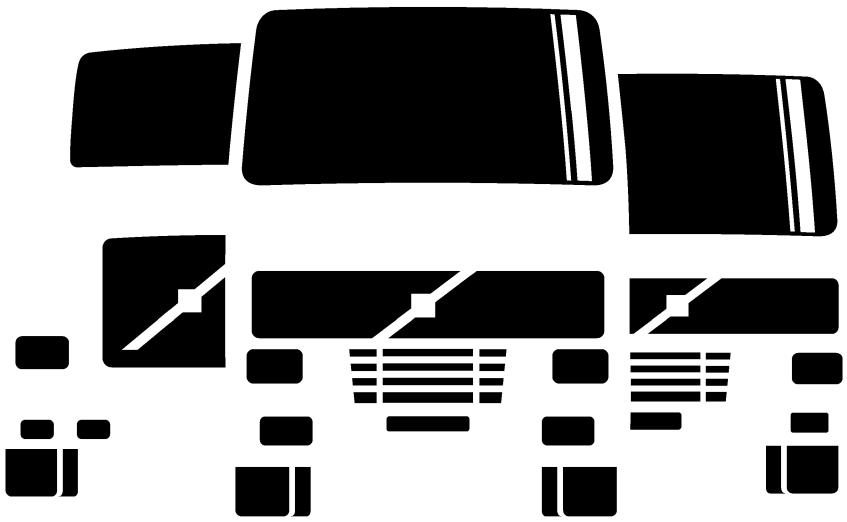
Service Manual
Trucks

Group **38**

Instrument Cluster Control Module (MID 140) Diagnostic Trouble Code (DTC), Guide

From build date 1.2007



PV776-88955132

VOLVO

Foreword

The descriptions and service procedures contained in this manual are based on designs and methods studies carried out up to January 2010.

The products are under continuous development. Vehicles and components produced after the above date may therefore have different specifications and repair methods. When this is believed to have a significant bearing on this manual, supplementary service bulletins will be issued to cover the changes.

The new edition of this manual will update the changes.

In service procedures where the title incorporates an operation number, this is a reference to an V.S.T. (Volvo Standard Times).

Service procedures which do not include an operation number in the title are for general information and no reference is made to an V.S.T.

Each section of this manual contains specific safety information and warnings which must be reviewed before performing any procedure. If a printed copy of a procedure is made, be sure to also make a printed copy of the safety information and warnings that relate to that procedure. The following levels of observations, cautions and warnings are used in this Service Documentation:

Note: Indicates a procedure, practice, or condition that must be followed in order to have the vehicle or component function in the manner intended.

Caution: Indicates an unsafe practice where damage to the product could occur.

Warning: Indicates an unsafe practice where personal injury or severe damage to the product could occur.

Danger: Indicates an unsafe practice where serious personal injury or death could occur.

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Contents

Design and Function

MID 140 Instrument Control Unit

The “Premium Tech Tool” (PTT) is the preferred tool for performing diagnostic work. Contact your local dealer for more information or visit “www.premiumtechtool.com”.

System Overview

The instrument cluster is used to provide the operator with information via gauges, indicator lamps and a display.

Via the three connectors on the rear of the instrument cluster module, information from the whole vehicle is received.

Some information is received from sensors directly connected to the instrument panel, and some is received across the J1587 data link. The data link permits other control units in the vehicle to send messages to the instrument panel. The instrument panel receives these messages, processes them and then presents the information in a suitable form to the operator.

The operator can use a control stalk on the steering column to cycle through a set of menus to gain a more detailed picture of the vehicle status.

For more information about the control stalk, refer to either the “General Electrical Manual” found in function group 30 or the truck Operator’s Manual.

Troubleshooting

MID 140 Instrumentation, Fault Codes

The “Premium Tech Tool” (PTT) is the preferred tool for performing diagnostic work. Contact your local dealer for more information or visit “www.premiumtechtool.com”.

The control units on the information link communicate according to the SAE J1587 standard. The standard has been extended with Volvo’s own supplement (PPID, PSID). The fault codes set by the control units contain information that is described by the following abbreviations.

MID	Message Identification Description: Identification of a control unit.	SID	Subsystem Identification Description: Identification of a component.
PID	Parameter Identification Description: Identification of a parameter (value).	PSID	Proprietary Subsystem Identification Description Volvo: Unique identification of a component.
PPID	Proprietary Parameter Identification Description Volvo: Unique identification of a parameter (value).	FMI	Failure Mode Identifier: Identification of fault types.

