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Installations instruction

for the HESTAL pillar system

VarioMaster 900 + 901 + 904(double decker version) + *SlimMaster 905*

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.

Contents

1. General information

The HESTAL VarioMaster respectively SlimMaster CS pillar system is attached at the bottom to the outer frame of a vehicle body and at the top to the roof profile of a vehicle body; it should only be used with the associated pillar bearings and accessories.
“Hesterberg & Söhne” shall not liable in the event of any modifications to the HESTAL CS pillar system or any deviations from the installation instructions.

The HESTAL CS pillar system is divided into two strength classes: (DIN EN 12642)
Class “CODE L“ corresponds to HESTAL **VarioMaster Type 900** CS pillar system
Class “CODE XL“ corresponds to HESTAL **VarioMaster Type 901** CS pillar system
Class “CODE XL“ with 2 mm pillar body corresponds to HESTAL **SlimMaster Type 905** CS pillar system
Class “CODE XL“ in double decker version corresponds to HESTAL **VarioMaster Type 904** CS pillar system

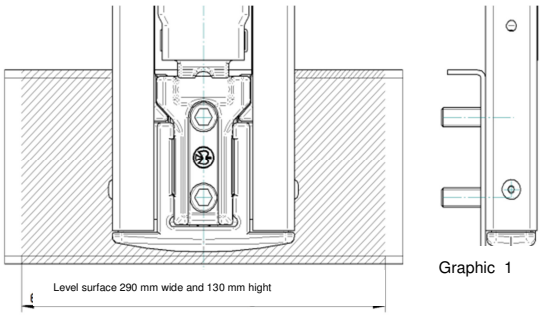
For reasons of clarity, only the type designation will be used from now on in these installation instructions.
This system is not approved for any applications that are not described in these installation instructions.

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. General principles

The number and design of the VarioMaster respectively SlimMaster required for each vehicle body need to be determined by the body manufacturer depending on the permissible load weight, the roof structure, and the resulting loading.
In order to guarantee the freedom of movement and operating safety of the system, the frame contour upon which the HESTAL pillar system is fitted need to be designed as a level surface. A level surface 290 mm width and 130 mm hight need to be included for profiled frame contours. (See graphic 1)



Graphic 1

4. Component overview

Overview HESTAL pillar system

Type	description	length (from frame top)	weight	article number
900	CS-pillar 900 Code L without slat stowage, without slat pocket	2370 mm	19,5 kg	6.800.175.00
900	CS-pillar 900 Code L with slat stowage, without slat pocket	2370 mm	21,6 kg	6.800.197.00
901	CS-pillar 901 Code XL without slat stowage, without slat pocket	2370 mm	21 kg	6.800.174.00
901	CS-pillar 901 Code XL with slat stowage, without slat pocket	2370 mm	23,1 kg	6.800.198.00
901	CS-pillar long 901 Code XL without slat stowage, without slat pocket	2700 mm	22,6 kg	6.800.211.00
901	CS-pillar long 901 Code XL with slat stowage, without slat pocket	2700 mm	24,7 kg	6.800.212.00
904	CS-pillar 904 Code XL (double decker) without slat stowage and perforated rail	2370 mm	21 kg	6.800.206.00
904	CS-pillar 904 Code XL (double decker) with slat stowage and CTD II perforated rail	2370 mm	27,3 kg	6.800.215.00
904	CS-pillar 904 Code XL (double decker) with slat stowage and CTD III perforated rail	2370 mm	27,5 kg	6.800.216.00
905	SlimMaster 905 (2mm pillar body) without slat stowage, without slat pocket	2370 mm	14,5 kg	6.800.353.00

Visual example: 6.800.175.00:

