SERVICE MANUAL

FASTRAC (AGRICULTURAL TRACTOR)

8290, 8330

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This manual contains original instructions, verified by the manufacturer (or their authorized representative).

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Foreword

The Operator's Manual

⚠

You and others can be killed or seriously injured if you operate or maintain the machine without first studying the Operator's Manual. You must understand and follow the instructions in the Operator's Manual. If you do not understand anything, ask your employer or JCB dealer to explain it.

Do not operate the machine without an Operator's Manual, or if there is anything on the machine you do not understand.

Treat the Operator's Manual as part of the machine. Keep it clean and in good condition. Replace the Operator's Manual immediately if it is lost, damaged or becomes unreadable.

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01 - Machine

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Acronyms Glossary

DEF	Diesel Exhaust Fluid
HVAC	Heating Ventilation Air Conditioning
PIL	Parts Identification List
PTO	Power Take-Off

03 - Safety

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03 - Safety - Yours and Others

Introduction

All machinery can be hazardous. When a machine is correctly operated and maintained, it is a safe machine to work with. 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 inform you of potential hazards and how to avoid them. If you do not fully understand the warning messages, ask your employer or JCB dealer to explain them.

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 of 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 work until you are sure that you and those around you will be safe.

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

Remember:

- Be careful
- Be alert
- Be safe.

06 - Safety Warnings

Introduction

In this manual and on the machine, there are safety notices. Each notice starts with a signal word. The signal word meanings are given below.

The signal word 'DANGER' indicates a hazardous situation which, if not avoided, will result in death or serious injury.

The signal word 'WARNING' indicates a hazardous situation which, if not avoided, could result in death or serious injury.

The signal word 'CAUTION' indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

The signal word 'Notice' indicates a hazardous situation which, if not avoided, could result in machine damage.

The safety alert system (shown) also helps to identify important safety messages in this manual and on the machine. When you see this symbol, be alert, your safety is involved, carefully read the message that follows, and inform other operators.

Figure 1. The safety alert system

09 - General Safety

Introduction

Training

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's 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. In some markets and for work on certain jobsites you may be required to have been trained and assessed in accordance with an operator competence scheme. Make sure that you and your machine complies relevant local laws and jobsite requirements - it is your responsibility.

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.

Clothing

You can be injured if you do not wear the correct clothing. Loose clothing can get caught in the machinery. Keep cuffs fastened. Do not wear a necktie or scarf. Keep long hair restrained. Remove rings, watches and personal jewellery.

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.

Feeling Unwell

Do not attempt to operate the machine if you are feeling unwell. By doing so you could be a danger to yourself and those you work with.

Mobile Phones

Switch off your mobile phone before entering an area with a potentially explosive atmosphere. Sparks in such an area could cause an explosion or fire resulting in death or serious injury.

Switch off and do not use your mobile phone when refuelling the machine.

Lifting Equipment

You can be injured if you use incorrect or faulty lifting equipment. You must identify the weight of the item to be lifted then choose lifting equipment that is strong enough and suitable for the job. Make sure that lifting equipment is in good condition and complies with all local regulations.

Raised Equipment

Never walk or work under raised equipment unless it is supported by a mechanical device. Equipment which is supported only by a hydraulic device can drop and injure you if the hydraulic system fails or if the control is operated (even with the engine stopped).

Make sure that no-one goes near the machine while you install or remove the mechanical device.

Raised Machine

Never position yourself or any part of your body under a raised machine which is not correctly supported. If the machine moves unexpectedly you could become trapped and suffer serious injury or be killed.

Lightning

Lightning can kill you. Do not use the machine if there is lightning in your area.

Machine Modifications

This machine is manufactured in compliance with prevailing legislative requirements. It must not be altered in any way which could affect or invalidate its compliance. For advice consult your JCB dealer.

12 - Maintenance Safety

Introduction

Hot Components

Touching hot surfaces can burn skin. The engine and machine components will be hot after the unit has been running. Allow the engine and components to cool before servicing the unit.

Turning the Engine

Do not try to turn the engine by pulling the fan or fan belt. This could cause injury or premature component failure.

Notice: *The engine and other components could be damaged by high pressure washing systems. Special precautions must be taken if the machine is to be washed using a high pressure system.Make sure that the alternator, starter motor and any other electrical components are shielded and not directly cleaned by the high pressure cleaning system. Do not aim the water jet directly at bearings, oil seals or the engine air induction system.*

WARNING! *To bleed the injectors you must turn the engine. When the engine is turning, there are parts rotating in the engine compartment.Before starting this job make sure that you have no loose clothing (cuffs, ties etc) which could get caught in rotating parts.When the engine is turning, keep clear of rotating parts.*

Notice: *Clean the engine before you start engine maintenance. Obey the correct procedures. Contamination of the fuel system will cause damage and possible failure of the engine.*

Notice: *Do not exceed the correct level of engine oil in the sump. If there is too much engine oil, the excess must be drained to the correct level. An excess of engine oil could cause the engine speed to increase rapidly without control.*

WARNING! *The engine has exposed rotating parts. Switch off the engine before working in the engine compartment. Do not use the machine with the engine cover open.*

WARNING! *Hot oil and engine components can burn you. Make sure the engine is cool before doing this job.Used engine crankcase lubricants contain harmful contaminants. In laboratory tests it was shown that used engine oils can cause skin cancer.*

Notice: *A drive belt that is loose can cause damage to itself and/or other engine parts.*

WARNING! *Do not open the high pressure fuel system with the engine running. Engine operation causes high fuel pressure. High pressure fuel spray can cause serious injury or death.*

CAUTION! *It is illegal to pollute drains, sewers or the ground. Clean up all spilt fluids and/or lubricants.Used fluids and/or lubricants, filters and contaminated materials must be disposed of in accordance with local regulations. Use authorised waste disposal sites.*

18 - Operating Safety

Introduction

Machine Condition

A defective machine can injure you or others. Do not operate a machine which is defective or has missing parts. Make sure the maintenance procedures in this manual are completed before using the machine.

Machine Limits

Operating the machine beyond its design limits can damage the machine, it can also be dangerous. Do not operate the machine outside its limits. Do not try to upgrade the machine performance with unapproved modifications.

Exhaust Gases

Machine exhaust gases can harm and possibly kill you or bystanders if they are inhaled. Do not operate the machine in closed spaces without making sure there is good ventilation. If possible, install an exhaust extractor. If you begin to feel drowsy, stop the machine at once and get into fresh air.

Communications

Bad communications can cause accidents. Keep people around you informed of what you will be doing. If you will be working with other people, make sure any hand signals that may be used are understood by everybody. Worksites can be noisy, do not rely on spoken commands.

Safety Barriers

Unguarded machines in public places can be dangerous. In public places, or where your visibility is reduced, place barriers around the work area to keep people away.

Sparks

Explosions and fire can be caused by sparks from the exhaust or the electrical system. Do not use the machine in closed areas where there is flammable material, vapour or dust.

Hazardous Atmospheres

This machine is designed for use in normal out door atmospheric conditions. It must not be used in an enclosed area without adequate ventilation. Do not use the machine in a potentially explosive atmosphere, i.e. combustible vapours, gas or dust, without first consulting your JCB dealer.

Regulations

Obey all laws, worksite and local regulations which affect you and your machine.

Machine Safety

Stop work at once if a fault develops. Abnormal sounds and smells can be signs of trouble. Examine and repair before resuming work.

Hot Components

Touching hot surfaces can burn skin. The engine and machine components will be hot after the unit has been running. Allow the engine and components to cool before servicing the unit.

Fires

If your machine is equipped with a fire extinguisher, make sure it is checked regularly. Keep it in the correct machine location until you need to use it.

Do not use water to put out a machine fire, you could spread an oil fire or get a shock from an electrical fire. Use carbon dioxide, dry chemical or foam extinguishers. Contact your nearest fire department as quickly as possible. Firefighters must use self-contained breathing apparatus.

