KESLA XS

190

SELF-PROPELLED TELESCOPIC PLATFORM

OPERATION MAINTENANCE

INTRODUCTION

Kesla XS 190 is a self-propelled telescopic access platform provided with it own diesel engine or an optional 380V electric pump unit. XS 190 is intended for lifting personnel for instance in building and renovation sites, parks, and shipyards etc. Due its four-wheel drive and four-wheel steering, XS 190 is very agile, and can easily travel in difficult terrain when driven from the platform.

Because all essential controls are centralized to the platform, XS190 Access Platform can be controlled from the platform in any normal operating situation. Similarly, the electrical junction box and the controls for ground operation are located on the turntable. The brakes of the Access Plateform are locked automatically when the pressure of the drive motors decreases. The electrical emergency lowering system can be controlled from the platform and from the turntable.

Due to its telescopic boom, XS 190 has a wide side reach. The 360º slewing mechanism. jib boom and turning platform enhance flexibility.

XS 190 Aceess Platform has many safety-improving functions. Good knowledge of all these functions helps carry out work efficiently and safely.

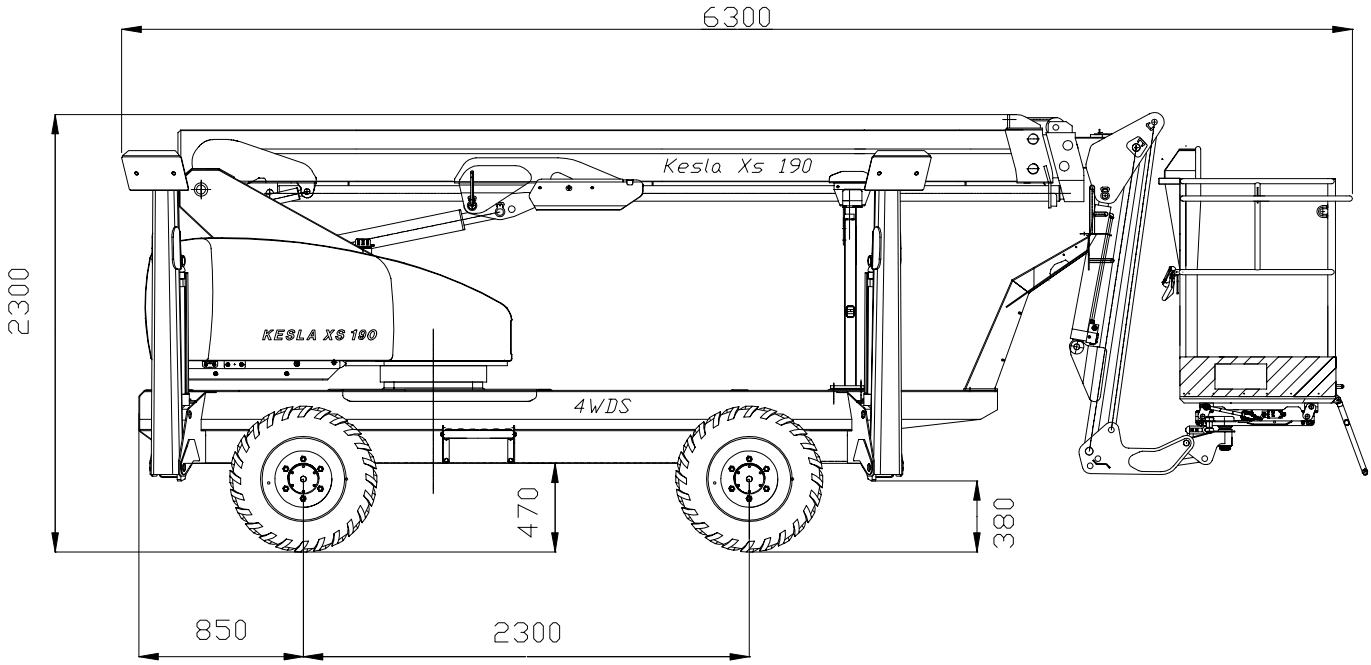
Please check the condition of the access platform every day according to these instructions prior to starting the work. Do not use the Access Platform if it is not in order or if it has not been serviced or inspected.

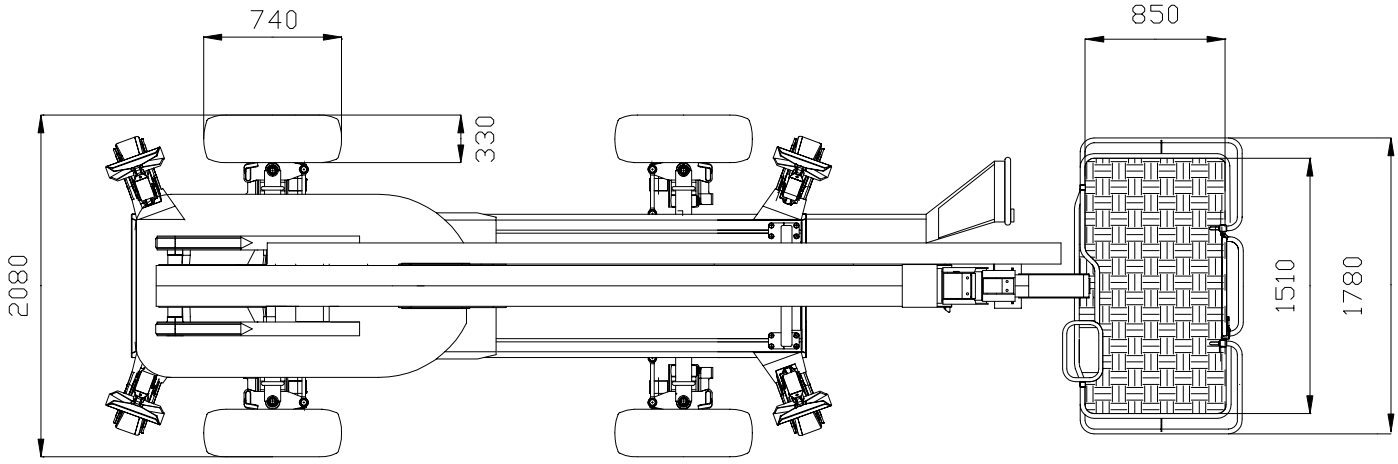
The manufacturer reserves the right to change the construction, equipment as well as the maintenance instructions of the machine without advance notification.

With wishes of elevating success

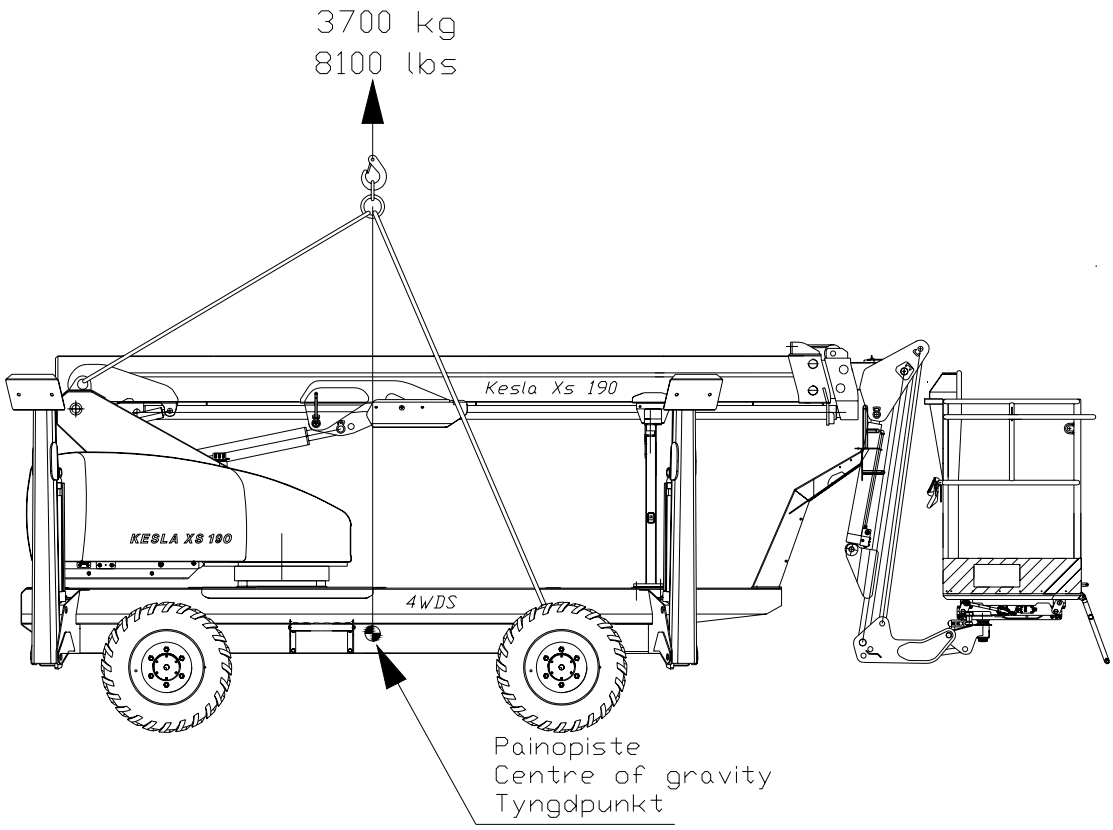
KESLA OYJ

TRANSPORT DIMENSIONS





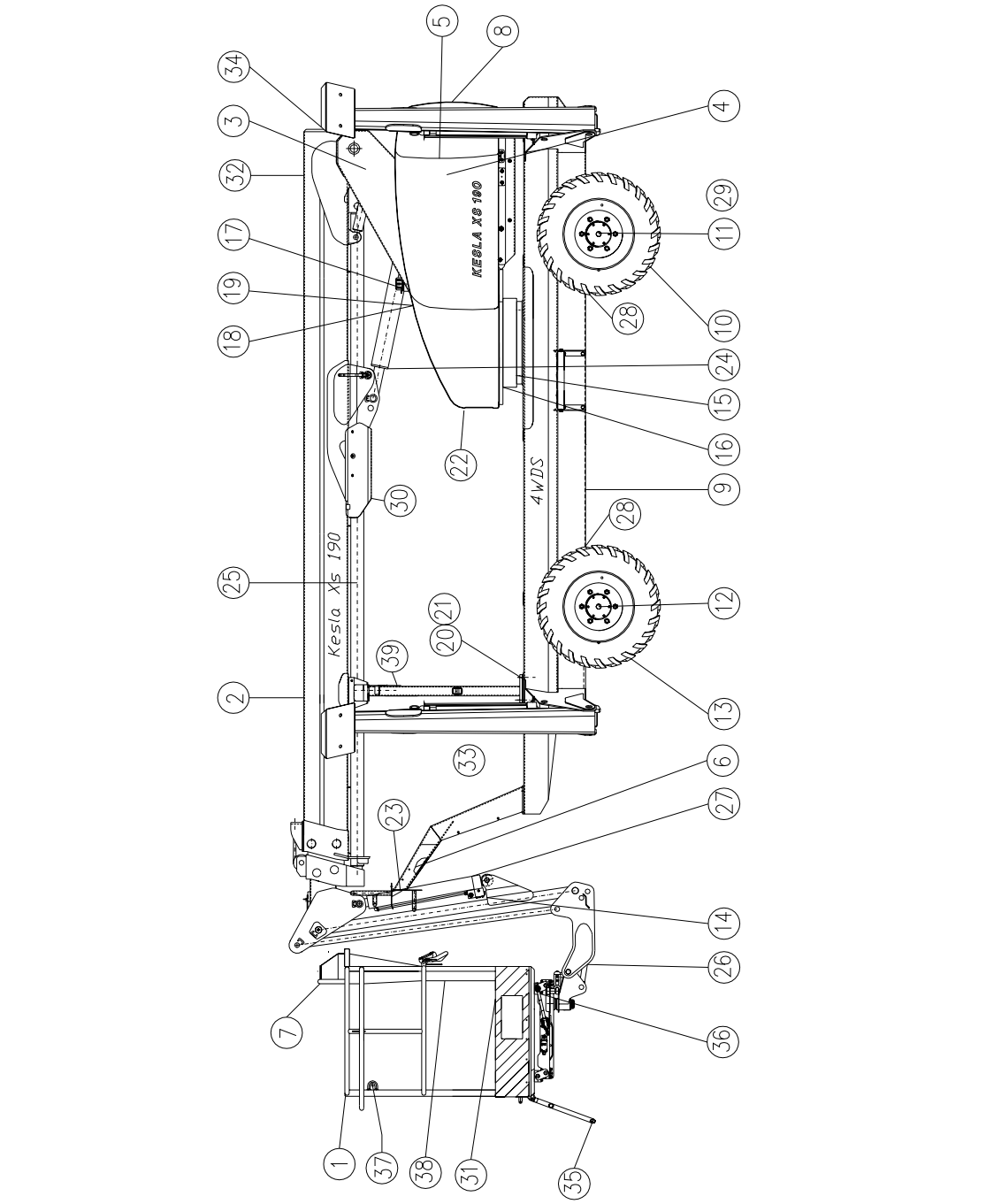
LIFTING THE ACCESS PLATFORM WITH LIFTING HOOK



Lifting the access platform with lifting hook

SPECIFICATION

FRONT



Specification

1 Platform
2 Boom
3 Turntable
4 Turntable cover
5 Combustion engine
6 Drive and outrigger valve and jib rods
7 Boom control valve, control from platform
8 Boom control valve, control from below
9 Chassis
10 Front axle, rocker axle
11 Front wheel and brakes
12 Rear axle, dead
13 Rear wheel and brakes
14 Jib
15 Pivot bearing
16 Slewing motor, gear and brake
17 Fuel tank, in the middle of the turntable
18 Hydraulic oil tank, on the left side of the Access Platform
19 Battery, on the left side of the Access Platform
20 Tool box
21 Storage place for the Operation Manual
22 Main power switch
23 Shunting switch, raising and lowering of the boom without outriggers
24 Lifting cylinder
25 Telescope cylinder
26 Platform stabilizer cylinder
27 Jib cylinder
28 Steering cylinders
29 Hydraulic pump
30 Lifting radius limiter device
31 Foot pedal (when pressed down: operating the boom)
32 Electric pump for the emergency lowering system (left side)
33 Storage for the spare wheel (spare wheel is an option)
34 Control cylinder for stabilizer cylinder
35 Platform step
36 Cylinder for rotating the platform
37 Fastening hooks for safety harness, 2 hooks
38 Electric outlets for power tools (220V 50Hz)
39 Transport support

TECHNICAL DATA

Max. height of platform bottom from ground	16.7 m 54.8 ft.
Max. working height	18.7 m 61.4 ft.
Min. lifting radius measured from the outer edge of the platform at max. working height	1.0 m 3.3 ft.
Max. permitted platform load	230.0 kg 506 lbs.
Max. lifting radius at @ 230.0 kg platform load (to the outer edge of the platform)	8.0 m 26.2 ft.
Ma. lifting radius @ 120 kg platform load (CE spec.)	9.2 m 30.2 ft.
Dimensions of platform bottom	0.85x1.5 m 2.7x4.9ft.
Support distance of outriggers (lengthwise)	4650 mm 15.2ft.
Support distance of outriggers (widthwise)	4050 mm 13.3ft.
Max. supporting force on the sole of outrigger	22500 N 5060 lbs.
Max. allowed ground slope	±6°
Max. allowed chassis inclination	±1°
Transport length	6.30 m 20.6 ft.
Transport width	2.08 m 6.8 ft.
Transport height	2.30 m 7.5 ft.
Ground clearance below bottom	0.47 m 1.5 ft.
Wheelbase	2.3 m 7.5 ft.
Turning radius:	
4-wheel steering, outermost part of tyre	3.0 m 9.8 ft.
4-wheel steering, outermost part of platform	5.0 m 16.4 ft.
2-wheel steering, outermost part of tyre	5.0 m 16.4 ft.
2-wheel steering, outermost part of platform	6.9 m 22.6 ft.
Rocking angle of front axle	±10°
Total weight with filled tanks	
Diesel	3700 kg 8160 lbs.
Rear axle load with 80 kg platform load	2200 kg 4850 lbs.
Front axle load with 80 kg platform load	
Diesel	1350 kg 2976 lbs.
Driving speed:	
slow	1.8 km/h
fast	3.6 km/h
Traction force	
slow, oil temperature +20°C	15400 N, 1570 kg, 3461 lbs.
fast, oil temperature +20°C	7700 N, 785 kg, 1730 lbs.
Climbing capacity (theoretical): slow range	35%/19°

Wide tyres..... 350/50-16/12pr
All-terrain tyres, high-traction tread..... 10,0/75-15,3/8pr
Max. noise level (at a distance of 1 m from the engine)..... 88 db

Output of hydraulic pumpu @ 3000 rpm:
for boom..... 9.0 l/min 2.4 US.gpm
from drive
Diesel..... 26 l/min 5,8 US.gpm

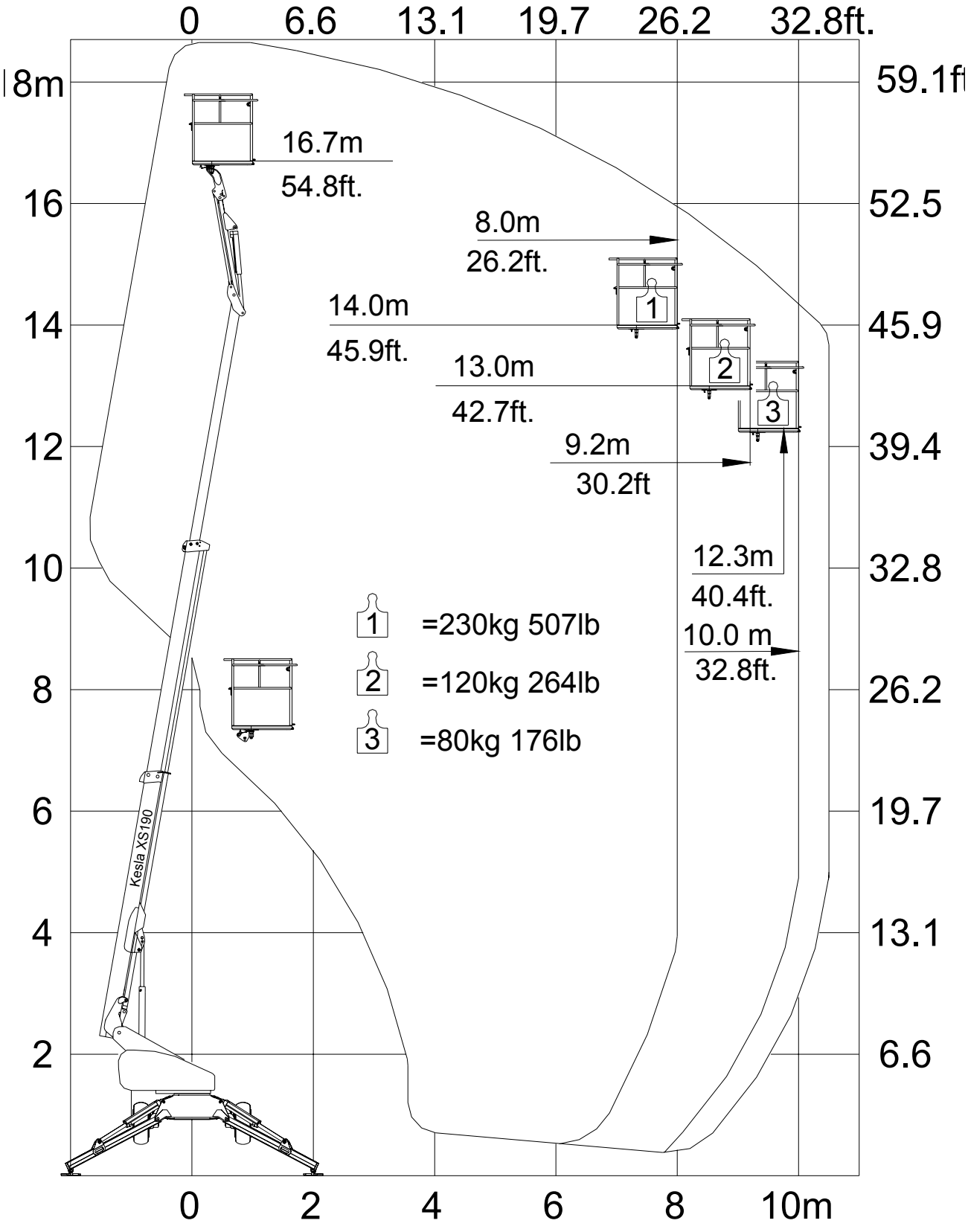
Hydraulic pressure:
upper carriage and boom..... 230 bar 3336 psi
drive motors and outriggers ..... 250 bar 3626 psi

Hydraulic pump: variable displacement axial piston pump

Volume of hydraulic oil tank..... 60 l 16 US.gal.
Volume of fuel tank ..... 65 l 17 US.gal.

Combustion engine
Diesel..... Kubota 905

ACCESS PLATFORM XS190 BOOM GEOMETRY



GENERAL SAFETY INSTRUCTIONS

1. Read through this Owner's Manual carefully before using the Access Platform for the first time. The Access Platform shall never be operated by an operator who is not familiar with the operating and safety instructions. Store the Owner's Manual in it's own compartment. ALWAYS keep the manual with the Access Platform.

2. The operator must be at least 18 years of age and have reasonable operating experience of Access Platforms

3. Kesla XS 240 is fitted with the following fail-safe safety limit switches:
- *Support position of the outriggers*
- *Ground sensing of outriggers*
- *A limit switch sensing the transport position of the boom in the transport support*
- *In the platform, a limit switch preventing the collision of the platform and the jib boom*
- *Between the boom and the turntable, a limit switch sensing the boom position*

4. The emergency lowering system comprises an electrical pump in the turntable, control valves in the turntable and the platform, and control buttons. Detailed instructions can be found on page 41.

5. Avoid lifting the platform too close to live electrical cables. The minimum safe distance to cables with different voltage is shown in a decal located on the platform.

6. Always use a yellow flashing warning light when working on streets with busy traffic. The working zone shall be fenced to avoid risks. Also observe the relevant traffic regulations concerning the working site.

7. When driving the Access Platform, the boom shall always be supported in the transport position. Drive using the bypass switch only when it is necessary when climbing a steep slope or in difficult terrain, where the platform may hit ground or an obstacle.

8. A maximum of two (2) persons with tools and supplies are allowed on the platform at the same time, however, so that the total load does not exceed 230 kg (506 lbs). When moving the Access Platform, there should be only one person in the platform due to traction power.

9. Use the Access Platform only when the ouriggers are properly extended. Use extra boards under the outriggers whenever required. Make sure that an outrigger does not slip on the surface of the extra board and that the extra board withstands the weight of the outrigger. On icy surface, attach calks or bolts to the outrigger plates. Calk holes have been provided in the sole plates. For the tightness of different soil types, refer to the soil tightness table on page 38.

Keep in mind that even asphalt may yield!

