OPERATION MANUAL
COMBISTAR SCISSOR LIFT
MODEL B-195DL25-4WD/P/N

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1 GENERAL INFORMATION

1.1 USE OF THIS MANUAL

This manual is a guideline for a safe and efficient use, maintenance and repair of minor problems of the HOLLAND LIFT scissor lift, model B-195DL25-4WD/P-N.
Persons who are performing maintenance on these machines must read, understand and obey the contents of this manual.
It is obligatory to keep the sequence of the given instructions, which increases the safety of operating personnel and bystanders.
Management is obliged to train operating personnel in the use of the machine with the help of this manual and with due observance of the applicable rules and indications.
Only after one has understood the manual the scissor lift may be operated.
The manual should be considered as a permanent part of the machine and should remain with the machine at the appropriate place (aluminium tube in hydraulic compartment)

1.2 OTHER DOCUMENTATION

1.2.1 Parts

See parts book.

1.2.2 Electric circuit

See plan.

1.2.3 Hydraulic circuit

See plan.

1.3 WARRANTY CLAUSE

HOLLAND LIFT INTERNATIONAL B.V. delivers according to the Metaalunie-Conditions, 1 January 2001.('Metaalunie': Dutch Organisation of Entrepreneurs in Small and Medium-Sized Businesses in the Metalworking and Mechanical Engineering Industry)

1.4 VALIDITY OF THIS MANUAL

All mentioned regulations, options and instructions are valid only for scissor lifts as built and supplied by **HOLLAND LIFT INTERNATIONAL B.V.** in original execution.

1.5 MODIFICATIONS

It is not allowed to modify the scissor lift, unless written permission is received from **HOLLAND LIFT INTERNATIONAL B.V.**
The information in respect of construction, material properties and procedures as stated in this manual are based on data known at the time of publication. Modifications of construction are possible. For this reason the contents of this manual are subject to change without prior notice by **HOLLAND LIFT INTERNATIONAL B.V.**

1.6 LIABILITY

HOLLAND LIFT INTERNATIONAL B.V. takes no responsibility for:
- damages resulting from the use of the scissor lift;
- printing errors in this manual and its consequences.

1.7 WARNINGS AND SYMBOLS

Safety instructions and warnings in this manual are indicated by the following symbols and pictograms.

➢ A working procedure, circumstance etc. which require special attention.

WARNING/CAUTION!
A **WARNING** refers to possible injury of the operator or mayor damage to the machine when the operator does not or insufficiently executes the working procedures.

CAUTION! Special requirements in respect of commands and prohibitions to prevent damage.

Danger - electrocution hazard.

Not following the instructions can result in death or major injury.

Danger - pinch area.

Use the appropriate safety equipment during working.

Flammable substance

The scissor lift is equipped with decals with instructions for safe and effective use.

2 TECHNICAL DATA

2.1 STANDARD EXECUTION

- Control box with plug-in connection on platform and chassis.
- Auxiliary switch on the lower control box for lifting/lowering.
- Proportional drive.

2.2 OPTIONS

- 230 VAC connection at the platform.
- Rotating beacon in addition to acoustic travel alarm.
- Cargo sliding door
- Driving on full height.

2.3 THE MANUFACTURER DECAL

CAUTION:
Never remove the manufacturer decal!

Specific details of the scissor lift can be taken from the manufacturer decal.

Fig. 1 Manufacturer decal

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2.4 TECHNICAL DATA MODEL B-195DL25-4WD/P/N

Suitable for indoor use	Yes
Suitable for outdoor use	Yes
Max. wind speed	12,5 m/s
Working height, approx.	21,54 m
Max. platform height, approx.	19,54 m
Min. platform height, approx.	2,45 m
Platform (retracted)	4,37 x 2,30 m
Platform (extended)	6,17 x 2,30 m
Platform extension, manual	1,80 m
Transportation height with railings	3,63 m
Transportation dimension (lxw)	4,73 x 2,44 m
Transportation height railings down	2,85 m
Wheel base	3,07 m
Ground clearance (centre)	270 mm
Turning radius (outside)	5,05 m
Solid tires	n.a.
Foam filled tyres (Solideal)	12 x 16,5

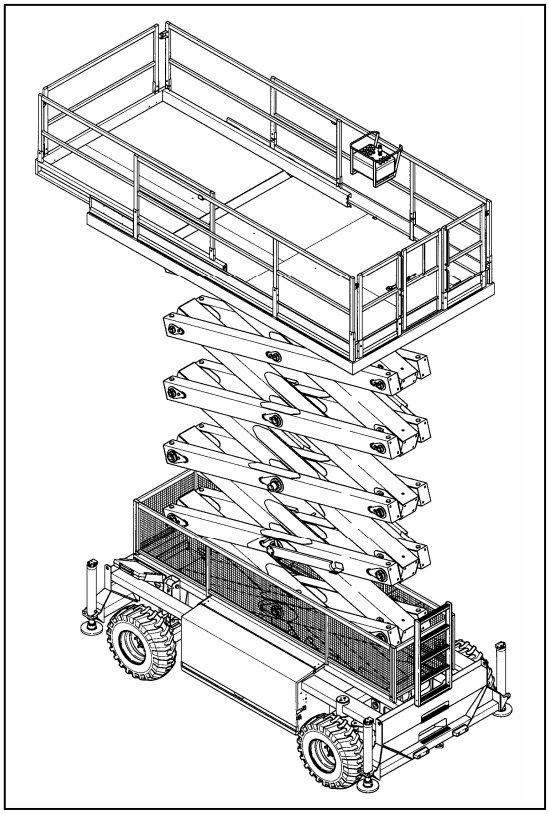

Fig. 2 Type B-195DL25-4WD/P/N

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Max. load capacity (platform retracted)	500 kg (2 pers. + 340 kg)
Max. load capacity (platform extended)	500 kg (2 pers. + 340 kg)
Lift/lowering time (max. load	95/45 sec.
Driving speed, high	2,6 km/h
Driving speed, low	0,5 km/h
Grade ability (platform lowest position)	± 30%
Max. inclination grade/slope	3° / 2° (mobile till 8 meter, choice switch “0”)
Max. inclination grade/slope	1º / 1º (mobile till 19,5 meter, choice switch “1”)
Operating weight (standard machine)	12.280 kg
Max. wheel pressure (with max. tilt and altitude)	9.070 kg (10,7 kg /cm² use this value with a + 25% safety factor; 13,4 kg / cm²)
Max. stabilizer ground pressure	18,5 kg/cm² (Ø 250 mm)
Max. stabilizer plate ground pressure	5,7 kg/cm² (40 x 40 cm)
Max. towing speed	3,6 km/h (1,0 m/s)

3 SAFETY PRECAUTIONS AND PROVISIONS

3.1 IMPORTANT: USE ONLY AS DESIGNATED

1 The scissor lift is built in compliance with the current safety guide lines.

2 Use the scissor lift only:
- in correct technical condition;
- as designated;
- with due observance of the instructions in this manual.

Do not use the machine in explosive and fire hazardous environments!

NEVER use the machine working in close distance of electrical power lines.

The machine is intended only for working on heights. The stated maximum capacity and the number of persons may not be exceeded. Other use, for instance supporting or lifting of constructions, is not in compliance with the regulations. HOLLAND LIFT INTERNATIONAL B.V. is not responsible for any damage resulting of incorrect use.

4 Proper use of the operation manual and compliance with the instructions for inspection and maintenance are part of the intended use of the machine.

5 It is only allowed, when one chooses to drive on full height (19,5 m), to do this with the following safety demands;
- the operator should be fully aware of the driving on height (19,5 m),
- the driving surface must be even, level and free of snow & ice
- the driving surface must be free of obstacles
- always work with two persons. One on the platform and one on the ground. They have to maintain contact with each other by walkie-talkie to increase safety (visibility is poor on this height). In standard situation; the machine driving capacity has to be reduced to 8 meters (put the key switch back in 0-position on the electric cabinet).

3.2 APPLICATIONS

The scissor lift, type B-195DL25-4WD/P/N, is suitable for both indoor and outdoor use, with an ambient temperature between -15° C and +40° C.
The driving surface must be even, level, free of snow & ice and free of obstacles.
The floor needs to have enough carrying capacity. Outdoor operations at a wind speed higher than 12,5 m/s (wind force 6) are not permitted.

Specific details of the machine can be found on the manufacturer decal. (Fig. 1).

