Notes:

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27 - Transportation Lock

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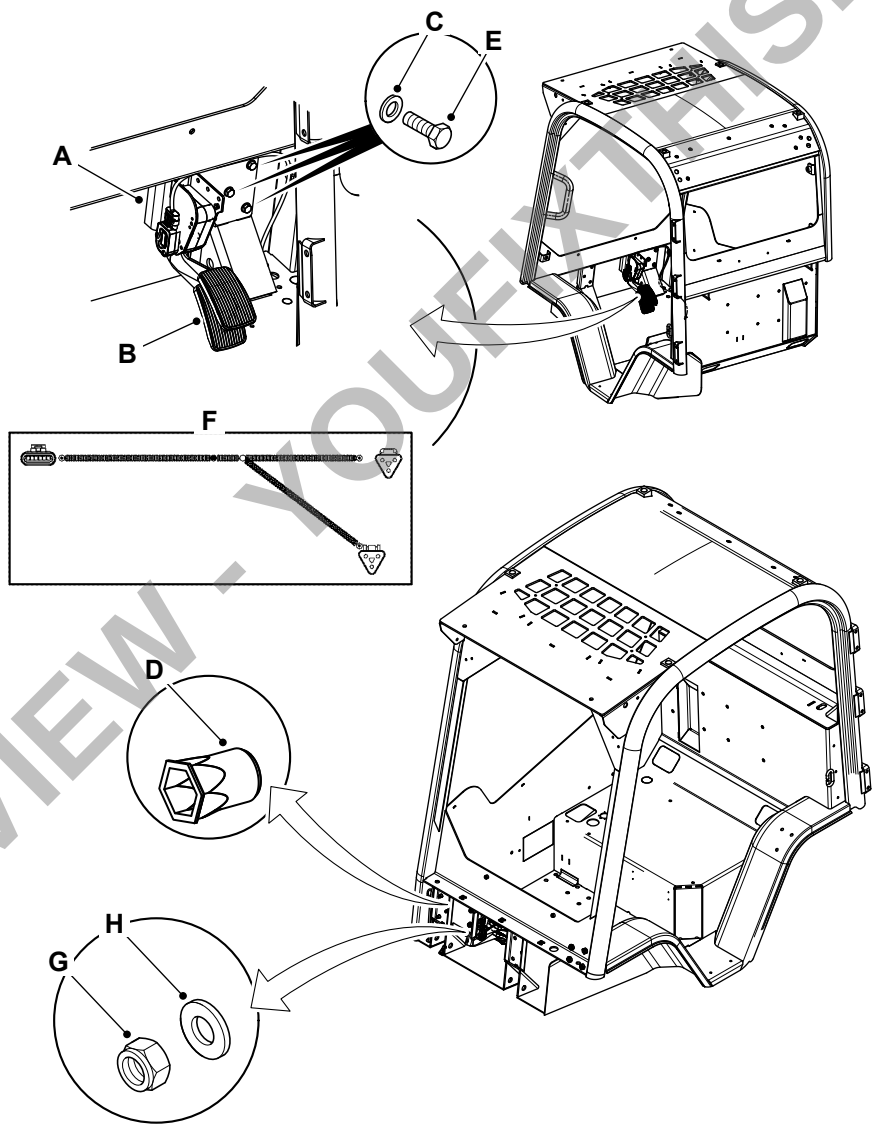
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Remove and Install

Remove

1. Make the machine safe with the lift arm lowered. Refer to (PIL 01-03).
2. Disconnect the accelerator harness from the accelerator pedal.
3. Remove the setscrew (x3) and the washer 1 (x3) from the accelerator pedal mounting.
4. Remove the accelerator pedal with the accelerator pedal mounting from the machine.
5. Remove the self locking nut (x2) and the washer 2 (x2) from the accelerator pedal.
6. Remove the accelerator pedal from the accelerator pedal mounting.

Figure 61.



