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MAD® Loading Systems

EH00002
Installation Manual
EasyLoad

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Version: English 04

Contents

1 Introduction

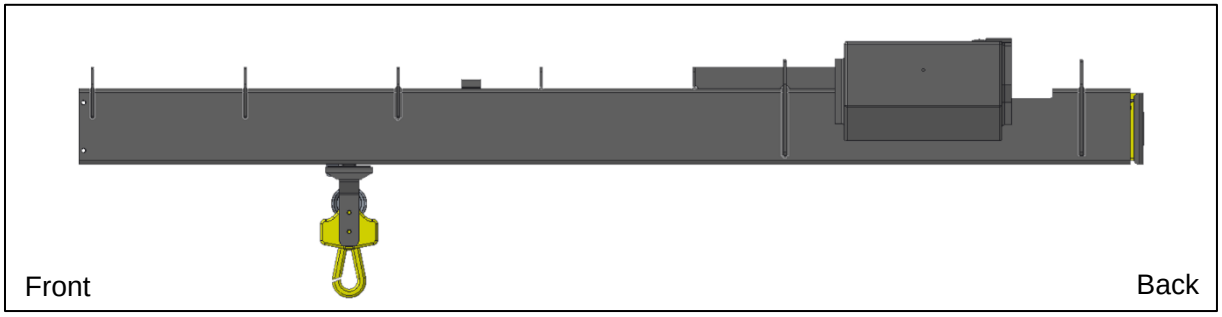
Read this manual carefully before installing the EasyLoad. The EasyLoad is a hoisting device and it is therefore very important that the installation instructions are followed carefully to avoid damage to the vehicle and injury to the user.

If during the installation you are in doubt or anything is unclear, or if there are any imperfections to the product, always contact MAD.

1.1 Definitions

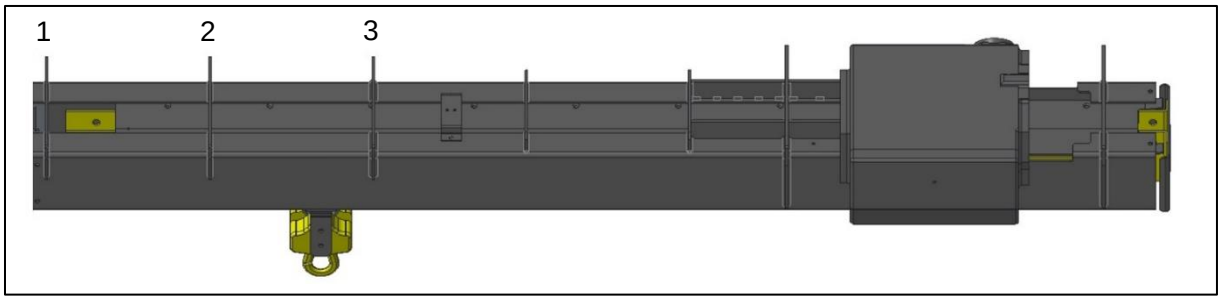
Orientation of the EasyLoad

The back of the EasyLoad is the side where the inner beam slides out of the outer beam.



Connecting bridge

These are the vertical plate sections on top of the EasyLoad with which the EasyLoad is attached to the frame. For the EL-250-**2**xxxx and the EL-500, the three front bridges can be used. With the EL-250-**1**xxxx and the EL-500-**1**xxx, only the first two can be used. For the EL-501, only the second and third connecting bridges can be used. The numbering used is as follows:



Front frame

The framework in which the EasyLoad will be suspended that is mounted furthest to the front of the vehicle.

Rear frame

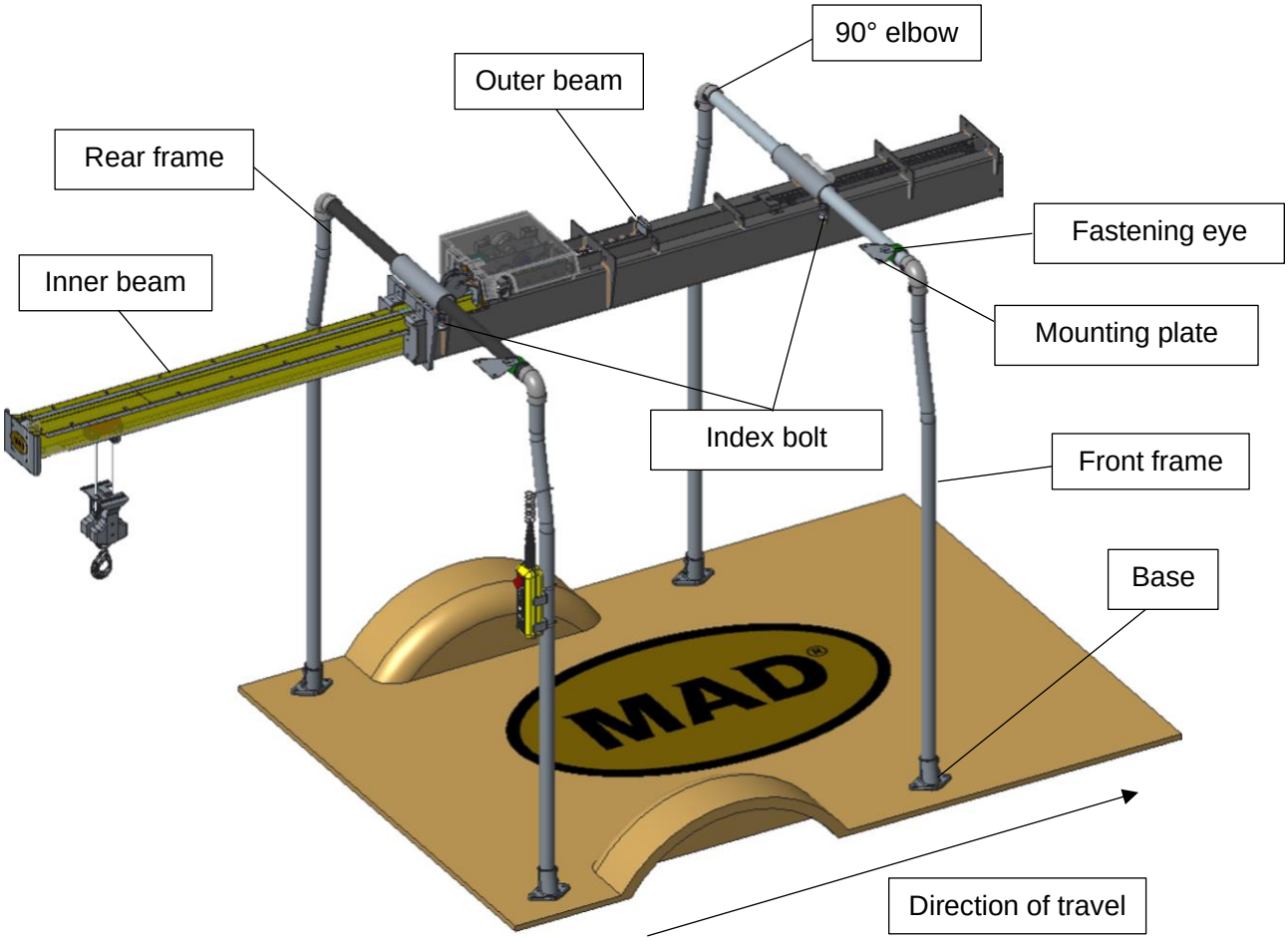
The framework in which the EasyLoad will be suspended that is mounted at the back of the vehicle. The rear frame contains a black beam.

