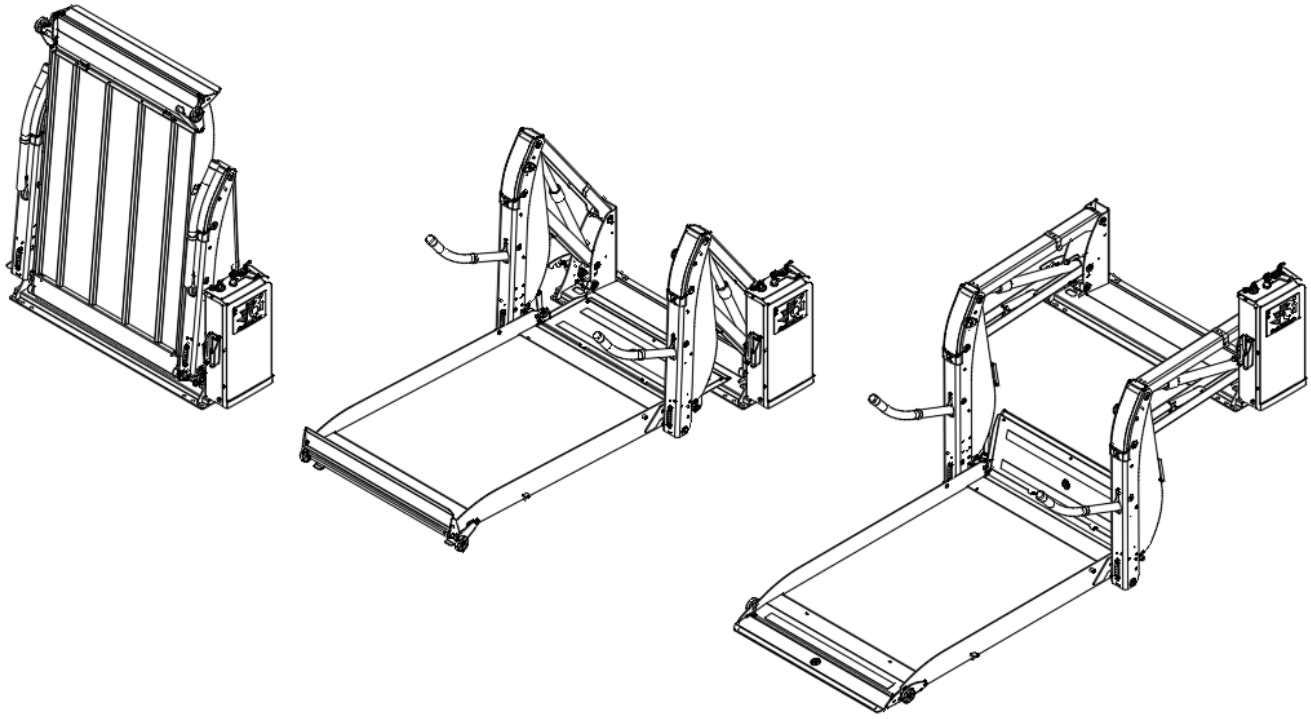
CE
edition

DHOLLANDIA

DH-P2 / PH2
DH-P1 / PH1
INSTALLATION MANUAL



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Read the manual in its entirety before operating the lift

Keep this manual in the vehicle cab, as reference for the driver and lift operator

Order ref: xxx Doc: **FIT_DH-P series_CE_EN_2021** Rev: 0 Date: DEC 01, 2021

TABLE OF CONTENTS

1 GENERAL INTRODUCTION

- This manual provides you with the necessary information for the installation of the DHOLLANDIA DH-Pxx-series 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 van 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 lift, reduce the durability and reliability of the 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 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 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 lifts or to obtain replacement copies of manuals or decals.

2 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 14.1 on page 57 for an overview of signs and symbols used in DHOLLANDIA manuals and their meaning.
- 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 background 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 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 lift. Contact your national DHOLLANDIA distributor. See page 5 for contact info.

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 operation of the associated DHOLLANDIA 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 lifts, to obtain replacement copies of manuals or decals, or to learn about available equipment options for DHOLLANDIA lifts.

If in doubt where to find your national DHOLLANDIA distributor, visit the official DHOLLANDIA website

www.dhollandia.com → Country selection / language selection → Distributors & service

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

www.dhollandia.com → Country selection / language selection → Downloads → Operation 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 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 lift**.
- DHOLLANDIA disclaims liability for any personal injury, death or property damage that results from **improper use of the 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.

4 SAFETY PRECAUTIONS FOR THE OPERATION

- It is essential that the installers understand and apply the safety instructions and precautions contained in the OPERATION MANUAL issued with the lift.
- Therefore, make sure you consult the OPERATION MANUAL prior to installing or operating the lift.

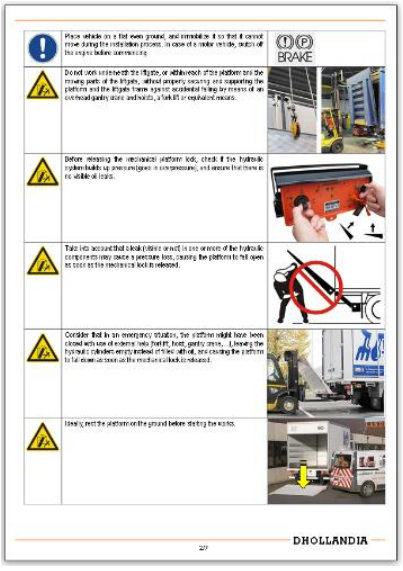
⚠ WARNING

- Improper use of the 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 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 lift.
- Please confirm you have reviewed the most up-to-date version of this manual prior to installation and operation of the associated lift.

5 SAFETY PRECAUTIONS FOR THE INSTALLATION

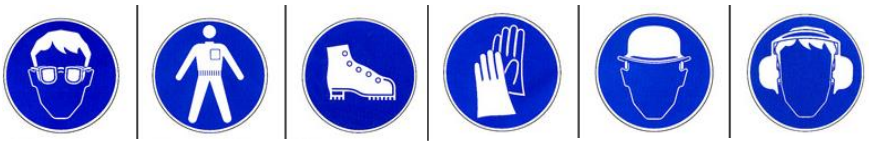
- It is essential that the personnel involved in installing, servicing and repairing lifts, knows, understands and applies the safety instructions and precautions contained in the GENERAL SAFETY INSTRUCTIONS FOR INSTALLATION, MAINTENANCE AND REPAIR manual.
- Make sure you consult these instructions prior to installing the lift.
- Safety instructions are a matter of progressive insight. The basics are listed in this manual, but contact the national DHOLLANDIA distributor for a copy of the latest set of instructions [see contact info on page 5], or download the latest edition from the DHOLLANDIA website:

  www.dhollandia.com → Country & language selection → Downloads → Operation manuals → General information →… select required manual



⚠ WARNING

- The personnel involved in lift installation are exposed to various dangers. Improper use of the 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 lift, can reduce its durability and reliability, 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, lift installation works MUST be restricted to skilled and trained technicians, who have been duly and professionally trained, and know, understand and apply the content of all manuals:
    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 lift.
- In case of doubt, ALWAYS contact the 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 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. Replace worn or damaged tools before use.
- Pay special attention to the lifting devices (forklifts with slings, overhead cranes, hoists, etc.) used to handle the lifts, and for the clamping tools used to clamp the lift, its platform, mounting plates and various other components to the vehicle chassis and / or body. Ensure these tools are appropriate for the job, and in good working order.
- Place the vehicle on a flat even ground and chock the wheels so that it cannot move during the installation. In case of a motor vehicle, make sure the engine is off and the parking brake is engaged.
- Do not work underneath the lift, or within reach of the platform and the moving parts of the lift, without properly securing and supporting the platform and the tail ramp frame against an accidental fall. Use an overhead crane and hoists, a forklift with slings or equivalent means to secure the heavy components.
- Make sure the vehicle battery power is disconnected while installing the lift. Connect the battery power to the lift only when the installation is completed, or as required in the installation instructions.
- NEVER modify DHOLLANDIA 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.

NOTICE

- Make sure the vehicle battery power is disconnected while installing the lift. Connect the battery power to the lift only when the installation is completed, or as required in the installation instructions.
- Except for the support channels and bracing of the side steps, which are usually welded to the cross members of the auxiliary chassis, **DHOLLANDIA lifts are designed as a bolt-on system, and don't require any welding**. **See Appendix 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 vehicle 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 lifts or their mounting plates, NEVER deviate from the described installation procedures without prior written consent by the manufacturer.

6 DESCRIPTION AND TERMINOLOGY

6.1 GENERAL

- The DH-PH2* and DH-PH1* are wheelchair lifts, used to assist wheelchair occupants or persons with an impaired mobility embark and disembark the vehicle. These wheelchair lifts incorporate a number of safety devices that are not required on commercial lifts.
- The DH-P2* and DH-P1* are commercial lifts derived from aforementioned wheelchair lifts. They are used to handle cargo.
- In this manual the following terms will be used:
  1. Lift = refers to both wheelchair and commercial lifts
  2. Wheelchair lift = refers to wheelchair applications only → abbreviation [W]
  3. Commercial lift = refers to commercial cargo handling applications only → abbreviation [C]
- In one and the same sentence, the abbreviations [W] and [C] will be used to include one type of lift and exclude the other.

- DHOLLANDIA lifts are developed and manufactured using state-of-the-art technology, high quality materials and components, and highly skilled workmanship. They comply with the European CE safety regulations mentioned in the Declaration of Conformity issued with each lift (unless otherwise agreed for lifts exported outside the CE region).

- The DH-P2* and DH-PH2* are fully automatic twin-arm lifts, holding the platform at both sides, providing maximum stability and additional lift capacity.
- In travel position, the platform and lift frame are stowed in upright position, just in front of the vehicle doors. Upon deployment, the platform is tilted down from a vertical travel position to a horizontal work position. Handrails, the bridge plate at the inboard platform edge and roll stop at the outboard platform edge are deployed automatically.

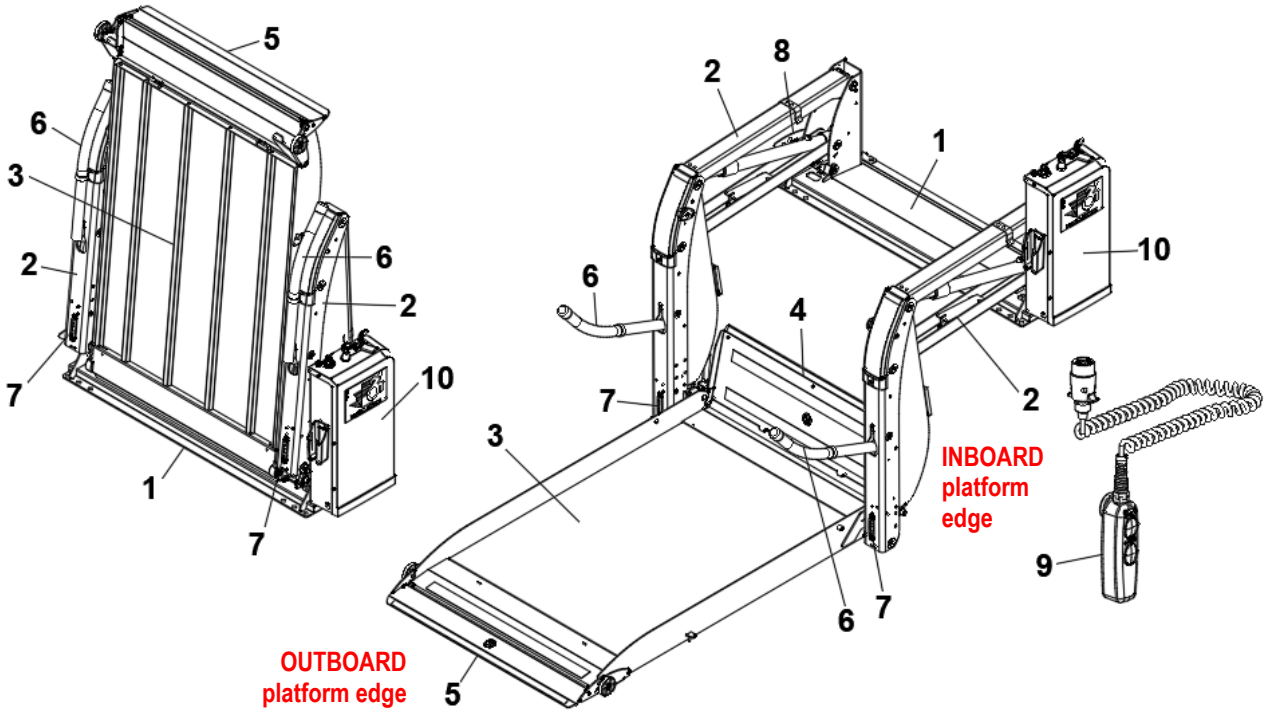
- The DH-P1* and DH-PH1* are operated by a single arm, holding the platform at 1 side only. In standard execution, they have a fixed frame, the closed platform stands in the door aperture. Option OWU006 features a rotating frame, so that the platform can be swung out of the way to a travel position at the side of the vehicle body.
- In travel position, the platform and lift frame are stowed in upright position, just in front of the vehicle doors (standard execution), or swung out of the way against the side of the vehicle body (option OWU006). Upon deployment, the lift frame is swung into the door aperture (only for OWU006). Then the platform is tilted down from a vertical travel position to a horizontal work position. The handrail, bridge plate at the inboard platform edge and roll stop at the outboard platform edge are deployed automatically.

- Main details and terminology: see below.

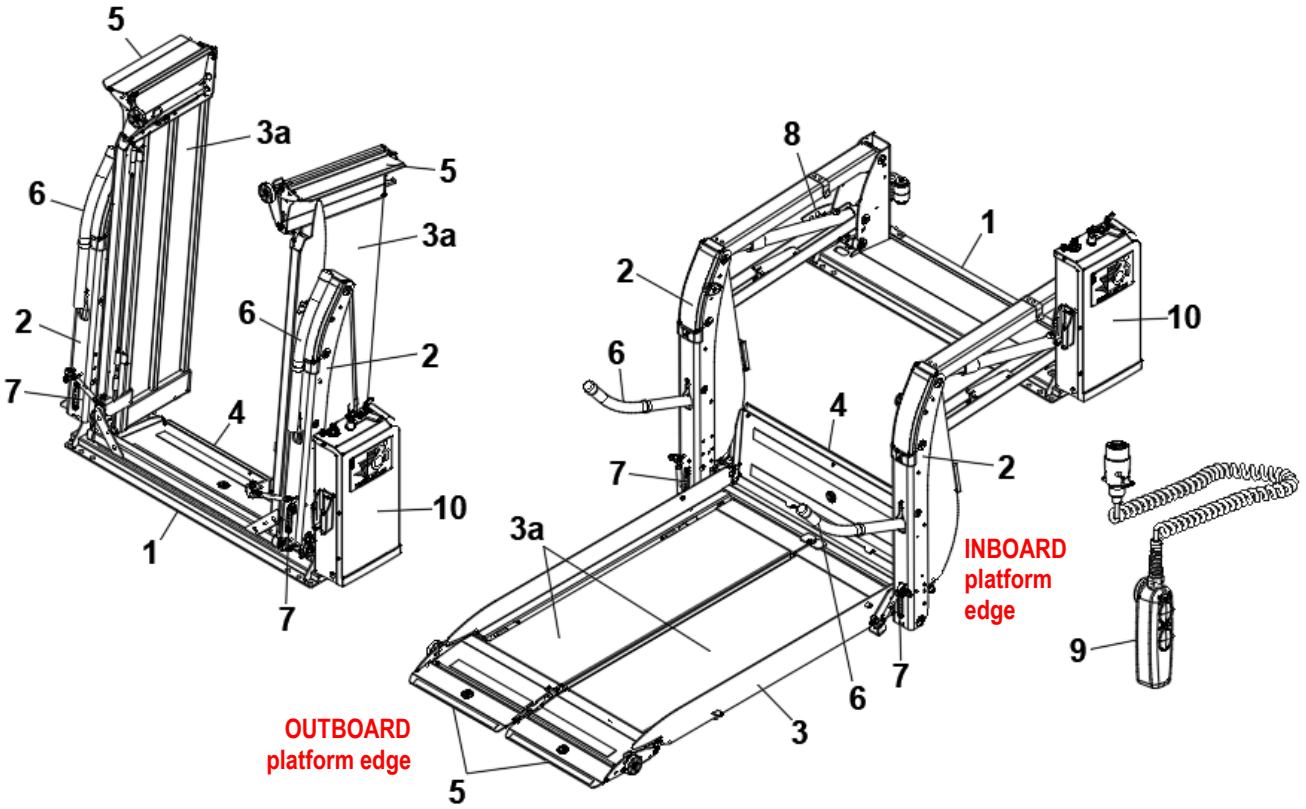
DH-PH2* / DH-P2* ● TERMINOLOGY	
See figure below for parts corresponding to numbers in this table	
#	**Description**
1	**Lift frame**: steel assembly incorporating the lift arms and lift cylinders, who together carry the platform. The lift frame is mounted in a fixed position on the vehicle floor.
2	**Lift arms + lift cylinders:** 2 lift arms L+R actuated by the lift cylinders, used to lift / lower the platform and its load (= functions UP / DOWN).
3	**Platform**: carries the load during lifting / lowering. It is equipped with a bridge plate at the inboard platform edge and a roll stop at the outboard platform edge. The handrails for the platform are integrated in the 2 lift arms. [W] → Platform in mesh steel, evacuating rainwater, snow, dirt, etc. quickly through the platform surface. [C] → Steel platform frame filled with aluminum profiles with anti-slip ripples.
3a	**Platform wings** [OWU002 = vertical split platform]: the platform incorporates 2 articulated platform sections that swing down and form a closed platform surface when the lift is deployed in its work position; and swing up and create an open space between the lift arms when the lift is stowed in its travel position.
3b	**Platform main section** [OWU003 = horizontally foldable platform]: inboard main section of the foldable platform, attached to the lift arms.

3c	**Foldable point** [OWU003 = horizontally foldable platform]: foldable point of the platform, folded automatically as the platform is deployed or stowed.
4	**Bridge plate**: 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.
5	**Roll stop**: 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. [W] → 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.
6	**Handrails [W]**: Rails at both sides of the platform. Lift occupants should hold on to these handrails to prevent them from falling off the platform. The handrails are integrated in the lift arms. They are deployed and stowed automatically in synchronization with the movement of the platform.
7	**Flashing platform lights**: used to make the platform visible to other parties in traffic.
8	**Platform lock:** Mechanical lock to prevent the platform from falling open in case of an accidental loss of hydraulic pressure. 3 types of locks are available: 1. Standard ref. OWF014.1: lock with gas cylinder mounted on 1 side only. This lock only engages in case of a slow hydraulic pressure loss. In normal conditions at full pressure, it remains inactive. 2. Option OWF014.2: same as above, but mounted on both sides of the lift. 3. Option OWF015: Lock with springs instead of gas cylinders. This lock engages automatically when platform is closed, and must be released manually every time before opening the platform.
9	**Remote control with spiral cable**: control box to execute all functions DEPLOY – UP – DOWN - STOW. [W] → 3-button remote control with a safety stop at the vehicle floor prior to stowing the platform [= ref. OWE002]. A 4-button execution [= option OWE003] is available as an option. [C] → 2-button remote control with for all 4 functions. A 3-button execution [= option OWE002] and 4-button execution [= OWE003] are available as an option.
10	**Hydraulic power pack**: contains the electric motor driving the hydraulic pump, the oil tank, and the control valves.

