Jonsered 1250RZ -1500RZ safety+R CE

Operator's Manual GB

This operator's manual is an Original Instruction and applies to cranes with serial number from:
BF1250RZ0001, BJ1500RZ0001

2020-07

Congratulations with your new crane!
You are now the owner of a quality product from Cargotec, built to the highest standards of safety and quality.

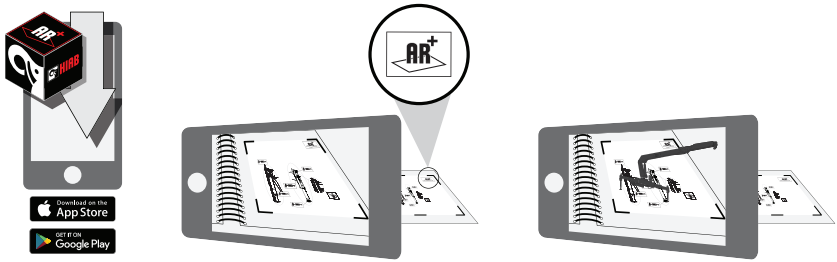
The aim of this manual is to help you handle your crane safely and with full satisfaction.

Please read the complete manual. It provides detailed information about the crane, control system and the practical management and maintenance of the crane.

We advise you to read it carefully and familiarize yourself with your crane before you start to use it.

Help us to improve this manual. Please send your comments and suggestions to **documentation@hiab.com**

This manual includes interactive contents.



Download the **'Hiab AR+ App'** for the interactive content in this manual. Look for the **AR+** symbol. Use your device to scan the image next to the symbol.

The interactive contents in the Hiab AR+ App will display suggestions to make the crane operation easier for you to understand. However, note that some of the content included in the 'Hiab AR+ App' may differ from the actual configuration of your crane and is subject to updates and changes from Hiab without prior notice.

Table of Contents

1. Introduction

1.1. This Operator's Manual is intended for operators of this crane.

This manual describes:

- Operation
- Safety precautions and warnings
- The crane control system
- Maintenance and troubleshooting

Enclosed to this manual the Installer will provide:

- Technical Data for your crane
- Technical Data and manuals for add on equipment if fitted

Study these instructions carefully

DANGER

If you do not study the complete Operator's Manual for your crane carefully, it could lead to fatal accidents or serious damage.

Therefore you should:

- Study the entire Operator's Manual carefully.
- Study the operating manuals for other add-on equipment, if fitted.
- Use the crane only after having done so.
- Follow the directions for use, operation and maintenance of the crane and add on equipment exactly.
- Store the Technical Data and manuals from the Installer, together with this Operator's manual.

NOTE

The manufacturer reserves the right to change specifications, equipment, operating instructions and maintenance instructions without prior notice.

NOTE

Hiab shall at all times have the right to:

- install, maintain and dismantle remote diagnostics tools or similar sensor-based connectivity capabilities (“Connectivity”) in and from the Equipment; and
- access, send, receive, collect, store and use any and all information and data gathered through the Connectivity, including but not limited to, information concerning efficiency, availability, downtime, operation, operating environment, movement, condition, logon, location and similar information relating to the Equipment (the “Information”). Such Information may be used for optimizing the Equipment, or any related equipment or services as well as for Hiab's internal business and/or operating purposes. Hiab shall be responsible for complying with applicable laws and regulations related to such Information.

The customer/user shall not in any way remove, disable, or interfere with the Connectivity or the Information. Any intellectual property rights or other right and title in and to the Connectivity features and the Information and all their further developments shall at all times be and remain the exclusive property of Hiab.

1.1.1. Description of Jonsered 1250RZ and Jonsered 1500RZ with safety +R

Safety+R recycling crane is intended for heavy-duty recycling applications: handling of scrap metal, building debris, waste, recycled material and bulky filling materials with a grapple, clamshell bucket or polyp grab. Hook is not allowed!

These cranes are compact, fully hydraulically operated loader crane and fulfils the European Machinery Directive requirements specified in the standard EN12999. Stress history class S3 in accordance with EN 13001-1

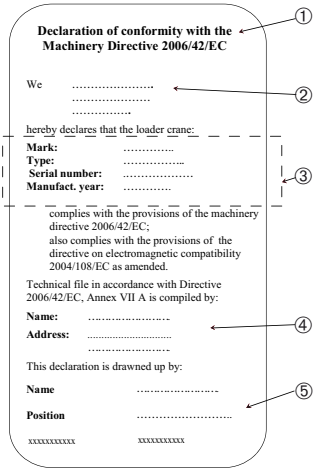
The crane type and the manufacturer are marked on the manufacturer plate.

NOTE

The exact technical information for your crane is shown in the Technical Data.

1.2. The Machinery Directive 2006/42/EC

- The Declaration of Conformity, delivered with the crane contains (1):
- Business name and full address where the crane is manufactured (2):
  Factory addresses:
  Hiab Cranes S.L.U. Pol. Ind. Malpica, calle E, 86 50016 Zaragoza, Spain
  Cargotec Poland Sp. z o. o. Ul. Metalowa 2, 73-102 Stargard, Poland
- Description and identification of the loader crane (3):
  Mark
  Type: see chapter Identification of the crane.
  Serial number
  Manufact. year
  Declaration of which provisions the loader crane fulfils.
- Name and address of the person authorised to compile the technical file (4):
  Name
  Address
- Identity and signature of the person who drawn up the declaration (5):
  Name
  Position
  Date and Signature



1.2.1. Identification of this crane

Description and identification of the loader crane:

Mark: .....

Type: .....

Serial number: .....

Manufact. year: .....

Mark: .....
Type: .....
Serial number: .....
Manufact. year: .....

1.3. Indications in the Operator's Manual

What must you do and not do?

The following indications are used in the Operator's Manual:

DANGER
Danger to life for yourself or to bystanders.
Follow the instructions carefully!

WARNING
Danger of injury to yourself or to bystanders, or danger of serious damage to the crane or other objects.

Follow the instructions carefully.

CAUTION
Hazard for the crane or crane components. Follow the instructions carefully.

Important:

If actions are numbered

1. Do this
2. Do that
3. .....
4. .....
5. .....

you should carry them out in numerical order!

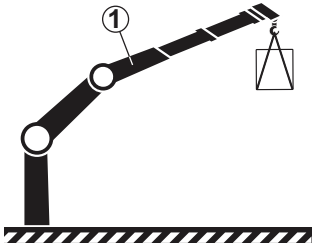
NOTE
Extra information that can prevent problems.

TIP
Tip to make the work easier to carry out.

Symbol for reference to a component in an illustration.

(1) Refers to a component in an illustration.

[option]: Indication for parts that are not-standard for the crane, but are an option. Not all [option] are available for your crane.

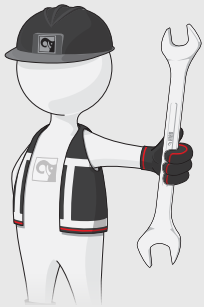


DANGER
Only persons with the requisite knowledge and experience with cranes may use the crane. Never operate the crane when you are sick, tired, under the influence of medicines, alcohol or other drugs.

- Take the delivery instructions from your Hiab Service workshop, or receive instruction from an experienced person from your own company. Only then should you operate your crane.
- Ensure that you comply with the statutory requirements of the country in which you use the crane (for example, certificate, obligatory safety-helmet).

DANGER

- Carry out yourself only the service and maintenance work you have the requisite knowledge and experience of.
- All other maintenance work may only be carried out by a Hiab service workshop.
- Ensure that every defect is rectified immediately, according to the instructions.
- Follow the instructions exactly!
- All other work to rectify faults must be performed by personnel in a Hiab service workshop!



WARNING

- Never clean the electronic system, plastic components, signs or bearings with a high-pressure jet cleaner. It could cause damage.
- Never expose the electronic system to high electrical voltages. This could damage the control system.
- Never immerse the controller in water or other liquid. This will make the controller unusable.

If your crane is equipped with add-on lifting equipment (hoist, rotator, etc.):

- The operation of the crane with add-on lifting equipment can differ from the operation as described in this manual.
- You should therefore study the Operating Manual for the add-on equipment carefully, before you use the crane.
- Take particular note when placing the crane in to or out of transport position.

2. Structure and parts of the crane

2.1. Main groups

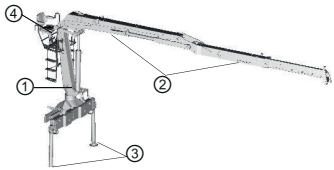
The crane consists of the following main groups:

(1) Crane base with column and slewing system

(2) Boom system

(3) Stabiliser system

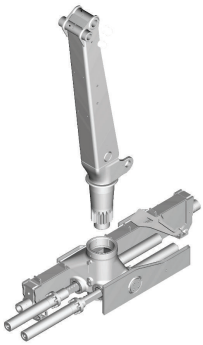
(4) Operating system (depends on the configuration)



2.2. Crane base with column and slewing system

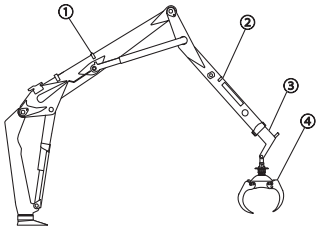
The crane base, column and the slewing system consist of the following components:

- Crane base
  with stabiliser beam, column bearings and three-point bridge.
- Column
  is fitted to the crane base and turns in an upper and a lower bearing.
- Slewing system



2.3. Boom system and add-on lifting accessories

The boom system consists of the following components:



(1) 1st boom

(2) 2nd boom

(3) Hydraulic extensions

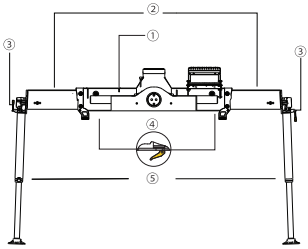
The length of the hydraulic extension depends on the type of crane.

(4) Grapple

Add-on lifting accessorie is placed between the boom tip and the load.

2.4. Stabiliser system

All our cranes are equipped with two stabiliser extensions and two stabiliser legs. Auxiliary stabiliser systems may be needed for heavy cranes.



- (1) Stabiliser beam. The stabiliser beam is a part of the crane base.
- (2) Stabiliser extensions.
- (3) Stabiliser locking device.
- (4) Switch
- (5) Stabiliser leg.

2.5. Operating system - hydraulic components

The operating system consists of the following hydraulic components:

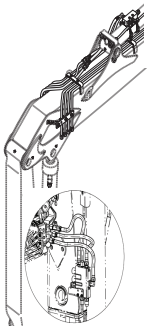
- oil tank
- hydraulic pump
- oil cooler [option on some cranes]
- main control valve
- stabiliser control valve
- hydraulic hoses and lines
- actuators:
  first boom cylinder
  second boom cylinder
  extension cylinder/s
  slewing cylinders
- return filter/oil tank
- pressure filter

2.6. LHV Load holding valves

The crane is equipped with load-holding valves as a safety device. After a crane movement they hold the crane in position, also in the unlikely event of a burst hose.

If there is a leak or a component fractures, such as a pipe, hose or a coupling, the load-holding valves will stop the booms from collapsing down, even when the hydraulic system is switched off, and you operate a particular crane function.

