Service Manual

Fastrac 8280 and 8310

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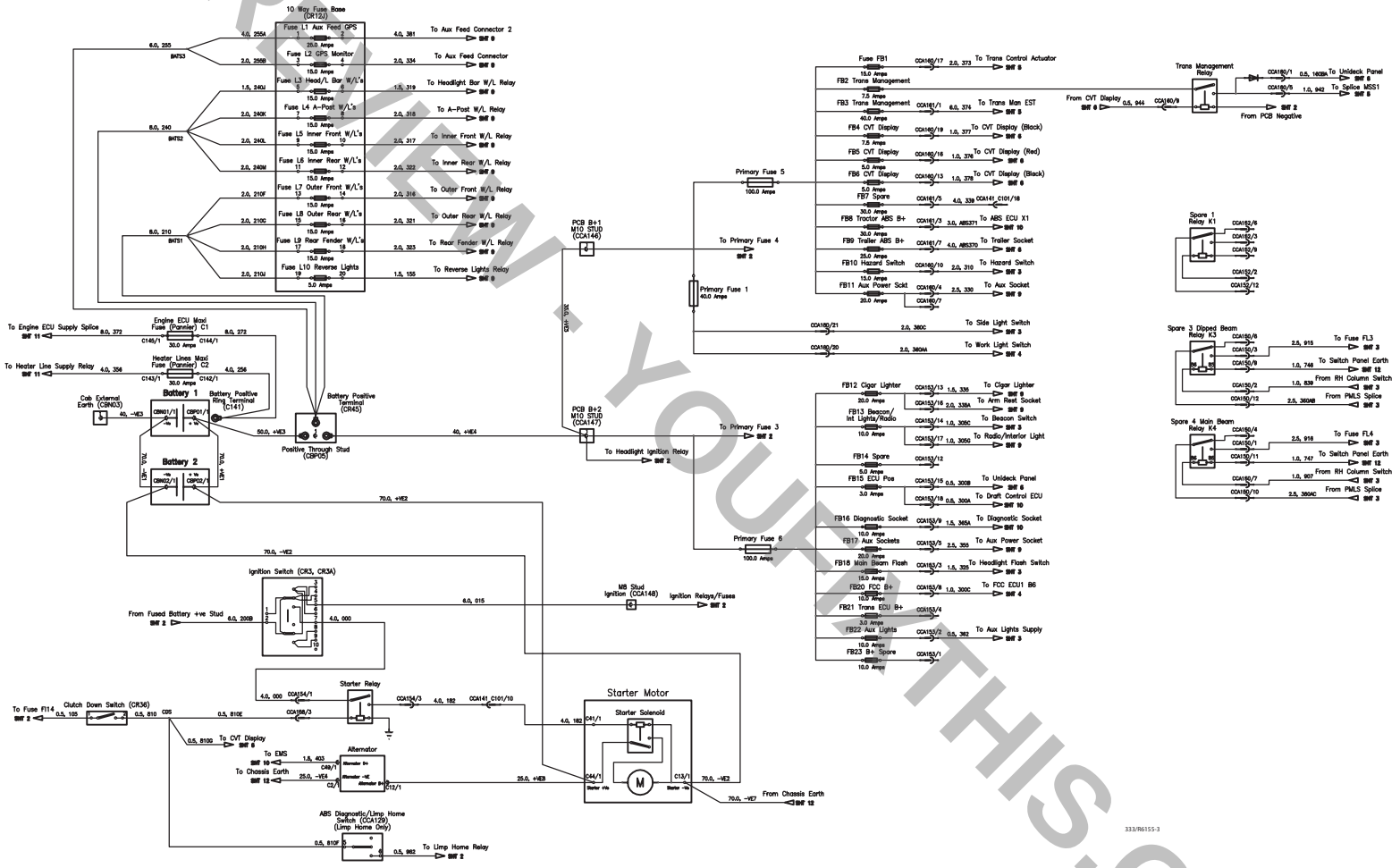
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Starter, Alternator, PCB Battery Fuses



C107700-C1 (333/R6155-3)

Fig 9. Starter, Alternator, PCB Battery Fuses

⇨ *Electrical System Main Components Key (🗋 C-18)*

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Hydraulic Circuit

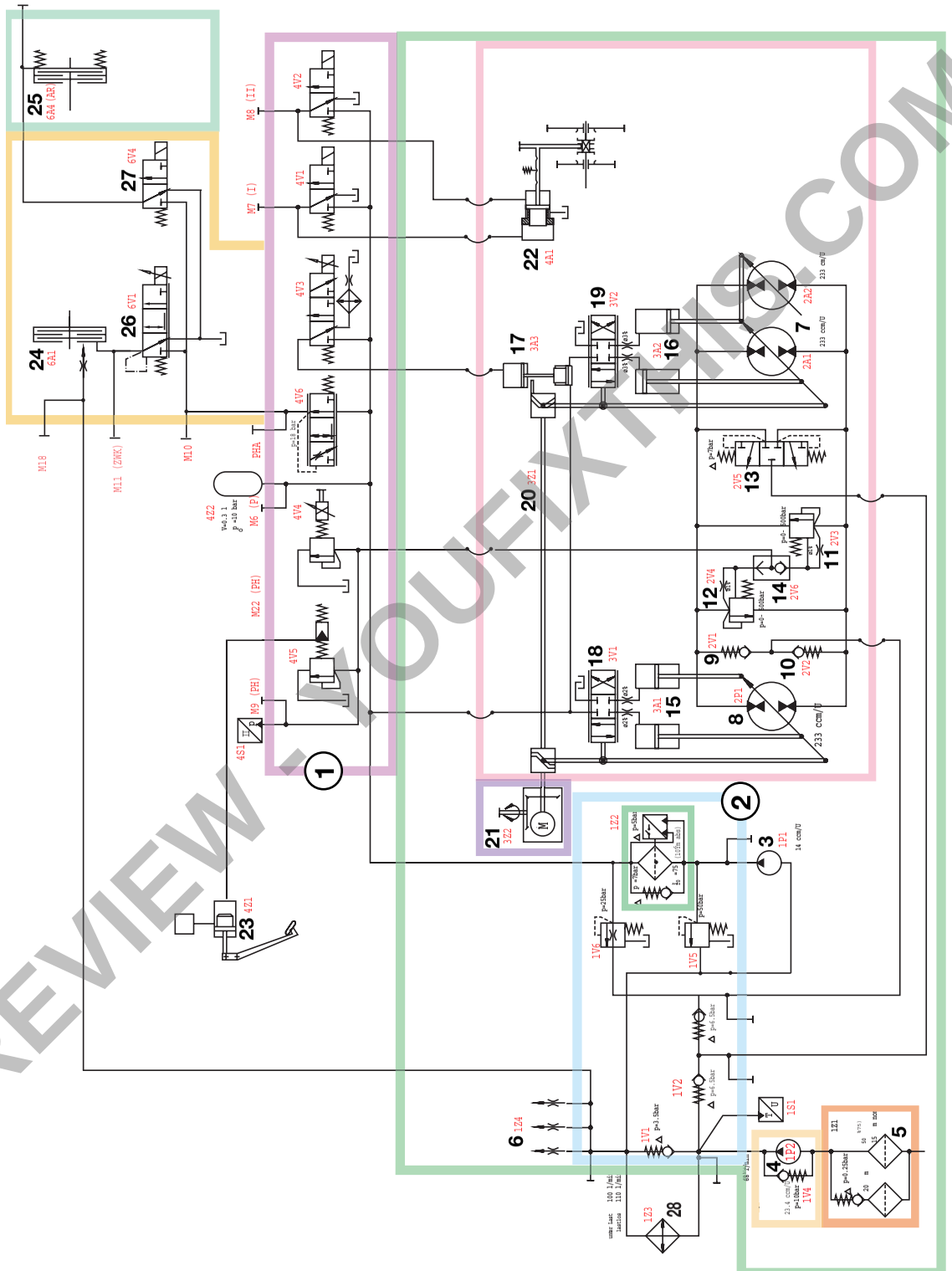


Fig 6.

