LEGUAN®

165

Operator and Service Manual

2016-

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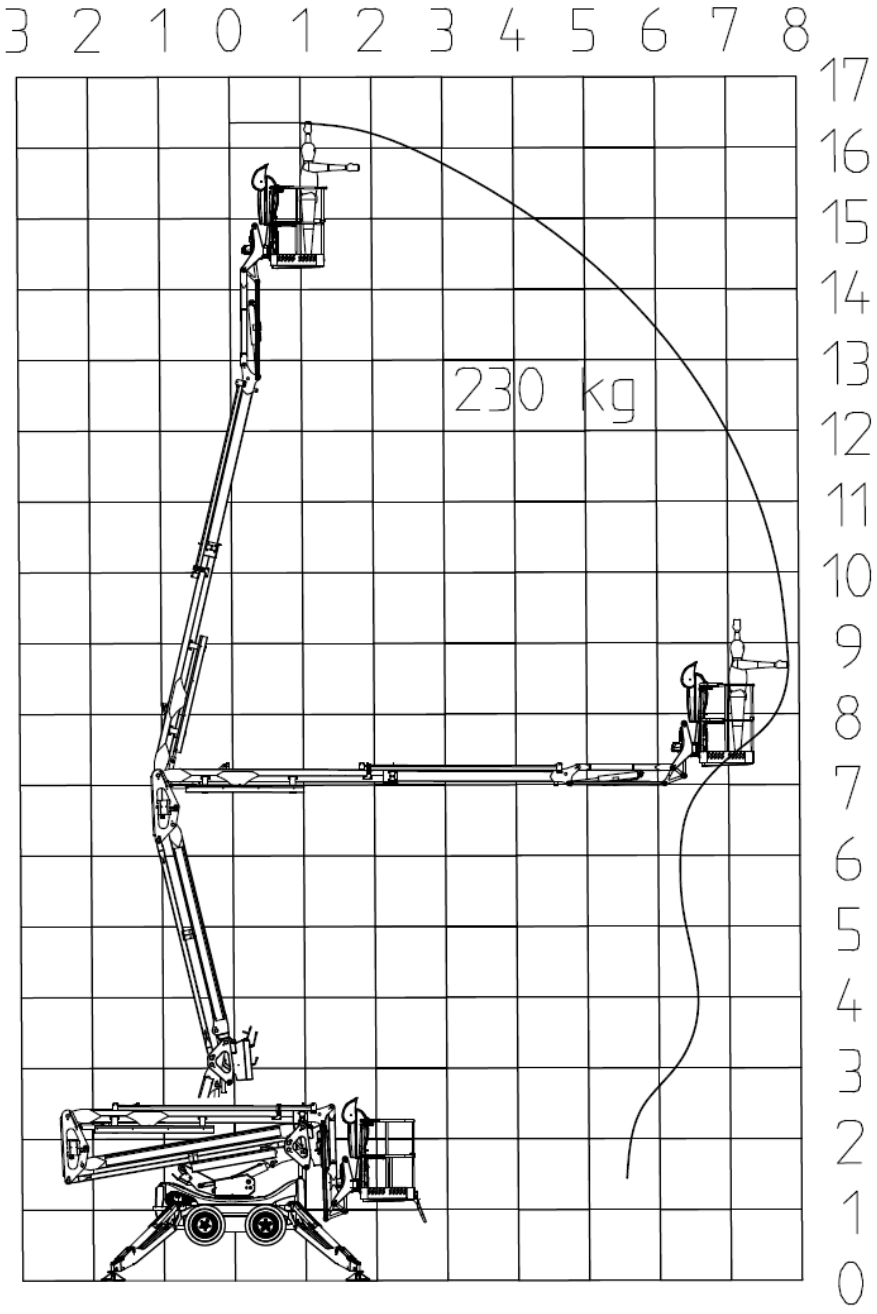

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1. INTRODUCTION AND WARRANTY CONDITIONS

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 that you read and understand the contects of this manual completely before operating the access platform. This will improve your operating and maintenance efficiency, help avoid breakdowns and damage and extend your machine's life.

Pay special attention to this symbol. It indicates important safety factors that require special attention. Every operator must read and understand this manual before starting operation, and the instructions in this manual must be followed. If you are lending the access platform out to somebody, make sure that he familiarises himself with and understands 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. They will provide your machine with the maximum life expectancy and ensure optimum safety.

The manufacturer does not warrant any damages which are the result of using the access platform.

It is not possible to give explicite 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 manufacture does not accept any responsibility for consequential losses resulting from the use of this self propelled access platform.

1.2 Warranty conditions

This product is warranted for a period of twenty-four (24) months.

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 ending date of 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 doesn't make a complaint within 14 days of delivery of this access platform, it is considered that the sale is closed and the warranty period has started.

Warranty is limited to the repair of a faulty access platform without cost at an authorized Leguan service workshop. 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.

Warranty does not cover:

- damages caused by wrong or negligent use of this product, or mischief
- any repairs or modfications to the product, performed without the prior authorisation of the manufacturer
- damages caused by not following service and maintenance instructions
- adjustments, repairs and spare parts replacements caused by normal wear
- damages caused by excessive loads on the access platform, sudden unexpected incident, natural disaster
- damages caused by external mechanical or chemical reasons (paint damages, especially caused by stone chips, air and environmental pollution and strong cleaning agents)
- eventual visible patterns or unevenness of painted surfaces
- warranty claims that haven't been sent to the manufacturer within 14 days from the date the buyer has noticed the defect. In all conditions the buyer shall act so that his action doesn't make the eventual 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 which 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	***230 KG***
MALLI MODEL	***L165***	NOSTOKORKEUS PLATFORM HEIGHT	***14,4 M***
SARJANUMERO SERIAL NR	***00XXXXX***	VALMISTUSVUOSI 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/EY

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

Teknisen tiedoston on valtuutettu kokoamaan:
Storage address of original documents:
Finland

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Ilmoitettu laitos/Notified Body — **INSPECTA TARKASTUS OY, NB0424**

Testausraportti/Test Report — **No. 16004**

Paikka / Place, Päiväys / Date
Ylöjärvi, FINLAND — xx.xx.20xx

Valmistaja / Manufacturer:
LEGUAN LIFTS OY
Ylötie 10, FI-33470 Ylöjärvi, Finland

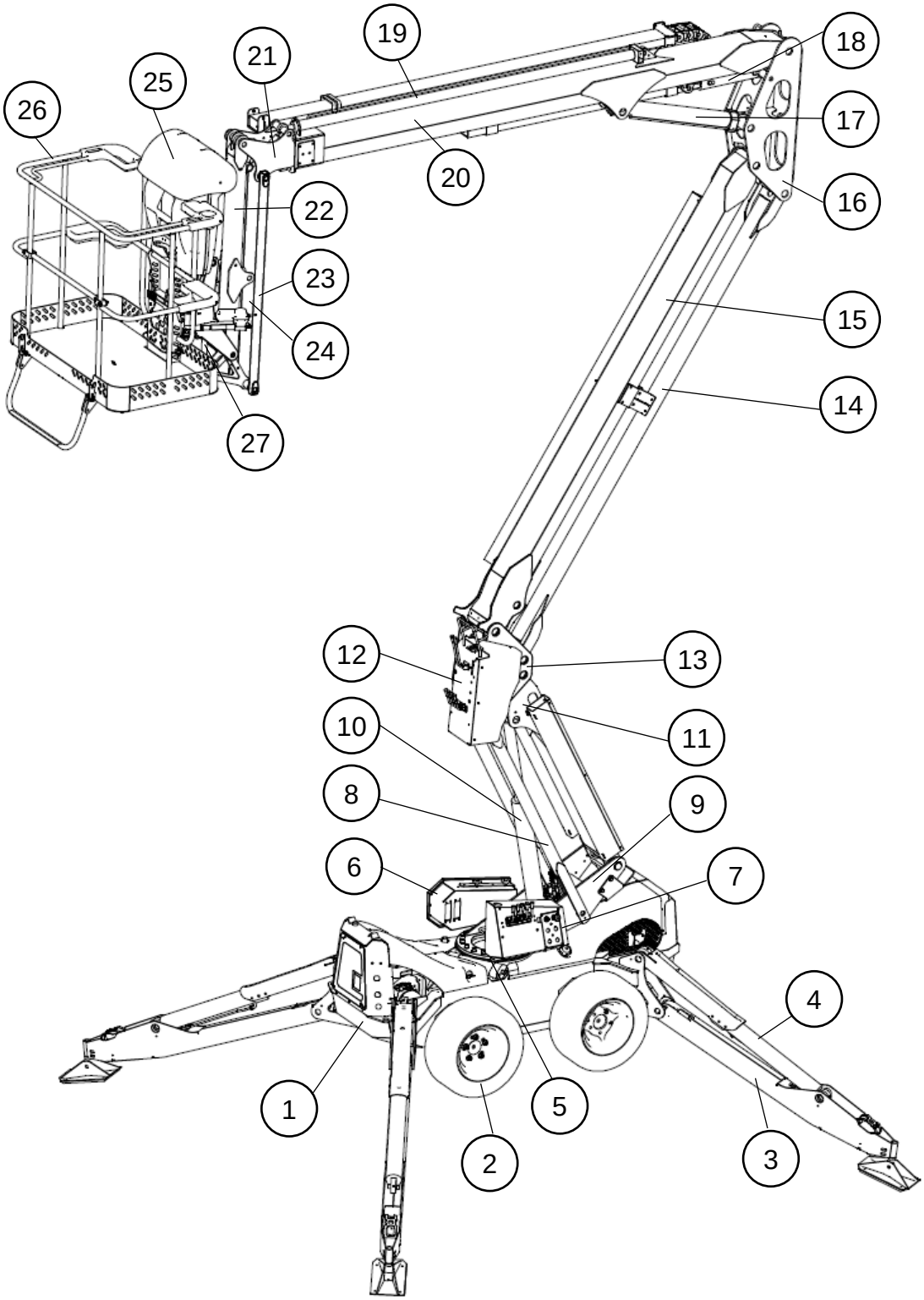
_____
XXXXX
Toimitusjohtaja / Managing Director

2. GENERAL INFORMATION

LEGUAN 165 is a self propelled Mobile Elevating Work Platform – or commonly called access platform, designed for indoor and outdoor use. An access platform is destined for lifting of persons and their equipment only. It is not allowed to use an access platform as a crane.
LEGUAN is designed and built in accordance with the international safety standards and MEWP (Mobile Elevating Work Platforms) standars.

