

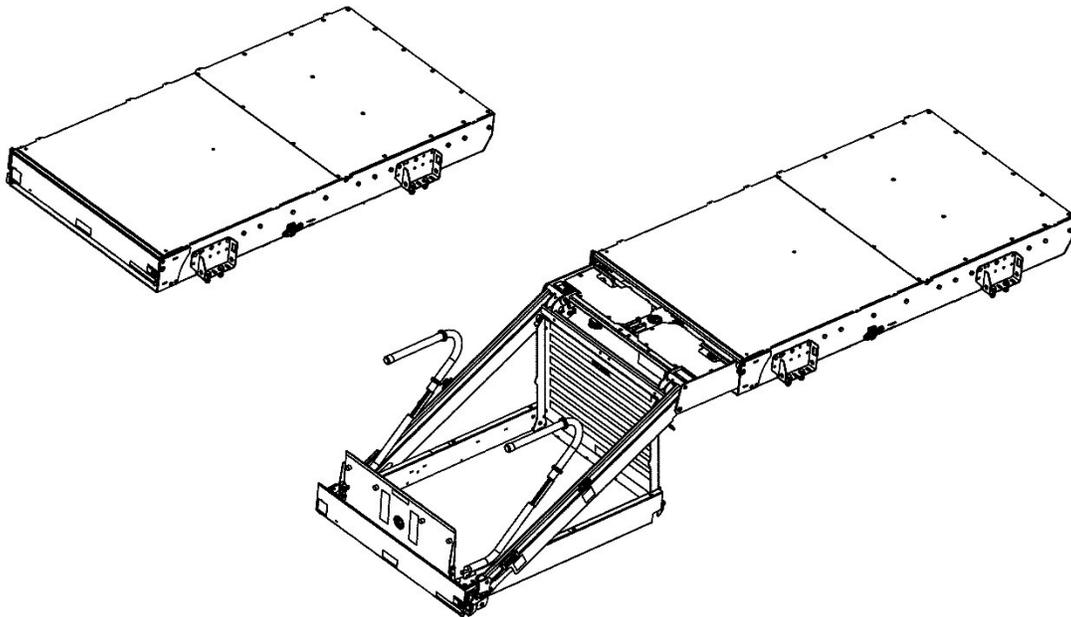


# **DHOLLANDIA**

## **DH-CH103**

### **DOT-Public Use Lift**

## **INSTALLATION MANUAL**



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**DHOLLANDIA US, L.L.C.**  
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**Read the manual in its entirety before installing and operating the wheelchair lift**  
**Keep this manual in the vehicle cab, as reference for the driver and wheelchair lift operator**

**“DOT-Public Use Lift’ verifies that this platform lift meets the “public use lift” requirements of FMVSS No. 403. This lift may be installed on all vehicles appropriate for the size and weight of the lift, but must be installed on buses, school buses, and multi-purpose passenger vehicles other than motor homes with a gross vehicle weight rating (GVWR) that exceeds 4,536 kg (10,000 lb).**

# TABLE OF CONTENTS

1	INTRODUCTION.....	3
1.1	General introduction.....	3
1.2	Public use lift.....	4
1.3	Contact information and disclaimers.....	5
1.4	Understanding safety and warning signs.....	6
1.5	Safety precautions for operation.....	7
1.6	Safety precautions for installation.....	8
1.7	Identification.....	11
1.8	Description and wheelchair lift terminology.....	12
2	INSTALLATION.....	20
2.1	Getting started.....	20
2.2	Installation kit - scope of delivery.....	22
2.3	Technical specifications.....	23
2.4	Installation.....	27
2.5	Hydraulic and electrical connections.....	32
3	THRESHOLD MODULE.....	40
3.1	Installation.....	40
3.2	Adjustment.....	42
4	VERIFYING INSTALLATION.....	46
4.1	Putting the lift into service.....	46
4.2	Commissioning & quality control.....	47
5	ADJUSTMENT INSTRUCTIONS.....	48
5.1	Factory settings.....	48
5.2	Height adjustment.....	49
5.3	Bridge plate adjustment.....	50
6	DECALS.....	51
6.1	Regular decals.....	51
6.2	Decals on inside of bus.....	53
7	FINISHING THE INSTALLATION.....	55
8	SERVICE/ MAINTENANCE.....	56
9	SPARE PARTS.....	56
10	APPENDIX.....	57
10.1	Meaning of safety and warning signs.....	57
10.2	Prescribed torque values for bolts supplied with wheelchair lift.....	59
10.3	Installation dimensions overview.....	60
10.4	Pre delivery inspection (PDI) checklist.....	62
10.5	Electric and hydraulic Information.....	65
10.6	End note.....	66

# 1 INTRODUCTION

## 1.1 GENERAL INTRODUCTION

- This manual provides you with the necessary information for the installation of the DHOLLANDIA DH-CH1xx-series wheelchair lift in a safe and correct manner to ensure good reliability of the lift.
- It provides you with general instructions applicable to the most common bus types. It might be possible that specific issues particular to your installation case are not adequately covered by this manual. If in doubt, please contact your national DHOLLANDIA distributor for further assistance.



### **WARNING**

- Improper installation can cause damage to the wheelchair lift, reduce the durability and reliability of the wheelchair lift and put the operator and bystanders at great risk of serious bodily injury and death in many ways.
- It is therefore essential that the wheelchair lifts are installed with proper care, in compliance with the installation instructions of this manual.
- In case of doubt, ALWAYS contact your national DHOLLANDIA distributor for further advice prior to continuing.

- DHOLLANDIA wheelchair lifts are regularly being adapted to new vehicle- and chassis developments and specialized customer requirements. Therefore, DHOLLANDIA reserves the right to alter product specifications without prior notice. Such modifications might not have been included at the time this manual was printed.

### ***NOTICE***

- Please confirm you have reviewed the most up-to-date version of this manual prior to the installation and operation of the associated DHOLLANDIA wheelchair lift.
- It is the sole responsibility of the installer to use good common sense and respect safety guidelines when installing the wheelchair lift.

- Contact your national DHOLLANDIA distributor if you have any questions regarding the installation, operation, repair and maintenance of DHOLLANDIA wheelchair lifts or to obtain replacement copies of manuals or decals.

## 1.2 PUBLIC USE LIFT

- **DHOLLANDIA public use lifts** [DH-CH...series used for commercial purposes] are designed to be fitted to vehicles with a gross vehicle weight rating (GVWR) that exceeds 4,536 kg (10,000 lb) (buses, school buses, and multi-purpose passenger vehicles other than motor homes), and shall be used exclusively to assist wheelchair passengers to embark and disembark the vehicle.
- The lift shall be used with obedience of the loading diagram, and the user's- and safety instructions contained in this manual.



### WARNING

- Improper use of the lift will put the operator and bystanders at great risk of serious bodily injury and death. Therefore, it is strictly forbidden to use the lift in a different way, or for different purposes than described in the operation manual.
- The lift shall NEVER be used as an elevated work platform, to push loads, to move snow or other debris.
- DHOLLANDIA disclaims liability for any personal injury and / or property damage that results from improper use.

## 1.3 CONTACT INFORMATION AND DISCLAIMERS

DHOLLANDIA lifts are regularly being adapted to new vehicle and chassis developments and specialized customer requirements. Therefore, DHOLLANDIA reserves the right to alter product specifications without prior notice; and potentially modifications or new developments might not have been taken into account at the time of printing

### **NOTICE**

Please confirm you have reviewed the most up-to-date version of this manual prior to the operation of the associated DHOLLANDIA wheelchair lift. See below for instructions to download the latest version of the manual.

Contact your national DHOLLANDIA distributor if you have any questions regarding the installation, operation, repair and maintenance of DHOLLANDIA wheelchair lifts, to obtain replacement copies of manuals or decals, or to learn about available equipment options for DHOLLANDIA wheelchair lifts.

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The latest version of all manuals can also be downloaded from the DHOLLANDIA website

[www.dhollandia.com](http://www.dhollandia.com) → **Downloads** → **User's manuals** → ... **select required manual**

- Take notice of following important disclaimers:

### **DISCLAIMERS**

- DHOLLANDIA disclaims liability for any personal injury, death, or property damage that results from **operating a wheelchair lift that has been modified from the original design**, without explicit written approval from the manufacturer.
- DHOLLANDIA disclaims liability for any personal injury, death, or property damage that results from the **use of aftermarket or non-OEM replacement parts for service or repair of the wheelchair lift**.
- DHOLLANDIA disclaims liability for any personal injury, death, or property damage that results from **improper use of the wheelchair lift**.
- DHOLLANDIA disclaims liability for any personal injury, death, or property damage that results from **overloading or improperly loading the platform**, disregard of the maximum rated lift capacity and the applicable load charts.
- There are no warranties, express or implied, including the warranty of merchantability or a warranty of fitness for a particular purpose extending beyond that set forth in this manual.

## 1.4 UNDERSTANDING SAFETY AND WARNING SIGNS

- Many safety signs and symbols used in this manual are based on international standards, others refer to specific situations or actions.
- Consult section 10.1 for an overview of signs and symbols used in DHOLLANDIA manuals, and their meaning. Make sure you understand these signs and symbols prior to starting the installation.

Examples of standard ANSI signs	
Examples of DHOLLANDIA purpose made signs	

- Please take special notice of the following signs used in the manual. They indicate the likelihood and severity of a potential injury if a person fails to follow the instructions presented on the safety sign.



**DANGER**: indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. [white letters on red background]



**WARNING**: indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. [black letters on orange background]



**CAUTION**: indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. [black letters on yellow background]



**NOTICE**: is used to address practices not related to physical injury. [white letters on blue background]



**SAFETY INSTRUCTIONS**: indicate general instructions relative to safe work practices, reminders of proper safety procedures, or the location of safety equipment. [white letters on green background]



**SAFETY ALERT SYMBOL**: is used to alert the user to potential hazards. All safety messages that accompany this sign shall be obeyed to avoid possible harm. [free-standing, or on back-ground colours red, orange, yellow or black]





## WARNING

- Failure to understand and to follow the instructions in this manual can put the operator and any bystanders at great risk of serious bodily injury and death.
- Prior to operating the wheelchair lift, make sure you understand the safety and warning signs used and read them in conjunction with the instructions in this manual.
- If in doubt, DO NOT operate the wheelchair lift. Contact your national DHOLLANDIA distributor. See page 5 for contact info.

### 1.5 SAFETY PRECAUTIONS FOR OPERATION



- It is essential that the personnel involved in installing, servicing and repairing wheelchair lifts know, understand and apply the safety instructions and precautions contained in the OPERATION MANUAL issued with the wheelchair lift.
- Therefore, make sure you consult the OPERATION MANUAL prior to installing or operating the wheelchair lift.



## WARNING

- Improper use of the wheelchair lift will put the operator and other parties at great risk of serious bodily injury and death.
- To reduce the risk of serious bodily injury to the operator and any bystanders, the use of the wheelchair lift is restricted to skilled operators, who have been properly trained and who know and understand the full contents of the OPERATION MANUAL.
- To reduce the risk of serious bodily injury or death, THE OPERATOR MUST COMPLY WITH ALL SAFETY INSTRUCTIONS AND WARNING LABELS IN THE OPERATION MANUAL before and while operating the wheelchair lift.
- Please confirm you have reviewed the most up-to-date version of this manual prior to installation and operation of the associated DHOLLANDIA wheelchair lift.

## 1.6 SAFETY PRECAUTIONS FOR INSTALLATION



- It is essential that the personnel involved in installing, servicing and repairing wheelchair lifts, know, understand and apply the safety instructions and precautions contained in the GENERAL SAFETY INSTRUCTIONS FOR INSTALLATION, MAINTENANCE AND REPAIR manual.
- Therefore, make sure you consult the GENERAL SAFETY INSTRUCTIONS FOR INSTALLATION, MAINTENANCE AND REPAIR manual prior to installing the wheelchair lift.
- These instructions are supplied as a separate manual with your wheelchair lift.
- You can also contact your national DHOLLANDIA distributor for the latest edition of this manual. See page 5 for contact info. Or download the latest edition from the website:



[www.dhollandia.com](http://www.dhollandia.com) → your language → Downloads → User's manuals → General information



### NOTICE

- Make sure the vehicle battery power is disconnected while installing the wheelchair lift. Connect the battery power to the wheelchair lift only when the installation is completed or as required in the installation instructions.
- DHOLLANDIA wheelchair lifts are designed as a bolt-on system and don't require any welding. See section 10.2 for prescribed torque values.
- Welding should be done by qualified personnel only and only to the extent allowed by the vehicle manufacturer. Ensure that the positive and ground cables are disconnected from the batteries and that all electrical and electronic equipment is fully isolated before welding.
- ALWAYS keep the ground clamp as close as possible to the weld location.

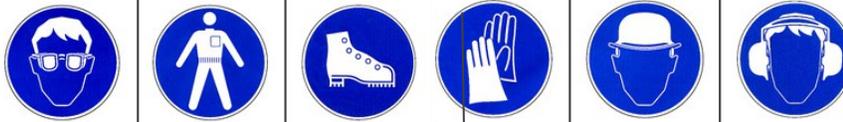
### WARNING

NEVER modify DHOLLANDIA wheelchair lifts or their mounting plates, NEVER deviate from the described installation procedures without prior written consent by the manufacturer.



## WARNING

- The personnel involved in wheelchair lift installations are exposed to various dangers. Improper use of the wheelchair lift or ignorance and neglect during installation, will put the personnel at great risk of bodily injury and death.
- Improper installation can cause damage to the wheelchair lift, can reduce the durability and reliability of the wheelchair lift, and can put the operator and bystanders at great risk of serious bodily injury and death in many ways.
- To reduce the risk of serious bodily injury or death to the installation personnel, to the operator and any bystanders, wheelchair lift installations **MUST** be restricted to skilled and trained technicians, who have been duly and professionally trained, and know, understand and apply the manuals of the wheelchair lift:
  1. OPERATION MANUAL
  2. INSTALLATION MANUAL
  3. GENERAL SAFETY INSTRUCTIONS FOR INSTALLATION, MAINTENANCE AND REPAIR
- ALWAYS confirm you have reviewed the most up-to-date version of these manuals prior to installation and operation of the associated DHOLLANDIA wheelchair lift.
- In case of doubt, ALWAYS contact your national DHOLLANDIA distributor for further advice, prior to continuing.
- ALWAYS wear appropriate Personal Protective Equipment. This includes but may not be limited to: ANSI rated glasses with side guards or a wrap-around face shield, steel toe safety shoes, fire-resistant overalls, protective gloves, adequate ear protection, a safety helmet when working under the vehicle chassis.



- NEVER wear loose-fitting clothes that may get trapped in the moving parts of the wheelchair lift, or in any machinery and tools used for the installation. Don't wear rings, bracelets, necklaces, watches etc...
- ALWAYS use the proper tool for the job. Repair or replace worn or damaged tools before use.
- Pay special attention to the lifting devices (forklifts, overhead cranes, hoists, chains or ropes...) used to handle the wheelchair lifts, and to the clamping tools (C-clamps, pipe clamps, vise grips) used to clamp the wheelchair lift, its mounting plates and floor extension to the vehicle chassis and box. Ensure these tools are appropriate for the job and in good working condition.
- Place the vehicle on a level ground and chock the wheels so that it cannot move during the installation process. In case of a motor vehicle, make sure the engine is off and the parking brake is set before starting.
- Do not work underneath the wheelchair lift or within reach of the platform and the moving parts of the wheelchair lift, without properly securing and supporting the platform and the wheelchair lift frame against accidental falling. Use an overhead crane and hoists, a forklift or equivalent means to secure the heavy wheelchair lift components.
- Make sure the vehicle battery power is disconnected while installing the wheelchair lift. Connect the battery power to the wheelchair lift only when the installation is completed or as required in the installation instructions.



- Before welding, note that welding on galvanized parts releases hazardous fumes. Provide adequate ventilation, and wear an appropriate toxic fume rated welding respirator.

- NEVER modify DHOLLANDIA wheelchair lifts or their mounting plates without prior written consent by the manufacturer.
- If for any reason, trouble-shooting and / or repair might be needed during the installation process, consult and follow the guidelines and safety instructions of the MAINTENANCE MANUAL.



## CAUTION



Welding on galvanized parts can produce hazardous fumes. To avoid intoxication:

- ALWAYS wear a suitable respirator.
- ALWAYS provide good ventilation.
- ALWAYS grind off the galvanization from the areas to weld.



- Most lifts are equipped with thermoplastic hoses, that can be damaged by hot metal chips, welding sparks and slag. Damage to a hose can lead to sudden loss of hydraulic pressure and an accidental drop of the platform.
- The penetration of welding sparks and slag can also cause a flame flash.
- Both types of incidents can put the welder or installer and any bystanders at great risk of personal injury or death. To avoid these risks:
  - ALWAYS protect and cover thermoplastic hoses with a welding blanket, prior to grinding, drilling and welding.
  - ALWAYS inspect the hydraulic hoses at the end of the installation process. Make sure all hoses are undamaged, replace them if required.



Welding can cause severe damage to the electronic components of the vehicle and lift. To prevent damage:

- ALWAYS follow the instructions and precautions of the vehicle manufacturer.
- DO NOT weld if this is not authorized by the vehicle manufacturer.
- ALWAYS disconnect the battery and ground terminals from the battery.
- ALWAYS connect the ground directly to the component being welded, as close to the weld as possible.

Welding should be done by skilled and qualified tradesmen only.

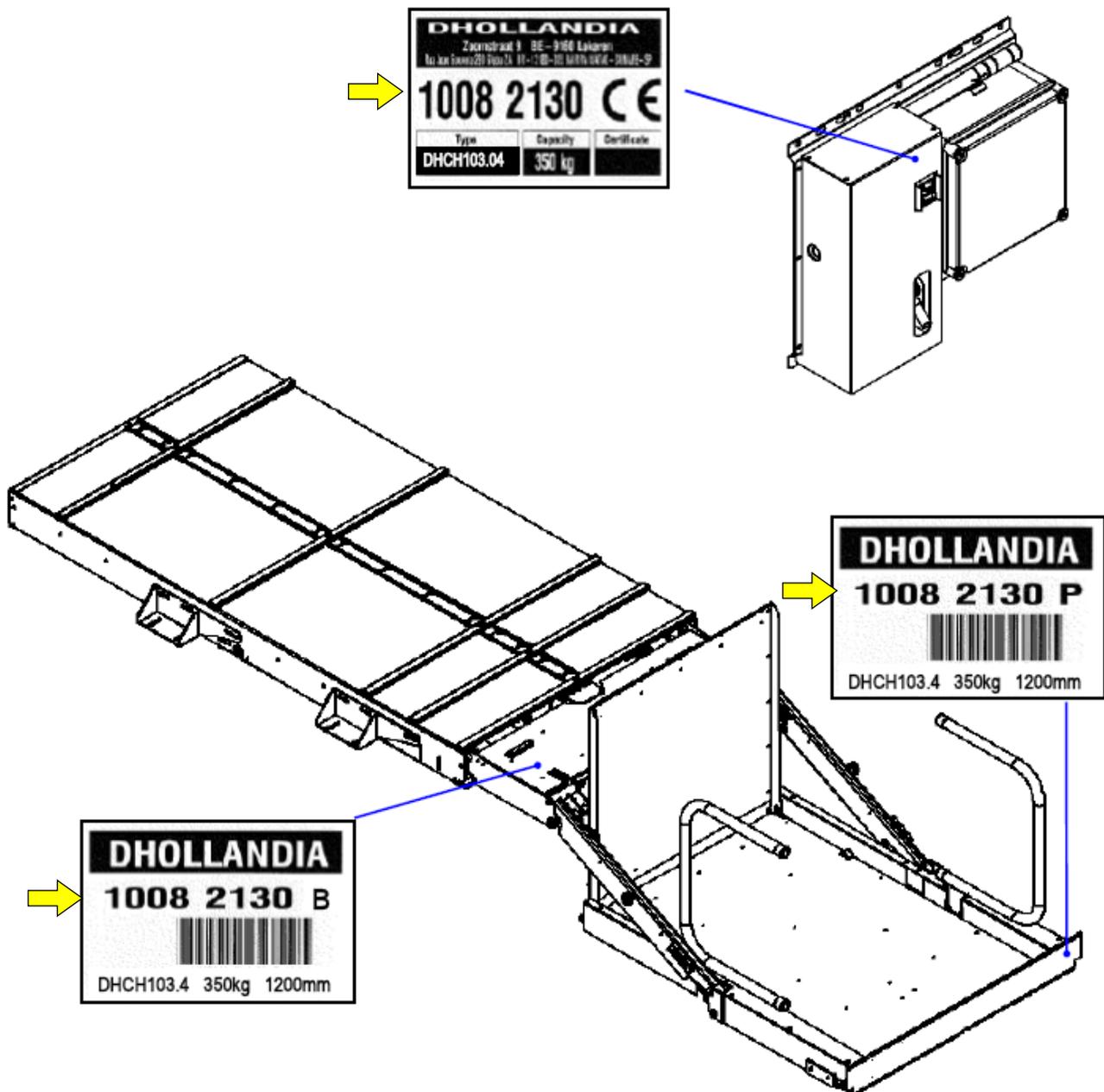
## 1.7 IDENTIFICATION

- Every DHOLLANDIA wheelchair lift is identified by and labelled with a **unique 8-digit serial number** (with or without a space between the first and last 4 digits). Use this number for any inquiry on a particular wheelchair lift, or when ordering replacement parts.
- In addition to the wheelchair lift type and serial number, the various serial number labels provide additional information, such as: the maximum rated lift capacity and load chart, the date of manufacture, etc...
- These labels are usually affixed to various wheelchair lift components and can be found in following locations (the yellow arrows point to the serial numbers):

