PRODUCT MANUAL
FOR OPERATING THE ABUS CRANE

ABUS overhead travelling crane

ABUS jib crane

ABUS HB crane

ABUS single-rail trolley track

ABUS chain hoist

ABUS wire rope hoist

AT A GLANCE:

AN 120192EN005
2024-07-17

Original Operating Instructions

CONTENTS

OPERATING THE ABUS CRANE

THIS SECTION APPLIES TO ANYONE WHO LIFTS LOADS USING THE CRANE OR WORKS NEARBY.

Be sure to read and observe the product manual of the entire crane! The instructions given here apply in addition to the other product manuals.

INSTRUCTIONS REGARDING SAFETY

Observe these instructions for safe handling of the crane. Special hazard notices are located in the corresponding sections in which the danger arises.

OBSERVE THE PRODUCT MANUALS!
In addition to the points described here, all information in the section “Instructions regarding safety” in the other supplied product manuals also applies.

DANGER TO PERSONS IF THEY ARE NOT TRAINED!
Special technical expertise is required to correctly sling and safely lift and move loads.

Otherwise accidents may occur, which can cause serious injuries or death.

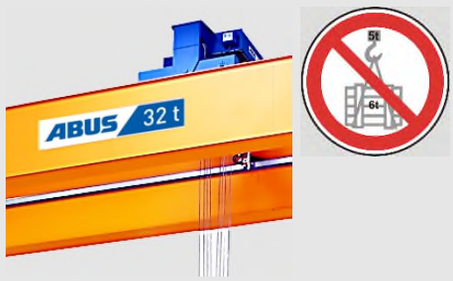
Personnel working with the crane (e.g. crane operators and load handlers) must first have received instruction regarding operation and be assigned this work by the end user.

DANGER FROM LOAD DROP DUE TO UNSAFE WORKING!
Suspended loads always pose a hazard when working with the crane. The load could fall and kill or injure people!

Always keep your own safety as well as the safety of others in mind when working with the crane. The technical knowledge gained from the instruction and the supplied ABUS product manuals will be aid you in working safely with the crane.

ONLY WITH CRANES WITH ONE TROLLEY

DANGER OF LOAD DROP CAUSED BY EXCEEDING MAXIMUM LOAD CAPACITY!



If the maximum load capacity is exceeded, the crane and the supporting structure could be damaged.

This could cause the load to fall, killing or injuring people.

Observe the maximum load capacity of the trolley and the crane and do not exceed it!

The maximum load capacity is specified on the trolley and on the bottom block or hook assembly. The maximum load capacity of the crane is also given:

- For overhead travelling cranes: On the main girder
- For jib cranes: On the jib arm
- For HB cranes: On the crane girder
- For single-rail trolley tracks: On the trolley track

ONLY WITH CRANES WITH MULTIPLE TROLLEYS

DANGER OF LOAD DROP CAUSED BY EXCEEDING MAXIMUM LOAD CAPACITY!

If the maximum load capacity is exceeded, the crane and the supporting structure could be damaged.

This could cause the load to fall, killing or injuring people.

Observe the maximum load capacity of the trolleys and the crane and do not exceed it!

The maximum load capacity is specified on the trolley and on the bottom block or hook assembly. The maximum load capacity of the entire crane is also given on the crane itself:

- For overhead travelling cranes: On the main girder
- For jib cranes: On the jib arm
- For HB cranes: On the crane girder
- For single-rail trolley tracks: On the trolley track

SETTING THE LOAD CAPACITIES

- If the maximum load capacity of the crane can be added together exactly from several trolleys, the load capacities of the respective trolleys are given with a “+”. The total is the maximum load capacity of the crane.

First 5 t trolley *Second 5 t trolley*

5t + 5t

Total 10 t, maximum load capacity of crane

20 t trolley *10 t trolley* *5 t trolley*

20t + 10t + 5t

Total 35 t, maximum load capacity of crane

– If the maximum load capacity of the crane cannot be accurately added together from several trolleys, first the maximum load capacity of the crane is given, then the maximum load capacity of the trolleys, specified in brackets with a "/".

Maximum load capacity of crane

20t (16t / 10t)

16 t trolley *10 t trolley*

Additional rules:

If the maximum load capacity of the crane corresponds exactly to that of the largest trolley, the maximum load capacity of the crane and the brackets are omitted.

Maximum load capacity of the crane and, at the same time, of the largest trolley

16t / 10t

Maximum load capacity of the smaller trolley

Maximum load capacity of the crane and, at the same time, of the largest trolley

20t / 10t / 5t

Maximum load capacity of the smaller trolleys

– In this case as well, the maximum load capacity of the crane can be added together from several trolleys.

20 t trolley *5 t trolley* *10 t trolley*

20t + 5t / 10t

Total 25 t, maximum load capacity of crane

ONLY WITH CRANES WITH PARTIAL LOAD RANGES

This section only applies if the main girder (for overhead travelling cranes), the jib arm (for jib cranes), the crane girder (for HB cranes) or the trolley track (for single-rail trolley tracks) are divided into different areas with different maximum load capacities.

DANGER OF LOAD DROP IN PARTIAL LOAD RANGES!

Depending on the position of the trolley, the crane will have different maximum load capacities. If the maximum load capacity is exceeded, the crane and the supporting structure could be damaged.

This could cause the load to fall, killing or injuring people.

Observe the maximum load capacity of the partial load range in which the trolley is currently located. Do not exceed the maximum load capacity!

The maximum load capacities of the individual areas on the main girder (for overhead travelling cranes), the jib arm (for jib cranes), the crane girder (for HB cranes) or on the trolley track (for single-rail trolley tracks) are separated from each other by vertical lines. The respective maximum load capacity of the partial load range is given within the lines.

DANGER OF LOAD DROP WITH HEAVY LOAD LIFTING ATTACHMENT!

The weight of the load lifting attachments (e.g. crossheads) can be very heavy and thus reduce the maximum load capacity of the crane.

If this weight is not factored in, the maximum load capacity of the crane could be exceeded, which could cause the load to fall and kill or seriously injure people.

The weight of the load lifting attachment must be taken into account in the crane operator's decision of whether a load can be lifted with the crane.

ONLY WITH CRANES WITH WARNING DEVICES

This section only applies if the crane has a warning device (e.g. horn or bell).

DANGER TO PERSONS IF THERE IS NO WARNING!

Especially when the crane operator is not standing directly at the crane (e.g. if using radio remote control), personnel standing nearby may not necessarily be aware that the crane is in use.

This could result in dangerous situations where people can be killed or injured.

Use the warning device (e.g. horn or bell) to warn persons nearby of suspended loads.

DANGER OF TROLLEY FALLING IF THE LOAD IS PULLED DIAGONALLY!

If an attached load is pulled or towed at a slant (e.g. over the floor), the trolley can tip due to the lateral forces and fall. The trolley can also be damaged by wire ropes or chains running askew.

This in turn means the load or crane could fall and kill or injure people!

Always lift the load vertically only! Do not pull any vehicles or carriages!

DANGER OF TROLLEY FALLING IF A LOAD JERKS FREE!

If an immobile or jammed load (e.g. due to rusted together or bolted together parts) is jerked free, the trolley could fall due to the strong jolt from the sudden release of the load.

As a result of this people can be killed or injured.

Do not jerk the load free with the crane.

DANGER OF TROLLEY FALLING IF A LOAD IS DROPPED!

If a load in the load hook, the lifting tackle or the load lifting attachment is dropped and then caught with the crane (e.g. a component is only loosely suspended and then detached), the strong jolt could cause the trolley to fall.

As a result of this people can be killed or injured.

Do not attempt to catch loads!

DANGER OF TROLLEY FALLING IF A LOAD IS TURNED!

If a load in the lifting tackle or load lifting attachment is rotated or turned, it can suddenly tilt. The strong jolt could cause the trolley to fall.

As a result of this people can be killed or injured.

Only turn the load if the crane is installed with a load lifting attachment specially designed for turning loads.

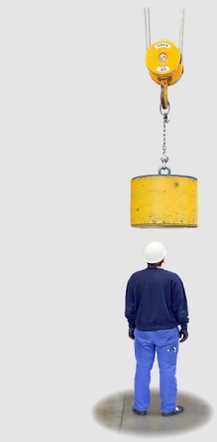
DANGER TO PERSONS FROM TRANSPORTING PERSONNEL!

The crane is not equipped with the necessary safety devices to safely transport people.

This means that persons could fall during transportation and be killed or injured.

Do not lift persons either together with a load or without one. If any persons step onto the load or the load lifting attachment (e.g. climbing into a pallet cage or sitting on the crosshead), do not lift the load.

DANGER TO PERSONS FROM LOAD DROP!



If the load is not slung correctly or the lifting tackle snaps, the load can fall.

As a result of this people can be killed or injured.

Do not transport a suspended load above anyone.

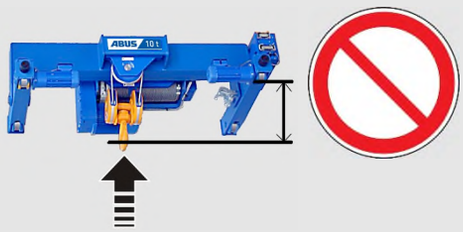
DANGER TO PERSONS DUE TO SWAYING LOAD!

A load that swings too heavily from side to side can no longer be safely controlled.

As a result of this people can be struck by the load and killed or injured.

During crane travel and trolley travel, avoid swinging the load too much from side to side. Do not use inching operation (button pressed repeatedly in quick succession).

DANGER OF LOAD DROP IF HOIST LIMITER FAILS!



The top hoist limiter (in wire rope hoists) and the friction clutch (in chain hoists) can be damaged if subjected to regular use, and will therefore no longer function if the load hook is run too high or too low.

This in turn could damage the crane and the load could fall and kill or seriously injure people!

Do not intentionally or under normal operating conditions trigger the hoist limiter or the friction clutch.

Note

If work needs to be performed near the highest or lowest hook position during normal operation, an additional backup limiter, which is regularly inspected, must be employed to avoid damaging the hoist limiter.

DANGER TO PERSONS IF THE CRANE IS ACCIDENTALLY OPERATED!

If the crane is inadvertently controlled by another crane operator while working on or with a load, the crane could move unintentionally.

This could lead to dangerous situations and injuries.

Keep the pendant control or transmitter within reach as long as a load is attached. Do not allow the pendant control to roll away on the mobile control. Do not set the transmitter aside.

DANGER TO PERSONS IF THE CRANE OPERATOR'S VIEW IS LIMITED!

If the crane operator does not have an unobstructed view of the load, persons could be hit by the load and be killed or injured.

Only operate the crane when the load, crane and operating range can be seen in full, or when working together with a banksman.

INSTRUCTIONS REGARDING SAFETY WHEN SLINGING A LOAD

OBSERVE THE PRODUCT MANUALS!
In addition to the points described here, all information in the section “Instructions regarding safety” in the other supplied product manuals also applies.