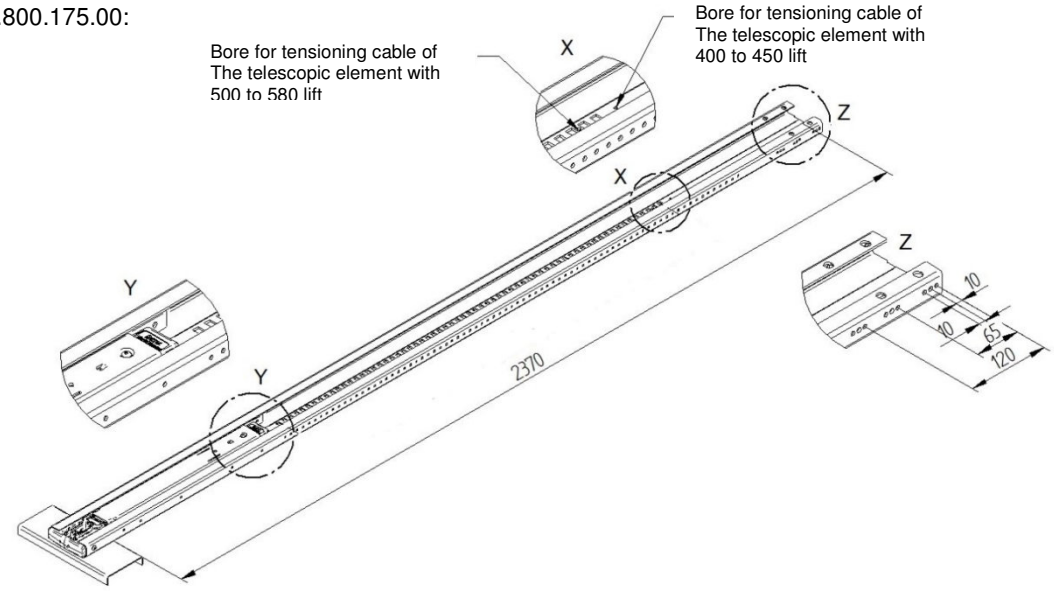


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Fig 1: Length overview

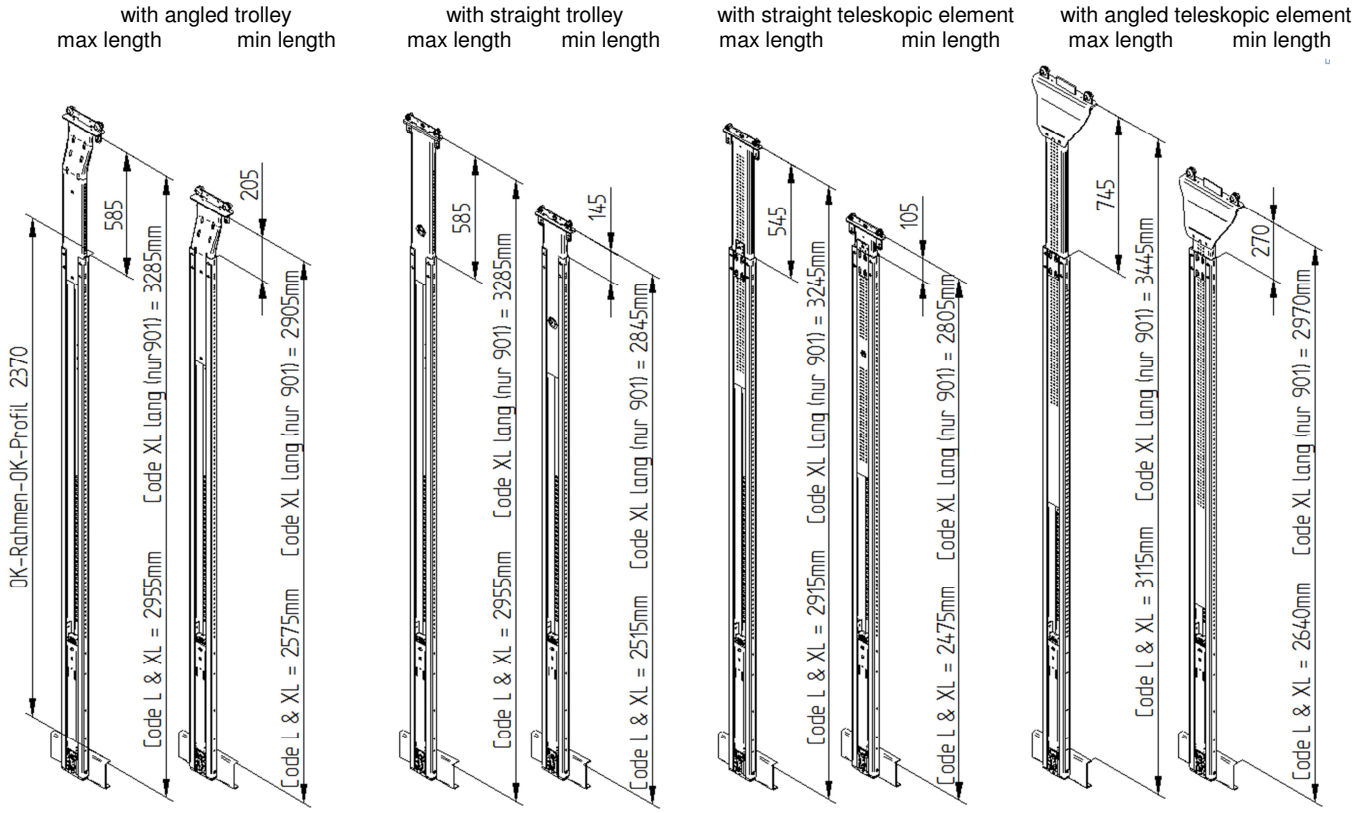


Fig 2: pillar bearing M12 – 6.090.151.00

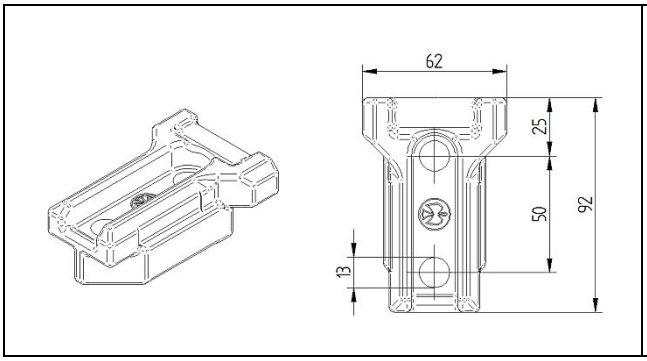


Fig 3: pillar bearing M14 - 6.090.220.00

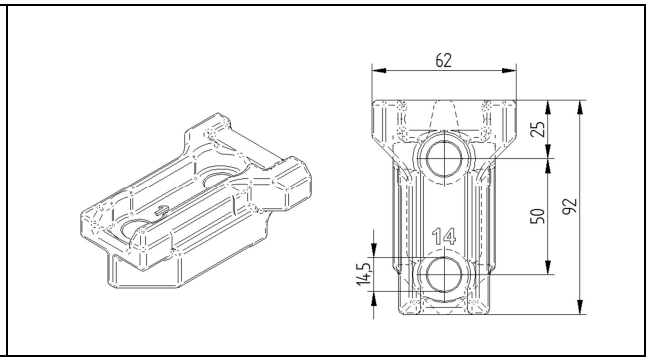


Fig 4: pocket 6.800.174.10

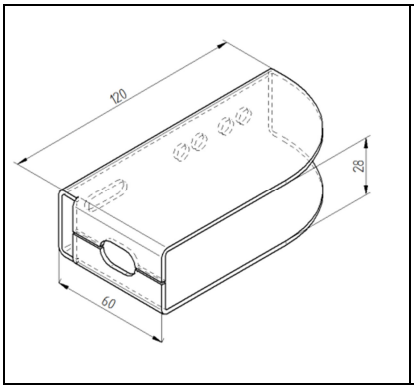


Fig 5: pocket with clamping protection 6.800.174.20

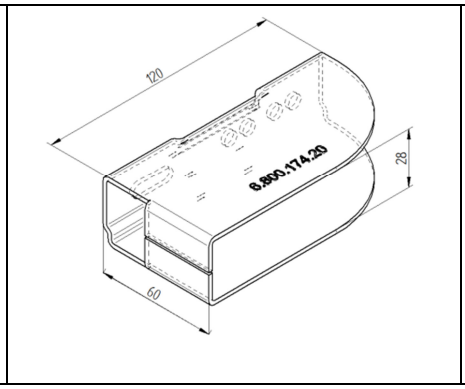


Fig 6: pocket 6.800.174.30

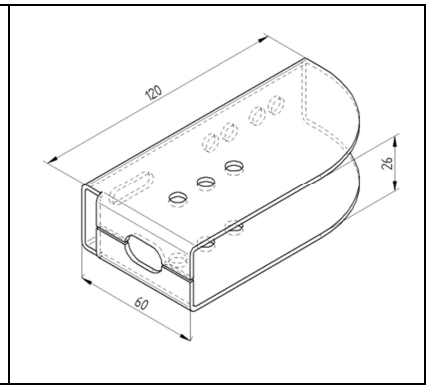


Fig 7: Slat stowage 465 mm – 6.800.174.09

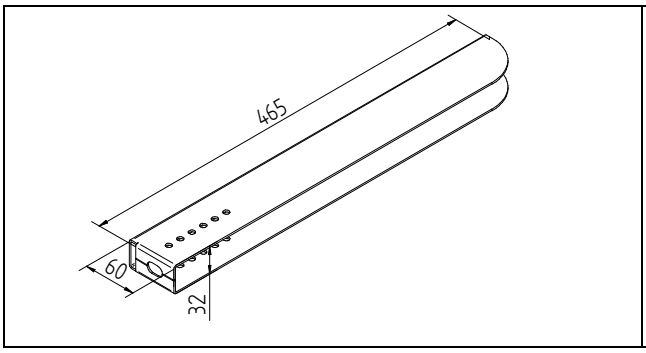


Fig 8: Slat stowage 602 mm – 6.800.182.09

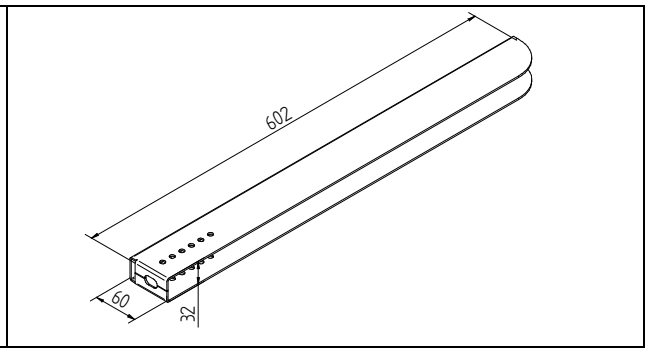


Fig 9: perforated rail CTD III – 6.800.216.01

