JCB

DRIVETRAIN SYSTEMS

# Service Manual

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**NOTE**
**All references in this manual to 'Forward' and 'Reverse' assume a front-mounted engine.**

# PS700 and PS750 SERIES TRANSMISSIONS

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Issue 8

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## Solenoid Data

| **Solenoid Valve** | **VICKERS: 02-332169** | **VICKERS: 02-332170** |
|---|---|---|
| Type | 4-way, 3-position, directional control | 4-way, 3-position, normally closed |
| Operating Flow | 40 l/min (minimum) | 40 l/min (maximum) |
| Operating Pressure (nominal) | 10 bar | 10 bar |
| Leakage (maximum) | 50 cc/min @ 40 °C, 10 bar | 50 cc/min @ 40 °C, 10 bar |
| Fluid Type | ATF 210 | ATF 210 |
| Fluid Cleanliness | JCB Standard 9993/0005 Class A | JCB Standard 9993/0005 Class A |
| Seals | - | - |
| Waterproof Specification | IP 67 | IP 67 |
| Coil Operating Voltage | + 12V DC nominal (10.8V - 13.2V) | + 24V DC Nominal (21.6V - 26.4V) |
| Pull-in Voltage | + 10.5V (max) @ 25 °C air (after energised for 10 mins @ +16V and off for 10 secs) | + 21V (max) @ 25 °C air (after energised for 10 mins @ + 32V and off for 10 secs) |
| Drop-out Voltage | + 1.5V (min) @ 20 °C air | + 1.5V (min) @ 20 °C air |
| Peak Voltage | + 26V DC for 5 mins @ 0 °C | + 28.8V DC for 5 mins @ 0 °C |
| Coil Resistance | 4.9 ohms ± 5% @ 20 °C | 19.6 ohms @ 20 °C |
| Operating Temperature Range | | |
| Air | - 40 °C to + 43 °C | - 40 °C to + 43 °C |
| Oil | - 40 °C to + 100 °C | - 40 °C to + 100 °C |
| Diode Protection | 3 amps minimum, 50 ns maximum reverse recovery time | 3 amps minimum, 50 ns maximum reverse recovery time |

| | **VICKERS: 02-171548** |
|---|---|
| Type | 3-way, 2-position, normally closed |
| Operating Flow | 20 l/min (maximum) |
| Operating Pressure (nominal) | 10 bar |
| Leakage (maximum) | 150 cc/min @ 40 °C, 10 bar |
| Fluid Type | ATF 210 |
| Fluid Cleanliness | JCB Standard 9993/0005 Class A |
| Seals | 70 Shore Nitrile |
| Waterproof Specification | IP 67 |
| Coil Operating Voltage | +12V DC nominal (10.8V to 13.2V) |
| Pull-in Voltage | + 10.5V (max) @ 25 °C air (after energised for 10 mins @ +16V and off for 10 secs) |
| Drop-out Voltage | + 0.5V (min) @ 20 °C air |
| Peak Voltage | + 26V DC for 5 mins @ 0 °C |
| Coil Resistance | 8 ohms ± 5% @ 20 °C |
| Operating Temperature Range | |
| Air | - 40 °C to + 43 °C |
| Oil | - 40 °C to + 100 °C |
| Diode Protection | 3 amps minimum, 50 ns maximum reverse recovery time |
| Coil Insulation | Class H |
| Coil Colour | Black |



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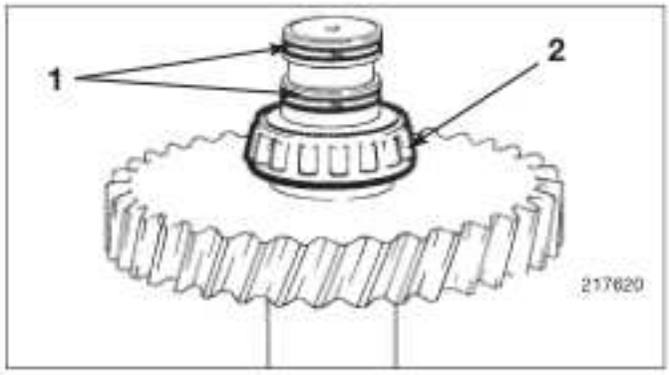
## Dismantling

1 Carefully remove piston ring seals.

**Note:** If the piston ring seals are excessively worn then check for burrs or damage on shaft grooves. If necessary remove burrs with a fine grade abrasion paper and oil.

* 2 Remove taper roller bearing using a puller/press.

**Note:** This bearing would not normally be removed unless it * was damaged. Use standard bearing pullers, although damage to the bearing cage may be incurred.



