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Installations and operating instruction

for the HESTAL portal door

SmartMaster I

Sandwich construction 500S (rear portal door with Styrofoam filling enclosed in the sheet metal) and Aluminum construction 500A (rear portal door with aluminum profile filling)

Intended for vehicle manufacturers and trained technical staff.
Do NOT allow non-specialists to carry out any installation work.
If there are uncertainties or questions concerning the installation, please feel free to give us a call, and we will be glad to help.

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1. General information

The HESTAL SmartMaster I products are rear portal doors positioned in front of the frame for tarp portal frames. The doors can be used for curtainsider bodies, as well as for box bodies.

2. Regulation

The following regulations and directives need to be complied with:

- DGUV regulation 1 “Accident Prevention Regulation - Principles of Prevention” (formerly BGV A1)
- DGUV regulation 70 “Vehicles” (formerly BGV D 29)
- DGUV principles "The testing of vehicles by drivers" (formerly BGG 915)
- DGUV principles "The testing of vehicles by skilled technicians" (formerly BGG 916)
- DGUV rules "Vehicle repair and maintenance" (formerly BGR 157)
- StVZO (German Road Traffic Act)
- VDI directive 2700 “Securing loads on road vehicles”
- Body guidelines established by the vehicle manufacturer

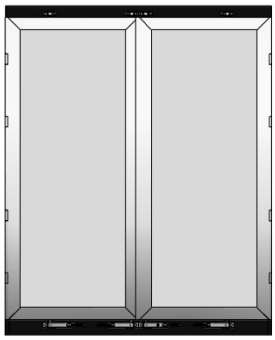
3. System description

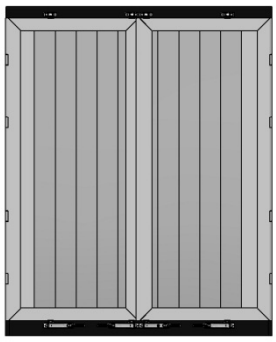
The rear portal doors of the SmartMaster I product range offer optimal stabilization of the body, and with the aid of the specially designed latches, they can be easily locked and unlocked.
The doors have an opening angle of approx. 270° and thus offer optimal loading and unloading possibilities via the rear portal.
The rear portal doors of the SmartMaster I product range are delivered completely pre-assembled, including mounted rotating bar and “709 PM 300" latches, and they can be hooked into the HESTAL hinge bearing without further processing.

Depending on the model of the hinge bearing, the connection of rotating arm and hinge bearing is executed via the provided fillister head screws, or the hinge bolt integrated in the hinge bearings.

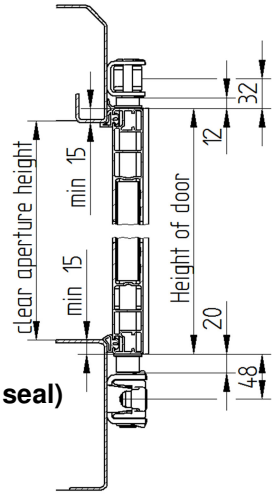
The HESTAL SmartMaster I door is delivered with a sandwich filling or with an aluminum profile filling.

SmartMaster I 500 S
door with aluminum frame
filled with Styrofoam
enclosed in sheet metal
(sandwich construction)





SmartMaster I 500 A
door with aluminum frame
filled with aluminum hollow
chamber profiles



The SmartMaster I portal door can be delivered in a color specified by the customer or with customer-specific advertising.

The height of the door can be freely selected between *2000 mm* and 3200 mm.
(special dimensions on request)

