LEGUAN® 135 NEO

Operator and Service Manual

Version 11/2021
November 2021

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1. INTRODUCTION AND WARRANTY CONDITIONS

1.1. Introduction

LEGUAN LIFTS wants to thank you for purchasing this **LEGUAN** access platform. It is the result of Leguan's long experience in design and manufacturing of access equipment.
We ask you to read and understand the contents of this manual completely before operating the access platform. This will improve your operating and maintenance efficiency, help avoid breakdowns and damage and extend the life of your machine.

Pay special attention to this symbol. It indicates important safety factors that require special attention. Every operator must read and understand this manual before commencing operation, and the instructions in this manual must be followed. If you lend the access platform out to others, make sure that they familiarise themselves with and understand these instructions. If there is anything unclear with the operation, please contact your Leguan dealer.

If spare parts are needed, use only original LEGUAN parts. The strain that these parts are subjected to is taken into account in their manufacture. They will provide your machine with maximum life expectancy and ensure optimum safety.

It is not possible to give explicit operating instructions to all operating conditions of the machine. Therefore, the manufacturer is not responsible for any damage caused by eventual faults in this Operators Manual.

The manufacturer does not accept any responsibility for consequential losses resulting from the use of this self-propelled access platform.

The lifespan of the track system of an access platform on rubber tracks is heavily dependent on the working environment and work methods. If the access platform is being used on terrain with stones or gravel, on demolition sites with concrete, or in an environment with scrap metal, the lifespan of the track system may be significantly reduced. Therefore, damage to the tracks, track rollers or crawler track chassis, caused by operation in such environments, is not covered by warranty.

The machine operator can influence the service life of the tracks by complying with instructions for their use and maintenance.

1.2. Warranty conditions

This product is under warranty for a period of twenty-four (24) months without restrictions on operating hours. For battery products (e.g. starter battery, remote control battery) warranty is twelve (12) months without restrictions on operating hours.

The warranty covers manufacturing and material defects. All warranty obligations end when the warranty period ends. Warranty repair that has been started will be completed regardless of the expiry date of the warranty period.

A condition for the warranty is that both the buyer and the seller have accepted the delivery. If the buyer is not present when the delivery takes place and does not make a complaint within 14 days of delivery of this access platform, the sale is deemed closed and the warranty period is then officially underway.

This warranty does not restrict the buyer's legal right to submit a complaint about a flaw in the purchased product.

Warranty is limited to the repair of a faulty access platform without cost at an authorised Leguan service workshop. The warranty period for parts that are changed in connection with the repair will end when the warranty period for the access platform ends. Parts that have been changed in the warranty repair will remain Leguan Lifts' property without compensation.

The warranty does not cover the following situations:

- inappropriate use of the product
- changes and repair work performed without consent from the manufacturer
- insufficient or flawed maintenance
- machine breakdowns due to causes other than a manufacturing error
- acts of vandalism
- adjustments, repair and the replacement of parts due to normal wear and tear, negligent use or non-compliance with the instructions for use
- exceptional strain placed on the access platform, sudden and unforeseeable events, natural disasters
- external, mechanical or chemical causes (damage to the paintwork, such as scratches and abrasions caused by flying stones, pollution and environmental impurities, strong detergents, or by lifting operations or lifting equipment)
- alterations, repair or reinstallation performed without consent from the manufacturer or dealer
- any patterns or uneven patches on the paintwork
- if the warranty claim is not submitted within reasonable time of the buyer observing the flaw or when the flaw should have been noticed. Notification must always be submitted within two (2) weeks of the buyer noticing the defect. - under all circumstances, the buyer must act so that his action does not make the defect(s) worse
- the manufacturer does not accept any responsibility for consequential losses resulting from the use of this access platform

In the event a fault occurs that is attributable to manufacturing or assembly defect, contact the dealer without delay.

ALKUPERÄINEN EY-VAATIMUSTENMUKAISUUSVAKUUTUS
ORIGINAL EC DECLARATION OF CONFORMITY FOR MACHINERY

TÄTEN VAKUUTAMME, ETTÄ
HEREWITH DECLARES THAT

HENKILÖNOSTIN AERIAL PLATFORM	***LEGUAN***	NIMELLISKUORMA NOMINAL LOAD	***250 kg***
MALLI MODEL	***135 NEO***	NOSTOKORKEUS PLATFORM HEIGHT	***11,4 m***
SARJANUMERO SERIAL NR	***007xxxx***	VALMISTUSVUOSI YEAR OF CONSTRUCTION	***20xx***

ON KONEDIREKTIIVIN 2006/42/EY ASIAAN KUUULUVIEN SÄÄNNÖSTEN MUKAINEN
IS IN ACCORDANCE WITH THE REGULATIONS LAID OUT IN THE MACHINERY DIRECTIVE:
2006/42/EC

KONE TÄYTTÄÄ LISÄKSI MUIDEN EY-DIREKTIIVIN VAATIMUKSET: 2004/108/EY
THE MACHINE ALSO FULFILLS THE REQUIREMENTS LAID OUT IN THE DIRECTIVES:
2004/108/EC

SEURAAVIA EUROOPPALAISIA YHDENMUKAISIA STANDARDEJA ON SOVELLETTU SUUNNITTELUSSA: EN280:2013+A1:2015
FOLLOWING EUROPEAN HARMONIZED STANDARDS ARE USED WHEN THE MACHINERY WAS DESIGNED: EN280:2013+A1:2015

Teknisen tiedoston on valtuutettu kokoamaan: Storage address of original documents:	**LEGUAN LIFTS OY** **Ylötie 1, FI-33470 Ylöjärvi, Finland**
Ilmoitettu laitos / Notified Body	**INSPECTA TARKASTUS OY, NB0424**
Hyväksyntätodistus / Certificate	**19074-2019**
Paikka / Place Päiväys / Date	Ylöjärvi, FINLAND dd.mm.20yy

Valmistaja / Manufacturer:

LEGUAN LIFTS OY

Ylötie 10, FI-33470 Ylöjärvi, Finland

_____

xxxx
Toimitusjohtaja / Managing Director

2. GENERAL INFORMATION

LEGUAN 135 NEO is a self-propelled Mobile Elevating Work Platform – commonly called an 'access platform', designed for indoor and outdoor use. Access platforms are designed for the lifting of persons and their equipment only. Using an access platform as a crane is prohibited.

LEGUAN 135 NEO is designed and built in accordance with the international safety standards and MEWP (Mobile Elevating Work Platform) standards.

The figure below shows the machine's main parts. Except for its track system, the track-equipped machine is similar in structure to a device with wheels.

1. Chassis
    a. Extra side weight (4WD) or Track frame (TRD)
2. Transmission, with wheels or crawler tracks
3. Outrigger
4. Outrigger cylinder
5. Combustion engine
6. Lower boom
7. Boom lift cylinder
8. Upper boom
9. Telescope cylinder
10. Push lever
11. Upper rod
    b. Tool box
12. Control valve box
13. Transport support
14. Lower control panel, control box
15. Electric motor
16. Middle boom
17. Extension
18. Platform control box
19. Platform
20. Levelling cylinder
21. JIB-boom
22. JIB push rod

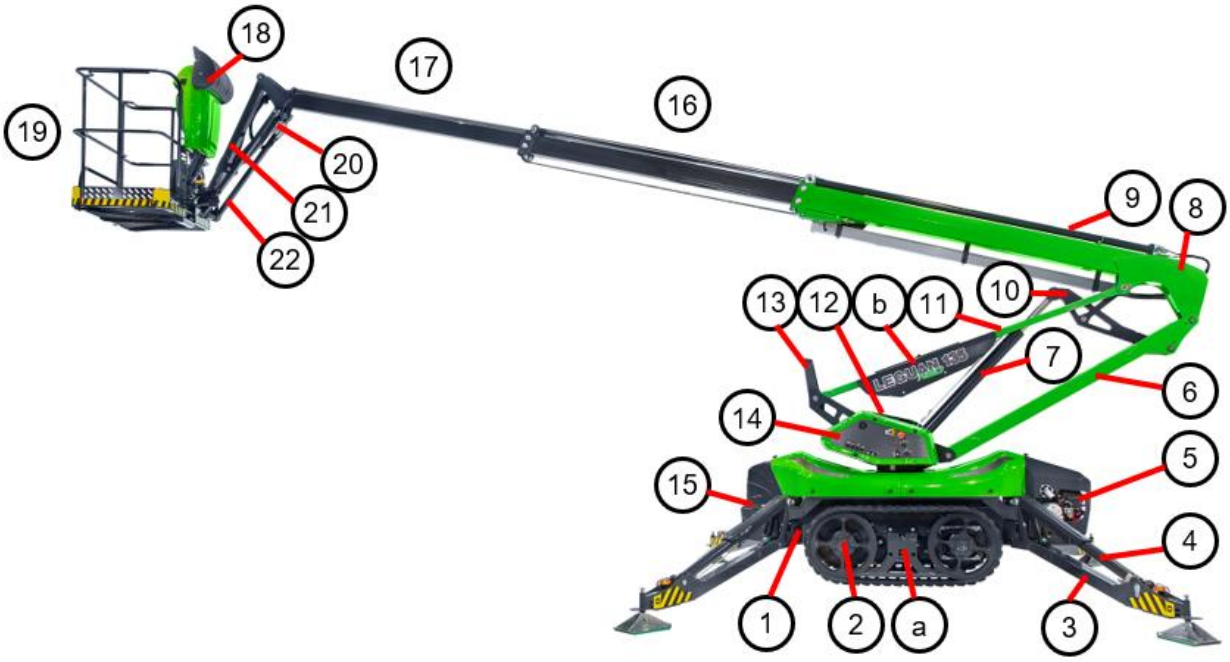


Figure 1 Leguan 135 NEO main parts

2.1. Technical specifications

Working height	13.4 m
Max. platform height	11.4 m
Max. outreach @ 120 kg	7.1 m
Max. outreach @ 250 kg	6.6 m
Safe working load	250 kg
Transport length	4.57 m
Transport length without platform	3.91 m
Transport height	1.93 m
Width, without platform and outrigger plates with platform	0.89 m 1.33 m
Maximum dimensions of outriggers when levelled (W x L)	3.29 x 3.27 m
Minimum required space for levelling the MEWP, outrigger plates excluded (W x L)	3.46 x 3.86 m
Platform dimensions, W x L, 2 persons	1.33 x 0.75 m
Max. allowed levelling inaccuracy	1.0º
Platform rotation	± 40º
Slewing	360º
Gradeability	50 % (27º)
Gradeability sideways	28 % (16º)
Support dimensions	3.07 x 3.14 m
Max. gradient of slope for set up	22 % (12º)
Weight, depending on equipment	1650 kg
Drive system, hydraulic	4WD or tracks
Drive speed	max. 2.5 km/h
Lowest operating temperature	-20 °C (storage -40 °C)
Starter battery / electric system	60 Ah / 12V
Sound power level at control position, L_{WA}	92.5 dB (A)
Max. outrigger force	12,5 kN
Max. load under wheels	0.3 N/mm^2 (3 bar)
Vibration emission, a_{wmax} (uncertainty K=0.3 m/s^2)	0.6 m/s^2

