Instruction manual

(translation of the original text)

Combistar Scissor lift

HL-140 E12 / N-120EL12
HL-160 E12 / N-140EL12
HL-190 E12 / N-165EL12
HL-220 E12 / N-195EL12

Contents

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1 General information

1.1 Use of this instruction manual

1.1.1 Objective

This instruction manual is intended for the users of the following scissor lifts:
HL-140 E12 / N-120EL12
HL-160 E12 / N-140EL12
HL-190 E12 / N-165EL12
HL-220 E12 / N-195EL12

1.1.2 Symbols used in this instruction manual

Comment
A comment gives additional information.

Note!
Failure to heed an instruction with this symbol and text may result in damage to the scissor lift.

Warning
Failure to heed an instruction with this symbol and text may result in serious physical injury or serious damage to the scissor lift.

1.2 Standard equipment

- Control box with a plug-in connection, which can be used on the platform and on the bottom carriage.
- Auxiliary switch for raising and lowering, on the electrical box.
- Proportional drive.
- Emergency descent device
- Driving alarm.
- Non-marking tyres

1.3 Additional documentation

- Parts list.
- Electrical and hydraulic diagram.
- Scissor lift book (logbook).
- Battery charger manual.
- Documentation set for central grease lubrication system (option).

1.4 Options

- AC 230 V connection on the platform.
- Flashing beacons in addition to the acoustic driving alarm.
- Ability to drive the scissor lift when fully extended.
- Central grease lubrication system
- U.K. specifications

1.5 CE marking

See the Declaration of Conformity.

1.6 Scissor lift identification (type plate)

Note!
Never remove the type plate.

The type plate contains information specific to the scissor lift.

1.6.1 Location of the type plate

The scissor lift's type plate is located behind the left-rear wheel.

Type plate

The type plate contains the following information:

1. the manufacturer's name, address and telephone number
2. the model
3. the total weight (kg)
4. the chassis number
5. the year of construction
6. the nominal power (kW)
7. the maximum permissible weight on the platform when retracted (kg)
8. the maximum permissible weight on the platform when extended (kg)

9. the maximum horizontal force (N)
10. the maximum angle of inclination (°)
11. the maximum wind speed (m/s)
12. the maximum tilt (°)
13. the maximum height (m)
14. the maximum height when mobile
15. the minimum permissible temperature (°C)
16. the maximum operating pressure (bar)

1.7 Terms of delivery and warranty

1.7.1 Terms of delivery

All sales agreements with **HOLLAND LIFT INTERNATIONAL B.V.** are subject to the Metaalunie terms and conditions.

1.7.2 Warranty

See the terms of delivery for the length of the warranty.

1.8 Intended use and modifications

1.8.1 Intended use

The scissor lift is only intended to be used to allow people to work at a height. The maximum load of the platform (see type plate) must not be exceeded under any circumstances. Any other use is contrary to the scissor lift's intended use. Only use the scissor lift in enclosed spaces with an ambient temperature of between -15 °C and +40 °C.

1.8.2 Modifications

Modifications may only be made to the scissor lift after written permission has been obtained from the management of **HOLLAND LIFT INTERNATIONAL B.V.**
The information contained in this instruction manual is based on the information regarding constructions, material properties and work methods that was known to us at the time of publication. We therefore reserve the right to make construction modifications. For this reason, **HOLLAND LIFT INTERNATIONAL B.V.** also reserves the right to make alterations to the content of the instruction manual without any prior notice.
Components may only be replaced by components provided by **HOLLAND LIFT INTERNATIONAL B.V.** or components which can be considered to be of a comparable quality. **HOLLAND LIFT INTERNATIONAL B.V.** reserves the right to decide whether these components are of a comparable quality. The manufacturer can only be held liable if a written declaration stating that the components are of comparable quality has been obtained from the manufacturer.

1.9 Service and technical support

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W www.hollandlift.com

2 Safety

2.1 Emergency procedures

2.1.1 Emergency stop

To disable all of the scissor lift's functions:

- Press the emergency stop button.

2.1.2 Contact with high-voltage power lines

Observe the following if the scissor lift comes into contact with high-voltage power lines:

1. Remain on the platform.
2. Drive the scissor lift out of the danger area.
3. Make sure bystanders do not touch the scissor lift.
4. Have the power disconnected from the high-voltage power lines.
5. Exit the scissor lift when the high-voltage power line is no longer energised.

2.2 Safety instructions

2.2.1 General information

- Avoid any situation that may endanger the users of the scissor lift or any bystanders.
- It is strictly forbidden:
  - to lower hanging loads onto the scissor lift
  - to use the scissor lift to hoist loads
  - to attach advertising boards or banners to the scissor lift
  - to increase the surface area of the platform
  - to stand on the guardrails surrounding the platform
  - to raise the height of the platform floor
  - to use any type of ladder on the platform
  - to enter or exit the platform in the raised position
  - to tow the scissor lift on public roads
- After every (major) repair, the scissor lift must be inspected and approved by an expert.
- If any modifications or repairs are carried out which may affect the scissor lift's stability, strength or performance, the scissor lift must be reinspected and approved by **HOLLAND LIFT INTERNATIONAL B.V.**
- Any inspections, tests, repairs or modifications must be recorded in the scissor lift logbook.
- The weighted root mean square acceleration value (vibrations) that the user is subjected to during use of the scissor lift is not greater than 2.5 m/s^2.

- The noise produced by the scissor lift in the work area at a distance of 7 metres and at maximum load does not exceed 75 dB(A).
- Exposure to the noise over a long period of time may be detrimental to the hearing if hearing protection is not worn.

2.2.2 Safety instructions during normal use

- Only use the scissor lift under the following conditions:
  - there is no visible damage to the scissor lift
  - all the functions work correctly
  - all the safety devices work correctly
  - the hydraulic system does not leak
  - the hydraulic system contains the correct quantity of oil
- Lock the covers of the cabinets on the bottom carriage.
- Do not touch the moving or pivoting parts of the scissor lift (e.g. the scissor mechanism or the steering gear).
- Make sure the driving area and the work area are:
  - sufficiently flat and able to support the weight of the scissor lift
  - adequately lit
  - free of obstacles
  - free of snow and ice
- Make sure the scissor lift cannot touch any fixed or moving obstacles.
- Make sure no objects can fall from the platform (e.g. tools).
- If tools which may cause a fire are used on the platform, a fire extinguisher must be present on the platform.
- The scissor lift may only be driven when fully extended if it is driven in an enclosed space on a completely flat surface which is able to support the weight of the scissor lift. The user must be aware of this. An additional safety requirement is that the scissor lift must be operated by two people at all times. One person must work on the platform and the other person must remain on the ground. They can maintain contact with each other using communication equipment.
  In normal situations, the 8-metre stop should work. The key switch is in the ‘0’ position by default. This means that it is possible to drive the scissor lift when it is extended up to a height of 8 metres. Position ‘1’ means: it is possible to drive the scissor lift when it is extended to the maximum height. The maximum speed is 0.5 km/h when the scissor lift is extended above a height of 4 m.
  The key switch is located on the electrical box.
- Only charge the battery of the scissor lift in an area that is well ventilated and where smoking and naked flame are prohibited.
- Important conditions concerning driving up or down inclines in the scissor lift's longitudinal direction:
  - See the technical information in the instruction manual for the maximum incline that the scissor lift can be driven on.
  - The maximum load when driving up an incline is 80 kg (1 person).
  - Place the platform in the lowest position.
  - Select the slowest speed.
  - Do not make any sharp steering movements when driving up an incline.
  - Drive up an incline with the non-driven wheels uphill.

- It is strictly forbidden:
  - to operate the scissor lift from the ground using the control box (except for transport reasons or when carrying out maintenance work on the scissor lift)
  - to use the scissor lift to carry out work on or near high-voltage electrical lines
  - to use the scissor lift to work in an area where there is a risk of explosion

2.2.3 Safety instructions during maintenance

- Always wear the required safety equipment (e.g. safety goggles, hearing protection, helmet) when carrying out maintenance work on the scissor lift.
- Prevent the scissor lift from being able to roll away. For example, place chocks against the wheels.
- Prevent the risk of crushing in the scissor mechanism. Make sure the safety prop has been fitted before working on parts such as the scissor mechanism (e.g. lubricating the scissor mechanism).
- If the scissor lift is switched off during maintenance work and must remain off, take measures to prevent the scissor lift from being switched on unexpectedly or unintentionally. Make sure others cannot undo the measures that have been taken.
- Before cleaning the scissor lift with steam, water or other liquids, protect all components that must not be exposed to liquids. Remove the protection after cleaning the scissor lift.
- Make sure oil, grease and other substances that are harmful to the environment are disposed of in a safe and environmentally-friendly manner.

2.2.4 Safety instructions when working on the electrical system

- Turn off the scissor lift before working on the electrical system.

