DINOlift
Up to the Job

# OPERATING INSTRUCTIONS

## DINO 160XTB II • 180XTB II • 210XTB II

**Manufacturer:**

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

**Dealer:**

# TRANSLATION OF THE ORIGINAL INSTRUCTIONS

## Valid from serial number

| | |
|---|---|
| **160XTB II** | **160097->** |
| **180XTB II** | **40001->** |
| **210XTB II** | **210025->** |

# CONTENTS

# 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.

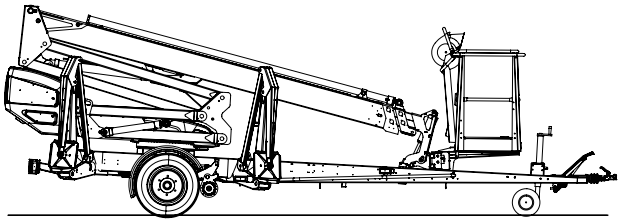
Dinolift Oy is constantly developing its products. For this reason, the contents of this manual might not always be in full compliance with the most recent version of the product. Dinolift Oy reserves the right to modify the product without prior notice. Dinolift Oy assumes no liability for any problems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

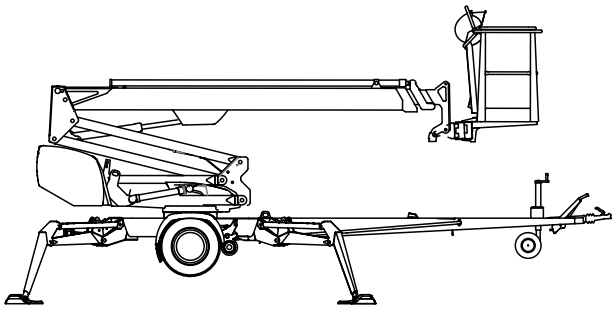
Please consult your dealer or the manufacturer for more information and detailed instructions.

## 1.1. OVERVIEW OF THE UNIT

This unit is a trailer mounted, towable aerial work platform.
It is an aerial work platform, which complies with the EN280 type 1, where travelling is only allowed with the platform in transport configuration.

For the operation the lift shall be supported by its hydraulic outriggers, extended so that the wheels of the trailer lift off the ground.





Nostimen ensisijaisena voimanlähteeenä on sähkömoottorikäyttö. The outriggers and the boom system are hydraulically powered.

As an option, the lifts can be equipped with a driving device that can be controlled from the ground.

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 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.

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***

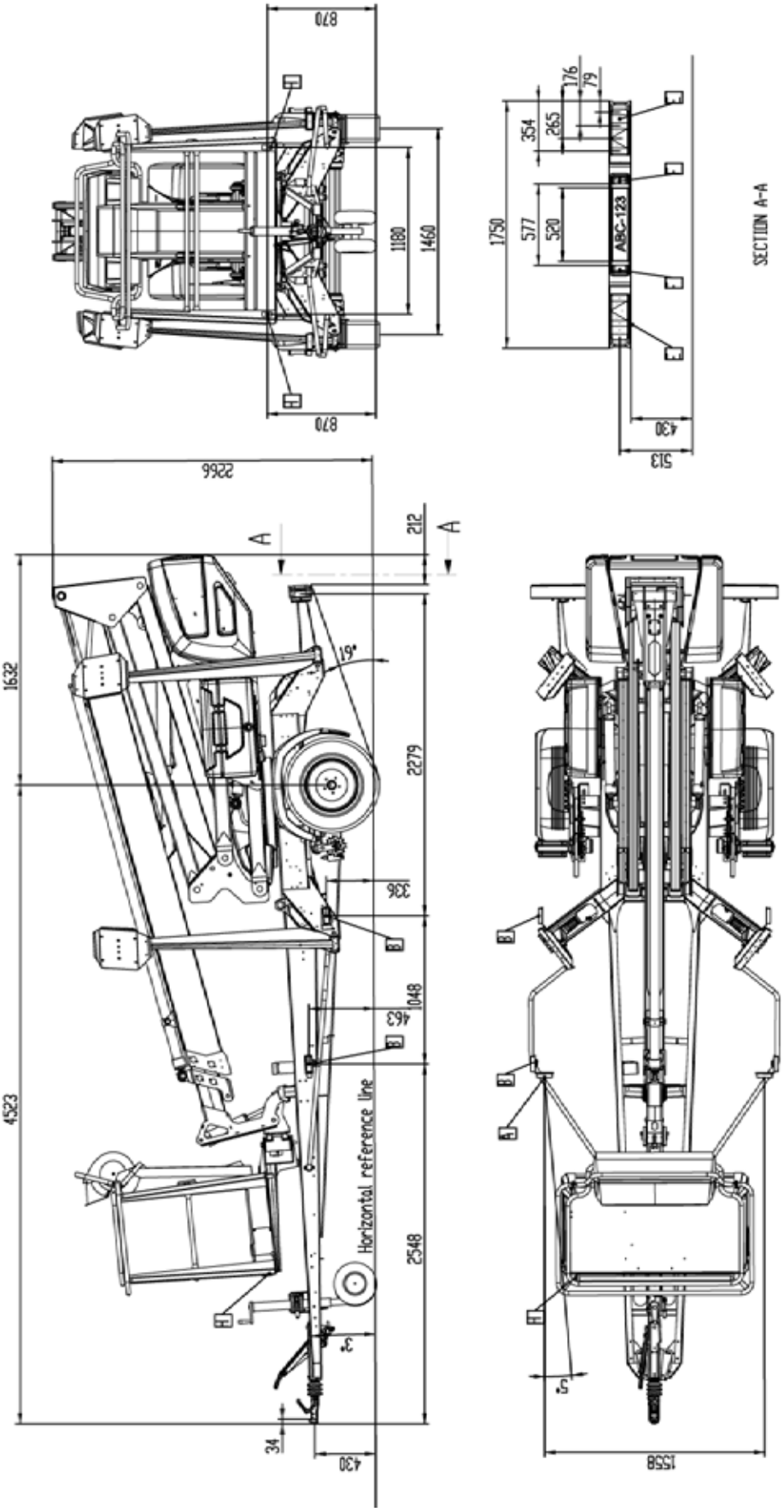
**The operator must receive instructions and consent from the manufacturer for all such specific work methods or conditions that the manufacturer has not explicitly defined in the unit's operation and maintenance instructions.**

## 2. TECHNICAL SPECIFICATIONS

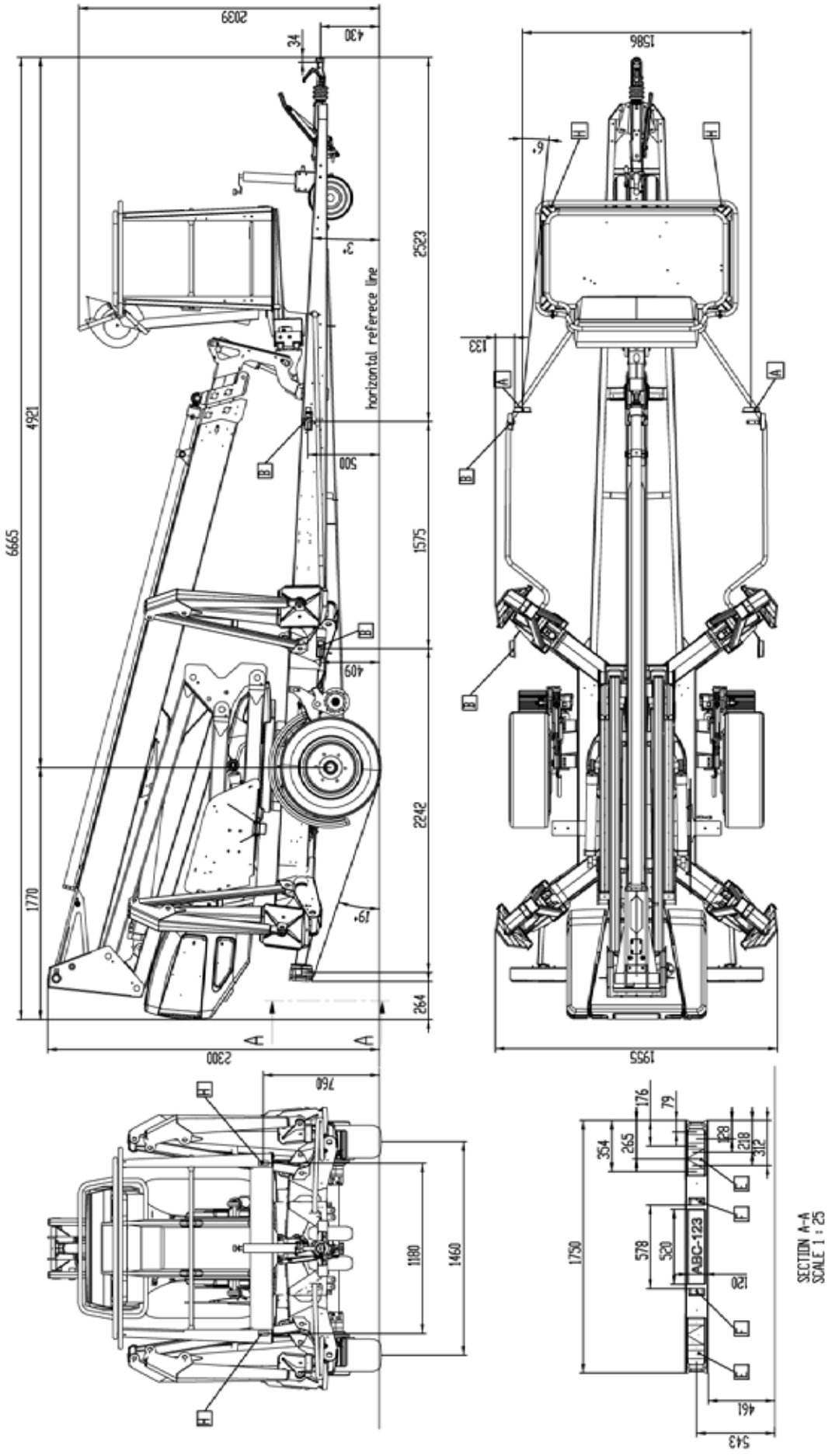
| | 160XTB II | 180XTB II | 210XTB II |
|---|---|---|---|
| Max. working height | 16,0 m | 18,0 m | 21,0 m |
| Max. platform height | 14,0 m | 16,0 m | 19,0 m |
| Max. outreach | 9,1 m | 11,2 m | 11,7 m |
| Boom rotation | continuous | | |
| Platform rotation | 180° | | |
| Turn area | refer to the reach diagram | | |
| Support width | 3,80/4,20 m | 3,90/4,30 m | 3,90/4,30 m |
| Transport width | 1,80 m | 1,95 m | 1,95 m |
| Transport length | 6,15 m | 6,66 m | 7,92 m |
| Transport height | 2,31 m | 2,30 m | 2,33 m |
| Weight | 2196 kg | 2380 kg | 2610 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. allowed gradient of ground to the side | 2,7° | 6,7° | 6,7° |
| Max. allowed gradient of ground lengthwise | 4,2° | 8,0° | 8,3° |
| Max. wind speed during operation | 12,5 m/s | | |
| Min. ambient temperature when working | - 20 °C | | |
| Max. support force on the outriggers | 16800 N | 16800 N | 22800 N |
| Platform size | 0,7 x 1,3 m | | |
| Gradeability | 25% | | |
| Power supply | | | |
| - battery powered | 24V/2kW, 4x6V 235Ah | | |
| Sound pressure level | < 70 dB | | |
| Whole-body vibration | Not detectable | | |
| - mains current, battery charging | 230V/50Hz/10A | | |
| Socket outlets on the platform | 2 x 230V/50Hz/16A | | |

