Operator's Manual GB
HIAB 022-033-044 Duo-Hi-Duo CE

This operator's manual is an Original Instruction and applies to cranes with serial number from:
BL022-033-044D00017, BL022-033-044HD00017

2018-01

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.

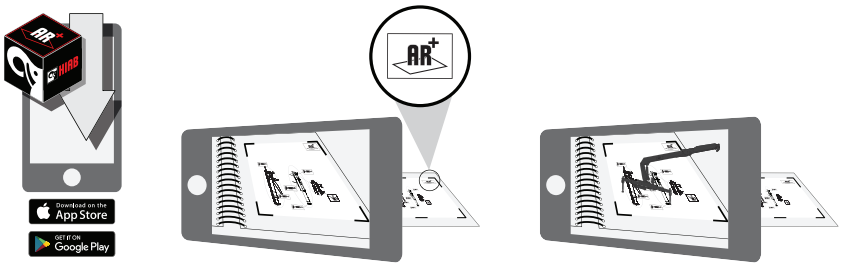
The aim of this manual is to help you handle your crane safely and with full satisfaction.

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

Table of Contents

1.1 This Operator's Manual is intended for operators of this HIAB 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 automated remote diagnostics system or similar sensor-based system (the “System”) in and from the Equipment; and
- access, send, receive, collect, store and use any and all information and data gathered or created by such System including but not limited to information concerning operation, operating environment, movement, condition, logon, location and similar information relating to the Equipment (the “Information”).

The Customer shall not in any way remove or alter the System, nor interfere with the use of the System or the Information. The System and the Information and all their further developments shall at all times be and remain the exclusive property of HIAB without granting any right or license to the customer.

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:

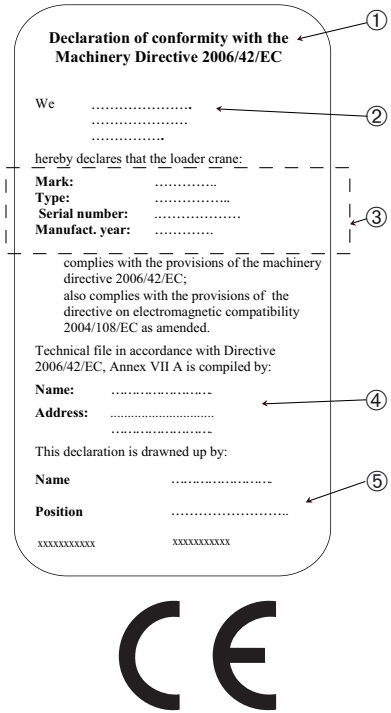
  Name

  Address
- Identity and signature of the person who drawn up the declaration ⑤:

  Name

  Position

  Date and Signature



1.3 Cleanliness certificate

All Hiab equipment has been tested and certified at the factory according to the Hiab Standard C250.52 that defines the Cleanliness Requirements for Hydraulic Systems. This means that they fulfil the cleanliness class **20/18/14** measured by the ISO 4406 standard.

All hydraulic functions have been individually tested and fully comply with the defined requirements.

1.4 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.

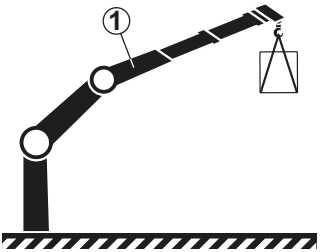
TIP

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.

2.1 Main groups

The HIAB crane consists of the following main groups:

- Crane base with column and slewing system
- Stabiliser system
- Boom system
- Operating system - hydraulic components

Some accessories can be fitted depending on your crane configuration:

- Add-on lifting accessories [option]
- Hooks [option]
- Separate lifting accessories [option]

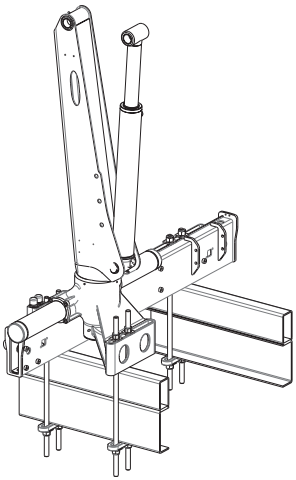
2.2 Crane base with column and slewing system

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

- Crane base

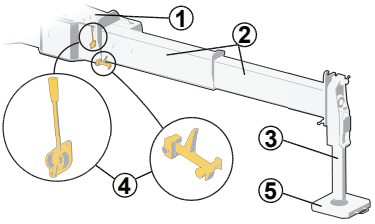
  with stabiliser beam.
- Column

  fitted to the crane base and turns in an upper and a lower bearing.
- Slewing system



2.3 Stabiliser system

Every HIAB crane is equiped with two stabiliser extensions and two stabiliser legs. Auxiliary stabiliser systems may be needed for heavy cranes. The stabiliser system consists of:



① **Stabiliser beam**

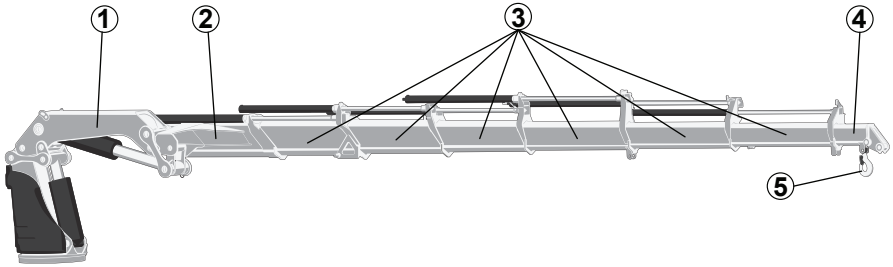
② **Stabiliser extensions**

③ **Stabiliser legs**

④ **Stabiliser locking devices** [option]

⑤ **Extra support plates**

2.4 Boom system



The boom system consists of the following components:

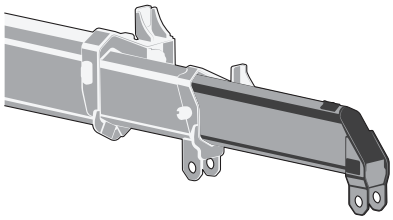
- ① 1st boom
- ② 2nd boom
- ③ Hydraulic extensions

  The length of the hydraulic extension depends on the type of crane.
- ④ Manual extensions [option]
- ⑤ Hook [option]

2.4.1 Accessories on the boom system

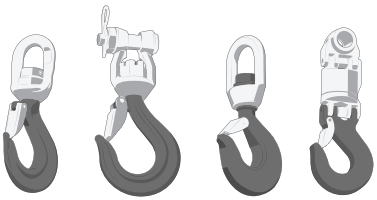
Manual extensions [option]

Manual extension is slid by hand into the hydraulic extension.



Hooks [option]

Different hooks can be mounted depending on the crane model.



DANGER

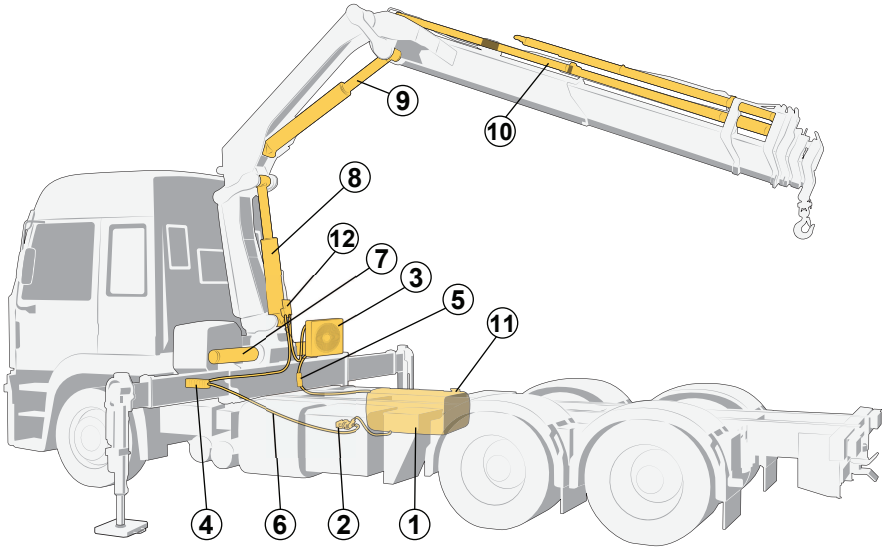
Never exceed the maximum permissible loading of the hook.

Separate lifting accessories [option]

Separate lifting accessories, help to make or use a slinging device: eye-hooks, shackles, eye-bolts etc.

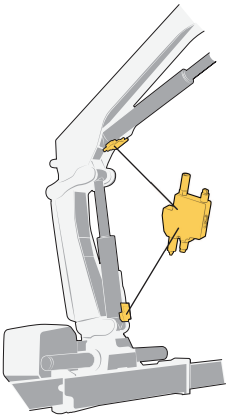
2.5 Operating system - hydraulic components

The operating system consists of the following hydraulic components:



① Oil tank	⑤ Stabiliser control valve [option]	⑪ Return filter
② Hydraulic pump	⑥ Hydraulic hoses and lines	⑫ Load holding valve
③ Oil cooler [option]	⑦ Slewing cylinders / Motor reducers	Pressure filter [option]
④ Main control valve	Actuators: ⑧ First boom cylinder ⑨ Second boom cylinder ⑩ Extension cylinder/s	

2.6 LHV Load holding valves



All cylinders are 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 Description of HIAB 022-033-044 Duo-HiDuo

HIAB

022

033

044

are compact, fully hydraulically operated goods cranes and fulfil the European Machinery Directive requirements specified in the standard EN12999. Stress class S1, according to EN13001.

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

! NOTE

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

3.1 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.

3.2 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	

3.3 Definition of a HIAB loader crane

Usage of the crane

The HIAB loader crane is used to lift and move loads in the working area permitted by the load plate and the load diagram. The cranes are normally mounted on a vehicle but they can also be mounted on a fixed base plate. The crane can be equipped with a number of accessories.

Loader cranes are designed for loading and unloading the vehicle, as well as for other duties as specified:

Permitted duties:

- Loading and unloading cargo from/to a vehicle
- Lifting of loads from the ground/vehicle to a higher place
- Installation work (beams, concrete plates, windows...) in building constructions
- Lifting construction material (wall boards, bricks, blocks…) on a pallet fork to a building, taking the material from the vehicle on which the crane is mounted, from another vehicle or from the ground
- Hoisting, e.g. beams, concrete plates and any other material and equipment used in building construction
- With a bucket, moving filling material at a construction site
- Handling large loads (containers, boats, machinery, vehicles…)
- Collection of waste and recycling material (glass, paper, cardboard, plastic…)
- Installation of informative posts, road signs, notice boards, traffic lights, street lights…
- Handling submerged pumps in wells, using a hoist

Forbidden duties:

- Crane mounted onboard ships or floating structures, only permitted in cases authorized by HIAB
- Continuous use as a production crane in assembly lines, foundries…, except for cranes prepared for that purpose
- Handle loads, work with submerge boom system or accessories, in strong currents such as rivers
- Loading cargo that is partially loaded or fastened by other means, without making sure the capacity of the crane is enough for the entire load
- Any duty which implies:
  - Pressure against the ground, unless the crane is specifically prepared for this
  - Push/pull with the boom system against any type of obstacle (wall, ground…)

DANGER

Lifting people with a crane is never allowed unless it is a MEWP crane. When working in a personnel basket, both feet must have contact with the floor of the basket. Standing on boxes or ladders in the basket can lead to injury or death.

