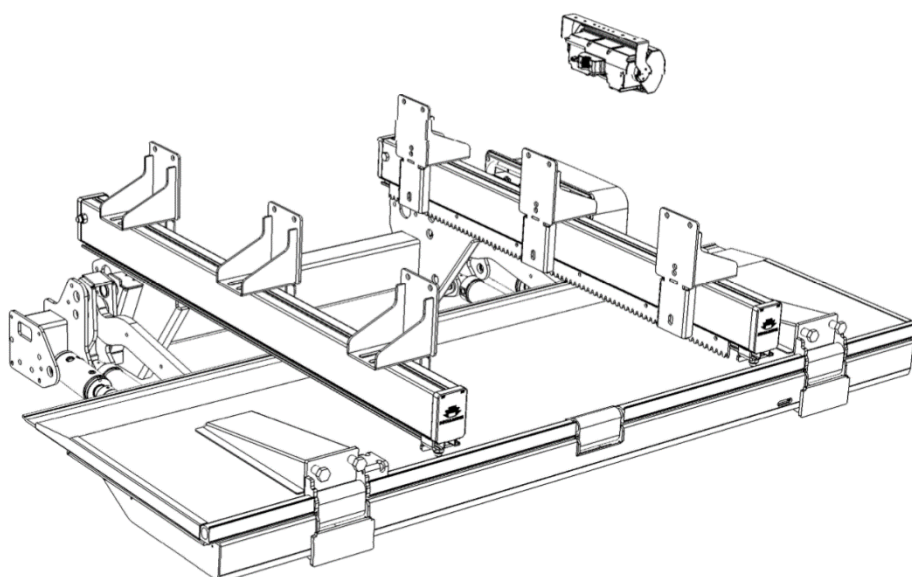


DHOLLANDIA

DH-S*

INSTALLATION MANUAL



400-3000kg

** Pictured: SM.20 tail lift

Manufacturer:
DHOLLANDIA N.V. Zoomstraat 9 9160 LOKEREN (Belgium)
Tel : +32 (0)9 349 06 92 Fax : +32 (0)9 349 09 77
e-mail : info@dhollandia.be
website : www.dhollandia.com

Read the manual in its entirety before operating the tail lift

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


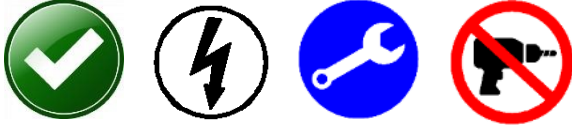
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1 UNDERSTANDING SAFETY AND WARNING SIGNS

- Many safety signs and symbols used in this manual are based on international standards, others refer to specific situations or actions.
- Consult Appendix 1 for an overview of signs and symbols used in DHOLLANDIA manuals, and their meaning. Make sure you understand these signs and symbols prior to starting the installation.

Examples of standard ANSI signs	
Examples of DHOLLANDIA purpose made signs	

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



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



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



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



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



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



SAFETY ALERT SYMBOL: is used to alert the user to potential hazards. All safety messages that accompany this sign shall be obeyed to avoid possible harm. [free-standing, or on 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 tail 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 tail lift. Contact your national DHOLLANDIA distributor. See page **Error! Bookmark not defined.** for contact info.

2 INTRODUCTION AND DISCLAIMERS

- This manual provides you with the information necessary for the installation of the DHOLLANDIA DH-LM tail lift.
- It provides you with general instructions applicable to the common truck and trailer 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 local DHOLLANDIA distributor for further assistance.
- The CE IDENTIFICATION AND INSPECTION BOOK (separate) contains the serial number identification, the CE Declaration of Conformity, the Fitting Declaration to be filled out by the installer of the tail lift, and an overview of the owner's legal obligations in terms of periodic testing and certification.



WARNING

- Improper installation can cause damage to the tail lift, reduce the durability and reliability of the tail 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 tail 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 tail 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 installation and operation of the associated DHOLLANDIA tail lift.
- It is the sole responsibility of the installer(s) to follow shop best practices for safety and craftsmanship and to use good common sense.

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

3 CONTACT INFORMATION

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



If in doubt where to find your national DHOLLANDIA distributor, visit the official DHOLLANDIA website www.dhollandia.com → **Country selection / language selection** → **Service and international work**



The latest version of all manuals can also be downloaded from the DHOLLANDIA website www.dhollandia.com → **Downloads** → **User's manuals** → ... **select required manual**

- Take notice of following important disclaimers:

DISCLAIMERS

- DHOLLANDIA disclaims liability for any personal injury, death, or property damage that results from **operating a tail 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 **use of aftermarket or non-OEM replacement parts for service or repair of the tail lift**.
- DHOLLANDIA disclaims liability for any personal injury, death, or property damage that results from **improper use of the tail 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 OPERATION



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

WARNING

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

5 SAFETY PRECAUTIONS FOR INSTALLATION

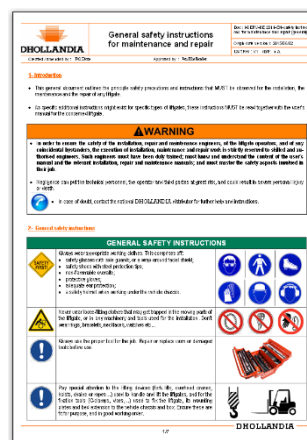
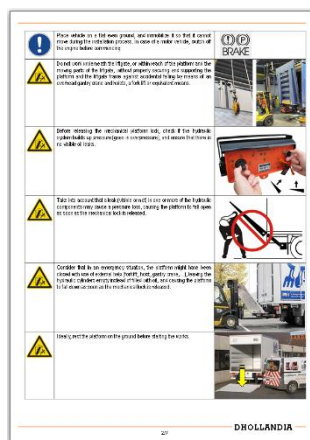


- It is essential that the personnel involved in installing, servicing and repairing tail lifts knows, understands and applies the safety instructions and precautions contained in the GENERAL SAFETY INSTRUCTIONS FOR INSTALLATION, MAINTENANCE AND REPAIR manual.
- Therefore, make sure you consult the GENERAL SAFETY INSTRUCTIONS FOR INSTALLATION, MAINTENANCE AND REPAIR manual prior to installing the tail lift.



- These instructions are supplied as a separate manual with your tail lift.
- You can also contact your national DHOLLANDIA distributor for the latest edition of this manual. See page 5 for contact info. Or download the latest edition from the website: www.dhollandia.com

your language → Downloads → User's manuals → General information



WARNING

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



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



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

- NEVER modify DHOLLANDIA tail 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.

NOTICE

- Make sure the vehicle battery power is disconnected while installing the tail lift. Connect the battery power to the tail 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 tail 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

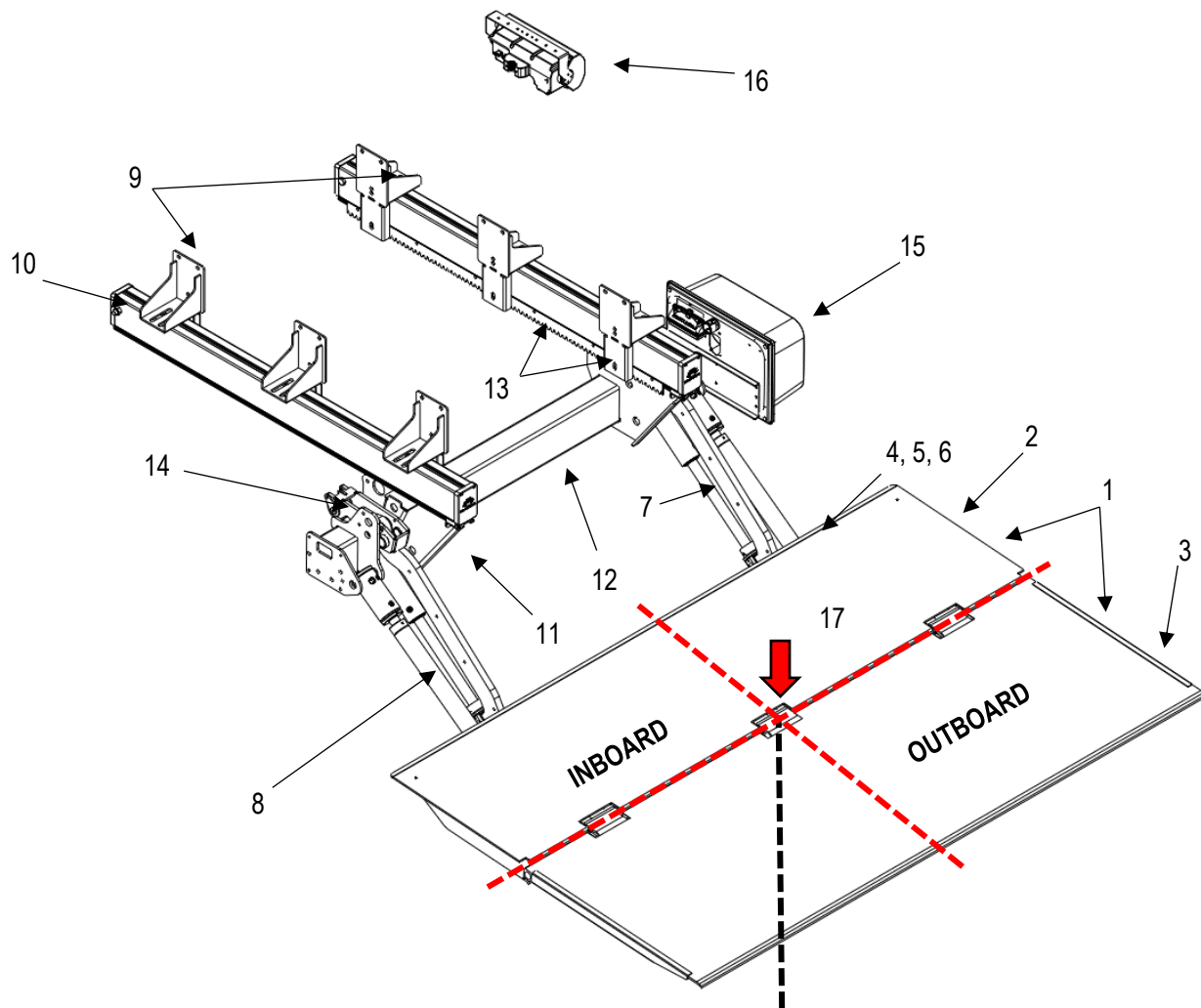
- NEVER modify DHOLLANDIA tail lifts or their mounting plates, NEVER deviate from the described installation procedures without prior written consent by the manufacturer.
- DHOLLANDIA disclaims liability for any personal injury and / or property damage that results from improper use.

6 TAIL LIFT TERMINOLOGY

6.1 DH-S* TAIL LIFT TERMINOLOGY

See figure on next page for parts corresponding to numbers in this table

#	Description
1	Platform Assembly: combination of the main and flip sections of the platform.
2	Platform, Main Section: inboard section of the foldable platform. Manufactured from steel or lightweight aluminium, with a permanent non-slip working surface.
3	Platform, Flip Section: carries the load during loading / unloading, lifting / lowering. Consists of a platform main section and a flip-over point.
4	Platform Pitch Adjustment bolts: bolts that adjust the angle of the main and flip section of the platform.
5	Platform Knuckle Assembly: assembly responsible for allowing the platform to pivot.
6	Lift Arm Weldment: support brace between the parallel lift arms.
7	Lifting Cylinder: hydraulic cylinders used to LIFT / LOWER the lift arms, the platform and its load.
8	Tilt Cylinder: hydraulic cylinders used to control the pitch of the lift platform.
9	Mounting Brackets: used to mount the sliding tubes to the vehicle chassis.
10	Sliding Tube: steel channels mounted to the underside of the vehicle body allowing the platform to slide.
11	Slide Plate: used to mount the lift frame to the sliding tubes.
12	Lift Frame: box beam connecting all main lifting components.
13	Gear Wheel and Tooth Rack: actuates the sliding function of the platform.
14	Auto Tilt Brackets (L+R): allow the platform to pitch downward and become level with the loading surface.
15	Hydraulic Power Unit: contains the electric motor driving the hydraulic pump, the oil tank, and the control valves.
16	Control Box: contains control buttons used to operate the lift.
17	Centre point of maximum load: point up to which the maximum rated capacity of the tail lift is valid. Beyond that point, the maximum safe working load diminishes according to the applicable load charts.

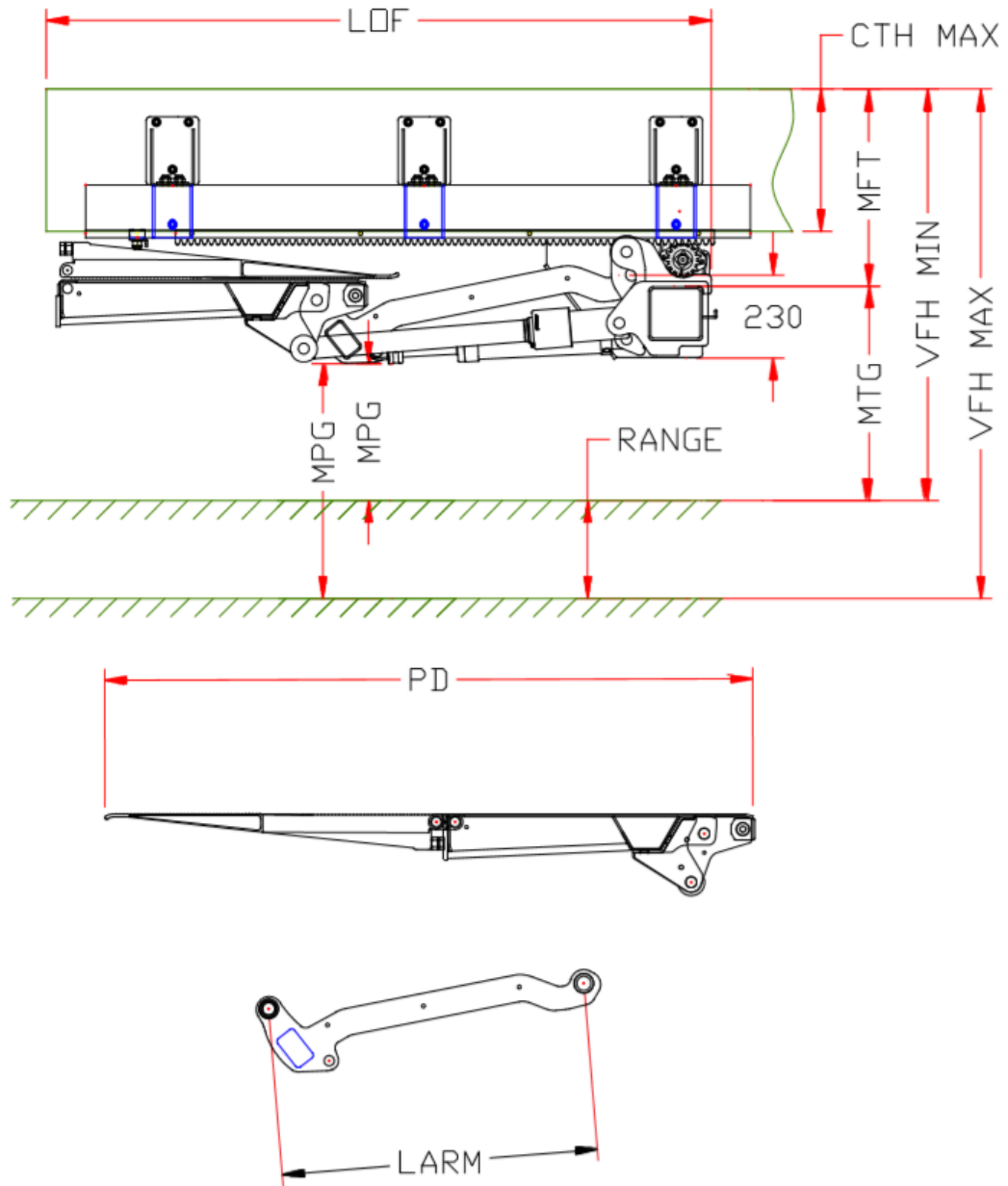


6.2 INSTALLATION PARAMETERS TERMINOLOGY

See [Figure 6.1] on next page for parts corresponding to numbers in this table

LARM	Length of the lift arms [= Lift ARM length]
VFH max	Max. height of vehicle floor (UNLOADED), applicable for the given arm length [= Vehicle Floor Height]
VFH	Actual height of vehicle floor (UNLOADED)
VFH min	Min. height of vehicle floor (FULLY LOADED)
CTH max	Max. height from underside of chassis to top of the vehicle floor, applicable for the given arm length [= Chassis Total Height]
CTH	Actual height from underside of chassis to top of the vehicle floor
MFT	Mounting height of lift frame under the vehicle: measured from the top of vehicle floor to the top of the lift frame main tube [= Mounting height Floor to Tube of frame]
MTG	Mounting height of lift frame above the ground: measured from the top of the lift frame main tube to the ground [= Mounting height Tube of lift frame to Ground]
MPG	Ground clearance under tail lift [= Mounting clearance Plates to Ground]
PD	[= Platform Depth]
LOF	Required mounting space to end of lift frame [= Lift Overhang to Frame]

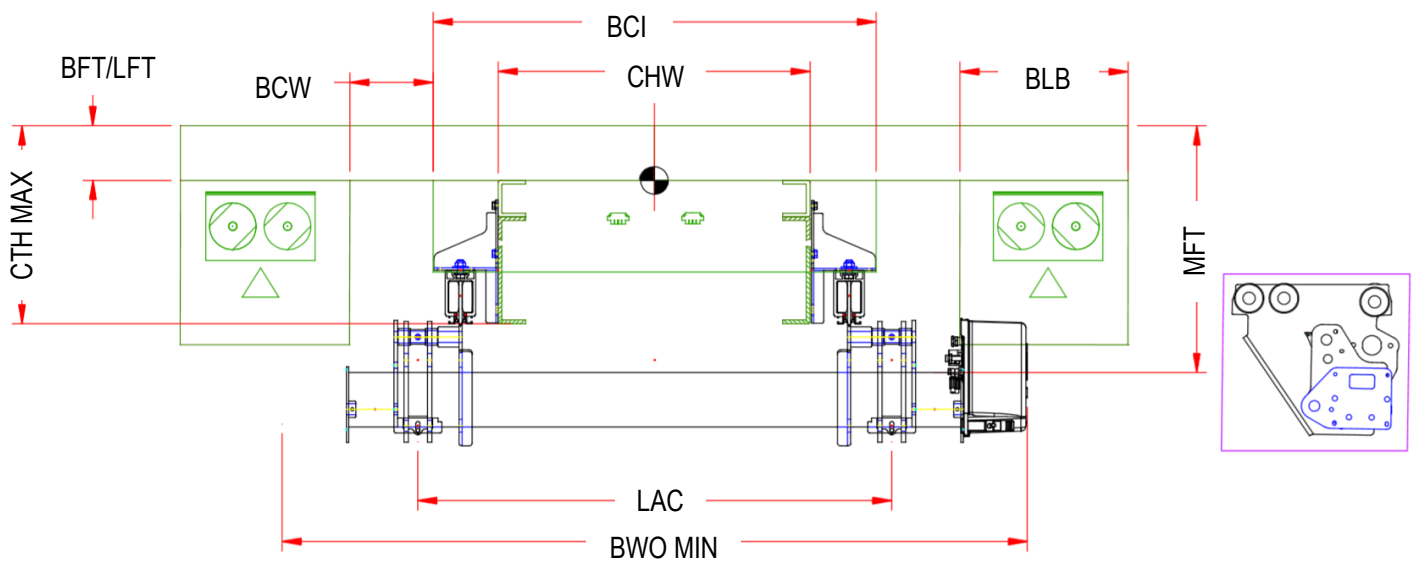
Figure 6.1



See [Figure 6.2] on this page for parts corresponding to numbers in this table.

LAC	Width of the lift arms [= Lift Arm Centre]
CHW	Vehicle chassis width [= CHassis Width]
BWO MIN	Min. body width with pump unit in premounted position [= Body Width Outside]
BCI	Width of the mid panel [= Body Cut Inside]
BCW	Width of the cut-outs for the lift arms and tilt cylinders [= Body Cut Width]
BLB	Available mounting space for rear truck lights on outside of the tilt cylinders [= Body Light Boxes]
BFT	Thickness of the rear cross member or sill of the vehicle bed [= Body Floor Thickness]
LFT	Max. thickness of the rear cross member or sill of the vehicle bed, in the maneuver zone <i>BCW</i> for the lift arms and tilt cylinders [= Lift Floor Thickness]

Figure 6.2



6.3 GETTING STARTED

- OEM Vehicle manufacturers may have issued important instructions on various aspects of the tail lift installation, specific to the brand and type of chassis, such as welding instructions (or prohibition to weld!); instructions on chassis drilling and bolt-on connections to the chassis; recommendations on the use of hydraulic stabilizing legs; guidelines for the battery and ground cable connections; fuses and other electrical interfaces; etc...

NOTICE

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

- Place vehicle on a flat even ground and chock the wheels so that it cannot move during the installation process. In case of a motor vehicle, switch off the engine and engage the parking brake before starting.
- Verify the installation kit is complete, and that all parts needed to correctly fit the tail lift are present.
- Compare the voltage of the vehicle batteries with the voltage of the hydraulic pump unit of the tail lift.
- Compare the installation dimensions and maximum installation parameters indicated in the installation drawing with the actual dimensions of the vehicle, to verify compliance. (See next chapter).
- Verify if the vehicle chassis and body are strong enough to support the load and moment created by the tail lift at maximum rated capacity. Refer to the Body Builder Guidelines of the OEM vehicle manufacturer for details.
- Check the stability of the vehicle and the weight over the axles with the addition of a tail lift loaded to maximum capacity. The weights indicated in the technical documentation and price list are theoretical and approximate and may vary from one tail lift installation to another.
- Make sure that the body is accurately fitted to the vehicle chassis.
- Remove all objects that are mounted in the mounting space required by the tail lift (RUP, spare wheel carrier, pallet racks, tool boxes, etc.). If necessary, consult with the OEM vehicle manufacturer for replacement solutions (e.g. special spare wheel carriers, exhaust pipe modifications, etc.).
- Finish the tail lift in compliance with applicable road legislation of the country where the vehicle will be registered.
- When connecting hydraulic fittings, make sure that the connections are thoroughly clean, and that you don't contaminate the hydraulic oil.
- Grease all bearings and pins before putting the tail lift into service. It is recommended to grease all articulation bearings before mounting the corresponding articulation pin.
- After installation, work through the pre-delivery inspection (PDI) checklist, verify all check points with due diligence. Make sure the final inspection is signed off by an inspector who is not part of the installation team.

- Do not pressurize any tail lift functions (LIFT / LOWER) before the tail lift installation is fully finished.
- During installation and while testing, verify that the tail lift and its moving parts don't interfere with, or cause damage to the vehicle systems (e.g. to suspension, braking system, hydraulic and electrical circuits, etc.).
- Do not release the locking bolts of the auto-tilt brackets on the lift frame before the tail lift installation is fully finished [Figure 6.3].



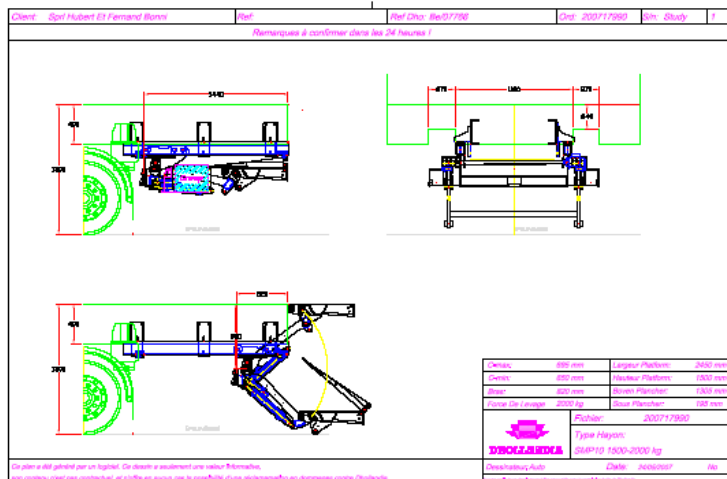
Figure 6.3



6.4 INSTALLATION DIMENSIONS

- If an INSTALLATION DRAWING is available (via order confirmation), this will provide you with the critical installation dimensions that should be observed. [see Figure 6.4]

Figure 6.4



- If no installation drawing is available, max. and min. installation parameters can be retrieved from TECHNICAL PRODUCT SUMMARIES [Figure 6.5] or from the PRODUCT RANGE POCKET GUIDE [Figure 6.6];

Figure 6.5

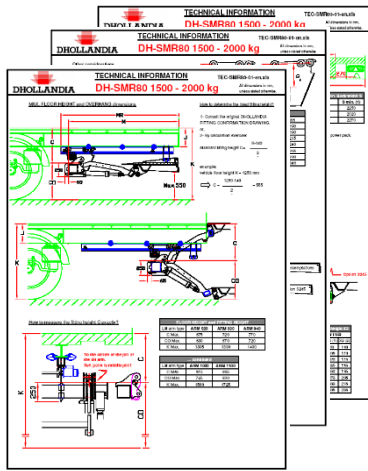
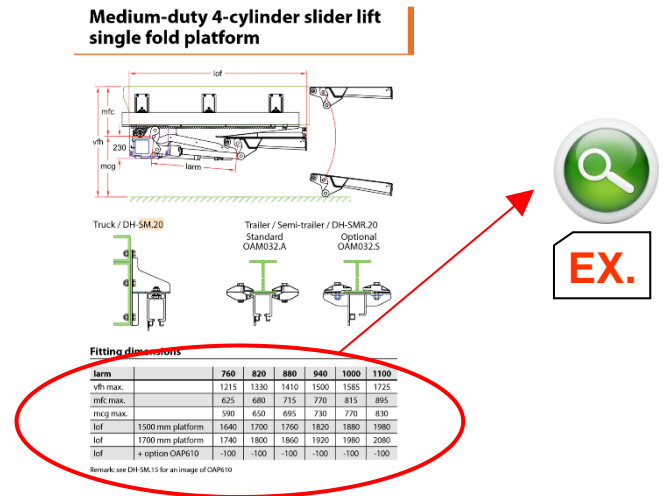
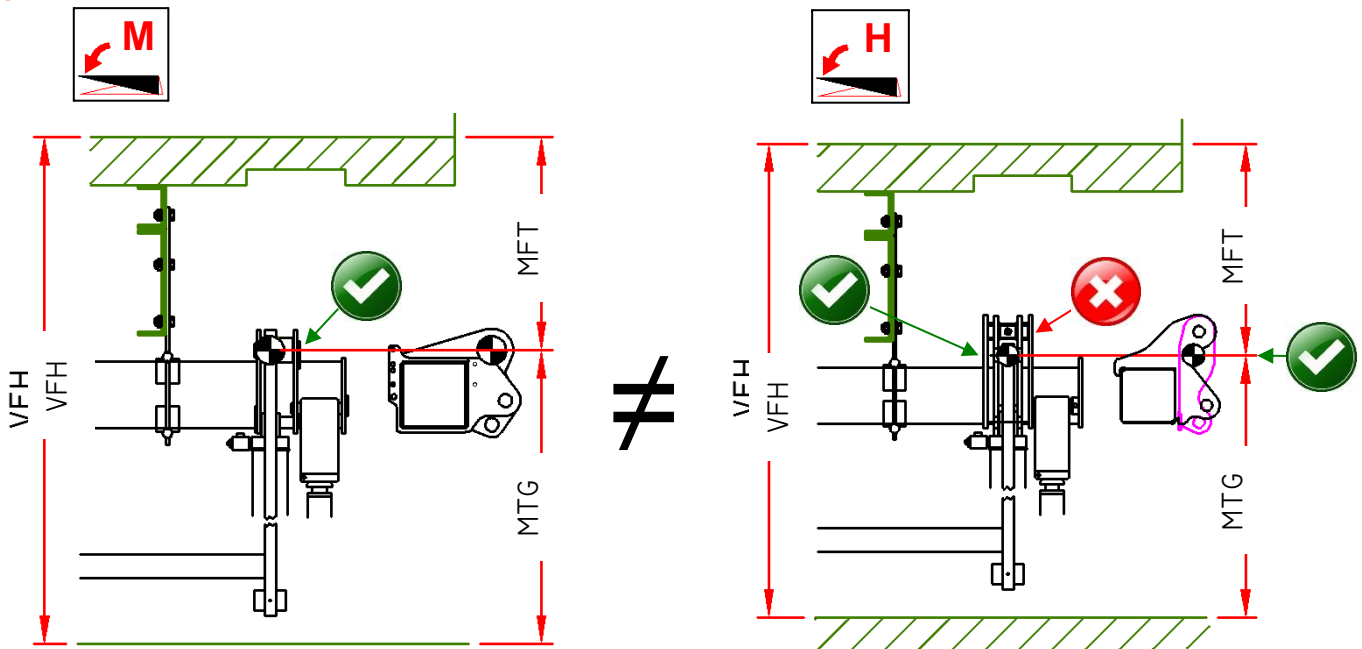


Figure 6.6



- Compare the installation dimensions and maximum installation parameters indicated in above mentioned sources with the actual dimensions of the vehicle, to verify compliance.
- Verify that the actual vehicle dimensions comply with the max. vehicle bed height *VFH max*, and with the min. / max. mounting heights *MFT*.

Figure 6.7



- Determine the applicable fitting height *MFT* either from the FITTING DRAWING supplied with the tail lift, or from the TECHNICAL SUMMARY.
- The fitting height, *MFC*, is measured from the top of the loading floor of the vehicle to the centre of the lift arm articulation pin. Be sure to follow these instructions as failure to do so could result in installation errors.