To operate a hydraulic cylinder equiped with a load holding valve, an opening pressure is required.



2.7. Premium high seat [option]

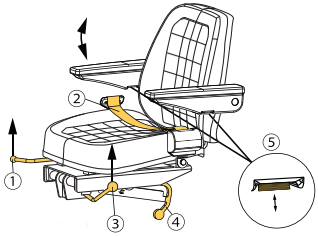
(1) Handle to adjust seat forward/backward

(2) Seat belt

(3) Handle to adjust height of the seat

(4) Locking device for seat tilting

(5) Handle to adjust armrest



DANGER

For cranes with joysticks and HPC, always deactivate HPC before leaving the high seat.

DANGER

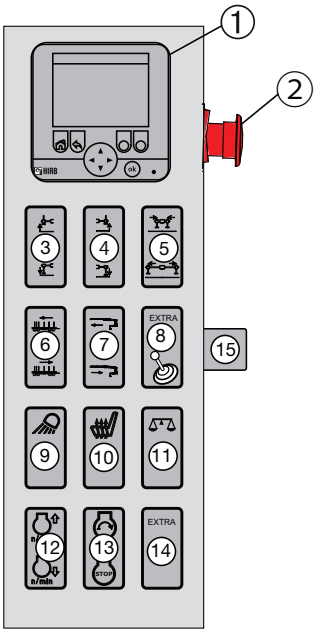
Take care not to put your foot on the pedals when taking place in the high seat. Unintentional crane movements can occur.

2.7.1. Controlbox

NOTE

The order of the buttons may differ, some are options. Please follow the symbol on the button.

(1) Display
(2) Stop button
(3) Right stabiliser leg in/out
(4) Left stabiliser leg in/out
(5) Stabiliser extensions in/out
(6) Bunks
(7) Console
(8) Stand by/Extra [option]
(9)Work lights [option]
(10) Seat heater [option]
(11) Scale [option]
(12) RPM+ RPM- [option]
(13) Engine start/stop [option]
(14) Extra [option]
(15) Button to be used when operating the stabiliser system



3. Safety precautions and warnings

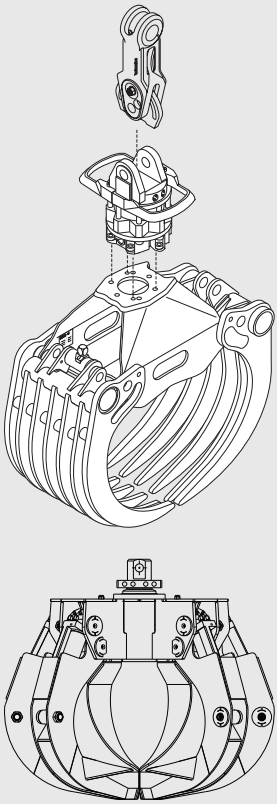
3.1. Use of lifting equipment

DANGER

- Only use lifting accessories that are suitable for your crane. Contact a HIAB service workshop.
- Never attempt to install add-on lifting accessories yourself!
- Add-on lifting accessories may only be installed by an authorised HIAB service workshop.
- When using lifting accessories, follow the instructions supplied with the equipment!
- Watch out for hazards!
- Never try to adjust lifting accessories when you are working on the crane!

After the lifting accessories have been fitted:

1. Check that the lifting accessories are securely fixed.
2. Only after this you should use your crane.



WARNING

- Clean the couplings, when connecting and disconnecting lifting accessories. Dirt can damage the hydraulic system.
- Take care that your fingers are not trapped.

3.2. Use of dismountable cranes

DANGER

- Ensure that there are no unauthorized persons in the immediate vicinity of the crane. When mount/dismount the crane to the vehicle people can suffer fatal crushing injuries!
- After setting up:
  Check that the crane is properly locked!

Dismounting the crane

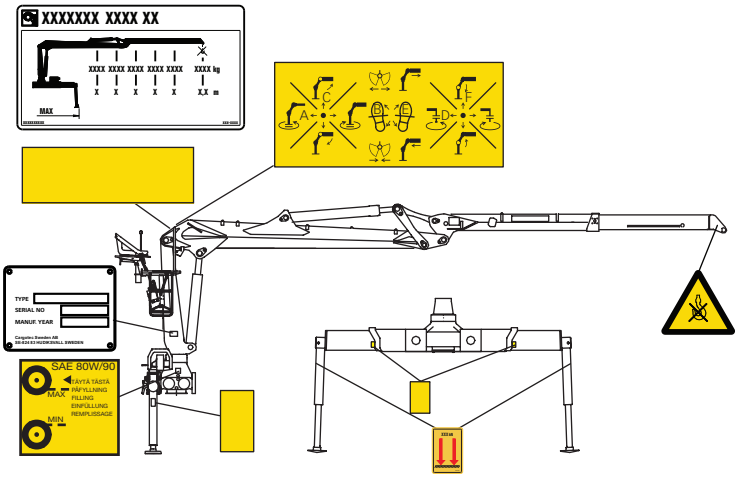
1. Make sure that the ground where the crane will be parked is firm.
2. Fully extend and set the stabilisers to ground.
3. Park the crane straight backward with a piece of wood underneath the crane tip to prevent damage.
4. Disconnect the power take off to ensure that the hydraulic system is without pressure.
5. Disconnect the crane from the chassis.
6. Slowly drive the vehicle away from the crane.

WARNING

Take care when mounting/dismounting the crane on/off the vehicle.

Roughly handling can seriously damage the crane or the vehicle.

3.3. Signs on the crane



NOTE
The signs may vary depending on country. Always make sure that you comply with the statutory requirements of the country in which you use the crane.

3.4. Maximum load

Lifting capacity

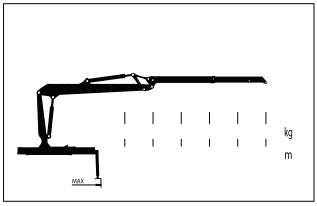
Your crane has a certain lifting capacity, expressed in kNm or tm. This lifting capacity is also known as the load moment. The lifting capacity is: the payload multiplied by the outreach in metres that the crane can operate at different positions. The lifting capacity of your crane determines the maximum load your crane may lift within its working zone. However take careful note; the greater the operating radius of the crane, the lower the lifting capacity will be because of the weight of the boom system itself. The load plate and the load diagram on your crane show the maximum loads you may lift in the operating reach of your crane.

DANGER
- Overloading could result in damage to the crane or in the worst case, personal injury or death
- Never increase a hanging load, since that may cause a load holding valve to open and/or the vehicle to turn over.
- Never use the crane with the OLP system switched off.

NOTE
The extra weight of the lifting accessories has to be added to the load. Thus, with lifting accessories the load you can lift is less heavy.

Load plate

You will find the load plate next to the main control station. On the plate is the maximum weight that you may lift at a given reach, with the 1st boom in the optimum position. In chapter Technical Data in this manual you will find these values for your crane.



DANGER
Never exceed the maximum weight on the load plate.

Optimum lifting position

The weight that your crane can lift will be determined by:

- Stability of your crane on the vehicle.

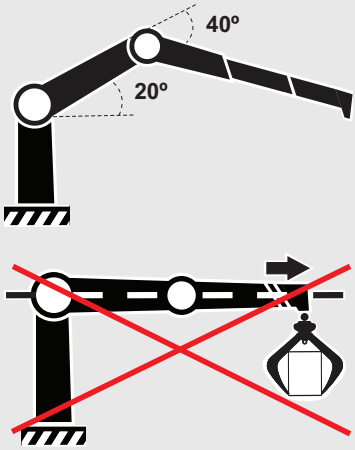
- Stabiliser extensions position and legs pressure to the ground.
- The outreach at which you are working and boom position.

WARNING

During testing crane (LHV, OLP, VSL etc.) follow the optimal boom position of your crane as shown on the picture:

- Position the 1st boom into an angle of 20 degrees,
- Position the 2nd boom into an angle of 40 degrees.

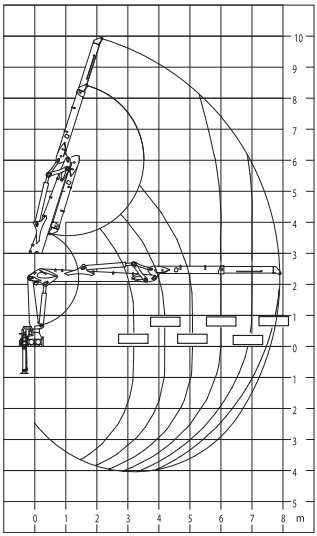
For Z-type cranes avoid situations when 1st and 2nd booms are in one line. In this particular position, the 2nd boom might be easily overloaded when extending the outreach of the crane and cause uncontrolled fall load on the ground.



Load diagram

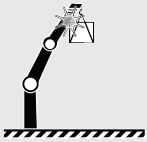
You can find the load diagram in the enclosed technical data and it shows the maximum load your crane may lift in the entire working zone.

The load curves show the maximum load that may be lifted at a given reach and height. For a given maximum load, the possible working zone is to the left of the load curve. The lifting capacity for some cranes is limited in the high lifting area.



WARNING

Care must be taken when handling loads in the high lifting area, so the load/tool does not come into contact with the boom system.



3.5. Operating conditions

You may only use the crane under the following conditions:

- In the open air, or in spaces with sufficient ventilation.
- With a mean wind velocity less than 13.3 m/sec (approx. 29.7 mph). **See the wind speed table.**

DANGER

- If you use the crane in a confined space you could suffocate from the exhaust gases from the vehicle.
- Never use the crane in a high wind or storm. When the mean wind velocity exceeds 13.3 m/sec (approx. 29.7 mph) the crane will behave unpredictably. **Never** use the crane during a thunderstorm.
- **Never** use the crane at temperatures below -40°C (-40°F), as the steel's properties deteriorate below this temperature.

WARNING

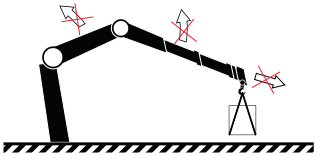
- At temperatures below 0°C (32°F):
  Do **not** touch the operating levers during the first few minutes.
- When starting in cold weather, the wear on the hydraulic system is greater than at normal working temperatures.

To get a good function of the crane, it should be started as follows:

- Engage the power take-off at low rpm.
- Allow the system to idle for a few minutes.
- Operate stabiliser legs up and down for one minute, in order to warm up the oil.

3.6. Maximum load moment

If your crane has reached the maximum load moment (lifting capacity), the OLP gives a warning and locks any crane movement that will increase the load moment. This is known as an OLP situation.

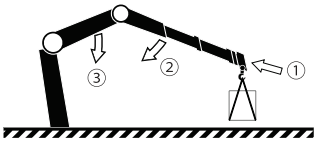


If a OLP situation takes place, then the following movements are locked: First boom up Second boom up Second boom extension out

- 1st boom up
- 2nd boom up
- 2nd extension boom out

If the OLP situation takes place and movements are locked , you must decreased the maximum load moment before you can continue loading. Operate the crane movements in the following order until the OLP situation is over and all movements unlocked.