The picture below (Picture 1) shows the main parts of this access platform:

1. Chassis
2. Transmission, either with wheels or with crawler tracks
3. Outrigger
4. Outrigger cylinder
5. Slewing ring
6. Connection box of control system with emergency lowering buttons
7. Lower controls (option)
8. Self levelling bar 1
9. Pedestal
10. Lift cylinder
11. Lower boom 1
12. Valve box
13. Linkage piece 1
14. Self levelling bar 2
15. Lower boom 2
16. Linkage piece 2
17. Upper boom cylinder
18. Self levelling ”slave” cylinder
19. Telescoping cylinder
20. Upper boom
21. Telescoping boom
22. Jib boom
23. Self levelling bar 3
24. Jib boom cylinder
25. Controls box at platform
26. Platform
27. Platform self levelling cylinder

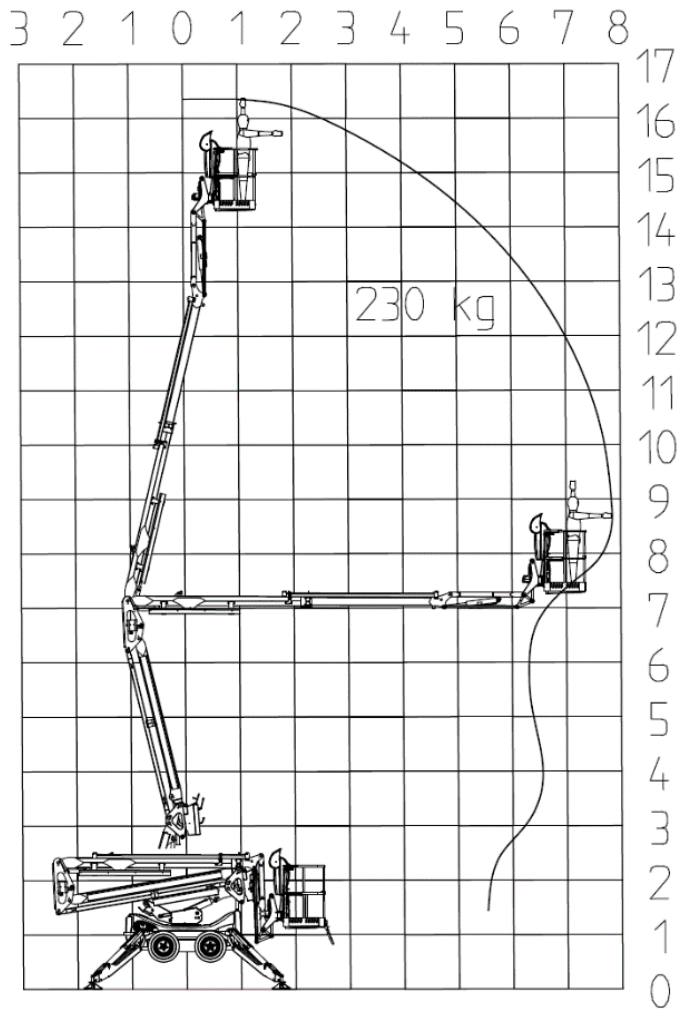


Picture 1. Leguan 165 Access Platform, main parts

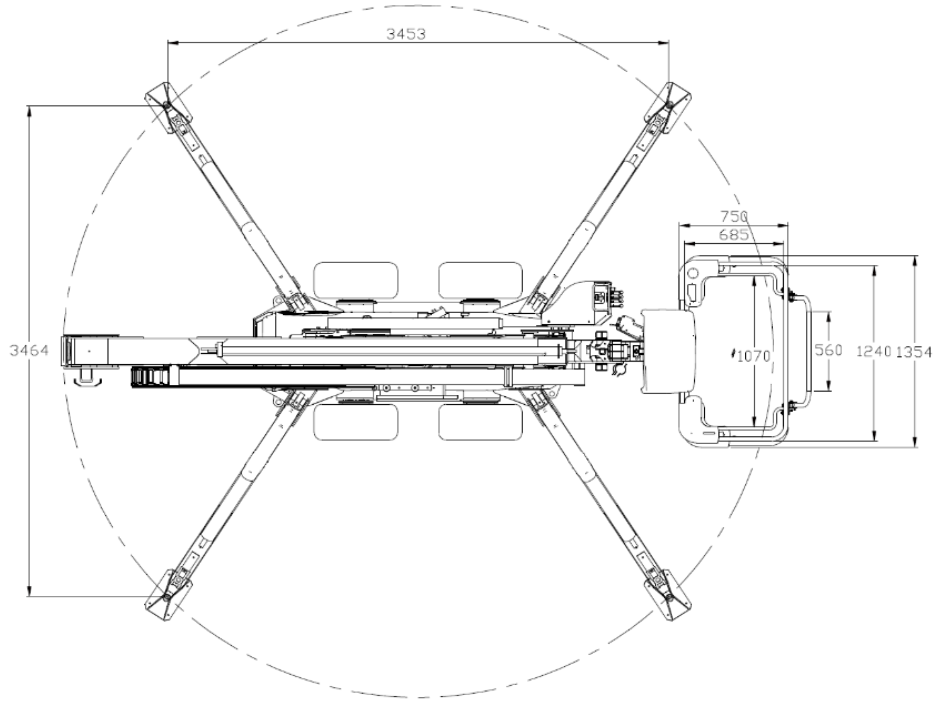
3. TECHNICAL SPECIFICATIONS, LEGUAN 165

Working height		16,4 m
Max. platform height		14,4 m
Max. outreach		7,85 m
Safe working load		230 kg
Transport length		5051 mm
Transport length without platform		4301 mm
Transport height,	23” wheels	2113 mm
	Tracks	2113 mm
Width,	23x10.50-12 wheels	1250 mm
	Tracks	1242 mm
Platform dimensions, W x L, 2 persons		1330 x 750 mm
Platform rotation		± 45º
Slewing		360º
Gradeability		35 % (20º)
Max. allowed levelling inaccuracy		1,0º
Support dimensions (outrigger spread)		3464 x 3453 mm
Max. gradient of slope for set up		21 % (12,0º)
Weight, depending on equipment		2520 - 2600 kg
Drive system		4WD or rubber tracks
Drive speed		max. 2,6 km/h
Speed when drive motors connected in series		max. 5,2 km/h
Lowest operating temperature		-20 ºC
Starter battery / Electric system		12V
Sound power level at platform controls, L_{WA}		75 dB
Max. Outrigger force		14 kN

Reach diagram and support dimensions are pictured on page 10 (Pictures 2 and 3).



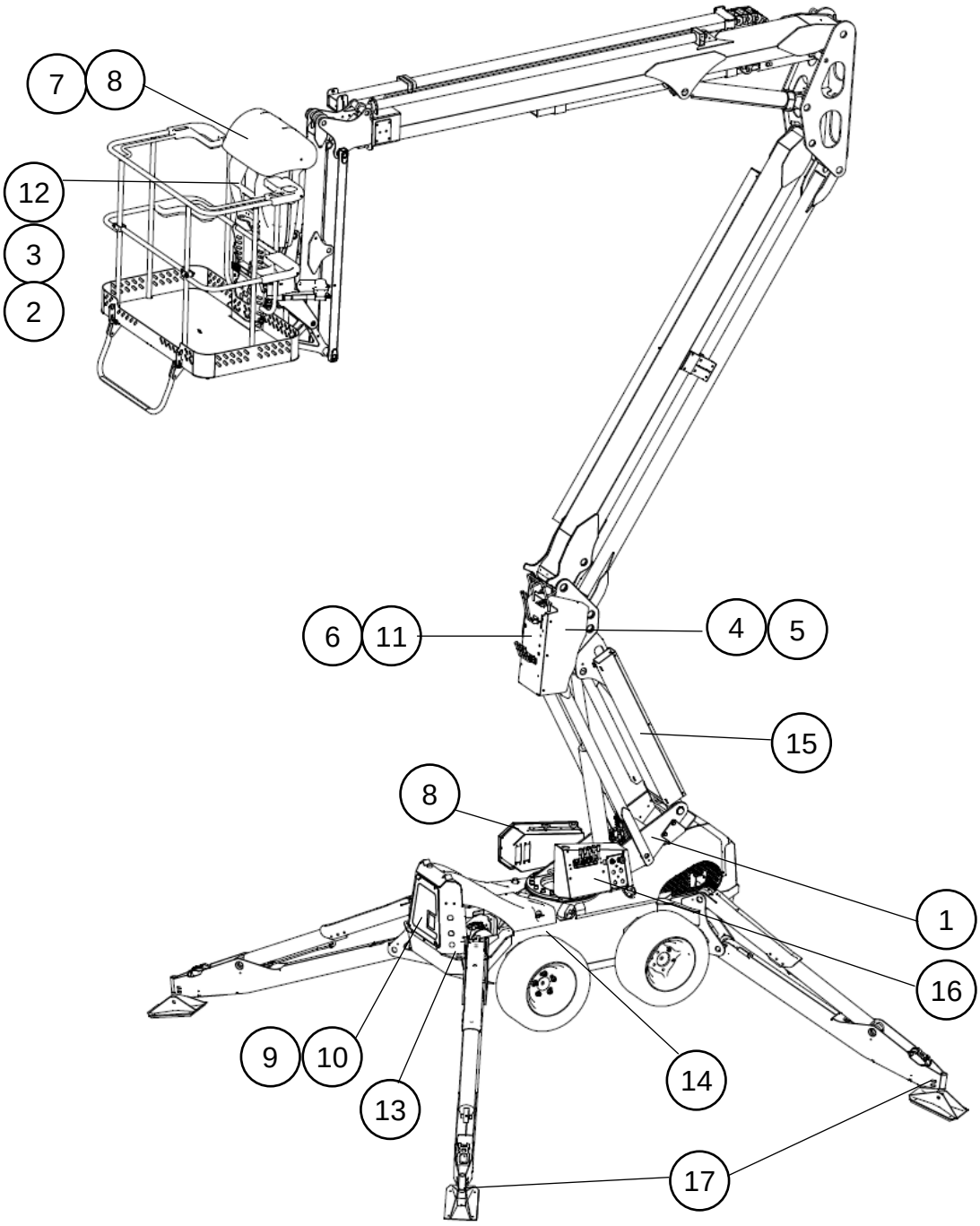
Picture 2. Reach diagram



Picture 3. Support dimensions

4. SIGNS AND STICKERS

1. Type plate and CE marking
2. Safe working load (SWL)
3. Max. horizontal force and wind speed
4. General user instructions
5. Daily inspection
6. Always use outriggers
7. Symbol stickers (pictograms) of controls
8. Emergency lowering
9. Residual current device
10. Voltage of electric motor
11. Max. support force
12. Distance from energized electric wires
13. Tie down points
14. Tyre pressure
15. LEGUAN 165 sticker
16. Lower controls' stickers
17. Lift points (4 points)



Picture 4. Leguan 165 signs and stickers

5. SAFETY INSTRUCTIONS

The operator must know and follow all safety instructions. The operator must receive sufficient instructions in ordert to be able to use the lift correctly and safely. This Operators Manual must always be kept in the box on the platform.