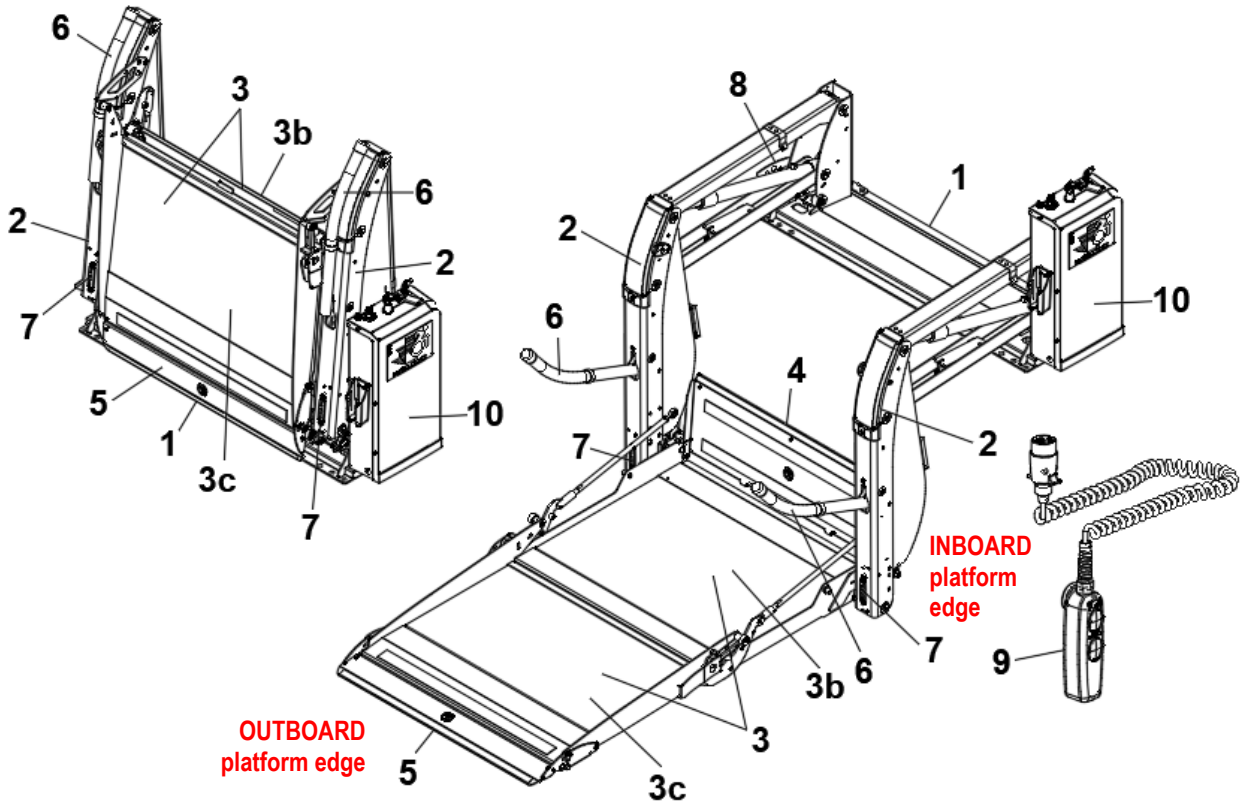
DH-P(H)2* ● TWIN ARM LIFT WITH STANDARD PLATFORM ● TERMINOLOGY



DH-P(H)2* + OWU002 ● TWIN ARM LIFT WITH VERTICAL SPLIT PLATFORM ● TERMINOLOGY

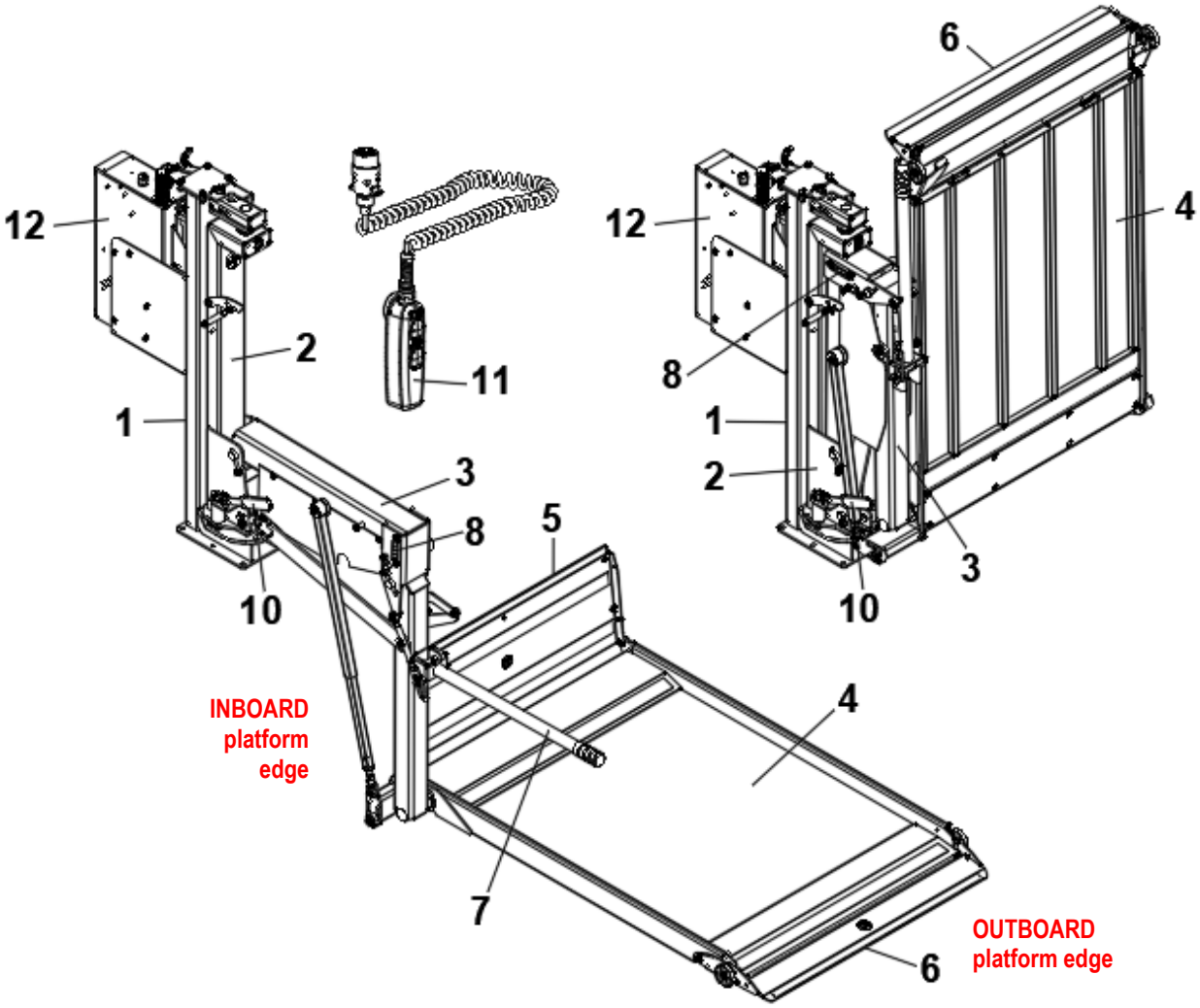


DH-P(H)2* + OWU003 ● TWIN ARM LIFT WITH HORIZONTALLY FOLDABLE PLATFORM ● TERMINOLOGY

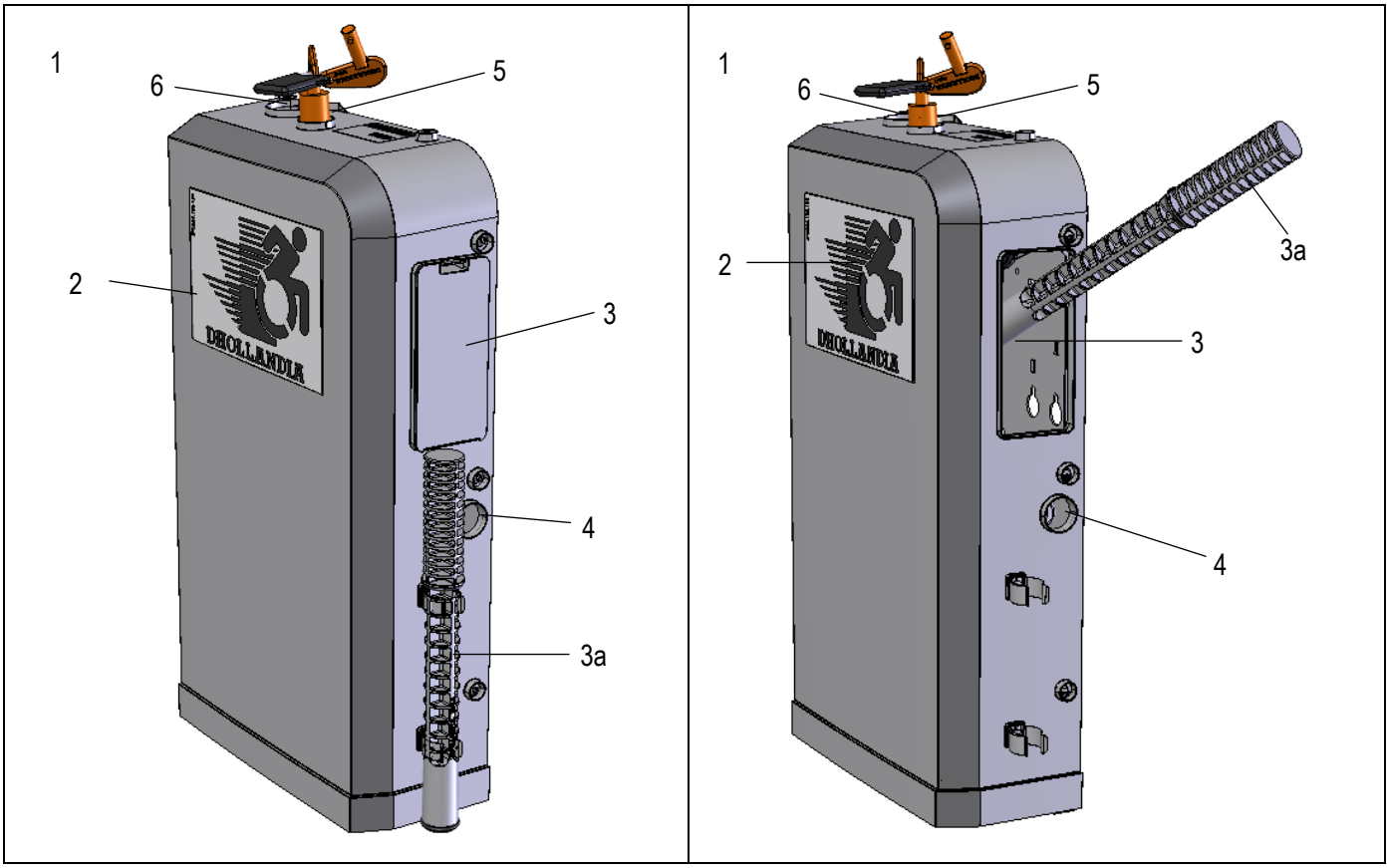


DH-PH1* / DH-P1* ● TERMINOLOGY	
See figure below for parts corresponding to numbers in this table	
#	**Description**
1	**Main column**: steel assembly incorporating the lift frame, lift arm and lift cylinder. The main column is mounted in a fixed position on the vehicle floor and additionally attached to the side of the vehicle body. Following types are available: 1. Standard: fixed column. The main column and lift frame are one and the same assembly. The platform has only 1 travel position just in front of the vehicle doors. 2. Option OWU006: free-access execution. The lift frame can pivot on the main column. The platform can swing from a travel position against the side of the vehicle body to a work position in the door aperture.
2	**Lift frame**: steel assembly incorporating the lift arm and lift cylinder, who together carry the platform.
3	**Lift arm + lift cylinder**: a single lift arm actuated by a lift cylinder, used to lift / lower the platform and its load (= functions UP / DOWN).
4	**Platform**: carries the load during loading / unloading, lifting / lowering. It is equipped with a bridge plate at the inboard platform edge and a roll stop at the outboard platform edge. The handrail for the platform is integrated in the lift arm. [W] → Platform in mesh steel, evacuating rainwater, snow, dirt, etc. quickly through the platform surface. [C] → Steel platform frame filled with aluminum profiles with anti-slip ripples.
5	**Bridge plate**: 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.
6	**Roll stop**: 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. [W] → 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.
7	**Handrails [W]**: Rails at both sides of the platform. Lift occupants should hold on to these handrails to prevent them from falling off the platform. The handrail is integrated in the lift arm. It is deployed and stowed automatically in synchronization with the movement of the platform.
8	**Flashing platform lights**: used to make the platform visible to other parties in traffic.
9	**Platform lock**: Mechanical lock to prevent the platform from falling open in case of accidental loss of hydraulic pressure. The lock incorporates a gas cylinder and only engages in case of a slow hydraulic pressure loss. In normal conditions at full pressure, it remains inactive.
10	**Pivot lock** [OWU006 = pivoting frame]: unlock and lock the pivot lock to pivot the lift frame from a travel position against the side of the vehicle body to a work position in the door aperture and vice versa.
11	**Remote control with spiral cable**: control box to execute all functions DEPLOY – UP – DOWN - STOW. The remote control features 2 buttons for 4 functions.
12	**Hydraulic power pack**: contains the electric motor driving the hydraulic pump, the oil tank, and the control valves.

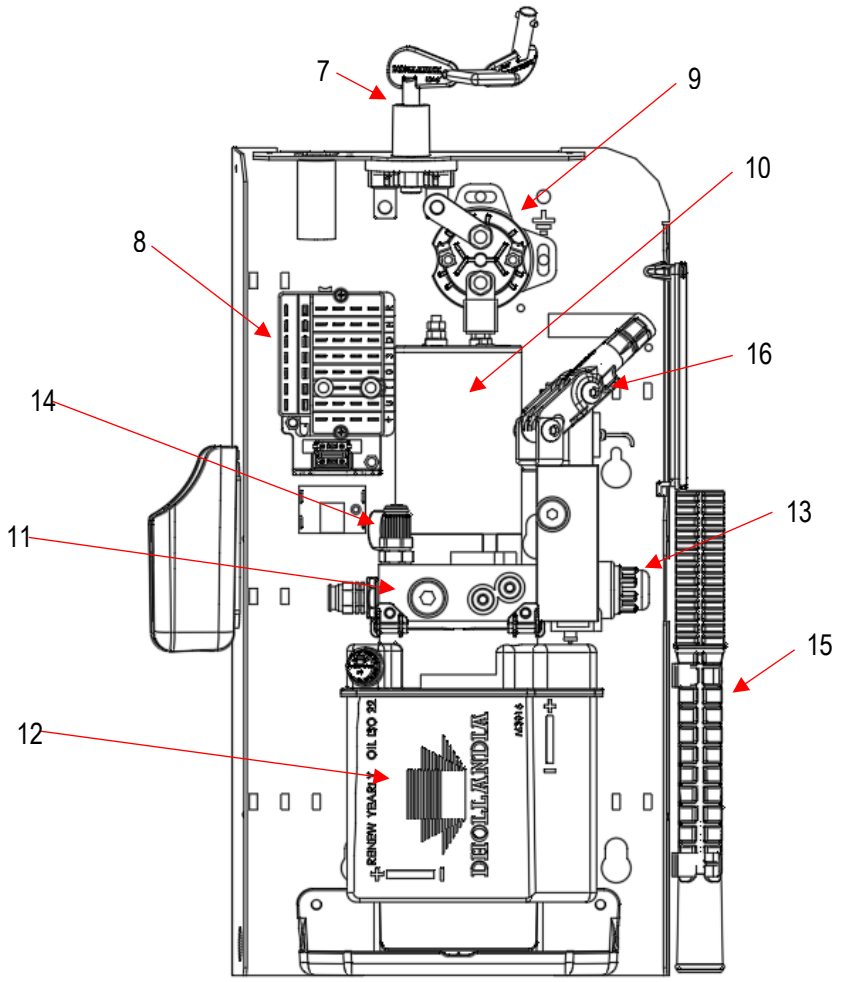
DH-PH1* ● 1 ARM LIFT WITH STANDARD PLATFORM ● TERMINOLOGY



POWER PACK ● TERMINOLOGY	
See figure below for parts corresponding to numbers in this table	
#	**Description**
1	**Power pack**: 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	**Removable cover**: can be removed to get access to the electric motor and hydraulic pump, the oil tank, control valves and electronic control unit.
3	**Hydraulic hand pump**: 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	**Emergency Descent button:** manual back-up button to lower the platform in case of an electrical power failure (=function DOWN).
5	**Main battery disconnect switch**: switches the main power from the vehicle battery to the lift on / off. • It will stop the lift in case of emergency involving hazard to the operator or wheelchair occupant. • It will stop the lift and reduce the risk of a power pack burn-out if the starter solenoid is stuck and the motor runs continuously (control button or contact damaged, starter solenoid short circuited by low voltage).
6	**Electric connection:** plug for the connection of the remote control with spiral cable

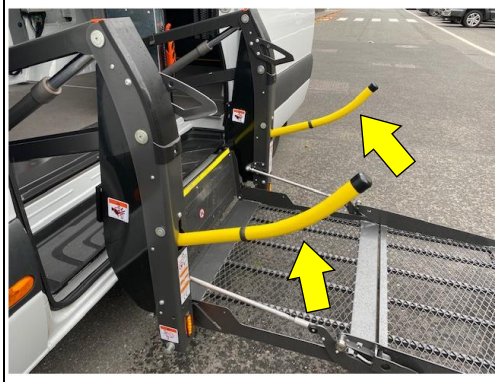


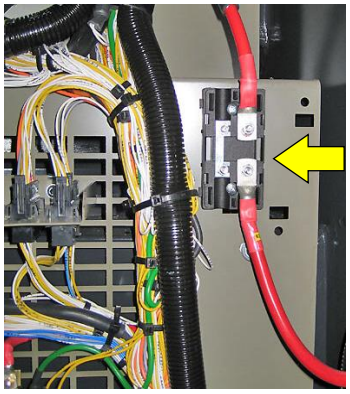
POWER PACK ● TERMINOLOGY	
#	**Description**
7	**Battery Switch:** Delivers main power from the vehicle to the power pack.
8	**Connection Block:** All controls and valves connect to this block to complete control circuits.
9	**Starter Solenoid:** Main solenoid separating the vehicle battery from the pump motor.
10	**Pump Motor:** Drives the flow of hydraulic fluid through the lifting mechanism.
11	**Valve Block:** Directs the flow of hydraulic fluid to actuate lifting and lowering functions.
12	**Oil Tank:** Contains the hydraulic pump and all unused hydraulic fluid for the lift.
13	**Main Lift Circuit Valve:** Primary valve and solenoid used in the lift/lower function with manual override cap.
14	**Pressure Check Valve:** Used to check the operating pressure of the lift.
15	**Emergency Lift Lever:** Used to increase torque applied to the emergency lift pump.
16	**Emergency Lift Pump:** Used during a power failure when a load or passenger must finish a lift/lower cycle.

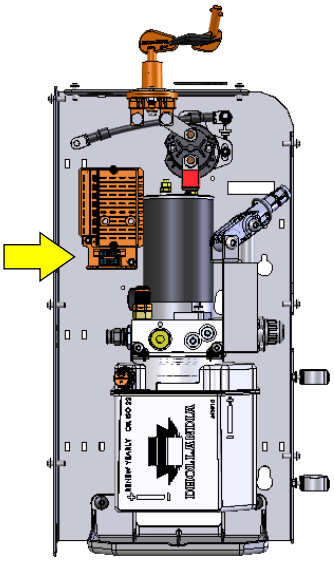
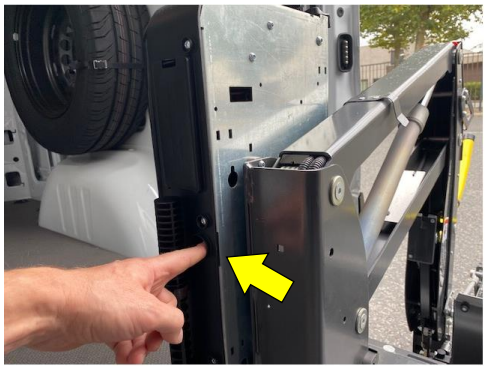
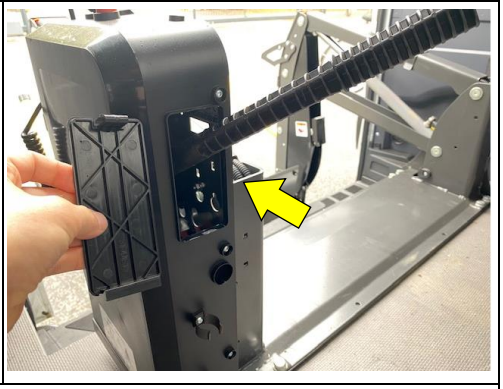


6.2 SAFETY DEVICES

- DHOLLANDIA lifts are equipped with a multiple safety devices to enable its intended use with a maximum degree of safety for the operator, the wheelchair occupant on the platform and any incidental bystanders. The following safety devices are incorporated on the DH-P*... Series:

N°	Description	Image
1	**Anti-slip surface**: the platform surface incorporates an anti-slip profiling to prevent the operator and platform occupants from slipping and falling. [W] → Platform in mesh steel, evacuating rainwater, snow, dirt, etc. quickly through the platform surface. [C] → Steel platform with aluminum anti-slip plate. (P2.05.04) Steel platform frame filled with aluminum profiles with anti-slip ripples. (P2.07.03)	
2	**Roll stop**: 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.	
3	**Handrails(s)** [W]: Rails at both sides of the DH-PH2* platform (*).Lift occupants should hold on to these handrails to prevent them from falling off the platform. The handrail is integrated in the lift arm. It is deployed and stowed automatically in synchronization with the movement of the platform. (*) 1 handrail only on the 1-arm lift DH-PH1*	
4	**Bridge plate**: 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.	

5	**Flashing platform lights**: used to make the platform visible to other parties in traffic.	
6	**End stop for STOW** [W]: DH-PH2* wheelchair lifts are supplied with a 3-button remote control and a safety stop at the end of each lift movement (= UP) before the platform can be closed (= STOW). On DH-P* lifts equipped with a 2-button remote control, the platform will stop at the vehicle floor if the platform is loaded and the UP button of the remote control released upon arrival. The platform will continue to close (= STOW) if the platform is empty and the UP button kept activated.	
7	**Platform lock:** Mechanical lock to prevent the platform from falling open in case of a slow loss of hydraulic pressure. See also terminology description above for differences between DH-P2 / PH2* and DH-P1 / PH1*.	
8	**Main battery disconnect switch**: switches the main power from the vehicle battery to the lift on / off. • It will stop the lift in case of emergency involving hazard to the operator or wheelchair occupant. • It will stop the lift and reduce the risk of a power pack burn-out if the starter solenoid is stuck and the motor runs continuously (control button or contact damaged, starter solenoid short circuited by low voltage).	
9	**Main battery fuse:** 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.	

10	**15A fuse:** fuse is used to protect the control unit, associated wires and the printed circuit against short circuits and amperage peaks.	
11	**Emergency descent button:** manual back-up button to open (= DEPLOY) and lower (= DOWN) the platform in case of an electrical power failure.	
12	**Hydraulic hand pump**: manual back-up pump to lift the platform in case of an electrical power failure (= UP).	
13	**Pressure relief valve:** 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 (= UP).	
14	**Pressure compensated flow valves**: flow valves are integrated in the hydraulic circuits to ensure the platform lowers at a safe speed, both empty and when fully loaded.	
15	**Decals**: 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.	

7 GETTING STARTED

- Many vehicle manufacturers issue important instructions on various aspects of the lift installation, specific to the brand and type of chassis. Examples:
  - → welding instructions or the prohibition to weld
  - → instructions on chassis drilling and bolt-on connections to the chassis
  - → recommendations on the use of hydraulic stabilizing legs
  - → guidelines on fuses, electrical interfaces, and the connection of battery and ground cables, etc.

NOTICE

- ALWAYS verify and ensure compatibility between the lift and the vehicle.
- ALWAYS ensure compliance with the fitting and body building instructions issued by the vehicle manufacturer.
- Make sure planned modifications to the vehicle chassis and body will not adversely affect the strength and integrity of the vehicle.
- If the instructions of vehicle manufacturer conflict with the installation instructions issued by DHOLLANDIA (e.g. on fuse ratings, etc.), contact your national DHOLLANDIA distributor for further advice. See contact info on page 4

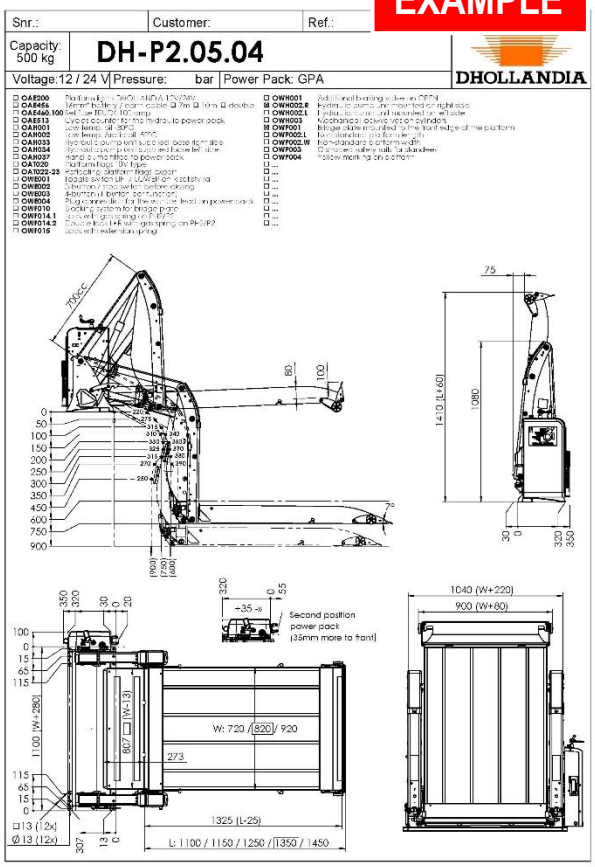
- Verify if the installation kit is complete and that all parts needed to install the lift, are present.
- Compare the voltage of the batteries with the voltage of the hydraulic power pack of the lift.
- Compare the actual vehicle dimensions with the maximum installation parameters indicated in the technical documentation. If the actual dimensions go outside of the maximum installation parameters, DON'T continue and contact your national DHOLLANDIA distributor for further advice.
- Verify and make sure that the vehicle chassis and body are strong enough to support the forces induced by the lift at its maximum rated capacity. Refer to the instructions of the vehicle manufacturer for calculation and construction guidelines.
- Execute the required stability and weight distribution calculations.
- Make sure that the body is accurately fitted to the vehicle chassis.
- Remove all objects that impede the installation of the lift (bumper bar, spare wheel carrier, pallet racks, tool boxes, etc.). If necessary, consult with the vehicle manufacturer for replacement solutions (e.g. special spare wheel carriers, exhaust pipe modifications, etc.).
- Finish the lift in accordance with the road legislation of the country where the vehicle will be registered.
- When connecting hydraulic fittings, make sure that the connections are clean, and that you don't contaminate the hydraulic oil.
- Grease all bearings and pins before putting the lift into service. Preferably, put grease in the bearings before mounting the corresponding articulation pin.
- After installation, work through the checklist of the Pre-Delivery Inspection (PDI). Make sure the final inspection is signed off by an inspector who is not part of the installation team.
- Do not pressurize any lift functions (OPEN / CLOSE) before the installation is fully finished.
- During installation and testing, verify and make sure that the lift and its moving parts don't interfere with any of the vehicle systems (e.g. the suspension, braking system, hydraulic and electrical circuits, etc.), or cause damage to them.