1. 2nd extension in.
2. 2nd boom down
3. 1st boom down down



If all functions are still blocked, it is possible to temporarily release OLP and operate appropriate crane movements to correct the overload situation, de chapter "during operation"

DANGER

Only use the OLP release to get the crane out of a locked position. Never use the OLP release to overload the crane deliberately!

3.7. Wind speeds

Wind speed averaged over 10 minutes at a height of 10 m

Wind Force	Above flat ground		Characteristics
	m/s	Wind type	
0	0.0 - 0.2	Calm	Calm, smoke rises vertically or nearly vertically
1 2	0.3 - 1.5 1.6 - 3.3	Slight breeze	Wind direction recognisable from smoke plumes, the wind begins to be noticeable on the face; leaves begin to rustle and weather vanes can start to move.
3 4	3.4 - 5.4 5.5 - 7.9	Moderate wind	Leaves and twigs in continuous movement, small branches begin to move. Dust and paper begin to move over the ground.
5	8.0 - 10.7	Fairly strong wind	Small leaved branches make swaying movements; crested waves form on lakes and canals.
6	10.8 - 13.8	Strong wind	Large branches move; you can hear the wind whistling in telephone wires; umbrellas can only be held with difficulty.
7	13.9 - 17.1	Severe wind	Entire trees move; the wind causes difficulty when you walk into it.
8	17.2 - 20.7	Stormy wind	Twigs break off, walking is difficult.
9	20.8 - 24.4	Storm	Causes superficial damage to buildings (chimney pots, roof-tiles, and TV antennae are blown off).
10	24.5 - 28.4	Severe storm	Uprooted trees; considerable damage to buildings etc. (occurs infrequently on land).
11	28.5 - 32.6	Very severe storm	Causes extensive damage (occurs very infre quently on land).
12	> 32.6	Hurricane	

3.8. Signals when using a crane

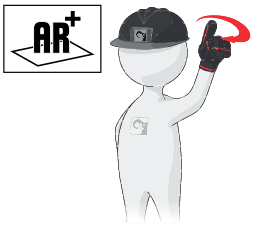
DANGER

- If it is not possible to see the load and the entire working area clearly the crane operator is obliged to follow the instructions and signals given by a qualified person qualified.
- The country-specific regulations for crane operator signals are to be used.

Signals in this manual give a number of standard signals that can be used.

Lift

Raised arm and index finger raised. Circular motion with the hand.



Lower

Arm pointing downwards and index finger down. Circular motion with the hand.

Stop all crane movements / Hold the load in position

Raise the open hand, with the palm clearly visible, and arm at shoulder height.

Keep the hand still.

Emergency stop for all movements by the crane

Raise the hands and the arms to an oblique angle.

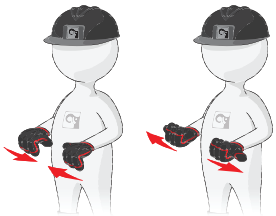
Very short movement

Place the hands a very short distance apart, with the palms facing each other. The hands may be held either horizontally or vertically. The next movement may be: Lift, lower, move the lifting gear, change the reach, or turn.

Change the reach

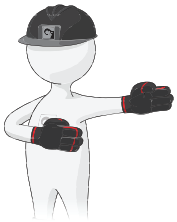
Signal with your hands.

- Sideways movement outwards with both hands. Thumbs outwards.
- Sideways movement inwards with both hands. Thumbs inwards.



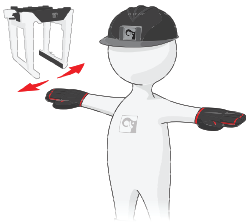
Turn in the direction indicated

Indicate the direction with the hands.



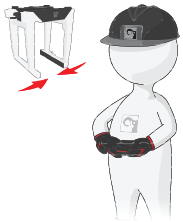
Open the tool

Extend the arms at shoulder height, with the palms facing downwards.



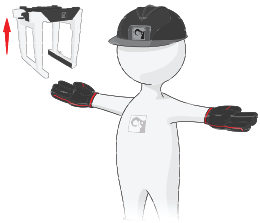
Close the tool

Move both hands close together.



Lift the open tool a little

Extend both arms at shoulder height, with the palms facing upwards. Make vertical movements with both arms outstretched.



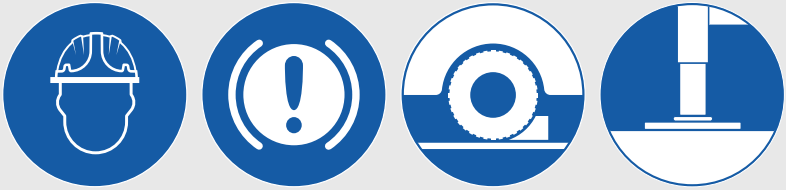
Keep the tool in position briefly

Raise the hand drooping slightly, with the fist clenched.

3.9. Use of the crane

Starting crane operation

DANGER



- Wear a safety helmet (compulsory in some countries!).
- Check that the ground is sufficiently flat and firm.
- To ensure that the vehicle stays in its position, always engage the parking brake and place chocks under the wheels.
- Check that the ground is not undermined. Look out for sewers, cellars, excavations etc.
- The stabiliser legs must not be able to sink in! Use support plates that are large and firm enough for your crane. The plates must not bend under load.
  Check that the support plate as, it comes under load, is not pushed into the ground.
- Ensure you can see the stabiliser legs and stabiliser extensions when you are operating them.
- Do not lower the stabiliser legs on the edge of an embankment, soft shoulder, slope etc.
  Lower the stabiliser legs only on to a flat and firm surface.

DANGER

- Do not stand in front of the hydraulically operated stabiliser legs when you are operating them!
- Never use the stabiliser legs as a parking brake, since the vehicle could start to slide.
- Slide the stabiliser extension, on both sides of the vehicle, out completely. Then lower the stabiliser legs for support.
- Never operate the stabiliser legs, while the crane has a load!

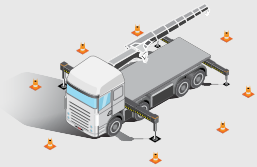
WARNING

- Use low force when placing the stabiliser legs on the ground.
- Do not raise the vehicle with the stabiliser legs!
  If you raise the vehicle with the stabiliser legs, this may damage the stabiliser legs.
- Check that the add-on lifting accessories and separate lifting accessories are in good order!
  Add-on lifting accessories are sometimes fitted on the crane (hoist, JIB) or placed between the boom tip and the load (grapple, rotator).
  Separate lifting accessories are connected to the standard load hook (slings, chains, chackles etc).

Preparation for use

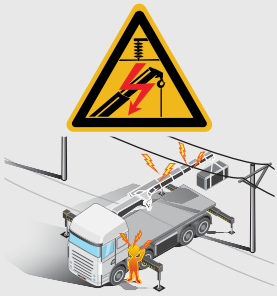
WARNING

Make sure that there are no unauthorised persons within the operating range of your crane!



WARNING

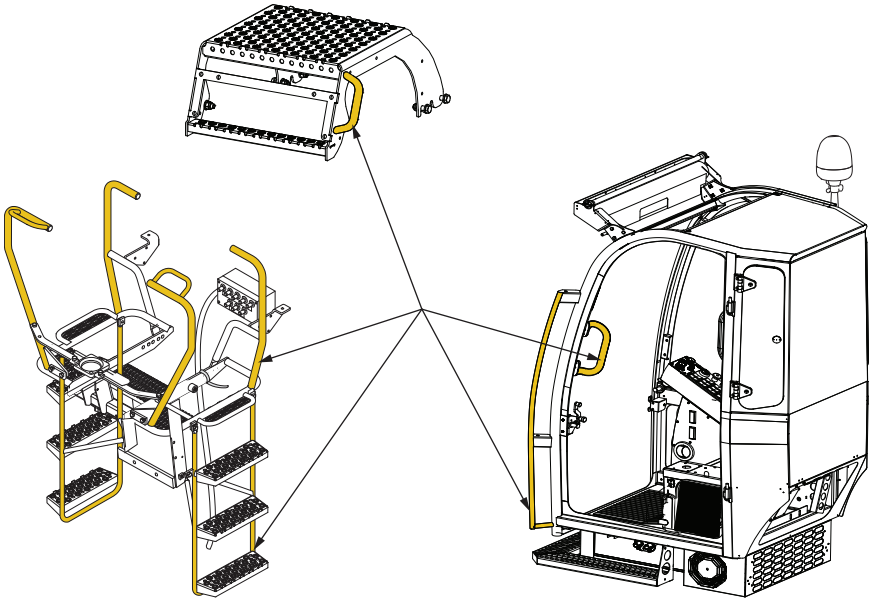
- If a part of the crane comes in contact with an electricity line, you will be electrocuted!
- Maintain the following minimum distances between the crane and overhead electricity lines, unless otherwise prescribed by national rules.



Minimum distance between crane and over head electricity lines		
Voltage (V)	Minimum distance to an insulated conductor	Minimum distance to an uninsulated conductor
<500 V	0.5 m	2 m
500-40000 V	1.5 m	4 m
>40000 V	2.0 m	6 m
Voltages are found:		
up to 500 V:		to buildings
500-40000 V:		trams, trains
over 40000V:		power transmission

DANGER

When you go into the control station (high-seat, cabin, platform) remove all jewellery, loose clothing or other hanging items from your body (for example, rings, scarfs, bracelets…). Jewellery, loose clothes and other hanging items can be caught in some parts of the crane.



DANGER

When you go into or out from the control station, use only handles and supports on the crane that were specifically made to help the operator to go into or out from the control station.

Safety when starting crane operation

DANGER

- Ensure you can see the stabiliser legs and stabiliser extensions when you are operating them.
- Do not stand in front of the hydraulically operated stabiliser legs when you are operating them!
- Where the ground is not firm enough, use support plates under the stabiliser legs for additional support.

  Use support plates that are large and firm enough for your crane.

  Check that the support plate as, it comes under load, is not pushed into the ground.

  Check that the support plate does not bend under load.
- Do not lower the stabiliser legs on the edge of an embankment, soft shoulder, slope etc.

  Lower the stabiliser legs only on to a flat surface.
- Slide the stabiliser extension, on both sides of the vehicle, out completely if possible. Then lower the stabiliser legs for support.
- Never operate the stabiliser legs, while the crane has a load!

WARNING

- Use low force when placing the stabiliser legs on the ground.
- Do not raise the vehicle with the stabiliser legs, if the crane is equiped with only two stabiliser legs!

  If you raise the vehicle with the stabiliser legs, this may damage the stabiliser legs.

Safety during crane operation

DANGER

Your crane has a safety system.

The safety system will help you to work safely. Nevertheless, you remain responsible for safe use of the crane!

Therefore, always work according to the operating instructions!

In an emergency immediately switch off all crane movements!

- Press a **stop button**.

To avoid unexpected load movements and at every interruption in crane operation.

