

Workshop Manual

Group 30 Electrical system

I
2(0)

**TAD540-542VE, TAD550-552VE, TAD570-572VE,
TAD840-843VE, TAD850-853VE, TAD870-873VE**

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TAD840VE, TAD841VE, TAD842VE, TAD843VE,
TAD850VE, TAD851VE, TAD852VE, TAD853VE

Engine management system

Functionality	Alternatives		Unit	Default setting
Governor mode	Droop	Isochronous	-	Isochronous
Governor droop	10	125	Nm/rpm	-
Governor response	Adjustable PI constants		-	-
Idle speed	600	800	RPM	600
Stop function	-	-	-	Replaced by "Ignition of stop engine".
Preheating function	Ignition	Request	Request + temp.	If preheat is available, preheat will be active at "ignition on" if low temp. or demanded by driver.
Lamp test	-	-	-	No lamp test, not used any longer.
Ignition of stop engine	Yes	No	-	Yes

Engine sensor and switch settings		Alarm level		Engine protection		
Parameter	Unit	Setting range	Default setting	Level	Action. Default / Alternative	
Oil temperature	°C (°F)	-	125 (257)	125 (257)	Derate	
Oil pressure	Low idle	kPa (psi)	-	100 (14.5)	100 (14.5)	Shut down.
	Rated speed	kPa (psi)	-	300 (43.5)	300 (43.5)	Shut down
Coolant temperature	°C (°F)	-	107 (224.6)	107 (224.6)	Derate	
Coolant level	Liter (US gals)	-	On	Low level	Derate	
Water in fuel	-	On if closed circuit	-	-	-	
Air filter pressure drop	kPa (psi)	-	5 (0.7)	-	-	
Altitude, above sea	m (ft)	-	-	-	Automatic derating.	
Intake manifold temperature	°C (°F)	-	80 (176)	80 (176)	Derate	
Air inlet pressure	kPa (psi)	-	Alarm map value	Alarm map value	Derate	
Engine speed	rpm	-	-	-	Shut down. ON/OFF ⁽¹⁾	

1) OFF means no shut down, alarm only.

TAD542VE

1) Soft derate, coolant temp. Remaining torque (%)	Speed / °C	107 °C	108.5 °C	110 °C
	700	100 %	100 %	100 %
	1500	100 %	77 %	56 %
	2200	100 %	78%	58 %

Derate map R2			
°C	107 °C	108.5 °C	110 °C
%	0	47.5	100

2) Soft derate, oil temp. Remaining torque (%)	Speed / °C	125 °C	127.5 °C	130 °C
	700	100 %	100 %	100 %
	1500	100 %	78 %	56 %
	2200	100 %	79 %	58 %

Derate map R2			
°C	125 °C	127.5 °C	130 °C
%	0	50	100

3) Soft derate, intake manifold temp. Remaining torque (%)	Speed / °C	80 °C	90 °C	100 °C
	700	100 %	100 %	100 %
	1500	100 %	78 %	56 %
	2200	100 %	79 %	58 %

Derate map R2			
°C	80 °C	90 °C	100 °C
%	0	50	100

Max torque, high map R2										
RPM	600	700	800	900	1000	1100	1200	1300	1400	1450
Torque	300	420	530	650	720	790	860	900	900	910
RPM	1500	1700	1800	1900	2000	2100	2200	2300	2400	2500
Torque	900	900	849	805	764	728	695	623	318	0

Max torque, engine protection map R2											
RPM	700	800	1000	1200	1400	1600	1800	2000	2200	2400	2500
Torque	450	475	500	500	500	500	475	430	400	250	0

TAD843VE

1) Soft derate, coolant temp. Remaining torque (%)	Speed / °C	107 °C	108.5 °C	110 °C
	600	100 %	88 %	77 %
	1500	100 %	76 %	54 %
	2200	100 %	79 %	60 %

Derate map R2			
°C	107 °C	108.5 °C	110 °C
%	0	47.5	100

2) Soft derate, oil temp. Remaining torque (%)	Speed / °C	125 °C	127.5 °C	130 °C
	600	100 %	88 %	77 %
	1500	100 %	77 %	54 %
	2200	100 %	80 %	60 %