2.2.5 Safety instructions when working on the hydraulic system

- Make sure the correct fire extinguisher is available. Leaking oil can be hot and may therefore cause a fire.
- Lower the platform as far as possible before carrying out work on the hydraulic system.
- Release the pressure before working on the hydraulic system.
- Do not touch the hydraulic systems lines. Leaking, hot oil can cause burns or penetrate the skin. If you come into contact with the oil, immediately contact a doctor who has experience with this type of injury.

2.3 Liability

HOLLAND LIFT INTERNATIONAL B.V. cannot be held liable for:

- damage resulting from negligent use and/or maintenance of the scissor lift
- any printing errors in the documentation or their consequences

2.4 Users

- The management is obliged to instruct the users of the scissor lift in its use and maintenance with the aid of the instruction manual, additional instructions and directions.
- The instruction manual must be easily accessible to the user at all times in a tube that has been fitted in the scissor lift's valve/electrical compartment for that purpose.
  If necessary, **HOLLAND LIFT INTERNATIONAL B.V.** can provide a new copy on request.
- The scissor lift may only be operated by people who are 18 years of age or older, who know how to operate the scissor lift and who have read and understood the operating instructions and regulations that are applicable to the **HOLLAND LIFT INTERNATIONAL B.V.** scissor lift.
- It is strictly forbidden for people to operate the scissor lift when they are under the influence of alcohol, drugs or medicine that impairs their ability to work safely.
- In the Netherlands, it is recommended that operators be required to obtain the elevating work platform safety certificate (*Veiligheidscertificaat Hoogwerker*). This is recognised by the Vertical Transport Certification Supervisory Association (TCVT).
  The IPAF Mobile Elevated Working Platform Operator course is recognised internationally.
- Maintenance may only be carried out by people who have read and understood the instructions contained in the instruction manual and who have specific knowledge of the operation and construction of the scissor lift manufactured by **HOLLAND LIFT INTERNATIONAL B.V.**

2.5 Intended use

Only use the scissor lift for the intended use.
Also see section 1.8.1.

2.6 Decals on the scissor lift

2.6.1 Decals on the front

Front

1. Reflective film (on all corners)
2. Max. 2 persons + load
3. Crushing/pinching danger for hands

2.6.2 Decals on the left side

Left side standard version

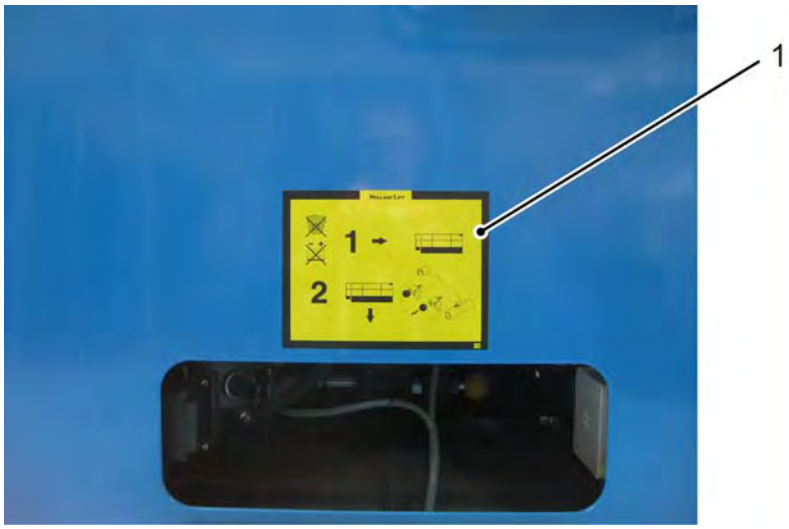
1. Scissor lift type indication
2. Presence in danger zone prohibited
3. Lubrication recommendations
4. Main switch icon
5. Main switch instructions
6. Only for enclosed spaces
7. Crushing/pinching danger for feet
8. Maintenance inspection
9. Safety prop instructions
10. Brand name
11. Reflective film (on all corners)

2.6.3 Decals on the right side

Right side

1. Scissor lift type indication
2. Presence in danger zone prohibited
3. Check battery charge weekly
4. Instructions for preventing excessively low battery voltage
5. Reflective film (on all corners)
6. Only for enclosed spaces
7. Crushing/pinching danger for feet
8. Brand name
9. Safety prop instructions
10. Lubrication recommendations

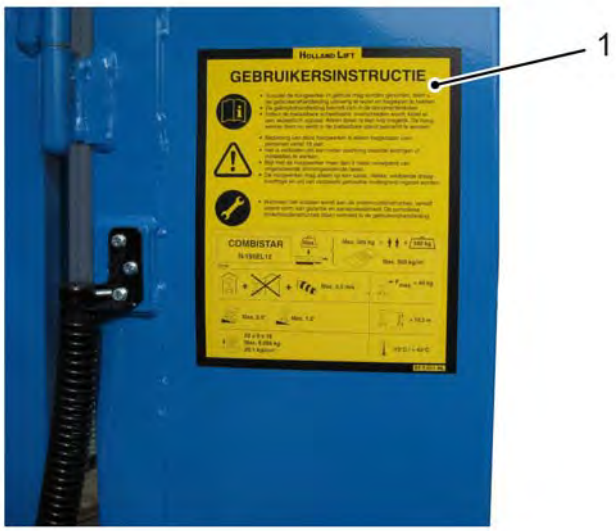
2.6.4 Decal emergency descent protection



