Contents **Page No.**

Introduction
About this Manual 3-1
Machine Model and Serial Number 3-1
Using the Service Manual 3-1
Section Numbering 3-1
Left Side, Right Side 3-2
Cross References 3-2

Identifying Your Machine
Identification Plates 3-3
Data Plate 3-3
Typical Product Identification Number (VIN) 3-3
Typical Product Identification Number (PIN) 3-3
Typical Engine Identification Number 3-3
ROPS, TOPS and FOGS 3-4

Standard Torque Settings
Zinc Plated Fasteners and Dacromet Fasteners 3-5
Introduction 3-5
Bolts and Screws 3-5
Hydraulic Connections 3-9
'O' Ring Face Seal System 3-9
'Torque Stop' Hose System 3-12

Service Tools
Numerical List 3-13
Tool Detail Reference 3-16
Section B - Frame and Bodywork 3-16
Section C - Electrics 3-20
Section E - Hydraulics 3-21
Section K - Engine 3-27

Service Consumables
Sealing and Retaining Compounds 3-29

Terms and Definitions
Colour Coding 3-31
Hydraulic Schematic Colour Codes 3-31

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Safety Check List

P11-1010_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

⚠ WARNING

Alcohol and Drugs

It is extremely dangerous to operate machinery when under the influence of alcohol or drugs. Do not consume alcoholic drinks or take drugs before or while operating the machine or attachments. Be aware of medicines which can cause drowsiness.

INT-1-3-9_2

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Pre Start Cold Checks, Service Points and Fluid Levels

	Operation	10	50	500	1000	2000
ENGINE						
Oil level	- Check	☐	☐	☐	☐	☐
Oil and Filter	- Change			☐	☐	☐
Air Cleaner Element (Dusty Conditions only)	- Change			☐	☐	☐
Air Cleaner Outer Element	- Change				☐	☐
Air Cleaner Inner Element	- Change					☐
Air Cleaner Hose Security	- Check and Adjust		☐	☐	☐	☐
Air Filter Dust Valve	- Check and Clean			☐	☐	☐
Fuel Injectors(1)	- Clean and Test					☐
Coolant Quality/Level	- Check	☐	☐	☐	☐	☐
Coolant	- Change					☐
Fuel Lift Pump	- Clean			☐	☐	☐
Fuel Sedimenter	- Drain and Clean	☐	☐	☐	☐	☐
Fuel Filter/Sedimenter Element	- Change			☐	☐	☐
Primary Fuel Filter	- Check			☐	☐	☐
Fuel Pre Filter	- Check			☐	☐	☐
Fan Belt Tension/Condition	- Check and Adjust		☐	☐	☐	☐
Valve Clearances(1)	- Check and Adjust				☐	☐
Cylinder Head Bolts for Tightness	- Check and Adjust			☐	☐	☐
Engine Mounting Bolts for Tightness	- Check and Adjust			☐	☐	☐
Exhaust System Security	- Check and Adjust			☐	☐	☐
Radiator	- Clean and Check	☐	☐	☐	☐	☐
TRANSMISSION						
Security of Mounting Bolts and Nuts						
- Track Wheel Motor to Undercarriage Bolts	- Check			☐	☐	☐
- Drive Sprocket Bolts	- Check			☐	☐	☐
- Slew Gearbox Bolts	- Check				☐	☐
Track Gearbox Oil	- Change			☐	☐	☐
HYDRAULICS						
Oil Level	- Check	☐	☐	☐	☐	☐

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Fluids, Lubricants and Capacities

Table 1.

Item	Capacity Litres (Gal)	Fluid / Lubricant	JCB Part No	Container Size (1)
Fuel Tank	36.5 (8)	Diesel Oil	-	-
Engine (Oil) (2)	4.5 (1.0)	**JCB Engine Oil HP 15W/40** (above -10°C, 14°F)	4001/1505	20 Litres
		JCB Cold Climate Engine Oil EP 5W40 (-20°C to +50°C, -4°F to 122°F)	4001/2705	20 Litres
Engine Coolant	8.5 (1.9)	**JCB Antifreeze HP/Coolant/Water** ⇨ *Coolant Mixtures (3-12)*.	4006/1120	20 Litres
Track Gearbox (each)	0.8 (0.2)	**JCB Engine Oil HP SAE 30** (Not Multigrade)	4001/0305	20 Litres
Track Idler Wheels	0.08 (0.02)	**JCB HD90 Gear Oil**	4000/0305	20 Litres
Track Rollers (top)	0.03 (0.01)	**JCB HD90 Gear Oil**	4000/0305	20 Litres
Track Rollers (bottom)	0.08 (0.02)	**JCB HD90 Gear Oil**	4000/0305	20 Litres
Hydraulic Tank	40 (8.8)	**JCB Hydraulic Fluid HP32** (Up to 30°C, 86°F)	4002/1025	20 Litres
		JCB Hydraulic Fluid HP46 (Over 30°C, 86°F)	4002/0805	20 Litres
Slew Ring Bearings	-	**JCB HP Grease**	4003/2017	400g
Slew Ring Gear Teeth	-	**JCB Special Slew Pinion Grease**	4003/1619	400g
All Other Grease	-	**JCB MPL-EP Grease**	4003/1501	400g