2.2. **Main dimensions**

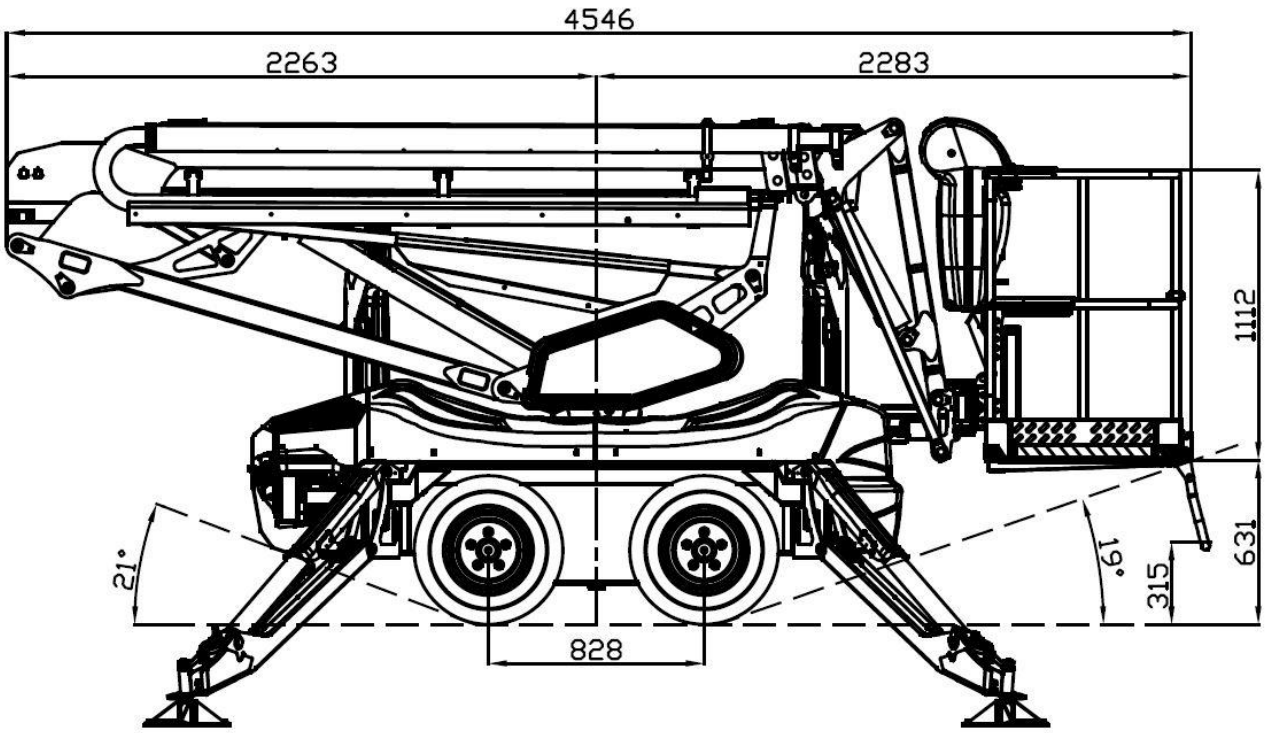


Figure 2 135 NEO Main dimensions, side

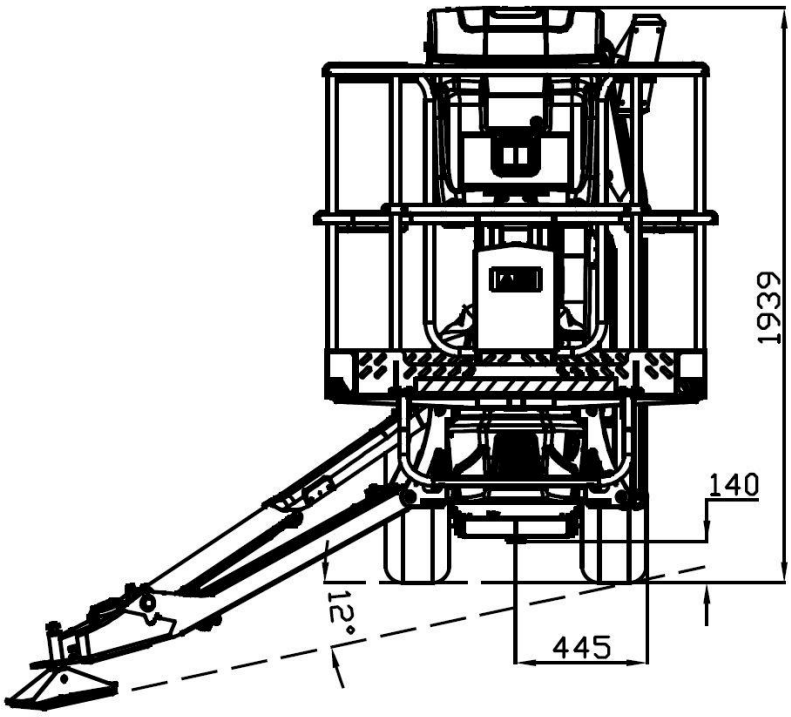


Figure 3 135 NEO main dimensions, rear

2.3. **Reach diagram and support dimensions**

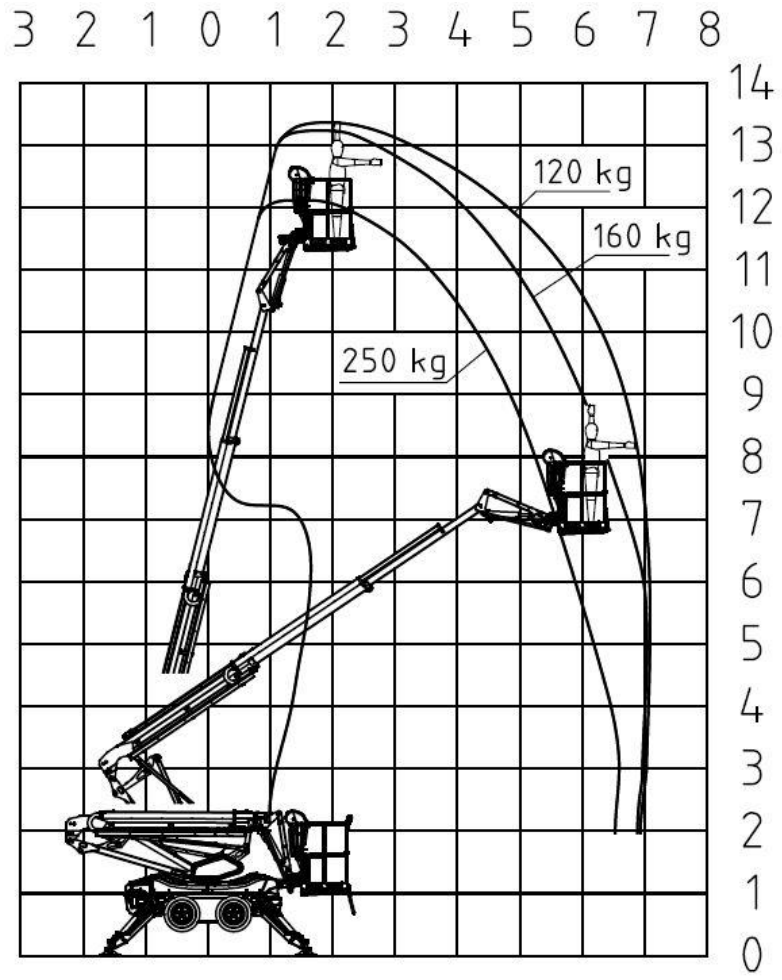


Figure 4 Reach diagram

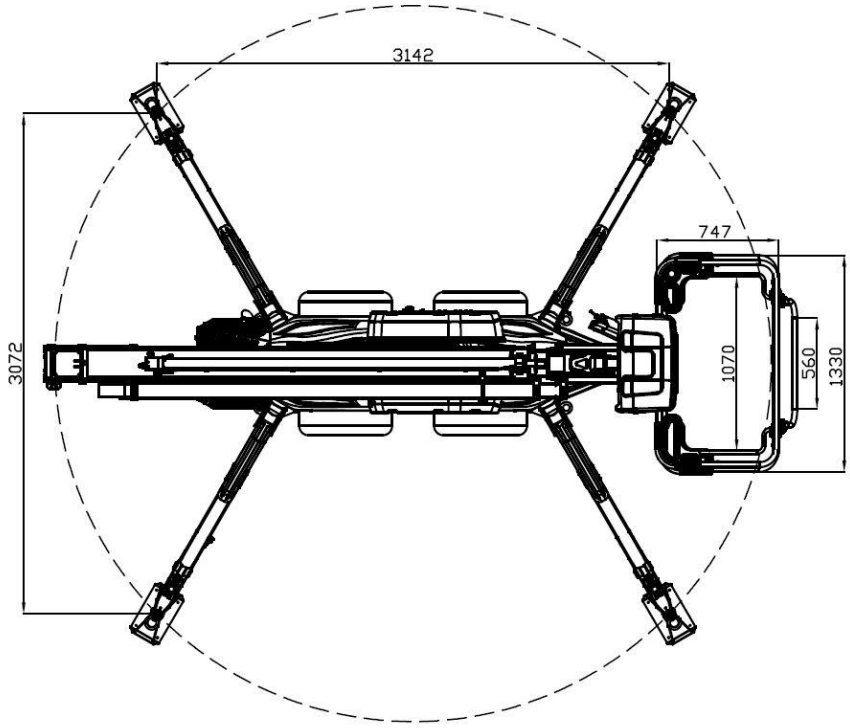


Figure 5 Support dimensions

2.4. Signs and markings

1. Type plate and CE-marking
2. Safe working load (SWL)
3. Control symbols decal
4. Max. horizontal force and wind speed
5. Max. outrigger force
6. Distance from energized electric wires
7. General user instructions
8. Daily inspection
9. Emergency lowering (2)
10. Residual current device
11. Electric motor voltage
12. Tie down points (4)
13. Tyre pressure
14. Leguan 135 decal
15. Lower controls' decal
16. Lift points (4)

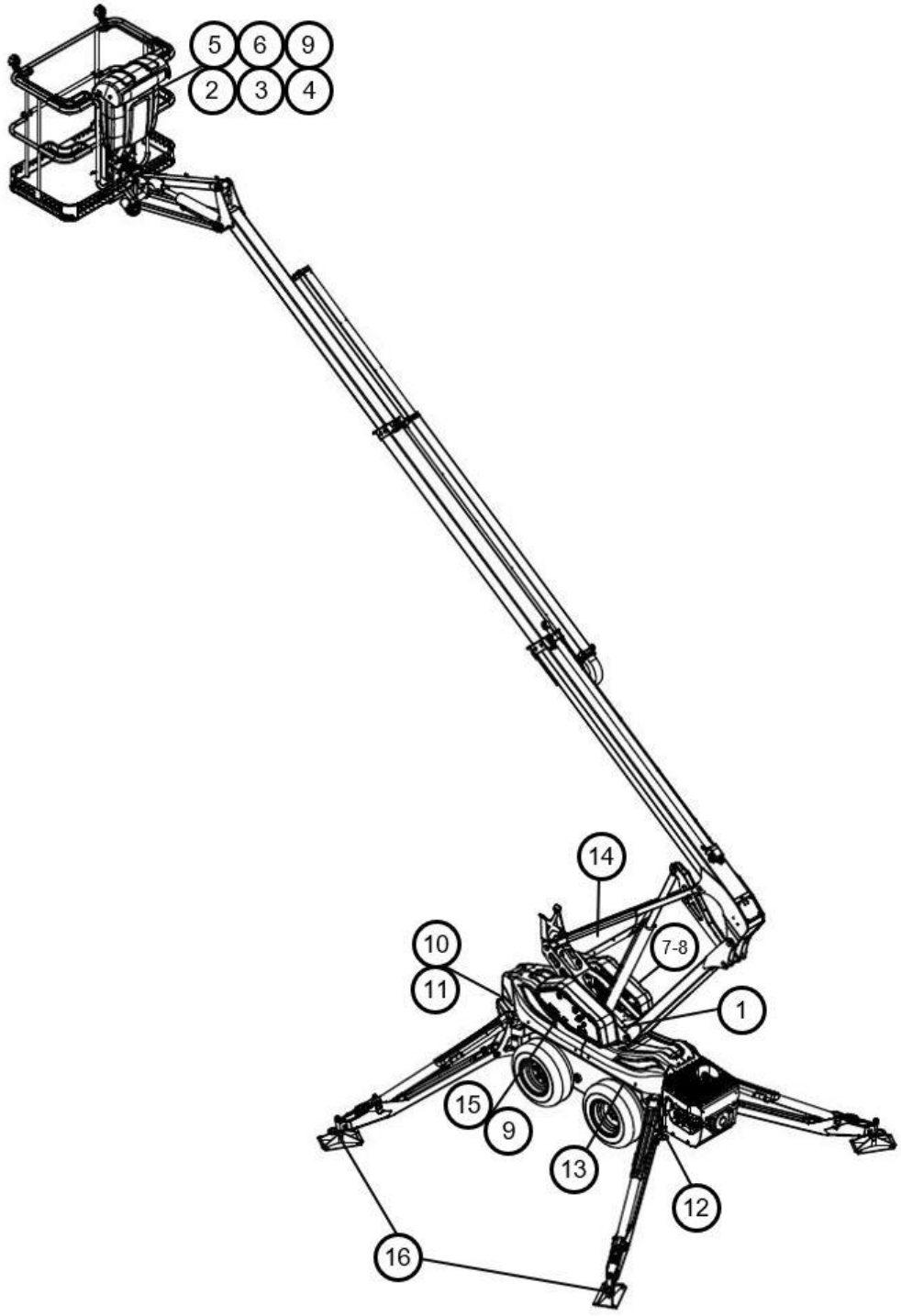


Figure 6 Signs and decals

3. SAFETY INSTRUCTIONS

The operator must know and follow all safety instructions. The operator must receive sufficient instructions in order to be able to use the lift correctly and safely. This **Operator's Manual must always be kept in the machine.**

To prevent unauthorised use of the access platform, take the main switch key with you after concluding operation if the machine is left unsupervised.

NOTE! DANGER!

When working with the access platform, it is recommended that the operator(s) always wear a certified safety harness that is properly connected to the attachment points. Always follow local rules and regulations regarding workplace safety and use of access platforms!

This access platform is not electrically insulated. Never use it near any live parts or wires.

3.1. Before using the machine

- read the instructions for use carefully before operating the machine.
- only persons aged 18 or older who have received sufficient training may use the access platform.
- the operator must know all the functions of this access platform as well as its Rated Load, loading instructions and safety instructions.
- if there is heavy traffic in the working area, it must be fenced off and marked with a fence or line. Road traffic regulations must be followed as well.
- make sure that there are no bystanders in the working area.
- do not use a faulty access platform. Submit notifications about all faults and defects and make sure that they are repaired before commencing operation.
- follow inspection and service instructions and intervals.
- the operator must check the access platform visually at the beginning of each work shift. This check is necessary to make sure that the machine is in working order before making the daily inspection prior to commencing operation.
- if a combustion engine is used indoors, make sure that the space is appropriately ventilated

3.2. Risk of tipping over

- Exceeding the access platform's maximum load or additional load or the maximum number of people permitted on the platform is strictly prohibited.
- When wind speed is equal to or greater than 12.5 m/s (28 mph), the use of the access platform must be discontinued immediately, and the platform must be lowered down to the transport position.
- Ensure that the access platform is used on dry, solid, level ground only. The ground is solid enough if it can carry min. 3 kg/cm^2. On softer ground, use extra support plates under the outriggers.
- Do not use a ladder, chair, stool, scaffolding or any other means to increase the reach capability of this access platform.
- If the platform gets stuck or jammed, or it is too close to a building or a wall to be moved, do not try to release the platform by operating the controls. All persons must leave the platform first (with the help of a rescue service or fire brigade if necessary), only after that one can try to lower the platform by using the emergency lowering.
- Do not increase the area of the platform or the load. Increasing the area exposed to wind weakens the stability of the access platform.
- Weight must be equally distributed across the platform. Make sure that additional weight cannot shift on the platform.
- Do not drive on gradients that are steeper than the max. values given for this access platform and for the slope.
- Never use this access platform as a crane. This access platform is intended for lifting the max. allowed number of persons and additional load only.
- Check and make sure that all tyres are in good condition. If the tyres are full of air, make sure that there is correct pressure in the tyres.
- To ensure the safe operation of this access platform the manufacturer has conducted approved tests for the **LEGUAN 135 NEO** in accordance with the standard EN 280:2013+A1:2015 static stability test in accordance with paragraph 6.1.4.2.1 and dynamic overload test in accordance with paragraph 6.1.4.3 of the EN 280:2013+A1:2015.

3.3. Risk of falling

- When working with the access platform, the operator(s) should always wear a certified safety harness which is properly connected to the platform.
- Do not stretch or reach out over the handrails. Stand steadily on the platform floor.
- It is not allowed to go to or step out from the platform when the booms are lifted.
- Keep the platform floor clean.
- Always close the platform gate before commencing operation.

3.4. Risk of collision

- Adjust the drive speed so that it is safe with regard to the ground conditions.
- When operating the lift, take into account that visibility may be limited
- The operator must follow all regulations concerning the use of safety equipment on the work site

- Make sure that there are no overhead obstacles on the work site that could prohibit lifting of the platform, or objects that might cause a collision
- Do not operate this access platform in the working area of another overhead lifting device or similar equipment that is moving, unless this lifting device is secured so that there is no risk of collision
- Beware of crushing hazard when holding the handrail of the platform in a potential collision situation
- When operating the lift, beware of limited visibility and trapping hazard.

3.5. Risk of electric shock 

- This machine is not insulated from voltage or protected against contact with live parts
- Do not touch the machine if it comes in contact with a live electric line
- Persons on the platform or at ground level must not touch or operate the machine before power has been cut off from the electric line
- During welding repairs, using any part of this access platform as an earth conductor is prohibited
- Do not use this access platform during a thunderstorm or in high winds
- Leave clearance for electric lines, taking into account movements of the platform, movements of electric lines, and high winds and gusts.

The minimum safety clearances for overhead cables are shown in the following table. The clearances for the most commonly used voltages in overhead lines are as follows, use these safety clearances if national or local regulations are not available:

VOLTAGE	MIN. DISTANCE
0 – 1,000 V	2 m
1 – 45 kV	3 m
110 kV	5 m
220 kV	5 m
400 kV	5 m

3.6. Risk of fire / explosion 

- The machine must not be started in a place where one can smell LPG, petrol, solvent or other flammable substance
- Do not add fuel when the engine is running or hot
- Charge the battery only in places with sufficient ventilation, where there is no open fire and no activity which could cause spark emissions (such as welding).

3.7. Daily inspections before starting work 

- ground
- supports
- horizontal position
- emergency stop button
- emergency lowering
- control devices
- access routes
- platform
- oil leakage
- work area

NOTE!
If you notice faults or missing equipment on this access platform, do not use the machine before the faults have been corrected. Never set the access platform up in a place where the ground may be too soft. Beware of soft ground and potholes.

4. CONTROLS AND SWITCHES

4.1. Control devices on the platform

The platform's controls and indicators on the control panel may be slightly different in different models. Indicators and switches that are marked as optional are not installed on all models.

Figure 7 Platform control panel

1. Lowering button
2. Emergency stop switch
3. Horn / platform work lights (option)
4. Back to work position / Home - Switch
5. Platform tilt enabler button
6. Platform rotation
7. Telescope in/out buttons
8. Joystick
9. Platform overload indicator
10. Outreach control indicator
11. Fault light
12. Boom centre position indicator
13. Boom transport position indicator
14. Low fuel indicator
15. Inclination sensor indicator
16. Outrigger switches (manual)
17. Automatic levelling switches
18. Automatic levelling indication light (light blinks) / boom use allowed (light on)
19. Combustion engine / electric motor start/stop switch
20. Automatic start / stop function indicator light
21. Speed selection / manual choke switch

4.1.1 Platform overload indicator light

This access platform is equipped with automatic platform overload system which prevents all boom movements in case the 250 kg rated load is exceeded. Should this happen, there is an audible warning signal and an indicator light up at the control panel (Figure 7 (10)). The booms can be operated again after the overload has been removed from the platform.

If platform overload goes on while platform is moving then lift down, telescope in and slewing functions are enabled to release the overload situation. If platform overload goes on while platform is stationary, all movements are disabled until overload is removed.

NEVER OVERLOAD THE PLATFORM!

4.1.2 Dynamic outreach control signal light

This access platform is equipped with dynamic outreach control.
Outreach depends on the actual load on the platform.

- Red dynamic outreach control signal light (Figure 7 (11)) will blink and an audible sound alarm can be heard when the telescope boom is about to reach the current maximum outreach.
- The frequency of the blinking light as well as the audible sound will increase as the telescopic boom closes the maximum outreach.
- When the maximum outreach is achieved red dynamic outreach control signal light will stay continuously on and:
  - Telescope boom movement out is prevented.
- Continuous audible sound will signal that the maximum outreach is achieved.
- If boom is moved while dynamic outreach light is on then telescope reverses automatically if current outreach is above limits.

Move telescope in to decrease outreach.

4.1.3 Fault light

The fault light will signal errors and faults on the equipment. Possible faults are divided into two categories based on their severity.

When an **ERROR** occurs, the red fault light will **BLINK**.

- Equipment can be used with extreme caution.
- Some features are prevented.
- If the red fault light blinks, return booms onto their transport positions, perform daily inspection and remove possible cause of the error.
- If the problem persists, contact your Leguan dealer.

When a **FAULT** occurs, the red fault light will stay **ON continuously**.

- Ensure neither emergency stop button is pushed down.

- If the emergency buttons are not active, one of the safety components has failed and prevented the use of the equipment.
- Return booms on their transport supports, stop working with the equipment and contact your local Leguan dealer.

Possible errors and faults can be diagnosed with a separate service display (option).

Fault light **BLINKS INTERMITTENT** (option).
- Hydraulic oil overheats
- Stop using the machine and let it cool down
- Audible signal is given only when machine is running

4.1.4 Inclination sensor indicator light ⚠

This access platform is equipped with inclination sensor which alerts when the inclination of the chassis exceeds the given limits.

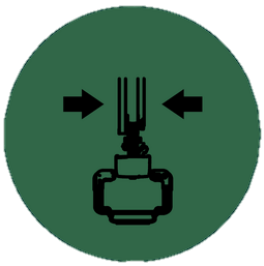
If the limits are exceeded while driving an orange indicator light will blink and give an audible alert can be heard. Drive the machine to more even surface.

While using booms:

If the **ALARM** limit is exceeded:
- Orange indicator light will blink, and an audible alert can be heard.
- Return all booms CAREFULLY on to their transport support
- Check that the ground is solid enough
- Re-level

Do not reach, slew or lift the booms when the inclination alert light is on!
RISK OF TIPPING OVER!

4.1.5 Boom centre position indicator (slewing)



The slew ring of the access platform is equipped with inductive sensor which lights the green boom centre position indicator light whenever the 1st boom is above the transport support. Indicator light is only an aid and does not guarantee that booms will lower straight to transport supports.

Boom centre position light is blinking when boom is nearby its centre position. Automatic levelling up is disabled to prevent collisions on outriggers up position.

