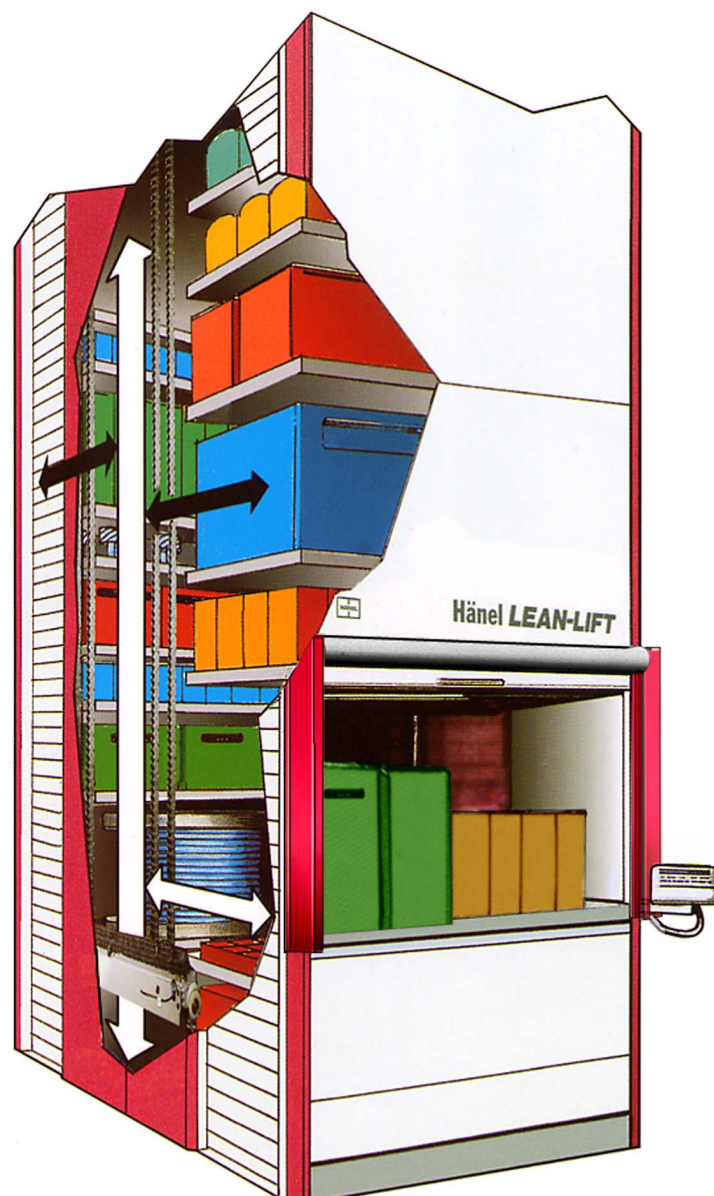




# Operating Manual Lean-Lift





# Operating Manual

## Lean-Lift

### Contents

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1	Accident prevention – what you need to know about workplace safety	21
2	Familiarising yourself with the lift	47
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# Operating Manual

## Lean-Lift

### Chapter 0

#### Basic information

#### Contents

This chapter contains general information about the lift, its use, and the Operating Manual.

Section	Subject	Page
0.1	Guide	5
0.2	Introduction	8
0.3	Intended use	11
0.4	Personnel requirements	14
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# Operating Manual

## Lean-Lift

### 0.1 Guide

#### Contents

This section contains basic information about this manual.

#### Target group of this manual

This manual has been written solely for trained and instructed installation and maintenance personnel who are responsible for all matters related to technical support of the lift.

#### Classification of the signal words and colours used

The signal words and colours used have the following meanings:

#### Signal word and colour

(Warning sign)



- Safety instruction
- Preventive measure

#### Meaning

##### High risk of danger

Safety alert symbol with the keyword "DANGER".  
High risk, warning of fatal injuries in the event that instructions/requirements are not observed.

White text on red background.

A specific symbol to explain the danger appears in the box to the left.

(Warning sign)



- Safety instruction
- Preventive measure

##### Moderate risk of danger

Safety alert symbol with the keyword "WARNING".  
Moderate risk, warning of possible severe to fatal injuries in the event that instructions/requirements are not observed.

Black text on orange background.

A specific symbol to explain the danger appears in the box to the left.

(Warning sign)



- Safety instruction
- Preventive measure

##### Low risk of danger

Safety alert symbol with the keyword "CAUTION".  
Moderate risk, warning of possible minor to moderate injuries in the event that instructions/requirements are not observed.

Black text on yellow background.

A specific symbol to explain the danger appears in the box to the left.

(Mandatory instruction sign)



- Safety instruction

##### Safety instruction

Keyword "SAFETY INSTRUCTION".  
Instruction for safe work.

White text on green background.

A specific mandatory instruction symbol may appear which explains the required safety measure.









# Operating Manual

## Lean-Lift

### 0.1 Guide (continued)

#### Symbols

The following symbols are used in this manual.

Symbol	Meaning
	Notes with this symbol warn you of possible severe injuries of a general nature, possibly including fatal injuries.
	Notes with this symbol warn you of a hazard caused by falling.
	Notes with this symbol warn you of a hazard caused by suspended loads, particularly falling of the extractor.
	Notes with this symbol warn you of a hazard caused by electrical current.
	Notes with this symbol warn you of a hazard caused by storing hazardous materials, particularly aggressive or corrosive media.
	Notes with this symbol warn you of hand injuries caused by moving machine parts.
	Notes with this symbol warn you of a hazard caused by hot surfaces.
	Notes with this symbol warn you of a hazard caused by: <ul style="list-style-type: none"><li>• Storing explosive materials in the lift</li><li>• Storing these materials in the area surrounding the lift</li><li>• Development of explosive atmospheres.</li></ul>



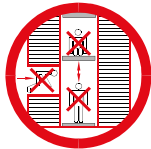
# Operating Manual

## Lean-Lift

### 0.1 Guide (continued)

#### Symbol

#### Meaning



This symbol informs you that the following are prohibited:

- Entering the lift via the access point.
- Sitting or standing inside the access point or underneath the unsecured extractor (see Chapter 1.4).
- Riding on the extractor.



#### **Secure the main switch(es)!**

This symbol informs you that, before beginning a task, you must switch off the main switch and secure it from being switched on again using a padlock.



#### **Secure the actuator latch!**

This symbol informs you that, before beginning a task, you must lock a padlock onto the actuator latch of the open service door to keep it from closing.



#### **Wear fall protection equipment!**

This symbol informs you that, before beginning a task at great heights, you must put on fall protection equipment as personal safety equipment.



#### **Tip!**

Here you will find important information about the lift, instructions, and tips to make using the lift easier.

# Operating Manual

## Lean-Lift

### 0.2 Introduction

#### Contents

This section contains some general information about the lift.

#### Manufacturer

Hänel Büro- und Lagersysteme  
Postfach 11 61  
74173 Bad Friedrichshall  
Phone: +49 (0) 7136 27725  
Fax: +49 (0) 7136 27741  
Internet: [www.haenel.de](http://www.haenel.de)

#### Scope of validity of the Operating Manual

This Operating Manual is valid for lifts of the following series:

Type: Hänel Lean-Lift  
Drives: 1 vertical motor and 1 horizontal motor  
Number of access points: unlimited  
Serial number: see type plate on the lift  
Year of manufacture: see type plate on the lift

If your lift has multiple access points, the type plate is located at the first access point (also refer to Chapter 4.11).

#### Date of issue of the Operating Manual

June 2008

#### Applicable EC directives

With machine documentation and a product description in the official language(s) of the country of use, the lift fulfils the basic safety requirements of the following EC directives:

- Machinery Directive 98/37/EC or 2006/42/EC
- Low Voltage Directives 2006/95/EC
- EMC Directive 2004/108/EC

For more information, refer to the Declaration of Conformity and EN 15095. Outside of the EU, the respective laws of the country of use shall apply to the seller and owner/operator.

#### Supporting documents

The complete table of contents included in the documentation provides an overview of all of the documentation. Of these documents, the following are particularly important for erection and operation of the lift:

Title of the document	Target group of the document
Hänel Lean-Lift User Guide	Supervisors and operating personnel
Hänel Lean-Lift Operating Manual	Supervisors, service and maintenance personnel
Microprocessor control system: User Guide for the MP... Lean-Lift and Multi-Space	Supervisors and operating personnel

# Operating Manual

## Lean-Lift

### 0.2 Introduction (continued)

Title of the document	Target group of the document
Microprocessor control system: Technical Description of the MP12....	Supervisors, service and maintenance personnel, programmers
Lean-Lift Installation Requirements	Support personnel employed by the owner/operator
Lean-Lift Installation Instructions	Specially trained and authorised technicians employed by the manufacturer or authorised representatives
<b>Depending on the lift version:</b>	
Lean-Lift and Multi-Space Operating Manual for Remote-controlled Lift Operation with MP12.... without Special Safety Equipment	Supervisors and operating personnel
Lean-Lift and Multi-Space Operating Manual for Remote-controlled Lift Operation with MP12.... with Special Safety Equipment	Supervisors and operating personnel
Operating Manual "Remote-controlled Lift Operation with MP12.... and Automatic Container Extractor"	Supervisors and operating personnel

#### Keep in an accessible place as a complete document

- This Operating Manual is a part of the lift and must be stored in a location that is accessible to authorised personnel at all times.
- Chapters may never be removed from this Operating Manual. If the Operating Manual or any of its pages are lost or missing, particularly the chapter entitled "Safety instructions", they must be replaced immediately.

#### Copyright

This documentation contains information that is protected by copyright. It may not, in whole or in part, be photocopied, duplicated, translated or stored to any electronic medium without prior consent.

All other rights reserved.

#### Modifications by third-party companies

Modifications are permitted only after a specialised safety concept is created and approved by the Hänel factory. This applies both to modifications carried out by companies associated with Hänel and to those carried out by independent representatives or other companies.

Any modification without the proper approval is prohibited.

- Risk of fatal injury! -

Unauthorised modification shall have the following consequences:

- All safety warranties and certifications shall be rendered null and void.
- Hänel shall no longer be deemed the manufacturer of the lift, and all warranty claims against Hänel shall be rendered null and void.
- A new safety assessment process and safety concept must be created. This would then have to take place under the sole responsibility and at the sole risk of the company carrying out the modification, and without the detailed knowledge of the manufacturer.

# Operating Manual

## Lean-Lift

### 0.2 Introduction (continued)

#### **Adding equipment to the lift without the manufacturer's approval**

Approval from the manufacturer is not necessary when adding the following equipment to the lift:

##### **On the lift:**

- Retrofitting a lighting fixture.
- Retrofitting an LED bar.
- Relocating a keyboard arm.
- Retrofitting an additional container limit stop in the access point.
- Installing partitioning hardware for containers.
- Replacing a piece of interchangeable equipment or spare parts listed in the spare parts price list.
- The following applies for additional containers:
  - The average load of all containers in the lift must not exceed the maximum total load of the lift.
  - The container version must correspond to that originally delivered with the lift.

##### **On the MP control systems:**

- Retrofitting compartment LEDs.
- Retrofitting a Varioarm system.

#### **Change service**

This documentation is not subject to the change service of the manufacturer. Changes to this documentation may be made without further notification.

# Operating Manual

## Lean-Lift

### 0.3 Intended use

#### Contents

This section describes which activities can be carried out using the lift and which are prohibited, even if the application seems possible.

#### Intended use

Hänel lifts are intended exclusively for storage and warehousing purposes in offices and industrial facilities.

The following points also require compliance:

- The containers are loaded and unloaded via the access opening only.
- For standard lifts, the permitted ambient temperature range is from +5 °C (+41 °F) to +40 °C (+104 °F).
- The maximum permitted load carrying capacity of the lift and the containers, which is stamped on the type plate, must not be exceeded. The owner/operator is responsible for ensuring the correct load.
- When performing service or repair work and before entering the inside of the lift, switch off the main switch and secure it from being switched on again using a padlock. Only trained and authorised personnel may enter the lift.
- When the service door is open, the actuator latch for the safety switch must be secured on the service door and the main switch using a padlock.

#### Misuse

The following points or activities shall be deemed by us to be prohibited use:

- Installing or operating the unit outdoors.
- Operating the unit without protection from external forces such as loads from wind and snow.
- In earthquake zones outside of Germany, using those lifts that do not have the special construction required or have not been certified by a specialised engineering office from the USA for use in earthquake zones (also refer to the order confirmation and Declaration of Conformity).
- Storing hazardous or explosive materials in solid, liquid or gas form (packaged or unpackaged).
- Operating the lift in an explosive, aggressive or corrosive environment.
- Storing loose foodstuffs in standard lifts. For lifts in which storing packaged foodstuffs is permitted, additional information about cleaning, disinfection and detergent procedures is provided in a supplement to the operating manual.
- Storing articles that exceed the interior height of the containers.

# Operating Manual

## Lean-Lift

### 0.3 Intended use (continued)

#### Misuse (continued)

- Storing transparent articles or articles with a diameter or edge length of less than 5 mm (0.2 in), as these articles are not detected by the article height detection system.
- Storing articles that are not packed such that they cannot tip over or that are not protected from tipping over when they are put into storage. These articles can fall out or damage the lift.
- Removal of parts that are screwed on, such as edge reinforcements that are screwed onto containers.
- Adding or replacing containers without a verifiable release from the Hänel factory.
- Loading using robots or similar automated systems is not permitted without suitable supplementary equipment coordinated with the manufacturer.
- Operating the unit with modifications that have not been approved by the manufacturer or failing to comply with the service intervals and regulations.
- Transporting humans or animals.
- Climbing into the lift through the access opening.
- Use of a lift that is or was exposed to rain, water or non-negligible vibrations.

#### Flooding the lift

Only nitrogen (N<sub>2</sub>) is currently approved for flooding the interior of the lift with media other than air. Before using other media, you must first obtain permission for the specific medium from the Hänel factory.

It is not permitted to use aggressive, corrosive, combustible or explosive media, since hot surfaces or sparks are possible inside the lift. Hot surfaces may develop, for example, from self-heating of drive parts; sparks may be caused by damage to interior parts from improperly stored articles.

All media can escape from the lift. Therefore, the owner/operator must provide a procedure for monitoring the room concentration of the medium used.

# Operating Manual

## Lean-Lift

### 0.3 Intended use (continued)

#### Collision barrier

If the lifts are in areas where forklifts or similar motorised loading equipment are driven, the owner/operator must provide a suitable collision barrier.

This also applies for lifts with guide rails that are loaded or unloaded using this loading equipment.

The owner/operator must co-ordinate the design of the collision barrier with the manufacturer of the conveyance so that damage to the lift is reliably prevented.

As a rule, it is not permitted to use forklifts or similar motorised loading equipment to load or unload from the side because of the risk of potential collision forces.

The same holds true for loading and unloading directly into the access point of the lift.

# Operating Manual

## Lean-Lift

### 0.4 Personnel requirements

#### Contents

Overview of the qualifications required of the installation and maintenance personnel.

#### Operating personnel

##### Tasks of the operating personnel

The operating personnel are responsible for the following tasks:

- Identifying any irregularities and malfunctions of the lift during operation.
- Operating the lift from the workstations intended for this purpose.
- Identifying faults and irregularities and, where possible and permitted, correcting them.

##### Requirements of the operating personnel

In order to perform their assigned tasks correctly, all operators must fulfil the following requirements:

- All operators must have received initial training from the owner/operator, and follow-up training at least once a year, with regard to all workplace safety matters pertaining to the lift.
- The operator must be at least 16 years of age.
- The operator must be sufficiently proficient in the language of the country of use.

#### Service and maintenance personnel

##### Tasks of the service and maintenance personnel

The service and maintenance personnel are responsible for the following tasks:

- Carrying out regularly scheduled inspections and service tasks on the lift.
- Carrying out maintenance tasks on the lift.
- Carrying out test runs on and with the lift.
- Checking the integrated safety equipment.

##### Requirements of the service and maintenance personnel

Only authorised personnel are permitted to carry out any work. Authorised personnel are defined as follows:

- Personnel who, because of their specialised education and qualified training (for example, from the manufacturer), can provide proof of adequate skills and experience for these tasks and
- Who have received approval from the manufacturer or an agent authorised within the technical field to carry out these tasks and can carry out such tasks in a traceable manner.

The personnel must also be sufficiently proficient in the language of the country of use.



# Operating Manual

## Lean-Lift

### 0.5 Due diligence of the owner/operator

#### Contents

This section will familiarise you with the tasks and responsibilities of the owner/operator with regard to use and operation of the lift.

#### Safety of the lift

In particular, the owner/operator must ensure the following:

- The lift is used for its intended use only.
- The lift is operated only if it is fully functional and free of faults.
- Integrated safety equipment is regularly maintained and checked for proper function (see Chapters 4.3 and 4.4),
- The unit is operated, maintained and repaired by sufficiently trained, qualified and authorised personnel only.
- Adaptations to state-of-the-art technology are carried out in accordance with the valid safety regulations in the country of use.

#### Protection of personnel

In particular, the owner/operator must ensure that the required personal safety equipment for:

- Maintenance personnel and
- Repair personnel

is provided and used.

#### Instruction and training

In particular, the owner/operator must ensure the following:

- Before beginning work for the first time, and at least once a year afterwards, the personnel are trained in all pertinent workplace safety and environmental protection matters.
- The operating manual is maintained in legible condition at all times and kept in its entirety at the location where the equipment is used.
- The personnel is familiar with the operating manual and, in particular, the safety instructions provided in the manual.
- The safety and warning signs attached to the lift are not removed and are maintained in legible condition at all times (also refer to the document "SiSchi-LL" in the documentation folder).