## 2.1. DIMENSION DRAWINGS

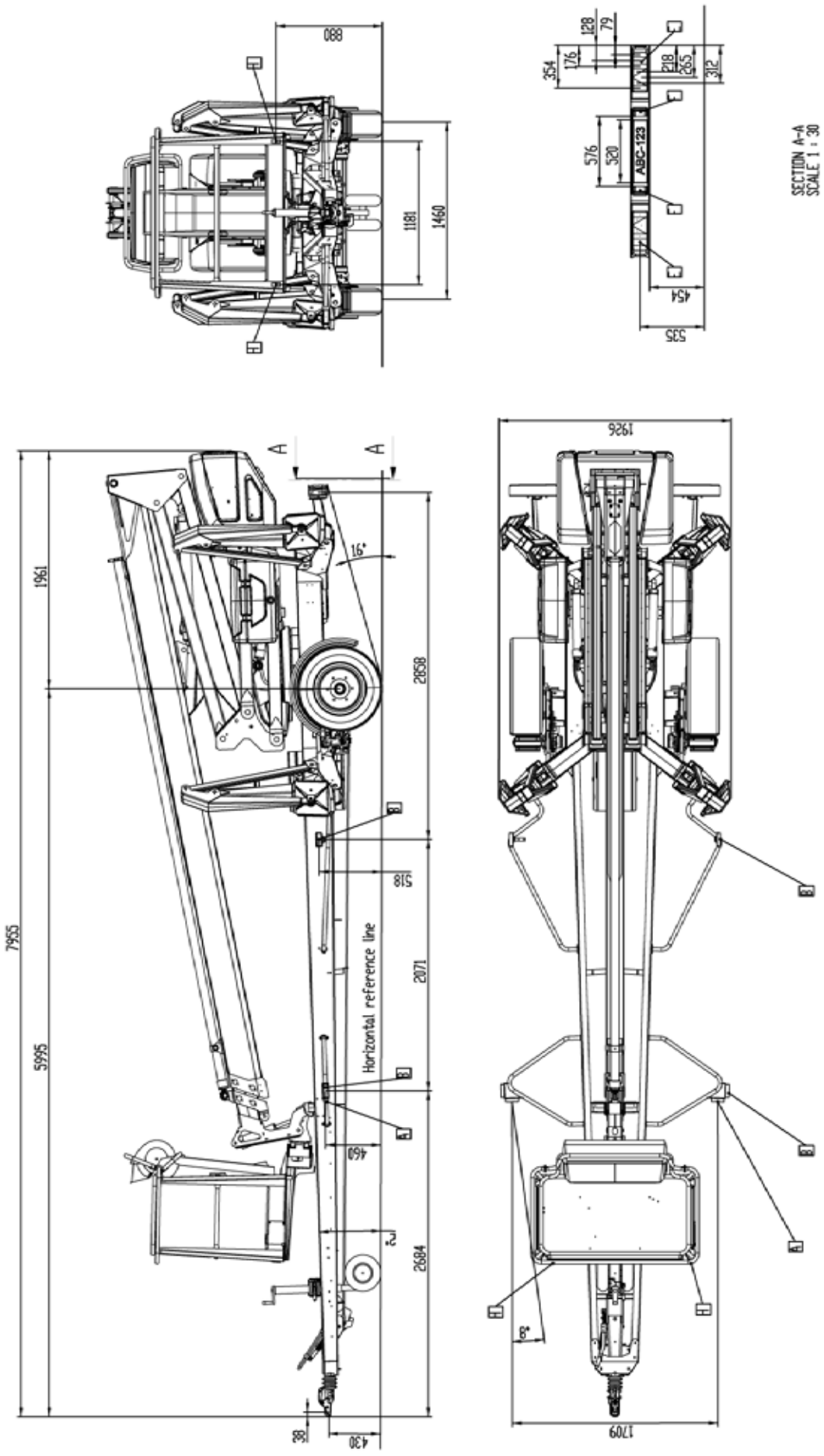
### 2.1.1. 160 XTB II



### 2.1.2. 180 XTB II

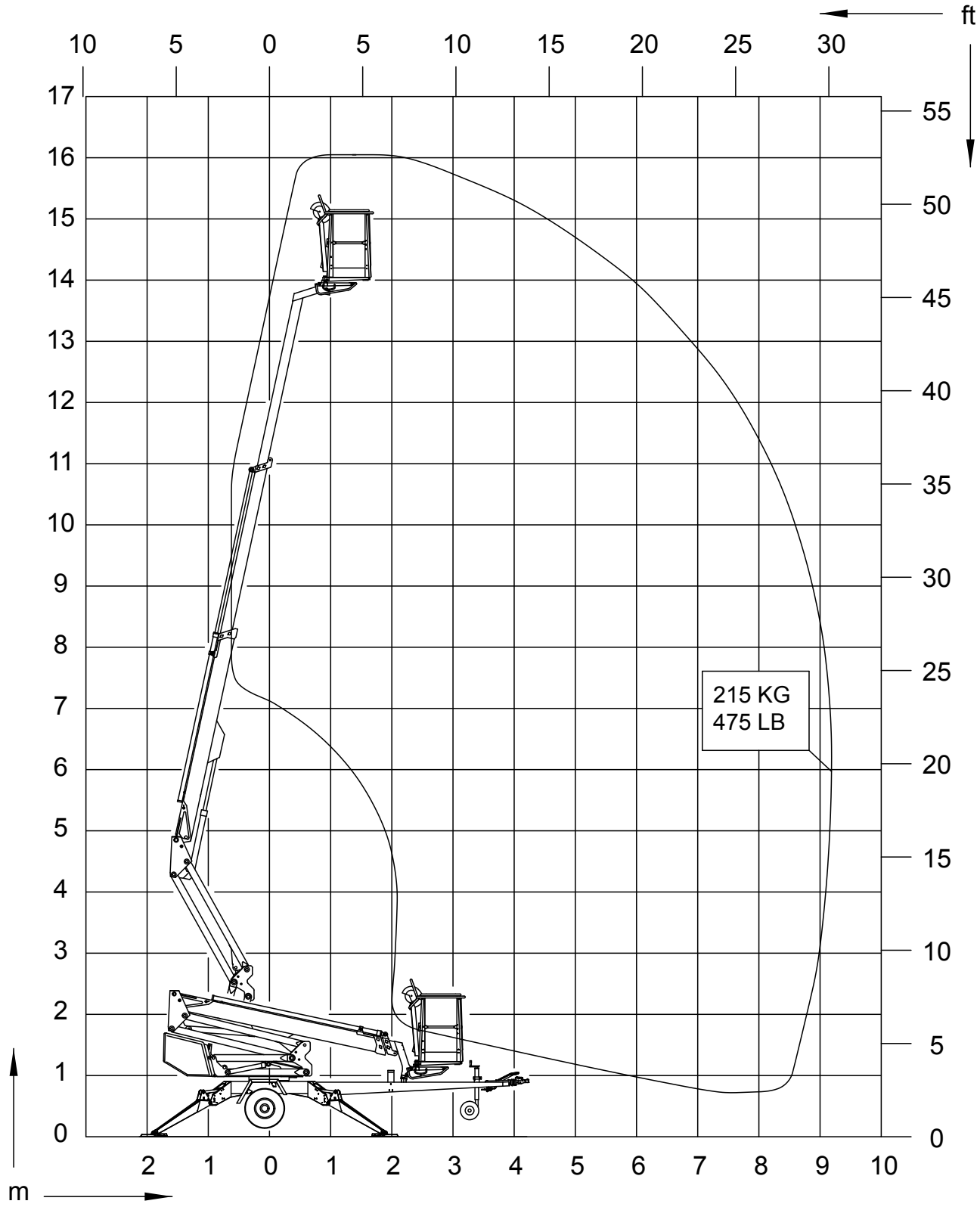


## 2.1.3. 210 XTB II

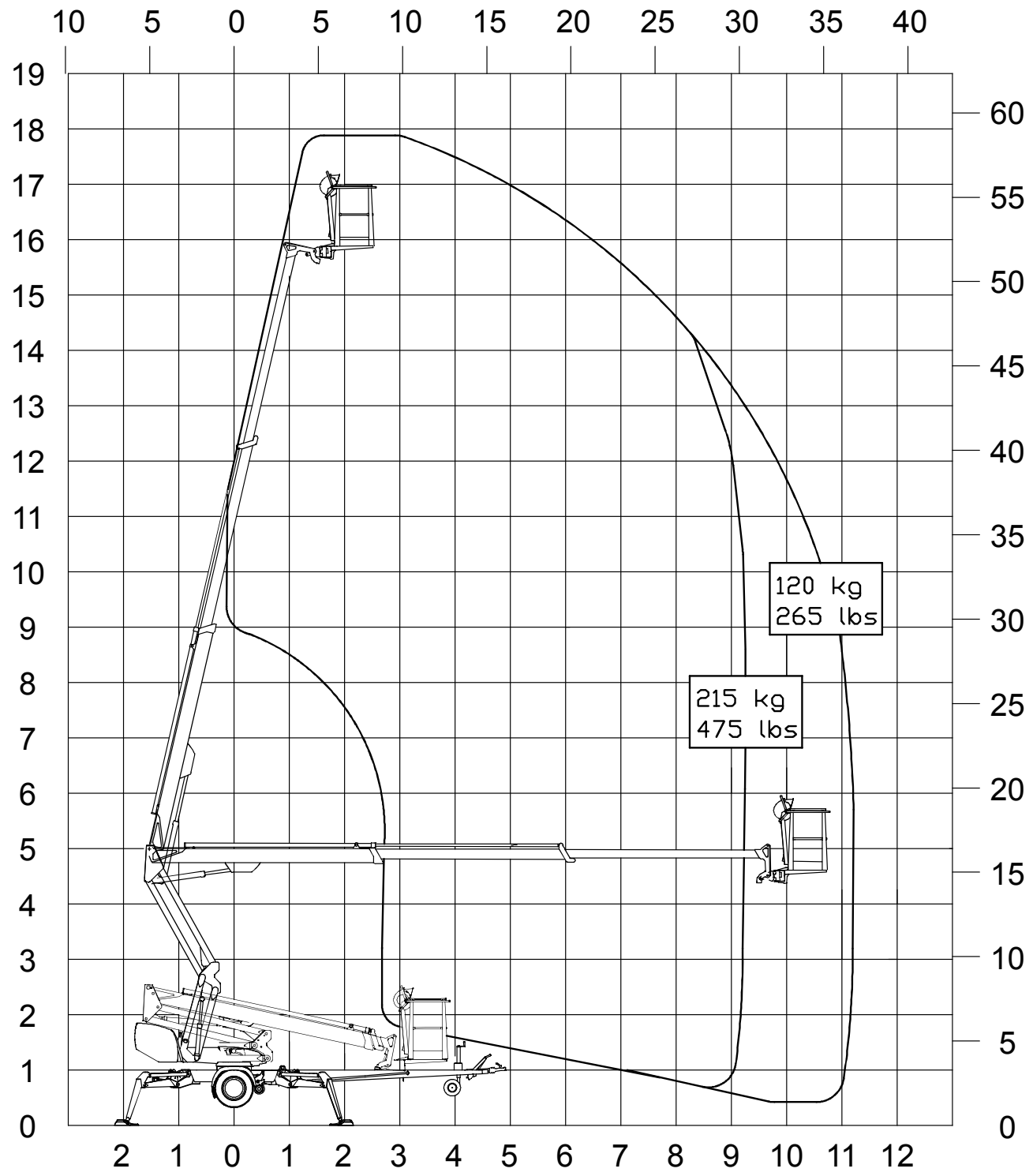


## 2.2. REACH DIAGRAM

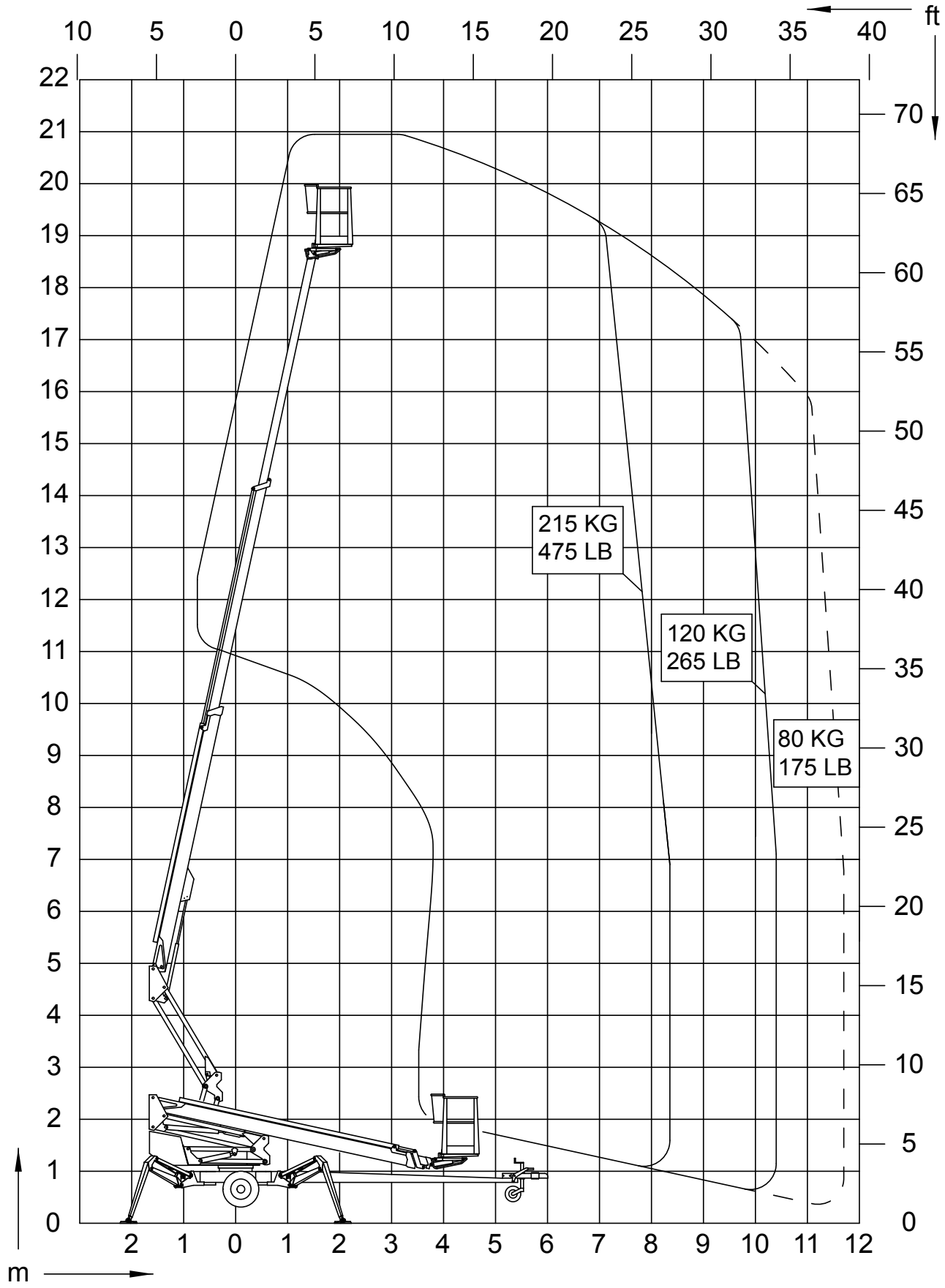
### 2.2.1. 160 XTB II



### 2.2.2. 180 XTB II

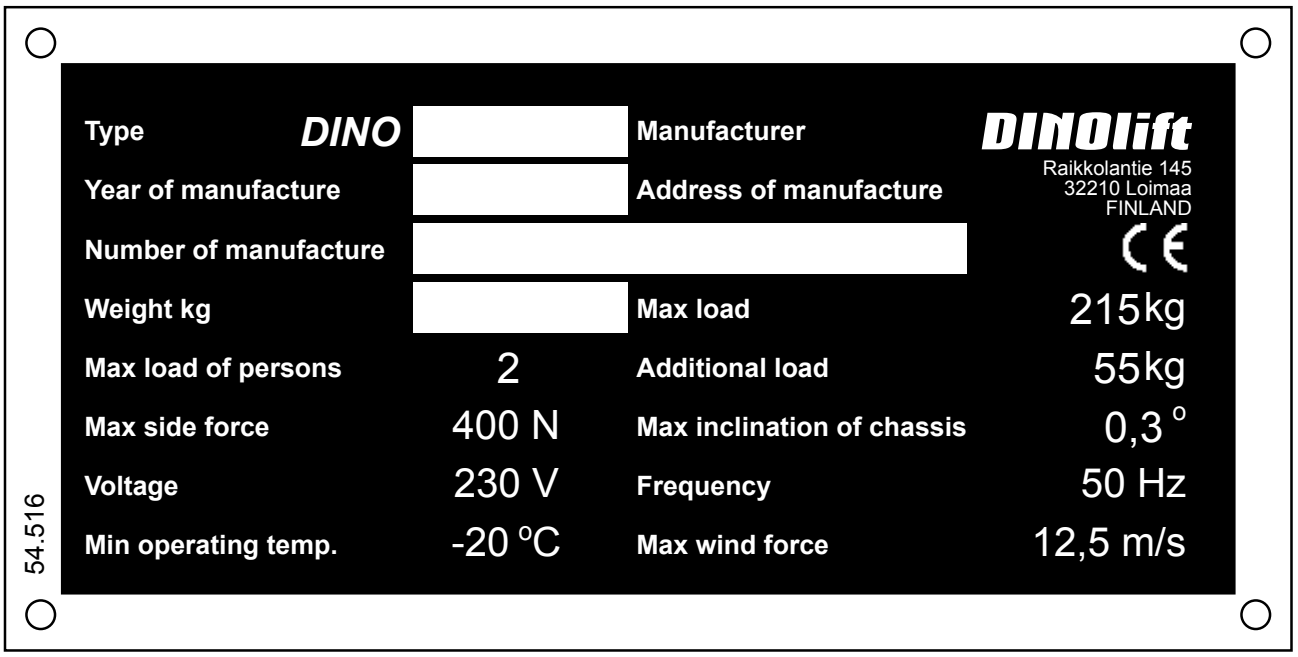


### 2.2.3. 210 XTB II

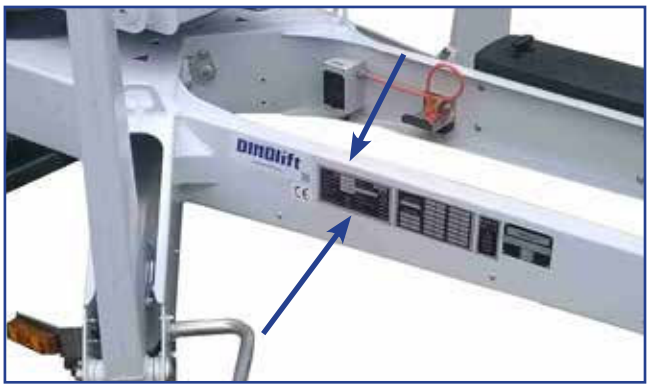


## 2.3. EXAMPLE OF THE MACHINE'S NAMEPLATE

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.




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

# EC-Declaration of Conformity for Machinery

**Manufacturer**
Dinolift Oy
Raikkolantie 145
FI-32210 Loimaa, FINLAND

declares that

## DINO 180XTB II Access Platform no YGC180XTBF2040055

is in conformity with the provisions of Machinery Directive **2006/42/EC** as amended and with national implementing legislation.

Inspection according to 2006/42/EC appendix IX carried out by notified body nr. 0537

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

which has granted the certificate No. **VTT 183/524/14**

Access platform also fulfils the requirements of the following EEC directives:
**2006/95/EC**, **2000/14/EC**, **2004/108/EC**

Following harmonized standards have been applied in designing the machine:
**SFS-EN 280:2013; SFS-EN 60204-1/A1; SFS-EN-ISO 12100**

Person authorized to draw up the Technical File:

Santtu Siivola
Chief Engineer
Dinolift Oy, Raikkolantie 145,
32210 Loimaa, FINLAND

Loimaa 01.09.2015

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Antti Tuura
Supervisor

## 2.5. SAMPLE OF INSPECTION PROTOCOL FOR THE ACCESS PLATFORM

DINOlift TEST CERTIFICATE

DATE:

www.dinolift.com

START-UP TESTS:

Inspection place: **Dinolift Oy** Inspector's signature: Reunanen Jari NT0226

**BASIC KNOWLEDGE**

| | | | |
|---|---|---|---|
| Manufacturer: | **Dinolift OY** | Place of manufacture: | **Finland** |
| Address: | **Raikkolantie 145** | | |
| | **32210 LOIMAA** | | |
| Importer: | | | |

| | | | |
|---|---|---|---|
| Type of lift: | ☑ Boom platform | ☐ Scissor platform | ☐ Mast platform |
| Chassis: | ☐ Car | ☑ Self propelled | ☑ Trailer mounted |
| Boom: | ☐ Articulated boom | ☐ Telescope boom | ☑ Articulated telescope boom |
| | ☐ Scissor | ☐ Fixed mast | ☐ Telescope mast |
| Outriggers: | ☑ Hydraulic turning | ☐ Hydraulic pushing | ☐ Mechanical |

**TECHNICAL SPECIFICATIONS**

| | | | |
|---|---|---|---|
| Machine and type: | **DINO 180XTBII** | Max. platform height | **16 m** |
| Number of manufacture | **YGC180XTB F2040001** | Max. outreach: depend on load: | **Depend on load** |
| Year of manufacture | **2014** | | |
| Max. lifting capacity: | **215 kg** | Boom rotation: | **Continuous** |
| Max. person number: | **2** | Support width: | **3,8 m** |
| Max. additional load: | **55 kg** | Transport width: | **1,95 m** |
| Power supply: | **24 VDC** | Transport length: | **6,65 m** |
| Lowest temperature: | **-20 °C** | Transport height: | **2,31 m** |
| Weight: | **2390 kg** | Basket size: | **0,7 x 1,3 m** |

Inspection points: (Y = meet standards N = do not meet standards)

| | Y | N |
|---|---|---|
| A. STRENGTH | | |
| 1. Certificate of material | ☑ | ☐ |
| 2. Certificate of strength | ☑ | ☐ |
| B. STABILITY | | |
| 1. Certificate of stability test | ☑ | ☐ |
| 2. Working space diagram | ☑ | ☐ |
| C. GENERAL REQUIREMENTS | | |
| 1. User's manual | ☑ | ☐ |
| 2. Place for safekeeping for user's manual | ☑ | ☐ |
| 3. Machine plate - checking plate | ☑ | ☐ |
| 4. Load plate | ☑ | ☐ |
| 5. Warning plate | ☑ | ☐ |
| 6. Plate for supports | ☑ | ☐ |
| 7. Safety colours | ☑ | ☐ |
| D. SAFETY REQUIREMENTS | | |
| 1. Indicating device for horizontal position | ☑ | ☐ |
| 2. Locking device and lockings | ☑ | ☐ |
| 3. Stop device for lifting | ☑ | ☐ |
| 4. Stop for opening of support | ☑ | ☐ |
| 5. Safety distances | ☑ | ☐ |