Derate map R2			
°C	125 °C	127.5 °C	130 °C
%	0	50	100

3) Soft derate, intake manifold temp. Remaining torque (%)	Speed / °C	80 °C	90 °C	100 °C
	600	100 %	88 %	77 %
	1500	100 %	77 %	54 %
	2200	100 %	80 %	60 %

Derate map R2			
°C	80 °C	90 °C	100 °C
%	0	50	100

Max torque, high map R2										
RPM	600	700	800	900	1000	1100	1200	1400	1450	1500
Torque	653	750	875	1000	1140	1250	1300	1300	1310	1300
RPM	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500
Torque	1300	1300	1245	1182	1123	1069	1021	678	339	0

Max torque, engine protection map R2											
RPM	600	800	1000	1200	1400	1600	1800	2000	2200	2400	2500
Torque	500	545	620	700	700	700	670	640	610	339	0

-  Immobilize the engine by turning off the power supply to the engine at the main switch (switches) and lock it (them) in the off position before starting work. Post a warning notice at the main circuit breaker.
-  Avoid opening the coolant filling cap when the engine is hot. Steam or hot coolant can spray out and system pressure will be lost. Open the filler cap slowly, and release the pressure in the cooling system if the filler cap or valve has to be opened, or if a plug or coolant hose has to be removed when the engine is hot.
-  As a rule, all service operations must be carried out with the engine stopped. However, some work, such as adjustments, will require the engine to be running. Approaching an engine which is running is a safety risk. Bear in mind that loose clothing or long hair can fasten in rotating parts and cause serious personal injury.
-  Hot oil can cause burns. Avoid skin contact with hot oil. Ensure that the lubrication system is not under pressure before any work is begun. Never start or operate the engine with the oil filler cap removed, because of the risk of oil ejection.
-  Be aware of hot surfaces (exhaust pipes, turbos, charge air pipes, starting heaters etc.) and hot fluids in pipes and hoses on an engine that is running or has just stopped. If work is done adjacent to a running engine, a careless movement or a dropped tool may in the worst case lead to personal injury.
-  Never start the engine without installing the air filter. The rotating compressor turbine in the turbocharger can cause severe injury. Foreign objects entering the intake ducts can also cause mechanical damage. Install all protective covers before the engine is started.
-  Ensure that the warning symbols or information decals on the product are always clearly visible. Replace decals which have been damaged or painted over.
-  Only start the engine in a well-ventilated space. When running in a confined space, exhaust fumes and crankcase gases must be led away from the engine bay or workshop area.
-  Avoid getting oil on your skin! Protracted or repeated exposure to oil can cause skin to become dry. Irritation, dryness, eczema and other skin problems may then result. From a health standpoint, used oil is more dangerous than new. Use protective gloves and avoid oil-soaked clothes and rags. Wash regularly, especially before eating. Use suitable barrier creams to counteract drying out of the skin and to aid dirt removal.
-  The majority of chemicals e.g. engine and transmission oils, glycol, gasoline, and diesel oil, together with chemicals for workshop use such as degreasing agents, paints and solvents, are injurious to health. Carefully read the instructions on the product packaging! Always follow a product's safety directions, e.g. use of protective mask, glasses, gloves etc. Ensure that other personnel are not exposed to substances that are injurious to health. Ensure good ventilation. Handle used and leftover chemicals in the prescribed manner.
-  Stop the engine and turn off the electrical supply at the main switch(es) before carrying out work on the electrical system.
-  Clutch adjustments must be carried out with the engine stopped.

P004513

Turbocharger/Supercharger Boost Control "A" Circuit / Open	
System:	Intake air system
SPN [FMI]:	641 [5]
DTC node:	EMS
Failure type:	Circuit Open
DTC description:	Faulty circuit / Faulty component
Monitoring condition:	Continuous monitoring
Fault indication:	Yellow alarm status.
DTC stored:	Yes
Replacement value:	None
Symptom:	Derate according to the engine protection map.
DTC conditions:	VGT actuator voltage supply < 1 V
Probable cause:	Faulty VGT supply.
Action:	<ol style="list-style-type: none"> 1 Check all cables and connections between the actuator and the EMS. 2 Change the VGT actuator.