10. When operating the Access Platform, observe the adverse impact of wind, rain, temperature, thunder, bad visibility and accumulated snow and ice.

11. Do not take extra load while lifting, RISK OF TIPPING OVER! Do not leave the platform when it is up or when the Access Platform is moving.

12. Be aware of the health risk in hot or cold working environment.

13. Do not increase the wind load of the Access Platform with extra cover boards or load which enlarge the wind surface.

14. Do not increase the reach or working height of the platform by using planks, ladders or any other device. Do not swing or jump in the platform.

15. Do not throw down objects from the platform. Make sure that nothing can fall down.

16. Use ear protection when operating the Access Platform from the ground operating station, because the sound intensity exceeds 84 db (A). When operating the Access Platform from the platform, the sound intensity is less than 84 db (A), and the use of ear protection is not obligatory.

17. Always when you operate the Access Platform indoors or in a place with poor ventilation, the engine shall be used only for moving the Access Platform. Try to improve ventilation. Risk of intoxication! The Access Platform may optionally be equipped with a mains current pump unit for operation indoors (240V / 50Hz).

18. Do not use the Access Platform as a crane or elevator for transporting goods or persons between different levels or floors. When using the Access Platform, observe the environment to avoid collisions with fixed or moving obstacles.

19. Do not deactivate a safety device. Repair it or have it repaired by a competent maintenance personnel before using it again.

20. Ensure that the area below the platform is clear of all personnel and obstructions before lowering the platform.

21. To ensure safe and trouble-free functioning of the Access Platform, keep it free from snow, ice and other impurities.

22. Be very careful when handling fuels, lubricating and hydraulic oils as well as lubricating greases of the Access Platform. Avoid skin contact with these substances. Risk of exposure!

23. Always turn off the engine of the Access Platform when filling up the fuel tank. Beware of splashes. Risk of fire!

24. Check and maintain the Access Platform regularly or let a maintenance personnel familiar with Access Platforms carry out the service and repair work.

25. Do not make or have made any structural alterations to the Access Platform without the permission and instructions of the manufacturer.

26. Do not open the filling opening of the cooling system if the engine is warm. Risk of an accident!

27. Check the following issues every day before starting the work:

28. Check the functionality of the load control system every day before starting the work. See pages 17 to 19 for checking instructions.

If the lifting radii are over or well below the permitted values, please contact an authorised service shop.
The Access Platform must not be used before the load control has been set correctly.

WARNING !

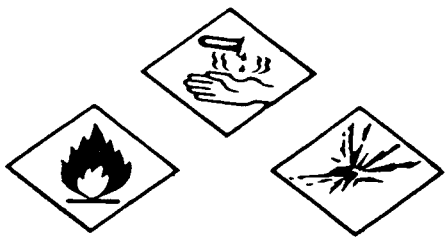
29. SAFETY INSTRUCTIONS FOR HANDLING A LEAD BATTERY

1. The electrolyte in a lead battery is diluted sulphuric acid. Several metals and organic substances are corroded by sulphuric acid. Always wear goggles, gloves and protective clothing when working with batteries. Any electrolyte splashed on skin should be removed immediately with plenty of fresh water. If electrolyte gets into eyes, they should be flushed for at least ten minutes. Immediate medical attention required.

2. Batteries generate hydrogen and oxygen gases during normal use. Together they form an explosive mixture. All local battery systems containing energy more than 15 kWh should be stored in a separate, efficiently ventilated battery room. The materials of the battery room should be selected so that they prevent static electricity and consequent sparks. The safety of a battery room is also enhanced by protective ceramic plugs in the batteries.

3. When connecting and wiring batteries, use only insulated tools in order to prevent short cuts. The battery terminals should be protected during transport.

4. The battery terminals and other lead components contain poisonous lead substances. Please carefully wash your hands after handling batteries. Abandoned lead batteries are toxic waste. They should be disposed of properly in designated collection points. Service stations have facilities for receiving discarded starter batteries.
DO NOT POLLUTE NATURE BY DISCARDED BATTERIES!
5.



6. You can get additional information about information related to batteries from these sources:

- *Finnish regulations of electrical safety (Sähköturvallisuusmääräykset), chapter 21*
- *Electrical card file (Sähkötietokortisto) cards No. TK 14.850, 14.855*
- *Security instruction for fork trucks by insurance company Teollisuusvakuutus*
- *specifications for telecommunication networks*

30. Inspect or have inspected the Access Platform once a year (12 months) or more often in adverse conditions. This so-called annual inspection should be carried out by a person with a lifting device inspector qualification. The inspection should be registered to a dated journal, which should always be kept in the Access Platform, for instance in the tool box, and the owner of the equipment should keep a backup copy in a safe place. An officially approved copy of the journal form is enclosed with the User's manual. Perform or have performed the next inspection within 12 months after the previous inspection, and similarly thereafter, during the same month in which the first factory inspection was performed. The inspection should be renewed sooner if the Access Platform is used in demanding conditions, if the supporting structures have been welded, or if there is any other special reason to carry out a new inspection. A new inspection should be carried out in order to secure the structure and general safety condition of the lifting equipment, particularly regarding to any alterations affecting security issues. As to any changes or repairs, their date, location in the equipment and the identity of the person who carried out the work should be recorded in the journal. Please keep yourself informed about any changes of official regulations since the last inspection. Any changes should be taken into account in the new inspection. The manufacturer or an authorized dealer should be consulted prior to any repairs or alterations of supporting structures.

31. Drive the Access Platform to a safe place before leaving it. Drive the boom and the outriggers to transport position, switch off the engine and the main power switch. Keep all keys in a safe place. Note! Keep all keys in one bundle, also when using the platform.

32. Never operate or drive the Access Platform under the influence of alcohol or narcotics.

BEFORE USING THE ACCESS PLATFORM FOR THE FIRST TIME

Check the following always before using the Access Platform at the intervals stated in the table. ***DO NOT USE A FAULTY ACCESS PLATFORM.***

	Daily	Weekly	Monthly	Note:
General issues to be inspected				
- engine oil, level	X			
- hydraulic oil, level	X			
- fuel, level	X			
- hydraulic oil, leaks	X			
- condition of hydraulic hoses	X			
- Checking of the load lowering valves of the cylinders	X			
- tyre pressures		X		310kPa (45PSI)
- visual inspection of bolt connections and load-bearing structures	X			
Operation of safety limits				
- checking of telescope reach	X			sivu 17,18
- checking of lifting radius	X			sivu 19
- checking of backup safety limit of load control			X	sivu 20
- checking of safety limits of outriggers	X			sivu 17
- checking of ground sensor limits of outriggers		X		sivu 17
- checking of platform load control		X		

Daily, weekly and monthly inspections and maintenance may be carried out by personnel sufficiently familiar with the use of the access platform and the User's manual.
Repairs and adjustments of safety equipment such as reach limit and load control should be carried out by trained personnel or a service shop.
The person carrying out the annual inspection of the Access Platform should have qualification of a lifting equipment inspector.
Repair works affecting the strength of the Access Platform are described on page 61.

CHECKING THE OUTRIGGERS

Check the functioning of the outrigger safety limits by extending the outriggers to the supporting position (wheels are off the ground). In this position, the boom can be operated. The outriggers have ground and position sensors; therefore a force of at least 6 kg (13,2 lbs) must be applied on the outriggers. The outriggers must be turned from the transport position at least 75° towards the ground because of the functioning of the position sensor.

Checking the operation of the ground sensor once a week. The alarm signal should sound if one of the outriggers is disengaged because of the quality of the ground or an uneven set up.

- *Set the Access Platform up in the supported position with wheels approx. 100 mm off the ground.*
- *Lift one outrigger slightly off the ground.*
- *Try to lift the boom. The boom must not rise, if the Access Platform is not correctly supported.*
- *Ask another person to raise the outrigger manually or using for instance a piece of wood. Then lift the boom slightly off the transport support.*
- *Ask him to release the outrigger. The alarm should now sound and the upward movements of the boom should be prevented. The alarm sound stops when the outrigger is lowered back on the ground.*
- *Repeat the same for all outriggers.*

If one outrigger or all of them does not work properly or if the alarm does not sound, the Access Platform must not be used before the fault has been repaired.

When the sole of one or more outriggers is off the ground and the power is switched on and the pedal is pressed, the alarm sounds. This does not prevent the use of the Access Platform.

CHECKING THE TELESCOPE

Support the Access Platform on the outriggers so that the wheels are about 100 mm off the ground.

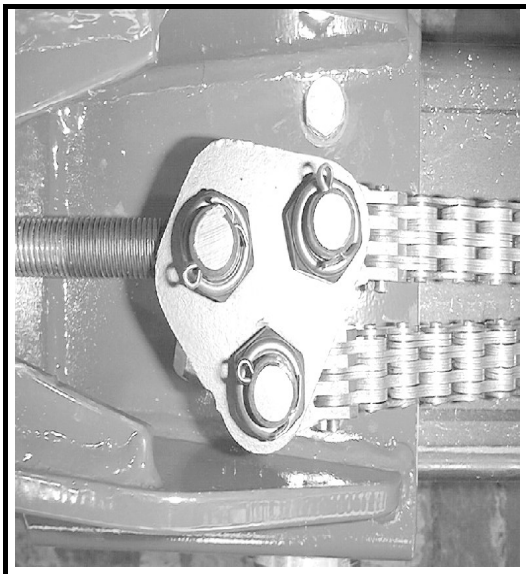
The platform must be empty during this test.

Extend the jib to an angle of 45º with respect to the boom according to the markings at the end of the jib and the boom, see fig. on page 18, item C. Lift the boom off the transport support and turn the boom about 10 degrees to the left. Lower the boom completely. Switch off the combustion engine by turning the ignition switch in the platform to OFF.

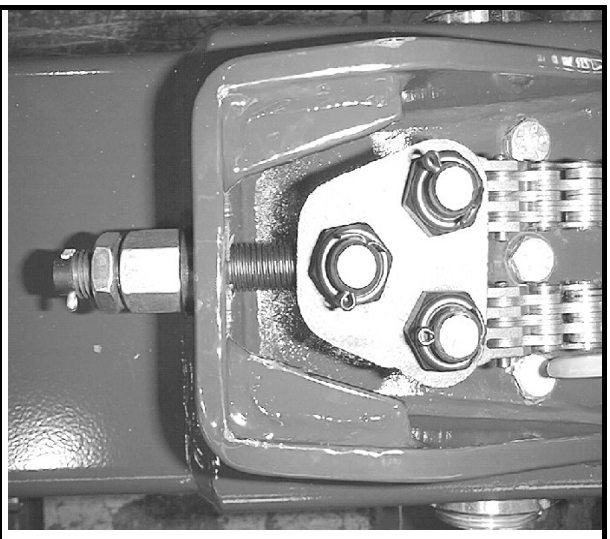
Move the ignition key to the control box of the turntable. Start the engine.

While being in the lower control position, lift the boom to horizontal position, see fig. on page 18, item D.
Extend the telescope boom continuously until the load control stops the extension movement.

Check that the triangular fastening item on top on the boom is straight; visually check that the chains are tight. Note! If the triangular link is askew, in others words if one of the chains is shorter, check the condition, fastening and adjustment of the chains. The Access Platform must not be used, if for instance one of the chains is broken or its fastening or adjustment is loose.



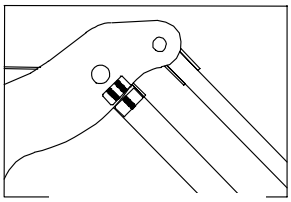
Wrong



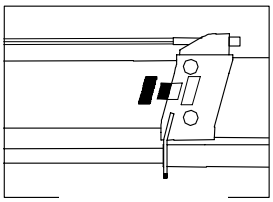
Right

Triangular fastening link of the boom

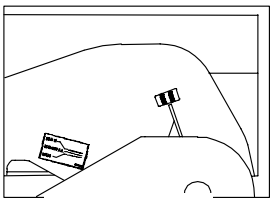
The telescope boom should stop when the middle painted mark is visible. The limiter of the lifting radius of the telescope boom has now been checked.
Note! If the last section of the painted marking is further than 100 mm from the exit of the boom, the Access Platform should not be used. Have the load control checked.



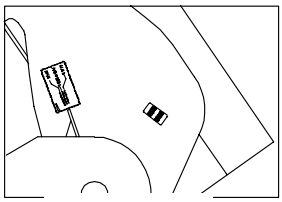
Direction C



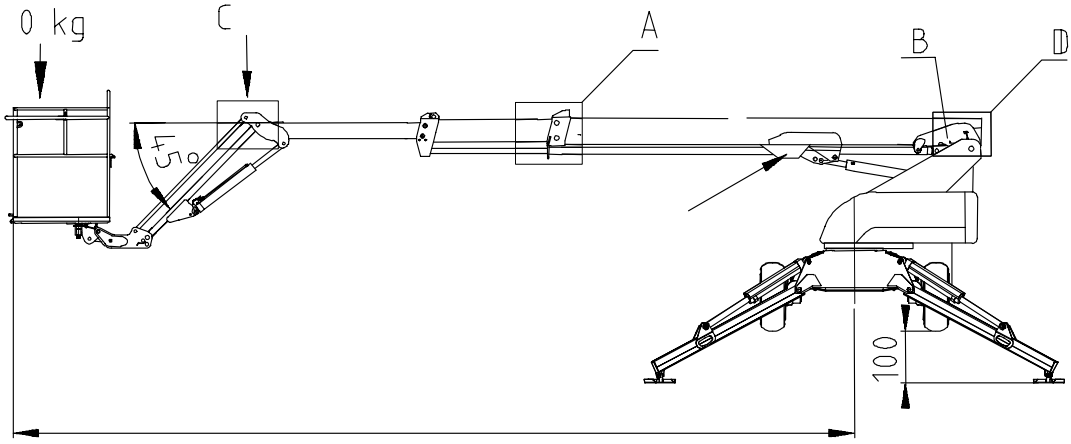
Point A



Point D



Point B



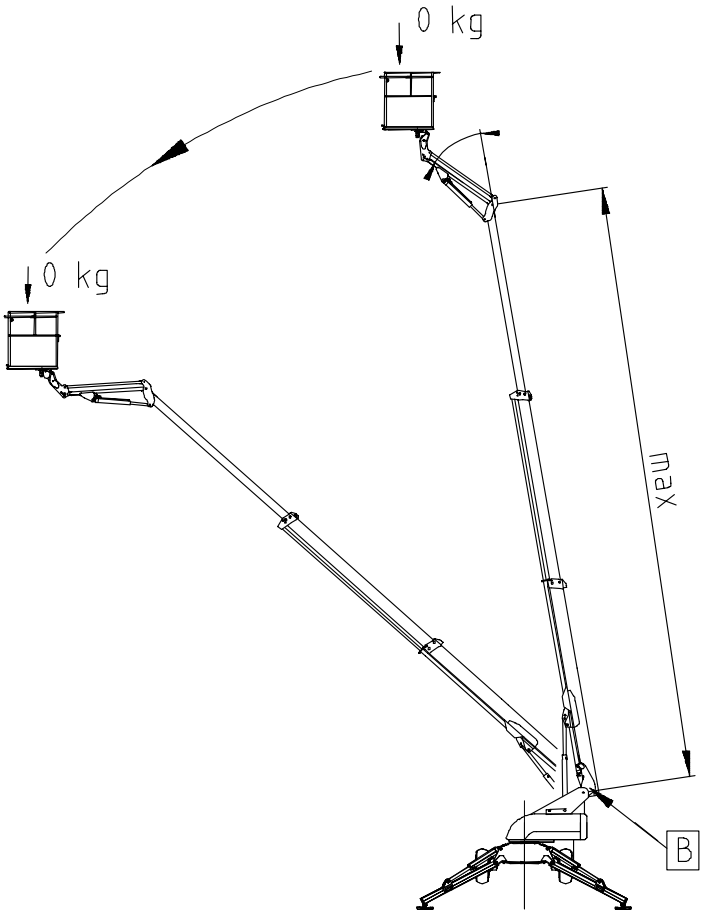
Checking marks of the extension boom and the boom lowering

Checking the lifting movement

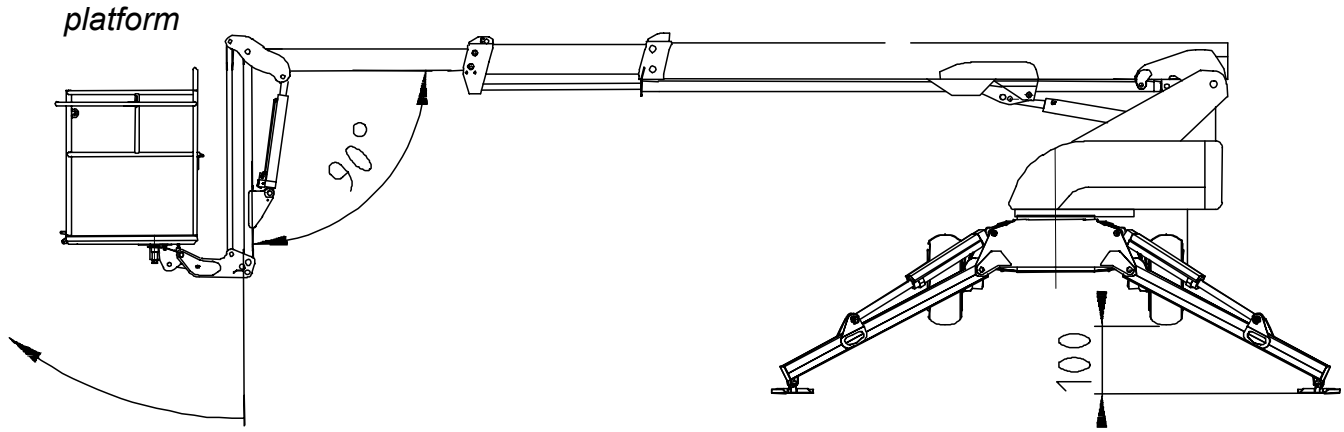
1. Extend the jib to an angle of 45º with respect to the boom according to the markings at the end of the jib and the boom, see item C.
2. Extend the jib all the way up, see fig. on page 19. Extend the boom extensions fully with the telescope.
4. Lower the boom with the lifting cylinder keeping the control lever all the time in the lowering position
5. After the lowering movement has stopped, check the stopping point from indicator located in the turntable. The indicator should now point the scale in the decal of the boom, see item B.

Note! If the indicator passes the max. line of the scale by more than 5 mm , the Access Platform should not be used. Have the load control checked.

Checking the lifting radius



Checking the lifting radius



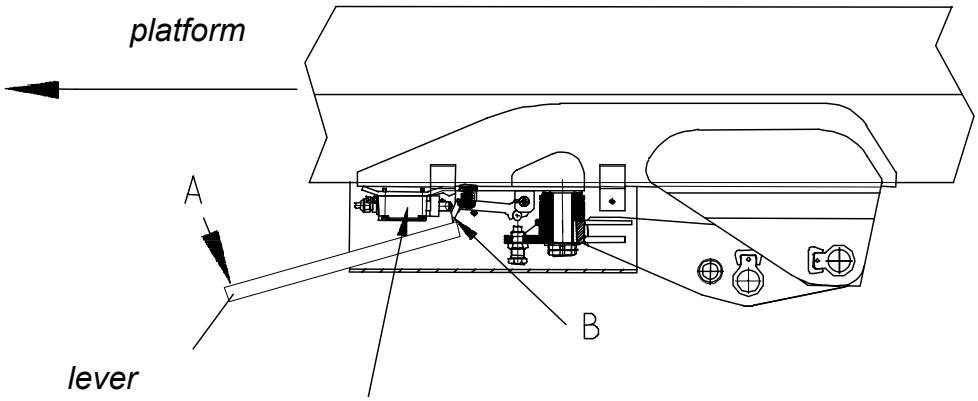
Checking the lifting radius of the jib

CHECKING THE JIB

1. Support the Access Platform on the outriggers so that the wheels are about 100 mm off the ground.
2. The platform must be empty.
3. Lift the boom off the transport support and turn the boom about 10 degrees to the left. Lower the boom to horizontal position. Lower the jib to vertical position. The angle between the jib and the boom is 90º±5º.
4. Extend the telescope boom continuously until the load control stops the extension movement.
5. Lift the jib boom upwards. The jib boom must rise. If the rib boom rises, the Access Platform must not be used. Check the operation of valves Y12 and Y13 in the platform.

CHECKING THE BACKUP SAFETY LIMIT FOR LOAD CONTROL

- Parallel with the load control, adjusted further on, i.e. for a larger lifting radius, there is an electric safety limit switch which interrupts all movements. It works when the actual load control is misadjusted or out of order. In normal conditions, the electrical backup safety limit does not work. If the backup limit switch is activated, the boom must be retracted to its normal range using the emergency lowering system, as this backup limit switches off the Diesel engine, and it will not start again as long as the backup limit is working. Even if the backup limit switch is activated, there is no danger of the Access Platform tipping over.



backup limit switch: is located on the right side of the boom, seen from the platform

Checking:

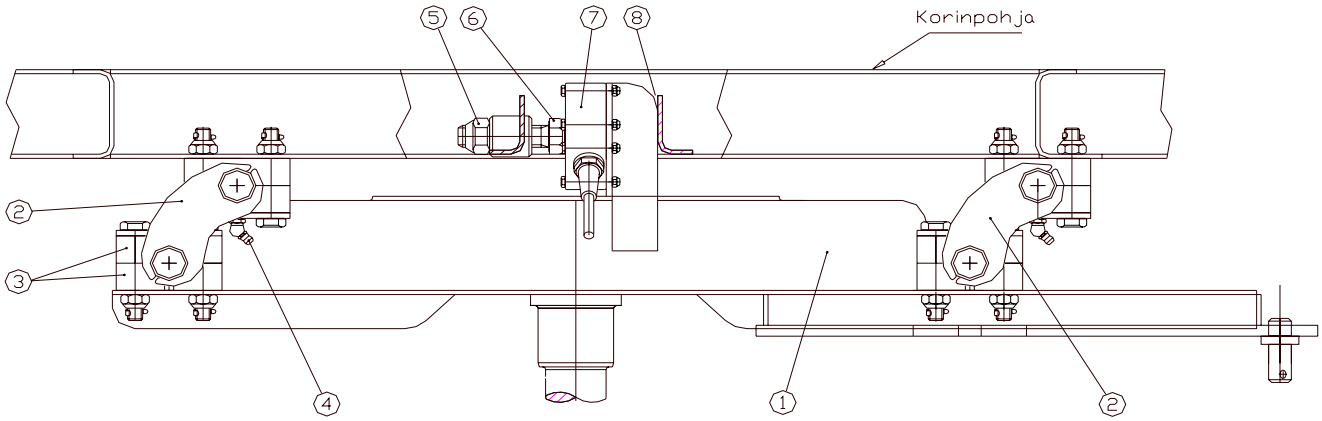
1. Start the Diesel engine for instance from the platform.
2. Set a lever, for instance a wood stick as illustrated between the guide cam B and the cover.
3. Press lever A to direction B. The guide B rises deactivating the backup limit switch. The Diesel engine should now stop running.
4. If the Diesel engine keeps on operating when the lever is taken away, the Access Platform must not be used before the fault has been corrected.

