

# Technical data

External venetian blinds



*Der SonnenLichtManager*

warema

Valid from 1 March 2017

Solflex AB försäljning och service västra Skåne. Showroom och rådgivning;  
Malmö Slussplan 1, 040-979745. Helsingborg Garnisonsg 12, 042-161635.  
kontakter@solflex.se [www.solflex.se](http://www.solflex.se)





## Technical data

### External venetian blinds

#### General information

##### Technical data, valid from 2017-03-01.

The publication of this document supersedes all previous corresponding documents.

Our general terms and conditions (GTC) can be viewed and downloaded on our homepage at <http://www.warema.com/gtc>.

We reserve the right to make changes in the interest of technical progress. Particular care was taken in producing the text and graphics in this documentation. In spite of this, we cannot accept liability for any existing (printing) errors, mistakes or the consequences thereof.

Our products are individual or made-to-measure items and therefore cannot be exchanged or returned.

##### Safety instructions

Please see detailed information in the technical data or in the installation and operating instructions.

##### Legal details

WAREMA International GmbH  
Nordring 2  
97828 Marktheidenfeld  
Germany

WAREMA and the WAREMA logo are registered trademarks of WAREMA Renkhoff SE. Any other labels or symbols contained herein are marks or registered trademarks of their respective owners.

© WAREMA Renkhoff SE





## General information 17

## Product characteristics 25

- Type overview
- Slat rotation
- Slat stack height

## Basic facade external venetian blinds 33

- Beaded slats
- Flat slats
- Dim-out external venetian blinds
- Self-supporting external venetian blinds
- T/M system cover panel

## Premium facade venetian blinds 75

- Metal system venetian blinds
- Wind-stable external venetian blinds
- Asymmetrical external venetian blinds

## Complete external venetian blinds 123

- Venetian blind window systems P/E
- Venetian blind window systems, shaft model
- Front-mounted external venetian blinds R6/R10
- Top-mounted external venetian blinds for new buildings NA-RA

## Light guidance/external venetian blinds 229

- Supplementary accessories for daylight utilisation
- Double curtain
- Daylight guiding venetian blinds
- External venetian blinds

## Guides 269

- Rail guidance
- Guide profiles
- Cable guidance

## Cover panels 297

- Cover panels
- Bracket
- Consoles

## Planning 333

- Bracket arrangement
- Tilting tape table

## Security systems/accessories 341

- Emergency retraction set
- Emergency power supply set
- Accessories

## Drives/control systems 355

General  
information

Product  
characteristics

Basic facade  
external venetian  
blinds

Premium facade  
venetian blinds

Complete external  
venetian blinds

Light guidance/  
external venetian  
blinds

Guides

Cover panels

Planning

Safety systems  
Accessories

Drives  
Control systems

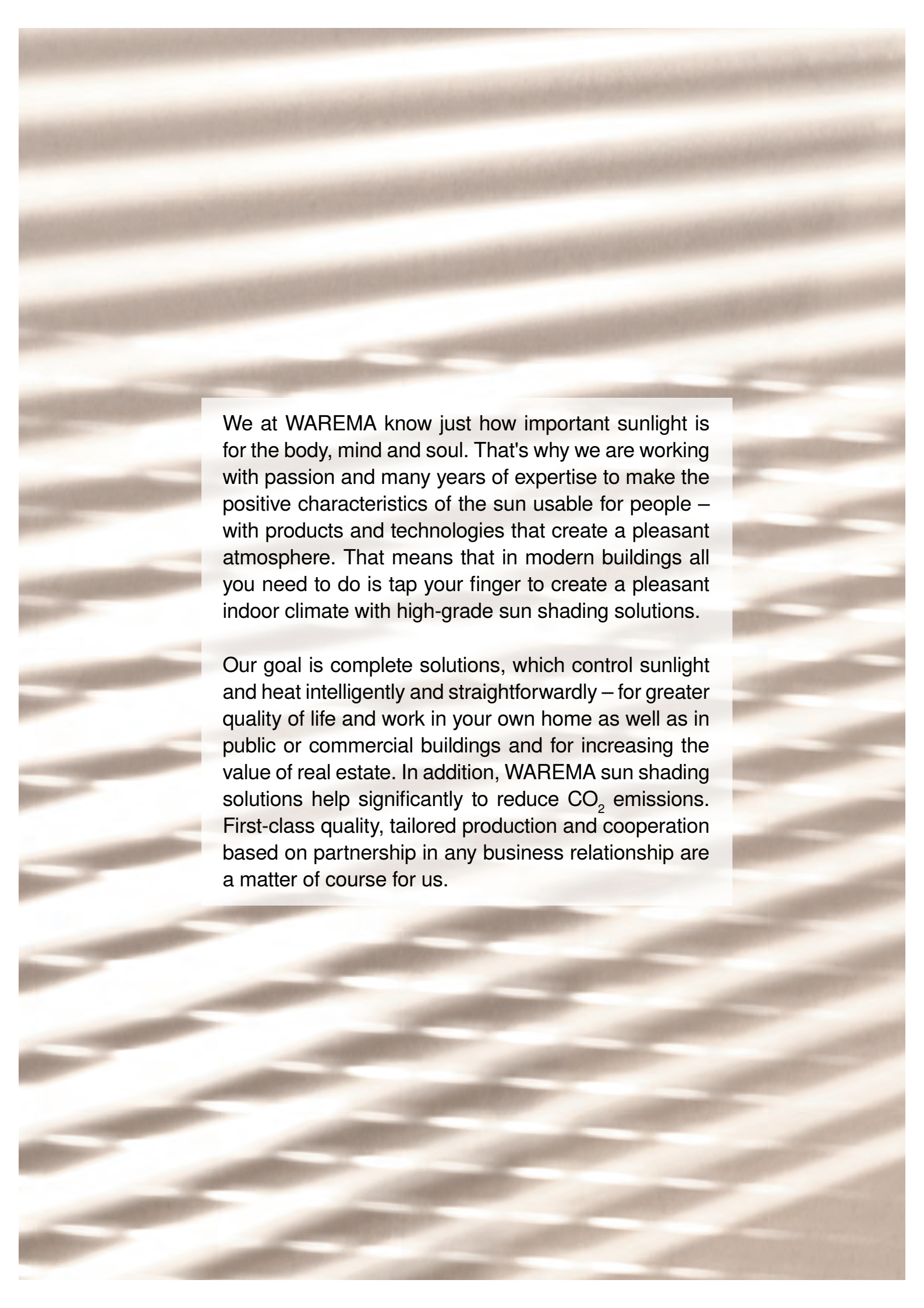


The sun can't be controlled,  
but it can be managed.



*Der SonnenLichtManager*






We at WAREMA know just how important sunlight is for the body, mind and soul. That's why we are working with passion and many years of expertise to make the positive characteristics of the sun usable for people – with products and technologies that create a pleasant atmosphere. That means that in modern buildings all you need to do is tap your finger to create a pleasant indoor climate with high-grade sun shading solutions.

Our goal is complete solutions, which control sunlight and heat intelligently and straightforwardly – for greater quality of life and work in your own home as well as in public or commercial buildings and for increasing the value of real estate. In addition, WAREMA sun shading solutions help significantly to reduce CO<sub>2</sub> emissions. First-class quality, tailored production and cooperation based on partnership in any business relationship are a matter of course for us.



Create an atmosphere.



Create unique contrasts and light scenarios, make the most of the daylight, save energy in a smart way: Anything is possible - with our innovative external venetian blinds. The slats individually adapt to the position of the sun when required and thus ensure comfortable lighting conditions and a perfect feel-good atmosphere in any room at any time of the day. A genuine advantage to quality of life and for maximum energy efficiency.



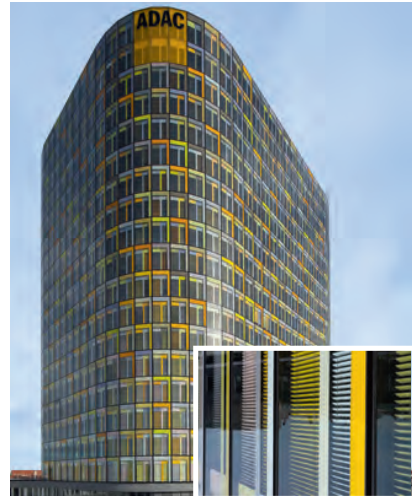


Capricorn, Mönchengladbach

## References

[www.warema.de/referenzen](http://www.warema.de/referenzen)

Whether for a commercial or a private property – we offer you optimum bespoke solutions for every requirement.



### ADAC Headquarters (Munich)

Perfectly integrated into the facade, the coloured external venetian blinds give the ADAC building a unique appearance.



### Net plus energy house

No longer a vision of the future: Buildings with holistic energy design and maximum comfort for the user - also thanks to our external venetian blinds.



### WAREMA Colour World

All indoor and outdoor aluminium parts are available in a variety of powder colours and with various surface qualities - for maximum freedom of design and the perfect harmonisation of all sun shading products.





## New products

### ProVisio external venetian blind

Feel comfortable with the new WAREMA ProVisio external venetian blinds in your own home. Thanks to the various slat angles, the ProVisio venetian blind provides an optimal outdoor view as well as a restricted view into the room. In addition to the perfect view out and optimum visual privacy, it also combines glare control and heat protection in one. This provides a safe atmosphere for the whole family. Convince yourself of the new WAREMA ProVisio external venetian blinds with its unique advantages.





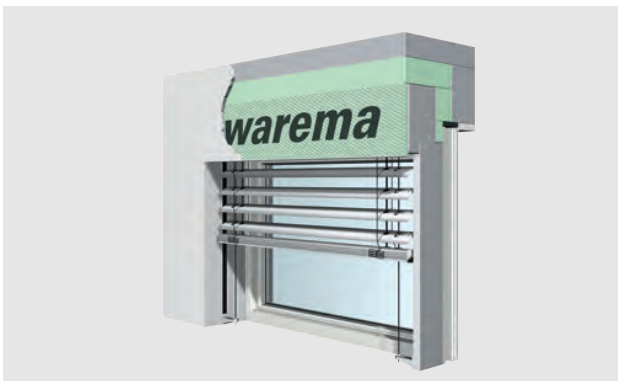
## The new premium slat

The new premium slat with the thickness of 1 mm stands for the highest quality in conjunction with very high stability. It can withstand extreme wind forces and is therefore considerably stronger than a wind-stable external venetian blind. What's more, the new slat also scores highly with regard to its appearance. Thanks to its 1 mm thickness, the premium slat is particularly high quality, refined and modern. It also combines stability and a very good view out thanks to its flat slat geometry.



## Clip-in guide profiles also now available for the battery-operated emergency retraction set

From now on, the clip-in WAREMA guide profiles can also be fitted in conjunction with the battery-operated emergency retraction set. In order to prevent the plastic clip profile from moving as a result of raising quickly, the profile is fixed by the guide profile end cap. With this adaptation WAREMA is implementing market requirements in targeted manner and is therefore upgrading the product variants for the WAREMA battery-operated emergency retraction set.



## The venetian blind window system will be wind-stable

You can now benefit from external venetian blinds with a wind-stable design even in the single family home range. In particular, the WAREMA venetian blind window system is now suitable for locations exposed to wind and can therefore be used for longer periods even during very strong winds.

Comfort and wind stability are united for you own home.



## External venetian blinds are further improved! 2 component bearing – standard

We require quiet, standard external venetian blinds. This was underlined with the noise-optimised brackets.

In order for WAREMA external venetian blinds to become quieter and to further reduce the wear of the plastic components, WAREMA is introducing a 2-component bearing as a standard.

Your advantage: Quality that cannot be heard!

### Note:

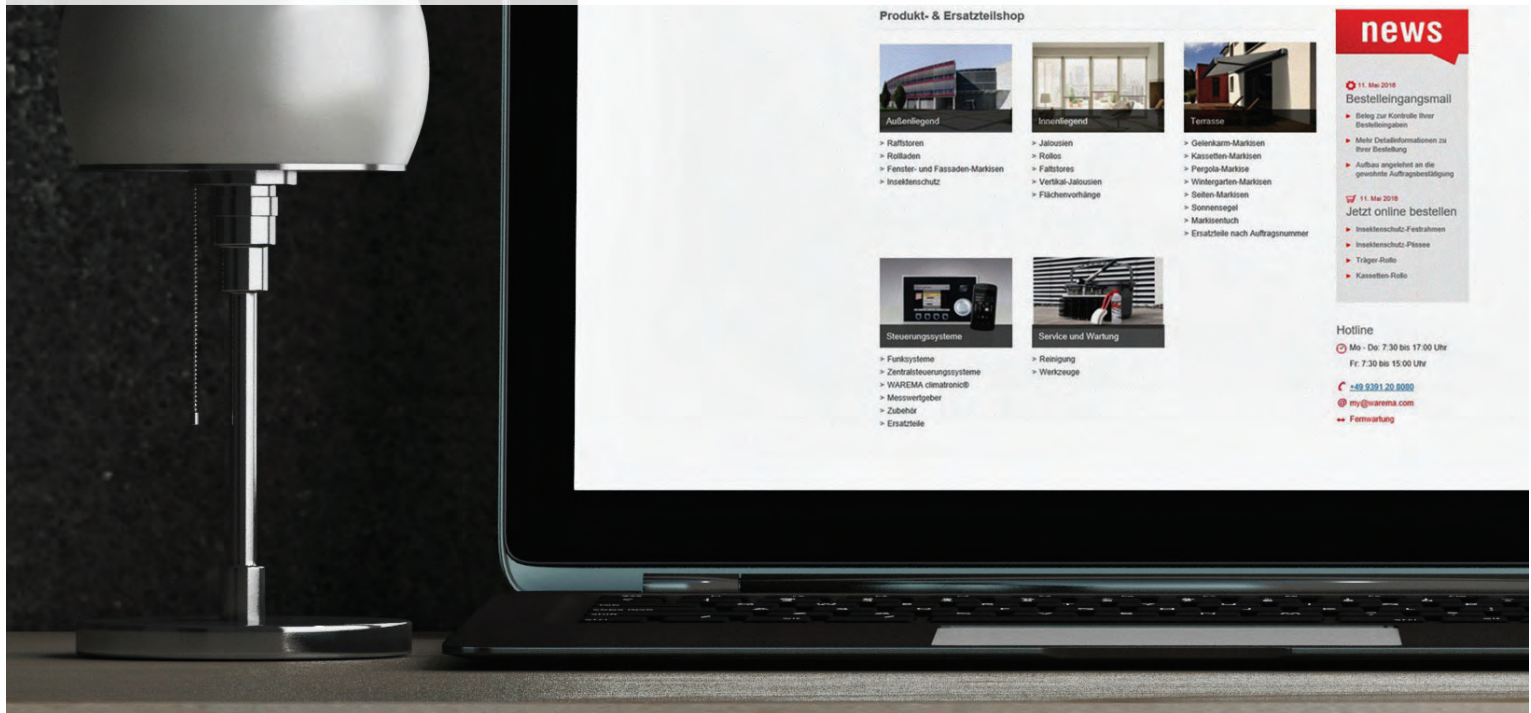
More information on new products will follow shortly.



myWAREMA

# One platform. Everything at a glance.

Work easily and efficiently.

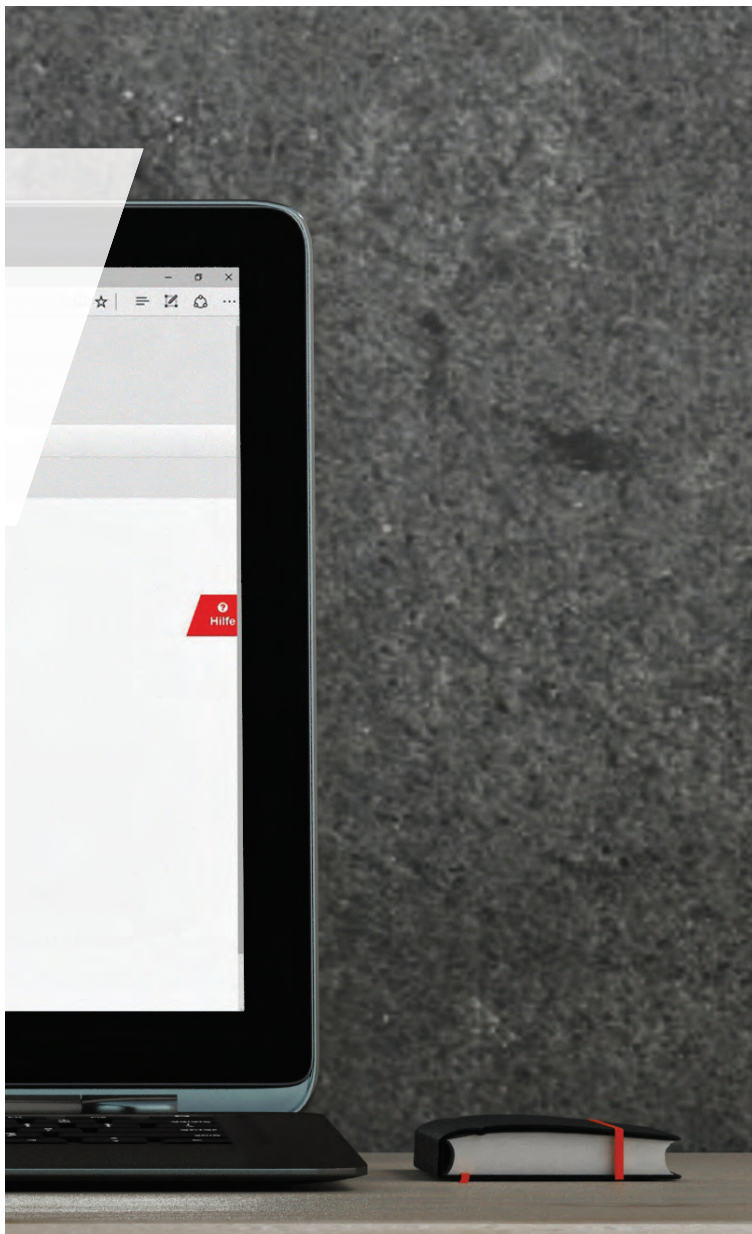


With the innovative online platform myWAREMA, your cooperation with WAREMA will now be even more convenient and efficient. For example, place orders and make calculations for quotations easier than ever before. Save valuable time for day-to-day business and with that time, cash. Register now!



“Handling orders via myWAREMA saves an enormous amount of time and thanks to the plausibility check, no more mistakes can happen. Managing the access of our users is designed very simply and comprehensibly so that we can allocate different levels of authorisation in the company.”

Andreas Kreiling,  
Peter Vieweg Sonnen- und Wetterschutz GmbH



## What does myWAREMA offer?



- Save time when calculating offers
- Place orders securely
- Conveniently manage account details
- Access all information centrally
- Available in English, German and French



### Easier

Generate individual customer quotations and make calculations or orders based on your own conditions.



### More comfortable

Forget laboriously searching for and ordering products using catalogues. You'll find everything you need in myWAREMA.



### Faster

Make the product configuration with a few mouse clicks and take advantage of the significantly faster order processes.



### More reliable

Enjoy greater reliability with your orders from the automatic plausibility check. If you have any questions, our myWAREMA hotline [my@warema.com](mailto:my@warema.com) is there for you.



### More direct

Get a direct view of all quotation, commission and company data in the account management.

**Not registered yet? Sign  
up now at [myWAREMA.com](https://mywarema.com)**



## Colours



### Colours for powder-coated aluminium parts

The entire range of the RAL CLASSIC colour chart (excluding camouflage and luminous colours) is available for powder-coated aluminium parts as well as six DB colours and additional colours in accordance with WAREMA Colour World.

You can also choose anodised effect colours as well as eight textured colours with a textured coating with metallic optics in accordance with WAREMA colour specification. Besides the elegant appearance of the textured colours, these colours have an additional benefit: the fine pore structure of the surface allows water to pearl off easily together with particles of dirt.

Of course aluminium parts can be coated in special colour shades, deviating from the WAREMA colour specification, at a surcharge.

There are no limits to colour accents and adjustment of colour to the building!

The exceptional coating quality ensures longevity – independently tested by the Quality Association for the Coating of Building Materials (GSB). The surface coating with a chrome-free pretreatment complies with the GSB-AL 631 directive.



### WAREMA Colour World

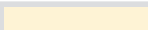






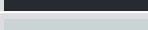




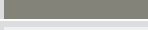
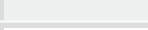







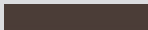

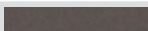




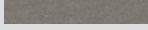
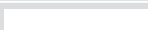
The WAREMA Colour World provides information about the colours and relevant colour specification you will receive when you order a product from WAREMA, to enable comparison with the colours used on site. You will receive the WAREMA Colour World brochure via our advertising service with the art. no. 879528.



## Slat colours

### External venetian blinds

#### Overview of standard slat colours – external venetian blinds

Colours			Price category	External venetian blind slats				
				80 S/ 80 AF	73/90/93	60 S/ 60 AF	100 AF	50 AF/ 150 AF
RAL 1015	Light ivory		1	●	●			
RAL 1019	Grey beige		2	●	●			
RAL 1036	Pearl gold		2	●	●			
RAL 3004	Purple red		1	●	●			
RAL 5011	Steel blue		1	●	●			
RAL 6009	Fir green		1	●	●			
RAL 7016	Anthracite grey		1	●	●	●		
RAL 7035	Light grey		1	●	●	●		
RAL 7038	Agate grey		1	●	●	●		
RAL 8014	Sepia brown		1	●	●			
RAL 9006	White aluminium		1	●	●	●	●	●
RAL 9007	Grey aluminium		1	●	●	●	●	●
RAL 9010	Pure white		1	●	●			
RAL 9016	Traffic white		1	●	●	●	●	
DB 502	Blue iron mica effect		2	●	●			
DB 603	Green iron mica effect		2	●	●			
DB 702	Grey iron mica effect		2	●	●			
DB 703	Anthracite iron mica effect		1	●	●	●		
W 3005	Wine red pearl glimmer		2	●	●			
W 4800	Light beige		2	●	●			
W 4919	Earth brown iron mica effect		2	●	●			
W 4922	Cappuccino		2	●	●			
W 7329	Dark bronze		1	●	●			
W 8000	Selective slat <sup>1)</sup>		3	●	●			
W 8100	Mill finish II <sup>1)</sup>		3	●	●			
W 8780	Light bronze		1	●	●			
<b>External venetian blind slats with EasyClean coating</b>								
RAL 9006 EasyClean <sup>2)</sup>	White aluminium, matt		3	●	●			
RAL 9007 EasyClean <sup>2)</sup>	Grey aluminium, matt		3	●	●			
RAL 9016 EasyClean <sup>2)</sup>	Traffic white, matt		3	●	●			
DB 703 EasyClean <sup>2)</sup>	Anthracite iron mica effect, matt		3	●	●			

<sup>1)</sup> Slat bottom side RAL 9006.

<sup>2)</sup> Top side of slats with EasyClean coating is matt, similar to the specified colour number

Colour deviations are due to printing technology!

Special slat colours on request.

Self-cleaning and air-cleaning function for slats with EasyClean coating due to titanium oxide coating on the top side of slats in connection with solar radiation and humidity.







Due to the different manufacturing processes, colour differences between the slats and powder-coated aluminium parts cannot be avoided.



## Slat colours

### External venetian blinds

#### Overview of slat colours – external venetian blinds

Colours			Standard colours for powder-coated aluminium parts
RAL 9007		Grey aluminium	RAL 9007
RAL 7016		Anthracite grey	RAL 7016
W3047		Snow white	RAL 9016
W3048		White	RAL 9016
W3049		Light grey	RAL 9002
W3064		Opal	RAL 1013
W3070		Dark beige	RAL 8014
W3073		Natural	RAL 9006
W3169		Agate grey	RAL 7038
W3240		Light grey	RAL 7035

*Colour deviations are due to printing technology!*

Colour selection for the following venetian blind types:

C 50 A1/A2

E 50 A1/A2

K 50 A1

Q 50 A1S

Due to the different manufacturing processes, colour differences between the slats and powder-coated aluminium parts cannot be avoided.



Notes

Drives Control systems	Safety systems Accessories	Planning	Cover panels	Guides	Light guidance/ external venetian blinds	Complete external venetian blinds	Premium facade venetian blinds	Basic facade external venetian blinds	Product characteristics	General information
---------------------------	-------------------------------	----------	--------------	--------	--	--------------------------------------	-----------------------------------	---	----------------------------	------------------------



## Service and quality



### CE mark

Motorised external and internal sun shading systems are subject to the Machinery Directive 2006/42/EC. An EC Declaration of Conformity is available for these products.

External sun shading systems, regardless of the type of drive, are subject to the Construction Products Regulation 305/2011/EC. Declarations of performance are available for these products for the mandated property: wind resistance when extended.

All products subject to the Machinery Directive and/or the Construction Products Regulation have a CE label.



Manually operated internal sun shading systems are not subject to any of these two directives or regulations and therefore must not be marked with a CE label.

External or internal sun shading systems correspond to the appropriate standard that regulates the details thereof: DIN EN 13659, DIN EN 13561 or DIN EN 13120.

### Durability

All WAREMA products are designed to be especially durable. All WAREMA products fulfil the durability classes 2 and/ or 3 of the standard, tested according to DIN EN 14201. Without exception, all WAREMA external venetian blinds fulfil the highest durability class (3) according to DIN EN 13659, with 10000 movements and a total of 20000 slat turns.

Assuming two movement cycles per day, this is equivalent to a minimum expected durability of approximately 15 years.

### Quality has a name



Every original WAREMA external venetian blind is clearly but elegantly and unobtrusively marked with a logo embossing on one of the lower slats.

This makes original WAREMA quality immediately and unmistakably visible.



Contents

Building physics ..... 18

Protection against summer heat with external venetian blinds ..... 19

Requirements for daylight systems ..... 20

General information
Product characteristics
Basic facade external venetian blinds
Premium facade venetian blinds
Complete external venetian blinds
Light guidance/ external venetian blinds
Guides
Cover panels
Planning
Safety systems Accessories
Drives Control systems

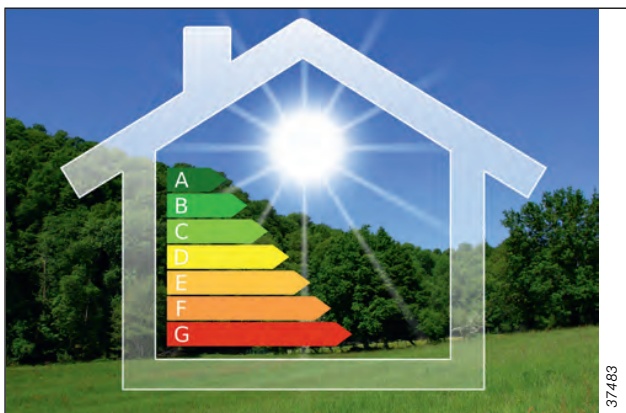


fig. 1: Energy savings

These days, effective protection against summer heat is absolutely essential. Sun shading systems can do a lot to reduce cooling loads and energy requirements in summer and winter.

An effective sun shading system also provides greatly improved thermal and visual comfort.

The calculation of the value for the protection against summer heat includes the total solar energy transmittance  $g_{tot}$  for the combination of sun shading system and glazing or the shading factor  $F_c$ .

### Services we provide for you:

- Individual construction physics advice
- Calculation of the  $g_{tot}$  and  $F_c$  value
- Calculation of the colour rendering index  $R_a$  for sun shading system and glazing combinations
- Radiation physics data for WAREMA products (transmittance, reflectance and absorptance)
- Assistance with data for thermal simulations, sound insulation, thermal bridge calculations, and thermal protection in summer and winter
- Advising on sustainability certification such as DGNB, BNB or LEED

### Building Physics and Sustainable Building hotline

Tel.: +49 9391 20-3025

E-mail: [bauphysik@warema.de](mailto:bauphysik@warema.de)

[www.warema.de/bauphysik](http://www.warema.de/bauphysik)



Effective protection against summer heat is an indispensable element in today's building architecture. A highly insulated outer facade, which effectively protects from heat loss in winter, will also keep the heat coming in through the glazing in summer. This can quickly lead to overheated rooms.

The most effective preventive measure are externally mounted venetian blinds. When closed, external venetian blinds remove over 90% of radiation in front of the glazing and therefore prevent the rooms from overheating.

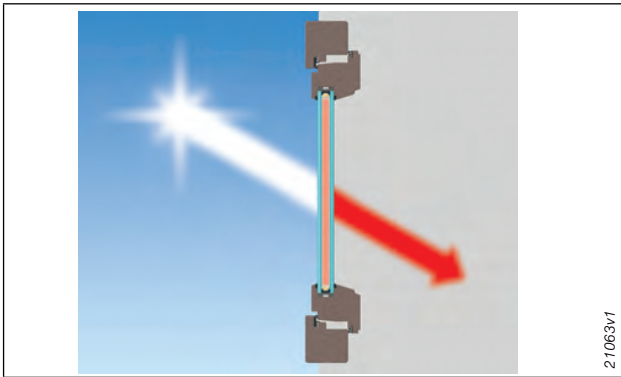


fig. 2: Heating up of rooms without sun shading system

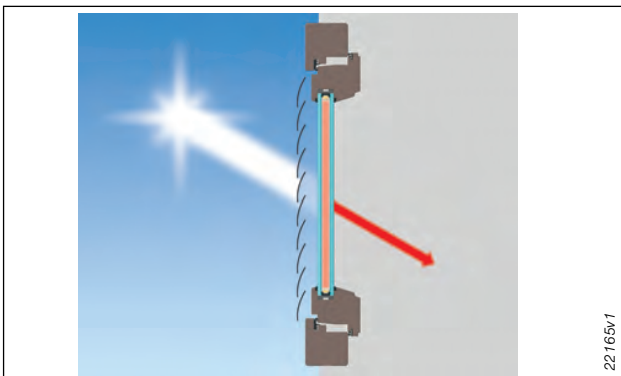


fig. 3: Reducing the overheating of rooms with external venetian blinds

## Definition of the $F_c$ value

For calculating the "Proof of protection against summer heat" according to DIN 4108-2, table 8 gives guide values for the so-called shading factor  $F_c$  for different sun shading systems. These values depend on the glazing and are calculated to be on the safe side for external venetian blinds.

## Influence of glazing

DIN EN 13363 "Sun shading installation in combination with glazing – calculating solar radiation and light transmittance" describes a more exact procedure for the calculation. Depending on the glazing, which in the calculation is defined with the heat transmission coefficient of the glazing ( $U_g$  in  $W/m^2K$ ) and the energy transmittance (g value), exact calculation of the total solar energy transmittance ( $g_{tot}$ ) can be carried out using this procedure. Afterwards, the shading

factor  $F_c$  of the sun shading system in combination with the glazing is determined:

$$F_c = g_{tot}/g$$

Generally external venetian blinds are combined with heat protection glazings (double glazing and triple glazing). This combination offers the advantage that the rooms remain comfortably cool in summer and that the best possible use can be made of the heat energy gains in winter.

## Effects of the slat colour

The colour of the external venetian blinds has a great influence on the results. This is due to great differences in the reflectance of the slats. The reflectance of a white slat is between  $70\% \leq \tau_e \leq 82\%$ , that of a dark to black slat between  $15\% \leq \tau_e \leq 27\%$ .

For completely closed external venetian blinds the reflectance is of little effect, the white blinds prove to be slightly more effective. When the slats are opened, white external venetian blinds reflect decidedly more light and therefore also more energy into the room. When opened, black external venetian blinds are better for protection against summer heat, while at the same reducing the incidence of light, though. A good compromise between protection against summer heat and daylight incidence lies with colours with a reflectance of about 50%.

## Requirements for daylight systems

### Daylight guiding venetian blinds

The main function of a daylight system is to transport daylight from outside or near the window into the building to illuminate the rooms without artificial lighting for as long as possible.

When designing the ergonomic illumination of workstations, particularly of computer workstations, it is indispensable to guarantee – in addition to the daylight utilisation – thermal and visual comfort in the corresponding rooms as well.

Daylight systems for use in vertical facade openings (windows, double skin facades, casement windows, etc.) must therefore be able to provide the following functions:

- Controllable daylight utilisation
- Glare control for computer workstations
- Visual contact to the outside
- Summer heat protection



fig. 4: Principle of light guidance using daylight guiding venetian blinds

WAREMA daylight guiding venetian blinds are daylight systems which meet all these requirements.

#### Controllable daylight utilisation

The mechanical design of WAREMA daylight guiding venetian blinds is similar to the classic venetian blind except for the slats.

These consist of mirror finish anodised aluminium, their surface provides a total reflection coefficient through a special treatment of up to 93%, depending on the type.

The geometry of these slats as well as the distance from slat to slat is specifically designed for best possible daylight transport.

The light hitting one slat is reflected, ensuring that the slat directly above it is not touched by the light.

This ensures that all light hitting the blind is used for illumination of the rooms.

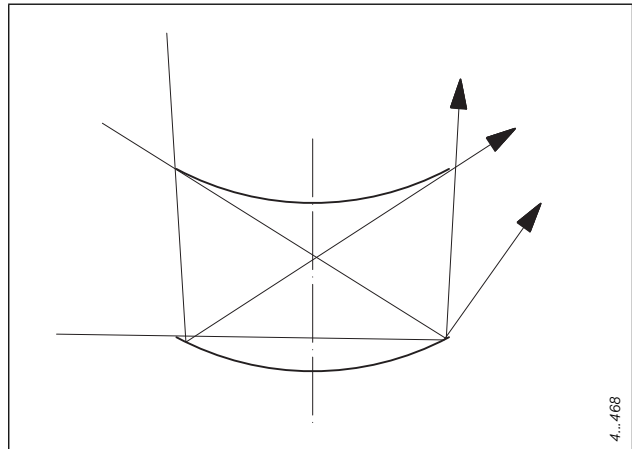


fig. 5: Reflection of the horizontal and vertical limit ray

The intensity of the diffuse daylight is at its peak at the zenith (100%) and decreases towards the horizon (30%). The zenith light arriving at a steep angle on vertically arranged building openings, however, does not reach into the back of the room. It only produces very high luminance near the windows whereas the room depth is insufficiently illuminated by the far less intensive horizontal light rays. It is therefore useful to deflect the intensive radiation from the zenith and use it for the illumination of the back of the room. Only light coming in at a low angle should be used for illumination of the areas close to the windows.



## Requirements for daylight systems

### Daylight guiding venetian blinds

#### 30° geometry

This requirement is met by the so-called 30° geometry of the WAREMA daylight guiding venetian blinds.

Connecting the right and the left outer edge of two slats positioned one on top of the other produces a straight line which is inclined by 30 degrees from horizontal. This explains the term 30° geometry.

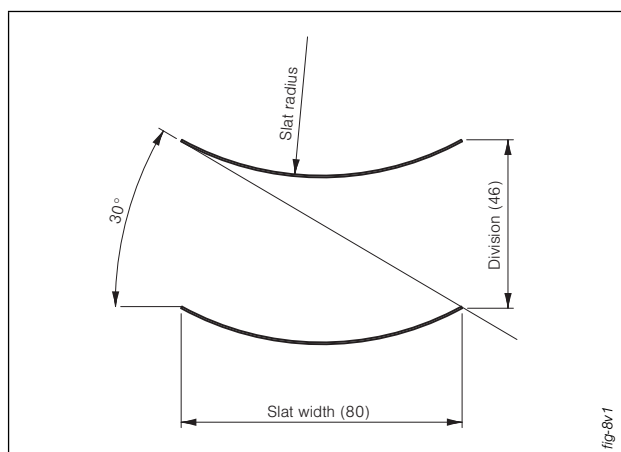


fig. 6: Geometry of the 30° light guiding slats

This means in practice that all rays hitting the blind at an angle of  $\geq 30^\circ$  are deflected and transported via the room ceiling into the back of the room.

Radiation arriving at a lower angle is partially deflected and partially allowed to enter the room.

Only the light arriving at a very low angle with low intensity is allowed to enter without deflection and thus provides visual contact to the outside by illuminating the areas near the windows without glare.

#### Glare control for computer workstations

With direct solar radiation, it is indispensable particularly at computer workstations to reduce the incoming amount of light without obscuring the room too much.

WAREMA daylight guiding venetian blinds optimised for use with computer screens (TLT) are the perfect solution.

For these models the venetian blind is divided into two sections, i.e. the light control section and the glare protection section.

When being lowered, both curtain sections of the blind are closed.

When the slats tilt, the upper section opens first. The lower section remains closed.

In this position, best possible glare control in the field of view is achieved. Daylight is guided into the room through the upper section.

Tilting the slats further opens the lower curtain section (useful with cloudy skies) and closes the upper curtain section to the inside.

With the convenient double curtain venetian blinds, independent tilting of the two slat sections is possible, since every section is operated by a separate motor.

Basically, the system works as if two venetian blinds were mounted one on top of the other.



fig. 7: Principle of daylight guiding venetian blinds optimised for use with computer screens

## Requirements for daylight systems

### Daylight guiding venetian blinds

#### Visual contact to the outside

Special perforations allow visual contact to the outside even with closed slats, i.e. activated glare control.

The diameter of the openings and distance between them is designed to make it impossible for the human eye to recognise the perforation, even from close up.

The slats then appear to be transparent. Depending on the perforation type, they have a transmission coefficient of 8.16% or 27.9%.

Special perforation types available on enquiry.

Combined with the 30° geometry, the **unilateral perforation** is particularly efficient.

With this perforation type, only the rear section of the slat towards the room is perforated.

The non-perforated front slat section can selectively reflect direct sun rays and thus avoid direct glare from the sun. Visual contact to the outside remains intact due to the rear perforated slat section.

When the slats are completely closed, each non-perforated slat section covers the perforated section of the slat below almost completely, ensuring perfect glare control even with horizontal sunlight.

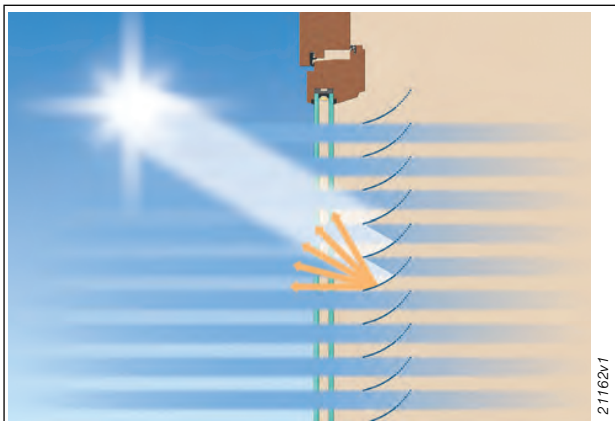


fig. 8: Working principle of slat with unilateral perforation

#### Heat protection

Especially during the summer months daylight systems bear the risk of too much light (radiation) being transported into the room. This radiation is absorbed and transformed into long-wave infrared radiation which heats up the room excessively (greenhouse effect).

With WAREMA daylight guiding venetian blinds the user can adjust the transmission coefficient (incidence of light) to his individual demands by simply changing the slat angle.

Since the mirror finished slats do not absorb but reflect radiation, any unwanted radiation will pass through the window pane without heating up the room.

This means that slat adjustment cannot only be used to change the transmittance, but also to set the total solar energy transmittance ( $g_t$ ) of the daylight system and the glazing.

The available setting range extends from the  $g$  value of the glazing (venetian blind raised) to the venetian blind being completely closed.

Since the maximum possible  $g$  value especially for internal systems to a high degree depends on the glazing, we will not make any statement in this technical documentation on possible  $g$  values or  $F_c$  values.

We will be happy to provide you with an estimation of the possible  $g$  value in accordance with DIN EN 13363-1 for a defined installation situation.

In this case, we would require the following information:

- Installation situation
- $g$  value of glazing
- $U_g$  value of glazing
- Type of venetian blind



## Requirements for daylight systems

### Light control slats/Daylight guiding venetian blinds Genius

#### Special slats with Genius profile

Unlike classic slats, this slat profile allows for

- optimisation of sun shading with simultaneous daylight utilisation
- very high reflection of direct sun light even when the slats are wide open
- good heat protection
- wide slat opening angle over a long part of the day and thus less slat movements for slat tracking and smooth control behaviour
- provision of indirect daylight
- good view out
- transport of the diffuse daylight into the room via the ceiling
- improved computer workstation ergonomics
- good dim-out effect when the blind is lowered

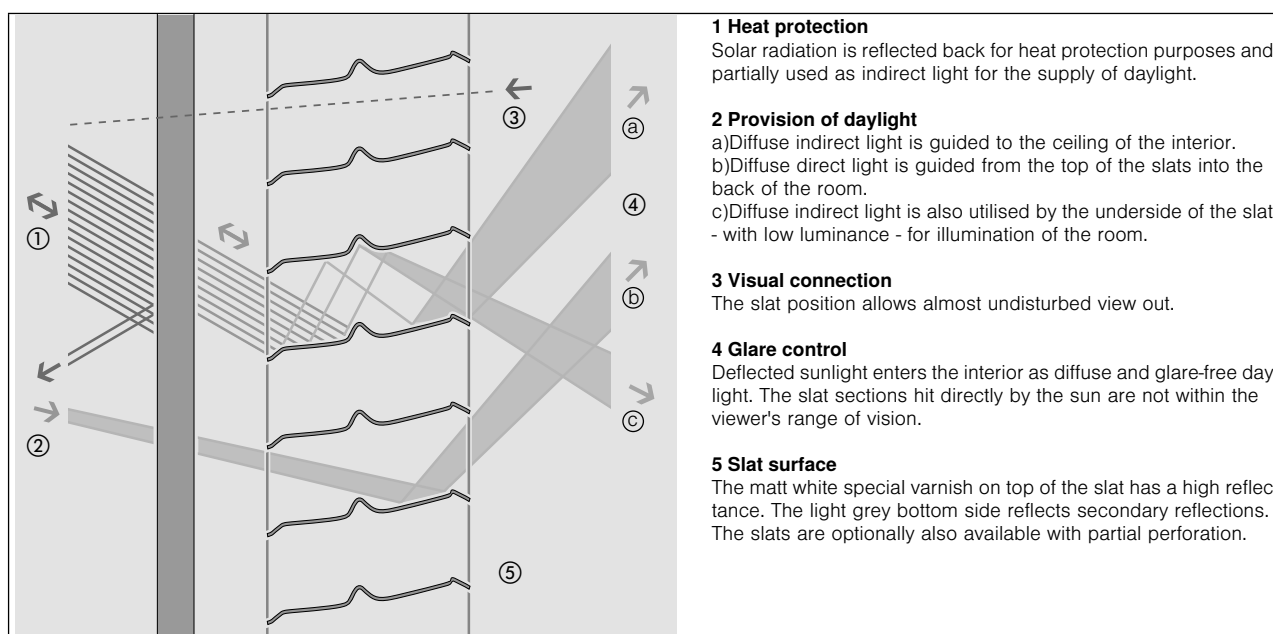


fig. 9: Schematic illustration of the basic functions

## Requirements for daylight systems

### Daylight guiding venetian blinds Genius

#### Comparative test under practical conditions

Comparative measurements carried out by the Fraunhofer Institute with conventional internal sun shading systems demonstrate the positive building physics characteristics of the Genius slat.

- Constantly good  $g$  value
- The angle of the horizontally adjusted slat requires adjusting in order to maintain good heat protection only for sunlight coming in at an angle below  $40^\circ$
- High local luminance values (peaks) are prevented due to the diffusely reflecting surface

The study refers to a representative office example

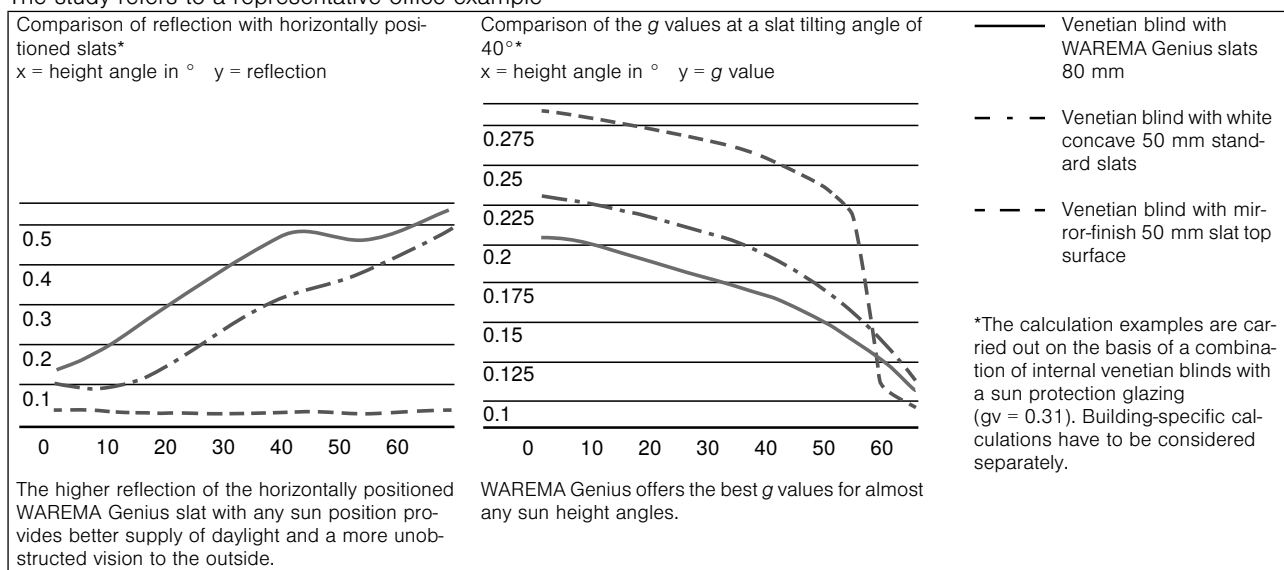


fig. 10: Comparative measurement reflection and  $g$  value with different slats

#### Recommended field of application

The 50 mm or 80 mm wide slats are suitable for

- indoors
- in double skin facades
- in casement windows

The control behaviour is supported by a central electrical control, motors featuring an incremental encoder or SMI motors.

#### Long-term safety concerning legal requirements

With regard to the EU framework guidelines and the corresponding national VDU guideline as well as to the work place and energy saving regulations (EnEV), WAREMA Genius supports compliance with legal requirements for new and modernised office buildings.

We will be happy to provide you with an estimation of the possible  $g$  value in accordance with DIN EN 13363-1 for a defined installation situation.



Contents

Product characteristics

Type key ..... 26

Type overview ..... 28

Slat tilting ..... 30

Slat stack heights ..... 31

General information
Product characteristics
Basic facade external venetian blinds
Premium facade venetian blinds
Complete external venetian blinds
Light guidance/ external venetian blinds
Guides
Cover panels
Planning
Safety systems Accessories
Drives Control systems

## Type key

### External venetian blinds

#### Example for external venetian blinds

E 80 A 6 S VM

S = new slat geometry with optimised slat stack height with beaded slats  
 TG = Slat cutouts 80 S beaded edges (deep drawn)  
 A6 = Flat slats with rail guidance (only to be used with feature AF)  
 ST = Slowturn  
 VM = Vivamatic®  
 AS = Work setting  
 Wind-stable = Wind-stable external venetian blind for higher wind speeds (only for use with slat width 80 or 93 mm)  
 TLT = Daylight transport element  
 ANR = Battery-operated emergency retraction set  
 ANS = Battery-operated emergency power supply set  
 D = Double curtain external venetian blind (with two independently tilting blind sections)

F = Flat slats with cable guidance, polyamide-sheathed steel wire cord Ø3.3 mm  
 2 = Cable guidance with polyamide-sheathed steel wire cord Ø3.3 mm  
 6 = Rail guidance  
 8 = Rail guidance with integrated chain for lifting

A = External installation (or type of lateral guidance)

50 = 50 mm slat width  
 60 = 60 mm slat width  
 80 = 80 mm slat width  
 100 = 100 mm slat width  
 150 = 150 mm slat width  
 73 = 73 mm slat width  
 90 = 93 mm slat width  
 93 = 93 mm slat width

C = Crank drive  
 E = Motor drive



## Type key

## External venetian blinds/Daylight guiding venetian blinds

### Example for daylight guiding venetian blinds

E	80	L	D	ST
ST = Slowturn				
D = Daylight guiding venetian blinds, double curtain (with two independently tilting blind sections)				
L = Daylight guiding venetian blinds Genius = Daylight guiding venetian blinds with special slats (only with 50/80 mm slats)				
50 = 50 mm slat width 60 = 60 mm slat width 80 = 80 mm slat width				
C = Crank drive (top rail 59x51 mm) E = Motor drive (top rail 59x51 mm)				

### Example for external venetian blinds

Q	50	A	1	S
S = Frontal cord outlet				
1 = Cable guidance with polyamide-sheathed steel wire cord Ø2.3 mm 2 = Cable guidance with polyamide-sheathed steel wire cord Ø3.3 mm				
A = External installation (or type of lateral guidance)				
50 = 50 mm slat width				
Q = Endless cord (top rail 40x36 mm) K = Crank drive (top rail 40x36 mm) C = Crank drive (top rail 59x51 mm) E = Motor drive (top rail 59x51 mm)				

## Type overview

### External venetian blinds/External venetian blinds/Daylight guiding venetian blinds

For order data, products are generally viewed "from the inside".

Types	Construction limit values in mm <sup>1)</sup>								Average weight in kg/m <sup>2 2)</sup>	Operation
	Individual units				Group unit					
	Width <sup>3)</sup>		Height	Area <sup>4)</sup> in m <sup>2</sup>	Width max.	Area <sup>4)</sup> in m <sup>2</sup>	left/right of driving curtain max. coupl. each side			
							Area in m <sup>2</sup>	Number of curtains		
	min. <sup>5)</sup>	max.								
External venetian blinds, beaded slats with cable and rail guidance										
C 60/80 A2 S	450	5000 <sup>6)</sup>	4000	12	12000	12	12	2	2.7/2.8	Crank
E 60/80 A2 S	600	5000 <sup>6)</sup>	4000	20	12000	26–30	13		3.0/3.1	Motor
C 60/80 A6 S	450	5000	5000	12	12000	12	12	2	2.7/2.8	Crank
E 60/80 A6 S	600	5000	5000	25	12000	26–30	13	2	3.0/3.1	Motor
E 80 A2/A6 S D	900	4000 <sup>6)</sup>	3800	15	12000	17–22	13	1	3.7	Motor
External venetian blinds, flat slats with cable guidance										
C 50/60/80/100 AF	450	5000 <sup>6)</sup>	4000	13	12000	13	13	2	2.3 – 2.5	Crank
E 50/60/80/100 AF	600	5000 <sup>6)</sup>	4000	20	12000	32–35		2	2.5 – 2.7	Motor
E 150 AF	600	5000 <sup>6)</sup>	4000	20	12000	24–26	13	2	2.9	Motor
E 80 AF D	900	4000 <sup>6)</sup>	3800	15	12000	17–25		1	3.5	Motor
External venetian blinds, flat slats with rail guidance										
C 60/80/100 AF A6	450	5000 <sup>7)</sup>	4000	13	12000	13	13	2	2.3 – 2.5	Crank
E 60/80/100 AF A6	600	5000 <sup>7)</sup>	4000	20	12000	32–35		2	2.5 – 2.7	Motor
External venetian blinds, dim-out slats with rail guidance										
C 73/90/93 A6	450	4500	4300	10	12000	10	10	2	2.9	Crank
E 73/90/93 A6	600	4500	4300	15	12000	23–24	13	2	3.2	Motor
External venetian blinds, dim-out slats with rail guidance										
C 73/90/93 A2	450	4500	4000	10	12000	10	10	2	2.9	Crank
E 73/90/93 A2	600	4500	4000	15	12000	23–24	13	2	3.2	Motor
Metal system venetian blinds										
C 90/93 A8	750	4000	4300	8	12000	8	8	1	3.5	Crank
E 90/93 A8	750	4000	4300	10	12000	16	10	1	3.5	Motor
Wind-stable external venetian blinds with rail guidance										
E 80 A6 S wind-stable	600	3000 <sup>8)</sup>	3600	7	9000	20	7	1	4.0	Motor
E 93 A6 wind-stable	600	3000 <sup>9)</sup>	3600	8	9000	20	8	1	4.2	Motor
Self-supporting external venetian blinds										
E 80 A6 S	600	4000	5000	13	12000	26–30	13	1	3.1	Motor
E 80 AF A6	600	4000 <sup>10)</sup>	4000	13	12000	32–35		1	2.7	Motor
E 90/93 A6	600	4000	4300	13	12000	24–25		1	3.2	Motor
External venetian blinds with cable guidance										
C 50 A1	450	5000 <sup>6)</sup>	4000	20	12000	30	20	2	2.3	Crank
E 50 A1	600	5000 <sup>6)</sup>	4000	20	12000	36–39	20	2	2.5	Motor
K 50 A1	400	4000 <sup>6)</sup>	3000	7	–	–	–	–	2.0	Crank
Q 50 A1 S	400	4000 <sup>6)</sup>	2800	6	–	–	–	–	2.0	Cord

<sup>1)</sup> Construction limit values for solar drive see Page 366

<sup>2)</sup> Cable force: 350 N per tension cable.

<sup>3)</sup> Width dimension = slat size, slat size + 65 mm = back edge of the guide rail for guide rail types 1 and 2

<sup>4)</sup> The maximum areas indicated depend on the height; see "Height-to-width ratio of external venetian blinds" on page 392

<sup>5)</sup> Asymmetrical running of slats cannot be prevented for small widths. (Please pay attention to the external venetian blind guideline ITRS Industrieverband Technische Textilien – Rollläden – Sonnenschutz e.V.)

<sup>6)</sup> Additional tension cables are required for slat sizes exceeding 3001 mm.

<sup>7)</sup> Additional tension cables are required for slat sizes exceeding 2401 mm.

<sup>8)</sup> Additional tension cables are required for slat sizes exceeding 1301 mm.

<sup>9)</sup> Additional tension cables are required for slat sizes exceeding 1501 mm.

<sup>10)</sup> Additional cable guidances are required for slat sizes exceeding 2400 mm. Standard cover panel depth is 150 mm.

#### Notes:

- Any other dimensions are subject to individual clarification with WAREMA! For external venetian blinds with equipment variant slowturn (ST) or work setting (AS), the construction limit values of the corresponding basic type should be assumed.
- For coupled curtains and the equipment variant vivamatic® (VM), the maximum curtain area per individual unit of 10 m<sup>2</sup> must be observed.
- In this case, up to 3 curtains can be designed as a group unit using one drive.

For external venetian blinds with dim-out slats, the combined AS + TLT equipment variant is not possible.



## Type overview

### External venetian blinds/Daylight guiding venetian blinds

For order data, products are generally viewed "from the inside".

Types	Construction limit values in mm <sup>1)</sup>								Average weight in kg/m <sup>2 2)</sup>	Operation
	Individual units				Group unit					
	Width <sup>3)</sup>		Height	Area <sup>4)</sup> in m <sup>2</sup>	Width max.	Area <sup>4)</sup> in m <sup>2</sup>	left/right of driving curtain max. coupl. each side			
	min. <sup>5)</sup>	max.					Area in m <sup>2</sup>	Number of curtains		
Daylight guiding venetian blinds										
C 50 L	450	3000	3000	9	9000	20	9	1	2.3	Crank
E 50 L	600	3000	3000	9	9000	27	9	1	2.6	Motor
C 60/80 L	450	3000	3000	8	9000	8	8	1	3.9	Crank
E 60/80 L	600	3000	3000	9	9000	19	9	1	4.2	Motor
C 50 Genius	450	4000	3000	12	12000	17	12	1	2.5	Crank
E 50 Genius	600	4000	3000	12	12000	36	12	1	3.0	Motor
C 80 Genius	450	3600	3000	10	10800	10	10	1	3.5	Crank
E 80 Genius	600	3600	3000	11	10800	22	11	1	4.1	Motor
E 80 LD	900	3000	3000	9	9000	13.5	9	1	4.8	Motor

<sup>1)</sup> Construction limit values for solar drive see Page 366

<sup>2)</sup> Cable force: 350 N per tension cable.

<sup>3)</sup> Width dimension = slat size

<sup>4)</sup> The maximum areas indicated depend on the height; see "Height-to-width ratio of external venetian blinds" on page 392

<sup>5)</sup> Asymmetrical running of slats cannot be prevented for small widths. (Please pay attention to the external venetian blind guideline ITRS Industrieverband Technische Textilien – Rollläden – Sonnenschutz e.V.)

#### Note:

Any other dimensions are subject to individual clarification with WAREMA! For external venetian blinds with equipment variant slowturn (ST), the construction limit values of the corresponding basic type should be assumed. In this case, up to 3 curtains can be designed as a group unit using one drive.

Solflex AB försäljning och service västra Skåne. Showroom och rådgivning;  
Malmö Slussplan 1, 040-979745. Helsingborg Garnisonsg 12, 042-161635.  
kontakter@solflex.se www.solflex.se

## Slat tilting

### External venetian blinds/Daylight guiding venetian blinds

#### Slat tilting

##### External venetian blinds:

C/E 60/80 A2/A6 S, E 80 A6 wind-stable, E 60/80 A2/A6 S with slowturn

##### External venetian blinds:

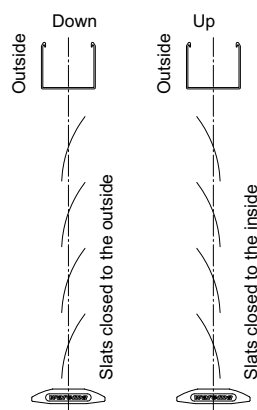
C/E 50 A1, K 50 A1 and Q 50 A1 S;

##### Daylight guiding venetian blinds:

C/E 50/60/80 L

##### Front-mounted external venetian blinds:

C/E 60/80 A6 S



The slats can be closed from any intermediate position, or can be tilted from closed outward to closed inward.

70128v1\_3sp

##### External venetian blinds:

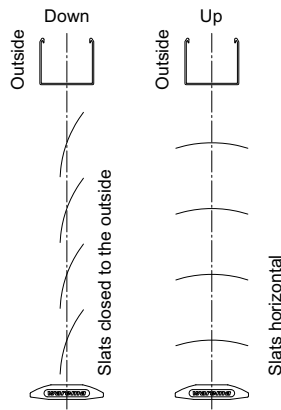
C/E 50/60/80/100 AF, E 150 AF/AF A6, C/E 73/90/93 A2/A6, C/E 90/93 A8 and E 93 A6 wind-stable; E 73/90/93 A2/A6 and E 50/60/80/100 AF/AF A6 with vivamatic<sup>®1)</sup> or slowturn

##### Daylight guiding venetian blinds:

E 50/80 Genius

##### Front-mounted external venetian blinds:

C/E 73 A6 and with vivamatic<sup>®1)</sup> or slowturn

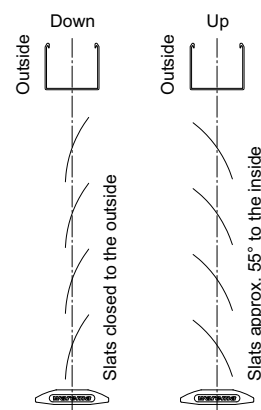


The slats can be closed in any intermediate position or can be tilted from closed to the outside to horizontal.

70129\_3sp

E 60/80 A2/A6 S with vivamatic<sup>®1)</sup>. Tilting with slats closed 55° to the inside can be used for types C/E 80 AF and C/E 80 AF A6 as an alternative to standard tilting (standard for FSR and front-mounted external venetian blinds).

Order data: "Tilt 55° to the inside"



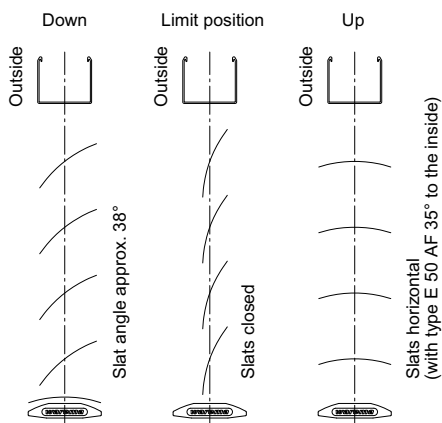
The slats can be closed in any intermediate position or tilted from closed to the outside to 55° to the inside.

70121\_3sp

<sup>1)</sup> For external venetian blinds with vivamatic<sup>®</sup>, the lowering angle can be freely defined; the principle sketches only describe the maximum tilting range. For this, see description on page 230.

##### External venetian blinds with work setting (AS) snap-action switch:

E 60/80 A2/A6 S AS, E 50/60/80/100 AF AS, E 60/80/100 AF A6 AS and E 73/90/93 A2/A6 AS



The slats can be tilted to any intermediate position from 38° to horizontal. The slats are closed in the limit position. In the limit position, the slats can be tilted from closed to the outside to horizontal.

70120\_2sp

fig. 11: Slat tilting

Special tilting behaviour upon request.

## Slat stack heights

### External venetian blinds

The external venetian blind height is the distance between the top edge of the top rail of the external venetian blind and the bottom edge of the bottom rail, see also Fig. 14 on page 36.

#### Slat stack height determined from external venetian blind height

Types	External venetian blind height in mm																					
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800	4000	4200	4400	4600	4800	5000	
E 60 A2/A6 S	173	187	201	215	229	243	257	271	285	299	313	327	341	355	369	383	397	411	425	439	453	
E 80 A2/A6 S	151	161	171	181	191	201	211	221	231	241	251	261	271	281	291	301	311	321	331	341	351	
E 50 AF	141	148	155	161	168	175	182	189	195	202	209	216	223	229	236	243	250	257	263	270	277	
E 50 AF (with eyelets)	156	166	176	185	195	205	215	225	234	244	254	264	274	283	293	303	313	323	332	342	352	
E 60 AF	148	154	160	167	173	179	185	191	198	204	210	216	222	229	235	241	247	253	260	266	272	
E 60 AF (with eyelets)	152	159	166	173	180	187	194	201	208	215	222	229	236	243	250	257	264	271	278	285	292	
E 80 AF	129	133	138	142	147	151	155	160	164	169	173	177	182	186	191	195	199	204	208	213	217	
E 80 AF (with eyelets)	134	139	145	150	156	161	166	172	177	183	188	193	199	204	210	215	220	226	231	237	242	
E 100 AF	128	132	136	141	145	149	153	157	162	166	170	174	178	183	187	191	195	199	204	208	212	
E 100 AF (with eyelets)	131	136	141	145	150	155	160	165	169	174	179	184	189	193	198	203	208	213	217	222	227	
E 150 AF	126	129	133	137	140	144	148	151	155	159	163	166	170	174	177	181	185	188	192	196	200	
E 150 AF (with eyelets)	128	132	136	141	145	149	153	157	162	166	170	174	178	183	187	191	195	199	204	208	212	
E 60 AF A6	148	155	161	168	175	182	204	210	217	224	231	238	244	251	258	265	272	278	285	292	299	
E 60 AF A6 (with eyelets)	155	163	172	180	189	197	205	214	222	231	239	247	256	264	273	281	289	298	306	315	323	
E 80 AF A6	134	140	146	152	158	164	170	176	182	203	209	215	221	227	233	239	245	251	257	263	269	
E 80 AF A6 (with eyelets)	138	145	151	158	165	172	179	185	192	199	206	213	219	226	233	240	247	253	260	267	274	
E 100 AF A6	128	132	137	142	146	151	155	160	165	169	174	178	198	203	207	212	216	221	226	230	235	
E 100 AF A6 (with eyelets)	131	136	141	146	151	157	162	167	172	177	183	188	193	198	203	209	214	219	224	229	235	
E 73 A2	166	177	187	198	208	219	230	240	251	261	272	283	293	304	314	325	336	346	357	367	378	
E 90/93 A2	154	162	170	178	186	194	202	210	218	226	234	242	250	258	266	274	282	290	298	306	314	
E 73 A6	162	173	183	194	204	215	226	236	247	257	268	279	289	300	310	321	332	342	353	363	374	
E 90/93 A6	150	158	166	174	182	190	198	206	214	222	230	238	246	254	262	270	278	286	294	302	310	
E 90/93 A8	180	188	196	204	212	220	228	236	244	252	260	268	276	284	292	300	308	316	324	332	340	

Slat stack heights are approximate values. For technical reasons, they might be higher or lower.