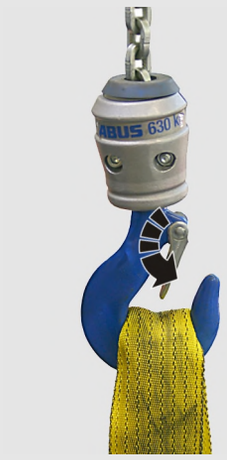
DANGER OF LOAD DROP IF SLINGING IS PERFORMED INCORRECTLY!

The chain of the chain hoist and the wire rope of the wire rope hoist are not lifting tackle. If twisted or laid around sharp edges, they will be damaged.

This could cause the chain or wire rope to break and the load to fall and kill or injure people!

Do not sling the chain of the chain hoist or the wire rope of the wire rope hoist around the load and use them for lifting. They must always run in a straight line. Instead, use suitable lifting tackle or load lifting attachments.

DANGER OF LOAD DROP IF THE HOOK SAFETY LATCH IS OPEN!



If the hook safety latch is not closed, the lifting tackle or load lifting attachment can inadvertently slip from the load hook.

This could cause the load to fall, killing or injuring people.

Hang the lifting tackle or the load lifting attachment fully in the load hook and allow the hook safety latch to spring back to secure it.

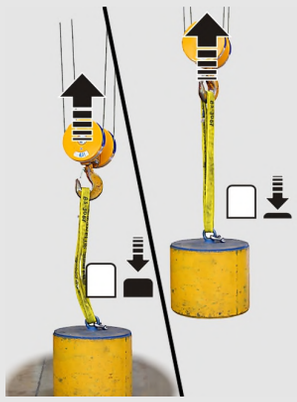
DANGER OF LOAD DROP IF THE LIFTING TACKLE IS OVERLOADED!

If the maximum angle of spread or the maximum load capacity of the lifting tackle is exceeded, it can break.

This could cause the load to fall, killing or injuring people.

Always observe the maximum angle of spread and maximum load capacity of the lifting tackle.

DANGER OF LOAD DROP IF LOAD IS LIFTED WITH A SUDDEN JOLT!



Due to the jolt when lifting from the ground with a fast lifting speed, the crane is heavily strained and can be overloaded. This jolt is amplified if the lifting tackle is slack while switching directly to fast lifting speed.

The jolt could break the lifting tackle or the crane could be damaged, causing the load to fall and potentially killing or injuring people.

Lift the load from the ground at slow lifting speed until the lifting tackle is tensioned and the load hangs freely. Only then continue lifting, if necessary, with fast lifting speed.

DANGER OF LOAD DROP IF THE CHAIN JAMS!

If the load is lifted when the chain of the chain hoist hangs slack, it can jam in the bottom block. It could then release when the load is suspended. This could cause the load to fall, killing or injuring people.

If the chain is hanging slack, lift with a slow lifting speed and guide the chain through the bottom block until it runs in a straight path. Only lift the load if the chain is running in a straight path.

DANGER OF LOAD DROP IF THE RAMSHORN HOOK IS UNEVENLY LOADED!

If a ramshorn hook is loaded on a single side, it tilts toward the loaded side or can be damaged. If the hook shank is strained, the load hook can be damaged. This in turn means the lifting tackle could slip out of the load hook and the load could fall and kill or injure people!

Load both sides of the ramshorn hook symmetrically and evenly. Do not strain the hook shank (e.g. do not sling individual lifting tackle around the hook shank). Always attach the load to both hooks on a ramshorn hook; do not put strain on only one hook of a ramshorn hook.

DANGER FROM LOAD LIFTING ATTACHMENT WITH UNSUITABLE SLINGING POINT!

The load hook is designed for the hook bed to be put under strain. If a load lifting attachment with an unsuitable slinging point is attached to the load hook (e.g. so wide that the load does not rest on the hook bed), the load hook may deform and be damaged. This could break the load hook and cause the load to fall and kill or injure people.

Select a load lifting attachment whose slinging point rests on the hook bed and deformation from ridges or edges is prevented.

DANGER FROM TOO SMALL A LIFTING TACKLE!

Attaching a lifting tackle with too small a slinging point to the load hook can cause the lifting tackle to deform, to slip when the load hook is lifted or bend the load hook. This could break the load hook and cause the load to fall and kill or injure people.

Select a load lifting attachment whose slinging point rests on the hook bed. Do not attach lifting tackle to the hook tip.

NOTES ON SAFETY WHEN WORKING WITH TWO TROLLEYS OR IN TANDEM OPERATION

OBSERVE THE PRODUCT MANUALS!
In addition to the points described here, all information in the section “Instructions regarding safety” in the other supplied product manuals also applies.

DANGER TO PERSONS FROM TANDEM OPERATION!
There is always a risk when working with cranes in tandem operation or when using two trolleys in joint operation.

Carefully observe the load, the cranes and the operating range when in tandem or joint operation! If necessary, work with an additional banksman. Only lift the load as far as necessary. Warn other persons within the operating range.

DANGER OF LOAD DROP WHEN IN TILTED POSITION!
If a load is transported by two cranes with a tandem control system or by two trolleys in joint operation, there is a danger of the load tilting (e.g. due to failure of a crane or a trolley, unintended speed variations, etc.).

The tilted position could, in the case of non-positive slinging, cause the load to slip and thereby fall, killing or injuring people.

Sling the load in a positive-locking manner and use load lifting attachments with which the load cannot slip in tilted positions.

DANGER OF FALLING LOAD FROM ACCIDENTAL INDIVIDUAL OPERATION!
If the suspension of a load is shared by both trolleys or both cranes, and one trolley or crane is unintentionally moved on its own, the load may no longer be securely suspended from the load hook, and could fall and kill or injure people.

Work with extreme caution. Use caution when switching between cranes and trolleys! When switching, make certain that the trolleys/cranes are not being used in individual operation.

DANGER TO PERSONS IF THEY ARE NOT TRAINED!
Special technical expertise is required to correctly sling and safely lift and move loads on two cranes in tandem operation (or on two trolleys in joint operation), otherwise potentially fatal accidents could occur.

Personnel working with the crane in tandem operation or with two trolleys in joint operation (e.g. crane operators and load handlers) must first have received instruction. The end user is responsible for this instruction. Instruction must be carried out on the basis of this product manual among other things. It is recommended to document this instruction in writing.

DANGER TO PERSONS WHEN TURNING A LOAD!
When loads are turned using two trolleys or two cranes (one hoist lifts, the other lowers), one of the hoists could be overloaded, even when stationary or lowering. This overload is not detected by the overload protection. Potentially fatal accidents could occur.

Only use cranes with two trolleys or tandem operation for the transport of loads in a position that remains stable. Do not turn or tilt loads.

Note

If loads are to be turned with the crane, an overload protection with additional functions and an additional crane may be necessary. In any case, a special hazard analysis made by the end user and special instruction for the crane operator is necessary.

DANGER TO PERSONS FROM DIAGONAL PULL!
If loads are turned with two trolleys or two cranes, the wire ropes could run slanted between the wire rope hoist and the load! This could damage the wire rope hoist and cause potentially fatal accidents.

Only use cranes with two trolleys or tandem operation for the transport of loads in a position that remains stable. Do not allow the wire rope to run slanted!

Note

If loads are to be turned with the crane, an additional crane may be necessary. In this case as well, the wire rope must not run slanted.

PREVENTING DAMAGE TO THE CRANE

Follow these instructions to ensure a long service life of the crane.

NO INCHING OPERATION!
To position a load precisely, do not use inching operation (button pressed repeatedly in quick succession).

Instead, use low speed or the slow lifting speed (button pressed halfway).

DO NOT RUN AGAINST THE SAFETY BUFFER!
The safety buffers are designed to absorb the total energy of movements. Nevertheless, an impact on the safety buffer is an extreme situation and places strain on the crane and the entire supporting structure.

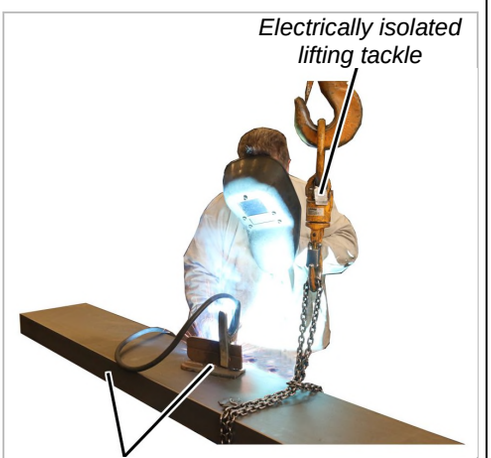
- For overhead travelling cranes: Do not run the crane with the safety buffer against the end of the crane track.
- For overhead travelling cranes: Do not run the trolley against the end of the main girder.
- For overhead travelling cranes: Do not allow the crane to run against another crane.
- For jib cranes: Do not run the jib arm against the safety buffer at the end of the slewing range.
- For jib cranes: Do not run the trolley against the safety buffer on the jib arm.
- For HB cranes: Do not run the HB crane against the end of the crane track.
- For HB cranes: Do not run the trolley against the end of the crane girder.
- With multiple trolleys: Do not run the trolleys against one another.

REPORT ANY UNUSUAL NOISES AND ABNORMAL BEHAVIOUR!
Be watchful for any unusual noises or abnormal behaviour of the crane during operation.

Unusual noises and abnormal crane behaviour can indicate defects and signs of wear.

If there is any damage or problems arise, do not work with the crane; inform coworkers and supervisors. If necessary, stop the crane.

USE ELECTRICALLY ISOLATED LIFTING TACKLE FOR WELDING!



If the crane is used to hold components on which welding work is performed, be sure to use electrically isolated lifting tackle (e.g. insulated swivel, round sling made of non-conductive material).

Otherwise, the welding current can flow through the crane and damage the electrical controls, the wire rope and the bearing.

EMERGENCY STOP

OBSERVE THE PRODUCT MANUALS!
In addition to the points described here, all information in the section “Emergency stop” in the other supplied product manuals also applies.

The images show the emergency stop button on the pendant control. The emergency stop function for the radio remote control units does not essentially differ from the mode of operation on the crane.

See also the ABURemote product manual.

In the event of dangerous situations with the crane with pendant control:

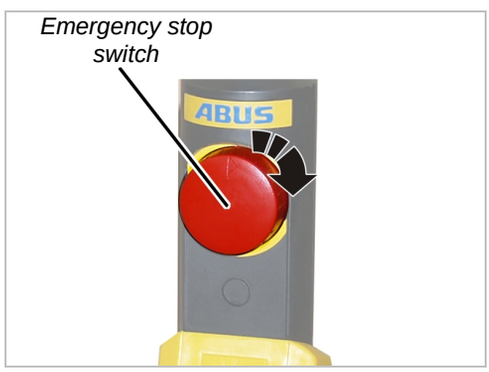
➔ Press the emergency stop switch.

- The crane brakes immediately; the load hook halts.
- With joint operation of two trolleys: Both trolleys brake immediately and come to a standstill.
- With tandem operation: Both cranes brake immediately and come to a standstill.

When the danger has been eliminated:

DANGER OF LOAD DROP DUE TO ACCIDENTAL INDIVIDUAL OPERATION!
Depending on the radio remote control, tandem operation or joint operation of two trolleys may no longer be active after switching on. This means the joint load could be accidentally transported with only a single crane or trolley and fall, killing or injuring people the in process.