Checking of the load lowering valves and the boom sections

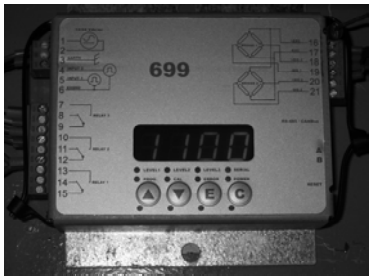
1. Support the Access Platform on the outriggers. Controlling from below, lift the boom off from the transport support. Turn the boom aside about 10º. Lower the boom to horizontal position. Extend the telescope boom continuously as long as it goes (the load control stops it). Leave the engine running.

2. Operate each outrigger lever back and forth. If the boom is not in the transport position, the outriggers must not work. If they do, the Access Platform must not be used before defect has been corrected.
3. Turn the boom and let it stay about 2 minutes on each outrigger. Watch the outrigger cylinder. The cylinder must not slide in. Repeat the same with all outriggers.
4. If the outrigger cylinders or the lifting cylinder slide in, the Access Platform must not be used before defect has been corrected. See illustrations on page 26.
5. Switch the engine off. Operate all hydraulic valves, also in the platform. The lowering movements of the boom and the outriggers must not work, not even slowly. If they do, the Access Platform must not be used before the hydraulic system has been checked and repaired.

CHECKING AND ADJUSTING THE PLATFORM LOAD CONTROL

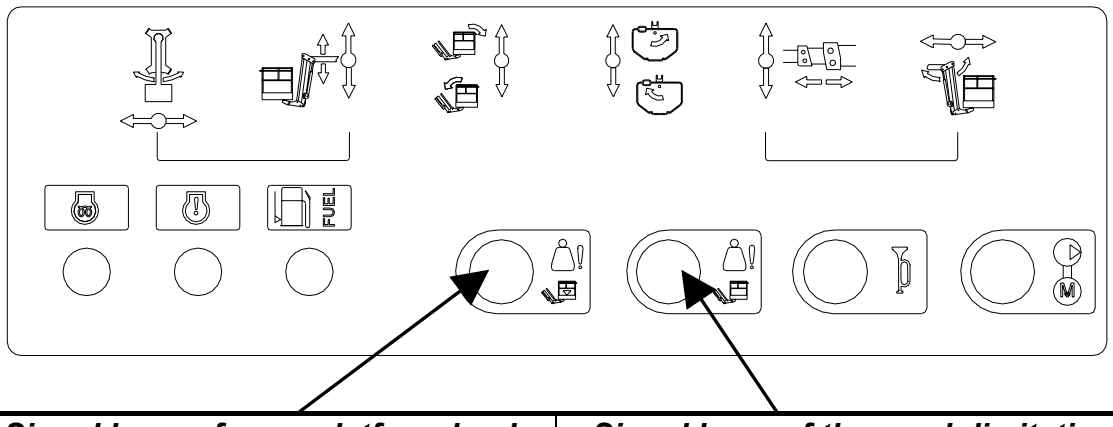


1. mounting
2. crank
3. bearing
4. grease nipples (8 nipples)
5. locking bolt
6. clearance adjusting screw
7. weigher sensor
8. control unit



8. Control unit

Location of signal lamps in the control console.



Signal lamp of max. platform load	Signal lamp of the reach limitation

Operating principle

The purpose of platform load control is to prevent the platform from being loaded in excess of the maximum permitted load (230 kg). When the platform load reaches the highest admitted load (230 kg), the max. platform load warning light lights.
When the platform load exceeds the highest admissible value, the reach limit warning light lights up simultaneously with the max. platform load warning light, and a sound alarms. When the max. platform load is being exceeded, all movements are prevented. The functions return to normal when the platform load is below the maximum value.

If the platform load control is defected, please contact the manufacturer.

Checking and adjustment

Check the platform load control as follows:
1. Support the Access Platform on outriggers. Lift the boom from the transport support. Switch off the engine.
2. Leave the ignition on.
3. Perform the check-up using to persons, whose body weights are known, for instance 90 kg + 80 kg = 170 kg
4. Add weight to the platform so that the total weight is 230 kg.
5. At 230 kg load the platform load warning light should light. For best result the persons should move around in the platform as if they were working. The precision of the platform load control is approx. ± 15 kg.
6. Gradually increase the platform load. The overload alarm should be activated before the platform road reaches 276 kg. When the overload alarm is activated, start the engine to check whether all the normal boom movements are prevented. Switch off the engine and try the movements using the emergency lowering pump. It should be possible to operate the movements.
7. Remove the load from the platform. The overload alarm and the max. platform load signal lamp should be switched off as the load is reduced. Pay attention to the accuracy of the measuring procedure.
8. Should the platform load control not work properly, lubricate the bearings (3) of the cranks (2) and repeat the check-up procedure. Adjust as required.

Adjustment

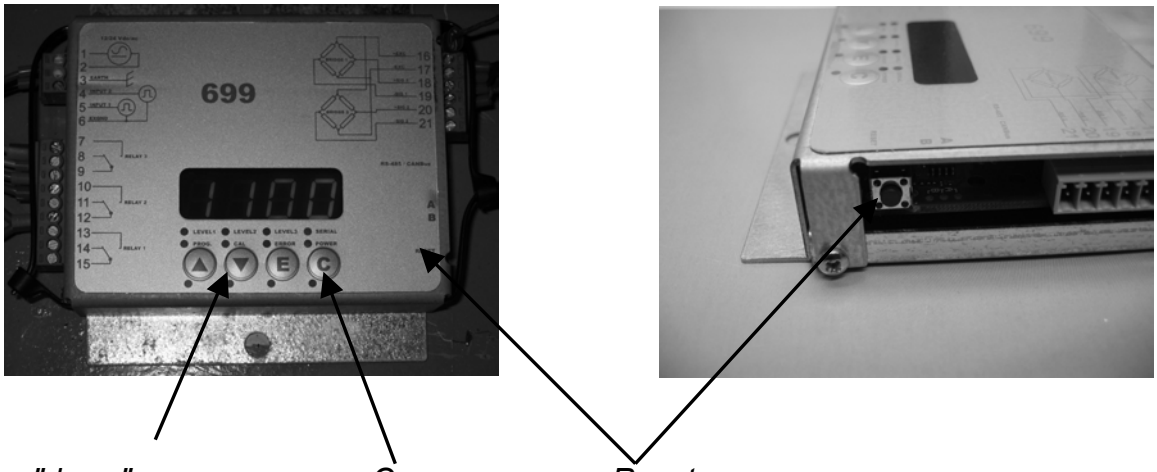
1. *Open the platform-side door in the control panel.*

2. *Switch on the power with the main power switch key.*

3. *Load the platform with 230 kg according to the testing instruction.*

4. *Adjust the point where the platform load signal lamp is switched on as follows.*

5. *Press Reset once and then simultaneous Arrow Down and C, until the display shows FSET. See illustrations below.*



Arrow "down" *C* *Reset*

6. *Browse with arrow keys up or down until the display shows LEV2.*

7. *Press key E to see the set value.*

8. *Press arrow up to increase the value, arrow down to decrease the value. If the signal lamp lights up too early, increase the value, if too late, decrease the value. Note: The shown amount of kilograms is not directly correct set value due to the lever relations. However the displayed value can be used as a guide value when performing the adjustment. If the signal lamp lights up approx. 20 kg too late, reduce the shown value with 20 kg.*

9. *When the value is correct, press E to accept the new value.*

10. *If you want to adjust also the overload alarm limit, press arrow keys to show LEV3; if you want to exit the setting menus, press C.*

11. *The overload alarm and the movement switch-off value are changed as instructed in setting 8.*

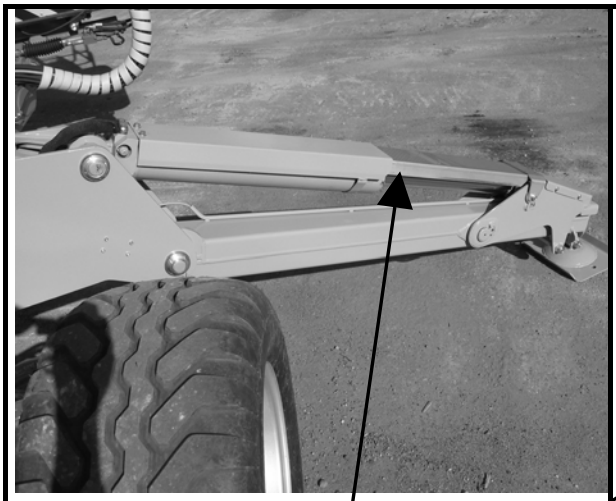
12. *Press E.25 to acknowledge the new value.*

13. *Press C to exit the settings menu.*
14. *Test the operation, repeat the setting procedure as required.*

Failure messages for the platform load control

In case the platform load control fails, open the door of the control panel and check if there is one of the following failure messages in the display:

ER 10	*Outside measuring range*	*Check the mechanical lever system for being stuck.*
ER 21	*LO or HI values not correct*	*Contact the manufacturer for instructions*
ER 22	*Sensor overloaded*	*Replace the horizontal overload sensor*
ER 23	*HI value too high*	*Contact the manufacturer for instructions*
ER 24	*The load difference too small*	*Check the mechanical lever system for being stuck.*
ER 30	*Failure in the control electronics*	*Replace the control electronics and perform adjustment as instructed.*
ER 70	*Problem in wiring*	*Check wires and connections*



Outrigger cylinder

Lifting cylinder

CONTROLS AND FUNCTIONS

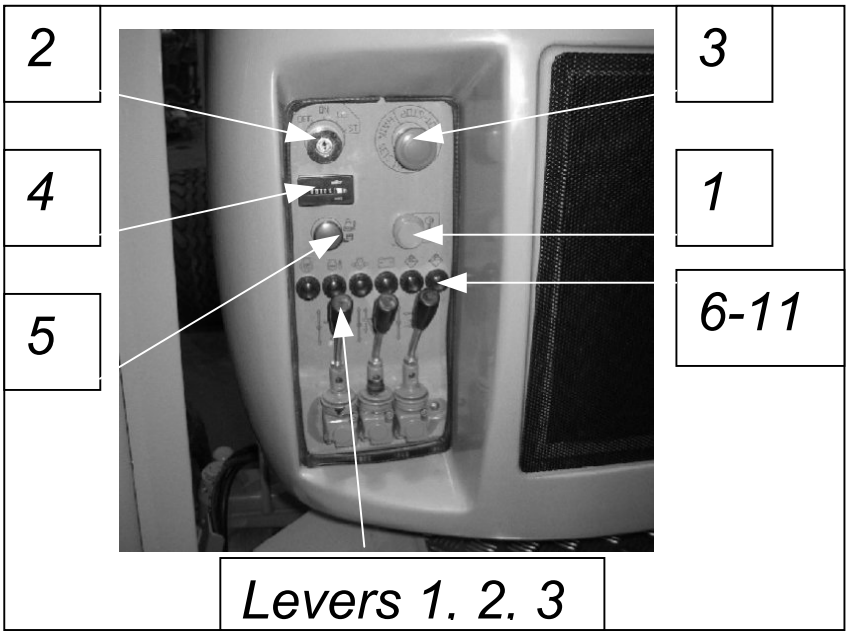
All controls of XS 190 are hydraulic; only outriggers are electrical. Also the safety limits of both the lowering of the telescope and the boom and the lifting of the jib operate electro-hydraulically. The various hydraulic movements have continuously variable speed adjustment.

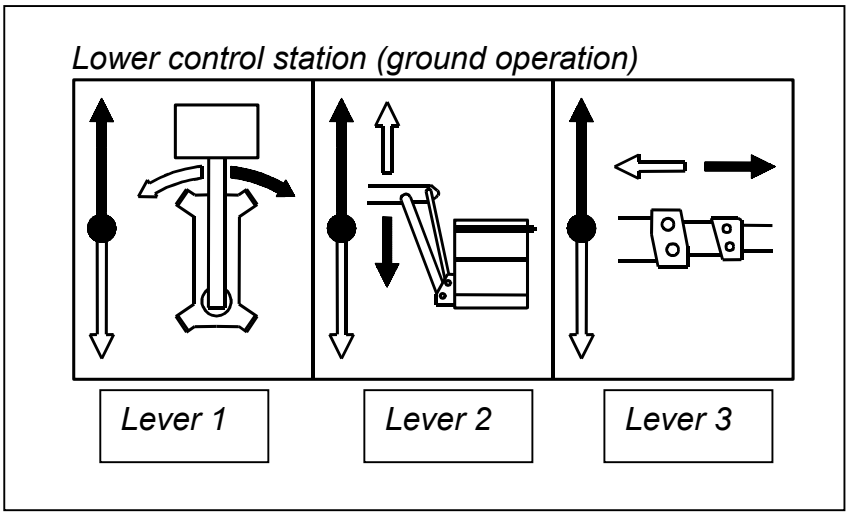
THE CONTROL EQUIPMENT IN THE TURNTABLE

1. The lower control valve is located in the front part of the turntable engine hood, on the right side, seen from the platform. With the outriggers extended, with the power switched on from below, with the engine running, the boom may be rotated, lifted, extended and retracted according the illustrated symbol chart. The emergency lowering system works using this same lower control valve.

2. The lower electric control equipment consists of an emergency stop button, an hour meter, the power switch, an operating button for the emergency lowering pump, an engine pre-heating signal lamp, a charge warning lamp, an oil pressure warning lamp and an overheating warning lamp, as well as warning lamps for clogged hydraulic filters. When extending or retracting the boom from below (at the ground control station), the engine must be started from the ground control station.

The control levers and their symbols in the turntable



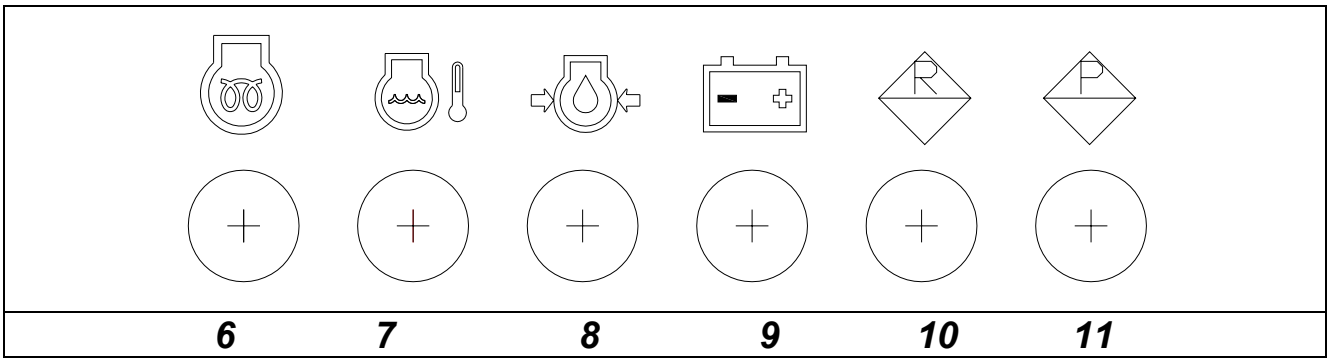


Signal lamps and control equipment in the turntable

1. *Emergency lowering button*
2. *Power switch (preheating of the diesel engine)*
3. *Emergency-stop button*
4. *Hour meter*
5. *Overload warning lamp*

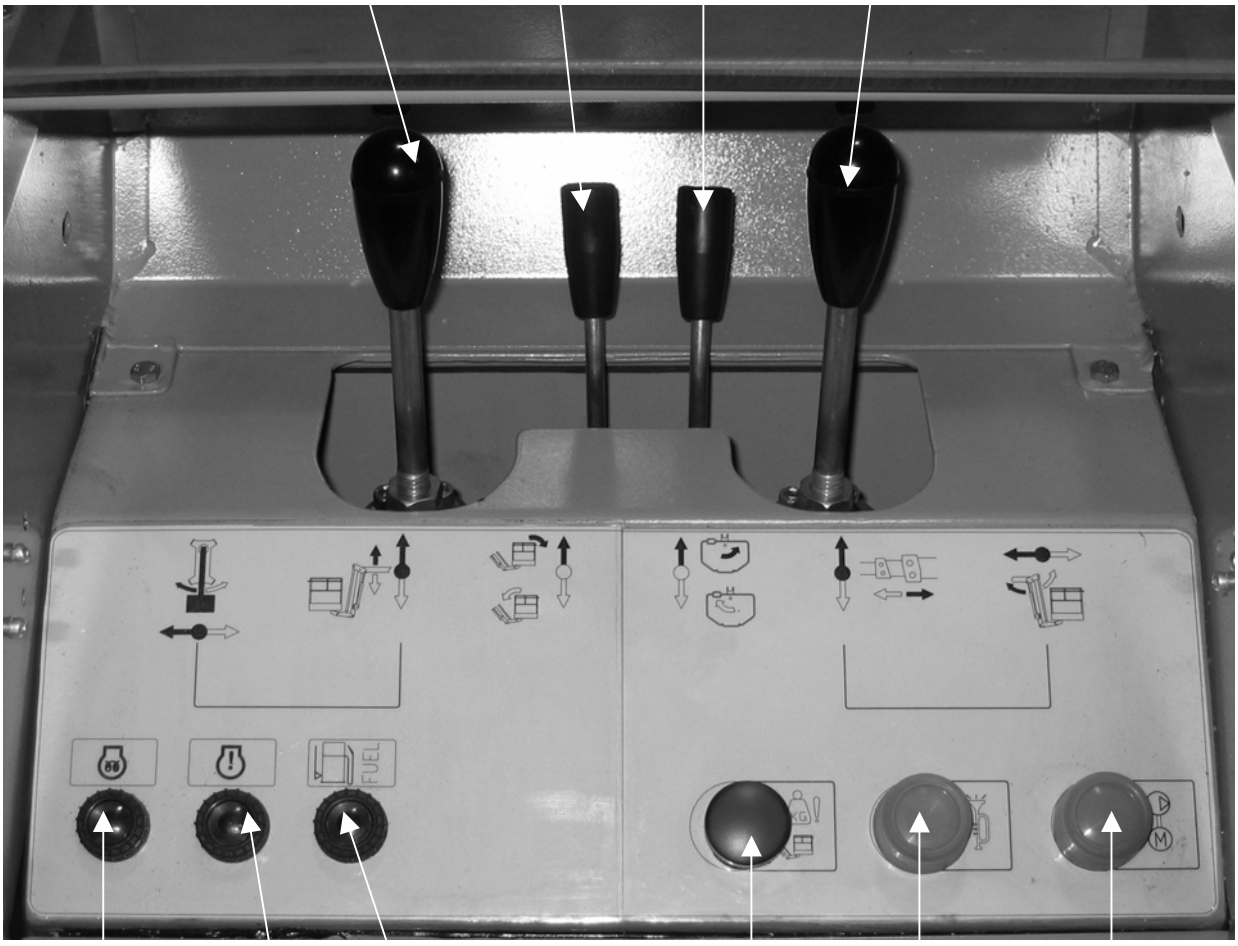
Warning lamps:

6. *Preheating*
7. *Engine temperature*
8. *Oil pressure*
9. *Charging*
10. *Warning lamp for the clogging of the return filter*
11. *Warning lamp for the clogging of the pressure filter*



THE CONTROL EQUIPMENT IN THE PLATFORM

The control levers and their symbols in the platform	1	2	3	4



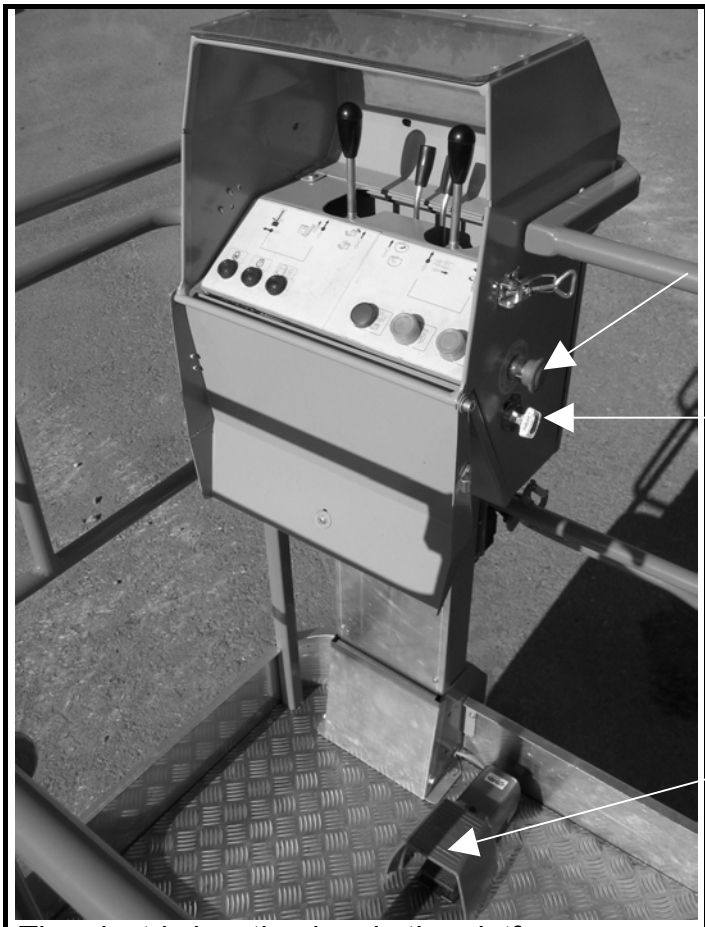
Control levers from left to right

1. Lifting/lowering and rotating the boom; push: the boom rises, pull: the boom lowers. The boom is rotated right of left by turning the lever to right or left.
2. Tilting the platform. The platform is tilted forwards by pushing the lever, backwards by pulling the lever.
3. Turning the platform. The platform is turned CCW by pushing the lever, CW by pulling the lever.
4. Telescope / jib. The boom is extended by pulling the lever, the boom is retracted by pushing the lever. The jib boom is lifted by turning the lever to right, the jib boom is lowered by turning the lever to left.

