

OPERATING INSTRUCTIONS

DINO TB II
135 • 150 • 180

Manufacturer:

Dinolift Oy
Raikkolantie 145 | FI-32210 LOIMAA
Tel. + 358 20 1772 400 | info@dinolift.com | www.dinolift.com

TRANSLATION OF THE ORIGINAL INSTRUCTIONS

Valid from serial number

| | |
|----------|---------|
| 135TB II | 130172, |
| 150TB II | 150024, |
| 180TB II | 180011, |

CONTENTS

| | | |
|-----------|---|-----------|
| 1. | TO THE OPERATOR | 7 |
| 1.1. | OVERVIEW OF THE UNIT | 8 |
| 1.2. | INTENDED USE OF THE WORK PLATFORM | 8 |
| 2. | TECHNICAL SPECIFICATIONS | 9 |
| 2.1. | DIMENSION DRAWINGS | 10 |
| 2.1.1. | 135TB II | 10 |
| 2.1.2. | 150TB II | 11 |
| 2.1.3. | 180TB II | 12 |
| 2.2. | REACH DIAGRAM | 13 |
| 2.2.1. | 135TB II | 13 |
| 2.2.2. | 150TB II | 14 |
| 2.2.3. | 180TB II | 15 |
| 2.3. | EXAMPLE OF THE MACHINE'S NAMEPLATE | 16 |
| 2.4. | EXAMPLE OF EU DECLARATION OF CONFORMITY | 17 |
| 2.5. | SAMPLE OF INSPECTION PROTOCOL FOR THE ACCESS PLATFORM | 18 |
| 3. | SAFETY | 20 |
| 3.1. | SAFETY INSTRUCTIONS | 20 |
| 3.2. | SAFETY-RELATED NOTIFICATIONS | 24 |
| 3.3. | SAFETY DEVICES | 25 |
| 4. | STRUCTURE AND FUNCTIONS OF THE LIFT | 29 |
| 4.1. | STRUCTURE OF THE WORK PLATFORM | 29 |
| 4.2. | FUNCTIONS OF THE WORK PLATFORM | 30 |
| 4.3. | OPERATING CONTROLS FOR THE FUNCTIONS | 31 |
| 4.3.1. | Operating controls in the chassis control centre | 31 |
| 4.3.2. | Operating controls for the outriggers | 33 |
| 4.3.3. | Operating controls in the platform control centre | 34 |
| 4.3.4. | Setup with two control levers (option) | 36 |
| 5. | OPERATING INSTRUCTIONS | 37 |
| 5.1. | START-UP | 37 |
| 5.1.1. | Worksite inspection | 37 |
| 5.1.2. | Positioning the lift | 38 |
| 5.1.3. | Starting up | 39 |
| 5.1.4. | Supporting the lift | 39 |
| 5.2. | OPERATION | 40 |
| 5.2.1. | Operating the lift from the chassis control centre | 40 |
| 5.2.2. | Operating the lift from the platform control centre | 42 |
| 5.2.3. | Special instructions for winter use | 44 |
| 5.2.4. | Ending the work | 44 |

| | | |
|--------|---|-----------|
| 5.3. | TRANSFERRING THE LIFT..... | 45 |
| 5.3.1. | Preparing the lift for transport | 45 |
| 5.3.2. | Using the driving device..... | 46 |
| 5.3.3. | Towing the lift | 48 |
| 5.3.4. | Lifting the device..... | 49 |
| 5.4. | LONG-TERM STORAGE | 50 |
| 5.5. | IN CASE OF EMERGENCY | 52 |
| 5.5.1. | When at risk of losing the stability | 52 |
| 5.5.2. | In case of overloading..... | 52 |
| 5.5.3. | In case the power supply is interrupted | 53 |
| 5.5.4. | In case of malfunction, when even the emergency descent system is not operational | 53 |
| 6. | INSTRUCTIONS FOR FAULT-FINDING | 54 |
| 7. | MAINTENANCE SCHEDULE..... | 58 |
| 7.1. | SCHEDULE FOR INSPECTIONS REQUIRED BY THE AUTHORITIES | 60 |
| 7.2. | LUBRICATION PLAN | 61 |
| 8. | ROUTINE MAINTENANCE DURING OPERATION | 62 |
| 8.1. | INSTRUCTIONS FOR DAILY MAINTENANCE AND INSPECTIONS | 63 |
| 8.1.1. | Check the condition of chassis, the boom and the work platform..... | 63 |
| 8.1.2. | Check the tyres and tyre pressure..... | 63 |
| 8.1.3. | Check the lights | 63 |
| 8.1.4. | Check the hydraulic oil level | 63 |
| 8.1.5. | Check the hydraulic hoses, pipes and connectors | 63 |
| 8.1.6. | Check the operation of the safety limit switches..... | 64 |
| 8.1.7. | Check the operation of the emergency descent, the emergency stop and the sound signal | 64 |
| 8.1.8. | Decals, stickers and signs | 64 |
| 8.1.9. | Instruction manuals..... | 64 |
| 8.2. | MAINTENANCE OF THE BATTERIES | 66 |
| 9. | CHANGE OF OWNER..... | 69 |



BLANK



1. TO THE OPERATOR

Keep this manual on the work platform of the lift in the box reserved for it. If the instruction manual gets lost, damaged, or for some other reason becomes unreadable, order a new manual from the manufacturer.

This manual is intended to familiarise the user with the structure and functions of the work platform, as well as with its appropriate use. The manual provides guidance on the service measures that are the responsibility of the user of the work platform.

Other maintenance procedures on the work platform require special skills, special tools or accurate knowledge about measurements or adjusted values. Guidance for these measures is provided in a separate service manual. For situations that require service or repair measures, contact the authorised service provider, importer or manufacturer.



DANGER

Read all the instructions in this manual before using the aerial work platform. Make sure that you have understood all the instructions. The instructions must absolutely be followed during operation and maintenance of the aerial work platform.

When handling the unit, in addition to the instructions in this manual, the user must also observe the local legislation, the guidelines stipulated by the employer, and regulations valid at the work site.

Dinolift Oy is constantly developing its products. For this reason, the contents of this manual might not always be in full compliance with the most recent version of the product. Dinolift Oy reserves the right to modify the product without prior notice. Dinolift Oy assumes no liability for any problems caused by changed or missing data or mistakes in this manual.

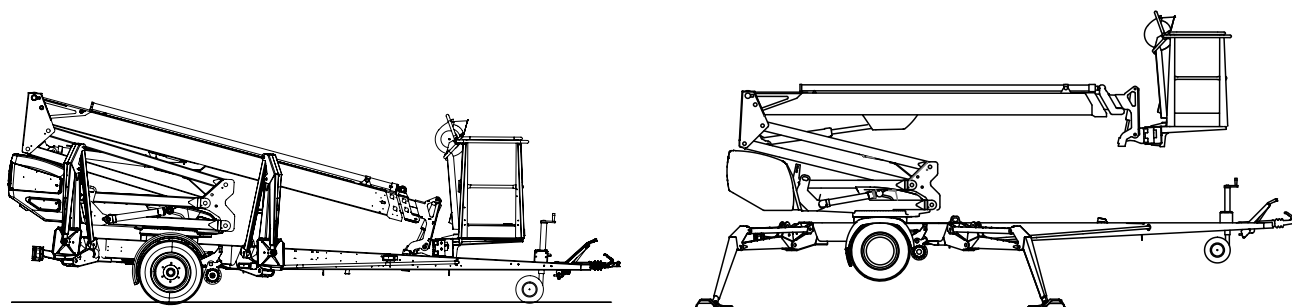
Please consult your dealer or the manufacturer for more information and detailed instructions.

1.1. OVERVIEW OF THE UNIT

This unit is a trailer mounted, towable aerial work platform.

This aerial work platform complies with the standard EN280 type 1. Moving the lift by means of the driving device or by towing is possible only when the lift is in the transport position.

For the operation, the tyres of the lift shall be raised off the ground by means of the hydraulic outriggers.



The primary power source of the lift is the electric motor. The outriggers and the boom system are hydraulically powered.

As an option, the lifts can be equipped with a hydraulic driving device.

Consult the chapters “Technical data” and “Structure and functions of the work platform” in this manual for more detailed information about the lift.

1.2. INTENDED USE OF THE WORK PLATFORM

The aerial work platform is exclusively intended for transferring people and tools to the work position and acting as a work platform within its permissible load-bearing capacity and reach (refer to the “Technical Specifications” table and the “Reach Diagram”).

The intended use also covers:

- Following all the instructions in the Operating Instructions
- Performance of the inspections and maintenance operations.
- Observation of the occupational safety regulations and road traffic regulations.

This aerial work platform is NOT insulated, and does not offer protection against contact with electric current. The aerial work platform must not be used for work on electric systems.

Observe the safety instructions concerning the operating environment, and the restrictions given in them,

NOTICE

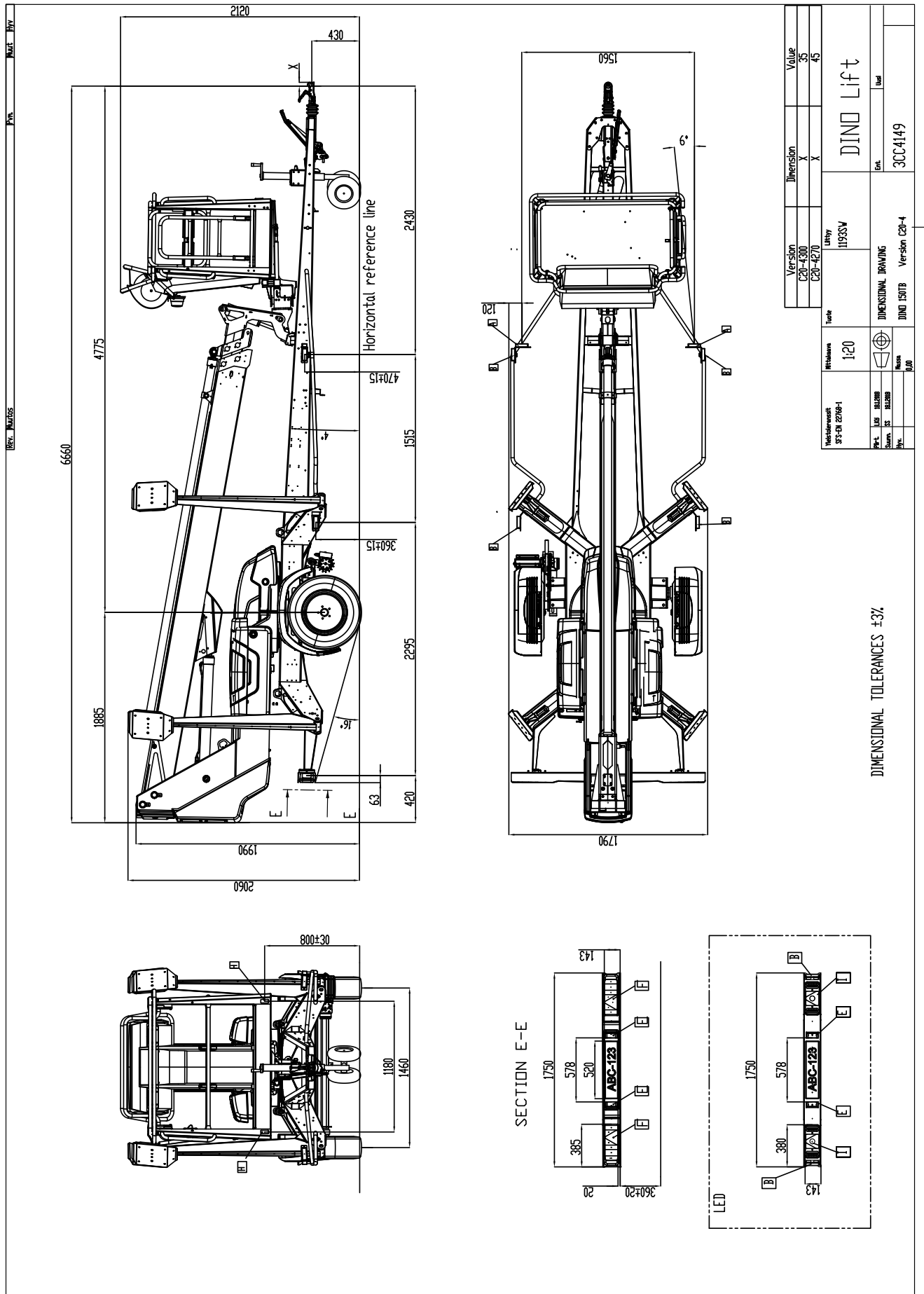
The operator must receive instructions and consent from the manufacturer for all such specific work methods or conditions that the manufacturer has not explicitly defined in the unit's operation and maintenance instructions.

2. TECHNICAL SPECIFICATIONS

| | 135TB II | 150TB II | 180TB II |
|--|----------------------------|-------------|-------------|
| Max. working height | 13,5 m | 15,0 m | 18,0 m |
| Max. platform height | 11,5 m | 13,0 m | 16,0 m |
| Max. outreach | 9,1 m | 10,0 m | 10,7 m |
| Boom rotation | continuous | | |
| Platform rotation | 90° | | |
| Turn area | refer to the reach diagram | | |
| Support width | 3,8 / 4,2 m | 3,8 / 4,2 m | 3,8 / 4,2 m |
| Transport width | 1,79 m | 1,79 m | 1,79 m |
| Transport length | 6,09 m | 6,66 m | 7,68 m |
| Transport height | 2,16 m | 2,12 m | 2,08 m |
| Weight | 1765 kg | 1835 kg | 1945 kg |
| Max. allowed load on platform | 215 kg | | |
| Max. number of persons + additional load | 2 persons + 55 kg | | |
| Max. allowed sideways load (caused by persons) | 400 N | | |
| Max. lateral inclination (chassis) | ±0,3° | | |
| Max. wind speed during operation | 12,5 m/s | | |
| Min. ambient temperature when working | - 20 °C | | |
| Max. support force on the outriggers | 11300 N | 12800 N | 16800 N |
| Platform size | 0,7 x 1,3 m | | |
| Gradeability | 25% | | |
| Power supply | | | |
| - battery powered | 24V/2kW, 4x6V 235Ah | | |
| Sound pressure level | 73 dB | | |
| Whole-body vibration | Not detectable | | |
| - mains current, battery charging | 230V/50Hz/10A | | |
| Socket outlets on the platform | 2 x 230V/50Hz/10A | | |

| | |
|------------------|---|
| Battery voltage: | |
| 29.6V | Charging voltage |
| 25.46V | Voltage of batteries that are 100 % charged. Charger disconnected, the voltage has been stabilizing for a few hours |
| 20.88V | Voltage of 0 % charged batteries. Movements "Boom up" and "Telescope out" impeded. |
| about 17 V | All movements impeded |