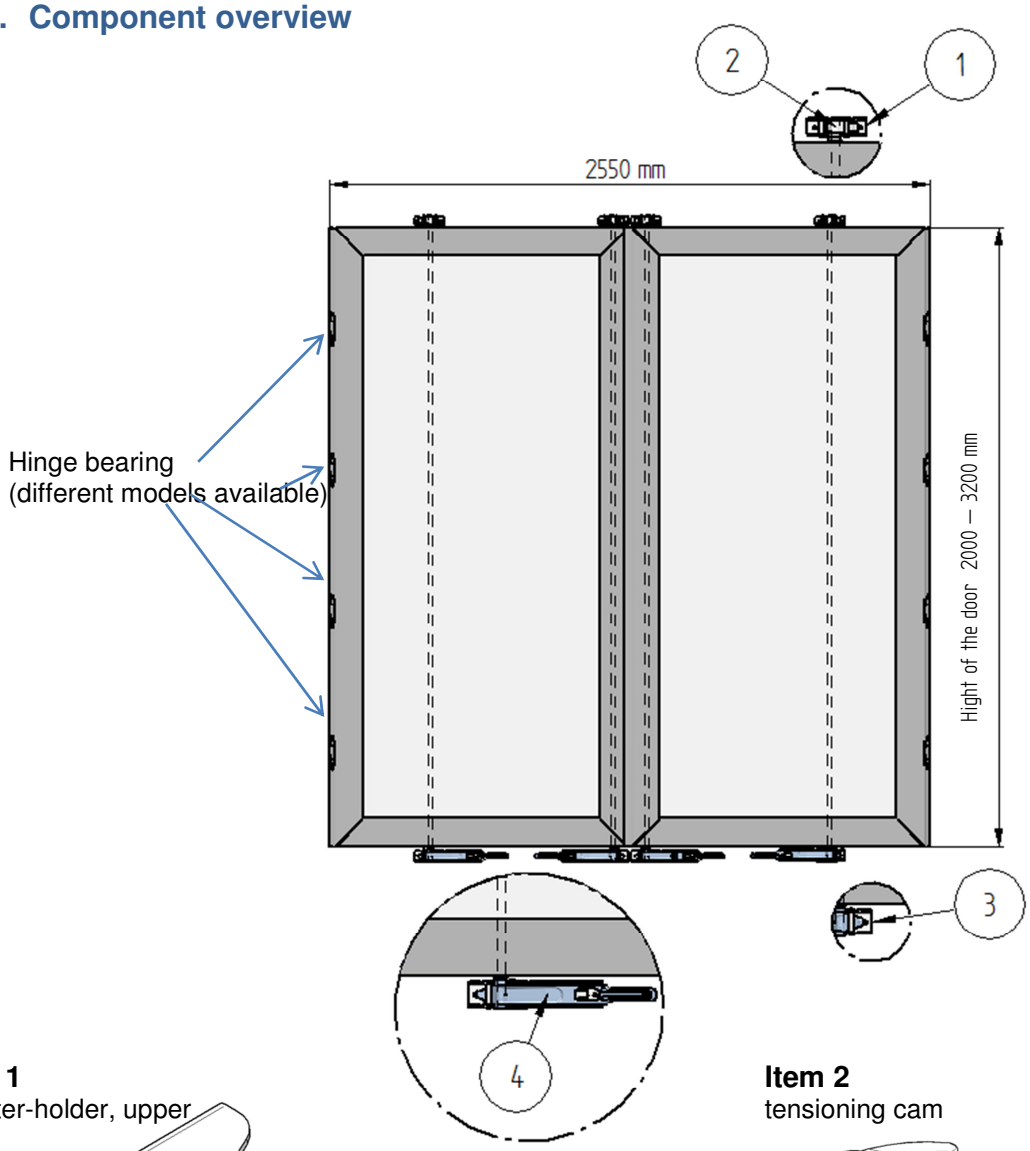
Height of portal door = clear aperture height + 30mm (for the correct function for the door seal)
(15 mm at top and bottom, each)

Several hinge bearing models are available in the HESTAL product range. (see page 5 - 6)
The number of hinge bearings is based on the height of the door. (see page 3)

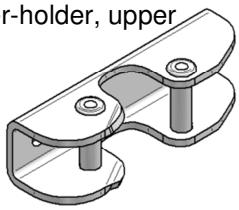
ATTENTION: The HESTAL SmartMaster I must only be installed with HESTAL hinge bearings!

All essential parts of the doors are made of aluminiuum, hot-dip galvanized or KTL-coated.
Thus a high level of corrosion protection is ensured. Only the hinge bearings in the weld-on version are delivered untreated; they must be appropriately treated after they are attached.