THE ELECTRIC CONTROLS IN THE PLATFORM

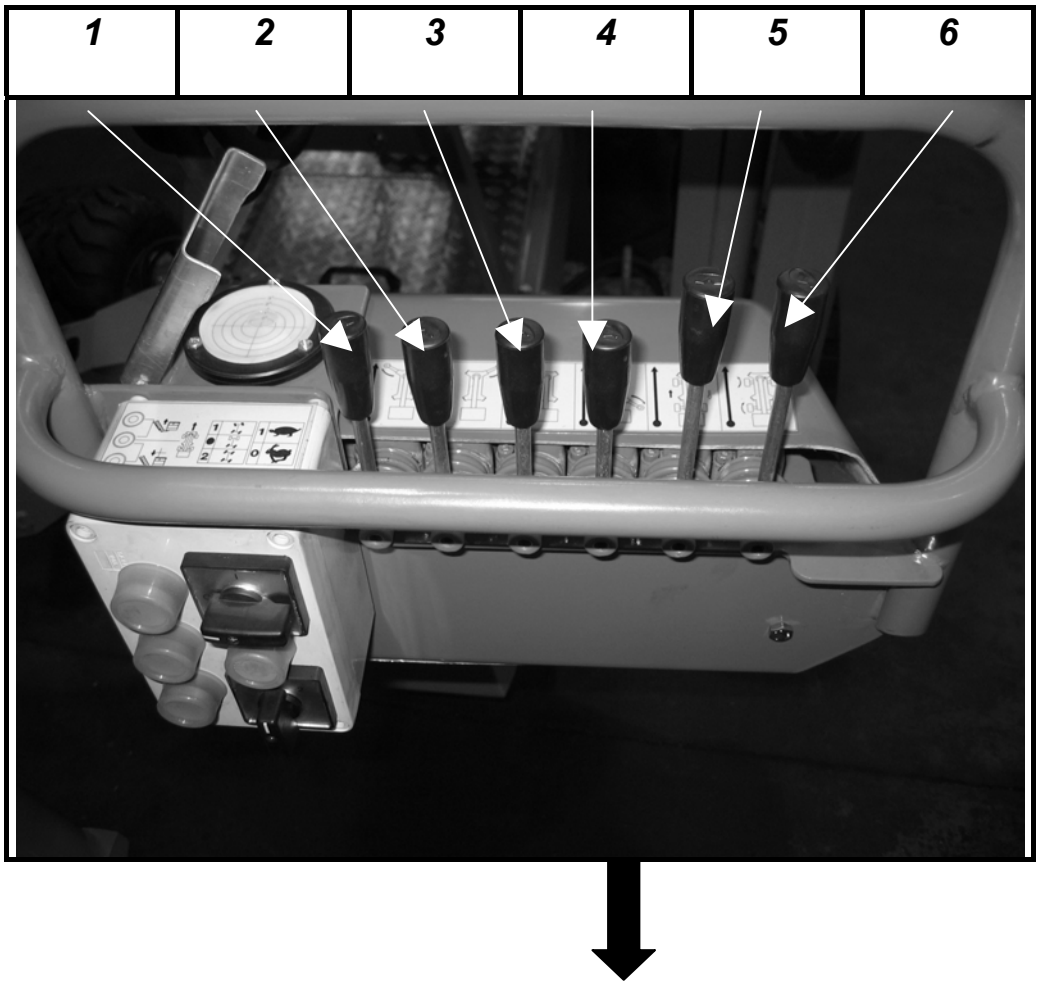
The electric junction box in the platform:

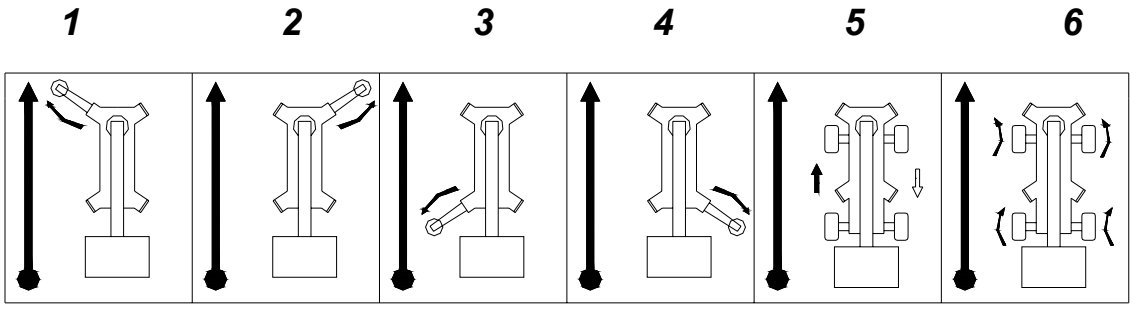
1. *Emergency lowering button*
2. *Horn (sound signal)*
3. *Overload warning lamp; lights up when reaching the max. lifting radius*
4. *Low fuel level warning lamp*
5. *Warning lamps for engine oil pressure, overheating and charging*
6. *Preheating warning lamp*
7. *Emergency-stop button; switches of both the diesel engine and all movements*
8. *Power switch*
9. *Pedal*



The electric junction box in the platform

DRIVING/OUTRIGGER VALVES



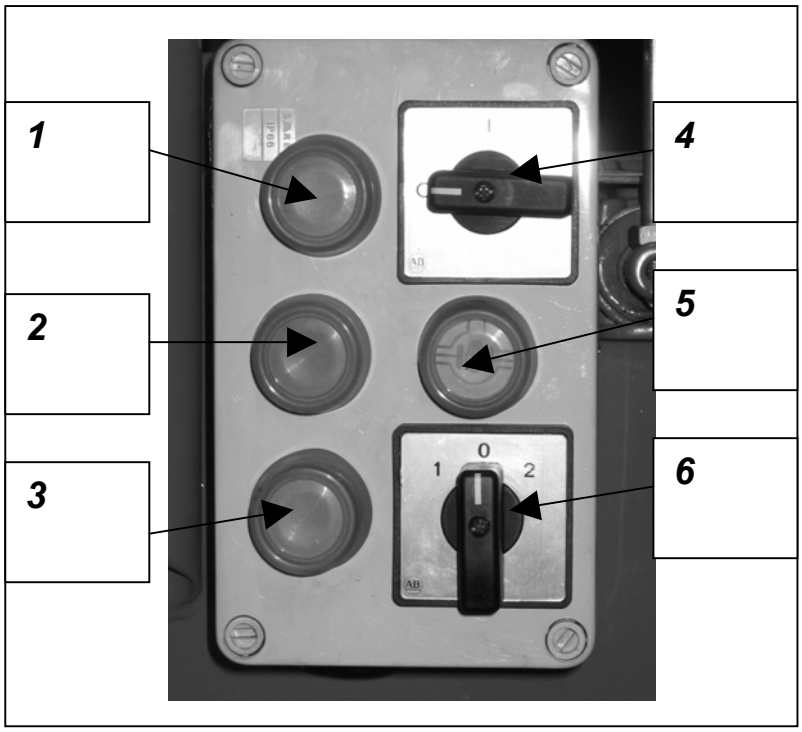


Lever operation decal

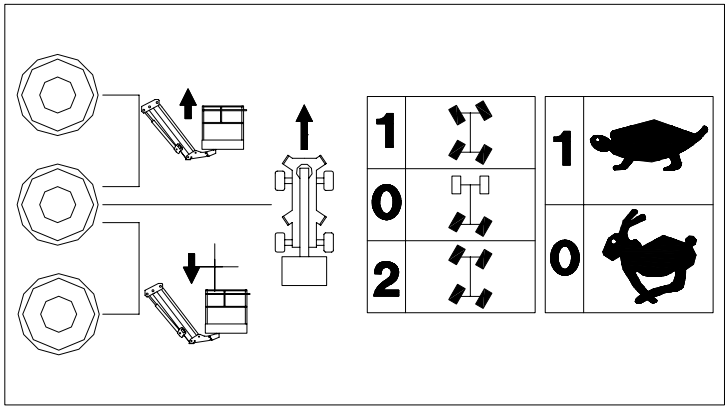
Lever 1. Front left-hand outrigger up / down
Lever 2. Front right-hand outrigger up / down
Lever 3. Rear left-hand outrigger up / down
Lever 4. Rear right-hand outrigger up / down
Lever 5. Drive ahead / reverse
Lever 6. Steering to right / left

The outriggers are pressed down by pushing levers 1, 2, 3, and 4. When lever 5 is pushed, the Access Platform moves forward. When lever 6 is pushed, the Access Platform turns right.

The electric control box for the drive / outrigger valve



The electric control box for the valve rod system



Function diagram decal

Override buttons 1, 2, 3

When required, the boom may be lifted to an angle of approx. 20 degrees when the outriggers are up. This function increases the ground clearance at the platform for instance when driving the Access Platform on top of a trailer.

For this, press buttons 1 & 2 when raising the boom.

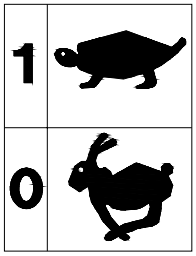
When the boom is raised, press button 2 when driving the Access Platform.
Both driving and steering are performed with the levers as usually.

When lowering the boom, press buttons 2 & 3.

Note! Be careful when driving with the raised boom. The Access Platform may tip over! The maximum allowed lateral inclination with a raised boom is ± 7.5 degrees.

Speed selection switch 4

The switch 4 is for selecting either high speed "0" or low speed "1".



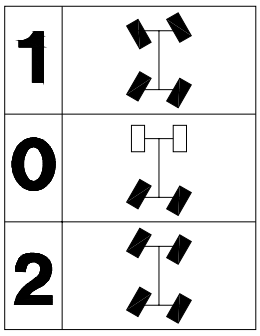
Differential lock 5

When driving in difficult conditions, the hydraulic differential lock may be engaged by pressing button 5. To disengage the lock, release the button.

Steering mode selector 6

The steering mode is selected with switch 6.

1. *four wheel steering*
0. *rear wheel steering*
2. *crab steering*



DRIVING THE ACCESS PLATFORM

Kesla XS 190 has hydrostatic power train, and all the drive and control functions can be controlled from the platform. The power train has a continuous four-wheel drive and two speed ranges. The low speed range is 0 to 1.8 km/h with the pulling force measured from a stationary machine being 15,400 N; the high speed range is respectively 0 to 3.6 km/h with pulling force 7,700 N. The brakes are disengaged when the hydraulic pressure in the drive motors exceeds 30 bar, and are automatically engaged, when the pressure is less than 30 bar. There are disk brakes in all wheels.

USING THE DRIVE CONTROL EQUIPMENT

Switch on the power with the starting key. The key may be removed also when the power is switched on. The keys should always be kept in one bundle.

 **Main power switch**	*Switch on the power with the starting key. The key may be removed also when the power is switched on. The keys should always be kept in one bundle. In this illustration, the keys are not in the bundle.*

Using drive control equipment (starting the diesel engine from the platform)

Switch on the power – turn the key to ON and preheat the engine with the key in the preheating position. Keep the preheating on as long as the preheat signal lamp is lit. In cold weather, repeat the preheating procedure two to three times. Do not heat longer than 15 seconds at one go.
Start the engine with the key and let it run for a moment. Note! Do not run the starting engine longer than 10 seconds at a time. Steer the Access Platform with the lever at the extreme right, and drive the Access Platform with the lever on the left side of the steering level. Choose the speed range with HI/LO selector. The low range has a considerably higher traction force then the high range. Choose the steering mode with the three-mode selector: four-wheel steering, crab steering or rear-wheel steering.

The wheels are centered by choosing four-wheel steering and turning the front wheels to the middle position.
After this, the rear wheels can be turned separately with rear-wheel steering. Inaccurate turning of the wheels may result from air in the system. The air can be removed by turning the wheels fully to one direction and maintaining a full hydraulic pressure for a short while, and then turning the wheels to the opposite direction. If there is a reason to suspect that air has entered into the system, this operation should be carried out three times. The rear wheel driving is the best steering mode at high driving speeds.

The driving hydraulics of Kesla XS 190 is equipped with a power distribution valve. The power distribution valve works as a differential lock by reducing the slipping of one wheel because of uneven friction between the wheels and the ground. Therefore it improves the off-road and climbing performance of the Access Platform.

In a normal situation, the power distribution valve is by-passed, and it is activated by pressing the switch (see illustration). If a wheel of the Access Platform slips on a slippery or soft ground, use this function to improve traction.

Activation switch for the power distribution valve

Driving instructions

Note that reducing the platform load improves driving performance in difficult terrain. However, never drive the Access Platform by walking beside it. You may use the four-wheel steering to crush obstacles such as sand or snow in front the wheels to improve traction.

USING THE ACCESS PLATFORM

Check the site intended for the Access Platform for sufficient evenness. Note the permitted maximum mounting inclinations (page 37).

When required, use sufficiently large and solid boards under the outriggers, if the ground is soft. See soil tightness table on page 38.

Pay attention to climatic and other conditions, for instance traffic, when choosing the erection site. Prevent any collisions with the outriggers. Warn others with flashing warning beacon.

Move the Access Platform to the site, which has been carefully checked.

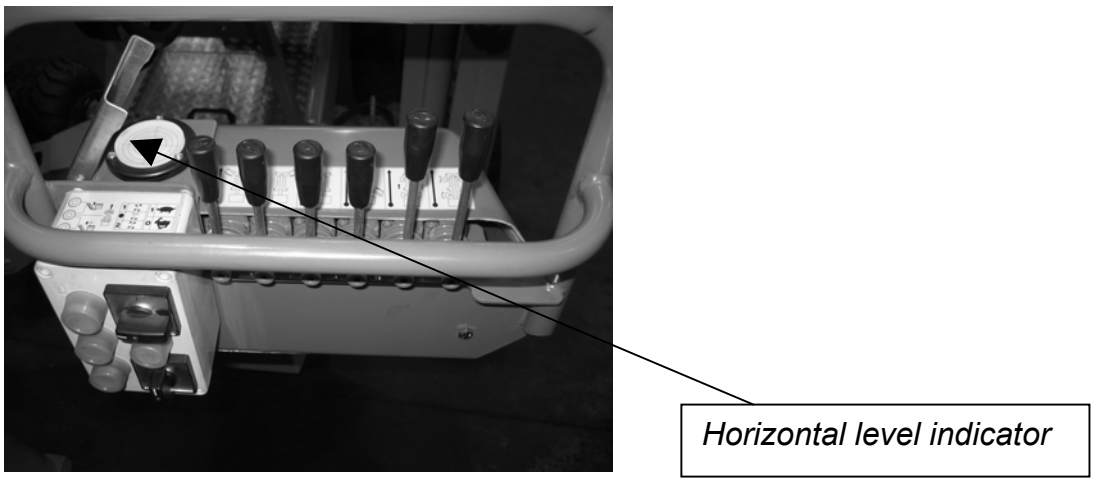
USING THE OUTRIGGERS AND THE BOOM

Lower the outriggers to the supporting position and check the position with the levelling indicator. Maximum permitted erection inaccuracy is +1°.
Check that all wheels are off the ground.
If the Access Platform is unevenly supported and no ground sensor is active, the boom does not rise from the transport support, and an alarm sounds when the pedal is pressed.
If you suspect the strength of the soil, extend the boom completely in a horizontal angle, and extend and retract the boom at each outrigger. If the soil yields, rearrange outrigging.
Use additional support boards when required.

When the platform is listed, if the soil under an outrigger yields or the Access Platform has been erected inaccurately, the outrigging may become loose. In this situation an alarm sounds when the pedal is being pressed. Loose outrigging does not prevent the use of the boom. Retract and lower the boom immediately onto the transport support, and rearrange the outrigging. Use additional support soil boards when required.

The boom can be driven with several simultaneous movements for fast and flexible operations.

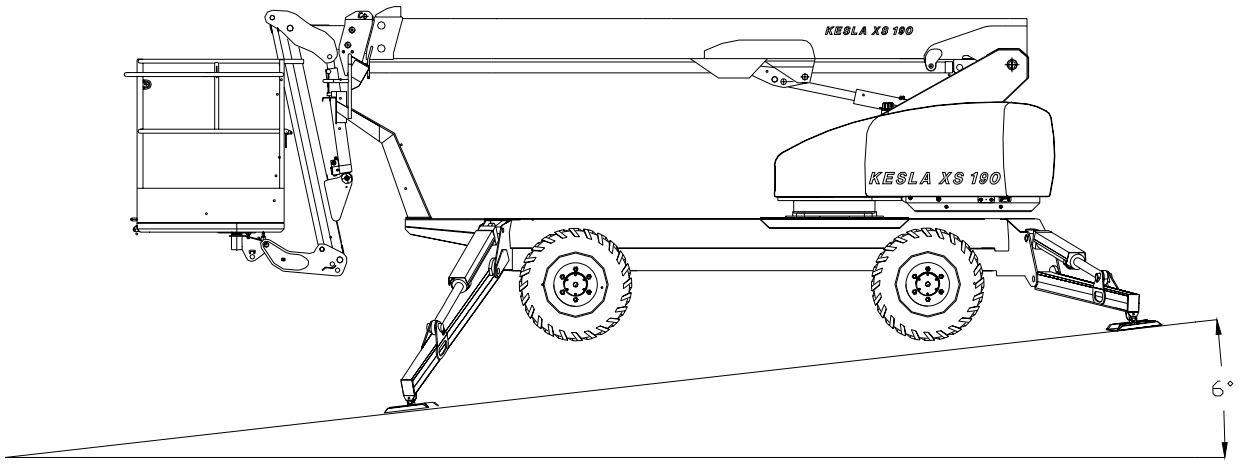
For lifting movement, the boom control valve has a special valve stem design for smooth start and stop of the boom. The turning device is also equipped with a similar special valve stem. If you are going to work in the same place for a long time, switch off the engine using the key in the platform, and restart the engine to move to the next location.



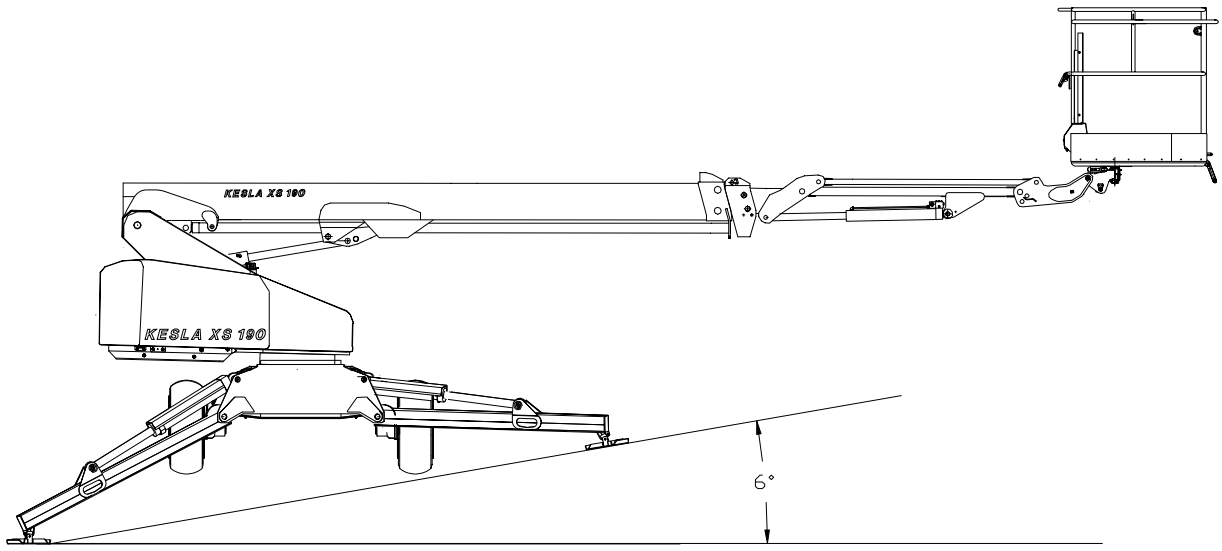
WARNING !

When lifting the boom off the transport support and lowering it back onto the transport support, pay attention to the location of the drive valve stem. ***Danger of collision!***

ERECTION INCLINATION

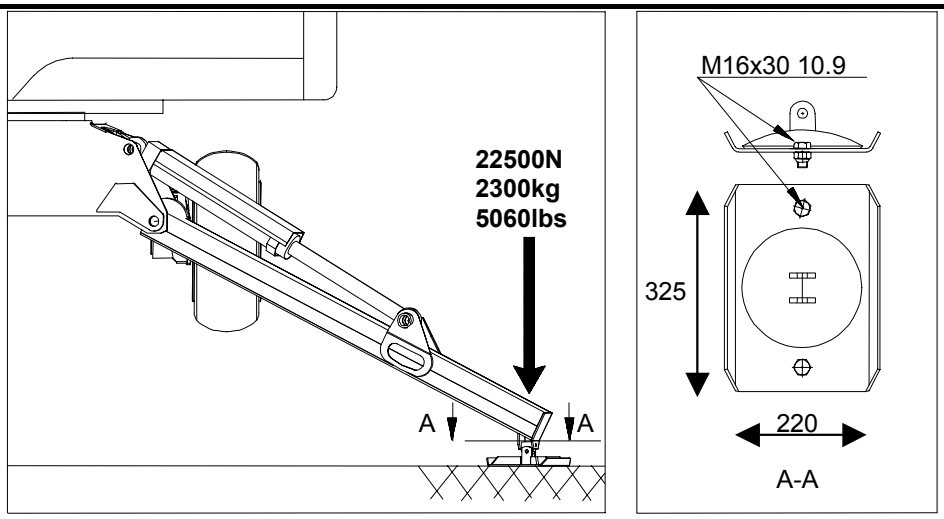


LATERAL INCLINATION



WARNING! MAKE SURE THE ACCESS PLATFORM DOES NOT SLIP ON AN INCLINED SURFACE.
WHEN REQUIRED, USE ADDITIONAL CALKS ON THE SOLE BOARDS OF THE OUTRIGGERS

SOIL TIGHTNESS TABLE



Maximum load on an outrigger sole	*Sole*

Surface are of the sole A:
(XS190 standard sole)
A = 32,5 cm x 22 cm =715 cm2

*Pressure **2300 kg / 715 cm^2 = 3.21 kg/cm^2*

NOTE!
On an icy or otherwise slippery ground, use additional calks on the sole plates of the outriggers, see illustration. Calk holes have been provided in the sole plates.

A (additional board) when adm. pressure = 2.00 A = 2300/adm. 2.00 = 1150 cm^2 (34 cm x 34 cm)

Admitted surface pressures for some soil types.

Soil type	*Density (structure) of soil*	*Adm. pressure kg/cm²*
Gravel	*high density* *average density* *loose*	*6,00* *4,00* *2,00 * <3,21*
Sand	*high density* *average density* *loose*	*5,00* *3,00 * < 3,21* *1,50 * < 3,21*
Fine sand	*high density* *average density* *loose*	*4,00* *2,00 * < 3,21* *1,00 * < 3,21*
Clay and silt	*high density* *average density* *loose*	*1,00 * < 3,21* *0,50 * < 3,21* *0,25 * < 3,21*

Note! *An asterisk (*) indicates need of larger additional boards.*
Note! *(**) Included are the max. wind load, the max. platform load at adm. lifting radius, and the inertia of the boom and the load when lowering the boom.*

USING THE MAINS VOLTAGE IN THE PLATFORM

Connect the mains voltage 220V / 50Hz 16A to the outlet in the toolbox. In the platform, here are two grounded outlets for hand tools. The mains circuit is equipped with a ground fault interrupter (in the tool box) and a slip ring unit (inside the turntable). The ground fault interrupter has a test button for checking the circuit before use. The ground fault interrupter has also a mains voltage switch-off facility.