Figure 1-1



Affixed to the side of the vehicle body, or on the platform



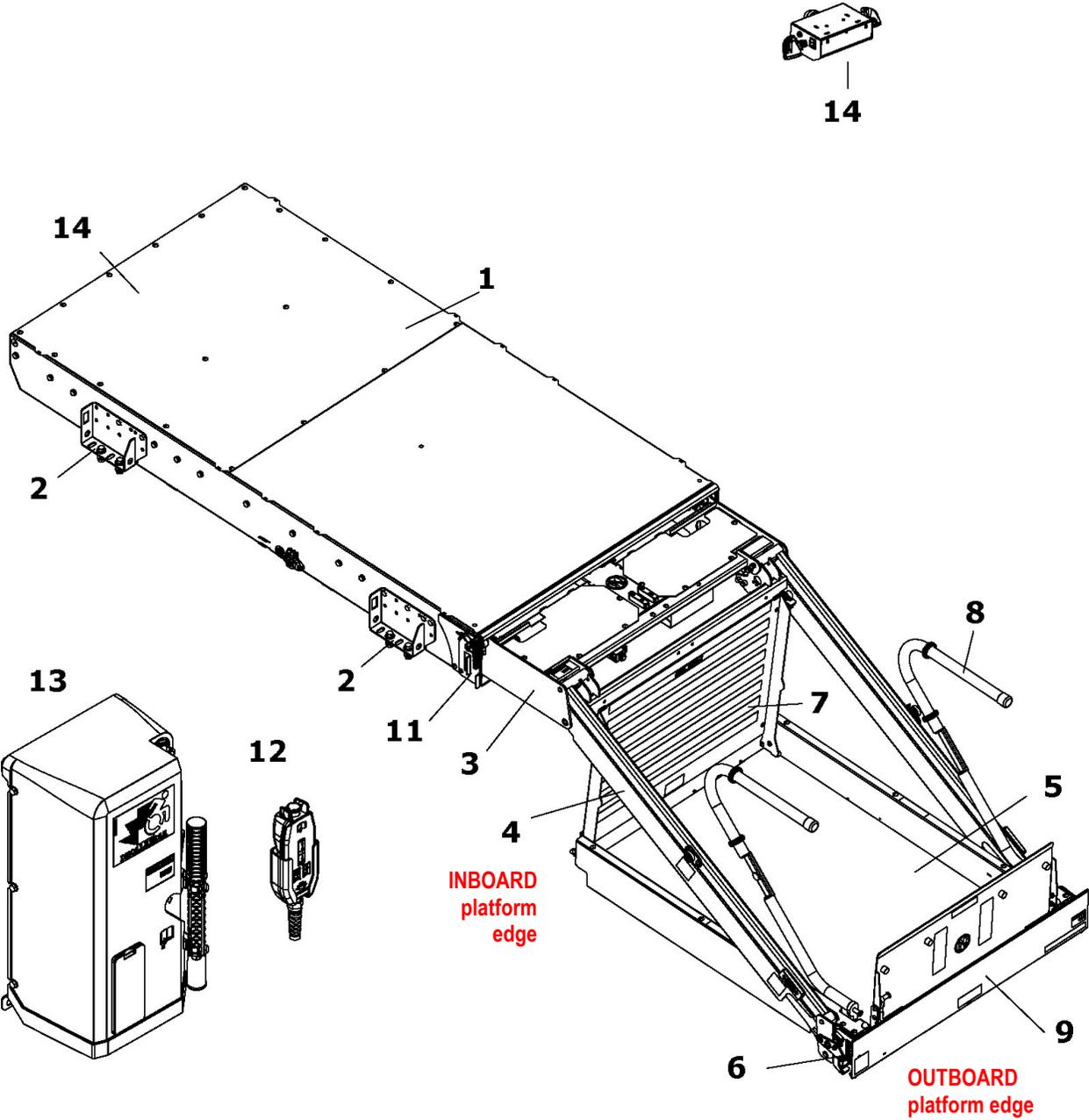
## 1.8 DESCRIPTION AND WHEELCHAIR LIFT TERMINOLOGY

### 1.8.1 General

- DHOLLANDIA lifts are developed and manufactured using state-of-the-art technology, high quality materials and components, and comply with the European CE safety regulations mentioned in the Declaration of Conformity (unless agreed otherwise upon ordering - export outside CE region) and the FMVSS 403-404 for US.
- The **DH-CH... series passenger lifts** are retractable lifts, whose lift mechanism and platform are stowed in a closed cassette box in travel position. This cassette can be mounted to the chassis of the vehicle, in a luggage compartment or integrated in one of the steps of the stairs at the access door.
- Main details and terminology: see below

DH-CH103* • TERMINOLOGY	
See figure below for parts corresponding to numbers in this table	
#	Description
1	<b>Cassette:</b> sealed box housing the lift frame and platform when stowed in travel position, and protecting the mechanism against adverse weather conditions. The cassette is equipped with slide rails and a retraction system to slide the lift frame and the platform from a travel position deep inside the cassette to a work position at the outboard edge of the cassette, and vice versa.
2	<b>Mounting brackets:</b> brackets used to mount the cassette to the vehicle.
3	<b>Lift frame:</b> steel assembly incorporating the lift arms and lift cylinders, who together carry the platform. The lift frame is moved in and out of the cassette by means of an electric motor and gearwheel system.
4	<b>Lift arms + lift cylinders:</b> 2 lift arms L+R actuated by the lift cylinders, used to lift / lower the platform and its load (= functions UP / DOWN).
5	<b>Platform:</b> carries the load during lifting / lowering. The platform is covered with an aluminium top plate with a non-slip surface. It is further equipped with a bridge plate, handrails and a roll stop flap.
6	<b>Flashing platform lights:</b> used to make the platform visible to other parties in traffic.
7	<b>Bridge plate:</b> plate mounted at the inboard platform edge, used to bridge any gap between the platform and the vehicle floor when the platform is raised to its maximum height.
8	<b>Handrails:</b> Rails mounted at both sides of the platform. Lift occupants should hold on to these handrails to prevent them from falling off the platform. Handrails must be deployed manually and secured in vertical position prior to using the lift, they must be stowed manually before retracting the lift back into its travel position.
9	<b>Roll stop:</b> roll stop mounted at the outboard platform edge. The roll stop is tilted up automatically when the platform leaves the ground, it is tilted down automatically when the platform touches the ground. The roll stop prevents the wheelchair from slowly and unexpectedly rolling off the platform during lifting and lowering. It is not designed to stop fast and powered movements.
10	<b>Automatic cassette lock:</b> in regular conditions, the lift frame and platform are automatically locked inside the cassette by means of a lock mounted at the inboard edge of the cassette.
11	<b>Emergency cassette lock:</b> in emergency conditions (in case of an electrical power failure) the automatic cassette lock can be disengaged, and the platform and lift frame can be pulled out by hand.
12	<b>Wander lead with spiral cable:</b> control box to execute all functions DEPLOY – UP – DOWN - STOW. In standard configuration, the wander lead features 4 buttons for 4 functions. The wander lead is equipped with an emergency button that immediately stops all electrical functions when activated.
13	<b>Hydraulic power pack:</b> contains the electric motor driving the hydraulic pump, the oil tank, and the control valves.
14	<b>Threshold module:</b> Guarantees a safe departure from the vehicle floor. It also makes sure the wheelchair lift will only initiate and continue the lift action when the threshold area is clear, in conformity with FMVSS requirements.

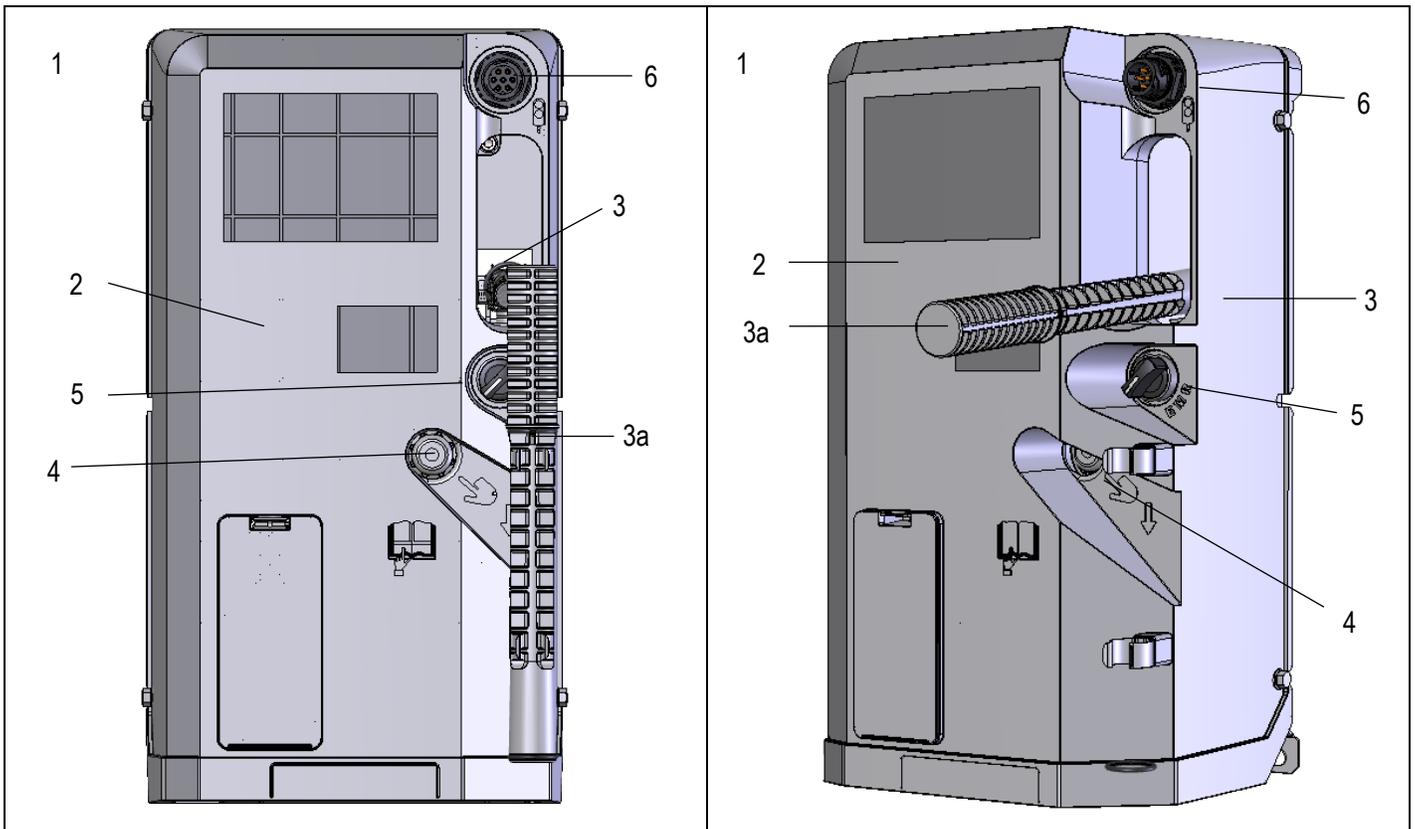
DH-CH103\* • PLATFORM WITH 1 SINGLE SECTION • TERMINOLOGY



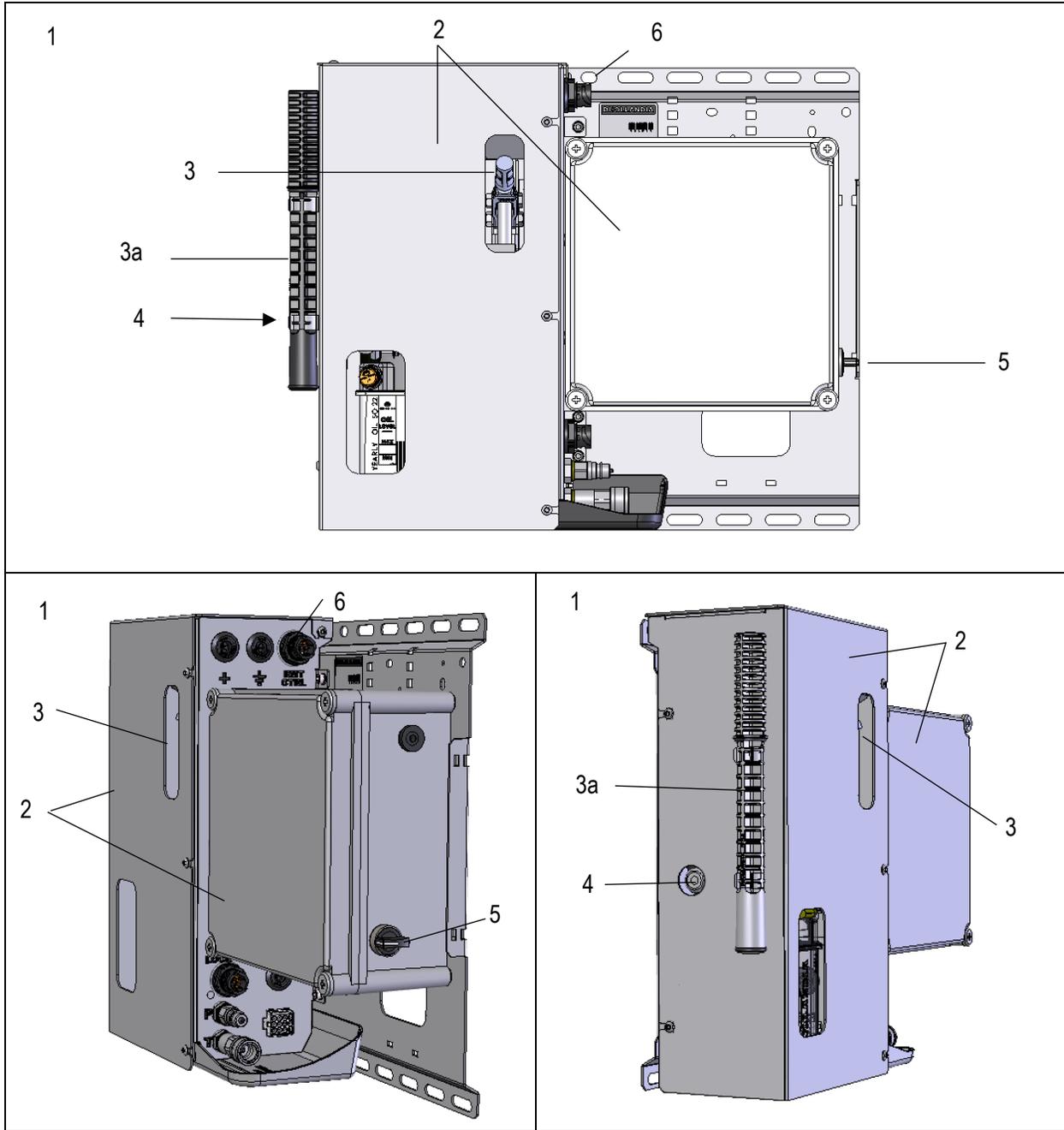
## POWER PACK • TERMINOLOGY

See figure below for parts corresponding to numbers in this table

#	Description
1	<b>Power pack:</b> sealed box containing the electric motor and hydraulic pump, the oil tank, control valves, electronic control unit and various emergency controls that can be operated in case of an electrical power failure.
2	<b>Removable cover:</b> can be removed to get access to the electric motor and hydraulic pump, the oil tank, control valves and electronic control unit.
3	<b>Hydraulic hand pump:</b> manual back-up pump to lift the platform in case of an electrical power failure (= function UP). The lever [# 3a] for the hand pump is stored at the front face of the cover of the power pack.
4	<b>Emergency Descent button:</b> manual back-up button to lower the platform in case of an electrical power failure (=function DOWN).
5	<b>EMR = Emergency Motor Release:</b> in regular mode, the lift frame and platform are blocked inside the cassette, and cannot be pulled out by hand easily. When turning the EMR button, the lift frame and platform are unlocked inside the cassette, and they can be pulled out by hand much more easily. After emergency use, the EMR button <b>MUST</b> be reset in its initial position.
6	<b>Electric connection:</b> plug for the connection of the wander lead with spiral cable.



- Note: depending on the lift type and the installation environment, other types of power packs can be used. Despite different appearances, the main devices and components are identical. For example:



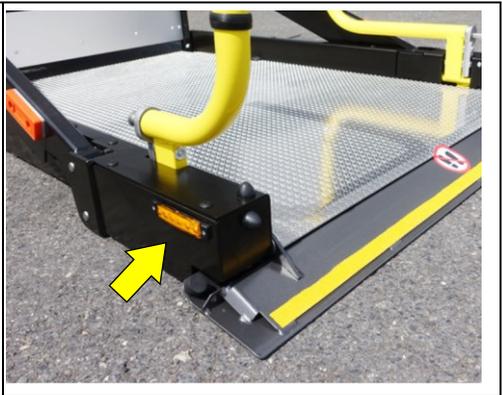
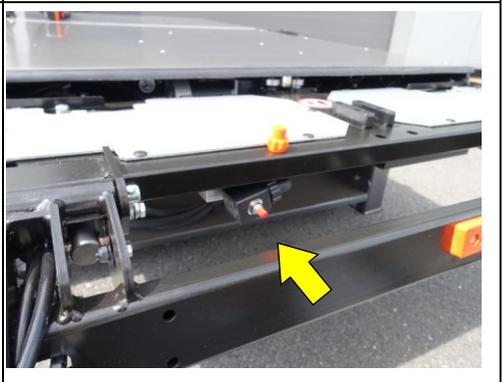
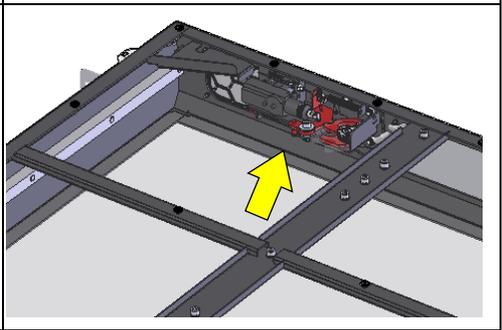
## NOTICE

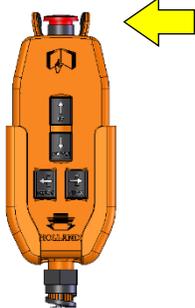
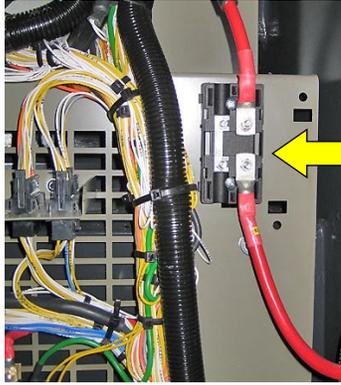
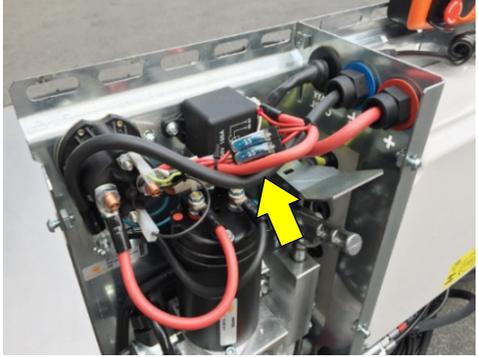
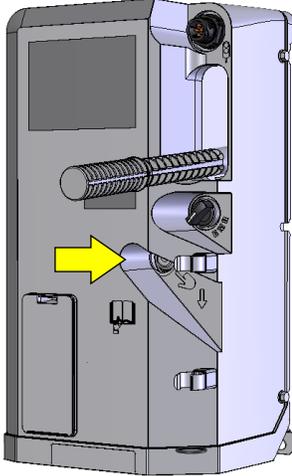
- To ensure the reliability of the lift over many years, it is extremely important that the batteries, their charging system, the battery- and earth cables, and fuses are dimensioned sufficiently strong, and fitted with care following below mentioned instructions. Insufficient battery voltage will cause harm and irreparable damage to the electric components of the lift (starter solenoid, electric motor, electric switches, etc...).
- Vehicle manufacturers often impose prescribed connections for the battery and earth connections of the lift, which should be observed to avoid damage to the vehicle electrics. Where such prescriptions conflict with the fitting instructions of DHOLLANDIA, contact the vehicle importer or DHOLLANDIA for further advice.

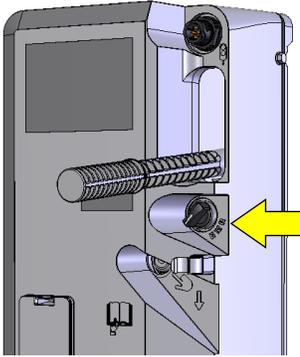
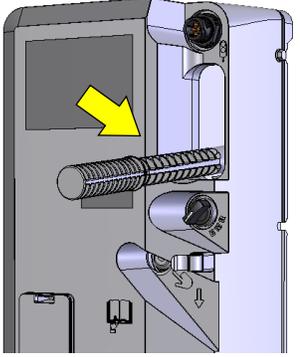
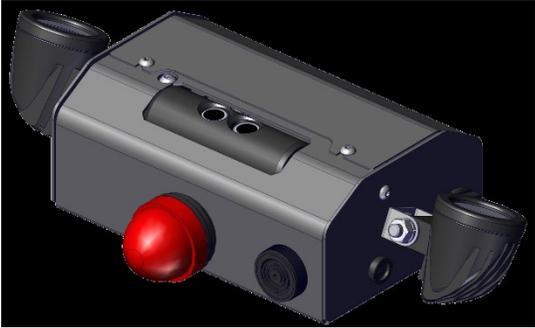
### 1.8.2 SAFETY MEASURES

- DHOLLANDIA lifts are equipped with a wide range of safety measures, to enable its intended use with a maximum degree of safety for the operator, the wheelchair passenger on the platform and bystanders.
- The following safety devices are incorporated on the DH-CH... Series:

N°	Description	Image
1	<p><b>Non-slip surface:</b> the platform surface incorporates an non-slip profiling to prevent the operator and platform occupants from slipping and falling.</p>	
2	<p><b>Roll stop:</b> roll stop mounted at the outboard platform edge. The roll stop is tilted up automatically when the platform leaves the ground, it is tilted down automatically when the platform touches the ground. The roll stop prevents the wheelchair from slowly and unexpectedly rolling off the platform during lifting and lowering. It is not designed to stop fast and powered movements.</p>	
3	<p><b>Handrails:</b> Rails mounted at both sides of the platform. Lift occupants should hold on to these handrails to prevent them from falling off the platform. Handrails must be deployed manually and secured in vertical position prior to using the lift, they must be stowed manually before retracting the lift back into its travel position.</p>	
4	<p><b>Bridge plate:</b> plate mounted at the inboard platform edge, used to bridge any gap between the platform and the vehicle floor when the platform is raised to its maximum height. The bridge plate tilts down automatically as the platform approaches the vehicle floor. It tilts up automatically as the platform lowers to the ground. It also forms a toe-guard for the operator and the wheelchair occupant while travelling up / down on the platform.</p>	

5	<p><b>Flashing platform lights:</b> used to make the platform visible to other parties in traffic.</p>	
6	<p><b>Safety valve on the roll stop cylinder:</b> the valve keeps the roll stop secured in the upright position as long as the platform has not reached the ground.</p>	
7	<p><b>End stop for STOW:</b> combination of a cam and a switch to automatically stop the platform at the correct height to slide in and STOW the platform in its travel position.</p>	
8	<p><b>Automatic cassette lock:</b> in regular conditions, the lift frame and platform are automatically locked inside the cassette by means of a lock mounted at the inboard edge of the cassette.</p>	
9	<p><b>Emergency cassette lock:</b> in emergency conditions (in case of an electrical power failure) the automatic cassette lock can be disengaged, and the platform and lift frame can be pulled out by hand (= function DEPLOY).</p>	

10	<p><b>Electric emergency stop:</b> enables the operator to switch-off the electric power to the control unit and to cause an immediate stop of all electrically actuated lift movements. This switch is usually incorporated in the wander lead with spiral cable.</p>	
11	<p><b>Main battery fuse:</b> a main fuse 100 – 150A is supplied by the vehicle manufacturer or by DHOLLANDIA. It protects the main battery cable from the batteries to the power pack of the lift against short circuits and amperage peaks.</p>	
12	<p><b>15A fuse:</b> lighter fuses are used to protect the control unit, associated wires and the printed circuit against short circuits and amperage peaks.</p>	
13	<p><b>Emergency descent button:</b> manual back-up button to lower the platform in case of an electrical power failure (= function DOWN).</p>	

14	<p><b>EMR = Emergency motor release:</b> in regular mode, the lift frame and platform are blocked inside the cassette, and cannot be pulled out by hand easily. When turning the EMR button, the lift frame and platform are unlocked inside the cassette, and they can be pulled out by hand much more easily. After emergency use, the EMR button <b>MUST</b> be reset in its initial position.</p>	
15	<p><b>Hydraulic hand pump:</b> manual back-up pump to lift the platform in case of an electrical power failure (= function UP).</p>	
16	<p><b>Pressure relief valve:</b> safety device integrated in the power pack, enabling the manufacturer and the installer of the lift to limit the real lift capacity to the maximum rated capacity of the lift sold, and protect it against overload while lifting (= function UP).</p>	
17	<p><b>Pressure compensated flow valves:</b> flow valves are integrated in the hydraulic circuits to ensure the platform lowers at a safe speed, both empty and when fully loaded.</p>	
18	<p><b>Decals:</b> the lifts are supplied with a number of operation decals, load diagrams and safety decals. Some of these decals are premounted by DHOLLANDIA on the lift. Some of these decals are supplied loose and shall be affixed by the installer near to the lift at a location clearly visible to the operator. The decals must be kept clean and legible at all times, and replaced whenever required.</p>	
19	<p><b>Bridge plate load detection:</b> Prevents the wheelchair lift from departing from the vehicle floor when a load is still applied on the bridge plate.</p>	
20	<p><b>Roll-stop load detection:</b> Prevents the wheelchair lift from initiating the LIFT-action when a load is still applied on the roll-stop at floor level.</p>	
21	<p><b>Threshold warning sensor (see section 3):</b> it guarantees a safe departure from the vehicle floor. It also makes sure the wheelchair lift will only initiate and continue the lift-action when the threshold area is clear.</p>	

## 2 INSTALLATION

### 2.1 GETTING STARTED

- Use the PDI (Pre-Delivery-Inspection) checklist, found in section 10.4, alongside the instructions of this manual when installing the wheelchair lift.
- OEM Vehicle manufacturers may have issued important instructions on various aspects of the wheelchair lift installation, specific to the brand and type of chassis, such as welding instructions (or prohibition to weld!), instructions on chassis drilling and bolt-on connections to the chassis, guidelines for the battery and ground cable connections, fuses and other electrical interfaces, etc...