(1) For information about the different container sizes that are available (and their part numbers), contact your local JCB dealer.
(2) Caution - Do not use ordinary Engine Oil.

Coolant Mixtures

T3-009_4

Check the strength of the coolant mixture at least once a year, preferably at the start of the cold period.

Replace the coolant mixture according to the intervals shown in the machine's Service Schedule.

⚠ WARNING

Antifreeze can be harmful. Obey the manufacturer's instructions when handling full strength or diluted antifreeze.

7-3-4-4_1

You must dilute full strength antifreeze with clean water before use. Use clean water of no more than a moderate hardness (pH value 8.5). If this cannot be obtained, use de-ionized water. For further information advice on water hardness, contact your local water authority.

The correct concentration of antifreeze protects the engine against frost damage in winter and provides year round protection against corrosion.

As an example, the protection provided by JCB High Performance Antifreeze and Inhibitor is given below.

50% Concentration (Standard)

Protects against damage down to -40 °C (-39 °F)

60% Concentration (Extreme Conditions Only)

Protects against damage down to -56 °C (-68 °F)

***Important:** Do not exceed a 60% concentration, as the freezing protection provided reduces beyond this point.*

If you use any other brand of antifreeze:

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Zinc Plated Fasteners and Dacromet Fasteners

Table 2. Torque Settings - UNF Grade 'S' Fasteners

Bolt Size		Hexagon (A/F)	Condition 1			Condition 2		
in.	mm	in.	Nm	kgf m	lbf ft	Nm	kgf m	lbf ft
1/4	6.3	7/16	11.2	1.1	8.3	10.0	1.0	7.4
5/16	7.9	1/2	22.3	2.3	16.4	20.0	2.0	14.7
3/8	9.5	9/16	40.0	4.1	29.5	36.0	3.7	26.5
7/16	11.1	5/8	64.0	6.5	47.2	57.0	5.8	42.0
1/2	12.7	3/4	98.00	10.0	72.3	88.0	9.0	64.9
9/16	14.3	13/16	140.0	14.3	103.2	126.0	12.8	92.9
5/8	15.9	15/16	196.0	20.0	144.6	177.0	18.0	130.5
3/4	19.0	1 1/8	343.0	35.0	253.0	309.0	31.5	227.9
7/8	22.2	1 15/16	547.0	55.8	403.4	492.0	50.2	362.9
1	25.4	1 1/2	814.0	83.0	600.4	732.0	74.6	539.9
1 1/8	31.7	1 7/8	1181.0	120.4	871.1	1063.0	108.4	784.0
1 1/4	38.1	2 1/4	1646.0	167.8	1214.0	1481.0	151.0	1092.3

Table 3. Torque Settings - Metric Grade 8.8 Fasteners

Bolt Size		Hexagon (A/F)	Condition 1			Condition 2		
ISO Metric Thread	mm	mm	Nm	kgf m	lbf ft	Nm	kgf m	lbf ft
M5	5	8	5.8	0.6	4.3	5.2	0.5	3.8
M6	6	10	9.9	1.0	7.3	9.0	0.9	6.6
M8	8	13	24.0	2.4	17.7	22.0	2.2	16.2
M10	10	17	47.0	4.8	34.7	43.0	4.4	31.7
M12	12	19	83.0	8.5	61.2	74.0	7.5	54.6
M16	16	24	205.0	20.9	151.2	184.0	18.8	135.7
M20	20	30	400.0	40.8	295.0	360.0	36.7	265.5
M24	24	36	690.0	70.4	508.9	621.0	63.3	458.0
M30	30	46	1372.0	139.9	1011.9	1235.0	125.9	910.9
M36	36	55	2399.0	244.6	1769.4	2159.0	220.0	1592.4

