DINOlift

MAINTENANCE INSTRUCTIONS

DINO XTC II
185 • 220

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

185XTC II	**XXXXXX ->**
220XTC II	**220066, 220068, 220072-220074**

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.

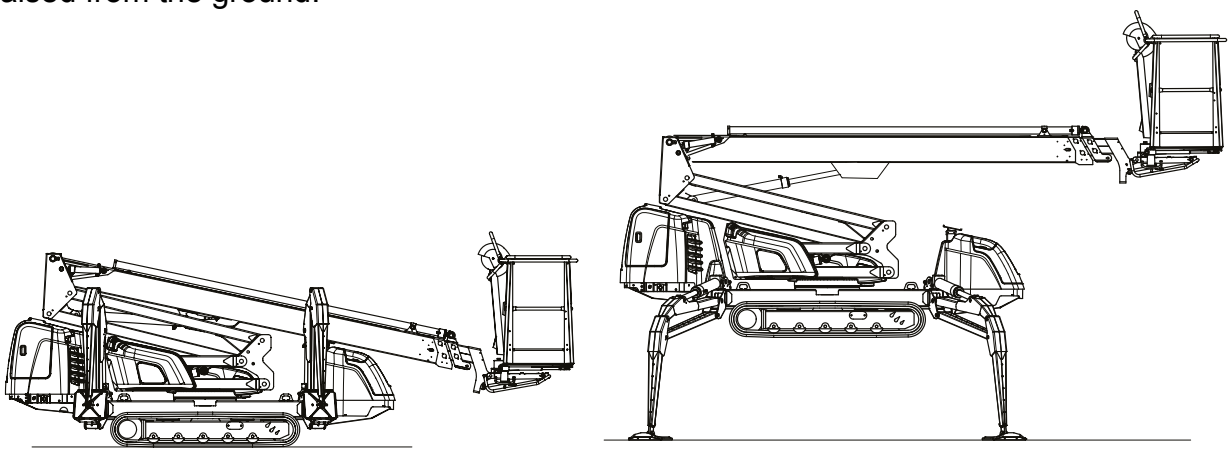
Dinolift Oy is constantly developing its products. For this reason, the contents of this manual might not always be in full compliance with the most recent version of the product. Dinolift Oy reserves the right to modify the product without prior notice. Dinolift Oy assumes no liability for any problems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

The unit is a self-propelled aerial work platform with track undercarriage.
This aerial work platform complies with the standard EN280 type 1, according to which the unit may only be transported in the transport position.

For the operation, the lift shall be supported by the hydraulic outriggers so that the tracks will be raised from the ground.



The lift's primary power source is a diesel engine, and auxiliary power is provided by a mains-powered electric motor. The outriggers and the boom system are hydraulically powered.

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 these 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

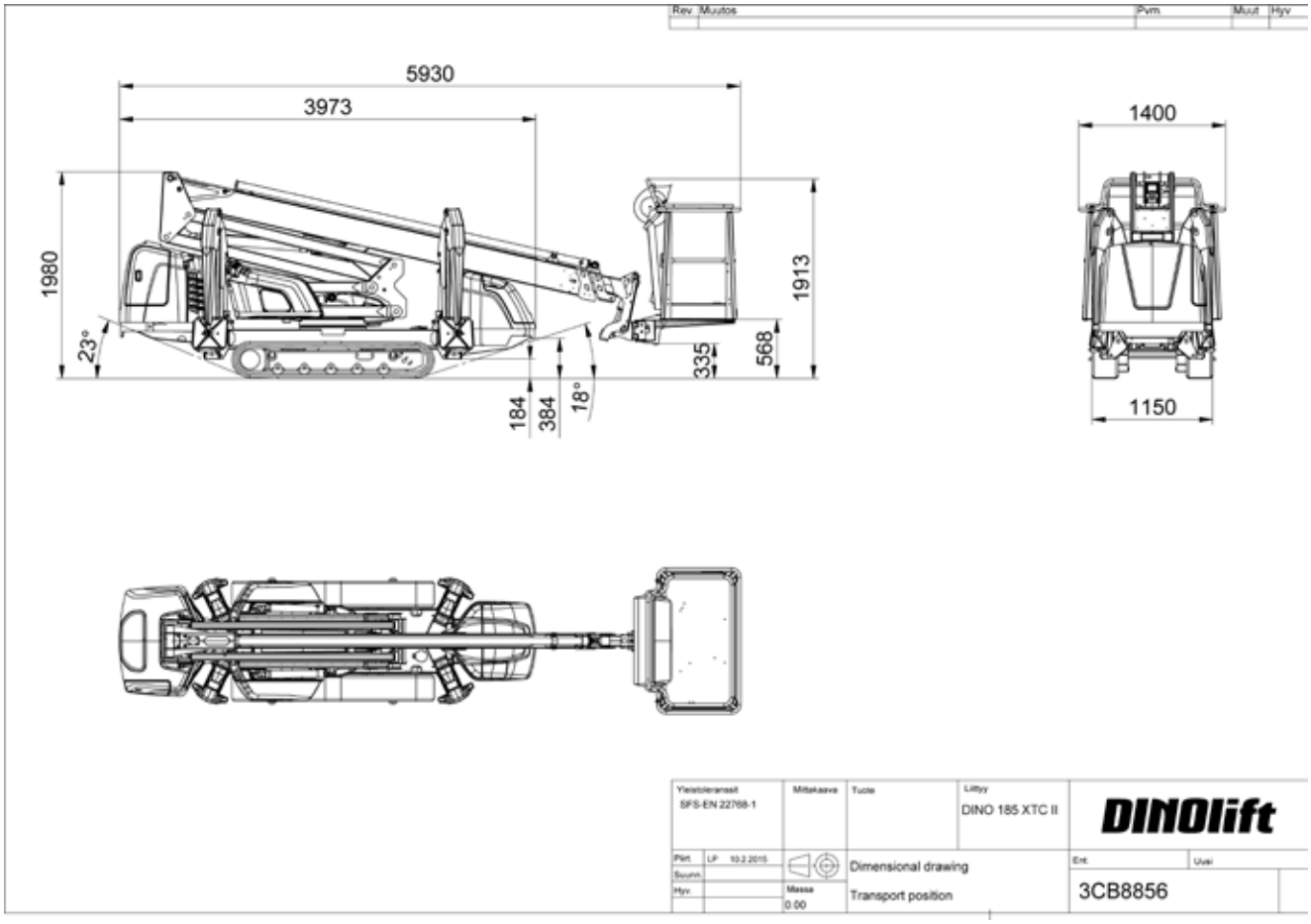
The operator must receive instructions and consent from the manufacturer for all such specific work methods or conditions that the manufacturer has not explicitly defined in the unit's operation and maintenance instructions.

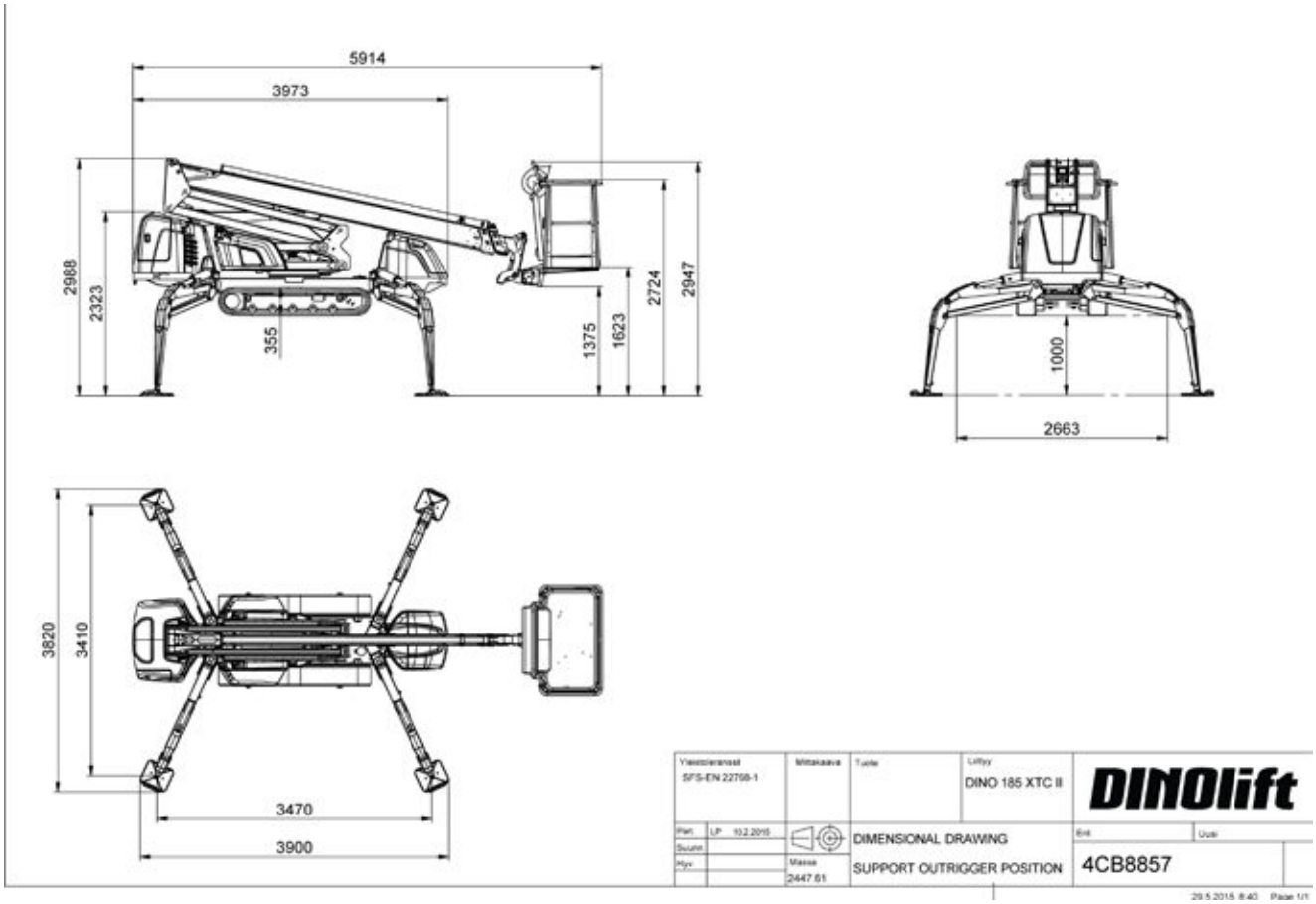
2. TECHNICAL SPECIFICATIONS

		185XTC II	220XTC II
Max. working height		18.5 m	22.1 m
Max. platform height		16.5 m	20.1 m
Max. outreach to the side		11.2 m	11.0 m
Boom rotation		continuous	
Platform rotation		180°	
Turn area		refer to the reach diagram	
Support width		3.54 / 3.95 m	
Transport width		1,4 / 1,18 m	1,4 / 1,18 m
Transport length		5,93 m	6,300 m
Transport height		1,98 m	1,98 m
Weight		2860 kg	3060 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		19000 N	19000 N
Platform size		0,7 x 1,3 m	
Gradeability		43%	
Driving speed		1,4 / 2,4 km/h	
Socket outlets on the platform		2 x 230V/50Hz/16A	
Power supply			
- Internal combustion engine		Kubota D1105-EF02	
	Fuel	Diesel (EPA / CARB Tier 4 Final)	
	Net output	17,3 kW (23,2 h.p.) 2400rpm	
	Fuel tank volume:	40 l	
	Oil volume	5,1 l	
	Sound pressure level	95 dB	
	Whole-body vibration (during driving)	0.99 m/s2	
	Whole-body vibration (during working)	< 0,5 m/s2	
- Mains power (option)		230/50Hz/16A	
	Sound pressure level	< 70 dB	
	Whole-body vibration	not detectable	