Connecting pieces

Parts of the frame with which the frame tubes are joined together or attached to the vehicle.

Base | 90° elbow | Fastening eye

1.2 Overview



2 Safety

- Carefully read through all the instructions for use.
- Always observe the car manufacturer's installation guidelines.
- The EasyLoad must be installed by an authority with sufficient expertise and in accordance with this installation manual.
- The vehicle must have a mounted wooden loading floor.
- Note! The EasyLoad has been developed for use in a van, in combination with the specially developed mounting frame. All other applications are outside of the responsibility of MAD.

- MAD is not responsible for the suspension of the EasyLoad to any mounting frame other than the one supplied by MAD.
- Have any damage repaired or repairs carried out by a person with the relevant expertise. The guarantee will be void in the case of unprofessional repairs and modifications to the EasyLoad.
- Always put the car horizontal, apply the vehicle's parking brake and make sure the load compartment is completely empty.
- The weight of the EasyLoad requires that it should be lifted out of and back into the frame by means of a lifting aid. To do this, use a transmission jack or other lifting device.

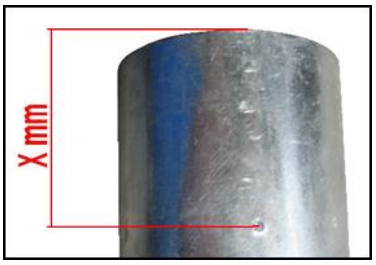
- If such a lift is not available, the EasyLoad should be lifted or moved by at least four people.
- Always use straps to prevent injury and/or damage if the EasyLoad is to be lifted in or out of the frame without a lifting aid. Pull on the tension straps alternately and evenly while lifting. When lowering, allow the tension straps to slacken simultaneously. In all cases, keep the EasyLoad horizontal.
- While installing the EasyLoad, the hoisting cable should always remain under tension by allowing the weight to hang freely above the lifting hook. This prevents the cable from kinking and/or running off the guide wheels.
- Always put the EasyLoad on trestles or two beams and never directly on the ground or floor of the vehicle. This can result in damage to the hoisting cable.
- Especially for electric vehicles, ensure that the car manufacturer's installation guidelines are followed in the areas of the battery pack and electrical wiring.
- When drilling in the vehicle, look out for wires which may be located behind a panel. If there are any, divert them temporarily.
- Remove any sharp edges after drilling and apply an anti-corrosion agent.
- Also make sure that the wiring is not pinched or can be damaged when screwing in a bolt.

3 The frame

3.1 General points of attention

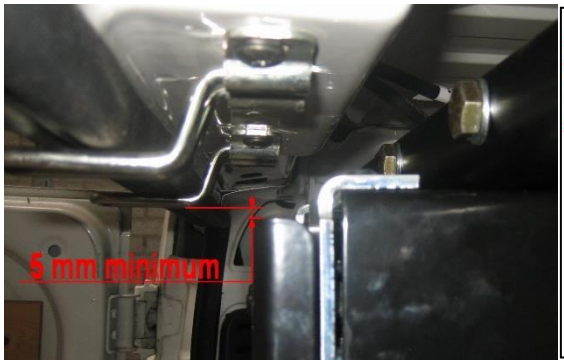
A marking must be placed on the uprights of the frame. This marking can be used to determine whether the upright has been inserted far enough into the coupling. If the length of the frame uprights needs to be adjusted, apply a new marking after sawing. A stripe or scratch must be placed as a marking at a distance of "x" mm from the new cut. The distance "x" is:

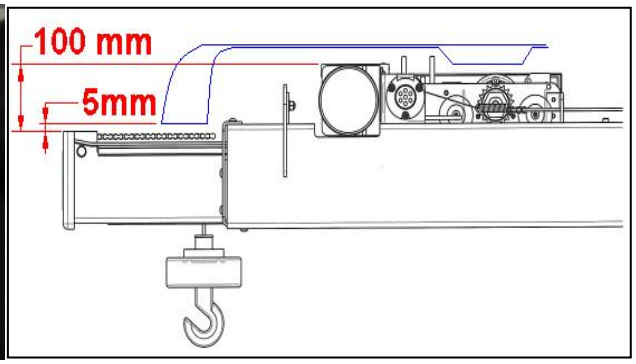
- 35mm, when the tube must be inserted in a coupling with one Allen bolt.
- 75mm, when the tube must be inserted in a coupling with two Allen bolts.