# Operating Manual


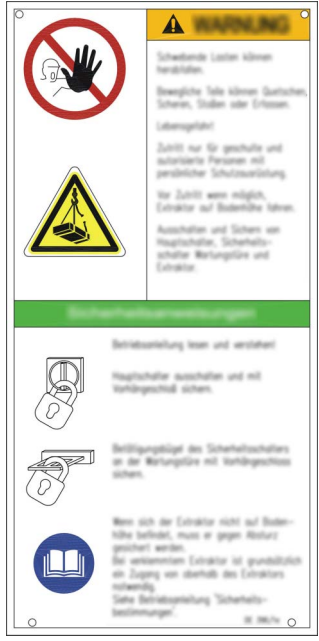

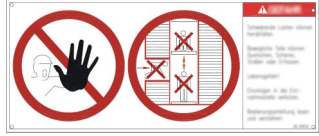
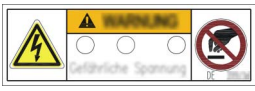
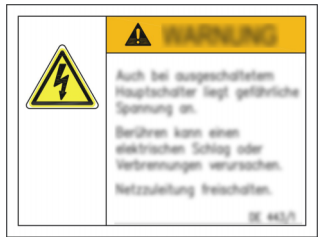
## Lean-Lift

### 0.6 Safety signs on the lift

#### Contents

This chapter provides an overview of the safety signs and, where applicable, specifies the location of additional information in the Operating Manual. The signs may vary depending on the lift version (standard/order-specific); refer to the document "SiSchi-LL" in the documentation folder.

#### Signs

Sign	Additional information	Sign	Additional information
	Chapter 0 (Short operating instructions; standard; 07 100 171/1)		Chapter 1-5 (Safety instructions for standard model service door; standard; 07 100 396/1)
	Chapter 1-5 (Climbing into the lift prohibited; standard; 07 100 313)		Chapter 1-5 (Access prohibited for unauthorised persons and prohibition sign for access point and extractor; standard; 07 100 418)
	Chapters 3 and 4 (Voltage at terminal block; standard; 07 100 399)		Chapter 3 (Electricity warning arrow for mains power line; standard; 07 100 443)

# Operating Manual

## Lean-Lift

### 0.6 Safety signs on the lift (continued)

Sign	Additional information	Sign	Additional information
	Chapters 1, 3 and 4 (Safety instructions for drive; standard; 07 100 260)		Chapters 3 and 4 (Electrical warning arrow; standard; 07 100 419)
	Chapters 1, 3 and 4 (Outside panelling; standard; 07 100 414)		Chapter 1 (Safety instructions for locking device; standard; 07 100 441)
	Chapters 1, 3 and 4 (Safety instructions for service door in special height; order-specific; 07 100 312)		Chapters 1 and 4 (Weighing device; order-specific; 07 100 402)
	Chapters 1, 3 and 4 (Safety instructions for service door in special height; order-specific; 07 100 312)		Chapters 1 and 4 (Weighing device; order-specific; 07 100 402)
	Chapters 1 and 4 (Weighing device; order-specific; 07 100 402)		Chapters 1 and 4 (Weighing device; order-specific; 07 100 402)

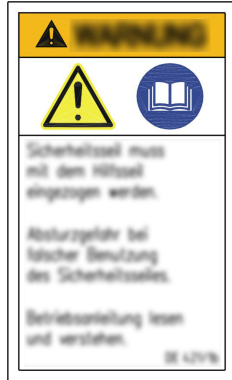
# Operating Manual

## Lean-Lift

### 0.6 Safety signs on the lift (continued)

#### Sign

#### Additional information



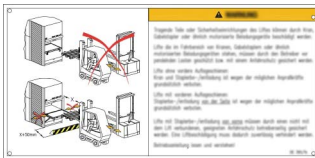
Chapter 1  
(Safety rope;  
order-specific;  
07 100 421)

#### Sign

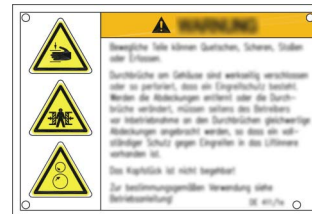
#### Additional information



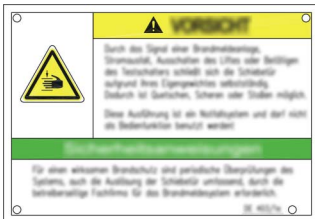
Chapters 1, 3 and 4  
(Interconnected Lean-Lift;  
order-specific;  
07 100 310)



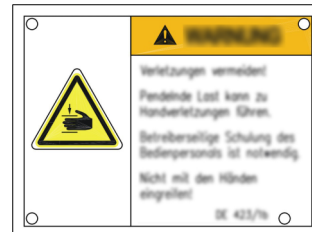
Chapters 0 and 4  
(Forklift loading  
prohibited/permitted;  
order-specific;  
07 100 395)



Chapters 1, 3 and 4  
(Openings in the housing;  
order-specific;  
07 100 411)



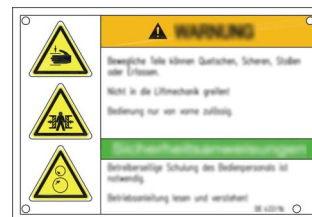
Chapters 1, 3 and 4  
(Automatically closing door;  
order-specific;  
07 100 403)



Chapters 1, 3 and 4  
(Automatic container ejector  
with side access protection;  
order-specific;  
07 100 423)



Chapter 1.7  
(Antistatic earthing;  
order-specific;  
07 100 401)



Chapters 1, 3 and 4  
(Automatic container ejector  
with safety slider;  
order-specific;  
07 100 422)

# Operating Manual

## Lean-Lift

### 0.6 Safety signs on the lift (continued)

#### Sign

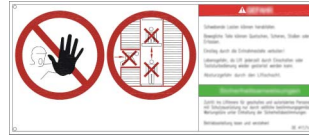
#### Additional information



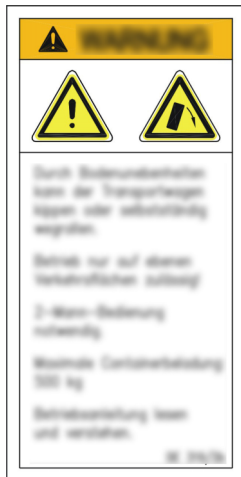
Chapters 1, 3 and 4  
(Safety instructions for wire mesh;  
order-specific;  
07 100 372)

#### Sign

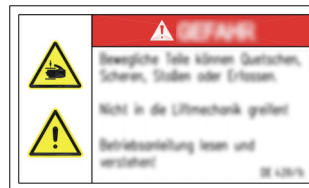
#### Additional information



Chapter 1-5  
(Enlarged access point;  
order-specific;  
07 100 417)



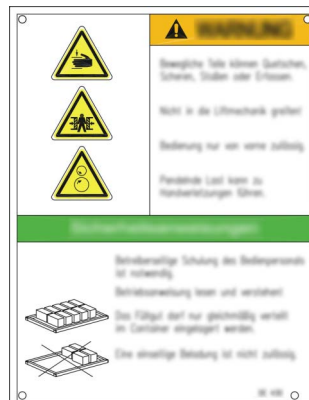
Chapter 0  
(Example: Transporter  
operation;  
order-specific;  
07 100 319)



Chapters 1, 3 and 4  
Automatic container ejector –  
hand injury warning  
order-specific;  
07 100 420)



Chapters 1 and 3  
(Safety instructions – non-EU  
order-specific  
07 100 427)



Chapter 1  
(Automatic container ejector  
2860, 3060, 3260  
order-specific  
07 100 430)



Chapter 4  
(Sticker for frequency converter;  
order-specific  
07 100 442)



# Operating Manual

## Lean-Lift

### Chapter 1

#### Accident prevention – what you need to know about workplace safety

##### Contents

This chapter contains everything you need for working safely on and with the lift. In addition to basic safety instructions, it also includes necessary information for certain tasks or special circumstances.

Read it before you begin work to find the information relevant to your task.

Section	Subject	Page
1.1	Basic safety instructions	23
1.2	Working inside the lift – general safety instructions	27
1.3	Working inside the lift – lifts in multi-unit networks	29
1.4	Working inside the lift – securing the extractor	31
1.5	Working inside the lift – jammed extractor	40
1.6	Wearing personal safety equipment	42
1.7	Working safely with Hänel accessories	45





# Operating Manual

## Lean-Lift

### 1.1 Basic safety instructions

#### Contents

This section contains basic, general safety instructions for safe use of the Lean-Lift.

#### Safety signs on the lift

Signs with instructions for safe use of the lift are attached at various locations of the machines (also refer to the document "SiSchi-LL" in the documentation folder and Chapter 0.6).

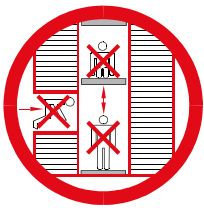
Always follow the instructions. Signs that are missing or illegible must be replaced immediately!

#### Introductory note about these safety instructions

The following safety instructions are very general rules for safe work at the lift. In addition to these, additional hazards and/or safety instructions may exist for certain tasks or operating tasks.

These special safety instructions appear in the text next to the description of the corresponding task.

**Follow these safety instructions at all times in order to prevent harm to your health from the hazards listed below.**



#### DANGER

Fatal crushing injuries from moving machine parts

For persons who are inside the lift for service work or to clear fallen articles, there is an acute risk of fatal injury from machine movements.

Therefore, the lift must be entered only by specially trained personnel (such as Hänel after-sales service technicians) and following special safety precautions!

- Never climb into the lift through the access point. If the lift is switched on at that moment, there is an acute risk of fatal injury from moving machine parts or falling articles.
- Do not transport persons or animals in the lift.
- Do not remove any locks or warning signs that secure the lift from being switched on. These usually indicate that someone is working inside the lift.



#### DANGER

Hazard from explosive materials and atmospheres

The lift is not suited for storing explosive or combustible hazardous materials, or for being operated in an explosive atmosphere; these are all prohibited. Solid materials and aerosols can accumulate in gaps inside the lift.

- Do not store any explosive or combustible materials or materials that can create an explosive atmosphere.
- Before switching on the lift, remove all explosive and combustible materials from the danger zone of the lift.

# Operating Manual

## Lean-Lift

### 1.1 Basic safety instructions (continued)



#### **DANGER**

Electrical hazard

The lift operates at high voltage and correspondingly high amperages.

Even an amperage as low as 44 mA can be fatal.

- Ensure that the openings and other means of access to the electrical supply units remain closed at all times. Operation with open electrical devices is prohibited.
- The keys for the means of access to the electrical supply units must be kept in such a way that they are accessible to electricians only.
- Beware of damaged electrical leads and connections. Before the unit is put into service, an electrician must first repair any damaged electrical leads and connections.
- Before all work, secure the main switch from being switched on again using a padlock.
- If you need to enter the lift for any reason, you must secure the extractor from crashing and secure the actuator latch of the safety switch on the service door using a padlock.



#### **DANGER**

Hazard from dangerous residual voltage for lifts in multi-unit networks

For lifts in multi-unit networks, hazardous voltage is still present at the following components even when the main switches are switched off:

- the main switches with undervoltage trip,
- Terminal strip X2 in the electrical drawer
- at the safety switch on the service door.

- Before working on these parts, completely disconnect lifts in multi-unit networks from the mains power connection.



#### **WARNING**

Hazard from aggressive and corrosive materials

It is prohibited to store hazardous materials in the lift. Stored hazardous materials can be harmful to the health of the operator and cause property damage to the lift or stored articles.

- Do not store any aggressive, corrosive or otherwise hazardous materials.
- If the lift is flushed with gas, nitrogen is the only gas approved by the manufacturer.

# Operating Manual

## Lean-Lift

### 1.1 Basic safety instructions (continued)



#### WARNING

Crushing injuries from moving machine parts  
When articles are put into storage or retrieved from storage, there is a danger of severe crushing injuries from the containers and extractor.

- Do not reach into moving machine parts.
- Before using the lifts, always check that the safety equipment in the area of the access point(s) is functioning properly.
- Do not remove any locks or warning signs that secure the lift from being switched on. These usually indicate that someone is working inside the lift.



#### WARNING

Burns from hot surfaces  
The drives, brakes and braking resistor can become very hot during operation. Therefore, burns are possible when working on these parts.

- If possible, wait 20 - 30 minutes before beginning work so that the drives and brakes can cool off.
- If it is not possible to wait that long, wear heat-resistant safety gloves while working.



#### WARNING

Danger of falling inside the lift  
If service or maintenance tasks have to be performed at great heights inside the lift, there is a danger of falling. There is a danger of severe or fatal injuries from the containers and other corners and edges.

- Fall protection equipment must be worn for all work at great heights inside the lift.

# Operating Manual

## Lean-Lift

### 1.1 Basic safety instructions (continued)

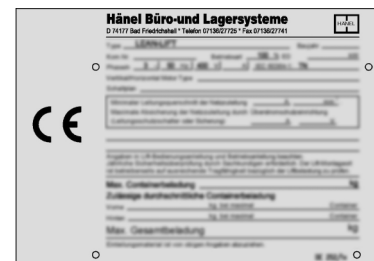


#### CAUTION

Hazard from overload of the lift

The load of the containers and the lift is not monitored automatically. Overloaded containers can cause one-sided loads or overloads of the lift or falling of stored articles.

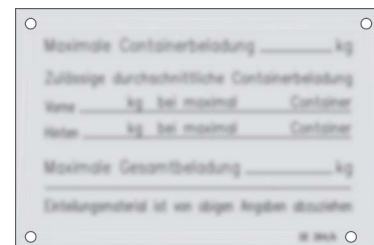
- After loading a container, check to make sure that the total weight of the stored articles does not exceed the permitted maximum.
- The owner/operator is responsible for monitoring the correct load.
- If possible, use a container weighing device for this purpose.
- If you do not use a weighing device, you must periodically check the lift load.
- Refer to the type plate and load sign for the permitted load per container and for the entire lift —see the following examples.



**Hänel Büro-und Lagersysteme**  
D 74177 Bad Friedrichshall \* Telefon 0714622720 \* Fax 0714622741

CE

Max. Containerbelastung \_\_\_\_\_ kg  
Zulässige durchschnittliche Containerbelastung \_\_\_\_\_ kg  
Max. Gesamtbelastung \_\_\_\_\_ kg



Maximale Containerbelastung \_\_\_\_\_ kg  
Zulässige durchschnittliche Containerbelastung \_\_\_\_\_ kg  
Max. \_\_\_\_\_ kg bei maximal \_\_\_\_\_ Container  
Max. \_\_\_\_\_ kg bei maximal \_\_\_\_\_ Container  
Maximale Gesamtbelastung \_\_\_\_\_ kg  
Entlangend ist vor allen Regeln abzuweichen



#### CAUTION

Hazard from erection of the lift on a prohibited substrate.

The substrate at the erection location must have a sufficient load carrying capacity for the lift load.

It is not possible to use the lift for monitoring purposes to ensure that the load capacity of the floor is not exceeded; this is the responsibility of the owner/operator.

- Before erecting the lift, ensure that the structure of the building has a sufficient carrying capacity for the lift load. The building must be founded on undisturbed soil or corresponding equivalent substrate.

# Operating Manual

## Lean-Lift

### 1.2 Working inside the lift – general safety instructions

#### Contents

Important information for working inside the lift without accidents.

#### Who is authorised to work inside the lift?

Only authorised personnel are permitted to carry out any work.

Authorised personnel are defined as follows:

- Personnel who, because of their specialised education and qualified training (for example, from the manufacturer), can provide proof of adequate skills and experience for these tasks and
- Who have received approval from the manufacturer or an agent authorised within the technical field to carry out these tasks and can carry out such tasks in a traceable manner.

Our Hänel after-sales service will be pleased to carry out service and maintenance work upon request. Should you wish to carry out any work yourself, please contact the Hänel plant or one of the Hänel representatives for information about the respective training courses.

All work on the drive parts and parts of the mechanical system of the lift may, for safety reasons, be carried out by trained and authorised personnel (such as Hänel after-sales service) only.

Examples of this work include:

- Replacing the drive chain,
- Replacing the motor or gear unit,
- Replacing the friction lining or brake,
- Readjusting the air gap of the brake,
- Replacing drive pinions,
- Repairing or replacing carrying chain(s),
- Replacing the carrying chain bearing and
- Replacing the drive shafts.

#### Accident prevention regulations

For all work, the legal accident prevention regulations applicable to the respective country of use always have overriding authority.

Furthermore, the owner/operator may have additional special regulations that also have to be taken into consideration.

#### Required padlocks

You need at least two padlocks for all service and maintenance tasks. For multi-unit networks, you need a corresponding number of additional locks. For security reasons, use individual locks to which only you have the keys.

# Operating Manual

## Lean-Lift

### 1.2 Working inside the lift – general safety instructions (continued)

#### General safety measures for all work inside the lift

##### SAFETY INSTRUCTION

Various tasks in the inside of the lift are associated with a substantial risk of accident. This primarily involves the danger of falling for persons, stored articles or the extractor.

Therefore, the following steps are always required whenever you work inside the lift:

- Before beginning work, move the container out of the extractor.
- Wear personal safety equipment (PSE) as described under 1.6.
- Before the work begins, lower the extractor all the way to the ground if possible, as otherwise it can fall. Service work or repairs to the extractor, and work on the drives, may be carried only after the extractor has been removed. If you cannot lower the extractor to the bottom of the lift or remove it, secure it as described under 1.4.

##### SAFETY INSTRUCTION



#### Switch off the main switches!

Turn all main switches to the "0" position and secure them from being switched on again using a padlock.

##### SAFETY INSTRUCTION



#### Secure the actuator latch!

Lock a padlock onto the actuator latch of the safety switch so that it is impossible to close the door.

#### Lifts in multi-unit networks

For lifts in multi-unit networks, the special safety instructions under 1.3 also apply.

#### Jammed extractor

When the extractor is jammed, the special safety instructions under 1.5 also apply.

# Operating Manual

## Lean-Lift

### 1.3 Working inside the lift – lifts in multi-unit networks

#### Contents

Workplace safety regulations to be observed for lifts in a multi-unit network.



#### DANGER

For lifts in multi-unit networks, hazardous voltage is still present at the following components even when the main switches are switched off:

- The main switches with undervoltage trip,
- Terminal strip X2 in the electrical drawer (see circuit diagram),
- At the safety switch on the service door.

Therefore, before service and maintenance work, completely disconnect the lifts in the multi-unit network from the mains power connection before beginning work on these electrical components!