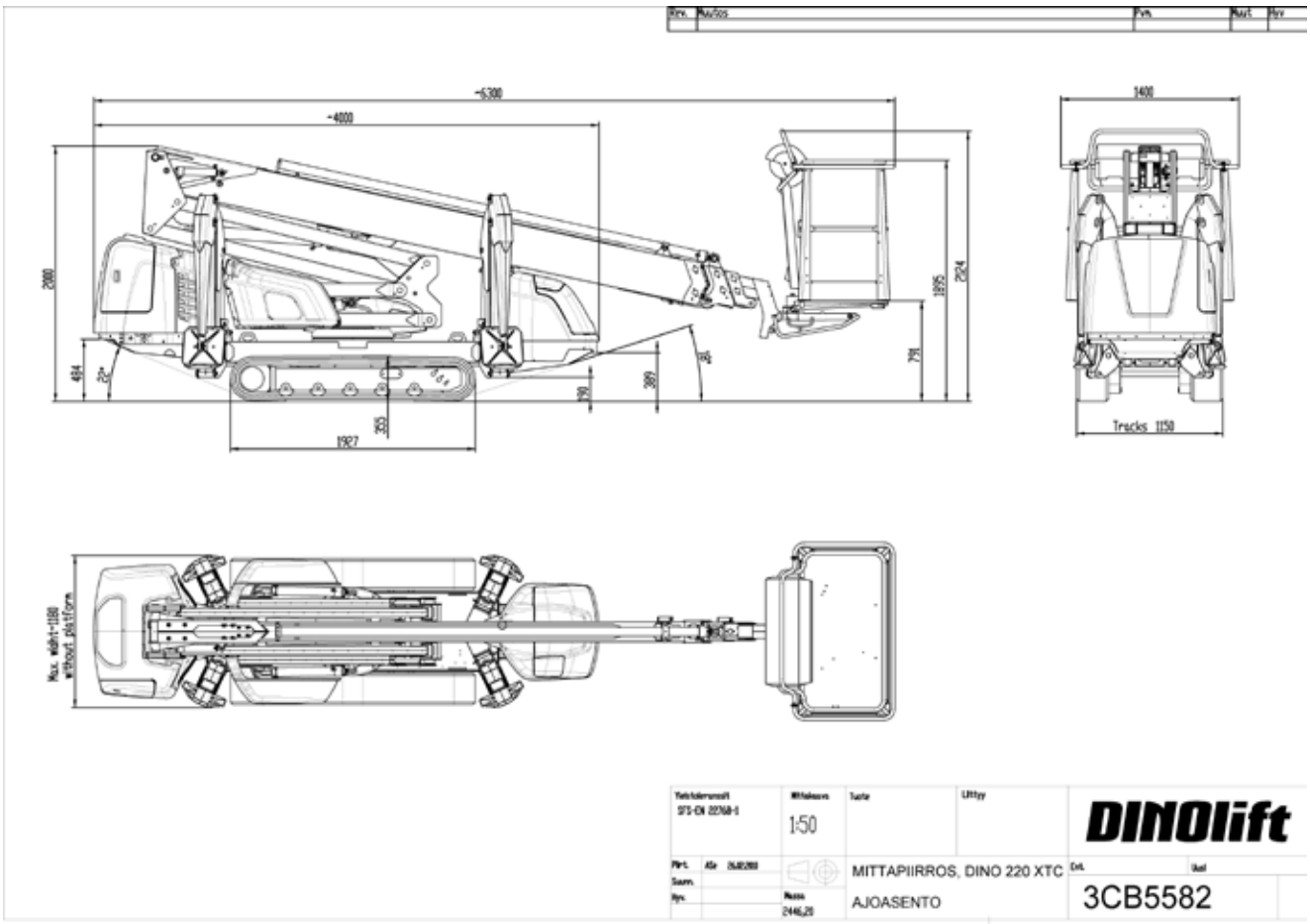
2.1. DIMENSION DRAWINGS

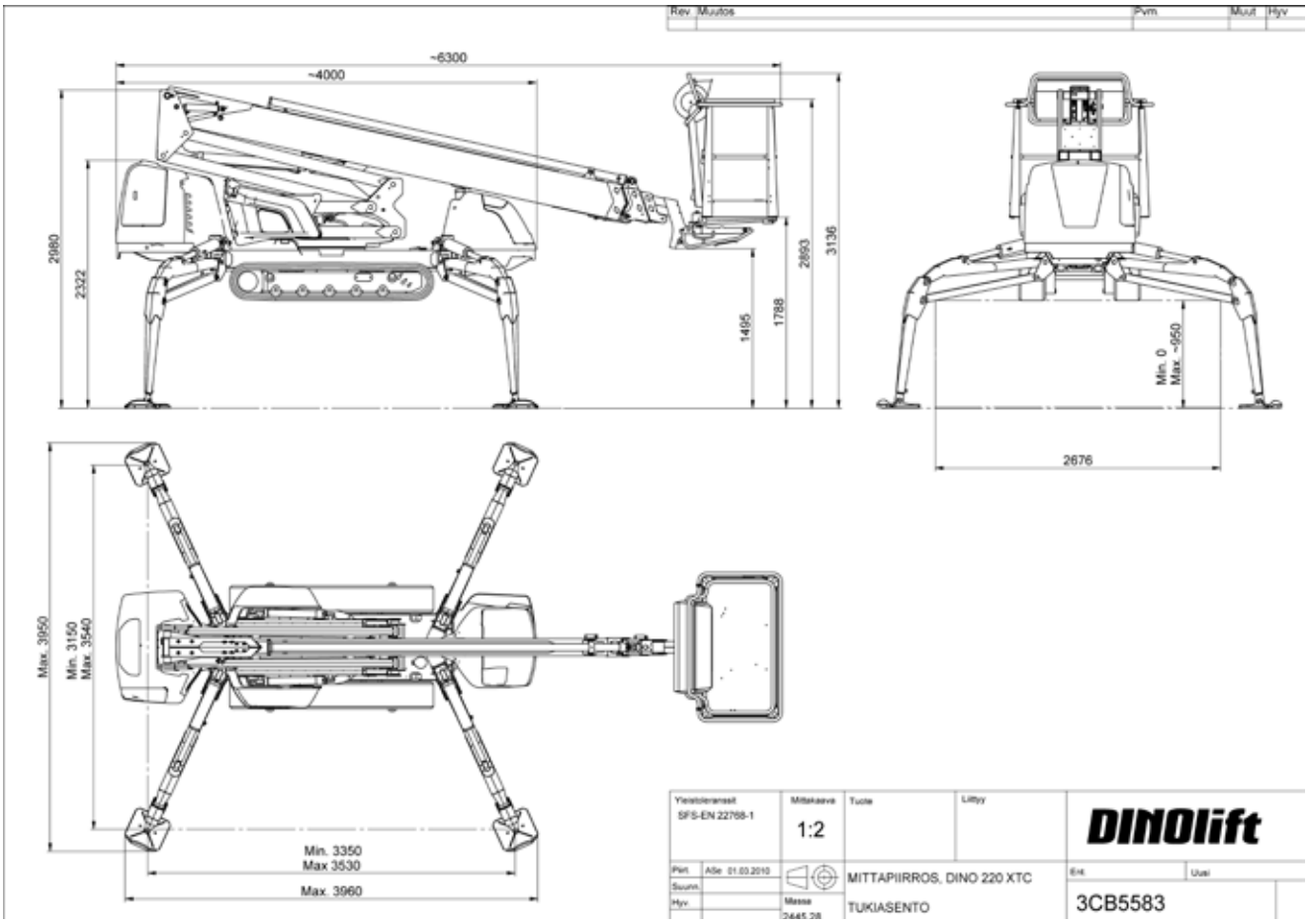
2.1.1. 185XTC II





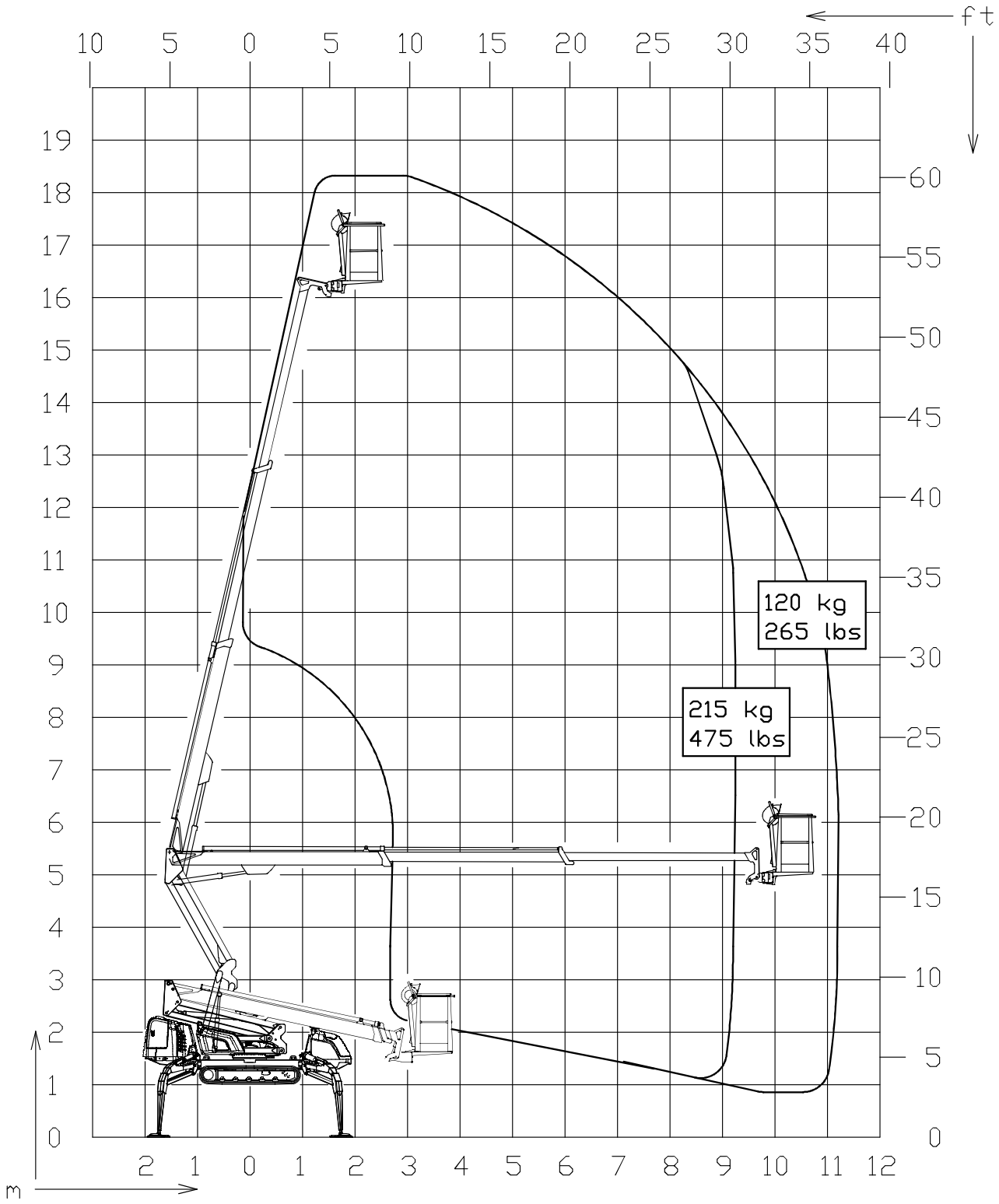
2.1.2. 220XTC II



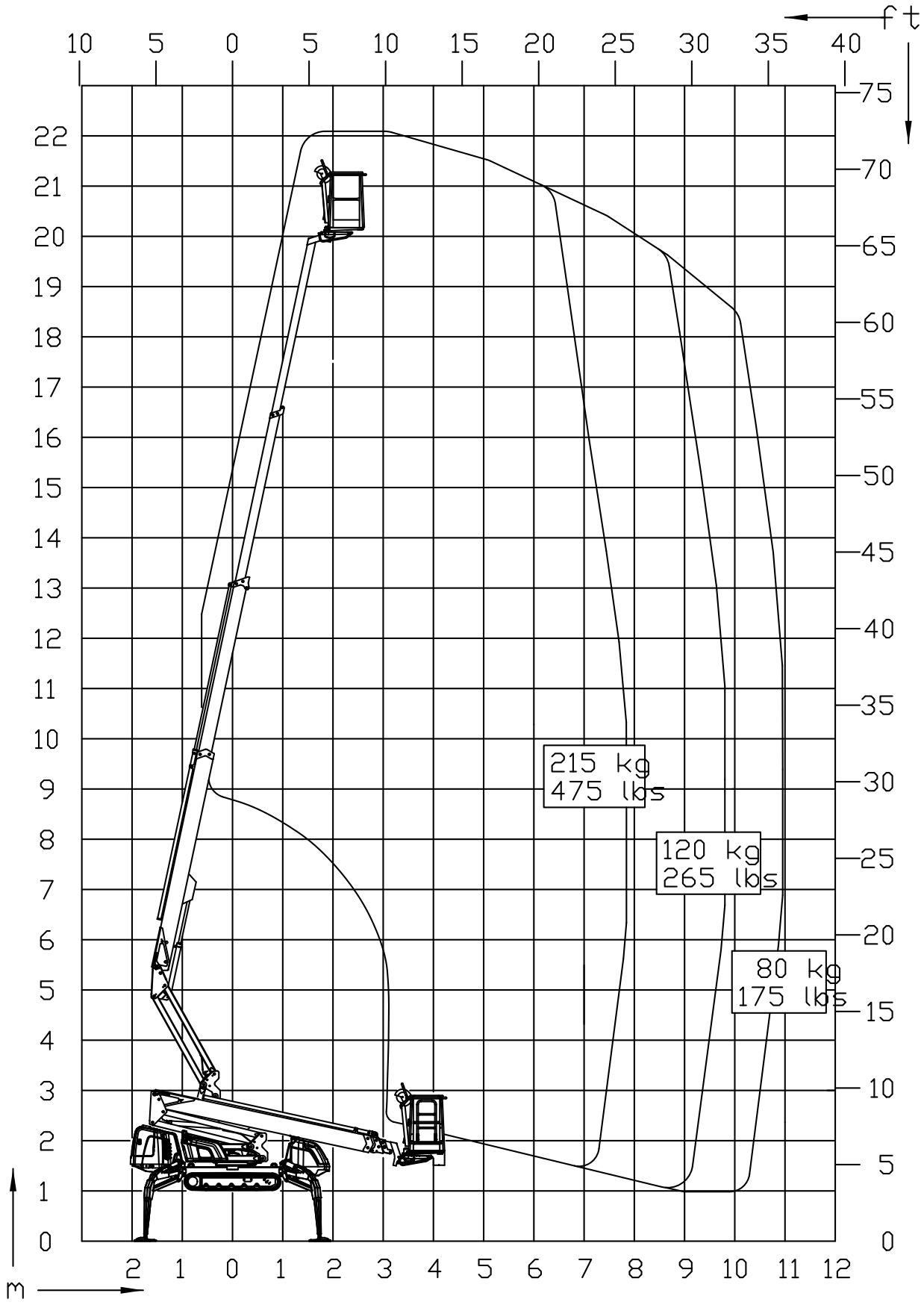


2.2. REACH DIAGRAM

2.2.1. 185XTC II

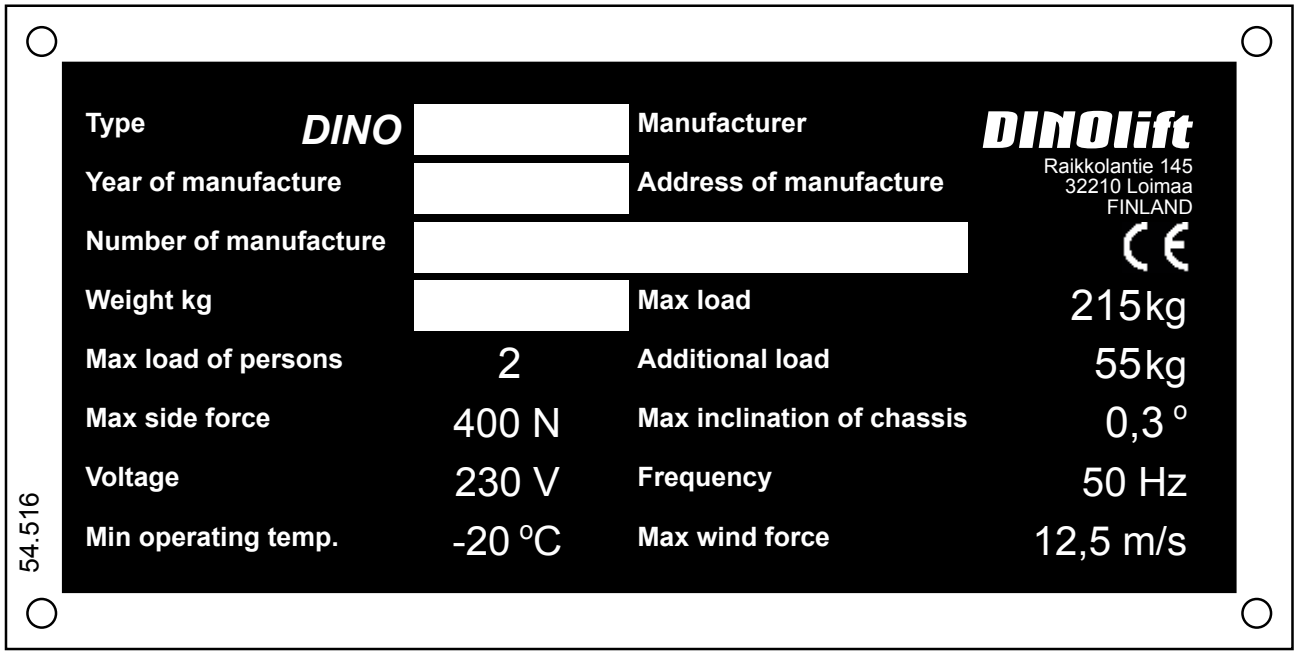


2.2.2. 220XTC II



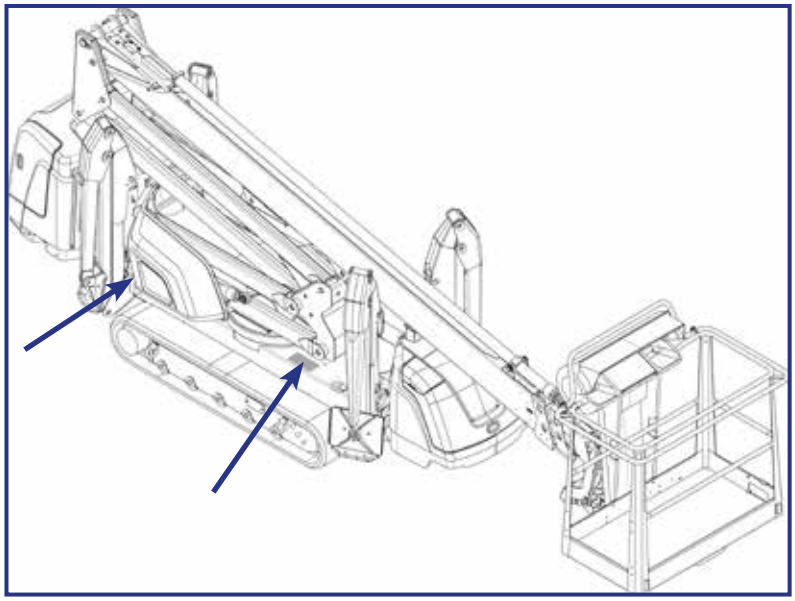
2.3. EXAMPLE OF THE MACHINE'S NAMEPLATE

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 is located on the chassis, in the place shown in the picture.