Use outriggers only when boom center position light is on!

Always visually ensure that the booms are properly placed on their transport supports!

4.1.6 Boom transport support indicator light

Boom transport support indicator light will stay continuously green when all booms are properly placed on their transport supports.

Boom transport position light is in blinking when boom is on raised transport position. This situation is used to cross high obstacles. Driving is possible on lowered speed. Automatic levelling is disabled but manual levelling is allowed. Return booms back to transport position when raised position is not required.

4.1.7 Low fuel level indicator

Low fuel level indicator lights up when the fuel level is low (approx. 1.5 l).
When the low fuel indicator light is lit refuel as soon as possible.
Fuel tank capacity is 6,1 l.

4.2. Lower controls panel

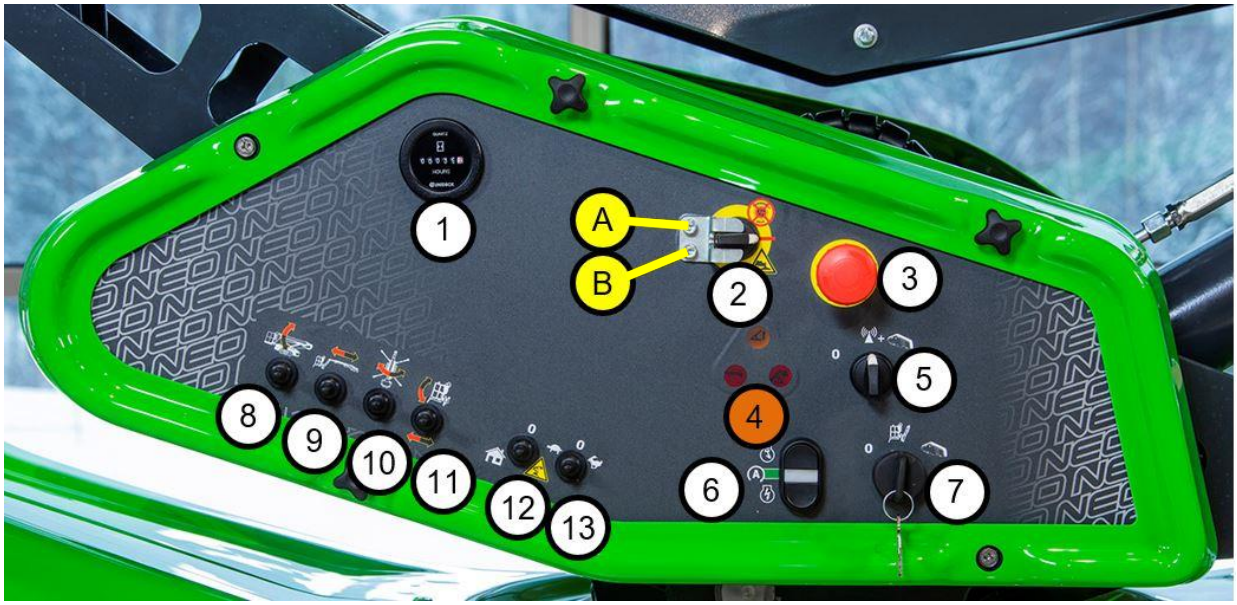


Figure 8 Lower controls panel

1. Hour meter
2. Safety functions override switch
3. Emergency stop switch
4. Indicator lights
   - Inclination sensor
   - Platform overload
   - Dynamic outreach control
5. Remote control selection switch
6. Combustion engine / electric motor start switch
7. Ignition key / upper/lower controls selector switch
8. Boom raise switch / choke
9. Telescope in/out switch
10. Boom rotation switch
11. Platform tilt switch
12. Home switch / lowering
13. Speed selector switch (dead man's switch)

Functioning of the lower control:

1. The ignition key (figure 8, switch 7) must be turned to lower control position
2. Turn on combustion engine or electric motor with the start switch (figure 8, switch 6)
3. To use the booms (figure 8, switches 8-11), you must also select movement speed with the speed selector switch (switch 13).
   - The speed selector also works as a dead man's switch, so it must be kept turned to the desired speed (or) when using the booms.

When the work takes place in an area that is open to the public, the ignition key should be removed to prevent unauthorised use and the machine can only be used from the platform.

NOTE! The emergency stop buttons of the lower control and platform panels function regardless of which control mode is selected.

4.3. 230 V connections and switches

Leguan 135 NEO can be powered by an electric motor (optional item). The standard motor must be connected to a 230 V / 50 Hz / 16 A outlet. Connections and switches pictured below.

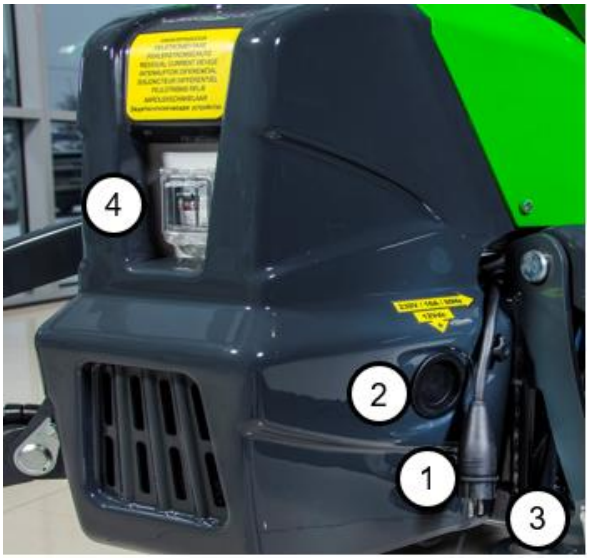


Figure 9 230 V and 12 V connections

1. 230 V / 50 Hz / 16 A connection lead
2. Booster point + pole
3. Booster point - pole (on the chassis)
4. Residual current device

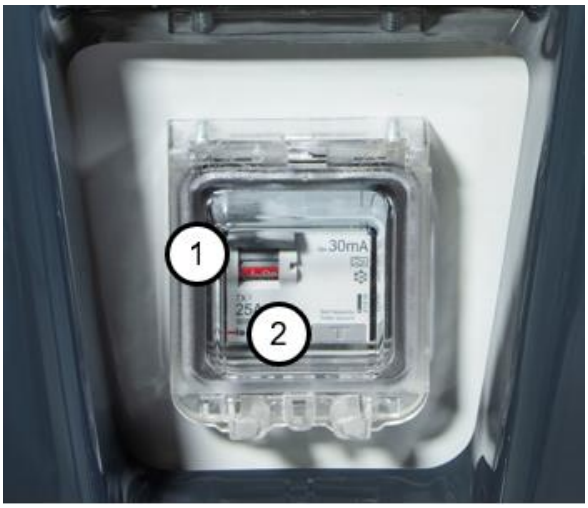


Figure 10 Residual Current Device

The residual current device or RDC-unit switch (1) must be up to have any 230 V device working, including the 230 V outlets at platform. One can test the function of the RCD-unit by pressing the test button (2) in the unit. If the switch in the unit will not go down, there is either a defect on the unit or the connecting cable is not attached to mains.

5. OPERATION

Read this Operator's Manual and the Operator's Manual for the engine carefully before commencing operation. Read the safety instructions in this manual and make sure you understand them before commencing operation. It is the operator's responsibility to understand and follow all operating and safety instructions. An access platform is designed only for the lifting of persons and their equipment; its use for any other purpose is prohibited for reasons of safety. If more than one person uses the machine during a shift, all of them must be qualified to do so and they must comply with the operating and safety instructions and rules.

5.1. Starting the combustion engine / electric motor

1. Switch on the machine by turning the ignition switch (figure 8) and select preferred control position (lower controls or platform controls)
2. Open fuel faucet (see the engine manufacturer's manual).
3. If using the electric motor, connect **230 V 16 A** cable and check the residual current device. The RCD-unit TEST button can also be used to test the power supply
4. Attach the safety harness to the attachment points and close the gate.
5. Switch on the petrol engine or electric motor by pushing the ignition button for desired power source
6. Use choke **only** if the petrol engine doesn't start automatically (figure 7, switch 21 or lower controls figure 8, switch 8)
7. Engine or electric motor is turned off by pushing either of the ignition buttons once.

NOTE! The engine must always be switched off using the ignition button.

NOTE! When you use the machine's electric motor, use an extension cord with a maximum length of 20 m and a minimum wire cross sectional area of 2.5 mm^2. Buildings' fixed electrical wiring may affect the functioning of the electric motor.

Use only lower speeds if the electric motor doesn't work properly.

5.1.1 Start-stop function

Machine is equipped with automatic start-stop function. Petrol motor rpm is lowered to the idle and electric motor is stopped when the either of the motor is on and machine is idling (no movements are done). When machine is idling engine run light (between motor start buttons) is blinking. Motors will wake up from idle automatically when allowed movements are done again.

5.2. Drive

When transferring the platform, pay attention to the following factors:

1. Do not exceed maximum inclination for the drive. Make sure the driving surface is solid.
2. Secure tools and other materials to prevent them from falling or shifting.
3. Operator should wear safety harnesses and keep them fastened whenever operating the machine. Follow your local rules and regulations regarding safety harnesses in access platforms!
4. Manoeuvre the joystick in a controlled manner: Avoid sudden movements.

To drive the machine:

1. Switch on the machine and select platform controls
2. Start the combustion engine or electric motor.
3. Ensure that the booms are in transport position and the outriggers are off the ground. Otherwise driving the access platform is prevented.
4. Ensure that the drive speed selection is in the correct position. Changing the drive speed while the access platform is moving is prohibited!
5. To drive the machine: grab and squeeze the joystick to hold down the joystick enabling button on the frontside of the lever. To move forward, push the joystick forward and backward to reverse. To turn the machine left or right, simply turn the joystick to the desired direction.

NOTE: The machine is controlled with skid steer method and the control properties vary depending on terrain, so great care must be taken when starting to drive.

NOTE: The access platform can only be driven when all booms are in transport position!

The machine's transmission system is hydrostatic. The model with wheels is 4-wheel drive. Both models (4-wheel-drive or rubber tracks) are moved by four hydraulic motors.

On low speed the access platform can be turned on the spot if necessary, by pushing the joystick in approximately 40-degree angle towards left or right, either forwards or backwards, depending on desired turning direction.

On high drive speed only, gentle curves are possible to leave as minimal mark on the ground as possible. Hydraulic power is limited on high speed to prevent sudden movements. Use lower drive speed on difficult terrain.

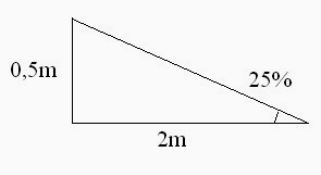
NOTE: Learn how to drive with the machine at a low speed. Operate the joystick smoothly to avoid abrupt and jerky movements. When driving, pay special attention to stability and the dimensions, especially the length, of the machine.

5.2.1 Determining the gradient of the slope

Measure the slope with a digital clinometer, or do as follows:
Take a water level, a straight piece of wood (at least 1 m long), and a pocket tape measure.

Place the wood on the gradient. Put the water level on the lower edge of the stick and lift the stick until it is in a horizontal position.
Keep the stick level and measure the distance from the lower end of the stick to the ground.
Divide the distance (height) by the length of the wood stick (distance) and multiply the result by 100.

Example:
Wood length = 2 m
Height = 0.5 m
(0.5 / 2) * 100 = 25% slope.



NOTE: On slopes, drive upwards or downwards. If you must drive sideways on a slope, lower the downhill side outriggers so that they are close to the ground. This prevents the machine from tipping over.

5.2.2 General information: tracks and their service life

An access platform with a skid steer chassis, equipped with a crawler track chassis, offers many advantages compared with a machine on wheels. However, certain things regarding operation and the working environment must be taken into account with an access platform on tracks. To achieve the maximum service life for the rubber tracks and crawler track chassis, follow the instructions below.

The lifespan of the track system of an access platform on rubber tracks is heavily dependent on the working environment and working methods. The machine operator can greatly influence the service life of the tracks by complying with instructions for their use and maintenance provided below. If the access platform is being used on terrain with stones or gravel or demolition sites with concrete, or in an environment with scrap metal, the lifespan of the track system may be significantly reduced. **Therefore, damage to the tracks, track rollers or crawler track chassis, caused by operation in such environments, is not covered by warranty.**

5.2.3 Guidelines: Operating environment of an access platform with tracks

To extend the lifespan of the track system, avoid driving on the following terrains or work sites:

- **Environments with crushed stone, iron bars, scrap metal or similar recycling material.**
  - Rubber tracks are not designed for such environments.
- **Daily/continuous driving on asphalt or concrete.**
  - Continuous operation on these surfaces will shorten the lifespan of rubber tracks.

- **Work sites with sharp objects, such as broken stones or concrete waste.**
  - Sharp objects like these may cut or damage the rubber tracks permanently. Conditions which may damage tyres can also damage rubber tracks. Usually, damaged tracks cannot be repaired, and they must be replaced instead. The warranty does not cover damage to the tracks if it occurs in such conditions.
- **Work sites with corrosive substances (fuels, oil, salt or fertilisers).**
  - Corrosive substances can oxidise the metal parts in rubber tracks. If such substances come into contact with the surface of the rubber track, the tracks must be rinsed with water immediately after stopping work.

Damage caused to the access platform in above mentioned conditions is not covered by warranty.

5.2.4 Guidelines: Operating an access platform with tracks

- **Check the tightness of the tracks regularly.**
  - Tracks that are too loose may fall off the sprockets. Make sure not to tighten the tracks too much as this results in a loss of power and causes strain on the tracks and the track chassis. (see chapter 9.1.1)
- **Change turning direction as often as possible.**
  - Turning only in one direction causes uneven wear of the sprocket and the rubber track.
- **Check the condition of the track system regularly.**
  - Excessive wear on the rollers, idlers, sprockets and bearings may damage the tracks.
- **Avoid driving sideways on a gradient.**
  - Always drive with the slopes straight up and down, and only turn on a flat, even surface. Continuous operation on uneven terrains or driving sideways on a gradient causes wear in the track guides and rollers and makes tracks jump off the sprockets.
- **Avoid repeated sharp turns.**
  - By making wider and more gentle turns, you can avoid unnecessary wear of the tracks and/or tracks jumping off the sprockets.
- **Avoid driving with one track on a level surface and one track on a gradient.**
  - Always drive on an even surface. If the tracks bend continuously from the inside or from the outside during operation, the metal structure of the tracks can break or get worn.

Damage caused to the access platform due to misuse by not following above mentioned guidelines is not covered by warranty.

5.3. Use of outriggers

The outriggers must be deployed, and the chassis of the access platform must be levelled before any boom operations. The chassis can be levelled by either using automatic levelling function or controlling individual outriggers manually. The maximum allowed levelling inaccuracy is 1,0°.
Make sure that the ground under every outrigger is solid – put extra plates on the ground if necessary.

Outriggers can only be operated when the booms are in transport position!

Booms must not be operated without properly deployed outriggers!

5.3.1 Automatic levelling

1. Switch on the machine and select platform controls
2. Turn on the combustion engine or the electric motor
3. Push the automatic levelling button (Figure 7 (18)). The button doesn't need to be held down.
4. The access platform will deploy all outriggers and level the chassis automatically.
5. While the levelling is in progress the green light of the automatic levelling will blink.
6. If the levelling procedure must be stopped, press the levelling button again.
7. Automatic levelling will end if user leaves the basket while levelling is running.
8. When the chassis is levelled the green light of the automatic levelling (Figure 7 (19)) will stay on continuously.
9. Booms can be operated any time when the green "levelling ok" light is lit
10. Make sure wheels/tracks are not on ground after levelling is done. Push automatic levelling again if necessary, to raise machine higher from ground.

5.3.2 Manual levelling

1. Switch on the machine and select platform controls
2. Start the combustion engine or the electric motor
3. Use the outrigger levers (Figure 7 (17)) to deploy outriggers
4. First: lower two back outriggers so they touch the ground
5. Second: lower the two front outriggers so they touch the ground as well
6. Lower the outriggers low enough: minimum chassis lift height is high enough, so the wheels or tracks visibly lift of the ground
7. Once all outriggers touch the ground, use the outrigger levers to level the machine. The levelling is easiest when lowering the outriggers in pairs (for example both left side outriggers together or both front outriggers together)
8. Green light above the automatic levelling button will blink when all outriggers have ground contact but chassis is not levelled.
9. When the chassis is levelled the green light above the automatic levelling button will be lit up continuously.

5.3.3 Setting the outriggers to transport position

1. Lower all booms on to their transport supports.
2. Green indicator light of boom transport support (see 4.1.6) and boom centre position must be lit.
3. Press the upper button of the automatic levelling switch (Figure 7 (18)). The button doesn't need to be held down.
4. The access platform will drive outriggers a little off from the ground which allows the user to operate drive functions.
5. If the outriggers need to be driven to their transport positions press down the upper button of the automatic levelling switch and keep it held down until outriggers reach their transport positions.

NOTE! If the green lifting light switches on even though the outriggers are not appropriately positioned, using the access platform is strictly prohibited! Contact the maintenance service!

Booms must not be operated without properly deployed outriggers!

