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Installations instruction

for HESTAL CS-Pillar system
VarioMaster 902 +903

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

The HESTAL VarioMaster CS pillar system is divided into two types:
The HESTAL **VarioMaster type 902 CS-pillar system**
The HESTAL **VarioMaster type 903 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

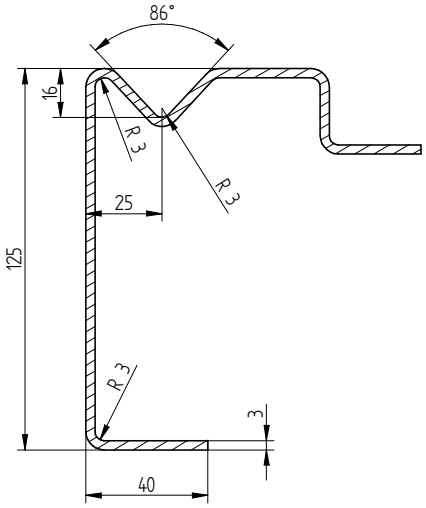
The following regulations and directives need to be complied with:

- 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 required for each vehicle body must 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 VarioMaster 903 CS-pillar system is fitted must be designed as shown in the diagram.



4. Component overview

Type	description	length (from frame top)	weight	Article number
902	CS-pillar 902, short without slat stowage, without slat pocket	2285 mm	15,8 kg	6.800.182.00
902	CS-Runge 902, long without slat stowage, without slat pocket	2580 mm	17,4 kg	6.800.183.00
903	CS-pillar 903, short without slat stowage, without slat pocket	2285 mm	16,5 kg	6.800.184.00
903	CS-Runge 903, long without slat stowage, without slat pocket	2580 mm	18,0 kg	6.800.185.00

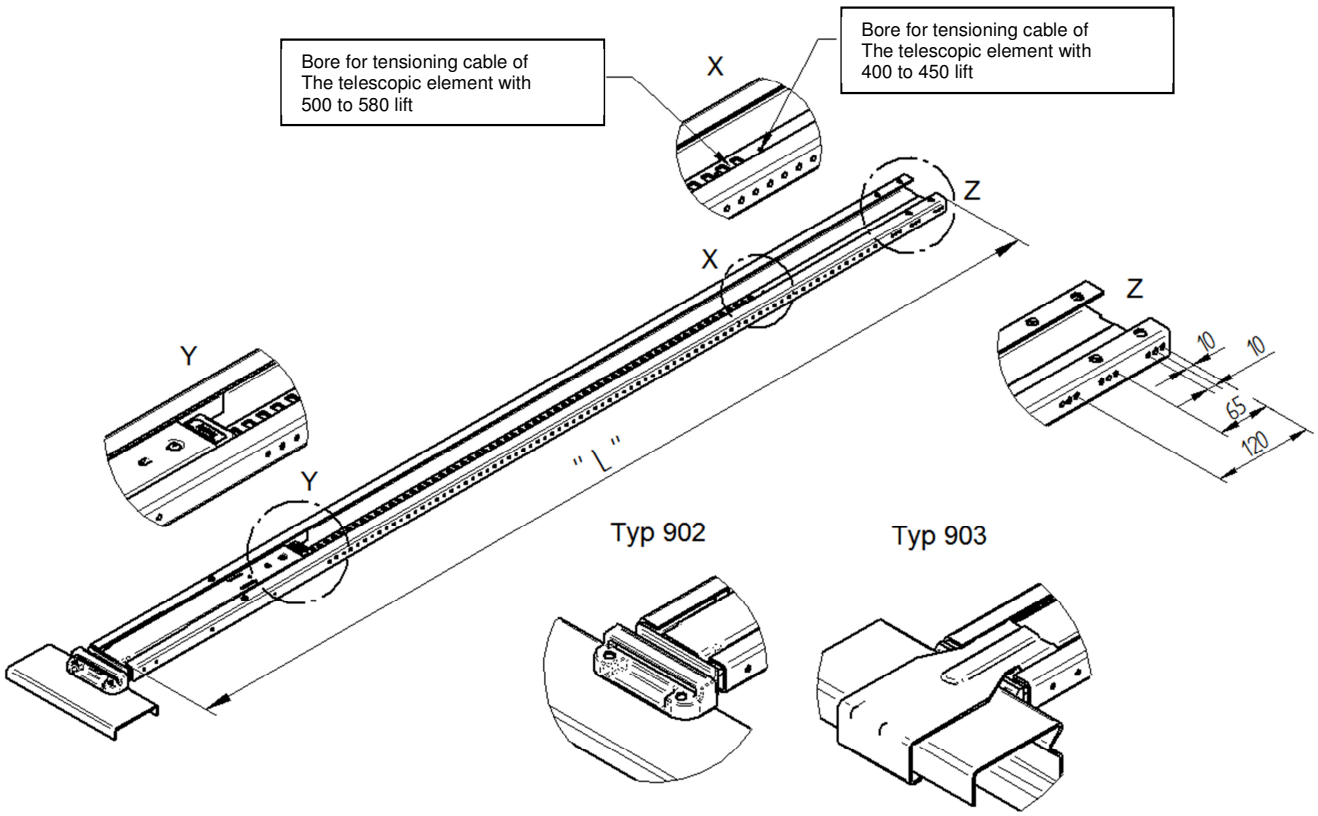


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Fig 1: Length overview, VarioMaster 902 + 903