P009012

Fuel Pressure Regulator 1 Control	
System:	Fuel System
SPN [FMI]:	679 [3]
DTC node:	EMS
Failure type:	Circuit Short To Battery
DTC description:	Faulty circuit / Faulty component
Monitoring condition:	Continuous electrical monitoring
Fault indication:	Yellow alarm status.
DTC stored:	Yes
Replacement value:	None
Symptom:	<ul style="list-style-type: none"> • Derate according to the engine protection map. • ePRV is open.
DTC conditions:	I at A12/A16 rises too fast.
Probable cause:	<ul style="list-style-type: none"> • SC: A12/A16, Vbat • Faulty fuel pressure regulator (MPROP).
Action:	<ol style="list-style-type: none"> 1 Check all cables and connectors between the fuel pressure regulator (MPROP) and the EMS. 2 Check the fuel pressure regulator (MPROP). Use an oscilloscope.

P010512

Manifold Absolute Pressure/Barometric Pressure Sensor	
System:	Intake air system
SPN [FMI]:	102 [3]
DTC node:	EMS
Failure type:	Circuit Short To Battery
DTC description:	Faulty sensor circuit / Faulty sensor
Monitoring condition:	Continuous electrical monitoring
Fault indication:	Yellow alarm status.
DTL:	5 seconds
DTC stored:	Yes
Replacement value:	Pressure set to atmospheric pressure + 30 kPa (4.4 psi).
Symptom:	Derate according to <i>Administration page 6</i> .
DTC conditions:	U at A22 > 4.85 V
Probable cause:	<ul style="list-style-type: none"> • OC: A11 • SC: A22, 5+ • Faulty sensor.
Action:	<ol style="list-style-type: none"> 1 Check all cables and connectors between the sensor and the EMS. 2 Check the contact pressure at the sensor connector and in socket A11 in the EMS connector. 3 Check the sensor.

P016E00

Closed Loop Fuel Pressure Control At Limit - Pressure Too High	
System:	Fuel System
SPN [FMI]:	520245 [0]
DTC node:	EMS
Failure type:	No Sub Type Information
DTC description:	Too high rail pressure
Monitoring condition:	Running conditions
Fault indication:	Red alarm status.
DTC stored:	Yes
Replacement value:	None
Symptom:	Derate according to the engine protection map.
DTC conditions:	Average rail pressure deviation above 10 MPa (1450 PSI) for 10 seconds.
Probable cause:	<ul style="list-style-type: none"> • Faulty rail pressure sensor. • Faulty/stuck/not opening ePRV. • Faulty/leaking fuel pressure regulator (MPROP). • Wrongly mounted high pressure pump. If the pump been dismantled/exchanged the pump alignment against the flywheel position is wrong.
Action:	<ol style="list-style-type: none"> 1 Check all cables and connectors between the rail pressure sensor and the EMS. Log the rail pressure by using Vodia or by performing a voltage measurement. P(norm at idle speed) = 30-40 MPa (4350-5800 psi). Notice at what rail pressure the fault code is set. 2 Check all wiring and the connectors between the ePRV and the EMS. Check the ePRV signal using oscilloscope. Check the fuel return from the ePRV. 3 Check all cables and connectors between the fuel pressure regulator (MPROP) and the EMS. Check the fuel pressure regulator (MPROP). Use an oscilloscope. 4 If the high pressure pump been dismantled/exchanged; check the pump installation. Please refer to workshop manual (group 21-26).