5.4. Use of booms

Before operating the booms, make sure the outriggers are properly deployed on solid ground and the green levelling light is lit. Booms cannot be operated if the rated load of the platform is exceeded.

1. Switch the machine on and select the desired control position: platform controls or lower controls
2. Start the combustion engine or the electric motor
3. The booms are controlled with the joystick:
   - push the joystick forward to lift the booms up; pull backward to lower the booms
   - push the joystick left or right to rotate the booms left or right
   - two buttons on the top of the joystick control the telescope: push the left button to drive the telescope out and the right button to pull the telescope in
4. When ending the boom operation:
   - First pull the telescope in
   - Rotate the booms to the middle, to transport position. Green indicator light lights up in the control panel when the middle point is reached (Figure 7 (13))
   - Carefully lower the booms to transport position. Green indicator light lights up in the control panel when the transport position is reached (Figure 7 (14))
5. **Leguan 135 NEO** has a unique Home Switch (Figure 7 (7)), which can be used to drive the booms to transport position. See chapter 5.4.2. **Beware of your surroundings when using this function!** Collision with buildings and other surroundings can cause the lift to fall over and cause serious damage to people and property around the lift.

Operate the joystick with ease and without hesitation – learn to operate the booms precisely.

NOTE: Always lift the booms from transport support first before operating other movements. When lowering the booms, make sure to drive them straight down to the transport supports.

NOTE: When a boom movement is prevented at any point there is an audible beep sound to notify the user of a faulty operation.

5.4.1 Home-Function

Home-function autonomously returns the booms to transport position. The function is activated by turning the Back to work position/Home-switch (figure 7, switch 7) clockwise to Home-position and holding it there. To stop the Homing process, release the switch.

When Homing is complete, there will be an audible signal and boom transport position and boom centre position signal lights will flash.

CAUTION! Pay attention to the surroundings of the access platform! User must prevent collision with surrounding objects!

5.4.2 Back to work position

Back to work position-function is activated by turning the Back to work position/Home-switch (figure 7, switch 7) counter clockwise to Back to work position-position and holding it there while using the function. When using the function boom will move automatically to position from where Home-function where activated last time after using the joystick.

When Back to work position-function is ready audible signal is given. Pay attention to surroundings when using this function. Be aware that Home and Back to works position movement paths are not necessary the same.

5.4.3 Boom Lift & Platform Tilt Without Outriggers

The boom can be raised slightly (approx. 10 cm) to avoid hitting the platform on an obstacle when driving in difficult terrain. Lifting the boom can be done by pressing the lowering button down (page 16, Figure 1, button 1) and simultaneously tilting the joystick forwards.

Also, the platform tilt can be used without outriggers in a similar fashion. To activate the platform tilt without outriggers: press the platform tilt button (figure 1, 5) simultaneously while tilting the joystick forwards to raise platform or backwards to lower it.

Boom can be operated without outriggers from lower controls also. Function is similar than on using the upper controls.

5.5. Ending operation

After concluding operation:

1. Lower the booms down to transport position.
2. Lift the outriggers completely up to transport position.
3. Turn the ignition key to the ‘0’ position and take it with you.
4. Remove safety harnesses from the platform and take them with you (harnesses must be kept in their place and in their box/package).
5. Close the fuel faucet (see the engine manufacturer’s manual).
6. If the machine stays in a place where it can be connected to 230 VAC mains current, it is recommended to leave it connected to charge the battery (e.g., overnight). The battery charges even when the main power switch is not engaged.

NOTE! Prevent unauthorised use of the access platform!

5.6. Additional instructions for winter use

The minimum allowed operating temperature for the access platform is -20 °C.

Do the following actions during winter time:

- Check that the limit switches are free from snow, ice and dirt.
- Let the engine run for a few minutes before moving the machine.
- First use drive mode for a while to warm the hydraulic oil. Then use the outriggers and lastly operate the booms. This way the oil in the whole system heats up and warm oil flows to the cylinders.

6. BACK-UP LOWERING AND EMERGENCY USE

Functions described in chapter 6 are for emergency and fault situation use only! Normal operation is not allowed using the functions mentioned in this chapter.

6.1. Back-up lowering procedure

If the operating power supply cuts off (fuel running out, power cut or damage to the extension cord), the booms can be lowered as follows:

Back-up lowering button is located on the platform control panel and and back-up lowering switch is located in the lower controls panel.

To operate back-up lowering from the platform control panel:

1. Push and hold down the back-up lowering button. Pull the joystick toward yourself to lower the boom.
2. To pull in the telescope: pull the joystick toward yourself and simultaneously push and hold down the telescope in button
3. To rotate the booms: pull the joystick backwards in a 45-degree angle to the direction you want to rotate (left or right)
4. Back-up lowering can be used with Home-function by using the back-up lowering button and Home-button simultaneously.

To operate back-up lowering from the lower controls panel:

1. Turn the switch (figure 8, switch 12) to the right and hold it turned & simultaneously turn the speed selector switch (dead-man-switch, figure 8 switch 13) to either left or right and hold it turned
2. Use the boom switch (figure 8, switch 8) to lower the boom
3. If you want to use other movements, hold down the boom switch (8) and simultaneously use other switches (figure 8, switches 9-10) for other movements
4. Back-up lowering can be used with Home-function. Activate dead-man-switch. Switch back-up-lowering on and then quickly move the switch to Home-function.

6.2. Back-up operation of outriggers

If the operating power supply cuts off (fuel running out, power cut or damage to the extension cord), the outriggers can be raised to transport position, when booms are in transport position, as follows:

1. Choose platform controls
2. Activate back-up lowering switch (platform controls panel, figure 7, p. 16)
3. Use the manual outrigger switches to select desired outrigger and movement direction
4. Use the hand pump to increase pressure in the hydraulic system.

6.3. Override of boom safety functions when motor is running ⚠

For possible emergencies this access platform is equipped with a safety functions override switch (p. 20, figure 8, switch 2), which enables boom movements without outriggers being correctly set down. This function can be used for example in a situation when booms have moved off their transport support during transportation.

Override switch should only be used in extreme emergencies!

To use the switch in the lower controls panel:

1. Loosen the screws (lower controls, screws A and B) to detach the protecting plate
2. Turn the override switch clockwise and hold it turned
3. Turn on combustion engine or electric motor
4. Lower the booms **slowly with caution**
5. Release the override switch
6. Turn off engine / motor
7. Attach the override switch's protecting plate (screws A and B)

The function bypasses / allows:

- overrides overload
- decreases outreach monitoring by 62,5 kg
- overrides platform levelling monitoring (automatic platform levelling is operational)
- overrides telescope chain monitoring
- overrides outrigger monitoring
- overrides speed selector switch (dead man's switch)
- allows telescope in movement to remove overload

6.3.1 Override of boom safety functions using the hand pump

This function is activated from the lower controls panel with the emergency stop switch pushed down and the only available power supply is the hand pump. Allows boom operation manually from the lower control switches without safety functions or automatic aides.

NOTE! Hand pump can only be used to operate outriggers and booms.

6.4. Override of drive and outrigger safety functions ⚠

This function is activated from the lower controls panel (p. 20) when platform controls are selected. Normal power supplies or alternatively the hand pump can be used. Movements are controlled from the platform control panel. Hand pump can be used to operate outriggers. When an engine/motor is running both drive and outriggers can be used.

This function overrides:

- transport position monitoring

- drive prevention
- speed selector switch

6.4.1 Override of transport position monitoring

The transport position of the booms can be overridden with the override switch in the lower controls panel. This enables outrigger operation even if the booms are not in transport position or if the sensor monitoring transport position is faulty.

To activate transport position monitoring override:

1. Turn the ignition key to platform controls position
2. Wait for power on signal sound and after that wait two seconds
3. Within 10 seconds turn the override switch in the lower controls panel to outrigger position and hold it turned (see 6.3)
4. A second user is required to turn on electric motor or combustion engine from the platform control panel
5. Second user operates the outrigger switches from the platform control panel to raise outriggers
6. To drive the access platform the second user operates the joystick from the platform
7. Release the override switch and lock it with the protecting plate

6.5. Override of load control and platform emergency stop switch ⚠

There is a safety function's override switch in the lower controls panel of the access platform. With this switch platform load monitoring and platform emergency stop switch can be overridden in an emergency. **Using the switch is allowed only in an extreme emergency**, for example when the operator has collapsed on the platform, pressed down the emergency stop switch and they have to be lowered immediately for their safety. **The manufacturer is not responsible for repercussions of misusing this function!** The override switch is in the lower controls panel and works only when lower control position is selected (p. 20, figure 8).

To use the switch in the lower controls panel:

1. Loosen the screws (lower controls, screws A and B) to detach the protecting plate
2. Turn the override switch clockwise and hold it turned
3. Turn on combustion engine or electric motor
4. Lower the booms **slowly with caution**
5. Release the override switch
6. Turn off engine / motor
7. Attach the override switch's protecting plate (screws A and B)

6.6. Emergency lowering without power to logic controller ⚠

In a situation when the logic controller of the access platform has lost power or does not function for any reason, there is a secondary emergency lowering method in addition to the normal emergency lowering procedure described in chapter 6.1. The method works by using a

separate power source and cables to activate the valves. **The ignition switch (p.20, figure 8) must be turned off before following this procedure!**

To use emergency lowering without the logic controller, use separate wires to connect a 12 VDC battery to the coils of the control valve block you wish to use (e.g. boom lift valve). It is possible to use either the starter battery of the access platform or a different external battery. When the battery is connected to the desired valve, use the hand pump on the inside the valve casing to power the wanted function. Note: Platform levelling automation does not work when this procedure is followed, and the platform can tilt into a dangerous angle. Use platform levelling valve's coils to straighten the platform.

7. TRANSPORTATION

The chassis and outriggers are equipped with lifting and binding points which are indicated with symbols. The machine may only be secured for transport from these binding points. The machine must always be lifted from the designated lifting points. When lifting, it is advisable to use a lifting beam to prevent the outriggers from getting damaged.

Figure 11 Binding point symbol

Figure 12 Lifting point symbol

Before transport, the booms are placed on the transport supports and the outriggers are raised.

NOTE! This access platform may only be transported in its transport position.
No persons or materials are allowed to be transported on the platform.

There is an automatic hydraulic brake in the rear axle that engages automatically when the combustion engine/electric motor is not running.

DO NOT TOW!
Towing can cause severe damage to the hydraulic motors and other parts of the chassis.

If the machine is transported on a trailer, a lorry or a similar vehicle, it must be secured carefully. There are four binding points marked on the corners of the chassis which make it easy to secure the machine. Always secure the machine diagonally from each corner.

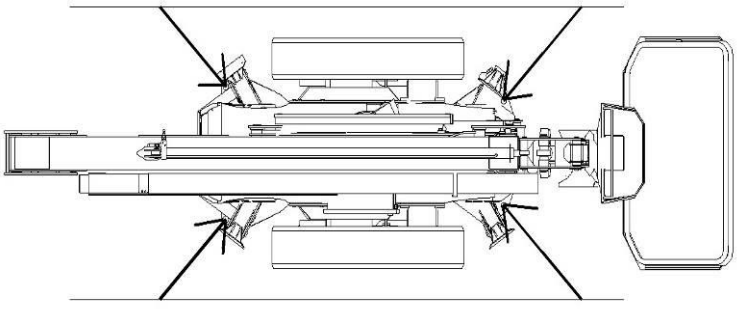


Figure 13 Binding locations

NOTE! Shut off the fuel faucet of the combustion engine for longer transport to prevent motor oil and petrol from becoming mixed and causing problems in the running of the motor.

NOTE! The machine must not be secured so that the ropes go over the booms. Only the marked binding points can be used!

8. INSTRUCTIONS: SERVICE, MAINTENANCE AND INSPECTION

This access platform must be inspected once a year. The inspection can only be performed by a qualified person. Persons who conduct the periodical services must familiarise themselves with the operation and technical features of this access platform before performing any service operations. All service and maintenance operations must be carried out in accordance with the instructions in this manual. If the access platform has not been used for a long time, the oil levels must be checked, and the machine's functioning must be inspected before the next use.

8.1. General instructions

- Making structural changes to the machine without written permission from the manufacturer is strictly prohibited.
- All defects that may have an effect on the safe use of this machine must be repaired before commencing operation.
- Inappropriate handling of protected parts causes a risk of serious injury. Only professional maintenance personnel may open the covers.
- Make sure that maintenance is performed in accordance with this Operator's Manual and the engine manufacturer's Service Manual.
- Stop the engine before starting any service or inspection operation, ALSO, **DISCONNECT THE 230 VAC PLUG!**
- Do not smoke during service and inspection operations.
- Keep the machine, and particularly the platform, clean.
- Ensure that the instructions for use are complete and legible and that they are available in the platform's storage box.
- Make sure that all labels are in place and readable.

NOTE! All spare parts – especially electric components and sensors – must be original Leguan parts.

8.1.1 Battery handling

When handling the battery, bear in mind that:

- The battery contains corrosive sulfuric acid – handle the battery with care! When handling the battery, wear protective clothing and eyewear.
- Avoid contact with clothes or skin; if electrolyte gets on your skin or clothes, flush it with a large quantity of water.
- In case of contact with eyes, flush with a lot of water for at least 15 minutes and seek medical assistance immediately.
- Do not touch the battery terminals or cables with tools that may cause spark emissions.
- To avoid spark emissions, always disconnect the (-) cable first and connect it last.

8.1.2 **Handling of fuel and oil products**

When handling fuel and oil products, bear in mind:

- Do not let any oil leak on the ground.
- Use oil qualities recommended by the manufacturer. Do not mix different oil types and/or brands with one another.
- When handling oil, always wear appropriate protective equipment.
- Before refuelling, always stop the combustion engine / electric motor and disconnect from mains current.
- Only use fuels recommended by the engine manufacturer. Do not mix any additives with the fuel.
- If fuel or oil gets into the eyes, mouth or open wound, clean it immediately with a lot of water or designated fluid and call a doctor.

Check hydraulic hoses and components only when the engine is stopped and with pressure released from the hydraulic system. Do not operate the machine if you have noticed faults or leaks in the hydraulic system. Ejection of hydraulic fluid can cause burns or penetrate the skin and cause serious injuries. Consult a doctor immediately if hydraulic fluid penetrates your skin. Wash any body part that has come in contact with hydraulic oil carefully with water and soap. Hydraulic oil is also harmful to the environment – prevent oil leakages. Only use hydraulic oil types approved by the manufacturer.

Never handle pressurised hydraulic components, because in case of failure on a fitting or component, a spray of high-pressure hydraulic fluid can cause the machine to tip over and result in serious injuries. Do not operate the machine if you have noticed a fault in the hydraulic system.

Check hydraulic hoses for any cracks and wear. Monitor the hoses for wear and stop operation if the outer layer of any hose has worn out. Check routing of the hoses adjust the hose clamps if necessary to prevent chafing. The hose’s expiry date is marked on it. After this date, the component must be replaced. If any signs of a leak are observed, place a piece of cardboard underneath the suspected component to determine the source.

If you find a fault, operation of the access platform must be stopped immediately and the hose or the component must be replaced. Contact the Leguan service.

9. SERVICE INSTRUCTIONS

9.1. Maintenance and inspections, service schedule

Regarding the service of the engine, also see the engine manufacturer's Operator's Manual. EM = engine manual

CH = check CL = clean R = replace A = adjust **F** = first service after 50 h

Measure		**day**	**month**	**100 h**	**200 h / 12 months**	**400 h / 24 months**	**1,000 h**
Engine oil, EO	FR	CH		R			
Air filter			CH/CL		R		
Fuel sediment bowl			CH/CL				
Spark plug, EM				CH	R		
Valve clearance, EM					CH		
Fuel tank and filter strainer						CL	
Fastening of the platform	FCH	CH					
Hydraulic oil							R
Hydraulic oil level	FCH			CH			
Hydraulic oil suction filter							CL
Hydraulic oil filters	FR				R		
Battery water			CH				
Locking of bearings and pivot pins	FCH		CH				
Electrical wires					CH		
Hydraulic fittings and hoses	FCH	CH					
Cylinders, load holding- and check valves	FCH	CH					
Functioning of emergency lowering	FCH	CH					
Function of emergency stop circuit	FCH	CH					
Functioning of set up system	FCH	CH					
Pressure adjustments	FCH				CH		
Functioning of control valves	FCH	CH					
Mounting of booms on the chassis					CH		
Condition of steel structures			CH				
Movement speeds of the booms	FCH		CH		A		
Greasing			R				
Functioning of load monitoring	FCH			CH	A		
Position of the water level	FCH		CH				

Hydraulic oil viscocity:	ISO VG 26
Recommended oil:	Mobil UNIVIS HVI 26 (Arctic oil)
Hydraulic system oil volume:	Oil tank 25 l, complete system 55 l
Engine oil:	See engine manufacturer's manual
Grease:	Lithium NLGI 2 grease (not MoS2),
Slewing ring grease:	grease containing EP (extreme pressure) component (e.g. Mobil Mobilith SHC 220)
Pressure settings of hydraulic system:	main pressure 206 bar slewing pressure 120 bar drive motor brake pressure 25 bar
Tyre pressure:	3 bar

Backlash of the wear pads on the telescopic boom must be checked every year and the wear pads must be replaced every 5 years.