TESTING THE GROUND FAULT INTERRUPTER

Connect a tool, for instance a hand drill, to the platform outlet. Connect the Access Platform to the mains voltage using the cable, which can be found in the tool box. Press the test button of the ground fault interrupter. The mains switch-off (acting as an automatic fuse) should be triggered. If the mains switch-off is not triggered, and the tool has not been activated in the platform, check that the mains switch is in the supply position.

Ground fault interrupter

PRECAUTIONS

USE OF THE BOOM IN COLD WEATHER

WARNING !

Do not stop the engine when working in cold conditions ((–5°C or below), even if you are going to work in the same location for a long time. This will keep the hydraulics and the engine warm.
Check the safety limit switches for snow, ice and dirt.
Check the control valves for proper operation and for snow and ice. Clean as required. In extremely low temperatures, at first let the engine run for a few minutes; then warm up the hydraulic system by lifting the Access Platform on the outriggers and then driving at low and high speeds performing steering movements to both directions.
Protect the control valves and the platform against snow and ice when not in use.
Note! Do not use the Access Platform in temperatures below –25C°.

PRECAUTIONS WHEN MOVING FROM ONE LOCATION TO ANOTHER WITH THE BOOM:

- *watch up overhead high voltage cables*
- *do not touch electric cables*
- *do not damage the platform or the control equipment*
- *avoid damaging surrounding structures*
- *do not throw or let fall anything from the platform*
- *stay within the confines of the platform – do not reach out of the platform*
- *do not use ladders or similar in the platform*
- *do not jump in the platform or rock it*
- *see that the platform remains in the horizontal position*

LIFTING WORK USING THE GROUND CONTROL VALVE

- *Do not use the Access Platform as an elevator for transporting goods or persons between different levels or floors.*
- *Support the Access Platform on a level and firm ground.*
- *Remove the key from the electric junction box in the platform.*
- *Switch on power and start the engine from the ground control station.*
- *Extend and retract the boom with the hydraulic control valve of the ground control station.*

Platform load

***WARNING**: If the boom reach exceeds the limits of the reach diagram, repair before next use. Do not use a faulty access platform. Maximum permitted platform load is 230 kg.*

USING THE EMERGENCY LOWERING SYSTEM

DESIGN OF THE EMERGENCY LOWERING SYSTEM

The emergency lowering system comprises an emergency lowering pump, the push-buttons for using the emergency lowering pump in the platform and at the ground control station, a platform control valve, a lower control valve, and the emergency lowering system instruction decals in the platform and at the turntable.

1. The electric emergency lowering pump is parallel with the main hydraulic pump, and always ready to supply oil into the system should the main hydraulic pump not work, or if, for some reason, the boom valve cannot be operated from the platform.
2. The emergency lowering pump supplies oil either to the platform control valve or to the ground station control valve.

USING THE EMERGENCY LOWERING SYSTEM

Using the system from the platform:

1. Press the emergency lowering button and keep it pressed during the whole lowering operation. Press the boom pedal switch and, at the same time, use the platform control valve.
2. Always retract the boom completely before beginning to lower it.

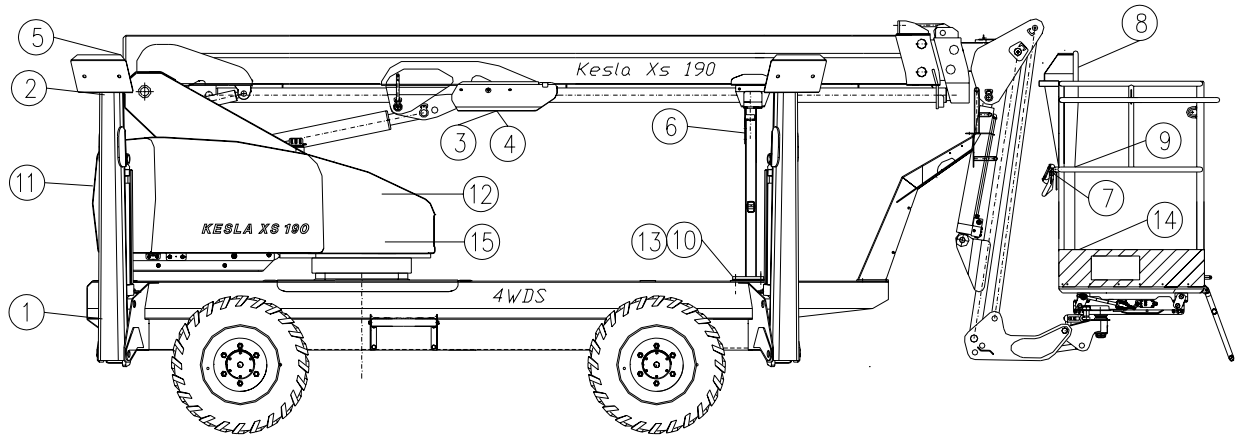
Using the emergency control system from the turntable:

1. Press the emergency lowering button and keep it pressed during the whole lowering operation. Lower the platform using the control valve.
2. Always retract the boom completely before beginning to lower it.

THE EMERGENCY LOWERING SYSTEM SHOULD NOT BE USED TO MOVE THE BOOM IN NORMAL WORK.

The pump motor must not be used continuously longer than approx. 3 minutes. The battery is also drained very fast (after which the engine will not start).
The emergency lowering pump motor has a thermal protection switch. When the thermal protection switch is activated due to high temperature, the motor stops. Wait for 3 to 5 minutes to let the motor cool down. The thermal protection switch will reset automatically.

LOCATION OF THE SAFETY LIMIT SWITCHES AND THE ELECTRIC COMPONENTS



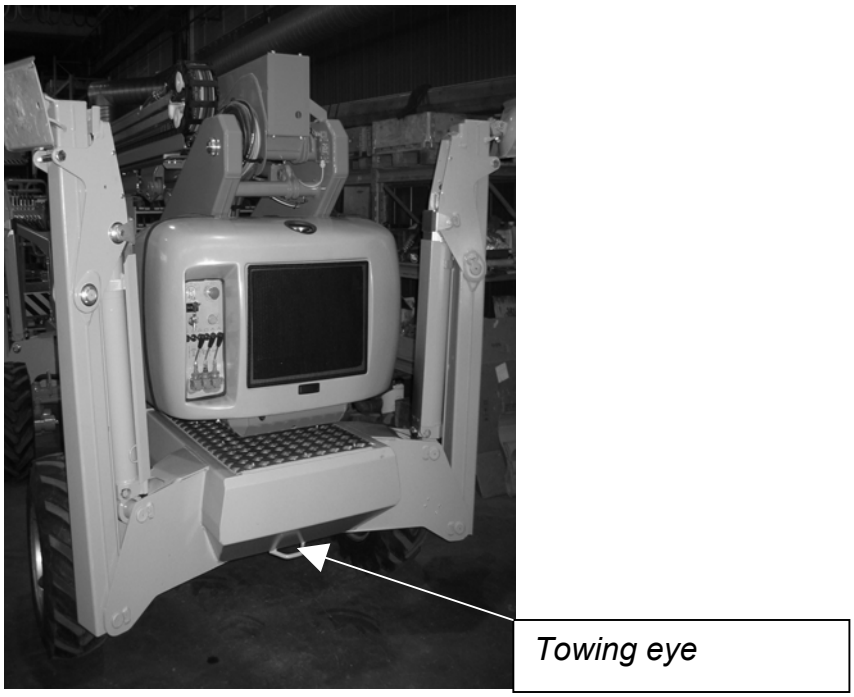
The illustration above shows the location or the safety limit switches

1. Outrigger limit switch, position limit switch, 4 switches
2. Ground sensor limit switch, 4 switches
3. Lifting radius limit switch, 2 switches
4. Boom emergency limit switch, 1 switch
5. Boom position limit switch, 1 switch
6. Transport support limit switch, 1 switch
7 Jib limit switch, 1 switch

Location of other electric components:

8. Electric junction box in the platform (emergency stop, emergency lowering switch, main power switch, warning lamps for preheating and load control, the diesel engine fault lamp
9. Mains outlets, 2 outlets, 240VAC/16A
10. Ground fault interrupter
11. Electric junction box at the turntable (emergency stop, hour meter, emergency lowering switch, main power switch, warning lamps for preheating, oil pressure, charging, engine temperature, pressure filter, and return filter
12. Slip ring unit
13. Mains outlet 240VAC/16A
14 Pedal switch
15. Battery, on the left side (seen from the platform)

TOWING THE ACCESS PLATFORM



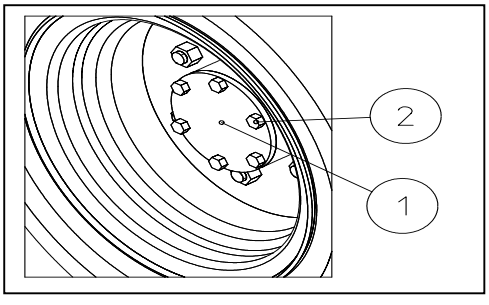
The Access Platform must be towed, if it gets stuck while being transferred.

1. Tow the Access Platform by the towing eye located at the front or rear of the Access Platform.

2. Keep the engine running and maintain traction to the desired travelling direction to avoid locking of the brakes. Steer the Access Platform on hard ground so that the pull rope can be released. When towing on hard ground, engage the high speed range. Do not exceed towing speed of 3.6km/h.

3. If needed, the brakes can be released as follows: disconnect the hydraulic hoses of the brake cylinder. Then replace the nipple by screwing in an R 1/4"-75 full-threaded bolt in the hole of the hydraulic coupling. Squeeze loose the brake pads from the brake disk for instance for towing. Refer to the illustration on page 44.

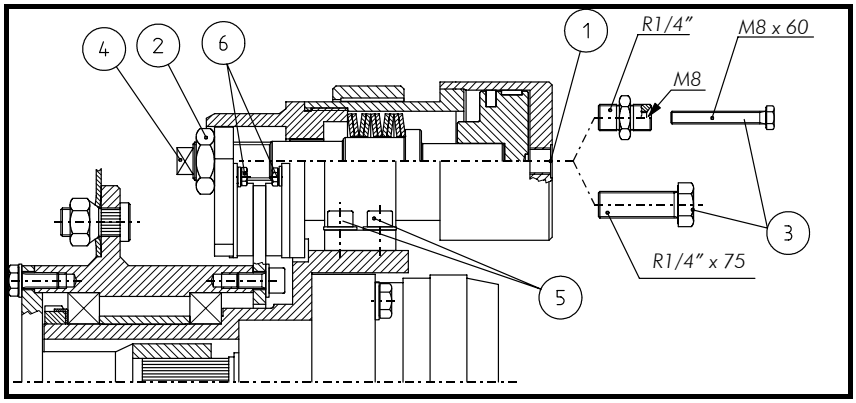
4. Note! After the brakes have released, the brakes can be cautiously used using the drive valve lever. For parking, fasten the Access Platform to a solid object to prevent it from drifting uncontrollably.



5. If the engine of the Access Platform is out of order of if the Access Platform has to be towed far, the hydraulic drive motors must be disconnected from the wheels by removing the covers of the wheel hubs. There is no oil under the covers. Unscrew the Allen screws 2 and pull out cover 1 (all four wheels).

6. Note! When the shafts have been removed, the Access Platform must be towed only with a towing bar.

7. For parking, anchor the Access Platform to a fixed object.



The illustration shows the brakes, the special nipple and the M8 bolt (all four wheels).(These are standard with the Access Platform.)

TRANSPORTING THE ACCESS PLATFORM

Do the following before transport.

1. Drive the boom to the transport position and raise the outriggers.
2. Strap the Access Platform carefully onto the transport base. Use the towing eyes on the chassis and the lifting points on the rear axle. If needed, place wedges in front of and behind the wheels to prevent rolling.
3. Fasten the boom steadily onto the transport support or strap the platform carefully to the transport base to avoid straining the boom during transport. Do not pull the ropes over the boom; instead, use the fastening eyes in the wheel axles.
4. Switch off the voltage by the main power switch.
5. Check the total height before leaving.

MAINTENANCE

The Access Platform must be maintained regularly in order to keep it safe and efficient. For descriptions of the necessary service procedures, refer to the maintenance scheme and annual inspection list. If you feel uncertain about carrying out maintenance, do not hesitate to contact a service shop specialized in Access Platforms for the maintenance work and inspections needed.

PERIODIC MAINTENANCE

Carefully ensure cleanliness before opening hydraulic or fuel lines.
Change the engine oil after the first 50 hours of operation.
In normal conditions, change the oil again after 50 hours of operation; change also the oil filter. In extremely dusty, hot or heavy environment or when the work load is exceptionally high, the oil should be changed at intervals of 25 hours of operation. Use washing motor oil, category SF. The required viscosity depends on the ambient temperature. Refer to the table in the engine manual.
- Change hydraulic oil and filter. The oil change intervals should be shortened in dusty, humid or corroding environment, if the ambient temperature varies greatly, or if the Access Platform is very heavily loaded.

MAINTENANCE SCHEME BASED ON OPERATING HOURS

Daily	*1. Check fuel level*
	2. Check load-bearing structures
	3. Check hydraulic hoses and pipes and tightness of hydraulic couplings
	4. Check the functioning of emergency stop and safety devices
	5. Check all directions of functions. The functions should return automatically to neutral positions.
Weekly	*1. Check hydraulic oil level **
50h intervals	*1. Lubricate all bearings and sliding surfaces*
	2. Check the condition of telescope sliding pads and surfaces, lubricate and adjust as required
500h intervals	*1. Change hydraulic oil and filter*
	2. Check how the boom movements can be stopped
1000h intervals or at least every 6 months	*1. Check the condition of driving brakes, clean, adjust and lubricate*
12 month intervals	*1. Annual inspection. Fill, sign and date the enclosed journal form.*
	*2. Check the tightness of the slewing gear fastening bolts **)*
	3. Check the boom extension chains

The Access Platform in the transport position
**) the Access Platform should in horizontal position, both lengthwise and crosswise*
- the oil level should be between Min and Max marks
***) see instruction on page 60*

SERVICE PROGRAMME FOR DIESEL ENGINE

KUBOTA D205E DIESEL ENGINE

The diesel engine is Kubota D905E.
The maximum speed of the engine has been adjusted to approx. 2700 rpm. This speed should not be exceeded. The top speed is needed when driving in difficult terrain. When adjusting the engine speed, 1500 rpm should be considered as the minimum level. Due to the variable displacement hydraulic pump the speed of the boom movements does not change along with the engine speed. In low temperatures, approx. –5°C or below, use the cold start device to start the engine.
The Kubota Diesel engine has a quick preheating operated with the main switch key.

Starting and stopping the Kubota D905 Diesel engine

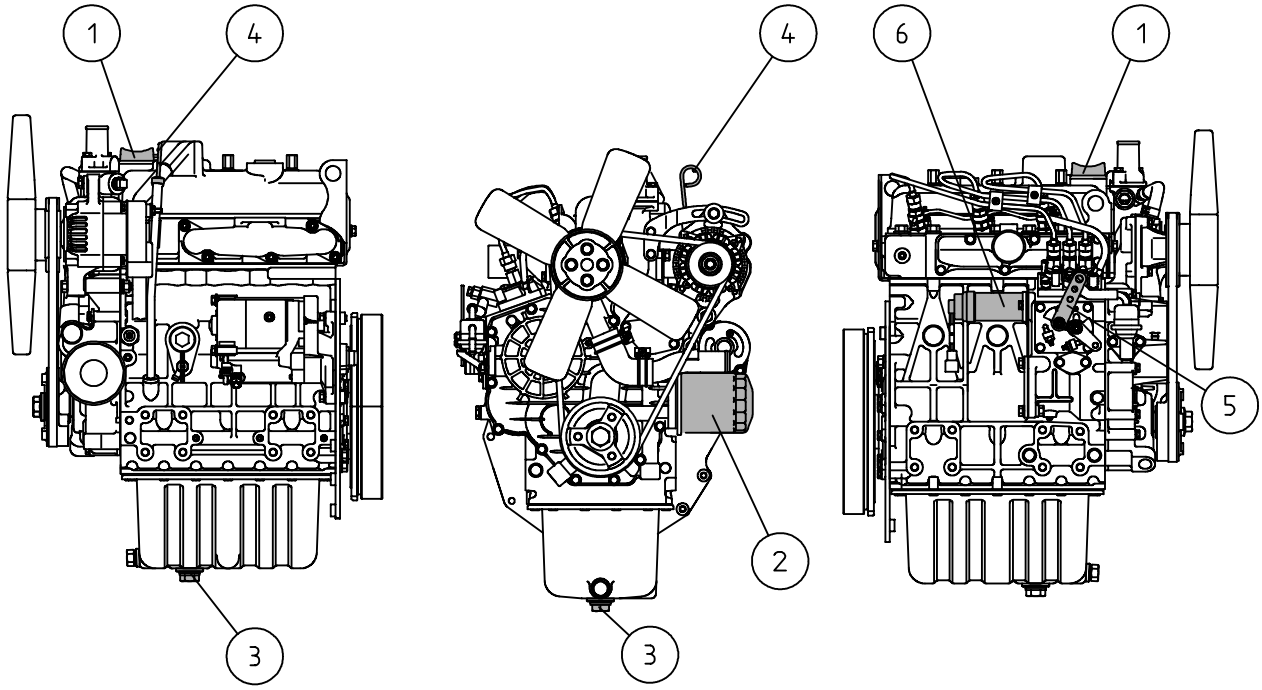
Starting:

1. Switch on the power with the main power switch. The key may be removed also when the power is switched on.
2. Start the engine from the platform if you intend to use the Access Platform from the platform. Similarly, if you intend to use the Access Platform from the ground station, start the engine from main power switch at the ground station. When using the Access Platform from the ground station, the Access Platform should at first be supported on the outriggers. See "USING THE BOOM FROM THE GROUND STATION". The selection of the control station depends on whether the engine was started from the platform or from the ground station. The selection of the control station depends on from where the engine was started. In cold weather, –5°C or below, keep the key in the preheat position as long as the preheat signal lamp is on. After this, start the engine by turning the key to position START. Let the engine idle until it has warmed up to the operation temperature.

Stopping:

1. Turn the key position 0 (OFF) to stop the engine.

Kubota D905-E main service items



Kubota D905-E

1. *Engine oil filler*
2. *Oil filter*
3. *Oil drain hole*
4. *Oil level dipstick*
5. *Speed regulator*
6. *Stopping solenoid*

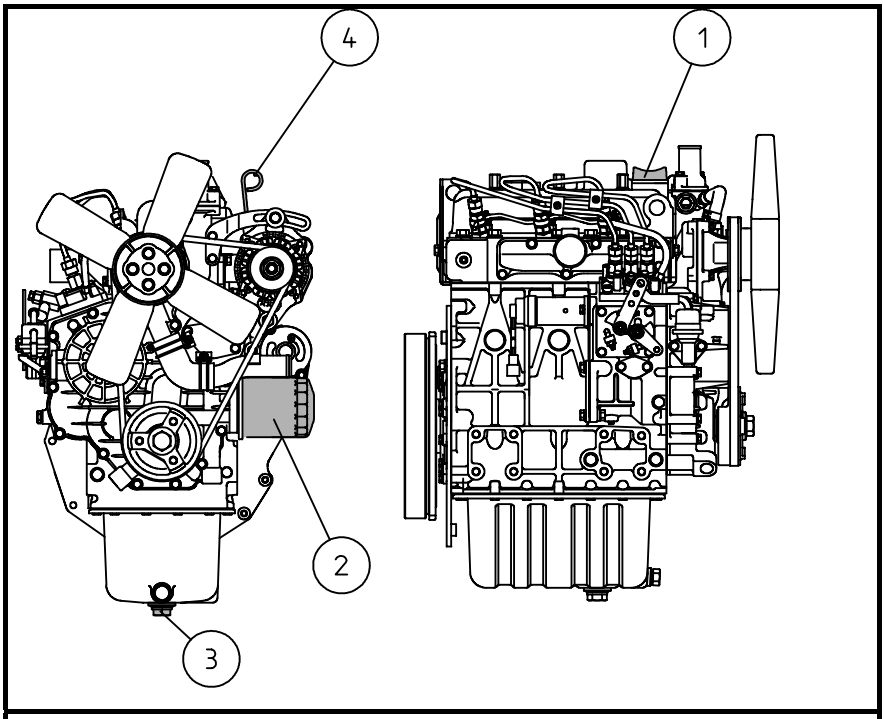
Kubota D905-E service programme

Kubota D905-E

Daily, with the engine switched off:	Check oil; check for leakages, correct as required before use.
	Check level and cleanliness of oil. Add oil when required.
	Check coolant level. NOTE! DO NOT OPEN THE FILLING OPENING OF THE COOLING WATER SYSTEM IF THE ENGINE IS WARM. LET THE ENGINE COOL DOWN AT LEAST 30 MINUTES AFTER USE BEFORE OPENING THE FILLING PLUG OF THE COOLING SYSTEM. Add coolant when required.
	Check for loose bolts and nuts and tighten if needed.
Daily, with the engine switched on	Listen to the sound of the engine. Switch off the engine if the engine rpm reduced or increases suddenly (the engine does not run smoothly), of if there is unusual interference sound.
	Check the exhaust gas colour. Stop the engine if the exhaust gas suddenly turns black.
	Stop the engine if the oil pressure warning lamp or the coolant temperature warning lamp is lit while the engine is running.
After the first 50h of operation	Change engine oil and oil filter.
50h intervals	Check fuel pipes and hoses, tightness of their connections, and condition of hose clamps.
100h intervals	Clean the air filter element..
	Check the battery electrolyte level.
	Check the fan belt tightness and wear.
200h intervals	Change engine oil and oil filter.
	Check the radiator system and the radiator cell, and check the condition of the radiator.
400h intervals	Replace the fuel filter element.
500h intervals	Clean the radiator system and the radiator cell, and check the condition of the radiator.
	Replace the fan belt..
800h intervals	Adjust valve clearances.
12 month intervals	Replace the air filter element. **
	Check the electrical wires for damage; check the condition of the connectors.
24 month intervals	Replace the fuel hoses and hose clamps.
	Replace the radiator hoses and hose clamps.
	Change the coolant.

