SCANLIFT SL 240

MOBILE ELEVATING WORK PLATFORM (MEWP)

OPERATOR'S MANUAL

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MEWP SL 240
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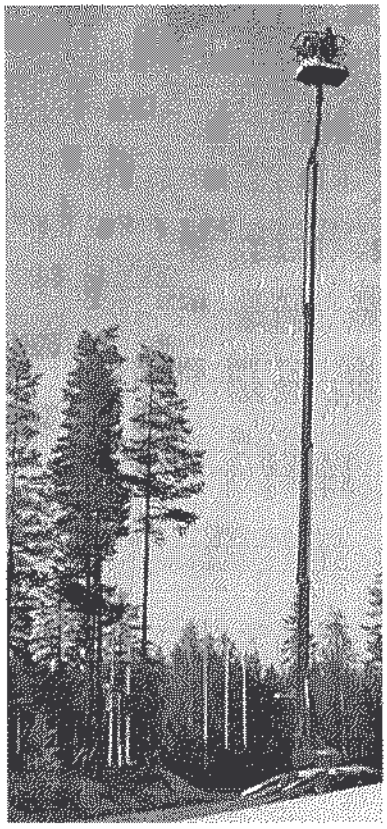
1. INTRODUCTION



Scanlift SL 240 is a mobile elevating work platform (MEWP) fitted with its own combustion engine using as fuel petrol (gasoline), liquid petroleum gas (LPG) or, in the diesel version, light fuel oil. Due to its 4WD and 4WS Scanlift SL 240 is very agile and, driven from the platform, it easily manages to travel in poor shaped terrain.
Because all essential controls are centralized to the platform, the Scanlift MEWP is in any normal situation controllable from the platform. Analogously the electrical box, the change-over switch and the controls for ground guiding are concentrated to the turntable.
The brakes of the MEWP get automatically locked when the pressure of the driving motors has dropped.
The electrical emergency lowering system can be controlled from the platform and the turntable.
Due to its telescope Scanlift SL 240 has a wide side reach and the work is not limited by the slew housing, as this rotates without limitation. The jib boom as standard equipment ensures agile movements.
Scanlift SL 240 is fitted with many safety improving functions. To achieve good, effective and safe working results their instructions must be read well and memorized.
The operation of the MEWP is made easier and lighter by the electrical controls.
The condition of the MEWP must be examined daily on basis of this manual before starting to work. Do not use the MEWP, if it is not maintained or not in order.
The manufacturer reserves the right of changing the construction, equipment as well as the maintenance instructions of the machine without advance notification.

With wishes of elevating success

KESLA OY

2. TRANSPORT DIMENSIONS

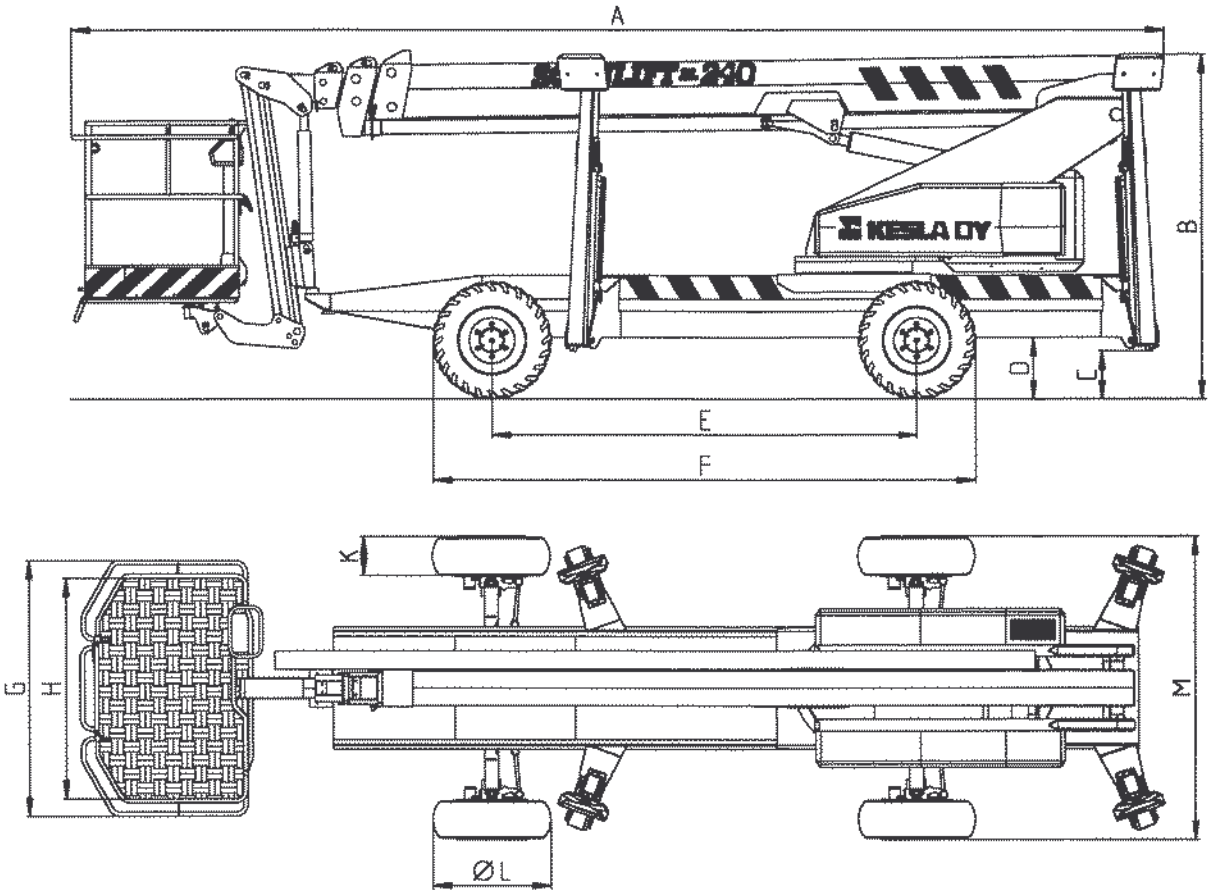


Figure 2-1. Transport dimensions

Dimension	mm	in.
A	6900	271.7
B	2250	88.6
C	365	14.4
D	420	16.5
E	2760	108.7
F	3520	138.6

Dimension	mm	in.
G	1670	65.7
H	1440	56.7
K	270	10.6
ØL	760	29.9
M	1920	75.6

3. LIFTING THE MEWP WITH LIFTING HOOK

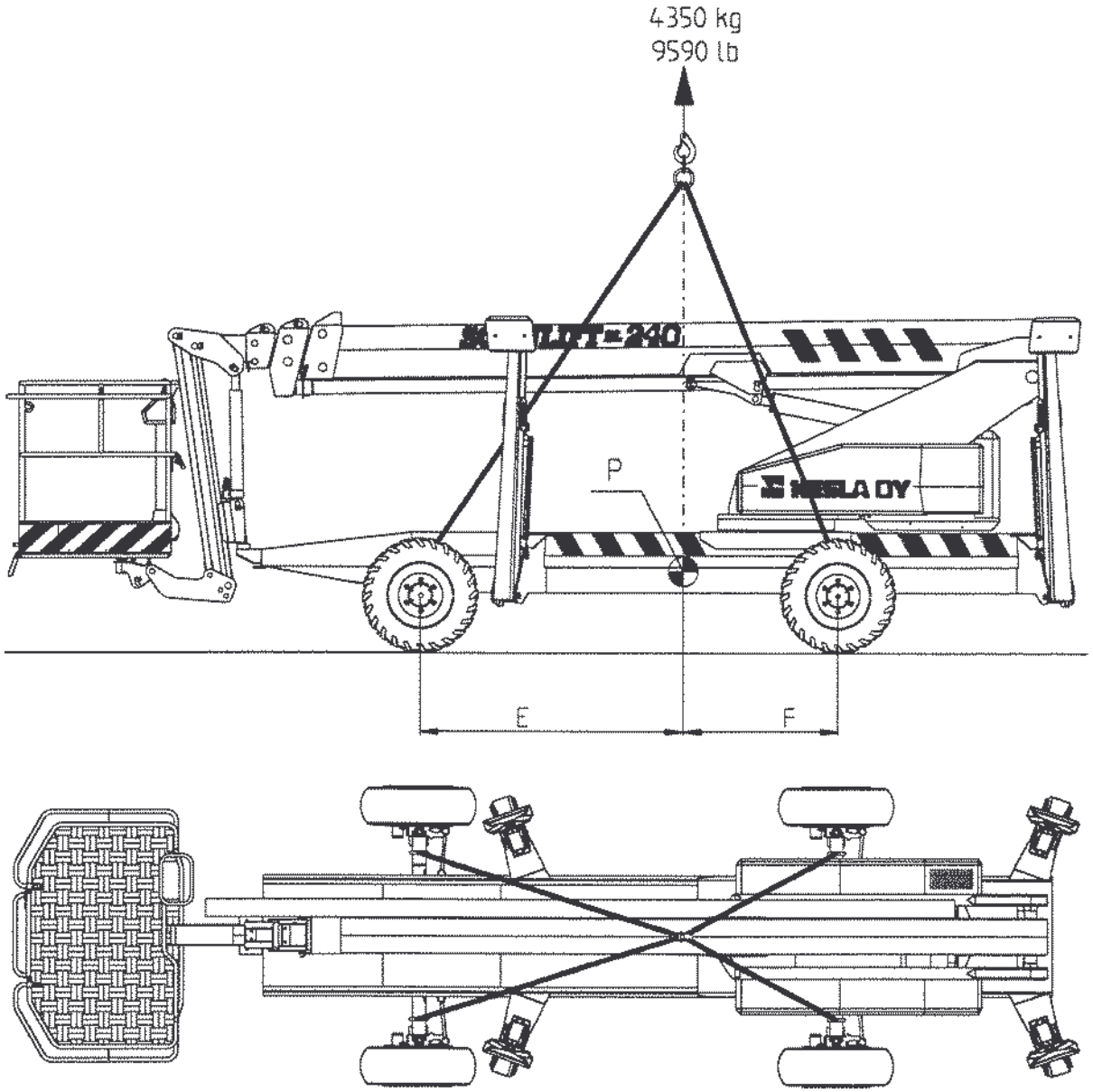


Figure 3-1 Lifting the MEWP with lifting hook

		m	ft.
E	Distance of centre of gravity	1,754	5.755
F	Distance of centre of gravity	1,0	3,281
P	Centre of gravity		

4. SPECIFICATION

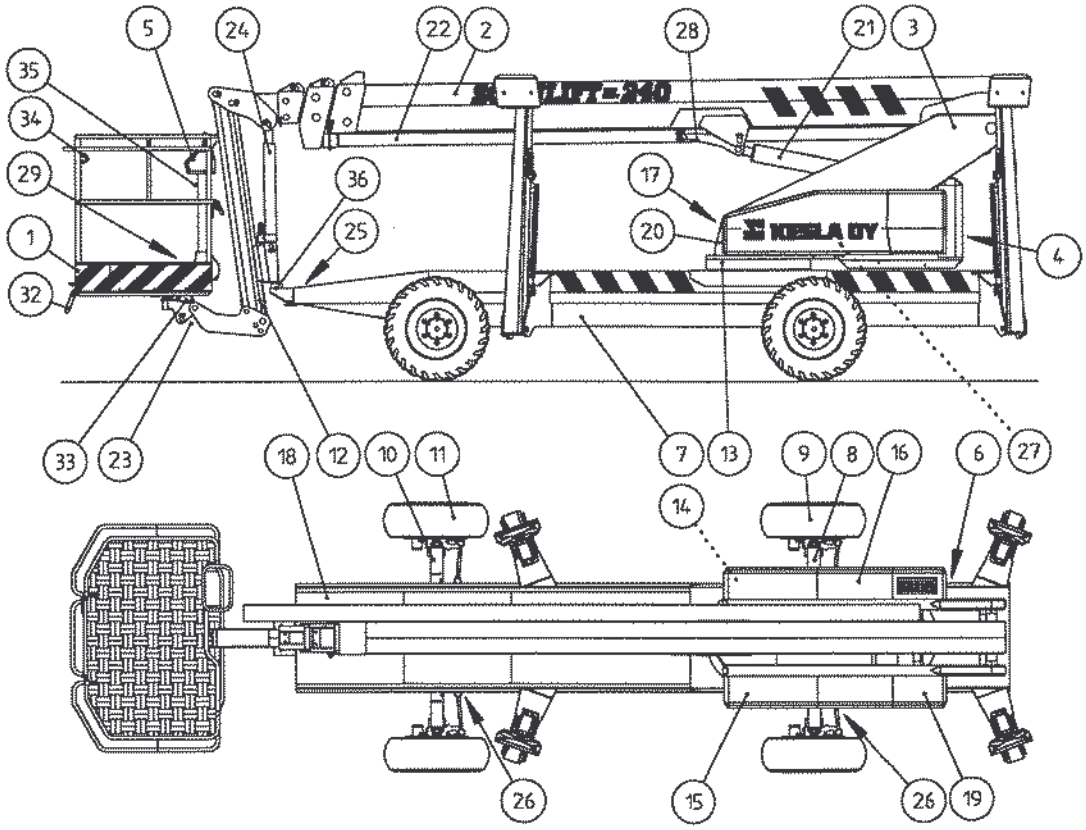
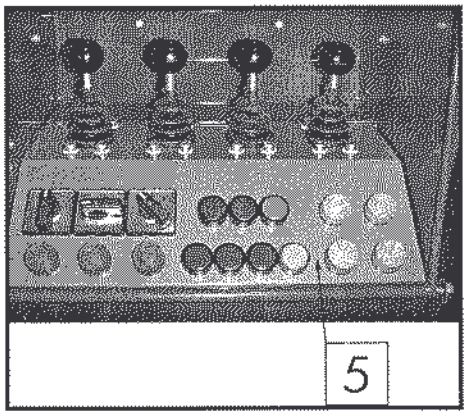
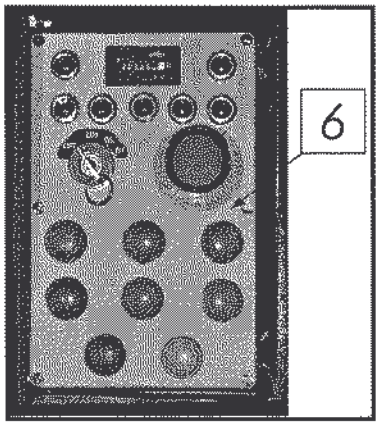
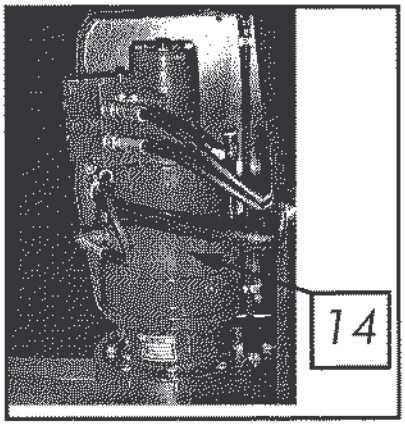
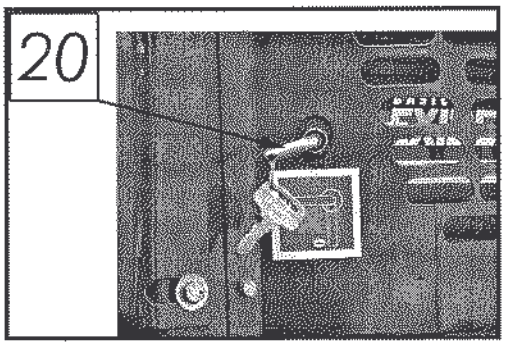


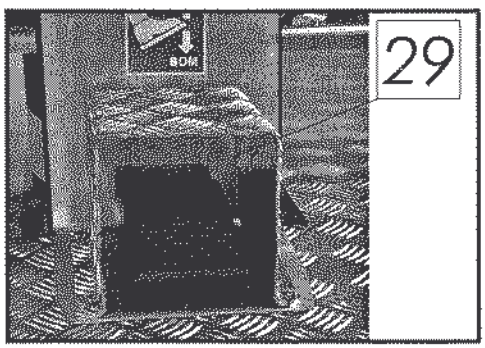
Figure 4-1. Specification











1. *Platform*
2. *Booms*
3. *Turntable*
4. *Combustion engine*
5. *Controls for platform guiding: Guiding the booms (slewing, raising / lowering, telescope in / out, raising/ lowering the jib), raising / lowering the outriggers, fast / slow driving, steering, fuel selector switch (petrol / LPG), override switch, outriggers / driving and steering selector switch, selector switch for the way of steering, emergency lowering switch, emergency stop push-button, signal lights for overload / normal load, switches for inclining the platform, switches for rotating the platform and ignition lock of the combustion engine.*
6. *Controls for ground guiding: Guiding the booms (slewing, raising / lowering, telescope in / out), emergency lowering switch, emergency stop push-button, hydraulic oil fill-up switch, ignition lock of the combustion engine, charge signal light, oil pressure signal light and the signal light for the overheating of the coolant (only diesel).*
7. *Chassis*
8. *Front axle, oscillating*
9. *Front wheel and brakes*
10. *Rear axle, dead*
11. *Rear wheel and brakes*
12. *Jib*
13. *Pivot bearing*
14. *Slewing motor, gear and brake*
15. *Fuel tank, to the right of the MEWP*
16. *Hydraulic oil tank, to the left of the MEWP*
17. *Battery, rear edge of the turntable under a cover*
18. *Equipment case, place for manual, ground fault circuit interrupter 220V 50 Hz and horizontal level indicator equipment*
19. *Gas device, to the right of the MEWP (SL 240 B)*
20. *Main switch, at the rear edge of the turntable*
21. *Lifting cylinder*
22. *Cylinder for telescope*
23. *Stabilizer cylinder for platform*
24. *Jib cylinder*
25. *Horizontal level indicator (four red indicator lights)*
26. *Steering cylinders*
27. *Hydraulic pump*
28. *Limiter device for lifting radius*
29. *Foot pedal (down: guiding the booms)*
30. *Electric pump for the emergency lowering system*
31. *Control cylinder for stabilizer cylinder*
32. *Platform step*
33. *Cylinder for rotating the platform*
34. *Fastening hooks for safety harness*
35. *Electric outlets for power tools (220V 50 Hz).*
36. *Transport support*

5. TECHNICAL DATA

Max. height of platform bottom from ground	22,00 m (72" 2')
Max. working height	24,00 m (78"9')
Min. lifting radius measured from outer brim of platform with max. working height	1,4 m (4"7')
Safe work platform load	230,0 kg (507 lb.)
Safe lifting radius with 230,0 kg (507 lb.) platform load (outer brim of platform)	8,8 m (28"10')
Safe lifting radius 120,0 kg (264 lb.) platform load (outer brim of platform)	10,4 m (34"2')
Safe lifting radius 80,0 kg (176 lb.) platform load (platform edge)	11,00 m (36"1')
Dimensions of platform bottom	1,0 x 1,5 m (3"3' x 4"11')
Hydraulic rotating of platform	90°
Slewing angle of jib boom	120°
Support distance of outriggers (lengthwise)	4740 mm (15"7')
Support distance of outriggers (widthwise)	4720 mm (15"6')
Max. supporting force in sole of outrigger	25500 N (5733 lbf)
Max allowed sloping of the ground	±7°
Max. allowed sloping of the chassis	±1°
Transport length	6,90 m (22"8')
Transport width	1,92 m (6"4')
Transport height	2,35 m (7"9')
Ground clearance under bottom	0,38 m (1"3')
Wheelbase	2,76 m (9")
Turning radius:	
4WS, outermost wheel side	3,0 m (9"10')
4WS, outermost platform part	5,0 m (16"5')
2WS, outermost wheel side	5,0 m (16"5')
2WS, outermost platform part	6,9 m (22"8')
Oscillation angle of front axle	±10°
Total weight with filled tanks:	
diesel	4350 kg (9590 lb.)
petrol	4300 kg (9480 lb.)
Rear axle load with 80 kg (176 lb.) platform load	1615 kg (3560 lb.)
Front axle load 80 kg (176 lb.) platform load:	
diesel	2835 kg (6250 lb.)
petrol	2785 kg (6140 lb.)
Driving speed:	
slow	1,5 km/h (0.9 mph)
fast	3,6 km/h (2.2 mph)
Traction force:	
slow, oil temperature +20°C (+68°F)	15400 N, 1570 kg (3461 lb.)
fast, oil temperature +20°C (+68°F)	7700 N, 785 kg (1730 lb.)
Hill climbing capacity (theoretical): slow speed range	19° (35%)
Terrain tires, tracting pattern	10,0/75-15,3/8pr
Max. noise level (measured 1 m (3"4') from motor)	93 db (A)

Output of hydraulic pump at 3500 rpm:
for booms..... 9,0 l/min (2.4 gal/min.)
for drive: diesel..... 22 l/min (5.8 gal./min.)
petrol..... 20 l/min (5.3 gal./min.)

Hydraulic pressure: turntable and booms ..... 23000 kPa (230 bar) (3336 psi.)
driving motors and outriggers..... 25000 kPa (250 bar) (3626 psi.)

Hydraulic pump: axial adjustable-displacement piston pump

Volume of hydraulic oil tank ..... 69 l (18.2 gal.)
Volume of fuel tank ..... 69 l (18.2 gal.)

Combustion engine:
- petrol/LPG Kohler Command 25
- diesel Kubota D905 - E

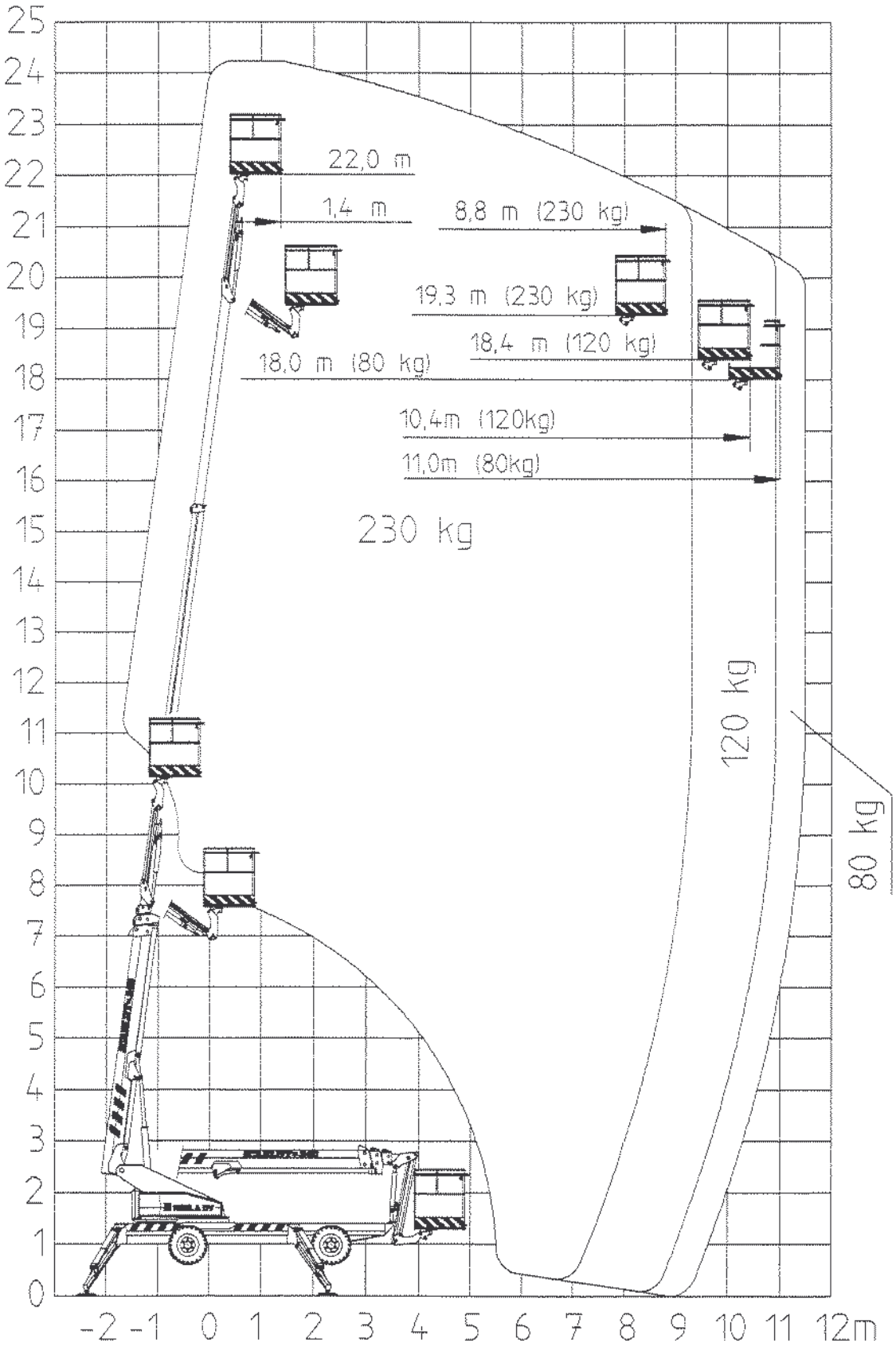
Kohler Command 25 :

Output, rotation speed of motor 3600 rpm..... 25hv / 18,4 kW
Max. rotation speed of motor limited by the manufacturer to ..... 3500 rpm
Max. torque 2400 rpm ..... 54 Nm
Fuel: unleaded 95E or liquid petroleum gas (LPG)
Fuel consumption:
rotation speed 3000 rpm, petrol ..... 3,9 - 7,0 l/h (1.0 - 1.8 gal./h)
rotation speed 3000 rpm, LPG. ..... 2,7 - 4,9 kg/h ((5.9 - 11 lb./h)
Battery..... 12 V 55 Ah

