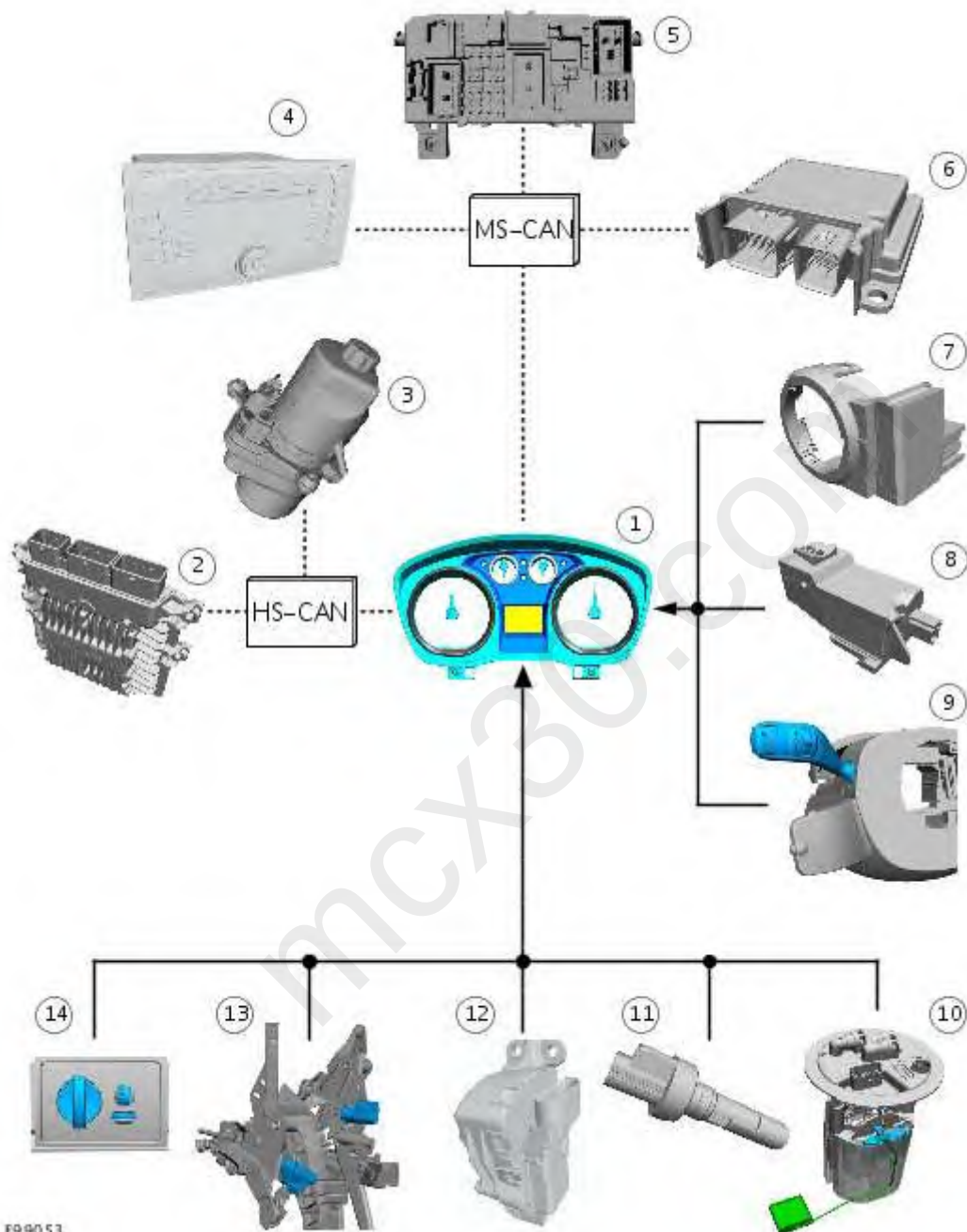


Description and Operation

System Diagram



E99053

Item	Description
1	Instrument Cluster
2	PCM (powertrain control module)
3	{Acronym.EHPS} ({Acronym.EHPS}) control module
4	Audio unit
5	GEM (generic electronic module)
6	RCM (restraints control module)
7	PATS transceiver

8	Steering wheel lock module
9	Left-hand steering column switch
10	Fuel level sensor
11	Washer water level warning lamp switch
12	Accelerator pedal position sensor
13	CPP (clutch pedal position) sensor/BPP (brake pedal position) sensor
14	Lighting control switch

System Operation

Instrument Cluster

The instrument cluster contains analog displays as well as warning and control lamps for displaying the system status; in addition, there is an LCD (liquid crystal display) indicator field for driver information.

