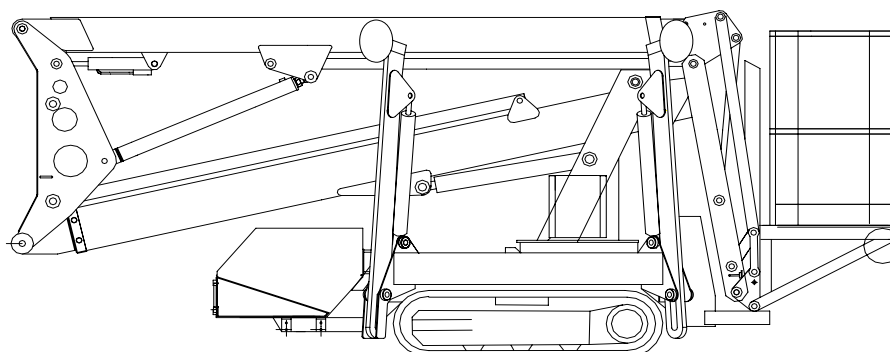




Factory Number:

LEO 18 GT



OPERATING AND MAINTENANCE DIRECTIVES

TEUPEN HUNGÁRIA GÉPGYÁRTÓ Kft.

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Foreword

Buying with this product, you have such an elevating machine which will sure you that you are able to work about to 17.7 m height /Leo 18GT/ with low operating cost in absolute safe and comfort.

The type Teupen Leo 18 GT is a elevating machine, which is equipped with one electro hydraulic control, as well as, it is self-powered elevating machine with cage and built-on a rubber caterpillar and it can be operated with simple handling.

The type Leo 18 GT self-powered lifting machine with cage, which was constructed that the operator is able to travel with the machine, to actuate the supports from the cage and, of course, to work safely a-high.

You can expect a fail-safe operating from the Teupen Leo 18 GT self-powered lifting machine if before first installation you read thoroughly the operating and maintenance instructions which are on the next pages.

Operating guide contains important instructions in connection with the expertise and economic operating of the elevating machine. Attention of the operator helps to avoid dangerous situations, reduces the maintenance costs and loss time, furthermore helps to increase the expected lifetime of the machine.

Any arbitrary modification or supplementation work executed on the machine cause loss of the warranty.

As long as the EU legislation according to technical standards and the use of machines on public road are not harmonised, it is not allowed to use the machine in any other country than where it has been used the first time if the documentation is not altered and approved by the producer in cooperation with the authorities of that other country.

After reading of the operating and maintenance instructions, you have still additional questions you can call up our service-department.

2008. június 26.

1.THE FUNCTION AND FABRICATION

1.1 The function

The Teupen **Leo 18 GT** elevating machine with cage can be used for elevating of persons and devices. The total load can be maximum 200 kg, which value is limited and calculated for the cage.

Operating methods of the machine which are different from the above regulations are not functional. **Teupen Hungária KFT** does not take any responsibility for damages arisen in consequence of non functional operation.

Functional operation means:

- all the instructions of the operating guide shall be kept, and
- all maintenance instructions shall be kept as well.

To work on the electrical equipments or next to them can only be, if those were switched off from the electrical circuit and no current state have checked by a measurer.

Symbols used in the '*Operational and Maintenance Manual*':

Throughout the manual important paragraphs of instructions are marked with two types of symbol:



WARNING!

For all types of information that should be taken into account in order to **prevent personal injuries**.



IMPORTANT!

For all types of information the operator should take into account in order to protect the machine.



1.2 Technical data

Working height: (remote control):	17.6 (17,90) m
Platform height: (remote control):	15.6 (15,90) m
Lateral outreach:	approx. 7,60 m
Safe load on cage:	max. 200 kg
Range of rotation:	355°
Size of working cage (LxWxH):	1,2 x 0,7 x 1,1 m
Length in travelling position with the cage:	min. 4710 mm
Length in travelling position without the cage:	min. 3995 mm
Width in travelling position without the cage:	min. 780 mm
Height in travelling position:	max. 1995 mm
Total weight:	2330 kg
Loading possibility:	2,92 m x 3,92
Surface load in loading position	approx. 2,21 kN/m ²
Ground load (caterpillar-track) in standard work position:	approx. 5,52 N/cm ²
Power line:	inside the profile
Drive:	Honda engine 13 PS
Adjustable width of caterpillar-track:	780-980 mm
Creeping angle forward:	approx. 36%
Creeping angle backward:	approx. 28%
Maximum ground dislevelment:	10 %
Height-adjustment limit for the rubber track carriage:	approx. 0.1 m
Crawler belt width:	approx. 0.20 m
Travel speed:	approx. 1,5 km / h
Maximum inclination:	± 1°
Maximum lateral force:	400 N
Ground load of the supports:	13.55 kN
Maximum wind speed:	12.5 m/s

Available accessories:

Remote cord control with 3 m long cable

Additional drive:	230 V AC engine
Overweight:29 kg	2,2 KW
Additional drive:	Kubota-Diesel
Overweight:32 kg	Z-482 13,5 PS

