JCB

DRIVETRAIN SYSTEMS

Service Manual

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NOTE

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

SS500 SERIES TRANSMISSION WITH TRANSFER GEARBOX - TG150

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Lubricants & Capacities

ITEM	CAPACITY			FLUID/LUBRICANT	INTERNATIONAL SPECIFICATION
	litres	UK gal	US gal		
†SS500 Transmission	*17.5	3.8	4.6	Kuwait EL4117 SAE 10w Kuwait EL4118 SAE 30 Mobil ATF 210	Cat TO-4 Cat TO-4 ESP-M2C 33G
Grease Points	- -	- -	- -	Mobil HP222	Mobil HP222
Electrical Connections	- -	- -	- -	As a corrosion and moisture inhibitor all exposed connections should be coated liberally with petroleum jelly. NB. Petroleum jelly must **NOT** be used on sealed-type connectors.	

† Capacities shown with an asterisk are approximate total system and dependent on vehicle circuit. Use the maximum and minimum marks on dipstick when filling.

Transmission Oil Fill Procedure

Note: When installing a transmission in a machine, whether new or in service, it is extremely important to follow the correct oil fill procedure to prevent internal damage to the transmission.

1 With the engine stopped, fill the transmission with specified transmission fluid to dipstick maximum mark (see **Synchro Shuttle Transmission - Check Oil Level**).

2 Start the engine and run slowly for a period not exceeding five minutes. This allows the oil to fill filter, pump, torque converter, oil cooler and hoses.

3 Stop the engine, wait approximately one minute. Re-check the oil level and fill to dipstick level.

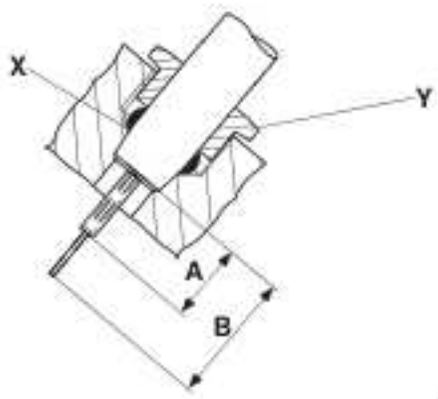
JCB Drivetrain Dipstick Details

Tube size 1" O/D x 16 S.W.G. ERW 1

Locknut and seal required for securing and sealing dipstick/filler tube - Part No. 155/10600

Filler tube must sit fully home in transmission casing counterbore.

Note: Figures given below are for transmissions installed horizontally. Allowance may be needed if installed at an angle (Front to Rear). JCB Drivetrain should be consulted if transmission is to be inclined in vehicle chassis.



A234630

Transmission Figures

Dimension **A** 187 mm (max)
Dimension **B** 199 mm (min)

X Seal Ferrule
Y Male nut fitting 1½ in Hex. A/F

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Relay Requirements

Relays are used in electrical circuits for a variety of reasons. However, the more usual application is to protect components like switches etc. from being overloaded. A relatively small current (from the switch) energises the relay coil, this coil causes internal contacts to open (or close) and therefore controls a (larger) current in another circuit. Although relays look similar, internally they can be different, for example, they can be single contact or double contact; normally closed or normally open. Make sure you fit the correct type of relay, otherwise the machine electrical circuits will not function properly.

Note: Relays are normally not supplied with the gearbox. It is the responsibility of the O.E.M. to provide relays for the protection of components.

Listed below are the gearbox components requiring relay protection.

Neutral Start
Ignition
Transmission Dump
Forward Drive
Buzzer (if fitted)
Park Brake (if switch fitted)
Reverse Drive
Drive (Layshaft / Mainshaft)
Power Take-off Solenoid

Note : The above list does not include any relays that may be required for machine electrics such as indicators, lights etc.

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Synchro Shuttle Gearbox - Hydraulics

Before commencing with the fault finding procedure make sure that the correct type of transmission fluid has been used.

LACK OF POWER

Possible Cause	Remedy
1 Poor engine condition.	1 Check and if necessary repair engine.
2 Low oil level.	2 Top up system.
3 Worn pump.	3 Check flow and if necessary repair or renew pump.
4 Torque converter damage.	4 Check and if necessary repair or renew torque converter.
5 Low mainline pressure.	5 See fault 'Low Mainline Pressure'.
6 Clutches slipping.	6 See fault 'Low Clutch Pressure'.
7 Internal leakage.	7 a) Check internal cored galleries and casting for porosity. b) Check condition of seals.
8 High stall speeds.	8 See fault 'High Stall Speeds'.
9 Low stall speeds.	9 See fault 'Low Stall Speeds'.
10 Overheating.	10 See fault 'Overheating'.

LOW MAINLINE PRESSURE (in neutral)

Possible Cause	Remedy
1 Worn pump.	1 Check flow and if necessary repair or renew pump.
2 Blocked suction strainer.	2 Clean suction strainer.
3 Pressure maintaining valve sticking/leaking.	3 Free off or renew valve.
4 Oil aerated (foaming).	4 a) Internal leakage (cored galleries) - inspect/repair transmission. b) Dirty suction strainer - clean strainer. c) High oil level - drain to proper level. d) Incorrect grade of oil - drain then refill with correct oil.
5 Oil leak through parking brake on/off circuit. (Gearboxes with internal parking brake only)	5 a) Check external pipework for parking brake circuit. b) Check parking brake (pressure) circuit - refer to **Fault Finding - Internal Parking Brake**. c) Disconnect parking brake and re-check.