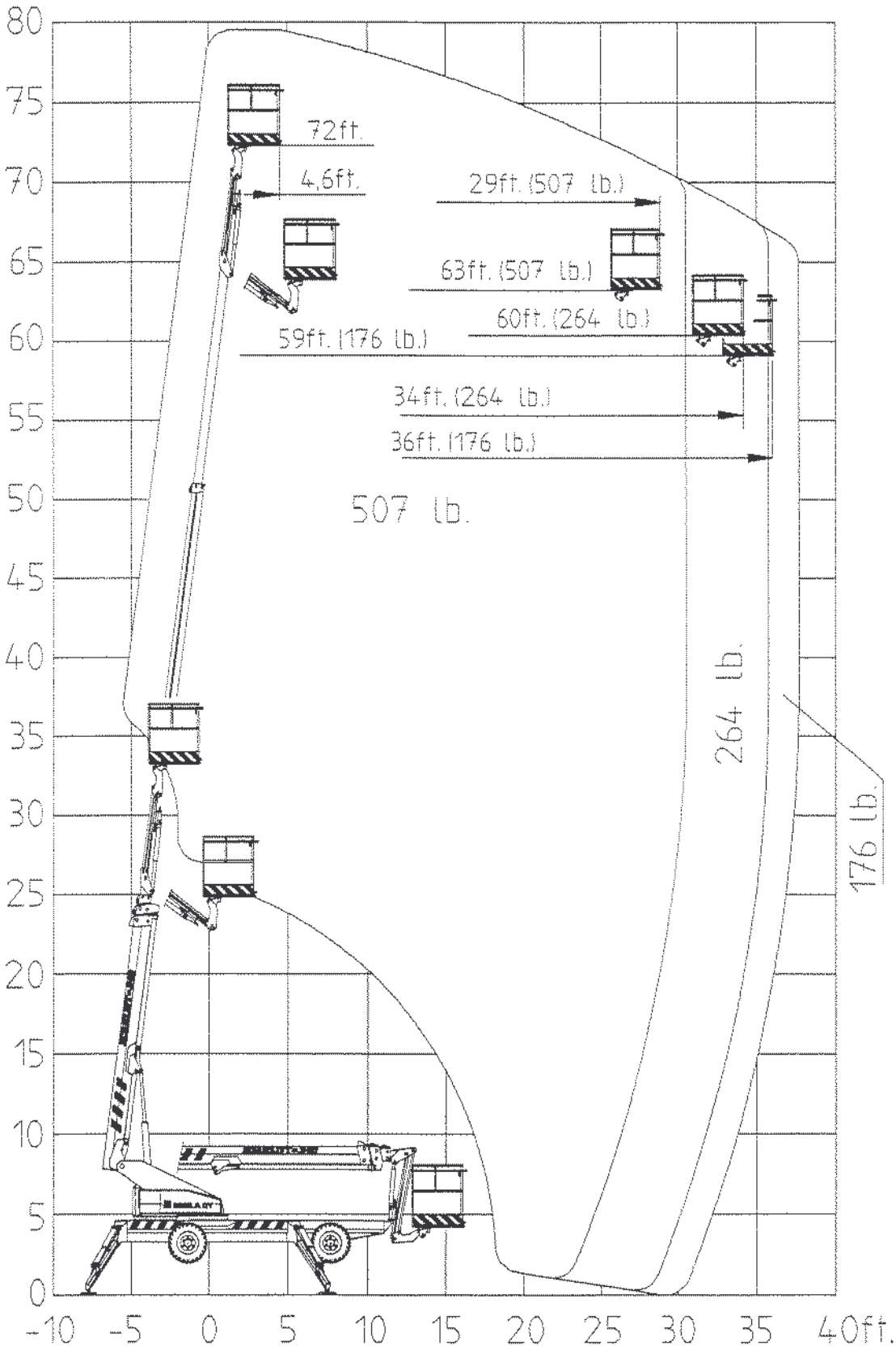
Kubota D905-E:

Output, rotation speed of motor 3600 rpm..... 17,5 kW (23,5 hv)
Max. torque 2400 rpm (ISO3046) 53,46Nm
Fuel: light fuel oil, diesel oil ASTM D 975-1D/2D
Fuel consumption:
rotation speed 3000 rpm..... 3,0 - 4,6 l/h (0.8 - 1.2 gal./h)
Battery..... 12 V 55 Ah
Warning and indicator lights:
- Glow indicator
- Oil pressure signal light
- Charge signal light
- Signal light for the overheating of the coolant
- Signal lights for blocked pressure / return filter
- Signal light for malfunction in the control system

5.1 MEWP SL 240 boom geometry (m / kg)



5.2 MEWP SL 240 boom geometry (ft. / lb.)



6. GENERAL SAFETY INSTRUCTIONS

1. *Read and memorize this owner's manual carefully before commissioning the MEWP. The MEWP shall never be driven by an operator not familiar with the instructions on handling and safety. Store the owner's manual in the equipment case. ALWAYS keep the manual with the MEWP.*

2. *The operator must be at least 18 years of age and have reasonable operating experience of MEWPs. In practice, the owner/holder of the MEWP must make sure that each operator is trained*

3. *Scanlift SL 240 is fitted with the following fail-safe safety limit switches:*

– *support position of outriggers*

– *electric guards for safe lifting radius, separately for raising functions, telescope, jib and standby switch for lifting radius*

– *electric guards for slewing the booms in transport position and for raising them from horizontal position*

– *safety limit for the transport position / use of booms*

4. *The emergency lowering system consists of an electric pump placed in front of the hydraulic oil reservoir, of the control valve and control switches for the booms on the turntable and on the platform. For detailed instructions refer to chapters 14.0 and 15.0 on the operation of the emergency lowering system.*

5. *Avoid rising near live electrical conductors. The minimum safe approach distance to different cables with voltage is made known on a plate on the platform.*

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

7. *When travelling the MEWP the platform shall always be supported in transport position. If the platform cannot be lowered against the transport base or the wafter, the transport support of booms shall always be used during transport.*

8. *Two (2) persons with tools and equipment are at most allowed on the platform at the same time, provided, however, that the total load does not exceed 230kg (507 lb.).*

9. *The outriggers shall always be well supported when using the MEWP. Use extra plates under the outriggers, if needed. Make sure that the outrigger is not slipping on the surface of the extra plate and that the extra plate withstands the weight of the outrigger. On icy surface attach calks or bolts to the outrigger plates. The sole plates have been provided with holes for the calks. For tightness of different soil types refer to chapter 21.0.*
   Note that even asphalt can yield.

10. When operating the MEWP, observe trouble caused by wind, rain, temperature, thunder, bad visibility and accumulated snow and ice.

11. Do not take extra load while lifting. R I S K O F T I P P I N G O V E R !

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

13. Do not increase the MEWP's wind load with extra cover boards or load thus enlarging the wind plane.

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

15. Do not throw down objects from the platform and make sure, that nothing can fall down.

16. Use ear mufflers when operating the MEWP from the ground guiding place, because the sound intensity exceeds 84 db (A). When using the MEWP from the platform the sound intensity will be less than 84 db (A), and the use of mufflers is not obligatory.

17. Always when you operate indoors or in a place with poor ventilation the engine shall only be used for moving the MEWP. Try to intensify the ventilation. Risk of intoxication! As an accessory, the MEWP can be equipped with a mains current pump unit for operation indoors.

18. Misuse of the MEWP as a crane for transporting goods or persons between different levels or floors is prohibited.

19. Do not ever deactivate a safety device, but repair it or have it repaired by a competent maintenance shop before re-use.

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

21. To ensure the safe and trouble-free function of the MEWP, keep it free from snow, ice and other impurities.

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

23. Always shut off the MEWP's engine when filling the fuel tank. Beware of splashes. Risk of fire!

24. Check and maintain the MEWP regularly or let a maintenance shop, familiar with mobile elevating work platforms, carry out the service and repair works.

25. Do not cause any alteration of the MEWP construction without permission and instruction of the manufacturer.

26. Do not ever open the filling hole of the cooling system, if the engine is warm. Risk of accident !

27. Daily pre-start checks:

27.1 Checking the outriggers:
- Check the function of outrigger safety limits by using outriggers in support position (with the wheels above the ground). After engagement and when all four horizontal indicator lights (H1 - H4) are on, the booms can be operated.

27.2 Checking the telescope:

- Refer to instructions in "Checking the reach of the telescope"

27.3 Checking the lifting:

- Refer to instruction in " Checking the lifting radius"

28.Check the function of the standby safety limit for load control weekly. (Refer to checking instructions in "Checking / adjusting the load control standby safety limit")

29.The owner of the MEWP shall cause a thorough annual inspection to be performed on the MEWP once in every twelwe (12) months and if conditions are hard, even in shorter time. This inspection shall be performed by a person familiar with MEWPs and their operation, structure and safety instructions.

The dated record of this inspection shall always be retained with the MEWP, stored e.g. in the equipment case, and a second copy in retention of the owner. An official model record form is enclosed to this manual. The re-inspection shall be performed every twelwe (12) months, and at the latest during the same calendar month as the initial pre-delivery inspection at the factory. If the MEWP is used in hard conditions, the supporting structures have been welded or if there is any other special reason for it, the re-inspection should be done earlier. Have the construction, safety and general condition of the lifting equipment re-inspected, especially alterations having safety consequences. Alterations and repairs, their location on the MEWP and identification of the person(s) involved shall, respectively dated, be entered into inspection records. Keep abreast of the development in the field, check any retroactive amendment of laws and decrees since the last inspection and take eventual alterations into consideration when re-inspecting. Prior to repairs or alterations of supporting constructions the manufacturer or his authorized representative shall always be contacted. Test loading of the MEWP with overload must be performed after any repairs or replacement on the platform, jibs, booms, turntable, chassis, outriggers or cylinders.

30.When leaving, always drive the MEWP out of way. Put the booms and outriggers in transport position. As protection against unauthorized use cut the motor, remove the ignition keys from both the platform and the control panel of ground guiding and switch off

the main current. Remove all keys and keep them always together on one key ring, also during use.

31. Never operate or drive the MEWP when under the influence of alcohol or narcotics.

7. MAXIMUM SLOPE

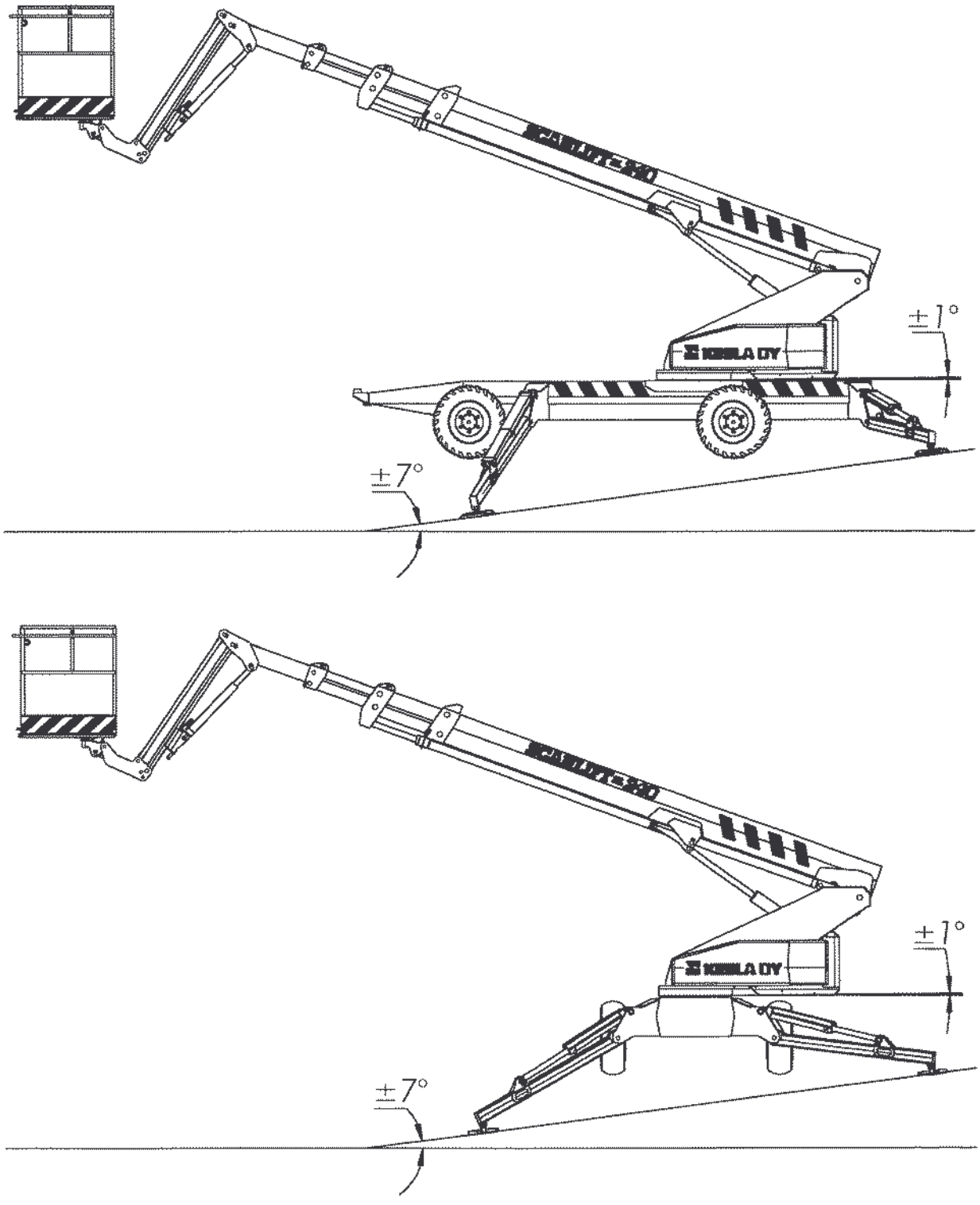


Figure 7-1. Maximum slope

WARNING ! MAKE SURE THAT THE MEWP DOES NOT SLIDE ON SLOPING GROUND. IF NEEDED, ATTACH ADDITIONAL CALKS TO SOLE PLATES.

8. CONTROLS AND FUNCTIONS

All controls of Scanlift SL 240 are electro-hydraulic, also the safety limits are electrically operated. The common electrically operated safety limits of lifting, telescope out and lifting the jib are located on the lower surface of the boom and are operated by the lifting cylinder. The standby electric safety limit of the above functions is located at the corresponding place on the right side of the lifting cylinder. When activated it cuts the combustion motor.

The slewing, lifting, telescope and jib can be steplessly adjusted with the electro-hydraulic controls. The movements of the platform are controlled with on/off push-buttons.

The point of operating (ground or platform) is selected depending on where the motor is started. When the combustion engine is started from the platform, the point of operating is at the platform. Both can not be used at the same time. Only the emergency lowering system functions irrespective of the selection.

8.1 Controls for ground guiding

The controls for ground guiding are located at the turntable, seen from the front (towards the motor) on the right side of the turntable. With outriggers in support position, the current on from below, the motor running, it is possible to slew, raise and telescope the boom by using the control valve for ground guiding, with ON/OFF technique. Also the emergency lowering system functions with this same control valve for ground guiding.

When the boom is operated from the ground, the current must be switched on from the ground. When operated from the platform, the key must be removed from the ground guiding point and placed in the ignition lock at the platform.

8.1.1 Push-buttons:

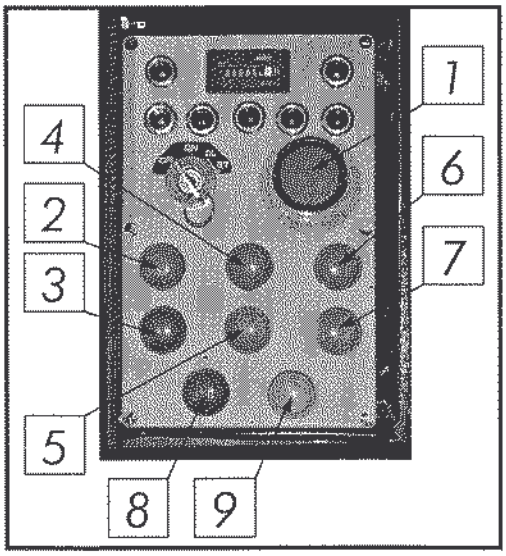


Figure 8-1. Push-buttons

Push-button No. 1:

- *EMERGENCY STOP push-button.*
- *Pushing the EMERGENCY STOP push-button cuts the combustion engine and stops all movements of the MEWP.*
- *The button gets locked in the lower position and the combustion engine can not be re-started, until the button is released. This is done by turning the button slightly in clockwise direction.*

Push-button No. 2:

- *Slewing the booms clockwise.*
- *The button does not get locked in lower position. The movement stops when the button is no longer pushed.*
- *Outriggers must be down in support position.*

Push-button No. 3:

- *Slewing the booms counterclockwise.*
- *The button does not get locked in lower position. The movement stops when the button is no longer pushed.*

– Outriggers must be down in support position.

Push-button No. 4:

– Raising the booms.
– When the button is pushed the booms will rise.
– The button does not get locked in lower position. The movement stops when the button is no longer pushed.
– Outriggers must be down in support position.

Push-button No. 5:

– Lowering the booms.
– When the button is pushed the booms will rise.
– The button does not get locked in lower position. The movement stops when the button is no longer pushed.
– Outriggers must be down in support position.

Push-button No. 6:

– Telescope out.
– When the button is pushed the telescope will come out (booms will get longer).
– The button does not get locked in lower position. The movement stops when the button is no longer pushed.
– Outriggers must be down in support position.

Push-button No. 7:

– Telescope in.
– When the button is pushed the telescope will go in (booms will get shorter).
– The button does not get locked in lower position. The movement stops when the button is no longer pushed.
– Outriggers must be down in support position.

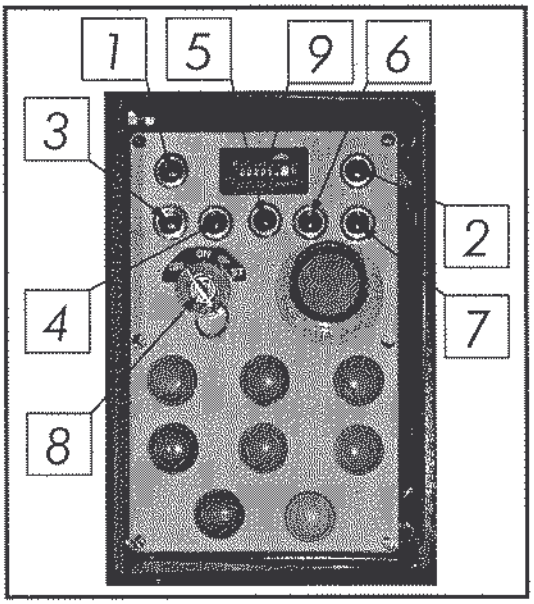
Push-button No. 8:

– Push-button for emergency lowering (use of emergency lowering pump).
– With the push-button the platform can be lowered even if the combustion engine is not running.
– For more detailed instructions on the use of the emergency lowering system refer to HOW TO OPERATE THE EMERGENCY LOWERING SYSTEM FROM THE GROUND.

Push-button No. 9:

– Push-button for filling up with hydraulic oil.
– For instructions on how to add hydraulic oil refer to CHECKING THE AMOUNT OF HYDRAULIC OIL AND ADDING OIL.

8.1.2 Signol lights, hour meter ond ignition lock:



The table below contains the signal lights of the control point for ground guiding, ond on explanation of what the lights signify.

Signal light No.	
1	Pressure filter blocked
2	Return filter blocked
3	Glow indicator
4	Oil pressure signol light
5	Signal light: malfunction in the control system
6	Charge signal light
7	Signal light for overheating of the motor coolant

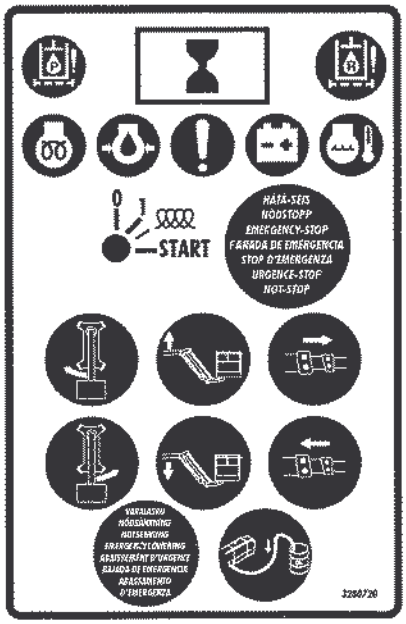
Figure 8-2. Signal lights, hour meter and ignition lock

Ignition lock No. 8:

– *Glowing (MEWPs equipped with a diesel engine), starting and stopping of combustion engine.*

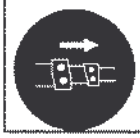
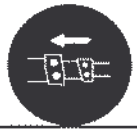
Hour meter No. 9:

– *The hour meter shows the working hours of the MEWP.*



Instruction decal at the control point for ground guiding:

Figure 8-3. Instruction decal

 Blocked pressure filter	 Blocked return filter	 Oil pressure signal light
 Hour meter	 Glow indicator	 Signal light: malfunction in control system
 Charge signal light	 Signal light for overheating of the coolant	 EMERGENCY STOP push-button
 Ignition lock	 Raising the boom	 Lowering the boom
 Slewing the booms clockwise	 Slewing the booms counterclockwise	 Push-button for filling up with hydraulic oil
 Telescope out	 Telescope in	 Emergency lowering push-button

8.2 Controls on plotform

Scanlift SL 240 can be driven and controlled from the platform.

8.2.1 Control levers:

- *Each of the four control levers has several functions, depending on the position of the selector switch for outriggers / driving and steering (switch No. 2, figure 8-7), foot pedal (switch No. 6, figure 8-5) and outriggers, as well as the booms.*
- *The booms can be controlled when the outriggers are down and the pedal has been pressed down. The use of outriggers, driving and steering is prevented.*
- *Driving and steering is possible when the booms and outriggers are in transport position, and the pedal has not been pressed down. The selector switch for outriggers / driving and steering (switch No. 2 figure 8-7) must be in position driving and steering.*
- *The outriggers can be raised and lowered when the booms and outriggers are in transport position, and the pedal has not been pressed down. The selector switch for outriggers / driving and steering (switch No. 2 figure 8-7) must be in position OUTRIGGERS.*

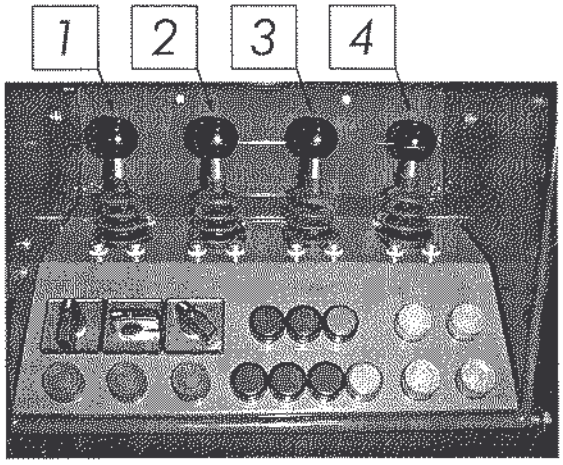


Figure 8-4. Control levers

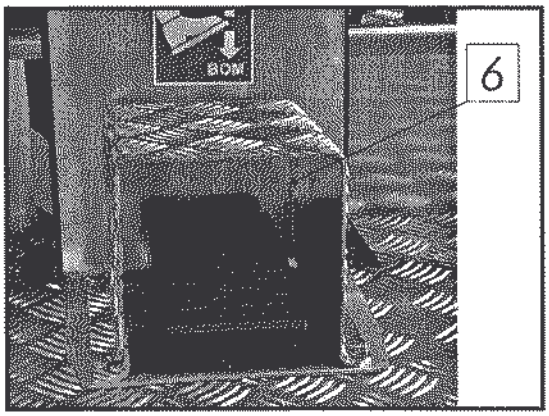


Figure 8-5. Food pedal

Functions of lever No.1:

- Slewing the booms. The pedal switch (switch No. 6, figure 8-5) must be pressed down and the outriggers must be in the support position (= lower position).
- Driving. The booms must be in the transport position(=on transport support) and the outriggers raised (=in transport position). The pedal (switch No. 6, figure 8-5) must not be pressed down and the selector switch for outriggers / driving and steering (switch No. 2 figure 8-7) must be in position DRIVING AND STEERING.
  The operator can select either four-wheel steering, diagonal steering or rear-wheel steering.
- Raising / lowering the outrigger (left front outrigger). The booms must be in transport position (=on transport support). The foot pedal (switch No. 6, figure 8-5)) must not be pressed down and the selector switch for outriggers / driving and steering (switch No. 2, figure 8-7) must be in position OUTRIGGERS.

Functions of lever No. 2:

- Raising / lowering the booms. The foot pedal (switch No. 6, figure 8-5) must be pressed down and outriggers must be in support position (=lower position).
- Raising / lowering the outrigger (right front outrigger). The booms must be in transport position (=transport support). The foot pedal (switch No. 6, figure 8-5) must not be pressed down and the selector switch for outriggers / driving and steering (switch No. 2, figure 8-7) must be in position OUTRIGGERS.

Functions of lever No. 3:

- Telescope in / out. The foot pedal (switch No. 6, figure 8-5) must be pressed down and the outriggers must be in support position (= lower position).
- Fast driving. The booms must be in transport position (=on transport support) and the outriggers must be raised (=in transport position). The foot pedal (switch No. 6, figure 8-5) must not be pressed down and the selector switch for outriggers / driving and steering (switch No. 2, figure 8-7) must be in position DRIVING AND STEERING.
- Raising / lowering the outrigger (left rear outrigger). The booms must be in transport position (=on transport support). The foot pedal (switch No. 6, figure 8-5) must not be pressed down and the selector switch for outriggers / driving and steering (switch No. 2, figure 8-7) must be in position OUTRIGGERS.