3.3.1 Noise declaration

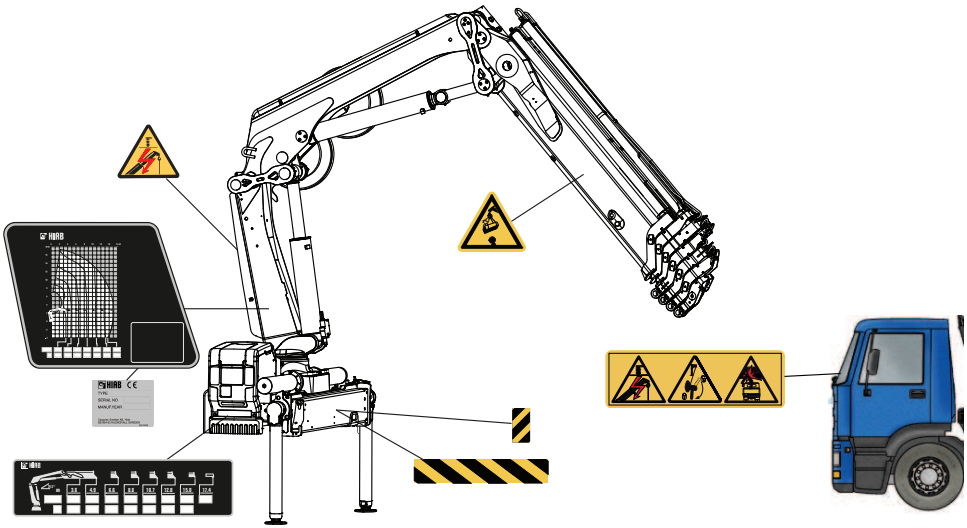
The following values for emitted noise may be taken as general and conservative values for ordinary installations of loader cranes on normal diesel engine powered trucks. Declared dual-number noise emission values in accordance with ISO 4871:

- Emitted A-weighted sound power level for basic loader cranes in accordance with ISO 3744: LwA = 103 dB (Uncertainty: KwA = 2 dB).

- Emitted A-weighted sound power level for loader cranes with hoist in accordance with ISO 3744: LwA = 107 dB (Uncertainty: KwA = 2 dB).
- A-weighted sound pressure level at loader crane control stations in accordance with ISO 11201: LpA = 95 dB (Uncertainty: KpA = 4 dB).

Particular installations can be quieter, in which case a post installation noise measurement in accordance with clause 6.3 of EN 12999:2011 may be used to prove this.

3.3.2 Signs on the crane



3.3.3 Maximum load [AR+]

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 at hook 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.

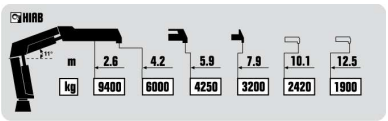
DANGER

- 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 valve. 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.

Optimum position

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

- Stability test of your crane on vehicle.
- Stabiliser extensions positioned and legs pressed to ground.
- The reach at which you are working and the optimum position of the boom.
- The optimal position for your crane is on the load plate.

DANGER

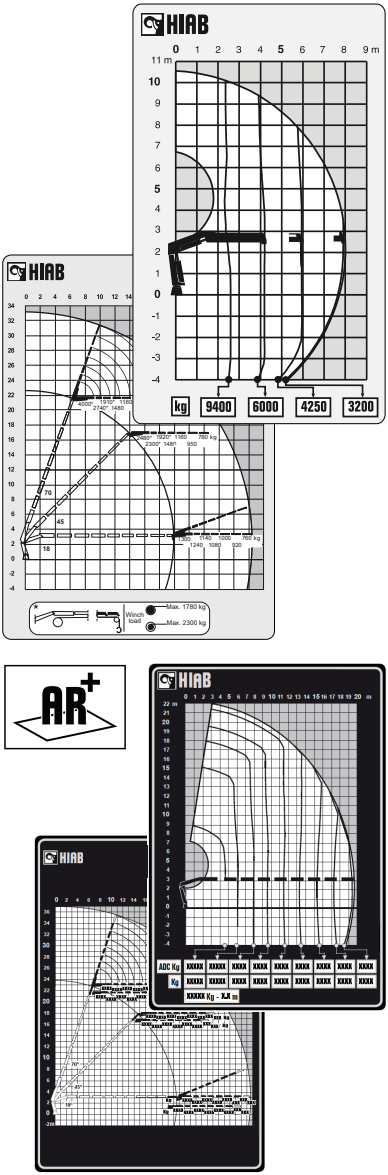
Never exceed the maximum weight on the load plate.

Load diagram

The load diagrams are placed on the column and show the maximum loads your crane / JIB (if fitted) / hoist (if fitted) may lift in the entire working zone (manual extensions excluded). The load diagram drawing will also be found in the enclosed Technical Data.

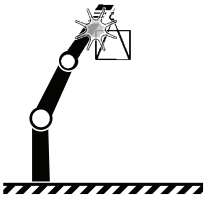
The white area is the working zone of the crane.

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.



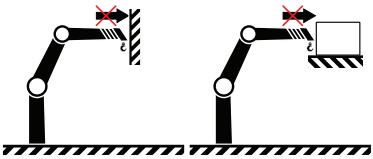
WARNING

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.

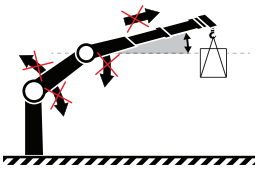


WARNING

Never operate the hydraulic extensions against a solid objet when the first boom is completely lifted. Do not try to push or compress loads when the first boom is fully lifted, as this could cause damage to the first boom cylinder.



3.3.4 Maximum load moment

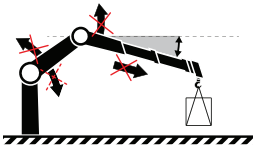


If your crane has reached the maximum load moment (lifting capacity), the OLP gives a warning and locks any crane movement that will increase the load moment. This is known as an OLP situation.

If the second boom is raised, then the following movements are locked:

- first boom down/up
- second boom down
- extension boom out

If the second boom is down, then the following movements are locked:

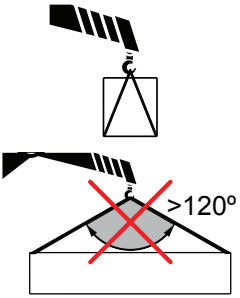


- first boom up
- second boom up
- extension boom out
- first boom down (certain crane types and cases)

Lifting the load

You obtain the best from your crane in this way: Ensure that you always have the work in clear view. If you cannot see the load properly, you could cause a fatal accident or serious damage.

Sling length

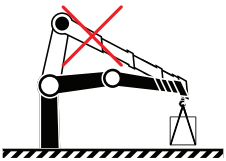


Always attach the load using the shortest possible sling. The angle between the legs of the sling must not exceed 120°. The maximum working load (usually known as the working load limit (WLL) in standards) of a multilegged sling for general purposes is calculated by multiplying the WLL of a single leg by a mode factor, in accordance with the table.

Max angle to the vertical of any sling leg (degrees)	Mode factor two legged sling	Mode factor three and four legged sling
0-45	1,4	2,1
45-60	1,0	1,5

If the angle between the legs of the sling exceeds 90°, the slings should not be hung directly on the hook, but rather be slung from a ring that is hung on the hook.

Working close to the load

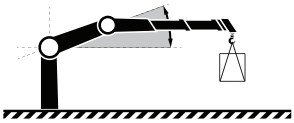


Always try to lift the load with the extension boom retracted, however not completely. The crane then has the greatest lifting capacity. Place the vehicle as close as possible to the load.

Working below ground level

If you have to load or unload below the level of the ground: keep the first boom angle to about 10 to 30° above the horizontal plane.

Heavy loads



Lift heavy loads with the second boom in the optimum position in relation to the first boom. For this, see the load plate on your crane.

DANGER

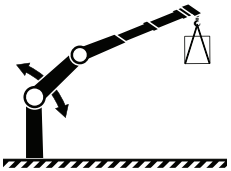
Never exceed the maximum permissible loading of the hook.

Heavy loads cannot be handled with the boom straight.

Set the second boom, so there is an angle in relation to the first boom.

Loads at the extreme limit of the working zone

Also in this case, angle down the second boom somewhat. Only use the first boom .



TIP

Make smooth crane movements: operate the crane with various functions simultaneously. In this way you will also prevent the hydraulic system heating up quickly.

3.4 Signals when using a crane [AR+]

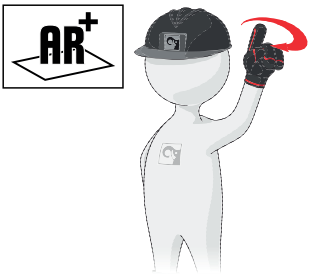
DANGER

- 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.

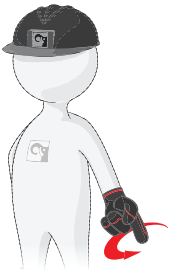
Lift

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



Lower

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

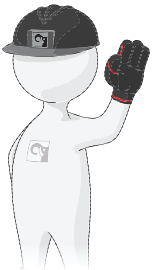


Stop all crane movements

Also: **Hold the load in position.**

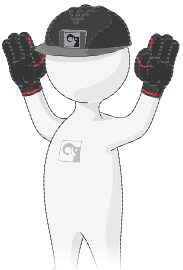
Raise the open hand, with the palm clearly visible, and arm at shoulder height.

Keep the hand still.



Emergency stop for all movements by the crane.

Raise the hands and the arms to an oblique angle.



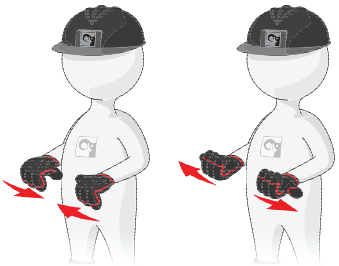
Very short movement

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

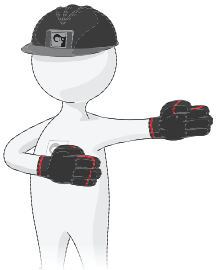
Signal with your hands.

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



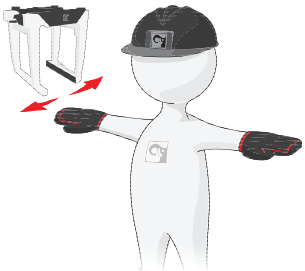
Turn in the direction indicated

Indicate the direction with the hands.



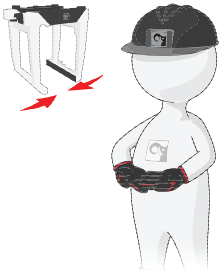
Open the grapple

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



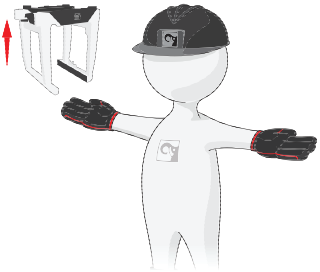
Close the grapple

Move both hands close together.



Lift the open grapple a little

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



Keep the grapple in position briefly

Raise the hand drooping slightly, with the fist clenched.

3.5 Use of the crane

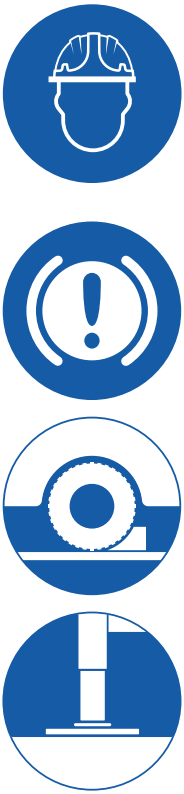
Starting crane operation

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 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!

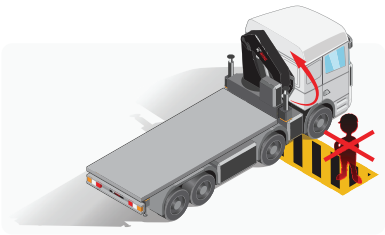
  If you raise the vehicle with the stabiliser legs, this may damage the stabiliser legs.
- Check that the add-on lifting accessories and separate lifting accessories are in good order!

  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).

DANGER

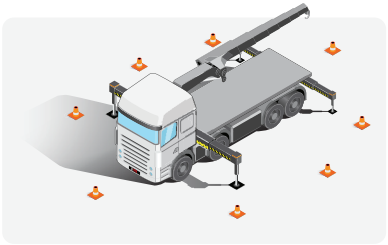
Do not stand in front of the boom system when operating the crane out of parking position.



3.5.1 Preparations for use

DANGER

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



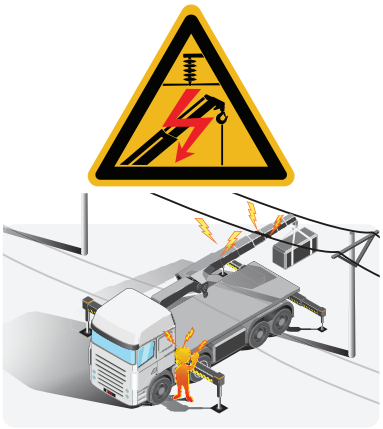
TIP

Mark out the working range, e.g. with cones.

Put on your vehicle's warning lights.

DANGER

- 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 transmisson

3.5.2 Crane operation

DANGER

Your crane has a control system.