A Accelerator pedal mounting
B Accelerator pedal
C Washer 1 (x3)
D Rivet nut (x3)
E Setscrew (x3)
F Harness
G Self locking nut (x2)
H Washer 2 (x2)

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Check (Operation)

There are three common symptoms of an improperly operating electronic coolant control system:

- No heat in the heat mode.
- Unable to control the temperature in any operating mode.
- Poor cooling, no cooling, or even heat while operating in full cooling mode.

1. Make sure that the heating system hoses have been properly installed:

    1.1. Make sure that the heater supply hose installed to the coolant valve is actually the hose coming from the supply port on the engine. A flow direction indicator is located on the side of the valve to help distinguish inlet and outlet ports. The inlet side of the valve is always on the same side as the harness connector. New valves also have tape wrapped around the inlet port that clearly identifies the inlet port.

2. The electronic coolant valve is a directional flow valve, and must be correctly installed, or it will not function properly. Coolant valves installed with the coolant flow reversed, will leak coolant past the valve cylinder resulting in poor air conditioning performance. If it is determined that the coolant supply line to the valve has been reversed, the valve should be replaced. Refer to Water Valve Removal.

3. If the system is correctly installed and the problem still exists, perform a heating system verification test.

Remove and Install

Hot Components

Touching hot surfaces can burn skin. The engine and machine components will be hot after the unit has been running. Allow the engine and components to cool before servicing the unit.

Removal of the coolant valve should be performed when the engine is cold. Removing the valve from the system when the engine is hot could result in burns and/or serious injury due to extremely hot coolant escaping under pressure. Do not start the engine while the coolant lines are disconnected as the engine will quickly pump the system dry, which could result in damage to the engine.

Remove

1. Make the machine safe with the cab raised, refer to (PIL 01-03).

2. Remove the electrical connector from the hot water valve actuator.

3. Use a spring hose clamp tool to remove the supply coolant line at the water valve.

4. Tightly clamp both supply and return lines to reduce the amount of coolant leakage when the valve is removed. Note: Some coolant will reside within the unit's heating coil, use a suitable container to catch the liquid when you remove the supply coolant line from the valve assembly.

5. Remove the valve assembly mounting bracket from the bottom of the cab to free the valve assembly and allow better access to the short outlet hose.

6. Remove the valve assembly from its outlet coolant hose, cap the ports.

Install

1. Replacement is a reversal of the removal procedure.

2. Check and fill the system with the correct fluid to the correct level.

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00 - General

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Introduction

The cylinder head is located above the cylinders on top of the crankcase. It closes in the top of the cylinder, forming the combustion chamber. This joint is sealed by a cylinder head gasket.

The cylinder head also provides the space for the passages that feed air and fuel to the cylinder and allow the exhaust to escape. The cylinder head is also used to mount the valves (PIL 15-30) and fuel injectors (PIL 18-18).

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Health and Safety

Oil

Oil is toxic. If you swallow any oil, do not induce vomiting, seek medical advice. Used engine oil contains harmful contaminants which can cause skin cancer. Do not handle used engine oil more than necessary. Always use barrier cream or wear gloves to prevent skin contact. Wash skin contaminated with oil thoroughly in warm soapy water. Do not use petrol, diesel fuel or paraffin to clean your skin.

CAUTION! *It is illegal to pollute drains, sewers or the ground. Clean up all spilt fluids and/or lubricants.Used fluids and/or lubricants, filters and contaminated materials must be disposed of in accordance with local regulations. Use authorised waste disposal sites.*

CAUTION! *Oil will gush from the hole when the drain plug is removed. Keep to one side when you remove the plug.*

CAUTION! *The oil filter canister will contain some oil which could spill out when you remove the canister.*