Functions of lever No. 4:

- *Raising / lowering the jib. The foot pedal (switch No. 6, figure 8-5) must be pressed down and the outriggers must be in support position (=lower position).*
- *Slow driving. The booms must be in transport position (=transport support) and the outriggers must be raised (=in transport position) The foot pedal (switch No. 6, figure 8-5) must not be pressed down and the selector switch for outriggers / driving and steering (switch No. 2, figure 8-7) must be in position DRIVING AND STEERING.*
- *Raising / lowering the outrigger (right rear outrigger). The booms must be in transport position (=on transport support). The foot pedal (switch No. 6, figure 8-5) must not be pressed down and the selector switch for outriggers / driving and steering (switch No. 2, figure 8-7) must be in position OUTRIGGERS.*

Control lever decal:

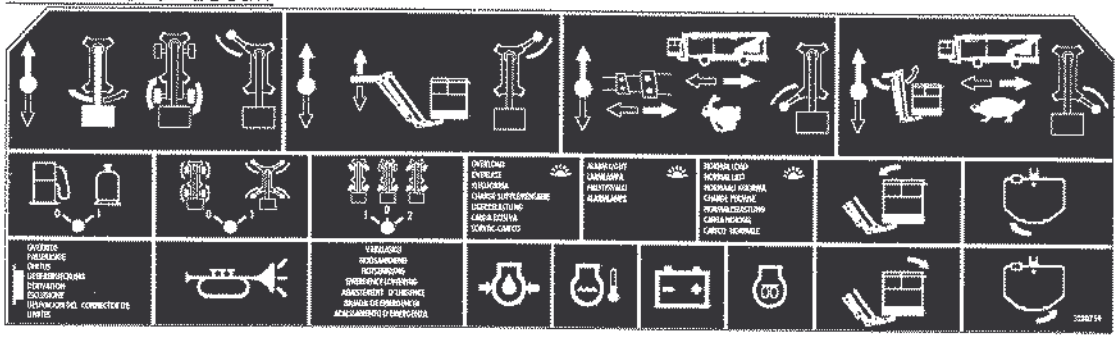
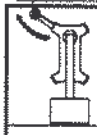
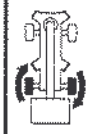
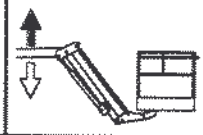
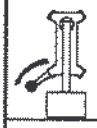
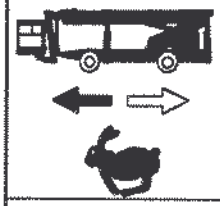
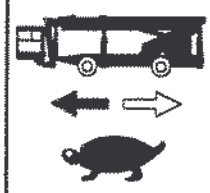
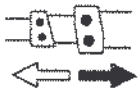


Figure 8-6

Symbols on the control lever decal:

 *Left front outrigger up / down*	 *Right front outrigger up / down*
 *Steering*	 *Raising / lowering the boom*
 *Slewing the booms*	
 *Left rear outrigger up / down*	 *Right front outrigger up / down*
 *Fast driving*	 *Slow driving*
 *Telescope in / out*	 *Jib up / down*

8.2.2 Selector switches:

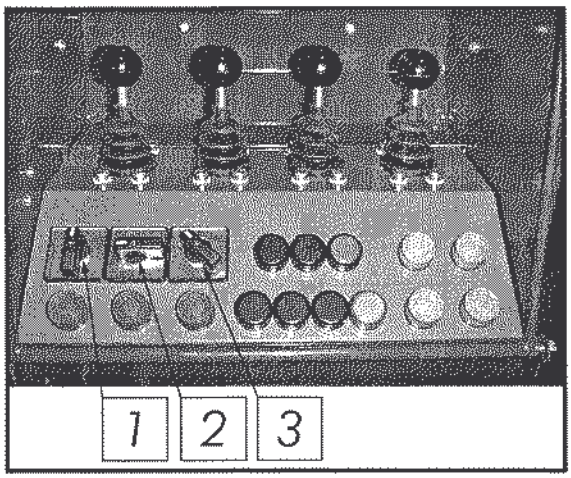


Figure 8-7. Selector switches

Selector switch No.1
- Selection of fuel: petrol / LPG (not in diesel model).

Selector switch No. 2
- Selector switch for outriggers / driving and steering.
- In the DRIVING AND STEERING position the control levers are used to drive and steer the MEWP.
- In the OUTRIGGERS position the control levers are used for raising / lowering the outriggers.

Selector switch No. 3
- Selecting the way of steering.
- Select either four-wheel, rear-wheel or diagonal steering.

8.2.3 Push-buttons:

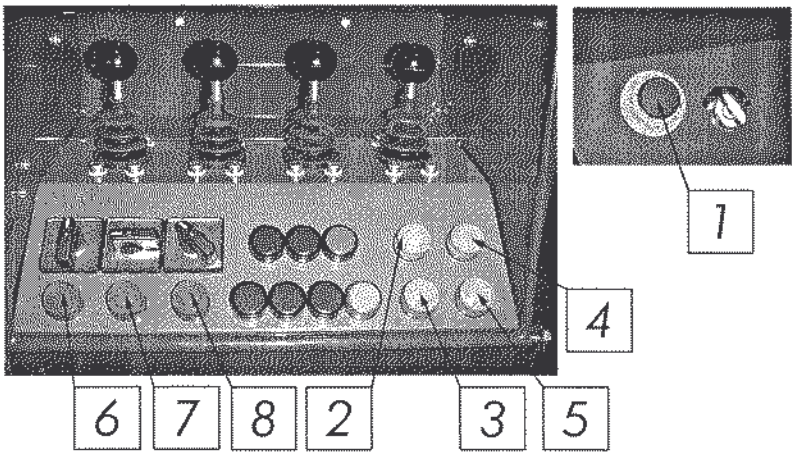


Figure 8-8. Push-buttons

Push-button No. 1
- EMERGENCY STOP push-button

Push-buttons No. 2 and 3
- Inclining the platform

Push-buttons No. 4 and 5
- Slewing the platform clockwise (button 4) and counterclockwise (button 5)

Push-button No. 6
- Override switch.
- With the override switch the booms can be used within certain limits even when the outriggers are not in support position.
- With the override switch the MEWP can also be driven and steered even when the booms are not on the transport support.
- Extreme caution and consideration must be exercised when using the override switch.
- For more detailed instructions on the use of the override switch refer to 12.1. Use of the override switch.

Push-button No. 7
- Sound signal

Push-button No. 8
- Emergency lowering.
- With the emergency lowering system the booms can be lowered, if the combustion engine stops for some reason, and it can not be re-started.

8.2.4 Signal lights and ignitian lack:

In the table below are the signal lights of the platform control panel, and an explanation of what the lights signify.

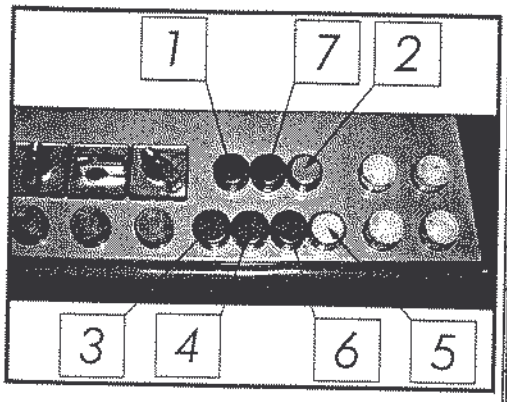


Figure 8-9. Signal lights

Signal light No.	
1 and 2	Signal lights indicating platform load. Normal load (signal light No. 1), green and overload (signal light No. 2), red.
3	Oil pressure signal light
4	Signal light for overheating of the coolant
5	Glow indicator
6	Charge signal light
7	Signal light: Malfunction in control system

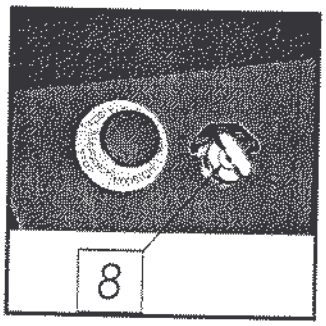
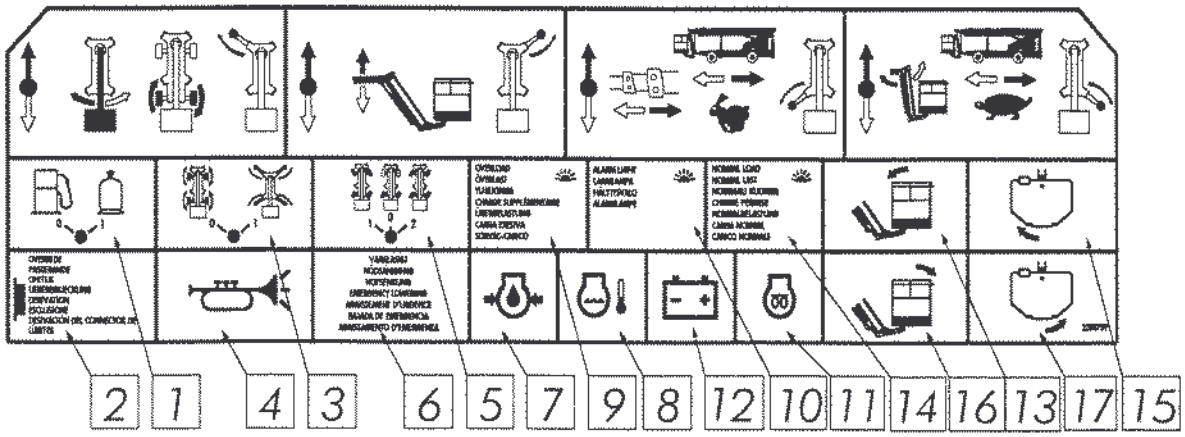


Figure 8-10. Ignition lock

Ignition lock No. 8

- Starting and stopping the combustion engine from the platform.
- Switch the ignition key in 0-position, if you stop the engine. The battery will not discharge unnecessarily.

Instruction decal for control switches and explanation of symbols:



Kuva 8-11

1	Selection of fuel	2	Override	3	Outriggers / driving and steering
4	Sound signal	5	Selection of way of steering	6	Emergency lowering
7	Oil pressure	8	Overheating of the coolant	9	Overload
10	Signal light	11	Glowing	12	Charging
13	Inclining the platform	14	Normal load	15	Rotating the platform
16	Inclining the platform	17	Rotating the platform		

9. COMBUSTION ENGINES - OPERATING AND STARTING

Depending on model, the combustion engine is either a Kohler C 25 petrol / LPG engine or a Kubota D905-E diesel engine.
The maximum engine rpms have been adjusted by the manufacturer to 3500 rpm, which should not be exceeded. The operator can, of course, reduce the speed of rotation, thus saving fuel, lowering the noise level and prolonging the life of the motor. The maximum engine rpms are needed, when driving in poor shaped terrain. Anyhow, the speed of rotation should not drop below 1500 rpm. Due to the adjustable-displacement hydraulic pump the speed of the boom movements does not change, even if the engine rpms have been adjusted. In freezing conditions, about -5°C (+23°F) or colder, the use of a cold starter to start the engine is recommended. The Kohler Command 25 petrol engine has a choke with a control lever under the engine hood. The Kubota diesel engine has a glow plug functioning from the ignition lock.

9.1 Storting ond stopping the Kohler Commond 25 petrol / LPG engine

9.1.1 Storting ond stopping when using LPG os fuel

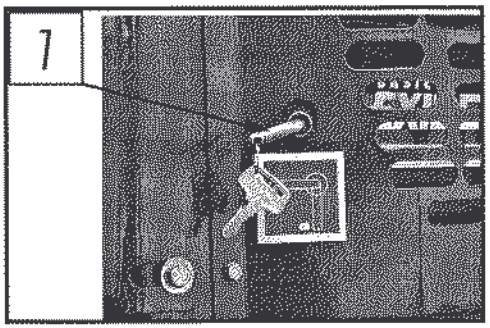


Figure 9-1. Main switch

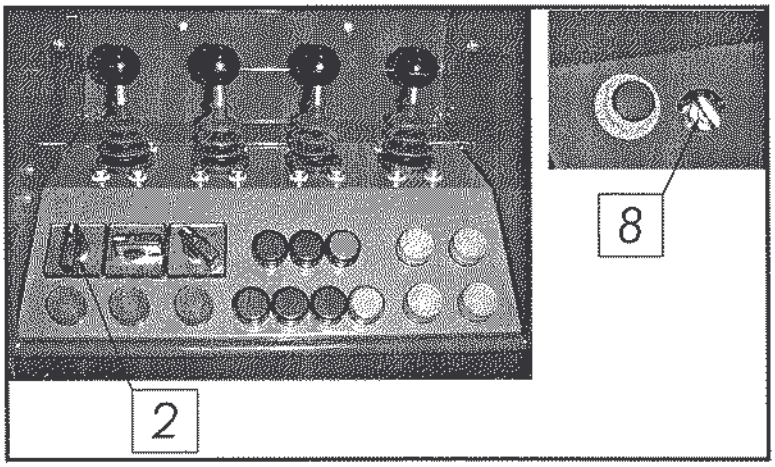
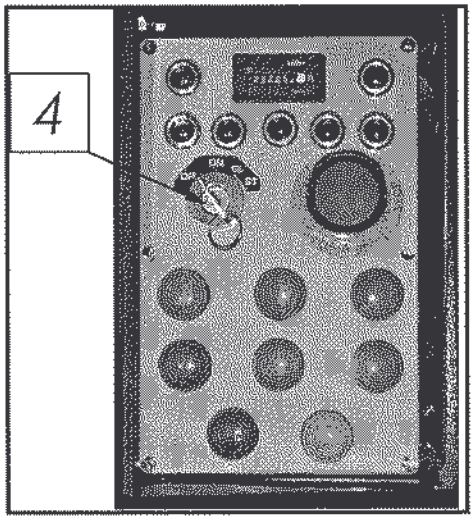


Figure 9-2. Ignition lock and switch 2



Kuva 9-3. Ignition lock

Starting:

1. Switch on the current from main switch 1. The main ignition key can be removed even when current is on.
2. Check that the gas hose is connected to the gas holder and open the closing cock of the gas holder.
3. Turn the petrol / LPG selector switch 2 on the platform to position gas.
4. Start the engine from the platform ignition lock 8, if you want to operate the MEWP from the platform. If you want to use the MEWP from the ground, start the engine from the operating point for ground guiding from ignition lock 4. When the booms are operated from the ground, the MEWP must be supported by the outriggers. Refer to OPERATING THE BOOMS FROM THE GROUND. Selection of the point of operating depends on where the combustion engine was started.

Stopping:

1. Stop the engine by turning the ignition key to position 0 (current off). If the engine will be out of operation for a longer period, close the closing cock of the gas holder.

9.1.2 Storting ond stopping when using petrol os fuel

Starting:

1. Switch on the current from main switch 1(figure 9-1). The main ignition key can be removed even when current is on.
2. Turn the petrol / LPG selector switch 2 (figure 9-2) on the platform to position petrol.
3. Start the engine from the platform ignition lock 8 (figure 9-2), if you want to operate the MEWP from the platform. If you want to use the MEWP from the ground, start the engine from the operating point for ground guiding from ignition lock 4 (figure 9-3). When the booms are operated from the ground, the MEWP must be supported by the outriggers.

engine hood, refer to: Principal controls of the Kohler Command 25 petrol / LPG engine) and start the engine. Let the engine run for a while and push the choke back in. Close the engine hood and let the engine run warm, after which you can stop it and restart it from the platform ignition lock.

Stopping:

1. Stop the engine by turning the ignition key to position 0 (current off).

9.2 Storting ond stopping the Kuboto D905 diesel engine

Starting:

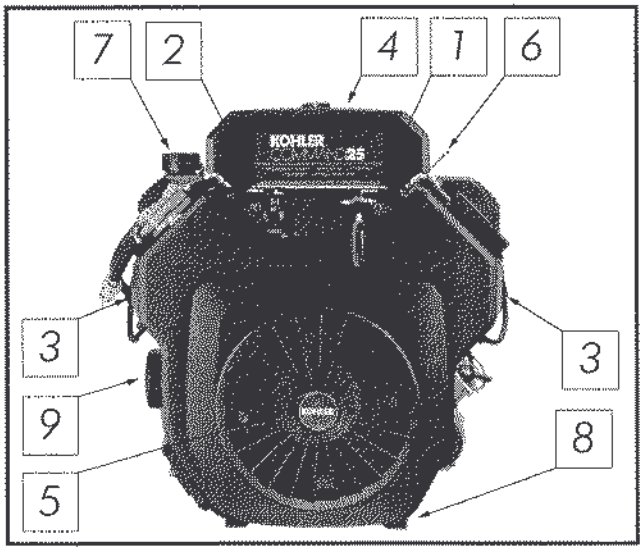
1. Switch on the current from main switch 1(figure 9-1). The main ignition key can be removed even when current is on.

2. Start the engine from the platform ignition lock 8 (figure 9-2), if you want to operate the MEWP from the platform. If you want to use the MEWP from the ground, start the engine from the operating point for ground guiding from ignition lock 4 (figure 9-3). When the booms are operated from the ground, the MEWP must be supported by the outriggers. Refer to OPERATING THE BOOMS FROM THE GROUND. Selection of the point of operating depends on where the combustion engine was started.
In freezing conditions, -10°C (+14°F) or colder, start the engine by keeping the ignition key in the glow position so long that the glow indicator light goes out before starting. Then start the engine by turning the ignition key to position START. Let the engine run warm.

Stopping:

1. Stop the engine by turning the ignition key to position 0 (current off).

9.3 Principol controls of the Kohler Commond 25 petrol/LPG engine:



1. *Adjusting the speed of rotation*
2. *Cold starter (choke)*
3. *Plugs*
4. *Air filter and carburator*
5. *Suction strainer for cooling air*
6. *Dipstick for engine oil*
7. *Filling cap for engine oil*
8. *Bleeding tap for engine oil*
9. *Engine oil filter*

Figure 9-4. Kohler Command 25

NOTE! Remove the hood when air temperature is +20°C (+68°F) or higher.

9.4 Principol controls of Kuboto D905-E diesel engine:

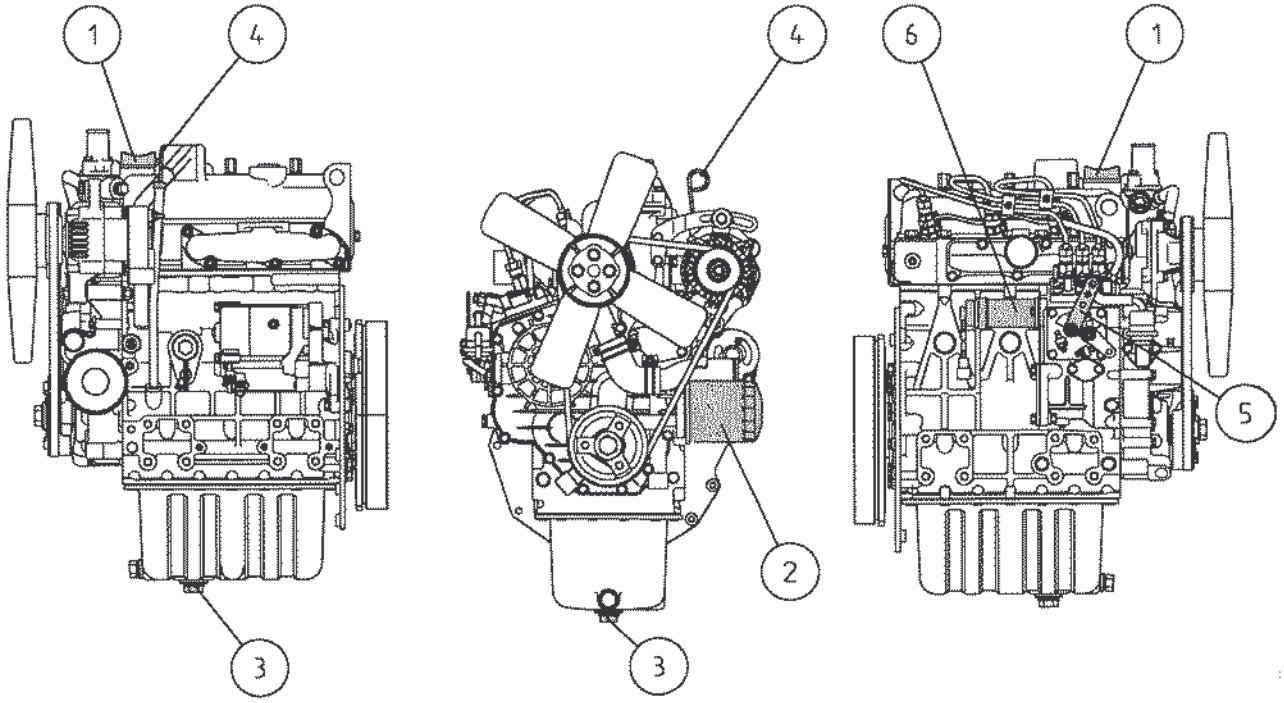


Figure 9-5. Kubota D905-E

1. Filling cap for engine oil
2. Engine oil filter
3. Bleeding tap for engine oil
4. Oil dipstick
5. Adjusting the speed of rotation
6. Stop solenoid

9.5 Adjusting the speed of rototion of o combustion engine

- The combustion engine of the MEWP is fitted with automatic increasing / reducing of the speed of rotation.
- When started, the engine speed of rotation increases momentarily (the time of increasing can be adjusted), after which the rotations drop to the adjusted minimum speed of rotation.
- When some control lever is used on the platform, or a control switch is used at the ground guiding point, the speed of rotation will increase to the adjusted maximum speed.
- When the control levers or control switches are released, the speed of rotation will drop automatically to the adjusted minimum speed of rotation, within an adjusted time from releasing the lever or switch.

10. USE OF THE OUTRIGGERS

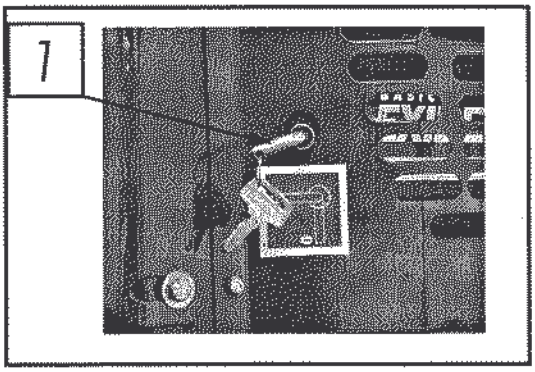


Figure 10-1. Main switch

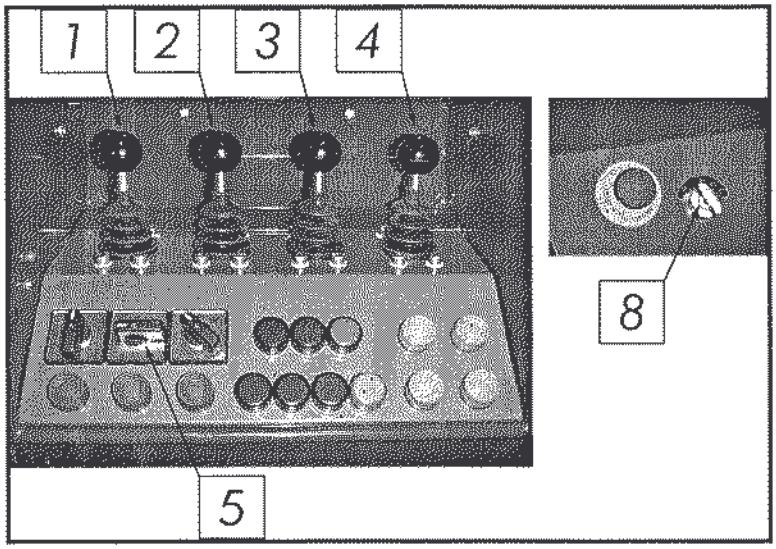


Figure 10-2. Control levers on the platform

1. Check that the ground under the MEWP is sufficiently even and hard so that the MEWP can be well supported and it is horizontal to the ground. Use sufficiently large and strongly built extra plates under the outriggers, if the ground is soft (refer to: Soil tightness table). Observe the additional need for support caused by ice, wind or rain. Attach additional calks to the sole plates on icy surface.
2. Switch on the current from the main switch 1 (figure 10-1) and remove the key from the main switch. Also remove the key from the ignition lock of the ground guiding point. Use only one set of keys.
3. Start the engine from the ignition lock 8 (figure 10-2) on the platform. Do not press the foot pedal.
4. Turn the selector switch 5 (figure 10-2) for outriggers / driving and steering to position OUTRIGGERS.
5. Lower the outriggers to the support position with control levers 1,2,3 and 4 (figure 10-2). Note that when the outriggers are used the booms must be in transport position.
6. Check that all four lights of the indicator for horizontal level of support are on. Check also that all four wheels are raised above the ground, and that the paws of the outriggers are well supported on the ground and without any risk of sinking or slipping (soil tightness table). You can check the steadiness of each paw by driving the booms from the platform in horizontal position with the maximum allowed lifting radius (limited by the limit switch), above each outrigger. Use extra plates, if needed.