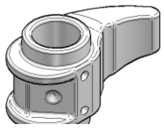
4. Component overview



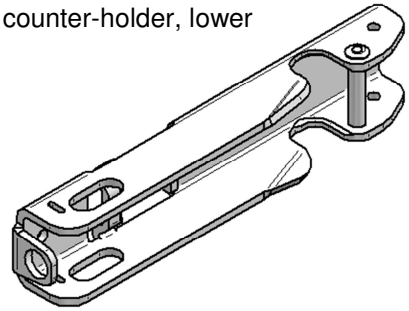
Item 1
counter-holder, upper



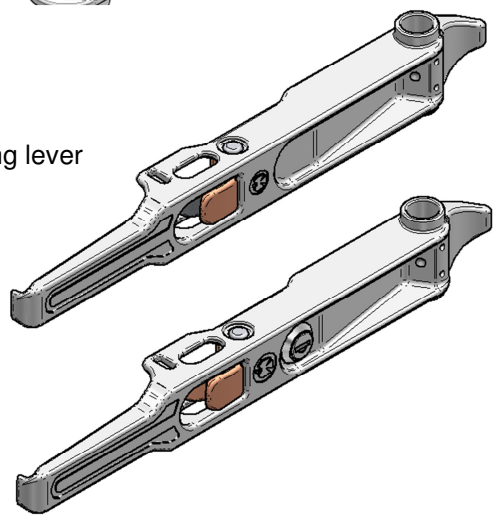
Item 2
tensioning cam



Item 3
counter-holder, lower

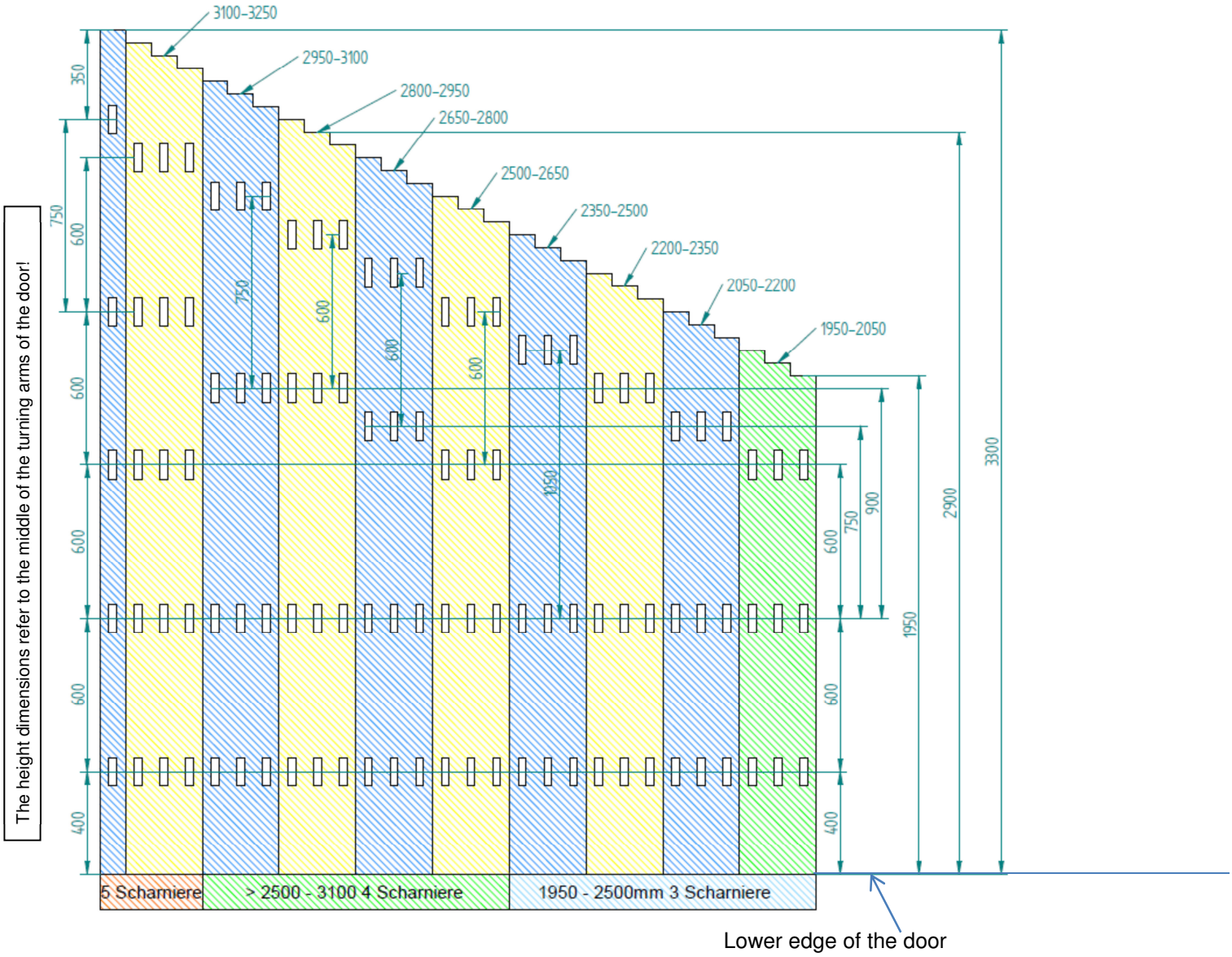


Item 4
clamping lever



5. Hinge bearing

In the standard situation the number and position of HESTAL hinge bearings are specified in accordance with the following scheme, depending on door height.



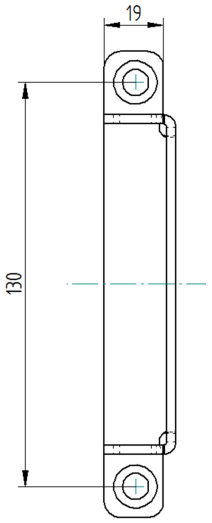
It must be ensured that ALL hinge bearings are attached on the vehicle frame or on the rear corner pillar BEFORE the door is installed.

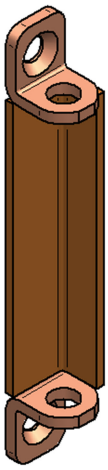
If hinge bearings with longer bolts are installed, then they must preferably be bolted on, or welded on, on top

5.1 Sheet metal hinge bearings, scew-on version

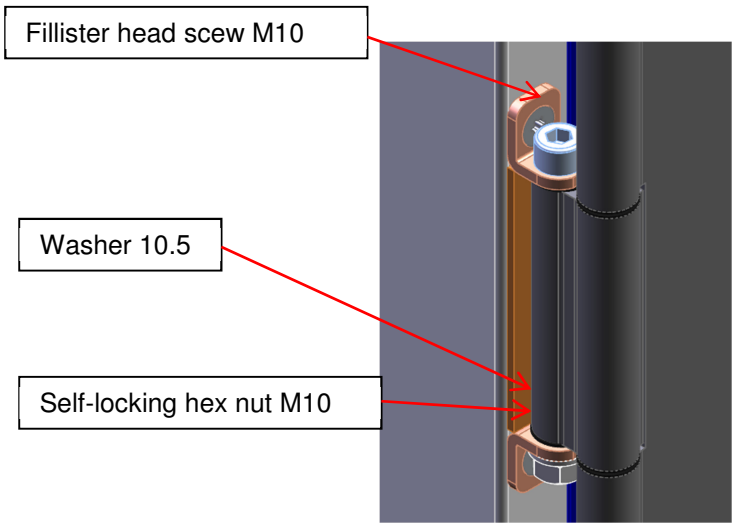
For the screw-on version of the hinge bearings, appropriate riveting nuts (M8), threaded plates, or similar items Must be introduced into the rear pillar or the corner pillar.

