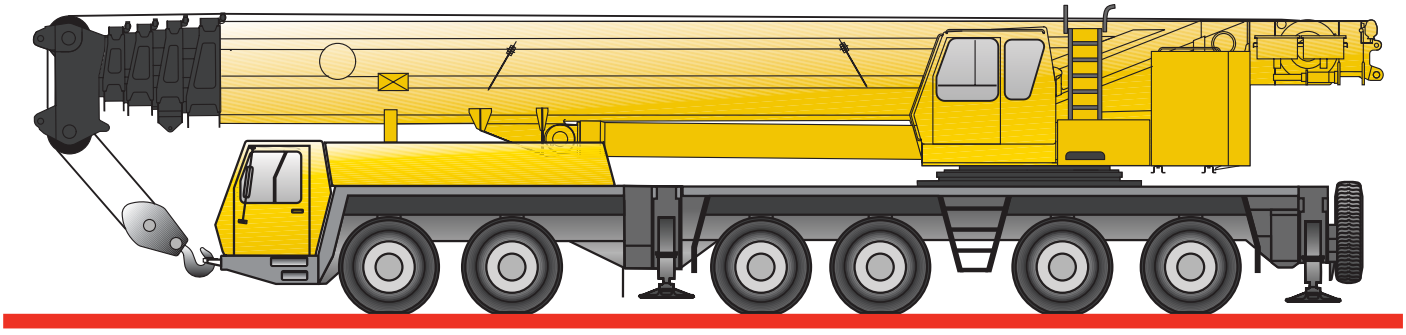
GROVE

GMK 6300

Operating instructions
Part 1 – Driving



Serial number

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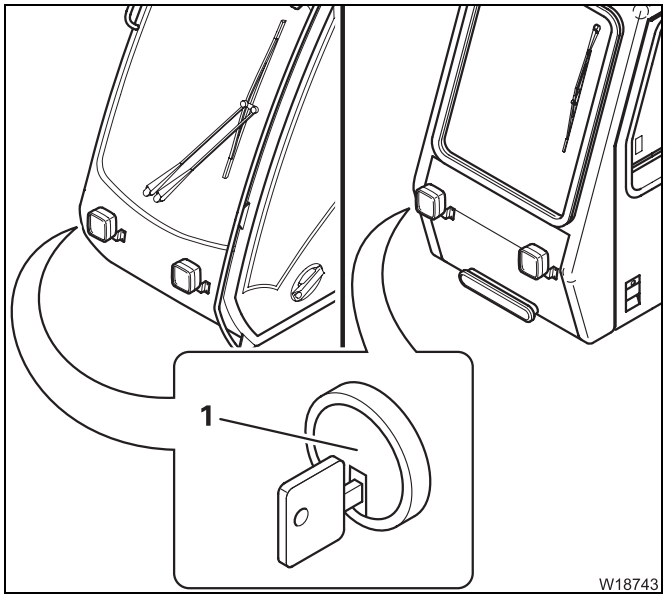
16.01.2006

Manitowoc Crane Group

A Manitowoc Company

Overriding the SLI in an emergency

Risk of accidents due to overridden or faulty SLI
It is not permitted to work with an overridden or faulty SLI!
Set down the load immediately and stop operating the crane if the SLI is faulty!
You may only override the SLI if it becomes absolutely necessary in the event of an emergency. This is to put the truck crane into a safe condition in the event of a malfunction. In this case, do not perform any movements that would increase the load moment.



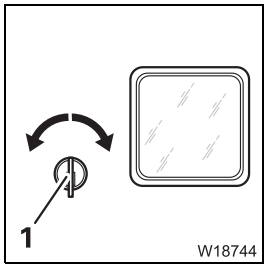
If the SLI has shut down all crane movements, you can cancel the shutdown with the key-operated switch (**1**).

Once the shutdown is cancelled, the crane operation is no longer monitored and the switched off crane movements are enabled again.

The power unit speeds are reduced to 15%.

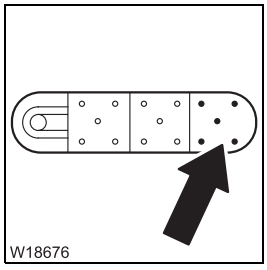
Prerequisite

– The engine for crane operation is running.



Cancelling a shutdown

- Turn the key-operated switch (**1**) to the left or right once.
  – Now all crane movements are enabled for 30 minutes. The crane movements are no longer monitored by the SLI.
  – The SLI shows an information code; ➠ S. 11.



The status display blinks **red**.
At a degree of utilisation over 110% the warning signal sounds; ➠ S. 4.

20.05.2010

The following plates and numbers have been attached to the truck crane for identification:

1 The superstructure name plate on the crane operator's cab at the front, containing the serial number and the crane type

2 The CE mark on the name plate (only of truck cranes which are delivered to member countries of the EU)

3 The chassis name plate on the passenger seat console, containing the chassis number and the crane type

4 The chassis number on the front right, above the first axle line, on the web plate of the frame

The locations of the identification numbers of removable rigging parts (e.g. counterweights, lattice extension, auxiliary hoist) are specified in the respective chapters.

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- Press down the *Suspension locking system* rocker switch.
  The *Suspension locking system* indicator lamp must be on.

1.4.3 How can I find required information quickly and easily?

These operating instructions contain the following reference aids:

– The table of contents at the beginning of the operating instructions

– The table of contents of each chapter on the coloured sheets preceding the respective chapters

– The index at the end of the operating instructions

– Cross-references in the text

The **general table of contents** and the **tables of contents for the individual chapters** provide an overview of the operating instructions according to subjects.

The **index** (in Chapters 10 and 17 of these operating instructions) is an alphabetical list of key words and terms with indication of the pages on which the respective term is defined or operation is described.
You can find out how to use the index on page 1 - 19.

The text itself contains a number of **cross-references** to other text passages, which contain additional or detailed information on particular terms or operations.
These cross-references are indicated by an arrow (➠).

Whenever you require further information on a subject, you must turn to the page to which the arrow refers.

Furthermore, you can use the cross-references to systematically familiarize yourself with specific information on the truck crane or look up functions of individual elements.

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2 Basic Safety Instructions for the Crane Operator

2.1 Warnings and symbols

The following designations and symbols are used in the operating instructions to indicate particularly important information:

This symbol indicates hazards related to the described operation, which can endanger persons. The type of danger (e.g. danger to life, risk of injury or danger of being crushed) usually precedes the warning.

This symbol indicates dangers which put objects at risk, e.g. damage to the truck crane, the load or the environment.

This symbol warns you about situations where there is a danger of electrocution.

This symbol reminds you that you are working with substances which pose a risk to the environment. Take particular care. For further information on handling substances that pose a risk to the environment; ➠ *Maintenance manual*, chapter titled *Safety and environmental protection*.

The vertical line to the left of the warning text indicates that this text belongs to the warning symbol, regardless of its length.

The hand with the outstretched index finger indicates passages that contain additional information and tips regarding the operation of the truck crane.

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2.6 Safety instructions for working with the truck crane

Carefully select a safe site for the truck crane from where you can work safely.

Walk around the truck crane and take a look at it before beginning with crane work. Check the condition of the truck crane carefully using the checklists in the operating instructions. Do not assume everything is in working order simply because it was in working order at the end of the last shift.

Check daily that all covers and safety devices are fitted properly and are in good condition before working with the crane.

Check the safety devices (SLI, lifting limit switch, dead man's switch, crane control emergency stop switch) every day before beginning with work.

Use the appropriate access aids when conducting overhead rigging or maintenance work. Do not use any parts of the crane as access aids.

Only access those machine parts which are equipped with appropriate treadles and railings and therefore guarantee safety. Use the supplied extension ladder for rigging and maintenance work on machine parts above body height if there are no other access aids (e.g. when reeving the hoist rope on the main boom head).

Keep all handles, steps, step treads and ladders free of dirt, snow and ice.

Check all operating and control elements in the crane cab before starting the crane engine.

Monitor all warning and indicator lamps as well as the control instruments after starting the engine.

Make sure no unauthorised persons are within the vicinity of or on the truck crane during rigging work. Cordon off the danger zone clearly and mark the zone as such.

When lifting a load, raise the boom to balance out the increase in working radius caused by the deflection of the main boom so that the load is lifted vertically and does not drag, injure helpers or fall diagonally into the hoist rope (e.g. from a vehicle or scaffolding). Inform any banksmen and helpers about this issue as well.

Support the truck crane with the outrigger span required for the currently rigged counterweight before turning the superstructure.

Always level the truck crane before carrying out any crane work.

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4 Description of the truck crane – vehicle section

4.1 Overview of the operating and display elements

This section only contains the operating and display elements for driving that are on the outside of the truck crane or in the driver's cab.

4.1.1 Overview of the vehicle

This section shows the position and designation of the operating elements for driving.

Operating elements which are only available for additional equipment are designated accordingly. These designations are made in this section only and are not repeated in the following sections.

All operating elements and control instruments required for crane operation are described in chapter 11.

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1 Trip recorder with tachometer ➠ p. 6 - 13

2 “Main boom not set down” indicator lamp [1)] ➠ p. 4 - 43

[1)] Additional equipment

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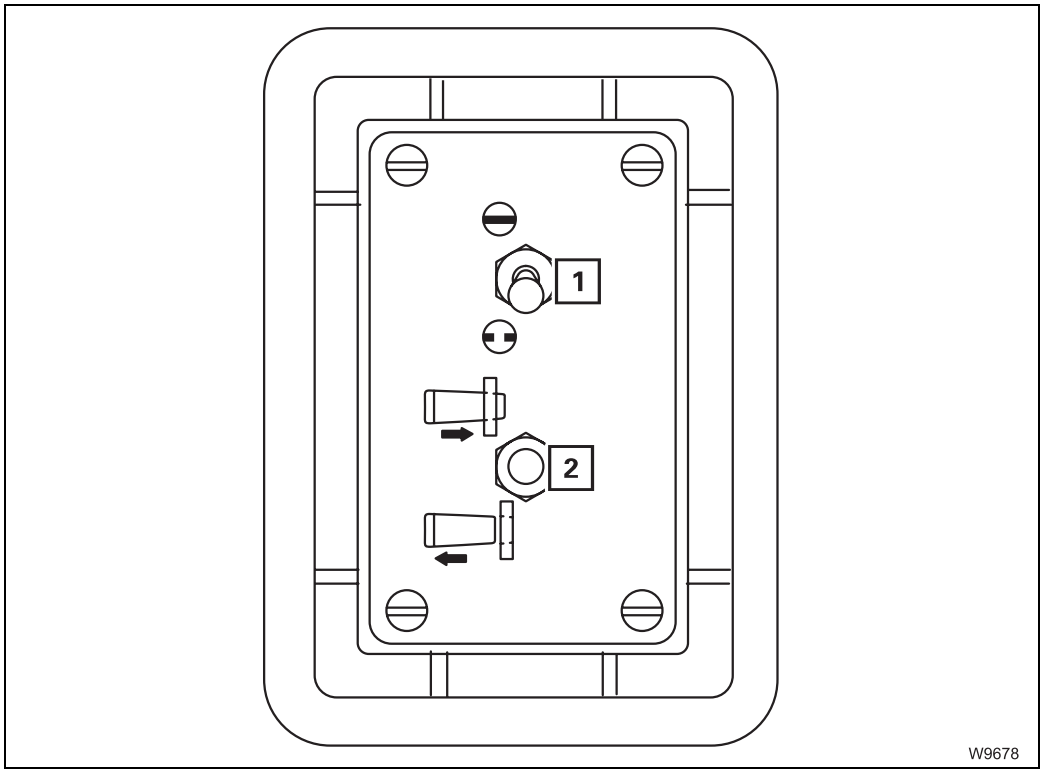
4.1.5 Outrigger box locking pin switch boxes



1 Toggle switch for releasing the locking pin ➠ p. 4 - 33

2 Toggle switch for extending/retracting pin ➠ p. 4 - 33

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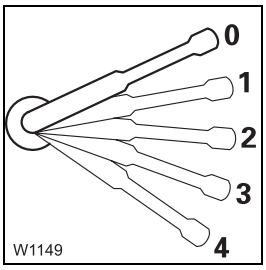
Trailer ABS warning lamp

Only goes out at a driving speed of over 6 km/h. Goes on in the event of a malfunction to the ABS of the trailer; ➠ p. 6 - 23.



Eddy current retarder lever switch

To switch on the eddy current retarder:	Shift the lever switch from the position **0** to the gears **1** to **4**.
To switch off the eddy current retarder:	Switch the lever switch to the **0** position; ➠ p. 6 - 31.

Eddy current retarder indicator lamp

Goes on if the eddy current retarder is switched on;
➠ *Eddy current retarder*, p. 6 - 31.

Suspension

Suspension locking system rocker switch

Locks all suspension cylinders in their respective positions; ➠ *Checking the suspension*, p. 6 - 9; ➠ *Switching over the suspension locking system*, p. 13 - 110.

To switch on:	press down the rocker switch.
To switch off:	press up the rocker switch.

Suspension locking system indicator lamp

Goes on if the suspension is locked.
Goes out if the suspension locking system is released; ➠ *Checking the suspension*, p. 6 - 9; ➠ *Switching over the suspension locking system*, p. 13 - 110.

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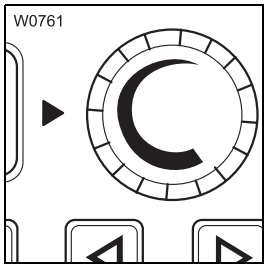
+ input button

Used to enter values when saving an automatic heating start and setting the time if the *Auxiliary heater* display is flashing. The flashing value is incremented each time the button is pressed.
The button switches to fast mode and the value is incremented continuously if it is held down for longer than two seconds.

Auxiliary air heater

➠ p. 6 - 69.



Rotary switch for regulating the temperature

For preselecting the desired temperature on the heater. Switches the heating on or off via the thermostat, depending on the current temperature in the driver's cab.

Warmer: Turn the rotary switch clockwise.

Colder: Turn the rotary switch anti-clockwise.

The higher the preselected temperature is, the faster the fan in the heater runs.

The functions of the following operating elements are exactly the same as for the auxiliary water heater; ➠ *Auxiliary water heater*, p. 4 - 40:

– Button for setting the time/day

– Button for switching the heating on/off

– Button for calling up storage locations

– – input button

– + input button

– Heating display

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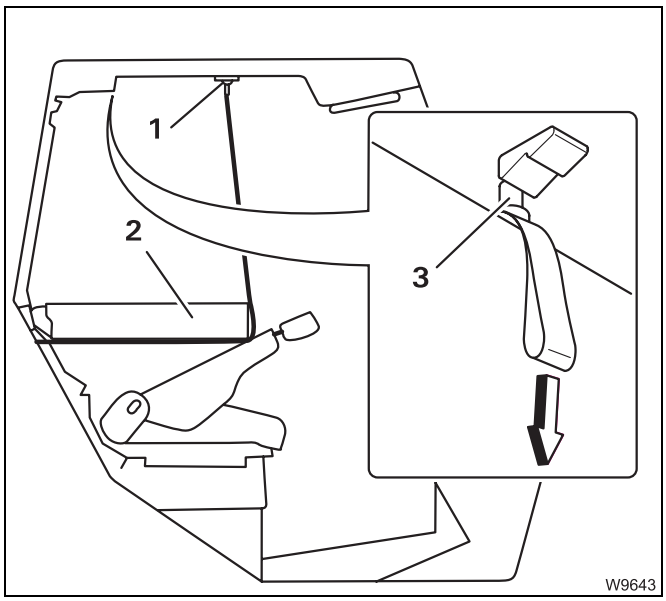
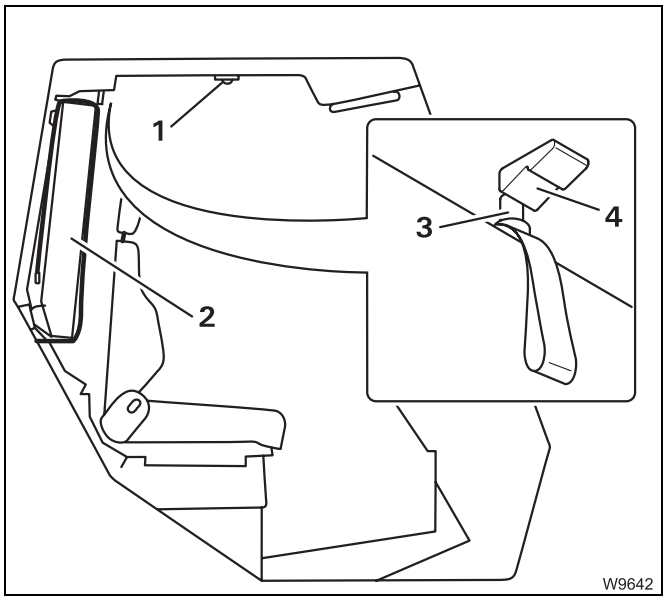
Folding berth The berth must always be folded up for driving.

Risk of accidents due to the berth falling open
Check whether the locking bar is engaged and put up the back rest of the seats before driving. In this way you can avoid the berth falling open when braking, resulting in uncontrolled manoeuvres due to fright.



Folding down

- Tilt the back rests of the seats forwards.
- Pull down the locking bar (**3**).
- Fasten both seat belts in the retainers (**1**).



Folding up

- Undo the seat belts from the retainers (**1**) and place them on the berth.
- Fold up the berth (**2**) against the rear wall of the cabin, so that you can hear the locking bar (**3**) behind the holder (**4**) engaging.
- Put up the back rests of the seats.

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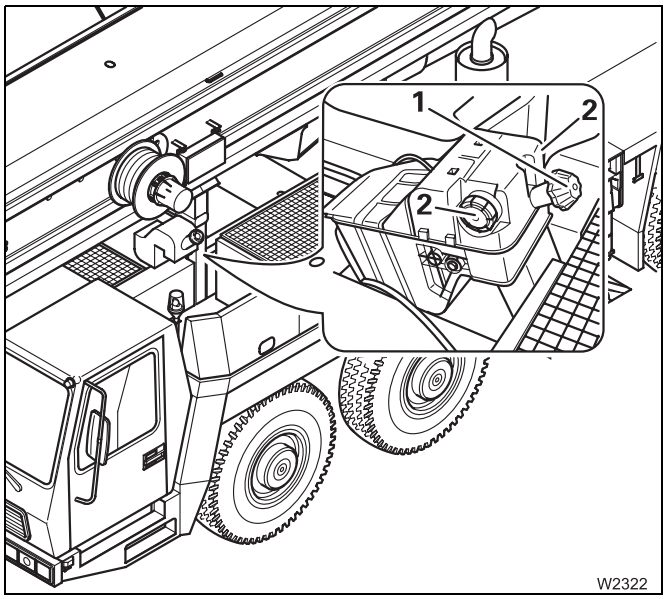
Checking the coolant level

The coolant reservoir is on the left-hand side of the carrier behind the driver's cab.

Risk of scalding when the vehicle engine is hot
The hot radiator is under pressure. You can be scalded by the hot radiator or escaping steam or hot coolant if you remove the radiator cap when the vehicle engine is hot.
Wear suitable protective gloves and cover the radiator cap with a cloth before opening it.
Turn the radiator cap slowly to the first notch to allow the excess pressure to be released.



Do **not** open the pressure relief valves (**2**) on the sides of the coolant reservoir.

- To release the pressure, loosen (do not open) the cap on the filling hole (**1**) with the coolant at operating temperature.
- Open the cap.
  The coolant level must be at the lower edge of the pipe in the filler neck.