- As a general rule, in the absence of a FITTING DRAWING with a confirmed fitting height, this dimension can be calculated as follows:

$$\text{mounting height } MFT = \frac{\text{vehicle bed height } VFH - 140\text{mm}}{2}$$

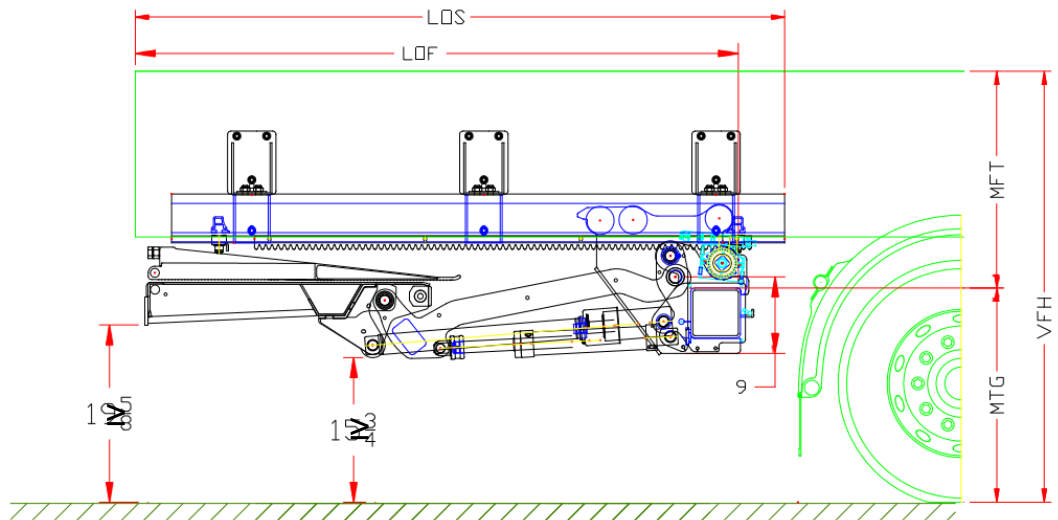
Ex. For vehicle with 1250mm bed height:

- Fitting height $MFT = (1250\text{mm} - 140)/2 = 555 \text{ mm}$

- You might want to deviate from the initial mounting height MFT . Examples:
 - In order to increase the ground clearance MTG , you could choose to fit tail lift higher above ground
 - In case of short mounting space LOF / LOP , you could choose to fit tail lift lower to the ground
 - To comply with RUP regulations, you could choose to fit tail lift higher above or lower to the ground.
- When changing the fitting height, refer to the TECHNICAL SUMMARY of the tail lift in question and be sure to stay within the given ranges of dimensions VFH , MFT , and MTG given for every lift arm [see Figure 6.8].
- Also make sure that the new fitting situation complies with the compulsory bumper bar regulations. See [Figure 6.8] for an example of the important fitting dimensions.

Figure 6.8

Dimensions table	
	mm
LOS	1960
LOF	1820
MFT	653
MTG	646
VFH	1300



- For SIDE-MOUNTING on truck chassis, when changing the fitting height, *MFT*; ensure that the drill holes in the mounting brackets for the aluminium sliding tubes still fall within the chassis [see Figure 6.9].
- Refer to the TECHNICAL SUMMARY of the tail lift for details on the correlation between the arm length, the fitting height and the required overhang [see Figure 6.11].
- For any given platform depth, *PD*; the required overhang VARIABLE can be reduced by 4" (100mm) with the option (S245.S) on the platform [see Figure 6.10].

Figure 6.9

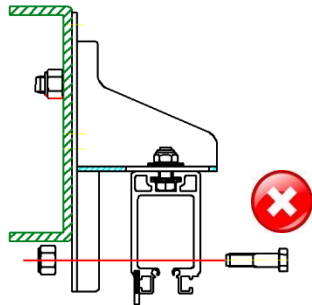
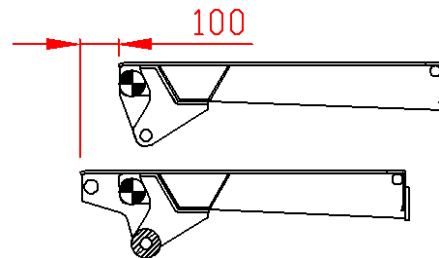


Figure 6.10



- Refer to the TECHNICAL SUMMARY of the tail lift to define:

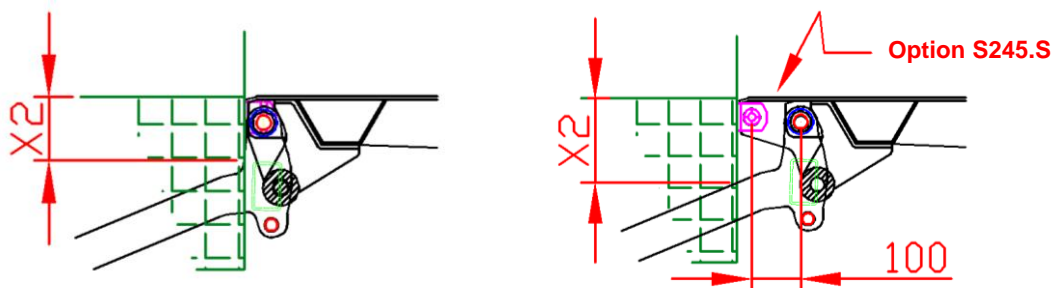
Figure 6.11

Arm length, platform depth and OVERHANG dimensions

OVERHANG M in function of arm length and platform depth (1)							
	ARM 820	ARM 880	ARM 940	ARM 1000	ARM 1100	Option S245	Min. MR
Platform depth V	M	M	M	M	M	M (3)	MR (4)
V = 1500 (2)	1640	1700	1760	1820	1920	- 100	+95
V = 1700 (2)	1740	1800	1860	1920	2020	- 100	+95

1. The minimum body width *BWO*.
 2. The cut-out dimensions *BCW*, *CHW*, determining the size of the mounting plates for the vehicle rear lights and the slots for the lift arms / cylinders of the lift. Or, the opposite way around, the dimensions indicating which arm width will suit a predetermined rear body configuration. [see Figure 6.12]
- Adjust the rear side of the body accordingly. *BCW* and *CHW* depend on the arm width *LAC*. *LFT* depends on the fitting height *MTG*.
 - The height of the rear cross member *LFT* varies also with the shape of the platform: standard platform hands or option (S245.S). [see Figure 6.12]

Figure 6.12



7 TYPES OF CHASSIS AND FITTING METHODS

- Most slider tail lifts are equipped with bolt-on sliding tubes (except for the DH-SP and DH-SV which come with weld-on sliding tubes), adapted to the type of chassis of the vehicle.
- The distinction between “side-mounting” and “under-mounting” can be made by whether the tubes are being attached to a truck chassis, or a trailer or semi-trailer chassis, respectively.
- 1 in Figure 7.3 shows the tubes side-mounting to a truck chassis. 2 in Figure 7.3 illustrates under-mounting aluminium tubes to a trailer chassis. Finally, 3 in Figure 7.3 shows under-mounting steel tubes to a trailer chassis.
- The slider tail lifts covered by this manual are all actuated in / out by means of a hydraulic motor [see Figure 7.1 and Figure 7.2].
- The hydraulic motor does not require any fixation of the drive system to the vehicle chassis. In comparison to a double acting retraction cylinder, this motor allows:

1. To reduce fitting time
2. To reduce the required overhang dimension

Figure 7.3

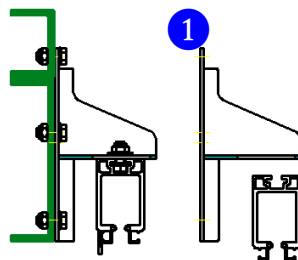
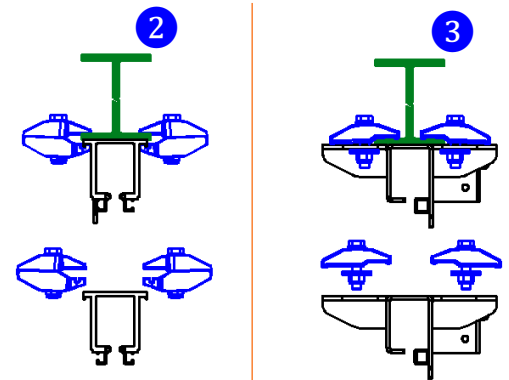


Figure 7.1



Figure 7.2



- The DH-S* tail lift range with a 1500-3000 kg capacity is comprised of 2 generic frame types and slide plates:
 1. Bolt-on slide plates, which can be moved side to side to adjust their position to the width of the vehicle chassis. [Figure 7.4]
 2. Pre-mounted or integrated slide plates, which cannot move side to side, but are configurable via their adjustable mounting brackets. [Figure 7.5]
- Take this information into account when preparing the fitting work of the tail lift.

Figure 7.4

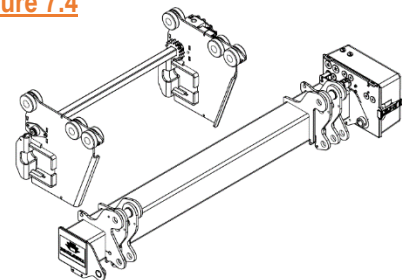
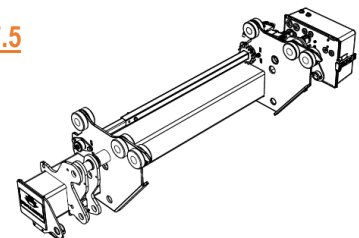


Figure 7.5



8 MOUNTING OF THE LIFT FRAME: 3 WAYS TO GET STARTED

- In general, there are 3 different methods to fit the slider tail lifts:
 1. Using the **fitting jigs** supplied with the tail lift. This method is suitable for all slider lifts with a standard, conical platform (DH-SM(R), SSU(R), SMP, SV, ...), but not for slider lifts with a flat platform (DH-SK...). See section 8.1 below.
 2. Using the **platform** lifted in a horizontal position. This method is suitable for the slider tail lifts with a flat platform (DH-SK...) but can also be used for all other tail lift types. See section 8.2 below.
 3. Using the **quick-fit transport rack** (option S410). See section 8.3 below.

8.1 METHOD WITH THE FITTING JIGS

- There are 2 types of fitting jigs: 1 set for the standard platforms [Figure 8.1Figure 8.2Figure 8.2], and 1 set for option S245.S [Figure 8.2Figure 8.3].
- Measure the outside width across the lift arms. This dimension corresponds with the inside width needed between the 2 fitting jigs. [Figure 8.3]
- If required, put a spacer between the rear cross member of the loading floor and the fitting jig to allow for a toe-guard, a rear rubber seal, and door locks before fastening the fitting jigs into position.
- Mark the centreline of the vehicle on the rear cross member of the loading floor and position the 2 fitting jigs in such a way that;
 1. The distance between the 2 fitting jigs matches the outside width across the arms.
 2. The distance from each fitting jig to the middle line is equal so they are perfectly centred in the rear body aperture. [Figure 8.3]

Figure 8.1

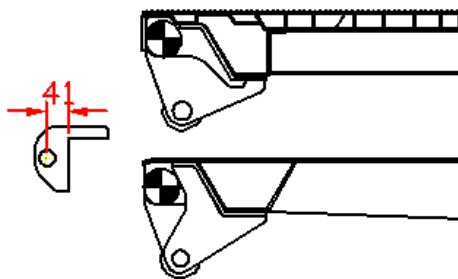


Figure 8.2

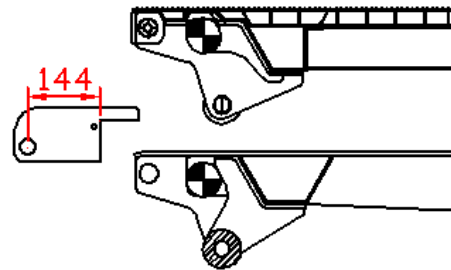
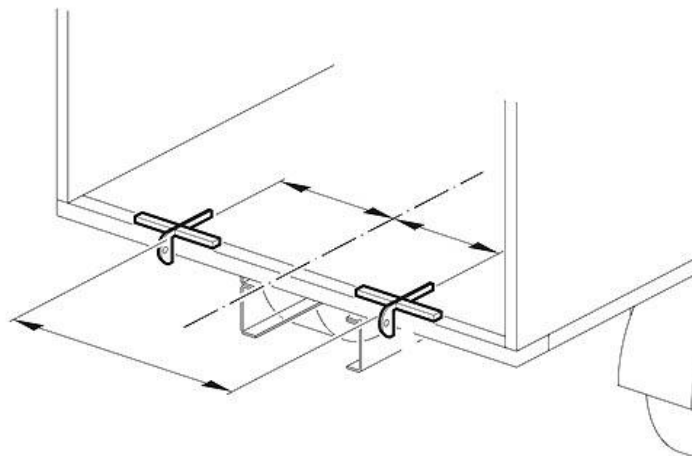


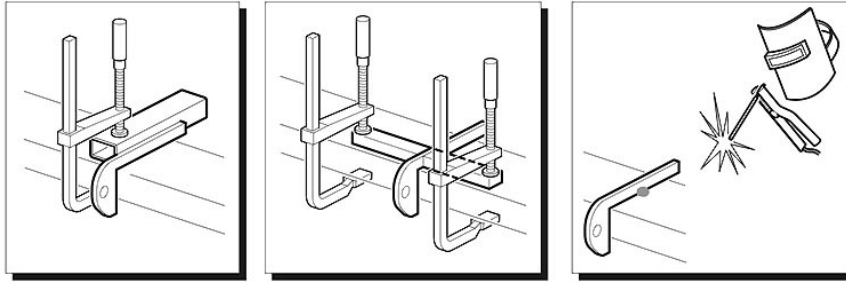
Figure 8.3



- Once the position of the fitting jig is finalized and checked, fasten them to the rear cross member of the loading floor of the vehicle by means of bolts, clamps, or spot welding. [Figure 8.4]

- Ensure that the centre holes of the 2 fitting jigs are perfectly aligned. One way to accomplish this is to slide a round bar through the holes and to check the alignment with the rear cross member of the loading floor.

Figure 8.4



8.2 METHOD WITH HORIZONTAL PLATFORM

- This is recommended for the slider tail lift with a flat platform (DH-SK...) and for all situations where the fixation of the fitting jigs to the rear cross member of the vehicle floor is problematic.
- Determine the distance (if any) at which the platform should stop behind the rear cross member of the loading floor. Prepare a corresponding spacer to insert between the rear cross member and the platform during fitting.
- Mount 2 strong tubes over the front edge of the platform. [Figure 8.5]
- Position the platform with the 2 tubes attached to it on the loading floor of the vehicle. Slide the required spacer (if any) between the rear cross member of the vehicle floor and the platform [Figure 8.6], and secure the platform safely (by means of a hoist, overhead gantry crane, or from underneath by a forklift or lifting jack...). [Figure 8.7]
- Centre the platform and check that it is parallel with the rear cross member of the loading floor.
- Note: there will be a gap between the rear cross member of the loading floor and the platform in horizontal work position. This will need to be covered by a bridge plate during operation.
- This fitting method (with gap between the platform and loading floor) can only be used if the platform can be stopped at the loading floor by other means than the standard stops which are fitted to the front side of the platform. See also section 9.3 regarding arm stops.

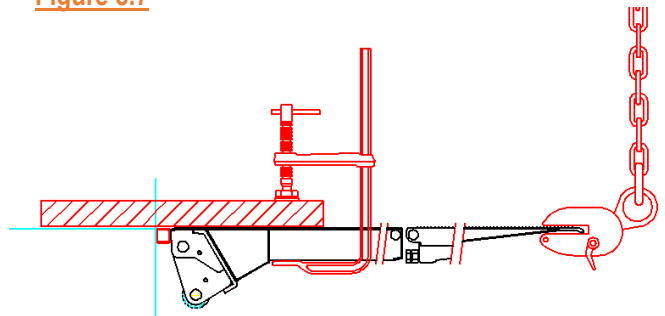
Figure 8.5



Figure 8.6



Figure 8.7



8.3 USING THE QUICK-FIT TRANSPORT RACK (OPTION S410)

- With option S410, the tail lift is delivered fully pre-mounted on a transport rack. [Figure 8.8 - Figure 8.9]
- In this case, the preparation is restricted to determining the start point (L1) for the sliding tubes under the chassis. [Figure 8.10]

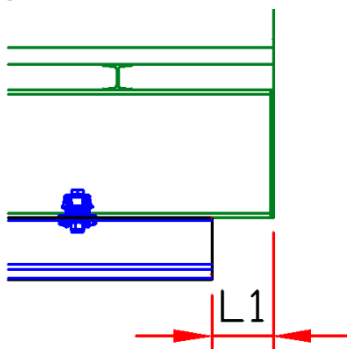
Figure 8.8



Figure 8.9



Figure 8.10



9 MOUNTING OF THE LIFT FRAME AND SLIDING TUBES

9.1 TEST FITTING THE LIFT FRAME AND SLIDING TUBES

- Position the lift frame on a wheeled jack (order code M0025) [see 1 on Figure 9.1], or use a similar device to slide the frame under the chassis of the vehicle. [Figure 9.2]
- Slide the frame under the chassis and raise the lift arms to the fitting jigs or the articulation hands on the platform.
- Slide the articulation pins through the fitting jigs (or platform hands) and the articulations on the lift arm. [Figure 9.3Figure 9.3]
- If it is difficult to raise the lift arms or to present the frame in the correct fitting position, disconnect the forks of the cylinders from the lift arms [see 2 in Figure 9.1].
- Raise it to the fitting height *MFT* [see section 6.4].
- While doing this, do not force either side of the frame higher or lower than the position it is taking naturally without exercising any special force.
- From the side of the lift, ensure the top face of the lift frame is perfectly parallel with the body and the chassis. [1 in Figure 9.4Figure 9.4]
- If applicable (not for SM.80, SMP... with integrated side plates), fit the slide plates over the frame and mount the front brackets, washers, and M24 nuts loosely. Do not tighten the nuts at this stage. [2 in Figure 9.4]
- Refer to the FITTING DRAWING to determine the distance (L) from the rear side of the sliding tubes to the end stops. [Figure 9.]
- If not drawing is available, this distance depends on how / where the platform buffers are mounted [see Figure 9. - Figure 9.]. Approximate values.
- For aluminium sliding tubes, fasten the toothed racks [3 in Figure 9.] just in front of the end stops at an equal distance from the edge of the sliding tubes (left and right).

Figure 9.1

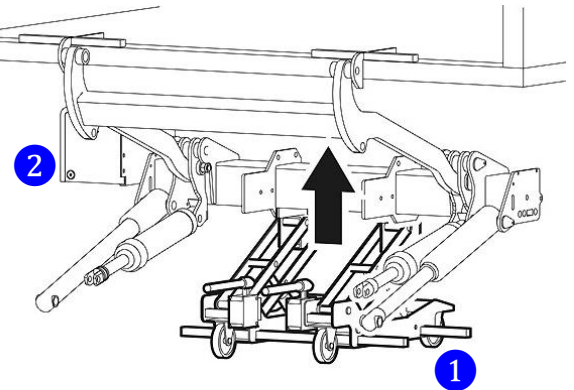


Figure 9.2



Figure 9.3

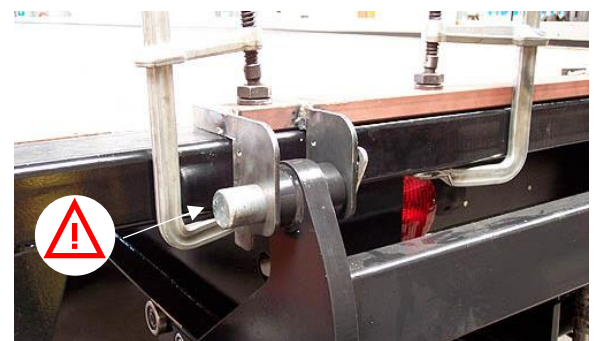
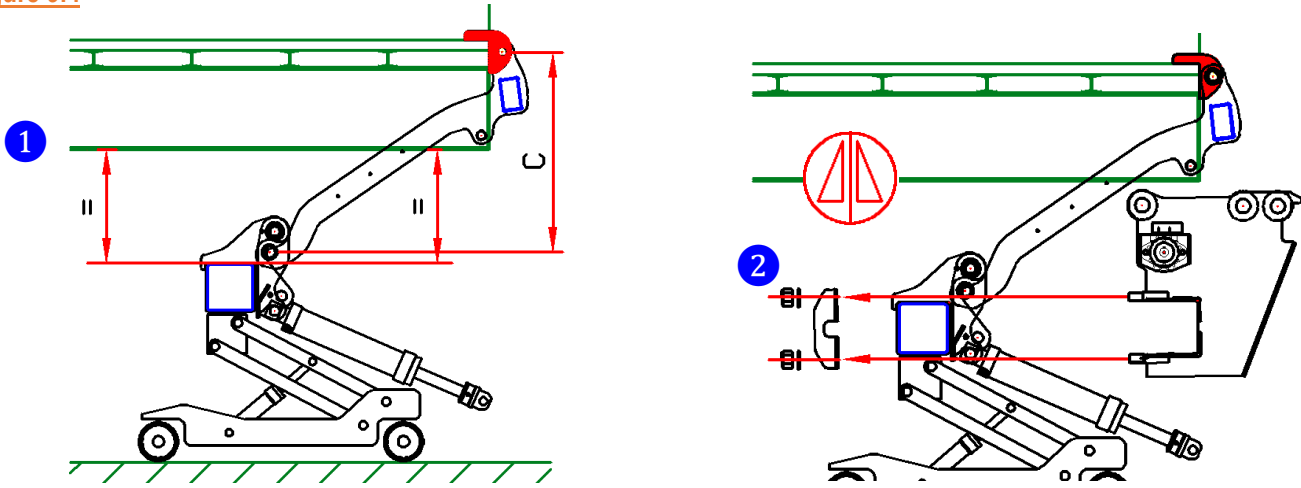


Figure 9.4



- Figure 9. illustrates a truck chassis with a platform buffer mounted to it **outside** the sliding tube. See [Figure 9.6] for the length (L) which the bumper should be mounted past the blocking edge of the end stop.

1	End Stop
2	Platform Buffer
3	Tooth rack for retraction

Figure 9.5

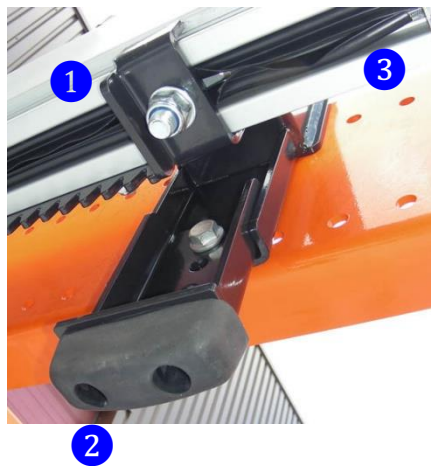
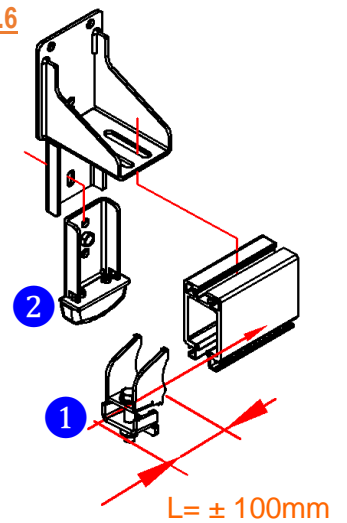


Figure 9.6



- Figure 9. shows a trailer chassis with a platform buffer mounted to it **inside** the sliding tube. See [Figure 9.7] for the length (L) at which the bumper should be mounted for this instance.

Figure 9.7

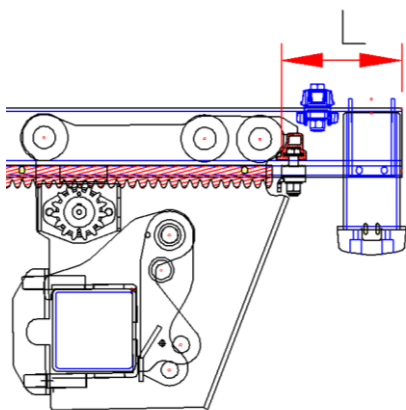


Figure 9.8

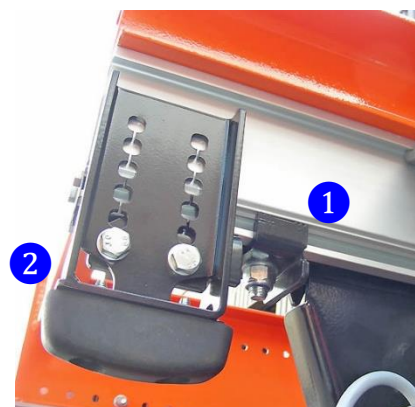


Figure 9.9

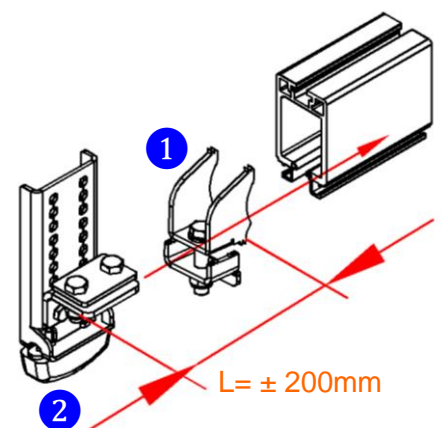


Figure 9.10

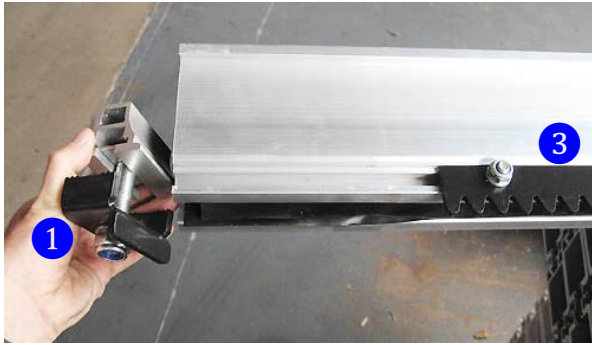


Figure 9.11

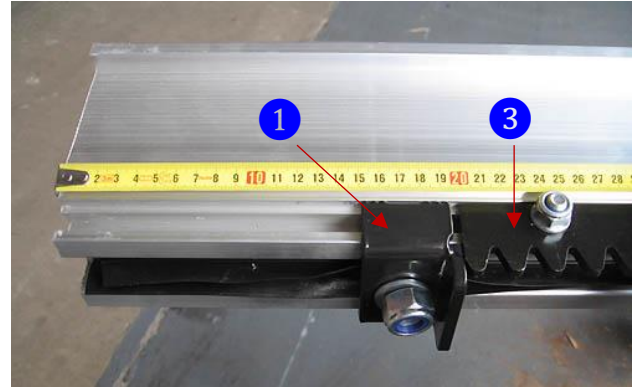
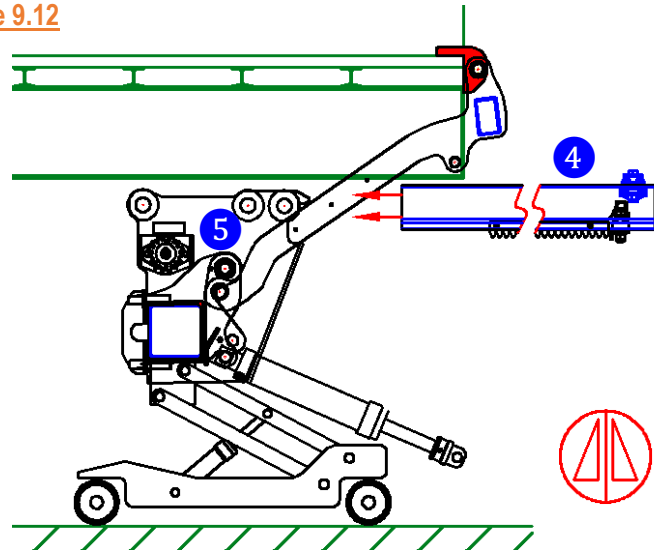


Figure 9.12

4	Sliding Tubes
5	Slide Plates



- Mount the sliding tubes [4 in Figure 9.12] over the rollers on the slide plates of the tail lift frame [5 in Figure 9.12]. Push the tubes forward until the ends stops [1 in Figure 9.6 – Figure 9.10] hit the rear face of the slide plate.
- If the sliding tubes would hit the mudguard of the vehicle, the air bag, or any other parts of the vehicle prematurely, the position of the end stops within the tubes, or the length of the sliding tubes can be adjusted accordingly. [see also Figure 9.18]



WARNING

Do not drill, weld, or cut any parts of the slide tubes or the vehicle chassis until the full mounting position of the tail lift has been validated and tested with a positive result.

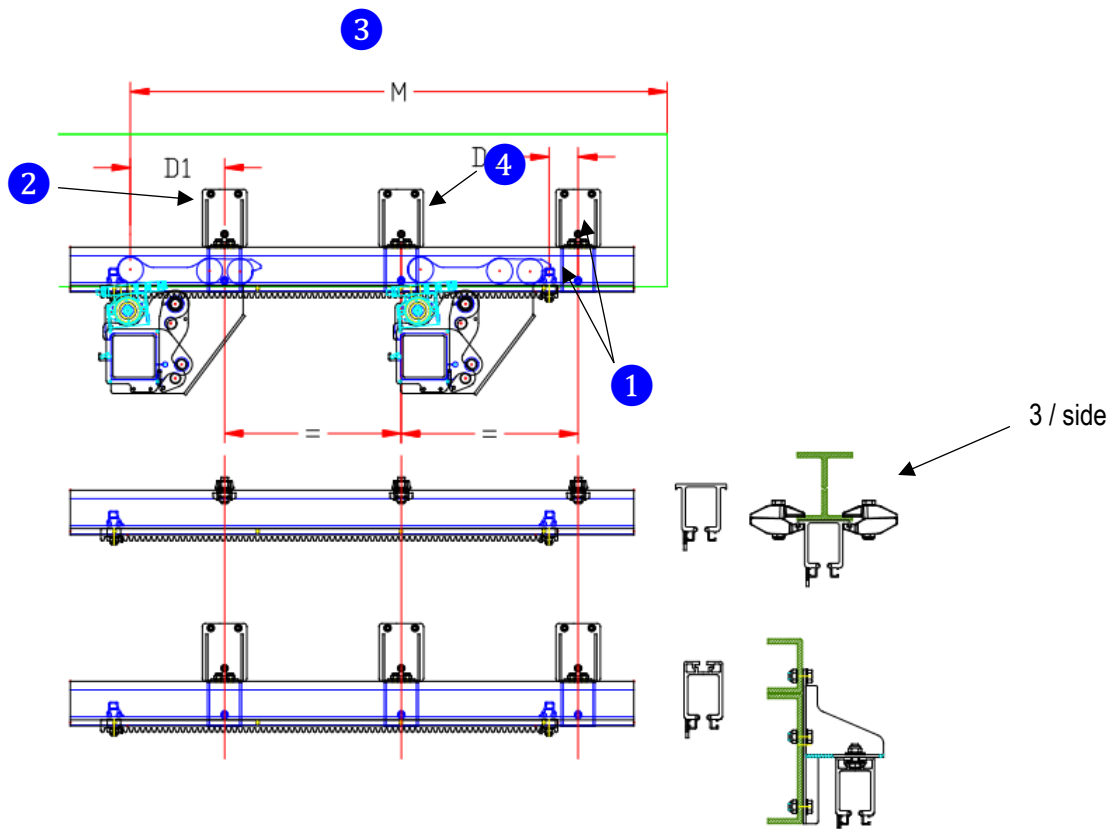
9.2 POSITION OF THE MOUNTING BRACKETS ON THE ALUMINIUM SLIDING TUBES FOR DH-SM(R) 1500-2000 KG

- Refer to the FITTING DRAWING for confirmation of the correct position of the mounting brackets of the sliding tubes.
- If not available (e.g. fitting of stock tail lift), refer to the TECHNICAL SUMMARY to determine the positions of the mounting brackets.
 1. The position of the **rear** mounting brackets is determined by the work position of the tail lift. [1 in Figure 9.]
 2. The position of the **front** mounting brackets [2 in Figure 9.] is determined by the overhang dimension (M) [3 in Figure 9.]. When the platform is not mounted flush with the rear end of the vehicle, correct the overhang dimension (M) accordingly.
 3. Follow the instructions for the third / middle mounting bracket [4 in Figure 9.].