8 INSTALLATION SPECIFICATIONS AND GUIDELINES

8.1.1 Installation dimensions

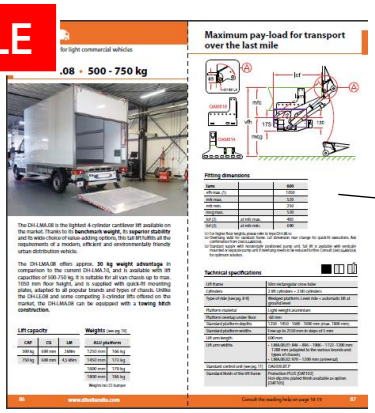
- The order form will provide the critical installation dimensions that should be observed. See paragraph 8.1.4 for a detailed overview of the installation dimension for your lift type.

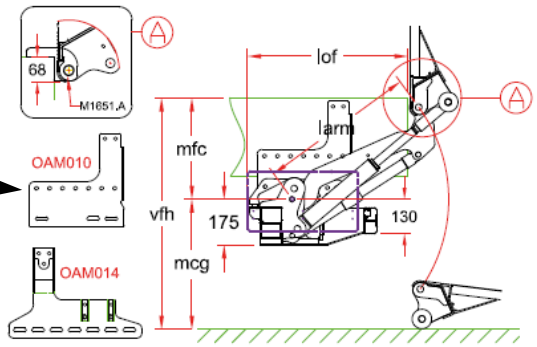
EXAMPLE



- If no order form is available, use the DHOLLANDIA POCKET GUIDE (paper or App) to learn the maximum and minimum installation parameters per type of lift.

EXAMPLE





Fitting dimensions

larm		600
vfh max. (1)		1050
mfc max.		520
mfc min.		250
mcg max.		530
lof (2)	at mfc max.	485
lof (2)	at mfc min.	690

- Compare the maximum installation parameters indicated in these sources with the actual vehicle dimensions. If the actual dimensions go outside of the maximum installation parameters, DON'T continue and contact your national DHOLLANDIA distributor for further advice.

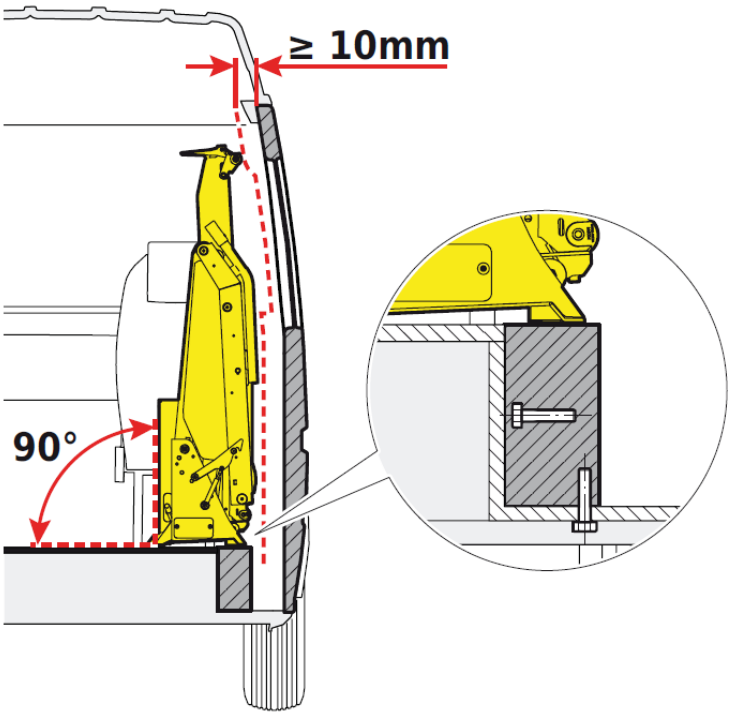
8.1.2 Vehicle suitability

- The P*-series lifts can be installed on vehicles such as vans, minivans, etc. with a floor-height of max 900mm.
- Compare the actual dimensions of the vehicle with the data given in the technical specifications in paragraph 8.1.4.
- Check if the vehicle chassis and body are sufficiently strong to carry the proper weight of the lift with its nominal load, both statically and dynamically.
- When unsure about the suitability of the vehicle, contact your DHOLLANDIA distributor.

- Practical check: On technical drawings in paragraph 8.1.4, a bumper clearance curve is drawn. Use the dimensions on this drawing to verify the suitability of your vehicle.
- Small differences can be compensated by placing the lift at a small angle. See paragraph 9.3.2.

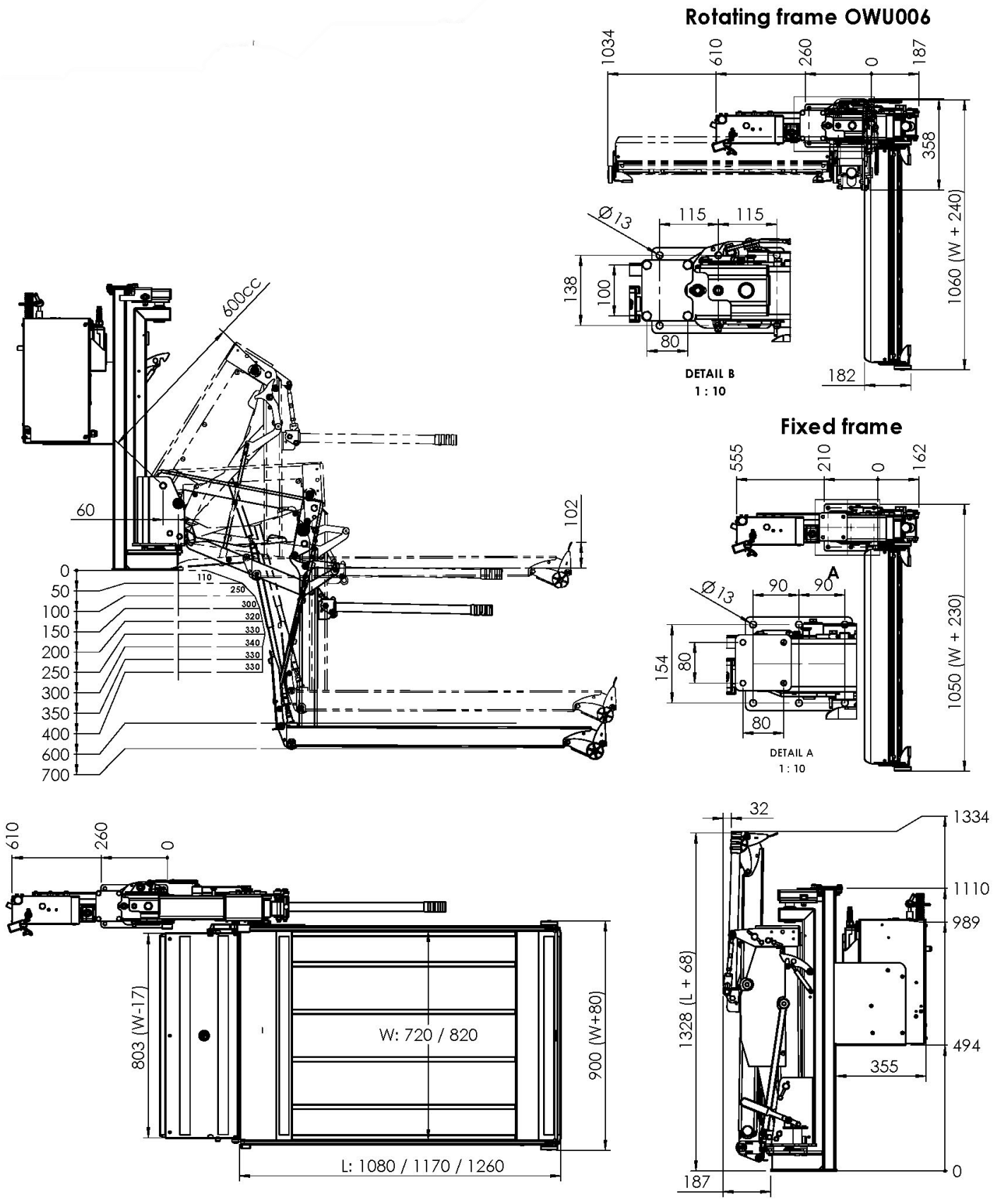
8.1.3 Lateral installations

- When the lift is located at the side door it is possible that it hangs over a stepwell.
  A support must be created to fill the gap between the base plate and the step.
- This support needs to be level with the vehicle floor and sufficiently strong to sustain the forces induced by the load.

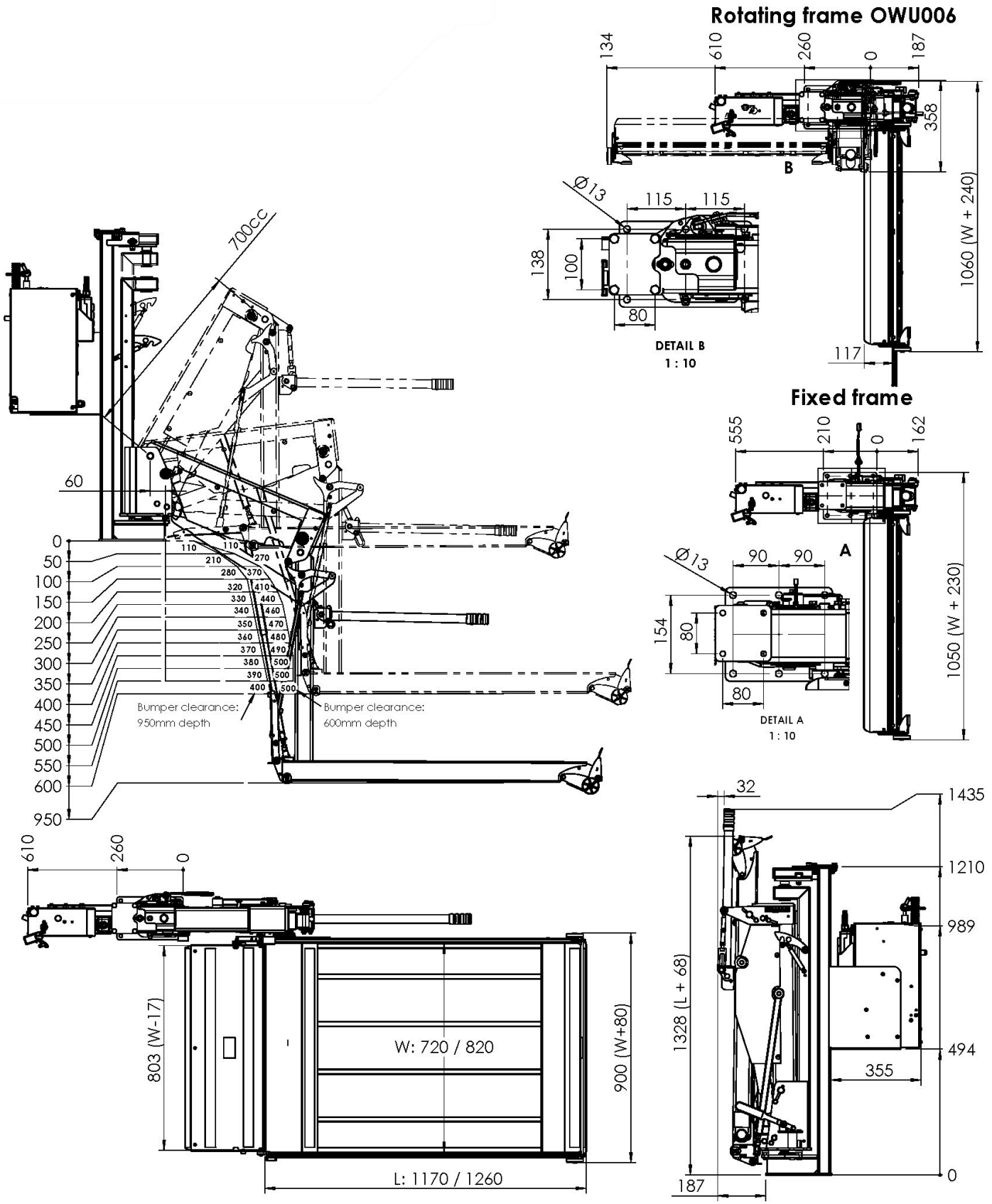


8.1.4 Technical specifications

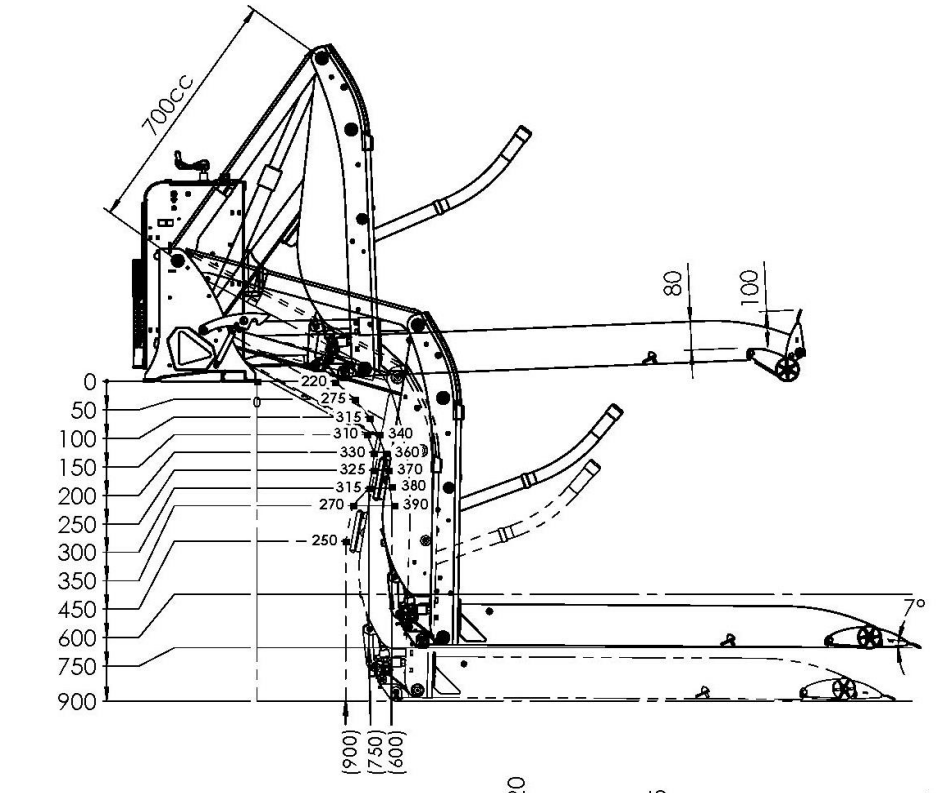
- P(H)1.03.03

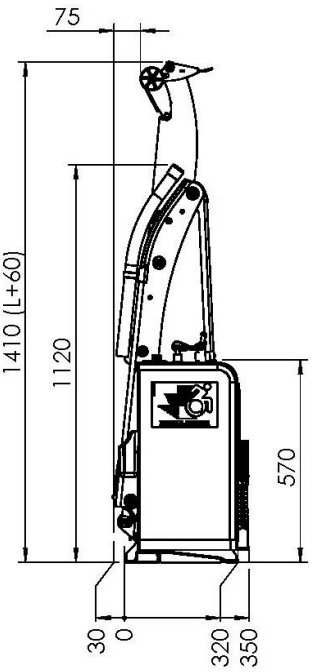


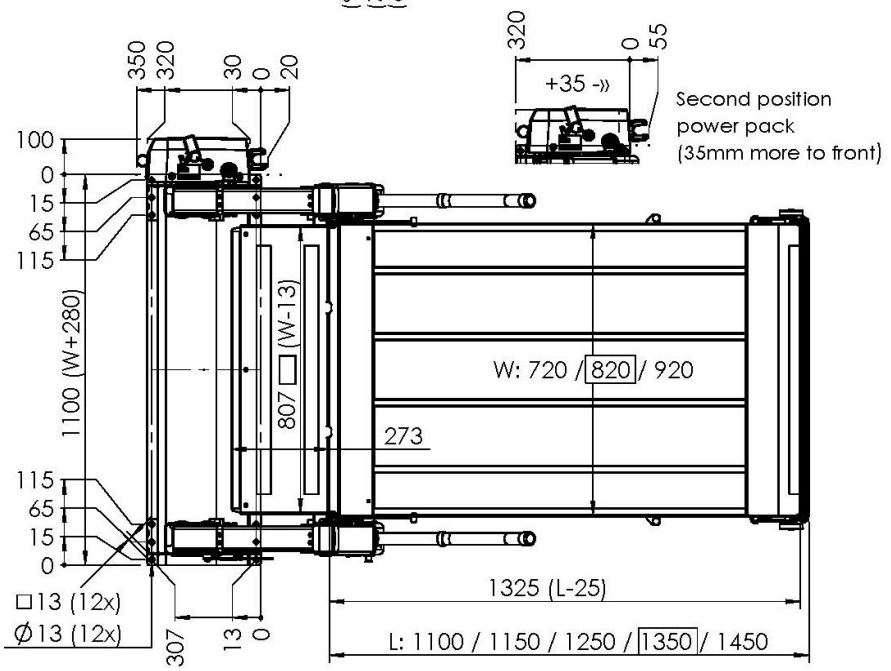
- P(H)1.03.03 - OWU12.0700

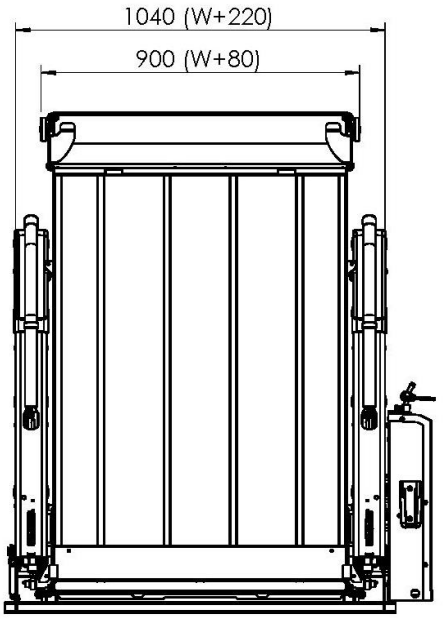


- PH2.03.04

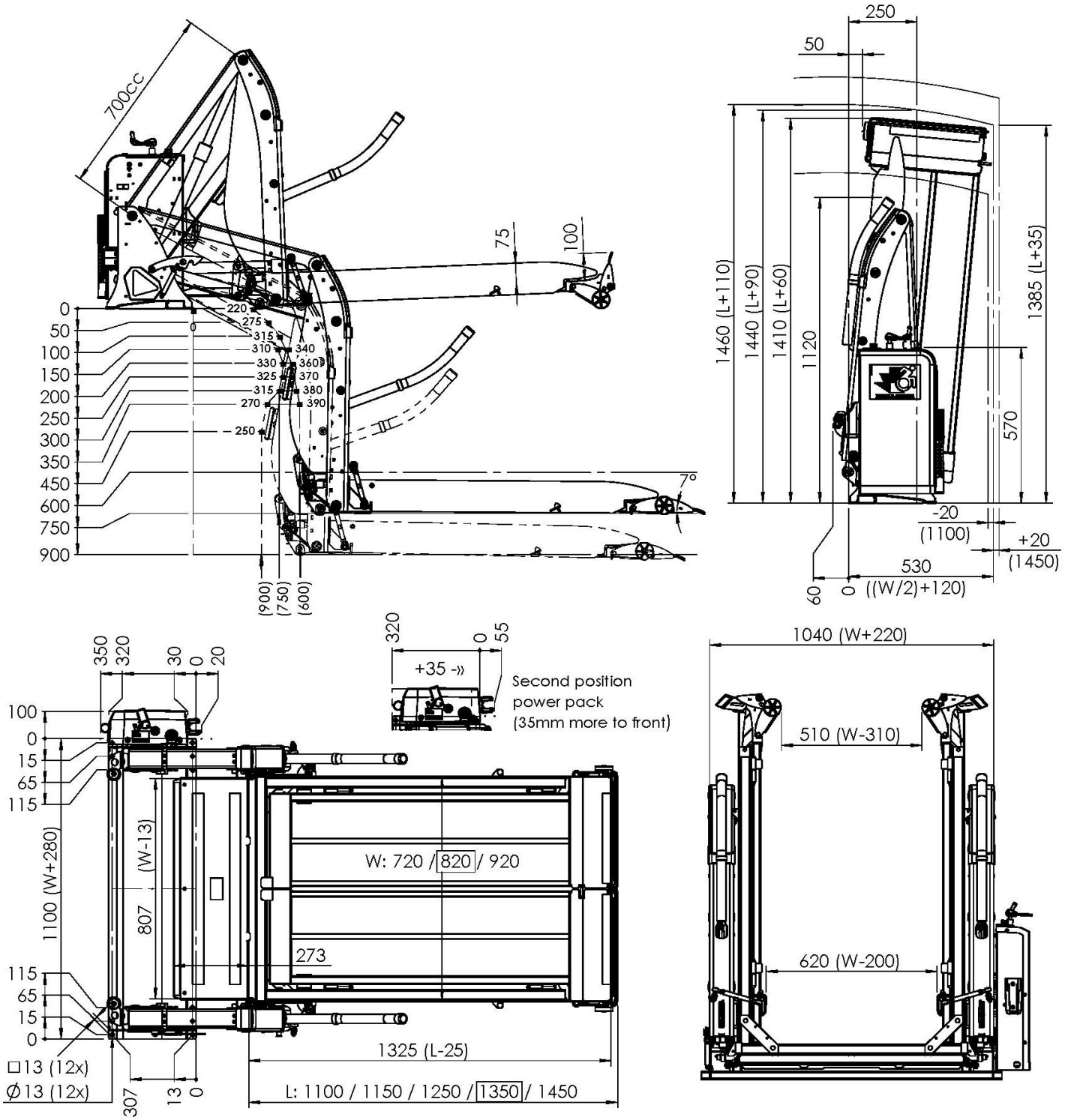

700cc
80
100
0
50
100
150
200
250
300
350
450
600
750
900
220
275
315
310
340
330
360
325
370
315
380
270
390
250
7°
(900)
(750)
(600)