11. USE OF THE BOOMS

11.1 Operating the booms from the platform

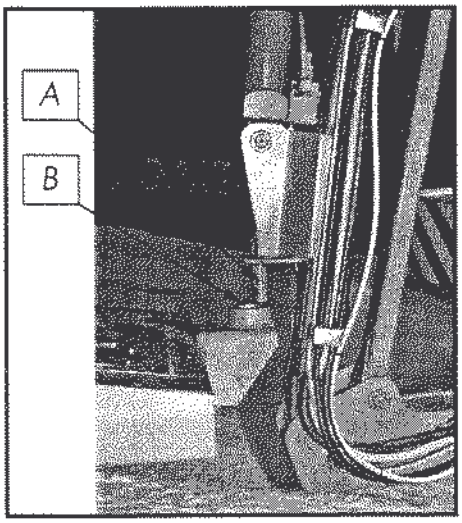


Figure 11-1, Transport support

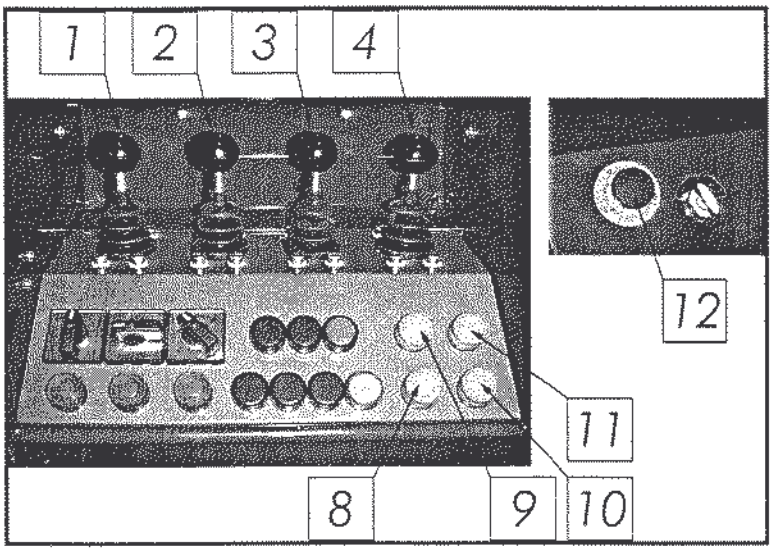


Figure 11-2

1. Support the MEWP on the outriggers, as described in USE OF THE OUTRIGGERS.
2. Press the foot pedal down and raise the booms up from the transport support (pin A of the jib boom up from hole B in the chassis (figure 11-1) with the control lever 2 of the booms (figure 11-2).
3. Now you can control the platform with control levers 1,2,3 and 4 (slewing the booms, raising / lowering the boom, telescope in / out and jib up / down) and incline and rotate the platform with push-buttons 8,9,10 and 11 (8 and 9 inclining the platform, 10 and 11 rotating the platform).
4. Test the function of the emergency stop push-button 12 by raising the boom and at the same time pressing the emergency stop push-button. The raising movement should cease and the engine should stop. The best way to reach the work site is to slew and raise the booms in that direction and then to drive the platform with the telescope to the work spot. The jib boom can be used to cope with possible obstruction. Lowering should be done in reverse order. The raising, slewing and telescope movements have been equipped with stepless controls so that several movements can be used at the same time and to ensure flexible speed of movements. When working for a long time at the same spot, stop the engine with the ignition key on the platform and re-start only when you move with the boom to another place.
5. When you stop working or want to move (drive) the MEWP, lower the booms on the transport support and lower the MEWP on the tires by raising the outriggers (refer to USE OF THE OUTRIGGERS).

THE EMERGENCY STOP PUSH-BUTTON MAY NOT BE USED FOR STOPPING THE ENGINE IN NORMAL WORK SITUATIONS

11.2 Operating the booms from the ground

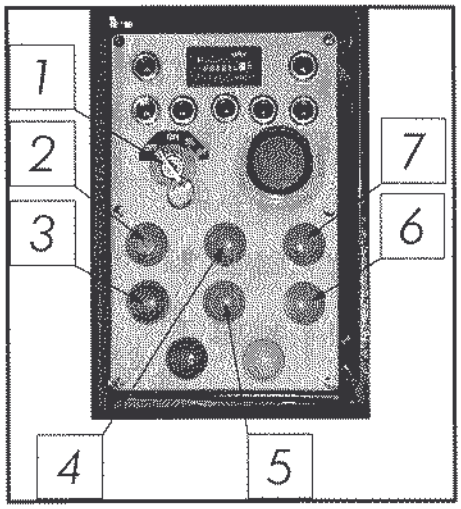


Figure 11-3

1. Support the MEWP on the outriggers, as described in USE OF OUTRIGGERS.
2. Use the control lever for the booms on the platform to guide the platform so close to the ground that you can safely leave the platform(refer to USING THE BOOMS FROM THE PLATFORM).
3. Stop the engine from the ignition lock on the platform, remove the keys from the platform ignition lock and leave the platform.
4. Start the engine from the ignition lock 1 of the ground guiding point.
5. Guide the booms with the push-buttons 2,3,4,5,6 and 7 (2 and 3 slewing the booms, 4 and 5 raising / lowering the booms, 6 and 7 telescope in/out) at the ground guiding point.
6. When you stop working or want to move (drive) the MEWP, lower the booms near the ground, stop the engine from the ignition lock at the ground guiding point and remove the keys. Step on the platform and start the engine from the platform ignition lock. Lower the booms on the transport support and lower the MEWP on the tires by raising the outriggers (refer to USE OF OUTRIGGERS).

MISUSE OF THE MEWP AS A CRANE FOR TRANSPORTING GOODS OR PERSONS BETWEEN DIFFERENT LEVELS OF FLOORS IS PROHIBITED.

11.3 Operating the booms in freezing conditions

- Do not stop the combustion engine when working in freezing conditions (-5°C or colder) even if you work at the same place for a longer period of time. The hydraulics and the combustion engine will cool unnecessarily. Instead it is adviseable to reduce the speed of rotation of the engine.
- Make sure that the safety switches are clear of snow, ice and dirt.
- Check that the control levers function and are clear of snow and ice.
- In extremely cold weather let the combustion engine run for a few minutes and then perform some warm-up movements with the booms, after which warm oil will flow into the cylinders and the booms can be more reliably controlled.
- Protect the platform and controls from snow and ice when not working with the MEWP.

11.4 To be observed, wben working on the plotform or moving from one work spot to onother

- Observe the minimum safe approach distance to live electrical conductors
- Do not damage the work platform or the controls
- Do not throw down objects from the platform and make sure that nothing can fall down
- Do not reach out of the platform
- Any increase in reach or working height of the platform by using ladders or any other device is prohibited
- Do not jump on or swing with the platform
- Make sure that the platform is always in horizontal position

WARNING! IF THE OUTREACH EXCEEDS THE VALUES GIVEN IN BOOM GEOMETRY, REPAIR IT OR HAVE IT REPAIRED BEFORE NEXT USE. DO NOT USE A FAULTY MEWP. THE MAXIMUM ALLOWED PLATFORM LOAD IS 230KG (507 LB.).

11.5 Using supply current on the platform

- Connect the supply current 220V / 50Hz 16A to the outlet on the chassis, next to the equipment case. The platform has two earthed outlets for hand tools.
- The electric line is fitted with a ground fault circuit interrupter and a slip-ring package inside the pivot bearing. The ground fault circuit interrupter is in the equipment case, and it has a test button for checking the line before use. The ground fault circuit interrupter is also fitted with a supply voltage breaker.

11.6 Testing the ground foult circuit interrupter

- Plug in a device, e.g. drilling machine, in the outlet on the platform. Engage supply current to the MEWP (220 - 240V / 50Hz) with an earthed cable. Press the test button of the ground fault circuit interrupter thus releasing the main power switch, which acts as an automatic fuse. Should the main switch not be released and if the device before that has not functioned on the platform, you have to check that the main power switch is in its power supplying position.
- Should the switch be released in normal use, either the electric line or the tool is faulty. Stop the use of the tool and have the equipment repaired.

12. HOW TO TRAVEL THE MEWP

Scanlift SL 240 is fitted with a hydrostatic transmission and the MEWP can be completely driven and steered from the platform. The transmission is fitted with continuous 4WD and with two driving speed ranges. The slow driving speed range is 0-1,8 km/h (0-1.1 mph) with a traction force of 15400 N (3462 lbf) measured from a machine standing still. The fast speed range covers 0-3,6 km/h (0-2.2 mph) with a traction force of 7700 N (1731 lbf). The brakes are released when the hydraulic pressure in the drive motors exceeds 30 bar (425 psi) and locked when the driving pressure drops under above mentioned 30 bar.

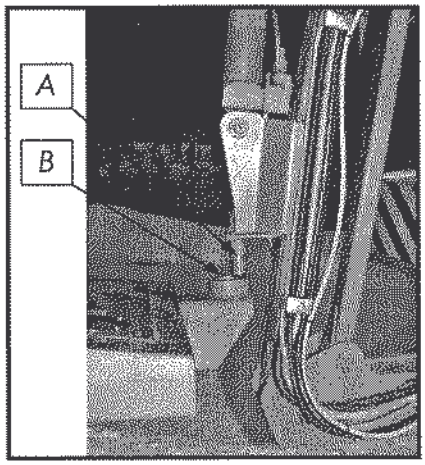


Figure 12-1. Transport support

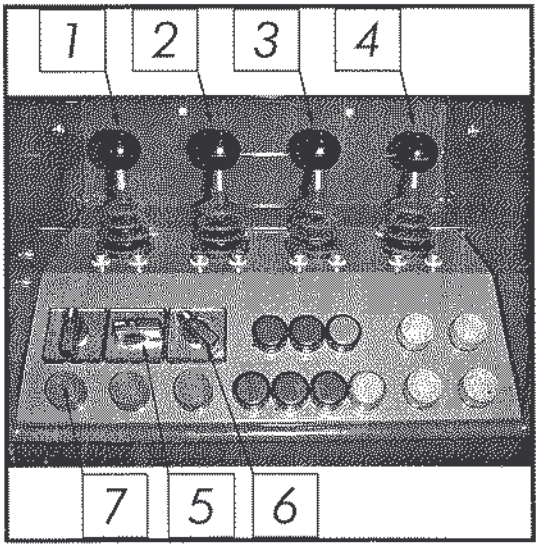


Figure 12-2

1. *Drive the booms into transport position, telescope all the way in (pin A of the jib boom in hole B of chassis) from the platform (refer to: OPERATING THE BOOMS FROM THE PLATFORM)*
2. *Raise the outriggers in the upper position. (refer to: USE OF THE OUTRIGGERS)*
3. *Turn the outriggers / driving and steering selector switch 5 to position DRIVING AND STEERING.*
4. *Center the front wheels by selecting 4WS with the selector switch 6 for the way of steering, and direct the front wheels into middle position with control lever 1. Correspondingly, center the rear wheels by selecting rear wheel steering with the selector switch 6 for the way of steering, and direct the rear wheels into middle position with control lever 1. The wheels should be centered when the deviation is more than 5°.*
5. *Select the way of steering with the selector switch 6 (4WS, rear wheel steering or diagonal steering) and drive the MEWP with lever 4 (slow speed range) or with lever 3 (fast speed range), at the same time steering with lever 1.*

Driving instructions:

- *Practice driving and steering on an unobstructed field of sufficient size.*
- *In driving speed range FAST the most useful way of steering is rear wheel steering (platform side).*
- *The slow range has considerably more traction power than the fast one.*
- *If you have to raise the platform to overcome any obstruction when driving, this can be done with the override switch. Refer to 12.1 Use of the override switch.*
- *In places where there is little space it is practical to turn the wheels to the desired position while the MEWP is standing, and then drive, either forward or back, using the slow driving speed range.*
- *With 4WS you can help the travelling in difficult terrain by breaking obstructions in front of the wheels, like sand or snow.*

12.1 Use of the override switch

- *EXERCISE EXTREME CAUTION AND CONSIDERATION WHEN USING THE OVERRIDE SWITCH.*
- *Pressing the override switch (push-button No. 7, figure 12-2) by-passes the limit switches of the outriggers and the limit switch of the transport support of the booms.*
- *If you have to raise the platform to overcome any obstruction when driving, do the following:*

1. *press down the foot pedal.*
2. *Press the override switch (push-button No. 7, figure 12-2) and at the same time use the control levers 1,2 and 4 (figure 12-2) to guide the booms. The booms can be raised to three metres (measured from the bottom of the platform) and turned slightly. In addition, the jib boom can be guided limitlessly.*
3. *Release the foot pedal, and the control levers 1,2,3 and 4 (figure 12-2) will function as control and driving levers of the MEWP. Now you can drive and steer the MEWP past the obstruction. Note that the override switch shall be pressed also during driving, because the booms are not on the transport support.*
4. *Press down the foot pedal, and the levers 1,2 and 4 (figure 12-2) function again as control levers of the booms. Drive the booms on the transport support and continue driving normally.*

NOTE! DO NOT USE THE OVERRIDE SWITCH UNLESS THE MEWP IS HORIZONTAL IN THE DIRECTION OF THE BREADTH. THERE IS DANGER OF TIPPING OVER ON SLOPING GROUND WHEN THE CENTRE OF GRAVITY MOVES UP.

THE OVERRIDE SWITCH IS ONLY INTENDED FOR TEMPORARY USE TO OVERCOME OBSTRUCTIONS WHEN DRIVING. IN NORMAL DRIVING THE BOOMS MUST ALWAYS BE KEPT ON THE TRANSPORT SUPPORT.

13. CONSTRUCTION OF THE EMERGENCY LOWERING SYSTEM

The emergency lowering system consists of the pump for emergency lowering, the control switch of the emergency lowering pump, the control valve of the platform, the valve for ground guiding and decals with instructions on operating the system fastened on the platform and at the ground guiding point. Besides the ordinary hydraulic pump of the hydraulic system also the pump of the emergency lowering system is continuously ready to feed oil into the system, if the ordinary hydraulic pump should be out of order or the valve of the booms on the platform cannot be used for some reason.

14. HOW TO OPERATE THE EMERGENCY LOWERING SYSTEM FROM THE PLATFORM (FIGURE 14-1)

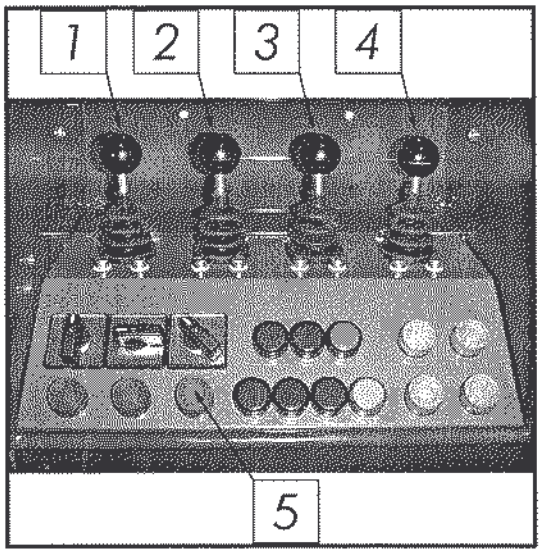


Figure 14-1

1. *Press the push-button 5 of emergency lowering to bottom and keep it there during the whole lowering procedure. To lower the platform use the platform control levers 1-4.*
2. *Always retract the telescope prior to starting to lower the boom.*

15. HOW TO OPERATE THE EMERGENCY LOWERING SYSTEM FROM THE GROUND (FIGURE 15-1)

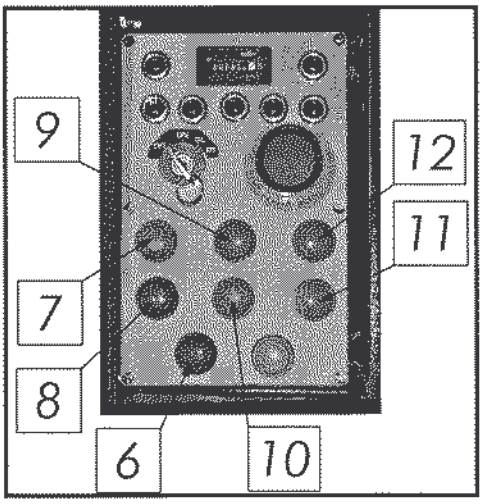


Figure 15-1

When the emergency lowering system is used, the ignition key must be in position 1 (current on) and the emergency stop push-buttons in the upper position.

1. *Press the push-button 6 of emergency lowering to bottom and keep it there during the whole lowering procedure. To lower the platform use the platform control levers 7-12.*
2. *Always retract the telescope prior to starting to lower the boom.*

16. PRINCIPLE OF OPERATION OF THE GAS DEVICE

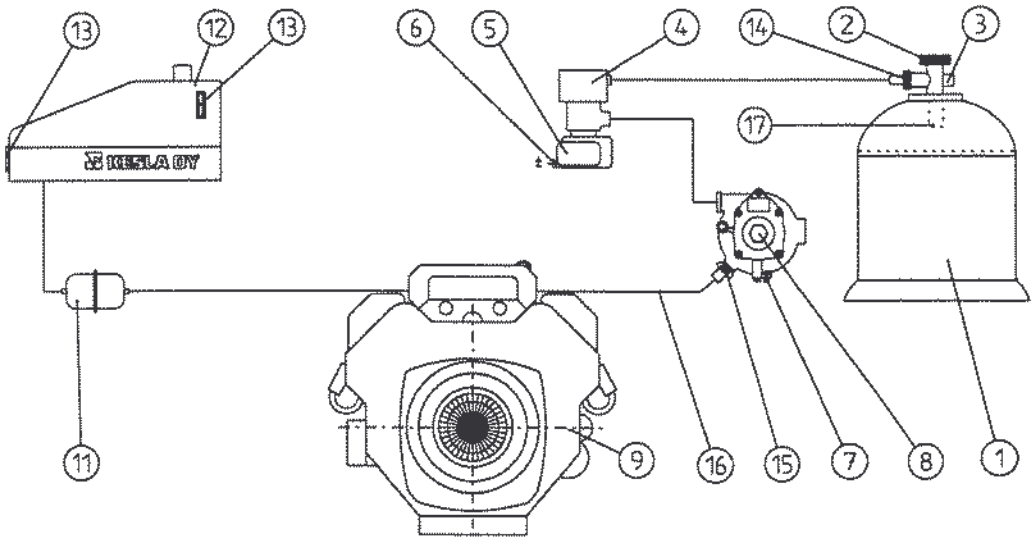


Figure 16-1

1. *Standard LPG holder for domestic use 11 kg (24 lbs)*
2. *Turnable closing cock*
3. *Relief guard (always with the holder)*
4. *Fine filter*
5. *Solenoid valve for gas*
6. *Solenoid valve 12 V, guided from platform with control switch and together from the motor oil pressure with relay*
7. *Idling regulator screw*
8. *LPG device*
9. *Combustion engine (petrol)*
11. *Petrol filter*
12. *Petrol tank*
13. *Dipstick for fuel quantity*
14. *Holder adapter VMT9/16-18JIC*
15. *Power regulator screw*
16. *Feeding hose for gas*
17. *Equipment for LPG holder (Gas is taken vaporous from holder)*

The LPG is taken from a gas holder which is in a vertical position. The gas is taken vaporous, but with a holder pressure for the gas device. Check the tightness of the adapters. When opening the closing cock 2 of the LPG holder and turning the selector switch for gas drive on the platform into position GAS 1 and when the engine oil pressure has risen, vaporous LPG will flow to the fine filter 4 and from there via the power regulator 15 to the gas device 8. The primary side of the gas device acts as a pressure regulator. When starting the engine, a vacuum will occur in the inlet manifold sucking gas into the engine via the feeding hose for gas 16. Behind the big membrane of the secondary side the air pressure is normal and inside a vacuum occurs, which corresponds to that of the running motor. Consequently the membrane moves inwards and opens the secondary valve. When the carburator flap is further opened (when the engine output is increased), the vacuum on the secondary side increases. This increases the movement of the membrane, the secondary valve opens up more and the flowing gas quantity increases. The power range of the gas quantity fed into the engine is regulated with screw 15 and the idling analogously with screw 7. The easiest and most precise way of regulating is the use of an exhaust gas analyzer. For the ratings refer to the table below. According to information of the Kohler engine manufacturer the CO-values of the exhaust gases are about 8 %, when loaded with different rpms. In gas drive the power drop is about 10 % compared with petrol drive.

Engine outlet of the gas device - deliverer's recommendation:

Reading	Full power	Partial power	Idling
in petrol scale	13,0	14,0-14,5	13,2
in LPG scale	14,4	15,1-15,6	14,4
in power scale	84,0	90,0-94,0	85,0

If an analyzer like this is not available, the regulation can be carried out as follows: First run the engine warm. The engine is loaded with the hydraulic pump mentioned above and at full throttle. The power regulator screw is tightened until the revs drop. Open the screw carefully until the engine reaches full revs and then lock the regulator screw. The idling mixture can analogously be regulated with the idling regulator screw. Regulate for idling and without loading the engine. The screw is tightened until the engine rpms drop. The the regulator screw is opened until the engine runs cleanly, which means that the regulation is in order.

17. MAINTENANCE OF THE GAS DEVICE (ENGINE USED MAX. 8 H PER DAY)

The fine filter, part 4, should be cleaned twice a year. Once a year, clean the vaporizer, check the membranes and replace them, if needed, clean the carburator and thoroughly check the condition and tightness of the piping.

18. OPERATING TROUBLES IN GAS DRIVE

18.1 Starting troubles

- *The battery is unpowered. To ignite LPG needs a stronger spark than petrol. When the starting motor is rotating the motor, the jumping space in the air of the spark must be 3 mm (0.118 in) in battery ignition. Check the ignition caefully as in case of petrol engine.*
- *Due to slower combustion speed the ignition advance must be longer than in case of petrol engine.*
- *The lubricating oil is too thick. Because the combustion residues of LPG are cleaner than those of petrol, the oil will not become thinner during use. Therefore a thinner and more cold resistant oil must be used than for petrol drive.*
- *Idling leakage in hoses, in the inlet manifold or the carburator.*
- *The gas holder is empty.*
- *The idling mixture is too weak.*

18.2 Idling troubles

- *The idling is misadjusted. The idling screw must have enough of extra adjustment space, so that the mixture can be adjusted to either too rich or too weak. Rich adjustment is recommended.*
- *The ignition has been adjusted to either too early or very late. The adjustment of the ignition is fixed - do not change it.*
- *Air leakage in the system.*
- *The petrol valve does not completely close off the petrol flow.*

18.3 Fume in the system

- *There is fume in the gas regulator. The motor has been overloaded immediately after starting.*

18.4 General

- *According to recommendation one grade colder plugs must be used in a LPG motor than in petrol drive.*
- *The inlet manifold heating device fitted in the exhaust manifold must be disconnected in LPG drive*
- *The Kohler C 25 petrol/LPG motor has a fixed electronic ignition system. Any possible adjustment of the ignition advance must be carried out by Kohler's service experts.*

19. PROCEOURES BEFORE TAKING THE MEWP INTO USE

Before using the MEWP or at least once a day check the following:

19.1 Check and add, if needed

- *motor oil quantity*
- *hydraulic oil quantity*
- *fuel quantity*
- *oil leakages of hydraulics - repair, if needed!*
- *condition of hydraulic hoses*
- *tire pressure*
- *make a visual check of the bolted joints and supporting structures*
- *DO NOT USE A FAULTY MEWP!*

19.2 Test the safety limits

- *Check the function of the outrigger safety limits by trying to move the boom with outriggers up. The booms do not move, if the safety limits are in order. The connection point is reached, when the outrigger has exceeded the horizontal level with 4 degrees, from above towards the support position.*
- *The outrigger safety limits allow using the booms only, when these are in support position. With the override switch in the electric control box of the drive / outrigger valves, the outrigger safety limits can be by-passed for moving the booms during drive.*
- *The light indicator at the rear on the chassis indicates that the MEWP is correctly supported, when all four lights are on (± 0,5-1°).*

19.3 Check of safe lifting radius

The limiter of the lifting radius is functioning totally dependent of the platform load and is activated, if the platform load is too heavy from the very beginning, if the telescope or the jib are too far extended or if the raising movement has gone down to the limit. Compare with BOOM GEOMETRY.

19.3.1 Checking the reach of the telescope

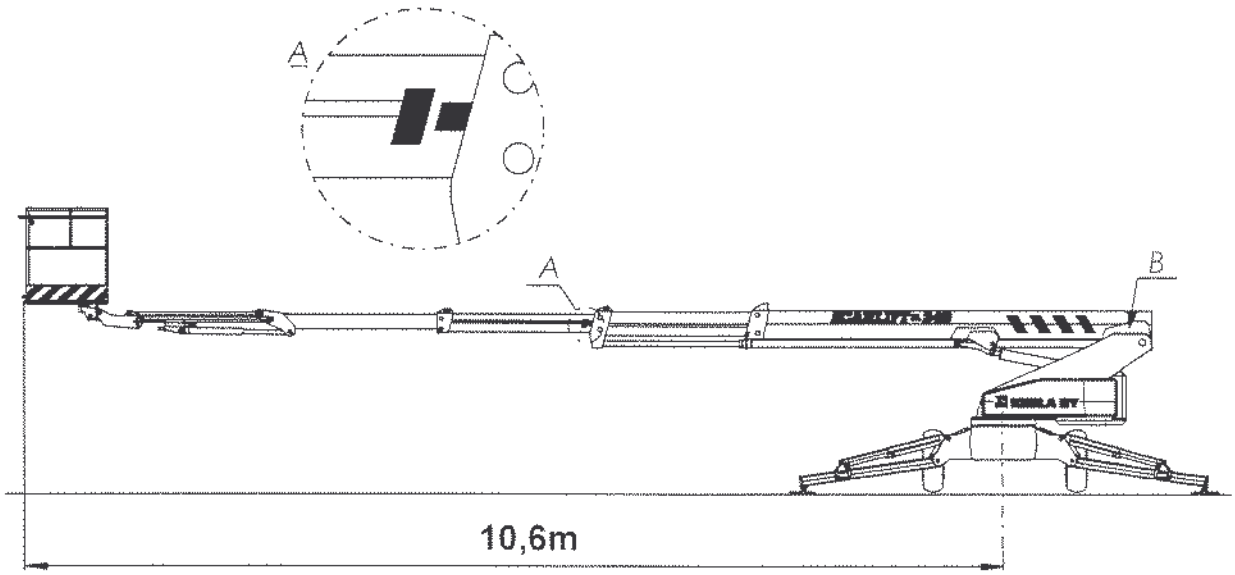


Figure 19-1. Checking the reach of the telescope

Check the function of the safety limits of the lifting radius as follows: drive the emptied platform by using the telescope cylinder with a continuous movement and with the jib straight extended, to the painted mark (point A) of the middle boom so, that the booms are at horizontal with the ground. This is the way to find out the function of the safety limit of telescoping and at the same time the safe lifting radius of the empty platform and the extended jib. The safe lifting radius from the turning centre to the brim of the platform is 10,6 m.