After the emergency stop, check whether tandem operation or joint operation of two trolleys is active.



➔ With pendant control: Turn the emergency stop switch a quarter-turn clockwise.

➔ With radio remote control: Switch on the transmitter of the radio remote control and log in to the receiver.

See the ABURemote product manual.

➔ Check whether the correct trolley has been selected or whether joint operation of two trolleys or tandem operation is active.

See the ABURemote product manual.

- The crane is ready for use.
- The crane does not start moving automatically after the emergency stop button has been unlocked.

As normal, the buttons for crane travel, trolley travel or lifting/lowering must be pressed.

CHECK BEFORE BEGINNING WORK AND SWITCHING ON

Check the following points before beginning work with the crane. If there is any damage or problems arise, do not work with the crane; inform coworkers and supervisors.

OBSERVE THE PRODUCT MANUALS!
In addition to the points described here, all information in the section “Check before beginning work and switching on” in the other supplied product manuals also applies.

EXTERNAL CHECK OF CRANE

➔ In all supplied product manuals, check whether additional points need to be checked before switching on.

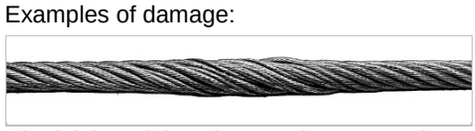
– Can any damage be detected on the crane or its accessories (e.g. rust, loose parts, leaking oil, missing screws,...)?

– Is the load hook generally OK?
– Is the load hook turnable?
– Can the load hook be tilted?
– Is the hook safety latch OK and moves with ease?
– Does the hook safety latch close completely?

ONLY WITH WIRE ROPE HOISTS

➔ Inspect the entire wire rope for damage. The damage shown here or any similar damage should not be detectable on the wire rope.

Examples of damage:



The joining of the wire rope has opened. The inner strands of the wire rope are visible.

Loops have formed in the wire rope.

There is a kink in the wire rope. This results from violent external forces being applied to the wire rope.

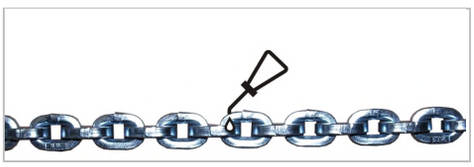
The wire rope is flattened at one point. This results from the wire rope being pinched.

A bird cage has formed in the wire rope. This results from violent untwisting of the wire rope.

The wire rope has a corkscrew-type deformation.

➔ Check the wire rope for detectable broken wires. If broken wires are found in the wire rope, do not work with the crane. Have a comprehensive wire rope test performed. See “General Product Manual for ABUS Cranes”.

ONLY WITH CHAIN HOISTS



– Is the chain lubricated with oil?

➔ Inspect the entire chain for damage. The damage shown here or any similar damage should not be detectable on the chain.

Examples of damage:

The chain link is heavily worn.

The chain link is mechanically damaged.

SWITCHING ON

➔ In all supplied product manuals, check whether additional points need to be checked for switching on.

Mains switch
The crane installation

➔ Only if the crane installation has a mains switch: Turn on the entire crane installation using the mains switch.

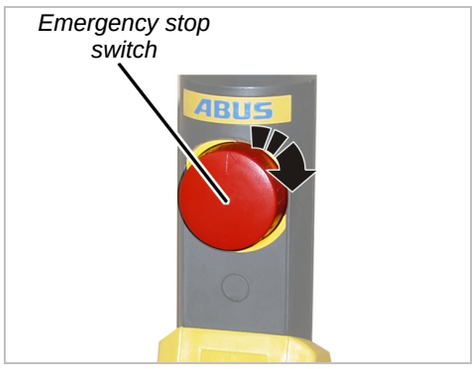
- The crane is switched on.
- With ABUControl with LED matrix display: On the LED matrix display, first “WAITING” and then a rising percentage value of the start process is shown.

➔ With ABUControl or ABULiner: Wait about 30 seconds until the ABUControl or ABULiner crane control has started.

- With ABUControl with LED matrix display: The message “F0001 Standby” is shown on the LED matrix display. The crane is now ready for operation.

ONLY WITH PENDANT CONTROL

UNLOCKING THE EMERGENCY STOP BUTTON



➔ Turn the emergency stop switch a quarter-turn clockwise.

- The crane is ready for use.

ONLY WITH RADIO REMOTE CONTROL

LOGGING IN

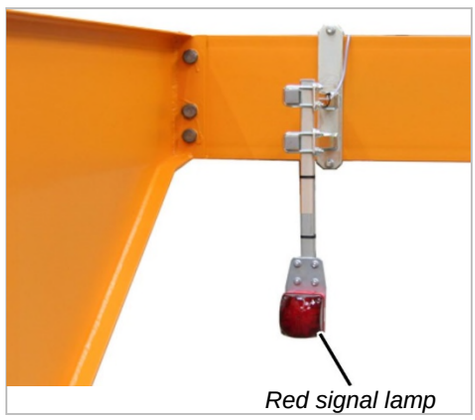
➔ Switch on the transmitter of the radio remote control and log in to the receiver.

See the ABURemote product manual.

- The crane is ready for use.

ONLY WITH SIGNAL LAMPS FOR RADIO REMOTE CONTROL

Once the transmitter is released:



- The red signal lamp lights up.

  Persons nearby thus know that a transmitter is logged in to the crane and the crane can move at any time.

CHECKING THE EMERGENCY STOP SWITCH, HOIST DRIVE AND BRAKES ON THE HOIST DRIVE

Test the following before beginning work:

➔ Press the ‘Lift’ button completely.

- The load hook moves up.

➔ Press the emergency stop switch.

- The load hook halts.
- The brake makes a clicking noise, and the load hook brakes immediately and comes to a stop.
- The functional checks of the emergency stop switch, hoist drive and brakes on the hoist drive are now completed.

➔ Switch the crane back on using the pendant control or radio remote control.

CHECKING THE DRIVE AND THE BRAKES OF THE DRIVE

Test the following before beginning work:

➔ Fully push the trolley travel and crane travel buttons.

- The trolley and crane run in the corresponding direction.

➔ Press the emergency stop switch.

- The trolley and crane stop running.
- The brakes engage with an audible click, and trolley and crane brake immediately and come to stop.
- The functional test of the drive and the drive brakes is now completed.

➔ Switch the crane back on using the pendant control or radio remote control.

ONLY WITH JIB CRANES WITH ELECTRICALLY POWERED SLEWING

TESTING THE SLEWING DRIVE

Test the following before beginning work:

➔ Press the ‘Slewing’ button completely.

- The crane pivots in the corresponding direction.

➔ Press the emergency stop switch.

- The crane stops pivoting and slowly comes to a stop.
- The slewing drive has no brake, therefore the crane slowly swings out.
- The functional check of the slewing drive is now completed.

➔ Switch the crane back on using the pendant control or radio remote control.

ONLY WITH WIRE ROPE HOISTS AND FOR CHAIN ROPE HOISTS WITH A MECHANICAL HOIST LIMIT SWITCH

CHECKING HOIST LIMITER

Test the following before beginning work:

➔ Press the 'Lift' button halfway and move the load hook completely up with slow lifting speed.

- At the highest hook position, the load hook halts.
- The function of the top hoist limiter has now been tested.

ONLY FOR TWIN HOIST

Note:

When the top hoist limiter is tested at the start of each work shift, the wire rope is completely wound up. This distributes the wire rope evenly on both cable drums. Trouble-free operation is thereby assured.

If the wire rope is not regularly and evenly wound on both cable drums, it can happen that the wire rope is unevenly distributed, and thus the wire rope is completely wound up on one cable drum and not yet wound on the other one.

ONLY WITH CHAIN HOISTS WITH AN ELECTRONIC HOIST LIMIT SWITCH

CHECKING THE SWITCHING POINTS

Test the following before beginning work:

➔ Move the load hook until it reaches the set switching points.

- The chain hoist no longer travels in the respective direction.

ONLY WITH CHAIN HOISTS WITHOUT A HOIST LIMIT SWITCH

The chain hoist has a friction clutch. It prevents damage to the chain hoist if the load hook in the highest hook position knocks against the housing from below.

DANGER FROM FALLING SUSPENDED LOAD!
Moving to the highest hook position permanently damages the friction clutch. This could cause the load to fall, killing or injuring people.

Never run the load hook so far up or down that the friction clutch engages.

➔ Therefore, also refrain from testing the friction clutch before performing work.

TEST THE TRAVEL LIMIT SWITCH

Test the following before beginning work:

➔ Testing the braking function:

– For overhead travelling cranes: Run the crane at high speed until it reaches the end of the crane track.

– For overhead travelling cranes: Run the trolley at high speed until it reaches the end of the main girder.

– For two trolleys: Run the trolleys successively at high speed until the respective other trolley is reached.

– For single-rail trolley tracks: Run the trolley at high speed until it reaches the end of the trolley track.

● Shortly before the end, the crane/trolley brakes and continues running at low speed.

➔ Check the shut-down function:

– For overhead travelling cranes: Run the crane until it reaches the end of the crane track.

– For overhead travelling cranes: Run the trolley until it reaches the end of the main girder.

– For two trolleys: Run the trolleys successively until the respective other trolley is reached.

– For single-rail trolley tracks: Run the trolley until it reaches the end of the trolley track.

● At the end, the crane/trolley brakes to a standstill.

● The crane/trolley comes to a stop just before the end.

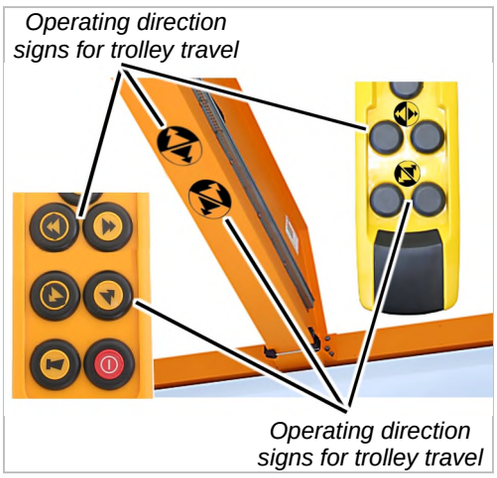
TESTING ADDITIONAL WARNING AND SAFETY DEVICES

If the crane has additional warning and safety devices:

➔ Test the warning devices.

➔ Test the safety devices.

SELECTING THE OPTIMAL POSITION TO OPERATE THE CRANE



➔ Select your position so that the operating direction signs from the transmitter or pendant control match the operating direction signs on the crane.

Only with radio remote control: Especially when using radio remote control, the operating direction signs on the crane and on the transmitter aid in selecting the correct buttons for crane travel and trolley travel. Since the position of the crane operator is independent of the crane, the actual and expected travel directions do not always match.

See also the ABURemote product manual.

- Independent of their respective position, the colours of the operating direction signs (yellow and black arrows) always point the correct running direction of the crane and the trolley.

LIFTING AND LOWERING, CRANE TRAVEL, TROLLEY TRAVEL

ONLY WITH PENDANT CONTROL

See the pendant control product manual.