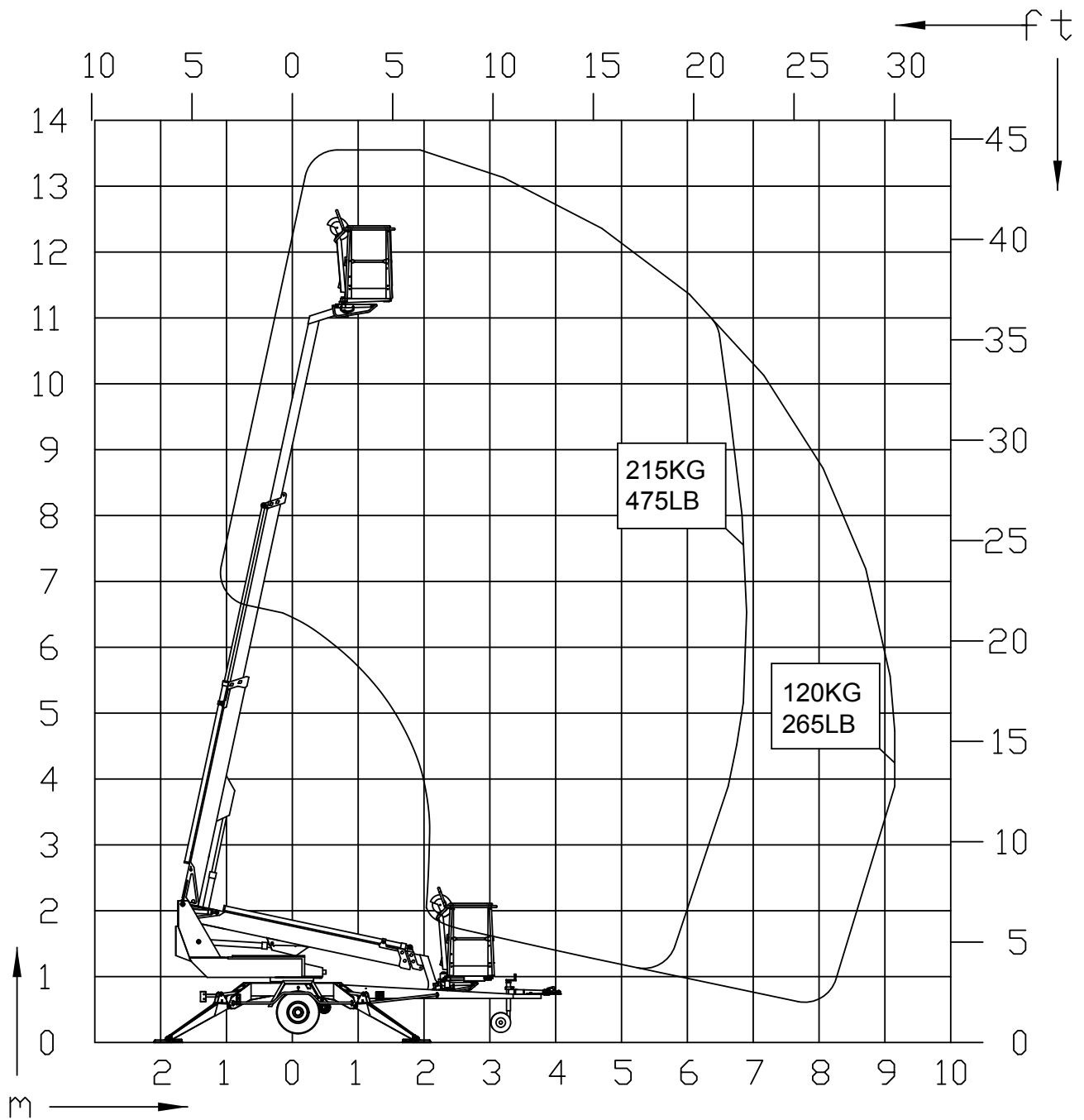
2.1.2. 150TB II



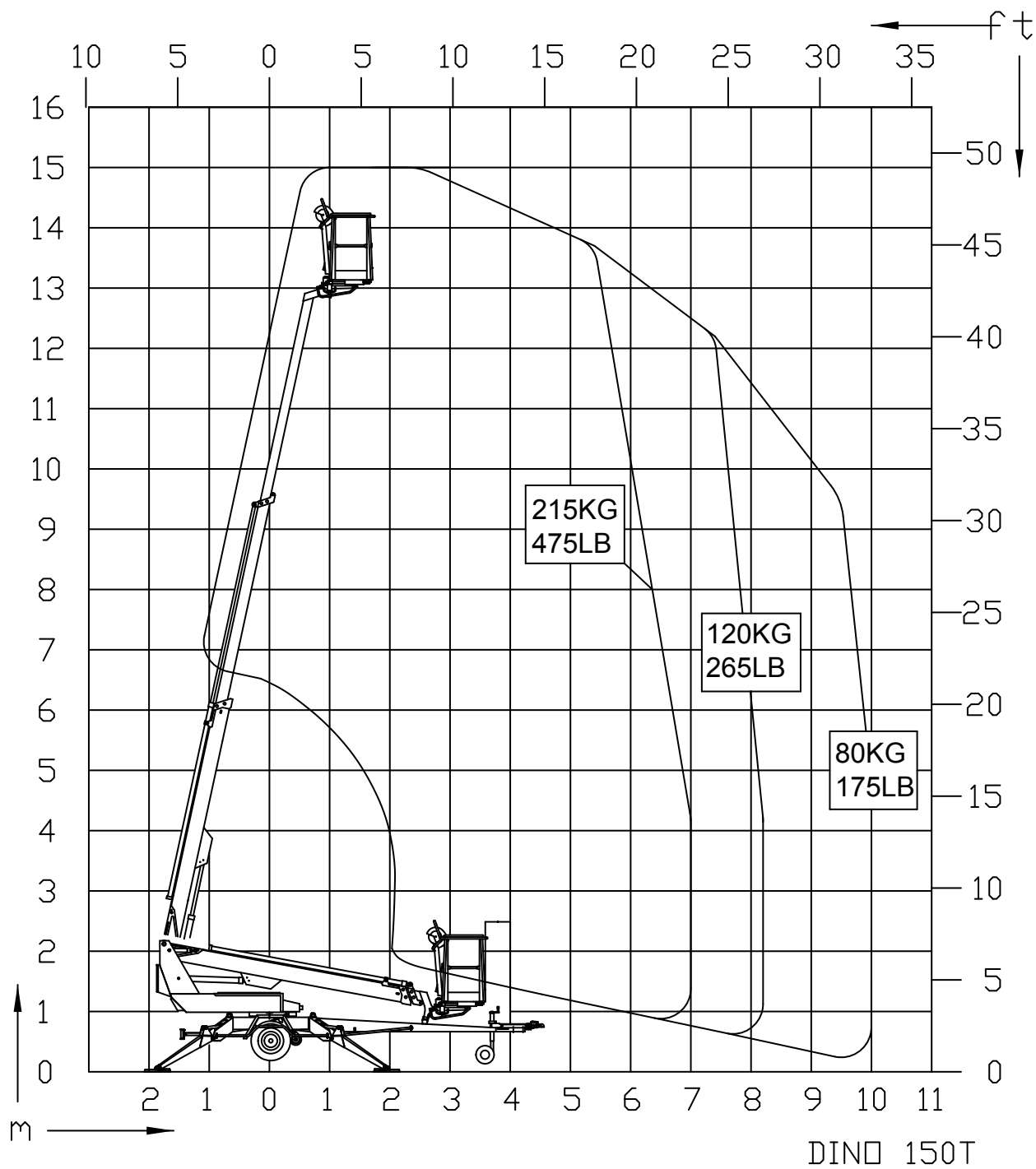


2.2. REACH DIAGRAM

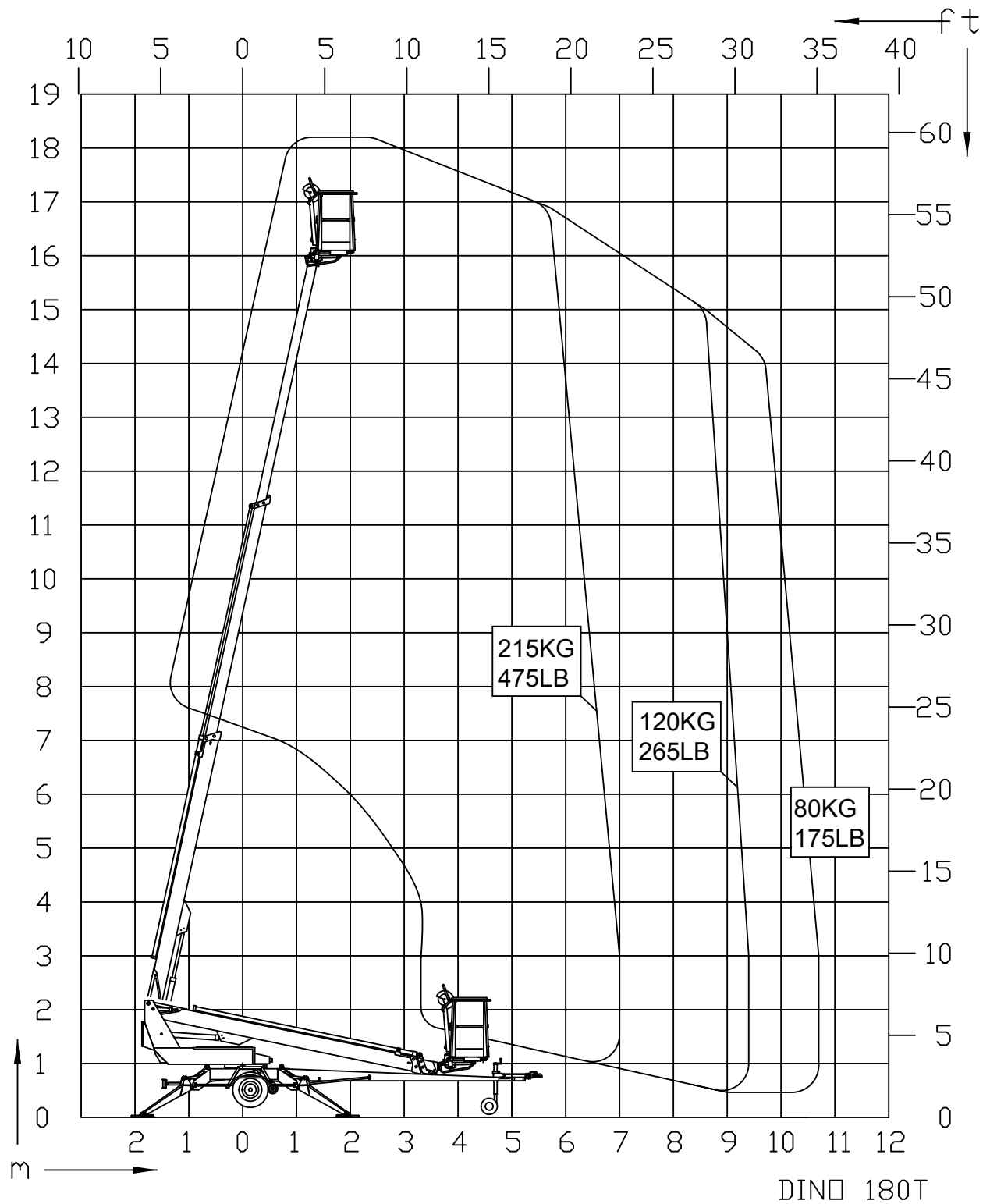
2.2.1. 135TB II



2.2.2. 150TB II



2.2.3. 180TB II



2.3. EXAMPLE OF THE MACHINE'S NAMEPLATE

The name of the manufacturer, and the production number and serial number of the machine have been marked on the nameplate as shown in the picture below.

| | | | | |
|---------------------------------------|-------------|--|------------------------------------|---|
| Type | DINO | | Manufacturer | DINOLIFT |
| Year of manufacture | | | Manufacturer's address | Raikkolantie 145 32210 Loimaa FINLAND |
| Serial number | | | | CE |
| Weight kg | | | Max. allowed load on platform | 215kg |
| Maximum allowed number of persons | 2 | | Maximum allowed additional load | 55kg |
| Maximum allowed sideways load | 400 N | | Max. lateral inclination (chassis) | 0.3° |
| Voltage | 230 V | | Frequency | 50 Hz |
| Min. ambient temperature when working | -20 °C | | Maximum allowed wind speed | 12,5 m/s |

The nameplate of the lift is located on the right-hand side of the tow-bar, as shown in the picture.

The serial number is also engraved in the lift's chassis, on the upper surface of the right-hand tow-bar.



The nameplate of the trailer is located on the tow-bar, on the right-hand side of the nameplate of the lift, as shown in the picture.



Following data is written on the plate:

| | | |
|--|--|----|
| EU Type Approval Number (if available) | | |
| Serial number | | |
| | Total weight | kg |
| 0 | Maximum allowed weight on the towing hitch | kg |
| 1 | Maximum allowed axle weight | kg |
| 2 | | kg |

2.4. EXAMPLE OF EU DECLARATION OF CONFORMITY**EU declaration of conformity for machine****Manufacturer**

Dinolift Oy
Raikkolantie 145
FI-32210 Loimaa, FINLAND

declares that

DINO 150TB Aerial Work Platform no YGCD150TB F0150015

conforms to the provisions of the Machine Directive 2006/42/EC
as well as the national decree (VNA 400/2008), through which they have been brought
into effect

The inspection in accordance with Annex IX to the directive 2006/42/EC has been
carried out by the notified body no. 0537,

VTT
P.O.Box 1300
FI-33101 Tampere, FINLAND

has granted the certificate no. **VTT 174/524/14**

In addition, the aerial work platform also complies with the provisions of the following
European Directives:

EMC: 2014/30/EU

In designing the machine, the following harmonised standards have been applied:
SFS-EN 280+A1:2015, SFS-EN ISO 13849-1:2015, SFS-EN 60204-1/A1:2009,
SFS-EN-ISO 12100:2010

The person, who has compiled the technical construction file: Santtu Siivola
Chief Engineer
Dinolift Oy, Raikkolantie 145,
FI-32210 Loimaa, FINLAND

Loimaa 07.01.2015

Santtu Siivola
Chief Engineer

2.5. SAMPLE OF INSPECTION PROTOCOL FOR THE ACCESS PLATFORM

TEST CERTIFICATE

DATE: |

START-UP TESTS:

Inspection place: Dinolift Oy

Inspector's signature: |

BASIC INFORMATION

Manufacturer: Dinolift OY Place of manufacture: FinlandAddress: Raikkolantie 145
32210 LOIMAA

Importer: _____

| | | | |
|---------------|---|---|--|
| Type of lift: | <input checked="" type="checkbox"/> Boom platform | <input type="checkbox"/> Scissor platform | <input type="checkbox"/> Mast platform |
| Chassis: | <input type="checkbox"/> Car | <input type="checkbox"/> Self propelled | <input checked="" type="checkbox"/> Trailer mounted |
| Boom: | <input type="checkbox"/> Articulated boom | <input checked="" type="checkbox"/> Telescopic boom | <input type="checkbox"/> Articulated telescopic boom |
| | <input type="checkbox"/> Fixed mast | <input type="checkbox"/> Telescopic mast | <input type="checkbox"/> Scissor |
| Outriggers: | <input checked="" type="checkbox"/> Hydraulic turning | <input type="checkbox"/> Hydraulic pushing | <input type="checkbox"/> Mechanical |

TECHNICAL SPECIFICATIONS

| | | | |
|------------------------|-------------------|----------------------|-----------------------|
| Machine and type: | <u>DINO 150TB</u> | Max. platform height | <u>13 m</u> |
| Number of manufacture | | Max. outreach: | <u>Depend on load</u> |
| Year of manufacture | | | |
| Max. lifting capacity: | <u>215 kg</u> | Boom rotation: | <u>Continuous</u> |
| Max. person number: | <u>2</u> | Support width: | <u>3,80 m</u> |
| Max. additional load: | <u>55 kg</u> | Transport width: | <u>1,79 m</u> |
| Power supply: | <u>24 VDC</u> | Transport length: | <u>6,66 m</u> |
| Lowest temperature: | <u>-20 °C</u> | Transport height: | <u>2,13 m</u> |
| Weight: | <u>1835 kg</u> | Basket size: | <u>0,7 x 1,3 m</u> |

INSPECTION POINTS: (Y = meet standards N = do not meet standards)

| | Y | N | | Y | N |
|--------------------------------------|-------------------------------------|--------------------------|--|-------------------------------------|--------------------------|
| A. GENERAL REQUIREMENTS | | | C. STRUCTURES | | |
| 1. Suitability for use | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 1. Transport position / transp. equipment | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Certificate of conformity | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 2. Driving/towing equipment | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. User manual and storage | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. Chassis | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Machine plate - inspection plate | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Turning device | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. Instructional and safety plates | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 5. Boom system | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6. Safety colours | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 6. Structure and position of work platform | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | | | 7. Hydraulic system | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| B. STABILITY | | | D. ELECTRIC SYSTEM | | |
| 1. Load plate and reach diagram | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 1. Electric system | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Supports / outriggers | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 2. Electric appliances | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Indicator for horizontal position | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. Lights | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

| | |
|--|---|
| E. SAFETY AND CONTROL DEVICES 1. Safety limit switches <input checked="" type="checkbox"/> <input type="checkbox"/> 2. Sound signal <input checked="" type="checkbox"/> <input type="checkbox"/> 3. Emergency descent system <input checked="" type="checkbox"/> <input type="checkbox"/> 4. Protection of controls <input checked="" type="checkbox"/> <input type="checkbox"/> 5. Symbols / control directions <input checked="" type="checkbox"/> <input type="checkbox"/> 6. Placement of controls <input checked="" type="checkbox"/> <input type="checkbox"/> 7. Emergency stop <input checked="" type="checkbox"/> <input type="checkbox"/> | F. SAFETY FEATURES 1. Prevention of unauthorized use <input checked="" type="checkbox"/> <input type="checkbox"/> 2. Locking device, covers and guards <input checked="" type="checkbox"/> <input type="checkbox"/> 3. Prevention of lifting <input checked="" type="checkbox"/> <input type="checkbox"/> 4. Prevention of opening of support <input checked="" type="checkbox"/> <input type="checkbox"/> 5. Safety distances <input checked="" type="checkbox"/> <input type="checkbox"/> 8. Control of loading <input checked="" type="checkbox"/> <input type="checkbox"/> 9. Limiting devices <input checked="" type="checkbox"/> <input type="checkbox"/> G. TEST LOADING 1. Overload test (150%) 323 kg <input checked="" type="checkbox"/> <input type="checkbox"/> 2. Functional test (110%) 237 kg <input checked="" type="checkbox"/> <input type="checkbox"/> |
| FAILINGS AND NOTES | |
| | |
| | |
| | |
| Failings have been repaired. Date: _____ Signature: _____ | |

The initial inspection and test loading of the Dino aerial work platforms is performed by the manufacturer. A protocol, drawn up during the inspection, will accompany the lift.