The pulley chains and/or cables of the telescope booms, their pulley wheels and fasteners must be replaced during the access platform's 10-year service.

The abovementioned service intervals are recommendations. If the operating conditions are challenging and/or the machine is in heavy duty use, the service and change intervals must be shortened.

Tightening torque of the M16 fastening bolts of the slewing ring is 210 Nm – torque must be checked once a year and bolts must be changed every 10 years. If a bolt has loosened, it must be replaced with a new bolt.

9.1.1 Crawler track and 4WD wheel nuts

For 4WD chassis machines the tightening torque for the wheel nuts is as follows:

- First tighten the nuts to 150 Nm ± 25Nm
- Then retighten the nuts to **200 Nm ± 25Nm**
- We recommend inspecting the tightness of the nuts once a week

It is important to check the tightening of nuts on the track wheels 2 days after commissioning the access platform. When driving with a new machine, the parts in the track system adapt to each other and "find their place". Because of this, the nuts may loosen during operation. Loose nuts can cause serious damage to the crawler track chassis. Tighten the track sprocket nuts:

- First tighten the nuts to 200 ± 25 Nm diagonally opposite.
- Then retighten the nuts to **250 ± 25 Nm** diagonally opposite.
- We recommend inspecting the tightness of the nuts once a week

9.2. Greasing

Greasing of the machine is of utmost importance to prevent wear in joints. Most of the joints are service free - however the slewing bearings must be greased in accordance with the maintenance schedule, using grease that contains EP (extreme pressure) additive. Outrigger bearings and articulation bearings in all hydraulic cylinders must be greased in accordance with the maintenance schedule. Greasing directions below.

9.2.1 Greasing diagram

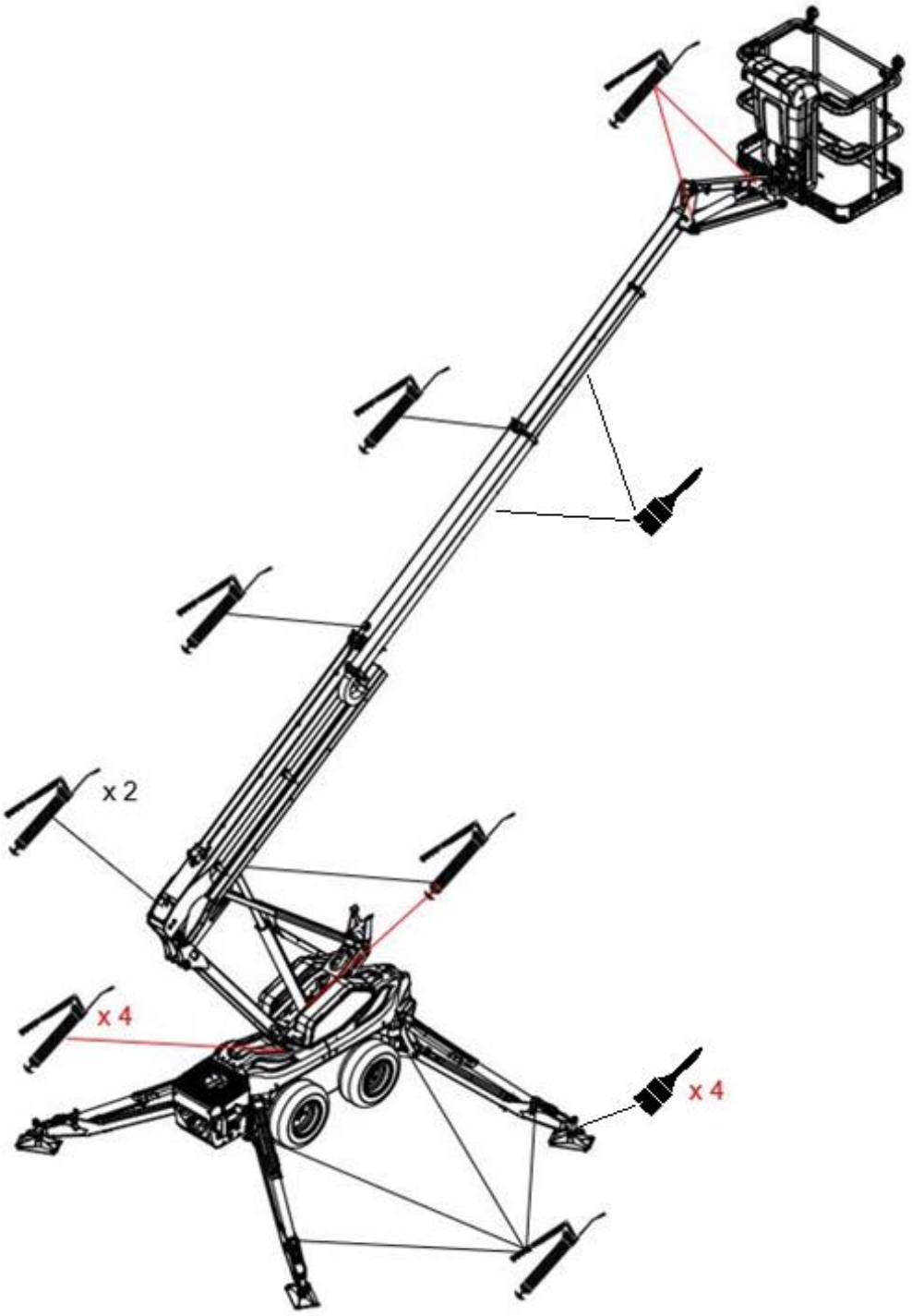


Figure 14 Greasing diagram

9.2.2 Greasing of the slew ring

The slewing ring of the access platform must be greased monthly, according to the maintenance schedule. It is important to notice that the **slewing ring has four (4) separate greasing points** (Figure 15) which all must be greased individually. There are 3 grease nipples on the backside of the slewing ring are connected to the gear and its bearings. One (1) grease nipple on top of the slewing ring (a hole through the pedestal) is connected to the ring's ball bearings. When applying grease to this grease nipple, it is important to apply it around the bearing: after applying grease, turn the slewing ring approximately 20 degrees and apply grease again. Repeat until the ring has gone around a full circle (360 degrees).

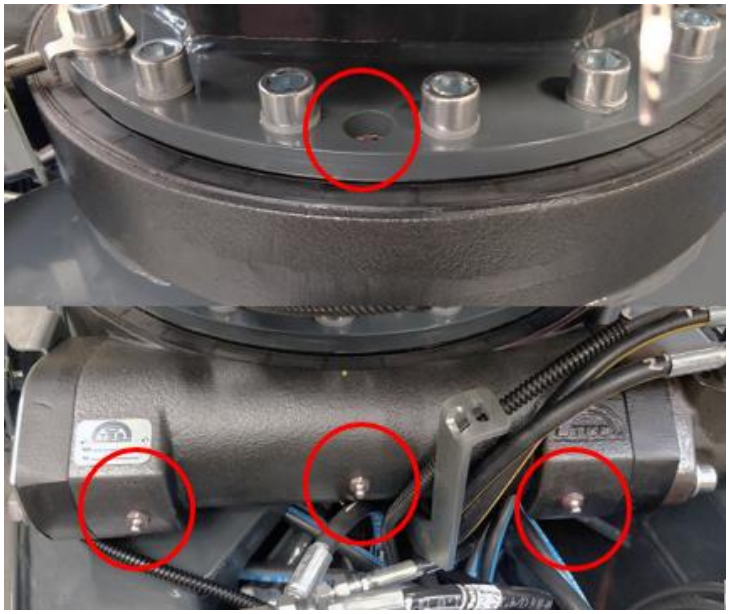


Figure 15: Slewing ring greasing

9.2.3 Greasing the telescopic boom chain pulley and inspection of the chain

A pair of leaf chains is used for telescopic boom movement. There are 3 pulleys which require greasing. Pulleys are greased monthly.

Figure 16 Telescoping chain pulley grease nipple

Figure 17: Leaf chain pulley greasing points in the front end of the upper boom.

Grease nipples are located on both ends of the telescopic boom. One grease nipple is located under the telescopic boom in the platform end of the boom (Figure 16). Two more nipples are located under a protective cover in the front end of the upper boom (Figure 17).

9.2.4 Greasing of Telescoping Booms

Glide surfaces of the telescoping booms (bottom surface, picture 18) should be greased with water resistant grease (e.g. Mobil XHP 222) during monthly greasing. The grease should be applied on the bottom surface of both middle boom and extension, on a surface area of approximately 30 mm wide measured from each side edge and for the whole visible length of the booms when the telescope is fully extended (picture 18). Apply only a thin layer (< 1 mm) of grease on the surface by using a brush for example.

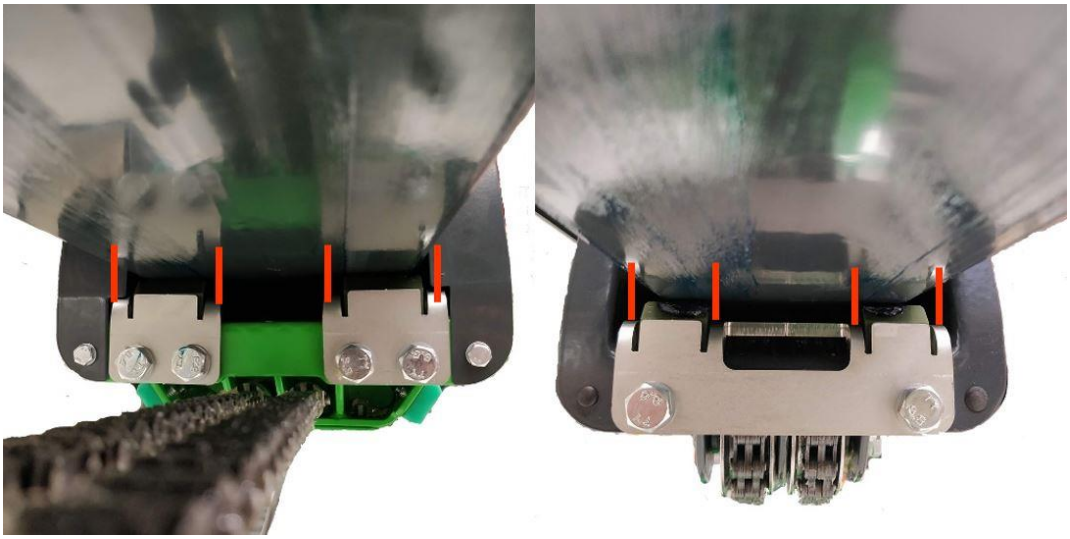


Figure 18 Width of the greased surface on Middle Boom and Extension highlighted with red lines

9.2.5 Greasing of the Position Sensor Pins on the Outriggers

The position sensor pins on the outriggers should be cleaned and greased with water resistant (e.g. Mobil XHP 222) during the yearly maintenance of the access platform. The pin is removed from the outrigger by opening the locking screw on the end of the outrigger (p. 44, figure 23, A). The pin is moved by a spring which is to be removed before the greasing. Apply only a thin layer (< 1 mm) of grease on the surface of the pin by using a brush for example. After greasing install the spring back on the pin and place the pin back on the outrigger and lock carefully it with its screw.

9.3. Handling of fuel and refuelling

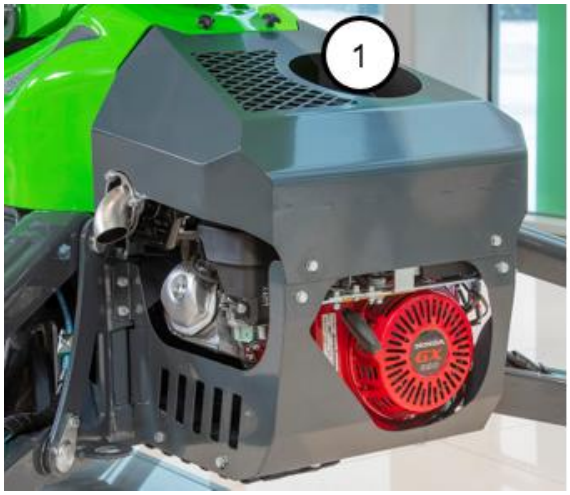


Figure 19 Combustion engine

Check the fuel level and refuel if necessary (1). Before refuelling, check whether the engine runs on petrol or diesel.

Petrol specified by the manufacturer in its manual must be used in a machine with a petrol engine.

9.4. Hydraulic oil and hydraulic oil filter replacement

The hydraulic return oil filter (figure 20, (1)) is located on the side of the oil tank inside the chassis. Replace the filter by removing the filter cap and replacing the filter cartridge. When replacing the hydraulic oil, the oil can be removed with a suction pump from the opening of the breather cap (2), or by opening the drain plug in the bottom of the chassis. In both cases, it is important to clean the magnetic drain plug. The hydraulic pressure filter cartridge (3) must always be changed when the return filter is changed. The pressure filter is located behind the combustion engine, on top of the chassis.

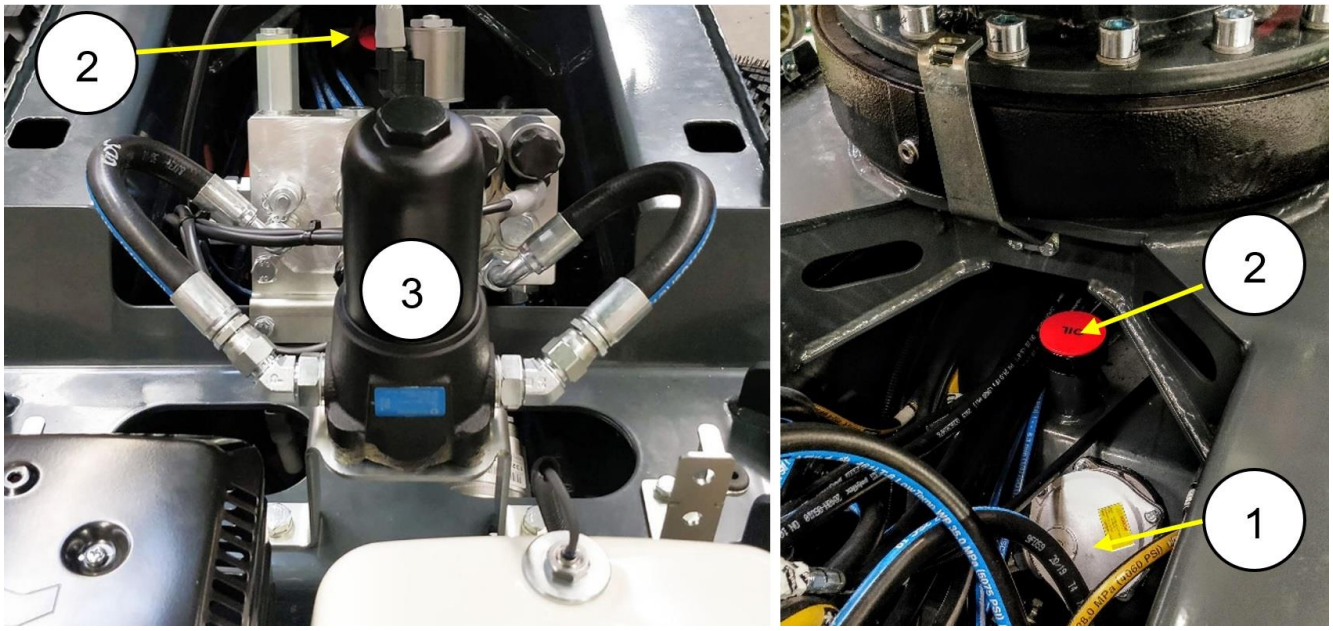


Figure 20 Hydraulic oil filter

9.5. Hydraulic oil level

The level of hydraulic oil can be checked from the oil level sight glass. The sight glass is located in the right side of the chassis, between the wheels or track wheels (Figure 21 (1)). The oil level should be at the top of the sight glass when the access platform is in transport position.

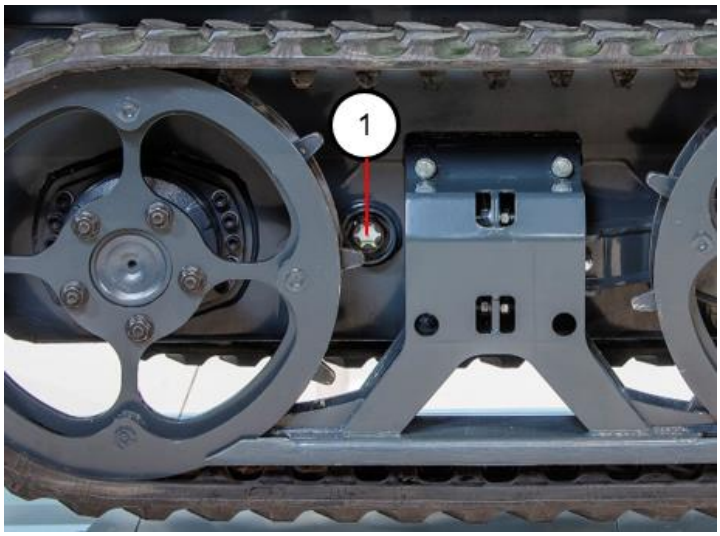


Figure 21 Oil level sight glass

9.6. Battery check

The original battery is maintenance-free. In order to secure the starting and safe operation the battery must be checked regularly. Inspect and clean battery terminals regularly. Check also condition and fastening of battery cables and terminal insulators. Make sure that battery cables cannot chafe against any sharp edges. Check also condition and fastening of battery disconnect switch and cables. Battery is in the back of the access platform chassis (figure 22).