FMI Table

FMI	Display Text	SAE Text
0	Too high value	Data valid, but above the normal work range
1	Too low value	Data valid, but below the normal work range
2	Incorrect data	Data erratic, Intermittent or incorrect
3	Electrical fault	Voltage above normal or shorted high
4	Electrical fault	Voltage below normal or shorted low
5	Electrical fault	Current below normal or open circuit
6	Electrical fault	Current above normal or grounded circuit
7	Mechanical fault	Mechanical system not responding properly
8	Mechanical or electrical fault	Abnormal frequency, pulse width or period
9	Communication fault	Abnormal update rate
10	Mechanical or electrical fault	Abnormal rate of change
11	Unknown fault	Failure mode not identifiable
12	Component fault	Bad intelligent device or component
13	Incorrect calibration	Out of calibration
14	Unknown fault	Special instructions
15	Unknown fault	Reserved for future assignment by SAE Data Formal Subcommittee

MID 140 Control Unit, Fault Tracing

PID

PPID

SID

PSID

MID 140 PID 7 Axle 2 Lift Air Pressure

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 3	• Abnormally high voltage or short circuit to higher voltage	• Sensor output voltage above 5 V	• N/A	• Faulty harness • Faulty rear air suspension sensor
FMI 4	• Abnormally low voltage or short circuit to lower voltage	• Sensor output voltage below 0.25 V	• N/A	• Faulty harness • Faulty rear air suspension sensor

MID 140 PID 76 Axle Lift Air Pressure

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 3	• Abnormally high voltage or short circuit to higher voltage	• Sensor output voltage above 5 V	• N/A	• Faulty harness • Faulty front air suspension sensor
FMI 4	• Abnormally low voltage or short circuit to lower voltage	• Sensor output voltage below 0.25 V	• N/A	• Faulty harness • Faulty front air suspension sensor

MID 140 PID 77 Forward Rear Axle Temperature

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 5	• Abnormally low current or open circuit	• Sensor resistance above 100 kOhm	• N/A	• Faulty harness • Faulty outdoor temperature sensor
FMI 6	• Abnormally high current or short circuit to ground	• Sensor resistance below 10 Ohm	• N/A	• Faulty harness • Faulty outdoor temperature sensor

MID 140 PID 78 Rear Axle Temperature

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 5	• Abnormally low current or open circuit	• Sensor resistance above 100 kOhm	• N/A	• Faulty harness • Faulty outdoor temperature sensor
FMI 6	• Abnormally high current or short circuit to ground	• Sensor resistance below 10 Ohm	• N/A	• Faulty harness • Faulty outdoor temperature sensor

MID 140 PID 84 Road Speed

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 9	• Abnormal Update Rate	• Signal missing for more than 8 seconds	• N/A	• Data link fault (J1587/J1939)

MID 140 PID 96 Fuel Level

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 5	• Abnormally low current or open circuit	• Sensor resistance above 1 kOhm	• Gauge needle moves to zero position	• Faulty harness • Faulty fuel level sensor
FMI 6	• Abnormally high current or short circuit to ground	• Sensor resistance below 20 Ohm	• Gauge needle moves to zero position	• Faulty harness • Faulty fuel level sensor

MID 140 PID 100 Engine Oil Pressure

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 9	• Abnormal Update Rate	• Signal missing for more than 8 seconds	• N/A	• Data link fault (J1587/J1939)

MID 140 PID 102 Boost Pressure

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 9	• Abnormal Update Rate	• Signal missing for more than 8 seconds	• N/A	• Data link fault (J1587/J1939)

MID 140 PID 110 Engine Coolant Temperature

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 9	• Abnormal Update Rate	• Signal missing for more than 8 seconds	• N/A	• Data link fault (J1587/J1939)

MID 140 PID 116 Application Air Pressure

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 3	• Abnormally high voltage or short circuit to higher voltage	• Sensor output voltage above 5 V	• Gauge needle moves to zero position (Warning with high cluster only)	• Faulty harness • Faulty brake pressure sensor
FMI 4	• Abnormally low voltage or short circuit to lower voltage	• Sensor output voltage below 0.25 V	• Gauge needle moves to zero position (Warning with high cluster only)	• Faulty harness • Faulty brake pressure sensor

MID 140 PID 117 Air Brake Pressure, Front

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 3	• Abnormally high voltage or short circuit to higher voltage	• Sensor output voltage above 5 V	• Gauge needle moves to zero position, Warning lamp	• Faulty harness • Faulty brake pressure sensor
FMI 4	• Abnormally low voltage or short circuit to lower voltage	• Sensor output voltage below 0.25 V	• Gauge needle moves to zero position, Warning lamp	• Faulty harness • Faulty brake pressure sensor

