

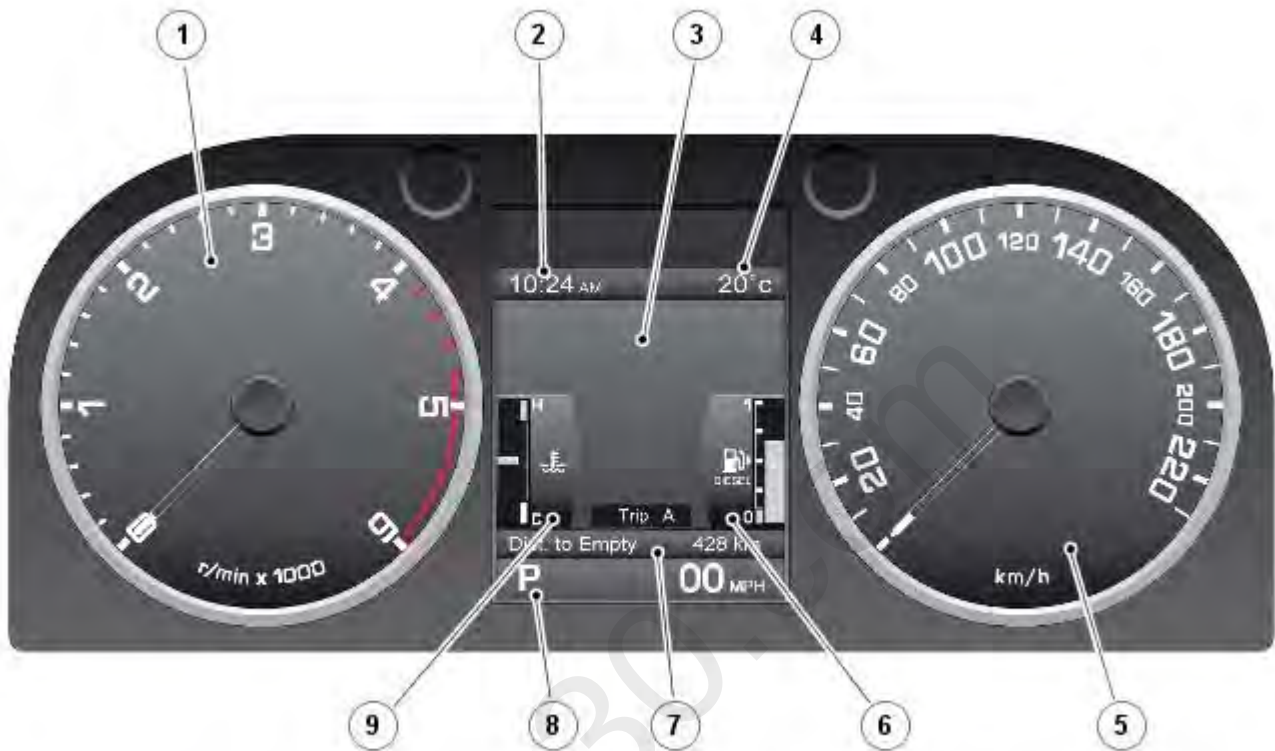
Information and Message Center - Information and Message Center

Description and Operation

OVERVIEW

A new instrument cluster is introduced where in addition to the larger speedometer and tachometer gauges the cluster also incorporates a TFT (Thin Film Transistor) 5" high-definition display unit.

Instrument Cluster Overview



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Item	Part Number	Description
1	-	Tachometer
2	-	Clock
3	-	Message center
4	-	External temperature
5	-	Speedometer
6	-	Fuel gauge
7	-	Total distance odometer and trip recorder
8	-	Gear selector position display
9	-	Engine temperature gauge

The TFT display incorporates a 'Message Center' that communicates vehicle information and status data to the driver. Menus displayed in the message center allow access to a number of vehicle functions through the guidance of the message center menus. The driver operates the message center using the 'menu control' located on the right-hand-side of the steering wheel.

The instrument cluster also features a number of warning indicators, where in addition to those located within the speedometer and tachometer gauges, another six indicators are positioned within the TFT unit above the message center. Refer to the 'Instrument Cluster' section for further information.