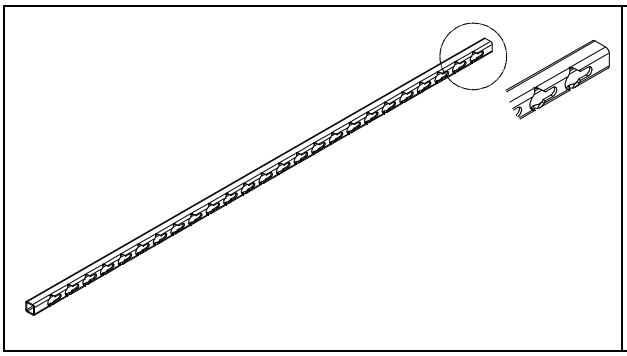


Fig 10: Airline-system rail – 6.800.215.01

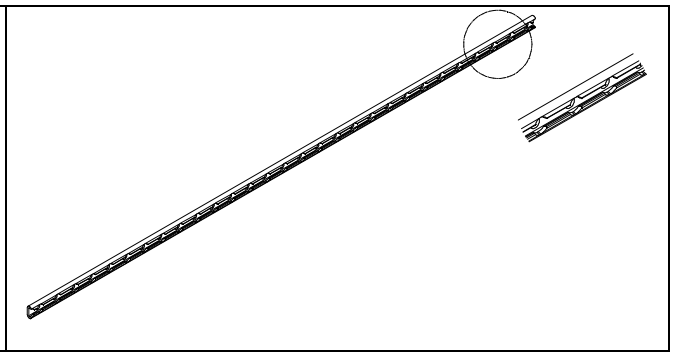


Fig 11: stop plate – 6.090.145.04

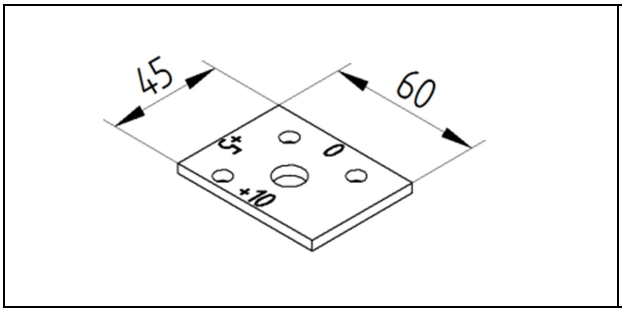


Fig 12: Telescopic element stop – 6.090.262.00

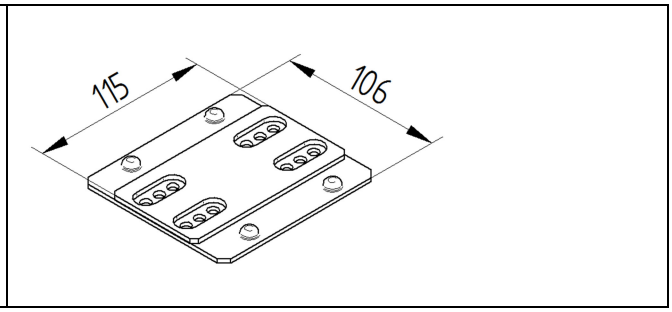


Fig 13: Plug-in-fastening system – 6.090.158.00

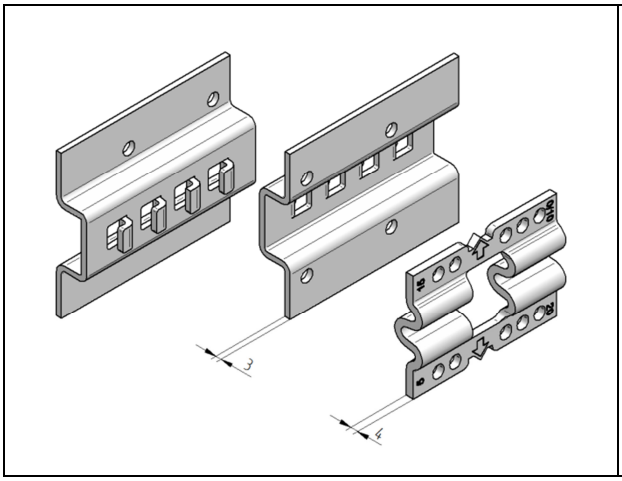


Fig 14: Plug-in-fastening system Double decker – 6.090.206.00

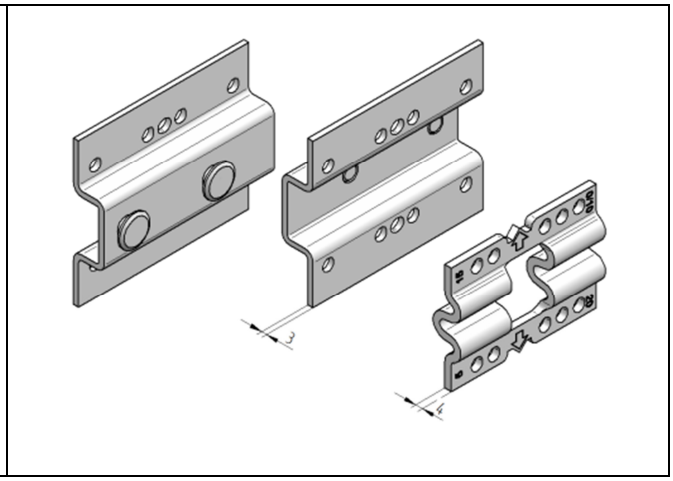


Fig 15: Trolley, angled – 6.090.153.00

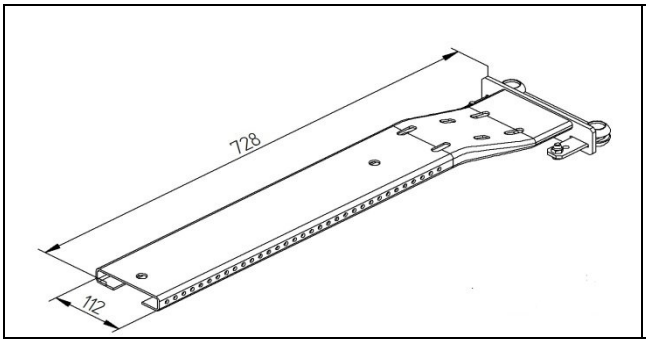


Fig 16: Trolley, straight – 6.090.154.00

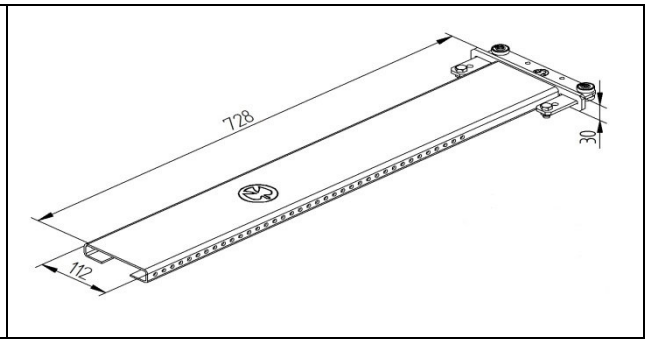


Fig 17: Trolley, straight – 6.090.157.00

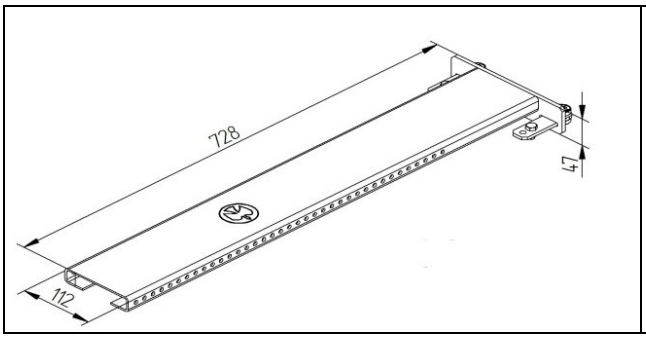
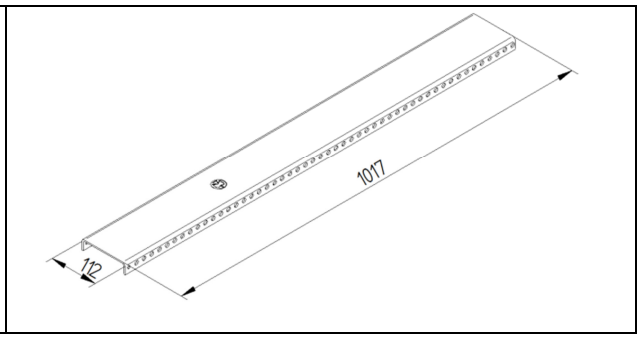


