SERVICE MANUAL

411HT, 413S, 417HT

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This manual contains original instructions, verified by the manufacturer (or their authorized representative).

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Foreword

The Operator's Manual

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You and others can be killed or seriously injured if you operate or maintain the machine without first studying the Operator's Manual. You must understand and follow the instructions in the Operator's Manual. If you do not understand anything, ask your employer or JCB dealer to explain it.

Do not operate the machine without an Operator's Manual, or if there is anything on the machine you do not understand.

Treat the Operator's Manual as part of the machine. Keep it clean and in good condition. Replace the Operator's Manual immediately if it is lost, damaged or becomes unreadable.

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sized connectors so that it cannot be installed incorrectly.

3. Tighten the bolts (x4) to the correct torque figure.
4. Fill the engine cooling system with the specified engine coolant. Refer to (PIL 75-09-03).
5. Connect the Servicemaster diagnostic tool.

   Special Tool: Data Link Adaptor (DLA) Kit (Qty.: 1)

6. Check for active fault codes. Make sure any existing fault codes are erased and do not return.

   6.1. Diagnose and repair any faults that return before continuing.

7. Select the aftertreatment system in the service master diagnostic tool and identify the coolant valve image and the status indicator next to it. Refer to the helpfiles.
8. Start the engine.
9. Check that the status indicator of the coolant valve changes from red to green. If the ambient temperature is above the specified limit, the indicator will return to red after a short period of time.

   Temperature: 10°C (50.0°F)

10. Continue to run the engine and allow it to reach operating temperature and for the after treatment system to start dosing.
11. Check for active fault codes. Make sure any existing fault codes are erased and do not return.

    11.1. Diagnose and repair any faults that return before continuing.

12. Disconnect the Servicemaster diagnostic tool.

Table 162. Torque Values

Item	Nm
3	10

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Introduction

Complex hydraulic components and circuits can be described to the engineer by using graphical symbols. The tables illustrate and give a brief description for some of the more common symbols used.

There are many symbols in use and it would be impossible to include them all here. However it should be noted that most are only variations or refinements on the basic principles explained here. If more detailed information is required you are recommended to obtain a copy of BS2917 or IS01219.

Once familiar with the symbols, the engineer can use hydraulic circuit diagrams as an aid to fault finding. It will be possible to see the complete hydraulic circuit and decipher the relationship between hydraulic components.

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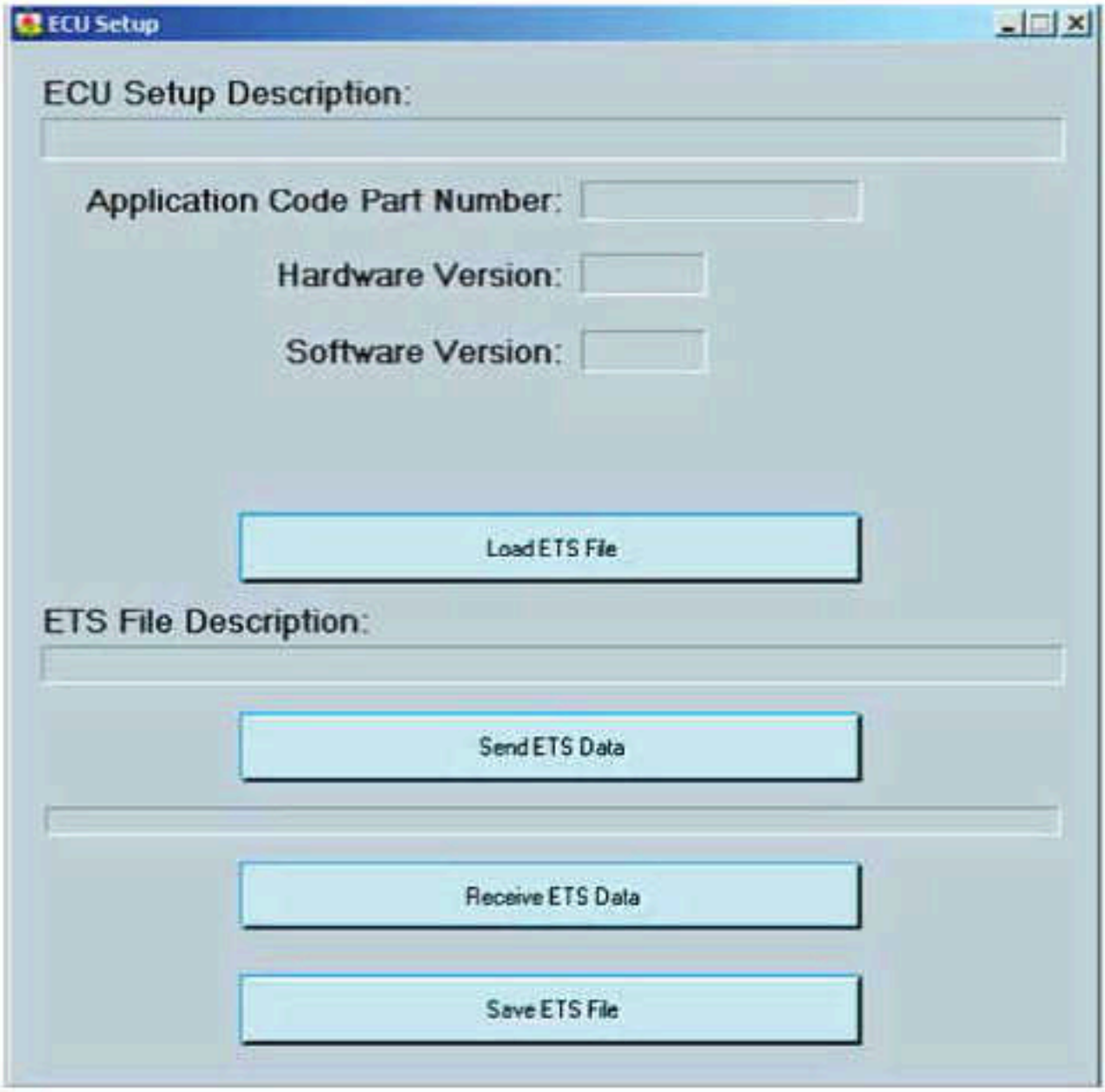
Technical Data