The control 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!

- Push a **stop button**.

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

DANGER

- Keep checking that there are no unauthorised persons within the operating reach of the crane!
- 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

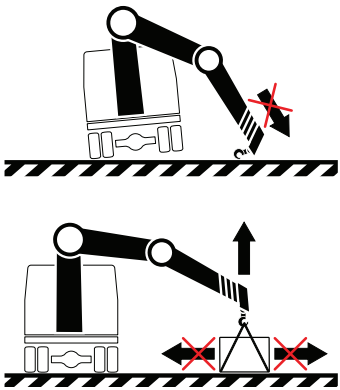
- Never push a load along the ground, or the vehicle's load space, with the extension boom. This can cause damage to the boom system. This will lead to expensive repairs.
- Never use the extension boom as a jack. This could damage the slewing bearings and the connection between the crane column and the crane base.
- Always lift the load from the ground before you start to slew. Do not tow the load over the ground. This can damage the boom system.
- If you are working with loads in restricted spaces (for example, windows):

  Check that the boom system can move up and down freely.

  The boom system will bend somewhat, when loading and unloading the crane.
- 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.

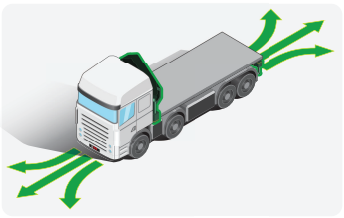
3.5.3 Driving with the crane

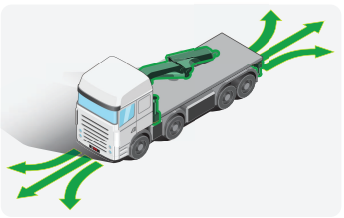
DANGER

- 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 stowed 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).





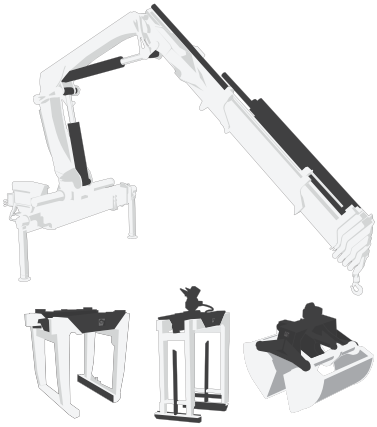
3.5.4 Use of lifting equipment

DANGER

- Only use lifting accessories (hoist, grapple, rotator) 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 should you 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

3.5.5 Use of demountable cranes

DANGER

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

  Check that the crane is properly locked!

WARNING

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

Roughly handling can seriously damage the crane or the vehicle.

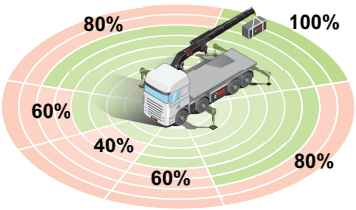
3.5.6 Ending crane operation

DANGER

Always end crane operation as follows:

- After use, always place the crane in the transport position!
- Withdraw the stabiliser legs and stabiliser extensions.
- 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.
- Only after doing the above, should you drive the vehicle away.

4.1 Safety System SPACE 3000/4000 and Remote Control



SPACE 3000 and 4000 are different versions of a crane safety system.

With the XSDrive you can control the crane remotely.

The safety system:

- Monitors the crane's operation and prevents unsafe actions.
- Increases the precision with which you can work.
- Makes operation easier.
- Makes troubleshooting easier.

SPACE 3000 is used on cranes with manual control. The control valve is type V30.

SPACE 4000 is used on cranes with control valve type V80 and remote control XSDrive

Crane version	Control valve	Safety system
Duo	V30	SPACE 3000
HiDuo	V80	SPACE 4000

! NOTE

The safety system provides a large number of functions. Certain functions are standard, others are options.

If you do not use the system for 30 minutes, it will switch itself off, in order to prevent draining the truck battery. This feature can be cancelled.

Contact your HIAB service workshop.

4.2 How the safety system works

On the crane there are various sensors and indicators which send signals about the crane's load, position and movements to a central microprocessor. The microprocessor then decides how the crane can be operated and stops/reduces prohibited movements/speeds according to the following:

- When prohibited movements/speeds are approached, a warning is given.
- When prohibited movements/speeds are reached:

  On remote controlled cranes prohibited movements are stopped.

  On manually operated cranes, all movements are stopped, because when a spool is moved too much, power to the dump valve is cut, all movements are stopped.

Fault monitoring

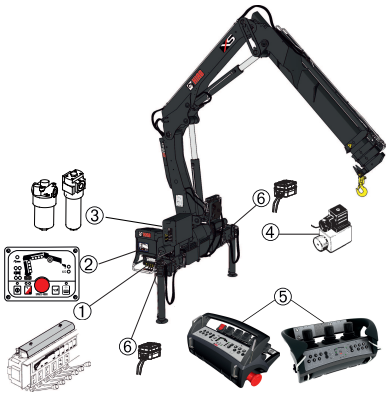
When there is a fault in the control system it will give an immediate warning.

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 Components of the SPACE 3000/4000 Safety System



Main control valve ①

- The crane can be operated from the main control valve, but as soon as you have selected remote control operation, it is impossible to operate the main control valve levers.

User Interface - Microprocessor ②

- This is the user interface for SPACE 3000/4000. On this user panel the operator turns on and off the system and activating stabiliser legs and OLP release.

  Activating the remote control and the signal horn. There is also a stop button on the user panel.

Filters (SPACE 4000) ③

- The remote control (valve V80) is equiped with high pressure filter and a separate pilot filter for the servo valve.

Dump valve 1 ④

- To prevent high pressure and thereby unnecessary heating of the oil there is an automatic dumping function. When no lever movement has been made for 3 seconds SPACE system opens the dump valve 1 and the oil is returned directly to the hydraulic tank. As soon as the operator moves a lever the valve closes.

Dump valve 2

- Allows operation of the stabiliser extensions and legs only when this valve is activated.

  The dump valve 2 will be placed between the main control valve and the stabiliser control valve. The dump valve 2 must be activated from the SPACE interface or the XSDrive controller before the stabiliser system can be controlled.

Remote control ⑤ (only HiDuo)

- The controller is used to operate the crane remotely, either by using levers or joysticks. There is also a stop button on the controller.

Warning lamp ⑥

- A warning lamp on each stabiliser leg is used to warn the surrounding about ongoing activity, by amber light indication. The warning lamp also gives information to the operator about the different statuses of the crane.

  System ON: the lamps light up

  Remote control ON: the lamps blink

  90% of maximum permitted load and OLP: the lamps flash twice

4.4 Operating components

- Duo: control valve V30
- HiDuo: control valve V80
- Stabiliser valve
- Duo: user panel SPACE 3000
- HiDuo: user panel SPACE 4000 and remote control XSDrive

  with radio

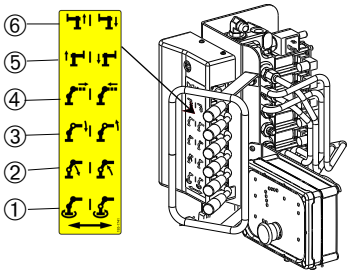
  with cable connection

4.5 Main control valve

The speed of a function corresponds to the extent of the lever movement, as long as the oil flow is sufficient. When the oil flow is insufficient, one or more functions will stop.

Main control valve lever function

Main control valve V30/V80



Slewing ①

First boom ②

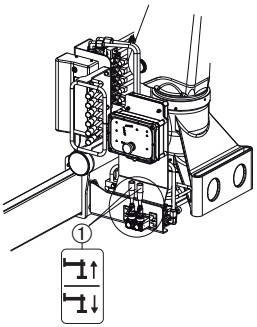
Second boom ③

Extension boom ④

Stabiliser leg ⑤

Stabiliser leg ⑥

4.6 Separate stabiliser valve [option]



2-function valve

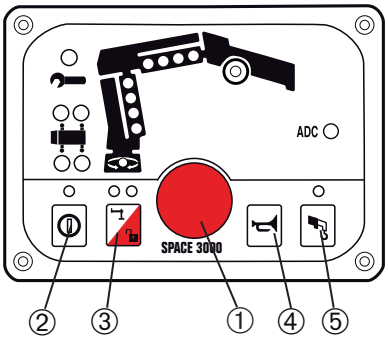
- **Stabiliser leg levers** ①
  upward/downward

The Stop button affects oil supply to this valve.

4.7 User panel SPACE 3000

Manually controlled cranes are equipped with user panel SPACE 3000

Functions:



- Stop button ①
  When you push the stop button, all crane movements are stopped immediately.
- ON/OFF button ② to switch the safety system On/Off.
- Button ③
  Push the button to operate stabiliser extensions and legs.
  The button is also an OLP release button with the functions:
  Disconnecting the automatic dump function.
  OLP release.
- Button ④, to sound the horn, if present.

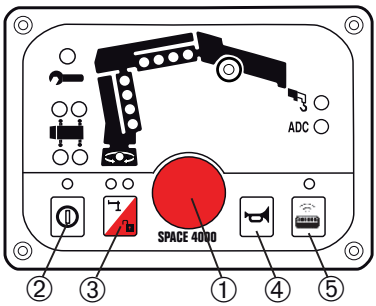
- Button ⑤

  Push the button, to switch the manual extensions on/off.

4.8 User panel SPACE 4000

Cranes with remote control, type XSDrive and main control valve type V80 are equipped with user panel SPACE 4000:

Functions:



- Stop button ①.

  When you push the stop button, all crane movements are stopped immediately.
- ON/OFF button ② to switch the safety system On/Off.
- Button ③.

  Push the button to operate stabiliser extensions and legs.

  For remote controlled stabiliser system: Confirm view button. The driver must have full view when operating the stabiliser extensions outward. In this case there is an user panel SPACE 4000 on both sides of the crane.

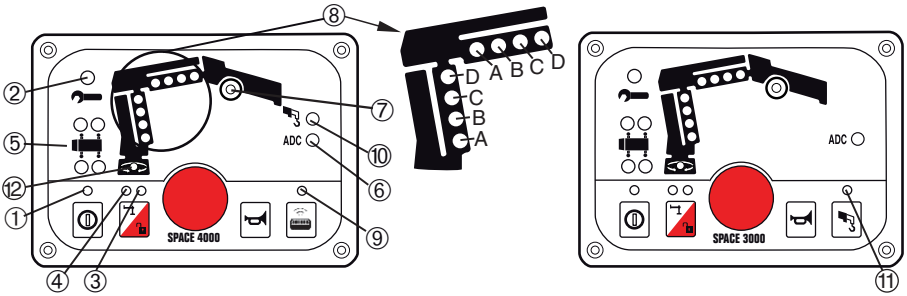
  The button is also an OLP release button with the functions:

  Disconnecting the automatic dump function.

  OLP release.
- Button ④, to sound the horn, if present.
- Button ⑤

  Push the button, to select remote or manual control.

4.9 Indicator LEDs on user panel SPACE 3000, SPACE 4000



	Power On	①	Green light on: The system is on. Green light flashing: A stop button is depressed or remote control selected.
	Service	②	Green light on: Time to service the crane. Red light on: A non-critical error detected in the system. Red light flashing: Critical error is stopping the crane. Diagnostic required. Red light dubble flash: CAN Error, crane stops.
	OLP Release	③	Red light on: OLP (crane, VSL or stabiliser leg) Red light blinking: OLP Release (crane, VSL or stabiliser leg) Green light on: dump 2 active (if present)
	OLP Release	④	Green light on: Dump 1 active.
	OLP Release	③ ④	Green light on both ③ ④: Stabiliser functions are activated (dump 1 and 2 active).
	Stabiliser leg/extension	⑤	Green light on: Stabiliser extensions fully out and legs set to ground. Lamp blinking: Stabiliser extension is not fully out. Stabiliser leg set to ground. Red light on: Stabiliser leg overload.
ADC	**Automatic duty control**	⑥	Green light on: Increased capacity (ADC mode).