P019062

Fuel Rail Pressure Sensor Bank 1	
System:	Fuel System
SPN [FMI]:	157 [7]
DTC node:	EMS
Failure type:	Signal Compare Failure
DTC description:	Too small rail pressure value change.
Monitoring condition:	Continuous electrical monitoring
Fault indication:	Yellow alarm status.
DTL:	5 seconds
DTC stored:	Yes
Replacement value:	If the rail pressure sensor is faulty an estimated value is calculated from engine speed and the total fuel quantity.
Symptom:	Derate according to the engine protection map.
DTC conditions:	Rail pressure sensor value change is too small during high pressure pumping or injection sequence.
Probable cause:	<ul style="list-style-type: none"> • Faulty sensor/sensor wiring. • Faulty/sticky fuel pressure regulator (MPROP).
Action:	<ol style="list-style-type: none"> 1 Check all cables and connectors between the sensor and the EMS. 2 Change the rail pressure sensor. 3 Check all cables and connectors between the fuel pressure regulator (MPROP) and the EMS. Check the fuel pressure regulator (MPROP). Use an oscilloscope.

P020312

Cylinder 3 Injector "A"	
System:	Fuel System
SPN [FMI]:	653 [3]
DTC node:	EMS
Failure type:	Circuit Short To Battery
DTC description:	Injector activated and faulty voltage in injector low side.
Monitoring condition:	Continuous electrical monitoring of the injector current waveform.
Fault indication:	Yellow alarm status.
DTL:	5 seconds
DTC stored:	Yes
Replacement value:	Injector 3 is shut off. Limp home on rest of injectors.
Symptom:	<ul style="list-style-type: none"> • Derate according to the engine protection map. • Uneven engine running. Run on three to five cylinders.
DTC conditions:	I at A59/A48 rises to quickly.
Probable cause:	SC: A59/A48, Highside voltage
Action:	<ol style="list-style-type: none"> 1 Check all cables and connectors between the injector and the EMS. 2 Check the injector coils.

P020613

Cylinder 6 Injector "A"	
System:	Fuel System
SPN [FMI]:	656 [5]
DTC node:	EMS
Failure type:	Circuit Open
DTC description:	Injector activated and faulty voltage in injector high or low side.
Monitoring condition:	Continuous electrical monitoring of the injector current waveform.
Fault indication:	Yellow alarm status.
DTL:	5 seconds
DTC stored:	Yes
Replacement value:	Injector 6 is shut off. Limp home on rest of injectors.
Symptom:	<ul style="list-style-type: none"> • Engine derate • Uneven engine running. Run on three to five cylinders.
DTC conditions:	I at A60/A36 rises too slow.
Probable cause:	<ul style="list-style-type: none"> • OC: A60/A36 • SC: A60/A36, Highside voltage • SC: A60/A36, GND
Action:	<ol style="list-style-type: none"> 1 Check all cables and connectors between the injector and the EMS. 2 Check the contact pressure at the injector connector and in socket A60/A36 in the EMS connector. 3 Check the injector coils.

P02E07C

Diesel Intake Air Flow Control	
System:	Intake air system
SPN [FMI]:	3464 [10]
DTC node:	EMS
Failure type:	Slow Response
DTC description:	Incorrect throttle valve calibration.
Monitoring condition:	Continuous monitoring
Fault indication:	Yellow alarm status.
DTC stored:	Yes
Possible concurrent DTC:	<ul style="list-style-type: none"> • <i>P02E013 page 118</i> • <i>P02E613 page 124</i> • <i>P02E012 page 117</i>
Replacement value:	None
Symptom:	Poor engine control.
DTC conditions:	A throttle actuator valve position sensor check performed at key on, and a throttle actuator valve calibration procedure is executed at key off. The current limitation is activated if the valve is too hard to move.
Probable cause:	<ul style="list-style-type: none"> • Contaminated throttle actuator valve. • Stuck or obstructed throttle actuator valve. • Faulty throttle actuator valve. • Faulty throttle actuator valve position sensor.
Action:	<ol style="list-style-type: none"> 1 Clean the throttle actuator valve. 2 Check that the throttle actuator valve is not stuck or obstructed. Check that the start-up test of the throttle actuator valve, open/close, is performed as normal at key on. The throttle actuator valve movement shall be smooth during the start-up test. 3 Check the throttle actuator valve position sensor.
Information:	<p>When root cause is fixed do the following to clear the DTC:</p> <ol style="list-style-type: none"> 1 Start the engine and run it at a speed above idle speed. 2 Turn ignition off. 3 Wait until the system shuts down.