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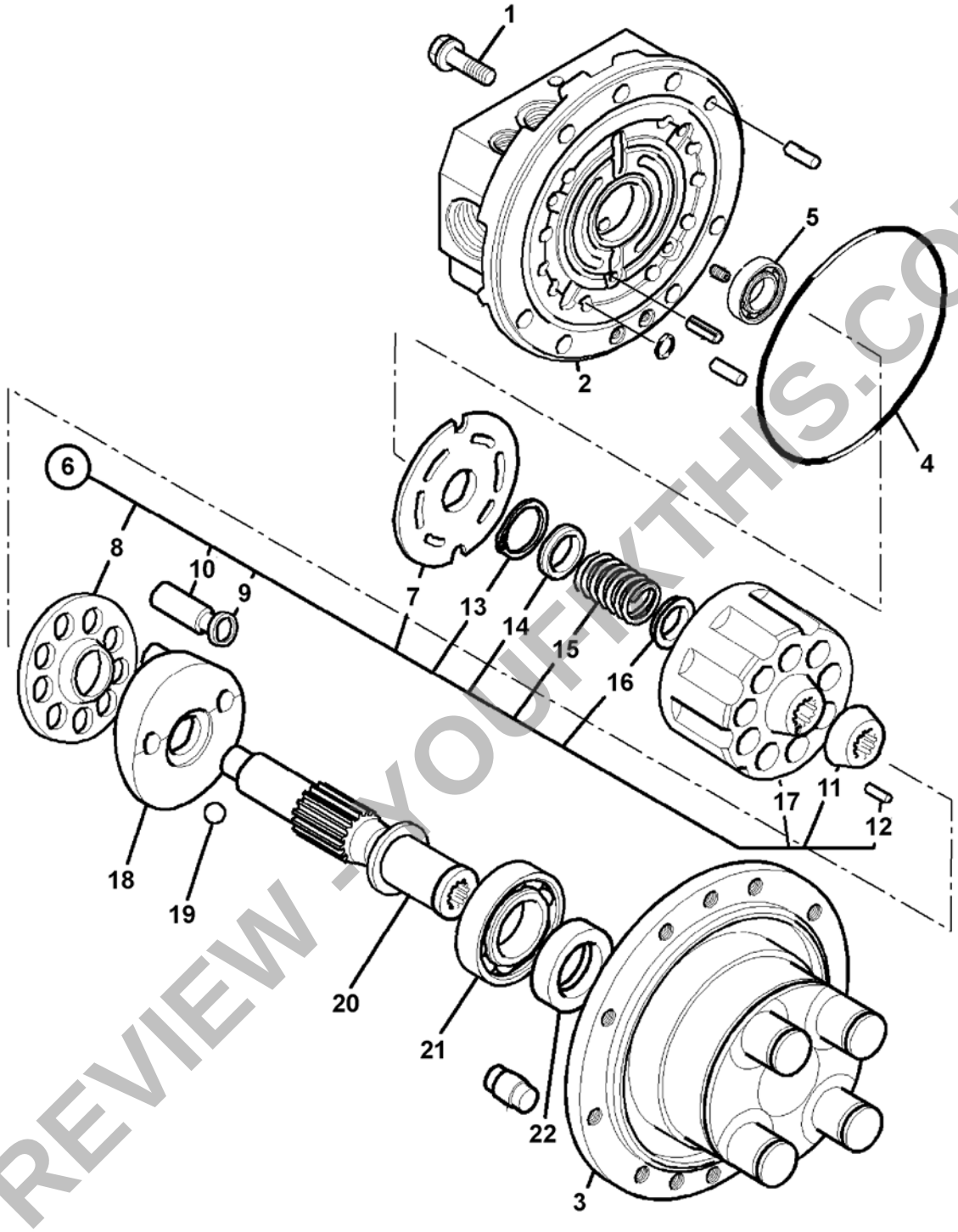


Fig 5.