#### SAFETY INSTRUCTION

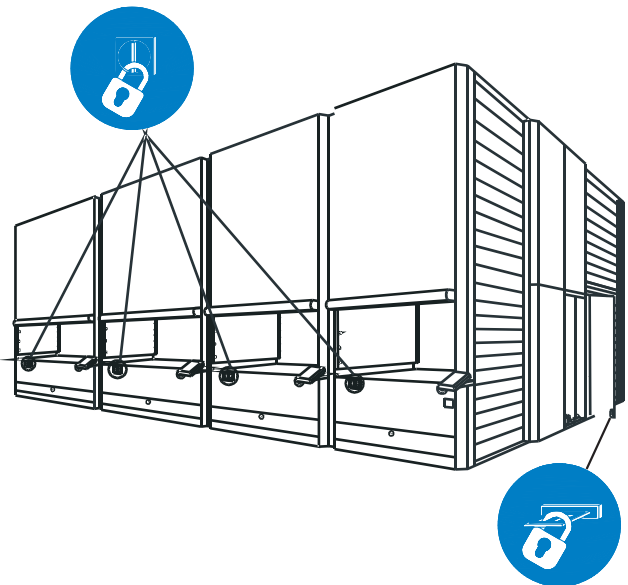


#### Switch off the main switches!

After the service door is opened, the main switches on the individual lifts switch off automatically. Before entering the inside of the lift, check that all the main switches have switched off automatically and cannot be switched on again. Repair work may be carried out by trained and authorised personnel (such as Hänel after-sales service) only.

All the lifts that persons are working on or are inside of must be secured against being switched on again using a padlock.

All the other lifts must also be checked, and their main switches secured against being switched on again using a padlock. Alternatively, you can also disconnect these lifts from the mains power connection. Always follow any applicable national laws and regulations!



# Operating Manual

## Lean-Lift

### 1.3 Working inside the lift – lifts in multi-unit networks (continued)

#### SAFETY INSTRUCTION



##### **Secure the actuator latch!**

When the maintenance door is opened, all the lifts come to a halt.

Secure the actuator of the safety switch with a padlock if you have opened the service door. In this way, none of the lifts can be put into operation.

For a multi-unit network with 2 service doors, you must secure each service door using a padlock.

#### SAFETY INSTRUCTION

##### **Service access door for all lifts**

All lifts have a shared service access door. The maintenance door on the outermost lift provides common access to all the lifts. Optionally, a multi-unit network is also available with 2 service doors.

The individual lifts are interconnected via inside passages.

#### SAFETY INSTRUCTION

##### **Securing the extractor**

During any work on an inside lift, every extractor under which you need to work or move must be either lowered down to ground level or removed or secured against falling. When doing so, start with the extractor at the service door.

For instructions on how to secure the extractors, refer to Section 1.4.

#### SAFETY INSTRUCTION

##### **After completing service work**

Open the safety doors to verify that the main switches on the individual lifts switch off automatically. Repair work must be carried out by trained and authorised personnel (such as Hänel after-sales service).



# Operating Manual

## Lean-Lift

### 1.4 Working inside the lift – securing the extractor

#### Contents

All work inside the lift requires special safety measures. This chapter provides the information you need for this work.



#### DANGER

All work—especially with a jammed extractor—must be carried out by trained and authorised personnel (such as Hänel after-sales service) only.

The training must also include safe working procedures at great heights and the installation/removal of the lift.



#### DANGER

The extractor is a suspended load that you have to secure. Do not enter the lift until you have secured the extractor.

#### SAFETY INSTRUCTION



#### Secure the main switch(es)!

Before all work, secure the main switch(es) from being switched on again using a padlock.

#### SAFETY INSTRUCTION



#### Secure the actuator latch!

Before all work, secure the actuator latch of the service door from being switched on again using a padlock.

#### SAFETY INSTRUCTION



#### Wear fall protection equipment!

You must wear fall protection equipment whenever you work at great heights.

#### Steps for securing the extractor when working underneath it

In some cases it may be necessary to work underneath the extractor when you are not able to lower it to ground level or remove it.

Following are four examples of how to secure the extractor. Before beginning work, obtain any lacking securing elements from Hänel.

# Operating Manual

## Lean-Lift

### 1.4 Working inside the lift – securing the extractor (continued)

#### A. Applying the locking device

Use this method if possible. It has the following advantages:

- It can be used regardless of the current position of the extractor.
- You do not need to run the extractor to head height beforehand.



**! DANGER**

- The extractor is a suspended load that you have to secure. To do so, you must fasten the locking device to the chains.
- You may not use the locking device when you need to replace the chains or remove the extractor.
- All work must be carried out by trained and authorised personnel (such as Hänel after-sales service) only.
- The training must also include safe working procedures at great heights and the installation/removal of the lift.
- In the event of a jammed extractor, please observe Chapter 1.5.

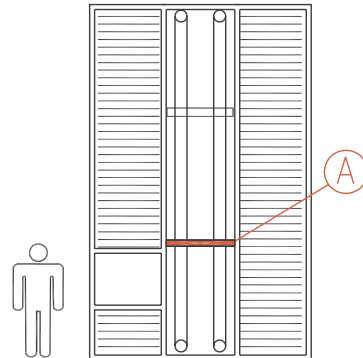
The Hänel Lean-Lift locking device for the service door side is normally located in a separate storage container on the extractor shaft floor directly behind the service door. The locking device for the opposite side of the lift is stored on the bottom of the rear lift shaft.

Attach the locking device (A) to the vertical chains on both sides as shown to secure the extractor according to the following description.



#### Tip!

If your Lean-Lift is not equipped with the locking device, you can obtain this as an accessory. For more information on the locking device, contact the Hänel factory or one of the Hänel representatives.



# Operating Manual

## Lean-Lift

### 1.4 Working inside the lift – securing the extractor (continued)

#### Intended use of the locking device

The locking device prevents the extractor from falling while work is being carried out within the extractor shaft.

Before entering the inside of the lift:

- The main switch must be switched off and secured with a padlock.
- The actuator of the safety switch on the service door must be secured with a padlock.
- The locking device for the service door side must be installed and then immediately the one for the opposite side of the lift.

#### Examples of anticipated noncompliant use

Noncompliant use and modifications to the lift structure or modifications to the locking device shall exempt the manufacturer from liability for any consequential or incidental damage.

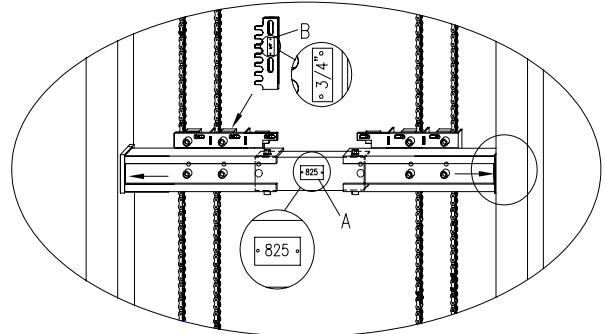
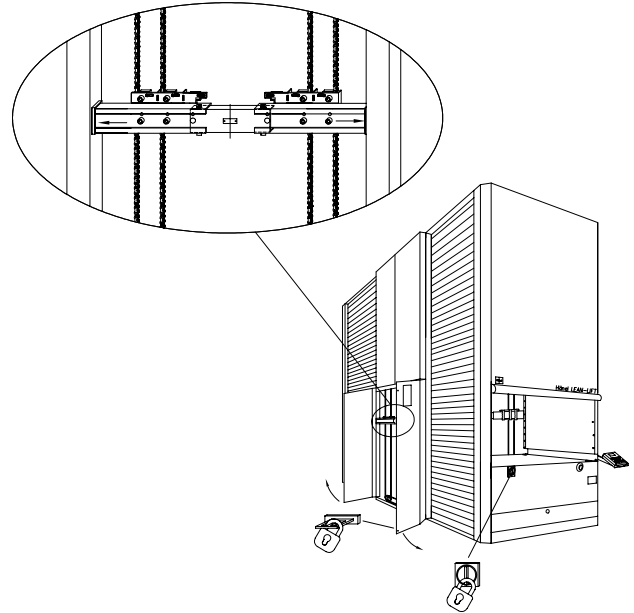
For safety reasons, it is forbidden to use the locking device if the maximum permissible load of the container or lift is exceeded.

Use of the locking device is possible only with Hänel Lean-Lifts model year March 2002 and later, since their readiness for this is a standard feature.

These lifts can be retrofitted by specially trained staff from the Hänel factory or by Hänel representatives.

The design of the locking device as regards container depths **A** and chain sizes **B** (see marking on locking device "A" and notched chain holder "B") must conform with the lift design (see data on the type plate and the chain designation).

Only the securing screws supplied by the factory with the lift may be used.



# Operating Manual

## Lean-Lift

### 1.4 Working inside the lift – securing the extractor (continued)

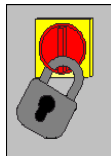
#### Safety instructions

Any kind of work must be carried out by Hänel-trained and authorised personnel (such as Hänel after-sales service) only. The general safety guidelines and the specific regulations for each customer must be followed. All work involving the locking device demands exact adherence to the instructions and safety regulations.

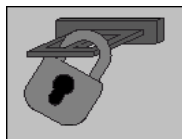
When installing the locking device at the service door side, entering the shaft is prohibited as there is danger of the extractor falling.

#### Installing the locking device

Before working inside the lift, remove the container from the extractor, if possible.



The main switch must be switched off and secured from being switched on again with a padlock.



Open the side service door and lock the actuator of the safety switch by attaching a padlock.

# Operating Manual

## Lean-Lift

### 1.4 Working inside the lift – securing the extractor (continued)

#### Installing the locking device – continued

Remove the first locking device from the separate storage container on the extractor shaft floor directly behind the service door.

Install the locking device at the service door side from outside the lift, since there is danger of the extractor falling in the shaft!

You must not enter the lift to install the second locking device until the first locking device is effective.

Loosen the locking screws **6** so that you can extend the locking device.

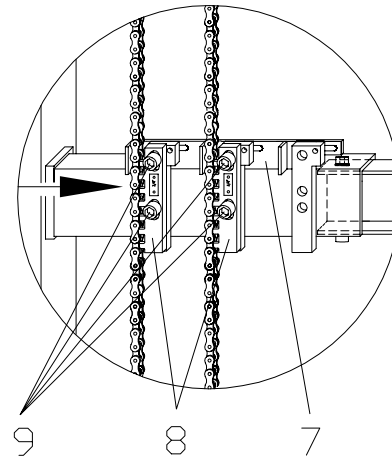
Insert the locking device bolts into the existing holes in the supporting tubes at the service door side, first on the one side **4**, and then on the other side **5** by extending the device into the supporting tube.

Secure the plug connection using the locking screws, nuts and washers **6**. Tighten only the inserted bolts **4** and **5**.

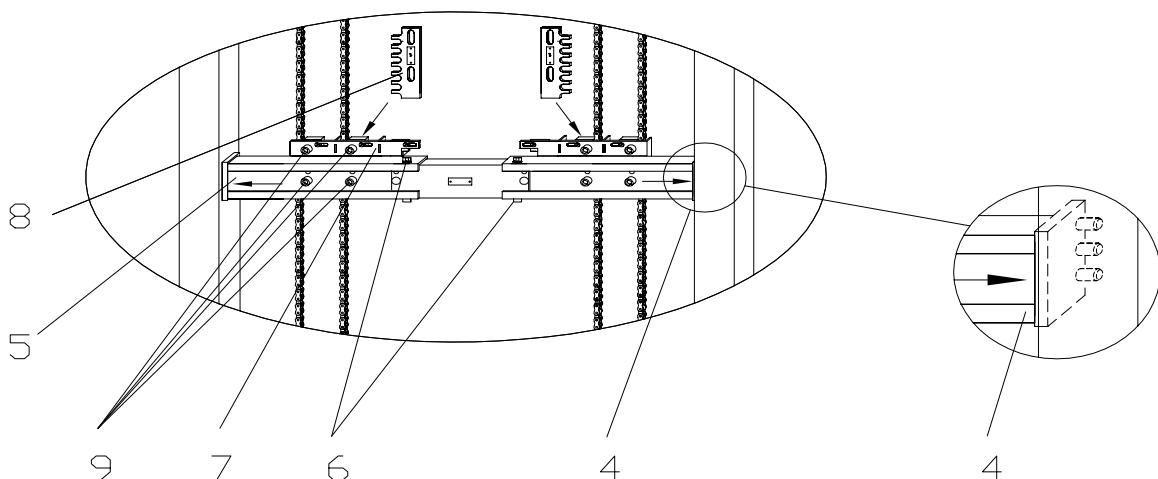
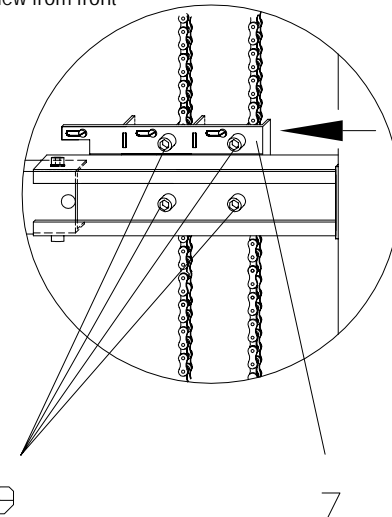
Push each of the chain fixtures **7** up to the chain in the safety position. This secures the chain from lateral movement in the fully installed locking device. Insert the notched chain holders **8** into all 4 hanging chains, fasten them using 2 screws **9** in each case and tighten firmly.

It is only possible to install the upper screws if the chain fixtures **7** are in the safety position.

Detail view from rear



Detail view from front



# Operating Manual

## Lean-Lift

### 1.4 Working inside the lift – securing the extractor (continued)

#### Installing the locking device – continued

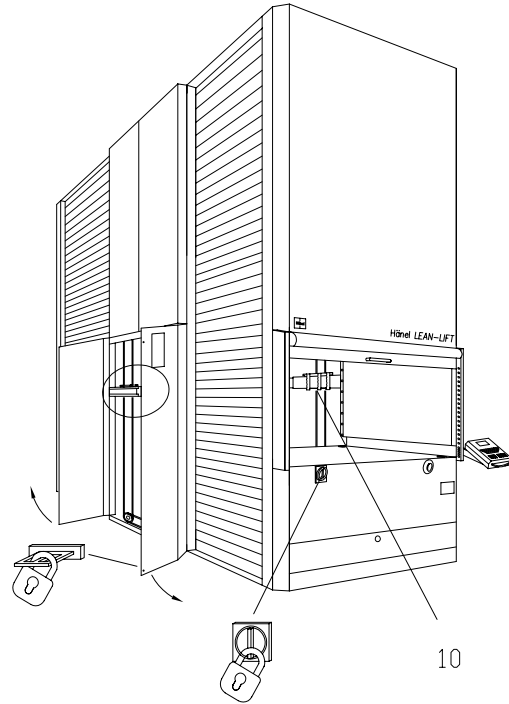
Check the following:

- The locking device has been inserted correctly into the supporting tube on the left and right sides.
- The locking screws **6** have been fastened.
- The notched chain holders **8** have been inserted correctly into the links on all 4 hanging chains.
- The chain fixture **7** is in the safety position.
- The notched chain holders **8** have been fastened to the locking device with 2 screws in each case and securely tightened.

Mount the second locking device **10** on the opposite side from the interior. This locking device is stored on the bottom of the rear lift shaft.

The assembly is carried out on the shaft side from the interior in accordance with the steps described above for the first locking device.

After the installation of the locking device has been completed, check to ensure that it has been done correctly – see above.



#### Uninstalling the locking device

When all work has been completed, you must uninstall the locking device and remove it from the lift.

First remove the locking device **10** from the inside of the shaft. To do so, loosen the locking screws **6**, push together the locking device and relock it. Then lay the locking device flat on the bottom of the lift of the rear lift shaft before you uninstall the locking device on the service door side. There must not be any parts protruding into the extractor shaft or the loadable container supports.

Then remove the locking device on the service door side from the outside. To do so, loosen the locking screws **6**, push together the locking device and relock it. Then place this into the separate storage container on the extractor shaft floor directly behind the service door.

Before the lift is started up again, carry out a functional check and safety inspection according to the checklist "F-SICHB1".

#### CAUTION



The inside clearance under the first locking device is 1.58 m [62.2 in]. You must also climb over the lift drive to do this.

Do not step on the cables on the floor of the lift.

# Operating Manual

## Lean-Lift

### 1.4 Working inside the lift – securing the extractor (continued)

#### B. Securing the extractor using the mounting bracket

You are only able to use this option if:

- The extractor is empty, and
- You are able to lower the extractor to head height directly above the mounting bracket.



**! DANGER**

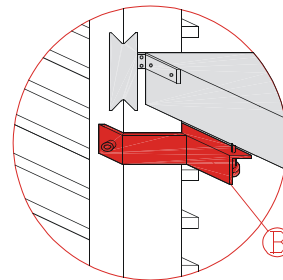
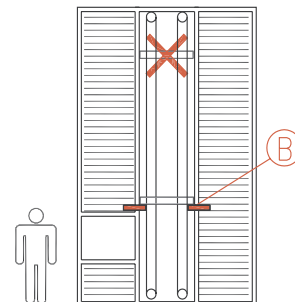
- The extractor is a suspended load that you have to secure. For your own safety, you must therefore first install the two mounting brackets next to the service door. Once these have been installed, you may enter the lift to install the two mounting brackets on the opposite side.
- All work must be carried out by trained and authorised personnel (such as Hänel after-sales service) only.
- The training must also include safe working procedures at great heights and the installation/removal of the lift.
- In the event of a jammed extractor, please observe Chapter 1.5.
- Disassembly must be carried out in the reverse sequence.

Position the 4 mounting brackets (B) at head height on the vertical tubes of the lift and secure the brackets using the clamping screws.



#### Tip!

The mounting brackets are available as an accessory. For more information on the mounting brackets, contact the Hänel factory or one of the Hänel representatives.



# Operating Manual

## Lean-Lift

### 1.4 Working inside the lift – securing the extractor (continued)

#### C. Securing the extractor using a wooden beam or rectangular steel tube

You are only able to use this option if:

- The extractor is empty, and
- You are able to lower the extractor to head height directly above the beams or rectangular steel tube (D).