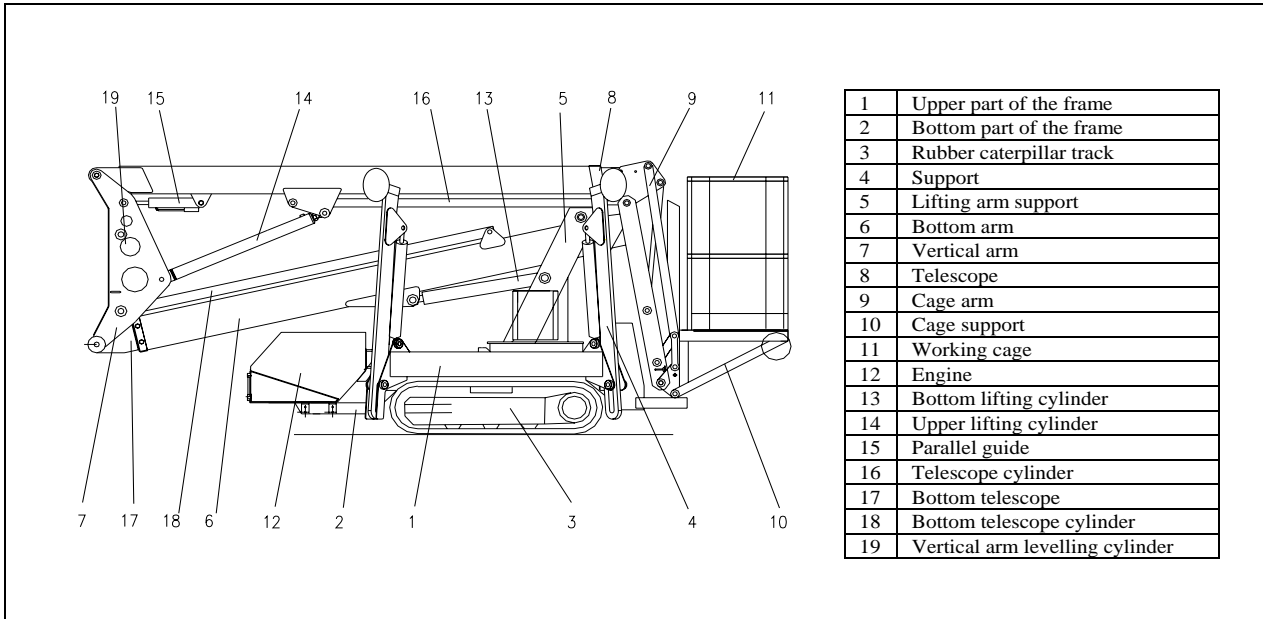


Chart 1
The main part of the Leo 18 GT cage-elevating machine

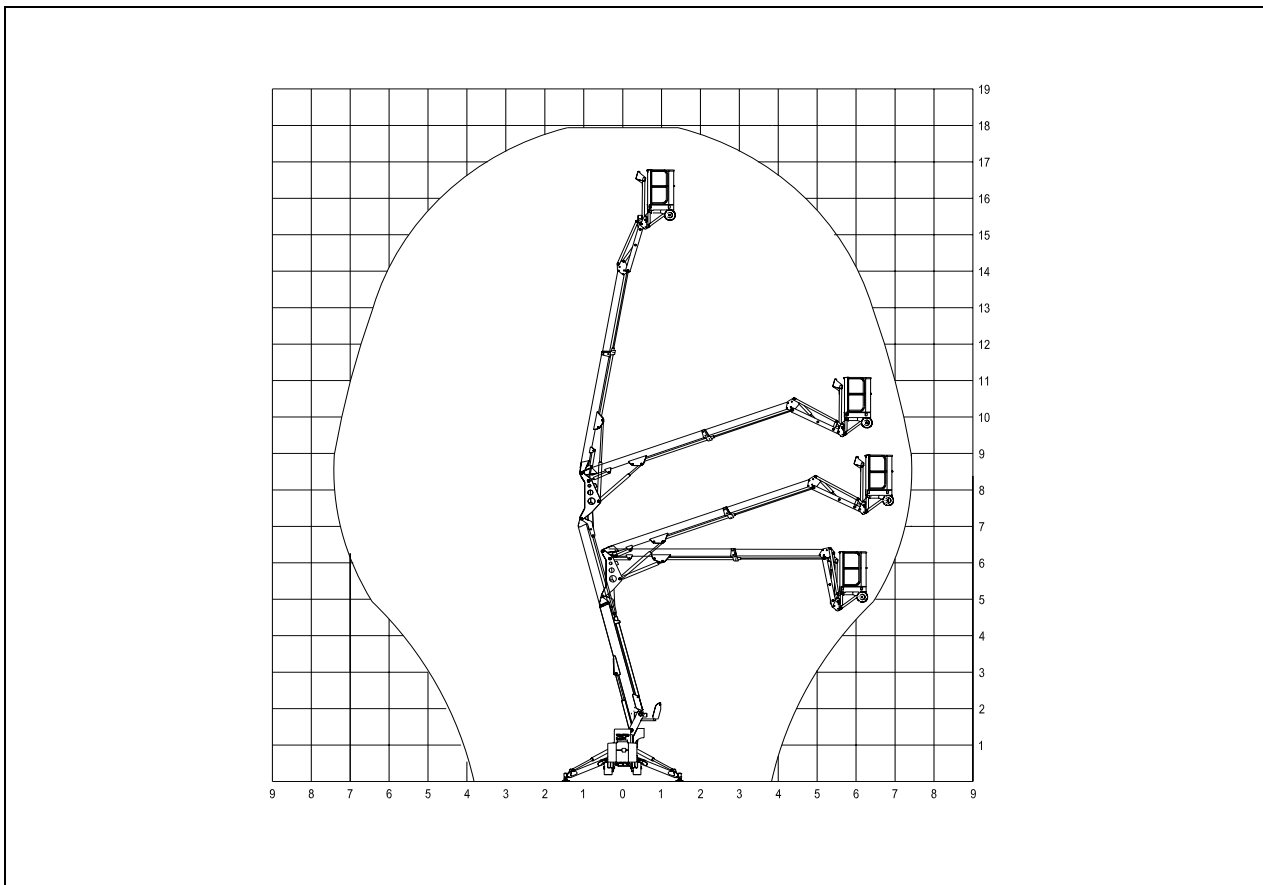


Chart 2
The moving diagram of the Leo 18 GT self-powered cage-elevating machine

1.3 General description

1.3.1 Frame and the supports

The frame made of closed steel profile, which will carry:

- the hydraulic supports,
- the ground plates, the ground supporting observation system with the end-switch
- the wide and inclination angle of the rubber caterpillar tracks can be change mechanically
- the tower-like of the superstructure
- Hydraulic oil tank with a level indicator with bar
- the explosive engine
- The electric drive 230 V /option/



ATTENTION!

The support end-switch works only if the ground is right secure.

1.3.2 Lifting arm support

The lifting arm support locates on a bogie. The hydraulic engine, which is reinforced by flange, assures rotating movement of the lifting arm support. The rotation can be worked out by a self-closing worm-gear drive.

On the lifting arm support locate the following things:

- The self-closing worm-gear drive, which is driven by hydraulically
- The electrical switchboard with a key switch
- Manual hydraulic pump
- Hydraulic control of the elevating machine
- Water-gauge spirit-level for the levelling of the chassis
- Special grease-cup for the stretching the tire chain.



ATTENTION!

The elevating machine may use only if the chassis is set up from the level within $\pm 1^\circ$

1.3.3 Articulated-telescopic arms

The superstructure consists of articulated-telescopic arms. The hinged arms / upper arm, bottom arm and cage arm/ are from big strength closed steel section and all of them has one double-acting hydraulic working cylinder.



1.3.4 Working cage

The serial equipment is the demountable cage.

The working area / basket / is a welded structure from aluminum profiles and plates. The entering to the cage can be by a turning down aluminum stairs. An automatically closing door and the two joining eyelet for tightening the safety belt serve the safe work.

In the cage is located a tool holder tray to ensure proper storage of the necessary tools.

The elevating machine has a demountable cage, because of the reducing of the transporting length and it is able to go through narrow opening. In case of the demountable cage, the superstructure will not operate, only self-propelling movements are possible. The weight of the aluminum cage is 34 kg.

1.3.5. Controlling of the elevating machine

- The outriggers can be actuated by the manual directional control valve which are placed on the lifting arm support. The actuating of the rubber caterpillar tracks can be done by the manual directional control valve which are placed on the lifting arm support or optionally by the cord control system (3m).
- The moving of the working basket can be done from the basket control panel which is before the working basket /cage/ by the joysticks and the turning of the buttons.

1.3.6. Rubber caterpillar track running gear

This is a special bogie is able to assure the self-powered of the machine on the extreme ground too. The outside wide of the caterpillar track can be changed between 0.78-0.98m by mechanically.

The drive of the caterpillar tracks is hydraulic one and the movement of those can be controlled:

- By hand hydraulic arms which are located on the lifting arm support. In that case, the maximum speed is 1.5 km/h, which one can be controlled proportionally by the removing of the arms.
- By electrical cable /about 3m /, which cable must be connected to the socket on the lifting arm support. The required directions can be changed by the turning switches. In that case, the maximum speed is 0.5 km/h

The caterpillar tracks only can be actuated hydraulically.

Therefore the machine must not be towed in order to avoid the damage of the hydraulic motors.

1.3.7. Safety instructions

This elevating machine is constructed considering the latest safety regulations. Notwithstanding the machine can cause personal injuries or other damages, therefore operating the machine is allowed only in case of

- functional operating and
- unexceptionable operation of the safety devices.

All malfunctions shall be corrected without any delay.

Please read through the operating and maintenance directives carefully before operating the machine and please take care of keeping the below mentioned safety instructions to avoid personal injuries and other damages.

Please take care of keeping the operating and maintenance directives for the explosive engine and the worm-gear drive as well!



Modifications of the construction of the machine are not allowed.



It is strictly prohibited to cut out the safety devices, for example the limit switch.



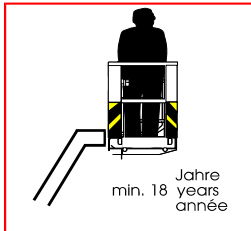
It is strictly prohibited to loose the yellow marked screws.



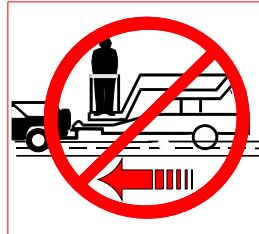
Adjusting the valves can only be executed by professional person.

Disregarding the above instructions causes loss of warranty.

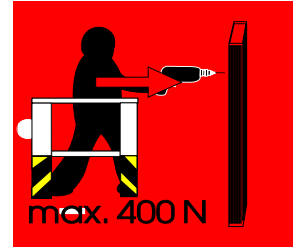
1.3.8 Meaning of the warning and informative signs placed on the machine:



Min. 18 year old



Persons not permitted in the cage during transport!



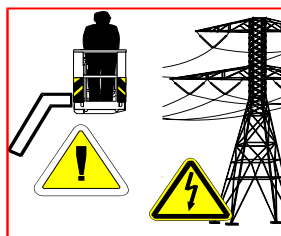
Max. lateral force 400 N



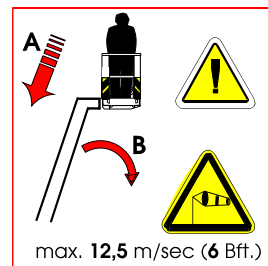
Getting in and out of the cage over the rail is **prohibited!**



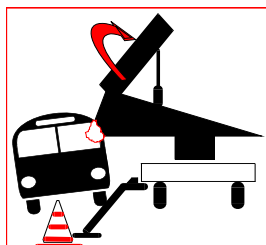
Avoid sudden move!!



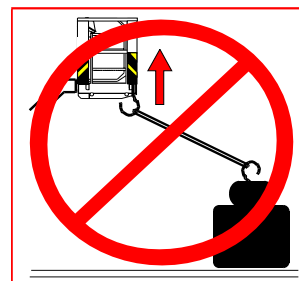
High voltage!
Risk to life!



Over 12,5 m / sec wind force (grade 6)
stop using the lifting machine immediately!



Take care of the **traffic!**
Working on a busy place
protruding parts must be
assured!



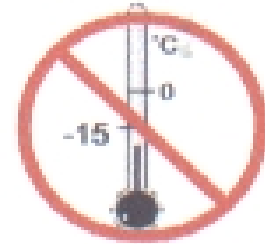
Not for lifting, as crane or as side tractor!



Danger to fingers!



Wear safety hat!



Do not operate machinery if temperature is below -15 C°!



Do not operate machinery in dark!



Use safety belt!



Danger! 230 V



Do not clean with high-pressure cleaner!

Warning!
Engine shall be
shut off before
refuelling!