P033538

Crankshaft Position Sensor "A"	
SPN [FMI]:	637 [8]
DTC node:	EMS
Failure type:	Signal Frequency Incorrect
DTC description:	Faulty sensor / Faulty sensor circuit
Monitoring condition:	Continuous electrical monitoring of the crankshaft position sensor voltage waveform.
Fault indication:	Yellow alarm status.
DTL:	5 seconds
DTC stored:	Yes
Replacement value:	Start engine by using camshaft position sensor.
Symptom:	<ul style="list-style-type: none"> • Engine is difficult to start. • Loss of torque. • The engine will operate unevenly with increased fuel consumption as a consequence.
DTC conditions:	Too many crank signal pulses detected inbetween cam signal pulses.
Probable cause:	<ul style="list-style-type: none"> • Incorrectly mounted sensor. • Faulty sensor.
Action:	<ol style="list-style-type: none"> 1 Check the installation of the sensor. Please refer to workshop manual (group 21-26). 2 Clean the sensor. 3 Check the crankshaft position sensor signal. Use an oscilloscope.

P040901

EGR Sensor "A"	
System:	EGR system
SPN [FMI]:	411 [12]
DTC node:	EMS
Failure type:	General Electrical Failure
DTC description:	Faulty circuit / Faulty component
Monitoring condition:	Continuous monitoring
Fault indication:	Yellow alarm status.
DTL:	5 seconds
DTC stored:	Yes
Replacement value:	None
Symptom:	None
DTC conditions:	0.21 V > U at A21 > 0.15 V
Probable cause:	<ul style="list-style-type: none"> • Unwanted circuit resistance. • Faulty EGR differential pressure sensor.
Action:	<ol style="list-style-type: none"> 1 Check all cables and connectors between the sensor and the EMS. 2 Check the sensor.

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P047012

Exhaust Pressure Sensor "A"	
System:	Exhaust System
SPN [FMI]:	131 [3]
DTC node:	EMS
Failure type:	Circuit Short To Battery
DTC description:	Faulty sensor / Faulty sensor circuit
Monitoring condition:	Electrical monitoring
Fault indication:	Yellow alarm status.
DTL:	5 seconds
DTC stored:	Yes
Replacement value:	None
Symptom:	Auxiliary brakes, low performance (reduced engine braking).
DTC conditions:	U at B12 > 4.85 V
Probable cause:	<ul style="list-style-type: none"> • SC: B12, Vbat • Faulty sensor.
Action:	<ol style="list-style-type: none"> 1 Check all cables and connectors between the sensor and the EMS. 2 Check the sensor.

P054001

Intake Air Heater "A" Control	
System:	Intake air system
SPN [FMI]:	729 [12]
DTC node:	EMS
Failure type:	General Electrical Failure
DTC description:	Faulty circuit / Faulty component
Monitoring condition:	Continuous monitoring
Fault indication:	Yellow alarm status.
DTL:	5 seconds
DTC stored:	Yes
Replacement value:	None
Symptom:	Engine might be hard to start in cold climate.
DTC conditions:	U at B7 deviates from expected value, should be approx. Vbat.
Probable cause:	<ul style="list-style-type: none"> • OC/SC: B7 • Unwanted circuit resistance. • OC: Heating element
Action:	<ol style="list-style-type: none"> 1 Check all cables and connectors between the heating element and the EMS. 2 Check heating element. 3 Check the contact pressure in socket B7 in the EMS connector.

P061519

Starter Relay	
System:	Electrical
SPN [FMI]:	677 [6]
DTC node:	EMS
Failure type:	Circuit Current Above Threshold
DTC description:	Faulty starter relay circuit / Faulty starter relay
Monitoring condition:	Cranking condition
Fault indication:	Yellow alarm status.
DTL:	1 second
DTC stored:	Yes
Replacement value:	None
Symptom:	Start motor does not engage.
DTC conditions:	I at B37/B29 is higher than normal.
Probable cause:	SC: B37, B29
Action:	<ol style="list-style-type: none"> 1 Check the starter relay. 2 Check all cables and connectors between the starter relay and the EMS.