| 6. Position of working face | ☑ | ☐ |
| 7. Structure of working face | ☑ | ☐ |
| 8. Emergency descent system | ☑ | ☐ |
| 9. Limit devices | ☑ | ☐ |

| | | | |
|---|---|---|---|
| E. ELECTRIC APPLIANCES | | G. SAFETY DEVICE | |
| 1. Electric appliances | ☑ ☐ | 1. Safety limit switch | ☑ ☐ |
| | | 2. Sound signal | ☑ ☐ |
| F. CONTROL DEVICES | | | |
| 1. Protections | ☑ ☐ | H. LOADING TEST | |
| 2. Symbols / directions | ☑ ☐ | 1.Dynamic = 237 kg | ☑ ☐ |
| 3. Placings | ☑ ☐ | 2. Static = 323 kg | ☑ ☐ |
| 4. Emergency stop | ☑ ☐ | 3. Work movements | ☑ ☐ |
| | ☑ ☐ | | |

FAILINGS AND NOTES _____

Failings have been repaired. Date: _____ Signature: _____

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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.

# 3. 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.

## 3.1. 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, 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 or covers 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, try to stay above 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.

**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 road traffic regulations.

Ensure the unobstructed range of movement before operating the outriggers.
The load-bearing capacity and the gradient of the base must be taken into account when supporting the chassis.
Ensure that the outriggers cannot slide while on a gradient.

Additional support plates of adequate size must be used under the outriggers, when working on soft ground. Only use such additional support plates, on which the metallic outriggers will not slide.
While in the support position, ensure that the wheels are off the ground.

Always verify the horizontal position of the machine.

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

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

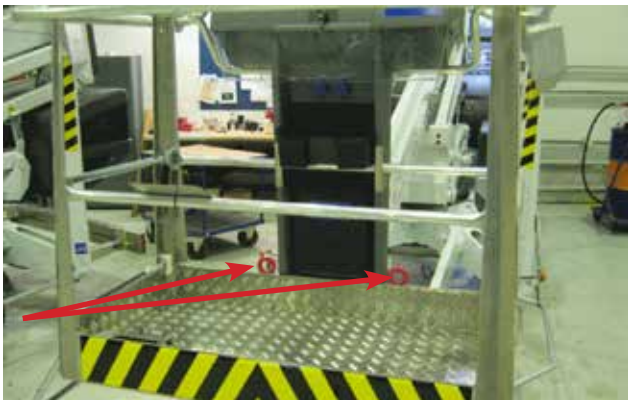
## LIFTING AND WORKING ON THE PLATFORM

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

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.

The max. allowed load on the platform is two (2) persons and at maximum fifty five (55) kg of additional load, however, the total load must not exceed two hundred fifteen (215) kg.

The lift must not be used as a crane.



### Use the safety harness!

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

Never add load onto the platform while in the upper position.

Never throw or drop any objects from the platform.

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.

## 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 | Gentle 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. |
| 14-16 | Strong | All the trees are swaying. It is difficult. to walk against the wind. |

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 | Min. distance below (m) | Min. distance at the side (m) |
|---|---|---|
| 100 – 400 V hanging spiral cable | 0.5 | 0.5 |
| 100–400 V open-wire cable | 2 | 2 |
| 6–45 kV | 2 | 3 |
| 110 kV | 3 | 5 |
| 220 kV | 4 | 5 |
| 400 kV | 5 | 5 |

## 3.2. 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.

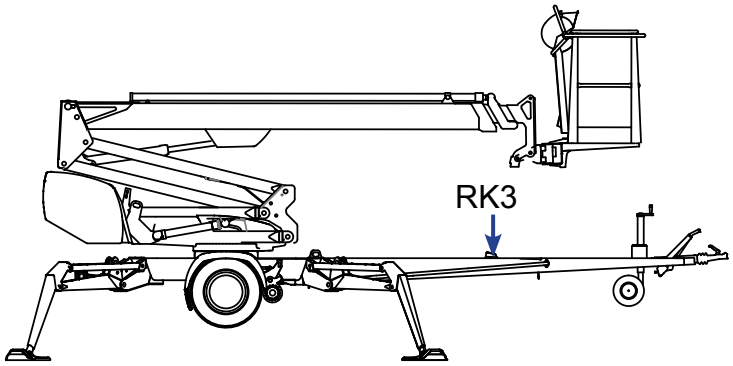
***NOTICE***

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.

## 3.3. SAFETY DEVICES

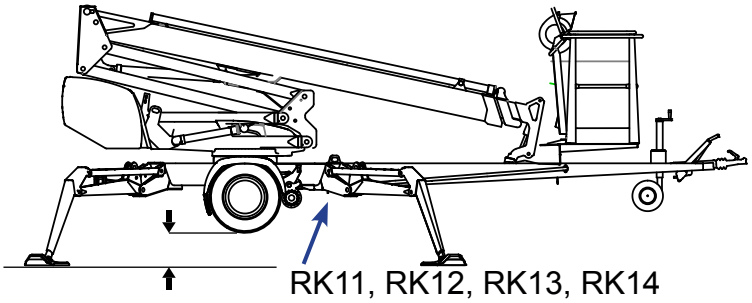
**1. Supervision of transport position of the boom**

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.



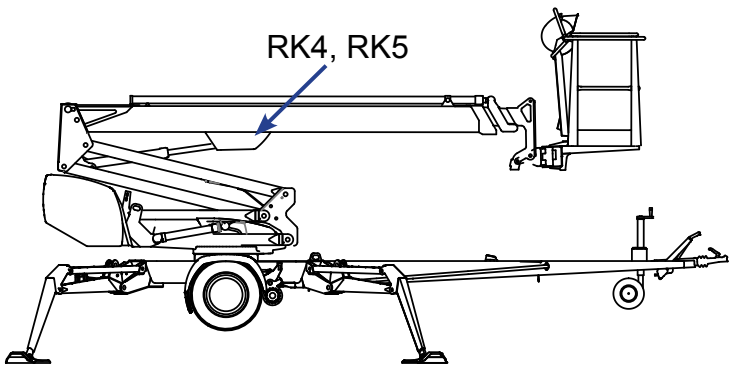

**2. Supervision of supporting**

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 control of the boom**

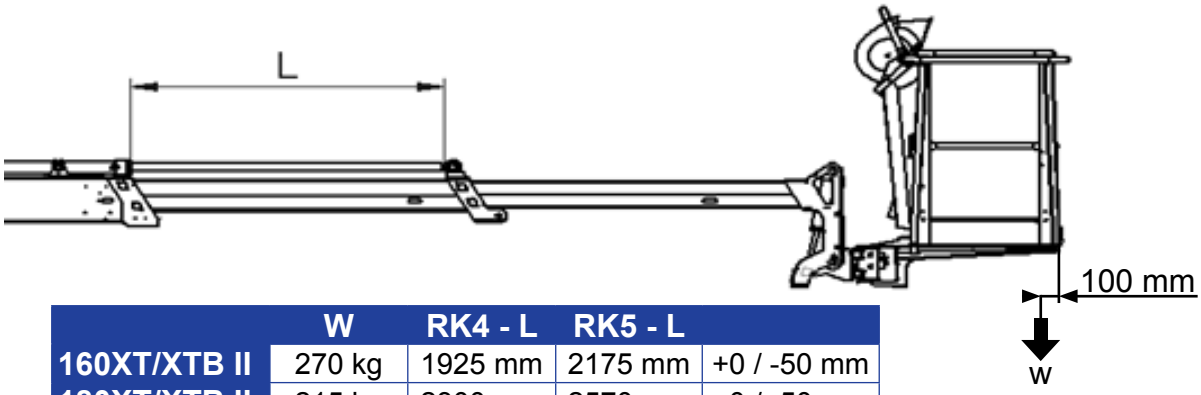
The outreach limit switch RK4 and overload limit switch RK5 prevent the lift from being overloaded by limiting the outreach of the lift to the side.
The limit switches are located under the cover at the top end of the lifting cylinder. During operation, the cover must be intact and in place.