**External venetian blinds with crank drive:** Slat stack height is reduced by 20 mm for beaded slats and flat slats/by 15 mm for dim-out slats (73/90/93).

**External venetian blinds with work setting:** Slat stack 7 mm higher due to lining art. no. 2012281, for type E 150 AF AS slat stack 12 mm higher

**Values in dark grey:** Minimum cover panel height for C/E 73 = 195 mm and for C/E 90/93 = 210 mm.

**Note:** For external venetian blinds with equipment variant vivamatic® (VM) or slowturn (ST), the slat stack heights of the corresponding basic type should be adopted.

#### Slat stack heights web app

You can also determine the slat stack heights comfortably and simply on your smartphone, tablet PC, notebook or PC using our web app. Simply use the QR code or enter [www.warema.de/pakethoehe](http://www.warema.de/pakethoehe) in your browser.





## Slat stack heights

### External venetian blinds

The clear shading height is the distance between the bottom edge of the cover panel of the external venetian blind or shaft and the bottom edge of the bottom rail, see also Fig. 14 on page 36.

#### Slat stack height determined from clear shading height

Types	Clear shading height in mm																			
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800	4000	4200	4400	4600	
E 60 A2/A6 S	186	201	216	231	246	262	277	292	307	322	337	352	367	382	397	412	427	442	457	
E 80 A2/A6 S	159	170	180	191	201	212	222	233	243	254	264	275	285	296	306	317	328	338	349	
E 50 AF	146	153	160	167	174	181	188	195	202	209	216	224	231	238	245	252	259	266	273	
E 50 AF (with eyelets)	164	174	185	195	205	216	226	236	247	257	267	278	288	298	308	319	329	339	350	
E 60 AF	153	159	166	172	178	185	191	198	204	210	217	223	230	236	242	249	255	262	268	
E 60 AF (with eyelets)	158	165	172	179	187	194	201	208	216	223	230	237	245	252	259	266	274	281	288	
E 80 AF	132	136	141	145	150	154	159	163	168	172	177	181	186	190	195	199	204	208	213	
E 80 AF (with eyelets)	138	143	149	154	160	166	171	177	182	188	193	199	204	210	215	221	227	232	238	
E 100 AF	131	135	139	144	148	152	157	161	165	169	174	178	182	187	191	195	199	204	208	
E 100 AF (with eyelets)	134	139	144	149	154	159	164	169	174	179	183	188	193	198	203	208	213	218	223	
E 150 AF	128	132	135	139	143	147	151	154	158	162	166	169	173	177	181	184	188	192	196	
E 150 AF (with eyelets)	131	135	139	144	148	152	157	161	165	169	174	178	182	187	191	195	199	204	208	
E 60 AF A6	153	160	167	174	181	204	211	218	225	232	239	246	253	260	267	274	281	288	295	
E 60 AF A6 (with eyelets)	162	171	179	188	197	206	215	223	232	241	250	258	267	276	285	293	302	311	320	
E 80 AF A6	138	145	151	157	163	169	176	182	203	210	216	222	228	234	240	247	253	259	265	
E 80 AF A6 (with eyelets)	143	150	157	164	171	178	185	192	199	206	213	220	227	234	241	248	255	262	269	
E 100 AF A6	131	136	140	145	150	154	159	164	169	173	178	198	203	207	212	217	222	226	231	
E 100 AF A6 (with eyelets)	134	139	145	150	155	161	166	171	177	182	187	193	198	203	209	214	220	225	230	
E 73 A2	175	187	198	209	220	231	243	254	265	276	287	299	310	321	332	343	355	366	377	
E 90/93 A2	161	169	177	186	194	202	211	219	227	236	244	252	261	269	277	286	294	302	311	
E 73 A6	171	182	194	205	216	227	238	250	261	272	283	294	306	317	328	339	350	362	373	
E 90/93 A6	156	165	173	181	190	198	206	215	223	231	240	248	256	265	273	281	290	298	306	
E 90/93 A8	188	196	204	213	221	229	238	246	254	263	271	279	288	296	304	313	321	329	338	

Slat stack heights are approximate values. For technical reasons, they might be higher or lower.

**External venetian blinds with crank drive:** Slat stack height is reduced by 20 mm for beaded slats and flat slats/by 15 mm for dim-out slats (73/90/93).

**External venetian blinds with work setting:** Slat stack 7 mm higher due to lining art. no. 2012281, for type E 150 AF AS slat stack 12 mm higher

**Values in dark grey:** Minimum cover panel height for C/E 73 = 195 mm and for C/E 80/93/90 = 210 mm.

**Note:** For external venetian blinds with equipment variant vivamatic® (VM) or slowturn (ST), the slat stack heights of the corresponding basic type should be adopted.

#### Slat stack heights web app

You can also determine the slat stack heights comfortably and simply on your smartphone, tablet PC, notebook or PC using our web app. Simply use the QR code or enter [www.warema.de/pakethoehe](http://www.warema.de/pakethoehe) in your browser.



## Contents

### Basic facade external venetian blinds

Venetian blind facade system with beaded slats .....	34
Venetian blind facade system with flat slats .....	42
Venetian blind facade system with dim-out slats .....	49
Self-supporting external venetian blinds .....	58
T/M system cover panel .....	70

General  
information

Product  
characteristics

Basic facade  
external venetian  
blinds

Premium facade  
venetian blinds

Complete external  
venetian blinds

Light guidance/  
external venetian  
blinds

Guides

Cover panels

Planning

Safety systems  
Accessories

Drives  
Control systems

Solflex AB försäljning och service västra Skåne. Showroom och rådgivning;  
Malmö Slussplan 1, 040-979745. Helsingborg Garnisonsg 12, 042-161635.  
kontakter@solflex.se www.solflex.se

## Description

### Venetian blind facade system with beaded slats

#### E 60/80 A2 S, E 60/80 A6 S, C 60/80 A2 S, C 60/80 A6 S



2014

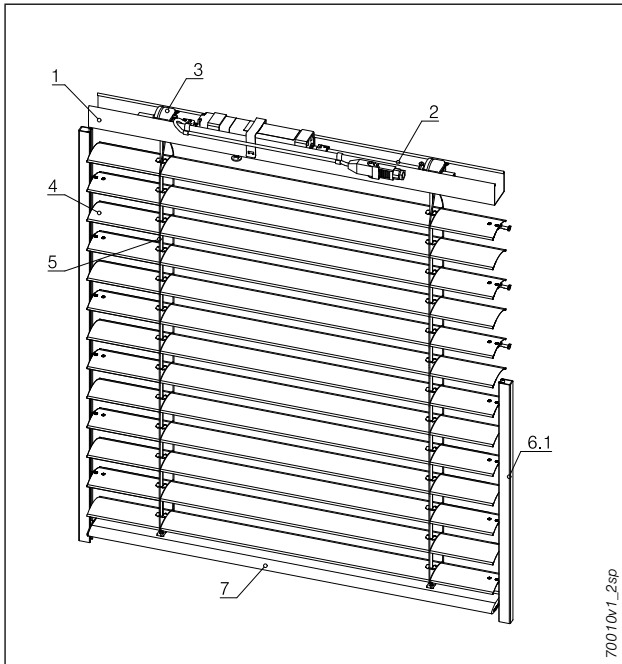


fig. 12: External venetian blind E 80 A6 S

- 1 Top rail
- 2 Tilt rod
- 3 Bearing
- 4 Slats
- 5 Tilting and lifting tape
- 6 Lateral guidance
  - 6.1 Rail
  - 6.2 Tension cable
- 7 Bottom rail

## Application

For mounting on transom and mullion facades or conservatories, in the reveal or in ventilated facades, in double skin facades, in front of the facade or indoors.

## Operation

### Motor

The slats are raised and lowered as well as tilted by actuating an operating switch.

Voltage: 230 V AC, other voltages optional

Frequency: 50 Hz, other frequencies optional

Degree of protection: IP 54

Plug-in connector: Hirschmann coupling

The drive switches off upon reaching the upper or lower limit position using built-in, adjustable limit switches.

### Crank

The slats are raised and lowered as well as tilted with the crank.

Crank rod with collapsible crank; sealed joint plate and square with patented thermal separation.

Material: aluminium

Surface: C0 anodised

Crank holder: plastic, grey, white or brown, crank holder with magnet optional

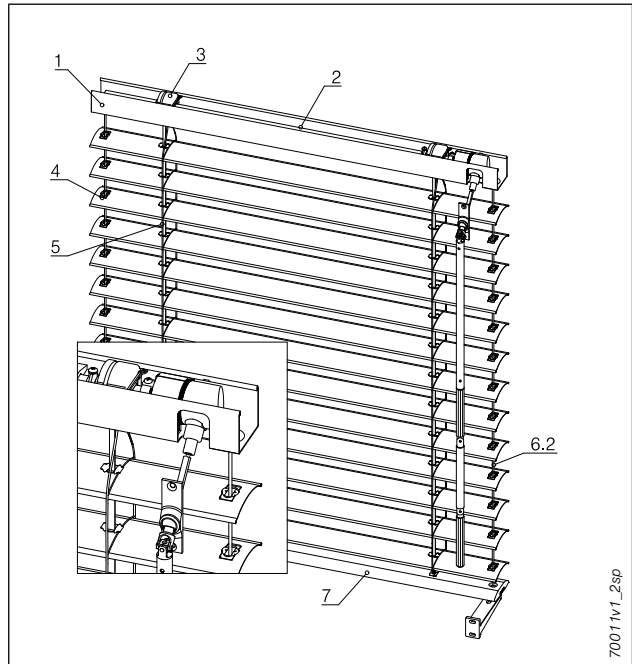


fig. 13: External venetian blind C 80 A2 S

### Top rail (1)

Material: aluminium, extruded

Material thickness: 1.5 mm

Dimensions (WxH): 59 x 51 mm

Profile: C-shaped profile

Surface: plain, optionally powder-coated or anodised

Fixing: with noise-optimised top rail brackets made of plain aluminium.

### Tilt rod(2)

Material: steel, zinc-coated

Material thickness: 1 mm

Dimensions (WxH): 12x12 mm

Profile: square tube

Surface: plain

### Bearing (3)

Maintenance-free, enclosed

Housing: plastic, with Teflon

Tilting reel: plastic

Tape reel: plastic

Segment tilting to prevent self-acting adjustment of slats.

### Slats (4)

**Optimally beaded on both sides with regard to slat stack height, curved**

Material: aluminium, special alloy

Material thickness: approx. 0.44 mm

Dimensions (W): 60/80 mm

Installation: convex

Surface: enamel finish resistant to corrosion using a special process



## Description

### Venetian blind facade system with beaded slats

#### E 60/80 A2 S, E 60/80 A6 S, C 60/80 A2 S, C 60/80 A6 S



product  
design award

2014

Colour: according to WAREMA colour chart for external venetian blinds

All cutouts in the slats have black eyelets, with an outlet size of 5x9 mm, to guide the lifting tapes (reduction of wear) and fix the webs of the tilting tape.

Optional (only 80 S): Slat cutouts with surrounding beaded edges instead of eyelet for lifting tape, outlet size approx. 6.5 x 8.5 mm, tilting tape connection via horseshoe cutout.

The blind moves down with the slats closed to the outside and moves up with the slats closed to the inside.

### Tilting tape/lifting tape (5)

#### Tilting tapes

Special heavy-duty version with double webs

Material: polyester, with Kevlar core

Colour: black, optionally grey

Each slat is attached to the top web of the tilting tape and threaded between the double webs.

#### Lifting tapes

Material: polyester, with special coating

Colour: black, optionally grey

### Lateral guidance (6)

#### Rail – A6 (6.1)

With black sealing strips inserted for noise reduction

Material: aluminium, extruded

Dimensions (WxD): 25x18 mm, other rail variants optional

Profile: C-shaped profile

Surface: powder-coated, optionally anodised

Fixing: 2-piece guide rail bracket H1, aluminium and plastic

End cap: plastic, black, optionally grey

Sealing strip: weather-proof, UV stable, black

Guide pin: Polyamide, impact-resistant connection with the slats by means of min. 2 ultrasonic welds, structured welding heads flush with slat surface, slats alternatively pinned.

#### Tension cable – A2 (6.2)

Stranded wire

Material: steel, corrosion-resistant

Coating: polyamide

Colour: black or transparent coating

Fixing: tension cable bracket S01, aluminium

Optionally: deep-drawn cable guidance feed-through

The cable guidances are fixed with a special spring tension device to compensate for thermal changes in the length of the top rail. Cable guidances run through oblong holes with protection eyelets in the slats and the bottom rail.

Optional: Cable guidance cutouts in the slats as cutout with surrounding beaded edges (only in connection with beaded lifting tape cutout). They are fixed to the window or the wall using tension cable brackets.

### Bottom rail (7)

With end caps

Material: aluminium, extruded

Dimensions (WxH): 60/80x15 mm

Surface: powder-coated, optionally anodised

End caps: plastic, black

Bottom rail for rail guidance A6 with sliding guide pins with slotted end caps to prevent the external venetian blind from unhinging.

### Colours

Powder coating of aluminium parts with chrome-free pre-treatment according to valid RAL CLASSIC colour chart (except camouflage and luminous colours) or in six DB colours as well as eight textured colours (W4914 - W4921), four anodised-look colours (WC31 - WC34) and further colours according to WAREMA Colour World (in WAREMA colour specification).

Other colour specifications and special colours are available on request at a surcharge.

### Accessories

From page 230

General  
information

Product  
characteristics

Basic facade  
external venetian  
blinds

Premium facade  
venetian blinds

Complete external  
venetian blinds

Light guidance/  
external venetian  
blinds

Guides

Cover panels

Planning

Safety systems  
Accessories

Drives  
Control systems

## Construction limit values/Measuring instructions

### Venetian blind facade system with beaded slats

#### E 60/80 A2 S, E 60/80 A6 S, C 60/80 A2 S, C 60/80 A6 S

#### Construction limit values in mm

For external venetian blinds with equipment variant vivamatic® (VM), slowturn (ST) or work setting (AS), the construction limit values of the corresponding basic type should be assumed. In this case, up to 3 curtains can be designed as a group unit using one drive.

Types	Construction limit values								Average weight in kg/m <sup>2</sup> <sup>1)</sup>
	Individual unit				Group unit				
	Width <sup>2)</sup>		Height	Area <sup>3)</sup> in m <sup>2</sup>	max. width	Area <sup>3)</sup> in m <sup>2</sup>	left/right of driving curtain max. coupl. each side		
	min. <sup>4)</sup>	max.					Area in m <sup>2</sup>	Number of curtains	
C 60/80 A2 S C 60/80 A6 S	450	5000	4000 5000	12	12000	12	12	2	2.7/2.8
E 60/80 A2 S E 60/80 A6 S	600	5000	4000 5000	20 25	12000	26–30	13	2	3.0/3.1

Tab. 1: Construction limit values external venetian blinds C/E 60/80 A2 S/A6 S

<sup>1)</sup> Cable force: 350 N per tension cable.

<sup>2)</sup> Width = slat size, slat size + 65 mm = back edge of the guide rail for guide rail types 1 and 2

<sup>3)</sup> The maximum areas indicated depend on the height; see "Height-to-width ratio of external venetian blinds" on page 392

<sup>4)</sup> Asymmetrical running of slats cannot be prevented for small widths. (Please pay attention to the external venetian blind guideline ITRS Industrieverband Technische Textilien – Rollläden – Sonnenschutz e.V.)

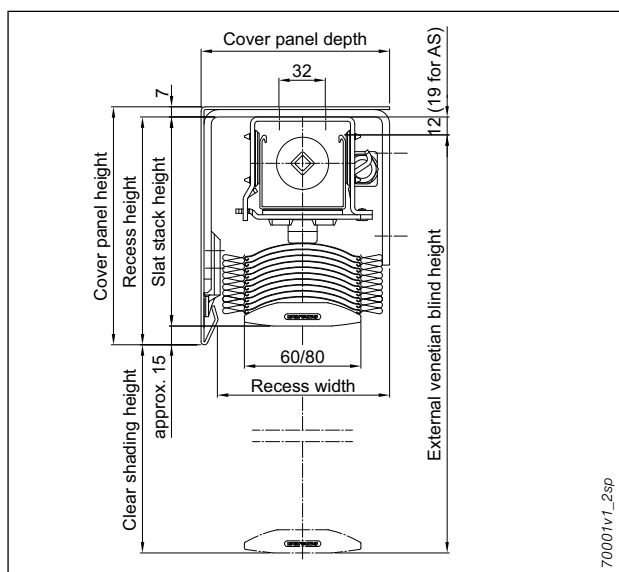


fig. 14: Measuring instructions for external venetian blinds C/E 60/80 A2 S/A6 S

#### Measuring instructions

Slat stack height from the table

Slat stack height with work setting (AS) + 7 mm

Recess height = slat stack height + 15 mm

Cover panel height = slat stack height + 20 mm

Types	Min. recess width	Min. cover panel depth
60 A2 S/A6 S	110	120
80 A2 S/A6 S	120	130

#### Number of cable guidances for 60/80 A2 S

Slat size	Cable guidances
Up to 3000 mm	2
From 3001 mm	3
From 4001 mm	4

When ordering, please indicate positioning of additional cable guiding (starting inside from the left)!

For model A6 we recommend an additional cable guide at the centre of the blind for external venetian blind widths >3000 mm.

#### Slat stack heights in mm

##### Slat stack height determined from external venetian blind height

Types	External venetian blind height in mm																				
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800	4000	4200	4400	4600	4800	5000
E 60 A2/A6 S	173	187	201	215	229	243	257	271	285	299	313	327	341	355	369	383	397	411	425	439	453
E 80 A2/ A6 S/TG	151	161	171	181	191	201	211	221	231	241	251	261	271	281	291	301	311	321	331	341	351

##### Slat stack height determined from clear shading height

Types	Clear shading height in mm														
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800
E 60 A2/A6 S	186	201	216	231	246	262	277	292	307	322	337	352	367	382	397
E 80 A2/A6 S/TG	159	170	180	191	201	212	222	233	243	254	264	275	285	296	306

Slat stack heights are approximate values. For technical reasons, they might be higher or lower.

External venetian blinds with crank drive: Slat stack height is reduced by 20 mm.

External venetian blinds with work setting: Slat stack 7 mm higher by lining art. no. 2012281.

## Mounting example

## Venetian blind facade systems

### Beaded slats with rail guidance

External venetian blind type E 60/80 A6 S with u-shaped cover panel on transom and mullion facade

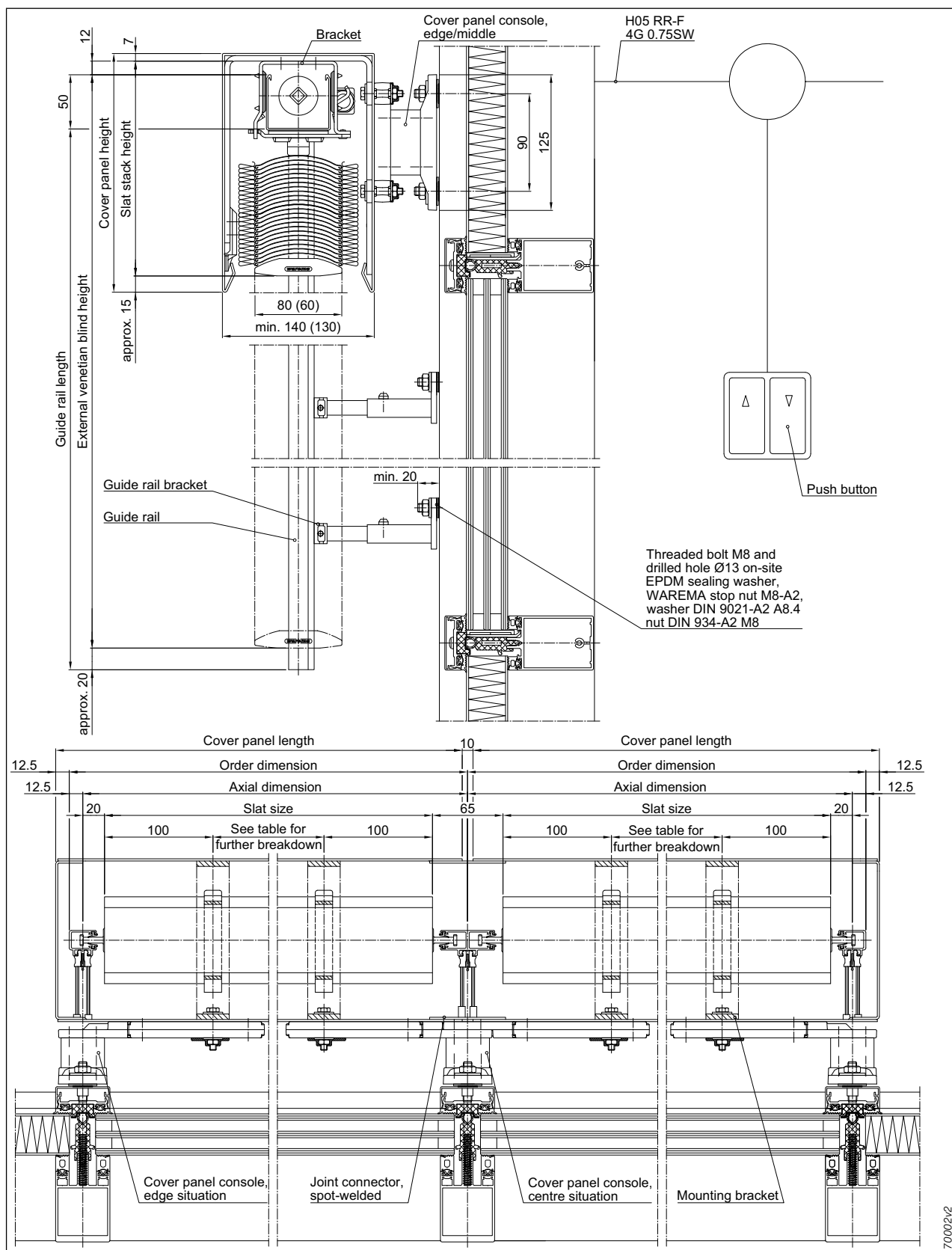


fig. 15: Mounting example, external venetian blind type E 60/80 A6 S with u-shaped cover panel on transom and mullion facade

## Mounting example

### Venetian blind facade systems

### Beaded slats with cable guidance

E 60/80 A2 S ST slowturn with angular cover panel

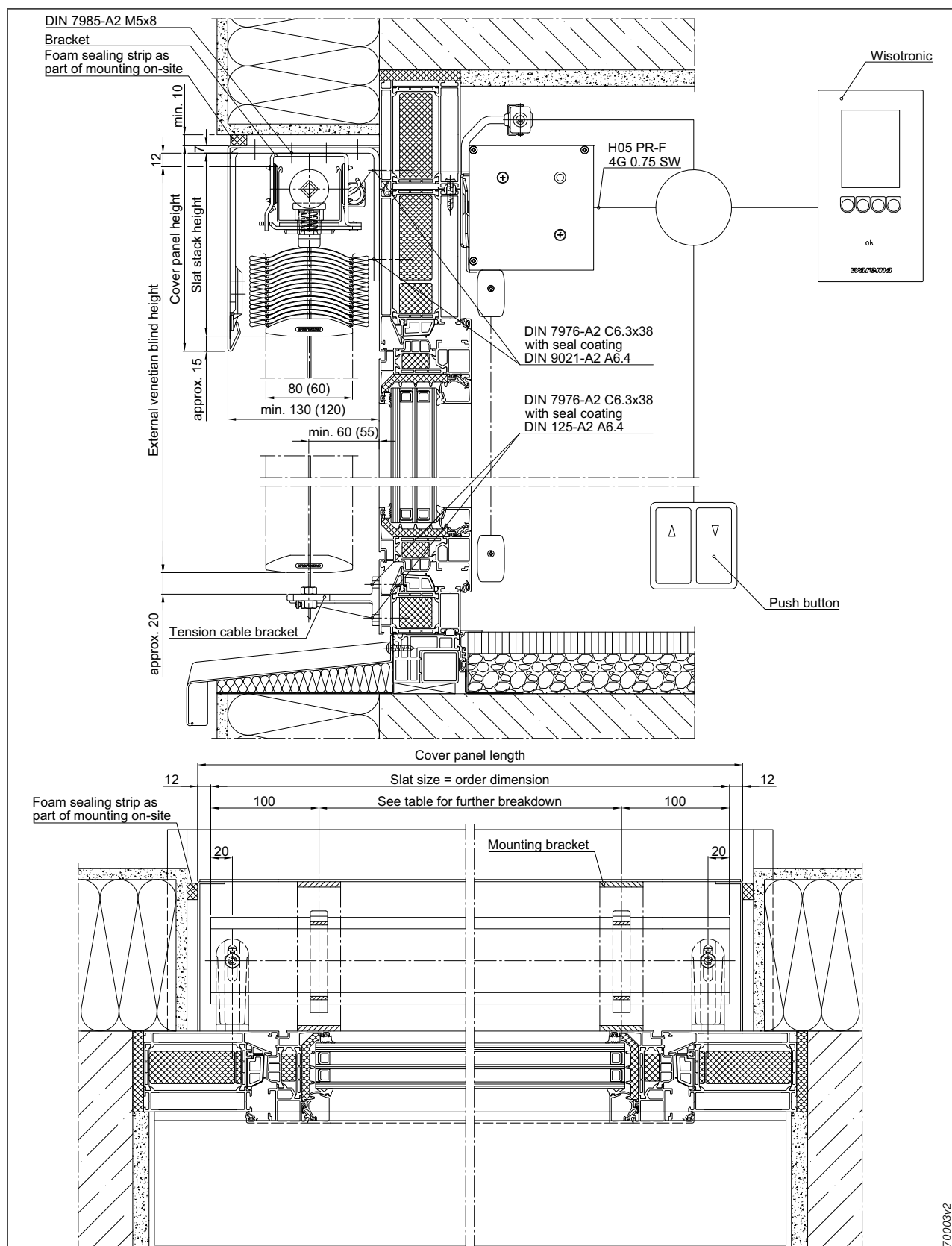


fig. 16: Mounting example, external venetian blinds E 60/80 A2 S ST with angular cover panel



# Mounting example **Venetian blind facade systems** **Beaded slats with rail guidance** E 60/80 A6 S in angular cover panel

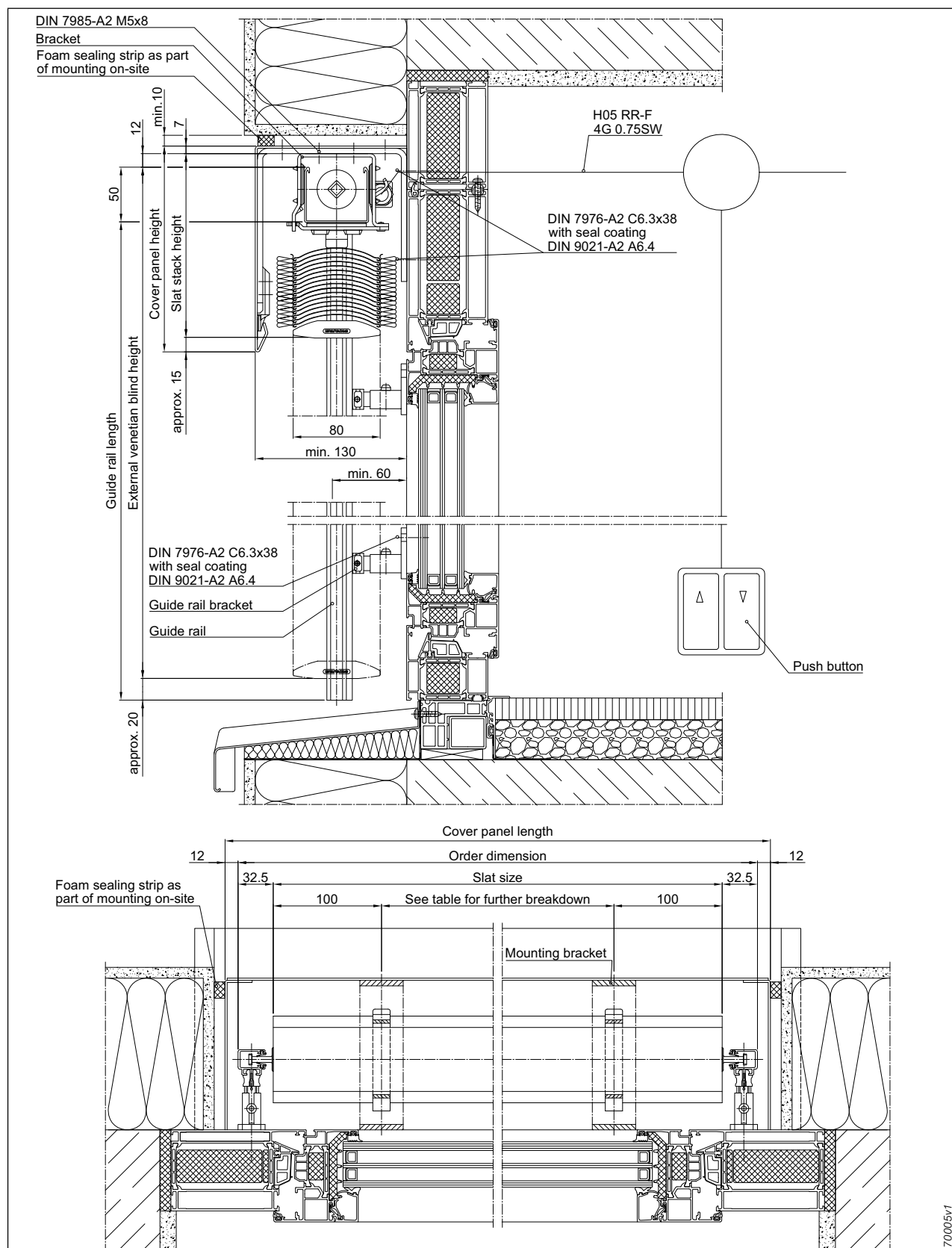


fig. 17: Mounting example, external venetian blinds E 80 A6 S with angular cover panel

## Mounting example

### Venetian blind facade systems

### Beaded slats with rail and cable guidance

E 60/80 A2/A6 S with angular cover panel – corner position

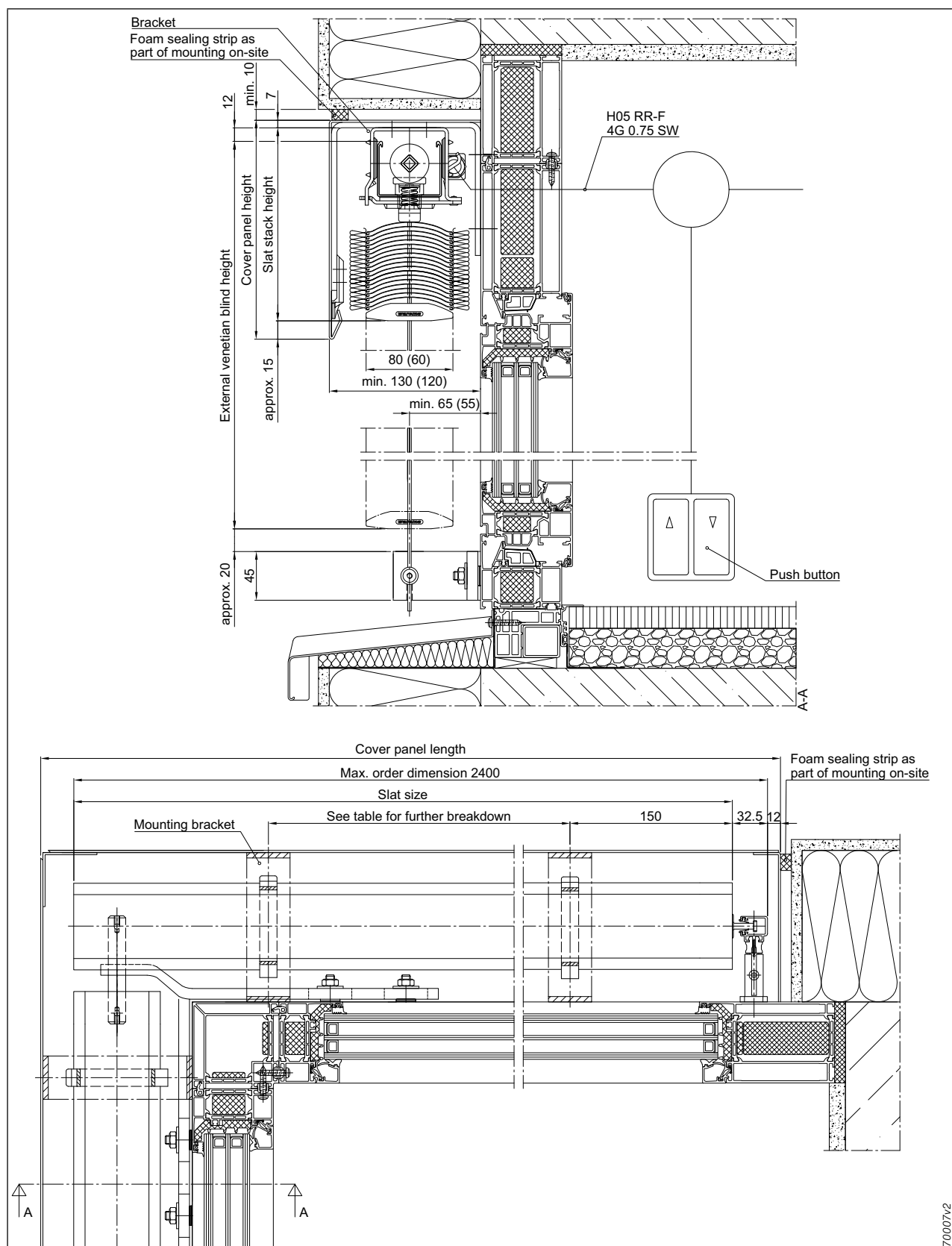


fig. 18: Mounting example, external venetian blind E 60/80 A2/A6 S with angular cover panel – corner position

70007v2

# Mounting example **Venetian blind facade systems** **Beaded slats with rail guidance** E 80 A6 S in on-site self-supporting lintel box

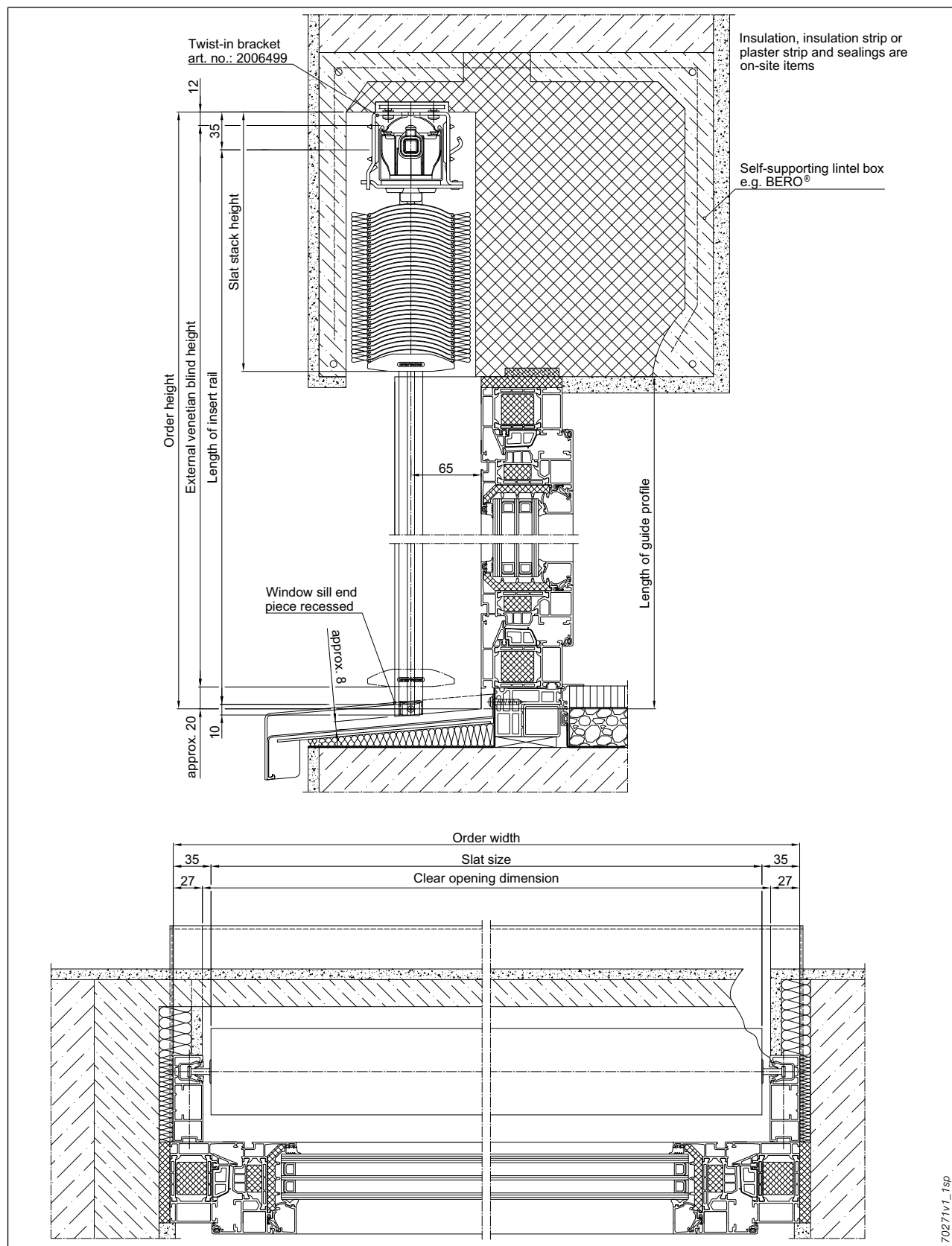


fig. 19: Mounting example, external venetian blind E 80 A6 S with continuous guide profiles in on-site lintel box

## Description

### Venetian blind facade system with flat slats

**E 50/60/80/100/150 AF, E 60/80/100 AF A6**

**C 50/60/80/100 AF, C 60/80/100 AF A6**

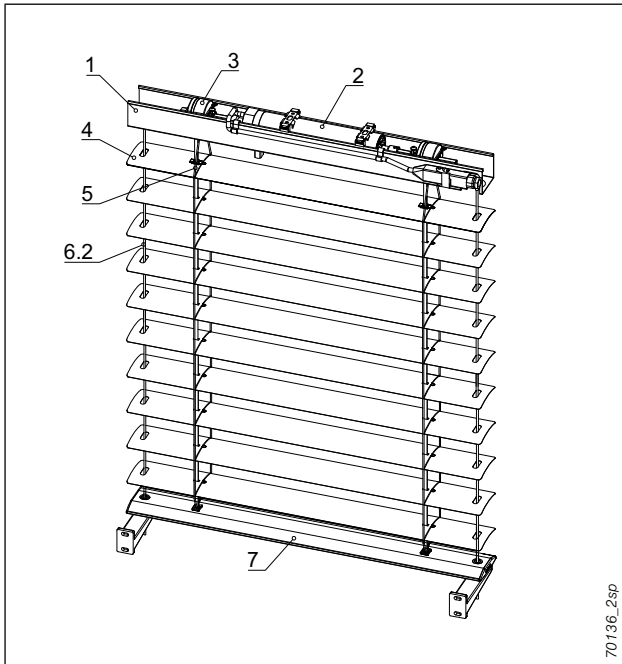


fig. 20: External venetian blind E 80 AF

- 1 Top rail
- 2 Tilt rod
- 3 Bearing
- 4 Slats
- 5 Tilting and lifting tape
- 6 Lateral guidance
  - 6.1 Rail
  - 6.2 Tension cable
- 7 Bottom rail

## Application

For mounting on transom and mullion facades or conservatories, in the reveal or in ventilated facades, in double skin facades, in front of the facade as well as indoors.

## Operation

### Motor

The slats are raised and lowered as well as tilted by actuating an operating switch.

Voltage: 230 V AC, other voltages optional

Frequency: 50 Hz, other frequencies optional

Degree of protection: IP 54

Plug-in connector: Hirschmann coupling

The drive switches off upon reaching the upper or lower limit position using built-in, adjustable limit switches.

### Crank

The slats are raised and lowered as well as tilted with the crank.

Crank rod with collapsible crank; sealed joint plate and square with patented thermal separation.

Material: aluminium

Surface: C0 anodised

Crank holder: plastic, grey, white or brown, crank holder with magnet optional

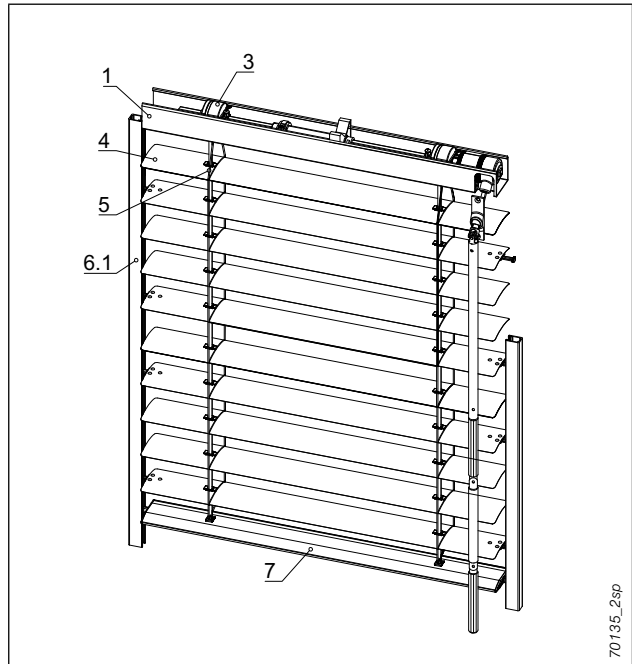


fig. 21: External venetian blind C 80 AF A6

### Top rail (1)

Material: aluminium, extruded

Material thickness: 1.5 mm

Dimensions (WxH): 59x51 mm

Profile: C-shaped profile

Surface: plain, optionally powder-coated or anodised

Fixing: with noise-optimised top rail brackets made of plain aluminium.

### Tilt rod (2)

Material: steel, zinc-coated

Material thickness: 1 mm

Dimensions (WxH): 12x12 mm

Profile: square tube

Surface: plain

### Bearing (3)

Maintenance-free, enclosed

Housing: plastic, with Teflon

Tilting reel: plastic

Tape reel: plastic

Segment tilting to prevent self-acting adjustment of slats.

### Slats (4)

#### Curved flat slats, no eyelets

Material: aluminium, special alloy

Material thickness: 0.45 mm

Dimensions (W): 50/60/80/100/150 mm

Installation: convex

Surface: enamel finish resistant to corrosion using a special process

Colour: according to WAREMA colour chart for external venetian blinds



## Description

### Venetian blind facade system with flat slats E 50/60/80/100/150 AF, E 60/80/100 AF A6 C 50/60/80/100 AF, C 60/80/100 AF A6

The top slat is reinforced.

Optionally all slats are available with black or grey protective eyelets.

Types 50/60/80/100/150 AF move down closed and move up horizontally.

#### Tilting tape/lifting tape (5)

##### Tilting tapes (5.1)

Special heavy-duty version with double webs

Material: polyester, with Kevlar core

Colour: black, optionally grey

Each slat is attached to the top web of the tilting tape and threaded between the double webs.

##### Lifting tapes (5.2)

Material: polyester, with special coating

Colour: black, optionally grey

#### Lateral guidance (6)

##### Rail – A6 (6.1)

With black sealing strips inserted for noise reduction

Material: aluminium, extruded

Dimensions (WxD): 25x18 mm, other rail variants optional, from page 273

Profile: C-shaped profile

Surface: powder-coated, optionally anodised

Fixing: 2-piece guide rail bracket, aluminium and plastic

End cap: plastic, black, optionally grey

Sealing strip: weather-proof, UV stable, black

Guide pin: polyamide, impact-resistant connection with the slats by means of 2 ultrasonic welds, structured welding heads flush with slat surface, every 3rd slat is pinned on both sides.

##### Tension cable – A2 (6.2)

Stranded wire

Material: steel, corrosion-resistant

Coating: polyamide

Colour: black or transparent coating

Fixing: tension cable bracket, aluminium

The cable guidances are fixed with a special spring tension device to compensate for thermal changes in the length of the top rail. Cable guidances run through the slats and the bottom rail. They are fixed to the window or the wall using tension cable brackets.

#### Bottom rail (7)

with end caps

Material: aluminium, extruded

Dimensions (WxH): 50/100/150x20 mm or 60/80x15

Surface: powder-coated, optionally anodised

End cap: plastic, black, optionally grey

Bottom rail for rail guidance A6 with sliding guide pins with slotted end caps to prevent the external venetian blind from unhinging.

#### Colours

Powder coating of aluminium parts with chrome-free pre-treatment according to valid RAL CLASSIC colour chart (except camouflage and luminous colours) or in six DB colours as well as eight textured colours (W4914 - W4921), four anodised-look colours (WC31 - WC34) and further colours according to WAREMA Colour World (in WAREMA colour specification).

Other colour specifications and special colours are available on request at a surcharge.

#### Accessories

From page 230.

# Construction limit values/Measuring instructions

## Venetian blind facade systems

### Flat slats with cable or rail guidance

#### Construction limit values in mm

For external venetian blinds with equipment variant vivamatic® (VM), slowturn (ST) or work setting (AS), the construction limit values of the corresponding basic type should be assumed. In this case, up to 3 curtains can be designed as a group unit using one drive.

Types	Construction limit values <sup>1)</sup>								Average weight in kg/m <sup>2</sup> <sup>2)</sup>
	Individual unit				Group unit				
	Width <sup>3)</sup>		Height	Area <sup>4)</sup> in m <sup>2</sup>	Width max.	Area <sup>4)</sup> in m <sup>2</sup>	left/right of driving curtain max. coupl. each side		
	min. <sup>5)</sup>	max.					Area in m <sup>2</sup>	Number of curtains	
C 50/60/80/100 AF	450	5000	4000	13	12000	13.0	13	2	2.3–2.5
E 50/60/80/100 AF	600	5000	4000	20	12000	32–35	13	2	2.5–2.7
E 150 AF	600	5000	4000	20	12000	24–26	13	2	2.9
C 60/80/100 AF A6	450	5000	4000	13	12000	13.0	13	2	2.3–2.5
E 60/80/100 AF A6	600	5000	4000	20	12000	32–35	13	2	2.5–2.7

Tab. 2: Construction limit values for venetian blind facade systems – flat slats with cable guidance

<sup>1)</sup> Construction limit values for solar drive, see page 366.

<sup>2)</sup> Cable force: 350 N per tension cable.

<sup>3)</sup> Width = slat size, slat size + 65 mm for model AF A6 = back edge of the guide rail for guide rail types 1 and 2

<sup>4)</sup> The maximum areas indicated depend on the height; see "Height-to-width ratio of external venetian blinds" on page 392.

<sup>5)</sup> Asymmetrical running of slats cannot be prevented for small widths. (Please pay attention to the external venetian blind guideline ITRS Industrieverband Technische Textilien – Rollladen – Sonnenschutz e.V.)

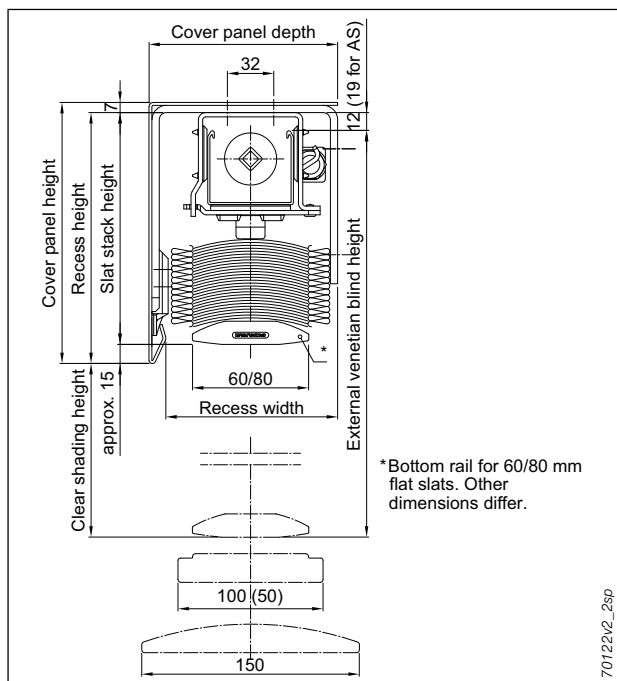


fig. 22: Measuring instructions for external venetian blinds C/E 50/60/80/100 AF, E 150 AF and C/E 60/80/100 AF A6

#### Measuring instructions

Slat stack height from the table

Slat stack height with work setting (AS) + 7 mm

Recess height = slat stack height + 15 mm

Cover panel height = slat stack height + 20 mm

Types	Min. recess width	Min. cover panel depth
50 AF	110	120
60 AF/60 AF A6	110	120
80 AF/80 AF A6	120	130
100 AF/ 100 AF A6	140	150
150 AF	190	200

#### Number of cable guidances AF

Slat size	Cable guidances
Up to 3000 mm	2
From 3001 mm	3
From 4001 mm	4

When ordering, please indicate positioning of additional cable guiding (starting inside from the left)!

#### Number of cable guidances AF A6

Slat size	Cable guidances
From 2401 mm	1
From 4001 mm	2

When ordering, please indicate positioning of additional cable guiding (starting inside from the left)!

**With flat slats with rail guidance, the motor can only be positioned on the left or right. A central tension cable is essential for slat sizes from 2400 mm, as any structural components behind the external venetian blind could sustain damage under strong wind loads.**

# Slat stack heights

## Venetian blind facade systems

### Flat slats with cable or rail guidance

#### Slat stack height determined from external venetian blind height

Types	External venetian blind height in mm															
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800	4000
E 50 AF	141	148	155	161	168	175	182	189	195	202	209	216	223	229	236	243
E 50 AF (with eyelets)	156	166	176	185	195	205	215	225	234	244	254	264	274	283	293	303
E 60 AF	148	154	160	167	173	179	185	191	198	204	210	216	222	229	235	241
E 60 AF (with eyelets)	152	159	166	173	180	187	194	201	208	215	222	229	236	243	250	257
E 80 AF	129	133	138	142	147	151	155	160	164	169	173	177	182	186	191	195
E 80 AF (with eyelets)	134	139	145	150	156	161	166	172	177	183	188	193	199	204	210	215
E 100 AF	128	132	136	141	145	149	153	157	162	166	170	174	178	183	187	191
E 100 AF (with eyelets)	131	136	141	145	150	155	160	165	169	174	179	184	189	193	198	203
E 150 AF	126	129	133	137	140	144	148	151	155	159	163	166	170	174	177	181
E 150 AF (with eyelets)	128	132	136	141	145	149	153	157	162	166	170	174	178	183	187	191
E 60 AF A6	148	155	161	168	175	182	204	210	217	224	231	238	244	251	258	265
E 60 AF A6 (with eyelets)	155	163	172	180	189	197	205	214	222	231	239	247	256	264	273	281
E 80 AF A6	134	140	146	152	158	164	170	176	182	203	209	215	221	227	233	239
E 80 AF A6 (with eyelets)	138	145	151	158	165	172	179	185	192	199	206	213	219	226	233	240
E 100 AF A6	128	132	137	142	146	151	155	160	165	169	174	178	198	203	207	212
E 100 AF A6 (with eyelets)	131	136	141	146	151	157	162	167	172	177	183	188	193	198	203	209

Slat stack heights are approximate values. For technical reasons, they might be higher or lower.

**External venetian blinds with crank drive:** Slat stack height is reduced by 20 mm.

**External venetian blinds with work setting:** Slat stack 7 mm higher by lining art. no. 2012281, for type E 150 AF AS slat stack 12 mm higher.

#### Slat stack height determined from clear shading height

Types	Clear shading height in mm														
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800
E 50 AF	146	153	160	167	174	181	188	195	202	209	216	224	231	238	245
E 50 AF (with eyelets)	164	174	185	195	205	216	226	236	247	257	267	278	288	298	308
E 60 AF	153	159	166	172	178	185	191	198	204	210	217	223	230	236	242
E 60 AF (with eyelets)	158	165	172	179	187	194	201	208	216	223	230	237	245	252	259
E 80 AF	132	136	141	145	150	154	159	163	168	172	177	181	186	190	195
E 80 AF (with eyelets)	138	143	149	154	160	166	171	177	182	188	193	199	204	210	215
E 100 AF	131	135	139	144	148	152	157	161	165	169	174	178	182	187	191
E 100 AF (with eyelets)	134	139	144	149	154	159	164	169	174	179	183	188	193	198	203
E 150 AF	128	132	135	139	143	147	151	154	158	162	166	169	173	177	181
E 150 AF (with eyelets)	131	135	139	144	148	152	157	161	165	169	174	178	182	187	191
E 60 AF A6	153	160	167	174	181	204	211	218	225	232	239	246	253	260	267
E 60 AF A6 (with eyelets)	162	171	179	188	197	206	215	223	232	241	250	258	267	276	285
E 80 AF A6	138	145	151	157	163	169	176	182	203	210	216	222	228	234	240
E 80 AF A6 (with eyelets)	143	150	157	164	171	178	185	192	199	206	213	220	227	234	241
E 100 AF A6	131	136	140	145	150	154	159	164	169	173	178	198	203	207	212
E 100 AF A6 (with eyelets)	134	139	145	150	155	161	166	171	177	182	187	193	198	203	209

Slat stack heights are approximate values. For technical reasons, they might be higher or lower.

**External venetian blinds with crank drive:** Slat stack height is reduced by 20 mm.

**External venetian blinds with work setting:** Slat stack 7 mm higher by lining art. no. 2012281, for type E 150 AF AS slat stack 12 mm higher.

**Note:** For external venetian blinds with equipment variant vivamatic® (VM) or slowturn (ST), the slat stack heights of the corresponding basic type should be adopted.

## Mounting example

### Venetian blind facade systems

### Flat slats with cable guidance

E 60/80/100 AF VM with vivamatic®, u-shaped cover panel at transom and mullion facade, interior blind and WAREMA climatronic® 3.0

NEW! Cover panel console BK

**MINERGIE®**

Mehr Lebensqualität, tiefer Energieverbrauch  
Meilleure qualité de vie, faible consommation d'énergie

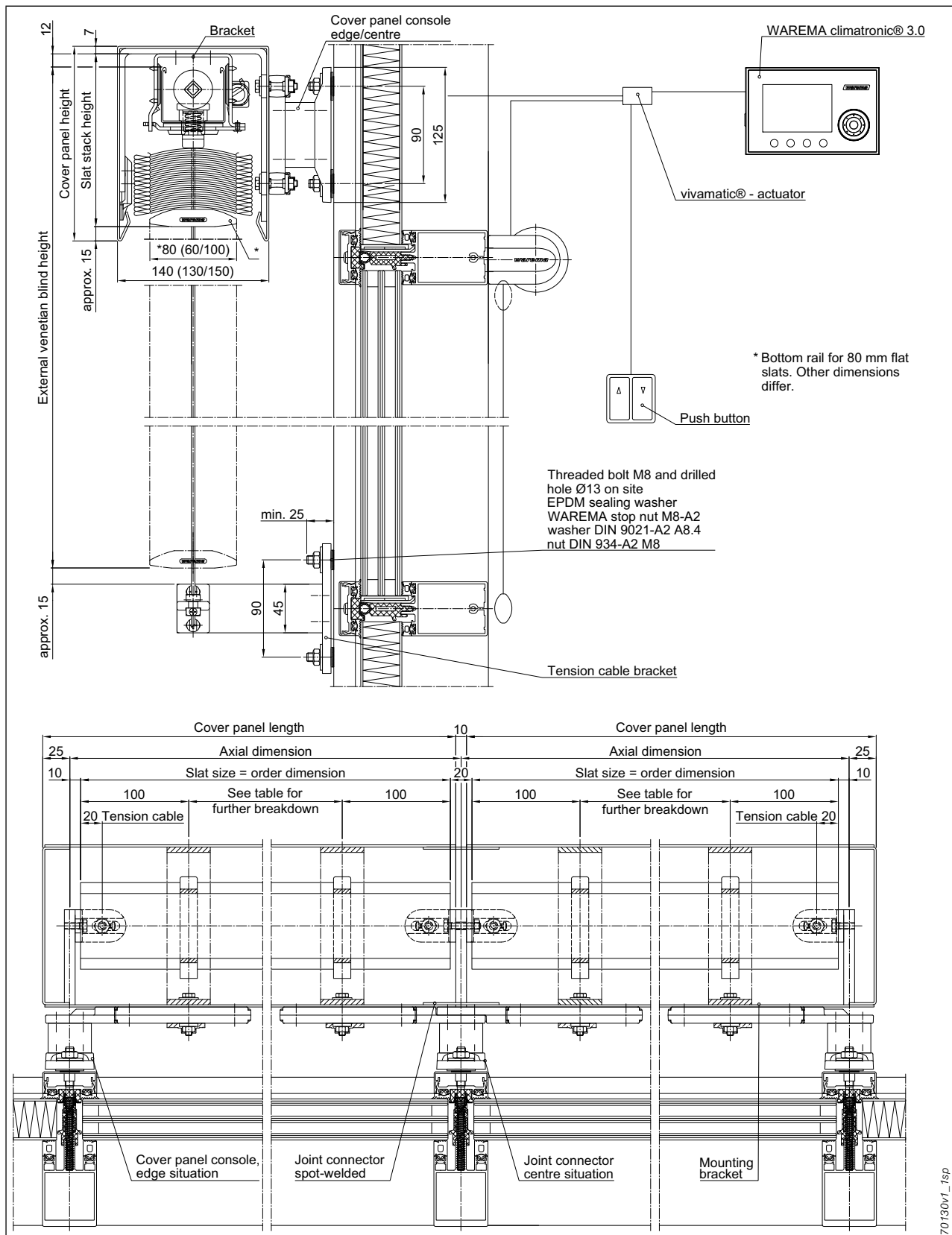


fig. 23: Mounting example for external venetian blinds E 60/80/100 AF VM with flat slats in u-shaped cover panel on mullion and transom facade



# Mounting example

## Venetian blind facade systems

### Flat slats with cable guidance

Types E 50/60/80/100 AF in angled cover panel

**MINERGIE®**  
 Mehr Lebensqualität, tiefer Energieverbrauch  
 Meilleure qualité de vie, faible consommation d'énergie

General information
Product characteristics
Basic facade external venetian blinds
Premium facade venetian blinds
Complete external venetian blinds
Light guidance/ external venetian blinds
Guides
Cover panels
Planning
Safety systems Accessories
Drives Control systems

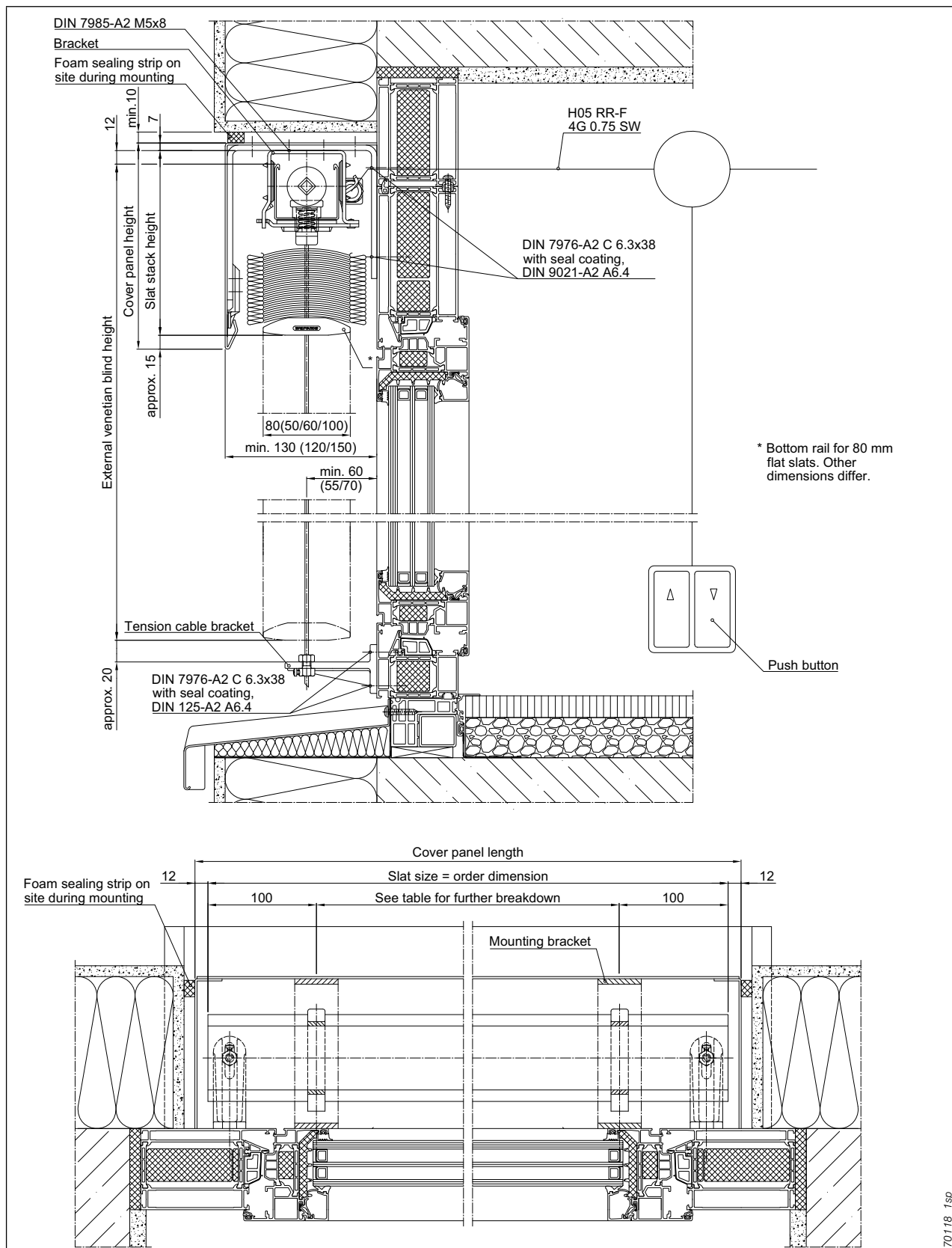


fig. 24: Mounting example of external venetian blinds E 50/60/80/100 AF with flat slats in angled cover panel

## Mounting example

### Venetian blind facade systems

#### Flat slats with rail guidance

E 60/80/100 AF A6 with angular cover panel

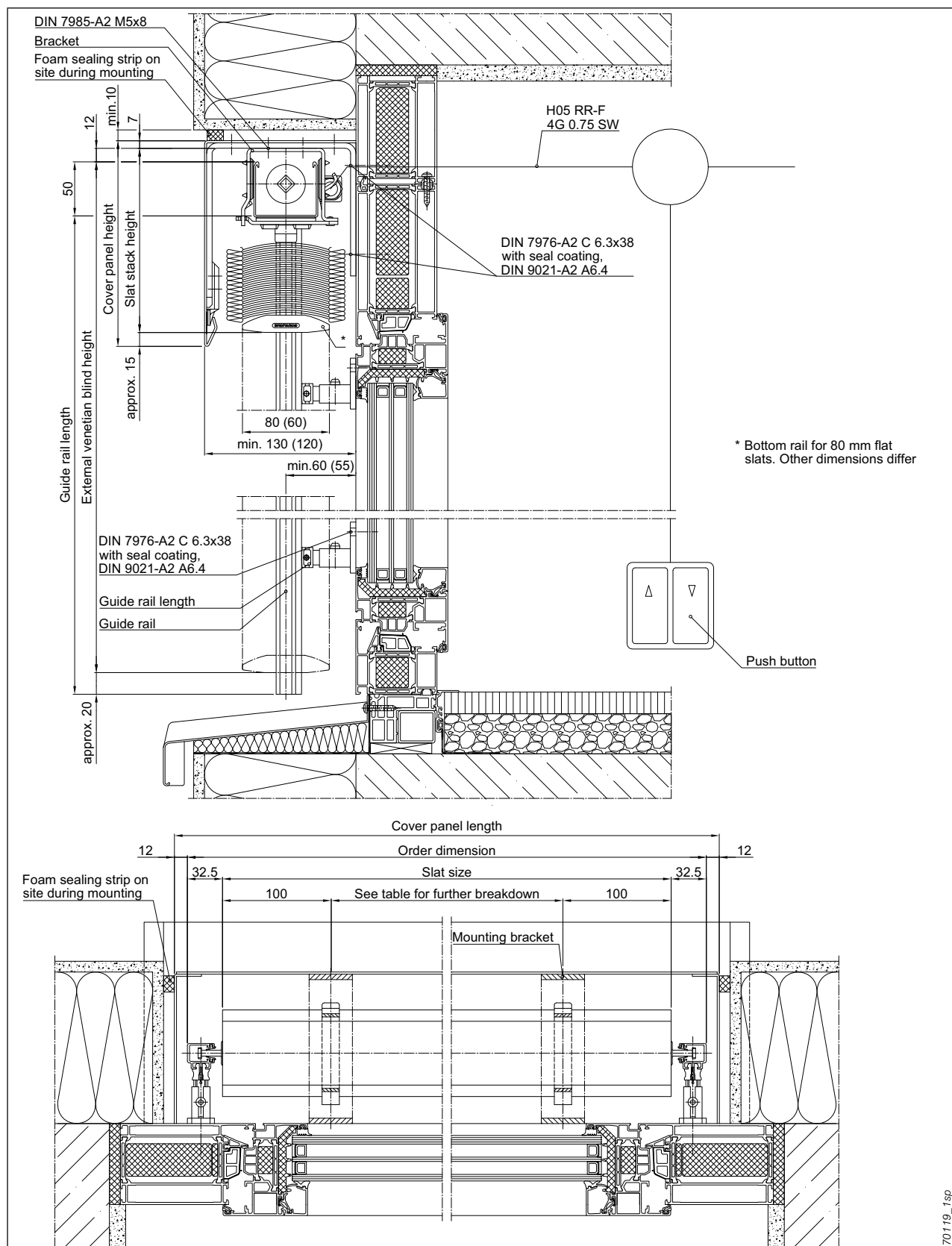


fig. 25: Mounting example for external venetian blinds E 60/80 AF A6 with flat slats, guide rail and angled cover panel

70119\_1.sp

## Description

### Venetian blind facade system with dim-out slats

**E 73/90/93 A6, C 73/90/93 A6**

**E 73/90/93 A2, C 73/90/93 A2**

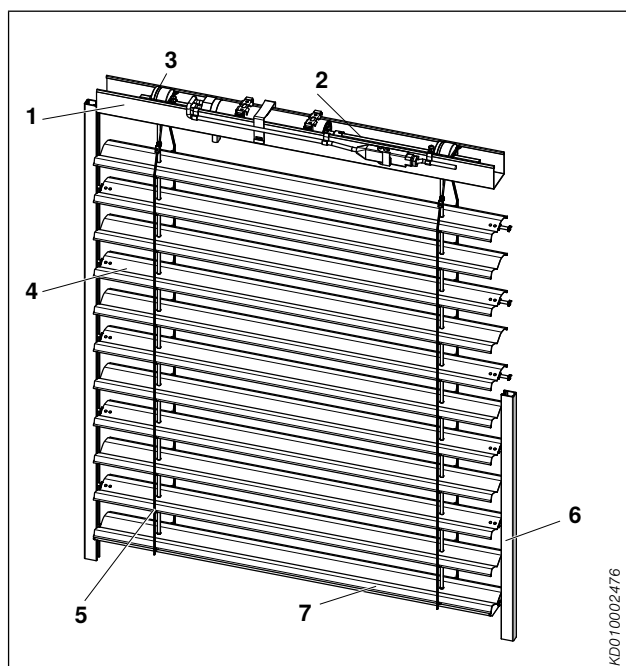


fig. 26: External venetian blind E 93 A6

- 1 Top rail
- 2 Tilt rod
- 3 Bearing
- 4 Slats
- 5 Slat suspension and lifting tape
- 6 Lateral guidance
- 7 Bottom rail

## Application

For mounting on transom and mullion facades or conservatories, in the reveal or in ventilated facades, in double skin facades, in front of the facade as well as indoors.