	Hoist LED	⑦	🟢 Green light on: Hoist mode. 🔴 Red light flashing: 90% of OLP pressure. 🔴 Red light on: 100% of OLP pressure.
	Cylinder pressure LED's	⑧	🟢 Green light A on: 50% of OLP pressure. 🟢 Green light A - B on: 70% of OLP pressure. 🔴 Red light A - C flashes: 90% of OLP pressure. 🔴 Red light A - D on: 100% of OLP pressure. 🔴 Red light blinking from A to D: OLP Release.
	Remote control	⑨	○ Light off: Manual control. 🟢 Green light on: Remote control. Good radio connection. 🟢 Green light blinking: Stop button pressed/no radio connection. 🔴 Red light blinking: Radio interference.
	Manual extension		🟢 Green light on: Manual extension selected. 🟢 Green light blinking: Manual extension selected and 1st manual extension out.
	SPACE 4000	⑩	
	SPACE 3000	⑪	
	VSL:Variable Stability Limitation	⑫	🟢 Green light on: Full VSL stability. ○ Light off: Vehicle has limited stability but, crane capacity is not fully used. 🔴 Red light on: VSL OLP. Vehicle has reached a stability limit. (Also all the 1st boom diodes will light red).

Lamp test for the user panel SPACE 3000 and SPACE 4000

See: Daily inspection.

4.10 XSDrive controller

Controller XSDrive has either four or six levers, or two or three joysticks for proportional functions programmed in the different menu selections. The controller normally communicates with the crane via radio but can also be operated via cable.

Radio communication is dependent on:

- Transmitter, fitted in the controller.

- Receiver box, fitted on the operating base.

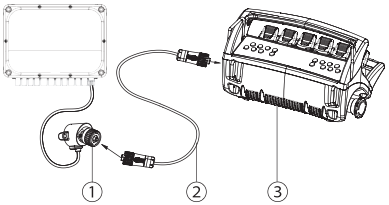
  The Receiver box consists of a combined radio receiver and 12 outputs for servo valves. The status of the receiver is visible on the controller. In case of radio interference, it is possible to change the channel by pushing button . There is a maximum of 12 channels available.

WARNING

When the controller is in use (stop button released), keep a distance of minimum 1 meter between the controller and the crane or truck because of possible electromagnetic interference.

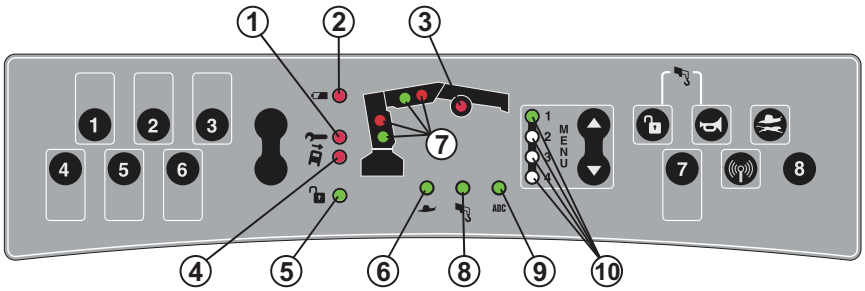
Cable connection [option]

The cable ② is intended to be used for short-term operation and when pairing in conjunction with the replacement of controller or receiver. Connection is made between the controller ③ and the receiver box ①. Radio communication is automatically disabled when the cable is connected.



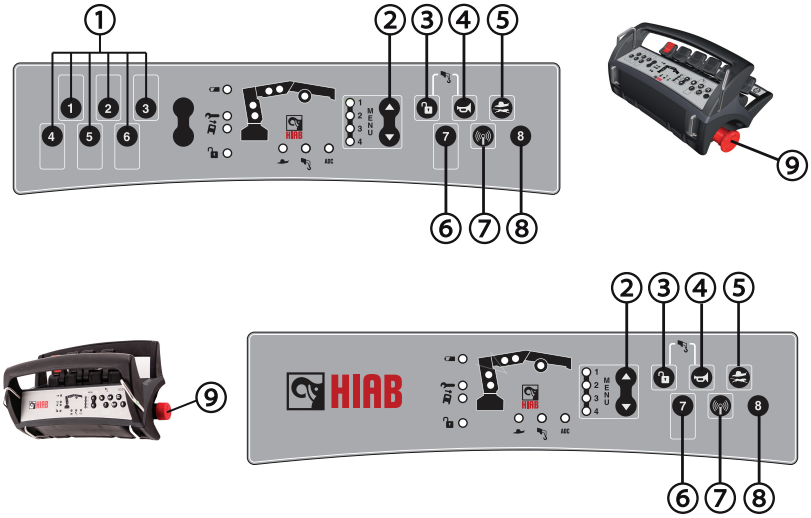
4.10.1 Indicator LEDs on XSDrive controller

The indicator LEDs on the controller indicates errors, stability, cylinder pressure etc. The appearance of the panel differs somewhat depending on if the controller has levers or joysticks.



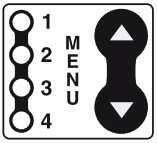
	Service	①	Red light on: Error detected in the system.
	Battery	②	Red light on: Low power
	Hoist LED	③	Red light flashing: 90% of maximum pressure Red light on: 100% of maximum pressure
	VSL	④	Red light on: VSL-OLP. Vehicle has reached a stability limit. (Also all the 1st boom diodes will light red).
	OLP Release	⑤	Red light on: OLP Red light blinking: OLP Release.
	Low speed	⑥	Green light on: Reduced speed. For normal speed, see section “Buttons”
	Cylinder pressure LEDs	⑦	Lower LEDs green light on: 70% of maximum pressure Lower LEDs, red light flashing: 90% of maximum pressure Lower and upper LEDs red light: 100% of maximum pressure
	Manual extension	⑧	Green light on: Manual extension activated
ADC	**ADC**	⑨	Green light on: Increased capacity (ADC mode)
	Menu LEDs	⑩	Light on: Indicates active menu

4.10.2 Buttons

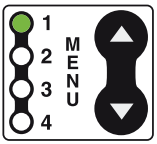


①	**ON/OFF buttons** [option]	Buttons for 7 extra ON/OFF functions (engine on/off, engine speed, horn etc.)
②	**Menu selection**	Push to change between menus 1 to 4.
③	**OLP release**	Push and hold the button while you operate a pressure reducing function.
④	**Horn**	Push to operate the horn.
③ & ④	**Manual extensions**	Push at the same time to activate the manual extension.
⑤	**Speed selection**	At the start, you have maximum operational speed. Push the button to operate the crane with decreased speed. Push it again for maximum speed.
⑥ & ⑧	**LSS-V**	If the crane has LSS-V, button ⑥ activates this feature and button ⑧ deactivates it.
⑦	**Channel shift**	Push to change radio channel. There are 12 channels in total.
⑨	**Stop button**	When you push the button, you stop all crane functions. To release it, turn the button clockwise.

Locking the controller

	1. Push the stop button. 2. Push and hold both arrows on the toggle button and release the stop button at the same time. 3. The 4 LEDs flash at the same time. Now you cannot operate the controller. 4. Push the stop button.

Unlocking the controller

	1. Make sure that you pushed the stop button. 2. Push and hold both arrows on the toggle button and release the stop button at the same time. 3. The 4 LEDs flash at the same time for 5 times. 4. LED 1 comes on. (Start menu)

4.10.3 Menus

The functions presented in each menu can be customized depending on crane configuration. It can be changed by a Hiab Authorized Workshop.

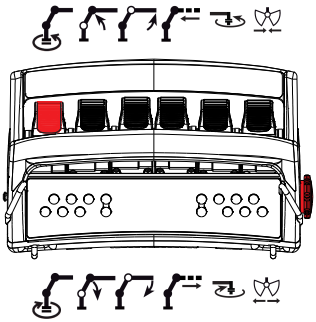
The table below shows an example:

Menu 1 	Slewing, first boom, second boom, extension boom, tools JIB, hoist, etc.
Menu 2 	[option] (If crane is equipped with extra remote controlled stabiliser system)
Menu 3 	[option] Slewing, attachment. (If crane is equipped with remote controlled stabiliser): left and right stabiliser extension, left and right stabiliser leg.
Menu 4 	[option] Similar to menu 3 but for extra stabiliser legs

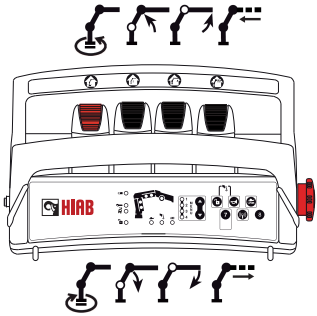
4.10.4 Standard functions and symbols

The function corresponding to each lever depends on the configuration of the specific crane. The table below shows examples:

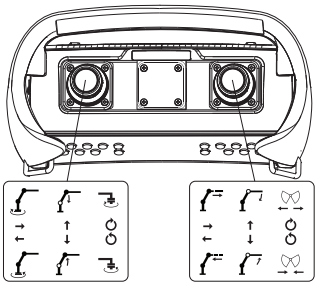
XSDrive levers 6F



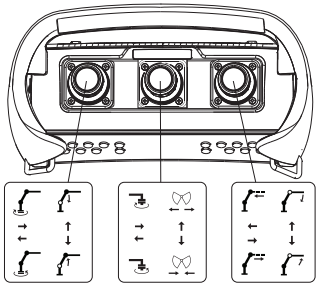
XSDrive levers 4F



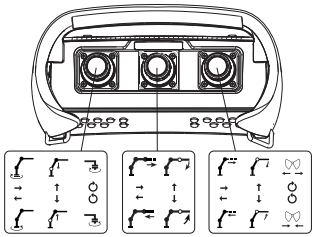
XSDrive joystick 3-0-3



XSDrive joystick 2-2-2



XSDrive joystick 3-2-3



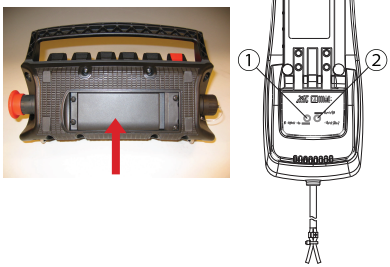
4.10.5 Battery and battery charger XSDrive

Battery

A fully charged battery provides approximately 5-8 hours use (at 25 °C, 77 °F) and the voltage level is approximately 8,4V. When the battery is about to wear out an indicator LED on the controller burns steady red and the horn will sound twice. Push the stop button before changing the battery. Note that the battery voltage remains between 7,6V and 7,5V for a long time. Therefore, the battery voltage cannot be used to estimate remaining hours of use.

Battery charger

The battery charger is to be fitted in a protected environment, preferably in the cab. Two batteries are delivered with each unit, one of which can always be placed in the charger.



LED ① is lit continuously when the battery charger is ready for use. Place the battery in the charger. LED ② flashes slowly during recharging and has a steady light when the battery is fully charged.

Charging time

The normal charging time for a flat battery, is approximately 3 hours. Operating ambient temp: Battery = 0° to + 45°C.

! NOTE

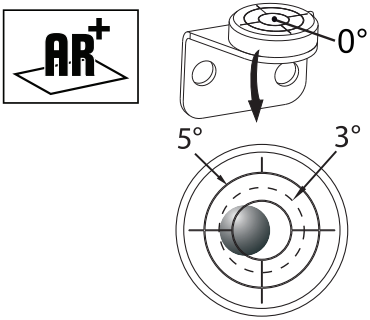
A charged battery is a concentrated energy source. Never store a charged battery in a toolbox or similar, where there is a risk of a short due to contact with metal components. Used batteries should be taken care of according to the local regulations.

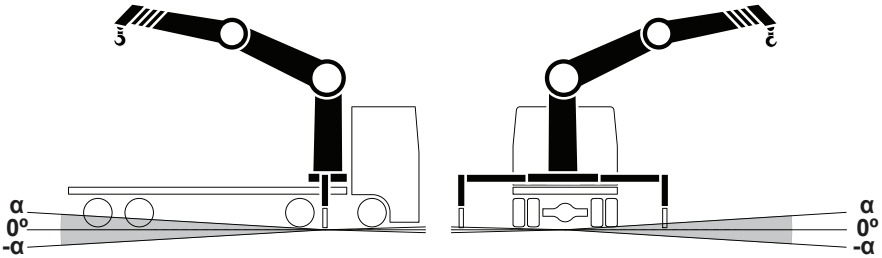
5.1 Starting operations [AR+]

- **General case:**

Place the vehicle on a flat, firm and stable surface. The vehicle inclination (α) during crane operation must **not be more than 3º**. If this value is exceed, unintentional crane movements can occur.