#### **NOTICE**

- **The installer MUST verify and ensure compatibility between the wheelchair lift and the vehicle.**
- **The installer MUST verify and ensure compliance with the installation instructions issued by the vehicle and body manufacturer.**
- Improper modifications to the vehicle chassis or body could cause serious mechanical failure of the vehicle. The installer MUST ensure that modifications to the vehicle chassis and / or body will not adversely affect the structural integrity of the chassis and / or body.
- In the event that instructions of the vehicle manufacturer conflict with the installation instructions issued by DHOLLANDIA (e.g. on fuse ratings, etc.), contact your national DHOLLANDIA distributor for further assistance.
- In the event OEM instructions conflict with the installation instructions issued by DHOLLANDIA (e.g. fuse ratings, etc.) contact your national DHOLLANDIA distributor. See page 5 for contact info.

- Place vehicle on a level ground and chock the wheels so that it cannot move during the installation process. In case of a motor vehicle, switch off the engine and engage the parking brake before starting.
- When connecting hydraulic fittings, make sure that the connections are thoroughly clean, and that you don't contaminate the hydraulic oil.
- Do not actuate any wheelchair lift functions (LIFT / LOWER / IN / OUT) before the wheelchair lift installation is fully finished.
- During installation and while testing, verify that the wheelchair lift and its moving parts don't interfere with, or cause damage to the vehicle systems (e.g. to suspension, braking system, hydraulic and electrical circuits, etc.).
- After installation, work through the pre-delivery inspection (PDI) checklist, verify all checkpoints with due diligence. Make sure the final inspection is signed off by an inspector who is not part of the installation team
- Finish the wheelchair lift in compliance with applicable road legislation of the country where the vehicle will be registered.

#### **NOTICE**

- **This installation manual is based on the most commonly found bus-frames. The figures will also be generated around this frame.**
- **Frame dimensions and set-up in your installation-case may vary from those found in this manual. Some specific issues might not be adequately covered by this manual.**
- In case of doubt, ALWAYS contact your national DHOLLANDIA distributor for further advice prior to continuing.

- If you intend to weld, beware of precautions below:

## ***NOTICE***



## **WARNING**

- The wheelchair lift might be equipped with thermoplastic hydraulic pipes, that can be easily damaged by welding. Damage to a pipe can lead to sudden pressure loss and accidental drop of the platform.
- Welding sparks and slag penetrating hydraulic pipes under pressure, could cause a flaming flash, and serious personal injury to the welder and any bystanders.
- To avoid risk of serious personal injury, ALWAYS use adequate coverage (e.g. by a leather welding blanket) to shield the thermoplastic pipes whenever welding is done on or near the wheelchair lift.



## **CAUTION**



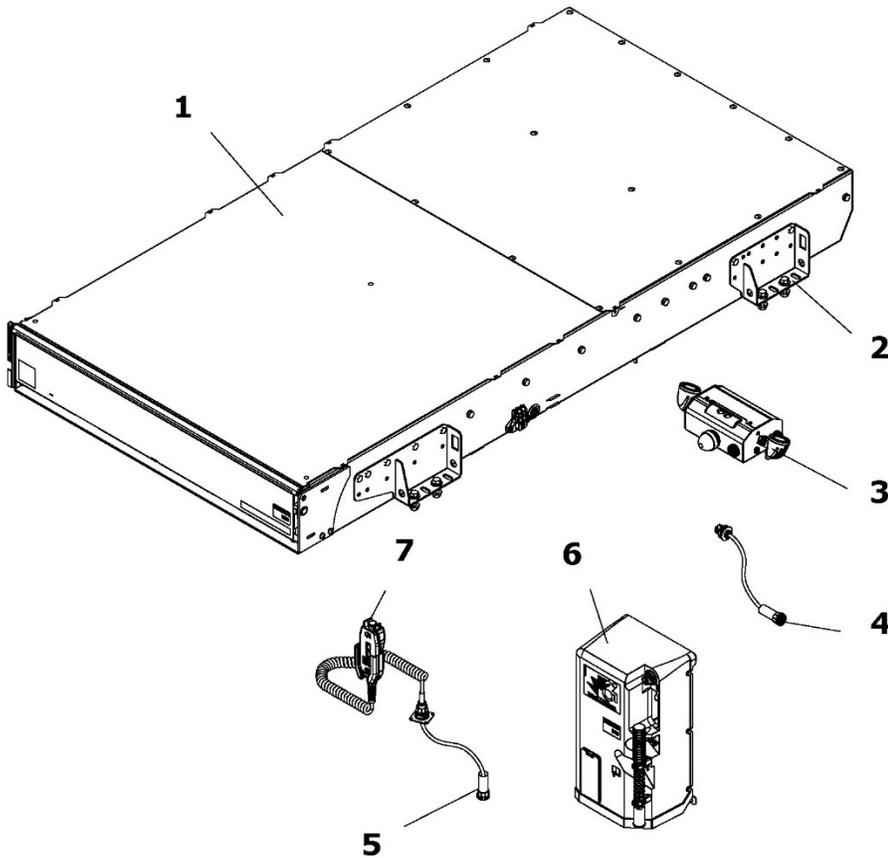
- Before welding, note that welding on galvanized parts releases hazardous fumes. Provide adequate ventilation and wear an appropriate toxic fume rated welding respirator.
- It is strongly recommended to first grind off the galvanizing in areas where welding is to be done.

## ***NOTICE***

- Some OEM vehicle manufacturers prohibit welding on the vehicle chassis.
- Verify the body builder guidelines issued by the OEM vehicle manufacturer and make sure you comply.
- When manipulating the wheelchair lift with a forklift or hoists etc... be very careful and make sure you don't damage any components.

## 2.2 INSTALLATION KIT - SCOPE OF DELIVERY

Verify if the scope of delivery is complete and that all parts needed to correctly fit the wheelchair lift, are present. An overview of the standard scope of delivery can be found below. The scope of delivery can vary for specific installation kits as mounting plates depend on the vehicle- and wheelchair lift type.



N°	Part
1	Lift DH-CH*-series
2	Mounting plates + Bolt set
3	Threshold module
4	Connector: Threshold module to power pack
5	Connector: Remote control to power pack
6	Power pack
7	Remote control

In addition to the parts that are shown on the overview, a set of decals is provided alongside the wheelchair lift. See section 6 on where to correctly apply these decals.

## 2.3 TECHNICAL SPECIFICATIONS

### 2.3.1 Identification of the lift

Before beginning the installation, make sure you have correctly identified the type of lift as the installation instructions may vary for different types.

To do so, check the identification sticker that is applied on the cassette. Make sure you have the technical information and manuals for the correct lift type.



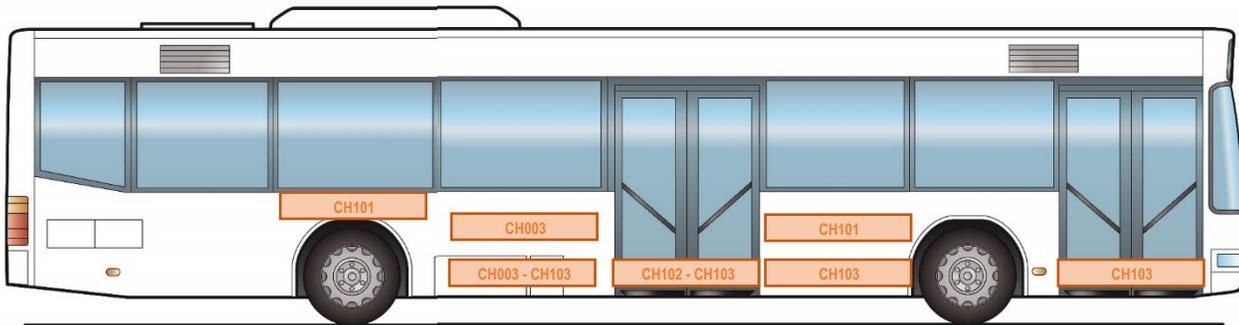
### 2.3.2 Vehicle requirements

- “DOT-Public Use Lift” verifies that this platform lift meets the “public use lift” requirements of FMVSS No. 403. This lift may be installed on all vehicles appropriate for the size and weight of the lift, but must be installed on buses, school buses, and multi-purpose passenger vehicles other than motor homes with a gross vehicle weight rating (GVWR) that exceeds 4,536 kg (10,000 lb).
- Compare the voltage of the vehicle batteries with the voltage of the hydraulic pump unit of the wheelchair lift.
- Verify if the vehicle chassis and body are strong enough to support the load and moment created by the wheelchair lift at maximum rated capacity. Refer to the Body Builder Guidelines of the OEM vehicle manufacturer for details.
- Check the stability of the vehicle and the weight over the axles with the addition of a wheelchair lift loaded to maximum capacity. The weights indicated in the technical documentation and price list are theoretical and approximate and may vary from one wheelchair lift installation to another.
- Verify the presence of proper reinforcements where the fitting bracket will be bolted to the structure.
- Remove all objects that are mounted in the mounting space required for the wheelchair lift (RUP, spare wheel carrier, pallet racks, tool boxes, etc.). If necessary, consult with the OEM vehicle manufacturer for replacement solutions (e.g. special spare wheel carriers, exhaust pipe modifications, etc.). Duly prepare the area where the cassette will be placed. Prepare the cut outs in the stair compartment and reinforce the structure if needed. Prior to any body- or door area modification, always contact the bus manufacturer for instructions and permission.

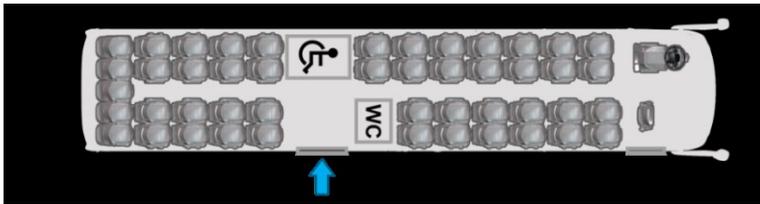
### 2.3.3 Installation types

Wheelchair lifts can be installed on different locations inside the vehicle. Refer to appendix 10.3 to find the correct location for your lift type.

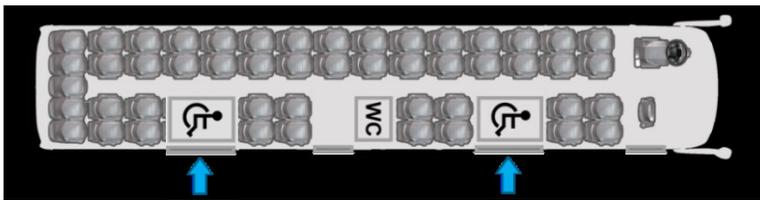
On busses you will find either stair installations or luggage compartment installations.



In stair installations, the cassette lift is positioned in between the two first steps facing outward. The lift is located behind the middle automatic door of the bus.



With luggage compartment installations, the cassette lift is either positioned in the luggage compartment between the two automatic doors or in the luggage compartment further to the back of the vehicle. The vehicle is equipped with an additional manual door, placed on the side wall of the vehicle. This door is to be used by the wheelchair users only and is out of use when the wheelchair lift is not active.





# EXAMPLE

**Maximum payload for transport over the last mile**

**L08 - 500 - 750 kg**



The DHL L08 is the lightest 4-cylinder container lift available on the market. Thanks to its **benchmark weight**, its superior stability and its exceptional payload capacity, it meets the safety and performance requirements of all modern, efficient and environmentally friendly urban distribution vehicles.

The DHL L08 offers space, 20 kg weight advantage in comparison to the original L08. It is available for all lift trucks up to max. 1000 mm floor height, and is supplied with quick fit receiving tubes, adapted to all popular brands and types of cranes. Unlike the DHL L08 and some competing 3-cylinder lifts offered on the market, the DHL L08 can be equipped with a **strong mesh construction**.

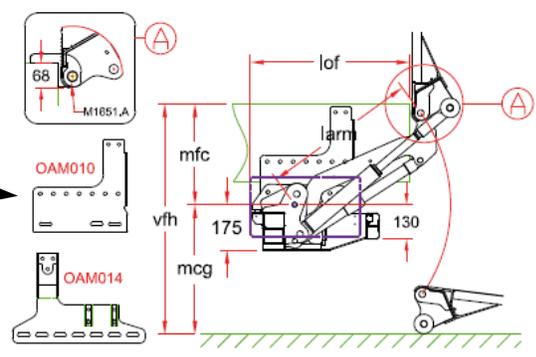
Lift capacity		Weights (per kg)	
max.	min.	max.	min.
1000	500	1000	500
1000	500	1000	500
1000	500	1000	500
1000	500	1000	500

**Fitting dimensions**

Parameter	Value
Weight	680 kg
Max. height	1050 mm
Max. width	1750 mm
Max. depth	1300 mm
Max. height (with mast)	1300 mm
Max. height (with mast and boom)	1750 mm
Max. height (with mast and boom and hook)	1900 mm

**Technical specifications**

Parameter	Value
Capacity	1000 kg (max. 500 kg)
Max. height	1050 mm
Max. width	1750 mm
Max. depth	1300 mm
Max. height (with mast)	1300 mm
Max. height (with mast and boom)	1750 mm
Max. height (with mast and boom and hook)	1900 mm



**Fitting dimensions**

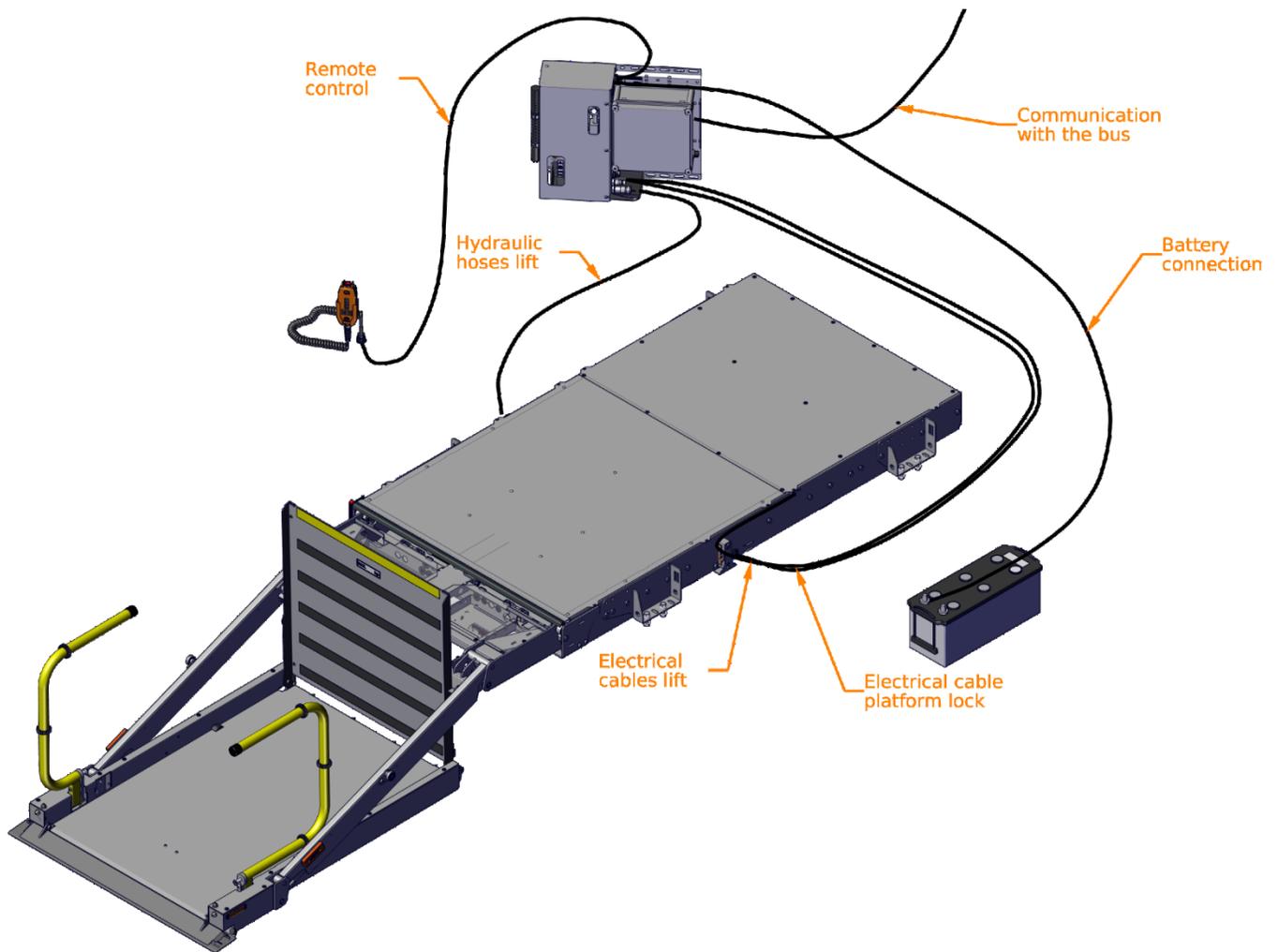
Parameter	Value	Value
<b>larm</b>		<b>600</b>
<b>vfh max. (1)</b>		1050
<b>mfc max.</b>		520
<b>mfc min.</b>		250
<b>mfcg max.</b>		530
<b>lof (2)</b>	at mfc max.	485
<b>lof (2)</b>	at mfc min.	690

- Compare the installation dimensions and max/min installation parameters indicated in these sources with the actual vehicle dimensions. If the actual dimensions don't comply with the maximum installation parameters, DON'T continue the installation and contact your national DHOLLANDIA distributor for further advice.

## 2.4 INSTALLATION

### 2.4.1 Overview

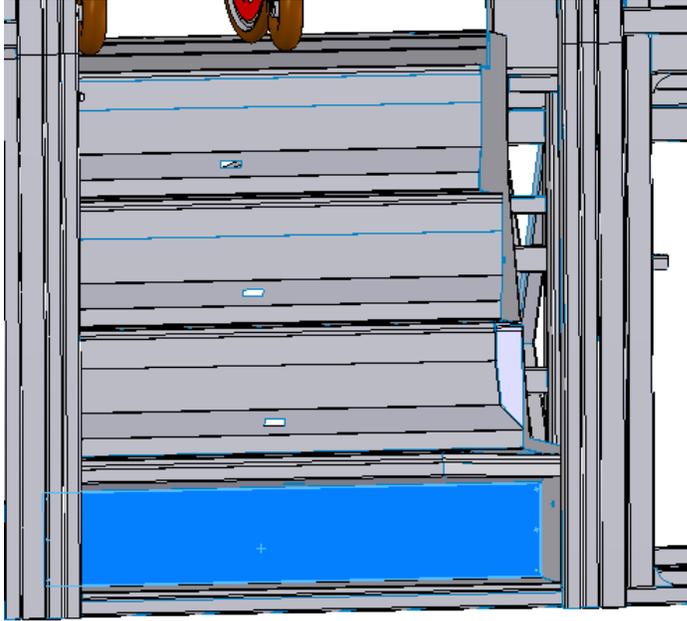
The next overview shows the different connections that need to be made in order to install the lift correctly.



### 2.4.2 Preparation work on vehicle body, chassis and wheelchair lift

- Position the vehicle over a workshop pit or lift it up by means of a workshop lifting bridge or hydraulic jacks. Make sure that you have sufficient access to the underside of the vehicle, so that the fitting work can be performed in a relaxed and safe manner.
- Remove any components interfering with the installation of the wheelchair lift frame.

- For a stair installation: if the bus is equipped with a cover plate between the first and second step, remove it. Otherwise proceed to cut out a rectangle in correspondence with the cassette outer flap position.



- Use the order form for all further reference. It contains useful information with regards to the position of the wheelchair lift on the vehicle chassis, the fitting height, the fixation of the mounting plates, the position of the platform.
- Lay the mounting plates ready on the ground and position the cassette on a wheeled fitting jack or fork lift, that will later be used to slide the cassette onto the vehicle chassis.



