



# Technical Service Bulletin

No.JTB00014  
11 December 2006

Reissue

**Please replace the previous edition of this bulletin.**

This bulletin supersedes TSB S413-006/2006 dated 03 November, which should either be destroyed or clearly marked to show it is no longer valid (e.g. with a line across the page).

<b>Subject/Concern:</b>	Additional Diagnostics for Instrument Cluster
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<b>Models:</b>		
S-TYPE		VIN- range: M45255 Onwards
XJ Range		VIN- range: G00442-X358 Introduction
X-TYPE		VIN- range: C00344 Onwards

**Markets:** All

**Section:** 413-01

<b>Summary:</b>
<p>This Bulletin has been issued for information only for additional diagnostics for instrument cluster (IC) concerns.</p> <p><b>This version has been issued due to the addition of X-TYPE and XJ Range vehicles.</b></p> <p><b>Cause:</b> Components returned under Warranty with no fault found (NFF).</p> <p><b>Action:</b> Should a customer express concern, Follow the Diagnostic Procedure's outlined below.</p>

## Diagnostic Procedure

### Instrument Cluster Diagnostics using the Instrument Cluster Engineering Test Mode (ETM) and Integrated Diagnostic System (IDS).

The IC (from above VINs) contains a self-diagnostic mode known as ETM. This can be used to show the status of the IC inputs as well as a

number of other useful features.

When in the respective ETM, the RH Message Centre or the single LCD displays internal data that can be cycled through. The left-hand (LH) message centre functionality remains unaffected (with exceptions) during ETM mode.

Note: This document is to be used in conjunction with the IC ETM (see relevant section within this document) and the Integrated Diagnostic System (IDS) facility; this does not supersede or replace the IDS facility.

Go directly to the 'Area of Issue' that indicates the customer concern(s) and perform the actions described within the relevant section(s):

Area of issue	Diagnostic Ref. No.	Actions	Notes
Warning lights	A-1	Perform cluster (S-TYPE: ETM test 3, X-TYPE/XJ Range: ETM test 4).	S-TYPE: Frost/ice warning illuminated in mixed red and amber; therefore colour differs from other warning lamps. All: When this test is ended, warning lamps currently required to be 'ON' will remain illuminated.
.	A-2	Perform IDS all warning lamp illumination check?	Using output state control, all warning lamps can be toggled 'ON' and 'OFF'.
Multiple warning lights 'ON'	B-1	Perform cluster (S-TYPE: ETM test 14, X-TYPE/XJ Range: ETM test 15), for DTCs related to identified vehicle system(s).	.
.	B-2	Check with IDS for DTCs related to identified vehicle system(s).	.
.	B-3	Check cluster battery and ignition wiring - refer to circuit diagrams.	Specifically check continuity of Standard Corporate Protocol (SCP) and Controller Area Network (CAN) lines.
.	B-4	Check cluster grounds.	.
.	B-5	Check fuses in primary junction box.	.
.	B - 6	Check for harness traps in facia.	.
			S-TYPE/XJ Range: Frost/ice

	B-7	Perform cluster (S-TYPE: ETM test 3, X-TYPE/XJ Range: ETM test 4).	warning illuminated in mixed red and amber; therefore colour differs from other warning lamps. All: When this test is ended, warning lamps currently required to be 'ON' will remain illuminated.
	B-8	Perform IDS all warning lamp illumination ON/OFF check?	Using output state control all warning lamps (with the exception of the oil warning lamp, which remains illuminated) can be toggled 'ON' and 'OFF'.
	B-9	Check for open circuit/shorts in wiring to related warning lamp trigger (module, sensor, switch).	
	B-10	S-TYPE Only: Perform TSB S413-02 (VIN Range M45255 - M70720).	
Specific warning lamp 'ON'	C-1	Perform cluster (S-TYPE: ETM test 14, X-TYPE/XJ Range: ETM test 15), for DTCs related to identified vehicle system(s).	
	C-2	Check with IDS for DTCs related to identified vehicle system.	
	C-3	Check for open circuit/shorts in wiring related to warning lamp circuit (module, sensor, switch) where appropriate.	
	C-4	Perform cluster (S-TYPE: ETM test 3, X-TYPE/XJ Range: ETM test 4).	S-TYPE/XJ Range: Frost/ice warning illuminated in mixed red and amber; therefore colour differs from other warning lamps. All: When this test is ended, warning lamps currently required to be 'ON' will remain illuminated.
	C-5	Perform IDS specific warning lamp illumination ON/OFF check?	Only works on micro-controlled telltales, e.g. won't work for airbag warning telltale.

	C-6	Check the specific vehicle system indicated by the warning lamp illuminated?	What is the warning lamp telling me? Does this check out with the DTC logged by the system indicating the fault?
	C-7	For oil warning lamp, perform ETM test 36, to establish input state of oil pressure sensing circuit.	Note: When using IDS output state control for all warning lamps the oil warning light cannot be toggled 'ON' and 'OFF'.
Fuel gauge operation	D-1	Perform cluster ETM tests 2, 'TEST GAUGES' gauge sweep, to prove out internal cluster function of fuel gauge. Note fuel gauge may only sweep to 80% of full range.	
	D-2	Drive gauge with IDS to prove gauge function.	Use output state control to drive gauge to specific values.
	D-3	Perform (S-TYPE ETM tests 22 and 23, X-TYPE ETM tests 20 and 21, XJ Range ETM test 21 and 22) to establish if fuel level input to cluster is out of range or invalid.	0 - 9 = short circuit; gauge will show empty. 10 - 254 = normal range. 255 = open circuit; gauge will show empty. --- = missing signal; gauge will show empty.
	D-4	Check gauge function versus (S-TYPE ETM test 26, X-TYPE ETM test 24, XJ Range ETM test 25).	0 = empty, 254 = full. 255 = invalid; gauge will show empty.
	D-5	Check for open circuit/shorts in wiring between the Fuel Delivery Module, Jet Pump Module and Rear Electronic Module (REM).	
Fuel gauge reading	E-1	Perform ETM test 2, 'TEST GAUGES' gauge sweep to prove out internal cluster function of fuel gauge. Note gauge only sweeps to 80% of full range.	
	E-2	Drive gauge to specific positions with IDS to prove gauge accuracy.	Use output state control to drive gauge to specific values.
	E-3	Check gauge position (S-TYPE ETM test 26, X-TYPE ETM test 24,	0 = empty to 254 = full (255 invalid; gauge will show empty). Other values percentage of above