The instrument cluster receives the following signals from the PCM via the high speed CAN (controller area network) Bus (HS-CAN):

- Vehicle speed
 - The PCM receives the necessary signals from the ABS (anti-lock brake system) wheel sensors from the ABS control unit on the HS-CAN.
- Engine Coolant Temperature
- Engine oil pressure.
- Engine speed

The instrument cluster receives the following signals from the GEM via the medium speed CAN Bus (MS-CAN):

- Ambient temperature
- Brake fluid level
- Handbrake control
- Door latch control
- Liftgate latch control
- High beam control
- Headlamp flasher control
- Direction indicator control

The fuel level signal is sent by the two fuel level sensors in the fuel pumps in the semitrailer tank, which is wired to the instrument cluster. The sensors are connected in series, and the total resistance is determined from the two individual resistors. The instrument cluster converts the raw fuel level signal into a damped fuel level value.

The odometer shows the total distance travelled by the vehicle and is based on the same signal as is processed for the daily mileage counter. The value is recorded by the instrument cluster and stored in a protected EEPROM (Electrically Erasable Programmable Read Only Memory) area. This area is a memory protected against manipulation. If the instrument cluster detects an error in this memory area, e.g. through damage, the driver is notified with the "Odometer error" message.

Message center

The message center is operated using the left-hand switch on the steering column.

The SET/RESET button is activated to select a submenu and change the settings. If signal tones have been activated, a short acoustic signal will sound each time a button is pressed.

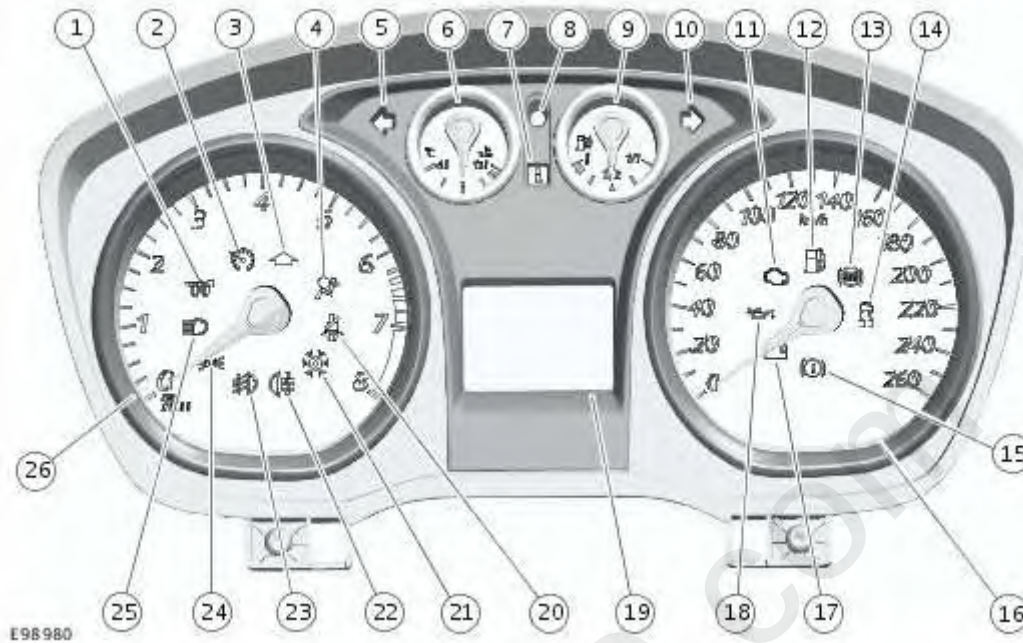
By turning the rotary switch, the different menu displays can be scrolled through or a setting selected.

In this display, the navigation system can also display direction and distance information.