WARNING

- It is important to position the mounting brackets of the sliding tubes properly. Incorrect positioning can lead to overload situations and premature failure of the tail lift. [Figure 9.14]
- For side-mounted sliding tubes, wider brackets are available to mount the tail lift alongside the spring hangers of a mechanical vehicle suspension. [Figure 9.15]

Figure 9.13



	MIN.	MAX.
D1	200mm	350mm
D2	0mm	100mm

- 1 and 2 in [Figure 9.14] show the mounting bracket too far to the rear, and too far to the front, respectively (100mm threshold):

Figure 9.14

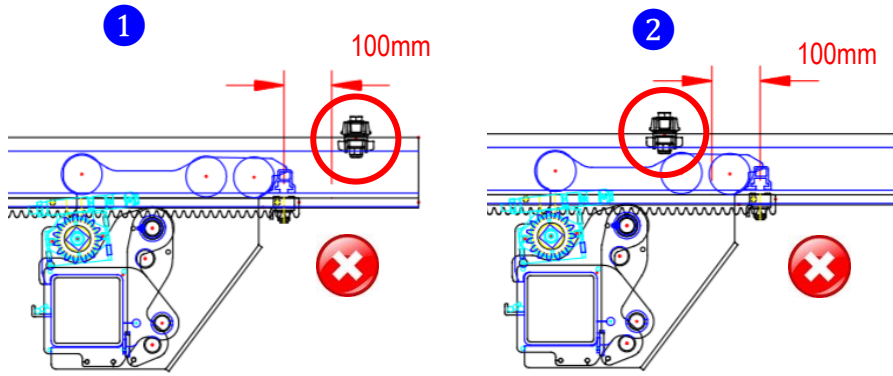
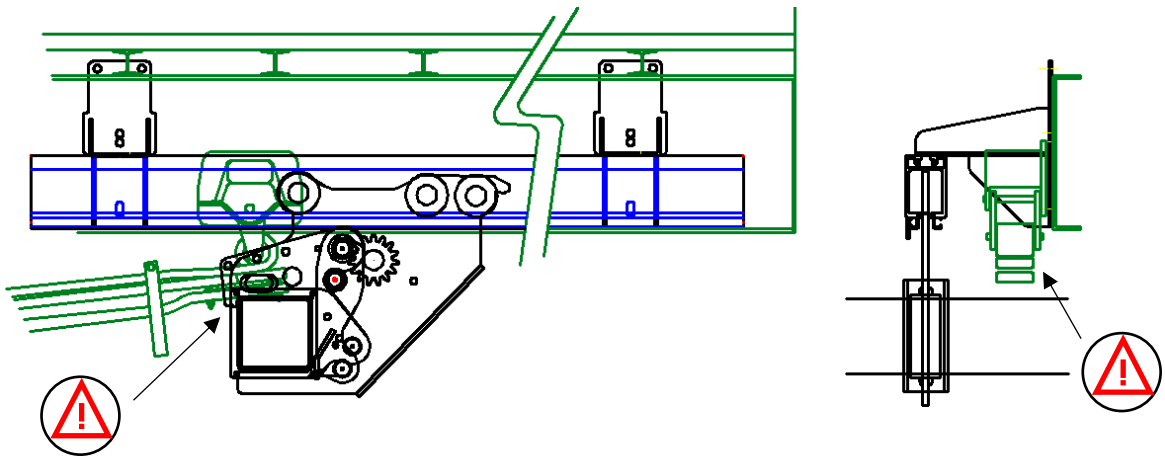


Figure 9.15



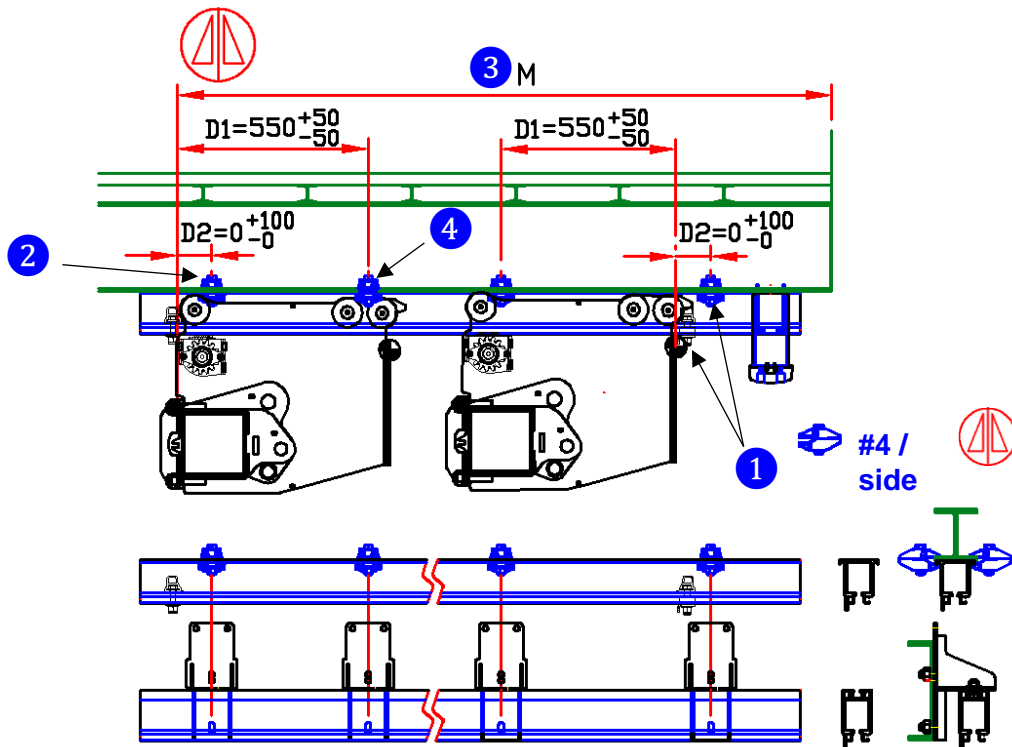
9.3 DIFFERENCES FOR DH-SSU(R) 2000-3000 KG AND DH-SK(S) 1000-2000 KG

- For these tail lift types, the quantity of mounting brackets is increased to 4 per side.
- Refer to the FITTING DRAWING for confirmation of the correct positioning of the mounting brackets for the sliding tubes.
- If not available (e.g. fitting stock tail lift), refer to the TECHNICAL SUMMARY to determine the positions of the mounting brackets:
 1. The position of the **rear** mounting brackets is determined by the work position of the tail lift [1 in Figure 9.].
 2. The position of the **front** mounting brackets [2 in Figure 9.] is determined by the overhang dimension (M) [3 in Figure 9.]. When the platform is not mounted flush with the rear end of the vehicle, correct the overhang dimension, M accordingly.
 3. Follow the instructions for the 2 middle mounting brackets [4 in Figure 9.].

WARNING

It is important to position the mounting brackets of the sliding tubes properly. Incorrect positioning can lead to overload situations and premature failure of the tail lift. [Figure 9.]

Figure 9.16

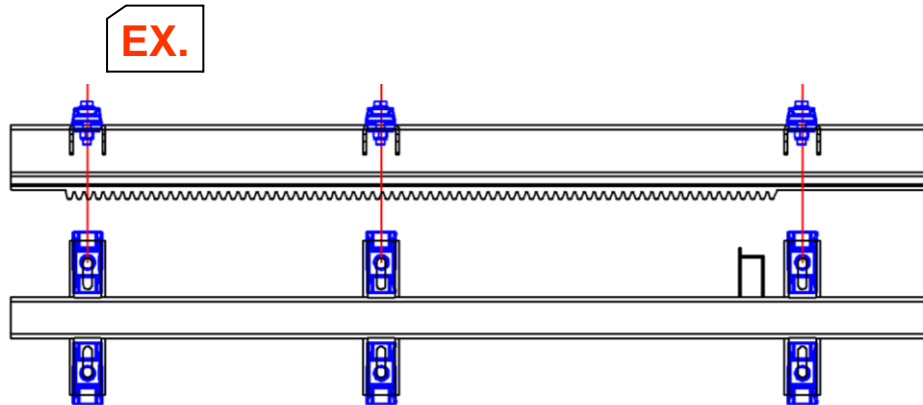


	MIN.	MAX.
D1	500mm	600mm
D2	0mm	100mm

9.4 STEEL SLIDING TUBES

- The steel sliding tubes for trailer / semi-trailer chassis have predetermined mounting positions [see Figure 9.17]. Their position on the vehicle chassis is fixed.

Figure 9.17



9.5 MOUNTING THE SLIDING TUBES TO THE VEHICLE CHASSIS

- Validate the mounting position of the tail lift and its sliding tubes before fastening the mounting brackets. If the sliding tubes would not fit in the initial setup of the end stops, these can be moved and adjusted accordingly. The tubes can also be shortened in order to allow them to fit [see Figure 9.18].
- When fastening the mounting brackets and the sliding tubes, make sure the alignment in all directions is correct.
 - The alignment of the mounting brackets in comparison to the chassis [see 1 in Figure 9.19].
 - Except for chamfered chassis, the parallelism of the sliding tubes to the chassis. [2 in Figure 9.19]
 - The parallelism between the 2 sliding tubes, one in comparison to the other. [3 in Figure 9.20]

Figure 9.18

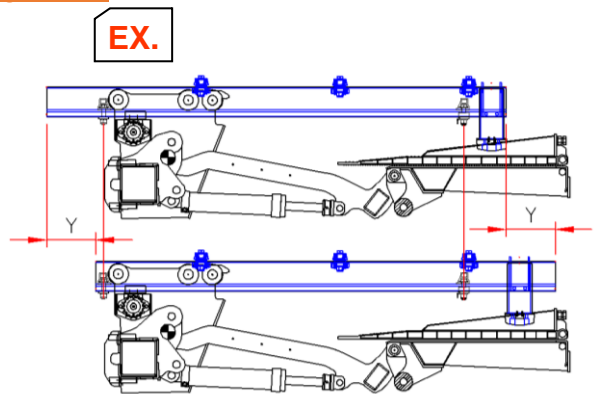


Figure 9.19

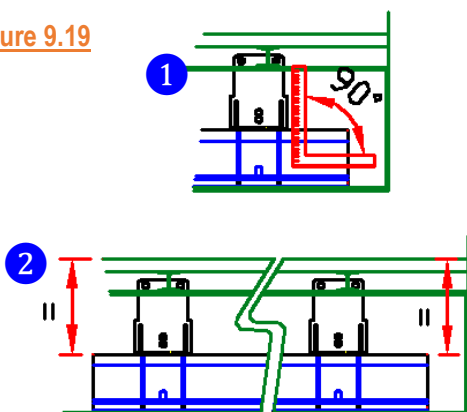
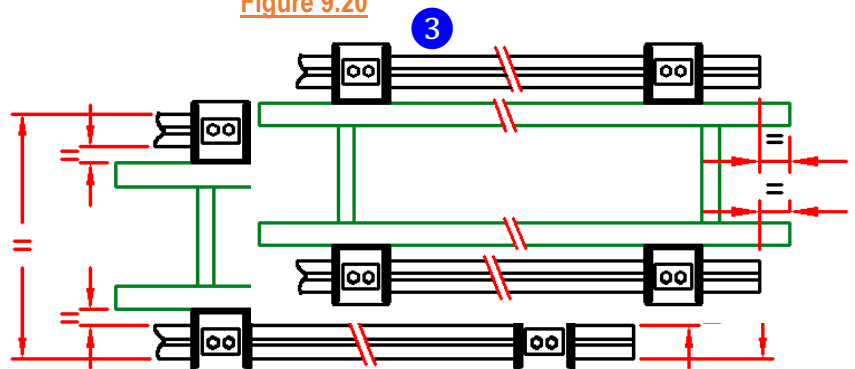


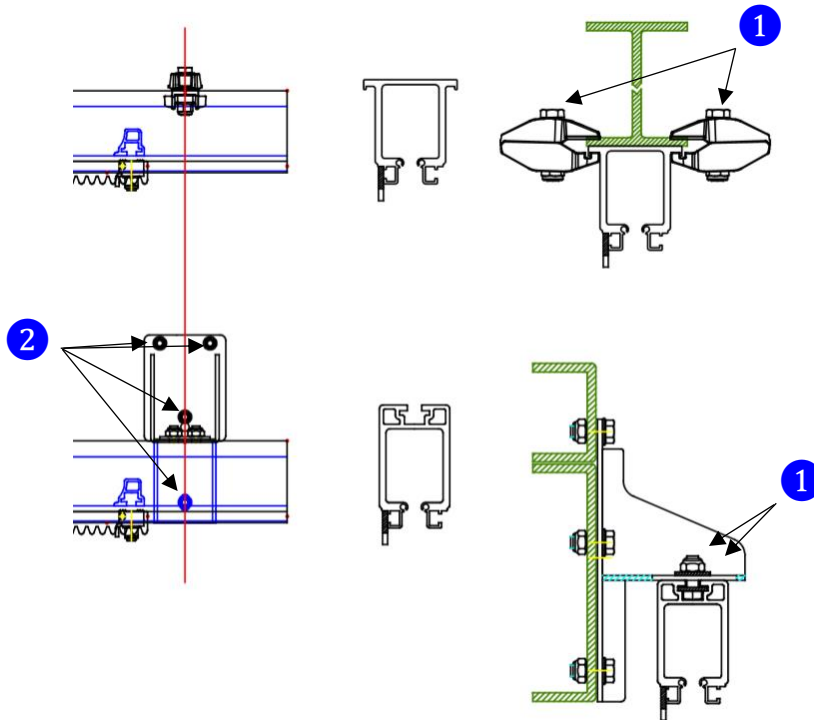
Figure 9.20



- Note: for semi-trailers or trailers with chamfered chassis, special slide plates with an angle compensation of 5° and 3° are available upon request. Consult your national DHOLLANDIA agent for further information.

- Make sure that the left and right sliding tubes are mounted at an equal distance from the rear of the vehicle chassis. [Figure 9.20]
- Side-mounting: Mark the pattern for the drill holes of all mounting brackets on the chassis. Lower the sliding tubes and the lift frame again so as to have easy access to the area where the drills must be performed.
- Drill the required holes into the chassis (\varnothing of the drill = M-value of the bolt + 0.5mm), apply sufficient anti-corrosive protection (zinc spray, Dinitrol...) to the freshly made chassis perforations and allow to dry.
- Fit the sliding tubes and mounting brackets as shown. [Figure 9.21]
- Side-mounting + option S255: Fit the platform buffers S255 now, together with the mounting brackets of the sliding tubes to the chassis of the vehicle. This will alleviate the amount of work done at a later stage. [Figure 9.22]

Figure 9.21



Per side		
1	2x M16 (8.8)	195 Nm
2	4x M14 (10.9)	195 Nm

Figure 9.22

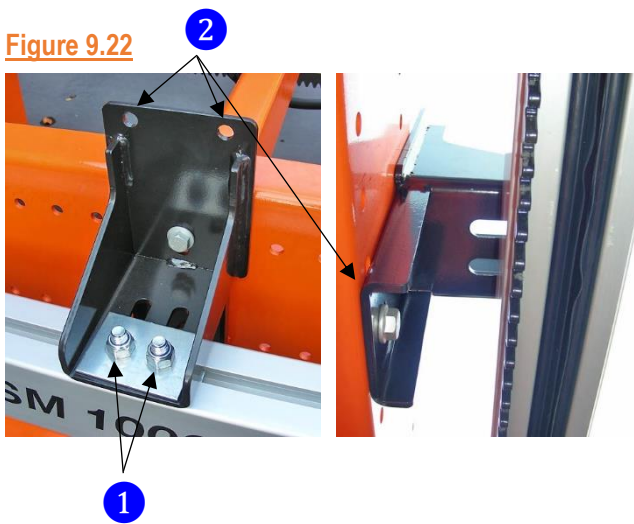
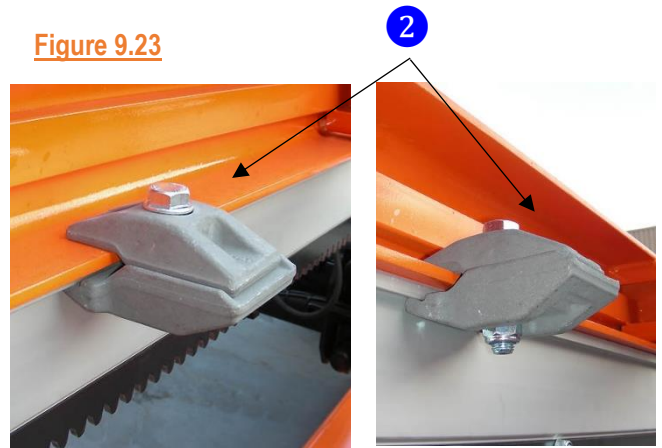


Figure 9.23

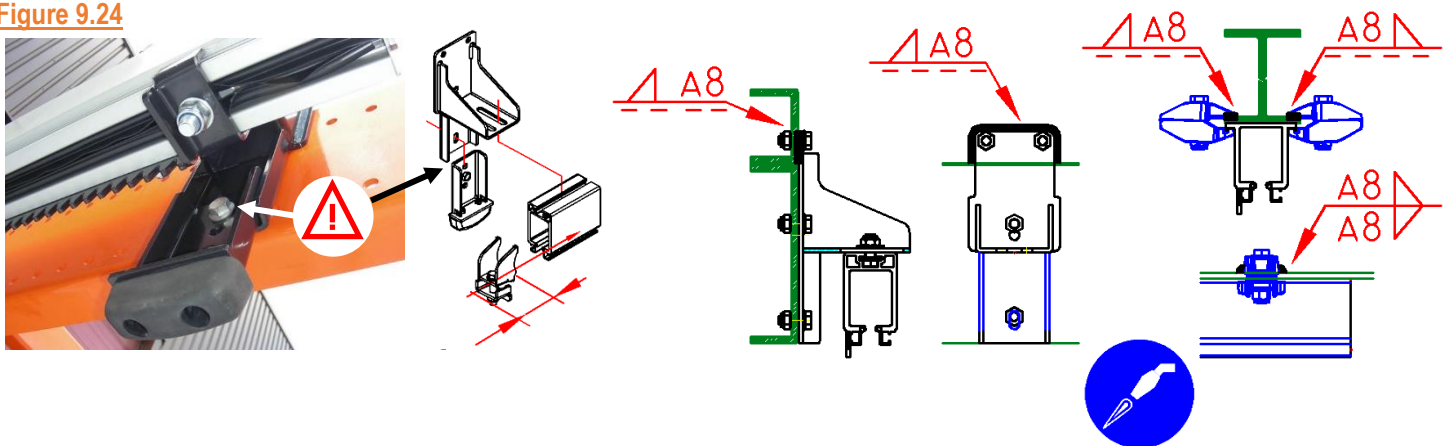


NOTICE



- For all tail lifts $\geq 2500\text{kg}$, reinforce the bolted connections by means of a 10mm weld to the vehicle subframe (truck chassis), or to the bottom flange of the I-beam (trailer chassis). [Figure 9.24]
- Consult the FITTING AND BODY BUILDING instructions of the vehicle manufacturer to verify what is allowed.
- The torque fastenings 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.
- 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 their instructions into account.

Figure 9.24



CAUTION



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

9.6 ADJUSTMENT AND FASTENING OF THE SLIDE PLATES

- For tail lifts with side-mounting and premounted slide plates [Figure 7.5], the gap between the slide plates and the chassis is covered by adjustable mounting brackets [see Figure 9.]. Tail lifts concerned: DH-SM, SMP, SV...
- With bolt-on or pre-mounted slide plates, mount the sliding tubes as close as possible to the vehicle chassis. [see 1 in Figure 9.]
- Tail lifts for under-mounting are equipped with bolt-on slide plates [see Figure 7.4], the position of which can be adjusted to the chassis width of the vehicle [see Figure 9.]. Tail lifts concerned: DH-SMR, DH-SSUR...
- Here, the adjustment available on the mounting brackets is used to adapt the tail lift to the width of the lower flange of the I-beam of the vehicle chassis. [Figure 9.]

Figure 9.25

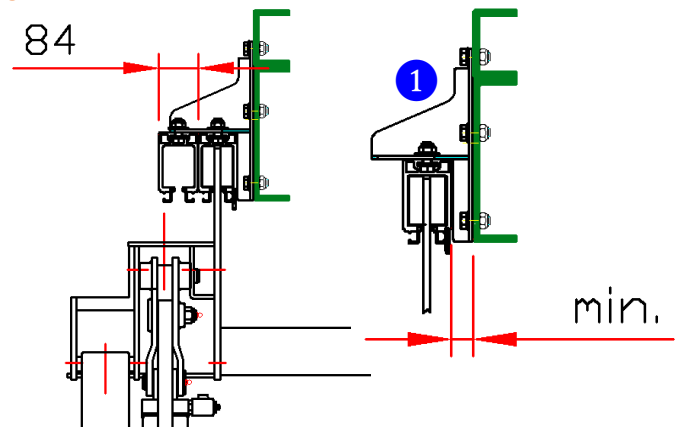


Figure 9.26

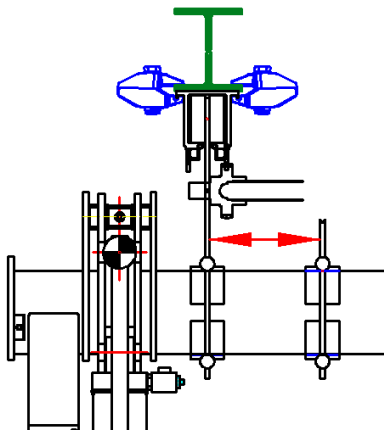
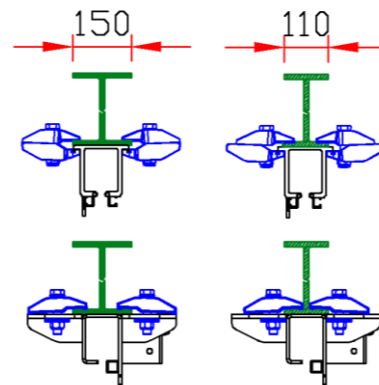


Figure 9.27



- Verify that the lift frame is correctly centred beneath the vehicle chassis and body. [Figure 9.28]
- Straighten the slide plates and make sure they stand perpendicularly to the lift frame. [Figure 9.29]
- Fasten the M24 locking nuts [see Figure 9.31]. Ensure that:
 1. The front brackets sit flush with the front side of the lift frame
 2. The upper and lower bolts are fastened gradually and in the alternating order
 3. The bolts are fastened with a torque wrench to the required Nm setting [see appendix]

NOTICE

- For all tail lifts $\geq 2500\text{kg}$, and / or platform depths $\geq 2000\text{mm}$, weld the mounting plates to the lift frame by 8mm surround welds over the top, rear, and bottom faces of the frame. [Figure 9.]
- The torque fastenings 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 necessary.

Figure 9.28

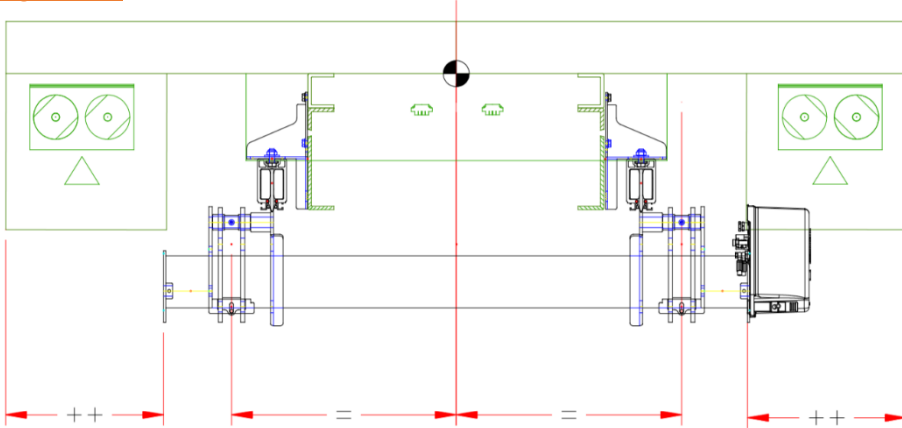


Figure 9.29

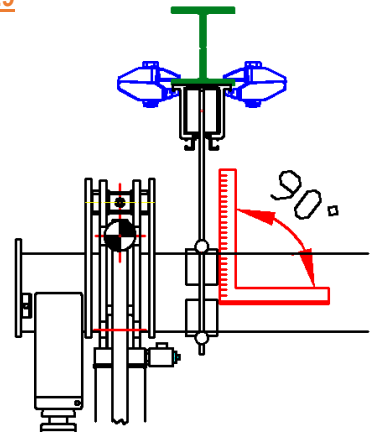


Figure 9.30

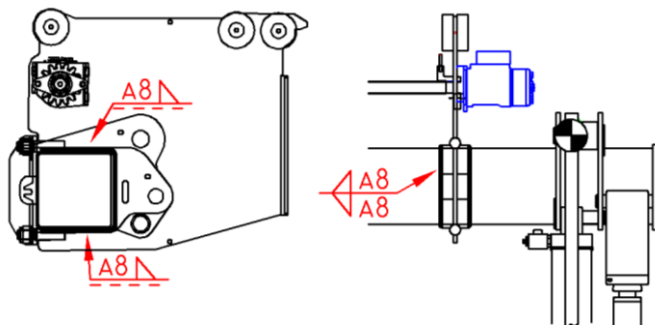
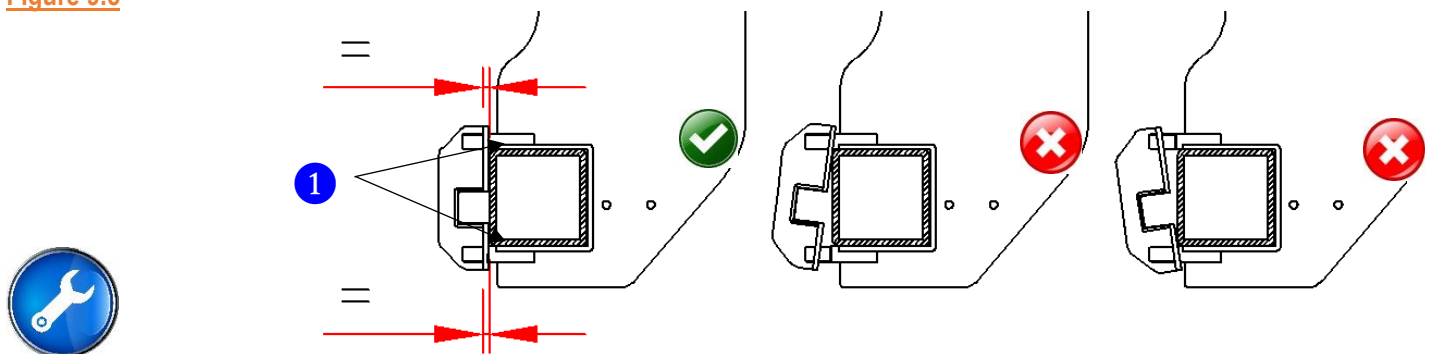


Figure 9.5



Per Side		
1	2x M24 (8.8)	450 Nm

10 MOUNTING THE PLATFORM & FINALIZING THE MECHANICAL WORK

10.1 MOUNTING THE PLATFORM TO THE LIFT ARMS

- Mount the electric controls at this stage [see chapter 11], or at minimum connect the battery and earth cables of the tail lift to an external battery. This will help with manipulating the hydraulic cylinders. Then proceed with mounting the platform.
- Grease the 4 articulation points on the lift arm and the 2 articulation points on the tilt cylinders prior to mounting the platform and pins. [Figure 10.1]
- Lift up the platform (by forklift, hoist, overhead gantry crane...) and bring it into position above the lift arms (in either a horizontal or vertical position). Align the platform hands with the articulation holes of the lift arms, mount the pins, and fasten their locking bolts [see Figure 10.2 - Figure 10.4].
- Tilt the platform open to a horizontal angle.
- Continue to support the platform by means of a forklift, hoist, or gantry crane so you can continue working in the action radius of the platform in safety.
- Connect the tilt cylinders to the platform hands [see Figure 10.4]. The piston rods can be moved with the help of the regular electric controls; or manually [see Figure 10.5] by:
 1. Using the manual emergency operation on the safety valves of the cylinders
 2. Unscrewing the flexible oil pipes beside it (in order to avoid vacuum forces)
 3. Then push and pull the piston rod by hand

Figure 10.1

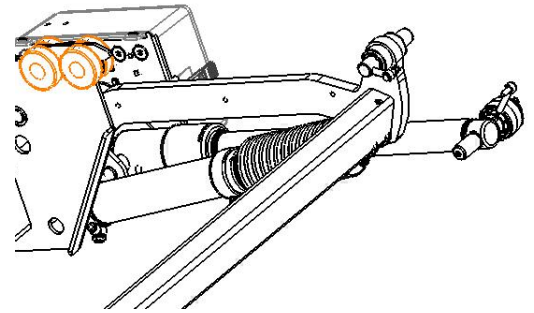


Figure 10.2

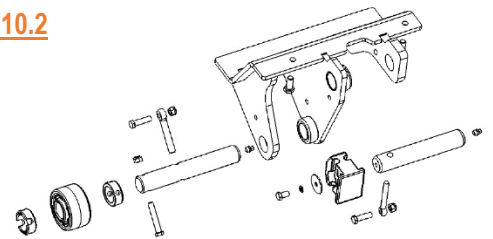


Figure 10.3

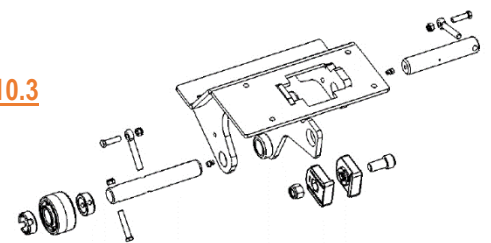


Figure 10.4

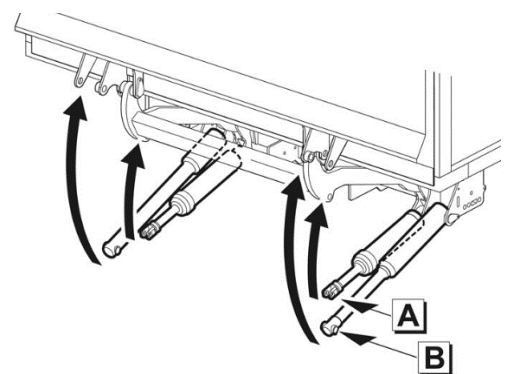
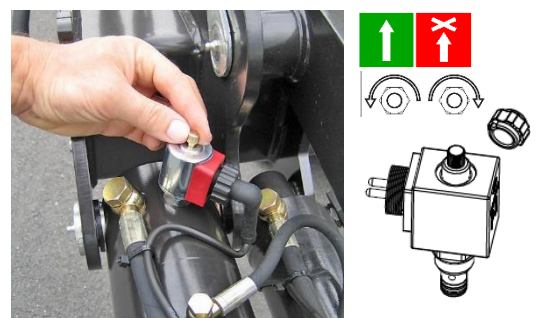


Figure 10.5



⚠ WARNING

- See the USER'S MANUAL to check on the correct procedures for manipulating the safety valves.
- If the electric controls are being used to move the cylinders, proceed with care. The cylinders might contain air, and can therefore react with unforeseen characteristics.
- Secure the pins of all articulation points firmly by means of locking bolts (supplied with the tail lift) and pressurize cylinders gently.