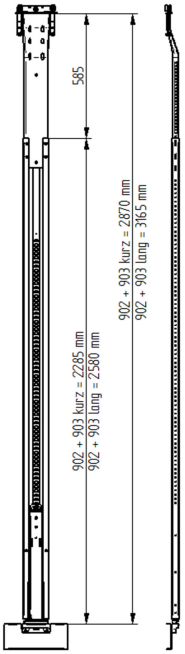
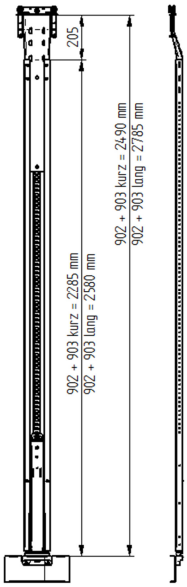
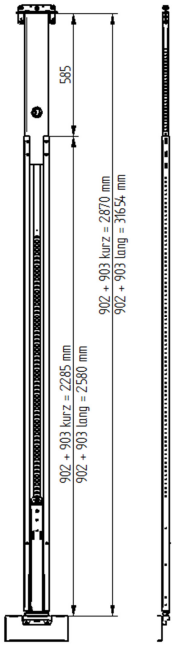
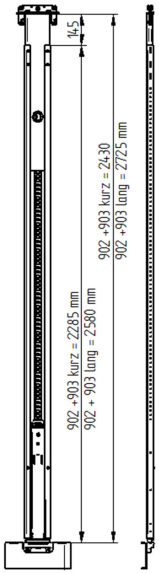
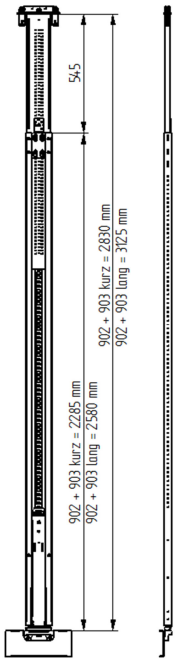
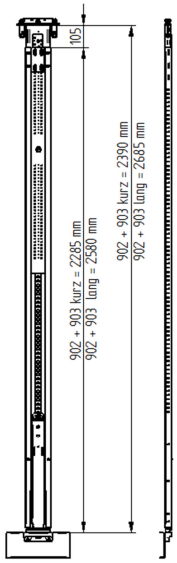
with angled trolley		with straight trolley		with telescopic element	
max length	min length	max length	min length	max length	min length
					