To secure the extractor, you need two hardwood beams or corresponding rectangular steel tubes with the minimum dimensions of cross-section:

50 mm × 50 mm (1.97 in × 1.97 in)

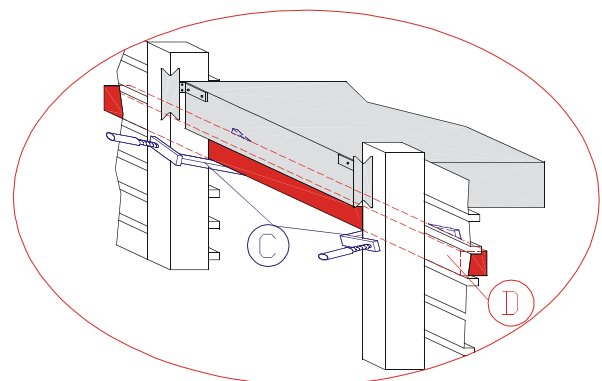
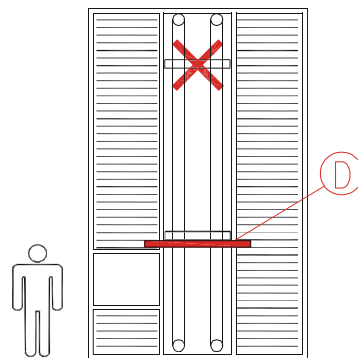
The lengths of the beams or steel tubes will vary according to the depth of the lift. The length must be chosen such that the beam has an excess length of at least 250 mm (9.84 in) resting on the container supports on both sides.



#### DANGER

- The extractor is a suspended load that you have to secure. For your own safety, you must therefore first install the beam or tube above the service door.
- You must not enter the lift to mount the second beam or second tube until the first beam or tube has been mounted above the service door.
- All work must be carried out by trained and authorised personnel (such as Hänel after-sales service) only.
- The training must also include safe working procedures at great heights and the installation/removal of the lift.
- In the event of a jammed extractor, please observe Chapter 1.5.
- Disassembly must be carried out in the reverse sequence.

Place the beams or tubes (D) between the bearing elements onto the supports as shown in the diagram. The beams or tubes must lie directly underneath the extractor and be clamped to the side part tubes of the lift, using one screw clamp (C) each.





# Operating Manual

## Lean-Lift

### 1.4 Working inside the lift – securing the extractor (continued)

#### D. Securing the extractor using pulled-out containers

You are only able to use this option if:

- The extractor is empty, and
- You are able to lower the extractor to head height directly above the pulled-out containers.
- The lift has a slot increment of 75 mm (2.95 in). The slot increment is the distance of between the containers as shown in the diagram.



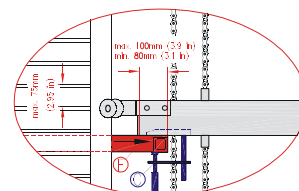
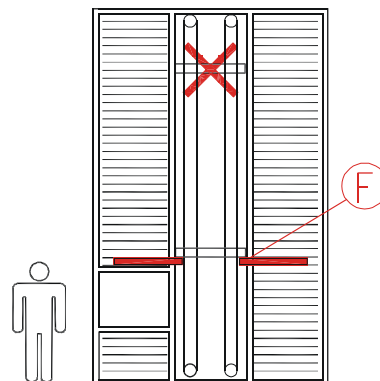
**! DANGER**

- The extractor is a suspended load that you have to secure.
- Therefore, this securing option may not be used for slot increments over 75 mm (2.95 in), as the containers tilt in the supports.
- All work must be carried out by trained and authorised personnel (such as Hänel after-sales service) only.
- The training must also include safe working procedures at great heights and the installation/removal of the lift.
- In the event of a jammed extractor, please observe Chapter 1.5.

Pull out two containers (F) lying opposite each other by approx. 10 cm (3.94 in). Attach 2 screw clamps (C) to each of the two sides to secure the container against slipping.

#### Extremely important!

After removing the screw clamps, you must make absolutely sure to push the containers back into their original position in the lift. Otherwise, damage can be caused to the machine.



Extractor

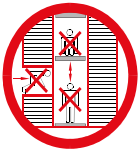
# Operating Manual

## Lean-Lift

### 1.5 Working inside the lift – jammed extractor

#### Contents

When working with a jammed extractor, there are a few important points you have to consider. This chapter provides the information you need for this work.



#### **DANGER**

There is a risk of fatal injury in the extractor shaft from falling parts! Entering the access point and sitting or standing in the access point is strictly prohibited. Sitting or standing under the extractor is strictly prohibited until the jammed item has been removed!



#### **DANGER**

- Any work on a jammed extractor must be carried out by Hänel-trained and authorised personnel (such as Hänel after-sales service) only.  
The training must also include safe working procedures at great heights and the installation/removal of the lift.
- The jammed item(s) can loosen on their own accord and fall. Therefore, do not enter the lift until the jammed item(s) has (have) been removed.



#### **DANGER**

Even when jams occur at a great height, the jammed item(s) still has (have) to be removed by hand. Therefore, observe the respective legal accident prevention regulations for work carried out in areas where there is a danger of falling.

#### **SAFETY INSTRUCTION**



#### **Secure the main switch(es)!**

You must remove any sections of panelling that are not included in the safety circuit. Before all work, secure the main switch(es) from being switched on again using a padlock.

#### **SAFETY INSTRUCTION**



#### **Secure the actuator latch!**

Before all work, secure the actuator latch of the service door from being switched on again using a padlock.

# Operating Manual

## Lean-Lift

### 1.5 Working inside the lift – jammed extractor (continued)

#### SAFETY INSTRUCTION



#### **Wear fall protection equipment!**

You must wear fall protection equipment whenever you work at great heights.

#### **Auxiliary equipment that must be provided by the owner/operator**

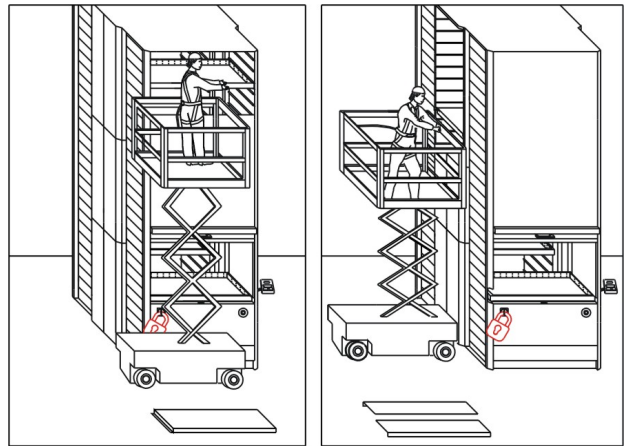
If the extractor has jammed at a level you cannot reach from the ground, you will need the following auxiliary equipment:

- Raised working platform, scaffolding etc. as a workstation
- High-lift truck or crane for removing panelling sections

#### **Removing the jammed articles**

The jammed items must be removed manually from above the extractor. To do so, you will have to remove panelling sections above the extractor from the outside.

You will find the procedure for doing this described in the "Lean-Lift Assembly Manual".



# Operating Manual

## Lean-Lift

### 1.6 Wearing personal safety equipment

#### Contents

This section contains some instructions for selecting and using suitable personal safety equipment (PSE).

#### Required personal safety equipment

The following minimum personal safety equipment is required:

- Fall protection equipment whenever working inside the lift at great heights.
- Protective gloves as protection against burns on hot drives and injuries from corners and edges.
- Safety shoes and a safety helmet to protect against falling parts.

#### Selecting permitted fall protection equipment

For all work at great heights inside the lift, only the following type of fall protection equipment is permitted:

- The safety harness must conform to EN 361. A safety belt in accordance with EN 358 is not suitable as fall protection equipment!
- The safety harness must have a travelling fall arrester in accordance with EN 353-2 and a deceleration device in accordance with EN 355. The deceleration device is mandatory when using a safety harness.
- The fastener, including carabiner (safety rope) between the safety harness and the lift must conform to EN 354 and be twice as long as the lift.

Outside Europe, the corresponding laws, standards and accident prevention regulations for fall protection apply.

#### Wear fall protection equipment

All lifts with a height > 4 m (157.5 in) have devices for connecting fall protection equipment and drawing in a safety rope. The feed line is located to the right of the service door inside the lift.



**DANGER**

- The feed line is not suitable for use as a safety rope, nor is it permitted to be used for that purpose. Its sole purpose is for pulling in the safety rope.
- Only trained technicians from the Hänel factory and Hänel representatives may use the equipment.
- Wear protective gloves when pulling in the safety rope.

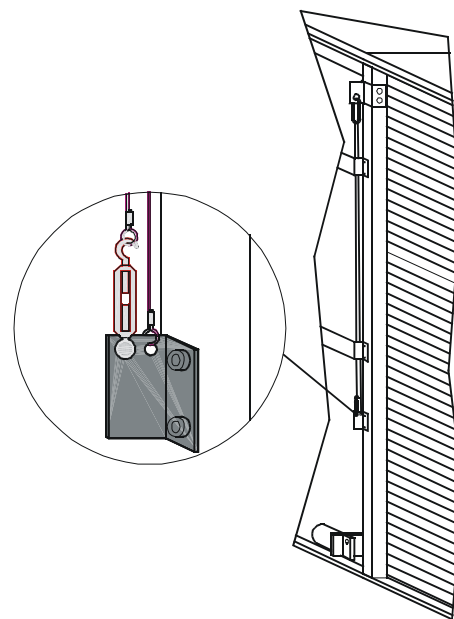
# Operating Manual

## Lean-Lift

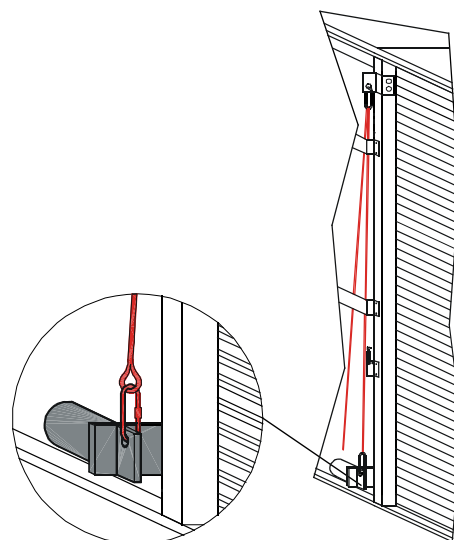
### 1.6 Wearing personal safety equipment (continued)

Follow these steps when pulling in the safety rope of the fall protection equipment:

- | Step | Task  |
|------|---|
| 1    | Ensure that the extractor is at ground level. If it is not, lower it now.<br>If you have to work underneath the extractor, you first have to secure it from falling as described under 1.4. |
| 2    | Switch off the main switch and secure it from being switched on again using a padlock.  |
| 3    | Open the side service door and lock a padlock onto the actuator latch of the safety switch on the door.   |
| 4    | Release the tensioning device of the feed line and unhook the end of the feed line.   |



- |   |  |
|---|--|
| 5 | Using a carabiner, hang one end of the safety rope into the drill hole provided on the motor holder. |
|---|--|



# Operating Manual

## Lean-Lift

### 1.6 Wearing personal safety equipment (continued)

- | Step | Task  |
|------|---|
| 6    | <p>Pull the end of your safety rope through the other eyelet of the feed line.</p> <p>Make an eyelet using the end of the safety rope and fasten it in place, for example using two cable ties.</p> |



- |   |  |
|---|--|
| 7 | Using the feed line, pull in the safety rope all the way to the end.                                     |
| 8 | Fasten the free end of the safety rope (e.g. to a carabiner of the motor holder) while the rope is taut. |



#### Tip!

- Refer to the manufacturer's documentation for the specific personal safety equipment for information on how to correctly wear and use the fall protection equipment.
- The lift can be equipped with a safety rope by the manufacturer. For more information, contact the Hänel factory or one of the Hänel representatives.

# Operating Manual

## Lean-Lift

### 1.7 Working safely with Hänel accessories

#### Contents

Workplace safety regulations to be observed when working with optional Hänel lift accessories.

#### Lifts with high-speed door

There is a crushing hazard when the high-speed door closes. Therefore, **do not** reach into the area of the high-speed door or the extractor shaft.

#### Lifts with container weighing device

Integrated container weighing devices do not meet the requirements of IEC 61508 for the functional safety of programmable safety-related systems. Therefore, monitoring the load capacity of the ground using the container weighing device is not permitted.

The manufacturer is responsible for ensuring that neither the load carrying capacity of the lift nor that of the ground at the installation location is exceeded.

#### Lifts with automatically closing sliding door in case of fire

If the system receives a signal of an operator-side fire detection system, when there is a power outage, when the lift is switched off or when the test button is pressed, the sliding door will close on its own because of its own weight. This can cause crushing, striking or cutting injuries. Therefore, this emergency system may not be used for regular operation of the lift.

Be absolutely certain to have the fire detection system inspected regularly by a company that is qualified to do so. This inspection must also include an examination of the activation of the sliding door.

#### Lifts with remote control

For remote-controlled lift operation, follow the separate operating manuals "MANL-LL-EXT", "MANL-LL-EXT1" and "MANL-LL-EXT2", when using one of the following supplementary modules:

- Container pre-positioning with an external host computer
- Command line programming with an external host computer
- Time-optimised requisition processing using the MP 100A / MP 100D

#### Lifts with antistatic earthing

Have the antistatic earthing checked regularly.

#### Lifts with automatic container ejector

Lifts with an automatic container ejector may be operated from the front only. Operation from the side is permitted only if the ejector is protected on all sides by a safety light curtain. You must also have received instruction from the owner/operator.

# Operating Manual

## Lean-Lift

### 1.7 Working safely with Hänel accessories (continued)

#### Lifts with openings in the housing

All openings in the housing that have been requested by the owner/operator of the lift are closed at the factory.

If the owner/operator or one of their employees removes the covers, the owner/operator must attach equivalent covers to these openings before the lift is put into service.

It is important that these covers leave no holes exposed through which someone could reach into the interior of the lift.

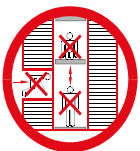
#### Extremely important!

The headpiece of the lift cannot be walked on.

#### Lifts with ground-level access point

Optionally, the lifts are available with a ground-level access point for loading with a standard lift truck.

In this case, always exercise caution while working, as there is an increased risk due to the easier accessibility of the access point.



**DANGER**

In the access point, there is a risk of fatal injury from falling articles. Entering the access point and sitting or standing in the access point or underneath the extractor is strictly prohibited (see Chapter 1.4).

#### Lifts with a transporter

Note the following whenever working with the transporter:

- Operation of the lift is permitted on a level traffic surface only.
- Always ensure that the container is properly locked in place before moving the transporter with the articles.
- When docking the transport cart to the lift, do not reach between the lift and the transport cart. There is a crushing hazard.



# Operating Manual

## Lean-Lift

### Chapter 2

#### Familiarising yourself with the lift

#### Contents

This chapter provides an overview of the modules and operating elements of the lift and their functions.

Section	Subject	Page
2.1	Operating elements	49
2.2	Safety equipment	51
2.3	Electrical equipment	53



# Operating Manual

## Lean-Lift

### 2.1 Operating elements

#### Contents

This section contains an overview of the operating elements of the lift.



#### Note!

- Refer to the following documents for more information on the control system:
  - In the "Technical Description of the MP12...." and
  - In the "User Guide for the MP12.... Lean-Lift and Multi-Space".
- For additional information on the safety equipment, refer to Section 2.2.

#### Standard access point

The standard access point has the following operating elements:

Item	Name and function
1	Main switch with emergency stop function for switching the mains supply on and off 0 = Off 1 = On
2	Workstation lighting (optional)
3	Operating panel for controlling the lift functions <b>Note:</b> The location of the operating panel is customer-specific.
4	Safety light curtain/barrier with emergency stop function as a safety guard
5	Emergency stop button
6	Container for holding the stored articles
7	Electrical drawer for holding the control system and electrical supply units.

Figure



# Operating Manual

## Lean-Lift

### 2.1 Operating elements (continued)

#### Operating panel

The following important operating elements are located on the operating panel:

Item	Name and function
------	-------------------

1	Display
---	---------

**Note:**

A green monochrome display can be installed by request.

2	Main key block for entering characters and letters.
---	---

3	Function keys for calling up individual functions and navigating in input fields. You can see which keys have been assigned on the display.
---	---

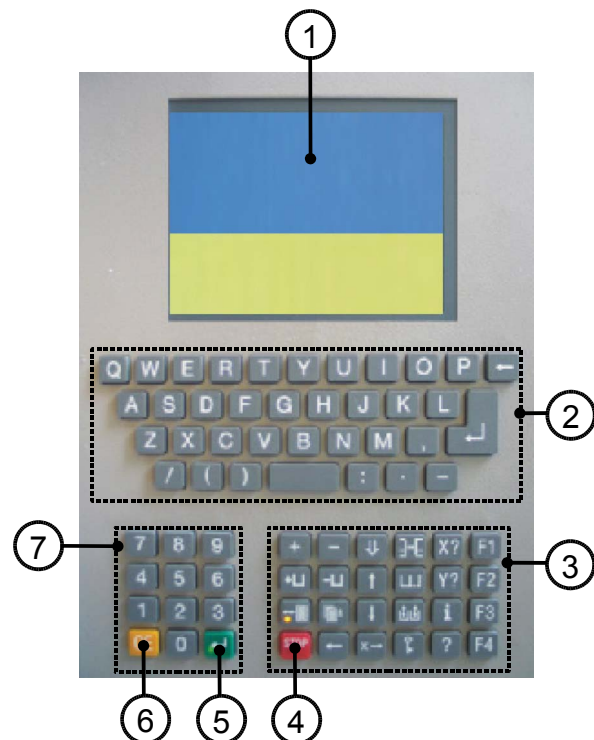
4	"Stop" button for stopping the lift immediately. The integrated red LED signals that the safety system is not set or that an operating fault is pending.
---	---

5	"Return" key for confirming entries and setting the safety system. The integrated green LED signals that the safety system is set.
---	---

6	CE key for clearing entries
---	-----------------------------

7	Number block for entering numbers such as when: <ul style="list-style-type: none"> <li>• Selecting a container</li> <li>• Entering article numbers, quantity, article names etc.</li> </ul>
---	---

Figure



# Operating Manual

## Lean-Lift

### 2.2 Safety equipment

#### Contents

Overview of the safety equipment integrated into the lift.



**DANGER**

Operating the lift with safety equipment that is defective, bypassed, modified or removed is not permitted.

#### Emergency stop button

The lift is equipped with an emergency stop button on the right side below the access opening. When one lift has multiple access points, each access point has an emergency stop button. When lifts are interconnected in a multi-unit network, each lift has an emergency stop button.

When you press the button, the lift comes to an immediate stop and the button is locked. In addition, the red LED in the "Stop" button of the operating panel is illuminated. For lifts in multi-unit networks, only the lift on which the emergency stop button is located comes to a stop.

To unlock the emergency stop button, you have to turn the red button to the left and pull it out.