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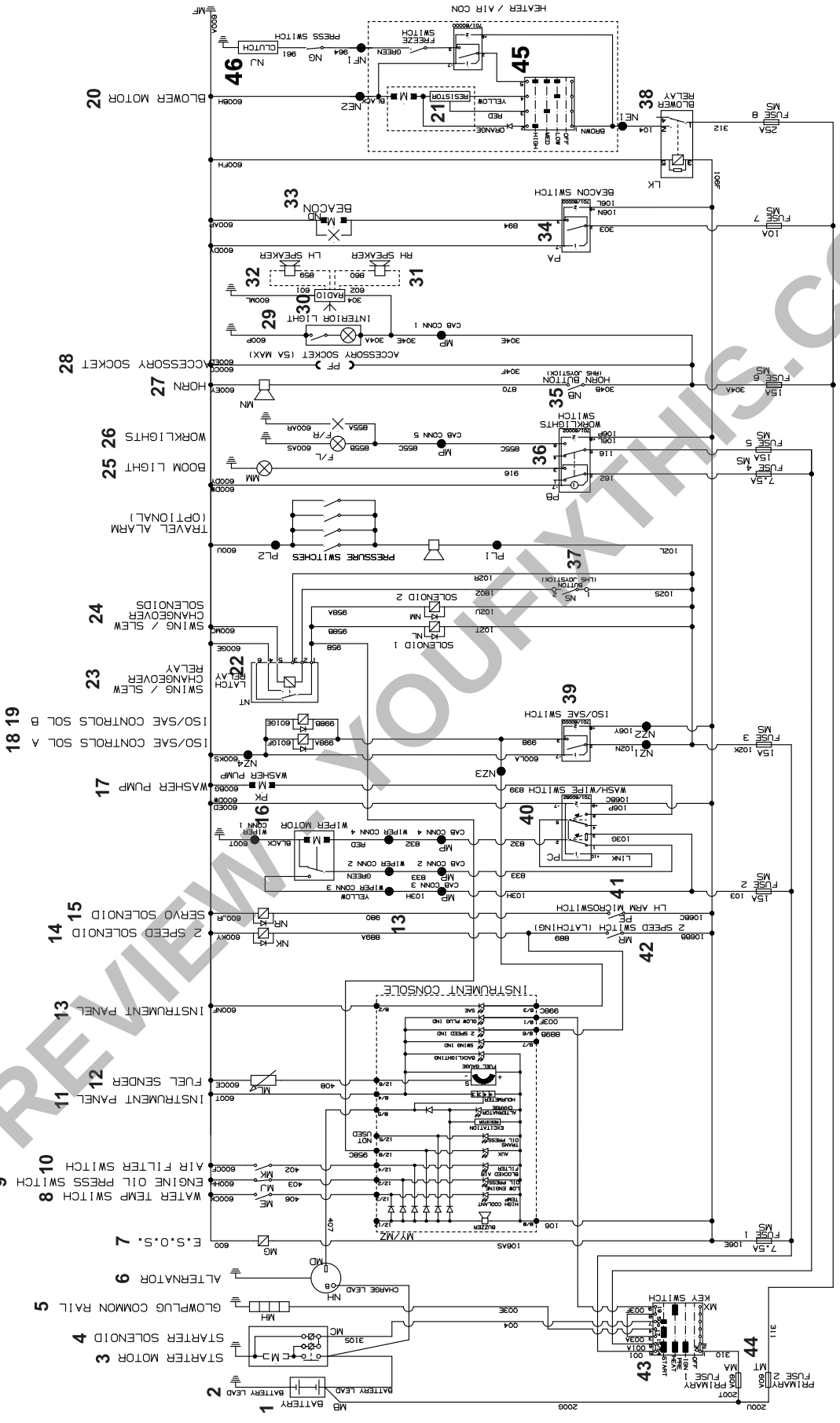


Fig 1. 853/20039 issue 1

⇒ Component Key (C-23).