The protocols of the start-up and periodic inspections must be kept with the lift or its immediate proximity for at least five years.

1. SAFETY

All the essential safety instructions and warnings, relevant to transport, use and maintenance of the lift, are described in this chapter.



DANGER

Failure to observe these instructions and safety regulations may cause a severe injury or even death. Familiarise yourself with all the safety regulations, operating instructions and signs affixed to the machine, and follow them.

Make sure that you understand all the safety instructions and regulations. Also make sure that others operating the machine or working on the work platform are familiar with these instructions.

1.1. SAFETY INSTRUCTIONS

Only specially trained personnel with authorisation in writing, who are well familiarised with the device, and at least 18-years old, are allowed to operate the unit.

Keep the lift free of any dirt, which may impair safe operation, and impede the inspection of the structures.

The device must be serviced and inspected regularly.

Only skilled persons, familiar with the service and repair instructions for the lift, are allowed to carry out servicing and repair work.

It is strictly prohibited to use a lift which is out of order.

Never remove or disable any safety devices of the machine.



WARNING

The device must neither be altered without the manufacturer's consent nor be used under conditions, which do not meet the manufacturer's requirements.

The operator must be given instructions and consent from the manufacturer for all such specific work methods or conditions that the manufacturer has not explicitly defined.

TRANSFERS

Observe the maximum allowed gradient when transferring the lift. During transfer in rough terrain, always try to position yourself higher than the machine.

Beware of fixed or moving obstacles in the terrain or near the lift while driving. Make sure that you have a clear view of the driving path.

Do not use the machine for towing.

WORK AREA AND PREPARATIONS BEFORE LIFTING WORK

When working in busy areas, the operating range of the lift must be clearly marked by using either warning lights or fencing.

Also observe the road traffic regulations.

Ensure the unobstructed range of movement before operating the stabilisers.

The load-bearing capacity and the gradient of the base must be taken into account when supporting the chassis. Do not operate the machine while it is placed on a truck, railway car, floating vessel or other possibly unstable structures.

Ensure that the stabilisers cannot slide while on a gradient.

Additional support plates of adequate size must be used under the stabilisers, when working on soft ground. Only use such additional support plates, on which the metallic stabilisers will not slide.

While in the support position, ensure that the wheels are off the ground.

Always verify the horizontal position of the machine before operation.

Always ensure that the work area is clear of outsiders. Danger of getting crushed between rotating and fixed structures.

While operating the boom from the control centre on the turning device, beware of getting pressed against the stabilisers or other structures that do not turn with the boom.

LIFTING AND WORKING ON THE PLATFORM

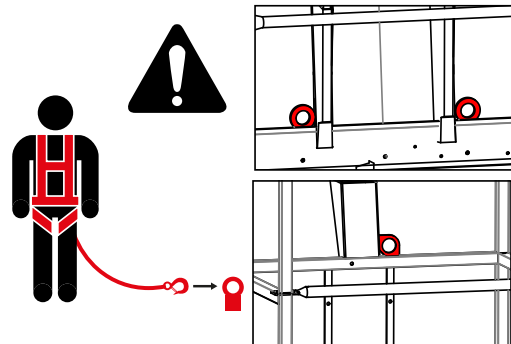
Never exceed the maximum number of persons, maximal loading or manual force, allowed for the lift. Never add load onto the platform while in the upper position.

Before operating, always ensure that the safety devices and the emergency descent system are in working order.

Use the safety harness! Fix the safety harness to the fixing points, intended for the purpose.

Note! The platform is fitted with a fixing point for the safety harness of each user. Only one harness per fixing point.

Do not use ladders, steps or other similar equipment on the platform.



Before operating the machine, make sure all gates are properly closed.
If the platform is fitted with a ladder, the ladder must be locked in the upper position.

Never throw or drop any objects from the platform. All tools must be carried inside the work platform. Never leave power tools hanging by the cord outside the work platform.

Do not carry tools, equipment or materials on or attached to the platform railing.

The lift must not be used as a crane.
The lift must not be used for transferring goods or persons between different floors or working levels. Stepping on or off the platform in motion is prohibited.

When the boom is in its lowest positions, make sure it cannot clash during rotation with structures that do not turn with the boom.

Always make sure, before lowering the platform, that the area under it is clear.

Avoid damaging the platform by lowering it on the ground, or bringing it in contact with any structures.

Never use a lift alone. Make sure that there is always someone on the ground, who can call for help in case of an emergency.

OPERATING CONDITIONS

The weather conditions, such as wind, visibility and rain, must always be taken into account so that these will not adversely affect the safe performance of the lifting operations.



The use of the lift is prohibited, if the temperature drops under -20 °C or the wind speed exceeds 12.5 m/s

| Wind speed (m/s) | | Conditions on land |
|-------------------|-----------------|---|
| 0 | Calm | Smoke rises vertically |
| 1-3 | Light breeze | Smoke moves with the wind and the wind feels on exposed skin. Leaves rustle. |
| 4-7 | Moderate breeze | Leaves and small branches of trees are moving. Flag is flying. Wind lifts dust and loose pieces of paper from the ground. |
| 8-13 | Strong breeze | Small broad-leaved trees and large branches sway. Wind whistles as it hits houses or other fixed objects. Umbrella is difficult to use. |
| 14-17 | Moderate gale | All the trees are swaying. It is difficult to walk against the wind. |

NOTICE! Wind speed can be significantly greater at height than at ground level.

Do not take tools/material of large surface area onto the platform. The increase in wind load may jeopardize the stability of the device.

Beware of the live aerial power lines in the area – observe the minimum safety distances:

| Voltage area (from phase to phase) | Minimum distance | |
|------------------------------------|------------------|------|
| | Metres | Feet |
| 0–300 V | Avoid contact | |
| 300 V–50 kV | 3 | 10 |
| 50 kV–200 kV | 4.5 | 15 |
| 200 kV–350 kV | 6 | 20 |
| 350 kV–500 kV | 8 | 25 |
| 500 kV–750 kV | 11 | 35 |
| 750 kV–1000 kV | 14 | 45 |

Observe these distances, if the worksite-specific instructions or the local or national regulations do not require even longer safety distances.

This aerial work platform is NOT insulated, and does not offer protection against contact with electric current. The aerial work platform must not be used for work on electric systems.

1.1. SAFETY-RELATED NOTIFICATIONS

The following safety alert symbols and safety signal words are used in this manual.

Observe all the safety instructions that follow these symbols, in order to avoid dangerous situations and personal injuries.



This is a general safety alert symbol and it is used to alert you about a potential hazard. Observe the additional instructions given in form of text or symbols that follow this symbol.



DANGER

Red DANGER-message warns for an imminent or potential hazardous situation which, if not avoided, may result in death or serious injury.



WARNING

Orange WARNING -message is used in connection with potential risk factors, which if not avoided, under certain conditions, may result in death or serious injury.



CAUTION

Yellow CAUTION -message is used to warn about a hazardous situation which, if not avoided, could result in minor or moderate injury.

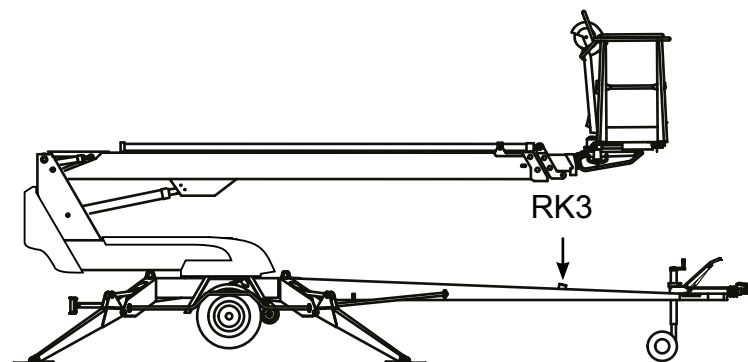
NOTICE

Blue notice-message is used to draw your attention to special notifications or instructions that are related to the operation or maintenance. Such messages include, for example, instructions that are related to reliability of the machine or aim to avoid material losses.

1.1. SAFETY DEVICES

1. Supervision of transport position of the boom

The safety limit switch RK3 prevents the operation of the outriggers and the driving device when the boom is not resting on the transport support. The switch is located on the tow-bar at the transport support.

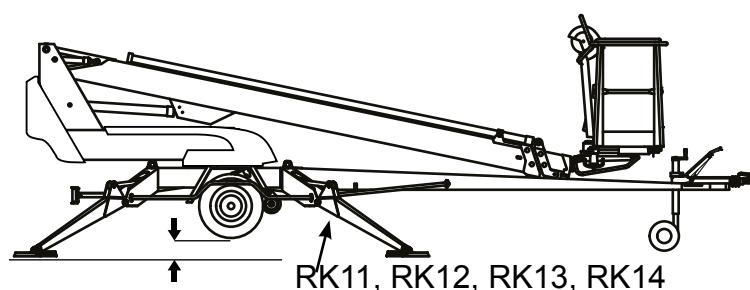


If the supervision of transport position is not functioning properly, the engine will stop. The defect must be repaired before the operation can be resumed.

2. Supervision of supporting

The lift's all support outriggers must be in the support position before the boom is lifted. Make sure that the wheels are off the ground.

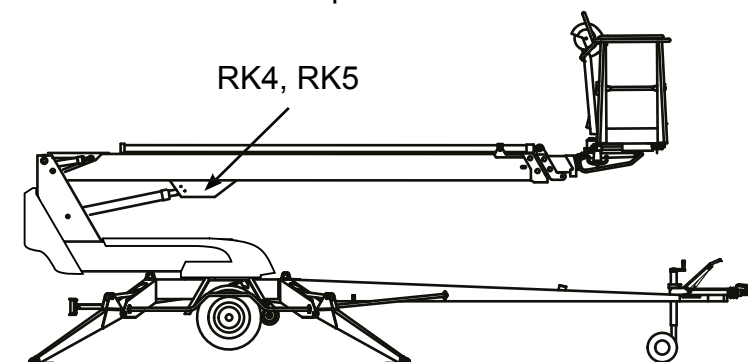
The safety limit switches RK11, RK12, RK13 and RK14 are located on the support outriggers.



3. Overload protection switches

The outreach limit switch RK4 and overload limit switch RK5 prevent the lift from being overloaded.

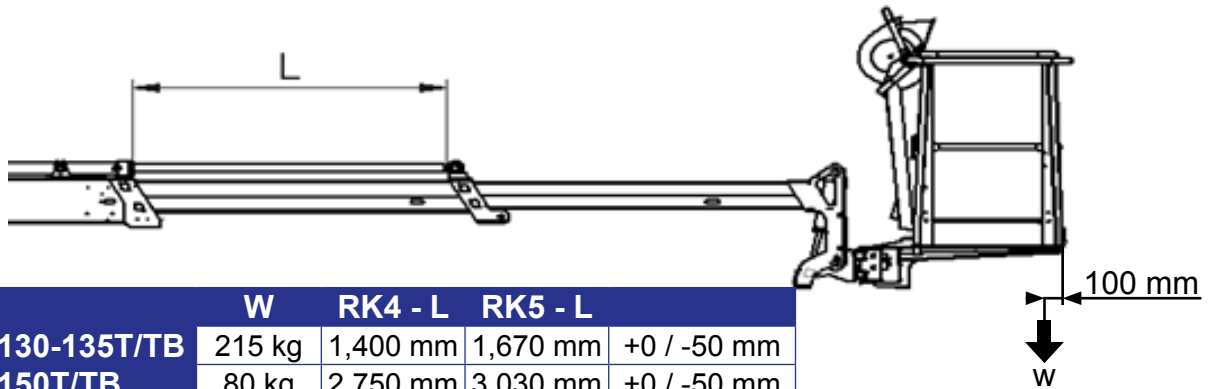
The limit switches are located under the cover at the top end of the lifting cylinder. During operation, the cover must be intact and in place.



The green light in the control centre on the platform is lit, when the platform is within the allowed operating range.

The reach limit switch **RK4** will stop the movements, which impair the stability of the lift (extending the telescope and lowering the boom), at a predetermined position.

Adjusted values of the limits:

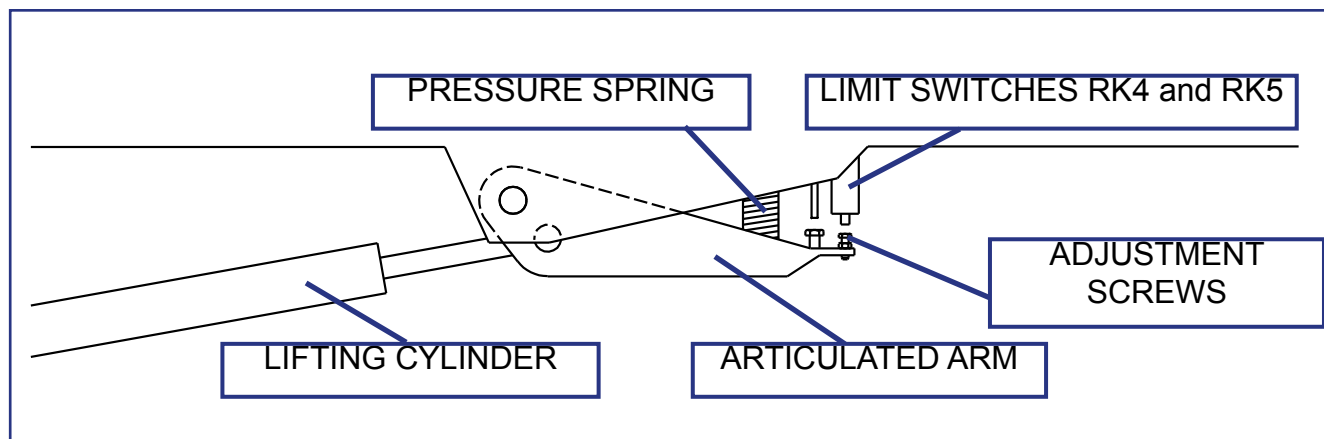


| | W | RK4 - L | RK5 - L | |
|--------------------|--------|----------|----------|-------------|
| 130-135T/TB | 215 kg | 1,400 mm | 1,670 mm | +0 / -50 mm |
| 150T/TB | 80 kg | 2,750 mm | 3,030 mm | +0 / -50 mm |
| 180T/TB | 80 kg | 2,500 mm | 2,875 mm | +0 / -50 mm |

The red light flashes when the **RK4** has stopped the movement. While the red light is flashing, the lift can be operated in the direction where it stays inside the allowed outreach area.

The overload limit switch **RK5** backs up, if the **RK4**, for some reason, does not work. When activated, the RK5 switches on the buzzer on the work platform.

The operation of the overload limit switches is based on monitoring of the boom's lifting torque.

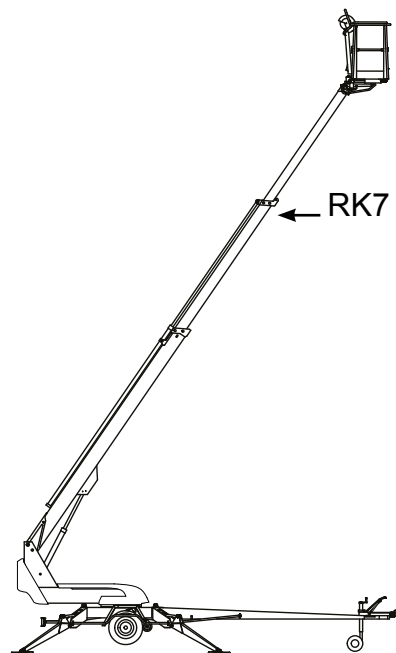
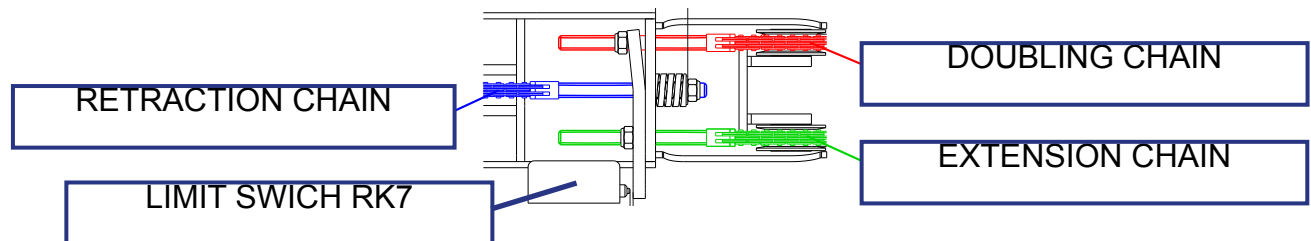


DANGER

The limit switches must never be readjusted, nor the operation of the mechanism be impeded. **Risk of turning over the lift!**

4. Supervision of the telescope chain

The extension chains for the telescope are doubled. If the load-bearing chain slackens or breaks, the doubling chain prevents the movements of the telescope, and the safety switch RK7 breaks the emergency stop circuit.