Figure 22 Battery is located in the back end of the chassis

9.7. Functioning of set up system ⚠

Outriggers are monitored with an inductive switch. There is one switch in each outrigger which tracks whether an outrigger has been set to the ground or not. Monitoring is based on a spring-loaded pin, which is pushed up when an outrigger is laid on the ground. Switches location in the outrigger pictured below (Figure 23 (1)).

Check set-up control always before operating the access platform.
When all four outriggers are firmly against ground the green automatic levelling signal light will blink (Figure 7 (19)). Drive outriggers **manually** against ground:

- If the green automatic levelling signal light will blink before all four outriggers touch the ground, there is a malfunction or a fault in the system and the operation must be stopped immediately (excluding the situation where automatic levelling has been activated).
- Check the functioning of the outrigger's inductive switch from the led-light on the switch: the light should be lit when the outrigger is off the ground and turned off when the outrigger is set on the ground.

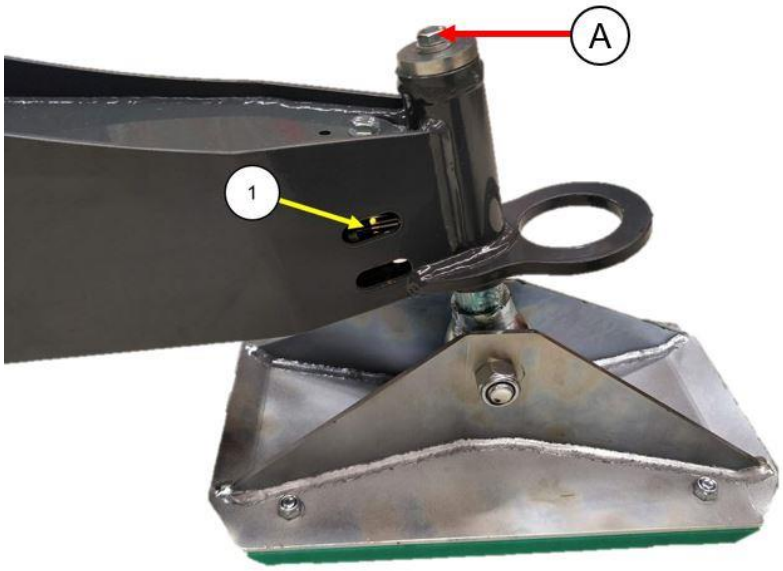


Figure 23 Outrigger limit switch location (A) and position sensor pin locking screw (A)

ATTENTION! If the set-up control system doesn't work correctly, using the access platform is forbidden! The failure/defect must be repaired before starting operation.

9.8. Hydraulic system settings

The hydraulic system has been adjusted to correct values at the factory and usually there is no need to adjust them.

All boom cylinders are equipped with two load control valves (Figure 24 (1)) which prevent boom movements in case of, for example, a hydraulic hose failure.

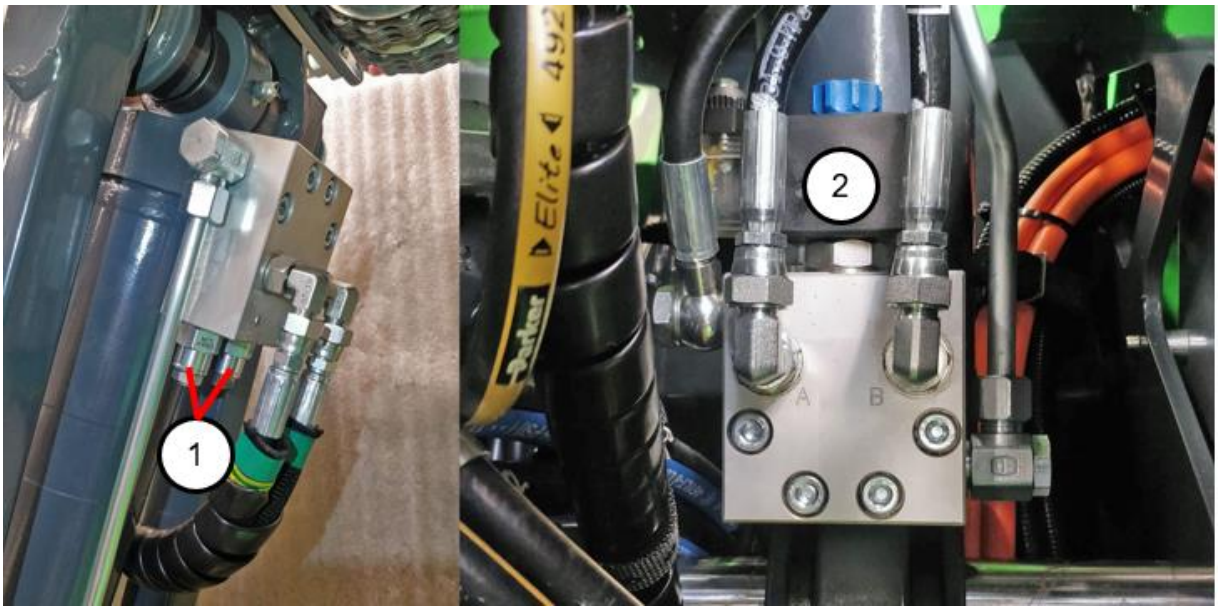


Figure 24 Cylinder hydraulic manifolds. JIB cylinder (left) and lift cylinder (right).

When the lower boom emergency lowering is used, the electric solenoid (2) located in the lift cylinder's hydraulic manifold engages oil flow into the tank and the booms move downwards. The oil from the lift cylinder is directed to other cylinders, if other emergency lowering functions are used simultaneously.

9.9. Overload protection components ⚠

Overload control has been set to the correct values at the factory and it is strictly forbidden to change its settings. THERE IS A RISK OF THE ACCESS PLATFORM TIPPING OVER!

Overload control mechanism is located between the working platform and the platform support (Figure 25). Basket load is measured with a load sensor (1) which follows EN 280 - standard.

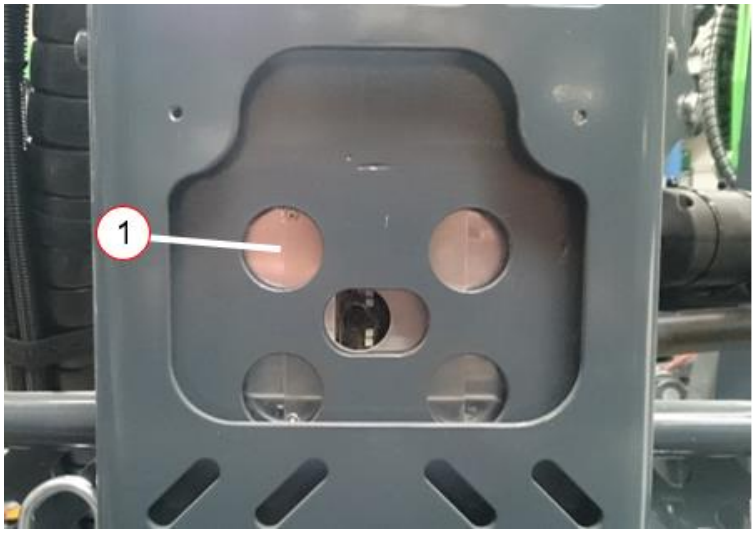


Figure 25: Load cell unit MOBA MRW in the platform

Maximum platform load has been adjusted to 250 kg.

In an overload situation the use of booms is prevented, and you will hear a sound alarm and see a red indicator light in the lower (Figure 7 (4)) and upper control (Figure 7 (10)) panels.
- Remove excess load from the platform.
- Both alarms will go OFF.
- Use of booms is possible again after removing the load from the platform.

The load sensor should be checked regularly for physical damage. Damage might cause incorrect sensor values. If the sensor must be replaced due to faults or damage, the bolts should be tightened to 150 Nm.

⚠

NEVER OVERLOAD THE MACHINE!

9.10. Electric sensors

9.10.1 Transport position monitoring

Transport position of the access platform is tracked by three sensors: slewing angle sensor (Figure 26, (1)), which activates when the slewing ring is in the middle position. Upper boom sensor (Figure 27, (1)) tracking the position of the telescope and the boom angle. Combined with the upper boom sensor is a capacitive sensor (2), which monitors the condition of the upper boom sensor's measuring wire. In addition, there is a levelling sensor in the connection box (see chapter 9.10.3) and its levelling angle is compared with the angle of the upper boom sensor to ensure that the boom is in transport position.

Figure 26 Slewing angle sensor

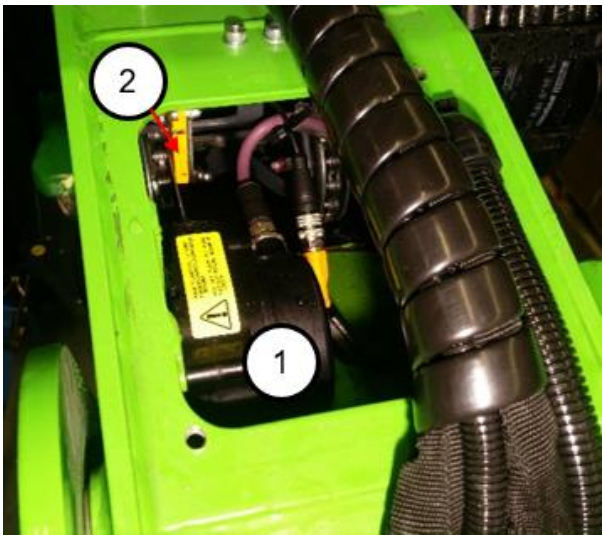


Figure 27 Upper boom sensors

Slewing ring position is monitored with a sensor on the end of the screw worm (picture 28 (1)).

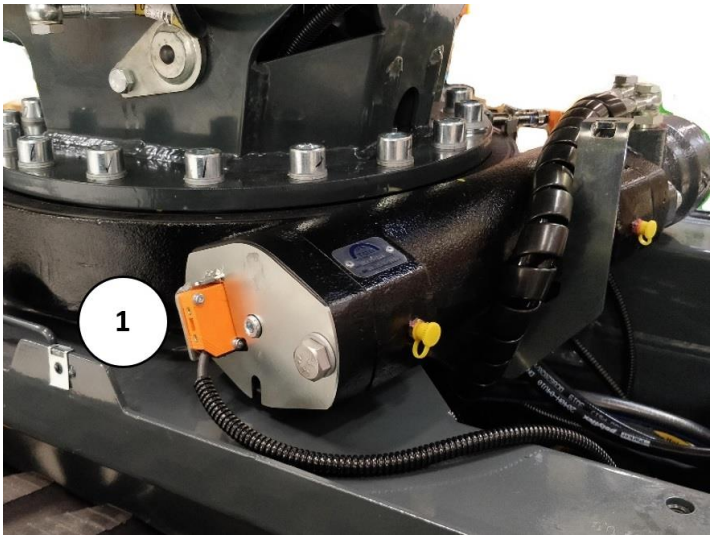


Figure 28 Slewing ring position measurement

9.10.2 **Levelling monitoring**

This access platform is equipped with automatic and manual levelling and the state of levelling is monitored with an inclination sensor. The sensor is located inside the connection box on the right side of the chassis (figure 31). Similar sensor also tracks the angle of the platform and the platforms automatic levelling is based on it. The second levelling sensor is located inside the control panel box in front of the platform (figure 30).

Figure 30 Inclination sensor (chassis)

Figure 29 Inclination (platform)

9.11. **Inspection of the track tightness and adjustment**

The tightness of the track is inspected and adjusted with the access platform raised on the outriggers. The tracks must be inspected for the first time and adjusted, if necessary, after one hour of use. After this initial inspection, the tracks should be checked once a week and adjusted if necessary. At the same time, the sprocket bolts and nuts should be inspected to ensure that they have not loosened. Take steps to keep the tracks appropriately tight. This has direct impact on wear and tear of the track chassis and helps to ensure that the tracks do not come off the sprockets.

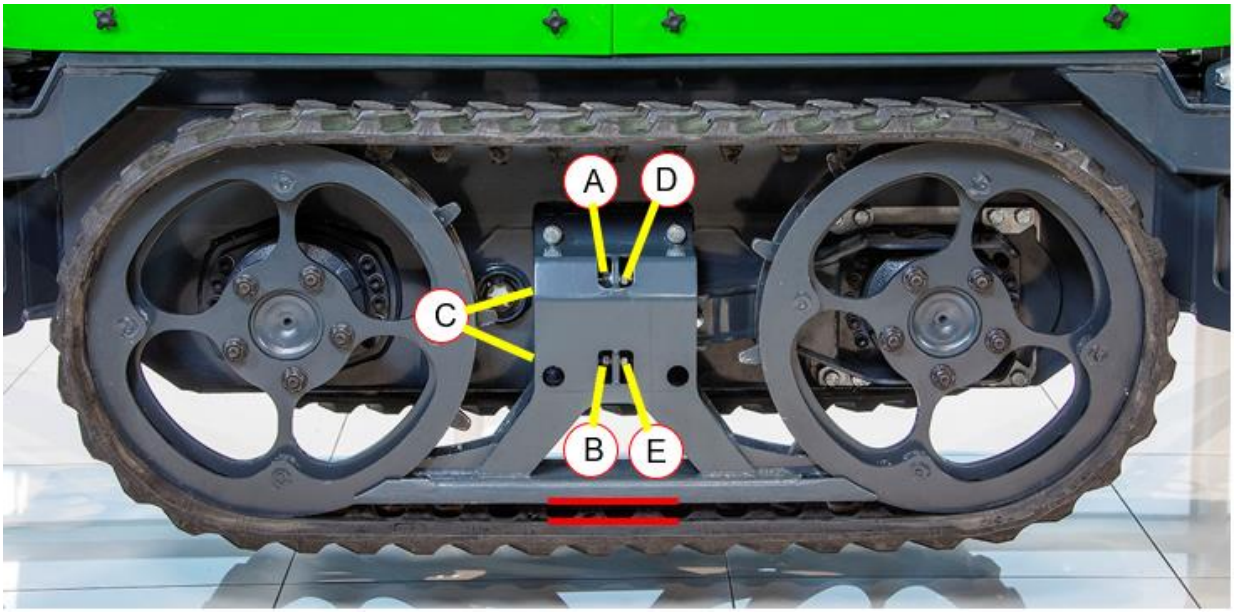


Figure 31 Leguan 135 NEO tracks

To inspect the tightness of the tracks:

Raise the access platform off the ground using the outriggers. The tracks should be off the ground minimum 5 cm. The tightness is correct if the gap between the track and the track frame is the same from end to end (marked with red lines in figure 32). The correct gap is 20-25 mm.

9.11.1 Adjustment of the tightness of the track

If you find that a track has loosened after inspecting the tracks as described in chapter 9.12, tighten the track as follows:

The track is tightened with a preloaded spring. To tighten the track, loosen the nuts marked (A) and (B) in figure 32. Then tighten nuts D and E and hold bolts C (or vice versa). This pulls the bolts (figure 32, (C)) and the adjustment plate towards the middle of the track and tighten the load on the spring. Tighten the nuts just enough so that the track straightens in relation to the track frame. Tighten both nuts evenly. After the adjustment tighten the nuts A and B.

10. REPAIR INSTRUCTIONS

10.1. Welding

All load-carrying steel parts are manufactured from S420MC EN10149 sheet and S420MH/S355J2H EN10219 tubular pipe.

Welding repairs may only be carried out by professional welders. When welding, use only methods and additives suited for the abovementioned steel qualities.

SFS EN-ISO 5817 quality level D is suitable for all welding, except for load-bearing parts. **Load-bearing structures may only be welded with consent from the manufacturer. If you are at all uncertain about whether the damage can be repaired by welding, contact the manufacturer.**

Before welding:

- Remove and cover the plus (+) and minus (-) terminals of the battery.
- Disconnect all contacts of the logic controllers (Figure 33). Connect the earth terminal of the welding device directly to the part to be welded.
- Do not touch the controller or electric cables with the welding electrode or the earth terminal of the welding device.

ATTENTION! It is not allowed to change the construction and structure of this access platform without a written permission from the manufacturer.