Fig 18: reinforced profile – 6.800.174.12



Telescopic element

Item number	Designation	"L" (Fig 19)	"A" (Fig 19)	Rollers (Fig 20 – 22)	"B" (Fig 19)	Roll ø	Roof rail
6.090.177.00	trolley, angled	1946	-	-	310	Ø35	suitable for e.g. Edscha 1005022, 32506 Sesam Mixliner ; Versus Quadro 100
6.090.155.00	trolley, straight	1176	30	6.090.155.52	195	Ø22	suitable for e.g. Edscha 04512, Sesam Highliner 2000 ; Autocar Slimlight
6.090.156.00	trolley, straight	1776	30	6.090.155.52	195	Ø22	suitable for e.g. Edscha 04512, Sesam Highliner 2000 ; Autocar Slimlight
6.090.159.00	trolley, straight	1176	47	6.090.155.52	195	Ø22	suitable for e.g. Edscha CS-Light plus 125 and 380546 (112,5 mm)
6.090.181.00	trolley, straight	1776	47	6.090.155.52	195	Ø22	suitable for e.g. roof rail 112,5 mm
6.090.187.00	trolley, straight	1776	30	6.090.153.20	195	Ø35	suitable for e.g. Edscha 1007309 ; 32507
6.090.188.00	trolley, straight	1176	30	6.090.153.20	195	Ø35	suitable for e.g. Edscha 1007309 ; 32507
6.090.235.00	trolley, straight	1776	30	6.090.226.00 (damped)	195	Ø22	suitable for e.g. Edscha 04512, Sesam Highliner 2000 ; Autocar Slimlight
6.090.250.00	trolley, straight	1176	30	6.090.226.00 (damped)	195	Ø22	suitable for e.g. Edscha 04512, Sesam Highliner 2000 ; Autocar Slimlight
6.090.252.00	trolley, straight	1176	47	6.090.226.00 (damped)	195	Ø22	suitable for e.g. Edscha CS-Light plus 125 and 380546 (112,5 mm)
6.090.253.00	trolley, straight	1776	47	6.090.226.00 (damped)	195	Ø22	suitable for e.g. Edscha CS-Light plus 125 and 380546 (112,5 mm)

Fig 19
for example

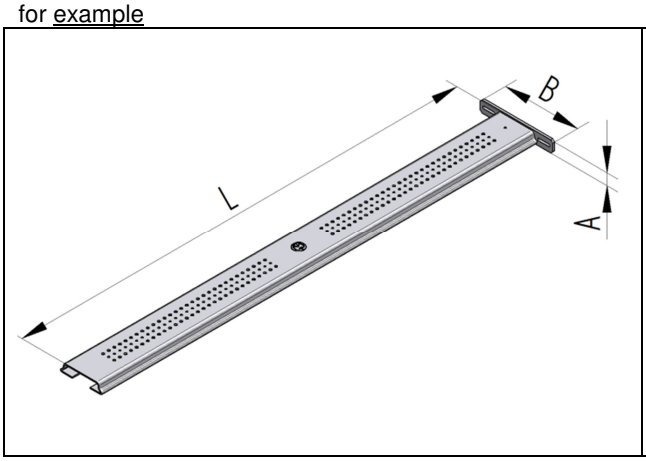


Fig 20
6.090.155.52

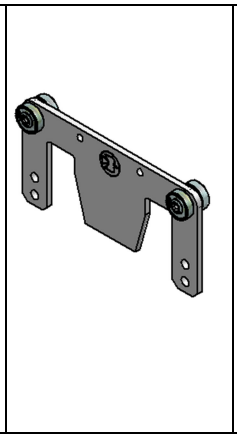


Fig 21
6.090.153.20

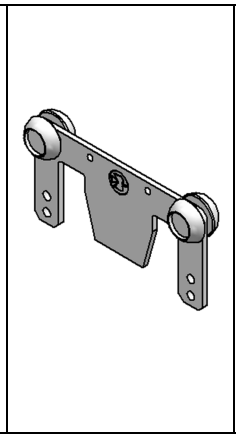


Fig 22
6.090.226.00

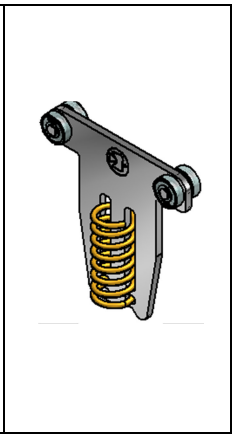


Fig 23
Tensioning cable complete
400 – 450 lift
6.090.155.25

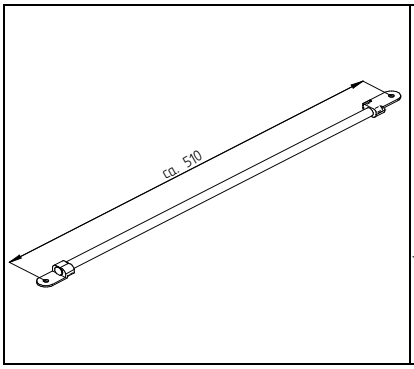


Fig 24:
Tensioning cable complete
500 – 580mm lift
6.090.156.25

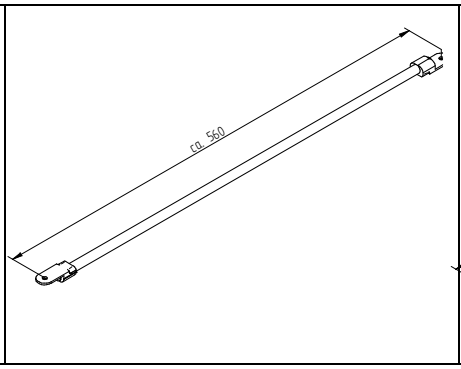
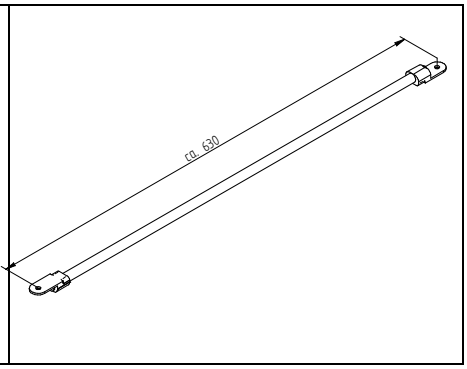


Fig 25:
Tensioning cable complete
500 - 640mm lift
6.090.160.25



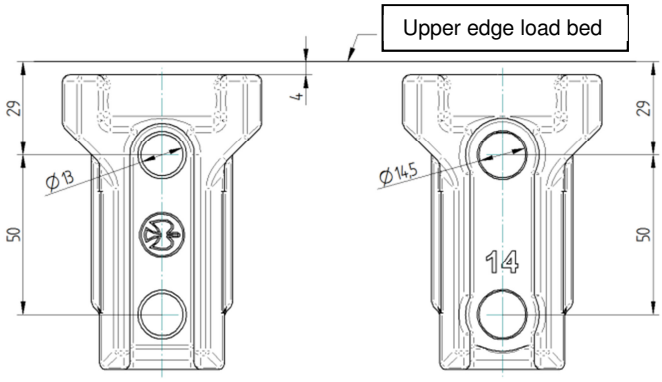
5. Installation / assembly

5.1 Installation of pillar bearings

Bolt on pillar bearing:

In order to guarantee the freedom of movement and operating safety of the system, the frame contour upon which the HESTAL CS pillar system is fitted need to be designed as a level surface.

To mount the pillar bearing (Fig 2 or 3) on the outer frame, drill two holes ø 13 mm or rather ø14,5 mm into the outer frame with the spacing shown in the sketch beside.



The vehicle manufacturer need to provide appropriate documentation depending on the selected material and dimensioning of the outer frame, and with due consideration of permissible and anticipated loads.

Position the pillar bearing in front of the hole pattern in the outer frame, and bolt it to the outer frame by using M 12 or rather M14 bolts, DIN EN ISO 4762 (formerly DIN 912), bolt quality 12.9.