P100112

Engine Stop Switch	
System:	Electrical
SPN [FMI]:	970 [3]
DTC node:	EMS
Failure type:	Circuit Short To Battery
DTC description:	Fault in stop switch circuit.
Monitoring condition:	Continuous monitoring
Fault indication:	Yellow alarm status.
DTL:	5 seconds
DTC stored:	Yes
Replacement value:	None
Symptom:	Engine stops or can not be started.
DTC conditions:	U at A27 higher than normal.
Probable cause:	SC: A27, Vbat
Action:	1 Check all wiring to pin A27 at the EMS.

P100713

Air Filter Indicator	
System:	Intake air system
SPN [FMI]:	107 [5]
DTC node:	EMS
Failure type:	Circuit Open
DTC description:	Faulty sensor / Faulty sensor circuit
Monitoring condition:	Continuous electrical monitoring
Fault indication:	Yellow alarm status.
DTL:	5 seconds
DTC stored:	Yes
Replacement value:	None
Symptom:	None
DTC conditions:	U at A29 deviates from expected value.
Probable cause:	<ul style="list-style-type: none"> • OC: A29 • Faulty switch.
Action:	<ol style="list-style-type: none"> 1 Check all cables and connectors between the switch and the EMS. 2 Check the switch.

P112100

EGR Temperature Too High	
System:	EGR system
SPN [FMI]:	412 [0]
DTC node:	EMS
Failure type:	No Sub Type Information
DTC description:	EGR temperature is too high.
Monitoring condition:	Running conditions
Fault indication:	Red alarm status.
DTC stored:	Yes
Replacement value:	None
Symptom:	Derate according to the engine protection map.
DTC conditions:	EGR temperature is too high.
Probable cause:	<ol style="list-style-type: none"> 1 Extreme driving conditions. 2 Clogged EGR cooler.
Action:	<ol style="list-style-type: none"> 1 Clean the EGR cooler. Please refer to workshop manual (group 21-26).

P11A412

Exhaust Gas Temperature Sensor Dry	
System:	Exhaust System
SPN [FMI]:	520688 [3]
DTC node:	EMS
Failure type:	Circuit Short To Battery
DTC description:	Faulty sensor / Faulty sensor circuit
Monitoring condition:	Continuous electrical monitoring
Fault indication:	Yellow alarm status.
DTL:	5 seconds
DTC stored:	Yes
Replacement value:	None
Symptom:	None
DTC conditions:	U at B44 > 4.9 V
Probable cause:	<ul style="list-style-type: none"> • OC: B44 • SC: B44, 5+ • Faulty sensor.
Action:	<ol style="list-style-type: none"> 1 Check all cables and connectors between the sensor and the EMS. 2 Check the contact pressure at the sensor connector and in socket B44 in the EMS connector. 3 Check the sensor.

P208A86

Reductant Pump "A" Control	
System:	EATS
SPN [FMI]:	3361 [12]
DTC node:	EMS
Failure type:	Signal Invalid
DTC description:	Reductant pump control error.
Monitoring condition:	Continuous monitoring
Fault indication:	Yellow alarm status.
DTL:	5 seconds
DTC stored:	Yes
Possible concurrent DTC:	<ul style="list-style-type: none"> • <i>P204A11</i> (ACM) • <i>P204A13</i> (ACM) • <i>P20E892</i> (ACM) • <i>P10CE97</i> (ACM)
Replacement value:	None
Symptom:	Derate according to the engine protection map.
DTC conditions:	An illegal value is sent from the ACM to the EMS over the Engine Subnet.
Action:	1 Fault tracing should be performed on root cause faults. This DTC is set due to other DTC set by the ACM.

P226411

Water In Fuel Sensor	
System:	Fuel System
SPN [FMI]:	97 [4]
DTC node:	EMS
Failure type:	Circuit Short To Ground
DTC description:	Faulty sensor / Faulty sensor circuit
Monitoring condition:	Running conditions
Fault indication:	Yellow alarm status.
DTL:	5 seconds
DTC stored:	Yes
Replacement value:	None
Symptom:	None
DTC conditions:	U at B8 < 0.21 V
Probable cause:	SC: B8, GND
Action:	1 Check all cables and connectors between the sensor and the EMS.