10.2 CHECK THE POSITION OF THE TOOTH RACK OF THE RETRACTION SYSTEM

- The aluminium sliding tubes are delivered with the tooth racks in a standard position that works for the majority of applications.
- When sliding onto the lift frame and sliding plates for the first time, make sure that the tooth rack covers the minimum range (TR) [see Figure 10.8]. Slide the tubes from the platform work position to the stowing position.
- The range TR should overlap the gear wheel both in working and stowing position. This will prevent the gear wheel running off of the tooth rack. [Figure 10.8]
- If this is not the case, loosen the bolts that fix the tooth rack to the sliding tubes, re-adjust the position of the tooth racks, and fasten them again to the required torque.
- Make sure the 2 tooth racks take the same position in comparison to their corresponding gear wheel. [Figure 10.6]
- Push the 2 square bars [1 and 2 in Figure 10.7] firmly against their respective slide plate and fasten them together by means of a locking bolt M8.

Figure 10.6

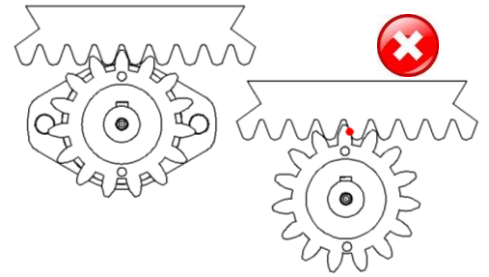
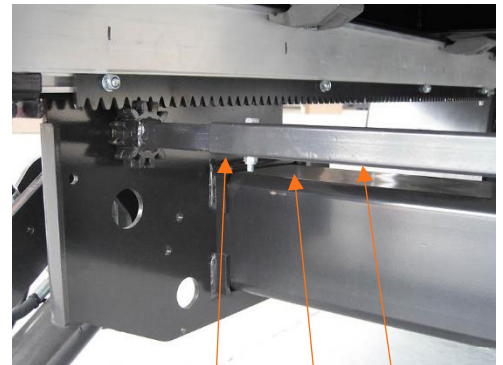
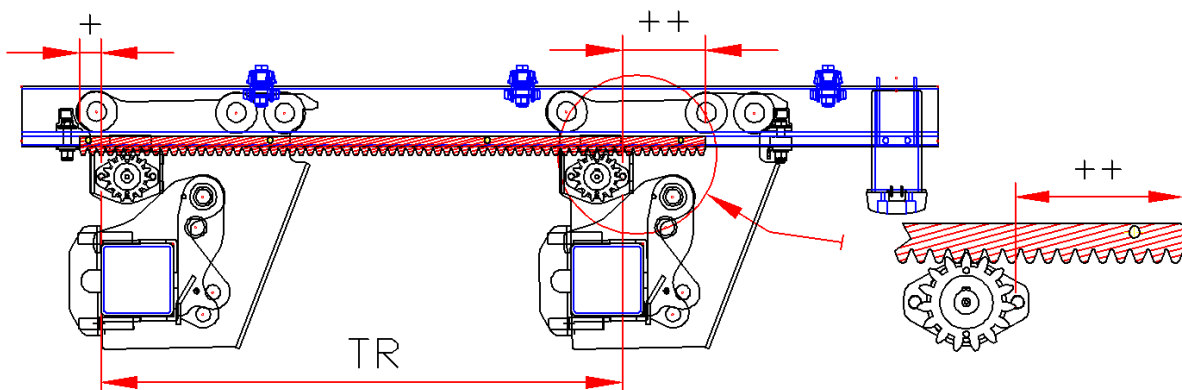


Figure 10.7



3	1x M8
---	-------

Figure 10.8



10.3 MOUNT THE END STOPS FOR THE WORK POSITION

NOTICE

Technical details on end stops, platform buffers, etc... may differ between various types of sliding tubes. The images under this paragraph are merely examples. Please refer to the appendixes for detailed information.

- On sliding tail lifts, the work position of the platform at the loading floor of the vehicle is determined by:
 - The end stops for the lift arms or platform (type and position)
 - The end stops for the retraction movement in the sliding tubes

Both points need to be considered together to obtain optimum results.

- Most platforms are equipped with PVC buffers at the front edge which are designed to press against the rear cross member of the loading floor of the vehicle. [Figure 10.9]
- If the loading floor of the vehicle does not allow this, an alternative is to fit the end stops to the chassis or vehicle body, against which the lift arms can be pressurized [see Figure 10.10 for examples].
- Make sure that the arm stops are sufficiently strong to sustain the force induced by the lift cylinders at maximum oil pressure, and to work correctly through the expected lifetime of the tail lift.
- For mounting situations where there is a wide gap between the loading floor of the vehicle and the platform in work position, a bridge plate (option S241) can be used [see Figure 10.11].
- The same bridge plate can also be used on container chassis to adapt the platform to varying container sizes and positions.
- 2 end stops at the rear of the sliding tubes ensure that the platform assumes the same stable work position every time the tail lift is used. [1 in Figure 10.12]
- Lift the platform up to the loading floor of the vehicle and set it in its intended work position as explained above. [Figure 10.12]
- Insert the end stops [1 in Figure 10.12] in the sliding tubes. Move them to the work position of the slide plates in the sliding tubes. Fasten the locking bolt of the end stops to the required torque settings.
- Slide the tail lift in and out several times to verify if the platform assumes the correct work position at the loading floor of the vehicle. Fine tune the position of the end stops if required.

Figure 10.9

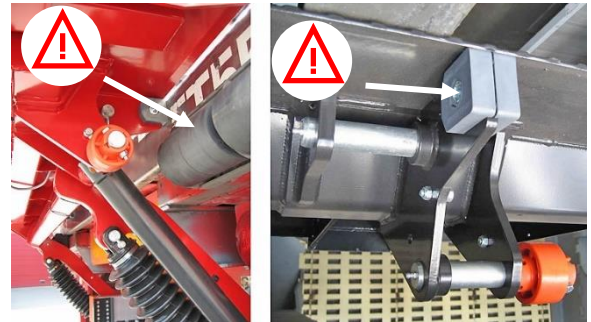


Figure 10.10

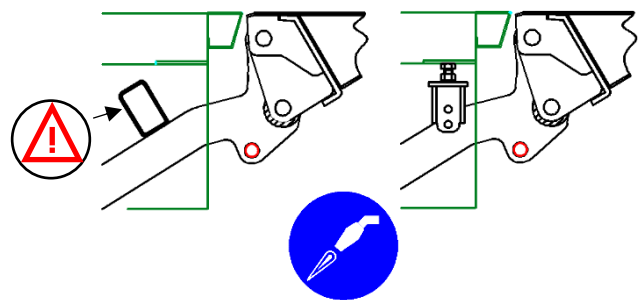


Figure 10.11

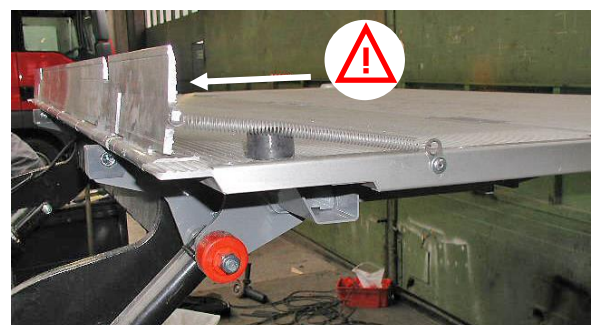
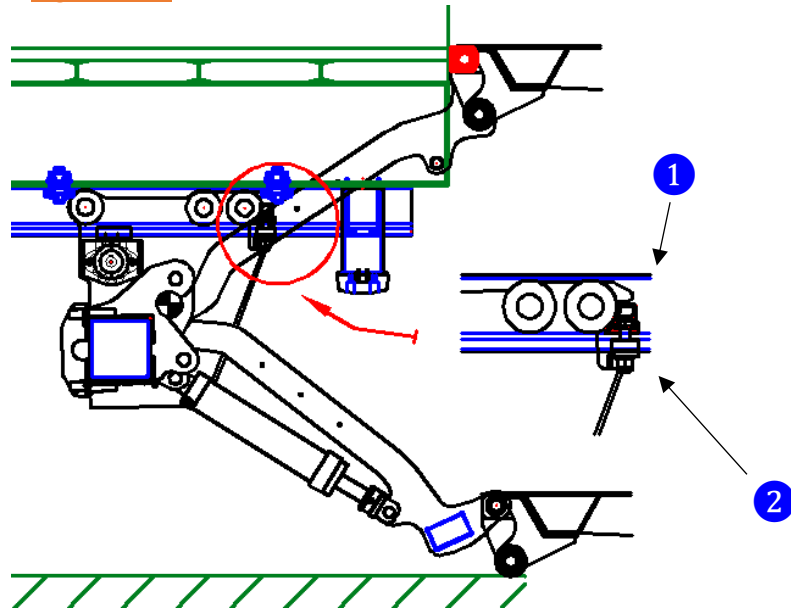


Figure 10.12



Per Side		
2	1x M16 (8.8)	195 Nm

1	End stops for retraction movement
2	Slide plates
3	Slide tubes

Figure 10.13

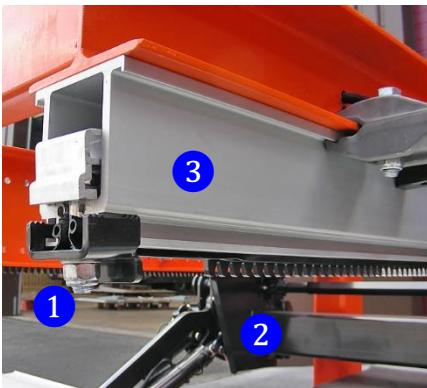


Figure 10.14

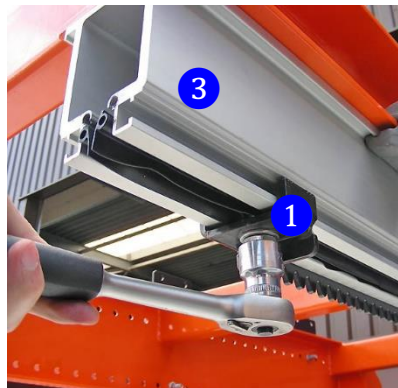
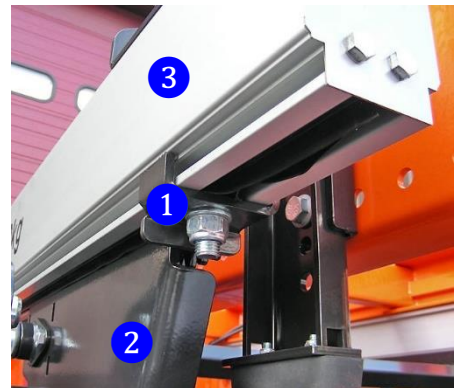


Figure 10.15

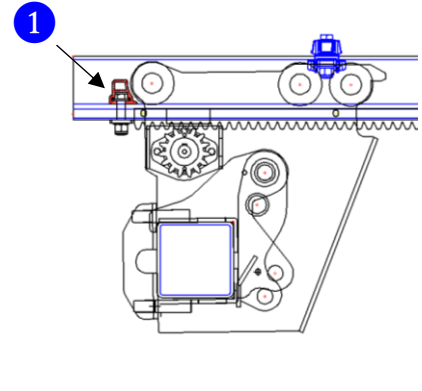


10.4 FINALIZE THE STOW POSITION OF THE PLATFORM

NOTICE

Technical details on end stops, platform buffers, etc... may differ between various types of sliding tubes. The images under this paragraph are merely examples. Please refer to the appendixes for detailed information.

Figure 10.16



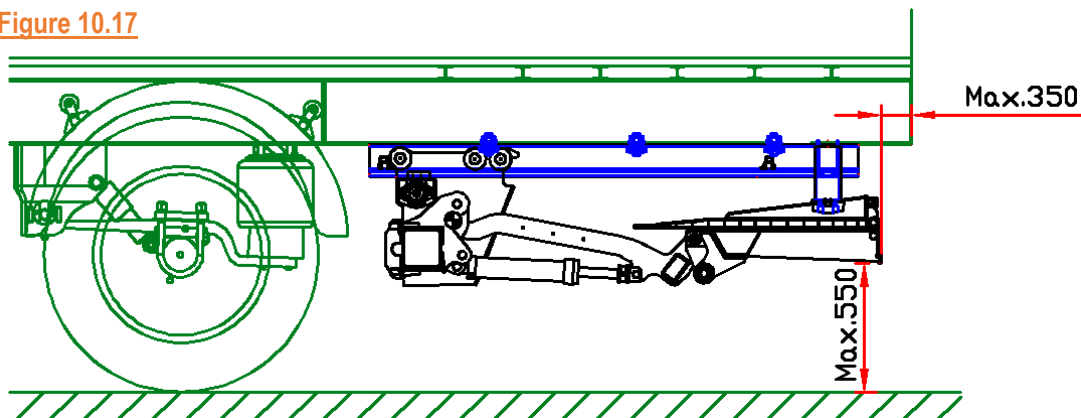
- 2 end stops at the front of the sliding tubes determine the position of the tail lift and its platform in stow position [see 1 in Figure 10.].
- Adjust the position of these front end stops to suit the desired stow position of the platform and fasten the locking bolts to the required torque settings [see appendix].



Per Side		
1	1x M16 (8.8)	195 Nm

- Rubber platform buffers must be mounted:
 1. To provide a soft means to store the platform under the vehicle chassis
 2. To make the stow position of the platform comply with the legal bumper requirements [see Figure 10.]

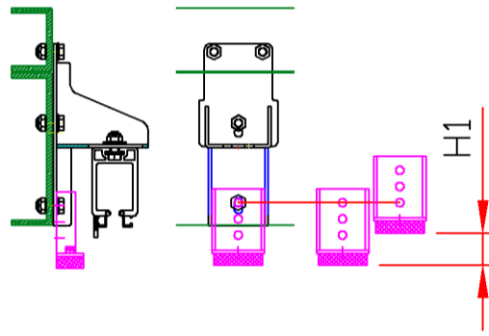
Figure 10.17



- This can be a fabricated set of platform rubbers, forseen by the body builder, or any of the standard options S255, S256, through S259. See appendixes for more information.

- Option S255 [Figure 10.18]: these buffers are designed for side mounting to a truck chassis.

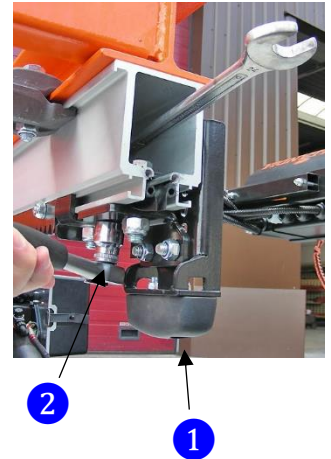
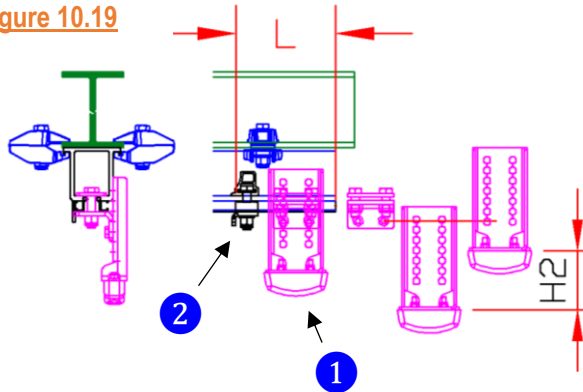
Figure 10.18



- They can be adjusted over a range (H1) [Figure 10.]. They are normally bolted to the rear-most mounting bracket for the sliding tubes, but can also be welded or bolted to the vehicle chassis itself.

- Option S256 [Figure 10.]: these buffers can be used on both types of aluminium sliding tubes.

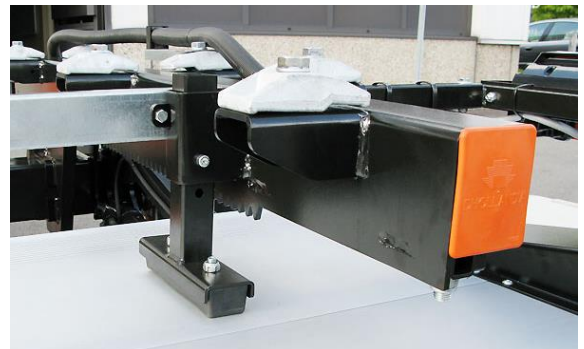
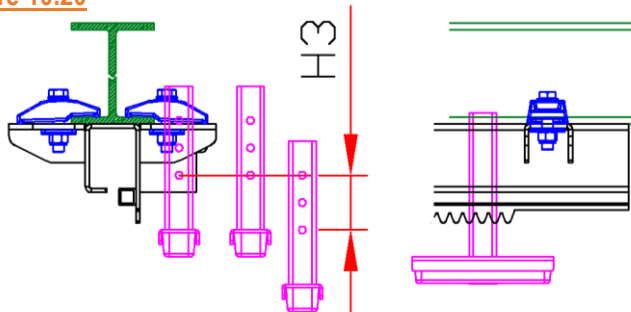
Figure 10.19



- These buffers [1 in Figure 10.] are mounted inside the track of the sliding tubes behind the end stops for the work position [2 in Figure 10.] and can be adjusted over a range (H2). They can only be used when the end stops in the sliding tubes are mounted at a minimum distance (L= 200mm) from the rear of the sliding tubes.

- Option S256.ST [Figure 10.]: these buffers are designed for under-mounting sliding tubes on semi-trailer chassis.

Figure 10.20



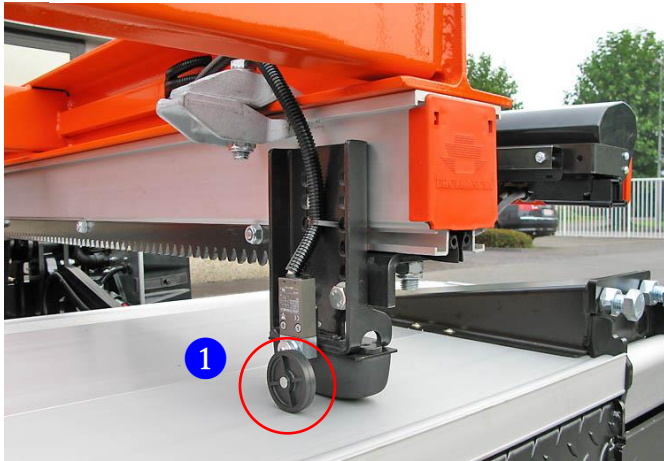
- They can be adjusted over a range (H3) [Figure 10.]. They are normally bolted to the rear-most mounting bracket for the sliding tubes, but can also be welded or bolted to the vehicle chassis itself.

WARNING

- Slide the tail lift in and out several times in road position to ensure the setup of the tooth rack, mounting brackets, end stops, and platform buffers work for all possible positions of the platform and vehicle suspension. Make sure the retraction system is not hindered by, or interfering with any parts of the vehicle chassis.
- Interference with any part of the vehicle suspension could result in damage to the tail lift and vehicle components as well as severe injury or death to the operator.

- For orders including option S268, fit the mechanical lock to the sliding tubes as shown in [see 2 in Figure 10.12].
- For orders including option S417, fit the electric switch (providing the signal that the platform is or is not in stow position) [see 1 in Figure 10.12]. Prepare the wiring to the dashboard of the vehicle cabin according to the wiring diagrams in the appendices.

Figure 10.12



11 ELECTRICAL INSTALLATION

11.1 INSTALLATION OF THE MAIN CONTROL BOX



- Refer to the separate manual ELECTRICAL INSTALLATION N-A GENERAL 01 for more detailed information on the electrical installation, connection to the tail lift or vehicle batteries, installation of fuses or circuit breakers, and ground connections.

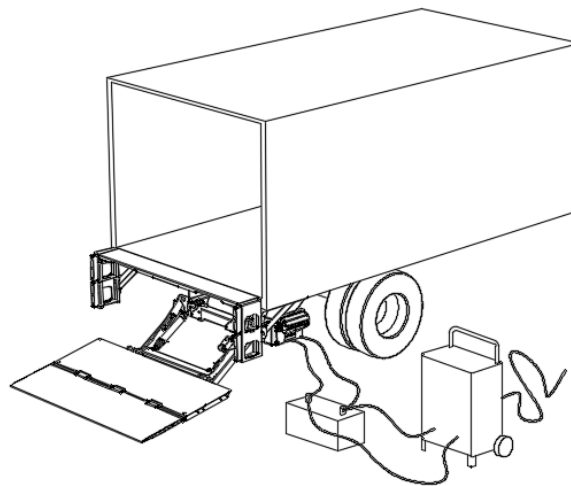
- If not supplied with the tail lift, these can be downloaded from the “DOWNLOAD” section on our website:



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 tail 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. [Figure 11.1]

Figure 11.1



NOTICE

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

11.2 OPTIONAL MOUNTING BRACKETS

- In a standard installation, the control box is supplied loose with the tail lift and is mounted to the body of the vehicle.
- For orders including option S411.S, DHOLLANDIA supplies a quick-fit bracket to mount the control box to the sliding tubes adapted to the specific type of tube in the unit [see Figure 11.2]

①	Aluminum sliding tubes, side-mounted
②	Aluminum sliding tubes, under-mounted
③	Steel sliding tubes, under-mounted

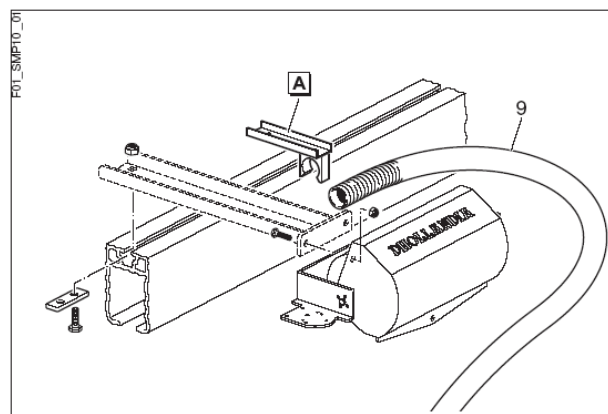
- Plan the position of the control box prior to mounting the sliding tubes as it might influence the fitting procedure.

Figure 11.2



- For side-mounted sliding tubes, insert the mounting parts for the S411.S prior to mounting the sliding tubes to the vehicle chassis. [see Figure 11.3]
- For the other types of sliding tubes, the parts can be mounted at any stage.

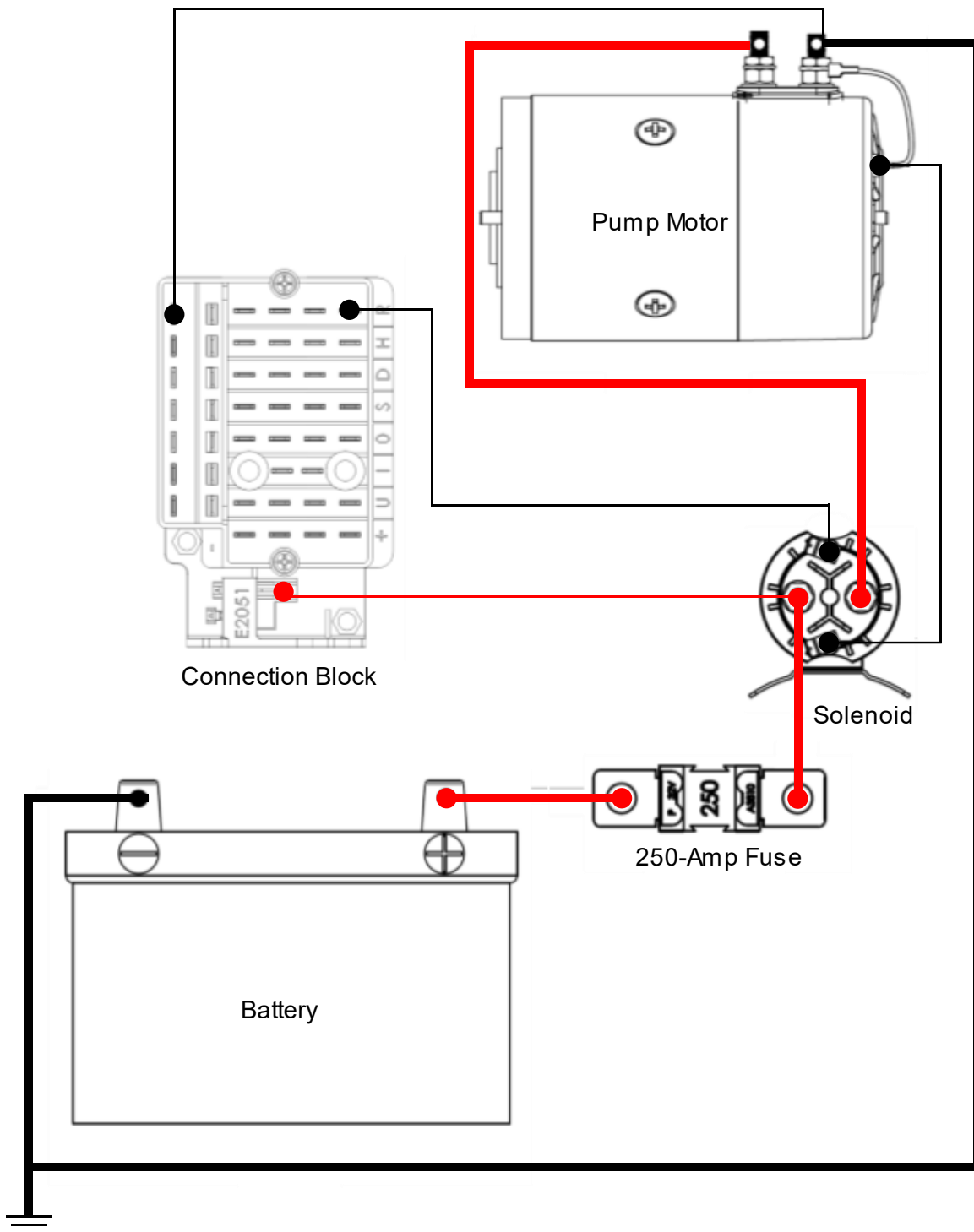
Figure 11.3



11.3 ROUTING OF THE ELECTRIC CABLES

- A general schematic of how to correctly connect the batteries to the tail lift is provided in [Figure 11.4].