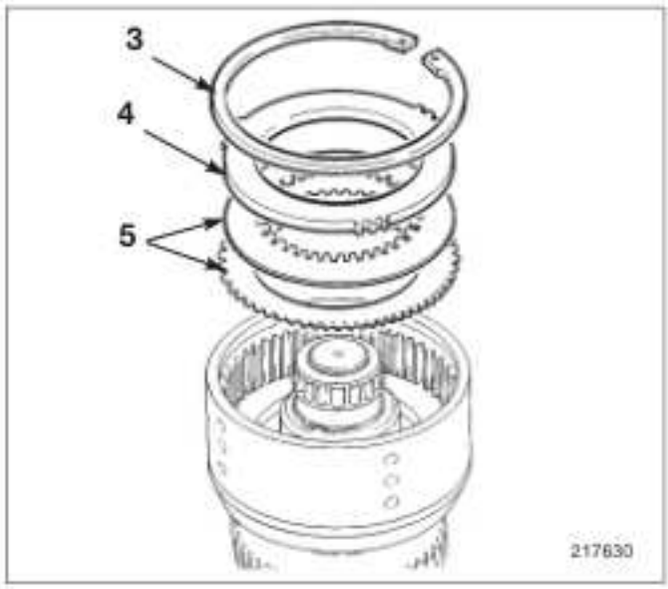

3 Remove internal circlip.

4 Remove pressure (end) plate.

**Note:** Later clutches are fitted with one 6 mm thick pressure plate in place of two 4 mm thick plates.

5 Remove the clutch friction/counter plates. Keep them together in sets, DO NOT mix the plates with those from other clutches.

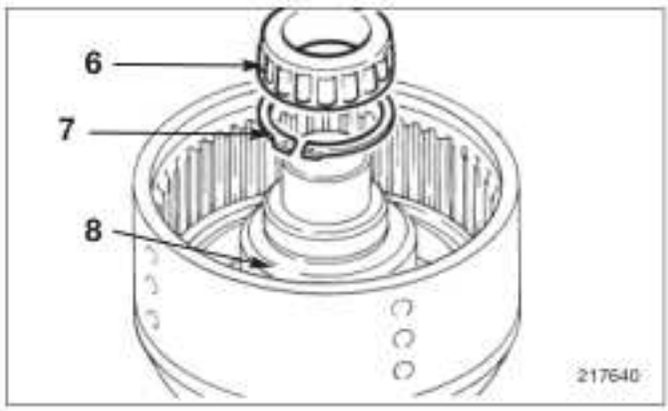
**Note:** In later clutches an additional counter plate is fitted beneath the pressure plate.

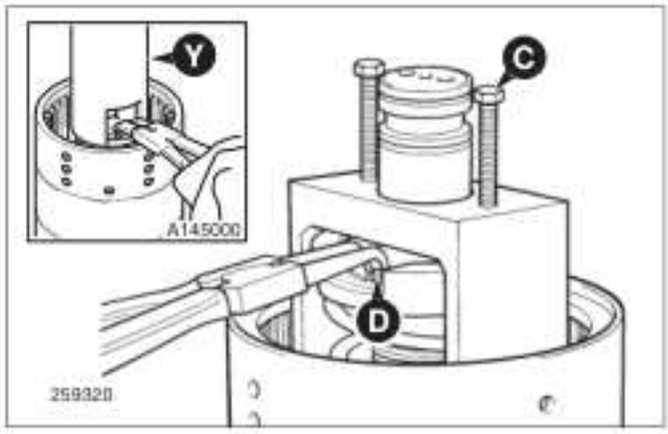



6 Remove taper roller bearing.

7 Position clutch assembly in press, with a cutaway tube **Y** compress piston spring then remove circlip.

If a press is not available use compressor spring tool 892/00916 to remove circlip **D**. Refit circlip removed at step 3 and locate the feet of the tool underneath the circlip. Fit 'C' shaped plate over the spring retaining plate, use two bolts **C** to relieve spring tension and remove circlip **D**.