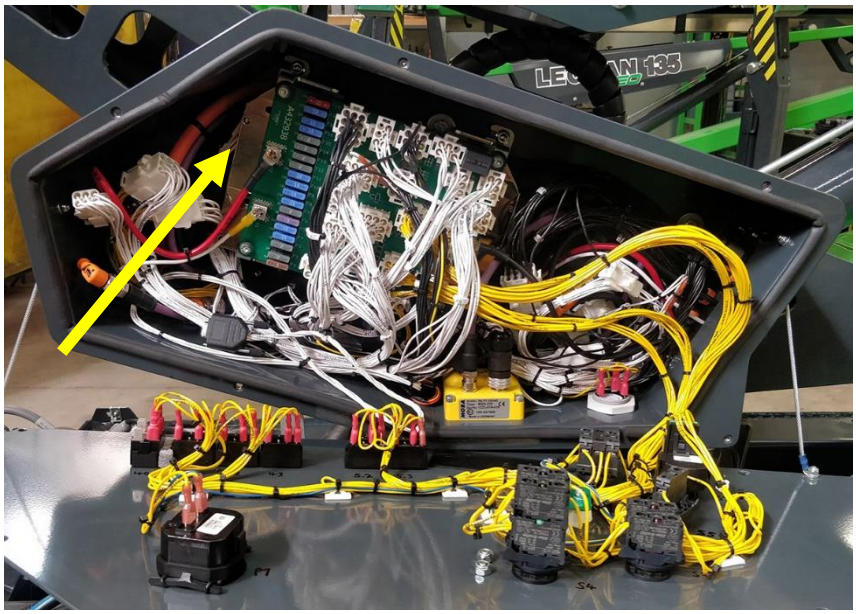


Figure 32 Logic controller

Note! The structure of this access platform may not be altered without written permission from the manufacturer.

11. INSTRUCTIONS FOR TEMPORARY STORAGE

- The cable of the **+** pole of the battery should be disconnected, if the access platform is being stored for a period longer than one month. The access platform must be protected and stored in an indoor storage facility or other covered space that cannot be accessed by unauthorised persons (a locked space)
- Make sure that chemical leaks during storage will not cause environmental harm, such as problems related to wastewater.

Note! Also see the engine manufacturer's instructions about storage of the engine.

12. **INSTRUCTIONS FOR DISPOSING THE ACCESS PLATFORM**

When the access platforms lifecycle comes to an end, it must be dissembled and disposed of in an environmentally friendly way:

- Battery and other electronic components should be recycled or disposed of according to local regulations.
- Oil should be collected and recycled according to local regulations.
- Plastic parts should be recycled according to local regulations.
- Metal parts should be recycled according to local regulations.

13. **TROUBLESHOOTING**

The following table shows failures and malfunctions of the access platform and the ways to repair them.

ISSUE	CAUSE	CORRECTIVE ACTION
the motor does not start when the START button is pushed (also see the engine manufacturer's manual).	The main power switch is in the 'OFF' position.	Turn the switch on.
	The emergency stop switch is turned down.	Release the emergency stop switch by turning it.
	The motor is too cold.	Use the choke.
	The fuel faucet is closed.	Open the fuel faucet (petrol engine).
	The fuel tank is empty.	Refill.
	Empty start battery.	Charge the battery by connecting the 230 V plug.
	The combustion engine fuse (inside the ignition) has blown.	Replace the fuse (also see the engine manual).
The motor does not start when the START button is pushed (see also the engine manual).	Connection flaw in the wiring.	Use a meter to check voltages, wires and connections.
	Faulty START switch.	Replace the switch.
The electric motor does not start when the start lever is pulled.	Mains cable is not connected to network.	Connect the plug to the 230V/16A output.
	The emergency stop switch is turned down.	Release the emergency stop by turning it.
	The main power switch is in the 'OFF' position.	Turn the switch on.
	Empty battery.	Charge the battery by connecting the 230 V plug.

ISSUE	CAUSE	CORRECTIVE ACTION
The electric motor stops suddenly during operation.	Power failure. The emergency stop button was pressed accidentally. Electric motor thermal overload relay (F1) in the connection box has gone off. Connection fault in mains or 12 V wiring.	Lower the booms by using the emergency lowering. Check that there is current in the mains. Release all emergency stop buttons. Wait for approx. 2 min. and start the motor – the relay will return to the 'ON' position automatically. Check the voltage and wiring.
Movements do not work even though the combustion engine / electric motor is running.	Failure in the hydraulic system – e.g., hydraulic pump broken. Overload on the platform.	Check hydraulic pressure. If there is no pressure, check the functioning of the hydraulic pump safety valve. Remove the excess load.
The combustion engine / electric motor stops when the booms are lifted from the transport support.	Outriggers are not correctly positioned in the support position – the green indicator lamp is not lit.	Lower the booms down to transport supports with emergency lowering, restart the combustion engine / electric motor and deploy the outriggers properly.
The boom comes down on its own.	Dirt in the load control valve or a defective valve Dirt in the emergency lowering valve or a defective valve The emergency lowering valve does not react to the control button. Lift cylinder seals are faulty.	Clean valve with compressed air, and if that does not help, change the valve. Clean valve with compressed air, and if that does not help, change the valve. Inspect the emergency lowering fuse. If it is in good condition, check whether the emergency lowering valve has come loose. Change the cylinder seals.

ISSUE	CAUSE	CORRECTIVE ACTION
Outrigger gives way.	Make sure that the ground does not give way.	Put extra support plates under the outriggers or move the machine to another place
	Air in the outrigger cylinder(s).	Drive outriggers all the way up and down a few of times.
	Dirt in the cylinders lock valve.	Clean the valve with compressed air.
	Faulty lock valve.	Change the valve.
	Faulty outrigger cylinder seals.	Change the cylinder seals.
The platform tilts backwards by itself when the booms are down on the transport supports.	Air in the hydraulic system.	Start the combustion engine / electric motor, drive the platform to the extreme end positions. If this doesn't help, do the air bleeding of the platform self-levelling system (the self-levelling cylinders are equipped with couplings for bleeding purposes)
	Dirt in the load control valve or a defective valve.	Clean the valve with compressed air, if that does not help, change the valve.
	Cylinder seals faulty.	Change the cylinder seals.

14. BLOCK DIAGRAMS FOR LEGUAN 135 NEO SAFETY FUNCTIONS

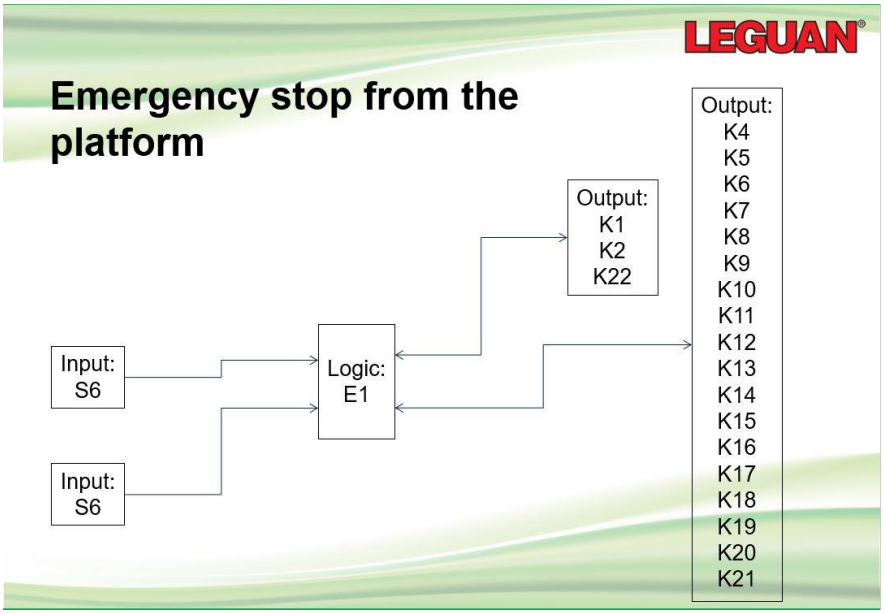


Figure 33 Emergency stop from the platform

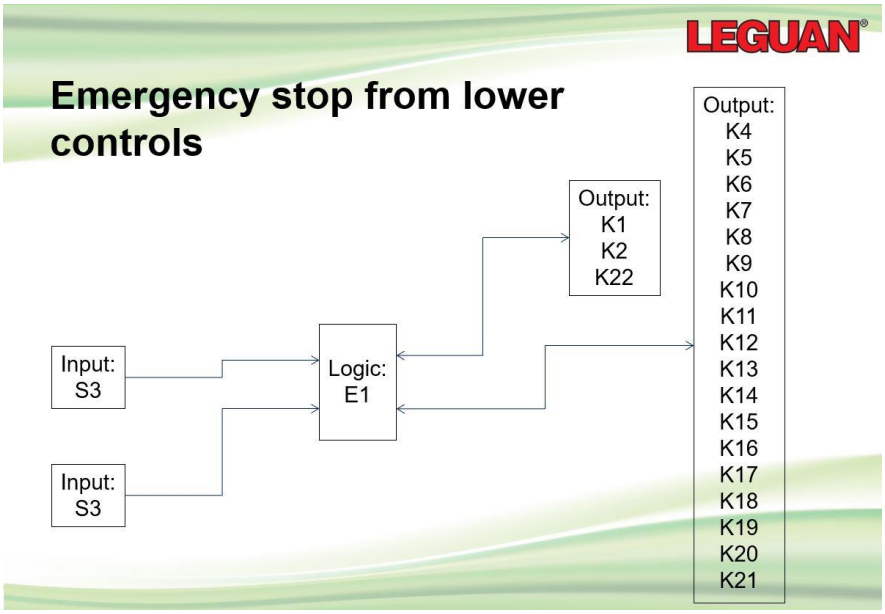


Figure 34 Emergency stop from lower controls

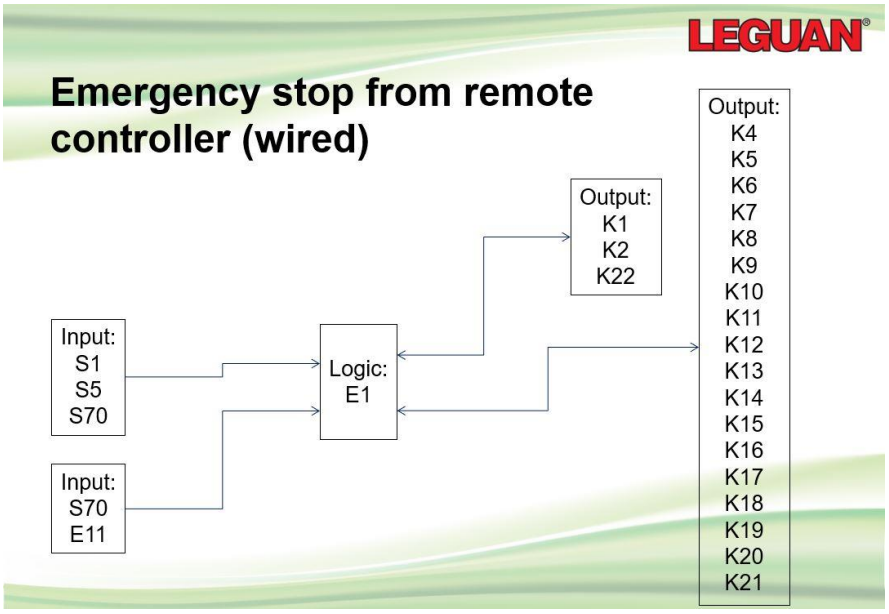


Figure 35 Emergency stop from remote controller (wired)

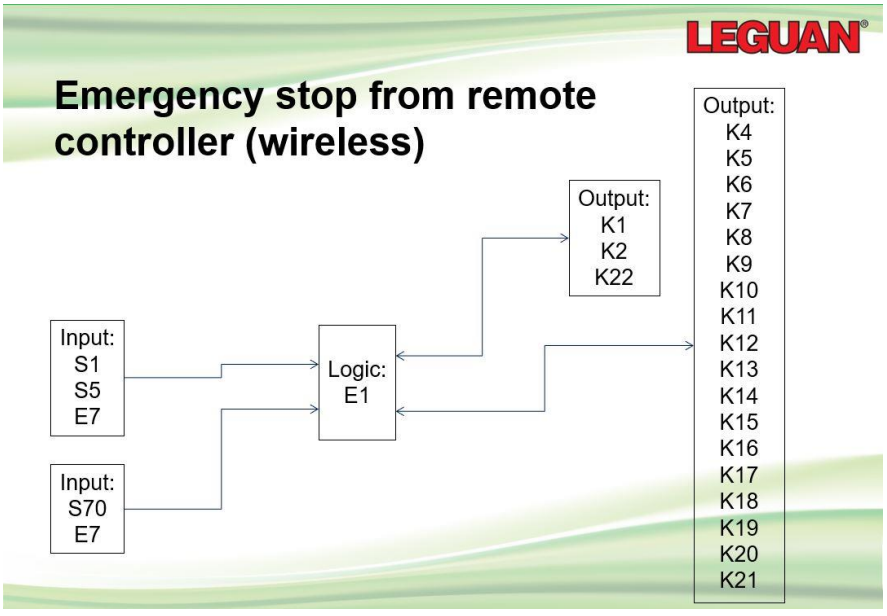


Figure 36 Emergency stop from remote controller (wireless)