The serial number is also engraved in the rear part of the chassis, in the place pointed by the arrow.



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 220XTC Aerial Work Platform no YGC220XTCF0220029

complies with the provisions of the Machine Directive **2006/42/EC** and its amendments 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 166/524/14**

In addition, the aerial work platform also complies with the provisions of the following European Directives:
2006/95/EC, 2000/14/EC, 2004/108/EC

Measured sound power level L_{wa} (92.5 + 1,5) 94 dB
Guaranteed sound power level L_{wa} 94 + 0,5 dB

To the assessment procedure of conformity has been applied: 2000/14/EC, Annex V: Internal control of production.

In designing the machine, the following harmonised standards have been applied:
SFS-EN 280:2013, SFS-EN 60204-1/A1, SFS-EN-ISO 12100

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

Antti Tuura
Foreman

2.5. SAMPLE OF INSPECTION PROTOCOL FOR THE ACCESS PLATFORM

DINOlift
www.dinolift.com

TEST CERTIFICATE

DATE:

START-UP TESTS:

Inspection place: **Dinolift Oy**

Inspector's signature: Lehtinen Sauli NT0574-2

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 185XTC**	Max. platform height	**16,5 m**
Number of manufacture	**YGC185XTC F0185**	Max. outreach: depend on load:	**Depend on load**
Year of manufacture	**2015**		
Max. lifting capacity:	**215 kg**	Boom rotation:	**Continuous**
Max. person number:	**2**	Support width:	**3,46 m**
Max. additional load:	**55 kg**	Transport width:	**1,15 m**
Power supply:	**230VAC**	Transport length:	**5,85 m**
Lowest temperature:	**-20 °C**	Transport height:	**1,98 m**
Weight:	**2980 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.

BLANK

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 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.

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 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 crushed 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.

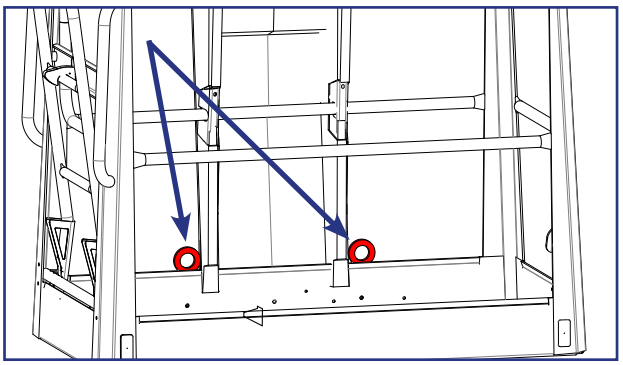
LIFTING AND WORKING ON THE PLATFORM

Never exceed the maximum number of persons, maximal loading or lateral 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.

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.

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.

Never throw or drop any objects from the platform.

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.

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 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.

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

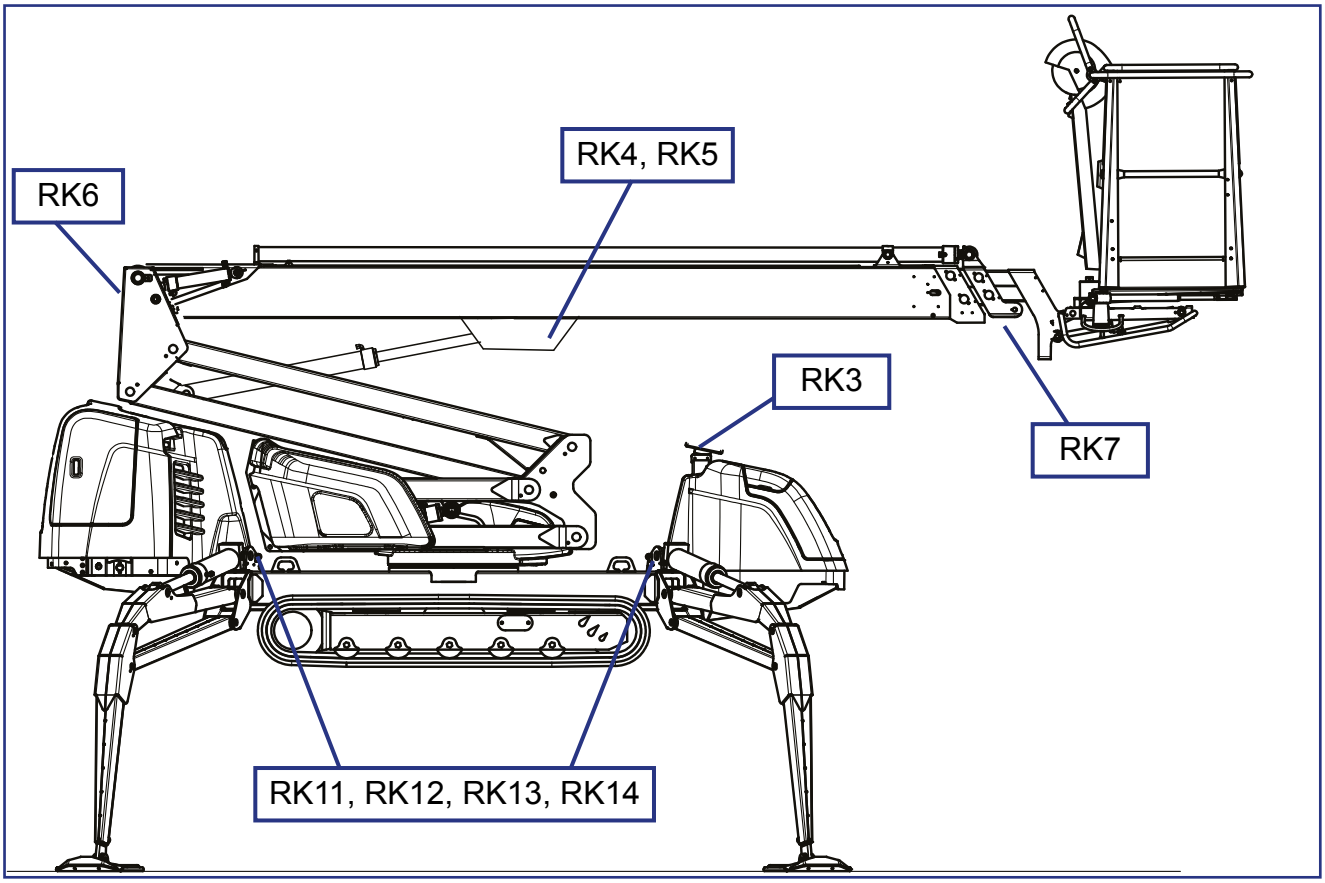
1. Supervision of transport position of the boom

The safety limit switch RK3 prevents the operation of the outriggers and the drive system, if the boom has been raised from the transport support. The limit switch RK3 is located on the transport support for the boom.

If the RK3 is not working properly, none of the boom movements will operate. The defect must be repaired before the operation can be resumed.

In the elevated transport position, the transport position of the boom is monitored by the saftey limit switch RK6, which stops the lifting of the boom in the level position, if the outriggers have been raised. In this situation, only the driving and the lowering of the boom are operational, whereas all the other movements of the lift are blocked.

If the RK6 is not working properly, the lifting of the boom does not operate.



2. Supervision of supporting

During normal operation of the lift all the outriggers must be in the support position before lifting of the boom (see point "Making use of the elevated transport position").

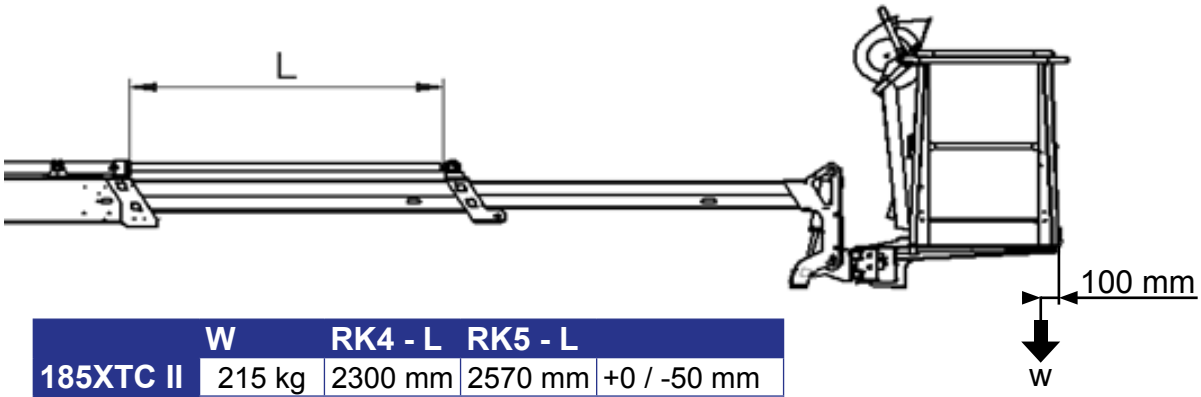
Make sure that the tracks are in the support position off the ground.

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

3. Outreach range and overload protection switch

The safety limit switches prevent overloading of the lift.
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:



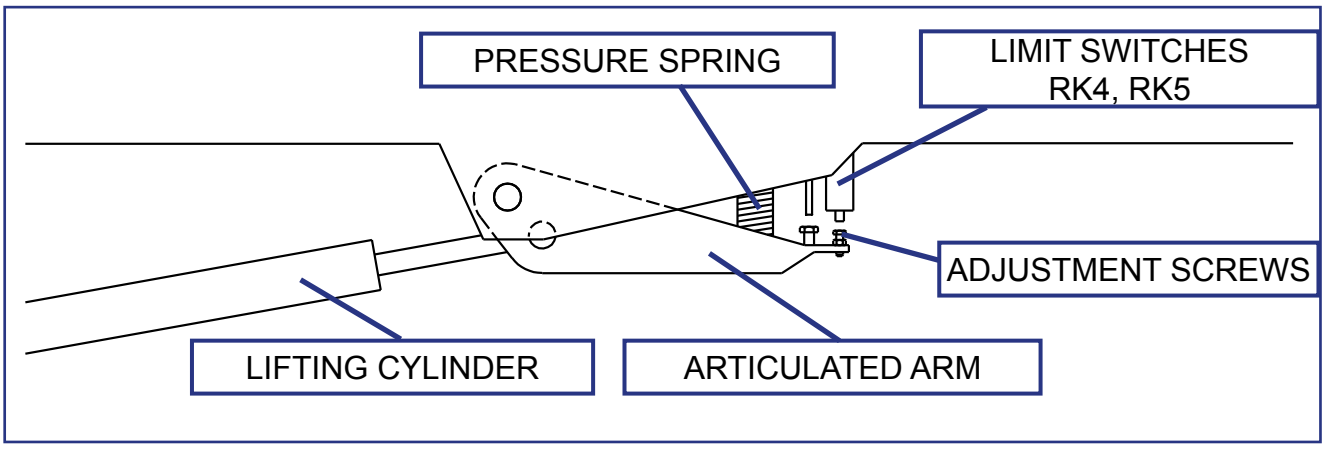
	W	RK4 - L	RK5 - L	
185XTC II	215 kg	2300 mm	2570 mm	+0 / -50 mm
220XTC II	80 kg	1825 mm	2075 mm	+0 / -50 mm

DANGER

The adjustments of the limit switches must never be readjusted from the values presented in the table. **Risk of turning over the lift!**

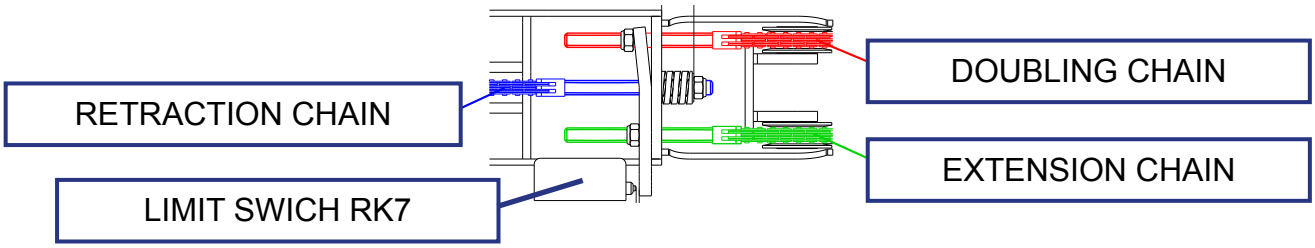
The red light flashes when the **RK4** has stopped the movement. While the red light is flashing, the lift can be operated in the direction where it stays inside the allowed outreach area.

The overload limit switch **RK5** backs up, if the **RK4**, for some reason, does not work.
The RK5 activates the buzzer on the platform, and breaks the emergency descent circuit.



4. Supervision of the telescope chain

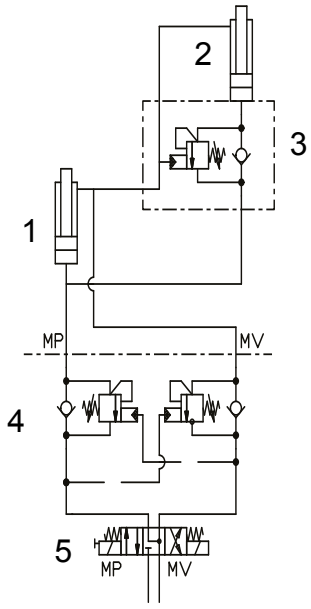
The extension chains for the telescope are doubled. If the load-bearing chain slackens or breaks, the doubling chain prevents the movements of the telescope, and the safety switch breaks the emergency stop circuit.