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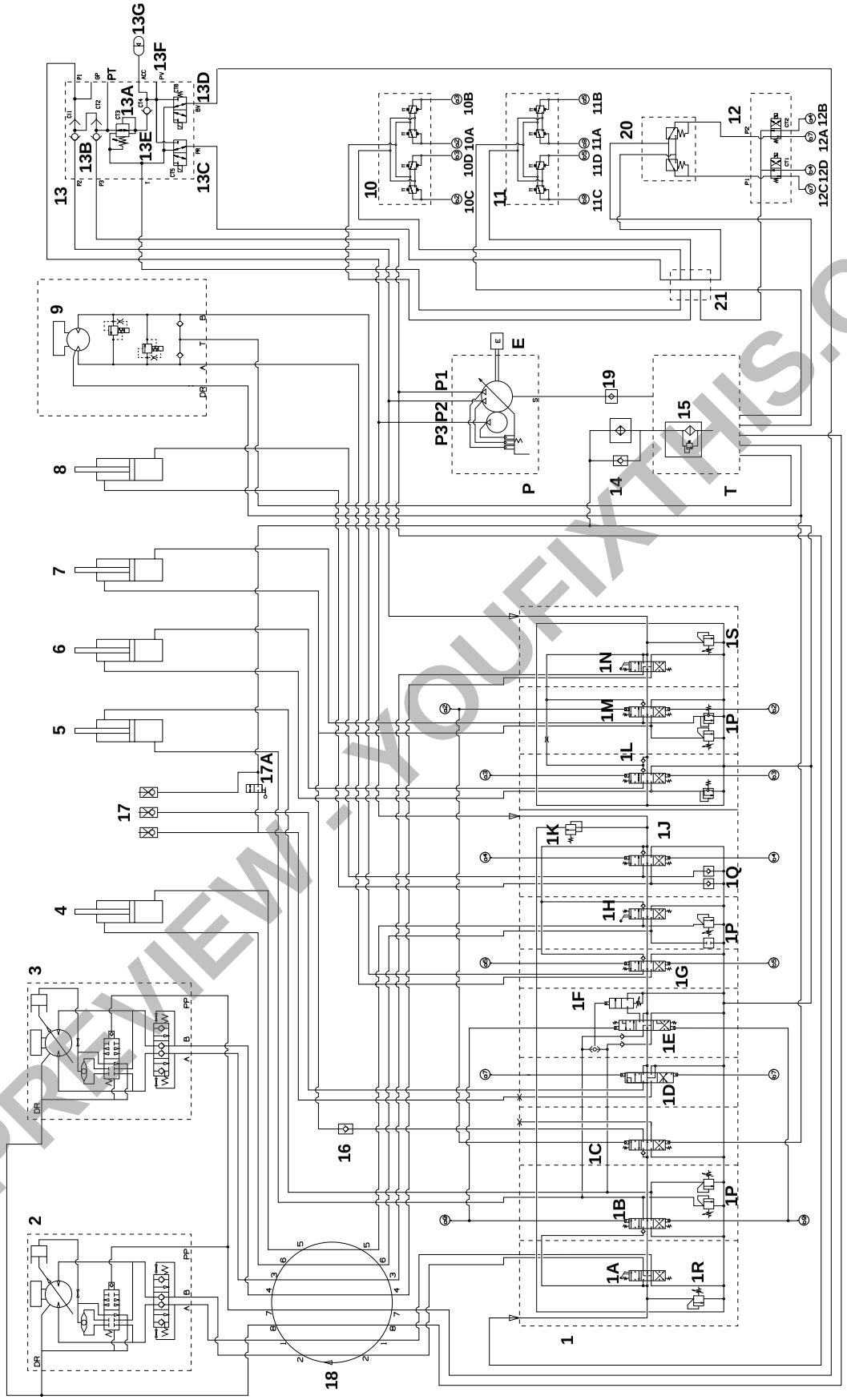


Fig 1.

⇒ *Component Key (E-12).*

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Technical Data

General

	8025ZTS, 8030ZTS	8026CTS, JS30, 8029CTS	8035ZTS
Model	HL 403C-15 (Tier 2), GL 403D-15 (Tier 3)	GK 403D-15 (Tier 3)	HL 403C-17 (Tier 2), GK 403D-17 (Tier 3),
Type	Vertical in-line, 3 cylinder, normally aspirated, 4 stroke, water cooled diesel.	Vertical in-line, 3 cylinder, normally aspirated, 4 stroke, water cooled diesel.	Vertical in-line, 3 cylinder, normally aspirated, 4 stroke, water cooled diesel.
Swept volume	1496 cm^3 (91 in^3)	1496 cm^3 (91 in^3)	1663 cm^3 (101 in^3)
Bore	84 mm (3.3 in)	84 mm (3.3 in)	84 mm (3.3 in)
Stroke	90 mm (3.5 in)	90 mm (3.5 in)	100 mm (4.0 in)
Firing order	1, 2, 3	1, 2, 3	1, 2, 3
Power output	20.9 kW (28.0hp) @ 2200 rev/min	18.4 kW (24.7hp) @ 2100 rev/min	23.6 kW (31.6hp) @ 2400 rev/min
Valve clearance (cold)	0.2 mm (0.0078 in)	0.2 mm (0.0078 in)	0.2 mm (0.0078 in)
Compression ratio	22.5:1	22.5:1	23:1
Compression pressure	29.4 bar (30 kgf/cm^2, 426.6 lbf/in^2) at 250 rev/min	29.4 bar (30 kgf/cm^2, 426.6 lbf/in^2) at 250 rev/min	29.4 bar (30 kgf/cm^2, 426.6 lbf/in^2) at 250 rev/min
Weight (dry)	154 kg (339 lb)	154 kg (339 lb)	160 kg (353 lb)
Idling speed	1050 rev/min	1050 rev/min	1050 rev/min
Maximum no - load speed	2420 rev/min	2250 rev/min	2592 rev/min