The maximum height at which the EasyLoad will be suspended is partly determined by the following factors:

- The height of the rear doors. When determining the height, keep a minimum of 5mm between the underside of the rear door frame (pay attention to the door catches!) and the top of the inner beam (top of the backplate).
- The height of the roof. Keep at least a gap of 5mm between the plastic cover of the EasyLoad and the roof of the vehicle.





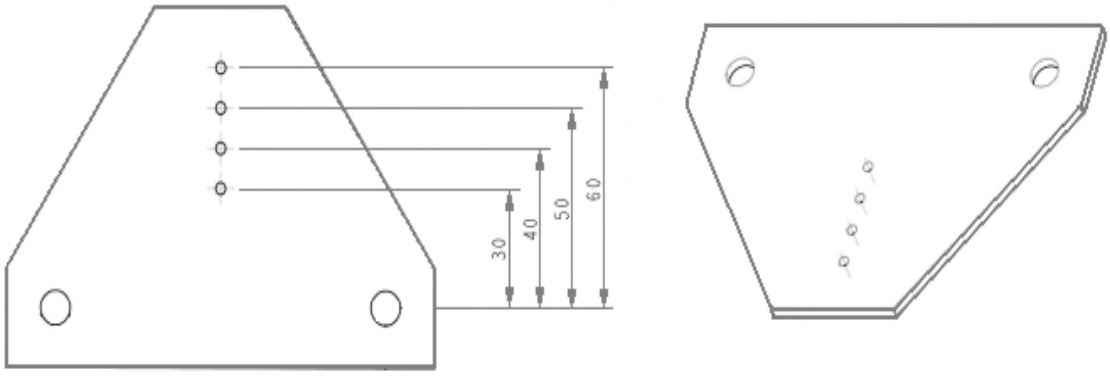
The tube with the largest wall thickness must be installed as a crossbar in the rear frame.

Always hand-tighten the elbows before lifting the pipes to prevent them from falling during installation and causing damage or injury.

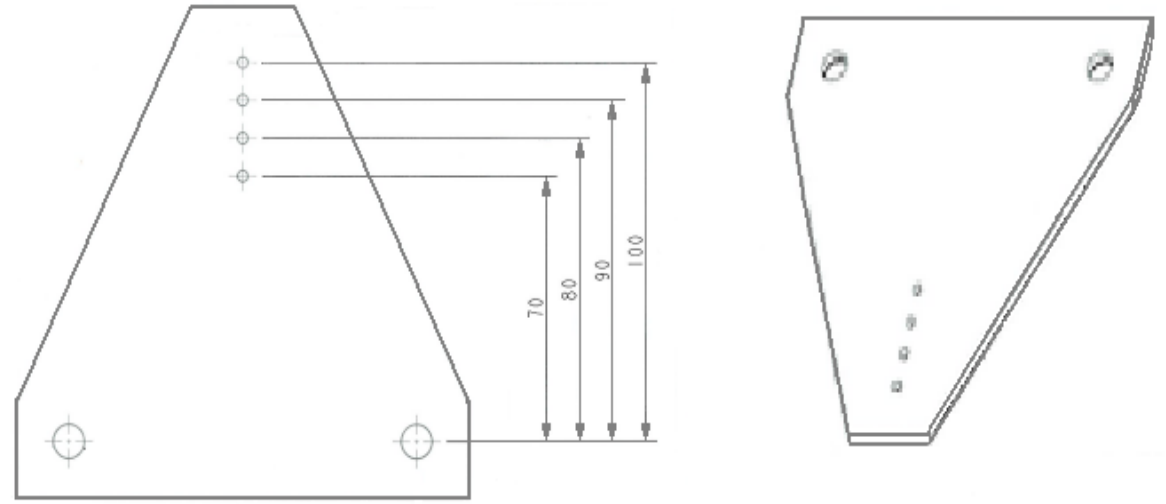
3.2 Supplied mounting plates

With each EasyLoad, four mounting plates are supplied as standard in the installation kit to attach the top of the frame to a roof member. Depending on the type of vehicle, the kit includes 90 triangular plates and/or a 130 triangular plates. For installation of the frame in a different position, the plates can also be ordered separately. With the plates it is possible to position the frame at four different locations in the vehicle direction over a distance of 30 mm. By using the fastening eyes, the location in the lateral direction is completely free to choose.

Triangular plate 90
Distance between the frame and the roof member ranging from 30 to 60 mm. MAD part number EM86007.



Triangular 130
Distance between the frame and the roof member ranging from 70 to 100 mm. MAD part number EM86006.

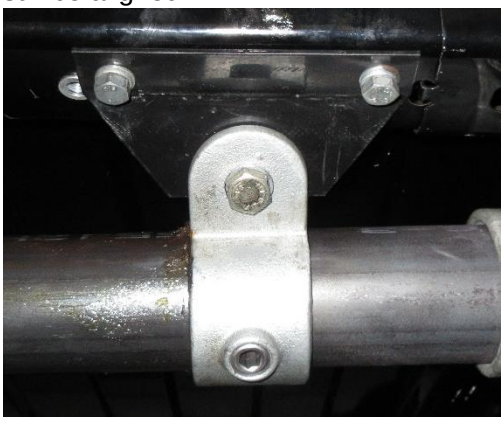


3.3 Installation of the frame

Before installing the frame, determine where the uprights are to be mounted. This depends on the roof members (in relation to the triangular plates) and the vehicle's equipment.