The TFT display unit comprises three distinct areas, as shown below:

Thin Film Transistor Display Unit



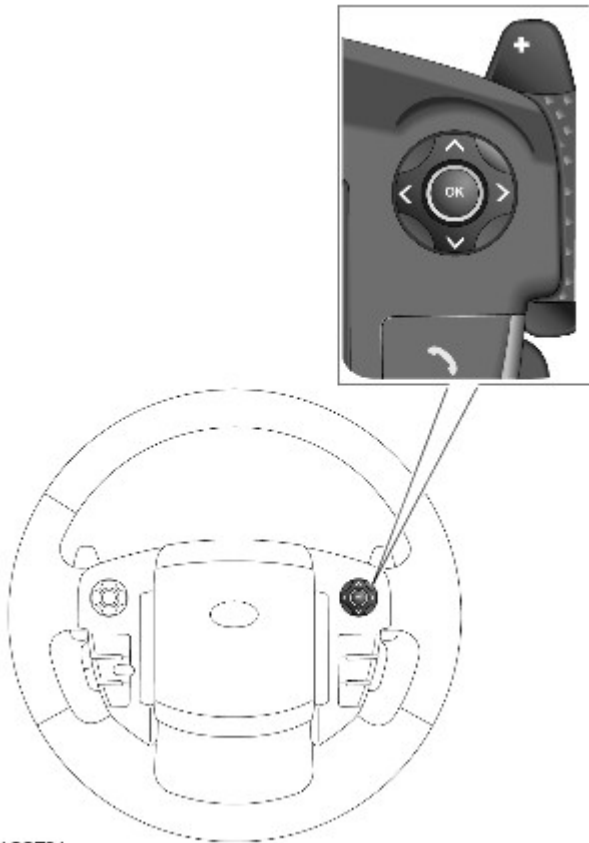
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Item	Part Number	Description
1	-	Warning Indicators - this area is fixed and cannot be overwritten
2	-	Message Center - this area can be overwritten by other information
3	-	Gear Selection and Digital Speedometer Display - this area is fixed and cannot be overwritten

MESSAGE CENTER

The coolant temperature and fuel quantity gauges are the default display in the message center when the stop/start button is pressed. These can be overwritten through the guidance of message center menus, to obtain different permutations of screens which are available to communicate vehicle information and status data to the driver.

Menu Control



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The driver operates the message center using the 'menu control' located on the right-hand-side of the steering wheel. A preference menu is available which allows the driver to personalize certain features and functions in the message center.

Messages displayed in the message center are mainly generated by the instrument cluster which monitors system status via the medium-speed and high-speed [CAN \(controller area network\)](#) bus systems. Other system control modules are also capable of generating messages to communicate system status. Some messages are accompanied by a chime, which is requested by the control module generating the message and functioned by the instrument cluster via the integral sounder.

The driver can view system status messages which are current in the instrument cluster [RAM \(random access memory\)](#), by pressing and releasing the menu control to display current messages in priority order; refer to 'Warning Messages'.

Vehicle Information and Settings Menu

Menu selections are made using the menu control to highlight the required menu option. Once the required option is highlighted that option can be selected by pressing the 'OK' button. The screen will then display a sub-menu, or activate the selected item where applicable.

Vehicle Information and Settings Menu



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Scroll arrows to the left of the menu indicate that there are further menu items either above or below the currently viewed menu items. If the arrow is displayed brightly there are additional menu items available. If the arrows appear dim, there are no additional items. For example, the engine oil level display can be accessed by selecting 'Service Manual' and then selecting 'Oil Level Display'.

Engine Oil Level Display



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To close the main menu, press the left button on the menu control. To close sub-menus press and hold the left button on the menu control.

The menu will close automatically if:

- no action is taken with the main menu within 10 seconds
- action is taken with the main menu and it is then left for 4 minutes

If a further action is taken within the four minutes period, the timer will reset and a further four minutes will have to elapse before the menu closes automatically.

The following table contains an overview of the information and settings menu and option displays:

Close Menu	-	Close the vehicle settings and information menu.
Show Warnings	-	Display all active warning messages.
Vehicle Set-up	Forward Alert	Enable/disable the forward alert feature of the adaptive cruise control system.
	Speed Warning	Enable/disable over speed warning and set the monitored speed.
	High Beam Assist	Enable/disable the operation of the automatic headlamp high beam feature. Configure system for driving on the alternate side of road. Note: Headlamps still need to be manually adjusted.
	Alarm Sensors	This setting allows you to temporarily disable the vehicle's interior space protection and tilt sensor the next time the vehicle is locked with Smart Key. This setting is automatically enabled when the vehicle is unlocked with the Smart Key.
	Reverse-dip Mirror	Enable/disable automatic dipping of exterior mirrors when reverse gear is selected.
	Drive-away Locking	Enable/disable automatic locking off the doors when the vehicle speed exceeds 8 km/h (5 mph).
	2-Stage Unlocking	Enable/disable the single-point entry door unlocking feature.
	Headlamp Delay	Enable/disable the headlamp delay feature. Configure the amount of time the headlamps will remain on: 30, 60, 120 or 240 seconds.
	TPM Load Setting	Change the monitored tire pressures for the vehicle loading conditions: • Heavy Load • Light Load
Trip Computer	Trip A	Enable/disable display of Trip A readings.
	Trip B	Enable/disable display of Trip B readings.
	Trip Auto	Enable/disable display of Trip Auto readings.
	Units	Select the units to be displayed by the trip computer: • Miles, MPH, MPG • Miles, MPH, MPL • Km, km / h, l / 100 km
Display Settings	Language	Select the language for text displayed in the message center.
	Temperature	Select the units for the external temperature reading: • Celsius • Fahrenheit
Service Menu	VIN Display	Displays the Vehicle Identification Number.
	Oil Level Display	Displays the oil level display.
	HBA Sensitivity	Change sensitivity of High Beam Assist system: • Normal Mode • Alternate Mode