		XJ Range ETM test 25).	range i.e. 127 = half.
	E-4	Calculate percentage fuel level from figure obtained from (S-TYPE ETM test 26, X-TYPE ETM test 24, XJ Range ETM test 25), and compare to IDS vehicle fuel percentage test.	ETM fuel level percentage can be calculated as follows: Value from ETM test 26 ÷ 254 x 100 = % shown on gauge.
	E-5	Monitor value of (S-TYPE ETM tests 22 and 23, X-TYPE ETM tests 20 and 21, XJ Range ETM tests 21 and 22) (during test drive) to establish if input drops out of range.	0 - 9 = short circuit; gauge will show empty. 10 - 254 = normal range. 255 = open circuit; gauge will show empty. --- = missing signal; gauge will show empty.
	E-6	Monitor 'FUEL LEVEL' in IDS data logger (during test drive) to correlate gauge position to vehicle reported fuel level.	Gauge function is damped so will not follow rapidly changing Fuel Delivery Module values.
Temperature gauge operation	F-1	Perform ETM test 2, 'TEST GAUGES' gauge sweep, to prove out internal cluster function of temp gauge. Note: gauge may only sweep to 80% of full range.	
	F-2	Drive gauge to specific gauge positions with IDS to prove gauge function.	Use output state control to drive gauge to specific temperature values.
	F-3	Perform (S-TYPE ETM test 28, X-TYPE ETM test 26, XJ Range ETM test 27) to establish if temp gauge input to cluster out of range or invalid.	Displays last temperature gauge input value from CAN in 1/10 deg C, no decimal point shown. i.e. 51.5 deg C = display value of 515. Displays ---- or INV if message is not received or if received data is invalid.
	F-4	Check for open circuit/shorts in wiring between temp sensor and Engine Control Module (ECM).	
		Perform ETM test 2, 'TEST GAUGES' gauge sweep to prove	

Temperature gauge reading	G-1	out internal cluster function of temperature gauge. Note: gauge may only sweep to 80% of full range.	.
.	G-2	Drive gauge to specific gauge positions with IDS to prove gauge function.	Use output state control to drive gauge to specific temperature values.
.	G-3	Monitor 'ENGINE COOLANT TEMPERATURE' in IDS data logger (during test drive) to correlate gauge position to vehicle reported engine temperature.	Need to check with IDS.
.	G-4	Monitor (S-TYPE ETM test 28, X-TYPE ETM test 26, XJ Range ETM test 27) (during test drive) to establish if temperature gauge input to cluster out of range or invalid.	Displays last temperature gauge input value from CAN in 1/10 deg C, no decimal point shown. i.e. 51.5 deg C = display value of 515. Displays ---- or INV if message is not received or if received data is invalid.
Speedometer operation	H-1	Perform ETM test 2, 'TEST GAUGES' gauge sweep, to prove out internal cluster function of speedometer.	.
.	H-2	Drive speedometer with IDS to prove speedometer function.	Use output state control to drive speedometer to specific speed values.
.	H-3	Monitor (S-TYPE ETM test 17, X-TYPE ETM test 15, XJ Range ETM test 16) (during test drive) check to establish if vehicle speed input to cluster is out of range or invalid.	Display speed input in 1/10 mile/h, no decimal point shown, and is compensated for tyre size etc. Displays ---- or INV if message is not received or if received data is invalid.
Speedometer reading	I-1	Perform ETM test 2, 'TEST GAUGES' gauge sweep, to prove out internal cluster function of speedometer.	.
		Drive speedometer to specific	Use output state control to drive

.	I- 2	positions with IDS to prove speedometer function.	speedometer to specific speed values.
.	I-3	During test drive compare speedometer position to (S-TYPE ETM test 17, X-TYPE ETM test 15, XJ Range ETM test 16), displayed value.	ETM displayed speed figure will be approx 3% higher than speed indicated by speedometer. Allowed tolerance – minus nothing/+ 10% + 2.5 mile/h.
.	I-4	Monitor (S-TYPE ETM test 17, X-TYPE ETM test 15, XJ Range ETM test 16) (during test drive) to establish if vehicle speed input to cluster drops out of range or is invalid.	Displays ---- if message is not received or if received data is invalid for two seconds or more.
.	I-5	Check that installed wheels and tires are standard Jaguar fitment. Confirm wheel size in IDS, 'ADD REMOVE ACCESSORY' section.	Non standard wheels and tires may lead to speed indication inaccuracies. Incorrectly set wheel size will result in speed indication inaccuracies. Trip and odometer distance accumulation will also be incorrect.
Tachometer operation	J-1	Perform ETM test 2, 'TEST GAUGES' gauge sweep, to prove out internal cluster function of tachometer.	.
.	J-2	Drive tachometer with IDS to prove tachometer function.	Use output state control to drive tachometer to specific rpm values.
.	J-3	Perform (S-TYPE ETM test 20, X-TYPE ETM test 18, XJ Range ETM test 19) to establish if vehicle rpm input to cluster out of range or invalid.	Displays ---- or INV if message is not received or if received data is invalid.
Tachometer reading	K-1	Perform ETM test 2, 'TEST GAUGES' gauge sweep, to prove out internal cluster function of tachometer.	.
.	K-2	Drive tachometer to specific positions with IDS to prove	Use output state control to drive tachometer to specific rpm values.

		tachometer function.	
	K-3	Check tachometer position versus (S-TYPE ETM test 20, X-TYPE ETM test 18, XJ Range ETM test 19), displayed value.	Tachometer accuracy +/- 100 rpm.
	K-4	Monitor 'ENGINE RPM' in IDS data logger at constant engine rpm to compare tachometer indicated engine rpm to engine rpm reported by Engine Control Module (ECM).	Tachometer accuracy +/- 100 rpm.
	K-5	Monitor (S-TYPE ETM test 20, X-TYPE ETM test 18, XJ Range ETM test 19) (during test drive) to establish if input to cluster drops out of range or is invalid.	Displays ---- or INV if message is not received or if received data is invalid.
Gauge judder	L-1	Perform cluster ETM test 2, 'TEST GAUGES' gauge sweep, to prove out smooth gauge operation.	
	L-2	Drive gauges with IDS to prove smooth gauge operation.	Use output state control to drive gauges to specific values.
Gauge noise	M-1	Perform cluster ETM test 2, 'TEST GAUGES' gauge sweep, with vehicle static and engine/systems OFF, to check for excessive noise.	
	M-2	With vehicle static and engine/systems 'OFF', drive suspect gauge(s) between minimum and maximum with IDS, to check for excessive noise.	
	M-3	Perform cluster ETM test 2, 'TEST GAUGES' gauge sweep, with vehicle static and engine/systems 'ON', to check for excessive noise.	
	M-4	With vehicle static and engine/systems 'ON', drive suspect gauge(s) between	