If the coolant level is too low:

- Top up the coolant.
  Refer to the vehicle engine operating instructions for the composition of the coolant.
- Screw the cap (**1**) onto the filler neck as tight as possible.

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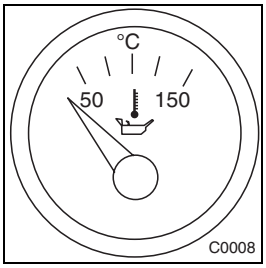
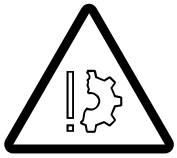
Oil level check with cold gear oil (15 to 50°C)

This method is only intended for the daily check before using the truck crane.

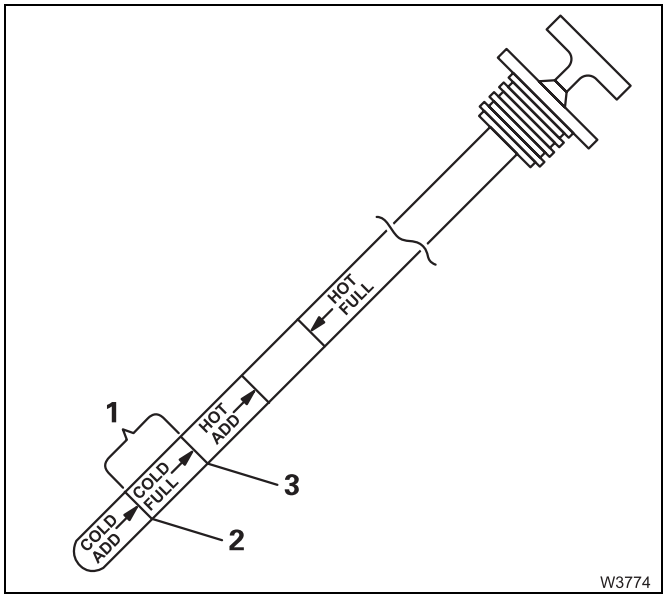


- Check the *Automatic transmission oil temperature* display to see whether the operating temperature of 15°C has been reached.



Risk of damage to the converter
If the wheels are locked (e.g. when warming up), the full engine output may not be applied in transmission mode **D** or **R** for more 30 seconds. Otherwise the converter can become damaged and the automatic transmission overheated.

- Switch first to transmission mode **D** and then to **R** and allow the engine to run briefly at about 1200 – 1500 min^{-1} in each transmission mode in order to remove the air from the hydraulic system.
- Switch back into neutral position **N** and let the vehicle engine run at idling speed.



- Check whether the oil level is within the cold range (**1**). Only then is the automatic transmission ready for driving.

You must drain some of the oil if the oil level is above the mark (**3**); ➠ *Maintenance manual*.

The oil must be topped up through the dipstick tube if it is below the mark (**2**). Information on the prescribed oil specification; ➠ *Maintenance manual*.

- Check the oil level when the gear oil is warm at the next opportunity; ➠ p. 5 - 18.

Risk of damage to the transmission due to an incorrect oil level
If you have topped up or drained oil in as a result of the measurement taken with cold gear oil, you must check the oil level with warm gear oil as soon as possible.

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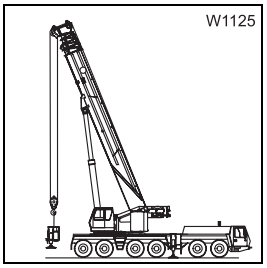
6 Driving the truck crane

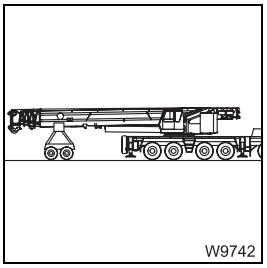
6.1 Inspections on the truck crane before driving

6.1.1 CHECKLIST: Condition of the truck crane for on-road driving

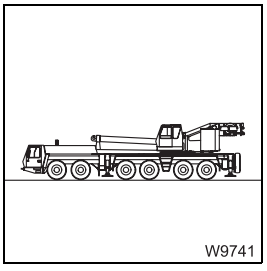
This checklist is not a complete set of operating instructions. There are accompanying operating instructions which are referred to by cross-references. **Observe the warnings and safety instructions there.**



1. Remove the outrigger box/outrigger beam if necessary;
   ➠ *CHECKLIST: Removal of the outrigger box*, p. 7 - 36;
   ➠ *CHECKLIST: Removal of the outrigger beams*, p. 7 - 16.



2. **If the main boom is set down on a trailer:**
   - The anemometer has been removed; ➠ p. 14 - 103.
   - The rope grab has been removed; ➠ p. 14 - 84.
   - The main boom has been set down on a trailer; ➠ p. 7 - 10.
   - The slewing gear freewheel might be switched on and the fuse box is on the superstructure lock; ➠ p. 7 - 8.
   - The boom floating position might be switched on; ➠ *Switching on the boom floating position*, p. 7 - 10.
   - The boom pre-tensioning might be switched on; ➠ *Switching on boom pre-tensioning*, p. 7 - 12.
   - The superstructure is **not** locked; ➠ *Superstructure lock*, p. 13 - 11.



3. **If the main boom is removed for on-road driving:**
   - The anemometer has been removed; ➠ p. 14 - 103.
   - The main boom has been removed; ➠ *CHECKLIST: Removal of the main boom*, p. 7 - 54.
   - The derricking cylinder is secured; ➠ *Securing the derricking cylinder for on-road driving*, p. 7 - 77.
   - The superstructure is locked; ➠ *Superstructure lock*, p. 13 - 11.

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The *Separate steering* indicator lamp must be off. If the indicator lamp is on, either the steering of the fourth axle line and/or the manual steering of the third axle line are not locked.

Risk of accidents when driving on the road with unlocked steering
For on-road driving:
– The steering of the fourth axle line
– The manual steering of the third axle line
– The drag rods between the third and fifth axle lines
must be locked and the warning and indicator lamps described above must be out.

Checking the *Main boom not set down* warning lamp

The *Main boom not set down* warning lamp indicates that the main boom is not set down properly on the boom rest and therefore the specified vehicle height is exceeded at on-road level.
The vehicle height is specified on a sticker in the driver's cab.

Risk of damage to the truck crane
The vehicle is higher than specified whenever the *Main boom not set down* warning lamp is on. An accident can occur if you drive under a bridge or through a tunnel, causing damage to the truck crane, bridge or tunnel.
Set the main boom down properly on the boom rest and make sure the on-road level is set.

- Check the on-road level. The *No on-road level* indicator lamp may not be on; ➠ p. 6 - 9.

- Check whether the *Main boom not set down* warning lamp is out. If the warning lamp is on, the main boom is not set down properly on the boom rest. This means the vehicle height specified in the driver's cab is exceeded.
- Lower the main boom until it is lying properly on the boom rest.

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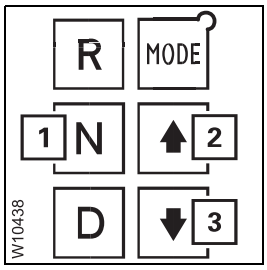
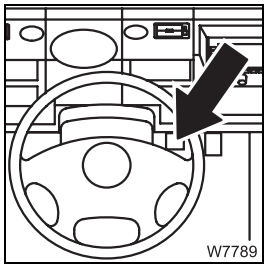
Changing the driving direction



- Stop the truck crane and leave the vehicle engine running at idling speed.
- Select the opposite driving direction by using button (**1**) or (**2**).
- Start driving.

Stopping the truck crane



- In order to stop, remove your foot from the accelerator and actuate the service brake pedal.

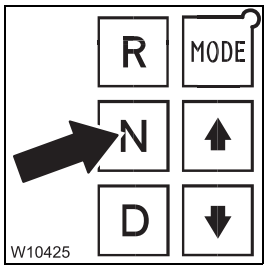
Stopping for a long period of time

In order to stop for a long time with the engine running, you must:

– Apply the parking brake.

– Shift the transmission to the neutral position **N**

On the roller type dynamometer



- Always switch to neutral position **N** after driving onto a roller type dynamometer.
- Allow the motor to run.

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Switching off the Tempomat

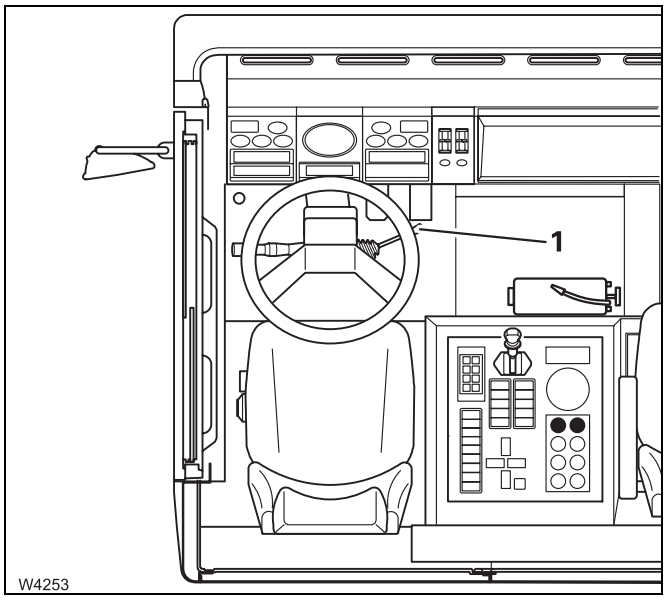
The truck crane brakes if you switch off the Tempomat without first pressing the accelerator.

- Press the accelerator until the truck crane accelerates.
- Press the *Switch Tempomat on/off* rocker button up to delete the set speed.

The Tempomat is automatically switched off if you operate the service brake, retarder or eddy current retarder; ➠ *Driving downhill*, p. 6 - 27.
The *Tempomat* indicator lamp goes out.

Eddy current retarder

You can brake the vehicle with the eddy current retarder on downhill slopes. You can use the eddy current retarder for all braking procedures as soon as the truck crane is in motion. In this way you can go easy on the service brake.



The eddy current retarder is operated with the *Eddy current retarder* lever switch (**1**) on the steering column.

You cannot regulate the engine speed with the accelerator as long as the eddy current retarder is in operation.

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Switching off the transverse differential locks

- Stop the vehicle or let it roll at a maximum of 3 km/h.

- Switch the automatic transmission to neutral position **N**.

- Press up the *Transverse differential locks in all driven axle lines* rocker switch. The indicator lamp **flashes** if **not all** of the transverse differential locks have been switched off yet. It only **goes out** once the transverse differentials are switched off in **all** axle lines.

Some locks are still engaged if the indicator lamp flashes even though the transverse differential locks are switched off. Help disengaging the locks by slowly driving forwards and backwards while turning the steering slightly.

- Turn the *Level adjustment system* key-operated switch off again once the indicator lamp has gone out.

- Switch off the off-road gear again if you do not need it anymore.

Risk of damage to the transmission if the transfer case is not working properly
Always switch off the transverse differential locks with the *Transverse differential locks in all driven axle lines* rocker switch.
Do not use the key-operated switch for the level adjustment system. In this way you can avoid malfunctions and damage in the axle centre drives.

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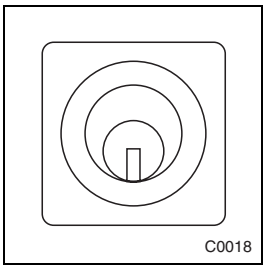
6.4.1 Switching on separate steering



- Switch on the *Level adjustment system* key-operated switch.

The electronics for separate steering are switched on in this way.

- Press down the *Separate steering* rocker switch.
  To do so, you must press the lock button.

The unlocking procedures begin:

– The steering lock on the fourth axle line is unlocked.
– The manual steering of the third axle line is unlocked.
– The connection of the drag rods between the third and fifth axle lines is disconnected.

The *Steering unlocked* warning lamp goes on as soon as a lock is released.

The hydraulic system is switched over for separate steering once all connections are unlocked or disconnected.

The *Separate steering* indicator lamp also goes on once these procedures are over and the electronics for separate steering are ready.

The steering system is now switched to separate steering.

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A thermostat in the heater takes over the control of the heating system once it has been activated.

If a malfunction occurs for about 10 seconds while the heating is on, the heating system automatically shuts down.

To reactivate the heating system, you must switch off the *Auxiliary heater* rocker switch and switch it back on again.

Check whether the auxiliary heater is switched off every time you park the truck crane with the battery master switch switched on. In this way, you prevent the auxiliary heater from restarting and running down the batteries after the vehicle engine has cooled down.

Switching off the auxiliary heater

- Press up the *Auxiliary heater* rocker switch to turn off the auxiliary heater. The *Auxiliary heater* indicator lamp goes out.
  The heating pump continues to run for a while (about three minutes) to cool down the heater.

The cooling of the heater is not interrupted by switching off the battery master switch.

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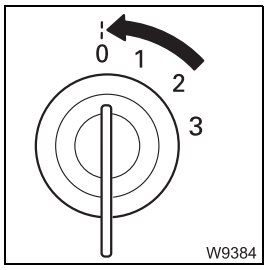
Setting the remaining time

If the ignition is turned off while the auxiliary heater is running, the auxiliary heater continues to run for the remaining time. To set the remaining time, the auxiliary heater must be within the remaining time.

- Switch on the auxiliary heater.



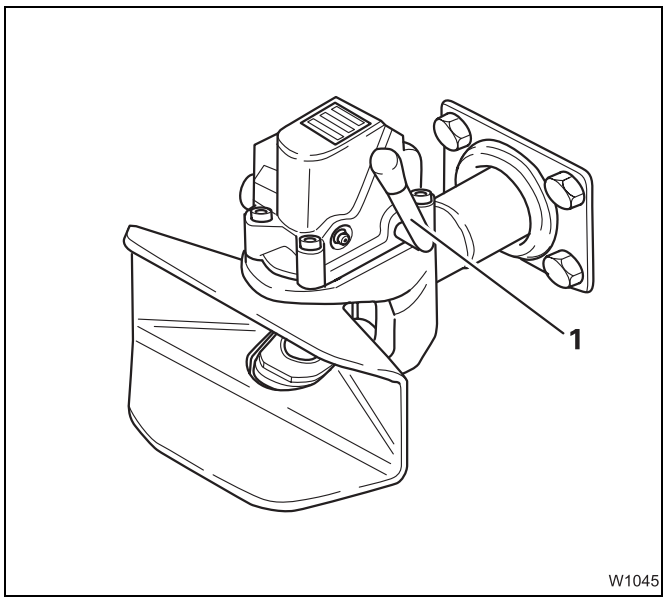
- Turn off the ignition.

The auxiliary heater continues to run and the remaining time which was set last is displayed on the *Auxiliary heater* display in minutes (e.g. 27 minutes).

- Set the desired remaining time with the *Input* buttons while the value is flashing. You can set a heating period of 1 to 120 minutes.

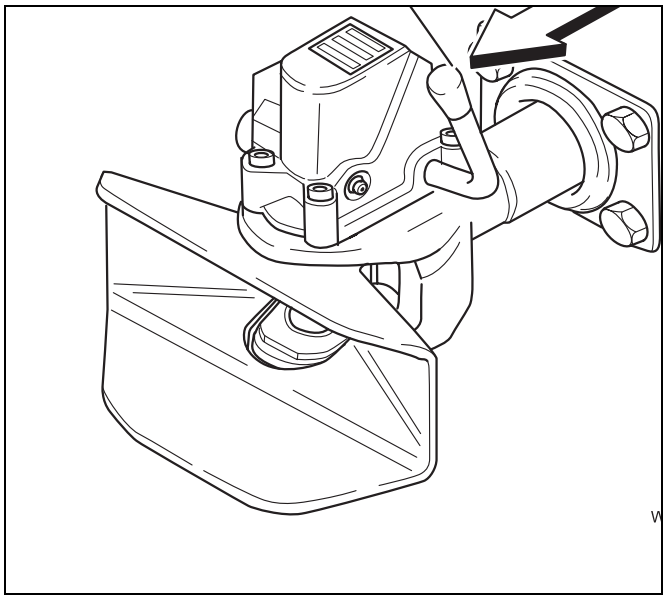
- Wait five seconds until the *Auxiliary heater* display is no longer flashing and the current time is displayed again. The remaining time is now set.

16.01.2006



- Secure the trailer with the service brake and chocks as prescribed to prevent it from rolling away.
- Open the towbar coupling.
  To do so, push up the hand lever (**1**), which engages in the highest position.
- Drive the truck crane carefully away from the trailer.

Risk of injury when closing the towbar coupling by hand
When closing the coupling, the hand lever moves down with great force in the direction of the coupling jaw. Therefore only start the closing procedure by moving the lever quickly in the direction of the coupling jaw with the heel of your hand. If you hold the hand lever or pull it down, your hand can get caught and crushed.



You must close the towbar coupling by hand if no trailer is connected. Proceed as follows:

- Move the hand lever knob (**1**) briefly in the direction of the coupling jaw (observe the arrow).

Risk of injury by actuating the automatic closing device
Always close the coupling if no trailer is connected. This prevents people from being injured by accidentally actuating the automatic closing device.

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7.2 Rigging work for driving with a trailer

To set the main boom down on a trailer for driving, the truck crane must be equipped with a slewing gear freewheel and boom floating position.

Before driving, you must:

– Switch on the slewing gear freewheel; ➠ p. 7 - 8.

– Switch on the boom floating position; ➠ p. 7 - 10.

– Switch on boom pre-tensioning, if necessary; ➠ p. 7 - 12.

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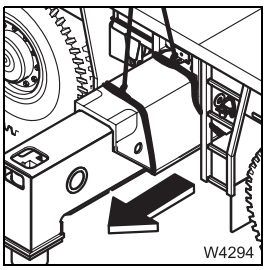
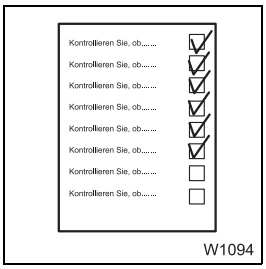


6. Pull the outrigger beams out of the outrigger box; ➠ *Pulling out the outrigger beam*, p. 7 - 30.



7. Depending on the equipment, remove further outrigger beams in accordance with this checklist in the same manner.

8. Set down the outrigger beams and outrigger pads on the separate vehicle; ➠ *Transporting the outrigger beams/pads*, p. 7 - 34.