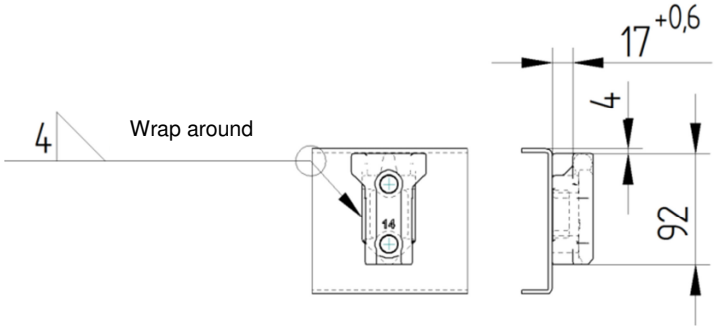
Align the pillar bearing at an angle to the outer frame and bolt it on.
Tighten all mechanical attachment elements to the appropriate torque!
(M12; 12.9 at 160 Nm, M14; 12.9 at 255 Nm to customary screw with a friction of µ = 0,14).
All bolt connections need to be retightened after 500 km, 5000 km, and at six month intervals!

The length of the bolts need to be selected by the vehicle manufacturer according to the thickness of the walls of the vehicle frame, as well as the expected laden weight of the body!

Mechanical attachment elements that are exposed to dynamic loads need to be secured by the customer!
The body manufacturer is responsible for securing all threaded connections.
The bolt set 6.850.032.00 can be used here as possible fastening material.
It consists per 60 pieces of:
Fillister head screw M12 x 60 - 2.9 DIN EN ISO 4762
Hexagon nut M12 - 10 DIN EN ISO 7042
HV-washer 12 – 200 HV DIN EN ISO 7089

Welding on the pillar bearings:

As shown in the sketch beside, position the pillar bearing at an angle to the outer frame, and weld it to the vehicle frame with a continuous seam as specified.
The body manufacturer is responsible for calculating the choice of materials, the dimensions of the outer frame, and the choice of suitable welding material, taking into account the permissible and expected loads.
Example: if the outer frame is made of St 52-3, we recommend that you use a NiFe rod as the welding rod and ENIFEBG11 for the welding electrode according to DIN 8573 or ENIFE-C according to the AWS standard.



The non-welded areas need to be covered with joint sealant in order to prevent joint corrosion!

5.2 Rivet

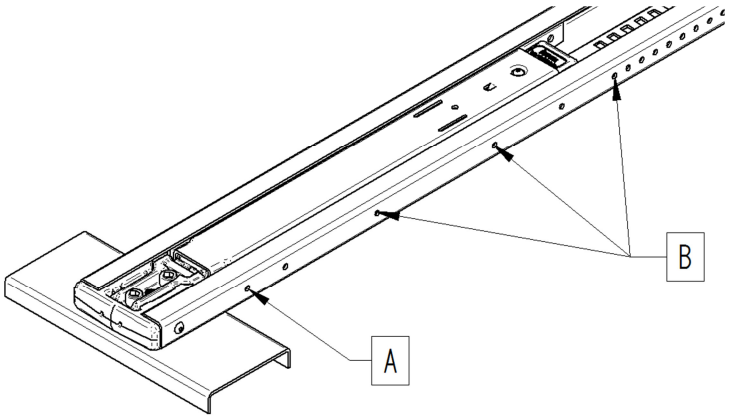
The following rivets are required for assembly

Rivet	Designation	Size	Execution	Strength	Hestal drawing-No
A	High-strength multi-range rivet (e.g. Monobolt Niet)	Ø6,5 x 19,3	Steel/Steel	11000 N Shear 9500 N Pull	6.800.147.07
B	High strength blind rivet (e.g. TI-Bulb Blindniet)	Ø6,4 x 12,5	Steel/Steel	10200 N Shear 6475 N Pull	6.800.174.23
C	High strength blind rivet (e.g. TI-Bulb Blindniet)	Ø6,4 x 14,5	Steel/Steel	11100 N Shear 6475 N Pull	6.800.174.24
D	High strength blind rivet (e.g. Hemlockniet)	Ø6,4 x 19,0	Steel/Steel	14000 N Shear 8800 N Pull	6.800.040.24
E	blind rivet (e.g. Avibulb-Blindniet)	Ø4,8 x 11,3	Steel/Steel	4200 N Shear 3800 N Pull	6.800.078.23
F	High-strength multi-range rivet (e.g. TI-Bulb Plus Blindniet)	Ø6,5 x 12,5	Steel/Steel	12250 N Shear 7900 N Pull	6.800.346.23

5.3 Fitting the slat stowage

HESTAL pillar system without pockets:

In case there is no need for a slat stowage, the holes in the pillar always need to be riveted as shown.



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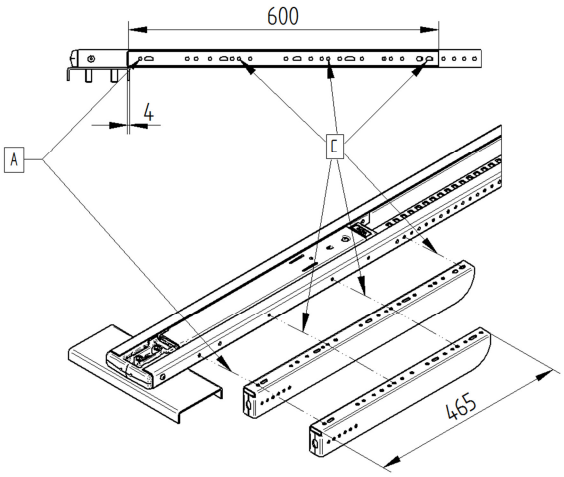
Standard position:

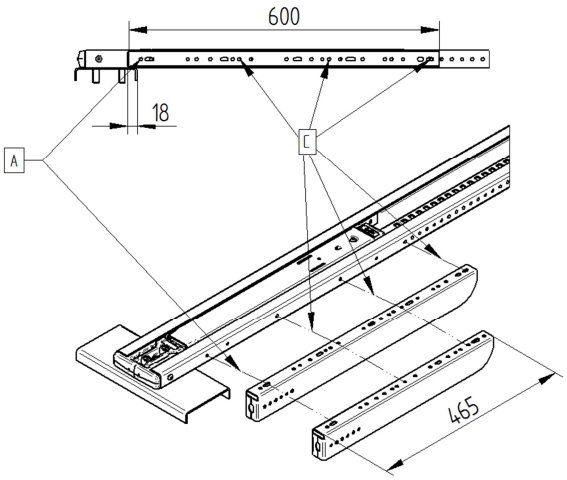
Position the slat stowage (Fig. 7 and 8) on the left and right of the pillar body and rivet them into place in the holes as shown.



In case there is just one slat stowage be fitted either of the left or the right, the holes in the pillar on the side without the slat stowage also need to be riveted.

Position offset by 22 mm downward:

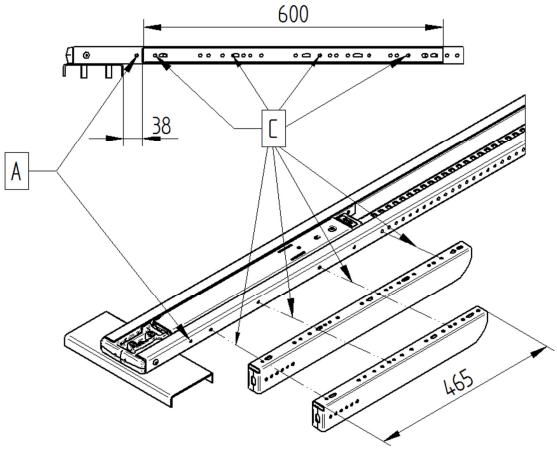
Position the slat stowage (Fig. 7 and 8) on the left and right of the pillar body and rivet them into place in the holes as shown.



In case there is just one slat stowage be fitted either of the left or the right, the holes in the pillar on the side without the slat stowage also need to be riveted.