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	Prevent the load from falling
Lifting cylinder of the articulated arms	Load regulation valve	
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 control centre CCB 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.

8. Emergency descent system

As a precaution against possible failure in the power supply, the lift is equipped with a battery operated emergency descent system. The emergency descent system remains operational even if the emergency stop circuit has broken.

The emergency descent system can be operated from all control centres. Primarily, it is intended for lowering the boom, but if necessary, it can also be used for powering the outriggers and tracks.

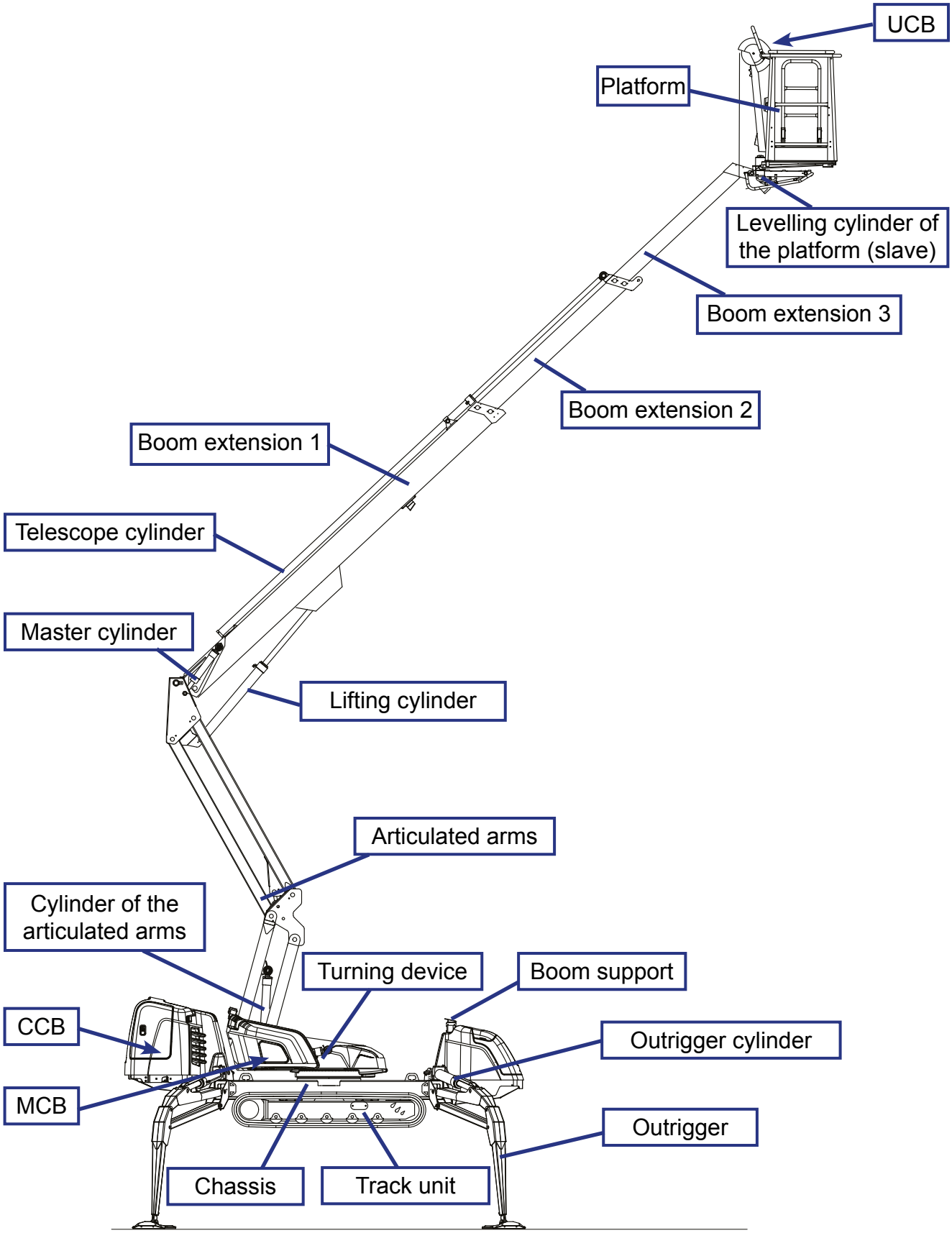
The system comprises
- battery 12V 44 Ah
- hydraulic unit 12 VDC
- battery charger

The hydraulic unit comprises:
- pressure relief valve, set value 17 MPa (170 bar)
- check valve
- direct current motor 12 VDC 800 W

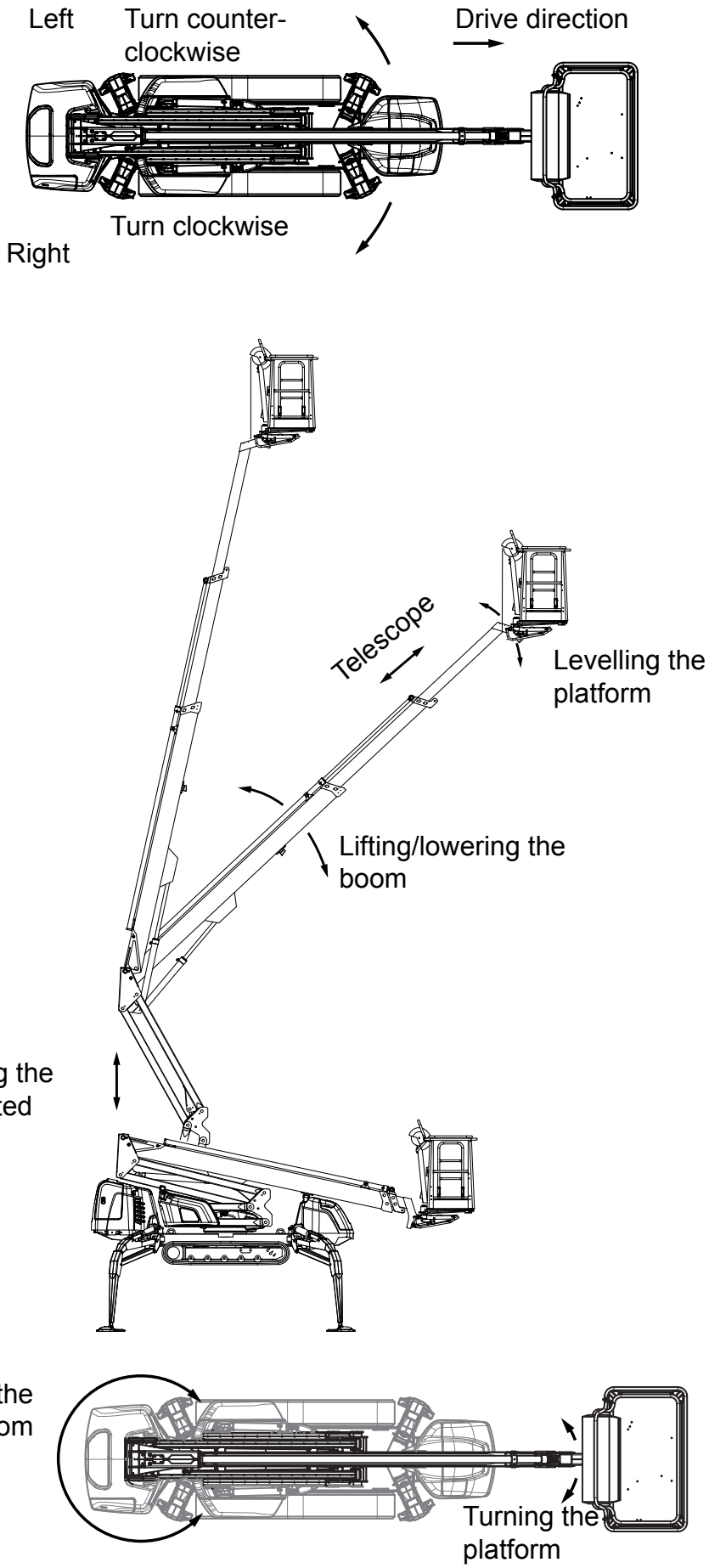
4. STRUCTURE AND FUNCTIONS OF THE LIFT

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 LIFT



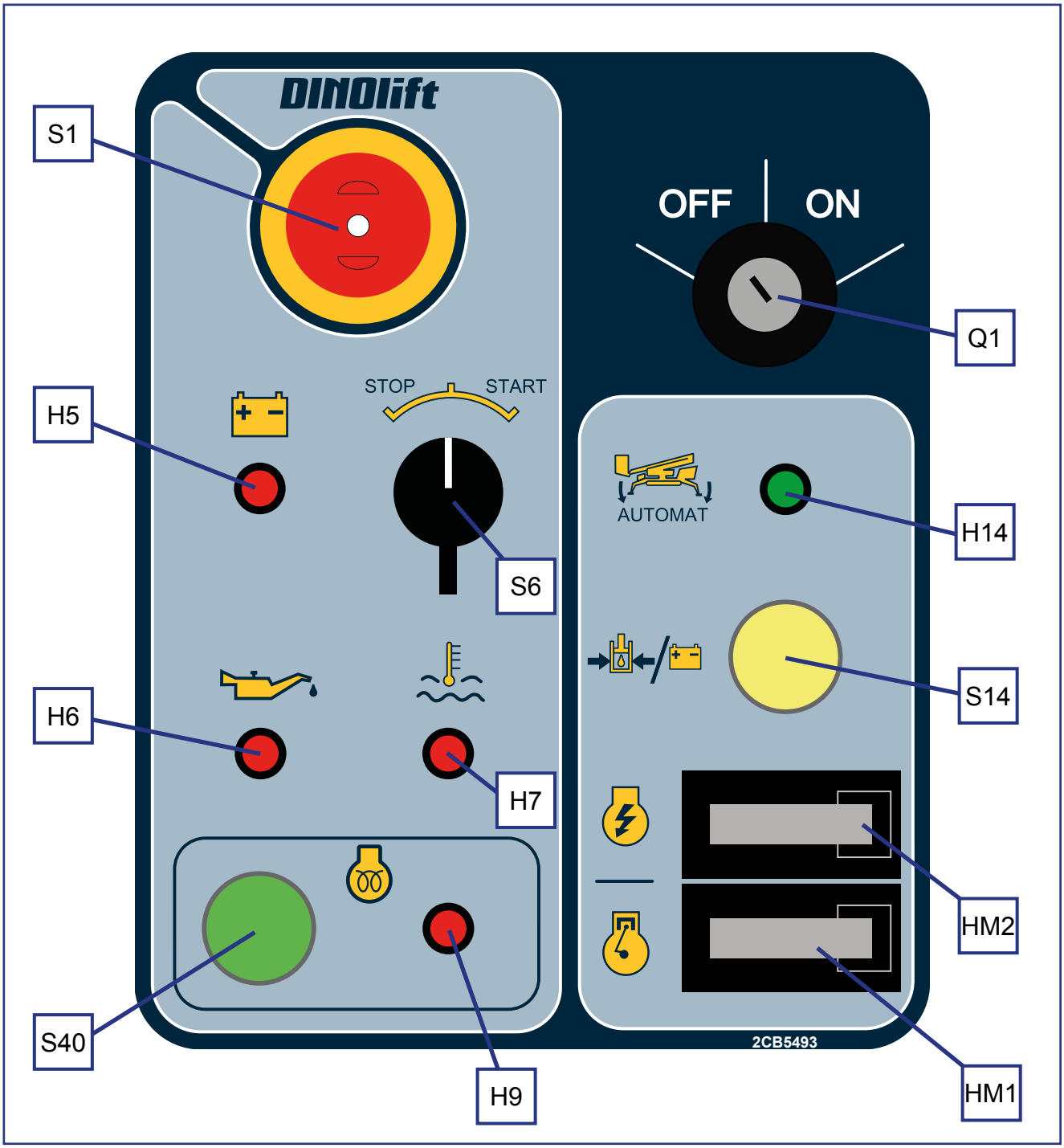
4.2. FUNCTIONS OF THE WORK PLATFORM



4.3. OPERATING CONTROLS FOR THE FUNCTIONS

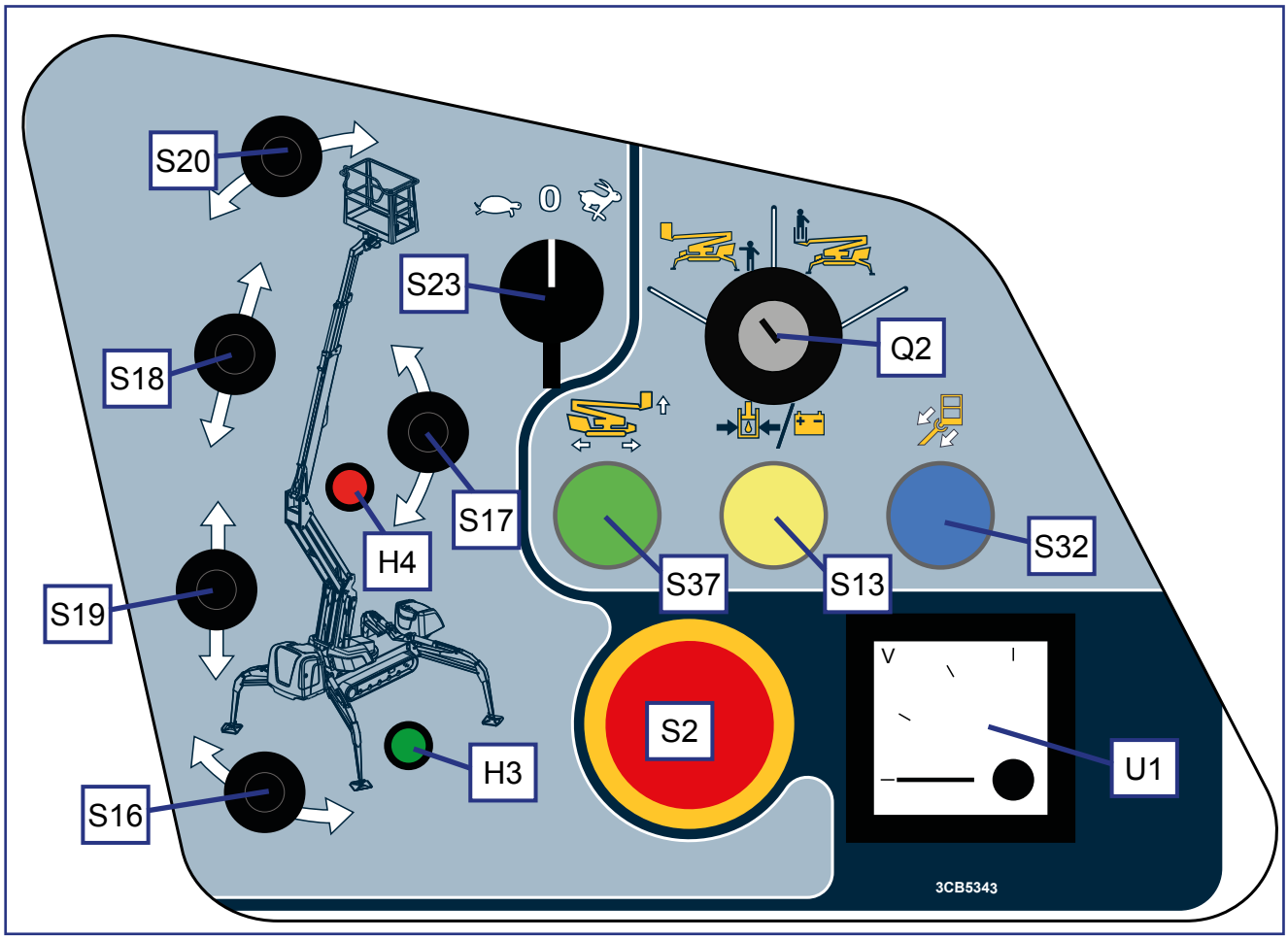
4.3.1. Operating controls in the chassis control centre CCB