ATTENTION !

In order to prevent unpermitted use of the access platform, take the main battery disconnect key that is located on ground level and the engine ignition key, if fitted, with you after ending operation.

CAUTION! DANGER !

THE ACCESS PLATFORM IS NOT VOLTAGE INSULATED. NEVER USE IT NEAR ANY VOLTAGE CARRYING PARTS OR DEVICES. DO NOT DRIVE ANY PART OF THE ACCESS PLATFORM OR PLATFORM CLOSE TO UNINSULATED CABLES OR OTHER VOLTAGE CARRYING PARTS OR DEVICES.

WHEN WORKING WITH THE ACCESS PLATFORM THE OPERATOR(S) MUST ALWAYS WEAR CERTIFIED SAFETY HARNESS WHICH IS PROPERLY CONNECTED TO THE PLATFORM.

5.1 Before starting operation 

- All warnings and labels must be read carefully.
- Only persons with min. 18 years of age are allowed to use the access platform. They must have received sufficient operating instrucions.
- Operator must know all the functions of this access platform as well as the Safe Working Load, loading instructions and safety instructions.
- If there is heavy traffic in the working area, it must be fenced off widely enough and marked with a fence or with a line. Road traffic regulations must be followed as well.
- Make sure that there are no bystanders in the working area.
- Do not use faulty access platform. Inform about all faults and defects and make sure that they are repaired before starting operation.
- Follow check and service instructions and intervals.
- The operator must check this access platform visually at the beginning of each work shift. This check is necessary in order to make sure that the machine is all right before making the daily inspection prior to starting operation.
- If combustion engine is used indoors, make sure that the ventilation is sufficient.

5.2 Risk of tipping over ⚠

- Safe working load (230 kg), number of persons (2) and additional load on the platform must never be exceeded.
- 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 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 grounds use extra support plates under the outriggers (plate dimensions 400 x 400 mm).
- Do not use a ladder, chair, stool, scaffolding or by any other means try to increase reach capability of this access platform.
- In case the platform has got 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 of fire brigade if necessary), only after that one can try to lower the platform by using the emergency lowering.
- Do not try to increase the area of the platform or the load. Increasing of the area exposed to wind will weaken the stability of the access platform.
- Weight must be equally distributed on 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 or an elevator. This access platform is intended for lifting of 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 air filled make sure that there is correct pressure in the tyres.
- In order to ensure the safe operation of this access platform the manufacturer has conducted approved tests for the **LEGUAN 165** in accordance with the standard EN280:2015 : static stability test in accordance with paragraph 6.1.4.2.1 and dynamic overload tests in accordance with paragraph 6.1.4.3 of the EN280:2015.

5.3 Risk of falling ⚠

- The operator(s) must always wear certified safety harnesses when operating this access platform. The harnesses must be connected to the fastening point at platform mounting bracket.
- Do not stretch or reach out over the handrails. Stand steadily on the platform floor.
- Keep platform floor clean.
- Always close the platform gate before starting operation.
- Do not drop or throw any material down from platform.
- It is not allowed to go to or step out from the platform when the booms are lifted.

5.4 Risk of collision ⚠

- Adjust the drive speed so that it is safe with regard to the ground conditions.
- 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 an eventual collision situation.
- When operating the lift beware of eventual limited visibility and trapping hazard.

5.5 Risk of electric shock ⚠

- This access platform is not voltage insulated nor protected against contact with voltage carrying parts, or when approaching them.
- Do not touch the machine if it comes in contact with voltage carrying electric line.
- Persons on the platform or at ground level must not touch or operate the platform before power has been cut off from the electric line.
- During welding repairs, it is not allowed to use any part of this access platform as earth conductor.
- Do not use this access platform during thunderstorm or high winds.
- Leave clearance to electric lines taking into account movements of platform, movements of electric line, and high winds and gusts.

The minimum safety clearances to voltage carrying electric lines are shown in the following table. These clearances must be respected.

VOLTAGE	MIN. DISTANCE
0 – 1000V	2 m
1- 45 kV	3 m
110 kV	5 m
220 kV	5 m
400 kV	5 m

5.6 Risk of explosion / fire ⚠

- It is not allowed to start the motor/engine in a place where one can smell LPG, petrol, solvent or other flammable substance.
- Do not fill with fuel when the engine is running.
- Charge the battery only in places with sufficient ventilation, where there is no open fire or no works which could cause spark emissions (like welding).

5.7 Daily inspection before starting operation

- ground
- supports
- horizontal levelling
- emergency stop button
- emergency lowering
- controls
- driving area
- platform
- oil leakages
- working area

ATTENTION! If you note faults or missing equipment on this access platform, do not put it into operation 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 grounds and potholes in particular.

5.8 Use of emergency stop switches

- To use an **emergency stop** or **killswitch** just press down the switch's red cap (Picture 5 & 9).
- Killswitches are used in emergency situations when normal shutting down procedures are not possible. For example in accidents and other dangerous situations involving the lift or its user.
- Killswitches shut down the engine but outrigger monitoring stays switched on.
- Killswitches in upper and lower control panels can be used at any time.
- Killswitches can be returned to neutral position by twisting its red cap counterclockwise.

6. CONTROLS AND SWITCHES

6.1 Controls in platform

The controls and indicators on the control panel at platform may be slightly different in different models. Indicators and switches that are marked as options are not mounted on all models.

Picture 5. Upper control panel's levers, switches and buttons

1. Ignition switch: Stop - ON / Glow (diesel) – Start
2. Selector switch of propelling: electric motor or combustion engine (option)
3. Platform rotation
4. Function selector switch (Drive – Outrigger operation – Boom operation)
5. Glow indicator (diesel engine)
6. Low fuel level indicator
7. Platform overload indicator
8. Emergency stop switch
9. Control lever, lower boom
10. Control lever, upper boom
11. Control lever, slewing
12. Control lever, telescope boom
13. Control lever, jib-boom
14. Control lever, platform tilting
15. Drive speed selector switch (option)
16. Outrigger monitoring override button
17. Horn (option)
18. Control panel / platform worklight switch (option)
19. Emergency lowering selector and button
20. Engine overheating indicator
21. Boom center position indicator (Slewing)
22. Engine oil pressure indicator

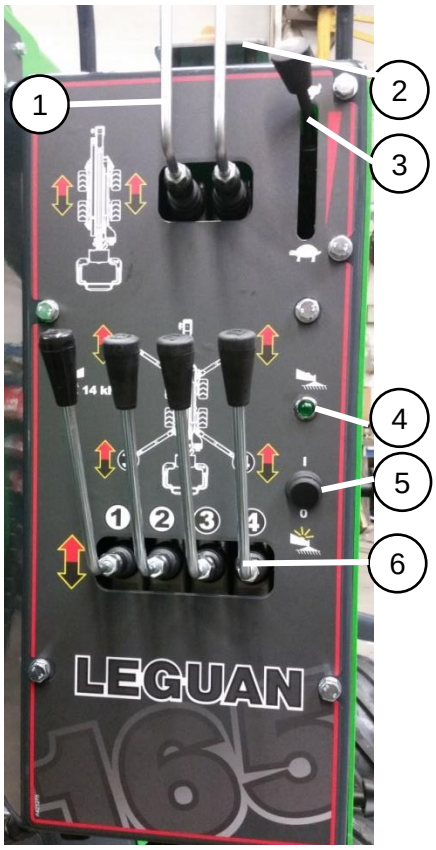
Outrigger monitoring override button (Picture 5, (16)) allows momentary boom operations while outriggers are not in support position. When button is pressed, booms can be operated for 3,5 seconds at a time if booms are't in transport position. The button is locked with a bolt and the locking must be restored to its place after use. **Override button is for emergency situations only!** For example if platform leveling cylinder has leaked and the platform has slipped to the ground and use of outriggers to lift the platform is not possible due to small storage space.

6.2 Controls at ground level

6.2.1 Battery disconnect switch at ground level

Battery disconnect switch connects and disconnects the circuit from the + line of the battery. When main current is switched off, all low voltage functions are cut off except for emergency lowering. DO NOT switch off the main current when the booms are not in transport position!

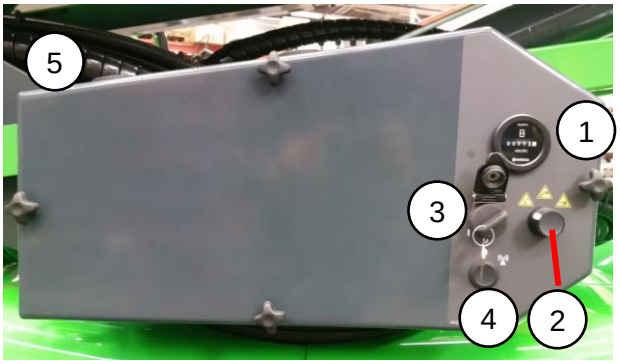
6.2.2 Controls on the control valve box at ground level



1. Drive control levers
2. Water level
3. Hand throttle
4. Outriggers in support position -indicator
5. Outrigger blinkers' on/off switch (option)
6. Outrigger control levers

Picture 6. Controls on control valve box

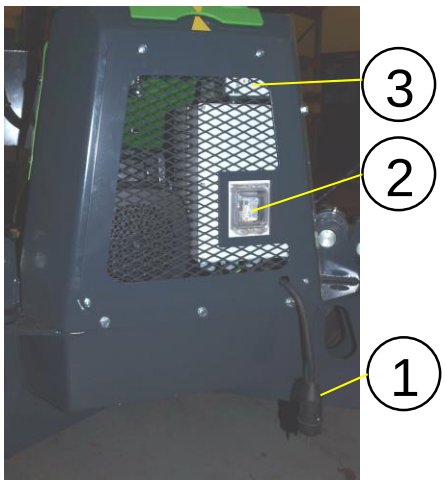
6.2.3 Emergency lowering buttons at ground level



1. Hour meter
2. Emergency lowering selector switch and button (lower boom, upper boom, jib)
3. Ignition key
4. Remote control switch (option)
5. Crank, manual emergency operation of slewing