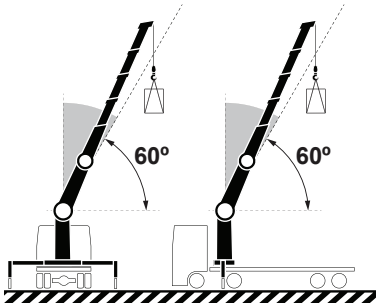
To determine the inclination of the truck, check the spirit level on the crane. When the bubble is in the middle of the gauge, the crane is in horizontal position. When the bubble is between the two circles, the crane inclination is between 0° and 5°.





- **Working with boom system beyond 60°**

  To avoid side deflection and in order to guarantee the safest operation when working with e.g. Lifting Accessories and/or Hoist applications, the vehicle has to be completely levelled in any direction **(α=0º)**.



! NOTE

- Operating the crane in to and out of transport position must also be done with the vehicle completely levelled.
- Activate the parking brake and place chocks under the wheels to prevent vehicle movement.

Engage the PTO

Engage the PTO (Power Take Off) and bring the vehicle engine to the correct rpm.

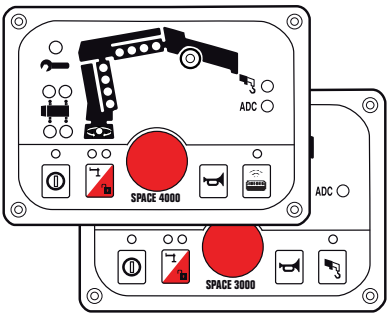
! NOTE

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

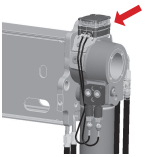
Start the safety system

The operating levers must be in the neutral position before start up.

To start the safety system, press the On/Off button ⏻. The LED above the button lights up. The system will check itself. (2-4 seconds)



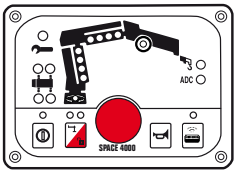
The warning lamps on the stabiliser legs light up.



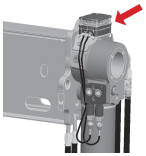
XSDrive-Start the remote control

Fasten the controller

1. Fasten the controller to a waist belt, or shoulder-/neck strap, in the most comfortable operating position.
2. Press the remote control button 📻
3. Release the stop button on the controller. The menu LED starts blinking. When communication is established, the LED lights constant = ready for use.



The warning lamps on the stabiliser legs blink swell light.



5.2 Set the stabiliser system

Crane must be operated with the stabiliser extensions fully extended and the stabiliser legs set to the ground without lifting the wheels from the ground, otherwise the stability of the vehicle will not be ensured.

DANGER

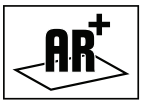
The operator is the responsible to make sure that the vehicle is stable while lifting a load and the maximum load is not exceeded.

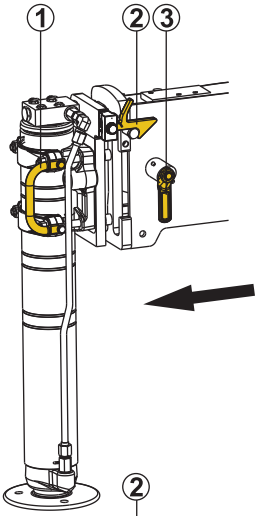
5.2.1 Extend the stabiliser extensions [AR+]

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

Manually controlled stabiliser extensions

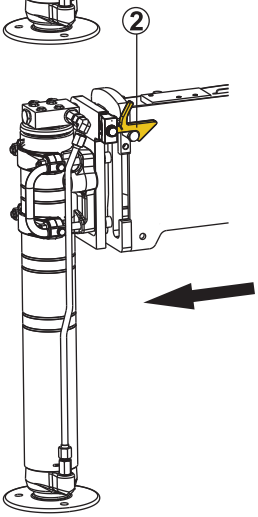
Unlock Stabiliser locking devices ② and ③. Take a firm grip around handle①, and pull to extend the stabiliser extension and lock with the handle ③.





Hydraulically controlled stabiliser extensions

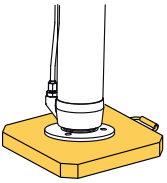
Unlock the Stabiliser locking device ② [option] and extend the stabiliser extensions with the levers on the valve or the controller depending on your crane configuration.



5.2.2 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:

DANGER

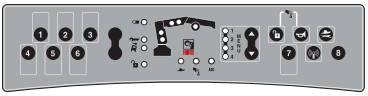
Check that the extra support plates do not bend or sink into the ground.

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.

Operating the stabiliser system

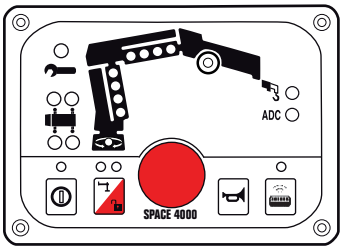
To operate the stabiliser extensions outwards, the confirm view button must be pressed on the side where the stabiliser extension will be operated.

Remote controlled stabiliser extensions and legs



1. Select menu 2, 3 or 4 with the menu button on the controller.
2. To be able to operate the stabiliser extensions outwards, press the button .

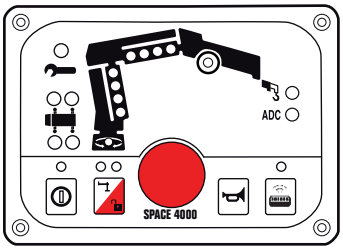
   The stabiliser legs can be driven up/down by pressing the button (regardless of the side).



3. Go to: **Extend stabiliser extensions and set stabiliser legs**

Remote control - manual controlled stabiliser extensions and legs:

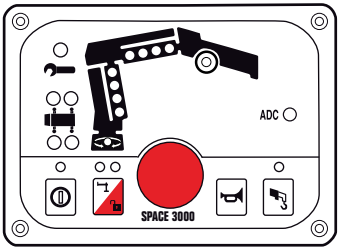
1. Press button to de-activate the remote control.
2. On the side where the stabiliser extensions and legs are to be operated, press the button to activate the system. Press the button once more to activate the stabiliser system.
3. Go to: **Extend stabiliser extensions and set stabiliser legs**



Manual controlled stabiliser extensions and legs

When in manual operation:

1. On the side where the stabiliser extension and leg will be operated, press the button to activate.
2. Go to: **Extend stabiliser extensions and set stabiliser legs**



5.2.6 Set the stabiliser legs [AR+]

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

> **WARNING**
>
> Take care not to lower the stabiliser leg onto your foot.

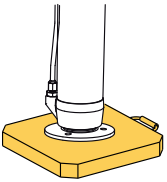
> **! NOTE**

For cranes with VSL the stabiliser leg downward movement is automatically stopped at a pre-given force level. To exceed this pre-given force level, operate the stabiliser leg down once again.

> **DANGER**
>
> Always ensure that the stabiliser legs and stabiliser extensions are in working position and securely locked.

Place the extra support plates

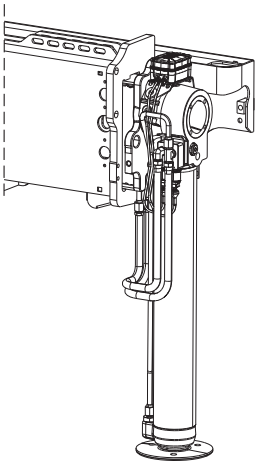
- Place the extra support plates under the stabiliser leg plates.



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

Non-tiltable stabiliser legs

1. Make sure that the stabiliser extensions are extended.
2. Operate the stabiliser leg downwards until it is set to the ground.

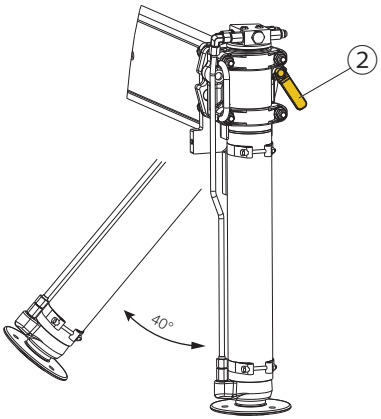


Manual tiltable stabiliser legs

1. Make sure the stabiliser extensions are extended a little
2. Unlock the stabiliser leg lock ②, that holds the stabiliser leg in the transport position.

> **WARNING**
> Do not stand in the stabiliser leg tilting area.

3. Tilt the stabiliser leg downward.
4. Lock the stabiliser leg lock ②.
5. Extend the stabiliser extension. For manual extensions, lock the extension
6. Operate the stabiliser leg downwards until it is set to the ground.



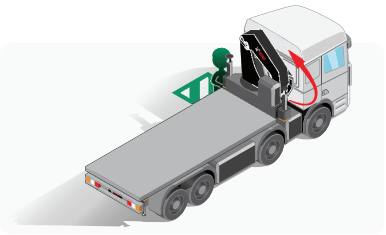
5.3 Operate the boom system out of transport position

WARNING

- A crane with add-on equipment can differ from the operations described in this section.
- For this reason, study the operating instructions for add-on equipment carefully.

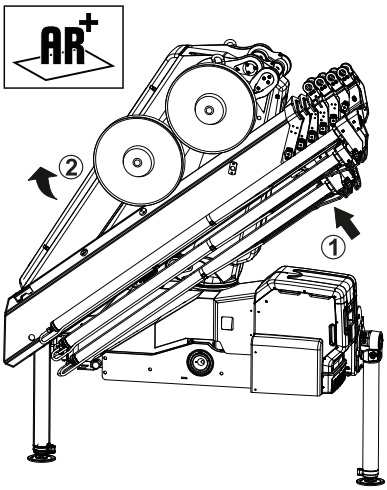
DANGER

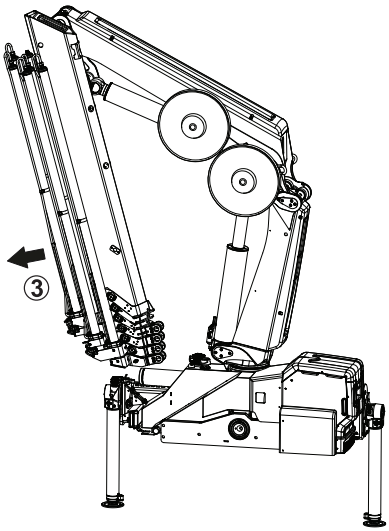
Always operate manually controlled crane from the position indicated!



Operate the boom system

1. Operate the second boom fully against the underside of the first boom ①.
2. Raise the first boom ②.
3. As soon as the first boom is raised to an angle where the second boom can go free from the crane base, raise the second boom ③.
4. Slew the crane to working position. The crane is ready for use.

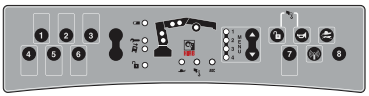




6.1 Functions

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

6.1.1 Controlling the crane speed with the controller XSDrive



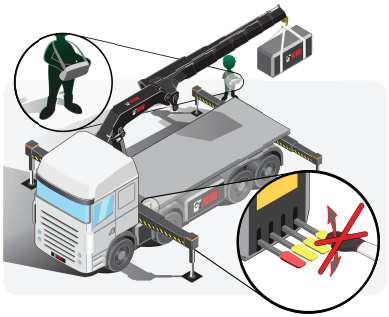
At start up, the system by default is set to full speed. To reduce the speed, push button once. The low speed LED will light continuously. By pushing the button again, the crane returns to full speed and the LED goes out.

When pushing the speed selector button, all levers must be in neutral.

! NOTE

The crane speed will depend upon the crane functions you are using and how many crane functions you operate at the same time.

6.1.2 Supervision of spools



If a valve spool movement is greater than the equivalent lever or joystick movement on the controller, a safety function is tripped, and all crane movements stops.

This occurs if a control lever on the valve is moved while the remote control is engaged.

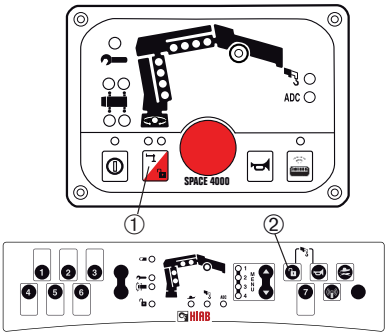
6.1.3 ADO Automatic dump function

If a lever is not moved for 3 seconds, this function diverts the oil to the tank, thereby preventing the oil from overheating. The next lever movement stops the dumping and it functions as normal.

Disconnecting the automatic dump function (ADO)

In certain cases the automatic dump function must be disconnected. The most common case is before operating the stabiliser valve (which is not equipped with spool sensors).