- Press a **stop button**

DANGER

- Keep checking that there are no unauthorised persons within the operating reach of the crane!
- For cranes with cabin, if something is wrong with the crane end the cabin is in the upper position, the emergency landing valve will opend end the cabin will go down slowly
  Always close the front door when you are inside the cabin. The side door must be closed or locked in ventilation mode.
- Make certain that you can always see the load!
  If your view of the load is not adequate, have someone else give you signals.
  See the list of signals. Make certain that you and the person assisting you know these signals.
- Pay attention to the safety of the person giving the signals!
- Never move the vehicle, if you have a freely-suspended load on the crane!
- Never walk or stand under a suspended load!
  During operation, never stand below the boom system or load!
- Do not slew the crane, nor lift the first boom, nor lift the second boom into their ends positions at full speed. This can damage the crane.

WARNING

- Never use the extension boom as a jack. This could damage the slewing bearings and the connection between the crane column and the crane base.
- Do not lift a load over yourself or the cab
- If the boom system is in a high position (first boom above 70°), do not allow the boom to lower at full speed. The crane could go into an uncontrolled movement.
  Be careful if, in particular, the OLP gives an early warning!
- When loading the vehicle:
  Take the load off the stabiliser legs by withdrawing them slightly. The stabiliser legs must remain in light contact with the ground.

CAUTION

- Operate the crane using smooth and gentle lever movements.
- If a cylinder is at its end position, free the operating lever. Otherwise overheating can occur.

Safety when ending crane operation

DANGER

Always end crane operation as follows:

- After use, always place the crane in the transport position!
- When you have to park the boom on the load space or over the load; secure the boom and the lifting accessories to prevent any movement of the crane and the lifting accessories.
- Withdraw the stabiliser legs and stabiliser extensions.
- Lock tiltable stabiliser legs and manual operated stabiliser extensions in transport position.
- Check that the locking mechanisms are properly locked.
- Switch off the operating system.
- Disengage the PTO or power supply after work.
- If you drive with the PTO or power supply engaged, this will cause serious damage to the PTO/gearbox combination.

DANGER

For cranes with cabin:

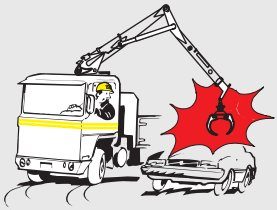
- Make sure that the cabin is in lower position.
- Close all windows and both doors.
- Pull down the protecting curtain to protect the front door .

Only after doing the above, should you drive the vehicle away.

Driving with the crane

DANGER

- Never drive the vehicle if there is a load suspended from the crane.
- Before you move the vehicle:
  Check that there is no pump flow to the main control valve. The PTO or power supply must be disengaged. The operating system must be switched off!
- Pay attention to the width and height of the crane in the transport position. The crane has to stay within the width of the truck. Make sure the parked crane can not hit bridges, tunnels etc.
- Pay attention to overhead power lines! Make sure that no part of the crane ever comes in contact with overhead power lines.



For further instructions see vehicle's manual(s).

4. The Safety+R

4.1. System Safety+R

Safety+ R is a safety system and it:

- Monitors the crane's operation and prevents dangerous actions.
- Makes operation easier.
- Makes troubleshooting easier.

The system also provides a large number of functions.

Additional features:

- Capacity indicator
- Warnings
- Slope control
- Over load protection (OLP)
- Overturn protection (OTP)
- Stabiliser deployment monitoring
- Automatic dumping of oil
- Transport warning

NOTE
Certain functions are standard, others are options.

4.2. How the Safety+R system works

The system works as follows:

On the crane there are different sensors and indicators that send signals about the crane's load, position and movements to an electronical control unit (ECU) . The ECU then decides how the crane can be operated and stops/reduces prohibited movements/speeds according to the following situations:

Overload situation (lifting)

- When the crane approached the prohibited overload, a warning is given.
- When the crane reaches the prohibited overload, all movements increasing load moment are stopped.
- When the maximum allowed tilting angle is exceeded, all movements increasing the load moment are stopped.
- If the stabiliser system is not fully **deployed**, the crane capacity is reduced.

Overturning situation (for cranes intended for digging/pressing down)

- When max allowed tilting angle is exceeded, all movements increasing the tilting angle are stopped..
- If the stabilisers system is not fully **deployed**, all crane movements are stopped.

Fault monitoring

When there is a fault in the control system it will give an immediate warning.

Depending upon the fault the crane speed and/or the load capacity will be reduced. When the fault is serious, use of the crane is blocked completely.

DANGER

Never try to repair the control system yourself. Repairs may only be made by a Hiab service workshop!

4.3. Graphical user interface (ECU)

Buttons and indicators

(1) Push to go back to main menu

(2) Push to go one step back

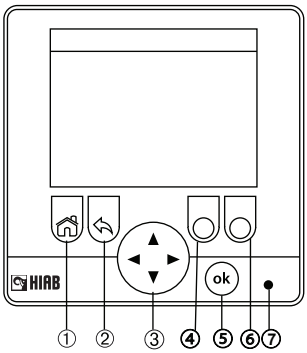
(3) Press to toggle between menu items

(4) Menu options

(5) Push to select item or to confrm

(6) Push to see the current error

(7) LED



	Green light on: Stand by mode
	Red light flashing: Communication is lost.
	Red light on: Critical error detected in the system
	Orange light blinking: Time for service

Symbols you can see in the display

Joysticks active.

Joysticks not active.

OTP activated

OTP released

Left/right stabiliser system not set to the ground.

Left/right stabiliser system set to the ground.

Left/right stabiliser extenstion in parking position.

OLP situation

OLP/OTP release

OLP/OTP release locked

1st boom parked

Connection lost

Capacity indicator

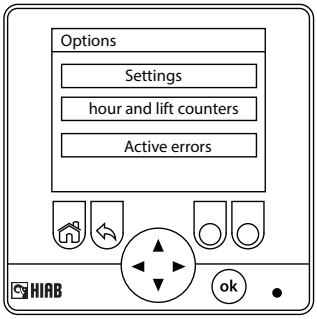
Current base angle

Service indicator

High boom warning

Menu options

To access the menu, push the button (3). To select one item, push the button (5) (OK) . In the top left of the screen the name of the item currently highlighted.



Settings

When the item *Settings* is selected information is shown about:

Screen brightness

Adjust the screen brightness.

Screen brightness for dimm mode

Adjust the brightness when the screen is faded.

Dimm time

Adjusts the time (in hours) before the display starts to fade.

Stand by time

Adjusts the time (in hours) before the display goes to standby mode.

Type of current capacity indicator

Choose between the single bar or the continuous bar.

Single Bars, 1 bar = 10% of capacity

- Bars 1-8 (0% – 90%) green
- Bars 7-8 (55% - 75%) orange
- Bars 9-10 (75% - 100%) red

Continuous bars 0,5% of capacity.

- Bars 1-8 (0% – 90%) green
- Bars 9-10 (90% - 100%)

Button backlights

Chose if the buttons should be illuminated or not.

Color scheme

Select bright or dark theme.

Language

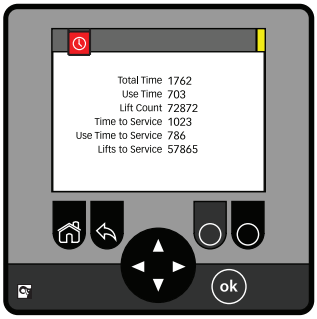
Select the wanted language.

Use the arrows do adjust the selected item, confirm with OK.

Hours and lifting counters

When item *Hours and lifting counters* is selected information is shown about:

- Total time - Number of hours that the crane has been engaged.
- Use time – Number of hours that the crane has been used.
- Time to service – Number of hours with the crane engaged until next service.
- Use time to next service – Number of hours until next service.
- Lifts to service – Number of lifts until next service.



4.4. Stop button

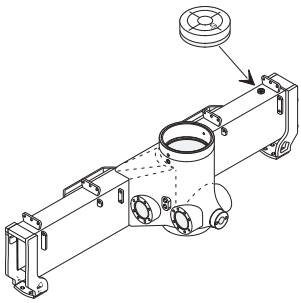
If a dangerous situation occurs, press the red stop button on the control box. To release the stop button, turn it clockwise. If you push a stop button this symbol will be shown in the display.

5. Starting crane operation

5.1. Starting operations

Placing the vehicle

- Place the vehicle on a flat surface. The maximum permissible slope for your crane is 5°. To determine the incline of the truck check the spirit level, on the crane. When the bubble in the middle of the gauge, the crane is in horizontal position. When the bubble is between the two circles, the crane's inclination is between 0 ° and 5 °. If the slope exceed 5° unintentional crane movements can occur.



Engage the PTO

- Engage the PTO (Power Take Off).
- Bring the vehicle's engine to the correct rpm.

NOTE

- Rpm too high: the oil in the hydraulic system might overheat. Rpm too low: during crane operation, the vehicle's engine could stall.
- The maximum rpm may depend upon a governor on your PTO combination.

Start the system

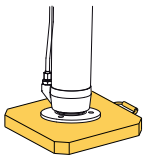
5.2. Set the stabiliser system

To ensure the maximum stability of the vehicle, all the stabiliser extensions and legs must be fully extended and set to the ground without lifting the wheels from the ground.The display will give you information about the stability of the vehicle.

5.2.1. Stabiliser system and ground conditions

Always:

- Make sure that the ground can support the load that the stabiliser leg imposes on the ground. **(*)**
- Make sure that the ground is not undermined.
- Use the extra support plates that are large and firm enough for your crane model.



The maximum permitted ground inclination under the stabiliser leg plate is 5º.

(*) The maximum load that the stabiliser leg can impose on the ground:

Cranes	P (kN)
J1250RZ	130
J1500RZ	150
J1620RZ	190
J1300RS	110
J2490RS	230

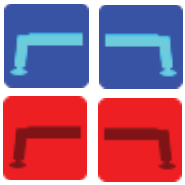
DANGER

Check that the extra support plates do not bend or sink into the ground.

Do not lower the stabiliser legs on the edge of an embankment, soft ground, hollows, etc… Lower the stabiliser legs only on to a flat, firm and stable surface.

5.2.2. Stabiliser deployment monitoring

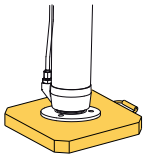
This optimise the crane lifting capacity in relation to the vehicle's stability. The ECU reads that the stabiliser extensions are fully extened and and that the stabiliser legs are pressed to the ground. When the stabiliser extensions are not fully extended or the stabiliser legs are not pressed to the ground there is a risk of of instability and the crane capacity will be reduced.



When the stabiliser extensions are fully extended and/or the stabiliser is set to the ground, the symbols for the stabiliser system will be blue. When the stabiliser extensions is not fully extended and/or the stabiliser set to the ground, the symbols for the stabiliser system will be red.

Place the extra support plates

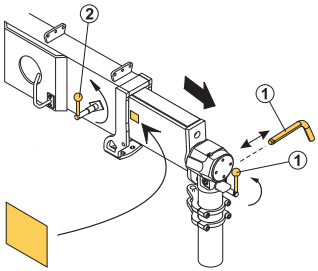
- Place the extra support plates under the stabiliser leg plates.