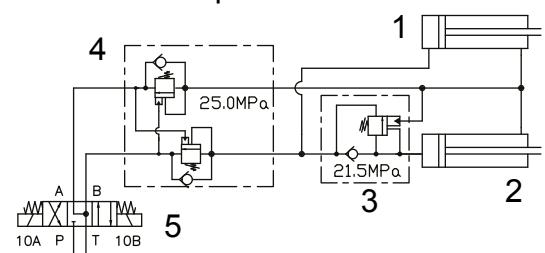


5. Preventing the inclination of the platform

The platform is levelled hydraulically by means of a so-called slave cylinder system, where the master cylinder controls the slave cylinder that inclines the work platform.

The levelling system comprises the following parts:

1. Master cylinder
2. Slave cylinder
3. Load regulation valve
4. Double load regulation valve
5. Electric directional valve



6. Safety devices for hose rupture

All the load-bearing cylinders are equipped with valves for rupture or leak in the hydraulic system, which prevent the load from falling.

| | | |
|------------------------------|------------------------|---|
| Outrigger cylinders | Lock valves | Prevent the inching of the outriggers in either direction. |
| Lifting cylinder of the boom | Load regulation valve | Prevents the load from falling |
| Telescope cylinder | Load regulation valve | Prevents the inching of the telescope in either direction. |
| Levelling system | Load regulation valves | Prevents the inclination of the platform in either direction. |

7. Emergency stop buttons

Depressing the emergency stop button, stops all the movements immediately and turns off the power unit. The button can be found at each control station. Once the button has been depressed, only the emergency descent functions remain operational.

The emergency stop button locks in the lower position, and it must be released before starting the power unit.

NOTICE

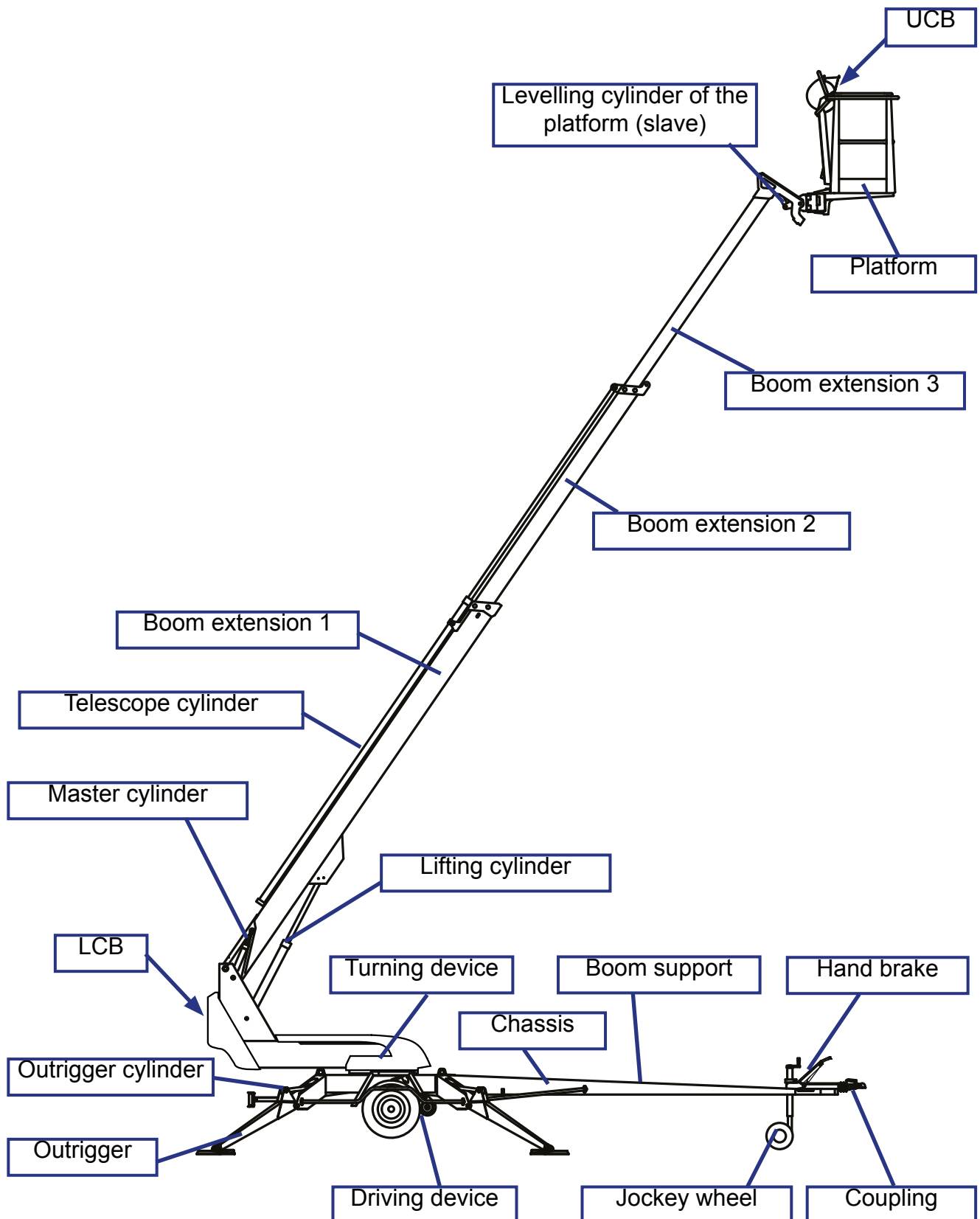
If the unit does not start, make sure that the emergency descent button is not in the lower position at any of the control stations.

The emergency stop button in the platform control centre is fitted with a signal light, which remains illuminated while the lift is in the normal operating mode. The light will go out, if the emergency stop function is activated by any of the emergency stop switches or by the safety device.

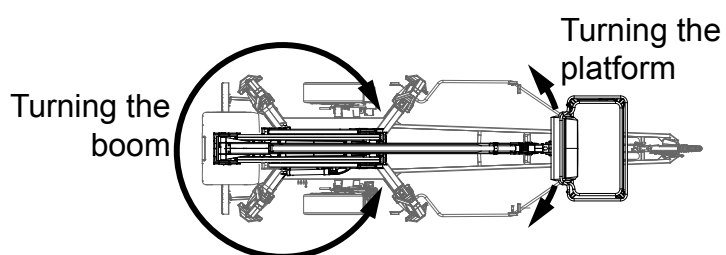
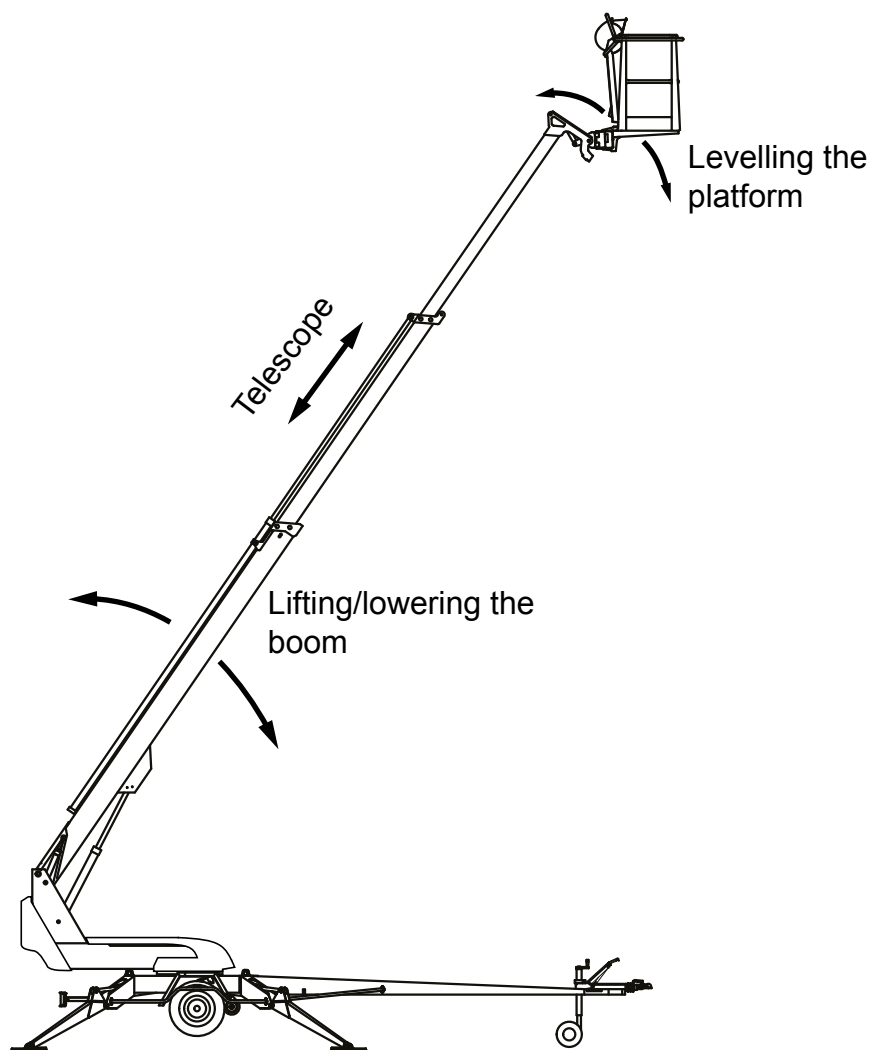
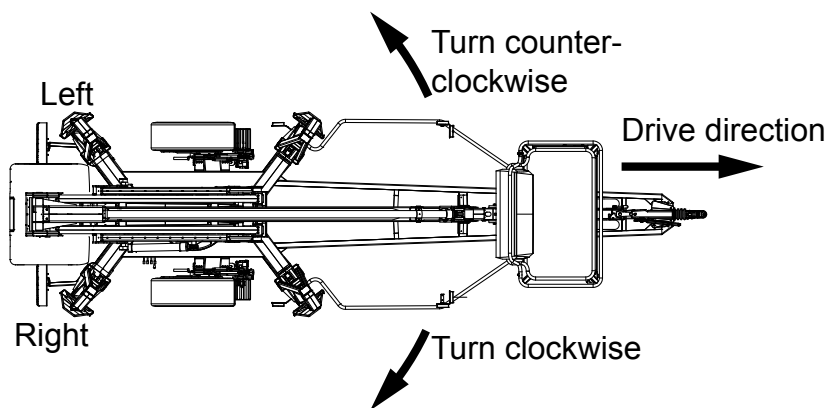
4. STRUCTURE AND FUNCTIONS OF THE LIFT

The denominations of the machine's essential parts and concepts, which are used later in these instructions, are described on the following pages.

4.1. STRUCTURE OF THE WORK PLATFORM





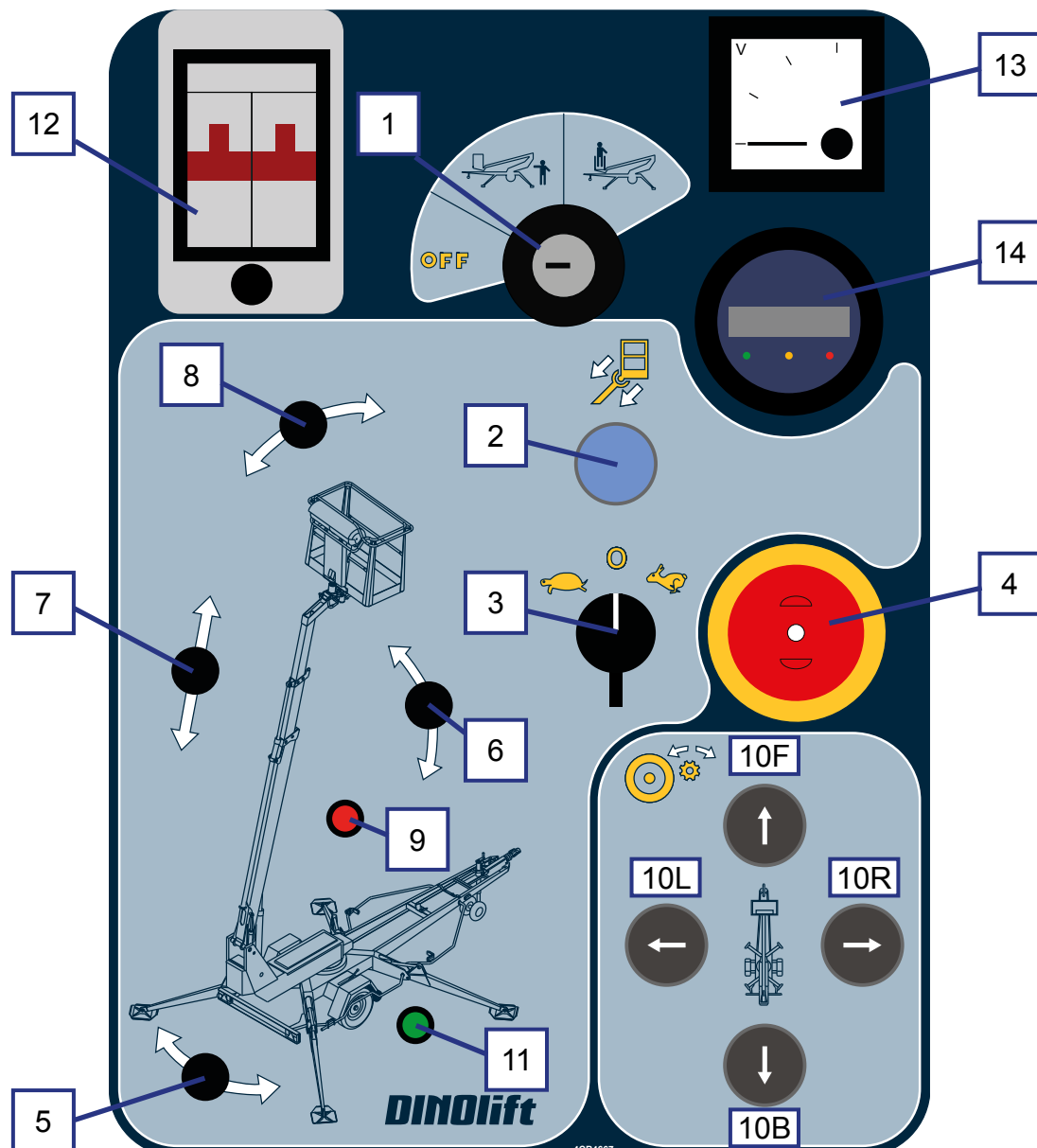
4.2. FUNCTIONS OF THE WORK PLATFORM



4.3. OPERATING CONTROLS FOR THE FUNCTIONS

4.3.1. Operating controls in the chassis control centre

| | | | |
|---|---|-----|---|
| 1 | Selector switch | 8 | Lever switch for levelling of platform |
| OFF | Ignition off | 9 | Signal light for safety device (RK5) |
|  | Operation from the chassis control centre LCB | 10F | Drive to the front |
|  | Operation from the platform control centre UCB | 10B | Drive to the rear |
| 2 | Pushbutton for retracting the telescope | 10R | Turning to the right (10R + 10F or 10B) |
| 3 | I/ II - speed (used simultaneously with the control levers for the boom and the driving device) | 10L | Turning to the left (10L + 10F or 10B) |
| 4 | Emergency stop button | 11 | Signal light for the outrigger limit switch |
| 5 | Lever switch for turning | 12 | Automatic fuse for socket outlets |
| 6 | Lever switch for boom system | 13 | Voltage meter |
| 7 | Lever switch for telescope | 14 | Battery voltage / Hour meter / Display of error codes for the engine controller |



Battery gauge (14)

1. As the current is switched on using the key switch, the operating hours of the motor are displayed on the gauge for 5 seconds.
2. During normal operation, the state of charge of the batteries is displayed in per cents.
3. If the motor controller observes malfunction, an error code is displayed.