To disconnect the automatic dump function:



1. Press the button ① on the user panel or the button ② on the controller.

   The LED is lit constantly when the automatic dump function is disconnected.

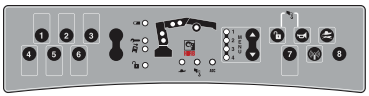
2. Press the button again.

   The automatic dump function is now connected again.

As soon as a crane function lever is operated (remote or manual control) the automatic dump function is activated again.

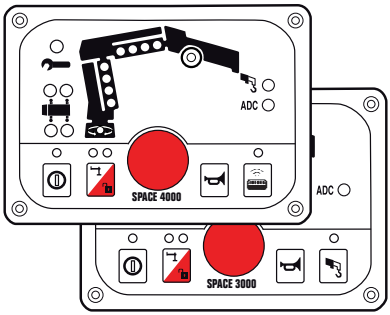
When the power is switched on, the automatic dump function is always connected.

6.1.5 ADC Automatic Duty Control



The purpose of the ADC function is to increase the lifting capacity by approx. 10%.

The first boom pressure sensors indicate if there is a positive or negative pressure on the first boom.



Normal capacity

- If the first boom is pressed down, the sensors indicate a negative pressure and the lifting capacity is normal during the complete lifting cycle.

Increased capacity (ADC mode)

- ADC lamps light up.

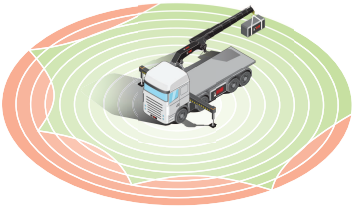
  If the sensors indicate a positive pressure, the lifting capacity is increased during the complete lifting cycle.

6.1.6 ASC Automatic Speed Control (only HiDuo)

- The ASC function automatically provides the extra power by reducing the speed smoothly, when working close to the rated capacity. When the load decreases, normal speed is restored.

6.1.7 VSL Variable Stability Logic

The VSL function detects the position of the stabiliser extensions and that the stabiliser legs are pressed to the ground. This optimize the crane lifting capacity in relation to the vehicle's stability.



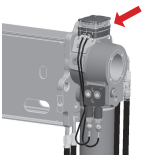
6.2 OLP (Overload protection)

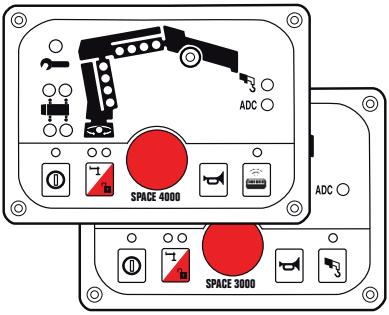
OLP Crane

The OLP function is a safety function in SPACE that prevents overloading of the crane.

On the boom system: With 90% of maximum permitted load, a prewarning is given. The warning lamp on the stabiliser leg double blinks and the cylinder pressure LED's flash red.

When 100% of the maximum permitted pressure is reached, the OLP cuts in and stops all movements that increase the moment. The warning lamp on the stabiliser leg will flash twice and the cylinder pressure LED's will light continuously.





OLP Stabiliser system:

If a stabiliser leg is overloaded, slewing is stopped in the direction towards the stabiliser leg where the OLP occurs. The crane stops. The lamp for stabiliser leg (for the overloaded stabiliser) on the user panel light red.

Move the levers to neutral and only operate permitted (load reducing) functions.

VSL - OLP

VSL-OLP occurs when there is a risk of instability of the vehicle.

The slewing is stopped towards the instability direction and the crane stops.

The VSL indicator lamp and the lamp for stabiliser leg on the user panel light red.

Move the levers to neutral and only operate permitted (load reducing) functions.

OLP Release

In certain OLP situations, the first and second booms can be locked. It is then possible to release the OLP for approximately 5 seconds.

To release the OLP

Press the "OLP release" button, while moving one lever.

There is a waiting time before the release operation can be activated again. The time increase in three steps: 30, 60 and maximum 90 seconds (the time starts to count down as you move the lever)

During this period it is possible to operate an appropriate crane function so as to correct the overload situation. Only one unallowed function at a time can be operated. Extension out cannot be operated.

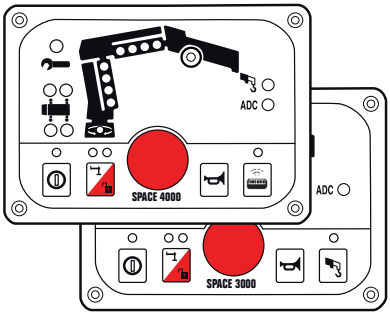
The cylinder pressure LED's and the lamp above the OLP release button flash red.

OLP End of stroke operation

(automatic OLP disconnect)

If a boom cylinder reaches its end position while lifting, the cylinder may reach the OLP limit and SPACE will interpret this as an overload.

In this case, SPACE will calculate the pressure increasement over time and automatically release OLP.



! NOTE

Do not operate heavy loads with the extensions fully retracted. In an OLP situation, it is an advantage to be able to retract the extensions.

DANGER

Never use the OLP override to overload the crane deliberately! Never exceed the values given on the load plate.

6.3 Manual extensions [option]

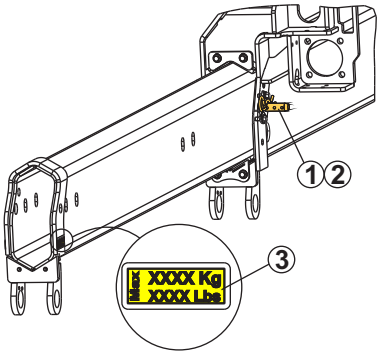
Operation with manual extensions

- Always extend the hydraulic extensions first, then the manual extensions.
- The use of manual extensions should be restricted to the longest outreach needed. When this reach is not needed, the manual extension should be retracted.

DANGER

Do not stand in front of moving parts. They may eventually move and cause injuries.

To extend the manual extensions



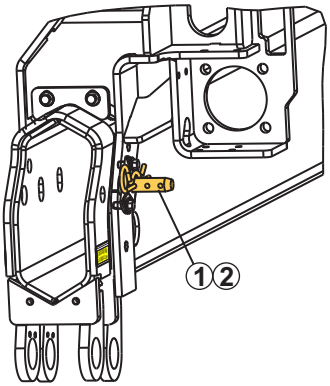
1. Locate the boom system as close as possible to the horizontal position, but low enough to reach the extension by hand.
2. Stop the crane, by pressing the stop button.
3. Remove the locking device ① and the locking pin ②.
4. Extend the manual extension fully by hand.
5. Secure the manual extension, by locking the pin ② and locking device ①.

DANGER

- Make sure that the locking device is properly locked.
- Each manual extension has a sign ③ for the maximum load that can be handled.
- Do not lift loads heavier than the values stated on the hook attachment.

To lift heavier loads than specified on the sign ③, the hook position must be moved to the nearest hydraulic extension, in accordance with the load plate on the crane.

To retract the manual extensions



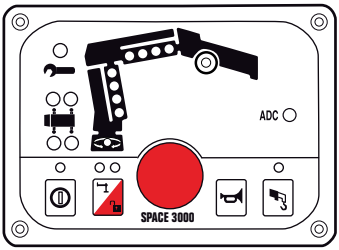
1. Locate the boom system as close as possible to the horizontal position, but low enough to reach the extension by hand.
2. Stop the crane, by pushing the stop button.
3. Remove the locking device ① and the locking pin ②.
4. Retract the manual extension fully by hand.
5. Secure the manual extension, by locking the pin ② and locking device ①.

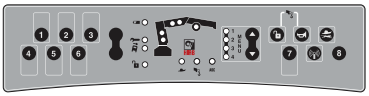
DANGER

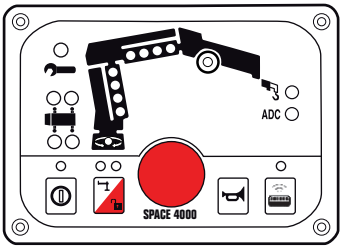
- Make sure that the locking device is properly locked.

Activate and de-activate OLP for manual extensions

> **WARNING**
>
> You must switch the OLP on and off manually for additional manual extensions!







Activate:

SPACE 3000: Push the button on the user panel.

SPACE 4000: Push buttons and on the controller.

The manual extensions are now included in the OLP protection. The lifting capacity will be reduced automatically. The lamp for lights up on the user panel.

De-activate:

SPACE 3000 - 4000

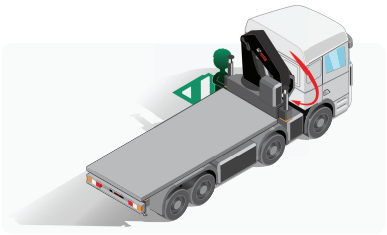
Push the button/s again. The lamp for goes out.

7.1 Operate the crane to parking position

WARNING

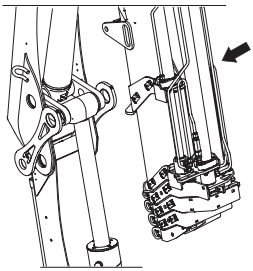
- A crane with add-on equipment can differ from the operations described in this section.
- For this reason, study the operating instructions for any add-on equipment carefully.

Always operate manually controlled crane from the position indicated in the figure.

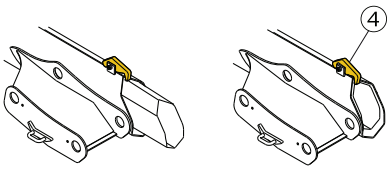


Slew the crane until the the crane is square on the vehicle. Check that the position arrows on the loader body and the crane base are in line .

1. Slide the boom extensions inward completely.
2. Operate the second boom against the underside of the first boom. Make sure the position of the 1st boom is sufficiently high to do so.

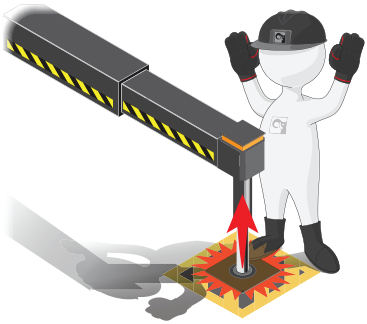


3. **Cranes with S-boom:** Start to lower the 1st boom until the 2nd boom is horizontally. Extend the extensions until the catcher ② drops. Retract the extensions carefully to give the required parking width and the catch secures the boom. Continue to lower the boom system onto the parking support.



4. **Other cranes:** Lower the boom system onto the parking support.
5. Fold in the hook.

7.2 Placing the stabiliser system in the transport position [AR+]



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.

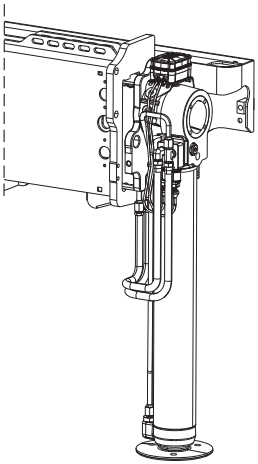
DANGER

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 .

Non-tiltable stabiliser legs

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



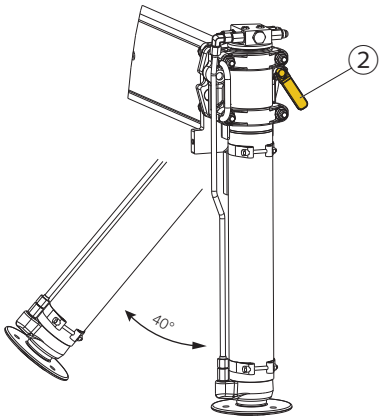
DANGER

Risk of crushing injuries.

Always keep hands away from moving parts during operation.

Manual tiltable stabiliser legs

1. Raise the stabiliser leg completely.
2. Unlock the stabiliser leg lock ②.
3. Tilt the stabiliser leg manually.
4. Lock the stabiliser leg lock ②.
5. Retract the stabiliser extension completely.
   WARNING
   Risk of crushing injuries.
   Always keep hands away from moving parts during operation.