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Hub

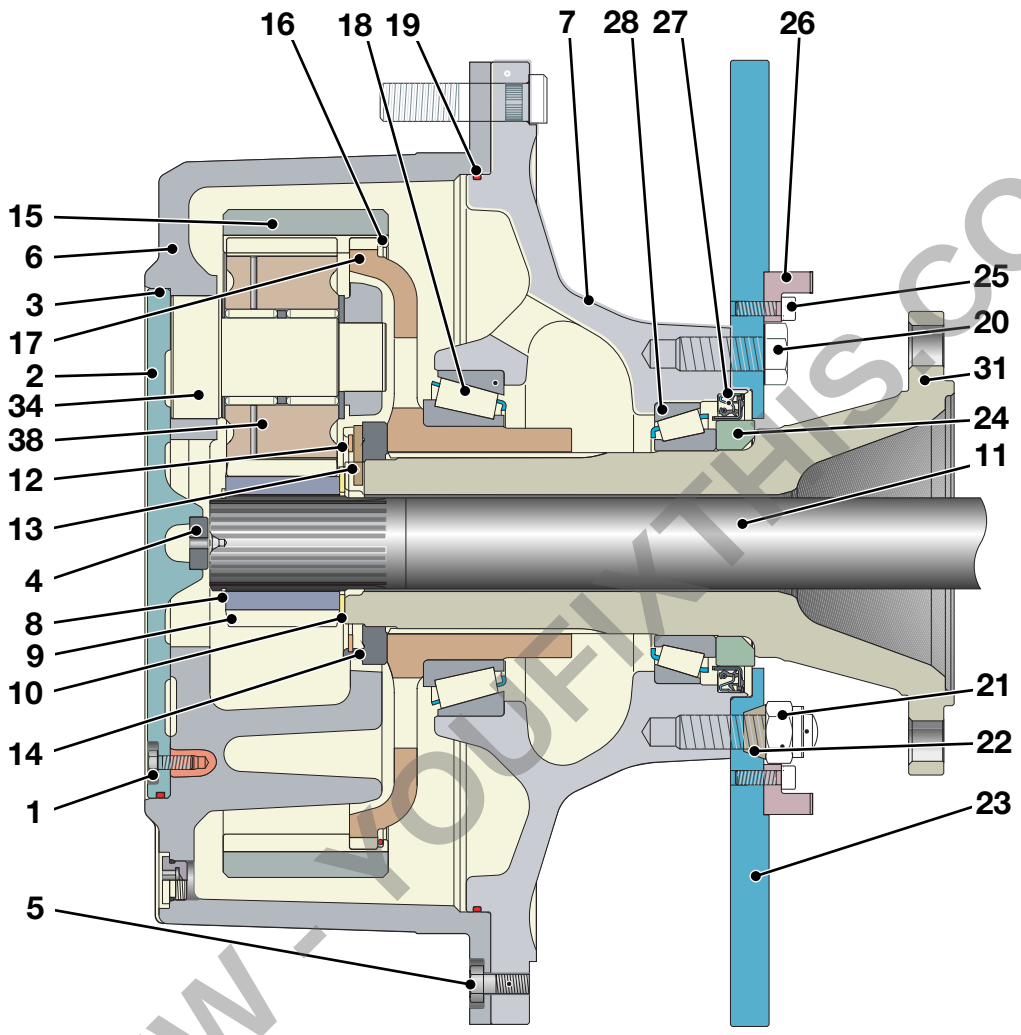


Fig 142.

Component Key

1 Screw
2 Cover
3 O ring
4 Backing plate
5 Screw
6 Gear carrier
7 Hub
8 Circlip
9 Sun gear
10 Thrust washer
11 Drive shaft
12 Circlip
13 Lock plate
14 Ring nut

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Zinc Plated Fasteners (golden finish)

Use the values on these pages only where no torque setting is specified in the text. Values are for dry threads and may be within three per cent of the figures stated. For lubricated threads the values should be REDUCED by one third.

Metric Grade 8.8 Bolts

Size			Torque Settings		
			Nm	kgf m	lbf ft
Diameter (mm)		Hexagon (A/F) mm			
M5	(5)	8	7	0.7	5
M6	(6)	10	12	1.2	9
M8	(8)	13	28	3.0	21
M10	(10)	17	56	5.7	42
M12	(12)	19	98	10	72
M16	(16)	24	244	25	180
M18	(18)	27	350	36	258
M20	(20)	30	476	48	352
M24	(24)	36	822	84	607
M30	(30)	46	1633	166	1205
M36	(36)	55	2854	291	2105

Metric Grade 10.9 Bolts

Size			Torque Settings		
			Nm	kgf m	lbf ft
Diameter (mm)		Hexagon (A/F) mm			
M6	(6)	8	16	1.6	12
M8	(8)	13	39	4	29
M10	(10)	17	78	8	57
M12	(12)	19	137	14	101
M16	(16)	24	343	35	253
M20	(20)	30	657	67	485
M24	(24)	36	1157	118	853

Metric - All Internal Hexagon Headed Cap Screws

Diameter	Torque Settings		
mm	Nm	kgf m	lbf ft
M3	2	0.2	1.5
M4	6	0.6	4.5
M5	11	1.1	8
M6	19	1.9	14
M8	46	4.7	34
M10	91	9.3	67
M12	159	16.2	117
M16	395	40	292
M18	550	56	406
M20	770	79	568
M24	1332	136	983

Verbus Ripp Bolts

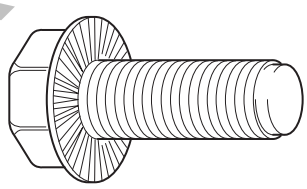


Fig 1.

Torque settings for these bolts are determined by the application. Refer to the relevant procedure for the required settings.

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Error Codes

WARNING

Repairs

If your machine does not function correctly in any way, get it repaired straight away. Neglect of necessary repairs could result in an accident or affect your health. Do not try to do repairs or any other type of maintenance work you do not understand. To avoid injury and/or damage get the work done by a specialist engineer.

GEN-1-5_2

In the event of the tractor developing a fault, the book icon on the instrument cluster will illuminate and the fault icon **F** will appear on the touch screen. ⇨ *Fig 82. (C-198)* Press this icon to display the error codes that are present.