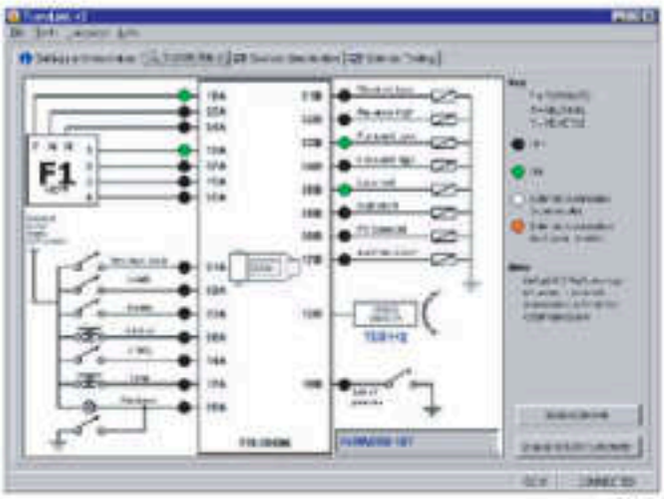






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### 8 System Status Page

This is the main page used for fault diagnosis of the gearbox control system. The picture below shows the status of machine conditions. (Note: details shown are application specific and will vary.)




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This section is not intended to be used as a guide for fault finding by identifying specific conditions. Please refer to the Hints & Tips section for more specific instructions on diagnosis.

The left hand side of the diagram shows all of the relevant operator and machine inputs to the ECU. The right hand side of the diagram shows the ECU outputs to the gearbox.

Each input and output signal has an LED indicator to show its' status. The key on the far right explains the colours.

In the top left corner of the diagram there is a box to simulate the gear/direction selector. In this box TransLink V2 shows the status of this indicator which may be different from the actual gear depending on other machine conditions.

The reading from the gearbox speed sensor is shown mid-way down the right hand side of the ECU. This is a live signal and has an approximate 1 second delay on updates.

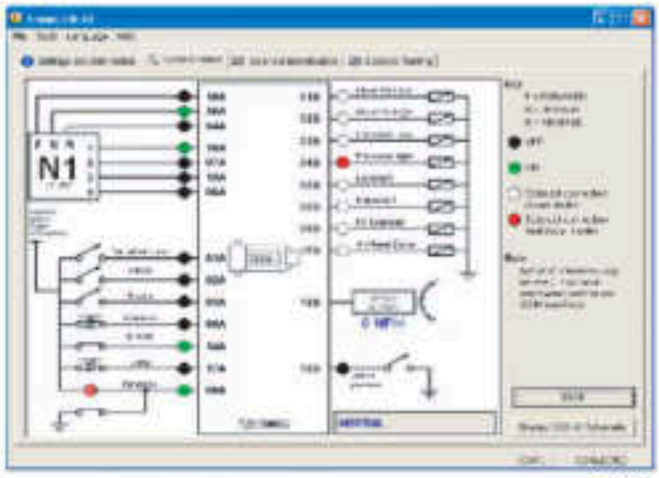
Below this the low gearbox oil pressure switch is shown. (Note that the ECU has the ability to add a delay to this signal to filter out any instantaneous dips in mainline pressure which may occur under certain extreme conditions.)

In the bottom right corner of the diagram there is a grey box which indicates the status of the gearbox. This will indicate the gear and direction that the ECU is controlling the gearbox. (Please note that this is the status of the ECU, if there is a problem with either the gearbox or the connecting harness then this value may not be the actual engaged gear).

In the bottom right corner of the page there are 2 buttons.

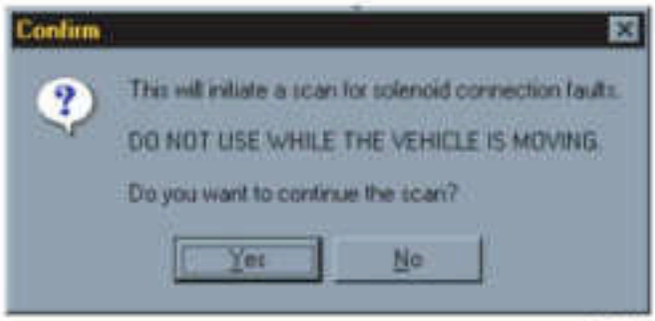
The lower button provides access to a more detailed ECU wiring diagram. This diagram shows all the ECU terminations and thus its full capabilities.

The button above this is used to start a Solenoid Scan process. Using this button will allow the Service Engineer to check the status of the ECU output loads.




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When you click on the Scan Solenoids button a message box is displayed.




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## 7 Menu Bar

**File Menu**
Contains options to;

Open a ECU Application Software (EAS) file.
Exit to close down the program.



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**Options Menu**
Contains options to;

Control connection to an ECU. This first menu item changes depending upon the current connection status.
Select Language, used to change the programs language.



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**Note:** The default language is English. At the time of writing this document alternative language support is not available. Please check future releases of TransFlash for further language support.

**Help Menu**
Contains links to the;

User Guide, this document.
Troubleshooting Guide, a document to help diagnose communications errors.
About... dialog, displays the current TransLink version and part number.



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