		minimum and maximum with IDS, to check for excessive noise.	
.	M-5	Perform vehicle road test. Gauges should not be audible during operation in drive cycle.	.
.	M-6	Benchmark noise against non-complaint vehicle.	.
Trip (fuel) computer	N-1	S-TYPE Only: Perform FAQ 14661 - S-Type Instrument cluster trip Inoperative ? Safe VINs - Gasolene N24605, Diesel - N23723	.
.	N-2	Check for consistent display (during test drive) of valid 'Rolling Odometer' count in (S-TYPE ETM test 30, X-TYPE ETM test 28, XJ Range ETM test 29).	Displays ---- , INV or 255 if message is not received, or if received data is invalid.
.	N-3	Check that installed wheels and tires are standard Jaguar fit. Confirm fitted wheel size in IDS, 'ADD REMOVE ACCESSORY' section.	Non standard wheels and tires or incorrectly set wheel size may lead to Odometer increment inaccuracies. This will impact the distance accumulators, which in turn affects the rolling average, fuel economy and range values. Trip distance accumulation will also be incorrect.
.	N-4	Consider noting odometer value and resetting fuel computer system. Advise customer to conduct brim-to-brim fuel tank test. Use collected information to determine if system accurate.	.
Passive Anti-Theft System (PATS) indicator	O-1	Drive lamp with IDS to check for LED operation.	.
.	O-2	Check for loose connections/wiring continuity.	.
		Check ignition switch for physical	

.	O-3	damage.	.
.	O-4	If LED is dimly illuminated, may indicate issue with instrument cluster.	.
Cluster illumination	P-1	Check for loose connections/wiring continuity.	.
.	P-2	Perform (S-TYPE ETM test 38, X-TYPE ETM test 41, XJ Range ETM test 38), to verify that illumination and dimmer control value varies when dimmer adjusted.	.
.	P-3	Check dimmer switch operation.	.
.	P-4	Check for loose connections/wiring continuity.	Check SCP lines. Cluster transmits dimmer status over SCP.
Cluster backlight operation	Q-1	Is the backlight on other components inoperative.	.
.	Q-2	Perform (S-TYPE ETM test 37 and 38, X-TYPE ETM test 41 and 42, XJ Range ETM test 37 and 38) 'LCD' and 'BACK LIGHT' check to establish if dimmer % pulse width modulation duty cycle (range 0 - 100) varies with dimmer adjustment.	.
.	Q-3	Check for loose connections/wiring continuity.	.
Chime/tone operation	R-1	Check vehicle configuration.	Note: Warning chime is not provided by instrument cluster.
.	R-2	Utilize lights ON, ignition OFF, door open warning to verify chime operation.	.
.	R-4	Check appropriate sensing circuit.	.
Continuous chime/tone	S-1	Check appropriate sensing circuit.	Note: Warning chime is not provided by instrument cluster.
Unexpected chime operation	T-1	Check vehicle configuration.	Note: Warning chime is not provided by instrument cluster.

Message centre LCD blank	U-1	S-TYPE Only, perform FAQ 14661 - S-Type Instrument cluster trip Inoperative? Safe VINs- Gasoline N24605, Diesel - N23723.	.
Message centre LCD illumination	V-1	Is the backlight 'ON' and other components dim?	.
.	V-2	Does the lighting level of other components change when dimmer adjusted?	.
.	V-3	Perform (S-TYPE ETM test 37, X-TYPE ETM test 42, XJ Range ETM test 37) to verify that LCD illumination and dimmer control value varies when dimmer adjusted.	.
Message centre display issue	W-1	Perform ETS test 3, to prove out LCD display function. S-TYPE Note, some vehicles feature negative mode LCD where characters are clear on dark background. The cluster is not faulty, short build period specification change.	X-TYPE: High series: Activates lower 'pixels' of dot matrix display. X-TYPE Low series: Activates all segments of the LCD display.
Message centre missing lines	X-1	Perform ETS test 3, to prove out LCD display function.	X-TYPE: High series: Activates lower 'pixels' of dot matrix display. X-TYPE Low series: Activates all segments of the LCD display.
Message centre incorrect message	Y-1	What is the message?	.
.	Y-2	Check for open circuit/shorts in wiring to related warning light trigger (module, sensor, switch).	.
Cluster/connectivity	Z-1	Check cluster battery and ignition wiring.	.
.	Z-2	Check cluster grounds.	.
.	Z-3	Disconnect/reconnect cluster.	.

.	Z-4	Attempt to enter ETM to prove cluster response to inputs.	.
No crank	AA-1	Check with IDS for presence of related DTCs.	.
.	AA-2	Is there a Passive Anti-Theft System (PATS) flash code?	.
.	AA-3	Does the other key crank?	.
.	AA-4	Tried new key?	.
.	AC-5	Check battery voltage.	.
.	AC-6	Diagnose non-start condition with IDS.	.
.	AC-7	Attempt PATS key erase and re-learn.	.
Crank but no-start	AB-1	Diagnose non-start condition with IDS.	Not usually caused by cluster issue.
Incorrect configuration	AC-1	Attempt to configure cluster.	.
.	AC-2	Ensure battery voltage is maintained above 12.1volts if cluster re-configured.	.

## Diagnostic Procedure

### S-TYPE Instrument Cluster Self-Diagnostic ETM

To place the cluster in ETM, perform the following:

1. Press and hold the stalk trip cycle button whilst turning the ignition from position 0 to position II, until 'ENGINEERING TEST MODE' is displayed on the RH Message Centre display. The stalk trip cycle button must be released within three seconds of 'ENGINEERING TEST MODE' being displayed or the instrument cluster will exit Self-Diagnostic mode.
2. To navigate forward through the instrument cluster Self-Diagnostic Mode tests, press the trip computer 'MLS/KMS' button.
3. To navigate backward through the instrument cluster Self-Diagnostic Mode tests, press the trip computer 'A/B' button.

4. To exit Self-Diagnostic Mode, press the stalk trip cycle button for more than three seconds.
5. The Self-Diagnostic Mode is also deactivated when the ignition switch is turned to the 'OFF' position, or low battery voltage is detected.
6. If the Self-Diagnostic Mode cannot be accessed (check function of buttons), use IDS/WDS to diagnose the instrument cluster.