The average rate of acceleration (due to vibration) of which the operator will be exposed during use of the machine will not exceed 2,5 m/s².

The noise at the workplace, produced by the machine, will not exceed 70dB (A). Exposure to noise for extended periods of time, without wearing ear protection, may damage the hearing.

3.3 BASIC PROVISIONS

1 The operation manual is a permanent part of the machine and must remain with the machine. We advise to leave a copy in the tube, which is provided in the hydraulic compartment.
2 The operator of the scissor lift must be aware the contents of this manual. Special attention is required to the paragraph: SAFETY PRECAUTIONS AND PROVISIONS.
3 Respect all instructions for safe and efficient use. Keep the decals in proper condition.
4 Modifications of the construction of the machine may only be executed with written permission of **HOLLAND LIFT INTERNATIONAL B.V.**
5 Parts may only be replaced by parts supplied by **HOLLAND LIFT INTERNATIONAL B.V.** or parts of equal quality. **HOLLAND LIFT INTERNATIONAL B.V.** maintains the right to define whether these parts are equal. Only a written statement guaranties the responsibility of the manufacturer.
6 Maintain the intervals for inspections and checks.
7 Keep all grips, steps, handrails and the platform surface free from pollution, snow and ice.
8 Inspections, tests, repairs or modifications have to be added to the history of the machine.

3.4 CHOICE OF PERSONNEL AND QUALIFICATION

1 Operation of the scissor lift is allowed only by persons older than 18 years, who are familiar with the regulations, operation and the instructions of the machine, supplied by **HOLLAND LIFT INTERNATIONAL B.V.**
2 Only maintenance, as described in this manual, should be executed by the user.
3 Maintenance, not described in this manual, as well as repair and replacement of parts, can only be done by authorised personnel.
4 Persons who are under the influence of alcohol, drugs or medications, which effect their physical condition, are not permitted to operate the machine.

3.5 SAFETY INSTRUCTIONS IN DIFFERENT SITUATIONS

3.5.1 Normal use

1 Avoid any operation that can compromise safety.
2 Use and operate the machine only when all safety provisions have been checked and are functioning.
3 Do not exceed the maximum work-load.
4 Keep the driving and working area free from obstacles.
5 Be sure that the machine is operating on a firm and level surface (see 2.4).
6 Enter and leave the platform only through the access gate, with the platform in the ground position.
7 To prevent unauthorised use of the machine, the control box has to be removed after operation.
8 It is **strictly forbidden** to:
- carry overhanging loads;
- connect banners or billboards to the platform or scissor mechanism;
- increase the size of the platform floor;
- stand on the platform rail;
- increase the height of the platform floor;
- use the scissor lift close to electrical installations or lines;
- tow the machine on a public road;
- change the safety provisions;
- change the settings of the machine;
- operate the scissor lift with the control box, outside the platform, with exception of transport and maintenance.

9 Be sure that the driving area is clearly visible, if necessary install extra lighting.
10 During normal use, the hydraulic compartment should be closed and locked.
11 Avoid contact with obstacles and take care of sufficient distance between the machine and other moving obstacles.
12 **CAUTION!**
- Avoid contact with moving parts of the machine (scissor mechanism and steering gear).
- Keep out of the working area of the scissor lift whilst lowering the platform.
- Avoid danger caused by falling parts from the platform.

13 The operator of the scissor lift should ensure that no unauthorised persons are in the working area of the scissor lift.
14 When one uses fire-causing tools on the *wooden* platform floor, one should be equipped with a fire extinguisher.

3.5.2 Safety during maintenance

1 Perform the maintenance and repair only when the machine is standing on a level and firm surface. Use wedges to avoid the machine to roll away.

2 When the machine is switched of during maintenance or repair, precautions must be taken to avoid unintended use of the machine.
- Lock the main switch and remove the key;
- Make sure that the precautions cannot be manipulated;
- When the machine cannot be locked sufficiently, place a "**DO NOT SWITCH ON"** sign. State date and time to avoid warnings to be understood as non relevant.

3 Cleaning the scissor lift with water, steam or other liquids and detergents, can only be done if all components which are not resistant to liquids, have been sufficiently protected.

4 After cleaning, the protection of the covered components should be removed

5 Safety devices, which have to be removed for maintenance or repair, should be mounted and adjusted immediately after the operations.

CAUTION!
Authorised personnel should execute these operations only.

6 Be sure oil, grease and other environmentally unfriendly materials will be processed in a safe and environmentally friendly way.

7 After carrying out repairs, all functions have to be tested before the machine can be used again.

3.5.3 Warnings in respect of specific dangers

CAUTION!
The exhaust pipe of the diesel engine is extremely hot during and after use of the scissor lift.

Electrical system

In case the machine makes contact with high tension lines, the instructions mentioned below have to be followed:
- Stay on the platform;
- Remove the machine from the danger zone;
- Warn others not to touch the machine;
- Cut off the electrical power;
- Leave the machine only when the power has been cut off.

The scissor lift is not protected against lightning. It is not allowed to use the machine during thunderstorms.

Hydraulic system

1. Hydraulic oil **can** become hot during operation. Avoid skin-contact with the hot oil!
2. Hydraulic lines, which are under pressure, should not be touched!
3. Pressurised hydraulic oil can perforate the skin and cause fatal injuries Do not try to find leakage's manually!
4. Release the pressure of the system before a pressure hose can be connected or disconnected.
5. Leaking hydraulic oil can cause fire!
6. If hydraulic oil has perforated the skin, one should be treated immediately by a specialised doctor.

7. Use the necessary safety equipment during operation.

3.5.4 Safety during transportation

1. Loading, unloading and transportation of the scissor lift should take place according to the instructions of this operation manual.
2. When towing the machine, the instructions in respect of transportation position, allowable speed and transportation route should be followed (see 5.5).
3. Use of the machine should take place according to the operation manual.
4. The platform has to be retracted during transportation.
5. Important statements in respect of driving on slopes up to 30%:
   - max. load on platform 80 kg (1 person);
   - platform in ground position;
   - steering wheels at bottom end of the slope;
   - no sharp steering movements during motion of the scissor lift;
   - slopes only allowed in longitudinal direction.
6. Driving on slopes of more than 30%, only with a reliable winch (see 2.4)!

4 DESCRIPTION OF THE SCISSOR LIFT

4.1 POSITION OF THE SAFETY DEVICES

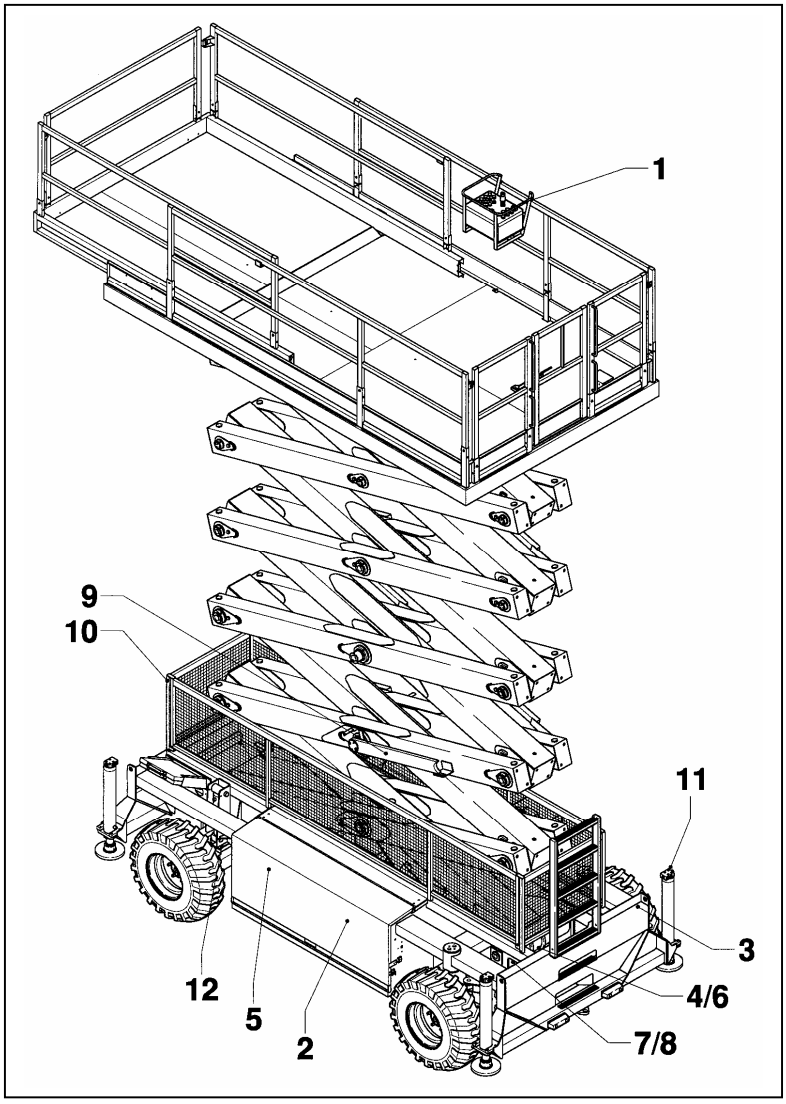

Fig. 3 Position safety devices

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1.	Emergency stop	7.	Tilt alarm limit switch
2.	Travel alarm, acoustic	8.	Safety device lowering
3.	Travel alarm, visual	9.	Safety props
4.	Limit switch (high speed)	10.	Safety guard
5.	Valves	11.	Safety device, piping & hose
6.	Limit switch lift cylinder	12.	Oscillating axle

