# Service Manual

## 8027Z
## 8032Z

PUBLISHED BY THE
TECHNICAL PUBLICATIONS DEPARTMENT
OF JCB SERVICE: © WORLD PARTS CENTRE,
WATERLOO PARK, UTTOXETER,ST14 5PA,
ENGLAND
Tel. ROCESTER (01889) 590312
PRINTED IN ENGLAND

**Publication No. 9803/9300 Issue 1**

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All construction and agricultural equipment can be hazardous. When a JCB Mini excavator 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.

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**

GEN-1-6

As well as the warnings in the following pages, specific warnings are given throughout the book. This section is designed to give a safety code for use of the machine generally and for operation and maintenance practices.

**Note:** This section includes a certain amount of operating safety information. But remember that whenever you drive the machine or operate its controls you are in effect a machine operator. Therefore you should read and understand the information given in the Operator Handbook before driving the machine or operating its controls.

## General Safety

**⚠ 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.

INT-1-3-6

**⚠ WARNING**

**Lifting Equipment**

You can be injured if you use faulty lifting equipment. Make sure that lifting equipment is in good condition. Make sure that lifting tackle complies with all local regulations and is suitable for the job. Make sure that lifting equipment is strong enough for the job.

**⚠ WARNING**

Do not use this Excavator as a ‘Crane’. Consult National Lifting Regulations.

**⚠ 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.

HOP3

**⚠ WARNING**

**Raised Attachments**

Raised attachments can fall and injure you. Do not walk or work under raised attachments unless they are safely supported.

HOP6

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Only use following when no setting is specified in text of manual.

**CAUTION:** All bolts used on JCB equipment are high tensile and must not under any circumstances be replaced with bolts of a lesser tensile specification.

**Metric Grade 8.8 Bolts**

| Bolt Size (mm) | | Hexagon (A/F) mm | Torque settings Nm | kgf m | lbf ft |
|---|---|---|---|---|---|
| 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 |
| M20 | (20) | 30 | 476 | 48 | 352 |
| M24 | (24) | 36 | 822 | 84 | 607 |
| M30 | (30) | 46 | 1633 | 166 | 1205 |
| M36 | (36) | 55 | 2854 | 291 | 2105 |

## Table of Important Tightening Torques

| Tightening Points | Tightening Torque Nm | kgf m | lbf ft |
|---|---|---|---|
| Track roller | 244 | 25 | 180 |
| Idler yoke | 98 | 10 | 72 |
| Rotary coupling mounting | 56 | 5.7 | 41 |
| Slew ring | 160 | 12.3 | 89 |
| * Slew gearbox mounting | 395 | 40 | 292 |
| * Hydraulic Pump | 98 | 10 | 72 |
| Hydraulic oil tank | 56 | 5.7 | 41 |
| Fuel tank | 56 | 5.7 | 41 |
| Rod end - controls | 56 | 5.7 | 41 |
| Silencer bolt | 28 | 3.0 | 21 |
| Exhaust tail pipe | 28 | 5.7 | 41 |
| Engine shock absorber (to slew frame) | 56 | 5.7 | 41 |
| Engine shock absorber (to engine) | 98 | 10 | 72 |
| Engine bracket | 118 | 12 | 87 |
| Engine bell housing | 56 | 10 | 72 |
| Counterweight | 240 | 10 | 72 |
| Slew ring to superstructure | 160 | 16.3 | 118 |

**Rams:** See section E

**Valve Block:** See section E

**Track Motor**

| | | | |
|---|---|---|---|
| Motor to undercarriage bolts | 98 | 10 | 72 |
| * Drive sprocket to motor bolts | 113 | 11.5 | 83 |

| | | | |
|---|---|---|---|
| **Pump Drive Coupling** | 98 | 10 | 72 |

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## Every 50 operating hours (or weekly) whichever occurs first

Do the daily jobs plus:

**Clean**

**1** Drain and clean fuel filter/sedimenter
**2** Radiator matrix and oil cooler matrix

**Check and adjust where necessary (engine stopped)**

**3** Fan belt adjustment

## Every 100 operating hours (or 2 weeks) whichever occurs first

Do the daily jobs through to 50 hours plus:

**Clean**

**1** Battery terminals

**Check and adjust where necessary (engine stopped)**

**2** Hose and pipework for security and damage
**3** Condition of ram piston rods
**4** All grease seals
**5** Track, plate condition/rubber condition
**6** Engine mounting bolts
**7** Air cleaner hose security
**8** Wiring for damage
**9*** Track tension

**Note:** Jobs which should only be done by a specialist are indicated by *.

## First 250 operating hours only

Do the jobs listed in 250 hours (below) plus:

**1** Change track gearbox oil

## Every 250 operating hours (or monthly) whichever occurs first

Do the daily jobs through to 100 hours plus:

**Change**

**1** Fuel in-line pre filter

**Grease**

**2** Slew ring grease nipples

## Every 500 operating hours (or 6 months) whichever occurs first

Do the daily jobs through to 250 hours plus:

**Clean**

**1** Fuel lift pump
**2*** Fuel injectors (and test)
**3** Engine oil and filter cannister

**Change**

**4** Fuel filter element
**5** Hydraulic fluid return filter element
**6** Air cleaner element (in very dusty conditions only)
**7** Engine oil and engine oil filter

**Check and adjust where necessary (engine stopped)**

**8** Exhaust system security
**9*** Tighten cylinder head bolts
**10*** Adjust valve clearances
**11** Engine mounting bolts
**12** Track gearbox oil levels

**Check and adjust where ncessary (engine running)**

**13*** Main relief valve pressure
**14*** Auxiliary relief valve pressure
**15*** Servo relief valve pressure
**16*** Cross line relief valve pressure
**17*** Engine idle speed

**Note:** Jobs which should only be done by a specialist are indicated by *.

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## Introduction

This chapter is arranged to guide you step-by-step through the task of learning how to use the machine. Read it through from beginning to end. By the end of the chapter you should have a good understanding of the machine and how to operate it.

Pay particular attention to all safety messages. They are there to warn you of possible hazards. Do not just read them-think about what they mean. Understand the hazards and how to avoid them.

If there is anything you do not understand, ask your JCB dealer, he will be pleased to advise you.

When you have learned where the driving controls are and what they do, practise using them. Practise driving the machine in a safe, open space clear of other people.

Get to know the "feel" of the machine and its driving controls.

Move on to the attachment controls only when you can drive the machine confidently and safely.

Take great care when practising with the attachment controls. Practise in an open space, keep people clear. Do not jerk the controls: operate them slowly until you understand the effect they have on the machine.

Finally, do not rush the job of learning. Take your time and take it safely.