Note: *If the fault is in the ABS, the ABS icon will come on instead of the book icon.*

If the error code is in red text, the fault is currently present. If the error code is in black text, the fault has occurred and has been cleared.

The error code would consist of a number that can be interpreted by a JCB Dealer. Although some faults may not prevent the machine from continuing to operate, you should contact your dealer if a fault develops in order to avoid the possibility of damage.

The prefix letters of the number error codes denote the part of the machine affected. These are given here for information only. ⇨ *Table 7. (C-200)*

To return to the normal driving screen, press the back icon **G** on the touch screen. ⇨ *Fig 82. (C-198)*

Table 7.

Prefix letter	Affected Part of Machine
A	Anti-lock Brake System (ABS)
C	Central Controller (mainly external hydraulics controls)
D	Instrument cluster
G	Gearbox
M	Work Light ECU
P	Touch Screen
Q	Engine
R	Rear 3-point Linkage
S	Suspension
U	Front 3-point Linkage
V	Electronic spool valve green slice
W	Electronic spool valve blue slice
X	Electronic spool valve brown slice
Y	Electronic spool valve grey slice
Z	For JCB Dealer information only

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Cleaning the Machine

Introduction

T3-062_2

Clean the machine using water and or steam. Do not allow mud, debris etc. to build upon the machine.

Before carrying out any service procedures that require components to be removed:

1 Cleaning must be carried out either in the area of components to be removed or, in the case of major work, or work on the fuel system, the whole engine and surrounding machine must be cleaned.

2 When cleaning is complete move the machine away from the wash area, or alternatively, clean away the material washed from the machine.

Important: *When removing components be aware of any dirt or debris that may be exposed. Cover any open ports and clean away the deposits before proceeding.*

Detergents

Avoid using full strength detergent - always dilute detergents as per the manufacturer's recommendations, otherwise damage to the paint finish may occur.

Always adhere to local regulations regarding the disposal of debris created from machine cleaning.

Pressure Washing and Steam Cleaning

⚠ WARNING

When using a steam cleaner, wear safety glasses or a face shield as well as protective clothing. Steam can cause serious personal injury.

13-3-2-10_2

⚠ CAUTION

The engine or certain components could be damaged by high pressure washing systems; special precautions must be taken if the engine is to be washed using a high pressure system.

Ensure that the alternator, starter motor and any other electrical components are shielded and not directly cleaned by the high pressure cleaning system.

ENG-3-3

Important: *Do not aim the water jet directly at bearings, oil seals or electrical and electronic components such as the engine electronic control unit (ECU), alternator or fuel injectors.*

Use a low pressure water jet and brush to soak off caked mud or dirt.

Use a pressure washer to remove soft dirt and oil.

Note: *The machine must always be greased after pressure washing or steam cleaning.*

Preparing the Machine for Cleaning

⚠ WARNING

Make sure the engine cannot be started. Disconnect the battery before doing this job.

2-3-3-5

Important: *Stop the engine and allow it to cool for at least one hour. Do not attempt to clean any part of the engine while it is running.*

Make sure that all electrical connectors are correctly coupled. If connectors are open fit the correct caps or seal with water proof tape.

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Fault Finding

Introduction

For ABS fault diagnosis, see ***JCB Service Master*** (Section C).

Diagnosis of system faults requires the use of suitable gauges (three are usually sufficient). A service kit of gauges, hoses and fittings is available as JCB Service Tool 892/00311.

The brake system air pressure should be 8 bar (120 lbf/in^2). For diagnostic purposes the air brake system is fitted with 8 test points.

The illustrations in this section show the locations of the test points and the main brake components.

Table 2.

Test Point Number	Location	Illustration
TP1	Front Brake Circuit Air Tank (test point labelled FB)	⇒ *Fig 27. (G-25)*
TP2	Rear Brake Circuit Air Tank (test point labelled RB)	⇒ *Fig 27. (G-25)*
TP3	Trailer and Parking Brake Circuit Air Tank (test point labelled TB)	⇒ *Fig 27. (G-25)*
TP6	Front Brake Circuit	⇒ *Fig 29. (G-27)*
TP7	Rear Right Hand Circuit	⇒ *Fig 27. (G-25)*
TP8	Rear Left Hand Circuit	⇒ *Fig 29. (G-27)*

The schematic circuit shows the positions of the test points in the circuit.⇒ *Fig 1. (G-3)*

General air leaks are usually audible with the engine stopped. For smaller air leaks on valves, soak the valve in soap solution and watch for the formation of bubbles.

⇒ *Fault Tables (G-28)*

As an aid to fault finding the air system pipes are colour coded as follows:

Red	Front brake circuit
Yellow	Rear brake circuits
Blue	Parking brake circuit
Black	Trailer brake system circuit

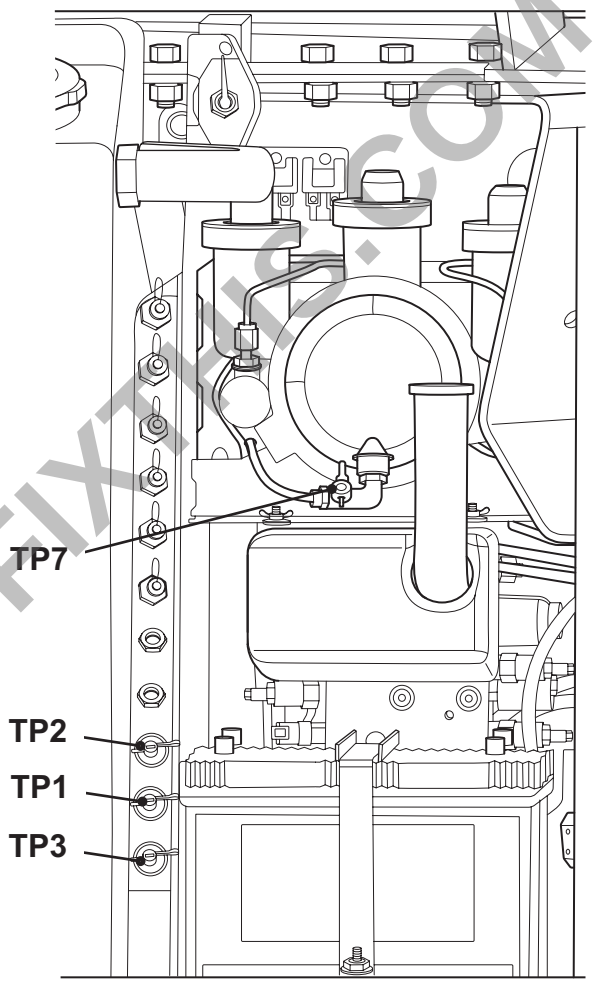


Fig 27. View from the pannier doorway

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Fluids, Lubricants and Capacities

Table 1.