Picture 7. Main electric box with emergency lowering buttons

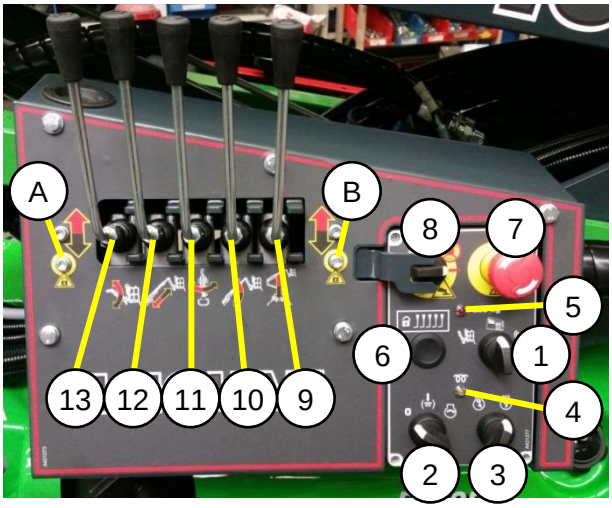
6.2.4 230V - Connection and switches (Option)



Picture 8. 230V use

1. 230V 50Hz, 16A connecting cable
2. Switch of residual current device. The switch must be in ”ON” position in order that any 230V device will work, including the 230V outlets. With the TEST button one can test the function of the residual current device, and also if there is 230V current coming from the network. If the residual current does not go off when pushing the TEST button, it is either defect or then there is no current coming from the network (the connecting cable must be connected of course).
3. Battery charger. There are two indicators on the charger which show the charge level of the battery: Yellow indicator on = low charge; Yellow and green indicator on = battery almost fully charged; Green indicator on = battery fully charged / trickle charge

6.2.5 Lower control panel (Option)



Picture 9. Lower controls

1. Selector switch, upper / lower controls
2. Ignition switch: Stop – ON – Start
3. Power source: Diesel engine or electric motor (option)
4. Glow indicator (diesel)
5. Platform overload indicator
6. Dead man button (option)
7. Emergency stop switch
8. Outrigger monitoring or Emergency stop & platform load monitoring override switch
9. Lower boom lever
10. Upper boom lever
11. Slewing lever
12. Telescope lever
13. Upper boom lever

Use of lower controls:

1. The ignition switch at main electric box on the pedestal (picture 7) must be turned to ”ON” position.
2. Boom operations only work when the mode selector switch in platform (picture 5) is in Boom selection.
3. Select with the selector key switch no. 1 either lower controls or upper controls at platform. The machine can be operated either with lower or upper controls, but not with both at the same time.
4. When lower controls are selected the engine/electric motor can be started and stopped with the ignition switch no. 2 at lower controls.
5. When the engine/motor is running the booms can be operated – except for platform tilting – with the control levers of lower controls.

ATTENTION! The EMERGENCY STOP switch at lower controls works always, regardless of the position of the selector switch of lower/upper controls.

⚠

6.2.6 Safety functions override in emergency situations

- Safety functions override switch (Picture 9 (8)) allows the user to override the emergency stop switch in the platform and the platform load monitoring OR outrigger monitoring. Override switch works only when lower controls have been selected (Picture 9 (1))
- Outrigger monitoring override can only be used when all outriggers are raised from the ground and Drive mode is selected in the platform's function selector switch (Picture 5)
- Outrigger monitoring override is only meant for lifting the platform when the platform has tilted down in long term storage and outriggers cannot be used safely
- The switch has to be held turned to desired function (see first line), during which the booms can be operated
- Safety functions override switch can only be used in extreme emergencies, for example if lifts operator has lost consciousness in the platform, emergency stop switch has been pressed and the operator has to be lowered for their safety
- To use the switch open screws A and B (picture 9) and slide the protective plate to the left to allow the switch to be moved
- When using safety safety functions override switch it is possible to operate the machine outside its stable working zone, which creates a falling hazard! The manufacturer is not responsible for the lifts falling when safety functions override switch has been used!

7. STARTING THE ENGINE / ELECTRIC MOTOR

Read carefully this Operators Manual and also the Operators Manual for the engine before starting operation. Read and understand all safety instructions before starting operation.

It is the operator's responsibility to follow all operating and safety instructions.

This access platform is destined for lifting of persons and additional load only. Lifting of materials is unsafe and not allowed.

If several persons are operating this machine during the same work shift, all of them must be trained and they must follow all operating and safety instructions.

- Switch on the battery disconnect switch.
- When using the electric motor connect the 230V cable and check also function of residual current device. With the TEST button you can also check that there comes 230V to the machine.
- Make sure that the booms are down in transport position. If necessary, press on the emergency lowering button with each boom setting (Picture 5 (19)).
- Check emergency stop switch; release by turning the switch if it is switched on
- Fasten safety harnesses on the fastening points at platform mounting bracket and close the gate.
- Select desired propelling with the switch no. 2 at platform (electric motor/combustion engine, see page 15, picture 5) and select slower drive speed.
- If electric motor is selected, start the electric motor by turning the ignition switch to the "Start" position to the right.

Starting of combustion engine:

- Adjust the hand throttle (lever no. 3, page 16) to about ¾ throttle.
- If ambient temperature is below +5ºC preheat the diesel engine in the glow, or (I) - position (Picture 5, (1)) of the ignition switch at the platform (see picture 5, page 15). When the switch is turned to glow position the yellow indicator (picture 5, (5)) lights up. Preheat until the indicator goes off.
- The glow is on automatically for 10 seconds but if ambient temperature is very low you should use glow for 20…25 seconds. To do this, turn the ignition switch to 0 and back to 1 after first glow period ends
- When the yellow indicator goes off start the engine by turning the ignition switch to the right to "Start" position.
- Once the engine has started reduce throttle to desired engine revs level.

ATTENTION! The engine must always be stopped with the ignition switch in the platform, by turning the switch to "Stop" position.

7.1 Additional instructions for winter use

The minimum allowed operating temperature for the lifter is -20 °C. Do the actions listed below when the temperature is below 0 °C in addition to the normal actions when starting to use the lift.

1. Check that the limit switches are free from snow, ice and dirt.
2. See page 20 “**Starting of combustion engine”** for instructions on starting the engine in cold weather
3. Let the engine run for a few minutes before moving the machine.
4. First use drive mode for a while, then use outriggers and lastly use the booms. This way the oil in the whole system heats up and warm oil flows to the cylinders

8. DRIVE CONTROL

ATTENTION! The machine can only be moved when the booms are down in transport position!

When driving with the machine special attention must be paid to the following things:

1. **Drive on solid and level grounds only**, with sufficient carrying capacity.
2. **Working materials and tools *must be fastened and secured*** against rolling and/or sliding.
3. **Safety harnesses must always be attached to the fastening points at platform mounting bracket** when the engine or electric motor is running.
4. Operate the control levers smoothly, avoid jerky movements.

Instructions for driving:

1. Start the engine and turn the function selector switch no. 4 at platform (see page 15) to ”Drive” position.
2. Make sure that the drive speed area selector (switch no. 15) switch is in desired position. **Changing of drive speed area is not allowed when the machine is moving!**
3. Driving forward and backward happens by moving the levers of the drive control valve (see page 16). By pushing the left lever left side wheels turn forward; by pulling the lever left side wheels turn backward. Right side wheels turn in the same manner by pushing and pulling the right side lever.
4. Turning of the machine is based on the skid steer principle: When you want to turn the machine either to the right or to the left, push/pull the drive control lever on the inner curve side. By doing this the inner wheels brake and consequently the machine turns.

If you want to turn the machine on the spot, push one side control lever and pull the other side control lever to the extreme end position. They way the machine moves and turns depends also on ground conditions – start the driving carefully and at low speed.

Transmission of the LEGUAN 165 is hydrostatic. Each wheel is equipped with a hydraulic motor - the machine is four wheel drive.

ATTENTION! <u>Learn how to drive with the machine at a low speed.</u> Operate the drive control levers with ease in order to avoid abrupt and jerky movements. When driving pay special attention to stability and the dimensions, especially length, of the machine.

NOTE! TOWING THE ACCESS PLATFORM IS FORBIDDEN, RISK OF DAMAGE!

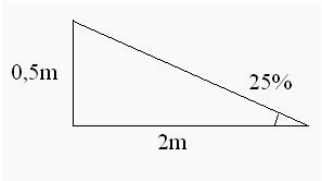
8.1 Defining the gradient of the slope ⚠

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.

Put the wood stick on the gradient. Put the water level on the lower edge of the stick and lift the stick until it is in 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 stick length = 2 m
Height = 0,5 m
(0,5 ÷ 2) x 100 = 25 % slope



ATTENTION! When crossing slopes always drive up or down the slope, not sideways. If you have to 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.

8.2 Crawler track chassis

General information and lifespan of rubber tracks
An access platform with skid steer chassis, equipped with crawler track chassis, offer many advantages compared with a machine on wheels. However, certain things regarding working and working environment must be taken into account with an access platform on tracks.

In order to secure the maximum life expectancy 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 the way of working. The operator can increase the lifespan by following the below mentioned operating and maintenance instructions. If the access platform is being used in terrains with stones or gravel, on demolition sites where there is concrete, or in an environment with scrap metal, the lifespan of the track system can be significantly reduced. Because of this damages on the tracks, track rollers or crawler track chassis, caused by operation in such environments, are not covered by warranty.

NOTE! Always ensure that rocks, gravel, snow or other materials don't build up between the rubber track and the track wheels. Risk of damage to the track chassis!

Nuts sprockets
It is important to check tightening of nuts on the rear sprocket (bigger track wheel) about 2 days after putting the access platform into operation. When driving with a new machine the parts in the track system adapt to each other and "find their place" so to say. Because of this it is possible that the nuts loosen during operation. Loose nuts can cause serious damage to the crawler track chassis.

- Tighten the nuts first to **200 ± 25 Nm** diagonally opposite
- After that retighten immediately to **250 ± 25 Nm** final torque diagonally opposite
- It is recommended to check tightness of nuts once a week

8.2.1 Instructions for working environment

In order to increase 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 this kind of 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, like broken stones or concrete waste.** This kind of sharp objects can cut or damage the rubber tracks permanently. Conditions which can damage tyres can also damage rubber tracks. Damaged tracks can normally not be repaired, they must be replaced. Warranty doesn't cover tracks that get damaged in this kind of conditions.
- **Work sites with corrosive substances (fuels, oil, salt or fertilizers).** Corrosive substances can oxizide the metal parts in rubber tracks. If such substances come in contact with the surface of the rubber track, the tracks must be flushed with water immediately after ending operation.

