# SERVICE MANUAL

LOADER
**TM320**

EN - 9813/2350 - ISSUE 5 - 01/2017

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

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# Foreword

## The Operator's Manual

⚠

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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**Table 125. TMAP (Temperature Manifold Air Pressure) Sensor Fault (Boost Pressure)**

| Cause | Remedy |
|---|---|
| Sensor supply voltage or calibration fault | Disconnect the sensor, check sensor voltage supply at the harness connector (see relevant sensor help file for pin numbers or refer to engine electrical schematic). If voltage supply is faulty, disconnect all other sensor in turn until voltage supply returns. Replace the faulty sensor. If no sensor is faulty replace the ECM. |
| | If sensor supply voltage is OK, proceed to 'Air inlet circuit fault'. |
| Air inlet circuit fault | Check the consistency of barometric pressure reading. Verify the conformity of air inlet circuit:– VGT (Variable Geometry Turbocharger) / Turbo – Leakage before VGT / Turbo – Air filter – Valve position using ServiceMaster – Vane state. |
| | Check all the hose connections for air leaks, repair as necessary. |
| | If no fault is found, raise Techweb Helpdesk call. |
| Sensor connection faulty | Check the condition of sensor to harness connection, make sure the seals are in place, check for signs of corrosion or contamination. Repair/replace as necessary. |
| | If no fault is found, proceed to 'Sensor failure'. |
| Sensor failure | Check the sensor resistance (see relevant help file page). If sensor is out of specification replace. |
| | If no faults is found, proceed to ECM connection fault'. |
| ECM connection fault | Disconnect the harness from engine ECM and inspect. Check seals are in place, check for signs of corrosion or contamination. |
| | If ECM pins are damaged, replaceECM and re-flash appropriate calibration (see Re-flashing an ECM |
| | If harness is damaged, repair or replace as necessary. |
| | If no fault is found proceed to 'Wiring fault'. |
| Wiring fault | Check the harness continuity and machine and engine earth contacts. Repair/ replace as necessary. |
| | If no fault found, raise Techweb Helpdesk call. |

**Table 126. Crankshaft Position Sensor**

| Cause | Remedy |
|---|---|
| Sensor supply voltage fault | Disconnect the sensor, check sensor voltage supply at the harness connector (see relevant sensor help file for pin numbers or refer to engine electrical schematic). If voltage supply is faulty, replace the sensor. |
| | If sensor supply voltage is OK, proceed to 'Sensor connection faulty'. |
| Sensor connection faulty | Check the condition of sensor to harness connection, make sure the seals are in place, check for signs of corrosion or contamination. Repair as necessary. |
| | If no fault is found, proceed to ECM connection fault'. |



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## Introduction

A schematic wiring diagram is a simplified pictorial representation of the machines electrical circuit. It shows the components of the circuit as simplified electrical symbols, and the power and signal connections between the devices. The wiring diagram is used to troubleshoot problems and to make sure that all the connections have been made and that everything is present.

Use the schematics together with the correct electrical harness drawings to reference the connector pin details.

This section may contain more than one set of electrical schematics for different machine variants.

### Understanding Electrical Schematics

Use the applicable schematic set to trace wires and connections between electrical devices. In most cases it will be necessary to trace wires across more than one schematic sheet.

The example identifies the information contained on the diagrams. It also shows how to follow wires from one diagram sheet to another.

The harness inter-connector codes and device harness connector codes are the same as used on the applicable harness drawings.

Splices are not normally accessible. Splices are inside the harness sheath and not visible on the outside. Wires are welded together at a splice, there are no individual connector components.



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# Technical Data

## Dimensions

Figure 1006.