ONLY WITH RADIO REMOTE CONTROL

See the ABURemote product manual.

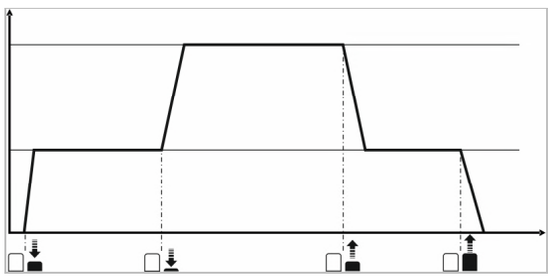
ONLY WITH TWO-STAGE MOVEMENT PROFILE (ABUCONTROL) AND WITH ABUS ELECTRICS 3

This section applies only to cranes with ABUS Electrics 3 with two-stage travel drives and/or hoist drives (without ABULiner)...

... and to cranes with ABUControl. With ABUControl, you can toggle at will in the ABUS KranOS movement profile control between a continuous and a two-stage movement profile.

OVERVIEW

The lifting speed and travel speed can be controlled in two levels (slow and fast).



SLOWER LIFTING/LOWERING/TRAVEL

➔ Half-press the button (stage 1).

- The crane lifts or lowers at a slower speed.

FAST LIFTING/LOWERING/TRAVEL

➔ Press the button completely (stage 2).

- The crane accelerates and lifts/lowers/travels at a faster speed.

BRAKING

➔ Release the button halfway (back to stage 1).

- The crane brakes and lifts/lowers/travels at low speed again.

STANDSTILL

➔ Release the button.

- The crane brakes and comes to a standstill.

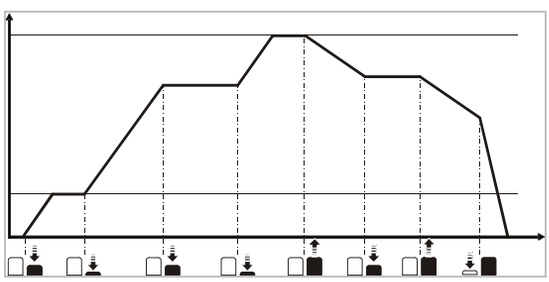
ONLY WITH A CONTINUOUS MOVEMENT PROFILE (ABUCONTROL) AND WITH ABUS ELECTRICS 3 WITH ABULINER

This section applies only to cranes with ABUS Electrics 3 with continuous acceleration of the travel drives and/or hoist drives (with ABULiner frequency converter)...

... and to cranes with ABUControl. With ABUControl, you can toggle at will in the ABUS KranOS movement profile control between a continuous and a two-stage movement profile.

OVERVIEW

The lifting speed and travel speed can be controlled continuously.



SLOW LIFTING/LOWERING/TRAVEL

➔ Half-press the button (stage 1).

- The crane lifts/lowers/travels at the slowest speed.

ACCELERATION

➔ Press the button completely (stage 2).

- The crane accelerates.

MAINTAINING SPEED

➔ Half-press the button again (stage 1).

- The crane no longer accelerates and continues lifting/lowering/travelling at the current speed.

BRAKING

➔ Release the button.

- The crane brakes.

MAINTAINING SPEED

➔ Half-press the button again.

- The crane no longer brakes and continues lifting/lowering/travelling at the current speed.

QUICK BRAKING

➔ Press the opposite button completely.

- The crane brakes very quickly.

ONLY WITH CRANE TRAVEL, TROLLEY TRAVEL, SLEWING BY HAND

➔ Pull or push on the load, the bottom block, the hook assembly, the lifting tackle or load lifting attachment to move the load.

Do not pull on the pendant control in order to move the load or the empty load hook.

➔ Only pivot or move the load if it can be easily and safely stopped by hand.

OVERLOAD PROTECTION

ONLY WITH WIRE ROPE HOISTS

The wire rope hoist has an overload protection feature. Depending on the type, the load of the fixed point crosshead is directly or indirectly measured, or the motor current of the hoist drive is recorded during lifting.

This allows the overload protection to measure the suspended load and ensures that the wire rope hoist cannot lift any load which exceeds the maximum load capacity.

In addition, the overload protection has a protective device to prevent lifting the load with a sudden jolt (sudden load increase).

DANGER FROM FALLING SUSPENDED LOAD!
Despite this overload protection, the crane could be damaged by a load that is too heavy, causing the load to fall, killing or injuring people.

Despite the overload protection, do not exceed the maximum load capacity of the crane!

If the wire rope hoist no longer lifts with the button pressed:

- The overload protection has triggered. The crane is now loaded with over 110% of its maximum load capacity.
- With load display: The load display flashes.
- With horn: The horn sounds.

➔ Release the ‘Lift’ button.

➔ Press the ‘Lower’ button for at least 2 seconds and set down the load.

- With ABUControl: For 10 seconds only slow lifting speed can be used for lowering. This prevents the crane from rocking with overload at fast lifting speed.

If the wire rope hoist briefly halts when lifting a load:

- The overload protection has detected lifting with a sudden jolt (sudden load increase).
- The wire rope hoist lifts for 3 seconds only at slow lifting speed.

➔ Continue to hold the 'Lift' button completely pressed (stage 2).

- After 3 seconds, the wire rope hoist accelerates again to the fast lifting speed.

ONLY FOR WIRE ROPE HOISTS WITH ABUCONTROL

If the wire rope hoist no longer lifts and lowers:

- The crane is now loaded with over 130% of its maximum load capacity.
- The wire rope hoist blocks lifting and lowering.

➔ To set down the load, the overload protection must be temporarily bypassed.

See the ABUControl Product Manual.

ONLY WITH ABUCONTROL AND CRANE WITH TWO TROLLEYS

In joint operation of two trolleys on a crane, the overload protection of both trolleys is jointly evaluated.

If the hoist of one of the trolleys is overloaded, the other trolley is stopped simultaneously.

If the overload protection of one of the hoists has triggered in individual operation:

- The overloaded hoist can only be used to lower the load.

  This enables a load slung on one or both hoists to be safely set down.
- In addition, the other hoist can only be used for lifting.

  This ensures that with a load which is slung on both hoists and has overloaded one of them, the load will not be lowered with the other hoist. That would further overload the already overloaded hoist.

  By lifting a load (which is slung on both hoists) with the other hoist, the overloaded hoist can be relieved.

If the overload protection of one of the hoists has triggered in joint operation:

- Only lowering is possible with both hoists.

  This enables a load slung on both hoists to be safely set down.

If the overload protection for the total load has triggered in individual operation:

- The overloaded hoist can only be used to lower the load.

  This enables the load slung on one or both hoists to be safely set down.

  In addition, the crane cannot be further overloaded.
- The other hoist can be used neither for lifting nor lowering.

If the overload protection for the total load has triggered in joint operation:

- Both hoists can only be lowered in joint operation.

  This enables a load slung on both hoists to be safely set down.

  This ensures that the crane cannot be further overloaded.

ONLY WITH CHAIN HOISTS

The chain hoist has a special overload protection (friction clutch). This ensures that the chain hoist cannot be used to lift loads that could cause direct mechanical damage to the chain hoist. It also prevents damage to the chain hoist if the load hook in the highest hook position knocks against the housing from below.

Nevertheless, do not exceed the maximum load capacity of the chain hoist!

If the load hook no longer moves, but the chain hoist is still running:

- The friction clutch has engaged.

➔ Release the ‘Lift’ button.

➔ Press the ‘Lower’ button and set down the load.

DANGER FROM FALLING SUSPENDED LOAD!
Moving to the highest hook position permanently damages the friction clutch. This could cause the load to fall, killing or injuring people.

Never run the load hook so far up that the friction clutch engages.

INCHING COUNTER

ONLY FOR WIRE ROPE HOISTS WITH ABUS ELECTRICS 3 AND LOAD INDICATOR SYSTEM LIS-SE

The LIS-SE has an inching counter. It ensures that the wire rope hoist is not used too long in inching operation (button pressed repeatedly in quick succession).

If the wire rope hoist no longer lifts after repeated brief presses of the button:

- The inching counter has triggered. The wire rope hoist has been raised 16 times in inching operation.

➔ Lower the load hook for 5 seconds at slow or fast lifting speed.

- The inching counter is reset. The wire rope hoist can be normally operated again.

OBSERVE THE SPECIFIED DUTY CYCLES

The motors on the crane are not designed for continuous operation. They must have break intervals for cooling down.

INTERMITTENT DUTY

Normally, an individual motor on a crane (e.g. the motor on the trolley drive) is not operated continually over a lengthier period, but rather only briefly with corresponding break intervals (in which then, for example, the crane travel drive is operated). This operating mode is called intermittent duty.

How long an individual motor should be operated and how long the breaks for cooling down must be is determined by the duty cycle.

The duty cycle of the hoist drive and travel drive can be found in the test log book of the crane or in the section “Technical data” in the production manual of the respective hoist drive or travel drive. The values can also be taken from this table.

➔ Observe the maximum permissible duty cycle and the maximum switching rate of the hoist and the travel drives.

Total duty cycle	Duty cycle at slow travel speed	Duty cycle at fast travel speed
25 % 2.5 min	0.8 min	1.7 min
30 % 3 min	1 min	2 min
40 % 4 min	1.3 min	2.7 min
50 % 5 min	1.7 min	3.3 min
60 % 6 min	2 min	4 min

Note

The specified values (percentage and minutes) refer to a duration of 10 minutes. Example: A duty cycle of 40% means that the motor may run for a maximum of 4 minutes and must remain stationary for 6 minutes within any 10-minute period.

Furthermore, the total duty cycle is divided into 1/3 of the duty cycle at low speed and 2/3 of the duty cycle at high speed.

Total switching rate	Switching rate at slow travel speed	Switching rate at fast travel speed
150 c/h	100 c/h	50 c/h
180 c/h	120 c/h	60 c/h
240 c/h	160 c/h	80 c/h
300 c/h	200 c/h	100 c/h
360 c/h	240 c/h	120 c/h

Note

The values are given in switches per hour. Example: 240 switches per hour means that the motor may switch up to a maximum of 240 times within one hour.

Furthermore, the total maximum switching rate is divided into 2/3 of the switches at low speed and 1/3 of the switches at high speed.

SHORT TERM DUTY

In special situations, a motor may need to run continuously for a longer period than allowed in intermittent duty (e.g. for a long crane run or if a longer hook path must be travelled). In these cases, the motor can be run in short term duty.

The motor may only be run up to the maximum period given in the table. The motor must then be allowed to cool down.

Short term duty cycle:

Duty cycle in intermittent duty (see previous table)	Corresponding duty cycle in short term duty for slow travel speed	Corresponding duty cycle in short term duty for fast travel speed
25 %	5 min	10 min
30 %	5 min	10 min
40 %	10 min	20 min
50 %	10 min	20 min
60 %	20 min	40 min

Table: Duty cycle in intermittent duty and the corresponding duty cycle if the motor is operated in short term duty.

Note

Likewise in short term duty, the total duty cycle is divided into 1/3 of the duty cycle at low speed and 2/3 of the duty cycle at high speed.