21 - Worksite Safety

Introduction

⚠ **WARNING** You or others can be killed or seriously injured if you do unfamiliar operations without first practising them. Practise away from the worksite on a clear area. Keep other people away. Do not perform new operations until you are sure you can do them safely.

WARNING There could be dangerous materials such as asbestos, poisonous chemicals or other harmful substances buried on the site. If you uncover any containers or you see any signs of toxic waste, stop the machine and advise the site manager immediately.

WARNING Before you start using the machine, check with your local gas company if there are any buried gas pipes on the site.

If there are buried gas pipes we recommend that you ask the gas company for any specific advice regarding the way you must work on the site.

Some modern gas pipes cannot be detected by metal detectors, so it is essential that an accurate map of buried gas pipes is obtained before any excavation work commences.

Hand dig trial holes to obtain precise pipe locations. Any cast iron pipes found must be assumed to be gas pipes until contrary evidence is obtained.

Older gas pipes can be damaged by heavy vehicles driving over the ground above them.

Leaking gas is highly explosive.

If a gas leak is suspected, contact the local gas company immediately and warn all personnel on the site. Ban smoking, make sure that all naked lights are extinguished and switch off any engines which may be running.

You are strongly advised to make sure that the safety arrangements on site comply with the local laws and regulations concerning work near buried gas pipes.

CAUTION Before you start using the machine, check with your local public water supplier if there are buried pipes and drains on the site. If there are, obtain a map of their locations and follow the advice given by the water supplier.

You are strongly advised to make sure that the safety arrangements on site comply with the local laws and regulations concerning work near buried pipes and drains.

CAUTION If you cut through a fibre optic cable, Do not look into the end of it, your eyes could be permanently damaged.

An applicable worksite organisation is required in order to minimise hazards that are caused by restricted visibility. The worksite organisation is a collection of rules and procedures that coordinates the machines and people that work together in the same area. Examples of worksite organisation include:

- Restricted areas
- Controlled patterns of machine movement
- A system of communication.

You and/or your company could be legally liable for any damage you may cause to public utilities. It is your responsibility to make sure that you know the locations of any public utility cables or pipes on the worksite which could be damaged by your machine.

24 - Risk Assessment

Introduction

It is the responsibility of the competent people that plan the work and operate the machine to make a judgement about the safe use of the machine, they must take into account the specific application and conditions of use at the time.

It is essential that a risk assessment of the work to be done is completed and that the operator obeys any safety precautions that the assessment identifies.

If you are unsure of the suitability of the machine for a specific task, contact your JCB dealer who will be pleased to advise you.

The following considerations are intended as suggestions of some of the factors to be taken into account when a risk assessment is made. Other factors may need to be considered.

A good risk assessment depends on the training and experience of the operator. Do not put your life or the lives of others at risk.

Personnel

- Are all persons who will take part in the operation sufficiently trained, experienced and competent? Are they fit and sufficiently rested? A sick or tired operator is a dangerous operator.
- Is supervision needed? Is the supervisor sufficiently trained and experienced?
- As well as the machine operator, are any assistants or lookouts needed?

The Machine

- Is it in good working order?
- Have any reported defects been corrected?
- Have the daily checks been carried out?
- Are the tyres still at the correct pressure and in good condition and is there sufficient fuel to complete the job (if applicable)?

The Load

- How heavy is it? Is it within the capabilities of the machine?
- How bulky is it? The greater the surface area, the more affected it will be by wind speeds.
- Is it an awkward shape? How is the weight distributed? Uneven loads are more difficult to handle.
- Is there a possibility of the load shifting while being moved?

Loading/Unloading Area

- Is it level? Any slope of more than 2.5% (1 in 40) must be carefully considered.
- Is more than one direction of approach to the load possible? Approaching across the slope must be avoided, if possible.
- Is the ground solid? Will it support the weight of the machine when loaded?
- How rough is the ground? Are there any sharp projections which could cause damage, particularly to the tyres?
- Are there any obstacles or hazards in the area, for example, debris, excavations, manhole covers, power lines?
- Is the space sufficient for safe manoeuvring?
- Are any other machines or persons likely to be in or to enter the area while operations are in progress?

The Route to be Travelled

- How solid is the ground, will it provide sufficient traction and braking? Soft ground will affect the stability of the machine and this must be taken into account.
- How steep are any slopes, up/down/across? A cross slope is particularly hazardous, is it possible to detour to avoid them?

Weather

- How windy is it? High wind will adversely affect the stability of a loaded machine, particularly if the load is bulky.
- Is it raining or is rain likely? The ground that was solid and smooth when dry will become uneven and slippery when wet, and it will not give the same conditions for traction, steering or braking.

27 - Maintenance Positions

Introduction

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

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

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

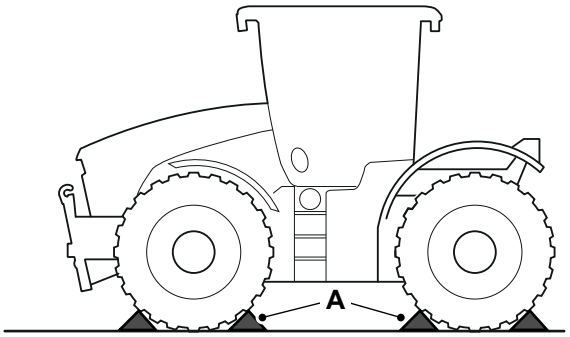
WARNING Make the machine safe before getting beneath it. Make sure that any attachments on the machine are correctly attached. Engage the park brake (if installed), remove the ignition key, disconnect the battery.

WARNING When getting access for maintenance work, make sure no-one is in a position to be caught and/or crushed by the wheels when the steering wheel is turned.

Make the machine safe as follows before you start a maintenance procedure.

1. Park the machine on level ground.
2. Lower all implements to the ground. If necessary remove them to gain access.
3. Remove the ignition key.
4. Switch off the Battery isolator.
5. Leave a warning notice in the operator station to advise others the machine is under maintenance.
6. Place the chocks on the wheels to prevent unintended movement.
7. If necessary, use additional platforms to access service points. Refer to Figure 2.

Figure 2.



A Chocks

06 - About this Manual

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06 - Using the Manual

Introduction

Information in this manual conforms to a standard JCB service manual format. The format uses section headings taken from a PIL (Parts Identification List). These headings are assigned numerical identification references.

Table 1.

Example	Section	Main Assembly / Heading	Component / Sub-heading
PIL reference	33	03	03
Heading	Electrical System	Battery	Isolator Switch

Information within each PIL reference is included under a set of standard headings such as Introduction, Health and Safety, Technical Data and Operation for example. Where additional relevant information is contained within another PIL reference a cross reference is provided.

The main systems information is contained in the manual as follows.

Table 2.

System	PIL Reference	Heading
Hydraulic System	30-00-50	Schematic Circuit
Electrical System	33-03-03	Battery - Isolator Switch
	33-09-00	Power Distribution (including fuses and relays)
	33-00-50	Schematic Circuit
Electronic Diagnostic	33-57	Electronic Diagnostic (including Servicemaster)

Machine Variants

Where information is different depending on machine variant, the applicable information sets are included within the same PIL reference. Headings are included to identify which information is for which variant. Make sure you use the correct information.

Diagnostics

Information in this manual can help you diagnose machine faults.

Before attempting to diagnose possible faults check the following.

- Ensure that the operator understands the machine controls, functions and use. Refer to the applicable Operator Manual.
- Check that the maintenance record complies with the applicable schedule for the operating environment. Refer to PIL 78-24.
- Check that the fuel and hydraulic oil in use complies with the standards specified. Refer to PIL 75-03 and 75-18.
- Ensure that the machine electronic set-up is applicable. Use the applicable Servicemaster vehicle set-up tool. Refer to PIL 33-57-03.
- Use the applicable Servicemaster diagnostics tools. Refer to PIL 33-57-03.