MID 140 PID 118 Air Brake Pressure, Rear

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 3	• Abnormally high voltage or short circuit to higher voltage	• Sensor output voltage above 5 V	• Gauge needle moves to zero position, Warning lamp	• Faulty harness • Faulty brake pressure sensor
FMI 4	• Abnormally low voltage or short circuit to lower voltage	• Sensor output voltage below 0.25 V	• Gauge needle moves to zero position, Warning lamp	• Faulty harness • Faulty brake pressure sensor

MID 140 PID 158 Battery Voltage

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 3 (Analog gauge on base cluster, digital gauge on mid and high cluster)	• Abnormally high voltage or short circuit to higher voltage	• Battery voltage indicator	• Yellow Check lamp lit	• Faulty harness
FMI 3 (Mid and high cluster only)	• Abnormally high voltage or short circuit to higher voltage	• Battery voltage above 15 V	• Yellow Check lamp lit	• Faulty harness
FMI 4 (Mid and high cluster only)	• Abnormally low voltage or short circuit to lower voltage	• Batery voltage below 11 V	• Yellow Check lamp lit	• Faulty harness

MID 140 PID 171 Ambient Temperature

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 5	• Abnormally low current or open circuit	• Sensor resistance above 25 kOhm	• N/A	• Faulty harness • Faulty outdoor temperature sensor
FMI 6	• Abnormally high current or short circuit to ground	• Sensor resistance below 25 Ohm	• N/A	• Faulty harness • Faulty outdoor temperature sensor

MID 140 PID 173 Pyrometer Temperature

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 9	• Abnormal Update Rate	• Signal missing for more than 8 seconds	• N/A	• Data link fault (J1587/J1939)

MID 140 PID 175 Engine Oil Temperature

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 9	• Abnormal Update Rate	• Signal missing for more than 8 seconds	• N/A	• Data link fault (J1587/J1939)

MID 140 PID 177 Transmission Oil Temperature

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 5	• Abnormally low current or open circuit	• Sensor resistance above 5 kOhm	• Yellow Check lamp lit	• Faulty harness • Faulty outdoor temperature sensor
FMI 6	• Abnormally high current or short circuit to ground	• Sensor resistance below 10 Ohm	• Yellow Check lamp lit	• Faulty harness • Faulty outdoor temperature sensor

MID 140 PID 190 Engine Speed

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 9	• Abnormal Update Rate	• Signal missing for more than 8 seconds	• N/A	• Data link fault (J1587/J1939)

MID 140 PID 373 Center Rear Drive Axle Temperature

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 5	• Abnormally low current or open circuit	• Sensor resistance above 100 kOhm	• Yellow Check lamp lit	• Faulty harness • Faulty outdoor temperature sensor
FMI 6	• Abnormally high current or short circuit to ground	• Sensor resistance below 10 Ohm	• Yellow Check lamp lit	• Faulty harness • Faulty outdoor temperature sensor

MID 140 PPID 119 Coolant Temperature Gauge Adjustment

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 9	• Abnormal Update Rate	• Signal missing for more than 8 seconds	• N/A	• Data link fault (J1587) • ECU

MID 140 SID 250 J1587/1708 Information Link

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 9	• Abnormal update rate	• PID 44 missing on data link for more than 30 seconds	• Yellow Check lamp lit	• Data link fault (J1587) • ECU
FMI 12	• Faulty unit or component	• PID 44 missing on data link for more than 30 seconds	• N/A	• Data link fault (J1587)/CAN1

MID 140 PSID 39 Steering Wheel Buttons, YES

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• Active signal (button) for more than 60 seconds	• N/A	• Faulty harness • Faulty steering wheel button

MID 140 PSID 40 Steering Wheel Buttons, NO

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• Active signal (button) for more than 60 seconds	• N/A	• Faulty harness • Faulty steering wheel button

MID 140 PSID 41 Arrow Left

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• Active signal (button) for more than 60 seconds	• N/A	• Faulty harness • Faulty steering wheel button

MID 140 PSID 42 Arrow Right

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• Active signal (button) for more than 60 seconds	• N/A	• Faulty harness • Faulty steering wheel button

MID 140 PSID 43 Volume (+)

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• Active signal (button) for more than 60 seconds	• N/A	• Faulty harness • Faulty steering wheel button

MID 140 PSID 44 Volume (-)