Fig. 2: Collision protection profile– 6.090.116.68

Fig. 3: Single pivot shoe bearing - 6.090.121.00

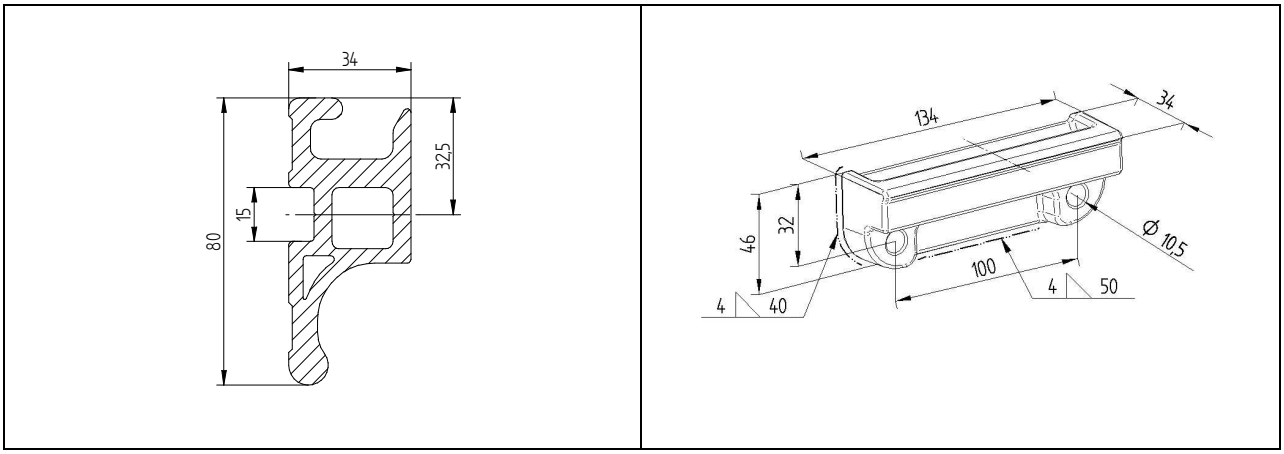


Fig. 4: pocket 6.800.174.10

Fig. 5: pocket with clamping protection 6.800.174.20

Fig. 6: pocket 6.800.174.30

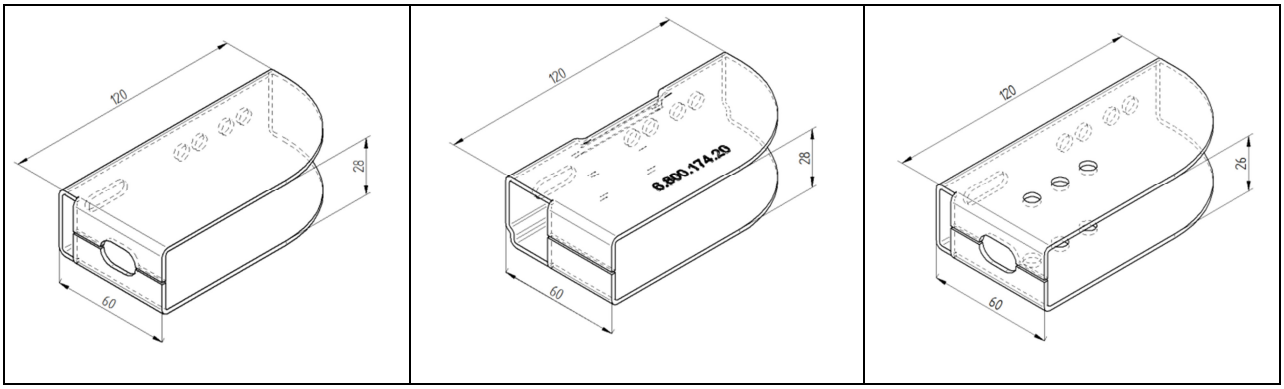


Fig. 7: Slat stowage 465 mm – 6.800.174.09

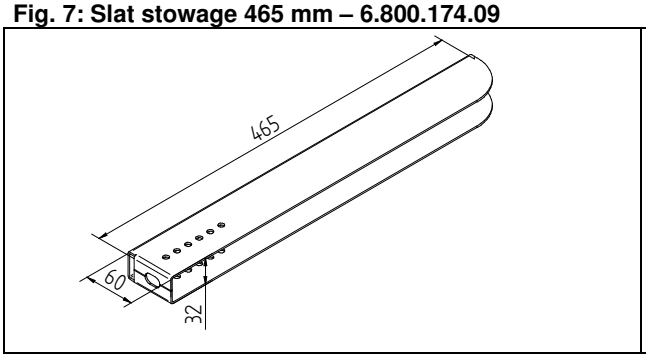


Fig. 8: Slat stowage 602 mm – 6.800.182.09

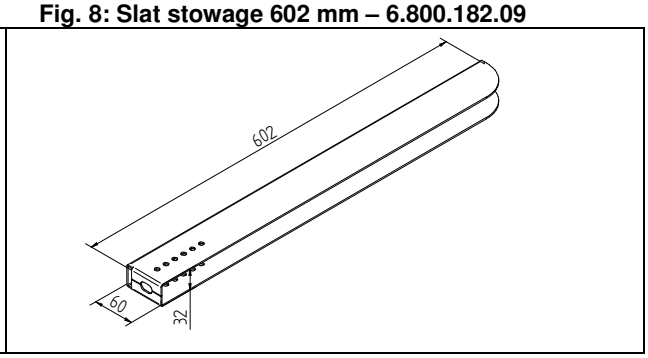


Fig. 9: slat stowage without floor – 6.090.230.09

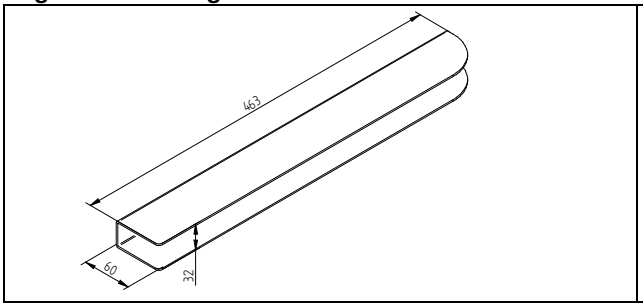


Fig. 10: stop plate – 6.090.145.04

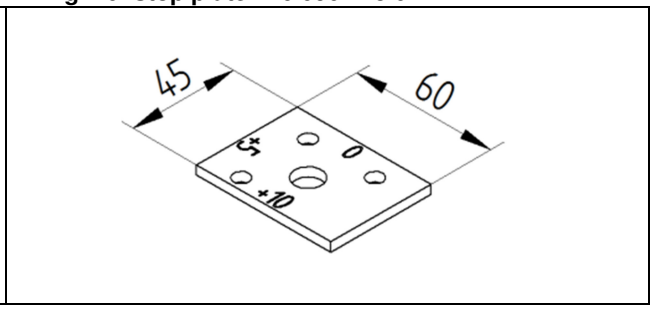


Fig. 11: Telescopic element stop – 6.090.262.00

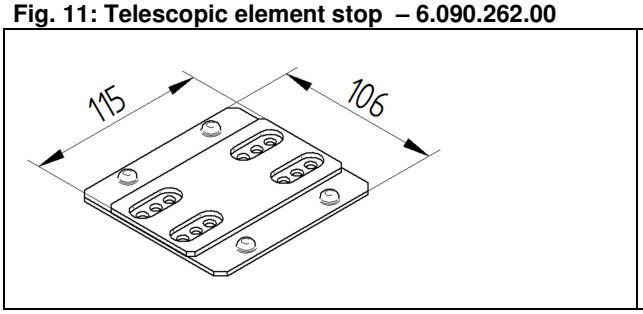


Fig. 12: Telescopic element stop – 6.090.158.00