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

The reach are limit switch **RK4** stops the movements that impair the stability of the lift (extending the telescope and lowering the boom) at a predetermined position.

Adjusted values of the limits:

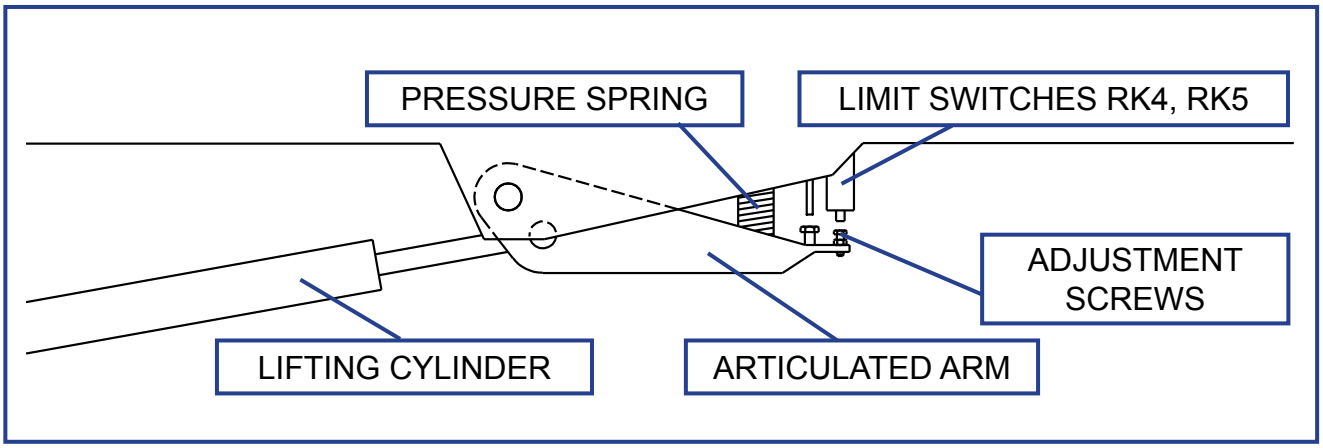



| | W | RK4 - L | RK5 - L | |
|---|---|---|---|---|
| **160XT/XTB II** | 270 kg | 1925 mm | 2175 mm | +0 / -50 mm |
| **180XT/XTB II** | 215 kg | 2300 mm | 2570 mm | +0 / -50 mm |
| **210XT/XTB II** | 80 kg | 3025 mm | 3525 mm | +0 / -50 mm |

The red warning light for overloading will illuminate as soon as the **RK4** has stopped the movement. While at the outreach limit, the red warning light and the green signal light will flash in turns. In this situation, the lift can be operated in the direction, in which it remains inside the permitted outreach area.

The overload limit switch **RK5** backs up, if the **RK4**, for some reason, does not work. Once the RK5 is activated, the red warning light for overloading in both control centres will be continually illuminated, and a warning buzzer will sound on the platform.

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

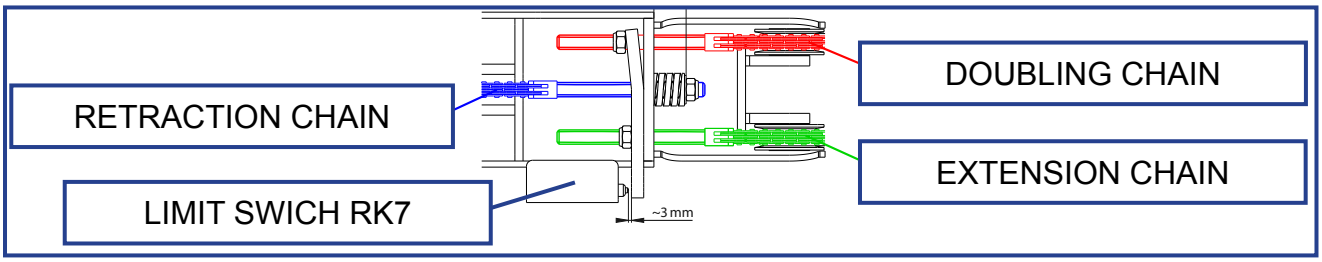


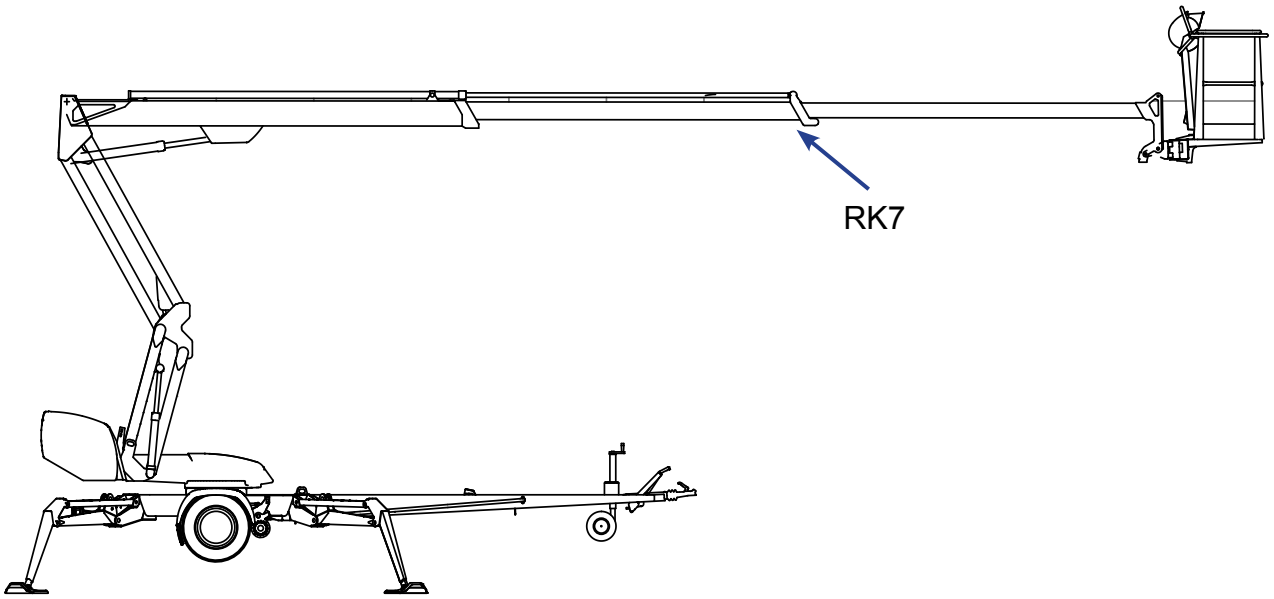

**DANGER**

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

### 5. 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/RK8 breaks the emergency stop circuit.



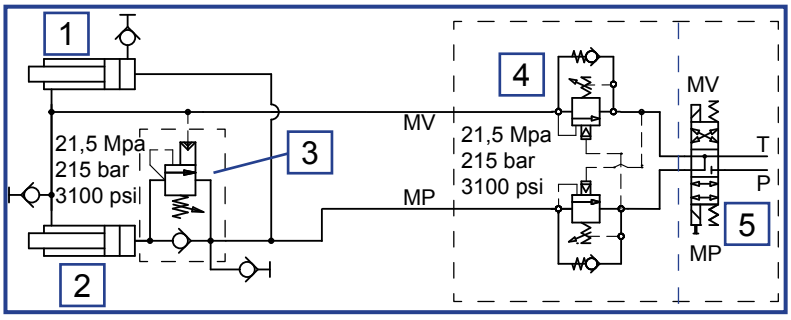




### 6. Preventing the inclination of the platform

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



## 7. 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 |
| Lifting cylinder of the articulated arms | 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 |

## 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.

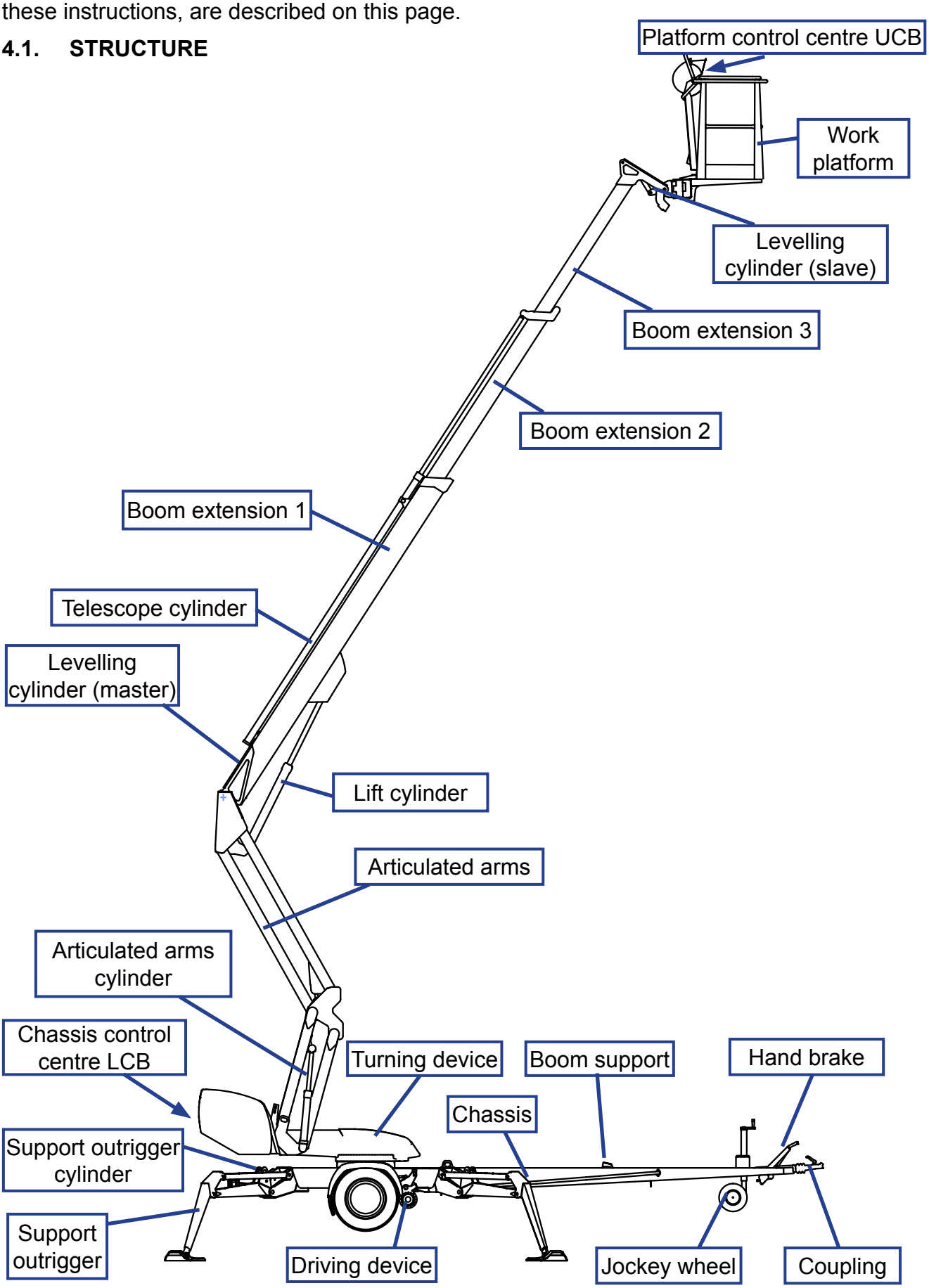
**NOTICE**

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.