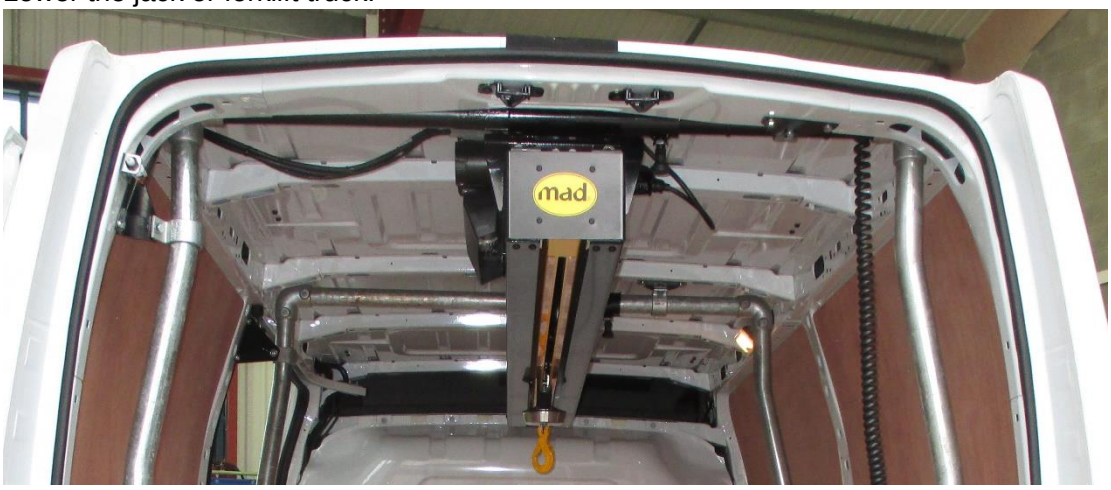
1. Use a jack or forklift truck to place the EasyLoad halfway up the load compartment.
2. Mount both suspension brackets with the long ends to the right. Mount the front suspension bracket on the first, second or third connecting bridge, depending on how the frame is mounted. Mount the rear suspension bracket on the rear connecting bridge.
3. Slide the tube having the largest wall thickness into the rear suspension bracket.
4. Mount a 90-degree elbow onto the left-hand side of the tube.
5. Slide a fastening eye onto the right-hand side, with the lip facing downwards, and then a 90-degree elbow.
6. Hand-tighten all Allen bolts.
7. Slide the tube having the smallest wall thickness into the front suspension bracket.
8. Mount a 90-degree elbow on the left-hand side.
9. Slide a fastening eye onto the right-hand side, with the lip facing upwards, and then a 90-degree elbow.
10. Hand-tighten all Allen bolts.
11. Jack or hoist the EasyLoad up to just below the roof.


12. Place a upright in a base. Then slide a fastening eye on the upright. Next, slide the upright in the elbow on the left side of the rear crossbar.
13. Place another upright in a base and slide the upright in the elbow on the right side of the rear crossbar.
14. Place the rear frame parallel to the vehicle’s door frame.
15. Position the fastening eyes for the triangular plates (see 3.2) and determine which of the four holes should be drilled to 10.5 mm. After drilling, mount the triangular plates to the fastening eyes of the crossmember and the upright using the M10x30 bolts supplied and turn the fastening eyes so that the plates lie against the door frame.
16. Mark the location of the attachment points in the vehicle's door frame by taking them over from the triangular plates. Drill 11 mm large holes for the blind rivet nuts. Beware of cabling running through the frame!
17. Treat the holes with an anti-corrosion agent and fit the supplied blind rivet nuts, four in total.
18. Attach the triangular panels to the door frame. Do this hand-tight so that the frame can still be aligned.

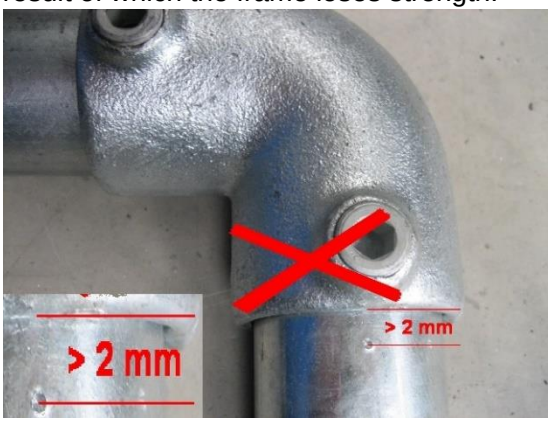


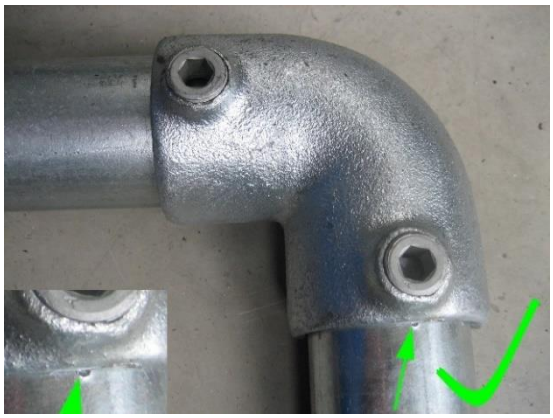
19. Place a upright in a base. Then slide a fastening eye on the upright. Next, slide the upright in the elbow on the left side of the front crossbar.
20. Place another upright in a base and slide the upright in the elbow on the right side of the front crossbar.
21. Position the fastening eyes for the triangular plate (see 3.2) and determine which of the four holes should be drilled to 10.5 mm. After drilling, mount the triangular plates to the fastening eyes of the crossbar and upright using the M10x30 bolts supplied and turn the fastening eyes so that the plates lie against the roof member.
22. Mark the location of the attachment points in the roof member by taking them over from the triangular plates. Drill 11 mm large holes for the blind rivet nuts. Beware of cabling running through the member.

23. Treat the holes with an anti-corrosion agent and fit the supplied blind rivet nuts, four in total.
24. Fix the triangular plates. Do this hand-tight so that the frame can still be oriented.
25. Lower the jack or forklift truck.