H5	Diesel – signal light for recharging	Q1	Power switch
H6	Diesel – signal light for oil pressure	S1	Emergency stop button
H7	Diesel – signal light for overheating	S6	Start and stop switches for the engine
H9	Diesel – signal light for glowing	S14	Operating switch for emergency descent system
H14	Signal light for automatic levelling	S40	Diesel – glow button
HM1	Diesel – hour meter		
HM2	230 VAC electric motor – hour meter		

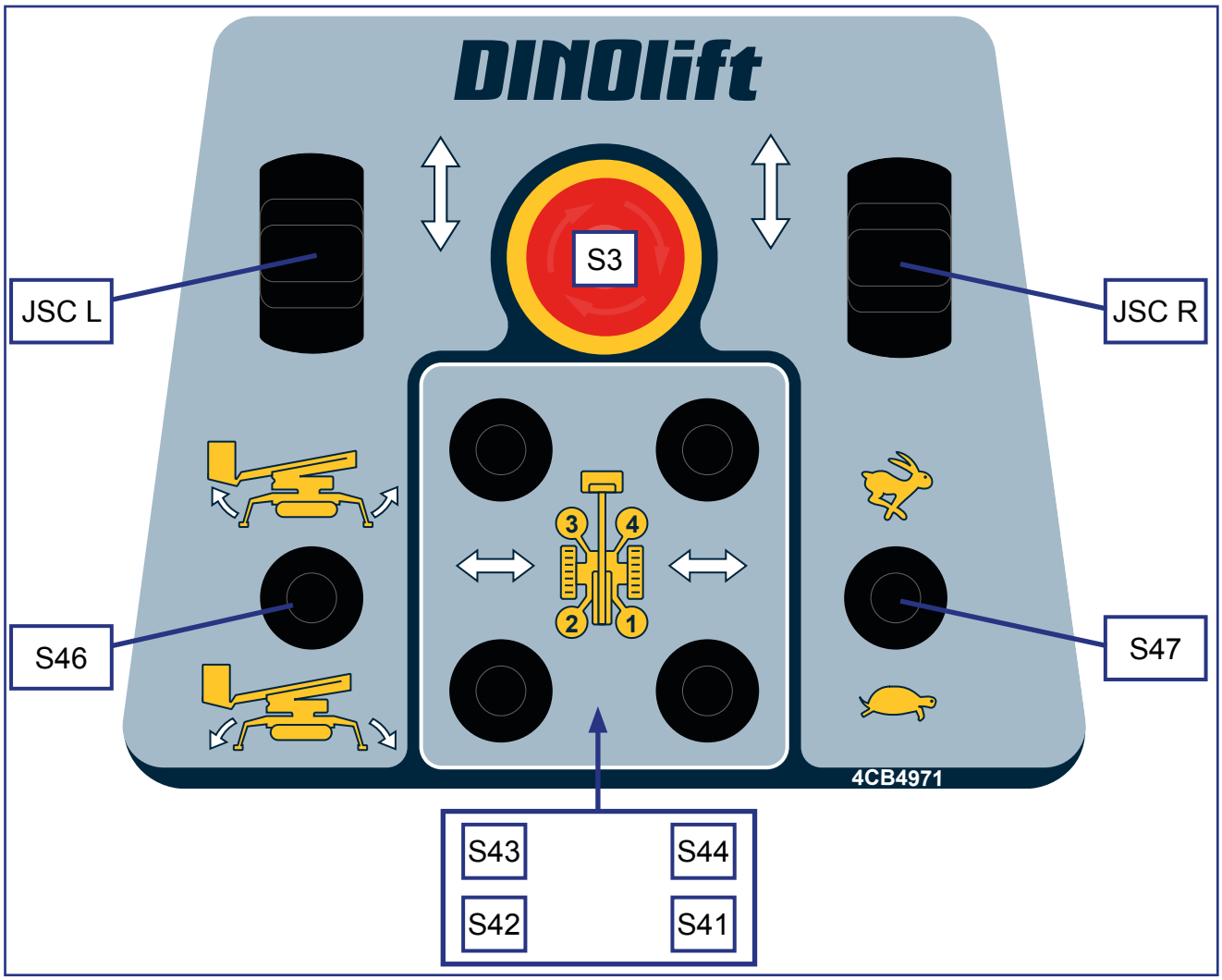


4.3.2. Operating controls in the turning device centre MCB

H3	Signal light for the outrigger limit switches	S18	Retracting/extending the telescope
H4	Alarm signal light for reach limit	S19	Lifting and lowering the articulated arms
U1	Voltage meter for 230 VAC mains current	S20	Levelling the platform to the front and to the rear
Q2	Selector switch for the operating location	S23	Selection of boom speed
S2	Emergency stop button	S32	Retracting the telescope
S13	Operating switch for emergency descent system	S37	Driving with the boom raised
S16	Turning the boom	S36	Turning the platform to the left and to the right
S17	Lifting and lowering the boom		

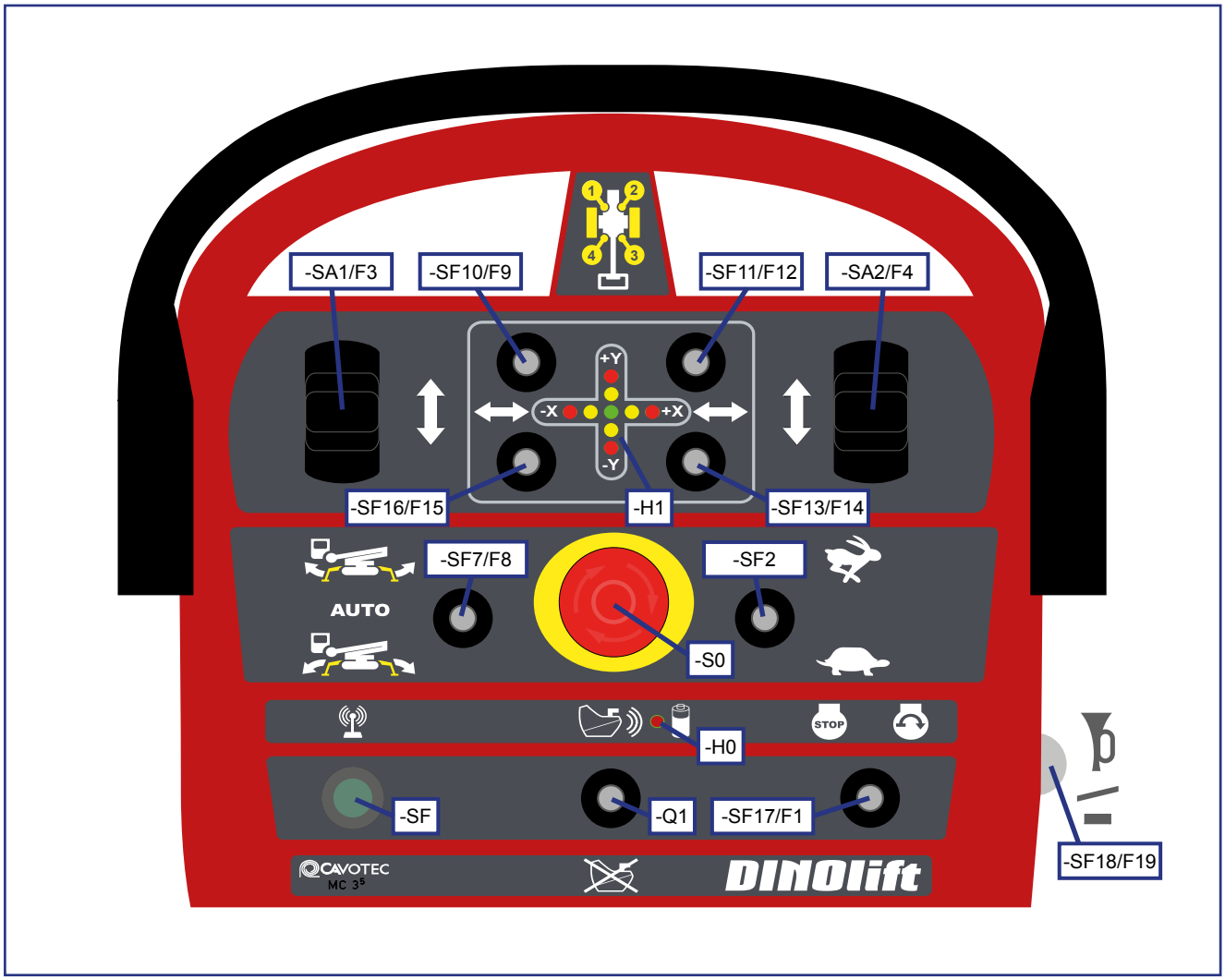


4.3.3. Operating controls for driving and outriggers



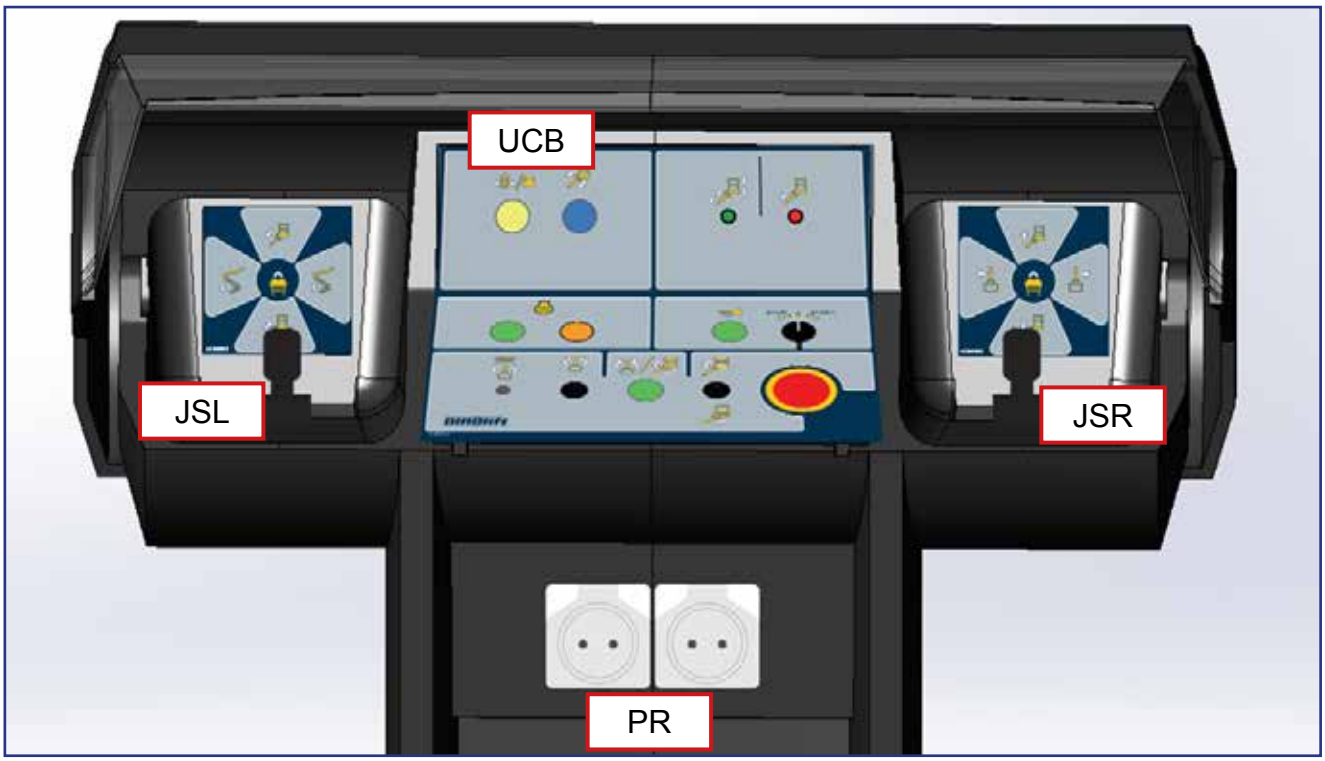
S3	Emergency stop button		
JSC L	Left track, speed forward-backward	JSC R	Right track
S46	Automatic levelling – lifting the outriggers	S47	Selection of drive speed range
S43	Lifting and lowering the support outrigger 3	S44	Lifting and lowering the support outrigger 4
S42	Lifting and lowering the support outrigger 2	S41	Lifting and lowering the support outrigger 1

Radio controller unit RCTX (optional)