4.2 SAFETY DEVICES

4.2.1 Emergency stop

A red emergency stop button is installed on the control box (Fig. 4-1). Pushing this button will switch off all functions. Turning the button will switch on all functions with a delay of 2 seconds. The diesel engine can be started again.

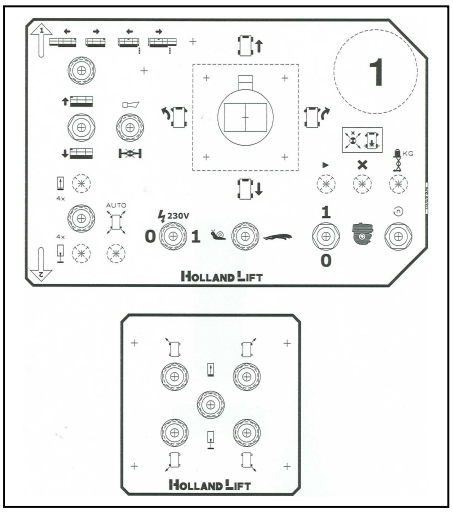

Fig. 4 Control box
1. Emergency stop

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4.2.2 Travel alarm, acoustic

The scissor lift is equipped with an acoustic travel alarm.

4.2.3 Travel alarm, visual

The machine can be equipped with two beacons, which will switch on automatically during motion.

4.2.4 Limit switch (high speed)

With a platform height above 4 meter, the low speed will be switched on automatically.
With a platform height above 8 meter the driving and steering will be switched off automatically.
Driving and steering will be switched on again, as soon as the platform height is less than 8 meter.

4.2.5 Driving on slopes

Before driving the scissor lift on a slope, the selector switch for the driving speed must be put on position 0. During driving on a slope the driving speed will be decreased automatically and the selector switched is out of order.

Only with the platform in ground position can the scissor lift mount a slope up to 30% and no sharp steering is allowed.
The scissor lift can only mount a slope in the driving direction.
When driving on a slope over 30%, a reliable winch has to be used (consider the weight of the machine).

4.2.6 Tilt alarm

When exceeding the maximum grade/slope angle, at a platform height above 4 meter,
a warning signal sounds and all functions will be switched off, with exception of the lowering function of the platform.
To use the machine again, the platform has to be lowered and the machine has to be placed on a level surface.

Fig. 5 Tilt alarm

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4.2.7 Load Sensing System

This scissor lift model is equipped with a load sensing system. When exceeding 80% of the rated load an acoustic warning signal will be activated together with an overload sensing light. When exceeding the rated load (between 100-120%) all normal movement of the machine will be prevented. An acoustic warning signal will sound and the overload sensing light will burn. Normal movement can only restart if the overload is removed!
We recommend you to bring some means of communication on to the platform just in case of any malfunctioning.

N.B.: *When this scissor lift is switched on, the load sensing system needs to perform a RAM-test. Therefore the machine will not function during 10 seconds after switching on the main switch and the emergency stop button. The continuous sounding of the overload warning signal indicates this period of ten seconds.*

4.2.8 Safety device lift cylinder

A limit switch prevents the lift cylinder from damage by stopping the power, just before reaching the maximum stroke.

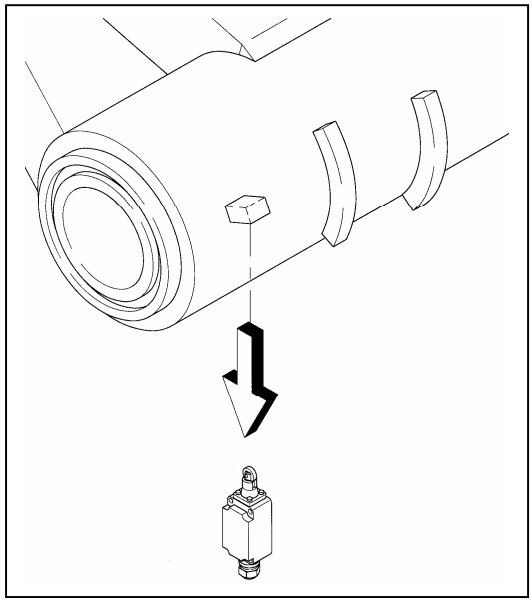

Fig. 6 Safety device lift cylinder

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4.2.9 Emergency lowering device

In case of an emergency the platform can be lowered by opening the emergency-lowering valve, which is mounted on the lift cylinder. Pulling the knob on the valve can activate it.
First the extended platform has to be retracted with the hand pump (Fig. 8) before emergency lowering.

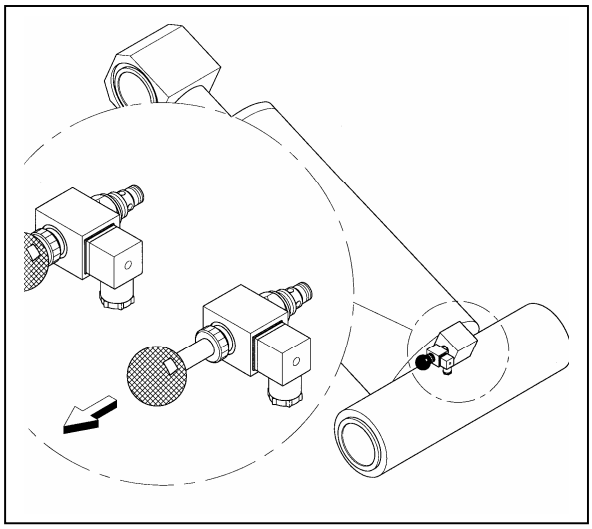

Fig. 7 Emergency lowering valve

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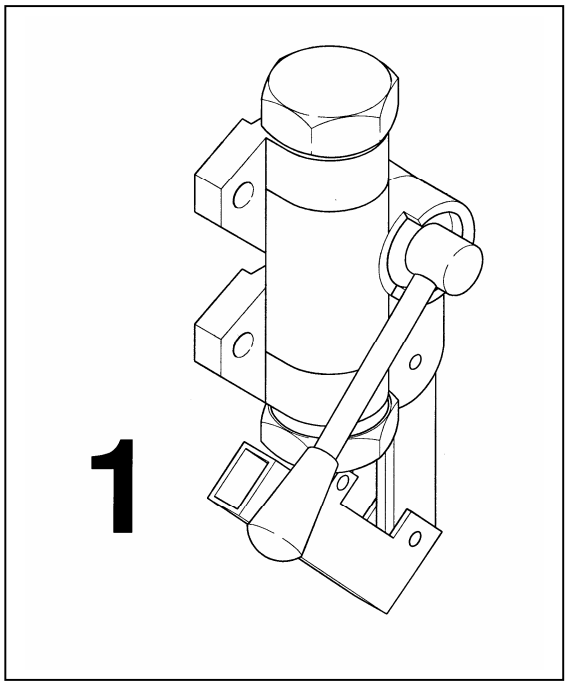

Fig. 8 Hand pump

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4.2.10 Safety device, piping and hose

The lift cylinder is operated with an electrically controlled check valve. Lowering is possible only with a signal from the control box switch, also in case of hose leakage.

A throttle valve, mounted in the lift cylinder limits the lowering speed (Fig. 9-1).