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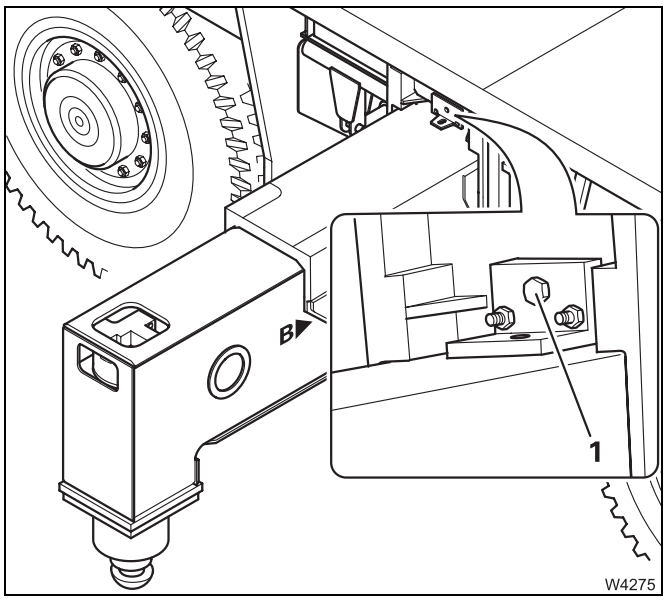
7.3.7 Transport/operating position of the holding angle

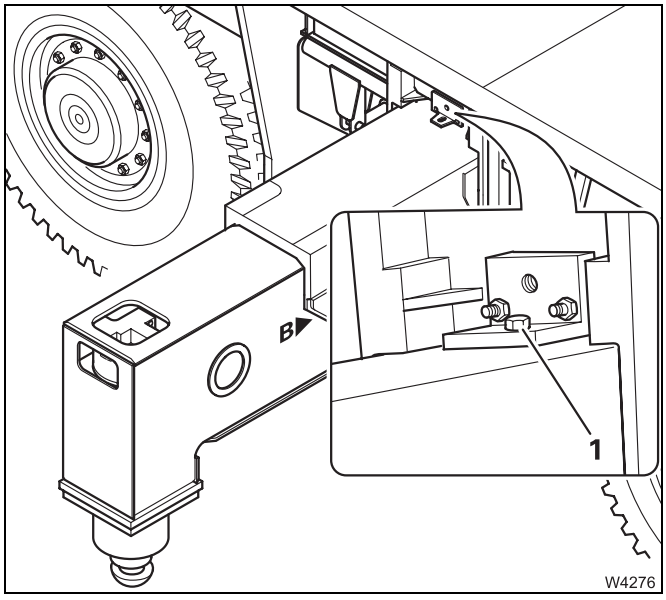
The telescoping ropes for the outrigger beams are fastened to the extension cylinder on one side and to a holding angle on the other side. The holding angle is directly above the outrigger beam.



Operating position

The holding angle must be fastened to the outrigger box for operation, so that a support point is available for pushing out the outrigger beam.

- Fasten the holding angle to the outrigger box with the screw (**1**).
- Bring the holding angle on the opposite side into operating position as well.



Transport position

The holding angle must be fastened directly to the outrigger beam for transport, so that the outrigger beam and ropes can be completely removed and installed. There is a bore hole at the top of the outrigger beam for this purpose.

- Extend the outrigger beam to the outrigger span of 8.70 x 6.00 m , so that the bore holes in the outrigger beam are in line with those in the holding angle.
- Fasten the holding angle to the outrigger beam with the screw (**1**).
- Bring the holding angle on the opposite side into transport position as well.

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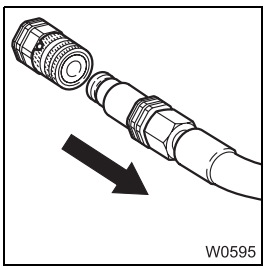
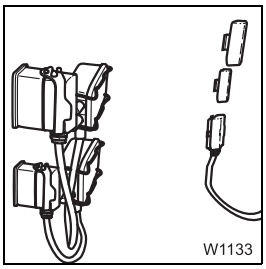
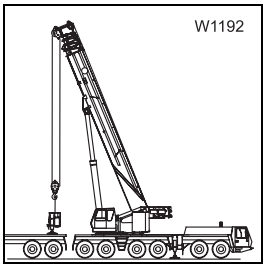


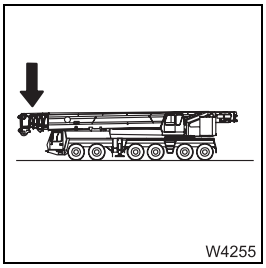
8. Disconnect the hydraulic connection between the outrigger box and carrier; ➠ *Disconnecting/establishing the hydraulic connection*, p. 7 - 44.



9. Disconnect the electrical connection between the carrier and outrigger box; ➠ *Establishing/disconnecting the electrical connection*, p. 7 - 43.

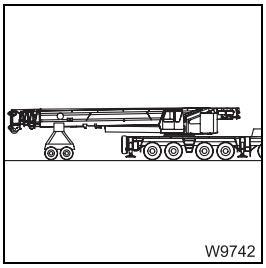


10. Raise the outrigger box out of the holders on the carrier with the truck crane and set it down on the separate vehicle; ➠ *Attaching/raising the outrigger box with the truck crane*, p. 7 - 45.

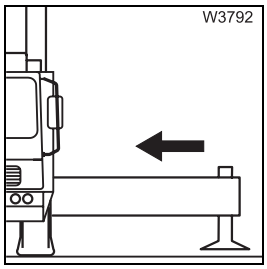


11. **If the main boom is to be set down on the boom rest:**
    – Raise the main boom to an angle permitted by the SLI and slew the superstructure to the front; ➠ *Slewing with the rear outrigger box (ROB) removed*, p. 7 - 49.

    Enter the SLI rigging code for the outrigger span of 8.70 x 8.50/2.40 m according to the *Lifting capacity table* for the 180° position to the front and set down the main boom on the boom rest.



12. **If the main boom is to be set down on a trailer:**
    – Attach the supplied supports to the bearings provided for that purpose on the rear of the truck crane; ➠ p. 7 - 51.
    – Raise the main boom to one of the angles permitted by the SLI.
    – Slew the superstructure to the rear and set down the main boom on the trailer; ➠ p. 7 - 52.



13. Retract the front outrigger cylinders and outrigger beams and secure them.

14. Secure the outrigger box on the separate vehicle for transport; ➠ *Transportation on a separate vehicle*, p. 7 - 50.

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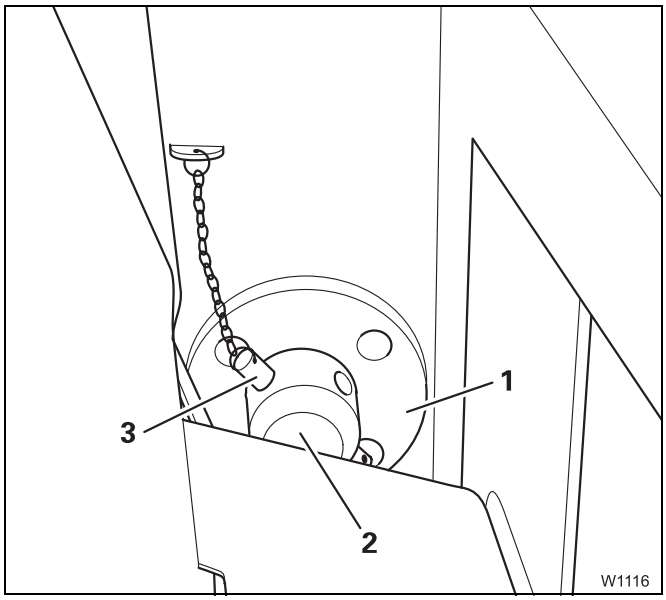
7.4.9 Locking the outrigger box to the carrier and unlocking it again

There are two pins on the outrigger box which grip the carrier in the respective retainers. The pins are hydraulically extended and retracted.

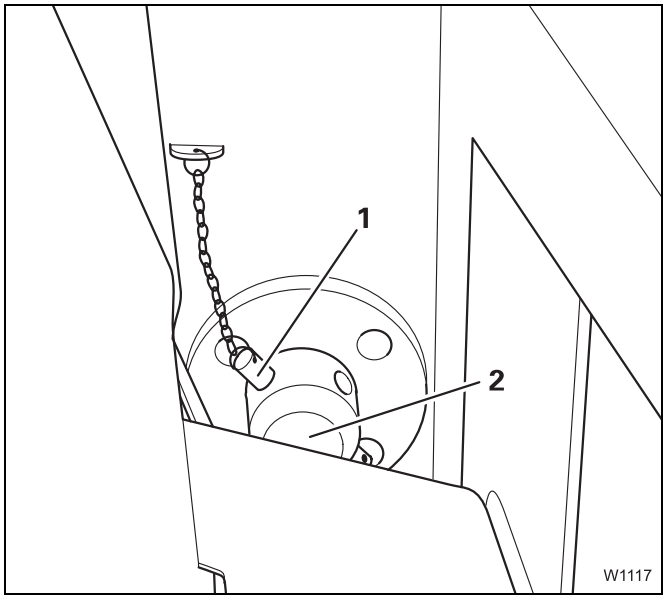
Locking the outrigger box

You can lock the outrigger box to the carrier once it is attached to the rear of the carrier.



- Extend the pins (**2**) on the outrigger box completely through the retainers (**1**) ➠ *Extending and retracting the pins*, p. 7 - 48.
- Secure both pins with the retaining pins (**3**).

Releasing the locking pins



- Pull the retaining pins (**1**) out of the pin (**2**).
- Fully retract the pins (**2**) on the outrigger box; ➠ *Extending and retracting the pins*, p. 7 - 48.

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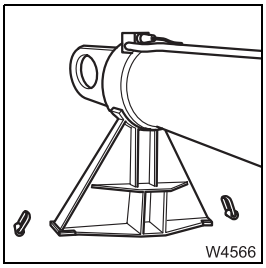
7.5.2 CHECKLIST: Installation of the main boom

This checklist is not a complete set of operating instructions. There are accompanying operating instructions which are referred to by cross-references. **Observe the warnings and safety instructions specified there**.

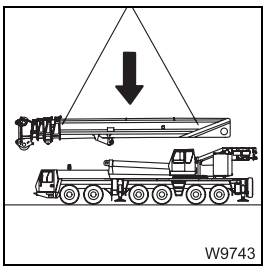
Prerequisites

- The truck crane is rigged with an outrigger span of at least 8.70 m x 2.68 m ; ➠ *Outrigger span*, p. 14 - 27.
- The superstructure is slewed to the front and the superstructure lock is engaged.
- The parking brake is engaged, the truck crane has been levelled with the level adjustment system and the suspension is locked.
- The battery master switch of the superstructure is switched on.
- The installation site meets the space requirements.

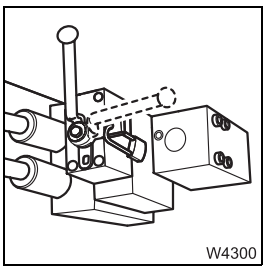
Installing the main boom



1. Remove the holding rope for securing the derricking cylinder.



2. Lift the main boom to the turntable with an auxiliary crane; ➠ *Lifting the main boom onto the turntable*, p. 7 - 62.



3. Check whether the boom floating position is switched on in order to relieve the pressure on the derricking cylinder; ➠ *Relieving the pressure on the derricking cylinder*, p. 7 - 78

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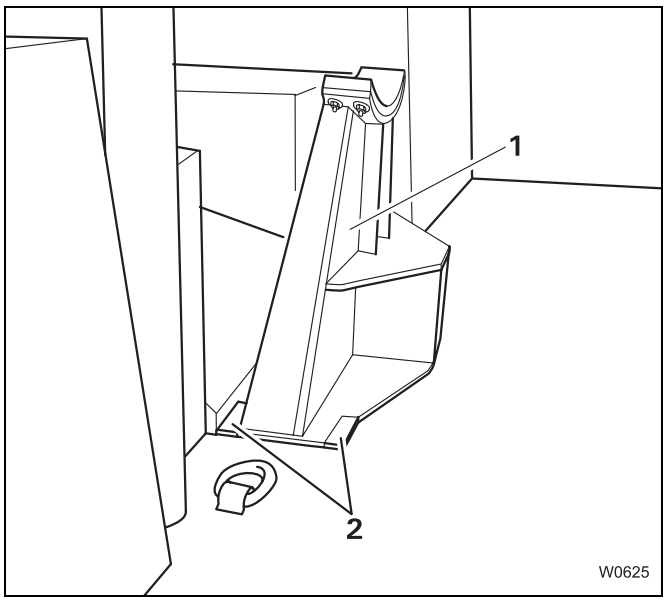
7.5.6 Locking pin on the derricking cylinder head eyelet

When rigged, the main boom is connected to the derricking cylinder with a pin. To remove or install the main boom, this pin must be pulled out or pushed in with a pulling device (additional equipment).
To make this possible, the derricking cylinder must be raised slightly.
A hand operated lifting equipment device, which is held in the supplied support of the derricking cylinder, is used for this purpose.
The pin is pulled out of the derricking cylinder head eyelet or pushed into it by a hydraulic cylinder. The hydraulic cylinder is attached to the main boom and operated by a hand pump.

Operation of the lifting device



- Place the support (**1**) for the derricking cylinder in the holding angle (**2**) on the carrier platform.
- Remove the lifting device from the support.

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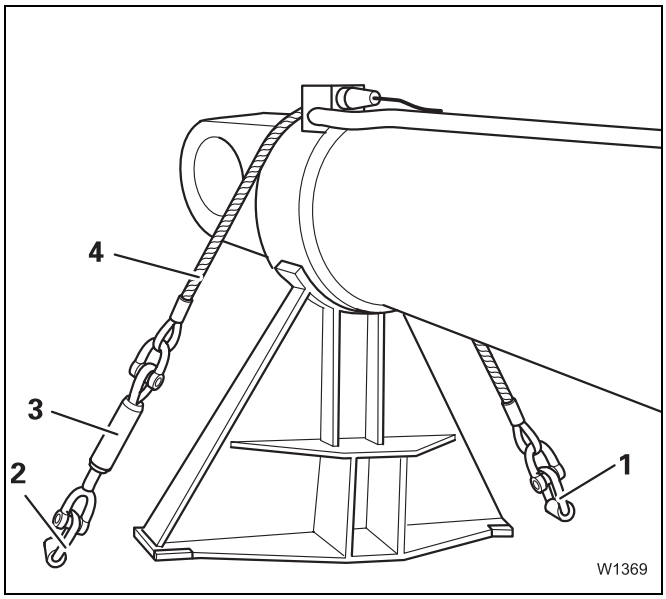
7.5.10 Before on-road driving

Securing the derricking cylinder for on-road driving

Before driving on the road with the main boom removed, you must secure the derricking cylinder in the support on the carrier with a holding rope. The holding rope is tightened with a turnbuckle.



The turnbuckle, the shackles and the holding rope are in the toolbox.

- Connect the eyelet (**1**) to one end of the holding rope (**4**) with a shackle.
- Put the free end of the holding rope over the derricking cylinder.
- Connect the turnbuckle (**3**) and the free end of the holding rope with a shackle.
- Connect the free end of the turnbuckle to the eyelet (**2**).
- Turn the turnbuckle to tighten it.

Transportation of the main boom

The main boom is transported on a separate vehicle. Dimensions and weight of the main boom; ➠ *Dimensions and weights – Main boom*, p. 17 - 6.

- Load the main boom in such a way that no motorists and cyclists are put at risk. Secure the main boom with holding ropes to prevent it from sliding from the transport vehicle!
- Load the transport vehicle in such a way that the weight is evenly distributed.
- Transport the main boom only on a separate vehicle of sufficient load bearing capacity.
- Make sure the cables and ropes on the main boom are not damaged and that the valve on the connections for the pulling device of the main boom pivot pin remains closed during transport.

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8.3 Towing away the truck crane

Observe the following if the truck crane has to be towed away:

- The truck crane may only be towed away with a tow bar. Attach the tow-bar to the tow-rod coupling on the front bumper of the truck crane and to the towbar coupling of the towing vehicle.
- The statutory regulations concerning the overall length of the towing and towed vehicle, including the towing bar, must be observed.
- If the vehicle engine, the steering and the service brake still work, you can tow the truck crane with a lorry.
- If the vehicle engine, the steering or the service brake no longer work properly, the truck crane must be towed away with a special breakdown truck.
- The front towing coupling is designed for a maximum tractive force of 10 t . The tractive force can be applied forwards or at an angle of 45° to both sides from the longitudinal axle of the truck crane.

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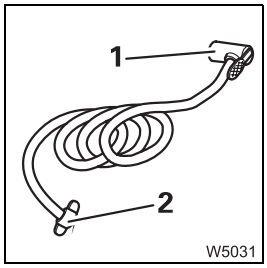
8.4.2 Filling the tyres yourself

If an appropriate filling hose is available, you can fill the tyres with the compressed air system of the truck crane in emergencies.
The tyres can be filled up to a maximum pressure of about 8 bar. This pressure might not correspond to the prescribed tyre pressure, depending on the tyres; ➠ *Technical specifications of the carrier – Tyres*, p. 9 - 6.

Risk of accidents due to impermissible tyre pressure
Fill the tyres up to the prescribed pressure at the maximum if the prescribed pressure is below 8 bar.
In this way you prevent the tyres from becoming damaged during driving, and bursting.

Always drive directly to a service station or garage and adjust the tyre pressure as soon as you have filled the tyres yourself.

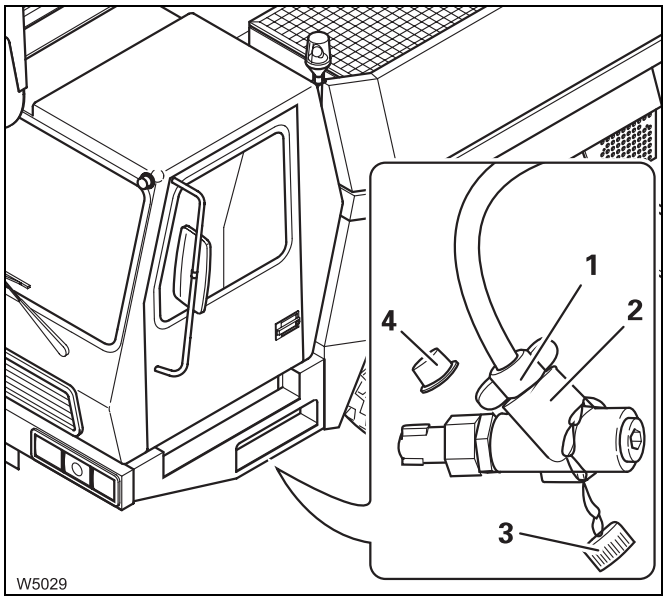


The tyre inflator hose is in the toolbox of the truck crane.

A tyre inflator connection (**1**) and a screw connection (**2**) are attached to the tyre inflator hose.

The tyre inflator hose is connected to the filler connection of the truck crane's compressed air system.

Connecting the filling hose



- Screw the protective cap (**3**) off the filler connection (**2**).
- Remove the protective cap (**4**) from the screw connection (**1**).
- Screw the screw connection (**1**) onto the filler connection (**2**).

The valve in the filler connection opens as the screw connection is screwed on and the same pressure is in the tyre inflator hose as in the compressed air system of the truck crane.

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Malfunction	Cause	Remedy
Engine electronic system **warning lamp on while driving, engine output decreases continuously**	Cooling water level too low, oil level too low, air filter dirty	Cooling water level; ➠ p. 5 - 7; oil level; ➠ p. 5 - 8; air filter; ➠ *Maintenance manual*
	V-belt too loose	Check V-belt tension; ➠ Operating instructions of the vehicle engine manufacturer
	Plug or cable on control unit loose	Check plugs on control unit (on the right next to the fuses); ➠ p. 8 - 18
	Cabling behind the accelerator pedal damaged	Check the cables and notify ***CraneCARE*** in the event of damage

8.6.2 Malfunctions of the automatic transmission

Malfunction	Cause	Remedy
Automatic transmission shift lock **warning lamp on while driving**	Electronic gear system has detected a malfunction	➠ *Procedure in the event of malfunctions of the automatic transmission*, p. 8 - 32.
Gear oil temperature too high	Oil level in automatic transmission too low	Check oil level and top up if necessary; ➠ p. 5 - 18.
	Temperature in coolant circuit too high	➠ *Checking the coolant level*, p. 5 - 7.
Transmission only shifts up to second gear	Level adjustment system switched on	Switch off level adjustment system; ➠ p. 6 - 45.
	Cold start program active	Wait until gear oil temperature rises
Transmission not shifting automatically	Fuse F1/6 on carrier is blown	Check fuses and replace them if necessary; ➠ p. 8 - 18.
Transmission not reacting when pressing buttons on the control panel	Fuse F3/1 on carrier is blown	Check fuses and replace them if necessary; ➠ p. 8 - 18.
Transmission not downshifting after reducing the highest possible gear	Speed too high, engine speed too high	Brake truck crane until shift point is reached; ➠ p. 6 - 18.