## Operation

### Motor

The slats are raised and lowered as well as tilted by actuating an operating switch.

Voltage: 230 V AC, other voltages optional

Frequency: 50 Hz, other frequencies optional

Degree of protection: IP 54

Plug-in connector: Hirschmann coupling

The drive switches off upon reaching the upper or lower limit position using built-in, adjustable limit switches.

### Crank

The slats are raised and lowered as well as tilted with the crank.

Crank rod with collapsible crank; sealed joint plate and square with patented thermal separation.

Material: aluminium

Surface: C0 anodised

Crank holder: plastic, grey, white or brown, crank holder with magnet optional

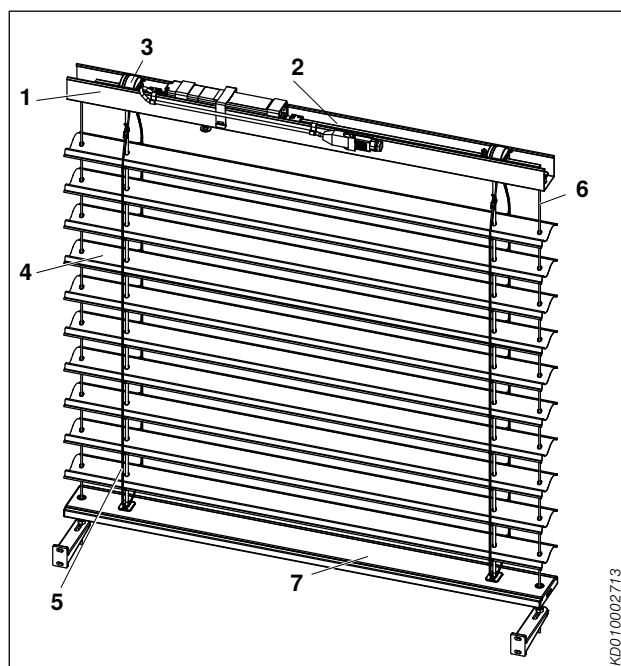


fig. 27: External venetian blind E 90 A2

### Top rail (1)

Material: aluminium, extruded

Material thickness: 1.5 mm

Dimensions (WxH): 59x51 mm

Profile: C-shaped profile

Surface: plain, optionally powder-coated or anodised

Fixing: with noise-optimised top rail brackets made of plain aluminium.

### Tilt rod (2)

Material: steel, zinc-coated

Material thickness: 1 mm

Dimensions (WxH): 12x12 mm

Profile: square tube

Surface: plain

### Bearing (3)

Maintenance-free, enclosed

Housing: plastic, with Teflon

Tilting reel: plastic

Tape reel: plastic

Segment tilting to prevent self-acting adjustment of slats.

### Slats (4)

**Dim-out slats, edges beaded on both sides, special profile**

Material: aluminium, special alloy

Material thickness: 0.44 mm

Dimensions (W): 73/93 mm

Installation: convex

Profile: special profile, front rolled beads with sealing strip made from flexible plastic. Models 73/93 with angular shaped slat

## Description

### Venetian blind facade systems

#### Dim-out slats with cable or rail guidance

	middle part, model 90 with corrugated shaped slat middle part
Surface:	enamel finish resistant to corrosion using a special process
Colour:	according to WAREMA colour chart for external venetian blinds

All edges of the holes in the slats are continuously beaded in order to reduce wear on the lifting tape to a minimum.

The external venetian blind moves down with the slats closed and moves up with the slats positioned horizontally.

#### Slat suspension/Lifting tape (5)

Using lateral **loop cords (5.1)**

Material:	polyester, with worked-in aramide fibres, weather-proof, UV stable
Colour:	black, optionally grey

The loops are fixed to the slats by clips made of stainless steel resistant to corrosion.

#### Lifting tapes (5.2)

Material:	polyester, with special coating
Colour:	black, optionally grey

#### Lateral guidance (6)

##### Rail – A6 (6.1)

With black sealing strips inserted for noise reduction

Material:	aluminium, extruded
Dimensions (WxD):	25x18 mm, other rail variants optional, from page 273
Profile:	C-shaped profile
Surface:	powder-coated, optionally anodised
Fixing:	2-piece guide rail bracket, aluminium and plastic
End cap:	plastic, black, optionally grey
Sealing strip:	weather-proof, UV stable, black
Guide pin:	polyamide, fibreglass-reinforced, impact-resistant connection with the slats by means of 2 ultrasonic welds; slats are alternatively pinned

##### Tension cable – A2 (6.2)

Stranded wire	
Material:	steel, corrosion-resistant
Coating:	polyamide
Colour:	black or transparent coating
Fixing:	tension cable bracket S01, aluminium

The cable guidances are fixed with a special spring tension device to compensate for thermal changes in the length of the top rail. Cable guidances run through cutouts with surrounding beaded edges in the slats and the bottom rail. They are fixed to the window or the wall using tension cable brackets. The slat closure is limited by the tension cable thickness.

#### Partitioning profile (optional)

For achieving maximum dim-out values

Material:	aluminium, folded
Dimensions (WxD):	25x100 mm or 125x45 mm

#### Bottom rail (7)

##### Rail-guided – A6 (7.1)

Tilts with the slats

Material:	aluminium, extruded
Dimensions (WxH):	73/93x20 mm
Surface:	powder-coated
End caps:	plastic, black, optionally grey

Bottom rail with stabilising webs, integrated fall protection and clip-on slat as matching closure. End caps with moveable rail guidance. Bottom rail for rail guidance A6 with sliding guide pins with slotted end caps to prevent the external venetian blind from unhinging.

#### Note:

For model A2/A6 – combination cable/rail guidance the bottom rail is shortened in the area of the cable guidance and ends in front of the cable guidance below the slat.

##### Cable-guided – A2 (7.2)

Material:	aluminium, extruded
Dimension (WxH):	100x20 mm (90/93)/80x20 mm (73)
Surface:	powder-coated
End caps:	plastic, black, optionally grey

#### Colours

Powder coating of aluminium parts with chrome-free pre-treatment according to valid RAL CLASSIC colour chart (except camouflage and luminous colours) or in six DB colours as well as eight textured colours (W4914 - W4921), four anodised-look colours (WC31 - WC34) and further colours according to WAREMA Colour World (in WAREMA colour specification).

Other colour specifications and special colours are available on request at a surcharge.

#### Accessories

From page 230



# Construction limit values/Measuring instructions

## Venetian blind facade systems

### Dim-out slats with cable or rail guidance

#### Construction limit values in mm

For external venetian blinds with equipment variant vivamatic® (VM), slowturn (ST) or work setting (AS), the construction limit values of the corresponding basic type should be assumed. In this case, up to 3 curtains can be designed as a group unit using one drive.

**Note:** The equipment variants AS + TLT together is not available for external venetian blinds with dim-out slats.

Types	Construction limit values <sup>1)</sup>								Average weight in kg/ m²
	Individual unit				Group unit				
	Width <sup>2)</sup>		Height	Area <sup>3)</sup> in m²	Width max.	Area <sup>3)</sup> in m²	left/right of driving curtain max. coupl. each side		
	min. <sup>4)</sup>	max.					Area in m²	Number of curtains	
C 73/90/93 A2 <sup>5)6)7)</sup>	450	4500	4000	10	12000	10	10	2	2.9
E 73/90/93 A2 <sup>5)6)7)</sup>	600	4500	4000	15	12000	23–24	13	2	3.2
C 73/90/93 A6	450	4500	4300	10	12000	10	10	2	2.9
E 73/90/93 A6	600	4500	4300	15	12000	23–24	13	2	3.2

Tab. 3: Construction limit values for external venetian blinds C/E 73/90/93 A6, C/E 73/90/93 A2

- <sup>1)</sup> Construction limit values for solar drive, see page 366.
- <sup>2)</sup> Width = slat size, slat size + 65 mm = back edge of the guide rail for guide rail types 1 and 2
- <sup>3)</sup> The maximum areas indicated depend on the height; see "Height-to-width ratio of external venetian blinds" on page 392. Any other dimensions are subject to individual clarification with the Application Technology department!
- <sup>4)</sup> Asymmetrical running of slats cannot be prevented for small widths. (Please pay attention to the external venetian blind guideline ITRS Industrieverband Technische Textilien – Rollläden – Sonnenschutz e.V.)
- <sup>5)</sup> No central cable guidance is possible for model 73/90/93 A2/A6, maximum width 2400 mm, slat stack heights correspond to the model 73/90/93 A6.
- <sup>6)</sup> Complete closing of the slats is not possible for dim-out slats with cable guidance.
- <sup>7)</sup> Cable force: 350 N per tension cable.

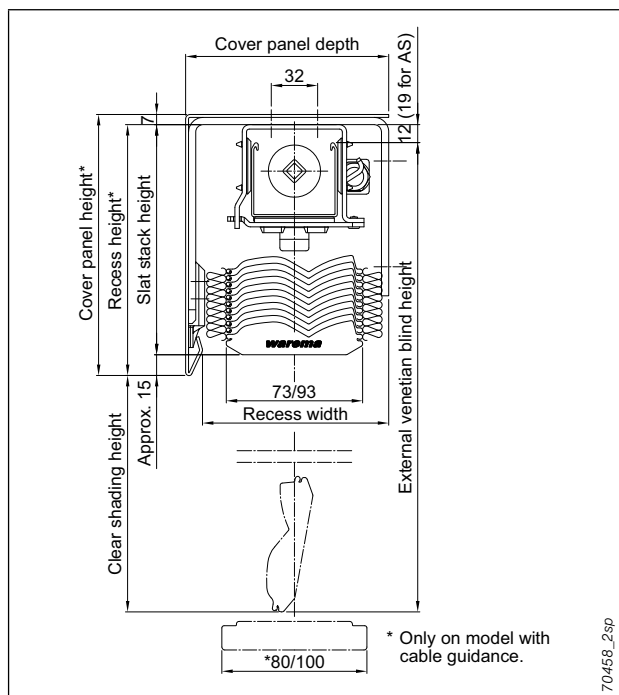


fig. 28: Measuring instructions for external venetian blind types C/E 73/90/93

#### Measuring instructions

Slat stack height from the table  
Slat stack height with work setting (AS) + 7 mm  
Recess height = slat stack height + 15 mm  
Cover panel height = slat stack height + 20 mm

Types	Min. recess height	Min. cover panel height	Round cover panel height min.
73	190	195	210
90/93	205	210	225

\*Minimum cover panel height and/or minimum recess height (overlapping ensured between lower edge of cover panel and top slat, since for dim-out external venetian blinds the length of the external venetian blind is compensated by the distance between the top slat and the top rail.)

Types	Min. recess width	Min. cover panel depth
73	110	120
90/93	130	140

#### Number of cable guidances for 73/90/93 A2

Slat size	Cable guidances
Up to 3000 mm	2
From 3001 mm	3
From 4001 mm	4

When ordering, please indicate positioning of additional cable guiding (starting inside from the left)!

## Construction limit values/Measuring instructions

### Venetian blind facade systems

#### Dim-out slats with cable or rail guidance

#### Slat stack height determined from external venetian blind height

Types	External venetian blind height in mm																	
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800	4000	4200	4300
E 73 A2	166	177	187	198	208	219	230	240	251	261	272	283	293	304	314	325		
E 90/93 A2	154	162	170	178	186	194	202	210	218	226	234	242	250	258	266	274		
E 73 A6	162	173	183	194	204	215	226	236	247	257	268	279	289	300	310	321	332	337
E 90/93 A6	150	158	166	174	182	190	198	206	214	222	230	238	246	254	262	270	278	282

#### Slat stack height determined from clear shading height

Types	Clear shading height in mm															
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800	
E 73 A2	175	187	198	209	220	231	243	254	265	276	287	299	310	321	332	
E 90/93 A2	161	169	177	186	194	202	211	219	227	236	244	252	261	269	277	
E 73 A6	171	182	194	205	216	227	238	250	261	272	283	294	306	317	328	
E 90/93 A6	156	165	173	181	190	198	206	215	223	231	240	248	256	265	273	

Slat stack heights are approximate values. For technical reasons, they might be higher or lower.

**External venetian blinds with crank drive:** Slat stack height is reduced by 15 mm.

**External venetian blinds with work setting (AS):** Slat stack 7 mm higher by lining art. no. 2012281.

**Values in dark grey:** Minimum cover panel height for C/E 73 = 195 mm and for C/E 90/93 = 210 mm.

## Mounting example

### Venetian blind facade systems

### Dim-out slats with guide rails

E 73/90/93 A6 VM with vivamatic®, fasciae, angular cover panel, 230 V internal roller blind and WAREMA climatronic® 3.0

**MINERGIE®**  
 Mehr Lebensqualität, tiefer Energieverbrauch  
 Meilleure qualité de vie, faible consommation d'énergie

General  
information

Product  
characteristics

Basic facade  
external venetian  
blinds

Premium facade  
venetian blinds

Complete external  
venetian blinds

Light guidance/  
external venetian  
blinds

Guides

Cover panels

Planning

Safety systems  
Accessories

Drives  
Control systems

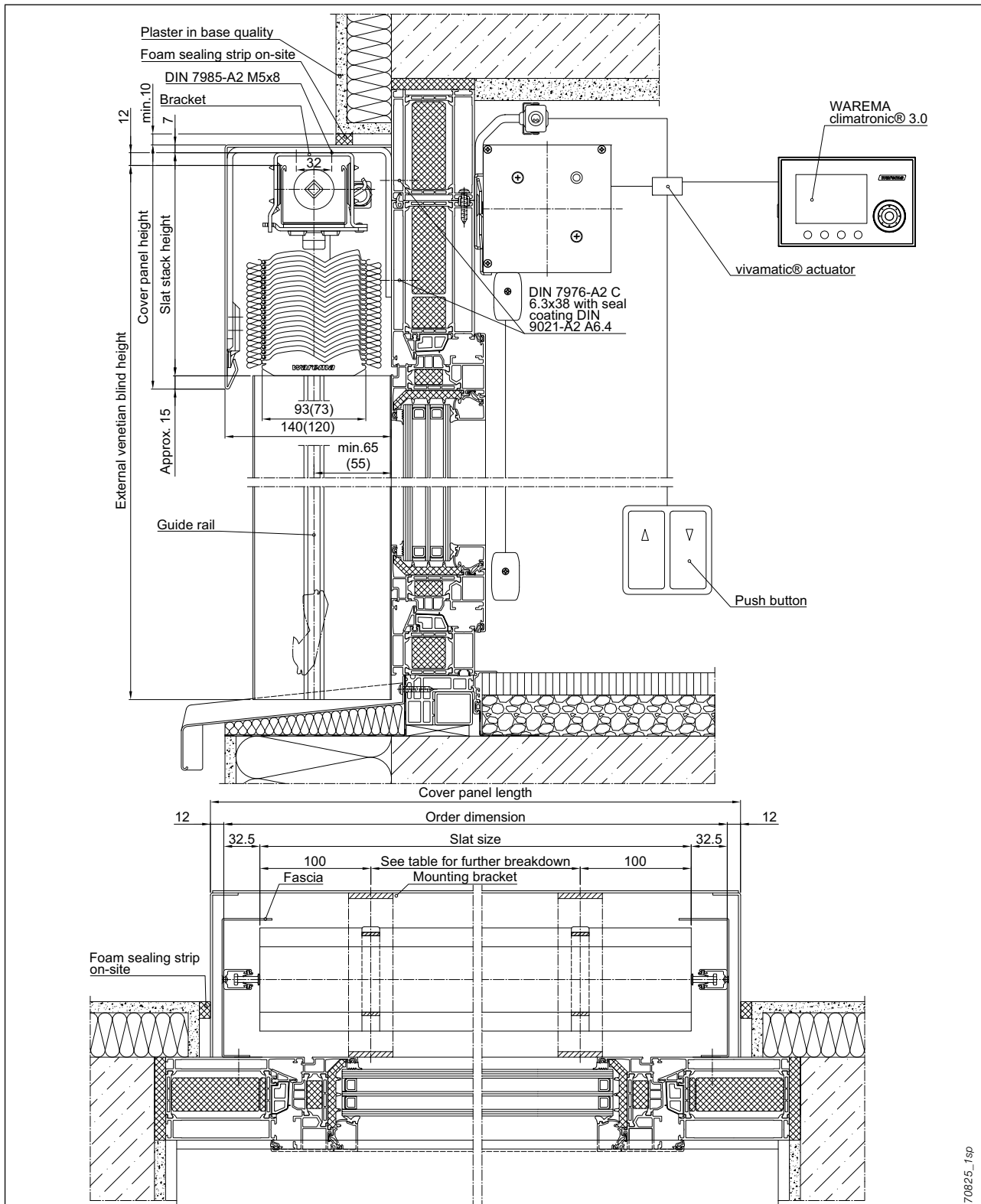


fig. 29: Mounting example for external venetian blinds E 73/90/93 A6 VM with fasciae, angular cover panel, internal roller blind and WAREMA climatronic® 3.0

**Note:** When dim-out venetian blinds are in the lowered position, the distance between the bottom rail and the window sill should be as small as possible to ensure the best possible dim-out effect.

**Minimum cover panel height for E 73 = 195 mm and for E 90/93 = 210 mm.**

## Mounting example

### Venetian blind facade systems

### Dim-out slats with guide rails

C 73/90/93 A6 with angular cover panel

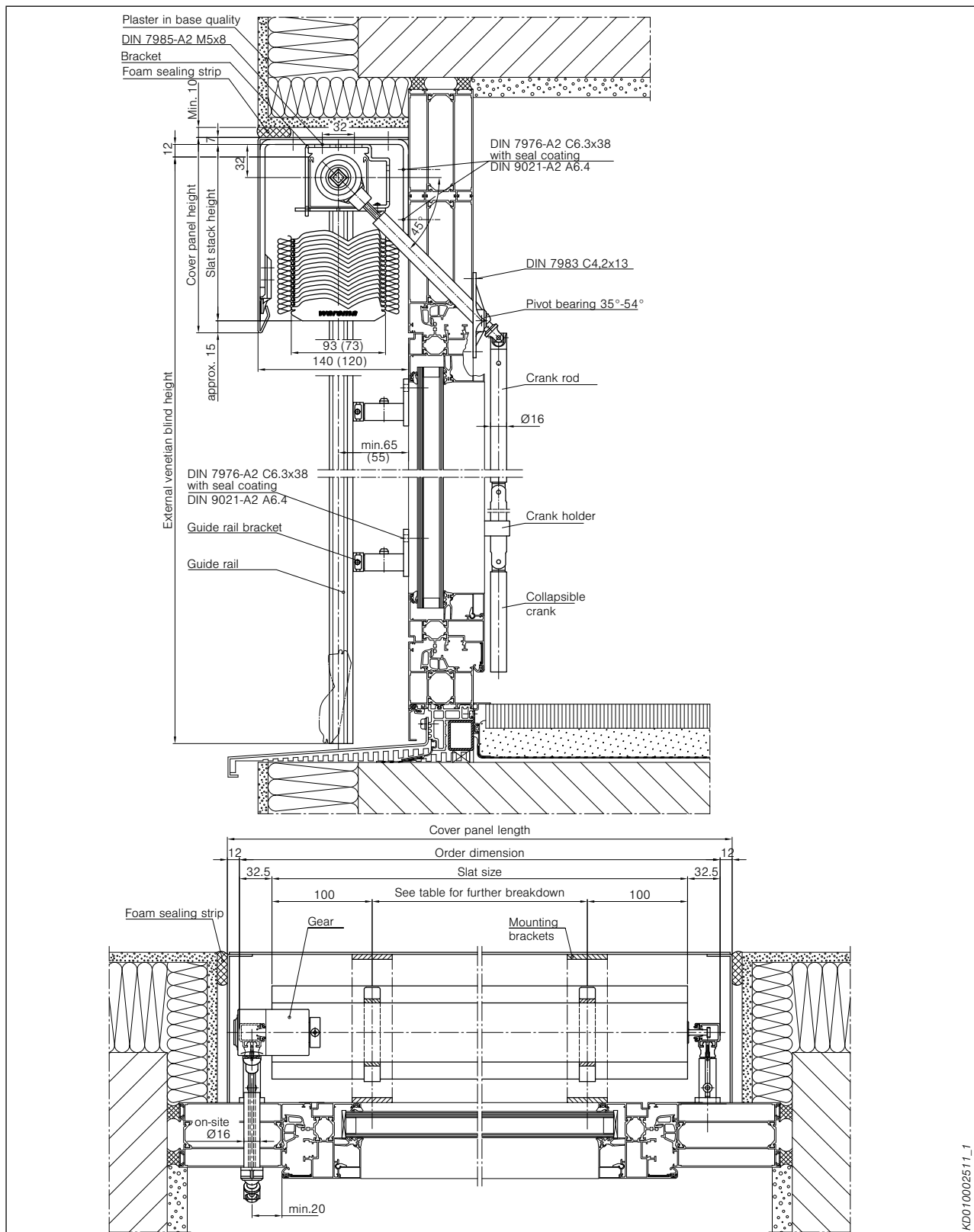


fig. 30: Mounting example for external venetian blinds C 73/90/93 A6 with angular cover panel

**Note:** When dim-out venetian blinds are in the lowered position, the distance between the bottom rail and the window sill should be as small as possible to ensure the best possible dim-out effect.

**Minimum cover panel height for C 73 = 195 mm and for C 90/93 = 210 mm.**

# Mounting example **Venetian blind facade systems** **Dim-out slats with cable guidance** E 90 A2 in on-site notch

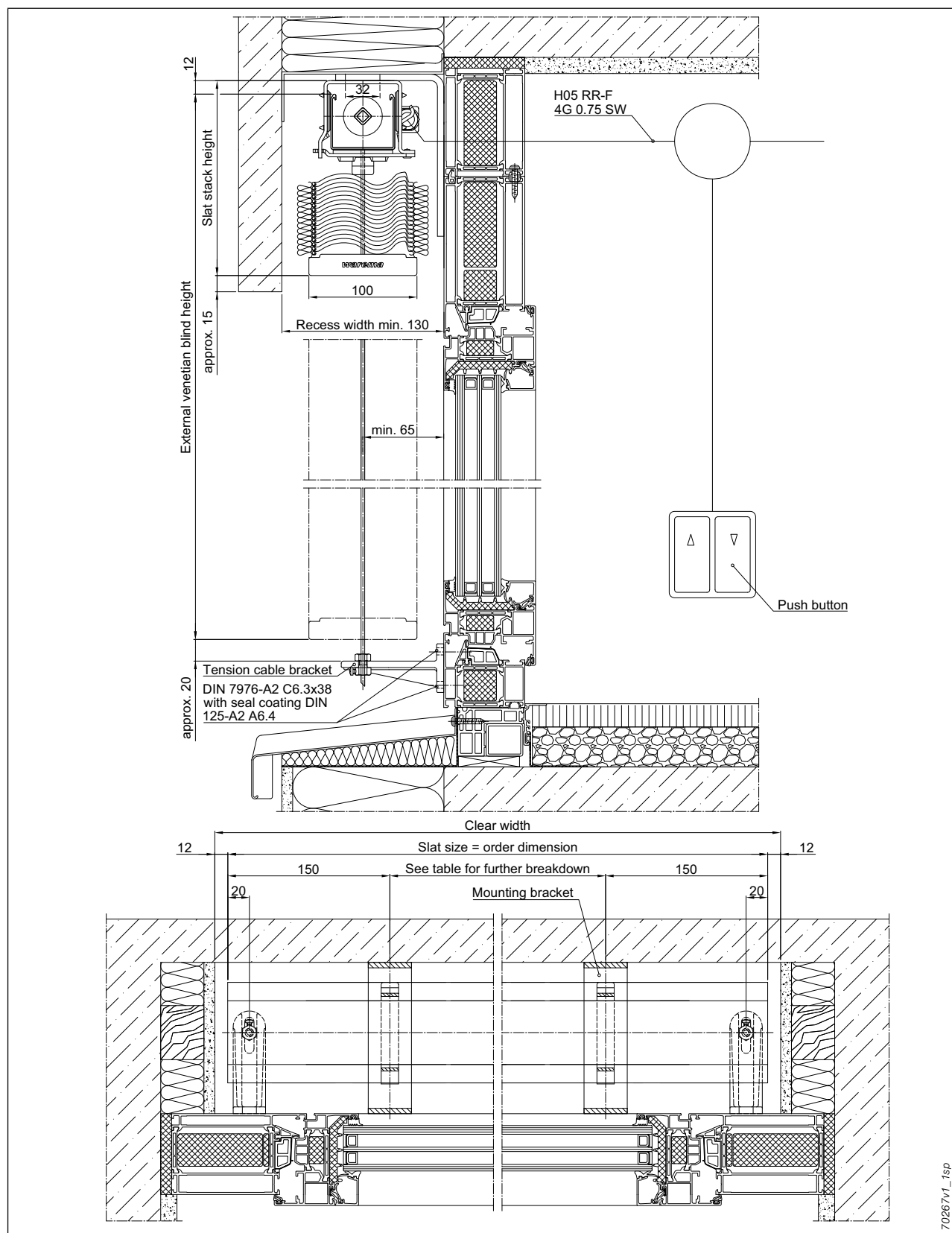


fig. 31: Mounting example for external venetian blind E 90 A2 in on-site notch

Minimum cover panel height for E 90 = 210 mm. Complete closing of the slats is not possible for dim-out slats with cable guidance.



## Dim-out slats with rail and cable guidance

Drives Control systems	Safety systems Accessories	Planning	Cover panels	Guides	Light guidance/ external venetian blinds	Complete external venetian blinds	Premium facade venetian blinds	Basic facade external venetian blinds	Product characteristics	General information
---------------------------	-------------------------------	----------	--------------	--------	--	--------------------------------------	-----------------------------------	---	----------------------------	------------------------

## Self-supporting external venetian blinds

### Cover panel mounting on or between the guide rails

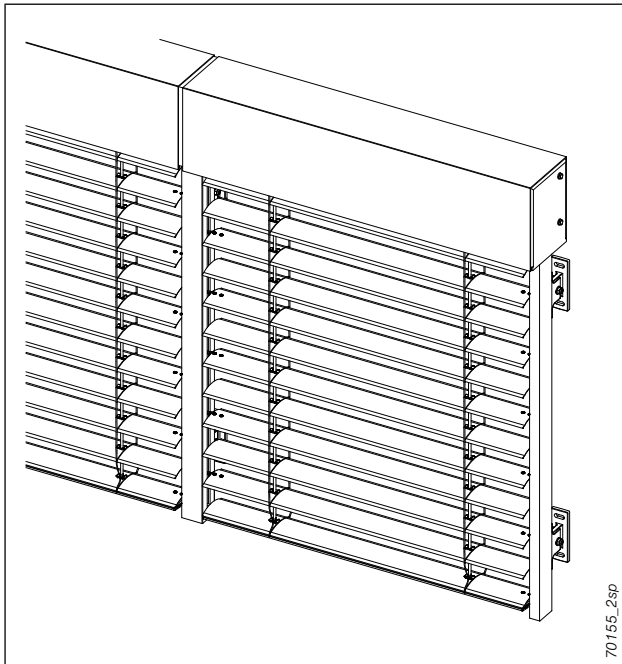


fig. 33: Self-supporting external venetian blind E 80 A6 S, cover panel mounting on the guide rails

### Self-supporting external venetian blinds in two versions

Self-supporting external venetian blinds are attached to the window/the facade only by means of the guide rail bracket. The cover panel is mounted on the guide rails and does not require any connection with the facade/structure.

**When the cover panel is installed between the guide rails,** individual cover panels are fixed to the guide rails using holding profiles with two side closures. The guide rails will give the impression of being continuous.

**Where cover panels are mounted on the guide rails,** cover panels are fixed to the end using side closures and at the cover panel joint using overlapping consoles. The cover panels will give the optical impression of being continuous.

For both systems the cover panel brackets as well as the external venetian blind carriers are preinstalled at the factory as well as the cover panel consoles and the guide rail bracket on the guide rail.

#### Available models:

- External venetian blind types E 60/80 A6 S, E 60/80/100 AF A6, E 73/90/93 A6
- Guide rails types 7, 8, 9 and 10
- Guide rail bracket types H101 and H115
- Cover panels types BL 06, 07, 08 and 09

#### Construction limit values

- Max. area 13 m<sup>2</sup>
- Cover panel depth 150 mm.
- Minimum cover panel height 185 mm, 195 mm for E 73 A6, 210 mm for E 90/93 A6, 225 mm for BL 09
- Cover panel length max. 4000 mm

#### Number of required guide rail brackets

Guide rail length	Up to 3000	3001–5000
Number of guide rail brackets	2	3

### Construction limit values in mm

Types	Construction limit values								Slat width	Average weight in kg/ m² <sup>1)</sup>
	Individual unit				Group unit					
	Width <sup>2)</sup>		Height	Area in m²	max. width	Area in m²	Left/right of driving curtain			
	min. <sup>3)</sup>	max.					Area in m²	Number of curtains		
E 60/80 A6 S	600	4000	5000	13	12000	26–30 <sup>4)</sup>	13	1	60/80	3.1
E 60/80/100 AF A6	600	4000 <sup>5)</sup>	4000	13	12000	32–35 <sup>4)</sup>	13	1	60/80/100	2.7
E 73/90/93 A6	600	4000	4300	13	12000	24–25 <sup>4)</sup>	13	1	73/90/93	3.2

<sup>1)</sup> Cable force: 350 N per tension cable.

<sup>2)</sup> Width = slat dimension

<sup>3)</sup> Asymmetrical running of slats cannot be prevented for small widths. (Please pay attention to the external venetian blind guideline ITRS Industrieverband Technische Textilien – Rollläden – Sonnenschutz e.V.)

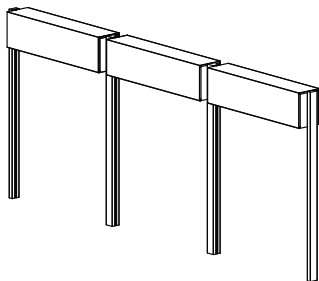
<sup>4)</sup> The specified maximum areas are height-dependent.

<sup>5)</sup> Additional cable guidances are required for order widths exceeding 2400 mm. Standard cover panel depth is 150 mm.

# Self-supporting external venetian blinds

## Cover panel mounting on or between the guide rails

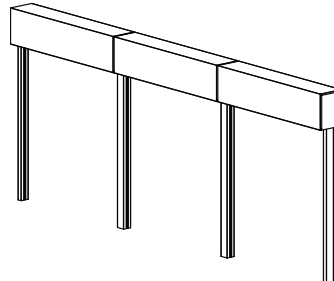
Mounting cover panels between the guide rails



KD010002349\_3

fig. 34: View

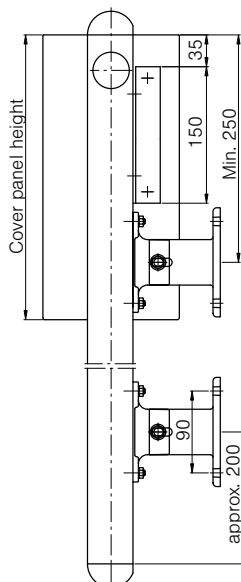
Mounting cover panels on the guide rails



KD010002349\_4

fig. 35: View

Mounting cover panels between the guide rails: guide rail brackets

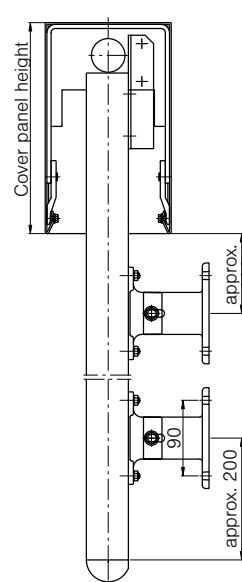


KD010002349\_1

From 3 m ext. ven. blind height a third guide rail bracket is necessary.

fig. 36: Position of the guide rail bracket for mounting cover panels between the guide rails

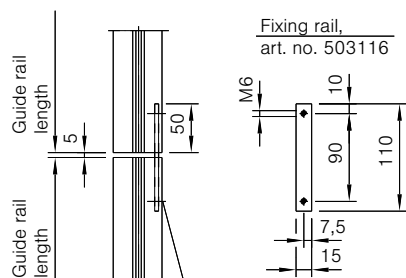
Mounting cover panels on the guide rails: guide rail brackets



KD010002349\_2

fig. 37: Position of the guide rail bracket for cover panels mounted on the guide rails

Mounting cover panels between guide rails: connection of the guide rails



Screw M6x8 DIN 933-A2, art. no. 732011

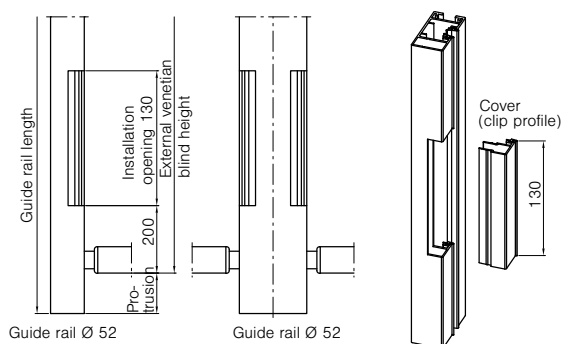
Material: 15x5 110 mm long stainless steel

Tighten screw M6 x 8 only at one guide rail so that the heat emission can be absorbed.

KD010002090

fig. 38: Connecting the guide rails

Installation opening with aluminium clip profile for threading the panel of self-supporting external venetian blinds



Guide rail Ø 52 type 7  
Guide rail 25x50 types 9 and 17  
Guide rail Ø 52 type 8  
Guide rail 50x50 type 10

Installation opening subject to surcharge

KD010002525a

fig. 39: Installation opening with aluminium clip profile

## Self-supporting external venetian blinds

### Cover panel mounting on or between the guide rails

#### Cover panel extension

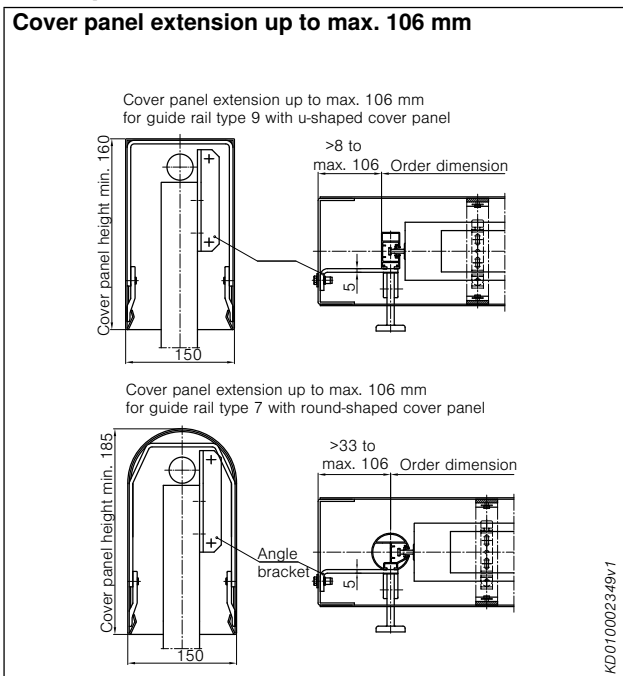


fig. 40: Cover panel extension up to max. 106 mm

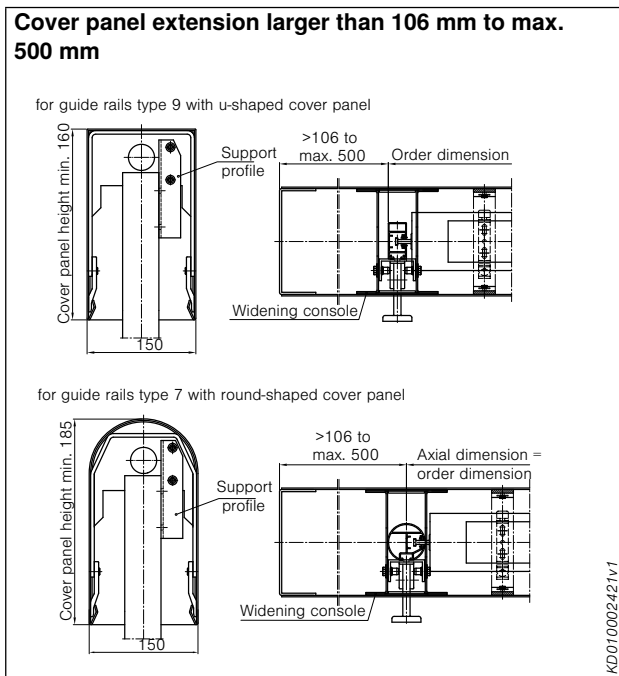


fig. 41: Cover panel extension larger than 106 mm to max. 500 mm



# Self-supporting external venetian blinds

## Mounting cover panels between the guide rails

E 80 A6 S with round-shaped cover panel on transom and mullion facade

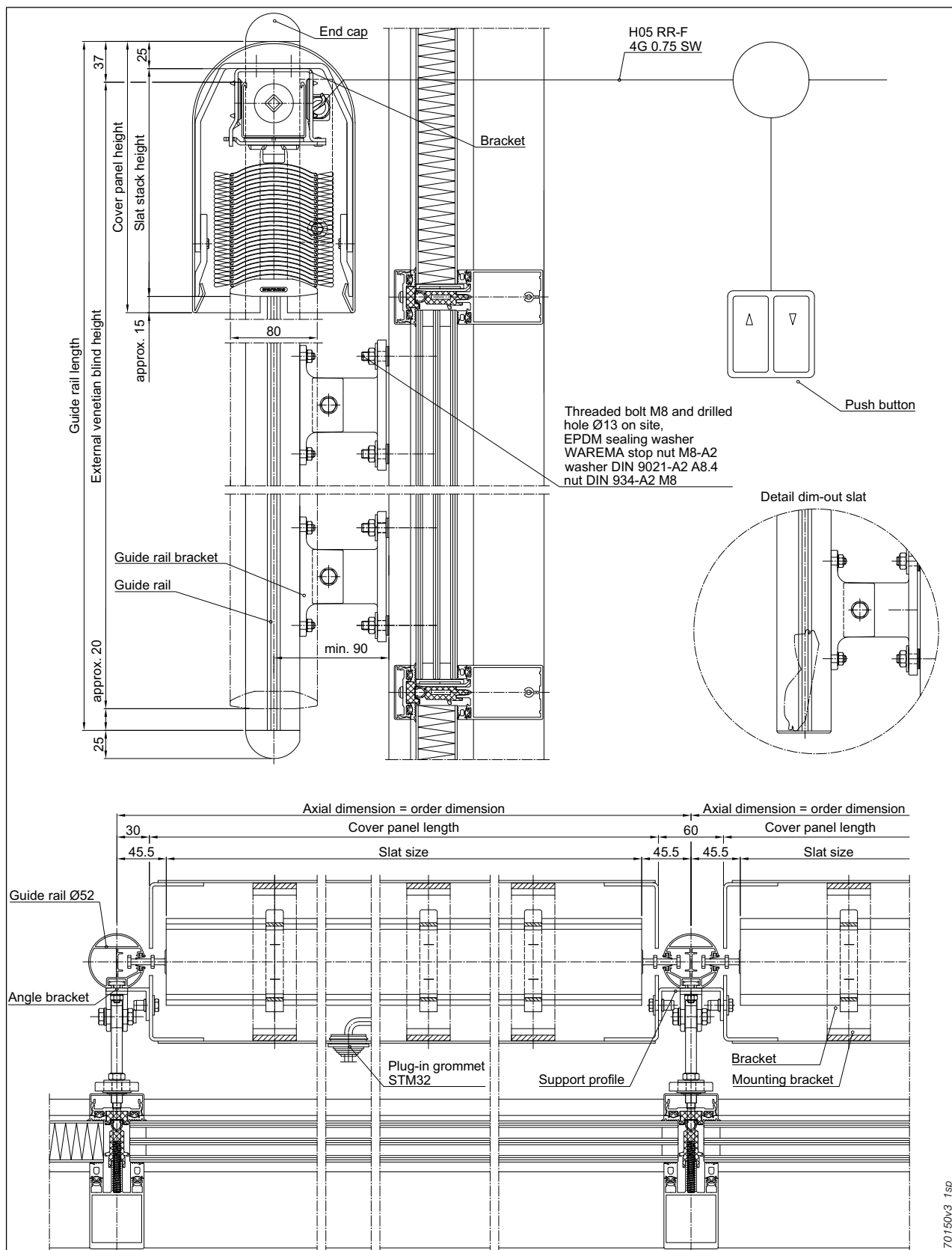


fig. 42: Mounting example for external venetian blind E 80 A6 S with guide rail Ø 52 mm: mounting cover panels between guide rails

## Self-supporting external venetian blinds

### Mounting cover panels between the guide rails

E 80 A6 S with u-shaped cover panel on transom and mullion facade

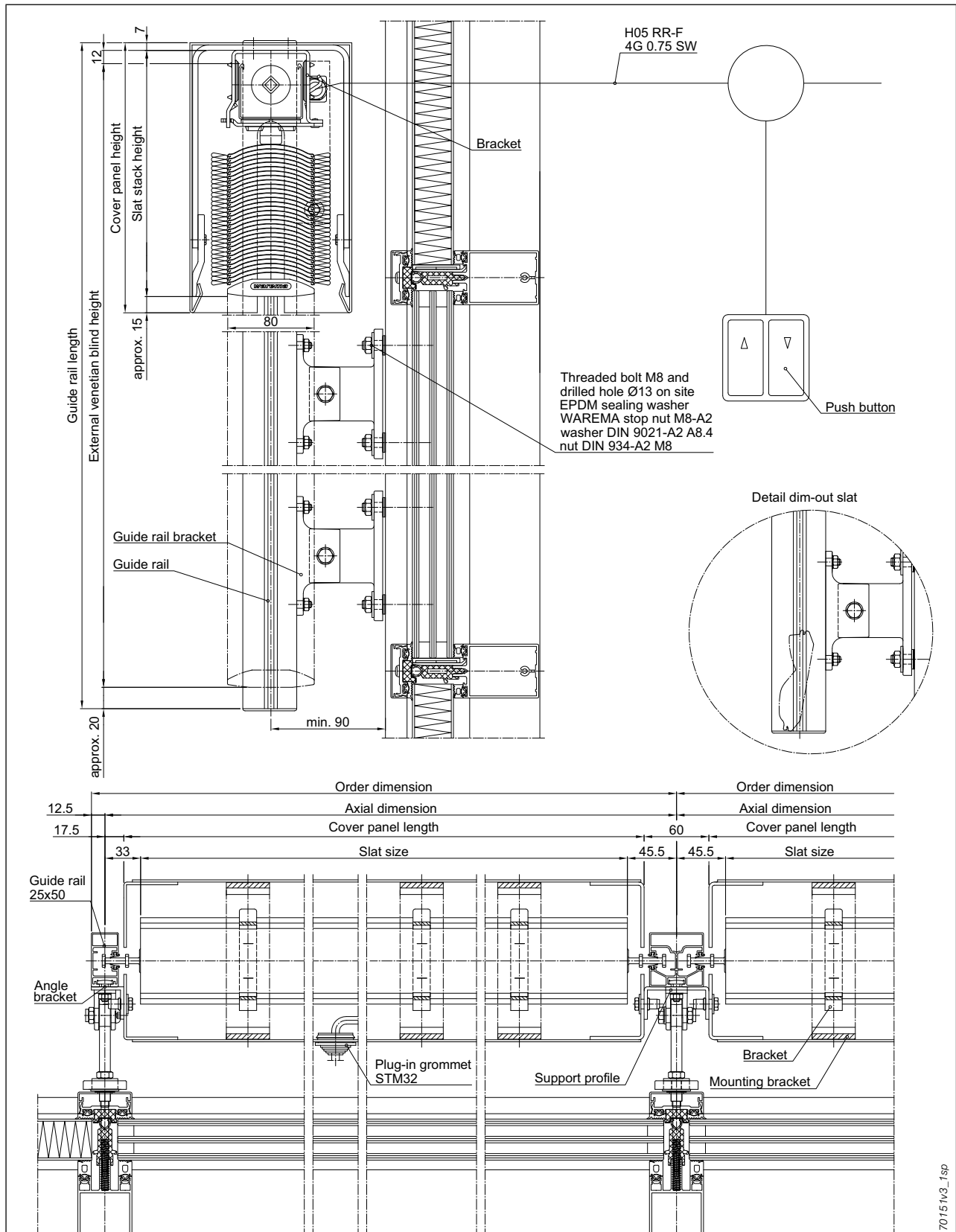


fig. 43: Mounting example for external venetian blind E 80 A6 S with guide rail 50x50 mm or 25x25 mm: mounting cover panels between guide rails

## Self-supporting external venetian blinds

### Mounting cover panels on the guide rails

E 80 A6 S with round-shaped cover panel on transom and mullion facade

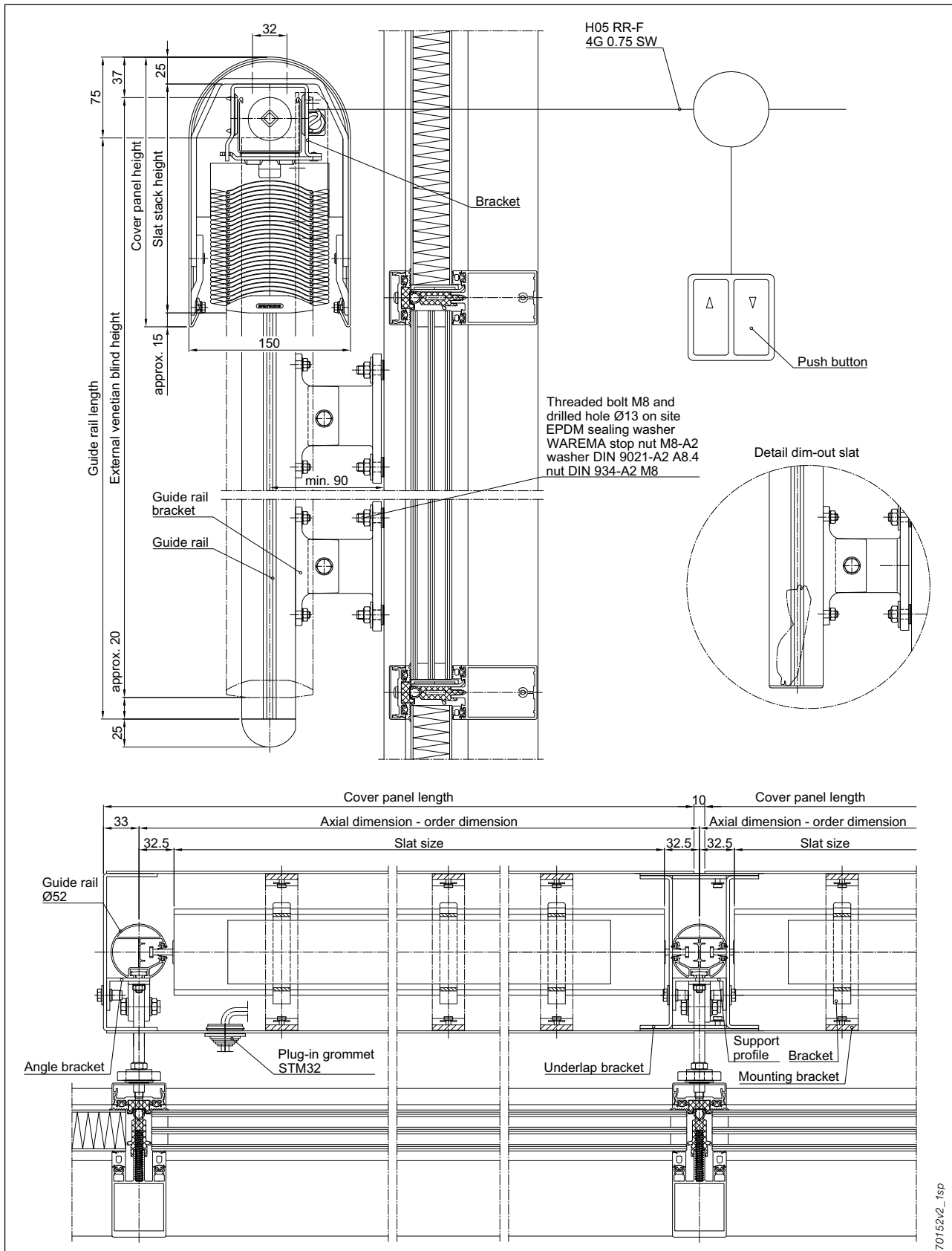


fig. 44: Mounting example for external venetian blind E 80 A6 S with guide rail Ø 52 mm: mounting cover panels on the guide rails

# Self-supporting external venetian blinds

## Mounting cover panels on the guide rails

E 80 A6 S with u-shaped cover panel on transom and mullion facade

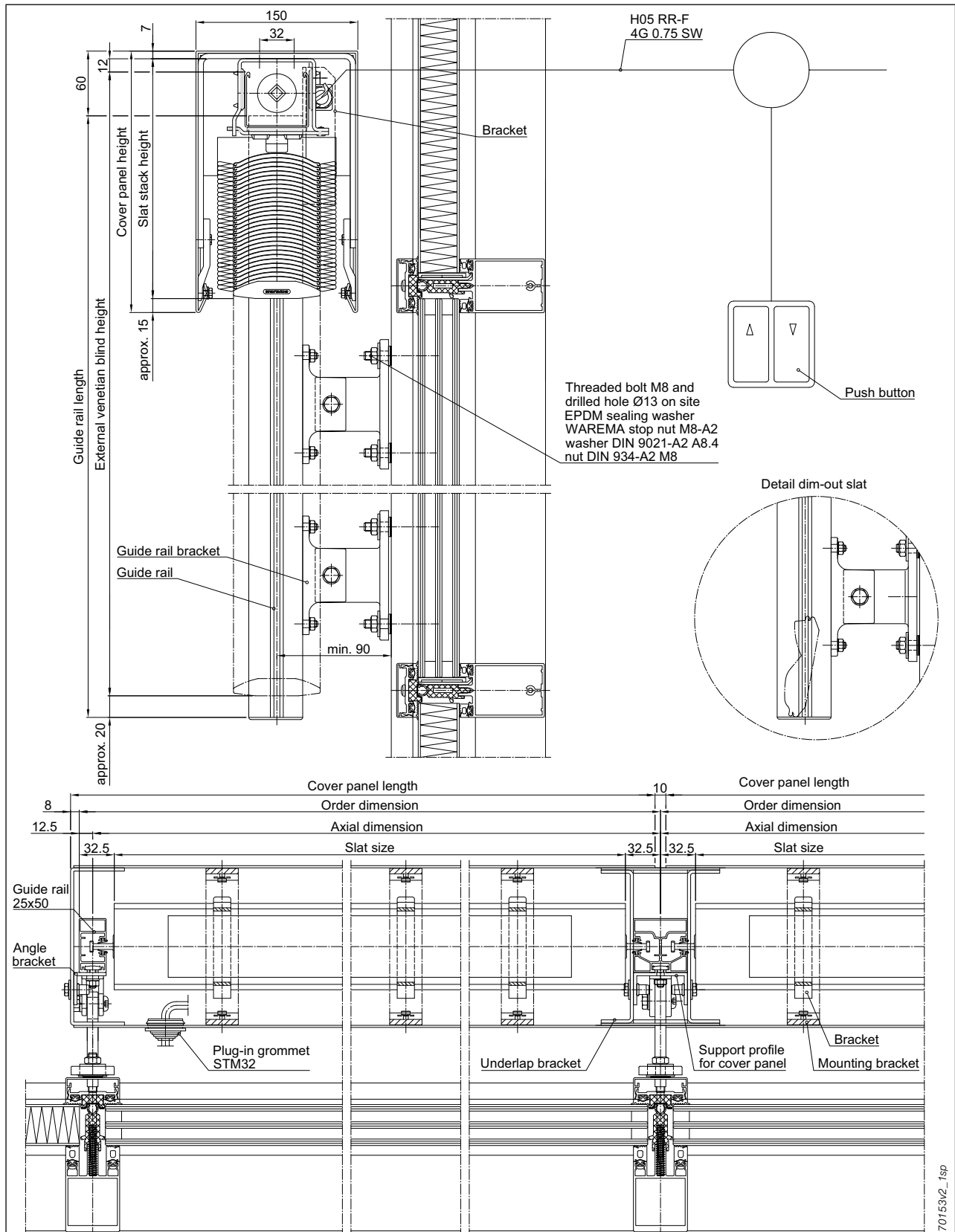


fig. 45: Mounting example for external venetian blind E 80 A6 S with guide rail 50x50 mm or 25x25 mm: mounting cover panels on the guide rails

# Self-supporting external venetian blinds

## Top rail mounting on SE guide rails

With bracket fixing on the guide rail bracket

For mounting in existing shaft or on-site cover panel if fixing of the support brackets is not possible there.

The supports are fixed to brackets with bracket lugs which are fixed to the guide rails. Based on this principle, first the guide rails and then the external venetian blinds are mounted.

### Available models:

- External venetian blind types E 60/80 A6 S, E 60/80/100 AF A6, E 73/90/93 A6
- Guide rail types 7, 8, 9, 10 and 17
- Guide rail bracket H101 and H115

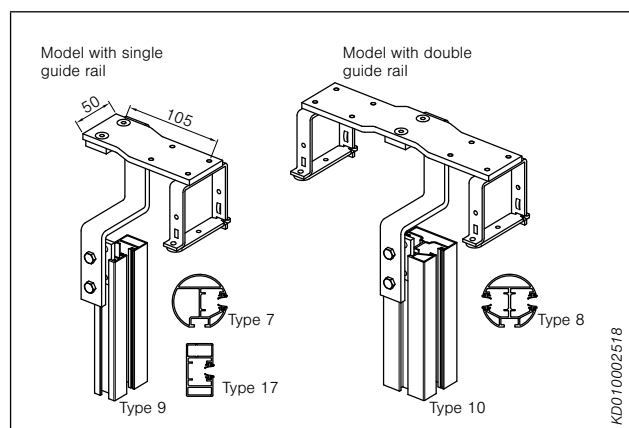


fig. 46: System illustration

### Construction limit values

- max. area 10 m<sup>2</sup>
- max. width: individual unit 2000 mm, group unit 6000 mm
- max. height: see respective external venetian blind types  
Shaft model recommendation: slat stack height + 25 mm

### Number of guide rail brackets required

Guide rail length	Up to 3000	3001–5000
Number of guide rail brackets	2	3

### Guide rail, single 25x50 Type 17 for reveal installation

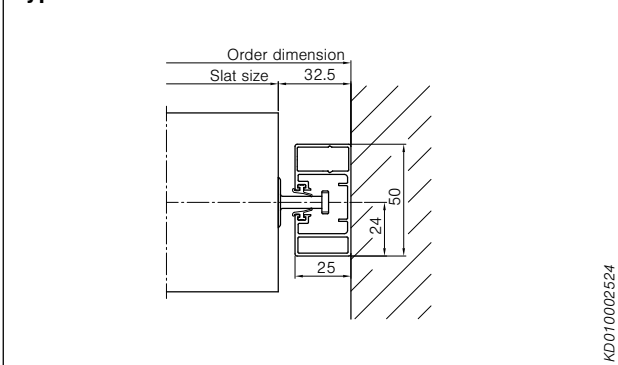


fig. 47: Guide rail, reveal installation





# Self-supporting external venetian blind

## Top rail mounting on SE guide rails

With bracket fixing on the guide rail bracket

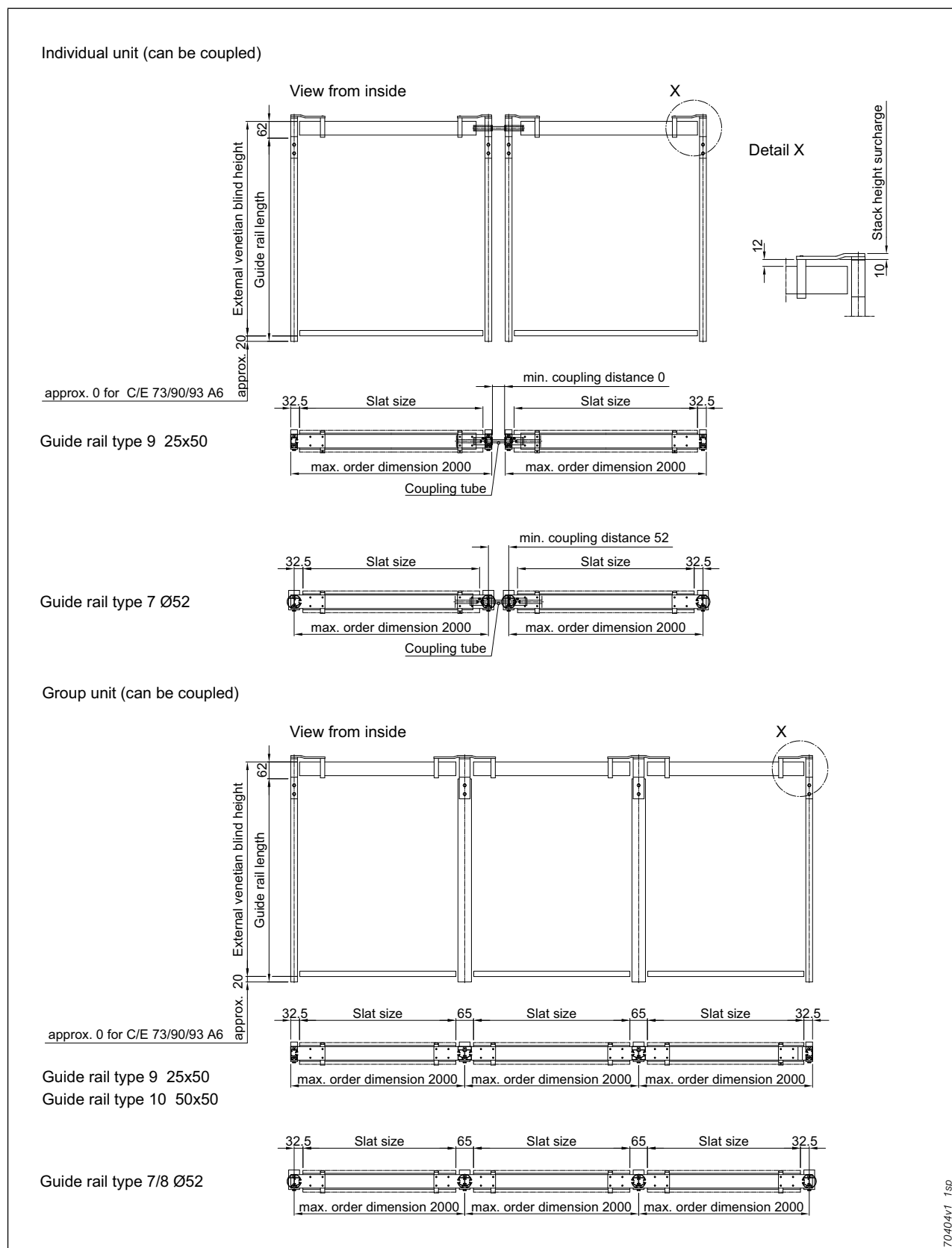
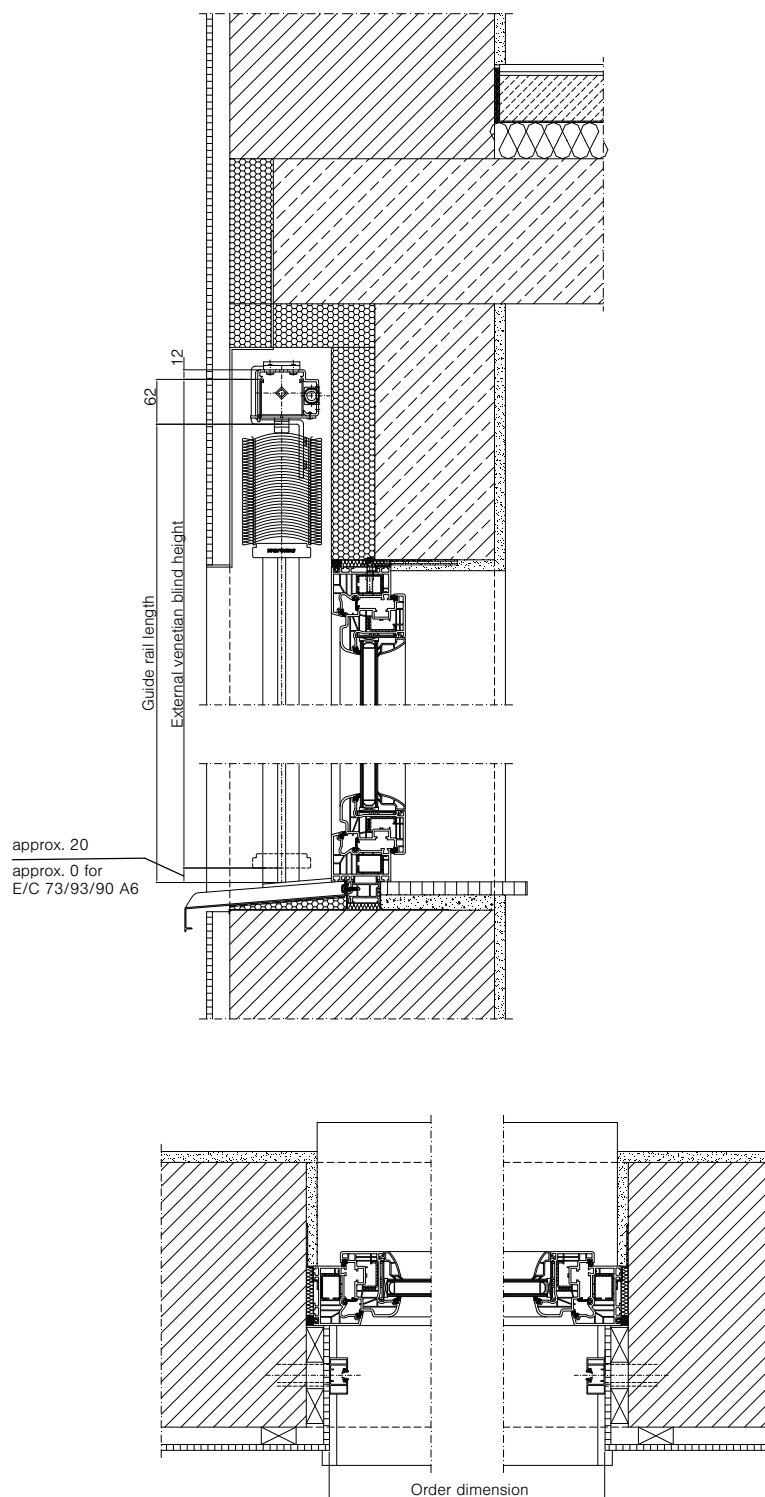


fig. 50: Measuring instructions

# **Self-supporting external venetian blind** **Fixing via self-supporting top rail installation SE** **in an existing shaft**

Type E 80 A6 S in on-site notch



3\_brickwall\_with\_coldfacade

fig. 51: Fixing via self-supporting top rail installation SE - type E 80 A6 S in on-site notch

Drives Control systems	Safety systems Accessories	Planning	Cover panels	Guides	Light guidance/ external venetian blinds	Complete external venetian blinds	Premium facade venetian blinds	Basic facade external venetian blinds	Product characteristics	General information
---------------------------	-------------------------------	----------	--------------	--------	--	--------------------------------------	-----------------------------------	---	----------------------------	------------------------

## Description

### T/M system cover panel

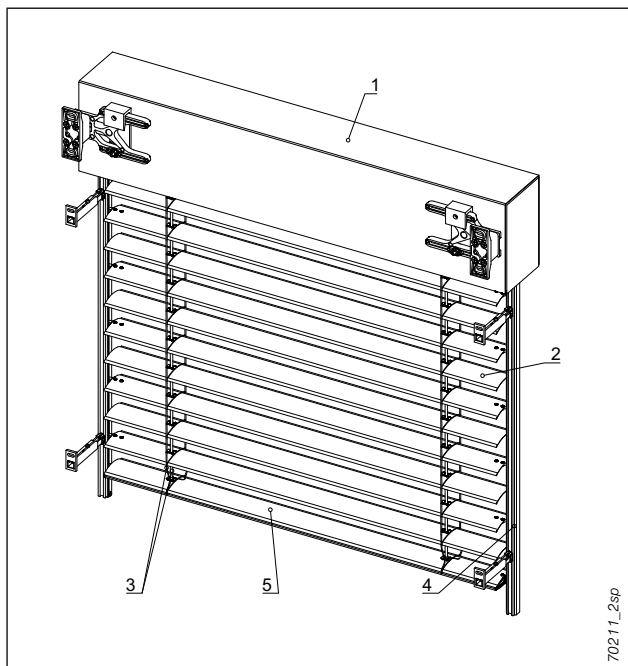


fig. 52: T/M system cover panel with rail guidance

#### 1 Cover panel

#### 2 Slats

##### 2.1 Beaded slats

##### 2.2 Flat slats

##### 2.3 Dim-out slats

#### 3 Tilting and lifting tape

#### 4 Lateral guidance

#### 5 Bottom rail

## Application

For special mounting on transom and mullion facades.