DANGER

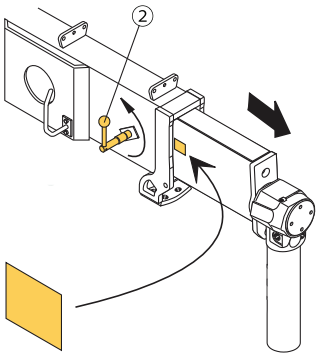
Check that the support plates do not bend or sink into the ground!

Crane with tiltable stabiliser legs



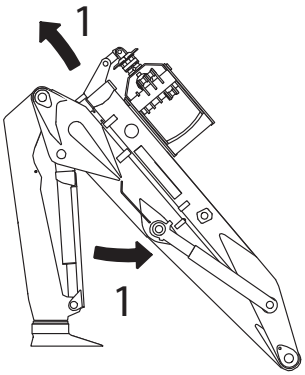
1. If the stabiliser extensions are equipped with a separate lock, unlock it with the handle (2).
2. Make sure the stabiliser extensions are extended a little, so the stabiliser leg can be rotated freely of the vehicle.
3. Unlock the stabiliser leg lock (1).
4. To tilt the stabiliser leg use lever or button for stabiliser leg. Make sure that you have full control of the movement to avoid risk of crushing.
5. Lock the stabiliser leg lock (1).
6. Extend the stabiliser extension until the yellow mark is visible. If the stabiliser extensions are equipped with a separate lock, lock it with the handle (2).
7. Operate the stabiliser leg downwards until it is set to the ground.

Crane with non-tiltable stabiliser legs:

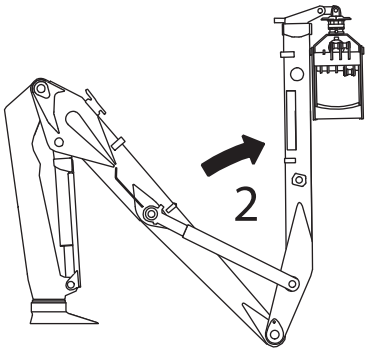


1. If the stabiliser extensions are equipped with a separate lock, unlock it with the handle (2).
2. Extend the stabiliser extension until the yellow mark is visible. If the stabiliser extensions are equipped with a separate lock, lock it with the handle (2).
3. Operate the stabiliser leg downwards until it is set to the ground.

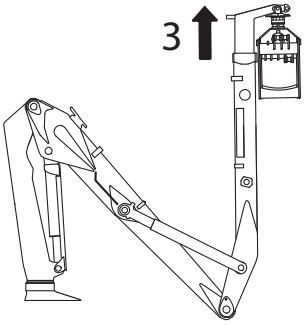
5.3. Operate the boom system



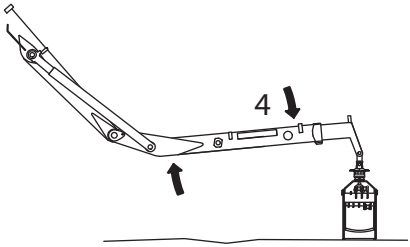
1. Extend the extensions until they are released from the hook. Operate the 1st boom 1-1.5m out from the column.



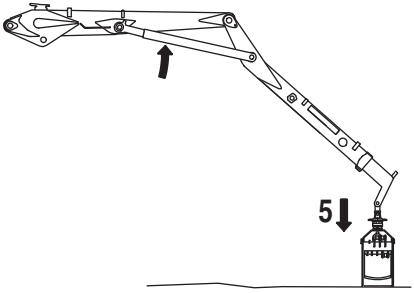
2. Operate the 2nd boom to an upright position.



3. Extend the hydraulic extension until the grapple is feee from the support hook.



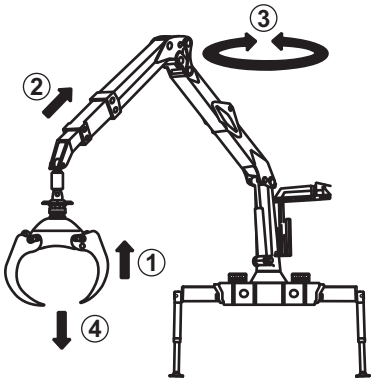
4. Push the grapple against the ground and straighten the 2nd boom.



5. Push the second boom against the ground and raise the 1st boom slowly.

6. During operation

6.1. Operate the crane



Lifting should be carried out in the following order:

1. Lift the load.
2. Move load closer to the crane.
3. Slew the crane
4. Lower the load.

WARNING

- Never go below a hanging load or move a load over people.
- The crane may not be used for lifting personnel

Comply with the values listed on the load plate; do not overload the crane.

Do not lift a load over yourself or the cab

- Never drive the cylinders to their extreme positions at full speed.
- Never operate the stabiliser system while the crane is loaded.
- Make sure that the weight of the load and the vehicle does not rest only on the stabiliser system. Adjust the stabiliser leg if necessary.
- Do not load from in front of the vehicle: You risk to tilt the vehicle!

DANGER

Be especially careful when working near electricity lines. Also beware of overhead lines for electrified rail roads. Maintain a distance of at least five meters.

If an accident occurs

- do not touch metallic parts of the crane (the stabiliser legs will ground the crane, and you will be connected to an electric circuit).

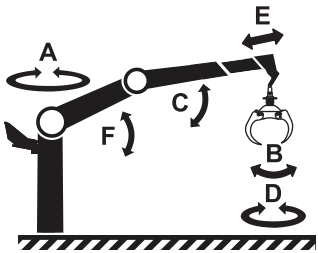
- warn others, ask them to move farther away, forbid them from touching the load, crane, vehicle or ground near the crane.

- request that power is turned off from the electricity line.

6.2. Operation from the high seat

The high seat is equipped for using tools and it is operated by two or four control levers and two foot pedals.

For safety reasons, it is necessary to sit down on the seat to operate the control levers.



A: Slewing

B: Grapple

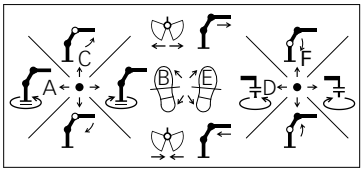
C: 2nd boom

D: Rotator

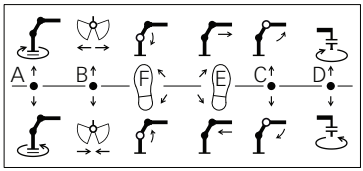
E: Extension

F: 1st boom

Two control levers and two foot pedals (2+2)



Four control levers and two foot pedals (4+2)



DANGER

Take care not to put your foot on the pedals when taking place in the high seat. Unintentional crane movements can occur.

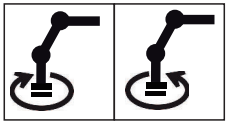
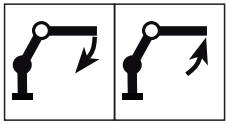
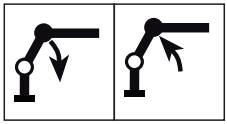
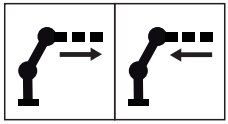
Symbols and functions

These symbols can be shown:

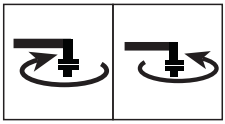
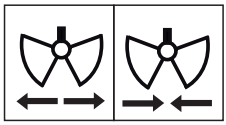
- On the plates.
- On the control valve levers.

- On the controller (If delivered).

Basic crane symbols and functions:

SYMBOLS	FUNCTIONS		SYMBOLS	FUNCTIONS
	Slewing			Second boom
	First boom			Hydraulic extensions

Accesories symbols and functions. (If delivered).

SYMBOLS	FUNCTIONS		SYMBOLS	FUNCTIONS
	Bunks			Rotation tool
	Scale			Grapple
	Grapple saw			Cabin
	Seat heater			Console
	Lights			

The order of the functions is customized for each crane.

6.3. Features

The control system provides a large number of features. Certain features are standard, others are options.

6.3.1. Over load protection (OLP)

OLP is a safety function that prevents overloading the crane. The current status is shown in the display.

Capacity indicator

(7) Load warning, the actual precentage is shown under.

(8) Green running light: Normal operation

(9) Orange running light: Close to 90 % of capacity used

NOTE

The color on the capacity indicator can be customized by the customer.

90%

When the load reaches 90% of permitted load, this symbol will blink red and white in the display.

100%

When the crane reaches 100% of used crane capacity, OLP cuts in and stops all functions that increase the pressure. These symbols will fill the display, regardless of the menu, together with the actual percentage.

To release OLP

If all functions have been blocked, it is possible to temporarily release the OLP and operate an appropriate crane function to correct the overload situation. Push and hold the button “OK” on the display while operating load reducing functions, the arrow in the display indicates which direction you must operate the boom system. OLP release is active in 10 seconds intervals. After each interval you must wait for a minimum of 30 second before the release operation can be activated again.

This symbols will show you that OLP is released,

6.3.2. Overturn protection (OTP)

OTP during lifting

If the tilt of the crane during lifting exceeds the maximum permitted angle, POL is activated, the symbol for tilting truck shows on the display and all load increasing moments are stopped until the situation is over.

The arrow in the display will indicate in which direction the boom should be operated.

OTP during digging

When the tilt of the crane during digging exceeds the maximum permitted angle, a dump valve is activated and all load increasing actions will be stopped until the situation is over. The arrow in the display will indicate which direction the boom should be operated.

Release OTP

Push and hold the button “OK” on the display or press the stop button whilst operating load reducing functions.

These symbols will show you that OTP or POL is released.

Base tilting: 

OTP: 

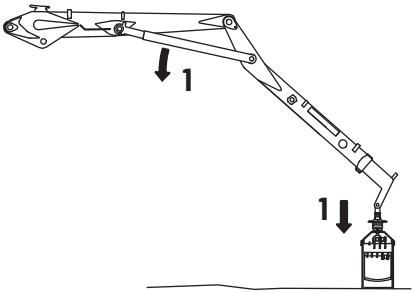
6.3.3. Error in the system

Error in the system

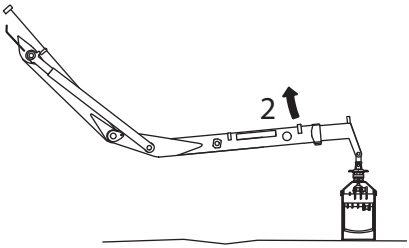
If there is an error, this symbol will be shown in the display.

Push the buttons  or  on the display for more information. Acknowledge minor errors and contact an authorized HIAB service workshop for critical errors.

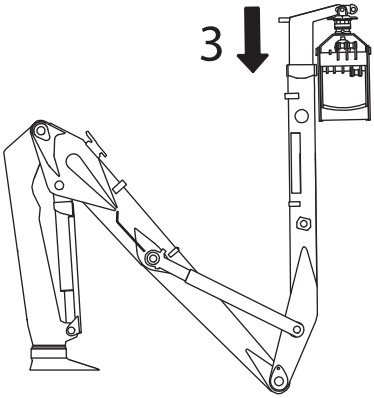
7. Ending crane operation



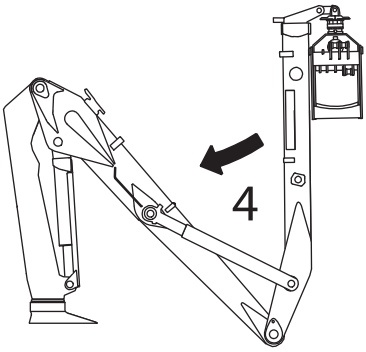
1. Press the 1st boom and the grapple against the ground.