Remember **BE CAREFUL**
**BE ALERT**
**BE SAFE**

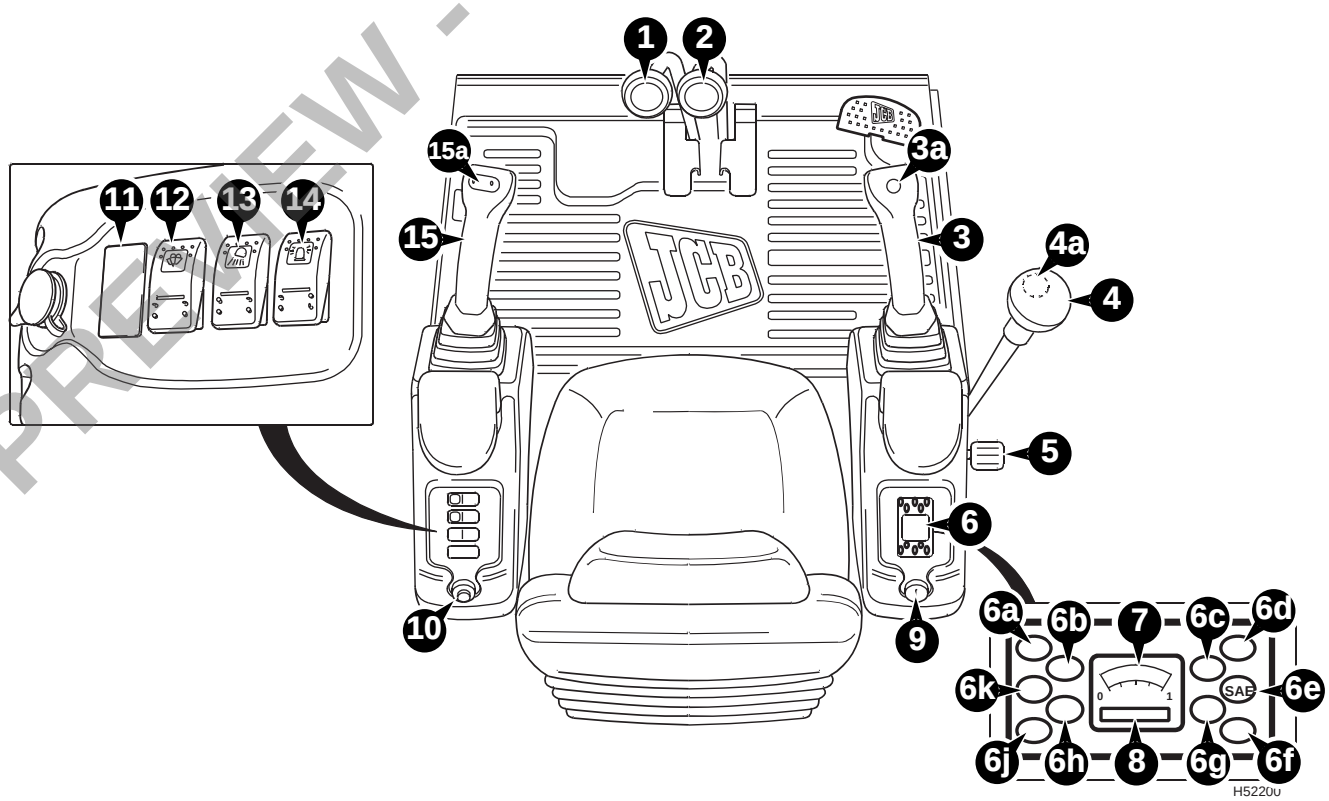
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## Engine and Track Controls, Switches and Instruments

**1** Left Track Control Lever
**2** Right Track Control Lever
**3** Right Hand Controller
**3a** Horn Button
**4** Dozer Lever
**4a** Two speed Tracking Switch
**5** Hand Throttle Lever
**6** Instrument Cluster
**6a** Charge (Fault) Indicator
**6b** Coolant Temperature (High) Indicator
**6c** Not operational on this machine
**6d** Two Speed (High Engaged) indicator
**6e** SAE Controls (selected) indicator
**6f** Glow Plugs (On) indicator
**6g** Air Filter (Blocked) indicator
**6h** Not operational on this machine
**6j** Not operational on this machine
**6k** Engine Oil pressure (Low) indicator
**7** Fuel Gauge
**8** Hourmeter
**9** Ignition Switch
**10** Accessory Power Socket (Beacon etc.)
**11** Blank
**12** Windscreen Wash/Wipe Switch
**13** Work Lights Switch
**14** Rotating Beacon Switch
**15** Left Hand Controller
**15a** Slew / Swing Selector Switch




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## Using the Attachments

There are two types of hydraulic attachment circuits available. Single acting or double acting. Both types are operated by a floor mounted pedal.

**Single acting circuit**
This type powers a dipper mounted breaker **A**.

**Double acting circuit**
This type powers reversible attachments such as an auger **B**. The double acting circuit can be switched to single acting operation by means of a valve **C** located above the valve block. Rotate the valve fully anti-clockwise for single acting operation or fully clockwise for double acting operation.