WARNING!

relays, as well as diodes, are **different** one another. their wrong sostitution can seriously **endanger** the machine safety.

this **intervention** is allowed only by qualified personnel

CA01917



	<p style="text-align: center;">ATTENTION!</p> <p>Remove the plastic wheel after use. Safe storage of the plastic wheel should be ensured at the hydraulic valves.</p>
	<p style="text-align: center;">WARNING!</p> <p>If the basket sensor or any stabilizing sensor give alarm signal during operation (red light lights up on the control panel of the basket), the elevating machine can only be moved to the transport direction and the machine is only allowed to use for lifting after eliminating the operating trouble.</p>
	<p>WARNING!</p> <p>It is strictly prohibited to loose the yellow marked screws otherwise warranty shall be lost. Yellow marked screws can only be adjusted by the authorized technician of the manufacturer.</p>

2. DIRECTIVES OF SAFETY ENGINEERING AND ENVIRONMENT PROTECTION

2.1 Safety engineering

- Do not exceed the maximum load of the cage!
- In any height, extra load is put or that extra person entries to the basket of the elevating machine from any aim must be prohibited. The subsequent load of the basket can cause the inclination of the machine.
- Load of the basket shall be located carefully to avoid dropping out.
- Elevating machine allowed only be operated from the specified locations (cage).
- The operators must watch continually that the moving of the elevating machine does not endanger another persons.
- Travelling position of the cage shall be kept during moving the elevating machine. The things must not be dropped from the basket or flipped to the basket.
- Before usage or if the operator is changed often you must keep functional test of the machine. The operator is responsible for the executing of the functional test. The work can be alone done by only faultless elevating machine. The fault of the functional test or operating must be notified to the operating firm/the constitutor firm at once The faulty machine must be put without operating.
- The safety equipments of the machine can not disconnected as well as the operating of those cannot bound. These can only be assembled and adjusted in the workshop of manufacturer by the technician. If the damaging of the machine or person accident happens because of the ignore switching off or careless maintenance, the manufacturer does not undertake the responsibility.
- The control of the boom section, you should pay attention, that
 - the basket can no be put to any thing,
 - The side surface of the basket cannot support to side direction, for example, to the wall face or to any equipment, because these will put in a risk the stability of the machine and it could tip up.
- You must watch, if there is or there will be accidentally, a transporting vehicle, or any another thing e.g. in the moving space of the basket that, those do not put in a risk the operating of the machine.



WARNING !

Keeping directives of the operating guide ensures safe and secure operating of the machine!

Manufacturer does not take any responsibility for warranty claims and damages originated from not functional operating and missing the relevant regulations.



ATTENTION!

Person working in the cage must use protective hat and protective belt attached to the fixing point of the cage. Person staying on the ground must also wear protective hat.



2.2 Environmental directives

- Hydraulic oil, which is in the elevating machine, contaminates the environmental that is why. if the oil leaks, it must be eliminated at once. If the sealing is damaged, the machine must not used.
- The oil, which was changed, it can only stocked on the desired place. It must not poured in anywhere.
- The contaminated filter, which was too changed, is danger waste that is why it can only stocked on the desired place.
- The changed old oil hose is also danger waste, that is why, it can only stocked on the desired place.

3. HYDRAULIC RUNNING GEAR FOR THE RUBBER CATERPILLAR TRACKS

3.1 Elevation adjustment of the running gear



WARNING! TIPPING DANGER!

Elevation adjustment of the running gear must always be done by at least two persons. Supports shall be adjusted properly to avoid tipping (Maximum angle to crosswise direction is 10° 17%).



WARNING! POSSIBLE INJURIES!

Fastening bolts must not be loosened in case of narrow gauge setting of the hydraulic running gear while the lifting machine is stabilized for lifting (Hydraulic running gear can fall down.)

3.1.1 Gauge narrowing (narrow gauge):

Running gear shall be lifted and discharged by the help of the supports (maximal distance from the ground: 10-20 mm).

Hydraulic running gear for the rubber caterpillar tracks



- Loosening one of the safety-catches (First person)
- Lifting the supports at the side of the loosened running gear and slip the running gear in (Second person). In case of proper setting the the running gear must be fastened again!
- Lifting up the rubber tracks with supports
- Execute the proper setting at the opposite side as well.

WARNING!

Proper fastening shall be checked before operating again. Lifting arms (Safety-catch) shall be properly fastened on both sides.

3.1.2 Gauge widening (wide gauge):

Running gear shall be lifted and discharged by the help of the supports (maximal distance from the ground: 10-20 mm).

- Loosening one of the safety-catches (First person)
- Lowering the supports at the side of the loosened safety-catch until the running gear reach the ground and reach the widened position. (Second person). In case of proper setting the running gear must be fastened again!

WARNING!

Proper fastening shall be checked before operating again. Lifting arms shall be properly fastened on both sides.

Safety-catch (lifting arm)

Safety-catch (lifting arm)





Photo from profiles which are arranged "A" form and from the securing pins

3.1.3 Safety devices

The safety operating of the machine is controlled by the following safety systems

- Check valves which are controlled by pressure and placed on all working cylinder
- Pressure limiting valve for three hydraulic cycles
 - supports and rubber foos for transporting: 200 bar
 - operating the superstructure: 140 bar
- Basket sensor (the superstructure is only able to operate in case of the properly assembled basket.)
- The bubble glass, which is placed nearby the hand control valves, will help to bring to the level the frame
- The switch clock for eliminating of the spontaneous starting
- The end switches, which are in the ground plates, control the safety stabilizing
- Sensors controlling the angle of the bottom arm
- Sensors controlling the end position of the bottom telescope
- FI relay (30mA),
- EMERGENCY-STOP switch on the switchboard of the basket and the cord controlled remote-control panel
- Two levelling switches assure to remain the basket to the level. The one / operating switch/ will allow the tilt of the basket to 3°, after that, the control will bring to the level the basket. The safety switch in case of the failure of the operating switch/ will stop the elevating machine after $\pm 10^\circ$ and, after that, the machine can only be moved by emergency control.
- Two levelling switches ensure the proper aligning of the vertical arm. The one / operating switch/ will allow the tilt of the basket to 3°, after that, the control will bring to the level the basket. The safety switch in case of the failure of the operating switch/ will stop the elevating machine after $\pm 10^\circ$ and, after that, the machine can only be moved by emergency control.



ATTENTION!

The adjusting and the fasten bolted connections of the safety devices are fixed with paint or lead by the manufacturer. These fixations can be broken up by the owner or operating only for his or her own danger or responsibility. The manufacturer will not undertake responsibility for those warranty and accident consequents which have originated from the breaking up.



ATTENTION!

Switches, which are controlling the proper levelling and aligning the machine, are adjusted by the manufacturer. It is strictly prohibited to readjust, reprogram these sensors or to implement further electric connections. The manufacturer will not undertake responsibility for those warranty and accident consequents which have originated from the above activities.



ATTENTION!

If the basket sensor or any stabilizing sensor give alarm signal during operation (red light lights up on the control panel of the basket), the elevating machine can only be moved to the transport direction and the machine is only allowed to use for lifting after eliminating the operating trouble.



ATTENTION!

During operating the machine the key switch of the basket must be in switched on position and the emergency stop buttons must be in released position to ensure proper operation of the voice and and light alarm signals.

Switching off the above mentioned switches is only allowed in emergency situation or during setting the basic position of the machine.

4. HANDLING AND USAGE OF THE MACHINE

4.1 Transporting of the machine



ATTENTION!

The hoisting machine can only be transported on a suitable size and authorized load transport vehicle on transport position. The hoisting machine must be fixed to the platform of the transport vehicle with bracers.



ATTENTION!

Manufacturer and distributor do not take any responsibility for any damage or accident occurring in consequence of the improper transporting position.

The transporting position of the machine:

- The arms of the elevating machine are in basic position (arms are in bottom position, telescope is in pulled in position)
- The supports are in a pulled up position
- Safety key switch is switched off, and unplugged,
- ignition switch of the explosive engine is switched off and unplugged,
- top cover of the switching board is locked,
- machine is disconnected from the mains current,
- all coverings are tightened,
- During transporting time, neither person and nor load can not be on the cage

The lifting of the machine:

- a) Lifting beltings which ones are roven through the marked out surfaces can only lift the machine.



- b) Frame of the machine contains a specially designed lifting part. Fork-lift truck must use this lifting part during lifting the machine:



Movement on ramp:

- Slope of the ramp can be maximum 20° (36%)

Before beginning of the transporting, you must check absolutely as follows

- The connecting of the fixing-stretcher beltings
- The tension of the fixing-stretcher beltings



ATTENTION!

The elevating machine, which is on the platform of the transporting vehicle, will change the running properties of the transporting vehicle. That is why, you must traffic INTENSIVE ATTENTION.

Fixing the lifting machine on a trailer:



4.2 The requirements for the operator

Elevating machine can only be operated by persons above their age of 18, who are trained for operating the machine.

Consigner shall clearly authorize and instruct the proper persons in written form for operating the machine.

Supervising

If more persons can expect to work with the elevating machine, in that case, the consigner will have to tell off one inspector.