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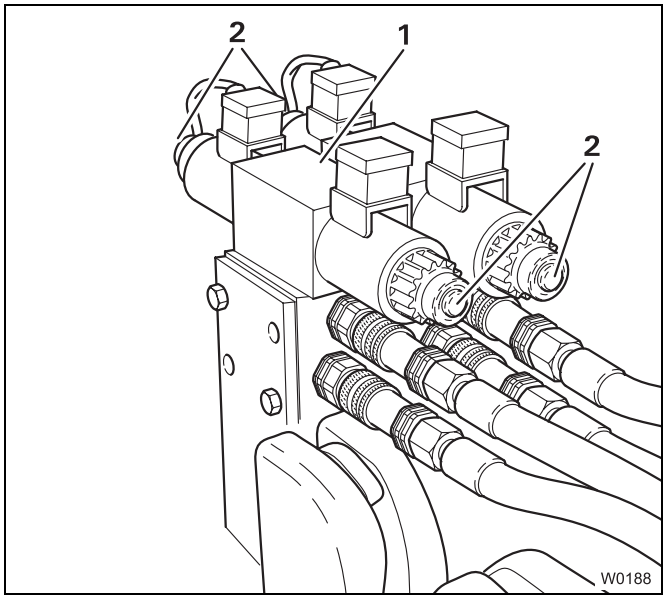
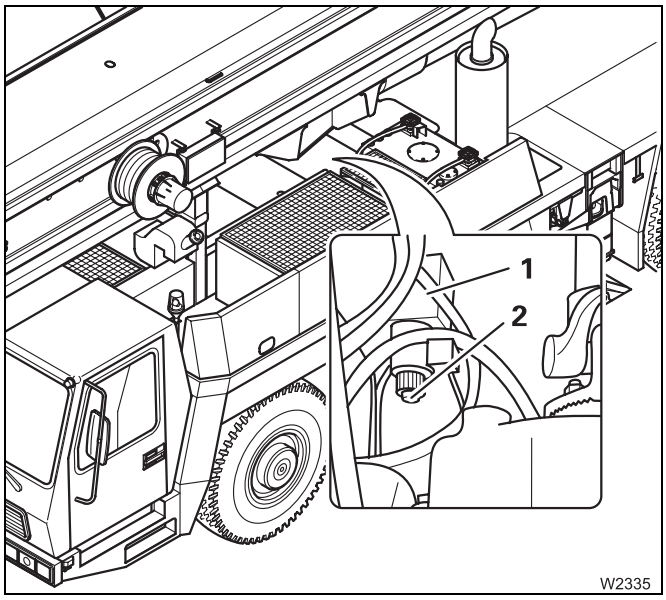
8.7.3 Emergency operation of the solenoid valves for the outriggers



The truck crane has four groups of solenoid valves for the emergency operation of the outrigger beams and outrigger cylinders. A solenoid valve group (**1**) is above each outrigger beam.

Each solenoid valve group has four buttons (**2**). With the buttons of a solenoid valve group you can only move the outrigger beams and outrigger cylinders on the side opposite (➠ p. 8 - 36).

The buttons are only active if a second person operates the 47-Y9 pressure build-up valve simultaneously.



- Remove the rearmost cover from the carrier.

The 47-Y9 pressure build-up valve (**1**) is on the left-hand side of the crane carrier, behind the automatic transmission.

- Press in the button (**2**) with a pointed object.

The 47-Y9 valve is now actuated and you can move the outriggers with the buttons on the solenoid valve groups.

The diagram on the next page shows you the positions and designations of the individual solenoid valves on the truck crane. You can find out which button you need to press for the desired movement of the outrigger beam or supporting cylinder in the accompanying tables.

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Dimensions for driving on public roads

All dimensions apply to the on-road driving mode (➠ *Driving modes and rigging for on-road driving*, p. 7 - 1) with the hoist mirror folded in.

Dimension and weights of the parts which have to be transported on separate vehicles when driving on the road: ➠ *Dimensions and weights of removable parts*, p. 9 - 4.

Length:	18.05 m (without auxiliary hoist)
Width:	3.00 mwith 14.00 R 25 or 16.00 R 25 tyres 3,10 m with 20.5 R 25 tyres
Height at on-road level:	3.95 m –130/+170 mm suspension range with 14.00 R 25 tyres
	4.00 m –130/+170 mm suspension range with 16.00 R 25 tyres
Front angle of negotiable banks:	approx. 16° at on-road level
Rear angle of negotiable banks:	approx. 14° at on-road level
Total weight:	72 t
Axle loads:	12 t per axle in on-road mode

16.01.2006

10 Index

Information on how to use the index; ➠ p. 1 - 19.
To avoid making the index unnecessarily long and unclear, we have not included every single element from the instrument panel. Those elements, such as rocker switches and buttons, warning and indicator lamps and displays are described and named in detail in the overviews of chapter 4 and 11, *Description of the truck crane*.
From there, you will be referred to more detailed descriptions of these elements.

16.01.2006

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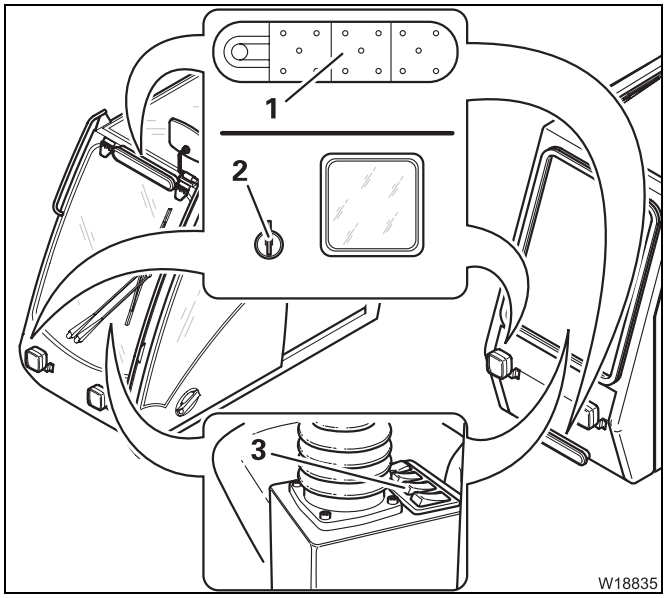
Additional pages

SLI override

These additional pages only apply to truck cranes with additional operating elements:



Additional operating elements:

1 Status display

2 Key-operated SLI override switch

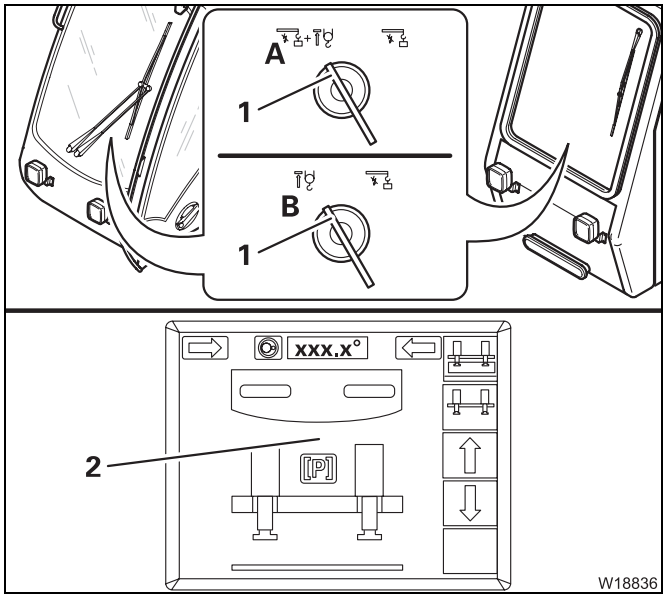
3 Raise switch

These change the following:

– Cancelling automatic mode for rigging the counterweight

and

– The procedure for the SLI override



Cancelling automatic mode

When the counterweight menu (**2**) is displayed, turn the key-operated switch (**1**) **anti-clockwise**, regardless of whether symbol (**A**) or (**B**) is displayed.

20.05.2010

Table – Error codes

The following table contains error codes, their causes and possible remedies.

Representation of error codes, ➠ *Operating instructions*

Error code			Cause	Remedy
9	**14**	**4**	Key-operated rigging switch pressed, no override effective	– Start the engine; – Reduce degree of utilisation to less than 110% – Move the control lever within 10 seconds after operation
9	**15**	**4**	Raise switch pressed, no override effective	– Start the engine; – Press switch again
9	**16**	**4**	Key-operated SLI override switch pressed, no override effective	– Start the engine; – Press switch again
9	**14**	**5**	**Information code:** Key-operated rigging switch pressed, override effective	No measures required.
9	**15**	**5**	**Information code:** Raise switch pressed, override effective	
9	**16**	**5**	**Information code:** Key-operated SLI override switch pressed, override effective	

20.05.2010

[1)] Additional equipment

16.01.2006

1 No function
1.1 Current lattice extension inclination display ➠ p. 11 - 49
2 Lattice extension length input ➠ p. 11 - 47
2.1 Lattice extension length display ➠ p. 11 - 47
3 Reeving input ➠ p. 11 - 46
3.1 Reeving display ➠ p. 11 - 46
4 Counterweight input ➠ p. 11 - 47
4.1 Counterweight display ➠ p. 11 - 47
5 SLI code input ➠ p. 11 - 46
5.1 SLI code display ➠ p. 11 - 46
6 Outrigger span input ➠ p. 11 - 48
6.1 Outrigger span display ➠ p. 11 - 48
7 Additional function **F 1** on ➠ p. 11 - 46
8 Numerical pad with the buttons 1 to 0 ➠ p. 11 - 45
9 Acknowledge ➠ p. 11 - 47
10 Confirm entry ➠ p. 11 - 47
11 Display/Enter time and date ➠ p. 13 - 39

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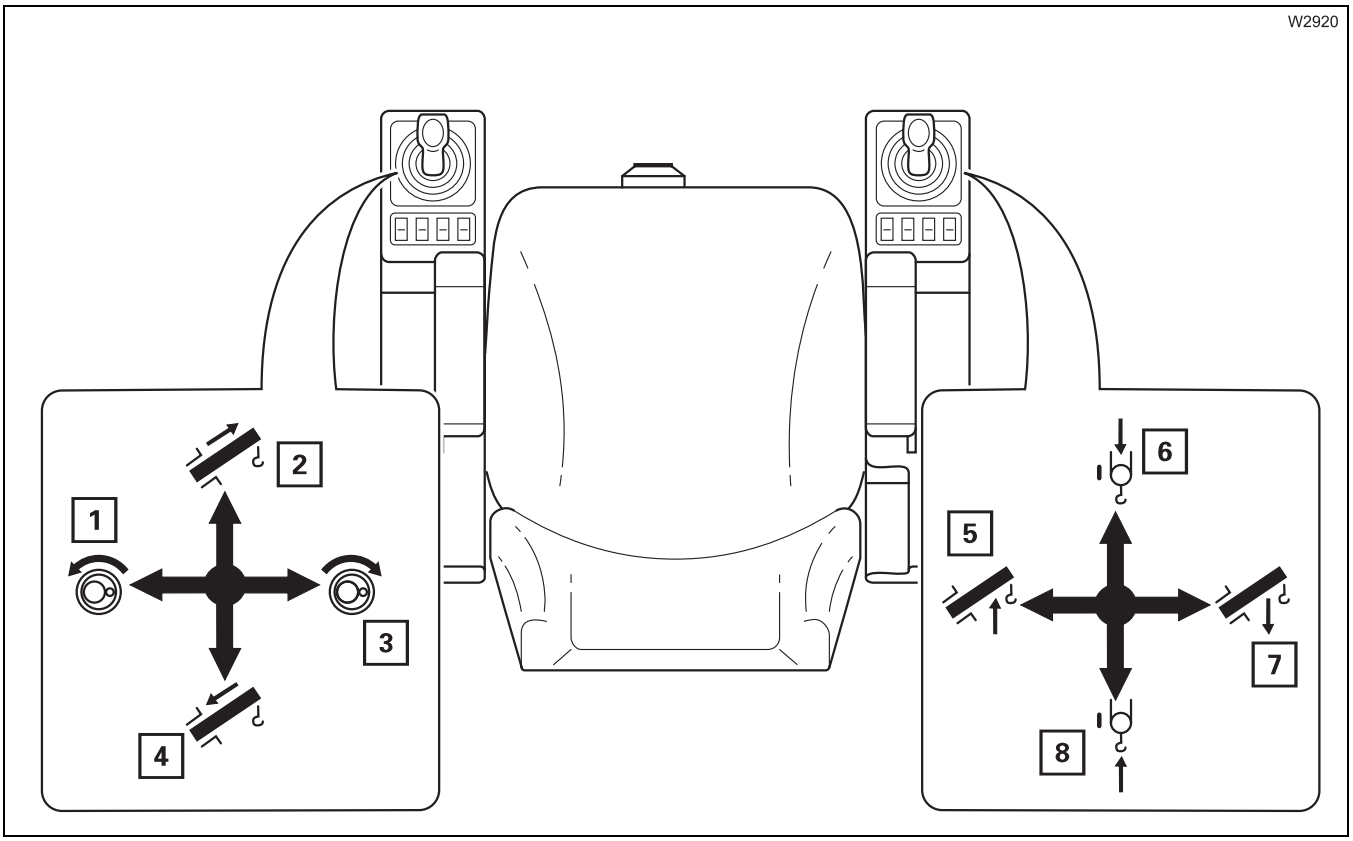
Version 2 (additional equipment)

The diagrams in this section illustrate the control lever assignment of version 2 (truck cranes without auxiliary hoist); ➠ *Version 1 (standard)*, p. 11 - 24.



Left-hand control lever assignment

- **1** Slew to the left
- **2** Extend
- **3** Slew to the right
- **4** Retract

Right-hand control lever assignment

- **5** Raise derricking gear/lattice extension [1)]
- **6** Lower main hoist
- **7** Lower derricking gear/lattice extension [1)]
- **8** Raise main hoist

[1)] Additional equipment

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F1 **"Display statuses" membrane button**

The *Display statuses* menu is selected by pressing this button. This menu shows the current statuses and operating hours of the crane engine, the hoists, the derricking gear, the slewing gear, the telescoping mechanism, the control systems, the locks and the lattice extension. If a function is completely or partially disabled by the crane control due to an error, the menu indicates that there is an error; ➠ *Display statuses menu*, p. 13 - 90.

F2 **"Power unit speeds/Critical load control" membrane button**

The *Power unit speeds/Critical load control* menu is selected by pressing this button.
The maximum speed for the operation of the main boom and lattice extension can be entered in this menu for the slewing gear, hoists, telescoping mechanism, derricking gear and the derricking cylinder of the lattice extension. The critical load control can be switched on and off in a further submenu;
➠ *Power unit speeds/critical load control menu*, p. 13 - 94,
➠ *Critical load control*, p. 13 - 102.

F3 **Control lever emergency program membrane button**

The *Control lever emergency program* menu is selected by pressing this button. In emergencies the corresponding crane operations can be carried out with this menu if one of the control lever fails;
➠ *Control lever emergency program*, p. 16 - 60.

F4 **"Telescoping display and teleautomation" membrane button**

The *Telescoping display and teleautomation* menu is selected by pressing this button. This menu shows the current telescoping statuses of all telescopic sections as a percentage.
The current extended length of the telescoping cylinder is displayed in feet if all telescopic sections are locked; ➠ *Telescoping mechanism*, p. 13 - 57.
The "Fully automatic telescoping" submenu is selected by pressing the button a second time; ➠ *Telescoping in fully automatic mode*, p. 13 - 83.

F5 **"Enter telescoping after emergency operation" membrane button**

This button is used to select the *Enter telescoping after emergency operation* menu. For safety reasons, the button must be pressed three times in a row within two seconds in order to select the menu. This menu is required to enter the current telescoping if the crane control is suddenly cut off from the power supply while saving values or if telescoping was performed in emergency mode; ➠ *"Enter telescoping after emergency operation" menu*, p. 16 - 68.

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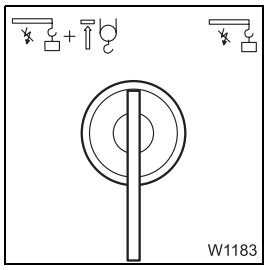
Safe load indicator

➠ *Operation of the safe load indicator (SLI)*, p. 13 - 17.

This section does not contain all of the requirements which much be fulfilled in order for several operating elements to be active.
If some operating elements do not work, first read the following sections which are referred to at the respective places before contacting ***CraneCARE***.

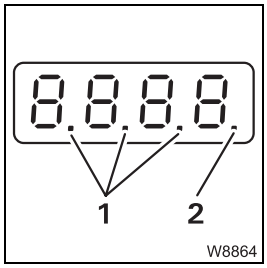


Key-operated override switch

- **Turn to the right:** *SLI* shutdown bypassed – crane functions released, no more monitoring; ➠ p. 13 - 38
- **Turn to the left:** *SLI* shutdown and *Lifting limit switch* shutdown bypassed – crane functions released, no more monitoring.

Input elements with displays

➠ *Operation of the safe load indicator (SLI)*, p. 13 - 17.

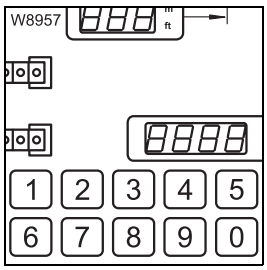


Displays

Display – maximum of four digits

1 Point for decimal places

2 Signalling point



Numerical pad

- **Buttons 1 to 0**
  - SLI code, reeving input
  - Date/time display
- **Additional functions:**
  - Date/time input
  - Lamp test

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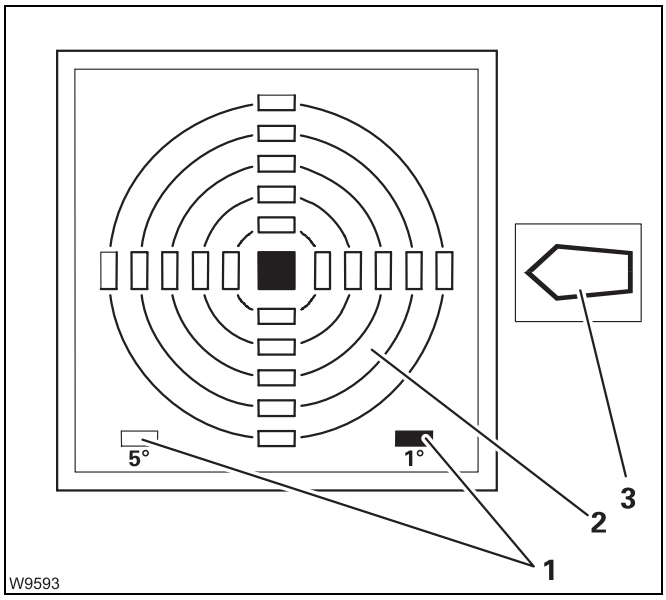
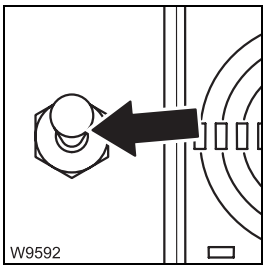
Switch box for electronic level

➠ *Checking the alignment of the truck crane*, p. 14 - 45.



The LEDs of the display (**2**) indicate the current alignment of the truck crane.
The measuring range currently set (**1**) is lit up (1° or 5°).