Table 344. Sealants Approved Product Information

Subsection	Commercial name	Product Number	Colour	Shelf life	Technical data	Comments
High strength	Loctite 275 Permabond A140	4102/0500	Green	730d	250bar (3,623.2psi) torque strength (on M8)	Non drip formulation, used on larger fittings, coarse threads.
High strength	Forgeway 240FC	4102/3100	Yellow	270d	25bar (362.3psi) breaking strength	Can be painted over with some 2 pack paint. Maximum width of joint =35mm, minimum width =2mm, minimum depth =2mm. Recommended depth of joint = width of joint.
Medium to high strength	Loctite 620	4102/3500	Green	-	172bar (2,492.7psi) shear strength	Used for locating pins in radiator assemblies, sleeves into pump housings and bearings in auto transmissions. Not suitable for plastics.
Medium strength	Loctite 518	4102/2000	Red, fluorescent	365d	90bar (1,304.3psi) tensile strength	Typically used as form-in-place gasket on rigid flanged connections.
Medium strength	Loctite 5182	4102/4100	Red gel, fluorescent	-	80bar (1,159.4psi) shear strength	It is manufactured to minimise air bubbles in the package. Used to seal gaskets, housings, cases and covers. It can also be used to repair and replace cut gaskets (up to 0.08mm in thickness).
Medium strength	Loctite 595	4102/2500	Clear	365d	6mm gap filling	Formulated to withstand weathering and extreme temperature cycling. Used for potting, coating and sealing. Can be applied horizontal, vertical and overhead.
Medium strength	Loctite 577 Permabond A1044	4102/1900	Yellow	365d	170bar (2,463.8psi) breakaway torque	A fast curing thread sealant used on coarse threads and pipe fittings up to 75mm thread size. Clearance for gap filling 0.8mm.
Medium strength	Loctite 2431	4102/2700	Blue	365d	140–340bar (2,029.0–4,927.5psi) breakaway torque	Taper thread sealant, non-fluorescing to see oil leaks. Suitable for all taper fittings up to M36.
Low strength	Clayton Dewandre air brake sealant SC1252	4102/2200	White opaque	12h full cure	Maximum seal pressure 29bar (420.3psi)	Seals pipes and plugs against leakage of air, fuels, lubricants and coolants. Hardens to a tough seal resistant to shock and vibration. Easily dismantled.
Low strength	Red Hermetite	4102/0800	-	-	Resistant to oil	Non-hardening paste jointing for joints regularly opened for servicing.

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Figure 826.



ETS Function

The ETS function provides a means of loading and uploading gearbox ECU software setup files between the ECU and the computer. On earlier versions of servicemaster a separate program was required to perform this function. This is now incorporated within shiftmaster diagnostics 2.3. The setup files have a file name extension of.ets.