ITEM	CAPACITY		FLUID/LUBRICANT	JCB PART NUMBER	CONTAINER SIZE(1)
	Litres	UK Gal			
Fuel Tank	604	132	Diesel Oil	⇨ *Fuel (3-16)*	
DEF Tank	70	15	DEF	⇨ *Diesel Exhaust Fluid (DEF) (3-16)*	
Engine (Oil)	24	5.3	JCB Optimum Performance Engine Oil (-20 to +40 deg C)(2) API CJ-4, SAE15W/40(3)	4001/2901, 4001/2905, 4001/2903	4 x 5 litres, 20 litres, 200 litres
Engine (Coolant)	31	6.9	JCB Antifreeze HP/Coolant + Water	4006/1120	20 litres
Transmission	75	16.5	JCB Optimum Performance Transmission Fluid	4004/6305	20 litres
Rear 3 Point Linkage Cross-shaft	0.2	0.04	JCB Optimum Performance Transmission Fluid	4004/6305	20 litres
Clutch	0.5	0.1	JCB Optimum Performance Clutch Fluid	4002/1904	1 litres
Front Axle			JCB HD90 Gear Oil API-GL-5, MIL-L-2105C		
- Axle Beam	16	3.5			
- Hubs (each)	4	0.9			
Rear Axle			JCB HD90 Gear Oil API-GL-5, MIL-L-2105C		
- Axle Beam	56	12.3			
- Hubs (each)	7	1.5			
Brake System			JCB Brake Fluid Dot 4 (capacity given is for each reservoir)	4002/0404	1 litre
- Front	0.75	0.2			
- Rear (2 reservoirs)	0.75	0.20			
Hydraulic System(4)	190	42	JCB Hydraulic Oil HP46 (Above 38ºC,100ºF)	4002/0805	20 litres
			JCB Hydraulic Oil HP32 (Below 38ºC,100ºF)	4002/1025	20 litres
Grease Points			JCB HP Grease	4003/2017	400g
Front PTO Gearbox (optional)	7	1.5	JCB HP Universal ATF	4000/2301	5 litres

(1) For information about the different container sizes that are available (and their part numbers), contact your JCB Dealer.
(2) While 15W/40 oil is recommended for most climates, limited use of low viscosity oils such as 10W/30 is permitted to provide easier starting and sufficient oil flow at temperatures below -5ºC (23ºF). Continued use of low viscosity oils can decrease engine life and will require different service intervals.
(3) It is essential that 15W/40 oil meeting API CJ -4 or ACEA E7/E9 specifications is used. For temperatures of -25ºC to +30ºC refer to your JCB dealer.
(4) The total hydraulic system capacity depends on the equipment being used. Watch level indicator on hydraulic tank

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Service Schedules

Introduction

T3-036_3

⚠ WARNING

Maintenance must be done only by suitably qualified and competent persons.

Before doing any maintenance make sure the machine is safe, it should be correctly parked on level ground.

To prevent anyone starting the engine, remove the starter key. Disconnect the battery when you are not using electrical power. If you do not take these precautions you could be killed or injured.

8-3-1-1

A badly maintained machine is a danger to the operator and the people working around him. Make sure that the regular maintenance and lubrication jobs listed in the service schedules are done to keep the machine in a safe and efficient working condition.

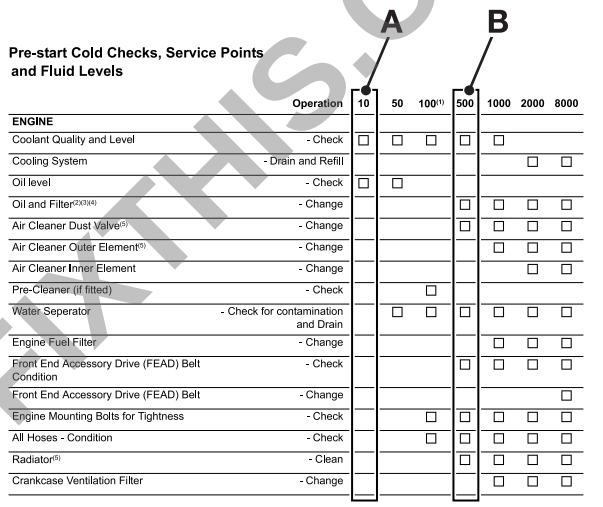
Apart from the daily jobs, the schedules are based on machine running hours. Keep a regular check on the hourmeter readings to correctly gauge service intervals. When there is no hourmeter fitted, use the calendar equivalents to determine the service intervals. Refer to ***Calendar Equivalents***. Do not use a machine which is due for a service. Make sure any defects found during the regular maintenance checks are rectified immediately.

How to Use the Service Schedules

T3-012_3

In the example shown, **A** shows all service requirements to be carried out every 10 hours and **B** shows the requirements to be carried out every 500 hours.

Important: *Services should be carried out at either the hourly interval or calendar interval, whichever occurs first. Refer to* ***Calendar Equivalents****.*



795390-1

Calendar Equivalents

T3-088

Every 10 Hours = Daily

Every 50 Hours = Weekly

Every 500 Hours = Six Months

Every 1000 Hours = Yearly

Every 2000 Hours = 2 Years

Every 5000 Hours = 5 Years

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Safety First

Safety Check List

P10-1003_3

Safety - Yours and Others

INT-1-3-1_3

All machinery can be hazardous. When a machine is correctly operated and properly maintained, it is a safe machine to work with. But when it is carelessly operated or poorly maintained it can become a danger to you (the operator) and others.

In this manual and on the machine you will find warning messages. Read and understand them. They tell you of potential hazards and how to avoid them. If you do not fully understand the warning messages, ask your employer or JCB distributor to explain them.

But safety is not just a matter of responding to the warnings. All the time you are working on or with the machine you must be thinking what hazards there might be and how to avoid them.

Do not work with the machine until you are sure that you can control it.

Do not start any job until you are sure that you and those around you will be safe.

If you are unsure of anything, about the machine or the job, ask someone who knows. Do not assume anything.

Remember

BE CAREFUL
BE ALERT
BE SAFE

General Safety

T1-043

⚠ WARNING

To operate the machine safely you must know the machine and have the skill to use it. You must abide by all relevant laws, health and safety regulations that apply to the country you are operating in. The Operator Manual instructs you on the machine, its controls and its safe operation; it is not a training manual. If you are a new operator, get yourself trained in the skills of using a machine before trying to work with it. If you don't, you will not do your job well, and you will be a danger to yourself and others.

INT-1-4-1

⚠ WARNING

Care and Alertness

All the time you are working with or on the machine, take care and stay alert. Always be careful. Always be alert for hazards.

INT-1-3-5

⚠ WARNING

Clothing

You can be injured if you do not wear the proper clothing. Loose clothing can get caught in the machinery. Wear protective clothing to suit the job. Examples of protective clothing are: a hard hat, safety shoes, safety glasses, a well fitting overall, ear-protectors and industrial gloves. Keep cuffs fastened. Do not wear a necktie or scarf. Keep long hair restrained. Remove rings, watches and personal jewellery.