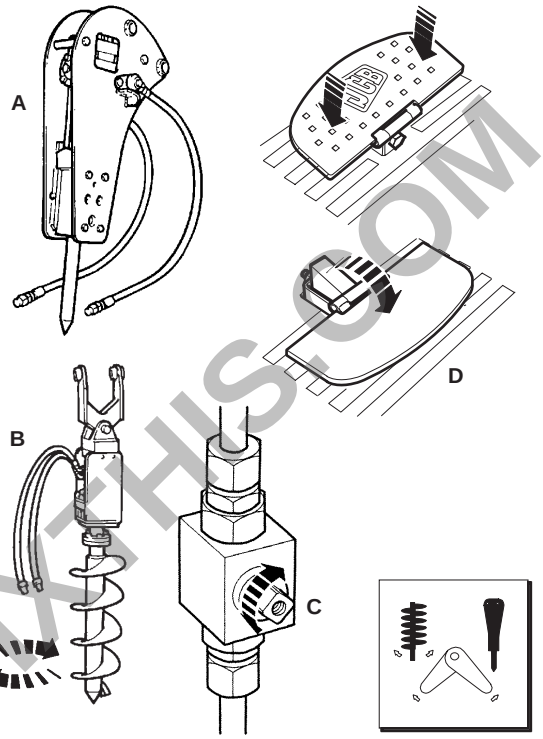
Operate the pedal in the required direction for correct tool operation. In non-operating conditions the pedal must be locked in position **D**.

**⚠ WARNING**

**Hydraulic Fluid**

**Fine jets of hydraulic fluid at high pressure can penetrate the skin. Do not use your fingers to check for hydraulic fluid leaks. Do not put your face close to suspected leaks. Hold a piece of cardboard close to suspected leaks and then inspect the cardboard for signs of hydraulic fluid. If hydraulic fluid penetrates your skin, get medical help immediately.**

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## Before Using the Trailer

### ⚠ WARNING

**Before moving the machine onto the trailer, make sure that the trailer and ramp are free from oil, grease and ice. Remove oil, grease and ice from the machine tracks. Make sure the machine will not foul on the ramp angle.**

HOP69

**1** Remove any dirt or debris from the trailer.

**2** Check the operation of the parking brake.

**3** Check the trailer bodywork for signs of damage.

**4** Check that the tyre pressures are correct (consult the Manufacturer's handbook).

**5** Check that the lights are working and are the correct voltage for the towing vehicle (consult the Manufacturer's handbook).

**6** Check that the breakaway cable is serviceable.

### ⚠ WARNING

**The safe transit of the load is the responsibility of the transport contractor and driver. Any machine, attachment or parts that may move during transit must be adequately secured.**

5-2-5-3

## Securing the Machine

### ⚠ WARNING

**The machine must be securely tied down to the trailer to prevent lateral movement, fore-and-aft movement, and slewing of the superstructure. Failure to do so could cause injury to yourself or others.**

