.	Go to Step 8.
8	1. With the headlamp switch in the AUTO position, the light sensor covered and TECH 2 connected, exit to the Body Control Module menu and select Data Display / Headlamps / Auto Headlamp Drive. Does TECH 2 display On?		Go to Step 9.	Go to Step 11.
9	1. With the headlamp switch in the AUTO position, back-probe BCM connector terminal X1-6, circuit 103 (White / Red wire) with a jumper lead to ground. Do the headlamps turn on?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 10.
10	1. Disconnect the headlamp switch (S125). 2. With the headlamp switch in the AUTO position, back-probe between headlamp switch terminals X1-4 and X1-2 with an ohmmeter. Is the value as specified?	Less than 1 ohm	Repair faulty circuit 103.	Replace the headlamp switch. Refer to Section 12B, 3.23 HEADLAMP SWITCH ASSEMBLY.
11	1. With TECH 2 connected, exit to the Body Control Module menu and select Data Display / Headlamps / Ambient Light. 2. Cover the light sensor. 3. Uncover and shine a torch on the light sensor. Are the values as specified?	Covered = 0 volt Uncovered = between 0-5 volts	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 12.
12	1. Disconnect the light sensor (B55) connector. 2. Back-probe the light sensor terminal X1-6 with a jumper lead to battery voltage. 3. Back-probe the light sensor terminal X1-4, circuit 1784 (Yellow / Black wire) with a voltmeter to ground. 4. Turn the ignition on. 5. Cover the light sensor. 6. Uncover and shine a torch on the light sensor. Are the values as specified?	Covered = less than 0.5 volt Uncovered = above 0.5 volt, up to 5 volts	Go to Step 13.	Replace light sensor / remote receiver module (B55). Refer to 2.3 REMOTE RECEIVER MODULE in this Section.
13	1. Check the integrity of circuit 1784 (Yellow / Black wire). Is the circuit OK?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Repair faulty circuit 1784.
14	1. In Step 3, did the headlamps turn off after longer than 5 seconds?		Go to Step 15.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
15	1. Disconnect the headlamp switch connector. 2. Back-probe connector terminal X1-5, circuit 306 (Black wire) with an ohmmeter to ground. Is the value as specified?	Less than 1 ohm	Go to Step 16.	Replace the headlamp switch. Refer to Section 12B, 3.23 HEADLAMP SWITCH ASSEMBLY.
16	1. Check the integrity if circuit 306 (Black wire). Is the circuit OK?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Repair faulty circuit 306.

STEP	ACTION	VALUE	YES	NO
17	1. Connect TECH 2 to the DLC. 2. Select Diagnostics / Model Year / Vehicle Model / Body / Body Control Module / Miscellaneous Test / Lamps / Auto Lights On. 3. Turn the ignition on. 4. Turn the headlamp switch to AUTO. 5. Perform the test as instructed by TECH 2 and turn off the headlamps. Do the headlamps turn off?		Go to Step 18.	Go to Step 19.
18	1. Back-probe BCM connector terminal X2-2, circuit 1784 (Yellow / Black wire) with a voltmeter to ground. 2. Turn the ignition on. 3. Shine a torch on the light sensor. Is the value as specified?	More than 0.5 volt, up to 5 volts	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Go to Step 12.
19	1. With TECH 2 connected, exit to the Body Control Module menu and select Data Display / Headlamps / Headlamp Drive. Does TECH 2 display Off?		Go to Step 20.	Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.
20	1. Disconnect the headlamp switch (S125) connector. 2. Back-probe connector terminal X1-2, circuit 103 (White / Red wire) with an ohmmeter to ground. Is the value as specified?	Less than 1 ohm	Go to Step 21.	Replace the headlamp switch. Refer to Section 12B, 3.23 HEADLAMP SWITCH ASSEMBLY.
21	1. Check the integrity if circuit 103 (White / Red wire). Is the circuit OK?		Replace the BCM. Refer to 2.1 BODY CONTROL MODULE in this Section.	Repair faulty circuit 103.
WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETE, VERIFY CORRECT OPERATION				

4.14 INSTRUMENT DIMMING CONTROL

CIRCUIT DESCRIPTION

The BCM regulates the illumination level of the instrument dial faces and the backlighting of the MFD and LCDs. The illumination level is transmitted from the BCM via the secondary data bus and the receiving assemblies read the signal and adjust the illumination level accordingly. The BCM illumination drive controls the dash and centre-console illumination, the display window of the trip computer, the Occupant Climate Control (OCC) HVAC display, radio illumination and the I/P switches.

Two momentary contact switches in the headlamp switch ramp the illumination intensity up and down to adjust the level of brightness.

The dimmer drives to 100% when the ignition is on and the park lamps are off. This enables maximum brightness for the trip computer, HVAC and radio illumination. When the park lamps are switched on, the dimmer operates according to the previously set percentage value. This intensity value is based on the Priority key used.

The dimmer control inputs are resistor encoded onto one input line. A 'bright' input occurs when DIM+ is activated and there is a 0 ohm reference to the park lamp control output. A 'dull' output occurs when DIM– is activated and there is a 2700 ohm reference to the park lamp control output. The resting point of this line is 5400 ohms. The system default is 100% when the circuit for this line is open. The default dimmer is 100%, which occurs if the battery or BCM is disconnected.

