Service Manual

Side Engine Loadalls

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Specific Gravity Testing

The specific gravity of the electrolyte gives an idea of the state of charge of the battery. Readings should be taken using a hydrometer, when the electrolyte temperature is 15°C (60°F). If the battery has recently been on charge, wait approximately one hour (or slightly discharge the battery) to dissipate the surface charge before testing.

Readings should be as tabulated and should not vary between cells by more than 0.04. A greater variation indicates an internal fault on that particular cell.

If the electrolyte temperature is other than 15°C (60°F) a 'correction factor' must be applied to the reading obtained. Add 0.07 per 10°C (18°F) if the temperature is higher than 15°C (60°F) and subtract the same if the temperature is lower.

Table 165. Specific Gravity at 15°C (60°F)

	Fully Charged	Half Discharged	Fully Discharged
Ambient temperature up to 27°C (80°F)	1.270 - 1.290	1.190 - 1.210	1.110 - 1.130
Ambient temperature above 27°C (80°F)	1.240 - 1.260	1.170 - 1.190	1.090 - 1.110

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Example of Schematic Circuit

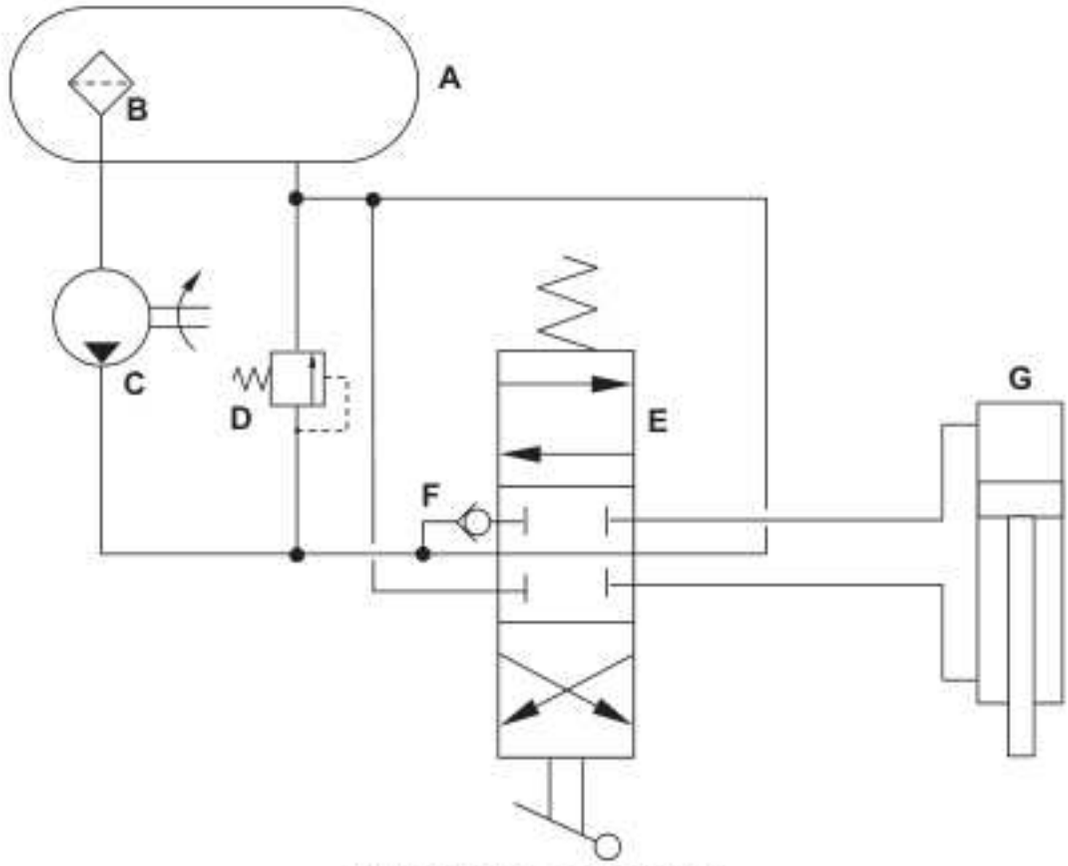


Fig 15. Simple Schematic Circuit

Some of the symbols described on the preceding pages have been arranged into a simple schematic circuit. ⇨ *Fig 15. (E-18).*

Hydraulic tank **15-A** is a pressurised tank with an internally mounted strainer **15-B** on the suction line to the fixed displacement pump **15-C**. System pressure is limited to the setting of relief valve **15-D**.