Position offset by 34 mm downward:

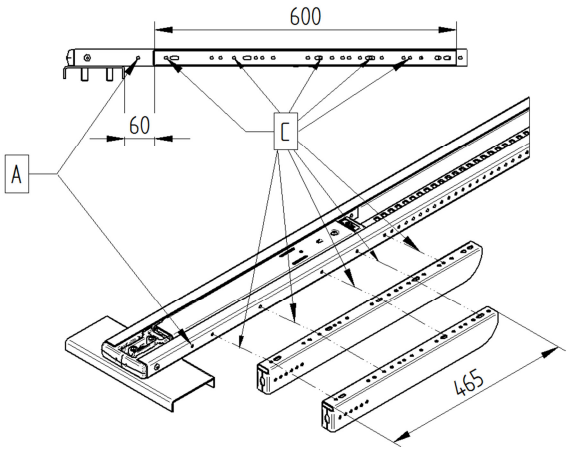
Position the slat stowage (Fig. 7 and 8) on the left and right of the pillar body and rivet them into place in the holes as shown.



In case there is just one slat stowage be fitted either of the left or the right, the holes in the pillar on the side without the slat stowage also need to be riveted.

Position offset by 56 mm downward:

Position the slat stowage (Fig. 7 and 8) on the left and right of the pillar body and rivet them into place in the holes as shown.



In case there is just one slat stowage be fitted either of the left or the right, the holes in the pillar on the side without the slat stowage also need to be riveted.

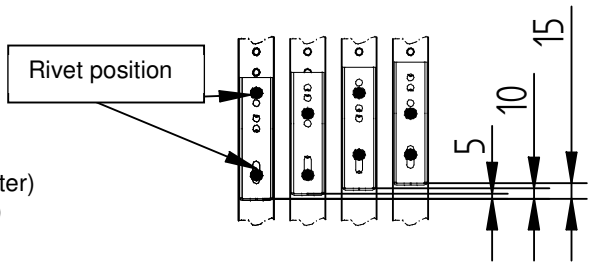
5.4 Mounting the pockets

The pockets (Fig 4, 5 and 6) of the Pillar-System 900, 901and 905 can be positioned in 5 mm height increments.

The height pattern begins at 575 mm above the top edge of the loadbed (measured at the bottom edge of the tarpaulin board) and ends differently depending on the pillar type and length.

The 5 mm steps adjustment works as follows:

The pillar has a 20 mm pattern of holes on each side.
You can make 5 mm adjustments within this pattern by driving rivets into the holes of the pocket at the positions shown here.



The fasteners used here are rivets "B" for 3mm profiles ‘(VarioMaster) and rivets "F" for 2mm profiles (SilmMaster). (See table on page 7)

ATTENTION: When using a reinforced profile (Fig. 18):
This has to be inserted into the pillar profile **before** the pockets assembly and is riveted to the pockets. (see 5.5 Fitting the carriage)

When using trolleys with the VarioMaster 900/901 and the shortest pillar adjustment, e.g. 2575 mm, there may be overlapping hole patterns above a tarpaulin slat height of 1750 mm.
In this case, the holes for the pocket can be re-drilled through the trolley profile (Ø 6.8 mm).

Rivets "C" are then to be used as fastening means. (See table on page 7)

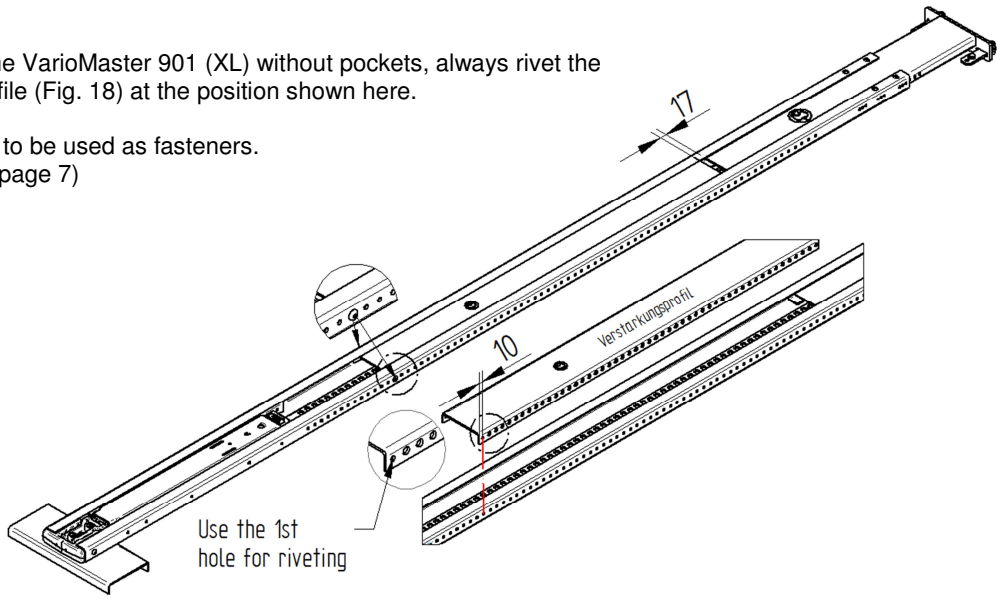
5.5 Fitting the trolley

There are different variants of the trolley due to the variety of possible roof frames.
Only a few variants are presented in these instructions. Trolleys for other roof frames can be requested.
The trolleys on Fig. 15, 16 or 17 are all fitted in the same way.
Longitudinal adjustment is possible in 5 mm steps, see length overview (Fig. 1).

An extra reinforced profile (Fig. 18) is included in the body of the pillar, which is intended for use with the trolleys of the VarioMaster 901 (XL).
Before the pockets are fitted, this reinforced profile need to be pushed into the body of the pillar from the top and riveted in place together with the pockets.
The position of the reinforced profile always depends on the position of the trolley in the pillar.
The reinforced profile is generally positioned below the trolley profile.
The maximum gap between the reinforced profile and the trolley profile is 17 mm.

When using the VarioMaster 901 (XL) without pockets, always rivet the reinforced profile (Fig. 18) at the position shown here.

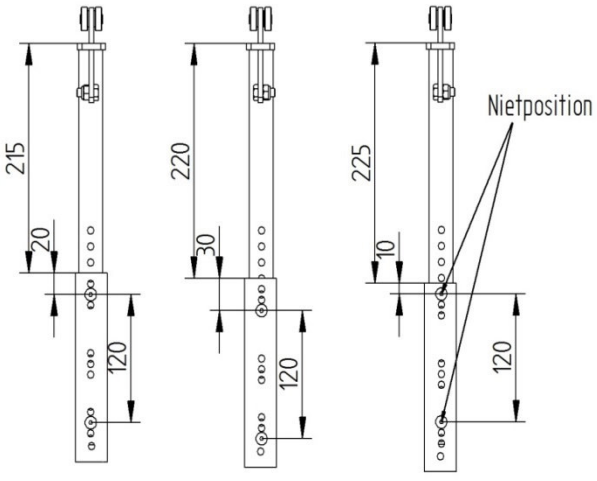
Rivets "B" are to be used as fasteners.
(See table on page 7)



The 5mm adjustment works as follows:

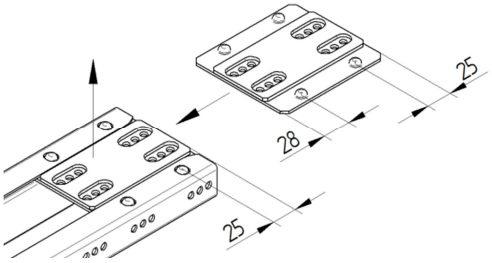
The pillar body has a pattern of holes at the top of each side (3 x 3 holes, Ø 6.8 mm).
To fasten a trolley only use the upper and lower hole pattern.
The middle hole pattern can be used in conjunction with the upper or lower hole pattern to fasten a tarp slat pocket.
You can make 5 mm adjustments within this pattern by driving rivets into the positions shown here
The gap between the rivets is always 120 mm.
The same adjustments can be made to all trolleys.
The trolleys always need to be attached with 4 rivets.