Warning Messages

Warning messages are displayed in the message center when a fault is detected or an alert state is triggered. There are three categories of messages that may be displayed in the message center; the driver is made aware of the message by an accompanying warning indicator illuminating.

The warning indicators illuminate in one of three colors, which indicate the level of importance of the warning as follows:

- Critical = red indicator accompanied with and audible alert
- Warning = amber indicator
- Information = green indicator.

• **NOTE:** Messages are displayed in order of importance with 'Critical' messages taking priority.

Priority Group 'P1' **Critical** - This group includes messages which have a direct affect on the driving ability and safety of the vehicle. This type of message requires an urgent and immediate reaction from the driver in response to the message. P1 messages are also accompanied by an appropriate warning indicator symbol and an audible alert. If more than one P1 message is present, each message is displayed in turn at 3 second intervals. Critical messages are displayed in the message center until either the fault condition that caused the message has been rectified or the message is suppressed by using the menu control on the steering wheel. Critical messages can also be recalled by using the menu control. If a critical message has been suppressed the accompanying warning symbol will remain illuminated to indicate that a problem exists.

Priority Group 'P2' **Warning** - This group includes messages which do not directly affect driving ability or safety of the vehicle. P2 messages are also accompanied by appropriate warning indicator symbol. This message must be noted by the driver and the cause rectified as soon as possible. Each message is indicated once for a maximum of 23 seconds. Warning messages are displayed in the message center until either the fault condition that caused the message has been rectified or the message is suppressed by using the menu control on the steering wheel. Warning messages can also be recalled by using the menu control. If a warning message has been suppressed the warning symbol will remain illuminated to indicate that a problem exists.

Priority Group 'P3' **Information** - This group displays messages which relate to fluid levels 'LOW WASHER FLUID' for example, or when an alert state is triggered when driving the vehicle. For example, cancelling cruise control will display the message 'CRUISE CANCELLED'. Depending on the message, some are only displayed at the end of a journey to avoid irritation to the driver. Information messages are displayed for four seconds before extinguishing.

Information Message



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The messages are displayed in a language applicable to the vehicle market configuration and can be changed using the instrument cluster menu. The following list shows the possible messages which can be displayed.

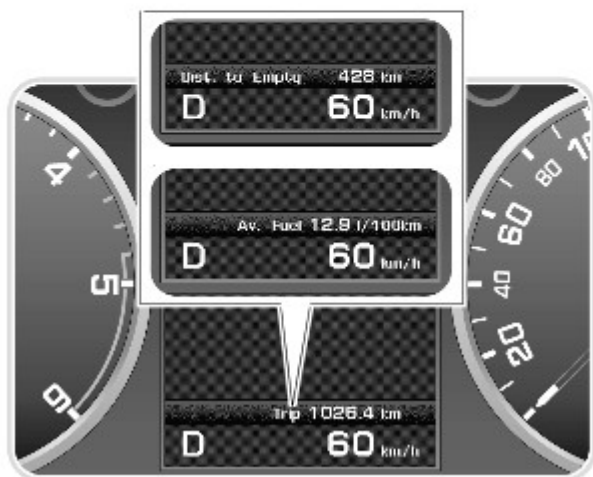
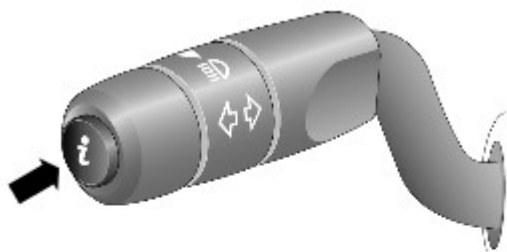
- **NOTE:** If the instruction given in the 'Action' column does not resolve the message display, use the [Workshop Manual Diagnosis and Testing](#) section for the applicable vehicle system to determine the fault and perform any additional action required.