Fastening is executed via an M8 threaded union
(The length of the screws must be selected depending on the material thickness of the corner pillar.)

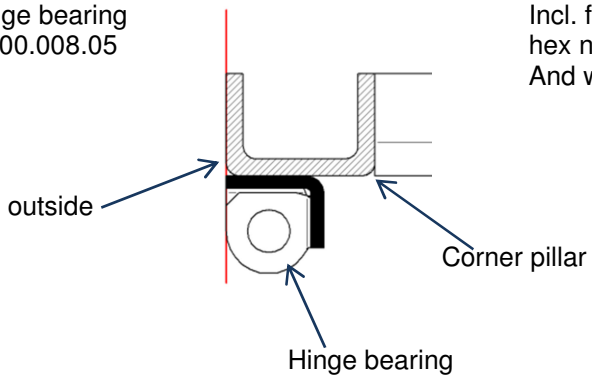




Hinge bearing
6.500.008.05



Incl. fillister scew M10x130
hex nut M10 (self-locking)
And washer 10.5



5.2 Hinge bearing with free standing bolt
(left and right)

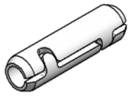
The hinged bearing consists of 3 parts:
One bearing bracket to screw on or to weld on at the doorframe,
one hinge pin (either short or long for the hinged bearing on top)
and one dowel pin.

6.500.011.21 (right)

6.500.011.22 (left)

6.500.011.23 (short)

6.500.011.24 (long)



6.020.858.06

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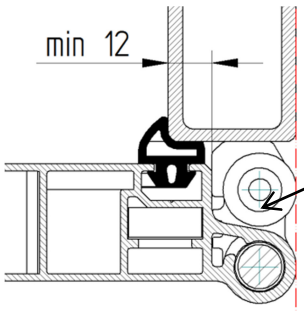
On first step the hinged bearing will be screwed on or welded on:

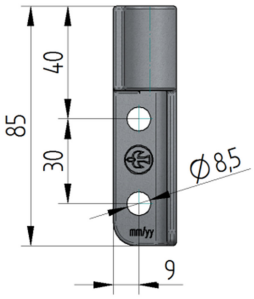


IMPORTANT!
The hinge bearing must not protrude over the corner pillar, otherwise the function of the door will be impaired!

To ensure that the hinge bearing rests flat against the substrate when using riveting nuts, appropriate recesses are provided on the rear.

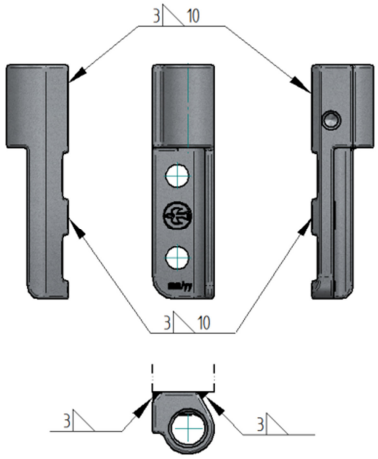
Fillister head screws M8, DIN 912

(The length of the screws must be selected depending on the material thickness of the corner pillar)
(Not included in scope of delivery.)

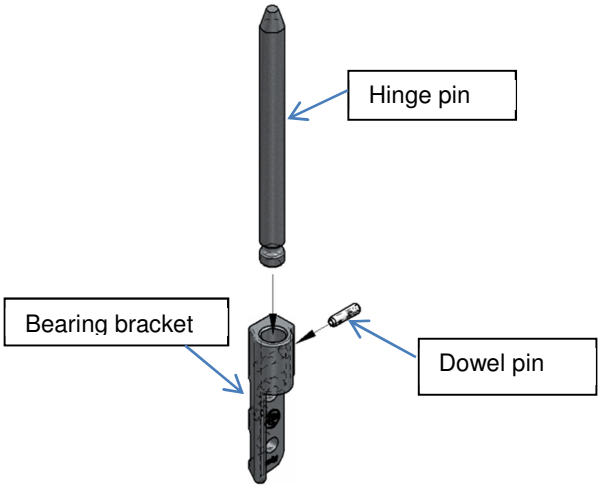


Welding:

When welding, it must be ensured that the weld seams are cleanly dressed for protection of the seals. Weld seams on the outside must not protrude over the rear pillar or over the corner pillar.



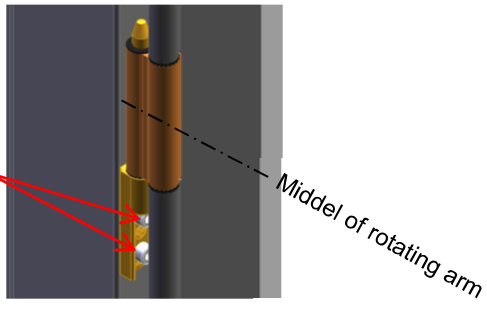
Only after the fastening of the bearing bracket and possible application of surface coating (e.g. paints, galvanizing or similar) the hinge pins can be mounted. These are made of stainless steel and are not allowed to be coated.
A long hing pin should be mounted to the top to secure the portal door against shifting.
For mounting push the hinge pin into the bearing bracket and secure with the dowel pin.