Torque Tightening

When you replace components, always tighten the applicable fixings to the correct torque value. Use the torque tightening values contained in the individual procedures (Remove and Install, Disassemble and Assemble etc.). If no torque values are specified, use the standard torque tightening values. Refer to Fasteners and Fixings, Screws, Bolts, Nuts, Technical Data (PIL 72-00). For the torque setting to be effective, do the following before you install the fixings.

- Make sure that all the applicable component assemblies are correct.
- Make sure that the applicable fixings are to the correct specification. If necessary discard the original fixings and replace them with new ones. The relevant procedures indicate when this is necessary.
- Make sure that the applicable fixings and threaded holes are free from contamination. This includes dirt, debris, old sealants and compounds, fluids and lubricants.

09 - Description

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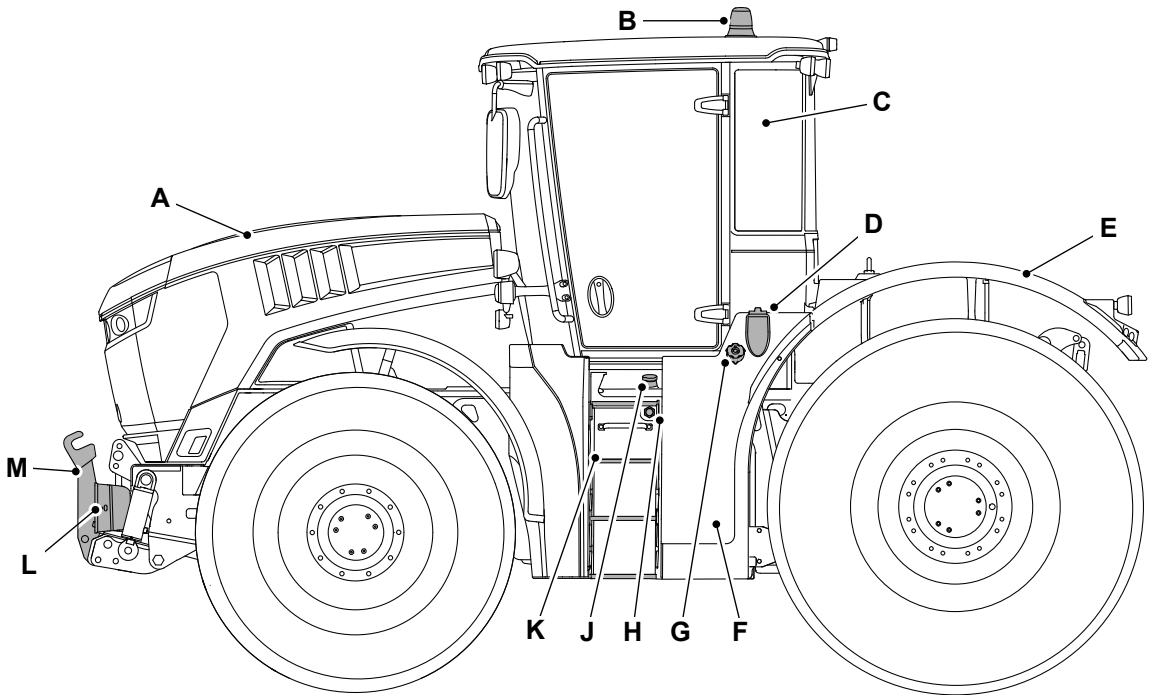
12 - Main Component Locations

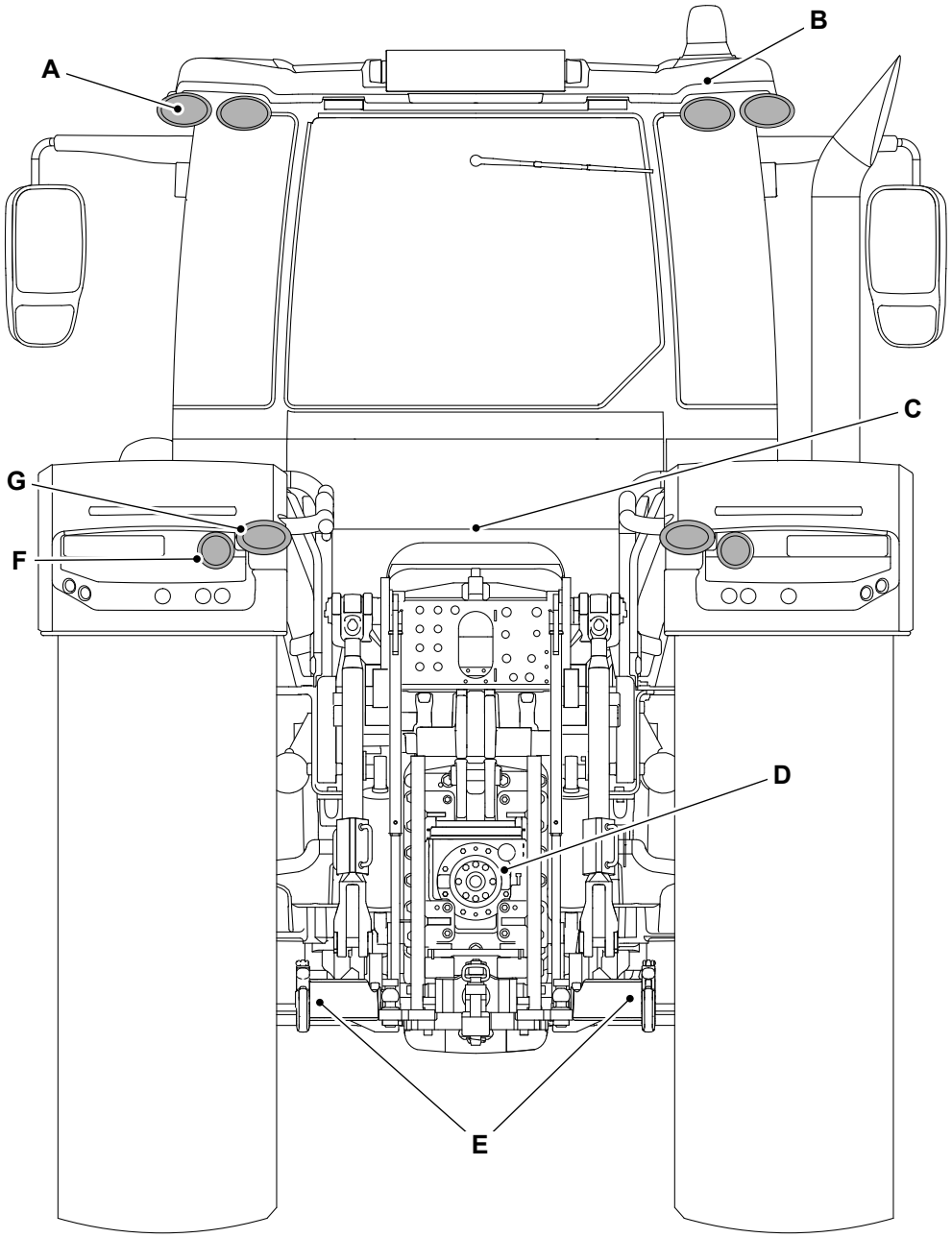
Introduction

Figure 3.