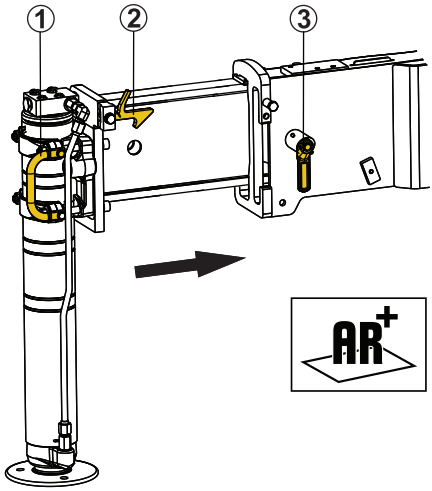


7.2.3 Retract the stabiliser extensions [AR+]

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

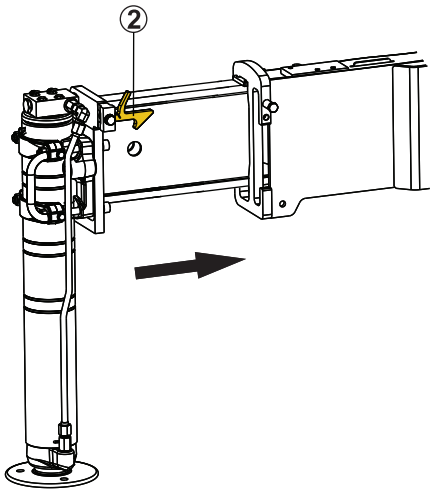
Manually controlled stabiliser extensions

Unlock the handle ③. Take a firm grip around handle ①, and push to retract the stabiliser extension and lock with the handle ③. Make sure the catcher ② is securely locked.



Hydraulically controlled stabiliser extensions

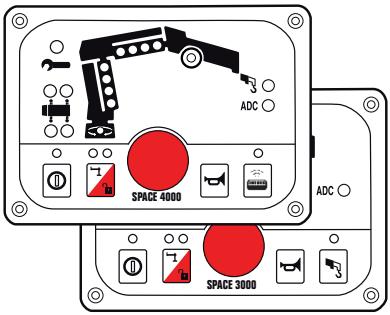
Retract the stabiliser extensions with the levers on the valve or the controller depending on your crane configuration. Make sure the catcher ② [option] is securely locked.



WARNING

Always ensure that the stabiliser legs and stabiliser extensions are in transport position and securely locked.

7.3 Switching off the safety system

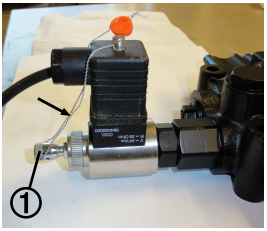


- Switch off the safety system with the on/off button ⏻.

If you are using the remote controller:

- Push in the stop button on the controller and switch off the safety system with the on/off button ⏻.
- Disengage the PTO.

7.4 Emergency operation Valve-V30



EMERGENCY operation to bring the crane to parking position

Do like this:

On the main control valve:

DANGER

To operate the crane like this is **HIGHLY DANGEROUS** because during emergency operation all crane security is disconnected.

Always go to/contact a HIAB service workshop when the seal wire has been broken.

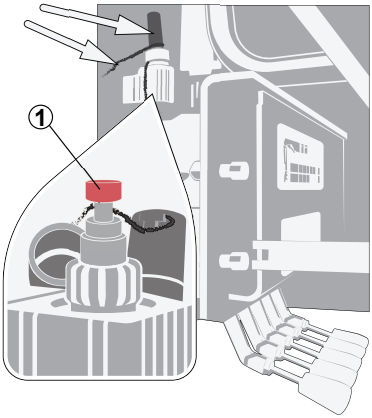
1. Break the security sealing on the dump valve.
2. Press the dump valve button ① and turn 90 degrees until it is blocked.
3. Operate the crane to parking position using the levers on the main control valve.

7.5 Emergency operation Valve-V80

EMERGENCY operation to bring the crane to parking position

Do like this:

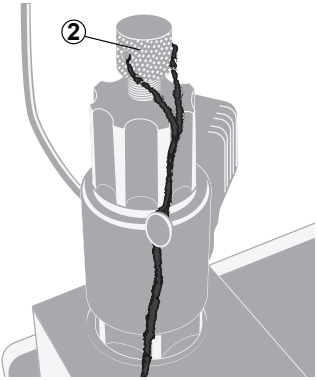
On the main control valve:



> **DANGER**
>
> To operate the crane like this is **HIGHLY DANGEROUS** because during emergency operation all crane security is disconnected.
>
> **Always go to/contact a HIAB service workshop when the security seal wire has been broken.**

1. Break the security seal wire and remove the cap on dump valve 1.
2. Press the dump valve button ① to the bottom and keep it in this position while you operate the crane to parking position, using the levers on the main control valve.

If separate stabiliser valve with manually controlled stabiliser extensions and stabiliser legs:



> **DANGER**
>
> To operate the crane like this is **HIGHLY DANGEROUS** because during emergency operation all crane security is disconnected.
>
> **Always go to/contact a HIAB service workshop when the security seal wire has been broken.**

1. Break the security seal wire on dump valve 2. Located next to the stabiliser valve.
2. Turn the security screw ② to the bottom.
3. Press the dump valve button ① on the **main control valve**, to the bottom and keep it in this position while you operate the stabiliser extensions and stabililiser legs to parking position using the levers on the stabiliser valve.

If separate stabiliser valve with remote controlled stabiliser extensions and stabiliser legs:

DANGER

To operate the crane like this is **HIGHLY DANGEROUS** because during emergency operation all crane security is disconnected.

Always go to/contact a HIAB service workshop when the security seal wire has been broken.

1. Break the security seal wire on dump valve 2. Located on the stabiliser valve.
2. Keep the dump valve button ① on the main control valve and this dump valve button ③ in depressed position at the same time, while you operate the stabiliser extensions and stabililiser legs to parking position using the levers on the stabiliser valve.

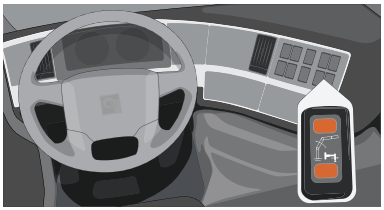
7.6 TWI Transport warning interface

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 space, or over the load, secure the boom and the lifting accessories to prevent any unintentional movement of the crane and the lifting accessories.

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 to 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 1000 hours operation
- or at least once a year.

Cleaning

Clean your crane and accessories regularly, but:

- Do not use aggressive cleaning agents.
- 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

Refer to the daily inspection checklist at the end of this manual to photocopy.

Presence of signs and symbols

- See chapter "Safety precautions and warnings" under section "Signs on the crane". Make sure that all the signs shown in section "Signs on the crane" are in position and in good conditions .
- Make sure that all the symbols on your crane are in good conditions.

Locking devices

- Make sure that the locking devices are undamaged and working properly.
- Make sure that the locking devices are properly locked.

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.

Levers

- Check that the levers operate smoothly.
- Check that the levers return to neutral position.

Controller

- Do a check of the controller functionality.

Crane structure

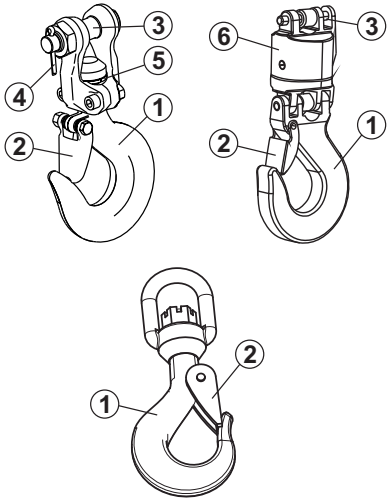
- Check for damage to the crane structure (e.g. any formation of cracks).

> **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.

Hooks

Before every lift:

- Check general condition of the hook, and parts of the hook ① for deformation and surface damages with significant depth.
- Check for damage to the hook structure (e.g. any formation of cracks).
- Check that the latch ② closes entirely.
- Check that the shaft ③ and the locking pin ④ are in place.
- Check that the plane bearing ⑤ or the swivel ⑥ are in good conditions.



> **DANGER**
>
> In the event of damage or worn that prevents a safety risk:
>
> - Do not use the hook.
> - Have the damage repaired immediately by a HIAB service workshop.

Add-on equipment and separate accessories (hoist etc.)

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

Electronic components

- Check that these are in good condition.
- LED test

To do the test:

1. Press the ON/OFF button for at least 2 sec. The test is activated and all the red LEDs are illuminated.

   If the system is equipped with warning lights / lamp pole, lamps will come on.

2. Release the button. After 3 sec, all the green the LEDs are illuminated. The test is finished when all LEDs is extinguished.

Hydraulic system

- Check that there are no leaks from the hydraulic hoses, lines and connections.
- Make sure that all security seal wires (Ex. LHV, dump valves, etc...) are not broken. Always go to/contact a HIAB service workshop when the seal wire has been broken.
- Check oil level in the tank. If necessary, fill to correct level.

! NOTE

Always place the vehicle on level ground with the crane in transport position while checking the oil.

Oil level on the slewing housing

- Do a check of the oil level in the slewing housing. If necessary, fill to correct level.

Filters

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

8.3.2 Monthly inspection and maintenance

In addition to the daily inspection, carry out the following each month:

Piston rods

- In cases where the cylinder piston rod is exposed to pollution due to the parking location, the chromed surfaces must be cleaned and oiled to prevent corrosion. This needs to be done regularly.

Pivot pins and bushes

- Inspect all the pivot pins and bushings for the crane boom and cylinders for damage, play, etc.

Bolts and screw fixings

- Check that bolt and screw fixings are not loose. If loose contact a HIAB service workshop

Cables and sensors

- Check that these are in good condition.

Lubrication schedule

- Carry out the lubrication according to the instructions.

Slewing bearing / Upper column bearing

- Check that the slewing bearing / upper column bearing is lubricated sufficiently.

Hydraulic system

- Check that the hydraulic pump attachment screws are tightened.
- Check if the oil in the hydraulic system needs to be changed.
- Or have the oil tested by a workshop or specialist.

Add-on equipment etc.

- Maintain all add-on equipment, auxiliary equipment etc. according to the instructions supplied with it.

8.3.3 Annual maintenance

Take the crane, at least once 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 hydraulic oil.

  Or have it tested by a workshop or specialist.
- Change the oil tank filler cap.
- Replace filters.

! NOTE

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

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).

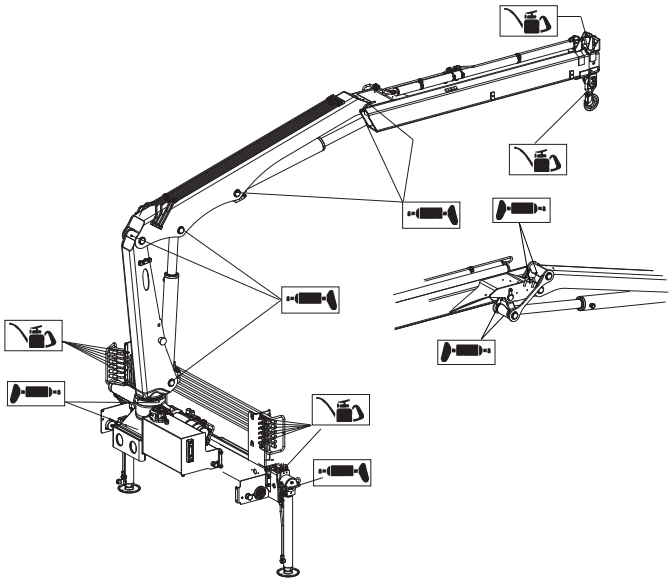
Recommended greases:

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 schedule



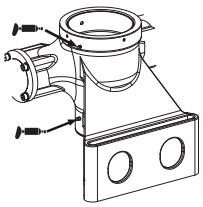
	Lubricate after every 16 hours of use.
	Lubricate after every 50 hours of use.

8.4.2 Lubrication of the column bearings

(Cranes up to X-072)

DANGER

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



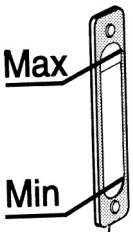
If you are lubricating the column bearing without help:

- Lubricate the bearings 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 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.



8.5.2 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.
2. 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.

WARNING

- 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.

3. Drain the oil tank through the drain plug. Make sure the system contains as little as possible.

   Use a container with sufficient capacity.

! NOTE

Ensure the waste oil is disposed of safely and inaccordance with local environmental regulations.

4. Change at the same time:

   - all filters

5. Refit the drain plug.

Filling the oil tank with hydraulic oil

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

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

-DIN 51524 part 3

-SS 15 54 34

-ISO 11158 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 biodegradadle 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 artic 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.