Valve spool **15-E** is an open-centre spool that is in neutral position; flow from the pump passes through the spool and returns to the hydraulic tank.

If the lever operated spool is moved away from neutral position hydraulic fluid is directed to either head side or rod side of hydraulic ram **15-G**. Notice that the fluid must first open one way valve **15-F** before flowing to the ram.

Example Circuit Key

15-A	Hydraulic Tank
15-B	Strainer
15-C	Fixed Displacement Pump
15-D	Relief Valve
15-E	Spool
15-F	One Way Valve
15-G	Double Acting Hydraulic Ram

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Table 4. Steering wheel difficult to turn.

Possible Cause	Action
Tyres not inflated to correct pressure.	Inflate tyres to correct pressure.
Insufficient hydraulic fluid.	Check for leaks and top up the hydraulic tank as required.
Leaks in the relevant hoses or component connections.	Check hoses and connections for leaks.
Air in the hydraulic system.	Bleed system - bleed the load sense line.
Low pump flow.	Check pump flow, if required service or replace pump.
Steer relief valve set incorrectly.	Check pressure setting of steer unit relief valve, adjust as required.
Worn or damaged parts in the steer control valve.	Remove and inspect.
Priority valve not operating correctly.	– Check if the priority valve is sticking (contamination) rectify as required. – Check the load sense line from the steer unit to the priority valve for signs of leaking or poor connection.
Steer mode valve not operating correctly.	– Check if spools sticking, rectify as required. – Check if solenoids operating, replace solenoids as required.
Mechanical failure.	Check for damaged axle components, such as rams, track rods, linkages, etc.

Table 5. Steering wheel turns on its own.

Possible Cause	Action
Dirt in the steer control unit (causing sleeves to stick open)	Clean and inspect unit.
Steer control valve centring springs damaged, broken or missing.	Check steer unit.
Steer control valve - position of rotor to shaft slot incorrect.	See ***Hydraulic Steer Unit, Dismantling and Assembly***. Correct as required.

Table 6. Machine will not turn when the steering wheel turned.

Possible Cause	Action
Insufficient hydraulic fluid.	Check for leaks and top up the hydraulic tank as required.
Leaks in the relevant hoses or component connections.	Check hoses and connections for leaks.
Air in the hydraulic system.	Bleed system - bleed the load sense line.
Low pump flow.	Check pump flow, if required service or replace pump.
Steer relief valve set incorrectly.	Check pressure setting of steer unit relief valve, adjust as required.
Worn or damaged parts in the steer control valve.	Remove and inspect.
Priority valve not operating correctly.	– Check if the priority valve is sticking (contamination) rectify as required. – Check the load sense line from the steer unit to the priority valve for signs of leaking or poor connection.

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ShiftMaster Diagnostics 2.3 - User Guide



Introduction

The **ShiftMaster Diagnostics** software tool is part of the **JCB Service Master** software suite. The diagnostics software is designed to be an easy to use fault finding tool for Powershift PS760 series electronically controlled gearboxes.

ShiftMaster Diagnostics employs the graphical strengths of the Microsoft Windows operating environment to simplify electrical fault finding within the gearbox ECU control system.

ShiftMaster Diagnostics is only intended for use with ECU 2, ECU 2.2 & ECU 2.3 controlled PS760 gearboxes. The system is not compatible with relay controlled gearboxes. Older versions of Powershift Controllers used on the PS750 series gearboxes are not supported.

Note: *This software guide is universal and some functions may not be available on particular machine variants.*

This software is intended for use on IBM Compatible Personal Computers **(PCs)** running **Windows 9x**, **Windows2000** and **WindowsXP** operating systems but is not compatible with either earlier versions of **Windows 3.x**. Ideally the computer should be a laptop type.