19.3.2 Checking the lifting radius

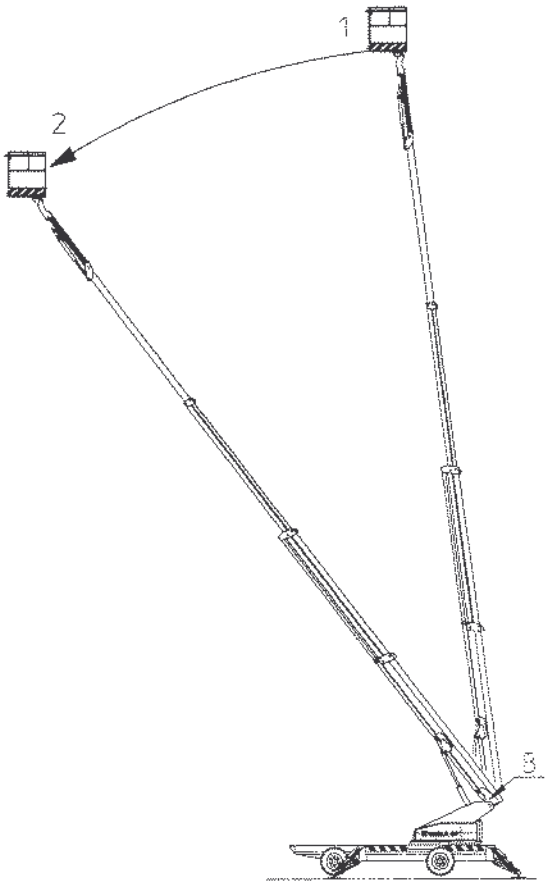


Figure 19-2, Checking the lifting radius

1. Guiding from the ground guiding point, raise the booms with an empty platform, jib extended, all the way up.
2. With the booms raised all the way extend the boom extensions fully with the telescope (figure 19-2, position 1).
3. Then lower the booms with the lowering push-button until the load control stops the movement (figure 19-2, position 2).
4. Check that the turntable indicator is between the min. and max. markings of the boom. The turntable indicator is located at point B of figure 19-2.

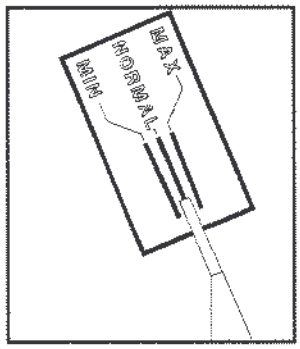


Figure 19-3. Point B, check mark

19.3.3 Checking the reach af the standby safety limit

Along with the actual safety limit, an electric safety limit has been adjusted further out, that is for a greater lifting radius. This limit breaks all movements and is activated, when the hydraulic safety limit is not correctly adjusted or faulty. The electric safety limit is not active in normal conditions. When this safety limit has reacted, the booms must be brought back to normal operating range by starting the motor and retracting the booms. Risk of tipping over does not exist even inside the operating range of the extra safety limit.

19.3.4 General safety instructians

- Do not add load to the platform, when the movements of the booms have stopped after the limiter of the lifting radius has intercepted the movements of the boom. Extra load would cause a risk of tipping over and a large extra load could cause overloading of the booms.
- Do not use the MEWP, if the safety limits or the limiters of the lifting radius are not working. If you are not familiar enough with the maintenance of MEWPs, you have to contact an expert. It is prohibited to override the safety device for even a minor job.
- Check, with the booms and the jib slightly raised and the telescope slightly extended, that no movement is "creeping", that is that the platform does not move downwards, when the control levers are in middle position. Load the platform with a proper extra load during the test. The creeping must be repaired before starting to work.

– *If needed, check the creeping of the outrigger cylinders in the position shown in figure 19-1, by slewing the booms above each outrigger and holding them there for about two minutes. If the cylinder retracts, have it repaired immediately. Do not use a faulty MEWP.*

19.4 Checking the standby safety limit of lood control

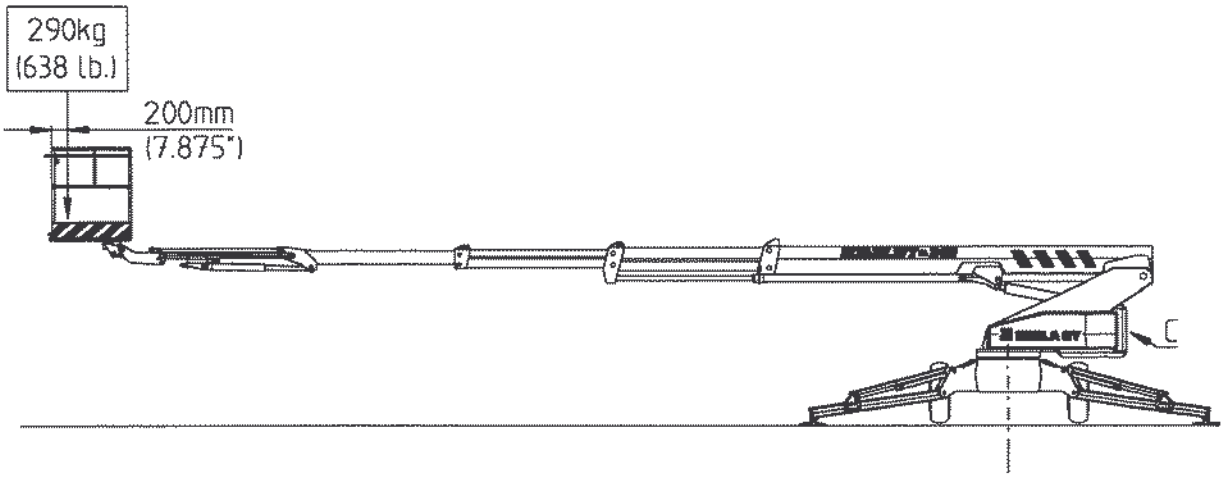


Figure 19-4. Checking the standby safety limit of load control

1. *Support the MEWP on outriggers (platform empty) with boom horizontal and jib totally out (refer to fig. 19-3). Guide the booms from the ground.*
2. *Cautiously add a 290 kg (639 lb.) load (refer to fig. 19.3). The motor must stop.*
3. *Unladen the platform.*
4. *Retract the booms by starting the motor and at the same time pressing the 'telescope in' push-button.*

19.4.1 Stondby sofety limit of lood control

Operation principle of the standby safety limit switch:
When the actual safety limit switches get out of order or the safe loading of the booms, that is the safe lifting radius, is exceeded because of a swing of the boom due to an external overload, the standby safety limit will release and cut the combustion motor. In a state of overload the spindle of the standby safety limit will retract.

20. CHECKING THE AMOUNT OF AND ADDING HYDRAULIC OIL

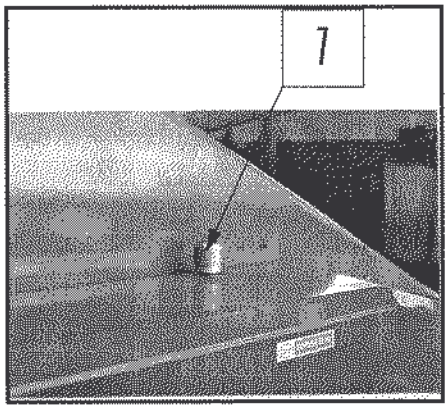


Figure 20-1. Breather cap

The amount of hydraulic oil is checked from the dipstick of the breather cap 1 on the tank. If oil level is below the lower mark of the dipstick, oil must be added. Always fill the hydraulic oil tank according to this instruction (instruction 20.1). IT IS ABSOLUTELY FORBIDDEN to add oil through the breather cap on the tank.

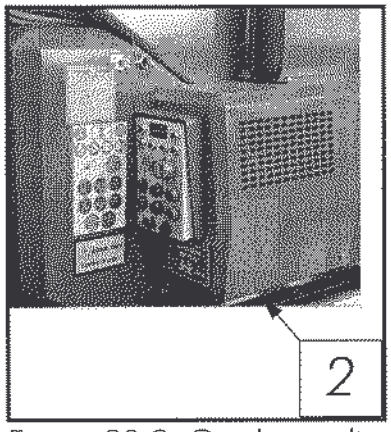


Figure 20-2. Quick coupling

20.1 Adding oil:

1. *Connect the female quick coupling of the tank hose supplied with the MEWP to the male quick coupling 2 on the MEWP.*
2. *Put the other end of the hose into the hydraulic oil barrel from which you intend to take the oil to be added. The end of the hose must be well below the oil surface in the barrel.*
3. *Switch the current on from main switch 3.*
4. *Press the 'tank' push-button at the ground guiding point, and the electric pump will start to pump oil into the tank through a filter.*
5. *Monitor the oil amount with the help of the dipstick.*
6. *Fill the tank to the upper mark of the dipstick. DO NOT OVERFILL THE TANK.*
   - It takes 7 - 10 minutes to fill an empty tank.

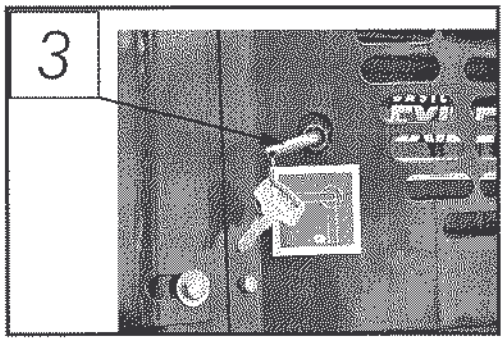


Figure 20-3. Main switch

21. SOIL TIGHTNESS TABLE

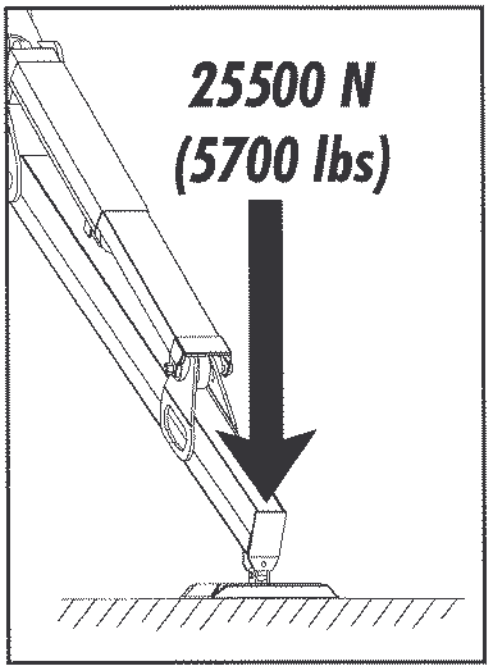


Figure 21-1

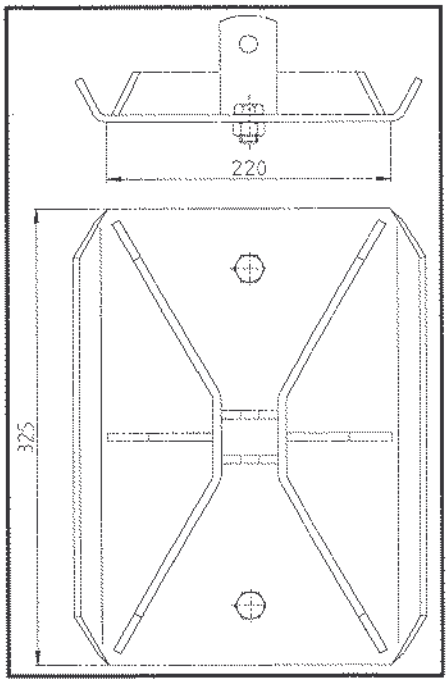


Figure 21-2. Sole

Sole surface A:

A = 0,325m x 0,22m = 0,0715 m

$$pressure = \frac{25500N}{0{,}0715m^2} = 357kpa$$

On icy surface attach extra calks to the sole plates, according to fig. 2. The soles have been provided with holes for the calks.

Permissible loads on ground for some soil types:

Soil type	Soil tightness	Safe surface pressure Ps kpa		SL 185 pressure
Gravel	Very tight structure	600	>	357
	Middle tight structure	400	>	357
	Loose structure	200	<	357*
Sand	Very tight structure	500	>	357
	Middle tight structure	300	<	357*
	Loose structure	150	<	357*
Fine sand	Very tight structure	400	>	357
	Middle tight structure	200	<	357*
	Loose structure	100	<	357*
Clay & fine silt	Loose (easy conditioned)	25	<	357*
	Tough (hard conditioned)	50	<	357*
	Firm (very hard conditioned)	100	<	357*

Note ! In items marked with (*) broader extra plates must be used.

22. LOCATION OF SAFETY LIMITS AND ELECTRIC COMPONENTS

In the figure below is shown the location of safety limits and electric components.

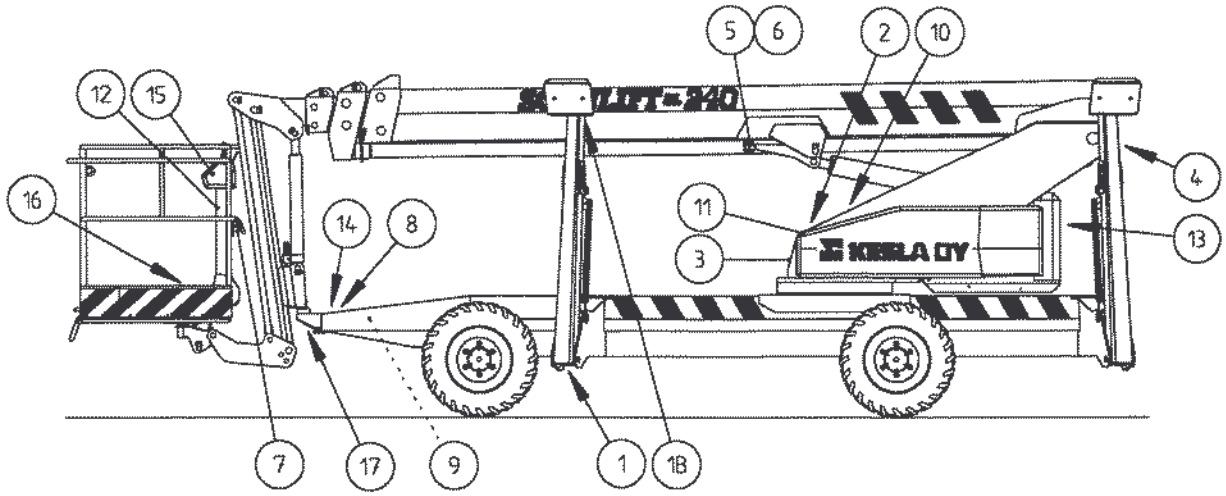


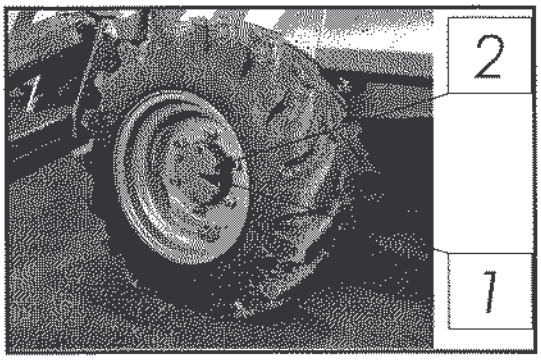
Figure 22-1. Location of safety limits and electric components

1. *Safety limit for outrigger, alternatively 1b*
2. *Limit switch for slewing*
3. *Main switch*
4. *Limit switch for boom position*
5. *Limit switch for load control*
6. *Standby limit switch for load control*
7. *Safety limit switch for outrigger arm of jib*
8. *Ground fault circuit interrupter 220V 50Hz 16A*
9. *Indicator for horizontal level, mercury switch clock*
10. *Electric inlet slip-ring switch (220V and 12V)*
11. *Battery*
12. *Outlets (2 pcs) 220V*
13. *Push-button box of turntable*
14. *Indicator for horizontal level*
15. *Control switch box of platform*
16. *Foot pedal (switch for Drive / Use of booms)*
17. *Drive and outriggers /use of booms limit switch*

23. TOWING THE MEWP

If the MEWP gets stuck when travelling:

1. *Tow the MEWP from the pulling points located in front of or behind the vehicle.*
2. *Let the combustion motor run and keep the traction into the wanted travelling direction to avoid locking of the brakes. Steer the MEWP onto hard ground to release the pull rope. When towing on hard ground, switch to the fast driving speed range. Do not exceed the towing speed of 3,6 km/h (2.2 mph).*
3. *If needed, the brakes can be released as follows: release the hydraulic hoses of the brake cylinder. Then replace the nipple by screwing in a R 1/4"-75 full threaded bolt in the hole of the hydraulic coupling. Squeeze loose the brake pads from the brake disc for eg. for the time of towing. Refer to drawing in chapter 25.0 MAINTENANCE OF DRIVING BRAKES.*



4. *If the motor of the MEWP is out of order, and it has to be towed far, the hydraulic traction motors can be disconnected from the wheels by removing the covers of the wheel hubs. Removal of the covers (figure 23-1): Unscrew Allen screws 2 and pull out cover 1.*

Figure 23-1. Removal of the cover

24. PROCEDURES BEFORE TRANSPORTING THE MEWP

Do the following before transporting:

1. *Drive the booms to transport position and raise the outriggers.*
2. *Strap the MEWP carefully onto the base. Use the pulling points on the chassis and the lifting points on the rear axle. If needed, put obstacles in front of and behind the wheels to prevent rolling.*
3. *Fasten the boom steadily onto the transport support or strap the platform carefully onto the transport base to avoid straining of the boom during transport. Do not pull the ropes over the boom, but for example around the axles and the chassis.*
4. *Switch off all current with the main switch and close the gas holder.*
5. *Check the total height before leaving.*

25. MAINTENANCE

To keep the MEWP safe and efficient it must be regularly maintained. For description of the service procedures refer to the maintenance scheme and annual inspection list. Do not hesitate to contact a service shop specialized in MEWPs for the maintenance work and examinations needed.

25.1 Maintenance after 20 aperating haurs

Observe extreme care and cleanliness before opening the hydraulic fuel lines.

- *The first oil change of the petrol motor must take place after five (5) operating hours. In connection with the test drive the oil has been changed by the manufacturer. Normally the following oil change is due after fifty (50) operating hours, when also the oil filter also must be changed. In very dusty, hot conditions or because of high stress the motor oil must be changed every twenty fifth (25) operating hour. Use a detergent motor oil of SF-grade. The viscosity is set by the operating temperature; there is a table in the motor manual.*
- *Change the hydraulic oil and filter. In dusty, moist and corroding conditions, when temperature changes are big or the stress niveau extremely high, the oil must be changed more often.*

25.2 Maintenance af the slewing gear and brake

The first oil change of the slewing gear takes place after 100 h operating hours. The next change is due after 1000-2000 h or at least every 12 months. Add oil uptil the control/filling pipe. Use oil of grade SAE 90 class ISO 3448 VG 150. Fill the brakes with ordinary 10W - 30 motor oil.

25.3 Maintenance scheme (based an aperating haurs)

Daily	Check hydraulic oil quantity
	Check fuel quantity
	Check support constructions
	Check hydraulic hoses and pipes and tightness of hydraulic couplings
	Check the function of emergency stop and safety devices
	Test all directions of functions
Every 50h	Lubricate all bearing and sliding surfaces
	Check the condition of telescope sliding pads and surfaces, lubricate and adjust, if needed
Every 500h	Change hydraulic oil and filter
	Change oil of slew. gear, first change 100h.
	Check the condition of brakes
Every 1000h or at least 6 months	Check the condition of driving brakes, clean and lubricate
Every 12 months	Annual examination. Enclosed records to be filled, signed and dated.

Kohler Commond 25

Daily	Check motor oil level and add, if needed
Every 25h	Clean the prefilter around the air cleaner element (Wash with warm water. Reinstall only after it has dried completely)
Every 100h	Change air cleaner
	Change motor oil and oil filter
	Check spark plug condition, clean plugs and adjust gap. Replace the plugs, if needed.
	Check condition of spark plug conductors and caps. Replace, if needed

Kuboto D905-E

Daily Motor off:	Check oil and fuel leakages, repair leakages before use.
	Check oil level and cleanliness. Add oil, if needed.
	Check the amount of coolant. NOTE! NEVER OPEN THE RADIATOR FILLING CAP OF A HOT MOTOR. LET THE MOTOR COOL AT LEAST 30 MINUTES AFTER USE, BEFORE OPENING THE CAP. Add coolant, if needed.
	Check for loose bolts and nuts, and tighten, if needed.
Daily Motor on:	Listen to the sound of the motor. Stop the motor if: The rpms of the motor reduce or increase suddenly (the motor does not run smoothly). There is unusual interference noise.
	Check the colour of exhaust gas. Stop the motor, if the exhaust gas suddenly changes black.
	Stop the motor, if the signal light for oil pressure or overheating of the coolant are on while the motor is running.
After first 50h	Change motor oil and oil filter.
Every 50h	Check fuel pipes and hoses, and tightness of their connections and condition of hose clamps.
Every 100h	Clean the air cleaner element.
	Check the battery electrolyte level.
	Check the fan belt tightness and condition.
Every 200h	Change motor oil and oil filter.
	Check the condition of radiator hoses and hose clamps.
Every 400h	Replace the fuel filter element
Every 500h	Clean radiator system and radiator cell and check the condition of radiator.
	Replace fan belt.
Every 800h	Adjust valve clearance.
Every 12 months	Replace air cleaner element. **
	Check for damage to el. conductors and condition of connectors.
Every24 months	Replace fuel hoses and hose clamps.
	Replace radiator hoses and hose clamps.
	Change coolant.

** Once a year or every six cleanings.

25.4 Chonging oil ond oil filter of KUBOTA D905-E motor

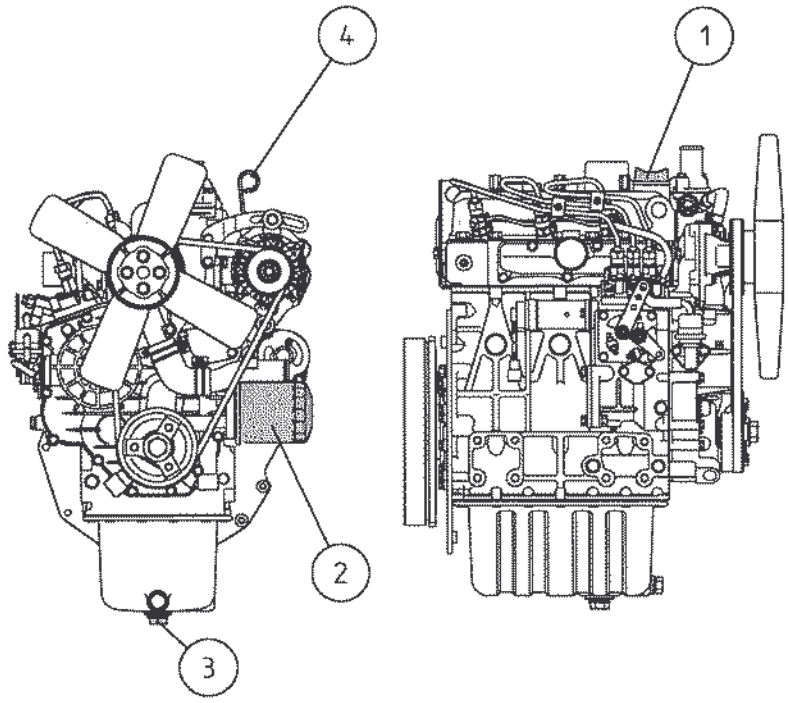


Figure 25-1. Changing oil and oil filter of Kubota D905-E motor

Being an often repeated operation the change of motor oil and the filter is handily done without lowering the motor by following these instructions.

1. *Lower the outriggers and turn the MEWP so that the motor will go between wheel and chassis.*
2. *Open and remove the hood*
3. *Remove the oil drain plug (3) and drain the motor oil to a waste oil container.*
4. *Fasten the oil filter tool on the filter and turn counterclockwise to remove the old filter (2).*
5. *Apply a thin coating of new oil to the rubber gasket and turn until the rubber gasket contacts the adapter, then tighten an additional ½ turn.*
6. *Reinstall the drain plug and tighten.*
7. *Open the oil cap (1) and fill the crankcase with new oil. Check that the oil level is up to the upper mark of the dipstick (4).*
8. *Close the oil cap and replace the dipstick. Let the motor run for a few minutes. Check for oil leaks and after oil pressure is stable check the oil level with the dipstick. Add more oil, if needed.*
9. *Reinstall the hood of the service opening.*

25.5 Chonging oil ond oil filter of KOHLER COMMAND 25 motor

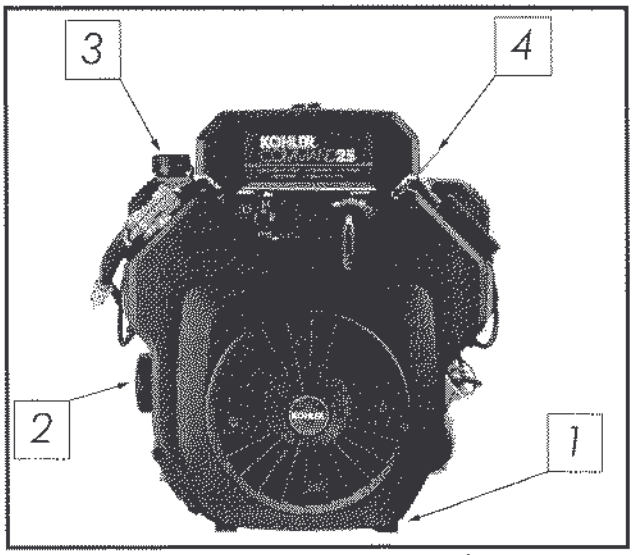


Figure 25-2. Changing oil and oil filter of Kohler Command 25 motor

Being an ofter repeated operation the change of motor oil and the filter is handily done without lowering the motor by following these instructions.