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00 - General

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Introduction

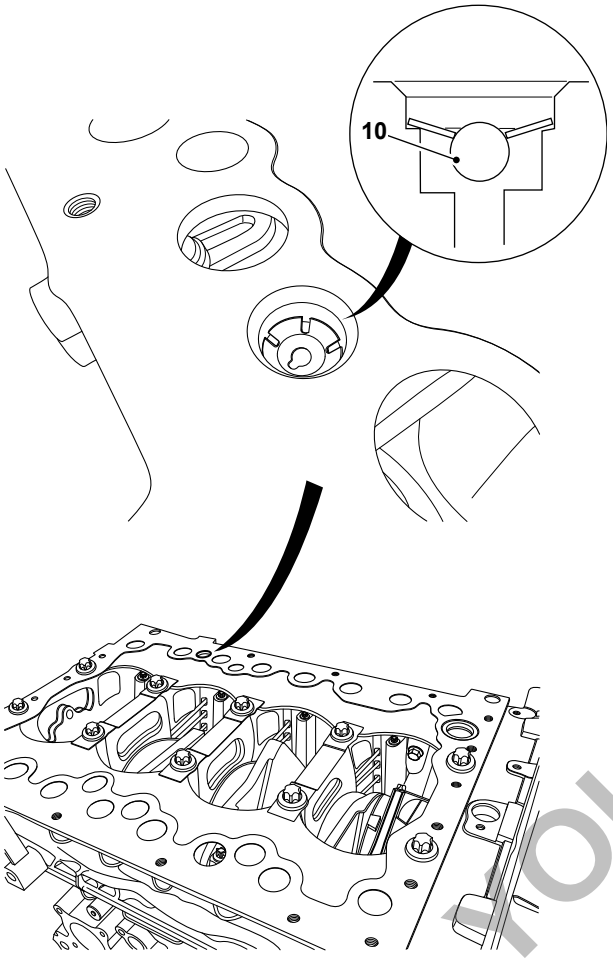
The rocker assembly is an indirect valve actuating system consisting of rocker arms and a shaft.

The rocker arm is an oscillating lever that conveys radial movement from the cam lobe into linear movement at the poppet valve to open it. One end