Note: *For further details of the engine See Engine Service Manuals 9806/2190 (Tier 2), 9806/3090 (Tier 3).*

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Prepare the Machine for Maintenance

How to Make the Machine Safe (Excavator Lowered)

Important: *Unless a maintenance procedure instructs you differently, you must lower the Excavator.*

1 Park the machine on level, solid ground.

If necessary, refer to ***Stopping and Parking the Machine*** in the Operator Manual.

2 Lower the dozer.

3 Lower the excavator so the attachment is flat on the ground.

4 Stop the engine and remove the starter key.

5 Disconnect the battery to prevent accidental operation of the engine.

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Controls

Controls Identification

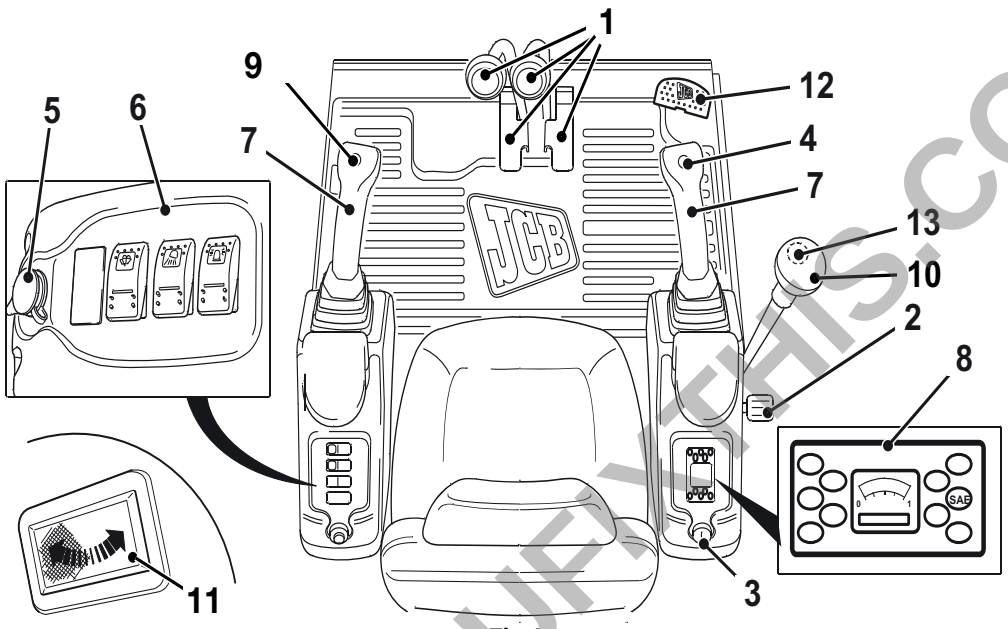


Fig 1.

1 Track Controls

2 Hand Throttle Lever

3 Starter Switch

4 Horn

5 Auxiliary Power Socket

6 Console Switches

7 Excavator Controls

8 Instrument Panel

9 Swing/Auxiliary Switch

10 Dozer Controls

11 Cab Interior Light

12 Swing Pedal

13 2 speed Tracking Switch

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Introduction

About this Manual

Machine Model and Serial Number

This manual provides information for the following model(s) in the JCB machine range:

JCB 8025ZTS from serial number 1226500

JCB 8026CTS from serial number 1779000

JCB 8029CTS from serial number 2314949

JCB 8030ZTS from serial number 1228500

JCB 8035ZTS from serial number 1230500

JS30 from serial number 2305191 to 2307191

Using the Service Manual

T11-004

This publication is designed for the benefit of JCB Distributor Service Engineers who are receiving, or have received, training by JCB Technical Training Department.

These personnel should have a sound knowledge of workshop practice, safety procedures, and general techniques associated with the maintenance and repair of hydraulic earthmoving equipment.

The illustrations in this publication are for guidance only. Where the machines differ, the text and/or the illustration will specify.

General warnings in Section 2 are repeated throughout the manual, as well as specific warnings. Read all safety statements regularly, so you do not forget them.

