

# Operator's Manual

ZETOR SYSTEM

ZL26 | ZL36 | ZL46 | ZL56 | ZL21 | ZL31 | ZL41 | ZL51



**CAUTION:**

Read through the entire operator's manual before you begin to use the product.





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## 1. INTRODUCTION

### 1.1. General information

**WARNING:**

Careless or incorrect use may result in serious injury or fatality to the operator or others. Observe the safety instructions.

This operator's manual describes the operation and maintenance of an agricultural loader. The information in the operator's manual was correct at the time this manual was printed. Please visit your dealer if there is anything you do not understand in the manual.

One operator's manual is supplied with every machine in order to show the operator how it should be operated and maintained. Read and use the information so that you can use the machine in a safe manner. This machine is designed with simple service in mind, and it can be maintained with normal hand tools.

Read and study the text in the operator's manual thoroughly before you begin to use the machine. If you are not an experienced operator, study the operator's manual and ask an experienced operator to explain things to you. Your dealer can help you by teaching you about operation and suitable work methods. Keep this operator's manual readily available, preferably with the tractor. Contact your dealer to obtain a replacement manual, if the original manual is damaged or missing.

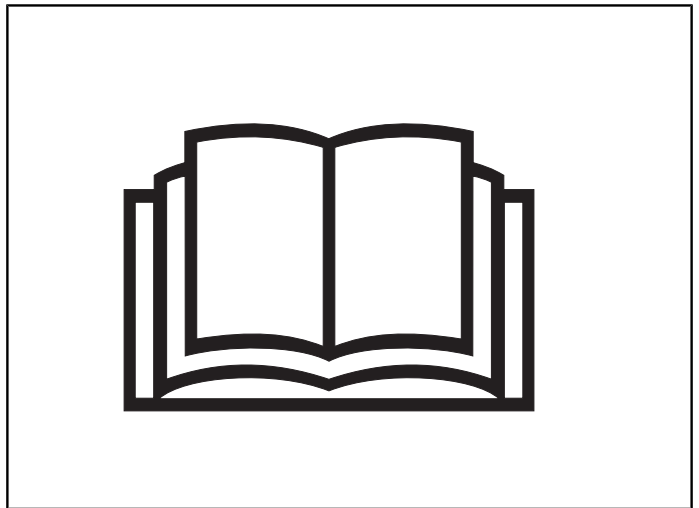
**WARNING:**

Read through the entire operator's manual before you begin to use the product.

We reserve the right to introduce changes to the design and specification, or improvements at any time, without prior notice or commitment.

**IMPORTANT:** The loader subframe is designed to suit specific models of tractors. Do not install a loader subframe on another model of tractor without prior permission from the manufacturer.

Installation and operating instructions for implements and accessories are not included in this operator's manual. Use the publications supplied with each implement.



*Fig. 1 Read through the entire operator's manual before you begin to use the product.*

## 1.2. Identification

### 1.2.1. Model and serial number

Each loader has an identification plate (A) with an identification number. The plate is located on the inside of the left arm.

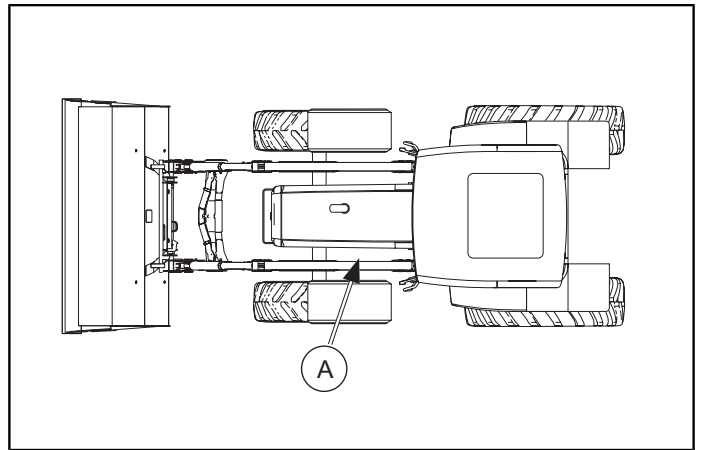


Fig. 2 Location of identification plate.

The plate specifies:

Product type, date of manufacture, weight, reference and serial number.

Always provide the type, serial number and date of manufacture during service queries or when ordering spare parts.

- A. Authorization number
- B. Type - model
- C. Date of manufacture
- D. Serial number

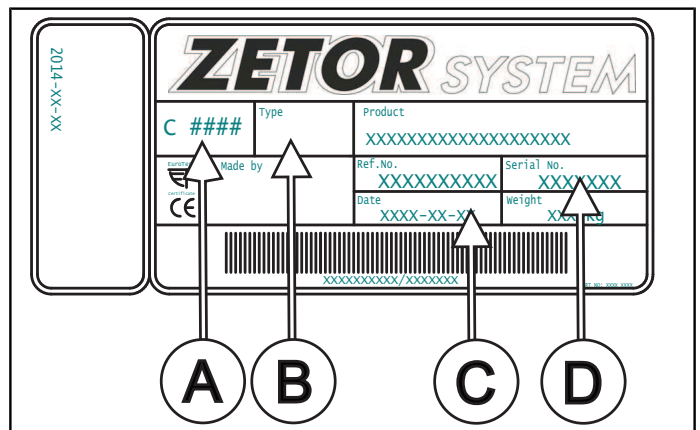


Fig. 3 Machine sign.

Cylinders, valves, control cables and hoses are also equipped with machine signs or punched/printed order numbers.

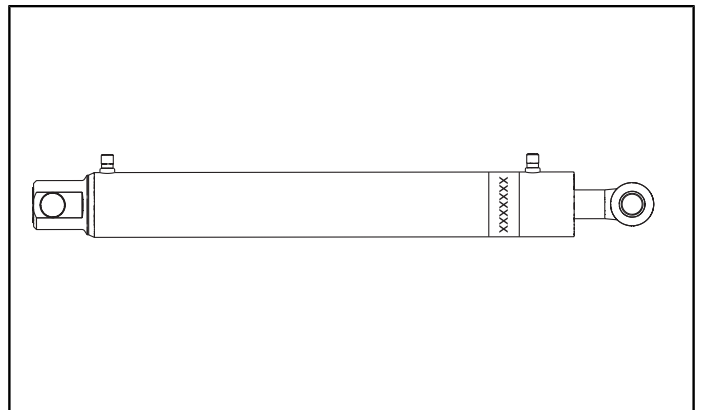


Fig. 4 Marking of components, e.g., cylinder.

When ordering replacement control cables, please specify the control cable length (L) and make of control valve.

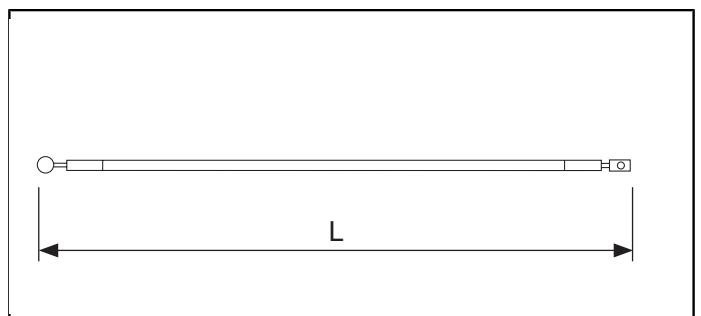


Fig. 5 Indicate length when ordering control cable.

### 1.3. Alignment reference

Throughout this operator's manual, references to the right and left are seen from the operator's seat in forward direction.

*NOTE:* Some illustrations in this operator's manual may show a model of tractor or loader that is different from your loader. However, the same information will apply to your equipment unless otherwise specified.

### 1.4. Allowable loader weight

Carefully read the entire instruction manual before starting to use the loader. Check that the loader capacity has not been exceeded. Do not exceed the maximum load or speed for the respective type of load. Always keep the maximum tire load in mind.

**Max weight for the entire unit at a speed of 6/8 km/h + 4WD for certain models:**

MAJOR – 6500 kg (6km/h)

PROXIMA – 7800 kg (6km/h)

PROXIMA PLUS - 7800 kg (6km/h)

PROXIMA POWER - 7800 kg (6km/h)

FORTERRA – 9000 kg (8km/h)

FORTERRA HSX - 9000 kg (8km/h)

## 2. DESCRIPTION

### 2.1. Definitions

#### 2.1.1. 3rd service

Optional hydraulic function for operating the implement's hydraulics.

The electric diverter valve is fitted to the front part of the loader, designed for an implement that has hydraulic functions.

#### 2.1.2. Ergo Drive

The cable control valve system is composed of a control valve and mechanical joystick as well as hydraulic connections and control cables for specified tractor models.

#### 2.1.3. Position indicator

Device to indicate the angular position of the implement.

#### 2.1.4. Control valve

Valve designed for controlling the operation of the loader.

#### 2.1.5. Tool carrier

Type 8 = Euro in compliance with ISO 23206.

SSL = Skid Steer Loader Style

#### 2.1.6. Hose kit

Hoses and hydraulic components for connecting the loader to the tractor's original hydraulic valve.

#### 2.1.7. PlusDrive

Load Damping System, improves operator comfort and reduces stress on the tractor and loader when driving in rough terrain.

### 2.2. Tool carrier

The loader can be fitted with two styles of tool carrier Euro Type 8 or SSL (skid steer loader) style. Consult your dealer as to the style of system of your loader.

**IMPORTANT:** Incorrectly designed implements can damage the loader. For this reason, do not install any implement without making sure that it has been approved by the loader manufacturer.

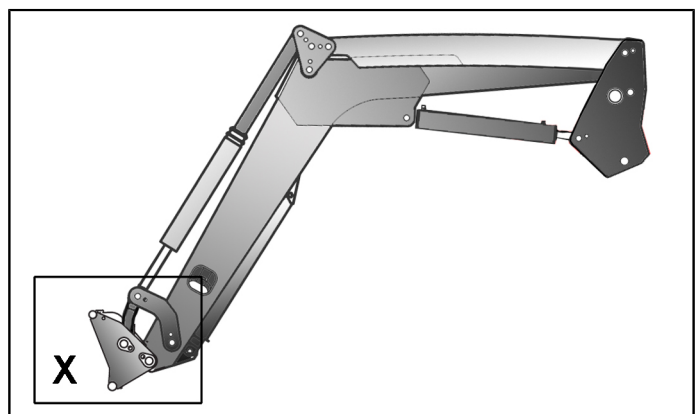
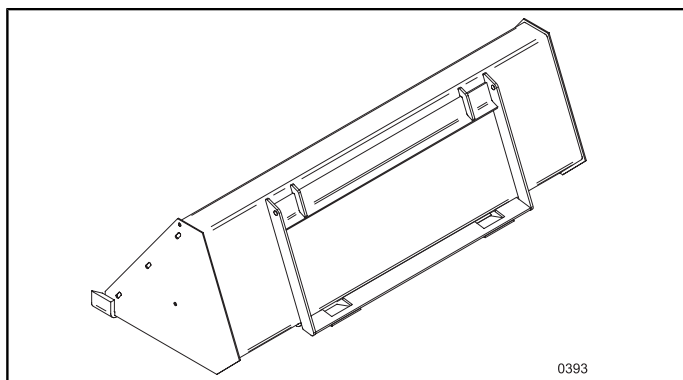


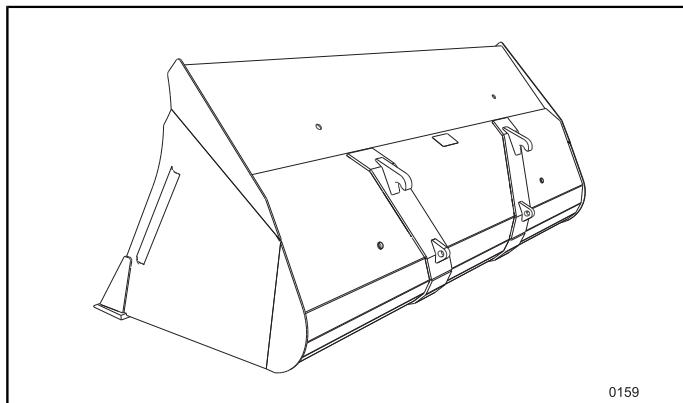
Fig. 6 The loader can be fitted with two styles of tool carrier.

The Skidsteer or EURO are the standard tool carriers for implement hooks.

Use only approved implements adapted to the loader and suited for the work at hand.



*Fig. 7 SSL (skid steer loader) (21) implement hooks.*



*Fig. 8 EURO (8) implement hooks per ISO 23206.*

### 3. SAFETY INSTRUCTIONS

#### 3.1. General information

Operator safety is one of the most important concerns when designing a new loader. The designer builds in as many safety features as practicable. However, several accidents occur every year that could be avoided by a few seconds of reflection and more careful operation of the machine.

Avoid personal injury. Read the following personal safety instructions and insist that everybody who works with you, or for you, also complies with the instructions.

Only use implements that have been approved by the manufacturer of the loader for use with the loader.



#### **WARNING:**

**Do not allow any passengers in the cab when you are working with the loader. The tractor must be equipped with an extra pair of dipped headlights on the cab that can meet the prescribed requirements (not just working lights). If they are missing, they should be mounted at a professional service station. External lighting must be used even if the visibility is not impaired.**

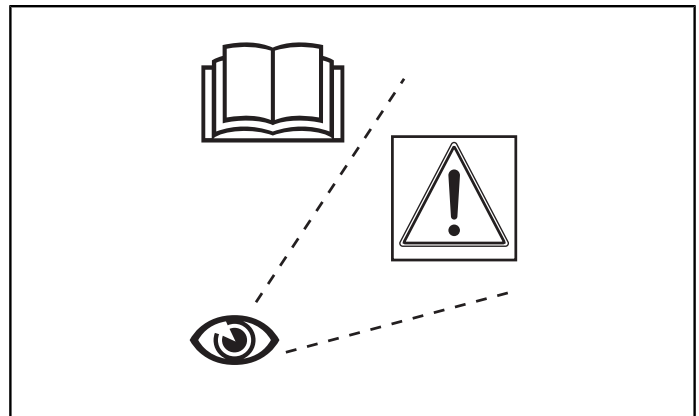
##### 3.1.1. Guards

This operator's manual contains a number of illustrations which show guards removed for better visibility. Never use the machine with guards removed. If a guard has been removed for service or repairs, re-install the guard before the machine is taken back into service.

##### 3.1.2. Safety signs

Safety signs are installed at different locations on the loader and implement. Locate, read and find out what the safety signs mean before using the loader and implement. See section 3.8. *Location of safety signs*.

Do not cover or remove any of the safety signs. If a safety sign is missing or illegible, replace it with a new safety sign. New safety signs can be obtained from your dealer.



*Fig. 9 Locate, read and find out what the safety signs mean before using the loader and implement.*

#### 3.2. Signal words

When you see the safety alert symbol and the signal word on safety signs or in the operator's manual, the instructions **MUST** be followed since they are related to your own personal safety.



#### **DANGER:**

**Means an imminently hazardous situation that, if not avoided, will result in DEATH OR VERY SERIOUS INJURY.**



*Fig. 10 Safety alert symbol*

**WARNING:**

Indicates a potentially hazardous situation that, if not avoided, could result in **DEATH OR SERIOUS INJURY**.

**CAUTION:**

Indicates a potentially hazardous situation that, if not avoided, may result in **MINOR OR MODERATE INJURY**.

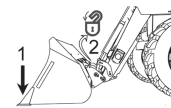
The following signal words and instructions do not refer to personal safety, but are used consistently in the operator's manual to provide tips about operating or servicing the machine.

**IMPORTANT:** Indicates a special instruction or procedure which, if not strictly followed, may result in damage to, or destruction of, the machine, the process, or surroundings.

**NOTE:** Indicates additional information about a subject or procedure for more efficient or convenient repair or operation.

### 3.3. Symbol explanation

- A Operator's manual. Read the operator's manual — it contains important information for your safety.
- B Safety alert symbol. Means CAUTION! BE ALERT! YOUR SAFETY DEPENDS ON IT! The safety alert symbol identifies important safety notices on machines, safety signs, in operator's manuals or elsewhere. When you see this symbol, be alert to the risk of injury or death. Follow the instructions in the safety notice.
- C Implement lock. Verify that coupled implement is secured correctly and locked in place.
- D Risk of crushing. Never stand between the front of the tractor and the cross tube on the loader.
- E Risk of falling. Do not use the loader to lift or transport people.
- F Electric shock. Get to know the site and the ground. Be aware of overhead power lines and other obstructions.



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G Overturning risk. The tractor can overturn and result in personal injury.



H Fall risk. Do not use the loader or the implement/bucket as a working platform.



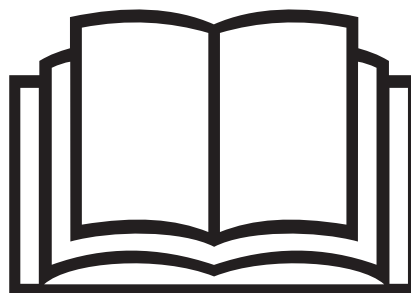
I Crush risk. Objects can fall or roll backwards when the loader is raised. Only lift loads which can be secured by the implement.



### 3.3.1. Operator's manual

Always store this operator's manual as well as the tractor's own operator's manual with the tractor.

- If there is no operator's manual included with the tractor then obtain one from the dealer before installing and using the loader.
- Read through all material carefully and learn how to operate the equipment in a safe and correct manner.
- Only qualified persons are to operate the machine.

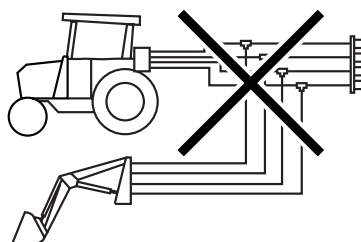


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*Fig. 11 Always store this operator's manual as well as the tractor's own operator's manual with the tractor.*

### 3.4. Installing the loader

The loader must not be connected in series with any other of the tractor's functions. Working with the loader will require the full attention of the operator.



*Fig. 12 The loader must not be connected in series with any other of the tractor's functions.*

The tractor and loader use fluids that are under high pressure during operation. Check all components and maintain them in good condition.

Make sure that no hydraulic components, especially hoses, are damaged or in contact with moving components.



Fig. 13 NEVER use fingers or hands to detect leaks.

### 3.4.1. Joystick operation

In order to prevent unintended loader motion, the loader joystick controller must be designed to self neutralize. When the operator releases his grip on the joystick, the joystick must return to a non-operational neutral position except for the float position in loader lower and bucket dump circuits.

## 3.5. Protection equipment

Seat belt must be worn and correctly adjusted during machine operation except when operating with the ROPS folded down. Replace a damaged seat belt before operating the machine.

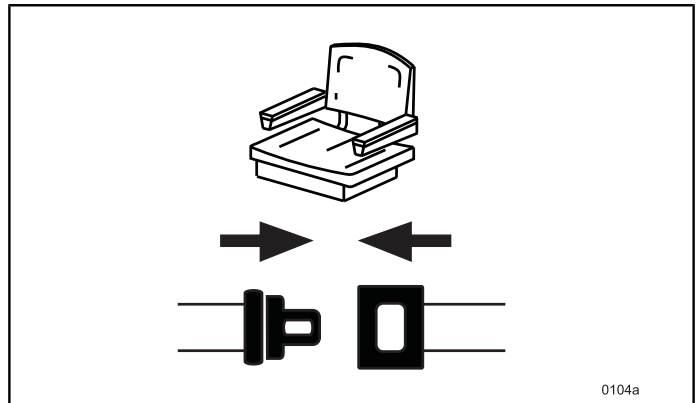


Fig. 14 Wear the seat belt when operating the machine.

### 3.5.1. Counterweight and tread width.

Make sure that the machine has ballast (counterweight) at the rear to stabilize the machine's load-carrying ability. The counterweight is essential for maintaining control of the machine.

Refer to section 5. *Operation* in the operator's manual for information on the counterweight and tread width. Also refer to the tractor operator's manual for further information.

**IMPORTANT:** Incorrectly designed implements can damage the loader. For this reason, do not install any implement without making sure that it has been approved by the loader manufacturer.

## 3.6. Operation

### 3.6.1. Before work

Familiarize yourself with the working area and terrain. ALWAYS inspect the work area before starting work. Look out for holes in the ground, stones and other hazards.

- Do NOT operate a machine that is broken or lacks any component. Make sure that recommended maintenance work has been carried out before the machine is used.
- Check all controls regularly and adjust as necessary. Make sure that the tractor's brakes are adjusted correctly.
- Check all screws and nuts regularly for tightening, especially those that secure the tractor wheels. See section 6. *Lubrication and maintenance* for information about tightening torques.
- Make sure that the loader is correctly mounted to the tractor, and that all pins are secured.
- Change worn components before using the machine.

### 3.6.2. Operator/driver location

Only operate the machine when sitting in the operator's seat.

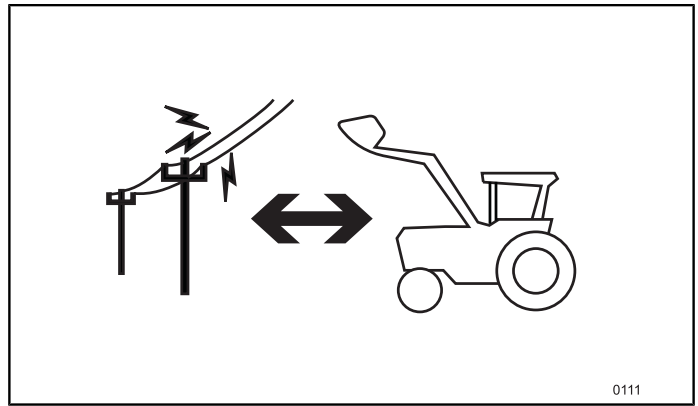


Fig. 15 Familiarize yourself with the working area before starting. Maintain a safe distance from electrical cables.