Handling and staying during operation

Entering into the cage, and exiting out of the cage are only allowed at the basic position of the cage. Elevating machine can only be operated from the specified service platforms. Operating persons should take care not to endanger any other persons during operating.

4.3 To be in operation

Before starting up, you must comply the following regulations

- The damage, breaks, oil flow, cable break on the machine or extension cable is not damage must be checked.
- You must check whether there is any equipment or anything else utilities during voltage in functional area of the machine, which can endanger the work.
- You must check whether there is anybody in the functional area of the machine. You must check whether the soil strength is suitable, there is hole or blocked out canal below the supports.
- You must check whether the arm of the machine reaches to arterial road section. In this case you must assure the fencing or must stop the traffic during the working time.

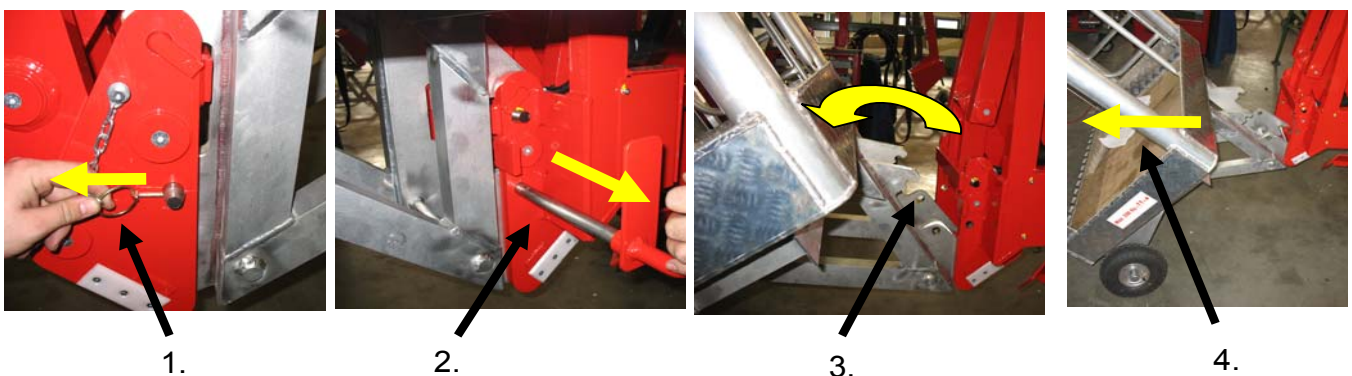
If above mentioned any factor is right, the machine must not started. At once the failure must be corrected.

4.4. Function descriptions of the machine

4.4.1. Disassembling and assembling of the basket

a.) The disassembling of the basket

- the locking screw must be screwed off (1)
- the locking pin must be turned and pulled out from the bores (2)
- the basket must be elevated a little bit and the basket support must be tilted to the back wheels (3)
- basket shall be overturned a bit when it is laying on its wheels, therefore basket will be unlocked totally (4).



- a.) The assembling of the basket is the same like the disassembling but the order is reversed.



ATTENTION!

The superstructure does not operate till the locking pin has not been placed to its bore in the suitable position.

The red signal-lamp will light on the switchboard as well as the sound signal will run till the failure exists.

4.4.2 The installation of the power supply of the machine

1. Starting of the Honda engine

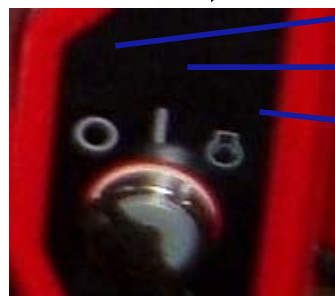
- The filling up of fuel tank of the explosive engine
- The switching in of electric supply of the Honda engine (O → I)

Starting of the Honda engine (below)

1. Starter rope



2. Fuel tank



3. Honda key switch

- 0: off

- 1: on

- 2: start

I. Starting the Honda engine at the engine (below):

- a., With the starting key switch which can be found on the Honda engine. To start the cold engine, push the choke button in the basket, during starting with the start button (3/2).
- b., Moreover you can start up the Honda engine with the pulling-rope

II. Starting the Honda engine from the basket:

HONDA start

**1. Start-Stop
Honda engine**

**2. Honda choke
pushbutton + green
lamp**



3. Emergency STOP

4. Key switch

a., Switch on the key switch (4)

b., To start the cold engine, push the choke button (2) , during starting with the start button (1).

To restart the warm engine, do not use the choke.

The emergency STOP-switch stops immediately the explosive engine, you can restart after the discoupling the STOP-switch.

2. Starting of the Kubota engine (Option)

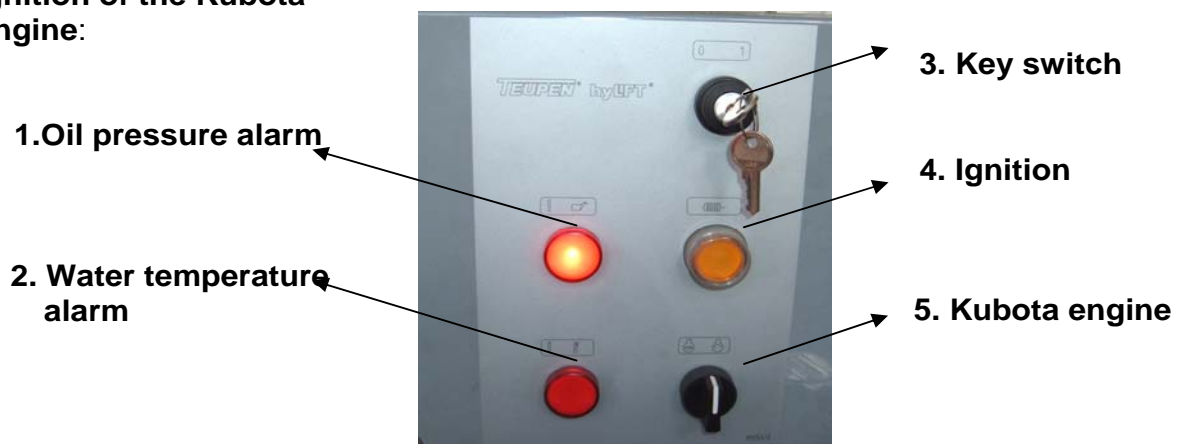
- The filling up of fuel tank of the explosive engine
- The switching in of electric supply of the Kubota engine (3) (O → I)

I. Ignition of the explosive engine from the bottom

Starting up/stopping the KUBOTA ENGINE (option), you can do it with the turning switch which can be found

- a., Starting up/stopping the KUBOTA ENGINE (option), you can do it with the turning switch (5) which can be found on the control box located nearby the electric switchboard.

Ignition of the Kubota engine:



- a., Switch on the key switch (3)
- b., The heating/ignition is needed with the yellow press-button (4) in the case of cold starting, until the yellow lamp goes out.
- c., Ignition with the start turning switch (5)

There is one red telltale on the control panel for the controlling of the oil pressure (1) and there is one for the controlling of the degree of the water temperature (2).

The control stops the engine automatically if the degree of the water temperature marking lights.

II. Starting the Kubota engine from the control panel of the basket:

- a., Switch on the key switch (4)
- b., The starting up/stopping of the Honda engine with the turning switch (1) which can be found on the control panel.
To start the cold engine, push the yellow choke button in bottom control panel the basket, during starting with the start button.

Ignition of the Kubota engine from the basket:

1. Start-Stop Kubota engine

2. Oil pressure alarm



8. Time control start push button and green lamp

3. Emergency stop

4. Key switch

The alarm STOP-switch stops immediately the explosive engine, you can restart after the discoupling the STOP-switch.

2. Operating with electric motor (Option)

The electrical connecting with feed cable

- On the building area the operating can be assured only from appropriately working up supplied units, which in working up and usage it is suitable to the protective instructions .
- Start the motor:
 - switching the key switch (4) on
 - pushing the green colour start button (8)
- Stop the motor:
 - switching the key switch (4) off
 - pushing the emergency stop button (or starting the combustion engine).



ATTENTION!

During operating the machine the key switch of the basket must be in switched on position and the emergency stop buttons must be in released position to ensure proper operation of the voice and and light alarm signals.

Switching off the above mentioned switches is only allowed in emergency situation or during setting the basic position of the machine.