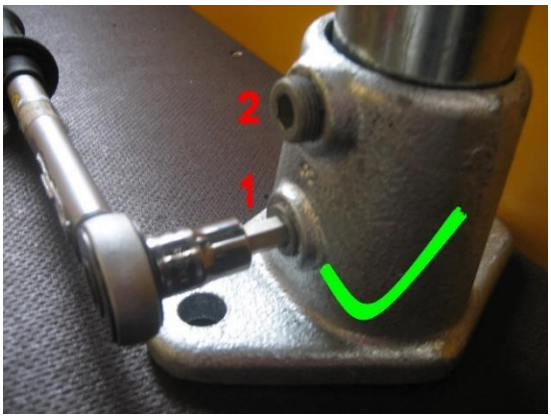


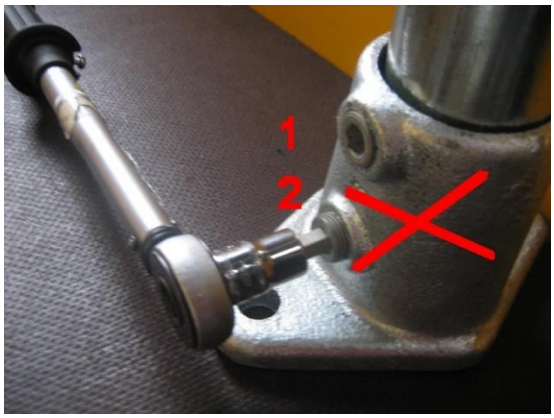
26. Once the exact position of the frame has been determined, the holes for the bases can be drilled. Before drilling, make sure there are no obstacles underneath the vehicle such as: hollow spaces, fuel lines, wiring looms and door mechanisms. **For 250kg:** First drill the holes with a 3 mm drill bit, then enlarge to 10.5 mm. **For 500kg:** First drill the holes with a 3 mm drill bit, then enlarge to 12.5 mm.
27. **For 250kg:** Secure the four bases with M10x50 bolts, M10 washers and M10 locknuts (tightening torque 51 Nm).
    For 500kg: Secure the four bases with M12x60 bolts, M12 washers and M12 locknuts (tightening torque 87 Nm).
28. Now orient the whole frame properly and check that the marking on the tube is just visible at all connecting pieces. If the marking is more than 2 mm from the edge of the connecting piece, the tube is not inserted deeply enough into the connecting piece, as a result of which the frame loses strength.



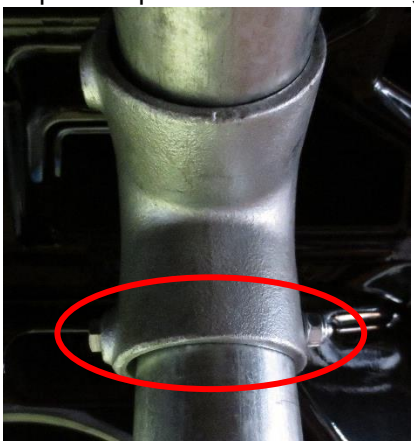


29. Now tighten all the Allen bolts of the frame to 40 Nm with the aid of a torque wrench. If there are two Allen bolts in the connecting piece, then when finally tightening, always first tighten the bolt which is furthest away from the edge of the base. Only tighten the second bolt once the first one has been tightened to the right torque.





30. On the frame for the **500 kg** versions, the bases and elbows of the front uprights must be drilled through so that they are attached to the frame tubes by means of a bolt.
31. Drill a 8mm hole though the elbow and the left upright and place the M8x90 bolt.
32. Drill a 8mm hole though the base and the left upright and place the M8x90 bolt.
33. Repeat steps 31 and 32 for the right side.



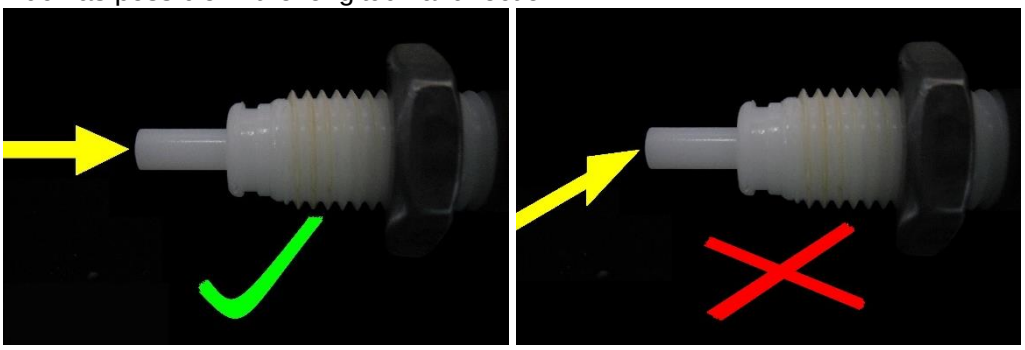
34. Apply enough grease to the beams and check that the EasyLoad slides properly from left to right.
35. Determine the correct location where the EasyLoad hangs when it is not being used (entirely to the left or right).
36. Mark the holes for the index bolts. Drill the hole in the beams all the way through one wall of the beam. Drill the holes carefully (Ø 8.5 mm - Ø 9.0 mm). For constructional reasons, it is not allowed to drill a plurality of holes in the beams (one drilled hole / locking hole per beam).
37. Mount the two index bolts, and test them, so that they lock the EasyLoad properly.

4 Electrical components

4.1 Door switch

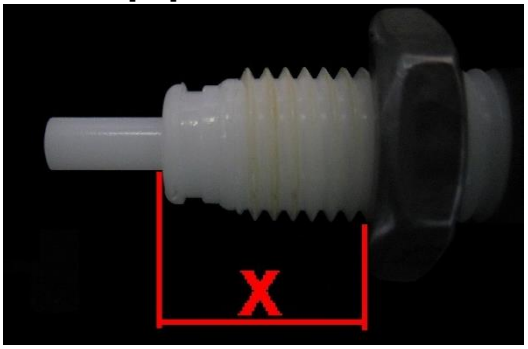
The door switch ensures that the EasyLoad is switched off as soon as the doors are closed. This prevents the battery from being drained in the event of a prolonged standstill. Please observe the following points of attention when installing the door switch:

- To prevent damage to the doors caused by the EasyLoad, the door switch must be mounted on the rear door that can be opened last.
- Do not place the door switch in a location where loads frequently pass by and therefore there is a high risk of damage.
- Find a location for the switch on a flat sheet metal part in the door frame on the inside of the vehicle, so that the switch is pressed down when the doors are closed.
- In order not to adversely affect the durability of the door switch, it should be operated as much as possible in the longitudinal direction.