AMBIENT TEMPERATURE

The ambient temperature is displayed in the right-hand position at the top of the message center. The temperature can be displayed in Fahrenheit or Centigrade and this is selectable by the driver using the instrument cluster menu.

ODOMETER AND TRIP METER

Trip Meter



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The odometer is located in a central position at the bottom of the message center. In addition to displaying the total distance the vehicle has traveled. Short presses of the 'I' button, on the end of the 'left-hand' steering column multifunction switch will scroll through the following statistics:

- Odometer
- Trip distance
- Trip average speed
- Trip average fuel consumption
- Instantaneous, short term average, fuel consumption
- Range available from remaining fuel
- Blank display

There are three trip memories available: A, B and Auto. The instrument cluster menu is used to select which trip recording is displayed.

The Auto trip is always available and is reset each time the engine is started and the vehicle moves. Previous trips can be added to form a continuous trip recording by pressing and holding the trip button when the automatic trip information is displayed. The message center will confirm that the previous journey information has been added and pressing and holding the trip button for 1 second will add the data. The previous trip information can also be deleted by pressing and holding the trip button when the automatic trip information is displayed. The message center will confirm deletion of the previous journey data and pressing and holding the trip button for 1 second will delete the previous trip information.

Trip A and B can be reset by the driver at any time. When the required trip information is displayed, pressing and holding the trip button for 2 seconds will erase the previous trip information stored. Resetting trip A or B will not affect the other trip information, for example, if trip A is reset, trip B will retain its information until it is reset.

GEAR POSITION DISPLAY

Gear Position Display



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The gear position shows the current selector position: P, R, N, D or S.

When the transmission is in manual 'CommandShift' mode, the display will show the currently selected gear S1, S2, S3, S4, S5 or S6.

The gear position is illuminated in response to 'CAN' bus messages from the [TCM \(transmission control module\)](#).

The instrument cluster has no control over the gear position display and obtains the information by monitoring the controlling CAN bus messages. If the instrument cluster detects ten incorrect CAN bus messages, 'TRANS. FAILSAFE PROG' is illuminated in the message center.

If a correct CAN bus message is received when the ignition is next switched on, the error is erased and the message removed.

SERVICE INTERVAL INDICATOR

A service interval message will automatically appear in the message center when a pre-determined distance or time before a scheduled service is reached. The kilometer or mileage countdown is controlled by the engine management system and is adjusted to allow for driving style and conditions to gauge when the appropriate service becomes necessary.

Service Interval Message



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The service indicator displays information calculated by the [ECM \(engine control module\)](#) to the remaining distance to the next service based on the amount of fuel used since the last service interval indicator reset.

The ECM counts down the distance to engine service and the instrument cluster rounds this down to the nearest 50 miles. The fuel used based count down starts from 3200 miles displaying the required figure in the trip computer message center, for example 'Service Required in 1950 miles'.

When the ECM has calculated the distance to service is 0 miles, the ECM will request the instrument cluster to display 'Service Required' in the message center.

The ECM also monitors and calculates when the time to the next oil service is required, 'Service Required' is displayed in the message center. This message takes priority over the distance to service calculation.

The service information is displayed in the message center for 4 seconds at each ignition cycle. There is no minus figure if the service distance is exceeded, 'Service Required' is displayed until the ECM service counter is reset using an approved diagnostic system.

Information and Message Center - Information and Message Center

Diagnosis and Testing

Principles of Operation

For a detailed description of the information and entertainment system and operation, refer to the relevant Description and Operation section of the workshop manual. REFER to: [Information and Message Center](#) (413-08 Information and Message Center, Description and Operation).

Inspection and Verification



CAUTION: Diagnosis by substitution from a donor vehicle is **NOT** acceptable. Substitution of control modules does not guarantee confirmation of a fault and may also cause additional faults in the vehicle being checked and/or the donor vehicle.

- **NOTE:** Check and rectify basic faults before beginning diagnostic routines involving pinpoint tests.

1. **1.** Verify the customer concern.
2. **2.** Visually inspect for obvious signs of mechanical or electrical damage.

Visual Inspection

Mechanical	Electrical
● Multi-Media Remote Control Switch ● Multifunction Display Screen	● Fuses ● Wiring harness ● Electrical connector(s) ● Battery condition, state of charge ● Multi-Media Remote Control Switch ● Multifunction Display Module

3. **3.** If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. **4.** If the cause is not visually evident, check for Diagnostic Trouble Codes (DTCs) and refer to the DTC Index.

DTC Index

For a list of Diagnostic Trouble Codes (DTCs) that could be logged on this vehicle, please refer to Section 100-00. REFER to: [Diagnostic Trouble Code \(DTC\) Index - DTC: Instrument Cluster \(IPC\)](#) (100-00 General Information, Description and Operation).