75
1410 (L+60)
1120
570
30
0
320
350

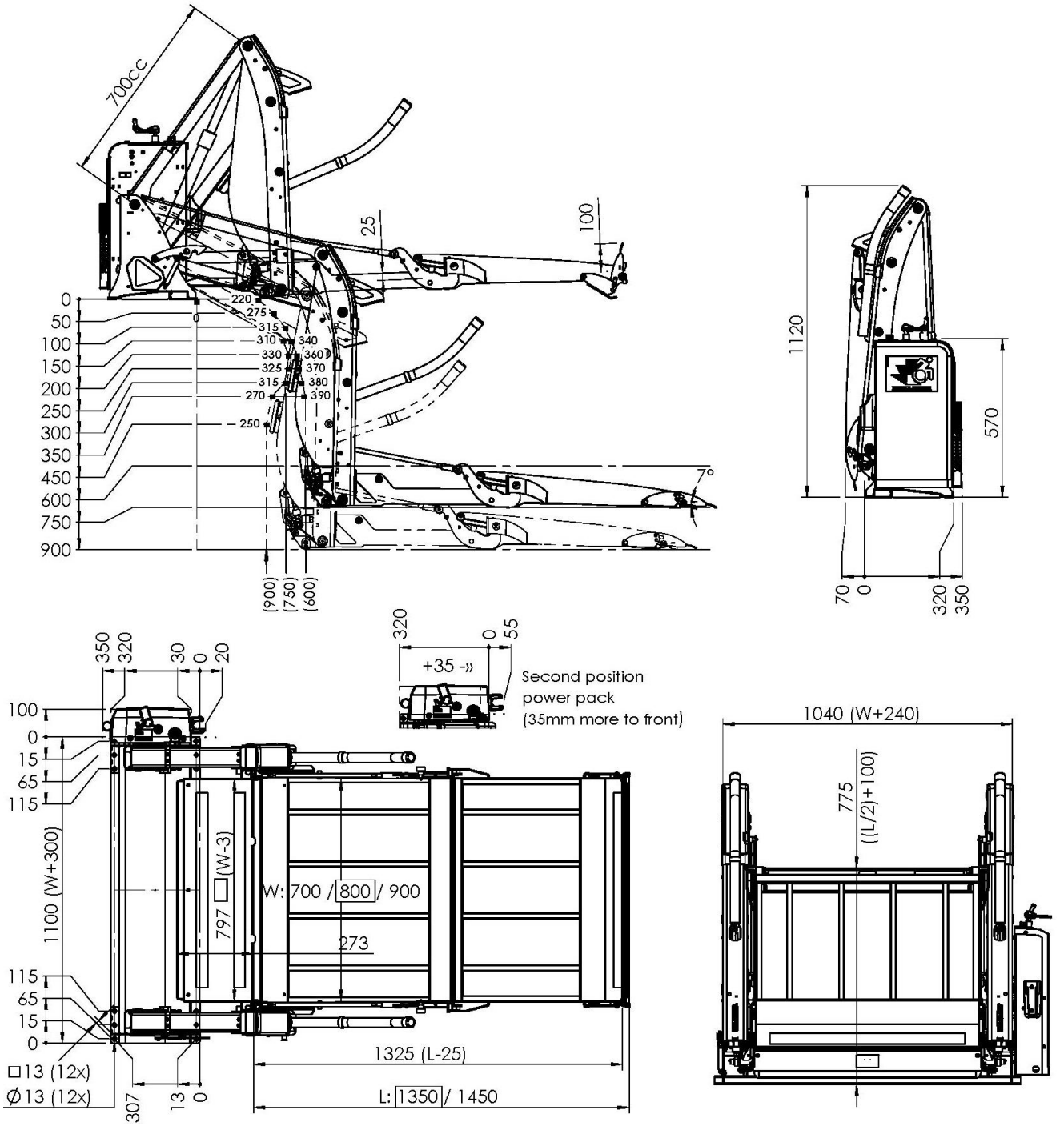

350
320
30
0
20
320
0
55
+35 -»
Second position
power pack
(35mm more to front)
100
0
15
65
115
1100 (W+280)
807 □ (W-13)
W: 720 / 820 / 920
273
115
65
15
0
□13 (12x)
Ø13 (12x)
307
13
0
1325 (L-25)
L: 1100 / 1150 / 1250 / 1350 / 1450


1040 (W+220)
900 (W+80)

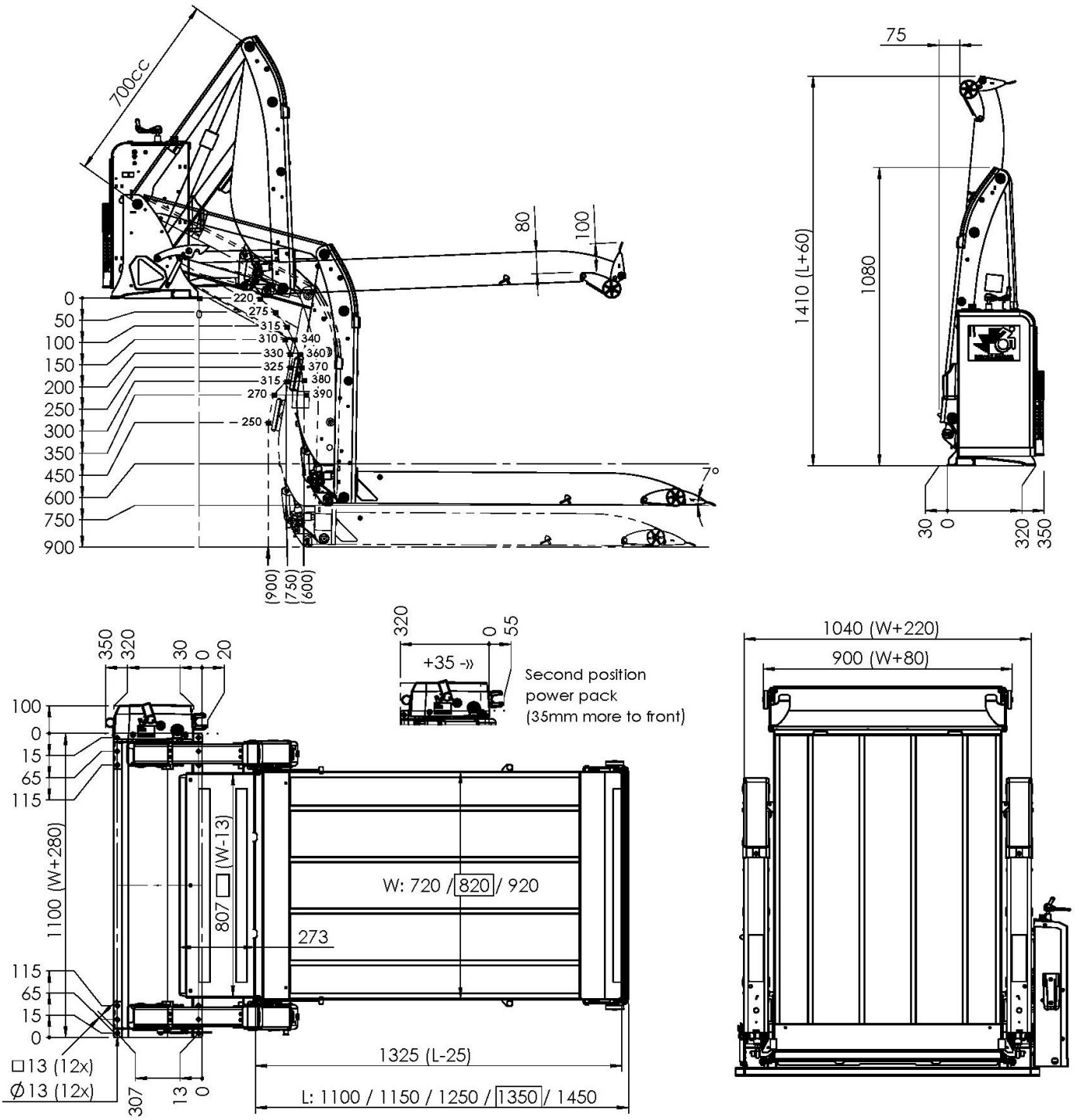
- PH2.03.04 - OWU002



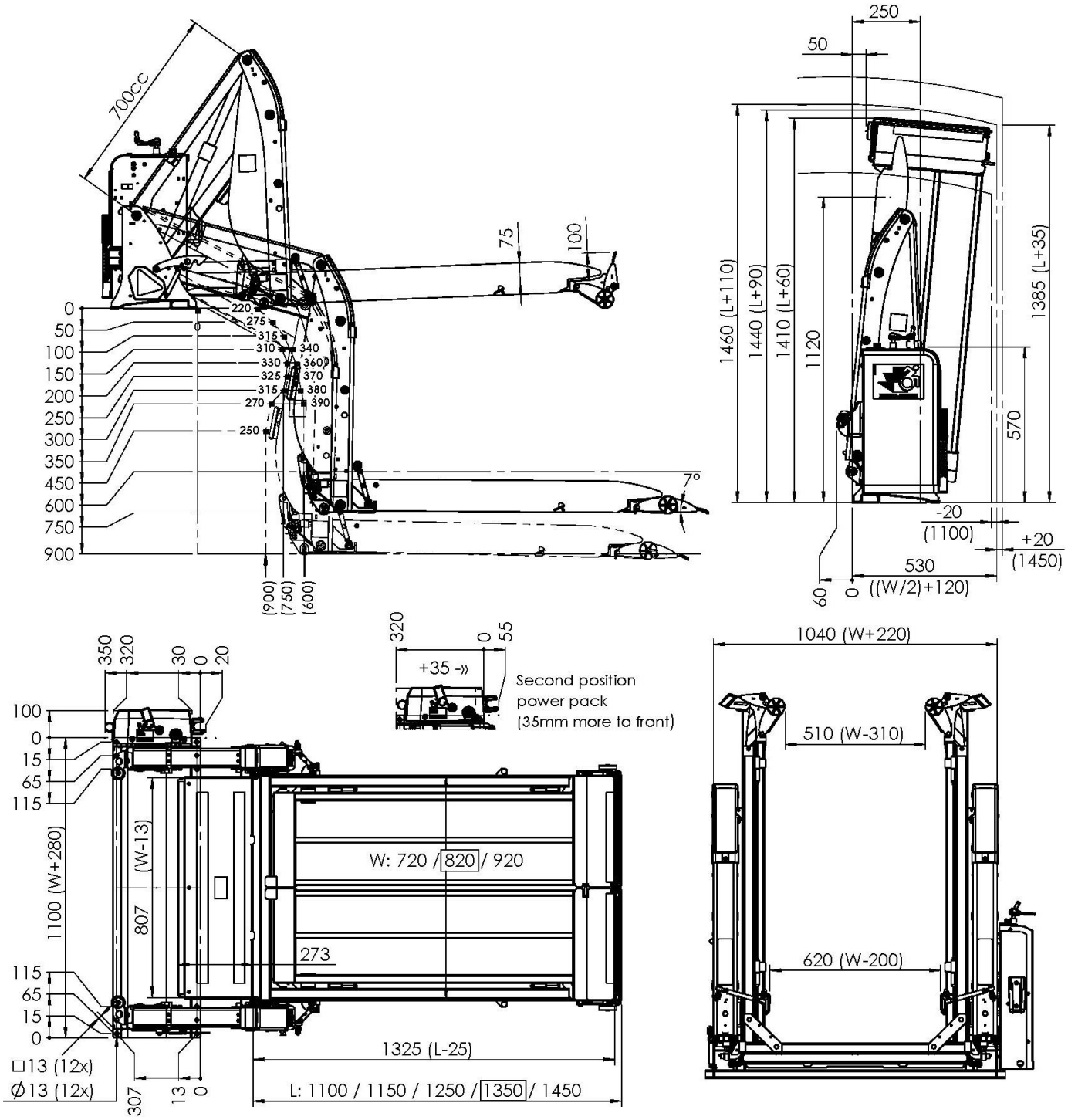
- PH2.03.04 - OWU003



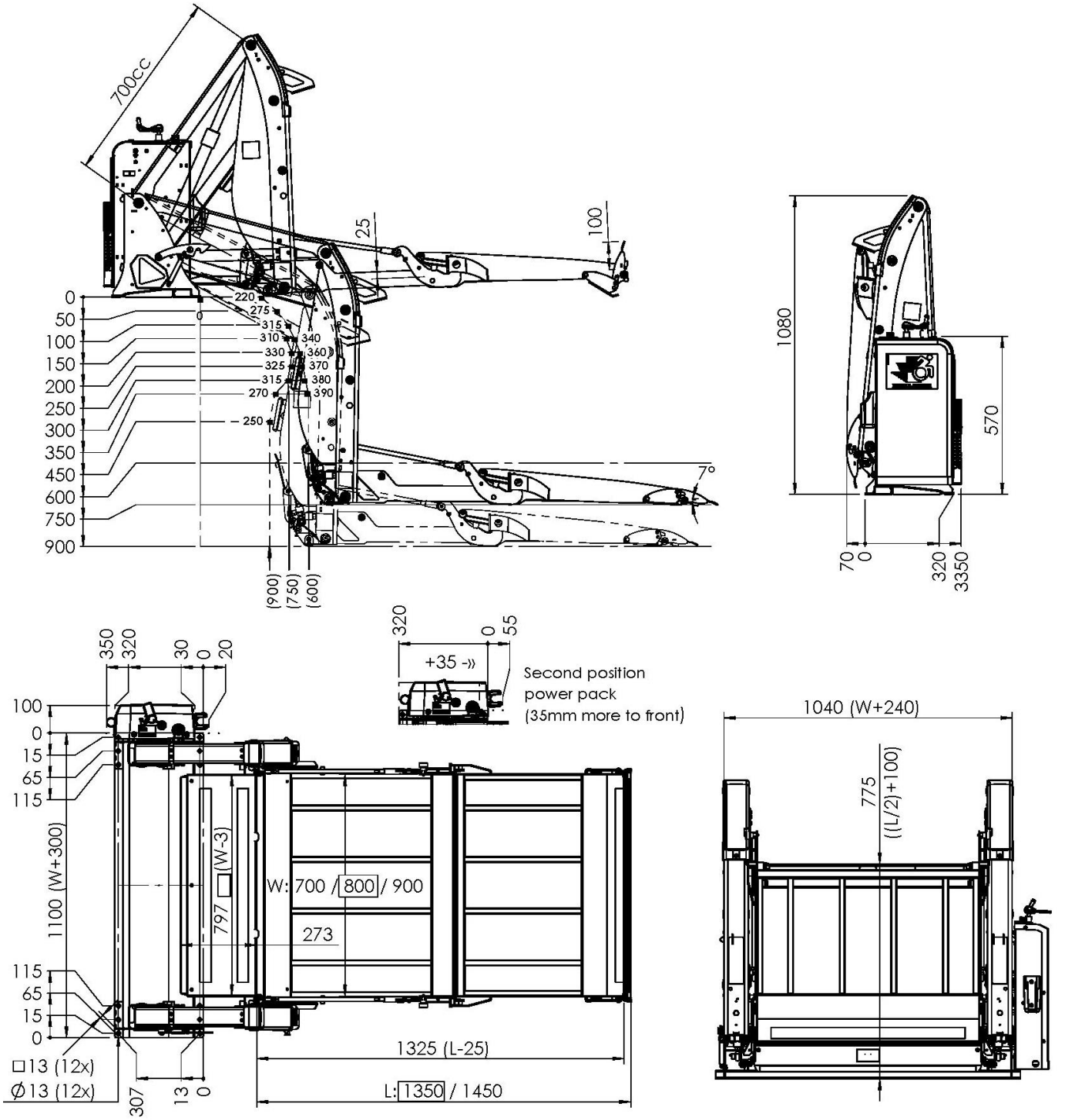
- P2.05.04


700cc
80
100
0
50
100
150
200
250
300
350
450
600
750
900
220
275
315
310
340
330
360
325
370
315
380
270
390
250
7°
(900)
(750)
(600)
75
1410 (L+60)
1080
30
0
320
350
320
55
+35 -»
Second position
power pack
(35mm more to front)
350
320
30
0
20
100
0
15
65
115
1100 (W+280)
807 □ (W-13)
W: 720 / 820 / 920
273
115
65
15
0
□13 (12x)
Ø13 (12x)
307
13
0
1325 (L-25)
L: 1100 / 1150 / 1250 / 1350 / 1450
1040 (W+220)
900 (W+80)

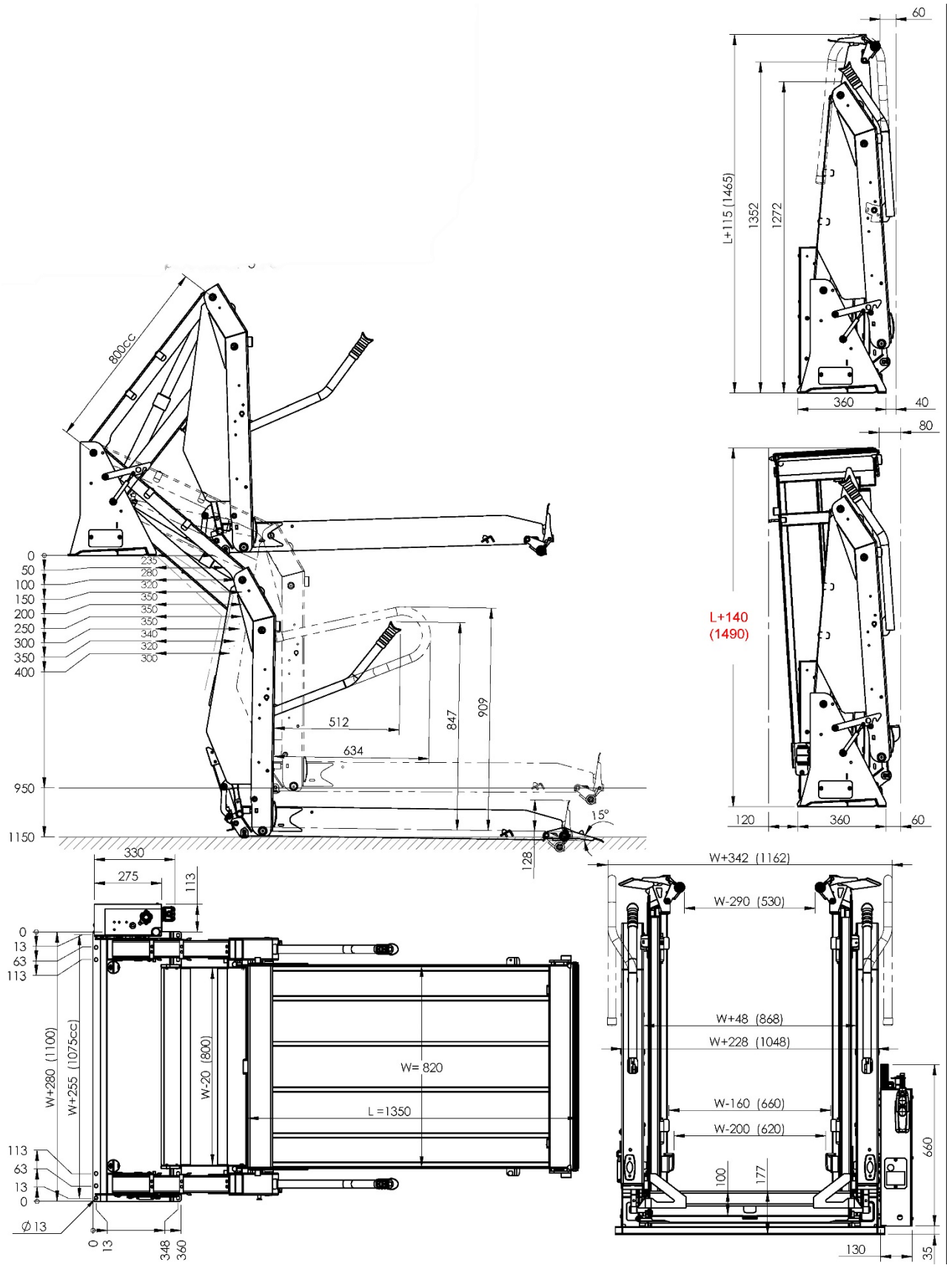
- P2.05.04 - OWU002



- P2.05.04 - OWU003



- PH2.05.03/ P2.07.03



9 INSTALLATION P(H)2

- Due to the wide range of applications for the DH-P(H)2-lifts, detailed fitting information for all vehicle types is not available.
- In this paragraph, the most common installation cases will be explained.
- When in doubt about a specific installation case, contact your DHOLLANDIA distributor before making any permanent changes to the vehicle.

9.1 INSTALLATION KIT – SCOPE OF DELIVERY

- P(H)2- lift and its optional extras
- CE-set: E0287.100.CE

- Optional 16mm² battery/ earth cable (Option OAE456)
- Additional fixation brackets or plates are NOT supplied with the lift.

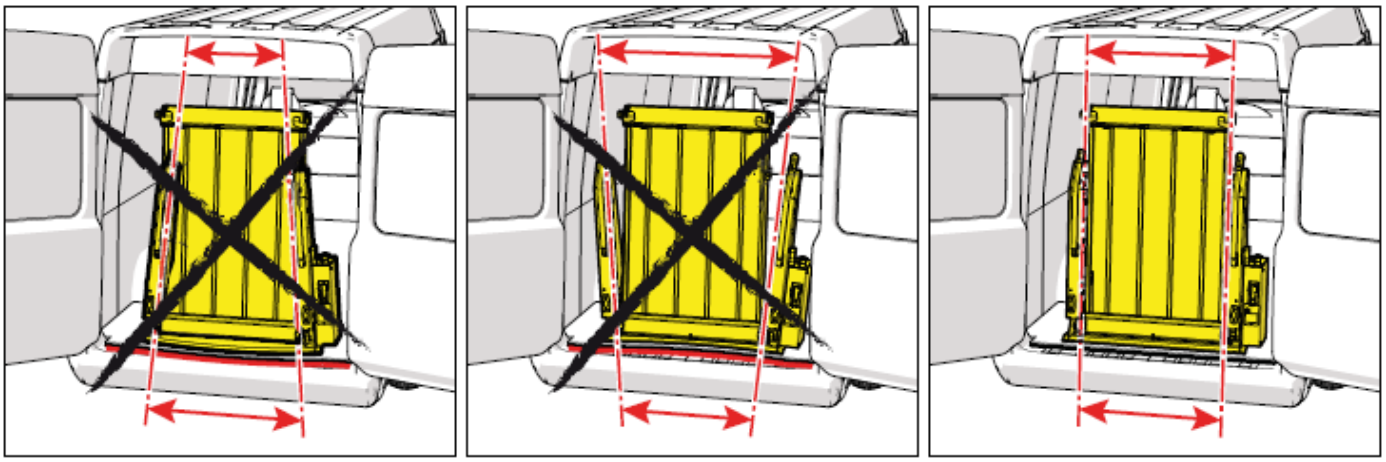
9.2 PREPARATION

- Remove any obstacles within the door opening or the mounting area.
- Remove or adapt the floor coverings in case that it interferes with the installation of the base plate.
- Remove all objects (spare wheel carrier, parts of the exhaust pipe, …) that could hinder the mounting of the lift. For permanently removed parts, consult with the vehicle manufacturer for replacement solutions.
- Make sure the lift can be placed on a straight and rigid surface.

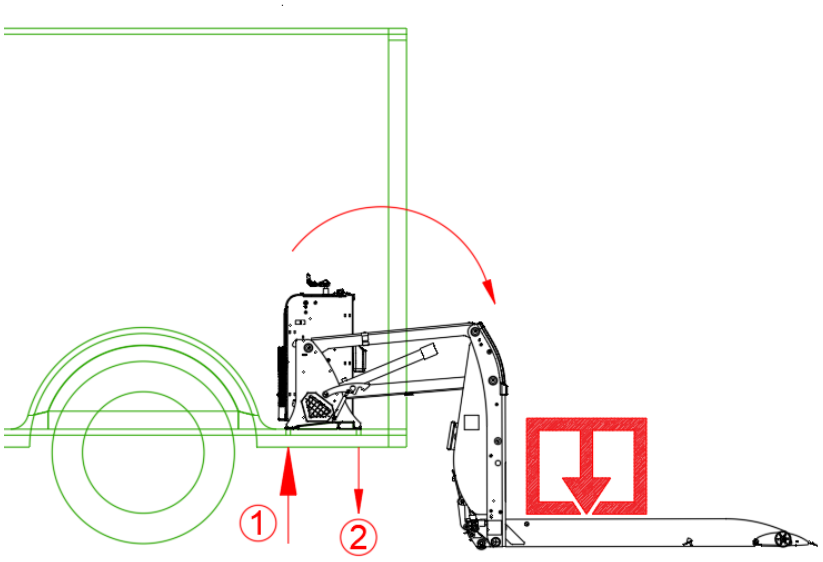
9.3 INSTALLATION

9.3.1 Requirements

- Ensure that the lift is mounted on a straight and rigid floor.
  The mounting of the lift on non-planar surfaces or the incorrect tightening of bolts can cause deformations to the base plate of the lift which will result in consequent malfunction in the platform movement.