ETM Test/No.	RH Message Centre Display	Gauge/Indicator/Display Tested	Range	Description
1 - Self-diagnostic entry	ENGINEERING TEST MODE	.	Not Applicable (N/A)	Establishes Self-Diagnostic mode.
2 - Gauge sweep	TEST GAUGES	Tachometer, speedometer, temperature and fuel. Gauges display current values after test.	N/A	All gauges go through a full up and down pointer sweep smoothness check. Note: For some variants fuel and temperature gauge will only sweep to approx 80% of maximum. If error suspected drive with WDS/IDS to prove out gauge fully.
3 - Warning lamp LED's - RH Message Centre LCD.	Message Centre Test Pattern/TEST LEDS	All internally controlled lamps/LEDs regardless of software configuration. Upper area of RH message centre LCD.	N/A	Illuminates all the LED warning indicators that are controlled by the instrument cluster. When this test is exited current vehicle warning lamps will remain illuminated. (Note: Frost/ice warning illuminated in mixed red and amber; therefore colour differs from other warning lamps). Applies chequered test pattern to upper area of RH message centre LCD.
4 - ROM level	ROM XXXX/FAIL	Instrument cluster Read Only Memory (ROM).	N/A	Displays the instrument cluster ROM level or ROM checksum fault.

5 - NVM level	NVM ROM XXXX	ROM level (most significant bit) and type (least significant bit) as stored in Non-Volatile Memory (NVM).	N/A	Displays hexadecimal coding of ROM level or checksum fault.
6 - EEPROM level	EEPROM XX / FAIL	Electrically Erasable Programmable Read Only Memory (EEPROM) level.	N/A	Displays hexadecimal coding of EEPROM level or checksum fault.
7 - Manufacturing date	DATE XXXX	Final manufacturing test date.	N/A	Displays hexadecimal coding of final manufacturing test date.
8 - VIN	VIN: XX	Vehicle VIN.	N/A	Displays last two digits of the VIN as stored in the cluster.
9 - Tire size	TIRE SIZE XXXX	Tire Size Compensation Value.	N/A	Displays hexadecimal coding of two byte Tire Size Compensation Value
10 - Cluster configuration 1	CONFIG 1 XX	Cluster configuration settings (byte 1).	N/A	Displays hexadecimal coding of cluster configuration settings (byte 1).
11- Cluster configuration 2	CONFIG 2 XX	Cluster language configuration (byte 2).	N/A	Displays hexadecimal coding of cluster configuration settings (byte 2).
12 - Cluster configuration 3	CONFIG 3 XXX	Cluster configuration settings (byte 3).	N/A	Displays hexadecimal coding of cluster configuration settings (byte 3).
13 - Cluster configuration 4	CONFIG 4 XX	Cluster language configuration (byte 4).	00 – 15.	00 UK. 01 US. 02 French. 03 Spanish. 04 German. 05 Italian. 06 Dutch. 07 Brazilian Portuguese. 08 Swedish. 09 Finnish. 10-15 Japanese.
		Cluster configuration		Displays hexadecimal coding of cluster

14 - Cluster configuration 5	CONFIG 5 XXXX	settings (byte 5).	N/A	configuration settings (byte 5).
15 - Diagnostic Trouble Code (DTC)	DTC XXXX XXXX XXXX	DTCs.	DTC or ---- (dashes).	Displays up to three DTCs on one page. Next button press will display the next three (if present). Display's '----' if no DTCs present. Displays hexadecimal coding of DTCs detected in continuous operation not during self test. Refer to WDS/IDS to diagnose the instrument Cluster.
16 - CAN Bus	BUS X Cnt XXX	CAN bus status.	N/A	.
17 - Vehicle speed (mile/h)	SPEED MPH X or SPEED ENG X	Speedometer.	---- to 4072.	Displays speed input value after compensation in tenths of mile/h, no decimal point shown. Speedometer will indicate present speed. Displays '--' if message is not received or if received data is invalid for two seconds or more.
18 - Vehicle speed (km/h)	SPEED KPH X	Speedometer.	---- to 6553.	Displays speed input value after compensation in tenths of km/h, no decimal point shown. Speedometer will indicate present speed. Displays '----' if message is not received or if received data is invalid for two seconds or more.
19 - Speedometer driver	SPEEDO DRIVER XXXX	Speedometer.	.	Displays speedometer driver gauge counts in decimal.
				Displays tachometer input value in RPM. Tachometer

20 - Engine speed	TACHO RPM IN X	Tachometer.	---- to 6383.	will indicate present RPM. Displays '----' if message is not received or if received data is invalid for two seconds or more.
21 -Tachometer driver	TACHO DRIVER XXXX	Tachometer.	.	Displays Tachometer driver gauge counts in decimal.
22 - Fuel system 1	RAW FUEL 1 X	Fuel indication system.	000 - 009. 10 - 254. 255 - --.	Displays present received fuel level input 1 in decimal, fuel gauge will indicate present filtered level. 000 - 009=Short Circuit (below empty). 10 - 254=Normal range. 255=Open Circuit (over full). ---=Missing.
23 - Fuel system 2	RAW FUEL 2 X	Fuel indication system.	000 - 009. 10 - 254. 255 - --.	Displays present received fuel level input 2 in decimal, fuel gauge will indicate present filtered level. 000 - 009=Short Circuit (below empty). 10 - 254=Normal range. 255=Open Circuit (over full). ---=Missing.
24 - Fuel system 3	FILTER FUEL 1 XXX	Fuel indication system.	000 - 254. 255.	000 - 254=Normal range. 255=Open/short detected.
25 - Fuel system 4	FILTER FUEL 1 XXX	Fuel indication system.	000 - 254. 255.	000 - 254=Normal range. 255=Open/short detected.
26 - Fuel gauge 1	FUEL PERCENT XXX	Fuel gauge.	000 - 254. 255.	Displays present damped total fuel level percent status in decimal. 000 - 254=Normal range. 255=Open/short detected.
27 - Fuel gauge 2	FUEL DRIVER XXXX	Fuel gauge.	N/A	Displays Fuel gauge driver counts in decimal.
				Displays last temperature



28 - Engine coolant temperature	ENGINE TEMP IN XXXX	Temperature gauge.	---- 369.5.	gauge input value from CAN in 1/10 deg C, no decimal point shown. Temperature gauge will indicate present filtered temperature Displays '-----' if message is not received or if received data is invalid.
29 - Temperature gauge driver	TEMP DRIVER XXXX	Temperature gauge.	N/A	Displays temperature gauge driver counts in decimal.
30 - Odometer count	ROLLING ODO XXX	Odometer.	----. 0 - 254. 255.	Displays the odometer input value received via CAN in decimal, value is a rolling count. ---- =Message is not received or if received data is invalid. 0 - 254=Valid odometer increment. 255=Invalid data.
31 - ACC	ACC STATUS XX XXXX XXXX	Cluster configuration.	N/A	Displays coding of Active Cruise Control (ACC) configuration settings.
32 - PCM	PCM XX XXXX XX	Cluster configuration.	N/A	Displays coding of Powertrain Control Module (PCM) configuration settings.
33 - TCM	TCM XX XX	Cluster configuration.	N/A	Displays coding of Transmission Control Module (TCM) configuration settings.
34 - DSC	DSC XX	Cluster configuration.	N/A	Displays coding of DSC configuration settings.
35 - Battery voltage	BATT XXXX	Battery voltage.	N/A	Displays present battery input voltage.
				Displays Oil pressure input.