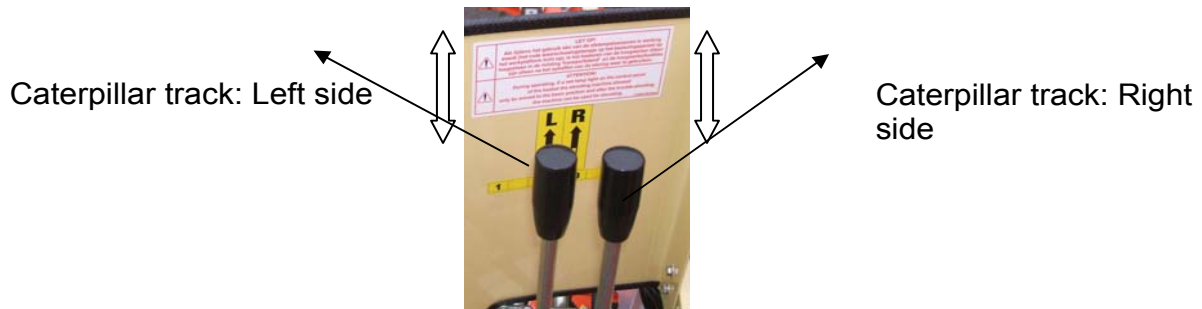
- b) If the supplying of the input energy happens from extension cable, you must keep strictly the following instructions:
- If the cable long is 40 m, the section of the extension cable must be minimum $3 \times 2.5 \text{ mm}^2$,
 - If the cable long is between 40 m and 80 m but maximum 80 m, the section of the extension cable must be minimum $3 \times 4 \text{ mm}^2$.

4.4.3 Traveling with the machine

Movement of the lifting machine can be directed from the basket and from the ground as well after demounting the basket..

a., Travelling control from the basket:

The required direction must be chosen by the hydraulic regulating valves of the self-powered and those must be operated progressively.



The rate of travel can be maximum 1,5 km/h
Maximum capacity during travelling uphill : max.20°

b., Traveling control with electric remote-control cable /option/

- Connect the remote-control plug to the socket, which is placed on the lifting arm support.
- Capacity during travelling uphill with remote control: 5°.

bullet valve



Connection of the cord controlled remote control system.

- Set the selection switch of the control panel to the “quick moving” position.
- Push the green push button,
- Turn the bullet valve located on the lifting arm holder with 180 °
- control the rubber track movement with the two switching keys, and both turning switches should be operated simultaneously.
- **After the finishing of the traveling, the globe valve must be turned back and pulled out the plug from the socket and, only after that, any function of the machine can be worked.**

Emergency stop



Caterpillar track: Left side

Caterpillar track: Right side

- the operating of the machine can be broken off any time with the EMERGENCY-STOP button, which is placed on control panel.

The safe directions for self-powering:



ATTENTION!

Tipping Danger! Maximal angle is to crosswise direction 10° (17%), to forward direction: 20°(36%).

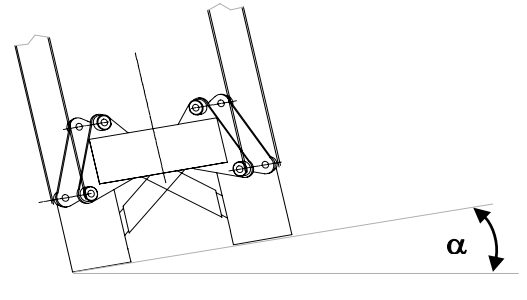
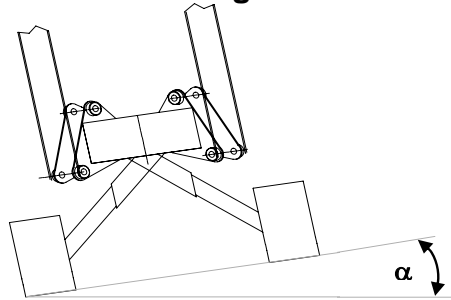
Creeping angle during forward movement: ca. 36%

Creeping angle during backward movement: ca. 28%

You never leave the elevating machine without fixing on a slope area or ramp.

In case of slope or crosswise traveling, on the angle side of the elevating machine, person can not stand.

On the danger slop, in case of creeping up, person can not stand behind the elevating machine.



$\alpha_{max.} = 10^\circ (17\%)$

- Before beginning of the traveling, you must ascertain that there is not person or any thing in the track of the elevating machine
- Before over passing through a doorway, you must ascertain with measuring that the doorway can be over passed.
- **The traveling and the maneuvering must be executed by intensive attention and caution**
- After taking off of the basket, the gravity center will shift to the front direction of the machine, that is why, at traveling up to the slop, the front of the machine must be in the elevation direction.
- The machine must not be pulled

4.4.4. Stabilizing of the machine

The support control can be controlled from the basket or from the ground:

- Place the machine in horizontal position with the hydraulic control valves
- Set the selection switch (11) of the control panel to the stabilizing (quick moving) position.
- Check the horizontal position of the machine with level which one is placed next to the hydraulic handling arms



11. Selection switch:
Position of
stabilizing (quick
moving)



water-gauge spirit-level

hydraulic handling arms

- The superstructure will only run if all support senses the bottom pressure. In case of faulty stabilizing, the red lamp will lights and sound signal will be audible

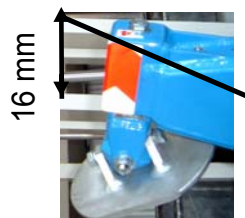
WARNING!



If the inclination angle is higher than ± 1 degree, probably the machine tilts or the bottom arm is not able to return to its normal position and the stabilization is not possible any more, furthermore the machine can be damaged due to butting on of the cage arm, therefore the machine must not be operated if the inclination angle is higher than ± 1 degree.

The safety direction of the stabilizing

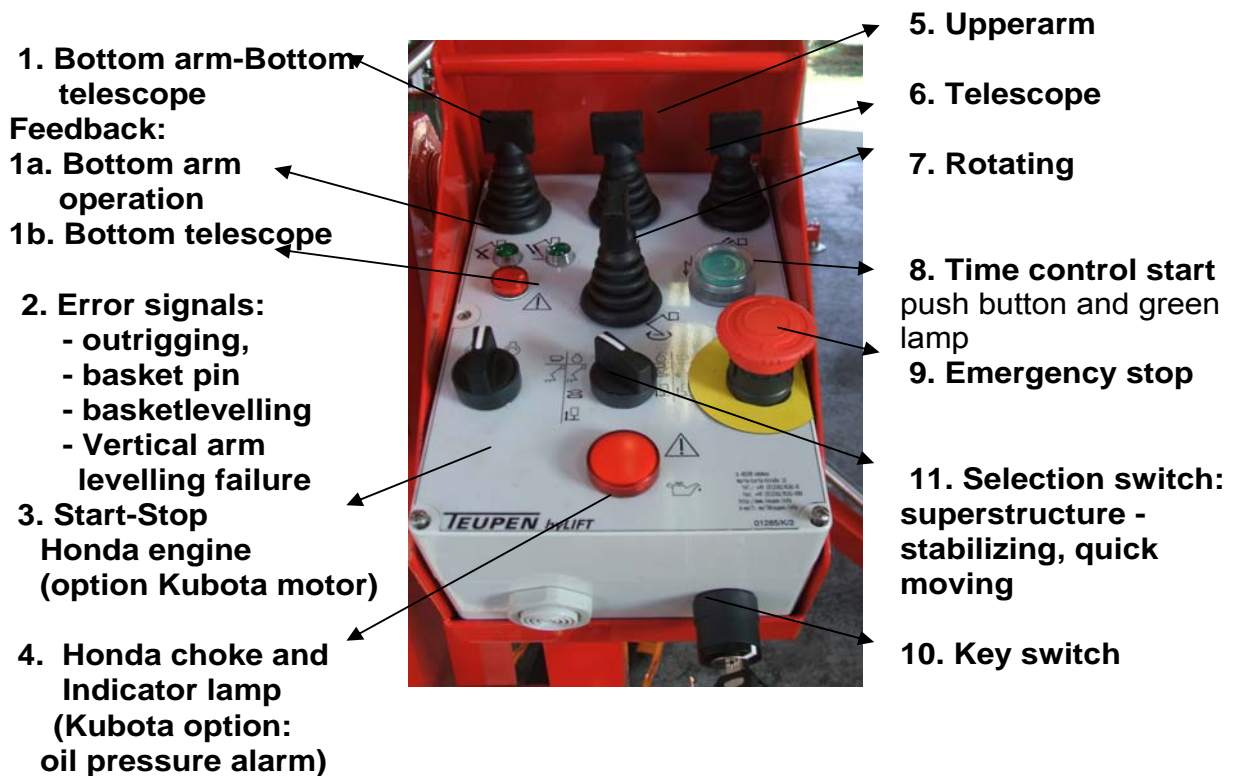
- Check the free movement of the ground plates whose movement must not be blocked by any dirt or damages. Tehcnical moving of the support system is 16 mm during stabilizing.



- Monitor the arc movement of the supports that those do not cause personal injure or damage of the things
- Check whether the supports bear up to suitable strength soil.
- In case of not a suitable strength soil, enlarge the surface of the soil with support plates
- Check whether the caterpillar tracks are in uplifted position in stabilized position of the machine.