Fig. 16 Only operate the machine when sitting in the operator's seat.

- Drive carefully and think about safety.
- Always leave the brake pedals locked to each other. NEVER use split brakes with a loader mounted to avoid the risk of losing control of the tractor and/or the tractor overturning.
- Always adjust the speed to prevailing conditions. Never drive so fast that you cannot stop quickly in an emergency situation.

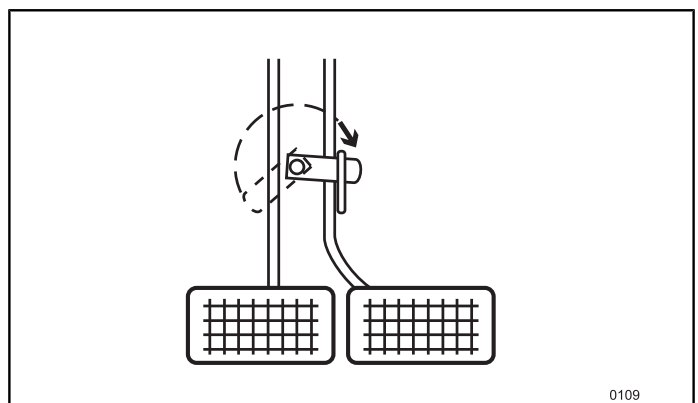


Fig. 17 Always leave the brake pedals locked to each other.

### 3.6.3. Workplace

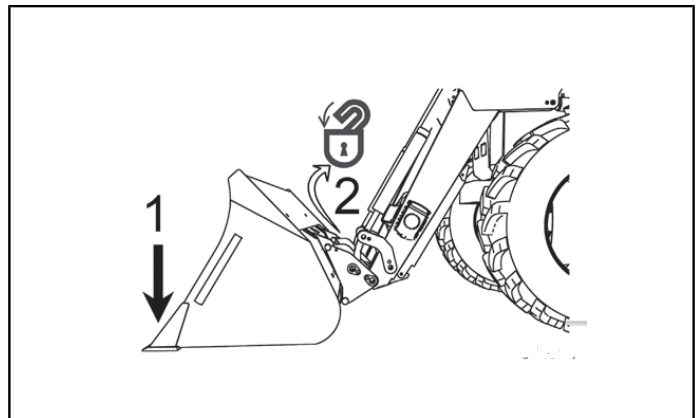
Always check the machine's surroundings and ensure that all individuals, especially children, and animals have moved away before starting or operating the machine. You may not hear warning cries from individuals on the outside when you are sitting in the cab with the door closed.

Make sure that the bucket or other implement is correctly installed on the tool carrier and that the pins are in the locked position. Press the front end of the implement against the ground to make sure that the implement is properly secured.

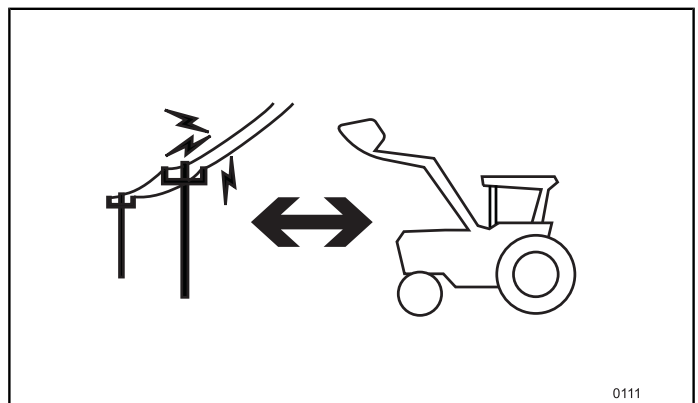
Familiarize yourself with the working area and terrain. Pay attention to vertical clearance and limitations that arise due to the increased reach.



*Fig. 18 Before starting, make sure that nobody is in the vicinity of the machine.*



*Fig. 19 Make sure that the implement is secured by pressing its front end against the ground.*



*Fig. 20 Familiarize yourself with the working area before starting. Maintain a safe distance from electrical cables and other obstructions.*

Do NOT use the loader or the implement as a working platform.



Fig. 21 Do NOT use the loader or the implement as a working platform.

Do NOT use the loader to lift or transport people.



Fig. 22 Do NOT use the loader to lift or transport people.

Do NOT stand, walk or work under a raised loader. Make sure that people, especially children, and animals are kept away from the working area.



Fig. 23 Do NOT stand, walk or work under a raised loader.

### 3.6.4. Load stability

Pay attention to the loader and implement positions. Objects can fall or roll backwards onto the operator or a bystander when the loader is raised.

Only lift loads which can be contained in, and are intended for, the specific implement.

A tractor that is equipped with a loader must also be equipped with a Falling Object Protection Structure (FOPS).

FOPS is not designed to protect against all types of falling objects. Therefore, you need to use implements that protect against falling loads. Be careful when you are working with suspended loads.

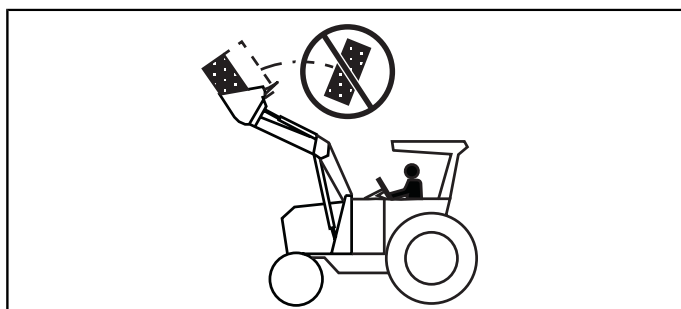


Fig. 24 Pay attention to the loader and implement positions; objects may fall off.

- Only use implements that are approved for the relevant application.
- Make sure that the load is positioned securely in the implement. When it comes to loose material, the implement must not be overfilled, and for solid material, the load must not stick up above the rear of the implement.

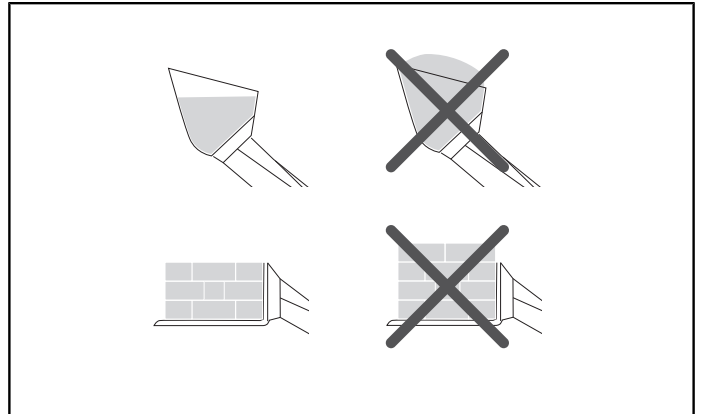


Fig. 25 Only lift loads which can be contained in, and are intended for, the specific implement.

- Adjust the tilt angle of the implement when the load is raised so that the load is not directed towards the operator.

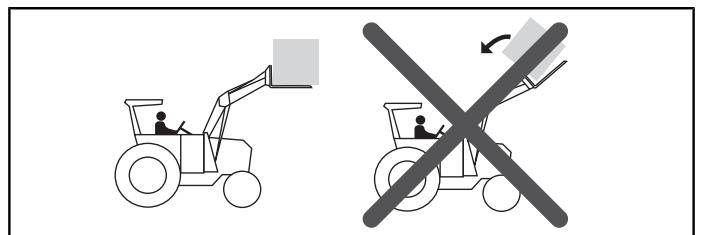


Fig. 26 Exercise caution when working with raised loads.

Reduce speed before cornering to avoid overturning the machine.

Avoid sudden turns when driving down slopes.

- Always leave the transmission in low gear to obtain engine braking when driving downhill. Do not allow the tractor to roll freely. Use the same gear for driving downhill as you did when driving uphill.
- While driving, lower the loader as far as possible. Keep in mind that the higher you raise the loader, the higher the centre of gravity, and thus the risk of the tractor overturning will increase.

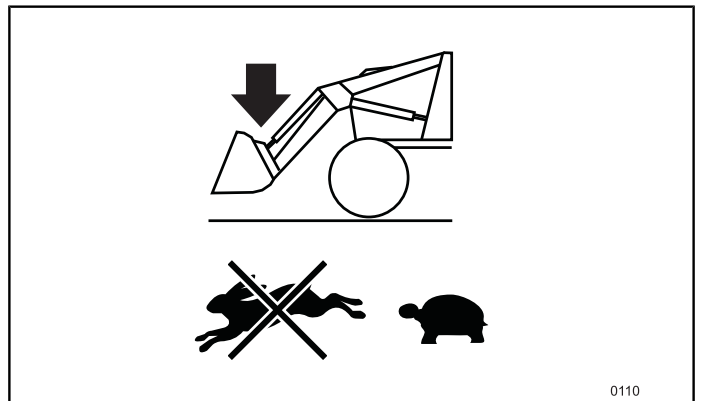


Fig. 27 When cornering, lower the loader and reduce speed.

### 3.6.4.1. Machine stability

Do not work near the edge of ditches and banks as there may be a danger of them collapsing.

The tractor must always be kept a distance from the edge that is equal to or greater than the height of the bank or ditch.

- Operate up and down (not across) slopes. Avoid sudden starts and stops. Keep the loader as low as possible.
- Drive the tractor forward up slopes with an empty bucket. Fill the bucket and then reverse slowly down the slope.

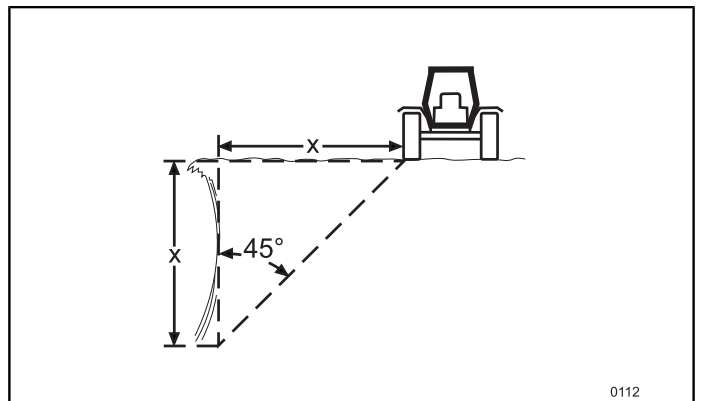


Fig. 28 Keep at a distance when working near slopes.

Before leaving the operator's seat:

1. Lower the loader and implement to the ground.
2. Apply the park brake securely.
3. Move the gearshift to the neutral or park position.
4. Shut the engine off.
5. Remove the ignition key.
6. Move the control handle through all positions, then return the control handle to the centre position in order to relieve the hydraulic pressure.

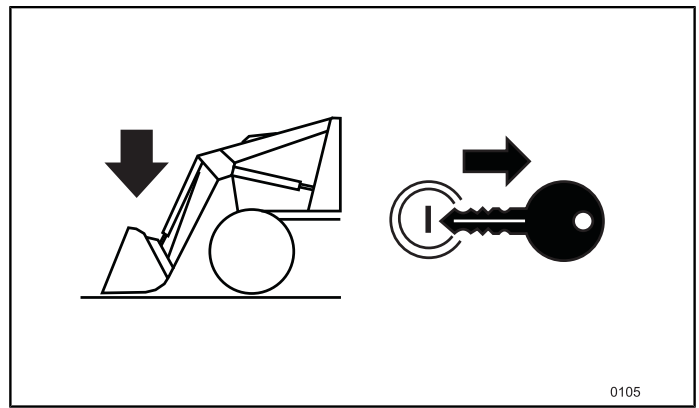


Fig. 29 Lower the loader and remove the ignition key.

To prevent accidental operation of the loader: Lock the joystick in the neutral position.

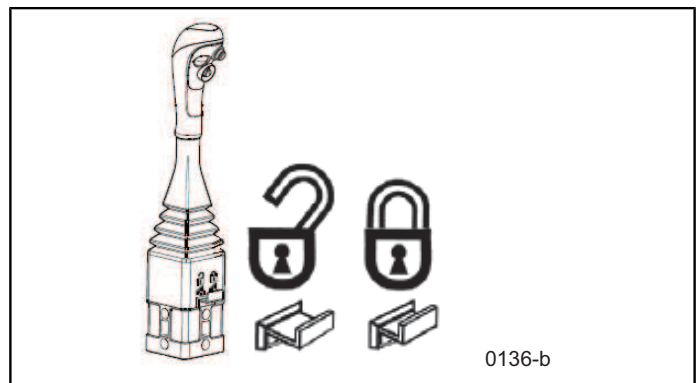


Fig. 30 Lock the joystick in the neutral position.

Never stand between the front of the tractor and the loader's cross tube.



Fig. 31 Never stand between the front of the tractor and the loader's cross tube.

### 3.7. Risk factors during operation

#### 3.7.1. During transport

The machine may not be used to transport loads on public roadways. External lighting must be used even if the visibility is not impaired. The tractor must be equipped with a special, amber warning light (rotating light) that must be used when driving on roadways together with a rear slow-moving vehicle sign. Always use a warning light when driving on a roadway.

When driving on public roadways, the slow-moving vehicle sign, the lights and reflectors must be visible.

When transporting bulky load on public roads, make sure that SMV-emblem, lights and reflectors are visible and use extra warning devices if needed.

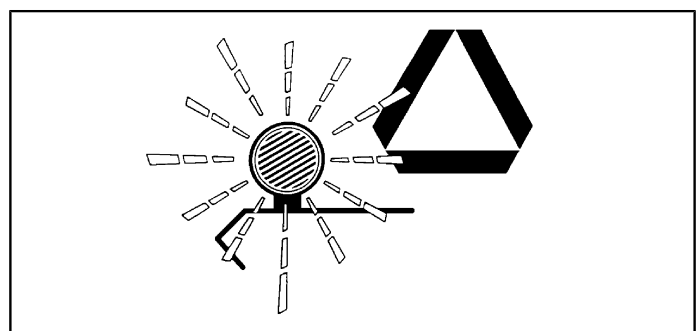


Fig. 32 During transport

When driving either with or without a load, always lower the loader as far as possible to provide maximum visibility and avoid obstructing lights.

- Remove or tilt the implement upwards to minimize the risk of damage in the event of collision.
- Make allowances for the extra length and weight of the vehicle when cornering, braking etc.
- Make sure that lamps and reflectors are visible during road transport and are not obscured by the implement.
- Transport mode with standard tire dimension. Always measure from the road surface to the upper edge of the implement bracket.
  - Major – 1000 mm
  - Proxima – 1100 mm
  - Forterra – 1200 mm
  - Forterra HSX – 1200 mm

The loader must not be operated during transport. When transporting on public roads, the control lever must be locked in neutral position. See section 5. *Operation*.

Do not grip objects that extend the centre of gravity to a significant extent.

Always look at the implement. Objects can fall or roll backwards onto the operator when the loader is raised. Only lift objects intended for the implement.

Always look at the implement. Objects may fall out during transport. Only transport objects that are intended for the implement.

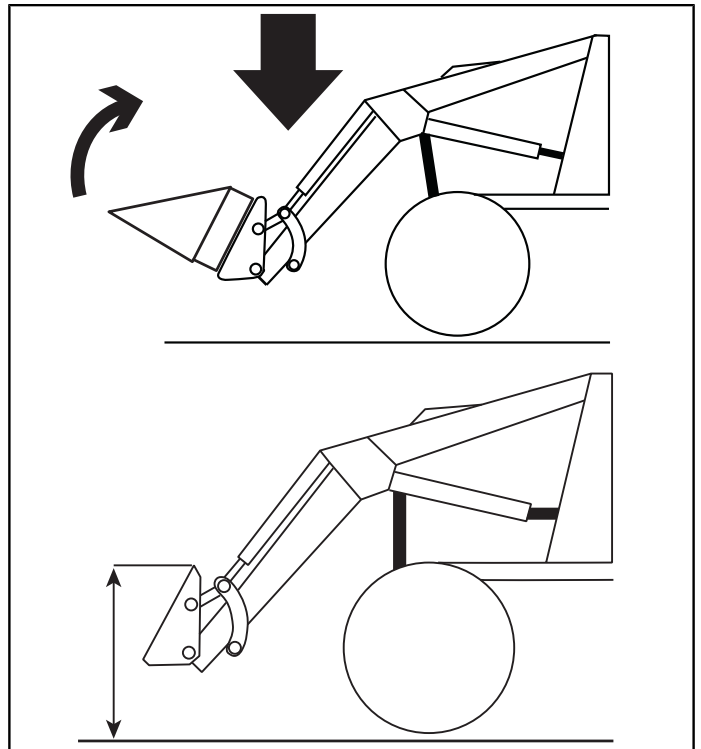


Fig. 33 Lower the loader to obtain maximum visibility.

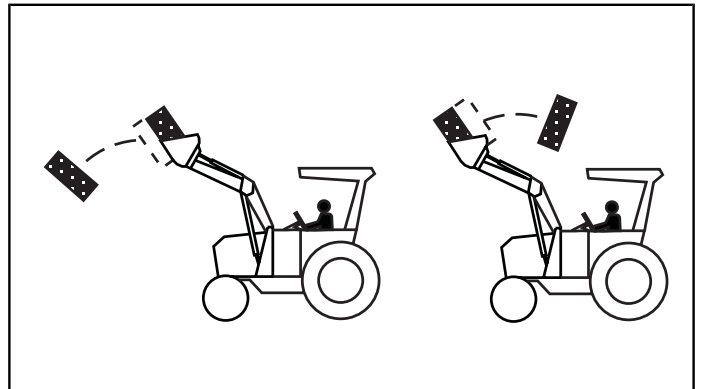


Fig. 34 Always monitor the implement. Objects can fall or roll backwards onto the operator when the loader is raised.

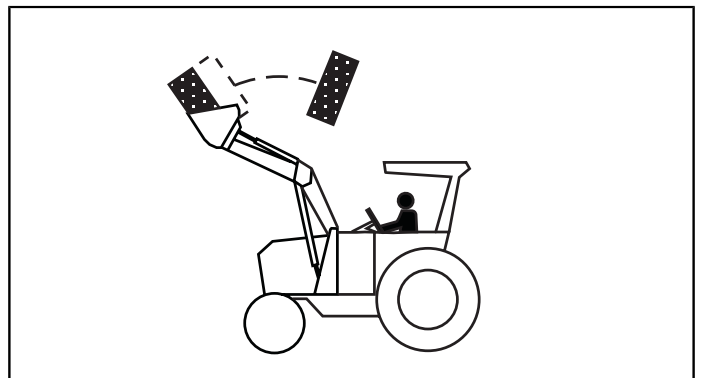
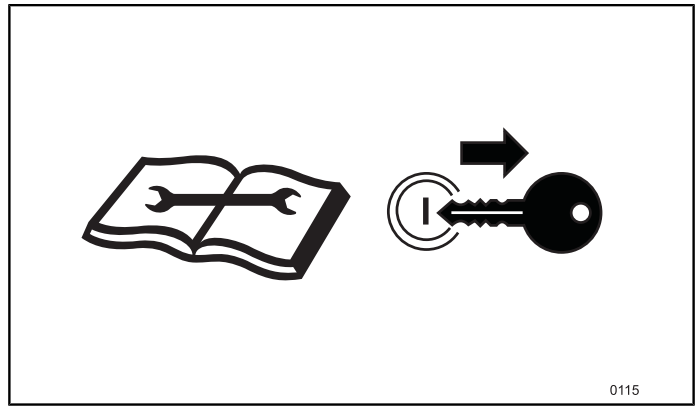


Fig. 35 Only lift loads that fit inside the implement.

The loader must not be operated during transport. When transporting on public roads, the control lever must be locked in neutral position. See section 5. *Operation*.

### 3.7.1.1. During service

Do NOT carry out any service on the loader when the tractor engine is running or is hot, or when the machine is moving.



*Fig. 36 Before service, read the instructions and remove the ignition key.*

Watch for pressurized hydraulic fluid.

NEVER use fingers or hands to detect leaks. Fluid that flows out from small holes can be almost invisible. Use a piece of wood or cardboard instead.

- Undo hydraulic couplings slowly. Keep your hands and fingers away from loosened couplings.
- Get medical attention at once if fluid penetrates your skin. Serious reactions and/or infections can rapidly occur if the oil is not immediately removed by means of surgery.