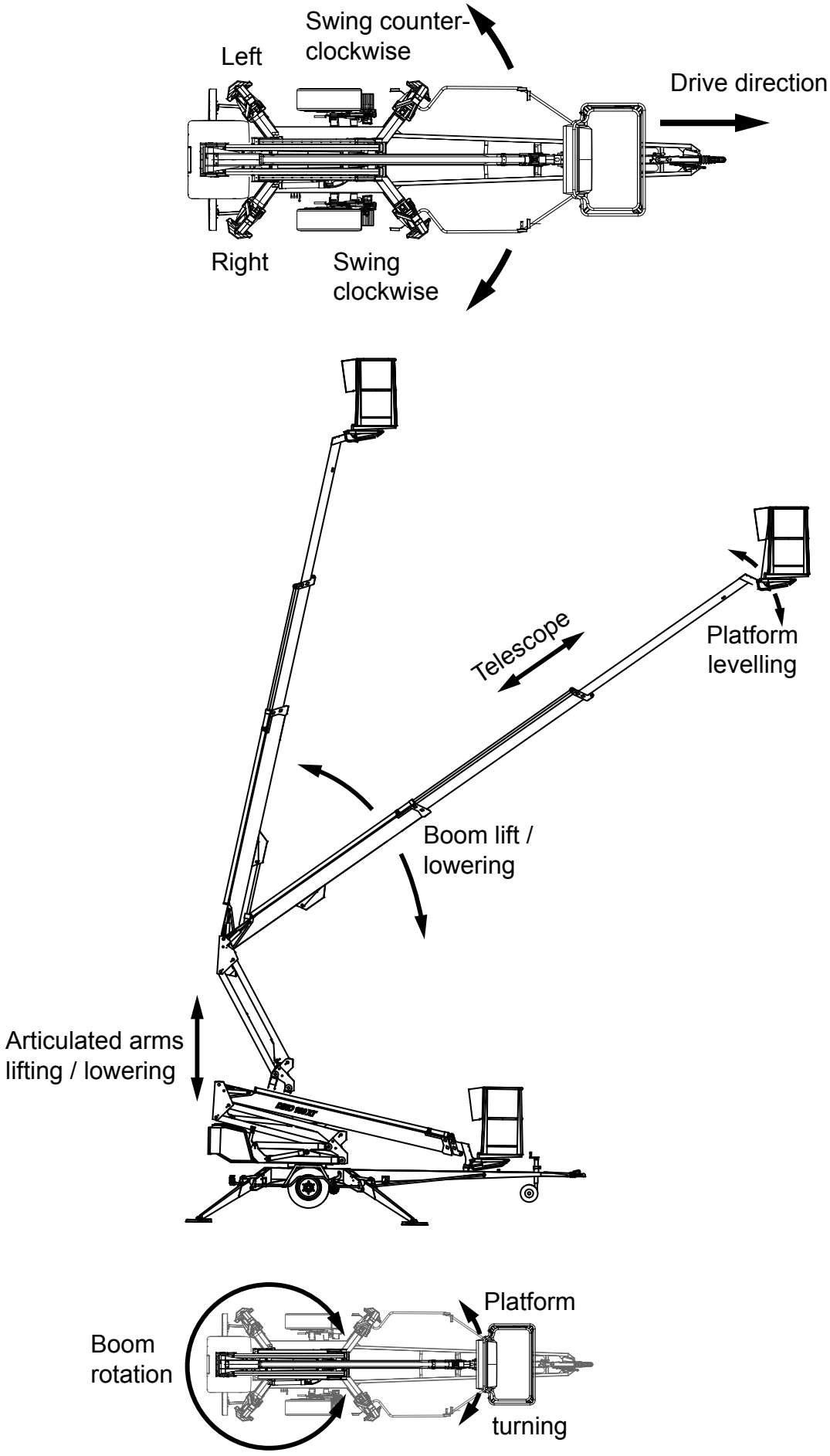
# 4. BASIC STRUCTURE AND FUNCTIONS

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

## 4.1. STRUCTURE



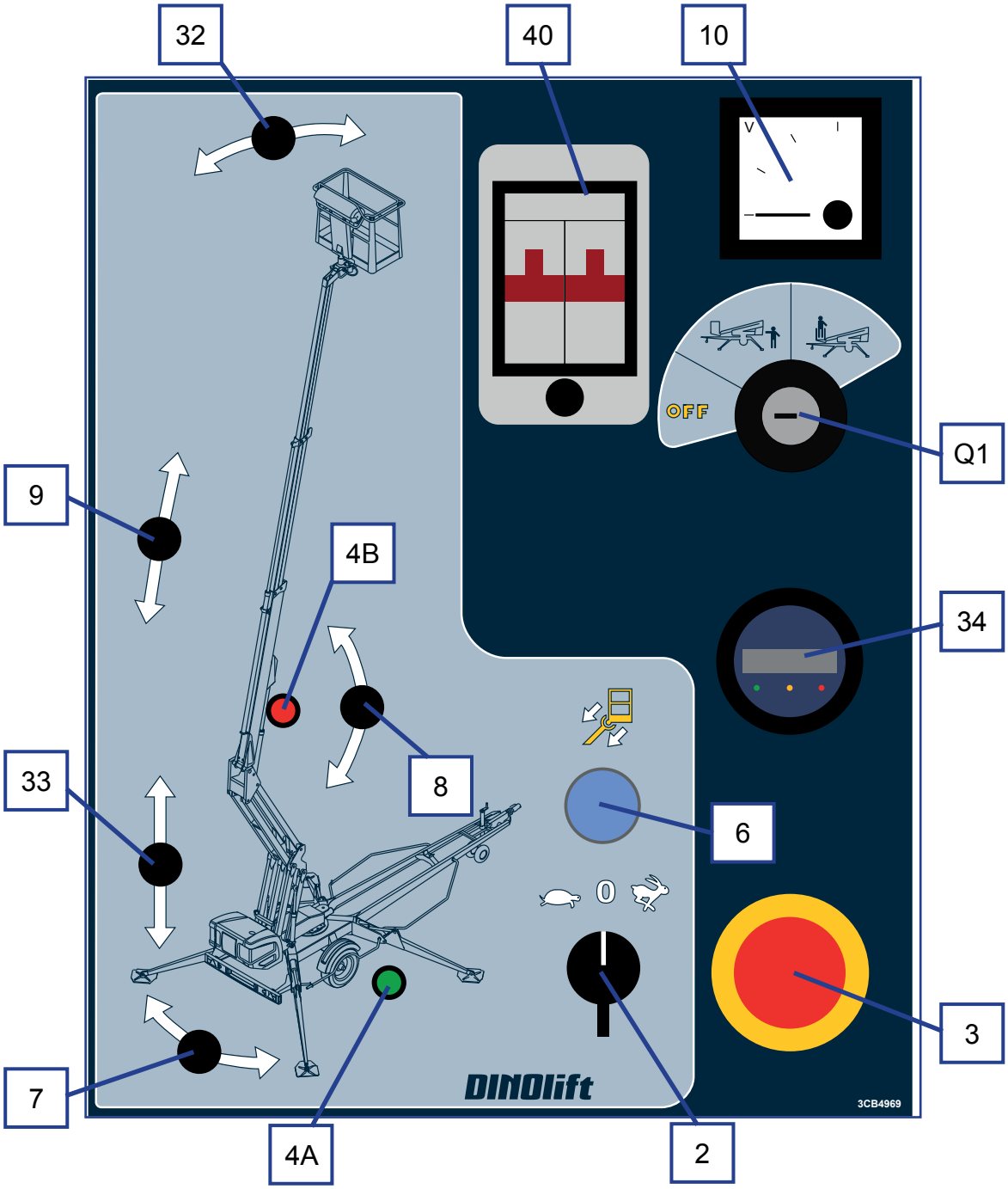
## 4.2. BASIC FUNCTIONS



## 4.3. OPERATING CONTROLS

### 4.3.1. Operating controls in chassis control centre

| | | | |
|---|---|---|---|
| Q1 | Selector switch | 7 | Lever switch for turning |
| 1a | OFF-power off | 8 | Lever switch for boom system |
| 1b | Chassis control centre – outriggers – hydraulic drive | 9 | Lever switch for telescope |
| 1c | Platform control centre | 10 | Voltage meter |
| 2 | I/ II - speed selector (is used simultaneously with control levers for the boom) | 16 | Position indicator of chassis (not in the picture) |
| | | 32 | Lever switch for levelling of platform |
| 3 | Emergency stop | 33 | Lever switch for articulated arms |
| 4A | Signal light for the outrigger limit switch | 34 | Battery voltage / Hour meter / Display of error codes for engine controller |
| 4B | Signal light for safety device (RK5) | | |
| 6 | Pushbutton for retracting the telescope | 40 | Automatic fuse for socket outlets |



**Battery gauge** (34)


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 | LED at the centre yellow | Right LED red |
|---|---|---|
| ON - operating hours are displayed | ON - state of charge of the batteries is displayed in %<br>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 | Emergency reverse - not in operation | Controller incorrectly programmed |
| 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 | Field coil of the engine broken - not in use | Controller incorrectly programmed |
| 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. |

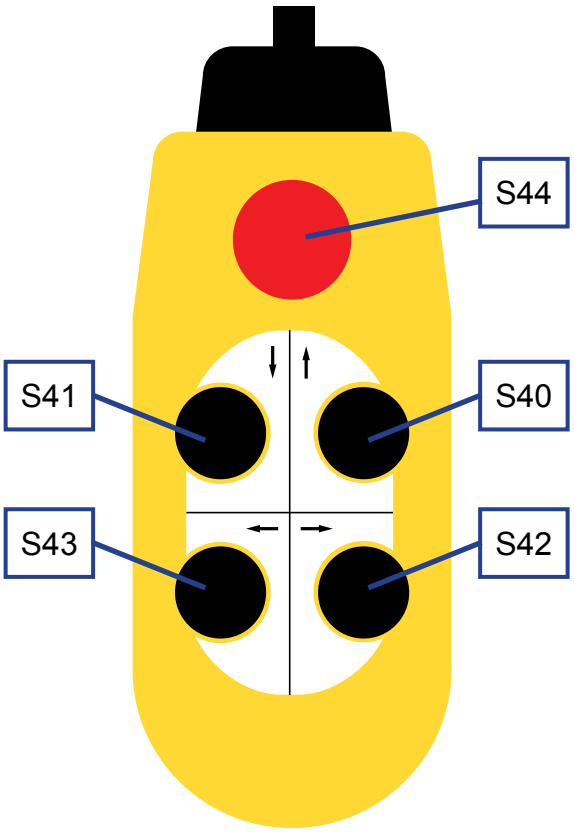
Capacity of the batteries is affected by the operating temperature.
100 % is reached at the temperature of 30 °C, at 0 °C the capacity is 80 % of normal, at -20 °C the capacity is 50 % of normal

## NOTICE

Note! 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 of drive system

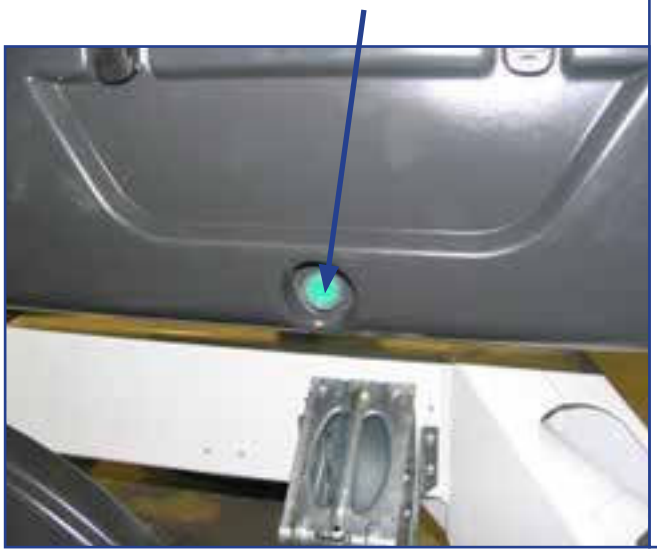
| | |
|---|---|
| S44 | Emergency stop |
| S40 | Forward |
| S41 | Backward |
| S40/S41 + S42 | Drive to the right |
| S40/S41 + S43 | Drive to the left |