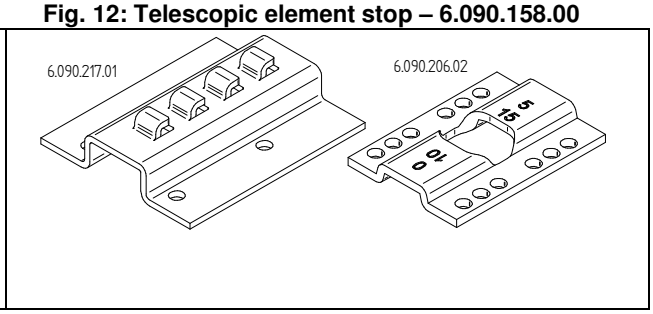


Fig. 13: Trolley, angled – 6.090.153.00

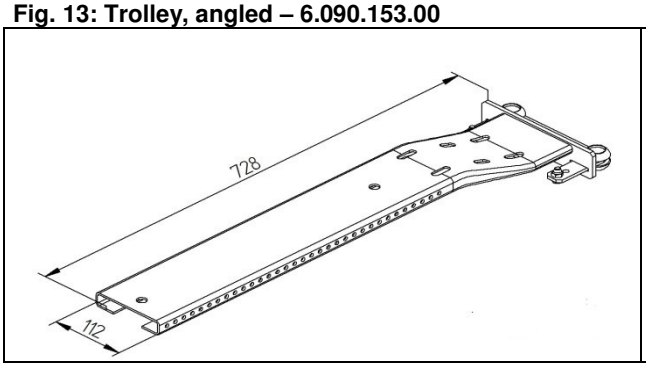


Fig. 14: Trolley, straight – 6.090.154.00

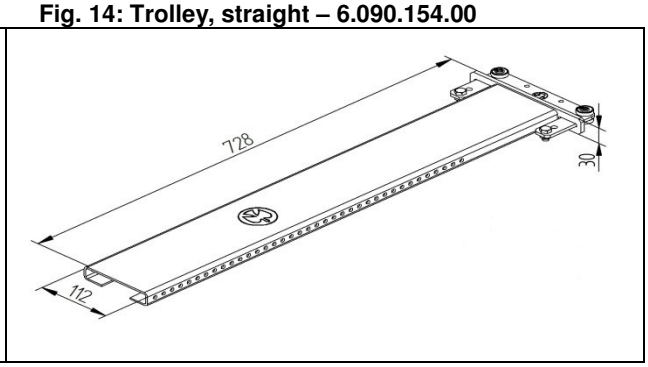


Fig. 15: Trolley, straight – 6.090.157.00

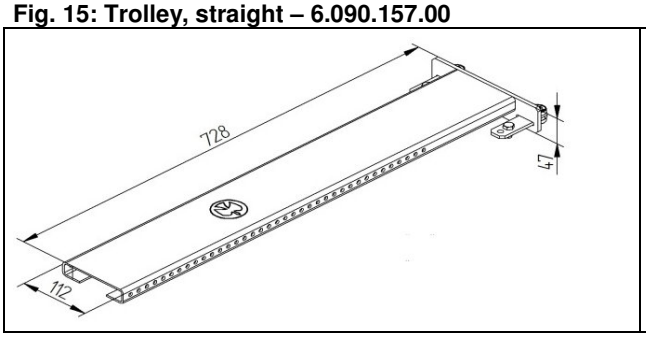
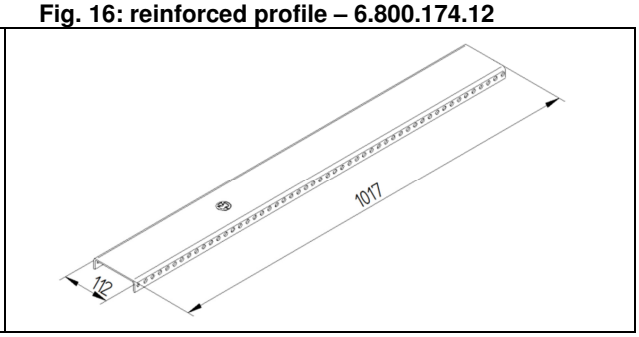


Fig. 16: reinforced profile – 6.800.174.12



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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. 17

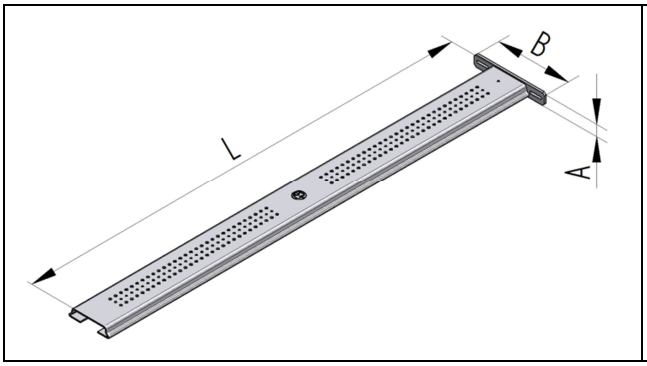


Fig. 18
6.090.155.52

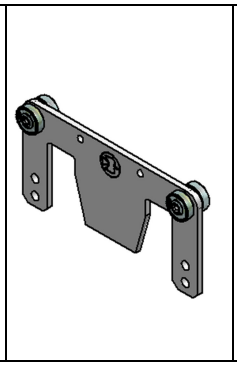


Fig. 19
6.090.153.20

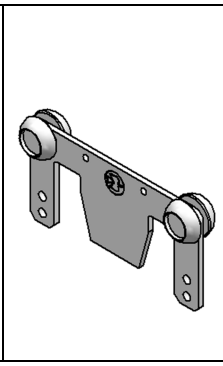


Fig. 20
6.090.226.00

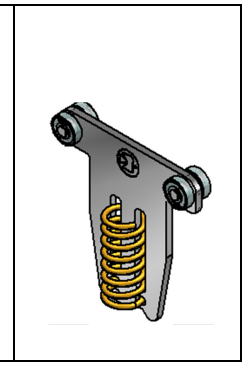
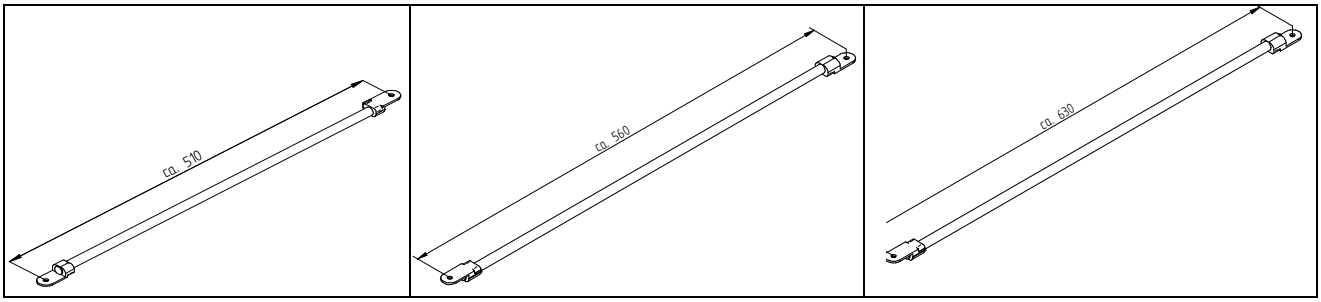