Operating the drive in short term duty:

- ➔ If the crane was previously just used: Wait until the motor has cooled down to the ambient temperature.
- ➔ Only run the motor at low and high speed maximally as specified in the table.

  In short term duty, the motor may not be switched on more than 10 times.
- ➔ Wait until the motor has cooled down to the ambient temperature.
- ➔ Then run the motor again in either short term duty or intermittent duty.

WORKING IN THE RANGE OF THE TRAVEL LIMIT SWITCH

The braking and shut-down functions operate according to the specific application by means of a mechanical cross-type limit switch (e.g. at the end of the crane track), a reflective light barrier (e.g. in the direction of another crane on the same run), or a distance sensor (e.g. in the direction of another crane on the same run with complex controls).

ONLY WITH BRAKING FUNCTION

The crane (or trolley) has a braking function. The braking function prevents the crane (or trolley) from impacting the safety buffer, an obstacle or another crane (another trolley) at high speed.

If the crane (or trolley) runs at high speed:

- The crane (or trolley) brakes at the switching point for the braking function:
  - The crane brakes a small distance before the end of the crane track.
  - The crane brakes a small distance before another crane on the same run.
  - The trolley brakes a small distance before the end of the main girder.
  - The trolley brakes a small distance before the other trolley.
- The crane (or trolley) continues running at low speed.

➔ Continue running the crane (or trolley), if necessary, at low speed.

➔ Run the crane (or trolley), if necessary, in the opposite direction out of the limit switch range.

ONLY WITH BRAKING FUNCTION AND SHUT-DOWN

The crane (or trolley) has a travel limit switch with braking and shut-down functions. The braking function prevents the crane (or trolley) from impacting the safety buffer, an obstacle or another crane (another trolley) at high speed. The shut-down function additionally prevents the crane (or trolley) from an impact at low speed.

If the crane (or trolley) runs into the limit switch range of the braking function:

- The crane (or trolley) brakes at the switching point for the shut-down function and stops.
  - The crane brakes just before the end of the crane track.
  - The crane brakes just before another crane on the same run.
  - The trolley brakes just before the end of the main girder.
  - The trolley brakes just before the other trolley.
- The crane (or trolley) is at the outermost limit of the traversing range and cannot go any further.

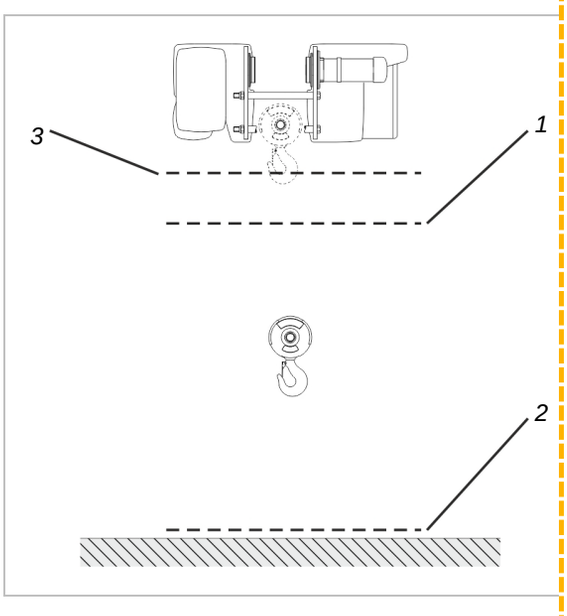
➔ Run the crane (or trolley), if necessary, in the opposite direction out of the limit switch range.

➔ With anti-collision device: Or continue running another crane (another trolley) on the same run and thus enlarge the traversing range of the crane (or trolley) again.

WORKING IN THE RANGE OF THE HOIST LIMITER

ONLY WITH WIRE ROPE HOISTS

The wire rope hoist has a gear limit switch that functions as a mechanical hoist limiter. It is directly coupled with the cable drum. It ensures that the load hook does not travel farther than the highest hook position or the lowest hook position.



- 1: Switching point of the top hoist limiter. If this is triggered, the hoist motor stops.
- 2: Switching point of the bottom hoist limiter. If this is triggered, the hoist motor stops.
- 3. To additionally increase safety, the gear limit switch has another switching point. It is called “backup limiter”. It is located above the top hoist limiter and serves as an additional switching point when lifting.

  If the top hoist limiter is no longer working (e.g. through faulty contactors, inversely poled rotary field...) and the load hook thus moves above the switching point of the top hoist limiter, the backup limiter switches off the main contactor and thus the whole crane.

ONLY FOR WIRE ROPE HOISTS WITH ABUCONTROL

Shortly before the load hook reaches the switching point of a hoist limiter, ABUControl slowly brakes the hoist motor. This method means that the switching points of the hoist limiter are only activated with a slow lifting speed.

ABUControl individually calculates at which point the brake phase begins each time, depending on the current lifting speed. If the load hook travels upwards quickly, the brake phase begins earlier. If the load hook travels upwards slowly, the brake phase begins later.

ONLY WITH WIRE ROPE HOIST WITH ABUS ELECTRICS 3 WITH ABULINER

The braking behaviour differs from the sequences described here. See the ABULiner product manual.

However, the operation by the crane operator does not essentially differ from the sequences described here.

ONLY WITH WIRE ROPE HOIST WITHOUT NORMAL OPERATIVE TRAVEL TO THE TOP HOIST LIMITER

The top hoist limiter must not be travelled to during normal operation. If it is travelled to, the load hook stops at the switching point of the top hoist limiter. The backup limiter switching point is above the top hoist limiter switching point and can therefore not be activated in a normal case.

➔ Do not intentionally trigger the top hoist limiter.

The top hoist limiter may not be intentionally triggered during the normal course of work.

- The load hook stops directly at the highest / lowest hook position.

➔ Move the load hook in the opposite direction out of the limit switch range.

ONLY FOR WIRE ROPE HOIST WITH NORMAL OPERATIVE TRIGGERING OF THE TOP HOIST LIMITER

If the highest hook position must be travelled to in normal operation, the top hoist limiter is frequently activated and can fail because of this. In this case, the backup limiter ensures that the crane comes to a safe stop. So that the backup limiter can be regularly tested, the wire rope hoist has a toggle switch with which the top hoist limiter can be manually bridged and the crane can be manually switched on again after the test.

➔ Trigger the top hoist limiter as required.

The top hoist limiter may be intentionally triggered during the normal course of work. If the top hoist limiter suddenly stops functioning, the load hook stops at the switching point of the backup limiter. The switching point of the backup limiter lies a small distance above the top hoist limiter.

- The load hook stops directly at the highest / lowest hook position.

➔ Move the load hook in the opposite direction out of the limit switch range.

ONLY WITH CHAIN HOISTS

The chain hoist is equipped with an adjustable friction clutch. This serves as an emergency stop device.

- Do not intentionally run through the upper or lower end of the hook path.

  The friction clutch must not be deliberately triggered during the normal course of work.
- The friction clutch is triggered directly at the highest / lowest hook position. The load hook stops, the hoist motor continues running.

➔ Move the load hook in the opposite direction out of the end of the hook path.

Note

The friction clutch on the chain hoist GMC cannot be adjusted!

ONLY WITH CHAIN HOISTS WITH A MECHANICAL HOIST LIMIT SWITCH

An upper and a lower switching point can be set with the mechanical hoist limit switch. When the load hook reaches one of the switching points, the chain hoist brakes and halts.

The switching points may be triggered during normal operation. If the microswitches of the hoist limit switch wear out due to regular use, the friction clutch of the chain hoist serves as an emergency end stop device.

ONLY WITH CHAIN HOISTS WITH AN ELECTRONIC HOIST LIMIT SWITCH

An upper and a lower switching point can be set with the electronic hoist limit switch. When the load hook reaches one of the switching points, the chain hoist brakes and halts.

Setting the intermediate switching point:

With the intermediate switching point function, any hook position between the upper and lower switching point can be moved to during normal operation.

See the product manual for the chain hoist.

Moving to the intermediate switching point:

The rotary switch is only required to set the intermediate switching point.

- In normal operation, the chain hoist brakes as soon as the load hook approaches the intermediate switching point and halts there.

  The function is optimised for moving to the intermediate switching point at fast lifting speed. At slow lifting speed, the load hook stops before the intermediate switching point is reached.

➔ Release the button for lifting/lowering and press again ("stop and go").

- The chain hoist continues running and runs over the intermediate switching point.

OPERATING THE BUILDING PROFILE CONTROL

The building profile comprises all characteristics of a building that could influence the crane travel, trolley travel and lifting/lowering of the crane. This includes the beginning and end of the crane track, obstacles, blocked-off areas, crane flaps and the like.

The building profile control is used to restrict all crane axes in accordance with the respective building profile.

For example:

- The speed of crane, trolley and hoist is reduced in front of obstacles.
- Crane, trolley and hoist insert an interim stop at certain positions.
- Areas are completely blocked off against being crossed.
- In certain areas, crane, trolley and hoist can only run/lift at low speed.
- Certain areas can only be crossed if a bypass button is pressed or a key switch is activated.

How the building profile control is set, and which functions are possible at which positions and under what conditions, can be configured individually according to the crane installation.

LOAD DISPLAY AND TARE

ONLY FOR CRANE WITH LED MATRIX DISPLAY

READING THE LOAD DISPLAY

- The suspended load is displayed in metric tons on the LED matrix display.

  The displayed load is not a calibrated measurement and is only an approximate estimate of the suspended load.

  The displayed load can in the worst case deviate by up to 10% from the actual weight of the suspended load.

  For an exact and calibrated weight, use a crane scale or a weighing bottom block.

TARE

The load display of the crane can be reset to zero using the “Tare” function. This enables a differential measurement, e.g. in order not to include the weight of a load lifting attachment (such as a crosshead).

Tare the hoist:

➔ Select the hoist to be tared using the pendant control or the ABURemote.

➔ Press and hold the “Tare” button until the load display shows **0.000**.

In the case of an overload, the tare value is deleted and the load is displayed!

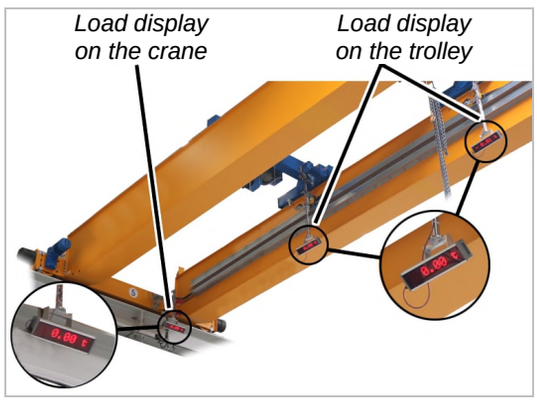
To reset the tare:

➔ Press the “Tare” button for 5 s.

- The LED matrix display shows the original value again.

ONLY FOR CRANE WITH MULTIPLE TROLLEYS

ASSIGNING THE LED MATRIX DISPLAYS



ONLY WITH ABUS ELECTRICS 3

Only for crane with multiple LED matrix displays:

- The load display on the crane shows the joint total load currently suspended on the load hook.
- The load display on the trolley shows the weight of the load currently suspended on the load hook of the respective trolley.