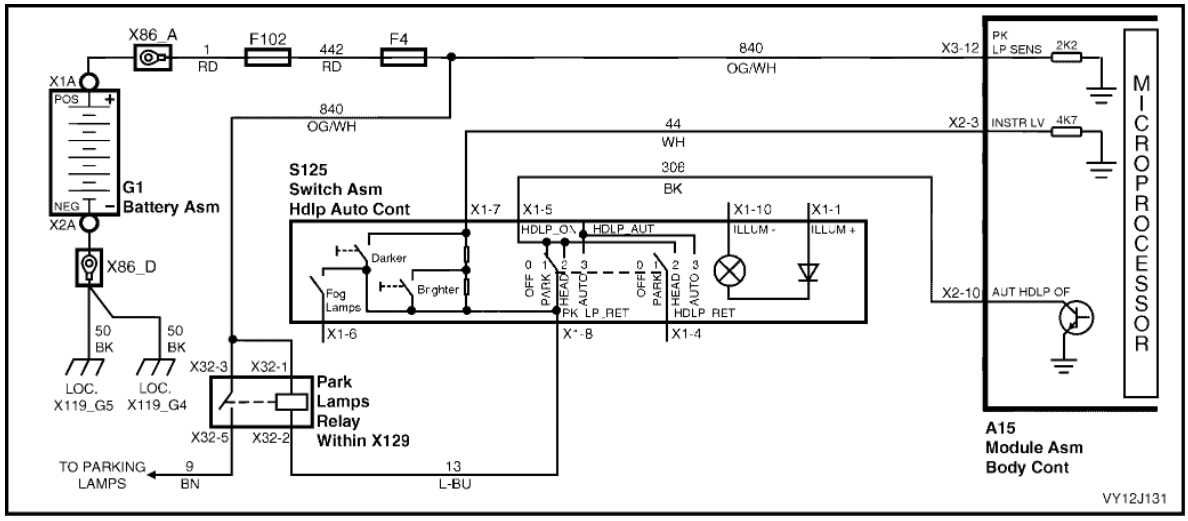

Figure 12J-257

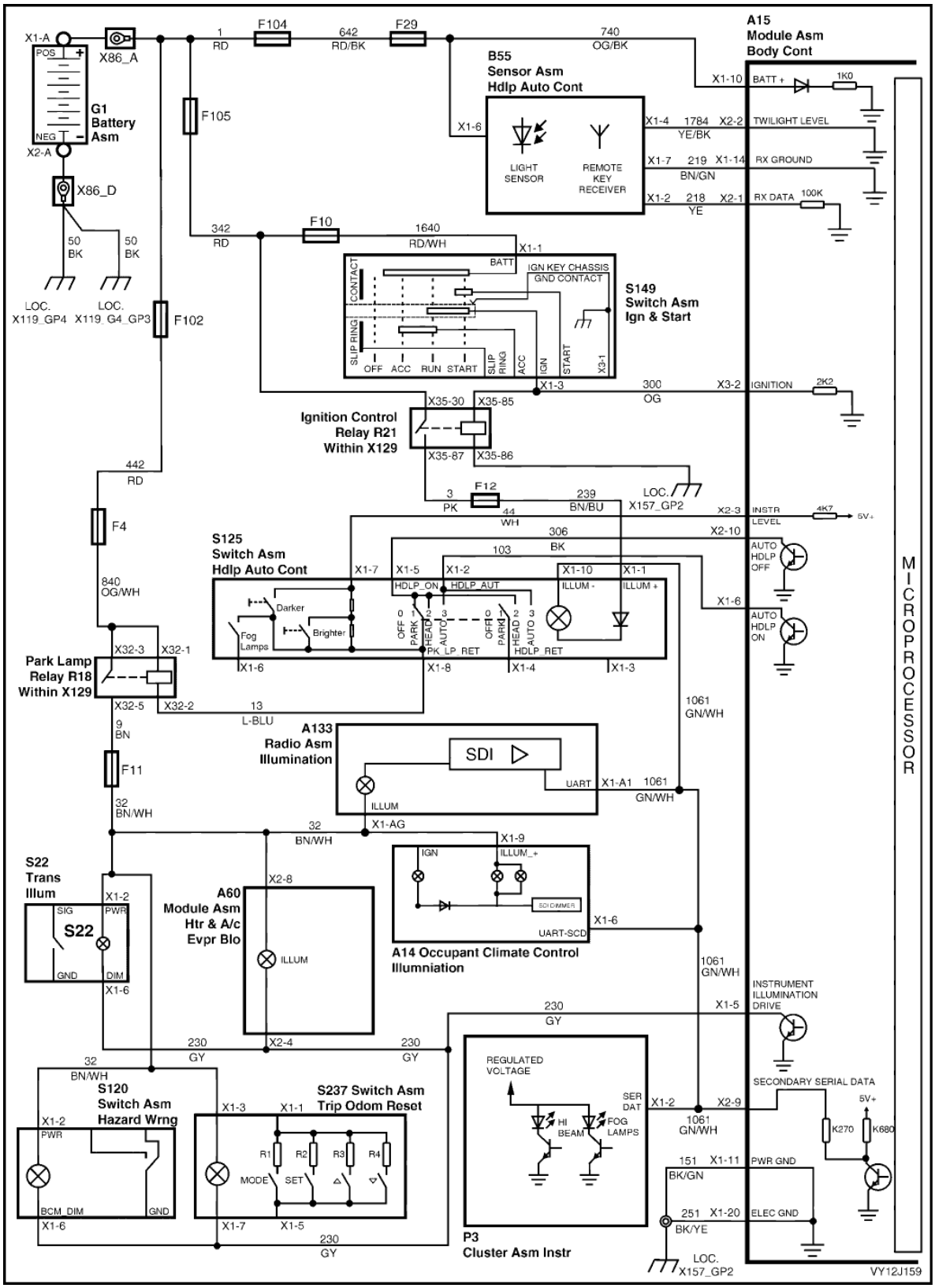

Figure 12J-258