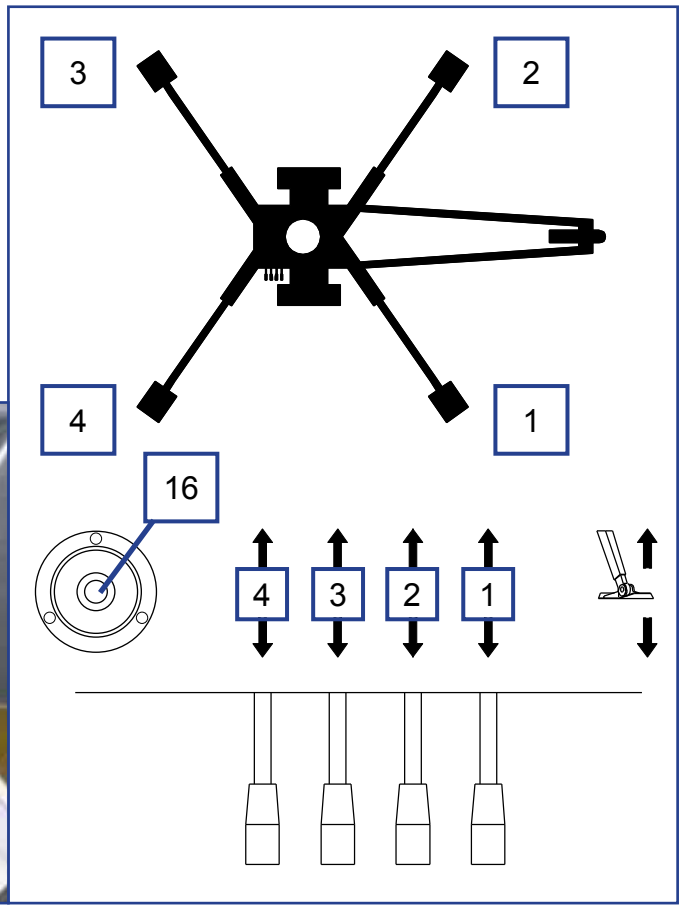



### 4.3.3. Operating controls of outriggers

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

Start button for the motor at the outriggers

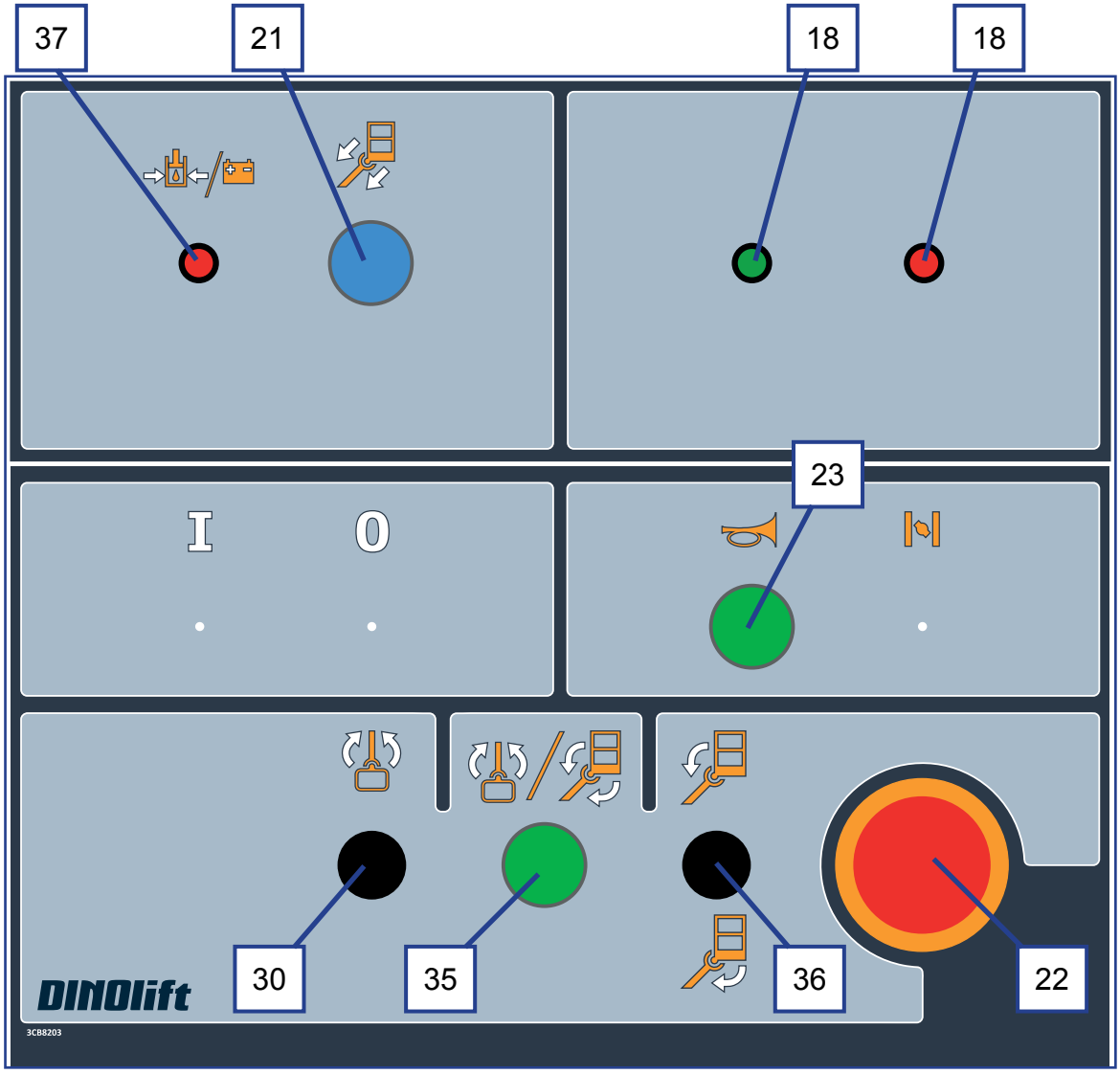




### 4.3.4. Operating controls in platform control centre UCB

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.

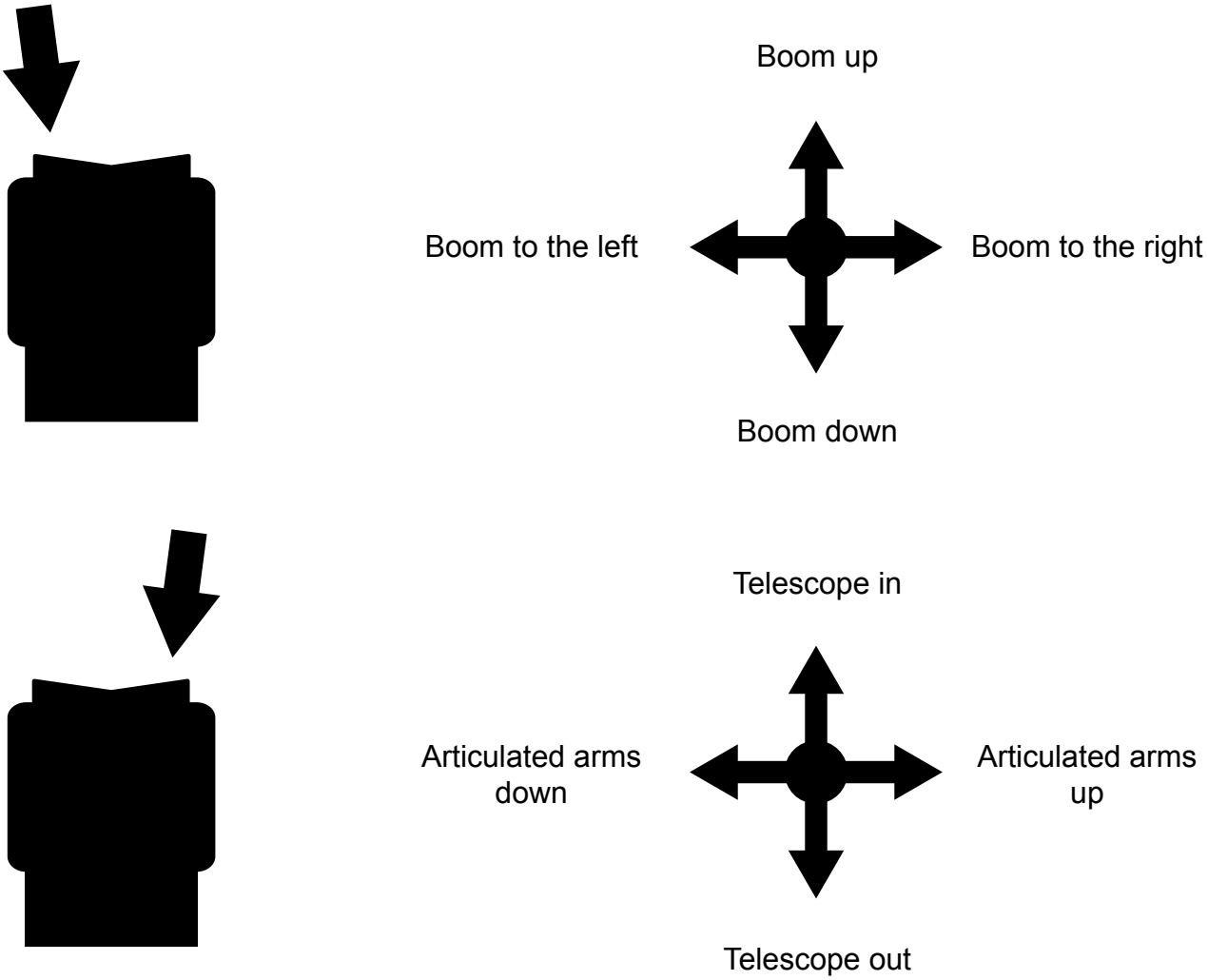
The motor starts and stops automatically, as the movement is activated.




| | | | |
|---|---|---|---|
| 18 | Signal lights | 30 | Lever switch for turning the platform (used simultaneously with pushbutton 35) |
| | Green – inside the allowed outreach range | | |
| | Red – at the border of the allowed outreach range | 35 | Levelling of the platform (pushbutton) |
| 21 | Pushbutton, retracting the telescope | 36 | Lever switch for levelling the platform (used simultaneously with pushbutton 35) |
| 22 | Emergency stop | | |
| | - push to stop | 37 | Signal light for battery voltage. Recharge the batteries when the signal light lights up. At the same time relay K6 stops telescope extension and boom lifting movements. |
| | - pull to reset | | |
| 23 | Sound signal button | | |
| 24 | Socket outlet 230VAC/ (2 pcs.) | | |

17. Control lever

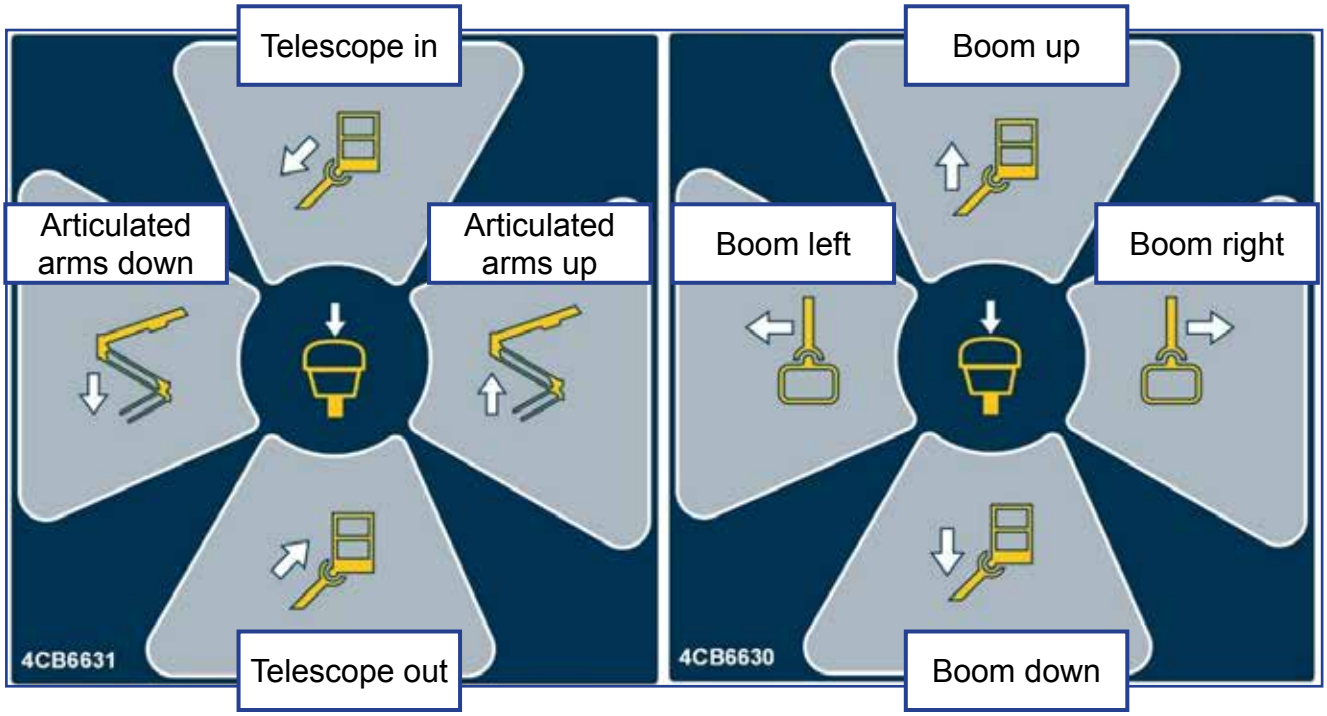

The functions to be controlled are selected using the ”dead-man-buttons” at the end of the joystick. Always press the button first, and only after that, turn the handle. The safety connection prevents the movements, if the handle is turned before depressing the button.



### 4.3.5. Setup with two control levers (option)

Platform contol centre UCB can be fitted with two control levers as an option.

Right and left control lever (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 depressing the button.



# 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

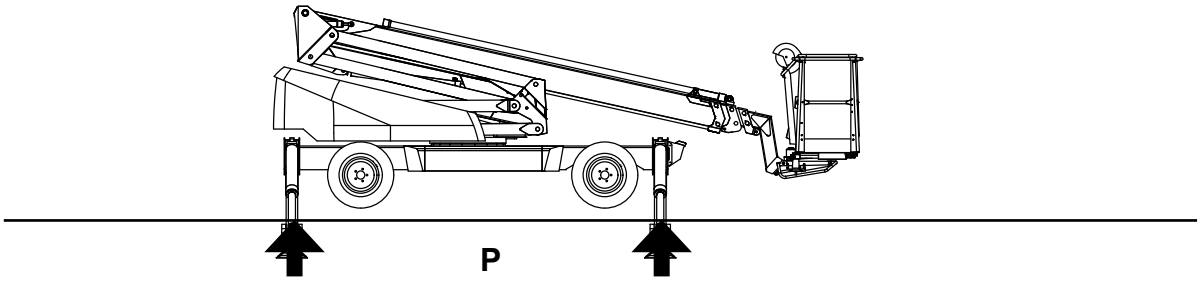
4. Operator
   - Is the operator old enough?
   - Has the operator recieved the required training?

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/cm² |
|---|---|---|
| Gravel | High density | 6 |
| | Medium density | 4 |
| | Loose | 2 |
| Sand | High density | 5 |
| | Medium density | 3 |
| | Loose | 1,5 |
| Fine sand | High density | 4 |
| | Medium density | 2 |
| | Loose | 1 |
| Sand / mud | High density (very hard to work) | 1,00 |
| | Medium density (hard to work) | 0,50 |
| | Loose (easily worked) | 0,25 |




**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 current using the mains switch
2. To access the operating controls open the cover behind the power unit
3. Turn the selector switch (1) to position 1b - chassis panel
4. Start the engine with button 2 (green)

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 whenever the boom system or the driving device is being operated.

### 5.1.4. Levelling the lift

1. Lower the front support outriggers 1 and 2 (on the tow-bar side).
2. Lower the rear support outriggers 3 and 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 (4A, green) in the chassis control centre is illuminated, when all the outriggers are in the support position and the limit switch circuit of the outriggers is closed

**Before using the lift, check that:**

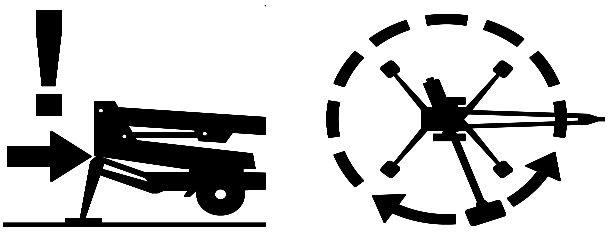
- the cassis is level
- the wheels are clearly off the ground
- all outriggers are firmly supported on the ground

**DANGER**

**The operation is prohibited if the lift is not properly supported and in a level 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.**

***NOTICE***

If you have levelled the chassis of the lift ON A GRADIENT, turn the boom around carefully in the lower position to make sure that the boom does not bang against the support outriggers or other obstacles.



## 5.2. INSTRUCTIONS FOR WORKING

**WARNING**

Do all daily maintenance tasks and operational inspections stated in the maintenance manual before operating the lift. **Failure to check the correct functioning of safety devices may cause serious injury or make the consequences of an accident worse.**

**All malfunctions in safety devices must be repaired before operating the lift**

### 5.2.1. Operating the lift from the chassis control centre LCB

1. Turn the selector switch (1) to position ”chassis control centre LCB”.

2. Lift the platform from the tow-bar and turn it to the side so that you can lower the boom.
3. Extend the telescope if necessary to ensure that stepping onto the platform is safe.

4. Drive the boom functions from control levers 7, 8, 9, 33 and the platform from lever 32

**NOTICE**

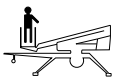
Do not damage the tow-bar jockey wheel!