For crane with an LED matrix display:

- The weight of the load on the selected trolley or the total load is shown on the load display.

See “Operating a crane with two trolleys”, page 42.

ONLY WITH ABUCONTROL

- The LED matrix display(s) show the fixedly set load of trolley I, trolley II or the total load.

  The LED matrix displays are fixedly set accordingly and cannot be switched off in running operation.

MOTOR COOLING

ONLY FOR AUXILIARY FANS

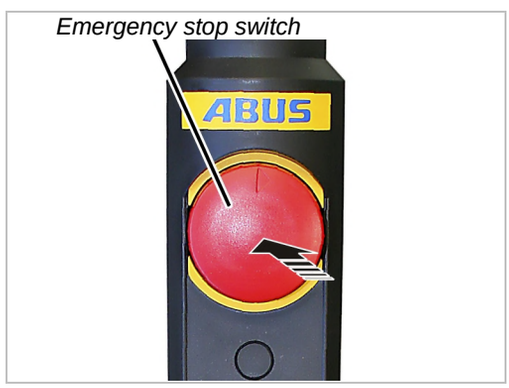
The hoist motor has an auxiliary fan which operates independently of the hoist motor speed. The hoist motor is thus cooled even with longer operation at slow lifting speed.

If the button for lifting or lowering has been released:

- The wire rope hoist brakes to a stop.
- The auxiliary fan continues running for up to five minutes in order to cool the hoist motor.

SECURING THE CRANE IN A POWER FAILURE

In the event of a power failure:



- Travel drive and hoist drive remain stationary due to the power failure.
- The travel motors and the hoist motors are immediately and reliably braked even without electricity.
- The entire crane halts. The load cannot sag or fall.
- Due to the abrupt braking, the load can swing more than usual.

➔ Release all buttons on the pendant control and press the emergency stop button.

This ensures that the crane cannot be inadvertently operated once the power is restored.

➔ If necessary: Secure the area under the suspended load.

SECURING THE CRANE AGAINST EXCESSIVELY STRONG WIND

ONLY WITH CRANES WHICH CAN ONLY BE SAFELY OPERATED UP TO A DEFINED WIND SPEED

The crane may only be operated up to a certain wind speed. The crane is equipped with a wind measuring system. The wind measuring system warns if a certain wind speed has been exceeded. The crane must then travel to its resting position (at the end of the crane track) within a specified time.

Yellow and/or red signal lamps flash and a horn (optional) sounds:

- The wind speed was exceeded or the threshold for the warning was reached.

➔ Set down the load.

➔ Set down or remove the load lifting attachments.

➔ Run the load hook upward to the highest hook position.

➔ Move the wire rope hoist to the left or right to the end of the main girder.

➔ Move the crane to the defined resting position.

A wind anchor is located at this resting position for securing the crane. Alternatively, the wind anchor can be of a design that secures the crane at any desired position.

➔ If necessary, secure the crane.

READING MESSAGES

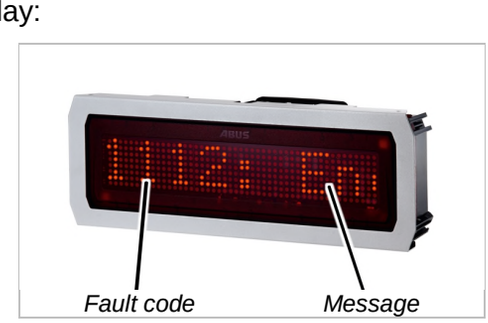
ONLY FOR CRANE WITH LED MATRIX DISPLAY AND ABUS ELECTRICS 3

- The message from the load indicator system LIS is shown on the LED matrix display.

  See the “Load indicator system” documentation.

ONLY FOR CRANE WITH LED MATRIX DISPLAY AND ABUCONTROL

A message appears on the LED matrix display:



- The LED matrix display shows the fault code and the message from ABUControl as scrolling text.

  The text speed can be set in KranOS by ABUControl.

  See the ABUControl Product Manual.

ACKNOWLEDGING MESSAGES

The displayed messages are divided into three categories, depending on their seriousness.

- The category is displayed at the end of the message as ".1", ".2" or ".3".

– ".3": Information message. The crane can continue to be normally operated.

  To acknowledge the message display, press the emergency stop button or horn.

– ".2": Not a serious error. The emergency stop function is triggered, the crane comes to a standstill.

  To acknowledge the message display, press the emergency stop button or horn.

  If the error does not occur again afterward, the crane can continue to be operated normally.

  If the error occurs again afterward, the message is not displayed again. The crane can continue to be operated, however, the crane axis affected by the error can only be operated at slow travel speed.

– ".1": Serious error. The emergency stop function is triggered, the crane comes to a standstill.

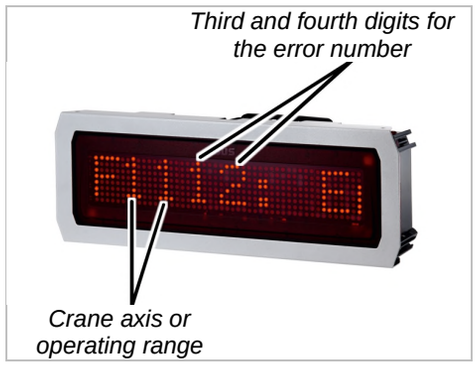
  To acknowledge the message display, press the emergency stop button or horn. If the error arose from a frequency converter, the crane must be switched completely off and then back on again.

  If the error does not occur again afterward, the crane can continue to be operated normally.

  If the error occurs again afterward, the message is displayed again. The emergency stop function is triggered again.

ASSIGNING MESSAGES

The digits in front of the message indicate where (e.g. on which crane axis) the error occurred and which trolley or hoist (in the case of multiple trolleys on the crane) is affected.



– First and second digits: number of the hoist, the trolley or the crane drive in combination with the crane axis or operating range

– Third and fourth digits: error number

This results in the following combinations for the first two digits:

Digits	Location
F00_ _	General error
F11_ _	Hoist 1, hoist drive 1
F12_ _	Hoist 1, hoist drive 2 (only with twin hoist)
F21_ _	Hoist 2, hoist drive 1
F22_ _	Hoist 2, hoist drive 2 (only with twin hoist)
F31_ _	Hoist 3, hoist drive 1
F32_ _	Hoist 3, hoist drive 2 (only with twin hoist)
F13_ _	Trolley 1
F23_ _	Trolley 2
F33_ _	Trolley 3
F14_ _	Crane travel drive, frequency converter 1
F24_ _	Crane travel drive, frequency converter 2 (only with electronic track guidance system and 4-wheel crane travel drive)

"Hoist drive 2" (F_2_ _) is only used with twin hoists. All other hoists have only one hoist drive (F_1_ _)

"Hoist 2" and "Hoist 3" as well as "Trolley 2" and "Trolley 3" apply to cranes with two or three trolleys.

A crane normally has one frequency converter for both crane travel drives (F14_ _). For cranes with an electronic track guidance system, each of the two crane travel drives has its own frequency converter (F14_ _ and F24_ _). For 4-wheel crane travel drives with greater power consumption of the motors, the four drives can also be divided between two frequency converters.

Digits	Location
F40_ _	Crane distancing system
F41_ _	Bypass control
F51_ _	Trolley distancing system, Trolley 1
F52_ _	Trolley distancing system, Trolley 2
F53_ _	Trolley distancing system, Trolley 3
F60_ _	Overrun protection

OVERVIEW OF MESSAGES

General information
“F0001: Standby.3” The crane is switched on and in standby mode. To use the crane, unlock emergency stop button or log in transmitter.
“F0003 PLC: Writing to SD card failed.3” An error occurred when saving data on the SD card in the PLC. Check the SD card; if necessary, insert a new SD card.
“F0004 Main contactor: Malfunction.1” The main contactor is switched on although it should be switched off, since the emergency stop button was pressed.

Hoist
“F_ _05 Hoist: Motor measurement failed.1” The electrical measurement of the hoist motor during switching on of the crane was unsuccessful.
“F_ _17 Hoist: Backup limiter started up.1” The load hook has overrun the switching point of the top hoist limiter and has triggered the backup limiter. Check the switching point and gear limit switch.
“F_ _26: Hoist: Wire rope wear above 80 %.3” The wire rope has reached 80% of its maximum acceptable wear. Have a regular inspection performed.
“F_ _27: Hoist: Caution! Wire rope wear above 100 %.3” The wire rope has reached 100% of its maximum acceptable wear. Do not continue working with the crane. Have a regular inspection performed.
“F_ _31 Hoist: Speed too high/low.1” The actual speed of the hoist (measured by the absolute rotary encoder) exceeds the tolerance limits (too high/too low) as compared to the set speed of the hoist.
“F_ _32 or F_ _33 Hoist synchronisation: Deviation too great.1” In the synchronisation control of two hoists for a crane with two hoists or with two cranes in tandem operation, the height difference between the two load hooks is too great when lifting or lowering.
“F_ _36 Super-precision lifting: Switching failed.1” The contactors for switching between the windings did not respond.
“F__37 Hoist: Error in slack-rope detection.3” An error occurred during slack-rope detection initialisation. Acknowledge error and repeat procedure.

Trolley
“F_ _25 Trolley travel synchronisation: Deviation too great.1” In the synchronisation control of two trolleys with a crane with multiple trolleys, the difference in distance between the two trolleys is too great during trolley travel.
“F_ _26 Trolley travel synch. in tandem op.: Dev. too great.1” In the synchronisation control of two trolleys with two cranes in tandem operation, the difference in distance between the two trolleys is too great during trolley travel.
“F_ _27 Trolley travel distance sensor: Outside trav. range r.1” The distance sensor for trolley travel to the right detected that the upper limit value was exceeded or the measured value fell below the lower limit value.
“F_ _28 Trolley travel distance sensor: Outside trav. range l.1” The distance sensor for trolley travel to the left detected that the upper limit value was exceeded or the measured value fell below the lower limit value.
“F_ _29 Trolley travel distance sensor r: Diagnosis fault.1” Diagnostic error in distance sensor for trolley travel to right. At a standstill, the distance sensor is internally tested at regular intervals. For this testing, the outputs of the distance sensor are briefly switched.
“F_ _30 Trolley travel distance sensor l: Diagnosis fault.1” Diagnostic error in distance sensor for trolley travel to left. At a standstill, the distance sensor is internally tested at regular intervals. For this testing, the outputs of the distance sensor are briefly switched.
“F_ _41 Trolley travel: Dist. sensor right: Travel dir. reversed.1” The trolley runs in a different travel direction (trolley travel frequency converter rotation direction) than detected by the distance sensor for “trolley travel to right”.
“F_ _42 Trolley travel: Dist. sensor left: Travel dir. reversed.1” The trolley runs in a different travel direction (trolley travel frequency converter rotation direction) than detected by the distance sensor for “trolley travel to left”.