P22FB92

NOx Sensor Performance - Sensing Element Bank 1 Sensor 1	
System:	NOx Sensors
SPN [FMI]:	3216 [12]
DTC node:	EMS
Failure type:	Performance or Incorrect Operation
DTC description:	NOx sensor value not reliable.
Monitoring condition:	Monitoring the quality of the NOx level signal.
Fault indication:	Yellow alarm status.
DTC stored:	Yes
Replacement value:	None
Symptom:	None
DTC conditions:	Pre-Nox sensor value not reliable.
Probable cause:	Faulty pre-NOx sensor.
Action:	1 Change the pre-NOx sensor.

P255611

Engine Coolant Level Sensor/Switch	
System:	Coolant System
SPN [FMI]:	111 [4]
DTC node:	EMS
Failure type:	Circuit Short To Ground
DTC description:	Faulty switch / Faulty switch circuit
Monitoring condition:	Continuous electrical monitoring
Fault indication:	Yellow alarm status.
DTL:	5 seconds
DTC stored:	Yes
Replacement value:	None
Symptom:	None
DTC conditions:	U at B23 < 2.8 V
Probable cause:	<ul style="list-style-type: none"> • SC: B23, GND • Faulty sensor/switch.
Action:	<ol style="list-style-type: none"> 1 Check all cables and connectors between the sensor/switch and the EMS. 2 Check the sensor/switch.

U014100

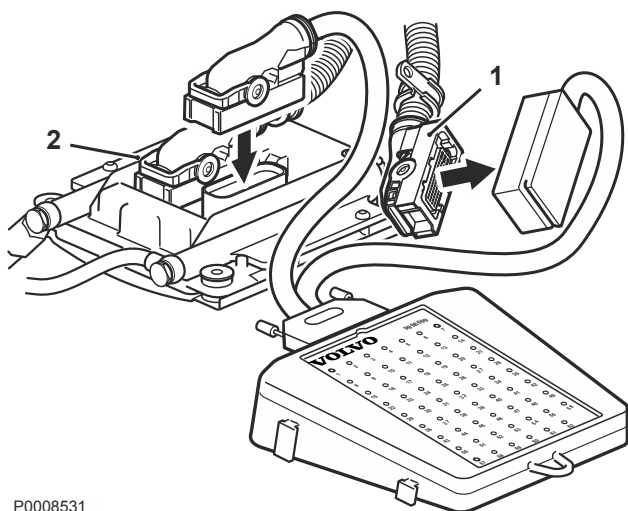
Lost Communication With VMCU	
System:	CAN communication
SPN [FMI]:	2017 [9]
DTC node:	EMS
Failure type:	No Sub Type Information
DTC description:	CAN communication failure
Monitoring condition:	Continuous monitoring
Fault indication:	Yellow alarm status.
DTL:	9 seconds
DTC stored:	Yes
Replacement value:	None
Symptom:	None
DTC conditions:	The EMS has lost communication with the DCU.
Action:	1 Check all between the EMS and the DCU.