8.2.2 Operating instructions

- **Change turning direction as often as possible.** Turning continuously only in one direction will cause uneven wear of the sprocket and the rubber track.
- **Check condition of the track system regularly.** Excessive wear on the rollers, idlers, sprockets and bearings can damage the tracks.
- **Avoid driving sideways on a gradient.** Always drive the slopes straight up and down, and turn on flat even surface only. 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 continuous 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 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.

9. OPERATION OF THE OUTRIGGERS

Lifting the booms without setting down the outriggers is never allowed!

Outriggers shall be driven down to support position as follows:

1. Make sure that the function selector switch no. 4 at platform's control panel (see page 15, picture 5) is in outrigger position

2. Make sure that the green indicator no. 4 (p. 16, picture 6) is not lit.

3. Deploy the outriggers down by pulling the levers of the control valve (see page 16). It is possible to deploy only one outrigger at the time but it is recommended to deploy two outriggers (front or rear) at the same time. Make sure that the ground under every outrigger is solid enough – put extra plates on the ground if necessary.

4. Drive the outriggers down on the ground firmly enough. They must be driven down so much **that all wheels lift off the ground!** (Usually it is not necessary to push the outriggers further unless it is necessary to reach higher). Make sure that the wheels do not touch the ground before starting to lift the booms.

5. When all outriggers are firmly on the ground and wheels lifted off the ground, check the horizontal position of the lift with the water level which is mounted on top of the control valve (p. 16, picture 6). **It is not allowed to lift the booms if the machine is not level!**

6. After the machine has been levelled and supported correctly, the green indicator that allows lifting of the booms is lit, turn the function selector switch to boom lifting position.

If the green indicator of boom lifting is lit when the outriggers are not correctly deployed, the operation of this access platform is not allowed! Contact nearest Leguan service!

10. OPERATION OF THE BOOMS

Before starting to lift the booms:

1. Make sure that all four outriggers are on solid ground, the machine has been levelled correctly and that the green indicator that allows lifting of the booms is lit. If the green indicator is not lit boom operations are not possible.
2. Turn the function selector switch no. 4 at platform to boom operation position.
3. Adjust the hand throttle to slightly higher than idling.
4. The booms are operated with the control levers of the boom control valve at platform – or with the control levers of lower controls, if fitted.
5. **LEGUAN 165** is equipped with an overload control system which prevents boom movements in case the 230 kg safe working load is exceeded. Should this happen, there is an audible warning signal and an indicator lights up at the control panel**.** The booms can be operated again after the overload has been removed from the platform. Never overload the platform!

ATTENTION! Always lift the lower booms first from transport support before operating other movements. When lowering the booms make sure to drive them straight down to transport supports.

Thanks to the fully hydraulic controls boom movements are very smooth, exact and stepless. Operate the control levers with ease and without hesitation – learn to operate the booms precisely.

Platform self levelling system keeps the bottom of the platform level automatically.

ATTENTION! If the level position of the platform must be adjusted – for instance in case the machine has not been used for a long time and the platform has tilted – operate the control lever of platform self levelling carefully, especially when the booms are up.

11. EMERGENCY LOWERING ⚠

If the power supply for some reason cuts off (e.g. no fuel or electricity cuts off, or connecting cable fails) the booms can be lowered as follows:

1. The lift is equipped with an electric emergency lowering system. There are emergency lowering buttons both on the platform and at ground level (p. 15, picture 5 and p. 17, picture 9). By pushing the button the selected boom comes slowly down as long as the button is being pushed. Emergency lowering takes it power directly from the battery – it is not dependent on the position of the main switch. Emergency lowering valves are protected with a 10A fuse which is located in the connection box on the side at ground level.
2. Before lowering the booms to transport supports always make sure that they are properly aligned and going straight down to transport supports. If necessary, the booms can be rotated at the end of the slewing ring shaft either with a 22 mm key or with a socket wrench or with the crank that is located on top of the emergency lowering controls box at ground level. Switch off main current before rotating the booms manually.

ATTENTION! Always remember to remove the tool after rotating the booms. Never rotate the slewing ring by hand when the engine/motor is running and the main current is on!

Always check function of emergency lowering before starting operation.

12. ENDING THE OPERATION

After ending operation:

1. Lower the booms down to transport position.
2. Lift the outriggers completely up to transport position.
3. Stop the engine/motor by turning the ignition switch to 0 position.
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. Move the ignition key in the coupling box to 0 (p. 16, picture 7) position and take the key with you
6. Move the main disconnect switch to horizontal position and take the key with you.
7. If the machine stays in a place where it can be connected to 230VAC mains current, it is recommended to connect it, in order to charge the battery (e.g. overnight).

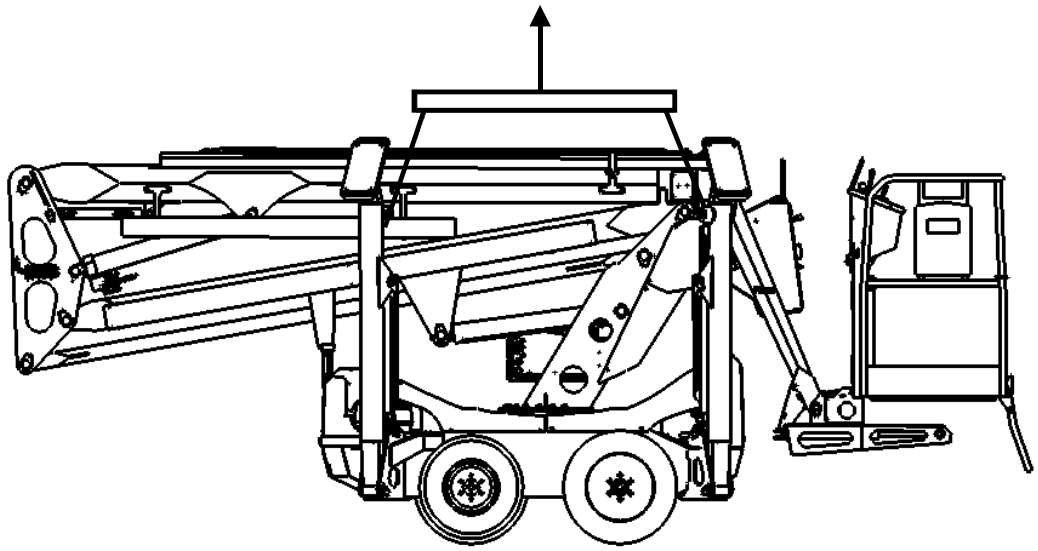
ATTENTION! Prevent unauthorized use of the lift by removing ignition key and main disconnect switch from the machine when it's not used!

13. TRANSPORTING INSTRUCTIONS

Lower the booms down to transport position and lift the outriggers completely up to transport position.

ATTENTION! Transporting of this access platform is allowed in its transport position only. No persons or materials are allowed to be transported on the platform.

The outriggers are equipped (picture 10) with lifting points from which the machine can be lifted if necessary. When lifting, it is advisable to use a lifting beam where the ropes are mounted, in order to prevent the outriggers from being damaged.



Picture 10. Lifting the access platform (visualization)

There is an automatic hydraulic brake in the rear axle which engages automatically when the engine/motor is not running.
If the machine is transported on a trailer or on a lorry or similar vehicle, it must be tied down properly. There are four tie-down points marked on the corners of the chassis which make it easy to tie down the machine. Always tie the machine down diagonally from every corner (picture 11).
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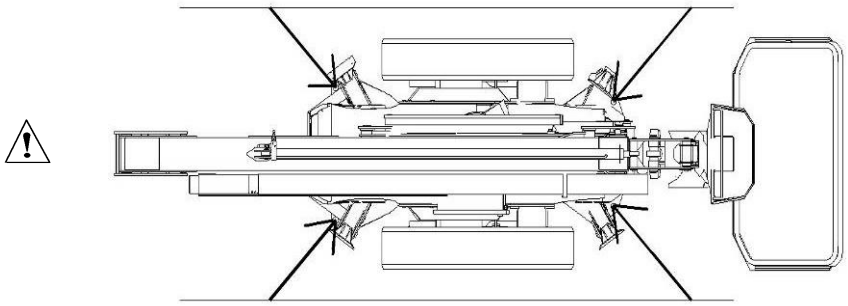


Picture 11. Tie-down points (visualization)

ATTENTION! It is not allowed to tie down the machine so that the ropes go over the booms. Only marked tie-down points can be used!

14. SERVICE, MAINTENANCE AND INSPECTION REGULATIONS

This access platform must be inspected once a year. The inspection can only be done by a qualified person. Persons who conduct periodical services shall familiarise themselves with the operation and technical features of this access platform before doing any service operations. All service and maintenance operations must be made in accordance with the instructions in this manual. If the access platform has not been used for a longer period of time, oil levels must be checked first and made sure that the machine functions correctly before starting operation.

14.1 General instructions

- It is not allowed to make any changes on the construction of the machine without written permission from the manufacturer.
- All defects that may have an effect on the safe use of this access platform must be repaired before starting operation.
- Only professional persons are allowed to open the covers and handle the electric etc. components. Risk of serious injury!
- Make sure that services are made in accordance with this Operators Manual and with the Service Manual of the engine manufacturer.
- Stop the engine before starting any service or inspection operation, DISCONNECT ALSO THE 230V MAINS CURRENT.
- Do not smoke during service and inspection operations.
- Keep the machine and especially the platform clean.
- Make sure that the operating instructions are complete, readable and in their place in the box at the platform.
- Make sure that all stickers are in their place and readable.
- Make sure that the access platform has been serviced according to the manual
- Make sure that all inspectations have been made according to local regulations

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

Always remember when handling the battery:

- 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 with a lot of water.
- In case of contact with eyes, flush with a lot of water for at least 15 minutes and call a doctor immediately.
- Do not smoke when handling the battery.
- Do not touch the battery terminals or cables with tools that may cause spark emissions.
- In order to avoid spark emissions always disconnect the (-) cable first and connect it last.

Handling of fuel and oil products:

- 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 each other.
- When handling oil always wear appropriate protective equipment.
- Before refueling always stop the 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 eyes, mouth or open wound, clean 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 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 carefully with water and soap any body part that has come in contact with hydraulic oil. Hydraulic oil is also harmful to the environment – prevent oil leakages. Only use hydraulic oil type approved by the manufacturer.