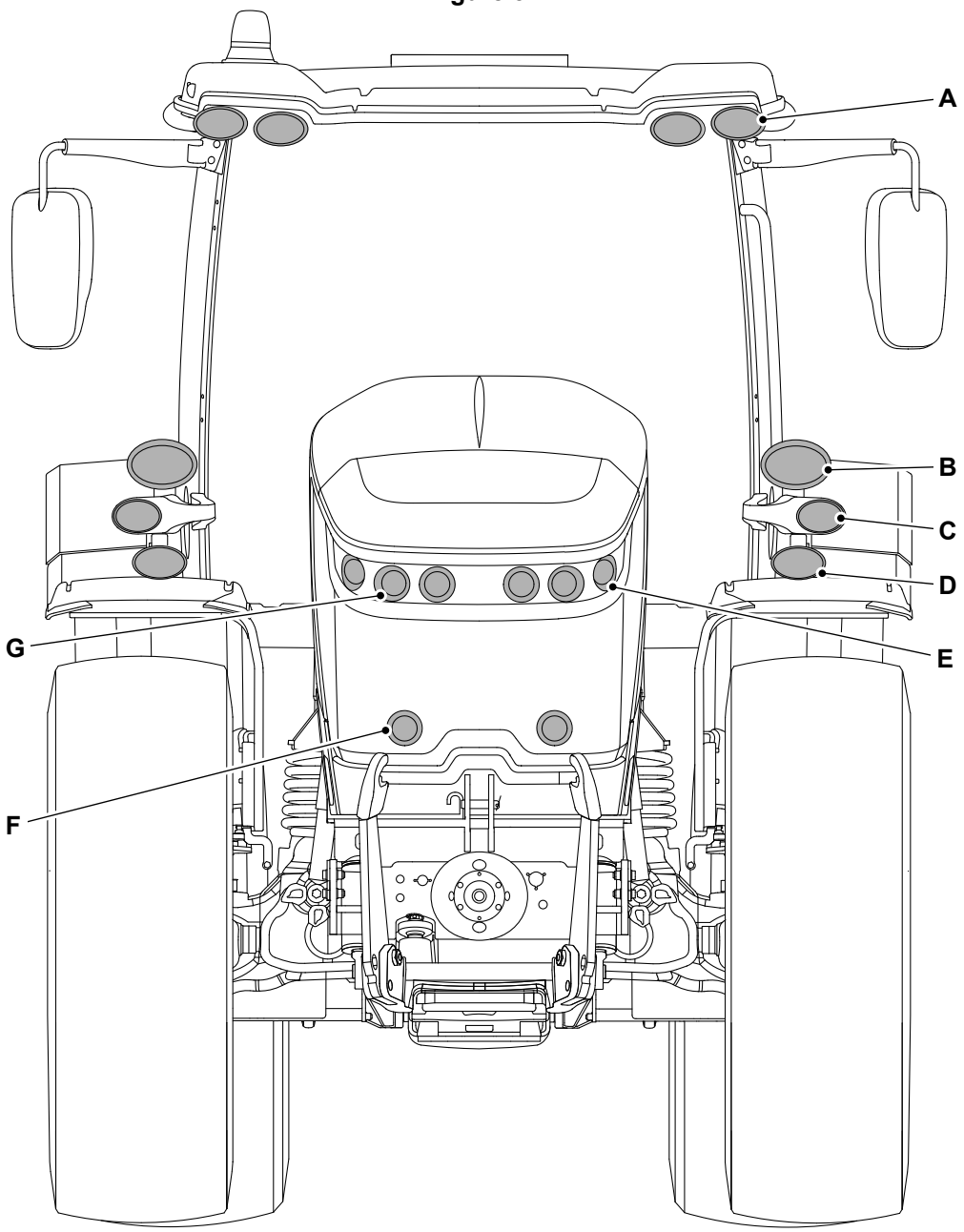
A Bonnet
B Beacon
C Cab
D Fuel filler
E Fenders
F Left hand pannier
G DEF (Diesel Exhaust Fluid) filler
H Hydraulic oil sight gauge
J Hydraulic oil filler
K Steps
L Front PTO (Power Take-Off)
M Front 3-point linkage

Figure 4.



A Rear work lights
B 12V beacon electrical sockets
C Rear deck implement attachment point
D Rear PTO
E Rear 3-point linkage
F Rear road lights
G Rear work lights

Figure 5.

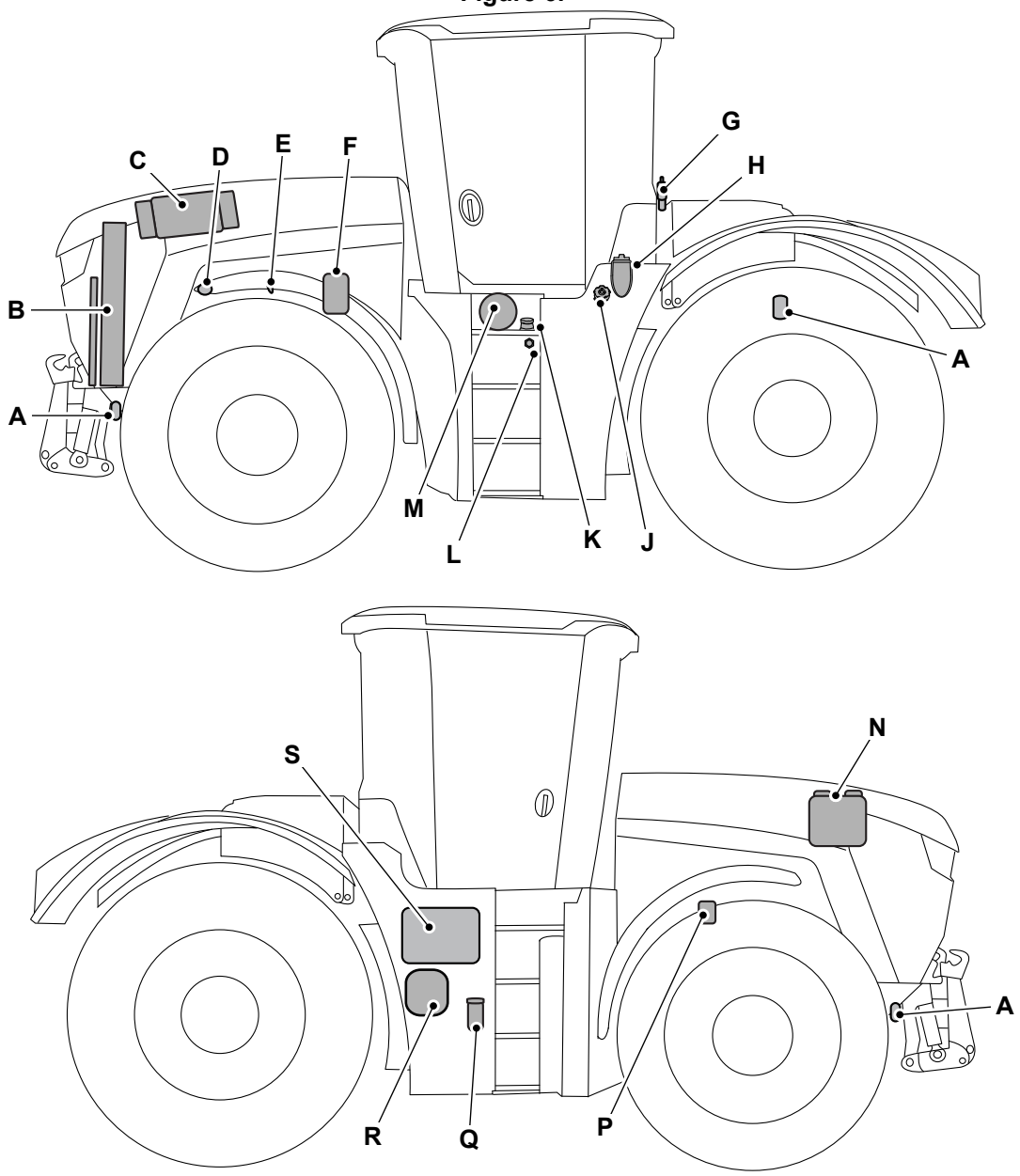


A Front work lights
B Auxiliary lights (option)
C Indicator/side lights
D Front work lights
E Front work lights
F Dipped lights
G Main beam

15 - Service Point Locations

Introduction

Figure 6.