Fig 21
Tensioning cable complete
400 – 450 lift
6.090.155.25

Fig 22:
Tensioning cable complete
500 – 580mm lift
6.090.156.25

Fig 23:
Tensioning cable complete
500 - 640mm lift
6.090.160.25

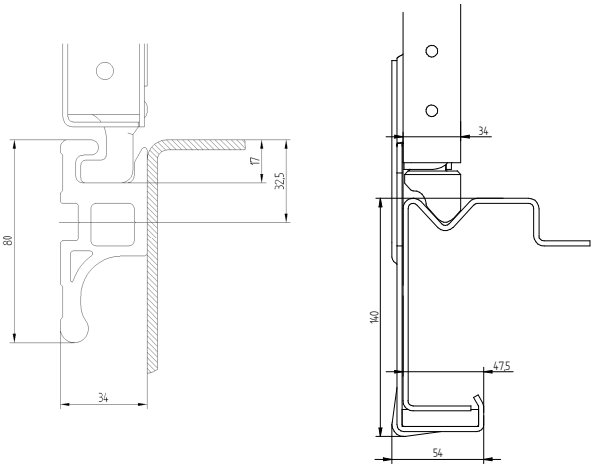


5. Installation / assembly

5.1 Installation situation

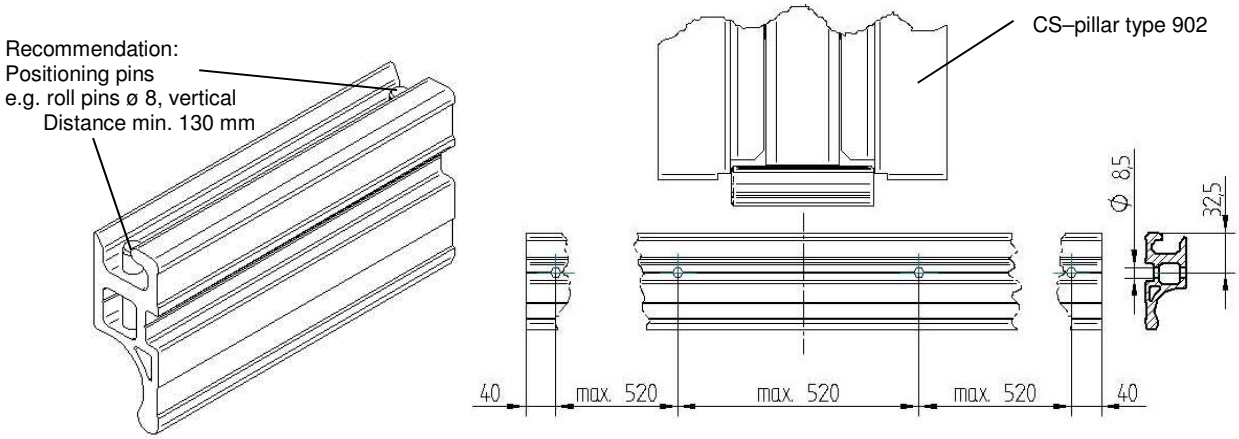
The pillar body of the CS pillar is on the outer frame.
The CS pillar must be connected to the roof structure so it is perpendicular to the outer frame.

Trolley, mounting type and means have to
Selected by the body manufacturer
Depending upon the anticipated load.



5.2 Attaching the collision protection profile

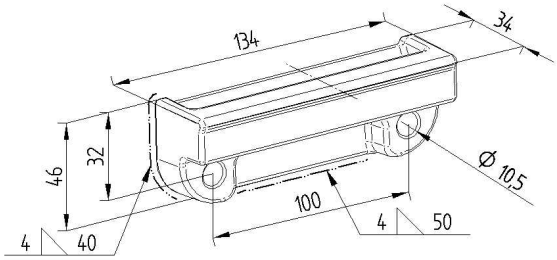
Adjust the collision protection profile (Fig. 6) in accordance with the vehicle frame length and fasten to the vehicle frame.
For fastening we recommend: Bolt DIN EN ISO 4014 (formerly DIN 931), M8, strength class 8.8, washer DIN EN ISO 7090 (formerly DIN 125), ø 8.4 and nut DIN EN ISO 7040 (formerly DIN 982), M8.



5.3 Attaching the single pivot shoe

The single pivot shoe (Fig. 3) is used for securely fastened locking points.
The single pivot shoe can be welded or bolted as desired.

If fastened using bolts we recommend:
Bolts DIN EN ISO 4762 (formerly DIN 912), M10, bolt grade 8.8
and nut DIN EN ISO 7040 (formerly DIN 982), M10.
Connection elements that are exposed to dynamic loads must be secured by the customer accordingly! Tighten all mechanical attachment elements to the appropriate torque (M10 - 8.8 at 50 Nm)! All bolt connections must be retightened after 500 km, 5,000 km, and at six month intervals!



The length of the bolts must 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!

If the single pivot shoe is welded take note of the following:
Weld execution in accordance with DIN EN ISO 13920-BF; DIN EN ISO 5817-C ;
DIN EN ISO 9692-1 and DIN EN ISO 9692-2!
The body manufacturer is responsible for conveying the choice of materials, the dimensions of the outside frame, and the choice of suitable welding material, taking into account the permissible and expected load.
The non-welded areas must be sealed with joint sealant in order to prevent joint corrosion

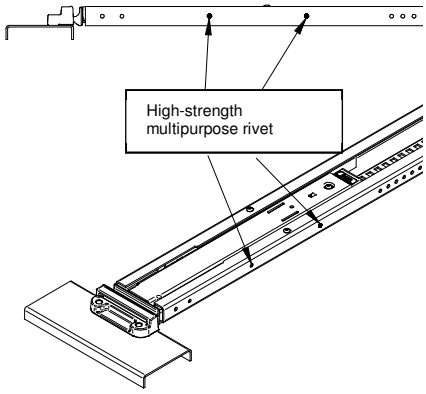
5.4 Fitting the slat stowage pockets

VarioMaster 902 & 903 without slot stowage:

The VarioMaster 902 is shown.

Should a slat stowage pocket not be fitted, the holes in the pillar must always be riveted as shown.

Use high-strength, multipurpose rivets drawing no.: 6.800.174.23, Ø 6.4x12.5 in the steel/steel version.
Strengths: (shear 10,202N / tensile 6,475N).



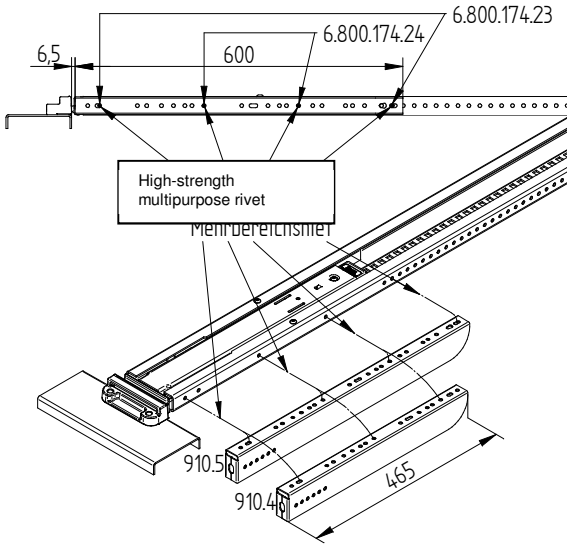
Standard position:

Position the slat stowage pockets (Fig. 9, 10 and 11) on the left and right of the pillar body and rivet them into place in the holes as shown.

Use high-strength, multipurpose rivets drawing no.: 6.800.174.23, Ø 6.4x12.5 in the steel/steel version, strength classes: shear 10202N / tensile force 6475N, and drawing no.:6.800.174.24, Ø 6.4x14.5 in the steel/steel version, strength classes: shear 11,183N / tensile 6475N.

Only in this position is the slat stowage fastened without floor (Fig. 11). For the VarioMaster 902 the insert-slats can then be supported by the collision protection profile. For the VarioMaster 903 they can then be supported by the vehicle frame.