The LED signal lights in the gauge indicate the current mode of the display

| Left LED (green) | Middle LED (yellow) | Right LED (red) |
|------------------------------------|--|----------------------|
| ON - operating hours are displayed | ON - state of charge of the batteries is displayed in % Flashes - state of charge below 10% | Flashes - error code |

Error codes

| CODE | DESCRIPTION | REMEDY |
|------|---|---|
| 11 | Internal current measurement error in the controller. | Switch off the current and retry |
| 12 | Error in the internal safety circuit for the controller. | Switch off the current and retry |
| 13 | Malfunction or short circuit of motor connections | Check the power cables and wiring of the motor. |
| 14 | Locking/malfunction in the directional switch circuit | Check fuses, control circuit for the controller and wiring. |
| 21 | Motor revolutions adjusted to too high value | Check joystick and wiring of the control circuit. |
| 22 | <i>Emergency reverse - not in operation</i> | <i>Controller incorrectly programmed</i> |
| 23 | Locking/malfunction in the revolution control circuit | Check fuses, control circuit for the controller and wiring. |
| 24 | Motor revolutions adjusted to too low value | Check joystick and wiring of the control circuit. |
| 31 | Excess current or short circuit in the main contactor spool | Check the main contactor, replace as required |
| 32 | Tip of main contactor shorted out | Check the main contactor, replace as required |
| 33 | <i>Field coil of the engine broken - not in use</i> | <i>Controller incorrectly programmed</i> |
| 34 | Control circuit for the main contactor spool broken | Check whether the connector for the main contactor is loose |
| 41 | Low battery voltage < 17VDC | Recharge the batteries immediately |
| 42 | Excess voltage > 30VDC | Check operation of the battery charger |
| 43 | Temperature too high > 85 °C or too low < -25 °C | Check ambient temperature |
| 44 | Locking/malfunction in the selector switch circuit | Check fuses, control circuit for the controller and wiring. |

Capacity of the batteries is affected by the operating temperature.

100 % is reached at the temperature of 30 °C, at 0 °C the capacity is 80 % of normal, at -20 °C the capacity is 50 % of normal

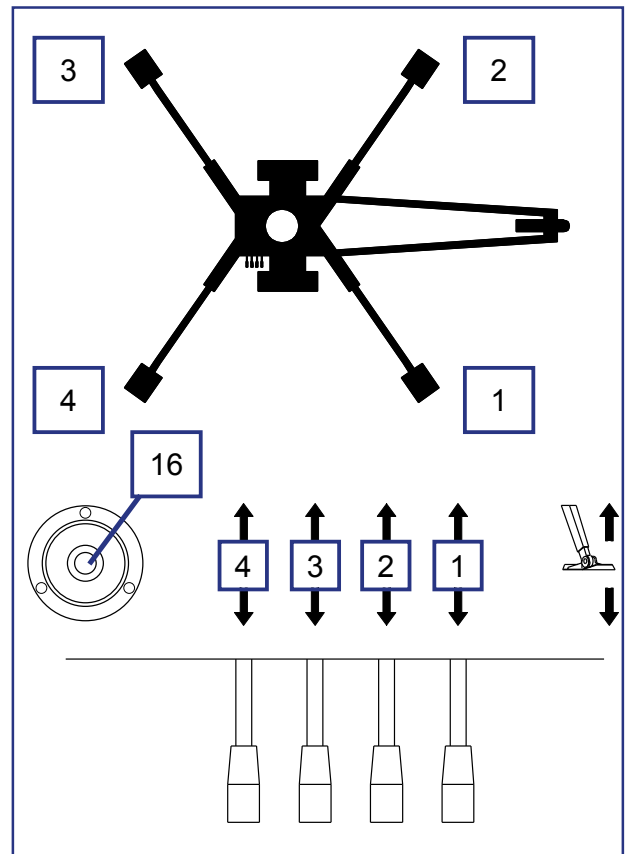
NOTICE

When the charger is connected to mains, the display immediately shows 100 % even if the batteries are not fully charged. You can check the state of charge of the batteries before charging. Always keep the charger connected for a sufficiently long time irrespective of the readout on the display! The recharger is equipped with overcharge protection.

4.3.2. Operating controls for the outriggers

| | |
|----|-------------------------------|
| 1 | Front outrigger, right |
| 2 | Front outrigger, left |
| 3 | Rear outrigger, left |
| 4 | Rear outrigger, right |
| 16 | Position indicator of chassis |

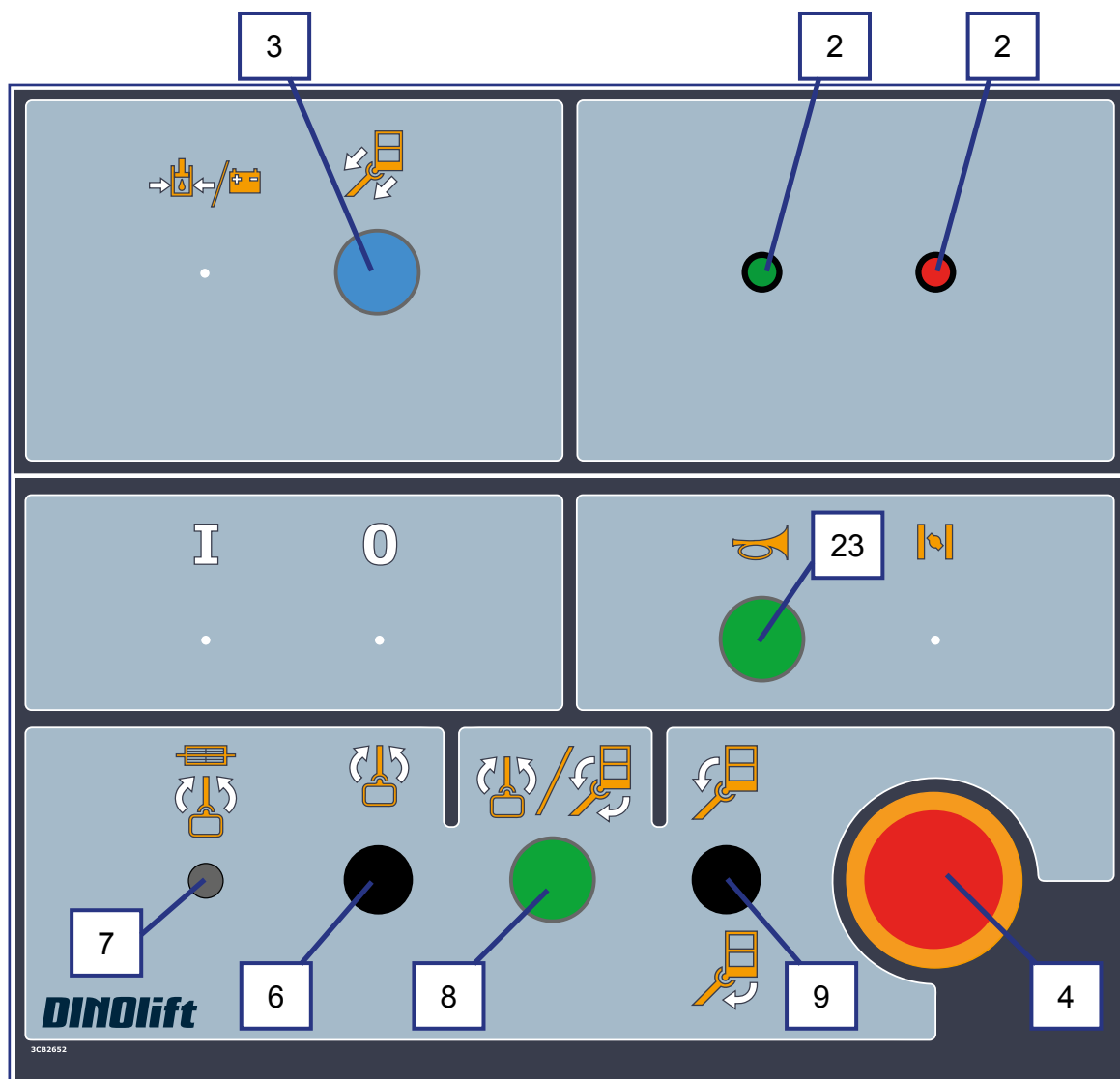
Start button for the motor at the outrigger control unit



4.3.3. Operating controls in the platform control centre

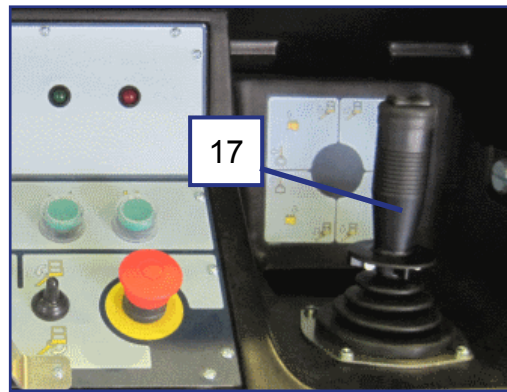
Close the cover of the chassis control centre before operating the controls on the platform.
The cover must not be locked while the lift is in operation.

The motor starts and stops automatically, as the movement is activated

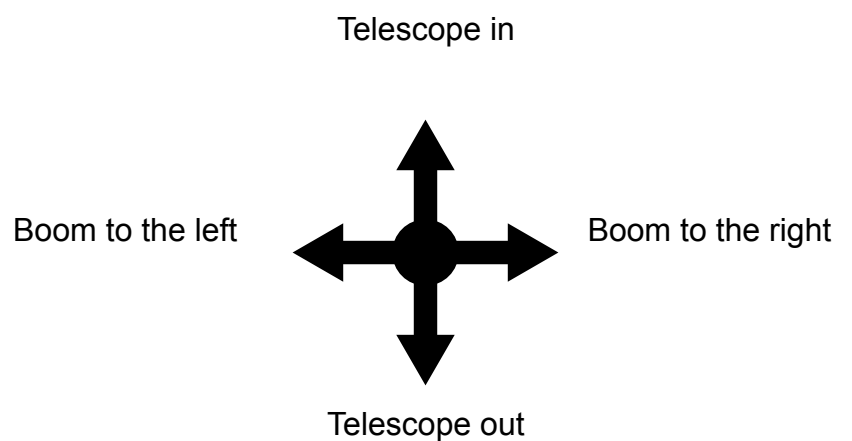
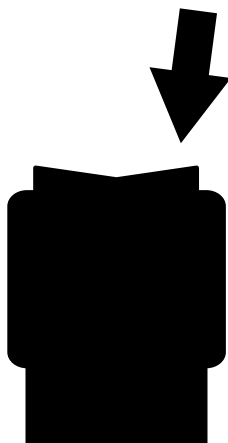
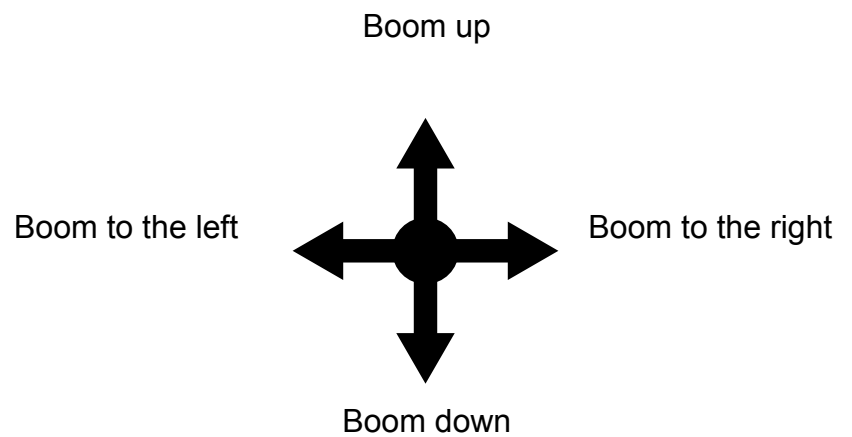


| | | | |
|---|---|---|--|
| 2 | Signal lights | 5 | Socket outlet 230VAC/ (2 pcs.) |
| | Green – inside the allowed outreach range | 6 | Turning the platform |
| | Red – at the border of the allowed outreach range | 7 | Fuse for turning of the platform |
| 3 | Pushbutton for retracting the telescope | 8 | Levelling the platform (pushbutton) |
| 4 | Emergency stop | 9 | Lever for levelling the platform (used simultaneously with pushbutton 8) |
| | - push to stop | | |
| | - pull to reset | | |

17. Control lever

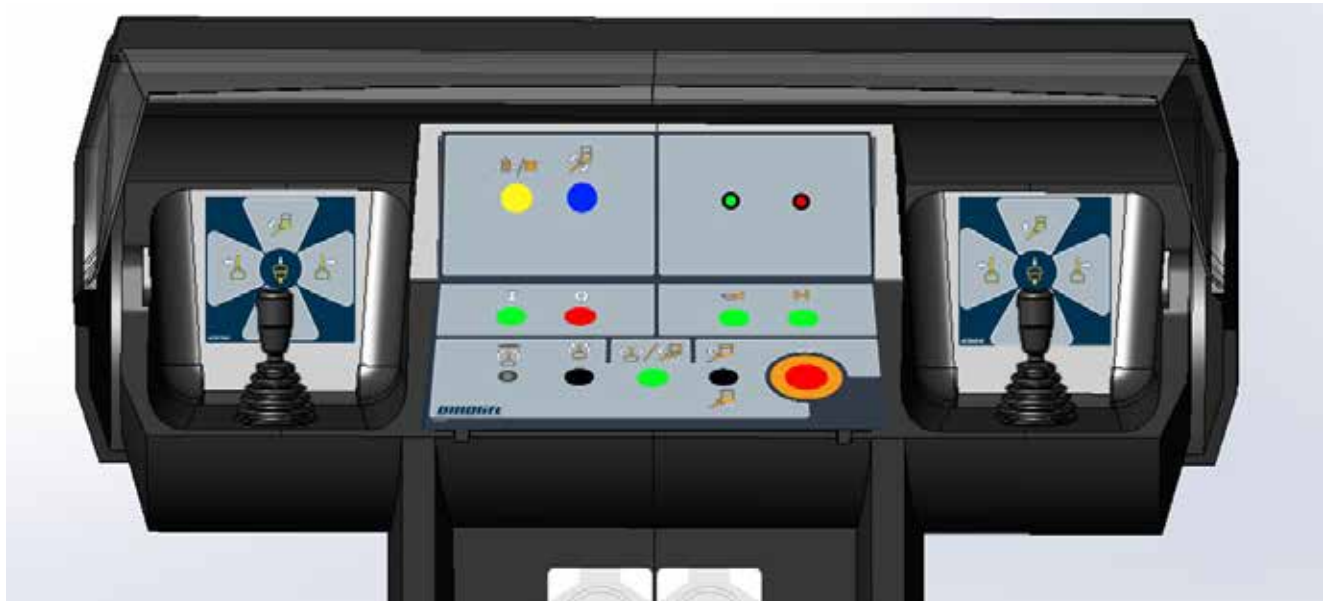


The functions are selected using the buttons at the end of the joystick. Always press the button first, and only after that, turn the handle. The safety connection prevents the movements, if the handle is turned before the button has been pushed down.