MID 144, PSID 106

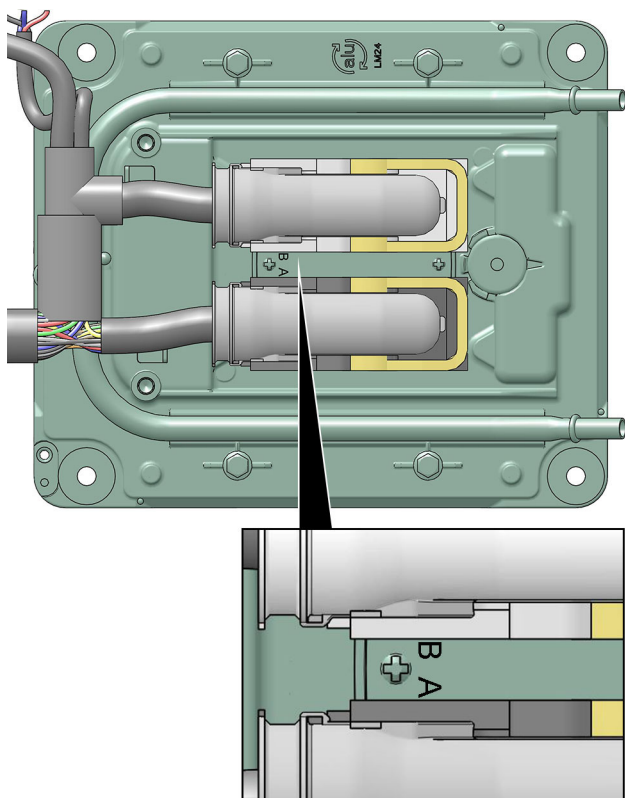
FMI:	2
SPN [FMI]:	626 [2]
DTC node:	DCU
DTC description:	A faulty start button signal from the DCU is detected.
Monitoring condition:	Continuous monitoring
Fault indication:	Red alarm status.
DTC stored:	Yes
Replacement value:	None
DTC conditions:	The start button has been activated too long.
Probable cause:	The start button is stuck.
Action:	<ol style="list-style-type: none">1 Check the button.2 Replace the DCU.

Measurements

Connect the engine control unit connector to the brake-out cable 9990014 (1). Connect the brakeout cable 9990014 to the engine control unit (2). All pins from the engine control unit is accessible in the measurebox 9998699.



P0008531



A and B is marked on the EMS.
Connector A is black and connector B is grey.

P0020466

Component/System	ISO DTC	SPN J1939	FMI J1939
Fuel Temperature Sensor "B"	P018501	3468	12
Fuel Temperature Sensor "B"	P018511	3468	4
Fuel Temperature Sensor "B"	P018513	3468	5
Fuel Temperature Sensor "B"	P018564	3468	2
Fuel System Over Pressure Relief Valve Frequent Activation	P018F00	520244	4
Fuel Rail Pressure Sensor Bank 1	P019001	157	12
Fuel Rail Pressure Sensor Bank 1	P019011	157	4
Fuel Rail Pressure Sensor Bank 1	P019013	157	5
Fuel Rail Pressure Sensor Bank 1	P019062	157	7
Engine Oil Temperature Sensor "A"	P019511	175	4
Engine Oil Temperature Sensor "A"	P019513	175	5
Cylinder 1 Injector "A"	P020111	651	4
Cylinder 1 Injector "A"	P020112	651	3
Cylinder 1 Injector "A"	P020113	651	5
Cylinder 2 Injector "A"	P020211	652	4
Cylinder 2 Injector "A"	P020212	652	3
Cylinder 2 Injector "A"	P020213	652	5
Cylinder 3 Injector "A"	P020311	653	4
Cylinder 3 Injector "A"	P020312	653	3
Cylinder 3 Injector "A"	P020313	653	5
Cylinder 4 Injector "A"	P020411	654	4
Cylinder 4 Injector "A"	P020412	654	3
Cylinder 4 Injector "A"	P020413	654	5
Cylinder 5 Injector "A"	P020511	655	4
Cylinder 5 Injector "A"	P020512	655	3
Cylinder 5 Injector "A"	P020513	655	5
Cylinder 6 Injector "A"	P020611	656	4
Cylinder 6 Injector "A"	P020612	656	3
Cylinder 6 Injector "A"	P020613	656	5
Engine Coolant Over Temperature Condition	P021700	110	0
Engine Overspeed Condition	P021900	190	0
Turbocharger/Supercharger Wastegate Solenoid "A"	P024311	1188	4
Turbocharger/Supercharger Wastegate Solenoid "A"	P024312	1188	3
Turbocharger/Supercharger Wastegate Solenoid "A"	P024313	1188	5
Engine Oil Over Temperature	P029800	175	0
Diesel Intake Air Flow Control	P02E011	3464	4
Diesel Intake Air Flow Control	P02E012	3464	3
Diesel Intake Air Flow Control	P02E013	3464	5
Diesel Intake Air Flow Control	P02E07C	3464	10

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