Should just one slat stowage pocket be fitted on either the left or the right, the holes in the pillar on the side without the slat stowage pocket must also be riveted.

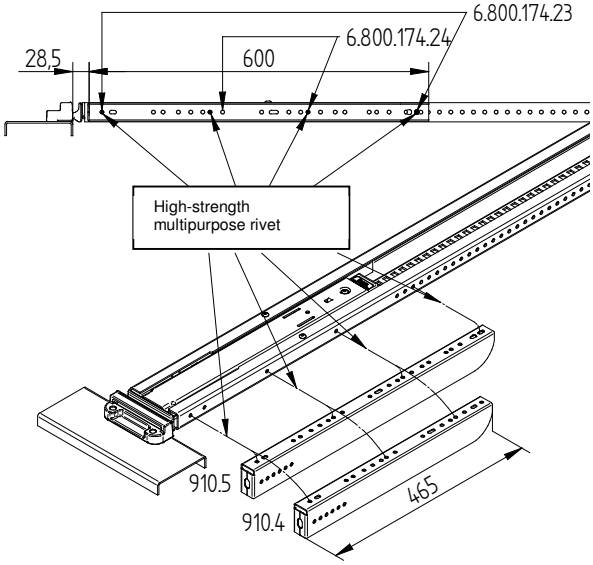


Position offset by 22 mm upward:

Position the slat stowage pocket (Fig. 9 and 10) on the left and right of the pillar body and rivet them into place in the holes as shown.

Use high-strength, multipurpose rivets drawing no.: 6.800.174.23, Ø 6.4x12.5 in the steel/steel version, strength classes: shear 10202N / tensile force 6475N, and drawing no.:6.800.174.24, Ø 6.4x14.5 in the steel/steel version, strength classes: shear 11,183N / tensile 6475N.

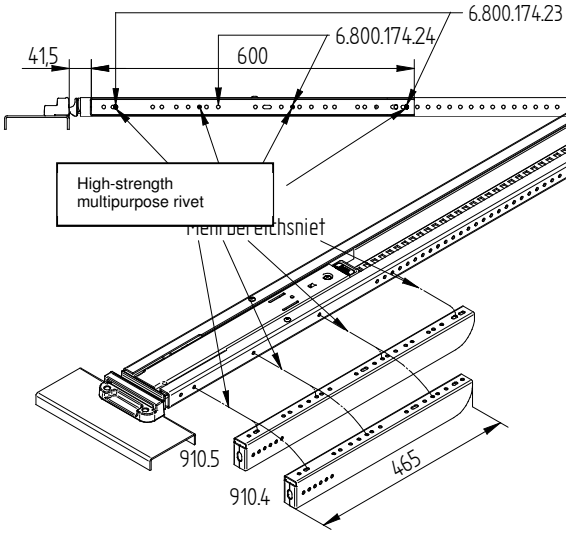
Should just one slat stowage pocket be fitted on either the left or the right, the holes in the pillar on the side without the slat stowage pocket must also be riveted.



Position offset by 35 mm upward:

Position the slat stowage pocket (Fig. 9 and 10) on the left and right of the pillar body and rivet them into place in the holes as shown.

Use high-strength, multipurpose rivets drawing no.: 6.800.174.23, Ø 6.4x12.5 in the steel/steel version, strength classes: shear 10202N / tensile force 6475N, and drawing no.:6.800.174.24, Ø 6.4x14.5 in the steel/steel version, strength classes: shear 11,183N / tensile 6475N.



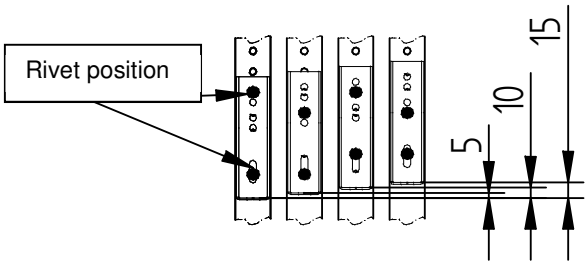
Should just one slat stowage pocket be fitted on either the left or the right, the holes in the pillar body on the side without the slat stowage pocket must always be riveted as well.

5.5 Mounting the tarp slat pockets

The pockets (Fig 6, 7 and 8) of the VarioMaster 900 and 901 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 at 1990 m depending on the pillar type. VarioMaster 900 (length load bed upper edge to pillar profile upper edge = 2370 mm) = 1990 mm,
VarioMaster 901 short (length load bed upper edge to pillar profile upper edge = 2370 mm) = 2110 mm,
VarioMaster 901 long (length load bed upper edge to pillar profile upper edge = 2700 mm) = 2270 mm,

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.



Use high-strength, blind rivets
(part no.: 6.800.040.23) Ø 6.5x19.3 in the steel/steel version, strength classes: (shear 12500 N / tensile 8800 N) or
(part no.: 6.800.174.23) Ø 6.4x12.5 in the steel/steel version, strength classes: (shear 10202 N / tensile 6475 N).

When using the VarioMaster 901 (XL) without pockets, always rivet the reinforced profile (Fig. 18) at the position shown here.
(see 5.4 Fitting the trolley)

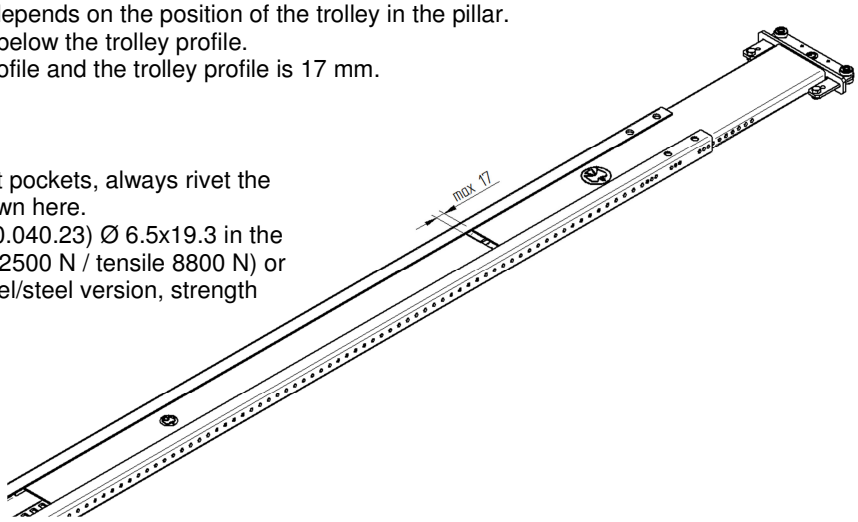
When using trolleys with the VarioMaster 900/901 and the shortest pillar adjustment, e.g. 2575 mm, there may be overlapping hole patterns above a tarpaulin slat height of 1750 mm.
In this case, the holes for the pocket can be re-drilled through the trolley profile (Ø 6.8 mm).