**1** Engage the slew lock. Ensure by operating the slew control that the slew lock is engaged.

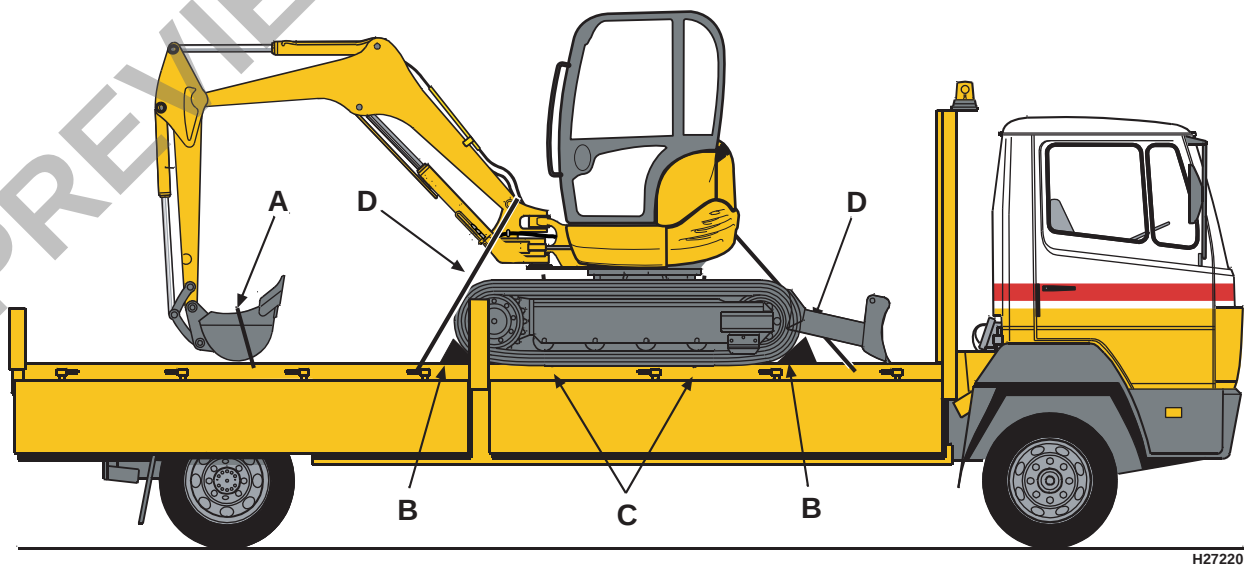
**2** Close the bucket. Position the dipper vertically and lower the boom until the bucket rests on a wooden block on the trailer bed.

**3** Position a wire rope **A** of suitable breaking strain over the bucket and secure to the trailer shackles.

**4** Place skids **B** under each track at front and rear to prevent movement of the machine in the fore-and-aft direction.

**5** Position a wire rope **C** of suitable breaking strain around each track frame at front and rear and secure to the trailer shackles to prevent lateral movement of the machine. (DO NOT tie down over the tracks.)

**6** Attach wire ropes **D** of suitable breaking strain over the kingpost and dozer and secure to the trailer shackles to prevent the superstructure from swinging.