You then have to acknowledge the emergency stop by pressing the green "Return" key on the operating panel.



#### Main switch

The main switch of the lift also has an emergency stop function. If you switch off the main switch while the lift is running, it comes to an immediate stop and remains stationary in this position.

For standard lifts, the main switch is on the left side below the access point. For lifts with multiple access points, the main switch is at the first access point.



#### Safety light curtain/barriers

The access opening is safeguarded on the outer edge by a safety light curtain or safety light barriers. For lifts in a multi-unit network, each access opening is secured separately by safety light curtain or safety light barriers.

If you interrupt the safety light curtain or the safety light barriers, the lift comes to an immediate stop or is prevented from starting up. In addition, the red LED in the "Stop" button of the operating panel is illuminated. For lifts in multi-unit networks, only the lift at which the safety light curtain is or the safety light barriers are interrupted comes to a stop.

You then have to acknowledge this interruption by pressing the green "Return" key on the operating panel.



# Operating Manual

## Lean-Lift

### 2.2 Safety equipment (continued)



#### Tip!

- The safety light curtain is / the safety light barriers are carefully aligned to guarantee that it/they will function in case anyone reaches into the access point or the extractor shaft without authorisation.  
You will find details for the adjustment in the respective Installation Instructions.
- For the safety concept "Lift run with sliding doors closed only", there is no safety light curtain / are no safety light barriers. For further information, refer to Annex B.

#### Safety switch on the service door

The service door is equipped with a safety switch. When the door is opened, the safety circuit is interrupted. The lift comes to an immediate stop or is prevented from starting.

For lifts in multi-unit networks, the main switch of all lifts are switched off as soon as the service door is opened (see 1.3).

#### Vertical movement limit switches

The proximity switches and mechanical safety limit switches detect whether the extractor has driven past one of the two end positions.

When this happens, the safety circuit and the lift run are interrupted to prevent damage.

#### Article height detection

If the maximum permitted fill level in a container is exceeded, the articles can fall down or become jammed. In this case, the container is returned to the access point rather than being put into storage.

A light barrier system in the rear of the access point is responsible for the article height detection.

#### Motor brakes

The drive is equipped with electromagnetically activated spring pressure brakes. This prevents unintended continued movement of the vertical drive and the extractor if the lift movement must come to an immediate stop due to an emergency stop or power failure.

The brakes are maintenance-free.

Contact the Hänel factory if the braking distance is too long.

# Operating Manual

## Lean-Lift

### 2.3 Electrical equipment

#### Contents

This chapter provides an overview of the features of the electrical equipment of the lift.



**DANGER**

- All inspections and work on the electrical system may be carried out by electricians only.
- The access routes to the electrical supply units must be closed and the keys stored in such a way so that they are inaccessible to unauthorised persons.



**DANGER**

The electrical and mechanical equipment is not designed for use in an explosive, combustible, corrosive or aggressive atmosphere.

Therefore, keep explosive, combustible and aggressive hazardous materials away from the lift.

#### Permitted ambient conditions

The electrical equipment is designed for the following ambient conditions:

Permitted temperature range: +5 °C to +40 °C  
(+41 °F to +104 °F)

Max. installation altitude: 1000 m (3281 ft) above sea level

Max. rel. humidity: 50% at +40 °C (104 °F) or 90% at +20 °C (68°F)

Protection class: IP 22

You are responsible for using appropriate additional measures, such as air conditioners, to prevent any harmful effects caused by occasional formation of condensation in the lift.

#### Control system

The control system is located in the electrical drawer.

For more information on the control system, refer to the electrical documentation.

#### Drives

The lift is equipped with two drive units. Both drive motors are reduced by worm gears.

When the drives are switched off, run-on is prevented by electromagnetically activated spring pressure brakes.

To change the direction of rotation of the drive, reverse phases U and V downline of the frequency converter.

# Operating Manual

## Lean-Lift

### 2.3 Electrical equipment (continued)

#### Protective motor switch

A protective motor switch integrated into the main switch interrupts the mains power supply to the entire lift in the event of a short-circuit.

A thermosensor in the winding of the drive unit monitors the motor temperature. In case of overheating, the safety chain is interrupted and the lift stops.

In addition, the control voltage circuit is monitored by a circuit breaker in the electrical control system.

#### Adjusting the protective motor switch

As the trigger value, enter the nominal current in (A) that is specified on the type plate.

#### Vertical movement position sensors

The extractor is equipped with two position sensors for position detection and fine positioning:

- The sensor for the front storage area is installed at the front left.
- The sensor for the rear storage area is installed at the rear right.

The positioning rails on the bearing stay pipes allow the exact position of the extractor to be detected, while the position sensor moves past.

When the extractor has reached the target position, the fine positioning takes place.

#### Horizontal movement position sensors

The horizontal positions of the container and the extractor chain are detected by proximity switches at the following positions:

- At the access point and
- On the extractor

Additionally, the horizontal movement is monitored by an incremental encoder.

After receiving these control signals, the control system of the lift performs the remaining movement sequences.

#### Multiple access points (optional)

For multiple access points, the operating elements and safety equipment are located at all access points and are active at all times.

The main switch is at only one access point.

For more information on the safety concept for multiple access points, refer to Annex B.

#### Lighting (optional)

Optionally, the lift can be equipped with an antiglare lighting fixture. The on and off switch for the lighting is located above and to the right of the access point on the cover of the lighting.

#### Safety light curtain at a distance (optional)

The system consists of a safety light curtain outside at a safety distance in front of the access point.



# Operating Manual

## Lean-Lift

### Chapter 3

#### Putting the lift into service for the first time

#### Contents

This chapter describes the tasks required when putting the lift into service for the first time.

Section	Subject	Page
3.1	Checking the electrical connections	57
3.2	Switching the lift on and off for the first time	60



# Operating Manual

## Lean-Lift

### 3.1 Checking the electrical connections

#### Contents

This section contains information on tests that must be carried out on the electrical system before the unit is first put into service.



#### DANGER

- If work on the electrical equipment is not carried out properly, there is a risk of fatal injury! Therefore, these tasks may be performed by qualified electricians only.
- Tasks carried out with voltage present (such as measurements) may be carried out only by specially qualified personnel in accordance with applicable legal accident prevention regulations.
- Voltage is present at the network connection terminals in the control unit even when the main switch is switched off.

#### SAFETY INSTRUCTION



##### Secure the main switch(es)!

Before all work, secure the main switch(es) from being switched on again using a padlock.

##### Exception:

Tasks that must be carried out with voltage present (such as measurements).

#### SAFETY INSTRUCTION



##### Secure the actuator latch!

Before all work, secure the actuator latch of the service door from being switched on again using a padlock.

# Operating Manual

## Lean-Lift

### 3.1 Checking the electrical connections (continued)

#### Mains power supply connection

Unless otherwise agreed when placing the order, for a three-phase drive the electrical components must be equipped with a separate neutral and earth wire in the entire power system: TN (L1/L2/L3/N/PE) in accordance with IEC 60364-1. Therefore, the connection to the mains power supply must have the following conductors:

- 3 outer conductors
- 1 neutral conductor
- 1 earth wire and 1 separate earth wire for the frequency converter

The permitted supply voltage and the required customer-side fuse protection are specified on the type plate.

In addition, specific local circumstances may need to be considered when connecting the lift to the mains power supply. Contact the responsible energy company for more information on these connection conditions.

#### Residual current circuit breakers

If the owner/operator employs residual current circuit breakers, these must conform to EN 50178 or IEC 755. In this case, a universal, time-delayed residual current circuit breaker (type B) must be used.

#### Earth wire

All conductive parts, which can take voltage directly in the event of a fault, must be connected to the earth wire connection.

#### Power cable

A cable strain relief clamp must be attached to the lift at the point where the mains power supply cable is introduced into the lift. For the length and routing of the cables, refer to the power supply and foundation plan.

#### Conductor cross-sections

The selection of the conductor cross-section must conform to

- DIN VDE 0298-4 (VDE 0298 Part 4:1998-11 table A.1) in the A2 method of installation
- or
- Table 13.5.1 of the NFPA 79 (National Fire Protection Association).

# Operating Manual

## Lean-Lift

### 3.1 Checking the electrical connections (continued)

Connection value for three-phase current in (A) according to the type plate	Conductor cross-section in accordance with		Structural safety device
	VDE 0298-4 Table A1	NFPA 79 Table 13.5.1	
– 10 A	5 x 1.5 mm <sup>2</sup>	AWG 16 (1.30 mm <sup>2</sup> )	10 A
– 15 A	5 x 1.5 mm <sup>2</sup>	AWG 14 (2.08 mm <sup>2</sup> )	15 A
– 20 A	5 x 2.5 mm <sup>2</sup>	AWG 12 (3.30 mm <sup>2</sup> )	20 A
– 25 A	5 x 4.0 mm <sup>2</sup>	AWG 10 (5.26 mm <sup>2</sup> )	25 A
– 30 A	5 x 4.0 mm <sup>2</sup>	AWG 10 (5.26 mm <sup>2</sup> )	25 A

#### Wiring installation

The customer-side wiring installation must conform to the following standards:

- IEC 60364-4-43:1977
- IEC 60364-4-473:1977
- IEC 60364-5-52:1993

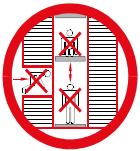
# Operating Manual

## Lean-Lift

### 3.2 Switching the lift on and off for the first time

#### Contents

This chapter tells you how to switch the lift on and off for the first time.



#### DANGER

- Never, under any circumstances, enter the access point or the lift during the test run.
- Never use the lift to transport persons – even for inspection purposes.



#### DANGER

- Do not remove any of the padlocks on the lift.  
They indicate that persons are working in or on the lift.
- Do not switch on the lift if this is prohibited by warning signs.



#### DANGER

Before switching on the lift, remove all explosive or combustible materials from the danger zone and the lift.



#### Tip!

Refer to the following documents for more information on the control system:

- In the "Technical Description of the MP12...." and
- In the "User Guide for the MP12.... Lean-Lift and Multi-Space".
- For additional information on the safety equipment, refer to Section 2.2.

#### Before you begin

##### Lifts with one access point

Unlock the door and, using the handle, open the sliding door of the access point all the way.

##### Lifts with multiple access points

In the case of multiple access points with mutual locking or "Lift run only with door closed", you can only open the sliding door once you have switched on the lift.

# Operating Manual

## Lean-Lift

### 3.2 Switching the lift on and off for the first time (continued)

#### Switching on the lift

Proceed as follows when switching on the lift:

Step	Task
------	------

- |   |   |
|---|---|
| 1 | Switch the main switch to the "I" position. |
|---|---|

**Note:**

For lifts with multiple access points, the main switch is at the first access point.



- |   |  |
|---|--|
| 2 | Wait for the control system to start up. Once the control system has started up, the following appears on the display: <ul style="list-style-type: none"><li>• The control system type (e.g. MP 12D/N-S-CSTN)</li><li>• The version No. of the control system</li><li>• The "Return" symbol (↩).</li></ul> |
|---|--|

**Note:**

If the lift is controlled by a PC, the message "Switch on host" appears.

- |   |  |
|---|--|
| 3 | Press the green "Return" key to start the safety system self-test.<br>Following the test, the red LED in the "Stop" key goes out and the green LED in the "Return" key is illuminated.<br>The lift is now ready for input. |
|---|--|

**Note:**

- Disengage the "Emergency stop" button if a message appears on the display indicating that this button is locked.
- Acknowledge the interruption via emergency stop by pressing the "Return" key.
- If you interrupt the safety light curtain or safety light barriers and thus the safety circuit again during operation, you have to acknowledge the fault by pressing the "Return" key.

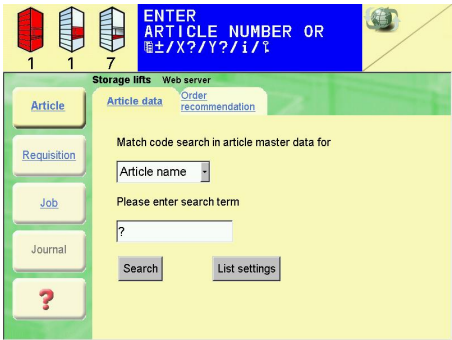


# Operating Manual

## Lean-Lift

### 3.2 Switching the lift on and off for the first time (continued)

Step	Task
4	After the safety system self-test, the main menu appears on the display. The lift is now ready for input.



#### Switching off the lift

To switch off the lift, all you need to do is move the main switch to the "0" position. If applicable, end the lift run first.

If the lift will not be used any more, close and lock the sliding door at the lock.



### Chapter 4

#### Service and maintenance

#### Contents

This chapter contains a description of the regular inspections and service tasks.

Section	Subject	Page
4.1	Safety instructions for all service work	65
4.2	Signs on electrical equipment	67
4.3	Carrying out the annual safety inspection	68
4.4	Carrying out regular inspections	74
4.5	Monitoring the lift load	77
4.6	Maintaining the drives and chains	78
4.7	Relubricating the lift	81
4.8	Correcting faults	84
4.9	Ordering spare parts	88
4.10	Final decommissioning of the lift	91
4.11	Technical data	92



# Operating Manual

## Lean-Lift

### 4.1 Safety instructions for all service work

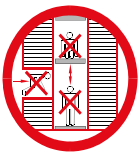
#### Contents

This section contains basic safety instructions that must be followed whenever service work is carried out on the electrical or mechanical system.

#### Complete workplace safety information

This section includes only the most important points for workplace safety.

Refer to Chapter 1 of this operating manual for complete information, which it is essential that you read and follow.



#### DANGER

- Never, under any circumstances, enter the access point or the lift during the test run.
- Never use the lift to transport persons – even for inspection purposes.



#### DANGER

- If work on the electrical equipment is not carried out properly, there is a risk of fatal injury! Therefore, these tasks may be performed by qualified electricians only.
- Tasks carried out with voltage present (such as measurements) may be carried out only by specially qualified personnel in accordance with applicable legal accident prevention regulations.
- Voltage is present at the network connection terminals in the control unit even when the main switch is switched off.
- Do not operate the lift if any structural components or their housings are open or damaged.

If opening is necessary to replace electrical components (e.g. frequency converter U1 or evaluation unit B1 of the fill level detection system), you first have to switch off the main switch and observe the safety instructions.

# Operating Manual

## Lean-Lift

### 4.1 Safety instructions for all service work (continued)



#### **DANGER**

The following apply whenever you work inside the lift:

- Before beginning work, lower the extractor all the way to the ground or remove it.
- If you have to work underneath the extractor, before beginning work you must secure it from falling as described in Chapter 1.



#### **DANGER**

When carrying out the work, use only working platforms, ladders and scaffolding.

#### **SAFETY INSTRUCTION**



##### **Secure the main switch(es)!**

Before all work, secure the main switch(es) from being switched on again using a padlock.

##### **Exception:**

Tasks that must be carried out with voltage present (such as measurements).

#### **SAFETY INSTRUCTION**



##### **Secure the actuator latch!**

Secure the actuators of the safety switch with a padlock if you have opened the service door.

#### **SAFETY INSTRUCTION**



##### **Wear fall protection equipment!**

You must wear fall protection equipment whenever you work at great heights.

Refer to Chapter 1 to find out what type of fall protection equipment you need and how to wear it.

# Operating Manual

## Lean-Lift

### 4.2 Signs on electrical equipment

#### Contents

Overview of the signs used for the electrical equipment.

#### Overview of the signs

All electrical equipment is clearly labelled using signs to ensure proper identification.

The signs are lift-specific and are detailed in Annex A.

# Operating Manual

## Lean-Lift

### 4.3 Carrying out the annual safety inspection

#### Contents

This section describes the annual safety inspection.

#### Who is allowed to carry out the inspection?

Only qualified persons may carry out the safety inspection.

#### Definition of a qualified person:

"Qualified persons" are those who, because of their specialised training and experience in the field of vertical storage systems and familiarity with the pertinent regulations, guidelines and generally applicable technical rules, are able to judge the safe working status of the lift.

#### Applicable guidelines

The following checklist (also refer to the document "F-SICHB3") for the annual inspection is based on the requirements of EN 15095.

Depending on the applicable laws in the country of use, the periods and the scope of the inspections may vary. Therefore, the applicable regulations of the country of use always take precedence, particularly those pertaining to earth wire and insulation measurements.

#### Test Book

A pre-printed copy of the Test Book is provided in Annex D.