Figure 11.4

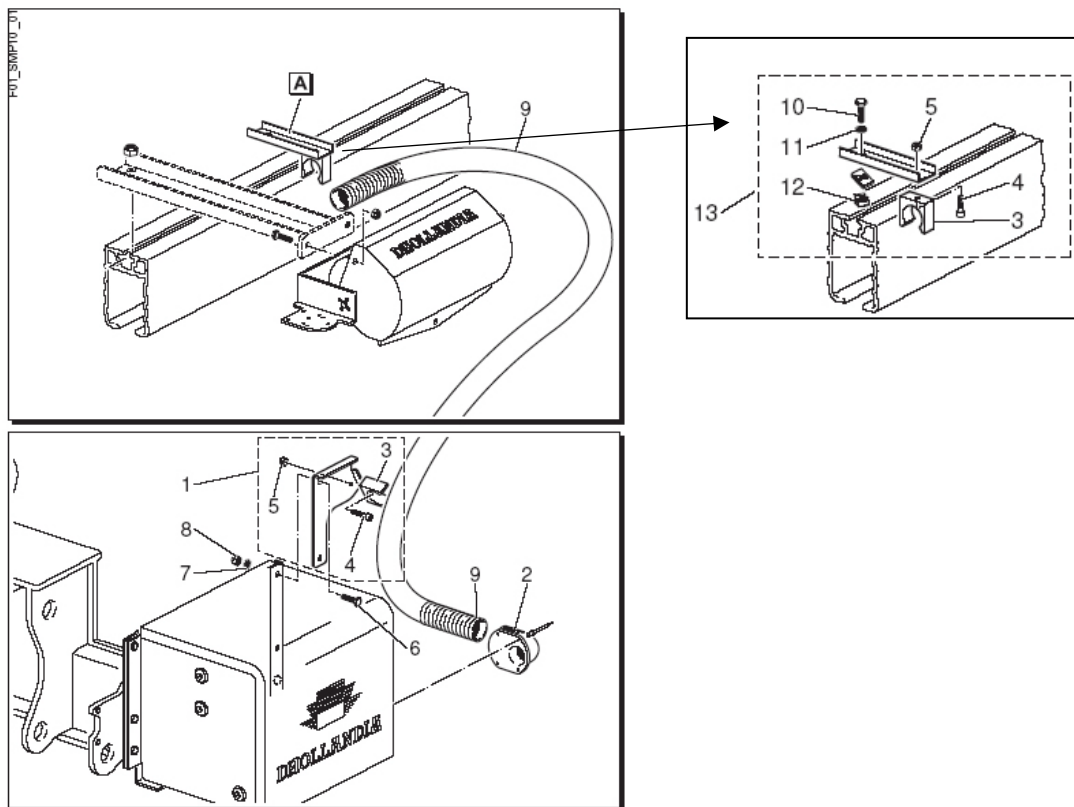


- Most slider tail lifts are equipped with a protective PVC conduit from the hydraulic power pack to the control box containing the electric wiring of the tail lift.
- Fit the mounting brackets for this conduit to the sliding tubes, adjust their position, and assure the conduit is routed in a sound and sizeable loop.

! WARNING

- Verify the cable routing while executing all tail lift functions and ensure the conduit cannot be stretched, squeezed, caught, or damaged by any obstruction on the lift frame, the sliding tubes, the vehicle chassis, and its accessories. [Figure 11.5]
- Failure to ensure proper cable routing could result in damage to the tail lift or vehicle components. Such damage could cause improper functionality of tail lift operations and result in serious injury or death to the operator or any bystanders.

Figure 11.5



- The mounting system for the conduit is adapted to the different types of sliding tubes [see Figure 11.6 – Figure 11.8].

Figure 11.6	Aluminum sliding tubes, side-mounted
Figure 11.7	Aluminum sliding tubes, under-mounted
Figure 11.8	Steel sliding tubes, under-mounted

Figure 11.6

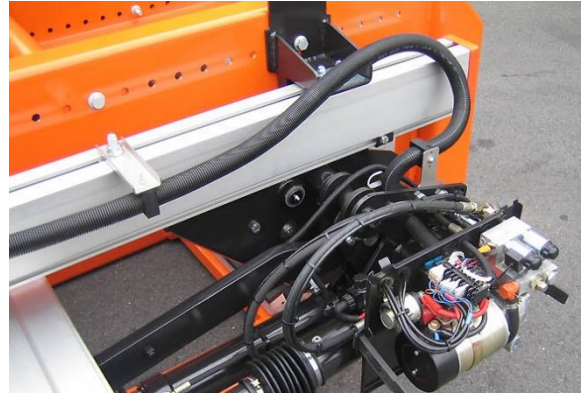
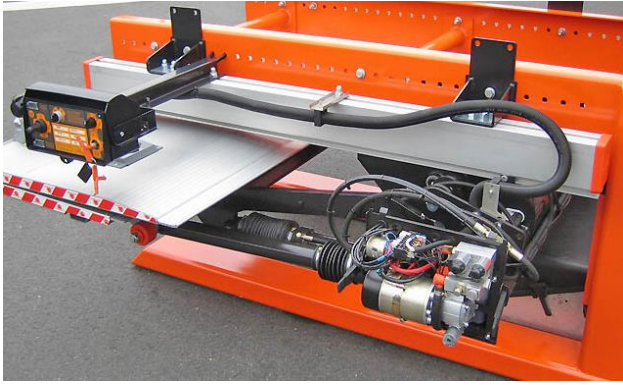


Figure 11.7

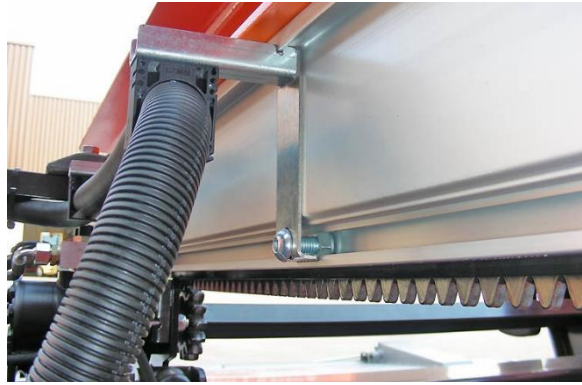
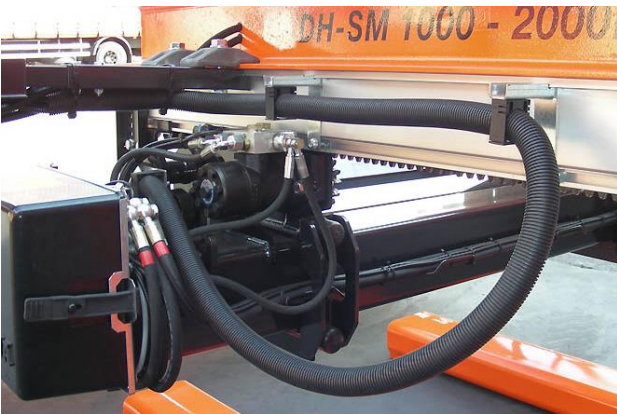
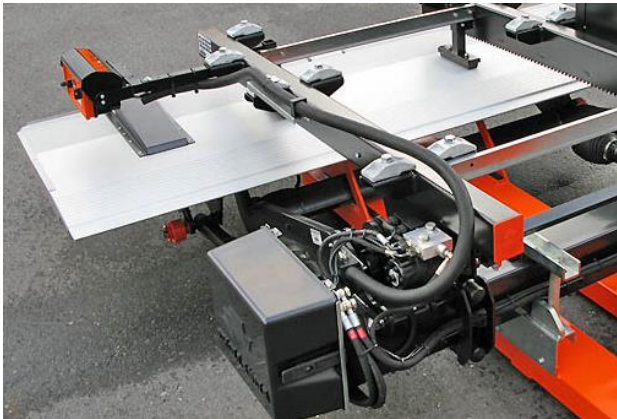


Figure 11.8



12 PUTTING THE TAIL LIFT INTO SERVICE

- Switch on the battery switch. Use the functions “lift” and “tilt” to bring hydraulic pressure into the hydraulic circuits. Stop when you hear the hydraulic pump turn in overpressure.

NOTICE

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

⚠ WARNING



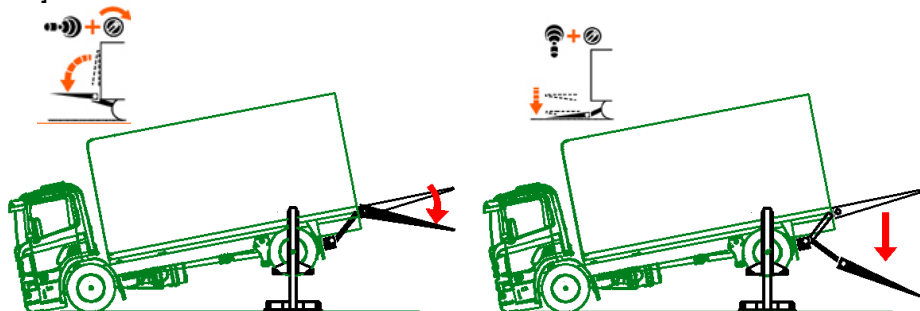
- Ensure that all electrical connections are correctly finished and that all mounting bolts are fastened with the required torque.
- Consult the USER'S MANUAL in case of doubt with regards to the correct use of the different lift functions and of the applicable safety instructions.
- Failure to do so could cause accidental fall of the tail lift and result in serious injury or death to the operator and any bystanders.

Figure 12.1

- Lower and remove the hydraulic mounting jack.
- Remove and installation hardware and the locking bolts on the swing brackets of the mechanical tilt device [see Figure 12.1].
- Execute the lift and tilt functions at least 5 times so the hydraulic cylinders can be purged completely.
- 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 tail lift or hazards to operators.
- Preferably, raise the rear end of the vehicle off the ground, or raise the vehicle air suspension to its maximum. Starting from the platform in work position at the loading floor:
 1. Open the platform completely (below horizontal position), until the cylinders are fully retracted, and continue to push the function “open” for another 20 seconds [see Figure 12.2].
 2. Tilt the platform back up to horizontal position, and lower the platform completely (further down below the normal ground level), until the lift cylinders are fully retracted, and continue to push the function “lower” for another 20 seconds [see Figure 12.2].



Figure 12.2



- Grease all nipples in all articulations with acid-free grease. See grease plan in chapter 13.

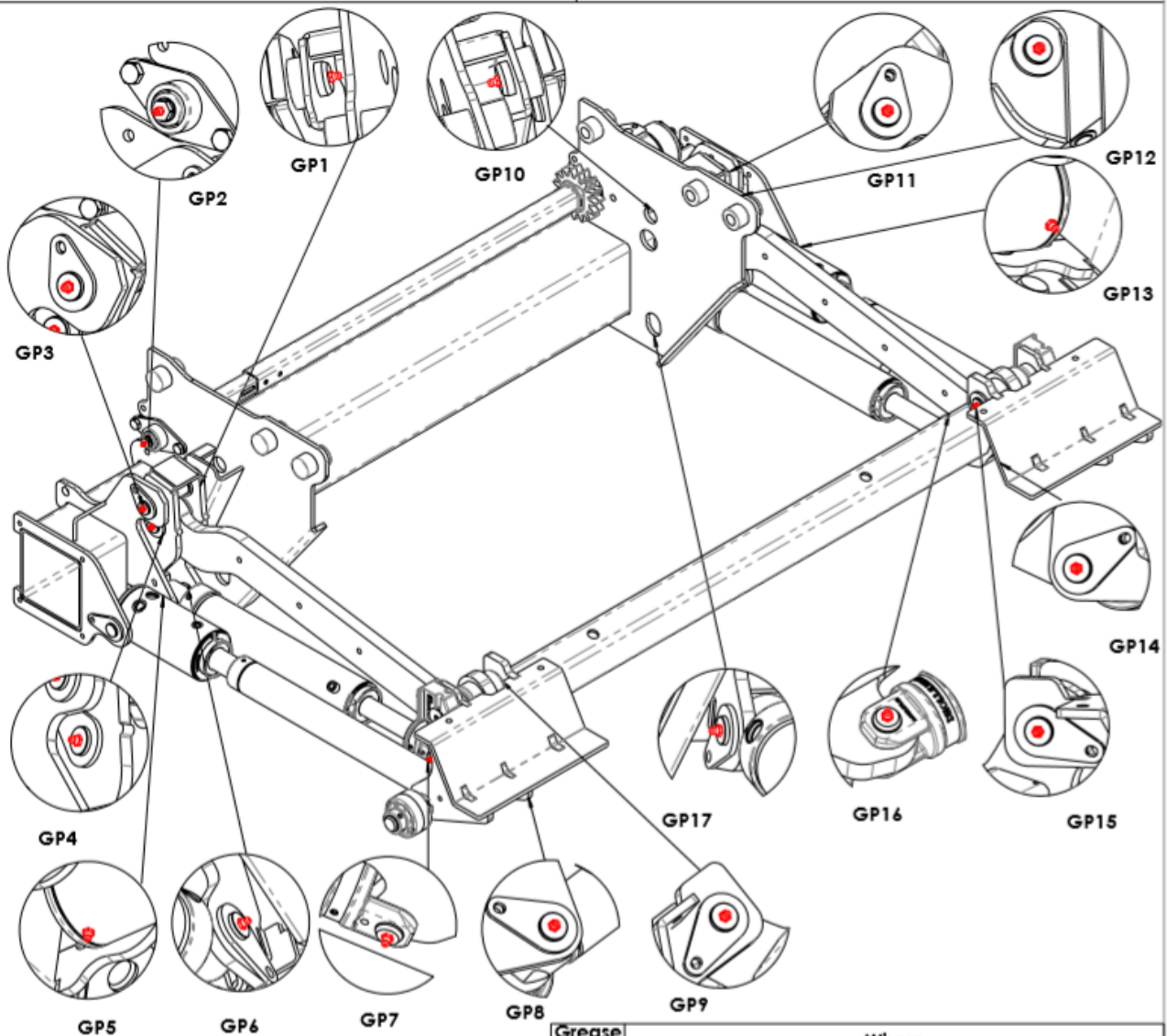
- Execute all movements several times to ensure all tail lift functions work properly. Pay special attention to:
 1. The correct function of the end stops for the lift arms, and the end stops in the sliding tubes.
 2. The correct alignment of the platform in work position, flush with the vehicle floor.
 3. The loop of the conduit with the electrical wires from the hydraulic power pack to the control box when sliding the tail lift in and out.
 4. The correct position of the platform buffers.

13 LUBRICATION INSTRUCTIONS

- All articulation points equipped with lube fittings should be lubricated after installation (pictured on the following page), 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 tail lift, it is important to lubricate the pivot points thoroughly after installation.



Grease point	Where
GP1	On pin between frame and swing (left side)
GP2	On nut to the gear (left side)
GP3	On pin between frame and swing (left side)
GP4	On pin between arm and swing (left side)
GP5	On tilt cylinder (left side)
GP6	On pin between lift cylinder and swing (left side)
GP7	On pin between lift cylinder and arm (left side)
GP8	On pin between platform and tilt cylinder (left side)
GP9	On pin between platform and arm (left side)
GP10	On pin between frame and swing (right side)
GP11	On pin between frame and swing (right side)
GP12	On pin between arm and swing (right side)
GP13	On tilt cylinder (right side)
GP14	On pin between platform and tilt cylinder (right side)
GP15	On pin between platform and arm (right side)
GP16	On pin between lift cylinder and arm (right side)
GP17	On pin between lift cylinder and swing (right side)



Drawing nr.:

SV.20.02-GS

Description:

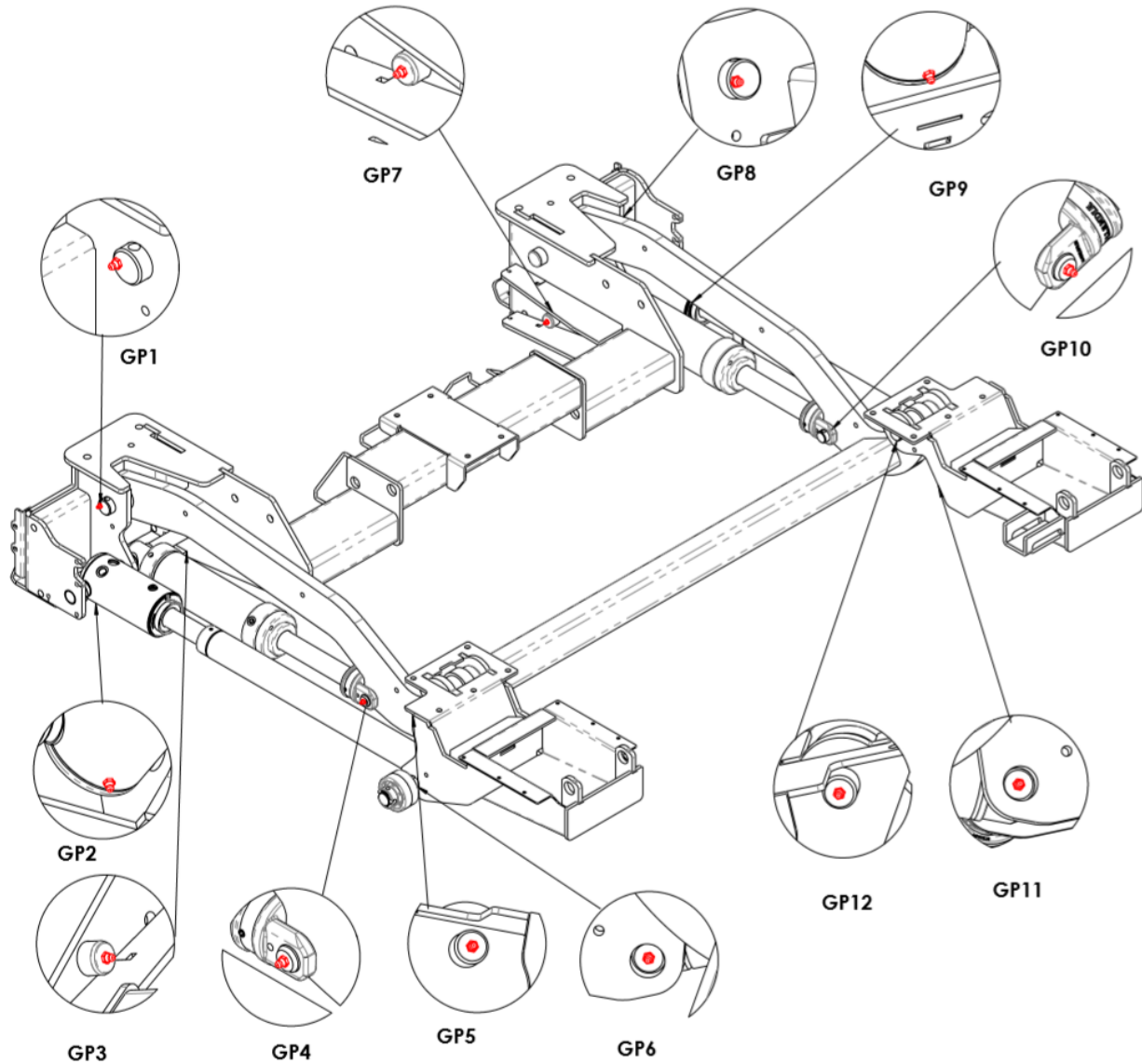
Greasing plan SV.20.02

Main group:

Greasing plan

Subgroup:

Slider lifts



Grease point	Where
GP1	On pin between frame and arm (left side)
GP2	On tilt cylinder (left side)
GP3	On pin between frame and lift cylinder (left side)
GP4	On pin between lift cylinder and arm (left side)
GP5	On pin between platform and arm (left side)
GP6	On pin between platform and tilt cylinder (left side)
GP7	On pin between frame and lift cylinder (right side)
GP8	On pin between frame and arm (right side)
GP9	On tilt cylinder (right side)
GP10	On pin between lift cylinder and arm (right side)
GP11	On pin between platform and tilt cylinder (right side)
GP12	On pin between platform and arm (right side)

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14 COMMISSIONING AND QUALITY CONTROL

- Finish the tail lift in accordance with local regulations.
- Execute all functions min. 5 times to ensure the tail lift functions correctly. Pay special attention to:
 1. Smooth and quiet operation through the full range of motion of the platform.
 2. Auto tilt at ground level.
 3. Correct alignment of the open platform flush with the extension plate.
 4. Correct stowage of the tail lift in its travel position.
- Make sure that the tail lift will be clearly visible in surrounding traffic [Figure 14.1]:
 1. Apply the RD/WH conspicuity tape on both sides of the platform.
 2. Fit the platform flags to the underside of the flip-over point.
 3. If applicable: connect the flashing platform lights (if not prewired) and verify their function.
- If the operator is allowed to travel up and down on the platform, it is strongly recommended to paint a safe-work zone of 400mmx400mm at a safe distance of 250mm removed from the hazardous crushing area between the inboard platform edge and the extension plate. [Figure 14.2 – Figure 14.3
- Work through the PDI checklist in the appendix and complete the practical load tests indicated. Fill-out the FITTING DECLARATION.
- During weight test, verify if the hydraulic pump pressure suits the maximum rated lift capacity in this particular mounting situation. Adjust the pressure if too high or too low, seal the pressure relief valve after that using the provided tamper-evident cap.

Figure 14.1

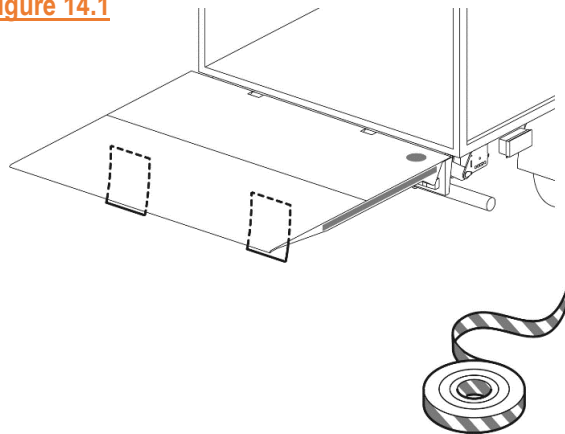


Figure 14.3

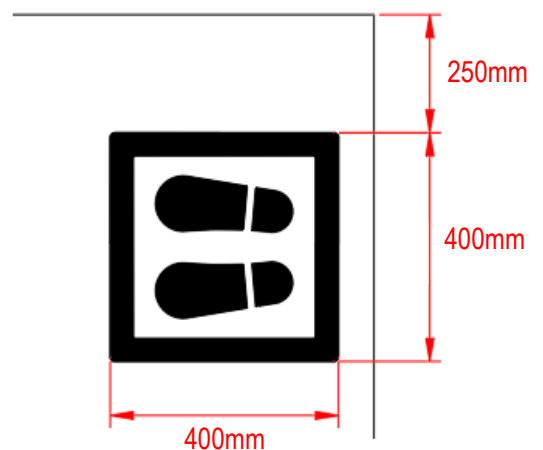
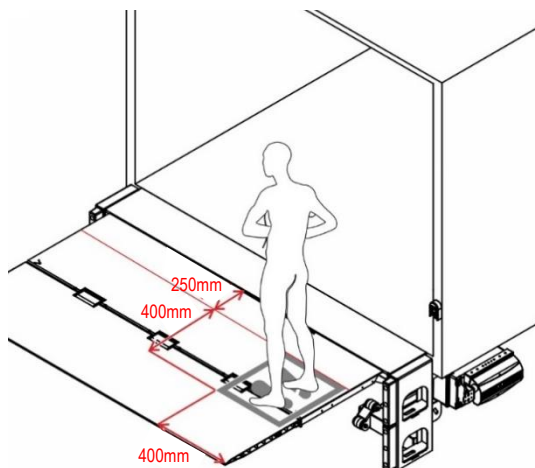


Figure 14.2



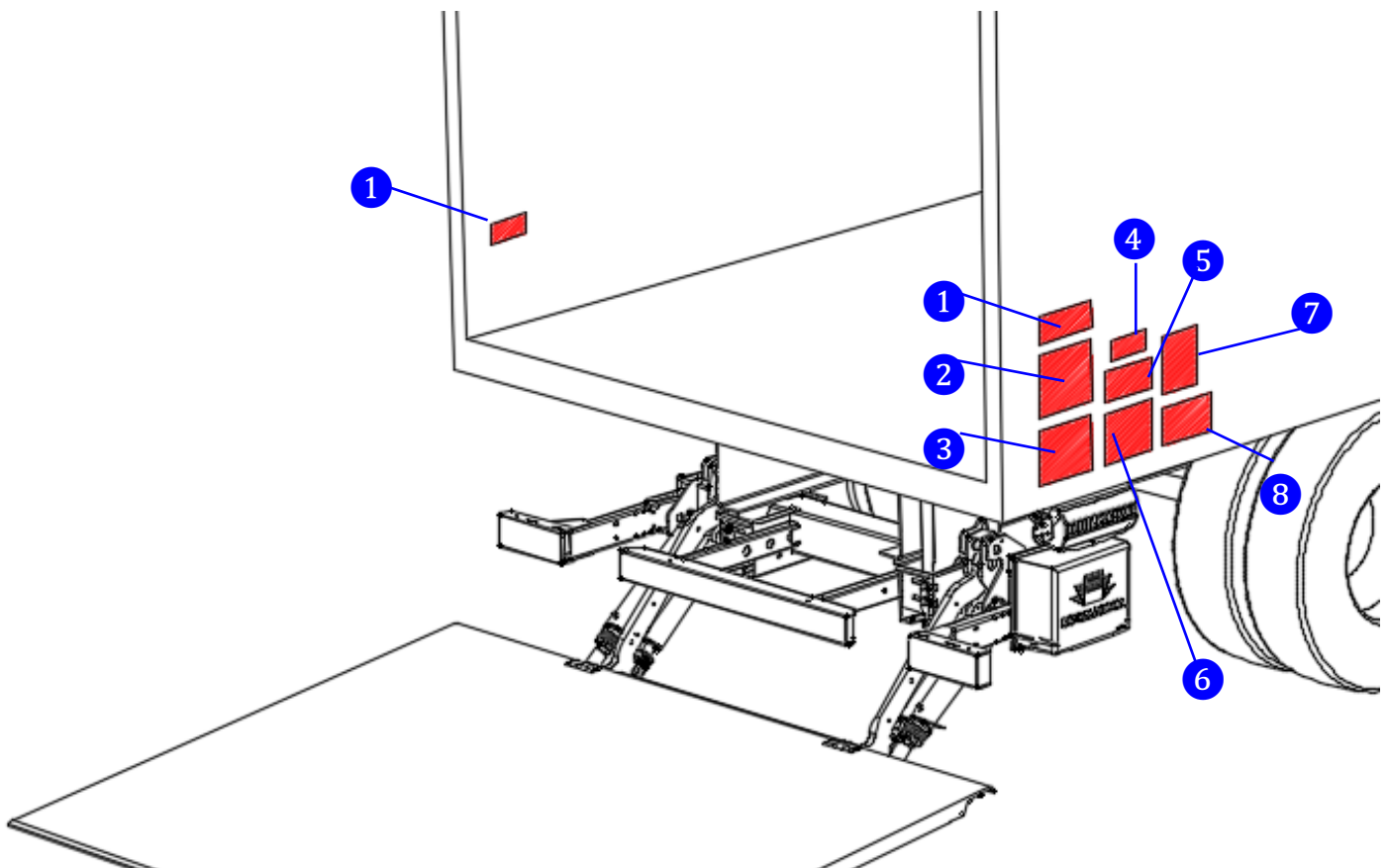
15 DECALS

15.1 REGULAR DECALS

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

NOTICE

Remove any unwanted debris or residue from surfaces before installing any of the decals to ensure proper adhesion.



1 EF0583.LM.EN

WARNING

- DO NOT use this liftgate without adequate safety and operator training.
- View safety and operator video prior to use. Use this QR-code to connect.
- Review operation manual prior to use. Manuals can be obtained from your DHOLLANDIA distributor, or downloaded from: www.dhollandia.com
- Improper use of the liftgate will put the operator and other parties at great risk of bodily injury and death.
- In case of doubt, contact DHOLLANDIA toll free:

US West: 855 856 8225 US East: 855 894 1888 CAN: 888 750 5438

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2 EF0565.EN

WARNING - SAFETY INSTRUCTIONS

Read and understand the user's manual, all instructions and warnings before use.

Carelessness or ignorance will put the operator and third parties at great risk of serious injury and death.

- Do not use liftgate unless you have been properly trained and instructed, you have read and you understand the full operating instructions.
- Wear appropriate working clothes, incl. footwear with steel toe caps and a good non-slip sole, and wear protective gloves.
- Ensure the vehicle is safely parked and braked before using the liftgate.
- Where applicable, refer to the site's specific risk assessment, and follow the local work & safety instructions.
- ALWAYS inspect the tail lift before using it. DO NOT use tail lift if there are signs of bad maintenance, subnormal wear or damage, or if the platform surface is slippery. DO NOT attempt to repair tail lift yourself, unless you have been trained and authorized to do so.
- Do not overload. Observe the maximum rated capacity and load charts.
- Do not stand behind or within reach of the platform.
- Make sure that platform area, including the area in which loads may fall from platform, is clear of obstacles and other people at all times.
- Make sure you can see and keep visual control over the whole working area of the liftgate, the platform and its load at all times.
- Beware of finger and toe traps at all times. When riding platform, stand at safe distance of minimum 10" from the inboard edge of the platform adjacent to the rear sill of the vehicle body.
- It is prohibited for anyone other than the operator to travel on the platform.
- Liftgate is intended for loading and unloading cargo only. Do not use liftgate for anything else but its intended use.
- Make sure platform is clearly visible from all approach directions (by means of flashing platform lights, platform flags, traffic cones, etc...) and that the working zone is sufficiently illuminated.

DHOLLANDIA • EF0565.EN

3 EF0582

EXAMPLE



DHOLLANDIA • EF0582

4 EF0580.EN.CAP + serial nr

WARNING

MAXIMUM LIFT CAPACITY

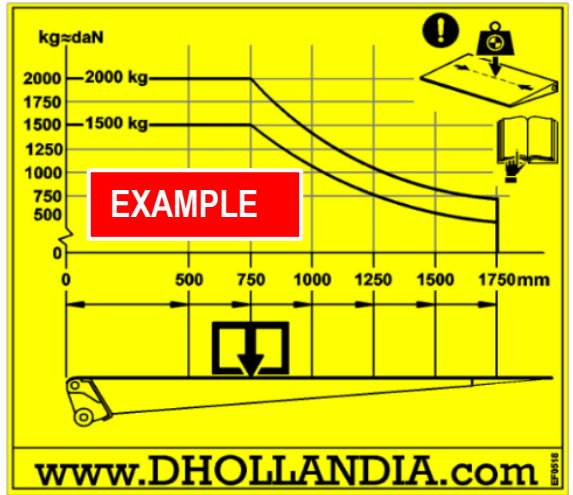
XXXX KG

When load is positioned centrally near inboard platform edge. Follow load chart.