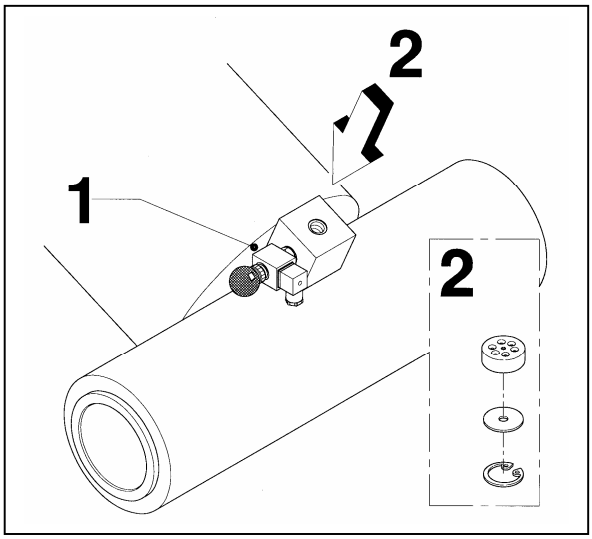

Fig. 9 Throttle valve

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4.2.11 Safety prop

Operations on or between the scissor arms are only allowed when the safety prop (Fig. 10) secures the scissor mechanism.
During use of the safety prop, the scissor lift must not have a load on the platform.

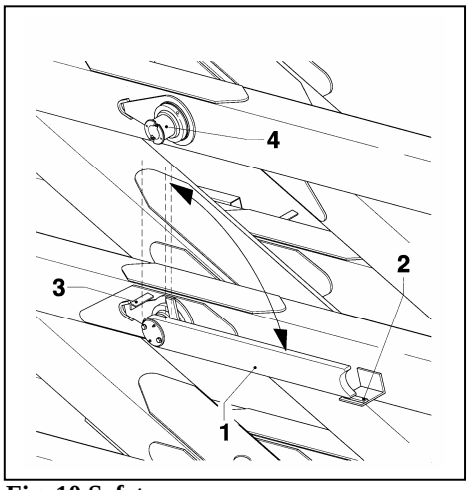

Fig. 10 Safety prop 150

4.2.12 Safety guard

A safety guard on the chassis prevents pinching of body parts by the moving scissor arms.

It is prohibited to use the machine if the safety guard is not mounted, or operating correctly.

When the safety guard was removed during maintenance, it has to be remounted correctly.

4.2.12 Cargo sliding door (optional)

When the scissor lift is built with the option of a cargo sliding door, one should consider that the door has an open detection (Fig. 11-4). The scissor lift control box will be shut down when the door is open (lowering is also not possible). The control box will be operational at once, when the door is closed. The lock (Fig. 11-1/2) on the cargo sliding door has to be closed before working on the platform. Don't forget to disconnect the door detection plug (Fig. 11-5) when the safety guard has to be removed during transport. Don't forget the extra fixation (Fig. 11-3/6) of the cargo sliding door above and under the platform.

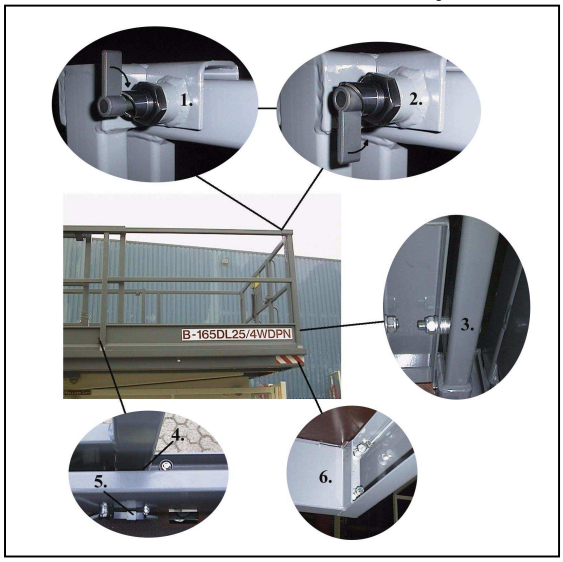

Fig. 11 Cargo sliding door

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Before using the scissor lift after transport, reinstall the railings properly and make sure that all locking pins are in place and pay extra attention on the items mentioned above.

4.2.14 Platform during transportation

During transportation the platform extension has to be in the retracted position and the railings have to be in the fold down position and mounted properly. Before using the scissor lift after transport, reinstall the railings properly and make sure that all locking pins are in place.

4.2.15 Oscillating axle

The oscillating axle allows for positive grip in rough terrain with a four-wheel drive scissor lift. When the oscillating axle is not horizontal and the platform height is above 4 meter, the oscillatingaxle will be blocked and the driving function will be switched off automatically. A warning light at the control box will be blinking. To get the oscillating axle in horizontal position again, the scissor lift must be moved to a flatter surface and the platform height should be less than 4 meters.

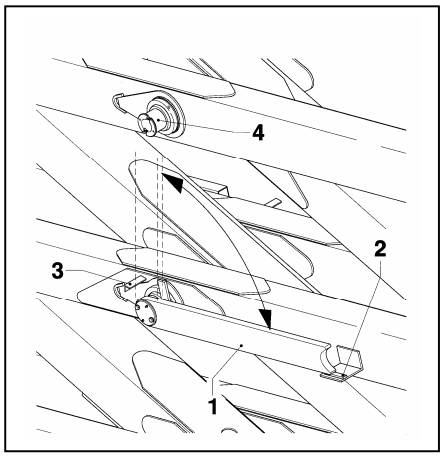

Fig. 12 Oscillating axle
1. Oscillating cylinders
2. Oscillating part of axle
3. Fixed part of axle

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4.2.16 Stabilisers

The scissor lift can be placed level on irregular ground using the stabiliser cylinders. The stabiliser cylinders can be operated only for a platform height lower than 4 meter. When the stabiliser cylinders are not completely retracted the scissor lift cannot be driven. A green lamp (Fig. 16-12) will then flash and to deactivate the safety device, switch 8 (Fig. 16-8) should be depressed until the green lamp burns continuously. When the selection switch up/down or the emergency stop button are operated the safety device of the stabiliser cylinders will be reactivated, meaning that the height will have to be reduced to less than 2,5 meter in order to deactivate this safety device.