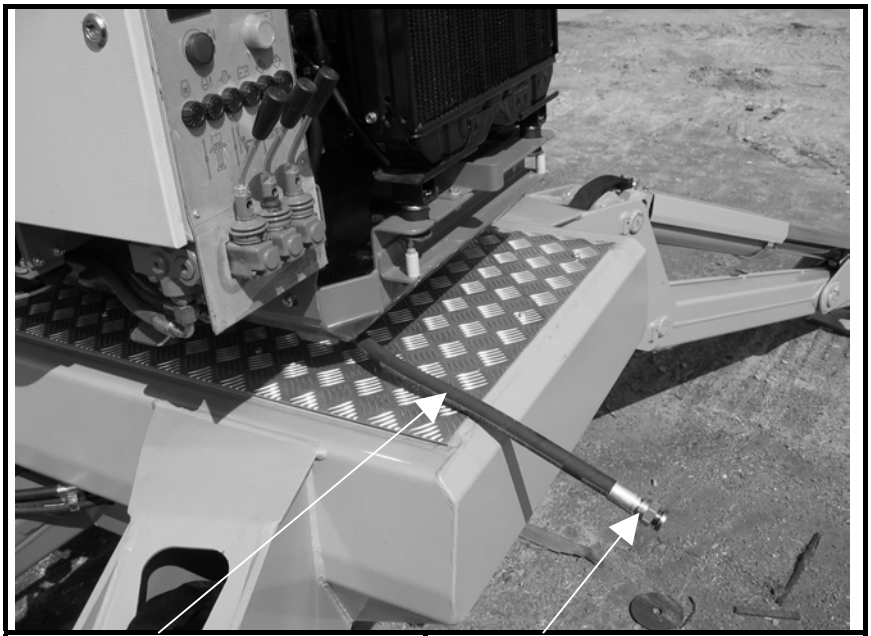
** Once a year of every six cleanings.

KUBOTA D905-E changing the oil filter and oil



Changing the oil filter and oil of KUBOTA D905-E

Changing the engine oil



Draining hose | *Draining plug*

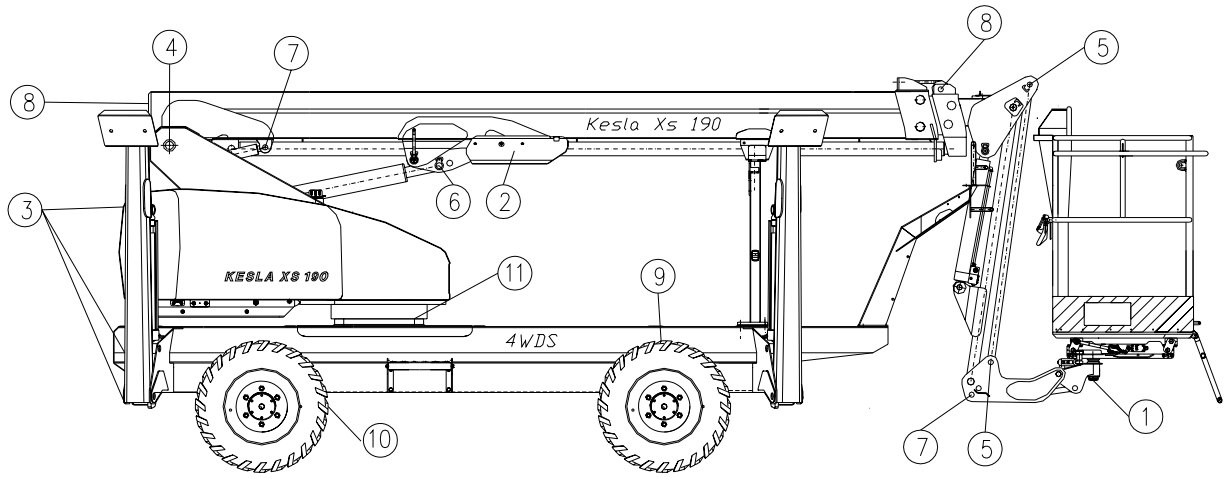
1. Open and remove the hood sections.

2. Bend the engine oil draining hose between the turntable and the chassis to the side of the chassis.

3. Open the engine oil draining plug at the end of the hose and let the oil flow into a waste oil container.

4. Fasten an oil filter tool on the filter and turn CCW.
5. Apply a thin coating of new oil to the rubber gasket and turn until the rubber gasket contacts the adapter. Then tighten additional 1/2 turns.
6. Reinstall the drain plug and tighten. Turn the draining tube back to the engine room.
7. Open the oil cap and fill oil pan with new oil. Check that the oil level is up the upper mark of the dipstick.
8. Close the oil cap and replace the dipstick. Let the engine run as long as the oil pressure warning light is lit. Check the oil level again. Check for oil leaks.
9. Reinstall the engine hood sections.

LUBRICATION DIAGRAM



Lubricate the following points every fifty (50) operating hours.

1.	*Articulation bearings for platform slewing*	*3*	*points*
2.	*Bearing surfaces of load control*	*2*	*points*
3.	*Outrigger joints and articulation bearings of cylinders*	*16*	*points*
4.	*Articulation bearing of the boom and the turntable*	*1*	*points*
5.	*Articulation bearings of the platform, the platform stabilizer arms and the jib*	*7*	*points*
6.	*Articulation bearings of the lifting cylinder*	*2*	*points*
7.	*Articulation bearings of the stabilizing cylinders*	*4*	*points*
8.	*Sliding surfaces of the boom and chain sprocket bearings*	*8+3*	*points*
9.	*Pivoted axle bearings of wheels*	*12*	*points*
10.	*Sliding surfaces of brake cylinders*	*4*	*points*

11. *. Pivot bearing and worm gear: Lubricate every 950 hours or at least every 6 months. There are two lubrication points in the bearing. The lubrication hoses are located in the hose grommet under the side hood in the front part of the turntable. Turn the bearing while greasing. Too much grease can break the gasket of the pivot bearing. Greasing the worm gear: Drive the boom 90° away from the transport support so that the work gear is no more at the lower chassis. The worm bear has three greasing points.*

SELECTION OF LUBRICANTS, OIL VOLUMES

Diesel engine:

Kubota D905-E :

Oil volume..... 5.1 ltr with filter
SAE 30 or SAE10W-30, SAE10W-40 ..... over +25°C
SAE 20 or SAE10W-30, SAE10W-40 ..... 0°C to +25°C
SAE 10W or SAE10W-30, SAE10W-40..... below 0°C

Hydraulic system

Oil volume..... 60.0 ltr filling volume
Oil grade: In summer Univis N46, in winter Univis N32
In warm conditions and in heavy off-road use: Univis N68

Articulation bearings

Lithium-based all-round grease, e.g. Esso Beacon EP2
Lubrication: Grease must ooze out a little during greasing

Open cogging of pivot bearings

Molybdenum-sulphide-based, e.g.
- *Esso Surrent Fluid 30F*
- *Shell Cardium EP Fluid H*
- *Mobil Dorcia 30*

Lubrication: Apply

Sliding surfaces of boom

Lithium-based all-round grease, e.g. Esso Beacon EP2

Slide bearings

Lithium-based all-round grease, e.g. Esso Beacon EP2
Lubrication: Grease must ooze out a little during greasing

Extension boom chains

Engine oil, all qualities
Lubrication: Apply, let flow until the chain pin

Pivot bearing

Lithium-based all-round grease, e.g.
- *Esso Beacon EP2*
- *Shell Alvania EP2*
- *Mobil Mobilux EP2*

Safety limit switches
- Molykote Separator Spray -40°C

CHECKING THE HYDRAULIC OIL, ADDING OIL

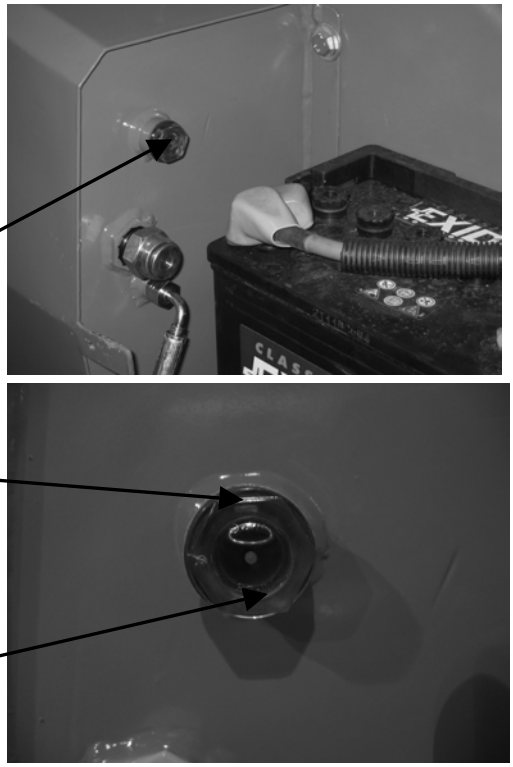
1. Check the hydraulic oil level with the boom on the transport support, the telescope fully retracted, and all outriggers fully up.

2. Remove the left-hand side cover over the turntable, seen from the platform.

3. Check the oil level in the sight glass of the oil tank. The top level is the top edge of the sight glass, the bottom level is the lower edge of the sight glass.

4. Add oil as required.
- *Clean the filler plug and the surround or the filler opening.*
- *Remove the plug. Note: The filler plug has a valve for maintaing a small overpressure in the tank. The overpressure is normally released when the plug is opened.*
- *Add oil using a filtered pump unit. Do not fill oil pouring it directly from a container. Oil recommendations, see page 51.*
- *Check oil level, see illustration below.*

5. Close the filler plug and reinstall the side cover.



MAINTENANCE OF DRIVING BRAKES

CONSTRUCTION OF BRAKES

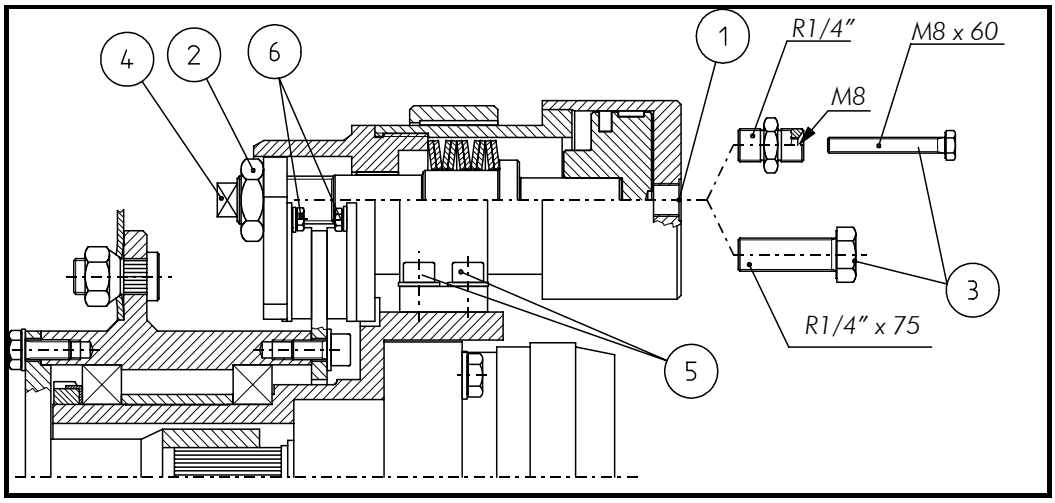
- *Kesla XS 190 has driving brakes both in front and rear axles, located in the wheel hubs.*
- *Disk brakes are opened by hydraulic pressure.*
- *When the pressure of the drive motor exceeds 30 bar, the disk brakes open, and a spring automatically closes the brakes when the pressure drops below 30 bar.*
- *The design of the brake caliper is "floating", which means that a spring presses one of the brake pads, but the slide mechanism compensates the compression pressure of the spring, and both brake pads of the brake caliper press against the brake disk with an equal force, on both sides of the disc.*

MAINTENANCE OF THE BRAKES:

- *Check that the brakes press on the both sides of the brake disk with equal forces – clean, lubricate and check the functioning of the floating brake caliper mechanism every 6 months, and in difficult and dirty conditions even at shorter intervals.*
- *If the brake pad located on the spring side is clearly more worn, the mechanism must be cleaned and lubricated.*
- *For instance when towing, the drive brake can be released by replacing the hydraulic hose nipple at the brake cylinder with a special nipple found in the toolbox, and screwing an M8 bolt in the threaded hole of the nipple.*
- *Replace the brake pad if the thickness of the friction surface is less than 1.5mm (0.06in).*

CHANGING THE BRAKE PADS

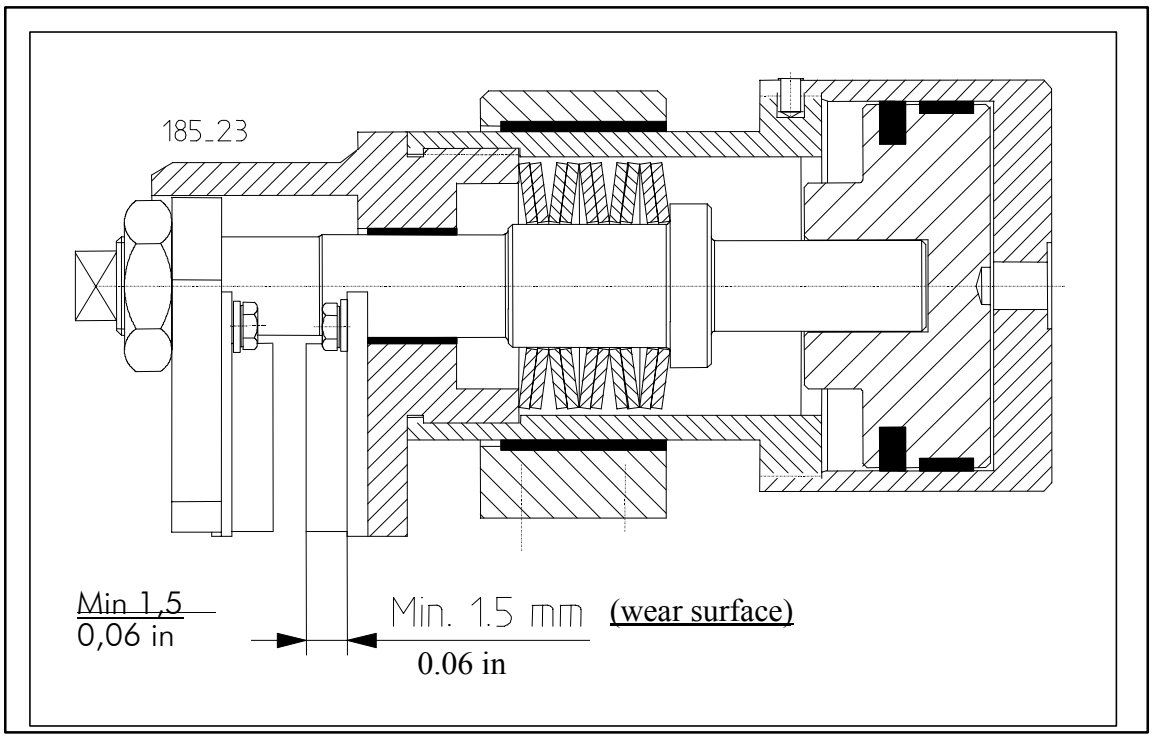
1. Change the brake pad if the thickness of the friction surface is less than 1.5mm (0.06in).



1. *Drive the Access Platform on an even and firm ground.*
2. *Use the outriggers to raise the wheels slightly off the ground, and turn off the engine.*
3. *Remove the wheels.*
4. *Remove the brake hose at (1); close the hose with a plug.*
5. *Remove nut (2).*
6. *Screw an R1/4" x 75 bolt or 1/4" double nipple with internal M8 thread, and bolt M8 x 60 at (1).*
7. *Tighten bolt (3) so that the brake pads are separated off the brake disk.*
8. *Turn spindle 4 inwards to separate the brake pad from the brake disk.*
9. *Remove bolts (5) and move the brake cylinder aside.*
10. *Remove bolts (6) and the brake pads.*

Reinstall the brake calipers in the reverse order.

BRAKE CYLINDER



Brake cylinder

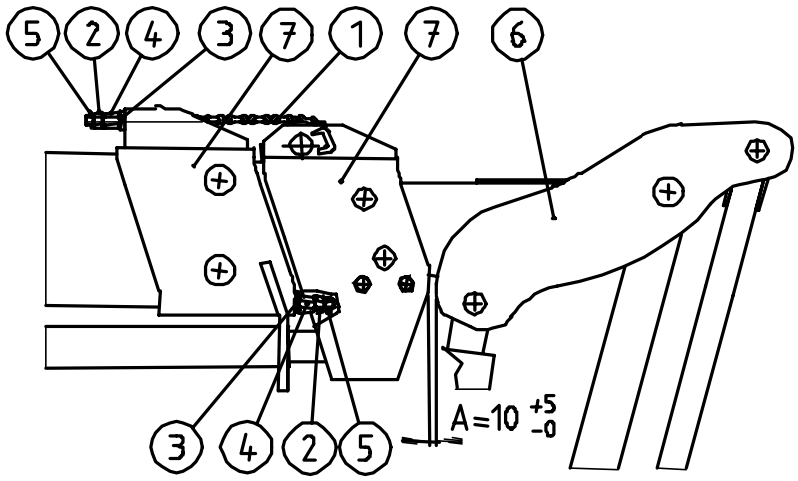
BOOM CHAINS – ADJUSTMENT AND MAINTENANCE

INSTRUCTION FOR INSPECTION

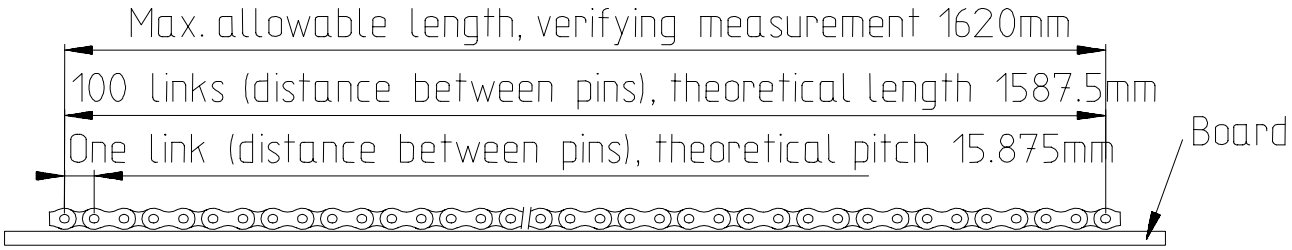
1. Retract the boom completely with the telescope cylinder.
2. Position of the outermost boom section: Check clearance A. See illustration on page 56.
If clearance A is wider than 10mm +5mm (0.39in +0.196in), loosen the nuts (2) and (4) of the extensions chain (1) and similarly tighten the nuts (2) and (4) of the retraction chain, whereat the boom extension is moved inwards.
If clearance A is smaller than 10mm –3mm (0.39in –0.118 in), loosen the nuts (2) and (4) of the retraction chain (2) and tighten the nuts (2) and (4) of the extraction chain (1)
After completing the adjustment, tighten locking nuts (2) holding nut (4) in place. Check that the cotter pin (5) is intact and securely installed.

3. The maximum permissible elongation of the chain is 2%.
3.1 Drive the boom out so that at least 2m of the chain is visible.
3.2 Count for instance 100 chain links.
3.3 Measure the length of this chain length (accuracy ± 1mm) (the chain must be straight, not hanging, use for instance a board under the chain.)
3.4 The theoretical length of a 5/8" chain: 100 links x pitch 15.875 = 1587.5 mm
3.5 If the measured length is longer than 1620mm, the chain must be replaced.

3.6 Replace the chains of there is visible wear, cracks or deformed side plates. Check also the condition of the chain ends.



Adjusting the boom chains



ADJUSTING THE CHAIN TENSION

1. Support the Access Platform on the outriggers with the wheels slightly off the ground. Lower the jib completely, and lower the platform on a wheeled carriage (for instance a pump lifter), and leave the platform.

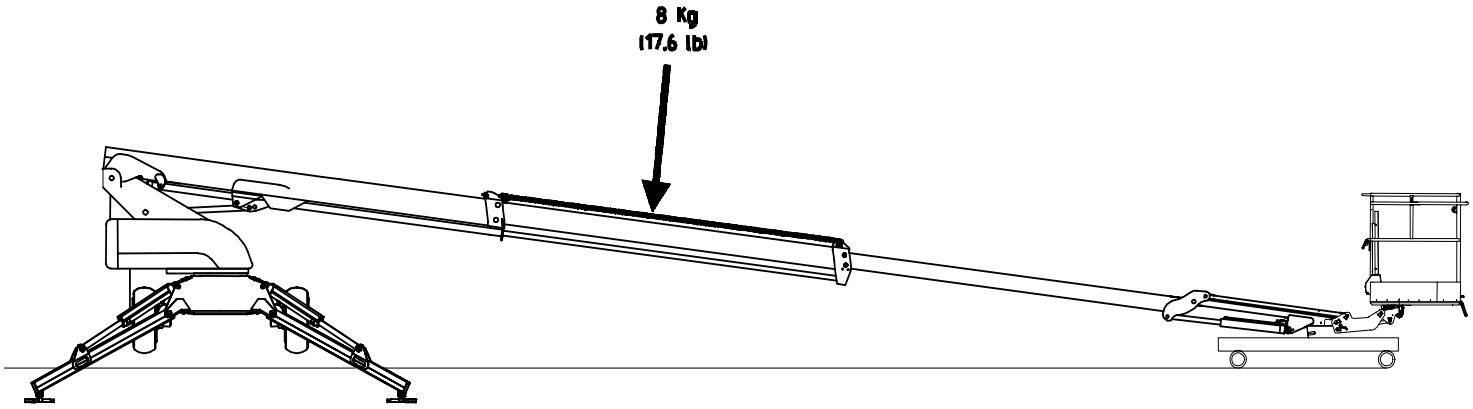
2. Extend the boom completely, relieving its weight with the lift cylinder. If the platform rises from the ground during extending, the lifting radius limiter cuts off both the lowering and extending movement of the boom. Therefore it is important to relieve part of the load onto the wheeled carriage.
Retract the boom about 50mm (1.96in) from the maximum reach, and leave the boom in this position. See illustration, page 57. Note: During extending, no load is allowed on the platform, observe extreme caution. It is most essential to relieve the boom weight with the lifting cylinder.
Excessive relieving may make the emergency limit of the load control trigger and consequently the engine stop.

3. Adjust the tension of both extensions chains so that with a point load of 8kg(17.6lbs) they just touch the top surface of the boom. The point load should be applied to the center of the visible part of the chain. There can be 1mm to 3mm (0.039-0.118in) free play between the chain and the boom.

4. When the chains are hanging freely, the distance between the chain and the boom in the middle of the chain should be approx. 10mm (0.39in).

5. For adjustment and inspection, the chains should be made loose with a reverse movement. The extensions chains can be loosened by slightly retracting the fully-extended boom as described above.
The retraction chains are loosened in the same way by slightly extending a fully-retracted boom.

Illustrations show the adjustment if the chain tension.