- The gap between the closed door and the door frame should be at least 9 mm.
- The supplied cable to the door switch is 2 metres long. Please take this into account while positioning the door switch.
- Behind the panel there must be an empty space of at least 75 mm deep and it must be accessible from the rear.
- Use the supplied bracket if the door switch cannot be mounted directly in the panel.

1. Drill a 12.5 mm hole when the door switch is mounted directly in the panel. Beware of a possible wiring harness behind the panel!
2. Remove any burrs and treat the hole with an anti-corrosion agent.
3. Screw the steel flat nut on the switch. Measure the space between the closed door and the doorframe. For the location of the nut, use the distance just measured plus the panel thickness [=X], measured from the front of the housing (see photo below).



4. Install the switch through the drilled hole from the rear.
5. Screw the plastic nut onto the switch and secure the switch.
6. Check that the switch is pressed as soon as the door is closed, if not adjust the switch again.

4.2 Control unit

The control unit can be stored in the bracket provided. The bracket is mounted on the upright of the rear frame using two hose clamps. The location can be freely chosen by the end user. The connecting cable is long enough to attach the bracket for the control unit to both the left and right uprights, even if the EasyLoad is installed asymmetrically.

The connection to the EasyLoad is made by means of the 7-pin plug in the socket, on the right-hand side on top of the EasyLoad.

Attach the curly cord to the crossbar of the rear frame using cable ties so that it does not hang in the door opening. When doing so, keep in mind the sliding motion of the EasyLoad.

4.3 Power supply

4.3.1 General information

The EasyLoad is powered from the vehicle battery by means of a supplied power cable. This cable is fused with a 100 or 150 Amp fuse which is located next to the battery. The length of the power cable is determined in a left-hand drive vehicle with the corresponding location of the battery. This is based on the following:

- A symmetrical installation of the EasyLoad.
- Frame location at the very back of the vehicle.
- Routing of the power cable on the side where the battery is located.
- Routing along the vehicle's ceiling, in the ledge where the roof is attached to the side wall.
- If the battery is in the engine compartment, routing along the A-pillar (window-pillar). If the battery is in the cabin, the routing is along the B-pillar (directly behind the front door).

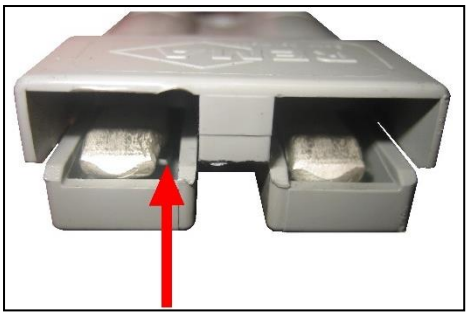
In case of a different routing or asymmetrical placement, a different power cable may be required. The following lengths are available (not for the EL-501):

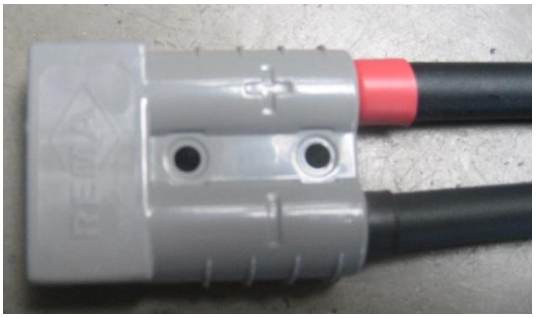
Description and length	**Part number**
Power cable 6 meter	EE08008
Power cable 8 meter	EE08009
Power cable 10 meter	EE08010

4.3.2 Installation of the power cable

Keep the following points of attention in mind when installing the power cable:

- Make sure that the power cables are not damaged during installation by rubbing on sharp edges or along screws.
- Protect the cables where they run through or along sheet metal to prevent damage of the cables.
- Never route the power cables over the floor, but always along the ceiling shielded by sheet metal or woodwork.
- Start by installing the power cables on the battery side but do not connect the cables to the battery yet.
- It is possible to remove the connector to make it easier to route the power cable. To do so, press the small metal lip under the contact, at the front, with a flat screwdriver and pull the cable gently.





- As soon as the power cable has been fitted, immediately replace the contacts in the connector, if they have been removed. The cable marked red in the "+" location.
- Before connecting the power cable to the battery, first connect the power cable to the connector of the EasyLoad. Then connect the power cable to the battery terminals.

5 Final test

5.1 General information

Lift only vertically and never more than 250 kg (EL-250) 500 kg (EL-500 and EL-501). When lifting, avoid excessive swinging.

Stop lifting as soon as there is an indication of a twisted hoisting cable, overload or other faults.

Always put the hoisting hook at the top position after use. Swinging of the hoisting hook may cause damage to the vehicle or the load.

5.2 Function test

Each EasyLoad is thoroughly tested and adjusted by MAD after assembly. To ensure that no defects have occurred during transport or installation, all functions must be checked before lifting with the EasyLoad. First do this without load to protect the vehicle, EasyLoad and yourself. Follow the steps below:

1. Check that the emergency switch is not activated.
2. Close the door that controls the door switch. The inner beam of the EasyLoad cannot be retracted or extended and the hook cannot be lifted or lowered. If the EasyLoad can be operated, the door switch must be adjusted again.
3. Open both rear doors and extend the inner beam of EasyLoad all the way.
4. Lower the hook all the way until the winch automatically turns off. Check whether there is still one layer of cable on the drum of the winch. If this is not the case, the "lowering stop switch" has to be readjusted (see the repair manual).
5. Lift the hook until the winch automatically turns off. This will happen as soon as the hook touches both copper strips on the underside of the inner beam. Release the control button immediately when the winch does not stop automatically. In that case, lower hook a little bit and check the "lift stop switch" (see the repair manual).
6. Retract the inner beam of the EasyLoad all the way.
7. Activate the emergency switch. The inner beam of the EasyLoad cannot be retracted or extended and the hook cannot be lifted or lowered. If this is not the case, please contact MAD.
8. Attach a weight of approximately 250 kg or 500 kg to the hook of the EasyLoad and repeat steps 3 to 6. After lifting the load (step 5), check for loose parts. Also check that the frame is securely fastened and does not show any deformation.
9. In the event of deformation or loosening of parts during hoisting, stop immediately and first identify and correct the cause. If in doubt, contact MAD.