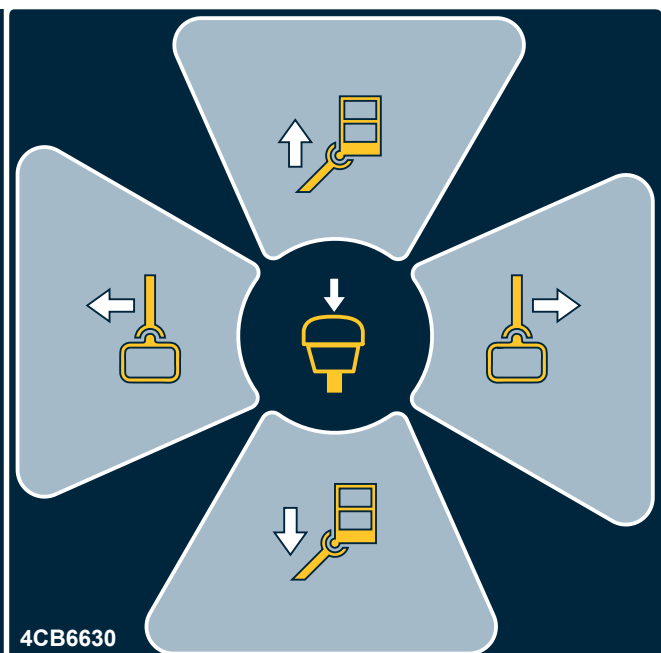
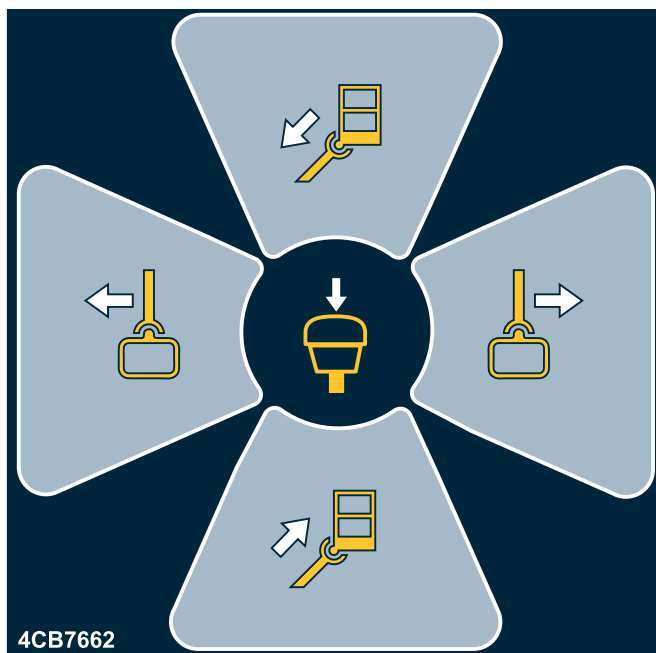


4.3.4. Setup with two control levers (option)

A setup with two control levers is available as an option for the platform control centre.



The left and right control levers (17 right/left) replace the normal control lever 17. Different functions are selected by turning the joystick in the desired direction of movement. Always press the button first, and only after that, turn the handle. The safety connection prevents the movements, if the handle is turned before the button has been pushed down.



5. OPERATING INSTRUCTIONS

5.1. START-UP

NOTICE

Before operating the lift, perform all daily maintenance measures listed in the maintenance schedule.

The operator must do a worksite inspection and daily maintenance:

- at the beginning of each workday
- before operating the lift at a new worksite
- when the operator changes in the middle of a workday

5.1.1. Worksite inspection

1. General information

- Is the lift suited for the intended job?
- Is the performance of the lift sufficient for the job? (reach, loadability etc.)
- Is the position of the lift safe?
- Is the lighting on the worksite sufficient?

2. Documents

- Are the Operation and Service Instructions for this lift present? (Manufacturer's instructions)
- Are inspections and servicing carried out in accordance with the instructions and have the defects affecting the safety been checked as repaired?
- (Inspection protocols)

3. Structure (Visual inspection and operational test)

- General condition of the lift
- Operation and protection of the controls
- Emergency stop, signal horn and limit switches
- Electrical appliances and wiring
- Oil leaks
- Load markings and signs

4. Operator

- Is the operator old enough?
- Has the operator received the required training?

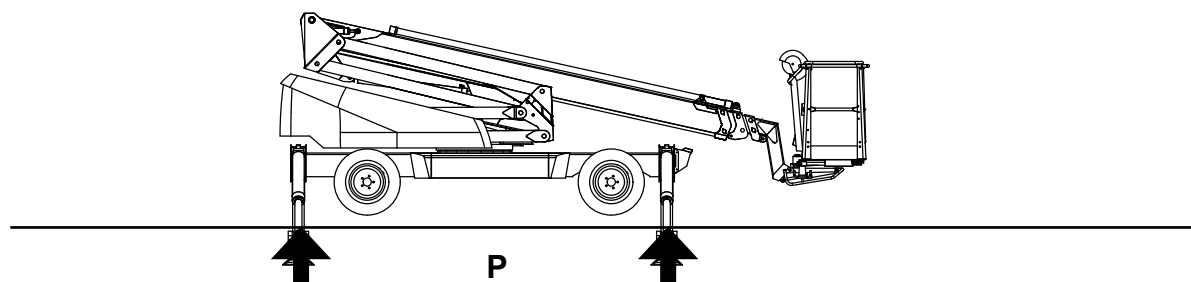
5. Special issues on the worksite

- Are there any additional regulations relevant to the worksite or the work?

5.1.2. Positioning the lift

1. make sure that the ground is even and hard enough to support the lift in a steady, level position.

| Soil material | Density | Max. ground pressure | |
|---------------|----------------------------------|----------------------|---|
| | | P | kg/cm ² (N/cm ²) |
| Gravel | High density | 6 | (59) |
| | Medium density | 4 | (39) |
| | Loose | 2 | (20) |
| Sand | High density | 5 | (49) |
| | Medium density | 3 | (29) |
| | Loose | 1,5 | (15) |
| Fine sand | High density | 4 | (39) |
| | Medium density | 2 | (20) |
| | Loose | 1 | (10) |
| Sand / mud | High density (very hard to work) | 1,00 | (10) |
| | Medium density (hard to work) | 0,50 | (5) |
| | Loose (easily worked) | 0,25 | (3) |



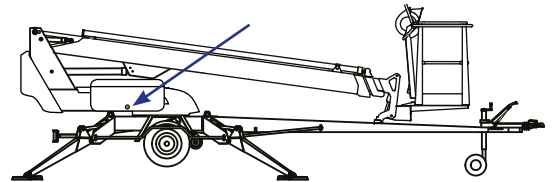
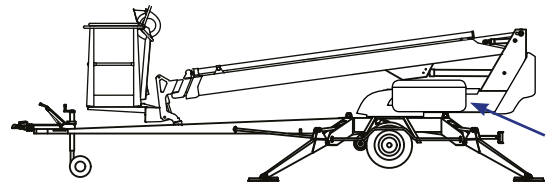
DANGER

If the ground is soft, use sufficiently large and sturdy additional plates under the support outriggers.

2. Drive the lift to the inspected lifting site
3. Engage the parking brake
4. Disconnect the lift from the towing vehicle

5.1.3. Starting up

1. Switch on the power via the main switch in the battery compartment on the left-hand side.
2. To access the operating controls, open the cover behind the power unit
3. Turn the selector switch (1) to position 1.
4. If you wish to operate the support outriggers, start the motor by pushing the green button on the battery housing on the right-hand side. The motor will run only as long as the button is kept depressed.
The motor starts and stops automatically when the speed selector switch is used.



5.1.4. Supporting the lift

1. Lower the front support outriggers 1-2 (on the tow-bar side)
2. Lower the rear support outriggers 3-4 (do not damage the tow-bar jockey wheel)
3. Level the chassis with the outriggers with the help of the level gauge (16). The air bubble must be located inside the inner ring.
4. the signal light (green) in the chassis control centre is illuminated, when all the outriggers are in the support position and the limit switch circuit for the outriggers is closed

Before using the lift, always check that:

- the chassis is in the horizontal position, using the position indicator
- the wheels are off the ground
- the outriggers are firmly supported on the ground, and the limit switch circuit of the outriggers is closed (green LED in the chassis control centre is illuminated)

**DANGER**

The operation is prohibited, if the lift is not properly supported and in a horizontal position.

Observe the effect of ice, possible rain and inclination of the surface on the support (the support outriggers must not slip on the surface).

5.2. OPERATION

WARNING

Carry out all the daily maintenance routines and inspections in accordance with the maintenance instructions before operating the lift.

Failure to check the safety devices may cause a serious injury or make the consequences of an accident worse.

IF THE SAFETY DEVICES OR THE EMERGENCY DESCENT SYSTEM ARE NOT WORKING, HAVE THEM REPAIRED BEFORE OPERATING THE LIFT.

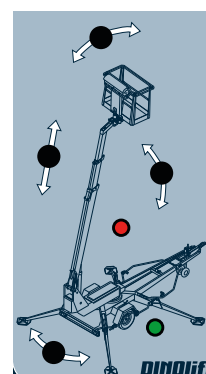
5.2.1. Operating the lift from the chassis control centre

1. Turn the selector switch Q1 to the position LCB – chassis control centre.
2. Select the movement speed using the speed selector switch. The motor starts.
3. Drive the boom and the platform using the control levers in the chassis control centre:
 - extending and retracting the telescope
 - lifting and lowering the boom
 - turning the boom

The movement will stop as soon as the speed selector switch or the selector switch for the movement is released.

The motor starts and stops automatically, as the movement is activated

4. Before starting the operation, lift the platform from the tow-bar and turn it to the side so that you can lower the boom.
5. Extend the telescope as much as is necessary to ensure that stepping onto the platform is safe.



NOTICE

Be careful not to damage the light ramps or the tow-bar jockey wheel with the work platform or the boom!

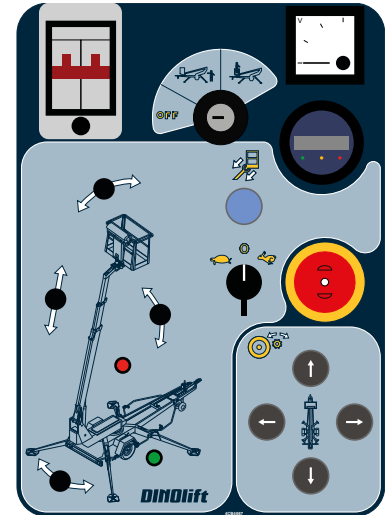
Adjusting the position of the platform from the chassis control centre:

The levelling system of the platform will automatically keep the platform level during the movements. As necessary, the position can be corrected.

Carry out the levelling of the platform while the lift is in the support position (the outriggers down). Adjust the platform position with the boom on a level. No persons allowed on the platform during adjustment.

The position of the platform may be adjusted from the chassis control centre in the following way:

1. Turn the selector switch Q1 to the position LCB.
2. Turn the speed selector switch.
3. Select the desired direction of the correction movement using the control lever (9).



5.2.2. Operating the lift from the platform control centre

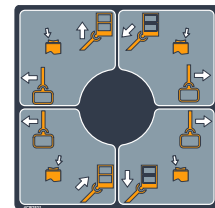
1. Turn the selector switch to the position "Platform control centre UCB", and remove the key. Do not lock the protective cover for the chassis control centre.



The engine is stopped by turning the switch Q1 to the position UCB. When operating from the platform control centre, the engine will start and stop automatically.

2. Step onto the platform and fix the safety harness to the intended attachment point.
3. Start using the lift normally. Operate the boom using the control lever:

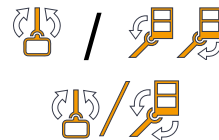
To operate the movements of the boom system, press first the rocker switch at the end of the control lever, and after that, move the control lever carefully in the desired direction of movement of the boom. The movement speed is adjusted steplessly.



If you move the lever before pressing the rocker switch, the action will be deterred.

4. Whenever possible, keep the boom short while lifting and lowering the platform.

5. Operate the movements of the platform via the lever switches.



Moving the platform via the lever switches requires that the dead-man-button 35 be depressed simultaneously.



WARNING

Never add load onto the platform, while the red overload light is illuminated. Risk of turning over the lift! Measures to be taken after an event of overloading:

Retract the platform to inside the operating range of the RK4 by pressing the "telescope in" button (the green light will be illuminated). After this, the lift may be operated normally.

6. With the boom slightly lifted and the telescope extended, make sure that the platform does not lower by itself while the operating controls are not being used.
7. Drive the platform to the work object.



CAUTION

The lift itself, the buildings around it and other obstructions constitute a risk of getting squeezed. Hands and legs must be kept inside the work platform while the platform is moving. Also beware of any obstacles above the platform.

The platform movements can be operated with continually adjustable speed from the platform control centre (not from the chassis control centre). Only one movement can be operated at a time. If several control levers are operated simultaneously, only the movement with the least resistance will operate.

Observe when lifting the platform

- The operating range of the platform depends on the load (see “Technical Data”) and is monitored by the safety limit switches RK4 and RK5, which are located under the protecting cover.
- The limit switches must not be adjusted or modified. The inspection and adjustment may only be carried out by an authorized serviceman.

Working a long time in the same position

- If the weather is cold, allow the motor to run once in a while to keep the hydraulic oil warm.
- Keep the battery sufficiently charged even during long-term work in the same position. As necessary, the state of charge of the battery must be ensured by power supply either from mains or from power pack.
- Check the stability and condition of the base regularly during the operation, taking into account the weather and ground conditions.

When moving the platform, remember the following

- beware of high voltage power lines
- do not touch open electric wires
- do not throw objects from the platform
- do not damage the lift
- do not damage other devices



DANGER

It is strictly prohibited to take additional load in the upper position.

Do not exceed the lateral force (400N), or load the platform in the vertical direction more than allowed.

Lowering the platform to transport position:

Always retract the telescope completely and turn the platform perpendicular to the boom before lowering the boom onto the transport support.

NOTICE

Do not damage the tow-bar jockey wheel while lowering the platform to the transport position!

When leaving the lift

- drive the lift to a safe position, preferably to the transport position
- switch off the power unit
- prevent unauthorized use of the lift by locking the control centre cover

5.2.3. Special instructions for winter use

The lowest allowed operating temperature of the lift is -20 °C

In cold conditions, carry out the following special actions in addition to the normal start-up procedure:

1. Let the power pack run for a few minutes before starting the movements.
2. To ensure the proper operation of the valves, do first a few warm-up movements to change warm oil in the cylinders.
3. Check that the limit switches and the emergency descent devices are operational and clean (from dirt, snow, ice, etc.).
4. Protect the control centre and the platform from snow and ice whenever they are not in use.
5. Ensure that the batteries are charged. Flat batteries freeze easily.



Always keep the lift free from dirt, snow etc.

5.2.4. Ending the work

At the end of the workday:

1. Retract the telescopic boom fully.
2. Check that the platform is perpendicular to the boom.
3. Lower the boom/platform onto the support on the tow-bar. The limit switch on the transport support prevents the operation of the support outriggers if the platform is not down.
4. Close the control centre cover on the work platform.
5. Turn the selector switch to position OFF, and turn off the main switch.
6. If you want to recharge the battery, leave the mains cable connected; otherwise disconnect the lift from the mains supply.
7. Make sure that the covers are locked.

NOTICE

To ensure proper operation and long service life of the batteries, it is recommended to always recharge them at the end of each workday, even though there was still plenty of charge left. Storing the batteries flat shortens their service life, and flat batteries also freeze easily.

5.3. TRANSFERRING THE LIFT

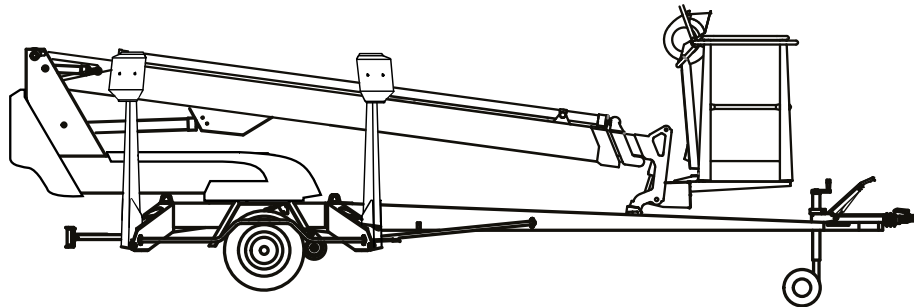
The lift can be transferred by towing or using its own driving device.



The lift may only be moved in the transport position. No persons or load are allowed on the platform during the transportation.

5.3.1. Preparing the lift for transport

During transfer, the lift must always be in the transport position.



Prepare the lift for the transfer as follows:

1. Retract the telescopic boom fully.
2. Check that the platform is perpendicular to the boom.
3. Lower the boom/platform onto the support on the tow-bar. The limit switch on the transport support prevents the operation of the support outriggers if the platform is not down.
4. Close the control centre cover on the work platform.
5. Turn the selector switch Q1 to the position LCB – chassis control centre.
6. Lift the support outriggers.
Lift first the rear support outriggers (do not damage the rear lights), and then the front support outriggers (do not damage the jockey wheel).
7. Make sure that the covers are locked.

If you intend to tow the lift:

8. Apply the parking brake.
9. Make sure that the driving device is disconnected.
10. Turn the selector switch to position OFF and disconnect the lift from the power supply.

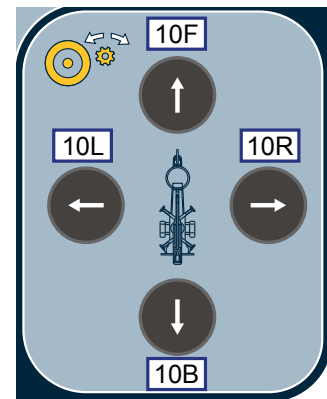
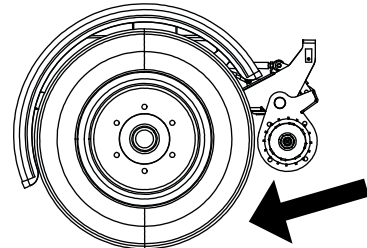
5.3.2. Using the driving device

The hydraulic driving device is intended for moving the lift within the work area if the towing vehicle cannot be used.