4.4.5 The control and the operating of the superstructure:

- In case of the right fixing of the basket, see 4.4.1 and the suitable stabilization, see 4.4.4. and, only after that, the superstructure can be operated by the josticks.
- The unsuitable basket fixing and the unsuitable stabilizing of the machine will be indicated by a red lamp flashing on the control panel in the basket and by an acoustical signal
- The green press-button (8), on the control panel in the basket, blocks the spontaneous starting of the machine. If it takes the setted time between the two controlling function, the control break. The control can be continued with pressing the green button again. The green button will light again.
- On the control panel in the basket there are two plus slewable switches
 - the starting up and the stopping of the Honda engine (3)
 - a selecting switch which is able to switch the superstructure functions or the quick travel function /if you switch the quick travel, in that case, the superstructure can not operated./



- The bottom arm and the bottom telescope are controlled by a joystick. Change over is automatic, and the active function of the automatic change-over is signed by the two green leds (1a) below the joystick..
 - Bottom telescope shall only be operated in the upper position of the bottom arm (automatic change-over is controlled by the joystick).
 - Bottom arm shall only be operated in the retracted position of the bottom telescope (automatic change-over is controlled by the joystick).
- Levelling the vertical arm is executed automatically during operating the bottom arm (1). Levelling automatics ensures the vertical position of the arm via

periodic movements (especially in case of the operation of the optional electric motor).

- Levelling of the vertical arm and the cage shall be executed before any movements of the bottom arm (controlled by the joystick).
- The machine operating can be cancelled any time by the EMERGENCY-STOP switch, which is placed on the control panel.
- The turning round of the boom is limited by a mechanical rebound stop (355°).

ATTENTION!



The superstructure is only able to reach the maximal working height / platform height / if the hydraulic supports are completely stabilized and the boom is maximum extended.

WARNING!



During the first movements move the upper telescope slightly outwards and move the upper arm slightly upwards from the travelling position to avoid any damage of the machine. **(Execute reverse movements during setting the transport position back).** Cage movements within the working range are controlled by the joystick. Speed of the movements is proportional to the amount of the joystick movements.

4.4.6 Emergency control

The usage of the emergency control:



This control method must only be used if the person, who is in the cage, is not able to direct the machine.

- I. Upper arm, upper telescope, bottom telescope, basket levelling, rotating:
 - Proportional valves (D) should be pushed in totally, then should be locked after turning right.
 - Bullet valve (A), located besides the hand pump, should be locked (horizontal position).
 - Required arm function should be selected based on the emergency control drawing, then the selected valve should be pushed manually meantime the hand pump should be operated.
 - Poportional valve should be unlocked after finishing the emergency control operation.
- II. Bottom arm, vertical arm:
 - Proportional valves (D) should be pushed in totally, then should be locked after turning right.
 - Bullet valve (A), located besides the hand pump, should be opened (vertical position).
 - Valve (C), located behind the control panel, should be pushed in and turned around.
 - Pin (B), located on the valve panel, should be locked.
 - Required direction of movement shall be controlled by the valves.

III. Stabilization, travelling, emergency control:

- Proportional valves (D) should be pushed in totally, then should be locked after turning right.
- Bullet valve (A), located besides the hand pump, should be opened (vertical position).
- Required direction of movement shall be controlled by the arms.



A

hand-pump

Remove the plastic wheel after use. Safe storage of the plastic wheel should be ensured at the hydraulic valves.



B

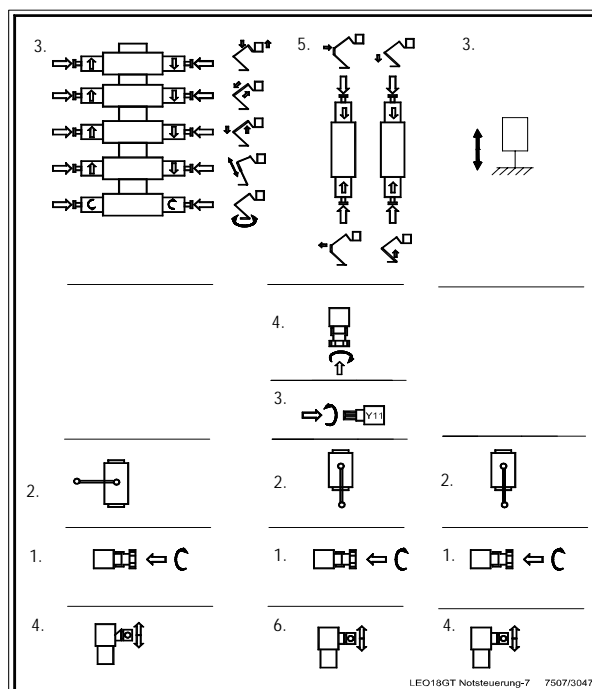


D

proportional valve



C



The selecting of the valve

Sequential control of the **bottom arm and the bottom telescope** shall be executed with special care:

- **First the bottom telescope should be retracted totally.**
- **Secondly the bottom arm should be moved downwards!**

1.

2.

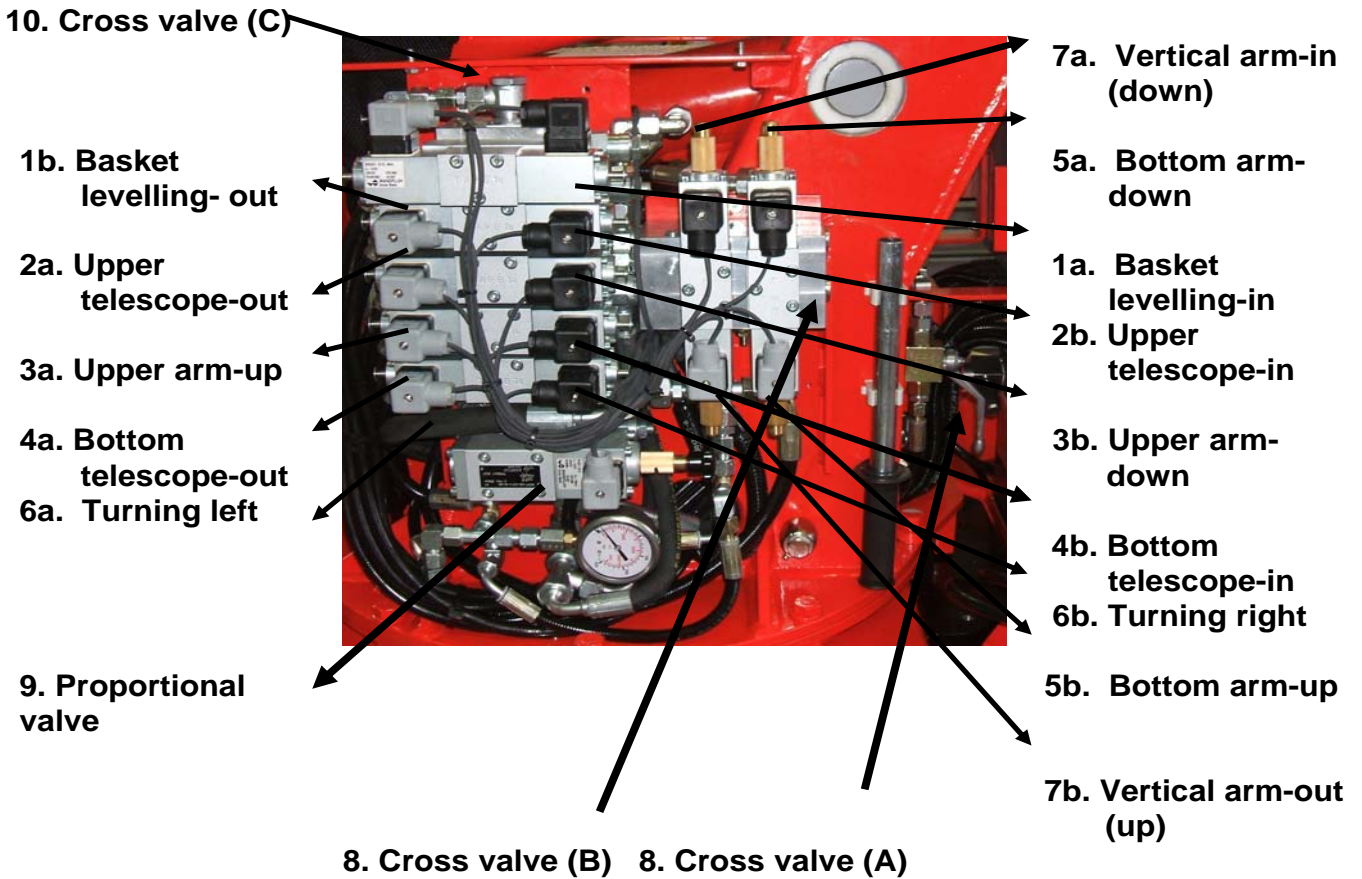
WARNING

OVERTURING DANGER!

Pushing down the bottom arm is only allowed after pulling the telescope in its basic position

Backward sequence of the above steps can result overturning of the machine.

Location of the valves:



4.4.7 Working on the slope

After the adjusting of the water level, on the slope the operator can work safely with the machine. The lever is next to the hand control valves of the supports. There is not installed extra leaning detector on the machine.

If the machine cannot be adjusted with the hydraulic support to water level because of the soil roughness or angle of the slope which one can be maximum 10% in that case you must put adequate strength and surface backings under the supports.

The selecting and placing of the backings, you must take into consideration the following conditions:

- The load of the supports can be each about 13.55 kN
- The hydraulic supports are stressed by dynamic load for example from the rotation of the boom and elevation dynamic effects of the superstructure which gives away it to the soil.