HIGH STALL SPEEDS (Forward & Reverse Clutches)

Possible Cause	Remedy
1 Damaged converter blades.	1 Check and if necessary renew converter.
2 Clutches slipping.	2 See fault 'Low Clutch Pressure'.
3 Internal leakage.	3 a) Check internal cored galleries and casting for porosity. b) Check condition of seals.

LOW STALL SPEEDS (Forward & Reverse Clutches)

Possible Cause	Remedy
1 Poor engine condition.	1 Check and if necessary repair engine.
2 Torque converter reaction member clutch slipping.	2 Check and if necessary renew torque converter.

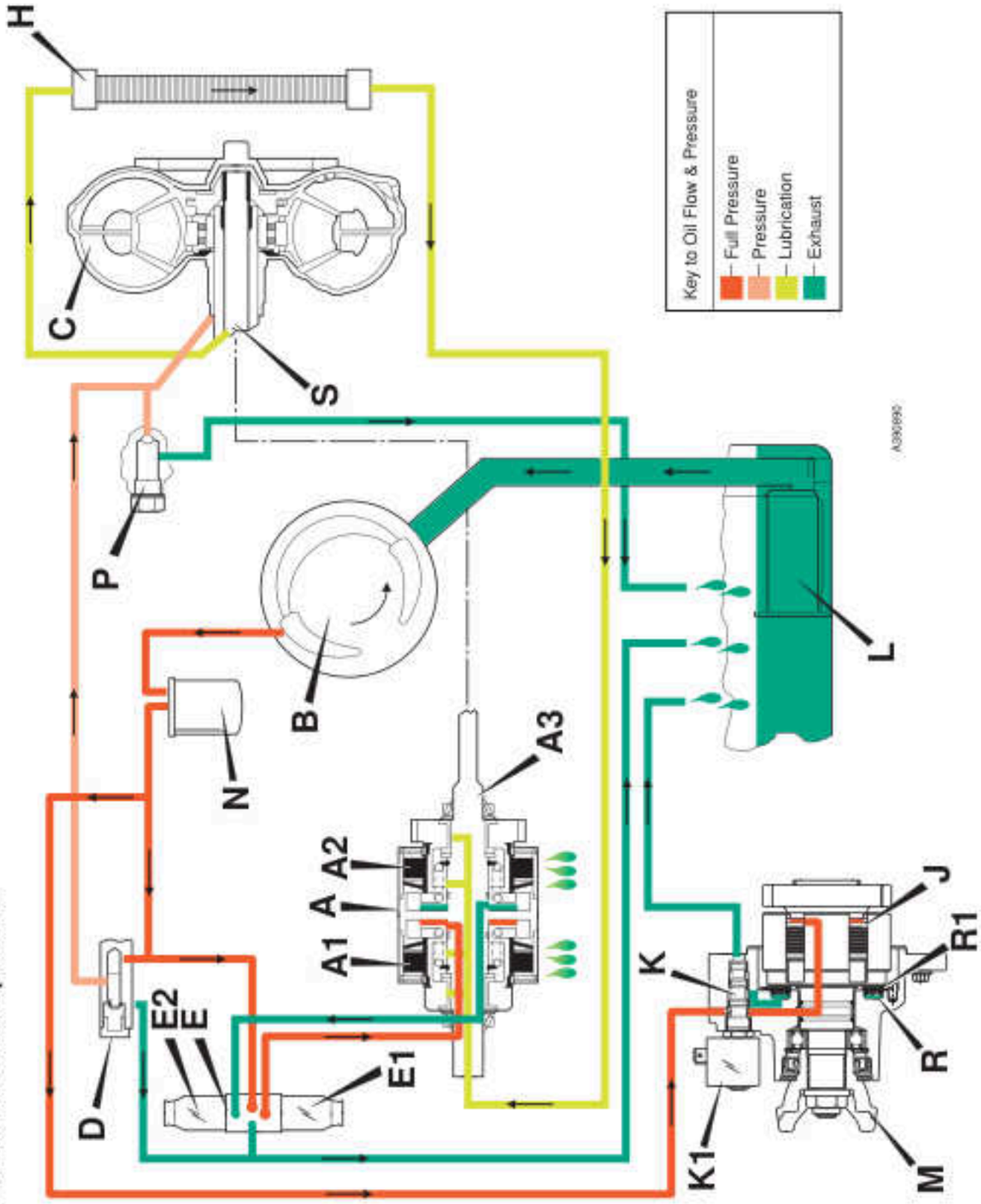
LOW CONVERTER OUT PRESSURE

Possible Cause	Remedy
1 Low mainline pressure.	1 See fault heading 'Low Mainline Pressure'.
2 Converter internal leakage.	2 Check and if necessary renew converter.
3 Converter relief valve faulty.	3 Check and if necessary repair relief valve.
4 Restriction in converter feed.	4 See item 10 in fault 'Overheating'

LOW PUMP FLOW

Possible Cause	Remedy
1 Low oil level.	1 Top up system.
2 Blocked suction strainer.	2 Clean suction strainer.
3 Worn pump.	3 Repair or renew pump.

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Hydraulic and Electrical Operation

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