4.3 OTHER COMPONENTS

4.3.1 Diesel engine

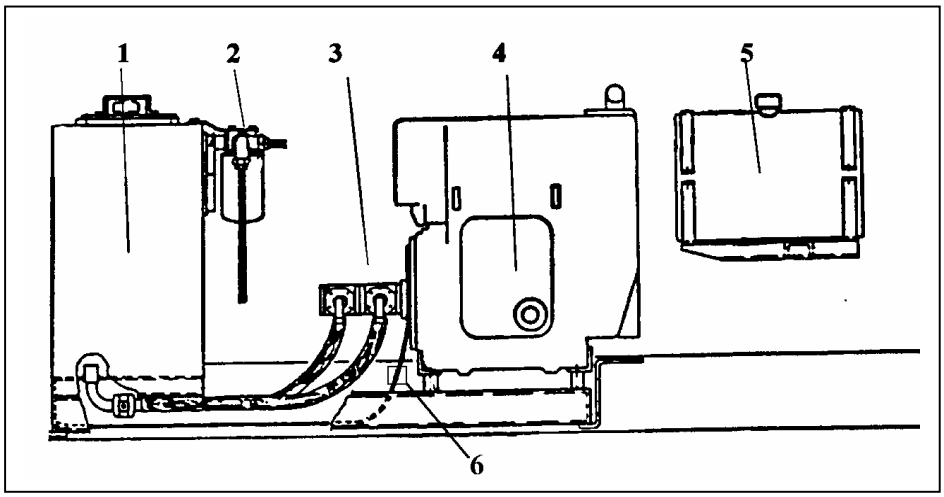

Fig. 13 Diesel engine

1.	Hydraulic tank	4.	Diesel engine
2.	Return filter	5.	Diesel tank
3.	Pumps		

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4.3.2 Valve cabinet

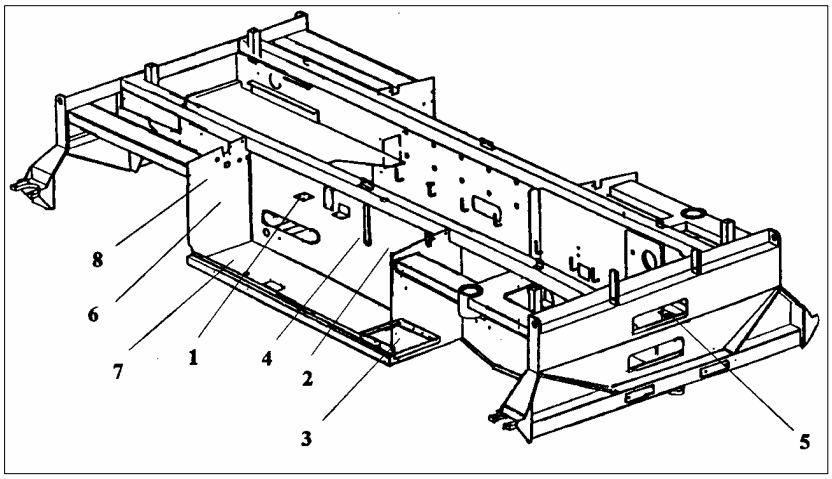

Fig. 14 Diesel engine and hydraulic compartment

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1.	Tilt alarm	5.	Limit switches
2.	Electrical system	6.	Hand pump
3.	Starter batteries	7.	Valves
4.	Auxiliary switch lifting/lowering	8.	Plug connection chassis

5 OPERATION

5.1 GENERAL

When operating the scissor lift the safety precautions should be observed first (see chapter 3).

5.2 POSITION OF THE CONTROLS

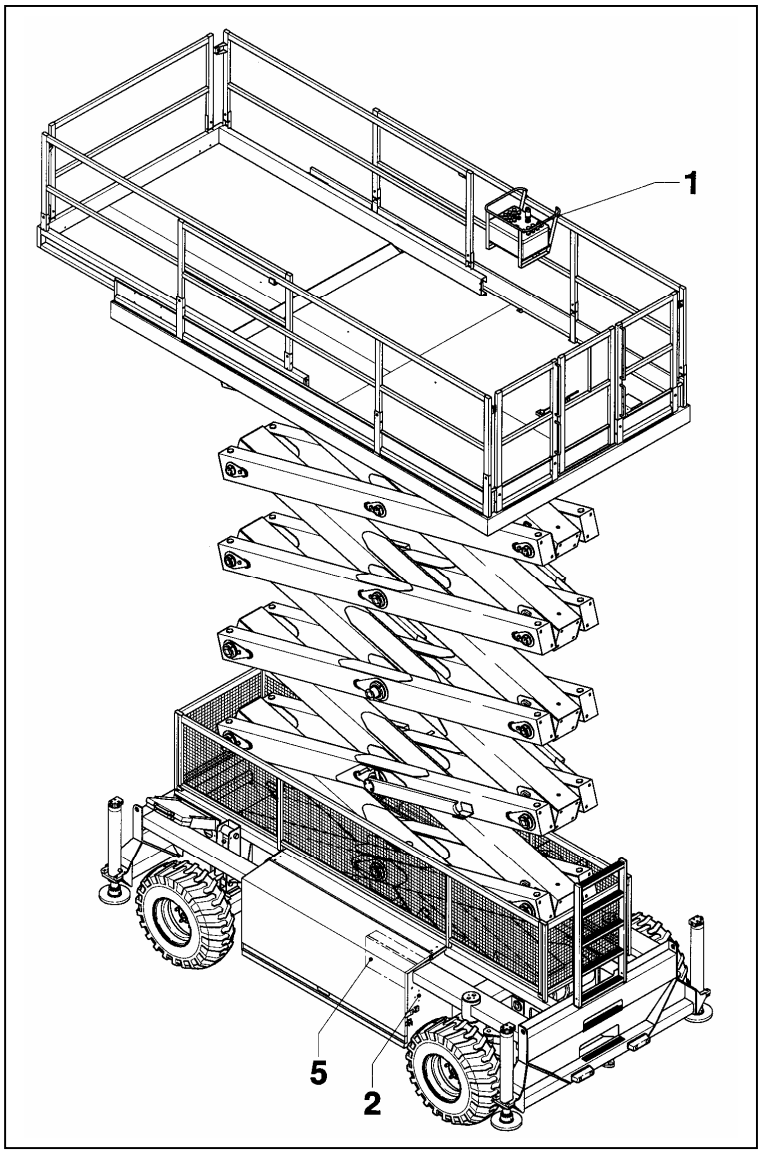

Fig. 15 Overview controls

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1. Control box
2. Main switch
5. Auxiliary switch lifting/lowering

5.3 CONTROLS

5.3.1 Control box

All functions of the machine are operated with a control box, which is mounted on the platform. Operation is allowed by persons located on the platform only. The upper side of the control box consists of a panel with toggle switches and related symbols.

On the valve cabinet is a plug-in position for the control box, only to be used during transport and maintenance and/or repairing operations.

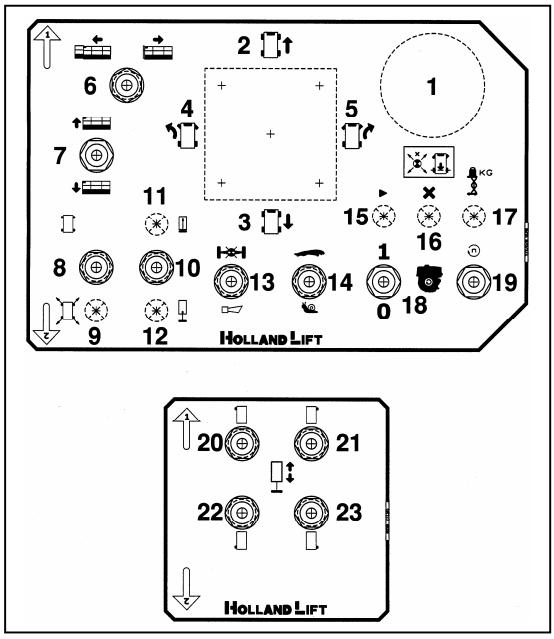

Fig. 16 Control box

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1. Emergency stop button
2. Driving, forward
3. Driving, backward
4. Steering, left
5. Steering, right
6. Platform extended/ retracted
7. Lifting / Lowering
8. Operation of all stabilisers
9. Automatic levelling
10. Selector switch, stabilisers up/down
11. Light “Stabiliser up”
12. Light “Stabiliser down”
13. Differential lock / Horn
14. Driving speed
15. Light "in control"
16. Light "error"
17. Light “Overload”
18. Diesel engine start / stop
19. Rotations, diesel engine
20. Stabiliser LV
21. Stabiliser RV
22. Stabiliser LA
23. Stabiliser RA

5.3.2 Main switch

The main switch (Fig. 17) switches the power of the machine on and off.

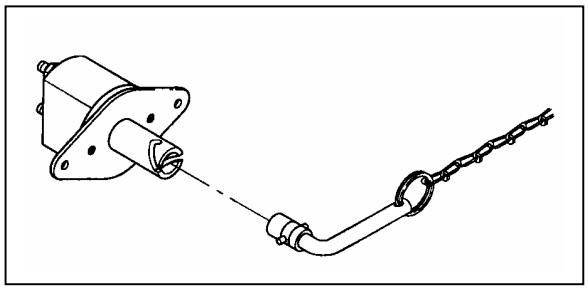

Fig. 17 Main switch

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5.3.3 Auxiliary switch lifting/lowering

On the lower control box in the hydraulic compartment an auxiliary switch (Fig. 18-1) with an automatic zero-position is mounted for lifting and lowering. This switch can be used for maintenance and in case of an emergency.

5.3.4 Start-/stop provision

It is possible to operate the diesel engine with the controls at the lower control box. This is possible, only when the upper control box is mounted on the platform.