#### Test criteria

Checklist for safety inspection,  
Check the following points:

1.	Mechanical system and documentation	(extract)	Evaluation Requirements fulfilled
1.1	<b>Design</b> <i>For general proper working condition, including the operating conditions (loaded - unloaded) and assessment of the ambient conditions (e.g. space requirements - temperature - humidity) and intended use according to the operating manual.</i>	<b>Check</b>	Yes <input type="checkbox"/> No <input type="checkbox"/>
1.2	<b>Deflection</b> <i>For greater than permitted material load of structural components (e.g. deflection of shelves).</i> <i>The lift is loaded.</i> <i>The shelf surfaces are sufficiently evenly loaded.</i>	<b>Check</b> (if the lift is loaded)  Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>

# Operating Manual

## Lean-Lift

### 4.3 Carrying out the annual safety inspection (continued)

1.	Mechanical system and documentation	(extract)	Evaluation Requirements fulfilled
1.3	<b>Stability</b> <i>For plumb installation, with structural reinforcement where necessary (see Chapter 4 of the operating manual, "Structural anchorage of the lift").</i> <i>Lift height: ..... m</i>  <i>Structural anchorage of the lift is required.</i> <i>Structural anchorage of the lift is present.</i>	<b>Check</b>   <b>Yes <input type="checkbox"/> No <input type="checkbox"/></b> <b>Yes <input type="checkbox"/> No <input type="checkbox"/></b>	<b>Yes <input type="checkbox"/> No <input type="checkbox"/></b>
1.4	<b>Installation and operating manual</b> <i>That it is present in the local language. The information must be complete and guarantee safe operation according to the intended use.</i>	<b>Check</b>	<b>Yes <input type="checkbox"/> No <input type="checkbox"/></b>
1.5	<b>Securing against falling out or down</b> <i>For loose or inadequately secured inner equipment of the carriers. All protruding articles (such as storage boxes) are detected by safety light barriers/curtains.</i>	<b>Check</b>	<b>Yes <input type="checkbox"/> No <input type="checkbox"/></b>
1.6	<b>Safety signs</b> <i>For compliance with the document "SiSCHI-LL".</i>	<b>Check</b>	<b>Yes <input type="checkbox"/> No <input type="checkbox"/></b>
1.7	<b>Signs</b> <i>Whether the information from the operating manual that is essential for safe operation is attached to the outside of the lift in a clearly legible and permanent manner.</i> <i>Only for multi-unit set-ups:</i> <i>Are shaft panelling and intermediate panels present for all lifts?</i>	<b>Check</b>   <b>Yes <input type="checkbox"/> No <input type="checkbox"/></b>	<b>Yes <input type="checkbox"/> No <input type="checkbox"/></b>
1.8	<b>Securing of hazard areas</b> <i>Whether equipment such as sliding doors, service openings, panelling or structural extensions can only be removed using a tool and/or are electrically locked.</i> <i>When there are multiple access points, only one may be open or active.</i>	<b>Check</b>	<b>Yes <input type="checkbox"/> No <input type="checkbox"/></b>
1.9	<b>Protection against hazardous movement</b> <i>For prevention of hazard areas such as crush or cut points.</i> <i>It must not be possible to reach above or below safety devices.</i>	<b>Check</b>	<b>Yes <input type="checkbox"/> No <input type="checkbox"/></b>
1.10	<b>Inner equipment</b> <i>For prevention of hazardous conditions caused by loose inner equipment.</i>	<b>Check</b>	
1.11	<b>Carrying chains / drive and connecting shafts</b> <i>For damaging abrasion and scratch marks, cracks or missing parts and adequate lubrication.</i>	<b>Check</b>	<b>Yes <input type="checkbox"/> No <input type="checkbox"/></b>
1.12	<b>Type plate</b> <i>For minimum required information such as manufacturer name, model year, commission number, load carrying capacity (permitted compartment and total carrier loads) and electrical specifications.</i>	<b>Check</b>	<b>Yes <input type="checkbox"/> No <input type="checkbox"/></b>

# Operating Manual

## Lean-Lift

### 4.3 Carrying out the annual safety inspection (continued)

2.	Electrical system	(extract)	Evaluation Requirements fulfilled
2.1	<b>General notes</b> <i>For proper installation and equipment of the system. Safety-related parts must be suited to the application or bear a corresponding certification mark. Visually inspect the wiring and measure the</i> <i>a) earth resistance and</i> <i>b) insulation resistance</i> <i>according to "DIN VDE 0701-1" and "EN 50110-1".</i> <i>When working on the electrical system, follow the safety instructions.</i>	Check	Yes <input type="checkbox"/> No <input type="checkbox"/>
2.2	<b>No soil deposits</b> <i>That no soil either mechanically or thermally impairs proper function.</i> <i>E.g. fans, safety light barriers/curtains, electrical installation spaces</i>	Check	Yes <input type="checkbox"/> No <input type="checkbox"/>
2.3	<b>Main switch (incl. main service switch)</b> <i>For good visibility, good accessibility and ability to be locked.</i> <i>All service access doors that are not visible from the access point are secured by service door switches or main service switches.</i>	Check	Yes <input type="checkbox"/> No <input type="checkbox"/>
2.4	<b>Safety devices</b> <i>Safety light barriers or a safety light curtain, with integrated start-up testing (ESPE type 4 in accordance with EN 61496-1).</i>	Check	Yes <input type="checkbox"/> No <input type="checkbox"/>
2.5	<b>Control and monitoring instruments</b> <i>For good accessibility and clear and permanent labelling.</i>	Check	Yes <input type="checkbox"/> No <input type="checkbox"/>
2.6	<b>Operating PC as control position</b> <i>Directly at the access opening</i> <input type="checkbox"/> <i>(e.g. with a pivoting arm)</i> <i>Or at another location in connection with a safety light curtain</i> <input type="checkbox"/> <i>Or at another location in connection with an electrically locked sliding door</i> <input type="checkbox"/>	Check	Yes <input type="checkbox"/> No <input type="checkbox"/> Without PC <input type="checkbox"/>
2.7	<b>Lighting</b> <i>For adequate illumination and protection from possible mechanical damage.</i>	Check	Yes <input type="checkbox"/> No <input type="checkbox"/>
2.8	<b>Emergency control devices</b> <i>For proper function at all access points (EMERGENCY STOP or red / yellow main switch).</i>	Check	Yes <input type="checkbox"/> No <input type="checkbox"/>
2.9	<b>Coupling of panelling</b> <i>For example, near the service door switches.</i> <i>For multi-unit networks, this must switch off the main switch of each lift so that it cannot be switched on again.</i>	Check	Yes <input type="checkbox"/> No <input type="checkbox"/>



# Operating Manual

## Lean-Lift

### 4.3 Carrying out the annual safety inspection (continued)

3.	For work on electrical systems,		
----	---------------------------------	--	--

the following safety measures, among others, must be followed:

- a) It must be carried out by a qualified person (described in the German "TRBS 1203 :2004-12" or "NFPA 70 :2002").
- b) Suitable measuring instruments (according to EN 61557), measurement conditions and circuits must be used. Regular function checks of the devices are required.
- c) The systems must be de-energised (for example, by switching off the main switch).  
Caution: Check against the circuit diagram!
- d) The de-energised state must be secured (for example, by locking the main switch).
- e) The system must be earthed and short-circuited (where necessary).
- f) Cover or block off neighbouring live parts.

---

For the sequence of the required tests of the primary circuits, refer to

"DIN VDE 0701-1 :2000-09"	Repair – Modification – Testing and
"EN 50110-1 :2004-07"	Operation of electrical installations (Here, for repetitive tests with fixed connection)

**Visual inspection** (for suitability for intended use)  
Assessing the condition of the condition of the mains power supply line and wiring on the entire electrical system.  
Damaged cables or wires must be replaced immediately.

**Measuring device inspection**  
Intermediate check for function before the measurements begin.

**Earth wire resistance** ( $\leq 0.1\Omega$  company requirement for fixed connection)  
When extensions are used, carry out a measuring line compensation where necessary.

**Insulation resistance** ( $\geq 1\text{ M}\Omega$  at 500 V)  
The measurement of the installation can also be carried out in part.

Amend the specified measuring points and areas to be measured according to the electrical equipment.

If the measured values do not fall within the requirements, the cause must be determined and eliminated immediately!

# Operating Manual

## Lean-Lift

### 4.3 Carrying out the annual safety inspection (continued)

Where applicable, enter other required test points into the blank fields.

Area — Location		Earth wire resistance [Ω]
Access side, panelling	left	
	right	
	Area of main switch	
Drive motor, PE contact	Vertical	
	Horizontal	
Worktop		
Power socket, PE contact of peripheral device. . . .	Barcode reader	
	Printer	
Lighting, PE contact	Lamp 1	
	Lamp 2	
	Lamp 3	
	Lamp 4	

Important points when measuring the insulation resistance (after de-energising the system):

The following parts can be disconnected from the de-energised circuit:  
input and output filter and frequency converter.

The following parts should be disconnected from the de-energised circuit (and bypassed if necessary):  
Unit control systems, lighting fixtures (using power contactors) and all connected peripheral devices (pull the plugs).

Load circuits must be connected through, for example by actuating all load contactors and protective motor switches. Contacts of fuses and circuit breakers must be closed. Alternatively, a partial test can be carried out. Before the test, be sure to check the contact assignment of the electrical system by comparing it with the respective circuit diagram.

Where applicable, enter other required test points into the blank fields.

Location — Area of the circuit		Insulation resistance [MΩ]	
from	to		
Q2 Main switch	→ Q1 Protective motor switch		
Q1 Protective motor switch	→ ..... Transformer		
	→ ..... Motor load contactor(s)		
..... Motor load contactor(s)	→ ..... Vertical drive motor		
	→ ..... Horizontal drive motor		
	→		

# Operating Manual

## Lean-Lift

### 4.3 Carrying out the annual safety inspection (continued)

#### After the inspection is passed

After the safety inspection is successfully completed, an inspection sticker is attached which is specific to the respective country of use. Note the next inspection date on the sticker.

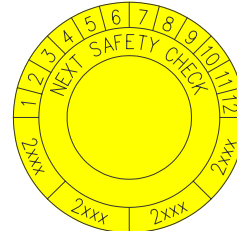
The sticker must be attached to the right side panel of the access point, below the short operating instructions. When there are multiple access points, the sticker is attached to the first access point only.

#### Extremely important!

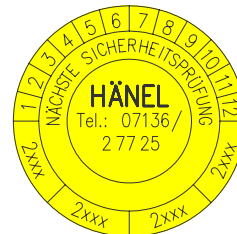
The stickers may be applied by the Hänel factory or Hänel service department only.

Examples:

Inspection sticker  
(worldwide)



Inspection sticker  
(Germany)



# Operating Manual

## Lean-Lift

### 4.4 Carrying out regular inspections

#### Contents

Overview of the required regular inspection tasks.

#### Test Book

A pre-printed copy of the Test Book is provided in Annex D.

#### Inspections and intervals

Carry out the specified inspections once a year (also refer to the document "F-SICHB2").

1.	Mechanical system	Evaluation Requirements fulfilled
1.1	<b>Signs</b> <i>In the local language with the essential information from the operating manual are attached to the outside of the lift in a clearly legible and permanent manner.</i>	Yes <input type="checkbox"/> No <input type="checkbox"/>
1.2	<b>Safety signs</b> <i>Are present and fully intact in compliance with the current "SiSchi-LL" document.</i>	Yes <input type="checkbox"/> No <input type="checkbox"/>
1.3	<b>Installation and operation conditions</b> <i>are checked in accordance with the intended use (loaded - unloaded) and the assessment of the ambient conditions (e.g. space requirements - temperature - humidity).</i>	Yes <input type="checkbox"/> No <input type="checkbox"/>
1.4	<b>Test run</b> <i>For generally functional condition with consideration of the ambient conditions and the intended use according to the operating manual.</i>	Yes <input type="checkbox"/> No <input type="checkbox"/>
1.5	<b>Running noise in normal operation</b> (particularly for bearing units, chain guides) <i>When abnormal noises are heard, the reason must be found and corrected.</i>	Yes <input type="checkbox"/> No <input type="checkbox"/>
1.6	<b>Drive and carrying chains</b> <i>Spot-check of chain links carried out at various places. Correct chain tension and sufficient lubrication checked.</i>	Yes <input type="checkbox"/> No <input type="checkbox"/>
1.7	<b>Connecting shafts</b> <i>Check for proper fastening (torque check where applicable).</i>	Yes <input type="checkbox"/> No <input type="checkbox"/>
1.8	<b>Chain wheels</b> <i>Check for deformation or other damage. All fasteners are present and fully functional (secure fit, torque check).</i>	Yes <input type="checkbox"/> No <input type="checkbox"/>
1.9	<b>Gear motor</b> <i>All fasteners are present and fully functional (secure fit, torque check). The permanent lubrication is ensured. There are no leaks.</i>	Yes <input type="checkbox"/> No <input type="checkbox"/>
1.10	<b>Guide tracks and rollers</b> <i>Visual and manual check (by running your hand across surfaces) for deformation and damage. Check the position and fit of the supporting roller axis bolts.  Sufficient lubrication is present.</i>	Yes <input type="checkbox"/> No <input type="checkbox"/>

# Operating Manual

## Lean-Lift

### 4.4 Carrying out regular inspections (continued)

1.	Mechanical system	<i>Evaluation</i> <i>Requirements fulfilled</i>
1.11	<b>Door locks</b> (of the access points and service access doors) <i>and their keys are present and fully functional.</i>	Yes <input type="checkbox"/> No <input type="checkbox"/>
1.12	<b>Door mechanical system</b> <i>The guides move easily and the cables are fully functional and undamaged.</i>	Yes <input type="checkbox"/> No <input type="checkbox"/>
1.13	<b>Structural extensions – special versions</b> <i>Technical values and specific information about use must be taken from the project-specific operating manual and checked for safe function.</i>  ..... ..... ..... .....	Yes <input type="checkbox"/> No <input type="checkbox"/>

2.	Electrical system		<i>Evaluation</i> <i>Requirements fulfilled</i>
2.1	<b>Wiring</b> <i>The labels of all conductors and terminals are present and correct.</i> <i>The conduits have no sharp edges and moving conductors are in no danger over their entire traverse path.</i> <i>The insulation of conductors, cables and all cable bushings are undamaged.</i> <i>Screw, clamp and plug connectors are in correct position and make secure contact.</i>		Yes <input type="checkbox"/> No <input type="checkbox"/>
2.2	<b>Mains power supply</b> <i>The operating and control voltage, the layout of the mains power supply and the motor power consumption conform to the specifications on the order-specific circuit diagram and the type plate.</i> <i>Main switch undervoltage trip present for multi-unit networks. Function check carried out at all main switches.</i>		Yes <input type="checkbox"/> No <input type="checkbox"/>
2.3	<b>Control system</b> <i>All functions (and every storage compartment) can be selected and carried out.</i>	<i>Installed control system type.....</i>	Yes <input type="checkbox"/> No <input type="checkbox"/>

# Operating Manual

## Lean-Lift

### 4.4 Carrying out regular inspections (continued)

2.	Electrical system		<i>Evaluation</i> <i>Requirements fulfilled</i>
2.4	<b>Protective motor switch</b> <i>Settings and function according to specifications of circuit diagram.</i> <i>Note: For models "Without protective motor switch Q1 in the electrical drawer", the variable protective motor switch is integrated in the main switch.</i>		Yes <input type="checkbox"/> No <input type="checkbox"/>
2.5	<b>Emergency control devices</b> (incl. main switch and main service switch) <i>All actuators and switching elements are undamaged and functional.</i>		Yes <input type="checkbox"/> No <input type="checkbox"/>
2.6	<b>Safety devices at all access points</b> <i>The installed safety light barriers or safety light curtains are installed according to their intended use</i> <i>Self-monitoring safety light barriers (yellow, ESPE type 4), <input type="checkbox"/></i> <i>Self-monitoring safety light curtain directly in front of the access point</i> <i>(LV15095 and LVS, ESPE type 4), <input type="checkbox"/></i> <i>Self-monitoring safety light curtain at a distance of the access point (LVH, ESPE type 4), <input type="checkbox"/></i> <i>Not self-monitoring (black) <input type="checkbox"/> Important! In this case, a note is required on Page 1.</i>		Yes <input type="checkbox"/> No <input type="checkbox"/>
2.7	<b>Limit switches / proximity switches / fill level detection system</b> <i>All installed limit switches, sensors and fill level detection devices checked for correct function.</i>		Yes <input type="checkbox"/> No <input type="checkbox"/>
2.8	<b>Compartment LED display</b> Option not available <input type="checkbox"/> <i>The display function is present.</i>		Yes <input type="checkbox"/> No <input type="checkbox"/>
2.9	<b>Soil deposits</b> (in electrical installation spaces or on electrical components) <i>Soil deposits that either mechanically or thermally impair proper function have been removed, e.g. from fans (FC), safety light barriers or curtains.</i>		Yes <input type="checkbox"/> No <input type="checkbox"/>

# Operating Manual

## Lean-Lift

### 4.5 Monitoring the lift load

#### Contents

This chapter tells you how to monitor the correct load of the lift.

#### Introductory note

We strongly recommend using a container weighing device for monitoring. If you do not want to use a weighing device, you must always monitor the lift load yourself.

#### Calculating the permitted load

From the control system, call up the distribution of all containers in the lift. For more information, refer to the "User Guide MP Lean-Lift and Multi-Space".

You then have to determine the permitted average container load for the front and rear storage units. The following formula is used for this purpose.

$$A = \frac{(B - C)}{D}$$

The abbreviations in this formula have the following meanings:

**A = Permitted average load of one container**

If the calculated value is larger than the maximum container load specified on the type plate, use the value for the maximum container load for the purposes of the check.

**B = Max. total load per storage unit**

You can find this value on the type plate.

**C = Empty weight of all containers in this lift**

The container empty weights are specified in the power supply and foundation plan in the documentation folder.

**D = Number of all containers in this storage unit**

This value can be viewed in the control system.

#### After the calculation

Compare the actual load of a certain number of containers of a lift with the calculated permitted average load A or the maximum load of one container.

*Example: The actual load of 3 containers, for example, is compared with the calculated permitted load A or the information on the type plate specifying the maximum permitted load.*

If you determine that the permitted load of one container is exceeded, you have to check all containers. Continue unloading overloaded containers until the permitted load is reached.

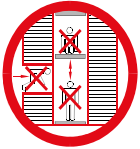
# Operating Manual

## Lean-Lift

### 4.6 Maintaining the drives and chains

#### Contents

This chapter describes the service tasks required on the drives and chains.



#### DANGER

- Never enter the access point or the lift during the test run.
- Never use the lift to transport persons – even for inspection purposes.



#### DANGER

All work may be carried out by trained and authorised personnel (such as Hänel after-sales service) only.



#### DANGER

- Before beginning work, lower the extractor all the way to the ground.
- If you have to remove the vertical drive unit or chains, before beginning work, you must secure the extractor from falling or remove it as described in Chapter 1.



#### DANGER

Voltage is present at the network connection terminals in the control unit even when the main switch is switched off.

#### SAFETY INSTRUCTION



#### Secure the main switch(es)!

Before all work, secure the main switch(es) from being switched on again using a padlock.

#### SAFETY INSTRUCTION



#### Secure the actuator latch!

Secure the actuator of the safety switch with a padlock if you have opened the service door.



# Operating Manual

## Lean-Lift

### 4.6 Maintaining the drives and chains (continued)

#### Replacing the drives

For safety reasons, the drive units may normally be replaced by specially trained and authorised personnel (such as Hänel after-sales service) only.

When replacing drives, the following points are most important:

- Work on the drive units requires special precautions for workplace safety – see Chapter 1.
- The number of teeth of the new drive pinion must match that of the original pinion.
- The motor power of the new drive pinion must match that of the original drive.

Before beginning work, contact the Hänel factory or Hänel after-sales service. For more information, refer to the manufacturer's documents for the new drive unit.

#### Lubricating the chains

The chains are lubricated for life. They may not be relubricated, as the lubricant would contaminate the containers and stored articles.

#### Inspecting the chains

Regularly check the chains for looseness and elongation. The chains must be taut in both directions of rotation.

If the automatic chain tensioners are no longer able to keep the chain(s) taut, the chains are worn out and must be replaced.

#### Manually retightening the chains

All chains are tightened by automatic chain tensioners and cannot be retightened manually.