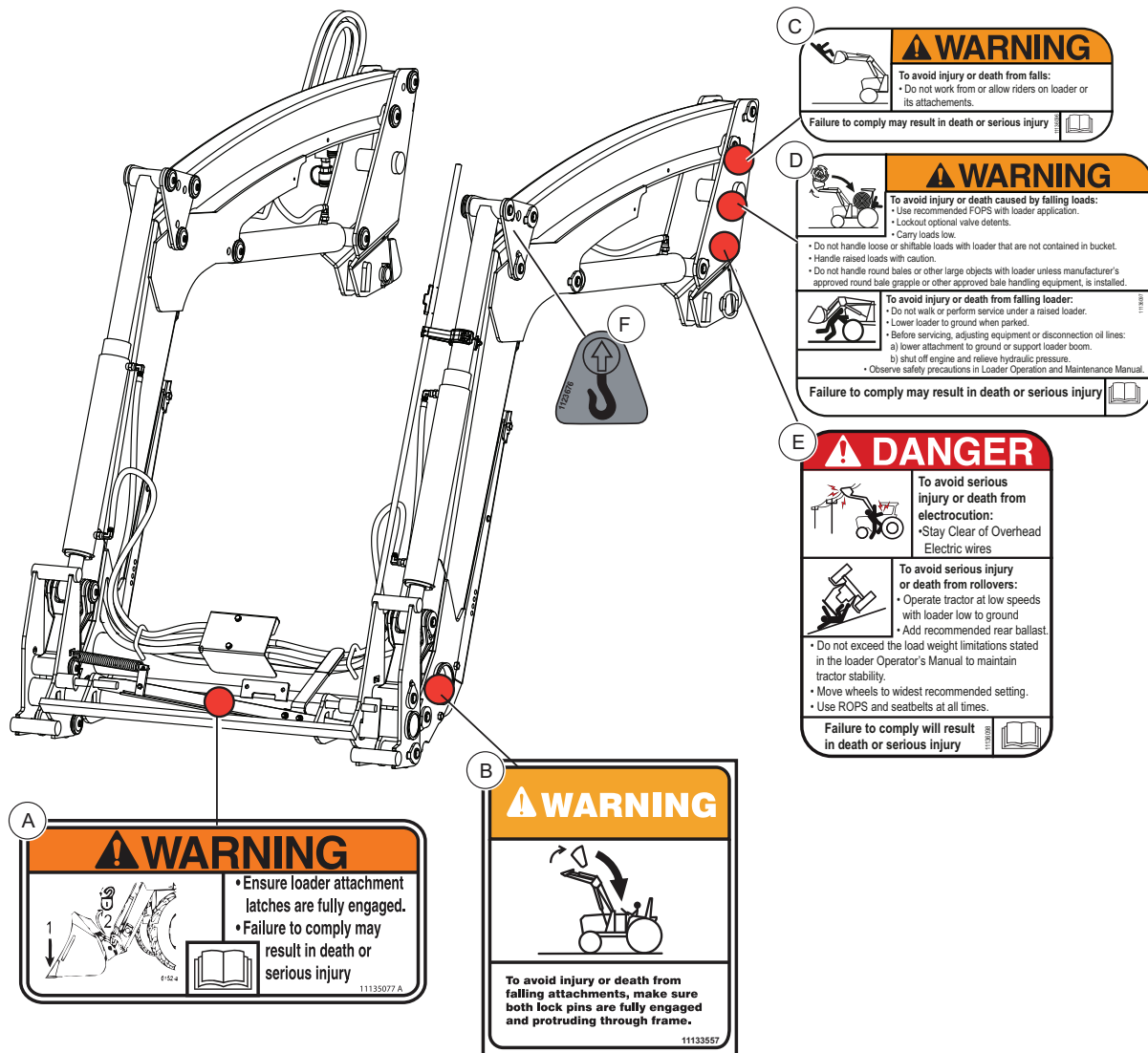
*Fig. 37 NEVER use fingers or hands to detect leaks.*

### 3.7.2. Replacement parts

When a replacement part is needed for periodic maintenance or service, use only genuine, original equipment replacement parts to restore your equipment to original specifications.

The manufacturer is not responsible for damages that may occur due to installation of non-approved parts and/or accessories.

### 3.8. Location of safety signs



- A. Safety sign implement lock, 1 pc.  
(Part no. 11135077)
- B. Warning decal on lower part of loader beam on right and left side, 2 pcs.  
(Part no. 11133557)
- C. Safety sign on bearing box, 1 pc  
(Part no. 11136096)
- D. Safety sign on bearing box, 1 pc  
(Part no. 11136097)
- E. Safety sign on bearing box, 1 pc  
(Part no. 11136098)
- F. Lift decal, 2 pc.  
(Part no. 1123676)

## 4. INSTALLING THE LOADER



### WARNING:

The loader must not be connected in series with any other of the tractor's functions. Working with the loader will require the full attention of the operator.



### WARNING:

**Risk of crushing and pinching**

Air in hydraulic hoses and cylinders can cause erratic operation.

Run the engine at low speed and make slow movements with the joystick to purge any air from the hydraulic system.



### CAUTION:

**Risk of crushing and pinching**

Keep hands and feet away from moving components. Do NOT use your fingers to check the alignment of holes or pins — use a mandrel or a steel rod.

Lift the loader up onto the subframe. Holes for attaching the lifting hooks are found on the inside of the knee plates.

**NOTE:** Make sure loader locking pins are removed from the loader bearing box prior to installation of the loader on to the subframe.

Connect the hoses to the valve (if one is installed) in accordance with the marking.

Before installation, depressurize the hydraulic system.

The valve's joystick control must be connected to the valve so that the loader is lifted when the lever is moved backwards.



### WARNING:

The control valve must be connected to a oil return. This oil return may never be pressurized since that will damage the control valve.

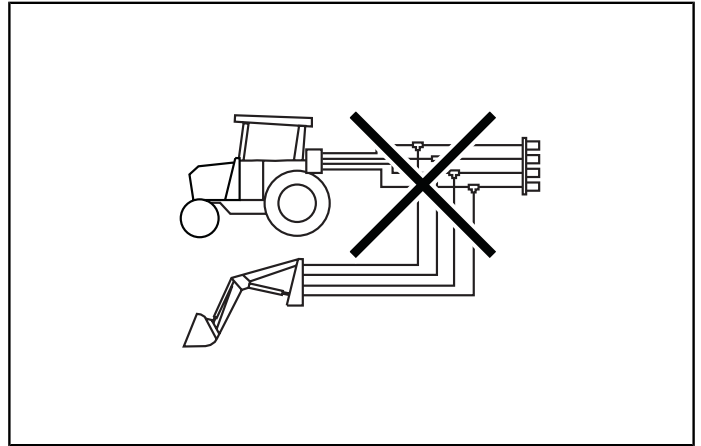


Fig. 38 The loader must not be connected in series with any other of the tractor's functions.

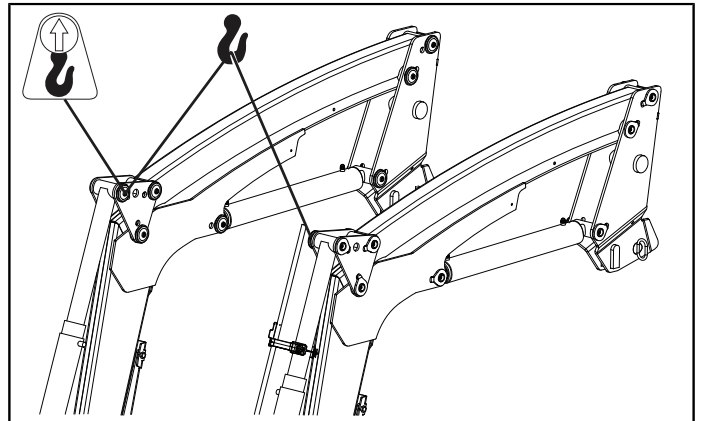


Fig. 39 Hole for attachment of lift hooks.

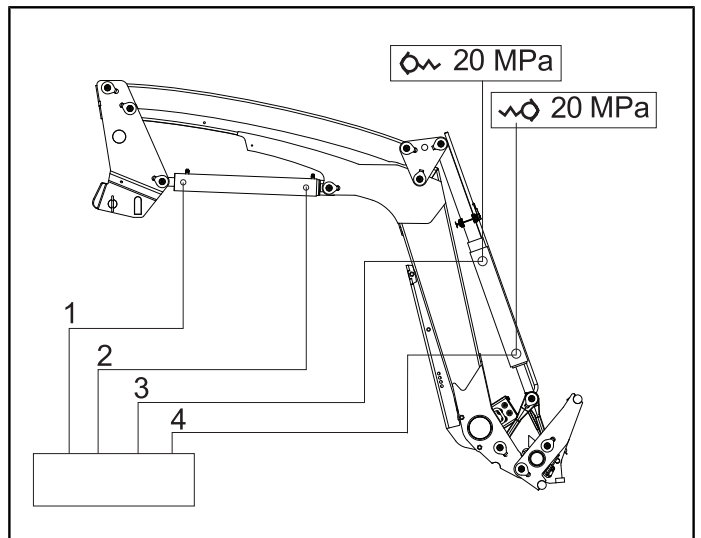


Fig. 40 Connect hoses to valve.

## 4.1. Install the position indicator

The position indicator can be mounted on the left or right tilt cylinder.

Set the implement in a level position and adjust the reference point (A) to indicator (B) on the indicator rod (C). Make sure that the indicator rod moves freely in the guides and adjust as needed. Incorrect installation can cause damage to the indicator.

## 4.2. Check list

When the loader has been installed - carefully check that everything works before it is taken into service. The following points must always be checked. Check them off and make the adjustments where necessary.

1. Check that everything has been installed in accordance with the installation instructions.
2. Check that the required counterweight is fitted with respect to the implement and application.
3. Check that all screws have been tightened.
4. Check that the locking pins are secured. Test drive the loader.
5. Check that the front wheels do not touch the loader and bracket at the max steering angle and when turning back and forth - if this is not the case, adjust the track gauge and/or steering stoppers or limit the steering angle.
6. Check to see that there are no oil leaks.
7. Operate all loader functions several times to remove air from the system.
8. Check the tractor oil level - top up as necessary.
9. Check that the implement lock pins engage when connecting an implement by pressing the front section of the implement against the ground.
10. Check that the loader does not have any visible defects.

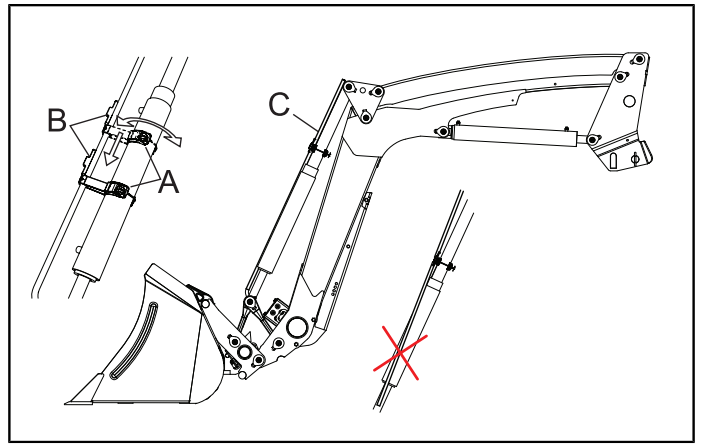


Fig. 41 Install the position indicator on the tilt cylinder.

## 5. OPERATION

### 5.1. General information

#### 5.1.1. Counterweight


**CAUTION:**

**Risk of overturning and skidding. The tractor can overturn or start skidding and thus cause personal injury. Check that a requisite counterweight is fitted with respect to the implement and work area.**

The size of the counterweight will vary according to its placement and the tractor's equipment (model, rim and tire combination, etc.). Check that the requisite counterweight is in place so that the tractor does not overturn and lose traction when the brakes are suddenly applied with a fully loaded implement. Please read the tractor's instruction manual or contact your dealer. Alternatively, you can use tractor weights as counterweights.

A 4-wheel drive tractor has the advantage of traction from the front axle. Use the counterweight at the rear to maintain the correct front/rear axle load and to avoid abnormally large stresses on the front axle when the loader is used.

Recommended distribution of gross weight (with empty implement) on the tractor's front and rear axles:

| Tractor | Front axle | Rear axle |
|---------|------------|-----------|
| 4WD     | 40%        | 60%       |

### 5.2. Tractor/Loader Stability

#### 5.2.1. Determination of Ballast


**WARNING:**

**Reduce the risk of personal injury due to the tractor tipping over or losing traction. Make sure proper ballast is fitted.**

The following information is based on recommendations from ASAE EP562 March 2005. The information is provided to reduce risk of machine overturning during normal operation. Ballast tractor to meet requirements outlined below.

Place mass (weight) equivalent to loader lift capacity (F) located 800 mm (31.5 in.) ahead of bucket pivot.

- Raise loader until bucket pivot is level with loader arm pivot (bucket in farthest forward position).
- Apply rear wheel ballast and/or ballast box until a minimum of 25% of total weight is on rear axle. Tractor must be on level ground while measuring axle load. Total weight includes ballasted tractor, loader, bucket and payload (F).
- When using loader for dedicated applications, operator may determine appropriate ballast, based on maximum load to be carried.

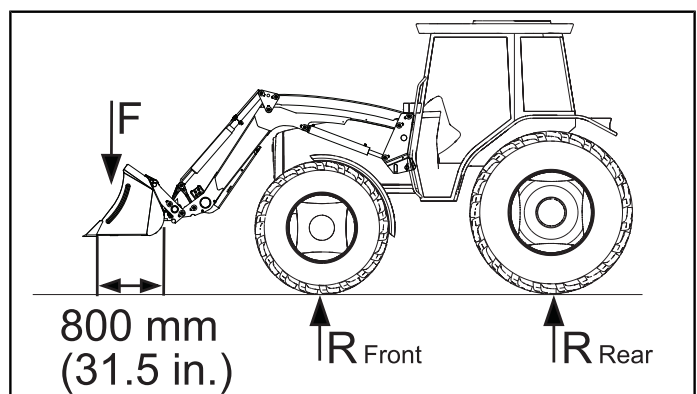


Fig. 42 Determination of Ballast

### 5.2.2. Minimum Tread Settings


**CAUTION:**

**Overturning risk. The tractor can overturn if its track is too narrow. Increase to maximum track width for best stability.**

Tread should be set as wide as practical considering the environment of use.

Minimum tread settings recommended provide static stability on a side slope of 15 degrees with loader positioned just off the ground.

Unless otherwise specified by tractor manufacturer, minimum rear tread settings should be selected from the table.

Tractor/loader with high center gravity or unusual configuration may require wider minimum tread setting to achieve same level of stability.

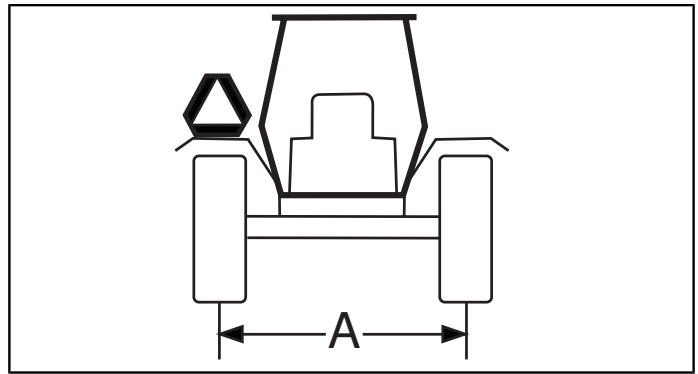


Fig. 43 Minimum Tread Settings

| TRACTOR MASS (weight) |                 | MINIMUM REAR TREAD SETTING (A) |        |
|-----------------------|-----------------|--------------------------------|--------|
| kg                    | pounds          | mm                             | inches |
| Less than 2,250       | Less than 4,960 | 1,575                          | 62.0   |
| 2,250–3,650           | 4,950–8,030     | 1,675                          | 65.9   |
| More than 3,650       | More than 8,030 | 1,825                          | 71.8   |

### 5.2.3. Transport mode loader

Transport mode with standard tire dimension. Always measure from the road surface to the upper edge of the implement bracket.

- Major – 1000 mm
- Proxima – 1100 mm
- Forterra – 1200 mm
- Forterra HSX – 1200 mm

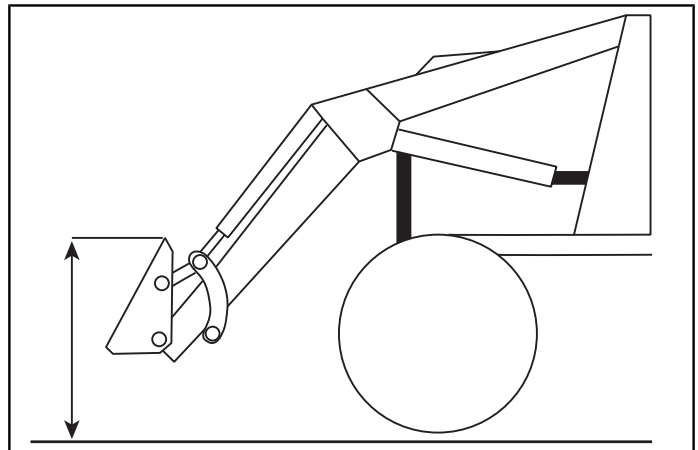


Fig. 44 Transport mode loader

## 5.3. Connection and Operation Options

The loader's hydraulic system can be connected to the tractor hydraulic system in two ways.

Alternative 1, the tractor hydraulic system is connected to the loader control valve.

Alternative 2 is to the tractors hydraulic remote valves or a mid-mount loader valve furnished by the tractor manufacturer to control the movements of the loader.

The loader may be equipped with a third hydraulic function for implements which is only compatible with the loader control valve.

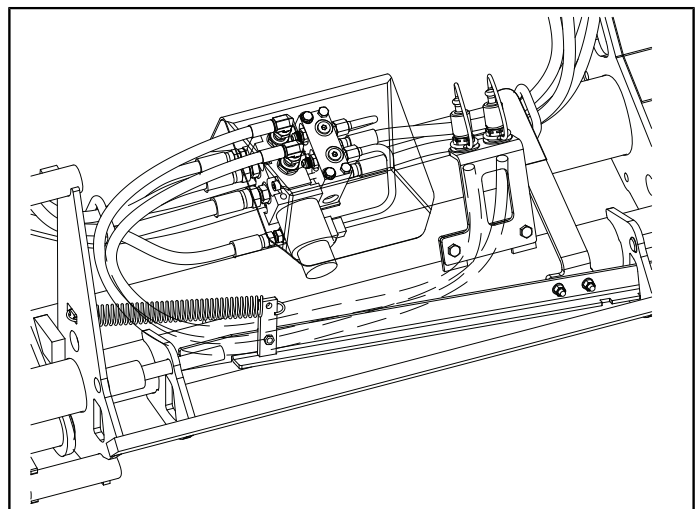


Fig. 45 Extra hydraulic function for implements.

### 5.3.1. Joystick operation

The loader must not be combined with a programmable joystick or other equipment that permits automatic or unintended loader movement.

In order to prevent unintended loader motion, the loader joystick controller must be designed to self neutralize. When the operator releases his grip on the joystick, the joystick must return to a non-operational neutral position except for the float position in loader lower and bucket dump circuits.

## 5.4. Operating the loader



#### CAUTION:

**Only operate the machine from the operator's seat.**



#### WARNING:

**The loader must not be operated during transport. When transporting on public roads, the control lever must be locked in neutral position. See section 5. Operation.**

**IMPORTANT:** Tractors with front axle suspension. The loader may cause increased wear on the components in the front suspension. Always lock out the front suspension if this option is available. Read the tractor's operator's manual.



#### WARNING:

**Seat belt must be worn and correctly adjusted during machine operation. Replace a damaged seat belt before operating the machine.**

### 5.4.1. Direct control valve

All control positions will return to neutral position when the lever is released and the function will cease to be active except when in the float position where the function will continue to be active.

### 5.4.2. Cable control valve

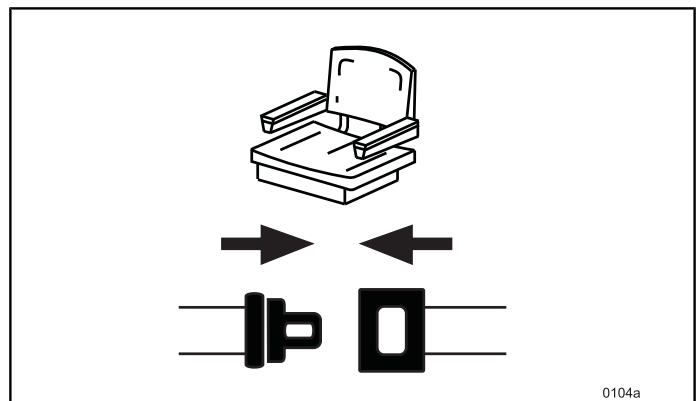
All control positions will return to neutral position when the lever is released and the function will cease to be active except when in the float position where the function will continue to be active.

### 5.4.3. Loader with mechanical self-levelling

The loaders are equipped with mechanical self-leveling. Parallel links keep the implement in the same angular position during the entire lifting/lowering movement.

### 5.4.4. Loader without mechanical self-levelling

The implement changes its angle in relation to the ground during the entire lifting/lowering movement. See section 9. Data.



0104a

Fig. 46 Wear the seat belt when operating the machine.

### 5.4.5. Direct control valve

The mechanically operated control valve is operated by a lever that is connected directly to the control valve. The control is only compatible with ROPS tractors.

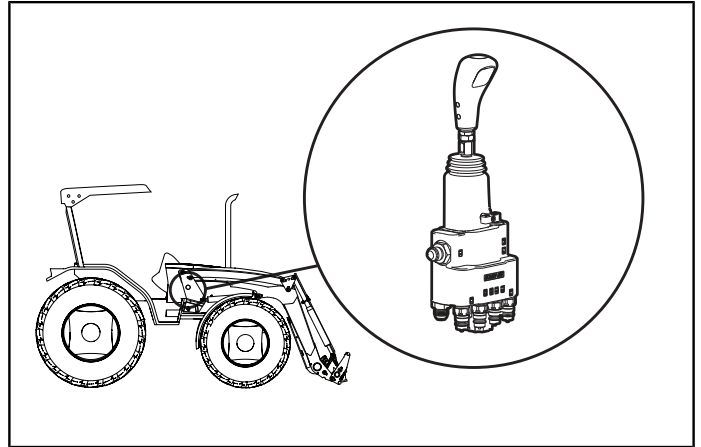


Fig. 47 Cable control valve, with single lever, mechanically operated.