During transfer in rough terrain, always try to position yourself higher than the machine.

1. Turn the selector switch Q1 to the position LCB – chassis control centre.
2. Make sure that the platform is in the transport position and the outriggers have been lifted to the upper position.
3. Switch the driving device to the drive position.
4. Release the parking brake
5. Turn the speed selector switch, and drive the unit using the controls for the driving device.



| | |
|-----------|-------------------------------|
| 10F | Drive to the front |
| 10B | Drive to the rear |
| 10F + 10R | Driving forward to the right |
| 10F + 10L | Driving forward to the left |
| 10B + 10R | Driving backward to the right |
| 10B + 10L | Driving backward to the left |

Note! The movements of the boom and the platform will stop as soon as the speed selector switch or the selector switch for the movement is released.

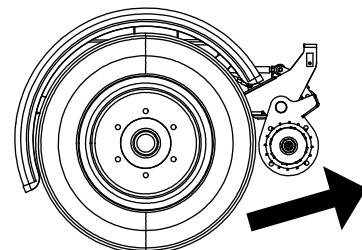


CAUTION

Do not drive the jockey wheel into obstacles or potholes. If one of the wheels bumps into an obstacle, the lift may turn abruptly.

After the driving:

- Apply the parking brake.
- Disengage the transmission.
- Disconnect the driving device from the tyre.



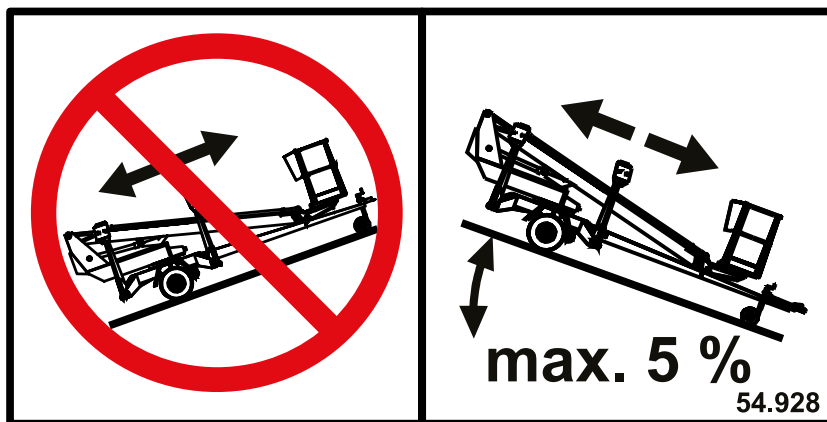
NOTICE

Be careful not to damage the jockey wheel tube by extending it too much.

When moving the lift using the driving device, a suitable length for the jockey wheel's stem can be achieved by adjusting the gap between the lower surface of the tow-bar/brake rod and the wheel to 1-3 cm. Then the wheel may turn freely.

On a slope:

1. When driving on a slope, the tow-bar must always point towards the descent. Never drive with the driving device with the tow-bar pointing towards the ascent.
2. Always place chocks under the wheels before disconnecting the device from the towing vehicle.
3. Always apply the handbrake before disconnecting the lift from the towing vehicle.
4. Only use the handbrake as a parking brake or for emergency stopping.
5. When transferring the lift using the driving device:
 - take care not to allow the wheel to roll over your foot
 - look out for sudden sideways movements of the tow-bar
 - be careful not to cause danger to other people and the environment
6. Do not move the device on a slope using only hand-power. You may lose control over it and cause an injury.
7. Never park a vehicle combination on a slope.
Never leave the lift on a slope being supported only by the self-braking action of the driving device.



Do not drive downhill with the driving device, if the inclination of the surface is more than 5 per cent, (corresponding to a descent of 0.5 m over a distance of 10 m). If the gradient of the surface is greater than this, you may lose control of the device.

5.3.3. Towing the lift

Connecting to the towing vehicle

1. Lift up and push forward (in the driving direction) the handle of the ball-coupling. Now the ball-coupling is released.
2. Press the ball-coupling onto the towball using only a little force. The connection and locking take place automatically.



Always make sure, after the connection, that the ball-coupling is properly locked.

3. Connect the emergency stop wires and light plug to the vehicle. Check the cable for chafing and proper operation of the wires.
4. Check the operation of the lights.
5. Carefully release the parking brake and make sure that its locking is in order and that its handle stays in the lower position.
6. Lift up the jockey wheel to the transport position.



Clean and lubricate the ball-coupling regularly.

In particular, if you are parking or disconnecting the lift from the towing vehicle on a slope, apply the parking brake as firmly as possible. After having applied the parking brake, push the lift backward to make the reverse automatics release the brake shoes. The spring cylinder pulls the parking brake tighter, and the brakes of the vehicle will again be properly engaged.

Adjust the brakes according to the service instructions.

Place chocks under the wheels as an additional precaution.

NOTICE

Observe the national traffic regulations, the local and worksite-specific instructions, as well as the instructions concerning the towing vehicle.

Always ensure before towing:

- transport position of the outriggers
- locking of the ball-coupling
- operation of the lights, connection of the cable
- that the parking brake is disengaged
- condition and pressure of the tyres The correct pressure ratings are marked both on the tyres and on the jockey wheel bracket.
- attachment of the safety wire
- locking of the brakes after the transportation
- locking of the jockey wheel in its upper position
- that the driving device is disconnected from the wheel
- that there is no load on the platform



Always use chocks under the wheels when disconnecting the lift from the car.

5.3.4. Lifting the device

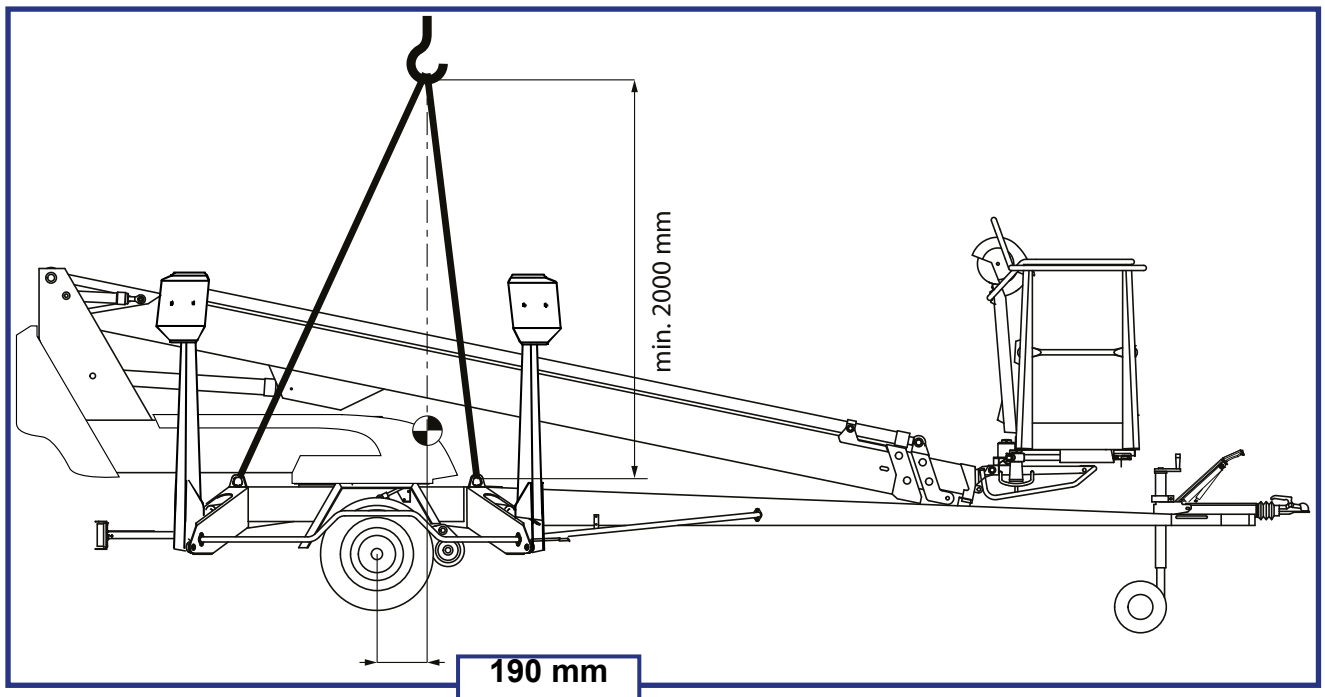
The device can be lifted using the lugs shown in the picture. The lifting lugs are located symmetrically on both sides of the lift.

During lifting the aerial work platform must be in the transport position. Remove all loose material from the top of the frame structures and the work platform before lifting.

Use for lifting a suitable crane with sufficient capacity and relevant accessories. Check the weight of the lift in the technical specifications.



Be careful not to damage the unit during the lifting operation.



5.4. LONG-TERM STORAGE

Clean the machine carefully, lubricate it and apply protective grease to it before putting it into storage for a longer period of time (see point “Lubrication plan”). Repeat the cleaning and lubrication procedures when you resume the operation.

NOTICE

If you leave the lift standing for a longer period of time, for example over the winter, we recommend propping it up to release any load from the wheels.

The periodic inspections must be executed following the steps described in the instructions.



BLANK



5.5. IN CASE OF EMERGENCY

5.5.1. When at risk of losing the stability

Reduced stability can be caused by a fault in the lift, the wind or other lateral force, collapse of the standing base or negligence in providing sufficient support. In most cases one sign of reduced stability is the inclination of the lift.



1. If there is time, try to find out the reason for the reduced stability and the direction of its effect. Warn other people on the worksite using the alarm signal.



2. If possible, reduce the load from the platform in a safe manner.
3. Reduce the outreach to the side by retracting the telescope. Avoid abrupt movements.
4. Turn the boom away from the danger zone, i.e. to a position where the stability of the lift is normal.
5. Lower the boom.

If the stability has been lost as a result of a fault in the lift, repair such a fault immediately.



Do not use the lift until the fault has been repaired and the condition of the lift has been verified.

5.5.2. In case of overloading



1. If there is time, try to find out the reason for the reduced stability and the direction of its effect. Warn other people on the worksite using the alarm signal.



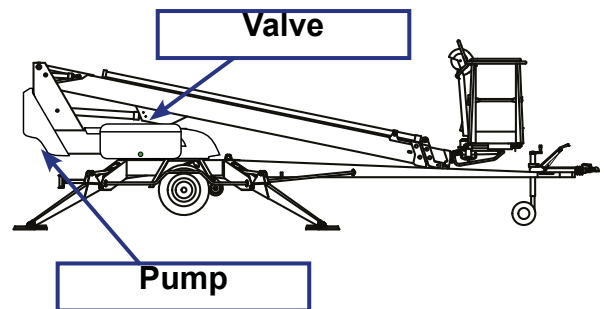
2. If possible, reduce the load from the platform in a safe manner.
3. Reduce the outreach to the side by retracting the telescopic boom using the emergency descent system. Avoid abrupt movements.

5.5.3. In case the power supply is interrupted

The lift is equipped with an emergency descent system with a hand-operated pump.

The hand pump is located under the chassis control centre. The operating lever of the pump is attached to the side of the chassis control centre. The functions are controlled by means of the finger screws on the valve. The valve is located under the plastic cover for the turning device.

Always check the condition of the emergency descent system before starting to use the lift.



NOTE Start by retracting the telescope completely, after that, lower the boom and last, turn the boom system.

1. Retracting the telescope

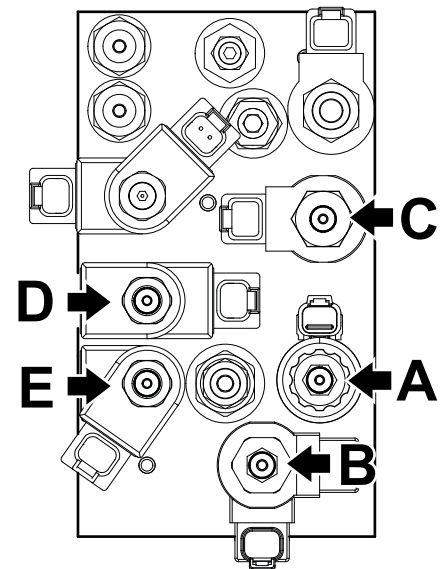
- Turn the finger screws A and C all the way down clockwise
- using the hand pump, retract the telescope completely.
- Turn the screws fully open counter-clockwise after the pumping.

2. Lowering the boom

- Turn the finger screws A, B and D all the way down clockwise
- using the hand pump, lower the boom completely.
- Turn the screws fully open counter-clockwise after the pumping.

3. Turning the boom

- Turn the finger screws A, B and E all the way down clockwise
- using the hand pump, turn the boom counter-clockwise.
- Turn the screws fully open counter-clockwise after the pumping.



5.5.4. In case of malfunction, when even the emergency descent system is not operational

If not even the emergency system is working, try to warn other personnel present on the site or call for more help. When help arrives, try to

- restore the power supply required for normal operation of the lift
- make the emergency descent system operational
- make the lift operational by, for example, changing the battery

6. INSTRUCTIONS FOR FAULT-FINDING

| FAULT | REMEDY |
|-------|--------|
|-------|--------|


1. The electric motor does not start from its start button or if any of the movements is activated

| | |
|--|---|
| The correct operating location has not been selected. | Select the correct operating location using the key switch Q1. |
| Main switch has been turned off. | Switch on the main switch. |
| The emergency stop button either in the chassis or the platform control centre has jammed in the lower position. | Pull up the button and re-start the motor. |
| No power supply to the main centre – no reading in the battery gauge. | Check the fuse F3 (main centre, 10A glass tube). Check the fuse F12 (left battery housing, 15A car fuse). Check the fuse FG (left battery housing, 150A mega fuse). |
| Power supply to the main centre is OK – reading in the battery gauge between 100 % and 1 %. | Check the fuse F1 (main centre, 10A glass tube). Check the fuse F4 (main centre, 10A glass tube). |
| Power supply to the main centre is OK – reading in the battery gauge is 0 %. | Batteries are flat → recharge the batteries by connecting the mains cable. |


2. Movements "boom up" and "telescope out" are not operational, even though the electric motor starts normally when other movements are being actuated.

| | |
|---|---|
| Low battery voltage, lifting movements are impeded. | Recharge the batteries by connecting the mains cable. |
|---|---|

3. None of the platform movements is operational though the electric motor is running and the selector switch is in the correct position

| | | |
|-------------------------------|---|---|
| The lift has been overloaded. | Reduce the platform load |  |
| | or Retract the telescope until the platform returns inside its operating range (the green light in the platform control centre lights up). | |

6. Outriggers do not move

| | | |
|--|---|---|
| Boom is not resting on the transport support. | Drive the boom onto the transport support. |  |
| The selector switch is in the wrong position. | Turn the selector switch to the correct position. | |
| The limit switch on the boom support has not closed. | Drive the boom onto the transport support. | |

| FAULT | REMEDY |
|-------|--------|
|-------|--------|

7. Malfunctions of platform movements – only one of the movements can be operated

| | |
|---|--|
| Lifting and lowering of the boom and the extension of the telescope are not operational, the red light is illuminated on the platform and in the chassis control centre, and the buzzer is audible. | The boom has been overloaded; retract the telescope and retry the operation (automatic reset). |
|---|--|

18. Driving device does not operate, although the selector switch is in position LCB

| | |
|---|----------------------------------|
| Boom is not resting on the transport support. | Drive the boom onto the support. |
|---|----------------------------------|

24. Wheel brakes overheat

| | |
|--|---------------------------------------|
| Parking brake not completely released. | Release the parking brake completely. |
|--|---------------------------------------|

25. Ball-coupling is not locked

| | |
|---|---|
| Inner parts of the ball-coupling dirty. | Clean and lubricate. |
| Tow-ball of the towing vehicle too large. | <p>Make sure that the towing ball of the towing vehicle is the right size for the lift's tow hitch.</p> <p>According to DIN74058, the diameter of the ball must be max. 50 mm and min. 49.5 mm.</p> |

In all other fault conditions, the lift must be submitted to a qualified DINO service provider.