#### Replacing worn chains

Normally, all chains may be replaced by specially trained and authorised personnel (such as Hänel after-sales service) only.

When performing such work, the following points must always be observed:

- Work on the chains requires special precautions for workplace safety.
- Do not shorten the chains by removing chain links.
- Do not use offset chain links.
- If one chain is worn out, you have to replace all of the chains as a set.

# Operating Manual

## Lean-Lift

### 4.6 Maintaining the drives and chains (continued)

A complete chain set consists of the following chains:

Name	Type of construction and dimensions	Quantity
All lifts: Extractor chain DIN 8187 / ISO 606	Double roller chain 5/8" × 3/8"	2
Lift with 250 kg (551.16 lbs) load Carrying chain DIN 8187 / ISO 606	Single roller chain 5/8" × 3/8"	4
Lift with 500 kg (1102.31 lbs) load Carrying chain DIN 8187 / ISO 606	Single roller chain 3/4" × 7/16"	4
Lift with 1000 kg (2204.62 lbs) load Carrying chain ISO 606-ANSI 60H-1	Single roller chain 3/4"	4
Lift with 250 kg (551.16 lbs) load Drive chain DIN 8187 / ISO 606	Single roller chain 5/8" × 3/8"	2
Lift with 500 kg (1102.31 lbs) load Drive chain DIN 8187 / ISO 606	Single roller chain 3/4" × 7/16"	2
Lift with 1000 kg (2204.62 lbs) load Drive chain ISO 606-ANSI 60H-1	Single roller chain 3/4"	2



#### Tip!

The number of links depends on the height of the lift. You can request the data from the Hänel factory.

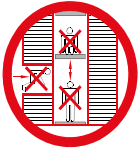
# Operating Manual

## Lean-Lift

### 4.7 Relubricating the lift

#### Contents

This section describes the required regular lubrication tasks.



#### DANGER

- Never, under any circumstances, enter the access point or the lift during the test run.
- Never use the lift to transport persons – even for inspection purposes.



#### DANGER

Before beginning work, lower the extractor all the way to the ground.

#### SAFETY INSTRUCTION



#### Secure the main switch(es)!

Before all work, secure the main switch(es) from being switched on again using a padlock.

#### SAFETY INSTRUCTION



#### Secure the actuator latch!

Secure the actuator of the safety switch with a padlock if you have opened the service door.

#### Components that may not be relubricated

The following components may not be relubricated:

- The plastic sliders on the containers: in some cases, the lubricant can destroy the plastic sliders.
- All roller chains: the chains are lubricated for life. Any added lubricant would be spun off during operation and thus would contaminate the containers and stored articles.

# Operating Manual

## Lean-Lift

### 4.7 Relubricating the lift (continued)

#### Components that need to be relubricated

The components listed below have to be relubricated once a year. You can obtain the required lubricants from the Hänel factory or one of the Hänel representatives.

All information applies to single-shift operation. For multi-shift operation or difficult operating conditions, we recommend correspondingly shorter lubrication intervals. Examples of difficult conditions include:

- High humidity
- Aggressive environments
- Large temperature fluctuations

#### Bevel gears of the extractor

Lubricant: Unigear ST 2M (Klüber)

Ordering information: LL-501

#### Guide of the container drive catch on the extractor transport chain

Lubricant: Klüberop SK 01-205 (Klüber)

Ordering information: LL-500

#### Drives

All work may be carried out by specially trained and authorised personnel (such as Hänel after-sales service) only.

##### Leroy Somer drives

We recommend replacing the drive after approximately 20,000 single-shift operating hours. The drives must be replaced by specially trained and authorised personnel (such as Hänel after-sales service).

The following lubricant is used in the gearboxes:  
Mobil SHC 634

Lubricant quantity for gearboxes:

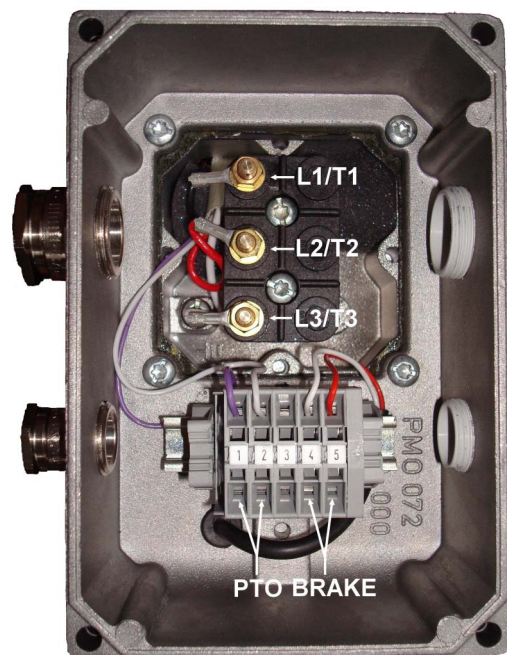
Type 2201: 0.21 L,

Type 2501: 1 L,

Type 2601: 2.2 L

You can obtain further service information at the website of the manufacturer: [www.leroy-somer.com](http://www.leroy-somer.com)

Connecting terminals of the Leroy Somer drive



# Operating Manual

## Lean-Lift

### 4.7 Relubricating the lift (continued)

#### Drive (continued)

##### SEW drives

We recommend replacing the drive after approximately 20,000 single-shift operating hours. The drives must be replaced by specially trained and authorised personnel (such as Hänel after-sales service).

Depending on the lift version, you may find the following SEW gear types :

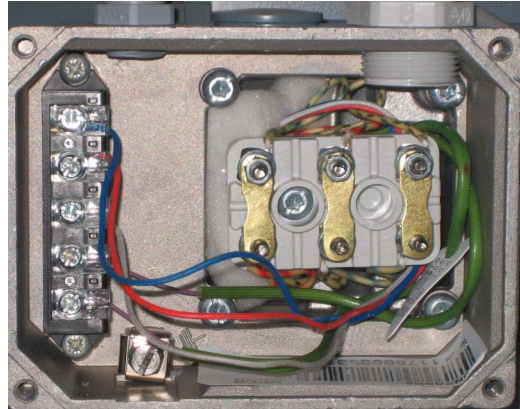
S32, S37

S62, S67, S77

The gearboxes use the long-life lubricant "Klüber-Synth GH 6-680".

You can obtain further service information from the corresponding manufacturer's description. This is available in the local language at the SEW website: [www.sew-eurodrive.de](http://www.sew-eurodrive.de).

Connecting terminals of the SEW drive



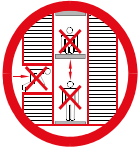
# Operating Manual

## Lean-Lift

### 4.8 Correcting faults

#### Contents

This chapter includes an index of faults during operation and options for correcting them.



#### DANGER

- Never enter the access point or the lift during the lift run.
- Never use the lift to transport persons – even for inspection purposes.



#### DANGER

- Faults may be corrected by technicians only.
- If you are not sure how to correct the fault, notify Hänel after-sales service.
- For all of this work, it is absolutely essential follow the workplace safety instructions in Chapters 1 and 4.



#### DANGER

- If possible, the extractor must be lowered all the way to the ground before work begins.
- If it is not possible to lower the extractor to the ground, before beginning work, you must secure it from falling as described in Chapter 1.

#### SAFETY INSTRUCTION



#### Secure the main switch(es)!

Before all work, secure the main switch(es) from being switched on again using a padlock.

#### SAFETY INSTRUCTION



#### Secure the actuator latch!

Secure the actuator of the safety switch with a padlock if you have opened the service door.

# Operating Manual

## Lean-Lift

### 4.8 Correcting faults (continued)

#### List of possible faults

The following faults are possible during operation. The right-hand column provides information about correcting the faults.



#### Tip!

For more information on possible faults, refer to the "Lean-Lift User Guide" and the "User Guides for the MP Control System".

Fault	Cause of the fault	Tips for correcting the fault
Lift cannot be moved	The safety circuit is interrupted.	<ul style="list-style-type: none"><li>• Ensure that the emergency stop button is disengaged.</li><li>• Ensure that the service door is closed properly.</li><li>• Check for objects in the area of the access point monitored by the safety light curtain or safety light barriers.</li><li>• Have all safety equipment inspected by an electrician.</li></ul>
	No supply voltage is present.	<ul style="list-style-type: none"><li>• Switch on the main switch.</li><li>• Check that all fuses on the mains side are functioning properly.</li><li>• Check that all fuses inside the control system are switched on.</li><li>• Check that all fuses on the electronics control system are functioning properly (see the "Circuit diagrams for the MP CPU I+II, power component, safety component I, Lean-Lift auxiliary board, lighting")</li></ul>
	Proximity switches at the access opening not referenced and triggered by fault.	<ul style="list-style-type: none"><li>• Have the proximity switches inspected for proper function by an electrician.</li><li>• Check that the proximity switches are covered by a container.</li></ul>
	Stored articles have become jammed in the extractor.	<p>Remove the jammed articles:</p> <ul style="list-style-type: none"><li>• Articles that can be reached through the service door can be removed that way.</li><li>• Articles that are jammed in the top area may be removed from the outside only. To do so, the lift panelling must be removed. For more information, refer to Chapter 1 and the installation instructions of the lift.</li></ul> <p><b>Extremely important!</b></p> <p>The jammed article must be removed by trained and authorised personnel (such as Hänel after-sales service) only. The safety measures described in Chapter 1 apply.</p>

# Operating Manual

## Lean-Lift

### 4.8 Correcting faults (continued)

Fault	Cause of the fault	Tips for correcting the fault
Protective motor switch has tripped	There is a short-circuit in the electrical system.	<ul style="list-style-type: none"> <li>Have the electrical system checked by an electrician for a short circuit.</li> </ul>
	The protective motor switch is set incorrectly.	<ul style="list-style-type: none"> <li>Have the set ampere value of the protective motor switch checked by an electrician and compare it with that specified on the type plate/circuit diagram.</li> <li>If necessary, the set value must be corrected.</li> </ul>
	The motor brakes are not released	<ul style="list-style-type: none"> <li>Ensure that the motor brakes disengage during the lift run.</li> </ul>
Extractor does not stop level with access point	The positioning system is malfunctioning.	<ul style="list-style-type: none"> <li>Check the vertical positioning system on the extractor at the front left and rear right. If necessary, correct the setting according to the "Positioning Sensor Installation Instructions POSIEINS".</li> <li>Reinitialise the positioning system according to the technical description of the "MP".</li> </ul>
	The motor brake is malfunctioning.	<ul style="list-style-type: none"> <li>Have the motor brake readjusted by a trained and authorised person (such as Hänel after-sales service).</li> </ul>
Container does not reach its horizontal limit positions	The control system or proximity switches are malfunctioning.	<ul style="list-style-type: none"> <li>Have the control system and proximity switches on the extractor inspected for proper function by an electrician.</li> </ul>
Lift makes excessive noise during operation	The mechanical system is defective.	<ul style="list-style-type: none"> <li>Check the drives or the entire lift for abnormal noises. Defective drives and modules have to be replaced.</li> <li>Check that all lubrication points are sufficiently lubricated.</li> </ul>
Lift jerks when starting up	The entire lift has settled.	<ul style="list-style-type: none"> <li>Using a spirit level, check the erection location and the lift for signs of settling.</li> <li>You must compensate for any unevenness of the floor using suitable shims under the base of the lift.</li> </ul>
	The chains are not tensioned properly	<ul style="list-style-type: none"> <li>Check the tension of the carrying and drive chains. To prevent a jerking motion of the lift at start-up, the chain segments must be taut.</li> <li>If the automatic chain tensioner no longer keeps the chains taut, the entire chain set must be replaced.</li> </ul>
Lift does not react to keyboard input	The keyboard or control system is defective.	<ul style="list-style-type: none"> <li>Check the plug connection between the keyboard and microprocessor control system.</li> <li>Check the fuses of the microprocessor control system.</li> <li>Replace the keyboard and/or microprocessor control system.</li> </ul>



# Operating Manual

## Lean-Lift

### 4.8 Correcting faults (continued)

Fault	Cause of the fault	Tips for correcting the fault
Lift run is suddenly interrupted	The safety circuit has been interrupted.	<ul style="list-style-type: none"><li>• You have interrupted the safety light curtain or the safety light barriers in the access point. Acknowledge the interruption at the operating panel by pressing the "Return" key.</li><li>• Ensure that the service door is closed properly.</li><li>• Have all safety equipment inspected by an electrician.</li></ul>
Stored articles have fallen in the lift	One or more containers have been loaded incorrectly.	<ul style="list-style-type: none"><li>• First, secure the extractor as described in 1.4.</li><li>• You can remove the articles from the lift via the service door again.</li><li>• Wear a safety helmet and follow the safety instruction in Chapter 1.</li></ul>

# Operating Manual

## Lean-Lift

### 4.9 Ordering spare parts

#### Contents

This chapter provides instructions for ordering spare parts and a spare parts list.

#### Necessary ordering information

To process your order quickly and accurately, we need the following information:

- The commission number of the lift
- The name or type of the spare part
- The spare part number
- The quantity you are ordering.

#### Terms of delivery

These terms apply for all spare parts orders:

- Orders placed by telephone must be confirmed in writing.
- Shipment takes place according to our general sales and warranty provisions.

#### Incorrect deliveries

We shall not be liable for the costs or other consequences that arise from incorrect deliveries in the following cases:

- An order placed by telephone is not confirmed in writing.
- The order does not contain all required information.

#### Liability and warranty

Only original Hänel replacement parts may be used when replacing parts. Parts from other manufacturers and/or unauthorised installation will result in forfeiture of warranty claims and liability claims against the manufacturer.

Spare parts may be installed only by personnel specially trained by Hänel or companies certified by Hänel.

#### Available spare parts

Only original Hänel replacement parts may be used when replacing parts. The following spare parts are available:

Description	Material	Function	Spare part number
<b>Access point</b>			
Roller for extraction in access point or on roller guide rails	Plastic	Support rollers for the container	LL-112
Plastic limit stop for access point	Plastic	Removal stop-lock for the container	LL-133
Door cables	Steel	Sliding door suspension	LL-143
Wiring cabinet lock with 1 key	Steel	Locks the wiring cabinet	LL-170

# Operating Manual

## Lean-Lift

### 4.9 Ordering spare parts (continued)

Description	Material	Function	Spare part number
Lock with 1 key for sliding door	Steel	Sliding door lock	LL-146
Lighting panel	Steel	Holder for lighting fixture	LL-150
Side panel	Steel	Mount for the height detection system	LL-130, LL-131
<b>Housing</b>			
Service door	Steel	Panelling section	LL-015, LL-016
Bottom front panel	Steel	Panelling section below the access point	LL-030
<b>Extractor</b>			
"Horizontal" drive unit		Drive of the extractor chain	LL-200
Set of bevel gears	Steel	Part of the drive train of the extractor chain	LL-214
Transport chain, complete, with drive catches and chain joint	Steel	Extractor chain	LL-217, LL-218
Sliding block	Plastic	Guide blocks under the extractor drive catches	LL-219
Rolling roller of the extractor	Plastic	Support rollers for the container	LL-235
Guide roller of the extractor	Plastic	Guides the extractor during vertical movement	LL-240
Coupling element of the extractor	Steel	Connection of the drive shafts	LL-210
Chain wheel, drive and guide side	Steel	Part of the drive	LL-215, LL-216
Plastic insert for guiding the carrying chain	Plastic	Guides the carrying chain	LL-245
Extractor, complete	Steel, plastic, chemical products	Extractor, complete	LL-290
<b>Vertical drive</b>			
"Vertical" drive unit		Drive of the carrying chain	LL-300
Carrying chain, complete, with chain joint	Steel	Vertical chain	LL-330, LL-331
Drive chain, complete, with chain joint	Steel	Connecting chain of the carrying chains on the drive	LL-340, LL-331
Coupling element of the vertical drive	Steel	Connection of the drive shaft	LL-310

# Operating Manual

## Lean-Lift

### 4.9 Ordering spare parts (continued)

Description	Material	Function	Spare part number
Drive shaft of the vertical drive	Steel	Connection of the chain wheels	LL-311
Bottom chain wheels	Steel	Chain wheels	LL-317, LL-318
Self-aligning bearing	Steel	Bearing of the drive shaft	LL-319
Top chain wheels	Steel	Chain wheels	LL-321
<b>Containers</b>			
Containers	Steel	Storage of articles	LL-400
Container notch, right and left	Plastic	Notch for carrier on the extractor chain	LL-410, LL-411
Container sliders	Plastic	Sliders on bottom of container	LL-412
<b>Electrical/electronic systems</b>			
See bills of materials included in the lift documentation.			
<b>Miscellaneous</b>			
Lubricant for extractor transport chain guide	Chemical product	Lubricant	LL-500
Lubricant for extractor bevel gears	Chemical product	Lubricant	LL-501
Touch-up paint	Chemical product	Paint	LL-505

# Operating Manual

## Lean-Lift

### 4.10 Final decommissioning of the lift

#### Contents

This chapter provides instructions for final decommissioning and disposal of the lift.



#### DANGER

- The lift may be disassembled by technicians only.
- For all of this work, it is absolutely essential follow the workplace safety instructions in Chapters 1 and 4.



#### DANGER

Before beginning work, lower the extractor all the way and remove it.



#### DANGER

Use only working platforms, ladders and scaffolding for all work that cannot be performed from the ground.

#### SAFETY INSTRUCTION



#### **Wear fall protection equipment!**

You must wear fall protection equipment whenever you work at great heights.

Refer to Chapter 1 to find out what type of fall protection equipment you need and how to wear it.

#### Legal regulations

Dispose of decommissioned lifts according to applicable national requirements.

If you have specific questions about the proper disposal of the parts, please contact your local environmental officer or the Hänel factory.

#### Disposal

For instructions on disassembly and disposal of the decommissioned lift, refer to the "Lean-Lift Installation Instructions". That document also lists the materials used.