The allocation of the LEDs always corresponds to how the carrier is displayed on the symbol (**3**); ➠ *Horizontal alignment*, p. 13 - 41.



Toggle switch for changing the measurement range

Changes the measurement range of the electronic level on the carrier between an angle of 1° and 5°.

For a measurement range angle of between 0° and 1°: Press up the toggle switch.

For a measurement range angle of between 0° and 5°: Press down the toggle switch.

The LED of the measuring range currently set is on; ➠ *Reading the displays*, p. 14 - 46.

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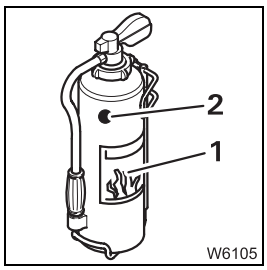
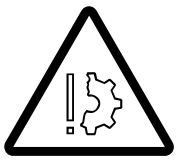
Fire extinguisher

The fire extinguisher is behind the crane cab seat.



Observe the operating instructions (**1**) for the fire extinguisher.

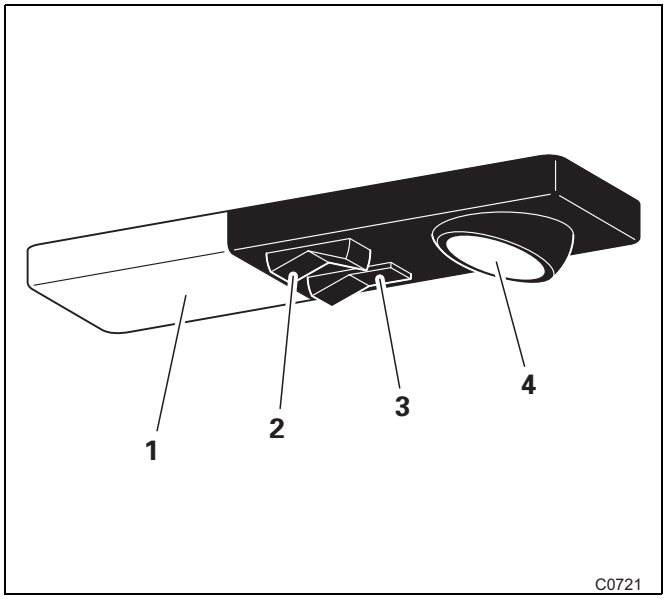
Have the fire extinguisher serviced by trained personnel in good time before the maintenance interval specified on the label (**2**) expires.



Danger due to the fire extinguisher not working
There is no guarantee that the fire extinguisher is still working properly after the maintenance interval on the label has expired.

Cab lighting

The crane cab lighting is on the ceiling behind the crane cab seat.



1 Cab lighting

2 Cab lighting switch

Pressed in to the front:	on by door contact
Pressed in to the rear:	permanently off
Pressed in to the rear:	permanently on

3 Reading lamp switch

4 Reading lamp

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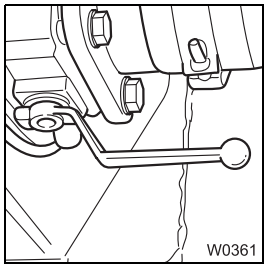
12 Crane engine

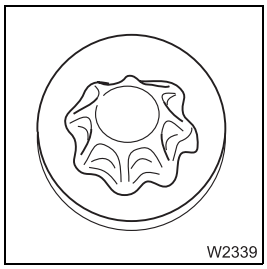
12.1 Starting/turning off the crane engine

12.1.1 CHECKLIST: Starting the crane engine

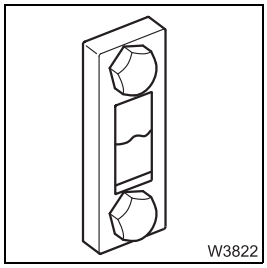
This checklist is not a complete set of operating instructions. There are accompanying operating instructions which are referred to by cross-references.
Observe the warnings and safety instructions specified there.



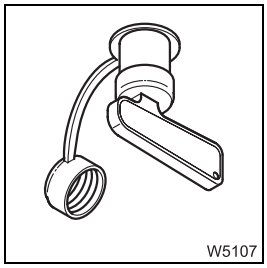
1. Check the positions of the shut-off valves of the hydraulic system; ➠ *Checking the shut-off valve in the hydraulic system*, p. 12 - 4.



2. Check the coolant level of the crane engine; ➠ *Checking the coolant level*, p. 12 - 5.



3. Check the oil level in the hydraulic system; ➠ *Checking the hydraulic oil level*, p. 12 - 6.



4. Switch on the battery master switch; ➠ *Switching on the battery master switch*, p. 12 - 4.

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Starting the crane engine

Refer to the accompanying operating instructions for the crane engine for the operation of the crane engine.

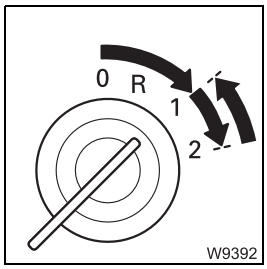
If the crane engine of your truck crane is equipped with a flame start system; ➠ *Starting the crane engine with the flame start system*, p. 12 - 11.

Starting the crane engine without the flame start system

This section applies to starting the warm or cold crane engine.

Danger of explosions when using starter fuel
Starter fuel (e.g. starter spray) may never be used to start the warm crane engine. The starter fuel sprayed into the suction unit can ignite.

- Do not press the accelerator.
- Turn the ignition key to position **2** and hold it there until the crane engine goes on.
- Let go of the ignition key after the engine has gone on.



If the engine does not go on, abort the starting procedure after about 15 seconds and wait one minute before trying again.

If the engine does not go on after several attempts; ➠ *Malfunctions on the crane engine*, p. 16 - 13.

Starting the crane engine with the flame start system

At low coolant temperatures, the flame start system heats the suction air of the crane engine by burning fuel in the suction line.

This section applies to starting the warm or cold crane engine.

Danger of explosions when using starter fuel
Starter fuel (e.g. starter spray) may never be used to start the crane engine. The starter fuel sprayed into the suction unit can ignite.

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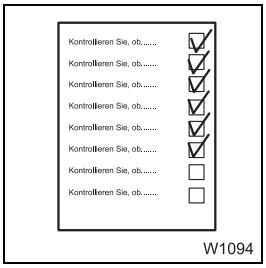
13 Crane operation

13.1 Checking the truck crane before working with the crane

13.1.1 CHECKLIST: With rigged truck crane

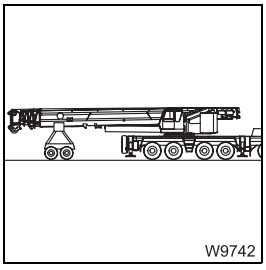
This checklist is not a complete set of operating instructions. There are accompanying operating instructions which are referred to by cross-references.
Observe the warnings and safety instructions specified there.

This checklist only applies if the truck crane has been rigged and is at the site.
If the truck crane has not yet been rigged, you must proceed in accordance with the *CHECKLIST: Rigging*; ➠ p. 14 - 1.



1. Perform the tasks and inspections required to start the crane engine; ➠ *CHECKLIST: Starting the crane engine*, p. 12 - 1.
   Furthermore check the respective lamps with the crane control lamp test; ➠ *Turning on the ignition*, p. 12 - 9.

2. The suspension system is locked; ➠ *Locking the suspension*, p. 14 - 33.



3. **With additional equipment for trailer operation, check whether:**
   - The boom floating position is switched off; ➠ p. 14 - 20.
   - The slewing gear freewheel is switched off; ➠ p. 14 - 18.
   - The boom pre-tensioning is switched off; ➠ p. 14 - 20.

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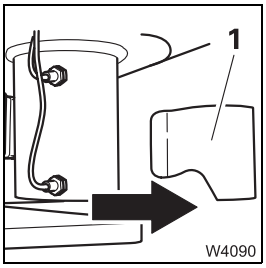
13.1.6 Superstructure lock

The superstructure can be locked with a locking pin in the 0° position to the rear or 180° position to the front to prevent it from turning. The locking pin is retracted and extended hydraulically and can be controlled from the crane cab.



- Remove the fuse box from the superstructure lock, if necessary; ➠ p. 14 - 18.

- Lock the superstructure whenever

– You work with the truck crane in the 0° position to the rear.

– You have set down the main boom in the 180° position to the front for on-road driving.

– Slewing is not allowed with the current rigged counterweight because the outrigger span is too small.

A table in the section titled *Slewing with rigged counterweight*, p. 14 - 76 shows you for which combinations of the counterweight and outrigger span the superstructure has to be locked.

Please also observe the section titled *Permissible slewing ranges when working with the crane*, p. 13 - 45.

Danger of overturning if the superstructure lock is released
Lock the superstructure whenever one of the three points mentioned above applies. In this way you prevent the superstructure from slewing out of the 0° position and overturning due to negative influences (such as accidentally activation of the slewing gear or due to swinging loads) or from overturning backwards due to the excessive counterweight mass.

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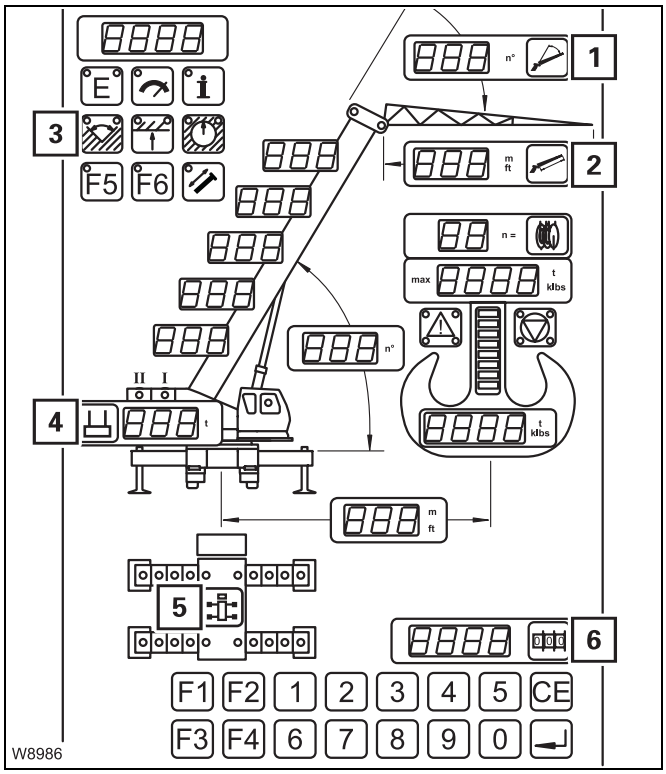
13.2.2 Entering the rigging mode

For a complete rigging mode input, you must enter, confirm and accept the rigging mode and the reeving separately.

Risk of accidents if the rigging mode is incompletely set
The crane movements are enabled as soon as you accept the SLI code **or** reeving. Therefore, always check whether both values correspond to the current rigging mode before operating the crane.
In this way you prevent the SLI from incorrectly calculating the permissible load and the truck crane from being overloaded or overturning.



There are two ways of entering the rigging mode.

– You can enter the SLI code for the current rigging mode on the display (**6**).

or

– You can select the individual components (**1**) to (**5**) for the current rigging mode one after another.

With both ways, you must confirm and accept the current rigging mode on the display (**6**).

The entire input procedure for the SLI code is described in the following section. To enter the rigging mode via individual components; ➠ *Entering individual components*, p. 13 - 26.

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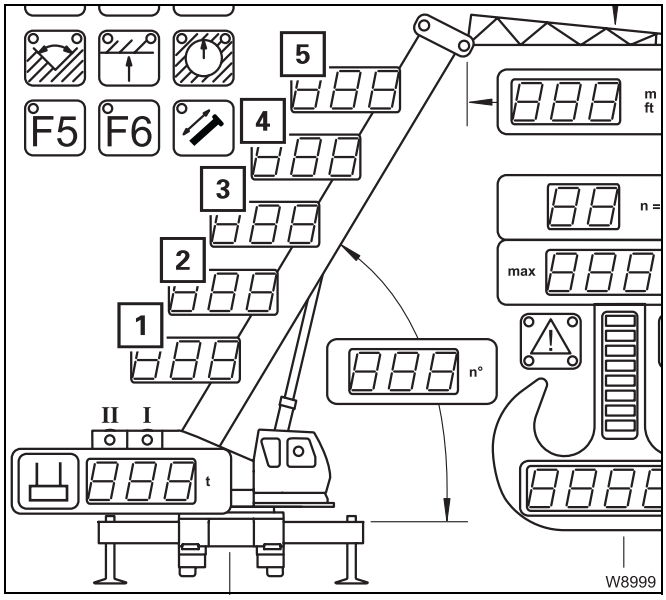
13.2.4 Displays during crane operation

Continuous displays

The following information is constantly displayed in addition to the displays of the rigging mode:



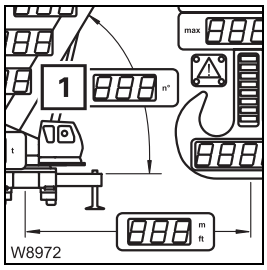
The current telescoping

The displays (**1**) to (**4**) show the current telescoping of the telescopic sections I to VI:

– Fixed lengths are displayed as decimal values (e.g. **1.00** or **0.50**).

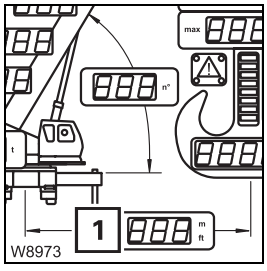
– Intermediate and telescoping lengths are displayed in percent (e.g. **100** or **50**).

Surplus displays have no function. With four telescopic sections, for example the display (**5**).



The current main boom angle

The display (**1**) indicates the current main boom angle in relation to the horizontal position. Angles under the horizontal position are displayed with a minus sign, e.g. –3°.



The current working radius

The display (**1**) shows the current working radius = horizontal distance between the turntable axle and hook block axle. The displayed value is calculated on the basis of the telescoping and the main boom or lattice extension angle. The value is displayed either in meters (m) or feet (ft), depending on the setting.

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13.3 Crane work with the main boom

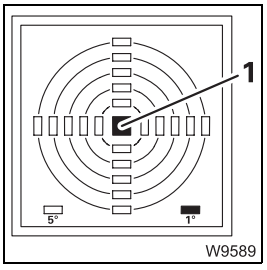
If a swing-away lattice extension is folded when operating the main boom, the loads specified in the *Lifting capacity tables* are reduced. The decreased values are shown directly on the *Maximum load* display. The relevant formulas and examples for calculating these values during operations planning can be found in the *Lifting capacity tables*.

13.3.1 External influences when working with the crane

Horizontal alignment

The horizontal alignment of the truck crane may change during crane work due to the varying load on the ground.

Risk of accidents if the truck crane is not level
The SLI calculates the working radius from the length and angle of the main boom. The actual working radius is changed and there is danger of the crane overturning if the truck crane is not level!



Check the horizontal alignment of the crane on the display of the electronic spirit level in the crane cab immediately before commencing crane work. Only the LED at the centre (**1**) of the level is on if the crane is level.

Check the electronic level regularly while working with the crane. If a diode lights up on the crossed bars, the truck crane is no longer level.
Due to deformation of the frame, the horizontal alignment can change up to 2° if the superstructure is slewed out of the 0° or 180° position.
If the truck crane does not return to the horizontal position after being turned back to the 0° or 180° position, you must immediately determine the cause, eliminate it and, if necessary, realign the crane. Observe the position of the superstructure in the process; ➠ p. 14 - 49.

Safe distances

When working with the crane, maintain adequate distances between all parts of the truck crane including the load and objects on the site as well as all persons at the site.

Pay particular attention to objects that pose direct risks (e.g. scaffolding or gas containers).

Keep a safe distance away from electrical lines; ➠ *Safe distance from electrical lines*, p. 14 - 14.

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13.3.4 Derricking gear

The main boom can be tilted between –1,5° and +82°. The angle of the main boom in relation to the horizontal position can be adjusted by raising and lowering the main boom.
The SLI switches off the lowering of the boom, depending on the load size and main boom length in accordance with the *Lifting capacity tables*.
Raising from a horizontal position (raising) and lowering into a horizontal position (setting down) in *Driving* telescoping mode is automatically enabled by the SLI, if it is permitted according to the SLI rigging programs (rigging programs ➠ *Lifting capacity tables*).
A rigging code must be entered for other telescoping statuses (also for 0/0/0/0).

For the outrigger span of 8.70 x 2.68 m, a rigging code must also be entered for *On-road driving telescoping* and raising and setting down is permitted only in the positions 0° to the rear or 180° to the front.

Danger of overturning when lifting loads
Lifting loads by raising the main boom is prohibited since the SLI does not work when this is done.

Raising the boom is a movement which reduces the load moment and is not deactivated by the SLI. However, raising the boom is an operation which can cause the truck crane to overturn if the load is too heavy.

- Switch on the derricking gear.
  Press up the *Derricking gear shutdown* rocker switch on the right-hand control lever.

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Telescoping

The position of the telescopic sections, i.e. which telescopic section is extended to what extent, is referred to as telescoping. The current telescoping is displayed:

– On the SLI and

– On the *Crane control display.*

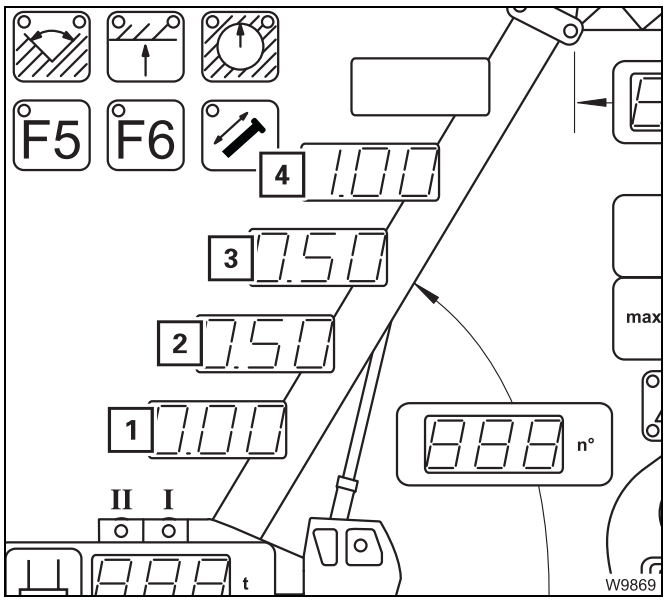
This section deals with the *Current telescoping* display on the SLI. The telescoping display on the *Crane control* display is described from the section titled *Example of a telescoping sequence*; ➠ p. 13 - 66.

Display of main boom fixed lengths

With main boom fixed lengths, the current telescoping is displayed as a decimal value with two decimal places (e.g. **1.00** or **0.50**).
For all telescopic sections, only percentages of 0%, 50% and 100% can be used as main boom **fixed lengths**.

Not all locked telescopings are released as main boom fixed lengths; ➠ p. 13 - 59. The released fixed lengths can be found in the *Lifting capacity table*.

Example: Telescoping display for main boom fixed lengths



1 Telescopic section I 0% = fixed length
2 Telescopic section II 50% = fixed length
3 Telescopic section III 50% = fixed length
4 Telescopic section IV 100% = fixed length

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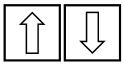
If you continue to move the right control lever after the *Telescoping cylinder unlocked* warning lamp lights up, the telescoping cylinder moves in the corresponding direction immediately after unlocking.

If the locking procedure has not been completed after about 10 seconds (*Telescoping cylinder unlocked* warning lamp is not on), you cannot retract the locking pins because they are under load.
With the *Telescoping cylinder at locking point* indicator lamps you can see if you need to retract or extend the telescoping cylinder to relieve the load.