1. *Lower the outriggers and turn the MEWP so that the motor will go between wheel and chassis.*
2. *Open and remove the hood.*
3. *Remove one of the oil drain plugs (1) and drain the motor oil to the waste oil container.*
4. *Fasten the oil filter tool on the filter and turn counterclockwise to remove the old filter (2).*
5. *Apply a thin coating of new oil to the rubber gasket and turn until the rubber gasket contacts the adapter, then tighten an additional ½ turn.*
6. *Reinstall the drain plug and tighten.*
7. *Open the oil cap (3) and fill the crankcase with new oil. Check that the oil level is up to the "F" mark of the dipstick (4).*
8. *Close the oil cap (3) and replace the dipstick. Let the motor run for a few minutes. Check for oil leaks and after oil pressure is stable check the oil level with the dipstick. Add more oil, if needed.*
9. *Reinstall the hood of the service opening.*

25.6 Lubrication scheme

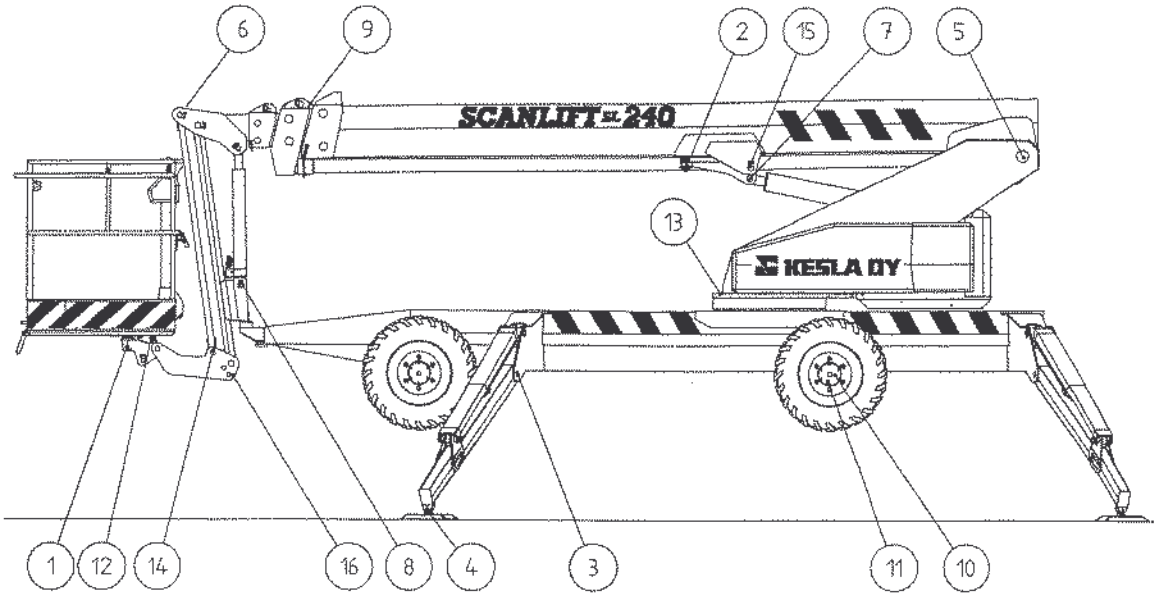


Figure 25-3. Lubrication scheme

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

1. *The spherical bearings in the platform slewing cylinder*
2. *Bearing surfaces of lifting radius guard*
3. *Outrigger links and spherical bearings of cylinders*
4. *Links of supporting plates*
5. *Spherical bearings of boom and turntable*
6. *Spherical bearings of platform outrigger arms*
7. *Spherical bearings of lifting cylinder*
8. *Spherical bearings of jib cylinder*
9. *Sliding surfaces of booms and sprocket bearings*
10. *Pivoted axle bearings of wheels*
11. *Sliding surfaces of brake cylinders*
12. *Spherical bearings of platform slewing cylinder*
13. *Pivot bearing and tooth ring. Too much grease can break the gasket of pivot bearing. Lubricate every 950 h or at least every 6th month. There are two lubrication points in the bearing. Turn the bearing while greasing. The cover of the lubrication opening of the pivot bearing and tooth ring is attached with 2 bolts.*
14. *Spherical bearings of outrigger arm*
15. *Spherical bearings of load control linkage*
16. *Spherical bearings of platform inclining cylinder*

25.7 Selection table of lubrication materials and oil volume

25.7.1 Combustion engines:

Kohler Command 25:
Oil volume..... 2,0 l (0.53 gal) with filter
SAE 30W SF..... +0° ..... +30°C (+32 .... +86°F) monograde oil
SAE 20W-30 SF..... +0° ..... +30°C (+32 .... +86°F) first filling
SAE 10W-30 SF..... -5° ..... +30°C (+23 .... +86°F)
5W-20 SF ..... -25° ..... +0°C (-13 ..... +32°F)
Kubota D905-E:
Oil volume..... 5,1 l (1.4 gal) with filter
SAE 30 or SAE10W-30, SAE10W-40 ..... above +25°C (+77°F)
SAE 20 or SAE10W-30, SAE10W-40 ..... 0°C ... +25°C (+32... +77°F)
SAE 10W or SAE10W-30, SAE10W-40 ..... below 0°C (+32°F)

25.7.2 Hydraulics

Oil volume..... 75,0 l (20 gal) total quantity
Oil type ..... UNIVIS 32

25.7.3 Spherical bearings

Lithium-based all-round grease eg. Esso Beacon EP2
Lubrication instruction: oozes out a little during greasing

25.7.4 Open cogging of pivot bearing

Molybdenum-sulphide-based eg.
- Esso Surrent Fluid 30F
- Shell Cardium EP Fluid H
- Mobil Dorcia 30

Lubrication instruction: brushing

25.7.5 Sliding surfaces of booms

Lithium-based all-round grease eg. Esso Beacon EP2

25.7.6 Sliding bearings

Lithium-based all-round grease eg. Esso Beacon EP2
Lubrication instruction: oozes out a little during greasing

25.7.7 Pivot bearing

Lithium-based all-round grease eg.
- Esso Beacon EP2
- Shell Alvania EP2
- Mobil Mobilux EP2

25.7.8 Slewing gear

Oil volume..... 1,5 l (0.4 gal)
ISO 3448 Vg 150
SAE 90

25.8 Maintenance af driving brakes

- *Verify that the brake pads are pressing against both sides of the brake disc with equal force.*
- *Clean, lubricate and check the function of the floating brake caliper mechanism always every 6 months and in hard and dirty conditions even with shorter periods.*
- *If the brake pad, located on the spring side, clearly is more worn, the cleaning and lubricating of the mechanism must be better tended to.*
- *For example when towing, the drive brake can be released by screwing in (point 1) a R1/4" - 75 full threaded bolt or a R1/4" double nipple, with a M8 thread and a M8x60 screw, instead of the hydraulic hose nipple of the brake cylinder.*

25.8.1 Canstructian af brakes

- *Disc brake which opens by hydraulic pressure.*
- *When the pressure of the driving motor exceeds 30 bar (430 psi), the disc brakes open. Analogously, the brakes close automatically pressed by a spring, when the pressure drops below 30 bar (430 psi).*
- *The construction of the brake caliper is so called "floating" which means that the spring is pressing one of the brake pads, but the slide mechanism compensates the clamping pressure of the spring and both brake pads of the brake caliper are pressing against the brake disc with equal force on both sides of the disc.*

25.8.2 Changing brake pads

- *The brake pad must be changed, if the friction surface of the pad is less than 1,5 mm (0.059 in.).*

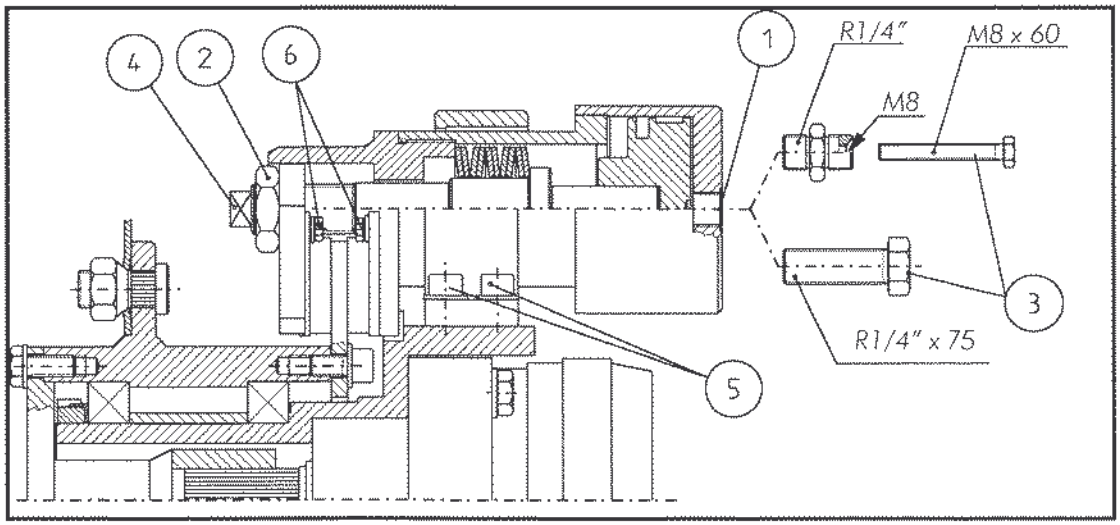


Figure 25-1. Changing brake pads

1. *Drive the MEWP onto level and firm ground.*
2. *Use the outriggers to raise the wheels slightly above the ground and turn off the engine*
3. *Remove the wheels*
4. *Remove the brake hose from point 1 and plug the hose*
5. *Remove nut 2*

6. Screw in a R1/4" x 75 screw or a 1/4" double nipple with a M8 thread, as well as a M8 x 60 screw to point 1
7. Tighten screw 3 so that brake pads detach themselves from the brake disc
8. Tighten from shank 4, and the brake pad will detach itself from the brake disc
9. Remove screws 5 and set the brake cylinder aside
10. Remove screws 6 and the brake pads
11. The brake caliper mechanism is installed in reverse order

25.9 Chains af baams - adjustment and maintenance

– The two outermost boom extensions of Scanlift SL 240 (the extensions closest to the platform) are moved by chains.

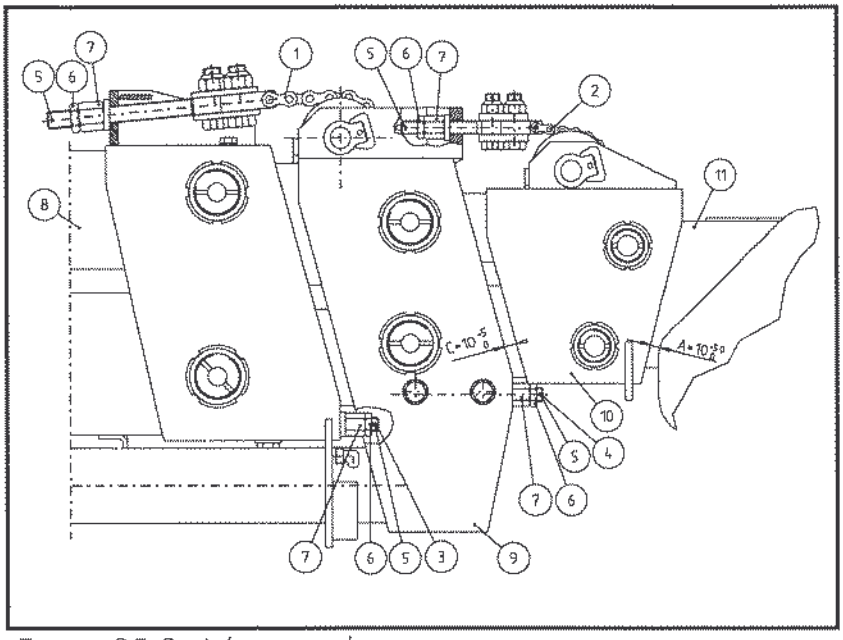


Figure 25-2. Adjusting chains

1. Extend chains of the second outermost extension
2. Extend chains of the outermost extension
3. Retract chain of the second outermost extension
4. Retract chain of the outermost extension
5. Pin
6. Locking nut
7. Adjusting screw
8. Lifting boom
9. First extension
10. Second outermost extension
11. Outermost extension

25.9.1 Adjusting the chains af the autermast extensians (extensian clasest ta the platfarm)

1. Retract the boom totally with the telescope cylinder
2. Check gap A. If the gap exceeds 10mm +5 / – 0 mm (0.394 +0.197 in.) loosen the nuts 6 and 7 of the extend chain of the outermost extension and analogously tighten the nuts 6 and 7 of the retract chain of the outermost extension which makes the outermost extension move inwards.
   If the gap is smaller than 10mm (0.394 in.) loosen nuts 6 and 7 of the retract chain and tighten nuts 6 and 7 of the extend chain.
3. When adjusted, tighten the locking nuts 6.

25.9.2 Adjusting the chains af the secand autermost extension

1. Retract the boom totally with the telescope cylinder
2. Check gap C. If the gap exceeds 10mm +5 / – 0 mm (0.394 +0.197 in.) loosen the nuts 6 and 7 of the extend chain of the second outermost extension and analogously tighten the nuts 6 and 7 of the retract chain of the second outermost extension which makes the outermost extension move inwards.

If the gap is smaller than 10mm (0.394 in.) loosen nuts 6 and 7 of the retract chain and tighten nuts 6 and 7 of the extend chain.

3. *When adjusted, tighten the locking nuts 6.*

25.9.3 Adjustment of choin tension

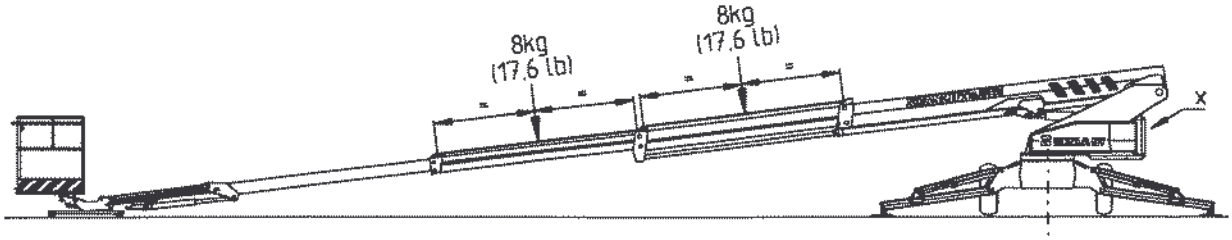


Figure 25-3. Adjustment of chain tension

1. *Support the MEWP on the outriggers with the wheels slightly risen from the ground. Raise the jib boom fully up (the cylinder will restrict). Lower the platform eg. on a pump carrier or other support equipped with wheels.*
2. *Drive out the booms totally, compensating with the lifting cylinder, so that the carrier under the platform rolls easily. If the platform rises from the carriage during extending, the limiter of the lifting radius will cut both the lowering and extending movements of the booms. Therefore it is important to compensate the load of the booms during extending. Retract the booms about 50 mm (2 ins.) from max. reach and leave the booms in this position. The situation is shown in drawing.*
   NOTE! During the extension no load is allowed on the platform and extreme caution must be observed. It is most essential to compensate the booms with the lifting cylinder.
3. *Adjust all four extend chains so that after a slight retraction there will be 1-3 mm (0.039 to 0.118 ins.) between the boom and the chain, measured at the middle of the free chain, with a single load of 8 kg (17.6 lbs) applied at the point of measuring.*
4. *If the booms do not fully settle within each other, but instead the boom moved by the chain remains "out", fix the boom back in by loosening the extend chain and tightening the retract chain. Adjust each extension at a time, testing now and then.*

25.10 Torque scheme

Wheel nuts ..... 250 Nm
Fastening bolts of slewing gear ..... 22-26 Nm
Bolts of pivot bearing, inner shell ..... 200-220 Nm
Bolts of pivot bearing, outer shell ..... 200-220 Nm
Holding capacity of pull eliminator in inlet of el. boxes ..... 5 kg when pulling from cable
Torque of clasp nuts of outrigger axles (locking with claw ring) 50-70 Nm
Nuts of wheel naves and pivoted axles ..... 50-70 Nm
Locking of axle nuts of cylinder pins (locking with claw ring) ..... 50-70 Nm

25.10.1 Torques, if not otherwise mentioned

Preliminary torque for screws with metric ISO thread			
	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

Preliminary torque for screws with metric ISO fine thread			
	Nm		
	8.8	10.9	12.9
M8 x 1	24,5	34,3	40,2
M10 x 1,25	49	68,6	80
M12 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

1 kpm = *9,80665 Nm*
1 lbf.ft = *1,356 Nm*

26. PROBLEMS IN OPERATING THE MEWP

Situation	Solution
Booms can not be guided from platform	1. Check that the ignition keys are in the ignition lock of the platform (combustion engine has been started from the platform). 2. Check that the outriggers are in support position (lower position). 3. Check that the foot pedal has been pressed down.
Booms can not be guided from ground	4. Check that the ignition keys are in the ignition lock of the ground guiding point (combustion engine has been started from ground). 1. Check that the outriggers are in support position (lower position.
Outriggers can not be raised or lowered	1. Check that the selector switch for outriggers / driving and steering is in position OUTRIGGERS. 2. Check that the booms are on the transport support. 3. Check that the foot pedal is not pressed down.
MEWP can not be driven / steered	1. Check that the selector switch for outriggers / driving and steering is in position DRIVING AND STEERING. 2. Check that the booms are on the transport support. 3. Check that the pedal is not pressed down.
Engine does not start from either of the guiding points	1. Check that current has been turned on from the main switch. 2. Check that the emergency stop push-button has not been pressed down at either of the guiding points.
Engine starts, but does not run	1. Starting a "cold" diesel engine: Turn the ignition key in the glowing position and keep it there until the glow indicator lights up. 2. Starting a "cold" petrol engine: Pull out the choke (under the engine hood) and start the engine. Let the engine run for a while and press the choke back in. 3. Check with the dipstick on the filling cap that there is enough fuel in the fuel tank.

27. INSTRUCTIONS AND RECORDS FOR RE-EXAMINATION

27.1 Exominotion of the MEWP

The Scanlift SL 240 must be examined in accordance with these instructions at least once a year and, if needed, more frequently. The examination date must not exceed 12 months since commissioning the MEWP. If uncertain, please contact the manufacturer or importer.

27.2 Introduction

As to the examination procedure these instructions can be considered as so called minimum general instructions. The manual chapters controls, check of safe lifting radius, construction of and how to operate the emergency lowering system, as well as location of safety limits will be of assistance when carrying out the examination correctly. During the

annual check the MEWPs examination records must be filled out. The examining person should have eg. the following decals with him to replace eventual worn ones::
- General operating instructions
- Instructions for daily check
- Secure the stability

27.3 General requirements

27.3.1 Manual

A manual must be delivered with the MEWP.

27.3.2 Lacker far manual

The manual must always be kept in the equipment case.

27.3.3 Manufacturer's plate

- The plate of the MEWP must be unbroken and clearly marked.
- The plate has been riveted onto the chassis next to the equipment case.

27.3.4 Laad plate

- SWL (=safe working load) given as the allowable number of persons and mass of equipment as well as the safe working lateral load caused by persons must be marked indelibly and clearly in an easily visible place on the platform.
- The load plate, located on the outside of the platform, must be replaced, if not readable or broken.
- A plate or a paint mark will do, because the lost information can, if needed, be replaced with new one available on the manufacturer's plate.
- The calculated weight for the first person is 80 kg (176 lbs.) and for the next ones 80 kg (176 lbs.), leaving 70 kg (154 lbs.) for the mass of equipment.
- The mass of equipment of 70 kg and the safe working lateral load 400 N = 40 kg (88 lbs.) are visible on the load plate.
- The second load plate is located beside the valve for ground guiding.

27.3.5 Warning plate

The point of operating from the ground and the platform of the MEWP are fitted with the following warning plates. On the engine cover there is also an instruction plate for operating the emergency lowering system.
- Working near live electrical conductors
- Plate with instructions on operating the outriggers: SECURE STABILITY. EVEN ASPHALT CAN YIELD!
- Safe working load
- Voltage decal
- Warning of high sound intensity
- Examination of the MEWP's condition and test drive before starting actual work (= daily overhaul)
- Steps to be taken in case malfunction during MEWP operation
- General instructions for the operators

27.3.6 Plate for outriggers

The maximum supporting load and instructions regarding the use of extra plates must be indelibly and clearly marked on the place where the outriggers are being used.
With the booms slewed above the concerned outrigger and with the safe working load, the supporting load will be 25500 N = 2550 kg (5700 lbs.).
The soil tightness table, chapter 21.00 in the manual will help to define the need of extra plates.

- *Eventual building instructions or requirements regarding each separate site must be considered separately*
- *Max. supporting load = 25500 N (5700 lbs.), on soft ground extra plates must be used under the outriggers*

27.3.7 Hozord colours

The MEWP must be easily visible. All projecting extremities must be clearly marked. Projecting are the extremities reaching outside the actual chassis, like outriggers, the boom tip and the platform. Being most easy to visualize yellow/black diagonals are used for marking.
Marking, general:

- *The stripes are marked on the MEWP with yellow/black colours*
- *Stripes on the sides of outriggers*
- *Stripes on the skirting board of the platform*
- *Stripes at the boom tip*

27.3.8 Scheme of working areo

For the scheme of working area refer to chapter 5.0 BOOM GEOMETRY

27.3.9 Exominotion plote

The examination plate, where the examinator stamps his initials and the date, is riveted on the equipment case.

27.4 Safety requirements

27.4.1 Indicator of horizontol level

The supporting is correct, when all four red lights of the indicator, located on the chassis on the right side of the boom support, are on. The actual mercury switch box with an accuracy of on ± 0,5°-1,0°, is in the equipment case.

27.4.2 Device to prevent roising the plotform

The MEWP must be fitted with a device to prevent the use of the platform before the outriggers are in support position, ie in the fully extended position. The preventing device must be active at least, when the free distance between the horizontal level (= even ground) and the support plate is exceeding 300 mm. The support position is activated, when the outriggers have exceeded the horizontal level with about 4° from above towards the support position.

- *The electric limit switches must be analogous to original ones and so connected that they become safely deactivated (forced opening).*

27.4.3 Device to prevent opening the support function

The MEWP must be fitted with a device to prevent moving the outriggers, whenever the booms are deviated from transport position.

- *The slewing and raising functions of the booms have el. safety limits preventing the use of outriggers, when the booms deviate from transport position.*
- *The selector switch on the platform must be in position BOOMS, when the booms are operated. Thus the use of outriggers is prevented. In praxis the transport position can differ from that with the boom lowered to the transport support. When operating in poor shaped terrain the transport position is valid, whenever the control levers of the valve for drive/outrigger can be reached from the platform.*
- *Deliberate opening or moving is prevented by using the lock valve of the hydraulics (no hose is allowed between the cylinder and the lock valve).*

27.4.4 Position of platform

The platform must be safely attached to the MEWP unit. Any unintentional swinging, inclining, slewing or moving has to be avoided. The screws, the nut, the linkage pins and fastening organs of the fixings must be secured or locked solidly.

- *Relating to the double nut securing also a cotter must be used (fixing the chain end of the booms).*
- *Avoid using a self-locking nut (must always be replaced after opening).*
- *In moving organs mechanical locking are used.*
- *Normal moving caused by the gap of fixing organs or the stabilizing and slewing equipment are not referred to here.*

The platform level shall not vary (recommendation not more than ± 5°) regardless of the position of the MEWP unit.

- *In case of hose damage the 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 by using the control lever located in the control valves of the booms*
- *The stabilizing equipment must function automatically in all situations.*
- *When raising the platform, it must always be horizontal.*

27.4.5 Emergency lowering system

The MEWPs fitted with a mechanical operating system must have an emergency lowering system to lower the platform with. 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 case and the control switches are on the turntable and platform.*
- *The operating instruction plate is located on the engine cover.*
- *The pressure for the emergency lowering system is produced with the el. pump and controlled from the platform with control levers and by pressing continuously the push-button of the emergency lowering pump.*
- *Control from the ground analogously, but by using the control push-buttons on the turntable and the control push-button of the pump.*

27.5 Generol condition of the MEWP

Visual examination of condition

27.5.1 Chossis

- Corrosion damage
- Welds (no visible breaks or cracks)
- Permanent deformations

27.5.2 Slewing ring

- Tightness of ring screws and the joint (instructed by the manufacturer)
- Slewing gear and holding of the brake
- Condition and gap of tooth ring
- Bearing
- Welds

27.5.3 Booms

- Welds
- Link wearings
- Lockings of links and cylinders
- Battered places and tears
- Permanent deformations
- Shafts and screws of stabilizing equipment
- Cylinders
- Slide pads and adjustments

27.5.4 Platform

- Fixing organs
- Joint lockings
- Tears and other damage
- Condition and self-closing of gate
- Gates and railings

27.5.5 Outriggers

- Wearing
- Corrosion damage
- Welds

27.5.6 Tronsport position

- Rack for transport position of booms
- Position of outriggers and tightness of lock valves
- Condition of brakes

27.5.7 Hydraulic system

- Leakages
- Condition of hoses (when even slightly damaged or leaking the hose must be replaced)

27.5.8 Electric system

- Condition of cables and fixings
- Condition of connections
- Activity of limit switches

27.6 Test drive / test looding

27.6.1 Operoting movements

- *Primarily the test drive or test loading (= overloading) is carried out in accordance with the manufacturer's instructions.*
- *If no instructions are on hand, we urge to carry out the test drive by using safe working loads in extreme and most unfavourable positions. Mark the load used in the record.*
- *Test the function of all operating movements, do not use jerky movements.*
- *Observe the "creeping" of the outriggers, ie. the tightness of the lock valves of the stabilizer cylinders during loading (about 1 h)*
- *After loading check thoroughly for any tears or permanent deformations on the loaded parts.*

27.6.2 Controls

- *Check their general condition and automatic returning to the 0-position.*
- *The controls on the platform must be protected against unintentional faulty guiding*
- *Check that the pipe frame surrounding the control levers is undamaged.*

27.6.3 Symbols

- *The directions of movement and the analogies between control levers and platform movements are shown by plates. When unreadable or damaged the plates must be replaced.*

27.6.4 Emergency stop

- *The emergency stop must have a red operating switch and a plate with the word "STOP" fixed next to it.*
- *The emergency stop is obligatory for guiding from platform as well as from ground.*
- *The emergency stop function must stop all movements immediately after being pushed down. Further the MEWP must not restart immediately when releasing the push-button. Anyhow, the motor rotation must have visibly stopped.*
- *The emergency stop must be easy to discerne from other operating switches.*
- *Never use the emergency stop for stopping the MEWP in normal conditions, the ignition lock is meant for that.*
- *The emergency stop must be impossible to disengage.*

27.6.5 Sofety limit switches

- *Check the function*
- *Check the fastenings*

27.6.6 Sound signol

- *Check the function*
- *There are push-buttons both on the platform and in connection with the control valve for ground guiding.*

27.7 Repoirs

27.7.1 Welding

Observed repair weldings on primary structures of the MEWP must be entered in the record space for "Notes" as follows:

- *Location of welding*
- *Date of repair welding*
- *Maker*
- *Check, if the manufacturer's instructions have been observed when welding.*

27.7.2 Other repairs

Any other repair on the primary structures (eg. cylinders) must also be entered in the record space for "Notes" as follows:

- *Location of repair*
- *Date*
- *Maker*
- *Make sure that the manufacturer's instructions have been observed.*

27.7.3 Test laading (= averlaading)

After repairs on primary structures the MEWP must be test loaded according to SFS 4261. The test load used is entered in the examination records. After loading check thoroughly for any tears or permanent deformations on the load-carrying parts. In this case the test loading is carried out by using an overload of 296 kg (652 lbs.) and by locking the load control for the period of loading.