Care and Safety

⚠ WARNING

Be sure to read and follow any on screen instructions. Failure to follow correct procedure could result in death or injury.

2-4-5-5



Fig 126.

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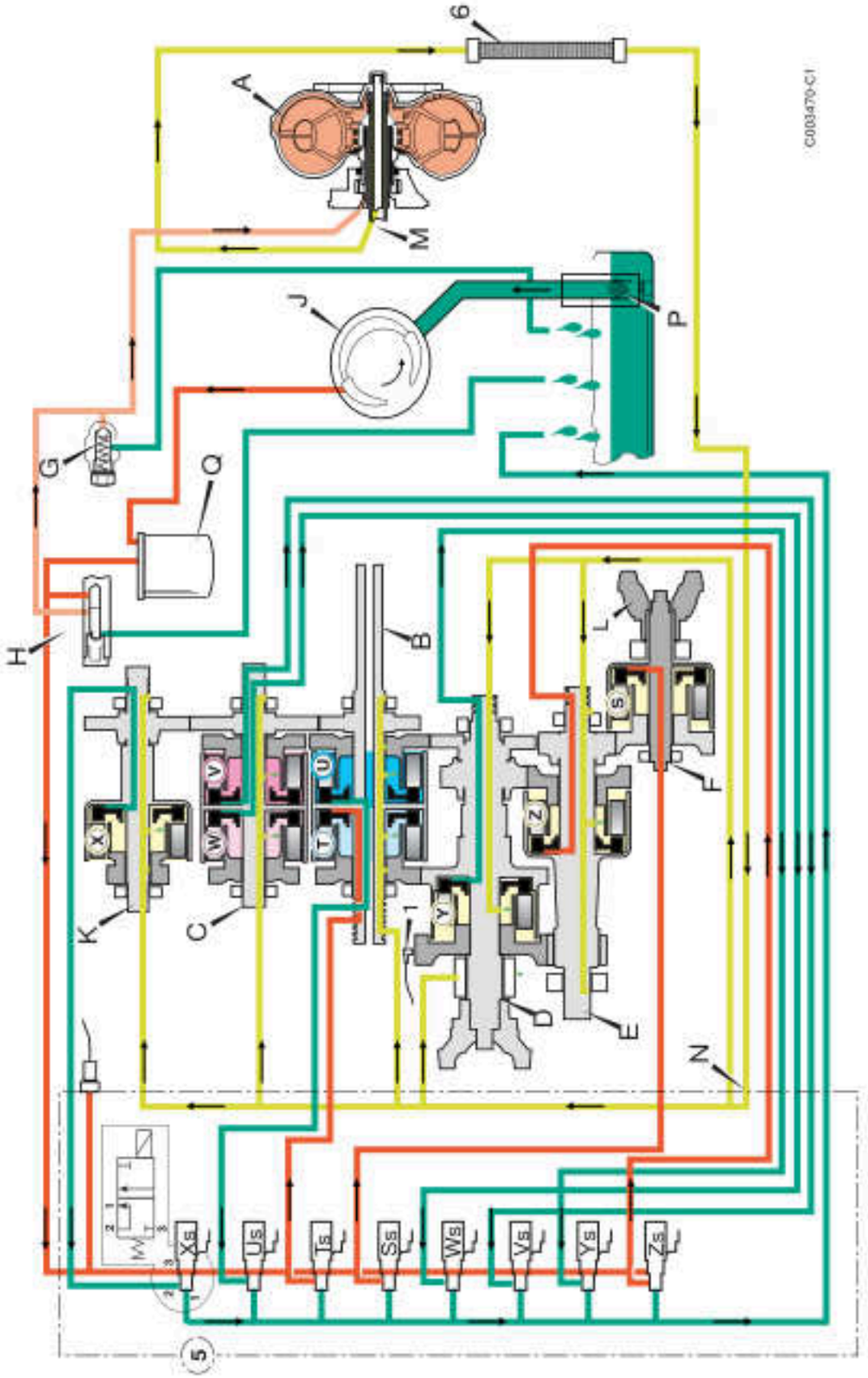


Fig 32. Electrical and Hydraulic Operation

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