DHOLLANDIA • EF0580.EN_2500

EXAMPLE

5 EF0584.EN.CAP + serial nr



Or:

EF0585.US + serial nr

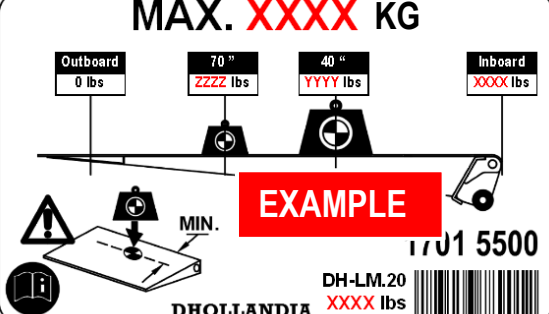
MAX. XXXX KG

Outboard 0 lbs 70" ZZZZ lbs 40" YYYY lbs Inboard XXXX lbs

EXAMPLE

1701 5500

DHOLLANDIA XXXX lbs



6 EF0564.EN

PLATFORM LOADING INSTRUCTIONS

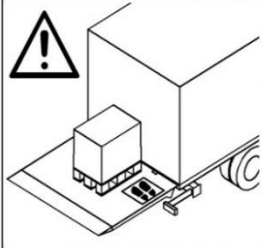
Position load as close as possible to inboard platform edge.

Position load in middle line of platform. Avoid loading on 1 side only.

Operator should stand on side of load, well clear of inboard platform edge to avoid crushing feet.

Read and understand the user's manual, all instructions and warnings before use.

DHOLLANDIA EF0564.EN



7

EF0581.EN

WARNING

Open or close platform at vehicle bed level ONLY

Adjust pitch of platform up and compensate for deflection before load is put on platform

DHOLLANDIA • EF0581.EN

8

EF0563.EN

WARNING

Liftgate hazards can result in crushing or falling. Keep hands and feet clear of pinch points. If riding liftgate, make sure load is stable and footing is solid.

Read and understand the user's manual, all instructions and warnings before use.

DHOLLANDIA • EF0563.EN

9

EF0562.EN

WARNING

Always stand clear of platform area.

DHOLLANDIA • EF0562.EN

10

CAUTION

Welding on galvanized parts produces hazardous fumes. To avoid intoxication:

- ALWAYS wear a suitable respirator.
- ALWAYS provide good ventilation.
- ALWAYS remove galvanizing from the area to weld.

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

- ALWAYS follow the instructions of the vehicle manufacturer with regards to welding, disconnecting batteries and plugs.
- DO NOT weld if such is not authorized by the vehicle manufacturer.
- ALWAYS connect the ground lead directly to the component being welded and as close to the weld as possible.

DHOLLANDIA • EF0597.US

• Tail lift decals used and affixed in areas, other than the rear of the vehicle:

11

EF0814-EN-US

NOTICE

LIFT GATE SHUT-OFF
TO BE TURNED OFF WHEN LIFT IS NOT IN USE

DHOLLANDIA • EF0814.EN.US

Cabin switch in driver's cabin to switch electrical power to tail lift on / off (if so equipped)

EF0815-EN-US

NOTICE

Liftgate electrical system is protected by a circuit breaker. To reset, push dropped tab upward until it clicks into place. To cut-off power to Liftgate, press the red button

DHOLLANDIA • EF0815.EN.US

For circuit breaker in tail lift battery compartment

Or:

NOTICE / ATTENTION

250 AMP fuse protection for **LIFTGATE POWER CABLE**
Fusible 250 AMP pour PROTÉGER LE CÂBLE D'ALIMENTATION DU MONTE-CHARGE

DHOLLANDIA • EF0816.ENFR

NOTICE / ATTENTION

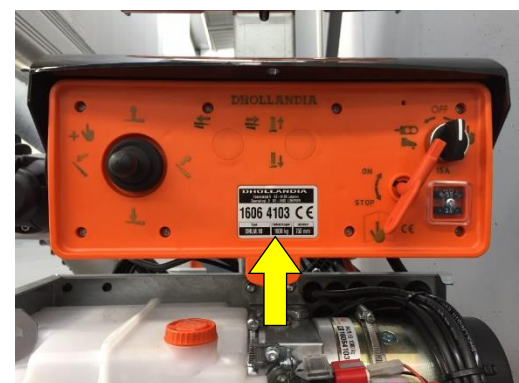
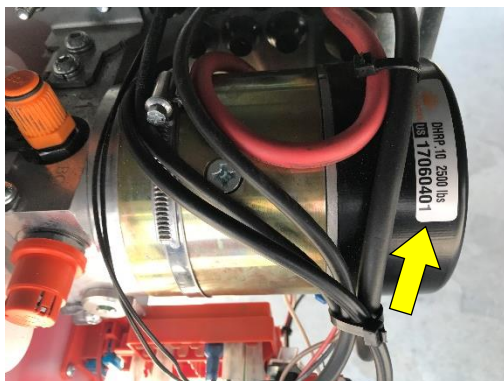
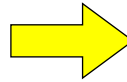
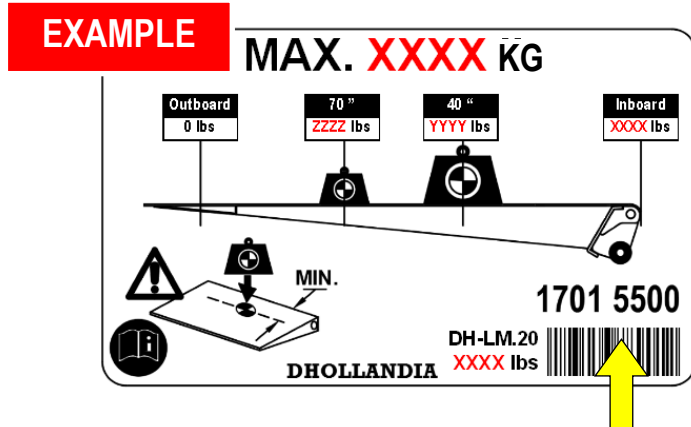
250 AMP fuse protection for **BATTERY CHARGE LINE**
Fusible 250 AMP pour PROTÉGER LE CÂBLE DE RECHARGE DES BATTERIES

DHOLLANDIA • EF0817.ENFR

For main fuse in tail lift battery compartment










15.2 IDENTIFICATION DECALS










1. Every DHOLLANDIA tail lift is identified and labelled with a unique 8-digit serial number (with or without a space between the first and last 4 digits). This number is used for any inquiry on a particular tail lift, or when ordering replacement parts.
2. In addition to the tail lift type and serial number, the various serial number labels provide additional information such as: the maximum rated lift capacity and load chart, the bumper certification number, the date of manufacture, etc...
3. The labels are usually affixed to the vehicle body and various tail lift components and can be found in the locations shown in the images below.



16 APPENDIX




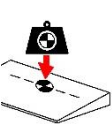





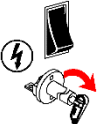



16.1 DECALS

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

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

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

Other frequently used signs

	Yes do this way. Correct work procedure.
	Yes do this way. Correct work procedure.
	No, DO NOT do this way. -Incorrect work procedure.
	Position the load at the applicable centre of gravity or load centre. - Follow the load instructions.
	Emergency stop. Will cause an immediate stop of the tail lift.
	Emergency exit. Provision (lever, valve,...) creating an emergency exit.
	Unlock. Disengage the mechanical locking system.
	Lock. Engage the mechanical locking system.
	Switch ON the electrical power.
	Switch ON the electrical power to the tail lift via the main battery disconnect switch and / or cabin switch.
	Switch OFF the electrical power.
	Switch OFF the electrical power to the tail 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).

16.2 PRESCRIBED TORQUE VALUES FOR BOLTS SUPPLIED WITH TAIL LIFT

- Installer **MUST** verify that all bolted connections are fastened with required torque in conformance with table in this appendix.
- After weight testing, installer **MUST** verify that all bolted connections between lift frame and mounting plates, and between mounting plates and vehicle chassis are still tightened in conformance with required torque. Retighten if required.
- Use a calibrated torque wrench to tighten bolt and nut connections to the prescribed torque value.

NOTICE



WARNING

- Incorrect, too soft or too hard tightening of mounting 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 M in N.m

Type of thread	Size	Strength class			
		<u>8.8</u>		<u>10.9</u>	
Standard	M6 x 1	10	N.m	14	N.m
	M8 x 1.25	24	N.m	33	N.m
	M10 x 1.5	47	N.m	68	N.m
	M12 x 1.75	82	N.m	115	N.m
	M14 x 2	129	N.m	185	N.m
	M16 x 2	195	N.m	285	N.m
Fine	M14 x 1.5	135	N.m	195	N.m
	M16 x 1.5	208	N.m	300	N.m
	M20 x 1.5	360	N.m	-	N.m
	M24 x 2	450	N.m	-	N.m

Prescribed torque values M in lbs-ft

Type of thread	Size	Strength class			
		8.8	-	10.9	-
Standard	M6 x 1	7.5	lbs-ft	10.5	lbs-ft
	M8 x 1.25	17.5	lbs-ft	24.5	lbs-ft
	M10 x 1.5	34.5	lbs-ft	50	lbs-ft
	M12 x 1.75	60.5	lbs-ft	85	lbs-ft
	M14 x 2	95	lbs-ft	136.5	lbs-ft
	M16 x 2	143	lbs-ft	210	lbs-ft
Fine	M14 x 1.5	99.5	lbs-ft	143	lbs-ft
	M16 x 1.5	155	lbs-ft	221	lbs-ft
	M20 x 1.5	265.5	lbs-ft	-	lbs-ft
	M24 x 2	332	lbs-ft	-	lbs-ft

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

16.3 PDI CHECKLIST 1/2

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

2 - Inspection of the mechanical part	
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.	
The extension plate, side steps, braces and dock bumpers are installed in conformance with the installation instructions.	
All welding has been performed by qualified welders.	
All articulation pins and retaining bolts are properly fastened and secured.	
All articulation pins are equipped with lube fittings and are lubricated.	
Areas of drilling, cutting, grinding, welding etc. are adequately protected against corrosion.	

3 - Inspection of the electrical part	
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 isolator switch of the external control box (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 exterior control box conforms to the fitting instructions.	
The power feed to all auxiliary controls is wired into the safety switch on the main external 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 cables going to the platform (flashing lights, foot controls, ...) are properly routed, and cannot be damaged during the various movements of the lift.	
The electrical platform mounted options (flashing lights, foot controls, etc.) function properly.	


4 - Inspection of the hydraulic part	
There are no visible oil leaks after the load test tests 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 has been damaged or marked during welding.	
The cover of the pump unit is mounted and securely latched.	

5 - Inspection of the platform	
The centre point of maximum load is correctly marked and corresponds with the data mentioned on the identification sticker supplied with the tail lift.	
The safe working zone for the operator is clearly and permanently marked on the platform (if applicable). The provided foot protection conforms with the fitting instructions.	
The platform is made sufficiently visible for the surrounding traffic (platform lights, flags, reflective tape, traffic cones,...)	
At vehicle floor level, the platform aligns flush with the extension plate.	
A hand grip for the operator to hold when lifting / lowering with the platform, is mounted on the rear frame of the vehicle body.	

7- General operation, practical tests	
<p>Unfolding and folding test:</p> <p><input type="checkbox"/> The platform opener is mounted in adequate position. When LOWERED at the ground, the platform stands just inside from vertical position.</p> <p><input type="checkbox"/> The platform unfolds and folds without touching the vehicle chassis.</p>	
<p>General operation with an empty platform: execute all movements several times with ALL available control units. The tail lift should work smoothly and quietly, and almost silently, through its full range of motion.</p> <p><input type="checkbox"/> Gravity down lifts: during LIFT, only the sound of the running DC motor in the pump unit should be audible.</p> <p><input type="checkbox"/> Power down lifts: the sound of the running DC motor in the pump unit will be audible during LIFT and LOWER movements.</p> <p><input type="checkbox"/> Any other (creaking, grinding or squeaking) noise should be carefully investigated and solved.</p>	

<p>Dynamic test at 100% of maximum rated lift capacity:</p> <p><input type="checkbox"/> Verify if the lift has sufficient lift capacity.</p> <p><input type="checkbox"/> Verify the general performance & stability.</p>	
<p>Overload test - Limitation of the lift capacity:</p> <p><input type="checkbox"/> Place the platform at rest on the ground.</p> <p><input type="checkbox"/> Put a load of 1x maximum rated lift capacity at the centre point of maximum load; adjust the hydraulic pressure on the pressure relief valve so that the maximum rated lift capacity is just reached. Seal the pressure relief valve after final adjustment with the provided tamper-evident cap.</p> <p><input type="checkbox"/> Put a load of 1.25x maximum rated lift capacity at the centre point of maximum load. The platform should not be able to lift vertically.</p>	

8- Documentation for the operator	
The OPERATION MANUAL and MAINTENANCE MANUAL are available in the vehicle.	

<i>NOTICE</i>	 WARNING
<ul style="list-style-type: none"> 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 tail lift. Operating a tail lift that hasn't successfully passed the PDI can lead to premature wear or damage of the tail lift itself. Operating a tail 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. 	

16.4 SAFE OPERATOR POSITION ON THE PLATFORM



- Consult the OPERATION MANUAL section 7.
- The operator travelling up and down on the platform, faces 2 main risks:

- 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 mounts a handgrip to the rear frame of the vehicle body. Such handgrip will enable the operator to ALWAYS maintain 3 points of contact while lifting or lowering on the platform. [Figure 16.1]
- The handgrip is normally manufacturer by the upfitter or body builder as part of the design of the box, but an alternative is available from DHOLLANDIA with ref. M1406. [Figure 16.2]
- 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 400mmx400mm safe operator position at a safe distance of min. 250mm away from the inboard platform edge. [Figure 16.3]
- A metal paint mask can be ordered from DHOLLANDIA with spare parts ref. EF0100.

Figure 16.1

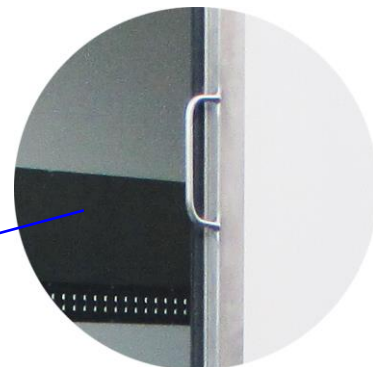
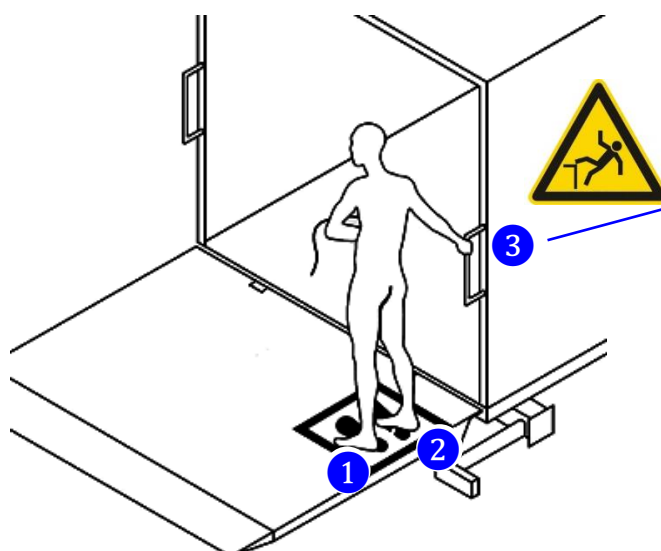
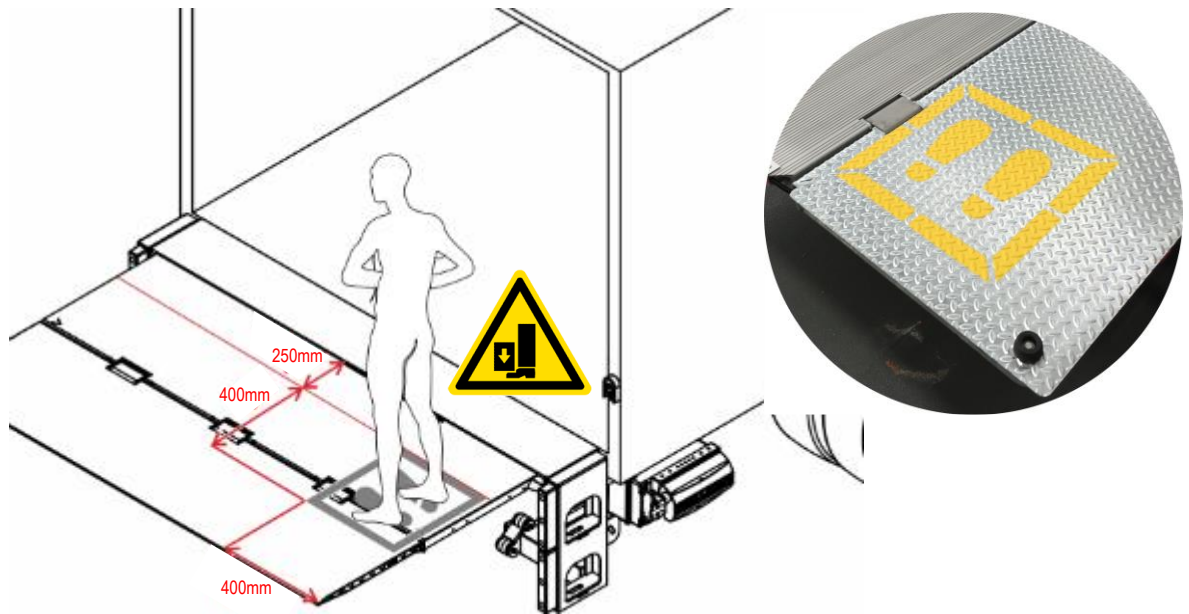


Figure 16.2



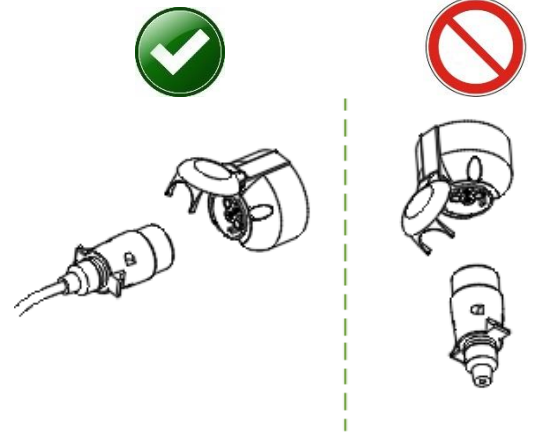
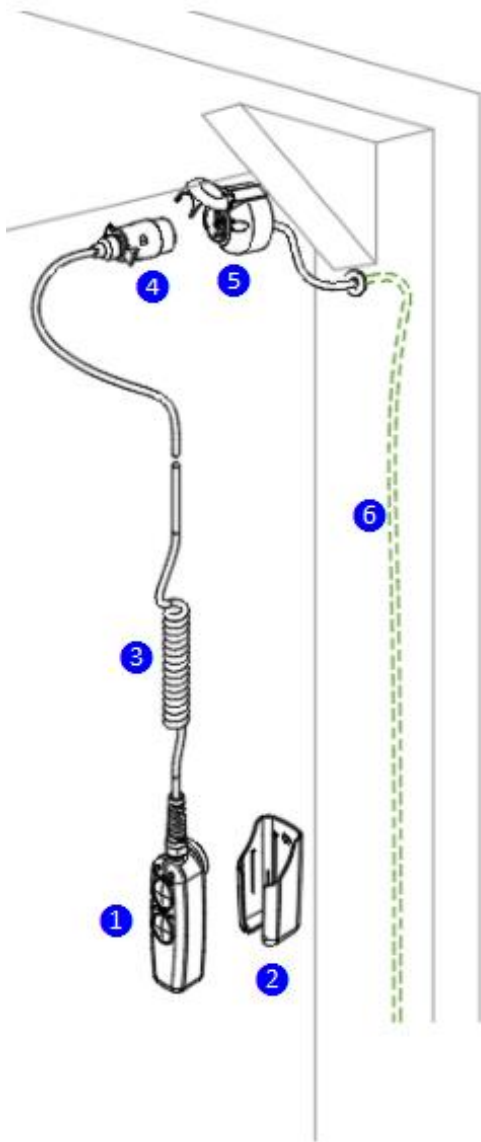
Figure 16.3



16.5 2-BUTTON PORTABLE CONTROL

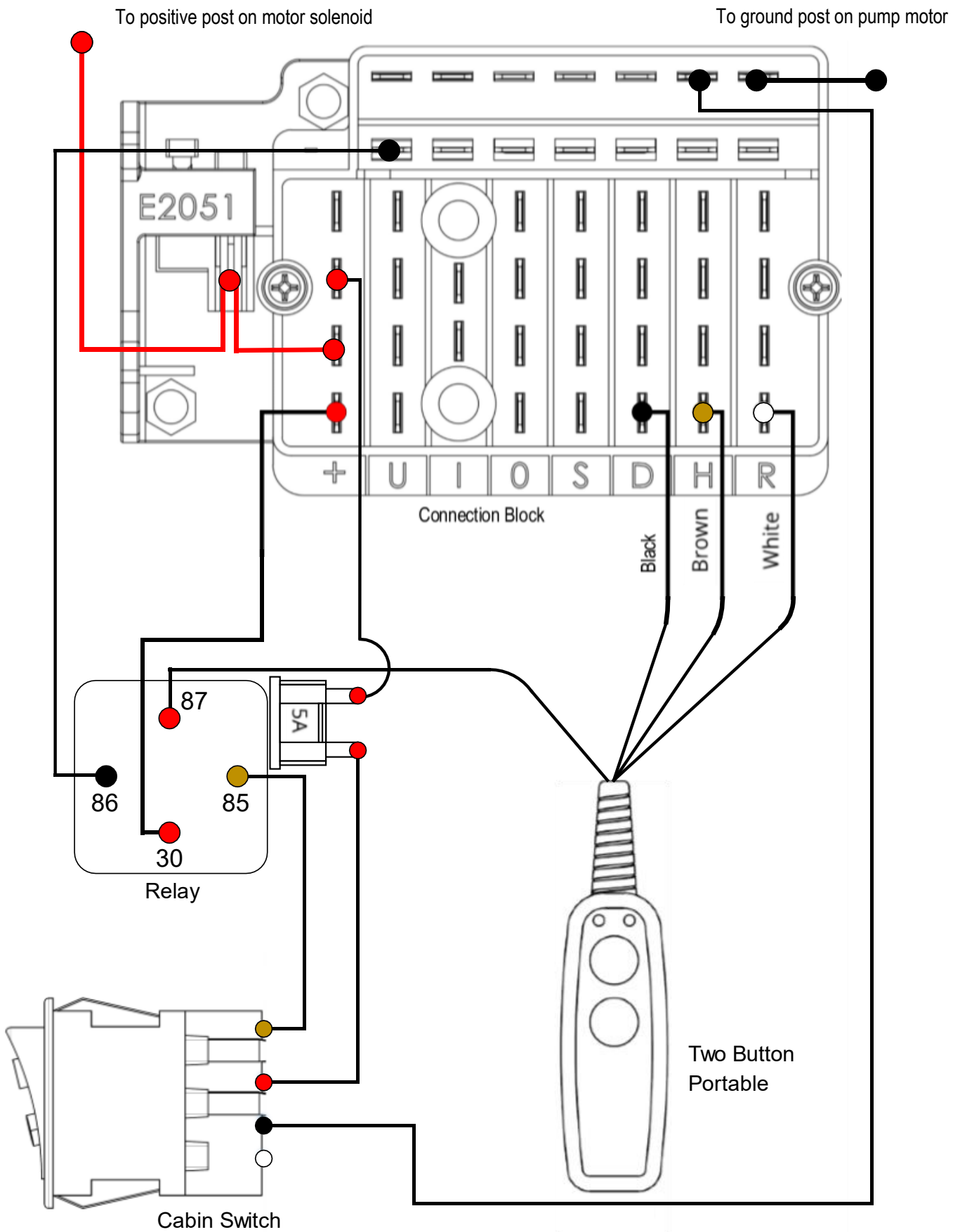
- The optional 2-button handheld control [1 in Figure 16.4] with spiral cable is supplied with a plug premounted on the spiral cable [4 in Figure 16.4], and a socket [5 in Figure 16.4] that is installed during the installation of the tail lift.
- Mount the socket [5] in the top corner of the vertical body panel, or other position where it is protected against physical damage. [Figure 16.4]
- Mount the socket [5] vertically to minimize the impact of accidental water ingress. [Figure 16.4]
- Route the cable [6] of the socket to the pump unit and connect it according to the wiring diagram supplied with the tail lift.
- Make sure the cable [6] is protected against physical damage. Run the cable inside the rear post of the vehicle body or mount a steel protection plate over it.
- If the tail lift is equipped with a main external control box (with compulsory 2-hand control), other than the toggle-switch described in this manual, wire the power feed of the 2-button portable control into the safety button of that control box in conformance with the wiring diagrams.
- Mount the holder [2] for the handheld control [1] in a position that is as much as possible protected against physical damage, and within reach of the operator. The handheld control [1] is also equipped with a magnet, so that it will stick to any metal surface.
- Mark the safe operator position on the platform and mount a hand grip to the rear frame of the vehicle body in conformance with Appendix 4.

Figure 16.4



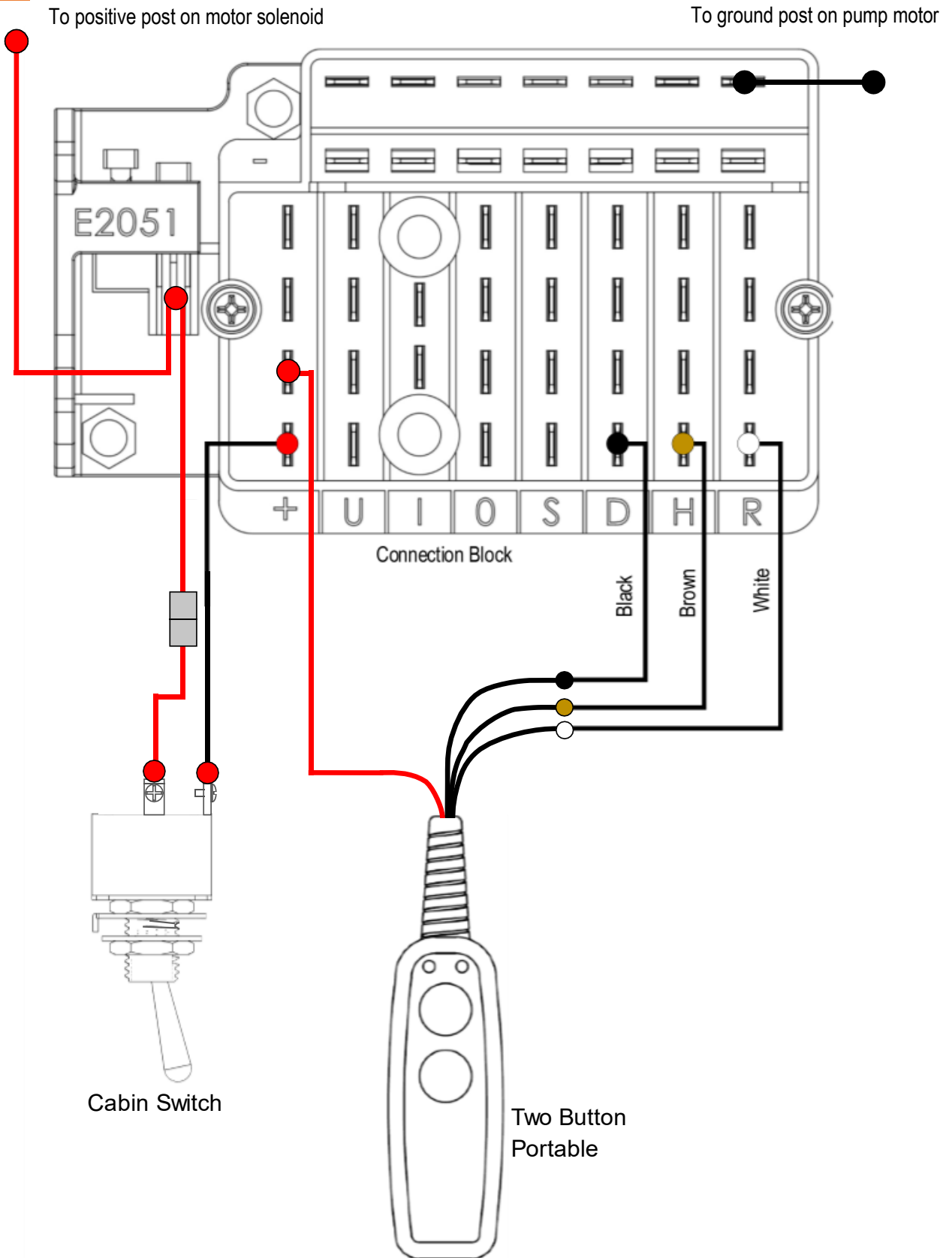
- A general wiring schematic for gravity down with the two-button handheld control is shown in [Figure 16.5].