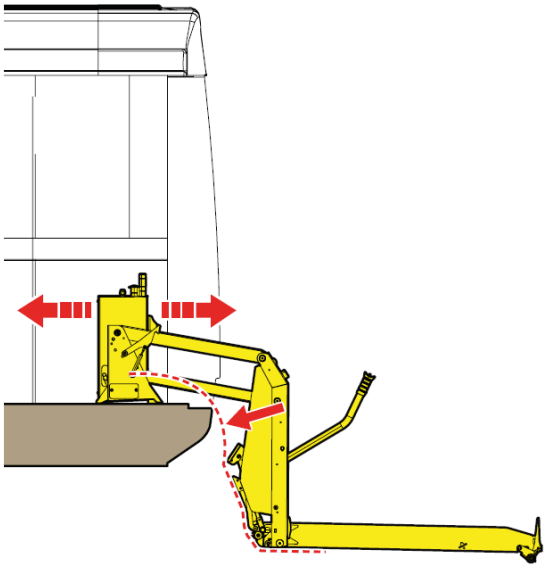
- The rear line of bolts (1) is crucial as they will be fully solicited when loading/ unloading.
  The front line of bolts (2) is less important, and mainly used to fix all sides of the lift frame and absorb the forces induced by the motion of the vehicle during driving.



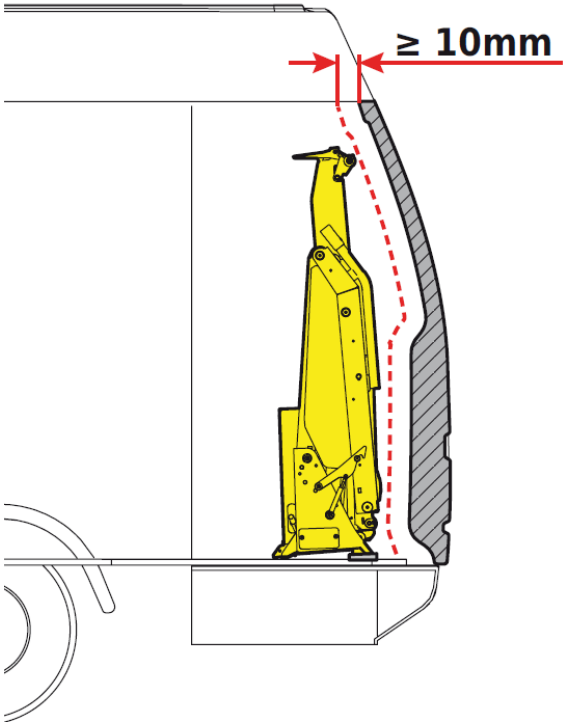
	M10		M12	
	Left side	Right side	Left side	Right side
Rear line (1)	3x	3x	2x	2x
Front line (2)	2x	2x	2x	2x

9.3.2 Positioning

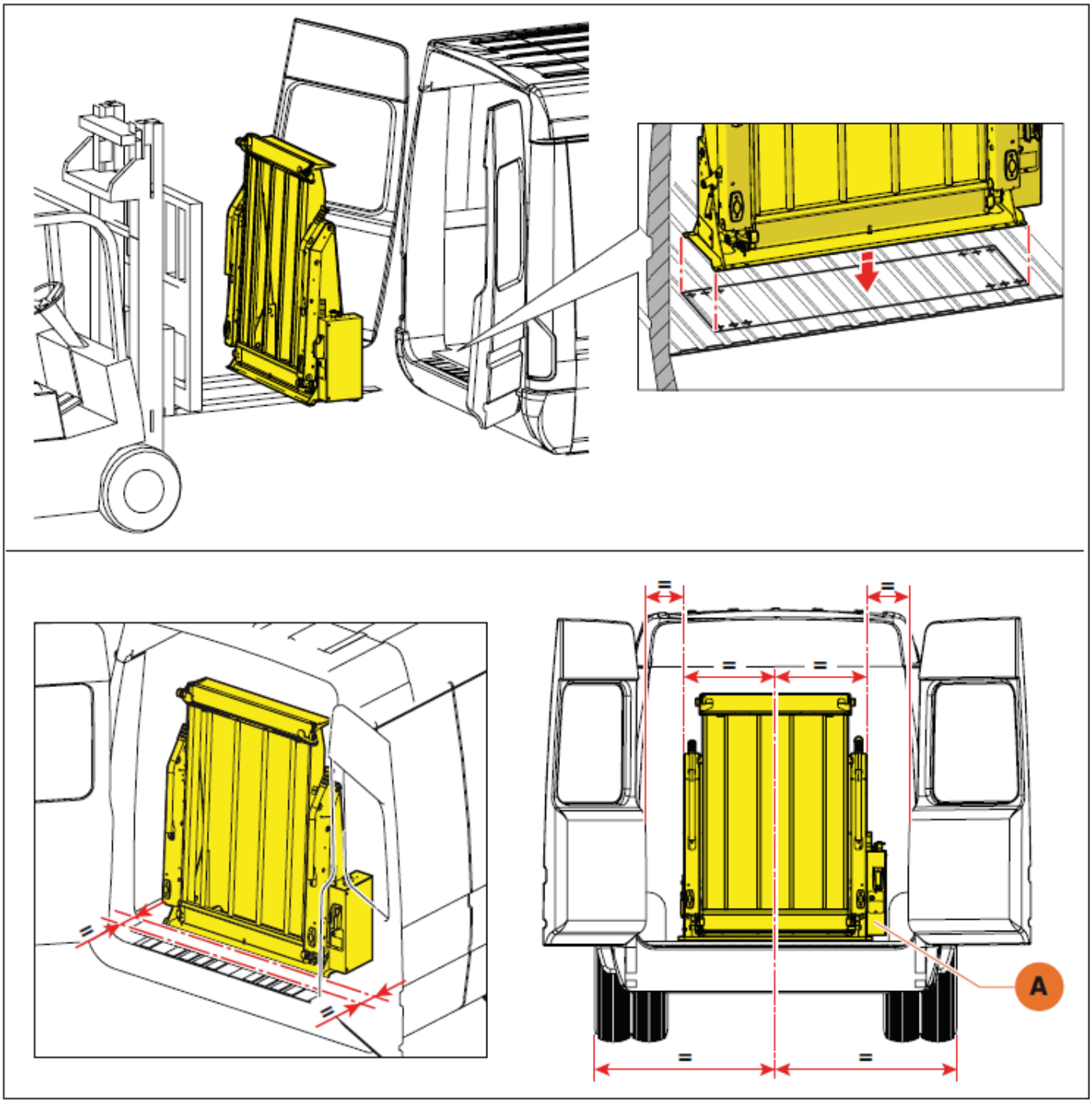
- Draw a line where the front of the base plate should be if the lift is placed as far to the front as possible, while still clearing the bumper during the full motion of the lift. Use the bumper clearance dimensions to figure out the correct location.



- Place the lift in the vehicle so that the front of the base plate is parallel with the line.
- Close one or both doors and position the lift as close as possible to the door. Maintain at least a 10mm gap between the lift and the door.

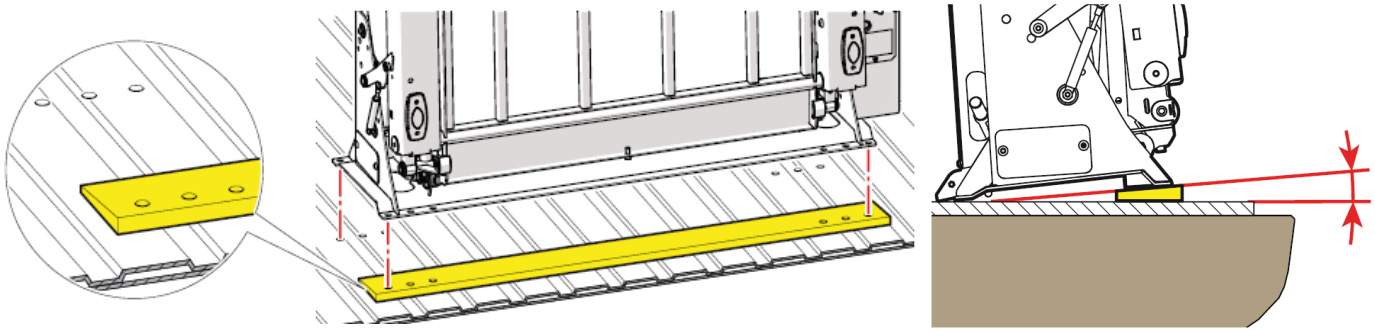


- Make sure that the lift is located in the center of the vehicle and that it is still parallel with the line.
- When the optional automatic locks (Option OWF014.1 / OWF014.2) are present, allow the lift to drift fully into the lock by slowly releasing pressure by pushing the emergency descent button. The previously mentioned 10mm gap should still be there. Move the lift backwards if needed.



- Mark the drilling points of the base plate.

When the lift can't be placed closer to the door opening and the bumper dimensions don't comply with the bumper clearance dimensions given on the technical specifications, the lift can be placed at a small angle in order to enlarge the bumper clearance. This requires the use of shims or base plate mounting wedges.



9.3.3 Fixation

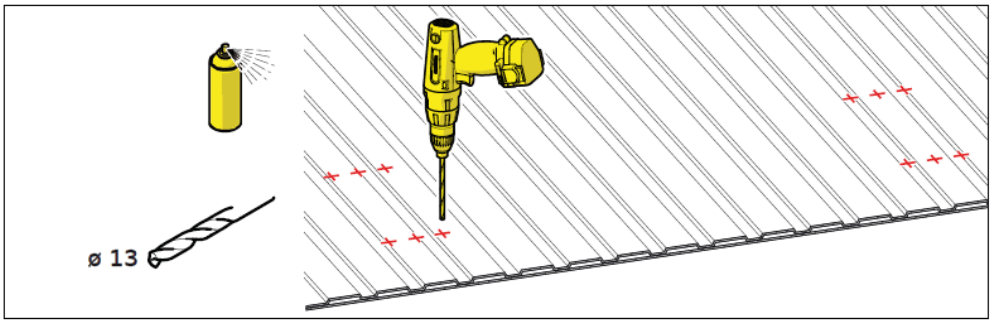
- After determining the position of the lift and prior to fitting the lift and drilling holes:
  - Consult the fitting and body building instructions of the vehicle manufacturer and follow their instructions on chassis drills.
  - Check if the drill pattern on the vehicle floor can be reproduced on the underside of the vehicle.
  - Verify the fixing points and prepare solutions in the event that drilling interferes with chassis beams, fuel or other tanks, spare wheel carrier, …

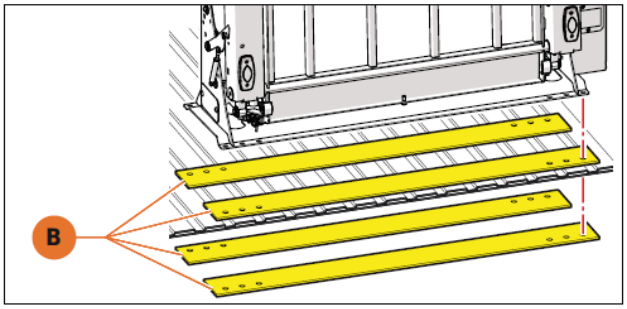
- The location of the drilling points will determine the installation method mentioned below:
  - Method A
    The base plate can't be fixed directly to the frame.
  - Method B
    The base plate can be fixed directly to the frame.
  - Method C
    The floor of the vehicle is not suitable for installation with method A.

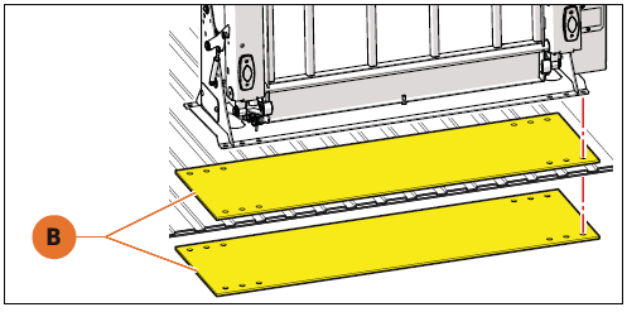
- Drill the vehicle floor on the markings you made earlier with a ø13mm drill.
- All freshly made chassis perforations must be properly deburred.
- All metal work (cutting, drilling, welding, …) must be treated with an anti-corrosive protection (e.g. Zincspray or Dinitrol)

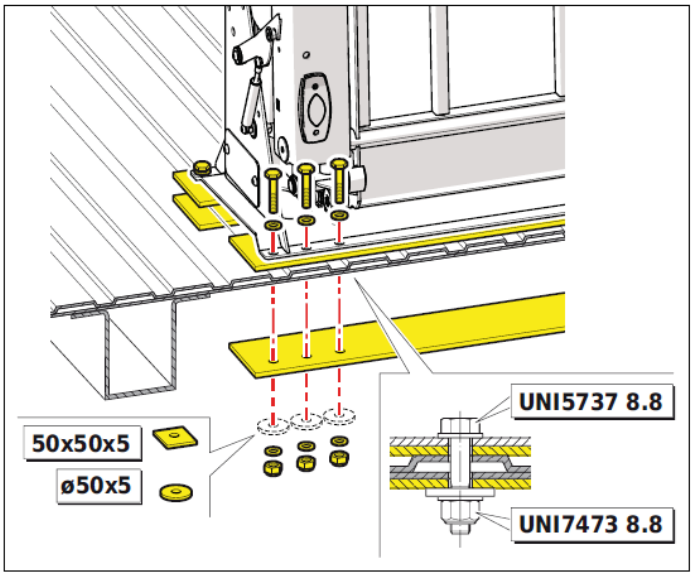
9.3.3.1 Method A

- It is not possible to fix the base plate to the vehicle chassis.
- It is necessary to stiffen the structure of the vehicle floor. Distribution base plates (B) need to be placed on top and below the floor. The size, number and thickness of these plates, varies according to the available space and the kind of floor.
- Use hexagon head bolts and locking nuts to make the connection



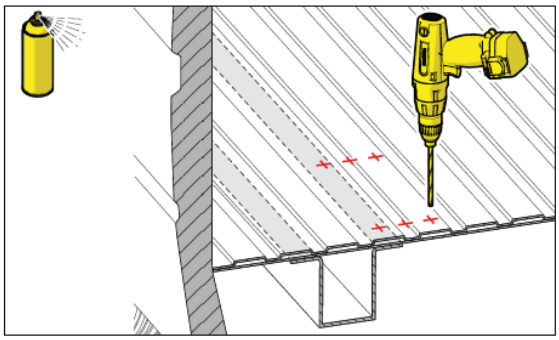


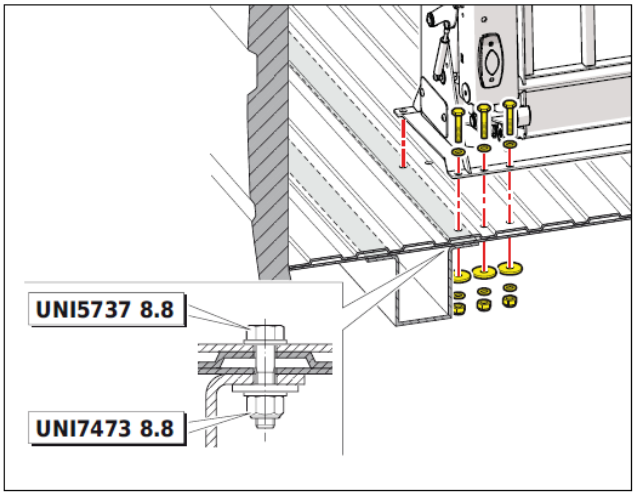


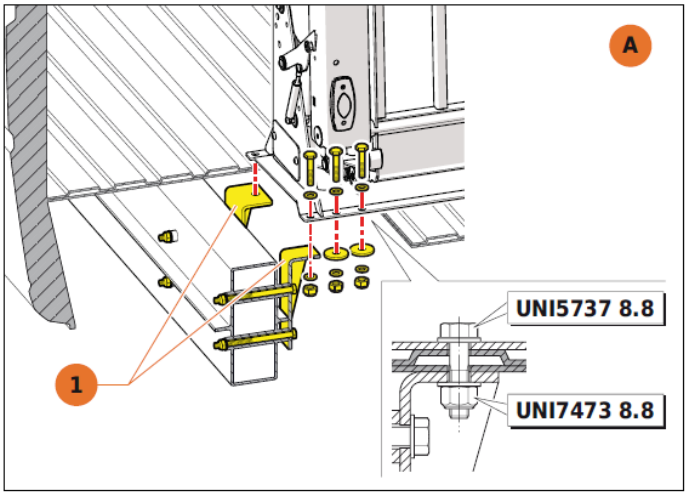


9.3.3.2 Method B

- Base plate can be fixed to the subframe of the vehicle.
- Depending on the type of frame, use reinforcement brackets or fix the lift directly to the subframe.
  - Reinforcement brackets are not provided by the manufacturer.



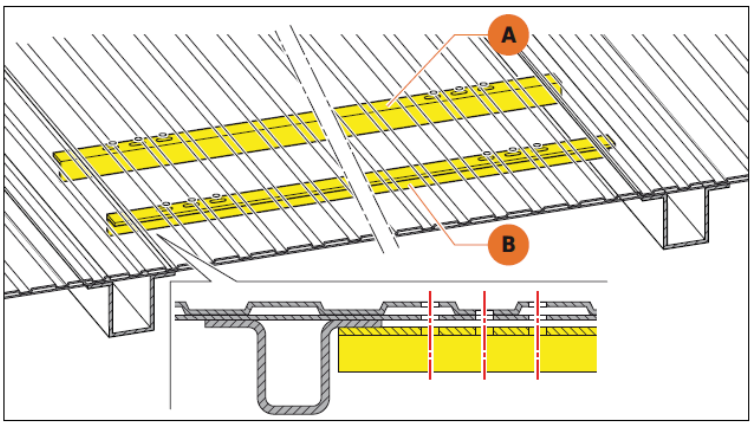


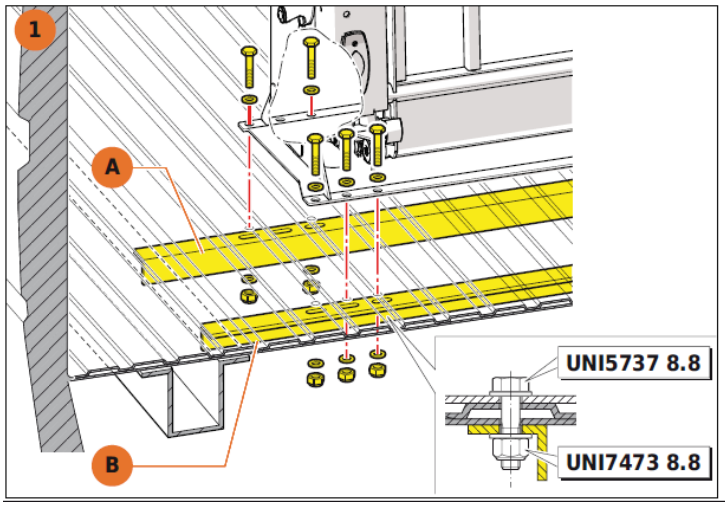


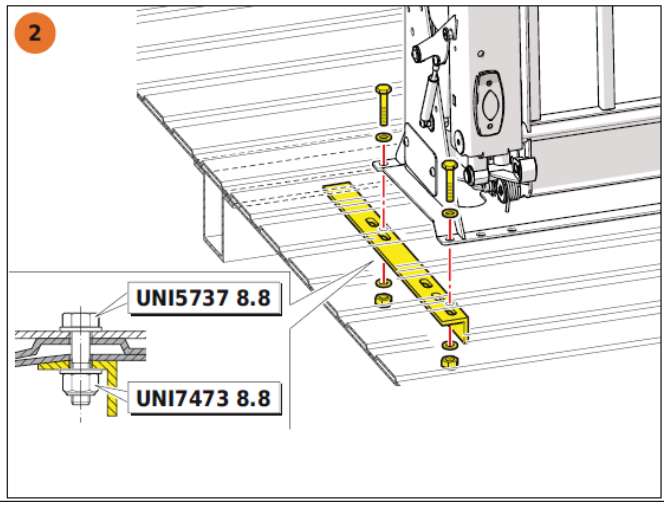
- Use hexagon head bolts and locking nuts to make the connection.

9.3.3.3 Method C

- When the floor is not suitable for fixation.
- Lift cannot be fixed directly to subframe of the vehicle.
- Reinforcement brackets underneath the floor must reach and overlap the nearest subframe flange.
- When possible, use two reinforcement brackets.
  If not, use bracket A as these bolts will be under the biggest amount of stress.



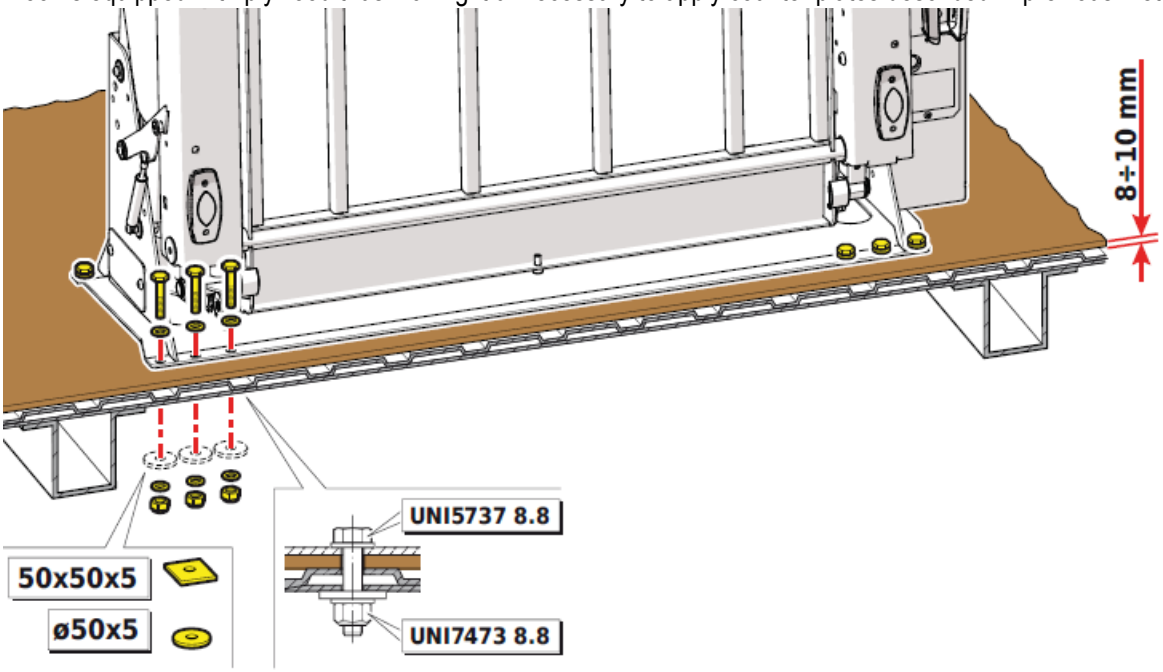




- Use hexagon head bolts and locking nuts to make the connection.