A Hydraulic coupling drain reservoir
B Radiators
C Air filter
D Engine oil filler
E Engine oil dipstick
F Fuel pre filter
G Transmission oil dipstick
H Diesel fuel filler
J DEF (Diesel Exhaust Fluid) filler
K Hydraulic oil filler
L Hydraulic oil level indicator
M HVAC (Heating Ventilation Air Conditioning) fresh air filter
N Engine coolant reservoir
P Engine oil filter
Q Brake fluid reservoirs
R Air system water drain

S Windscreen washer reservoir

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03 - Attachments and Options

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Acronyms Glossary

CAN	Controller Area Network
DECU	Display Electronic Control Unit
ECU	Electronic Control Unit

00 - General

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00 - General

Introduction

A wide range of optional attachments are available to increase the versatility of your machine. Only JCB approved attachments are recommended for use with your machine. Consult your JCB Distributor for the full list of approved attachments available.

Some attachments are supplied complete with instructions on safety, installing and removing, operation and maintenance. Read and fully understand the information before fitting, using and servicing the attachment. If there is anything you do not understand, ask your JCB Distributor.

Before using any attachment, read Working With The Machine in the Operator Manual and consider how the attachment is going to affect operational safety. With the attachment fitted, there may be changes in the machine's centre of gravity or overall dimensions. This could have an effect on, for example, machine stability, the gradients on which it is safe to operate or the safe distance from power lines.

Practice using attachments off the job before working with them for the first time.

JCB attachments are designed and manufactured specifically to suit the machine's hydraulic system, mounting arrangements and safe load requirements. Attachments which are not designed for use with this machine may cause damage and create safety hazards for which JCB cannot be held responsible. In addition the machine's warranty and any other legislative compliance may be affected by the use of non JCB approved attachments.

If your machine needs the hydraulic system adapting to facilitate the use of auxiliary attachments, you must consult your distributor. Only suitably qualified personnel must reroute hydraulic hoses.

All optional attachments will have limits on their operation. i.e. lifting capacity, speeds, hydraulic flow rates, etc. Always check in the literature supplied with the attachment or in the Specification section of this manual. Some specification limits may also be displayed on the attachments Data/Rating Plate.

Important: Do not operate or work with attachments until the machine hydraulic oil has reached its normal working temperature.

Health and Safety

Attachments

Use only the JCB approved attachments that are specified for your machine. Operating with non-specified attachments can overload the machine, causing possible damage and machine instability which could result in injury to yourself or others.

The use of non-approved attachments could invalidate your warranty.

Attachments

If you have an attachment which is not covered in the Operator's Manual do not install it, use it or remove it until you have obtained, read and understood the pertinent information. Install attachments only on the machines for which they were designed.

WARNING! *Load and unload on firm, level ground. Always be alert for possible hazards. Take special care when turning or reversing.*

DANGER! *Before lowering the attachments to the ground, make sure that the machine and the area around it are clear of other people. Anyone on or close to the machine could fall and be crushed by the attachments, or get caught in the linkages.*

DANGER! *Using the forks alone as a working platform is hazardous; you can fall off and be killed or injured. Never use the forks as a working platform.*

12 - Hitch

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00 - General

Introduction

A hitch can be installed on many different types of agricultural or earthmoving machines. There are a vast amount and different types of hitches used for numerous applications. There are front and rear options available.

Refer to the operator manual for information how to operate these attachments.

Health and Safety

⚠ **WARNING** Examine the tow hitch and the trailer draw bar towing ring for signs of wear before each use. A badly fitting or worn hitch or towing ring could cause loss of the trailer and injury to yourself or other people.

WARNING Do not exceed the permitted limits on trailer gross weight or hitch load. The machine may become unstable.

WARNING Make sure the trailer hitch has correctly engaged and locked before driving off.

WARNING Make sure you never use this component if any part of it is missing, defective or damaged in any way. Always install a new replacement component

WARNING Make sure you only tow when the hitch and eye are fixed or one fixed and one rotating. If both the hitch and eye are allowed to rotate they will lock up during reverse manoeuvres and both components will be damaged due to reduced lateral articulation.

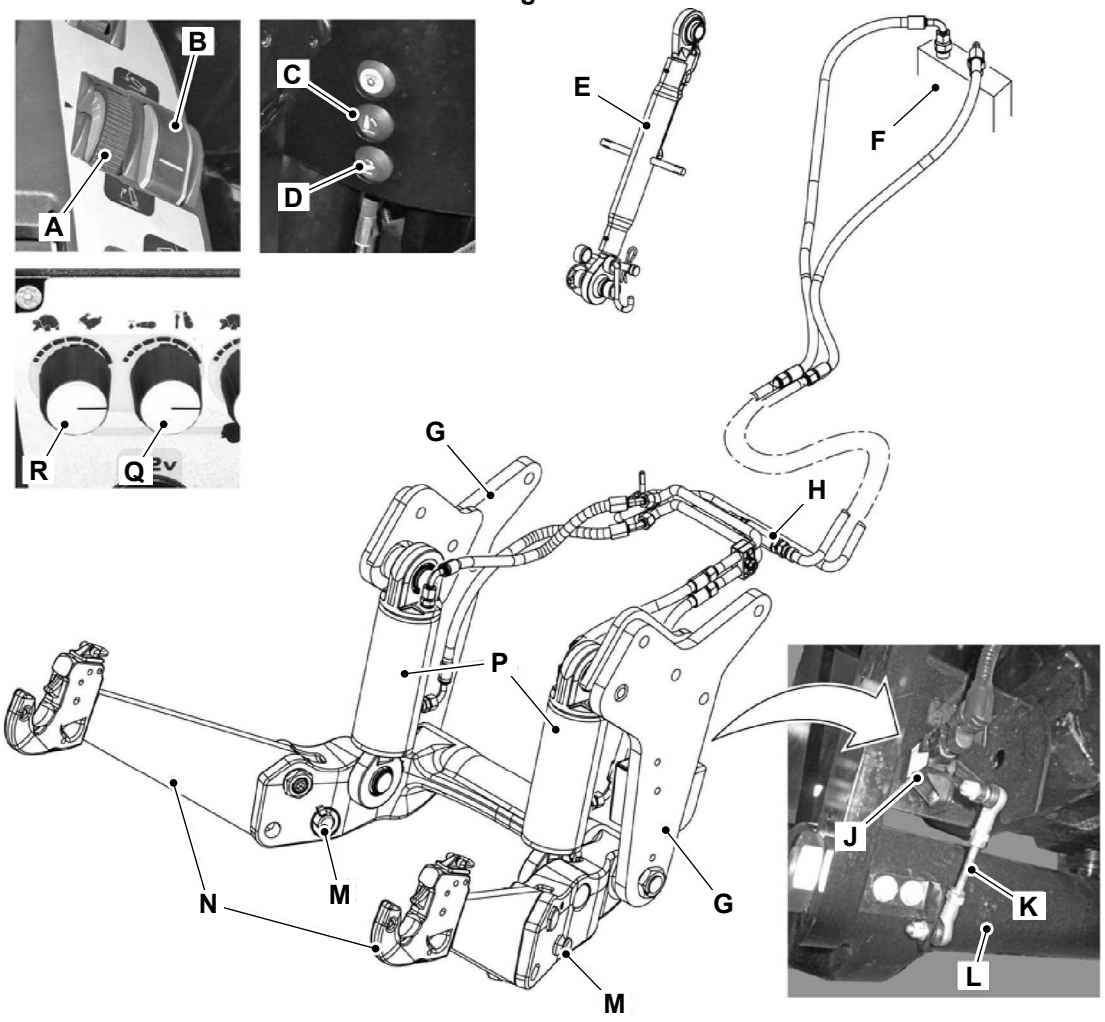
01 - Front Hitch

Introduction

The front hitch assembly is installed on the front of the chassis with the mounting plates.

Component Identification

Figure 7.