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• Active signal (button) for more than 60 seconds	• N/A	• Faulty harness • Faulty steering wheel button

MID 140 PSID 45 Power Supply Switch Steering Wheel Buttons

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 3	• Abnormally high voltage or short circuit to higher voltage	• Voltage supply to steering wheel button above 16V	• N/A	• Faulty harness • Faulty steering wheel button
FMI 5	• Abnormally low current or open circuit	• Steering wheel button PWM constant low	• N/A	• Faulty harness • Faulty steering wheel button
FMI 9	• Communication fault	• Steering wheel button PWM missing	• N/A	• Faulty harness • Faulty steering wheel button
FMI 6	• Abnormally high current or short circuit to ground	• Steering wheel button PWM constant high	• N/A	• Faulty harness • Faulty steering wheel button

MID 140 PSID 47 Switch Display, Escape

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• Active signal (button) for more than 60 seconds	• N/A	• Faulty harness • Faulty steering wheel button

MID 140 PSID 48 Switch Display, Enter

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• Active signal (button) for more than 60 seconds	• N/A	• Faulty harness • Faulty steering wheel button

MID 140 PSID 49 Switch Display, Up

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• Active signal (button) for more than 60 seconds	• N/A	• Faulty harness • Faulty steering wheel button

MID 140 PSID 50 Switch Display, Down

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• Active signal (button) for more than 60 seconds	• N/A	• Faulty harness • Faulty steering wheel button

MID 140 PSID 200 Communication Interference, Data Link, Engine Control Unit

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• PID 44 missing on data link for more than 30 seconds	• Yellow Check lamp lit	• Data link fault (J1587) • EECU

MID 140 PSID 201 Communication Interference, Data Link, Vehicle Control Unit

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• PID 44 missing on data link for more than 30 seconds	• Yellow Check lamp lit	• Data link fault (J1587) • VECU

MID 140 PSID 202 Communication Interference, Data Link, Instrumentation

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 2	• Data Erraric, intermittent	• DM1 missing on data link	• Yellow Check lamp lit	• Data link fault (J1939) • Engine ECU

MID 140 PSID 204 Communication Interference, Data Link, Brake Control Unit

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 9	• Abnormal update rate	• J1939 Communication missing for more than 30 seconds • Missing hill start assist message	• Stop lamp lit • Hill start assist lamp lit	• Data link fault (J1939) • Brake ECU
FMI 12	• Faulty unit or component	• PID 44 missing on data link for more than 30 seconds	• Stop lamp lit	• Data link fault (J1587) • Brake ECU

MID 140 PSID 205 Communication Interference, Data Link, Transmission Control Unit

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• PID 44 missing on data link for more than 30 seconds	• Yellow Check lamp lit	• Data link fault (J1587) • TECU

MID 140 PSID 208 Communication Interference, Data Link, Air Suspension

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• PID 44 missing on data link for more than 30 seconds	• Yellow Check lamp lit	• Data link fault (J1587) • Air Suspension ECU

MID 140 PSID 210 Data Link, External Lighting Control Unit

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• PID 44 missing on data link for more than 30 seconds	• Yellow Check lamp lit	• Data link fault (J1587) • LCM

MID 140 PSID 211 Data Link Adaptive Cruise Control

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• DM1 missing on data link	• Yellow Check lamp lit	• Data link fault (J1939) • Volvo Enhanced Cruise ECU

MID 140 PSID 214 Data Link, Bodybuilder Module

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• PID 44 missing on data link for more than 30 seconds	• Yellow Check lamp lit	• Data link fault (J1587) • BBM

MID 140 PSID 235 Data Link, Control Unit Airbag

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• PID 44 missing on data link for more than 30 seconds	• Yellow Check lamp lit	• Data link fault (J1587) • Airbag ECU

MID 140 PSID 238 Data Link, Control Unit Climate Unit

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• PID 44 missing on data link for more than 30 seconds	• Yellow Check lamp lit	• Data link fault (J1587) • Climate Control ECU

MID 140 PSID 239 Data Link, Volvo Link

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• PID 44 missing on data link for more than 30 seconds	• Yellow Check lamp lit	• Data link fault (J1587) • Viscom ECU

MID 140 PSID 247 Communication Interference, Data Link, Tire Pressure Monitoring

Type of fault:	FMI Description:	Fault Condition:	Possible Symptoms:	Possible Cause:
FMI 12	• Faulty unit or component	• Missing DM1 message on data link	• Yellow Check lamp lit	• Data link fault (J1939)

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