Renewal of oil seals, gaskets, etc., and any component showing obvious signs of wear or damage is expected as a matter of course. It is expected that components will be cleaned and lubricated where appropriate, and that any opened hose or pipe connections will be blanked to prevent excessive loss of hydraulic fluid and ingress of dirt.

Where a torque setting is given as a single figure it may be varied by plus or minus 3%. Torque figures indicated are for dry threads, hence for lubricated threads may be reduced by one third.

The manufacturer's policy is one of continuous improvement. The right to change the specification of the machine without notice is reserved. No responsibility will be accepted for discrepancies which may occur between specifications of the machine and the descriptions contained in this publication.

Finally, please remember above all else safety must come first!

Section Numbering

T11-005

The manual is compiled in sections, the first three are numbered and contain information as follows:

1 General Information - includes torque settings and service tools.

2 Care and Safety - includes warnings and cautions pertinent to aspects of workshop procedures etc.

3 Maintenance - includes service schedules and recommended lubricants for all the machine.

The remaining sections are alphabetically coded and deal with Dismantling, Overhaul etc. of specific components, for example:

A Attachments

B Body and Framework, etc.

Section contents, technical data, circuit descriptions, operation descriptions etc. are inserted at the beginning of each alphabetically coded section.

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Fuses

Introduction

CAUTION

Fuses

Always replace fuses with ones of correct ampere rating to avoid electrical system damage.

8-3-3-5

The electrical circuits are protected by fuses. If a fuse blows, find out why before fitting a new one.

Two primary fuses **A** and **B** are located in the battery compartment below the cab door. ⇒ *Fig 10. (3-33)*.

The secondary fuses are in the fuse box located below the operator's seat. ⇒ *Fig 11. (3-33)*.

Open panel **C** using the starter key. Pull off the cover to gain access to the fuses.

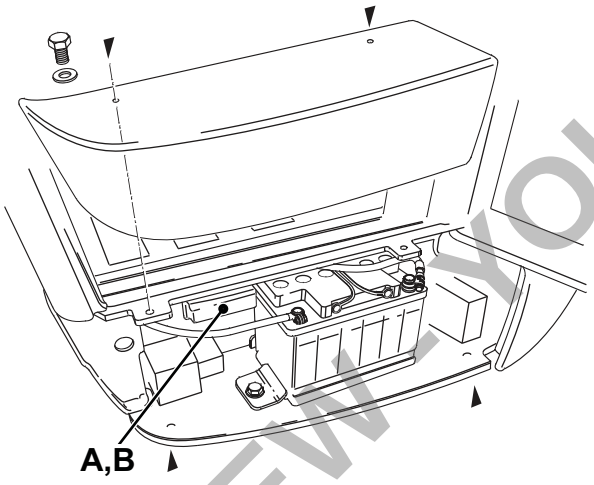
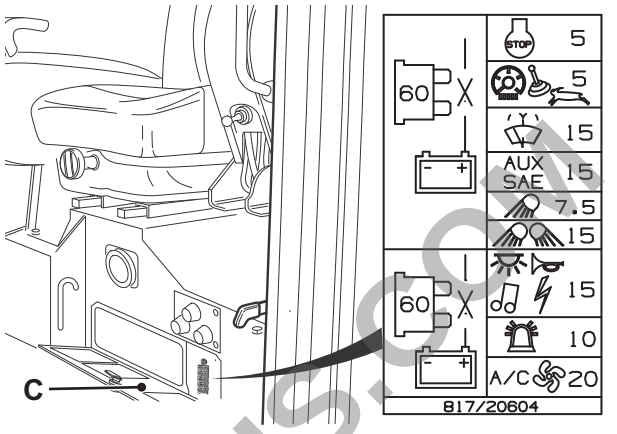


Fig 10. Primary Fuses

All Machines



862330-3

Fig 11.

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Service Procedures

Checking Refrigerant Charge Level

Normal Recharge Weight: 1575 grammes

The pressure in the system, i.e. the refrigerant charge level, can be determined by checking the state of refrigerant at the receiver drier sight glass. The receiver drier is mounted on the central rear counterweight, close to the air conditioning condenser.

If the level of charge is correct, the sight glass will be clear. If the charge is low, bubbles will be seen. Bubbles may also be an indication of inadequate cooling, due to a restriction of air flow around the condenser coil. (Some slight bubbling is to be expected when R134a refrigerant is used.) Recharging of the system should be carried out by an air conditioning engineer. Check refrigerant charge level as follows:

1 Park the machine on firm, level ground. Lower the excavator arms to the ground. Engage the parking brake.

2 Open the engine cover.

3 Start the engine and run at idle. Switch the air conditioning ON to circulate refrigerant.

4 Check refrigerant charge level at sight glass.

Leak Testing

⚠ WARNING

Leak testing in Air Conditioning systems should be carried out only in a well ventilated area.