# Operating Manual

## Lean-Lift

### 4.11 Technical data

#### Contents

Technical data of the lift

Name	Value
<b>Permitted ambient conditions</b>	
Ambient temperature	+5 °C to +40 °C (+41 °F to +104 °F)
Installation in earthquake zones outside of Germany	Not permitted or permitted for special construction versions only (see type plate)
Outdoor installation	Not permitted or permitted only with additional enclosure
Structural reinforcement	Must be provided by owner/operator for lifts with heights equal to or greater than (see type plate): <ul style="list-style-type: none"> <li>8 000 mm (315 in) for the lift type "840- ..."</li> <li>10 000 mm (393.7 in) for all other lifts</li> </ul>
<b>General</b>	
Width	see order confirmation
Depth	see order confirmation
Height	see order confirmation
Container dimensions	see order confirmation
Noise emissions (airborne noise measurement in accordance with DIN 45635)	The A-weighted equivalent continuous sound pressure level is < 70 dB(A) Maximum C-weighted transient sound pressure level < 63 Pa.
<i>Measuring point:</i> <ul style="list-style-type: none"> <li>Centre of the lift in front of the access opening (lift with standard access point)</li> <li>Distance from the front panel of the housing 1 m (39.4 in)</li> <li>Height above the ground 1.60 m (63 in).</li> </ul>	
<i>Operating conditions of the lift:</i> Maximum travel speed, access opening open.	
<b>Weights</b>	
Max. container load	See type plate
Max. total load of the lift	See type plate
Total weight	see order confirmation
Largest single part weight	See Installation Requirements for the Owner/Operator
Container empty weight	See power supply and foundation plan
<b>Electrical system</b>	
Supply voltage	See type plate
Control voltage	24 VAC
Connected load	See type plate

# Operating Manual

## Lean-Lift

### 4.11 Technical data (continued)

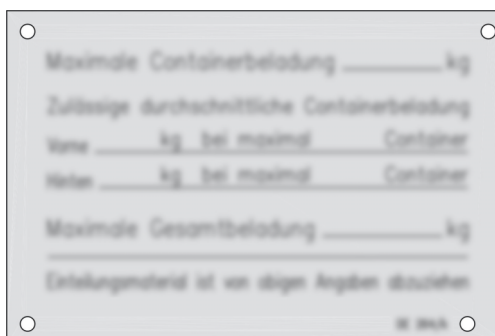
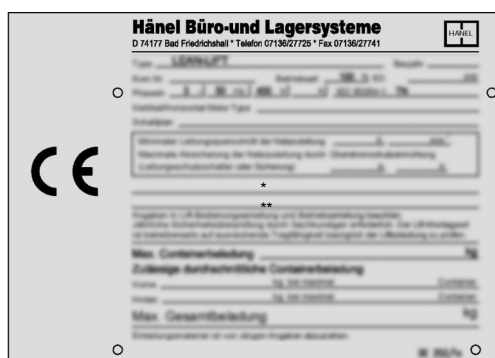
Name	Value
Nominal power consumption	See type plate
Max. power consumption	1.5 x the nominal power consumption
Internal fuse protection of the unit	See nominal current specified on type plate
Customer-side fuse protection	see Chapter 3.1
Control system type	see order confirmation

#### Type plate

The most important data also appears on the type plate and the load sign in the access point on the lift. There you can also find information about the electrical drives and the load carrying capacity, which depend on the lift version and the country of use:

Mode:	Duty cycle (max. 100 %)
Phases:	Three-phase current
Frequency:	Depends on the lift version, owner/operator, and country of use
Supply voltage:	Depends on the lift version, owner/operator, and country of use
Power consumption:	Nominal power consumption of the lift in (A)
Power:	Connection power of the lift in (kW)
Motor type:	Motor types used for vertical and horizontal drives
Circuit diagram:	Document No. of the circuit diagram
*:	Indicates whether or not installation is permitted in earthquake areas outside of Germany
**:	Indicates whether structural reinforcement is required
Max. container load:	Maximum load of one container
Permitted average container load:	Permitted average load of a container on the front or rear
Max. total load:	Permitted total load of the lift

Example type plate or load sign







# Operating Manual

## Lean-Lift

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## Lean-Lift

### Keyword index (continued)

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# Operating Manual

## Lean-Lift

### Annex B

### Safety Concept for Operation at Multiple Access Points

To prevent users at multiple access points from endangering each other, the following variants are possible:

#### Variant 1:

Lean-Lift with guide rails

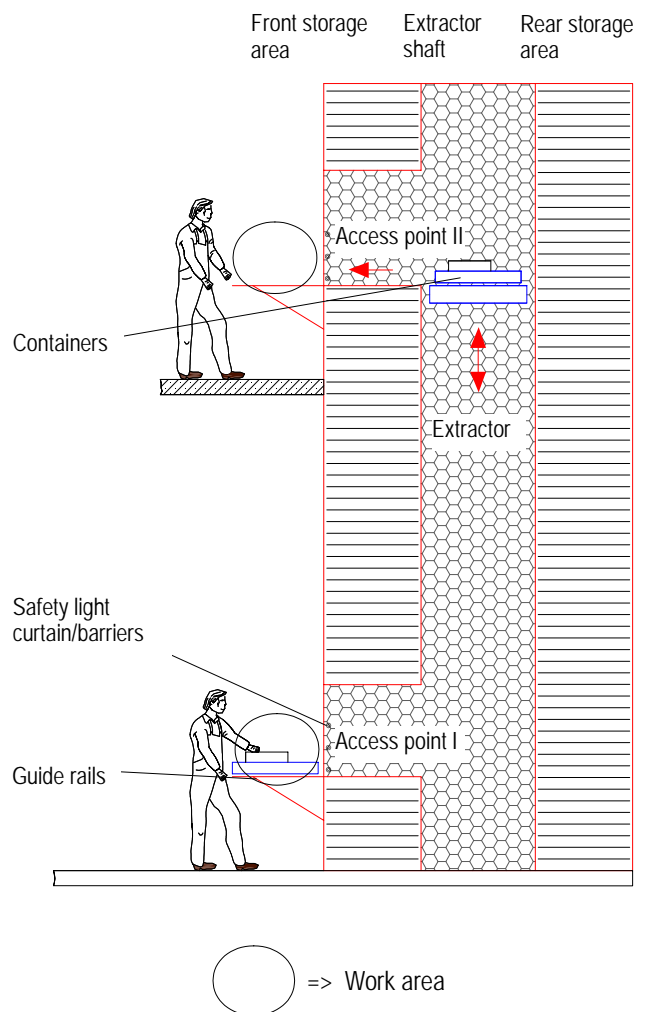
Optional: "Safety device is not triggered during standstill".

##### Notes:

- Simultaneous handling at multiple access points by trained personnel is possible. (However, the extractor can be used by one operator only.)
- Shelf transfer is **<not>** possible.
- Remote-controlled operation of the lift is **<not>** possible.
- Driving the extractor (lift run) is possible only if no safety light barrier/safety light curtain is triggered and no container is in another access point. (Container must be pulled onto guide rails or stored).
- Shelf locking function is **<not>** possible.

The extractor moves the selected container into the access point. The safety light barriers / safety light curtain is active. As soon as the container has been pulled onto the guide rails, driving the extractor is possible (see Access point I).

A container is on the guide rails in front of the access point. The safety light curtain is / the safety light barriers are active. The container can be processed. The extractor can be driven.



### Annex B

### Safety Concept for Operation at Multiple Access Points

#### Variant 2:

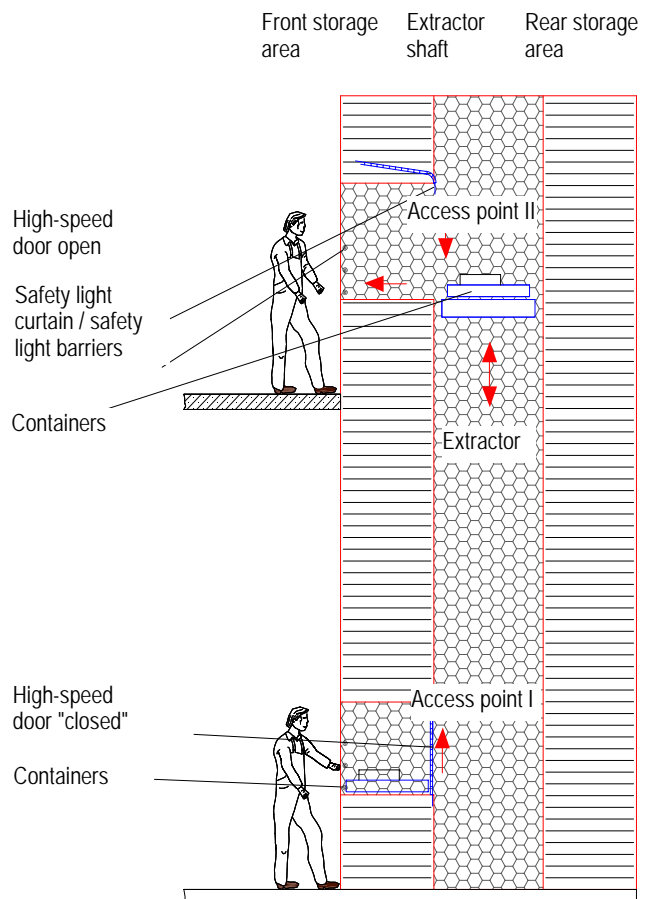
Lean-Lift with high-speed door between access point and extractor shaft

##### Notes:

- Simultaneous operation at multiple access points is possible. (However, the extractor can be used by one operator only.)
- Shelf transfer (direct forwarding of a shelf into another access point) is possible only with safety light curtain barrier at the access point according to Draws\LL-LVS.
- Remote-controlled operation of the lift is possible.
- Shelf pre-positioning is possible.
- Driving the extractor (lift run) is possible only if all high-speed doors at the access points are closed. The option "Safety device is not triggered during standstill" is already integrated when the high-speed door is closed.
- Shelf locking function is **<not>** possible.
- Three carriers need to be blocked above each access point via the high-speed door.

The extractor drives the selected container into the access position. The high-speed door opens and the container is pushed from the extractor into the access point. Then, the high-speed door closes again. The container can now be processed, and it is possible to drive the extractor for the other access point (see Access point I).

A container is located in the access point. The high-speed door to the extractor shaft is closed. The container can be processed, and driving the extractor is possible. The safety light barriers are / curtain is **<not>** active when the high-speed door is closed.



### Annex B

### Safety Concept for Operation at Multiple Access Points

#### Variant 3:

##### Lean-Lift with "Lift run with sliding doors closed only"

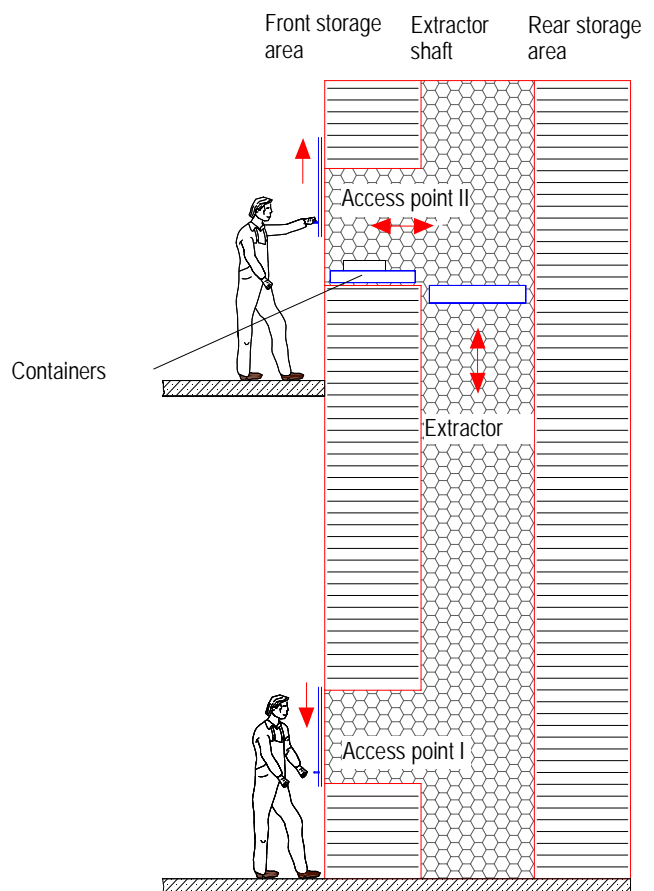
Optional: Automatic sliding door with "Safety device is not triggered during standstill".

##### Notes:

- Not suited for alternating-side operation; the LL-ENVAR Variant 2 (high-speed door) is preferred for alternating-side operation due to its better operability! Shelf transfer is possible (direct forwarding of a shelf into another access point).
- Remote-controlled operation of the lift is possible.
- Shelf pre-positioning is <not> possible.
- Driving the extractor (lift run) is possible only if all sliding doors at the access points are closed and locked.
- When one door is opened, lift operation is not possible and no other doors can be opened.
- No safety light curtain or safety light barriers (does not apply to option: Automatic sliding door with "Safety device is not triggered during standstill").
- Cannot be combined with the version "Automatically closing sliding door in case of fire".
- For extra-wide units (2860, 3060, 3260), only possible with an automatic sliding door.
- One carrier needs to be blocked above each access point via the door locking mechanism.

The extractor drives the selected container into the access point. The sliding door is opened manually, and the container can be processed. After processing is finished, the sliding door can be closed manually, and the extractor can be driven again (see Access point I).

The safety sliding door can be opened only after it is unlocked. The control system unlocks it after the lift run for the other access point is completed. A prompt to open the door appears on the display.



# Operating Manual

## Lean-Lift

### Annex B

### Safety Concept for Operation at Multiple Access Points

#### Variant 4:

Lean-Lift with mutual sliding door locking mechanism

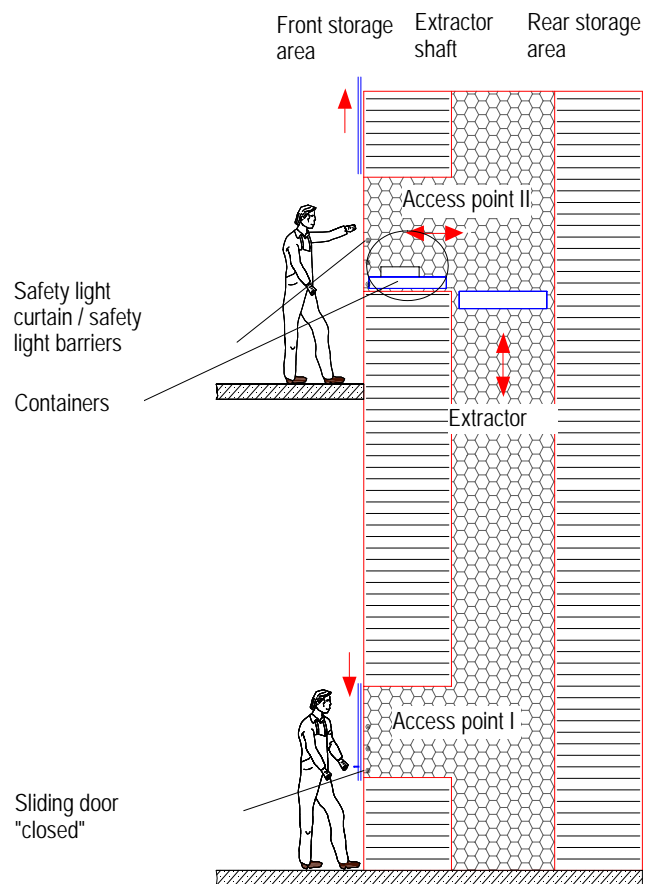
##### Notes:

- Not suited for alternating-side operation; the LL-ENVAR Variant 2 (high-speed door) is preferred for alternating-side operation due to its better operability!
- Only 2 access points are possible.
- Shelf transfer is **<not>** possible!
- Driving the extractor (lift run) is possible only if the other access point is closed and locked, and there is no container in the other access point.
- When one door is opened, the other door is locked.
- Cannot be combined with the optional equipment "Automatically closing sliding door in case of fire".
- Extra-wide units (2860, 3060, 3260) are not possible.
- Automatic sliding door is not possible.
- One carrier needs to be blocked above each access point via the door locking mechanism.

The sliding door is opened manually, and the desired container is selected. The extractor drives the container to the access point. The safety light barriers / curtain is active when the sliding door is open. When the container is driven away and the sliding door closed, a lift run is possible for another access point if that access point is opened.

The sliding door can be opened only if the other sliding door has been closed.

At locked access points, the message "DOOR" appears on the display.



○ => Work area

# Operating Manual

## Lean-Lift

### Annex C

### Test Book for Hänel Lean-Lift

#### Contents

This Annex includes a pre-printed Test Book for the lift from which you can make copies.

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C3	Inspection certifications	107





# Operating Manual

## Lean-Lift

### C1 Lift data

For the specific lift version, refer to the order confirmation in the machine documentation and the type plate on the lift.

Owner/address: _____ _____	
Installation location: _____	
Type: _____	Year of construction: _____
Comm. No.: _____	
Commissioning date: _____ _____	



# Operating Manual

## Lean-Lift

### C2 Inspections

The owner/operator is responsible for having the inspections carried out. They may be carried out by an authorised person only; also refer to Chapter 0.4. Therefore, the applicable standards and regulations of the country of use always take precedence, particularly those pertaining to earth wire and insulation measurements. The scope and intervals of the inspections may vary.

#### Safety inspection

- This must be carried out at least once a year. Operating conditions such as multi-shift operation, dirty environments etc. make shorter intervals necessary.
- Inspection by a qualified person according to the "Safety inspection log for the Lean-Lift F-SICHB3" (included in the machine documentation). Refer also to the information in the operating manual.

#### Inspection control

- This must be carried out at least once a year. Operating conditions such as multi-shift operation, dirty environments etc. make shorter intervals necessary.
- Inspection by a qualified person according to the "Safety inspection log for the Lean-Lift F-SICHB4" (included in the machine documentation). Refer also to the information in the operating manual.



# Operating Manual

## Lean-Lift

### C3 Inspection certifications

Inspection: _____ According to log: _____			Deficiencies corrected
The lift conforms with the requirements <input type="checkbox"/> Yes <input type="checkbox"/> No If "No" has been selected above, the following points do not conform with the requirements and must be rectified immediately for safety reasons:			Date:  Name of inspector:
Inspection date	Next scheduled inspection	Signature of the inspector	Signature of the owner/operator

Inspection: _____ According to log: _____			Deficiencies corrected
The lift conforms with the requirements <input type="checkbox"/> Yes <input type="checkbox"/> No If "No" has been selected above, the following points do not conform with the requirements and must be rectified immediately for safety reasons:			Date:  Name of inspector:
Inspection date	Next scheduled inspection	Signature of the inspector	Signature of the owner/operator