28. MEWP EXAMINATION RECORDS

First examination (check before commissioning)
PLACE: KESLA OY, KESÄLAHTI, FINLAND

Date _____

Examiner _____

Name clarification _____

BASIC INFORMATION ON MEWP
Manufacturer: Kesla Oy
Address: Metsolantie 2, FIN-59800 Kesälahti

Country of manufacture: Finland

Type of MEWP: BC Boom chassis
Chassis: MS MEWP (self-propelled)

Booms: TB Telescope boom
Outriggers: HT Hydraulic turning

TECHNICAL DATA
Model and type: Scanlift SL 240
Serial No./Year: _____
Safe load: 230 kg
Number of presons: 2
Extra load: _____
Combustion motor: petrol /LPG ☐ *diesel* ☐
Lowest operating temp.: -25°c
Weight: 4300 / 4350 kg

Max. height of platform	*HP= 22,0 m*
Max. direct. reach	*DR= 11,0 m*
Slewing of booms	*SB= Limitless*
Width of support	*WS= 4,74X4,72m*
Transport width	*TW= 1,92 m*
Transport length	*TL= 6,9 m*
Transport height	*TH= 2,25 m*
Platform dimens.	*PD= 1,0mx1,5m*

EXAMINATION SPOTS OK= In order, NO= To be repaired

A. STRENGTH

OK	NO	
☐	☐	*Material certificates*
☐	☐	*Strength certificate*

B. STABILITY

☐	☐	*Stability test certificate*
☐	☐	*Operating zone scheme*

C. GENERAL REQUIREMENTS

☐	☐	*Manual*
☐	☐	*Locker for manual*
☐	☐	*Product/examination plates*
☐	☐	*Load plate, plate of outriggers*
☐	☐	*Warning plate*
☐	☐	*Hazard colours*

D. SAFETY DEVICES

☐	☐	*Safety limit switches*
☐	☐	*Sound signal*

E. LOADING

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

Observed defects repaired : _____/_____ *199*

Signature _____

Name clarification _____

F. SAFETY REQUIREMENTS

OK	NO	
☐	☐	*Indicator of horizontal level*
☐	☐	*Securings and lockings*
☐	☐	*Device to prevent raising*
☐	☐	*Device to prevent using of outriggers*
☐	☐	*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*
☐	☐	*Safety limits*

DEFECTS AND NOTES

_____
_____
_____
_____

28.1 MEWP EXAMINATION RECORDS

(These records must be thoroughly filled in and kept with the MEWP for two years.)

RE-EXAMINATION (= maintenance check) Date _____ / _____ 199 _____

Place _____ Examiner _____

Address _____ Name clarification _____

BASIC INFORMATION ON MEWP

Manufacturer _____ Model and type _____

Importer / distributor _____ Serial No./Year of manuf. _____

Owner _____ Address _____

TYPE OF MEWP: BC ☐ Boom chassis SC ☐ Scissor chassis MC ☐ Mast chassis
CHASSIS: T ☐ Truck MS ☐ MEWP (self-prop.) Tt ☐ Trailer (towed) M ☐ Monkey
BOOMS: A ☐ Articulated boom T ☐ 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

EXAMINATION SPOTS OK= In order NO= To be repaired

1. GENERAL REQUIREMENTS

OK	NO	
☐	☐	1. Manual
☐	☐	2. Locker for manual
☐	☐	3. Manufacturer's plate
☐	☐	4. Load plate
☐	☐	5. Warning plate
☐	☐	6. Plate of outriggers
☐	☐	7. Hazard colours
☐	☐	8. Operating zone scheme
☐	☐	9. Examination plate

2. SAFETY REQUIREMENTS

OK	NO	
☐	☐	1. Indicator of horizont. level
☐	☐	2. Device to prevent raising
☐	☐	3. Device to prevent using of outr.
☐	☐	4. Position of platform
☐	☐	5. Emergency lowering system

3. GENERAL CONDITION

OK	NO	
☐	☐	1. Chassis
☐	☐	2. Slewing ring
☐	☐	3. Booms
☐	☐	4. Platform
☐	☐	5. Outriggers
☐	☐	6. Transport position
☐	☐	7. Hydr. system
☐	☐	8. El. system

4. TEST DRIVE/TEST LOADING

OK NO
Load _____ kg

OK	NO	
☐	☐	1. Oper. movements
☐	☐	2. Controls
☐	☐	3. Symbols
☐	☐	4. Emergency stop
☐	☐	5. Safety limit switches
☐	☐	6. Sound signal

5. REPAIRS

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

DEFECTS AND NOTES:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Observed defects repaired: _____ / _____ 199 Signature _____

Name clarification _____

ENCLOSURES: ☐ Notes cont. on back side
☐ Other documents _____ pcs

Distrib.: Owner of MEWP
MEWP manual
Examiner

28.2 MEWP EXAMINATION RECORDS

(These records must be thoroughly filled in and kept with the MEWP for two years.)

RE-EXAMINATION (= maintenance check) Date _____ / _____ 199 _____

Place _____ Examiner _____

Address _____ Name clarification _____

BASIC INFORMATION ON MEWP

Manufacturer _____ Model and type _____

Importer / distributor _____ Serial No./Year of manuf. _____

Owner _____ Address _____

TYPE OF MEWP: BC ☐ Boom chassis SC ☐ Scissor chassis MC ☐ Mast chassis
CHASSIS: T ☐ Truck MS ☐ MEWP (self-prop.) Tr ☐ Trailer (towed) M ☐ Monkey
BOOMS: A ☐ Articulated boom T ☐ 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

EXAMINATION SPOTS OK= In order NO= To be repaired

1. GENERAL REQUIREMENTS

OK	NO	
☐	☐	1. Manual
☐	☐	2. Locker for manual
☐	☐	3. Manufacturer's plate
☐	☐	4. Load plate
☐	☐	5. Warning plate
☐	☐	6. Plate of outriggers
☐	☐	7. Hazard colours
☐	☐	8. Operating zone scheme
☐	☐	9. Examination plate

2. SAFETY REQUIREMENTS

OK	NO	
☐	☐	1. Indicator of horizont. level
☐	☐	2. Device to prevent raising
☐	☐	3. Device to prevent using of outr.
☐	☐	4. Position of platform
☐	☐	5. Emergency lowering system

3. GENERAL CONDITION

OK	NO	
☐	☐	1. Chassis
☐	☐	2. Slewing ring
☐	☐	3. Booms
☐	☐	4. Platform
☐	☐	5. Outriggers
☐	☐	6. Transport position
☐	☐	7. Hydr. system
☐	☐	8. El. system

4. TEST DRIVE/TEST LOADING

OK NO Load _____ kg

OK	NO	
☐	☐	1. Oper. movements
☐	☐	2. Controls
☐	☐	3. Symbols
☐	☐	4. Emergency stop
☐	☐	5. Safety limit switches
☐	☐	6. Sound signal

5. REPAIRS

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

DEFECTS AND NOTES:

Observed defects repaired: _____ / _____ 199 Signature _____

Name clarification _____

ENCLOSURES: ☐ Notes cont. on back side
☐ Other documents _____ pcs

Distrib.: Owner of MEWP
MEWP manual
Examiner

28.3 MEWP EXAMINATION RECORDS

(These records must be thoroughly filled in and kept with the MEWP for two years.)

RE-EXAMINATION (= maintenance check) *Date* _____ / _____ 199 _____

Place _____ *Examiner* _____

Address _____ *Name clarification* _____

BASIC INFORMATION ON MEWP

Manufacturer _____ *Model and type* _____

Importer / distributor _____ *Serial No./Year of manuf.* _____

Owner _____ *Address* _____

TYPE OF MEWP: BC ☐ *Boom chassis* SC ☐ *Scissor chassis* MC ☐ *Mast chassis*
CHASSIS: T ☐ *Truck* MS ☐ *MEWP (self-prop.)* Tt ☐ *Trailer (towed)* M ☐ *Monkey*
BOOMS: A ☐ *Articulated boom* T ☐ *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*

EXAMINATION SPOTS *OK= In order* *NO= To be repaired*

1. GENERAL REQUIREMENTS

OK	NO	
☐	☐	1. Manual
☐	☐	2. Locker for manual
☐	☐	3. Manufacturer's plate
☐	☐	4. Load plate
☐	☐	5. Warning plate
☐	☐	6. Plate of outriggers
☐	☐	7. Hazard colours
☐	☐	8. Operating zone scheme
☐	☐	9. Examination plate

2. SAFETY REQUIREMENTS

☐	☐	1. Indicator of horizont. level
☐	☐	2. Device to prevent raising
☐	☐	3. Device to prevent using of outr.
☐	☐	4. Position of platform
☐	☐	5. Emergency lowering system

3. GENERAL CONDITION

☐	☐	1. Chassis
☐	☐	2. Slewing ring
☐	☐	3. Booms
☐	☐	4. Platform
☐	☐	5. Outriggers
☐	☐	6. Transport position
☐	☐	7. Hydr. system
☐	☐	8. El. system

4. TEST DRIVE/TEST LOADING

OK	NO	
Load _____ kg		
☐	☐	1. Oper. movements
☐	☐	2. Controls
☐	☐	3. Symbols
☐	☐	4. Emergency stop
☐	☐	5. Safety limit switches
☐	☐	6. Sound signal

5. REPAIRS

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

DEFECTS AND NOTES:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Observed defects repaired: _____ / _____ 199 *Signature* _____

Name clarification _____

ENCLOSURES: ☐ *Notes cont. on back side*
☐ *Other documents* _____ *pcs*

Distrib.: *Owner of MEWP*
MEWP manual
Examiner

28.4 MEWP EXAMINATION RECORDS

(These records must be thoroughly filled in and kept with the MEWP for two years.)

RE-EXAMINATION (= maintenance check) Date _____ / _____ 199 _____

Place _____ Examiner _____

Address _____ Name clarification _____

BASIC INFORMATION ON MEWP

Manufacturer _____ Model and type _____

Importer / distributor _____ Serial No./Year of manuf. _____

Owner _____ Address _____

TYPE OF MEWP: BC ☐ Boom chassis SC ☐ Scissor chassis MC ☐ Mast chassis
CHASSIS: T ☐ Truck MS ☐ MEWP (self-prop.) Tt ☐ Trailer (towed) M ☐ Monkey
BOOMS: A ☐ Articulated boom T ☐ 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

EXAMINATION SPOTS OK = In order NO = To be repaired

1. GENERAL REQUIREMENTS

OK	NO	
☐	☐	1. Manual
☐	☐	2. Locker for manual
☐	☐	3. Manufacturer's plate
☐	☐	4. Load plate
☐	☐	5. Warning plate
☐	☐	6. Plate of outriggers
☐	☐	7. Hazard colours
☐	☐	8. Operating zone scheme
☐	☐	9. Examination plate

2. SAFETY REQUIREMENTS

OK	NO	
☐	☐	1. Indicator of horizont. level
☐	☐	2. Device to prevent raising
☐	☐	3. Device to prevent using of outr.
☐	☐	4. Position of platform
☐	☐	5. Emergency lowering system

3. GENERAL CONDITION

☐	☐	1. Chassis
☐	☐	2. Slewing ring
☐	☐	3. Booms
☐	☐	4. Platform
☐	☐	5. Outriggers
☐	☐	6. Transport position
☐	☐	7. Hydr. system
☐	☐	8. El. system

4. TEST DRIVE/TEST LOADING

Load _____ kg

OK	NO	
☐	☐	1. Oper. movements
☐	☐	2. Controls
☐	☐	3. Symbols
☐	☐	4. Emergency stop
☐	☐	5. Safety limit switches
☐	☐	6. Sound signal

5. REPAIRS

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

DEFECTS AND NOTES:

Observed defects repaired: _____ / _____ 199 Signature _____

Name clarification _____

ENCLOSURES: ☐ Notes cont. on back side
☐ Other documents _____ pcs

Distrib.: Owner of MEWP
MEWP manual
Examiner

28.5 MEWP EXAMINATION RECORDS

(These records must be thoroughly filled in and kept with the MEWP for two years.)

RE-EXAMINATION (= maintenance check) *Date*_____/ _____ 199 _____

Place _____ *Examiner* _____

Address _____ *Name clarification* _____

BASIC INFORMATION ON MEWP

Manufacturer _____ *Model and type* _____

Importer / distributor _____ *Serial No./Year of manuf.* _____

Owner _____ *Address* _____

TYPE OF MEWP: BC ☐ *Boom chassis* SC ☐ *Scissor chassis* MC ☐ *Mast chassis*
CHASSIS: T ☐ *Truck* MS ☐ *MEWP (self-prop.)* Tt ☐ *Trailer (towed)* M ☐ *Monkey*
BOOMS: A ☐ *Articulated boom* T ☐ *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*

EXAMINATION SPOTS *OK= In order* *NO= To be repaired*

1. GENERAL REQUIREMENTS

OK	NO	
☐	☐	1.Manual
☐	☐	2.Locker for manual
☐	☐	3.Manufacturer's plate
☐	☐	4.Load plate
☐	☐	5.Warning plate
☐	☐	6.Plate of outriggers
☐	☐	7.Hazard colours
☐	☐	8.Operating zone scheme
☐	☐	9.Examination plate

2.SAFETY REQUIREMENTS

☐	☐	1.Indicator of horizont. level
☐	☐	2.Device to prevent raising
☐	☐	3.Device to prevent using of outr.
☐	☐	4.Position of platform
☐	☐	5.Emergency lowering system

3.GENERAL CONDITION

☐	☐	1.Chassis
☐	☐	2.Slewing ring
☐	☐	3.Booms
☐	☐	4.Platform
☐	☐	5.Outriggers
☐	☐	6.Transport position
☐	☐	7.Hydr. system
☐	☐	8.El. system

4.TEST DRIVE/TEST LOADING

OK	NO	
Load _____ *kg*		
☐	☐	1.Oper. movements
☐	☐	2.Controls
☐	☐	3.Symbols
☐	☐	4.Emergency stop
☐	☐	5.Safety limit switches
☐	☐	6. Sound signal

5.REPAIRS

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

DEFECTS AND NOTES:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Observed defects repaired: _____ / _____ 199 *Signature* _____

Name clarification _____

ENCLOSURES: ☐ *Notes cont. on back side*
☐ *Other documents* _____ *pcs*

Distrib.: *Owner of MEWP*
MEWP manual
Examiner

29. TERMS OF WARRANTY

Kesla Oy gives a manufacturer's warranty for the mobile elevating work platforms (MEWP) for a period of twelve (12) months from the date of delivery to the real user or purchaser, yet not more than 18 months from delivery from the manufacturer.

The warranty will cover any defects in the machine or equipment due to faulty raw materials, structural failures and faulty workmanship. The defective part of the machine or equipment is replaced free of charge with a new or reconditioned part by the guarantor. This involves that the machine or the part (according to mutual consideration) will be delivered without freight costs to the manufacturer or to a service shop authorized by the manufacturer.

The warranty shall not apply to any faults or defects arising from normal wear, negligence or improper operation, faulty installation or incorrect or inadequate maintenance. The manufacturer will not assume any liability for any economical losses or for any concequential damage to persons or property which may incur through product failure.

The warranty shall be invalidated, if any repairs to the warranted product have been made by others than the manufacturer or a service shop authorized by the manufacturer or if the preset pressure settings have been altered.

The warranty will apply provided that the enclosed Bill of Delivery is returned to the manufacturer within fourteen (14) days from delivery.

A warranty claim must be submitted to the guarantor without delay, within fourteen (14) days at most after the fault appeared.

The warranty does not continue without a separate arrangement, when transferring the product to a third part.

30. COMPENSATION APPLICATION

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

Owner or holder of MEWP _____
Postal address _____ Tel. _____
Model and serial number of MEWP _____
MEWP delivered _____
Model and serial number of motor _____
SPECIFICATION ON DAMAGE AND ITS CAUSES _____

_____

_____

SPARE PART NUMBER AND DESCRIPTION OF THE PART WHICH HAS CAUSED THE DAMAGE _____

_____

MANNER OF USING THE MEWP (eg. renting) _____

_____

WORKING HOURS OF MEWP WHEN DAMAGED _____
Damage date: ____ / ____ 199 ____ Repaired by Date ____ / ____ 199 ____
Maker _____ Job No. _____
The damaged parts returned to Kesla Oy. Shipment date ____ / ____ 199 ____
Way of delivery _____ Station of origin _____
Freight bill No. _____
The damaged parts are originals ☐ Delivered as spare parts ☐
New parts delivered, delivery date no. _____
No. of invoice _____ Date ____ / ____ 199 ____

Signature _____

Name clarification _____

Enclosures _____

To be filled in by Kesla OYJ
Takuuhakemus saapunut: ____ / ____ 199 ____
Osat saapuneet: ____ / ____ 199 ____ Osien säilytyspaikka _____

_____

PÄÄTÖS
Takuuanomus hylätty, laskutetaan kaikki ☐ Hyväksytty työkust.ja varaosat ____

_____

_____

____ / ____ 199 ____ Tarkastanut _____
____ / ____ 199 ____ Hyväksynyt _____

31. BILL OF DELIVERY

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

Commissioning date: _____/ _____ 199____

SCANLIFT SL 240

Serial number _____ Owner _____

Petrol engine ☐ Street address _____

Diesel engine ☐ Postal code and town _____

Accessories _____ Tel. _____

Seller _____

✂----------

To be sent back to:

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

BILL OF DELIVERY

Commissioning date: _____/ _____ 199____

SCANLIFT SL 240

Serial number _____ Owner _____

Petrol engine ☐ Street address _____

Diesel engine ☐ Postal code and town _____

Accessories _____ Tel. _____

Seller _____

32. WARRANTY

_____ / _____ 199 _____

SERIAL NUMBER _____

SELLER: _____

33. DIRECTIVES AND STANDARDS APPLIED

When designing the machine the following directives and standards have been applied:

- EU declaration of conformity: directive 89/392/EEC as amended as well as the national State Council Decision VNp 1314/94.

- CE marking: directive 93/68/EEC.

- Protection against electromagnetic interference: directive 89/336/EEC.

- The manual delivered with the machine: according to directive 89/392/EEC and 91/368/EEC and also standards SFS-EN 292-2 and SFS-EN 414.

34. EU DECLARATION OF CONFORMITY FOR MACHINERY

(directive 98/37/EEC)

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

herewith declares that

Mobile elevating work platform(MEWP) SL 240

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 (State Council Decision on machine safety Vnp 1314/94).

Applied standard proposals when designing the machine: pr En 280.

Applied national standards and specifications when designing the machine:

SFS 4020, SFS 4023, SFS 4025, SFS 4026, SFS 4300, SFS 4302, DIN 15018 and standard proposal pr En 280.

Kesälahti _____
place *date*

_____
Signature

Arvo Rönkkönen, Produktion Manager
Name clarification, position

VTT MANUFACTURING TECHNOLOGY

EC TYPE-EXAMINATION CERTIFICATE

No VAL 059/524/98

SCANLIFT SL 240 D/B
Machine/Equipment

KESLA OY
Manufacturer / Orderer

Metsolantie 2
56800 KESÄLAHTI
FINLAND
Address

VNp 1314/94 (89/392/EEC)
Regulations and standards

VAL42- 7721
Research reports

From serial no. 97001 valid until 13.5.2003
Validity

Other conditions and limitations have been presented on the reverse side

Tampere, May 13, 1998
VTT MANUFACTURING TECHNOLOGY

Markku Lumme

Jorma Järvenpää

VALTION TEKNILLINEN TUTKIMUSKESKUS
VTT
STATENS TEKNISKA FORSKNINGSCENTRAL

VTT MANUFACTURING TECHNOLOGY
Factory Engineering
P.O.Box 170 [illegible] TAMPERE
FINLAND

Notified body no. 0401

VTT

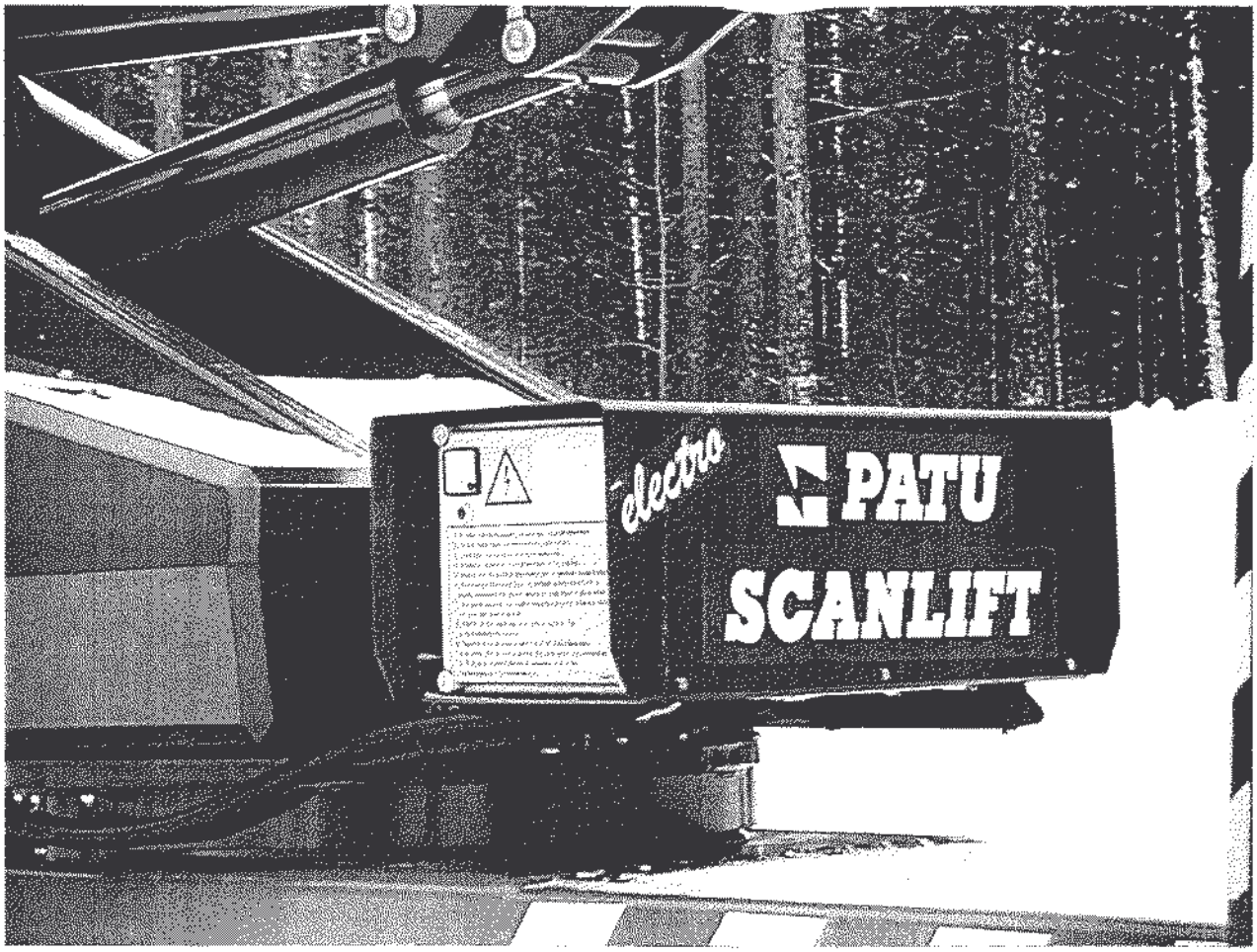
PATU SCANLIFT ELECTRIC MOTOR DRIVE MECHANISM

The Scanlift mobile elevating work platform can be equipped with an optional electric motor drive for indoor work. The electric motor unit consists of either a motor that runs on residential electricity (240 V / 50 Hz) or a motor that runs on industrial power electricity (380 V, three phase), a hydraulic pump, a motor attaching device, sheet metal covering, an electrical connection box, and suction and pressure hoses. The fixed displacement hydraulic pump is fitted with a master relief valve fixed to the pump. Control pressure is set at 230 bar.