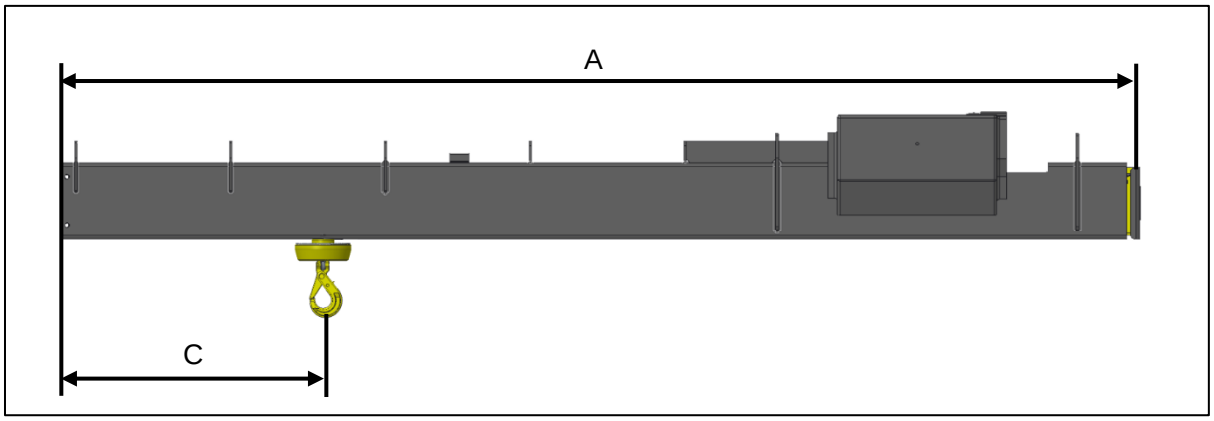
10. Increase the weight to about 280 kg or 530 kg. The EasyLoad has an overload protection and must now stop hoisting, only lowering is still possible. If hoisting is possible, then the overload protection is not adjusted properly and must be readjusted (see the repair manual).

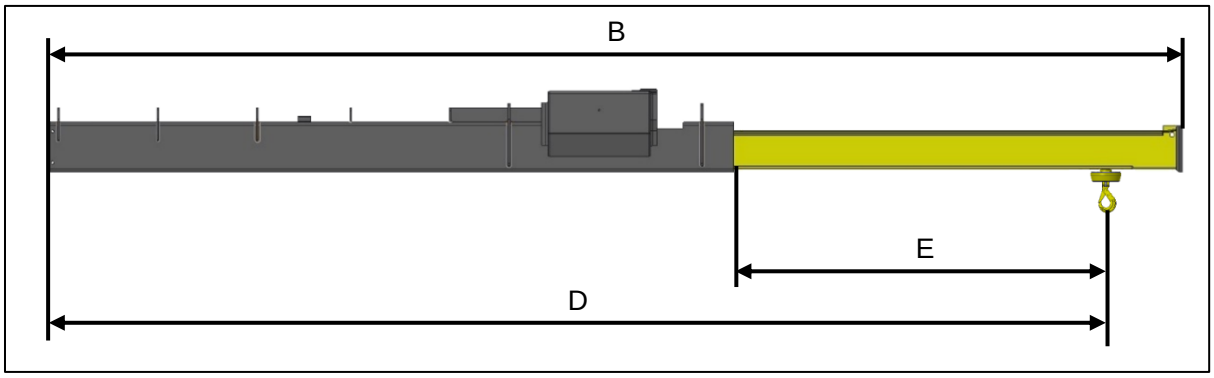
6 Documentation

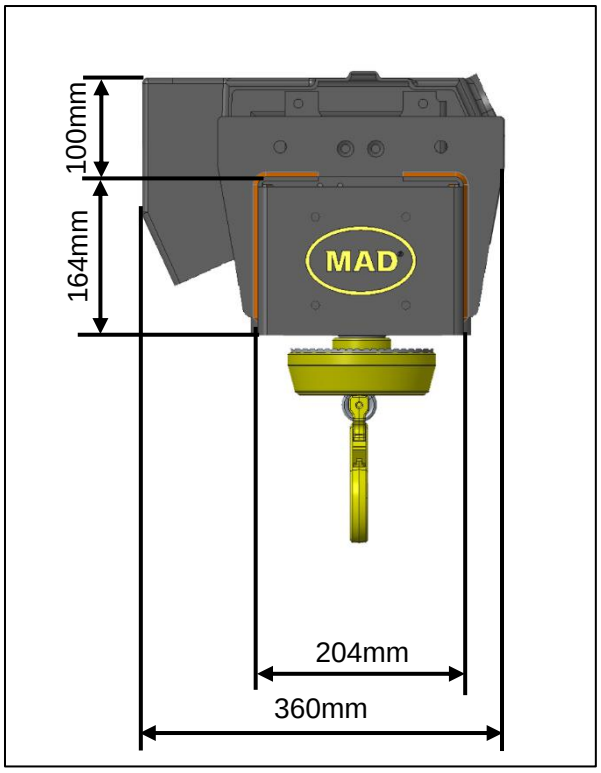
After the EasyLoad has been converted, the installation form in the user manual must be completed. No guarantee can be given without this information! The user manual containing the form must be handed over to the end user.