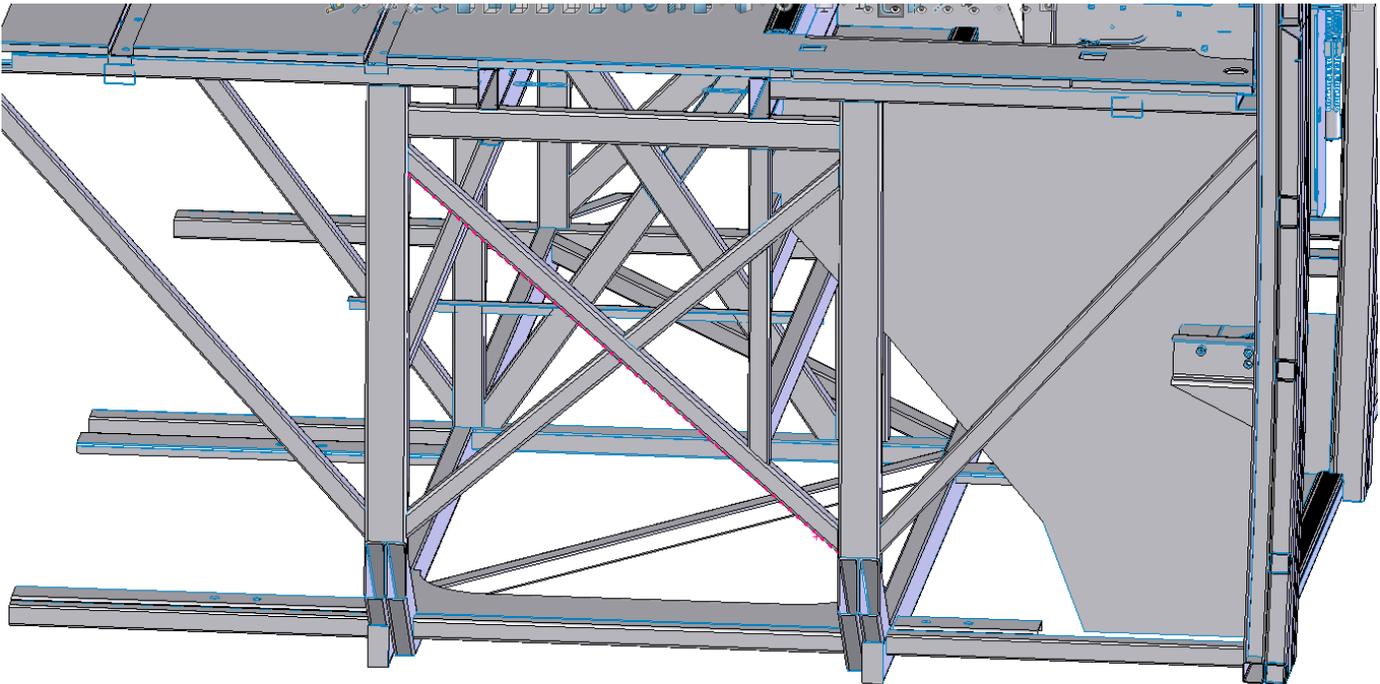
## WARNING

NEVER modify DHOLLANDIA wheelchair lifts or their mounting plates. NEVER deviate from the described installation procedures without prior written consent by the manufacturer.

### 2.4.3 Checking the chassis perforations

- Refer to the order form, distinguish the right & left side mounting plates and the front & rear end of the mounting plates and identify the existing chassis perforations and reinforcements that will be used to fit the mounting plates to the chassis.
- If the existing chassis perforations and reinforcements don't comply with the provided mounting plates, check the study or order form to see how the chassis needs to be adapted to correctly fit the wheelchair lift. Use mounting plates as drilling templates by marking the centres of the holes that need to be made.

The lift can be temporarily placed in the correct location to mark the drill locations after the mounting plates have been correctly fitted to the cassette.



## WARNING

- Incorrect installation of the mounting plates and bolts can lead to a sudden drop or movement of the wheelchair lift when put in use. This could damage the wheelchair lift and / or vehicle chassis and can cause serious bodily injury or death to the operator and any bystanders.
- Therefore, it is essential that the mounting plates are installed following the instructions of this manual.

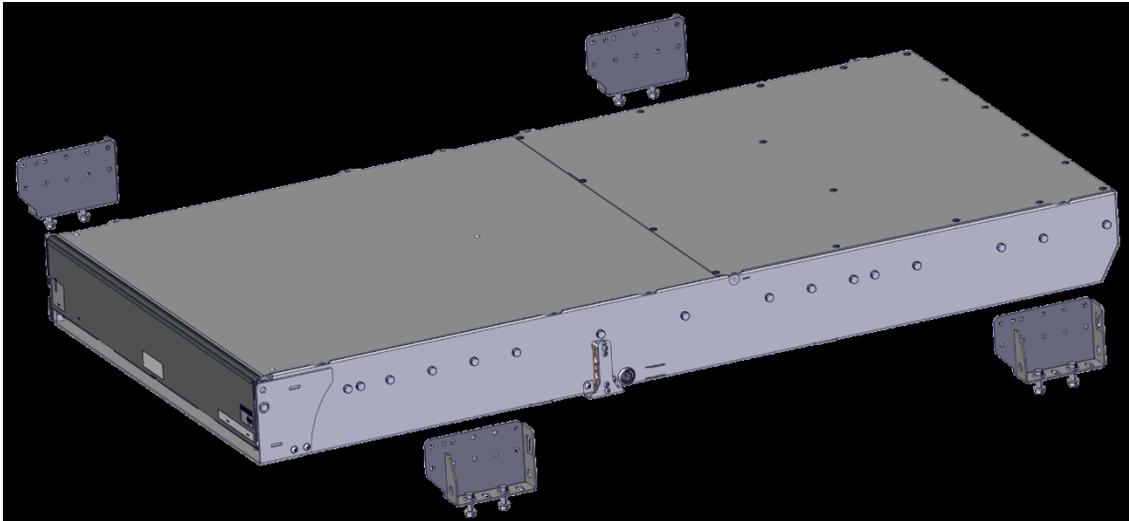


## WARNING

- During installation, the bolts and nuts should be fastened with the proper torque. See appendix 10.2 for the torque values.
- If you use mounting bolts that were not supplied by DHOLLANDIA, make sure the total strength is at least equivalent as per this manual.
- Check and retighten the bolts after static and dynamic load tests were performed at the end of the installation process.

#### 2.4.4 Attaching the mounting plates to the cassette

- The mounting plates should be fastened at the same points on the cassette as shown on the order form.
- There will already be bolts fixed to the cassette in these fixation points. Take these bolts out of the cassette.
- Fixate the mounting plates to the cassette by using the bolts provided in the installation kit. Fasten the bolts with the proper torque. See Appendix 10.2 for the correct torque values.

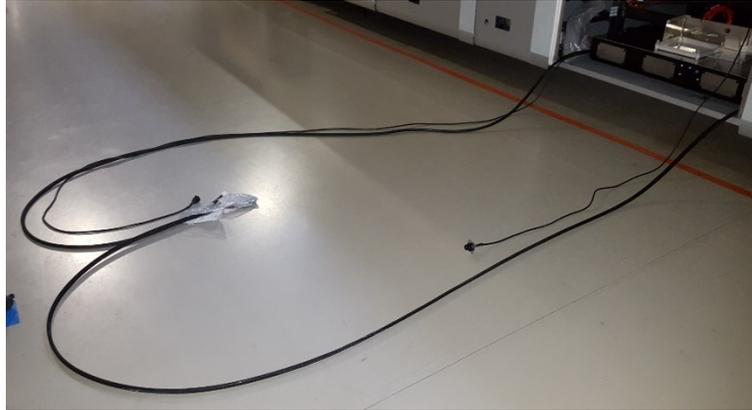


#### 2.4.5 Fit the wheelchair lift to the chassis

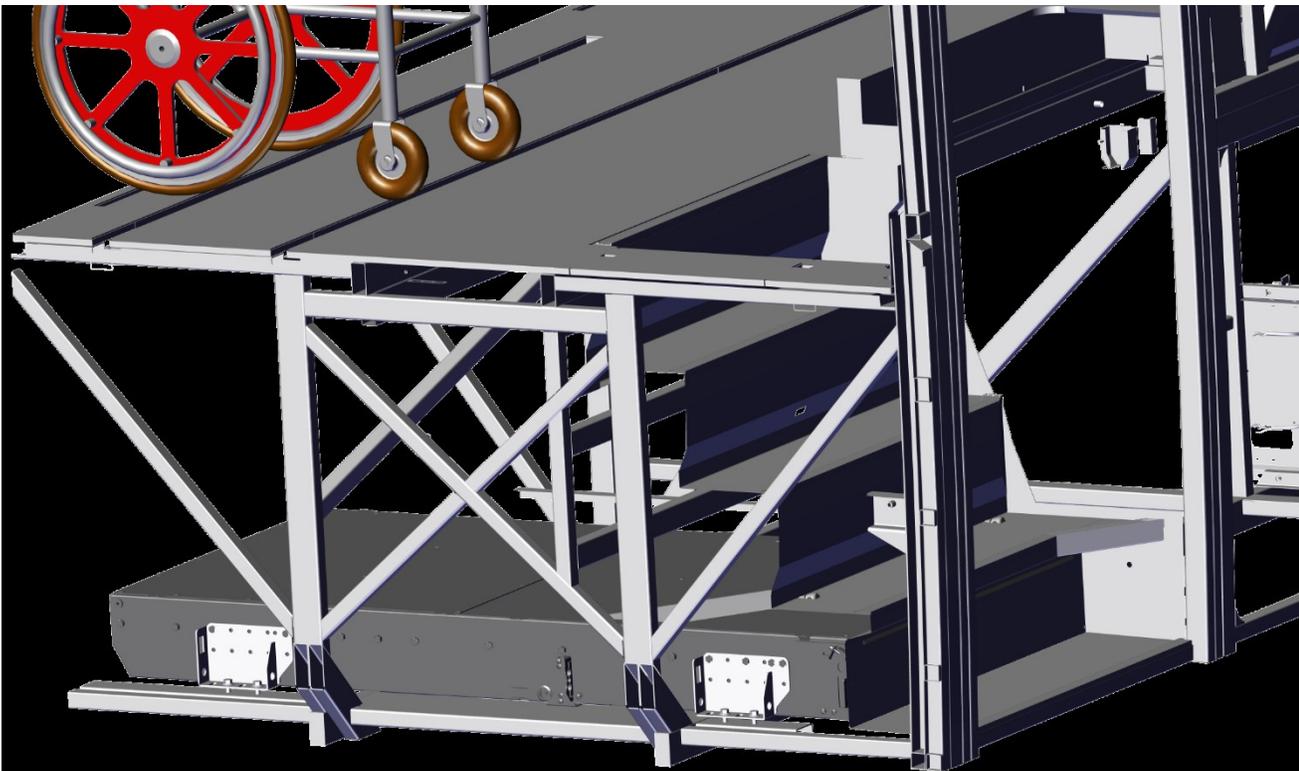
- Use a forklift to support the wheelchair lift.
- Open the luggage compartment on the other side of the bus, behind the compartment where the lift will be located.
- Slide the lift into the right position using the fitting support wheels MQ0299 (or an equivalent tool). Retract the forklift and let the mounting plates rest on the chassis.
- Fitting support wheels MQ0299 can be used during the installation of the wheelchair lift in order to easily slide the cassette to the right position. Attach the wheels to the mounting plates at the 4 different corners of the cassette as seen on the pictures below.



- When sliding the wheelchair lift into the desired position, make sure not to damage the hydraulic and electrical connections that exit the cassette. These connections should be free and you should be able to attach them to the power pack as is explained in section 2.5.



- When the correct position has been reached, detach the wheels from the mounting plates and let the cassette sit on the vehicle chassis.



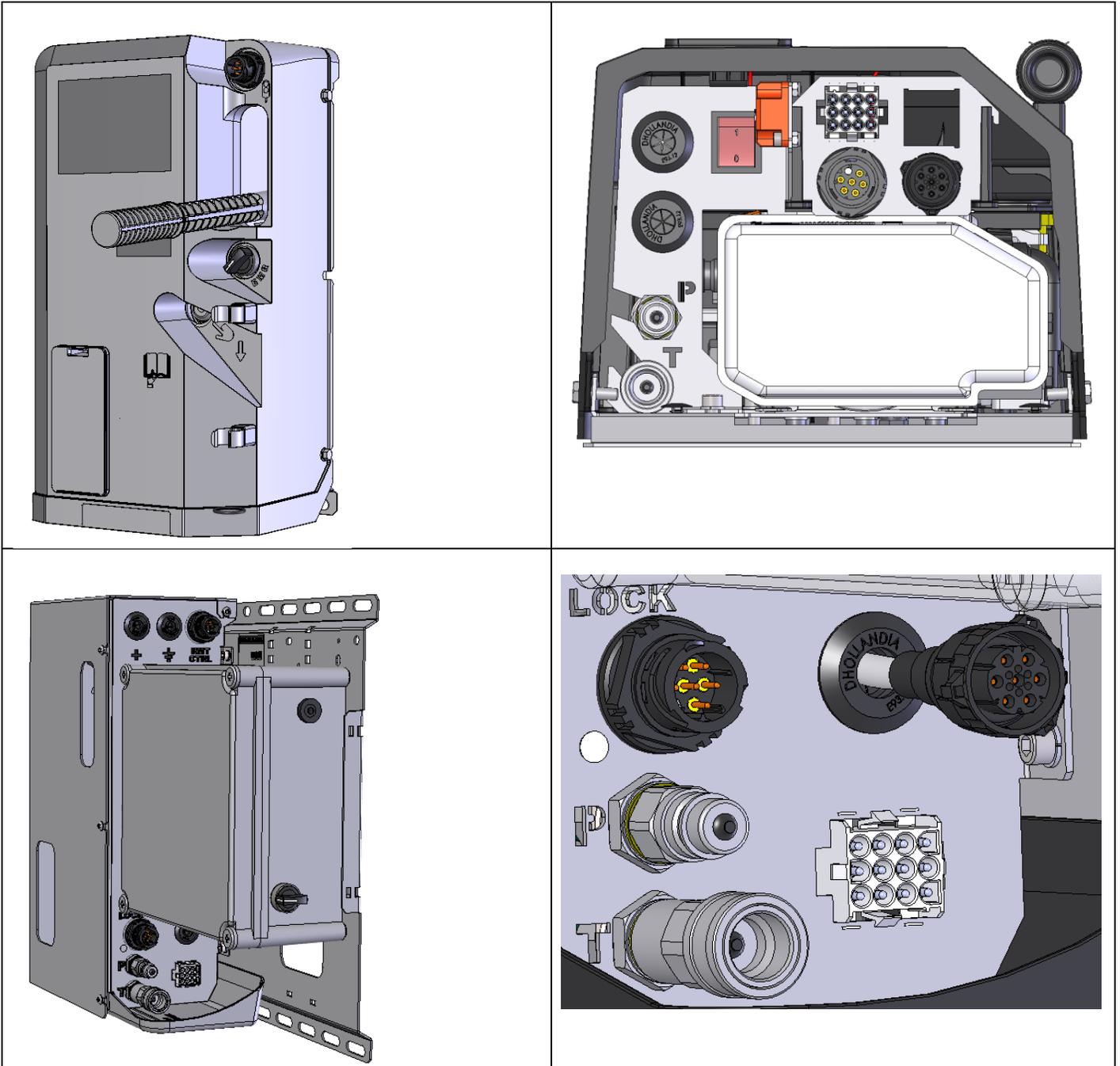
- Fit the mounting plates to the vehicle chassis, using the bolts supplied in the installation kit. Remove the excess of mastic or paint if required to place the mounting plates correctly. Fasten the bolts with the proper torque.
- If the wheelchair lift is not protected by an additional cover, be aware not to place large weights on top of the cassette as this may result in damaging the wheelchair lift.

#### 2.4.6 Fitting the power pack

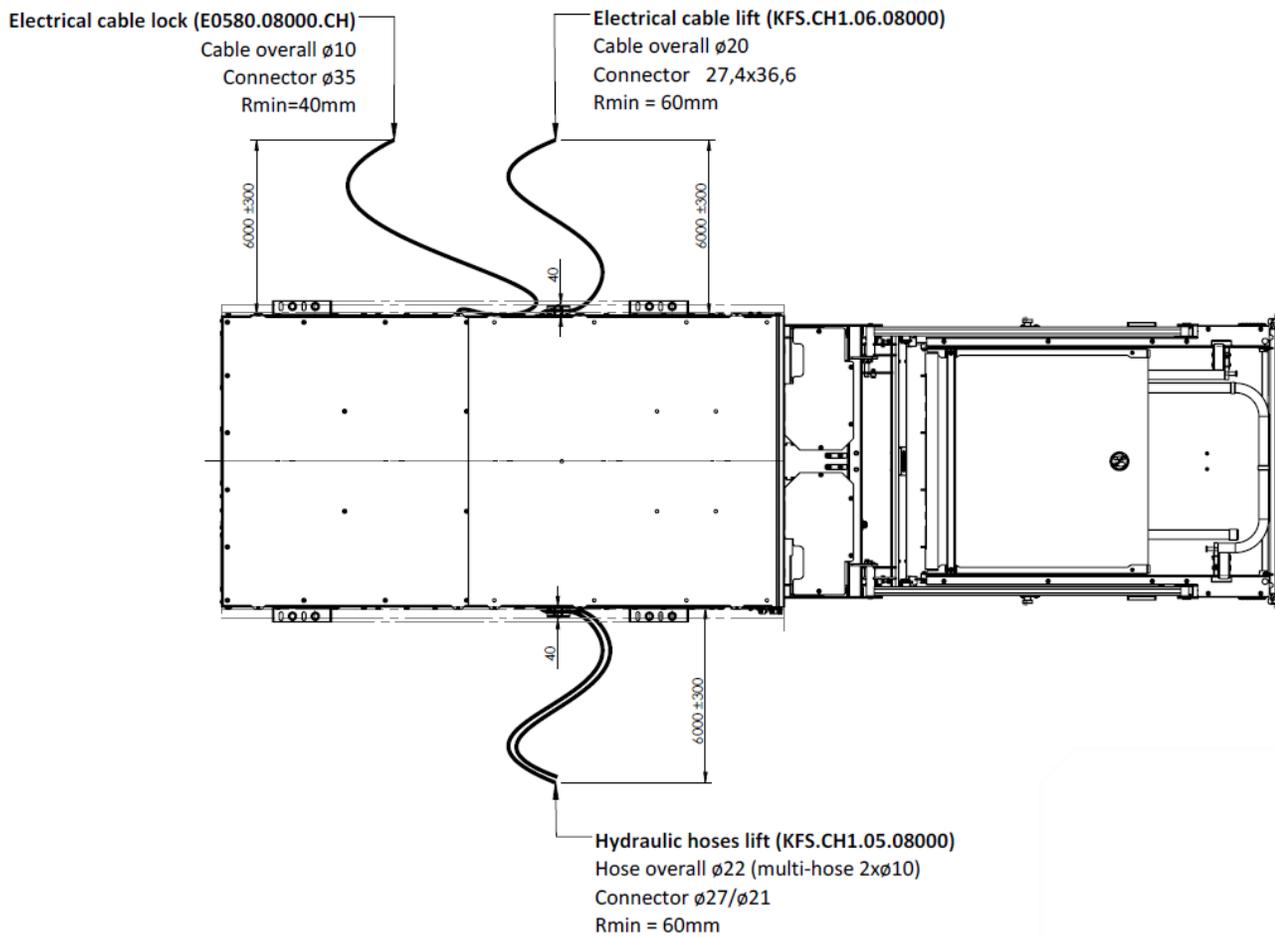
- Check whether the bus was prepared for the installation of the power pack in a certain place before making permanent changes to the inside of the bus. If not the case, try to find a place that is easily reachable by the lift-operator and close to the lift. In most cases this would result in placing the power pack in the nearest luggage compartment next to the stairs. When in doubt, always contact the bus manufacturer before proceeding with permanent changes to the bus.
- An additional connector is provided between the remote control and the power pack. This way the remote control can be placed directly next to the lift and the power pack can be stored away in a more convenient space.

## 2.5 HYDRAULIC AND ELECTRICAL CONNECTIONS

- Remove the cover of the hydraulic power pack.
- Refer to the handbook of the vehicle manufacturer and check if an earth to the vehicle chassis is allowed or if the vehicle requires an insulated earth return to the vehicle batteries.
- Power packs come in different versions and configurations. Connections for your installation case could differ from the images that are shown below. Contact your national DHOLLANDIA distributor in case of doubt.



The schematic overview shown underneath could differ from your wheelchair lift type but the same principles apply throughout the DH-CH\*\* -series.



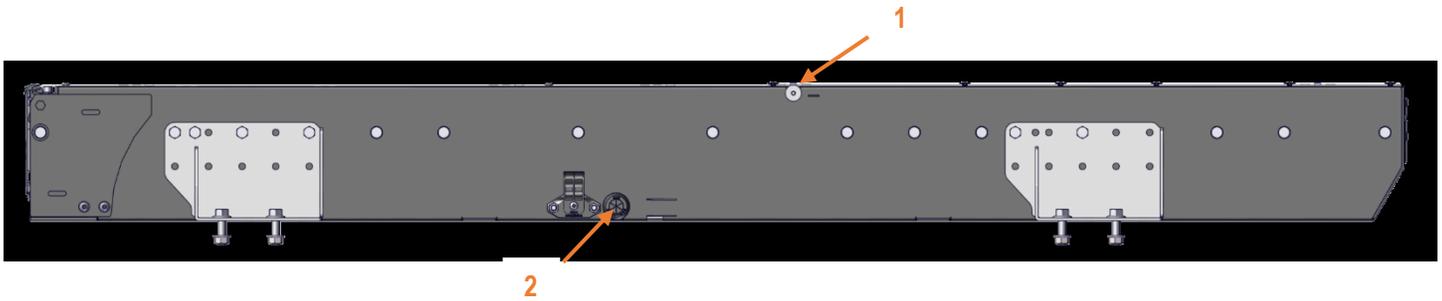
### 2.5.1 Hydraulic



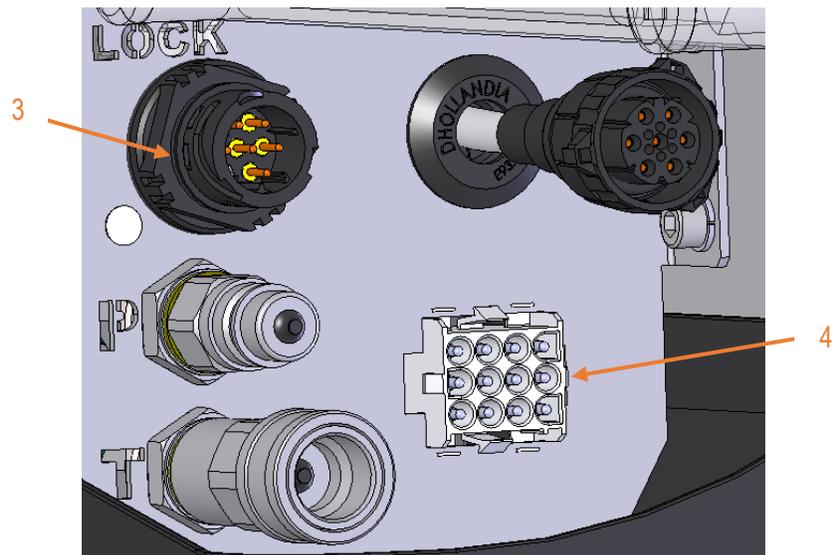
- On the left side of the cassette, the hydraulic connections exit the cassette. These need to be connected to the power pack at the connectors that are marked P (Pressure) and T (Tank).
- See section 2.5.6 for the power pack connector overview.

## 2.5.2 Electrical: Cassette – Power pack

- The electrical diagram can be found inside the power pack and can be downloaded from the website.