is raised and lowered by a rotating lobe of the camshaft via a tappet and push rod while the other end acts on the bridge piece which is connected to the valve stem.

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Figure 199.



10 CCV Anti drain back valve

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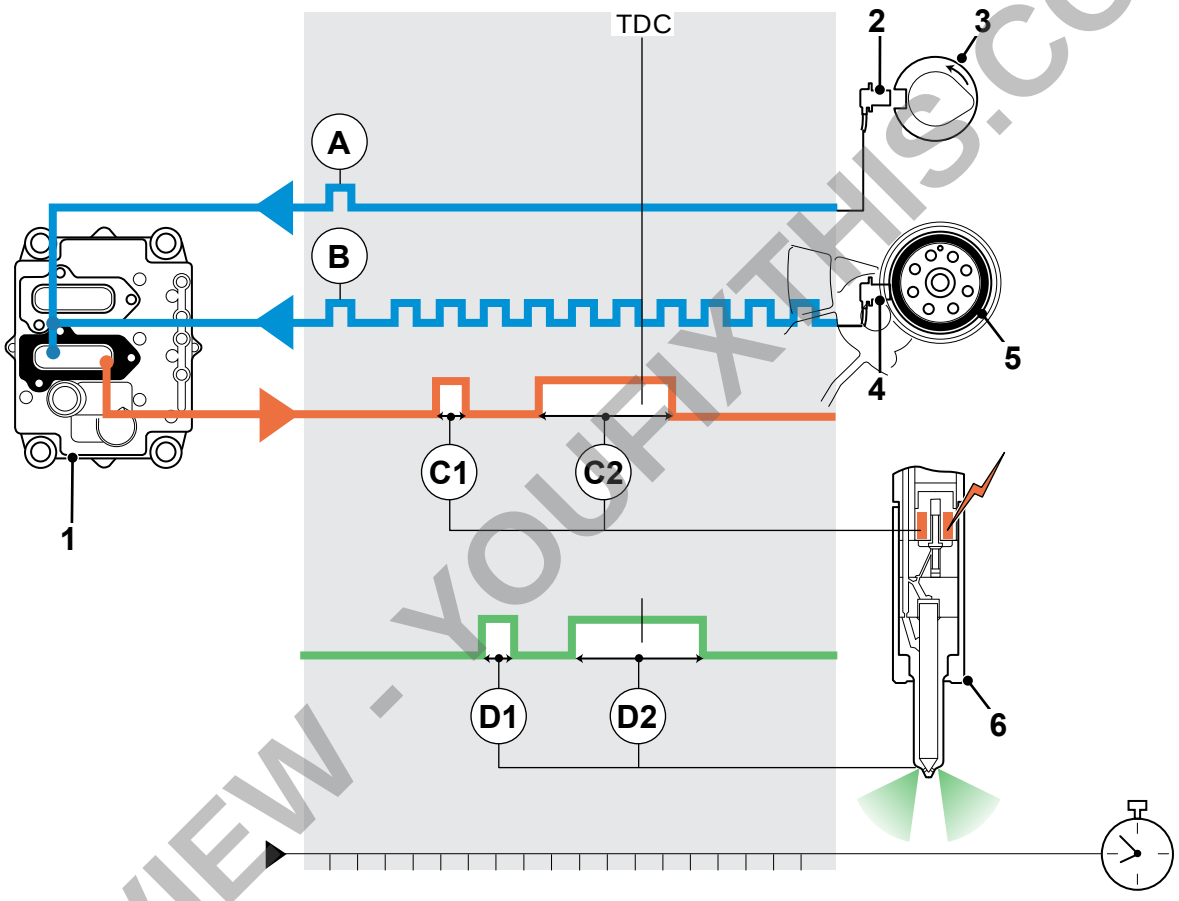
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Operation