A Maximum height control
B Raise/lower switch - operator station
C Raise switch - external
D Lower switch - external
E Adjustable top link
F Front hitch spool valve
G Mounting plates
H Hydraulic flow restrictor
J Position sensor
K Actuating rod
L Bottom link pivot
M Lock pins
N Bottom links
P Hydraulic cylinders
Q Maximum height setting control
R Rate of drop setting control

Operation

Two double acting hydraulic cylinders raise the bottom link. An adjustable top link locates on the chassis to provide a three point linkage.

The bottom links can be manually pivoted and locked with the lock pins for safe travel when the front hitch is not in use. The front hitch spool controls the hydraulic cylinders in the external hydraulics valve block. Refer to (PIL 30-60).

A switch in the operator station or the external switches located on the front of the chassis control the hitch raise and lower system. The minimum and maximum height control enables adjustment of the hitch height or depth. The rate drop setting control enables adjustment of the rate at which the hitch drops when the lower control is enabled. The maximum height setting control enables the maximum raise height to be set.

To enable the operation of the hitch height control system the central control ECU (Electronic Control Unit) receives an input from the position sensor. The position sensor is connected to the bottom link pivot through the actuating rod. If the position sensor or actuating rod is replaced the sensor must be re-calibrated.

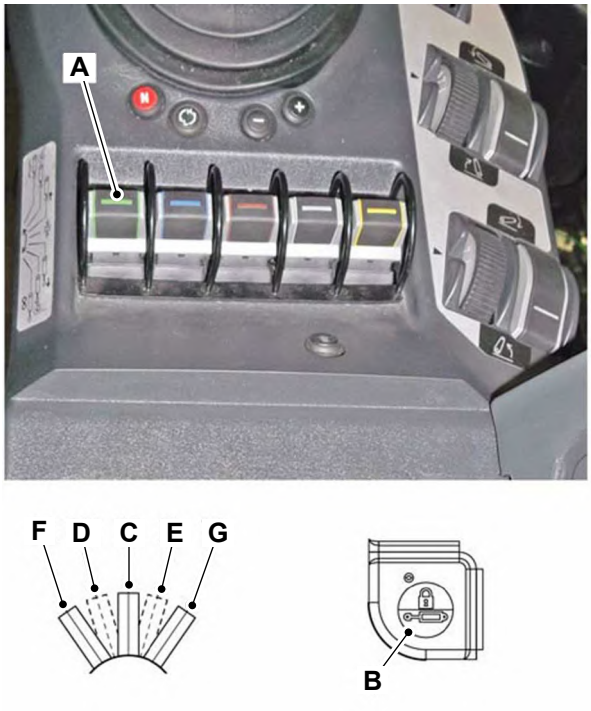
Calibrate

It is necessary to define the limits of the front hitch movement so that the position sensor values are related to the central control ECU (Electronic Control Unit).

Be aware that this process is time critical. Make sure that you read all the following steps before you start the calibration process.

1. Make sure that the transport lock is in OFF position and the spool levers are in neutral upright position.
2. Switch on the ignition. Do not start the engine.
3. When the first dashboard beep stops sounding, press the transportation lock button and switch on the transport lock.
4. Before the master buzzer stops sounding, slowly extend the green spool lever from its central neutral position to position 1, then retract to position 2 and again bring back to the central neutral position.

Figure 8.



A Green spool lever
B Transportation lock button
C Central neutral position
D Position 2
E Position 1
F Maximum retracted position
G Maximum extended position

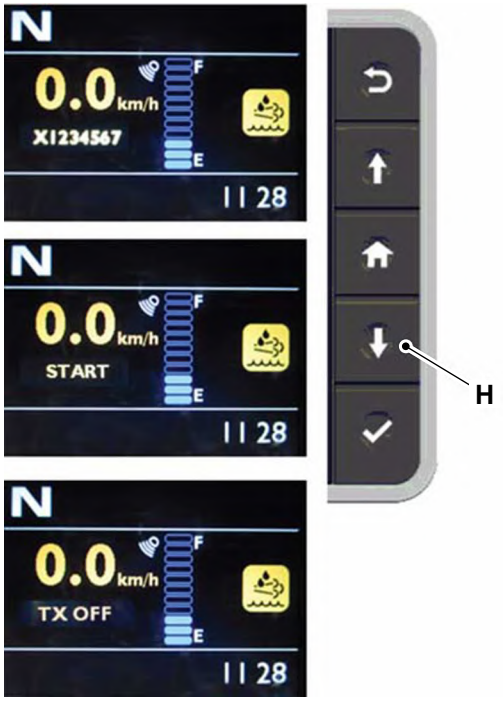
5. The instrument panel will display a code and then begin to count down for the specified duration.

   Duration: 25s

Figure 9.

6. The valve slice configuration is shown on the display. For example, X1234567.
7. Press the down button. The display will show START.
8. Start the engine. The display will show TX OFF.
9. Turn off the transport lock.

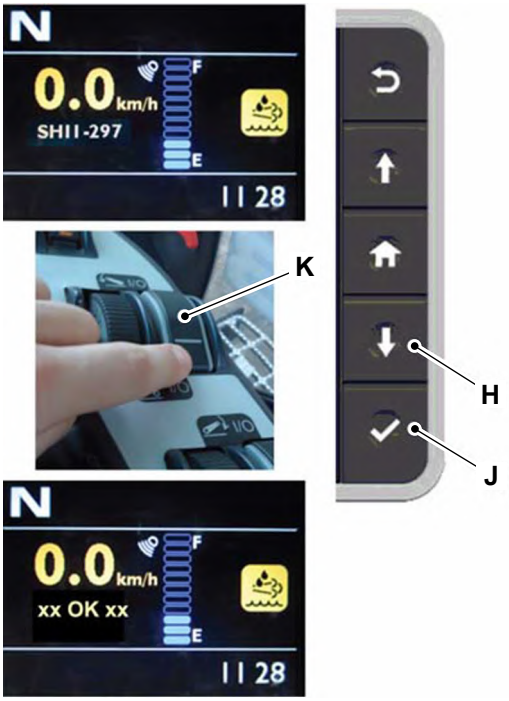
Figure 10.



H Down button

10. The display shows SHII-xxx, where xxx is a number. Operate the front hitch control to raise the front hitch fully.
11. When the hitch is fully raised, press the tick button. The display will show xxOKxx, if the calibration value is acceptable.

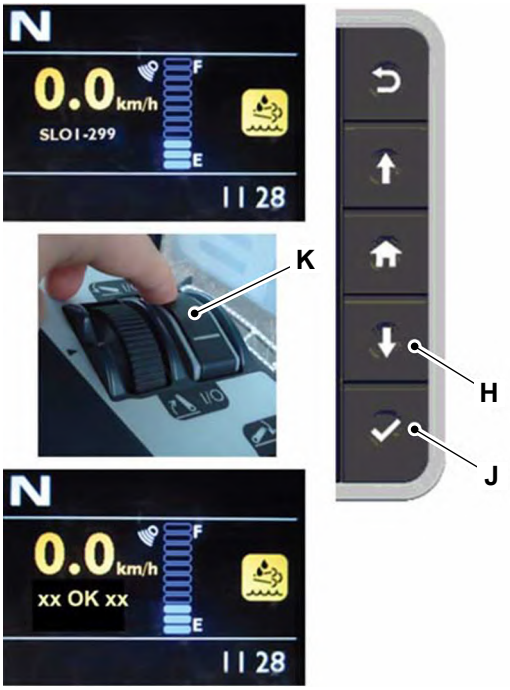
Figure 11.



H Down button
J Tick button
K Front hitch control

12. Press the down button. The display will show SLO.
13. Operate the front hitch control to lower the front hitch fully. The display shows SLOI-xxx, where xxx is a number.
14. When the hitch is fully lowered, press the tick button. The display will show xxOKxx, if the calibration value is acceptable.

Figure 12.

