SERVICE MANUAL

LOADER
TM320, TM420

EN - 9813/6850 - ISSUE 2 - 04/2018

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.

Contents

01 - Machine

03 - Attachments, Couplings and Load Handling

06 - Body and Framework

09 - Operator Station

12 - Heating, Ventilating and Air-Conditioning (HVAC)

15 - Engine

18 - Fuel and Exhaust System

21 - Cooling System

24 - Brake System

25 - Steering System

27 - Driveline

30 - Hydraulic System

33 - Electrical System

72 - Fasteners and Fixings

75 - Consumable Products

78 - After Sales

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01 - Machine

Contents **Page No.**

Acronyms Glossary 01-2

01-03 Safety
- 01-03-03 Safety - Yours and Others 01-3
- 01-03-06 Safety Warnings 01-4
- 01-03-09 General Safety 01-5
- 01-03-12 Maintenance Safety 01-6
- 01-03-18 Operating Safety 01-8
- 01-03-21 Worksite Safety 01-10
- 01-03-24 Risk Assessment 01-11
- 01-03-27 Maintenance Positions 01-12

01-06 About this Manual
- 01-06-03 Model and Serial Number 01-15
- 01-06-06 Using the Manual 01-16

01-09 Description
- 01-09-12 Main Component Locations 01-19
- 01-09-15 Service Point Locations 01-20

01-33 Cleaning
- 01-33-00 General 01-23

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03 - Safety

Contents **Page No.**

01-03-03 Safety - Yours and Others 01-3
01-03-06 Safety Warnings 01-4
01-03-09 General Safety 01-5
01-03-12 Maintenance Safety 01-6
01-03-18 Operating Safety 01-8
01-03-21 Worksite Safety 01-10
01-03-24 Risk Assessment 01-11
01-03-27 Maintenance Positions 01-12

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03 - Attachments, Couplings and Load Handling

Contents **Page No.**

03-00 Attachments
- 03-00-00 General 03-3

03-09 Lift Arm Quickhitch
- 03-09-00 General 03-7
- 03-09-06 Hydraulic Quickhitch 03-8

03-30 Shovel
- 03-30-00 General 03-13

03-33 Fork
- 03-33-00 General 03-17
- 03-33-03 Carriage 03-20

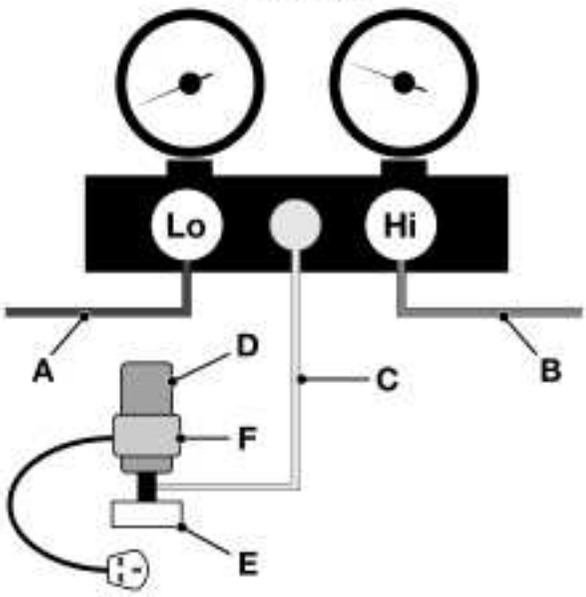
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recharging with gas follow the manufacturers instructions and recharge only via the low pressure port. Do not use liquid refrigerant at the low pressure port.

3. Slowly open the high pressure valve and allow the vacuum to draw-in refrigerant to the specified weight for the system. Refer to Technical Data. Add refrigerant until the scales indicate the specified weight for the system or the weight obtained when the system refrigerant was previously recovered. Note: To speed up the process a thermostatically controlled thermal blanket can be used around the replenishing cylinder.

4. Close all valves and remove the equipment.

Figure 128.



A Low pressure hose (blue)
B High pressure hose (red)
C Hose (yellow)
D Refrigerant cylinder
E Scales
F Thermal blanket

Electronic Vacuum Gauge

The CPS VG100 vacuum gauge is an electronic type using LED's to indicate various states of vacuum. It is used in place of or to supplement the gauge on the vacuum pump. Before connecting into the system, switch on to check that the first LED lights to show that the battery is in good condition.