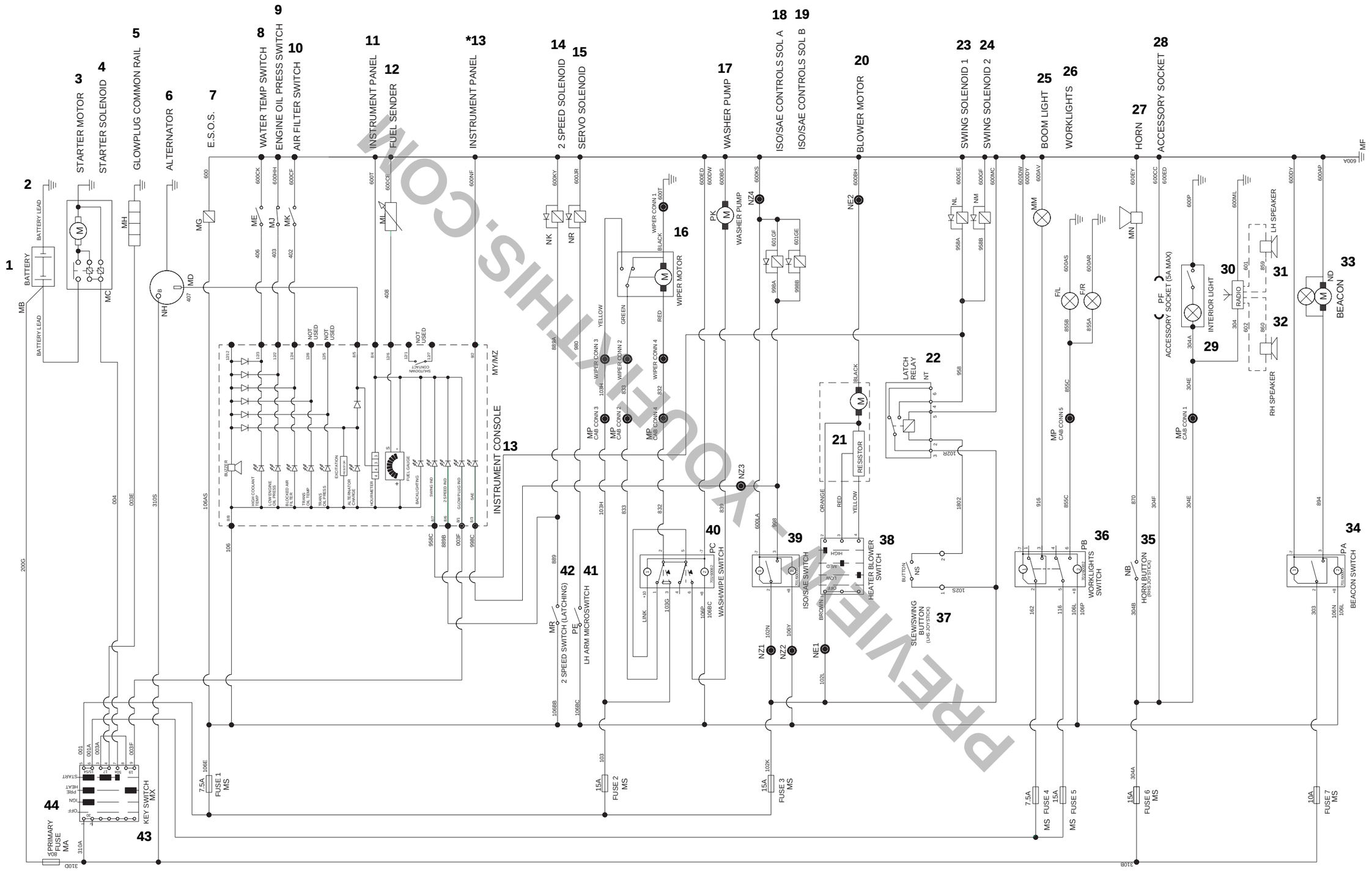



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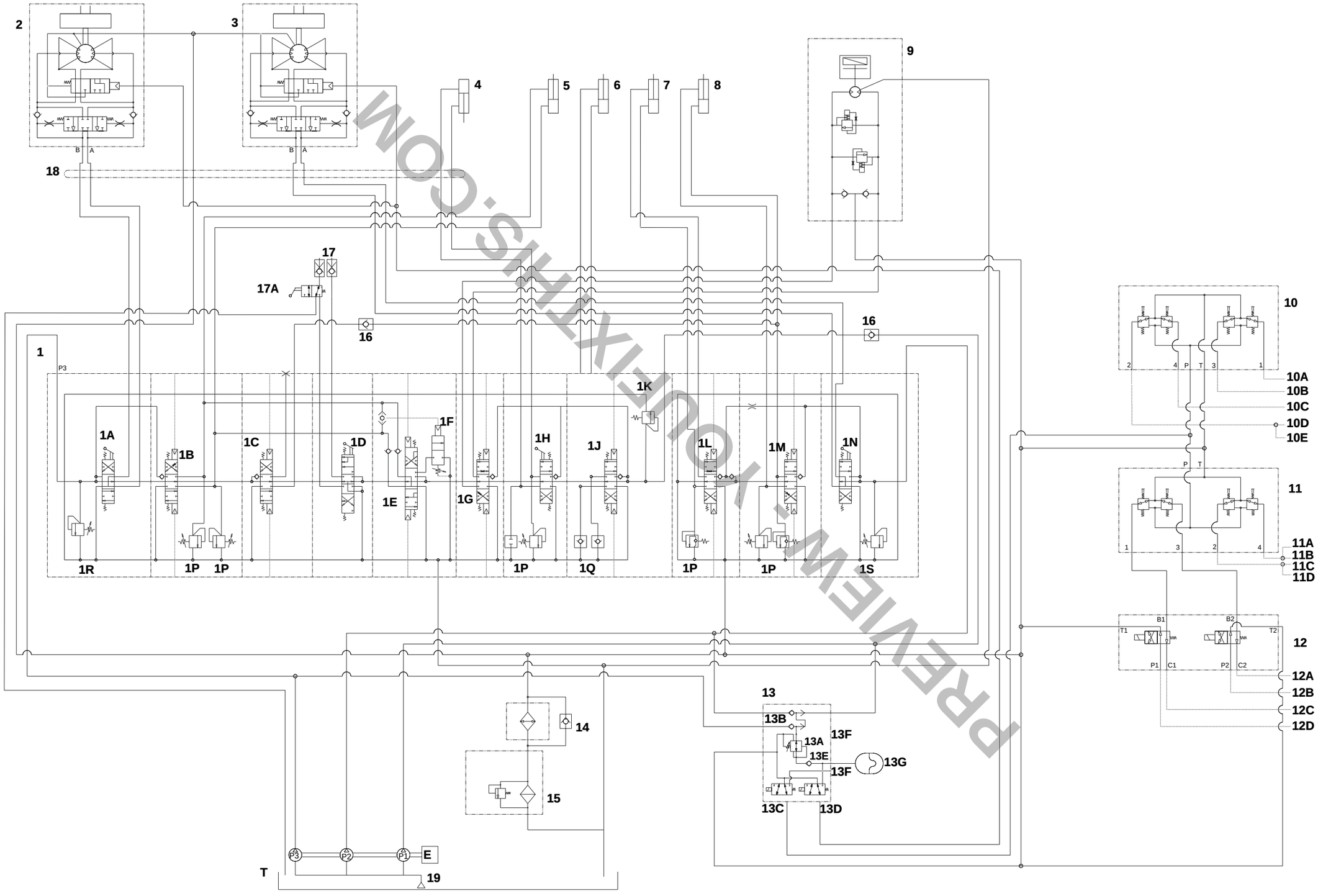