Installation note:

For T/M system cover panels the cover panel brackets, external venetian blind brackets as well as the suspended consoles are already premounted at the factory.

Optionally, the external venetian blinds can be delivered in a preinstalled condition.

## Operation

### Motor

The slats are raised and lowered as well as tilted by actuating a switch.

Voltage: 230 V AC, other voltages optional

Frequency: 50 Hz, other frequencies optional

Degree of protection: IP 54

Plug-in connector: Hirschmann coupling

The drive switches off upon reaching the upper or lower limit position using built-in, adjustable limit switches.

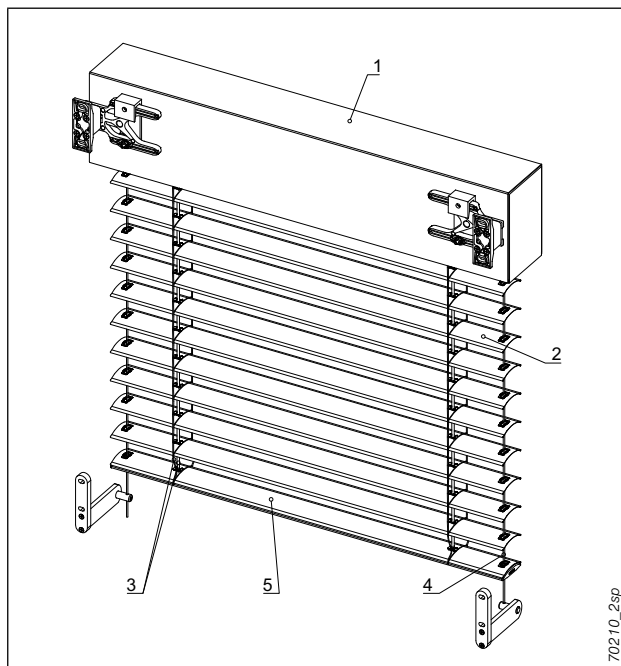


fig. 53: T/M system cover panel with cable guidance

## T/M system cover panels (1)

Material: aluminium sheet, folded

Material thickness: 2 mm

Dimensions (WxH): variable

Fast and easy installation using premounted stiffener brackets and top rail brackets in the cover panel as well as mounting consoles with a large shifting range on the external side of the cover panel.

Available cover panel types: BL 06, 07, 08 and 09. Cover panel special foldings optionally.

## Available external venetian blind types (2)

Rail-guided: E 60/80 A6 S, E 60/80 AF A6 and E 73/90/93 A6

Cable-guided: E 60/80 A2 S, E 60/80 AF and E 73/90/93 A2

Technical description see respective external venetian blind basic type.

## Colours

Powder coating of aluminium parts with chrome-free pre-treatment according to valid RAL CLASSIC colour chart (except camouflage and luminous colours) or in six DB colours as well as eight textured colours (W4914 - W4921), four anodised-look colours (WC31 - WC34) and further colours according to WAREMA Colour World (in WAREMA colour specification).

Other colour specifications and special colours are available on request at a surcharge.

## Construction limit values

### T/M system cover panel

#### T/M system cover panel

Types	Construction limit values <sup>1)</sup>								Number of curtains
	Individual unit				Group unit <sup>2)</sup>				
	Width <sup>3)4)</sup>		Height	Area in m²	max. width	Area <sup>5)</sup> in m²	left/right of driving curtain max. coupl. each side		
							min. <sup>6) 7)</sup>	max.	
E 60 A6 S	690	4000	3150 <sup>8)</sup>	12.6	12000	26 - 30	12.6	1	3
E 80 A6 S	690	4000	5000	20	12000	26 - 30	13	1	3
E 60/80 AF A6	690	4000 <sup>9)</sup>	4000	16	12000	32 - 35	13	1	3
E 73/90/93 A6	690	4000	4300	15	12000	23 - 24	13	1	3
E 60 A2 S	670	4000	3150 <sup>8)</sup>	12.6	12000	26 - 30	12.6	1	3
E 80 A2 S	670	4000	4000	16	12000	26 - 30	13	1	3
E 60/80 AF	670	4000	4000	16	12000	32 - 35	13	1	3
E 73/90/93 A2	670	4000	4000	16	12000	23 - 24	13	1	3

Tab. 4: Construction limit values T/M system cover panel

<sup>1)</sup> Cable force 350 N per tension cable.

<sup>2)</sup> There must always be a curtain section at where cover panels join (mechanical coupling possible).

<sup>3)</sup> Width = cover panel size

<sup>4)</sup> In general: if there is an additional tension cable, an additional cover panel fixation is imperatively required.

<sup>5)</sup> The indicated maximum areas depend on the individual height; see "Height-to-width ratio of external venetian blinds" on page 392.

<sup>6)</sup> Asymmetrical running of slats cannot be prevented for small widths. (Please pay attention to the external venetian blind guideline ITRS Industrieverband Technische Textilien – Rollläden – Sonnenschutz e.V.)

<sup>7)</sup> Min. width with a round guide rail: 730 mm

<sup>8)</sup> Max. cover panel height = 370 mm.

<sup>9)</sup> Additional cords and an additional cover panel console are required for a slat size >2400 mm. Cover panel depth 150 mm.

#### Note:

Information on the slat stack heights can be found from page 31 or via the WAREMA slat stack height app at [www.warema.de/pakethoehe](http://www.warema.de/pakethoehe).

#### Cover panels types BL 06, 07, 08, 09

Min. cover panel height	200 mm (E90/93 = 210 mm), BL 08 = 220 mm, BL 09 = 245 mm
Max. cover panel height	370 mm
Cover panel depth	150 mm
Max. cover panel length	4000 mm
Min. projection	115 mm (dimension A)
Max. projection	150 mm (dimension A)
possible tension cable bracket	see chapter "Cable guidances"
possible guide rails	see chapter "Rail guidance"

#### Number of required cover panel consoles

Cover panel length	Up to 3000	3001 to 4000
Number of cover panel consoles <sup>1)</sup>	2	3

<sup>1)</sup> an additional cover panel console must be mounted per additional tension cable



## T/M system cover panel E 80 A2 S



72

# Mounting example **T/M system cover panel E 80 A6 S**

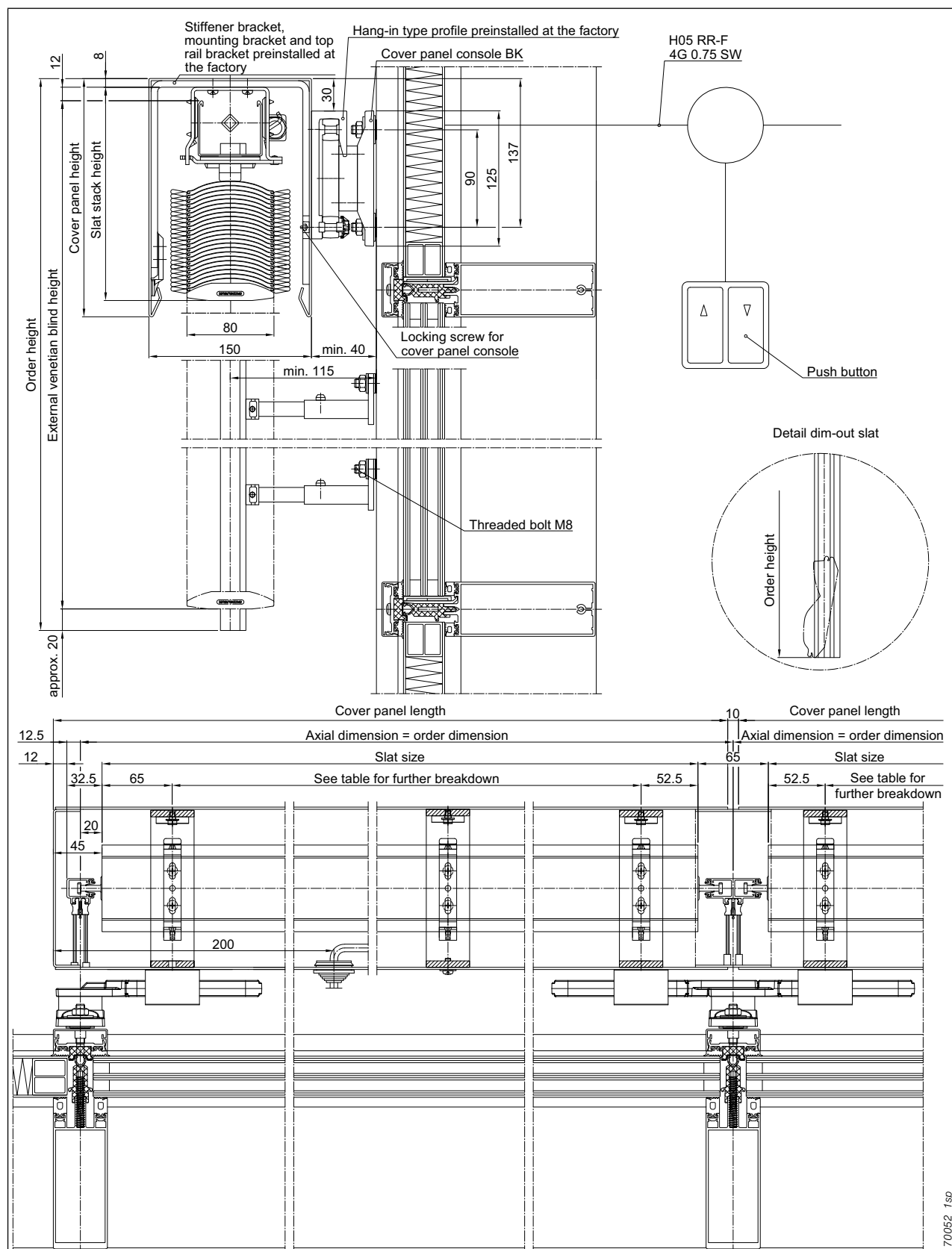


fig. 55: Mounting example for T/M system cover panel E 80 A6 S

## Mounting example

### T/M system cover panel E 80 A6 S with round-shaped cover panel

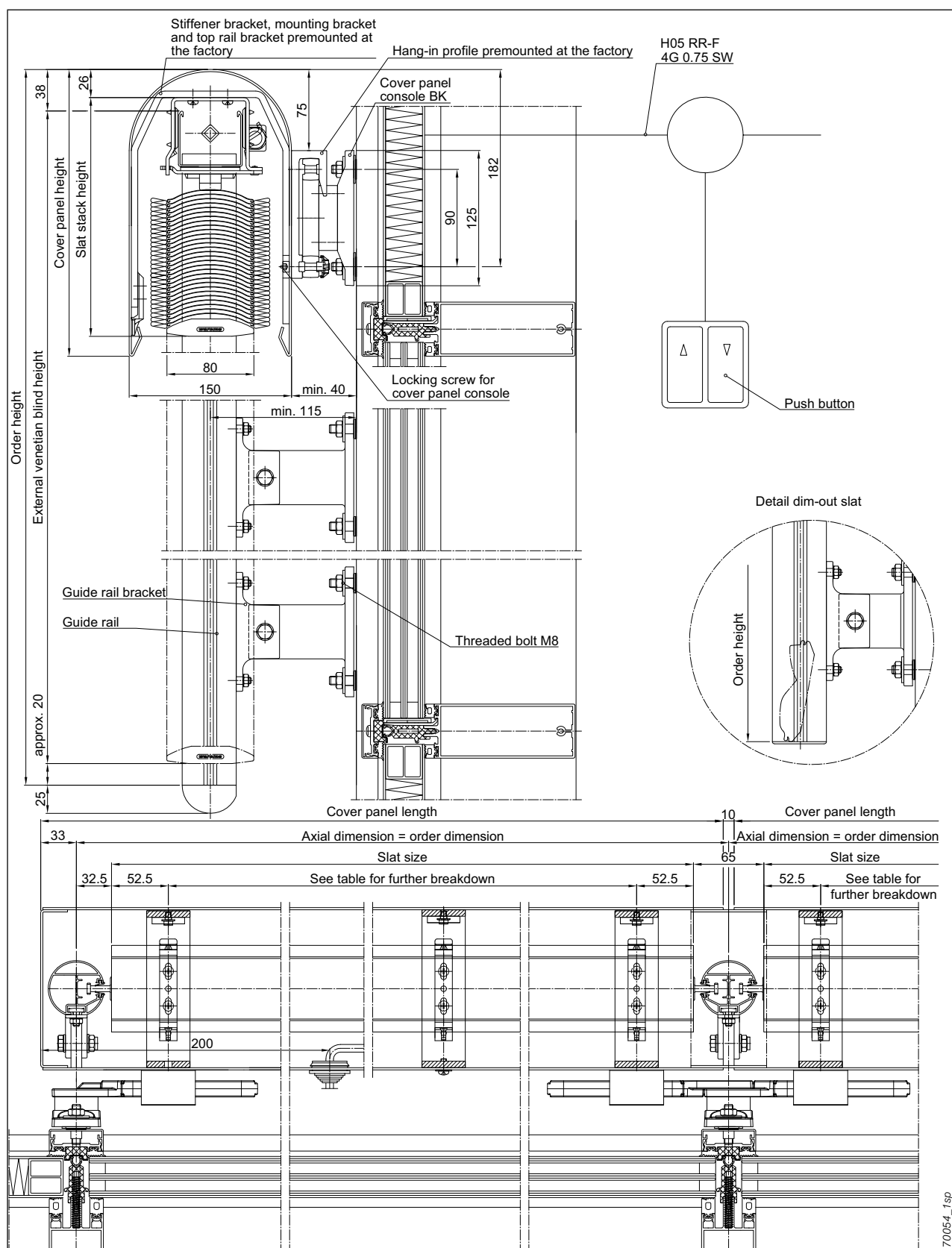


fig. 56: Mounting example for T/M system cover panel E 80 A6 S with round-shaped cover panel

## Contents

### Premium facade venetian blinds

Metal system venetian blinds	76
Wind-stable external venetian blinds	80
Asymmetrical external venetian blinds	89

Solflex AB försäljning och service västra Skåne. Showroom och rådgivning;  
Malmö Slussplan 1, 040-979745. Helsingborg Garnisonsg 12, 042-161635.  
kontakter@solflex.se www.solflex.se

General information
Product characteristics
Basic facade external venetian blinds
<b>Premium facade venetian blinds</b>
Complete external venetian blinds
Light guidance/ external venetian blinds
Guides
Cover panels
Planning
Safety systems Accessories
Drives Control systems

## Description

### Metal system venetian blinds E 90/93 A8, C 90/93 A8

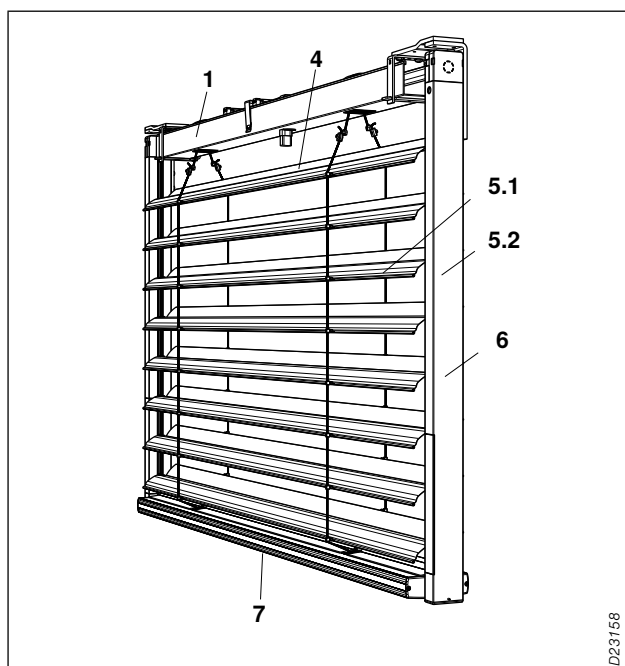


fig. 57: External venetian blind E 93 A8

- 1 Top rail
- 2 Tilt rod
- 3 Bearing
- 4 Slats
- 5 Slat connection/raising mechanism
- 6 Lateral guidance
- 7 Bottom rail

## Application

For mounting on mullion/transom facades or conservatories, in the soffit or ventilated facades, in double-skin facades, in front of the facade.

## Operation

### Motor

The slats are raised and lowered as well as tilted by actuating an operating switch.

Voltage: 230 V AC, other voltages optional

Frequency: 50 Hz, other frequencies optional

Degree of protection: IP 54

Plug-in connector: Hirschmann coupling

The drive switches off upon reaching the upper or lower limit position using built-in, adjustable limit switches.

### Crank

The slats are raised and lowered as well as tilted with the crank.

Crank rod with collapsible crank; sealed joint plate and square with patented thermal separation.

Material: aluminium

Surface: C0 anodised

Crank holder: plastic, grey, white or brown, crank holder with magnet optional

Maintenance-free bevel gear with built-in brake.

Feedthrough to the interior using pivot bearings and square rods with thermal separation..

### Top rail (1)

Material: aluminium, extruded

Material thickness: 1.5 mm

Dimensions (WxH): 59x51 mm

Profile: C-shaped profile

Surface: plain, optionally powder-coated or anodised

Fixing: with noise-optimised top rail brackets made of plain aluminium.

### Tilt rod (2)

Material: steel, zinc-coated

Material thickness: 1 mm

Dimensions (WxH): 12x12 mm

Profile: square tube

Surface: plain

### Bearing (3)

Maintenance-free, enclosed

Housing: plastic, with Teflon

Tilting reel: plastic

Tape reel: plastic

Segment tilting to prevent self-acting adjustment of slats.

### Slats (4)

#### Dim-out slats (4.1)

Rolled beading on both edges with sealing strip in the front beading

Material: aluminium, special alloy

Material thickness: approx. 0.44 mm

Dimensions (W): 90/93 mm

Surface: enamel finish resistant to corrosion using a special process

Colour: according to WAREMA colour chart for external venetian blinds

Slats pinned on both sides, no holes.

The external venetian blind moves down with the slats closed to the outside and moves up with the slats in a horizontal position.

## Description

### Metal system venetian blinds

#### E 90/93 A8, C 90/93 A8

#### Slat connection/Lifting chain

##### Slat connection (5.1)

Using lateral loop cords (5.1)

Material: polyester, with worked-in aramide fibres, weather-proof, UV stable

Colour: black, optionally grey

The loops are fixed to the slats by clips made of stainless steel resistant to corrosion.

##### Lifting chain (5.2)

Material: steel, zinc-coated

The lifting chain moves invisibly in the guide rails; the system is lifted by means of the attachment to the bottom rail.

#### Lateral guidance (6)

##### Rail – A8 (6.1)

With black sealing strips inserted for noise reduction

Material: aluminium, extruded

Dimensions (WxD): 25x50 mm

Profile: C-shaped profile

Surface: powder-coated (anodisation is not possible)

Fixing: 2-piece guide rail bracket, aluminium

End cap: plastic, black, optionally grey

Sealing strip: black, inserted in the guide rail for noise reduction

Guide pin: polyamide, glass fibre reinforced, impact-resistant connection with the slats by means of 2 ultrasonic welds; slats are pinned on both sides.

#### Bottom rail (7)

With end caps

Material: aluminium, extruded

Dimensions (WxH): 104x33 mm

Surface: powder-coated

End caps: plastic, black, optionally grey

Bottom rail with rail guidance A8 with movable sliders made of corrosion-resistant steel and integrated opening, fall and collision protection.

#### Colours

Powder coating of aluminium parts with chrome-free pre-treatment according to valid RAL CLASSIC colour chart (except camouflage and luminous colours) or in six DB colours as well as eight textured colours (W4914 - W4921), four anodised-look colours (WC31 - WC34) and further colours according to WAREMA Colour World (in WAREMA colour specification).

Other colour specifications and special colours are available on request at a surcharge.

General  
information

Product  
characteristics

Basic facade  
external venetian  
blinds

Premium facade  
venetian blinds

Complete external  
venetian blinds

Light guidance/  
external venetian  
blinds

Guides

Cover panels

Planning

Safety systems  
Accessories

Drives  
Control systems



## Construction limit values

### Metal system venetian blinds

#### E 90/93 A8, C 90/93 A8

#### Construction limit values in mm

Types	Construction limit values								Average weight in kg/ m²
	Individual unit				Group unit				
	Width <sup>1)</sup>		Height	Area <sup>2)</sup> in m²	max. width	Area <sup>2)</sup> in m²	left/right of driving curtain max. coupl. each side		
	min.	max.					Area in m²	Number of curtains	
C 90/93 A8 <sup>3)</sup>	750	4000	4300	8	12000	8	8	1	3.5
E 90/93 A8	750	4000	4300	10	12000	16	8	1	3.5

Tab. 5: Construction limit values for external venetian blinds C/E 90/93 A8

<sup>1)</sup> Width = slat size, slat size + 65 mm = back edge of the guide rail for FSCH types 18, 19 and 20 (for FSCH type 20 the measuring instructions must be followed).

<sup>2)</sup> The maximum areas indicated depend on the height; see "Height-to-width ratio of external venetian blinds" on page 392. Any other dimensions are subject to individual clarification with the Application Technology department!

<sup>3)</sup> Positioning of crank drive is not possible in the area of the guide rail. Please note: for a bottom rail length of 2 m there is a deflection of max. 3 mm, for a bottom rail length of 4 mm, max. 30 mm

**Note:** Models with work setting are only available in combination with the MSE work setting. This allows the slats to be closed in any intermediate position. Work setting only in connection with motor drive.

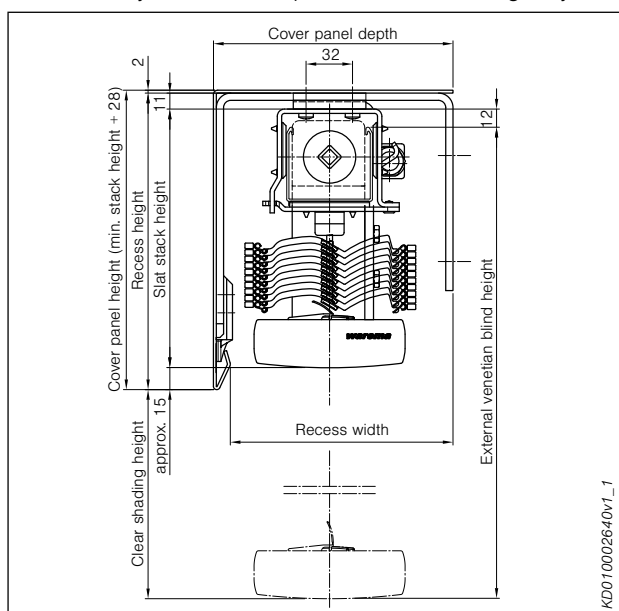


fig. 58: Measuring instructions for external venetian blinds types C/E 93/90

#### Measuring instructions

Slat stack height as per table

Recess height = slat stack height + 26 mm

Cover panel height = slat stack height + 28 mm

Types	Min. recess height	Min. cover panel height
90/93 A8	205	210
Types	Min. recess width	
90/93 A8	130	

#### Min. cover panel depth

Type BL 01/02/03/04	Type BL 06/07/08/09
140	150

Minimum recess height or cover panel height = 210 mm (overlapping between the lower edge of the cover panel and the top slat is ensured)

#### Slat stack height determined from external venetian blind height

Types	External venetian blind height in mm														
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800
E 90/93 A8	180	188	196	204	212	220	228	236	244	252	260	268	276	284	292

#### Slat stack height determined from clear shading height

Types	Clear shading height in mm														
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800
E 90/93 A8	188	196	204	213	221	229	238	246	254	263	271	279	288	296	304

Slat stack heights are approximate values. For technical reasons, they might be higher or lower.

External venetian blinds with crank drive: Slat stack height is reduced by 15 mm. Values in dark grey: Minimum cover panel height for C/E 90/93 210 mm.

## Mounting example

### Metal system venetian blinds

### External venetian blinds with lateral raising mechanism in the guide rail

E 90/93 A8 in existing recess

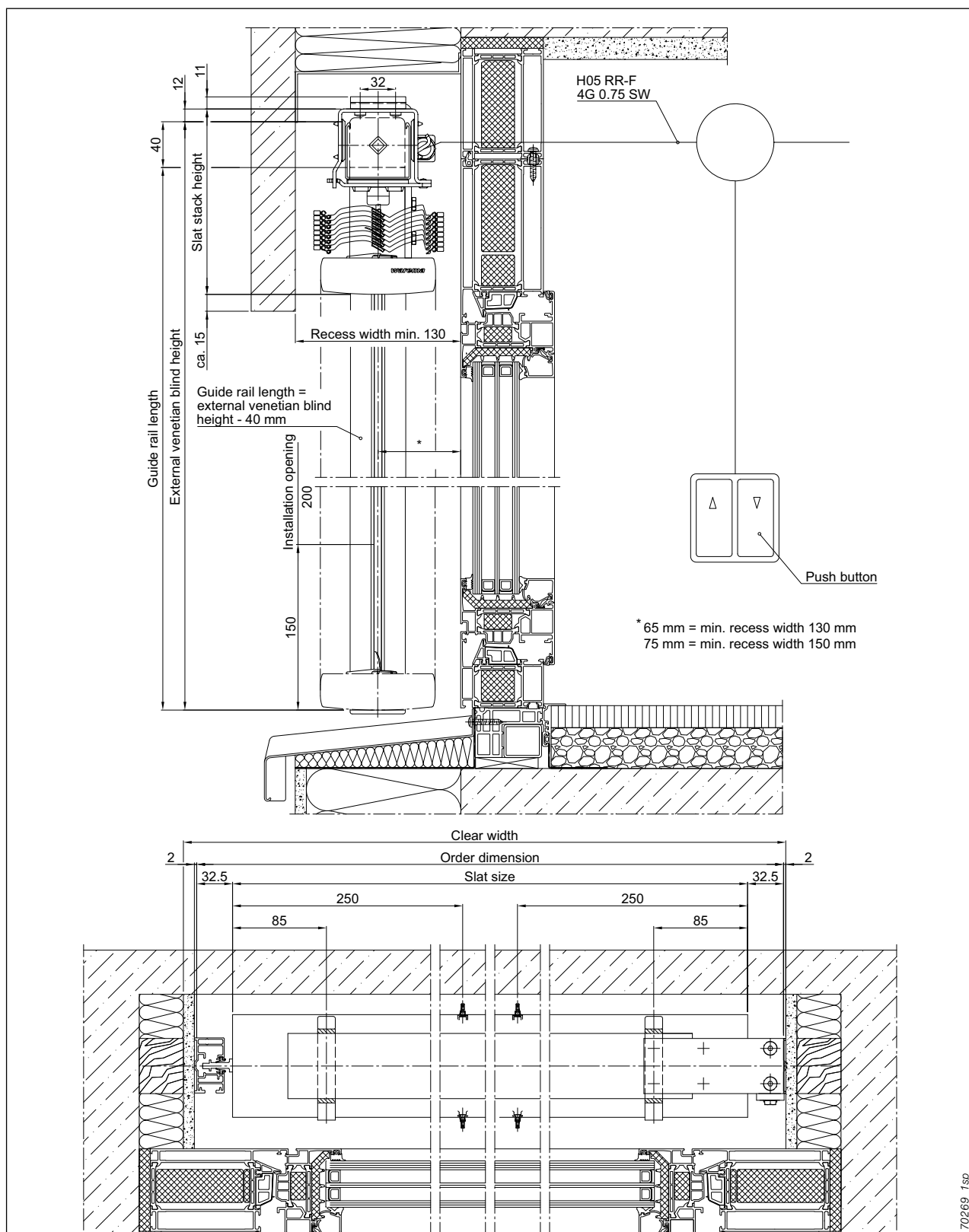


fig. 59: Mounting example for metal system venetian blinds E 90/93 A8 in on-site notch

**Note:** Clearance width – 4 mm = order dimension

## Description

### Wind-stable external venetian blinds

#### E 93 A6 wind-stable

#### E 80 A6 S wind-stable

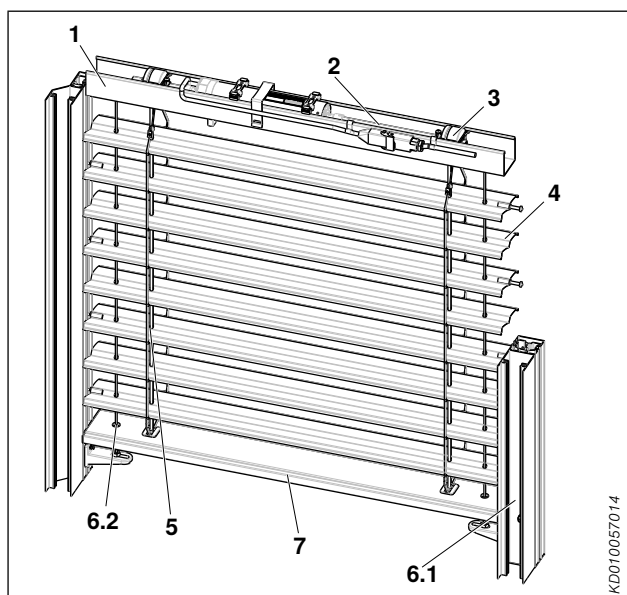


fig. 60: Wind-stable external venetian blind E 93 A6 wind-stable

- 1 Top rail
- 2 Tilt rod
- 3 Bearing
- 4 Slats
- 5 Slat suspension and lifting tape
- 6 Lateral guidance
  - 6.1 Rail
  - 6.2 Tension cable
- 7 Bottom rail

### Application

For mounting on high buildings or in areas exposed to wind on mullion and transom facades or conservatories, in front of the facade, in the reveal or in ventilated facades.

### Operation

#### Motor

The slats are raised and lowered as well as tilted by actuating an operating switch.

Voltage: 230 V AC, other voltages optional

Frequency: 50 Hz, other frequencies optional

Degree of protection: IP 54

Plug-in connector: Hirschmann coupling

The drive switches off upon reaching the upper or lower limit position using built-in, adjustable limit switches. For optimum wind stability and for use with increased wind loads the external venetian blind must be fully lowered.

The stipulated wind speed limits must not be exceeded.

#### Top rail (1)

Material: aluminium, extruded

Material thickness: 1.5 mm

Dimensions (WxH): 59x51 mm

Profile: C-shaped profile

Surface: plain, optionally powder-coated or anodised

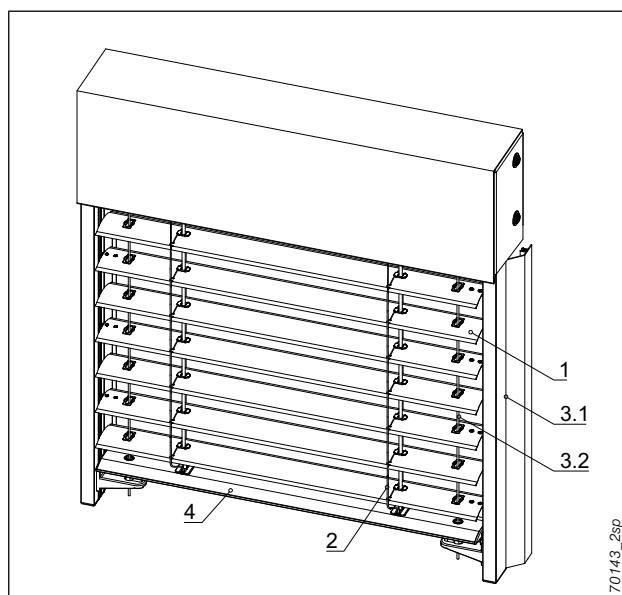


fig. 61: Wind-stable external venetian blind E 80 A6 S wind-stable

- 1 Slats
- 2 Tilting and lifting tape
- 3 Lateral guidance
  - 3.1 Rail
  - 3.2 Tension cable
- 4 Bottom rail

Fixing: with noise-optimised top rail brackets made of plain aluminium.

#### Tilt rod (2)

Material: steel, zinc-coated

Material thickness: 1 mm

Dimensions (WxH): 12x12 mm

Profile: square tube

Surface: plain

#### Bearing (3)

Maintenance-free, enclosed

Housing: plastic, with Teflon

Tilting reel: plastic

Tape reel: plastic

Segment tilting to prevent self-acting adjustment of slats.

#### Slats (4)

##### Dim-out slats (4.1)

Edges beaded on both sides, special profile

Material: aluminium, special alloy

Material thickness: 0.44 mm

Dimensions (W): 93 mm

Installation: convex

Profile: special profile, front rolled beads with sealing strip made from flexible plastic light-fast enamel finish, resistant to corrosion using a special process

Surface:

## Description

### Wind-stable external venetian blinds

#### E 93 A6 wind-stable

#### E 80 A6 S wind-stable

Colour: according to WAREMA colour chart for external venetian blinds

All edges of the cutouts in the slats are continuously beaded in order to reduce wear of the lifting tape to a minimum. The external venetian blind moves down with the slats closed and moves up with the slats positioned horizontally.

#### Slats with beaded edges on both sides (4.2)

Curved, type 80 S

Material: aluminium, special alloy

Material thickness: approx. 0.44 mm

Dimensions (W): 80 mm

Installation: convex

Surface: enamel finish, resistant to corrosion using a special process

Colour: according to WAREMA colour chart for external venetian blinds

All cutouts in the slats are equipped with black protection eyelets to guide the lifting tapes (to reduce wear) and fix the webs of the tilting tape.

Additional fixing of the tilting tape on a horseshoe cut-out in the outer third of the slat.

The external venetian blind moves down with the slats closed to the outside and moves up with the slats closed to the inside.

#### Slat suspension/Lifting tape (5)

Using lateral **loop cords** (5.1)

The loops are permanently fixed to the slats by clips made of stainless steel resistant to corrosion. A special tensioning system fixes the slats when the external venetian blind is fully lowered, stabilising them against any wind loads.

Material: polyester with woven-in aramide fibres

Colour: black, optionally grey

#### Tilting tapes (5.2)

Special heavy-duty version with double webs

Material: polyester, with Kevlar core

Colour: black, optionally grey or white

Each slat is attached to the top web of the tilting tape and threaded between the double webs.

#### Lifting tapes (5.3)

Material: polyester, with special coating

Colour: black, optionally grey

#### Lateral guidance (6)

##### Rail on T/M facade (6.1)

With black sealing strips inserted for noise reduction

Material: aluminium, extruded

Dimensions (WxD): 50x111 mm

Profile: guide rail as C-shaped profile with patented adapter profile for lateral fascia

Surface: powder-coated, optionally anodised

Fixing: with patented adapter profile

End cap: plastic, black, optionally grey

Sealing strip: weather-proof, UV stable, black

Guide pin: polyamide, glass fibre reinforced, impact-resistant connection with the slats by means of 2 ultrasonic welds; slats are alternatively pinned

##### Rail on window/wall (6.1)

With plastic guide profile for nipple guiding and noise reduction, incl. water-repelling end caps.

Material: aluminium, extruded

Dimensions (WxD): 27.5x80 mm

27.5x87.5 mm

27.5x95 mm

27.5x109.5 mm

27.5x117 mm

27.5x122.5 mm

Surface: powder-coated, optionally anodised

Fixing: directly on the window frame or in the reveal

Guide pin: polyamide, fibreglass-reinforced, impact-resistant connection with the slats by means of min. 2 ultrasonic welds; slats are alternatively pinned

##### Tension cable (additional lateral guidance) (6.2)

Material: steel, corrosion-resistant

Coating: polyamide

Colour: black or transparent coating

Fixing: tension cable bracket, aluminium

The cable guidances are fixed with a special spring tension device to compensate for thermal changes in the length of the top rail.

Cable guidances run through the slats (beaded cutouts for E 93 A6 WS, protection eyelets for E 80 A6 S WS) and bottom rail. They are fixed to the window, wall or in the reveal using tension cable brackets with clamping devices on the guide rail/profile.

##### Bottom rail (7)

With end caps, including weighting

Material: aluminium, extruded

Dimensions (WxH): 100x20 mm/80x15 mm

Surface: powder-coated, optionally anodised

End caps: plastic, black, optionally grey

With special patented tensioning system for the loop cord to fix the slats under wind load. End caps with moveable rail guidance.

#### Colours

Powder coating of aluminium parts with chrome-free pre-treatment according to valid RAL CLASSIC colour chart (except camouflage and luminous colours) or in six DB colours as well as eight textured colours (W4914 - W4921), four anodised-look colours (WC31 - WC34) and further colours according to WAREMA Colour World (in WAREMA colour specification).

Other colour specifications and special colours are available on request at a surcharge.

## Description

### Wind-stable external venetian blinds

#### E 93 A6 wind-stable

#### E 80 A6 S wind-stable

### Overview of wind speed limits

Max. wind speed. Flawless functioning (slat tilting, shading etc.) of the wind-stable external venetian blinds is ensured up to the wind speed limits stated in the following tables.

External venetian blind width in mm	Model		
	E 93 A6 wind-stable	without additional tension cables	without guide rail extension profile or reveal
Up to 1500	25 m/s (Beaufort 10)	25 m/s (Beaufort 10)	20.5 m/s (Beaufort 9)
Up to 2000	25 m/s (Beaufort 10)	20.5 m/s (Beaufort 9)	20.5 m/s (Beaufort 9)
Up to 3000	20.5 m/s (Beaufort 9)	17.5 m/s (Beaufort 8)	17.5 m/s (Beaufort 8)

Tab. 6: Overview of wind speed limits

The wind speeds specified for the external venetian blind type E93 A6 wind-stable are limit values at which the blind must be retracted. The values apply to a facade distance of the slats  $\leq 100$  mm and a unit height of  $\leq 3600$  mm.

For the standard version, it is recommended to set the wind sensor to max. 20 m/s.

External venetian blind width in mm	Model		
	E 80 A6 S wind-stable	without additional tension cables	without guide rail extension profile or reveal
Up to 1300	22 m/s	22 m/s	18 m/s
Up to 1500	22 m/s	19 m/s	18 m/s
Up to 2000	20 m/s	18 m/s	15 m/s
Up to 3000	18 m/s	15 m/s	15 m/s

Tab. 7: Overview of wind speed limits

The wind speeds indicated for external venetian blind type E 80 A6 S wind-stable are limit values at which the external venetian blind must be retracted. The values apply to a facade distance of the slats  $\leq 100$  mm and a unit height of  $\leq 3600$  mm.

# Construction limit values/Measuring instructions

## Wind-stable external venetian blinds

### E 93 A6 wind-stable

### E 80 A6 S wind-stable

#### Construction limit values in mm

Type	Construction limit values								Average weight in kg/m <sup>2</sup> <sup>1)</sup>
	Individual unit				Group unit				
	Width <sup>2)</sup>		Height	Area in m <sup>2</sup>	max. width	Area in m <sup>2</sup>	left/right of driving curtain max. coupl. each side		
	min. <sup>3)</sup>	max. <sup>4)</sup>					Area in m <sup>2</sup>	Number of curtains	
E 93 A6 wind-stable	600	3000	3600	8	9000	20	8	1	4.2
E 80 A6 S wind-stable	600	3000	3600	7	9000	20	7	1	4.0

Tab. 8: Construction limit values wind-stable external venetian blind E 93 A6 wind-stable/E 80 A6 S wind-stable

<sup>1)</sup> Cable force: 350 N per tension cable.

<sup>2)</sup> Width = slat size, slat size + 65 mm = back edge of the guide rail for guide rail types 1 and 2

<sup>3)</sup> Asymmetrical running of slats cannot be prevented for small widths. (Please pay attention to the external venetian blind guideline ITRS Industrieverband Technische Textilien – Rollläden – Sonnenschutz e.V.)

<sup>4)</sup> Please observe restrictions for maximum width and/or wind speed limits according to Table 6, "Overview of wind speed limits", on page 82!

**Note:** A model of the wind-stable external venetian blind vivamatic®, work setting or daylight transport elements is not possible.

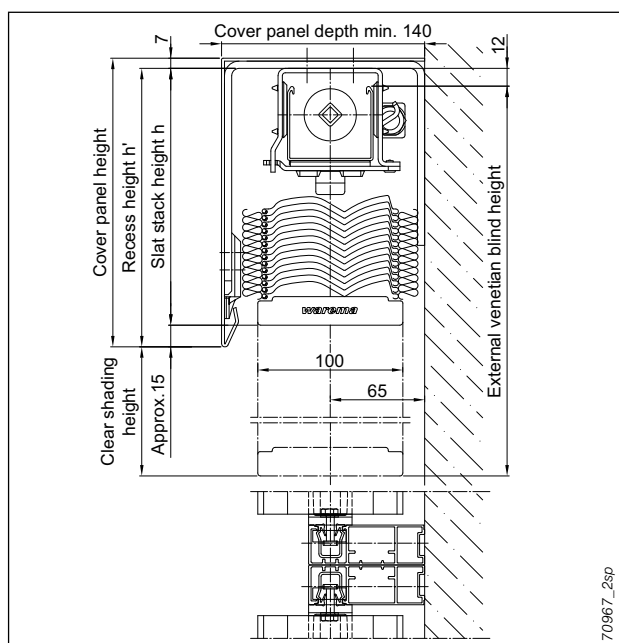


fig. 62: Measuring instructions for wind-stable external venetian blind E 93 A6

#### Measuring instructions

Slat stack height as per table

Recess height = slat stack height + 15 mm

Cover panel height = slat stack height + 20 mm

Minimum recess height or cover panel height = 210 mm (overlapping between the lower edge of the cover panel and the top slat is ensured)

#### Number of additional cable guidances E 93 A6 wind-stable

Slat size	Cable guidances
Up to 1500 mm	0
From 1501 mm to 2000 mm	1
From 2001 mm to 3000 mm	2

#### Number of additional cable guidances E 80 A6 S wind-stable

Slat size	Cable guidances
Up to 1300 mm	0
From 1301 to 3000 mm	1

The two external cable guidance are always installed and not included in the table.

## Construction limit values/Measuring instructions

### Wind-stable external venetian blinds

#### E 93 A6 wind-stable

#### E 80 A6 S wind-stable

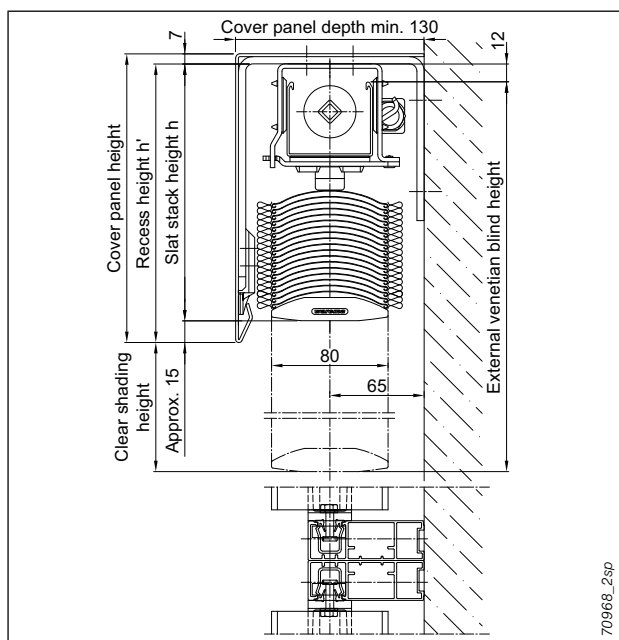


fig. 63: Measuring instructions wind-stable external venetian blind  
E 80 A6 S wind-stable

### Slat stack height determined from external venetian blind height

Type	External venetian blind height in mm													
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600
E 93 A6 wind-stable	154	162	170	178	186	194	202	210	218	226	234	242	250	258
E 80 A6 S wind-stable	151	161	171	181	191	201	211	221	231	241	251	261	271	281

### Slat stack height determined from clear shading height

Type	Clear shading height in mm													
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600
E 93 A6 wind-stable	161	169	177	186	194	202	211	219	227	236	244	252	261	–
E 80 A6 S wind-stable	159	170	180	191	201	212	222	233	243	254	264	275	285	–

Slat stack heights are approximate values. For technical reasons, they might be higher or lower.  
Values in dark grey: Minimum cover panel height for E 93/E 80 S 210 mm.



Measuring instructions

Wind-stable external venetian blinds

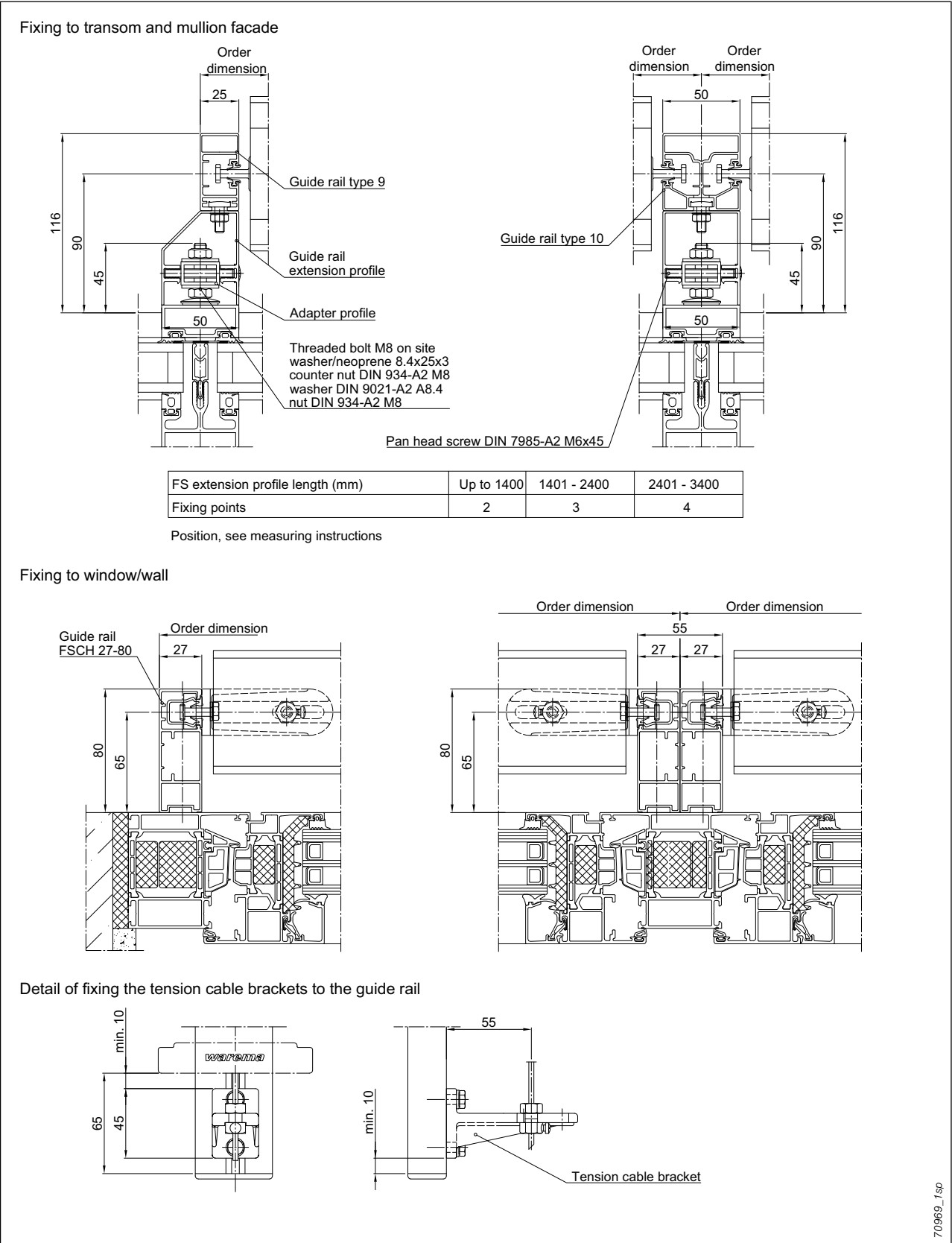


fig. 64: Typ E 93 A6 wind-stable

## Mounting example

### Wind-stable external venetian blinds

FSR PS E 80 A6 S wind-stable

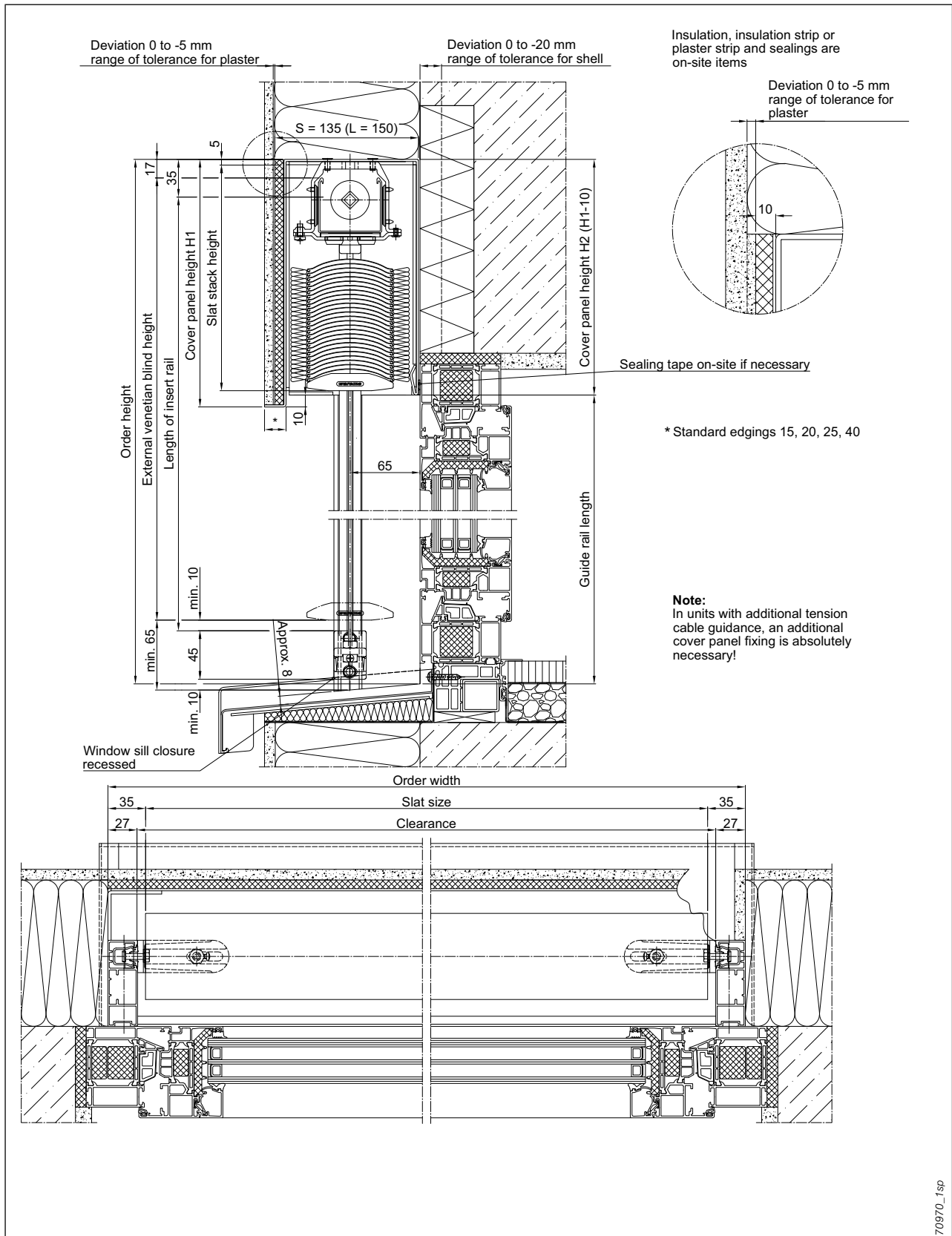


fig. 65: FSR PS E 80 A6 S wind-stable

Mounting example

Wind-stable external venetian blinds

E 93 A6 wind-stable with angular cover panel

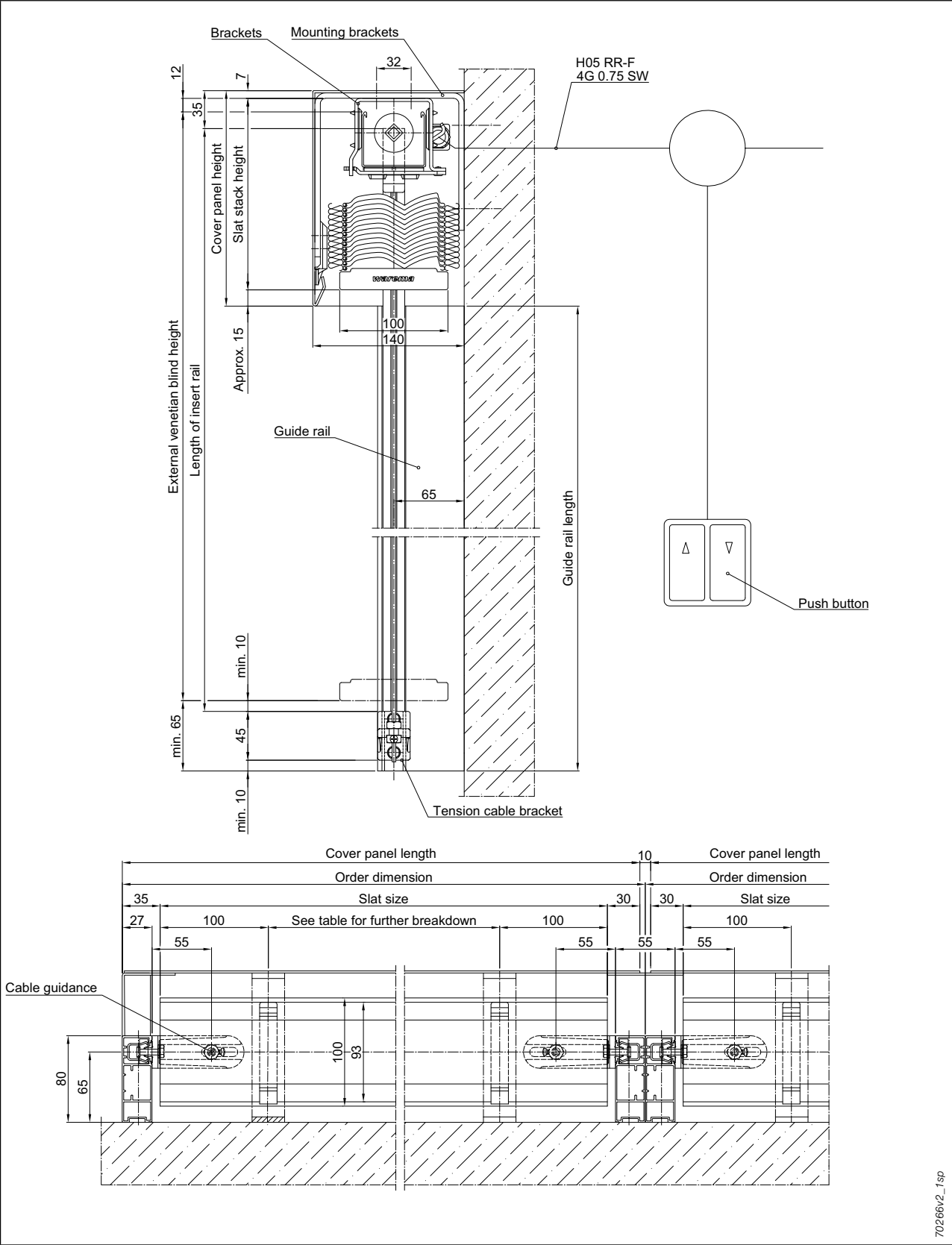


fig. 66: Mounting example for external venetian blind E 93 A6 wind-stable with angled cover panel

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

## Mounting example

### Wind-stable external venetian blinds

E 93 A6 wind-stable, cover panel installation on the guide rails, on transom and mullion facade

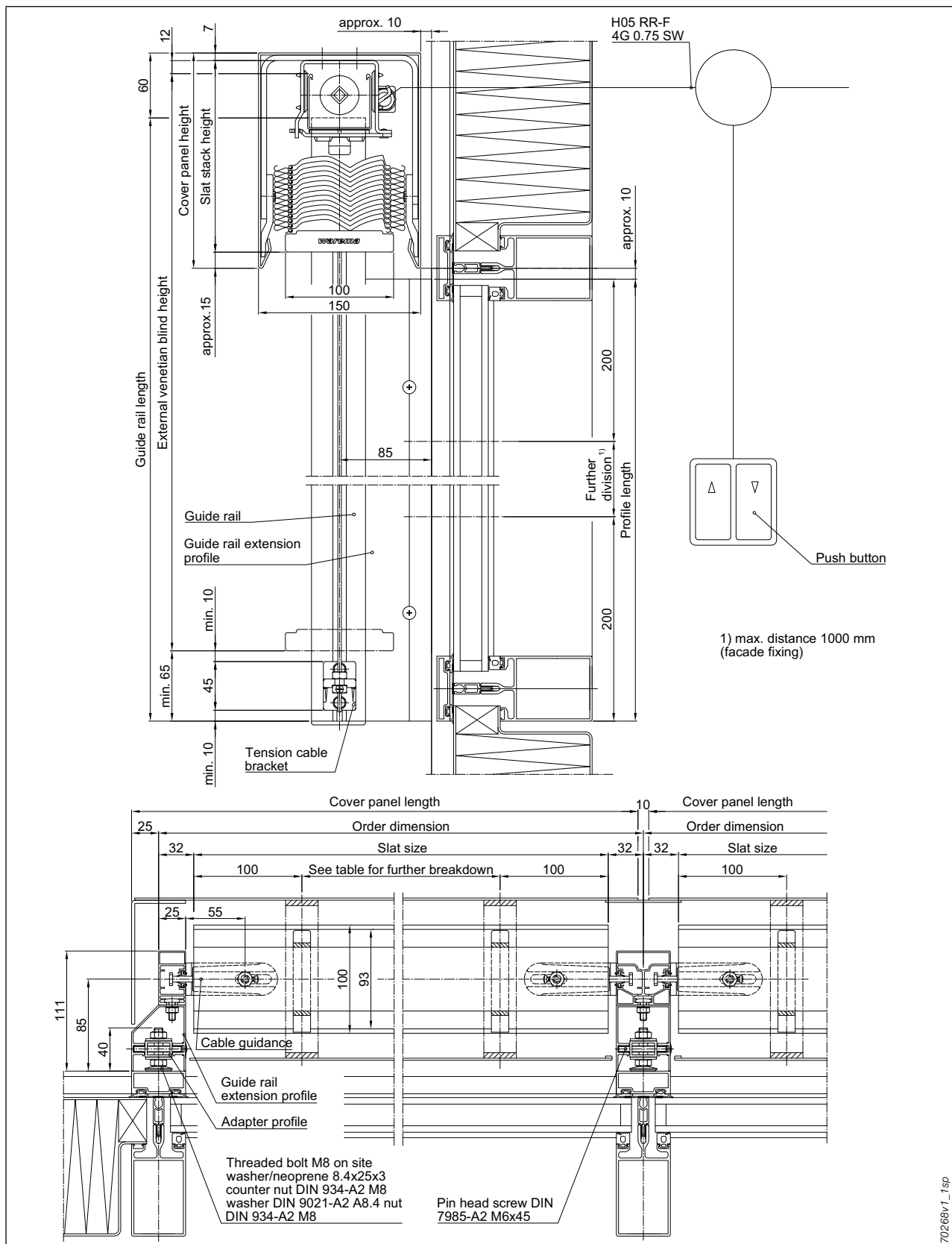


fig. 67: Mounting example for external venetian blind E 93 A6 wind-stable with u-shaped cover panel

## Contents

### Asymmetrical external venetian blinds

#### Description

Asymmetrical external venetian blinds E 80 AF SR . . . . .	90
Asymmetrical external venetian blinds E 80 AF SRG horizontal combination . . . . .	93
Example . . . . .	95
Example/formulas for determining dimensions and angles . . . . .	98
Cover panel heights or slat stack heights . . . . .	100
General information . . . . .	102
Unit shapes . . . . .	103
Measuring instructions . . . . .	107
Protective cover panels . . . . .	115
Mounting brackets . . . . .	116
Mounting options for cover panels . . . . .	117
Bracket options . . . . .	118
Tension cable bracket . . . . .	120
Guy rope . . . . .	121

Solflex AB försäljning och service västra Skåne. Showroom och rådgivning;  
Malmö Slussplan 1, 040-979745. Helsingborg Garnisonsg 12, 042-161635.  
kontakter@solflex.se www.solflex.se

**You can find information on asymmetrical roller shutters in the roller shutter technical data, art. no. 2016093**

## Description

### Asymmetrical external venetian blinds E 80 AF SR

#### E 80 AF SR1

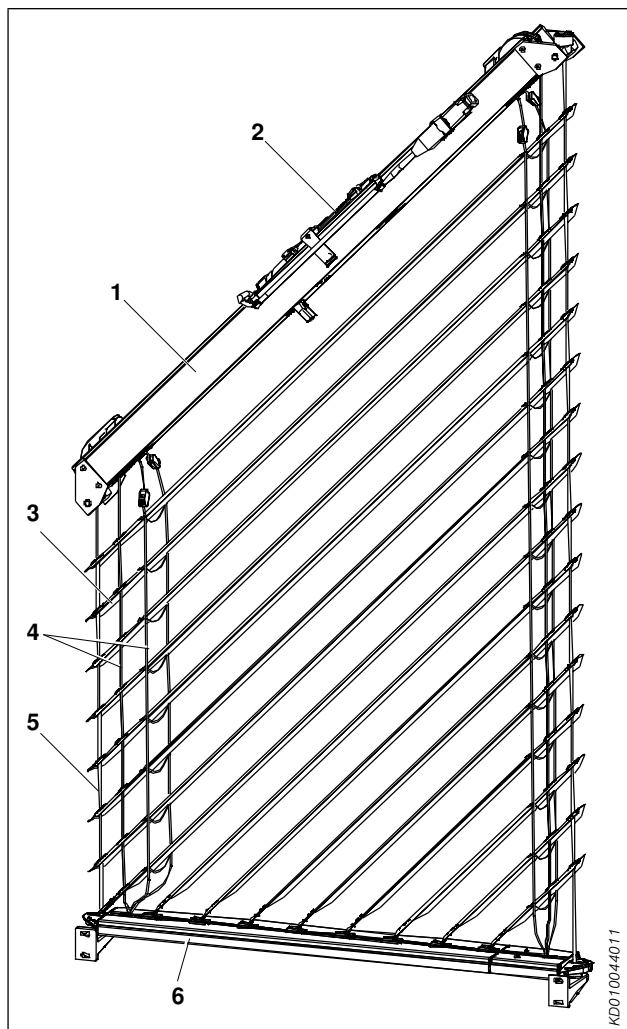


fig. 68: Asymmetrical external venetian blinds E 80 AF SR1

- 1 Top rail
- 2 Middle motor
- 3 Slats
- 4 Tilting and lifting tape
- 5 Lateral guidance
- 6 Bottom rail

#### Application

For mounting on mullion/transom facades or conservatories, in the reveal or ventilated facades, in double-skin facades, in front of the facade.