Figure 16.5



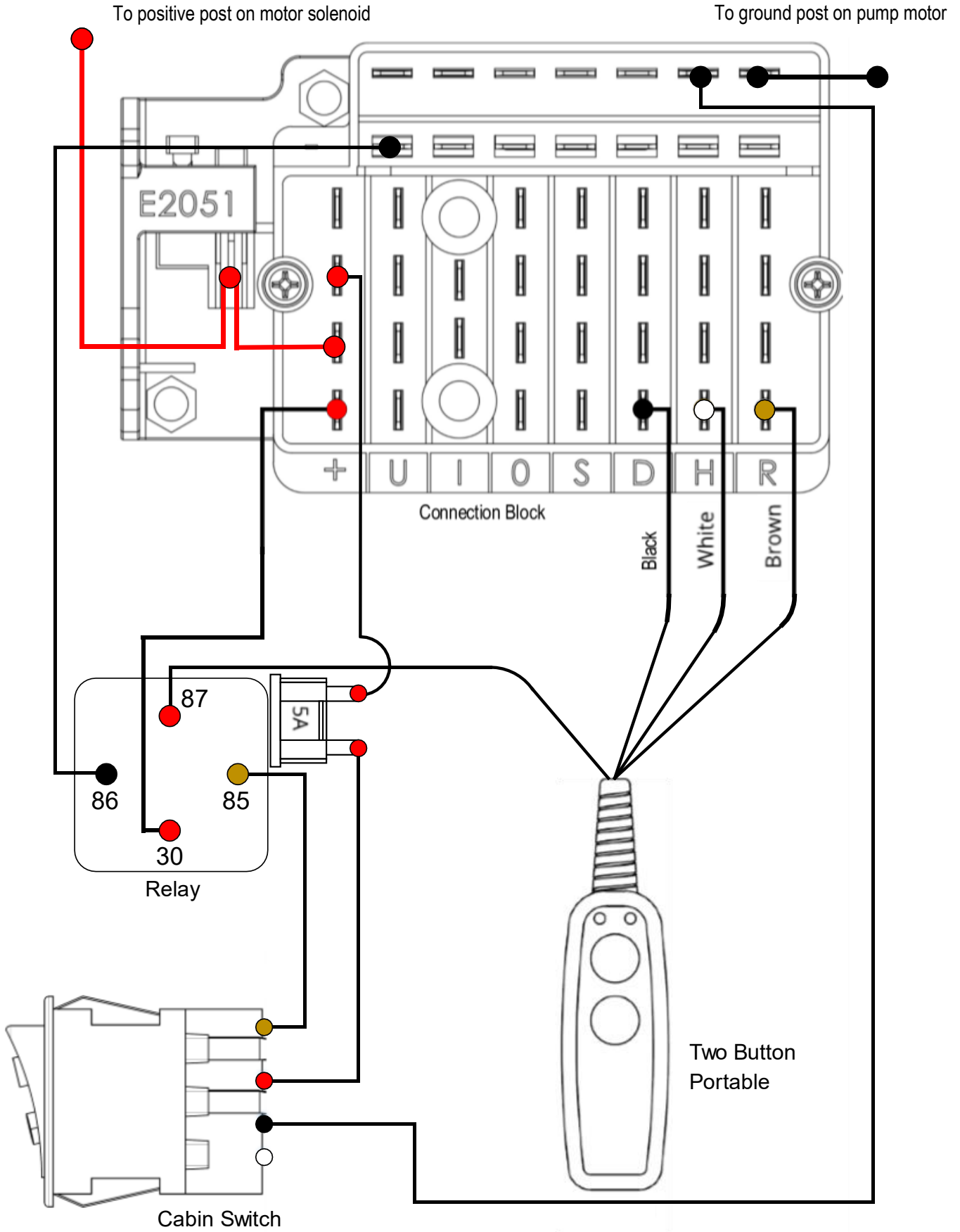
- For option OAE510.15, see Figure 16.6, below:

Figure 16.6



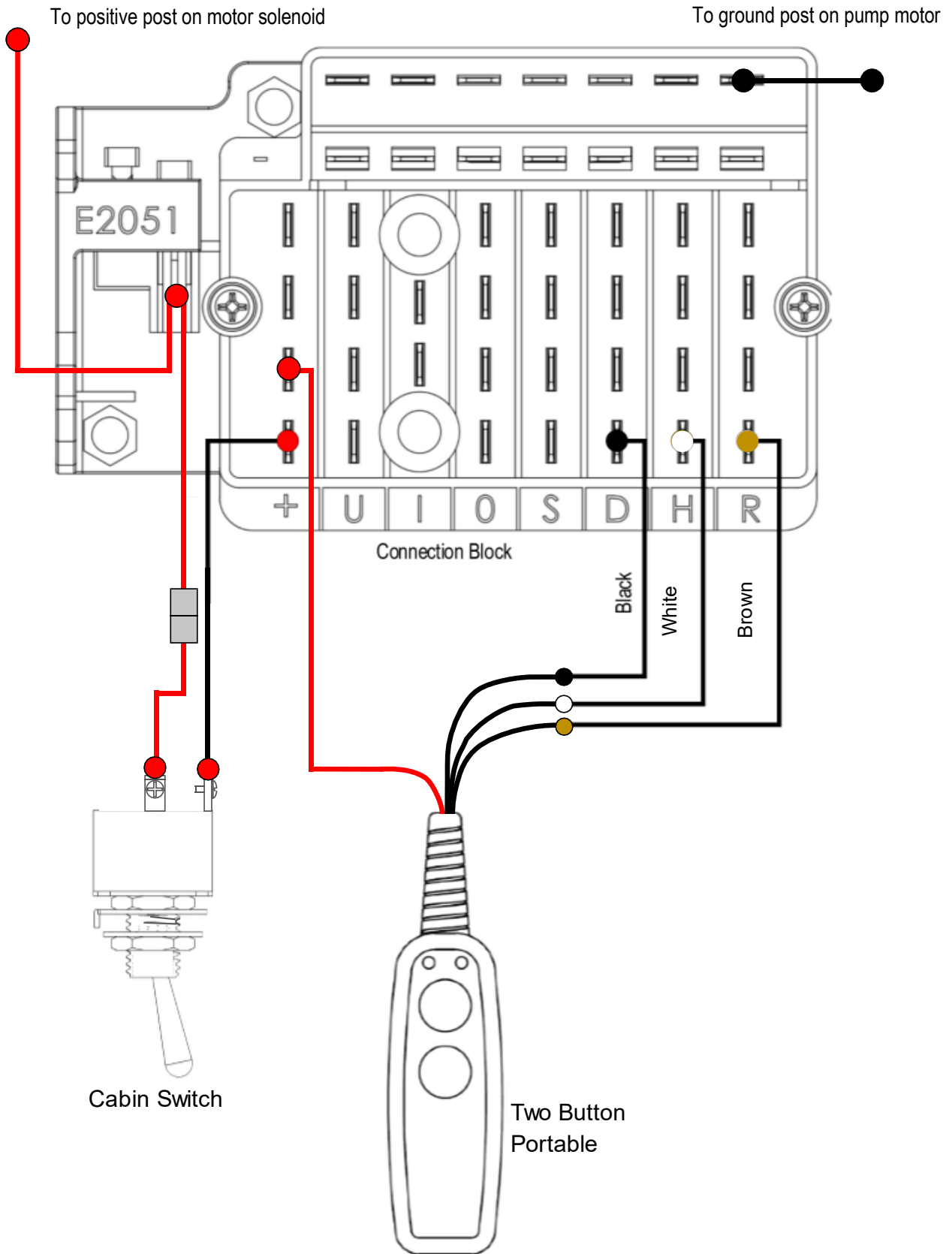
- A general wiring schematic for power down with the two-button handheld control is shown in [Figure 16.7].

Figure 16.7



- For option OAE510.15, see Figure 16.8, below:

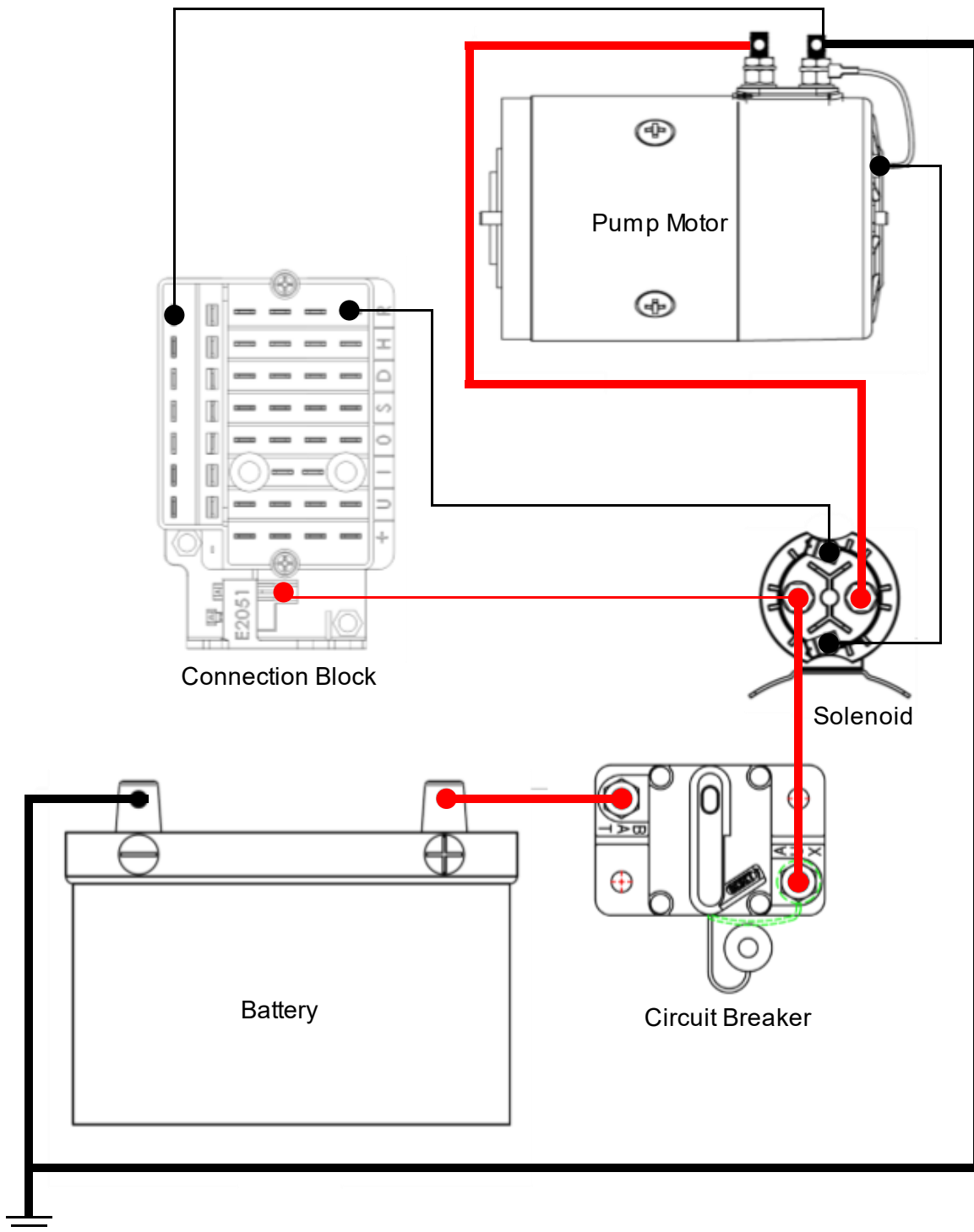
Figure 16.8



16.6 CIRCUIT BREAKER

- A resettable circuit breaker option is also available for the connection to the batteries. [Figure 16.9]

Figure 16.9



16.7 CAB CUT-OFF SWITCH

- Refer to the appropriate connection sequence in Figure 16.10 to properly connect the E0667 illuminated cab switch.

Figure 16.10

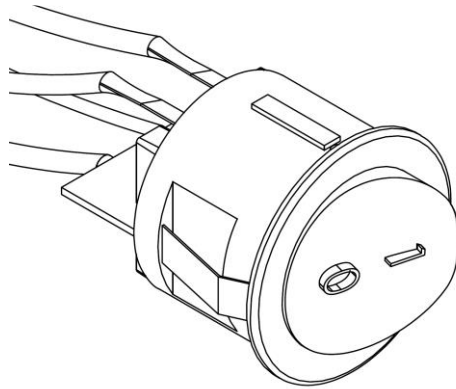
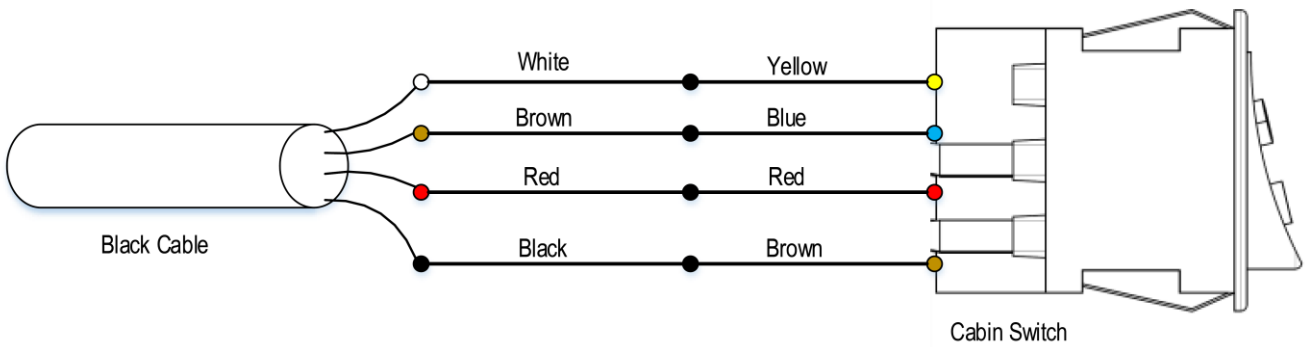
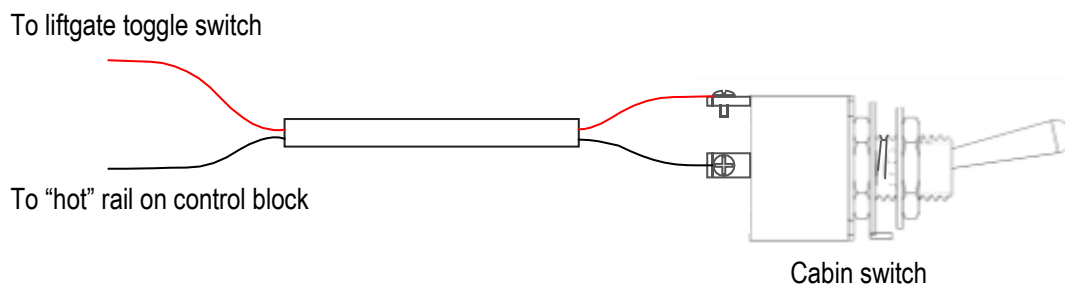


Figure 16.11



- For orders that shipped with option OAE510.15, refer to Figure 16.12 to properly connect the cab switch.

Figure 16.12



16.8 ELECTRIC AND HYDRAULIC INFORMATION

- Because of the wide choice in different control boxes and electrical options, appendix 3 only includes the basic diagrams for fully standard tail lifts.
 - The correct diagram applicable for the tail lift supplied can be found on the inside of the control box. If correct diagram is not present inside control box, contact your national DHOLLANDIA distributor for further assistance, or download from the website.
 - Other important information sources available on the website:
 1. FIT-ELEC-GENERAL.. - (latest update) for installation of main control box, battery and ground cables
 2. FIT-ELEC-OPTION.. - (latest update) for installation of extra controls and electrical options
- Remark: the following minimum cable sections are recommended (+) battery cables and (-) ground cables

Recommended MIN. cable sections for (+) battery cables and (-) ground cables	
Size electric motor	Cable section
500 W	16 mm ² - 5 AWG
1200 - 2200 W up to max. 1500kg capacity (length ≤ 7m)	25 mm ² - 3 AWG
1200 - 2200 W up to max. 1500kg capacity (length > 7m)	35 mm ² - 1 AWG
1200 - 2200 W above 1500kg capacity (length ≤ 13m)	35 mm ² - 1 AWG
1200 - 2200 W above 1500kg capacity (length > 13m)	50 mm ² - 0 (1/0) AWG
3000 W (only 24V)	35 mm ² - 1 AWG
Long motor cycles (double deck, power down)	50 mm ² - 0 (1/0) AWG

- Batteries and their charging system should be chosen to comply with following minimum requirements:

	Voltage System					
	12V			24V		
Tail lift capacity (lb / kg)	Electrical power (Amp)	Battery capacity (Ah)	Generator output (A)	Electrical power (Amp)	Battery capacity (Ah)	Generator output (A)
≤ 1750 / 800	200	143	70	150	105 (2X)	70
≤ 2200 / 1000	250	143	70	200	105 (2X)	70
≤ 3300 / 1500	250	180	90	200	180 (2X)	90
> 3300 / 1500	250	180	110	250	180 (2X)	110
> 3300 / 1500 Freq. Usage	300	220	110	300	220 (2X)	110

- The main wiring diagrams are included in the pages hereafter.
- The wiring logic for the DH-SM is called V012.x / V096.x, and uses the following abbreviations:

R = starter solenoid for the DC motor

M = pump motor

P = pump unit

T = oil reservoir

O = self-locking valve on the tilt cylinders

U I = 3/4 valve on the rear side of the pump unit

H = lift circuit

S = tilt circuit

D = self-locking valve on the lift cylinders

SA = single acting lock valve

DA = double acting lock valve

Type : SLIDER LIFT DH-SM* (MECH-X + E2007) + HYDROMOTOR - 2010/...

Power pack : GT-SX-motor pump-...

Valve : V012.X / V096.X

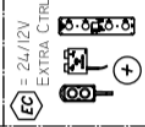
Plan N° : Sch_SM-V096.X-S008.BT-2011-01

Date : 28/03/2011



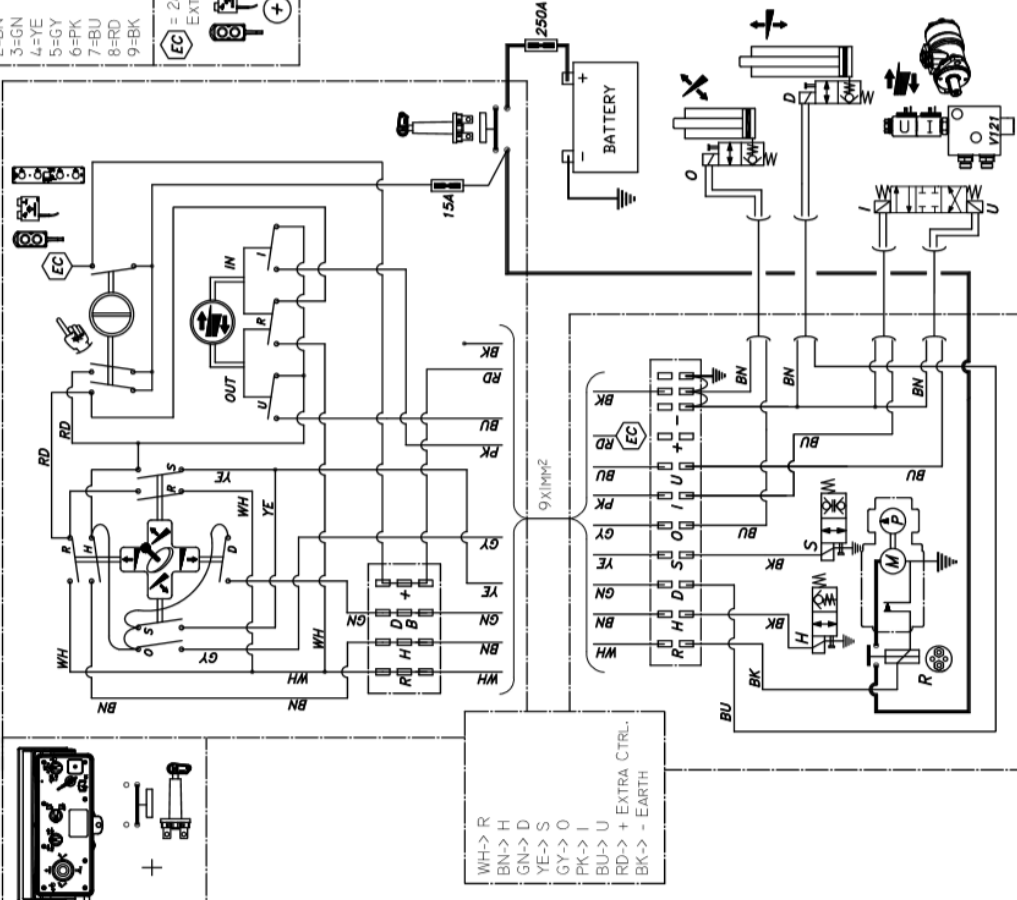
COLOUR CODES
DIN 47100

- 1=WH
- 2=BN
- 3=GN
- 4=YE
- 5=GY
- 6=PK
- 7=BU
- 8=RD
- 9=BK



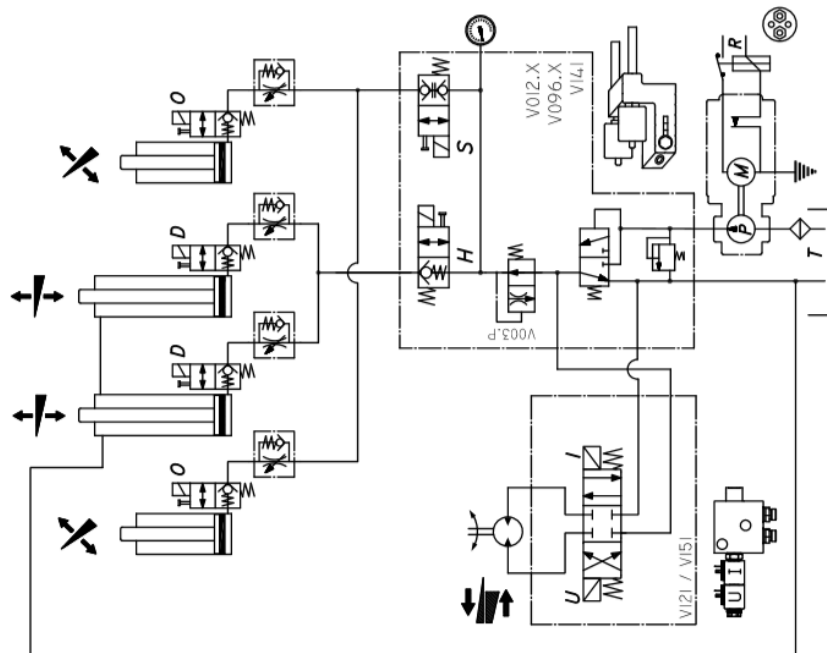
EXTERIOR CONTROL BOX REF. ED203.T0 / ED223.T0

S008.B + E2007

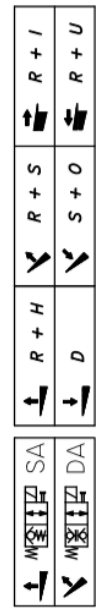


- WH-> R
- BN-> H
- GN-> D
- YE-> S
- GY-> O
- PK-> I
- BU-> U
- RD-> + EXTRA CTRL.
- BK-> - EARTH

DH-SM* / SMR*



MECH - X



Type : SLIDER LIFT DH-SM* (MECH-X + E2007) + HYDROMOTOR - 2010/...

Power pack : GT-SX-motor pump-...

Valve : V012.X / V096.X

Plan N° : Sch_SM-V096.X-S008.BP-2010-02

Date : 28/03/2011



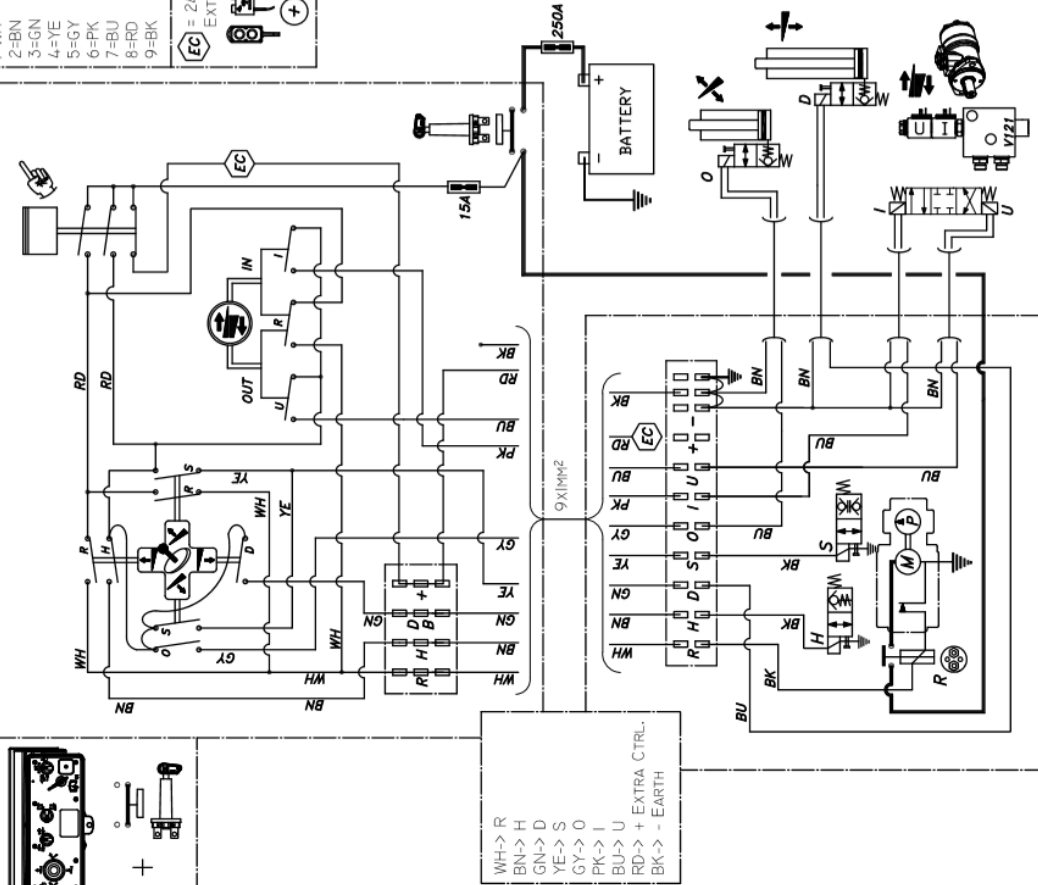
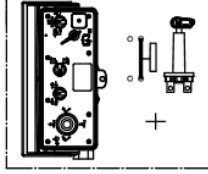
COLOUR CODES
DIN 47100

- 1=WH
- 2=BN
- 3=GN
- 4=YE
- 5=GY
- 6=PK
- 7=BU
- 8=RD
- 9=BK



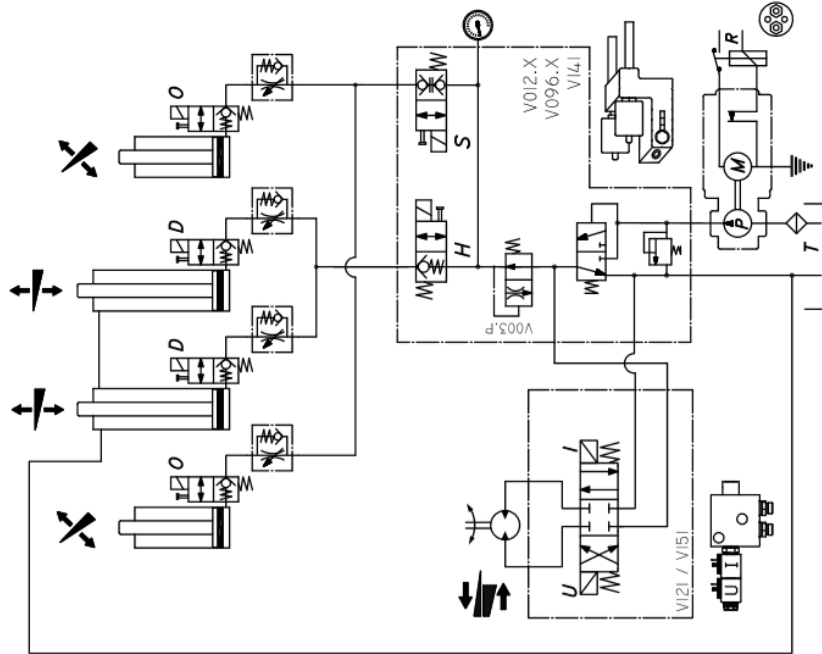
EXTERIOR CONTROL BOX REF. ED203.P0 / ED223.P0

S008.B + E2007



WH-> R
BN-> H
GN-> D
YE-> S
GY-> O
PK-> I
BU-> U
RD-> + EXTRA CTRL.
BK-> - EARTH

DH-SM* / SMR*



MECH - X



Type : SLIDER LIFT DH-SM + S008.ZT (MECH-X) - 2010/...

Power pack : GT-SX-motor pump-...