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

Check hydraulic hoses for eventual cracks and wear. Follow the wear of the hoses and stop operation if the outer layer of any hose has worn out. Check routing of the hoses, adjust the hose clamps if necessary in order to prevent chafing. Hydraulic hoses have finite service life and the expiration date is marked on the hoses. After that they have to be changed. If there are signs of oil leakage, put a piece of cardboard under the probable leakage place in order to find the leakage.

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

15. SERVICE INSTRUCTIONS

15.1 Services and checks, maintenance schedule

Regarding the service of the engine see also engine manufacturer's Operators Manual = EM

CH = Check CL= Clean R = Replace A = Adjust F = First service at 50 h

Operation		day	month	100 h	200 h / 12 month	400 h / 24 month	1000 h
Engine oil, EM	FR	CH		R			
Engine oil filter	FR				R		
Air filter, EM			CH /CL		R		
Glow plug							CH
Valve clearance, EM							A
Fuel filter						R	
Fuel tank				CH			CL
Fastening of platform	FCH	CH					
Hydraulic oil							R
Hydraulic oil level			CH				
Hydraulic oil suction filter						CL	
Hydraulic oil filters	FR				R		
Battery			CH				
Coolant	FCH		CH			R	
Locking of bearings and pivot pins	FCH		CH				
Electric wires					CH		
Hydraulic fittings and hoses	FCH	CH					
Cylinders, load holding & check valves	FCH	CH					
Function of emergency lowering	FCH	CH					
Function of emergency stop circuit	FCH	CH					
Function of set up system	FCH	CH					
Hydraulic pressure adjustments	FCH				CH		
Function of control valves	FCH	CH					
Mounting of booms on the chassis			CH				
Condition of steel construction			CH				
Movement speeds of booms	FCH		CH		A		
Greasing of the machine			R				
Function of load control system	FCH			CH	A		
Level position of water level	FCH		CH				

Hydraulic oil type:	Statoil Hydraulic Oil 131 HP, (-45 – 65 °C.Vickers 104 C IP 2 81/80, FSD 8401)
Hydraulic system oil volume:	oil tank 35 l, complete system 55 l
Engine oil:	See engine manufacturer's manual
Grease:	Litium NLGI 2 grease (not MoS2), slewing ring with grease containing EP (extreme pressure) additive
Pressure settings of hydraulic system:	Main pressure 200 bar (2900 PSI), lower operating pressure 110 bar (1595 PSI)

Tyre pressure:	23*10.50-12 grass profile	3.0 bar (43 PSI)
	23*10.50-12 TR profile	3.0 bar (43 PSI)
	Leguan TeHo trailer	6.0 bar (87 PSI)

Do not exceed maximum inflation pressures marked on the tyres.

Wear pads on the telescopic boom must be checked every 5 years max.

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 5 years.

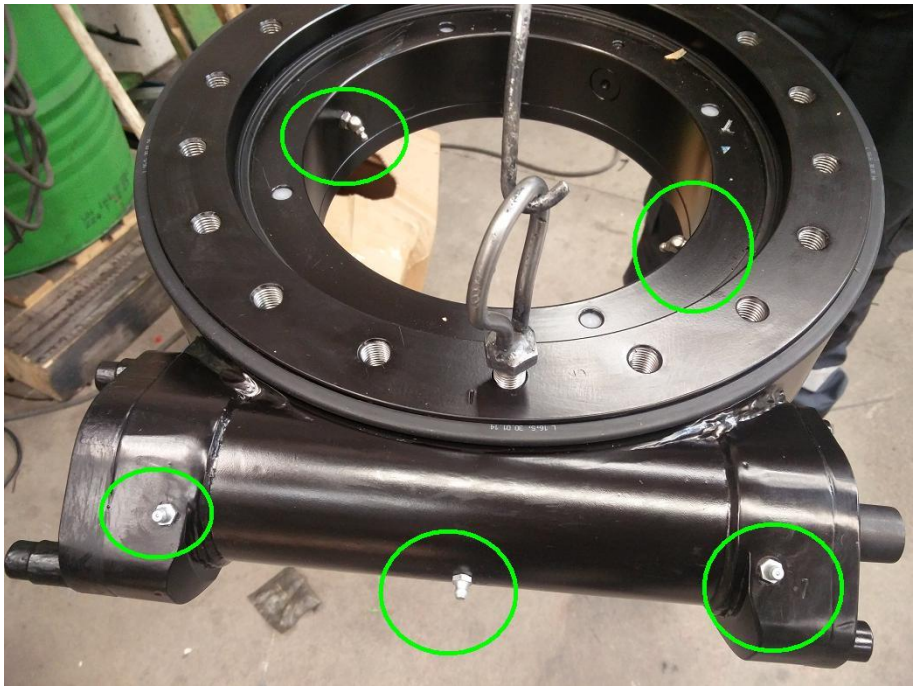
Above mentioned service intervals are recommendations. If the operating conditions are very hard and/or the machine is in heavy duty use the service and change intervals must be shortened.

15.2 Greasing of the machine

Greasing of the machine is of utmost importance in order to prevent wear in joints. Most of the joints are service free - however the slewing ring 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.

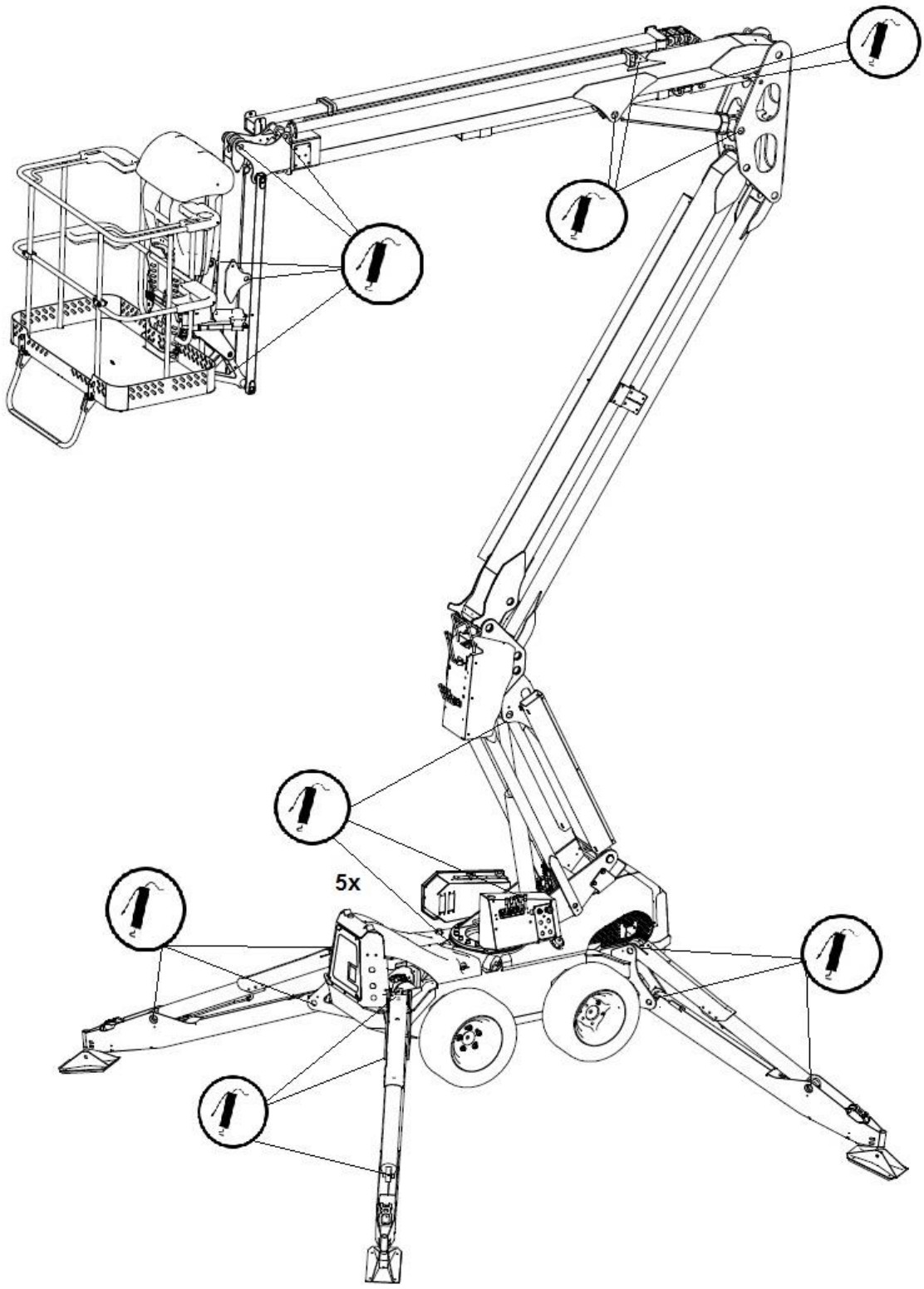
Greasing of the Slewing Ring

The lift's Slewing Ring must be greased monthly, according to the maintenance schedule. It is important to notice that the Slewing Ring has five (5) separate greasing points (Picture 12) which all must be greased individually. The grease nipples on the outside of the Slewing Ring are connected to the gear and it's bearings. Two (2) grease nipples on the inside of the Slewing Ring are connected to the Ring's ball bearings. Easiest way to apply grease on these two grease nipples is through the cleaning hatch on the bottom of the chassis.



Picture 12. Slewing Ring's greasing points. The ring pictured from above.

15.3 Greasing diagram



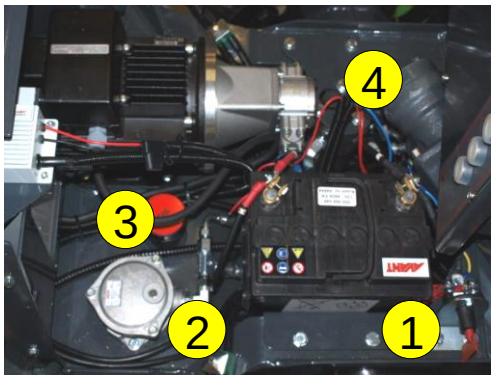
Picture 13. Greasing points

15.4 Handling of fuel and refueling

Picture 14. Fuel tank filling cap

Check fuel level and refuel if necessary (fuel tank cap, no. 6).
In diesel engine use DIESEL fuel only, see also Kubota Operators Manual. Use of other fuels is not allowed.
Make sure not to let the fuel tank get empty. Should this happen, refuel and restart – the engine is fitted with automatic fuel bleeding.
In petrol engine use fuel defined by the engine manufacturer in the engine Operators Manual.