7 Technical specifications EL-250

		EL-250-1xxx	EL-250-2xxx	
Length retracted	A	1830	2230	mm
Length extended	B	3230	3630	mm
Distance hook – front of EasyLoad when retracted	C	610	610	mm
Distance hook – front of EasyLoad when extended	D	2610	3410	mm
Distance hook retracted versus extended	D-C	2000	2800	mm
Maximum reach behind the vehicle.	E	800	1200	mm
Height of beam in the door opening		160	160	mm
Weight		125	135	kg
Max. hoisting capacity		250	250	kg
Cable speed		6000	6000	mm/min
Voltage		12/24	12/24	V
Maximum power consumption		100	100	A

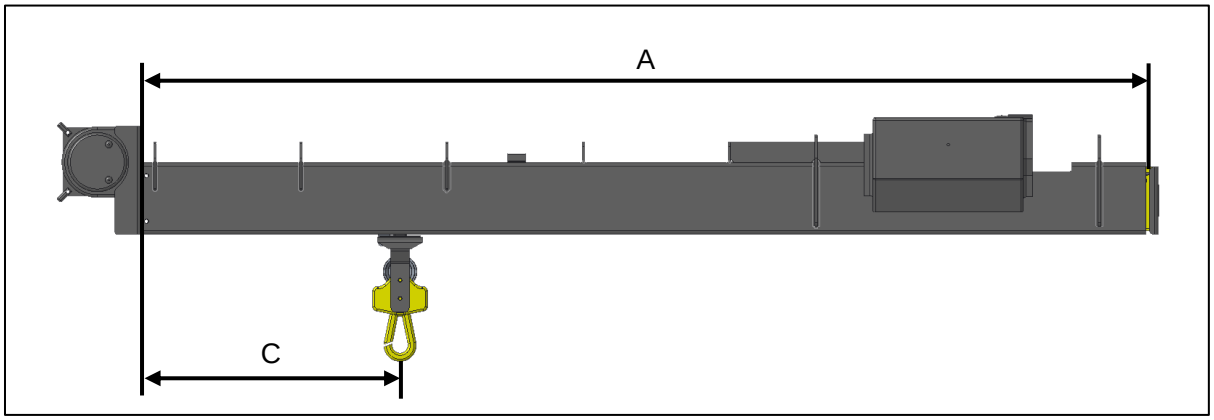


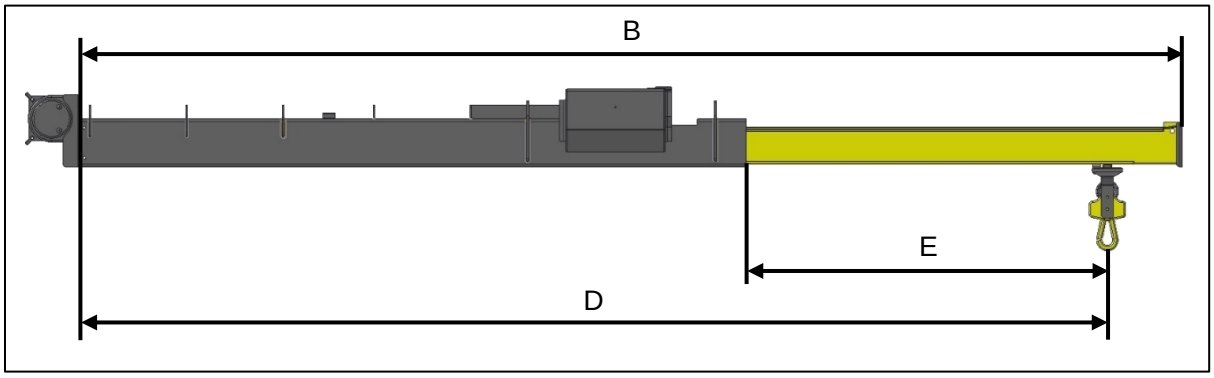


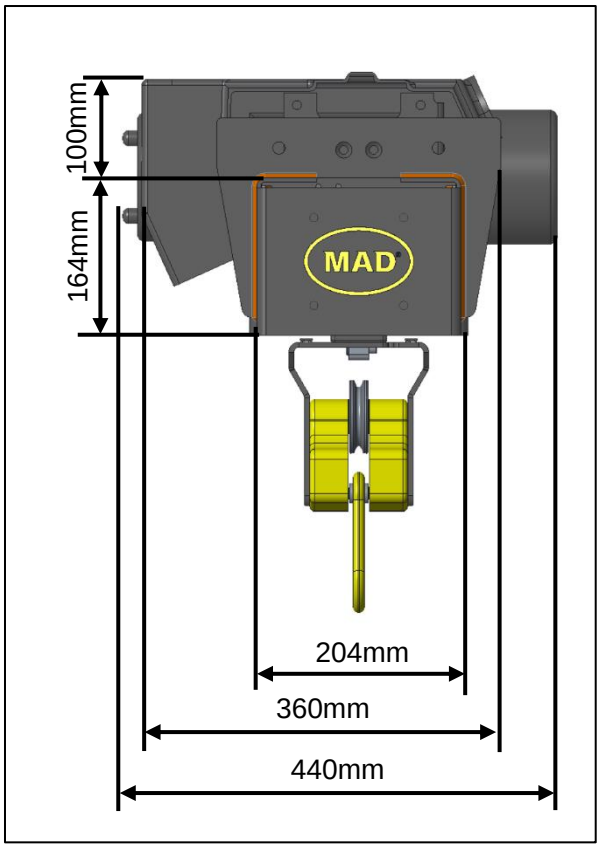

100mm
164mm
MAD
204mm
360mm

8 Technical specifications EL-500 and EL-501

		EL-500-1xxx	EL-500-2xxx	EL-501-2xxx	
Length retracted	A	1830	2230	2230	mm
Length extended	B	3230	3630	3630	mm
Distance hook – front of EasyLoad when retracted	C	610	610	610	mm
Distance hook – front of EasyLoad when extended	D	2610	3410	3410	mm
Distance hook retracted versus extended	D-C	2000	2800	2800	mm
Maximum reach behind the vehicle.	E	800	1200	1200	mm
Height of beam in the door opening		160	160	160	mm
Weight		125	140	184	kg
Max. hoisting capacity		500	500	500	kg
Cable speed		3000	3000	3000	mm/min
Voltage		12	12/24	12	V
Maximum power consumption		100	100	100	A






100mm
164mm
MAD
204mm
360mm
440mm

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