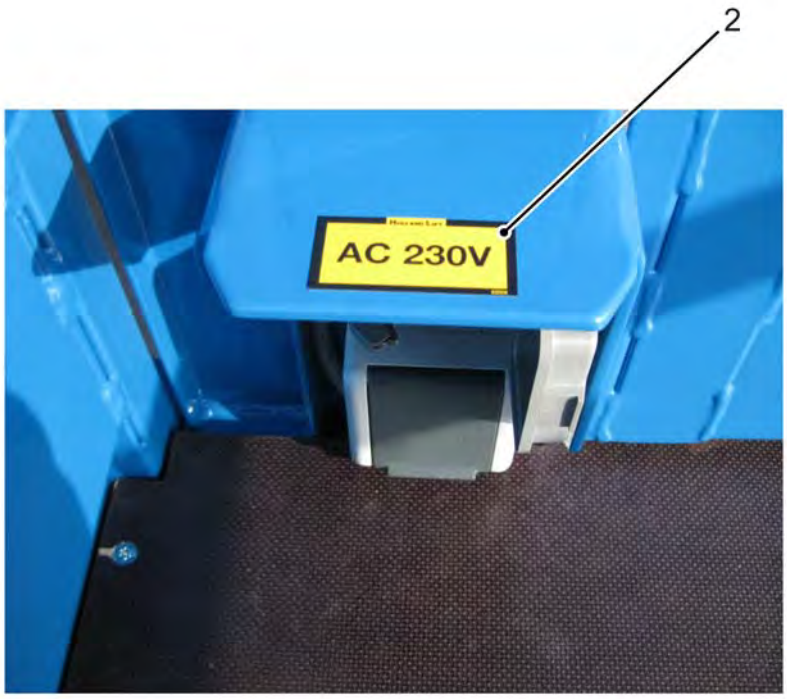
Decal emergency descent protection

1. Decal emergency descent protection

2.6.5 Decals on the control box and on the platform



Decals on the inside of the platform

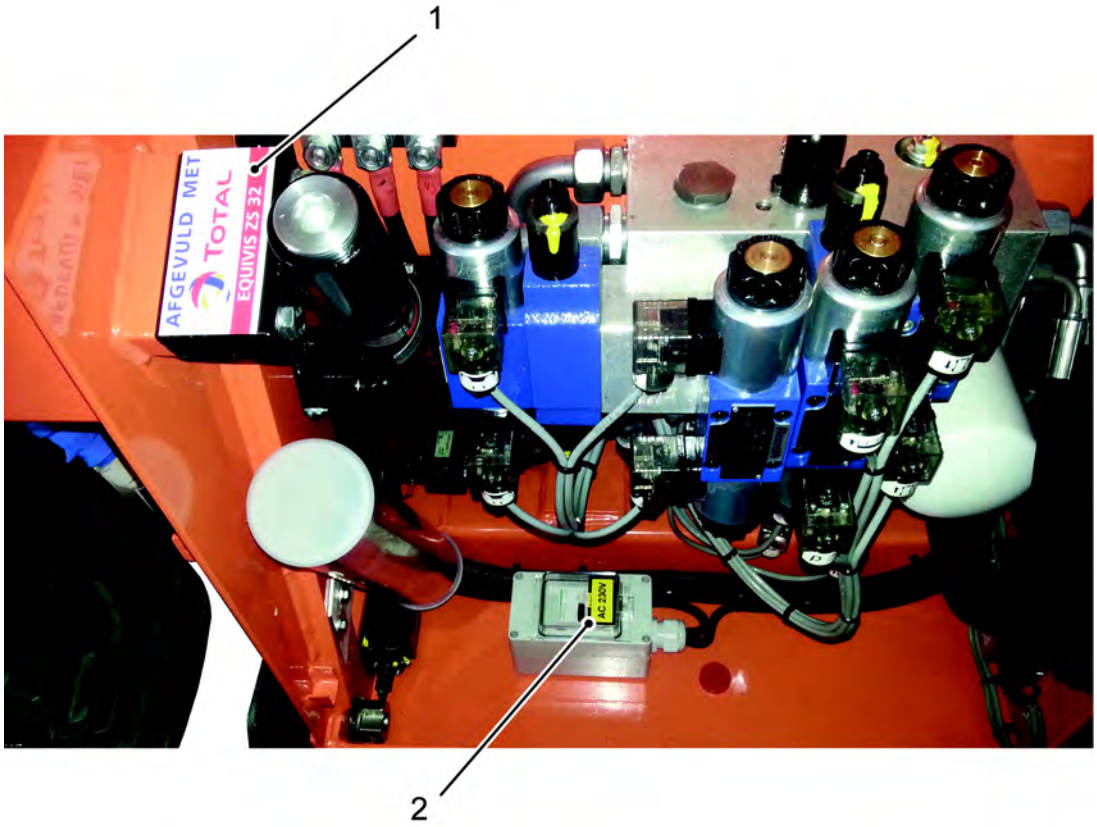


230 VAC decal on the socket (option)

Descend with platform retracted

1. Concise operating instructions
2. ‘AC 230 V’ (option)
3. ‘Only lower the scissor lift with the platform retracted.’

2.6.6 Decals in the left-side compartments



Decals in left-side compartment

1. 'Filled with Equivis ZS32'
2. AC 230V

2.7 Location of the safety provisions on the scissor lift

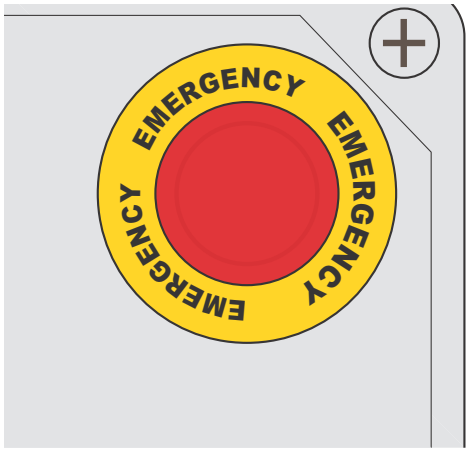
Location of the safety provisions on the scissor lift

1. Emergency stop button and dead man's switch on the control box
2. Protective guardrail
3. Visual driving alarm (optional)
4. Tilt protection
5. Safety prop
6. Pipe/hose rupture safety device
7. Emergency descent valve
8. Angle sensor

2.7.1 Emergency stop button

The emergency stop button can be used to deactivate all scissor lift functions.

- All of the functions are deactivated when the emergency stop button is pressed.
- If the emergency stop button is pulled out and rotated a quarter turn clockwise, all the functions will be activated again after two seconds.



Emergency stop button

2.7.2 Dead man's switch

The dead man's switch prevents unintentional activation of the scissor lift. After this button is pressed, the control handle is activated.

2.7.3 Safety prop

The safety prop prevents people from becoming trapped in the scissor mechanism when work must be carried out on it.

2.7.4 Protective guardrail

The protective guardrail prevents people from coming into contact with the moving parts of the scissor mechanism.

2.7.5 Visual driving alarm/descent protection

The visual driving alarm/descent protection is activated when the scissor lift is being driven or is descending. Two lights flash during operation.

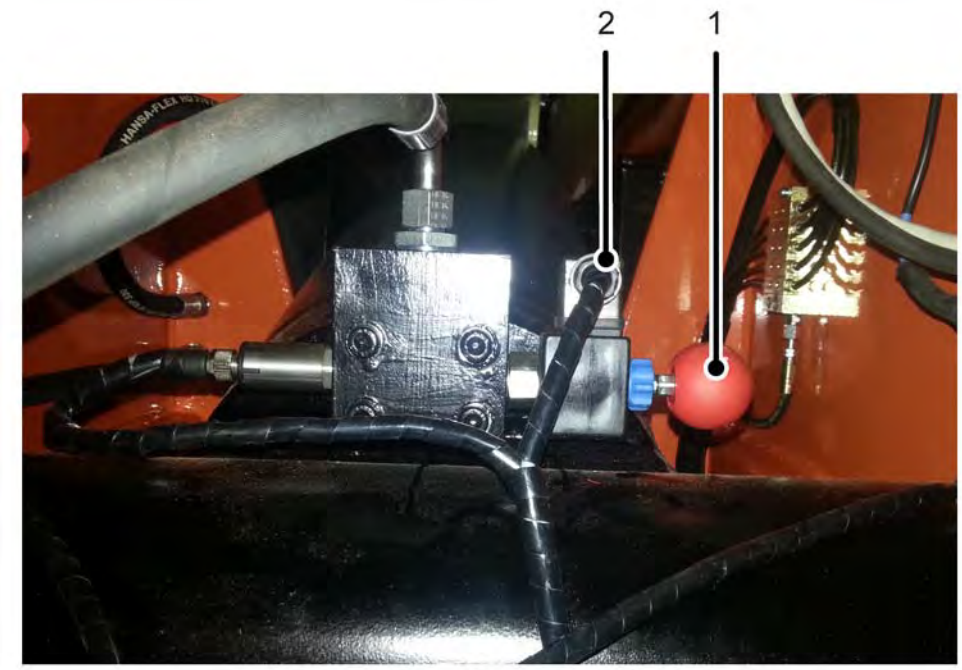
Comment
Only for scissor lifts with the ‘visual driving alarm’ option.

2.7.6 Pipe/hose rupture safety device

An electrically controlled valve is fitted on the lift cylinder. It is only possible to lower the platform with a control signal from the control box, even in the event of a line/hose rupture.
The maximum descent speed is limited by an orifice (constriction) in the cylinder.

2.7.7 Emergency descent device

The emergency descent valve on the lift cylinder allows the platform to be lowered in the event of an emergency. This is possible by pulling the round operating button (1) on the emergency descent valve (2).



Emergency descent device

1. Operating button
2. Emergency descent valve

In this case, if the platform is still in the extended position it must first be retracted.

2.7.8 Acoustic driving alarm/descent protection

- The acoustic driving alarm sounds when the scissor lift is being driven: a warning signal will be heard.
- The acoustic descent protection sounds in the crushing danger zone below 3.2 metre platform height (for HL-220 E12 / N-195EL12 below 3.6 metre platform height): a warning signal sounds for three seconds.

2.7.9 Speed limiter

The speed limiter prevents the scissor lift from being driven too fast when the platform is raised.

- Driving is automatically limited to the slow driving speed when the platform is at a height of more than 3 metres. The fast driving speed becomes available again when the platform is lowered to a height of less than 3 metres.
- The driving and steering functions are automatically deactivated when the platform is at a height of more than 8 metres. The driving and steering functions can only be activated again once the platform is at a height of less than 8 metres.

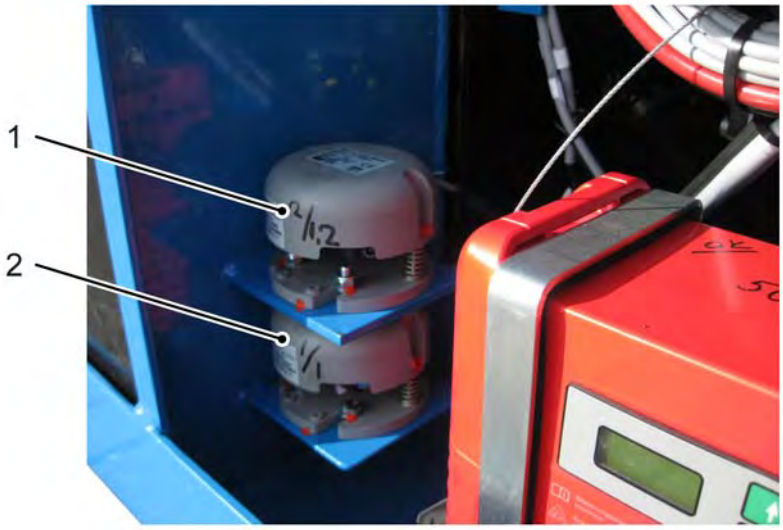
Comments

Only for scissor lifts with the 'Drive at full height' option:

- It is possible to reactivate the driving and steering functions when the platform is at a height of more than 8 metres by placing the key switch on the electronics box in position '1'.

2.7.10 Tilt indicators

- If the scissor lift exceeds the specified maximum tilt when the platform is at a height of more than 3 metres, a warning signal will sound and all the movement functions will be deactivated, with the exception of the descent function and the (manual) retraction of the platform.



Tilt indicators

1. Extra indicator for 1 degree of tilt in the longitudinal or transverse direction (with the 'drive at full height' option).
2. Standard tilt indicator.