15.5 Hydraulic oil and oil filter change



Picture 15. Oil filter locations

Hydraulic return oil filter is located on top of the hydraulic oil tank (no. 2) at the rear of the chassis. Replace the filter by removing the filter cap and replacing the filter cartridge.
When changing hydraulic oil, the oil can be removed with a suction pump from the opening of breather cap (no 3), or by opening the drain plug. In both cases it is important to clean the magnetic drain plug.

Hydraulic pressure filter cartridge (no. 4) must be changed always when return filter is changed. Take off the filter bracket, lift up the filter, open and replace the filter cartridge.

Pressure filter cartridge is mounted inside the filter case with the cartridge's opening facing up and the case. After this mount the case back to the bracket. Make sure there are no leaks when the engine is running.

Picture 16. Return oil filter cartridge (2)

Picture 17. Pressure filter cartridge (4)

15.6 Hydraulic oil level

Hydraulic oil level can be checked with the dipstick in the filler (no. 3). Oil level should be at the upper mark in the dipstick when the lift is in transport position (booms down on transport supports and outriggers completely up).

15.7 Battery check

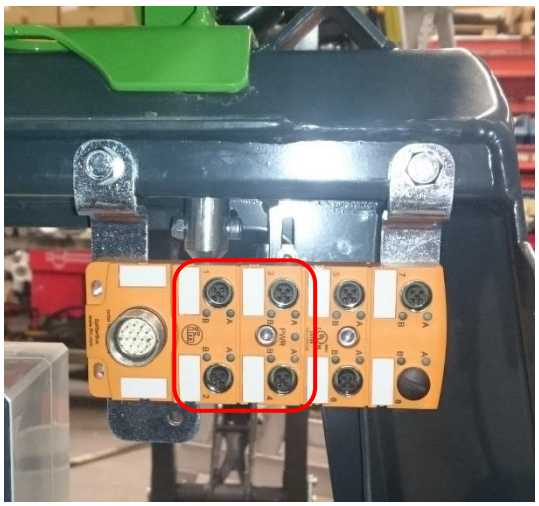
In order to secure the starting and safe operation the battery must be checked regularly. Inspect and clean battery terminals regularly. Check also condition and fastening of battery cables and terminal insulators. Make sure that battery cables cannot chafe against any sharp edges. Check also condition and fastening of battery disconnect switch and cables.

ATTENTION! Always clean the battery before opening the caps so that dirt cannot get in the battery.

15.8 Check of set-up outrigger control system

Always check the set-up outrigger control system before working on the access platform. The set-up outrigger control system recognizes when outriggers are set to the ground. When outriggers are steadily on the ground, a green indicator light in the outrigger control panel (p. 16, picture 6) lights up. If the green indicator light is lit up or lights up before all 4 outriggers are set to the ground or when you turn the selector switch to boom mode when the outriggers are not set to the ground, there is a malfunction or a fault in the system and the operation must be stopped immediately. The malfunction can be found out on the splitter box (Picture 18) in the back of the chassis. In the box connectors 1-4 are equivalent to the numbering of the outriggers (picture 6). Connectors' equivalent limit switches are: 1 = S21, 2 = S22, 3 = S23, 4 = S24. When the outriggers are off the ground or in transport position indicator light A should be lit next to connectors 1-4. Similarly when outriggers are set to the ground indicator light B should be lit. If there is a malfunction the wrong light will be lit or possibly none of the lights light up. Check the function of the splitter box during monthly inspection.

ATTENTION! If the set up control system doesn't work correctly, it is not allowed to use this access platform, and the failure/defect must be repaired before starting operation.

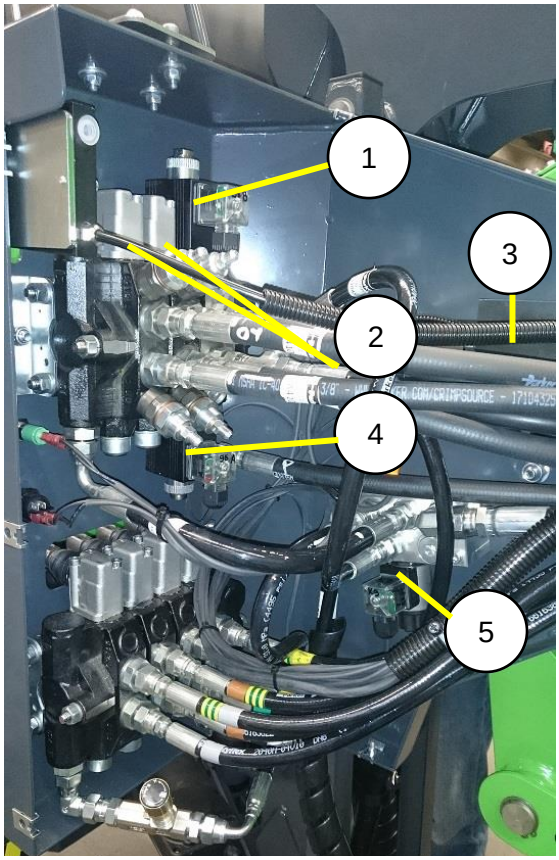


Picture 18. Splitter Box, outrigger connectors marked inside red square

15.9 Water level check

Correct position of the water level (on top of the control valve box at ground level) in relation to the upper surface of the slewing ring must be checked in accordance with the maintenance schedule, or if there is reason to believe that the position of the water level has changed: Make sure that the booms are in transport position and put a water level on the slewing ring. Compare the position of this water level to the position of the water level on the control valve box. If the positions are different, adjust the water level on the valve box with the adjustment screws so that both levels are in the same position. Do the adjustment both lengthwise and sideways.

15.10 Adjustments of the Hydraulic system

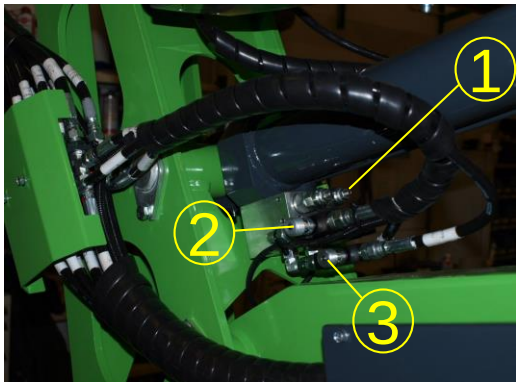


Picture 19.

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

Picture 19 shows the components inside the drive and outrigger valve box:

1. Drive Control Valve, Solenoid K98B (Outriggers)
2. Drive valve
3. Selector valve of lower controls K93 (option)
4. Drive control valve, solenoid K98A (booms)
5. Boom pressure solenoid K94



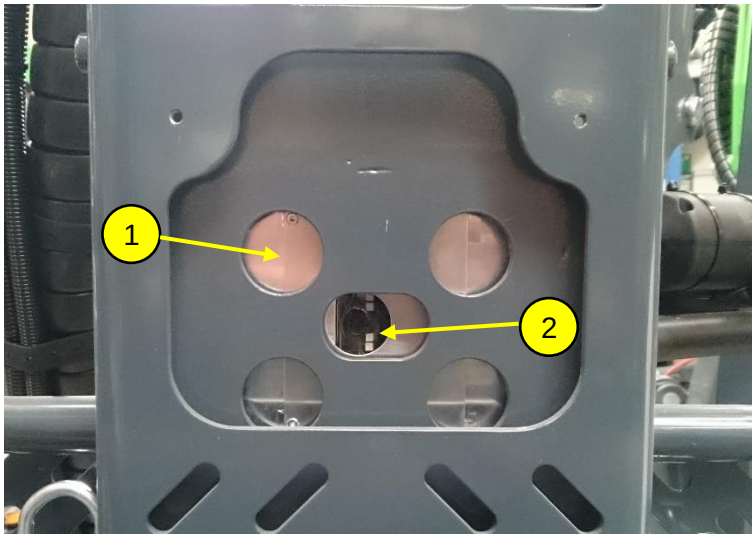
Picture 20.

All cylinders – except for the self levelling ”slave” cylinder – are equipped with load holding valves (no. 1 in the picture left), which prevent cylinder movements in case e.g. a hydraulic hose fails. When using emergency lowering of the booms, the electric solenoid valve in the cylinder (no. 2) opens and oil flows through the adjustable restrictor valve into the tank and the boom(s) come down.

15.11 Overload control components ⚠

ATTENTION! Overload control has been set to the correct values at the factory and it is strictly forbidden to change its settings. FALLING HAZARD!

Overload control mechanism is located between the working platform and the platform support (picture 21). Basket load is measured with a load sensor (1), which has 2-channel measuring. Both channels are tared according to empty platforms weight. The sensor follows EN 280 –standard and it can be used in applications mentioned in the standard.



Picture 21. 1: Load sensor MOBA MRW Limit, 2: ”zero load” orange indicator light

Maximum platform load has been adjusted to 230 kg. In an overload situation the use of booms is prevented and you will hear a sound alarm and see a indicator light in the lower and upper control panels. Use of the machine 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 has to be replaced due to faults or damage, the bolts should be tightened to 150 Nm.

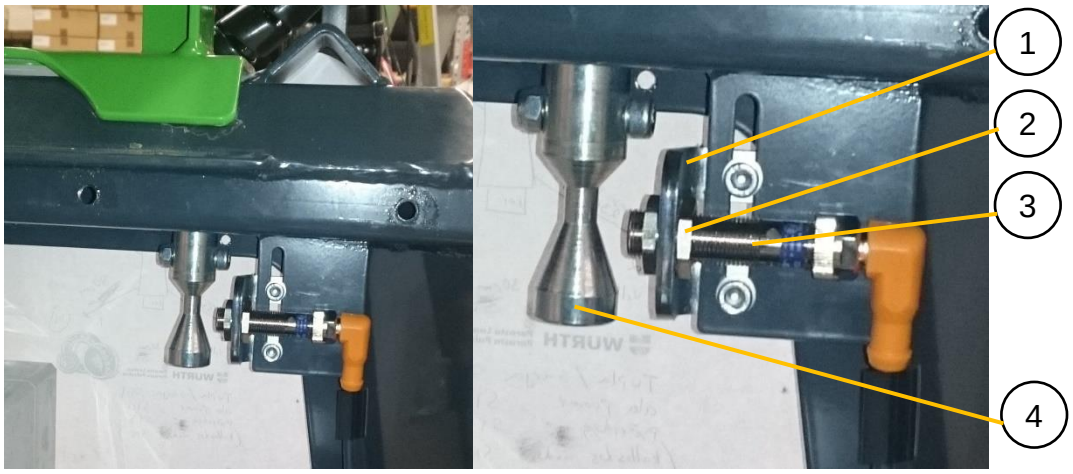
There is a led indicator light in the sensor (picture 21, (2)), which allows the so called zero load to be monitored. The light turns on when the basket load is 0 kg ±15 kg. The basket load must be tared in every maintenance inspection by an authorized person. To tare the load sensor you need a programming tool. The tool is available for authorized dealers and service companies. Instructions are available from Leguan Lifts.