To avoid malfunctions

- Follow the operating instructions
- Beware of dangerous situations, which can damage the lift
- Keep the lift clean and protect it against moisture

NOTES

NOTES

1. MAINTENANCE SCHEDULE

| Maint. | Schedule | Person responsible | Reference |
|--------|-----------------------|--|--------------------------|
| A | Daily | Operator | Operating instructions |
| B | 1 month / 100 hours* | Competent person who is familiar with the lift | Maintenance instructions |
| C | 6 months / 400 hours* | Competent person who is familiar with the lift | Maintenance instructions |
| D | Annually / 800 hours* | Skilled technician who is well familiar with the structure and operation of the lift | Maintenance instructions |
| E | As needed | Skilled technician who is well familiar with the structure and operation of the lift | Maintenance instructions |

* Service must be performed every indicated month or operating hour interval, whichever comes first.

NOTICE

In addition to the daily maintenance routines according to the maintenance schedule, every operator is obliged to perform a site-specific worksite inspection.

T = Check (general/visual checking of condition).

P = Thorough Inspection. To be performed following the procedure, described in the separate maintenance instructions.

V = Lubricate

S = Carry out replacements and repairs in accordance with this point

| | Maintenance item | A | B | C | D | E |
|----|--|---|-----|-----|-----|---|
| 1 | Condition of chassis structures, boom and work platform | C | C | C | I | |
| 2 | Bearings of the overload protection device joint | | G | C/G | C/G | |
| 3 | Bearings of outriggers and outrigger cylinders | | G | C/G | I/G | |
| 4 | Bearings of outrigger footplates and moving parts of outrigger limit switch system | | G | C/G | I/G | |
| 5 | Bearings of boom and articulated arms | | G | C/G | C/G | |
| 6 | Bearings of the platform | | G | C/G | C/G | |
| 7 | Bearings of the levelling cylinders | | G | C/G | C/G | |
| 8 | Bearings of the lifting cylinder | | G | C/G | C/G | |
| 9 | Sliding surfaces / rolls of the telescope | | C/G | C/G | C/G | |
| 10 | Bearings of the telescope cylinder | | | C/G | C/G | |
| 11 | Condition of cylinders | | | | I | |
| 12 | Flyer-chain | | | G | I/G | |
| 13 | Slide pads and sliding pad clearances | | C | C | C | |
| 14 | Turning device | | | G | I/G | |
| 15 | Electro-hydraulic rotating adaptor | | | | C | |
| 16 | Tyres and tyre pressures | C | C | I | I | |
| 17 | Coupling / overrun device | | C | G | I/G | |
| 18 | Jockey wheel slide and threads | | | | I/G | |
| 19 | Brakes | | | C | C | |

| Maintenance measures | | A | B | C | D | E |
|----------------------|--|---|---|---|---|---|
| 20 | Axles and suspension | | | | I | |
| 21 | Driving device | | C | G | I | |
| 22 | Lights | C | C | C | I | |
| 23 | Hydraulic oil | C | C | C | D | |
| 24 | Hydraulic hoses, pipes and fittings | C | C | C | I | |
| 25 | Condition and attachment of battery, electrical devices and wiring | | C | C | I | |
| 26 | Hydraulic pressure | | | | I | |
| 27 | Condition of safety limit switches | | | | C | |
| 28 | Operation of safety limit switches | C | C | C | I | |
| 29 | Operation of overload protection device | | | C | I | D |
| 30 | Load holding and load regulation valves | | | C | C | |
| 31 | Platform levelling system | | C | C | C | |
| 32 | Platform control devices | C | | | I | |
| 33 | Emergency descend, emergency stop and sound signal | C | C | C | C | |
| 34 | Labels, machine plates and instructions | C | C | C | C | |
| 35 | Test loading | | | | I | |
| 36 | Corrosion protection | | | | C | D |
| 37 | Movement speed adjustment | | | | | D |
| 38 | Special inspection | | | | | D |

Always lubricate the lift and apply a protective grease film immediately after the washing.

The lift must be subjected to an extraordinary inspection always after an exceptional event. An event is exceptional, for example, if the lift has been damaged so severely, that its strength or operational safety may have been endangered. Consult the maintenance manual for more detailed instructions.

NOTICE

If the lift is equipped with a petrol-driven power pack, then you shall, in addition to the normal maintenance routines, also carry out the service measures prescribed in the operating and service instructions for the power pack.

NOTICE

Under demanding conditions where moist, corrosive substances or corrosive climate may speed up the deterioration of the structures and induce malfunctions, the maintenance intervals must be shortened, or the influence of corrosion and malfunctions must be reduced by using appropriate protective agents.

1.1. SCHEDULE FOR INSPECTIONS REQUIRED BY THE AUTHORITIES

Inspections must be performed in accordance with local, state or federal regulations, legislation, directives, standards. The manufacturer recommends following inspections, as required by local authorities in platforms country of origin.

A pre-use inspection must be done before taking the platform to use for the first time and before first start-up after major repairs and alterations.

A thorough inspection and a test loading of the lift must be carried out at least once every twelve (12) months.

The platform should undergo a major inspection within ten (10) years after having been originally put into service. A major inspection includes non-destructive testing and inspection while dis-assembled.

A special inspection should be done if the platform has been exposed to exceptional circumstances which may have affected the structural integrity of critical components.

The inspections should be carried out on regular basis throughout the service life of the lift. If the lift is used under extreme conditions, intervals between the inspections shall be reduced.

The overall operating condition of the lift as well as the condition of the safety-related control devices shall be established in the regular inspections. Particular attention shall be paid to changes which affect the operational safety.

During inspections the notifications given in previous inspections, practical experience from use and information on performed repairs should be taken into account and can be implemented for better safety.

Major and special inspections shall be carried out by a competent person or competent body, who is familiar with the operation and structure of the lift. The competent person should periodically update their knowledge and be able to demonstrate their competency if so required.

A report should be made of the inspections and the reports should be kept with the unit stored in the space reserved for it.

The report should include

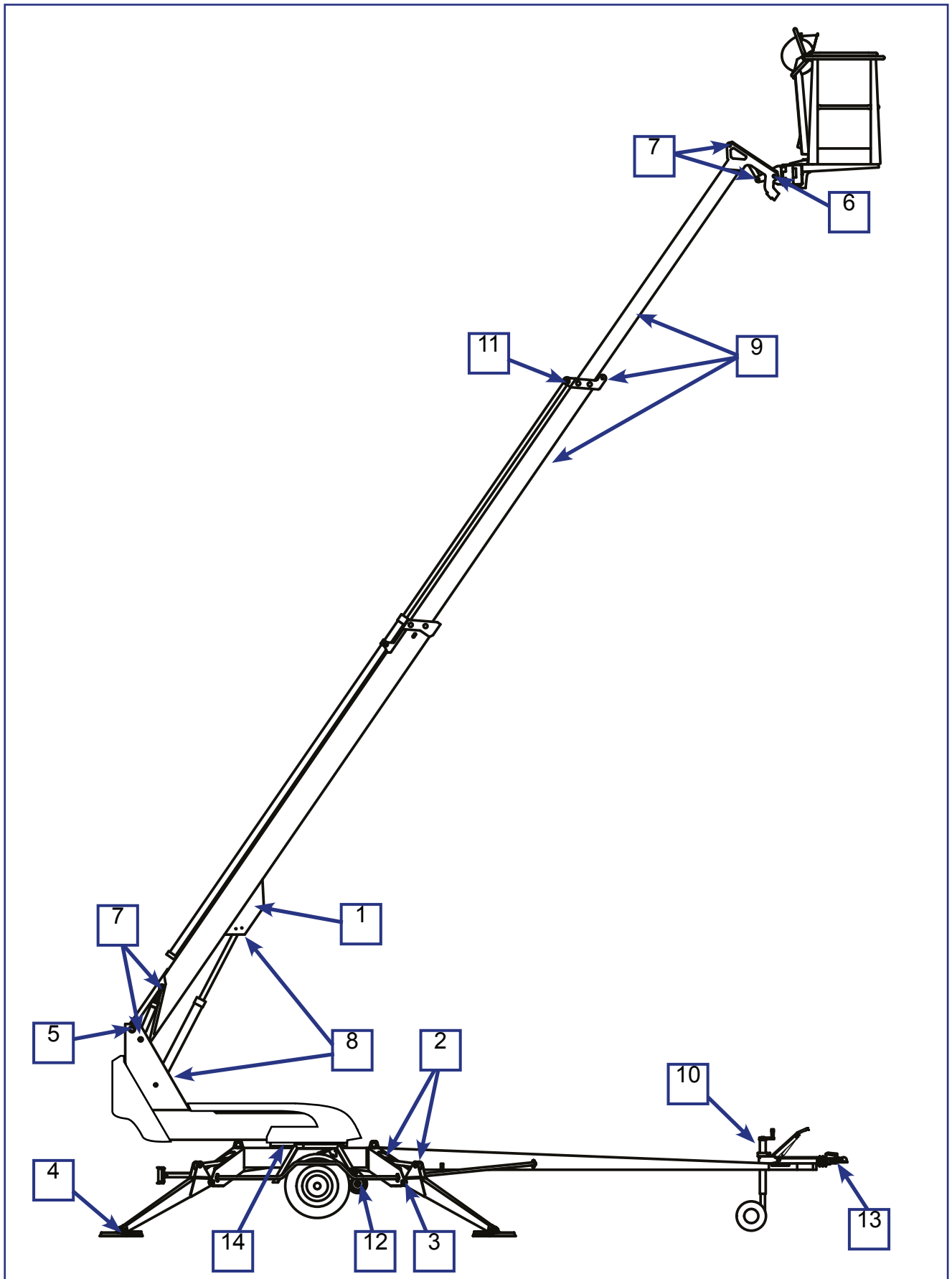
- information about the inspection
- data of repair welds (date, what was repaired and repaired by whom)

When the lift is ready for operation after annual inspection, the date of inspection shall be marked on the inspection plate affixed to the lift.

NOTICE

The schedule for inspections required by the authorities is based on the regulations, valid in the country of manufacture of the device. Check the regulations for the inspections and the competence of the inspector with the local authorities.

1.2. LUBRICATION PLAN



2. ROUTINE MAINTENANCE DURING OPERATION

The maintenance operations, that are the responsibility of the operator, are described in this chapter.

The more demanding maintenance operations that require special skills, special tools or specific measurements and adjustment values are instructed in the separate Maintenance Instructions. In such maintenance and repair cases, the operator shall contact an authorized service provider, the distributor or the manufacturer.

Make sure that all the service and maintenance procedures of the lift are performed in time and according to the given instructions.



WARNING

Any such faults, observed during operation or periodic service, which affect the operational safety of the unit, must be repaired before the lift is used next time.

Keep the lift clean. Clean the lift especially carefully before services and inspections. Impurities may cause serious problems, for example, in the hydraulic system.

Use original spare parts and consumables. Consult the spare parts list for more detailed information about the parts.

The first service after 20 hours of operation

- change the pressure filter element
- adjust the brakes according to the instructions (see point “Wheel brakes and bearings”)
- check the wheel bolts for tightness after about 100 km of driving

If the lift is operated under demanding conditions (in exceptionally humid or dusty environment, corrosive climate, etc.) the intervals between the oil changes and the other inspections shall be shortened to meet the prevailing conditions in order to maintain the operational safety and reliability of the lift.

The timely performance of the periodic servicing and the inspections is absolutely mandatory, because neglecting them may impair the operational safety of the lift.

The guarantee will not remain valid, if the servicing and the periodic inspections are not performed.

2.1. INSTRUCTIONS FOR DAILY MAINTENANCE AND INSPECTIONS

2.1.1. Check the condition of chassis, the boom and the work platform

Check visually the condition of the access routes, the work platform, the platform gate and the handrails.

Check visually the condition of the boom and the frame structures.

2.1.2. Check the tyres and tyre pressure

Check visually that the tyres are duly inflated, and do not show any damage.

2.1.3. Check the lights

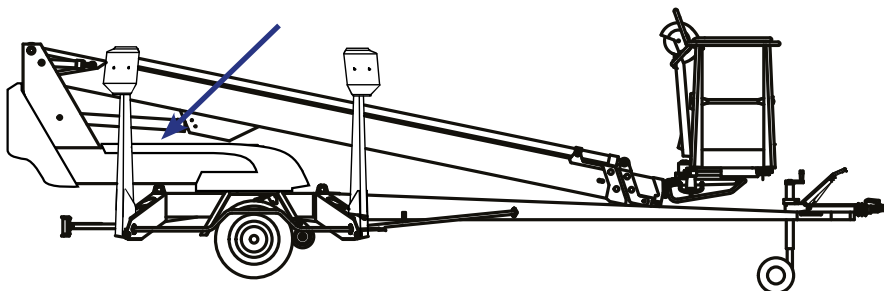
Check the condition of all the warning and signal lights as well as the road traffic lights of the trailer.

2.1.4. Check the hydraulic oil level

Check the hydraulic oil level with the platform in the transport position.

As required, top up hydraulic oil to the upper mark on the dipstick.

The hydraulic oil tank is located under a cover of the turning device, as shown in the picture.



2.1.5. Check the hydraulic hoses, pipes and connectors

Check visually the hydraulic hoses, pipes and connections.

Make sure that there are no visible oil leaks.

Replace any externally damaged hoses and clashed pipes or fittings.

2.1.6. Check the operation of the safety limit switches

Test the operation of the safety limit switches that prevent the movements of the boom and the outriggers as follows:

1. The lift is in the transport position with the outriggers in the upper position, and the driving device connected.
2. Lift the boom via the controls in the chassis control centre.
The boom must not operate in any position of the selector switch.
3. Lower the outriggers to the operating position of the lift
4. Using the controls in the chassis control centre, lift the boom so much that it raises from the support
5. Drive the outriggers.

The outriggers must not operate in any position of the selector switch.

2.1.7. Check the operation of the emergency descent, the emergency stop and the sound signal

Test the operation of the emergency stop, the emergency descent system and the sound signal from both the chassis control centre and the platform control centre.

- lift the boom about 1–2 metres, and extend the telescope by 1–2 metres, keeping the emergency stop button depressed – the movement shall now stop
- using the emergency descent, retract first completely the telescope, then lower the boom
- pull up the emergency stop button
- test the operation of the sound signal

2.1.8. Decals, stickers and signs

Check that all the signs, warning decals and pictorials in the control centres are in place, intact and clean.

2.1.9. Instruction manuals

Check that the user manuals accompanying the lift are legible.



BLANK



4.7. MAINTENANCE OF THE BATTERIES



CAUTION

Electrolytic liquid is highly corrosive – always wear protective clothing and eye guards.
The batteries generate hydrogen gas during charging – naked flame prohibited, danger of explosion

Always keep the batteries well charged

- Keeping batteries discharged is extremely harmful. Modern chargers do not charge batteries excessively.
- Make sure the user is aware that the batteries must be plugged in for charging every night, although they were not totally flat.
- Plug in a rental machine for charging over night immediately after it is returned.

NOTICE

If the batteries are flat, using the charger for driving the machine is not recommended. The load may grow too high. Continue the charging for at least half an hour before starting the operation.

Do not allow the batteries to freeze

- A fully charged battery stands out for frost, a flat battery does not.
- Make sure the batteries are charged, if they are kept outdoors in the winter.

Make sure the level of electrolyte in the battery is correct

- Top up distilled water only after the charging is finished. Correct level of the electrolyte is 3 mm below the edge of the mark.
 - If the level is too high, the liquid will spume out from the plugs during charging.
 - If the level is too low, the upper edges of the elements will corrode.
- If the level of the electrolyte is so low, that the tops of the elements are not submerged, top up water as much as is required to cover the elements. After that, charge the batteries and recheck the electrolyte level after the charging is finished.
- Do not add into the battery acid, but only distilled water.



Check the batteries regularly

- Keep the batteries clean externally. You can wash the batteries with warm water and a brush. Make sure the plugs for the cells are closed so that washing water cannot enter the cells.
- Check the condition and attachment of the cables and the tightness of the connectors regularly.
- Check that the batteries do not show cracks or leaks.

Test the condition of the batteries regularly

- Specific weight of the liquid
1.277 Battery 100 % charged

NOTICE

If maintained well, the batteries will last 4-5 years of normal operation. Incorrect use shortens their service life rapidly.



BLANK

1. CHANGE OF OWNER

For the owner of the lift:

If you have purchased a used DINO lift from some other than the manufacturer, please post your details to the manufacturer using the form on this page, and send it to:

info@dinolift.com

This information makes it possible for us to provide you with the safety bulletins and other campaigns relevant to your machine.

Note! It is not necessary to inform about a rented machine.

Machine model: DINO _____

Serial number: _____

Previous owner: _____

Country: _____

Date of purchase: _____

Current owner: _____

Address: _____

Country: _____

Contact person

Name and position in the company: _____

Telephone: _____

E-mail: _____

NOTES

NOTES