Note: The indicator lights show pressure in inches of mercury (Hg) and vacuum in microns (0.001mm Hg).

Figure 129.

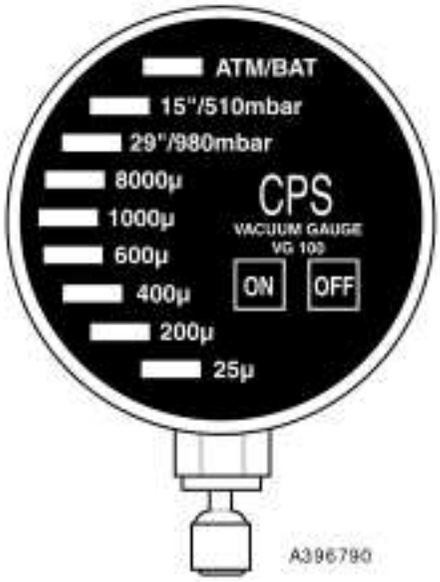


Table 42.

Gauge Reading	Description
ATM/BAT	Normal atmospheric pressure reading. Battery condition.
15"/510mbar	381mm (15 in)Hg. Partial vacuum - Vacuum system is operating.
29"/980mbar	736mm (29 in)Hg. No vacuum drawn - Possible system leakage.
8000	8.0mm (0.31 in)Hg. Partial vacuum - If the reading does not progress the system may have a slow leak.
1000	1.0mm (0.039 in)Hg. Deeper vacuum.
600	0.6mm (0.023 in)Hg. Deep vacuum.
400	0.4mm (0.015 in)Hg. Deep vacuum.
200	0.2mm (0.0078 in)Hg. Deep vacuum.
25	0.025mm (0.00098 in)Hg. Pump Test. Maximum sustainable vacuum.

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Remove

1. Remove the flywheel hub fixing bolt.
2. Remove the flywheel hub. DO NOT remove the crankshaft gear.
3. Remove the oil pump fixing bolts and lift the oil pump away from the timing gear case.

The oil pump is a non-serviceable item. If the oil pump is damaged or worn it must be renewed as a complete assembly.

Install

1. The installation procedure is the opposite of the removal procedure. Additionally do the following steps.
2. Make sure that all parts are clean and free from damage and corrosion.
3. Lubricate the pump rotor with clean engine oil.
4. Make sure that the oil pump location dowel locates into the hole in the gear timing case.
5. Install the flywheel hub into the crankshaft gear, locating on the dowel. Tighten the bolts to the correct torque value.

   Special Tool: Torque Wrench (10-100Nm) (Qty.: 1)

After Replacement

1. Install the flywheel housing, refer to (PIL 15-54).
2. Install the flywheel to the crankshaft hub, refer to (PIL 15-54).
3. Install the starter motor, refer to (PIL 15-75).
4. Fill the engine with engine oil, refer to (PIL 15-21).

Table 99. Torque Values

Item	Nm
2	24
4	47

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Transmission Dump

The harness connector pin numbers are shown on the schematic. For harness connector details refer to electrical system- harness. Refer to: PIL 33-12.

Table 215. ECU inputs - transmission dump

Gearbox function	Dump switch 1051 (Joystick)	ECU 4016 (A) Inputs
Transmission dump selected	6	37

Park Brake On

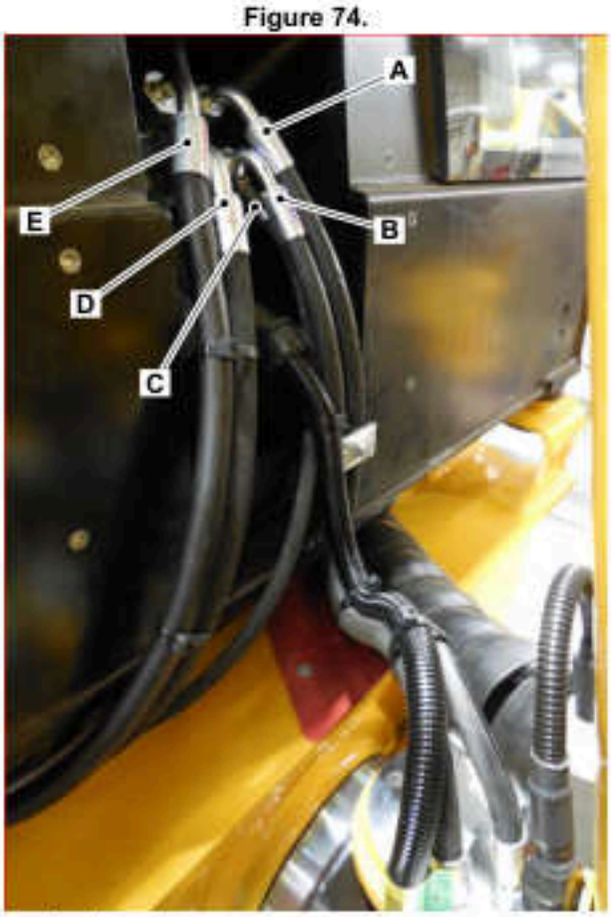
The harness connector pin numbers are shown on the schematic. For harness connector details refer to electrical system- harness. Refer to: PIL 33-12.