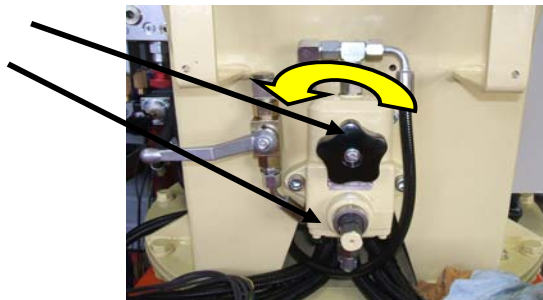
4.4.8. Instructions for operating in Winter

Before operating, you must check that all control valve can be moved freely. If is necessary, the snow and the ice must be got off. If the control arms can not be moved in chill weather, you must not attempt to move them.

If the temperature of the ambient and the machine is under 0°, the machine can only be started according to the following steps:

- Open the valve of the hand pump, screw out the plastic wheel

- Hand wheel
- Hand pump



- The hydraulic pump must be operated about 20 minutes, while oil can warm up in the hydraulic system, after that the wheel of the hand pump must be screw in (to the right).

4.4.9. Working on electrical equipments and next to the electrical ones

- If the work must be done on electrical equipments and next to those, then these equipments shall be disconnected from the mains current.
- You must take care of spontaneous resetting of the voltage.

4.5. Instructions after finishing of the operating of the machine

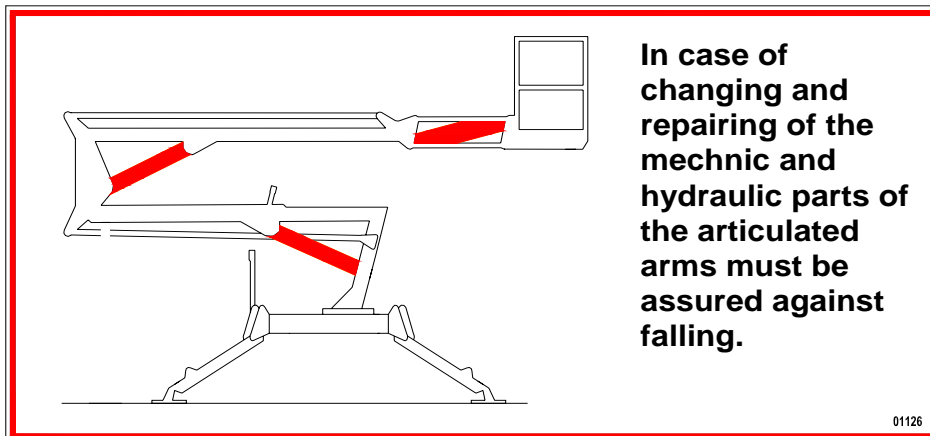
The operator must execute the following tasks:

- place the machine in delivery or normal position
 - Elevator machine arms are in basic position (arms are in bottom position, telescope is in pulled in position)
 - The supports are in a pulled up position
- turn the safety key-switch in normal position and the pull out the key
- switch off the ignition of the explosive engine and pull out the key
- Close the plastic cover of the switch box
- Cancel the electrical connection
- check if all coverings are tightened.

5. MAINTENANCE AND LUBRICATION OF THE MACHINE

5.1 Safety instructions of the maintenance

- The person, who is executing the maintenance works, must check before starting the maintenance activities that no people and objects blocks the maintenance works or the movements of the machines and vehicles on the specified area.
- Relevant safety instructions must be followed during operating the lifting machine.
- Control panel and power supply must be switched off.
- Key switch must be removed.
- Proper warning signs must be displayed „ Out of Order”.
- Before beginning of the maintenance work, if the work must be done under the elevating parts of the machine, those must be assured against falling!



- Maintenance person must check the proper operation of the safety functions, the proper fixing of the parts and protective coverings and the proper air expulsion of the system before putting the machine into operation again after executing the necessary maintenance works. Maintenance person furthermore must ensure that travelling and movements of the machine are not blocked or endangered by any objects.
- „Out of Order” sign can only be removed by the authorised person.
- Maintenance activities must be recorded in written form.



ATTENTION!

The person from the operating company, who is commissioned by the maintenance of the machine, can only check the safety equipment and those operating but can not reset or change those
In case damaged or badly operating safety device, for detecting, the operating company must request the helping of the customer service.

The lead or the fixing point, which is place on the safety device, is only got off and repeated by the manufacturer expert.

We emphatically underline, that the beforehand mentioned works are executed by such kind of person who does not belong to the acknowledged expert of the Teupen Hungaria company, we will refuse all warranty demand and all responsibility which formed from the occasional damage case.

If the elevating machine damages, a damage report must be made by a damage-expert with the countersigns of two evidences.



WARNING!

The adjusting and the fasten bolted connections of the safety devices are fixed with paint or lead by the manufacturer.

These fixations can be broken up by the owner or operating only for his or her own danger or responsibility.

The manufacturer will not undertake responsibility for those warranty and accident consequents which have originated from the breaking up.



WARNING!

Sensors, which are controlling the proper levelling and aligning the machine, are adjusted by the manufacturer. It is strictly prohibited to readjust, reprogram these sensors or to implement further electric connections. The manufacturer will not undertake responsibility for those warranty and accident consequents which have originated from the above activities.



WARNING!

Relays, as well as diodes, are **different** one another. their wrong sostitution can seriously **endanger** the machine safety.

this **intervention** is allowed only by qualified personnel

It is strictly prohibited to modify the manufacturer adjusted parameters of the electric parts.

5.1.1 Lubrication and checking tasks

- a.) The elevating machine was constructed, that the maintenance should be the more simple for the user. The hydraulic pump, the engine, the hydraulic cylinder and the control valves are self-lubricating, the supported in bearings bogie of the lifting arm support must be filled up by lubricant and it only must be repeated in half a year. Furthermore all the joints and slipping surfaces shall be lubricated at least once a month with Optimol white T.
- b.) The rubber track must be cleaned from the laded soil by the water of jet after usage and after that, the lubricating points must be filled up by the described lubricant.
- c.) The machine should be cleaned by the help of a jet of water or the appropriate neutralizer after transportation or usage in saulty or corrosive medium. After cleaning the prescribed lubrication should be made.

5.1.2 Bogie maintenance instructions

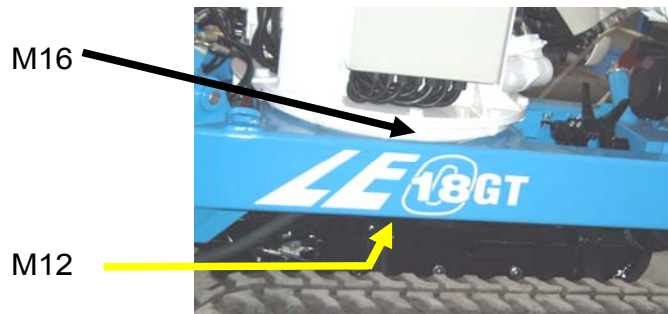
Control the tightening screws



Screws shall be retightened after 700 running hours or at least in every sixth month to avoid any injuries or damages.

Control the pull-on torque of the screws after the first 100 running hours to avoid possible malfunctions.

Reset the specified pull-on torque of the screws:



Screw size:	Screw quality:	Pull-on torque:
M12	10.9	109 Nm
M16	10.9	270 Nm

Tightening screws shall be retightened after 700 running hours or at least in every sixth month to avoid any injuries or damages.

Control and replacement of the screws:

- screws shall be relieved
- pull-on torque shall be checked and reset
- loose screws shall be replaced



Check the bearings:

Any small chips in the system can modify working of the bearings, therefore bearing shall be checked regularly.



Bearings shall be checked in every 2000 running hours but at least once a year

Missing the above mentioned checks causes damages and injuries during operating

Lubrication of the bogie:

Bogie must be lubricated after every 100-200 running hour in case of using on rough ground!

Lubrication of the pressure bearing shall be executed

- after every cleaning (with high pressure water or stream),
- before longer doentimes (winter downtime)

General maintenance instructions

- Damages and gaskets of the hydraulic pipes must be checked at least on a monthly basis
- Hydraulic pipes shall be replaced in every sixth years
- All parts of the machine shall be inspected visually
- Loosen bolts and nuts shall be checked
- Wearing and tension of the rubber chain must be checked
- Wearing and tension of the rubber chain must be checked
- Function of the end switches of the bogie truck shall be checked
- Proper operation of the main functions of the elevating machine shall be checked before operating



No.	Description of the tasks	Before every operating	Weekly	Monthly	Yearly
1.	The checking of the equipment with inspection	X			
2.	Checking the functions and the safety devices. Checking the stabilizing mechanism (see:4.4.4)	X			
3.	The checking of the cleanness of the machine	X			
4.	The checking of the oil level and state and, if it necessary, it must be refilled		X		
5.	Lubrifications must be achieved by the attached lubricating plan		X		
6.	The state checking of the tubings and the cylinders and the tightness of the hydraulic system		X		
7.	The checking of the electric devices and cables.		X		
8.	The tightening checking of the hollow screws		X		
9.	The cleaning of the hydraulic filter			X	
10.	The checking of the hinge-pin and bushing			X	
11.	The checking of all bearing of the moving element.				X
12.	The oil filter changing.				X
13.	The filling up of the hydraulic system				X
14.	The checking of the welded seams injury and the corrosion				X
15.	The cleaning as well as the lubrication of the closed corners and the bogie.				X
16.	The renewing of the labeling and the sticker as well as painting etc.				X
17.	The execution of the load test				X
18.	The checking of the hollow screw tightness of the bogie				X

The oil must be changed in the machine once a year.