The boom movements are noticeably slower when the emergency descent system is used. The speed of the boom movements cannot be adjusted continually with the control levers when the lift is operated from the chassis control centre.

### 5.2.2. Operating the lift from the platform control centre UCB

Lift the platform from the tow-bar and turn it to the side so that you can lower the boom. Extend the telescope as much as is necessary to ensure that stepping onto the platform is safe.

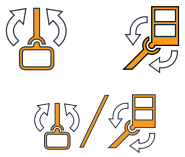
5. Turn the selector switch (1) to position ”Platform control centre UCB”, and take away the key. Do not lock the protective cover of the chassis control centre.



6. Start the normal operation of the lift
   Step on the platform and drive the boom and platform movements as follows
   - Start the engine with start-button

   - Operate the boom system with control levers in the UCB control centre.
   - If possible, keep the telescope short while lifting and lowering movements

- To operate the movements of the boom system, press first the rocker switch 17 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 of the platform can be continually adjusted. If you move the lever before pressing the rocker switch, the action is deterred.
- Operate the work platform movements with lever switches 30 and 36.
- Moving the platform via the lever switches 30 and 36 requires that the dead-man-button 35 be depressed simultaneously.
- Stop the engine with stop-button.



For further instructions, see point “Operating controls in platform control centre UCB”

**WARNING**

**Do not add load (e.g. another person) onto the platform, while the red overload light (18) is illuminated. Risk of tipping over!**
Measures to be taken after an event of overloading: Retract the platform to inside the operating range of the RK4 by depressing the “telescope in” button (6 or 21)(the green light will be illuminated). After this, the lift may be operated normally

7. 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.
8. Move the platform to the work object

**CAUTION**

The platform, buildings around it and other obstructions may cause a crushing hazard. Hands and legs must be keps inside the work platform at all times when moving the platform. Beware of obstacles above the platform.

**Start/stop automation**

The start/stop automation is operational, when driving from the platform control centre UCB. The operation is started by depressing the rocker switch at the end of the control lever 17 to start the engine. After that, turn the control lever 17 carefully in the desired direction of movement of the boom. The engine will stop automatically in about 3 seconds after the movement of the boom has stopped. The engine will restart as soon as the dead-man-switch is depressed, and the desired movement of the boom is resumed.

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

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 in the same position for a long time**

- there are pushbuttons for both stopping and starting in both the platform and the chassis control centres
- When the weather is warm, and the platform is kept for a longer period in the same position, it is not necessary to let the engine run continuously.
- when the weather is cold, it is, however, recommended to let the engine run to keep the hydraulic oil warm
- It is recommended to also leave the combustion engine running between the operations, to ensure the battery remains well charged
- check the stability and condition of the base regularly during the operation, taking into account the weather and ground conditions
- the electric timer of the lift automatically disconnects the supply voltage (12 VDC) in about 1 hour after the electric motor or the combustion engine has been turned off.
- Re-activate the power supply by pressing the start button either in the chassis control centre or in the platform control centre.

**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**

**Do not take additional load in the upper position.**
Do not exceed the max. allowed lateral force (400N) or load the platform vertically more than what is allowed

Lowering the platform to transport position:
Before lowering the boom onto the transport support, retract the telescope completely and turn the platform perpendicular to the boom.

***NOTICE***

Do not damage the tow-bar jockey wheel while lowering the platform to 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 do the following special actions in addition to normal start-up procedure.

1. if the temperature is below zero, let the power unit run for a few minutes before starting the movements
2. start with a few movements to warm-up oil in the cylinders and to ensure proper operation of the valves
3. check that the limit switches and the emergency descent devices are operational and clean (from dirt, snow, ice, etc.)
4. protect the control panel and the platform from snow and ice whenever they are not in use
5. Make sure the batteries are charged. Flat batteries freeze easily.

**Always keep the lift free from dirt, snow etc.**

### 5.2.4. Measures to be taken at the end of the working day

At the end of a workday:

1. Retract the telescope boom completely.
2. Check that the platform is perpendicular to the boom.
3. Lower the boom/platform onto the support on the chassis.
   The limit switch on the transport support prevents operation of the support outriggers if the platform is not down
4. Close the cover on the platform control panel.
5. Turn the key switch to OFF-position 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***

With respect to the operation and durability of the batteries, it is beneficial to connect them for recharging at the end of each workday, irrespective of their remaining level of charge. Keeping the batteries in storage without charging them first shortens their service life and flat batteries also freeze easily.

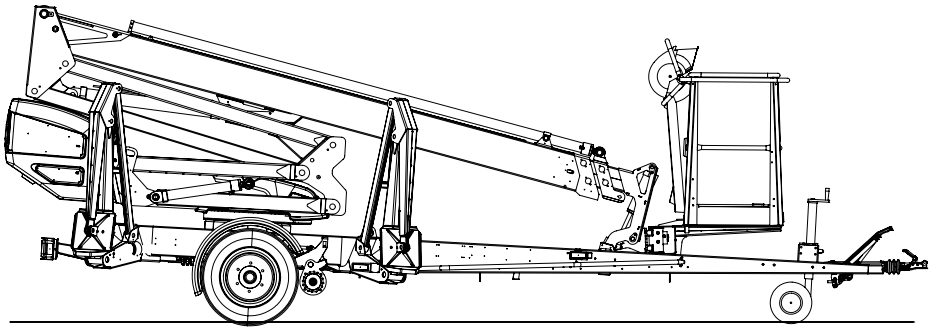
## 5.3. TRANSPORT

The lift can be moved by towing or with the platforms driving device.

**Moving the lift is only allowed in the transport position. No persons or other additional load is allowed on the platform while transport.**

### 5.3.1. Preparing the lift for transport

The lift must be in transport position.



Prepare the lift for transport 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 cover of the platform control centre.
5. Turn the selector switch (1) to position ”chassis control centre LCB”.
6. Lift the support outriggers.
   - first the rear support outriggers 3-4 (do not damage the rear lights)
   - then the front support outriggers 1-2 (do not damage the jockey wheel)
7. Make sure that the covers are locked.

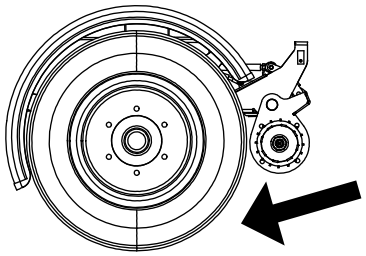
If you intend to tow the lift:
1. Apply the parking brake.
2. Make sure that the driving device is disconnected.
3. Turn the selector switch to position OFF and disconnect the lift from the power supply.

### 5.3.2. Driving with 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, try to stay above the machine.**

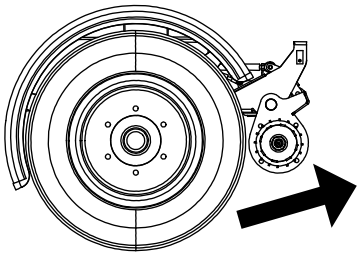
1. Turn the selector switch (1) to position ”chassis control centre LCB”.
2. Start the motor
   Honda: set the engine revolutions at 3/4 of the maximum speed.
3. Make sure that the platform is in the transport position and the outriggers are lifted in the upper position
4. Make sure that the mains cable is long enough to cover the whole travel distance (power supply from mains).
5. Switch the driving device to the drive position
6. Release the parking brake
7. Drive the lift with the drive controls



**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 driving:
1. Apply the parking brake
2. Disconnect the driving device from the wheel

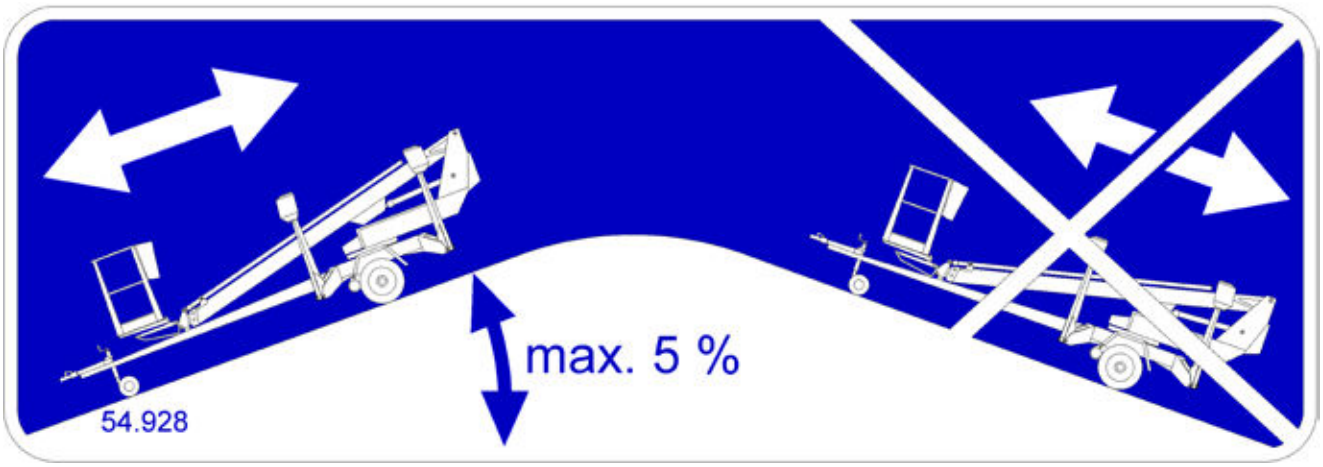


**NOTICE**

**Do not extend the jockey wheel too much. It increases the risk of damage.**
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.

**When driving 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. 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.
8. 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, i.e., more than 1/20 (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***

While towing, in addition to the instructions in this manual, the user must also observe the road traffic legislation, regulations valid at the work site and towing instructions of 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
  rear axle 450 kPa (4.5 bar)
  jockey wheel250 kPa (2.5 bar)
- 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 additional load on the platform

**Place chocks under the wheels while disengaging the lift from the towing vehicle.**

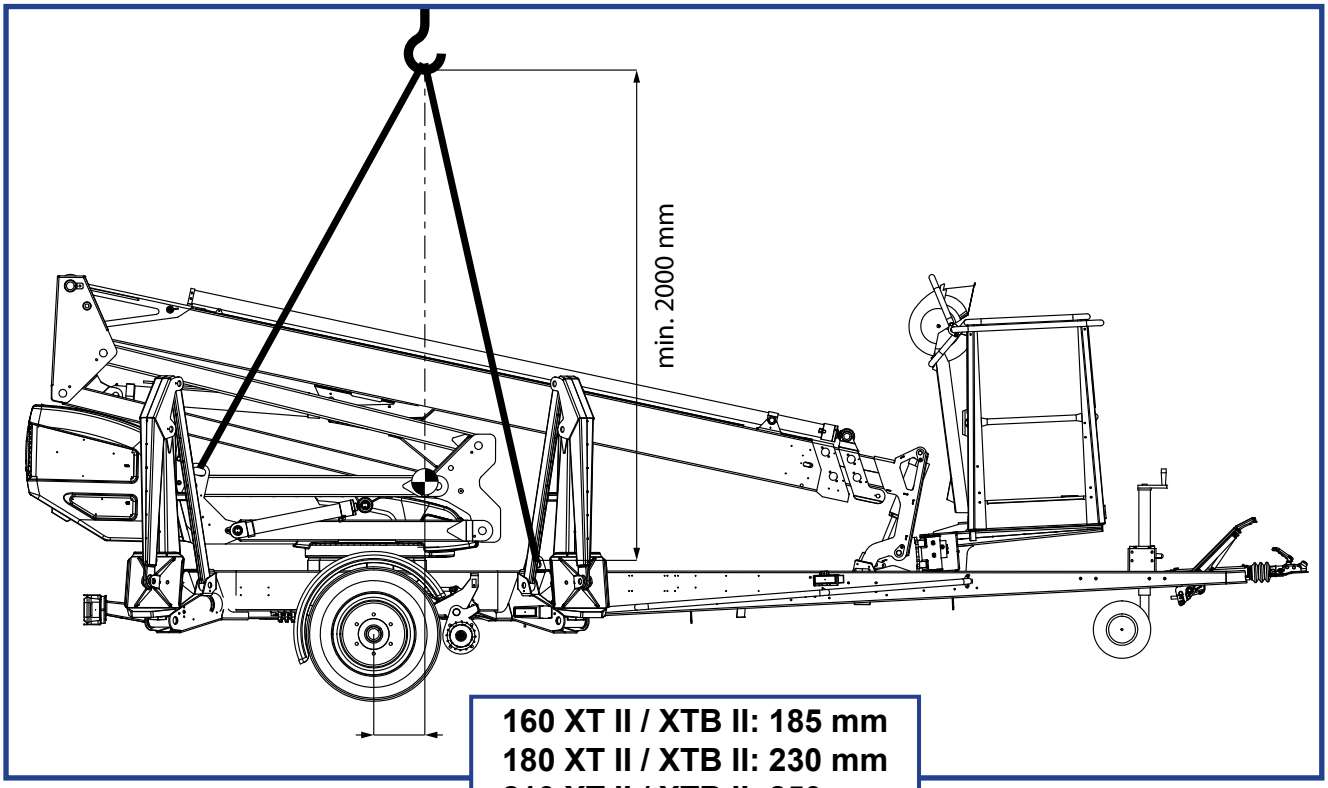
## 5.4. LIFTING THE DEVICE

The device can be lifted from the lugs shown in the picture. Lugs are placed symmetrically on both sides. Lifting lugs are also marked in the machine with instructional labels.

During lifting the platform must be in transport position. Remove all loose material and other excess load from the platform before lifting.

Use a suitable crane and lifting accessories. Make sure that the crane and other lifting equipment are strong enough for the weight of the device. Check the weight from the technical specifications.

**Be careful not to damage the device during the lifting!**




## 5.5. 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. Repeat the cleaning and lubrication procedures while resuming 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.