A signal is generated by the camshaft mounted target disc and camshaft position sensor. This information is used by the ECM (Engine Control Module) to process the signal to determine the engine phase (which cylinder is firing).

The ECM will select the correct cylinder for fuel injection.

Figure 226.



1 ECM
2 Camshaft position sensor
3 Camshaft target disc
4 Crankshaft position sensor
5 Crankshaft mounted target disc
6 Fuel injector

A Camshaft sensor signal
B Crankshaft position sensor signal
C1-C2 Current pulse - injector solenoid coil
D1-D2 Fuel Injection
TDC TDC (Top Dead Centre)

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18 - Fuel and Exhaust System

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Table 122. Torque Values

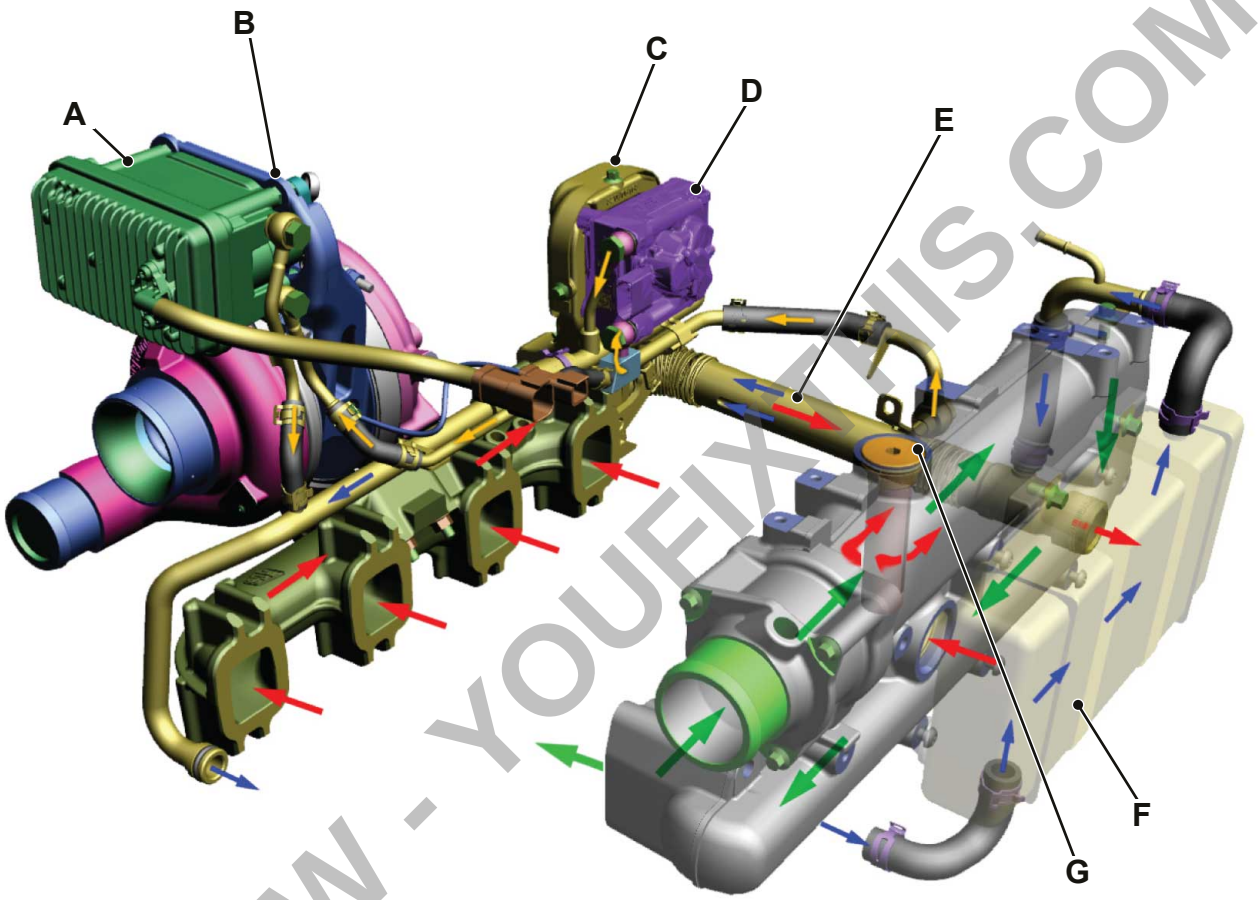
Item	Nm
3	28
4	39

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Component Identification

Figure 326.



A	VGT (Variable Geometry Turbocharger) actuator	**D**	EGR actuator
B	VGT	**E**	EGR intermediate cooler
C	EGR (Exhaust Gas Recirculation) valve	**F**	Main plate cooler
		G	Mixer tube