If only the bottom indicator lamp lights up, you must extend the telescoping cylinder.



If both indicator lamps or only the top indicator lamp light up, you must retract the telescoping cylinder.

Risk of damage to the main boom system
If extending and retracting the telescoping cylinder several times does not cause unlocking, you may not move the telescoping cylinder any further against the stop.

If the telescoping cylinder is unable to be unlocked by repeatedly extending and retracting it:

– Lock the telescoping cylinder by pressing the *Select locking/unlocking* rocker switch up and moving the control lever.
– Re-start the locking procedure by pressing the *Select locking/unlocking* rocker switch down and moving the control lever.

The unlocking procedure applies to all telescoping procedures, so that the red *Telescoping cylinder unlocked* warning lamp would now also light up in our **example**. The display would show the length L = 1.10 m.
Present end state: – Telescoping cylinder unlocked in telescopic section IV –
The next objective: – Moving the telescoping cylinder into foot section III –

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The section “Locking the telescopic section at the fixed length reached first” applies to our example. Telescopic section III should be extended to 50%. You can therefore select locking as soon as the telescopic section is telescoped about 2% away from the initial position.
The values in this section correspond to this example. You can take this section directly as an example.
Current end state: – Telescopic section III extended to 50% –
New objective: – Extending telescopic section II –

In order to reach the end position of the example on page 13 - 66, you would now have to extend telescopic section II. You would have to repeat the sections which are referred to in points 2 to 5 of the example on page 13 - 66. The steps are the same as for extending telescopic section III. The initial positions and end positions would simply have to be implemented for telescopic section II and the displays would change accordingly in the same way as for any other telescoping procedure.

You can also telescope a telescopic section without selecting locking, as described in the next section.

Telescoping the telescopic section to an intermediate length

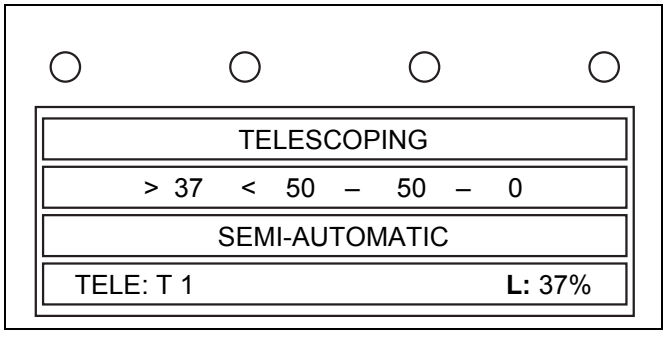
Before telescoping a telescopic section to an intermediate length, the following prerequisites must be fulfilled:

– The telescoping cylinder is in the foot section of the telescopic section to be telescoped. The respective indicator lamp (e.g. *Telescoping cylinder in foot section I)* is on; ➠ *Extending/Retracting and locking the telescoping cylinder*, p. 13 - 72.

– The telescopic section in which the telescoping cylinder is located is unlocked, the red *Telescopic section unlocked* warning lamp is on; ➠ *Unlocking the telescopic section*, p. 13 - 75.

The telescoping cylinder is locked to the telescopic section and the green *Telescoping cylinder locked* indicator lamp is on.

• Check whether the *Telescoping mechanism on* indicator lamp is on and telescope the telescopic section.



While you telescope the telescopic section, the current telescoping (e.g. for telescopic section I) changes on the *Crane control* display.

Extend the telescopic section until the display shows the desired intermediate length in percent (e.g. **L:** 37%).

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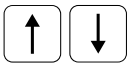
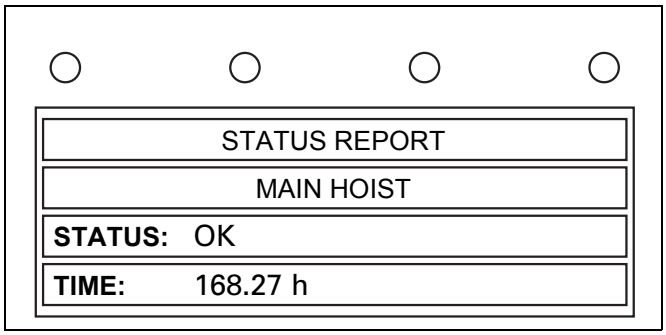
The following menu items are available:

– Engine (crane engine)
– System (for the crane control)
– Main hoist
– Auxiliary hoist
– Derricking gear
– Telescoping mechanism
– Locking system (locking pins in the telescoping mechanism)
– Slewing gear
– Auxiliary power units (counterweight hoist/locking pins, superstructure lock, crane cab inclination)
– Critical load control



• Select the desired menu item (e.g. Main hoist).



The total operating hours (**TIME:** 168.27 h) of the selected power unit are displayed in the last line.
In this example the total operating time of the main hoist is 168 hours and 27 minutes.

The **STATUS** of the selected power unit is displayed in the third line. There are three different displays:

Display	Meaning
O.K.	There are no malfunctions at present. The power unit has been released by the crane control without restrictions.
ERROR	One or more error messages have been acknowledged for this power unit and stored in the *Error memory* submenu.
not connected	Auxiliary hoist or lattice extension not available or not connected.

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13.3.9 Setting a constant engine speed

You can switch on and set the crane engine to a constant speed in the crane cab with the *Constant engine speed* rocker button.

F2

You can view the current speed of the crane engine on the *Display statuses* display on the *Crane control* display while you set it; p. 13 - 92.

- Set the crane engine to the desired engine speed with the accelerator.
- Press the down the *Constant engine speed* rocker switch once to switch on the constant engine speed.

Now this engine speed is set as constant engine speed and the crane engine keeps this engine speed even when the accelerator is released.

To **increase the constant engine speed**, press up the *Constant engine speed* rocker button and hold it there until the desired speed is reached.

If you wish to **increase the engine speed**, press down the accelerator. The preset engine speed is increased. The truck crane returns to the defined engine speed if you then release the accelerator.

- To **switch off the constant engine speed**, let go of the accelerator and press down the *Constant engine speed* rocker button once.

The engine speed drops to idling speed, and you can regulate the engine speed with the accelerator again.

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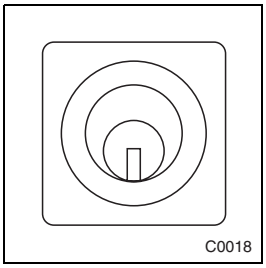
Switching on separate steering

You must switch on separate steering before driving the rigged crane:



- Switch on the *Level adjustment system* key-operated switch.

- Switch on separate steering. To do this, disengage the *Separate steering* rocker switch and press it down.

Risk of damage to the steering linkage

Always switch on separate steering before driving the rigged crane and steer the truck crane only when the vehicle is rolling.
The steering linkage can become damaged if separate steering is switched off or if you steer the vehicle while it is stationary.

Driving

Risk of damage to tyres

Check the pressure in the tyres before moving the rigged truck crane.
The truck crane may be moved only if the tyre pressure is at the prescribed levels; ➠ *Checking the tyres*, p. 6 - 6.
Do not reduce the tyre pressure.

Risk of damage to the steering linkage

Steer the truck crane only when the vehicle is rolling. The steering linkage can become damaged if the steering is operated while the vehicle is stationary.

Check the wind speed before moving the rigged truck crane. The same maximum permissible wind speeds apply as when working with the crane; ➠ *Effect of wind on crane operation*, p. 13 - 42.

- Switch the transfer case to the off-road gear to move the truck crane; ➠ *Engaging the off-road gear*, p. 6 - 36.
- Switch on transmission mode **1**; ➠ *Changing the driving modes*, p. 6 - 16.

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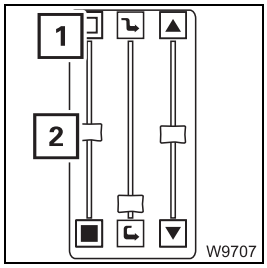
Switching on the auxiliary heater

- Check whether the auxiliary heater is allowed to be operated at the current site of the truck crane before switching it on. Find out whether there are any sources of danger that could result in explosions.

Danger of explosions when operating the auxiliary heater
The auxiliary heater is not allowed to be operated:
– At service stations and tank farms
– At places where inflammable gases or vapours can be found or form (e.g. at places where fuel is stored and at chemical factories)
– At places where explosive dust can be found or form (e.g. coal dust, wood dust, grain dust)

Danger of suffocation when operating the auxiliary heater
Do not operate the auxiliary heater and the auxiliary heater with timer in closed rooms (e.g. garages).



The auxiliary heater is not switched on if the *Air temperature* regulator (**2**) is pushed upwards as far as it will go (**1**) into the *cold* position.

- Push the *Air temperature* regulator (**2**) to the desired temperature.

This section describes how to switch on the heater manually. You can also save the activation point and have the auxiliary heater switched on automatically; ➠ *Saving the automatic heating start*, p. 13 - 123.

- Turn on the ignition; ➠ *Turning on the ignition*, p. 12 - 9.

- Press the *Switch auxiliary heater on/off* button once.
  The auxiliary heater is switched on and the display and buttons are illuminated.

The auxiliary heater supports the crane engine's heating power with the crane engine running as long as the engine has not sufficiently warmed up the coolant at low outside temperatures.
The heater is turned off by a thermostat once the operating temperature of the crane engine has been reached while the pump of the auxiliary heater continues to run.

Check whether the auxiliary heater is switched off every time you park the truck crane with the battery master switch switched on. In this way, you can prevent the auxiliary heater from restarting and running down the batteries after the crane engine has cooled down.

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13.7.3 Air conditioning

How to use air conditioning conveniently

Do not let the air in the crane cab cool down too low.
At an outside temperature of 40°C, for example, the inside temperature should be about 26°C to 30°C, i.e. the temperature difference should be 10°C to 14°C at the most. At a low outside temperature, you should select a lower difference in temperature accordingly. Excessive cooling frequently results in physical discomfort, usually after you have left the crane cab.
Avoid having cold air blown directly onto your body.

When drying the air in the driver's cab in recirculated air mode, you should switch over to mixed air mode from time to time to simultaneously ensure a fresh supply of oxygen.

Adapt the cooling output to your actual needs:
If the truck crane has, for example, been exposed to strong sunlight for a long period of time, the cooling system should be initially operated at the highest blower level with the crane engine running.
The crane cab door or at least the windows should be left open for a short time to ventilate the cab.
This procedure can be accelerated by increasing the crane engine speed.
Close the windows and other air vents to ensure the crane cab is cooled sufficiently in if the air-conditioning system is in continuous operation mode.

Set the blower to a lower level once the inside temperature is as desired.

Dehumidifying the crane cab air

On humid days you can dehumidify the air in the crane cab by operating the air-conditioning system in combined heating and cooling mode. For the operation of the heating, refer to the section titled *Heating and ventilation*, p. 13 - 115.

Dehumidifying generates barely any heat or no heat at all, since this involves the heating and air-conditioning system working “against each other”.

- Set the fan of the crane cab heating and the air-conditioning system to about the same level.

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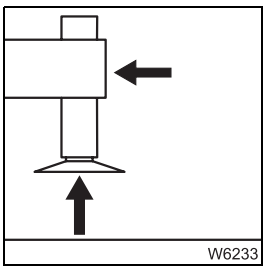
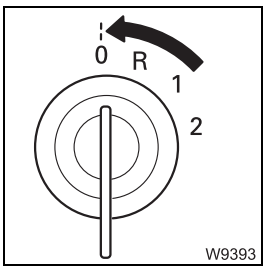
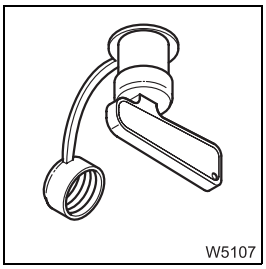


10. Retract the outriggers; ➠ *CHECKLIST: Retracting outriggers*, p. 14 - 25.

11. Switch off the suspension locking system; ➠ *Checking the suspension*, p. 6 - 9.



12. Turn off the crane engine; ➠ p. 12 - 15.



13. Switch off the battery master switch when the truck crane is no longer being used; ➠ p. 12 - 4.

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14.3 Rigging work after driving with a trailer

Carry out the following prior to working with the crane if the main boom was resting on a trailer while driving:

– Switch off the slewing gear freewheel; ➠ p. 14 - 18.

– Switch off the boom floating position; ➠ p. 14 - 20.

– Switch off boom pre-tensioning, if necessary; ➠ p. 14 - 20.

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14.4.3 Outrigger span

You can set various outrigger spans with the outriggers. The outrigger bases are given in meter x meter (e.g. 8.70 x 8.50 m). The first value stands for the outrigger length between the front and rear outrigger beams. With the truck crane GMK 6300 it is always 8.70 m .
The second value indicates the necessary span to which you must extend the outrigger beams. The following outrigger spans are permissible:
- Outrigger span of 8.70 x 8.50 m
- Outrigger span of 8.70 x 6.00 m
- Outrigger span of 8.70 x 2.68 m
- Outrigger span of 8.70 x 8.50/2.84 m
- Outrigger span of 8.70 x 8.50/2.40 m (only for additional equipment with ROB)

The prescribed span can be found in the *Lifting capacity table*. An outrigger cylinder is installed at the end of each outrigger beam. The outrigger cylinders are used to raise, lower and level the truck crane.

Risk of truck crane overturning if not properly supported
Before the superstructure can be slewed, the outrigger beams on the truck crane must be extended and supported on all four outrigger cylinders, and the outrigger beams must be secured with the locking pins so that they cannot extend on their own. The wheels must no longer touch the ground.

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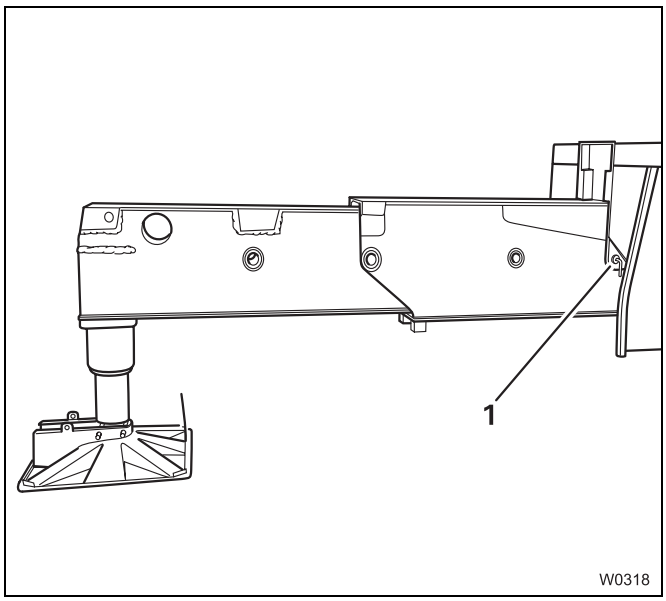
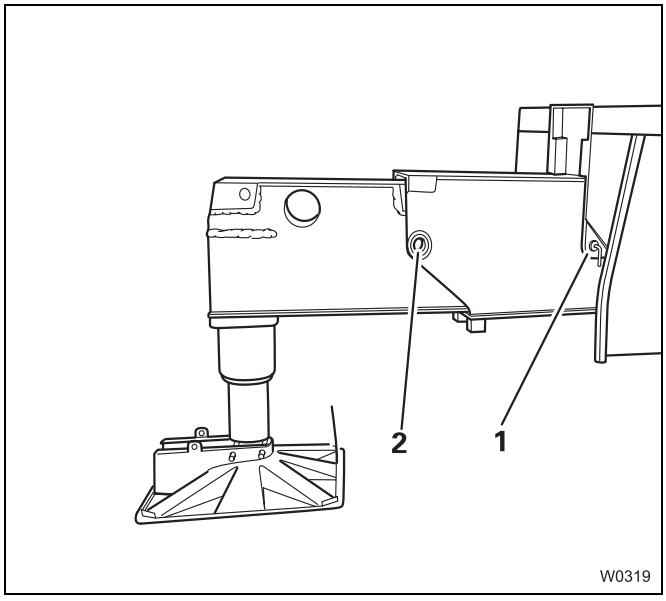


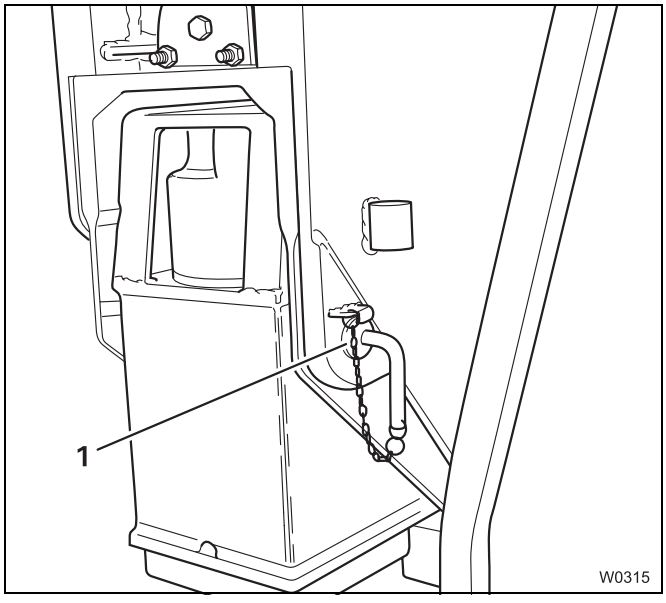
Outrigger span of 8.70 x 8.50 m

The outrigger beams are extended as far as possible with the span of 8.50 m and the locking pins (**1**) can be completely inserted into the bores in the outrigger box and outrigger beam.



Outrigger span of 8.70 x 6.00 m

With the outrigger span of 6.00 m the bores (**2**) of the interior and exterior outrigger beams align, and the locking pins (**1**) can be completely inserted in the bores in the outrigger box and outrigger beam.

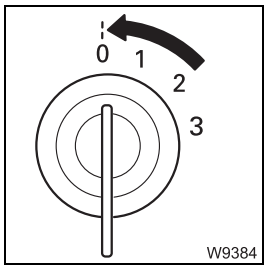


Outrigger span of 8.70 x 2.68 m

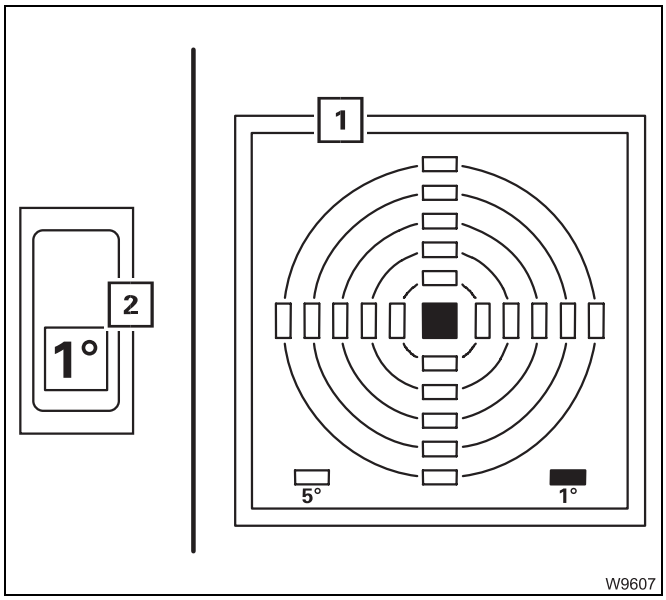
The outrigger beams are extended as far as possible with the span of 2.68 m , and the locking pins (**1**) can be completely inserted into the bores in the outrigger box and outrigger beam.