Crane travel
“F_ _20 Crane travel synch. in tandem op.: Dev. too great.1” In the synchronisation control of the crane drives with two cranes in tandem operation, a difference between the two cranes which is too great occurred during crane travel.
“F_ _28 Crane travel distance sensor: Outside trav. range f.1” The distance sensor for crane travel forward detected that the upper limit value was exceeded or the measured value fell below the lower limit value.
“F_ _29 Crane travel dist. sensor: Outside trav. range back.1” The distance sensor for crane travel back detected that the upper limit value was exceeded or the measured value fell below the lower limit value.
“F_ _30 Crane travel distance sensor f: Diagnosis fault.1” Diagnostic error in distance sensor for crane travel forward. At a standstill, the distance sensor is internally tested at regular intervals. For this testing, the outputs of the distance sensor are briefly switched.
“F_ _31 Crane travel distance sensor back: Diagnosis fault.1” Diagnostic error in distance sensor for crane travel back. At a standstill, the distance sensor is internally tested at regular intervals. For this testing, the outputs of the distance sensor are briefly switched.
“F_ _37 Crane: Distance sensor fwd: Travel dir. reversed.1” The crane runs in a different travel direction (crane travel frequency converter rotation direction) than detected by the distance sensor for “crane travel forward”.
“F_ _38 Crane: Distance sensor back: Travel dir. reversed.1” The crane runs in a different travel direction (crane travel frequency converter rotation direction) than detected by the distance sensor for “crane travel back”.

OVERVIEW OF MESSAGES FOR REDUNDANT TRAVEL LIMIT SWITCHES AND ANTI-COLLISION DEVICES

With a redundant travel limit switch, a crane distancing system, or trolley distancing system, two cross-type limit switches or light barriers are used on a switching point in order to additionally increase the level of safety. If both cross-type limit switches or light barriers do not simultaneously trigger when the switching point is run over, the corresponding message is displayed. Nevertheless, the crane or trolley brakes in accordance with the function.

Crane travel
“F_ _26 Crane travel: Redundant shut-down: Sw. status differs.3”
“F_ _27 Crane travel: Red. brake funct.: Sw. status differs.3”

Crane distancing system
“F_ _16 Crane dist. sys.: Red. shut-down 1/2 f: Sw. status diff.3”
“F_ _17 Crane dist. sys.: Red. shut-down 1/2 b: Sw. status diff.3”
“F_ _18 Crane dist. sys.: Red. shut-down 1/2 f/b: Sw. stat. diff.3”
“F_ _19 Crane dist. sys.: Red. brake fnct. 1/2 f: Sw. stat. diff.3”
“F_ _20 Crane dist. sys.: Red. brake fnct. 1/2 b: Sw. stat. diff.3”
“F_ _21 Crane dist. sys: Red. brake fnct. 1/2 f/b: Sw. stat diff.3”

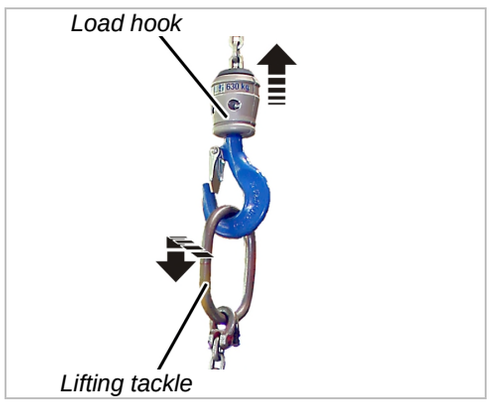
Trolley distancing system
“F_ _16 Trolley dist. sys.: Red. shut-down 1/2 r: Sw. stat. diff.3”
“F_ _17 Trolley dist. sys.: Red. shut-down 1/2 l: Sw. stat. diff.3”
“F_ _18 Trolley dist. sys: Red. shut-down 1/2 r/l: Sw. stat diff.3”
“F_ _19 Trolley dist. sys: Red. brake fnct. 1/2 r: Sw. stat diff.3”
“F_ _20 Trolley dist. sys: Red. brake fnct. 1/2 l: Sw. stat diff.3”
“F_ _21 Tr. dist. sys: Red. brake fnct. 1/2 r/l: Sw. stat diff.3”

The LED matrix display shows “No Signal”:

- The LED matrix display is not receiving a valid signal from the crane control.

SWITCHING OFF THE CRANE

OBSERVE THE PRODUCT MANUALS!
In addition to the points described here, all information in the section “Switching off the crane” in the other supplied product manuals also applies.



➔ If possible, set down or remove lifting tackle (wire ropes, chains, ...) and load lifting attachments (crossheads, ...).

➔ After the end of work, run the load hook to just below the highest hook position.

ONLY WITH CRANES WHICH ARE PARTIALLY OPERATED OUTDOORS

This section is only applicable if the crane can be operated either in a building or outdoors (if the crane track leads out of the building).

➔ Move the crane to the resting position in the building.

ONLY WITH CRANES WITH A WIND ANCHOR SECURED BY A FALLING LATCH

This section only applies if the crane is operated completely outdoors and if it can be secured from wind by means of a falling latch.

Example of a wind anchor at the end of the crane track

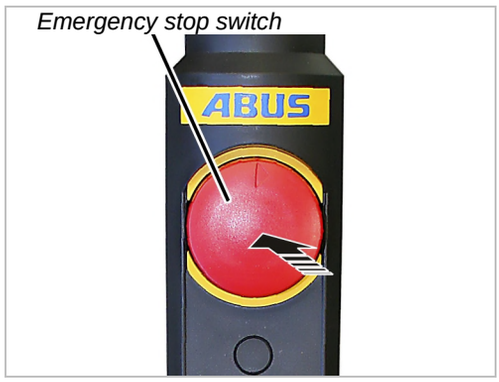
- ➔ Set down the load.
- ➔ If necessary: Set down or remove the load lifting attachments.
- ➔ Move the trolley to the left or right to the end of the main girder.
- ➔ Move the crane to the resting position at the end of the crane track.
- ➔ Run the crane until the falling latch closes.
- ➔ Make sure the crane is secured.

ONLY WITH CRANES WITH A RAIL CLAMP TYPE WIND ANCHOR

This section only applies if the crane is operated completely outdoors and if it can be secured from wind by means of a rail clamp.

- ➔ Set down the load.
- ➔ If necessary: Set down or remove the load lifting attachments.
- ➔ Switch on the rail clamp.
- ➔ Make sure the crane is secured.

Emergency stop switch



➔ Press the emergency stop switch.

For lengthier interruptions:

Mains switch

➔ Switch off the crane at the mains switch.

LIFT/LOWER WITH DOUBLE LIFTING SPEED

ONLY WITH DOUBLE LIFTING SPEED

This section only applies if the wire rope hoist can lift/lower with double lifting speed.

The function is continually activated and must be switched on separately.

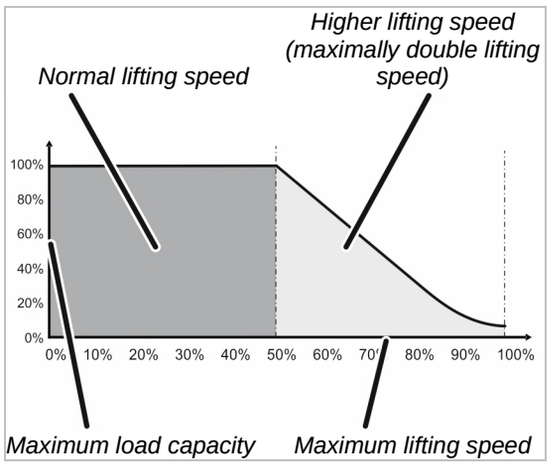
DANGER DUE TO LONG BRAKING DISTANCE!
When working at higher lifting speeds, the braking distance lengthens.

At doubled lifting speed, the braking distance becomes four times longer. Potentially fatal accidents could occur.

Not the longer breaking distance when working at double lifting speed!

➔ Lift/lower the load with the crane as usual.

- ABUControl or the LIS-SV on ABUS electrics 3 ascertains the suspended load.
- The wire rope hoist can be accelerated to a greater maximum lifting speed than normal, depending on the weight of the suspended load.
  - With a light load (down to an empty load hook), the maximum lifting speed of the wire rope hoist is up to twice the normal maximum speed.
  - The heavier the load, the lower the maximum speed when lifting or lowering.
  - At the maximum load, the wire rope hoist can only be lifted/lowered at the normal maximum lifting speed.



SWITCHING SUPER-PRECISION LIFTING ON AND OFF

ONLY WITH SUPER-PRECISION LIFTING

This section only applies to wire rope hoists with the option of super-precision lifting.

The super-precision lifting function is used for especially slow lifting and lowering with the hoist. This enables extremely exact positioning of the load. Super-precision lifting can be switched on and off at the transmitter or the pendant control.

SWITCHING SUPER-PRECISION LIFTING ON AND OFF

➔ Wait until the crane stops.

➔ With pendant control: Switch super-precision lifting on or off with the rotary switch.

➔ With ABURemote: See the ABURemote product manual.

- Wait about 2 seconds until the super-precision lifting function has switched on or off.

LIFTING/LOWERING LOADS IN SUPER-PRECISION MODE

➔ Operate the wire rope hoist as usual.

- The wire rope hoist lifts/lowers very slowly and thus can be used to position the load with great precision.

➔ Observe the duty cycle in super-precision lifting! It amounts to 1/3 that of normal operation.

If the hoist motor normally has a duty cycle of 60%, the duty cycle in super-precision lifting is 20%. The hoist motor may then be run for a maximum of 2 minutes within a 10-minute period.

USING SWAY CONTROL

ONLY WITH SWAY CONTROL

The “Sway control” function considerably reduces the swinging movement of the load hook during trolley and crane travel on a crane with ABUControl. See the “ABUControl” product manual.

SWITCHING SWAY CONTROL ON AND OFF

See the ABURemote product manual.

The sway control initially functions only with a crane with a single trolley or with a crane with several trolleys, providing the unused trolley is in the parking position.
During the joint operation of several trolleys or in tandem operation, the sway control must be separately enabled. See the ABUControl Product Manual.

For ABURemote with individual control: If a load hook is in the highest hook position (top hoist limiter), the sway control can be switched on for the other load hook.

CRANE AND TROLLEY TRAVEL WITH SWAY CONTROL

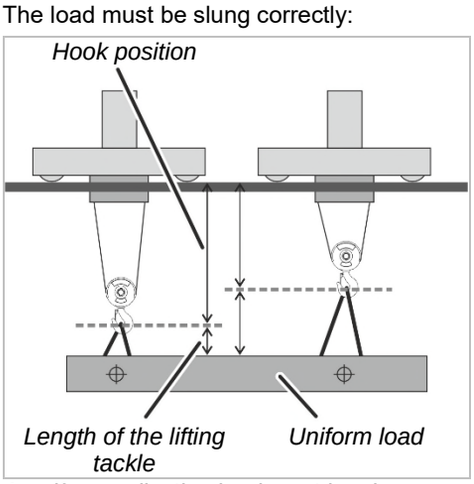
➔ Operate the crane as usual.

- ABUControl uses the travel speeds of crane and trolley, the hook position and the length of the load lifting attachment to calculate how much the load would normally sway, and accelerates and brakes the travel motors in such a way that the swinging movement is reduced.
- The acceleration and braking distances are not substantially altered.
- The function does not compensate for external influences such as wind, impacts against the load or load hook, or manual movements.