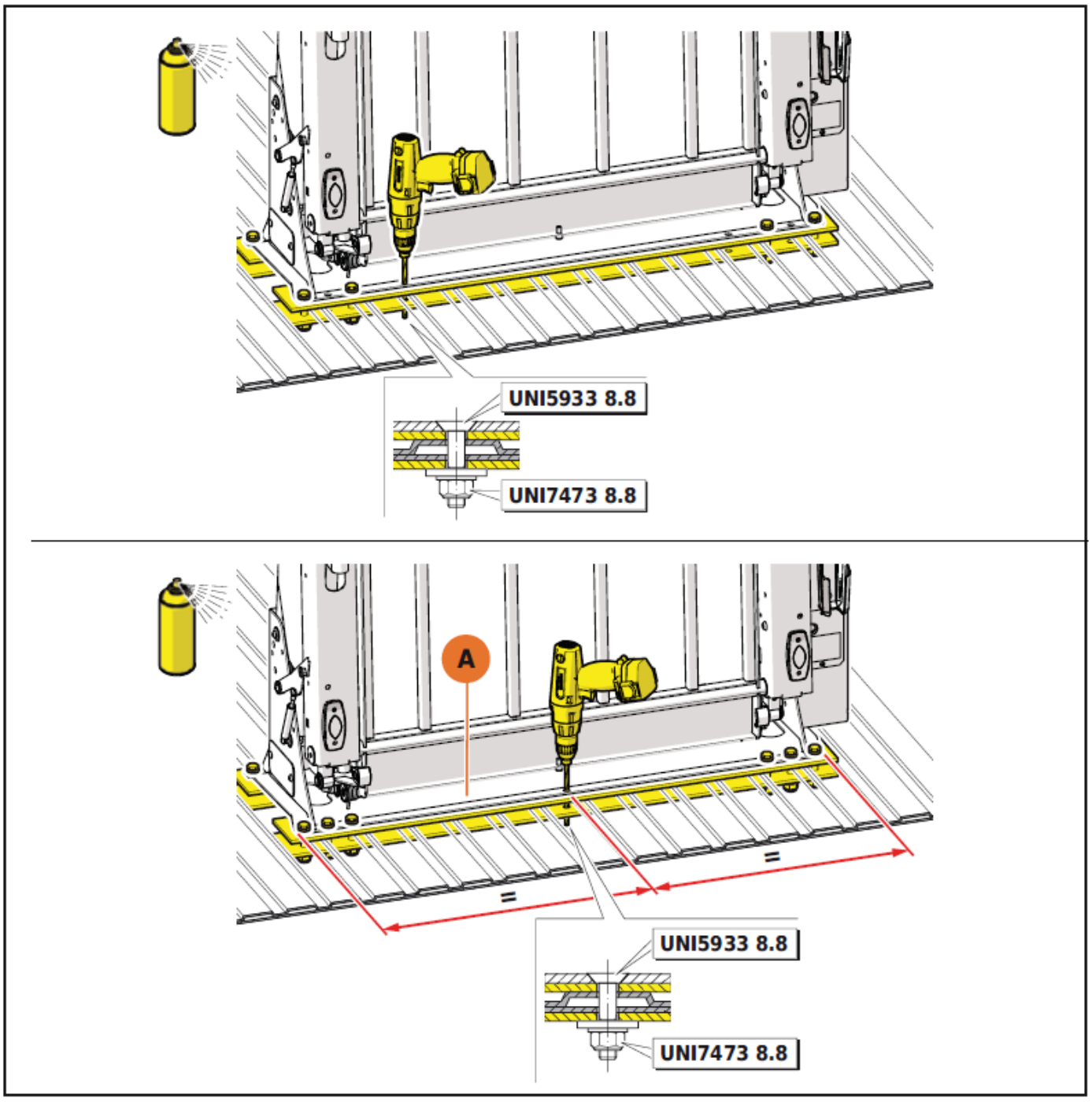
9.3.3.4 Special circumstances

- Floor is equipped with plywood thus making it unnecessary to apply counter plates described in previous methods.



- Add additional fastening points in case that:
  - One of the holes in the corners cannot be used. Prepare another fixation point as close as possible to the existing ones.
  - The vehicle floor is too weak to keep the base plate straight. Prepare a fixation point at the center of the base plate.

  Use preferably countersunk bolts.



9.3.4 Remarks

- The torque fastening of all bolts should be checked after completion of the compulsory static and dynamic weight tests at the end of the fitting process, and retightened if required. See section 13.2 for the prescribed torque values.
- Ensure that all freshly made chassis perforations are properly deburred, and that all metal work (cutting, drilling, welding, grinding,...) is properly treated with an anti-corrosive protection (e.g. Zinc-spray or Dinitrol). Allow to dry. Consult the FITTING AND BODY BUILDING INSTRUCTIONS of the vehicle manufacturer to take into account their instructions.

10 INSTALLATION P(H)1

- Due to the wide range of applications for the DH-P(H)1-lifts, detailed fitting information for all vehicle types is not available.
- When in doubt about a specific installation case, contact your DHOLLANDIA distributor before making any permanent changes to the vehicle.
- As P(H)1 is a single column lift, it is obligatory for the body builder to create a second fixation point.
  This second fixation point needs to be a connection from the top of the P(H)1 frame to a structural part of the vehicle.
  Check vehicle manufacturer guidelines to make sure the area of fixation is sufficiently strong to keep the lift in place.

10.1 INSTALLATION KIT – SCOPE OF DELIVERY

- P(H)1- lift and its optional extras
- CE-set: E0287.100.CE

- Optional 16mm² battery/ earth cable (Option OAE456)
- Additional fixation brackets or plates are NOT supplied with the lift.

10.2 PREPARATION

- Remove any obstacles within the door opening or the mounting area.
- Remove or adapt the floor coverings in case it interferes with the installation of the base plate.
- Remove all objects (spare wheel carrier, parts of the exhaust pipe, …) that could hinder the mounting of the lift.
  For permanently removed parts, consult with the vehicle manufacturer for replacement solutions.
- Make sure the lift can be placed on a straight and rigid surface.

10.3 POSITIONING

- Use the bumper clearance and the dimensions given in the technical specifications to locate the correct location for your installation.
- When installing a P(H)1 with pivoting frame (option: OWU006), make sure the lift is capable of performing its full range of motion.
- Try to position the lift as close to the door opening as possible while maintaining a 10mm gap with the closed door.
  Allow the lift to drift fully into the automatic gas spring lock by slowly releasing pressure by pushing the emergency descent button. The previously mentioned 10mm gap should still be there. Move the lift backwards if needed.

10.4 INSTALLATION

10.4.1 Drill

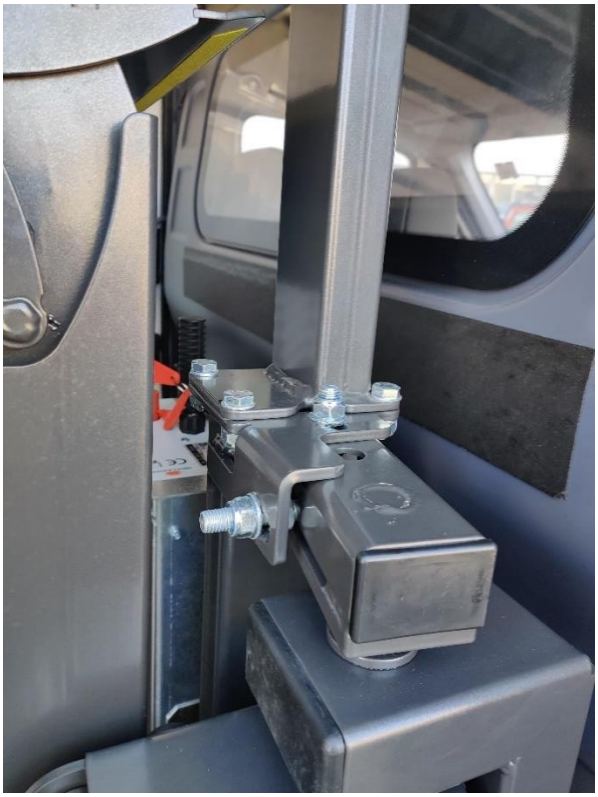
- After determining the position of the lift and prior to fitting the lift and drilling holes:
  - Consult the fitting and body building instructions of the vehicle manufacturer and follow their instructions on chassis drills.
  - Check if the drill pattern on the vehicle floor can be reproduced on the underside of the vehicle.
  - Verify the fixing points and prepare solutions in the event that drilling interferes with chassis beams, fuel or other tanks, spare wheel carrier, …
- The location of the drilling points will determine the installation method.
- Drill the vehicle floor on the markings you made earlier.
- All freshly made chassis perforations must be properly deburred.
- All metal work (cutting, drilling, welding, …) must be treated with an anti-corrosive protection (e.g. Zincspray or Dinitrol).

10.4.2 Base installation

- As mentioned above, the positioning of the lift and the location of the drilling points, will determine the installation method. Due to the wide range of possible vehicles and variations, detailed installation information is not available.
- Use paragraph 9.3.3 as guidance when figuring out the best way to secure the lift to the vehicle floor. A few guidelines should always be kept in mind.
  - The lift should be mounted on a flat and rigid surface.
  - Make sure the lift is able to go through its full range of motion while loaded at full capacity without creating permanent damage to the vehicle.
  - Reinforcements should be added when the vehicle floor is not able to withstand the forces that will be applied to it.
  - Check vehicle manufacturers guidelines before making any permanent changes to the vehicle.

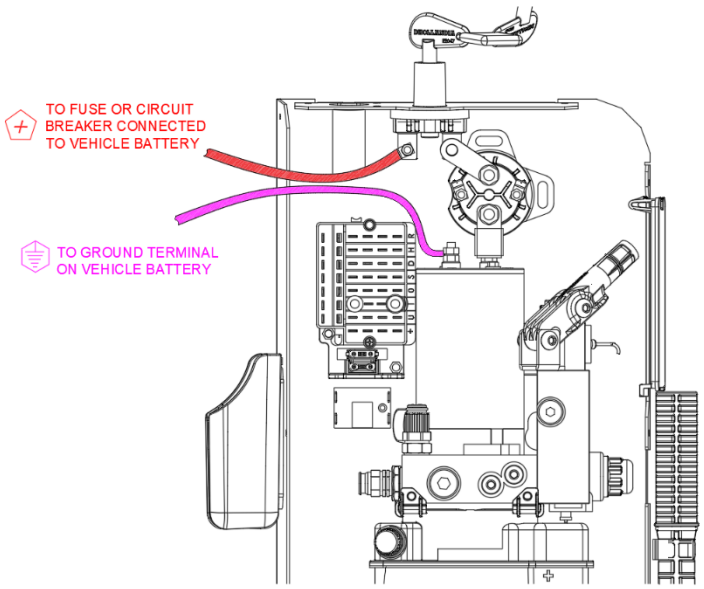
10.4.3 Top fixation

- The top plate of the P(H)1 column can be removed to make place for the top fixation bracket.
- This bracket is not supplied by the lift manufacturer and should be attached to a structural part of the vehicle.

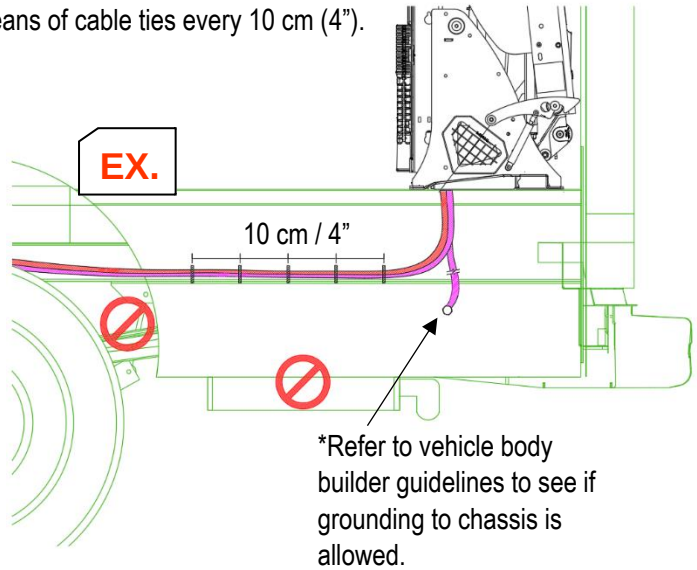


11 ELECTRICAL INSTALLATION P-SERIES

11.1 MOUNTING OF THE CONTROL BOX



- The lift is pre-equipped with a remote control, directly in the power pack, or via a plug connection.
- The electrical installation is limited to mounting the 16 mm² battery and earth cable, and the main fuse of the power circuit.
- Remove the side lid of the power pack.
- Refer to the handbook of the vehicle manufacturer, and check if an (-) earth link to the vehicle chassis / body is allowed; or if an insulated earth return to the vehicle batteries is required.
- Prepare a battery (+) cable (min. section 16mm²) to run from the incoming main pole on the starter solenoid or from the battery switch on the power pack to the main fuse near the vehicle batteries. A ø8mm cable lug connector is required on the power pack side.
- Prepare an (-) earth cable (min. section 16mm²) to run from the earth pole on the electric motor to the negative pole of the vehicle batteries (insulated earth return), or; to the vehicle chassis / body (if direct earth link is allowed by vehicle manufacturer).The cable will be connected to the electric motor with a ø6mm cable lug connector
- Use insulating protection rubbers for both ends of the (+) battery and (-) earth cables.
- Protect the (+) battery and (-) earth cables over their full length by means of flexible corrugated tubes, suitable for automotive purposes.
- If the wiring comes close to the exhaust system, the vehicle catalyzer, the particle filter,... or other hot components, CLASS 2 tubing (sustaining 100°C (212°F) continuously and 125°C (257°F) peak temperature) is required.
- Seek adequate routing for the (+) battery cable and (-) earth cable to their connection point by drilling holes through the vehicle floor, and passing via the chassis, or; by passing on the inside, and using the cavities in the vehicle body to join the vehicle battery.
- Ensure that the cables 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 to the suspension, the braking systems, oil pipes and wiring circuits of the vehicle. Ensure adequate fixation by means of cable ties every 10 cm (4").
- If holes are drilled in the chassis or vehicle body to use riveted or bolted wire clips, refer to the FITTING AND BODY BUILDING INSTRUCTIONS of the vehicle manufacturer for their drill instructions, and apply sufficient anti-corrosion protection (zinc-spray, Dinitrol,...).
- At the other end of the PLUS circuit, mount the 100A passenger lift main fuse to the (+) positive pole of the vehicle battery, and connect the incoming (+) battery cable.
- The 100A fuse should be located between the battery and the starter solenoid.



- In case of insulated EARTH return circuit, connect the incoming (-) earth cable to the (-) negative pole of the vehicle batteries.
- Fasten all bolted connections of the PLUS and EARTH circuits and the main fuse firmly. Poor or loose fitting can lead to bad contacts and overheating of the electrical connections, and to premature failure.
- Apply a thick layer of anti-corrosive grease or Vaseline to the (+) and (-) battery connections.

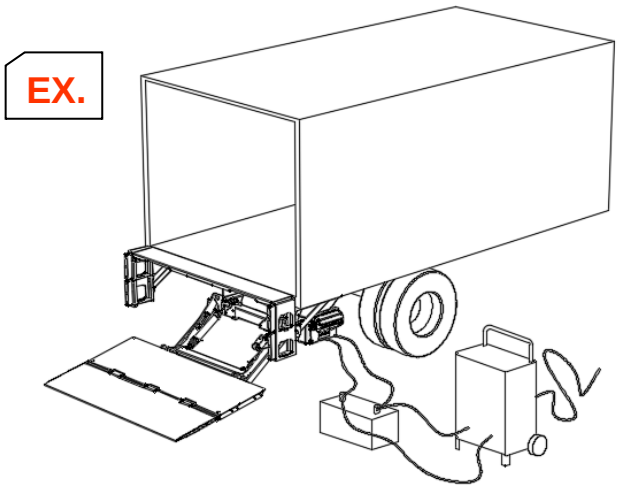
NOTICE

- DHOLLANDIA supplies an internally grounded motor with the lift.
- It is strongly recommended to complete the ground between the negative motor stud and the negative terminal on the vehicle battery.
- DO NOT ground the system to the chassis. Doing so can cause corrosion and improper functionality of the lift. (See bodybuilder guidelines for official recommendations)

- Refer to the separate manual ELECTRICAL INSTALLATION N-A GENERAL 01 for more detailed information on the electrical installation, connection to the lift or vehicle batteries, installation of fuses or circuit breakers, and ground connections.
- If not supplied with the lift, these can be downloaded from the “DOWNLOAD” section on our website:

http://www.dhollandia.com

- Please confirm you have reviewed the most up-to-date version of this manual prior to continuing.
- If you want to operate the lift before the batteries are installed, use a temporary battery of min. equivalent power as the final battery, charged by a battery charger connected to a wall plug.



NOTICE

NEVER run a lift from a battery charger only. This can cause damage to the pump unit and electrical parts of the lift.

11.2 POSITION OF THE POWER PACK P(H)2

In case the vehicle does not allow the power pack to sit next to one of the two lift columns, it can also be placed separately with the use of a an additional kit. (OAH033/ OAH034).

Make sure the lift can still be easily operated and that the power pack is firmly fixated.

12 PUTTING THE LIFT INTO SERVICE

12.1 COMMISSIONING & QUALITY CONTROL

- Ensure that all electrical connections are correctly finished, and that all mounting bolts are fastened with the required torque.
- Turn the battery switch. Use the functions “lift” and “close” to bring hydraulic pressure in the hydraulic circuits. Do not overpressure at this stage.
- Improper use of the lift can result in personal injury. Consult the OPERATION MANUAL in case of doubt with regards to the correct use of the different lift functions, and of the applicable safety instructions.
- Do not exceed the rated nominal capacity of the lift.
- Execute all movements several times to ensure all lift-functions work properly. Pay special attention to:
    1. when closing: the correct arrival of the platform in travel position.
    2. when lifting / lowering at ground level: the correct function of the roll-stop device [see 1 in Figure 11.1]
    3. when lifting / lowering: the correct function of the bridge plate [see 2 in Figure 11.1].
- Check paragraph 12.2 in case any adjustments need to be made.
- Ensure that all safety decals and decals on operating instructions are duly affixed. [See Chapter 13]

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

Figure 11.1

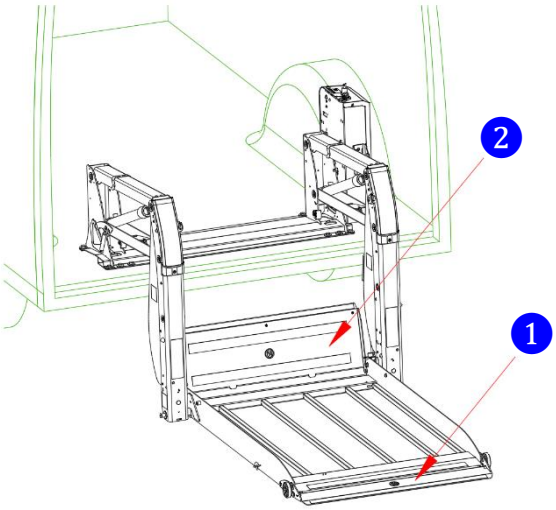
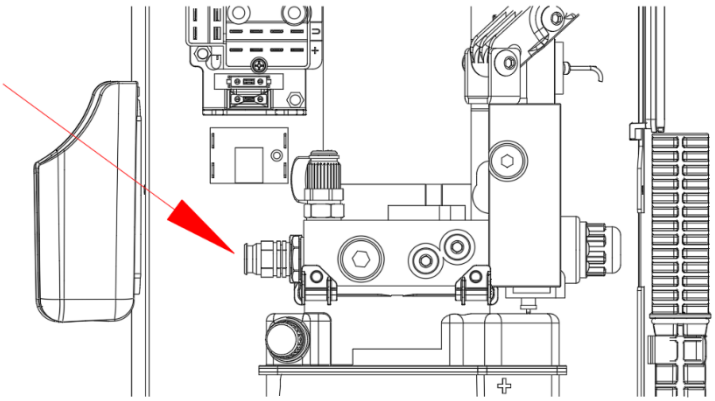


Figure 11.2



⚠ WARNING

- Improper use of the lift will put the operator at great risk of serious bodily injury and death. If in doubt how to use the lift correctly, installer should consult the operation manual prior to continuing.
- Air might be trapped in the hydraulic circuits, as long as the lift has not been bled. Air can cause the 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 lift as long as the hydraulic circuits have not been purged.

- Only the sound of the pump unit should be audible. In case of jerking movements or odd sounds, you should investigate and correct to avoid damage to the lift or potential hazards for the operators.
- Bleed all air from the hydraulic circuits.
  - Preferably raise the rear end of the vehicle off the ground or raise the vehicle air suspension to its allowed maximum. LIFT the platform to vehicle floor level.
  - Then LOWER the platform fully to its deepest position at the ground, continue to press LOWER for 20 sec. LIFT the platform again, and repeat until no air bubbles run back to the oil reservoir.
- Finish the wheelchair lift in accordance with local regulations.
- Work through the PDI checklist in the appendix and complete the practical load tests indicated. Fill-out the FITTING DECLARATION.
- During the weight test, check (and adjust if required) the hydraulic pressure to suit the nominal lift capacity of the lift. [See Figure 11.2]. Ensure the actual capacity doesn't exceed the rated nominal capacity of the lift. Seal the pressure relief valve after that.

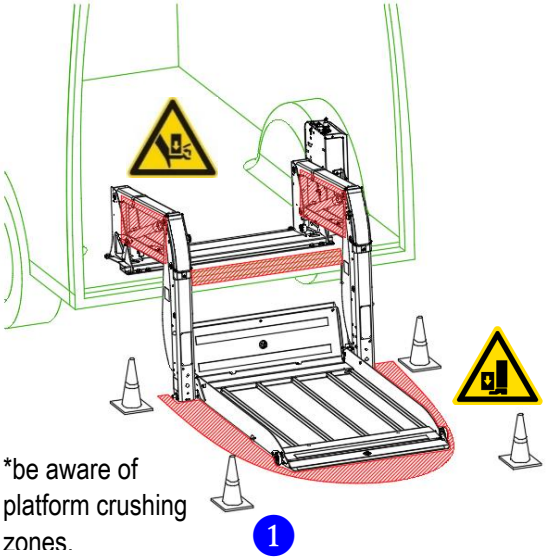
NOTICE

⚠ WARNING

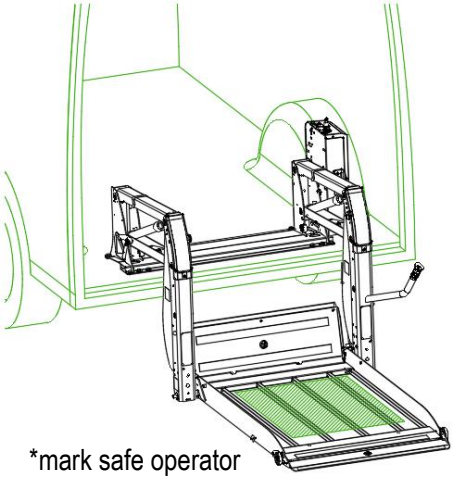
- The PDI checklist completes the final quality inspection of the installation. Once completed successfully, it will certify the safe and reliable operation of the wheelchair lift.
- Operating a lift that hasn't successfully passed the PDI can lead to premature wear or damage of the lift itself.
- Operating a 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.

- Make sure that the lift will be clearly visible in surrounding traffic [1 in Figure 11.3]:
  1. Apply the RD/WH conspicuity tape on both sides of the platform.
  2. If applicable: connect the flashing platform lights (if not prewired) and verify their function.

Figure 11.3



*be aware of platform crushing zones.



*mark safe operator position within bounds of platform surface.