INT-1-3-6_2

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Accessing Calibration Menu

1 Switch the Ignition `On'

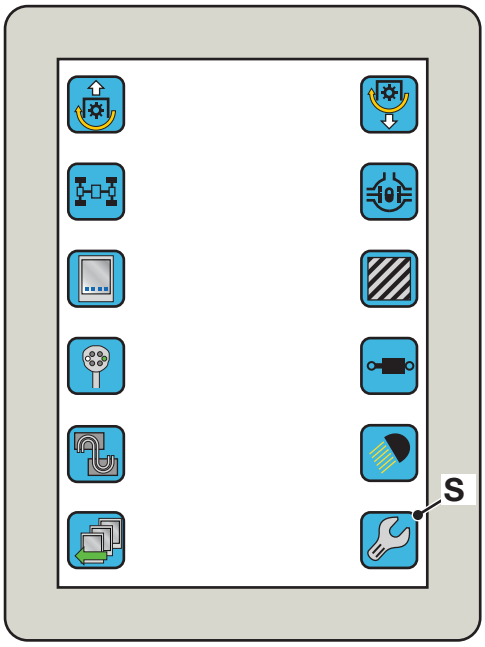


Fig 84. Level 1 Programming Screen

2 Press button **S** on the Level 1 programming screen. ⇨ *Fig 85. (C-201)* The service screen will appear. ⇨ *Fig 85. (C-201)*

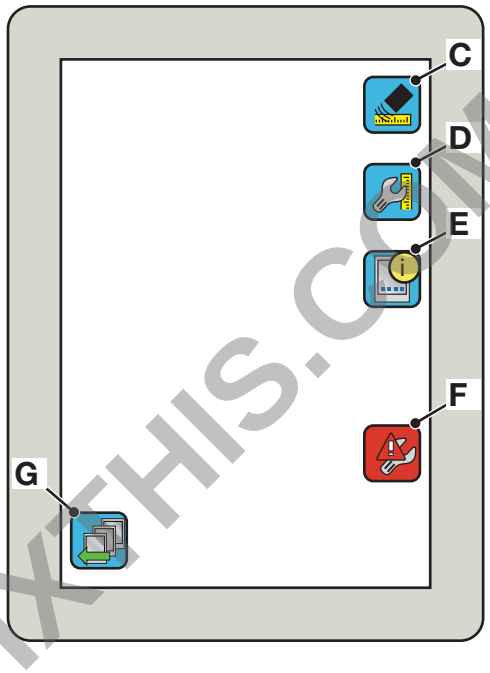


Fig 85.

Normally the `Calibration' icon **D** will be `greyed out' so it can not be accessed by non-service personnel.

Note: *The use of icons **C**, **E** and **F** is described in **Normal Operation**.* ⇨ *Fig 82. (C-198)*

3 To activate the calibration icon **D**, hold the clutch pedal down and press the armrest + and - buttons simultaneously.

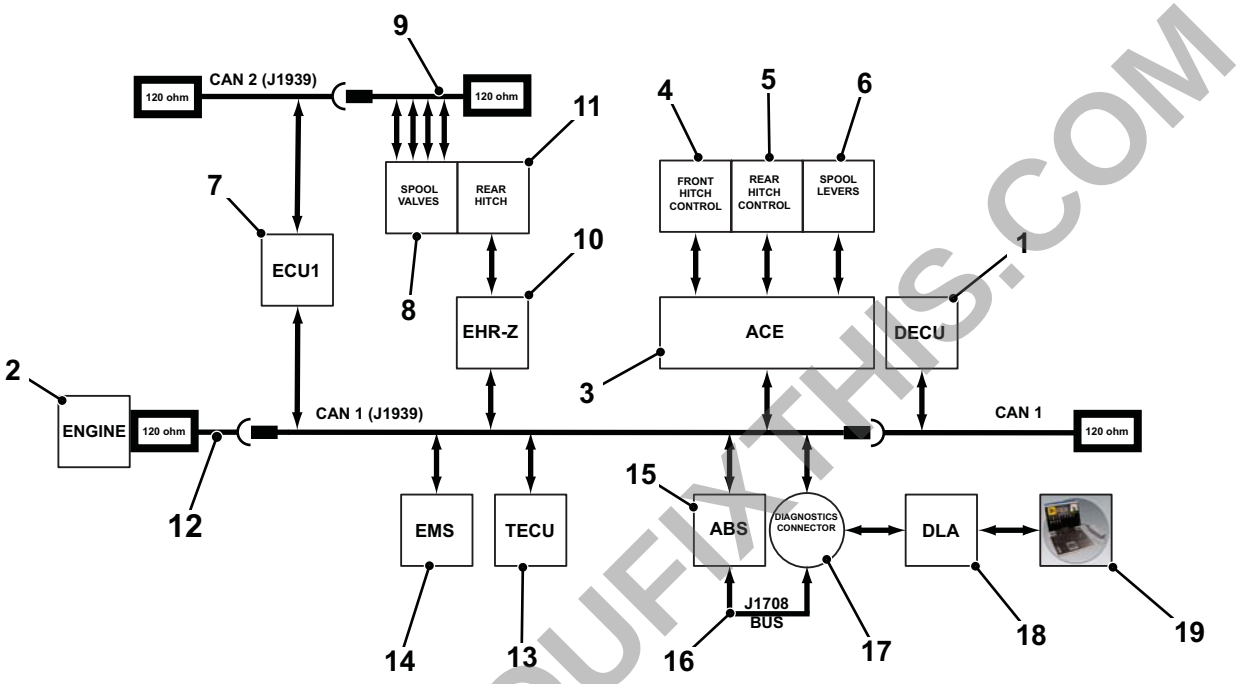
The icon will turn blue allowing it to be selected by gently pressing on the screen.

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Electronics System

Main Components Diagram



C096020-C1

Fig 62.

Description

The electronic system consists of several ECUs which communicate with each other over a CAN bus network.

The touch Screen display (DECU) **1** is a colour VGA Liquid Crystal Display with touch-screen. It provides a graphical user interface in order to keep the driver informed of the vehicle status. Various menus are accessible for additional configuration purposes. The main user inputs for controlling transmission ratio, engine speed control, etc. are all processed by the DECU.

The engine ECU **2** manages engine fuelling to control engine speed, emissions and torque. This ECU has a hardwired secondary throttle pedal sensor to allow limp home operation if the CAN bus communication with the DECU is lost.

The front and rear hitch controls (**4** and **5**) are wired to the Auxiliary Controls ECU (ACE) **3** which has the spool levers **6** mounted integrally above it.

The Fastrac Central Controller (ECU1) **7** communicates to the spool valve block **8** over a separate CAN bus (CAN 2) **9**. ECU1 also controls the electronic suspension.

The rear hitch ECU (EHR-Z) controls the position of the rear hitch **11** according to operator commands and adjusts working depth if required depending on draft force and wheel slip.

J1939 (CAN 1) is the communication between the main ECUs.

The transmission is controlled by TECU **13**.

The EMS instrument panel **14** is the main user display for vehicle/engine speed and user warning / indication lamps.