#### Operation

##### Motor

The slats are raised and lowered as well as tilted by actuating an operating switch.

Voltage: 230 V AC, other voltages optional

Frequency: 50 Hz, other frequencies optional

Degree of protection: IP 54

Plug-in connector: Hirschmann coupling

The drive switches off upon reaching the upper or lower limit position using built-in, adjustable limit switches.

##### Solar drive (optional)

Raising and lowering as well as tilting the slats by means of operation of the EWFS radio hand-held transmitter. Control and storage battery concealed inside the box.

Including EWFS hand-held transmitter 1-channel.

Voltage: 12 V

Degree of protection: IP 44

Solar panel mounted to the outside of the box, optionally external panel

Power supply unit for emergency power supply optional.

Cover panel depth see page 115.

##### Top rail (1)

Material: aluminium, extruded

Material thickness: 1.5 mm

Dimensions (WxH): 59x51 mm

Profile: C-shaped profile

Surface: plain, optionally powder-coated or anodised

Fixing: with aluminium supports, plain

Inclination angle: 5° to 52°

##### Tilt rod

Material: steel, zinc-coated

Material thickness: 1 mm

Dimensions (WxH): 12 x 12 mm

Profile: square tube

Surface: plain

##### Bearing

Maintenance-free, enclosed

Housing: plastic, with Teflon

Tilting reel: plastic

Tape reel: plastic

Segment tilting to prevent self-acting adjustment of slats.

##### Slats (3)

###### Flat slat, curved

Material: aluminium, special alloy

Material thickness: approx. 0.45 mm

Dimensions (W): 80 mm

Installation: convex

Surface: enamel finish resistant to corrosion using a special process

Colour: according to WAREMA colour chart for external venetian blinds (colours with EasyClean coating are excluded)

All cutouts in the slats are fitted with black eyelets to guide the lifting tapes (reduction of wear) and for attaching the webs of the tilting tape.

The blind moves down with the slats closed and up with the slats horizontal.

All slats are guided in the wind protection unit on both sides, or in the wind protection unit on one side and in the telescopic bottom rail on one side.

## Description

### Asymmetrical external venetian blinds E 80 AF SR

You can also use our free planning programme on [www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de) for planning your sun shading control systems – here you can configure the product and create a technical drawing to be integrated into your plans.

#### Tilting tape/lift tape (4)

##### Tilting tapes (4.1)

Special heavy version with double webs

Material: polyester, with Kevlar core

Colour: black

Each slat is attached to the top web of the tilting tape and threaded between the double webs.

##### Lifting tapes (4.2)

Material: polyester, with special coating

Colour: black

Material: aluminium, extruded

Dimensions (WxH): 80 x 21.5 mm

Surface: powder-coated, optionally anodised

End caps: plastic, black

The inner profile is guided in the outer profile with plastic bearings to prevent the profiles from touching. Additional ladder tapes are flexibly integrated into plastic gliders to keep to the smallest possible overhangs of the tilting tape. Short slats are permanently guided over plastic gliders and plastic nipples in at least one of the profiles.

#### Lateral guidance (5)

##### Tension cable

Stranded wire

Material: steel, corrosion-resistant

Coating: polyamide

Colour: black or transparent coating

Fixing: tension cable bracket, aluminium

The cable guidances are fixed with a special spring tension device to compensate for thermal changes in the length of the top rail. Cable guidances run through the slats and the bottom rail. They are fixed to the window or the wall using tension cable brackets.

#### Colours

Powder coating of aluminium parts with chrome-free pre-treatment according to valid RAL CLASSIC colour chart (except camouflage and luminous colours) or in six DB colours as well as eight textured colours (W4914 - W4921), four anodised-look colours (WC31 - WC34) and further colours according to WAREMA Colour World (in WAREMA colour specification).

Other colour specifications and special colours are available on request at a surcharge.

#### Accessories

Self-supporting model, cover panels, brackets, tension cable brackets and solar drives on page 367.

#### Telescopic bottom rail (6)

With end caps, consisting of an inner and an outer profile

#### Construction limit values

Top rail inclination <sup>1)</sup>	Width (b) min. (mm)	Width <sup>1)</sup> (b) max. (mm)	Height short side (a) min. (mm)	Height long side (c) max. (mm)	Curtain area max. (m <sup>2</sup> )	Slat width (mm)	Drive
5° – 52°	700 – 1050 (710 <sup>2)</sup> /1100 <sup>3)</sup> )	1670 – 2510	180	3900 (2600 <sup>4)</sup> )	7 (5 <sup>3)</sup> ) <sup>4)</sup>	80	Motor

<sup>1)</sup> The maximum and minimum widths are dependent on the angle of inclination of the top rail. Curtain area = ((a+b)/2)xb

<sup>2)</sup> for models with solar drive and 1 solar panel

<sup>3)</sup> for models with solar drive and 2 solar panels

<sup>4)</sup> for models with solar drive, maximum sizes according to construction limit value diagram for solar drive page 367

Detailed construction limit values on page 92.



## Construction limit values

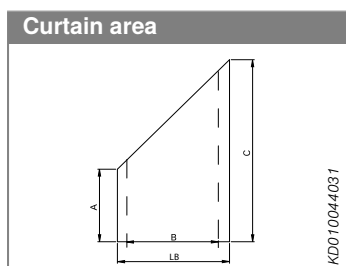
### Asymmetrical external venetian blinds E 80 AF SR

You can also use our free planning programme on [www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de) for planning your sun shading control systems – here you can configure the product and create a technical drawing to be integrated into your plans.

Inclination angle W of top rail (°)	max. width B <sup>1)</sup> (mm)	min. width B (mm)	max. height long side C (mm)	min. height short side A (mm)	Max. curtain area F (m <sup>2</sup> ) <sup>2)</sup>
5	2510	750	3900	180	7
6	2510	750	3900	180	7
7	2500	750	3900	180	7
8	2500	750	3900	180	7
9	2490	750	3900	180	7
10	2480	740	3900	180	7
11	2480	740	3900	180	7
12	2470	740	3900	180	7
13	2460	740	3900	180	7
14	2450	730	3900	180	7
15	2440	720	3900	180	7
16	2430	720	3900	180	7
17	2420	720	3900	180	7
18	2410	720	3900	180	7
19	2390	710	3900	180	7
20	2380	710	3900	180	7
21	2370	700	3900	180	7
22	2350	700	3900	180	7
23	2330	700	3900	180	7
24	2320	700	3900	180	7
25	2300	700	3900	180	7
26	2280	700	3900	180	7
27	2260	700	3900	180	7
28	2250	700	3900	180	7
29	2220	700	3900	180	7
30	2200	700	3900	180	7
31	2180	700	3900	180	7
32	2160	700	3900	180	7
33	2140	700	3900	180	7
34	2110	700	3900	180	7
35	2090	700	3900	180	7
36	2070	700	3900	180	7
37	2040	700	3900	180	7
38	2010	700	3900	180	7
39	1990	700	3900	180	7
40	1960	700	3900	180	7
41	1930	700	3900	180	7
42	1910	700	3900	180	7
43	1880	700	3900	180	7
44	1850	700	3900	180	7
45	1820	700	3900	180	7
46	1820	730	3900	180	7
47	1820	760	3900	180	7
48	1820	800	3900	180	7
49	1820	840	3900	180	7
50	1790	900	3900	180	7
51	1730	970	3900	180	7
52	1670	1050	3900	180	7

<sup>1)</sup> B = axis of wind protection

<sup>2)</sup> for models with solar drive maximum area 5 m<sup>2</sup>, construction limit values for solar drive on page ff. 367



F = curtain area  
C = long side  
A = short side  
LB = reveal width

$$F = \frac{(A + C)}{2} \times LB$$

#### Attention:

Values for area calculation have to be entered in metres!

Description

Asymmetrical external venetian blinds E 80 AF SRG horizontal combination

E 80 AF SRG

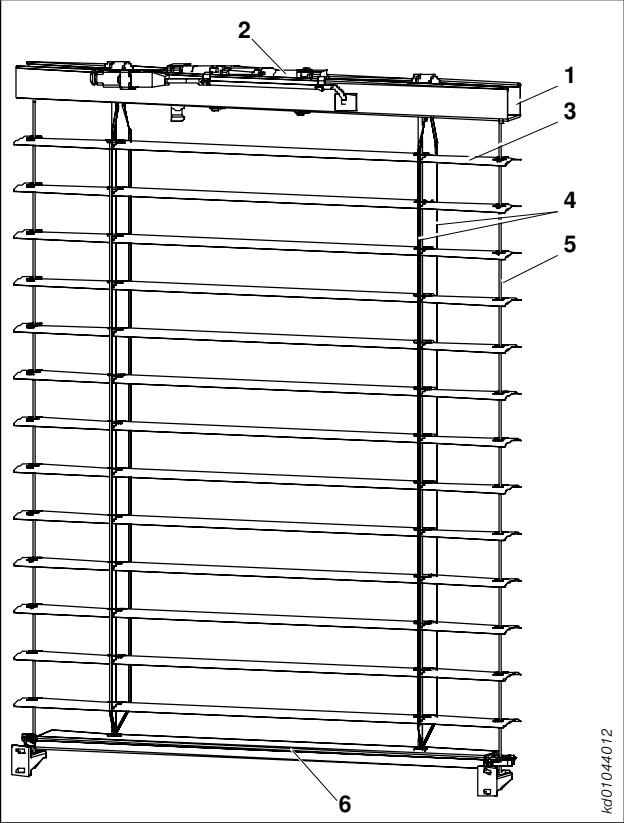


fig. 69: Asymmetrical external venetian blinds E 80 AF SRG

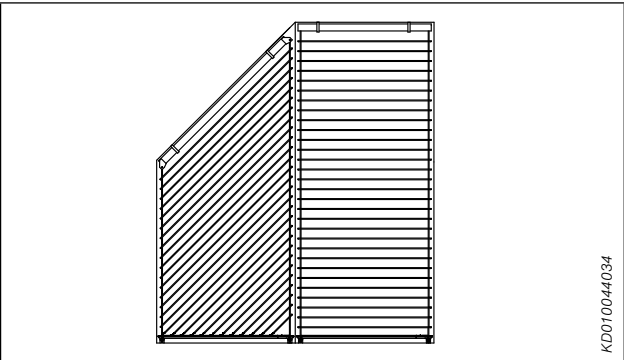


fig. 70: E 80 AF SR5 (SR1+SRG)

- 1 Top rail

2 Middle motor

3 Slats

4 Tilting and lifting tape

5 Lateral guidance

6 Bottom rail

Application

For mounting on mullion/transom facades or conservatories, in the reveal or ventilated facades, in double-skin facades, in front of the facade.

Operation

Motor

The slats are raised and lowered as well as tilted by actuating an operating switch.

Voltage: 230 V AC, other voltages optional

Frequency: 50 Hz, other frequencies optional

Degree of protection: IP 54

Plug-in connector: Hirschmann coupling

The drive switches off upon reaching the upper or lower limit position using built-in, adjustable limit switches.

Solar drive (optional)

Raising and lowering as well as tilting the slats by means of operation of the EWFS radio hand-held transmitter. Control and storage battery concealed inside the box.

Including EWFS hand-held transmitter 1-channel.

Voltage: 12 V

Degree of protection: IP 44

Solar panel mounted to the outside of the box, optionally external panel Power supply unit for emergency power supply optional.

Cover panel depth see page 115.

Top rail (1)

Material: aluminium, extruded

Material thickness: 1.5 mm

Dimensions (WxH): 59x51 mm

Profile: C-shaped profile

Surface: plain, optionally powder-coated or anodised

Fixing: with aluminium supports, plain

Tilt rod

Material: steel, zinc-coated

Material thickness: 1 mm

Dimensions (WxH): 12 x 12 mm

Profile: square tube

Surface: plain

Bearing

Maintenance-free, enclosed

Housing: plastic, with Teflon

Tilting reel: plastic

Tape reel: plastic

Segment tilting to prevent self-acting adjustment of slats.

Slats (3)

Flat slat, curved

Material: aluminium, special alloy

Material thickness: approx. 0.45 mm

Dimensions (W): 80 mm

Installation: convex

Surface: enamel finish resistant to corrosion using a special process

Colour: according to WAREMA colour chart for external venetian blinds (colours with EasyClean coating are excluded)

## Description

### Asymmetrical external venetian blinds E 80 AF SRG horizontal combination

You can also use our free planning programme on [www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de) for planning your sun shading control systems – here you can configure the product and create a technical drawing to be integrated into your plans.

All cutouts in the slats are fitted with black eyelets to guide the lifting tapes (reduction of wear) and for attaching the webs of the tilting tape.

The blind moves down with the slats closed and up with the slats horizontal.

#### Tilting tape/lift tape (4)

##### Tilting tapes (4.1)

Special heavy version with double webs

Material: polyester, with Kevlar core

Colour: black

Each slat is attached to the top web of the tilting tape and threaded between the double webs.

##### Lifting tapes (4.2)

Material: polyester, with special coating

Colour: black

#### Lateral guidance (5)

##### Tension cable (5.1)

Stranded wire

Material: steel

Coating: polyamide

Dimensions (Ø): 3.3 mm

Colour: black or transparent coating

Fixing: tension cable bracket, aluminium

The cable guidances are fixed with a special spring tension device to compensate for thermal changes in the length of the top rail. Cable guidings run through slats and bottom rail. They are fixed to the window or the wall using aluminium tension cable brackets.

#### Bottom rail (6)

with end caps

Material: aluminium, extruded

Dimensions (WxH): 80 x 20 mm

Surface: powder-coated, optionally anodised

End caps: plastic, black

## Design

The design of the horizontal combination external venetian blinds is adapted to the asymmetrical external venetian blinds.

## Colours

Powder coating of aluminium parts with chrome-free pre-treatment according to valid RAL CLASSIC colour chart (except camouflage and luminous colours) or in six DB colours as well as eight textured colours (W4914 - W4921), four anodised-look colours (WC31 - WC34) and further colours according to WAREMA Colour World (in WAREMA colour specification).

Other colour specifications and special colours are available on request at a surcharge.

## Accessories

Self-supporting model, cover panels, brackets, tension cable brackets and solar drives on page 367.

## Construction limit values

Type	Construction limit values			
	Individual unit			Area in m <sup>2</sup> <sup>1)</sup>
	Width B in mm		Height C in mm	
	min. <sup>2)</sup>	max.		
E 80 AF SRG	560	4960	4000	20

<sup>1)</sup> Construction limit values for solar drive on page 367

<sup>2)</sup> Asymmetrical running of slats cannot be prevented for small widths. Width dimensions = axis of wind protection

## Number of cable guidances

Slat size	Cable guidances
Up to 3000 mm	2
From 3001 mm	3
From 4001 mm	4

When ordering, please indicate positioning of additional cable guiding (starting inside from the left)!

## Example

### Asymmetrical external venetian blinds

#### No need to worry about sloped windows!

#### Examples for the "feasibility" as a tool for your tender

Our section 'No need to worry about asymmetrical windows' guides you from the selection of shapes through the determination of dimensions to the verification of feasibility.

#### 1st step: Selecting shape of asymmetrical external venetian blind according to window shape

Depending on the shape of the window you can choose between different shapes for the venetian blinds (see pages 103 to 106).

Select the shape which is suitable for your situation (SR1 to SR8). Pay attention to 'left' and 'right' variants. (The units are always viewed from inside the room)

For this example you want to shade a single window with an asymmetrical top section.

Selected shape: SR1 L

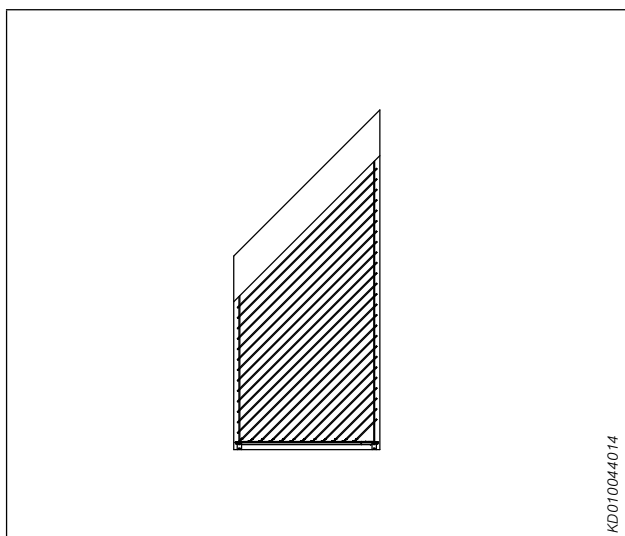


fig. 71: Shape SR1 L

#### 2nd step: Determining required dimensions

Different basic dimensions are required depending on the shape of the external venetian blind and the intended type of installation (in the reveal or in front of the facade).

For asymmetrical external venetian blinds with shape SR1 and mounting in the reveal the following is required:

- Reveal width LB
- Side heights short side A and long side C, here measured from top edge of cover panel to bottom edge of tension cable bracket (your planning will show you where the tension cable bracket can be mounted later on)
- If necessary inclination angle W of top rail from horizontal

Determine these dimensions and write them down.

For this example the result is:

- Reveal width LB = 1530 mm
- Short side A = 716 mm
- Long side C = 2000 mm
- Angle of inclination W = ?

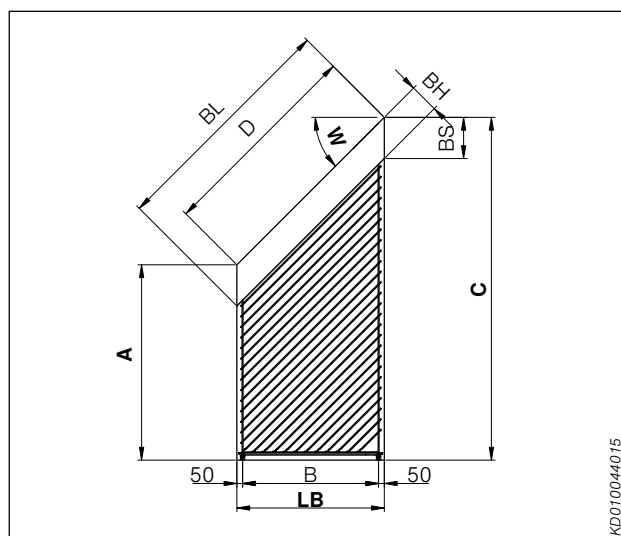


fig. 72: Dimensions

## Example

### Asymmetrical external venetian blinds

#### 3rd step: Checking feasibility of the asymmetrical external venetian blind

The maximum width B of the asymmetrical external venetian blind is directly related to the angle of inclination.

This varies between 1670 mm at 52° and 2510 mm at 5° inclination.

Furthermore the curtain area may not exceed a size of 7 m².

In order to check whether your asymmetrical external venetian blind is feasible it is first necessary to determine the angle of inclination W.

There are different possibilities:

- The pitch of the window is adapted to the roof pitch e.g. 35°, and you can see the pitch or find out or
- you calculate the angle or
- you calculate the angle using our sun shading planner.

In this example we calculated the angle.

On the formula sheet (page 99) select the formula for calculating the angle:

$$\tan W = \frac{(C - A)}{LB}$$

and substitute the measured lengths into it.

$$\tan W = \frac{(2000 - 716)}{1530} = 0.8392$$

Use the number value  $\tan W = 0.8392$  to determine the angle of inclination on the basis of the table opposite.

In the column 'tan W' find the number that is closest to your calculated value (0.8392) and read the corresponding angle from the centre of the line.

0.8391 → W = 40°

(In the same way the angle can be determined using the arc-tangent function of a calculator, e.g.  $\tan^{-1}$  keys, instead of reading the angles from the table.)

For this example  $\tan W = 0.8392$

tan W	Inclination angle W of top rail (°)	cos W
	5	0.9962
0.1051	6	0.9945
0.1228	7	0.9925
0.1405	8	0.9903
0.8098	39	0.7771
0.8391	40	0.7660
0.8693	41	0.7547
1.1504	49	0.6561
1.1918	50	0.6428
1.2349	51	0.6293
1.2799	52	0.6157

## Example

### Asymmetrical external venetian blinds

Use the calculated value to check the ordering dimensions.

To do this, compare the measured dimensions with the limit dimensions stated for the unit pitch.

For this example 40°:

Inclination angle W of top rail (°)	max. width <sup>1)</sup> B (mm)	min. width B <sup>1)</sup> (mm)
5	2510	750
6	2510	750
7	2500	750
8	2500	750
39	1990	700
→ 40	1960	700
41	1930	700
49	1820	840
50	1790	900
51	1730	970
52	1670	1050

<sup>1)</sup> B = axis of wind protection

Maximum width B 1960 mm, minimum width B 700 mm

Measured reveal width LB 1530 mm

Width B = 1530 - 2x50 = 1430 mm → O.K.

Maximum height long side C = 3900 mm

Measured height C = 2000 mm → O.K.

Minimum height short side A = 180 mm

Measured height A = 716 mm → O.K.

Max. curtain area F = 7 m<sup>2</sup>

Calculated area F? → O.K.

$$F = \frac{(A + C)}{2} \times LB = 2.08 \text{ m}^2$$

(Formula see page 99, caution: insert values in metres here)

The planned asymmetrical external venetian blind is feasible without any changes.

Possible changes:

- Was maximum width B exceeded?  
→ Divide asymmetrical external venetian blind vertically
- Was maximum height C exceeded?  
→ Divide asymmetrical external venetian blind horizontally
- Was maximum curtain area F exceeded?  
→ Divide asymmetrical external venetian blind vertically

## Example/formulas for determining dimensions and angles

### Asymmetrical external venetian blinds

#### Example for a typical gable window consisting of several window elements

A window requires 2 asymmetrical and one straight external venetian blinds.

Please verify feasibility of the asymmetrical curtains (E 80 AF SR) as described above. The design of the straight external venetian blind (E 80 AF SRG) matches the asymmetrical external venetian blind.

The height of the cover panel of the straight external venetian blind or the total cover panel height is always equal to the cover panel height of the tallest asymmetrical external venetian blind.

Of course it is also possible to form larger groups of units than the ones shown in the shape representations. For example with 2 directly adjacent asymmetrical curtains (SR6) and 3 connecting straight curtains.

Please note that for this every asymmetrical external venetian blind requires its own drive and mechanical coupling of the curtains is not possible due to technical reasons.

#### 4th step: Measurement and ordering

Use our measuring instructions (from page 103), order forms and the WAREMA sun shading planner for measurement in order to create a detailed order sketch. It is enough to measure all required widths and heights. The angle of inclination does not have to be measured.

When ordering external venetian blinds it is necessary to specify 'left' or 'right' models.

The required cover panel length only has to be specified if it has to cover more than the width of the top rail or if you require a special cut for the lateral end of the panel. If only the cover panel type is stated we will manufacture the cover panel to match the external venetian blind.

Delivery of external venetian blinds includes installation instructions, individual mounting diagram, operating instructions and a special drill template for easy mounting.

#### Formulas

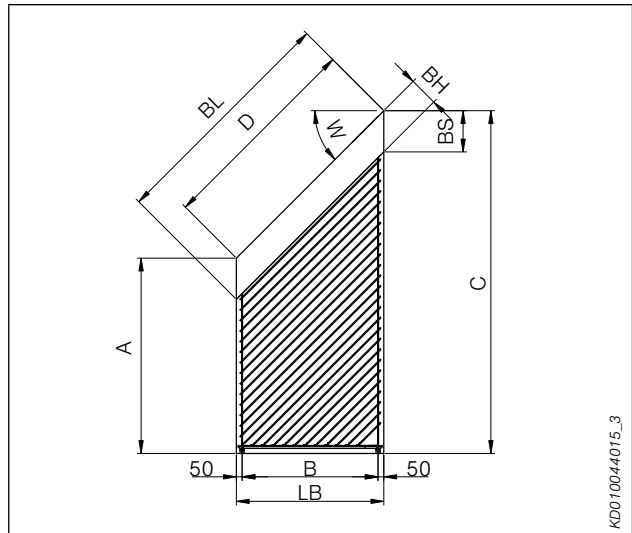


fig. 73: Dimensions

- C = long side
- A = short side
- B = width = axis of wind protection
- LB = reveal width
- W = inclination angle from horizontal
- D = diagonal
- BH = cover panel height
- BS = vertical cover panel height
- BL = cover panel length
- F = curtain area

$$\tan W = \frac{(C - A)}{LB}$$

$$LB = \frac{(C - A)}{\tan W}$$

$$A = C - (LB \times \tan W)$$

$$C = (LB \times \tan W) + A$$

$$F = \frac{(A + C)}{2} \times LB$$

$$D = \frac{LB}{\cos W}$$

$$BS = \frac{BH}{\cos W}$$

$$BL = \sqrt{(BS^2 - BH^2)} + D$$

BH = see table Cover panel height or slat stack heights



## Formulas for determining dimensions and angles

### Asymmetrical external venetian blinds E 80 AF SR

You can also use our free planning programme on [www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de) for planning your sun shading control systems – here you can configure the product and create a technical drawing to be integrated into your plans.

tan W	Inclination angle W of top rail (°)	cos W
0.0875	5	0.9962
0.1051	6	0.9945
0.1228	7	0.9925
0.1405	8	0.9903
0.1584	9	0.9877
0.1763	10	0.9848
0.1944	11	0.9816
0.2126	12	0.9781
0.2309	13	0.9744
0.2493	14	0.9703
0.2679	15	0.9659
0.2867	16	0.9613
0.3057	17	0.9563
0.3249	18	0.9511
0.3443	19	0.9455
0.3640	20	0.9397
0.3839	21	0.9336
0.4040	22	0.9272
0.4245	23	0.9205
0.4452	24	0.9135
0.4663	25	0.9063
0.4877	26	0.8988
0.5095	27	0.8910
0.5317	28	0.8829
0.5543	29	0.8746
0.5774	30	0.8660
0.6009	31	0.8572
0.6249	32	0.8480
0.6494	33	0.8387
0.6745	34	0.8290
0.7002	35	0.8192
0.7265	36	0.8090
0.7536	37	0.7986
0.7813	38	0.7880
0.8098	39	0.7771
0.8391	40	0.7660
0.8693	41	0.7547
0.9004	42	0.7431
0.9325	43	0.7314
0.9657	44	0.7193
1.0000	45	0.7071
1.0355	46	0.6947
1.0724	47	0.6820
1.1106	48	0.6691
1.1504	49	0.6561
1.1918	50	0.6428
1.2349	51	0.6293
1.2799	52	0.6157

C = long side  
 A = short side  
 B = width = axis of wind protection  
 LB= reveal width  
 W = inclination angle from horizontal  
 D = diagonal  
 BH= cover panel height  
 BS= vertical cover panel height  
 BL= cover panel length  
 F = curtain area

$$\tan W = \frac{(C - A)}{LB}$$

$$A = C - (LB \times \tan W)$$

$$LB = \frac{(C - A)}{\tan W}$$

$$C = (LB \times \tan W) + A$$

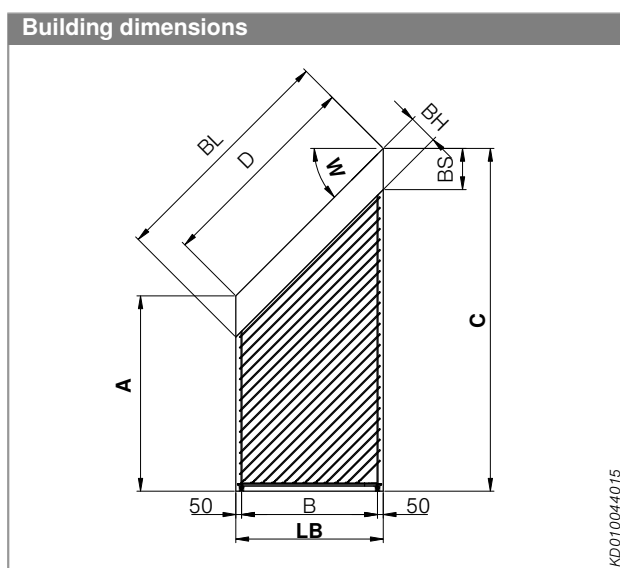
$$F = \frac{(A + C)}{2} \times LB$$

$$BH = \text{see table Slat stack heights}$$

$$BS = \frac{BH}{\cos W}$$

$$BL = \sqrt{(BS^2 - BH^2)} + D$$

$$D = \frac{LB}{\cos W}$$



## Cover panel heights or slat stack heights

### Asymmetrical external venetian blinds E 80 AF SR

You can also use our free planning programme on [www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de) for planning your sun shading control systems – here you can configure the product and create a technical drawing to be integrated into your plans.

Estimated cover panel length is:

$$BL = LB \times f + z$$

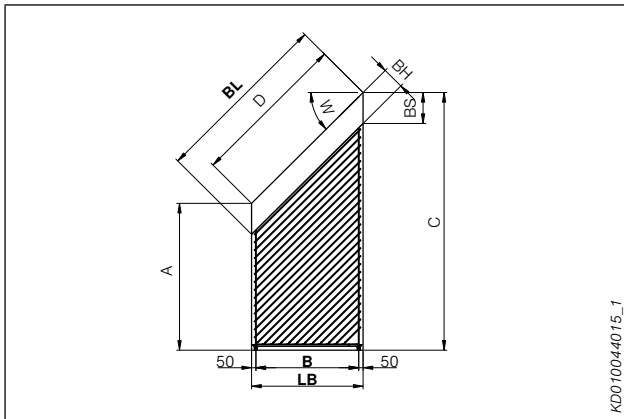


fig. 74: Estimated cover panel length

BL= cover panel length

B = width = axis of wind protection

LB= reveal width

f = factor depending on angle

z = allowance depending on angle

#### Attention:

The estimated cover panel length may only be used for bidding purposes. Please state exact order lengths!

#### Cover panel heights or slat stack heights

Height long side C (mm)	Slat stack height (mm)	Panel height BH (mm) □ 01+□ 06	Panel height BH (mm) □ 07+ □ 09
1000	155	205 <sup>1)</sup>	235 <sup>1)</sup>
1200	160	205 <sup>1)</sup>	235 <sup>1)</sup>
1400	168	205 <sup>1)</sup>	235 <sup>1)</sup>
1600	175	205 <sup>1)</sup>	235 <sup>1)</sup>
1800	182	205 <sup>1)</sup>	235 <sup>1)</sup>
2000	188	210	240
2200	195	215	245
2400	202	225	255
2600	210	230	260
2800	215	235	265
3000	222	245	275
3200	230	250	280
3400	235	255	285
3600	242	265	295
3800	250	270	300
3900	253	275	305

<sup>1)</sup> Attention: To avoid any visible gap between the bottom edge of the cover panel and the closed top slat we recommend adhering to the minimum cover panel heights.

#### Number of brackets for asymmetrical external venetian blinds

Width of external venetian blind (mm)	Up to 1500	Up to 2500	Up to 3500
Number of brackets	2	3	4

## Cover panel heights or slat stack heights

### Asymmetrical external venetian blinds E 80 AF SR

You can also use our free planning programme on [www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de) for planning your sun shading control systems – here you can configure the product and create a technical drawing to be integrated into your plans.

For cover panel depth with cover panel SR.01 and SR.02 min 140 mm, SR.06, SR.07 und SR.09 min. 150 mm. For models with solar drive always 150 mm. For combinations of several units (shapes SR5 to SR8) the uniform cover panel height BH for all units results from the cover panel height for the tallest asymmetrical external venetian blind!

#### Estimated cover panel length

Inclination angle W of top rail (°)	Factor f	Allowance z (mm)
5	1.004	30
6	1.006	30
7	1.008	40
8	1.010	40
9	1.012	50
10	1.015	50
11	1.019	60
12	1.022	60
13	1.026	70
14	1.031	70
15	1.035	80
16	1.040	90
17	1.046	90
18	1.051	100
19	1.058	100
20	1.064	110
21	1.071	120
22	1.079	120
23	1.086	130
24	1.095	130
25	1.103	140
26	1.113	150
27	1.122	150
28	1.133	160
29	1.143	170
30	1.155	170
31	1.167	180
32	1.179	190
33	1.192	190
34	1.206	200
35	1.221	210
36	1.236	220
37	1.252	230
38	1.269	230
39	1.287	240
40	1.305	250
41	1.325	260
42	1.346	270
43	1.367	280
44	1.390	290
45	1.414	300
46	1.440	310
47	1.466	320
48	1.494	330
49	1.524	340
50	1.556	360
51	1.589	370
52	1.624	380

**Please note:** Values given are for a cover panel height BH of 300 mm.

Only for use in bids or offers!

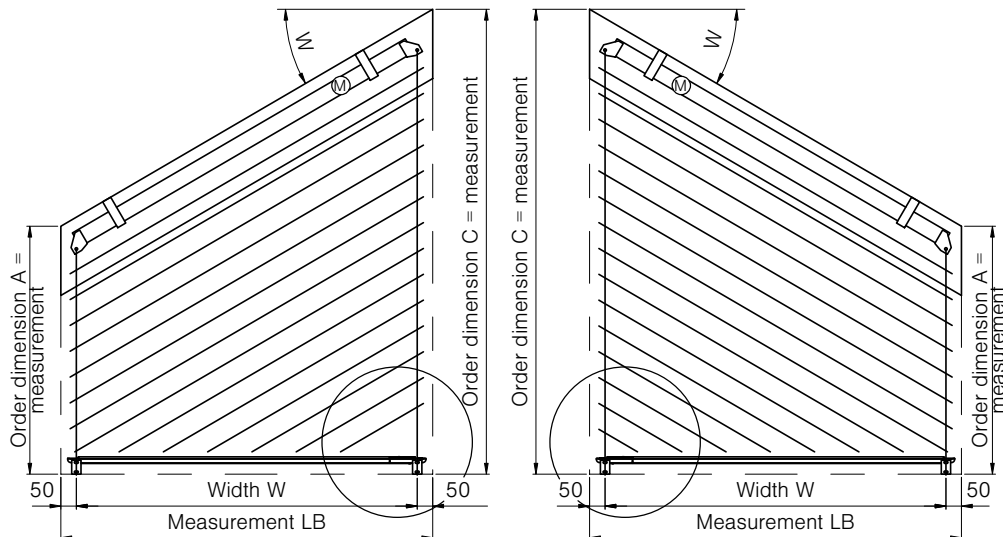
Ordering lengths are to be given as exact dimensions.

## General information

### Asymmetrical external venetian blinds E 80 AF SR

You can also use our free planning programme on [www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de) for planning your sun shading control systems – here you can configure the product and create a technical drawing to be integrated into your plans.

#### Example: shape SR1 left/right



KD01/0044 018

fig. 75: Unshaded area

#### Attention:

When ordering please specify the relevant model (left or right).

The motor is always located on the tall side of the unit, between the first and second bearing (see Fig. 75).

For technical reasons a small triangular area in the lower part of the tall side of the unit always remains unshaded, depending on shape and size of the asymmetrical external venetian blind (see Fig. 76).

In extreme cases, even small measurement differences of a few mm on two identical gables can lead to the inclusion or exclusion of an additional short slat in the asymmetrical external venetian blind (see Fig. 75).

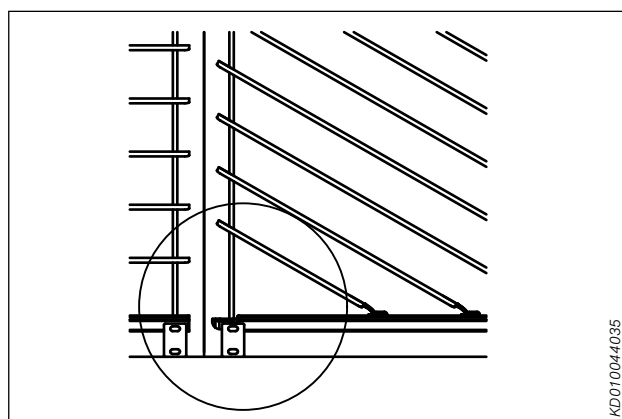
This can be influenced already during measurement of the units or during the ordering process by adjusting dimensions.

#### Adjust dimensions for laterally reversed units!

We recommend using our WAREMA sun shading planner to verify the feasibility of our units and to determine deduction and ordering dimensions. The planner automatically creates a drawing containing all data relevant for the order. Of course this drawing can be used for ordering as well!

Make sure to pass on the measuring sketches to your installation department to ensure proper mounting of the asymmetrical external venetian blinds and optimum slat closure.

Compared to the venetian blind facade system the bottom rail has to rest on the tension screws when the asymmetrical external venetian blind is lowered. A small gap has to be present between the top edge of the bottom rail and the closed slats.

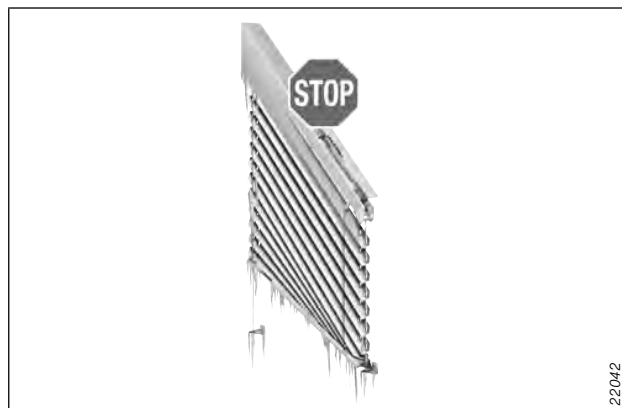


KD01/0044035

fig. 76: Unshaded area

#### Comfort switch-off "ice"

We recommend including the option 'Anti-freeze comfort switch-off' to protect asymmetrical external venetian blinds from damage through incorrect operation.



22042

fig. 77: Comfort switch-off "ice"

Unit shapes

Asymmetrical external venetian blinds

You can also use our free planning programme on [www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de) for planning your sun shading control systems – here you can configure the product and create a technical drawing to be integrated into your plans.

The units are always shown from inside the room

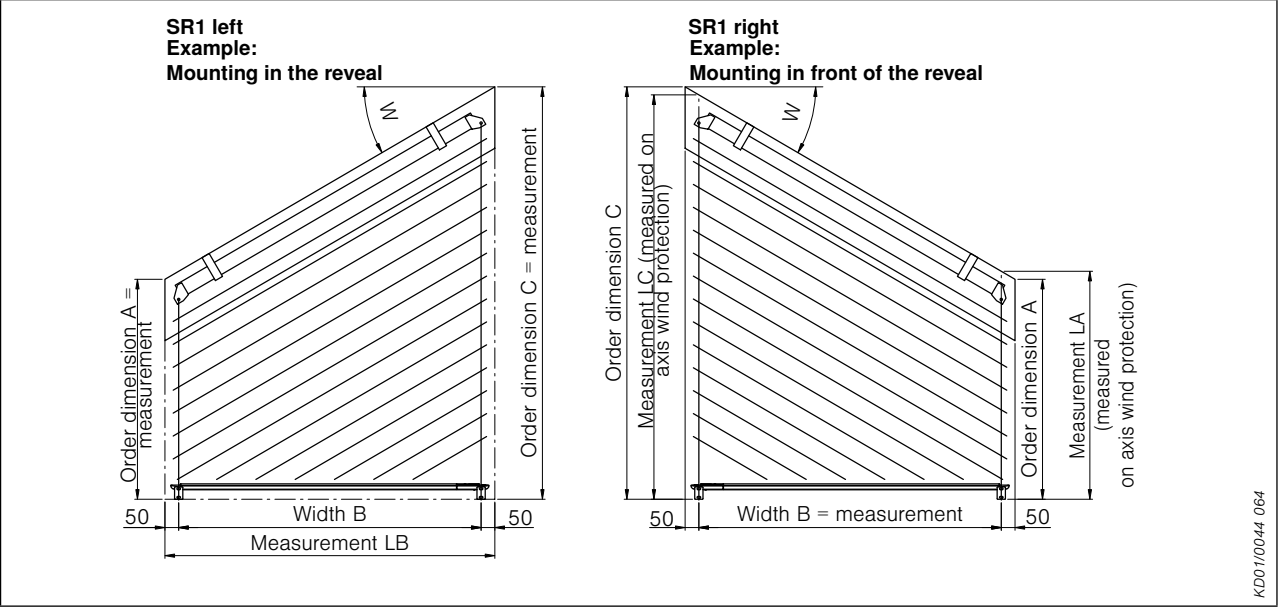


fig. 78: Shapes: SR1

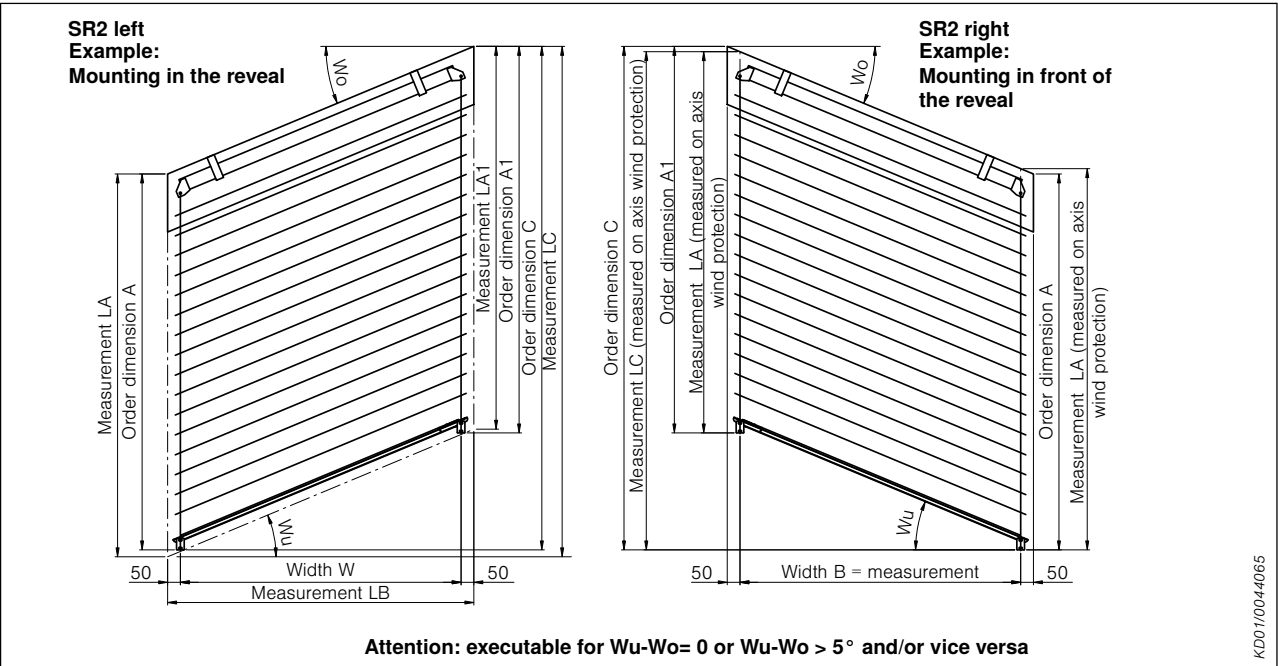


fig. 79: Shapes: SR2

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

## Unit shapes

### Asymmetrical external venetian blinds

You can also use our free planning programme on [www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de) for planning your sun shading control systems – here you can configure the product and create a technical drawing to be integrated into your plans.

The units are always shown from inside the room

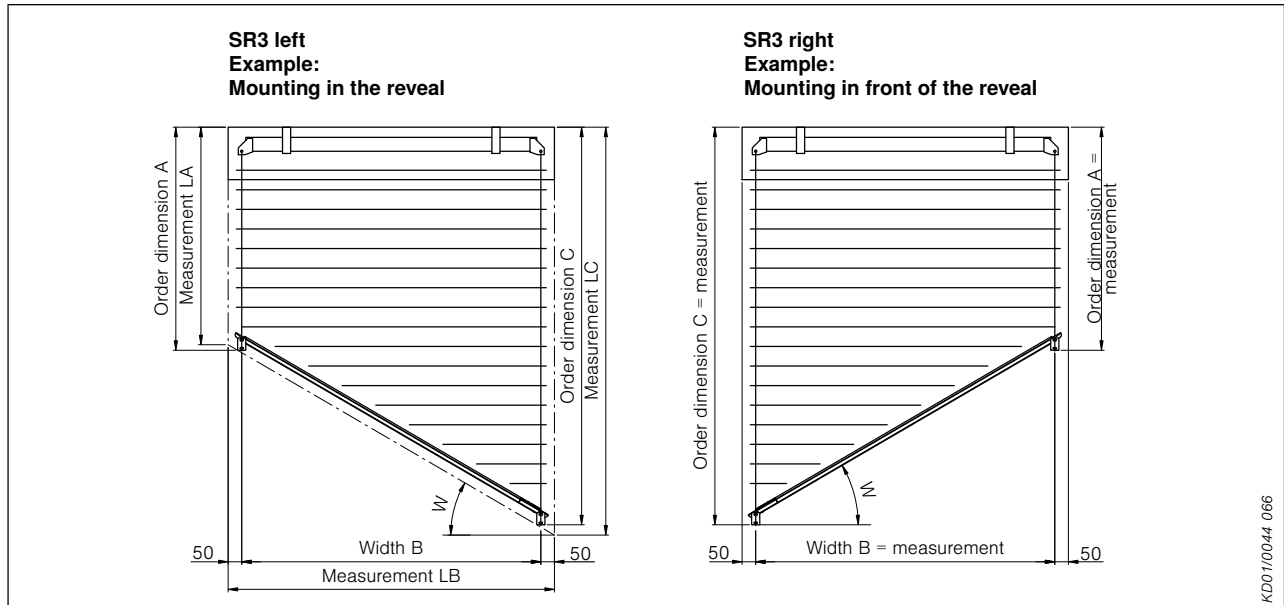


fig. 80: Shapes: SR3

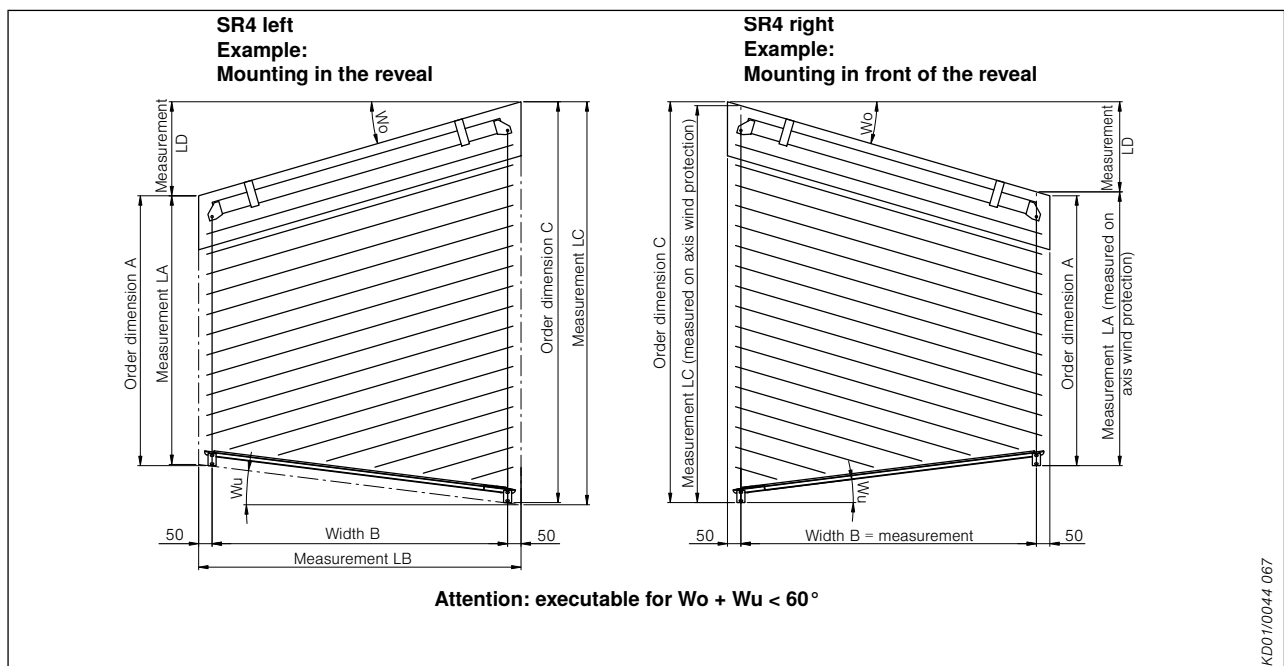


fig. 81: Shapes: SR4

Unit shapes

Asymmetrical external venetian blinds

You can also use our free planning programme on [www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de) for planning your sun shading control systems – here you can configure the product and create a technical drawing to be integrated into your plans.

The units are always shown from inside the room

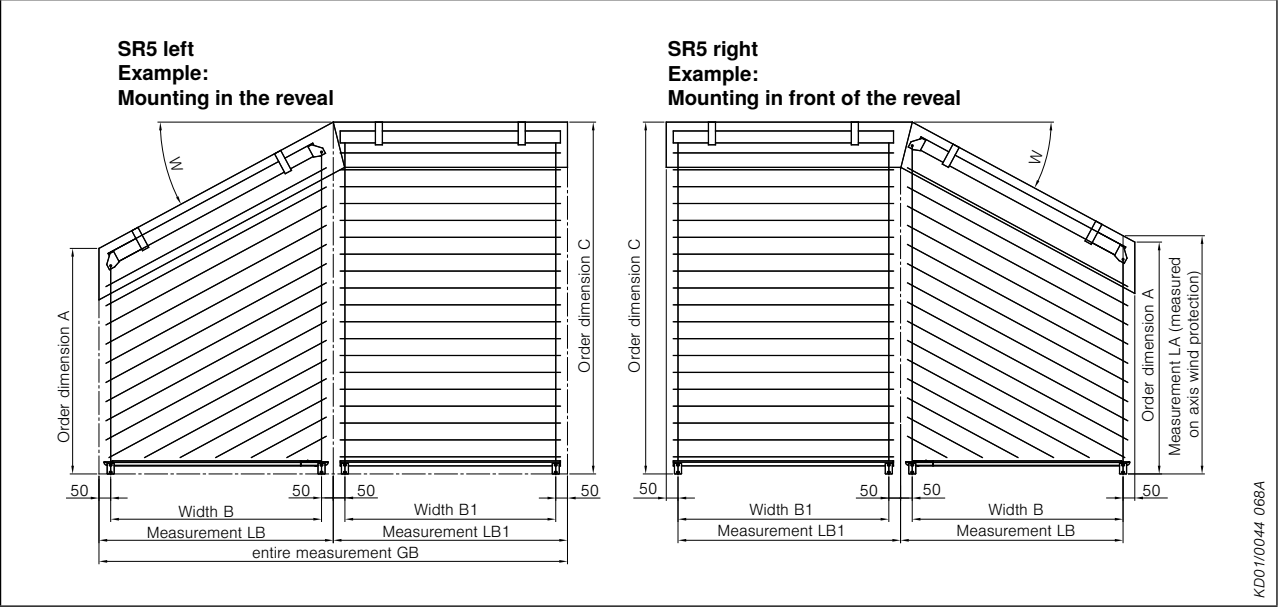


fig. 82: Shapes: SR5

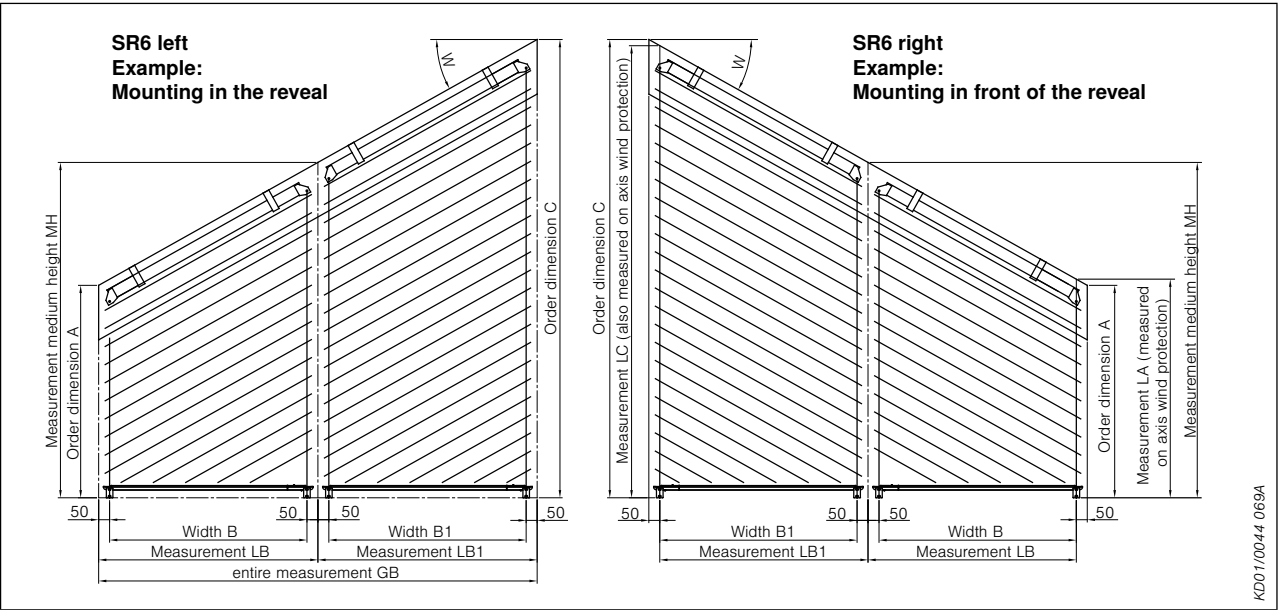


fig. 83: Shapes: SR6

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

## Unit shapes

### Asymmetrical external venetian blinds

You can also use our free planning programme on [www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de) for planning your sun shading control systems – here you can configure the product and create a technical drawing to be integrated into your plans.