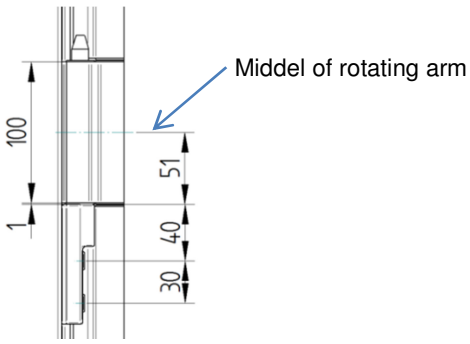


Name	surface	Drawing no
Bearing bracket, right	raw	6.500.011.25
Bearing bracket, left	raw	6.500.011.26
Bearing bracket, right	KTL	6.500.011.21
Bearing bracket, left	KTL	6.500.011.22
Bearing bracket, right	galvanised + sealed	6.500.011.48
Bearing bracket, left	galvanised + sealed	6.500.011.49
Hinge pin, short, 150 mm long	Stainless steel	6.500.011.23
Hinge pin, long, 150 mm long	Stainless steel	6.500.011.24
Dowel pin ø5x18	Dacromet	6.020.858.06

mounting situation:

Cylinder screw M8 x 30





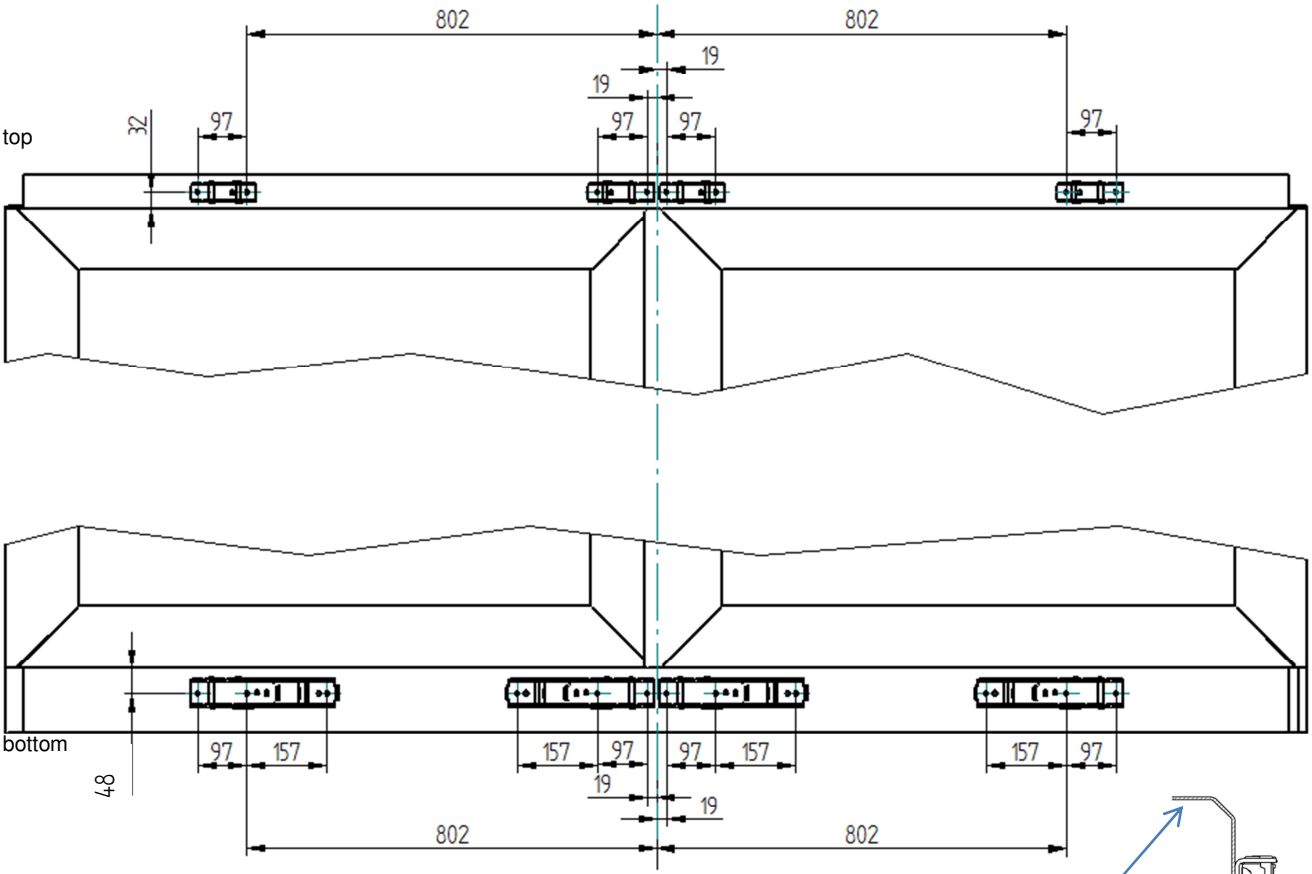
6. Installation

6.1 Installation of the counter-holders

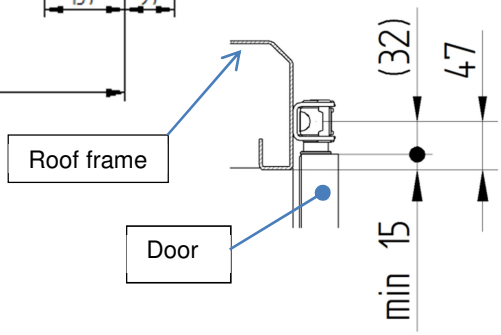
The fastening bores for the counter-holders must be drilled in accordance with the dimensions shown in the drawing below.
In the standard situation, the middle of the hole of the upper counter-holders in the horizontal direction is **32 mm** above the upper edge of the door.
In the standard situation, the middle of the hole of the lower counter-holders in the horizontal direction is **48 mm** below the upper edge of the door.
A bore diameter of **ø 8.5 mm** is recommended.