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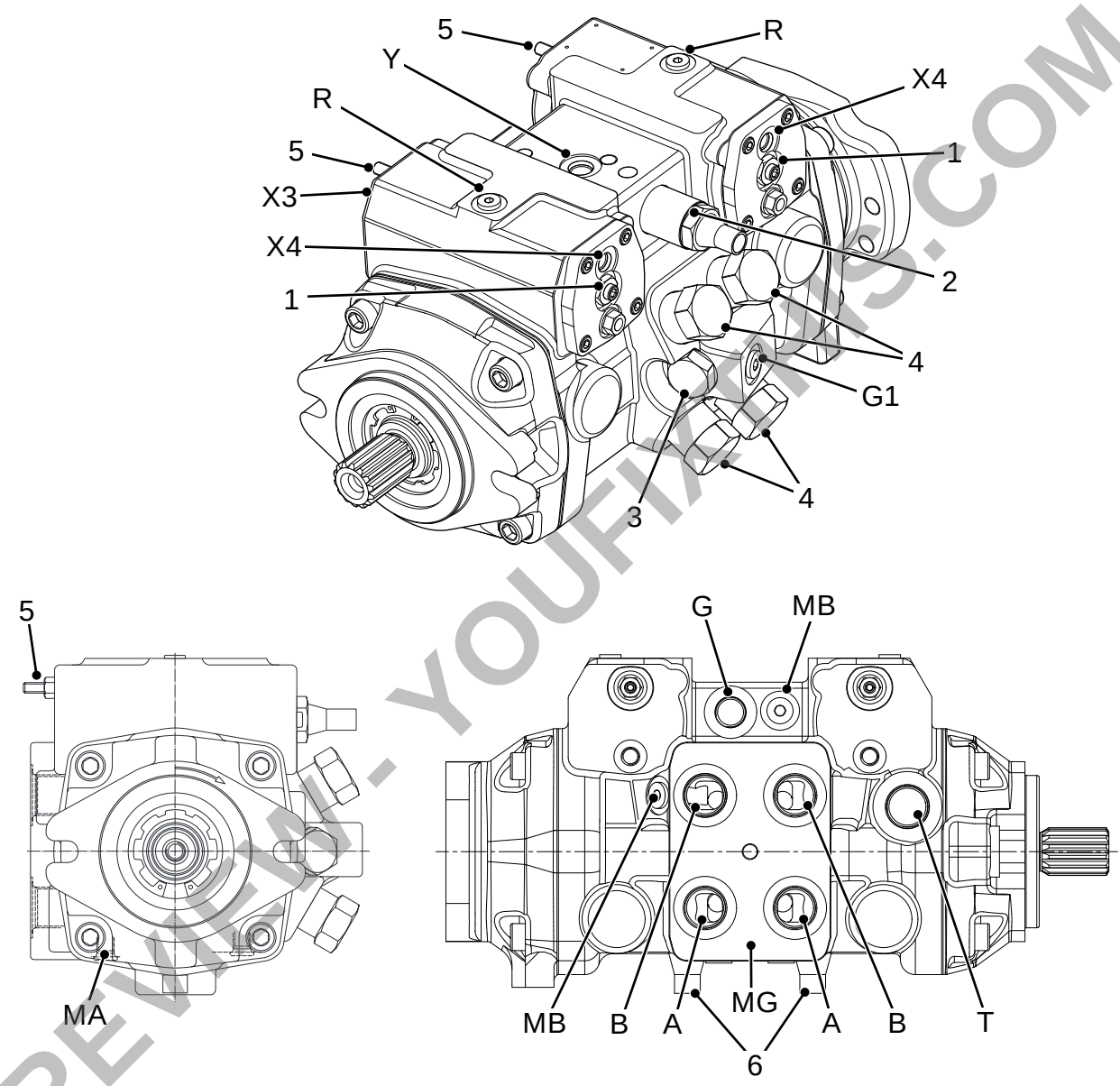
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Component Identification

Figure 382.



1	Mechanical centring adjustment	**MA**	Pressure gauge - Operating pressure A
2	DA-Control valve (non adjustable)	**MB**	Pressure gauge - Operating pressure B
3	Low pressure valve (charge pressure)	**R**	Air bleed
4	High pressure valve	**X3**	Control pressure point (before the orifice)
5	Mechanical stroke limiter	**X4**	Control pressure point (before the orifice)
6	Timing adjustment screw	**G**	Pressure port for auxiliary circuit
A	High pressure port	**MG**	Pressure gauge - Operating pressure G
B	High pressure port	**G1**	Pressure port for auxiliary circuit
T	Tank - Case drain port	**Y**	Control pressure - gauge port

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2. Tighten the bolts to the correct torque value.

Table 178. Torque Values

Item	Nm
A	220
B	220

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Table 204. Boom judders when used while machine is moving

Cause	Remedy
Loader pump flow low	Check flow rate
Restriction in neutral circuit lines	Check hoses and pipes, replace as necessary
Service pipe lines leaking, damaged, trapped or kinked	Check hoses and pipes, replace as required

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A Lift arm cylinder ram (Vertical lift machine)

B Lift arm cylinder ram (Radial lift machine)

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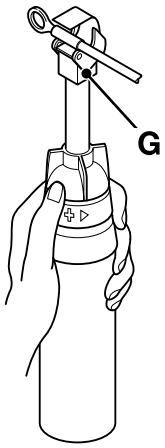
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161 ECM (Vehicle)
162 SCR ECU Chamber1
163 Head unit
164 NOx sensor upstream out
165 NOx sensor downstream tailpipe
166 Machine display CAN (Controller Area Network) based
167 Diagnostic connector
168 Dieselmax CAN terminal 1
169 Machine CAN terminal 1
170 Machine CAN terminal 2