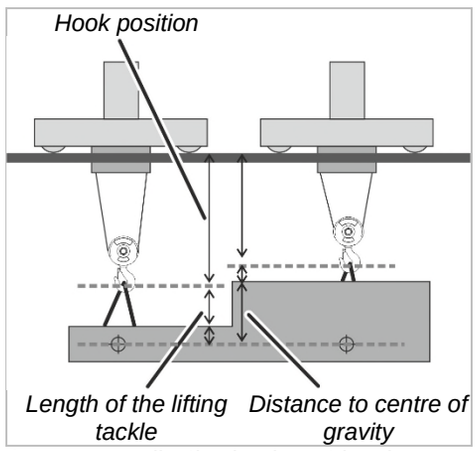
Instructions for sway control for multiple trolleys:

The calculation of the sway control only functions correctly in joint operation of multiple trolleys or in tandem operation if the crane operator observes these conditions:

- Crane and trolley must be the same type and size.
- The load must be slung correctly:



A uniform collective load must be slung so that the hook position and the length of the lifting tackle added together results in the same total length in each case.



An uneven collective load must be slung so that the hook position, the length of the lifting tackle and the distance to the centre of gravity added together results in the same total length in each case.

- The length of the lifting tackle must be entered:

  In joint operation of multiple trolleys, the length of the lifting tackle for trolley 1 must be entered.

  In tandem operation, the length of the lifting tackle from the first crane must be entered. The first crane has the IP address 192.168.1.1

CRANE TRAVEL WITH ELECTRONIC TRACK GUIDANCE SYSTEM

ONLY WITH ELECTRONIC TRACK GUIDANCE SYSTEM

The electronic track guidance system is automatically switched on and cannot be switched off.

➔ Operate the crane as usual.

- Sensors measure the distance of both wheels of an end carriage to the crane track.
- If the crane runs unevenly (e.g. due to an unbalanced load), ABUControl evens this out again automatically, via a differential control of the drives of both end carriages.

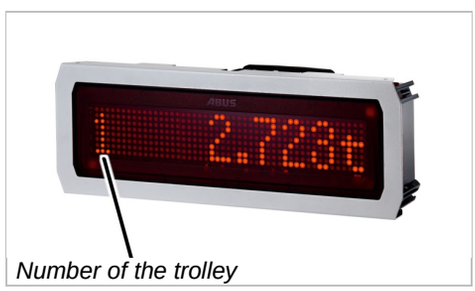
OPERATING A CRANE WITH TWO TROLLEYS

The crane is equipped with two trolleys. These can be controlled using a joint pendant control (or transmitter). This improves safety during the transportation of e.g. long or bulky loads.

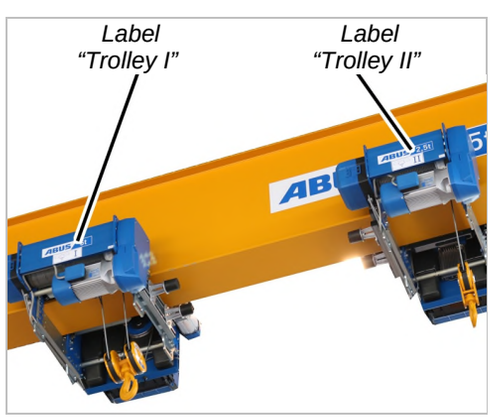
ASSIGNING THE TROLLEYS

ONLY WITH ABUS ELECTRICS 3 WITH LED MATRIX DISPLAY

When fitted to a trolley, the LED matrix display can also show the numbers “1” and “2” to indicate the trolley assignment.



- The assigned number of the trolley is displayed at the foremost position on the LED matrix display.



- The trolleys are labelled “Trolley I” and “Trolley II” on the wire rope hoist.

SWITCHING BETWEEN TROLLEY I AND TROLLEY II

On a crane with trolley selection, it is possible to switch back and forth between trolley I and trolley II.

ONLY WITH ABUREMOTE

See the ABURemote product manual.

ONLY WITH PENDANT CONTROL

See the pendant control product manual.

SWITCHING OVER TO JOINT OPERATION

On a crane with trolley selection and joint operation, it is also possible to switch back and forth between trolley I and trolley II in joint operation of both trolleys.

ONLY WITH ABUREMOTE

See the ABURemote product manual.

ONLY WITH PENDANT CONTROL

See the pendant control product manual.

ONLY WITH ABUS ELECTRICS 3

The control is without synchronisation control. This can result in a change in the distance of the trolleys to one another, or in the position of the load during transport, for example, due to different loads placed on the drives with differing load distribution, to different braking differences and to tolerances of the components.

If changes occur in the distance of the trolleys to each other or in the position of the load:

- ➔ Allow the crane to come to a complete standstill.
- ➔ Switch to trolley I or trolley II.
- ➔ Compensate for the changed distance of the trolleys or the changed position of the load through lifting/lowering or trolley travel to the right/left.
- ➔ Switch to joint operation again.

ONLY WITH ABUCONTROL

ABUControl has a synchronization control system. Thus, the synchronous travel of all crane axes is automatically controlled.

- Only for hoist with frequency converter: ABUControl monitors the speed of the two hoists and automatically controls the lifting speed. This ensures a constant lifting speed of both hoists during lifting and lowering, even with unequal load distribution.
- ABUControl monitors the speed of the trolley drives and automatically controls the trolley travel speed. Thus, both trolleys travel at the same constant speed.
- ABUControl monitors the distance of the two trolleys to the respective end of the main girder, uses this to calculate the distance of the trolleys to one another, and controls the trolley travel speed so that the distance between the two trolleys remains constant.
- Only with twin hoist: The synchronization control system is deactivated shortly before the switching point of the top and bottom hoist limiters. This is necessary so that the wire rope on the two cable drums of the twin hoist can be balanced. During acceleration in the opposite direction, the synchronization control system is automatically activated again. The load hook thereby stops briefly.

BRAKING AND SHUT-DOWN FUNCTIONS OF THE TROLLEY TRAVEL LIMIT SWITCH, HOIST LIMITER

In joint operation, the trolley travel limit switch and the hoist limit switch are evaluated jointly.

If one of the trolley drives brakes or halts, or if one of the hoists brakes or halts, the other trolley is also synchronously controlled.

ONLY WHEN TURNING LOADS

If the crane is to be used to turn loads, the overload protection is possibly equipped with additional functions in order to also detect an overload of the hoist even when it is lowering or stopped.

See the order-specific crane documentation.

OPERATING CRANES IN TANDEM OPERATION

The tandem control system can be used to control two overhead travelling cranes at the same time using only one transmitter. In this way, long or bulky loads can be more easily and safely lifted and transported than with two independently controlled cranes.

ONLY WITH ABUS ELECTRICS 3

See the “ABUS Tandem Control System” product manual.

ONLY WITH ABUCONTROL

ACTIVATING TANDEM OPERATION

Working with two cranes in tandem operation:

Check the following points before beginning work in tandem operation. If there is any damage or problems arise, do not work with the crane; inform coworkers and supervisors.

Switch on tandem operation at the transmitter:

➔ Check whether the two cranes are not being used independently of one another by another person.

➔ Allow the cranes to come to a complete standstill. Do not switch to tandem operation during travel.

➔ Activate tandem operation at the transmitter.

See the ABURemote product manual.

- On both cranes the white signal lamp “Crane active” lights up.

Check the crane/trolley travel limit switch and hoist limiter:

➔ Check the braking function of both cranes and trolleys in tandem operation.

➔ Check the shut-down function of both cranes and trolleys in tandem operation.

➔ Check the hoist limit switch of both hoists in tandem operation.

- If one of the crane drives or trolley drives brakes or halts, or if one of the hoists brakes or halts, the other crane and the other trolley are also synchronously controlled.

CONTROLLING AN INDIVIDUAL CRANE WITH THE TANDEM CONTROL SYSTEM SWITCHED ON (INDIVIDUAL OPERATION)

With the tandem control system switched on, it can be necessary to control an individual crane briefly (e.g. for slinging the load or compensating height differences).

During this, the other crane must be blocked and must not move (e.g. through another crane operator). This mode of operation is called individual operation.

Switching to individual operation in tandem operation (controlling one individual crane and blocking the other crane):

➔ Allow both cranes to come to a standstill.

➔ Select one of the two cranes on the transmitter.

See the ABURemote product manual.

- The crane selected is now activated in individual operation.
- On the selected crane the white signal lamp “Crane active” lights up.
- The crane not selected is blocked for the duration and cannot be controlled (e.g. by another crane operator).
- On the crane that is not selected the white signal lamp “Crane active” goes out.

➔ Operate the crane selected.

➔ Select both cranes again at the transmitter.

SLINGING THE LOAD FOR TANDEM OPERATION

In order to sling a joint load, switch tandem operation on first, then sling the joint load in individual operation (control one crane and block the other), then transport the load using both cranes in tandem operation.

➔ Select lifting tackle or load lifting attachments which will hold the load safely even if the load is accidentally brought out of plumb alignment.

➔ Activate tandem operation at the transmitter.

See the ABURemote product manual.

➔ Select one of the two cranes for individual operation on the transmitter.

➔ Move the load hook to the required hook position in individual operation.

➔ Attach the lifting tackle or load lifting attachments safely to the load and hook.

➔ Select the other crane for individual operation on the transmitter.

➔ Move the load hook to the required hook position in individual operation.

➔ Attach the lifting tackle or load lifting attachments safely to the load and hook.

➔ Select tandem operation for both cranes on the transmitter and lift the load.

OPERATING CRANES IN TANDEM OPERATION

➔ Use the buttons for crane travel, trolley travel, lift and lower to lift and transport the load.

See the ABURemote product manual.

- Only for hoist with frequency converter: ABUControl monitors the speed of the two hoists and automatically controls the lifting speed. This ensures a constant lifting speed of both hoists during lifting and lowering, even with unequal load distribution.
- ABUControl monitors the speed of the crane drives and trolley drives and automatically controls the travel speed. Thus, both cranes and trolleys travel at the same constant speed.
- ABUControl monitors the distance between both cranes and controls the crane travel speed so that the distance between the two cranes remains constant.

The optical anti-collision device also works in tandem operation. This prevents the collision of the two cranes in tandem operation with further cranes on the same crane track.

BRAKING AND SHUT-DOWN FUNCTIONS OF THE CRANE TRAVEL LIMIT SWITCH, TROLLEY TRAVEL LIMIT SWITCH, HOIST LIMITER

In tandem operation, the crane travel limit switch and the trolley travel limit switch, as well as the hoist limit switch, are evaluated together.

If one of the crane drives or trolley drives brakes or halts, or if one of the hoists brakes or halts, the other crane and the other trolley are also synchronously controlled.

OVERLOAD PROTECTION

In tandem operation, the overload protection of both cranes is jointly evaluated.

If one of the cranes is overloaded, the other crane is stopped simultaneously.

DEACTIVATING TANDEM OPERATION

➔ Set down the joint load.

➔ Deactivate tandem operation at the transmitter.

See the ABURemote product manual.

- The tandem control is now switched off. Both cranes can now be used independently of each other again. Both cranes can now be used independently of each other again.

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