In the crane cab

The *Crane cab* electronic level only displays a correct value when the ignition in the driver's cab has been switched off.

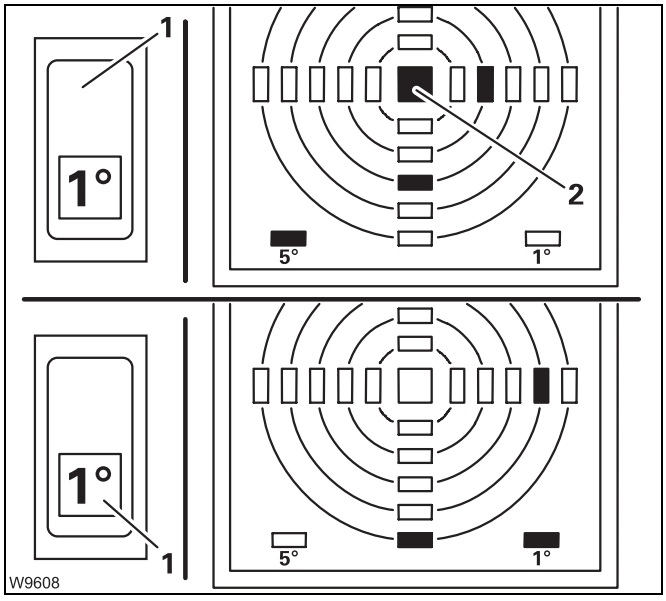


Turn the ignition key in the driver's cab to position **0**.



The electronic level (**1**) and the rocker switch with the *Switch over level indicator measuring range* (**2**) LED are located on the instrument panel in the crane cab.

Changing the measurement range



Measurement range of 0° to 5° inclination

- Press the *Switch over level indicator measuring range* (**1**) rocker switch up. The indicator lamp in the switch goes out.
  The **5°** and (**2**) LEDs light up. One graduated collar corresponds to an inclination of 1°.

Measurement range of 0° to 1° inclination

- Press the *Switch over level indicator measuring range* (**1**) rocker switch down. The indicator lamp in the switch lights up.
  The **1°** LED lights up. One graduated collar corresponds to an inclination of 0.2°.

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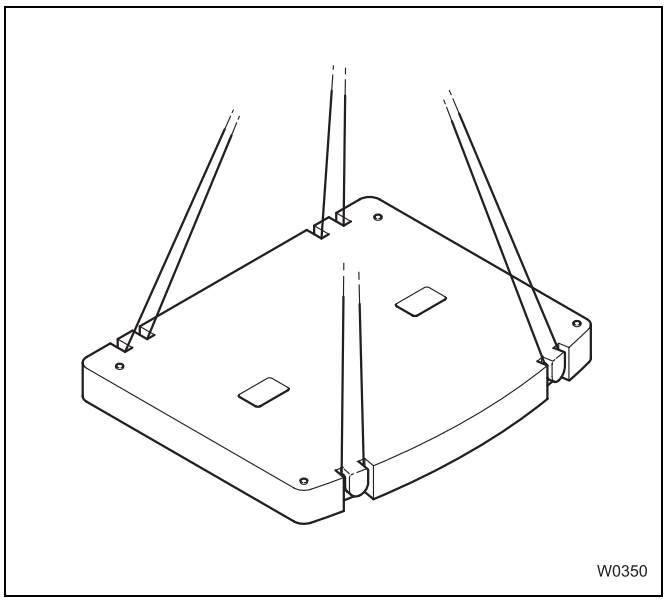
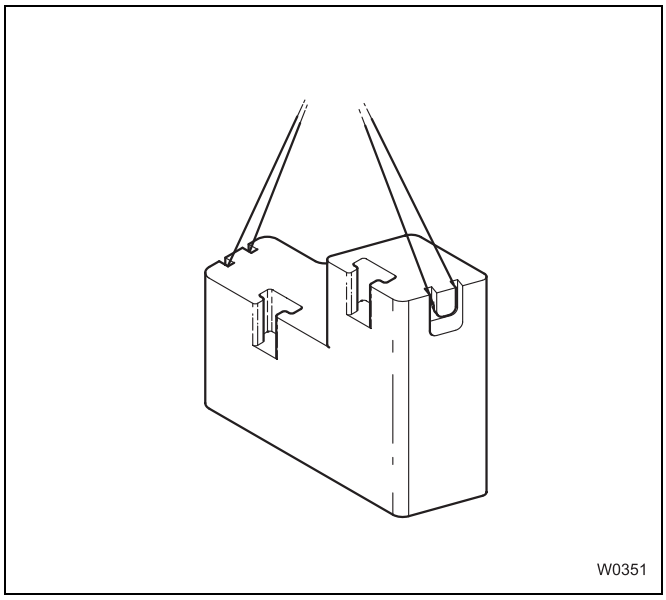
14.5.3 Slinging points on the counterweight sections



Four slinging points each are imbedded in the 8 t base plate and the 14 t counterweight sections.



Two slinging points each are imbedded in the 15 t and 10 t counterweight blocks (additional equipment).

For slinging, use only the supplied sling gear which fits the different heights of the slinging points.

Risk of accidents if used incorrectly
Only attach the various counterweight sections to the appropriate slinging points and use sling gear with sufficient lifting capacity.
You can only hoist the 8 t base plate together with the 5.1 t plate. The slinging points on all other counterweight sections are not designed to lift stacked counterweight sections.

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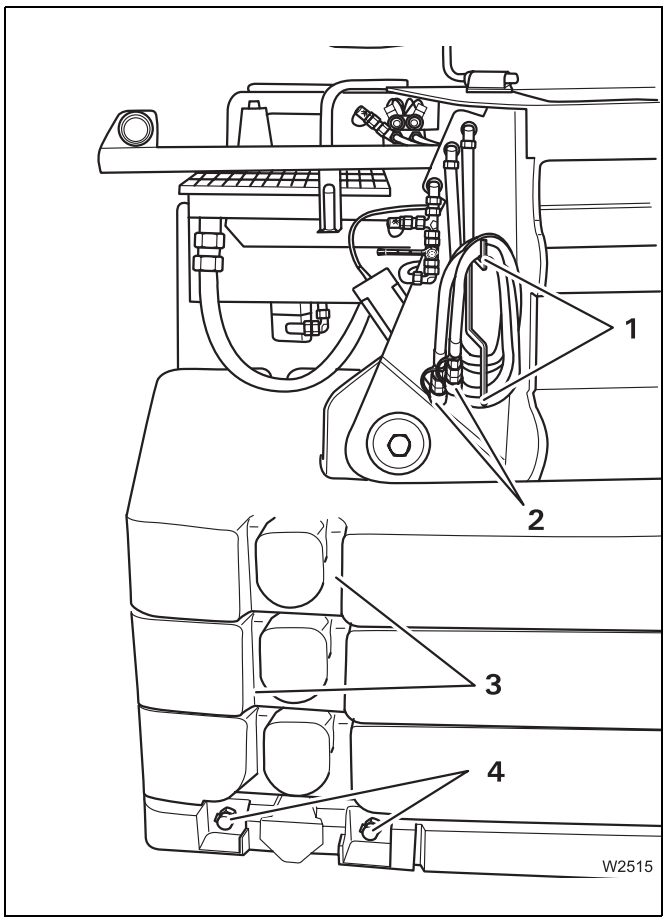

Disconnecting the hydraulic connection

- Detach the connection lines (**2**) from the half couplings (**4**) at the base plate.
- Place the protective caps on both half couplings (**4**) at the base plate.
- Take the two connection lines out of the pouches (**3**) of the counterweight receiver.
- Put the protective caps on the connection lines (**2**).
- Wind the connection lines (**2**) back onto the holder (**1**) on the turntable.

The hydraulic connection has now been disconnected.

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14.6 Rigging work on the main boom

14.6.1 Hook block on the bumper

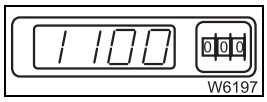
The hook block can be transported on a separate vehicle or attached to the front bumper; ➠ *Hook block on a separate vehicle*, p. 14 - 79.

Picking up the hook block from the bumper

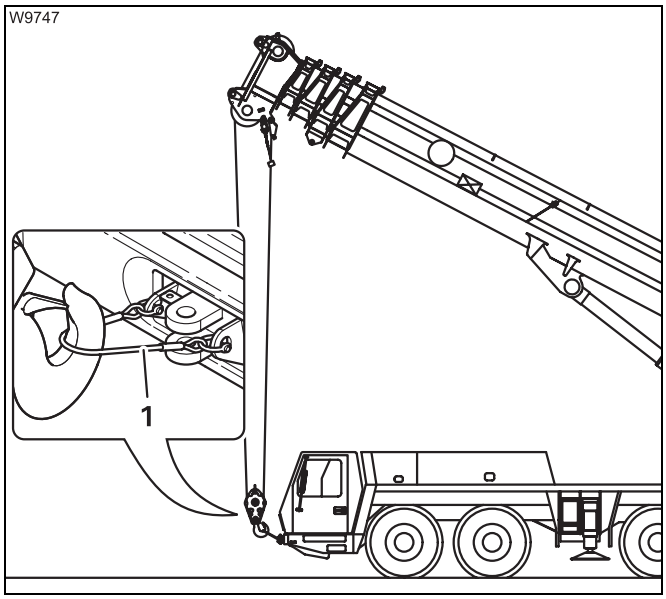
Depending on the driving mode, a hook block can be attached to the front bumper with a retaining rope for driving; ➠ *Driving modes*, p. 7 - 3.

Danger of accidents if the view is obstructed
Have someone guide you when detaching the hook block from the holding rope since the view of the hook block is obstructed by the driver's cab.

The main boom is fully retracted.



- Enter the SLI code for the current rigging mode of the truck crane.



- Slacken the hoist rope and raise the main boom simultaneously.
- Raise the main boom until the main boom head is in a vertical position above the hook block.
- Detach the hook block from the retaining rope (**1**).

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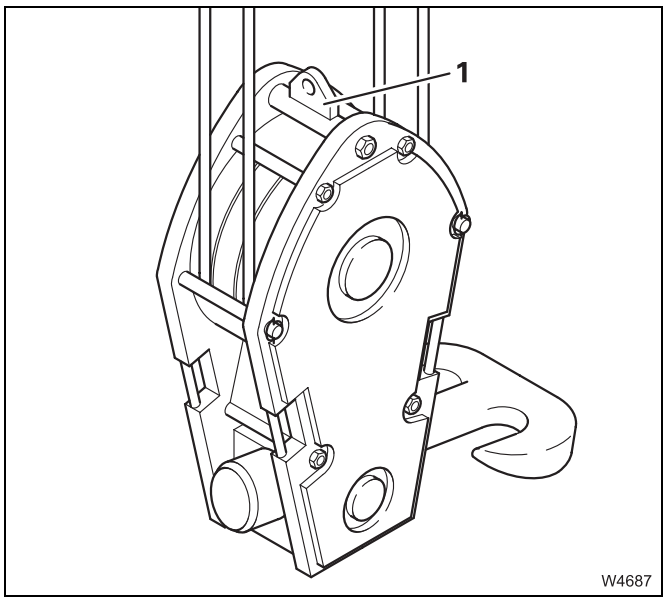
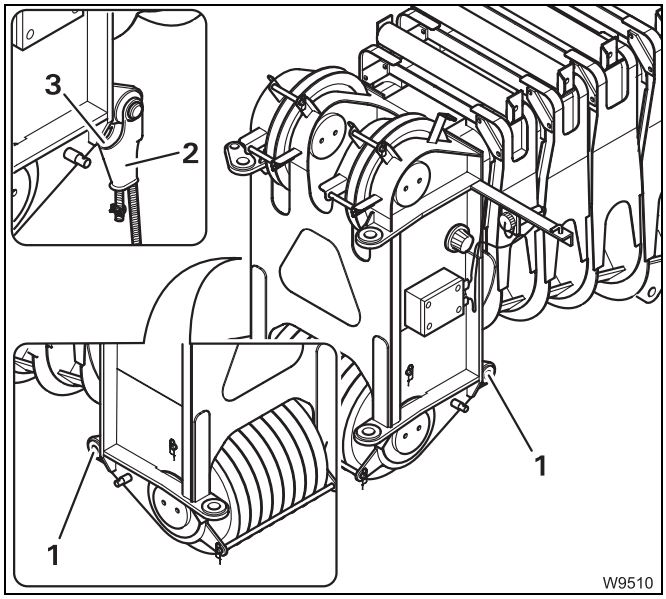
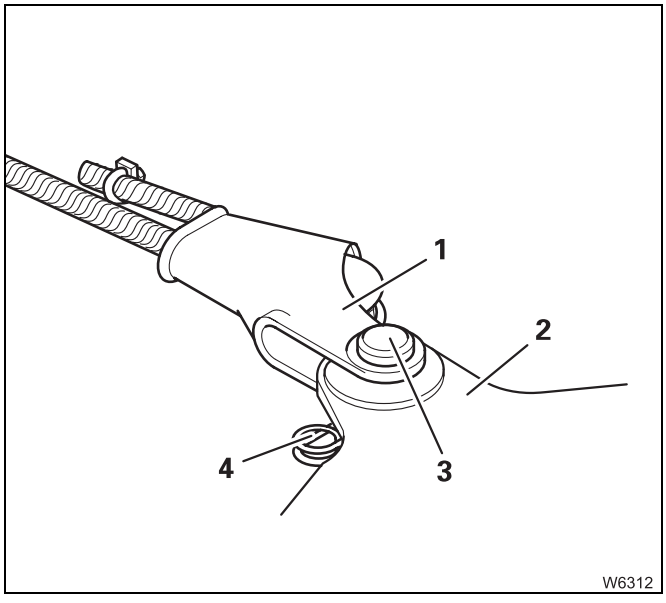


Fixed point for an odd number of lines
The rope end clamp is fastened to the fixed point (**1**) of the hook block if the number of lines is odd (1 line, 3 lines, 5 lines etc.).



Fixed point for an even number of lines
The rope end clamp is fastened to one of the fixed points (**1**) of the main boom head if the number of lines is even (2 lines, 4 lines, 6 lines etc.).

Attach the rope end clamp (**2**) in such a way that the cutout (**3**) points forwards.



Locking the rope end clamp to the fixed point

- Attach the rope end clamp (**1**) to the fixed point (**2**).
- Fasten the rope end clamp with the pin (**3**) and secure the pin with the retaining pin (**4**).

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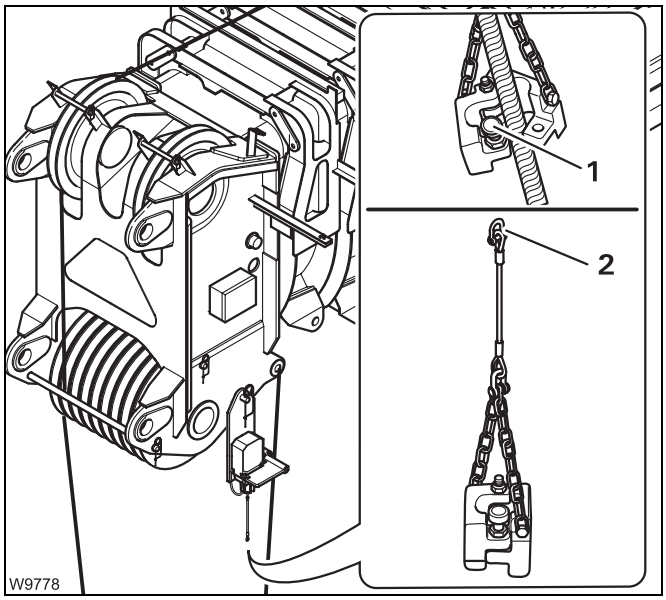
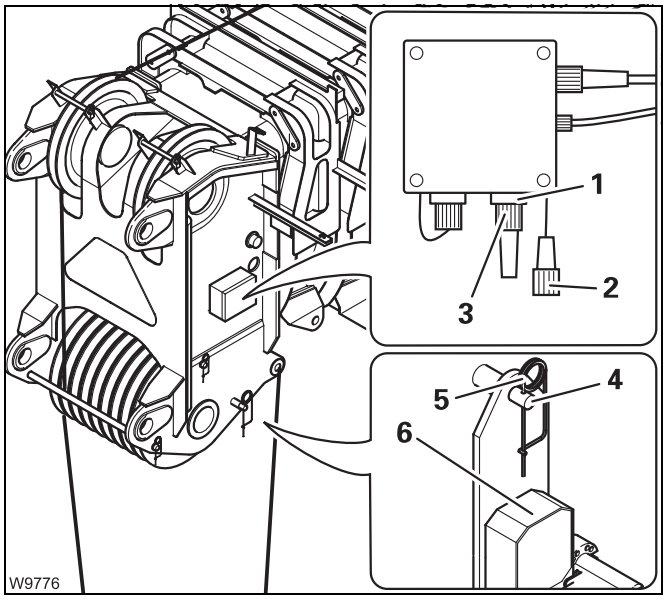
Removing the lifting limit switch

This section describes complete removal.
If the hook block is to be subsequently attached to the bumper, you only need to detach the lifting limit switch weight from the hoist rope in order to able to unreeve or re-reeve the hoist rope when unrigging. You can place the lifting limit switch weight around the hoist rope again before driving.



Removing the lifting limit switch weight

- Pull the safety pin (**1**) upwards and fold out the two halves of the weight.
- Remove the halves of the weight from the rope.
- Pull the safety pin (**1**) upwards, connect the two sides of the weight and let the safety pin engage.
- Unscrew the shackle (**2**) and remove the lifting limit switch weight.
- Remove the lifting limit switch weight on the other side too, if necessary.



Removing the left lifting limit switch

- Pull the plug of the connecting cable of the lifting limit switch out of the socket (**1**).
- Remove the bridging plug (**3**) from the dummy socket (**2**) and plug it into the socket (**1**).
- Undo the retaining pin (**5**) and remove the holder with the lifting limit switch (**6**) from the holding rod (**4**).
- Attach the retaining pin to the holder of the lifting limit switch.

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15 Installing/Removing the auxiliary hoists

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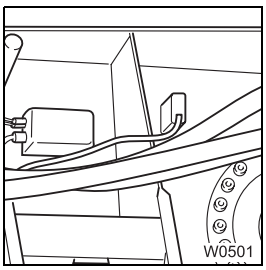
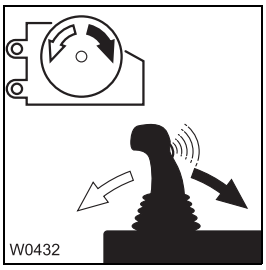


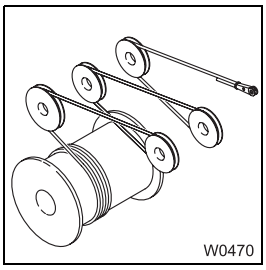
10. Establish the electrical connection; ➠ *Establishing/disconnecting the electrical connection*, p. 15 - 22.



11. Check that the auxiliary hoist is functioning properly; ➠ *Checking the auxiliary hoist for correct functioning*, p. 15 - 26.

12. Reeve the hoist rope and connect the lifting limit switch if you intend to lift loads with the auxiliary hoist; ➠ *Permissible applications for the auxiliary hoists*, p. 15 - 28.

The following points must be carried out only when the auxiliary hoist is rigged for operation with the luffing jib.



13. If necessary, reeve the upper and lower hook blocks of the guy unit for the luffing control arm; ➠ *Attaching and reeving the guy unit – Reeving the upper/lower hook block*, p. 15 - 17.

14. Remove the transport protection between the upper hook block and the auxiliary hoist; ➠ *Transport protection for the upper hook block*, p. 15 - 27.