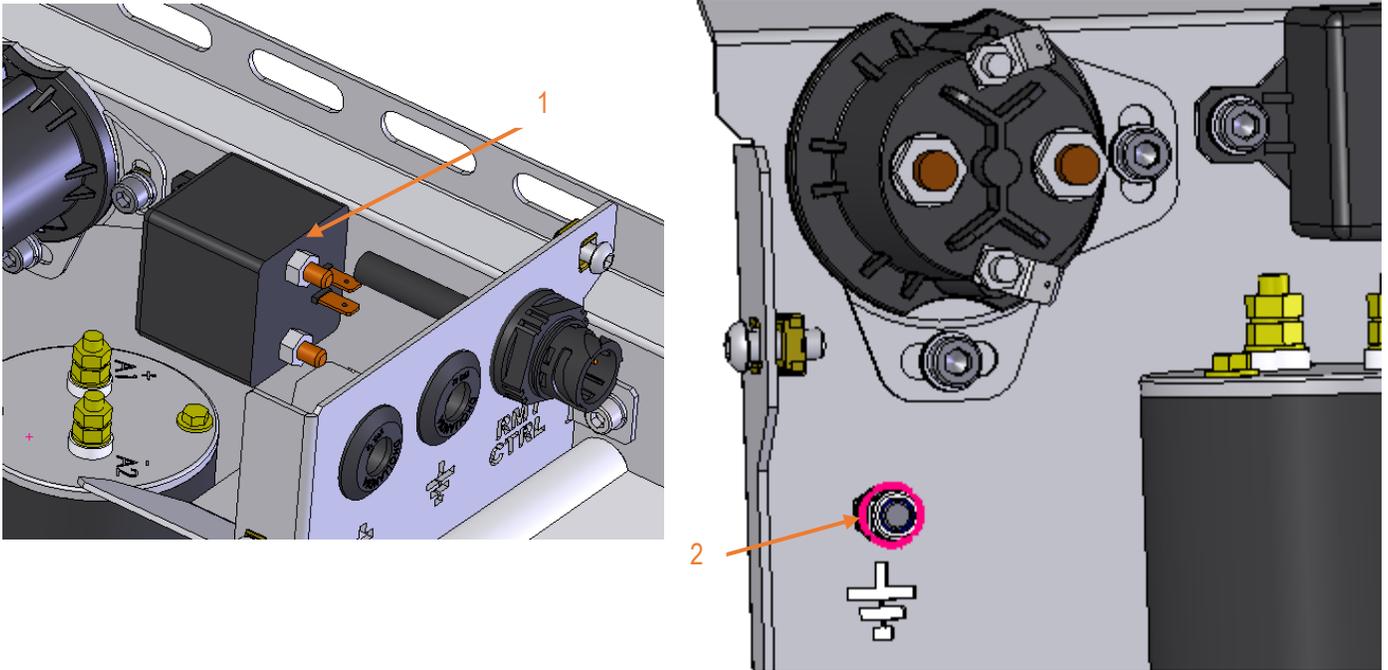


- On the right side, the electrical connections exit the cassette.
- The first single cable (1) exits through the top-hole and will be in charge of actuating the automatic lock. It needs to be connected with the connector found on the power pack under the LOCK- marking (3). See section 2.5.6 for an overview of the power pack connectors.
- The second connector (2) that exits the cassette will lead to the electrical motor for the movement of the lift out of the cassette. This one needs to be connected to the 12-point connector (4).



### 2.5.3 Electrical: Power pack – Battery

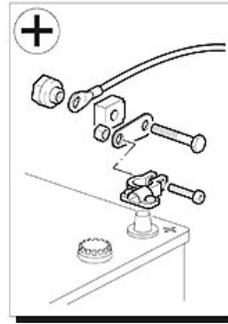
- Follow the guidelines in section 10.5 when completing the electrical wiring.
- The wheelchair lift is equipped with a battery relay (1) which is actuated by a switch inside the vehicle cabin.
- In case there is not an OEM fuse prepared, attach CE-set (fuse) to the positive pole of the battery.
- Prepare a 16mm<sup>2</sup> battery cable (=main power cable) to run from the incoming main pole on the battery relay (1) in the power pack, to the battery. When the battery cable exceeds a 10m length, a 25mm<sup>2</sup> cable thickness is required.
- Images shown below could differ slightly from your installation case depending on the hydraulic power pack. The components remain the same.



- Use insulating protection rubbers for both the battery connection to the battery relay (1) and the earth (2).
- Pull a flexible protective tube over the full length of the battery and earth cable. Make sure this conduit is suitable for automotive purposes. Class 1 tubing (without marking) is suitable for general use, and sustains a temperature of 185°F (85°C) continuously, and 212°F (100°C) peak.
- When it is possible that the main power and earth cable will run close to exhaust pipe, the catalyser and pre-catalyser, the particle filter,... and other heating components, it is mandatory to use class 2 tubing (marked white) over the full length. This class can sustain a temperature of 212°F (100°C) continuously, and 257°F (125°C) peak.

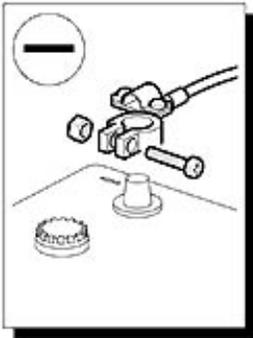


- Seek an adequate routing to run the (+) battery cable and (-) earth cable to the vehicle battery. Ensure that the wiring cannot be damaged, squeezed, heated or melted by any of the fixed or moving parts of the vehicle. Ensure also that the wiring doesn't interfere with, or isn't connected or attached to the suspension, the breaking systems, oil pipes and wiring circuits of the vehicle. Ensure adequate fixation by means of cable ties every 4" (10cm).
- The (+) and (-) battery cable can be fixed to the chassis by means of cable ties around existing holes or cavities in the chassis, or by means of wire clips riveted or bolted to the chassis, and sufficiently protected against corrosion by means of zinc spray, Dinitrol,... (refer to the manufacturer's handbook for details what is allowed and not allowed).
- Seek an adequate entry into the battery compartment under the motor hood. Most vehicle brands and types are equipped with a dedicated rubber diaphragm to pass the wiring from the chassis area to the inside of the vehicle cabin (without drilling extra holes).
- Connect the 16mm<sup>2</sup> (+) battery cable coming from the battery relay inside the power pack of the wheelchair lift to the (+) pole of the battery. Mount the 100A fuse, supplied with the wheelchair lift, to the positive pole of the vehicle battery, and connect the 16mm<sup>2</sup> (+) battery cable to the fuse as shown.

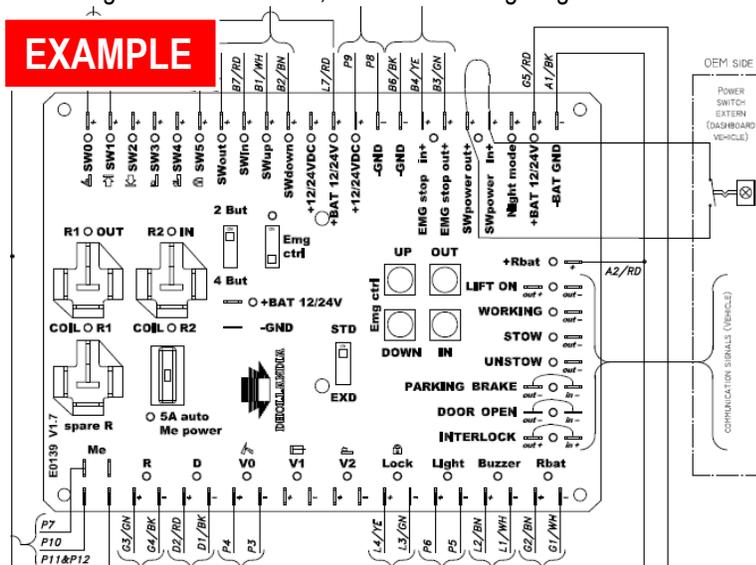


- Fasten all bolted connections to the battery, the power pack and the 100A fuse for the wheelchair lift (see below) firmly. Loose and insufficient fitting can lead to bad contact and overheating of the connections, followed by premature failing of the power circuit. Apply a thick layer of anti-corrosive grease or Vaseline to all electric connections, and use protection rubbers E0289 to shield the exposed components against rain and dirt.

- In an analogue way, route the 16mm<sup>2</sup> (-) earth cable from the negative pole of the vehicle battery to the earth (2) inside the power pack. Firmly fasten the earth connection, and protect against corrosion, in the same way as the (+) battery connection.



- For the wiring of the cabin switch, refer to the wiring diagram found inside the power pack and in section 10.5.



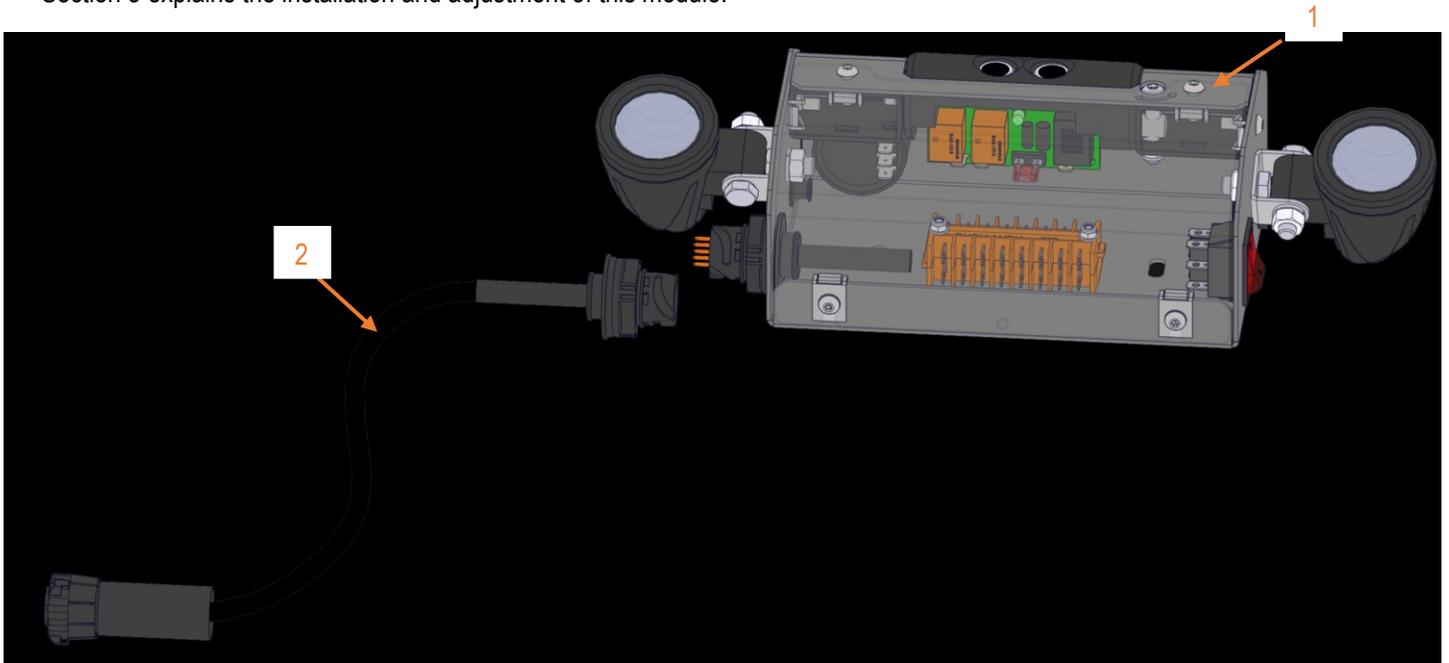
## 2.5.4 Remote control

- A 4-button controller will be used to manipulate the wheelchair lift.
- Decide where the controller needs to be fitted. In most cases it is either placed in the stairwell or in a luggage compartment located as close as possible to the wheelchair lift.
- Check whether the bus was prepared for the mounting of the controller in a certain place before making permanent changes to the inside of the bus.
- A spiral cable will be attached to the controller. An extra extender cable will be provided in the installation kit to bridge the distance between the location of the controller and the location of the power pack.
- This extender cable needs to be connected on to the power pack as shown in section 2.5.6 above RMT CTRL.
- At the end of this spiral cable a fixation plate is attached. This fixation plate needs to be mounted to a wall inside the vehicle.
- The remote control should be mounted in a location so that it can be held on to during the full lift cycle.
- Drill two holes to attach the controller holder.



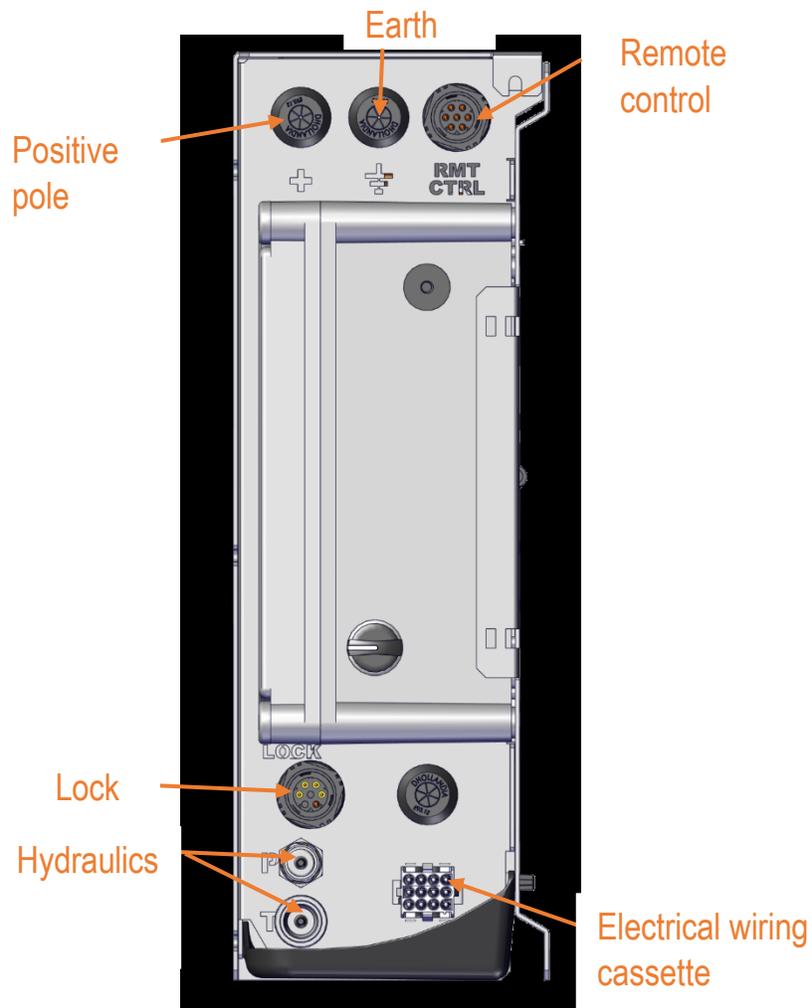
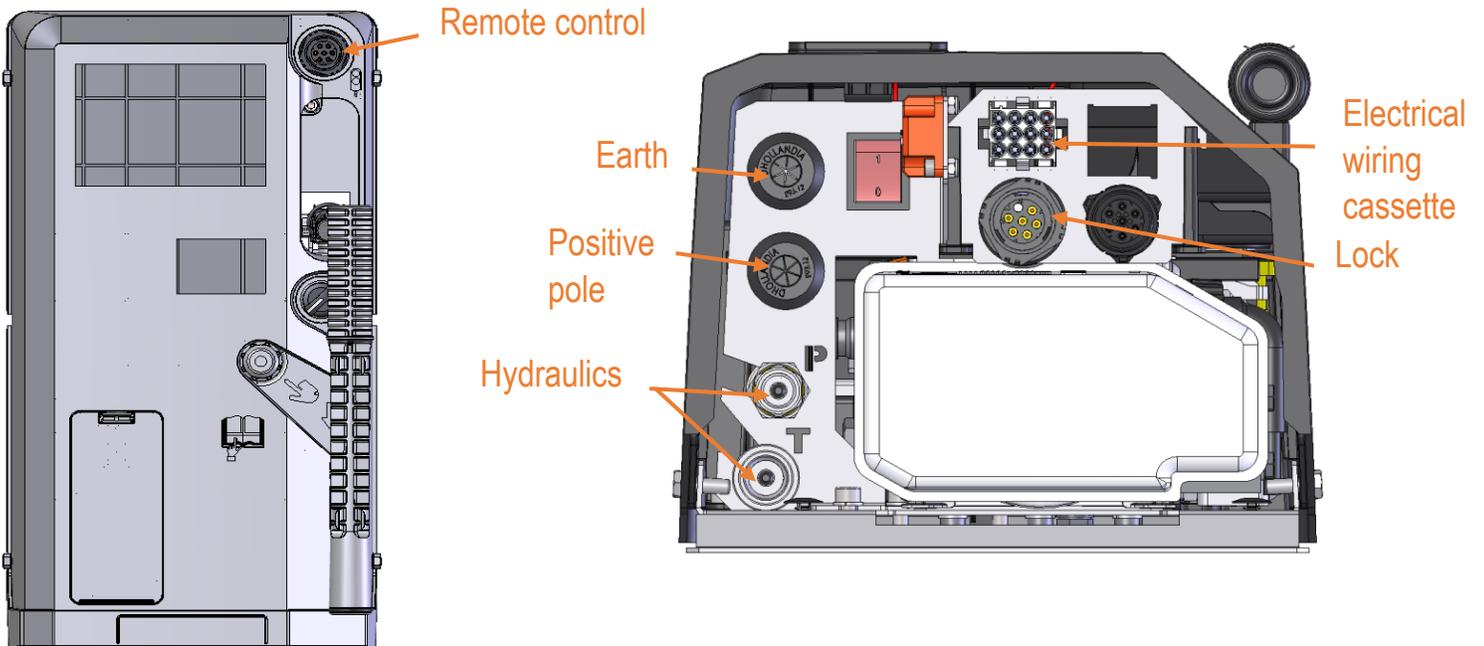
### 2.5.5 Threshold module

- The threshold module (1) is located above the wheelchair lift. It needs to be connected to the power pack using a double 7-point connector (2).
- Section 3 explains the installation and adjustment of this module.



### 2.5.6 Power pack connector overview

- Check every connection that has been made in the previous steps by comparing it to the figure below.



### 3 THRESHOLD MODULE

#### 3.1 INSTALLATION

The threshold module needs to be installed above the threshold area which is defined by FMVSS 403.

The threshold area is a rectangular area on the vehicle floor defined by the edge of the vehicle and a line placed at an offset of 457 mm (18 inches) from this edge.

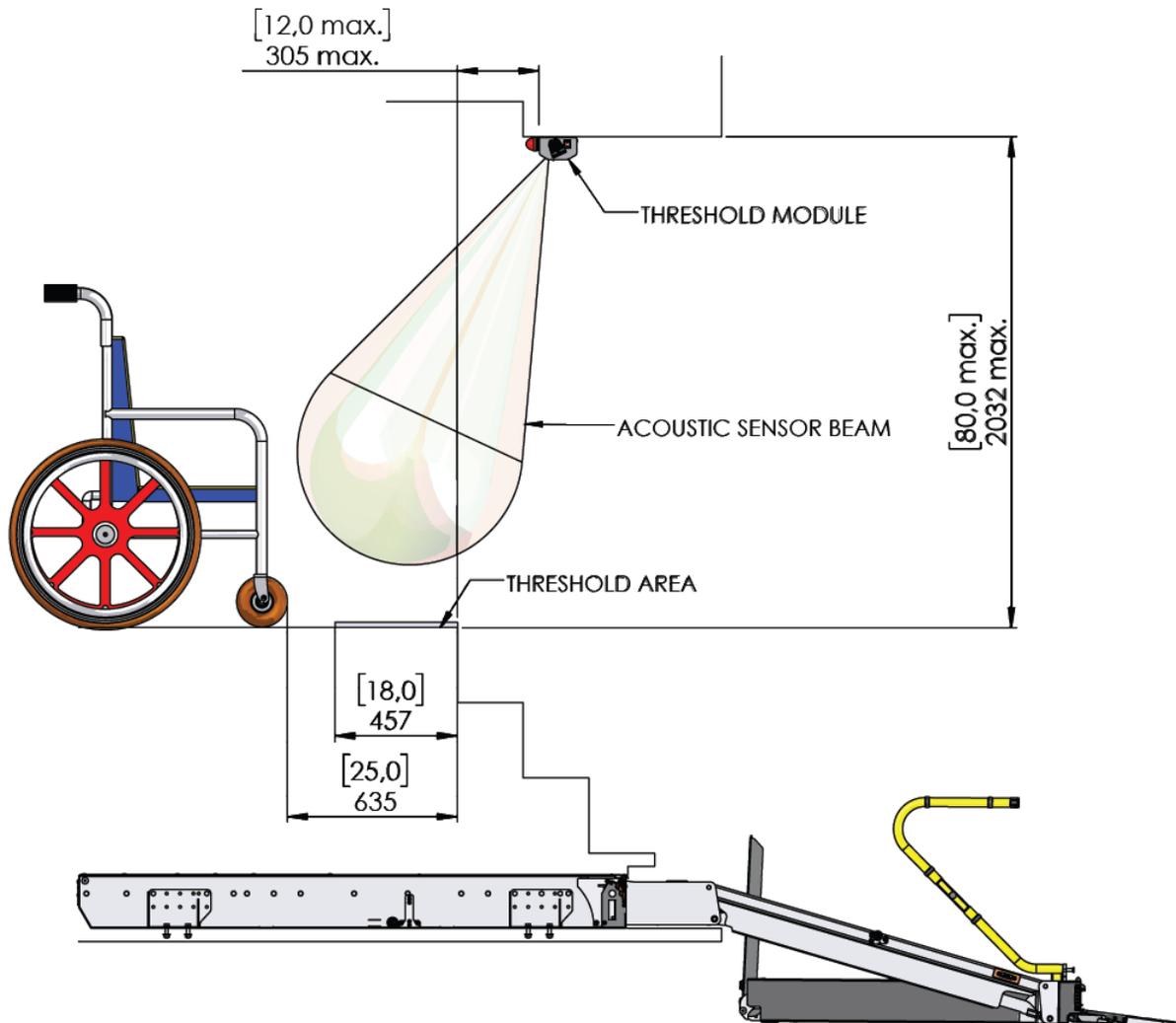
Any portion of a bridging device that lies on this area must be considered part of that area.

The width of the threshold area is defined by the lift door width of the vehicle.