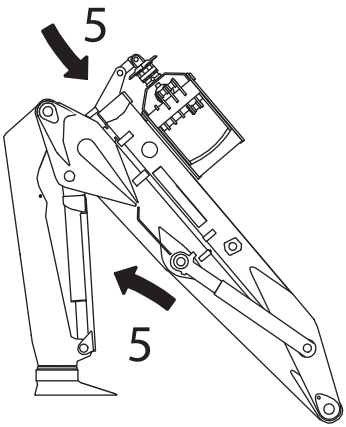
2. Raise the 2nd boom



3. Retract the hydraulic extensions until the grapple is locked in the support.



4. Operate the 2nd boom against the 1st boom.



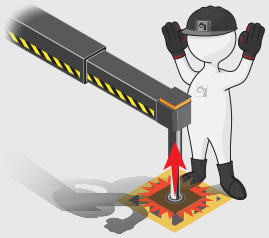
5. Retract the extensions until it is locked by the catch. Slowly operate the 1st boom against the column.

7.1. Placing the stabiliser system in the transport position

DANGER
Do not stand in the stabiliser legs, tilting area.

WARNING

Do not put your foot on the support plate.



The procedure of operating the stabiliser legs differs depending on the type of stabiliser leg. Repeat the instructions for the stabiliser extension and leg on the other side of the vehicle. For auxiliary stabiliser system [option]: Repeat the process.

DANGER
Always ensure that the stabiliser legs and the stabiliser extensions are in transport position and securely locked before moving the vehicle.

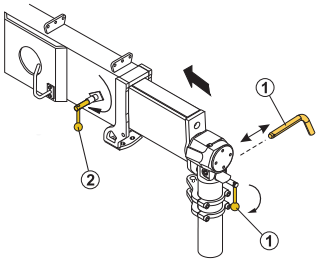
Activate stabiliser operation on the user panel by pushing button .

Crane with non-tiltable legs

1. Raise the stabiliser leg.
2. Retract the stabiliser extension completely.

Crane with tiltable stabiliser legs

1. Raise the stabiliser leg carefully slightly from the ground.
2. Unlock the stabiliser leg lock (1). Make sure that it remains in the released position.



WARNING
Do not stand behind the stabiliser leg. Do not touch the stabiliser leg either.

3. Raise the stabiliser leg slowly until the plate touches the bar on the “inside” of the stabiliser leg.
4. Continue raising the stabiliser leg carefully. It will now move backwards and perform a rotary movement.
5. Stop the operation as soon as the stabiliser leg is almost vertical, lock the stabiliser leg lock (1).
6. If manual operated stabiliser extension: unlock the stabiliser extension with the handle (2) and retract the stabiliser extension completely.
7. If manual operated stabiliser extension: lock the stabiliser extension with the handle (2).

7.2. Stabiliser system and boom system

Before switching of the system make sure that the stabiliser extensions and the boom system is in locked transport position.

Transport warning- Stabiliser extensions

When the stabiliser extensions are locked in transport position this symbol, one symbol for each side of the crane, will change to green and it is safe to move the vehicle.

High boom warning

If the 1st boom is in parked position the symbol will change from (5) to (6) and it is safe to move the vehicle.

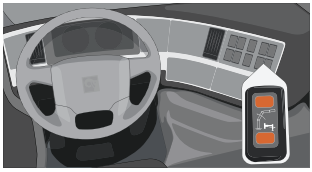
7.3. TWI Transport warning interface

WARNING

If you switch off the control system when manual operated stabiliser extensions/tiltable stabiliser legs are not locked in the transport position, and/or if the first boom angle exceeds a certain specified angle, the indicator lamps for both the cylinders and the hoist will flash red for a while.

The vehicle must not be moved.

- A warning, visible and audible from the driving position for transport, indicates when the crane height exceeds a predetermined maximum and when the manual operated stabiliser extensions/tiltable stabiliser legs are not locked in the transport position.
- The audible warning can be silenced by an acknowledgement button [option] or by a signal indicating that the parking brake of the vehicle is engaged.



The vehicle must not be moved

1. Switch the system on and operate the crane into transport position.
2. Switch off the system. The vehicle may be moved.

DANGER

After use always put the crane into the transport position! When you have to park the boom on the load bed, or over the load, secure the boom and the lifting accessories to prevent any unintentional movement of the crane and the lifting accessories.

End the system

8. Maintenance and Service

8.1. Service

DANGER

- Do not do any welding work on the crane yourself! Welding work on the crane may only be carried out by, or in close consultation with, a Hiab service workshop.
- Do not drill into the crane yourself. Drilling work on the crane may only be carried out by, or in close consultation with, a Hiab service workshop.
- Never try to reinstall the crane. Only a Hiab Dealer may reinstall the crane.

Before carrying out any welding on the vehicle:

- Disconnect the power between the vehicle and the crane.
- Contact the vehicle manufacturer.

After welding on the vehicle:

- Connect the power between the vehicle and the crane.

Leakage

DANGER

- Keep well away from an oil leak on the hydraulic system! The oil spraying out can cause serious injury. The oil in the hydraulic system is under high pressure.
- Do not replace any hydraulic hoses or lines yourself: Precautions shall be taken when disconnecting hydraulic lines and hoses to ensure that no hydraulic pressure is retained in the line when the power supply to the system is switched off. Pressure may be retained in the hydraulic lines when the power supply has been switched off.
- Always contact a Hiab service workshop.

Deal with an oil leak as follows:

1. Rest the crane on the floor or on the truck platform.
2. Switch off the operating system.
3. Disengage the PTO.
4. Leaking coupling:
   Tighten the coupling with a spanner.
   If tightening does not help, contact a Hiab service workshop.
5. Small leak on a line or hose:
   Determine if you can still park the crane.
   If you can: park the crane and go to a Hiab service workshop. If you cannot: contact a Hiab service workshop.
6. In all other cases, contact a Hiab service workshop.

8.2. Warranty

Hiab only provides a warranty if:

- The "Warranty – Terms and Conditions" specified in the "Service & Warranty Manual" are fulfilled.
- The crane is inspected and maintained, at least once a year, by a Hiab service workshop as specified in the "Service & Warranty Manual".
- Hiab parts are used for every repair or maintenance work.
- All security seal wires on the valves are still intact.

Always use original Hiab parts and tools.

8.3. Follow the maintenance instructions!

Take the crane, at least once a year, to a HIAB service workshop for inspection and maintenance. Maintain lifting accessories according to the supplier’s instructions.

WARNING

- Ensure that faults in the crane are corrected immediately!
- Never correct faults yourself that may only be corrected by a HIAB service workshop.
- Carry out yourself only the service and maintenance work you have the requisite knowledge and experience of.

If the crane is not be used for 1 month or longer:

- Lubricate the crane thoroughly, according to the lubrication schedule.
- Park the crane in the transport position.

Filters

Replace the filter cartridge

- after the first 50 hours operation
- then after every 500 hours operation
- or at least twice a year.

Cleaning

Clean your crane and accessories regularly, but:

- Do not use aggressive cleaning agents.
- •Use only cleaning agents with pH between 5-9.
- Use Max water temperature: + 50 C
- Use Max pressure: 140 bar
- Minimum distance between nozzle and the surface: 40 cm
- Never use a high pressure jet cleaner on electronic parts, plastic components, signs, bearings, control valves, cylinders or the oil tank. Only the cranes surface may be cleaned with a high-pressure jet cleaner.

8.3.1. Daily inspection

Stop buttons and stop functions

- Use the crane and its safety system to make sure that the stop buttons, motor stop, dump valve, tilt sensor, TWI and CWI are undamaged and working properly.

OLP [option]

- Operate the OLP function and verify that is working correctly.

Control levers, joysticks, pedals and control rods

- Check that they are undamaged and working properly.

Hydraulic system

- Check that there are no leaks from the hydraulic hoses, cylinders, valves, bottom of the base, joint of the column, lines and connections of the base.

Oil tank level

- To check the level in the oil tank:
  Put the vehicle on level ground with the crane in transport position.
- If necessary, top up.

Base oil level

- Check the oil level in the base.
- If necessary, top up.

Add-on equipment

- Check the cables, cable connections, the cable guides and the attachment points for the add-on equipment.
- Maintain all add-on equipment, auxiliary equipment etc. according to the instructions supplied with it.

8.3.2. Weekly inspection and maintenance

Shafts and pins

- Check the lockings of shafts and pins.

Steps, passageways and the seat/cab

- Check the steps, passageways and the seat/cab.
- Check the fastening of the seat.

Hydraulic pump

- Check the fastenings of the hydraulic pump.

Hose connections

- Check that the hoses, lines, connectors, cylinders and valves are tight.

Suction hose

- Tighten the suction hose connectors if necessary.

Hydraulic system

- Bleed air from the hydraulic system. Air must be bled from the hydraulic system, if:
  - the system has been under maintenance or repairs.
  - the crane has not been used for a long time.
  - inadvertent movements occur during operation of the crane or the controls are slow or inaccurate.

Bearings and joints

Refer to the lubrication schedule to lubricate the following components:

- Base bearing
- Cylinder bearings
- Control lever joints

- Boom system bearings.

Boom extension and the stabiliser beam

- Use spray vaseline or chain oil to lubricate the surface of the second boom and extension.
- Use spray vaseline to lubricate the surface of the stabiliser beam.

Levers

- Lubricate the levers with a grease gun. Note the positions of the levers before greasing.

Chain in extension

- Lubricate with a grease gun.

8.3.3. Daily inspection

Stabiliser locking devices

- Check that the stabiliser locking devices are undamaged and working properly.

Shafts, shaft lockings, bearings and bushings

- Check that the shafts, shaft lockings, bearings and bushings are undamaged and working properly.

Stop buttons

- Check that the Stop buttons are undamaged and working properly.

Seat

- Check the fastening of the seat

Electronic components

- Check that these are in good condition.

Check that the booms do not lower by themselves.

- At rated capacity at maximum hydraulic outreach, check that the booms do not lower by themselves.
  Maximum allowed boom sinking with a 5 m outreach, 10 cm/min;
  7 m outreach 14 cm/min; 9 m outreach 18 cm/min.

Crane structure

- Check for damage to the crane structure (e.g. any formation of cracks).

DANGER

In the event of damage that presents a safety risk:

- Do not use the crane.
- Have the damage repaired immediately by a HIAB service workshop.

Hydraulic system

- Check that there are no leaks from the hydraulic hoses, lines and connections.

Filters

- Check the filter indicator. If red replace the cartridge.

Add-on equipment

- Check the cables, cable connections, the cable guides and the attachment points for the add-on equipment.
- Maintain all add-on equipment, auxiliary equipment etc. according to the instructions supplied with it.

Oil tank level

- To check the level in the oil tank:
  Place the vehicle on level ground with the crane in transport position.
- If necessary, top up.