Table 216. ECU inputs - Park brake on

Gearbox function	Park brake switch 1057	ECU 4016 (A) Inputs
Park brake ON	2-3	30

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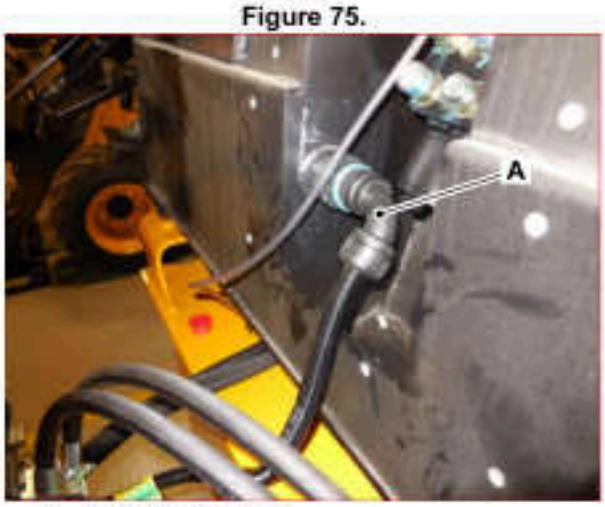
Figure 74.



A Hose 1
B Hose 2
C Hose 3
D Hose 4
E Hose 5

25. Disconnect the front chassis harness from the cab.

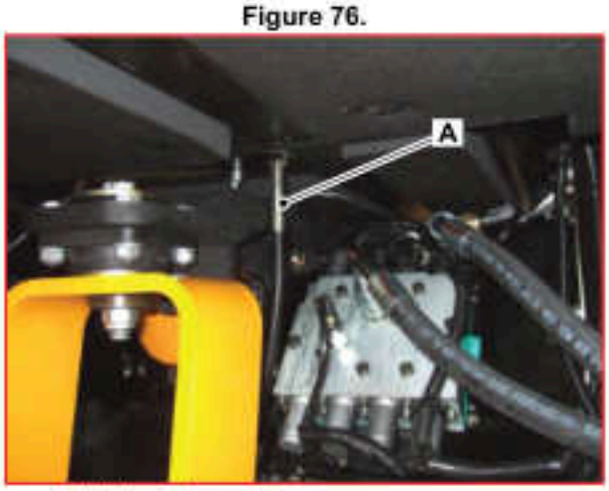
Figure 75.



A Chassis harness

26. Disconnect the hitch cable (if installed).

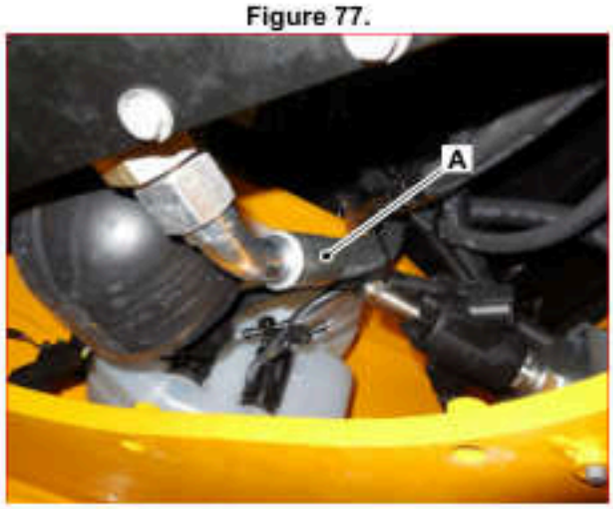
Figure 76.