All other rigging work (e.g. attaching the guy unit on the luffing control arm) which also concerns the auxiliary hoist is described in the chapter on the luffing jib; ➠ *Attaching the upper hook block to the luffing control arm* in the *GMK 6300 lattice extension operating instructions*.

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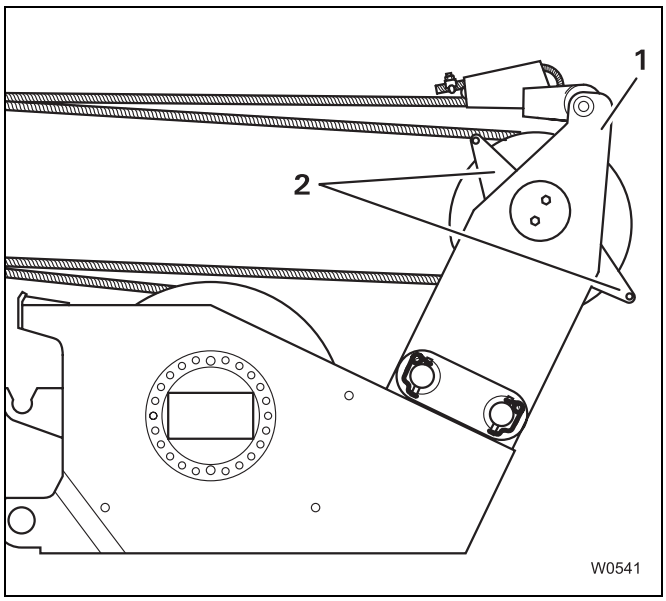
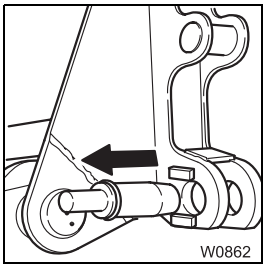


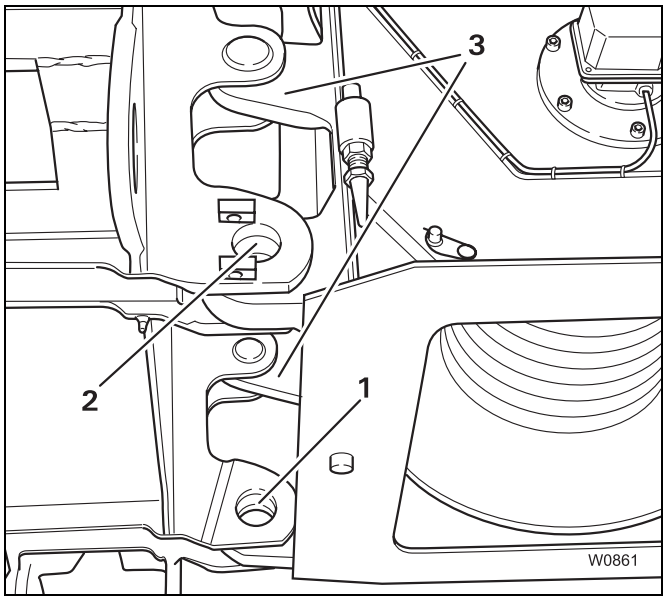
- Reattach the rope end clamp to the auxiliary hoist rope, observing the information in Section *Rope end clamp*, p. 14 - 82.
- Attach the rope end clamp to the holder (**1**) on the lower hook block.
- Re-attach the rope holding rods (**2**) and the rope holding rollers to the lower hook block and secure the rope holding rods with the retaining pins.
- Also secure the rope on the upper hook block.

15.3.3 Lifting the auxiliary hoist to the main hoist with the auxiliary crane

To lift the auxiliary hoist to the main hoist with the counterweight;
➠ *Lifting/lowering the auxiliary hoist with the counterweight*, p. 15 - 23.



- Check if the fastening pins have been removed from the holder on the main hoist.
- Sling the auxiliary hoist onto an auxiliary crane; ➠ *Slinging points*, p. 15 - 13.



- Lift the auxiliary hoist to the main hoist with the auxiliary crane. When doing this, ensure that:
  – the two hooks (**3**) interlock with the holders on the main hoist and
  – the holders on the main hoist and on the auxiliary hoist align in the positions (**1**) and (**2**).
- Correct the position of the auxiliary hoist if necessary.
- Hold the auxiliary hoist in this position.

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If you run the auxiliary hoist rope over the left head sheave (additional equipment), you must extend the main boom to a total length of at least 20 m before lifting a load. Otherwise the rope angle would exceed the maximum permissible value.

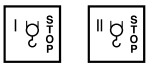
Alternating operation with the main and the auxiliary hoist

If the truck crane is equipped with a second head sheave (additional equipment) on the main boom, you can reeve the auxiliary hoist rope and the main hoist rope on the main boom (or on the main boom and auxiliary single-sheave boom top) at the same time and work alternately with one hoist or the other. For this mode there is a socket for connecting a second lifting limit switch on the right side of the main boom.

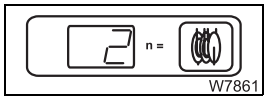
Risk of accidents during two-hook operation
During alternating operation the load must always hang on only one hook block. If you sling the load on both hook blocks but lift it with only one of the blocks, you are already in the non-permissible two-hook mode which is no longer secured by the SLI.

- Connect both lifting limit switches; ➠ *Installing the lifting limit switch*, p. 14 - 93.
- Place the appropriate lifting limit switch weight around each of the two hoist ropes; ➠ *Placing a lifting limit switch weight around the hoist rope*, p. 14 - 98.

The respective hoist with which the load is to be lifted must be set on the SLI before operation. Proceed as follows:



- Switch off both hoists. The *Hoists* indicator lamps on the SLI go out.
- Switch on the hoist with which you wish to lift the load.
  The corresponding *Hoists* indicator lamp will light up.



- Enter the reeving of the hoist with which the load is to be lifted in the *Reeving* display.

The correct hoist is now set on the SLI and crane operation is secured by the SLI. The maximum loads are reduced by the value of the weight of the second hook block.

For further information on switching the *Hoists* indicator lamps; ➠ *Example of how to switch over the display*, p. 13 - 30.

If you unreeve a hoist rope again and pull the plug of the lifting limit switch from the terminal box or the socket, you must insert the short-circuit plug there. Otherwise the crane control system detects a shutdown of the lifting limit switch, the warning lamp *Lifting limit switch shutdown* lights up and all load moment increasing motions are switched off.

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Designation	Amperage (A)	Function
F 2/1	10	Free
F 2/2	10	Free
F 2/3	10	Free
F 2/4	10	Free
F 2/5	10	Free
F 2/6	15	Free

Designation	Amperage (A)	Function
F 3/1	10	Indicator and warning lamps for engine, hydraulic system, flame start system (additional equipment)
F 3/2	15	Windscreen wiper/washing system
F 3/3	10	ECOS Pressure switch/pressure sensor
F 3/4	10	Control lever, high-speed mode for telescoping mechanism and slewing gear, superstructure lock
F 3/5	10	Diagnostics plug for crane engine
F 3/6	10	Flame start system (additional equipment)

Designation	Amperage (A)	Function
F 4/1	5	Switches and indicator lamps
F 4/2	15	Spotlights, switches and indicator lamps for spotlights and shutdown for derricking gear/telescoping mechanism/ main hoist
F 4/3	5	Horn, switches and indicator lamps for auxiliary hoist shutdown, slewing gear holding brake and crane cab inclining
F 4/4	10	Crane cab heating system
F 4/5	15	Crane cab electronic level, SLI early warning/shutdown, lattice extension (additional equipment)
F 4/6	10	SLI shutdown, lifting limit switch shutdown, dead man's switch, seat contact

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16.4.3 Malfunctions on the auxiliary hoist

Malfunction	Cause	Remedy
Auxiliary hoist not functioning or malfunctioning (lifting, lowering or high-speed mode not functioning)	*Auxiliary hoist shutdown* rocker switch switched on	Switch off the *Auxiliary hoist shutdown* rocker switch
	Fuses F3/4 or F4/2 or F6/2 on superstructure is blown	Check the fuses and replace if necessary; ➠ p. 16 - 5.
	Dead man's switch system not actuated	Press dead man's switch; ➠ p. 11 - 71.
	A control unit of the crane control system has failed (error message is displayed)	Acknowledge the error message once; ➠ p. 13 - 99. If the error message is repeated, change the connections on the control units; ➠ p. 16 - 49.
	Crane control emergency stop switch pressed	Re-enable crane functions; ➠ p. 16 - 2.
Auxiliary hoist has lifting function only (also check all the causes listed for 'Auxiliary hoist not functioning')	Lowering limit switch activated	Leave the shutdown range and lift the auxiliary hoist
Auxiliary hoist has lowering function only (also check all the causes listed for 'Auxiliary hoist not functioning')	Lifting limit switch activated (warning lamp on)	Leave the shutdown range and lower the auxiliary hoist.
	SLI shutdown (warning lamp on)	Leave the shutdown range
	Fuse F4/6 or F7/1 on superstructure is blown	Check the fuse and replace it if necessary; ➠ p. 16 - 5.
The *Lifting limit switch shutdown* warning lamp lights up, lifting function disabled, but lifting limit switch not raised.	On one side of the main boom there is neither a lifting limit switch nor a short-circuit plug connected at the terminal box	Plug in the short-circuit plug or connect second lifting limit switch

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16.4.10 Malfunctions on the SLI

This section contains general malfunctions which are not displayed on the *SLI* control unit as well as malfunctions which prompt an error display on the *SLI* control unit.

Risk of accidents
Immediately stop operating the crane if an error message is displayed.
The SLI may only be repaired by trained, qualified personnel.

Risk of accidents in the event of a faulty or overridden SLI
In the event of a faulty SLI, first try to correct the error with the information in this section. Only override the SLI if it becomes absolutely necessary in order to lower the load in the event of an emergency.
Do not carry out any movements which increase the load moment in the event of a faulty or overridden SLI.
If the SLI is overridden, the crane operations are not monitored and no shutdown procedures are initiated when leaving the working range.

General malfunctions

Malfunction	Cause	Remedy
SLI not working (dark displays, no buzzer tone)	Power supply not switched on	Switch on ignition
	Blown fuse on superstructure	Replace the blown fuse; ➠ *Fuses at the front of the crane cab*, p. 16 - 6.
	The fuse SLI F 6 in the SLI control system is blown.	Replace the blown fuse; ➠ *Fuses for the SLI*, p. 16 - 11.

If further malfunctions of the SLI occur, the corresponding error messages are displayed on the *SLI* control unit.

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The *Crane control* display shows an error message in the Telescoping *Submenu.*
The error code displayed shows:
– **either** a 1 in the last place in area 2 (e.g. 0 0 0 **1**); ➠ *Crane control error messages*, p. 16 - 49)
– **or** a 1 in the third last place in area 1 (e.g. 0 0 0 0 0 **1** 0 0); ➠ *Crane control error messages*, p. 16 - 49).

Yes

Check whether the current status of the telescoping cylinder can still be read on the display in the crane cab; ➠ p. 16 - 38.

Yes

Check whether the telescoping cylinder is locked with the telescopic section:

– unlocked telescopic section can be telescoped
– or, if the telescopic section is locked, length details for telescoping cylinder do not change when telescoping

Yes

– Prepare required equipment and prepare the truck crane for emergency operation; ➠ p. 16 - 39

No

All remedial measures listed in the *Malfunctions in the telescoping mechanism* section do not help; ➠ p. 16 - 21.

No

CraneCARE should be consulted

No

Risk of damage to the main boom
If you arrive at a box where you are referred to ***CraneCARE***, you must not use the hydraulic emergency operation since the main boom could be damaged. In this case hydraulic emergency operation can only be carried out with the help or consultation of trained and qualified personnel.
Contact ***CraneCARE***.

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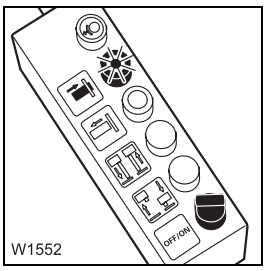
- Extend the telescopic section approx. 30 mm so that the section is no longer on the cutouts.



- Unlock the telescopic section by turning the *Release button unit* knob to the right and also pressing the "Lock counterweight" button.
- Retract the telescopic section until it has reached the locking point at 0%.
- Repeat all steps in the section *Retracting with hydraulic hoses connected* until all telescopic sections are retracted or until enough sections have been retracted for the main boom to be set down.

After telescoping in hydraulic emergency mode

If you retract the main boom while the electrical connection to the head of the telescoping cylinder is interrupted, you will have to enter the current telescoping position on the crane control after the repair work; ➠ *"Enter telescoping after emergency operation" menu*, p. 16 - 68.

Extended lengths of the telescoping cylinder at the locking points

Telescopic section	Locking point at fixed length [%]	Extended length of the telescoping cylinder in m
T1	0 50 100	0.0 5.46 10.92
T2	0 50 100	0.36 5.89 11.42
T3	0 50 100	0.76 6.37 11.97
T4	0 50 100	1.10 6.79 12.47

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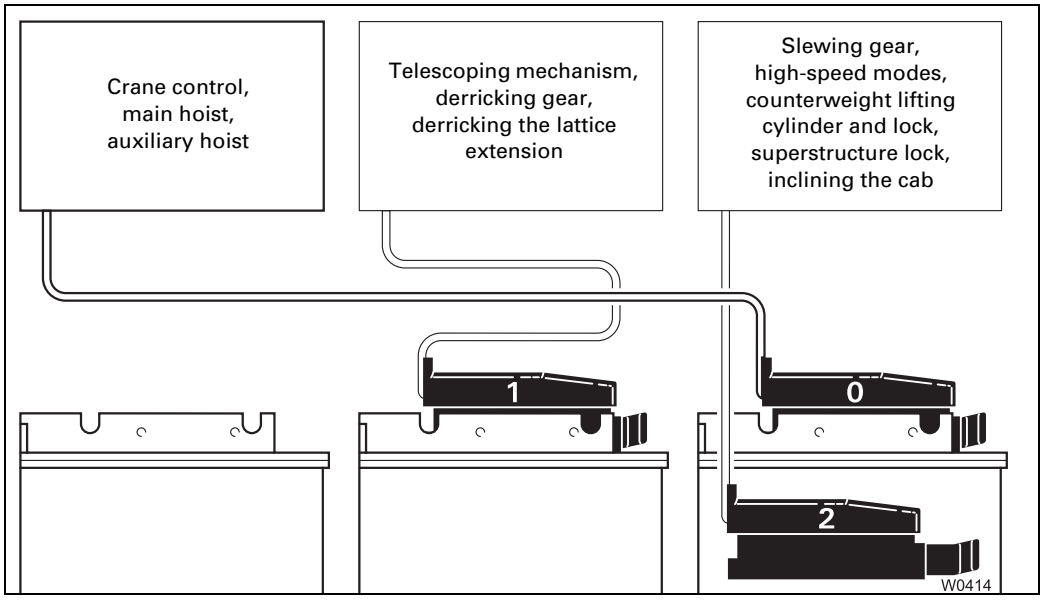
You can reactivate the crane control and the failed power units by removing the connection from one of the other two control units (e.g. connection **2**) and plug connection **0** onto this control unit; ➠ *Inserting and removing connections*, p. 16 - 59.



After connection **2** has been removed, the crane control shows the corresponding error message UNIT 2. You can acknowledge this error message.

You can now carry out all crane movements connected to connections **0** and **1**:

– Putting down the load with the main and auxiliary hoist

– Telescoping

– Derricking

All power units which are connected to connection **2** are now out of service (slewing gear and high-speed modes).

If you need the slewing gear when unrigging, you must change the connections again.

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Table for approaching the locking points

The following table shows the extended length of the telescoping cylinder at the locking positions of the various telescopic sections.

Telescopic section	Locking point at fixed length [%]	Extended length of the telescoping cylinder in m
T1	0 50 100	0,0 5.46 10.92
T2	0 50 100	0.36 5.89 11.42
T3	0 50 100	0.76 6.37 11.97
T4	0 50 100	1.10 6.79 12.47

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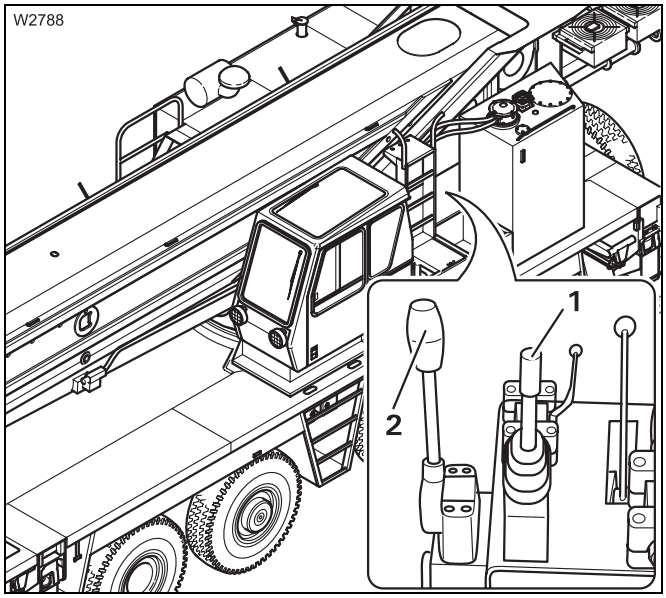
16.6.6 Carrying out emergency operation

If you have connected the transformer, switched on emergency operation and established the required hydraulic circuit for a power unit, the power unit connected can be operated in emergency operation mode. There are two control levers provided for this outside the crane cab.

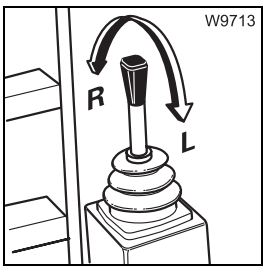


The control levers are in front of the hydraulic tank under the cover on the console next to the valves.

- Undo the fixing elements and remove the cover.

The small control lever (**1**) is required to lower the boom, the large control lever (**2**) for the other operations.

The description of control lever movements in the following sections complies with the definition of positional references in the operating instructions (➠ p. 1 - 19), which means:



To the right: Push in direction **R**

To the left: Pull in direction **L**

In emergency mode, you can control the speed of all power units with the control lever. You can also increase the maximum speed by increasing the vehicle engine speed using the accelerator.

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Dimensions when driving on public roads

All measurements relate to on-road driving mode (➠ *Driving modes*, p. 7 - 3) with the hoist mirror folded up.

Dimension and weights of the parts which must be transported on separate vehicles during on-road driving: ➠ *Dimensions and weights of removable parts*, p. 17 - 4.

Length:	18.05 m (without auxiliary hoist)
Width:	3.00 mwith 14.00 R25 or 16.00 R25 tyres 3.10 m with 20.5 R25 tyres
Height at on-road level:	3.95 m –130/+170 mm suspension range with 14.00 R 25 tyres
	4.00 m –130/+170 mm suspension range with 16.00 R 25 tyres
Front angle of negotiable banks:	approx. 16° at on-road level
Rear angle of negotiable banks:	approx. 14° at on-road level
Total weight:	72 t
Axle loads:	12 t per axle in on-road mode

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18 Index

How to use the index; ➠ p. 1 - 19.
To avoid making the index unnecessarily long and unclear, we have not included every single element from the instrument panel.
These elements, such as rocker switches, rocker buttons, warning and indicator lamps, as well as displays, are described and named in detail in the overviews of chapter 4 and 11 *Description of the truck crane*.
From there, you will be referred to more detailed descriptions of these elements.

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