The units are always shown from inside the room

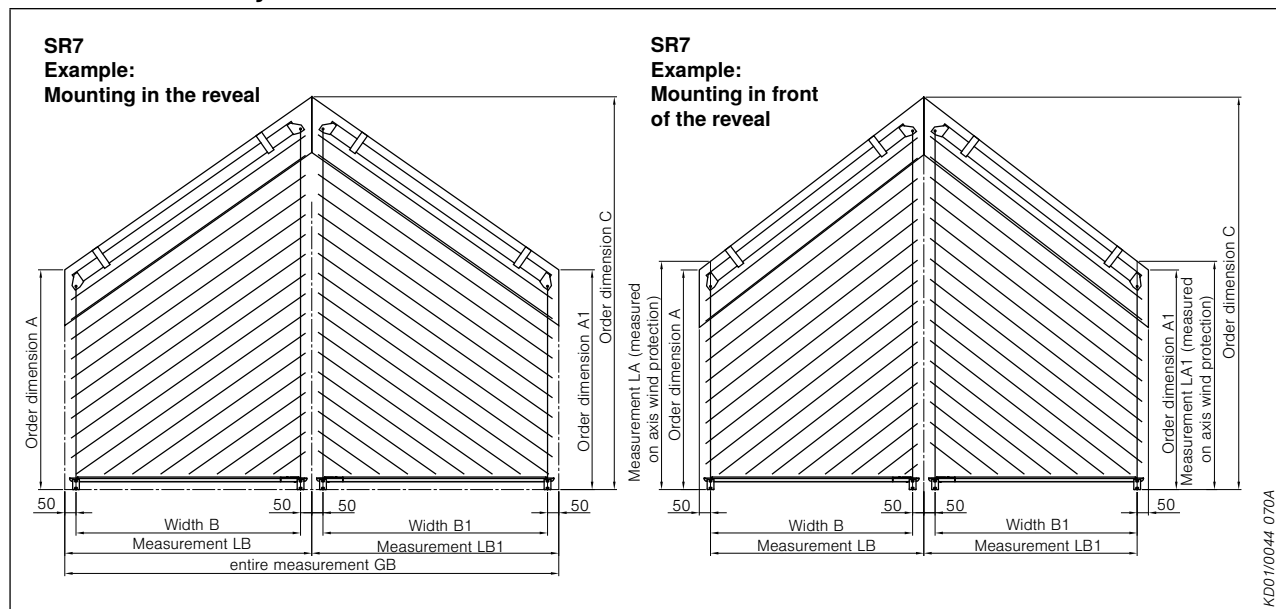


fig. 84: Shapes: SR7

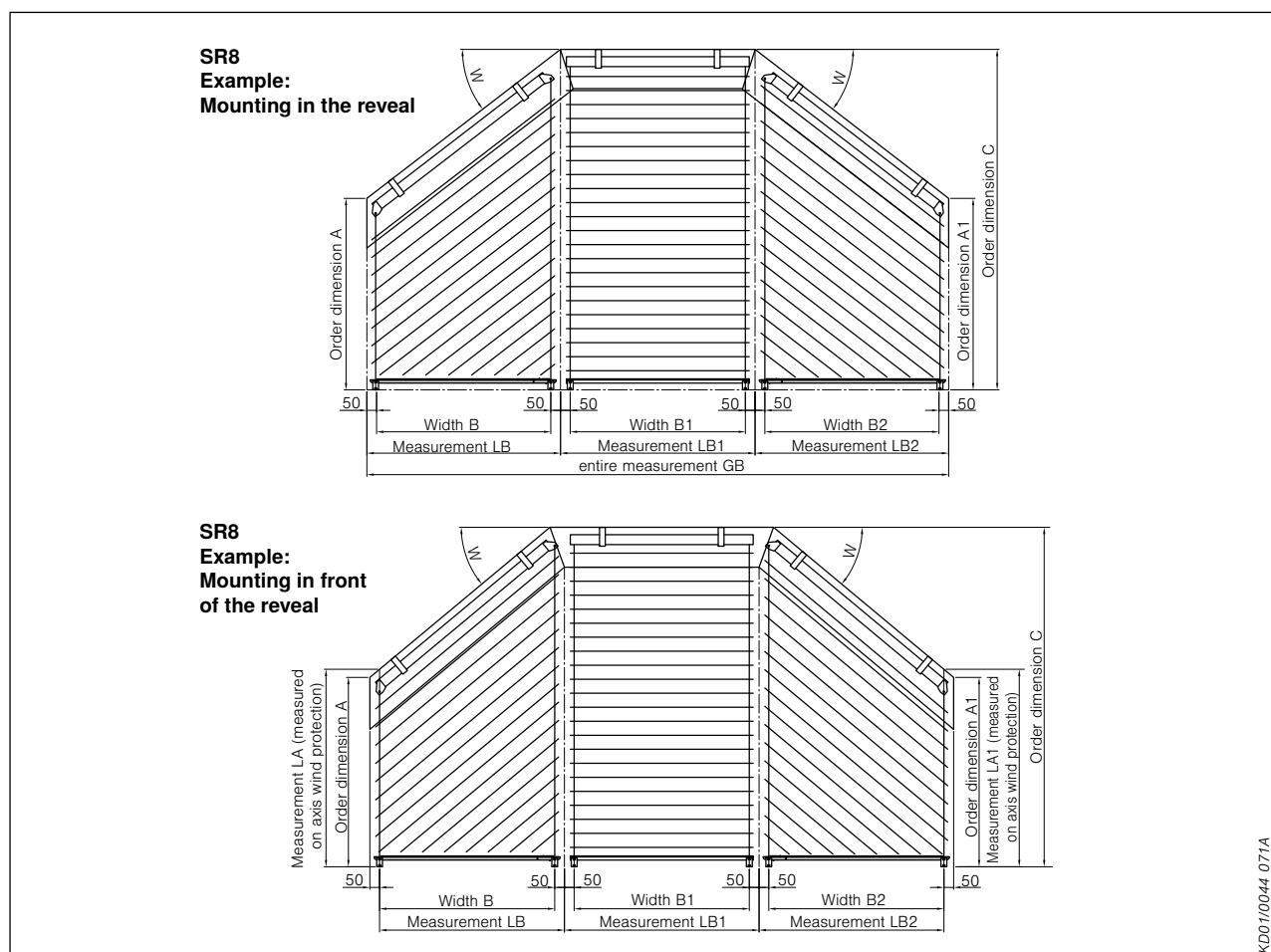


fig. 85: Shapes: SR8



## Measuring instructions

### Individual unit asymmetrical external venetian blinds Installation in the reveal with angled cover panel

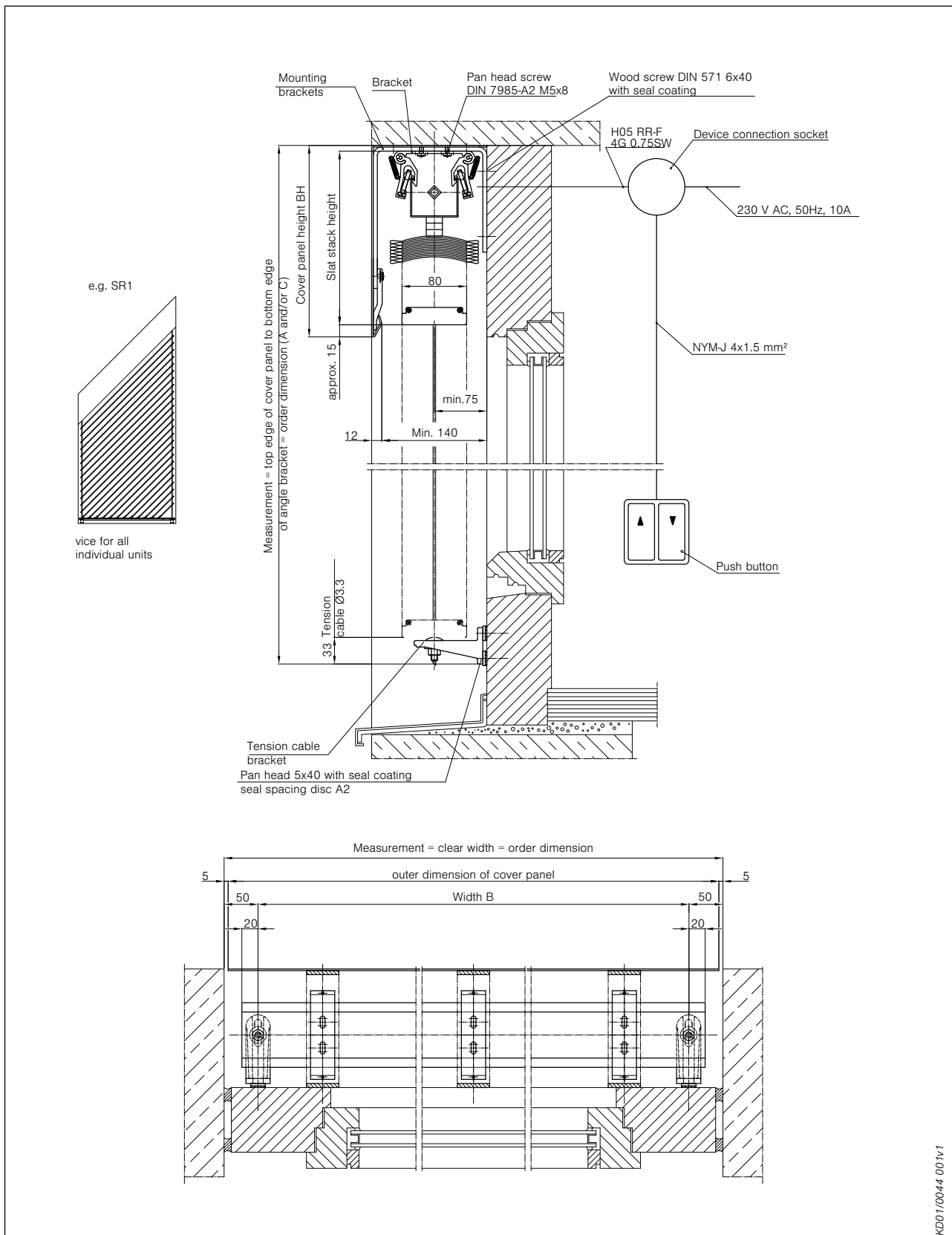
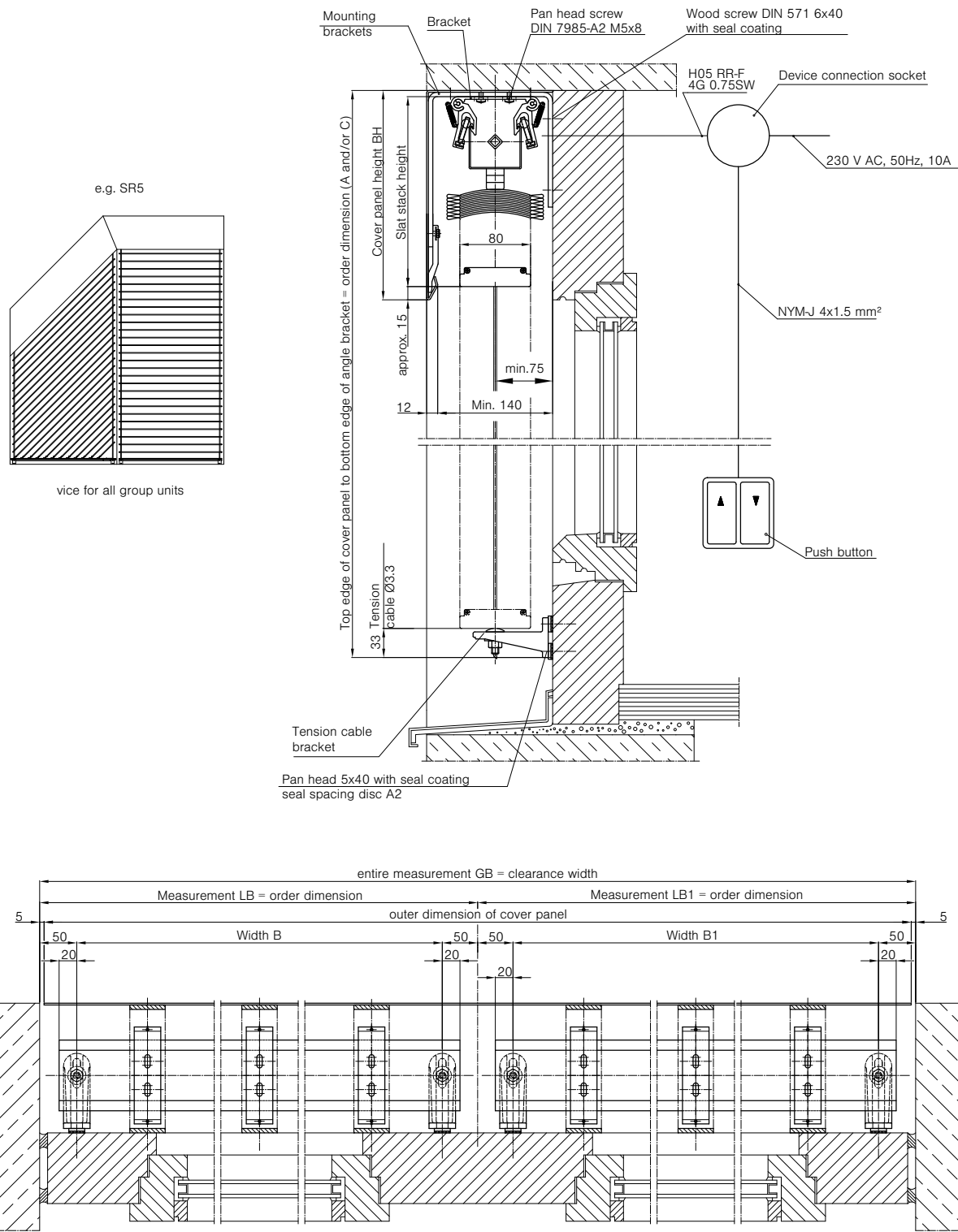


fig. 86: Individual unit with SR.01 in front of reveal

## Measuring instructions

### Group unit asymmetrical external venetian blinds Installation in the reveal with angled cover panel

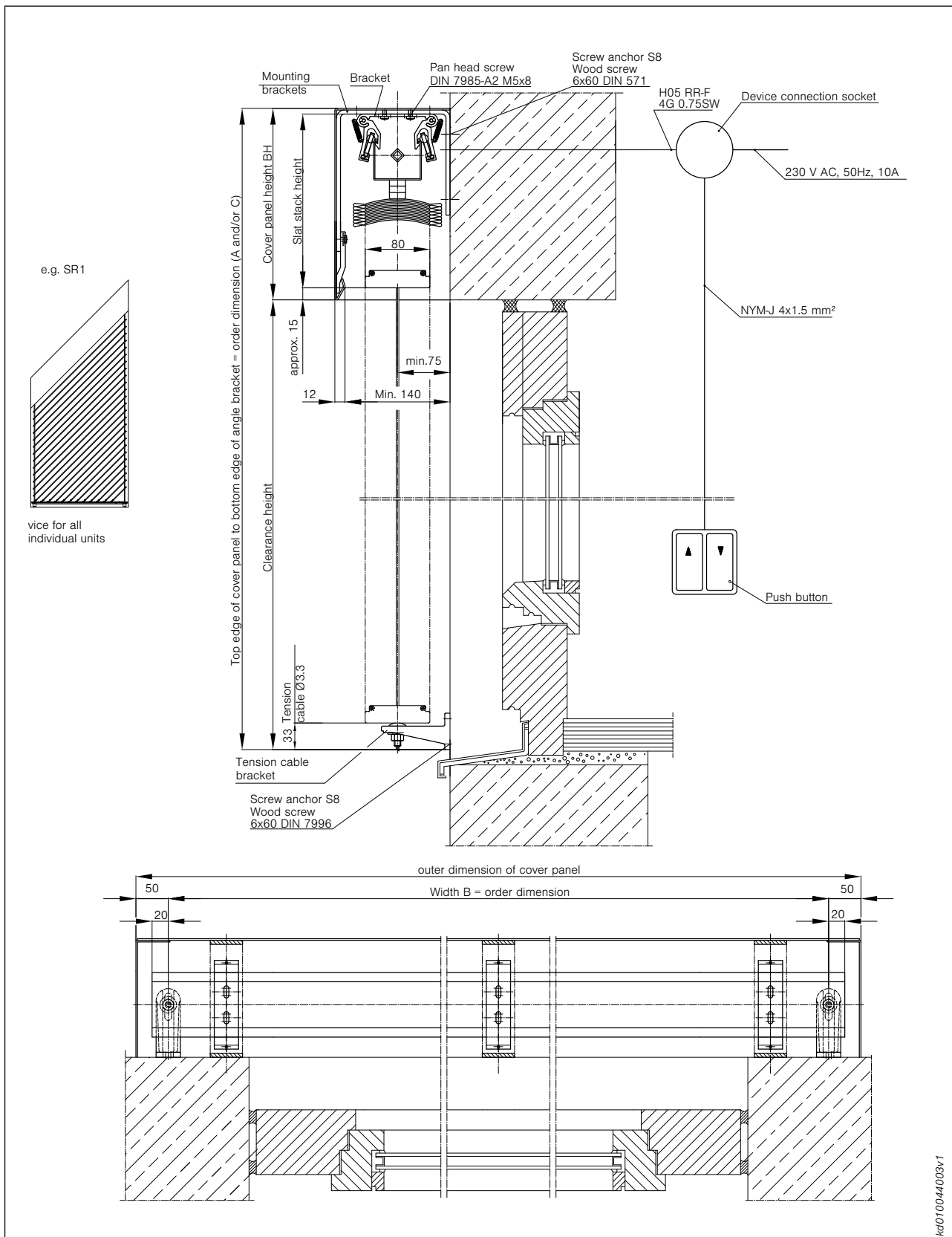


KD010044002v1

fig. 87: Group unit with SR.01 in front of reveal

## Measuring instructions

### Individual unit asymmetrical external venetian blinds Installation in the reveal with angled cover panel



## Measuring instructions

### Group unit asymmetrical external venetian blinds

#### Installation in front of the reveal with round cover panel

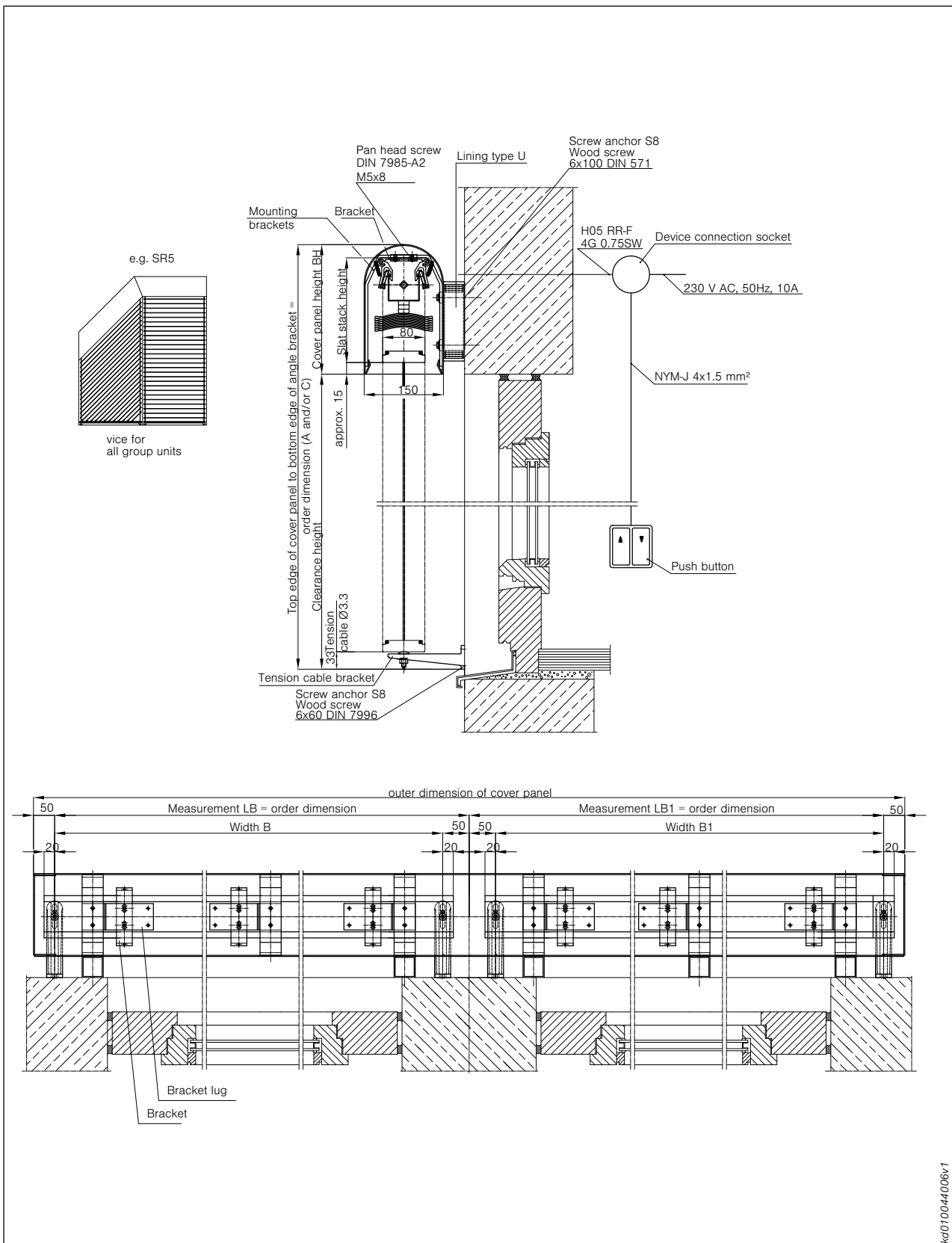


fig. 89: Group unit with SR.09 in front of reveal

kd010044006v1

## Measuring instructions

### Individual unit

### Mounting on mullion/transom facade with u-shaped cover panel

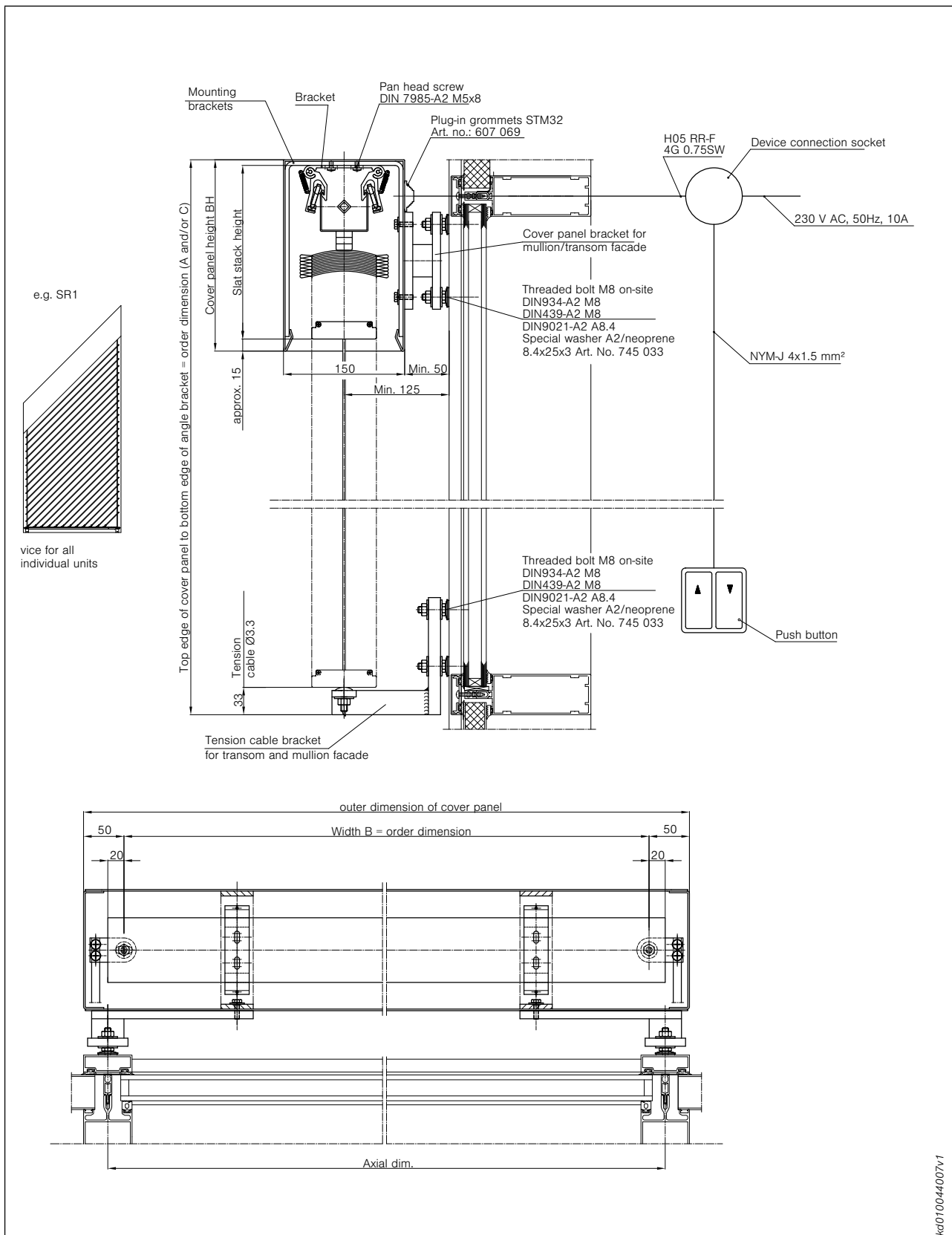


fig. 90: Individual unit mounted on mullion/transom facade with SR.06

## Measuring instructions

### Group unit

### Mounting on mullion/transom facade with u-shaped cover panel

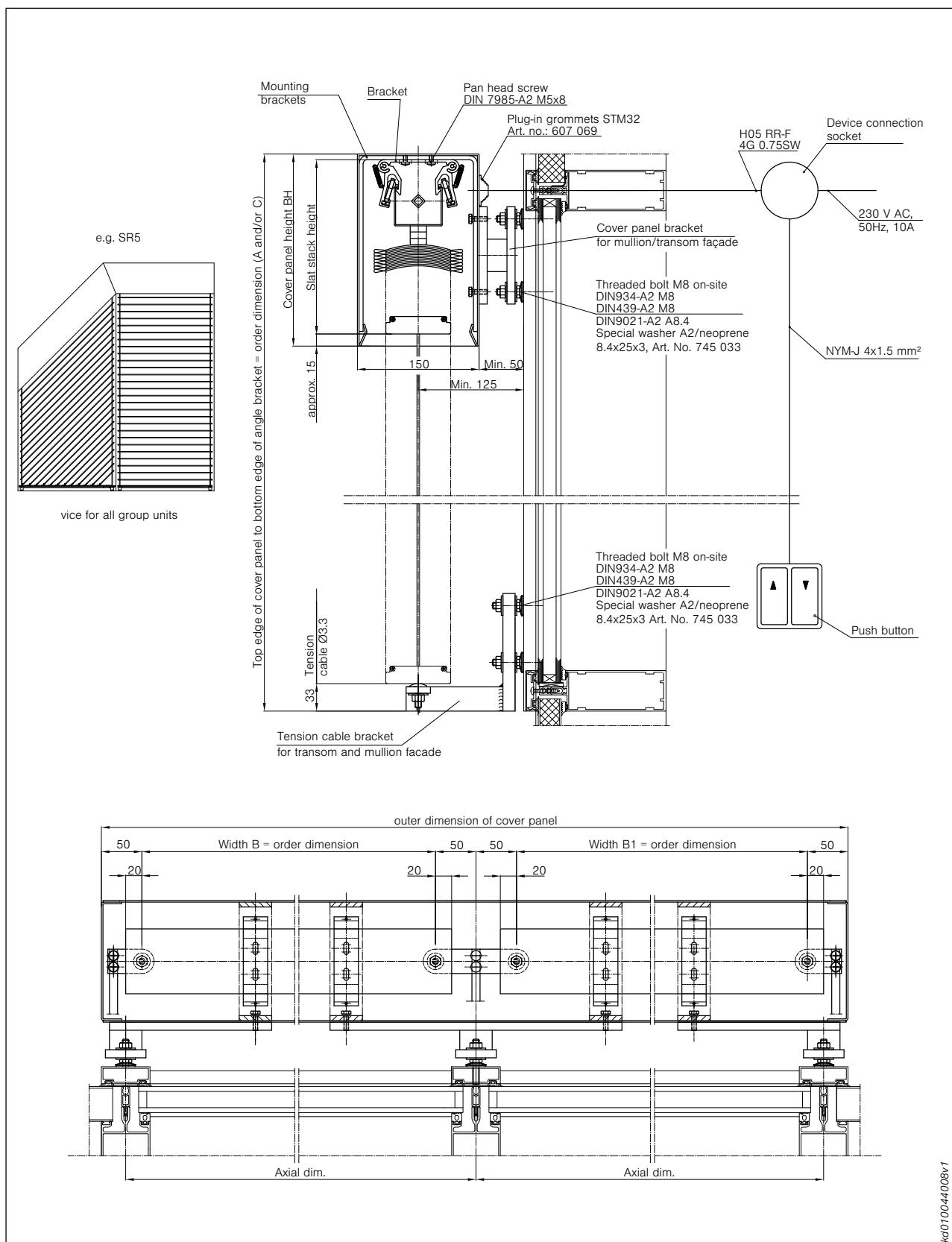


fig. 91: Group unit mounted on mullion/transom facade with SR.06

## General information

## Product characteristics

## Basic facade external venetian blinds



### Complete external venetian blinds

**Light guidance/  
external venetian  
blinds**

## Guides

## Cover panels

## Planning

## Safety systems Accessories

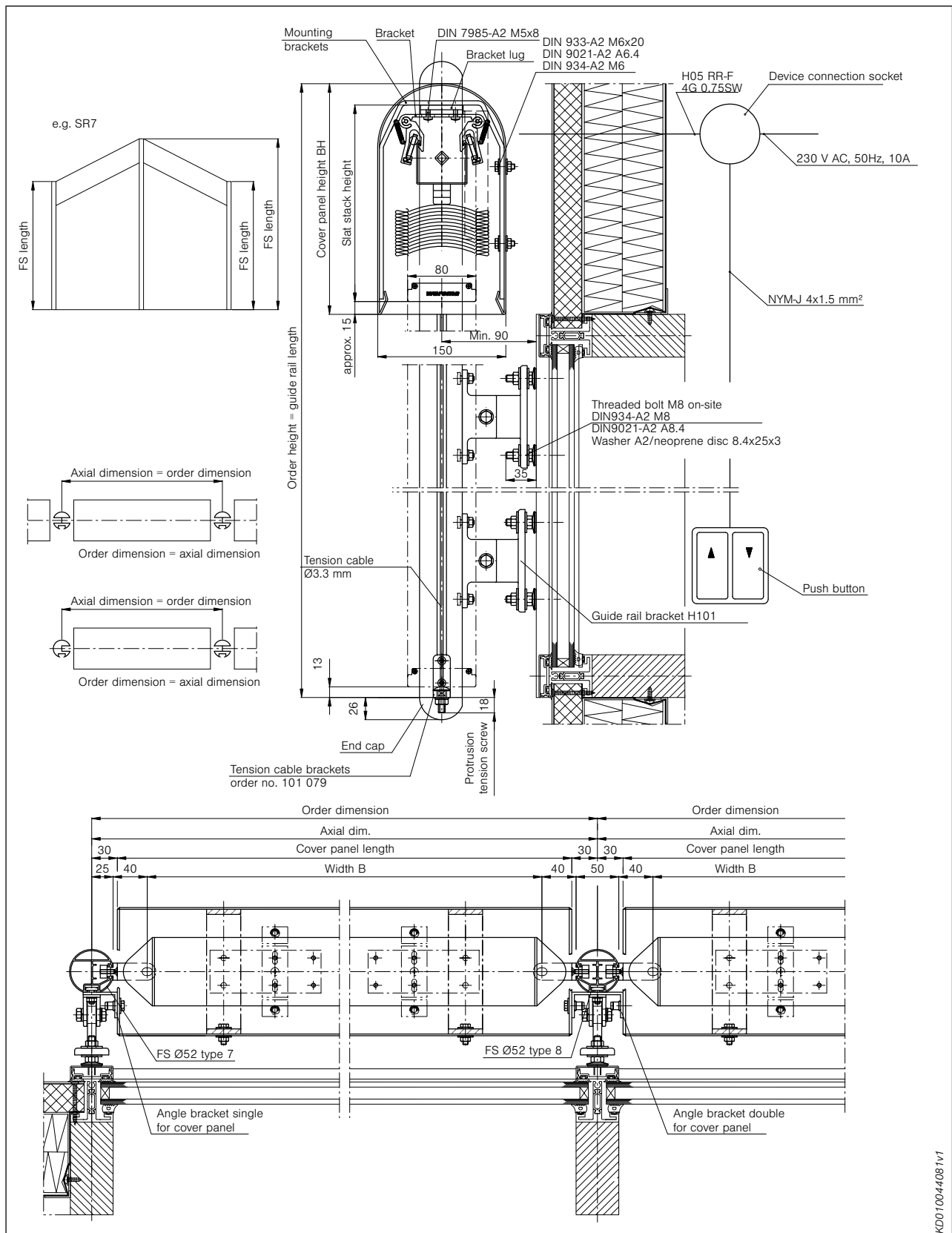
Drives  
Control systems

KD010011080v1

## Measuring instructions

### Group unit asymmetrical external venetian blinds

### Mounting cover panels between guide rails with round-shaped cover panel and guide rail Ø 52 mm



KD010044081v1

fig. 93: Group unit: Mounting cover panels between guide rails with SR.09 and guide rail Ø52 mm



## Protective cover panels

### Asymmetrical external venetian blinds

#### Cover panel types

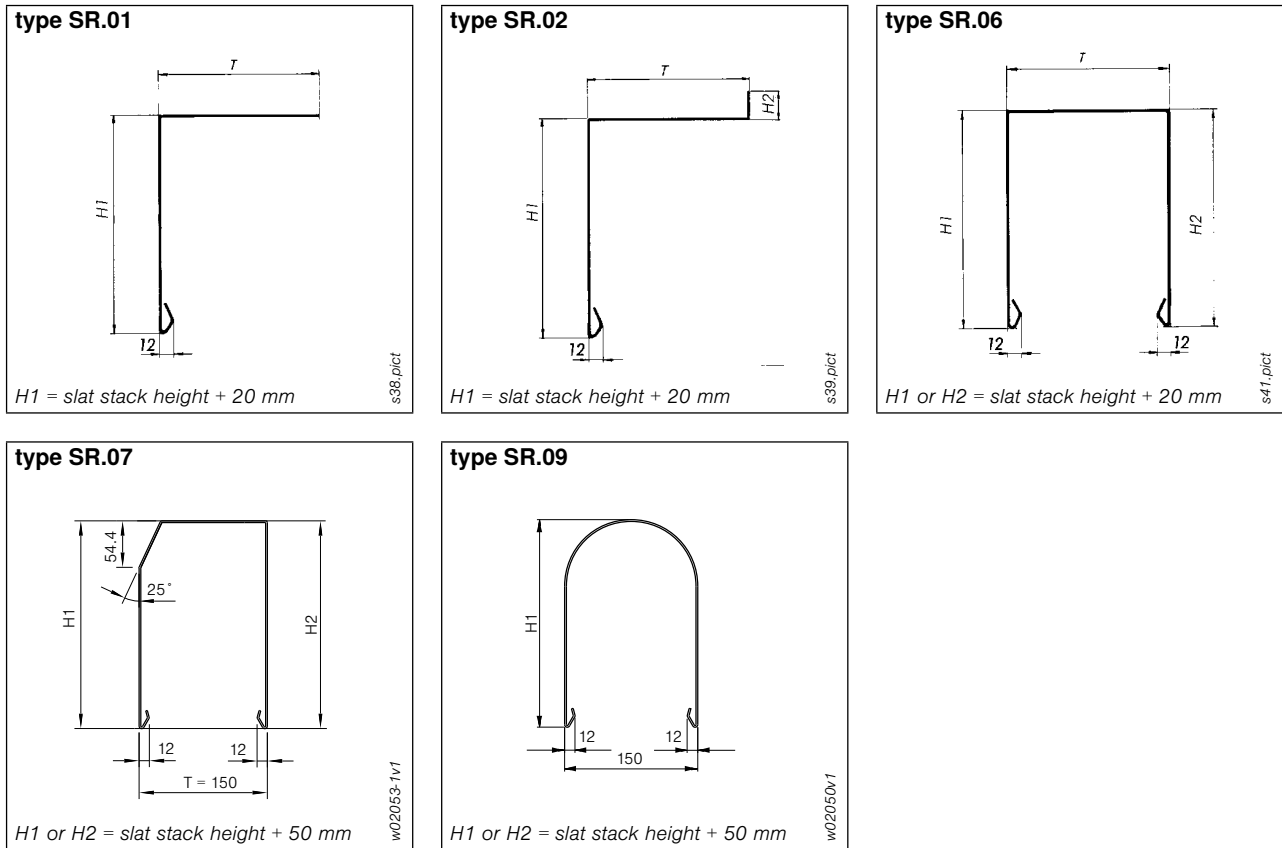


fig. 94: Cover panel types

Material: aluminium, folded  
 Material thickness: 2 mm  
 Dimensions: development according to customer specification  
 (L): without joint maximum 4000 mm  
 (H): cover panel one-piece maximum 380 mm, for types BL SR.06, BL SR.07, BL SR.09  
 (T): minimum 140 mm, for types SR.01, SR.02  
 150 mm for types SR.06, SR.07, SR.09  
 Surface: outside powder-coated, optionally anodised

A drone-reducing coating for the top and front area of the cover panel is available

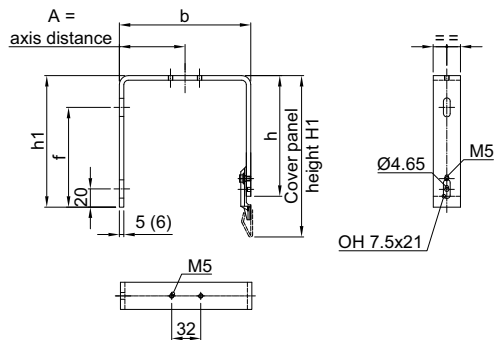
## Mounting brackets

### Asymmetrical external venetian blinds

#### Mounting brackets

##### Mounting bracket for u-shaped cover panel type BG02

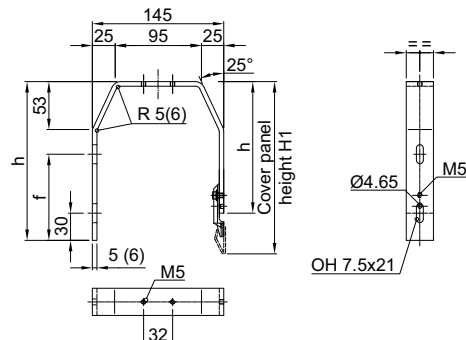
Dimension h = cover panel height - 20 mm  
Material: steel 37 zinc-coated



70915

##### Mounting bracket for round cover panel type BG11

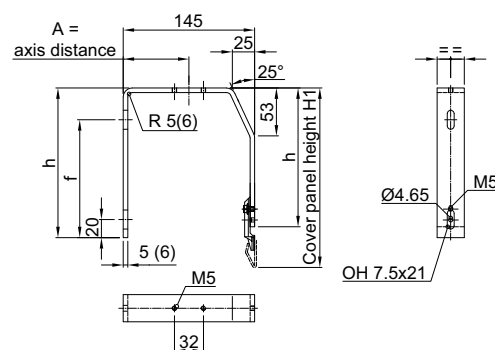
Dimension h = cover panel height - 35 mm  
Material: steel 37 zinc-coated



70916

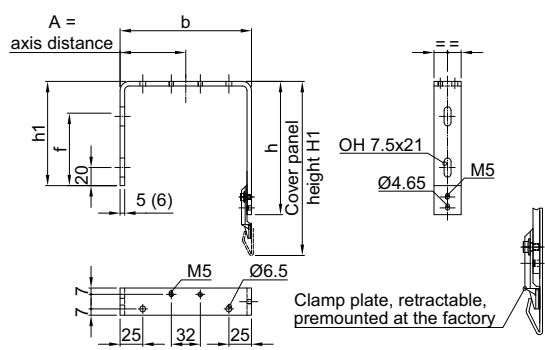
##### Mounting bracket for round cover panel type BG32

Dimension h = cover panel height - 20 mm  
Material: steel 37 zinc-coated



70917

##### Mounting bracket for angled cover panel type BG55



70918

fig. 95: Mounting brackets

#### Fixing suggestions for mounting brackets on existing substructure

Mounting sub-structure	Fixation suggestion	Art. no.
Aluminium	DIN 7976 6.3x38	720323
	DIN 9021 A2 6.4 washer	742006
Concrete (C 20/25)	DIN 571-A2 6x60	727002
	DIN 9021-A2 A6.4	742006
	Dowel SX8	790419
Plastic window with steel insert	DIN 7976-A2 C6.3x38 <sup>1)</sup>	721029
	DIN 9021-A2 A6.4	742006
Wood	DIN 571-A2 6x40 <sup>1)</sup>	727030
	DIN 9021-A2 A6.4	742006

<sup>1)</sup> Screw with seal coating prevents ingress of water into the screw connection.

#### Note:

The WAREMA Fastener Assistant provides a calculation tool which helps you to individually calculate the suitable and permitted fixing material for your application.

The WAREMA Fastener Assistant is available at <http://befestigungsberater.warema.de>.

Drives	Safety systems	Cover panels	Guides	Light guidance/ external venetian	Completeexternal	Basic facade	Product	General
Control systems	Accessories				venetian blinds			

sliding from 60 - 95 mm distance, material: aluminium



Material: aluminium, 40x40x2  
Specify dimension H when ordering



### Angle bracket

Dimensioning of the angled bracket according to overhang and load



# **Bracket options** **Asymmetrical external venetian blinds**

**Brackets for asymmetrical external venetian blinds**

Powder coating not possible as a standard in the scope of delivery, art. no. 551247

KD010044013

**Brackets for asymmetrical external venetian blinds**

Included as a standard in the scope of delivery, for more than 2 brackets used as additional 3rd or 4th bracket, each with 3 linings

70919

**Brackets for asymmetrical external venetian blinds**

Powder coating available, art. no. 551250

KD010044059

# Mounting options for cover panels Asymmetrical external venetian blinds

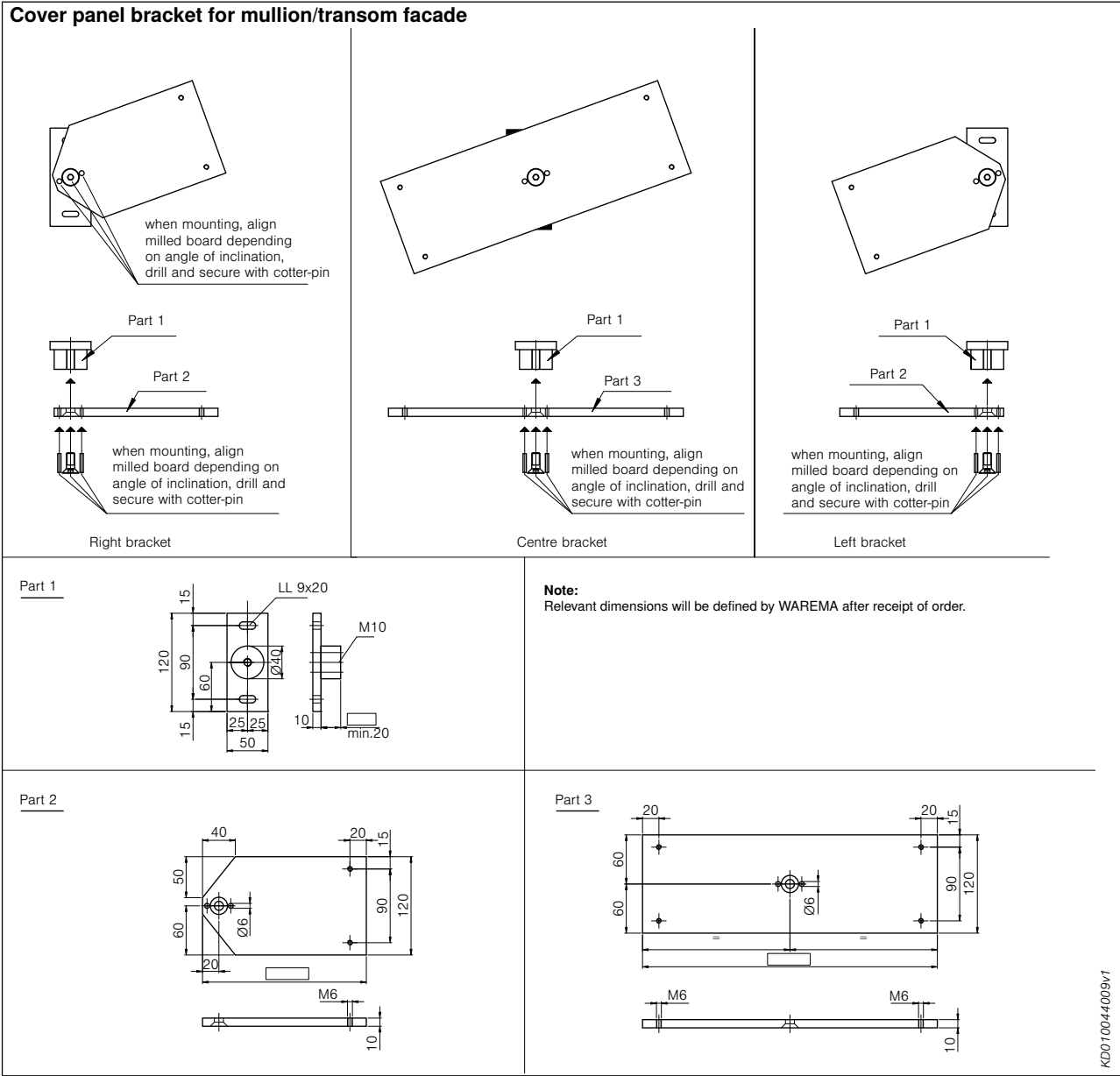


fig. 96: Cover panel bracket for mullion/transom facade

## Tension cable bracket

### Asymmetrical external venetian blinds

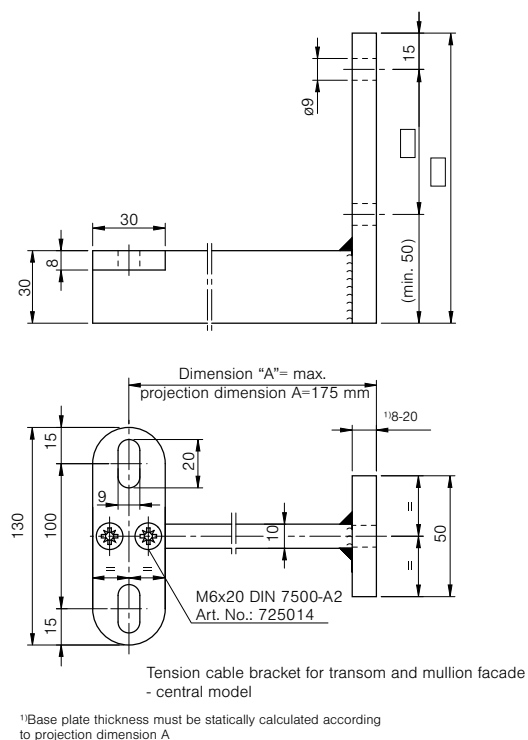
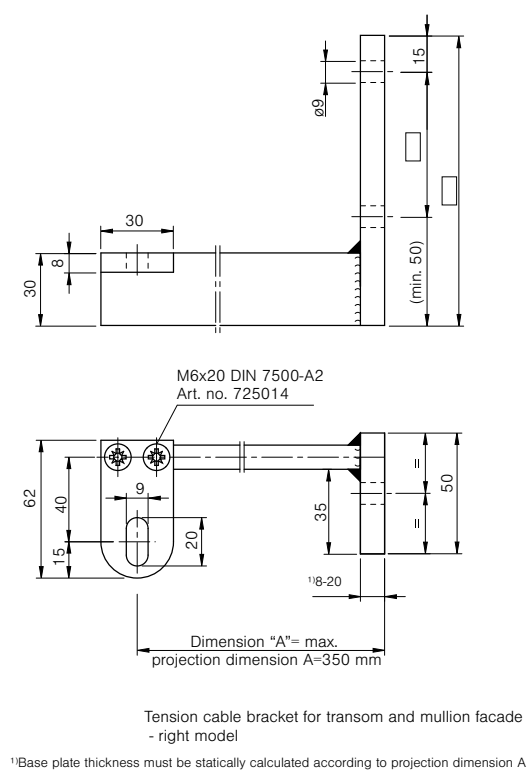
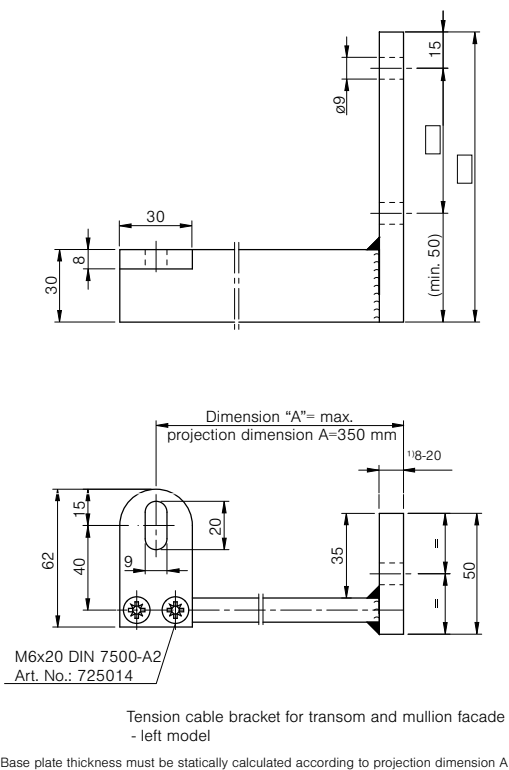
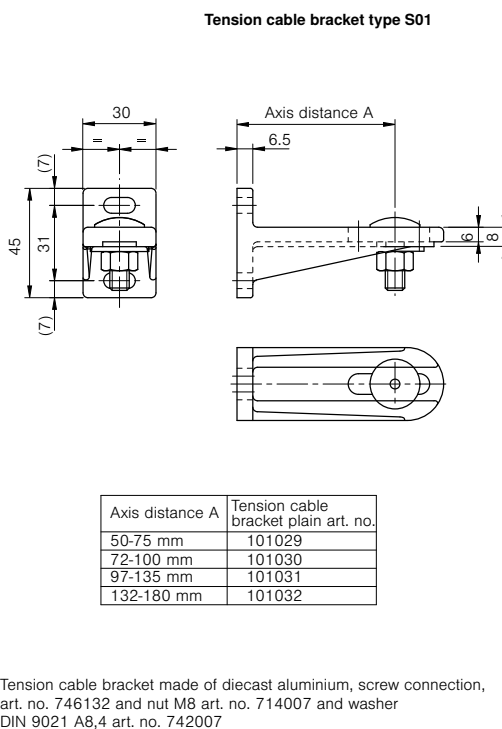


fig. 97: Tension cable bracket

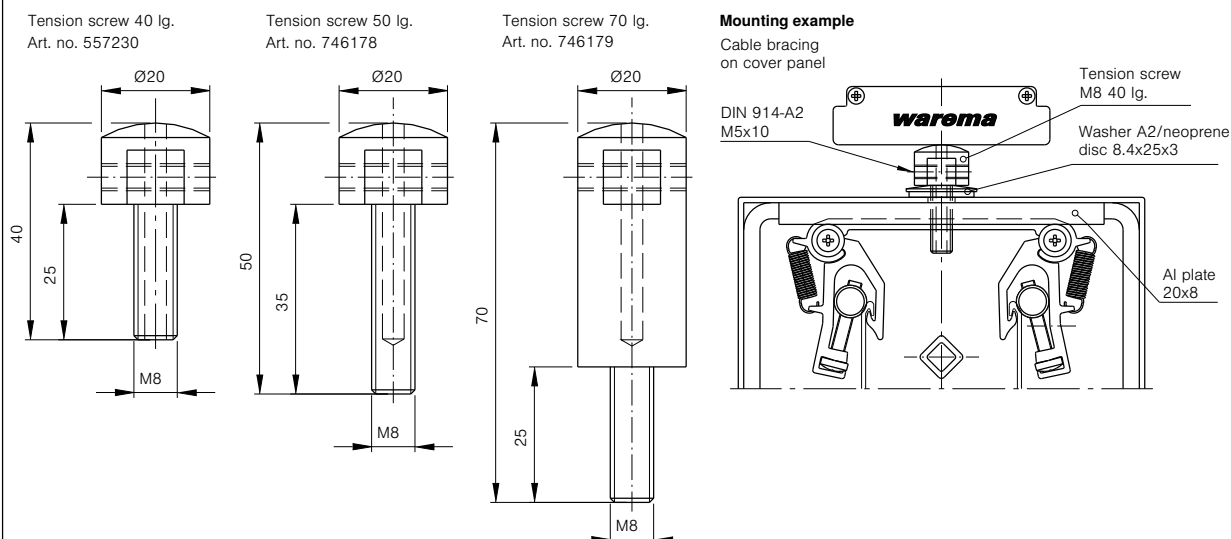


kd01004010

## Guy rope

### Asymmetrical external venetian blinds

**Tension screws Ø20 mm** for tension cables on cover panel, floor or window sill  
Material: A2



**Adjusting ring**  
Art. no. 542517, material: A2

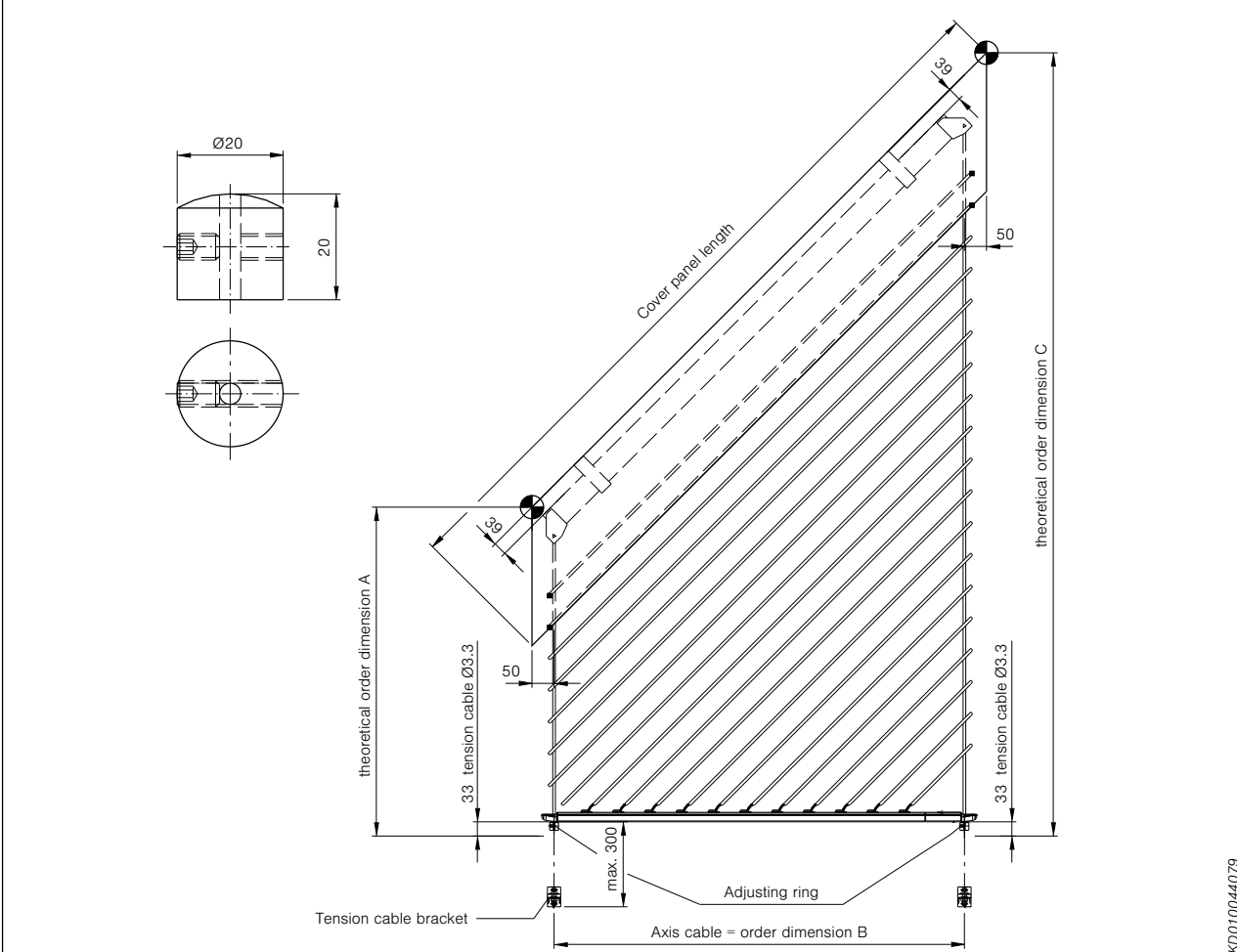


fig. 98: Guy rope

**Notes**



## Contents

### Complete external venetian blinds

#### Venetian blind window systems, plaster base type/ corner version

Description ..... 126

Construction limit values ..... 130

#### Venetian blind window systems, shaft version

Description ..... 154

Construction limit values ..... 157

#### Front-mounted external venetian blinds R6/R10

173

#### Top-mounted external venetian blinds for new buildings NA-RA

195

General  
information

Product  
characteristics

Basic facade  
external venetian  
blinds

Premium facade  
venetian blinds

Complete external  
venetian blinds

Light guidance/  
external venetian  
blinds

Guides

Cover panels

Planning

Safety systems  
Accessories

Drives  
Control systems

Solflex AB försäljning och service västra Skåne. Showroom och rådgivning;  
Malmö Slussplan 1, 040-979745. Helsingborg Garnisonsg 12, 042-161635.  
kontakter@solflex.se www.solflex.se

## Field of application/type overview FSR

### Venetian blind window systems with cable or rail guidance

Venetian blind window systems are suitable for both the restoration of buildings and for new buildings.

These systems can be integrated into the facade in a concealed form or set coloured accents at the facade as visible system. There is a huge selection of colours for slats, cover panels, guide rails and bottom rails. All external venetian blind types that can be used allow regulation of daylight with simultaneous visual privacy and additional perfect heat protection. Adjusted to the subsequent requirements, flat slats, beaded slats or dim-out slats can be used.

The venetian blind window system that can be integrated into the facade in a concealed form is especially designed for heat insulation network systems (WDVS); thus, compliance with EnEV 2016 is no problem. The external venetian blinds feature proven, robust technology, ensuring long-term use of the units.

The FSR shaft models S1 or S2 allow integration into on-site shafts without additional fixing in shafts where the mounting substructure is not suitable for screw anchor fixing.

Planning the integration of the system into the facade is straightforward and the implementation can be carried out with the smallest possible installation effort. Optional equipment or retrofitting of the system with insect screens is also easy.

With WAREMA sun shading controls the functions of the venetian blind window system can be perfectly controlled and adjusted to the circumstances. This will effectively reduce the energy needs of your building.

#### Type overview

FSR S1

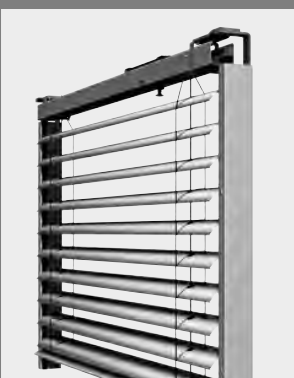


#### Venetian blind window system, FSR S1

As a refurbishment or retrofitting option for mounting in on-site shafts

Cover panel:	closed on both sides for stiffening, allowing larger curtain widths
Curtain:	beaded slats 60/80 mm, flat slats 60/80 mm, dim-out slats 73/90/93 mm
Insect screen:	roller blind or swivel frame, can be integrated

FSR S2



#### Venetian blind window system, FSR S2

As a refurbishment or retrofitting option for mounting in on-site shafts

Top rail:	the top rail is connected to the guide rails with a bracket. It is fixed by inserting the top rail into the external venetian blind support on the bracket.
Curtain:	beaded slats 60/80 mm, flat slats 60/80 mm, dim-out slats 73/90/93 mm

## Type overview FSR

### Venetian blind window systems with cable or rail guidance

#### Type key FSR

P S 0

0 = 0 mm rear cover panel fold (standard)  
Number = rear cover panel fold according to table

Cover panel without back-fold

S = small, 135 mm cover panel depth for 73 and 80 mm slats

L = large, 150 mm cover panel depth for 73, 80, 90 and 93 mm slats

Cover panel with back-fold

S = small, 130 mm cover panel depth, plus back-fold, for 73 and 80 mm slats

L = large, 145 mm cover panel depth, plus back-fold, for 73, 80, 90 and 93 mm slats

P = plaster base model (plaster cover panel)

E = rectangular model (u-shaped cover panel)

Example: FSR **PS-0** E 80 A6 S

#### Type overview

FSR P



#### Venetian blind window systems, FSR P

For flush mounting

Cover panel: with plaster base plate

Curtain: beaded slat 80 mm

flat slat 80 mm

dim-out slat 73/90/93 mm

Insect screen: roller blind or swivel frame, can be integrated

FSR E



#### Venetian blind window systems, FSR E

For facade colour design or for refurbishment/retrofitting

Cover panel: visible

Curtain: beaded slat 80 mm

flat slat 80 mm

dim-out slat 73/90/93 mm

Insect screen: swivel frame, can be integrated

## Description

### Venetian blind window systems with cable or rail guidance

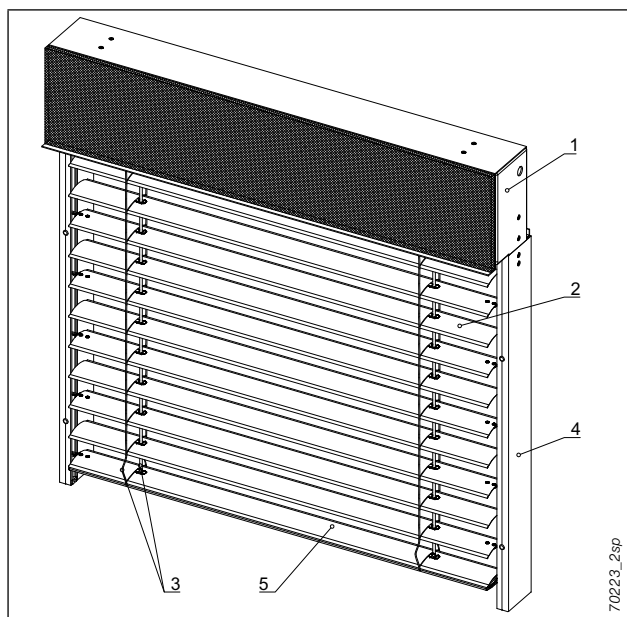


fig. 99: Venetian blind window system FSR P, rail-guided

#### 1 Cover panel

#### 2 Slats

2.1 Beaded slats

2.2 Flat slats

2.3 Dim-out slats

#### 3 Tilting and lifting tape

3.1 Tilting tapes

3.2 Lifting tapes

3.3 Loop cord

#### 4 Lateral guidance

#### 5 Bottom rail

## Application

For mounting in the reveal, for integration in composite thermal insulation system, in ventilated facades or in front of the facade.

### Installation note:

For venetian blind window systems the external venetian blinds are preinstalled in the boxes at the factory.

For group units the curtains are supplied loose.

## Operation

### Motor

The slats are raised and lowered as well as tilted by actuating a switch.

Voltage: 230 V AC, other voltages optional

Frequency: 50 Hz, other frequencies optional

Degree of protection: IP 54

Plug-in connector: Hirschmann coupling incl. 1 m cable whip

The drive switches off upon reaching the upper or lower limit position using built-in, adjustable limit switches.

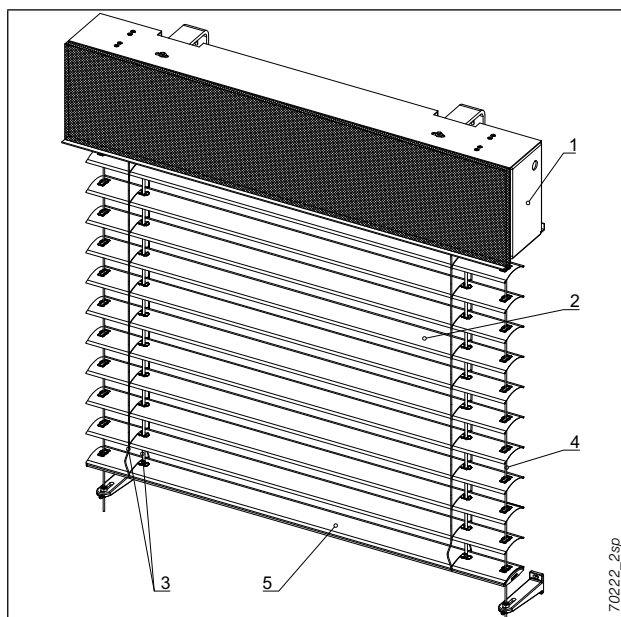


fig. 100: Venetian blind window system FSR P, cable-guided

## Cover panels (1)

Closed on both sides

Material: aluminium sheet, folded

Material thickness: 2 mm

Dimensions:

(H): 210, 240, 270, 300 mm. Optionally: differing cover panel height possible

(D): For cover panel without back-fold (standard): S = 135 mm, L = 150 mm  
For cover panels with back-fold: S = 130 mm, L = 145 mm

Plaster base plate: polystyrene, material thickness 8 mm  
The side closures are connected to the guide rails, fixing of the blind on the guide rails.

The model is designed both as screen or for complete integration under the outside plaster as plaster base type with plaster base plate.

## Top rail

Material: aluminium, extruded

Material thickness: 1.5 mm

Dimensions (WxH): 59x51 mm

Profile: U-shaped profile

Surface: plain

Fixing: with aluminium brackets with sound decoupling, plain

## Tilt rod

Material: steel, zinc-coated

Material thickness: 1 mm

Dimensions (WxH): 12x12 mm

Profile: square tube

Surface: plain

## Description

# Venetian blind window systems with cable or rail guidance

### Bearing

Maintenance-free, enclosed

Housing: plastic, with Teflon

Tilting reel: plastic

Tape reel: plastic

Segment tilting to prevent self-acting adjustment of slats.

### Slats (2)

**Slats with beaded edges on both sides, type 80 S (2.1)**  
curved

Material: aluminium, special alloy

Material thickness: approx. 0.44 mm

Dimensions (W): 80 mm

Profile: convex

Surface: enamel finish resistant to corrosion using a special process

Colour: according to WAREMA colour chart for external venetian blinds

All cutouts in the slats have black eyelets, with an outlet size of 5 x 9 mm, to guide the lifting tapes (reduction of wear) and fix the webs of the tilting tape.

Optional: slat cutouts with surrounding beaded edges, instead of an eyelet for lifting tape, outlet size approx. 6.5 x 8.5 mm, tilting tape connection via horseshoe cutout.

The curtain moves down with the slats closed to the outside and moves up with the slats closed to the inside.

#### Flat slats (2.2)

curved, no eyelets

Material: aluminium, special alloy

Material thickness: approx. 0.45 mm

Dimensions (W): 80 mm

Profile: convex

Surface: enamel finish resistant to corrosion using a special process

Colour: according to WAREMA colour chart for external venetian blinds

The top slat is reinforced. Optionally all slats are available with protective eyelets.

The curtain moves down with the slats closed to the outside and moves up with slats tilted approx. 55° to the inside.

#### Dim-out slats (2.3)

Edges beaded on both sides, special profile

Material: aluminium, special alloy

Material thickness: approx. 0.44 mm

Dimensions (W): 73/93 mm

Profile: special profile, front rolled beads with sealing strip made from flexible plastic

Surface: enamel finish resistant to corrosion using a special process

Colour: according to WAREMA colour chart for external venetian blinds

All edges of the cutouts in the slats are continuously beaded in order to reduce wear of the lifting tape to a minimum. A higher level of dim-out is achieved by using dark slat colours.

The external venetian blind moves down with the slats

closed and moves up with the slats positioned horizontally.

### Tilting tape/lifting tape (3)

#### Tilting tapes (3.1)

Special heavy-duty version with double webs

Material: polyester, with Kevlar core

Colour: black, optionally grey

Each slat is attached to the top web of the tilting tape and threaded between the double webs.

#### Lifting tapes (3.2)

Material: polyester, with special coating

Colour: black, optionally grey (only for type E 80 A6 S or E 80 AF A6)

#### Loop cord (3.3)

Slat suspension through laterally fixed loop cord

Material: polyester, with worked-in aramide fibres, weather-proof, UV stable

Colour: black, optionally grey

The loops are permanently fixed to the slats by clips made of stainless steel resistant to corrosion.

### Lateral guidance (4)

#### Rail through guide profile

With plastic guide profile for nipple guiding and noise reduction, incl. water-repelling end caps.

Material: aluminium, extruded

Dimensions (WxD): 27.5x80 mm

27.5x87.5 mm

27.5x95 mm

27.5x109.5 mm

27.5x117 mm

27.5x122.5 mm

Surface: powder-coated, optionally anodised

Fixing: directly on the window frame or in the reveal

Guide pin: polyamide, glass fibre reinforced, impact-resistant connection with the slats by means of min. 2 ultrasonic welds; slats are alternatively pinned (beaded slats, dim-out slats), every 3rd slat is pinned on both sides (flat slat). Details of guide profile from page 283.

#### Notice:

For model A2/A6 – combination cable/rail guidance the bottom rail for dim-out slats is shortened in the area of the cable guidance and ends in front of the cable guidance below the slat.

## Description

### **Venetian blind window systems with cable or rail guidance**

#### **Tension cable - A2**

Stranded wire

Material: steel, resistant to corrosion

Coating: polyamide

Colour: black or transparent coating

Fixing: tension cable bracket S01, aluminium

The cable guidances are fixed with a special spring tension device to compensate for thermal changes in the length of the top rail. Cable guidances run through the slats and the bottom rail. They are fixed to the window or the wall using tension cable brackets.

#### **Bottom rail (5)**

With end caps (moving with the unit for types 73/90/93 A6)

Material: aluminium, extruded

Dimensions (WxH): 73/80/93x15 mm

Surface: powder-coated, optionally anodised

End caps: plastic, black, optionally grey

With sliding guide pins with slotted end caps to prevent the blind from unhinging. For dim-out slats with bottom rail with stabilising webs, integrated fall protection and clip-on slat with matching design as lower closure.