A Hitch cable

27. Disconnect the washer tube from the front of the cab.

Figure 77.

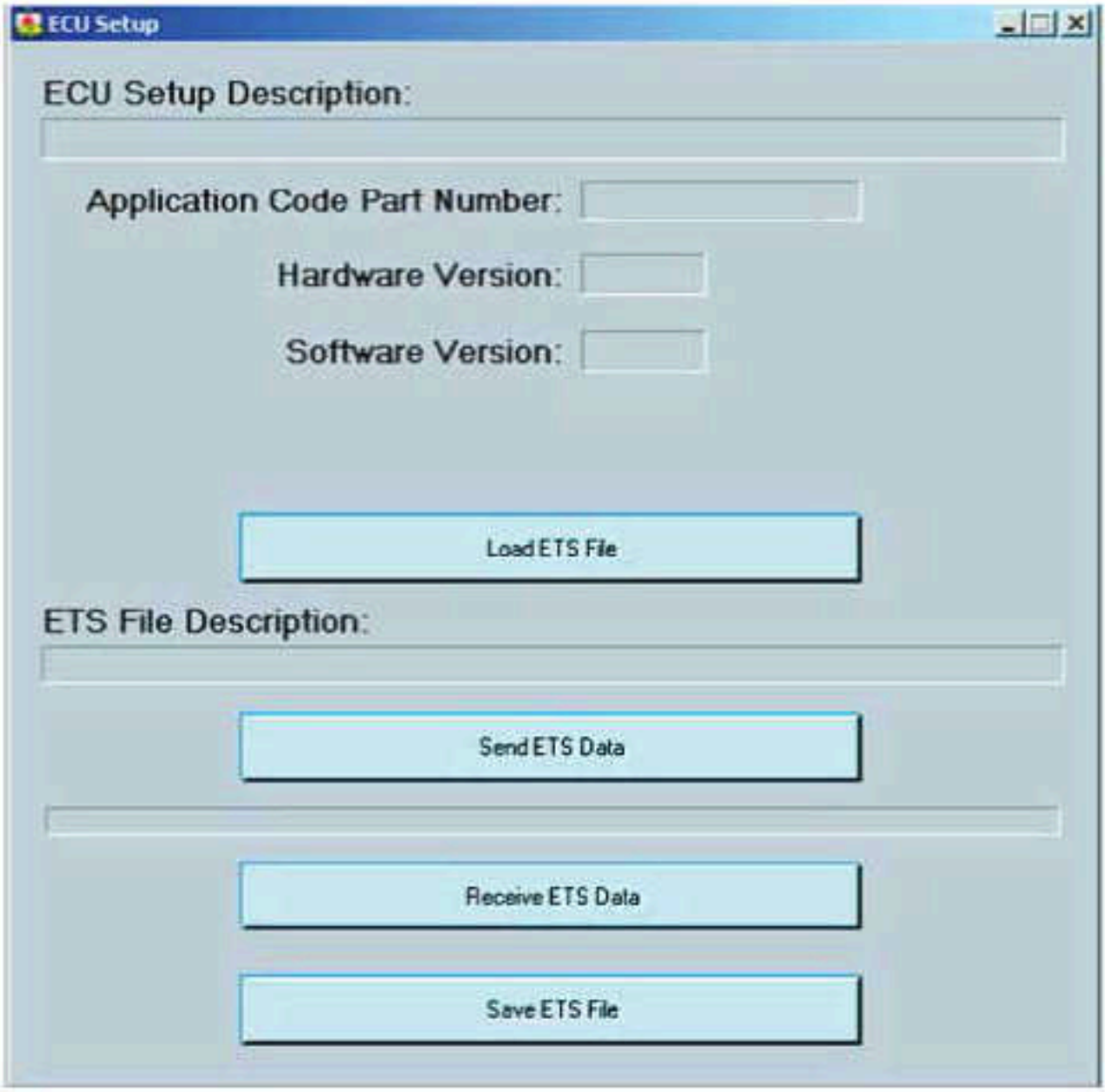


A Washer tube

28. Disconnect the earth strap from bottom of the cab.

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Figure 1051.



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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