Rivets "A" are to be used as fasteners.
(See table on page 7)



5.6 Fitting the telescopic elements as a fixed trolley

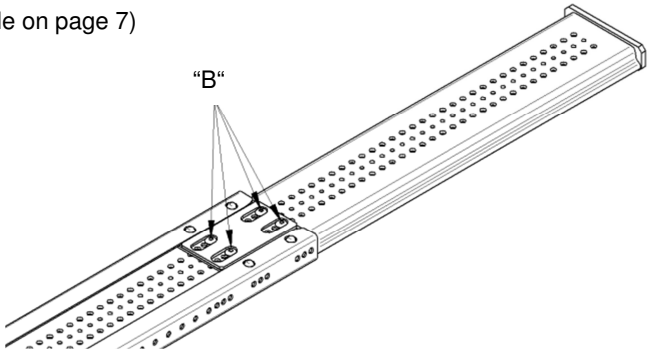
To fitting a telescopic element (Fig. 19) as a fixed trolley, the telescopic element stop (Fig. 12) is inserted flush into the pillar body.



The telescopic element is pushed into the pillar body and adjusted to the desired length.
(The length adjustment is basically possible in 5mm increments)

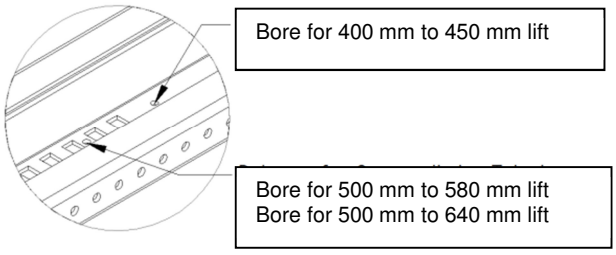
Now 4 holes of the stop must be aligned with the holes of the telescopic element.
Through this, the telescopic element is riveted by means of 4 high-strength blind rivets. (See sketch).

Rivets "B" are to be used as fasteners. (See table on page 7)



5.7 Fitting the telescopic elements

The telescopic elements (See table on page 5) for the HESTAL pillar system are all fitted in the same way.
Length adjustment is possible in 5mm steps. The telescopic elements are for a lift of 400 to 450 mm.
For the XL telescopic elements there are variants for a lift of 500 mm to 600 mm and 500 mm to 640 mm.
Tensioning cable complete 400 - 450 mm lift - 6.090.155.25
Tensioning cable complete 500 - 580 mm lift - 6.090.156.25
Tensioning cable complete 500 – 600 mm lift - 6.090.160.25

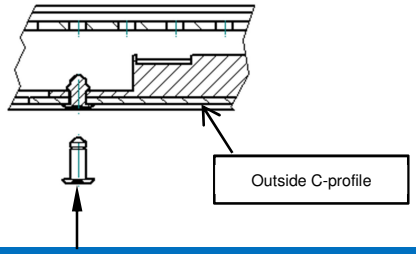


Procedure:

1. Rivet the telescopic element tensioning cable (Fig. 23 to 25) on the pillar body (see visual example on page 2) to one of the bore (Ø 5mm) with rivet “E”. (See table on page 7)

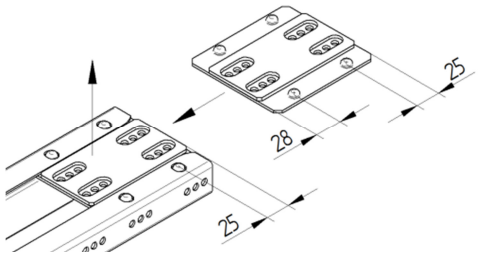
   At lift 400mm to 450mm upper bore (Fig 23),
   At lift 500mm to 580mm lower bore (Fig 24),
   At lift 500mm to 640mm lower bore (Fig 25).

   Position of the rivet head, Outside C-profile.

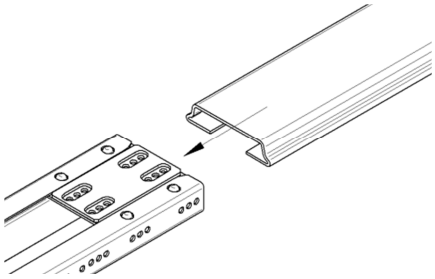


Guide the telescope tensioning cable out of the pillar from the top.

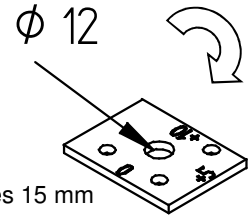
2. Insert the telescopic stop (Fig. 12) into the contour of the pillar body, and fix it in place.

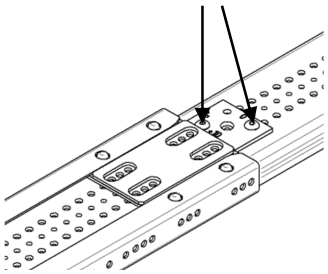


3. Slide the telescopic element into the body of the pillar from the top



4. Set the desired pillar length by adjusting the stop plate (Fig. 11).
Riveted connection: 2x rivet “D” (See table on page 7))



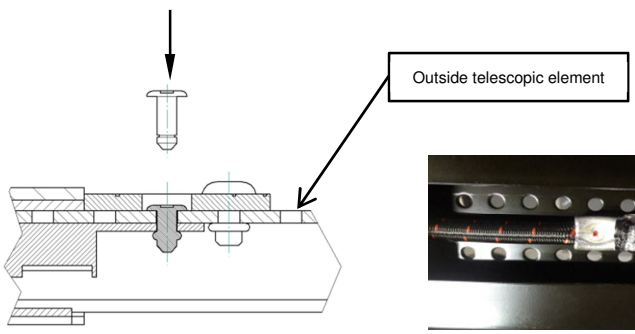


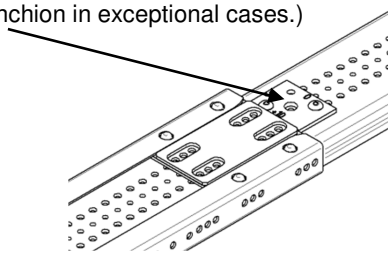
In basic position, the zero edge is at the top edge of the telescopic stop.
Adjusting the hole pattern of the telescopic profile provides 15 mm steps.
Turning the stop plate (with the "five" edge at the top edge of the telescopic stop) raises the basic position by 5 mm.
Turning the stop plate further (with the "ten" edge at the top edge of the telescopic stop) raises the basic position by 10 mm. These increases are transferred to the 15mm hole pattern.
This flexibility leads to adjustments in 5 mm steps.

These increases are transferred to the 15 mm hole pattern.
This flexibility leads to adjustments in 5 mm steps.

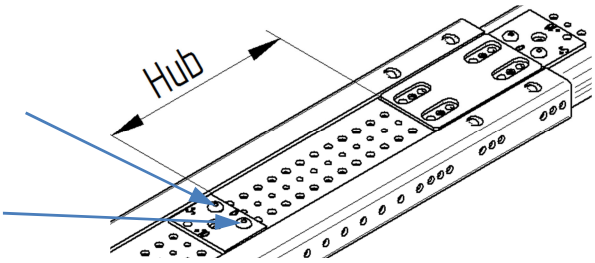
5. Rivet the telescopic tensioning cable to the telescopic element with rivet “E” (See table on page 7).

The riveting position is within the Ø 12 hole in the stop plate.
(A different rivet position is only shown in the production drawing of the stanchion in exceptional cases.)





6. Set the required lift of the telescopic element using a second stop plate.
   Riveted connection: 2x rivet “D” (See table on page 7)



ATTENTION:

Check the extended tensioning cable length, in which the telescope is pulled out completely.