8.5.3 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 air from the hydraulic system, proceed as follows:

Move each crane cylinder and each hydraulically operated piece of add-on equipment at least twice to its end positions (slowly).

8.5.4 Replacing the cartridge in return oil filter

Return oil filter with clogging indicator

! NOTE

Do not clean the filter.

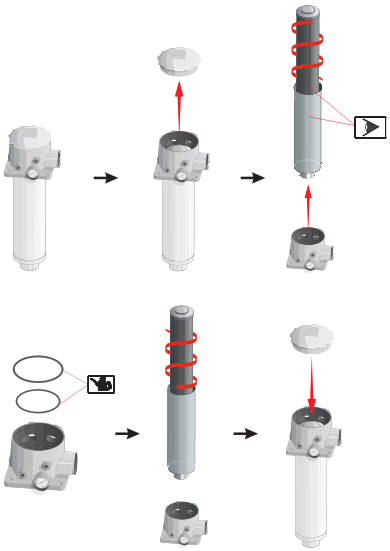
Replace the breathing filter of the filler cap at the same time as the return filter cartridge.

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

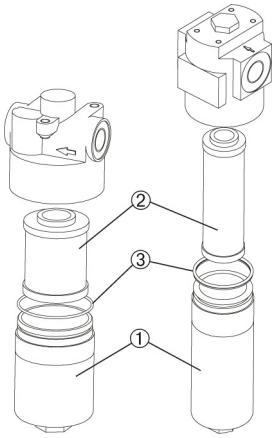
Make sure that the area around the filter is clean to prevent contamination of the hydraulic oil.

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.



8.5.5 Replacing the cartridge in pressure-reducer filter and high pressure filter

> **WARNING**
> Dirt will damage the hydraulic system



1. Clean the immediate surroundings of the filter.
2. Dismantle the filter housing ①.
3. Remove the cartridge ②.
4. Clean the filter housing.
5. Fit a new cartridge. Also fit new seal ③.
6. Reassemble the filter housing.

8.6 Troubleshooting

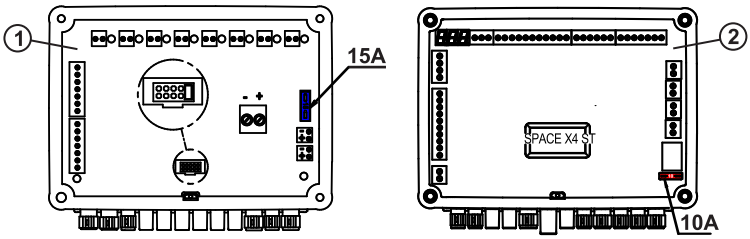
8.6.1 Main fuses

If the microprocessor detects a fault, this must be rectified immediately.

Fault	Probable cause	Action
The control system does not work at all. The indicator light next to On/Off button on the user panel is not lit, even if you push On/Off.	Defective fuses.	1. Replace faulty fuses in the: - vehicle - standard box - relay box (See Description, Components, Fuse, Location) 2. Check all the cable connections.

Description	Components	Fuse	Location
System main fuse	Relay Box, Standard Box, Oil Cooler	40 A	Located on the vehicle, were the crane is mounted.

Description	Components	Fuse	Location
Fuse for all components controlled by the relay box.	Hydraulic main control valve, stabiliser leg warning lamp, Remote control, user panel, MUX box. Truck warning interface, Work lights.	15 A	Located inside the relay box ①.
Fuse for all components connected to the standard box.	Hydraulic main control valve, stabiliser leg warning lamp, user panel, MUX box. Truck warning interface.	10 A	Located inside the standard box ②.



8.6.2 Faults on 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 must be corrected by personnel in a HIAB service workshop!

Fault	Probable cause	Action
Electronic system will not start.	Parking brake on the truck is not engaged.	Engage parking brake on the truck.

Fault	Probable cause	Action
The hydraulic pump makes a noise. **Warning! Stop using the crane immediately!**	Oil tank filler breather is clogged.	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.
	Hydraulic pump is faulty.	Go to a HIAB service workshop.
Leak on hydraulic system: leaking coupling, hose or line. **Danger! Keep away from any oil leak.**		1. Push in the Stop button [If fitted].
		2. Disengage the PTO.
		3. Contact a HIAB service workshop.
Stabiliser extensions do not slide out.	Stabiliser extensions are still locked.	Unlock the stabiliser extensions.
	Hydraulic fault.	Go to a HIAB service workshop.
The stabiliser extensions do not slide out/in. (Chain-driven stabiliser system)	Incorrect chain tension.	Contact a HIAB service workshop.
The stabiliser leg cylinder cannot keep the truck load and it goes inwards.	Check valve damaged.	Go to a HIAB service workshop.
	Cylinder internal leakage.	Go to a HIAB service workshop.
	Soft ground surface.	Set again the stabiliser led onto the ground or add an extra support plate between the cylinder and ground.
Slewing support cylinders do not turn	Three-way valve failure.	Go to a HIAB service workshop.
Irregular slewing movements and unusual noises in cranes with rack and pinion slewing system.	Insufficient oil in the hydraulic system.	Top up the oil tank.
	Insufficient oil in the slewing housing.	Top up the oil in the slewing housing to the required level.
	The upper slewing bearing is not properly lubricated.	Lubricate the bearing.
	The bearings in the slewing housing are damaged.	Go to a HIAB service workshop.

Fault	Probable cause	Action
Irregular slewing movements and unusual noises in cranes with continuous slewing system.	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.
One function of the controller does not work.	One lever of the controller was not in neutral at start up.	1. Push in the Stop button.
		2. Make sure that all levers are in neutral.
		3. Release the Stop button.
Crane does not react to controls. Indicator lamps light up on the user panel.	The crane is in an OLP situation.	Perform movements to reduce the load moment. If necessary, release OLP.
Crane does not work properly: One or more crane functions do not work, or not properly. Lifting capacity is much less than normal. Operating speed is significantly reduced. The service lamp is lit.	The system has detected a fault.	Contact a HIAB service workshop.
Cane performance when operating it with the controller is unsatisfactory.	The pressure-reducer filter is clogged.	Replace the pressure-reducer filter.
Boom system cannot keep the load height, and it goes down by itself.	Load holding valves on the first boom or second boom damaged.	Go to a HIAB service workshop.
	Cylinder internal leakage.	Go to a HIAB service workshop.
Boom extension cylinders do not follow the sequence.	Cylinder internal leakage.	Go to a HIAB service workshop.

Fault	Probable cause	Action
Boom extensions shake during extending/retracting function.	Cylinder internal leakage.	Go to a HIAB service workshop.
	Sequence screw in cylinder head loose.	Tight the screw in the right position.
Boom extensions cannot keep the load height and they move out by themselves.	Extension load holding valve damaged.	Go to a HIAB service workshop.
	Cylinder internal leakage.	Go to a HIAB service workshop.
Add-on equipment does not work properly (rotator, hoist, etc.)	Connectors not properly connected.	Reconnect the add-on equipment, according to the instructions.
	Other defect.	Go to a HIAB service workshop.

9.1 Decommissioning a crane

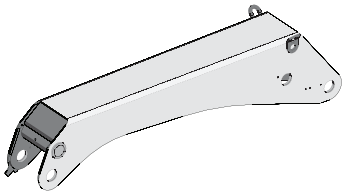
Cranes are designed and manufactured taking the environment into consideration. Environmental requirements and soundness have been considered when selecting the raw materials. The metal parts are designed to achieve a light and durable construction, this includes the selection of higher-quality grades 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.

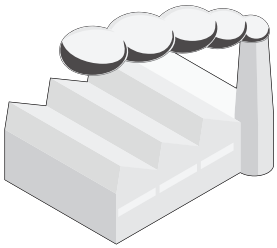
Sort the waste

- 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

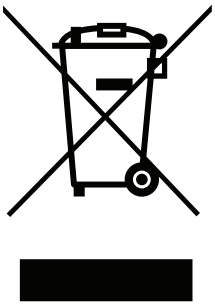
- drained hydraulic hoses, electrical wires, control cables, seat, hydraulic cylinder seals, lights, small plastic and rubber parts.

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.

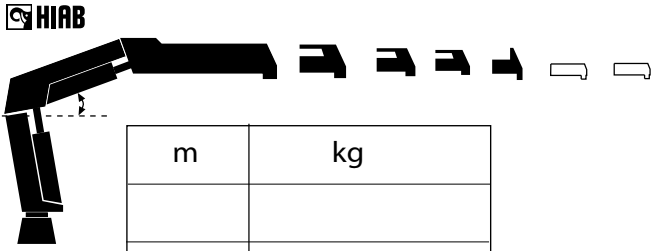
European Union—Disposal Information

This symbol identifies the parts of your crane that need to be disposed of separately from household waste according to EU legislation. When one of this part reaches the end of its life, take it to a collection site designated by local authorities. Responsible collection and recycling helps protect natural resources, environment and human health.



10.1 Load plate table

The Installer must fill in the valid meters (**m**) and kilos (**kg**) in this table, following instructions given in the Installation instructions.



m	kg

The enclosed Technical Data must be stored together with this Operator's manual.

10.2 Identification of the loader crane

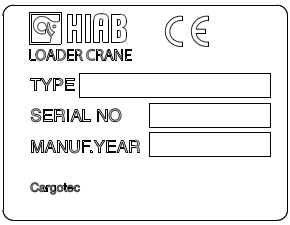
The information below is to be filled in by the installer. The same information will be found on the serial number plate on the crane:

Mark: HIAB

Type: .....

Serial number: .....

Manufact. year: .....



10.3 Abbreviations

- ADC - ('Automatic Duty Control') - Automatic Duty Control
- ADO - ('Automatic Dumping of Oil') - Automatic Dumping of Oil
- APO - ('Automatic Power Off') - Automatic Power Off
- ASC - ('Automatic Speed Control') - Automatic Speed Control
- BDA - ('Boom Deployment Assistant') - Boom Deployment Assistant
- CTC - ('Crane Tip Control') - Crane Tip Control
- DA modules - ('Digital Amplifier Modules') - Digital Amplifier Modules
- HDC - ('Hoist Dual Capacity') - Hoist Dual Capacity
- JDC - ('Jib Dual Capacity') - Jib Dual Capacity
- LSS-H - ('Load Stabilising System-Horizontal') - Load Stabilising System-Horizontal
- LSS-V - ('Load Stabilising System-Vertical') - Load Stabilising System-Vertical
- MEWP - ('Mobile Elevating Work Platform') - Mobile Elevating Work Platform
- MSC - ('Manual Speed Control') - Manual Speed Control
- MUX - ('Multiplexer Box') - Multiplexer Box
- OLP - ('Overload Protection') - Overload Protection
- OPS - ('Operator Protection System') - Operator Protection System
- PFD - ('Pump Flow Distribution') - Pump Flow Distribution
- PSB - ('Power Supply Box') - Power Supply Box
- SAF - ('Semi Automatic Folding') - Semi Automatic Folding
- SCB - ('Stabiliser Control Box') - Stabiliser Control Box
- SSL - ('Sector Stability Limit') - Sector Stability Limit
- TWI - ('Transport Warning Interface') - Transport Warning Interface
- UI - ('User Interface') - User Interface
- VSL - ('Variable Stability Logic') - Variable Stability Logic
- VSL+ - ('Variable Stability Logic Plus') - Variable Stability Logic Plus

10.4 Daily inspection checklist to photocopy

Operator:		**Document ID:**	
Crane s/n:		**Date:**	

	OK	No OK*	N/A	Comments
1. VISUAL INSPECTION				
1.1 Presence of signs and symbols				
1.2 Locking devices				
1.3 Shafts, shaft lockings, bearings and bushings				
1.4 Crane structure				
1.5 Hooks				
1.6 Add-on equipment and separate lifting accessories				
1.7 Electronic components				
1.8 Security seal wires				
1.9 Oil level in the slewing housing				
1.10 Oil level in the slewing motors				
1.11 Oil level in the tank				
1.12 Filters				
2. FUNCTIONAL TESTS				
2.1 Stop buttons				
2.2 Levers				
2.3 Controller				
2.4 LED test				
2.5 Hydraulic system				

*** If you find a fault that prevents you to operate the crane safely, contact to a Hiab authorized service workshop. Do not try to repair the fault, it can cause you injury or you can damage the equipment.**