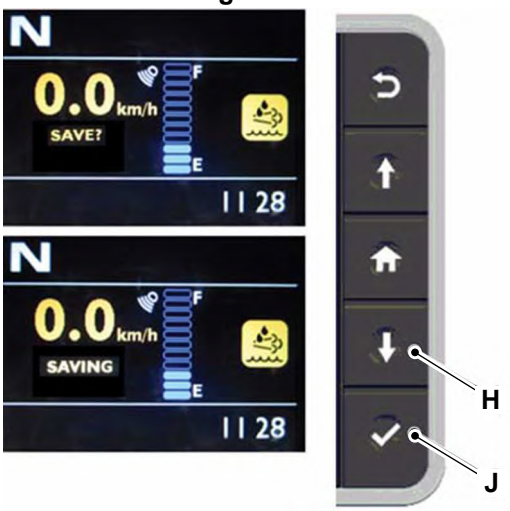


H Down button
J Tick button
K Front hitch control

15. Press the down button. The display will show SAVE?.

16. Press the tick button. The values will save and the display will change to its normal operating mode.

Figure 13.



H Down button
J Tick button

Remove and Install

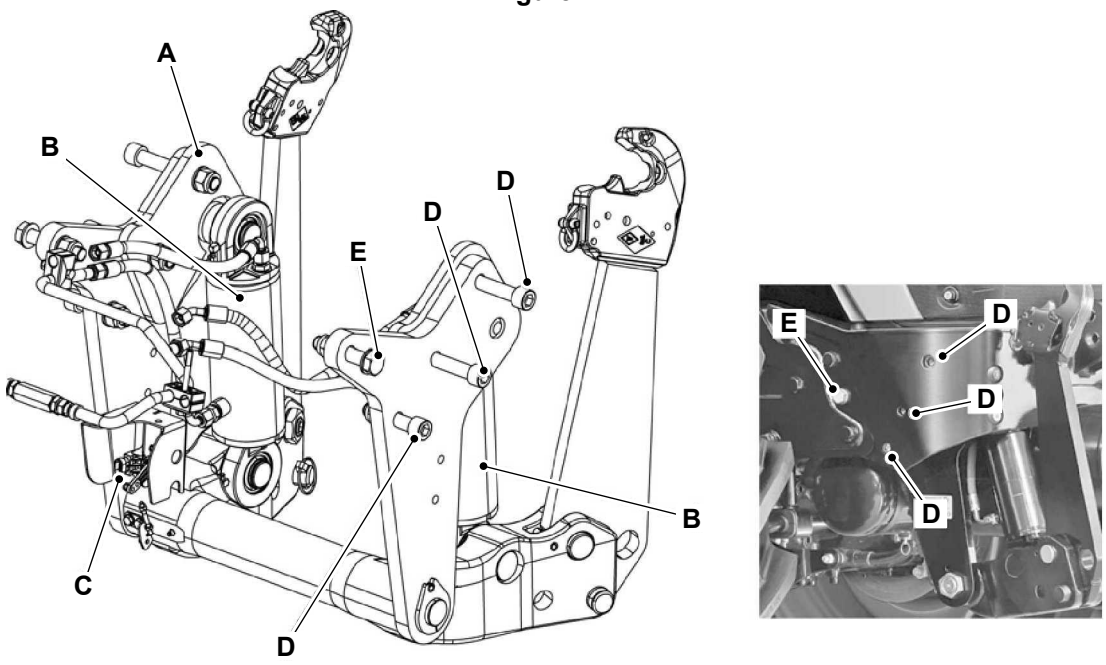
⚠ **CAUTION** This component is heavy. It must only be removed or handled using a suitable lifting method and device.

Use a suitable jack to support the hitch assembly. The hitch assembly weighs approximately 200kg.

Remove

1. Lower the front hitch fully. Refer to (PIL 03-12).
2. Make the machine safe. Refer to (PIL 01-03).
3. Disconnect the electrical connector.
4. Disconnect the hydraulic hoses from the hydraulic cylinders.
5. Cap the open ports and hoses to prevent contamination.
6. Remove the bolts (x8).
7. Use a suitable jack to lower the hitch assembly.
8. Remove the hitch assembly from the machine.

Figure 14.



A Hitch assembly
B Hydraulic cylinder
C Position sensor
D Bolts 1
E Bolts 2

Install

1. The installation procedure is the opposite of the removal procedure. Additionally do the following step.
2. Tighten the bolts to the correct torque value.
3. If the position sensor is removed and installed, do the calibration procedure. Refer to (PIL 03-12).

Table 3. Torque Values

Item	Description	Nm
D	Bolts 1	607
E	Bolts 2	506

Disassemble and Assemble

Special Tools

Description	Part No.	Qty.
Slide Hammer Kit	993/68100	1

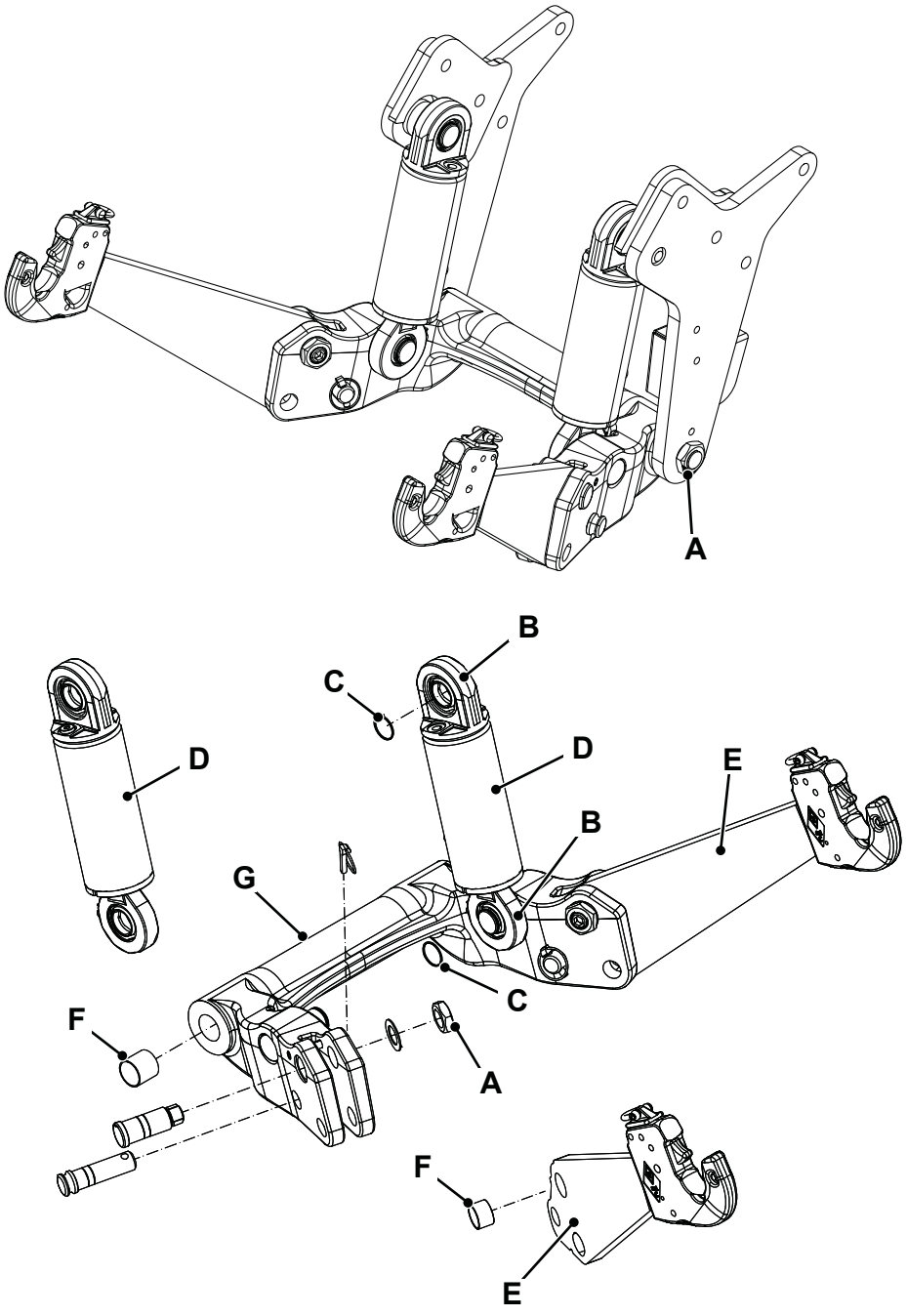
If necessary, the hydraulic cylinders, bottom links and the frame can be disassembled and assembled with the hitch installed on the machine.