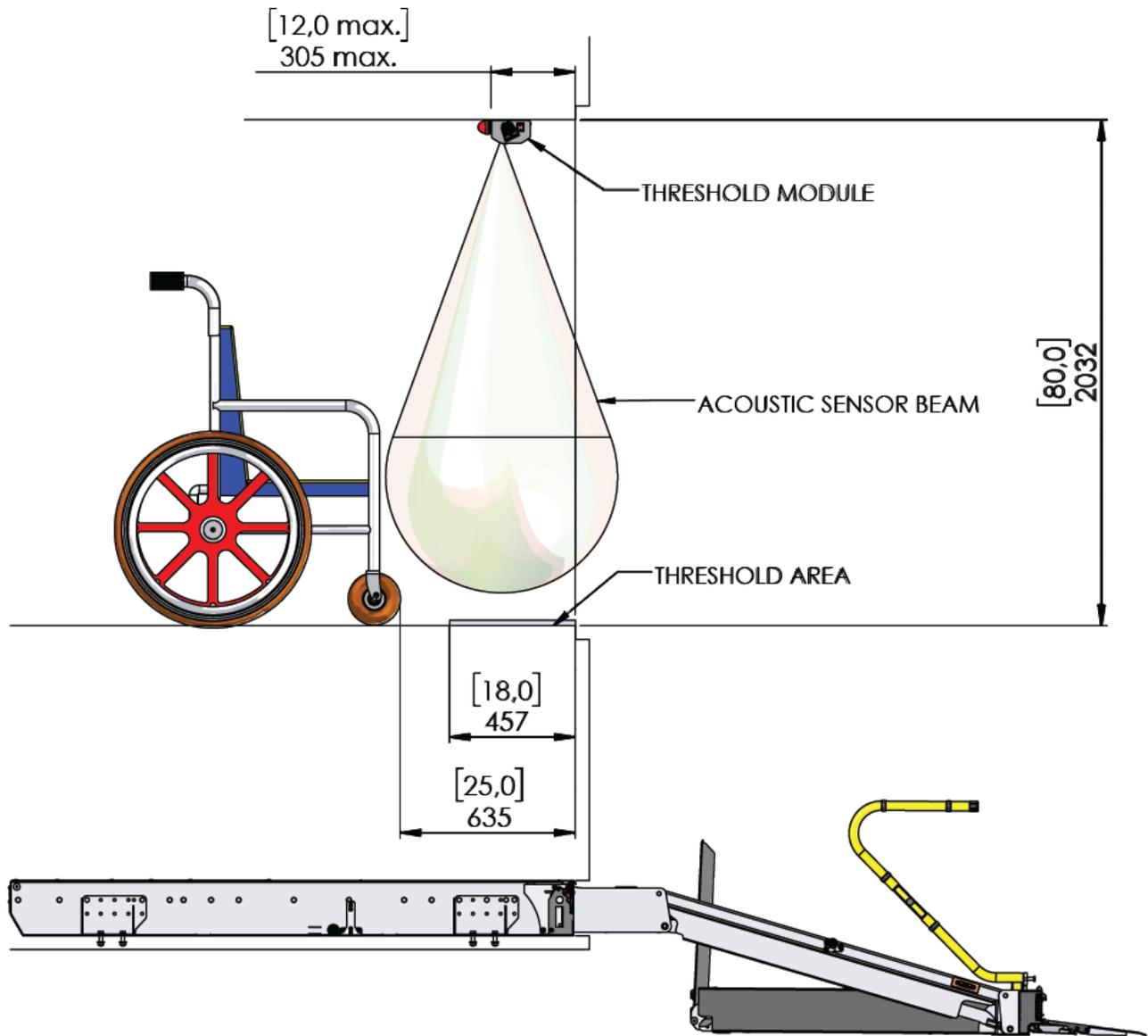
The position of the threshold module depends on the type of lift installation.

We have two kinds of installation for DH-CH103 cassette lifts:

- A. Stair installation - cassette lift is mounted in the first step of the middle door stair



B. Side installation - cassette lift is mounted in the luggage compartment located under the extra dedicated door on the side.

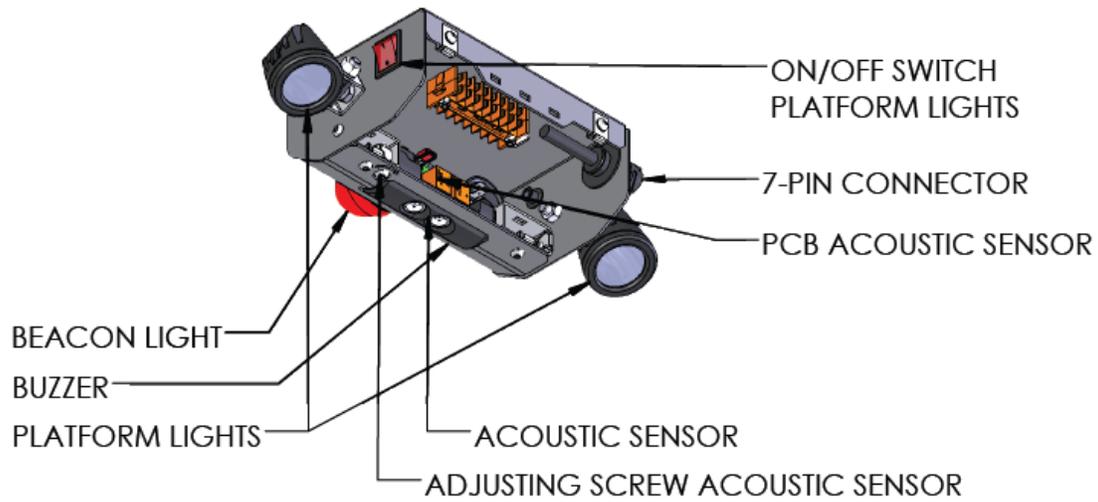


The front of threshold module must be placed maximum 305mm (12 inches) from the front of the threshold area (edge of the vehicle floor) according to the type of lift installation.

The threshold module is connected by a 7-pin connection cable by which it communicates with the corresponding output on the lift power pack.

## 3.2 ADJUSTMENT

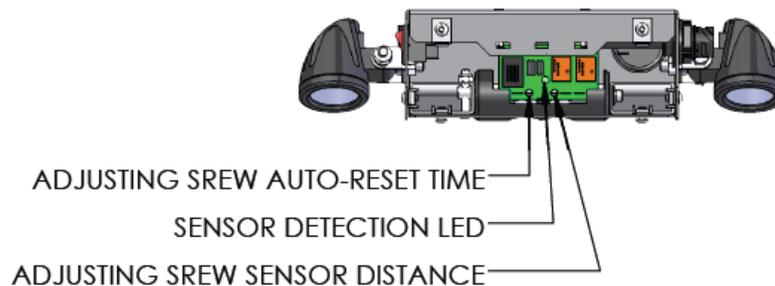
Once the threshold module is fixed on the vehicle, the acoustic sensor needs to be set up correctly depending on the type of lift installation. Read the operation manual and go through section 4: Verifying installation before operating the wheelchair lift.



### 3.2.1 Adjusting the acoustic sensor

1. Make sure the red switch on the power pack is turned off.
2. Open the vehicle door and DEPLOY the lift, move the lift to the vehicle floor until the bridge plate is laying on the threshold area.
3. Turn on the red switch in the power pack.
4. Remove the cover from the threshold module by loosening the 4 Allen bolts.
5. Adjust the sensor angle in the direction of the threshold area.

The sensor angle can be adjusted from vertical  $0^\circ$  (installation type B) till  $30^\circ$  (installation type A) by turning the Allen adjusting screw. By turning the adjusting screw clockwise, the angle of the acoustic sensor will raise and the sensor beam will go away from the centre of the threshold module. By turning the adjusting screw counter clockwise, the angle of the acoustic sensor beam will focus more vertically.

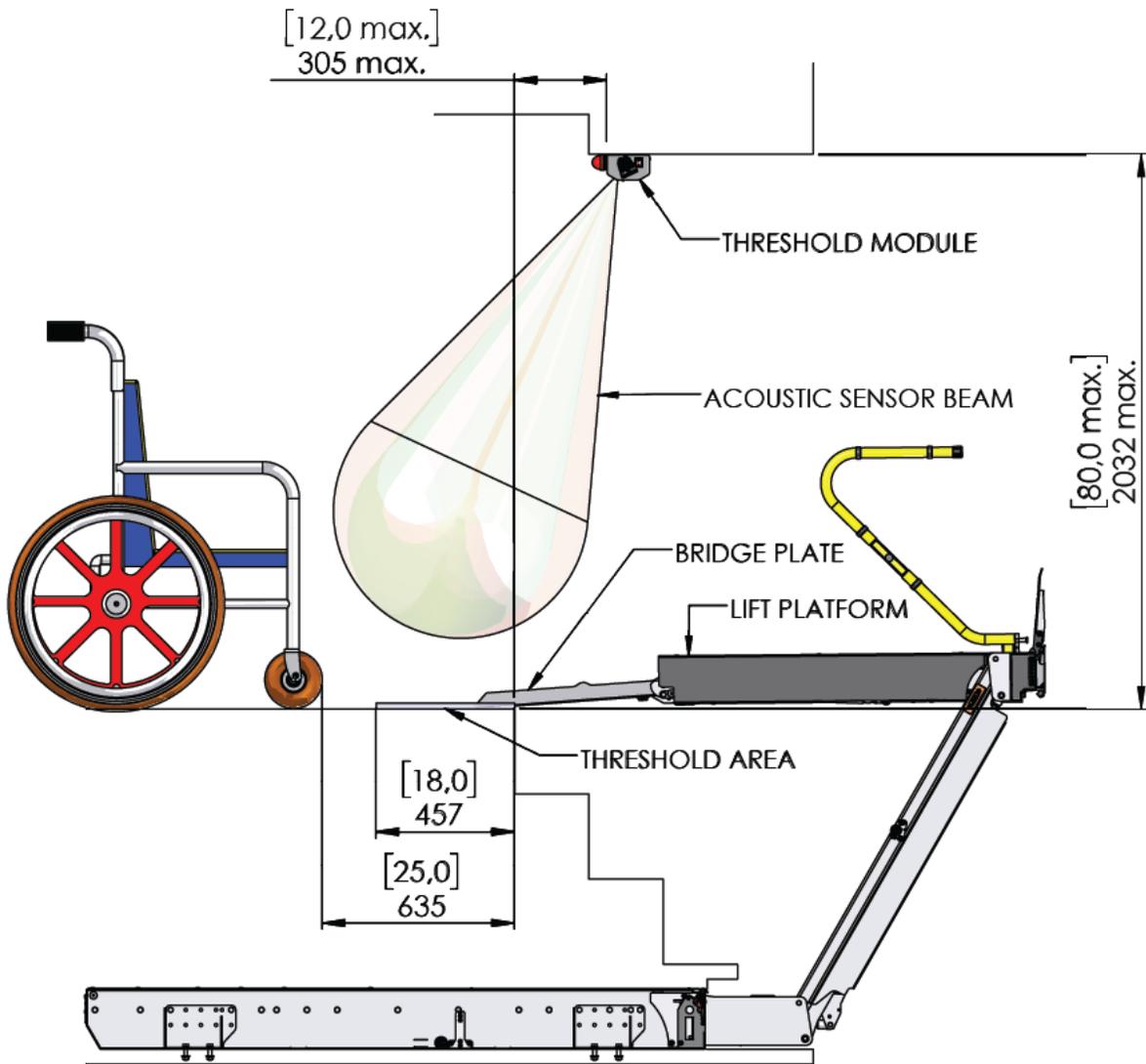


6. With the lift on vehicle floor level, push the 'DEPLOY' button on the remote control to activate the acoustic sensor without movement of the lift. Make sure that no other objects (body, seats,..) interfere the sensor beam direction while adjusting the sensor.

While pushing the 'DEPLOY' button, turn the adjusting screw 'sensor distance' clockwise till the green detection LED lights up continuously.

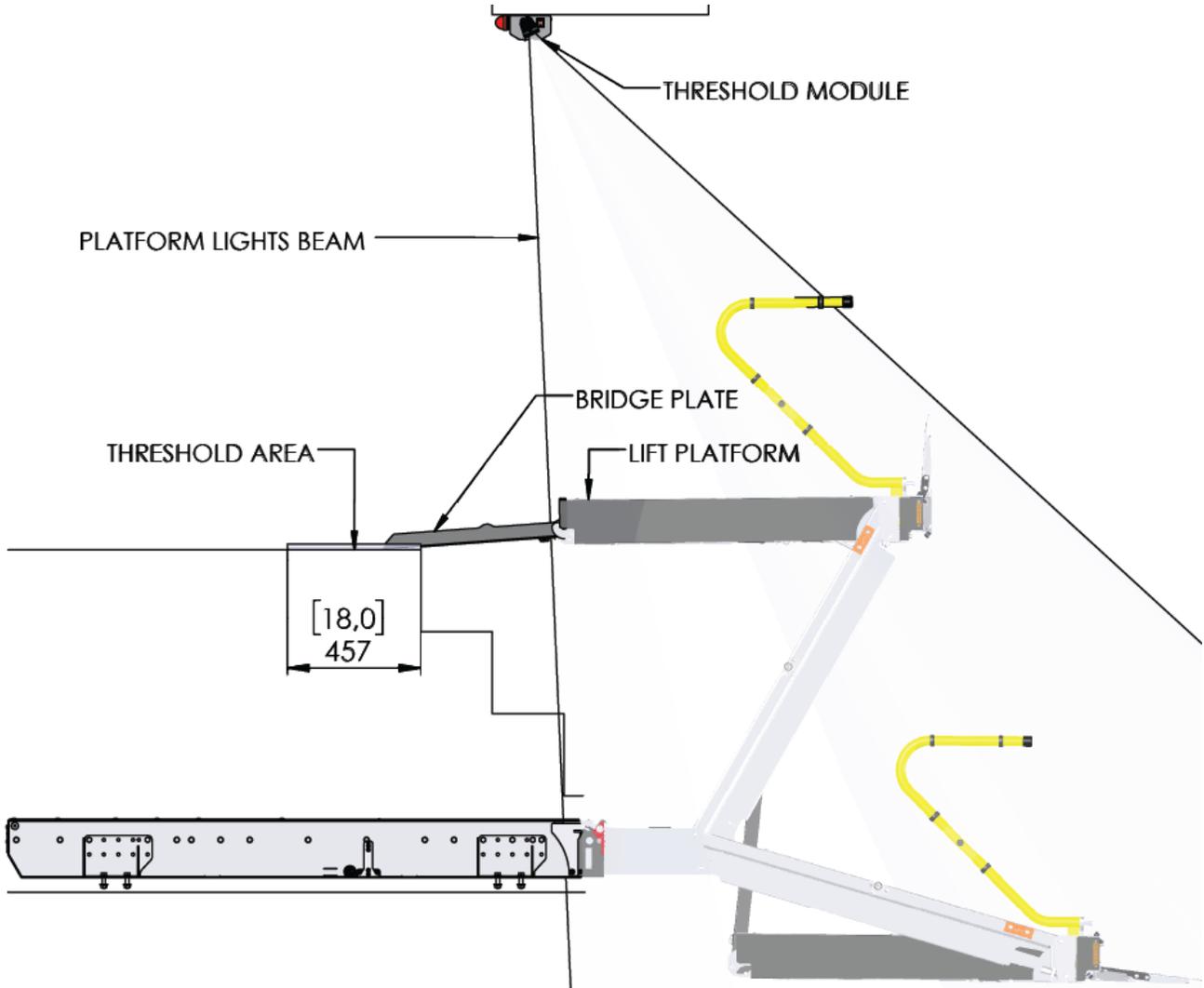
Keep pushing the 'DEPLOY' button, now turn the adjusting screw 'sensor distance' counter clockwise till the green detection LED stops with flickering or to light up continuously.

7. The sensor adjustment needs to be checked by using an empty standard wheelchair.  
Place the wheelchair's front wheels approximate 635mm (25 inches) from the front of the threshold area (25 inches from the edge of the vehicle floor).  
Push the 'DEPLOY' button to activate the acoustic sensor.  
Check if the green LED is not lighting up continuously. On this position the sensor should not cause any alarm signal.
8. Now place the wheelchair with one of the front wheels on the back of the threshold area. (18 inches from the edge of the vehicle floor).  
Check if the green LED is lighting up continuously. On this position the sensor must cause an alarm signal.  
The red beacon light and buzzer should be activated.  
If the green LED is not lighting up continuously, turn the adjusting screw 'sensor distance' clockwise till the green LED is lighting up continuously and repeat from step 7.
9. Set up the auto-reset time. Time can be adjusted by turning the left screw clockwise (longer time) or counter clockwise (shorter time) on the PCB.  
Default time should be set up on approximately 4 sec.
10. Check the working of the sensor with movement of the lift.  
Place the wheelchair with one of the front wheels on the back of the threshold area. (18 inches from the edge of the vehicle floor).  
Pushing the 'DOWN' button to lower the lift for approximately 5 sec.  
The acoustic sensor must cause an alarm signal (red beacon light and buzzer) and the lift movement should be interrupted instantly.  
Check if the lift platform has not moved more than 25mm (1 inch) below floor level.  
If the acoustic sensor doesn't cause any alarm signal or the lift platform is lowered more than 25mm (1 inch) below floor level, repeat from step 8.
11. Place the wheelchair front wheels approximately 635mm (25 inches) from the front of the threshold area (25 inches from the edge of the vehicle floor).  
Pushing the 'DOWN' button to lower the lift, the movement of the lift platform and bridge plate should not be interrupted.  
If the acoustic sensor causes an alarm signal, repeat from step 7.
12. Set up the platform lights on the threshold module.  
The two platform lights need to be pointed on the lift platform surface.  
Check the lighting of the platform surface when the lift is on floor level and when the lift is on ground level.  
The two lights may be set up differently to achieve the lighting in both positions of the lift platform.
13. Add the closing cover on the threshold module by fixing the 4 Allen bolts.



### 3.2.2 Adjusting the platform lights

The platform lights need to be positioned so that platform is lit throughout the full lift cycle.



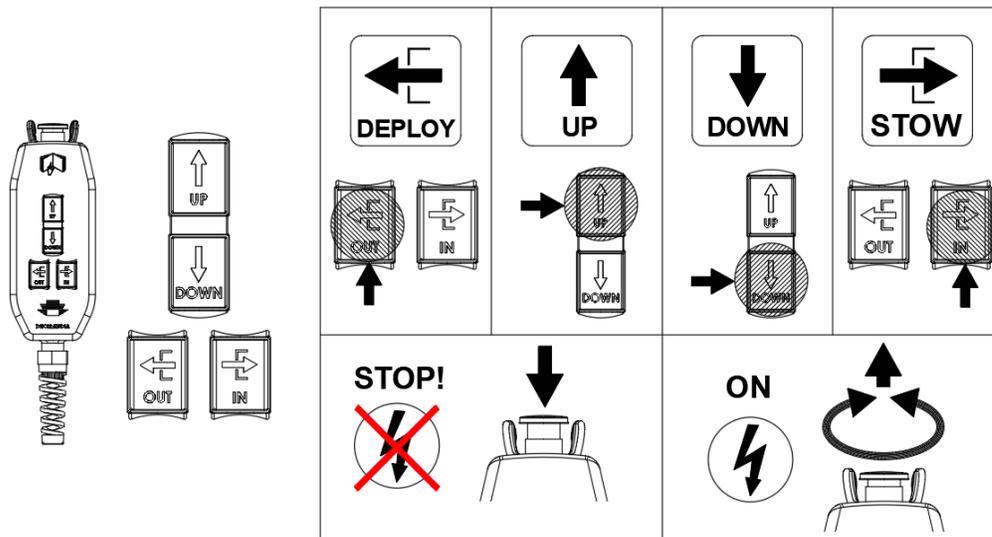
## 4 VERIFYING INSTALLATION

### 4.1 PUTTING THE LIFT INTO SERVICE



## CAUTION

- Only when all electrical connections have been finished and all mounting bolts have been fastened with the required torque and are safely locked, is it allowed to switch on the battery switch in the vehicle cabin and put the electric installation of the wheelchair lift under load.
- Consult the operation manual in case of doubt with regards to the correct use of the different lift functions and of the safety aspects linked to wheelchair lift use. See section 8 of the Operation manual for a summary of the main functions.



- Use the “DEPLOY” function to bring the lift out of the cassette. The deploy action will hold as soon as the lift has exited the cassette completely. Check if the lift completes this action without making any unusual noises or sudden movements. If this is the case, please contact your national DHOLLANDIA distributor for further advice prior to continuing.
- Use the function “UP” to bring hydraulic pressure in the hydraulic circuits. Bring the platform to its highest elevation and check if the height needs to be adjusted. Check if the bridge plate is correctly positioned and guarantees a smooth and safe passage between the platform and the vehicle floor. See section 5 in case an adjustment needs to be made.

## NOTICE

Check for visible leaks of hydraulic oil as the system is being pressurized. If there is a leakage, correct the problem prior to continuing.

- Bring the lift to ground level using the “DOWN” function. Check if the roll-stop automatically lowers when the ground level has been reached.
- Return the lift to its storage position using the “STOW” function.



## WARNING

- Improper use of the wheelchair lift will put the operator at great risk of serious bodily injury and death. If in doubt how to use wheelchair lift correctly, installer should consult the operation manual prior to continuing
- Air might be trapped in the hydraulic circuits, as long as the wheelchair lift has not been bled. Air can cause the wheelchair lift to make unexpected movements and can put the installer at great risk of serious bodily injury. The installer should remain vigilant and stay out of the range of motion of the platform and the moving parts of the wheelchair lift as long as the hydraulic circuits have not been purged.

## 4.2 COMMISSIONING & QUALITY CONTROL

- Finish the wheelchair lift in accordance with local regulations.
- Execute all functions a minimum of 5 times to ensure the wheelchair lift functions correctly. Pay special attention to:
  1. Smooth and quiet deployment out of the cassette.
  2. Smooth and quiet operation through the full range of motion of the platform.
  3. Correct alignment of bridge plate and the vehicle floor.
  4. Correct stowage of the wheelchair lift in its travel position.
- Follow the adjustment instructions in section 5 when the bridge plate doesn't align correctly with the vehicle floor before proceeding.
- Work through the (PDI) Pre delivery inspection checklist in the appendix and complete the practical load tests indicated. Fill-out the FITTING DECLARATION.
- During weight test, verify if the hydraulic pump pressure suits the maximum rated lift capacity in this particular mounting situation. Adjust the pressure if too high or too low, seal the pressure relief valve afterwards using the provided tamper-evident cap.