- Load ETS File: A revision to the gearbox ECU software file may be supplied by JCB for installation on particular ECU models. Store the file on the computer which is to be connected to the gearbox ECU. The shiftmaster diagnostic program needs to open this file and obtain the software version and other applicable information to make sure it is compatible with the ECU connected to the computer.
- Send ETS Data: This allows the computer to send a software setup file to the gearbox ECU.
- Receive ETS Data: This reads the existing setup file from the gearbox ECU.
- Save ETS File: This saves the data received from the ECU onto the computer.

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Remove and Install

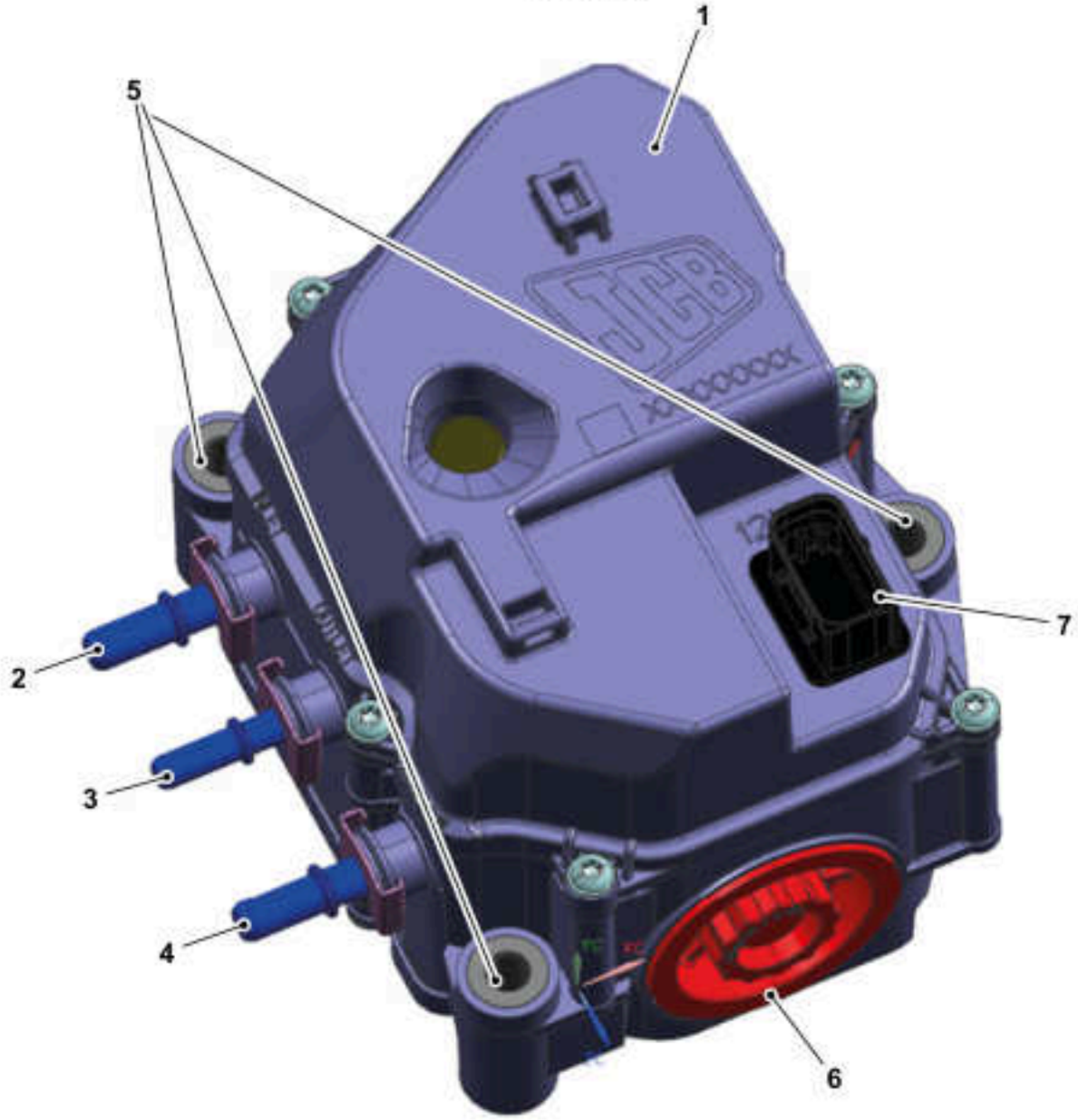
This component is not serviceable, if the component fails replace the complete module.

Before Removal

1. Make sure that the engine is safe to work on. If the engine has been running, let it cool before you start the service work.
2. Get access to the pump supply module.
3. Ensure that the area around the pump supply module is clean to prevent contamination of the SCR (Selective Catalytic Reduction) system.

Remove

Figure 365.



1 Pump supply module

2 DEF (Diesel Exhaust Fluid) inlet spigot

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