Maximum permissible tensioning cable length for 400 - 450 mm lift = 1040 mm
Maximum permissible tensioning cable length for 500 - 580 mm lift = 1150 mm
Maximum permissible tensioning cable length for 500 - 640 mm lift = 1320 mm

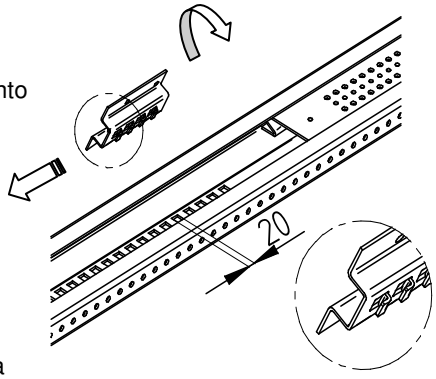
To improve operating convenience and to reduce wear, the HESTAL Set dampers for telescopic elements 913.4 can be installed (see point *6. Accessories*).

5.8 Fitting the plug-in fastenings

The plug-in fastenings for the HESTAL pillar system (Fig 13 and Fig 14) are comprised of the plug-in profile and the cover plate.

While you can fit these components at any time, you should have completed the assembly of the telescopic element first.

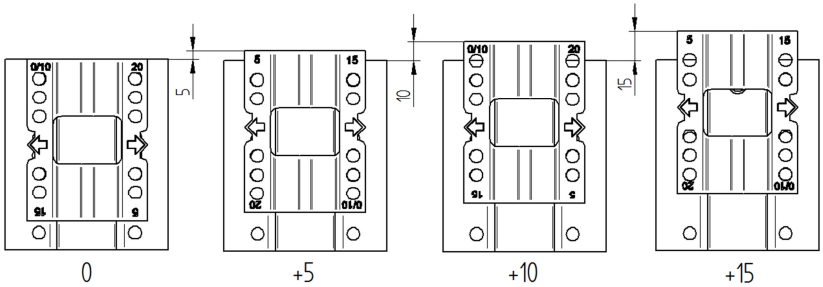
Procedure for example on Fig 13:



1. Slide the plug-in profile into the pillar profile, and hook the hook rail into the pattern of holes. (with the hooks facing downward)
   The pillar profile has a rectangular row of holes with 20 mm spacing.
   Position the plug-in profile at the required height

2. Align the cover plate on the plug-in profile, and rivet it in place using 4x rivet “B” (See table on page 7)

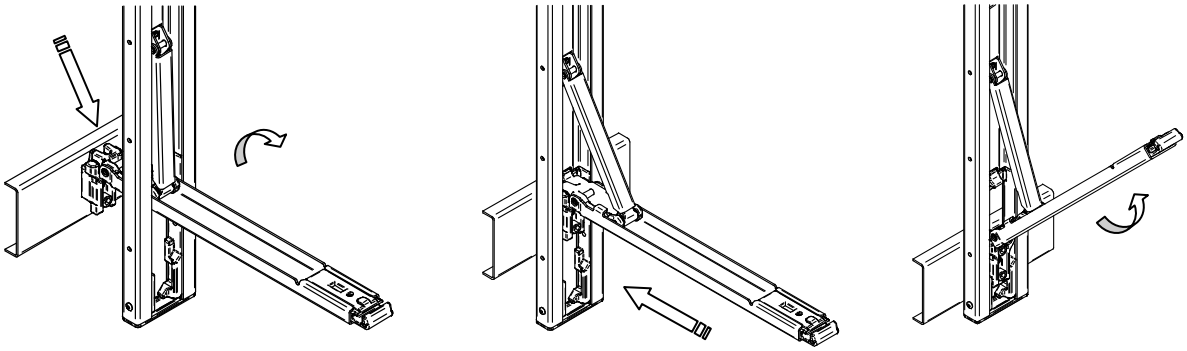
   The cover plate has a staggered hole arrangement and thus allows a setting of +5, +10, and +15 mm.



Once the plug-in fastening system is fitted, it is possible to make a customised length adjustment within the 20 mm pattern.
The cover plate always forms the support surface for the telescopic profile.
The plug-in unit is "captive" after riveting and can now only be moved within the pillar.

5.9 Installing the pillar System

Hook the HESTAL VarioMaster respectively SlimMaster into the roof rail and position it in front of the pillar bearing.
Operate the lock button, open the hand lever, and place the hook contour of the hand lever through the pillar profile onto the pillar bearing.
Press the pillar body against the vehicle frame profile and close the hand lever.
The locking button in the hand lever engages automatically; the logo on the locking button is completely legible.

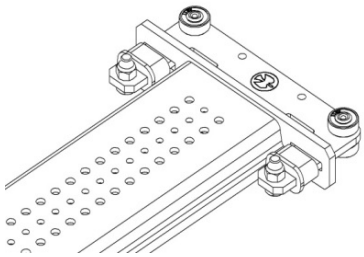


When the hand lever is closed, the pillar is pushed up and interlocks with the pillar bearing.

When opening the pillar do not let it fall (rollers could be damaged).

6. Accessories

HESTAL Set dampers for telescopic elements 913.4 (drawing no.: 6.850.041.00)



Consisting of:

2x damping ring
2x oval washer
2x Treloc (self-locking) M8 hexagon nut
2x hex head screw M8 x 18

7. Important instructions

- Most of the surfaces of the components of our pillar systems are treated with a cathodic dip paint finish (CDP). The exceptions are various small parts, such as roller carriage, rollers, dowel pins, and rivets.

  The surfaces of all components are only suitable for outdoor exposure (UV radiation, electro-chemical corrosion) to a limited extent.
- If a weather-resistant surface is desired to achieve effective corrosion protection, a supplemental covering lacquer need to be provided by the body manufacturer! In this regard ensure that sliding or moving parts are not painted when the other parts are painted, or after the covering lacquer is applied ensure that sliding or moving parts are restored to their proper function (ease of movement)!
- The HESTAL pillar system will only function perfectly if all installation and operating instructions are complied with.
- For reasons of operational safety, road safety, as well as operational health and safety, you are not allowed to combine any components other than the HESTAL components shown here.
- A function check of the VarioMaster respectively SlimMaster system need to be done with the following checklist.

8. Checklist for final checking by the body manufacturer

Assembly

- ☐ Original factory drawing and parts list available
- ☐ Genuine HESTAL parts have been used exclusively
- ☐ Regulations and directives followed
- ☐ HESTAL VarioMaster respectively SlimMaster fitted against the outer frame and under the roof profile
- ☐ Vehicle frame constructed in accordance with the specifications (see “General principles“)
- ☐ Pillar bearings fitted as shown in the drawings (see “Installation of pillar bearings”)
- ☐ Slat stowage positioned and rivet locations complied with (see “Fitting the slat stowage”)
- ☐ Trolleys positioned and rivet locations complied with (see “Fitting the trolley”)
- ☐ Pockets positioned and rivet locations complied with (see “Mounting the Pockets”)
- ☐ Telescopic element mounted with correct selection of cable and lift (see “Fitting the telescopic elements”)
- ☐ Telescopic stops fitted (see “Fitting the telescopic elements”)
- ☐ Layout and execution of riveted joints as specified and correct

Function

- ☐ Trouble-free opening and closing
- ☐ Hand lever lock engages properly and completely in the locking pin
- ☐ Trouble-free lateral movement of the VarioMaster respectively SlimMaster
- ☐ Operation / lift and ease of movement of the telescopic element
- ☐ Operation of the telescopic tensioning cable (see “Fitting the telescopic elements”)
- ☐ If fitted, plug-in fastening element freely movable and positioned in the body of the pillar
- ☐ Function check carried out and with no reservations

Information

- ☐ Operating instructions 6.800.174.48 have been added to the vehicle's documentation
- ☐ The vehicle's owner or user has received instructions on how to operate the system
- ☐ The vehicle's owner or user has been informed about maintenance and inspection work

Vehicle description / model: .....

Chassis no.: .....

Date of initial registration: .....

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

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