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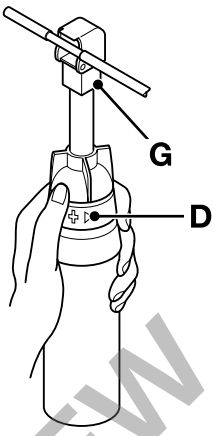
Figure 643.



G Side wings

3.9. Side wings up, reflector head opening reduced. In this mode the heating is done only by the hot gas (use for dark coloured plastic splices).

Figure 644.



D Red ring
G Side wings

Check (Condition)

Special Tools

Description	Part No.	Qty.
AVO Meter	892/00281	1
Digital Multimeter	892/00298	1

This section describes how to use electrical measuring devices that are used in electrical fault finding.

Use of Multimeters

In order to obtain the maximum benefit from the fault finding information contained in the Electrical Section, it is important that the technician fully understands the approach to fault finding and the use of the recommended test equipment, in this case a FLUKE 85 or AVO 2003 digital multimeter, or a moving pointer analogue multimeter. The approach is based on a fault finding check list. In tracing the fault from the symptoms displayed you will be directed to make measurements using a multimeter. These instructions are intended to cover the use of the recommended meters.

1. Make sure that the test leads are plugged into the correct sockets. The black test lead should be plugged into the black socket (sometimes, this socket is also marked by a -, or E or marked as COMMON or COM). The red test lead should be plugged into the red socket marked with +, V or Ω.

2. When you make a measurement, make sure that the test probes have a good clean contact with bare metal, free from grease, dirt, and corrosion as these can cause a false reading.

3. When you measure a voltage, make sure that the correct range is selected, that it is set to the selector value equal to or greater than that you are about to measure. e.g. If asked to measure 12 Volts, set the selector to the 12V range. If there is no 12V range, set the selector to the next range higher, 20V for instance. If the meter is set to a range that is too low, it may be damaged. e.g. setting to the 2V range to measure 12V.

Measuring DC Voltage

1. Select the correct range on the multimeter.

   Special Tool: Digital Multimeter (Qty.: 1)
   Special Tool: AVO Meter (Qty.: 1)

   1.1. On the digital multimeter, turn the switch to position B.

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40 - Bulb

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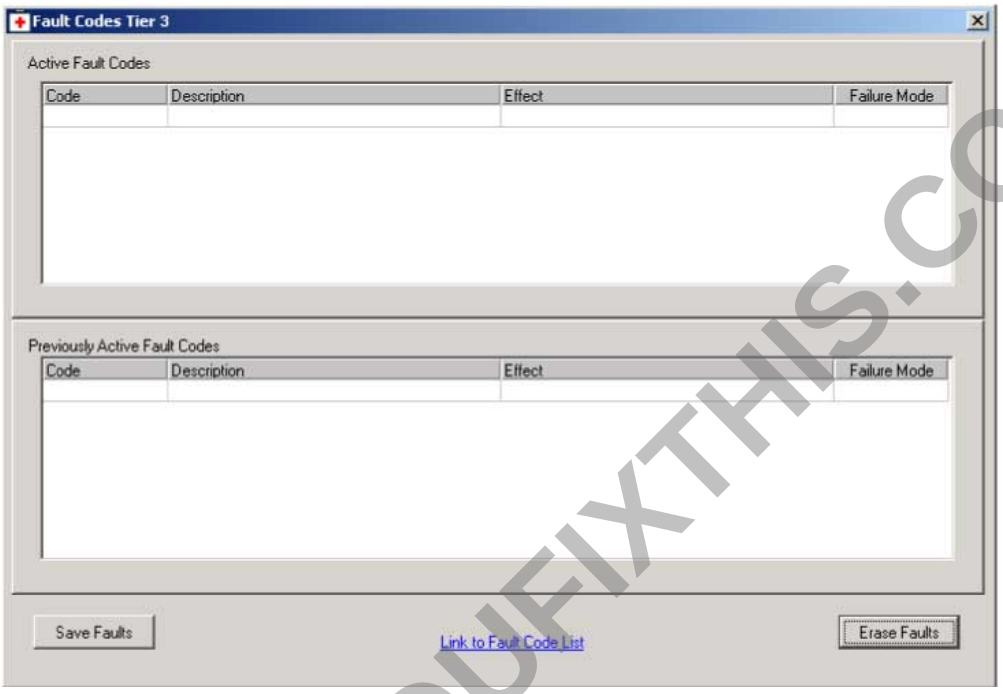
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Fault Codes Page