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Functional Test and Final Inspection

	Operation	10 Hr	50 Hr	100 Hr(1)	500 Hr	1000 Hr	2000 Hr
ENGINE							
Exhaust System Security(2)	- Check			☐	☐	☐	☐
Cooling System for Leaks	- Check	☐	☐	☐	☐	☐	☐
Fuel System for Leaks and Contamination	- Check	☐	☐	☐	☐	☐	☐
Lubrication System for Leaks	- Check	☐	☐	☐	☐	☐	☐
TRANSMISSION, AXLES AND STEERING							
2WD/4WD/Differential Lock Selection	- Check			☐	☐	☐	☐
Oil Leakage	- Check	☐	☐	☐	☐	☐	☐
Transmission Lubrication Pressure(2)	- Check			☐		☐	☐
4WD/PTO Supply Pressure (2)	- Check			☐		☐	☐
Differential Lock Pressure Relief Valve(2)	- Check			☐	☐	☐	☐
Neutral Start Operation	- Check		☐	☐	☐	☐	☐
PTO Selection and Operation	- Check			☐			
Selection of Transmission Modes and Ranges	- Check	☐	☐	☐	☐	☐	☐
Steering Operation	- Check	☐	☐	☐	☐	☐	☐
Steering Pressure Relief Valve(2)	- Check			☐		☐	☐
GPS Steering Main Relief Valve Pressure(2) (3)	- Check			☐		☐	☐
GPS Steering Pilot Relief Valve Pressure(2) (3)	- Check			☐		☐	☐
HYDRAULICS							
Maximum System Pressure(2)	- Check and Adjust			☐		☐	☐
Operation All Services	- Check	☐	☐	☐	☐	☐	☐
System for Oil Leakage	- Check	☐	☐	☐	☐	☐	☐
Oil Cooler and Pipework for Damage or Leakage	- Check			☐	☐	☐	☐
BRAKES							
Foot Brake - Operation	- Check	☐	☐	☐	☐	☐	☐
Park Brake - Operation	- Check	☐	☐	☐	☐	☐	☐
Air System Warning Lights	- Check			☐	☐	☐	☐
ABS(2)	- System Test			☐		☐	☐
ELECTRICS							
Starter Motor	- Check			☐	☐	☐	☐

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Tyres and Wheels

General

The versatility of the JCB Fastrac dictates a range of tyre types which may be operated at differing loads and widely differing speeds. Agricultural type tyres are designated according to both their load carrying ability and their ability to operate at certain speeds.

Generally, the speed at which a given tyre can operate depends upon inflation pressure and the load carried.

The table in the **Specification** section gives the load carrying capacity **per tyre** at varying pressures and speeds. All tyres supplied as original equipment may be operated over the full speed range of the vehicle provided the pressure is correct and their loading is no higher than that given in the table.

⚠ WARNING

Check daily that tyre pressures are correct for operational weight and speed. Make sure that the combined deck and hitch imposed loads do not exceed the capability of the tyres.

13-2-4-20

⚠ WARNING

Running tyres outside recommended guidelines may result in failure of the tyres which at high speeds may endanger life. BE WARNED.

13-3-1-6

⚠ WARNING

Certain tyres fitted as after-market/optional equipment may have maximum permitted speeds below the maximum speed of the vehicle. Brake efficiency is slightly reduced and stopping distance is increased when these tyres are fitted. They will suffer damage if operated at speeds higher than those recommended and may endanger life.

13-3-2-5

⚠ WARNING

Wheels and tyres are heavy. Take care when lifting or moving them.

Store with care to ensure that they cannot fall and cause injury.

13-3-1-7_1

⚠ CAUTION

The high speed capability of the Fastrac dictates that water ballasting of the tyres is not recommended.

13-3-1-12

Wheel and Tyre Replacement

If a replacement wheel or tyre is needed, call in a qualified tyre mechanic. Make sure he is aware of the following warning and notes:

⚠ WARNING

When ordering tyres, you must specify not only the tyre size but also the speed designation. The correct tyres for the machine are shown in the Tyre Pressures, Speeds and Loads table. On no account should you use tyres of other designations without first gaining approval from the machine manufacturer.

13-3-1-8_2

Note: *If you change to different size rear tyres, the speed reading on the instrument panel will not be correct. You must change the rear tyre size setting.* ⇨ ***Tyre Size Settings (1-160)*** *It may also be necessary to have the speed limiter adjusted (consult your JCB Dealer).*

Note: *The front and rear tyres fitted to this model of tractor are not the same size. If replacement wheels or tyres are fitted, always make sure that the correct matching front/rear sizes are fitted* ⇨ ***Table 2. Permitted Tyre Size Combinations (3-80)***

Note: *To reduce the possibility of vibration, wheels and tyres with a rim diameter bigger than 30 inches must be assembled with the wheel high spot and the tyre low spot correctly aligned within a tolerance of +/- 7.5 degrees.*

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General

Using a Multimeter

TC-002

In order to obtain maximum benefit from the fault finding information contained in Section C it is important that the technician fully understands the approach to fault finding and the use of the recommended test equipment, in this case a FLUKE 85 or AVO 2003 digital multimeter, or a moving pointer (analogue) multimeter. The approach is based on a fault finding check list. In tracing the fault from the symptoms displayed you will be directed to make measurements using a multimeter.

These instructions are intended to cover the use of the recommended multimeters.

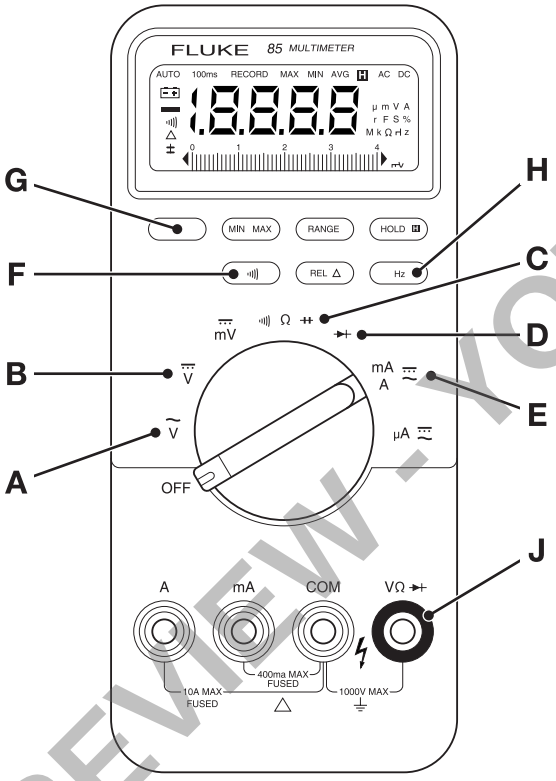


Fig 1. FLUKE 85

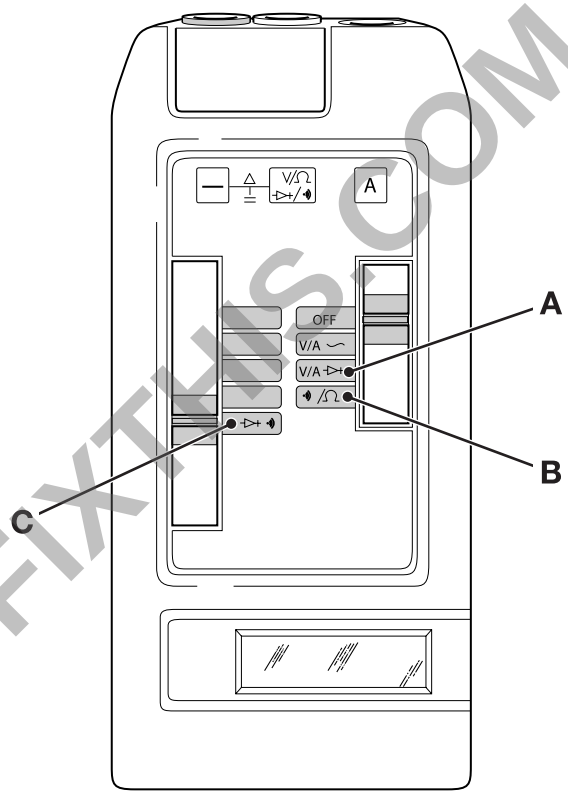


Fig 2. AVO 2003

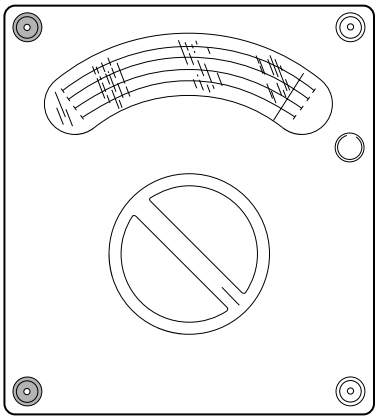


Fig 3. A Typical Analogue Meter

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Table 6. Roof Liner Harness 332/R4342