## NOTICE



## WARNING

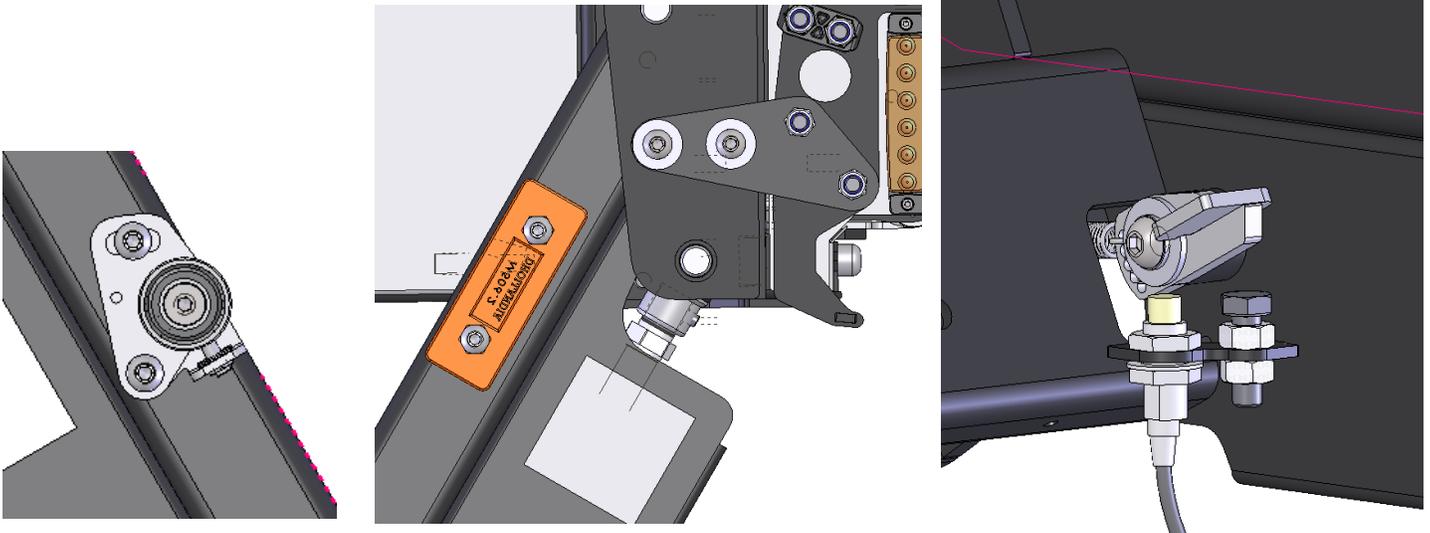
- The PDI checklist completes the final quality inspection of the installation. Once completed successfully, it will certify the safe and reliable operation of the wheelchair lift.
- Operating a wheelchair lift that hasn't successfully passed the PDI can lead to premature wear or damage of the wheelchair lift itself.
- Operating a wheelchair lift that hasn't successfully passed the PDI can put the operator and third parties at great risk, and could result in severe personal injury or death.

## 5 ADJUSTMENT INSTRUCTIONS

- The wheelchair lift can be adjusted in numerous ways, this way it can comply to a wide array of different bus types.
- In case of any doubt regarding these adjustments, please contact your national DHOLLANDIA distributor for further advice prior to continuing.
- A wheelchair lift is normally set-up in the factory to the desired dimensions as described in the order forms. Please check if the original set-up complies to your installation case, prior to making any of the adjustments mentioned below.
- If the desired result can't be reached by using the adjustments in section 5.2 and 5.3, please contact your national DHOLLANDIA distributor for further advice before altering these factory settings.
- When adjustments have been made, re-check the PDI checklist.

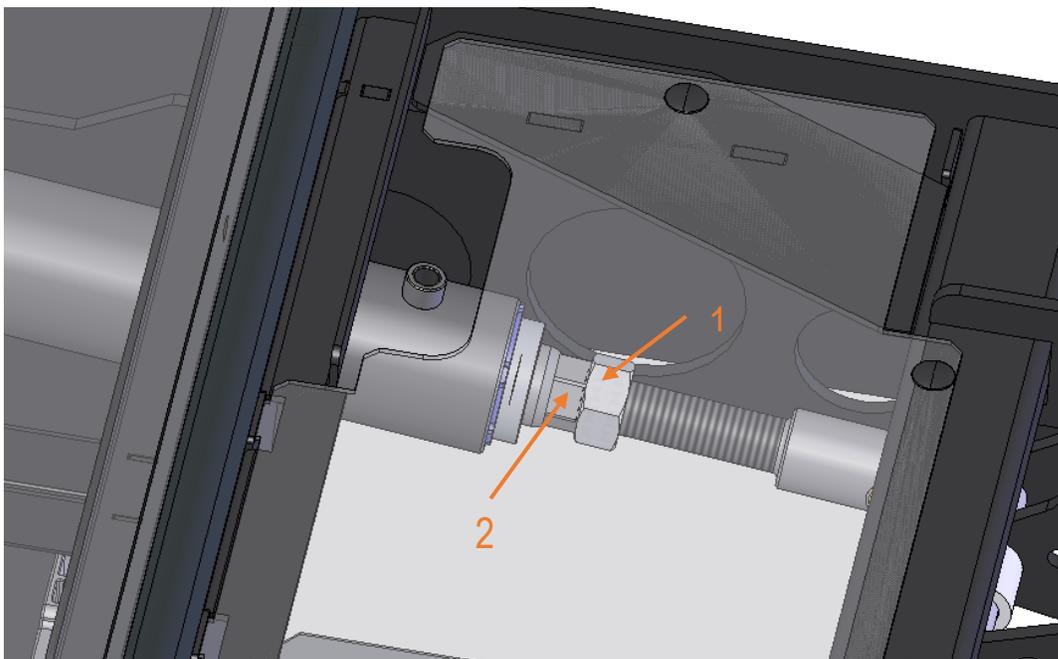
### 5.1 FACTORY SETTINGS

- The wheelchair lift will be set up in the factory based on the drawing received during the order phase. These settings should not be adjusted during the installation or operation of the wheelchair lift.
- The components shown on the pictures below will be adjusted to alter the angle of the platform and the way the lift will return to its storage position. The set-up of these components is crucial to assure a good working lift and should only be done in the factory or service station by trained individuals when it is strictly necessary.



## 5.2 HEIGHT ADJUSTMENT

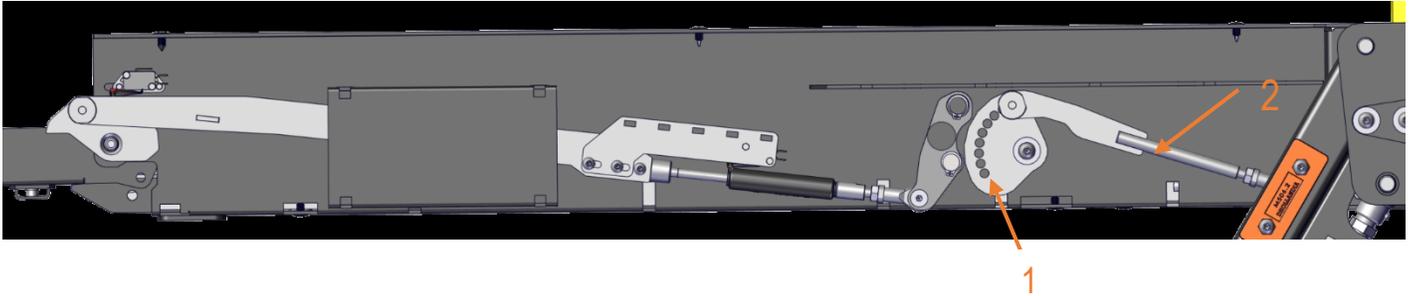
- When the platform arrives at floor level, the bridge plate should create a smooth and safe passage between the platform and the vehicle floor. To create this smooth transition, the desired height can be adjusted using the following steps.
- The lifting mechanism of the wheelchair lift consists of two hydraulic cylinders. The stroke of these cylinders can be altered to a different length causing a different maximal elevation.
  1. Raise the platform to its highest position
  2. Check how much the height of the platform differs from the vehicle floor.
  3. Lower the platform a little bit to release pressure on the cylinders.
  4. Release the counter-nut (1) using a 30 wrench. Do this while fixating the cylinder rod (2).
  5. Turn the cylinder rod the correct direction. Lengthening it will result in a higher elevation. Alter this extension by applying small increments of 3 turns or less, alternately to each cylinder.
  6. Raise the platform to its highest position. Check the desired height and make sure that both sides raise evenly. If this is not the case, the cylinders were not adjusted to the same length. Lower the platform a few inches and repeat the previous step until both conditions are fulfilled.
  7. Tighten the counter-nut.



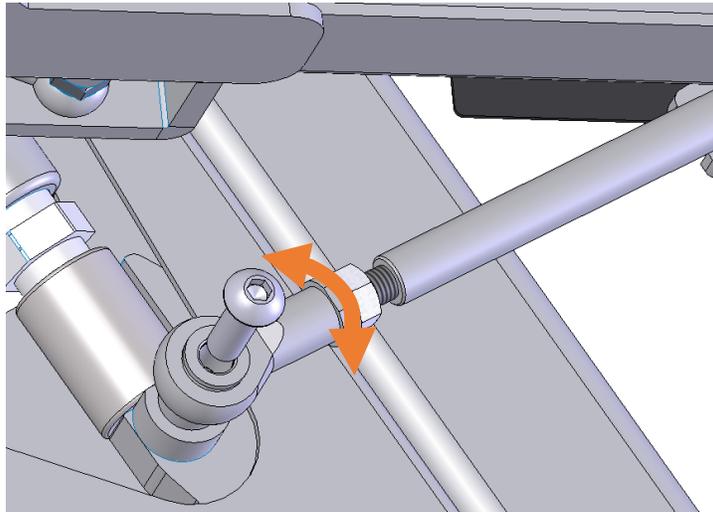
### 5.3 BRIDGE PLATE ADJUSTMENT

- The angle of the bridge plate changes throughout the whole lift cycle. To maintain the correct set-up at every moment, the bridge plate set-up can be altered by adjusting the following components.
- Cam bridge plate(1): This cam regulates the moment the bridge plate will go from the upright position in the start of the lift cycle, to the horizontal position when it is being used as a passage between the platform and the vehicle floor.

The rod (2) can be fixed to the cam (1) in one of nine positions. The difference between the result of various cam positions will be rather large. When a smaller adjustment is needed, the rod itself can be manipulated.



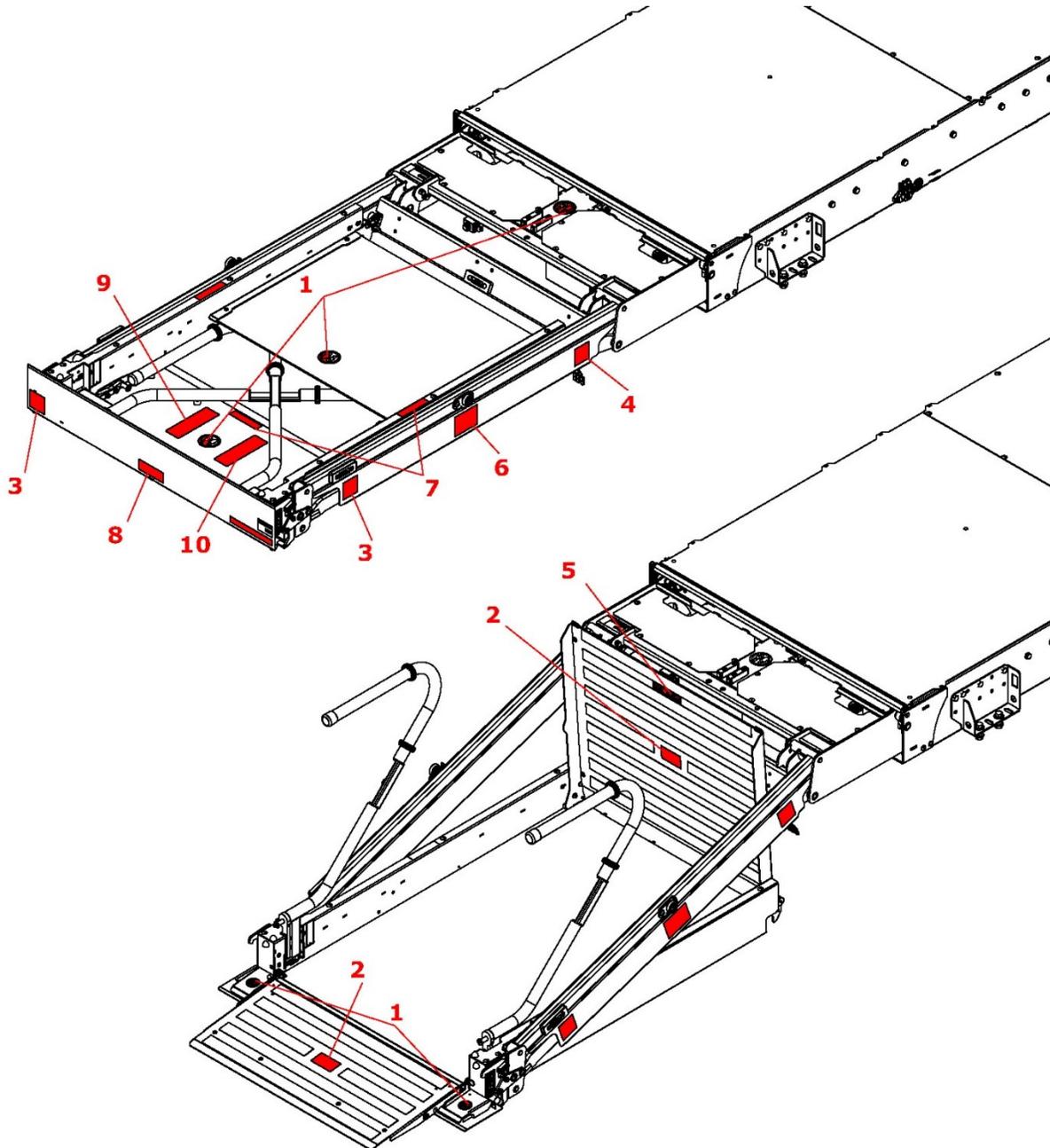
- Rod bridge plate (2): The length of the rod can be altered by releasing the counter nut and taking out the bolt that is attached to the lift arm. Turn the eye hinge to change the length of the rod. Retighten the bolt and the counter nut when finished.



## 6 DECALS

### 6.1 REGULAR DECALS

- The following decals are supplied with each new wheelchair lift and should be affixed to the vehicle body during installation in the manner set forth in the adjacent drawings.
- NEVER remove or paint over any decal. Missing, worn or illegible warning decals must be immediately replaced. Get free replacement decals from DHOLLANDIA. Contact your national DHOLLANDIA distributor. See page 5 for contact info.
- The operator should comply with all affixed safety and operation decals. Be aware that the decals merely summarize the main points, and that the operator must know, understand, and comply with the full contents of the operation manual.
- Note: the decals marked as "EXAMPLE" can vary in function of the maximum rated capacity of the wheelchair lift or the chosen type of external control box.



1

EF0505



2

EF0505.B



3

EF0506



4

EF0503



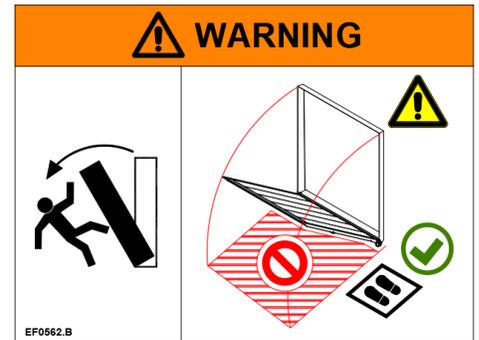
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EF0570.CAP



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EF0562.B



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EF0593.EN



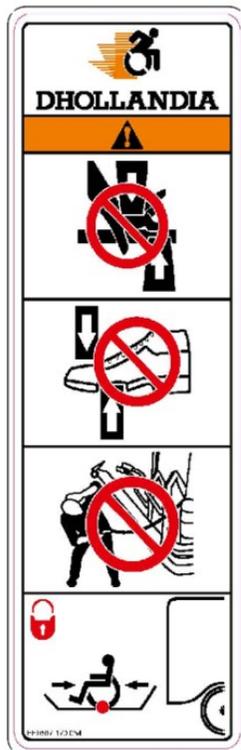
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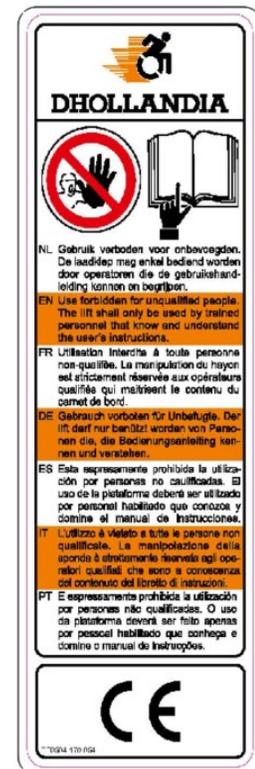
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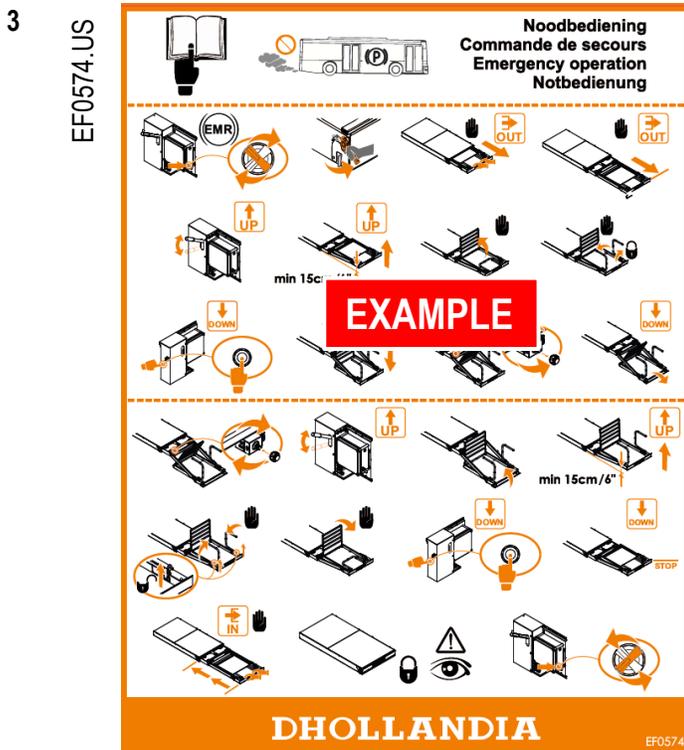
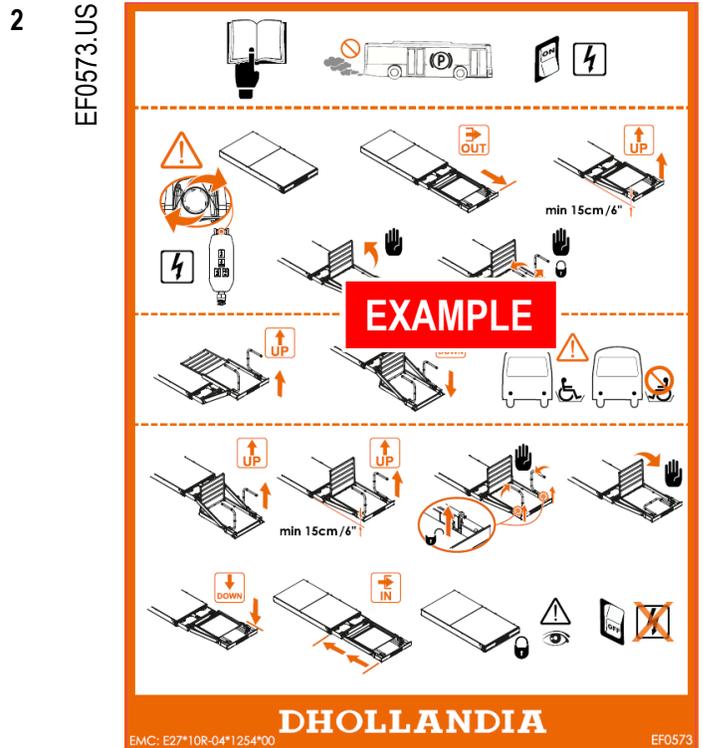
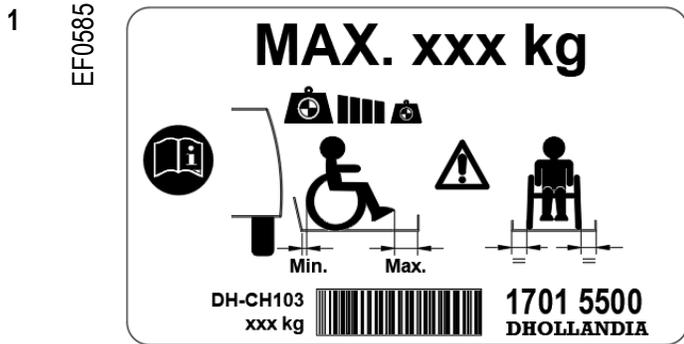
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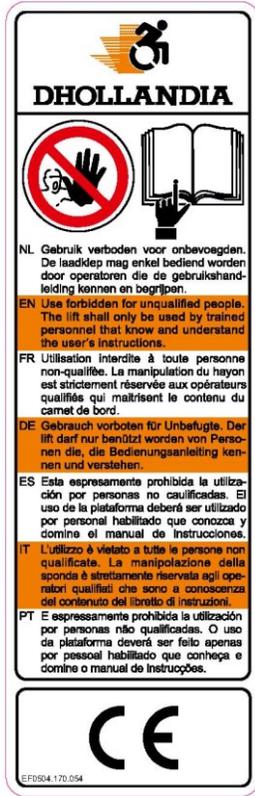
## 6.2 DECALS ON INSIDE OF BUS

- The following decals are supplied loose with the wheelchair lift and shall be affixed by the installer near to the lift at a location clearly visible to the operator, preferably inside the bus to maximize longevity.