12.2 ADJUSTMENTS P(H)2

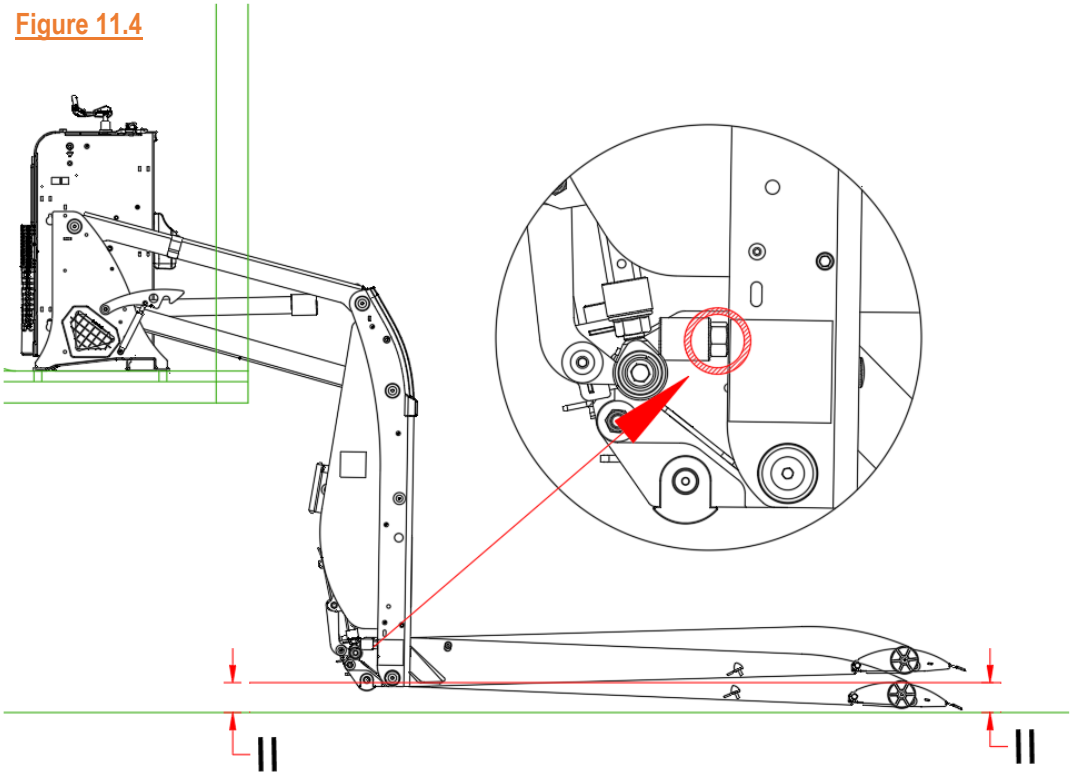
12.2.1 Platform angle

1. Open the platform and see if it remains level during its lifting motion.
2. Check if the roll-stop falls down completely when reaching the ground. When the platform is at an angle, the roll-stop will not engage automatically.
3. If needed, adjust the angle between the platform and the LIFT ARMS by turning the 2 adjuster bolts at the back side of the platform main section. Loosen the counter nuts, then adjust bolt length, and retighten the counter nuts. [Figure 11.4].
   Make sure both sides are adjusted equally, so that all bolts will support the platform (and its load) evenly.

⚠ WARNING

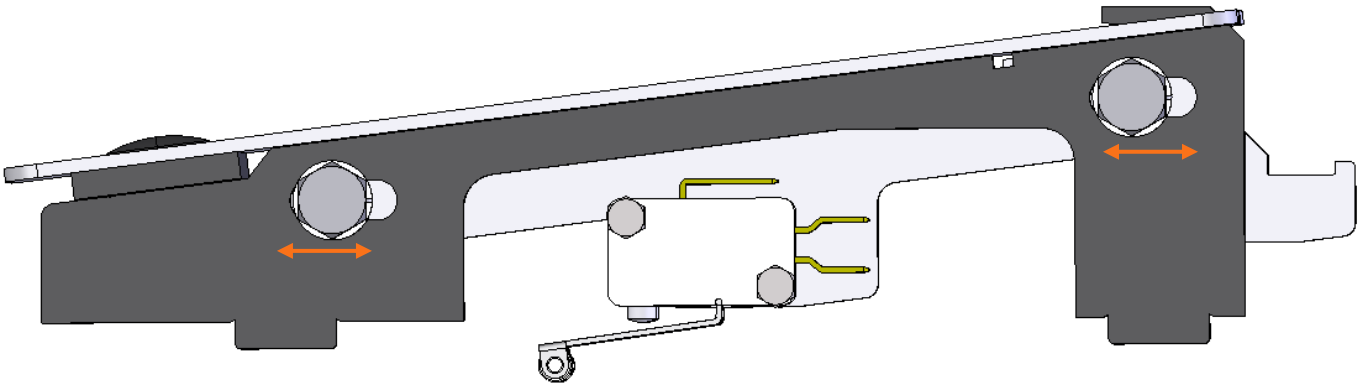
- Failure to properly adjust the pitch of the roll-stop and platform, can cause the cargo to fall off the platform during operation.
- Falling cargo will put the operator and any bystanders at serious risk of bodily injury and death.
- Therefore, it is important that the pitch of the roll-stop and platform are adjusted correctly conform with instructions in this manual.

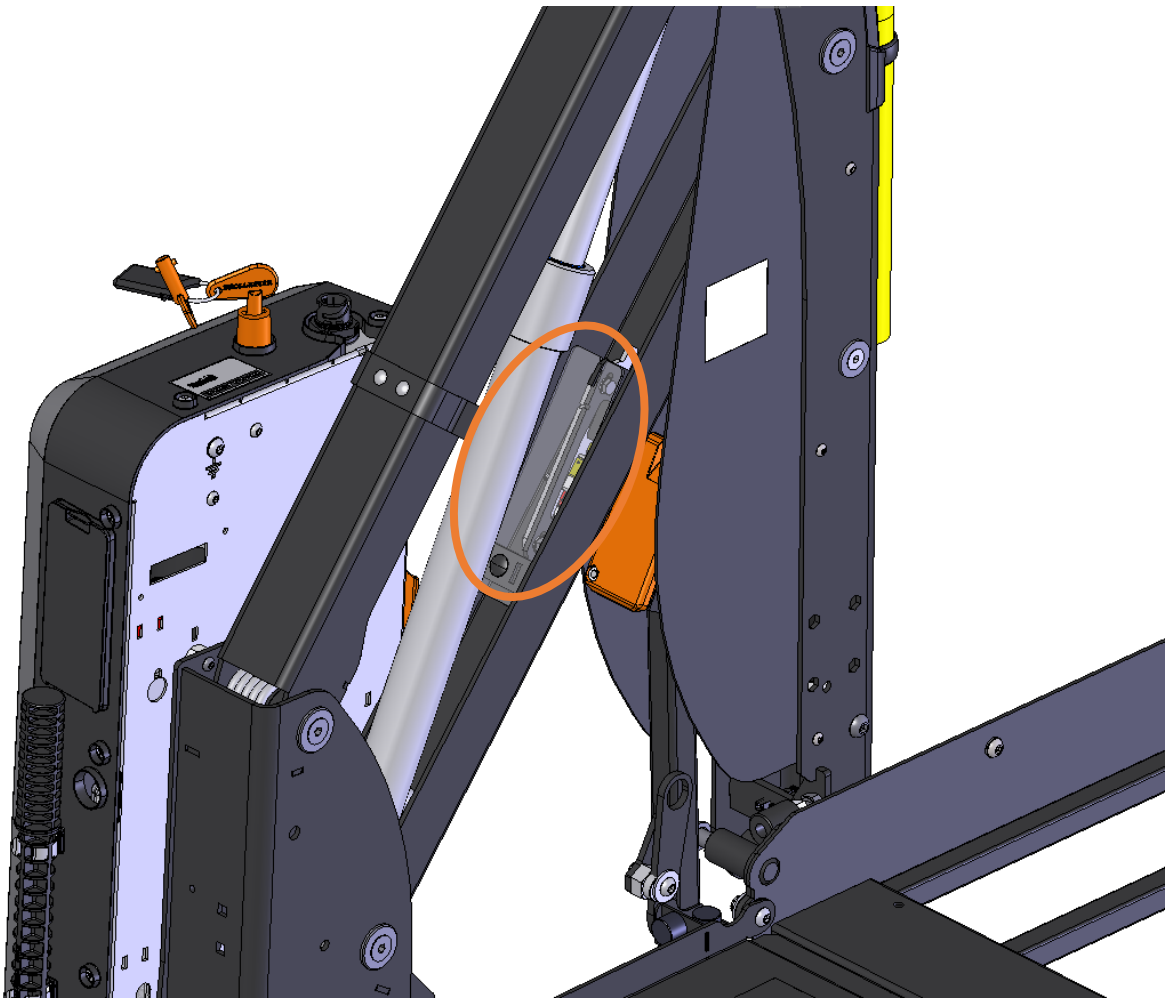
Figure 11.4



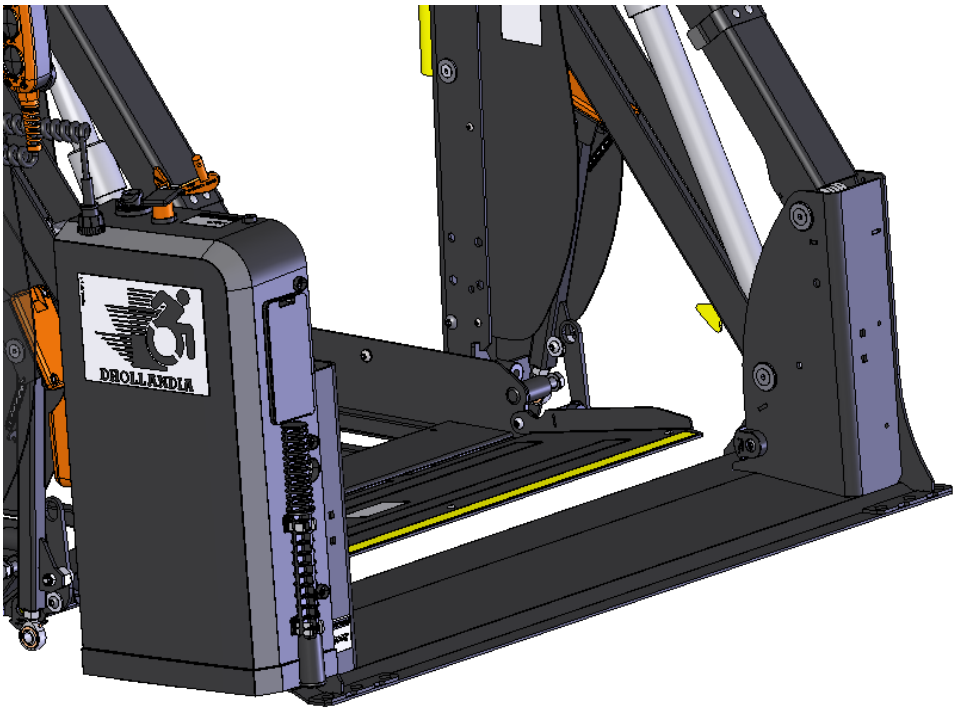
12.2.2 Other adjustments

- The position of the switches inside the arms can be adjusted to fine-tune the alignment of the bridge plate and maximum height.
  Right and left in this paragraph is referenced to the viewer standing in front of the lift on the outside of the vehicle.

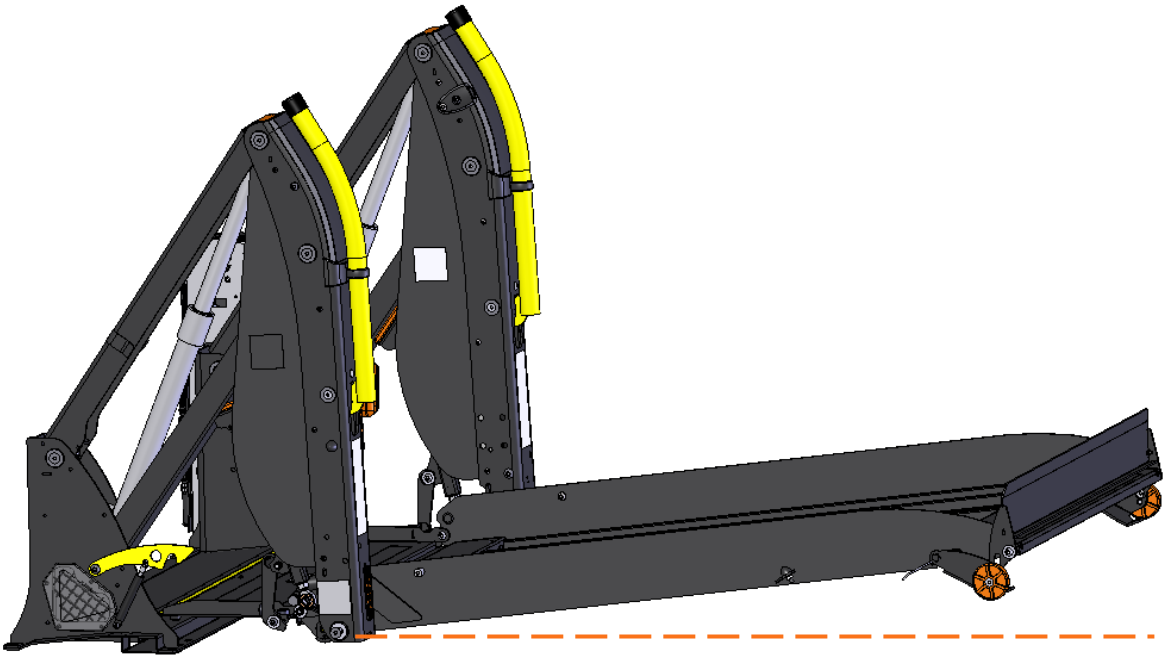




- When the bridge plate is not horizontal or not pointing down when the switch interrupts the lift from raising further (3- and 4 button control):
  - Move the switch in the right arm downwards. This will make sure the switch is actuated later so that the bridge plate will reach closer to the base plate. It should create a smooth transition to the vehicle floor.



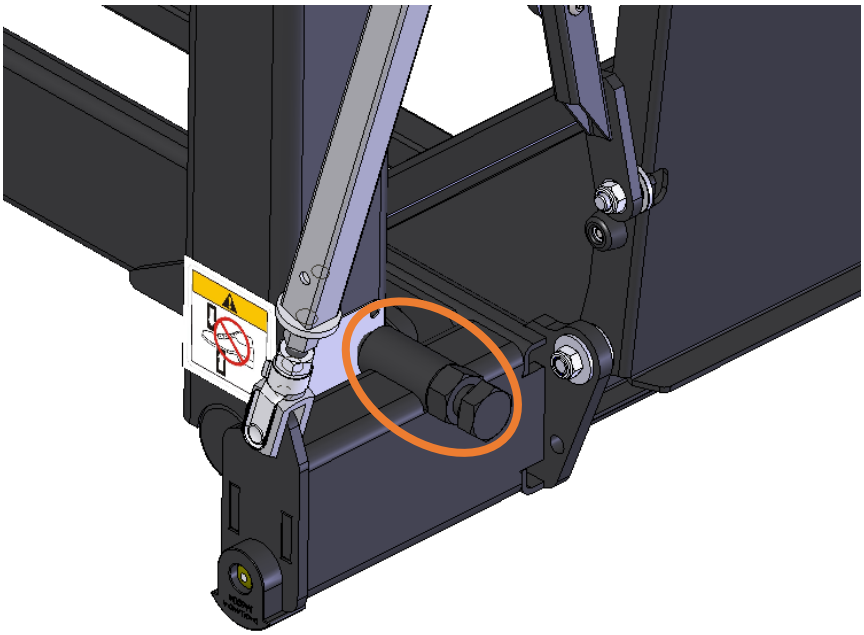
- When the platform starts to fold before reaching the vehicle floor when going up (3- and 4 button control):
  - Move the switches on the right arm upwards.
  - Adjust this until the platform sits at a horizontal position when the lift reaches its maximum level.



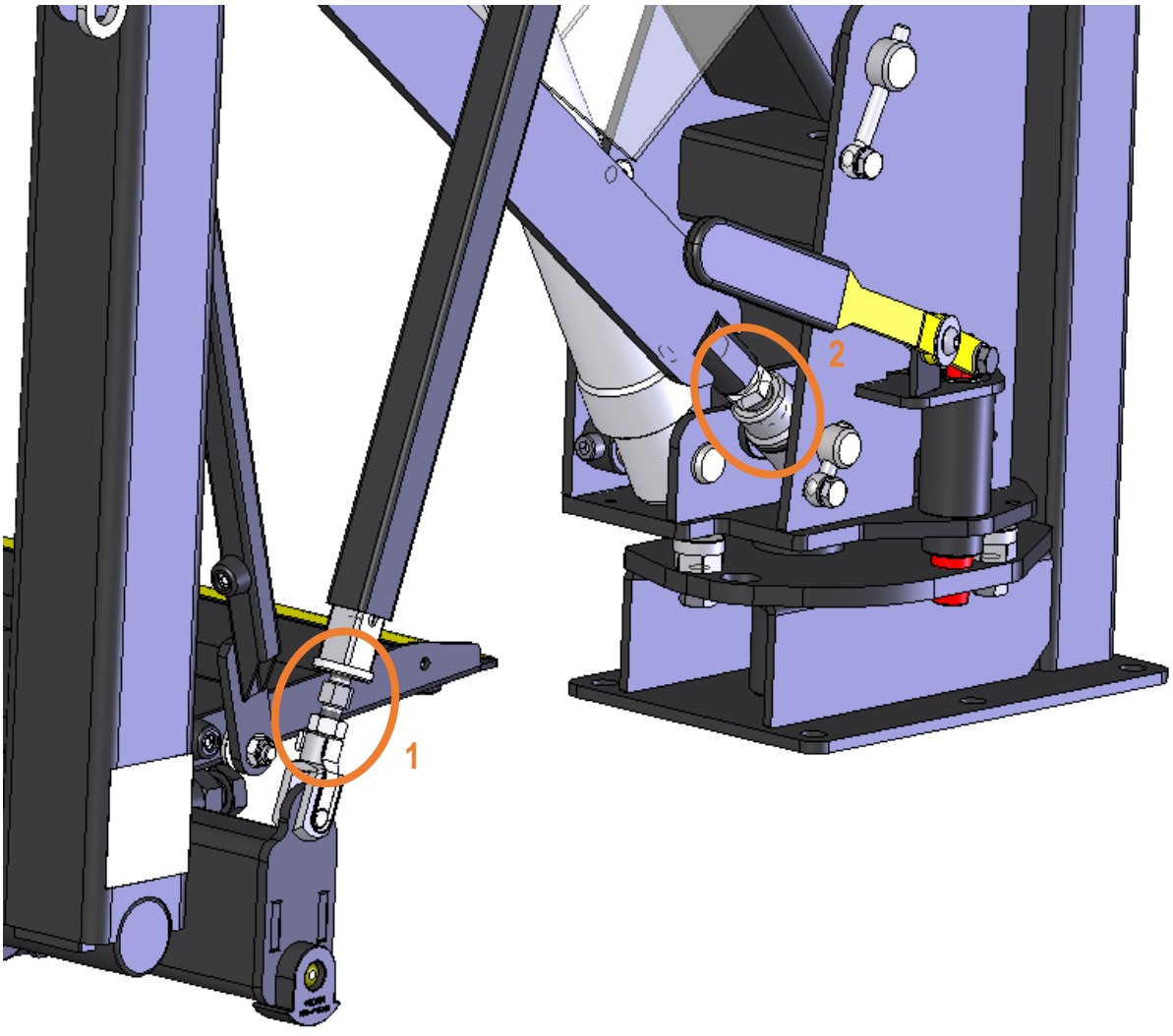
- When the platform holds at an angle after pushing the unfold button (4 button control):
  - Move the switch on the left arm upwards. This should disengage the switch a bit later.
  - Adjust this until the platform holds at a horizontal position.

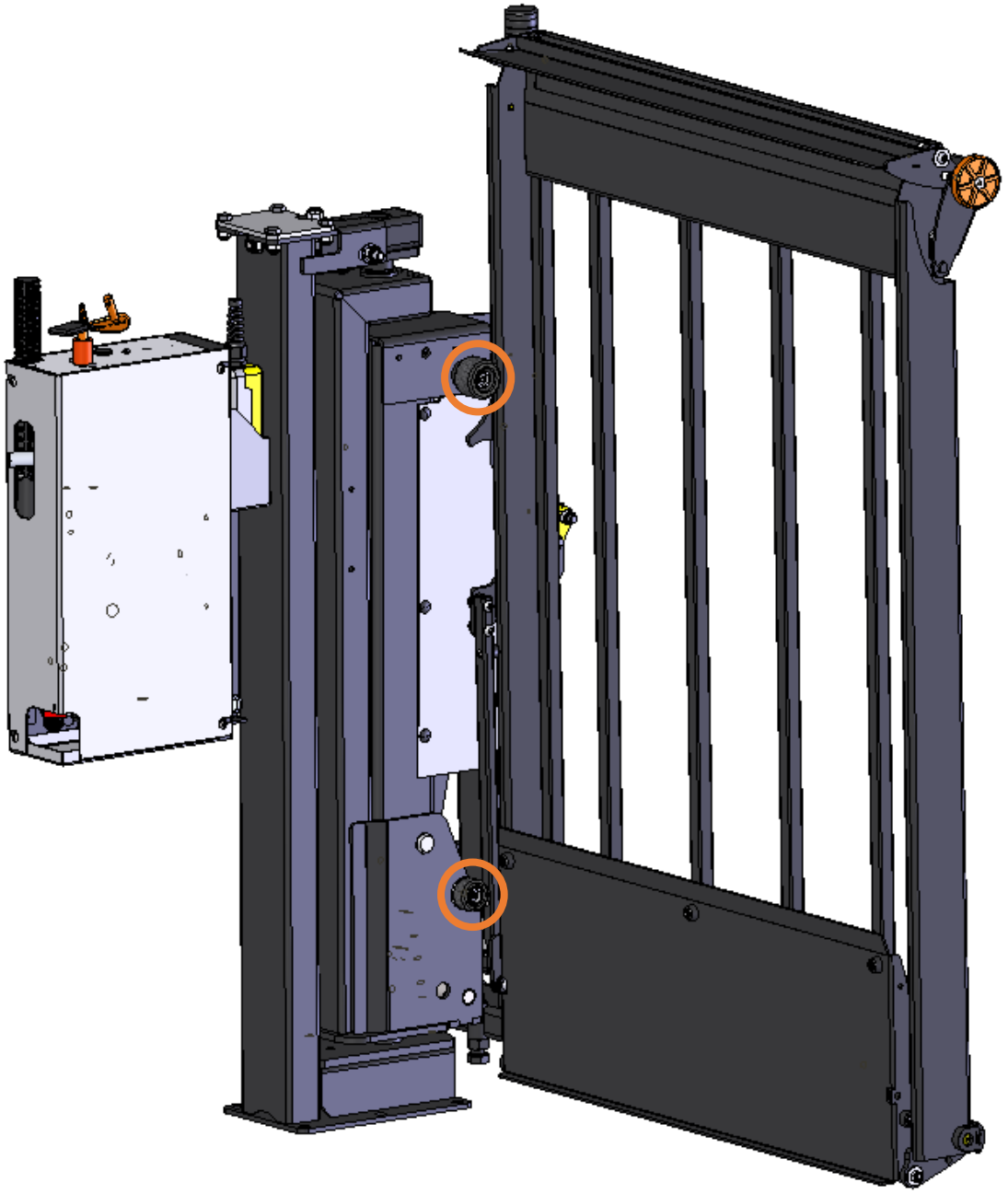
12.3 ADJUSTMENTS P(H)1

- Adjuster bolt to change the angle of the platform. See paragraph 12.2.1 as this is similar for both lifts.