#### **Colours**

Powder coating of aluminium parts with chrome-free pre-treatment according to valid RAL CLASSIC colour chart (except camouflage and luminous colours) or in six DB colours as well as eight textured colours (W4914 - W4921), four anodised-look colours (WC31 – WC34) and other colours according to WAREMA Colour World (in WAREMA colour specification).

Other colour specifications and special colours are available on request at a surcharge.

#### **Notice:**

Information on insect screen can be found on page 167.

Drives Control systems	Safety systems Accessories	Planning	Cover panels	Guides	Light guidance/ external venetian blinds	Complete external venetian blinds	Premium facade venetian blinds	Basic facade external venetian blinds	Product characteristics	General information
---------------------------	-------------------------------	----------	--------------	--------	--	--------------------------------------	-----------------------------------	---	----------------------------	------------------------

## Construction limit values

### Venetian blind window systems with cable or rail guidance

You can also use our free planning programme on [www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de) for planning your sun shading control systems – here you can configure the product and create a technical drawing to be integrated into your plans.

#### Construction limit values with rail guidance

Cover panel height H1 (mm)	Types	Individual units						Combination <sup>1)</sup>		
		Width (mm) <sup>2)</sup>		Height (mm)			Area (m <sup>2</sup> ) <sup>3)</sup>	Width (mm)	Area (m <sup>2</sup> ) <sup>3)</sup>	Number of curtains
					Order height without stack protrusion (mm) <sup>4)</sup>	approx. protrusion per 100 mm add. height (mm) <sup>5)</sup>				
		min.	max.	max.	max.	max.	max.			
210	E 80 A6 S	680	4000	4000	2100	6	16	4000	16	3
	E 80 AF A6 <sup>6)</sup>	680	4000	4000	2800	3	16	4000	16	3
	E 80 AF A6 <sup>6)</sup> (with eyelets)	680	4000	4000	3000	3	16	4000	16	3
	E 73 A6	680	4000	4000	1700	5	15	4000	16	3
	E 90/93 A6	680	4000	4000	2300	4	15	4000	16	3
240	E 80 A6 S	680	4000	4000	2700	6	16	4000	16	3
	E 80 AF A6 <sup>6)</sup>	680	4000	4000	3400	3	16	4000	16	3
	E 80 AF A6 <sup>6)</sup> (with eyelets)	680	4000	4000	3800	3	16	4000	16	3
	E 73 A6	680	4000	4000	2200	5	15	4000	16	3
	E 90/93 A6	680	4000	4000	3000	4	15	4000	16	3
270	E 80 A6 S	680	4000	4000	3300	6	16	4000	16	3
	E 80 AF A6 <sup>6)</sup>	680	4000	4000	4000	-	16	4000	16	3
	E 80 AF A6 <sup>6)</sup> (with eyelets)	680	4000	4000	4000	-	16	4000	16	3
	E 73 A6	680	4000	4000	2800	5	15	4000	16	3
	E 90/93 A6	680	4000	4000	3800	4	15	4000	16	3
300	E 80 A6 S	680	4000	4000	3900	6	16	4000	16	3
	E 80 AF A6 <sup>6)</sup>	680	4000	4000	4000	-	16	4000	16	3
	E 80 AF A6 <sup>6)</sup> (with eyelets)	680	4000	4000	4000	-	16	4000	16	3
	E 73 A6	680	4000	4000	3400	5	15	4000	16	3
	E 90/93 A6	680	4000	4000	4000	-	15	4000	16	3

Tab. 9: Construction limit values

<sup>1)</sup> With mechanically coupled units, curtains are not delivered preinstalled.

<sup>2)</sup> Asymmetrical running of slats cannot be prevented for small widths. (Please pay attention to the external venetian blind guideline ITRS Industrieverband Technische Textilien – Rollladen – Sonnenschutz e.V.)

<sup>3)</sup> The stated maximum areas are height-dependent (see page 392 Information on height-to-width ratio). Any other dimensions should be clarified with the Application Technology department.

<sup>4)</sup> For units with combined lateral guidance rail/cable, the max. order heights without stack protrusion of the units with cable guidance must be used as a basis.

<sup>5)</sup> In conjunction with insect screen swivel frame, the curtain must move completely into the cover panel.

<sup>6)</sup> In case of type 80 AF A6, a tension cable must be used in the centre of the curtain with a slat size >2400 mm for wind protection reasons. In units with additional cable guidance, an additional cover panel fixing is absolutely necessary.



## Construction limit values

### Venetian blind window systems with cable or rail guidance

You can also use our free planning programme on [www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de) for planning your sun shading control systems – here you can configure the product and create a technical drawing to be integrated into your plans.

#### Construction limit values with cable guidance

Cover panel height H1 (mm)	Types <sup>1)</sup>	Individual units						Combination <sup>2)</sup>		
		Width (mm) <sup>3)</sup>		Height (mm)			Area (m <sup>2</sup> ) <sup>3)</sup>	Width (mm)	Area (m <sup>2</sup> ) <sup>4)</sup>	Number of curtains
		min.	max. <sup>6)</sup>	max.	Order height without stack protrusion (mm)	approx. protrusion per 100 mm add. height (mm) <sup>5)</sup>				
210	E 80 A2 S	660	4000	4000	2000	6	16	4000	16	3
	E 80 AF	660	4000	4000	3500	3	16	4000	16	3
	E 80 AF (with eyelets)	660	4000	4000	3200	3	16	4000	16	3
	E 73 A2	660	4000	4000	1600	5	15	4000	16	3
	E 90/93 A2	660	4000	4000	2200	4	15	4000	16	3
240	E 80 A2 S	660	4000	4000	2600	6	16	4000	16	3
	E 80 AF	660	4000	4000	4000	-	16	4000	16	3
	E 80 AF (with eyelets)	660	4000	4000	4000	-	16	4000	16	3
	E 73 A2	660	4000	4000	2100	5	15	4000	16	3
	E 90/93 A2	660	4000	4000	2900	4	15	4000	16	3
270	E 80 A2 S	660	4000	4000	3200	6	16	4000	16	3
	E 80 AF	660	4000	4000	4000	-	16	4000	16	3
	E 80 AF (with eyelets)	660	4000	4000	4000	-	16	4000	16	3
	E 73 A2	660	4000	4000	2700	5	15	4000	16	3
	E 90/93 A2	660	4000	4000	3700	4	15	4000	16	3
300	E 80 A2 S	660	4000	4000	3800	6	16	4000	16	3
	E 80 AF	660	4000	4000	4000	-	16	4000	16	3
	E 80 AF (with eyelets)	660	4000	4000	4000	-	16	4000	16	3
	E 73 A2	660	4000	4000	3300	5	15	4000	16	3
	E 90/93 A2	660	4000	4000	4000	-	15	4000	16	3

Tab. 10: Construction limit values

<sup>1)</sup> In general: if there is an additional tension cable, an additional cover panel fixing is absolutely necessary.

<sup>2)</sup> With mechanically coupled units, curtains are not delivered preinstalled.

<sup>3)</sup> Asymmetrical running of slats cannot be prevented for small widths. (Please pay attention to the external venetian blind guideline ITRS Industrieverband Technische Textilien – Rollläden – Sonnenschutz e.V.)

<sup>4)</sup> The specified maximum areas are height-dependent (see page 392 Information on height-to-width ratio). Any other dimensions should be clarified with the Application Technology department.

<sup>5)</sup> In conjunction with insect screen swivel frame, the curtain must move completely into the cover panel.

<sup>6)</sup> From a slat size of 3001 mm, an additional mounting bracket is absolutely necessary.

For external venetian blinds with equipment variant vivamatic® or slowturn, the construction limit values and the cover panel height of the corresponding basic type should be adopted. In this case, up to 3 curtains can be used as a group unit using one drive.

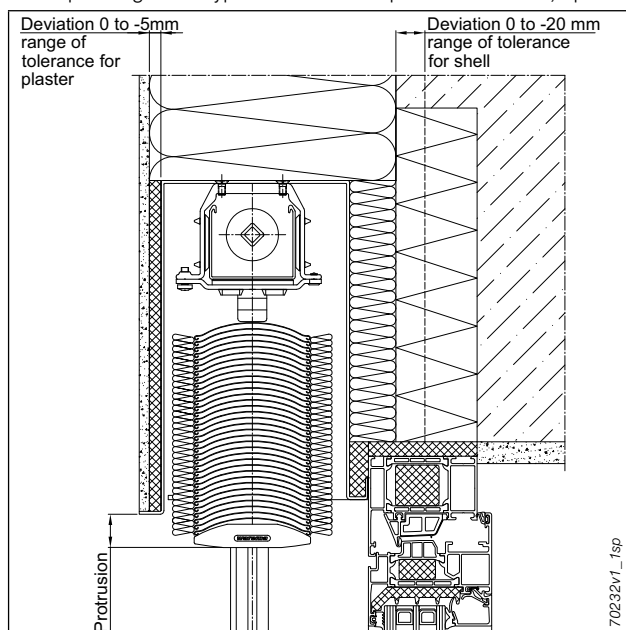


fig. 101: Protrusion of bottom rail

#### Maximum fixing distance of the cover panel with cable guidance

Cover panel depth	max. distance of back edge of cover panel to leading edge of mounting substructure
S = 130 mm	85 mm
L = 145 mm	75 mm

#### Tolerances

The assumed slat stack heights are approximate values. These may be higher or lower due to technical reasons. Stack parallelism with retracted curtain: ±10 mm

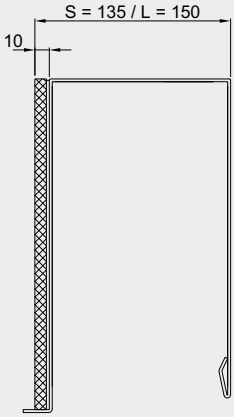
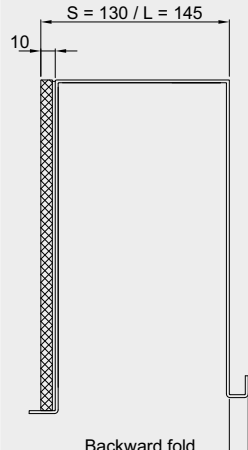
#### Additional cover panel fixing

In units with additional cable guidance, an additional cover panel fixing is absolutely necessary. For details on the additional cover panel fixation see page 147.

## Type designation FSR/guide profile allocation Venetian blind window systems

**NEW:** Allocation with rear insulation thickness with immediate effect!

### Type designation FSR P (plaster base model)

FSR P (plaster)	Standard		Back-fold <sup>1)</sup>		
Cover panel depth	S = 135 mm	L = 150 mm		S = 130 mm	L = 145 mm
Rear cover panel fold					
	0 mm			13 15 20 21 30 35 40 48	13 27.5 30 35 40

<sup>1)</sup> for cable-guided units, the back-fold can be ordered infinitely variably from 15 to 90 mm

#### Notice:

- Dim-out slats E 90/93 A2/A6 with cover panel depth S not available
- Lining profile for guide profile available in 15 and/or 20 mm. A maximum of 2 linings can be used per side.

**Example:** FSR PS-29 E 80 A6 S

### Allocation of cover panel depths/external venetian blind types/guide profiles FSR

#### Cover panel shape P (plaster)

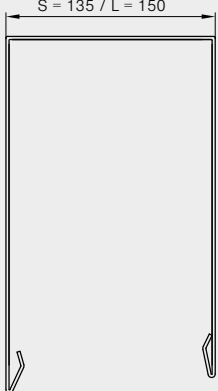
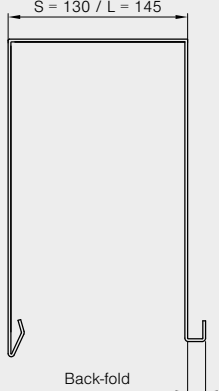
Cover panel type	Curtains	Cover panel depth	Guide rail	Length of the rear folded edge	Rear insulation thickness
FSR PS-0	73/80	135	27.5x80	0	
FSR PS-13	73/80	130	27.5x87.5	13	
FSR PS-15	73/80	130	27.5x87.5	15	15
FSR PS-20	73/80	130	27.5x95	20	20
FSR PS-21	73/80	130	27.5x95	21	
FSR PS-30	73/80	130	27.5x109.5	30	30
FSR PS-35	73/80	130	27.5x109.5	35	
FSR PS-40	73/80	130	27.5x117	40	40
FSR PS-48	73/80	130	27.5x122.5	48	
FSR PL-0	73/80/90/93	150	27.5x87.5	0	
FSR PL-13	73/80/90/93	145	27.5x95	13	
FSR PL-27.5	73/80/90/93	145	27.5x109.5	27.5	
FSR PL-30	73/80/90/93	145	27.5x117	30	30
FSR PL-35	73/80/90/93	145	27.5x117	35	
FSR PL-40	73/80/90/93	145	27.5x122.5	40	40

Continuous aluminium guide profile with 2-component plastic insert to create a reveal situation. The guide rail on the front side can be completely embedded in plaster. Optionally with guide profile with integrated plaster base. Detailed drawings of the guide profiles can be found in the chapter "Guides".

## Type designation FSR/guide profile allocation

### Venetian blind window systems

#### Type designation FSR E (rectangular cover panel shape)

FSR E (rectangular)	Standard		Back-fold <sup>1)</sup>		
Cover panel depth	S = 135 mm	L = 150 mm		S = 130 mm	L = 145 mm
Rear cover panel fold			0 mm		
				13 15 20 21 30 35 40 48	13 27.5 30 35 40

<sup>1)</sup> for cable-guided units, the back-fold can be ordered infinitely variably from 15 to 90 mm

#### Notice:

- Dim-out slats E 90/93 A2/A6 with cover panel depth S not available
- Lining profile for guide profile available in 15 and/or 20 mm. A maximum of 2 linings can be used per side.

**Example:** FSR EL-0 E 80 A6 S

#### Allocation of cover panel depths/external venetian blind types/guide profiles FSR

##### Cover panel shape R (rectangular)

Cover panel type	Curtains	Cover panel depth	Guide rail	Length of the rear folded edge	Rear insulation thickness
FSR ES-0	73/80	135	27.5x80	0	
FSR ES-13	73/80	130	27.5x87.5	13	
FSR ES-15	73/80	130	27.5x87.5	15	15
FSR ES-20	73/80	130	27.5x95	20	20
FSR ES-21	73/80	130	27.5x95	21	
FSR ES-30	73/80	130	27.5x109.5	30	30
FSR ES-35	73/80	130	27.5x109.5	35	
FSR ES-40	73/80	130	27.5x117	40	40
FSR ES-48	73/80	130	27.5x122.5	48	
FSR EL-0	73/80/90/93	150	27.5x87.5	0	
FSR EL-13	73/80/90/93	145	27.5x95	13	
FSR EL-27.5	73/80/90/93	145	27.5x109.5	27.5	
FSR EL-30	73/80/90/93	145	27.5x117	30	30
FSR EL-35	73/80/90/93	145	27.5x117	35	
FSR EL-40	73/80/90/93	145	27.5x122.5	40	40

Continuous aluminium guide profile with 2-component plastic insert to create a reveal situation. The guide rail on the front side can be completely embedded in plaster. Optionally with guide profile with integrated plaster base. Detailed drawings of the guide profiles can be found in the chapter "Guides".

## Mounting example

### Venetian blind window systems FSR PS-0, E 80 A6 S

You can also use our free planning programme on [www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de) for planning your sun shading control systems – here you can configure the product and create a technical drawing to be integrated into your plans.

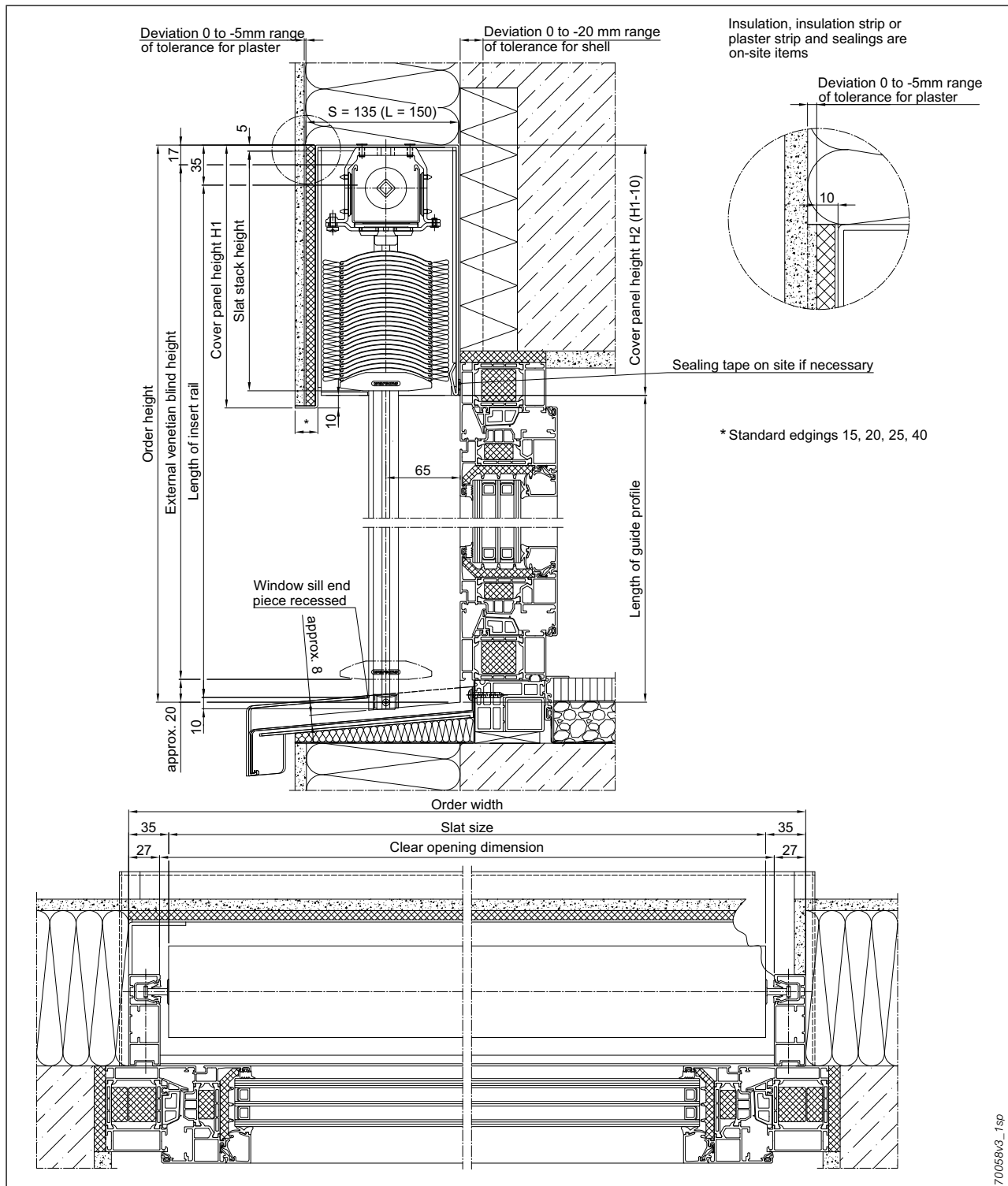


fig. 102: Mounting example, venetian blind window systems FSR PS-0, E 80 A6 S

The details shown in this document are general planning proposals showing the design of a composite thermal insulation system in schematic form. The illustration does not exempt any person from the obligation to carry out an individual examination of the particular building project for applicability and completeness. Adjacent constructions are only schematic representations. All specifications and assumptions are

to be adjusted to the local circumstances and coordinated. Plaster or reinforcement joining of the plaster base plate to the on-site insulation/ masonry must be carried out in accordance with DIN specifications.

# Mounting example

## Venetian blind window system FSR PS-0, E 80 A2 S

### Mounting in the reveal

General information

Product characteristics

Basic facade external venetian blinds

Premium facade venetian blinds

Complete external venetian blinds

Light guidance/ external venetian blinds

Guides

Cover panels

Planning

Safety systems Accessories

Drives Control systems

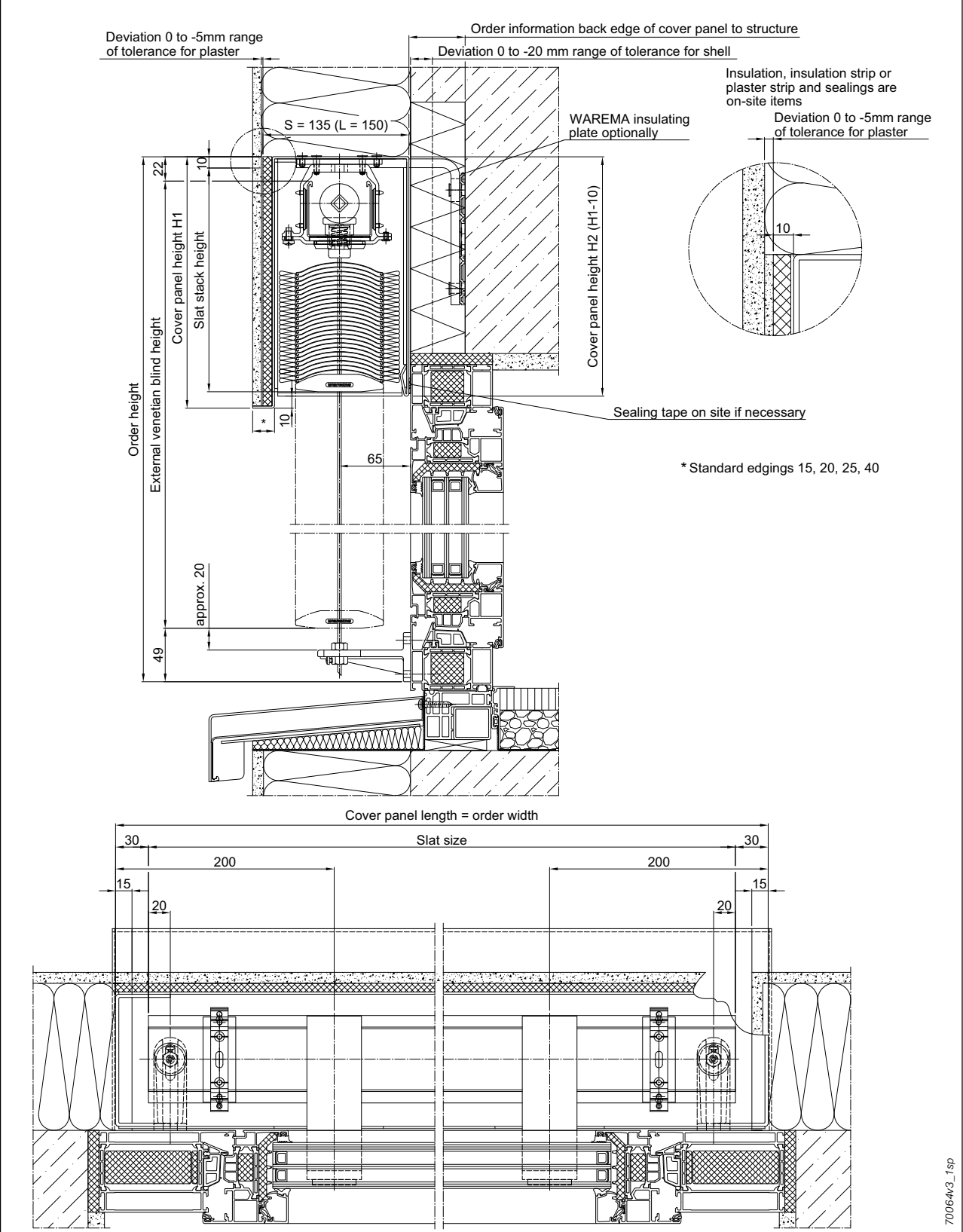


fig. 103: Mounting example, venetian blind window system FSR PS-0, E 80 A2 S

## Mounting example

### Venetian blind window system FSR PS 30 E 80 A6 S with flush lintel insulation

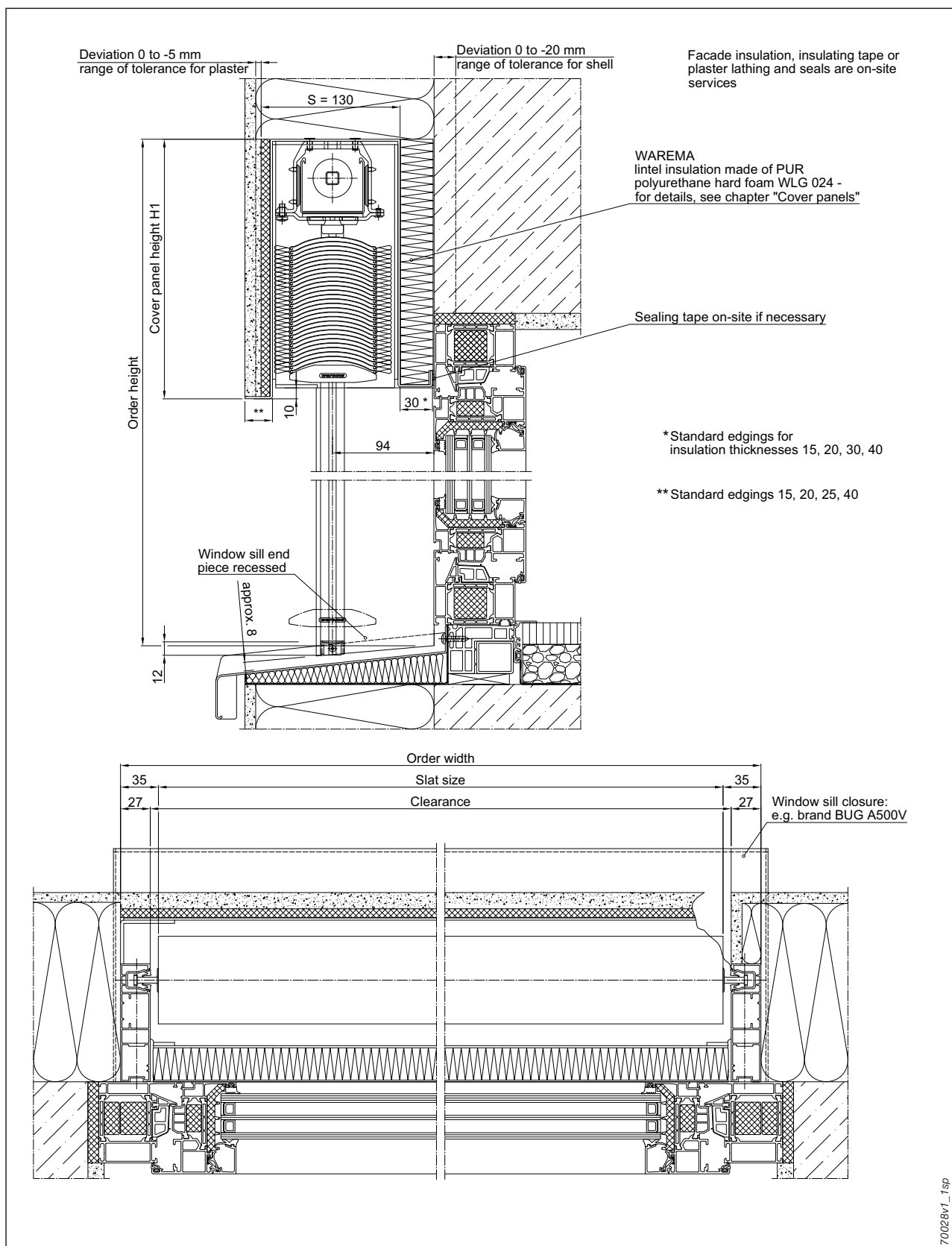


fig. 104: Venetian blind window system FSR PS 30, E 80 A6 S with flush lintel insulation

## Mounting example

### Venetian blind window system FSR PL 40

### E 90 A6 with flush lintel insulation

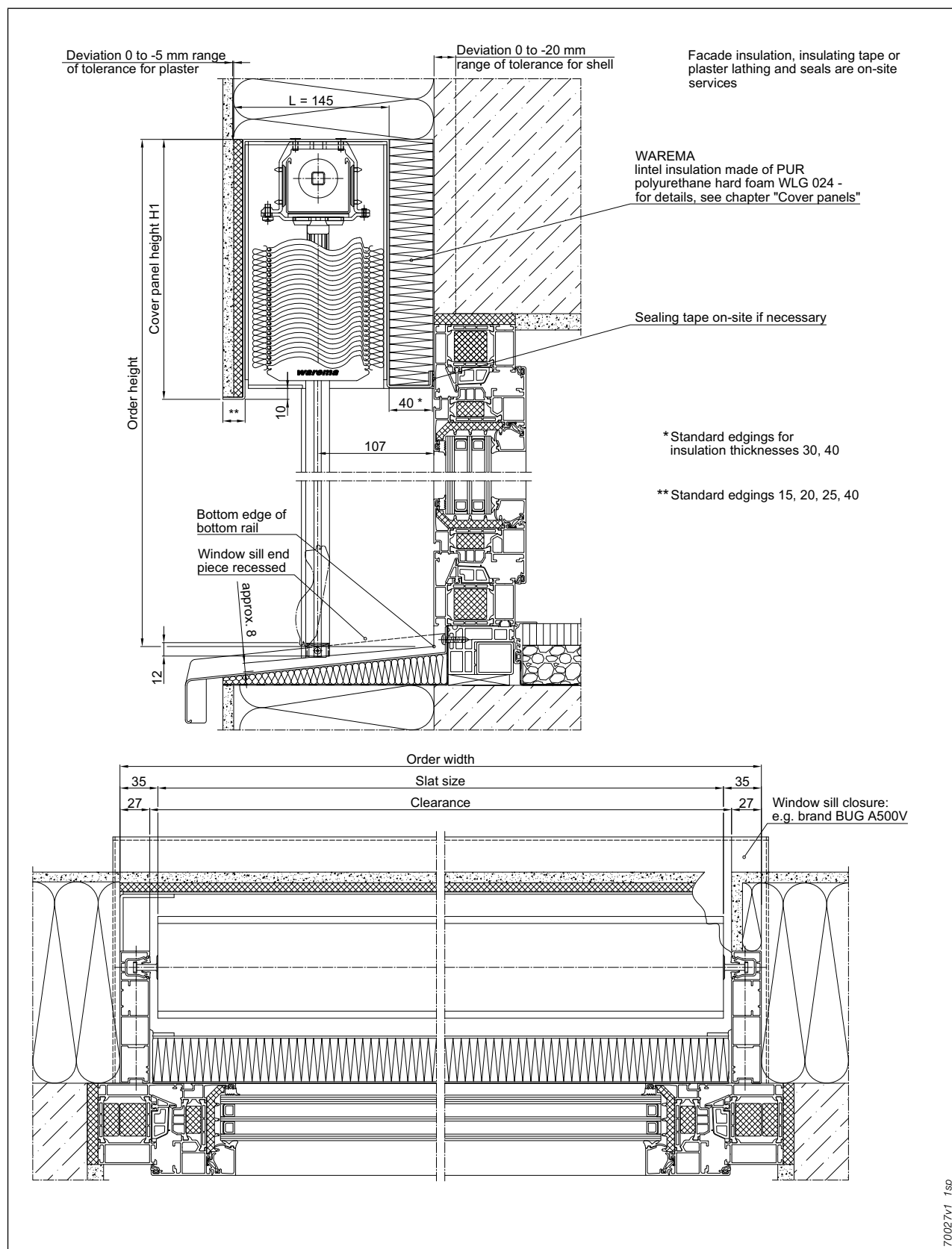
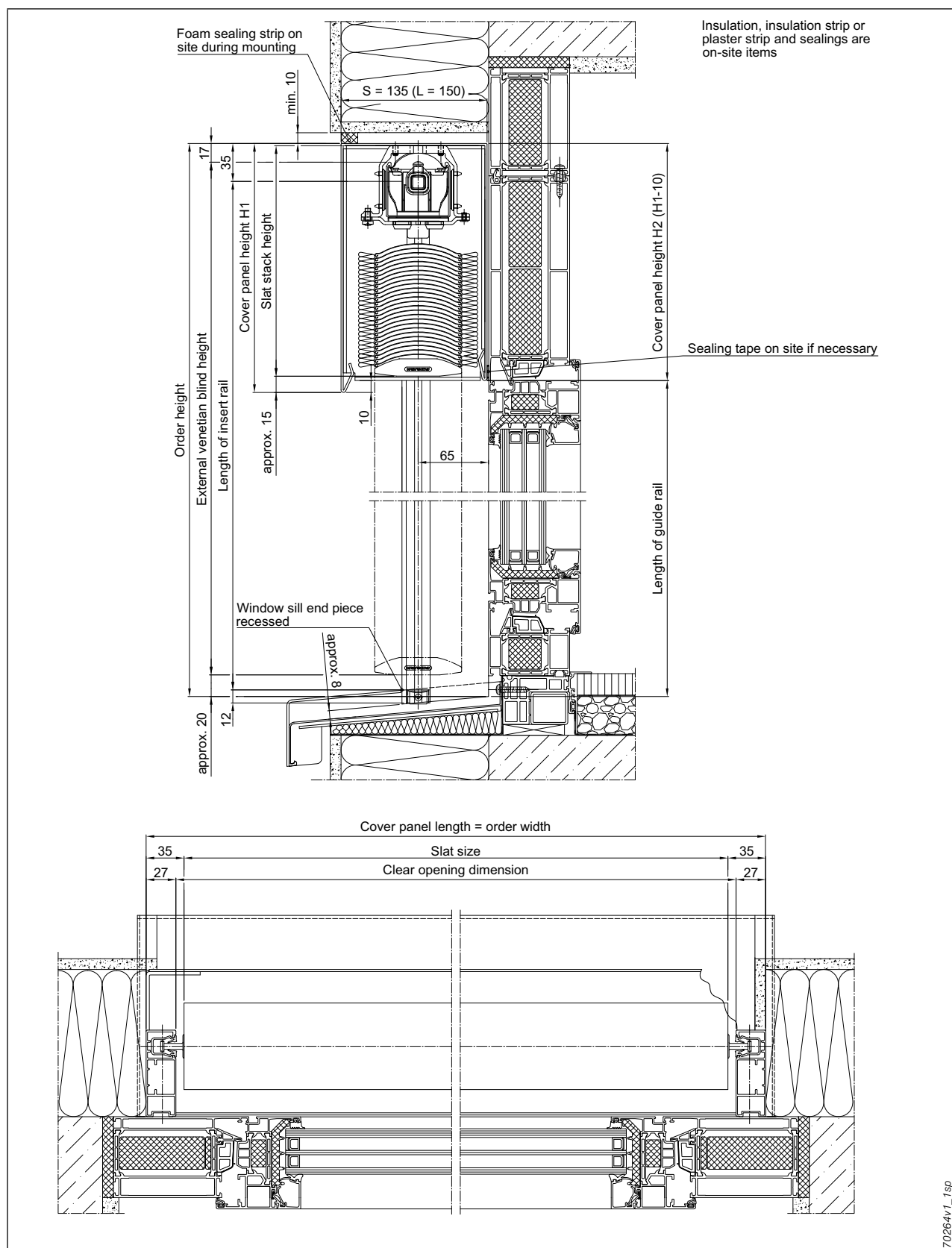


fig. 105: Venetian blind window system FSR PL 40, E 90 A6 with flush lintel insulation

## Mounting example

### Venetian blind window systems FSR ES-0, E 80 A6 S



70264v1\_1.sp



# Mounting example

## Venetian blind window system FSR ES-13-48 (variable), E 80 A6 S

General information

Product characteristics

Basic facade external venetian blinds

Premium facade venetian blinds

Complete external venetian blinds

Light guidance/ external venetian blinds

Guides

Cover panels

Planning

Safety systems Accessories

Drives Control systems

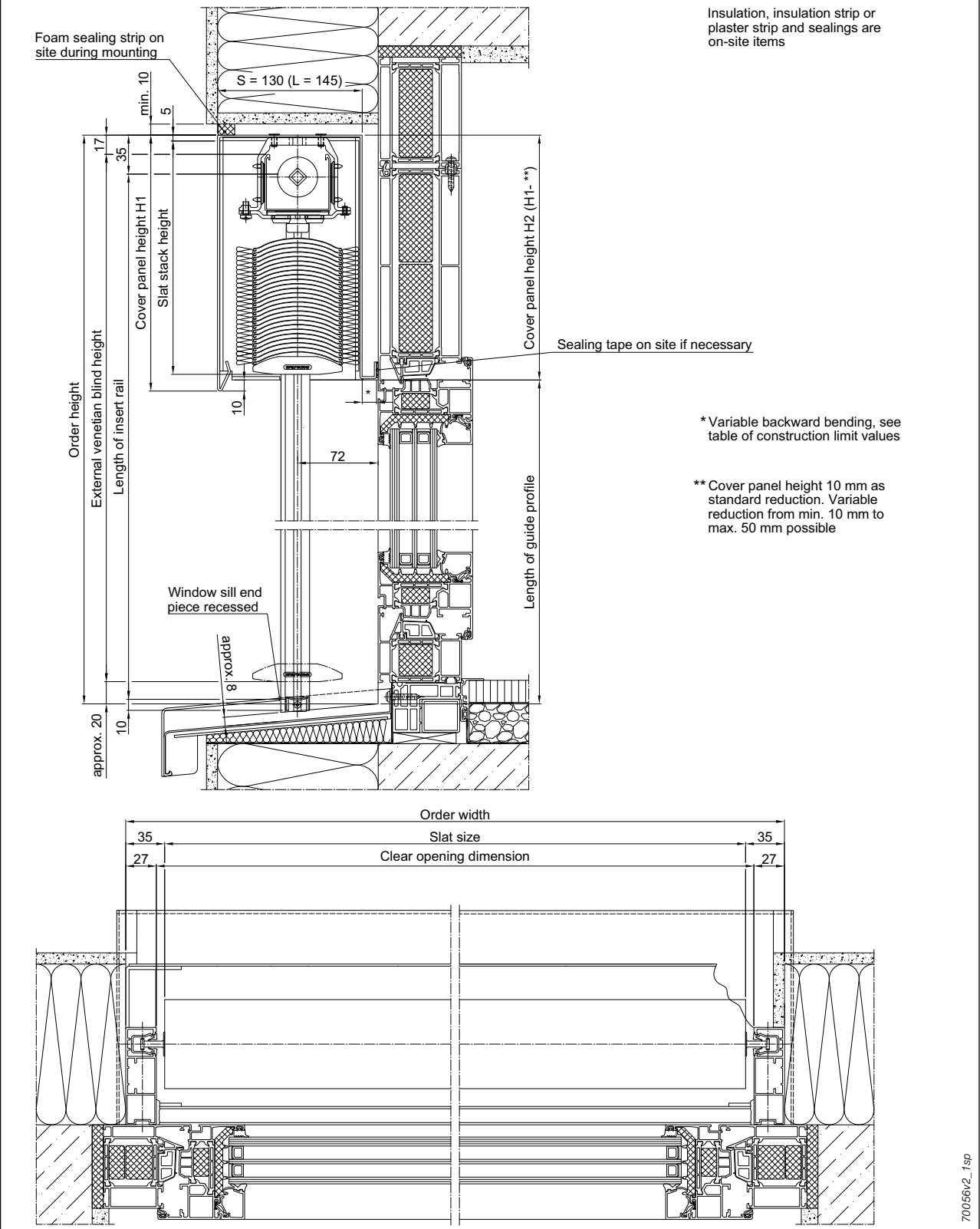


fig. 107: Mounting example, external venetian blind window system FSR ES-13-48 (variable), mounting in the reveal

If the support profiles are cut at an angle, the height of the external venetian blind height will still relate to the order height on the window frame.

This produces a gap (depending on the slope) between the window sill and the bottom edge of bottom rail.

## Venetian blind window systems FSR PL-13-40.5 (variable), E 90 A2



140

## Mounting example

### Venetian blind window systems FSR PS-13-48 (variable), E 80 A2 S

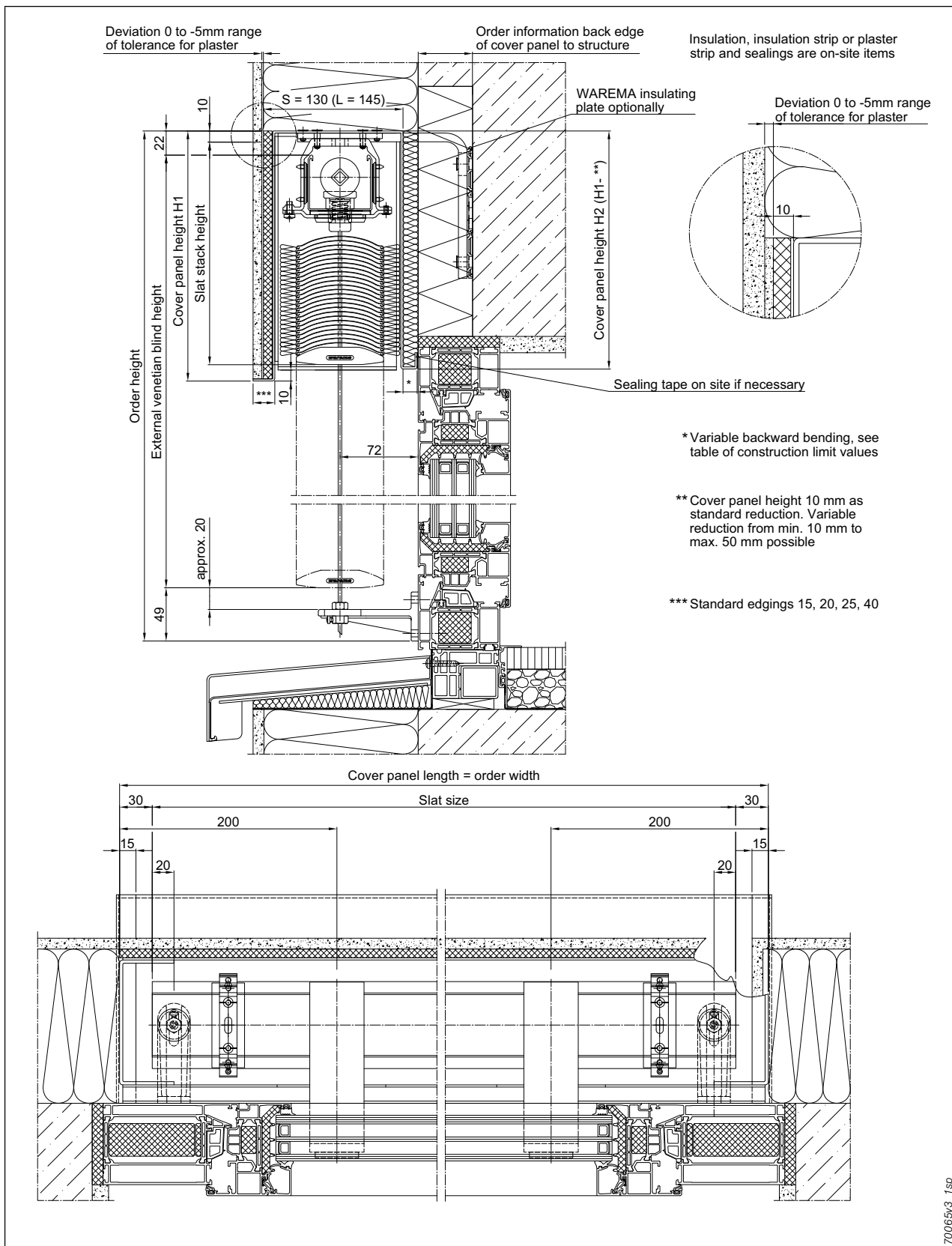


fig. 109: Mounting example, venetian blind window systems FSR PS-13-48 (variable), E 80 A2 S

## Mounting example

### Venetian blind window systems FSR PL-13-40.5 (variable), E 90 A6

You can also use our free planning programme on [www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de) for planning your sun shading control systems – here you can configure the product and create a technical drawing to be integrated into your plans.

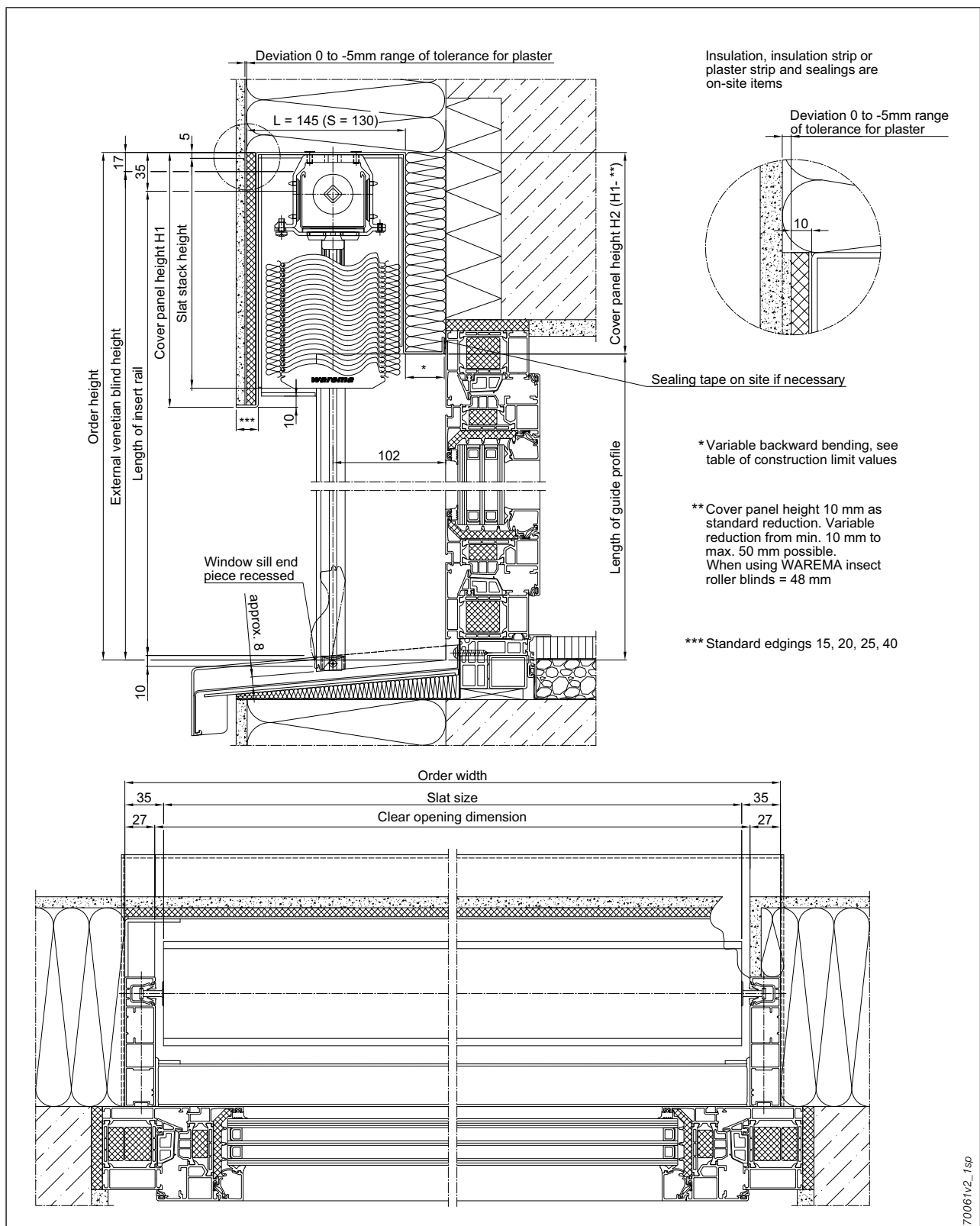


fig. 110: Mounting example, venetian blind window systems FSR PL-13-40.5 (variable), E 90 A6

## Mounting example

### Venetian blind window systems FSR PL-13-40.5 (variable), E 80 A6 S

You can also use our free planning programme on [www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de) for planning your sun shading control systems – here you can configure the product and create a technical drawing to be integrated into your plans.

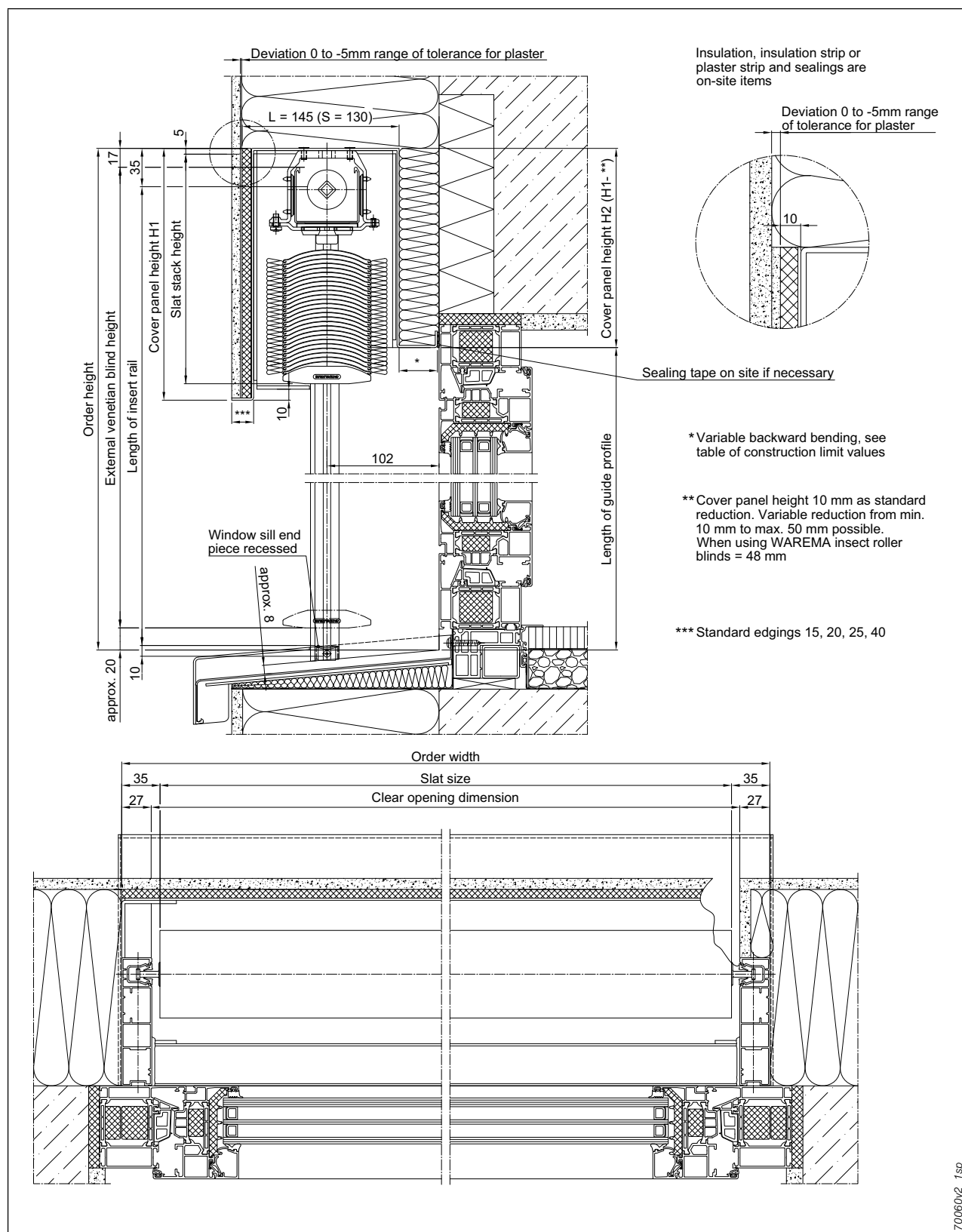


fig. 111: Mounting example, venetian blind window systems FSR PL-13-40.5 (variable), E 80 A6 S

If the support profiles are cut at an angle, the height of the external venetian blind height will still relate to the order height on the window frame. This produces a gap (depending on the slope) between the window sill and the bottom edge of bottom rail.

## Mounting example

### Venetian blind window systems FSR PL-13-40.5 (variable), E 90 A2

You can also use our free planning programme on [www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de) for planning your sun shading control systems – here you can configure the product and create a technical drawing to be integrated into your plans.

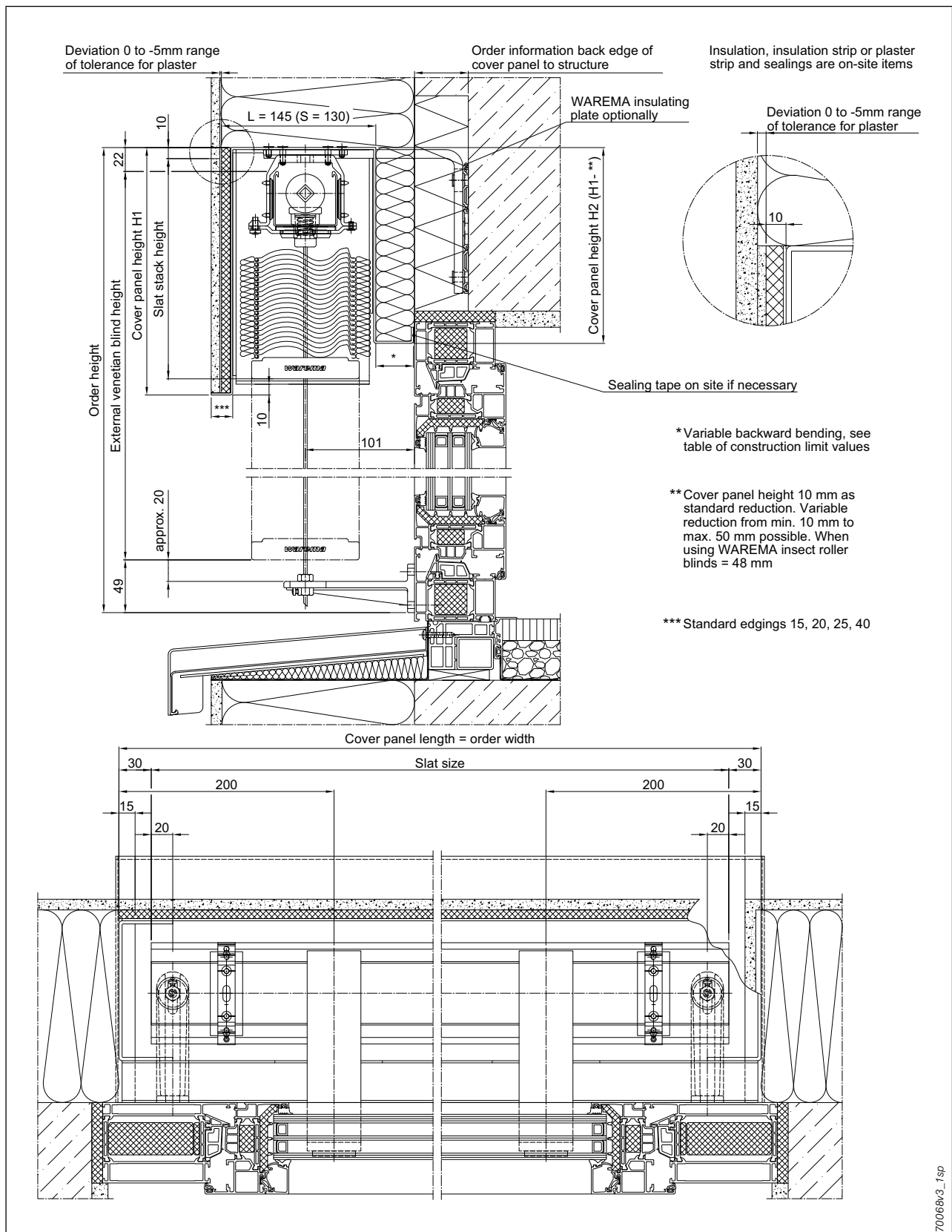


fig. 112: Mounting example, venetian blind window systems FSR PL-13-40.5 (variable), E 90 A2

# Guide profile with self-supporting centre situation Venetian blind window systems

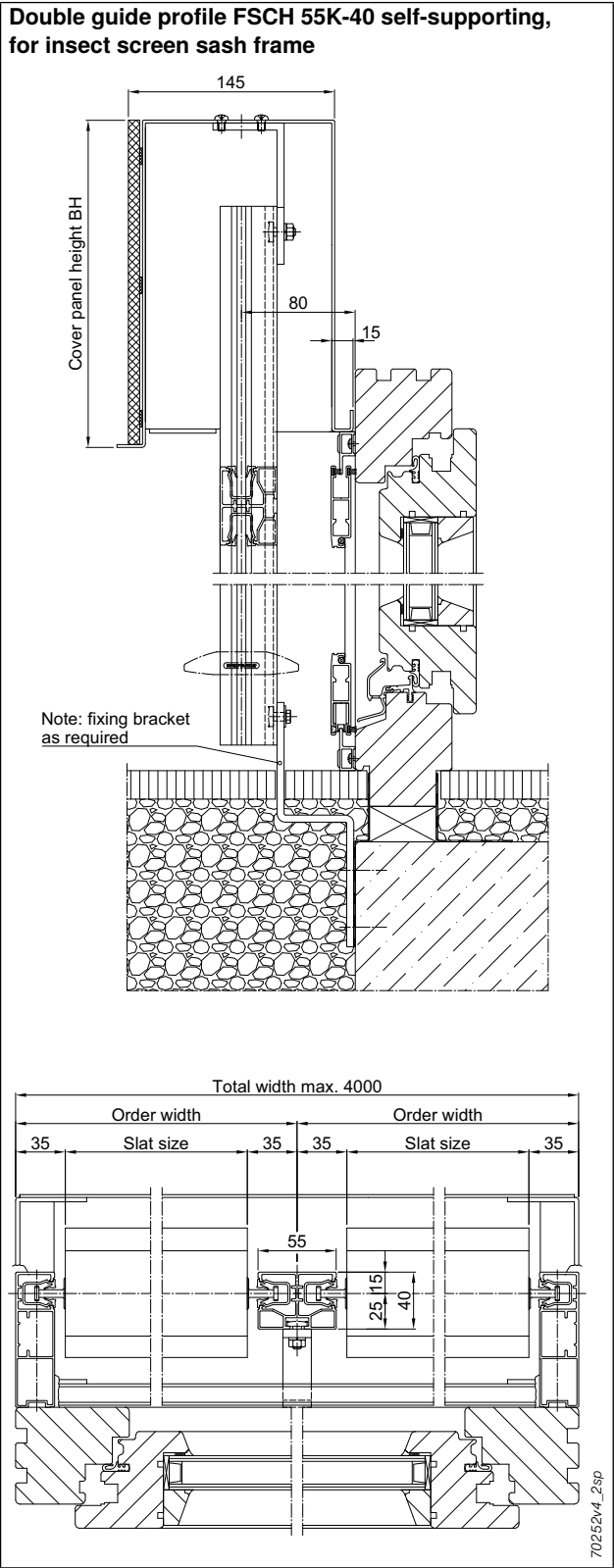


fig. 113: Double guide profile self-supporting, for insect screen sash frame

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

## Cover panels

### Possibilities of the cable exit/bead fixing FSR

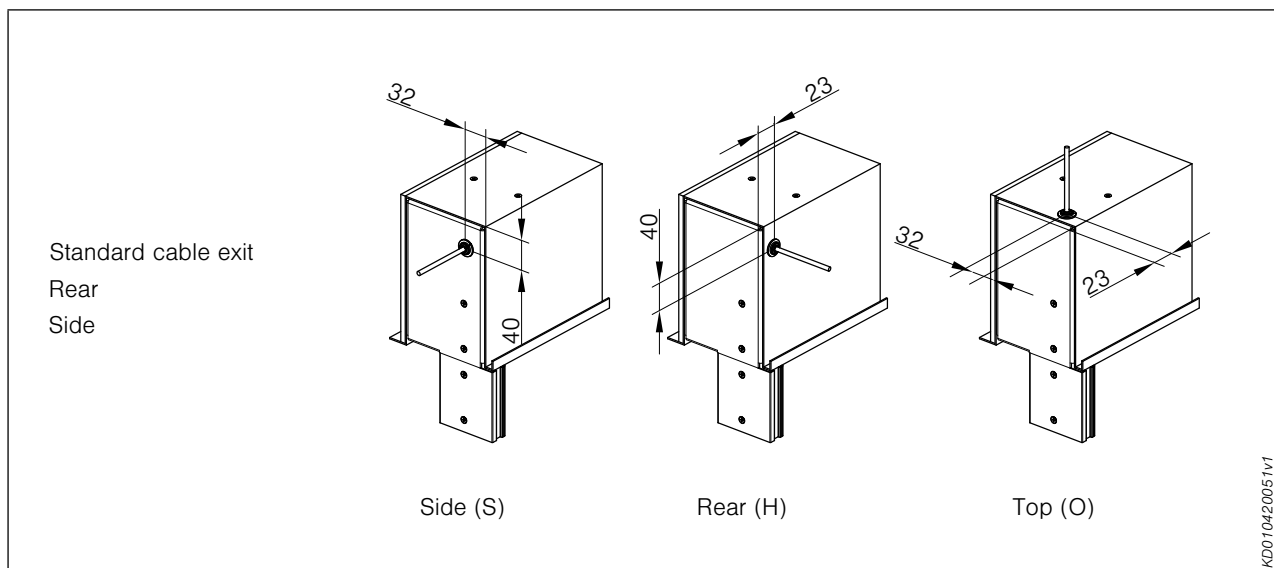


fig. 114: Possible cable outlets

With a lateral cable exit or one on the top, the motor line is sealed by means of plug-in grommet.

Cable excess 1000 mm. 5000 mm or 10000 mm also optionally possible.