⇒ *Fig 41. (C-66)* ⇒ *Fig 42. (C-67)*

Key to Connectors:

RL10	Option Power 1
RL11	Option Power 2
RL2/1	Speaker +VE LH Front
RL2/2	Speaker -VE LH Front
RL5/1	Light +VE Interior
RL5/2	Light -VE Interior
RL5/3	Switch Interior Light
RL1/1	Speaker +VE RH Front
RL1/2	Speaker -VE RH Front
RL3	Radio Speakers
RL4	Radio Power
RL7/1	Light +VE AG Panel
RL7/2	Light -VE AG Panel
RL8/1	Speaker +VE RH Rear
RL8/2	Speaker -VE RH Rear
RL9/1	Speaker +VE LH Rear
RL9/2	Speaker -VE LH Rear
RL6	Roof Liner Harness I/F

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Start Service Master

1 Double click on the Service master icon. ⇒ *Fig 70. (C-136)*. (The icon is found on the desktop or in the `Start' menu -`Programs' - 'JCB'.)

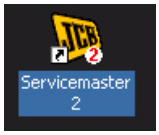


Fig 70.

2 The Service master chooser window will open. ⇒ *Fig 71. (C-136)*



Fig 71.

3 Open the drop down menu to see the machines and components supported by Service master tools. ⇒ *Fig 72. (C-136)*



Fig 72.

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Calibration

Note: *If the values attempted to be saved are not within the allowable limits then a default value is used and a fault code generated. See JCB Service Master for details.*

Engine

Hand Throttle

1 Access the Calibration Menu ⇨ ***Accessing Calibration Menu (C-201)***

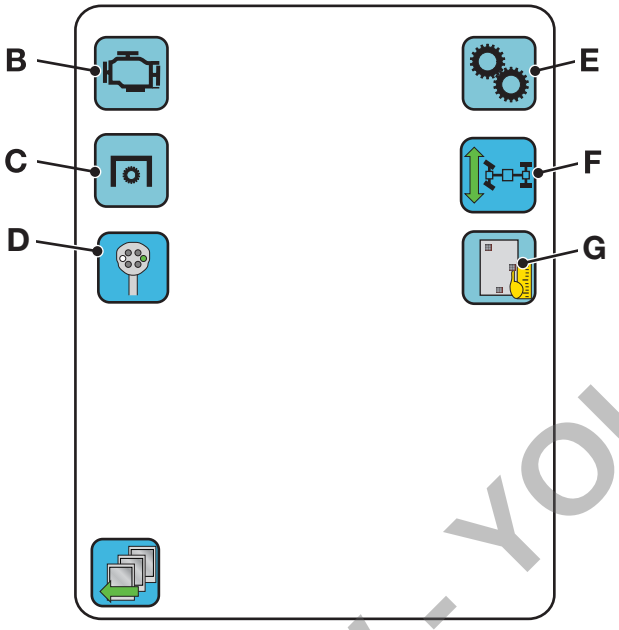


Fig 87.

2 Select the engine calibration icon **B**.

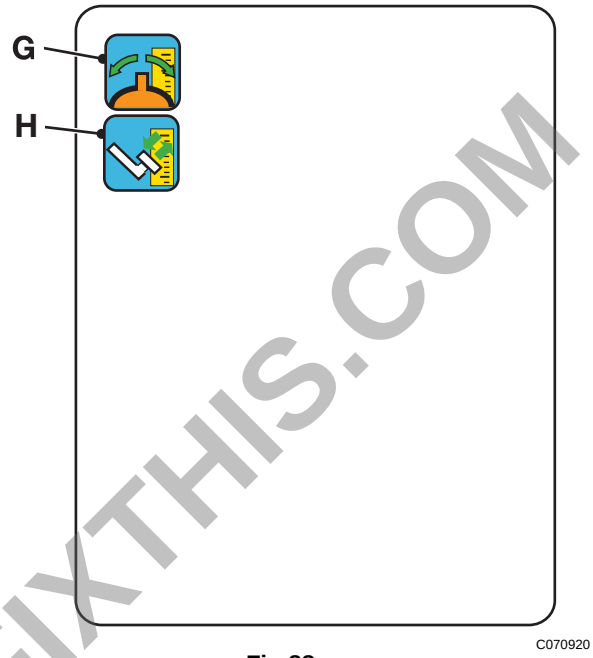


Fig 88.

3 Select the hand throttle icon **G**.

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Rams

Rear Lift Ram

⚠ WARNING

Hydraulic Pressure

Hydraulic fluid at system pressure can injure you. Before disconnecting or connecting hydraulic hoses or couplings, vent the pressure trapped in the hoses in accordance with the instructions given in this publication.

HYD-1-5

Important: *Cleanliness is absolutely essential when working on hydraulic systems. Orifices in valves, pumps and motors can be blocked by even the smallest particle - e.g. a thread from a cloth. You must maintain the highest level of cleanliness when working on any part of the hydraulic system*

Removal and Replacement

Note: *The procedure given is for the right hand ram. The procedure for the left hand ram is similar.*

Removal

1 Ensure that lift rams are fully closed as pressure cannot be vented by operating controls with engine stopped.

2 Support the weight of the lift arm on the same side as the ram to be removed.

3 Disconnect and blank the hydraulic connections **A** and **B**.

4 Remove bolt **C** and keep plate **D** and drive out pin **E**.

5 Support the ram, remove bolt **F** and keep plate **G** and extract pin **H**, using a slide hammer and a suitable M12 bolt in the threaded hole in the end of pin **H**.

Replacement

Reverse the removal procedure.

Make sure that flats on pins **E** and **H** are aligned with the flats on the keep plates **D** and **G**.