2.7.11 Other safety provisions

Tilt protection

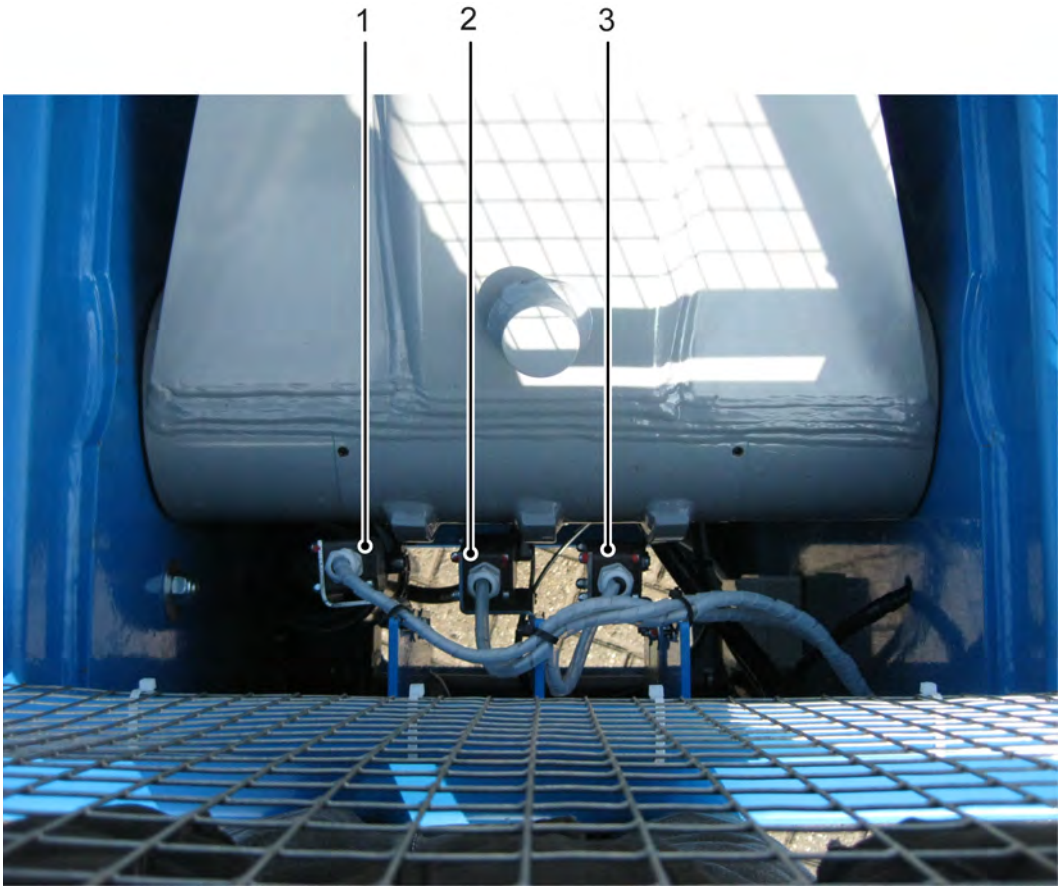
The tilt protection prevents the machine from tipping over while the lift is being driven if a wheel runs over a hole. The tilt protection extends when the platform is above 3 m.

Overload protection

The overload safety device informs the operator when the platform is overloaded. If the permitted load is exceeded (between 100-120%), all of the scissor lift's movement functions will be deactivated. An acoustic signal will also sound for 5 seconds every minute and the overload light with be lit. When the overload safety device is activated the excess load must be removed, after which the scissor lift's movement functions will become active again. It is recommended that persons on the platform take communication equipment with them for use in the event of a malfunction.

Lift cylinder protection device

- This protection device prevents the lift cylinder from becoming mechanically jammed. A limit switch is activated by a switch cam just before the cylinder reaches its maximum range, so that the lift cylinder stops in time.



Limit switches and switch cams

1. 3.2-metre switch (3.6 metres for HL-220 E12 / N-195EL12)
2. Limit switch
3. 8-metre switch

Pipe/hose rupture safety device

An electrically controlled valve is fitted on the lift cylinder. It is only possible to lower the platform with a control signal from the control box, even in the event of a line/hose rupture.
The maximum descent speed is limited by an orifice (constriction) in the cylinder.

Battery charge protection

The charge protection prevents use of the machine during battery charging.
The charge protection switches off all machine functions during battery charging.
The LEDs on the control box flash sequentially to indicate this.

Driving on inclines

Before driving the scissor lift up an incline, the selection switch for driving speed must be put in position ‘0’ (slow driving). When driving up an incline with a gradient of up to 25%, the platform must be in the lowest position and no sudden steering manoeuvres may be made. The scissor lift may only be driven up or down – never across! – an incline. The scissor lift may only be rolled up and down inclines with a gradient above 25% through use of a reliable winch! When doing so, consider the weight of the scissor lift (see chapter ‘Technical specifications’).

Battery state-of-charge meter

The battery state-of-charge meter has a LED bar indicator that shows the battery's current state of charge.

When all of the LED segments are on, the battery is fully charged.
The fewer LEDs that are lit, the less charge remaining in the battery.
See section ‘Battery state-of-charge meter’.

Descent protection

The models are equipped with descent protection. During descent the descending movement is interrupted at a height of 3.2 metres (3.6 metres for HL-220 E12 / N-195EL12). To resume the descending movement the decent control must be released and engaged again; descent will resume after 3 seconds. During descent the acoustic and visual descent protection are active. The descent speed will not exceed 0.2 m/s.

3 Controls

3.1 Overview

Overview of the controls

1. Control box
2. Connection for the control box
3. Main switch
4. Mains plug for battery charger
5. Auxiliary switch raise/descend
6. Connection for the bottom carriage control box

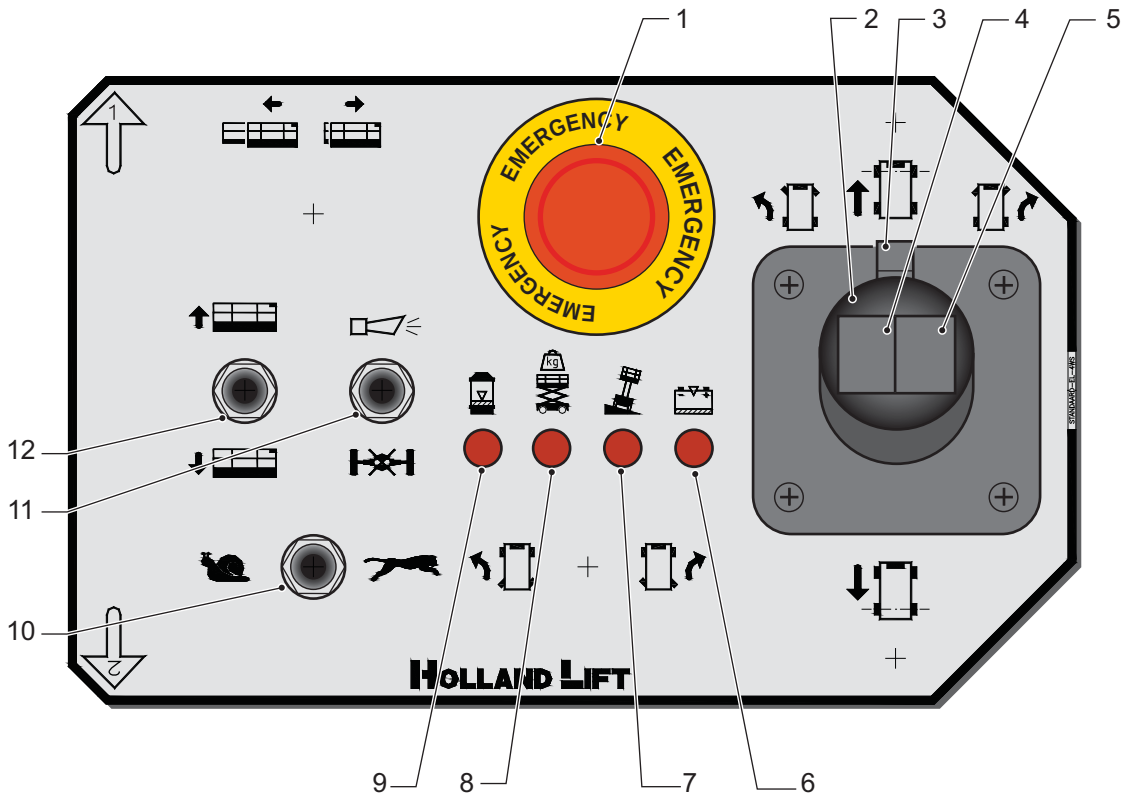
3.2 The control box

A plug-in connection makes it possible to use the control box both on the platform and on the bottom carriage.