Figure 727.



This page allows the engineer to access fault codes logged by the ECM. The ECM logs a fault code if sensor or actuator signals are not valid. These codes are useful when fault finding.

- Active Fault Codes: Displays fault codes for active faults in real time. To link to information about the fault code click on the code. Note: Start the engine to see all the active fault codes. Note: To check if a fault code is no longer active set engine ignition system to OFF and then restart the engine. The Servicemaster log display will not delete codes that are no longer active until the engine ignition system is set to OFF.
- Previously Active Fault Codes: Displays fault codes for faults that have occurred but are not necessarily active. To link to information about the fault code click on the code.
- Save Faults: Click the button to save the fault code lists as a file to a computer location.
- Link to Fault Code List: Click to link to a complete list of possible fault codes.
- Erase Fault Codes: Click the button to erase logged fault codes from the ECM memory.

Engine Setup Data Tool-User Guide

Introduction

The Engine Setup software tool is part of the JCB Servicemaster software suite.

The Engine Setup Up tool can be used to view and change data stored the ECM. If the machine or engine specification is changed due to operational or maintenance requirements the relevant data must be changed in the ECM.

Connecting Engine Setup

To use Vehicle Setup your laptop computer must be connected to the machine CANbus.

Starting Engine Setup

1. Turn ON the machine ignition and additionally start the engine if required (taking normal precautions).
2. Start JCB Servicemaster on the laptop computer.

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Fault Code	Description
P20B6	Supply module heater temperature duty cycle above Maximum range
P20B6	Supply module heater temperature duty cycle below minimum range
P20B7	Error for Short to ground of Supply module heater actuator power stage
P20B8	Error for Short to battery of Supply module heater actuator power stage
P20B9	Error for open load on heater relay of backflow line
P20BE	Error on Supply module heater
P20BE	Error on Supply module heater temperature Sensor
P20C1	Open load Error of Urea suction line heater actuator power stage
P20C2	Error for over temperature of Urea suction line heater actuator power stage
P20C3	Error for Short to ground of Urea suction line heater actuator power stage
P20C4	Error for Short to battery of Urea suction line heater actuator power stage
P20EA	DCU relay, early opening
P20EB	DCU relay stuck
P20E8	Under pressure Error in metering control state

Fault Code	Description
P20E9	Over pressure Error in metering control state
P20E9	Over pressure Error regardless of Supply module state
P202A	Open load Error of Urea tank heater actuator power stage
P202B	Error for Short to ground of Urea tank heater actuator power stage
P202C	Error for Short to battery of Urea tank heater actuator power stage
P203B	Urea tank level
P203F	Low / empty Reagent tank level
P204B	Error on pressure line while monitoring for blockage
P204B	Error on pressure line and dosing valve while monitoring for blockage
P204B	Error while monitoring the stabilisation of pressure
P204B	Error while monitoring of pressure build-up
P204C	Pump pressure signal below the minimum Voltage limit
P204C	Error for pump pressure physical signal below lower limit
P204D	Pump pressure signal above the Maximum Voltage limit
P204F	Error to detect clogged filter
P204F	Error for leakage during no dose

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