The Teupen Hungária Company or the acknowledged special companies of the Teupen Hungaria Company should achieve the annual checking tasks.

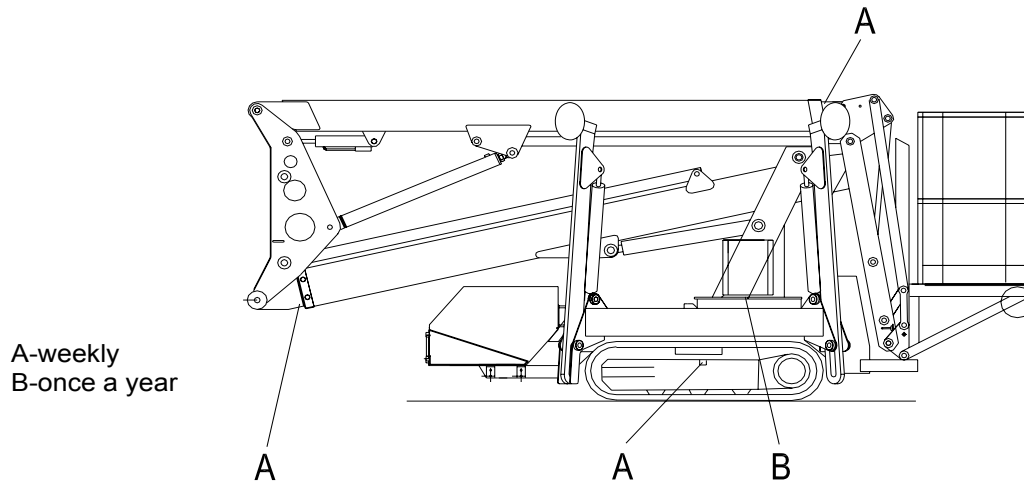


Chart 5

Grease

On the given points of the elevating machine, there are lubricating places with lubricating nipples which ones are able to move on each another. See the chart 5.

The lubricant type, which you can use, the following table contains:

The quality of the lubricant	The applied temperature
IP ALVANIA 32	- 30° + 130°
IP FLUID 12	- 20° + 60°
MOBIL MOBILUX 2	- 35° + 130°
MOBIL MOBILTAC 81	- 30° + 120°
ESSO BEACON 2	- 30° + 130°
ESSO SURRET FLUID 30	- 20° + 60°

The hydraulic oils

Hydraulic system of the elevating machine is filled up with environment friendly **PLANTOHYD 32-S oil**.

Oil level:

The level of the hydraulic equipment only can be checked, if the cylinders are in basic position or the machine is in delivery position. If it necessary, the oil must be filled up.



**The different type oil mixing is prohibited because it can cause the damage of the machine.
The hydraulic oil can only be used which are in the instruction manual.**

Hydraulic system needs
Hydraulic tank needs

about 25 liter
about 25 liter

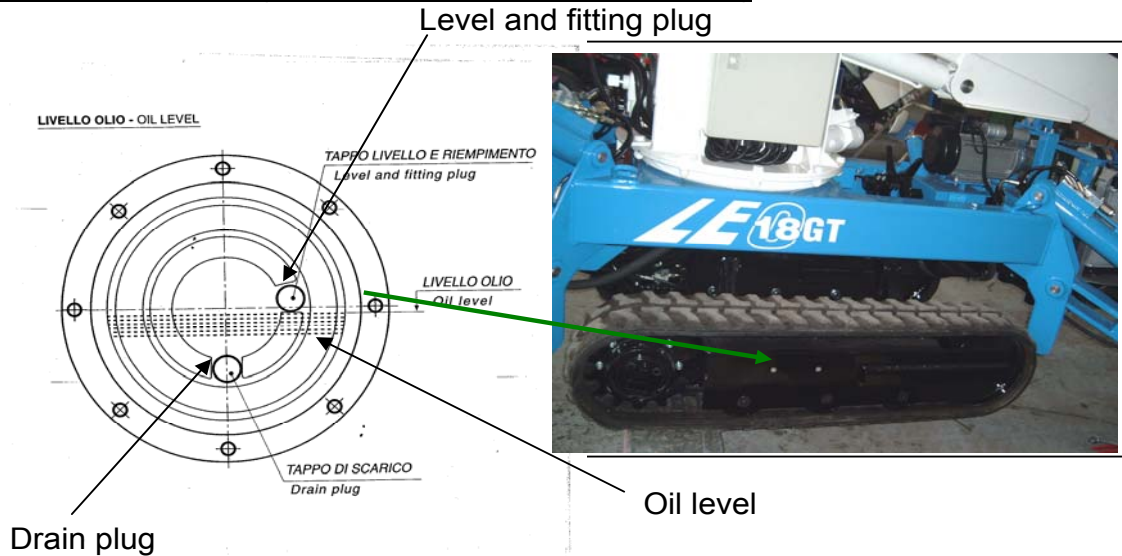
For the trouble-free operating of the hydraulic system and for the optimum actual output assuring as well as for the long life operating, the adequate quality hydraulic oil will only give warranty. That is why, we recommend the following type hydraulic oil, which ones are suitable for the machine.

BP Energol HLP-D 22
H-LPD OEL 22
Renolin MR 5
Shell hydrol DO 22
AGIP ARNICA 22

ATTENTION!

The hydraulic oil, which is not suitable for the machine, can cause the damage of the hydraulic system.

Gearbox lubrication (on the both sides of the machine)



The checking of the oil level and state and, if it necessary, it must be refilled: Monthly
The oil change must be carried out after the first 150 hours of work, and then once a year. To facilitate the emptying of the gearbox the oil change should be carried out while the gearbox is warm.

Type of gearbox oil: **SAE 80W-90 API GL-5 OEST**

Recommended lubricants:

Viscosity: SAE 80W-90

SAE 80W-90 API GL-5 OEST

BP Enersyn HTX

AGIP Blasias S

Shell Tivela Oil



ATTENTION!

The gear oil, which is not suitable for the machine, can cause the damage of the gearbox. Different oils must not be mixed together.

5.2 Operating trouble and prevention of those

FAILURE	THE CAUSE OF THE FAILURE	FAILURE CORRECTION
The hydraulic pump cannot generate pressure.	The valve of the hand pump is open	Turn right for closing
	The pressure limiting valve of the control block is contaminated	Call the customer service
	Hydraulic pump failure	Call the customer service
	The oil filter is contaminated	Clean the oil filter or change it
	There is enough oil	Refill the oil and examine the cause of the loss
The engine does not start.	There is not electrical energy supply.	-Check the EV relay. -Check the thermal release of the engine -Check the electrical connection entireness
	Either button of EMERGENCY-STOP is in disconnected position.	Check the EMERGENCY-STOP buttons. (Relieve).
The basket does not move.	There is bearing pressure on any soil plate	Check the position of the soil plate.
	The overloaded of the cage	Check the load of the cage.
	The safety pin position of the cage is not suitable.	Check the pin and the approaching sensor position.
The superstructure does not move and the sound of the electric engine is not common	The section of the extension cable is not enough.	Check the section of the extension cable.
The hydraulic oil is dingy or white color	Water got to the system.	Call the customer service Immediate replacement of the hydraulic oil is expected
The speed control of the functions does not run, individual function starts with complete speed.	The proportional valve remained in closed position.	Turned off the bar of the valve and screw it out in basic position.
The basket does not leave the transport position, green sign of timing is not displayed.	Bottom telescope is not in total retracted position.	Start the Kubote engine. Push the Timer (Temp) button.

<p>Vertical arm is not levelled during the operation of the bottom arm. Inclination (10 degree) of the vertical arm stops the machine control.</p>	<p>Instantaneous cutout.</p>	<ul style="list-style-type: none"> - Switch the machine off. - Adjust the normal position of the basket by the hand pump to ensure the vertical position of the vertical arm. - Switch the machine on and the arm-levelling function should work.
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ATTENTION!

The fabricator respectively the dealer will not undertake the warranty and pecuniary responsibility such damages which derivated from the negligence of the described maintenance of the elevating machine and for the consequences of the accidents.

5.3 The maintenance of the explosive engine

The explosive engine unit must be serviced regularly according to the maintenance directives, which are given by its fabricator.

To the trouble-free operating, you must do the following tasks according to the described duration

- the changing of the oil and the oil filter
- the checking of the electrolyte level of the accumulator frequently in summer



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