The control valve can be locked in neutral position to prevent unintentional loader movements. To lock the control lever, pull out the lock pin to the locked position. Check that the control lever is locked by trying to move it in all directions. If the lever does not lock, contact your dealer.

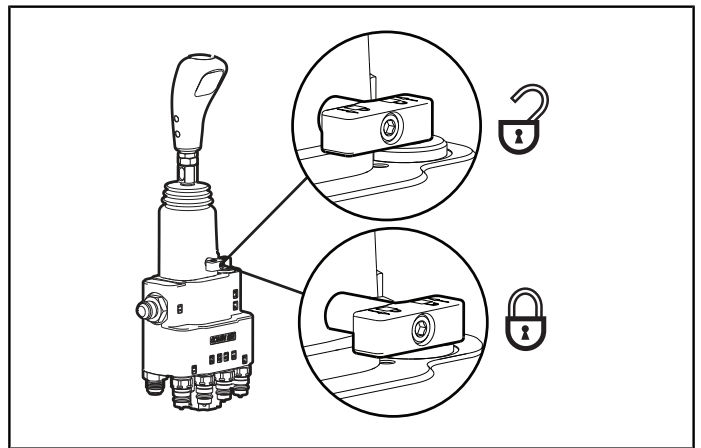


Fig. 48 Direct control, lever lock.

### 5.4.6. Operating the loader

#### 5.4.6.1. Raise/lower the loader

Move the lever backwards (1) to lift the loader.

Move the lever forwards (2) to lower the loader.

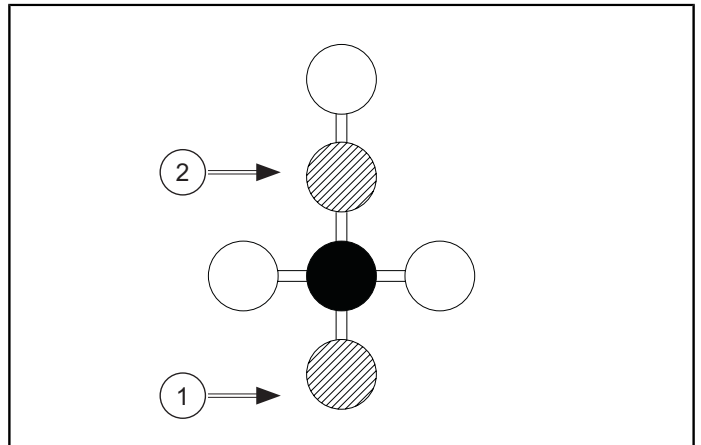


Fig. 49 Raise/lower the loader.

#### 5.4.6.2. Loader's float position



##### CAUTION:

The float position in combination with a bucket operation or implement operation may only be used at low speeds.

Move the lever forwards to float position (3) and release the lever to lower the loader without any downward force.

To release the float function, move the lever backwards slightly (out of the float position) and release it.

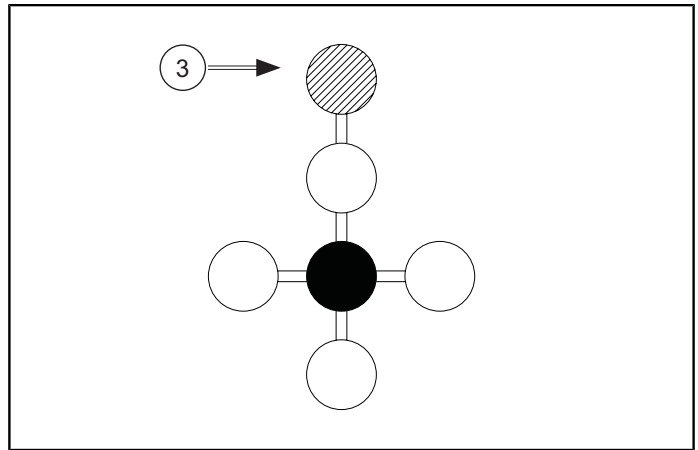


Fig. 50 Float position lowering.

#### 5.4.6.3. Dump/Roll back the implement

Move the lever to the left (4) to angle the implement upward (roll back).

Move the lever to the right (5) to angle the implement downward (bucket dump).

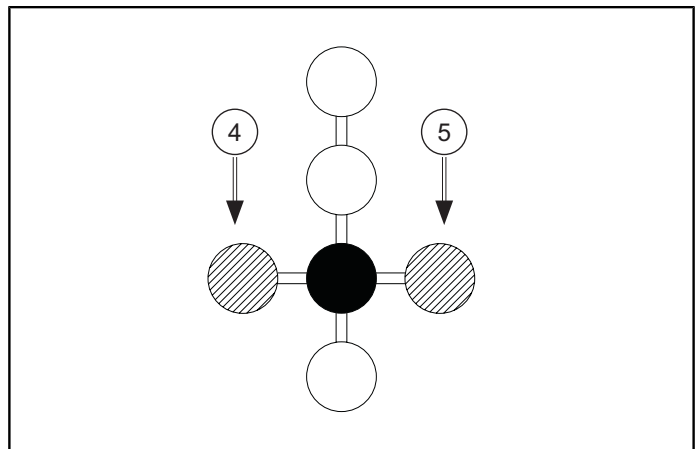


Fig. 51 Empty/angle implement upwards.

#### 5.4.6.4. Third hydraulic function (Optional)

The third hydraulic function is controlled with a switch (A) which can be fitted to the joystick control.

When the switch for the third hydraulic function is released, the joystick immediately returns to controlling the implement cylinders.

Press the loader third hydraulic function button (A) and move the joystick to the right to open the hydraulic implement, press the loader third hydraulic function button (A) and move the joystick to the left to close the hydraulic implement.

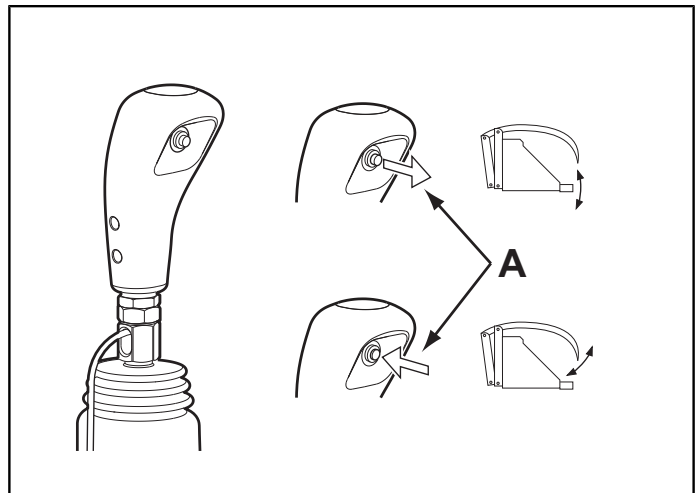


Fig. 52 Switch for third hydraulic function.

### 5.4.7. Cable control valve

Cable control valve, with single lever, mechanically operated.

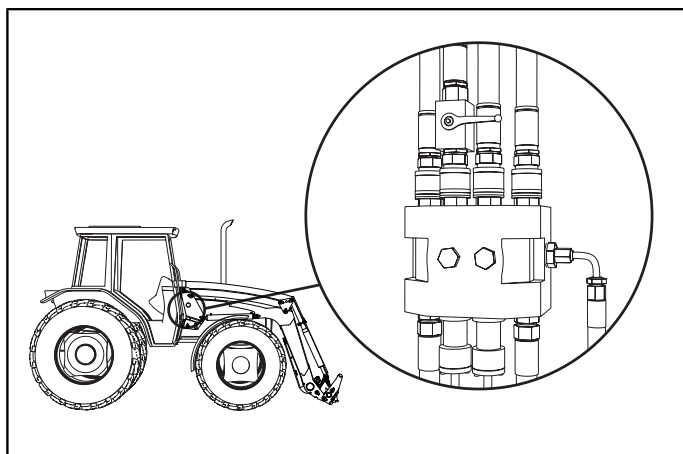


Fig. 53 Cable control, mechanically operated.

The control valve is equipped with a joystick-type control lever, located by the operator's seat. The lever is connected to the hydraulic control valve via two control cables. The joystick can be locked in neutral to prevent inadvertent operation.

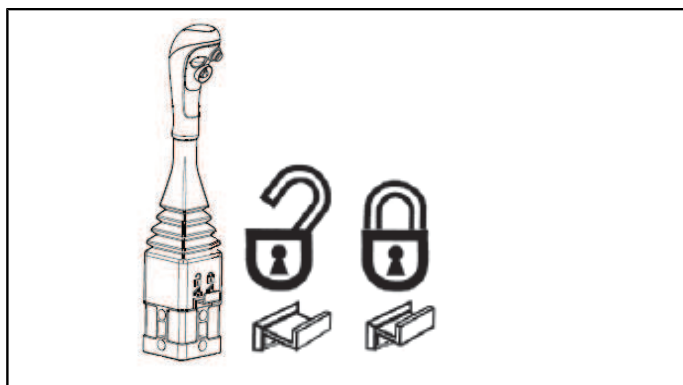


Fig. 54 Joystick-type control lever, cable control valve.

### 5.4.8. Operating the loader

#### 5.4.8.1. Raise/lower the loader

Move the lever backwards (1) to lift the loader.

Move the lever forwards (2) to lower the loader.

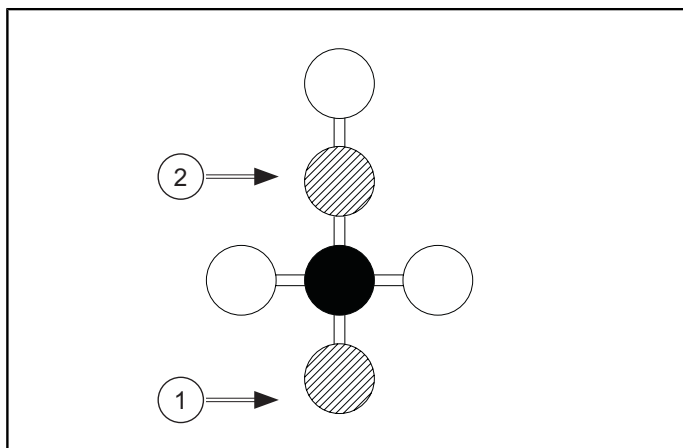


Fig. 55 Raise/lower the loader.

#### 5.4.8.2. Loader's float position


**CAUTION:**

The float position in combination with a bucket operation or implement operation may only be used at low speeds.

Move the lever forwards to float position (3) and release the lever to lower the loader without any downward force.

To release the float function, move the lever backwards slightly (out of the float position) and release it.

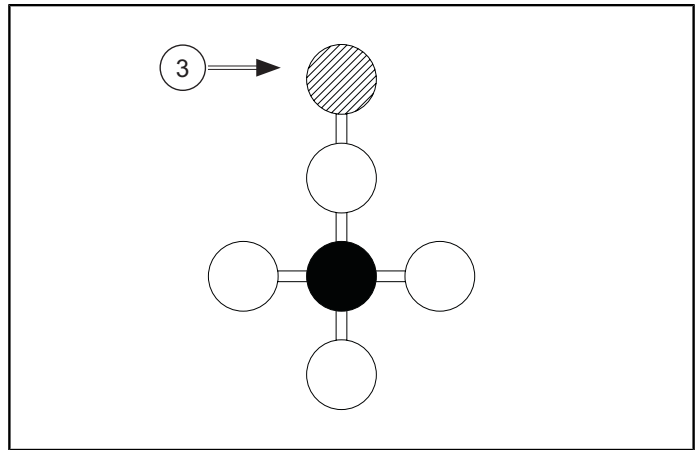


Fig. 56 Loader's float position.

#### 5.4.8.3. Dump/Roll back the implement

Move the lever to the left (4) to angle the implement upward (roll back).

Move the lever to the right (5) to angle the implement downward (bucket dump).

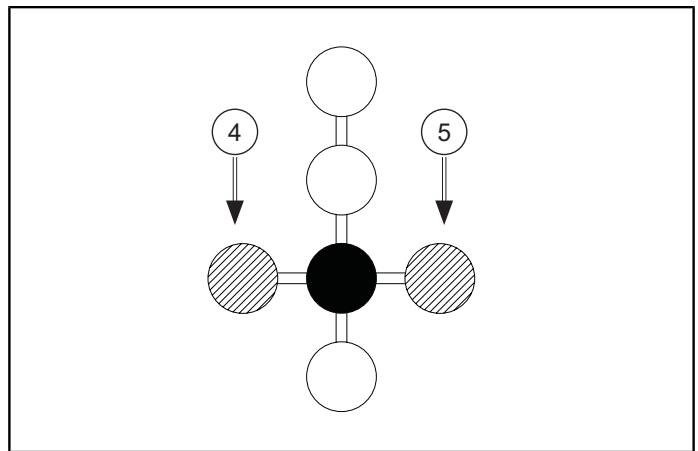


Fig. 57 Empty/angle implement upwards.

#### 5.4.8.4. Third hydraulic function (Optional)

The third hydraulic function is controlled with a switch (A) on the front of the joystick control, combined with movement of the joystick to the left or right.

When the switch for the third hydraulic function is released, the joystick immediately returns to controlling the implement cylinders.

Press the loader third hydraulic function button (A) and move the joystick to the right to open the hydraulic implement, press the loader third hydraulic function button (A) and move the joystick to the left to close the hydraulic implement.

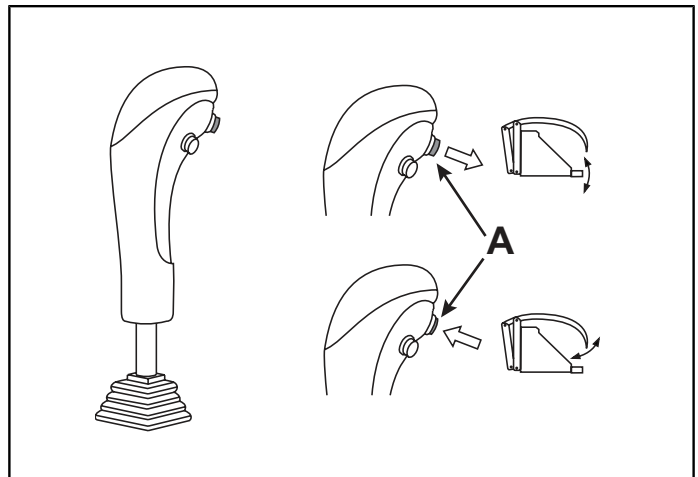


Fig. 58 Switch for third hydraulic function.

## 5.5. Disconnecting a loader with delta bearing box



### CAUTION:

**Risk of crushing and pinching**

**The loader may fall downwards.**

**Always install a bucket or other suitable implement on the loader before the loader is disconnected from the tractor.**

Park the tractor and the loader on a flat, firm surface.

Shut off the ride control load damper before disconnecting the loader.

Tilt the bucket/implement forwards and lower the loader so that the rear part of the bucket/implement is 4 - 6 inch above the ground.



### CAUTION:

**If the rear section of the bucket/implement is more that 6 inch above ground when uncoupling the loader there is risk of damaging the hoses.**

Fold the parking stands down to the ground. The parking stands are installed in the front part of the loader.

Fix the stay in each parking stand.

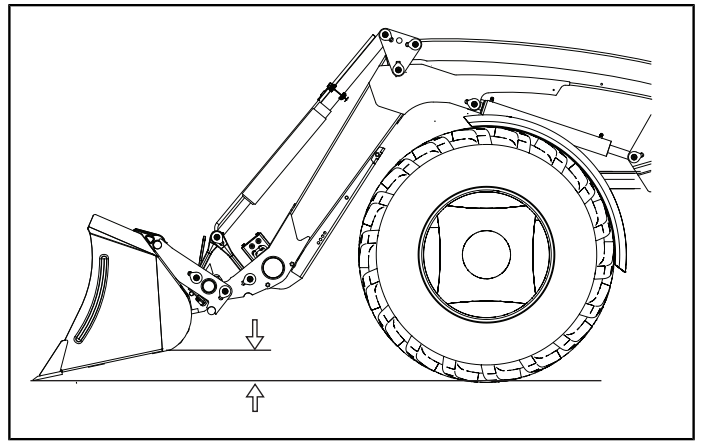


Fig. 59 Tilt the bucket/implement forward.

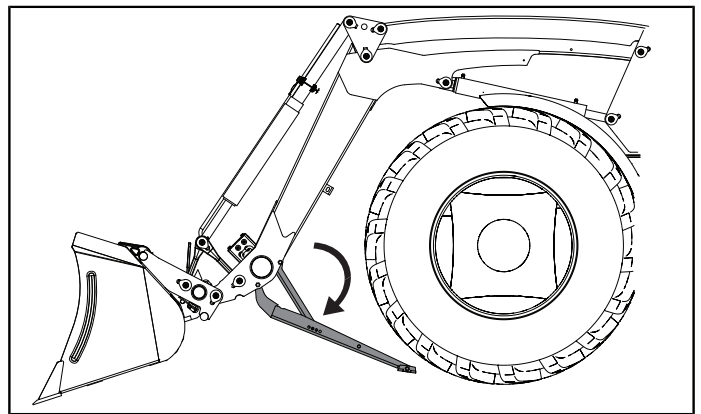


Fig. 60 Lower the parking stands.

Remove the securing pin from locking pin (E) and remove locking pin (E) from the subframe on the left/right bearing boxes.

Pull out the lock handles (F), one on each side.

Operating the tractor:

- Release the parking brake and your foot from the brake pedal(s).
- Move the control lever to the lowering position, so that the lifting cylinders are completely retracted.

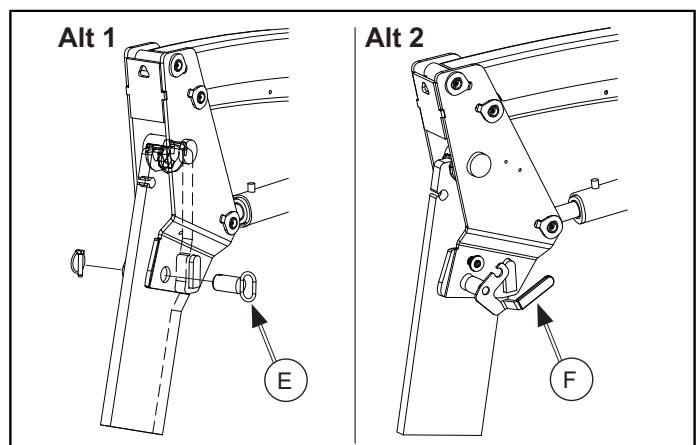


Fig. 61 Remove the locking pin.

Carefully tilt the implement upward (roll back) until it sits flat on the ground. This will cause the rear of the loader to lift and disconnect from the subframe.

- Stop the tractor and eliminate the oil pressure to the loader cylinders using the control valve.
- Disconnect the hoses and place them in a safe parking position. Install dust guards on the quick release couplings.
- Reverse the tractor carefully until it is completely free from the loader.
- Refit the locking pins on both sides.

**IMPORTANT:** Make sure that you position the hoses so that they do not hook onto the tractor when reversing from the loader.

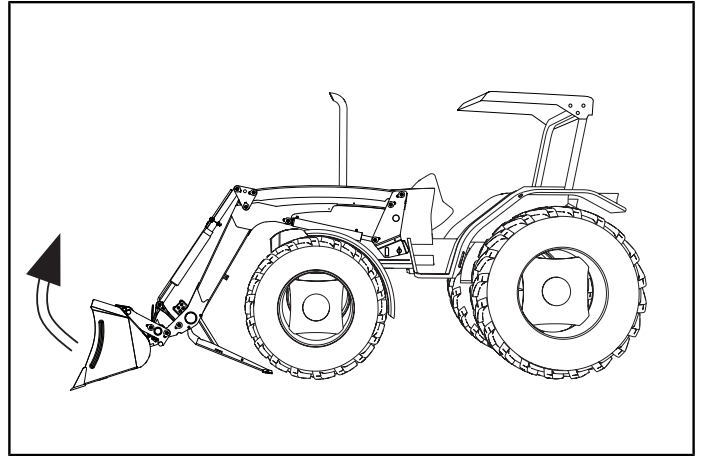


Fig. 62 Carefully tilt the implement upwards (roll back).

## 5.6. Disconnecting a loader with BASIC bearing box



### CAUTION:

**Risk of crushing and pinching**

**The loader may fall downwards.**

**Always install a bucket or other suitable implement on the loader before the loader is disconnected from the tractor.**

Park the tractor and the loader on a flat, firm surface.

Shut off the ride control load damper before disconnecting the loader.

Tilt the bucket/implement forwards and lower the loader so that the rear part of the bucket/implement is 4 - 6 inch above the ground.

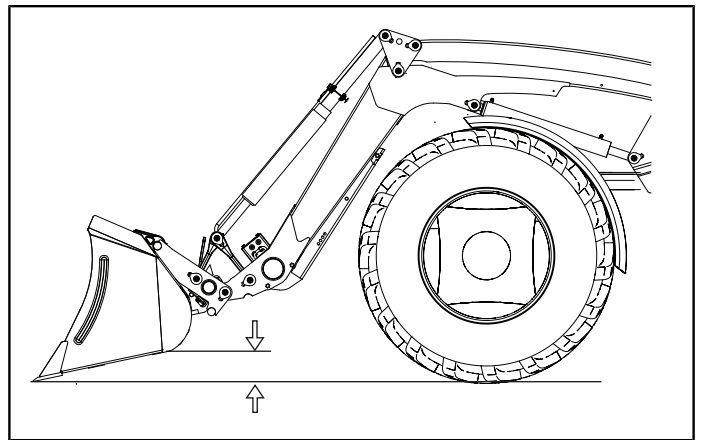


Fig. 63 Tilt the bucket/implement forward.