## 5.6. IN CASE OF EMERGENCY

### 5.6.1. When at risk of losing 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 work site 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.
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.**

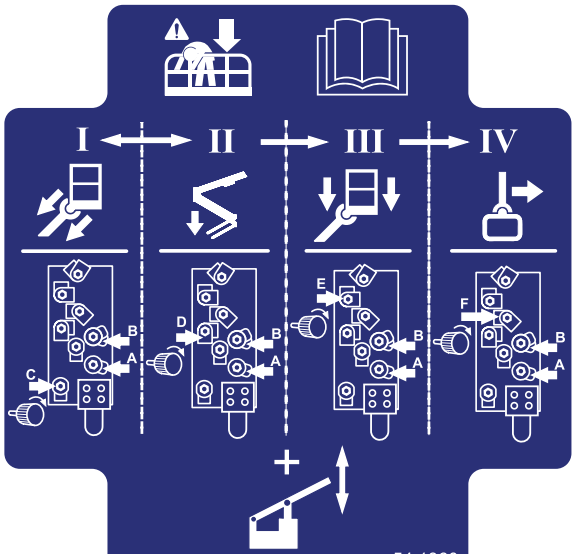
### 5.6.2. In case of overloading

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 work site 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.
4. The green light becomes illuminated when the overload situation is reset. After this the machine may be operated normally.

### 5.6.3. In case the power supply is interrupted

**Operation:**
The lift is equipped with an emergency descent system with a manually operated pump. Seen from the lower control centre, it is located behind the side cover on the right-hand side. The operating lever for the pump is fixed on the inside of the cover.
Always check the condition of the emergency descent system before putting the lift into operation

NOTICE! Start by retracting the telescope completely, continue by lowering the articulated arms and finally turn the boom.



1. Retracting the telescope
- On the valve block, turn the screws A, B and C completely in the clockwise direction
- retract the telescope completely by pumping with the hand pump.
- Open the screws back up by turning them counterclockwise.

2. Lowering the articulated arms
- On the valve block, turn the screws A, B and D completely in the clockwise direction
- lower the articulated arms down by pumping with the hand pump.
- Open the screws back up by turning them counterclockwise.

3. Lowering the boom
- On the valve block, turn the screws A, B and E completely in the clockwise direction
- lower the articulated arms down by pumping with the hand pump.
- Open the screws back up by turning them counterclockwise.


4. Turning the boom
- On the valve block, turn the screws A, B and F completely in the clockwise direction
- lower the articulated arms down by pumping with the hand pump.
- Open the screws back up by turning them counterclockwise.

### 5.6.4. In case the emergency descent system is not operational

In case of a malfunction where even the emergency descent system does not operate, try to warn other personnel present on the site so that they can help or call for more help. When help arrives:
- try to restore the power supply required for normal operation
- make the emergency descent system operational
- resume normal operation by other means

# 6. FAULT FINDING

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

### 1. Electric motor cannot be started by depressing the start button, although the selector switch 1 is in position LCB or UCB

| | |
|---|---|
| The mains switch is turned off | Turn on the mains switch. |
| The emergency stop button is pushed down in chassis or platform contol centre. | Pull up the button and re-start the motor from the start button. |
| No power supply to the main centre - no readout in the battery gauge. | Check the fuse F3 (10A glass tube fuse in the main centre).<br><br>Check the fuse F12 (15A automatic fuse in the left battery housing)<br><br>Check the fuse FG (150A megafuse in the left battery housing) |
| Power supply to the main centre OK - the battery gauge readout is between 100 % - 1 %. | Check the fuse F1 (10A glass tube fuse in the main centre).<br><br>Check the fuse F4 (10A glass tube fuse in the main centre). |
| Power supply to the main centre OK - the battery gauge readout is 0 %. | Batteries are flat -> recharge batteries by connecting the mains cable. |

### 2. “Boom up” and “Telescope out” movements are not operational, although the electric motor starts normally as other movements are operated

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

### 3. None of the platform movements operate though the electric motor is running and the selector switch is in position 2 or 3

| | |
|---|---|
| Overloading of the boom has occurred. | Retract the platform with the buttons 6 or 21 inside the designated operating range of the platform (the green light in the platform control panel lights up). |

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

### 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 position 1b. |
| Limit switch on the boom support has not closed. | Drive the boom onto the transport support. |

### 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). |

### 10. None of the outriggers moves although the selector switch is in position LCB

| | |
|---|---|
| The boom does not rest properly on the support. | Check the boom support and the operation of the RK3. |

### 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. | Measure the tow-ball. According to DIN74058 the diameter of the ball must be max. 50 mm and min. 49,5 mm. |

**With all other problems, please take the platform to a qualified DINO-service.**

**To avoid problems:**

- Follow all operating, maintenance and safety instructions
- Be careful in situations with a risk of damage to the lift
- Keep the lift clean and protect it against moisture

**NOTES**

## NOTES

# 7. SERVICING AND MAINTENANCE

| 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 daily maintenance, every user must do a worksite inspection before operating the lift.

C = Check (general checking of condition).
I = Thoroug Inspection. Performed according to separate prochedure described in maintenance instructions.
G = Grease
D = Do the replacements, repairs or other maintenance tasks described in the instructions

| | 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 item | 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 | Signs, labels and machine plates | C | C | C | C | |
| 35 | Instruction manuals | C | C | C | C | |
| 36 | Test loading | | | | I | |
| 37 | Corrosion protection | | | | C | D |
| 38 | Movement speed adjustment | | | | | D |
| 39 | Special inspection | | | | | D |

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

Special inspection is required if the lift has been damaged in a manner which may affect its load-bearing capacity or safe operation. For further instructions, see the maintenance instuctions manual.

**NOTICE**

If the platform has a combustion engine power pack, check the engine manual for information on maintenance prochedures required by the engine.

**NOTICE**

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.

## 7.1. INSPECTIONS REQUIRED BY 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.

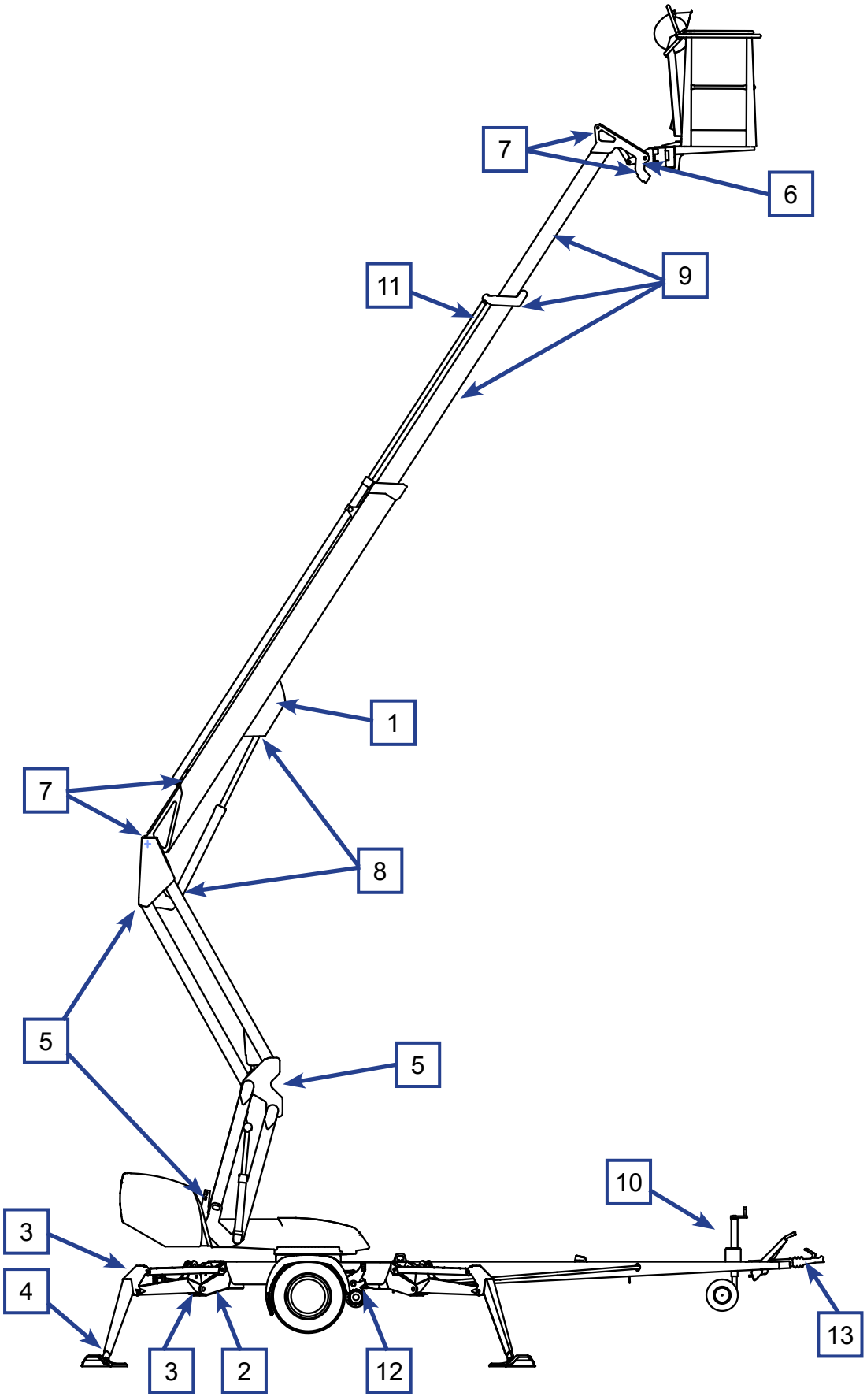
Major and special inspections shall be carried out by a competent person or competent body, who is familiar with the operation and structure of the lift. The competent person sould periodically update their knowledge and be able to demonstrate their competency if so required.

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

***NOTICE***

**Always check the local, state or federal regulations about aerial platform inspections and inspector qualifications from local authorities.**

## 7.2. LUBRICATION PLAN



# 8. ROUTINE MAINTENANCE DURING OPERATION

This chapter describes the service and maintenance operations that the operator of the platform is responsible for.

Other maintenance operations require special training, tools and materials or specific measurements and adjustment values. They are separately described in maintenance instructions manual. Please contact your maintenance partner, dealer or manufacturer.

Make sure that all service and maintenance prochedures are performed in time and according to instructions.

**WARNING**

Any faults which may affect the operational safety of the unit must be repaired before the lift is used for the next time

Keep the lift clean. Clean the lift carefully before any service and maintenance operations or inspections. Impurities may cause serious problems in for example in the hydraulic system.

Use original spare parts and service kits. See spare part list for detailed information on spare 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 performance of the periodic servicing and the inspections is absolutely mandatory, because their negligence may impair the operational safety of the lift.**

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

## 8.1. DAILY MAINTENANCE TASKS

### 8.1.1. Condition of chassis, boom and work platform

Inspect visually the condition of access systems, work platform, platform gate and handrails.
Check that the chassis and boom have no visible signs of structural damage.

### 8.1.2. Check the tyres and tyre pressure

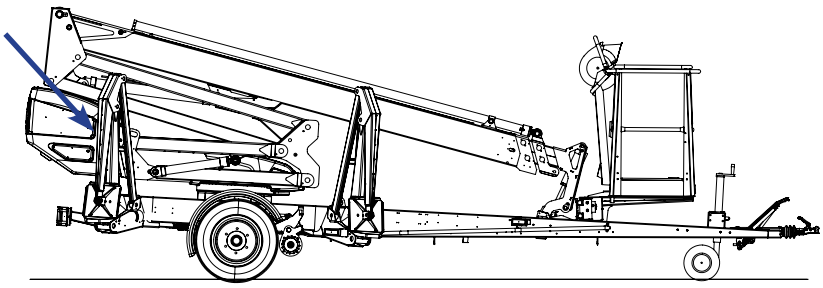
Inspect the condition of tyres visually and chack that they are not flat.

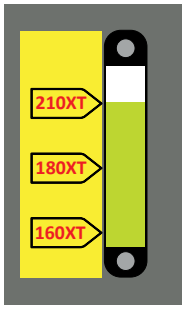
### 8.1.3. Check the lights

Check all the warning and signal lights and trailer lights for road traffic.

### 8.1.4. Check the hydraulic oil

Check the hydraulic oil level while the platform is in transport position. Add oil if needed.






The oil tank is located under a cover on the rights side of the device.

Chech that the oil visible from the oil meter looks clean and normal (no excess foam etc.)

### 8.1.5. Check the hydraulic hoses, pipes and connectors

Inspect the condition of hydraulic hoses, pipes and connections visually.
Make sure that there are no visible oil leaks.

Any externally damaged hoses or clashed pipes and connections must be changed.

### 8.1.6. Check the operation of safety limit switches

Test the correct operation of safety limit switches that prevent the boom and outrigger movements unless the platform is in a correct position.

1. Platform must be in transport position, outriggers up and the driving device connected.
2. Lift the boom from lower controls.
   **The boom must not work in any position of the control device.**
3. Drive the outriggers down to operating position
4. Lift the boom so that the boom is not on the support
5. Drive the outriggers.
   **The outriggers must not work in any position of the control device.**

### 8.1.7. Check the emergency descent, emergency stop and sound signal

Test the correct operation of emergency stop, emergency descent system and the sound signal from the lower controls and platform controls.

- lift the boom up approximately 1-2 meters and drive the telescope out 1-2 meters. While driving the movement, push down the emergency stop button. The movement should stop.
- Drive the telescope in and lower the boom by using emergency descent
- lift up the emergency stop button
- test the sound signal

### 8.1.8. Signs, labels and machine plates

Make sure, thet all the plates, adhesive tapes and instructional labels on control stations are intact, clean and legible.

If the labels have started to come off or tear apart or if the symbols or texts are illegible the labels must be replaced.

Product numbers of labels are marked on the labels or they can be found in the spare part lists.

### 8.1.9. Instruction manuals

Check that the instruction manuals accompanying the platform are correctly stored on the platform and that they are legible.

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## 8.2. MAINTENANCE OF THE BATTERIES

**CAUTION**

The electrolyte is very corrosive - always use protective clothing and eye protectors
**Charging of the batteries generates hydrogen gas. Keep away from open flame. EXPLOSION HAZARD!**

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.

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
- 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

**NOTICE**

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

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## 9. 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**