36 - Oil pressure	OIL X	Oil pressure.	-L. -O.	-L=Good oil pressure (open). -O=Low oil pressure (ground).
37 - LCD Illumination	LCD XXXX	LCD illumination.	0-100.	Displays LCD illumination duty cycle.
38 - Cluster illumination	BACK LIGHT XXX	Cluster illumination.	0-100.	Displays cluster backlight dimming duty cycle.
39 - Engine run/start	CRANK X	Ignition status.	-B. -O.	RUN/START sense circuit check. -B=Input is high. -O=Input is low (open).
40 - Accessory circuit	ACCESSORY X	Accessory circuit.	-B. -O.	RUN/ACC sense circuit check. -B=Input is high (B+). -O=Input is low (open).
41 - Autolamps	AUTOLAMP X	Autolamp circuit status.	N/A	Autolamp decoded state check.
42 - Park switch	PARK SW X	Automatic transmission J-Gate park switch circuit.	-B. -O.	J-Gate park switch circuit check. -B=J-Gate lever in Park. -O=J-Gate lever in not in Park.
43 - Key-in switch	DOOR -X	Door ajar Standard Corporate Protocol (SCP) input status.	-B. -O.	KEY-IN switch circuit check. -B=Key-in. -O=Key-out.
44 - Seatbelt/airbag chime	SBELT AB X	Seatbelt and airbag chime circuit.	-B. -O.	Seatbelt and airbag chime sense circuit check. -B=Belt unbuckled. -O=Belt buckled.
45 - Auxiliary switch pack	SW PAC XXX	Auxiliary switch pack status.	N/A	Displays coding of auxiliary switch pack status.
46 - Coolant level	L COOL X	Coolant level sense circuit .	-B. -O.	Displays input status of the low coolant level switch. -B=Coolant level low (open). -O=Coolant level ok (ground).
47 - PATS	PATS XX	Passive Anti-Theft System (PATS) status.	0-FF.	Displays hexadecimal coding of PATS status byte.

48 to 54 - Not required	PORT A XX to PORT T XX	.	N/A	Not required.
55 to 70 - Not required	A/D 0- RAW: XXX RATIO: XXX to A/D15- RAW: XXX RATIO: XXX	.	N/A	Not required.
71 - Back to test 2	TEST GAUGES	Tachometer, speedometer, temperature and fuel.	N/A	Repeats display cycle from test 2.

## Diagnostic Procedure

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2. To navigate forward through the instrument cluster Self-Diagnostic Mode tests, press the trip computer 'MLS/KMS' button.
3. To navigate backward through the instrument cluster Self-Diagnostic Mode tests, press the trip computer 'A/B' button.
4. To exit Self-Diagnostic Mode, press the stalk trip cycle button for more than three seconds.
5. The Self-Diagnostic Mode is also deactivated when the ignition switch is turned to the 'OFF' position, or low battery voltage is detected.
6. If the Self-Diagnostic Mode cannot be accessed (check function of buttons), use IDS/WDS to diagnose the instrument cluster.

ETM Test/No.	RH Message Centre Display	Gauge/Indicator/Display Tested	Range	Description
1 - Self-diagnostic entry	TEST	.	Not Applicable (N/A)	Establishes Self-Diagnostic mode.
2 - Gauge sweep	GAUGES	Tachometer, speedometer, temperature and fuel rewind test. Gauges display current values after test.	N/A	All gauges perform a rewind to pointer stop.

3 - RH Message Centre LCD.	Lower dot matrix `pixels` activated or all segments activated.	RH message centre LCD. LCD trip/odometer display.	N/A	LCD function, prove out. High series: Activates lower `pixels` of dot matrix display. Low series: Activates all segments of the LCD display.
4 - Warning lamp LED's	BULB	All internally controlled lamps/LED's regardless of software configuration.	N/A	Illuminates all the LED warning indicators that are controlled by the instrument cluster. When this test is exited current vehicle warning lamps will remain illuminated.
5 - ROM level	ROM XXXX/FAIL	Instrument cluster Read Only Memory (ROM).	N/A	Displays the instrument cluster ROM level or ROM checksum fault.
6 - NVM level	NR XXXX	ROM level (most significant bit) and type (least significant bit) as stored in Non-Volatile Memory (NVM).	N/A	Displays hexadecimal coding of ROM level or checksum fault.
7 - EEPROM level	EE XX/FAIL	Electrically Erasable Programmable Read Only Memory (EEPROM) level.	N/A	Displays hexadecimal coding of EEPROM level or checksum fault.
8 - Manufacturing date	DT XXXX	Final manufacturing test date.	N/A	Displays hexadecimal coding of final manufacturing test date.
9 - Cluster configuration 1	CF 1 XX	Cluster configuration settings (byte 1).	N/A	Displays hexadecimal coding of cluster configuration settings (byte 1).
10 - Cluster configuration 2	CF 2 XX	Cluster configuration settings (byte 2).	N/A	Displays hexadecimal coding of cluster configuration settings (byte 2).
11 - Cluster configuration 3	CF 3 XXX	Cluster configuration	N/A	Displays hexadecimal coding of cluster

		settings (byte 3).		configuration settings (byte 3)
12 - Cluster configuration 4	CF 4 XX	Cluster language configuration (byte 4).	00.	= Default language. 01 English UK. 02 French. 03 Finnish. 04 English US. 05 Italian. 06 Portuguese. 07 German. 08 Spanish. 09 Dutch. 10 Swedish. 11 Japanese. FF Not know.
13 - Cluster configuration 5	CF 5 XXXX	Cluster configuration settings (byte 5).	N/A	Displays hexadecimal coding of cluster configuration settings (byte 5).
14 - Diagnostic Trouble Code (DTC)	DTC XXXX	DTCs.	Alternating flashes of 'DTC' and actual DTC value or DTC/NONE).	Displays hexadecimal coding of DTCs detected in continuous operation not during self test. If DTCs are logged each button press will cause the next DTC to be displayed until all unique DTCs have been displayed. Display's DTC/NONE if no DTCs present. Refer to WDS/IDS to diagnose the instrument cluster.
15 - Vehicle speed (mile/h)	E XXXX	Speedometer.	---- to 4072.	Displays speed input value after compensation in tenths of mile/h, no decimal point shown. Speedometer will indicate present speed. Displays '--' if message is not received or if received data is invalid for two seconds or more.
				Displays speed input value after compensation in