Base oil level

- Check the oil level in the base.
- If necessary, top up.

8.3.4. Weekly inspection and maintenance

Shafts and pins

- Check the lockings of shafts and pins.

Steps, passageways and the seat/cab

- Check the steps, passageways and the seat/cab.

Hydraulic pump and the cardan shaft

- Check the fastenings of the hydraulic pump and the cardan shaft.

Hose connections

- Check that the hoses, lines, connectors, cylinders and valves are tight.

Suction hose

- Tighten the suction hose connectors if necessary

Hydraulic system

- Bleed air from the hydraulic system. Air must be bled from the hydraulic system, if
  - the system has been under maintenance or repairs
  - the crane has been unused
  - inadvertent movements occur during its use or the controls are slow or inaccurate.

Bearings and joints

- Lubricate the base bearing.
  - cylinder bearings
  - control lever joints
  - boom system bearings
  - cardan shaft.

Boom extension and the stabiliser beam

- Use spray vaseline or chain oil to lubricate the surface of the second boom and extension. Use spray vaseline to lubricate the surface of the stabiliser beam.

Levers

- Lubricate the levers with a grease gun. Note the positions of the levers before greasing

Chain in extension

- Lubricate with a grease gun.

8.3.5. Monthly inspection and maintenance

In addition to the daily and weekly inspection, carry out the following each month.

Crane structure

- Clean the crane structure and check for damage (for example, any formation of cracks).

In the event of damage that presents a safety risk:

- Do not use the crane.
- Have the damage repaired immediately by a Loglift/Jonsered service workshop.

Presence of load plates and notices

- Check that the symbols near the levers for the main control valve and stabiliser control valve are in position.
- Refer to the chapter "Signs on the crane" and check that all other notices and stickers are in position: load plates, warning symbols.

Boom bearing and cylinders

- Check the fastening.

Bolts and screw fixings on crane, cabin, cabin lifting device and the grapple

- Examine the condition of the bolts and make sure that bolt and screw fixings are tightened. Tighten them if necessary.

Lateral clearance of the boom and/or hydraulic extension

- Adjust the lateral clearance of the boom and/or hydraulic extension.

Chain in extensions

- Check the condition and adjust the telescope chain if necessary.

Grapple

- Lubricate the grapple with a grease gun according to the operator’s manual for your grapple.

8.3.6. Twice a year maintenance

Take the crane, at least twice per year, to a Hiab service workshop for inspection and maintenance. Carry out the following maintenance:

Oil tank

- Remove condensed water from the oil tank.

Crane base

- Check the oil in the crane base and drain it for condensed water via the drain plu.g

Spring cups

- Clean spring cups and grease them.

8.3.7. Annual maintenance

Take the crane, at least twice a year, to a Hiab service workshop for inspection and maintenance.

Carry out the following maintenance at least once a year.

Hydraulic system

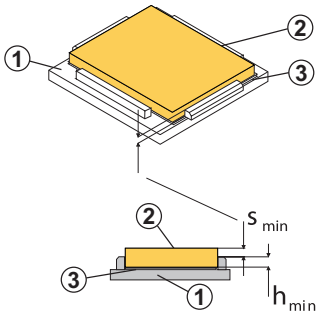
- Change the oil tank filler cap.
- Change the hydraulic oil.
- Change the oil in the slewing system.

- Replace filters.

NOTE
If the crane is being used in hot climates the oil might need to be changed more often.

Extension

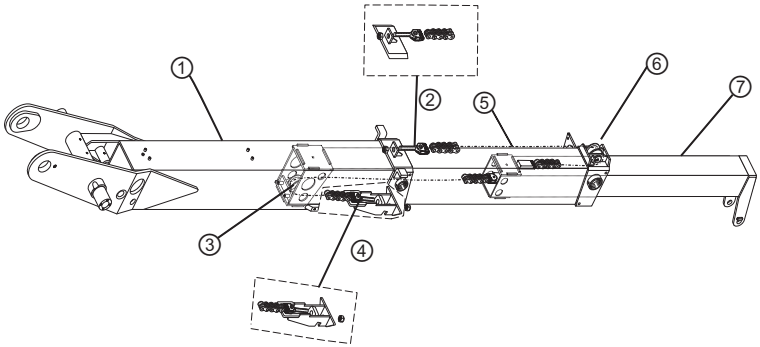
•
- Check and adjust the vertical clearance of the extensions.
  You can adjust the clearance of the extensions (1 or 2 depending on crane type) by adding shims underneath the slide pads.



Crane base

- Change the oil in the crane base.

8.3.8. Adjust the chain in the telescope



(1) second boom
(2) chain tensioner
(3) roller
(4) chain tensioner
(5) extension 1
(6) roller
(7) extension 2

The correct tightness prevents the chains from overloading and wearing out too quickly. Correct adjusted chains will also not jump off the grove in the roller.

1. Retract the extensions. Lower the grapple to the ground.
2. Loosen the adjustment screw of the top chain fastener until the chain is visibly loose.
3. Tighten the adjustment screw of the bottom chain. Extension 2 will retract until the extensions come in contact with each other. Check that the top chain is still loose. Loosen the adjustment screw of the bottom fastener until a small gap is created between the nut and the second boom and extra chain tension is removed.
4. Raise the 2nd boom until it is level and keep the grapple near the ground. Extend the extensions. Slightly retract the extensions (2 to 5 cm) to loosen the top chain. Leave the 2nd boom in the air to avoid the top chain from tighten.
5. Tighten the top chain with the adjustment screw. The correct tension is achieved when it is possible to move the chain vertically about 1.5 to 3 cm from its center by hand.
6. Check the chain adjustments by extending and retracting the extensions a couple of times.

8.4. Lubrication

WARNING
Follow the lubrication schedule exactly. If you do not do so, you can cause serious damage to the crane and to add-on equipment.

Type of grease

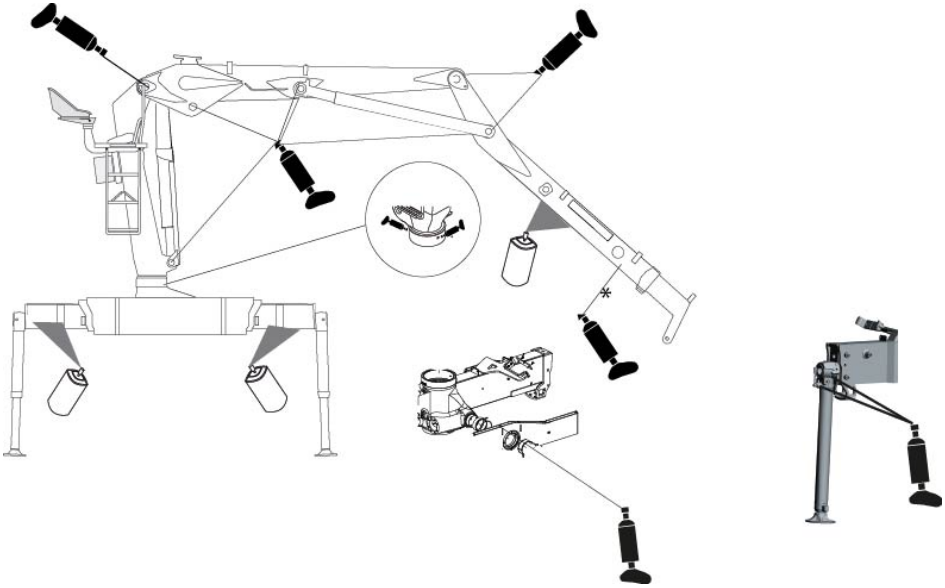
Use lithium based grease containing EP additives (consistencies 2 and 3 are recommended, depending on the climate).

Recommended greases:

BP LS EP 2, ESSO UNIWAY EP2 N, AGIP GR MU/EP3, NYNÄS UNIFETT EP.

NOTE
Avoid grease with graphite or molybdenum-disulphide additives.

8.4.1. Lubrication



* Only for cranes with telescopic boom and 2 extensions. Extend the boom system to access the grease nipple

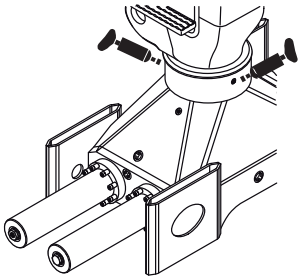
8.4.2. Lubrication of the upper column bearing

DANGER

The upper column bearing must be lubricated while the crane is slewed. If one person lubricates the upper column bearing, while another is slewing the crane: Take care that the person lubricating the bearing does not come into contact or get crushed by the crane!

If you are lubricating the upper column bearing without help:

- Lubricate the upper bearing with a little grease.
- Slew the crane a little.
- Again lubricate with a little grease. Repeat, until the column has been slewed round completely.

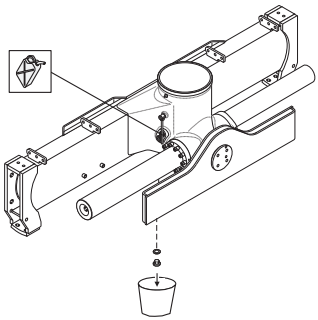


8.5. Hydraulics

8.5.1. Crane base: checking the oil level/oil change

Checking the oil level in the crane base

1. The oil level must reach the bottom edge of the top oil level eye. the crane slewing system and the lower bearing of the column must be fully submerged in oil bath.
2. If the oil level is below the minimum level, top up through the filling hole with transmission oil of type MIL-L-2105C or API-GL-5, viscosity SAE-80W-90



Changing oil in the slewing housing

Change the oil in the slewing house yearly!

1. Use a container with sufficient capacity to receive the oil. Drain off the oil through the drain plug.
2. Refill through the hole for the measuring stick, with transmission oil of type MIL-L-2105C or API-GL-5, viscosity SAE-80W-90.
3. Slew the crane, after filling to the end positions, three times.
4. Check the oil level. If necessary top up again.

8.5.2. Replacing the cartridge in return oil filter

Return oil filter with clogging indicator

NOTE

Do not clean the filter.

Replace the breathing filter of the filler cap at the same time as the return filter cartridge.

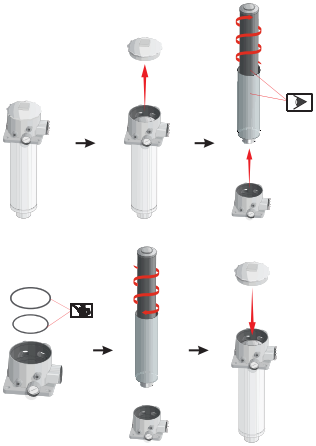
When clogging indicator turns red or filter time is reached (whichever is the sooner), the cartridge must be replaced. **If indicator is not fitted, replace the cartridge periodically as recommended by Hiab.**

WARNING

Dirt will damage the hydraulic system

Make sure that the area around the filter is clean to prevent contamination of the hydraulic oil.