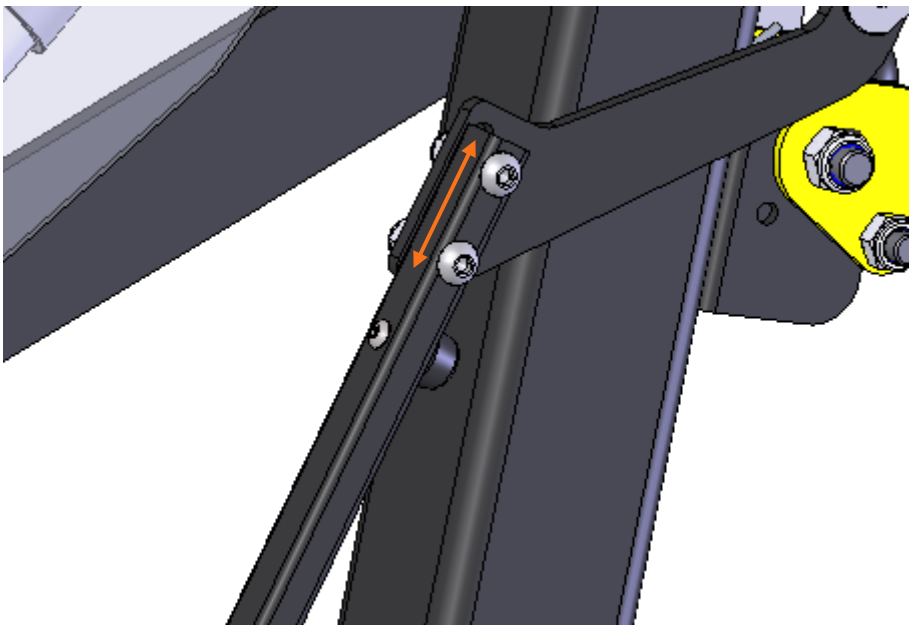


- Adjust the moment the platform reaches its highest point by turning the adjuster bolt (1).
  Check the position of the platform when it is closed. It should apply some pressure to both of the rubbers. Adjust the extension of the push rod (2) when this is not the case.
  Minor changes can result in a substantial difference so the adjustments should be performed with small increments.

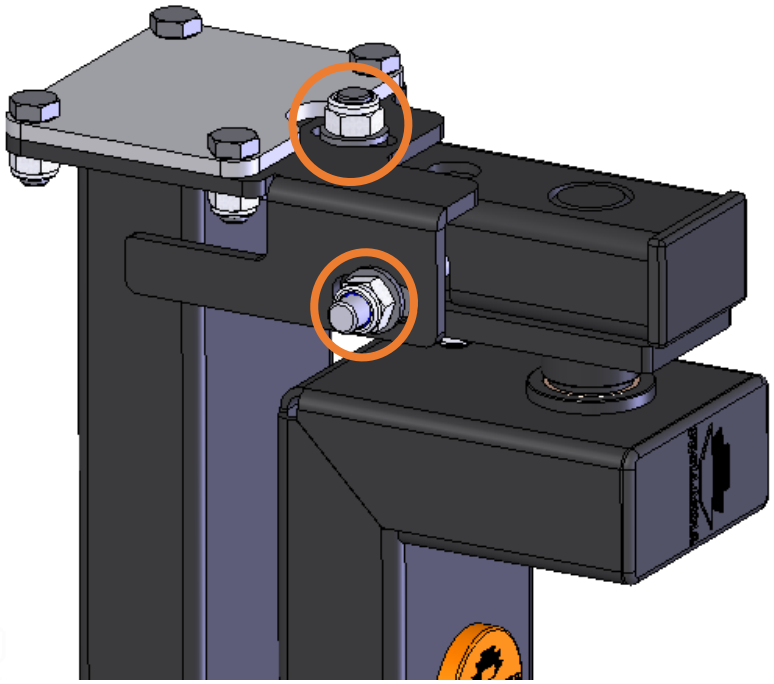




- Adjust the way the bridge plate aligns with the vehicle floor by moving the two bolts in the slot holes.



- When the vehicle floor sits at a small angle and the bridge plate does not align completely parallel to the vehicle floor, You can adjust the position of the lift column to fix this. (Only applicable with option OWU006)



12.4 LUBRIFICATION INSTRUCTIONS

- All articulation points equipped with lube fittings should be lubricated after installation, and once in service with intervals as indicated in the maintenance manual.
- Use a grease gun to pump grease in the lube fittings, until a grease collar is formed on both sides of the bearing or articulation, protecting it against ingress of water, salt, sand and dirt.
- Note that the grease nipple might be located in the pin itself, or in the larger assembly that pivots around the pin.
- In case a pin has 2 grease nipples, grease both sides.
- Ensure all lube fittings function correctly and replace any defective fittings.
- ALWAYS use acid-free grease. The use of graphite grease is not allowed.
- If so equipped, verify if the platform lock operates smoothly, and lubricate with oil if necessary.

NOTICE
To maximize the durability and operational reliability of the lift, it is important to lubricate the pivot points thoroughly after installation.

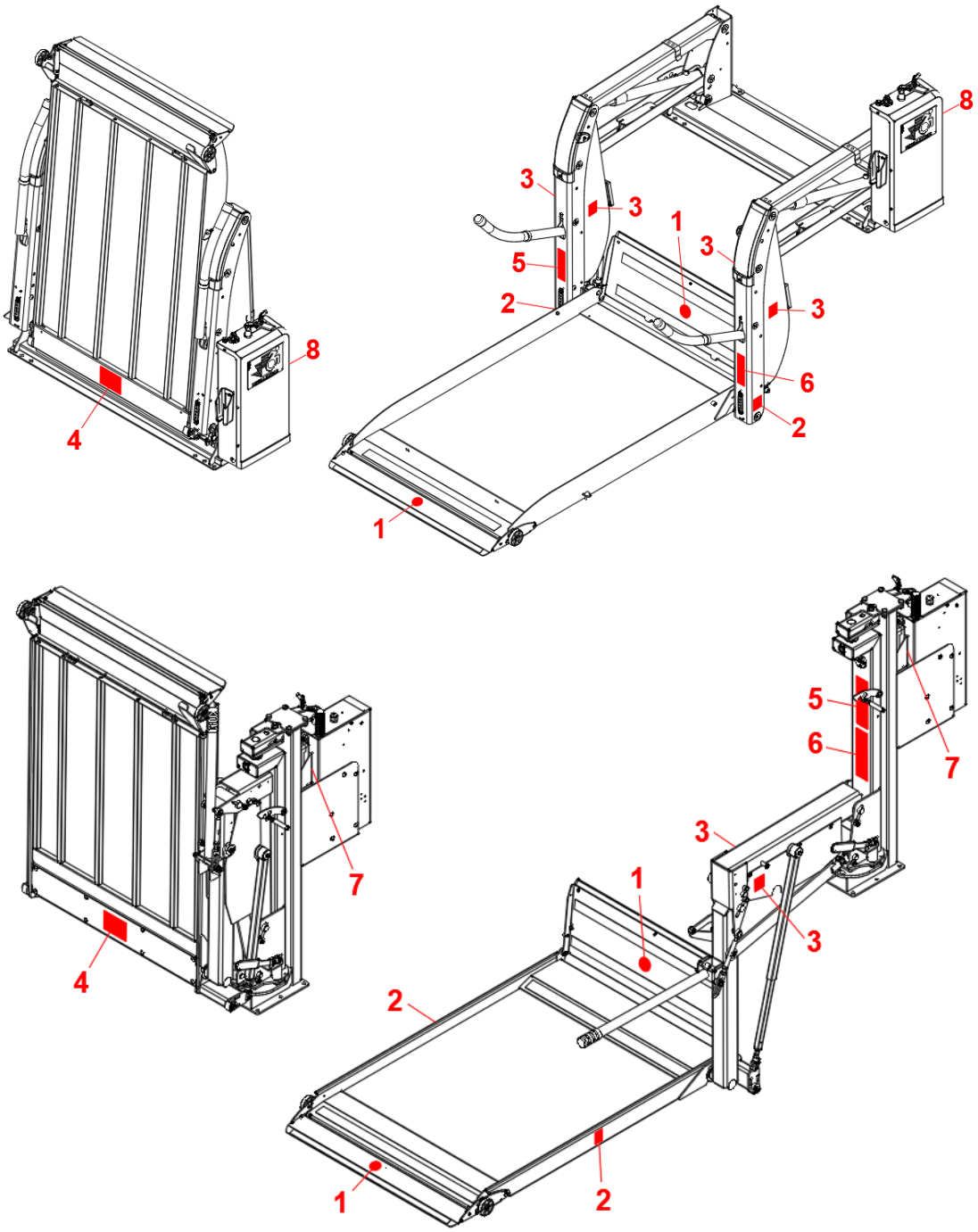
13 DECALS

13.1 INTRODUCTION

- Decals are used to remind the operator and warn the wheelchair occupant for a number of specific hazards and instructions. Decals can be premounted on the lift itself, or shall be mounted by the installer during installation and PDI of the lift.
- NEVER remove or paint over any decal. Missing, worn or illegible warning decals must be immediately replaced. Get 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. Beware 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 lift or the chosen type of external control box.

13.2 REGULAR DECALS ON THE LIFT

- The following decals are premounted by DHOLLANDIA on the lift.

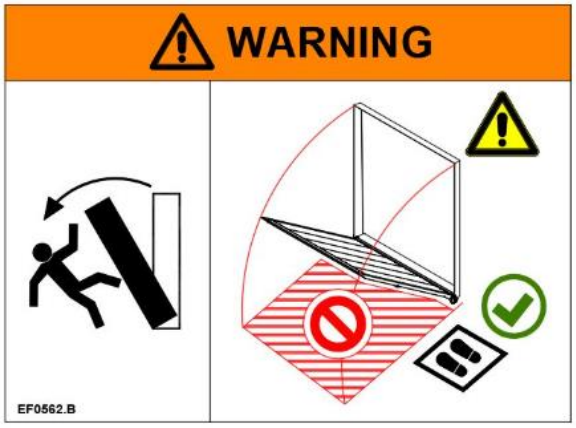


1 EF0505.B

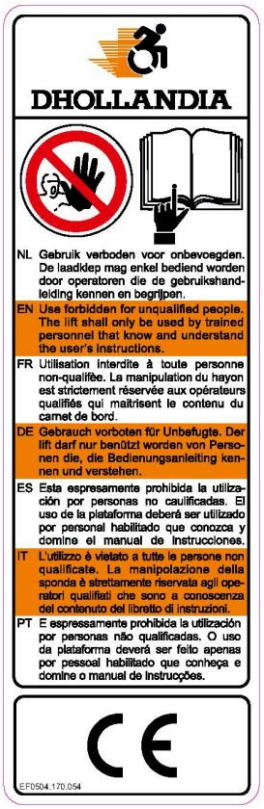
2 EF0506

3 EF0503

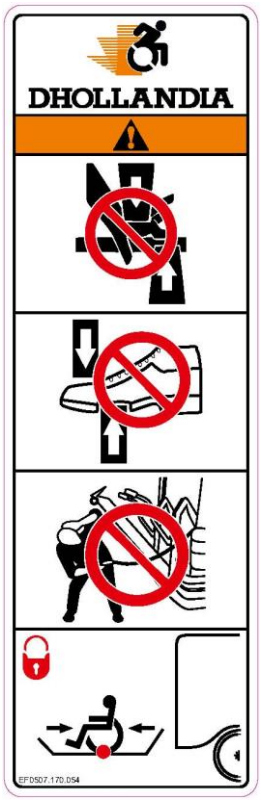
4 EF0562.B



5 EF0504



6 EF0507



7 EF0514

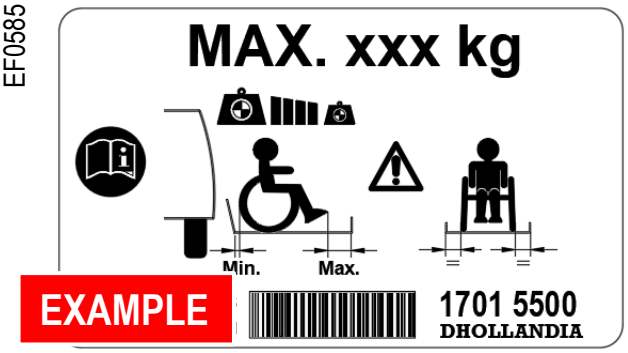
8 EF0514.B

13.3 DECALS ON INSIDE OF VEHICLE NEAR THE LIFT

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

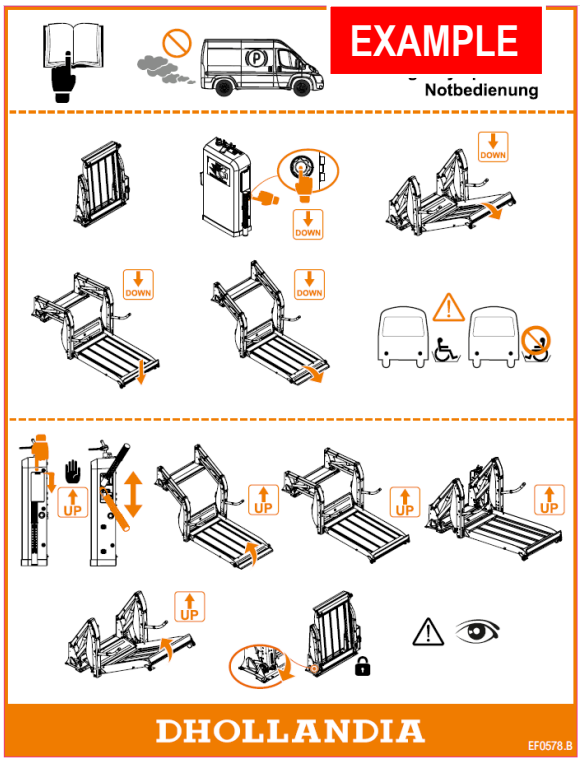
1

EF0585



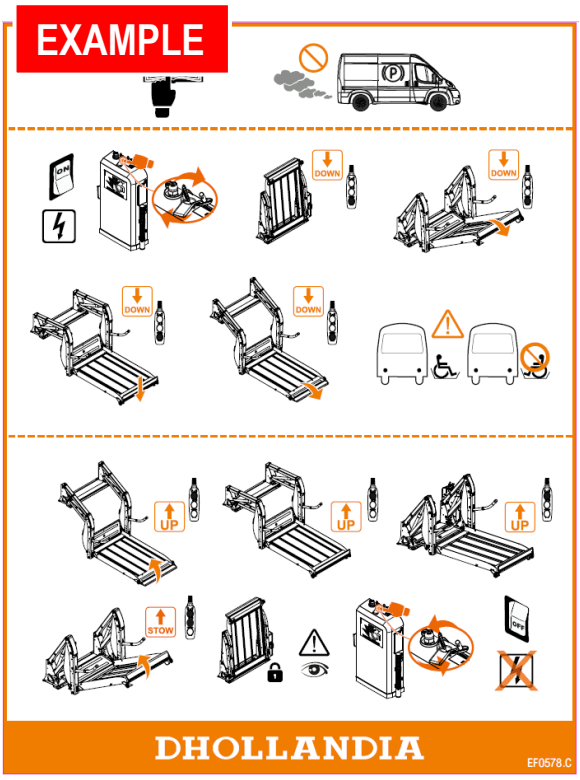
2

EF0578 B→ DH-PH2* / EF0528.B → DH-PH1*



3

EF0578.C → DH-PH2* / P2* / EF0528.C → DH-PH1* / P1*



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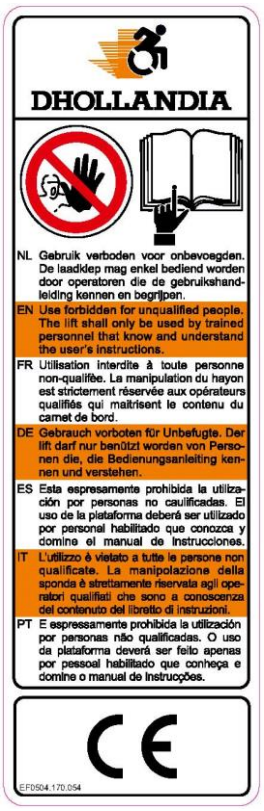

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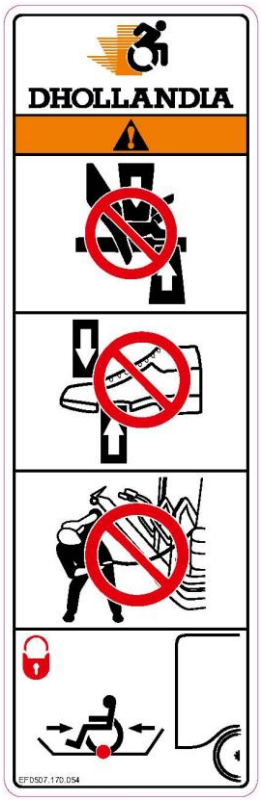
EF0507

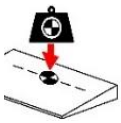
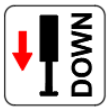
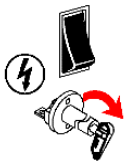


14 APPENDIX

14.1 MEANING OF SAFETY AND WARNING SIGNS

WARNING signs		MANDATORY ACTION signs	
	Overview and keep visual control over the working area of the lift at all times.		Contact your regional DHOLLANDIA distributor.
	General warning sign used to alert the user to potential hazards. All messages that follow this sign shall be obeyed to avoid possible harm.		Consult the DHOLLANDIA website. Download from DHOLLANDIA website.
	Entrapment hazard. Keep hands, limbs, loose clothes and long hair away from moving parts.		Read the manual or instructions.
	Crushing & shearing hazard. Keep hands away from moving parts.		Hold onto handrail. Protect yourself from falling off the platform, or vehicle floor.
	Crushing & shearing hazard. Keep feet away from moving parts.		Wear safety gloves.
	Slipping hazard.		Wear safety-toe shoes.
	Tripping hazard.		Wear appropriate work clothes, avoid loose-fitting clothes that might be trapped in the moving parts of the lift.
	Hazard caused by tilting objects.		Wear safety protection, eye protection and a safety hard hat.
	Hazard of falling from heights.		
	Crushing & entrapment hazard. Keep head, upper body and limbs away from moving parts.		

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		Signs for electro/hydraulic functions	
	Yes do this way. Correct work procedure.		Deploy the platform from its travel position to its work position.
	No, DO NOT do this way. -Incorrect work procedure.		Lower the platform.
	Position the load at the applicable center of gravity or load center. - Follow the load instructions.		Lift the platform
	Emergency stop. Will cause an immediate stop of the lift.		Stow the platform from its work position to its travel position.
	Emergency exit. Provision (lever, valve) creating an emergency exit.		LEG(S) DOWN: lower down the stabilizing legs
	Unlock. Disengage the mechanical locking system.		LEG(S) UP: raise the stabilizing legs
	Lock. Engage the mechanical locking system.		SWITCH between internal and external controls
	Switch ON the electrical power.		Normal operation by means of the electric controls
	Switch ON the electrical power to the lift via the main battery disconnect switch and / or cabin switch.		Manual emergency operation
	Switch OFF the electrical power.		
	Switch OFF the electrical power to the 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).		

14.2 PRESCRIBED TORQUE VALUES FOR BOLTS AND NUTS

- 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	
Metric Value	8.8	10.9	8.8	10.9
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	
Imperial Value	8.8	10.9	8.8	10.9
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 (lbsf-ft)	**Metric Banjo Bolt Size**	Newton Metre (Nm)	Pounds Force - Feet (lbsf-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

14.3 PDI CHECKLIST

1 - General inspection on the fitting parameters	OK
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 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.	

2 - Inspection of the mechanical part	OK
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.	

3 - Inspection of the electrical part	OK
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 power feed to all auxiliary controls is wired into the safety switch on the main control box (if so equipped). When the external control box is active, none of the auxiliary control units are activated, and vice versa.	
The "hold-to-run" principle works on all control units: any ongoing movement should immediately stop when one of the corresponding switches is released.	
The electrical mounted options (flashing lights) function properly.	

4 - Inspection of the hydraulic part	OK
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.	

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

7- General operation, practical tests	**OK**
Unfolding and folding test: ☐ The remote control is mounted in adequate position and can be held on to during the complete lift cycle.	
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. ☐ Any other (creaking, grinding or squeaking) noise should be carefully investigated and solved.	
Dynamic test at 100% of maximum rated lift capacity: ☐ Verify if the lift has sufficient lift capacity. ☐ Verify the general performance & stability.	
Overload test - Limitation of the lift capacity: ☐ Place the platform at rest on the ground. ☐ Put a load of 1x maximum rated lift capacity at the center 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. ☐ Put a load of 1.25x maximum rated lift capacity at the center point of maximum load. The platform should not be able to lift vertically.	

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 lift.
- Operating a lift that hasn't successfully passed the PDI can lead to premature wear or damage of the wheelchair lift itself.
- Operating a 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.

14.4 SAFE OPERATOR POSITION ON THE PLATFORM

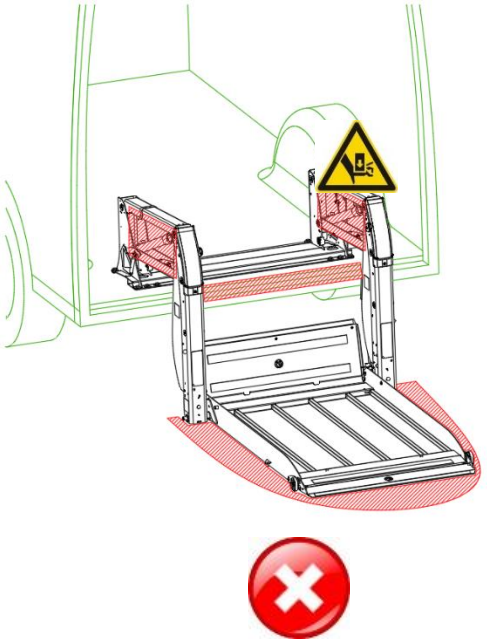
- Consult the OPERATION MANUAL.

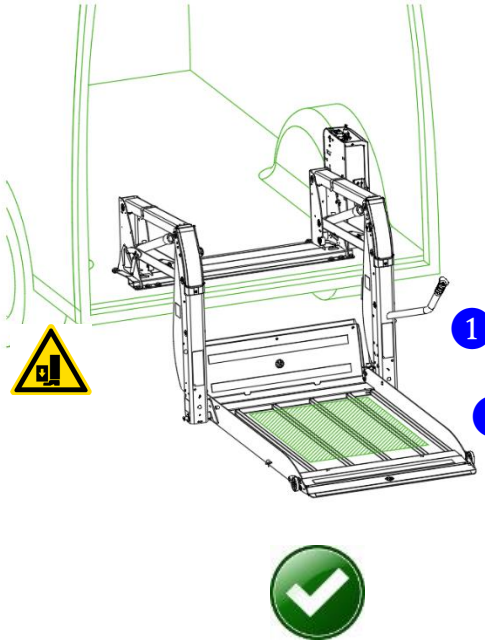
- The operator travelling up and down on the platform, faces 2 main risks:

i. Falling from the platform. Falling from the platform can result in serious body injury or death.

ii. Risk of crushing and shearing the limbs between the raising platform and the rear of the vehicle floor or extension plate. Crushing or shearing limbs or body parts can will result in serious bodily injury.

- To reduce the risk that the operator falls from the platform, DHOLLANDIA recommends that the installer chooses a handrail option on the lift. Such handgrip will enable the operator to ALWAYS maintain 3 points of contact while lifting or lowering on the platform.
- Handrail options are available from DHOLLANDIA. Please contact your national DHOLLANDIA dealer for more information.
- To reduce the risk that the operator crushes their feet between the raising floor and the end of the vehicle floor, DHOLLANDIA recommends that the installer paints a 405mm x 405mm (16x16”) square to mark the safe operator position at a safe distance of min. 254mm (10”) away from the inboard platform edge.
- A metal paint mask can be ordered from DHOLLANDIA with spare parts ref. EF0100.





1 *optional handrails.

2 *safe operator position on platform.

14.5 ELECTRIC AND HYDRAULIC REQUIREMENTS

- 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 → 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**
12V ● 1200 – 500 W	Length ≤ 10m : 16 mm² - 5 AWG Length > 10m : 25 mm² - 3 AWG
24V ● 1200 – 500 W	Length ≤ 10m : 16 mm² - 5 AWG Length > 10m : 25 mm² - 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.

14.6 SPARE PARTS LIST

- The latest spare parts lists can be downloaded from:

  www.dhollandia.com → Country & language selection → Downloads → …

15 END NOTE

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