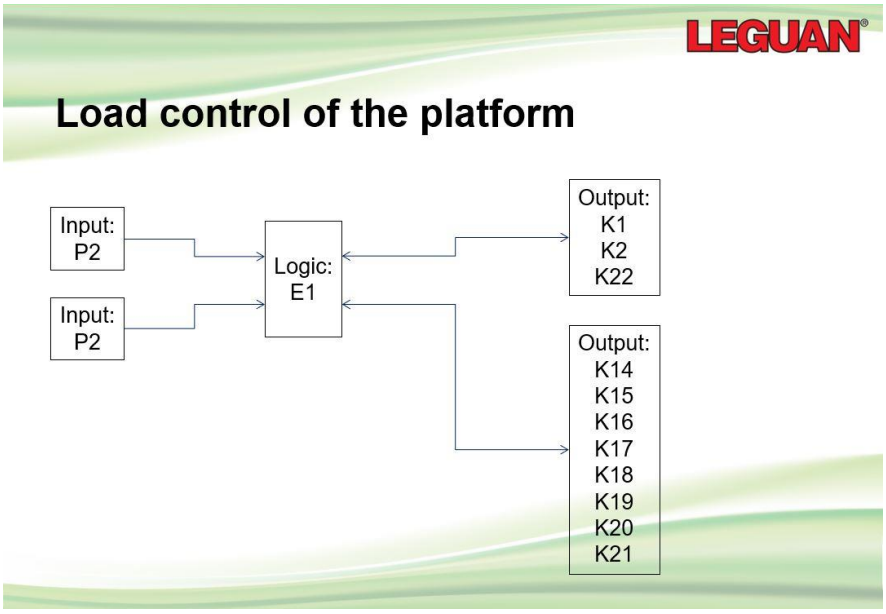


Figure 37 Load control of the platform

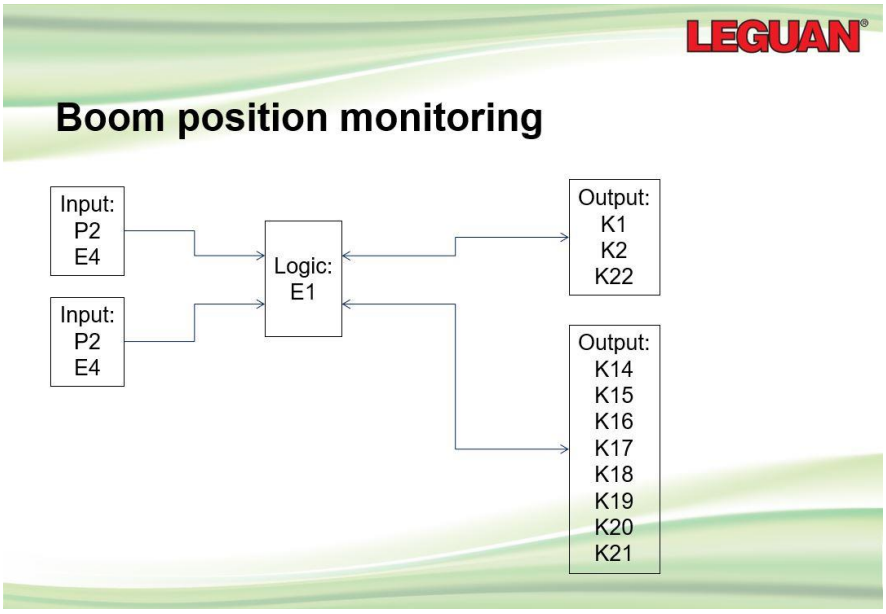


Figure 38 Boom position monitoring

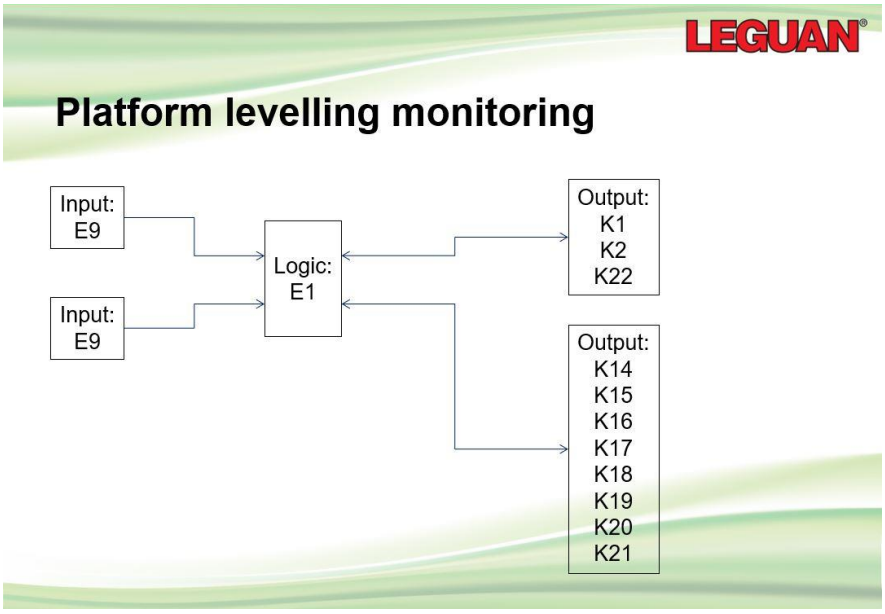


Figure 39 Platform levelling monitoring

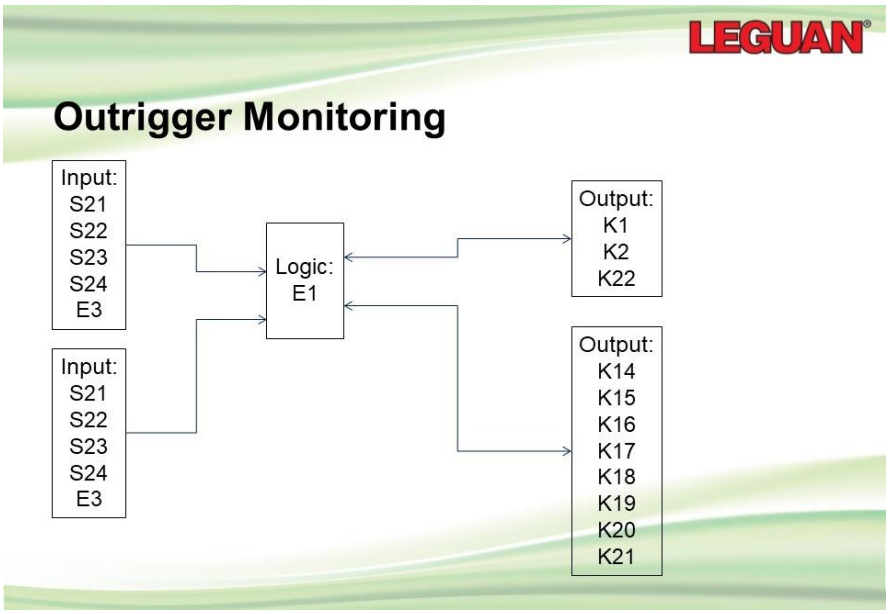


Figure 40 Outrigger monitoring

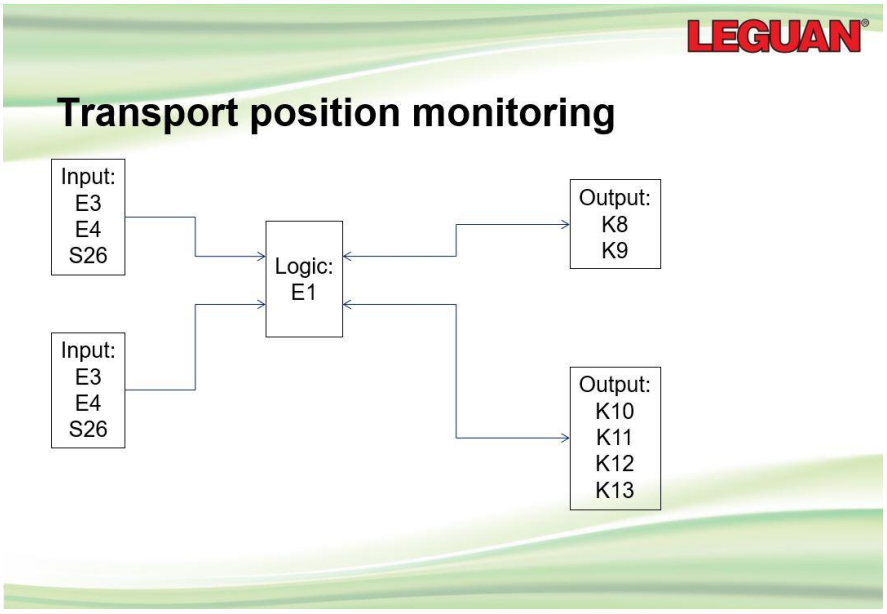


Figure 41 Transport position monitoring

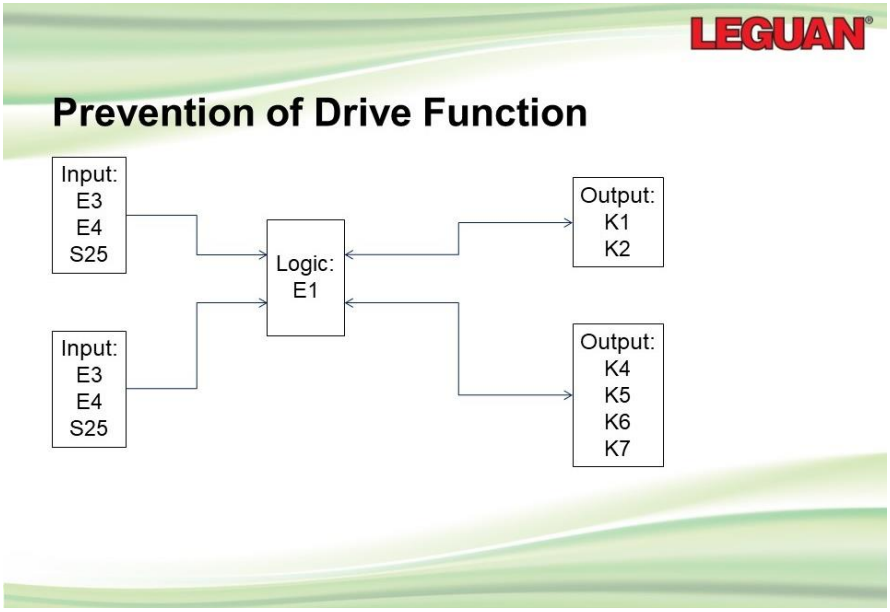


Figure 42 Prevention of drive function

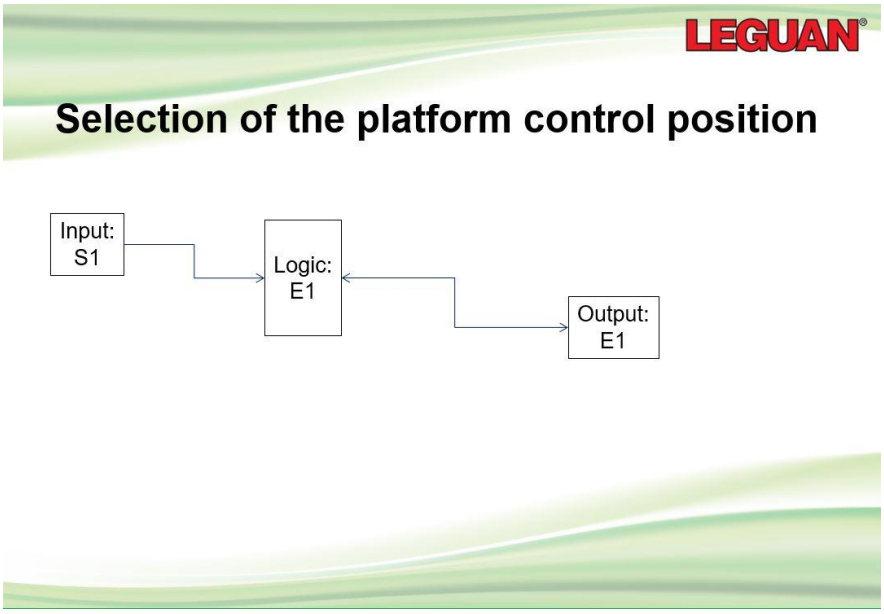


Figure 43 Selection of the platform control position

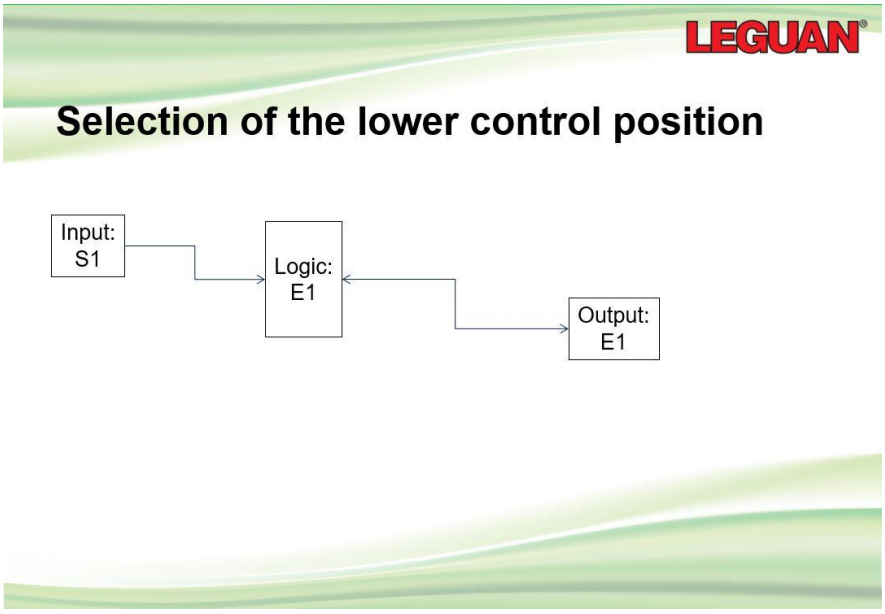


Figure 44 Selection of the lower control position

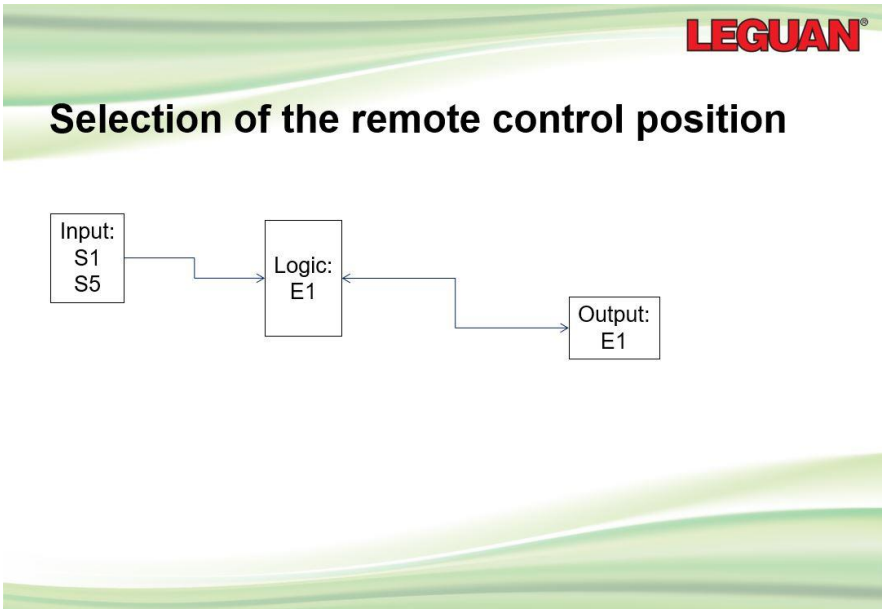


Figure 45 Selection of the remote-control position

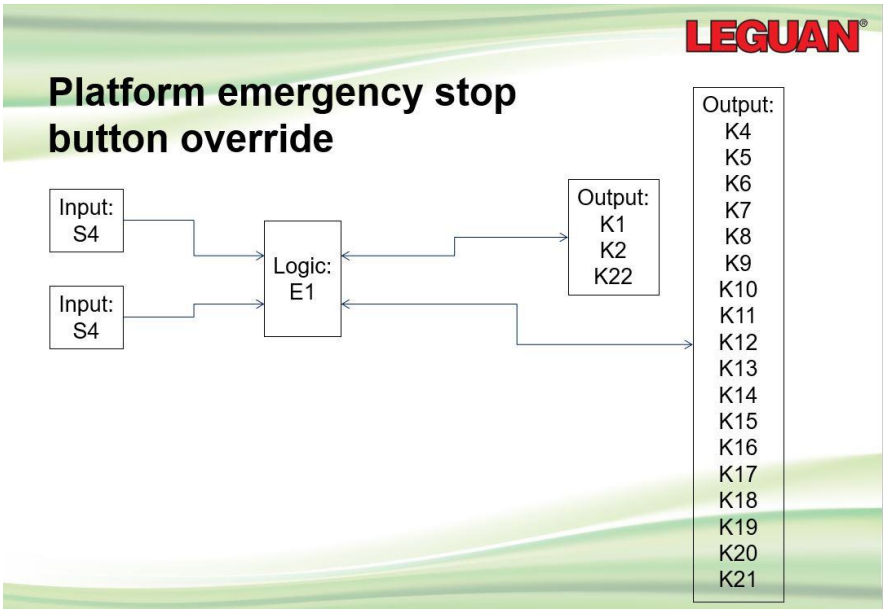


Figure 46 Platform emergency stop button override

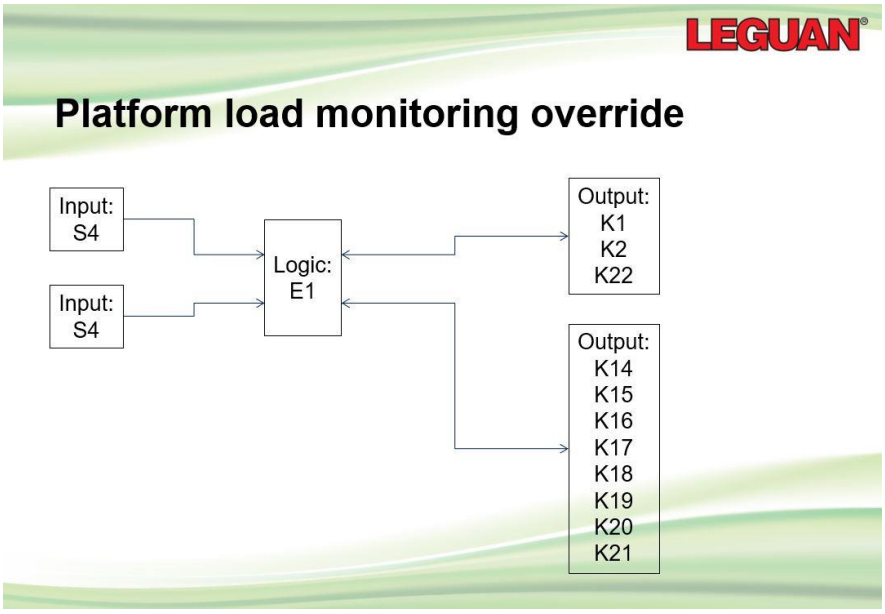


Figure 47 Platform load monitoring override

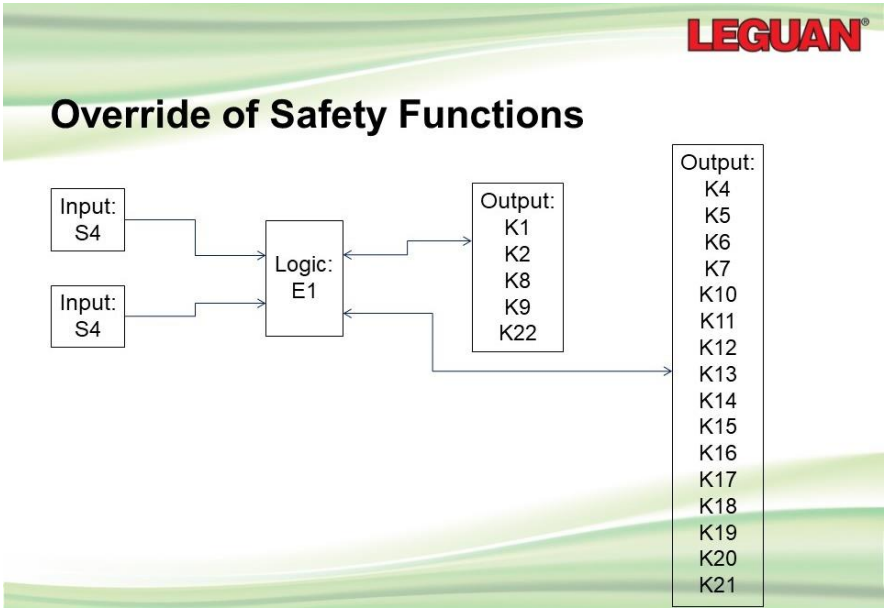


Figure 48 Override of Safety Functions

15. **PERFORMED SERVICE**

It is advisable to write down all service operations that are included in the periodical service. All services that have been performed during the warranty period must be noted on the list below, otherwise the manufacturer's warranty will not be valid. The service operations mentioned in the maintenance schedule on page 24 must be recorded as follows: FIRST SERVICE, 1 MONTH SERVICE, 6 MONTH SERVICE, ETC.

Performed service (e.g. 12 month service)	**Operating hours**	**Performed by**	**Date**	**Additional information**

Performed service (e.g. 12 month service)	Access Platform operating hours	Performed by	Date	Additional information