16 - Vehicle speed (km/h)	XXXX	Speedometer.	---- to 6553.	tenths of km/h, no decimal point shown. Speedometer will indicate present speed. Displays '----' if message is not received or if received data is invalid for two seconds or more.
17 - Speedometer driver	SG XXXX	Speedometer.	.	Displays speedometer driver gauge counts in decimal.
18 - Engine speed	T XXXX	Tachometer.	---- to 6383.	Displays tachometer input value in rpm. Tachometer will indicate present rpm. Displays '----' if message is not received or if received data is invalid for two seconds or more.
19 - Tachometer driver	TG XXXX	Tachometer.	.	Displays tachometer driver gauge counts in decimal.
20 - Fuel system 1	F1 XXX	Fuel indication system.	000 - 009. 10 - 254. 255. --.	Displays present received fuel level input 1 in decimal, fuel gauge will indicate present filtered level. 000 - 009=Short Circuit (below empty). 10 - 254=Normal range. 255=Open Circuit (over full). ---=Missing.
21 - Fuel system 2	F2 XXX	Fuel indication system.	000 - 009. 10 - 254. 255. --.	Displays present received fuel level input 2 in decimal, fuel gauge will indicate present filtered level. 000 - 009=Short Circuit (below empty). 10 - 254=Normal range. 255=Open Circuit (over full). ---=Missing.
				Displays present filtered

22 - Fuel system 3	FP1 XXX	Fuel indication system.	000 - 254. 255.	Fuel level percent status from sender 1 in decimal. 000 - 254=Normal range. 255=Open/Short detected.
23 - Fuel system 4	FP2 XXX	Fuel indication system.	000 - 254. 255. NC.	Displays present filtered Fuel level percent status from sender 2 in decimal. 000 - 254=Normal range. 255=Open/Short detected. NC=Not configured/option not present.
24 - Fuel gauge 1	FP XXX	Fuel gauge.	000 - 254. 255.	Displays present damped total fuel level percent status in decimal. 000 - 254=Normal range. 255=Open/Short detected.
25 - Fuel gauge 2	FG XXXX	Fuel gauge.	N/A	Displays fuel gauge driver counts in decimal.
26 - Engine coolant temperature	XXXX C	Temperature gauge.	----. 369. 5.	Displays last temperature gauge input value from CAN in 1/10 deg C, no decimal point shown. Temperature gauge will indicate present filtered temperature. Displays '----' if message is not received or if received data is invalid.
27 - Temperature gauge driver	CG XXXX	Temperature gauge.	N/A	Displays temperature gauge driver counts in decimal.
28 - Odometer count	ODO XXX	Odometer.	----. 0 - 254. 2550.	Displays the odometer input value received via CAN in decimal, value is a rolling count. ---- =Message is not received or if received data is invalid. 0 - 254=Valid

				odometer increment. 2550=Invalid data.
29 - VAP	VAP XXX	Variable assisted power steering status.	0 - 511. S-B. S-G. OL. FLt. EE. NC.	S-B=Short to battery. S-G=Short to ground. OL=Open load. FLt=No comms fault. EE=NVM checksum failure. NC=Not configured/option not present.
30 - Cruise control	CRC -X	Cruise control status.	-0. -1. -3. -7. NC. --.	-0=Cruise off. -1=Cruise enabled, no function. -3=Cruise resuming. -7=Cruise on. NC=Not configured/option not present. --=CAN message not received or invalid.
31 - Adaptive Cruise Control	ACr XX	Adaptive cruise control status. Low series only.	N/A	Not configured. Note: Test in low series only.
32 - Powertrain check	PTC XX	Powertrain check status.	0 - ff.	Bit 0=MIL. Bits 1 -3=Red throttle malfunction. Bits 4 -5=Amber throttle malfunction. CAN message not received or invalid.
33 - Transmission check	TRN -X	Transmission check status.	0. 1. --.	0=Transmission function normal. 1=Transmission fault. --=CAN message not received or invalid.
34 - Interactive vehicle dynamics	IVD XX	Interactive Vehicle Dynamics status.	0 - ff. NC. --.	0 = No faults. Bit 0 = ABS/TCS fault. Bit 1 = Brake intervention fault. Bit 3 = Engine intervention fault. Bit 4 = EBD fault. Bit 5 = YAW/IVD fault. NC=Not configured/Option not present. --=CAN message not received or invalid.



35 - Battery voltage	BATT XX.X	Battery voltage.	N/A	Displays present battery input voltage.
36 - Oil pressure	OIL -X	Oil pressure input status.	-O. -G.	-O=Good oil pressure (open). -G=Low oil pressure (ground).
37 - Brake fluid	BF -X	Brake fluid level input status.	-O. -G.	-O=Good fluid level (open). -G=Low fluid level (ground).
38 - Handbrake	HB -X	Handbrake input status.	-O. -G.	-O=Brake off (open). -G=Brake on (ground).
39 - Dipped beam	DB -X	Dipped beam input status.	-B. -O.	-B=Exterior lights OFF or side lights ON. -O=Head lights ON (dipped or main beam).
40 - Side lights	SLP -X	Side light input status.	-B. -O.	-B=Side lights ON (B+). -O=Side lights OFF (open).
41 - Cluster illumination	IL XXX	Cluster illumination input.	0 - 1000.	Displays instrument panel illumination duty cycle. With vehicle lights on value will change when dimmer adjusted. Static display of last value when lights turned off. % Pulse Width Modulated (PWM) duty cycle in 0.1 steps.
42 - LCD Illumination	LC XXXX	LCD illumination input.	0 - 1000.	Displays LCD illumination duty cycle. With vehicle lights on value will change when dimmer operated. Static display of last value when lights turned off. % Pulse Width Modulated (PWM) duty cycle in 0.1 steps.
43- Step dimming	STXXXX	Step dimming input.	0 - 1000.	.
44 - Door ajar	DOOR -X	Door ajar Standard Corporate Protocol (SCP)	-F. -N.	-F=Door ajar. -N=Doors closed. Wagon liftgate not