A control box

1. Control panel

3.2.1 The control panel

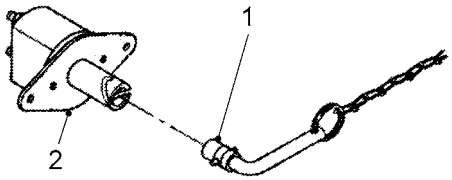


Controls on the control box

1. Emergency stop button
2. Forwards/backwards control handle
3. Dead man's switch
4. Steer to the left
5. Steer to the right
6. Indicator light ‘battery voltage too low’
7. Indicator light for tilt
8. Indicator light for overload
9. Indicator light for central grease lubrication system (option)
10. Driving speed fast/slow
11. Horn/Differential lock
12. Raise/descend

3.3 Main switch

The main switch turns the power supply for the scissor lift on and off.



Main switch

1. Key with chain
2. Main switch

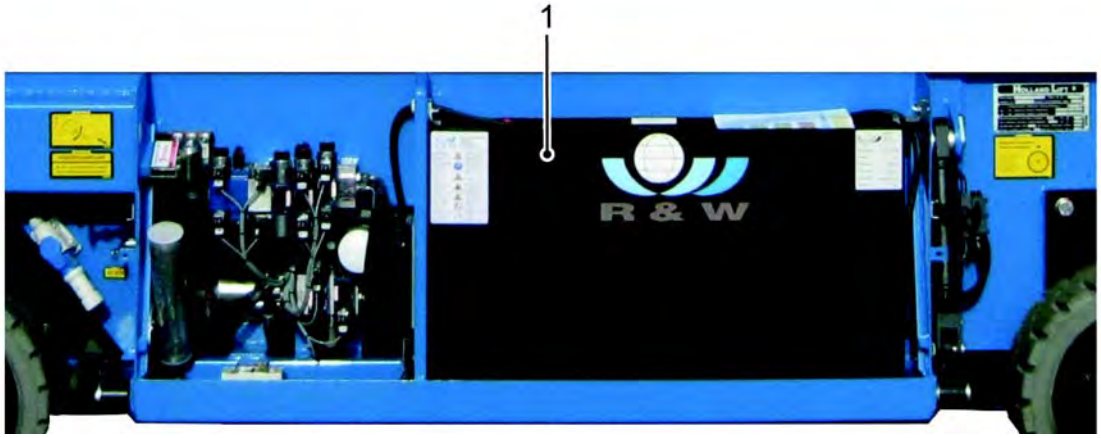
4 Machine compartments

4.1 Introduction

The scissor lift has two interconnected compartments. These are located on either side of the bottom carriage. These contain various components, including the electrical control unit and the hydraulic components for the lifting, steering and drive system.

4.2 Battery compartments

The scissor lift has two battery compartments. One on each side of the bottom carriage.



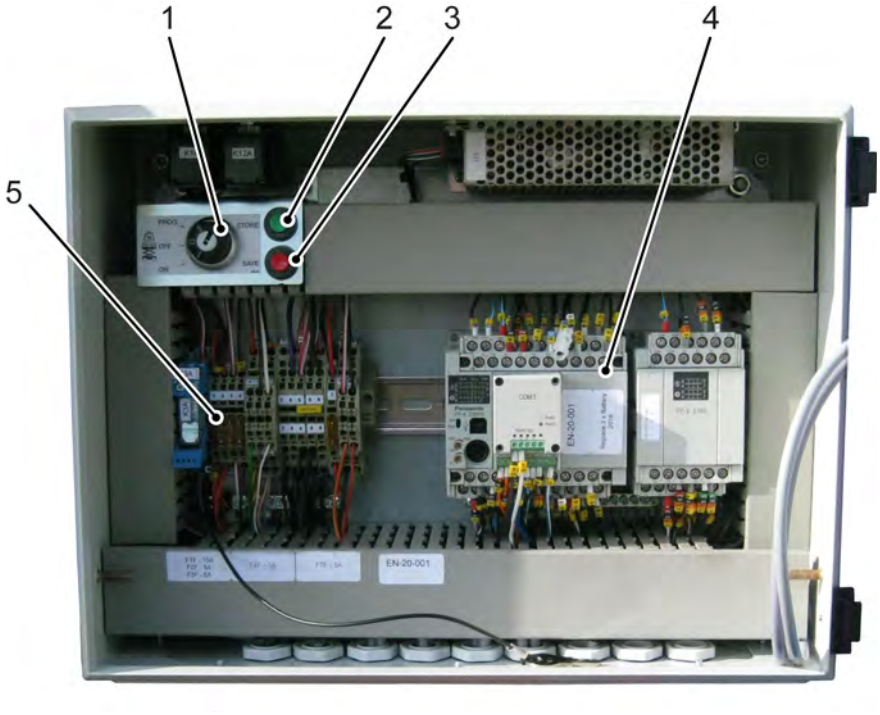
Compartments left side

Compartments right side

1. Battery box left side
2. Battery box right side
3. Lock bolt

4.3 Electrical box

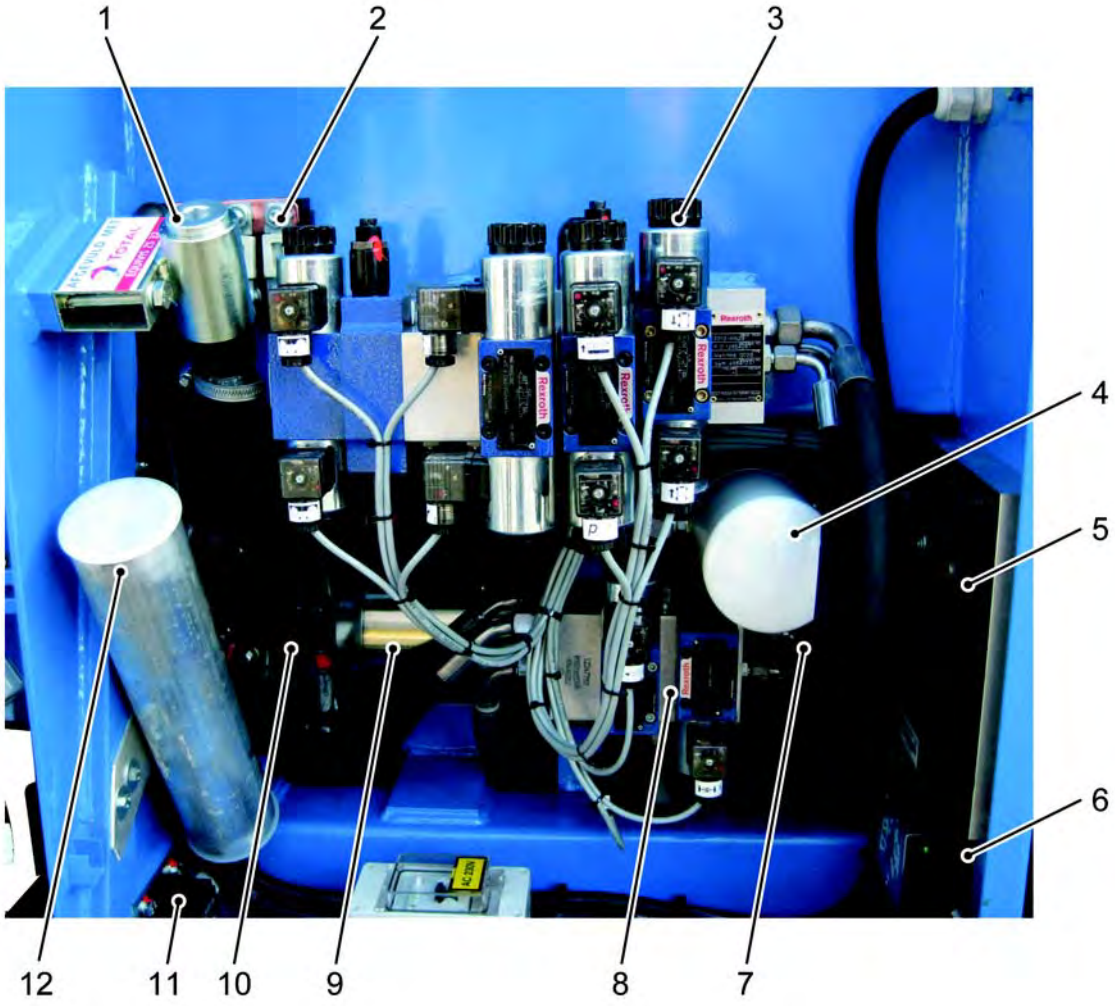
This compartment contains the electrical control unit.



Electrical compartment

1. Key switch for overload protection
2. Angle sensor calibration – store
3. Angle sensor calibration – save
4. PLC
5. Control current fuses (see the electrical diagram for the relevant circuits).

4.4 Hydraulic oil compartment



Hydraulic oil compartment

The hydraulic oil tank is located on the right side of the bottom carriage.