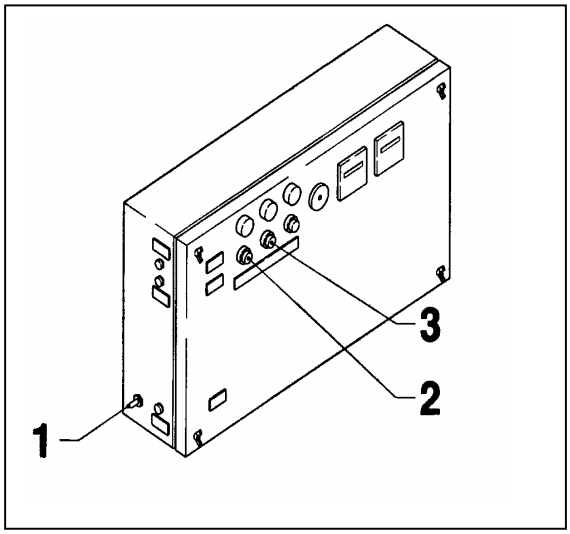

Fig. 18 Auxiliary switch and start/stop provision
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1. Auxiliary switch
2. Start diesel engine
3. Stop diesel engine

5.4 OPERATION

5.4.1 Preparations for use

Check:

- correct operation of all functions;
- correct operation of all safety devices;
- the scissor lift on visual damages (don't forget the tires);
- the hydraulic system on leakages;
- level of hydraulic oil and necessary fill up with Shell Tellus T32;
- level of diesel and necessary fill up;
- level of motor oil and necessary fill up (see Hatz manual);
- * pay extra attention to the cargo sliding door.

5.4.2 Operation

1 Turn the main switch on (lever 90° right).

WARNING
Enter the platform only through the access gate.

2 Place the upper control box at the access gate of the platform and connect the plug with the power outlet at the platform.

3 Pull out the emergency stop button on the control panel (turn right). When this scissor lift is switched on, the load sensing system needs to perform a RAM-test.
Therefore the machine will not function during 10 seconds after switching on the main switch and the emergency stop button. The continuous sounding of the overload warning signal indicates this period of ten seconds.

4 Press the start button for more then 3 seconds. A green light will blink.
This light will burn continuously, while the engine is running.

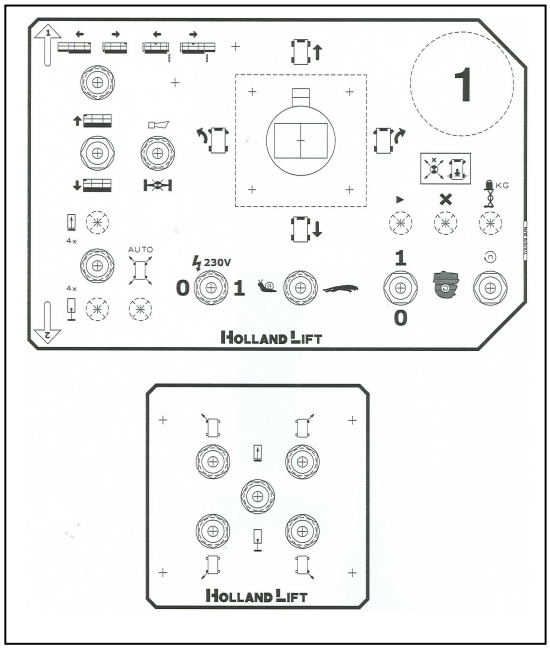

Fig. 19 Control box
1. Emergency stop button

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5.4.3 Operating the stabilisers

- Selection switch 10 (Fig. 16-10) should be set to extend stabilisers.
- Then operate switch 8 (Fig. 16-8) for as long as it takes to secure contact for all four stabilisers. This will be indicated by the continuous burning of lamp 12 (Fig. 16-12).
- Make any level corrections required using switches 20 through 23 (Fig. 16-20-23) and after correction once more depress switch 8 for as long as it takes for lamp 12 to burn continuously. Only then will the lifting function be released. Use for these corrections the spirit level on the top of the platform.
- After the lifting function has been released by switch 8 *the operator should* ***ensure by visual inspection*** *that all four struts are* ***in contact with the surface*** and that the surface itself provides sufficient support and is even, snow and ice free.
- The level of support can be increased by placing stabiliser plates under the stabiliser cylinders (allow for the surface pressure, see 2.4)

5.4.4 Retracting the stabilisers

- Selection switch 10 (Fig. 16-10) should be set to withdraw stabilisers.
- Then operate switch 8 (Fig. 16-19) so that the machine declines gradually.
- When the machine has a lead stabiliser cylinder (a stabiliser cylinder that withdraws more rapidly than the remaining three), this should be corrected manually with switch 20 through 23 (Fig. 16-20-23).

WARNING!
When excessively rapid withdrawal of the stabiliser cylinders is not corrected (when one of the cylinders has no surface contact) this may result in an undesirable acceleration of 2,5 m/s².

5.4.5 After operation

1 Slide the extending platform completely.
2 Lower the platform to the ground position.
3 Push the emergency stop button (Fig. 16-1).
4 Turn the main switch off (lever 90° left).
5 Remove the control box.

5.5 TOWING AND TRANSPORTATION

In full-stop position of the machine the brakes are activated.
When towing the scissor lift, the brakes must be released.

5.5.1 Release of the brakes

The scissor lift is equipped with 4 gear boxes with integrated laminated brakes (Fig. 20-1), which can be released.

To release the laminated brakes:

1. Make sure the wheel is not loaded in one of the drive directions, because than you could damage the internal parts of the driving hub.
2. Turn the M30 bolt 10-14 mm out of the driving hub till the wheel is released.
3. When towing is finished, fasten the M30 bolt to engage the brakes again.

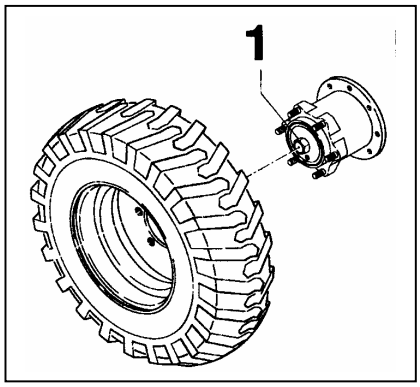

Fig. 20 Release of the brakes

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The scissor lift can be towed now. The maximum towing speed should never exceed the maximum driving speed as mentioned in the technical data of the scissor lift.

CAUTION!
There is no brake function when the brakes are released as described above.
After towing, the brakes have to be reset immediately.

Note: *Before releasing the brakes, it is advisable to take precautions to prevent movement of the machine. Place blocks or wedges in front of and behind a wheel.*

5.5.2 Transportation

During transportation of the scissor lift, the following has to be observed.

- When the slope is over 30%, the scissor lift has to be moved with the help of a reliable winch. The winch has to be connected to the draw bar eye at the front of the machine (Fig. 21-1).
- When the scissor lift is lifted on the transportation vehicle by crane, the pull eyes on each corner of the machine can be used. **HOLLAND LIFT INTERNATIONAL B.V.** does not advise lifting its equipment without a special lifting rectangular. Contact **HOLLAND LIFT INTERNATIONAL B.V.**
- The weight of the scissor lift is mentioned on the manufacturer decal. The weight should be considered when choosing the transportation vehicle.

During transportation the chassis has to be strapped to the transportation vehicle in such a way that no movement is possible. Use the pull-eyes (Fig. 21-2).

During transportation the platform has to be retracted and secured with the "hairpin".

Before transportation the proper operation of the brakes has to be tested.
When the rails were removed during transportation, please make sure that they are remounted correctly, before using the scissor lift.

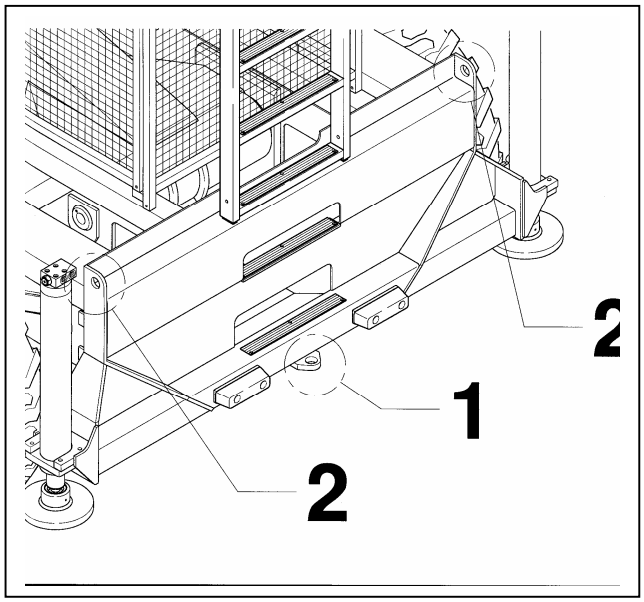

Fig. 21 Draw bar eye/pull eyes

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Note: *With regard to safety during transportation, we refer to chapter 3.5.4.*

6 MAINTENANCE

Before maintenance and/or repairing operations on the scissor lift, the maintenance mechanic has to be fully aware of the precautions of this manual and have specific knowledge of the operation and construction of the scissor lift, manufactured by **HOLLAND LIFT INTERNATIONAL B.V.** *When our maintenance protocol is not applied all forms of guarantee and responsibility will lapse.*

6.1 GENERAL

Turn off the main switch in case of failures in the electrical system. Use original fuses with the strength of current as mentioned in the parts list only.
All piping, hoses and couplings should be checked for leakages and external damages regularly. Repair damages immediately. Leaking oil can result in injuries and could cause a fire or environmental hazard.