		input status.		linked to door ajar input.
45 - Seatbelt	STBT -X	Safety belt Standard Corporate Protocol (SCP) input status.	-F. -F.	-F=Safety belt warning message OFF. -F=Safety belt warning message ON.
46 - Engine run/start	CR- X	Ignition status.	-B. -O.	-B=Input is high (B+). -O=Input is low (open). Should always be seen as -O.
47 - Accessory circuit	AC -X	Accessory circuit status.	-B. -O.	-B=Input is high (B+). -O=Input is low (open).
48 - Auxiliary switch pack	PAC XXX	Auxiliary switch pack status.	0-255. NC.	0-255=Displays auxiliary switch pack status. NC=Not configured (low series).
49 - Vehicle inertia switch	VIS -X	Vehicle inertia switch input status.	-O. -G.	-O=Switch OK (open). -G=Switch tripped (ground).
50 - Washer level	LF -X	Washer fluid sense circuit.	-O. -G.	-O=Coolant level OK (open). -G=Coolant level low (ground).
51 - Reverse switch	RE -X	Reverse switch sense circuit.	-B. -O. NC.	-B=Reverse switch engaged/on (B+). -O=Reverse switch disengaged/off (open). NC=Not configured.
52 - PATS	PATS XX	Passive Anti-Theft System (PATS) status.	0-FF.	Displays hexadecimal coding of PATS status byte. 0=No Diag Byte. 1=Bad Diag Byte. 2=Start Byte Received. 3=Key Read Complete. 4=Key Is Programmed. 5=Bad Read Address. 6=Signature Matches.
53 - TFB	TFB -XX	?	0-FF.	High series only.
54 - EVOL	EVOLUME -XX	?	0-FF.	High series only.

55 to 59 - Not required	PA -XX to PT -XX	.	N/A	Not required.
60 to 63 - Not required	AD0 -XXX to AD4 -XxX	.	N/A	Not required.
64 to 65 - Not required	AP0 -XX to AP1 -XX	.	N/A	Not required.
66 - Back to test 2	GAGE	Tachometer, speedometer, temperature and fuel.	N/A	Repeats display cycle from test 2.

## Diagnostic Procedure

### New XJ (up-to X358) Instrument Cluster Self-Diagnostic ETM

To place the cluster in ETM, perform the following:

1. Press and hold the stalk trip cycle button whilst turning the ignition from position 0 to position II, until 'ENGINEERING TEST MODE' is displayed on the RH Message Centre display. The stalk trip cycle button must be released within three seconds of 'ENGINEERING TEST MODE' being displayed or the instrument cluster will exit Self-Diagnostic mode.
2. To navigate forward through the instrument cluster Self-Diagnostic Mode tests, press the trip computer 'MLS/KMS' button.
3. To navigate backward through the instrument cluster Self-Diagnostic Mode tests, press the trip computer 'A/B' button.
4. To exit Self-Diagnostic Mode, press the stalk trip cycle button for more than three seconds.
5. The Self-Diagnostic Mode is also deactivated when the ignition switch is turned to the 'OFF' position, or low battery voltage is detected.
6. If the Self-Diagnostic Mode cannot be accessed repeat the above paying particular care to the sequence timing. NOTE: ETM is not available on X358. If ETM is not available use IDS/WDS to diagnose the instrument cluster.

ETM Test/No.	RH Message Centre Display	Gauge/Indicator/Display Tested	Range	Description
1 - Self-diagnostic entry	TEST MODE (After button release)	.	.	Establishes Self-Diagnostic mode. Note: TEST MODE is only displayed after the mode button is released.
		Tachometer, speedometer, temperature and fuel		All gauges perform a

2 - Gauge sweep	TEST GAUGES	rewind test. Gauges display current values after test.	Not Applicable (N/A).	rewind to pointer stop.
3 - RH Message Centre LCD.	Lower dot matrix 'pixels' activated.	Message centre LCD.	N/A	Activates lower 'pixels' of dot matrix display.
4 - Warning lamp LED's	TEST LEDS	All internally controlled lamps/LED's regardless of software configuration.	N/A	Illuminates all the LED warning indicators that are controlled by the instrument cluster. When this test is exited current vehicle warning lamps will remain illuminated.
5 - ROM level	ROM XXXX/FAIL	Instrument cluster Read Only Memory (ROM).	N/A	Displays the instrument cluster ROM level or ROM checksum fault.
6 - NVM level	NVM ROM XXXX	ROM level (most significant bit) and type (least significant bit) as stored in Non-Volatile Memory (NVM).	N/A	Displays hexadecimal coding of ROM level or checksum fault.
7 - EEPROM level	EEPROM XX/FAIL	Electrically Erasable Programmable Read Only Memory (EEPROM) level.	N/A	Displays hexadecimal coding of EEPROM level or checksum fault.
8 - Manufacturing date	DATE XXXX	Final manufacturing test date.	N/A	Displays hexadecimal coding of final manufacturing test date.
9 - VIN	VIN: XXXXXX	Vehicle VIN.	N/A	Displays last two digits of the VIN as stored in the cluster.
10 - Cluster configuration 1	CONFIG 1 XX	Cluster configuration settings (byte 1).	N/A	Displays hexadecimal coding of cluster configuration settings (byte 1).
11 - Cluster configuration 2	CONFIG 2 XX	Cluster configuration settings (byte 2).	N/A	Displays hexadecimal coding of cluster configuration settings (byte 2).
				Displays hexadecimal

12 - Cluster configuration 3	CONFIG 3 XXX	Cluster configuration settings (byte 3).	N/A	coding of cluster configuration settings (byte 3).
13 - Cluster configuration 4	CF 4 XX	Cluster language configuration (byte 4).	00 - 15	00=UK. 01=US. 02=French. 03=Spanish. 04=German. 05=Italian. 06=Dutch. 07=Brazilian, Portuguese. 08=Swedish. 09=Finnish. 10-15=Japanese.
14 - Cluster configuration 5	CF 5 XXXX	Cluster configuration settings (byte 5).	N/A	Displays hexadecimal coding of cluster configuration settings (byte 5).
15 - Diagnostic Trouble Code (DTC)	DTC XXXX	DTCs.	DTC or NONE (dashes).	Displays hexadecimal coding of DTCs detected in continuous operation not during self test. If DTCs are logged each button press will cause the next DTC to be displayed until all unique DTCs have been displayed. Display's DTC/NONE if no DTCs present. Refer to WDS/IDS to diagnose the instrument cluster.
16 - Vehicle speed (mile/h)	ENG SPEED XXXX	Speedometer.	---- to 4072.	Displays speed input value after compensation in tenths of mile/h, no decimal point shown. Speedometer will indicate present speed. Displays '--' if message is not received or if received data is invalid for two seconds or more.
				Displays speed input value