BF-1-2

Note: *The refrigerant is heavier than air and will leak downwards from the defective component. Check in still conditions but in a well ventilated area.*

Hose or pipe connections are likely leakage points of any refrigerant circuit.

To test for leaks in the high pressure side of the system, i.e. from the compressor output to the expansion valve, run the air conditioning for a few minutes then switch off the engine and test for leakage using an electronic leak detector or soapy water.

To test for leakage in the low pressure side of the system, switch off the air conditioning and leave for a few minutes before testing.

Tightening Leaking Hoses

⚠ WARNING

The air conditioning system is a closed loop system and contains pressurised refrigerant. No part of the system should be disconnected until the system has been discharged by a refrigeration engineer or a suitably trained person. You can be severely frostbitten or injured by escaping refrigerant.

4-3-4-1_2

The refrigerant hoses have crimped ferrule end fittings. The hose connectors have an 'O' ring seal which compresses when the connection is tight, creating an airtight seal.

Hoses are used to connect the inlets and outlets of the compressor, condenser, receiver drier and expansion valve (the evaporator coil is connected to the expansion valve within the air conditioning unit using rigid pipes).

If leakage is detected from a hose connector, either by means of an electronic leak detector or soapy water, tighten the connector and repeat the leakage test. If leakage is still evident, it will be necessary to de-gas the system and renew the connector 'O' ring seal.

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Slew Motor - 8035ZTS

General Description

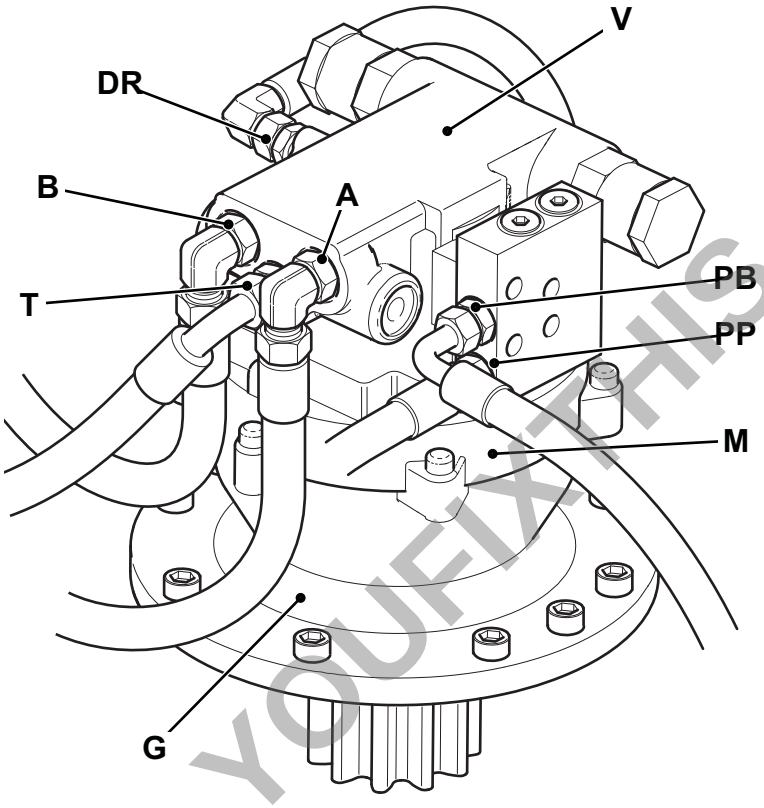


Fig 1.

The slew motor consists of a reduction gearbox **G**, hydraulic motor **M** and hydraulic cross-line relief valve assembly **V**.

The hydraulic motor is an axial piston type and converts hydraulic energy supplied from the hydraulic pump into a rotary motion.

The hydraulic valve consists of cross-line relief valves, which in conjunction with a double acting spool fitted to the valve block ensures that the inertia produced when stopping the machine is absorbed through the cross-line relief valves. This in turn produces a smooth machine stop also preventing the hydraulic motor becoming overloaded.

The gearbox is a single step planetary type, the gearing converts high speed rotary motion from the hydraulic motor into low-speed high torque, transmitted to the pinion shaft.

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