### CAUTION:

**If the rear section of the bucket/implement is more that 6 inch above ground when uncoupling the loader there is risk of damaging the hoses.**

Fold the parking stands down to the ground. The parking stands are installed in the front part of the loader.

Fix the stay in each parking stand.

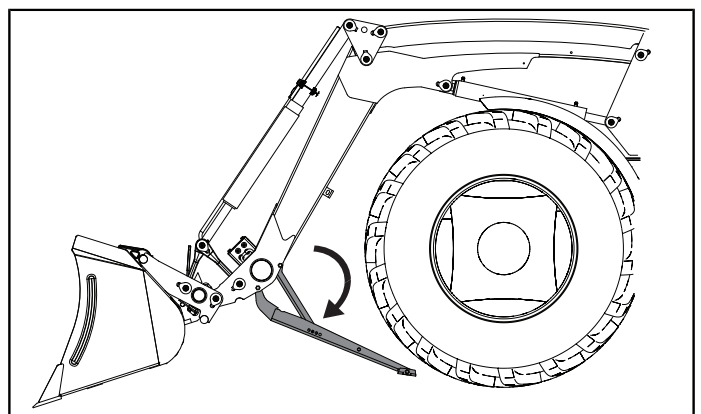


Fig. 64 Lower the parking stands.

Remove the pin from the retaining fork and remove retaining fork from the subframe on the left/right bearing boxes.

Operating the tractor:

- Release the parking brake and your foot from the brake pedal(s).
- Move the control lever to the lowering position, so that the lifting cylinders are completely retracted.

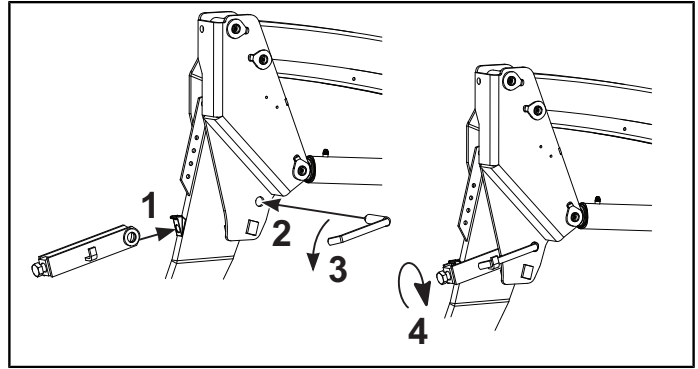


Fig. 65 Remove the retaining forks, pins and screws.

Carefully tilt the implement upward (roll back) until it sits flat on the ground. This will cause the rear of the loader to lift and disconnect from the subframe.

- Stop the tractor and eliminate the oil pressure to the loader cylinders using the control valve.
- Disconnect the hoses and place them in a safe parking position. Install dust guards on the quick release couplings.
- Reverse the tractor carefully until it is completely free from the loader.
- Refit the locking pins and retaining forks on both sides.

**IMPORTANT:** Make sure that you position the hoses so that they do not hook onto the tractor when reversing from the loader.

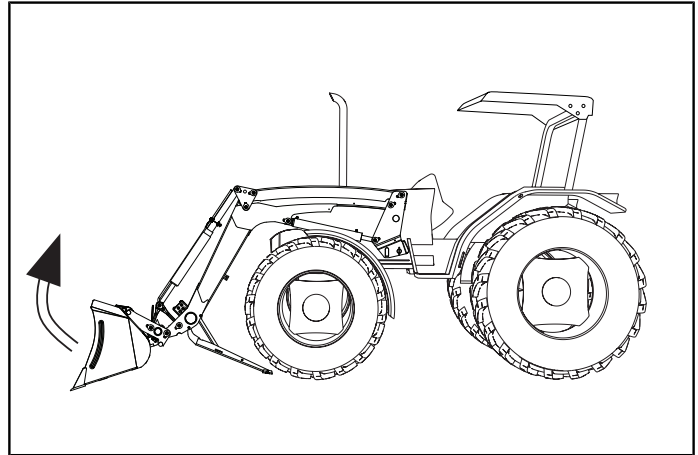


Fig. 66 Carefully tilt the implement upwards (roll back).

## 5.7. Connecting a loader with delta bearing box.



### CAUTION:

#### Risk of crushing and pinching

Air in hydraulic hoses and cylinders can cause erratic operation.

Run the engine at low speed and make slow movements with the joystick to purge any air from the hydraulic system.



### CAUTION:

#### Risk of crushing and pinching

Keep hands and feet away from moving components. Do NOT use your fingers to check the alignment of holes or pins — use a mandrel or a steel rod.



### CAUTION:

#### Risk of crushing and pinching

If the loader valve is in a depressurized or float position then sudden and unforeseen movements may occur when the hydraulics are connected.

**IMPORTANT:** Make sure that the hoses are positioned on the loader so they do not catch the tractor as it is entering the loader. Make sure that locking pins are removed from the loader bearing boxes.

Drive the tractor slowly forwards until the subframe upright slowly enters the bearing box.

Connect the hydraulics. If there is any difficulty in connecting the quick release couplings, this will be because the oil pressure has not been eliminated. Depressurize the system.

**IMPORTANT:** Never use force on quick release couplings by striking the valve ball. This may cause damage such that the coupling does not open when compressed (the oil can only pass in one direction). Ensure that none of the hoses are interchanged — follow markings 1-4.

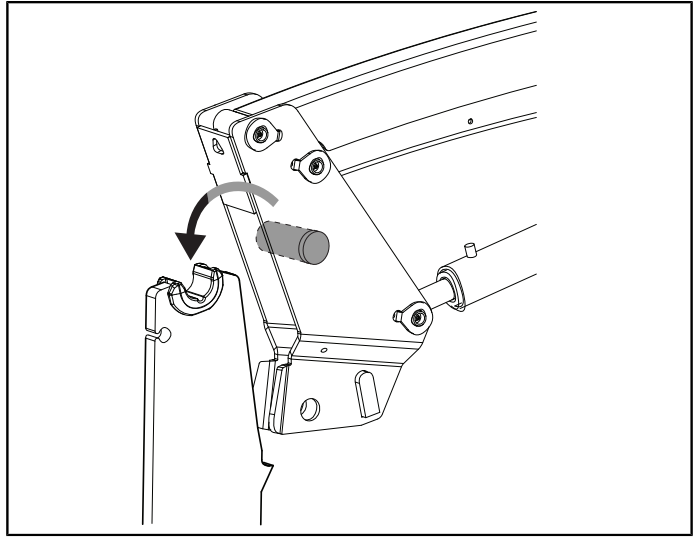


Fig. 67 The subframe upright enters the bearing box.

Extend the bucket cylinder (dump) so that the bearing box pin engages the saddle in the subframe upright.

Carefully lift the loader so that the stop bar in the lower face of the bearing box contacts the face of the subframe.

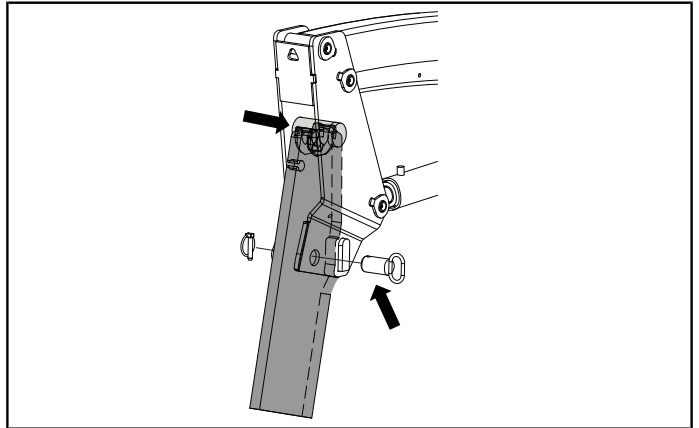


Fig. 68 Bearing box pin enters saddle in subframe upright.

Raise the loader, install securing pin and locking pin (E)/deluxe locking pin (F), one on each side.

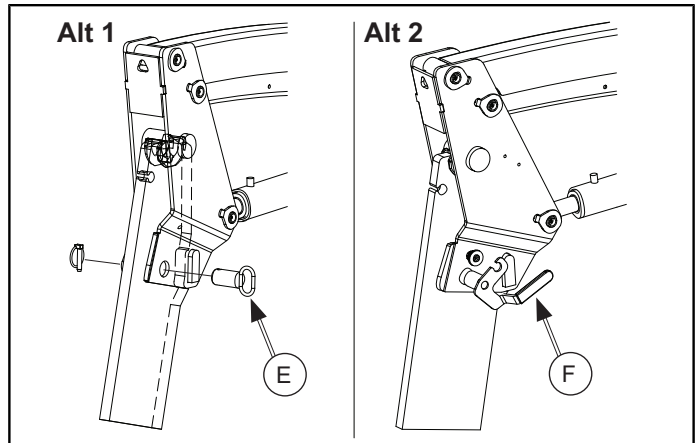


Fig. 69 Install lock pin, one on each side.

Fold the parking stands in to the storage position.

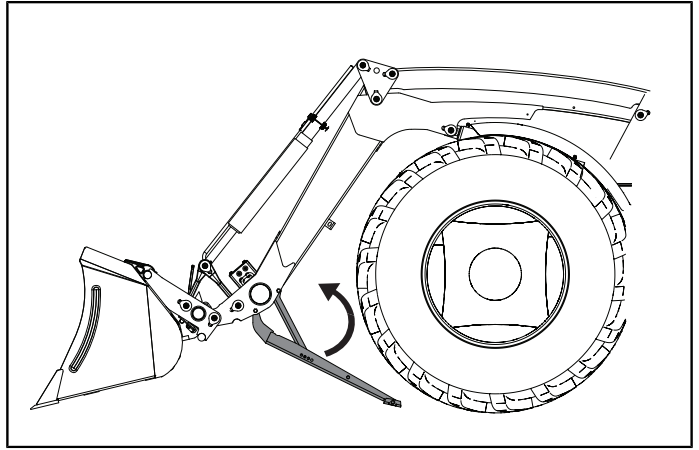


Fig. 70 Fold the parking stands in to the storage position.

## 5.8. Connecting a loader with BASIC bearing box.



**CAUTION:**

**Risk of crushing and pinching**

Air in hydraulic hoses and cylinders can cause erratic operation.

Run the engine at low speed and make slow movements with the joystick to purge any air from the hydraulic system.



**CAUTION:**

**Risk of crushing and pinching**

Keep hands and feet away from moving components. Do NOT use your fingers to check the alignment of holes or pins — use a mandrel or a steel rod.



**CAUTION:**

**Risk of crushing and pinching**

If the loader valve is in a depressurized or float position then sudden and unforeseen movements may occur when the hydraulics are connected.

**IMPORTANT:** Make sure that the hoses are positioned on the loader so they do not catch the tractor as it is entering the loader. Make sure that locking pins are removed from the loader bearing boxes.

Drive the tractor slowly forwards until the subframe upright slowly enters the bearing box.

Connect the hydraulics. If there is any difficulty in connecting the quick release couplings, this will be because the oil pressure has not been eliminated. Depressurize the system.

**IMPORTANT:** Never use force on quick release couplings by striking the valve ball. This may cause damage such that the coupling does not open when compressed (the oil can only pass in one direction). Ensure that none of the hoses are interchanged — follow markings 1-4.

Extend the bucket cylinder (dump) so that the bearing box pin engages the saddle in the subframe upright.

Carefully lift the loader so that the stop bar in the lower face of the bearing box contacts the face of the subframe.

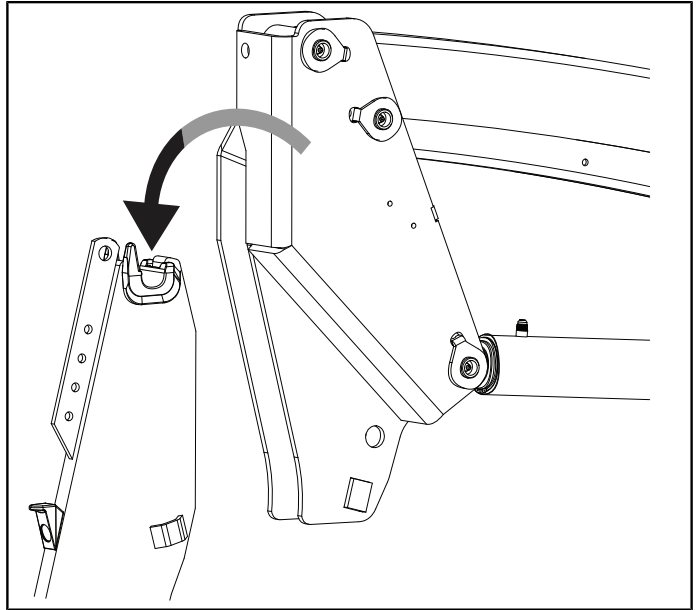


Fig. 71 The subframe upright enters the bearing box.

Install the retaining forks and pins.

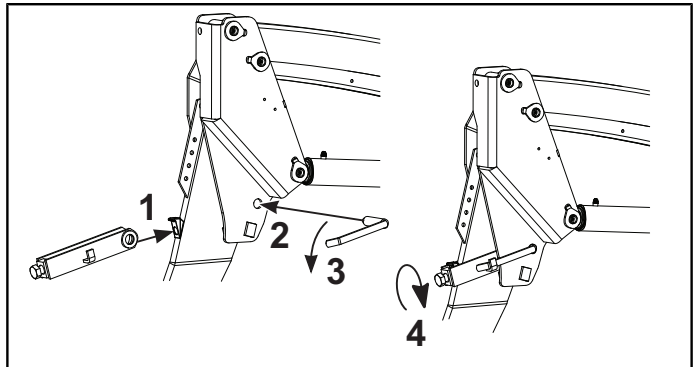


Fig. 72 Install the retaining forks and pins.

Fold the parking stands in to the storage position.

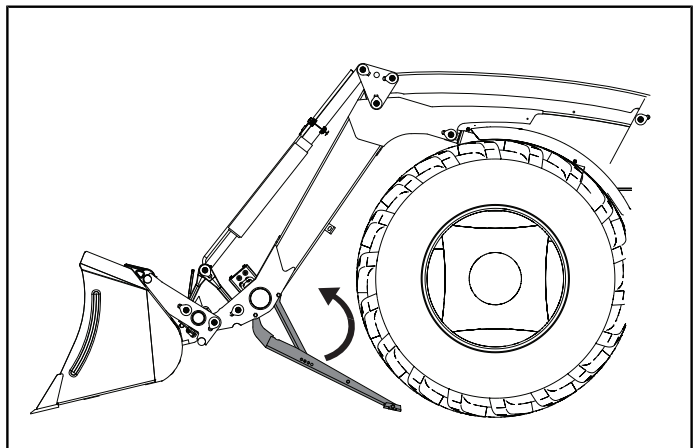


Fig. 73 Fold the parking stands in to the storage position.

## 5.9. PlusDrive (optional)

PlusDrive can be engaged during most tasks, but can be disengaged using the shut-off valve (2) when careful operation with exact control of the loader is required.

**CAUTION:**

**Risk of pinching.**

**Risk of crushing/pinching when you connect the hydraulic system.**

**Lower the bucket to the ground, turn off engine and relieve the pressure in the hydraulic system by moving the control lever to all control positions before connecting or disconnecting the system.**

### 5.9.1. Description

This equipment dampens the vertical movements of the loader when driving on uneven ground.

*NOTE:* The accumulator (1) used in the PlusDrive-system is precharged and cannot be recharged. Contact your dealer for service.

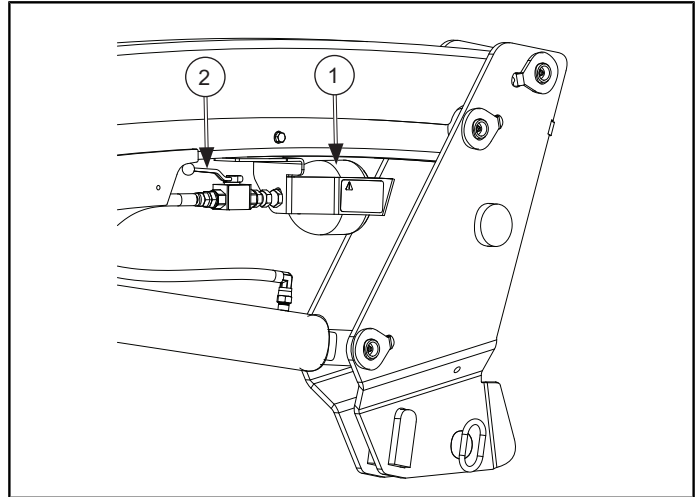
**CAUTION:**

**The accumulator (1) is pressurized. Repair, maintenance and startup may only be carried out by authorized staff.**

**WARNING:**

**Do not open the accumulator before the gas and oil side is depressurized. The vessel contains nitrogen, which can involve a risk of suffocation.**

**No work may be carried out on the pressure vessel. Welding, drilling or opening the tank by force are not allowed.**



*Fig. 74 Mechanical deactivation of load damping.*

### 5.10. Loader Operation

**WARNING:**

**Risk of electric shock, crushing and pinching.**

**When driving with the loader raised, make sure that there is enough room between the loader and power lines, barn roofs, etc.**

**CAUTION:**

**Risk of crushing and pinching**

**People may be inside the working area.**

**Make sure that nobody is close to the tractor when work commences. Only operate the tractor when sitting in the designated place in the operator's seat.**

**CAUTION:**

**Risk of crushing and pinching**

**Lower the implement to the ground, lock the brakes and shut the engine off before climbing off of the tractor. Remove the ignition key if the machine is left unsupervised.**

When working with the loader on an uphill slope, drive straight up the slope, fill the bucket and reverse downhill. Driving along the side of a slope can result in overturning.



**WARNING:**  
Do NOT use the loader or the implement/bucket as a work platform.

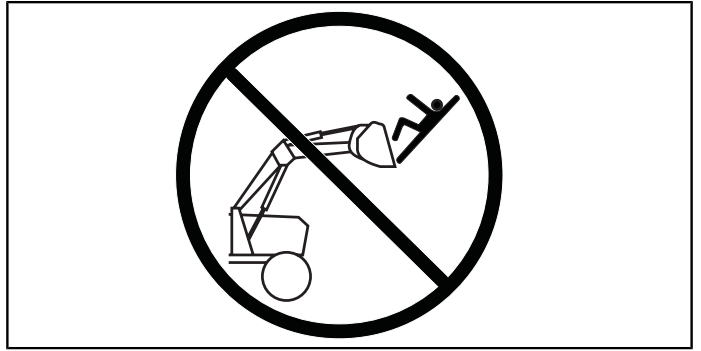


Fig. 75 Do NOT use the loader or the implement/bucket as a work platform.



**WARNING:**  
Do NOT use the loader to lift or transport people.

Only qualified persons are to operate the machine.

### 5.10.1. Counterweight and tread width.



**WARNING:**  
Check that the machine has ballast (counterweight) at the rear to stabilize the machine's load-carrying ability. The counterweight is essential for maintaining control of the machine.



Fig. 76 Do NOT use the loader to lift or transport people.

- Move the tires to the widest recommended setting to increase stability.
- Refer to section in the operator's manual for information on the counterweight and tread width. Also refer to the tractor operator's manual for further information.

**IMPORTANT:** Incorrectly designed implements can damage the loader. For this reason, do not install any implement without making sure that it has been approved by the loader manufacturer.

Make sure that the bucket or other implement is correctly secured on the tool carrier and that the pins are in the locked position. Press the tip of the implement against the ground (1) to make sure that the implement is firmly fixed.

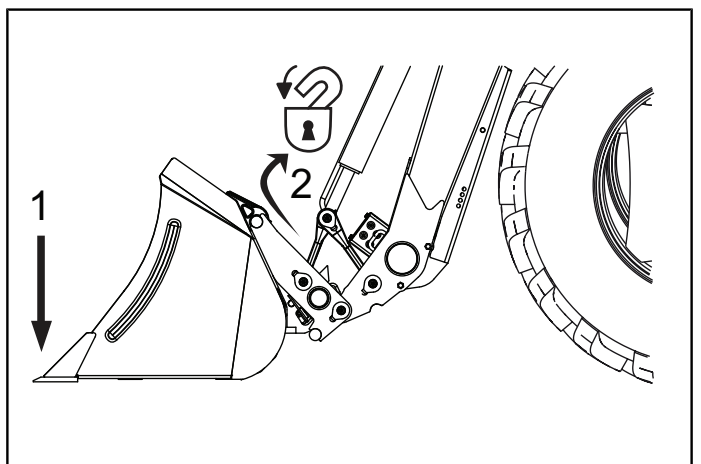


Fig. 77 Make sure that the implement is secured by pressing its front end against the ground.