As fastening material use longer high-strength, blind rivets
(part no.: 6.800.040.23) Ø 6.5x19.3 in the steel/steel version, strength classes: (shear 14000 N / tensile 8800 N)
or (part no.: 6.800.174.24) Ø 6.4x14.5 in the steel/steel version, strength classes: (shear 11183 N / tensile 6475 N).

5.6 Fitting the Trolleys

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 (Fig. 15, 16 or 17) for the VarioMaster 900/901 are all fitted in the same way.
Longitudinal adjustment is possible in 5 mm steps, see length overview (Fig. 1).

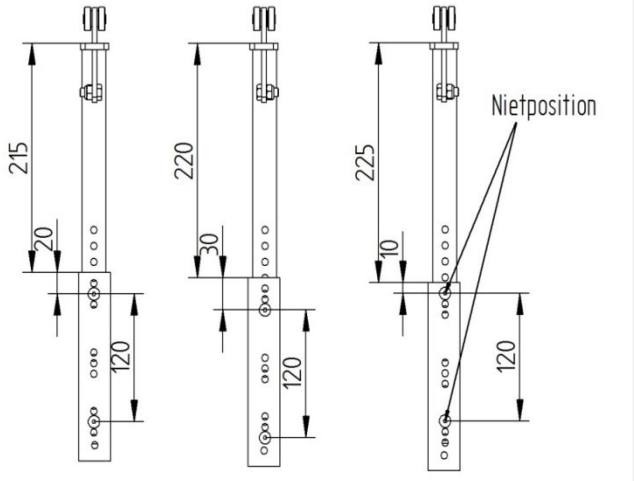
An extra reinforced profile (Fig. 18) is included in the body of the pillar, which is intended for use with the trolleys of the VarioMaster 901 (XL).
Before the pockets are fitted, this reinforced profile need to be pushed into the body of the pillar from the top and riveted in place together with the 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.
Use high-strength, blind rivets (part no.: 6.800.040.23) Ø 6.5x19.3 in the steel/steel version, strength classes: (shear 12500 N / tensile 8800 N) or (part no.: 6.800.174.23) Ø 6.4x12.5 in the steel/steel version, strength classes: (shear 10202 N / tensile 6475 N).

The 5mm adjustment works as follows:

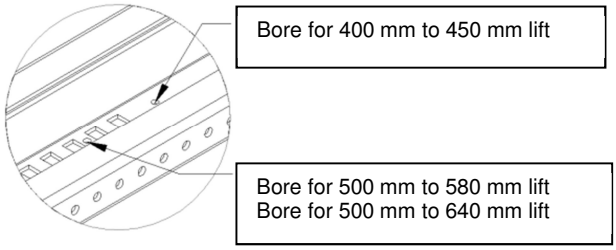
The pillar body has a pattern of holes at the top of each side (3 x 3 holes, Ø 6.8 mm).
To fasten a trolley only use the upper and lower hole pattern.
The middle hole pattern can be used in conjunction with the upper or lower hole pattern to fasten a tarp slat pocket.
You can make 5 mm adjustments within 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.
Use high-strength, multipurpose rivets
(part no.: 6.800.174.07) Ø 6.4x12.5 in the steel/steel version, strength classes: (shear 11000 N / tensile 9300 N)



5.7 Fitting the telescopic elements

The telescopic elements (see table on page 5) for the VarioMaster 900/901 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.

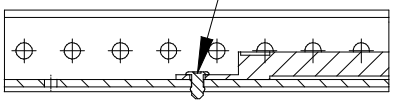
Tensioning cable complete 400 - 450 mm lift - 6.090.155.25
Tensioning cable complete 500 - 580 mm lift - 6.090.156.25
Tensioning cable complete 500 – 600 mm lift - 6.090.160.25



Procedure:

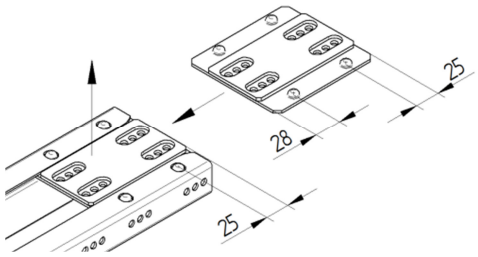
1. Rivet the telescopic element tensioning cable (Fig. 23 to 25) on the pillar body (see visual example on page 2) to one of the bore (Ø 5mm) with a blind rivet (part no.: 6.810.078.23) Ø 4.8 x 11.3
   Strengths: (shear 4200 N / tensile 3800 N).

   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, inside C-profile, on the tensioning cable

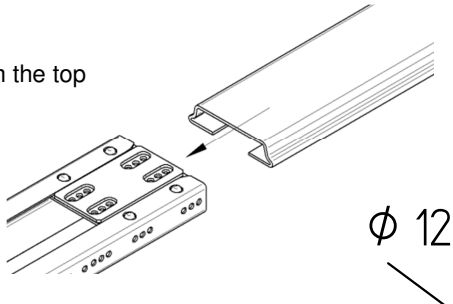


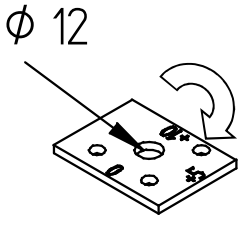
   Guide the telescope tensioning cable out of the pillar from the top.