Avoid personal injuries and prevent damage of the scissor lift; carry out the prescribed maintenance work carefully and timely.
When during maintenance operations the platform is elevated, the safety props should be placed.

6.1.1 Placing/removing safety prop

For placing or removing the safety prop, there should be no charge on the platform.

Placing the safety prop:
1. Lift the platform
2. Lift the safety prop out of the lock (Fig. 22-1) and turn the prop 90° to the right (Fig. 22-2)
3. Lower the platform till the pin sinks into the support (Fig. 22-4) of the safety prop.

Removing the safety prop:
1. Lift the platform.
2. Remove the prop (Fig. 22-1) from the support.
3. Lower the platform.
4. Turn the prop 90° left, into the lock.

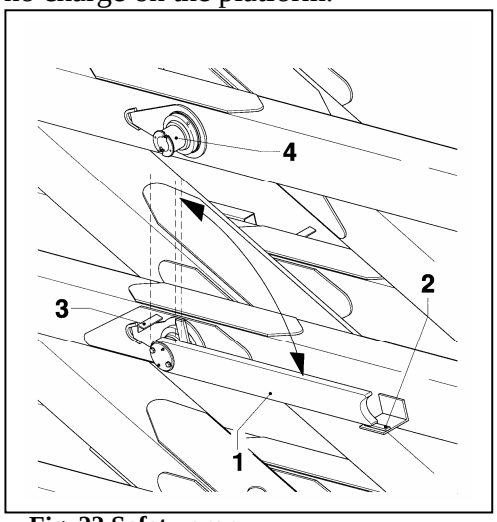

Fig. 22 Safety prop
1. Safety prop
2. Lock point
3. Stop plate
4. Pin

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6.1.2 Lubrication points

All lubrication points have to be greased monthly with Teflon based grease (Art.code: VETPATROON).

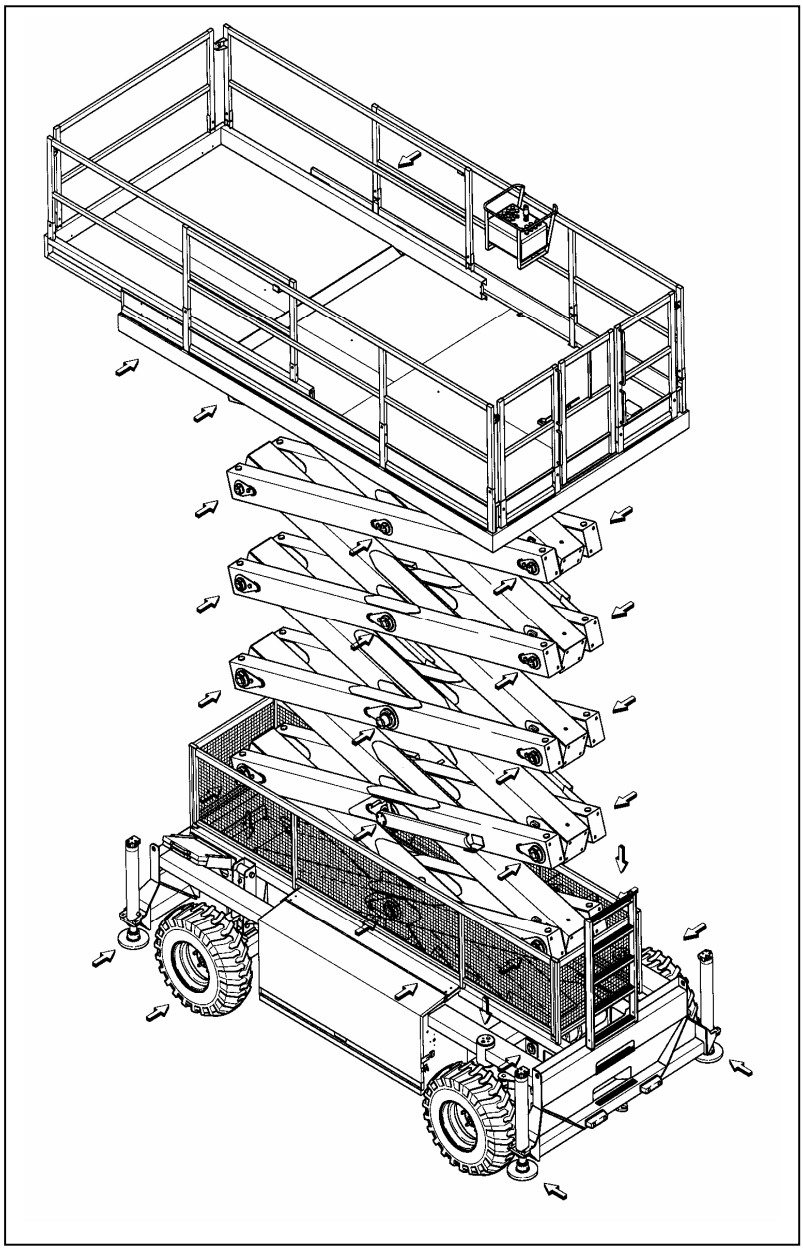

Fig. 23 Lubrication points

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Before lubrication the safety guard (on the side of the grease nipples) has to be removed. This safety guard has to be remounted before the machine will be operated again.

6.2 SCHEDULED MAINTENANCE

For the maintenance of the diesel engine, please refer to the Hatz-manual.

6.2.1 Daily

- Check on leakages in the hydraulic system.
- Check the oil level of the diesel engine.
- Check the proper operation of all safety devices (see 4.1).
- Check the overall operation.
- Check the scissor lift for damages (pay extra attention to the tyres and stabilisers).
- Check if all decals are legible and replace them if necessary.

6.2.2 Weekly

- Check the liquid level of the batteries; if necessary, fill them with distilled water.
- Check all hoses, piping, couplings and other components of the hydraulic system for damages.
- Check the proper operation and adjustment of all limit switches.
- Check the hydraulic oil level and if necessary, fill it up. Maximum 75% of the stated level on the level gauge.

CAUTION!
When checking the following (except for the height limit switches), the platform should be in the ground position!

6.2.3 Monthly

- All lubrication points should be greased according to the schedule (Fig. 22).

6.2.4 Quarterly

- Check all bolts for the correct torque as per diagram "bolt torque specifications".
- Replace the filter element of the hydraulic system.
- Check the diesel filter and replace it if necessary.
- Check the locking and attachment of the pivot pins of the scissor mechanism and the lift cylinder.
- Check the proper operation and adjustment of the tilt alarm (it should make a acoustic sound when it is pushed a side).
- Check if all seals (adjustments sealed by the manufacture) are intact.
- Check the maximum allowable lifting pressure at maximum work-load and the maximum pressure of the drive motors (as stated in the documentation). If the maximum pressures exceed the indicated values, please consult the factory.

6.2.5 Yearly

- Replace the hydraulic oil. Only use the designated type.
- Replace the motor oil (every ± 250 operating hours).
- The scissor lift has to be check by a expert.