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## Hydraulic Circuit




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Before carrying out the following checks, ensure that where applicable:

**1** The correct hydraulic fluid is used and the system filled to the correct level.
**2** The hydraulic fluid, filter and suction strainer are clean.
**3** There are no visible leaks in the system.
**4** Engine maximum speed and condition is as specification
**5** Hydraulic pressures for each service are correct to specification

If possible the machine should be operated to identify the fault and to bring the systems to their normal working temperature.

After completing these initial checks, proceed as follows:

**A** If all the hydraulic services are at fault start at check 1.
**B** If servo controllers only are at fault start at check 13.
**C** If tracking services only are at fault start at check 16.
**D** If slew service only is at fault start at check 21.

| Check | | Action | |
|---|---|---|---|
| **1** | Is the fault in all services or one only? | ALL :<br>ONE : | Check 2<br>Check 6 |
| **2** | Are the hydraulics inoperative or lacking in power? | INOPERATIVE :<br>POOR PERFORMANCE : | Check 4<br>Check 3 |
| **3** | Is the servo pressure to specification? | YES :<br>NO : | Check 4.<br>Adjust |
| **4** | Is the pump operating correctly? | YES :<br>NO : | Check M.R.V's.<br>Check 5. |
| **5** | Is the pump noisy in operation? | YES :<br>NO : | Purge air from pump casing.<br>Check 6 |
| **6** | Is the pump drive broken? | YES :<br>NO : | Renew<br>Check 7. |
| **7** | Is one service only down on pressure? | YES :<br>NO : | Check 8.<br>Check 9. |
| ***8** | Is the cable adjustment correct? (Tracks, dozer & auxiliary services only) | YES :<br>NO : | Check 9.<br>Adjust cable. |
| **9** | Is the control valve spool sticking? | YES :<br>NO : | Overhaul valve block section<br>Check 10. |
| **10** | Is the service A.R.V. operating correctly? | YES :<br>NO : | Check 11.<br>Reset or renew |
| **11** | Is the valve block section cracked? | YES : | Renew section and check valve block mounting |
| **12** | Are the rams faulty? | YES : | Overhaul or renew |
| **13** | Is the fault in all servo operated services or only one? | ALL :<br>ONE : | Check servo isolator microswitch, check servo solenoid valve, check 14.<br>Check 15. |
| **14** | Is the servo system operating correctly? | YES :<br>NO : | Check 15<br>Check servo pressure maintenance valve. |

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