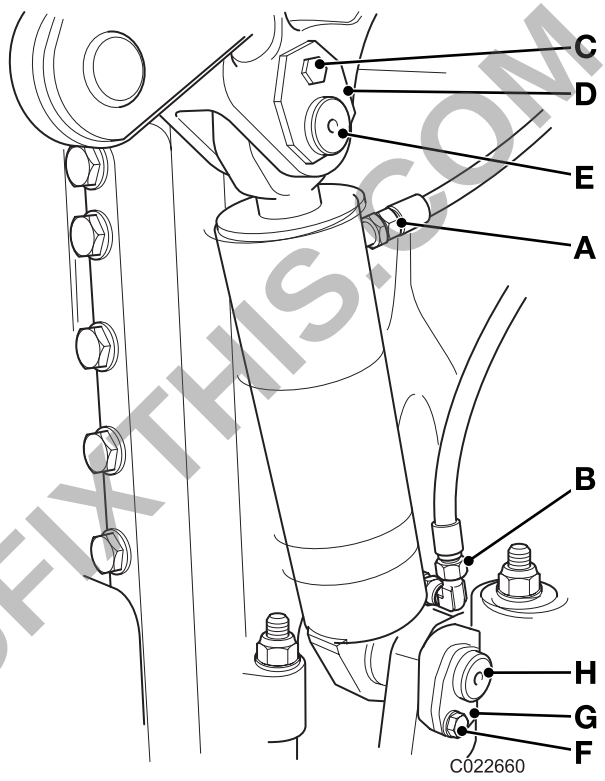
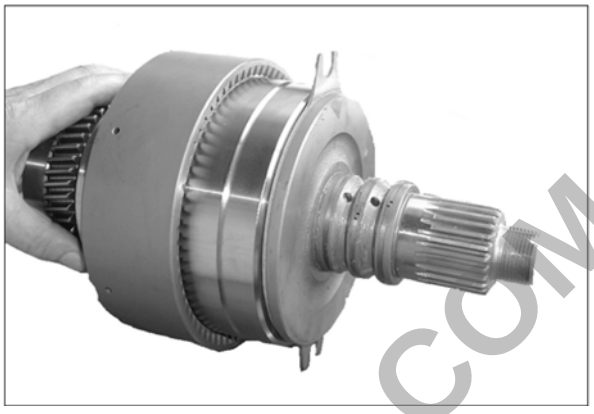


Fig 54.

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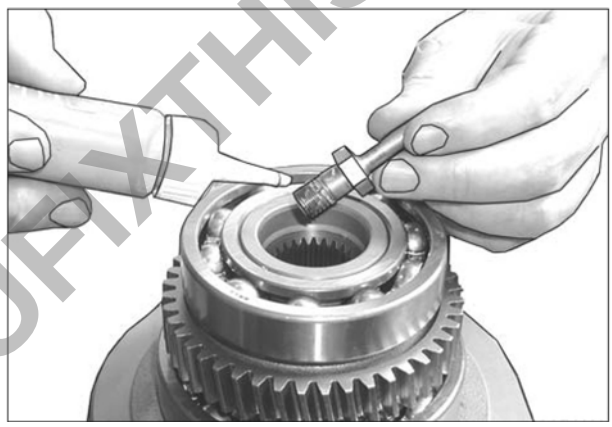
17 Replace piston rings if necessary



C101600

Fig 91.

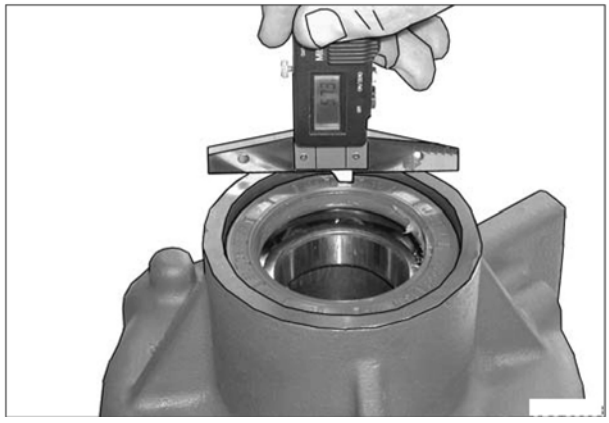
18 Coat threads on lubrication nozzle with Loctite 274, insert and tighten to 40 Nm (30 lbf ft).



C101610

Fig 92.

19 Check shaft seal and replace if necessary. Speci.ed depth is 5.5 mm



C101620

Fig 93.

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Add 0.05 to the theoretical thickness S to compensate for pre-load. The result will be the thickness of shims **33** required behind the pinion bearing outer race **32**.

Example Calculation (all dimensions in millimetres)

Dimension **A**		244.00
Minus Corrected Dimension **B**		208.20
	=	35.80
Minus Bearing Depth **D**		35.59
	=	0.21
Plus Pre-load		0.05
TOTAL		**0.26**

Use shim pack size to the nearest 0.10mm which in this example is 0.30mm.

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5 Use switch **D** to move steering to full left lock and hold. ⇒ *Fig 4. (H-6)*

The gauge reading should be the specified GPS steering main relief valve pressure +0/-3 bar (45 lbf/in²) ⇒ *Technical Data (H-1)*

6 Use switch **D** to move steering to full right lock and hold. The gauge reading should be the specified GPS steering main relief valve pressure +0/-3 bar (45 lbf/in²). ⇒ *Technical Data (H-1)*

7 If the gauge reading is not correct, slacken locknut **E** and turn screw **F** clockwise to increase the pressure or counter clockwise to decrease. ⇒ *Fig 7. (H-8)*

8 Repeat steps 5 to 7 as required. Tighten locknut **E** when the pressure is correct.

GPS Steering Pilot Relief Valve

⚠ WARNING

Make sure the vehicle cannot be moved, as it is necessary to work under the machine to do this job.

0027

1 Connect and test the service harness. ⇒ *Preparation (H-6)*

Note: *The control valve is in the right hand pannier. On machines fitted with chocks, the chock carrier will restrict access to the test points. If necessary, remove the chocks, remove two bolts and remove chock holder form the chassis.*

2 Connect 0 - 400 bar (0 - 6000 lbf/in²) pressure gauge to **TP2** on the control valve. ⇒ *Fig 7. (H-8)*

Note: ***TP2*** *is on the back (inboard side) of the valve block.*

3 Turn start switch to position 1. Error code P0081 will be displayed.

4 Start engine. Error codes P0081, P0081 and P0086 will be displayed.

5 Use switch **D** to move steering to full left lock and hold. ⇒ *Fig 4. (H-6)*

Turn steering wheel slowly to the right. The pressure should start to rise and the steering should start to judder at the specified GPS steering pilot relief valve pressure. ⇒ *Technical Data (H-1)*

6 Use switch **D** to move steering to full right lock and hold. Turn steering wheel slowly to the left. The pressure should start to rise and the steering should start to judder at the specified GPS steering pilot relief valve pressure. ⇒ *Technical Data (H-1)*

7 If the pressure is not correct, slacken locknut **G** and turn screw **H** clockwise to increase the pressure or counter clockwise to decrease. ⇒ *Fig 7. (H-8)*

8 Repeat steps 5 to 7 as required. Tighten locknut **G** when the pressure is correct.

Related Error Codes

Low Pressure Transducer Error Codes

P.80 - GPS Low pressure error.
P.81 - GPS Open circuit error.
P.82 - GPS High pressure error.
P.83 - GPS Over pressure error.
P.84 - High side driver supply error.

ESV1 Solenoid Error Codes

P.85 - GPS ESV solenoid had short circuit error.
P.86 - GPS ESV solenoid had open circuit error.
P.87 - GPS ESV solenoid had over temperature error.

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