In addition, safety and warning messages can be displayed in this system, such as "Coolant overheating", "Engine system error" or "Washer fluid level too low". In addition to a safety message, a general warning light (red/yellow) lights up.

Component Description

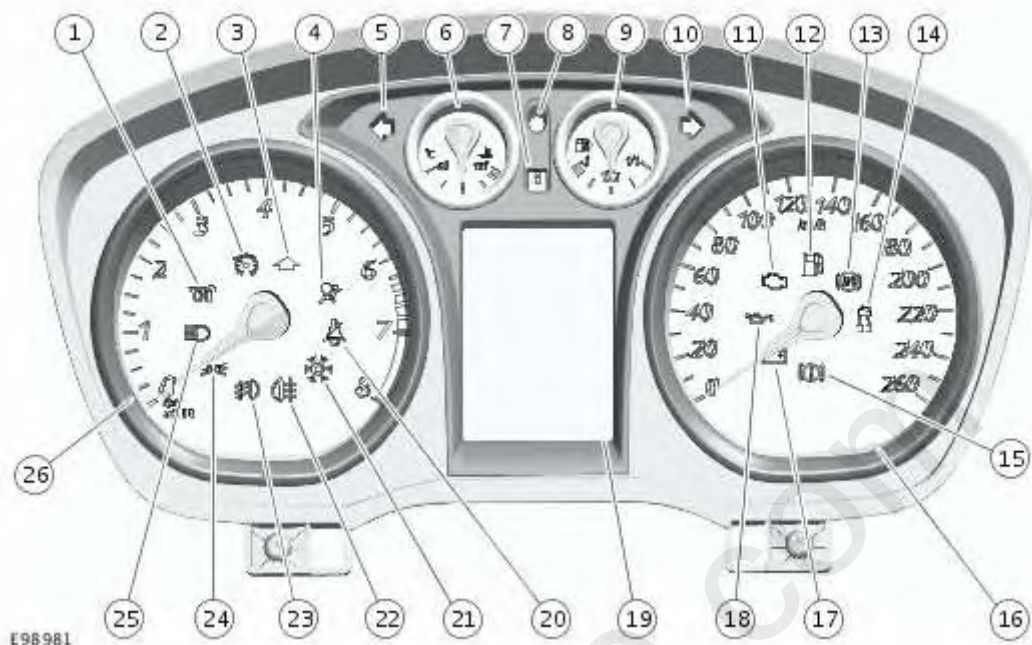
Vehicles with low series instrument cluster



Item	Description
1	Glow plug indicator
2	Speed control system indicator
3	Gear shift indicator
4	Air bag warning indicator
5	Left-hand turn signal indicator
6	Coolant temperature gauge
7	Generic warning indicator (red/amber)
8	PATS (passive anti-theft system) control
9	Fuel Level Gauge
10	Right-hand turn signal indicator
11	Malfunction Indicator Lamp (MIL)
12	Low fuel warning indicator
13	Anti-lock Braking system (ABS) Warning Indicator
14	Stability assist indicator
15	Brake warning indicator
16	Speedometer
17	Charging system indicator
18	Low oil pressure warning indicator
19	Message center
20	Seat belt indicator
21	Ice warning indicator
22	Rear Fog Lamp Indicator

- | |
|-----------------------------|
| 23 Front fog lamp indicator |
| 24 Headlamp indicator |
| 25 High beam indicator |
| 26 Tachometer |

Vehicles with high series instrument cluster



Item	Description
1	Glow plug indicator
2	Speed control system indicator
3	Gear shift indicator
4	Air bag warning indicator
5	Left-hand turn signal indicator
6	Coolant temperature gauge
7	Generic warning indicator (red/amber)
8	PATS control
9	Fuel Level Gauge
10	Right-hand turn signal indicator
11	Malfunction Indicator Lamp (MIL)
12	Low fuel warning indicator
13	Anti-lock Braking system (ABS) Warning Indicator
14	Stability assist indicator
15	Brake warning indicator
16	Speedometer
17	Charging system indicator
18	Low oil pressure warning indicator
19	Message center
20	Seat belt indicator
21	Ice warning indicator
22	Rear Fog Lamp Indicator

23	Front fog lamp indicator
24	Headlamp indicator
25	High beam indicator
26	Tachometer

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