1. Switch off the hydraulic system and release the filter of pressure.
2. Clean the immediate surrounding area of the filter.
3. Remove the cover.
4. Remove the filter cartridge with attached filter housing by using the handle.
5. Examine the surface of the filter cartridge for dirt residue and larger particles; these can indicate damage to the components.
6. Examine the filter housing for any possible mechanical damage.
7. Replace the filter cartridge with a new one.
8. Remove old O-rings and replace (oil before assembling).
9. Place the filter cartridge carefully into the filter housing and screw. Pay attention to the position of the handle.
10. Install the filter cartridge with attached filter housing.
11. Refit the cover.
12. Replace the breathing filter in the filler cap.
13. Switch on hydraulic system and check the filter for leakage.

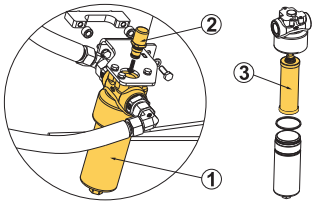


8.5.3. Replacing the cartridge in high pressure filter

(1) High pressure filter

(2) Optical indicator

(3) Cartridge



WARNING

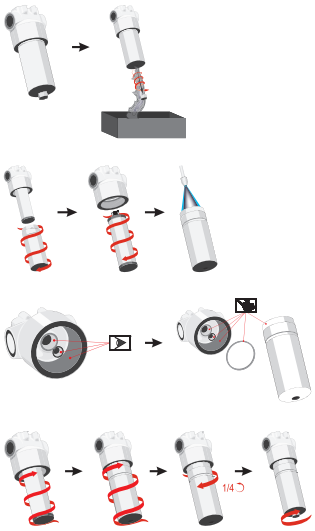
Dirt will damage the hydraulic system

NOTE

DO NOT clean the filter cartridge.

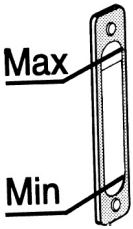
When clogging indicator turns red or filter time is reached (which ever is the sooner), the cartridge must be replaced. **If indicator is not fitted, replace the cartridge periodically as recommended by Hiab.**

1. Switch off hydraulic system. Release filter of pressure.
2. Clean the immediate surrounding area of the filter.
3. Remove the oil drain plug. Collect oil in a suitable container.
4. Unscrew the filter housing. Collect oil in a suitable container and clean or dispose of it in accordance with environmental regulations.
5. Remove the filter cartridge. Examine the surface of the cartridge for dirt residue and larger particles; these can indicate damage to the components.
6. Clean the filter housing.
7. Examine the filter housing and head segment, especially sealing surfaces and thread, for mechanical damage.
8. Always replace the O-ring of the filter housing.
9. Oil the threads and sealing surfaces on the filter housing and head segment, as well as the O-ring.
10. Replace the filter cartridge with the new one and screw carefully.
11. Fully tighten the filter housing. Then, unscrew it 1/4-turn back.
12. Screw the oil drain plug.
13. Switch on hydraulic system and check the filter for leakage.



8.5.4. Checking the oil tank level

1. Place the crane and stabiliser legs in the transport position.
2. Place the vehicle on level ground.
3. Check the oil level in the tank.
4. Oil level too low:
   Top up with hydraulic oil.



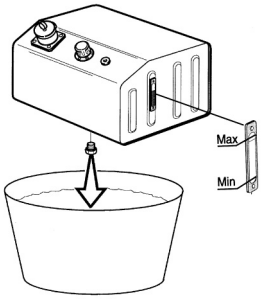
8.5.5. Changing the hydraulic oil

WARNING
The oil can be hot and cause injury.

1. Operate the crane for a while to warm the oil. Place the crane in the parked position. Take care that the temperature of the oil does not exceed the point where you can handle it safely. If this occurs allow the oil to cool before moving to the next step.

WARNING
- Suitable eye and hand protection must be worn while carrying out this operation, and if there is a risk for inhalation of oil mist, a mask as well.
- Inhalation of oil mist: Contact a doctor.
- Skin contact: Remove polluted clothing, wash with soap and water. In the event of high pressure injection of the product, see a doctor without delay.
- Eye contact: Rinse eyes with plenty of water, see a doctor if irritation persists.

2. Drain the oil tank through the drain plug. Make sure the system contains as little as possible.
   Use a container with sufficient capacity.
3. Change at the same time:
   - all filters
4. Refit the drain plug.



NOTE
Ensure the waste oil is disposed of safely and in accordance with local environmental regulations.

Filling the oil tank with hydraulic oil

The oil used for filling must be clean. Do not mix different oils.

Hydraulic oils must have been dealt with according to cleanliness requirements ISO 4406: -/16/13.

Hydraulic oil that is approved for Hiab products must comply with one of the following standards or equivalents:

- ISO 11158 HV
- DIN 51524 part 3 HVLP
- ISO 6743/4 L-HV

Suppliers of hydraulic oil must verify that the quality and performance of the oil complies with the above standards.

When changing from mineral oil to a non-polluting synthetic oil, or when changing to biodegradable oil, contact a Hiab service workshop.

Viscosity of oil

The viscosity of the oil is of great importance to achieve high efficiency of the hydraulic system.

The naming of the oil in the table below: 32, 46 or 68 tells the viscosity of that oil at 40°C (reference temperature).

Viscosity of oil at 40°C	Temperature range
32	-25°C to 75°C
46	-15°C to 90°C
68	-5°C to 90°C

The recommended viscosity during normal working conditions is between 16 and 40cSt.

Hiab strongly recommend an oil working temperature below 70°C. If necessary consider an oil cooler or heater.

NOTE

When working in arctic condition consider an oil with lower viscosity than the 32 oil in the table above.

Environmentally Friendly Oil

The environmentally friendly oils recommended for Hiab products are ester based synthetic hydraulic fluids (synthetic ester).

NOTE

Vegetable oils do not meet Hiab's requirements and must not be used.

After filling the tank

1. Operate each crane function to its end positions.

2. Operate the crane to parking position.
3. Check and top up the oil tank to max level on the tank gauge.
4. Bleed the system.

8.5.6. Bleeding air from the hydraulic system

Bleed the air from the hydraulic system:

- after changing the hydraulic oil
- after working on the hydraulic system
- if your crane works slowly or jerkily
- if your crane has not been used for a long time

WARNING
Air in the hydraulic system can lead to faults and damage

To bleed the air from the hydraulic system, proceed as follows:

1. Slowly extend and retract each stabiliser extension to its end position at least two times.
2. Slowly extend and retract each stabiliser leg to its end position at least two times.
3. Set stabiliser system in working position and operate the crane out of parked position.
4. Slew the crane slowly.
   - If your crane has a rack-and-pinion slewing system, slew the crane in each direction to the slewing stop at least twice.
   - If your crane has a continuous slewing system, slew at least two complete rotations.
5. Slowly raise and lower the 1st and the 2nd boom to its end position at least twice.
6. If the crane is equipped with JIB, slowly raise and lower the JIB at least twice with main boom system pointing downwards and upwards.
7. Slowly extend and retract the boom extensions to their end position at least twice.
   a. If your crane is equipped with JIB, extend and retract the 2nd boom extensions with the JIB pointing almost vertically upwards and downwards.
   b. Slowly extend and retract the JIB extensions to their end position at least twice.
8. Slowly operate each hydraulically operated add-on equipment such as hoist, grapple, pallet fork, etc. to their end position at least two times.
9. Check the oil level in the tank and top up if necessary.

8.6. Troubleshooting

8.6.1. Main fuses- Column box

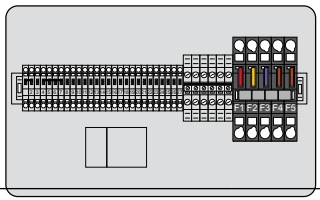
Remove the cover on the coulmn box to access the fuses.

F110A

F220A

F33A

F4, F5 5A



8.6.2. Faults in the crane

Faults in the crane must be rectified immediately.

DANGER

- Only correct yourself the faults that according to the table you may rectify.
- Follow the instructions exactly!
- All other faults may be dealt with only by personnel in a HIAB service workshop!

Fault	Probable cause	Action
The hydraulic pump makes a noise. Three causes: **Warning! Stop using the crane immediately!**	Oil tank filler cap air filter is blocked.	Clear the blockage or replace the entire filler cap.
	Oil level in the tank is too low.	Top up the oil tank and bleed the hydraulic system.
	The pump is faulty.	Go to a HIAB service workshop.
The stabiliser extensions do not slide out.	The extensions are still locked.	Unlock the extensions.
	Hydraulic fault.	Go to a HIAB service workshop.
The slewing movements are irregular or cause abnormal noises.	Insufficient oil in the hydraulic system.	Top up the oil tank.
	Insufficient oil in the gear box.	Top up the oil in the gear box to the required level.
	Bearing assemblies and pinion are not properly lubricated.	Lubricate the bearing while slewing.
	Bearing assemblies or pinion are damaged.	Go to a HIAB service workshop.
Add-on equipment does not work properly.	Connectors not properly connected.	Reconnect the add-on equipment according to the instructions.
	Other defect.	Go to a HIAB service workshop.
Leak on hydraulic system: leaking coupling, hose or line. **Danger! Keep well away from an oil leak.**		1. Press a Stop button. 2. Disengage the PTO. 3. Contact a HIAB service workshop.

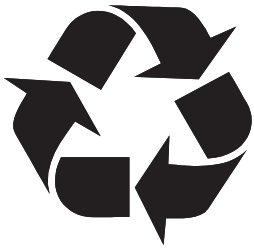
9. Decommissioning

9.1. Decommissioning a crane

Cranes are designed and manufactured taking the environment into consideration. Environmental requirements and soundness have been considered when selecting the raw materials. The metal parts are designed to achieve a light and durable construction, this includes the selection of higher-quality grades of steel. When the crane is decommissioned at the end of its service life, years from now, waste will be created, which must be utilized and disposed of correctly. The crane must be decommissioned properly. Most of the crane's raw materials can be recycled.

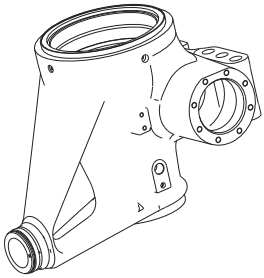
Follow the regulations of the local authorities!

- Oil and grease must not be spilled on to the ground or released into the environment!
- Drain the oil from hydraulic cylinders, valves and hoses.



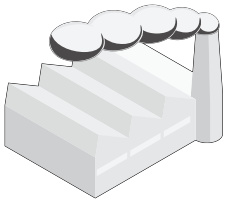
Sort the waste

- Deliver the metal parts for recycling, for reuse as raw material. These are load-bearing, structures manufactured from steel or cast iron, hydraulic cylinders and lines drained of oil, directional control valves, shafts, bearing bushes, control levers, small parts.



Energy waste can be utilized by incinerating it at a proper waste incineration plant

- spiral wraps, manufactured from polyethene, plastic, bearings (cleaned of lubricants) used in the column, beam system etc, manufactured from polyamide plastic.



Unsorted waste should be delivered to a landfill

- drained hydraulic hoses, electrical wires, control cables, seat, hydraulic cylinder seals, lights, small plastic and rubber parts.

Hazardous waste is delivered to a collection point for hazardous waste

- oils: hydraulic oil, transmission oil from the slewing system
- solid lubricants: greases from the joints and journal bearings
- other waste containing oils and greases: hydraulic oil filters.

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