Valve : V012.X / V096.X

Plan N° : Sch_SM-V096.X-S008.Z-2011-10

Date : 28/03/2011

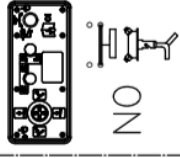


COLOUR CODES
DIN 47100

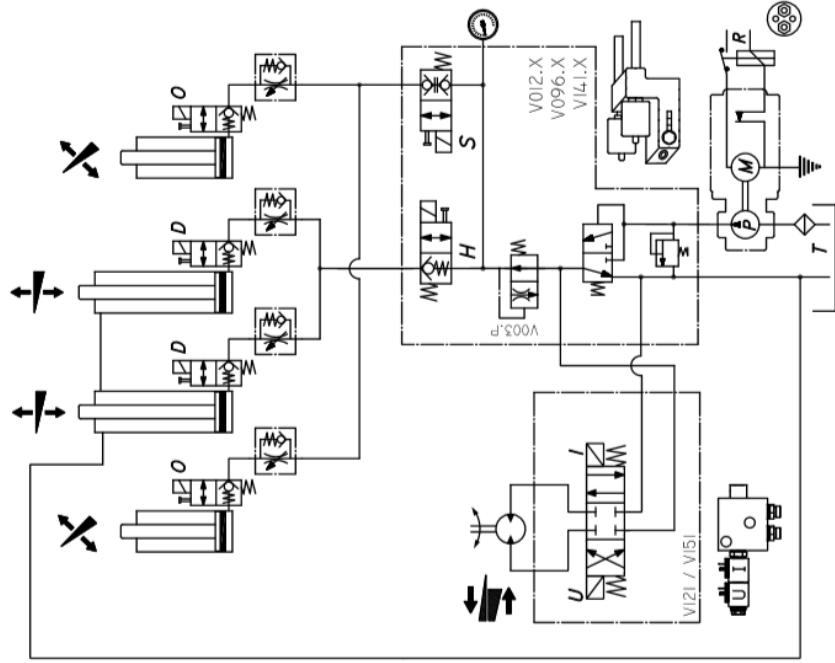
- 1=WH
- 2=BN
- 3=GN
- 4=YE
- 5=GY
- 6=PK
- 7=RU
- 8=RD
- 9=BK



S008.Z EXTERIOR CONTROL REF. EC203T0 (OR K0) / EC223T0 (OR K0)



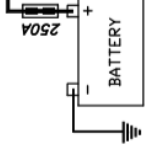
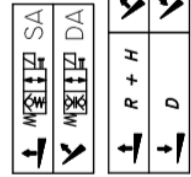
S008.Z



WH-> R
BN-> H
GN-> D
YE-> S
GY-> O
PK-> I
BU-> U
RD-> + 24V LIGHTS
+12V LIGHTS
(IF S008.Z + S070)
BK-> - EARTH
GY/PK-> + EXTRA CTRL.
RD/BU-> + 24/12V

(1) USED AS + 12/24V LIGHTS
SEE DIAGRAM SM-TRUCK

MECH - X



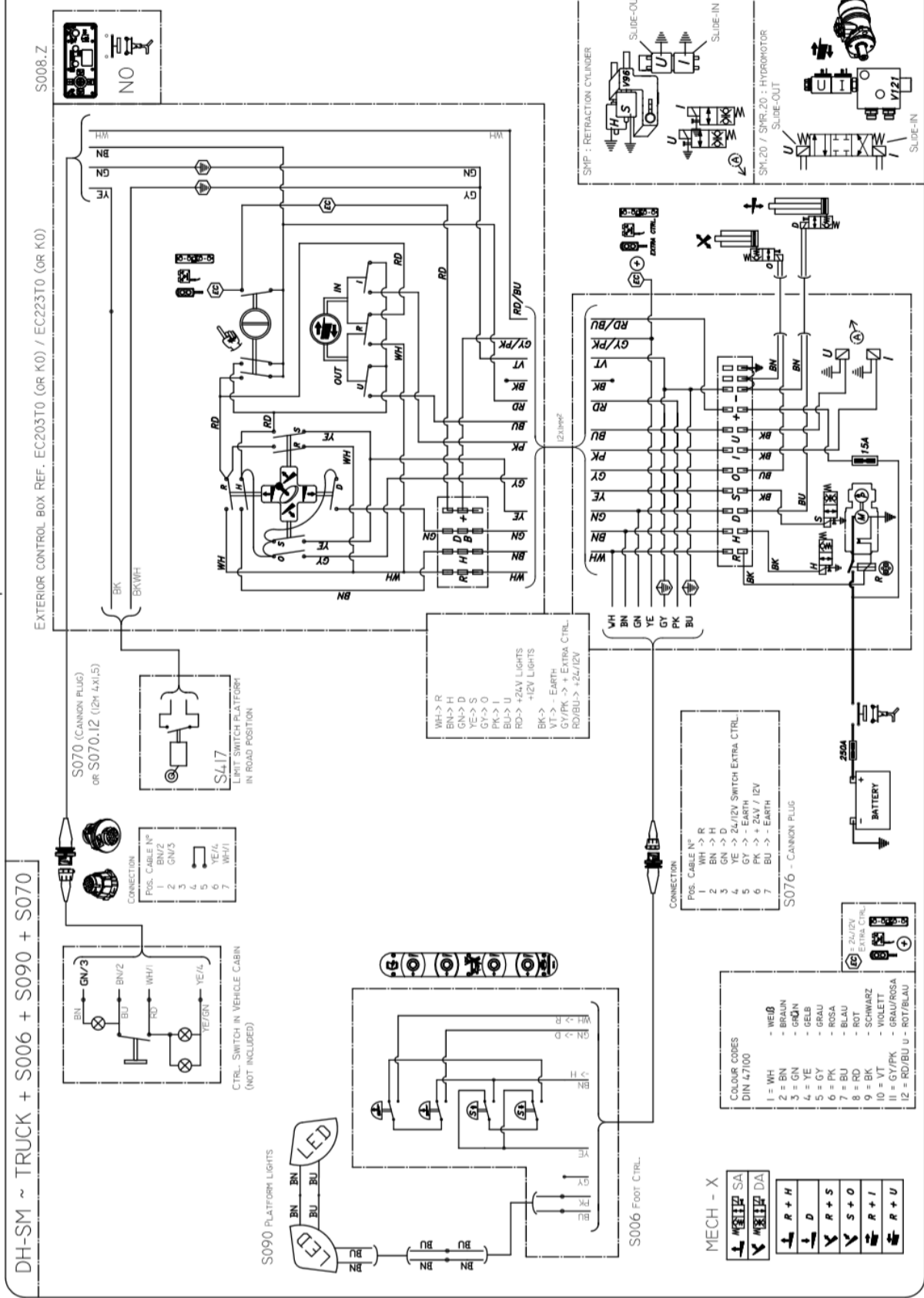
Type : SLIDER LIFT DH-SM + S008.ZT (MECH-X) - 2010/...

Power pack : GT-SX-motor pump-...

Valve : V012.X / V096.X

Plan N° : Sch_SM-V096.X-S008.ZT-DE-Truck-2011-02

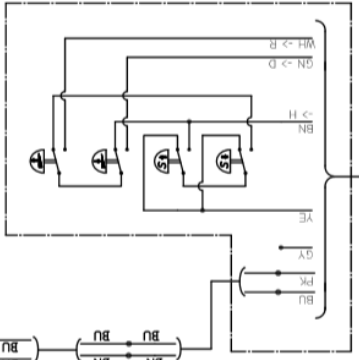
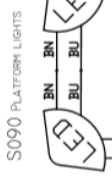
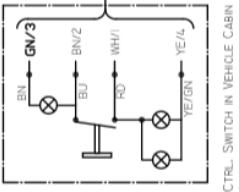
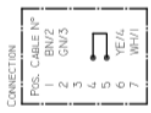
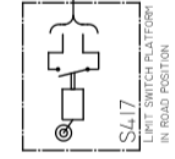
Date : 06/05/2011



S008.Z

EXTERIOR CONTROL BOX REF. EC203T0 (OR K0) / EC223T0 (OR K0)

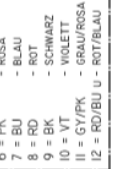
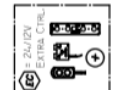
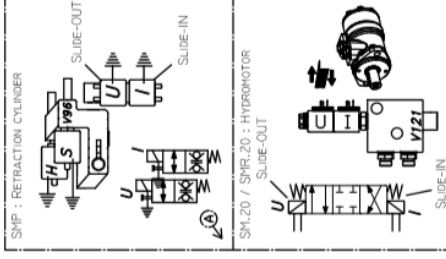
DH-SM ~ TRUCK + S006 + S090 + S070



WH-> R
BN-> H
GN-> D
YE-> S
GY-> O
RD-> U
BU-> U
BK-> +24V LIGHTS
+12V LIGHTS
VT-> - EARTH
GY/PK-> + EXTRA CTRL.
RD/BU-> +24V/12V

CONNECTION POS. CABLE N°
1 WH-> R
2 BN-> H
3 GN-> D
4 YE-> S
5 GY-> O
6 PK-> - EARTH
7 BU-> + EARTH

COLOUR CODES DIN 47100
1 = WH - WEIß
2 = BN - BRAUN
3 = GN - GRÜN
4 = YE - GELB
5 = GY - GRAU
6 = PK - ROSA
7 = BU - BLAU
8 = RD - ROT
9 = BK - SCHWARZ
10 = VT - VIOLETT
11 = GY/PK - GRAU/ROSA
12 = RD/BU U - ROT/BLAU



Type : SLIDER LIFT DH-SM* (MECH-X + E2007) + HYDROMOTOR - 2011/...

Power pack : GT-SX-motor pump-...

Valve : V012.X / V096.X

Plan N° : Sch_SM-V096.X-S008.B-DE-Trailer-2011-02

Date : 06/05/2011



COLOUR CODES
DIN 47100

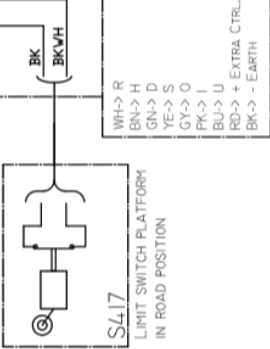
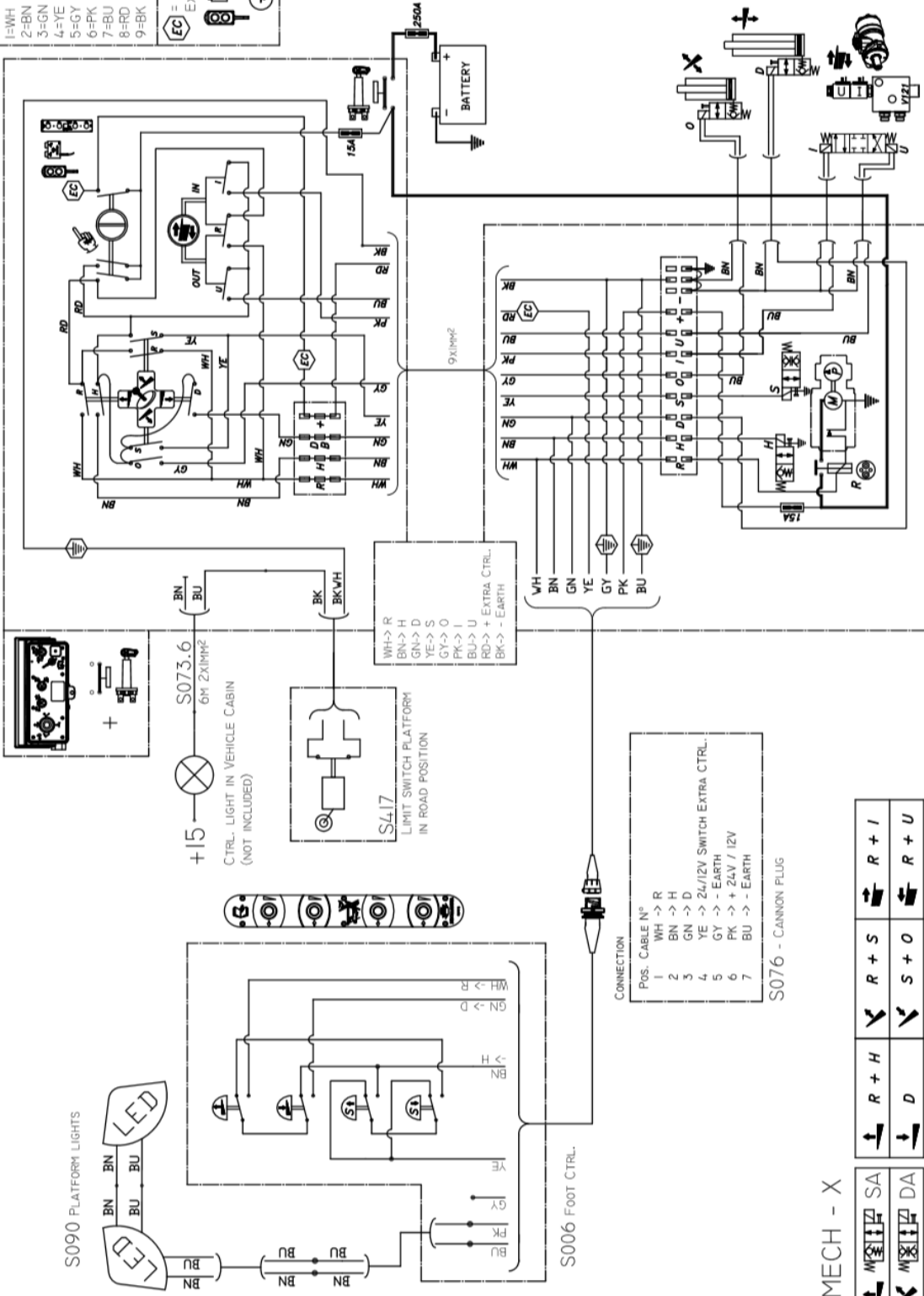
- 1=WH
- 2=BN
- 3=GN
- 4=YE
- 5=GY
- 6=PK
- 7=BU
- 8=RD
- 9=BK



EXTERIOR CONTROL BOX REF. ED203.T0 / ED223.T0

S008.B + E2007

DH-SM ~ TRAILER + S006 + S090 + S073.6



CONNECTION

POS. CABLE N°	WH → R	BN → H	GN → D	YE → S	GY → O	PK → I	BU → U	RD → + EXTRA CTRL.	BK → - EARTH
1	WH → R								
2	BN → H								
3	GN → D								
4	YE → S								
5	GY → O								
6	PK → I								
7	BU → U								

S076 - CANNON PLUG



Type : SLIDER LIFT DH-SM* (MECH-X + E2007) + STABIL. LEGS - 2010/...

Power pack : GT-SX-motor pump-...

Valve : V012.X/V096.X + V093

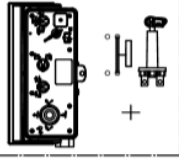
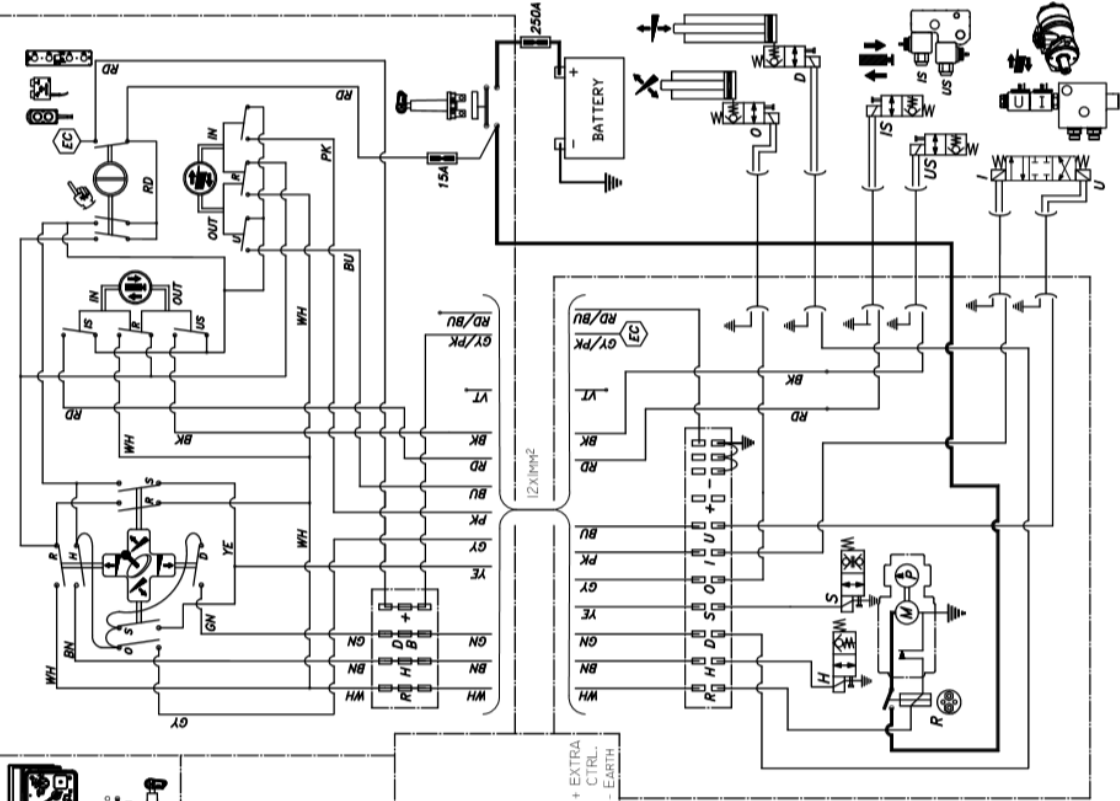
Plan N° : Sch_SMST-V096.X-V093-S008.BT-2011-01

Date : 28/03/2011



EXTERIOR CONTROL BOX REF. ED213.T0 / ED233.T0

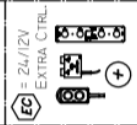
S008.B + E2007



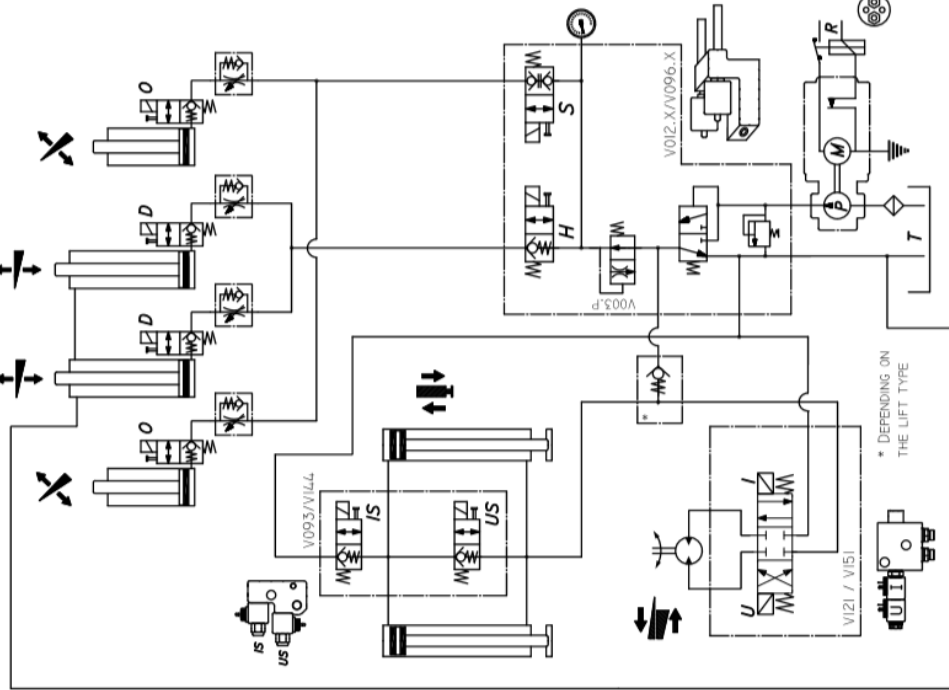
WH-> R
 BN-> H
 GN-> D
 YE-> S
 GY-> O
 PK-> I
 BU-> U
 RD-> IS
 BK-> US
 VT-> J
 GY/PK-> + EXTRA CTRL.
 RD/BU-> - EARTH

Colour codes
 DIN 47100

- 1=WH
- 2=BN
- 3=GN
- 4=YE
- 5=GY
- 6=PK
- 7=BU
- 8=RD
- 9=BK
- 10=VT
- 11=GY/PK
- 12=RD/BU



DH-SM* + STAB. LEGS



MECH - X



* DEPENDING ON THE LIFT TYPE

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 (-) ground cables, fuses and circuit breakers are dimensioned sufficiently strong, and fitted with care following 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 (-) ground cables can lead to overheating, bad performance of the electrical system, and premature wear of the main electrical components.
- (-) ground 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 2 types of oils in its hydraulic systems:

1. Standard oil: ISO VG 22.

This common and widely available hydraulic oil is used in the majority of DHOLLANDIA lifts, sold for use in "normal" climate conditions. This includes all countries excluding the Nordic countries suffering very cold winter climate. Refer to the product specifications of Q8 - Haydn ISO VG 22 (*) attached for further technical details.

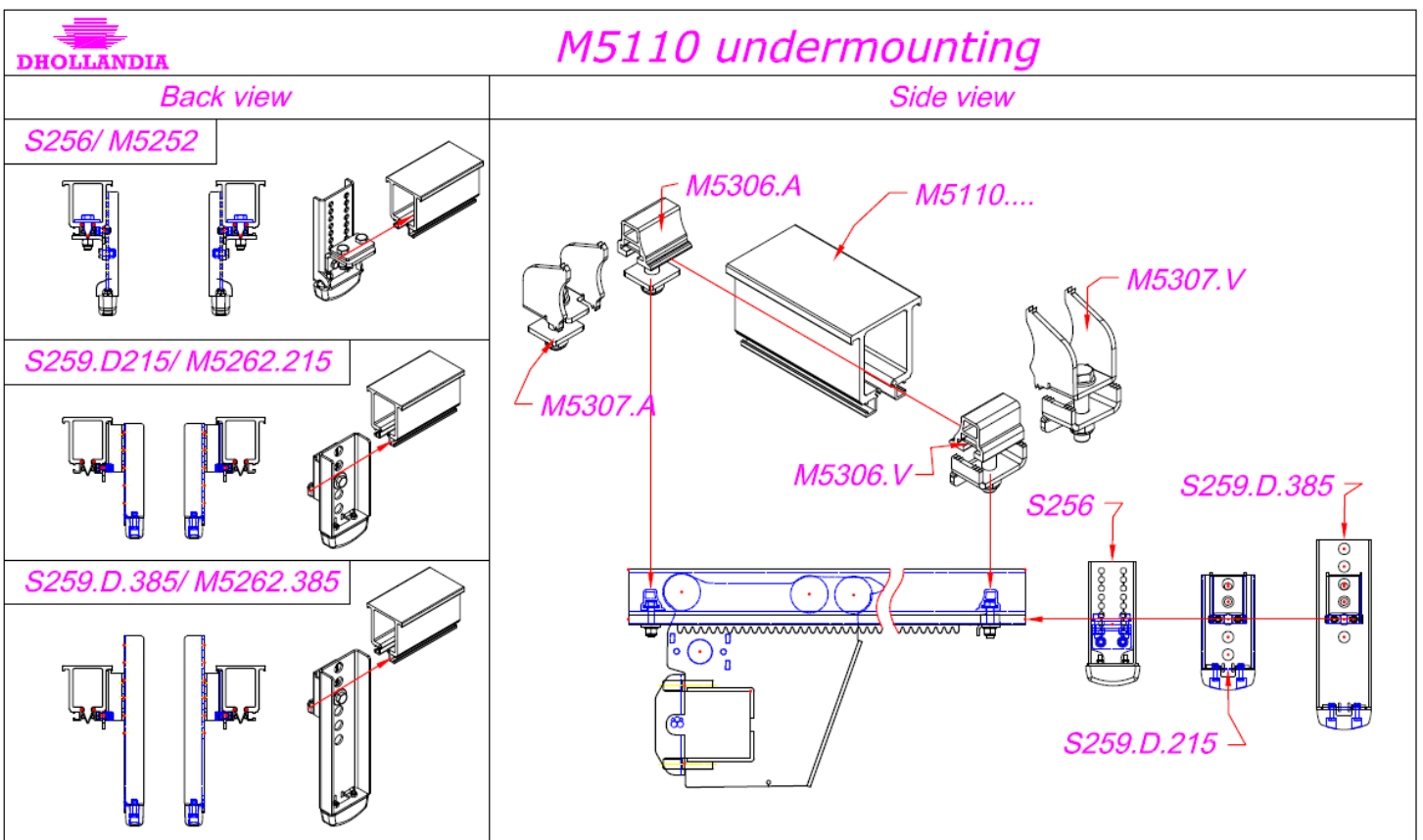
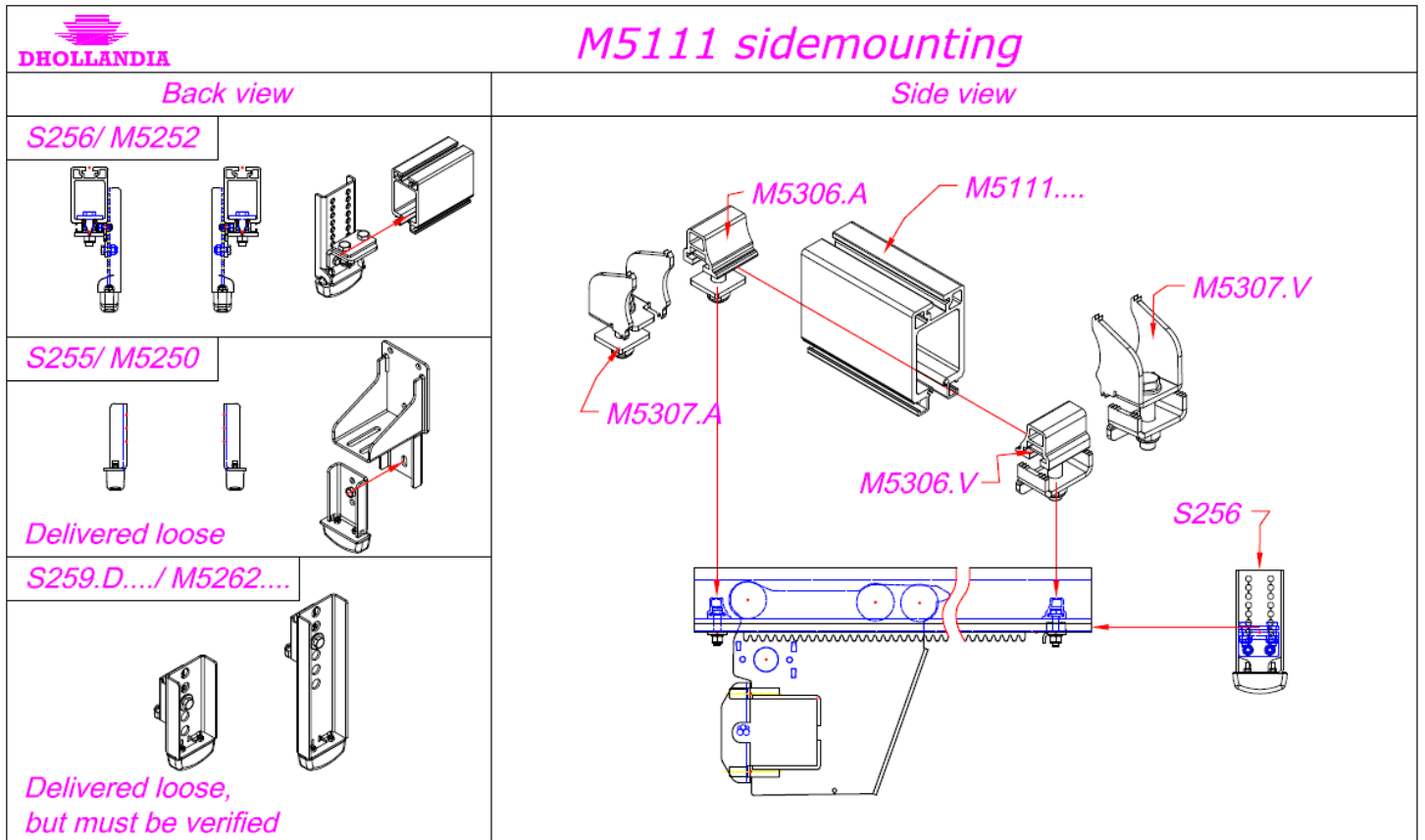
2. Option OAH002 (old ref. S502) = arctic oil -52°C: mineral low-temperature hydraulic fluid.

This option is used on lifts sold to countries subjected to very cold freezing temperatures during winter, including Russia, Ukraine, the Baltic states, Poland, Scandinavia, Canada. Refer to the product specifications of Castrol - Aero HF 585 B (*) attached for further technical details.

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 tail 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 tail lift caused by the replenishment with non-compatible oils or fluids; nor for the consequential damage to property or physical harm to individuals.

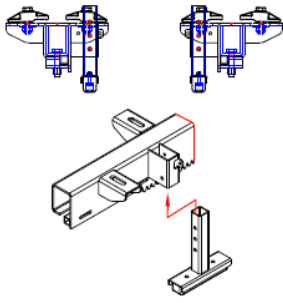
16.9 MOUNTING DIAGRAMS



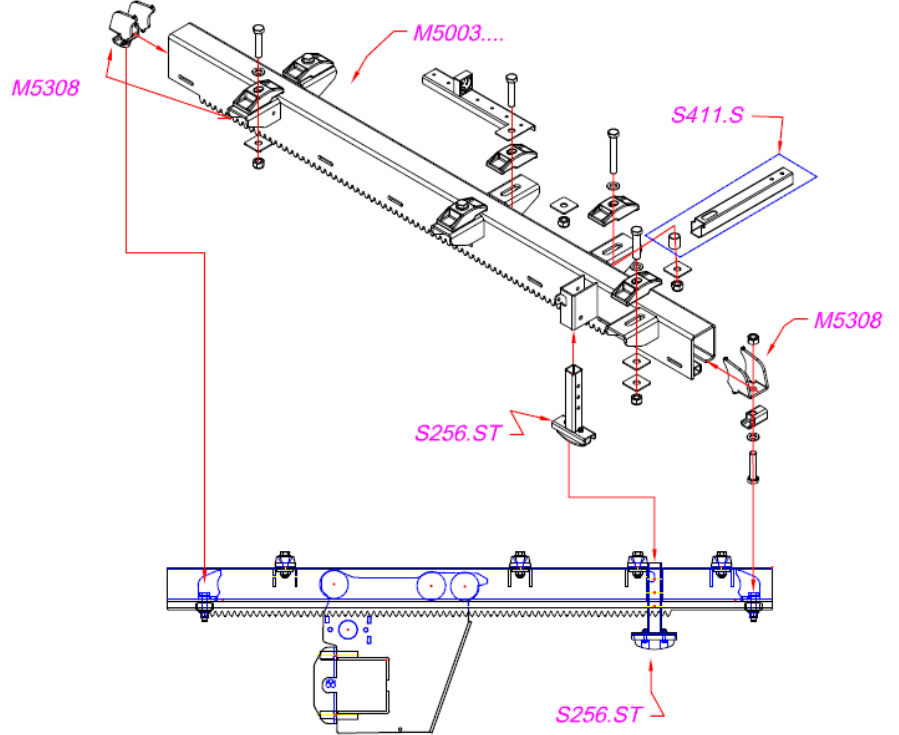
M5003 undermounting

Back view

S256.ST/ M5253



Side view



16.10 END NOTE

- DHOLLANDIA would like to thank you for using our products and leave you with this final notice and warning.
- Additional information about this tail lift and many other DHOLLANDIA products is available at the following link:
<http://www.dhollandia.com>

NOTICE

- Competent and regular preventative maintenance is essential to the operational reliability and safety of the operator or bystanders.
- All maintenance and repair work should be performed by authorized DHOLLANDIA service agents.
- Only authorized OEM DHOLLANDIA replacement parts should be used for all repairs.
- Consult the separate MAINTENANCE AND REPAIR MANUAL for safety instructions, maintenance guidelines, and troubleshooting support.



WARNING

- Improper use of the tail lift may result in damage, premature wear or failure of the tail lift, and will increase the risk of serious injury or death to the operator or bystanders.
- To maximize the durability, ensure long-term reliability of the tail lift, and protect operators and bystanders from serious bodily injury or death, the operator **MUST** comply with the proper loading instructions and safe working procedures in the OPERATIONS MANUAL.