17 - Vehicle speed (km/h)	MET SPEED X	Speedometer.	---- to 6553.	after compensation in tenths of km/h, no decimal point shown. Speedometer will indicate present speed. Displays '----' if message is not received or if received data is invalid for two seconds or more.
18 - Speedometer driver	SPEEDO DRIVER XXXX	Speedometer.	.	Displays speedometer driver gauge counts in decimal.
19 - Engine speed	TACHO IN XXXX	Tachometer.	---- to 6383.	Displays tachometer input value in RPM. Tachometer will indicate present RPM. Displays '----' if message is not received or if received data is invalid for two seconds or more.
20 - Tachometer driver	TACHO DRIVER XXXX	Tachometer.	.	Displays tachometer driver gauge counts in decimal.
21 - Fuel system 1	RAW FUEL 1 XXXX	Fuel indication system.	000 - 009. 10 - 254. 255. --.	Displays present received fuel level input 1 in decimal, fuel gauge will indicate present filtered level. 000 - 009=Short Circuit (below empty). 10 - 254=Normal range. 255=Open Circuit (over full). ---=Missing.
22 - Fuel system 2	RAW FUEL 2 X	Fuel indication system.	000 - 009. 10 - 254. 255. --.	Displays present received fuel level input 2 in decimal, fuel gauge will indicate present filtered level. 000 - 009=Short Circuit (below empty). 10 - 254=Normal range. 255=Open Circuit (over full). ---=Missing.

23 - Fuel system 3	FILTER FUEL 1 XXX	Fuel indication system.	000 - 254. 255.	Displays present filtered fuel level percent status from sender 1 in decimal. 000 - 254= Normal range. 255=Open/Short detected.
24 - Fuel system 4	FILTER FUEL 2 XXX	Fuel indication system.	000 - 254. 255.	Displays present filtered fuel level percent status from sender 2 in decimal. 000 - 254= Normal range. 255=Open/Short detected.
25 - Fuel gauge 1	FUEL PERCENT XXX	Fuel gauge.	000 - 254. 255.	Displays present damped total fuel level percent status in decimal. 000 - 254= Normal range. 255=Open/Short detected.
26 - Fuel gauge 2	FUEL DRIVER XXXX	Fuel gauge.	N/A	Displays fuel gauge driver counts in decimal.
27 - Engine coolant temperature	TEMP IN XXXX	Temperature gauge.	----. 369.5.	Displays last temperature gauge input value from CAN in 1/10 deg C, no decimal point shown. Temperature gauge will indicate present filtered temperature. Displays '----' if message is not received or if received data is invalid.
28 - Temperature gauge driver	TEMP DRIVER XXXX	Temperature gauge.	N/A	Displays temperature gauge driver counts in decimal.
29 - Odometer count	ODO XXX	Odometer.	----. 0 - 254. 255.	Displays the odometer input value received via CAN in decimal, value is a rolling count. ---- =Message is not received or if received data is invalid. 0 - 254=Valid odometer increment.

				255=Invalid data.
30 - VAP	VAPSXXX	Variable assisted power steering status.	0 - 511. S-B. S-G. OL. FLt. EE.	S-B=Short to battery. S-G=Short to ground. OL=Open load. FLt=No comms fault. EE=NVM checksum failure.
31 - ACC	A CRUISE CNTRL -X	Adaptive cruise control status.	-0. -1. NC.	-0=ACC off. -1=ACC on. NC=Option not present.
32 -PCM	PCM XX	Cluster configuration.	N/A	Displays coding of PCM configuration settings.
33 - TCM	TCM XX XX	Traction control status.	-0. -1. --.	-0=Transmission Control Module (TCM) functioning normally. -1=TCM fault. --=Message not received or invalid.
34 - IUD	IUD XX	Cluster configuration.	N/A	Displays coding of IUD configuration settings.
35 - Battery voltage	BATT XXXX	Battery voltage.	N/A	Displays present battery input voltage in tenths of volts.
36 - Oil pressure	OIL -X	Oil pressure input status.	-0. -G.	Displays Oil pressure input. -0=Good oil pressure (open). -G=Low oil pressure (ground).
37 - LCD Illumination	LCD XXXX	LCD illumination.	0-100.	Displays LCD illumination duty cycle Lights off value?
38 - Cluster illumination	BACK LIGHT XXX	Cluster illumination.	0-100.	Displays cluster backlight dimming duty cycle Lights off value?
39 - Brake pad wear	BRAKE PW	Brake pad wear system status. Note: Unused feature.	-O.	Brake pad wear feature not implemented on vehicle. -O=Default value (open).
40 - Accessory circuit	ACCESSORY -X	Accessory circuit.	-B. -O.	RUN/ACC sense circuit check. -B=Input is high (B+). -O=Input is low (open).



41 - Autolamps	AUTOLAMP -X	Autolamp circuit status.	-D. -O	Autolamp decoded state check. -D=Autolamp is day time. -O=Autolamp is night time.
42 - Park switch	PARK SW X	Automatic transmission J-Gate park switch circuit.	-B. -O.	J-Gate park switch circuit check. -B=J-Gate lever in Park. -O=J-Gate lever is not in Park.
43 - Key-in switch	KEY IN X	Ignition key sense circuit.	-B. -O.	KEY-IN switch circuit check. -B=Key-in/high (B+). -O=Key-out/low (open).
44- Seatbelt/airbag chime	SBELT AB X	Seatbelt and airbag chime circuit.	-B. -O.	Seatbelt and airbag chime sense circuit check. -B=Belt unbuckled/high (B+). -O=Belt buckled/low (open).
45 - Auxiliary switch pack	SW PAC XXX	Auxiliary switch pack status.	N/A	Displays coding of auxiliary switch pack status.
46 - Coolant level	L COOL X	Coolant level sense circuit.	-O. -G.	Displays input status of the low coolant level switch. -O=Coolant level low (open). -G=Coolant level OK (ground).
47 - PATS	PATS XX	Passive Anti-Theft System (PATS) status.	0-FF.	Displays hexadecimal coding of PATS status byte.
48 to 53- Not required	PORT A -XX to PORT T -XX	.	N/A	Not required.
54 to 69 - Not required	A/D 0- XX to A/D17- XX	.	N/A	Not required.
70 - Back to test 2	TEST GAUGES	Tachometer, speedometer, temperature and fuel.	N/A	Repeats display cycle from test 2.