Only flanged button-head screws M8 (not included in the scope of delivery) must be used for fastening.
The length of the fastening screws must be selected by the body manufacturer according to the thickness of the walls of the vehicle frame, as well as the expected laden weight of the body.
The threaded unions must be secured against loosening.

The body manufacturer is responsible for thread locking.



Attach each of the upper counter-holders on the vehicle frame with 3 flanged button-head screws M8; attach each of the lower counter-holders on the vehicle frame with 2 flanged button-head screws M8.
Fasten washers and self-locking nuts from the rear in such a manner that they can still move.

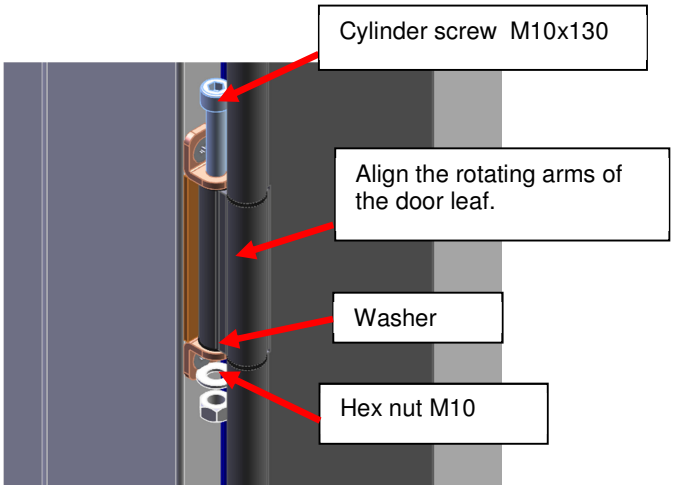


⚠ **Do not completely tighten the screws of the counter-holders at this time, otherwise after hooking in the door, alignment will no longer be possible.**

6.2 Hooking in the door leaf

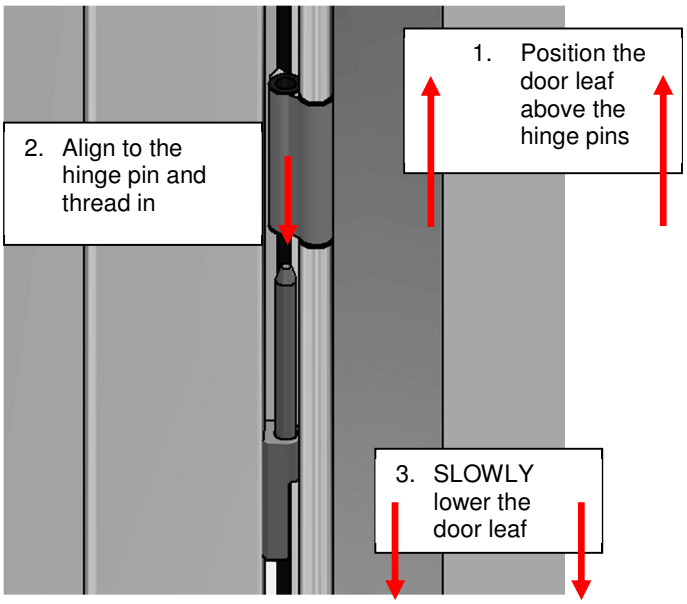
Since, depending on the size, a door leaf can weigh as much as 100 kg, it should only be hooked in using a suitable hoist.
For example, the door leaf can be lifted via a crane and suitable lifting straps,and then brought up the position of the hinges

For the sheet metal hinge bearings 6.500.008.05
the rotating arms of the door are positioned centered to the hinge bearing and fixed in place with the provided
cylinder screws M10 x 130.
Then the cylinder screw is secured with washer and hex nut.



⚠ While using the hinge bearing with free standing bolt start with lifting the door leaf above the hinge pin.
(ATTENTION: the hinge pin might be longer than the other)

Then adjust the upper rotating arm of the door leaf above the Top hinge pin in axial direction and lower the door leaf slowly.
Pay attention to thread the left rotating arms onto the corresponding hinge pin.



After both door leafs have been hooked in and fixed in place, you can start with the positioning of the counter-holders.