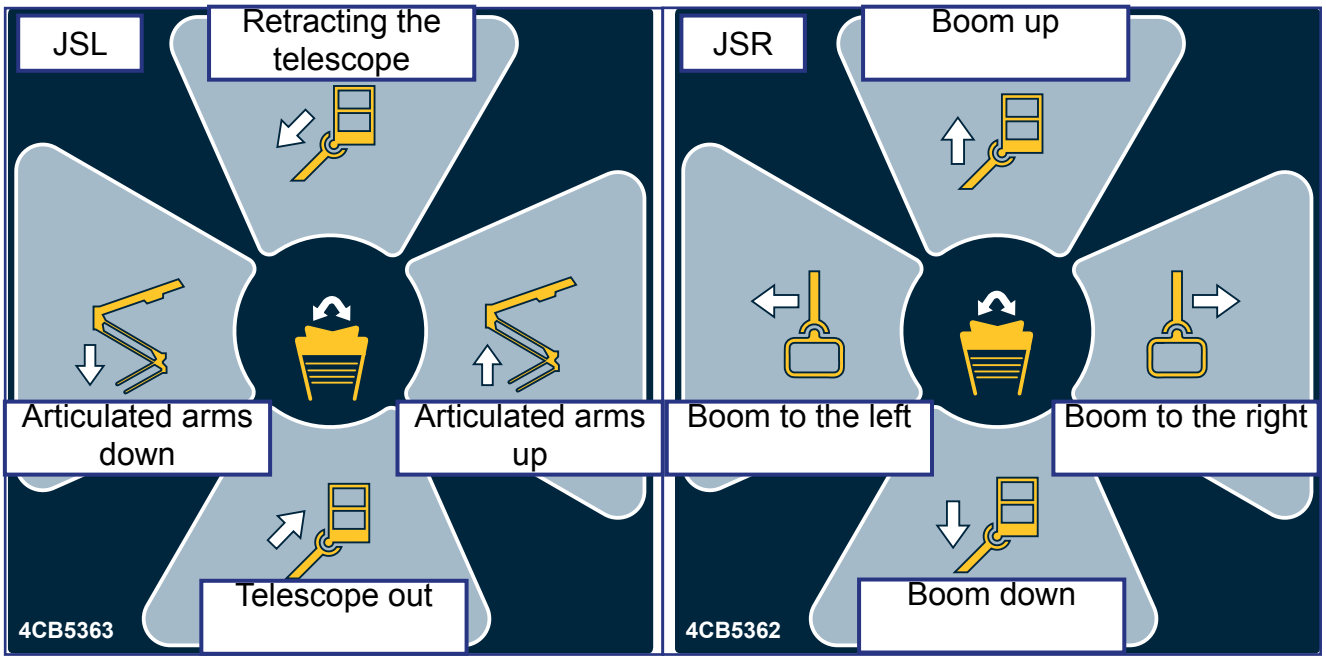


Cavotec #	Operation
-SA1/F3	Left track, speed forward-backward
-SA2/F4	Right track, speed forward-backward
-SO	Emergency stop button
-SF10/F9	Lifting and lowering the support outrigger 1
-SF11/F12	Lifting and lowering the support outrigger 2
-SF13/F14	Lifting and lowering the support outrigger 3
-SF16/F15	Lifting and lowering the support outrigger 4
-H1	Inclination display
-SF7/F8	Automatic levelling – lifting the outriggers
-SF2	Selecting the driving speed range
Q1	Power on/off
-SF	Switching frequency
-SF17/F1	Start / Stop
-SF18/F19	Sound signal / start switch of the controller

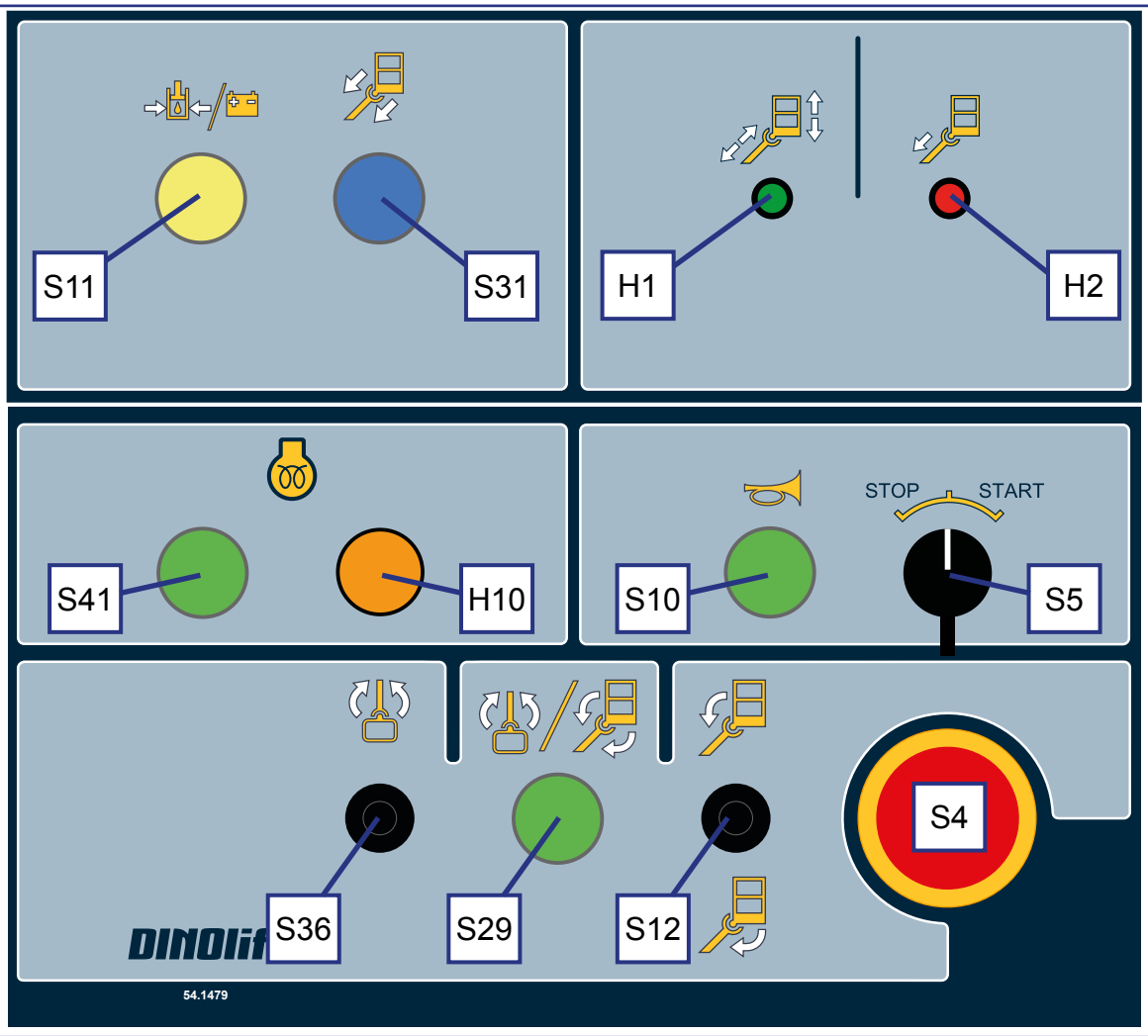
4.3.4. Operating controls in the platform control centre UCB



UCB	Control panel of the platform centre
JSL	Control lever (left joystick)
JSR	Control lever (right joystick)
PR	Socket outlet 230 VAC/10A (2 pcs.)



H1	Signal lights for limit switches
H2	Alarm signal light
H10	Diesel – signal light for glowing
S5	Start and stop switch of the combustion engine
S4	Emergency stop button
S10	Pushbutton for the sound signal
S11	Operating switch for emergency descent system
S12	Levelling the platform to the front and to the rear
S29	Enabling platform swing and levelling
S31	Retracting the telescope
S36	Turning the platform to the left and to the right
S41	Diesel – glow button



5. USING THE WORK PLATFORM

5.1. START-UP

NOTICE

All the regular servicing measures must be carried out before using the lift.

The operator must carry out the worksite inspection and all the inspections, related to the start of daily operations always:

- 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

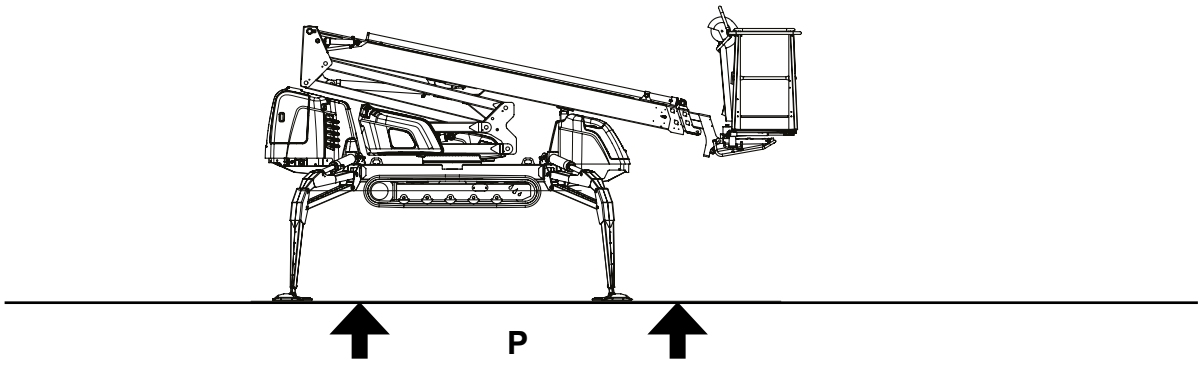
4. Operator
   - Is the operator old enough?
   - Has the operator received the required training?

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/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



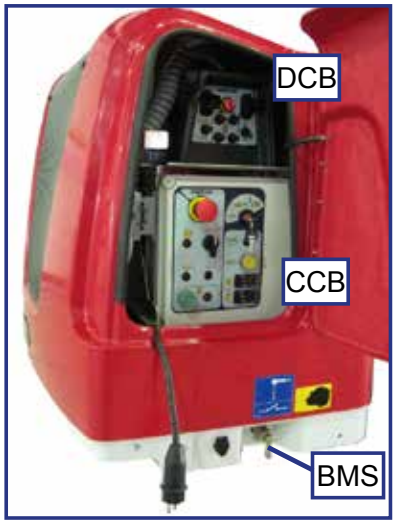
2. Check that the working surface is free from potholes, pits or in excess inclined areas.
3. Check that the movement area of the outriggers and the boom, and the area under the outriggers are free from obstacles, which could cause a risk of collision or turning over.

DANGER

Risk of turning over the lift! If the ground is soft, use sufficiently large and sturdy additional plates under the support outriggers.

5.1.3. Starting up the machine

1. Make sure that the main current switch BMS is turned on. This switch is located in the chassis, below the control centre CCB.
2. Make sure that none of the emergency descent buttons has been depressed (the signal light of in the emergency stop button of the LCB centre is illuminated).
3. Before operating the mains-powered lift by the current, first ensure that the network cable is connected. The plug is located at the side of the lower control centre CCB.



4. Switch on the power to the unit using the switch Q1.
5. Activate the control system by depressing the glow button S40 or by turning the start switch S6 to the START position for a moment.

NOTICE

The machine is equipped with an automatic economy function. The power of the machine will be switched off, if the operating controls have not been used for 20 minutes. If the power has been switched off, the control system must be reactivated. The reactivation can be done either from the chassis control centre or from the platform control centre.

POWERED BY COMBUSTION ENGINE Diesel

Starting the engine

6. Glow the engine by depressing the glow button. The signal light H9 lights up. The glowing will be interrupted and the light will be automatically switched off in about 10 seconds. If the engine is warm, even a shorter glowing time may be sufficient.

7. Start the engine by turning the switch S6 to position START and keep it there until the engine starts running.

The oil pressure light and the charging light of the engine must go out.

The overheat light must not be illuminated.

Stopping the machine

To switch off the engine, turn the switch S6 to the left to the position STOP.

The engine also stops:

- once the emergency stop switch is depressed at any of the control stations
- once the emergency descent switch is depressed
- once the key switch Q1 is turned to the position OFF
- once the alarm for too low oil pressure or overheating has been activated.

NOTICE

The battery will only be recharged when the combustion engine is running. Allow the combustion engine to run also between the operations to maintain sufficient charge level of the battery.

NOTICE

Do not disconnect the main current while the diesel engine is running!
Disconnecting the power supply while the engine is running may damage the electronics of the diesel engine's charger.

ELECTRIC MOTOR

- For maximum out of the electric motor the voltage must 230 VAC (-10%/ +6%), and the frequency must be 50 Hz (the length of the connecting cable has some effect).
- 16A fuse.

Starting the electric motor

1. Connect the mains plug.
2. Switch on the power to the unit via the switch Q1.
3. Start the engine by turning the switch S6 to position START and keep it there until the engine starts running.

Stopping the engine

To switch off the engine, turn the switch S6 to the left to the position STOP.

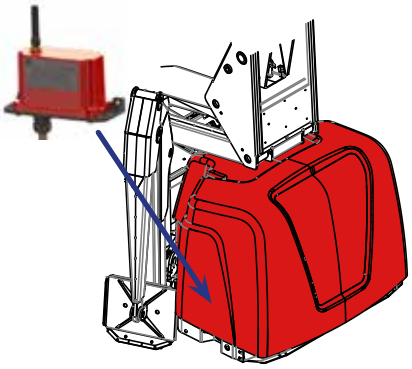
NOTICE

The motor can be started and stopped from both the chassis control centre and the platform control centre.

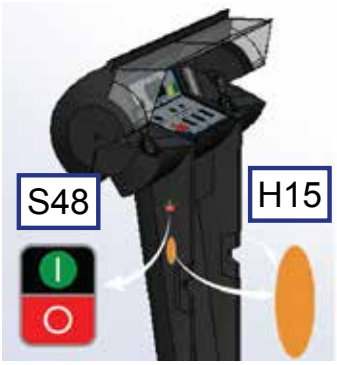
Putting the radio control into operation (option)

Transmitter (RCTX)

Receiver



Operating controls of the receiver



The recharger for the transmitter of the radio controller is located in the storage compartment, next to the UCB control station.

Before putting the radio control into operation, ensure that:

- the main current switch BMS is turned on
- none of the emergency stop switches is depressed
- the power supply to the unit has been switched on via the switch Q1
- the control system has been activated by depressing the glow button S40 or by turning the start switch S6 to the START position for a moment.
- the state of charge of the radio control transmitter's battery is sufficiently high
- all the switches have been switched OFF, i.e. none of the functions is active

1. Switch on the power supply to the RCRX receiver (I).
   The flashing warning lights H15 and H16 on either side of the platform control panel indicate that the receiver is active.

2. Switch on the power supply to the RCTX transmitter.

3. Activate the radio control by depressing the pushbutton at the side of the transmitter. The button must be kept depressed for about 1 second.

4. Start the engine

If the radio controller has not been used in 20 minutes, it will be switched off, and the lift will switch to the emergency stop mode. To continue the operation:

- reactivate the radio controller and restart the unit
- switch off the receiver of the radio controller

NOTICE

Before starting the operation, check that the receiver of the radio controller is intact. Do not use the transmitter, if it has worn or defect parts. Refer to the manual for the radio controller for more detailed instructions.

If the system is operating normally, the signal light of the radio controller will remain continuously illuminated. If the light is flashing, as indicated in the table, the system has been subjected to an extraordinary situation. Establish the reason before continuing the operation.

The light indicates:

— ‿ — ‿ — ‿ (1/s)	Low battery voltage	
– – ‿	Movement active during starting	
– – – ‿	Radio module failed	
– – – – ‿	Switch off/battery flat	
– – – – – ‿	Erroneus signals from the controller	
– – – – – – ‿	Switch off/controller in stand-by mode	
– – – – – – – ‿	Emergency stop	
— 2s — 2s	Processor fault/test mode	
Switched off	Transmitter switched off. Check that the transmitter's battery is fully charged, and the transmitter is on. If the transmitter has entered the stand-by mode and switched off, switch off and restart the unit.	
‿ = Pause, after which the flashing will restart		

If the receiver does not receive the control signal from the transmitter, the lift will enter the emergency stop mode.
If the connection is lost, the radio controller must be reactivated.

If the signal is repeatedly lost or suffers from interference, the frequency used may be changed. The transmitter must be restarted after changing the frequency.