1. Fill opening – hydraulic oil tank
2. Main circuit breakers
3. Primary manifold
4. Hydraulic oil filter
5. Motor controller
6. Inverter 48/24V
7. Hydraulic tank
8. Driving manifold
9. Electric motors with pumps
10. Main relay
11. Limit switch for tilt protection
12. Document tube

4.5 Auxiliary switch raise/descend

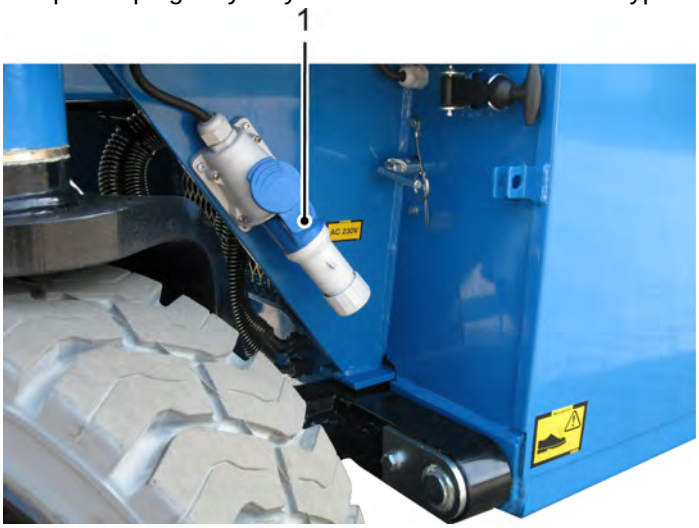
In the hydraulic cabinet, on the electrical box, there is an auxiliary (self-centring) toggle switch for raising and lowering the platform. This switch can be used during maintenance and in emergency situations.

Auxiliary switch raise/descend

1. Auxiliary switch raise/descend

4.6 Mains plug for battery charger

The mains power plug for the battery charger is located in a plug holder on the side of the battery cabinet. The mains power plug may only be connected to a Schuko-type mains socket.



Mains plug for battery charger

1. Mains plug for battery charger

5 Normal use

5.1 Preparations before use

See the instruction manual for the power source for instructions on how to prepare the scissor lift.

5.2 Starting

A. Insert the key (1) into the main switch.
B. Turn the key a quarter turn clockwise.
   • The power for the scissor lift is now ‘on’.

Main switch and key

C. Access the platform via the steps.
D. Erect the guardrail sections in the correct position and secure them correctly (see photos).

Linchpin for platform guardrail section

Linchpin for platform guardrail section

Linchpin for platform guardrail section

Linchpin(s) on the platform

E. Check whether the control box has been connected correctly.
F. Pull out and rotate the emergency stop button.

The scissor lift activates the tilt protection for 10 seconds (when height is below 4 metres). Once the warning signal is off, you can operate the scissor lift with the control box.

5.3 Switching off

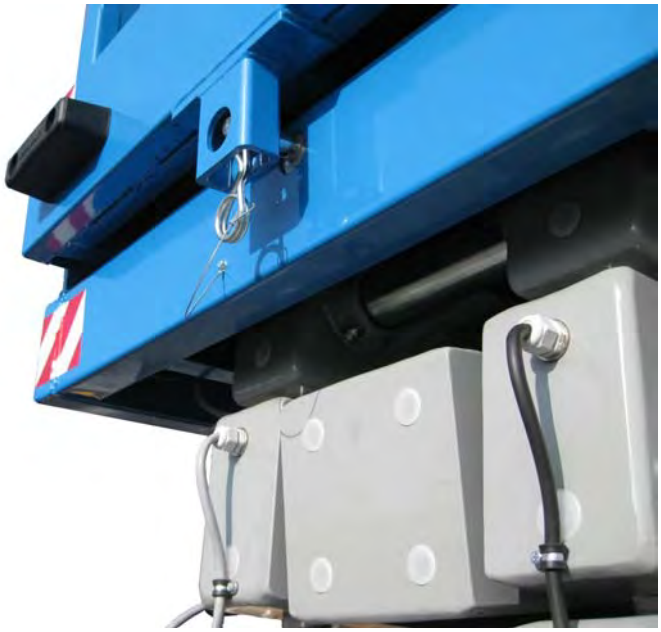
1. Retract the platform manually (if necessary).
2. Lower the platform.
3. Press the emergency stop button.
4. Disconnect the control box and store it safely.
5. Turn the key in the main switch a quarter turn anticlockwise.
6. Remove the key from the main switch.

5.4 Platform during transport

If the platform guardrails were folded down during transport, it is necessary to make sure they are fitted correctly, including the linchpins, before the scissor lift is used again.

Note!

- Never use the scissor lift if the linchpins are not all fitted.
- The guardrail sections may never be removed when using the scissor lift.
- The platform must be completely retracted and secured during transport.



Linchpin for the extendable platform

5.5 Battery state-of-charge meter

The battery state-of-charge meter (1) is located on the right side of the bottom carriage.

Location of the battery state-of-charge meter

1. battery state-of-charge meter

Battery state-of-charge meter

2. LED bar graph
3. Hour counter
4. 20%

The LED bar graph (2) indicates the batteries' state of charge. All LEDs on means: battery fully charged. The fewer LEDs that are lit, the less charge remaining in the battery. When all the LEDs on the bar graph are off, the 20% LED (4) lights. The ‘battery voltage too low’ indicator lamp on the control box then also lights. An acoustic signal also sounds. The raise function is now no longer available. You now have 10 minutes remaining to descend and drive to a charging point if necessary. After that time, none of the scissor lift's functions will be operable any more. Use of the emergency stop function during this 10-minute period will also deactivate all of the scissor lift's functions. In that case, a new 10-minute cycle can be started by briefly pressing the descend button on the left side of the electrical box. This procedure resets the 10-minute cycle.

Comment

If the emergency stop function is used during the 10-minute cycle, all functions are disabled from that moment.
The 10-minute cycle can be restarted by briefly pressing the descend button on the left side of the electrical box. This action re-activates the 10-minute cycle.

6 Transport

6.1 Towing

6.1.1 Introduction

The scissor lift has multiple disc brakes with a towing function. The multiple disc brakes are applied when the scissor lift is stationary. All the multiple disc brakes must be released before the scissor lift can be towed.

Releasing the multiple disc brakes

1. Plug

6.1.2 Releasing the multiple disc brakes

Warning
Prevent the scissor lift from being able to roll away. For example, place chocks against the wheels.

- Loosen the central bolt with a 30 mm socket, turning it out ±10-14 mm, until you feel the stop. Loosen the last turns by hand.

Note!
Do not continue to turn past the end stop.

The scissor lift can now be towed, because the wheels are no longer braked.

Warning
Restore the brakes for all the wheels after towing the scissor lift.

6.1.3 Point of special interest

When towing the scissor lift, pay attention to the following:

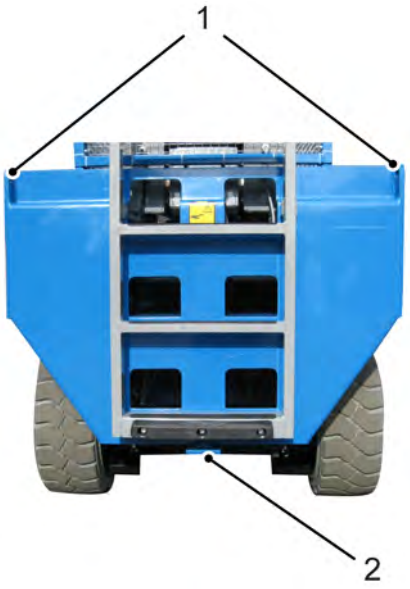
- The scissor lift may never be towed at a speed faster than the scissor lift's maximum speed.

6.2 Transport

6.2.1 Introduction

The towing eyes and the lashing/lifting eyes must be used when transporting the scissor lift. The towing eyes are located at the front and the rear of the scissor lift. The lashing/lifting eyes are located on the top corner points of the bottom carriage.
The following must be taken into consideration when using a different means of transport to move the scissor lift:

- If the scissor lift is hoisted onto another vehicle, then the lifting eyes, which are located on every corner of the bottom carriage, must be used.
- The weight of the scissor lift is stated on the type plate. Take this into consideration when deciding which means of transport or hoisting equipment to use.
- The bottom carriage must be secured to the means of transport in such a way that it cannot make any unintended movements in any direction. Use the lashing eyes for this.
- If the guardrails were folded down during transport, they must be fitted properly again before using the scissor lift.



Lashing/lifting eyes and the towing eye

1. Lashing/lifting eyes
2. Towing eye (at the front and rear)

Note!
Read the chapter entitled ‘Safety’ for more information concerning safety issues when transporting the scissor lift.

6.2.2 Preparation

1. Check the scissor lift's brakes.
2. Slide the platform in and secure it with the transport linchpin.

6.2.3 Points of attention

When transporting the scissor lift, pay attention to the following:

- If the incline is steeper than 25%, use a winch to pull the scissor lift onto the means of transport. Secure the winch cable to the towing eye on the bottom carriage.
- Only use the lashing/lifting eyes on the corners of the bottom carriage to hoist the scissor lift.