The continuous operation of the electric valves is ensured by the battery charger which is permanently attached inside the electrical connection box. This recharges the startup battery whenever the Scanlift is connected to the power mains.

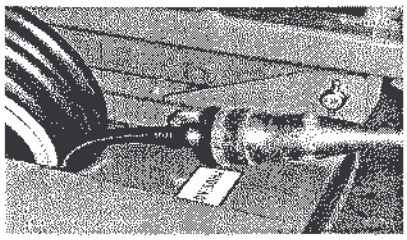
All of the Scanlift functions, outriggers, and booms can be used with the electric motor unit, and, at a lower power and slower speed, you can even drive it across a level floor. With the electric motor unit you must always be careful of where the electric cable is and that it is long enough.

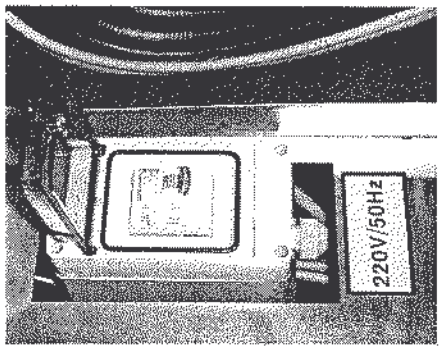
Always double-check the size of the fuses at the supply current connecting point before plugging in the cable. The residential current electric motor unit requires at least a 10 amp "slow blow" fuse, and the industrial power electric unit, three 10 amp fuses.



USING THE RESIDENTIAL CURRENT ELECTRIC MOTOR UNIT

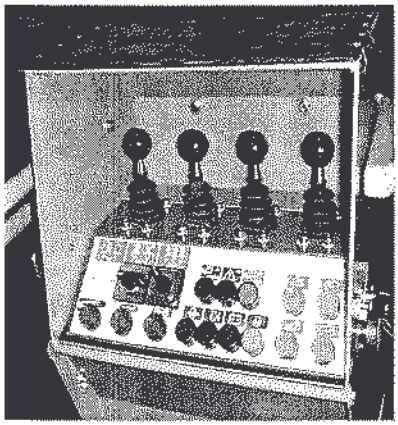
1. Turn off the internal combustion engine and all other operations. In other words, center all control levers and turn the ignition switch to 0. Turn the main power switch in the instrument box to the 0 position, too.
2. Connect one end of the power cable to the Scanlift residential current plug and the other end to the supply mains.
3. Make sure that the fault current limiter is in the ON position, and move the main power switch to 1. The switches are under the protective cover in the instrument box.

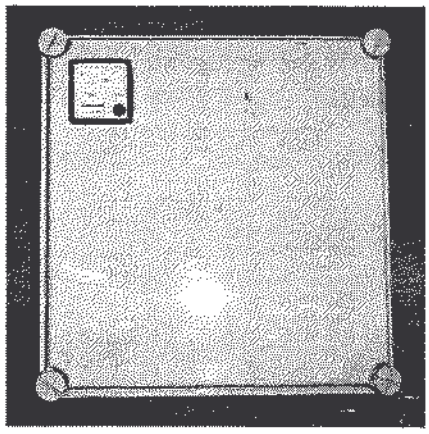




Pictures of the power cable, supply mains, and switches (fault current and main power)

4. Select either the platform or the lower controls as your control point. Insert the ignition key into the ignition switch and turn it to position 1. The Scanlift SL 240 electric motor goes into standby mode and the SL 185 electric motor starts. The SL 240 electric motor starts when you use one of the control levers, that is, when you move it out of the center position. At this time, the operation selected also begins.
5. If you turn the ignition key all the way to the start position, the electric motor stops, and the internal combustion motor starts running.
6. If the electric motor does not start or keep going after the initial steps, check the voltmeter to make sure the motor is receiving voltage of at least 220 V. Lower voltage might be due to the cable being too thin or too long, or to insufficient voltage reaching the wall socket. Exchange the cable for one with thicker wiring. Transfer the supply current receiver to a different wall or directly to the power distributor box.
7. All of the mobile elevating work platform's functions operate as usual, as described in the user guide.
8. The normal safety devices work: emergency stop buttons, emergency lowering pump, and turning off the motor with the ignition switch.
9. Turn off the electric motor by turning the ignition key to the 0 position. Switch the main power switch to off and detach the power cable from the supply mains and from the Scanlift plug.

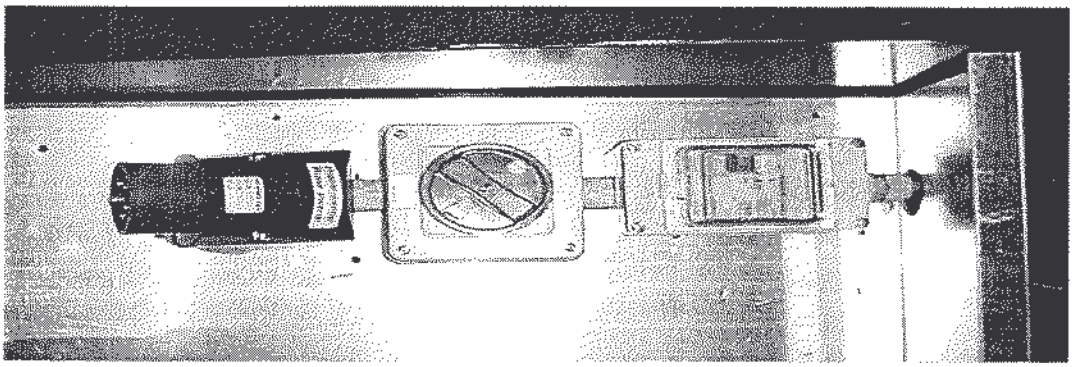




Pictures of the control points and the voltmeter (SL 185)

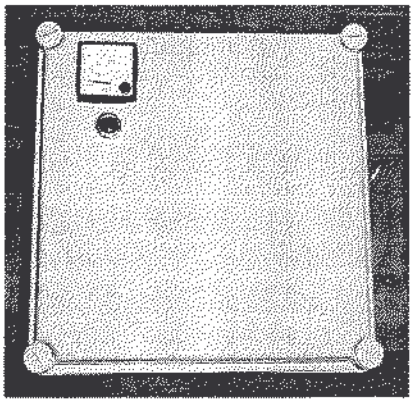
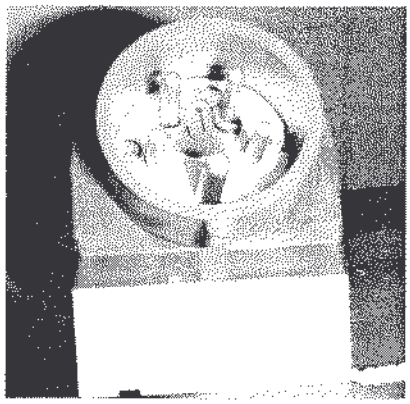
USING THE INDUSTRIAL POWER ELECTRIC MOTOR UNIT

1. Turn off the internal combustion engine and all other operations. In other words, center all control levers and turn the ignition switch to 0.
2. Attach one end of the power cable to the Scanlift's 5-pin connector and the other end to the power supply mains. The 5-pin connector is under the protective cover in the instrument box.
3. Make sure that the fault current limiter is in the ON position, and the main power switch is set at 1. The switches are also in the instrument box.



Picture of the 5-pin connector and the switches

4. Select either the lower controls or platform controls as your control point, insert the ignition key in the corresponding ignition switch, and turn the key to position 1. The electric motor of the SL 240 will go into standby mode, or the SL 185 motor will start.
5. If you turn the ignition key all the way to the start position, the electric motor stops, and the internal combustion motor starts running. The correct direction for the electric motor to revolve is indicated on a sticker on the fan guard at the front of the motor.
6. If the electric motor does not start after the initial set-up steps, check the three-phase current phasing. The system is equipped with a device to prevent the motor from revolving in the wrong direction, and you are warned of incorrect phasing by an indicator light on the cover of the motor drive unit's electric coupling box. If the light is on, the phasing is wrong. Change the phasing by detaching the mains cable from the plug in the instrument box and using a screwdriver to turn the plug's two upmost pins 180 degrees to the left or right. Before you connect the mains cable again you should turn the ignition key to the 0 position and make sure all operations have been turned off.
If even one fuse is loose or blown, the phase control light goes on and the electric motor will not start. Before you change a fuse, find out what caused it to overheat. Correct the error, change the fuse, and try again to start the electric motor.

Pictures of the warning light, the voltmeter, and the plug

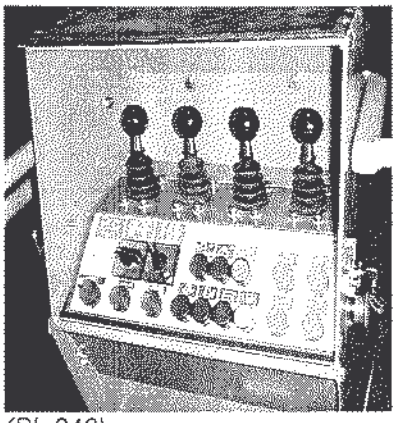
7. If movements are slow and the electric motor is heating up, it may be because the cable is too long or too thin. Check the voltmeter on the cover of the unit's electricity box to be sure that load voltage reaches at least 350 V. Another cause might be low voltage at the mains

outlet. Change the mains supply point or connect the cable directly to the electricity distributor point.

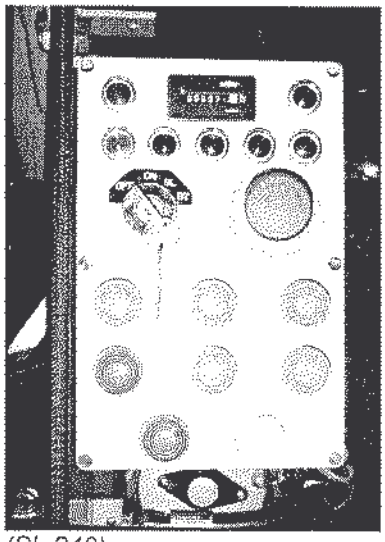
8. All of the mobile elevating work platform functions should work according to the user guide. When driving the Scanlift you must be careful of the electric cable.

9. Turn off the Scanlift by turning the ignition key to the 0 position. Turn the main power switch to off, too, and detach the supply cable from both the power mains and Scanlift.

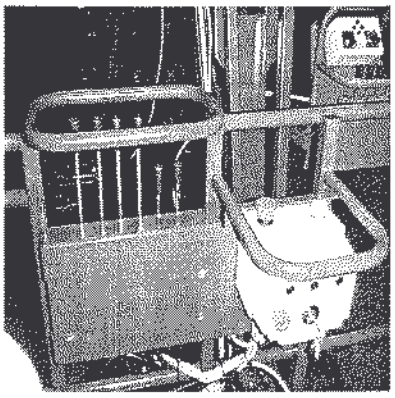
10. All of the safety devices work: emergency stop buttons and emergency lowering pump.



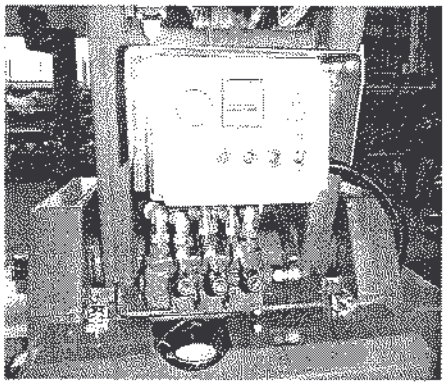
(SL 240)



(SL 240)



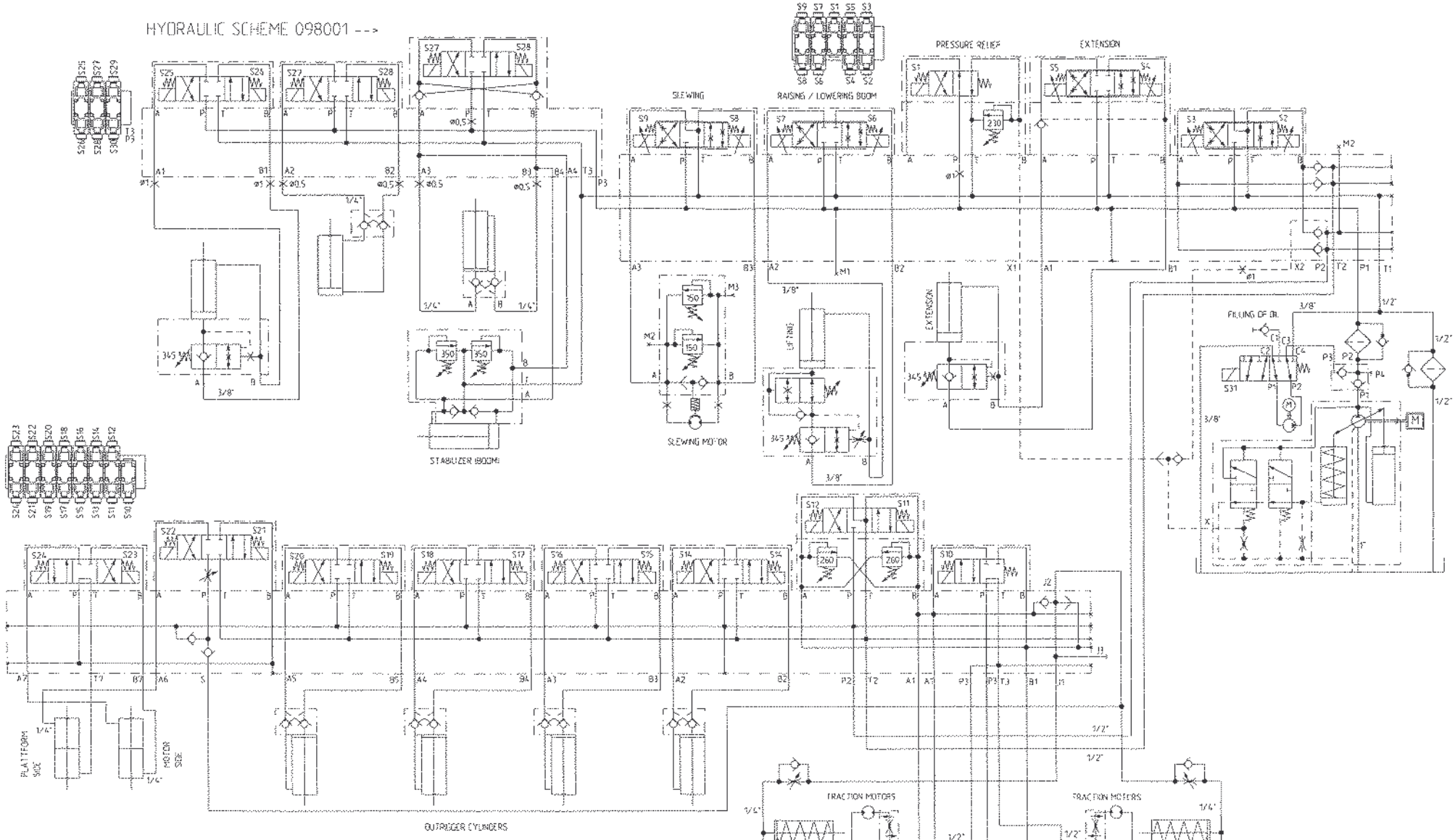
(SL 185)



(SL 185)

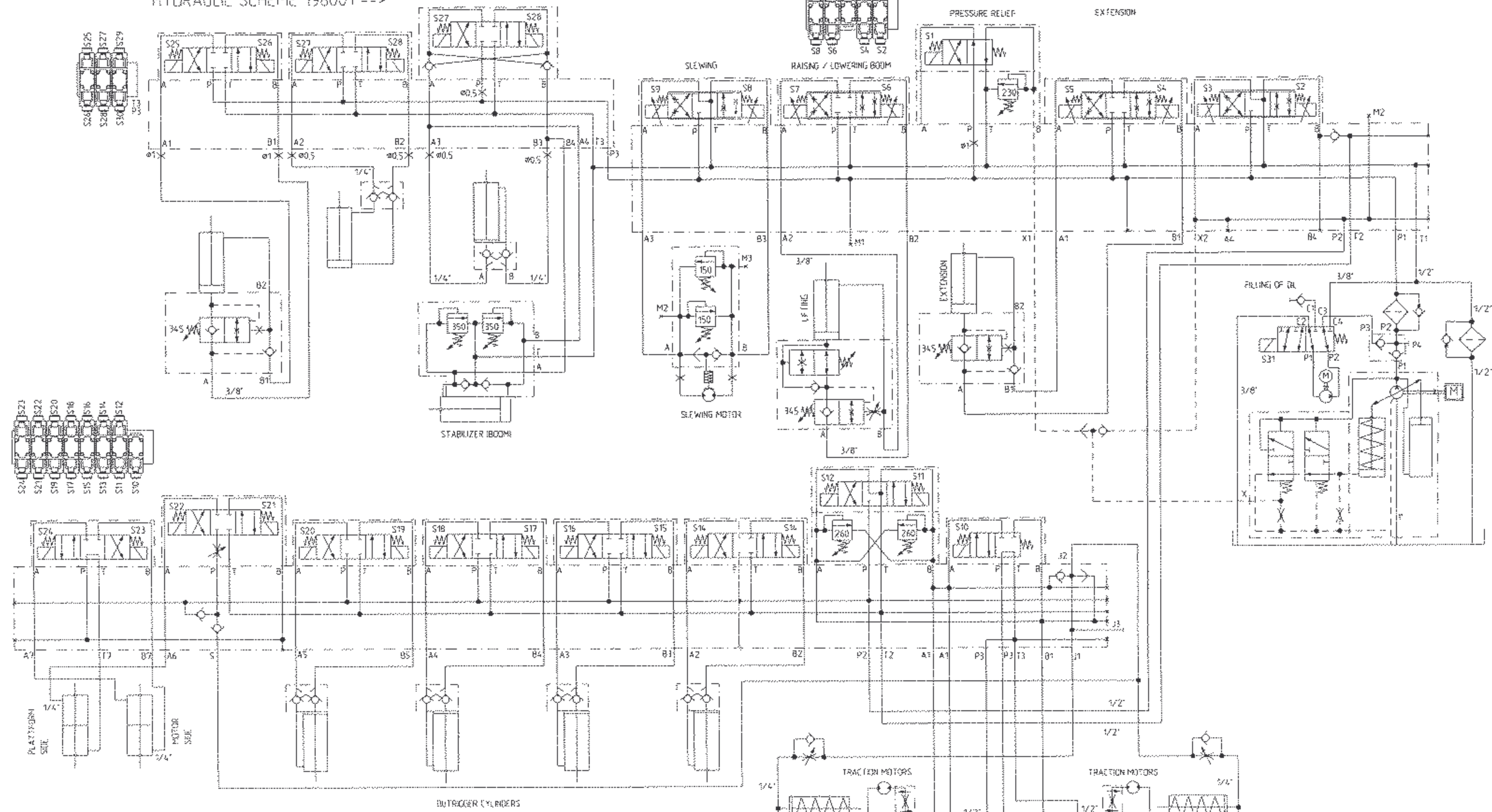
Pictures of the control points (SL 240)

HYDRAULIC SCHEME 098001 -->

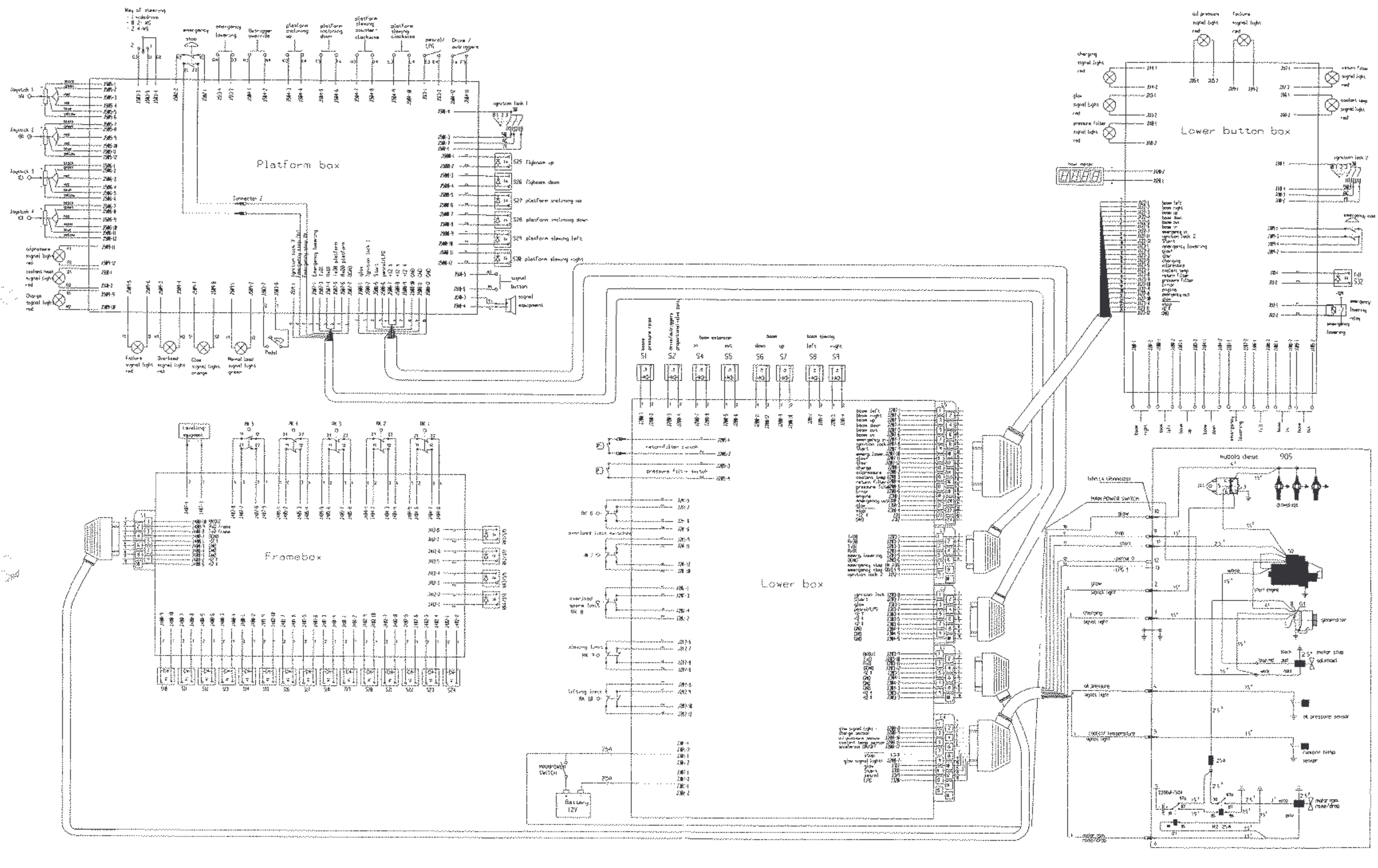


Solenoid energized	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30
Extension out	X				X																									
Extension in	X			X																										
Boom raising	X						X																							
Boom lowering	X					X																								
Slewing to the left	X							X																						
Slewing to the right	X								X																					
Jib up	X																							X						
Jib down	X																								X					
Platform rotation to the left	X																									X				
Platform rotation to the right	X																										X			
Platform up with stabilizer cylinder	X																											X		
Platform down with stabilizer cylinder	X																													X
Slow slewing forwards		X								X			X																	
Slow slewing backwards		X								X		X																		
Fast slewing forwards		X									X																			
Fast slewing backwards		X									X																			
Wheel steering alternatives		X																			X									
		X																			X	X								
		X																			X		X							
		X																				X	X							
		X																					X							
		X																			X			X						
Pressure fix or position as required		X																												

HYDRAULIC SCHEME 198001 -->



Solenoid energized	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	130
Extension out	X				X																									
Extension in	X			X																										
Boom raising	X						X																							
Boom lowering	X					X																								
Slewing to the left	X							X																						
Slewing to the right	X								X																					
Jib up	X																								X					
Jib down	X																									X				
Platform rotation to the left	X																										X			
Platform rotation to the right	X																											X		
Platform up with stabilizer cylinder	X																												X	
Platform down with stabilizer cylinder	X																													X
Slow driving forwards		X								X	X																			
Slow driving backwards		X								X		X																		
Fast driving forwards		X									X																			
Fast driving backwards		X										X																		
Wheel steering alternatives		X																			X									
		X																				X								
		X																			X		X							
		X																				X	X							
		X																				X		X						
		X																			X			X						
Outriggers down together or separately		X												X		X		X		X										
[illegible]		X											X		X		X		X											


Platform box
Lower button box
Lower box
Framebox
Connector 2
emergency stop
emergency lowering
Outrigger override
platform inclining up
platform inclining down
platform slewing counter-clockwise
platform slewing clockwise
petrol/LPG
Drive / outriggers
ignition lock 1
ignition lock 2
S25 flyboom up
S26 flyboom down
S27 platform inclining up
S28 platform inclining down
S29 platform slewing left
S30 platform slewing right
signal button
signal equipment
Joystick 1
Joystick 2
Joystick 3
Joystick 4
Pedal
Failure signal light red
Overload signal light red
Glow signal light orange
Normal load signal light green
charging signal light red
glow signal light red
pressure filter signal light red
oil pressure signal light red
failure signal light red
return filter signal light red
coolant temp signal light red
hour meter
emergency stop
emergency lowering relay
boom pressure relief
boom extension in out
boom down up
boom slewing left right
S1
S2
S4
S5
S6
S7
S8
S9
return filter switch
pressure filter switch
overload limit switches
overload space limit
slewing limit
lifting limit
levelling equipment
Battery 12V
mainpower SWITCH
kubota diesel 905
glowplugs
start engine
generator
motor stop solenoid
oil pressure sensor
coolant temp sensor
motor rpm raise/drop
main POWER SWITCH
charging signal light
oil pressure signal light
coolant temperature signal light