NOTICE

If the transmitter's battery dies, or the unit must be operated in an environment, where radio control cannot be used, the transmitter can be connected to the receiver by means of a cable. The radio signal will then be automatically switched off.

Ending the operation:

1. Stop the engine.

2. Switch off the RCTX transmitter

3. Switch off the RCRX receiver (0)

5.2. WORKING WITH THE MACHINE

5.2.1. Driving with the machine

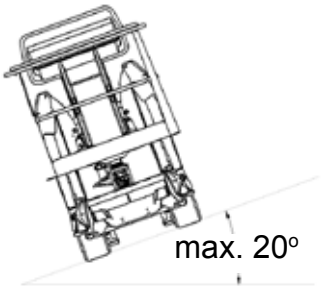
Make sure that the boom rests on the support and the outriggers are in the upper position. Driving is allowed, when the outriggers are off the ground.

The lift may be operated either from the chassis control centre DCB, or by means of radio control, from the control centre RCTX (optional).

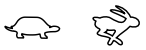
WARNING

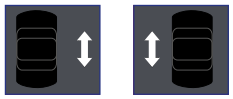
Observe the following safety instructions during driving:

- Do not enter the danger zone of the tracks during driving. Ensure that there are no people inside the danger zone.
- Watch out that the power cable does not get under the tracks when driving powered by electricity.
- The maximum allowed gradient during transfer is 20°.
- When driving in terrain on a slope, position yourself uphill with respect to the machine.



1. Turn the selector switch Q2 in the control centre MCB to the position ”Chassis control centre LCB”
   OR
   Start the radio control
2. Make sure that the boom is resting on the transport support.
3. Start the motor
4. Select the driving speed range, using the lever switch.
   While the unit is operated by the electric motor, only the lower speed should be applied.
5. Adjust the driving direction and speed of the lift using the control levers for respective track. The speed can be steplessly adjusted.
   The movement stops immediately, when the control levers are released.





During driving

- While powered by the diesel engine, the engine revolutions automatically increase and decrease as the movements are being activated. The revolutions will drop to idling in about 3 seconds after the controls are returned to their neutral position.
- In case of emergency, the engine of the unit can be switched off by pushing the emergency stop button in the driving device.

5.2.2. Using the elevated transport position

The machine can be temporarily driven with the boom raised from its support.
This feature is intended for temporary use only, such as, for example, passing by an obstacle in the terrain or driving onto a slope, in order to avoid hitting any objects within the surrounding area.

WARNING

Risk of turning over the lift! It is absolutely prohibited to transfer the unit from the platform by means of the radio controller, while the boom is raised!
The platform must be empty during the transfer. When the unit is transferred with the boom raised, a load on the platform impairs the lift's stability.

1. Start the machine.
2. Ensure that the outriggers are in their upper positions, the articulated arms have been lowered and the telescopic movement has been completely retracted.
3. Turn the key switch Q2 in the control centre on the turning device MCB to the position “Chassis”.

4. Depress the button S37 for driving with the boom raised. Lift the boom via the lever switch S17. The lifting movement stops automatically, when the boom reaches the level position.

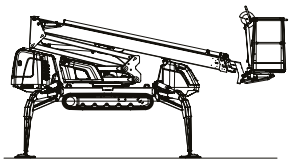
5. Drive the lift to the desired location.
6. Depress the button S37 for driving with the boom raised. Lower the boom onto the support using the lever switch S17.

The raising of the boom is possible only from the chassis control centre, and the movement is limited to the level position.
In this restricted use situation, only the following boom movements will be operational:

- lifting and lowering of the boom
- levelling and rotation of the platform
- driving of the lift

The outriggers cannot be operated until the boom has been lowered back onto the support.

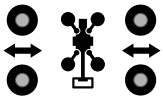
5.2.3. Supporting the lift



Supporting the lift in the operating position.

The support outriggers may only be operated, while the boom is resting on the support and the telescopic boom is fully retracted.

1. Turn the selector switch Q2 in the control centre MCB to the position ”Chassis control centre LCB”
   OR
   Start the radio control
2. Ensure that the operating range of the outriggers is unobstructed.
3. Turn the relevant lever switch to the desired direction of movement of the outrigger.Always move the front and rear outriggers in turns to ensure that the lift does not incline too much during levelling. Lift the unit using the outriggers only as much as is required, but however so much, that the tracks rise clearly off the ground, and the turning device does not hit the outriggers during turning.



4. Level the lift using the support outriggers.
   You can verify that the machine stands on a level either by means of the water level or on the electric display of the radio controller with columns of different height that indicate the horizontal position.
5. The green outrigger signal light H3 in the MCB centre will light up as soon as the support force on all outriggers is sufficiently strong. In the radio controller, the green signal light is located in the middle of the inclination display.
6. Turn off the transmitter and the receiver of the radio controller.

WARNING

Lighting up of the green signal light does not always prove that the lift is on a level. It only indicates that the support force on the outriggers is sufficient.

Automatic levelling (optional)

1. Pull the lever switch S46 to bring the lift on a level. During levelling, the green signal light H14 in the control centre CCB is flashing.
2. Keep the levelling operation activated until the movement stops and the signal light becomes steady.
3. Always verify the level position of the lift as instructed in the chapter above. Readjust manually, as necessary.

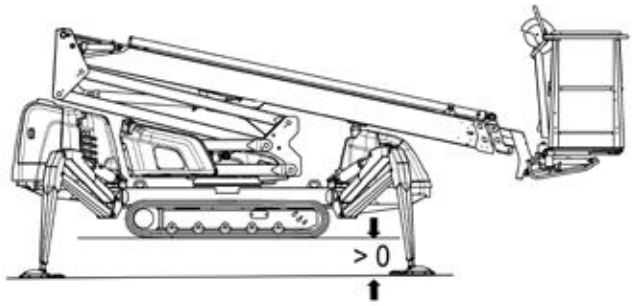
4. Pull the lever switch S46 to lift the outriggers to the transport position.

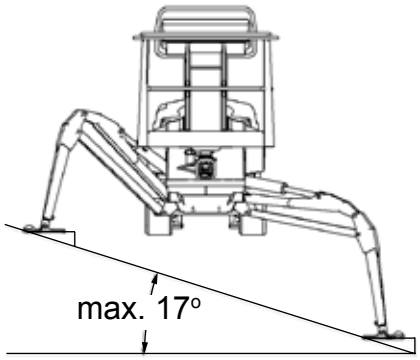
DANGER

Risk of turning over the lift! Using the lift is prohibited unless it is properly supported and in a level position. Observe the effect of ice, possible rain and inclination of the surface on the support force (the outriggers must not slip on the surface).
As required, test the stability by turning the boom around loaded but the telescope fully retracted. If you notice during the test, that the chassis inclines, you must not continue the use.

Before using the lift, always check that:

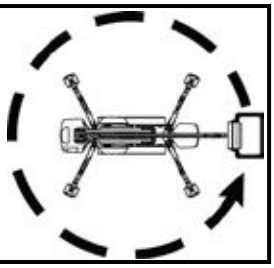
- the chassis is in the horizontal position, in accordance with the position indicator
- the tracks are off the ground and the footplates are lower than the tracks
- the outriggers are firmly supported on the ground
- the outriggers cannot slide while on a gradient
- the additional plates (if any), are in a horizontal position





NOTICE

Danger of structural damage. If you have levelled the chassis of the lift **ON A GRADIENT**, turn the boom around carefully to make sure that the turning device does not bang against the support outriggers or other obstacles.



5.2.4. Operating the lift from the control centre on the turning device MCB

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.**

All the faults, observed in the safety devices, must be repaired before the use.

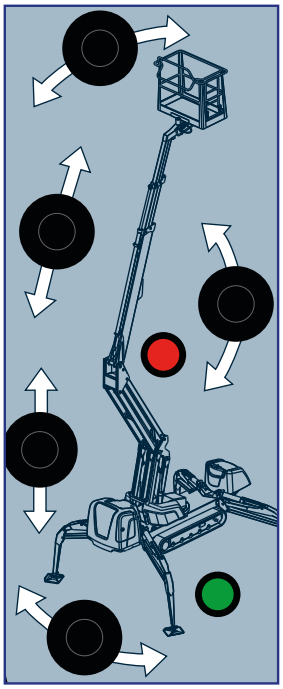
The boom can only be operated, when the machine is raised off the ground and levelled using the outriggers. The signal light H3 for the outriggers glows green.

1. Start the machine from either the lower control centre CCB or the upper control centre UCB.
   Go to the control centre on the turning device MCB.
2. Turn the key switch Q2 to the position “Operating from the chassis control centre”.

3. Adjust the movement speed for the boom via the speed selector switch.
   When the selector switch is released, it automatically returns to the position 0 and the movement stops.

4. Select the movement using the control levers

Turning the boom	S16
Lifting/lowering the boom	S17
Retracting/extending the telescope	S18
Lifting/lowering the articulated arms	S19
Levelling the platform	S20



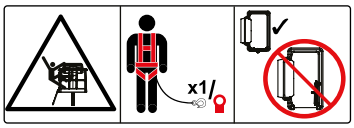
5. Lift the platform from the boom support. Turn the boom so that the platform can be lowered.
6. Extend the telescope as much as necessary to ensure that stepping onto the platform is safe.

5.2.5. Operating the lift from the platform control centre UCB

1. Turn the key switch Q2 in the control centre on the turning device MCB to the position “Platform”, and step onto the platform.

DANGER

Risk of falling! Wear a safety harness while on the platform, and fix it to the point marked for them.
Make sure that the platform gate remains closed during the operation.



2. If necessary, glow the Diesel engine by depressing the button S41.

3. Start the engine via the lever switch S5.

4. Depress the rocker switch at the end of the control lever for the platform. Note the following: if the lever is used before the rocker switch is depressed, the movement will be blocked.

5. Start operating the boom. The movements of the boom are controlled as presented in the table.

Control lever	Movement	Movement speed	Symbol
JSR - up / down	Boom up / down	Stepless adjustment	
JSR - to the left / right	Turning the boom clockwise / counter-clockwise	Stepless adjustment	
JSR - to the left / right	Articulated arms down-up	Stepless adjustment	
JSL - up / down	Retracting/extending the telescope	Stepless adjustment	
The movements can be operated simultaneously. If several control levers are operated simultaneously, the speed of individual movements decreases.			

6. To operate the turning and levelling of the platform, use the activation switch S29, and simultaneously move the control lever for the movement in the desired direction.

S36 - to the left / right	Turning the platform clockwise / counter-clockwise	Constant speed	
S12 - up / down	Levelling the platform	Constant speed	

DANGER

Risk of turning over the lift! Do not overload the lift.

Never add load onto the platform while the overload warning light is lit. The overload control system prevents any dangerous movements, if the platform load is too heavy with respect to the outreach.

Do not operate the boom, if the inclination of the ground surface exceeds the maximum allowed value.
It is strictly prohibited to take additional load in the upper position.
Do not exceed the lateral force (400N), or load the platform vertically more than allowed

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

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.

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.

If the maximum allowed movement range, deterrmined by the load on the platform, is exceeded, the overload limit switch RK5 blocks the use of the lift and launches a warning signal.

Measures in case 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).

As soon as the red signal light stops flashing, the lift may be operated normally.

The "telescope in" -button (S30 or S31) is always operational when the engine is running.

Working a long time in the same position

- There is a keyswitch for stopping and starting the engine in both the platform and the chassis control centre. 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, the engine should be allowed to run to keep the hydraulic oil warm.
- Keep the state of charge of the battery sufficiently high even during long-term work in the same position.
  It is recommended to leave the combustion engine running even between the operations.
- Check the stability and condition of the base regularly during the operation, taking into account the weather and ground conditions.

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

8. **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 removing the ignition key

5.2.6. 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 transport support. 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 power switch to position OFF and switch off the main current.
6. Make sure that the covers are locked.

5.3. ADJUSTMENT OF THE PLATFORM POSITION

The levelling of the platform is operational while the lift is in the support position (supported by the outriggers).

The levelling of the platform from the chassis control panel:
1. Turn the selector switch Q2 to the ”chassis control panel” position.
2. Select the movement speed using the switch S23.
3. Using the switch S20, select the desired direction for the correction movement.

The levelling of the platform from the platform control panel:
1. Activate the dead man’s switch S29.
2. Using the control lever S12, select the desired direction for the correction movement.

NOTICE

During the operation, the work platform is kept level by means of a hydraulic levelling system. If you have to correct the position of the work platform repeatedly during the operation to keep it horizontal, the levelling system is not operating properly.
Staying in a level position is a safety feature of the platform, and any faults, observed in its operation, must be repaired without delay.

5.4. 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.

Always keep the lift free from dirt, snow etc.

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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

In case of overloading, the red signal light is illuminated, the RK5 blocks the movements of the lift and launches a warning signal.

1. If possible, reduce the platform load.

2. Reduce the outreach to the side by retracting the telescopic boom using the emergency descent system. Avoid abrupt movements.
3. The green light will illuminate as soon as the overloading situation is reset. After this, the machine may be operated normally.

5.5.3. In case the power supply is interrupted

As a precaution against possible failure in the power supply, the lift is equipped with a battery operated emergency descent system. The emergency descent can be operated from every control centre.

When the emergency descent system is started, the electric motor and the combustion engine will stop.

Operation from the control centre on the turning device MCB

1. Start the emergency descent system via the pushbutton. The emergency descent system is operational only when the pushbutton is being depressed.

2. Retract the telescope completely (the limit switch RK8 will close).
3. Lower the boom and, as necessary, also the articulated arms.
4. Turn the boom to above the transport support and lower the boom onto it.

Emergency descent from the platform control centre UCB

1. Start the emergency descent system via the pushbutton. The emergency descent system is operational only when the pushbutton is being depressed.

2. Use the “telescope in” pushbutton, if the set value of the RK5 has been exceeded.
3. In any other case, operate the movements using their regular control levers.
   Note! Do not press the dead-man-switches at the end of the joystick.

4. Retract the telescope completely (the limit switch RK8 will close).

5. Lower the articulated arms and the boom, and finally, turn the boom.
6. Establish the reason for interruption of the energy supply.

Operating the outriggers and the track unit by means of the emergency descent system

Emergency descent from the chassis control panel CCB and from the control centres for driving and outriggers DCB and RCTX.

1. The boom must rest on the transport support, and the telescope be completely retracted. (see previous paragraphs).
2. Start the emergency descent system via the pushbutton in the CCB centre. The emergency descent system is operational only when the pushbutton is being depressed.
3. Drive the necessary movements from the control centre for the outriggers and tracks (DCB and RC).

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

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 by, for example, changing the battery
- resume the lift's normal operation by other means

Always check the condition of the battery for the emergency descent system before putting the lift into operation.

5.6. LONG-TERM STORAGE

Clean the machine carefully, lubricate it and apply protective grease to it before putting it into long-term storage (see point “Lubrication plan”). Repeat the cleaning and lubrication procedures when resuming the operation.