**WARNING:**

**Do NOT stand, walk or work under a raised loader. Make sure that individuals, especially children, and animals are kept away from the working area.**



*Fig. 78 Do NOT stand, walk or work under a raised loader.*

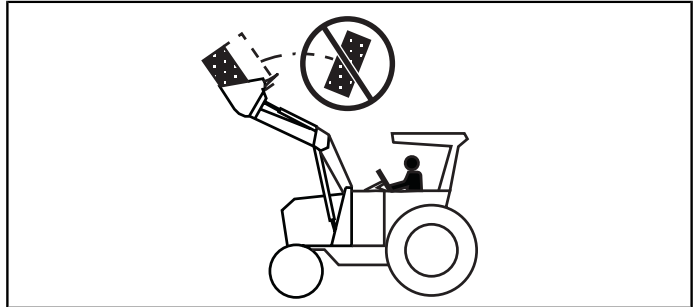
### 5.10.2. Load stability

**WARNING:**

**Always look at the implement. Objects can fall or roll backwards onto the operator when the loader is raised.**

**Only lift loads which can be contained in, and are intended for, the specific implement.**

**Some implements should be equipped with a fall prevention system.**



*Fig. 79 Pay attention to the loader and implement positions; objects may fall off.*

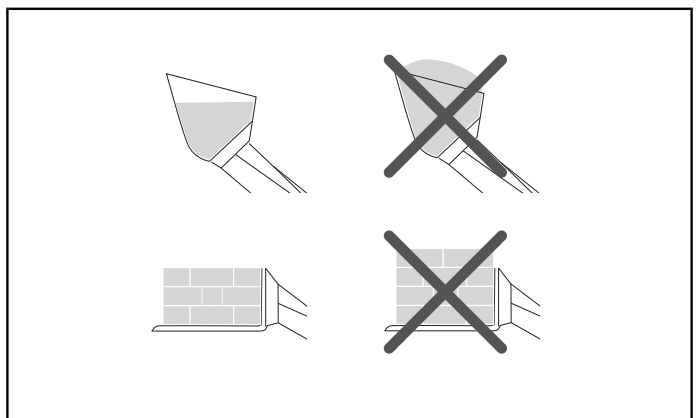
**WARNING:**

**If the tractor is equipped with a Falling Object Protective Structure (FOPS), there is only limited protection against falling loads. The operator risks injury if the load falls when the loader is being operated at height.**

**FOPS is not intended to protect against falling loads. Therefore, it is important to use an implement with safety grating that prevents loads from falling.**

**Exercise caution when working with raised loads.**

- Only use implements that are approved for the relevant application.
- Make sure that the load is positioned securely in the implement. When it comes to loose material, the implement must not be overfilled, and for solid material, the load must not stick up above the rear of the implement.



*Fig. 80 Only lift loads which can be contained in, and are intended for, the specific implement.*

- Adjust the tilt angle of the implement when the load is raised so that the load is not directed towards the operator.

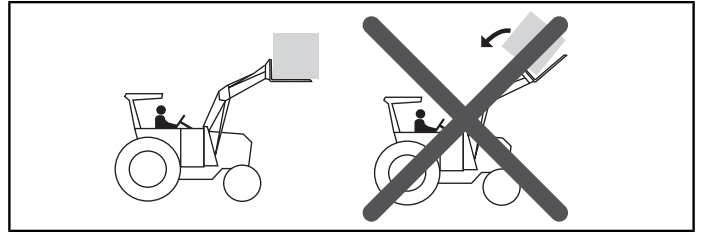


Fig. 81 Exercise caution when working with raised loads.

#### 5.10.2.1. Machine stability



##### **WARNING:**

**Do NOT work on or close to steep slopes.**

**The tractor must always be kept a distance from the edge that is equal to or greater than the height of the bank or ditch.**

- Operate up and down (not across) slopes. Avoid sudden starts and stops. Keep the loader as low as possible.
- Drive the tractor forward up slopes with an empty bucket. Fill the bucket and then reverse slowly down the slope.

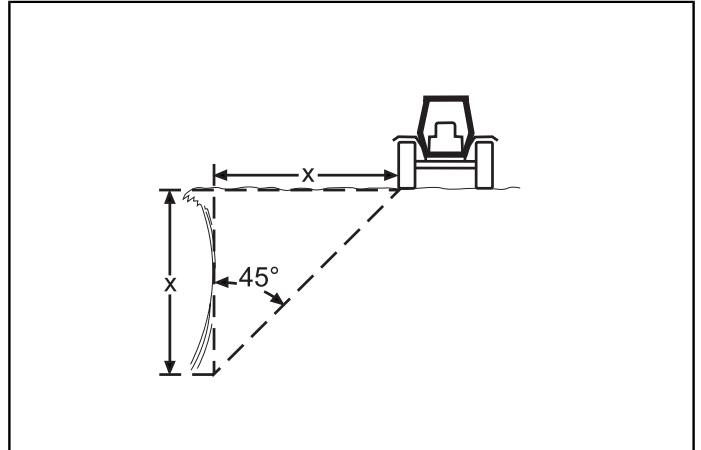


Fig. 82 Keep a distance when working near slopes.



##### **WARNING:**

**Reduce speed before cornering to avoid overturning the machine.**

**Avoid sudden turns when driving down slopes.**

- Always leave the transmission in low gear to obtain engine braking when driving downhill. Do not allow the tractor to roll freely. Use the same gear for driving downhill as you did when driving uphill.
- While driving, lower the loader as far as possible. Keep in mind that the higher you raise the loader, the higher the centre of gravity, and thus the risk of the tractor overturning will increase.

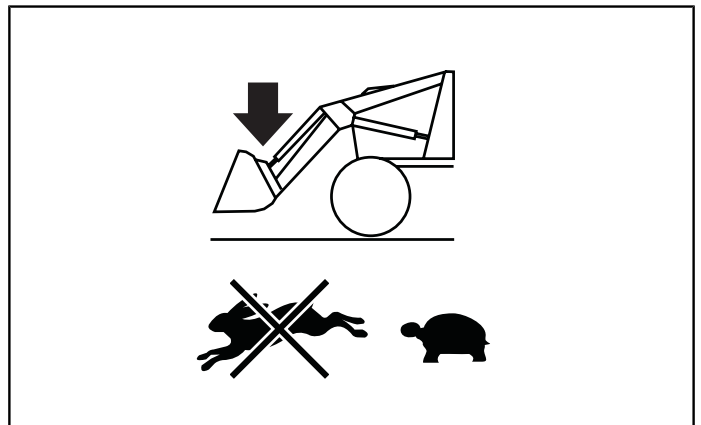


Fig. 83 When cornering, lower the loader and reduce speed.

The bucket is filled most effectively by driving straight into the stock pile with the bucket level. Raise the loader slightly while forcing the bucket into the pile to tear material loose for easier filling. Then roll the bucket back to contain material.

**NOTE:** Remove top layers first when working in deep material.

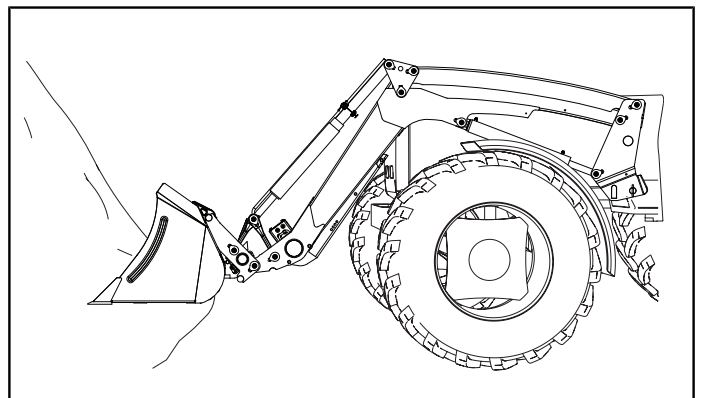


Fig. 84 Drive straight in, lift the load and tilt the bucket backwards.

Reverse from stock pile, lowering loader slowly. Sudden stops when lowering bucket quickly can result in damage to loader and/or tractor's hydraulic system.

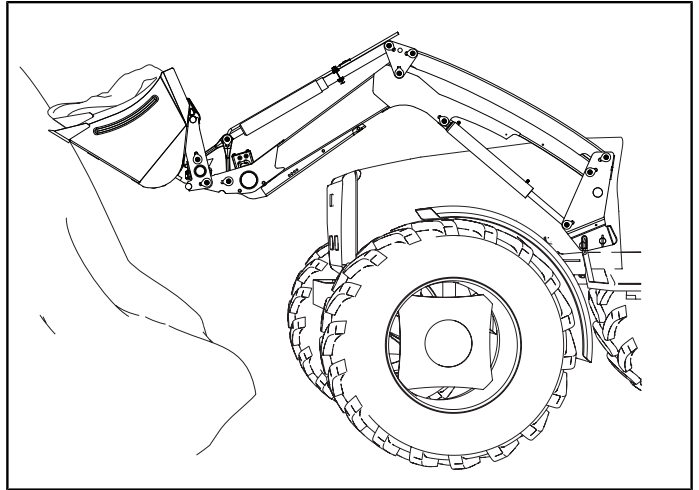


Fig. 85 Reverse, lower slowly.

During grading work, tilt the bucket downwards, so that the cutting edge on the bucket comes into contact with the ground in order to avoid damage to the bottom of the bucket.

**IMPORTANT:** To avoid damage to the loader, do not angle the bucket fully backwards when grading. The bottom of the bucket should not be angled more than 45° from the ground.

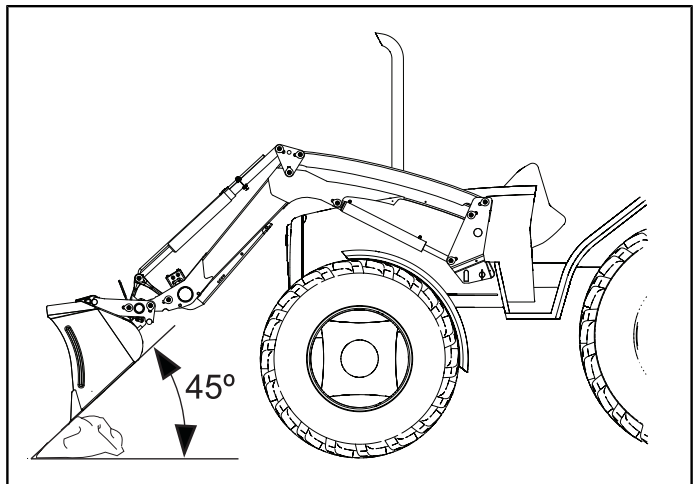


Fig. 86 Operating technique when grading.

## 5.11. Operation with bale spike



**WARNING:**

**DO NOT** move large round bales using loader unless equipped with an approved round bale attachment. Without these, the bale can fall on the operator when the loader is raised causing severe injury or death.



**WARNING:**

Prevent personal injury due to machine tipping. Use extreme caution when turning, loading, and moving loads. Use adequate rear ballast.



**CAUTION:**

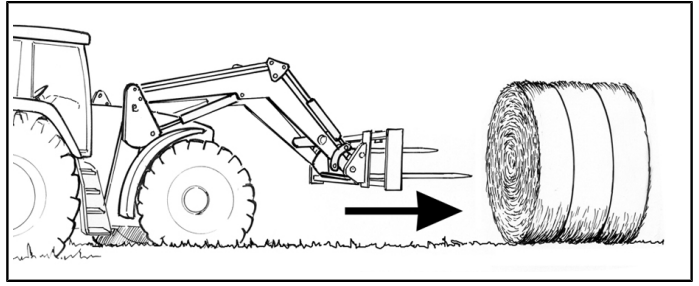
Forward visibility is reduced when moving large round bales.



**CAUTION:**

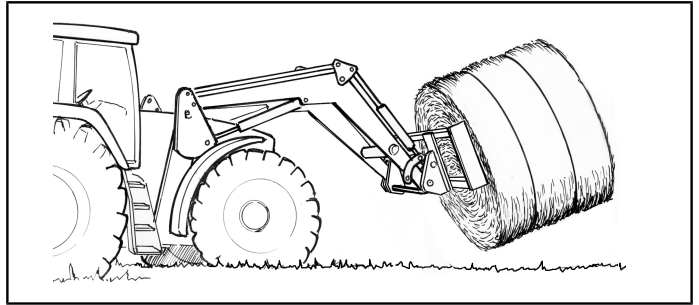
Prevent personal injury due to being struck by a “run-away” bale. Use proper bale handling equipment when stacking round bales. Set bales down on level ground. “Run-away” bales can cause personal injury and/or property damage.

Move the bale spike into position at the end of the bale.  
 Make sure the bale spike is centered left to right and top to bottom with relation to the bale.  
 Drive forward slowly into the bale until spike fully penetrates the bale.



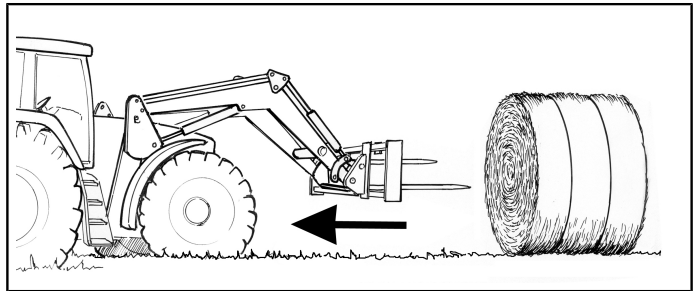
*Fig. 87 Drive forward slowly into the bale until spike fully penetrates the bale.*

Tilt the bale back, lift the load carefully. Raise loader only enough for clearance under bale. Move bale slowly and carefully until ready to unload.



*Fig. 88 Tilt the bale forward to level position and place bale on the ground.*

Tilt the bale forward to level position and place bale on the ground.  
 Carefully reverse unit away from bale.

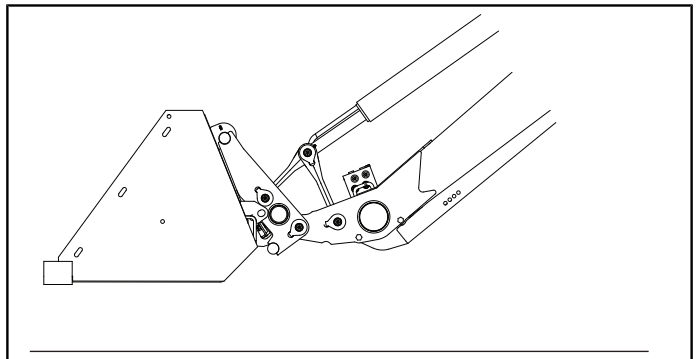


*Fig. 89 Carefully reverse unit away from bale.*

## 5.12. Coupling and uncoupling implements

### 5.12.1. Uncoupling implements, Euro 8 Tool carrier

Raise the loader off the ground and position the implement level to the ground.  
 Turn off the tractor engine and lock the loader control lever in the neutral position.  
 Apply the parking brake.



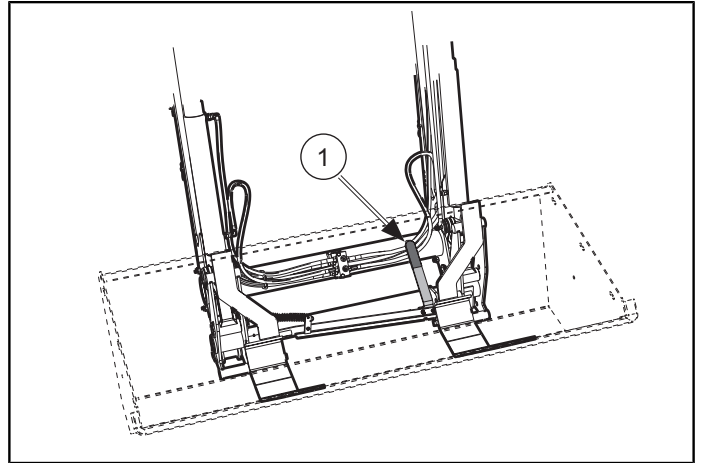
*Fig. 90 Raise the loader off the ground, turn off the engine, lock control lever in neutral position.*

Move the locking lever to the disengaged (open) position (position 1).



**CAUTION:**  
**Risk of pinching.**

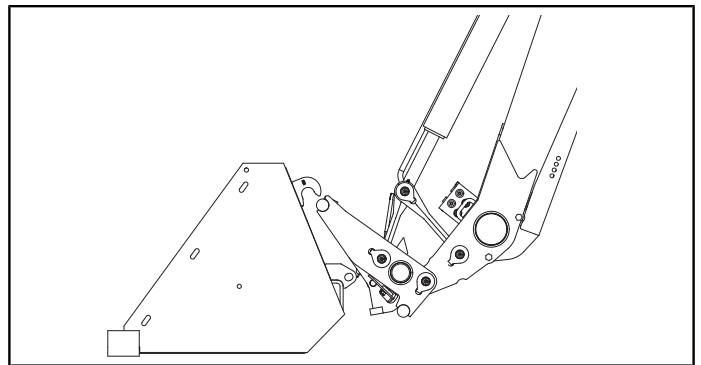
**The locking lever is spring loaded when in position 1.**



*Fig. 91 Move the locking lever to the disengaged (open) position (position 1).*

Lower the loader to the ground and continue lowering the loader until the implement is disconnected from the loader's tool carrier.

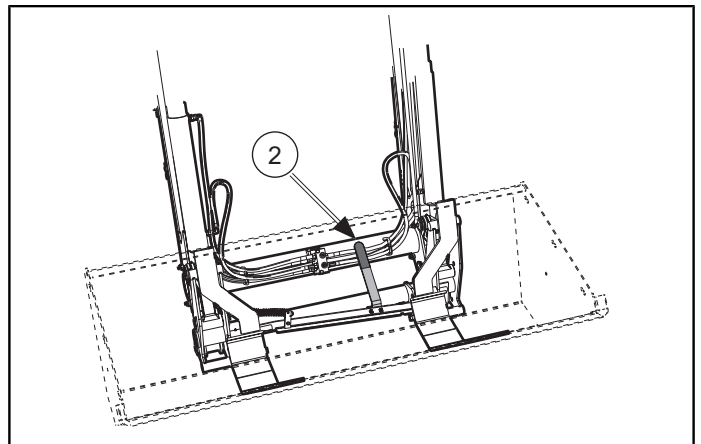
Back tractor/loader away from the implement.



*Fig. 92 Lower the loader until the implement is loose.*

If no implement is to be coupled to the tool carrier, the lever and the mechanism should be set into the engaged position, position 2.

To engage the locking lever completely roll the tool carrier back with the implement rams with the loader just above the ground or engage the lever manually.



*Fig. 93 Locking lever in engaged position, position 2.*

### 5.12.2. Coupling implements, Euro 8 Tool carrier

Move the locking lever to the disengaged (open) position (position 1).

**NOTE:** It is easiest to disengage the locking lever to the disengaged position if the loader is 12 - 24 inch off the ground.



**CAUTION:**  
Risk of pinching.

**The locking lever is spring loaded when in position 1.**

Tilt the tool carrier so the implement mounting face is angled, and raise/lower the loader to position the tool carrier on the left/right of the tool carrier about 4 inch below the implement hooks.

Drive the tractor forward slowly to position the tool carrier under the hooks on the implement. When the tool carrier contacts the implement raise the loader to "hook" the implement on the tool carrier.

This coupling procedure must be tested in each case, depending on the combination of implement and accessory, to make sure that there is no interference.

As the tool carrier is rolled back the implement should follow the movement of the tool carrier. If the implement's two hooks are not firmly attached to the tool carrier, the implement must be repositioned against the ground and the connection procedure must be repeated.

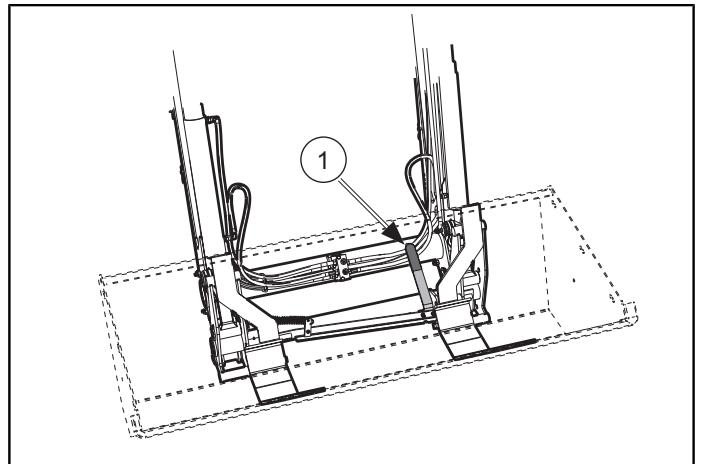


Fig. 94 Move the locking lever to the disengaged (open) position (position 1).

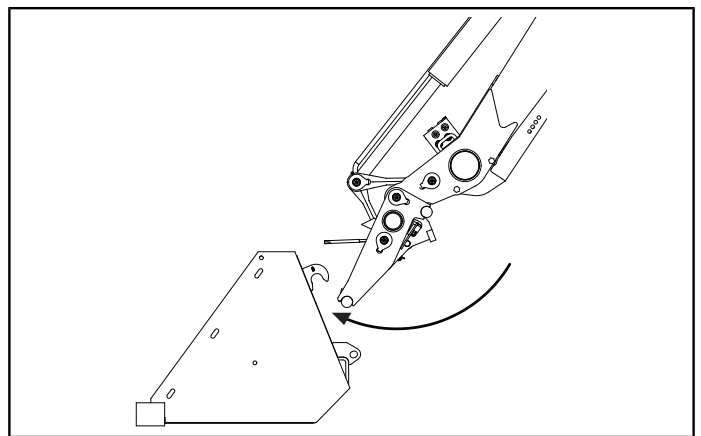


Fig. 95 Tilt the tool carrier

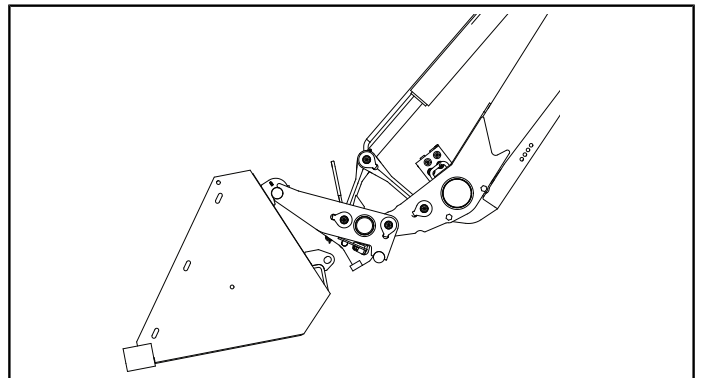


Fig. 96 Tilt the tool carrier back slowly until the implement hooks are firmly attached.