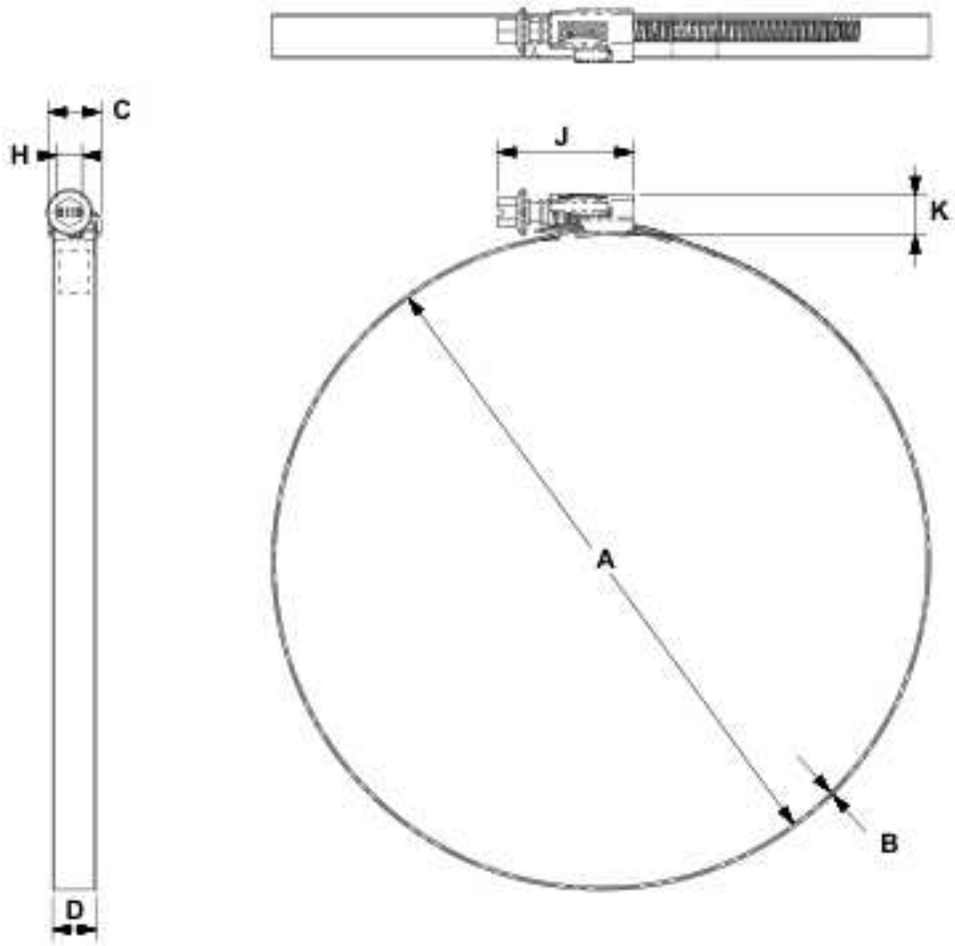


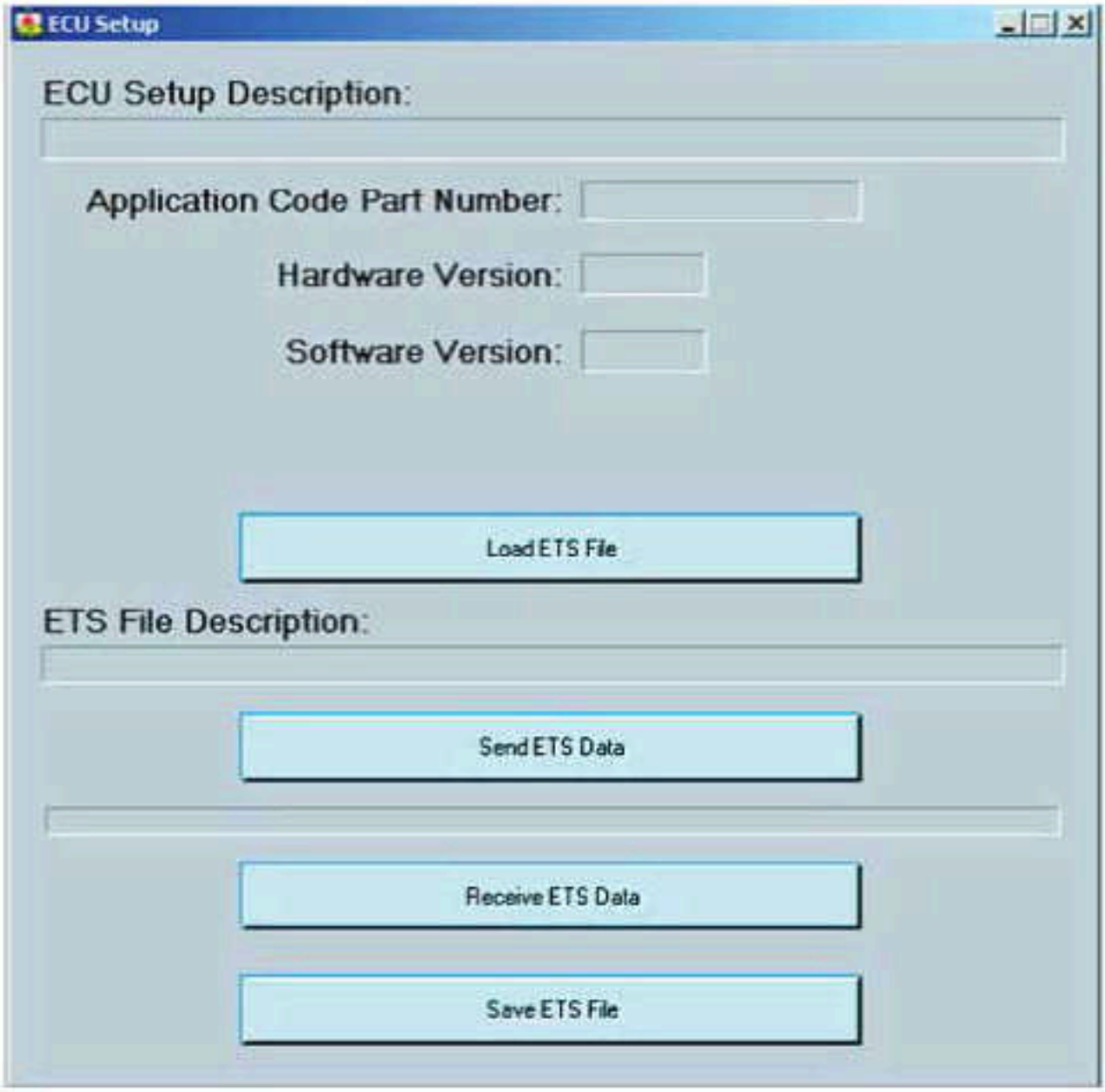

Table 350.

| A<br>Clamping range | B<br>Band thick-ness | C<br>Housing width | D<br>Band width | H<br>Hex size across flats | J<br>Bolt and housing length | K<br>Bolt and housing overall height |
|---|---|---|---|---|---|---|
| Standard worm drive clips and spring assisted worm drive clips | | | | | | |
| 8–16mm | 0.7mm | 13mm | 9mm | 7mm | 21mm | 11mm |
| 12–22mm | | | | | 21mm | |
| 16–27mm up to 60–80mm | 0.8mm | 14.6mm | 12mm | | 30mm | 12.5mm |
| 70–90mm up to 160–180mm | | | | | 36mm | |



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Figure 870.




**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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## Adjust

This procedure is only applicable within 2min from the installation of the LMI (Load Moment Indicator) transducer.

If the Loctite has cured, go to step 5.

Do the following step to adjust an out of range LMI transducer.

1. Loosen the top bolt on the LMI transducer.
2. Tighten the top bolt on the LMI transducer. If it is still out of range do the step 3.
3. Loosen both of the bolts.
4. Tighten the bottom bolt in the opposite direction to the first installation. If it is still out of range do the step 5.
5. Remove the LMI transducer.
6. Clean the LMI transducer and the chassis.
7. Check the chassis with a suitable straight edge.
   - 7.1. If uneven, contact your JCB dealer.
   - 7.2. If correct, replace the LMI.
8. If necessary, install a new LMI transducer. Refer to (PIL 33-66).

## Remove and Install

**Consumables**

| Description | Part No. | Size |
|---|---|---|
| JCB Threadlocker and Sealer (Medium Strength) | 4101/0250 | 0.01L |
| | 4101/0251 | 0.05L |

⚠ **WARNING** Make sure the articulation lock is in the transport position before you transport the machine. The articulation lock must also be in the transport position if you are carrying out daily checks or doing any maintenance work in the articulation danger zone. If the articulation lock is not in the transport position you could be crushed between the two parts of the chassis.

### Remove

1. Make the machine safe. Refer to (PIL 01-03).
2. Disconnect the transducer harness connector.
3. Remove the screws and washers.
4. Lift off the transducer. (It may be adhered to the surface with Loctite during installation.)

**Figure 995.**




**A** Transducer
**B** Screw



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