Adjusting the tension of the boom extension chain

TORQUE SCHEME FOR BOLTS AND NUTS

Wheel nuts.....250Nm
Bolts of pivot bearing, inner circle.....280Nm
Bolts of pivot bearing, outer circle.....280Nm
Holding capacity of cable clamp in inlet of electrical outlets.....5kg (11lbs) when pulling from cable
Torque of locking nuts of outrigger axles (nylon nuts) .....50Nm to 70Nm
Nuts of wheel hubs and pivot axles .....50Nm to 70Nm
Locking of axle nuts of cylinder pins (nylon nuts).....50Nm to 70Nm

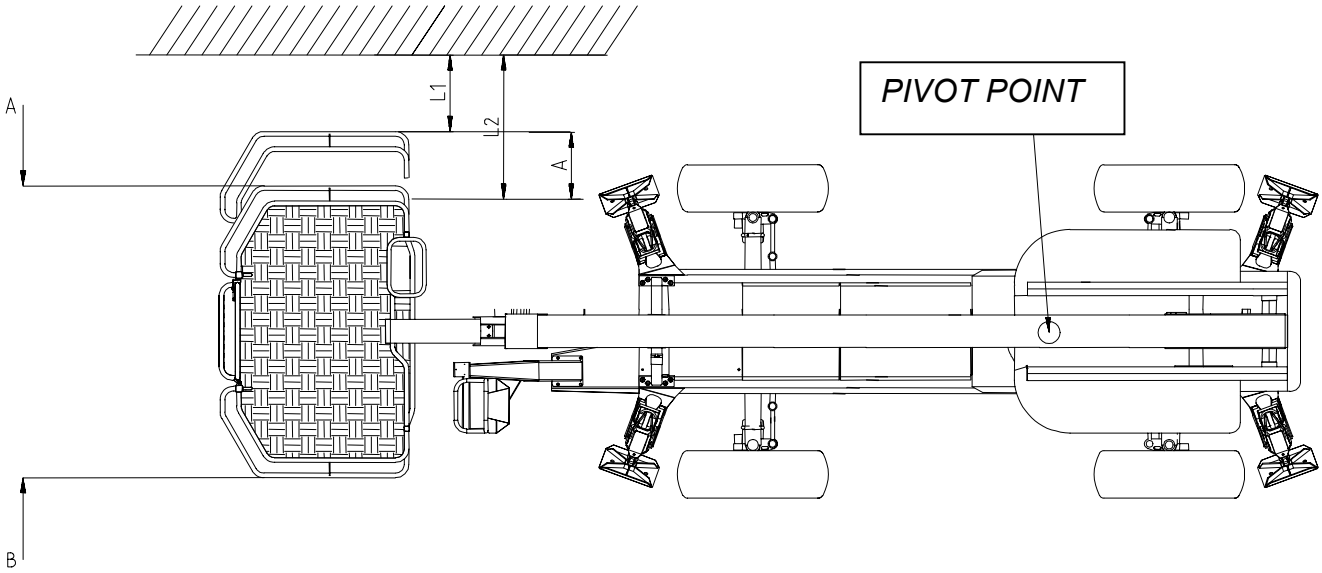
Loosened nylon nuts should always be replaced with new nylon nuts. When a nylon nut has been opened (for instance for a repair work), an opened nylon nut should be always replaced with a new one.

TORQUES IF NOT OTHERWISE MENTIONED

Prelimary torque for screws with metric ISO thread Nm			
	Nm		
	8.8	10.9	12.9
M4	2,8	4,0	4,9
M5	5,7	7,9	9,5
M6	9,7	13,7	16,2
M8	23,5	33,3	39,2
M10	47,1	65,7	79,4
M12	81,4	114,7	137
M14	130	181	216
M16	196	280	333
M18	270	382	461
M20	382	539	647
M22	519	730	873
M24	662	932	1118
M30	1324	1863	2236

Prelimary torque for screws with metric ISO fine thread Nm			
	Nm		
	8.8	10.9	12.9
M8 x 1	24,5	34,3	40,2
M1 x 1,25	49	68,6	80
M1 x 1,25	85,3	118	147
M12 x 1,5	80,4	118	138
M14 x 1,5	118	167	206
M16 x 1,5	196	285	343
M18 x 1,5	295	412	491
M20 x 1,5	402	569	687
M22 x 1,5	540	765	912

CHECKING THE PLAY OF THE SLEWING MECHANISM

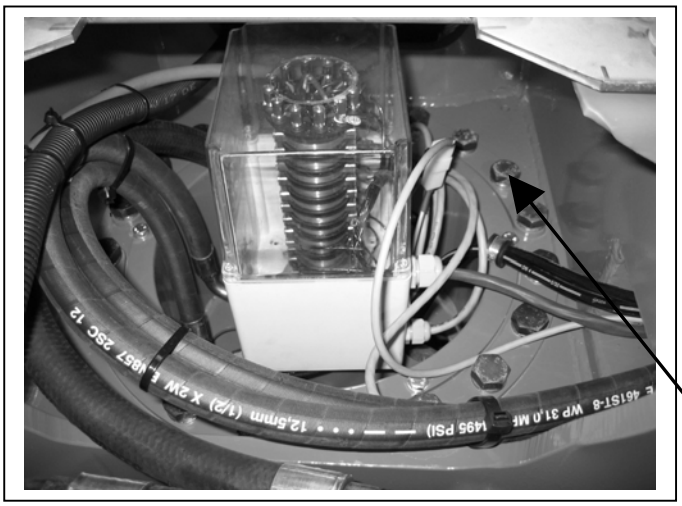


1. Retract the boom completely, lower the jib.
2. Lower the transport support, leave the boom in horizontal position.
3. Push the platform lightly from direction B –remove the free play. Measure dimension L1.
4. Push similarly from direction A and measure dimension L2.
5. L1 - L2 must not be greater than 40mm (1.57 in)
6. Check also the worm gear for wear.

CHECKING THE TORQUE OF THE SLEWING GEAR BOLTS

BOLTS OF PIVOT BEARING, INNER CIRCLE

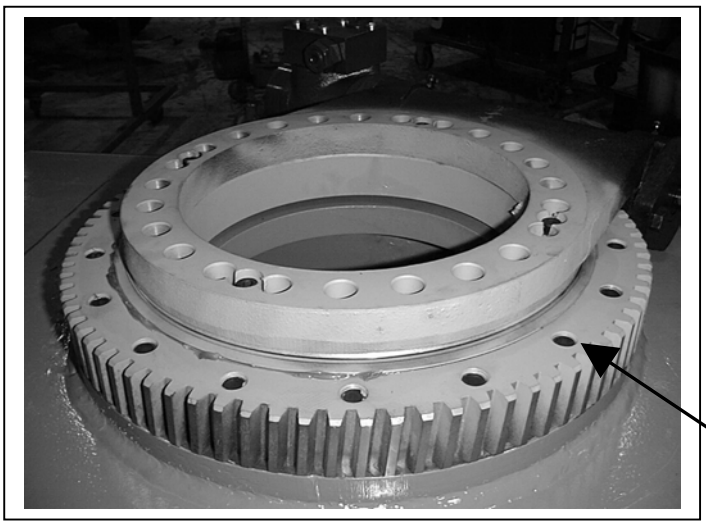
1. Remove the front cover of the turntable.
2. Check torque using a torque wrench, correct value 270Nm. M16x90 bolts, initial torque 280Nm



Bolts of pivot bearing, inner circle

BOLTS OF PIVOT BEARING, OUTER CIRCLE

1. Tighten the outer circle bolts through the chassis bottom (remove the hexagonal bottom plate).
2. Check torque using a torque wrench, correct value 270Nm. M16x90 bolts, initial torque 280Nm.



Bolts of pivot bearing, outer circle

3. When the slewing gear has been removed from the turntable or the chassis, all bolts and washers should be replaced with new ones. All bolts should be tightened to 280Nm torque.

REPAIRS AND ALTERATIONS AFFECTING STRENGTH, STABILITY, AND PERFORMANCE

If the owner needs to perform repairs or alterations, which affect the structural strength, stability and performance, he should devise a plan for these works and have it approved of by the manufacturer in advance. The plan may also be ordered from the manufacturer. The repairs and alterations must be accomplished in accordance with the instructions and methods described in the plan. After accomplishing the repairs and alterations, the inspections and tests specified in the plan must be carried out.

LONG TERM STORAGE OF THE ACCESS PLATFORM

1. *Clean the Access Platform thoroughly using for instance a pressure washer.*
   NOTE: Never clean electrical components with a pressure washer.

2. *Lubricate all lubrication points after washing.*

3. *Change engine oil and oil filter.*

4. *Check coolant level and dilution.*

5. *Change hydraulic oil as well as the pressure filter and the return filter.*

6. *Fill the fuel tank to prevent condensation in the tank.*

7. *Lubricate the visible parts of hydraulic piston rods for instance with grease spray.*

8. *Lubricate the telescope chains, extend the telescope completely for greasing. See BOOM CHAINS – ADJUSTMENT AND MAINTENANCE, pages 56 to 57.*

9. *Clean and lubricate the load control linkage.*

10. *Repaint damaged paintings where required.*

11. *Fix possible defects.*

12. *Check tyre pressures. For storage of more than six months, lift the Access Platform on supports. Set the supports under axles for firm and stable support.*
NOTE: During storage, the Access Platform should not be supported on outriggers.

13. *Switch off the main power switch. For long-term storage, or if the Access Platform will be stored in temperatures below –0°C, remove the battery and store it in a warm place. In order to keep the battery in good condition, uncharge and recharge the battery at regular intervals.*

14. *If possible, store the Access Platform in a dry place and in a constant temperature. Protect against direct sunlight and rain.*

AFTER A LONG-TERM STORAGE

1. *Clean the piston rods and the load control linkage.*

2. *Check engine oil and coolant levels, add as required.*

3. *Reinstall the battery.*

4. *Start the Access Platform, let the engine idle for a moment.*

5. *Perform the daily inspection.*

6. *Drive and test all functions.*

7. *Check for leakages.*

8. *When required, wash the Access Platform.*

9. *If the last annual inspection was carried out more than a year ago, have the annual inspection done before reuse.*

INSTRUCTIONS FOR RE-INSPECTIONS

Inspecting the Access Platform

Kesla XS 190 should be inspected in accordance with these instructions at least once a year or more frequently when needed.
The inspection interval must nut exceed 12 months from the commissioning of the Access Platform.
Test loading with overload and inspection must be carried out also after repairing or replacing load-carrying structures such as cylinders, pins, boom components, jib, platform, outriggers, turntable, chassis or a similar component. Repairs and replacements of components should be recorded in the inspection journal.
If uncertain, contact the manufacturer or importer.

Introduction

These instructions provide minimum general instructions concerning the inspection procedure. Prior to inspection, read the following sections of the manual: control equipment, starting from page 26, Checking lifting radius, pages 19 to 20, design and use of the emergency lowering system, page 41, and location of safety limit switches, page 42. Fill the inspection journal when carrying out the annual inspection. The inspector should have the following decals for replacement should the existing ones be damaged:
- *general operating instructions for the operator*
- *instructions for daily inspection*
- *securing the stability*

GENERAL REQUIREMENTS

Manual
The manual must always be kept with the Access Platform.

Locker for the manual
Keep the manual in the storage locker located in the platform next to the control valve.

Manufacturer's plate
- *The manufacturer's plate (nameplate) should be undamaged and readable.*
- *The plate has been riveted to the rear part of the chassis.*

Load plate
- *SWL (= Safe Working Load) given as the allowable number of persons and the weight of an additional load as well as the maximum permitted lateral load caused by persons must be permanently and clearly marked in a visible place on the platform.*
- *The load plate is located on the outer edge of the platform. Replace the plate if it is unreadable or damaged.*
- *A decal or a painted marking will do, because the lost information can, if needed, be copied from the manufacturer's plate.*
- *the calculated weight for the first person is 80kg (176lbs), and for the next one 80 kg(176lbs), leaving 70kg (154lbs) for the equipment.*

- *The equipment weight 70kg(154lbs) and the maximum lateral load 400N (40kg/88lbs) are shown in the load plate. Another load plate is located next the control valve at the ground control station.*

Warning plate

The following warning plates can be found in the ground control station and in the platform. An instruction decal for operating the emergency lowering system can be found on the engine hood.

- *working near live electrical conductors*
- *a decal with instructions for operating the outriggers: SECURE STABILITY. EVEN ASPHALT CAN YIELD!*
- *maximum load*
- *voltage decal*
- *warning for high sound pressure level at the ground control station*
- *inspecting the condition of the Access Platform and testing before work (= daily inspections)*
- *steps to be taken in case of malfunction during work*
- *general instructions for the operators*

Outrigger plate

The maximum supporting load and instructions for the use of extra boards must be permanently and clearly marked at the place where the outriggers are operated.
The supporting load is 22500N (2300kg/5060 lbs)), when the boom with maximum load is slewed above the outrigger in question.
The soil tightness table on page 38 of the manual will help to define the need of extra boards.
Please also note the local building regulations and special regulations for each building site.
The outriggers and their operating levers are identified with numbers 1-2-3-4.

Hazard colours

The Access Platform must be clearly visible. All projecting parts must be clearly marked.
Projecting parts are sections reaching outside the chassis, i.e. the outriggers and the working platform. The projecting parts are marked with yellow/black diagonals. The diagonal striping is best visible in the site environment.
General information:

- *the striping is marked with yellow-black decals*
- *the decals on the sides of the outriggers*
- *the decals in the base strip of the working platform*

Operating zone diagram

The operating zone diagram can be found in the manual and in the working platform. In the manual, the diagram is on page 11.

Inspection plate

The inspection plate, onto which the inspector stamps his initials and the date, is riveted in a visible place in the rear part of the chassis.
***NOTE!** All damaged or unclear plates and decals should be replaced with new ones immediately, before the next use of the Access Platform.*

SAFETY REQUIREMENTS

Horizontal level indicator

The indicator is located at the left side of the outrigger valve unit under the cover. The indicator is a spirit level showing the position of the Access Platform. The accuracy of the spirit level is + 0.5° - 1.0°.

Prevention of raising the platform

The Access Platform must be equipped with a device (limit switches 1 & 2) to prevent the use of the platform before the outriggers are extended to the support position. The support position is the position where the outriggers are fully extended and the sole plates of the outriggers are pressed firmly against the ground. The operation of outriggers is prevented, when the boom is away from the transport support (limit switch 6) and the working platform has been raised more than 3,0m (9,81ft) from the ground (limit switch 5).

- The electric limit switches must be similar to the original ones and so connected that become safely deactivated (forced opening type).

Prevention of undoing the outrigger support

The Access Platform must be equipped with a device (limit switches 6 & 2) to prevent outrigger movement when the boom is off the transport position.

- The boom lift and the transport support have electrical safety limit switches to prevent the outrigger movements when the boom is off the transport position. When moving the boom, the operator must press the pedal in the working platform. In practice, the transport position does not mean only that the boom has been lowered on the transport support. The boom is in the transport position also when both the control levers of drive/outrigger valve and bypass buttons are within the reach of the operator. XS 190 has limit switches for the positions of the outriggers and ground sensor limit switches. The position sensor is activated, when the outriggers have been turned at least 30° from the transport position. The ground sensor is activated, when an outrigger us pressed against the ground with more than six (6) kgs.

Position of working platform

The working platform must be securely attached to the Access Platform unit. Any unintentional swinging, inclining, slewing or moving of the platform must be avoided. The screws, nuts, joint pints and fixing equipment must be reliably secured or locked.

- Use also a cotter pin in double nut securing (fixing the end of the boom chain).
- In moving parts, mechanical locks are to be used.
- This does not apply to the normal movements caused by the clearances of fixing, stabilizing, and slewing equipment.
- Nyloc nuts must always be replaced with new ones after loosening.

The working platform must remain in a sufficiently horizontal position (recommendation: maximum slope ±5°) regardless of the position of the Access Platform.

- *If a hose is damaged, the working platform must be kept locked by the hydraulic stabilizing equipment.*
- *The hydraulic stabilizing equipment is fitted with a lock valve.*
- *The horizontal level of the platform can be corrected with a control lever located in the boom control valve.*
- *The stabilizing equipment must function automatically in all situations.*
- *While the working platform is being raised, it must always remain in a horizontal position.*

Emergency lowering system

Access Platforms fitted with a mechanical operating system must have an emergency lowering system for lowering the working platform in an emergency. The controls of the emergency lowering system must be clearly indicated, and their unintentional use must be prevented.

- *The electric pump of the emergency lowering system is located under the battery compartment, and its operating buttons are in the working platform and in the turntable.*
- *For the emergency lowering system, there is an instruction decal in the electric junction box.*
- *An electric pump supplies pressure to the emergency lowering system, and it is controlled with the control valve in the ground control station, or, from the working platform, with the boom control valve and the pedal.*

GENERAL CONDITION OF THE ACCESS PLATFORM

Visual inspection

Chassis

- *Corrosion damage*
- *Welded joints (no visible breaks or cracks)*
- *Permanent deformations*

Slewing ring

- *Tightness of ring screws and the joint (see manufacturer's instructions)*
- *Slewing gear*
- *Condition of tooth ring and play (see the manual for maximum play)*
- *Bearing*
- *Welded joints*

Boom

- *Welded joints*
- *Wear of joints*
- *Locking of joints and cylinders*
- *Dents and tears*
- *Permanent deformations*
- *Bars and screws of the stabilizing equipment*
- *Cylinders*
- *Slide pads and adjustments*

Working platform

- *Fixing equipment*
- *Locking of joints*
- *Tears and other damage*
- *Condition and automatic closing of the gate*
- *Access routes and railings*

Outriggers

- *Wear*
- *Corrosion damage*
- *Welded joints*

Transport position

- *Rack for boom transport position*
- *Positions of outriggers and reliability of the lock valves*
- *Condition of brakes*

Hydraulic system

- *Leakages*
- *Condition of hoses (even a slightly damaged hose or a hose with a slightest leak must be replaced)*

Electric system

- *Condition and fixing of cables*
- *Condition of connections*
- *Functionality of limit switches*

TESTING / TEST LOADING

Operating movements

- *Primarily carry out the test operation or test loading (= overloading) according to the manufacturer's instructions.*
- *If no instructions are available, we recommend that the test operation be carried by using the maximum permitted loads in extreme and most unfavourable positions. Make a note of the used load in the journal.*
- *Test the functioning of all movements, do not use jerky movements.*
- *Observe the "creeping" (sliding) of the outriggers, i.e. the reliability of the lock valves of the outrigger cylinders when loaded (approx. 1 hour test period).*
- *After loading, check carefully for any tears or permanent deformations of the loaded components.*

Controls

- *Check the general condition of controls and their automatic return to the neutral position.*
- *The controls on the working platform must be protected against unintentional faulty operation.*
- *Check the tube railing surrounding the control levers for wear and damages.*

Symbols

- The movement directions and the analogies between the control levers and the platform movements are shown with decals. Replace a damaged or unreadable decal with a new one, which can be purchased from the manufacturer.

Emergency stop

- The emergency stop must have a red operating switch, and a plate with the word "STOP" must be fixed next to it.
- It must be possible to use the emergency stop both from the working platform and from the ground station.
- The emergency stop function must stop all movements immediately as the button is being pressed. Furthermore, the Access Platform must not restart immediately when the button is released. The engine must not restart when the emergency stop button is released.
- The emergency stop button must be easily distinguishable from the other operating switches.
- Never use the emergency stop for stopping the Access Platform in normal conditions. The key-operated main power switch is for this purpose.
- It must not be possible to deactivate the emergency stop.

Safety limit switches

- Check functions.
- Check fastenings.

Horn (sound signal)

- Check the functioning.
- The push-button is located in the working platform.

Sealing

- Check the sealing; fastening of all limit switches, levers and rollers, all pressure limitation cartridges, lock valves, controls of the hydraulic pump, the maximum rpm of the engine, and the adjusting nuts of the boom extension chains.

REPAIRS

Welding

If you notice that the load-bearing structures of the Access Platform have been repaired by welding, enter a remark in the inspection journal under "Remarks", including the following information:

- Location of welding
- Date of repair welding
- Welder

Find out if the manufacturer's instructions have been observed when welding.

Other repairs

Any other repairs of the load-bearing structures (e.g. cylinder) must also be entered in the inspection journal under "Remarks", including the following information:

- *Location of the repair*
- *Date*
- *Name of the person who carried out the repair*

Make sure that the manufacturer's instructions have been observed. Use original spare parts in all repairs.

Test loading (= overloading)

After repairs of load-bearing structures the Access Platform must be tested while being loaded according to standard EN280. The test load used must be entered in the inspection journal. After loading, check carefully for any tears or permanent deformations on the loaded components. The test load should be 125% of the maximum nominal load.

TERMS OF WARRANTY FOR KESLA XS ACCESS PLATFORMS

Kesla Oyj warrants that the Access Platforms they sell are free from defects and provides the following warranty for any defects in materials and workmanship.

1. The warranty is valid for a maximum of 12 months starting from the date of delivery of the Access Platform to the actual user or buyer, but not more than 18 months after delivery from the manufacturer. The warranty is valid only for a new Access Platforms while it is in the possession of the first buyer.

2. During the duration of this warranty, Kesla Oyj is liable to repair, free of charge, defects in the Access Platform pursuant to these Terms of Warranty.

3. A repair under warranty shall be carried out during normal working hours by a maintenance shop or distributor authorised by Kesla Oyj in the normal order of reception.

4. For work completed under warranty the buyer and the authorised maintenance shop shall make a warranty claim and submit it to Kesla Oyj within 14 days.

5. Kesla Oyj will decide whether the parts and work are covered by the warranty.

6. Should the warranty claim concern a defective part, already removed from the Access Platform, that is to be replaced with a corresponding faultless part, the replacement shall take place free of charge at the spare part store of Kesla Oyj or an authorised maintenance shop.

7. Any other expenses resulting from the fulfilment the warranty obligation, such as repair personnel's travel and accommodation expenses, transport expenses of tools, overtime compensation and any comparable extra compensation shall be paid for by the buyer.

8. The warranty does not apply to hydraulic hoses, gaskets and seals. For components purchased by Kesla Oyj for the Access Platform, such as the pivot bearing, Kesla Oyj will pass on a warranty that is equal to the warranty given by the components manufacturer/seller to Kesla Oyj.

9. The warranty shall not apply to defects arising from failure to observe the operation and safety instructions, or the main cause of which is improper operation, installation or maintenance, or which are due to normal wear and tear or an accident.

10. Kesla Oyj will not assume liability for any damage to property or persons resulting from a defective Access Platform, or loss of earnings, expenses of driving to the repair shop, or any similar claims.

11. The warranty shall be invalidated immediately and entirely if inaccurate repairs have been made to the Access Platform, foreign or inappropriate parts have been installed in the Access Platform, or permitted pressure settings of hydraulic equipment preset by Kesla Oyj have been changed without written permission of Kesla Oyj.

12. The warranty will apply provided that a completed installation inspection journal, with an assurance by the buyer/user of having read and understood the manual, is returned to the manufacturer within 14 days of installation.