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

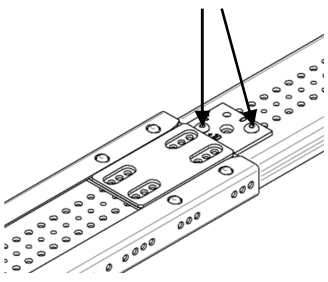


3. Slide the telescopic element into the body of the pillar from the top





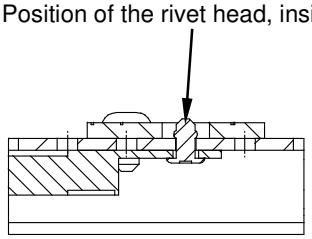
4. Set the desired pillar length by adjusting the stop plate (Fig. 11).
   Riveted connection 2x high-strength blind rivet (part no. 6.800.040.24)
   Ø 6.4x19.0 in the steel/steel version, strength classes: (shear 14000 N / tensile 8800 N)

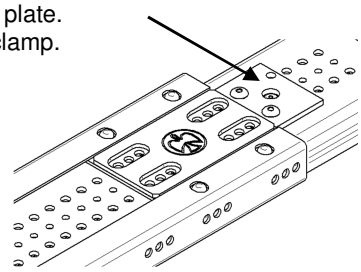


In basic position, the zero edge is at the top edge of the telescopic stop.
Adjusting the hole pattern of the telescopic profile provides 15 mm steps.
Turning the stop plate (with the "five" edge at the top edge of the telescopic stop) raises the basic position by 5 mm.
Turning the stop plate further (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.

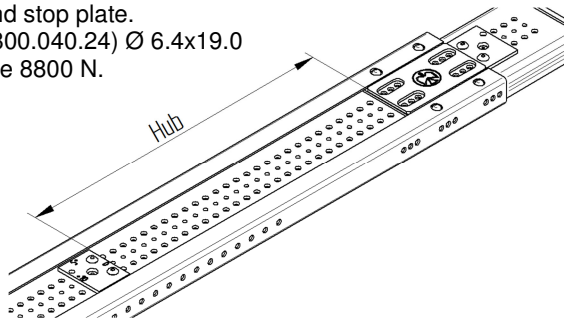
These increases are transferred to the 15 mm hole pattern. This flexibility leads to adjustments in 5 mm steps.

5. Rivet the telescopic tensioning cable to the telescopic element with blind rivet (part no.: 6.810.078.23) Ø 4,8x14,7 ; strengths: shear 4200 N / tension 3800 N.
The position of the rivet is always in the ø12 mm hole of the stop plate.
Position of the rivet head, inside telescopic profile, on the cable clamp.





6. Set the required lift of the telescopic element using a second stop plate.
Riveted connection 2x high-strength blind rivet (part no. 6.800.040.24) Ø 6.4x19.0 in the version steel/steel, strengths: (shear 14000 N / tensile 8800 N.



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

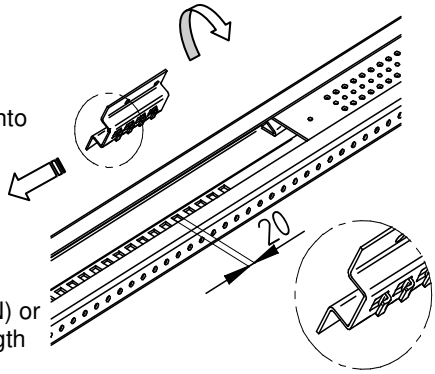
To improve operating convenience and to reduce wear, the HESTAL Set dampers for telescopic elements 913.4 can be installed (see point *6. Accessories*).

5.8 Fitting the plug-in fastenings

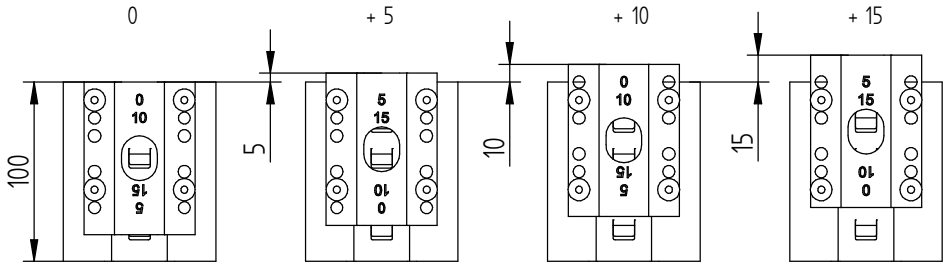
The plug-in fastenings for the VarioMaster 900 / 901 (Fig 13 and Fig 14) are comprised of the plug-in profile (6.090.206.02) and the cover plate (6.090.217.01-910.2 or 6.090.206.50 - double decker).
While you can fit these components at any time, you should have completed the assembly of the telescopic element first.

Procedure for example on 6.090.217.01:

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 high-strength rivets (part no. 6.800.040.23) Ø 6.5 x 19.3 in the steel/steel version, strength classes: (shear 12500 N / tensile 8800 N) or (part no.: 6.800.174.23) Ø 6.4 x 12.5 in the steel/steel version, strength classes: (shear 10202 N / tensile force 6475 N).
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 VarioMaster

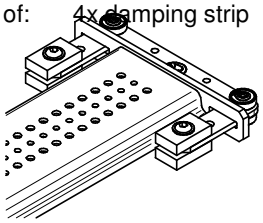
Hook the HESTAL VarioMaster into the roof rail and push into the allotted position on the vehicle frame.
Press the lock button, open the hand lever and, for the VarioMaster 902, mount the support foot into the collision protection profile or the single pivot shoe, and for the VarioMaster 903 into the vehicle frame.
Press the pillar body - and for the VarioMaster 903 also the mounting bracket - 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 opening the stanchion do not let it fall (rollers could be damaged).

6. Accessories

6.1 HESTAL Set dampers for telescopic elements 913.4 (drawing no.: 6.850.035.00)

Consisting of: 4x damping strip



2x Allen screw with rounded flange head M8 x 30
2x Treloc (self-locking) M8 hexagon nut
2x ISO 7092-8-200 HV washer

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, then in order to achieve effective corrosion protection a supplemental covering lacquer must 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 VarioMaster CS stanchion 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 must not combine any components other than the HESTAL components shown here.
- A function check of the VarioMaster system must be carried out via the following checklist.
- The HESTAL VarioMaster CS 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 must not combine any components other than the HESTAL components shown here.
- A function check of the VarioMaster system must be carried out via 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 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
- ☐ 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