Disassemble

1. If the complete hitch assembly is not removed from the machine, lower the hitch fully.
2. Make the machine safe. Refer to (PIL 01-03).
3. Make a note of the position of the grease nipples at the hydraulic cylinder eye ends.
4. Remove the bottom links and disconnect the position sensor actuating rod.
5. Remove the pivot pin nuts.
6. Use the slide hammer kit to remove the pivot pin. Refer to (PIL 06-30).

   Special Tool: Slide Hammer Kit (Qty.: 1)
7. Support the frame.
8. Remove the circlips.
9. Remove the hydraulic cylinders from the machine.
10. Remove the bushes.

Figure 15.



A Pivot pin nuts
B Cylinder eye end
C Circlips
D Hydraulic cylinder
E Bottom links
F Bushes
G Frame

Assemble

1. The assembly procedure is the opposite of the disassembly procedure. Additionally do the following step.
2. Inspect the bushes for wear and damage. If necessary, replace them.
3. Make sure that the cylinders are orientated with the grease nipples positioned correctly for access when greasing.
4. Tighten the pivot pin nuts to the correct torque value.
5. Calibrate the position sensor. Refer to (PIL 03-12).

Table 4. Torque Values

Item	Description	Nm
A	Pivot pin nuts	400

02 - Rear Hitch

Introduction

The rear hitch assembly is located on the rear axle. The top case of the rear hitch assembly locates on the lift arm and the bottom link is located on the bottom case. The top and bottom case are bolted to the rear axle and they also locate the suspension link arms.

The rear hitch ECU (Electronic Control Unit) is also called the draft control ECU or the EHR-Z ECU.

Operation

Two single acting hydraulic cylinders raise or lower the bottom links through the lift arm and the adjustable links.

An adjustable top link locates on the top case to provide a three point linkage.

The rear hitch ECU (Electronic Control Unit) controls the rear hitch raise and lower functions (implement draft) by energising and de-energising the hitch spool valve solenoids.

The raise lower switch in the operator station or the external switches installed on the LH and RH rear fenders control the hitch raise and lower system. The height control enables the adjustment of the maximum and minimum hitch height (depth). The rate of drop setting control enables the adjustment of the rate at which the hitch drops when the lower control is enabled. maximum height setting control enables the maximum raise height to be set. The override switches enable raise and lower of the hitch and override the limits.

The operator hitch controls are not connected directly to the rear hitch ECU. The auxiliary control ECU and the central control ECU processes the control signals, and transmit on to the CAN (Controller Area Network)1.

The position sensor allows the ECU to control the maximum and minimum hitch height as per the pre-set value.

Automatic Draft Control

The rear hitch ECU automatically controls the implement working depth. The rear hitch ECU gets input from the load sensors in the left and right bottom links. When the force from the implement is above the pre-set limits the ECU automatically raises the hitch to reduce the force from the implement. As the force reduces the ECU responds and lowers the hitch.

The rear hitch potentiometer changes the sensitivity of the automatic draft control. One end of the control scale enables maximum automatic draft control and minimum positional height control. At the other end of the control scale there is maximum positional control and minimum automatic draft control. The auxiliary control ECU transmits the potentiometer setting on to the CAN1.

Wheel Slip Control

When the wheel slip switch is set to ON, the rear hitch ECU compares the radar calculated ground speed with that from the transmission speed sensors and calculates the amount of wheel slip. The result is compared with the maximum allowed wheel slip pre-set value.

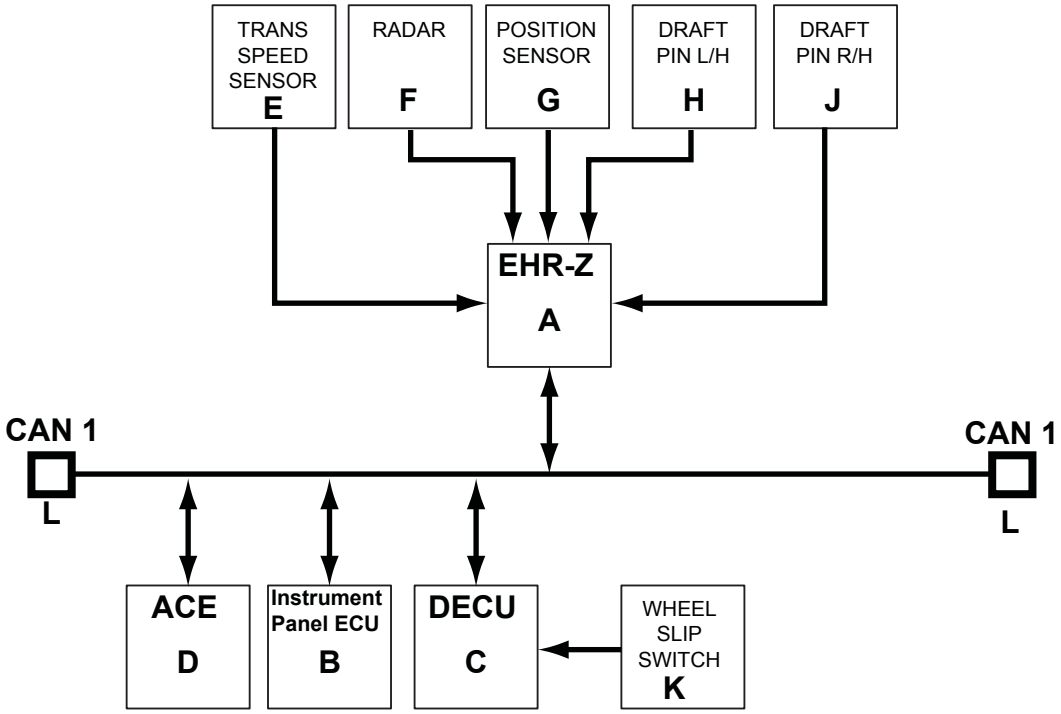
When the amount of wheel slip is more than the pre-set limit, the rear hitch responds and raises the hitch. The force from the implement reduces and the amount of wheel slip is reduced.

The rear hitch ECU transmits the wheel slip value on CAN1. The instrument panel ECU displays the wheel slip value as a percentage.

The operator can set the maximum allowed wheel slip value through the touch screen DECU (Display Electronic Control Unit).

Diagram

Figure 16.



A Rear hitch ECU (Electronic Control Unit)
B Instrument panel ECU
C DECU (Display Electronic Control Unit)
D Auxiliary control ECU
E Transmission speed sensor
F Radar unit
G Rear hitch position sensor
H Draft pin LH (force sensor)
J Draft pin RH (force sensor)
K Wheel slip control function ON/OFF switch
L CAN (Controller Area Network)1

Fault-Finding

- Check the wheel slip calibration. If necessary, calibrate the slip control. Refer to (PIL 03-12).
- Use JCB Servicemaster to check for correct draft control operation. Use the rear hitch ECU (Electronic Control Unit) diagnostic window.
- Check the position sensor calibration. Refer to (PIL 03-12).
- Check the data log for relevant fault codes.
- Check that the hitch position sensor and draft pin installations are correct.
- Check the related wires and connectors for defects. Use the Servicemaster help file to identify the wires and connectors.