6.3 Positioning the counter-holders

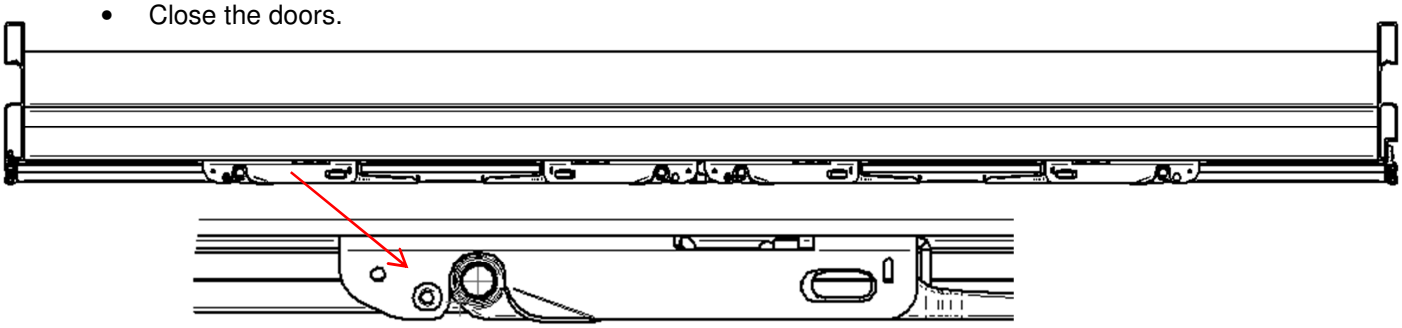
Lock both door leafs with the clamping elements in ALL counter-holders.

ATTENTION! Check the door to ensure right angularity. If necessary the door must be aligned.

Aligning the lower counter-holder on the vehicle frame:

The lower counter-holders are each attached on the vehicle frame from the rear with three fastening screws M8 DIN 912, washers, and self-locking nuts in a manner than still allows movement.

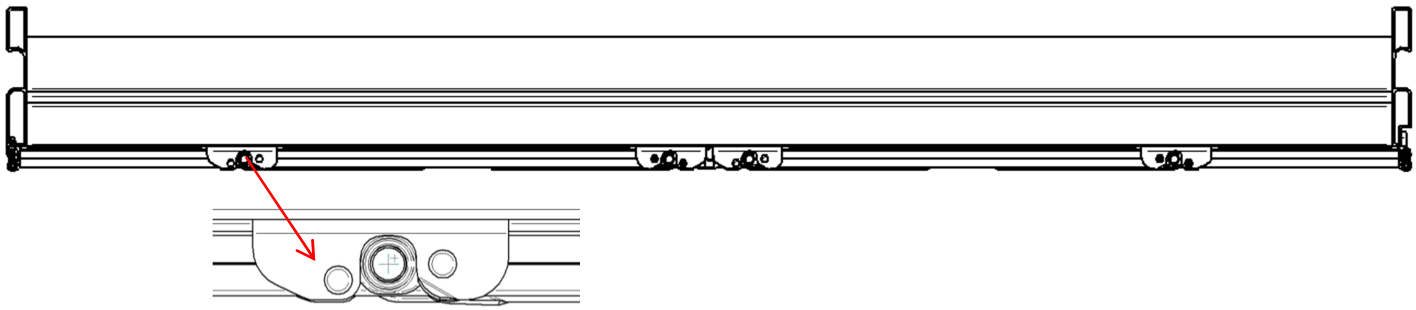
- Brace the clamping lever with door in the counter-holder.
- Align counter-holder.
- Firmly tighten the freely-accessible fastening screw on the each of the lower counter-holders.
- Carefully open the door via the clamping lever.
- Firmly tighten all other screws.
- Close the doors.



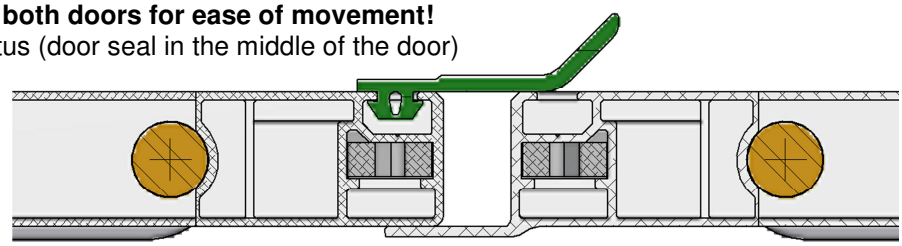
Aligning the upper counter-holder on the roof crossbeam

The upper counter-holders are each attached on the roof crossbeam with two fastening screws M8 DIN 912, and are fastened from the rear with the aid of the screw-on plates and self-locking nuts, in a manner that still allows movement.

- Brace tensioning cam with door in the counter-holder.
- Align the counter-holder.
- Firmly tighten the freely-accessible fastening screw on the each of the lower counter-holders.
- Carefully open the door via the clamping lever.
- Firmly tighten all other screws.
- Close the doors.



Check the latch system on both doors for ease of movement!
Diagram: Door in closed status (door seal in the middle of the door)



6.4 Function check

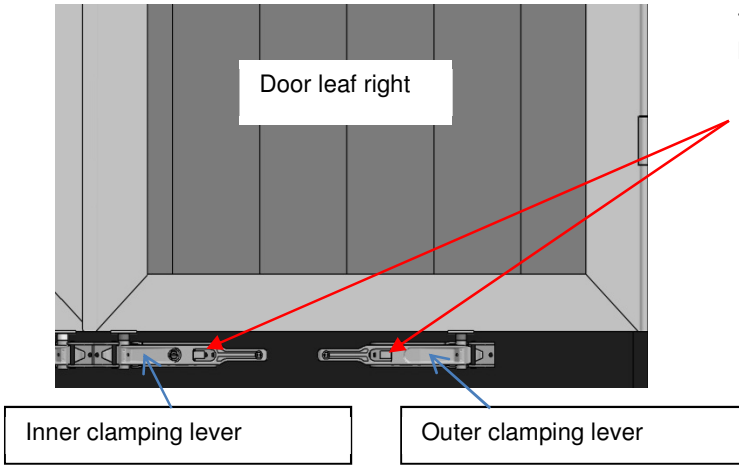
- Open doors (Open the right door leaf first!)
- Check wether the door leafs move easily and not catch.
- Check wether the door leafs can be swung approx.. 270°
- Close doors (Close the left door leaf first!) and check wether all clamping elements engage as desired.
- Allow the clamping levers to engage.
- To ensure optimal function, all moving parts must be regularly lubricated and serviced.