Tilt the implement back completely with the loader at a low elevation (4 inch) off the ground. This will allow the tool carrier locking system to secure the implement. Always visually inspect the tool carrier locking pins to ensure proper connection of an implement before starting work.

**IMPORTANT:** Read this before operating loader:

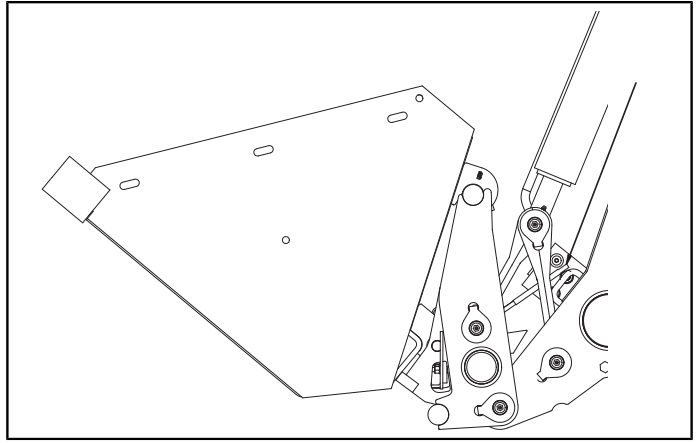


**WARNING:**

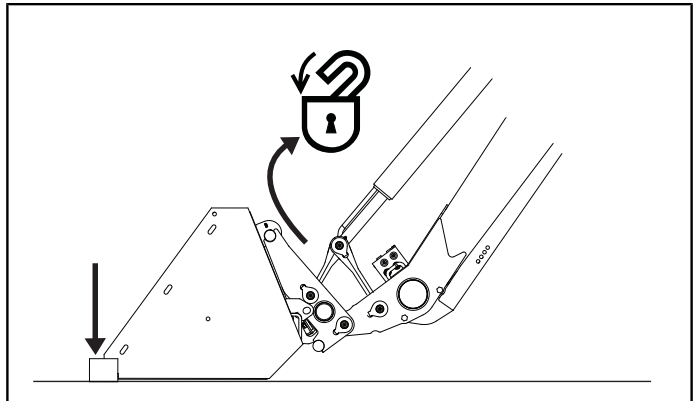
**Risk of crushing and pinching**

**Incorrectly locked implements can come loose.**

**Always check to ensure implement is locked in position by forcing the front of the implement against the ground and visually confirm that the tool carrier locking pins are in the engaged position.**



*Fig. 97 Tilt the implement back slowly at a low elevation then physically engage the locking pins and securing pin.*



*Fig. 98 Make sure that the implement is secured by pressing its front end against the ground.*

### 5.12.3. Uncoupling Implements, Skid Steer Tool carrier

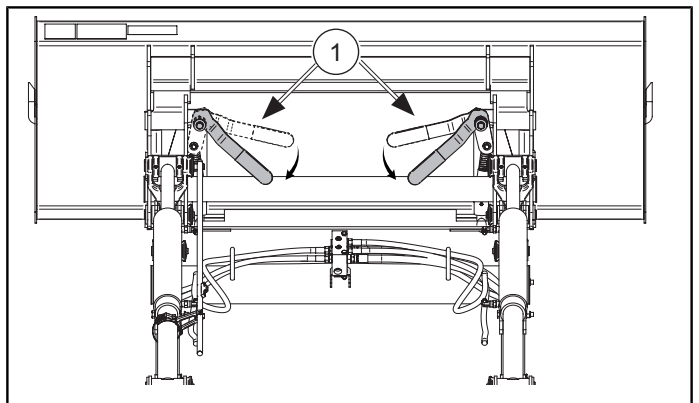
**IMPORTANT:** Do not place the loader's control valve in the float position until you have disconnected the implement. Do not stand on the implement when setting the lever in the unlocked position.

1. Position the implement a few centimeters above the ground and tilt it backwards slightly.
2. Turn off the tractor engine and lock the loader control lever in the neutral position.  
Apply the parking brake.
3. Pull out lock handles (1) so that the tool carrier is disconnected from the implement.



**WARNING:**

**Stand to the side of the implement and keep your feet away from the loader and implement when setting the lock handles in the unlocked position.**



*Fig. 99 Pull out the lock handles.*

4. Start the engine and lower the loader while carefully tipping the implement forwards until the tool carrier (1) disengages from the bucket's plates (2).
5. Back tractor/loader away from the implement.

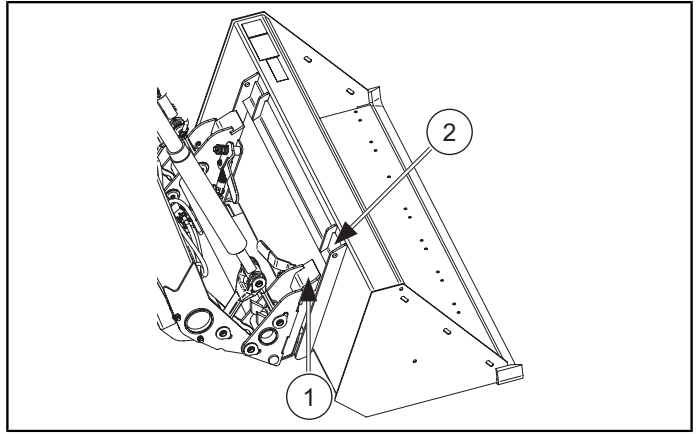


Fig. 100 Tool carrier

#### 5.12.4. Coupling Implements, Skid Steer Tool carrier

1. Open the left and right lock handles (1) before starting the tractor.

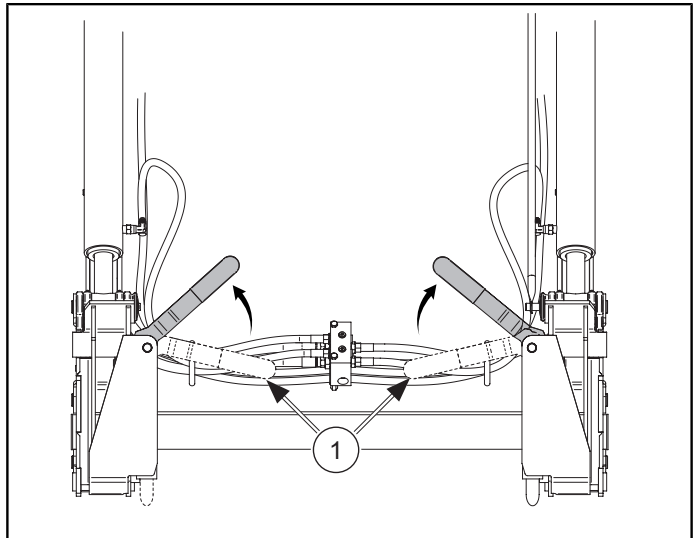


Fig. 101 Open the left and right lock handles (1) before starting the tractor.

2. Lower the loader with the tool carrier (1) positioned under the bucket plates (2), and tilted slightly frontward (use the bucket position indicator as a reference).

**IMPORTANT:** The area around the quick lock mechanism and corresponding contact surface on the bucket must be kept clean of dirt and foreign objects in order for the lock mechanism to be able to work properly.

3. Raise the loader slightly so that the tool carrier (1) hooks into the implement's upper plates (2).
4. With the tool carrier fixed in the upper plates, tilt the implement backwards so that the tool carrier moves forward and is connected onto the implement.
5. Turn off the tractor engine and lock the loader control lever in the neutral position.  
Apply the parking brake.

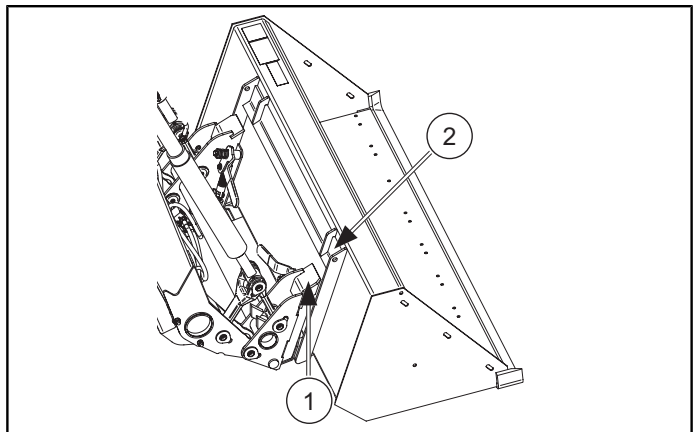


Fig. 102 Lower the loader

6. With the tool carrier connected to the implement, press the left and right lock handles (1) into the locked position.

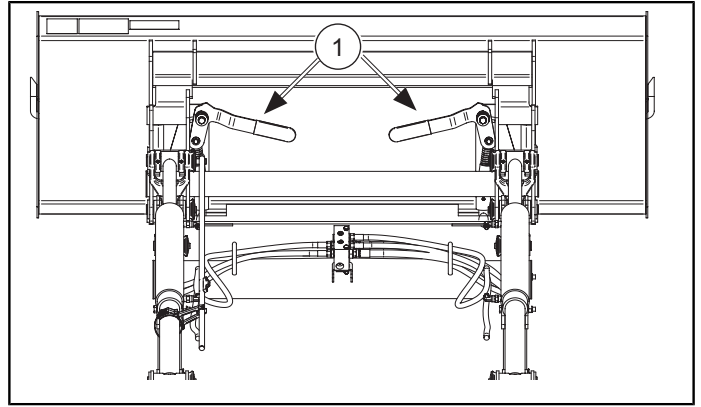


Fig. 103 Lock handles

7. Raise the loader and tilt the implement until the cutting edge is resting on the ground. Perform a visual check that the locking pins (1) on the tool carrier are fixed and locked onto the implement's contact surface.
8. Lower the loader and set the implement in a level position.
9. Check the position indicator and adjust if necessary.



**DANGER:** Check that the implement is locked in position by pressing the tip against the ground. Also perform a visual check to ensure that the tool carrier's lock handles are in the locked position and that the locking pins are fully engaged.

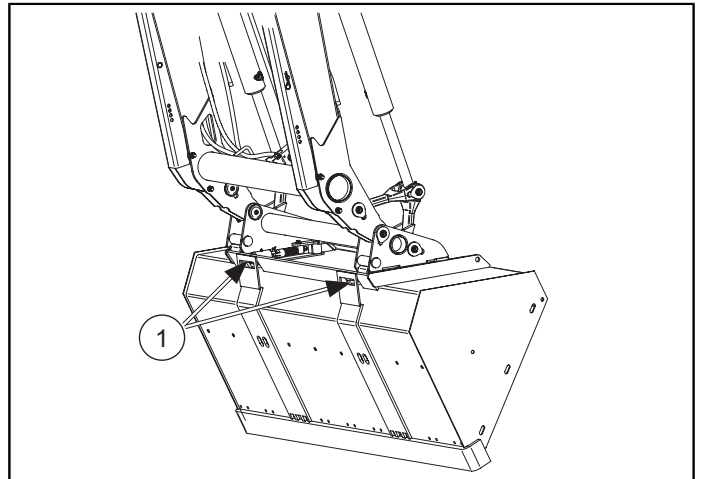


Fig. 104 The lock handle should be in locked position if the bucket is laid on the ground.

## 5.13. Overview of approved implements

### 5.13.1. Approved implements

Buckets, H, L, HV, LV

Grading bucket

Unigrip

Flexigrip



#### **WARNING:**

**Implements that are not listed as approved are automatically considered to be prohibited.**

### 5.13.2. Non-approved implements

HT series buckets

Pallet forks

Hydraulic pallet forks

Lifting arms

Gripping tool

Bale spike

Silograb

Multibenne

Flexibal

Silosplit

Fork for square bales

Fork for stones

Fork for manure

Silocut

### 5.13.3. Weight

| Model | Weight |
|-------|--------|
| ZL21  | 310 kg |
| ZL26  | 360 kg |
| ZL31  | 335 kg |
| ZL36  | 390 kg |
| ZL41  | 360 kg |
| ZL46  | 420 kg |
| ZL51  | 390 kg |
| ZL56  | 440 kg |

## 6. LUBRICATION AND MAINTENANCE



### WARNING:

Never stand between the front of the loader and the cross-tube on the loader.



Fig. 105 Never stand between the front of the loader and the cross-tube on the loader.

### 6.1. Lubrication points

Lubricate the following grease fittings with universal grease every 10 operating hours.



### WARNING:

**Risk of crushing and pinching**

The loader may fall downwards.

Lower the loader to the ground before you start greasing.

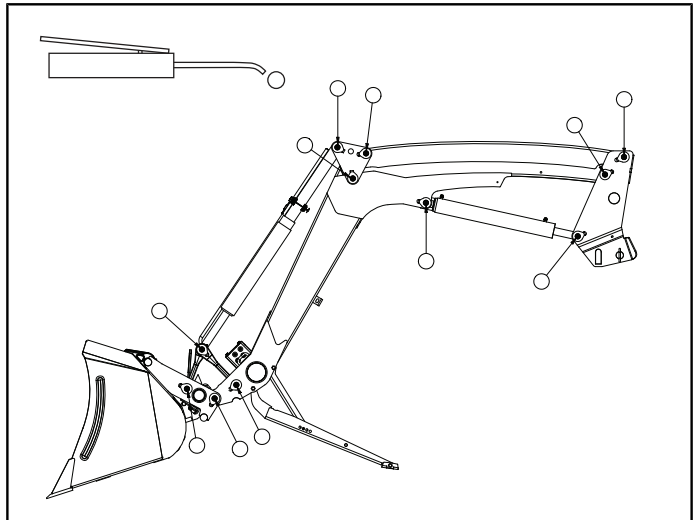


Fig. 106 Grease fittings on every pivot pin on both sides of the loader.

Grease fittings on every pivot pin on both sides of the loader.

### 6.2. Storage

Apply a thin layer of grease on visible piston rods in order to protect them.

### 6.3. Hydraulic system

Check the oil level in the tractor hydraulic oil tank regularly, with the loader lowered to the ground. Use the oil specified in the tractor's operator's manual.

#### 6.3.1. Hoses and cylinders

Read this before checking the hydraulic system for leakage:



### WARNING:

**Pressurized oil.**

Hydraulic oil at high pressure can be injected into the body in the event of leakage leading to serious injuries, blindness or fatality. Leakage may be invisible.

Use approved protective safety glasses and protect the skin using strong leather gloves etc. Use cardboard or wood when searching for leaks. If fluid has entered the skin then it **MUST** be removed within a couple of hours by a doctor able to treat this type of injury.



Fig. 107 NEVER use fingers or hands to detect leaks.

The loader is equipped with a shut-off mechanism. The design can vary depending on the type of control valve.



**WARNING:**

**This shut-off mechanism must NOT be used when working on the loader's lift cylinders or associated lines. In such cases, the loader must be lowered to the ground. Turn off the tractor's engine and relieve the oil pressure using the operating control before disconnecting any couplings or doing any other work on the hydraulics — oil subjected to high pressure can cause severe injuries**

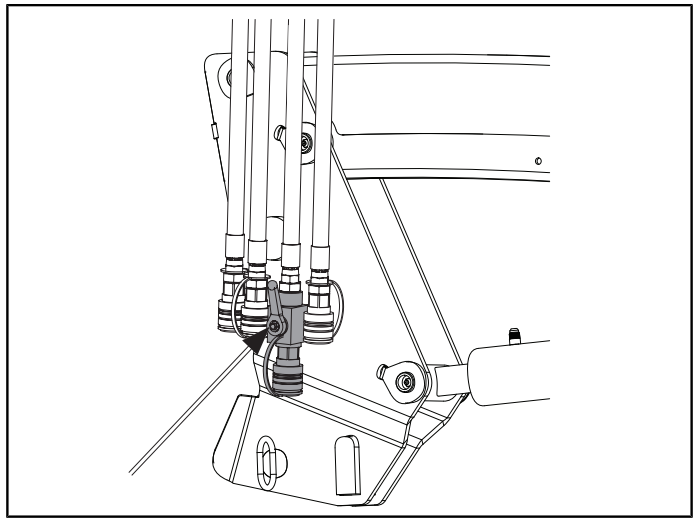
Check hoses and connections for wear and leakage at regular intervals. Make sure that hoses have sufficient clearance and do not scrape against other components. Replace damaged hoses and tighten all connections.

The cylinders are double-acting. They must always be maintained in good condition for optimal function. Leaks, internal or external, affect performance and may be hazardous.

This loader requires a hydraulic system that works at high pressure. Only use replacement parts approved by the manufacturer.

### 6.3.2. Checking the hydraulic connections

Check that all hoses and adapters are tightened and that they do not leak.



*Fig. 108 Turn the shut-off valve handle to the closed position during service work.*



*Fig. 109 NEVER use fingers or hands to detect leaks.*

### 6.3.3. Repairing hydraulic cylinders

The removal, repair and installation of hydraulic cylinders require special tools to prevent damage to internal components. We recommend you to have your cylinders repaired by an authorized dealer.

### 6.3.4. Checking subframe bolt connection

Check that all screws are tightened to the specified torque, first after 10 hours of operation and subsequently every 50 hours of operation thereafter.

#### 6.3.4.1. Tightening torques - bolt connections

Tighten all the screws on the loader and all fasteners, except in the cases where the tightening torque is specified in the assembly instructions.

The torques apply to clean, dry threads. Lubricated threads can lead to the joint being tightened too strongly. Damaged or dirty threads can cause torque values to be too low.

A torque amplifier may be needed when tightening screws to high torque values.

Tightening torques should be checked immediately after installation, and several times after a short period of use. Incorrect tightening can damage the structure of the loader and/or tractor.

| Grade 5 (Class 8.8) hardware |                      | Grade 8 (Class 10.9) hardware |                      |
|------------------------------|----------------------|-------------------------------|----------------------|
| Diameter                     | Torque               | Diameter                      | Torque               |
| 1 /4"                        | 13.6 Nm (10 lb-ft)   | 1 /4"                         | 14.9 Nm (11 lb-ft)   |
| 5/16"                        | 27.1 Nm (20 lb-ft)   | 5/16"                         | 32.5 Nm (24 lb-ft)   |
| 3/8"                         | 47.5 Nm (35 lb-ft)   | 3/8"                          | 59.7 Nm (44 lb-ft)   |
| 7/16"                        | 75 Nm (55 lb-ft)     | 7/16"                         | 96.3 Nm (71 lb-ft)   |
| 1/2"                         | 100 Nm (85 lb-ft)    | 1/2"                          | 154.6 Nm (114 lb-ft) |
| 5/8"                         | 230 Nm (170 lb-ft )  | 5/8"                          | 301 Nm (222 lb-ft)   |
| 3/4"                         | 405 Nm (300 lb-ft)   | 3/4"                          | 440.6 Nm (325 lb-ft) |
| M8                           | 27.1 Nm (20 lb-ft)   | M8                            | 32.5 Nm (24 lb-ft)   |
| M10                          | 54.2 Nm (40 lb-ft)   | M10                           | 63.7 Nm (47 lb-ft)   |
| M12                          | 94.9 Nm (70 lb-ft)   | M12                           | 108.4 Nm (80 lb-ft)  |
| M14                          | 119.3 Nm (88 lb-ft)  | M14                           | 176.3 Nm (130 lb-ft) |
| M16                          | 189.8 Nm (140 lb-ft) | M16                           | 271.2 Nm (200 lb-ft) |
| M20                          | 385 Nm (284 lb-ft)   | M20                           | 542.3 Nm (400 lb-ft) |

## 7. TROUBLESHOOTING

Loader malfunctions are frequently caused by factors not related to the loader:

- Check the oil level in the tractor's hydraulic reservoir. Top up to the correct level.
- Make sure that the correct oil is used. Only use the oil specified in the tractor's operator's manual. The wrong oil can cause foaming, heating and internal leakage.
- Make sure that hoses and couplings are correctly installed and connected to the tractor. Hydraulic couplings must be fully engaged.
- Check the oil for contamination and moisture. Change the oil and filter as necessary.
- Check hoses and couplings for leakage, abrasion and twist.
- Low temperatures can cause slow movements and/or cause the loader to function irregularly until a normal working temperature is reached. Check whether the oil maintains its normal working temperature before testing the loader.
- When using the tractor's own valve to control the loader, ensure that the tractor's valve is adjusted for double-acting function. Check that the flow control has been set to maximum flow.
- Move the loader's cylinders to their end positions several times to remove air from the hoses and cylinders.

Most problems that occur with the loader are simple in nature and can be easily rectified. Use the "Troubleshooting table" on the following pages to help you locate and solve problems.