6.2.6 Every five years

Check all the hinge points of the scissor for play, wear, tear and damage. It will be necessary to dismantle the scissor in order to perform these checks. Check all the surfaces of the bearings and shafts. If the surface roughness of the surfaces of the shafts and bearings is more than 1,0 µm, the shafts or bearings should be replaced. This also applies when the chromium layer has been penetrated. Check the shafts for damage if any and replace them if necessary. The play between the shaft and the bearing must not exceed the table values. The minimum depth of the grease chamber of the bearing must be 0,40 mm. If the bearing fails to satisfy even one of these two rejection values, the bearing should be replaced. Shafts that are found to be jammed or improperly lubricated should be replaced. An expert should carry out these checks. In case of doubt please contact **HOLLAND LIFT INTERNATIONAL B.V.**

Shaft diameter (mm)	**Fit dimension f7 (DIMENSIONS IN µM)**	**Inside diameter of bearing**	**Fit dimension H9 (DIMENSIONS IN µM)**
120 f7	- 43 - 83	120 H9	+ 100 0
110 f7	- 36 - 71	110 H9	+ 87 0
100 f7	- 36 - 71	100 H9	+ 87 0
90 f7	- 36 - 71	90 H9	+ 87 0
75 f7	- 30 - 60	75 H9	+ 74 0
60 f7	- 30 - 60	60 H9	+ 74 0

ATTENTION! After all major repairs, the scissor lift must be subjected to a overload test by an expert. In case of major modifications and repairs that affect the stability strength and performance of the aerial platform, the scissor lift should again be inspected and tested by **HOLLAND LIFT INTERNATIONAL B.V.**. All major repairs should be mentioned in the scissor lift logbook. If this is not done, the Declaration of Conformity shall become invalid.

6.2.7 Extreme conditions

- At extreme exposure to dust, algae, bacteria, salt deposit, moisture etc. the maintenance frequency has to be increased accordingly.

6.2.8 Storage

- When the scissor lift will not be used for more than 10 days, the batteries should be checked (charge, water, etc.).
- Upon renewed operation, please refer to paragraph 6.2.1.
- If the scissor lift is stored away for a long period of time, the tires should be separated from the base with the help of sheer legs in order to prevent the flattening of edges.

6.2.9 Battery PLC-control

The lower control box of the scissor lift contains the PLC-control. In order to keep the memory, its battery needs to be replaced every 4 years.

Attention: replace the battery only (by means of switching on the main switch) when the PLC is powered!

6.2.10 Markings and decals

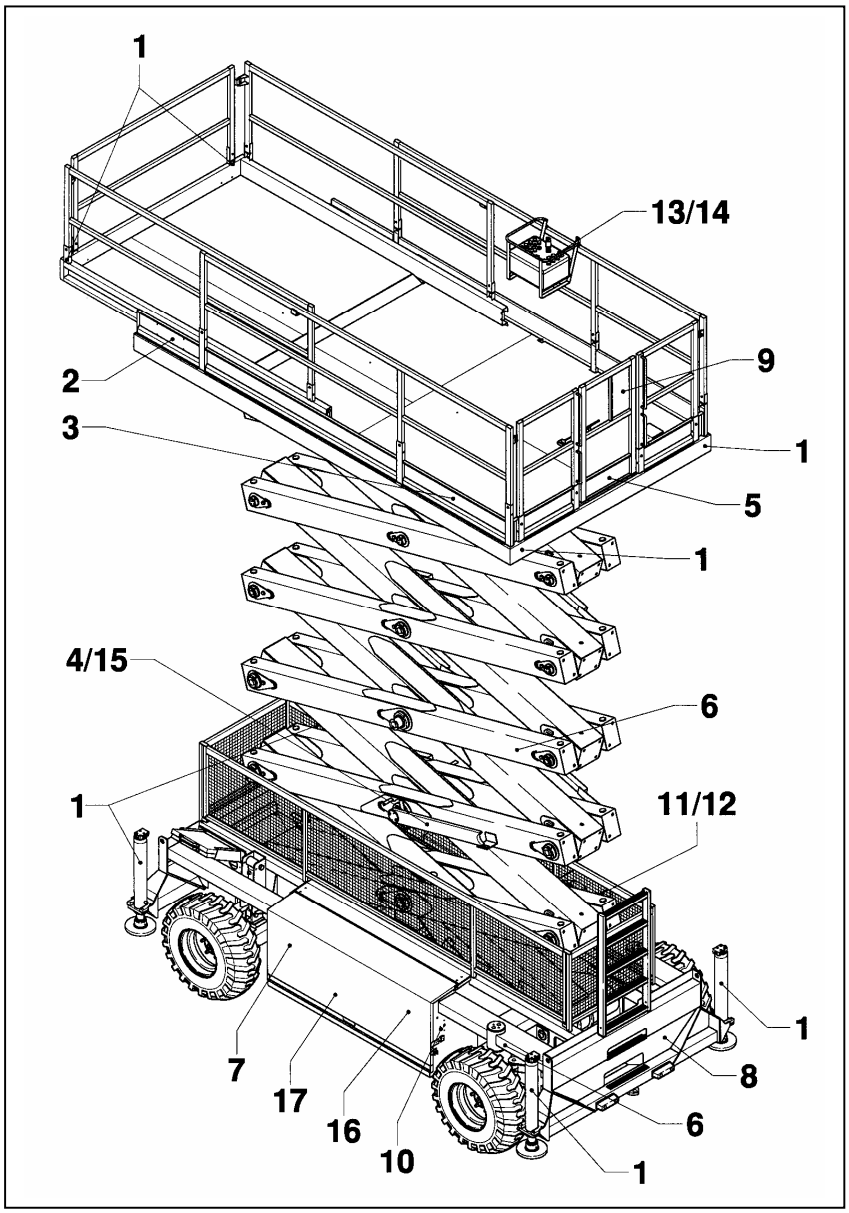

Fig. 24 Markings and decals

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1. Reflexfoil
2. Max. load capacity
3. Model indication
4. Use of safety prop
5. "Max. 2 persons"
6. Lubrication advice
7. Brief usage instructions
8. "Emergency lowering valve"
9. Brief operation instructions
10. "Main switch"
11. "Hydro-oil"
12. "Diesel"
13. "Lowering with not extended platform only"
14.
15. "WARNING ..... locked"
16. Hand pump platform
17. No unauthorised person allowed.

6.3 BOLT TORQUE SPECIFICATIONS

Track rod to wheel support	41 Nm
Steering cylinder to track rod	41 Nm
Steering cylinder to chassis	60 Nm
Rear axle to chassis	390 Nm
Wheel nuts	250 Nm
Gear box to wheel support	200 Nm
Gear box to rear axle	200 Nm
Oscillating part to oscillating axle	200 Nm

7 TROUBLE SHOOTING

This chapter handles some errors with the possible cause and solution.

Error	Possible cause	Solution
Scissor lift does not function.	Main switch not activated. Emergency stop button on control box is activated. Short-circuit/fuse defective.	Turn on main switch. Release emergency stop button. Find the cause and replace fuse.
Diesel engine does not start.	Start button is not pushed long enough. Battery voltage too low. Out of diesel fuel.	Push button for 3 seconds. Charge batteries. Refill diesel fuel.
Scissor lift does not move with elevated platform.	Maximum grade/slope exceeded. Tilt alarm is activated. Platform is higher than 8 m.	Lower platform to ground position and drive to a flat surface. Lower the platform below 8 m.
Scissor lift does not lift.	Maximum grade/slope exceeded. Platform is overloaded.	Lower platform to ground position and drive to a flat surface. Reduce load of the platform (max. load 500 kg)
Driving at high speed is not possible.	Platform is higher than 4 m. Driving speed switch is not in position 1. Switch for RPM diesel engine is not in position 1 or automatic. Maximum grade/slope exceeded.	Lower platform below 4 m. Put switch in the right position. Put switch in the right position Drive to a flat surface.
Scissor lift does not brake.	Brakes have not been reset after towing. Laminated brakes are worn out.	Reset the brakes. Replace lamination brakes.
Stabilisers do not work.	Platform is higher than 4 m.	Lower platform below 4 m.
Platform cannot be lowered.	Safety props lock scissor mechanism. Electrical failure. Cargo sliding door is open	Remove safety props. Lower platform with emergency lowering valve and check electrical system. Close Cargo sliding door
Persistent malfunction		Contact **HOLLAND LIFT INTERNATIONAL B.V.**

8 DISPOSAL OF THE SCISSOR LIFT

8.1 GENERAL

When the scissor lift will be disposed of, it has to be done in an environmentally friendly way.

Some options are:
- Trade in when purchasing a new scissor lift.
- Deliver it to a recycle company.

8.2 DISPOSAL OF THE SCISSOR LIFT

- Remove the hydraulic oil out of the system and deliver it to an authorised recycling company.
- Remove the usable parts.
- Remove the diesel fuel and deliver this to an authorised recycle company.
- Remove the engine oil and deliver this to an authorised recycle company.
- Deliver the remaining parts to a recycle company.

➢ Batteries Chemical waste.
➢ Gas springs **CAUTION!**: under pressure!

9 INDEX

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