Comment
HOLLAND LIFT INTERNATIONAL B.V. recommends that the scissor lift only be hoisted using a special hoisting tool. If necessary, contact the manufacturer for more information.

7 Maintenance

7.1 Maintenance overview

Comment
The maintenance intervals given below are based on normal use of the scissor lift under normal conditions.
If the scissor lift is subjected to extreme conditions (such as dust, algae, bacteria or salt deposits), the frequency must be increased.
We rely on your sense of responsibility and professionalism.

Component	Action	Frequency
Scissor lift	Check the entire scissor lift for damage.	Every day
	Check for correct operation.	Every day
	Make sure the safety provisions work correctly.	Every day
	Make sure the decals are legible. If necessary, replace them.	Every day
	Lubricate the scissor lift according to the lubrication diagram.	Once a month
	Check all the bolt connections. If necessary, tighten.	Once every 3 months
	Check the maximum permitted lifting pressure at the maximum working load and maximum driving pressure. If the measured maximum permitted lifting pressure is greater than the stated maximum driving pressure: contact the manufacturer.	Once every 3 months
	Check all the sealed settings. If there are broken seals: contact the manufacturer.	Once every 3 months
	Have the scissor lift inspected by an expert.	Once a year
Scissor mechanism	Check that all parts are correctly attached and secured.	Once every 3 months
	Have the scissor mechanism inspected by an expert.	Every 5 years
Lift cylinder	Check that all parts are correctly attached and secured.	Once every 3 months
Hydraulic system	Check for damage and leaks. If necessary, rectify leaks and damage.	Every day
	Check oil reservoir. If necessary, top up.	Every week
	Replace the filter element.	Once every 3 months
	Change the oil.	Once a year

Component	Action	Frequency
Batteries	Check fluid levels. Top up if necessary.	Every week
	Recharge the battery if the scissor lift has not been used for more than 2 weeks.	Every two weeks when not in use
Limit switches for height stops	Check operation and adjustment.	Every week
Tilt safety device	Make sure it works correctly.	Once every 3 months
Wheels	Tighten the wheel bolts according to the tightening torque chart.	Once every 3 months
	Raise the wheels off the ground if the scissor lift is not going to be used for a long period of time.	-
PLC operation	Replace batteries. Only do so while the PLC is connected to a power supply, so the program in the memory will not be lost.	Every 4 years
Electric motors	Check the carbon brushes for wear. Replace if necessary, and clean the collector.	Once every 3 months

7.1.1 Protective guardrail

The protective guardrail on the bottom carriage prevents body parts from becoming trapped by the moving scissor arms.

Note!
If the guardrail is removed during maintenance work, it must be reinstalled correctly once the maintenance work has been completed.
It is not permitted to use the scissor lift when the protective guardrail is not fitted or does not work as intended.

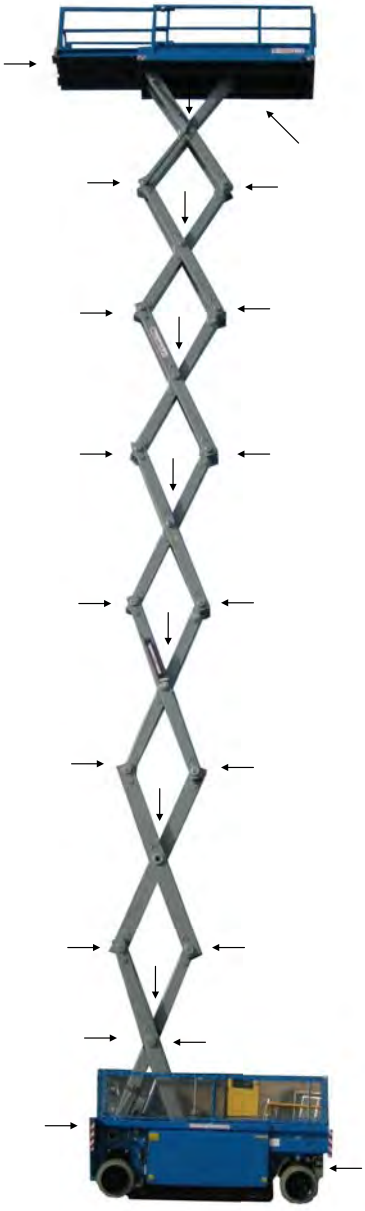
The protective guardrail must be removed before lubrication.
Make sure the guardrail is properly installed before the scissor lift is used again.

7.2 Overviews

7.2.1 Lubrication points

Lubricate all lubrication points with EP NLGI-kl.2 + Teflon (<2% dry material) grease.
The lubrication points are located in or at the following locations:

- all of the scissor mechanism's pivot points
- on the shafts used to attach the scissor mechanism and the lift cylinder to the bottom carriage (both sides)
- the sliding surfaces of the plastic blocks under the platform and in the bottom carriage (lubricate with a brush)
- the swivel axles



Lubrication points

7.2.2 Tightening torques

Bolt connection	Tightening torque	Thread
Tracking rod on steering knuckle	50 Nm	M16
Steering cylinder on tracking rod	50 Nm	M16
Steering cylinder on bottom carriage	50 Nm	M10
Rear axle of bottom carriage	725 Nm	M24
Wheel nuts	250 Nm	M18x1.5
Gearbox at swivel axles	200 Nm	M16

7.3 Maintenance procedures

7.3.1 Installing and removing the safety props

Introduction

The safety prop prevents people from becoming trapped in the scissor mechanism when carrying out work on the scissor lift.

Safety prop

1. Safety prop
2. Stub shaft
3. Stop
4. Latch

Engaging the safety prop

1. Make sure there is no load on the platform.
2. Make sure the scissor mechanism is opened far enough so that the safety prop (1) can be engaged.
3. Remove the lock bolt (4).
4. Lift the safety prop (1) out of the retainer and rotate it a quarter turn upwards as far as the stop (3).
5. Lower the platform until the stub shaft (2) falls into the recess in the safety prop.

Disengaging the safety prop

1. Raise the scissor mechanism slightly to release the safety prop.
2. Swing the safety prop a quarter turn back into the storage position.
3. Lower the safety prop into the retainer.

7.3.2 Topping up the hydraulic system

Note!
First disconnect the interconnection hose (on top of the tank) between the two tanks so the air can exit the tank.

Note!
Only top up the hydraulic system with TOTAL Equivis ZS 32.

- Fill the tank until the oil level reaches half the volume indicated on the gauge glass.

7.3.3 Lubrication

Note!
Only use EP NLGI-kl.2 + Teflon (< 2% dry material) grease to lubricate the scissor lift.
The warranty will be void if a different type of grease is used.

1. Engage the safety prop.
2. Manually pump the correct quantity of grease into all the indicated lubrication points until plenty of grease escapes from behind the washers.
3. Carefully remove any excess grease.

7.3.4 Check the tilt safety device

- Press the tilt safety device in both the longitudinal and transverse direction.
  - A warning signal will sound.

7.3.5 Inspecting the scissor mechanism

The scissor mechanism's pivot points must be checked for play, wear and damage by an expert every five years. A pivot point will be rejected if one or more of the following rejection criteria apply to the shaft or the bearing.

Rejection criteria:

- The shaft or the bearing has visible damage.
- The surface roughness of the shaft or the bearing exceeds 1 μm.
- The chrome layer on the shaft is damaged.
- The depth of the bearing's grease chamber is less than 0.40 mm.
- The shaft or the bearing is not sufficiently lubricated.
- The shaft or the bearing has seized.
- The play between the shaft and the bearing is greater than the specified limit (see table below).

Shaft diameter (mm)	Clearance F7 (μm)	Bearing - inner diameter (mm)	Clearance H9 (μm)
120 f7	-43 -83	120 H9	+100 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

8 Troubleshooting

Problem	Possible cause	Action
The scissor lift cannot be turned on.	The main switch has not been turned on.	Turn on the main switch.
	The emergency stop button has been pressed.	Pull out the emergency stop button and wait 10 seconds.
	There is a short circuit or a fuse has blown.	Determine the cause and replace the fuse.
The red segments of the LED bar indicator are flashing.	The battery voltage is too low.	Charge the batteries.
The hydraulic pump motor runs, but the scissor lift does not function.	The hydraulic pump does not work, so the hydraulic system cannot build up any pressure.	Contact the technical service department.
	The oil level in the hydraulic system is too low.	Top up the hydraulic system.
	The hydraulic pump is broken.	Replace the hydraulic pump.
The scissor lift cannot be driven with a raised platform or the platform cannot be raised.	The maximum tilt has been exceeded and the tilt safety device has been activated.	Lower the platform and make sure the scissor lift is on a level surface.
The platform cannot be raised or lowered.	The platform has been overloaded and the overload safety device has been activated.	Reduce the load on the platform. Or follow the emergency descent procedure.
The scissor lift cannot be driven at the fast speed.	The platform is at a height of more than 3 metres.	Lower the platform to a height of less than 3 metres.
The scissor lift cannot be driven.	The platform is at a height of more than 8 metres.	Lower the platform to a height of less than 8 metres.
The scissor lift brakes do not engage.	The brake system was not re-engaged after towing.	Re-engage the brake system.
	The brake packet is not correctly adjusted.	Readjust the brake packet.
	The multiple disc brake is worn.	Fit a new brake packet.
The platform cannot be lowered.	The safety prop is blocking the scissor mechanism.	Disengage the safety prop.
	The electrical system has cut out.	Use the emergency descent valve to lower the platform and check the electrical system.
A problem keeps recurring.		Contact the manufacturer (**Holland Lift International B.V.**).