Please contact your dealer for further assistance.

| Problem                                         | Possible cause                                                                     | Action                                                                                     |
|-------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Non-functioning lifting and implement cylinders | Low hydraulic oil level.                                                           | Check and top up with hydraulic oil.                                                       |
|                                                 | Hydraulic hoses incorrectly connected.                                             | Check and connect the hoses correctly.                                                     |
|                                                 | The hydraulic hoses to/from control valve are "blocked".                           | Check hoses for damage (kinks, twists, etc.).                                              |
|                                                 | Loader control valve or tractor's main relief valve is stuck in the open position. | Contact your dealer.                                                                       |
|                                                 | Low system pressure from pump.                                                     | Contact your dealer.                                                                       |
| Non-functioning lift or implement cylinders     | Break in control cables for control valve.                                         | Inspect. Replace if necessary.                                                             |
|                                                 | Hydraulic quick-release couplings not fully engaged.                               | Check the connection. Replace coupling(s) if necessary.                                    |
|                                                 | Blocked hydraulic hose/pipe.                                                       | Look for damage to hose/pipe that could block oil flow between cylinder and control valve. |
|                                                 | Piston unit damaged (does not seal).                                               | Contact your dealer.                                                                       |
|                                                 | Blocked control valve.                                                             | Contact your dealer.                                                                       |
|                                                 | Damaged quick-release coupling.                                                    | Replace quick-release coupling.                                                            |

| Problem                                                                                      | Possible cause                                                                      | Action                                                                                       |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Lift and/or implement cylinders working in the wrong direction compared to lever deflection. | Hydraulic hoses incorrectly connected.                                              | Connect hydraulic hoses to correct socket.                                                   |
|                                                                                              | Control cables for single lever control incorrectly connected.                      | Contact your dealer.                                                                         |
| Air in hydraulic oil (generally shown by foaming).                                           | Low hydraulic oil level.                                                            | Check and top up with hydraulic oil to correct level.                                        |
|                                                                                              | Air leakage in hydraulic pump suction side.                                         | Contact your dealer.                                                                         |
|                                                                                              | Foaming due to use of wrong type of hydraulic oil.                                  | Read the tractor operator's manual and top up using the recommended type of hydraulic oil.   |
| Slow or jerky lifting movement.                                                              | Low hydraulic oil level. Cold hydraulic oil.                                        | Check and top up with hydraulic oil. Allow the hydraulic oil warm up to working temperature. |
|                                                                                              | Engine speed too low (hydraulic pump speed is subsequently too low).                | Increase engine speed to improve loader performance.                                         |
|                                                                                              | Load in bucket too heavy. Material weight exceeds loader's specified capacity.      | Reduce the load in the bucket.                                                               |
|                                                                                              | Control valve cable system binds or is damaged.                                     | Contact your dealer.                                                                         |
|                                                                                              | Air in the hydraulic oil.                                                           | See "Air in the hydraulic oil".                                                              |
|                                                                                              | Hydraulic quick-release couplings not fully engaged.                                | Check the couplings. Repair or replace.                                                      |
|                                                                                              | Restriction in hydraulic hose or pipe (hoses/pipes have become twisted or pinched). | Contact your dealer.                                                                         |
|                                                                                              | Lifting cylinder piston unit leaks.                                                 | Contact your dealer.                                                                         |
|                                                                                              | Pressure relief valve working irregularly or set too low.                           | Contact your dealer.                                                                         |
|                                                                                              | Internal leakage in control valve (bypass flow in valve).                           | Contact your dealer.                                                                         |
|                                                                                              | Inadequate capacity in hydraulic pump.                                              | See "Inadequate pump capacity".                                                              |
| Noise from the system's pressure relief valve (squeaking)                                    | Cold hydraulic oil.                                                                 | Allow the hydraulic oil warm up to working temperature.                                      |
|                                                                                              | Load in bucket too heavy. Material weight exceeds loader's specified capacity.      | Reduce the load in the bucket.                                                               |
|                                                                                              | Pressure relief valve set lower than specification.                                 | Contact your dealer.                                                                         |
|                                                                                              | Restriction in hydraulic hose, pipe or quick-release coupling.                      | Contact your dealer.                                                                         |
| Insufficient lifting capacity.                                                               | Engine speed too low.                                                               | Increase engine speed.                                                                       |
|                                                                                              | Load in bucket too heavy. Material weight exceeds loader's specified capacity.      | Reduce load.                                                                                 |
|                                                                                              | Pressure relief valve set lower than specification.                                 | Contact your dealer.                                                                         |
|                                                                                              | Piston in lifting cylinders leaks.                                                  | Contact your dealer.                                                                         |
|                                                                                              | Internal leakage in control valve.                                                  | Contact your dealer.                                                                         |

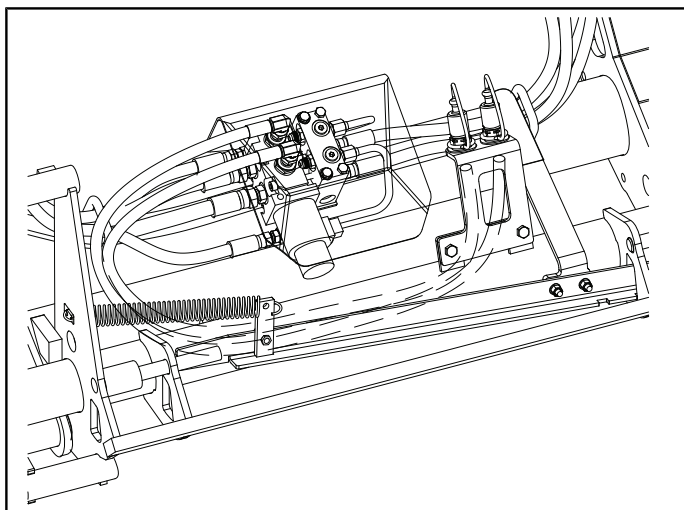
| Problem                                                                                                                                                                                                              | Possible cause                                                                                  | Action                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
|                                                                                                                                                                                                                      | Damaged hydraulic pump.                                                                         | Contact your dealer.                                                           |
| The load drops with the control valve's spool in neutral position. Note: Depending on the model of loader, the value that the loader is allowed to sink by is between 0.5 and 1.5 mm/min measured at the piston rod. | Piston in lifting cylinders leaks.                                                              | Contact your dealer.                                                           |
|                                                                                                                                                                                                                      | Internal leakage in control valve.                                                              | Contact your dealer.                                                           |
|                                                                                                                                                                                                                      | Control valve or cable system binds and prevents spool valve from returning to centre position. | Contact your dealer.                                                           |
| Solenoid valve spool(s) does/do not return to neutral position.                                                                                                                                                      | Control valve centering spring is damaged.                                                      | Contact your dealer.                                                           |
|                                                                                                                                                                                                                      | Control valve spool binds in its bore.                                                          | Contact your dealer.                                                           |
|                                                                                                                                                                                                                      | Control lever or cable system binds.                                                            | Find the reason for binding and repair it.                                     |
| External hydraulic oil leakage.                                                                                                                                                                                      | Loose hydraulic unions.                                                                         | Tighten loose connections.                                                     |
|                                                                                                                                                                                                                      | Damaged hydraulic hoses, pipes, couplings or O-rings in couplings.                              | Find the reason for the leakage and replace the damaged component.             |
|                                                                                                                                                                                                                      | Damaged O-rings in control valve.                                                               | Contact your dealer.                                                           |
|                                                                                                                                                                                                                      | Control valve spool or housing damaged and/or worn.                                             | Contact your dealer.                                                           |
|                                                                                                                                                                                                                      | Piston rod seal in cylinder leaks.                                                              | Contact your dealer.                                                           |
| Inadequate pump capacity.                                                                                                                                                                                            | Cold hydraulic oil.                                                                             | Allow the hydraulic oil warm up to working temperature. Increase engine speed. |
|                                                                                                                                                                                                                      | Engine speed too low.                                                                           | Increase engine speed.                                                         |
|                                                                                                                                                                                                                      | Low hydraulic oil flow.                                                                         | Please refer to the tractor operator's manual for service recommendations.     |
|                                                                                                                                                                                                                      | Restriction in hydraulic hose.                                                                  | Contact your dealer.                                                           |
|                                                                                                                                                                                                                      | Fault in hydraulic pump.                                                                        | Contact your dealer.                                                           |
| Lifting cylinder piston rods bent.                                                                                                                                                                                   | Abnormally high shock load during lowering movement.                                            | Contact your dealer.                                                           |
| Bucket cylinder piston rods are bent when bucket cylinders are extended.                                                                                                                                             | Grading or excavation work with bucket cylinders fully extended.                                | Contact your dealer.                                                           |
| Implement lock can not be locked                                                                                                                                                                                     | If the hoses are connected the wrong way, locking will not function!                            | Contact your dealer.                                                           |

## 8. ACCESSORIES

Not all accessories fit all loaders. Please contact your dealer for information on compatibility with your loader.

### 8.1. 3rd service

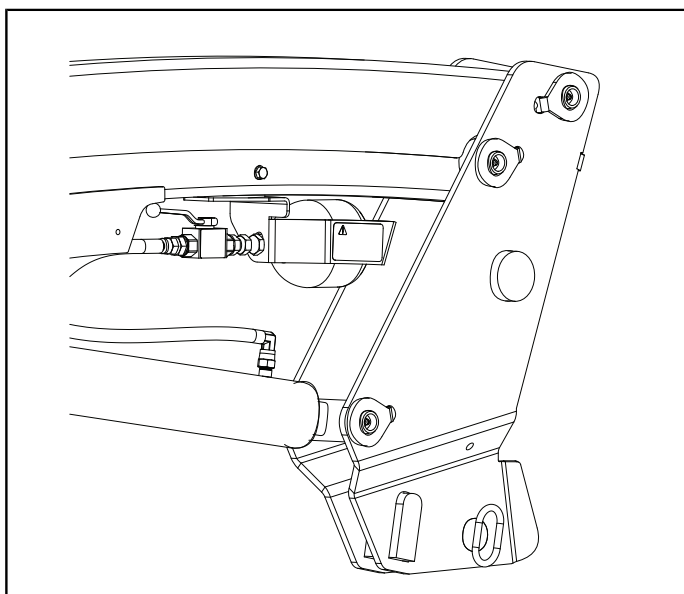
3rd service. The electric diverter valve is used to operate hydraulic implements.



*Fig. 110 3rd service, electric diverter valve.*

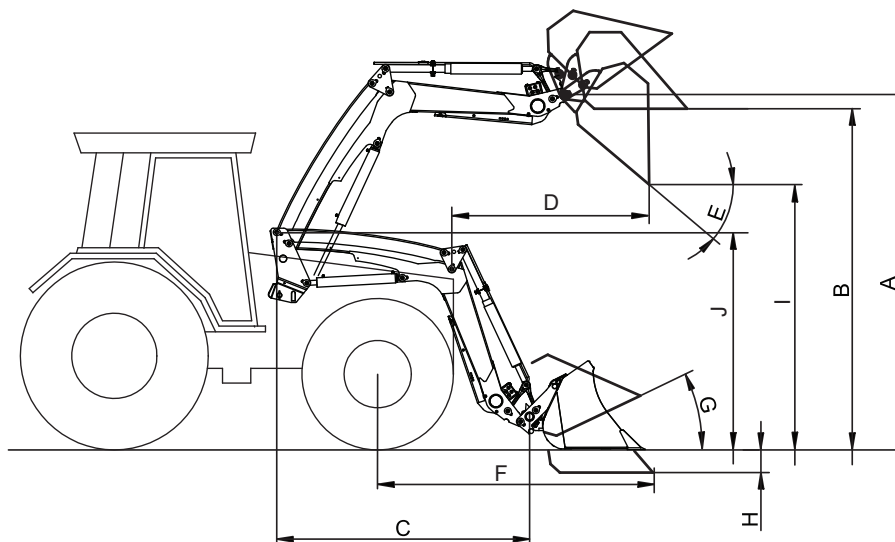
### 8.2. Ride control load damper, PlusDrive

Reduces stresses on tractor and loader, and improves operator comfort.



*Fig. 111 Ride control load damper, PlusDrive*

## 9. DATA



|   |                                                           | <b>ZL21/ZL26</b>                 | <b>ZL31/ZL36</b>                 | <b>ZL41/ZL46</b> | <b>ZL51/ZL56</b> |
|---|-----------------------------------------------------------|----------------------------------|----------------------------------|------------------|------------------|
| A | Lifting height at foremost bearing point (in/mm)          | 122/3100                         | 134/3400                         | 146/3700         | 154/3900         |
| B | Lifting height under level bucket (in/mm)                 | 113/2860                         | 124/3160                         | 136/3460         | 144/3660         |
| C | Distance between the rear and front bearing point (in/mm) | 66/1680                          | 72/1830                          | 76/1940          | 81/2070          |
| D | Reach at Max. lift height                                 | 31/800                           | 33/850                           | 31/800           | 37/950           |
| E | Tipping angle at top (degrees)                            | 50                               | 50                               | 49               | 46               |
| F | Reach with bucket at ground                               | 79/2000                          | 83/2100                          | 87/2200          | 81/2050          |
| G | Crowd angle at ground level (degrees)                     | 42                               | 44                               | 42               | 43               |
| H | Calculated undercut (in/mm)                               | 6/150                            |                                  |                  |                  |
| I | Clearance with bucket dumped                              | 91/2300                          | 98/2500                          | 110/2800         | 122/3100         |
| J | Overall height in carry position                          | 65/1650 (ZL21)<br>69/1750 (ZL26) | 67/1700 (ZL31)<br>71/1800 (ZL36) | 75/1900          | 75/1900          |

The technical data may vary depending on the tractor model and implement.

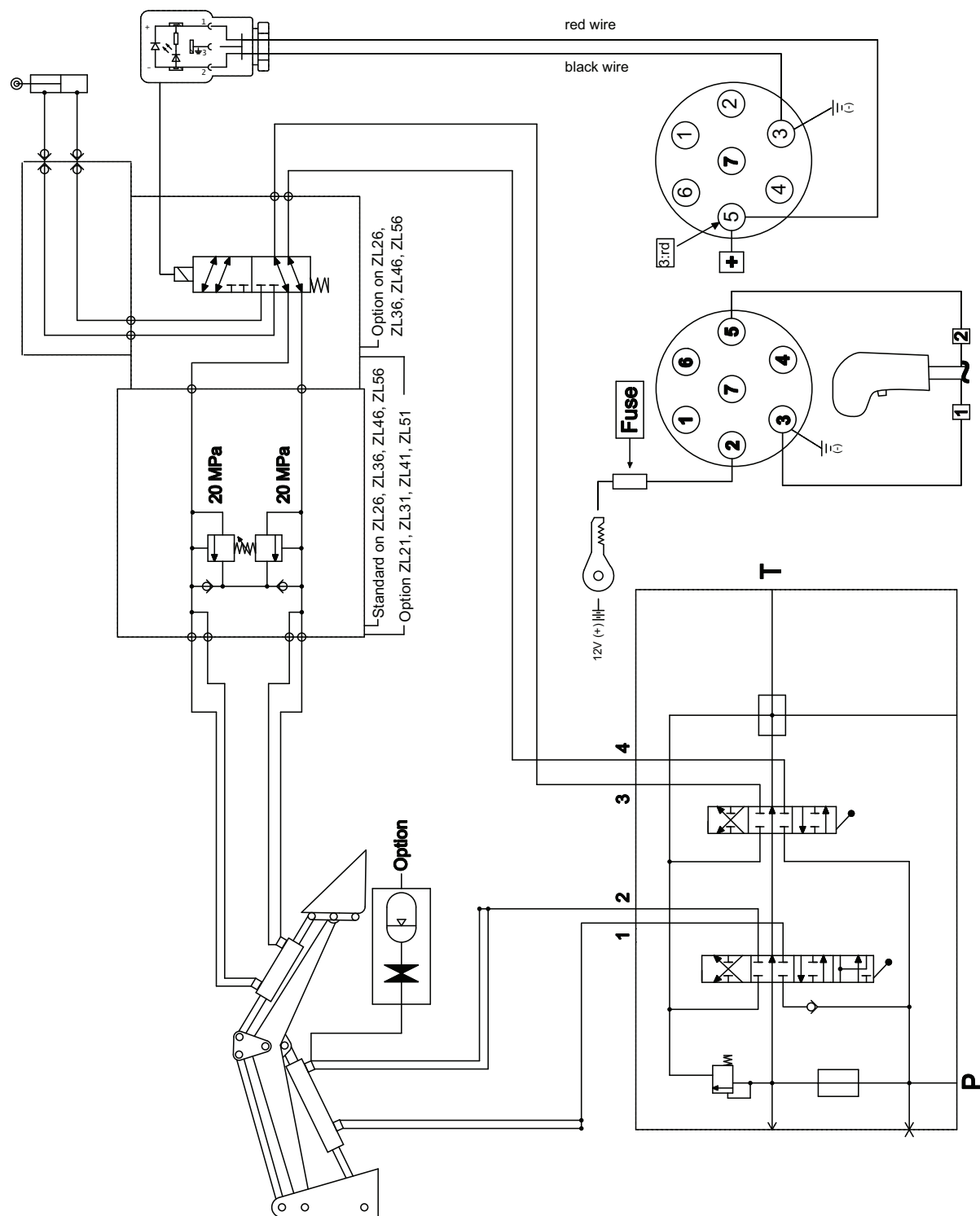
The calculations have assumed bucket model H is used.

Max hydraulic pressure 21 MPa / 210 bar / 3045 psi.

| Loader model                                                                             | ZL21      | ZL26      | ZL31      | ZL36      | ZL41      | ZL46      | ZL51      | ZL56      |
|------------------------------------------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| <b>Lifting power to pivot point at 19.5 MPa (kg/lbs)</b>                                 |           |           |           |           |           |           |           |           |
| Maximum lifting height                                                                   | 1580/3490 | 1290/2840 | 1760/3890 | 1460/3210 | 1870/4120 | 1570/3450 | 1960/4320 | 1660/3660 |
| 1.5 m lifting height                                                                     | 1900/4190 | 1560/3430 | 2100/4630 | 1750/3850 | 2290/5050 | 1930/4260 | 2470/5450 | 2110/4660 |
| Opening force at ground level                                                            | 2440/5380 | 2020/4450 | 2600/5730 | 2180/4800 | 2820/6220 | 2400/5290 | 3040/6700 | 2610/5760 |
| <b>Lifting power at 19.5 MPa 800 mm/31.5" in front of pivot point (kg/lbs)</b>           |           |           |           |           |           |           |           |           |
| Maximum lifting height*                                                                  | 910/2000  | 1260/2780 | 1010/2230 | 1570/3470 | 1050/2310 | 1650/3630 | 1120/2470 | 1740/3840 |
| 1.5 m lifting height*                                                                    | 1250/2760 | 1450/3200 | 1420/3130 | 1610/3560 | 1580/3470 | 1780/3910 | 1740/3830 | 1960/4310 |
| Opening force at ground level*                                                           | 1510/3220 | 1640/3610 | 1660/3670 | 1720/3790 | 1830/4050 | 1920/4240 | 2030/4480 | 2160/4760 |
| <b>Bucket's opening force at 19.5 MPa 800 mm/31.5" in front of pivot point (kg/lbs).</b> |           |           |           |           |           |           |           |           |
| Maximum lifting height*                                                                  | 1470/3240 | 1200/2640 | 1470/3240 | 1480/3260 | 1780/3920 | 1780/3920 | 2130/4690 | 2130/4690 |
| 1.5 m lifting height*                                                                    | 1990/4390 | 1610/3560 | 2050/4520 | 2040/4500 | 2530/5590 | 2520/5560 | 3040/6700 | 3030/6670 |
| Opening force at ground level*                                                           | 1940/4280 | 1550/3410 | 1980/4360 | 1960/4310 | 2380/5240 | 2360/5190 | 2840/6270 | 2830/6250 |

\*A bucket weight of 150kg was used.

## 10. WIRING DIAGRAM



## 11. WARRANTY CONDITIONS

ÅLÖ AB undertakes, for a period of 12 (twelve) months from the day that the loader/equipment was delivered to the purchaser, to replace or repair components that need to be rectified due to faults in material or manufacture. This is on condition that the fault is immediately notified to the supplier, and that the faulty loader/component is made freely available to the supplier.

For replaced components, the warranty will only be valid for what remains of the original warranty period.

The warranty does not cover faults caused by accidents, inadequate maintenance, modification or incorrect installation on the part of the purchaser. When heavily worn components are replaced under warranty, the purchaser shall be charged for the time that they have been used.

No compensation will be provided for personal injury, stoppages, consequential damage or other losses.

Testing or troubleshooting carried out at the request of the purchaser will be carried out without charge to the purchaser if defects are established in that connection.

Otherwise the purchaser will be charged for all costs.

Temporary repairs or extra costs incurred due to the fact that work was carried out outside of ordinary working hours will not be compensated.

## EC DECLARATION OF CONFORMITY

(Directive 2006/42/EC, Annex 2A)

ÅLÖ AB

Brännland 300

SE-901 37 Umeå, Sweden

Tel. +46 (0)90 17 05 00

Hereby certifies that:

From January 2013, the front loader models described in this operator's manual (see front page)

A. have been manufactured in conformity with the provisions in the COUNCIL DIRECTIVE

dated 17 May 2006 pertaining to mutual approximation of the laws of the Member States relating to machinery, 2006/42/EC, with special reference to Annex 1 of the Directive on essential safety and health requirements in relation to the construction and manufacture of machines.

dated 15 December 2004 pertaining to the approximation of the laws of the Member States on electromagnetic compatibility, 2004/108/EC.

B. are manufactured according to the following harmonized standards:

EN ISO 12100:2010 EN ISO 4413:2010, EN ISO 14892, EN 12525:2000 A2:2010, EN 60204-1.

SMP Svensk Maskinprovning AB, Box 7035, SE-75007 Uppsala, Sweden, has carried out a voluntary type control for ÅLÖ AB. The certificate has the following number: SEC/09/2050 – front loader.

The person authorized to compile technical documentation at ÅLÖ AB is Tomas Nygren, Product Development Director.



Umeå, 30 July 2013

Johan P Schlyter

CEO