⚠

NEVER OVERLOAD THE MACHINE!

15.12 Electric sensors

Lower transport support sensor is located in the back of the chassis behind a protective netting (Picture 22, taken from front to back). The height position of the sensor is adjusted while the boom is in transport position. When the boom is on the support the position of the sensor is adjusted by the fixing plate. The plate is tightened to its place so that when the boom is on the support the sensors face is facing the narrowed part of the measuring pin and the led-light of the sensor is not lit. After this the boom is lifted from the support and the sensor's horizontal position is adjusted with 2 nuts on the sensors (distance to the pin approx. 3 mm), the distance is correct when the led-light on the sensor lights up when the boom is lifted from the support. The sensor must not touch the pin. The position can be tested by lowering the boom down to the support, the led-light should now turn off.

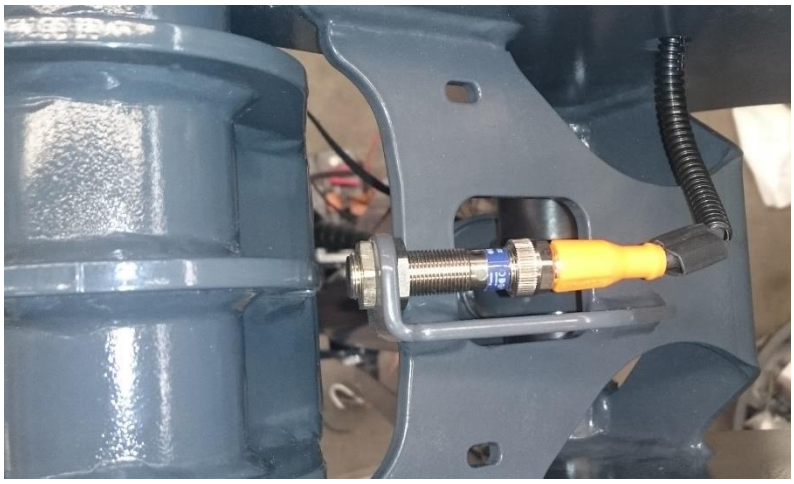


Picture 22. 1: Fixing plate, 2: Sensor nuts, 3: Sensor, 4: Pin

The upper transport support sensor is located infront of the platform near the top of the linkage peace. It is protected by a protective plate and it is not visible from the platform (picture 23). The sensor is adjusted according to the instructions above.

Picture 23. Upper transport support sensor

The third sensor monitoring the transport position is the JIB-boom sensor (picture 24). The sensor measures whether the JIB-boom is in transport position or not. The sensor is located at the tip of the telescope boom on the top surface. The sensor is adjusted like the two sensors before. When the JIB-boom is in transport position the sensor should be facing the notch on the boom. The led-light on the sensor should not be lit when the boom is in transport position.



Picture 24. JIB-boom sensor

15.13 Testing of safety valves

Booms' safety valves must be tested once every year. Lifespan of these safety valves is 30 years and after that they must be changed to new valves. Follow the following steps when testing the valves:

1. Drive the machine into transport position

2. Switch on Drive mode from the selector switch in the upper control panel (picture 5, number 4) and test the function of all control levers (including the lower controls, if installed). Only the drive levers should work at this point.

3. Switch the selector switch (upper control panel) to Outrigger position. Test the function of all control levers (including the lower controls, if installed). Only the outrigger levers should work at this point.

4. Drive the outriggers to the ground and level the machine. The green light should be light as a signal for outriggers being set on the ground. If the green light does not light up, see section 15.7 (page 34).

5. Switch the selector switch to Boom position (upper control panel). Test the function of all control levers (including lower controls, if installed). Only boom levers should work at this point, either in lower or upper control panel, depending on which is chosen.

6. Remove the valve cap (K94) of the boom's dump valve and keep the selector switch on boom position. Test the function of all control levers (including lower controls, if installed). None of the control levers should now work.

7. Attach the unloading valve's valve cap (K94) back to its place. The test is now complete. In case the functions were not as described, see directions below.

In case the machine does not function as describe in steps 1-5 is the selector valve faulty (valve attached to coils K98A and K98B). In case the machine does not function as described in step 6, the booms' dump valve is faulty (valve attached to coil K94). All faulty valves must be replaced with new valves before continuing operations on the machine.

16. REPAIR INSTRUCTIONS

16.1 Welding

All load carrying steel parts are manufactured from S420MC EN10149 sheet and S355J2H EN10219 tube.

Welding repairs are only allowed to be carried out by professional welders. When welding, use only methods and additives suited for above mentioned steel qualities.

SFS EN-ISO 5817 quality level D of imperfections in welding is suitable for all weldings, except for load carrying parts. Repair weldings in load carrying parts can be performed only by permission from the manufacturer.

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

17. 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 1 month
- The machine shall be covered and, if possible, stored inside or under roof in a place where unauthorized persons don't have access.
- Make sure that eventual leaks during storage will not cause waste water or similar environmental problems.

ATTENTION! See also engine manufacturer's instructions for the storage of the engine.

18. INSTRUCTIONS FOR DISPOSING OF THE MACHINE

When the access platforms lifecycle comes to an end, it has to 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

19. TROUBLESHOOTING

Following table shows eventual failures and malfunctions of the access platform and the ways how to repair them.

PROBLEM	REASON	CORRECTIVE ACTION
Engine/electric motor does not start when ignition switch is moved to START position. Engine and electric propelling	The booms are not properly down on the transport supports, and set up outrigger control system doesn't work.	Lower the booms down to transport supports by using emergency lowering. Select drive position with the function selector switch and start the engine/electric motor.
Combustion engine does not start when ignition switch is moved to START position. (See also engine manufacturer's Operators Manual).	Main Disconnect Switch is in "OFF" position. Petrol engine ignition switch is in "OFF" position Engine/electric motor selector switch at platform is in wrong position Emergency stop switch is pushed down Engine is cold. Fuel tank is empty. Empty start battery. Fuse inside the connection box is broken. The fuses are at the end of the terminal base.	Move to ON position. Move ignition switch to "ON" position Move to correct position Release emergency stop by turning it counterclockwise Preheat. Refill. Charge by connecting to 230V or change battery if necessary. Replace fuse.
Combustion engine does not start when ignition switch is moved to START position. (See also engine manufacturer's Operators Manual).	Faulty contacts in electric wires. Start switch is broken.	Check wires and terminals; and voltages with a voltage meter. Replace switch.

PROBLEM	REASON	CORRECTIVE ACTION
Electric motor does not start when ignition switch is moved to START position.	Mains 230V cable is not connected to network.	Connect 230V mains, min. 16A wall socket fuse. Make sure that the socket is electrified.
	Engine/electric motor selector switch at platform is in engine position.	Move switch to electric motor position
	Emergency stop switch is pushed down	Release emergency stop by turning it counterclockwise
	Battery Disconnect Switch is in ”OFF” position.	Move to ON position.
	Empty start battery.	Charge by connecting the cable to 230V mains, or change battery if necessary.
	Fuse inside the connection box is broken. The fuses are at the end of the terminal base.	Replace fuse – if the fuse blows again, find out the reason.
Electric motor stops suddenly during operation.	Power failure.	Lower the booms by using the emergency lowering. Check that there is current in mains.
	Emergency stop button accidentally pushed down	Release emergency stop and restart.
	Electric motor thermal overload relay (F1) in connection box has gone off.	Wait for approx. 2 min. and start the motor – the relay will return to ON automatically. Find out the reason for overload.
	Connection fault in mains or 12V wiring.	Check voltages and wirings.
Movements don’t work even though the engine/electric motor is running.	Function selector switch at platform in wrong position.	Turn the switch to correct position.
	Failure in hydraulic system – e.g. hydraulic pump broken	Check hydraulic pressure . If there is no pressure check function of hydraulic pump and the coupling between engine and pump.
	Overload on platform.	Remove overload.
Engine/electric motor stops when booms are lifted from transport support.	Outriggers are not correctly deployed down to support position – green indicator lamp is not lit.	Lower the booms down to transport supports with emergency lowering, restart the engine/motor and deploy the outriggers properly so that the green indicator lights up.

PROBLEM	REASON	CORRECTIVE ACTION
Boom(s) come down by itself.	Dirt in load control valve or faulty valve.	Clean valve with compressed air, if that doesn't help change valve.
	Dirt in emergency lowering valve or faulty valve.	Clean valve with compressed air, if that doesn't help change valve.
	Emergency lowering valve(s) don't work when emergency lowering button is pushed.	Check emergency lowering fuse, if all right check also emergency lowering valve(s) separately.
	Lift cylinder seals faulty.	Change lift cylinder seals.
Outrigger gives in.	Make sure that the ground doesn't give in.	Put extra support plates under the outriggers or move the machine to another place.
	Air in outrigger cylinder(s).	Drive outriggers up and down a couple of times.
	Dirt in outrigger cylinder check valve.	Clean valve with compressed air.
	Faulty check valve.	Change valve.
	Faulty outrigger cylinder seals.	Change outrigger cylinder seals.
Platform tilts backward by itself when booms are down on transport supports.	Air in hydraulic system.	Start the engine/motor, drive the platform to extreme end positions by using the lever no. 22 (see page 14). If this doesn't help, do the air bleeding of the platform self levelling system (there are bleeding screws in the self levelling cylinders).
	Dirt in load control valve of self levelling cylinder or faulty valve.	Clean valve with compressed air. If that doesn't help, change the valve.
	Faulty self levelling cylinder seals.	Change cylinder seals.

20. PERFORMED SERVICES

It is advisable to write down all service operations that are included in the periodical service. All services that have been made during the warranty period must be noted on the list below, otherwise **the manufacturer's warranty will void**. The service operations mentioned in the maintenance schedule on chapter 15.1 shall be noted as follows: **First Service (50 hours), 100 hour Service, 200 hour / 1 Year Service etc.**

#	Date (dd.mm.yyyy)	Operating Hours	Type of Service (e.g. First service (50 h))	Notifications, additional repairs, etc.
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				