WARRANTY COMPENSATION APPLICATION

KESLA OYJ
Metsolantie 2
59800 KESÄLAHTI
Tel. +358 13 682841
Fax. +358 13 6828100

Owner or holder of Access Platform_____
Postaladdress_____ Tel._____
Model and serial number of Access Platform_____
Access Platform delivered on (d/m/y)_____
Model and serial number of engine_____
DESCRIPTION OF DAMAGES AND THEIR CAUSES_____
_____
_____
SPARE PART NUMBER AND DESCRIPTION OF PART WHICH CAUSED THE DAMAGE
_____
_____
HOW THE ACCESS PLATFORM IS BEING USED (e.g. rental shop)_____
_____
WORKING HOURS OF ACCESS PLATFORM WHEN THE DAMAGE OCCURRED_____
Damage date (d/m/y)___/___200___Repaired on (d/m/y) ___/___200_____
Repaired by _____ Job No._____
The damaged parts have been returned to Kesla Oyj.
Shipment date____/____200_____
Method of delivery_____ Delivered from_____
Freight bill No._____
The damaged parts are original parts☐Delivered as spare parts☐
New parts have been delivered, consignment note no._____
No. of invoice_____Date (d/m/y)____/____200_____

Signature_____

Name in block letters_____

Enclosures_____

To be filled in by Kesla Oyj:
Takuuhakemus saapunut:_____/____200_____
Osat saapuneet:_____/____200_____Osien säilytyspaikka_____
PÄÄTÖS
Takuuanomus hylätty, laskutetaan kaikki
Hyväksytty työkust. ja varaosat_____

_____/____200_____ Tarkastanut_____

_____/____200_____ Hyväksynyt _____

BILL OF DELIVERY

KESLA OYJ
Metsolantie 2
59800 KESÄLAHTI
Tel. +358 13 682841
Fax. +358 13-6828100

Commissioning date (d/m/y):_____/_____200____

Kesla® XS 190

Serial number _____Owner_____

Accessories_____Street address_____

_____ Postal code and town_____

_____Telephone_____

_____Seller_____

✂----------

To be returned to: KESLA OYJ
Metsolantie 2
59800 KESÄLAHTI
Tel. +358 13 682841
Fax. +358 13 6828100

BILL OF DELIVERY

Commissioning date (d/m/y):_____/_____200____

Kesla® XS 190

Serial number _____Owner_____

Accessories_____Street address_____

_____Postal code and town_____

_____Telephone_____

_____Seller_____

_____

WARRANTY

_____/_____200_____

SERIAL
NUMBER_____

SELLER:_____

EU DECLARATION OF CONFORMITY FOR MACHINERY

(directive 98/37/ETY)

KESLA OYJ
Metsolantie 2
59800 KESÄLAHTI
Tel. (013) 682841
Fax. (013) 6828100

herewith declares that

Self-Propelled Telescopic Platform ***Kesla XS 190***

*serial number*_____

is in conformity with the provisions of the Machine Directive 98/37/EEC, 89/336/EEC as amended and with national implementing legislation (Council of State Decision on machine safety Vnp 1314/94).

European standard EN 280 has been applied to the design of the machine.

National standards and specifications applied to the design of the machine:

SFS 4020, SFS 4023, SFS 4025, SFS 4026, SFS 4300, SFS 4302, DIN 15018.

Kesälahti, Finland _____
place & date *(d/m/y)*

_____
signature
Juha Karjalainen,
Product Development Manager
Name in block letters, position

REGISTRATION OF GUARANTEE OF KUBOTA ENGINE

To ensure that the warranty of the Kubota engine starts on the commissioning date of the machine, please complete the below form and forward it by e-mail, post or fax to the address given below.

Commissioning date (d/m/y): _____/_____200___

Kesla® XS 190 ENGINE TYPE: KUBOTA D905

MANUFACTURING NUMBER:_____ SERIAL NUMBER:_D905

SELLER:_____

CUSTOMER:_____

STREET ADDRESS:_____

POSTAL CODE AND TOWN:_____

_____

E-MAIL:_____

To be returned to: *KONEKESKO OY*
Moottori- ja vaihteistomyynti
JUHA ANTTONEN
PL 54
FIN-01301 VANTAA
Fax. +358 (0)10 5320 625
E-mail: juha.anttonen@kesko.fi

Kesla XS 190

SELF PROPELLED TELESCOPIC PLATFORM

ACCESS PLATFORM INSPECTION JOURNAL

First inspection (commissioning inspection) *Date(d/m/y).*_____

LOCATION OF INSPECTION: KESLA OYJ, KESÄLAHTI *Inspected by*_____

Name in block letters _____

BASIC INFORMATION ON ACCESS PLATFORM
Manufacturer: Kesla Oyj
Address: Metsolantie 2, 59800 Kesälahti, Finland

Country of manufacture: Finland

Type of MEWB: BP Boom platform
Chassis: MS MEWP (self-propelled)

Boom: TB Telescope boom
Outriggers: HT Hydraulic turning

TECHNICAL DATA

Model and type: Kesla XS 190
*Serial No. / Manuf.year:*_____
Maximum load: 230 kg
Number of persons: 2
*Extra load:*_____
Combustion engine: diesel
Lowest operating temperature: -25°c
Weight: 3700kg

Max. height of platform	*HP= 16,7 m*
Max. side outreach	*SO=8.0m /230Kg*
Slewing of boom	*SB= Limitless*
Width of support	*WS= 4.65x4,05m*
Transport width	*TW= 2,08 m*
Transport length	*TL= 6,30 m*
Transport height	*TH= 2,3 m*
Platform dimensions	*PD= 0,85mx1,5m*

ITEMS TO BE INSPECTED OK = in order , NO = To be repaired

A. STRENGTH

OK	NO	
☐	☐	*Materials certificate*
☐	☐	*Strength certificate*

B. STABILITY

☐	☐	*Stability test certificate*
☐	☐	*Operating zone diagram*

C. GENERAL REQUIREMENTS

☐	☐	*Manual*
☐	☐	*Locker for the manual*
☐	☐	*Product plate/inspection plate*
☐	☐	*Load plate, plate for outriggers*
☐	☐	*Warning plate*
☐	☐	*Hazard colours*

D. SAFETY DEVICES

☐	☐	*Safety limit switches*
☐	☐	*Horn (sound signal)*

E. LOADING

☐	☐	*Load=*_____ *kg*
☐	☐	*Operating movements*

F. SAFETY REQUIREMENTS

OK	NO	
☐	☐	*Horizontal level indicator*
☐	☐	*Securings and lockings*
☐	☐	*Raising prevention device*
☐	☐	*Prevention of undoing the outrigger supp.*
☐	☐	*Safety distances*
☐	☐	*Position of platform*
☐	☐	*Construction of platform*
☐	☐	*Emergency lowering system*
☐	☐	*Limiter devices*

☐ ☐ *G. ELECTRICAL EQUIPMENT*

H. CONTROLS

☐	☐	*Symbols/directions of movement*
☐	☐	*Locations*
☐	☐	*Emergency stop*
☐	☐	*Protections*

DEFECTS AND REMARKS

_____
_____
_____
_____

*Observed defects repaired on (d/m/y)-:*_____/____*20* _____

*Signature*_____

Name in block letters _____

Kesla XS 190

SELF PROPELLED TELESCOPIC PLATFORM

ACCESS PLATFORM INSPECTION JOURNAL

(Fill this journal carefully. Keep the journal with the Access Platform for at least two years)

RE-INSPECTION (= maintenance check) *Date (d/m/y).* _____/_____ 20____

Place of inspection _____ *Inspected by*_____

*Address*_____ *Name in block letters* _____

BASIC INFORMATION ON ACCESS PLATFORM

*Manufacturer*_____ *Model and type* _____

*Importer / Dealer*_____ *Serial No. / Manuf.year* _____

Owner _____ *Address* _____

TYPE OF MEWP: BC☐*Boom platform* MP☐*Scissor platf.* MP☐*Mast platform*
CHASSIS: T ☐*Truck* MS☐*MEWP (self-prop.)* TT☐*Trailer (towed)* M ☐*Monkey*
BOOM: A ☐*Articul.boom* TB☐*Telescope boom* AT☐*Articulated telescope boom*
S ☐*Scissor* FM☐*Fixed mast* TM☐*Telescope mast*
OUTRIGGERS: HT☐*Hydr. turning* HE☐*Hydr. extending* M ☐*Mechanical* NO☐*No outriggers*

ITEM TO BE INSPECTED *OK= in order* *NO= To be repaired*

1.GENERAL REQUIREMENTS

OK	NO	
☐	☐	*1.Manual*
☐	☐	*2.Locker for the manual*
☐	☐	*3.Manufacturer's plate*
☐	☐	*4.Load plate*
☐	☐	*5.Warning plate*
☐	☐	*6.Outrigger plate*
☐	☐	*7.Hazard colours*
☐	☐	*8.Operating zone diagram*
☐	☐	*9.Inspection plate*

2.SAFETY REQUIREMENTS

OK	NO	
☐	☐	*1.Horizontal level indicator*
☐	☐	*2.Raising prevention device*
☐	☐	*3. Prevention of undoing the outrigger support*
☐	☐	*4.Position of platform*
☐	☐	*5.Emergency lowering syst.*

3.GENERAL CONDITION

OK	NO	
☐	☐	*1.Chassis*
☐	☐	*2.Slewing gear*
☐	☐	*3.Boom*
☐	☐	*4.Working platform*
☐	☐	*5.Outriggers*
☐	☐	*6.Transport position*
☐	☐	*7.Hydraulic system*
☐	☐	*8.Electric system*

4.TESTING/TEST LOADING

OK	NO	
		Load _____ kg
☐	☐	*1.Operating movements*
☐	☐	*2.Controls*
☐	☐	*3.Symbols*
☐	☐	*4.Emergency stop*
☐	☐	*5.Safety limit switches*
☐	☐	*6. Horn (sound signal)*

5.REPAIRS

☐	☐	*1.Welding*
☐	☐	*2.Other repairs*
☐	☐	*3.Test loading*

DEFECTS AND REMARKS

_____
_____
_____
_____
_____
_____
_____
_____
_____

Observed defects repaired on (d/m/y) :___/___20__ *Signature*_____
*Name in block letters*_____

ENCLOS: ☐ *Remarks continue overleaf*
☐ *Other document* _____ *qty*

Distribution: *Owner of Access Platform*
Access Platform manual
Inspected by

Kesla XS 190

SELF PROPELLED TELESCOPIC PLATFORM

ACCESS PLATFORM INSPECTION JOURNAL

(Fill this journal carefully. Keep the journal with the Access Platform for at least two years)

RE-INSPECTION (= maintenance check) *Date (d/m/y).* _____/_____ 20____

Place of inspection _____ *Inspected by*_____

*Address*_____ *Name in block letters* _____

BASIC INFORMATION ON ACCESS PLATFORM

*Manufacturer*_____ *Model and type* _____

*Importer / Dealer*_____ *Serial No. / Manuf.year* _____

Owner _____ *Address* _____

TYPE OF MEWP: BC☐*Boom platform* MP☐*Scissor platf.* MP☐*Mast platform*
CHASSIS: T ☐*Truck* MS☐*MEWP (self-prop.)* TT☐*Trailer (towed)* M ☐*Monkey*
BOOM: A ☐*Articul.boom* TB☐*Telescope boom* AT☐*Articulated telescope boom*
S ☐*Scissor* FM☐*Fixed mast* TM☐*Telescope mast*
OUTRIGGERS: HT☐*Hydr. turning* HE☐*Hydr. extending* M ☐*Mechanical* NO☐*No outriggers*

ITEM TO BE INSPECTED *OK= in order* *NO= To be repaired*

1.GENERAL REQUIREMENTS

OK	NO	
☐	☐	*1.Manual*
☐	☐	*2.Locker for the manual*
☐	☐	*3.Manufacturer's plate*
☐	☐	*4.Load plate*
☐	☐	*5.Warning plate*
☐	☐	*6.Outrigger plate*
☐	☐	*7.Hazard colours*
☐	☐	*8.Operating zone diagram*
☐	☐	*9.Inspection plate*

2.SAFETY REQUIREMENTS

OK	NO	
☐	☐	*1.Horizontal level indicator*
☐	☐	*2.Raising prevention device*

OK	NO	
☐	☐	*3. Prevention of undoing the outrigger support*
☐	☐	*4.Position of platform*
☐	☐	*5.Emergency lowering syst.*

3.GENERAL CONDITION

☐	☐	*1.Chassis*
☐	☐	*2.Slewing gear*
☐	☐	*3.Boom*
☐	☐	*4.Working platform*
☐	☐	*5.Outriggers*
☐	☐	*6.Transport position*
☐	☐	*7.Hydraulic system*
☐	☐	*8.Electric system*

4.TESTING/TEST LOADING

OK	NO	
		Load _____ kg
☐	☐	*1.Operating movements*
☐	☐	*2.Controls*
☐	☐	*3.Symbols*
☐	☐	*4.Emergency stop*
☐	☐	*5.Safety limit switches*
☐	☐	*6. Horn (sound signal)*

5.REPAIRS

☐	☐	*1.Welding*
☐	☐	*2.Other repairs*
☐	☐	*3.Test loading*

DEFECTS AND REMARKS

_____
_____
_____
_____
_____
_____
_____
_____
_____

*Observed defects repaired on (d/m/y) :*___/___20__ *Signature*_____
*Name in block letters*_____

ENCLOS: ☐ *Remarks continue overleaf*
☐ *Other document* _____ *qty*

Distribution: *Owner of Access Platform*
Access Platform manual
Inspected by

Kesla XS 190

SELF PROPELLED TELESCOPIC PLATFORM

ACCESS PLATFORM INSPECTION JOURNAL

(Fill this journal carefully. Keep the journal with the Access Platform for at least two years)

RE-INSPECTION (= maintenance check) *Date (d/m/y).* _____/_____ 20____

Place of inspection _____ *Inspected by*_____

*Address*_____ *Name in block letters* _____

BASIC INFORMATION ON ACCESS PLATFORM

*Manufacturer*_____ *Model and type* _____

*Importer / Dealer*_____ *Serial No. / Manuf.year* _____

Owner _____ *Address* _____

TYPE OF MEWP: BC☐*Boom platform* MP☐*Scissor platf.* MP☐*Mast platform*
CHASSIS: T ☐*Truck* MS☐*MEWP (self-prop.)* TT☐*Trailer (towed)* M ☐*Monkey*
BOOM: A ☐*Articul.boom* TB☐*Telescope boom* AT☐*Articulated telescope boom*
S ☐*Scissor* FM☐*Fixed mast* TM☐*Telescope mast*
OUTRIGGERS: HT☐*Hydr. turning* HE☐*Hydr. extending* M ☐*Mechanical* NO☐*No outriggers*

ITEM TO BE INSPECTED OK= in order NO= To be repaired

1.GENERAL REQUIREMENTS

OK	NO	
☐	☐	1.Manual
☐	☐	2.Locker for the manual
☐	☐	3.Manufacturer's plate
☐	☐	4.Load plate
☐	☐	5.Warning plate
☐	☐	6.Outrigger plate
☐	☐	7.Hazard colours
☐	☐	8.Operating zone diagram
☐	☐	9.Inspection plate

2.SAFETY REQUIREMENTS

OK	NO	
☐	☐	1.Horizontal level indicator
☐	☐	2.Raising prevention device
☐	☐	3. Prevention of undoing the outrigger support
☐	☐	4.Position of platform
☐	☐	5.Emergency lowering syst.

3.GENERAL CONDITION

OK	NO	
☐	☐	1.Chassis
☐	☐	2.Slewing gear
☐	☐	3.Boom
☐	☐	4.Working platform
☐	☐	5.Outriggers
☐	☐	6.Transport position
☐	☐	7.Hydraulic system
☐	☐	8.Electric system

4.TESTING/TEST LOADING

OK	NO	
		Load _____ kg
☐	☐	1.Operating movements
☐	☐	2.Controls
☐	☐	3.Symbols
☐	☐	4.Emergency stop
☐	☐	5.Safety limit switches
☐	☐	6. Horn (sound signal)

5.REPAIRS

☐	☐	1.Welding
☐	☐	2.Other repairs
☐	☐	3.Test loading

DEFECTS AND REMARKS

_____
_____
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_____

*Observed defects repaired on (d/m/y) :*___/___20__ *Signature*_____
*Name in block letters*_____

ENCLOS: ☐ *Remarks continue overleaf*
☐ *Other document* _____ *qty*

Distribution: *Owner of Access Platform*
Access Platform manual
Inspected by

Kesla XS 190

SELF PROPELLED TELESCOPIC PLATFORM

ACCESS PLATFORM INSPECTION JOURNAL

(Fill this journal carefully. Keep the journal with the Access Platform for at least two years)

RE-INSPECTION (= maintenance check) *Date (d/m/y).* _____/_____ 20____

Place of inspection _____ *Inspected by*_____

*Address*_____ *Name in block letters* _____

BASIC INFORMATION ON ACCESS PLATFORM

*Manufacturer*_____ *Model and type* _____

*Importer / Dealer*_____ *Serial No. / Manuf.year* _____

Owner _____ *Address* _____

TYPE OF MEWP: BC☐*Boom platform* MP☐*Scissor platf.* MP☐*Mast platform*
CHASSIS: T ☐*Truck* MS☐*MEWP (self-prop.)* TT☐*Trailer (towed)* M ☐*Monkey*
BOOM: A ☐*Articul.boom* TB☐*Telescope boom* AT☐*Articulated telescope boom*
S ☐*Scissor* FM☐*Fixed mast* TM☐*Telescope mast*
OUTRIGGERS: HT☐*Hydr. turning* HE☐*Hydr. extending* M ☐*Mechanical* NO☐*No outriggers*

ITEM TO BE INSPECTED *OK= in order* *NO= To be repaired*

1.GENERAL REQUIREMENTS

OK	NO	
☐	☐	*1.Manual*
☐	☐	*2.Locker for the manual*
☐	☐	*3.Manufacturer's plate*
☐	☐	*4.Load plate*
☐	☐	*5.Warning plate*
☐	☐	*6.Outrigger plate*
☐	☐	*7.Hazard colours*
☐	☐	*8.Operating zone diagram*
☐	☐	*9.Inspection plate*

2.SAFETY REQUIREMENTS

OK	NO	
☐	☐	*1.Horizontal level indicator*
☐	☐	*2.Raising prevention device*
☐	☐	*3. Prevention of undoing the outrigger support*
☐	☐	*4.Position of platform*
☐	☐	*5.Emergency lowering syst.*

3.GENERAL CONDITION

OK	NO	
☐	☐	*1.Chassis*
☐	☐	*2.Slewing gear*
☐	☐	*3.Boom*
☐	☐	*4.Working platform*
☐	☐	*5.Outriggers*
☐	☐	*6.Transport position*
☐	☐	*7.Hydraulic system*
☐	☐	*8.Electric system*

4.TESTING/TEST LOADING

OK	NO	
		Load _____ *kg*
☐	☐	*1.Operating movements*
☐	☐	*2.Controls*
☐	☐	*3.Symbols*
☐	☐	*4.Emergency stop*
☐	☐	*5.Safety limit switches*
☐	☐	*6. Horn (sound signal)*

5.REPAIRS

☐	☐	*1.Welding*
☐	☐	*2.Other repairs*
☐	☐	*3.Test loading*

DEFECTS AND REMARKS

_____
_____
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_____

*Observed defects repaired on (d/m/y) :*___/___20__ *Signature*_____
*Name in block letters*_____

ENCLOS: ☐ *Remarks continue overleaf*
☐ *Other document* _____ *qty*

Distribution: *Owner of Access Platform*
Access Platform manual
Inspected by

Kesla XS 190

SELF PROPELLED TELESCOPIC PLATFORM

ACCESS PLATFORM INSPECTION JOURNAL

(Fill this journal carefully. Keep the journal with the Access Platform for at least two years)

RE-INSPECTION (= maintenance check) *Date (d/m/y).* _____/_____ 20____

Place of inspection _____ *Inspected by*_____

*Address*_____ *Name in block letters* _____

BASIC INFORMATION ON ACCESS PLATFORM

*Manufacturer*_____ *Model and type* _____

*Importer / Dealer*_____ *Serial No. / Manuf.year* _____

Owner _____ *Address* _____

TYPE OF MEWP: BC☐*Boom platform* MP☐*Scissor platf.* MP☐*Mast platform*
CHASSIS: T ☐*Truck* MS☐*MEWP (self-prop.)* TT☐*Trailer (towed)* M ☐*Monkey*
BOOM: A ☐*Articul.boom* TB☐*Telescope boom* AT☐*Articulated telescope boom*
S ☐*Scissor* FM☐*Fixed mast* TM☐*Telescope mast*
OUTRIGGERS: HT☐*Hydr. turning* HE☐*Hydr. extending* M ☐*Mechanical* NO☐*No outriggers*

ITEM TO BE INSPECTED OK= in order NO= To be repaired

1.GENERAL REQUIREMENTS

OK	NO	
☐	☐	1.Manual
☐	☐	2.Locker for the manual
☐	☐	3.Manufacturer's plate
☐	☐	4.Load plate
☐	☐	5.Warning plate
☐	☐	6.Outrigger plate
☐	☐	7.Hazard colours
☐	☐	8.Operating zone diagram
☐	☐	9.Inspection plate

2.SAFETY REQUIREMENTS

OK	NO	
☐	☐	1.Horizontal level indicator
☐	☐	2.Raising prevention device
☐	☐	3. Prevention of undoing the outrigger support
☐	☐	4.Position of platform
☐	☐	5.Emergency lowering syst.

3.GENERAL CONDITION

OK	NO	
☐	☐	1.Chassis
☐	☐	2.Slewing gear
☐	☐	3.Boom
☐	☐	4.Working platform
☐	☐	5.Outriggers
☐	☐	6.Transport position
☐	☐	7.Hydraulic system
☐	☐	8.Electric system

4.TESTING/TEST LOADING

OK	NO	
		Load _____ kg
☐	☐	1.Operating movements
☐	☐	2.Controls
☐	☐	3.Symbols
☐	☐	4.Emergency stop
☐	☐	5.Safety limit switches
☐	☐	6. Horn (sound signal)

5.REPAIRS

☐	☐	1.Welding
☐	☐	2.Other repairs
☐	☐	3.Test loading

DEFECTS AND REMARKS

_____
_____
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_____

*Observed defects repaired on (d/m/y) :*___/___20__ *Signature*_____
*Name in block letters*_____

ENCLOS: ☐ *Remarks continue overleaf*
☐ *Other document* _____ *qty*

Distribution: *Owner of Access Platform*
Access Platform manual
Inspected by

VTT

EC TYPE-EXAMINATION CERTIFICATE

No TUO 125/524/05

Machine	Mobile elevating work platform **KESLA XS 190 D/B**
Manufacturer/ Customer	**Kesla Oyj**
Address	Metsolantie 2 FIN-59800 KESÄLAHTI FINLAND
Regulations	Machinery Directive 98/37/EC (VNp 1314/94)
Research report	TUO22-055827
Identification	Drawing: Kesla XS 190 Outreach diagram: Kesla XS 190
Validity of certificate	From serial number XS1902002 until 16.8.2010. Other conditions and limitations on the reverse side.

Tampere, August 16, 2005

VTT INDUSTRIAL SYSTEMS
Notified body no 0537

Jorma Järvenpää

Mika Yli-Marttila

VALTION TEKNILLINEN TUTKIMUSKESKUS
VTT
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