9 Disposal

9.1 Introduction

The scissor lift must be disposed of in an environmentally-friendly manner. For example:

- trade in the scissor lift when purchasing a new scissor lift
- take the scissor lift to a specialised waste disposal company

9.2 Disposal procedure

1. Remove the batteries.
2. Remove the oil from the hydraulic system.
3. If necessary, remove the parts that can be reused.
4. For disposal of the batteries, oil and parts that cannot be reused, contact specialised waste disposal companies.

10 Technical specifications

10.1 Technical specifications for HL-140 E12 / N-120EL12

Suitable for use in enclosed spaces	Yes
Suitable for outdoor use:	No
Max. wind speed	n/a
Ambient temperature	-15 °C to +40 °C
Working height	±13.7 m
Max. platform height	±11.7 m
Min. platform height	1.8 m
Platform dimensions (retracted)	3.38 x 1.26 m
Platform dimensions (extended)	2.34 x 1.20 m
Platform extension	1.50 m
Transport dimensions (l x w)	3.74 x 1.20 m
Transport height with guardrails	2.96 m
Transport height with guardrail folded down	2.21 m
Wheelbase	2.67 m
Ground clearance (middle)	235 mm
Turning circle	3.92 m
Wheels	22 x 9 x 16
Power source	420 Ah/k5/48 V
Max. load with retracted platform	1,000 kg (2 pers. + 840 kg)
Max. load with extended platform	1,000 kg (2 pers. + 840 kg)
Raising/descent time (max. load)	approx. 68 | 40 sec.
Driving speed (fast)	2.0 km/h
Driving speed (slow)	0.5 km/h
Maximum traversable incline (platform lowered)	±25%
Max. longitudinal/transverse tilt	2° / 1.8° (mobile up to 8 metres, selection position ‘0’)
Max. longitudinal/transverse tilt	1° / 1° (mobile up to 11.7 metres, selection position ‘1’)
Unladen weight	7,000 kg
Max. wheel pressure (at max. tilt and max. height)	6,276 kg (18.03 kg/cm²)
Max. towing speed	2.0 km/h (0.56 m/s)

10.2 Technical specifications for HL-160 E12 / N-140EL12

Suitable for use in enclosed spaces	Yes
Suitable for outdoor use:	No
Max. wind speed	n/a
Ambient temperature	-15 °C to +40 °C
Working height	±16.0 m
Max. platform height	±14.0 m
Min. platform height	2.02 m
Platform dimensions (retracted)	3.38 x 1.16 m
Platform dimensions (extended)	4.88 x 1.16 m
Platform extension	1.50 m
Transport dimensions (l x w)	3.74 x 1.20 m
Transport height with guardrails	3.18 m
Transport height with guardrail folded down	2.43 m
Wheelbase	2.67 m
Ground clearance (middle)	235 mm
Turning circle	3.92 m
Wheels	22 x 9 x 16
Power source	420 Ah/k5/48 V
Max. load with retracted platform	750 kg (2 pers. + 590 kg)
Max. load with extended platform	750 kg (2 pers. + 590 kg)
Raising/descent time (max. load)	approx. 70 | 45 sec.
Driving speed (fast)	2.0 km/h
Driving speed (slow)	0.5 km/h
Maximum traversable incline (platform lowered)	±25%
Max. longitudinal/transverse tilt	2° / 1.8° (mobile up to 8 metres, selection position ‘0’)
Max. longitudinal/transverse tilt	1° / 1° (mobile up to 14 metres, selection position ‘1’)
Unladen weight	7,550 kg
Max. wheel pressure (at max. tilt and max. height)	6,500 kg (18.68 kg/cm²)
Max. towing speed	2.0 km/h (0.56 m/s)

10.3 Technical specifications for HL-190 E12 / N-165EL12

Suitable for use in enclosed spaces	Yes
Suitable for outdoor use:	No
Max. wind speed	n/a
Ambient temperature	-15 °C to +40 °C
Working height	±18.8 m
Max. platform height	±16.8 m
Min. platform height	2.24 m
Platform dimensions (retracted)	3.38 x 1.16 m
Platform dimensions (extended)	4.88 x 1.16 m
Platform extension	1.50 m
Transport dimensions (l x w)	3.74 x 1.20 m
Transport height with guardrails	3.40 m
Transport height with guardrail folded down	2.65 m
Wheelbase	2.67 m
Ground clearance (middle)	235 mm
Turning circle	3.92 m
Wheels	22 x 9 x 16
Power source	420 Ah/k5/48 V
Max. load with retracted platform	500 kg (2 pers. + 340 kg)
Max. load with extended platform	500 kg (2 pers. + 340 kg)
Raising/descent time (max. load)	approx. 95 | 52 sec.
Driving speed (fast)	2.0 km/h
Driving speed (slow)	0.5 km/h
Maximum traversable incline (platform lowered)	±25%
Max. longitudinal/transverse tilt	2° / 1.8° (mobile up to 8 metres, selection position ‘0’)
Max. longitudinal/transverse tilt	1° / 1° (mobile up to 16.5 metres, selection position ‘1’)
Unladen weight	7,985 kg
Max. wheel pressure (at max. tilt and max. height)	6,659 kg (19.14 kg/cm²)
Max. towing speed	2.0 km/h (0.56 m/s)

10.4 Technical specifications for HL-220 E12 / N-195EL12

Suitable for use in enclosed spaces	Yes
Suitable for outdoor use:	No
Max. wind speed	n/a
Ambient temperature	-15 °C to +40 °C
Working height	±21.7 m
Max. platform height	±19.7 m
Min. platform height	2.58 m
Platform dimensions (retracted)	3.38 x 1.16 m
Platform dimensions (extended)	4.88 x 1.16 m
Platform extension	1.50 m
Transport dimensions (l x w)	3.74 x 1.20 m
Transport height with guardrails	3.74 m
Transport height with guardrail folded down	3.01 m
Wheelbase	2.67 m
Ground clearance (middle)	235 mm
Turning circle	3.92 m
Wheels	22 x 9 x 16
Power source	500 Ah/k5/48 V
Max. load with retracted platform	500 kg (2 pers. + 340 kg)
Max. load with extended platform	500 kg (2 pers. + 340 kg)
Raising/descent time (max. load)	approx. 90 | 55 sec.
Driving speed (fast)	2.0 km/h
Driving speed (slow)	0.5 km/h
Maximum traversable incline (platform lowered)	±25%
Max. longitudinal/transverse tilt	2° / 1.2° (mobile up to 8 metres, selection position ‘0’)
Max. longitudinal/transverse tilt	1° / 1° (mobile up to 19.7 metres, selection position ‘1’)
Unladen weight	9,220 kg
Max. wheel pressure (at max. tilt and max. height)	8,096 kg (23.27 kg/cm²)
Max. towing speed	1.9 km/h (0.53 m/s)

11 EC Declaration

This EC Declaration applies to scissor lifts produced after 29 January 2015.

HOLLAND LIFT

EC DECLARATION OF CONFORMITY

(In accordance with the Machinery Directive 2006/42/EC, annex II, sub a.)

HOLLAND LIFT INTERNATIONAL B.V.
ANODEWEG 1
1627 LJ, HOORN, THE NETHERLANDS

Declares that:

Scissor lift, series N
Type: HL-140 E12 / HL-160 E12 / HL-190 E12 / HL-220 E12
N-120EL12 / N-140EL12 / N-165EL12 / N-195EL12
Machine number: HL140.... / HL160.... / HL190.... / HL220....
N120.... / N140.... / N165.... / N195....

- Complies with the stipulations of the Machinery Directive; **2006/42/EC**
- Conforms to the following additional European Directives:
  EMC Directive, 2004/108/EC
  Low Voltage Directive, 2006/95/EC
- Conforms to the following harmonised European standards:
  EN 280:2001+A2:2009, EN-ISO 12100-1:2003, EN-ISO 12100:2010,
  EN 349:1+A1:2008, EN-ISO 13850:2008, EN-IEC 60204-1:2006+A1:2009,
  EN-IEC 60529:1 1992+A1:2000, EN-IEC 60947-5-1-2004

Conformity with the requirements laid out in annex I, IV and VII of the Machinery Directive was established during an EC type examination conducted by S.G.S NEDERLAND B.V. (Identity Number: 0608), Malledijk 18, Spijkenisse (The Netherlands). An EC Type examination certificate was issued with the number: **110201/500/001/2835.**

HOORN, ...

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