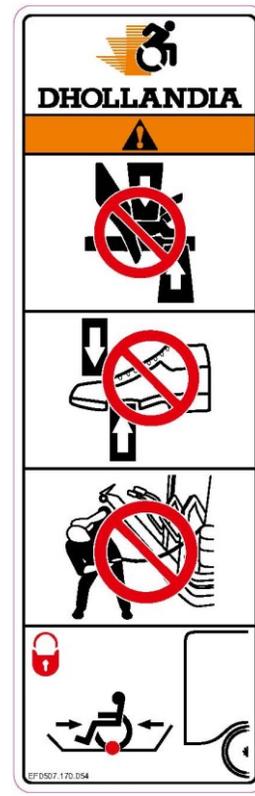
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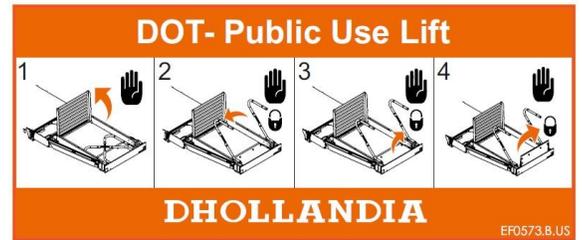
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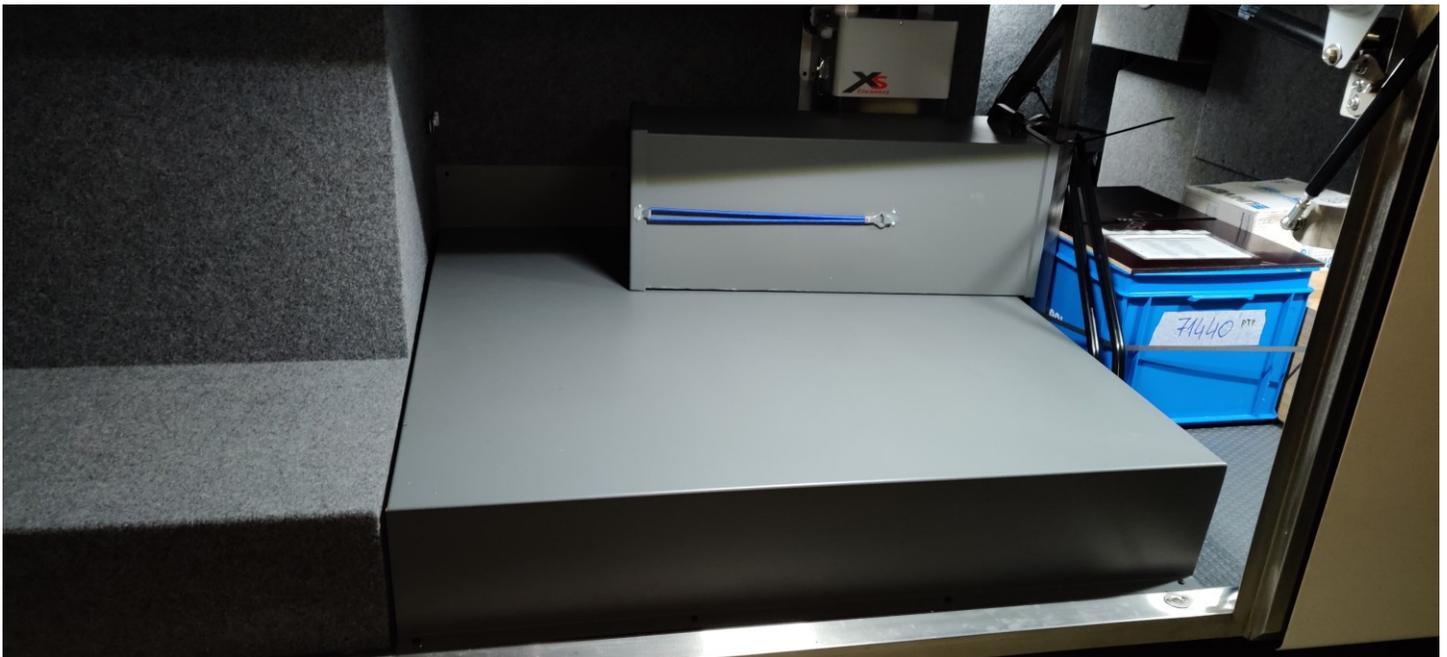
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EF0573.B.US



## 7 FINISHING THE INSTALLATION

When desired, the different lift components inside the luggage compartment can be covered to provide an extra layer of protection and to maintain a certain material finish. When doing so, make sure that all components are still easily reachable for service and maintenance.



## 8 SERVICE/ MAINTENANCE

In case of any malfunctions, unusual sounds or movements, don't hesitate to contact your national DHOLLANDIA distributor/ service point. A malfunctioning wheelchair lift could possibly lead to severe or deadly injuries.

A troubleshooting chart can be found in the maintenance manual. This chart can be used to detect the cause of a problem and to fix this problem. When trying to fix the problem, be sure to have read the operation- and maintenance manual and to be aware of all the possible dangers that are mentioned in these manuals.

## 9 SPARE PARTS

Only original DHOLLANDIA parts should be used as replacements in case of repair. Part lists for the wheelchair lift can be downloaded from the DHOLLANDIA website.



The latest version of all spare parts lists can also be downloaded from the DHOLLANDIA website

[www.dhollandia.com](http://www.dhollandia.com) → Downloads → Spare parts lists → Passenger wheelchair lifts

EXAMPLE		CH103.03.06-01					
		Frame compl. CH103.03.06 + Snr					
Main group:	Tailift types	Subgroup:	Passenger lifts				
Pos.	Code	Description	Qty	Pos.	Code	Description	Qty
1	1000000000	Frame (incl. base)	1	29	1000000000	Roller (incl. base)	2
2	1000000000	Roller (incl. base)	1	30	1000000000	Roller (incl. base)	1
3	1000000000	Roller (incl. base)	1	31	1000000000	Roller (incl. base)	1
4	1000000000	Roller (incl. base)	1	32	1000000000	Roller (incl. base)	1
5	1000000000	Roller (incl. base)	1	33	1000000000	Roller (incl. base)	1
6	1000000000	Roller (incl. base)	1	34	1000000000	Roller (incl. base)	1
7	1000000000	Roller (incl. base)	1	35	1000000000	Roller (incl. base)	1
8	1000000000	Roller (incl. base)	1	36	1000000000	Roller (incl. base)	1
9	1000000000	Roller (incl. base)	1	37	1000000000	Roller (incl. base)	1
10	1000000000	Roller (incl. base)	1	38	1000000000	Roller (incl. base)	1
11	1000000000	Roller (incl. base)	1	39	1000000000	Roller (incl. base)	1
12	1000000000	Roller (incl. base)	1	40	1000000000	Roller (incl. base)	1
13	1000000000	Roller (incl. base)	1	41	1000000000	Roller (incl. base)	1
14	1000000000	Roller (incl. base)	1	42	1000000000	Roller (incl. base)	1
15	1000000000	Roller (incl. base)	1	43	1000000000	Roller (incl. base)	1
16	1000000000	Roller (incl. base)	1	44	1000000000	Roller (incl. base)	1
17	1000000000	Roller (incl. base)	1	45	1000000000	Roller (incl. base)	1
18	1000000000	Roller (incl. base)	1	46	1000000000	Roller (incl. base)	1

## 10 APPENDIX

### 10.1 MEANING OF SAFETY AND WARNING SIGNS

WARNING signs	
	Overview and keep visual control over the working area of the wheelchair lift at all times.
	General warning sign used to alert the user to potential hazards. All messages that follow this sign shall be obeyed to avoid possible harm.
	Entrapment hazard. Keep hands, limbs, loose clothes and long hair away from moving parts.
	Crushing & shearing hazard. Keep hands away from moving parts.
	Crushing & shearing hazard. Keep feet away from moving parts.
	Slipping hazard.
	Tripping hazard.
	Hazard caused by tilting objects.
	Hazard of falling from heights.

MANDATORY ACTION signs	
	Contact your national DHOLLANDIA distributor.
	Consult the DHOLLANDIA website. Download from DHOLLANDIA website.
	Read the manual or instructions.
	Hold onto safety rail. Protect yourself from falling off the platform, or vehicle floor.
	Wear safety gloves.
	Wear safety-toe shoes.
	Wear appropriate work clothes, avoid loose-fitting clothes that might be trapped in the moving parts of the lift.
	Wear safety protection, eye protection and a safety hard hat.
	Use a safety shield.

PROHIBITION signs			
	General prohibition. DO NOT do!		DO NOT use machine by more than 1 operator!
	General prohibition. DO NOT do!		DO NOT step or stand here!

Other frequently used signs	
	Yes do this way. Correct work procedure.
	Yes do this way. Correct work procedure.
	No, DO NOT do this way. -Incorrect work procedure.
	Position the load at the applicable center of gravity or load center. - Follow the load instructions.
	Emergency stop. Will cause an immediate stop of the wheelchair lift.
	Emergency exit. Provision (lever, valve) creating an emergency exit.
	Unlock. Disengage the mechanical locking system.
	Lock. Engage the mechanical locking system.
	Switch ON the electrical power.
	Switch ON the electrical power to the wheelchair lift via the main battery disconnect switch and / or cabin switch.
	Switch OFF the electrical power.
	Switch OFF the electrical power to the wheelchair lift via the main battery disconnect switch and / or cabin switch.
	This is an operation to be executed manually (as opposed to an electrical function controlled by means of one of the control units).

## 10.2 PRESCRIBED TORQUE VALUES FOR BOLTS SUPPLIED WITH WHEELCHAIR LIFT

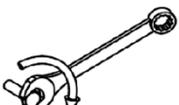
- The installer MUST verify that all bolted connections are fastened with required torque in accordance with the table below.
- After weight testing, the installer MUST verify that all bolted connections between lift frame and mounting plates, and between mounting plates and vehicle chassis are still tightened in accordance with required torque. Retighten if required.
- Use a calibrated torque wrench to tighten bolts and nuts to the prescribed torque value.

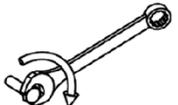
### NOTICE



### WARNING

- Incorrect, too soft or too hard tightening of bolts can lead to accidental fall of the tail lift off the vehicle chassis.
- A fall of the tail lift off the chassis can damage the tail lift and / or vehicle chassis and can cause serious bodily injury or death to the operator and any bystanders.
- Therefore, it is essential that the mounting plates are installed following the instructions of this manual.

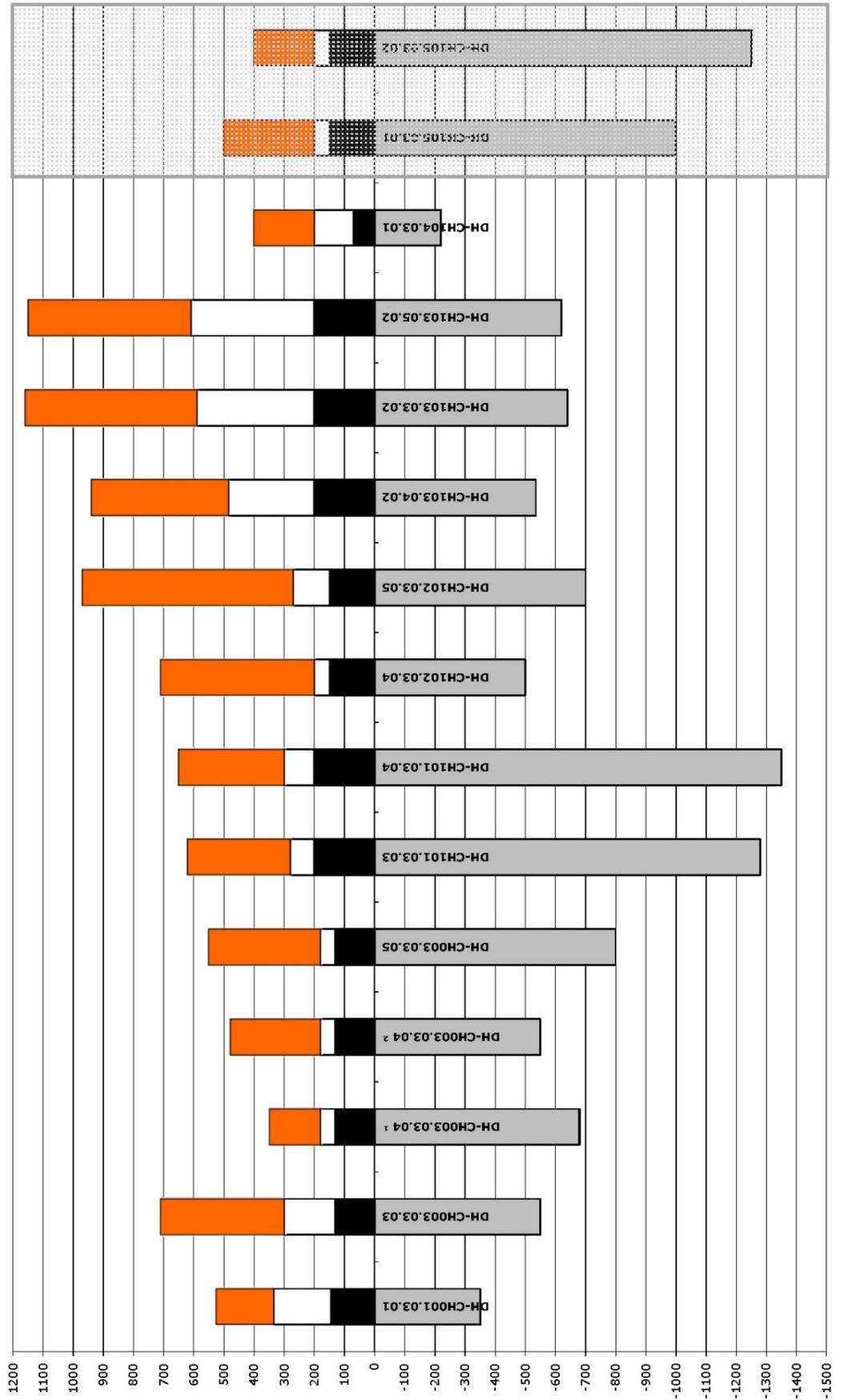
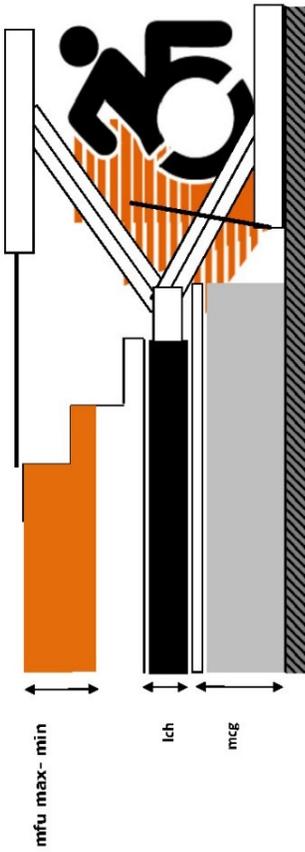
Prescribed torque values				
Nm 	Type of stress			
	Pull		Shear	
	Class		Class	
	8.8	10.9	8.8	10.9
Metric Value				
M08 x 1.25	8	11	23	34
M10 x 1.50	15	22	46	68
M12 x 1.75	26	44	79	116
M14F x 1.50	45	65	135	195
M14 x 2.00	45	65	125	184
M16F x 1.50	100	150	208	300
M16 x 2.00	100	150	195	287
M20F x 1.50	215	310	425	605
M20 x 2.50	191	275	382	550
M24F x 2.00	360	490	715	975
M24 x 3.00	330	472	660	945

Prescribed torque values				
LbsFt 	Type of stress			
	Pull		Shear	
	Class		Class	
	8.8	10.9	8.8	10.9
Imperial Value				
M08 x 1.25	6	8	18	24
M10 x 1.50	11	16.5	34.5	50
M12 x 1.75	17.5	32.5	60.5	85
M14F x 1.50	33	48	99.5	144
M14 x 2.00	33	48	95	136.5
M16F x 1.50	74	110.5	153.5	221.5
M16 x 2.00	74	110.5	144	210
M20F x 1.50	158.5	228.5	313.5	446.5
M20 x 2.50	141	203	282	405.5
M24F x 2.00	265.5	361.5	527.5	719
M24 x 3.00	243.5	348	487	697

Banjo Bolt Torque Specifications					
BSPP Banjo Bolt Size	Newton Metre (Nm)	Pounds Force - Feet (lbf-ft)	Metric Banjo Bolt Size	Newton Metre (Nm)	Pounds Force - Feet (lbf-ft)
1/8	17	12	M10	10.5	13
1/4	34	25	M12	24.5	15
3/8	47	35	M14	48	19
1/2	102	75	M16	85	33
5/8	122	90	M18	136.5	37
3/4	149	110	M20	195	52
			M22	136	55
			M26	195	81

### 10.3 INSTALLATION DIMENSIONS OVERVIEW

**DHOLLANDIA - Survey cassette lifts: from bottom of cassette to floor level**





## 10.4 PRE DELIVERY INSPECTION (PDI) CHECKLIST

<b>1 - General inspection on the fitting parameters</b>	<b>OK</b>
The vehicle is technically suitable for the type of lift and its max. rated capacity.	
The requirement for mechanical or hydraulic stabilizing legs has been checked and been fulfilled (if applicable).	
The actual fitting dimensions don't exceed the theoretical maximum fitting dimensions mentioned in the fitting drawings.	
The lift has been fitted to conform with the fitting instructions of DHOLLANDIA and the Body Building Guidelines of the OEM vehicle manufacturer.	
All safety decals have been affixed in conformance with the installation instructions and are clearly legible.	

<b>2 - Inspection of the mechanical part</b>	<b>OK</b>
The size, number and spread of mounting bolts conform with the installation instructions. All bolts are fastened to the prescribed torque values. Check for potential deformation of the mounting bolts and plates after weight testing.	
All articulation pins and retaining bolts are properly fastened and secured.	
Areas of drilling, cutting, grinding, welding etc. are adequately protected against corrosion.	

<b>3 - Inspection of the electrical part</b>	<b>OK</b>
Voltage of the lift is compatible with voltage of the vehicle. The batteries & alternator suit the lift capacity, application & frequency of use.	
The cabin switch in the driver's cabin and the main battery disconnect switch on the power pack (whichever is applicable) function OK.	
The main fuse or circuit breaker, the battery and ground cables are fitted correctly and conform to the fitting instructions. All bolted connections of cables and fuses are properly tightened and secured.	
All electrical connections are coated with dielectric grease.	
The position of the power pack and remote control conforms to the fitting instructions.	
The "hold-to-run" principle works on all control units: any ongoing movement should immediately stop when one of the corresponding switch is released.	
The cables going from the cassette to the power pack are properly routed, and cannot be damaged during the various movements of the lift.	
The electrical platform mounted options (flashing lights) function properly.	

<b>4 - Inspection of the hydraulic part</b>	<b>OK</b>
There are no visible oil leaks after the load test in operation and at rest.	
The visible oil level corresponds with the oil level instructions of this manual.	
The hydraulic circuits have been purged to remove any remaining air.	
During the various movements of the lift, the flexible oil pipes stay clear from the vehicle chassis & body. They cannot be damaged by rubbing, squeezing, etc.	
None of the thermoplastic pipes have been damaged or marked during welding.	
The cover of the pump unit is mounted and securely latched.	

<b>5 - Inspection of the platform</b>	<b>OK</b>
At vehicle floor level, the platform aligns correctly with the bridge plate creating a smooth passage from the platform to the vehicle floor.	

<b>7- General operation, practical tests</b>	<b>OK</b>
<p>Unfolding and folding test:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> The remote control is mounted in adequate position and can be held on to during the complete lift cycle.</li> <li><input type="checkbox"/> The platform slides in and out without touching the vehicle chassis.</li> </ul>	
<p>General operation with an empty platform: execute all movements several times with ALL available control units. The wheelchair lift should work smoothly and quietly, and almost silently, through its full range of motion.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Any other (creaking, grinding or squeaking) noise should be carefully investigated and solved.</li> </ul>	
<p>Dynamic test at 100% of maximum rated lift capacity:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Verify if the lift has sufficient lift capacity.</li> <li><input type="checkbox"/> Verify the general performance &amp; stability.</li> </ul>	
<p>Overload test - Limitation of the lift capacity:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Place the platform at rest on the ground.</li> <li><input type="checkbox"/> Put a load of 1x maximum rated lift capacity at the centre point of maximum load; adjust the hydraulic pressure on the pressure relief valve so that the maximum rated lift capacity is just reached. Seal the pressure relief valve after final adjustment with the provided tamper-evident cap.</li> <li><input type="checkbox"/> Put a load of 1.25x maximum rated lift capacity at the centre point of maximum load. The platform should not be able to lift vertically.</li> </ul>	

**8– Documentation for the operator**

OK

The OPERATION MANUAL and MAINTENANCE MANUAL are available in the vehicle.

***NOTICE***



**WARNING**

- The PDI check-list completes the final quality inspection of the installation. Once completed successfully, it will certify the safe and reliable operation of the wheelchair lift.
- Operating a wheelchair lift that hasn't successfully passed the PDI can lead to premature wear or damage of the wheelchair lift itself.
- Operating a wheelchair lift that hasn't successfully passed the PDI can put the operator and third parties at great risk and could result in serious personal injury or death.
- It is therefore essential that the PDI check is completed with due diligence, and any shortcomings rectified prior to delivery of the vehicle to the operator.

## 10.5 ELECTRIC AND HYDRAULIC INFORMATION

- The applicable wiring diagrams are stored at the inside of the main external control box.



- A copy of the wiring diagrams can also be obtained from the national DHOLLANDIA distributor [see contact info on page 4 or downloaded from the DHOLLANDIA website:  
[www.dhollandia.com](http://www.dhollandia.com) → **Country & language selection** → **Downloads** → **Electrical & hydraulic wiring diagrams** → ... **select required diagram**
- Remark: the following cable sections are recommended (+) battery cables and (-) earth cables. Note: these are general data. Subject to agreement with our order department, other configurations are possible.

Recommended cable sections for (+) battery cables and (-) earth cables	
Size electric motor	Cable section
<u>12V ● 1200 – 500 W</u>	Length ≤ 10m : 16 mm <sup>2</sup> - 5 AWG Length > 10m : 25 mm <sup>2</sup> - 3 AWG
<u>24V ● 1200 – 500 W</u>	Length ≤ 10m : 16 mm <sup>2</sup> - 5 AWG Length > 10m : 25 mm <sup>2</sup> - 3 AWG

### NOTICE

- To ensure the reliability of the tail lift over many years, it is extremely important that the batteries, their charging system, the (+) battery and (-) earth cables, fuses and circuit breakers are dimensioned sufficiently strong, and fitted with care in accordance with the DHOLLANDIA installation instructions. Insufficient battery power will cause harm and irreparable damage to the electric components of the tail lift (starter solenoid, electric motor, electric switches, etc.).
- Insufficient cable gauge on the (+) battery and (-) earth cables can lead to overheating, bad performance of the electrical system, and premature wear of the main electrical components.
- (-) earth circuits are as important as (+) battery circuits for the good operation of the tail lift, but often overlooked in troubleshooting. Make sure you take these into consideration when executing repairs or maintenance checks.

- DHOLLANDIA mainly uses 3 types of oils in its hydraulic systems.

Option code	Temperature range	Type of oil, examples
Standard	Mild to hot	ISO VG 22
OAH001 winter oil	Down to -30°C / -22°F	ISO VG 15
OAH002 arctic oil	Down to -50°C / - 58°F	Hydr. Fluids such as Castrol Aero HF585B

### NOTICE

It is important to follow these guide-lines with due care. A lot of oils or fluids used in automotive industry, such as transmission fluids and ATF oils, are not suitable for lift use. DHOLLANDIA has not tested the potential consequences of oils and fluids with deviating specifications and cannot be held responsible or legally liable for any damage to the lift caused by the replenishment with non-compatible oils or fluids; nor for the consequential damage to property or physical harm to individuals.

## NOTICE

- Competent and regular preventative maintenance is essential to the operational reliability, and the safety of the operator and bystanders.



- The latest update of our check-list for preventative maintenance & inspection can be downloaded from:

**www.dhollandia.com → Country & language selection → Downloads → Checklists → ... select required manual**

- All maintenance and repair work should be performed by authorized DHOLLANDIA service agents and using only authorized OEM DHOLLANDIA replacement parts.
- Consult the separate MAINTENANCE AND REPAIR MANUAL for safety instructions, maintenance guidelines, and troubleshooting support.
- Lubricate the lift on a regular basis to maximize its durability and operational reliability. This is at least 3 times per year in a single shift operation; more frequently in case of very intensive use (multiple shift, 24h operation, etc.) or use in hostile environment conditions (frequent high pressure cleaning with strong detergents, etc.).



- The latest version of the MAINTENANCE AND REPAIR MANUAL can be downloaded from the DHOLLANDIA website:

**www.dhollandia.com → Country & language selection → Downloads → Operation manuals → ... select required manual**