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

5.7. PREPARING THE LIFT FOR TRANSPORT

1. Retract the telescopic boom fully.
2. Check that the platform is perpendicular to the boom.
3. Lower the boom/platform onto the transport support. The limit switch on the transport support prevents the operation of the support outriggers if the platform is not down.
4. Lift the support outriggers. Lift the outriggers in the front and in the rear in turns, so as to prevent the unit from inclining too much.
5. Drive the unit or lift it onto the transport vehicle by the marked lifting points.
6. Turn the selector switch Q1 to OFF position and disconnect the lift from the power supply.
7. Turn the main switch to position 0.
8. Make sure that the covers are locked.
9. Ensure that there is no load on the work platform during the transport.

CAUTION

Risk of falling! Tie down the lift to the vehicle for the transport. The chassis of the lift is fitted with specific, marked lugs for tying. To avoid structural damage, use only the marked tying points.

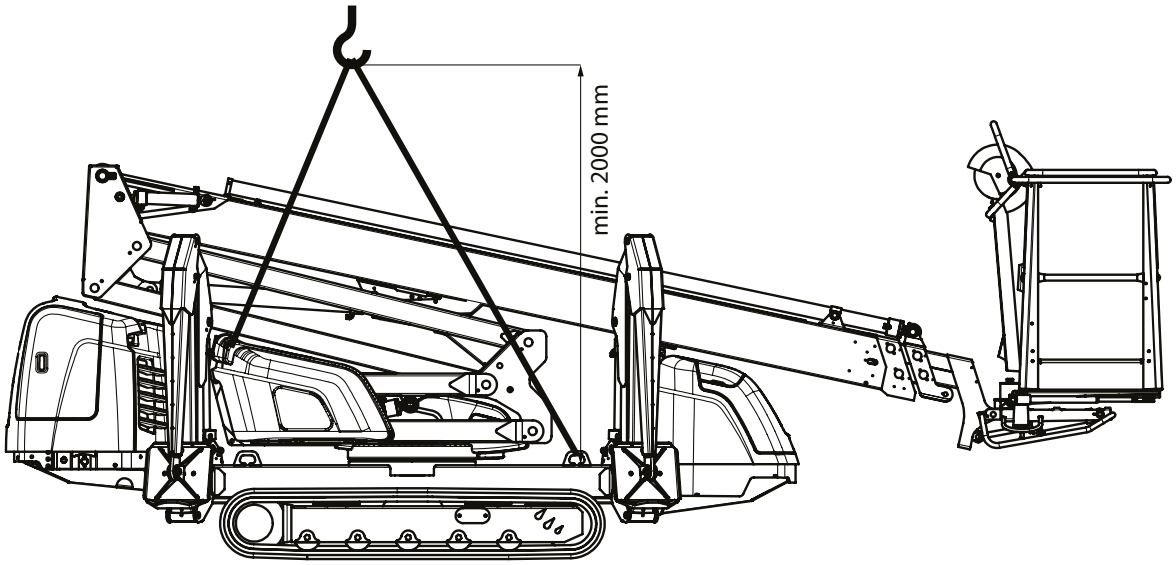
5.8. LIFTING THE DEVICE

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 device during the lifting operation.



6. FAULT FINDING

FAULT	REMEDY
1. The engine does not start	
The main current is not connected.	Turn on the main switch and ensure that the key switch is in the correct position.
The emergency stop button has jammed in the lower position.	Pull up the button and re-start the engine by actuating any of the control movements.
The machine has been switched off in order to minimise the electric power consumption of the radio controller or due to missing signal or operational fault.	Switch off the receiver of the radio controller. OR Restart the radio controller, change the frequency range or continue the operation by means of the cable.
Fault current safety switch has tripped.	Reset the fault current switch.
2. Diesel engine does not start	
The mains cable is plugged.	Disconnect mains cable.
Battery is flat.	Recharge the battery.
Main battery fuse has blown.	Replace the fuse.
3. Diesel engine cranks but does not start	
Fuel tank is empty.	Refuel and bleed the fuel supply system.
Glowing neglected.	Glow the engine and restart. 
4. The diesel engine starts but stops after a while	
Low oil pressure. (Signal light for oil pressure in the CCB centre) 	Check the engine oil level.
Engine overheated. (Signal light for overheating in the CCB centre) 	Allow the engine cool down and check the coolant level.

FAULT	REMEDY	

5. None of the platform movements is operational though the motor is running and the selector switch is in position 1

Green signal light for the outriggers is not illuminated.	Make sure that the outriggers are steady supported on the ground.	
The outreach range of the boom exceeded.	Retract the telescope until the platform returns to its normal operating range.	

6. None of the outriggers moves

Boom does not rest on the transport support.	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 both 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).	

Driving device does not operate

Boom is not resting on the transport support.	Drive the boom onto the support.	
Selector switch Q1 is in the wrong position.	Turn the switch to the “Chassis” position.	

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

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7. MAINTENANCE SCHEDULE

Service	Service interval	Service person	Instructed
A	Daily	Operator	operating instructions
B	every month/100 hours*	Competent person who is familiar with the lift	maintenance instructions
C	every 6 months/400 hours*	Competent person who is familiar with the lift	maintenance instructions
D	every 12 months/800 hours*	Technical specialist, who is well familiar with the structure and operation of the lift	maintenance instructions
E	When necessary	Technical specialist, who is well familiar with the structure and operation of the lift	maintenance instructions
* Service interval in months or operating hours, depending on whichevercomes 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 = Grease
S = Carry out the replacements or repairs as described in the instructions.

	Maintenance measures	A	B	C	D	E
1	Frame structures, boom system and platform	T	T	T	P	
2	Bearings of the overload protection device		V	V	T/V	
3	Joints of the outriggers and the outrigger cylinders		V	V	T/V	
4	Joints of the outriggers' foot plates and the moving parts of the outrigger limits		V	V	T/V	
5	Bearings of the boom and the articulated arms		V	V	T/V	
6	Bearings of the levelling system of the platform		V	V	T/V	
7	Articulation bearings of the levelling cylinders		V	V	T/V	
8	Articulation bearings of the lifting cylinders		V	V	T/V	
9	Sliding surfaces and rollers of the telescope		T/V	T/V	T/V	
10	Bearing of telescope cylinder			T/V	T/V	
11	Condition of cylinders				P	
12	Flyer-chain			V	P/V	
13	Checking and adjusting the play between slide pads and surfaces		T	T	T	
14	Turning device			V	P/V	
15	Electro-hydraulic rotary adaptor				T	
16	Track unit	T	T	P	P	
17	Drive functions			T	T	

	Maintenance measures	A	B	C	D	E
18	Lights	T	T	T	T	
19	Diesel engine and fuel system	T	T	T	S	
20	Hydraulic oils	T	T	T	S	
21	Hydraulic hoses, pipes and connections	T	T	T	P	
22	Condition and attachment of battery and wiring		T	T	P	
23	Hydraulic pressure				P	
24	Condition and attachment of safety devices				T	
25	Operation of safety devices (limit switches)	T	T	T	P	
26	Operation of overload limit switches			T	P	S
27	Operation of load regulation valves			T	T	
28	Operation and condition of platform's levelling system		T	T	T	
29	Operation and condition of controls on platform	T			P	
30	Operation of emergency descent, emergency stop and sound signal	T	T	T	T	
31	Decals, stickers and signs	T	T	T	T	
32	Instruction manuals	T	T	T	T	
33	Test loading				P	
34	Anti-corrosion treatment				T	S
35	Special inspection					S

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

Separate operating and maintenance instructions for the engine and the tracks, issued by the manufacturers of these components, are delivered with the lift. Consult these manuals for more detailed instructions.

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 means.

7.1. SCHEDULE FOR INSPECTIONS REQUIRED BY THE AUTHORITIES

The inspections must be performed in accordance with local and national regulations, in accordance with the legislation and standards.

The lift must be subjected to a **start-up inspection** before it is used for the first time and before starting it up the first time after a major repair or modification work.

The lift must be subjected to a thorough **periodic inspection** with related **test drive** at intervals of year.

The inspection must be carried out within twelve (12) months of the first inspection or previous regular inspection.

In connection with the periodic inspection the lift must be subjected to a **non-destructive inspection/inspection disassembled** in general at intervals of ten (10) years from the start-up date.

In addition, the lift much be **inspected** to the extent applicable after any exceptional situation

The inspections of the lift must be carried out at regular intervals as long as it is in use.
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.

In connection with the regular inspection shall be established to what extent the lessons and practical experience gained since the previous inspection could be utilized to improve the safety even more.

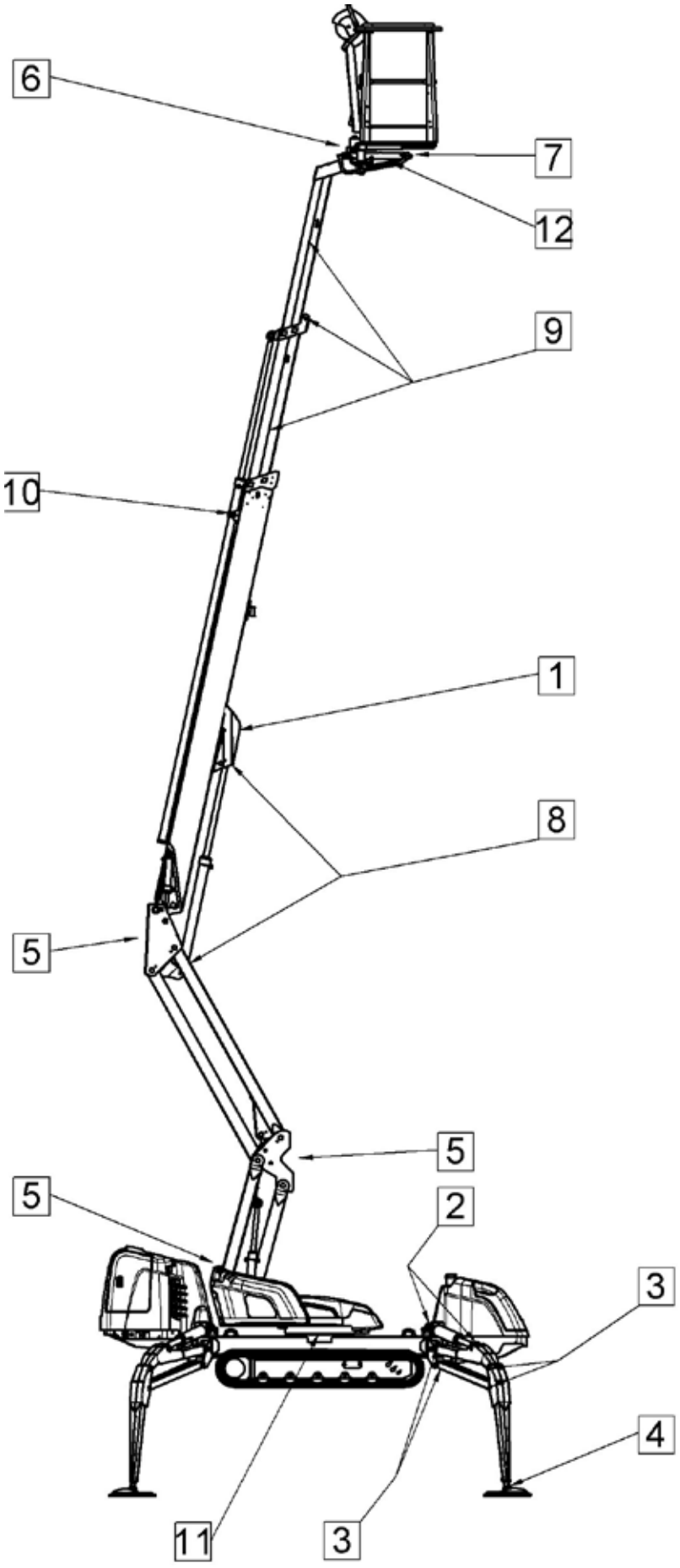
For the inspection must be assigned an **expert inspection body** with **documented evidence of competence** or an **expert with documented evidence of competence**.

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

NOTICE

Check the regulations for the inspections and the competence of the inspector with the local authorities.

7.2. LUBRICATION PLAN



8. 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.

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.

8.1. SERVICING A NEW LIFT FOR THE FIRST TIME:

after 20 hours of operation

- Change the pressure and return filters.
- Inspect visually the tracks for tightness, and adjust as necessary.
- Check the tightening torque of the attachment bolts:
  - track undercarriage M16x12 pcs., 222 Nm
  - engine bearers M10x16 pcs., 53 Nm
  - bearers of the tanks M10x12 pcs., 53 Nm

after 50 hours of operation

- Change the engine oil and the oil filter cartridge

8.2. INSTRUCTIONS FOR DAILY MAINTENANCE AND INSPECTIONS

8.2.1. 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.

8.2.2. Condition of the track unit

Inspect visually the condition of the track unit.

- Perform a general visual check of the operation and cleanliness of the track unit.
- Check the track belt for tightness. If the lift stands supported by its outriggers, the track belt should sag about 20 mm at the centre roller.
- Clear any stones/debris from cavities between the tracks.

NOTICE

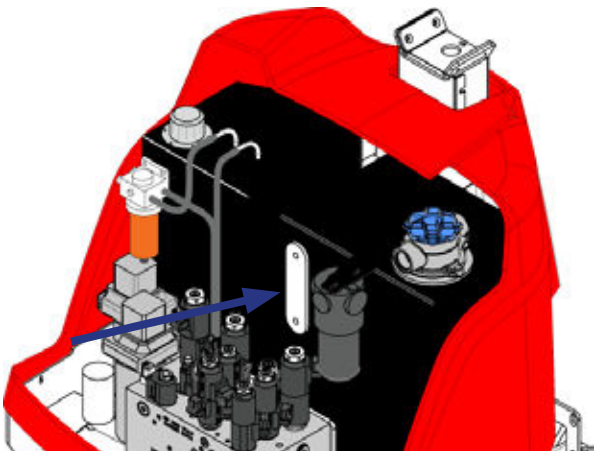
The tracks may wear significantly in a very short time if driven without tightening.

8.2.3. Check the lights

Check the condition of all the warning and signal lights.

8.2.4. Check the hydraulic oil level

Check the hydraulic oil level with the platform in the transport position. Top up oil, if necessary.



8.2.5. Check the diesel engine and the fuel system

1. Check the fuel level.
2. Check the amount of water gathered in the water trap/fuel filter, and drain as required.
3. Check the oil level in the diesel engine. Top up oil, if necessary.

8.2.6. 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.

8.2.7. 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 slightly from the support
5. operate the outriggers.
   The outriggers must not operate in any position of the selector switch.

8.2.8. 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 (using lever 8) and extend the telescope 1-2 metres (using lever 9) 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

8.2.9. Decals and signs

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

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

Product numbers of the decals are visible on the decals or the product numbers of new decal sets can be found in the spare part list.

8.2.10. Instruction manuals

Check that the user manuals accompanying the lift are legible.

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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: _____

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