7. Opening and closing

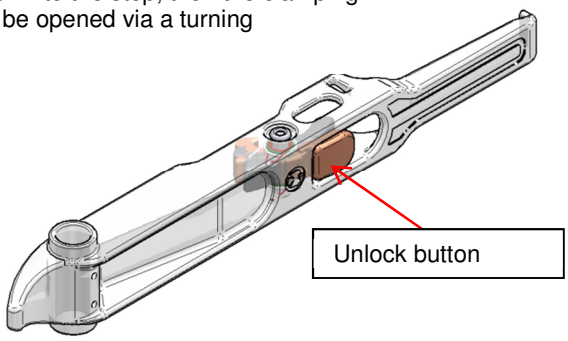
IMPORTANT: Prior to activating the lockable clamping lever, it must be unlocked!

By opening the clamping levers, the door is unlocked, top and bottom.
To open, press the unlock button; keep the button depressed and pull on the clamping lever.

To facilitate this procedure, the outer clamping lever should be opened first.



The unlock buttons of the clamping levers must be pressed down to the stop, then the clamping levers should be opened via a turning movement.



The right door must always be opened first, because its vane overlaps on the left door leaf, and otherwise the left door leaf cannot be opened.

The procedure is the same for opening the doors, and for optional lifting of the roof, however the door leafs are not completely opened, but rather remain in their open position of approx. 20°.
Holding the doors open in this position can be ensured with the HESTAL Türfix, which is available as on option.

When the door is opened, you can start with the loading and unloading procedure.

After the procedure is concluded, the doors can be reclosed.
If you will not be driving with a lifted roof, the lifted roof must be lowered.

⚠ **Prior to closing the double leaf door you must ensure that the load does not project over the vehicle frame.**

⚠ **"Adjustment" of the load via the door is not permitted!**

⚠ **When closing, you must start with the left door frame**.

You must ensure that the upper tensioning cams are meshed, before the lower clamping lever is closed.
The locking mechanisms of the clamping lever automatically engage in the securing bridges of the counter-holder when the clamping lever is swung into close position.

In addition to the acoustic sound when the elements engage, the flush close position of the lock button for the clamping lever can be detected by a visual inspection.

⚠ **ATTENTION: The lower clamping lever must only be released, if it is noticeably engaged.**

For correct operation of our rotating bar latch “709 PM300", we would be pleased to send you our operating instructions, if desired.

8. Operation

- Secure the load.
- Prior to every trip, ensure that the SmartMaster I is closed properly.
- When working in traffic, wear a suitable reflective vest.
- No part of the load should protrude beyond the limit of the outside vehicle frame.
- The vehicle roof must be cleared of any loads (ice and snow).

9. Maintenance

- The SmartMaster I door must be serviced periodically depending on use and time.
  (Clean, remove foreign objects, lubricate, adjust, check all screws and bolts for firm seat, replace parts subject to wear)
- **The sealing surfaces on the vehicle frame must be kept clean.**
- Use only **genuine HESTAL spare parts**.
- Any defective or damaged components must be replaced immediately with genuine HESTAL parts.
- See also BG regulation "Vehicles” (BGV D 29), §56 and §57.

10. Important instructions

- If the installation and operating instructions are complied with, trouble-free function of the HESTAL SmartMaster I portal door is ensured
- For reasons of operational safety, road safety, as well as occupational health and safety, do not combine any components other than the HESTAL components shown here.

PLEASE NOTE:
The information presented here is based on data that was considered to be correct at the time these installation and operating instructions were prepared.
However, no express or implied warranty or confirmation of the correctness or completeness of the data and safety information is assumed.
For material damage or physical injury that occurs due to improper use, or failure to comply with recommended use procedures,
no responsibility can be assumed.

11. Checklist for final inspection by the body manufacturer

Installation

General

☐ Visual inspection of all parts of the scope of delivery for completeness.
☐ Work was executed using the original HESTAL factory drawing.
☐ Only HESTAL original parts were used.
☐ Regulations and directives have been complied with.
☐ Positioning of the upper and lower counter-holder relative to the clamping lever and tensioning cam have been tested.
☐ Hole distances have been checked.
☐ Welding has been properly executed. (Only applies for weld-on hinge bearings.)
☐ Corrosion protection applied. (Only applies for weld-on hinge bearings.)

Function

☐ Clamping lever and tensioning cams engage easily behind the retaining bolts in the lower and upper counter-holders in the close procedure.

☐ Locking mechanisms open and close faultlessly.

Information

☐ The associated installation and operating instructions are stored with the vehicle papers.
☐ The vehicle owner or user has been informed about maintenance and inspection work.
☐ The vehicle owner or user has been instructed with regard to operation.

Vehicle description / model : ……

Chassis no. : ……

Date of initial registration : ……

This checklist is used for the final inspection of the installation and function of product prior to its initial use.

…… ……..
Examiner's signature Place and date of final testing