### Cover panels/bead fixing

#### Detail: Bead fixing for cover panels standard without back-fold

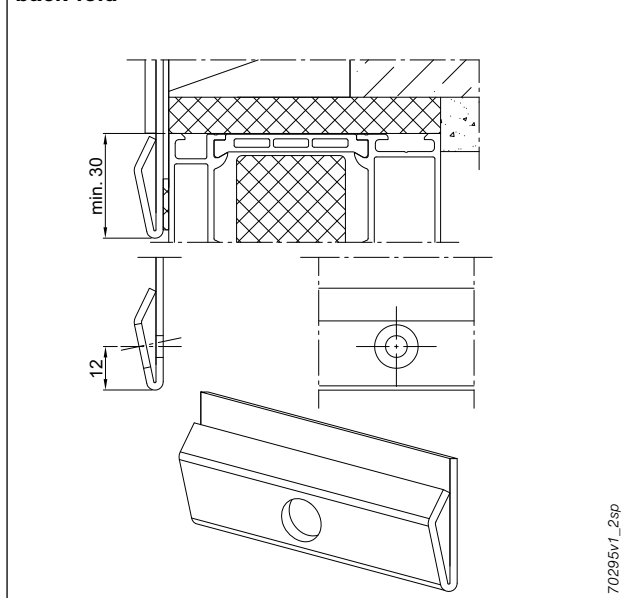


fig. 115: Bead fixing for cover panels without back-fold

#### Detail: Bead fixing for cover panels with back-fold

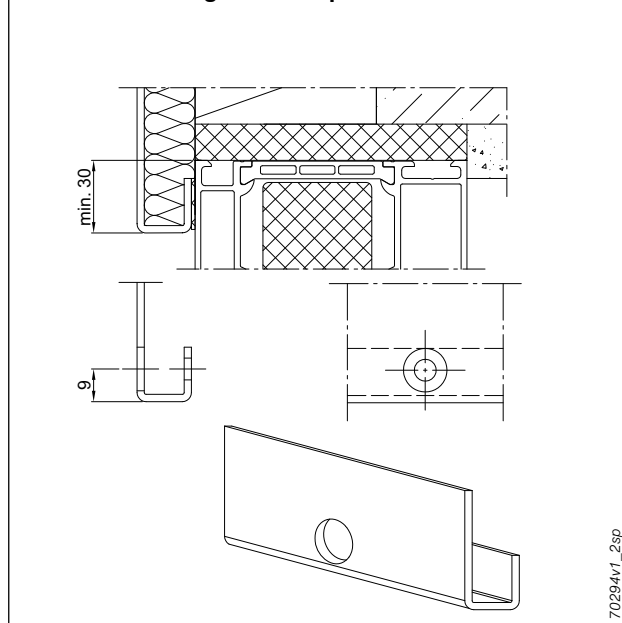


fig. 116: Bead fixing for cover panels with back-fold

#### Notes:

- Fixing hole in cover panel bead in order to guarantee that the cover panel is in flat contact with the window frame
- Minimum overlap on window frame 30 mm
- 1 drilled hole, central up to a cover panel width of 2000 mm as standard

- 2 drilled holes for  $\frac{1}{3}$  up to a cover panel width of 4000 mm as standard



Cover panels

Additional cover panel fixing

FSR

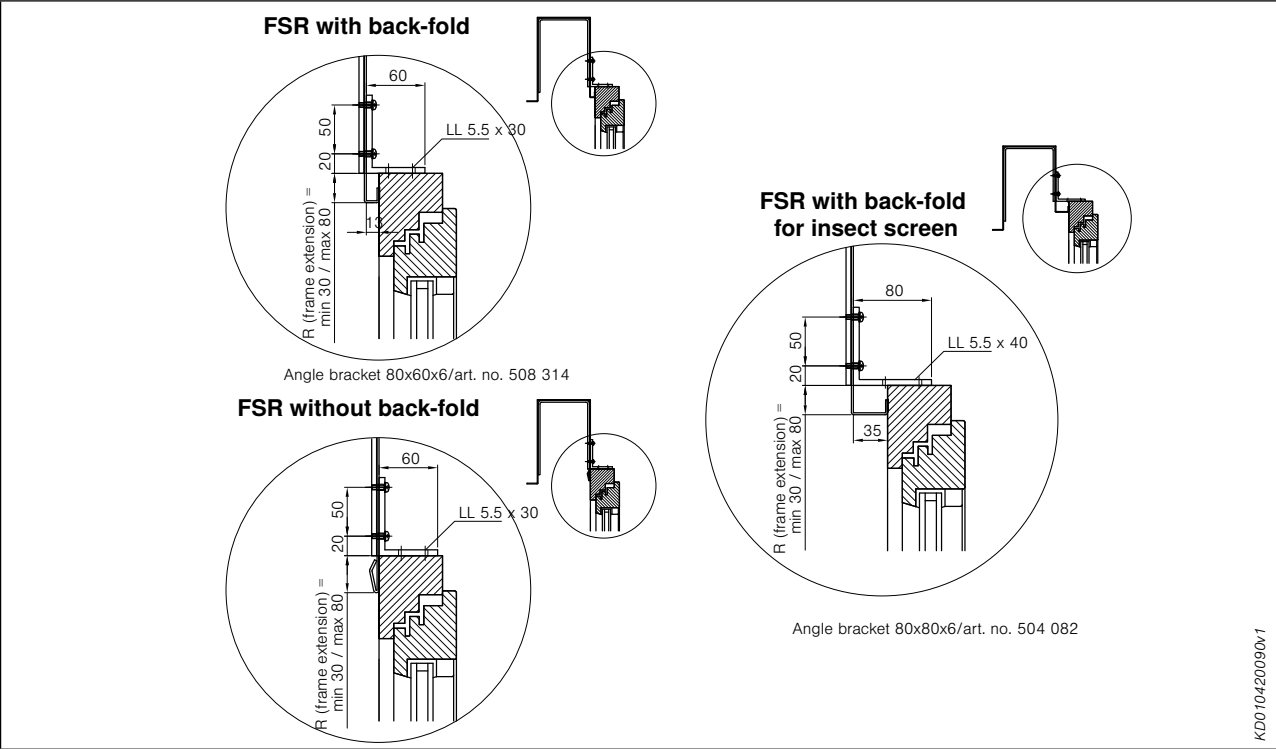


fig. 117: Installation situation angle bracket

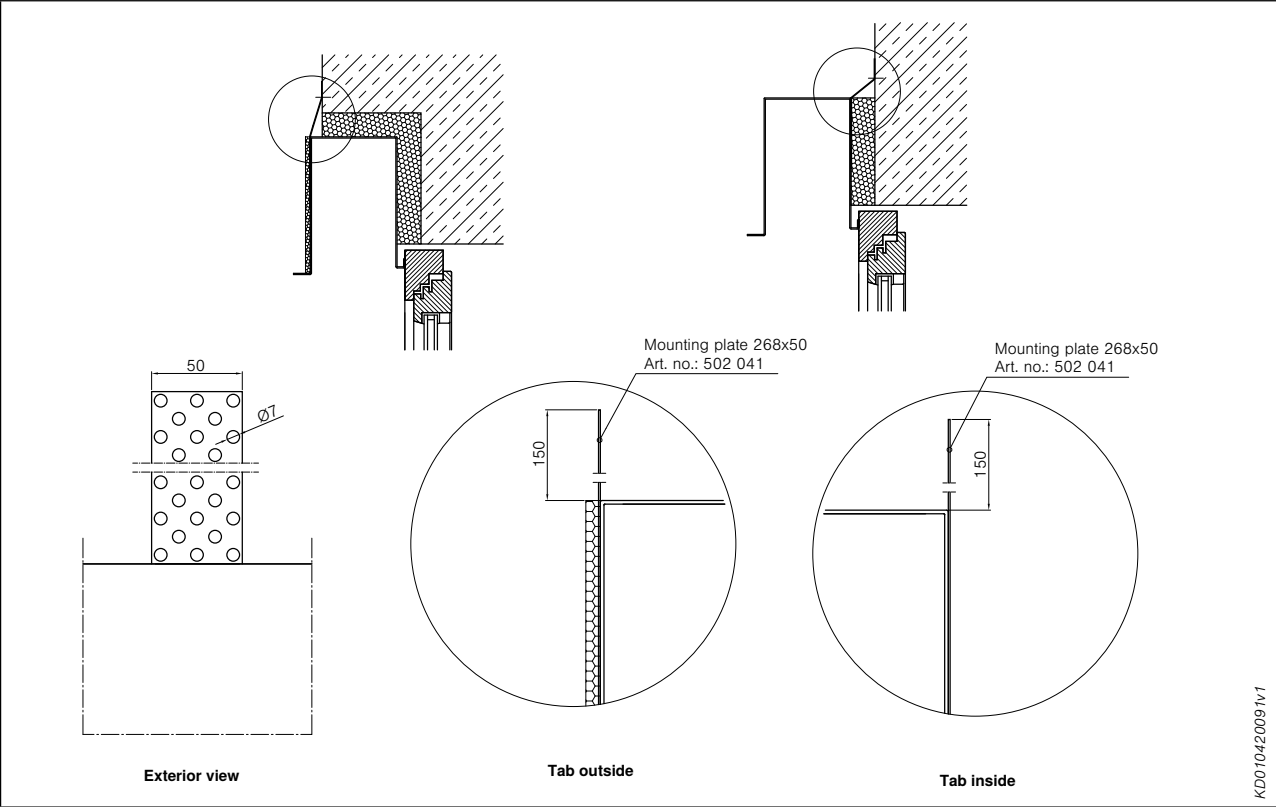


fig. 118: Installation situation mounting strap

General information
Product characteristics
Basic facade external venetian blinds
Premium facade venetian blinds
Complete external venetian blinds
Light guidance/ external venetian blinds
Guides
Cover panels
Planning
Safety systems Accessories
Drives Control systems

**Cover panels**  
**Dummy cover panels/dummy bottom rails (optional)**  
**FSR**

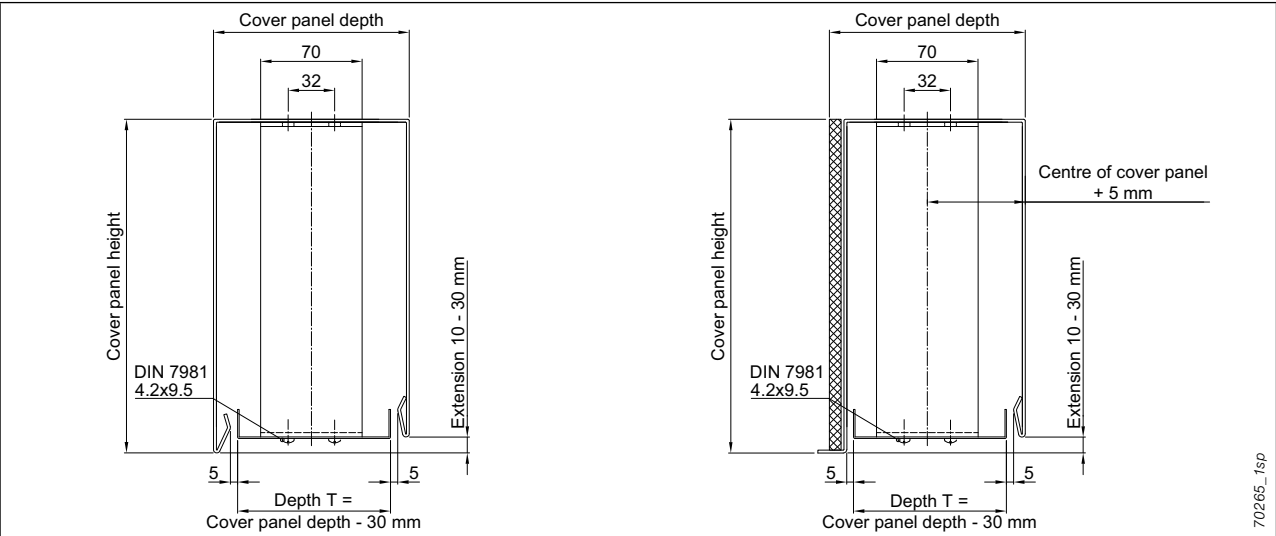


fig. 119: Dummy cover panels FSR

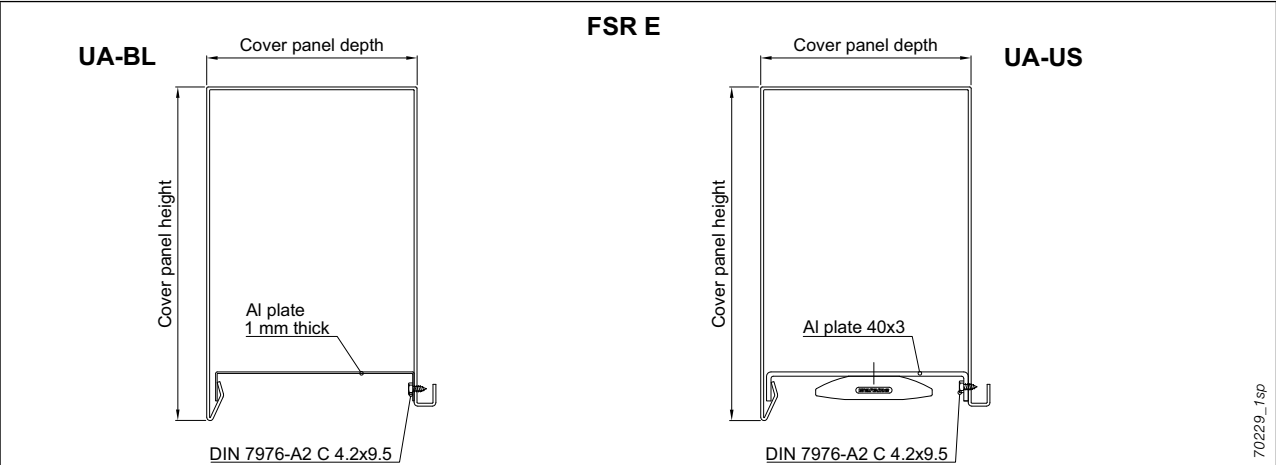


fig. 120: Dummy cover panels

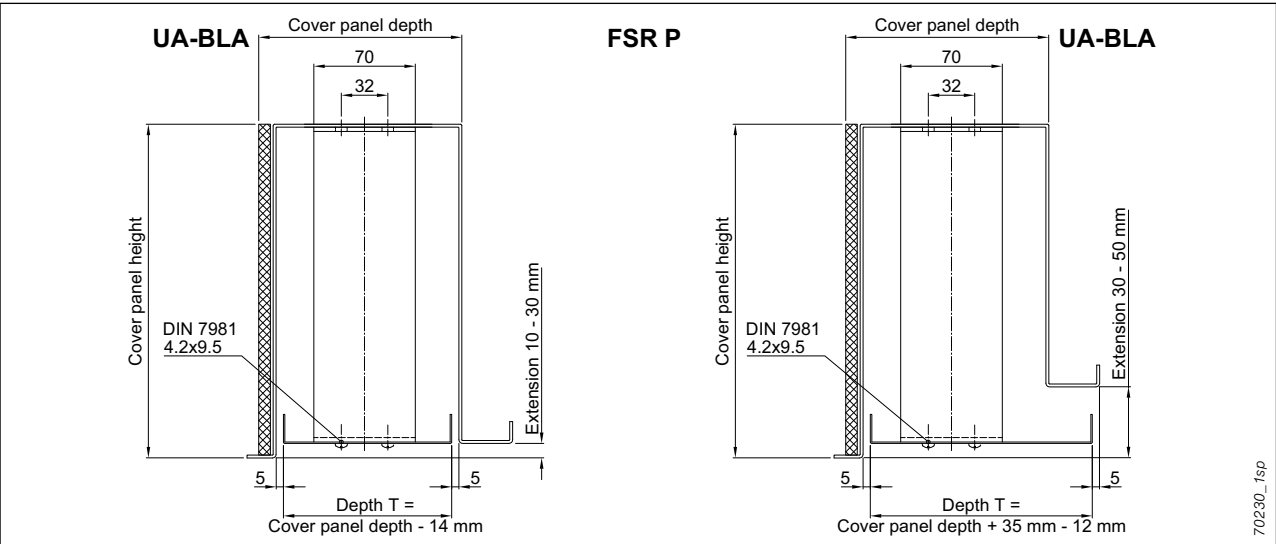


fig. 121: Dummy cover panel

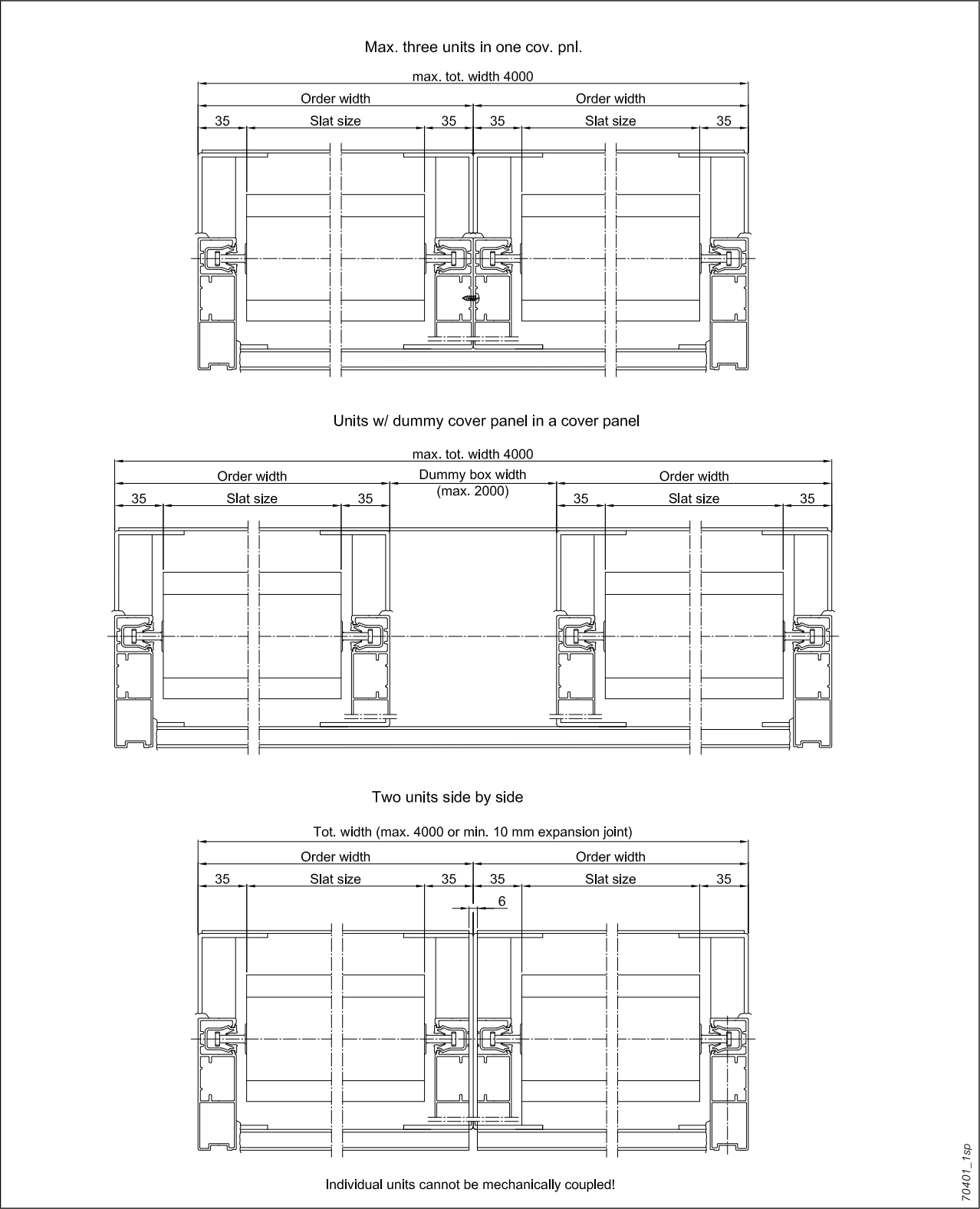


fig. 122: Details continuous cover panel strip

Cover panels  
Combination  
FSR

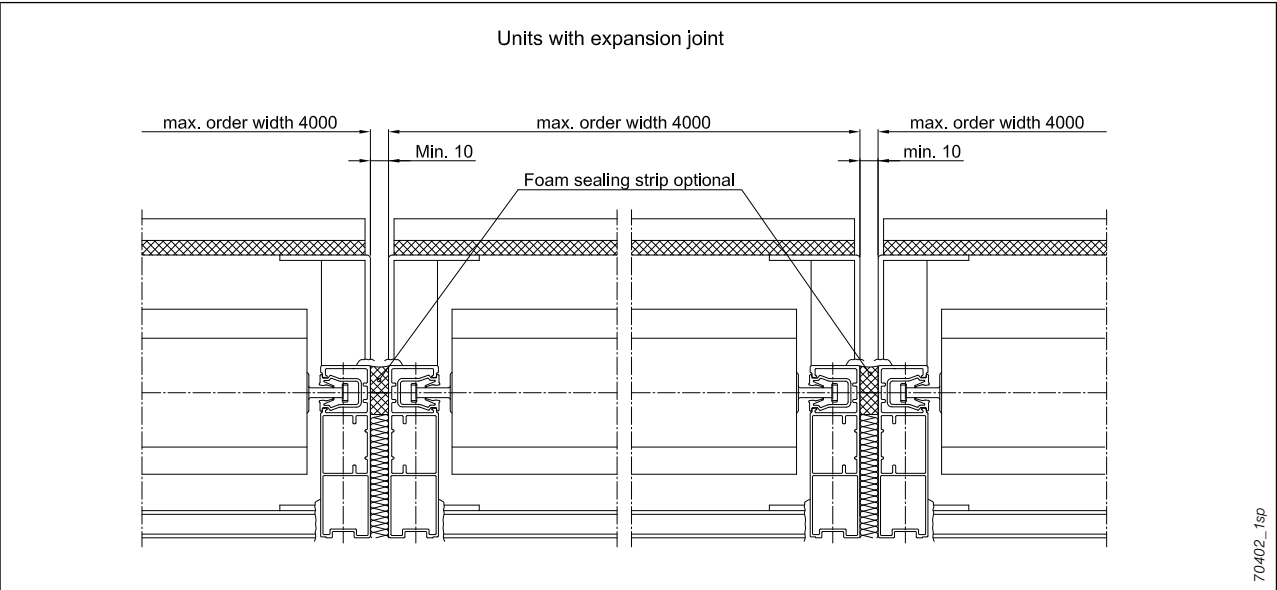


fig. 123: Details continuous cover panel strip

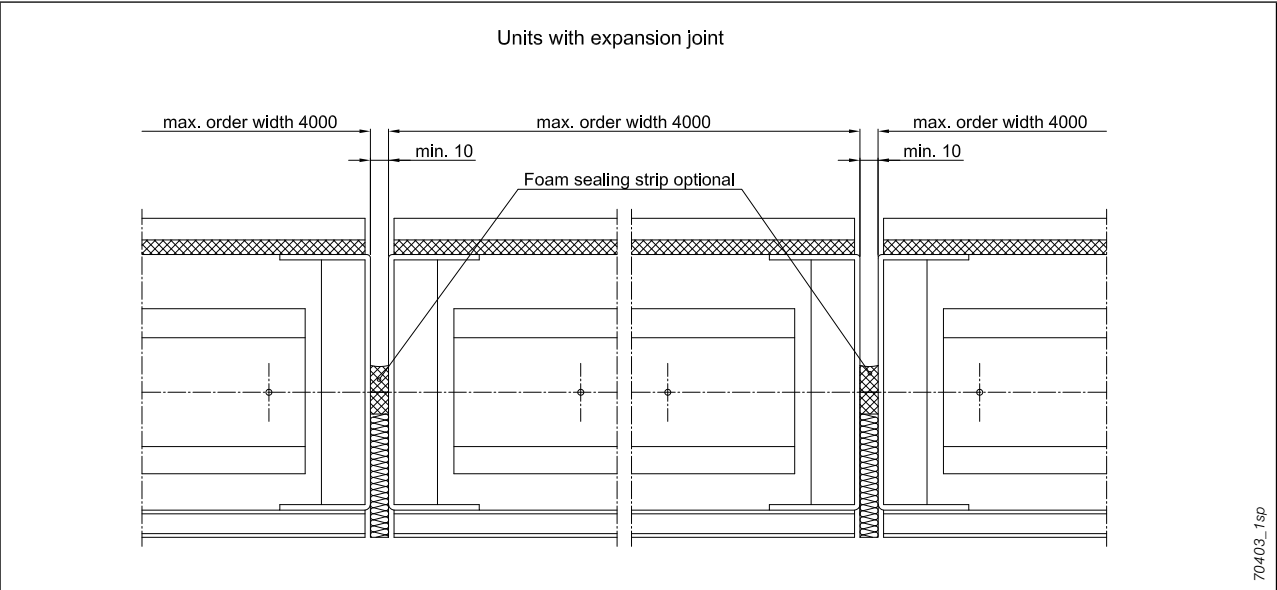


fig. 124: Combination cable

## Cover panels

### Corner position cable/rail combination FSR

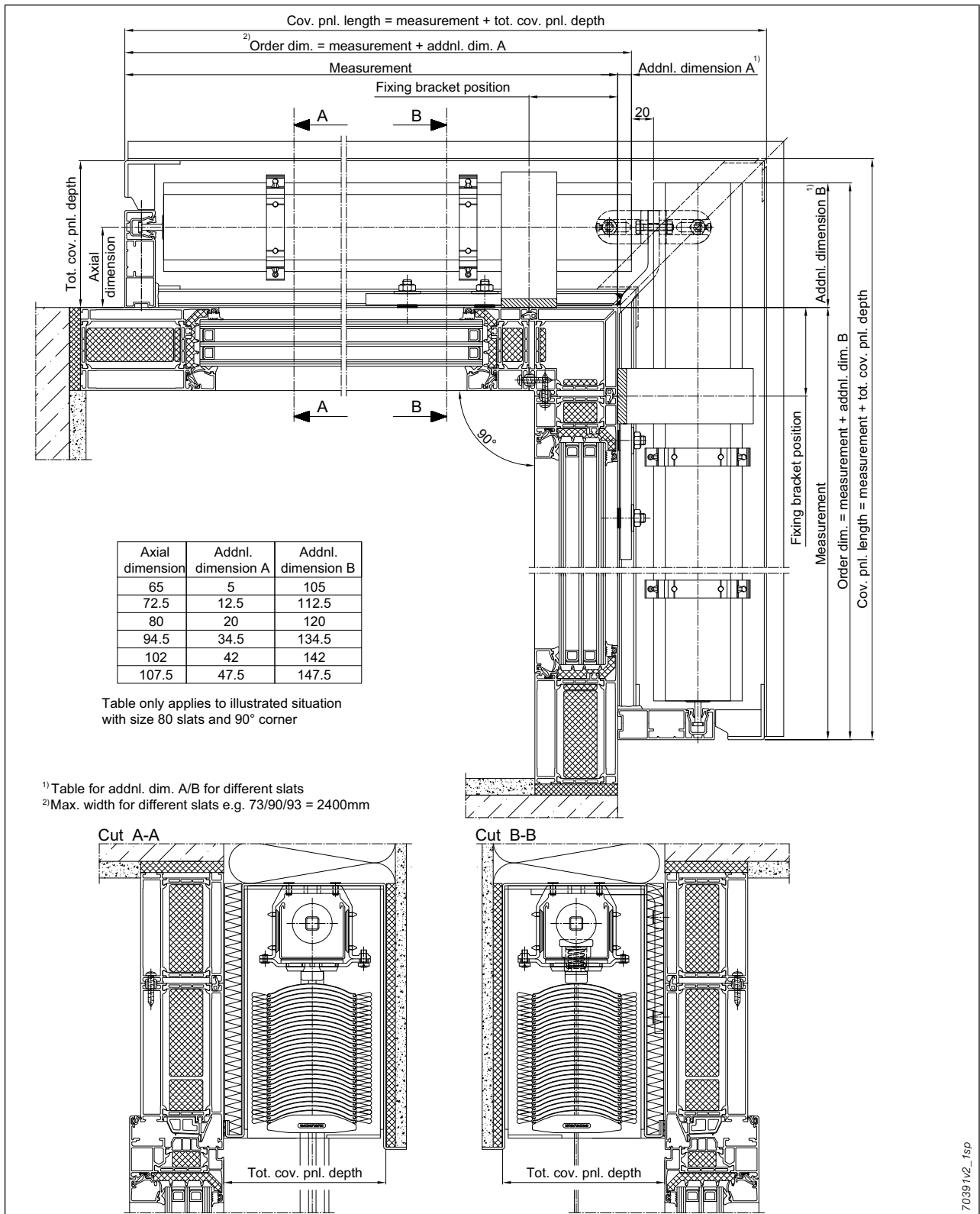


fig. 125: Corner position cable/rail combination FSR

#### Note:

To determine the cover panel heights, the construction limit value table cable guidance must be used as a basis for the model cable/rail combination.

**Cover panels**  
**Cover panel extension/corners**  
**FSR**

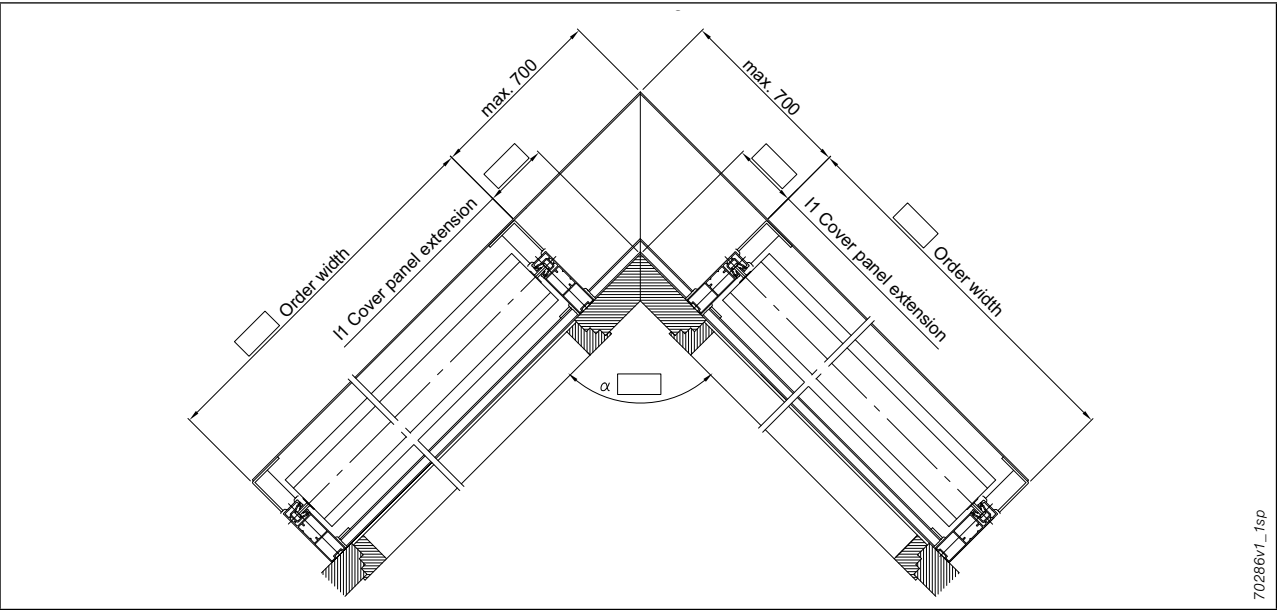


fig. 126: Cover panel overview

**Minimum protrusion for corners**

Outer angle				Inner angle			
BL 47 + 49		BL 46 + 48		BL 46 + 47		BL 48 + 49	
Angle $\alpha$	l1 min	Angle $\alpha$	l1 min	Angle $\alpha$	l1 min	Angle $\alpha$	l1 min
90°–119°	40	90°–119°	55	90°–119°	50	90°–119°	35
120°–149°	35	120°–149°	45	120°–149°	45	120°–149°	35
150°–180°	40	150°–180°	40	150°–180°	40	150°–180°	40

FSR E S=135 L=145	FSR P S=130 L=145	FSR E S=135 L=145	FSR P S=130 L=145	FSR E S=135 L=150	FSR P S=135 L=150	FSR E S=135 L=150	FSR E S=135 L=145	FSR P S=135 L=150	FSR P S=130 L=145

fig. 127: Outer angle oriel

Cover panels

Cover panel extension/corners

FSR

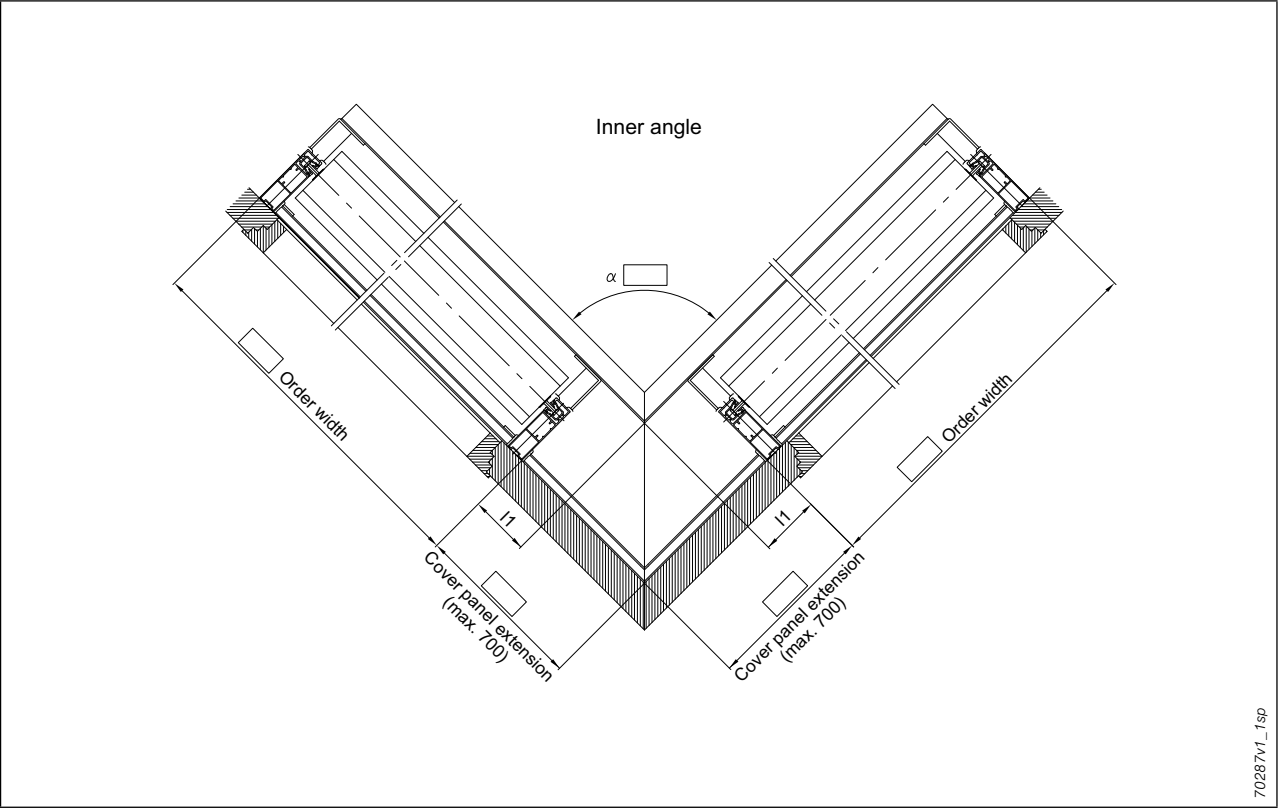


fig. 128: Inner angle

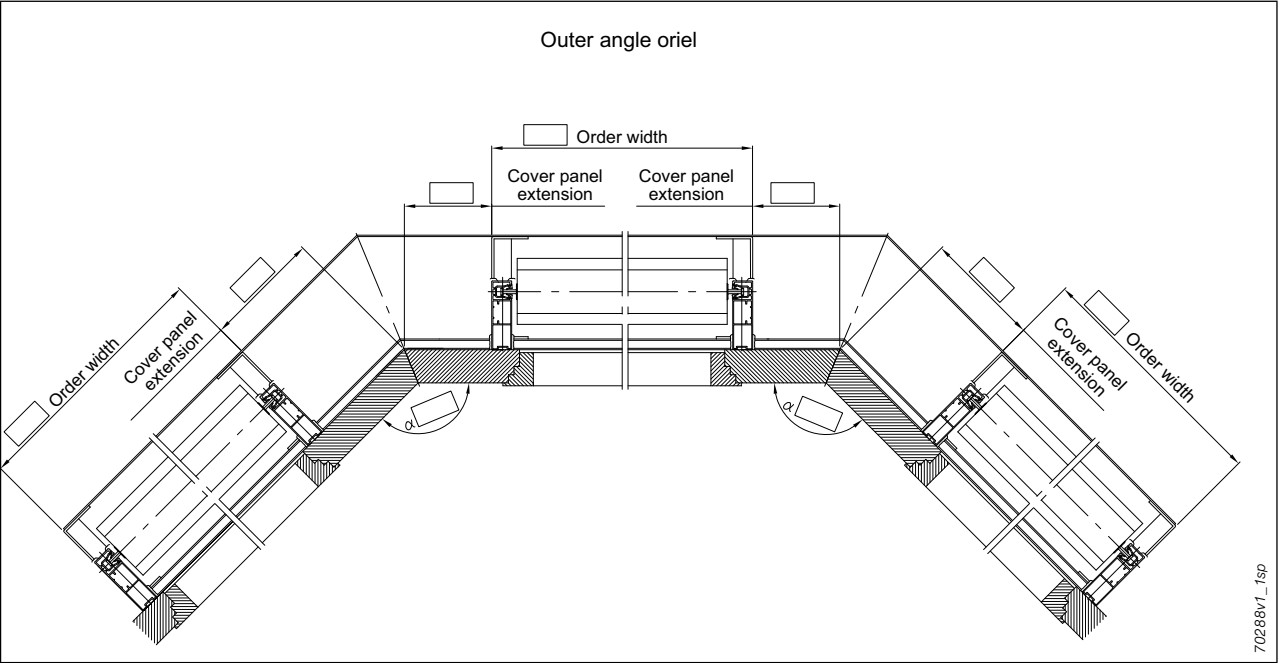


fig. 129: Outer angle oriel

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

## Description

### Venetian blind window system FSR S1 and S2

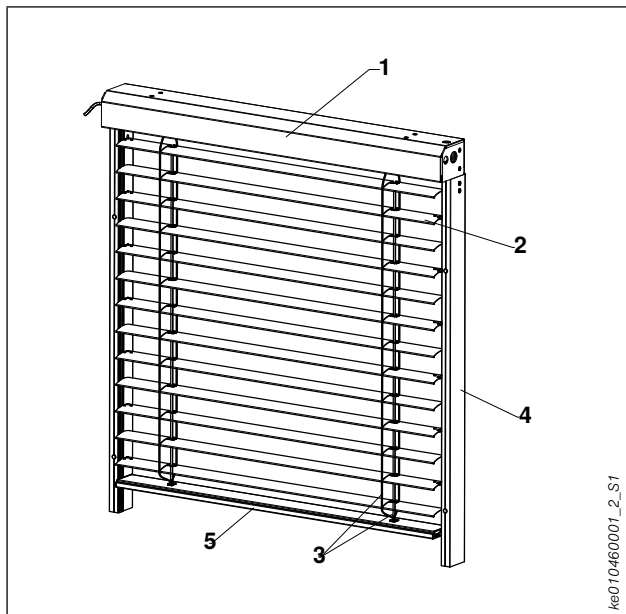


fig. 130: Venetian blind window system shaft variant S1 cover panel fixing

- 1 Cover panel
- 2 Slats
  - 2.1 Beaded slats
  - 2.2 Flat slats
  - 2.3 Dim-out slats
- 3 Tilting and lifting tape
  - 3.1 Tilting tapes
  - 3.2 Lifting tapes
  - 3.3 Loop cord
- 4 Lateral guidance
- 5 Bottom rail

## Application

For mounting in existing shafts, for integration in exterior insulation and finish systems and ventilated facades.

## Installation note

For the FSR variant S1 the external venetian blind stack is already preinstalled in the cover panel on delivery.  
For the FSR variant S2 the external venetian blind stack is attached to the supports after fixing the guide rail to the window.

## Operation

### Motor

The slats are raised and lowered as well as tilted by actuating a switch.

Voltage: 230 V AC, other voltages optional

Frequency: 50 Hz, other frequencies optional

Degree of protection: IP 54

Plug-in connector: Hirschmann coupling

The drive switches off upon reaching the upper or lower limit position using built-in, adjustable limit switches.

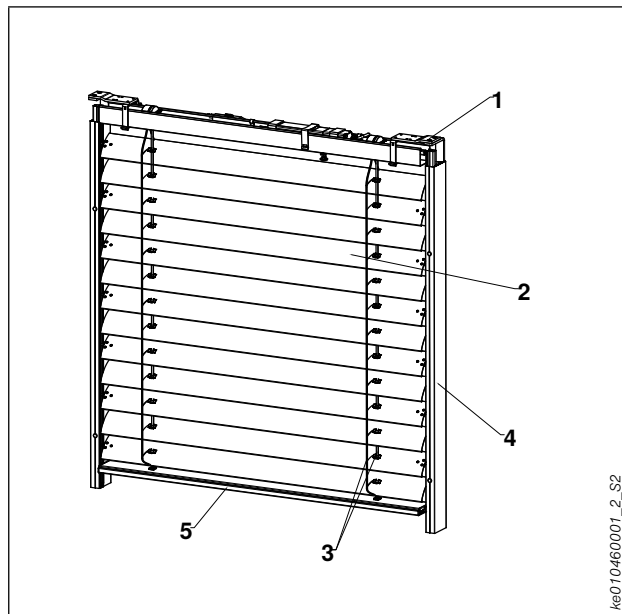


fig. 131: Venetian blind window system shaft variant S2 top rail fixing

- 1 Top rail fixing
- 2 Slats
  - 2.1 Beaded slats
  - 2.2 Flat slats
  - 2.3 Dim-out slats
- 3 Tilting and lifting tape
  - 3.1 Tilting tapes
  - 3.2 Lifting tapes
  - 3.3 Loop cord
- 4 Lateral guidance
- 5 Bottom rail

## Crank

The slats are raised and lowered as well as tilted with the crank.

Crank rod with collapsible crank; sealed joint plate and square with patented thermal separation.

Material: aluminium

Surface: C0 anodised

Crank holder: plastic, grey, white or brown, crank holder with magnet optional

## Cover panel (1) – Only for FSR S1

Closed on both sides for stiffening, allowing larger curtain widths

Material: aluminium sheet, folded

Material thickness: 2 mm

Dimensions:

(H): 95 mm (standard)

(D): 115 mm (standard)

The side closures of the cover panel variant S1 are connected to the guide rails to allow self-supporting mounting.



## Description

### Venetian blind window system FSR S1 and S2

#### Top rail fixing (1.2) – only for FSR S2

The subassembly consists of steel square with bracket lug and external venetian blind support and is welded to the guide profile. The external venetian blinds with stack are fixed by attaching the top rail to the external venetian blind support.

#### Top rail – standard for S1 and S2

Material: aluminium, extruded  
Material thickness: 1.5 mm  
Dimensions (WxH): 59 x 51 mm  
Profile: U-shaped profile  
Surface: plain, optionally powder-coated or anodised  
Fixing: with aluminium supports, plain

#### Tilt rod

Material: steel, zinc-coated  
Material thickness: 1 mm  
Dimensions (WxH): 12 x 12 mm  
Profile: square tube  
Surface: plain

#### Bearing

Maintenance-free, enclosed  
Housing: plastic, with Teflon  
Tilting reel: plastic  
Tape reel: plastic, segment tilting to prevent self-acting adjustment of slats

#### Slats (2)

##### slats with beaded edges on both sides, type 60/80 S (2.1)

Curved  
Material: aluminium, special alloy  
Material thickness: approx. 0.44 mm  
Dimensions (W): 60/80 mm  
Profile: convex  
Surface: enamel finish resistant to corrosion using a special process  
Colour: according to WAREMA colour chart for external venetian blinds

All cutouts in the slats are fitted with black eyelets to guide the lifting tapes (reduction of wear) and for attaching the webs of the tilting tape.

The curtain moves down with the slats closed to the outside and moves up with the slats closed to the inside.

##### Flat slats (2.2)

Curved, no eyelets  
Material: aluminium, special alloy  
Material thickness: approx. 0.45 mm  
Dimensions (W): 60/80 mm  
Profile: convex  
Surface: enamel finish resistant to corrosion using a special process  
Colour: according to WAREMA colour chart for external venetian blinds

The top slat is reinforced. Optionally all slats are available with protective eyelets.

The type 60 AF moves down with closed slats and up with horizontal slats. The type 80 AF moves down with the slats closed to the outside and moves up with slats tilted approx. 55° to the inside.

#### Dim-out slats (2.3)

Edges beaded on both sides, special profile  
Material: aluminium, special alloy  
Material thickness: approx. 0.44 mm  
Dimensions (W): 73/90/93 mm  
Profile: special profile, front rolled beads with sealing strip made from flexible plastic  
Surface: enamel finish resistant to corrosion using a special process  
Colour: according to WAREMA colour chart for external venetian blinds

All edges of the perforations in the slats are continuously beaded in order to reduce wear of the lifting tape to a minimum. A higher level of dim-out is achieved by using dark slat colours. The curtain moves down with closed slats and up with horizontal slats.

#### Tilting tape/lifting tape (3)

##### Tilting tapes (3.1)

Special heavy-duty version with double webs  
Material: polyester, with Kevlar core  
Colour: black, optionally grey  
Each slat is attached to the top web of the tilting tape and threaded between the double webs.

##### Lifting tapes (3.2)

Material: polyester, with special coating  
Colour: black, optionally grey (only for type E 80 A6 S or E 80 AF A6)

##### Loop cord (3.3)

Slat suspension through laterally fixed loop cord  
Material: polyester, with worked-in aramide fibres, weather-proof, UV stable  
Colour: black, optionally grey  
The loops are permanently fixed to the slats by clips made of stainless steel resistant to corrosion.

#### Lateral guidance (4)

Guide profile with plastic guide profile for nipple guiding and noise reduction, incl. water-repelling end caps.

Material: aluminium, extruded  
Dimensions (WxD): 27.5 x 70 mm  
27.5 x 80 mm, 27.5 x 95 mm for S1 with insect screen  
Surface: powder-coated, optionally anodised  
Fixing: directly on the window frame  
Guide pin: polyamide, fibreglass-reinforced, impact-resistant connection with the slats by means of ultrasonic welding

Slats alternately pinned (beaded slats and dim-out slats), every 3rd slat is pinned on both sides (flat slat). Details of guide profile from page 283.

## Description

### Venetian blind window system FSR S1 and S2

#### Bottom rail (5)

With end caps (moving with the unit for types 73/90/93)

Material: aluminium, extruded

Dimensions (WxH): 73/93x20 mm or 60/80x15 mm

Surface: powder-coated, optionally anodised

End caps: plastic, black, optionally grey

With sliding guide pins with slotted end caps to prevent the blind from unhinging. For dim-out slats with bottom rail with stabilising webs, integrated fall protection and clip-on slat with matching design as lower closure.

#### Colours

Powder coating of aluminium parts with chrome-free pre-treatment according to valid RAL CLASSIC colour chart (except camouflage and luminous colours) or in six DB colours as well as eight textured colours (W4914 - W4921), four anodised-look colours (WC31 - WC34) and further colours according to WAREMA Colour World (in WAREMA colour specification).

Other colour specifications and special colours are available on request at a surcharge.

#### Insect screen (optional)

see page 167.

## Construction limit values

### Venetian blind window system FSR S1 and S2

You can also use our free planning programme on [www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de) for planning your sun shading control systems – here you can configure the product and create a technical drawing to be integrated into your plans.

## Construction limit values

### FSR S1

Types	Individual units – FSR S1 (cover panel variant)				
	Order width (mm) = back edge of guide rail		Height (mm)	Area (m <sup>2</sup> ) E units	Area (m <sup>2</sup> ) C units
	min.	max. (without additional cover panel fixing)	max.	max.	max.
C/E 60/80 A6 S	680 <sup>1)</sup>	4000	4000	16	5
C/E 60/80 AF A6 with eyelets	680 <sup>1)</sup>	3000 <sup>2)</sup>	4000	12	5
C/E 73/90/93 A6	680 <sup>1)</sup>	4000	4000	15	5

Tab. 11: Construction limit values FSR S1

<sup>1)</sup> Asymmetrical running of slats cannot be prevented for small widths. (Please pay attention to the external venetian blind guideline ITRS Industrieverband Technische Textilien – Rollläden – Sonnenschutz e.V.)

<sup>2)</sup> For slat widths >2400 mm, an additional tension cable guide is required (for additional tension cables and a cover panel length >3000 mm an additional on-site cover panel fixing is generally required).

### FSR S2

Types	Individual units – FSR S2 (top rail variant)					
	Order width (mm) = back edge of guide rail			Height (mm)	Area (m <sup>2</sup> ) E units	Area (m <sup>2</sup> ) C units
	min.	max. (without additional top rail fixing)	max. (with additional on-site top rail fixing)	max.	max.	max.
C/E 60/80 A6 S	680 <sup>1)</sup>	2000 <sup>2)</sup>	4000	4000	8	7
C/E 60/80 AF A6 with eyelets	680 <sup>1)</sup>	2000 <sup>2)</sup>	4000	4000	8	7
C/E 73/90/93 A6	680 <sup>1)</sup>	2000 <sup>2)</sup>	4000	4000	8	7

Tab. 12: Construction limit values FSR S2

<sup>1)</sup> Asymmetrical running of slats cannot be prevented for small widths. (Please pay attention to the external venetian blind guideline ITRS Industrieverband Technische Textilien – Rollläden – Sonnenschutz e.V.)

<sup>2)</sup> The top rail fixing is an on-site service. For additional tension cable guidance an additional mounting support is generally required.

**Note:** External venetian blinds for group units are not premounted in the cover panel when delivered.

## Allocation of shaft depths/external venetian blind types/guide profiles FSR S1/S2

External venetian blind	Guide profile 27.5x70 Art. no. 112 683 Dimension A = 55	Guide profile 27.5x80 Art. no. 112 684 Dimension A = 65	Guide profile 27.5x95 Art. no. 112 245 Dimension A = 80 (required for insect screen)
min. shaft depth ►	130 mm <sup>1)</sup>	140 mm	150 mm
C/E 60 A6/AF A6	●	○	●
C/E 73 A6	●	○	●
C/E 80 A6 S/AF A6	●	○	●
C/E 90/93 A6	–	●	○ <sup>2)</sup>

<sup>1)</sup> The minimum shaft depth can be reduced by 10 mm if the shaft is min. 55 mm higher than the top rail of the cover panel and the window height is min. 1000 mm

<sup>2)</sup> not in combination with insect screen roller blind

- Standard allocation
- Guide profile optional
- not possible

## Slat stack heights

### Venetian blind window system FSR S1 and S2

The external venetian blind height is the distance between the top edge of the top rail of the external venetian blind and the bottom edge of the bottom rail.

#### Slat stack height determined from external venetian blind height

Types	External venetian blind height in mm																				
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800	4000	4200	4400	4600	4800	5000
E 60 A6 S	173	187	201	215	229	243	257	271	285	299	313	327	341	355	369	383	397	411	425	439	453
E 80 A6 S	151	161	171	181	191	201	211	221	231	241	251	261	271	281	291	301	311	321	331	341	351
E 60 AF A6	148	155	161	168	175	182	203	210	216	223	230	237	244	250	257	264					
E 60 AF A6 (with eyelets)	155	163	171	180	188	196	205	213	221	229	238	246	254	263	271	279					
E 80 AF A6	134	140	146	152	158	164	170	176	182	202	208	214	220	226	232	238					
E 80 AF A6 (with eyelets)	138	145	152	158	165	172	179	186	193	199	206	213	220	227	234	240					
E 73 A6	160	175	185	195	205	215	225	235	245	255	270	280	290	300	310	320	330				
E 90/93 A6	150	160	165	175	185	190	200	205	215	225	230	240	245	255	265	270	280				

**External venetian blinds with crank drive:** Slat stack height is reduced by 20 mm for beaded slats and flat slats, by 15 mm for dim-out slats (73/90/93).

Slat stack heights are approximate values. For technical reasons, they might be higher or lower.

For external venetian blinds with equipment variant vivamatic® and slowturn, the construction limit values and slat stack heights of the corresponding basic type should be assumed.

#### Shaft height FSR S1 and S2:

Slat stack height + 30 mm = minimum shaft height.

#### Shaft heights FSR S1 for reduced shaft depth:

Slat stack height + 75 mm = minimum shaft height.

**Values in dark grey:** Minimum shaft height for C/E 73 = 205 mm and for C/E 90/93 = 220 mm.

#### Slat stack height determined from clear shading height

Types	Clear shading height in mm														
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800
E 60 A6 S	186	201	216	231	246	262	277	292	307	322	337	352	367	382	397
E 80 A6 S	159	170	180	191	201	212	222	233	243	254	264	275	285	296	306
E 60 AF A6	152	159	166	173	180	202	209	216	223	230	237	244	251	258	265
E 60 AF A6 (with eyelets)	161	169	178	187	196	204	213	222	231	239	248	257	266	274	283
E 80 AF A6	138	144	150	156	163	169	175	181	202	208	215	221	227	233	239
E 80 AF A6 (with eyelets)	142	149	156	163	170	177	184	191	198	205	212	219	226	233	240
E 73 A6	170	180	195	205	215	225	240	250	260	270	285	295	305	315	330
E 90/93 A6	155	165	175	180	190	200	205	215	225	230	240	250	255	265	275

**External venetian blinds with crank drive:** Slat stack height is reduced by 20 mm for beaded slats and flat slats, by 15 mm for dim-out slats (73/90/93).

Slat stack heights are approximate values. For technical reasons, they might be higher or lower.

For external venetian blinds with equipment variant vivamatic® and slowturn, the construction limit values and slat stack heights of the corresponding basic type should be assumed.

#### Shaft height FSR S1 and S2:

Slat stack height + 30 mm = minimum shaft height.

#### Shaft heights FSR S1 for reduced shaft depth:

Slat stack height + 75 mm = minimum shaft height.

**Values in dark grey:** Minimum shaft height for C/E 73 = 205 mm and for C/E 90/93 = 220 mm.

Mounting example

Venetian blind window system FSR S1

E 80 A6 S

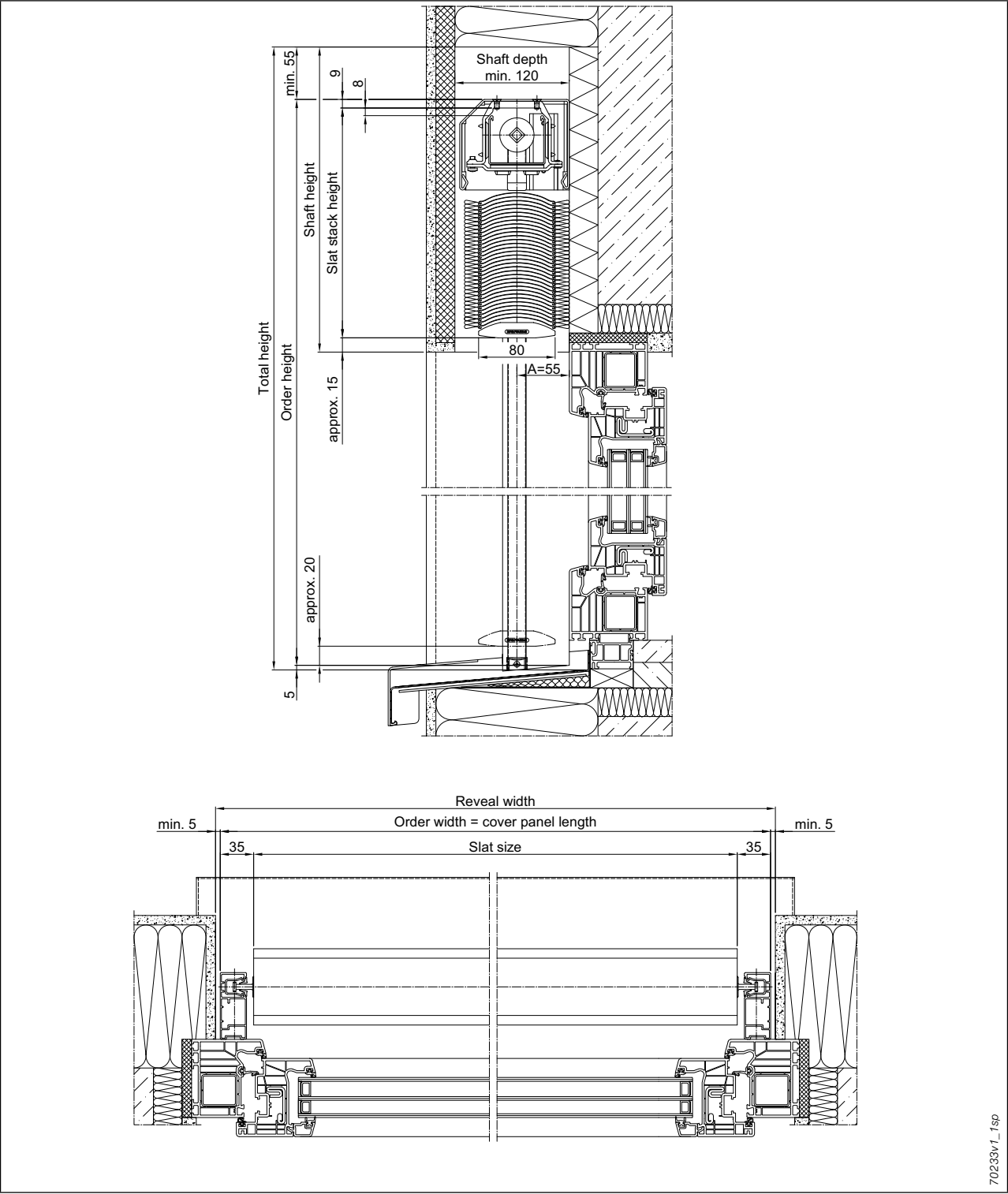


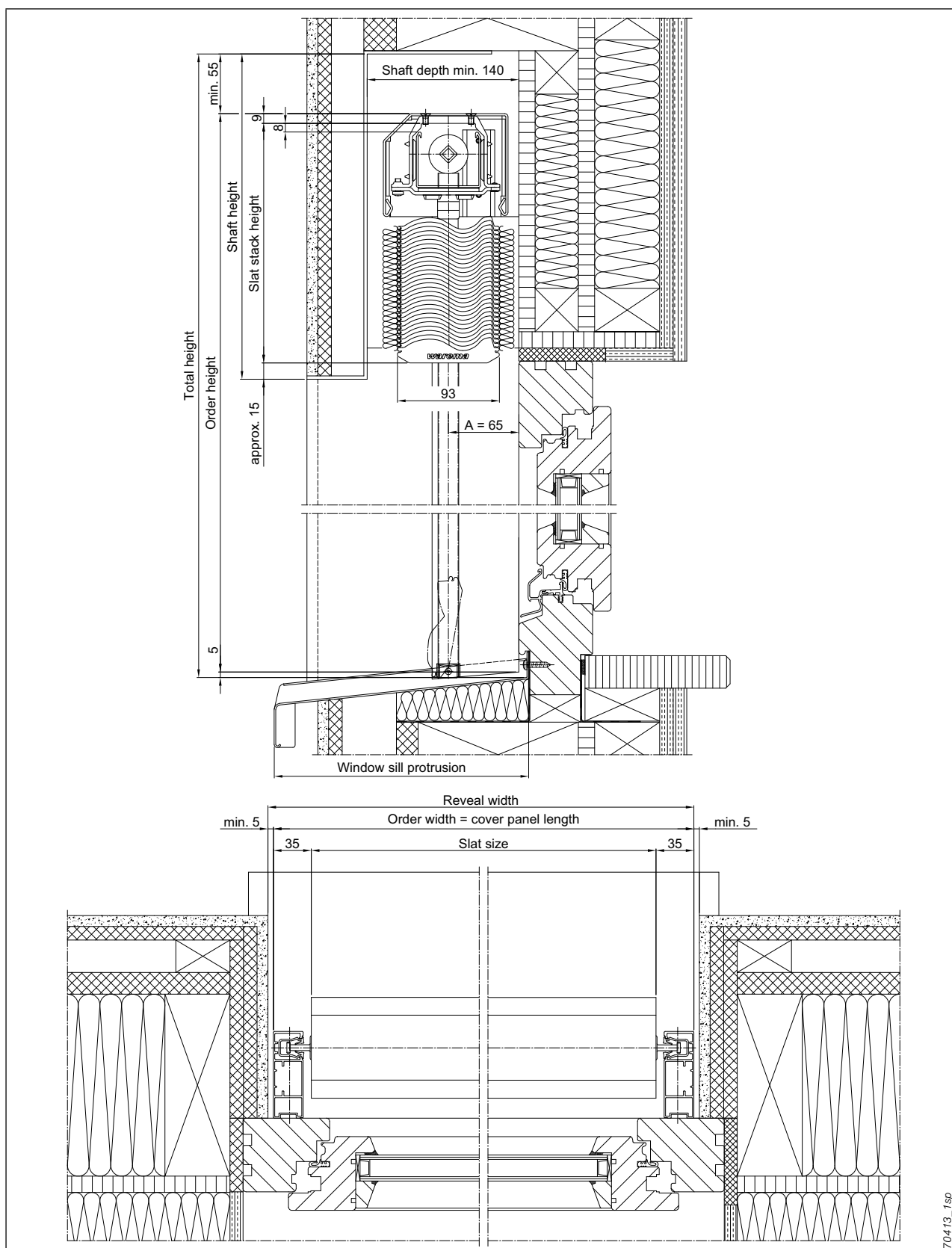
fig. 132: Mounting example, venetian blind window system FSR S1

\* The minimum shaft depth can be 120 mm if the shaft is min. 55 mm higher than the top rail of the cover panel and the window height is min. 1000 mm.

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

## Mounting example

### Venetian blind window system FSR S1 E 90 A6



70413\_1.sp

fig. 133: Mounting example, venetian blind window system FSR S1

# Mounting example

## Venetian blind window system FSR S1

### C 80 A6 S, with external gear in on-site notch

General information

Product characteristics

Basic facade external venetian blinds

Premium facade venetian blinds

Complete external venetian blinds

Light guidance/ external venetian blinds

Guides

Cover panels

Planning

Safety systems Accessories

Drives Control systems

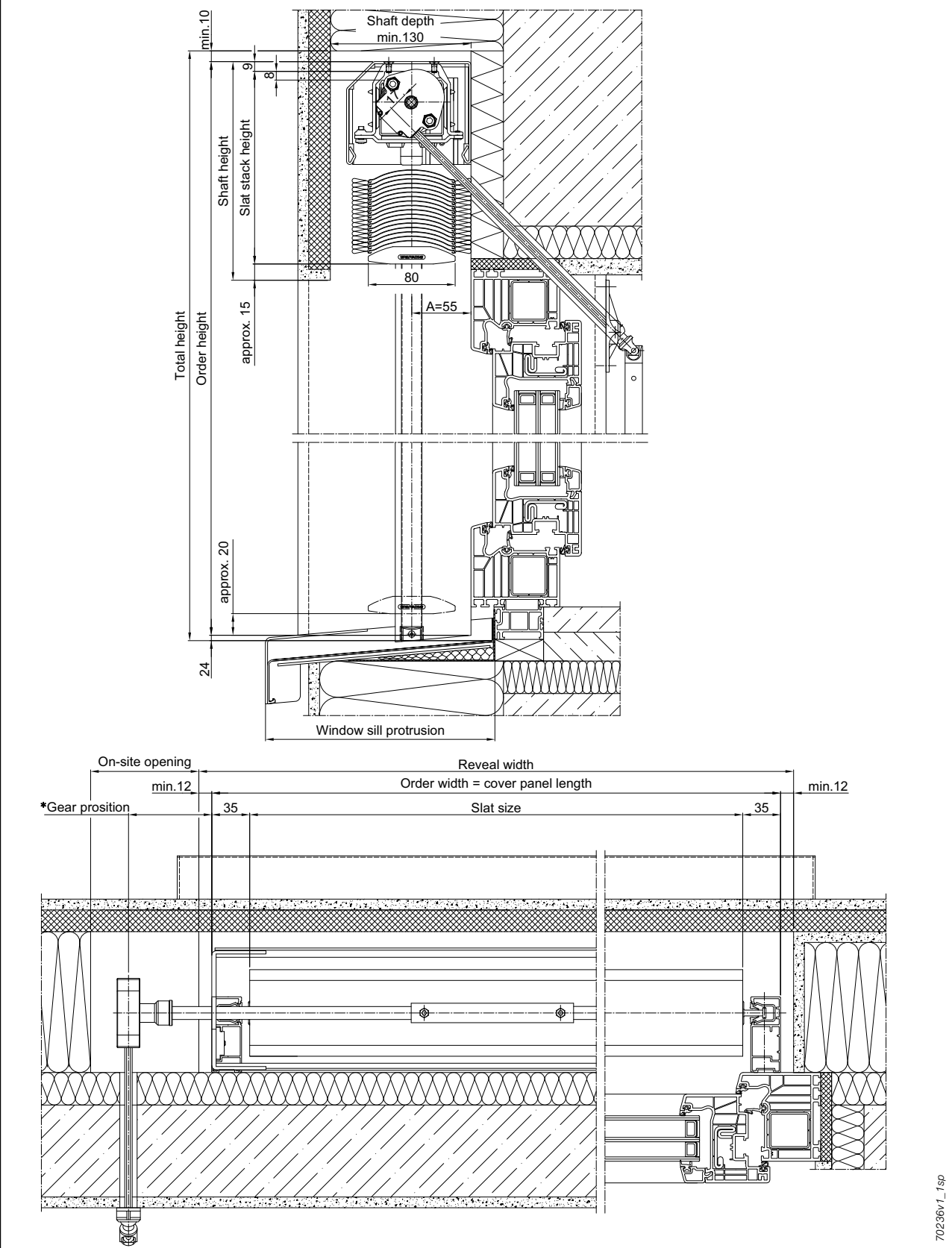


fig. 134: Mounting example, venetian blind window system FSR S1

### C 80 A6 S, with internal gear in existing shutter box



162



Mounting example

Venetian blind window system FSR S2

E 80 A6 S

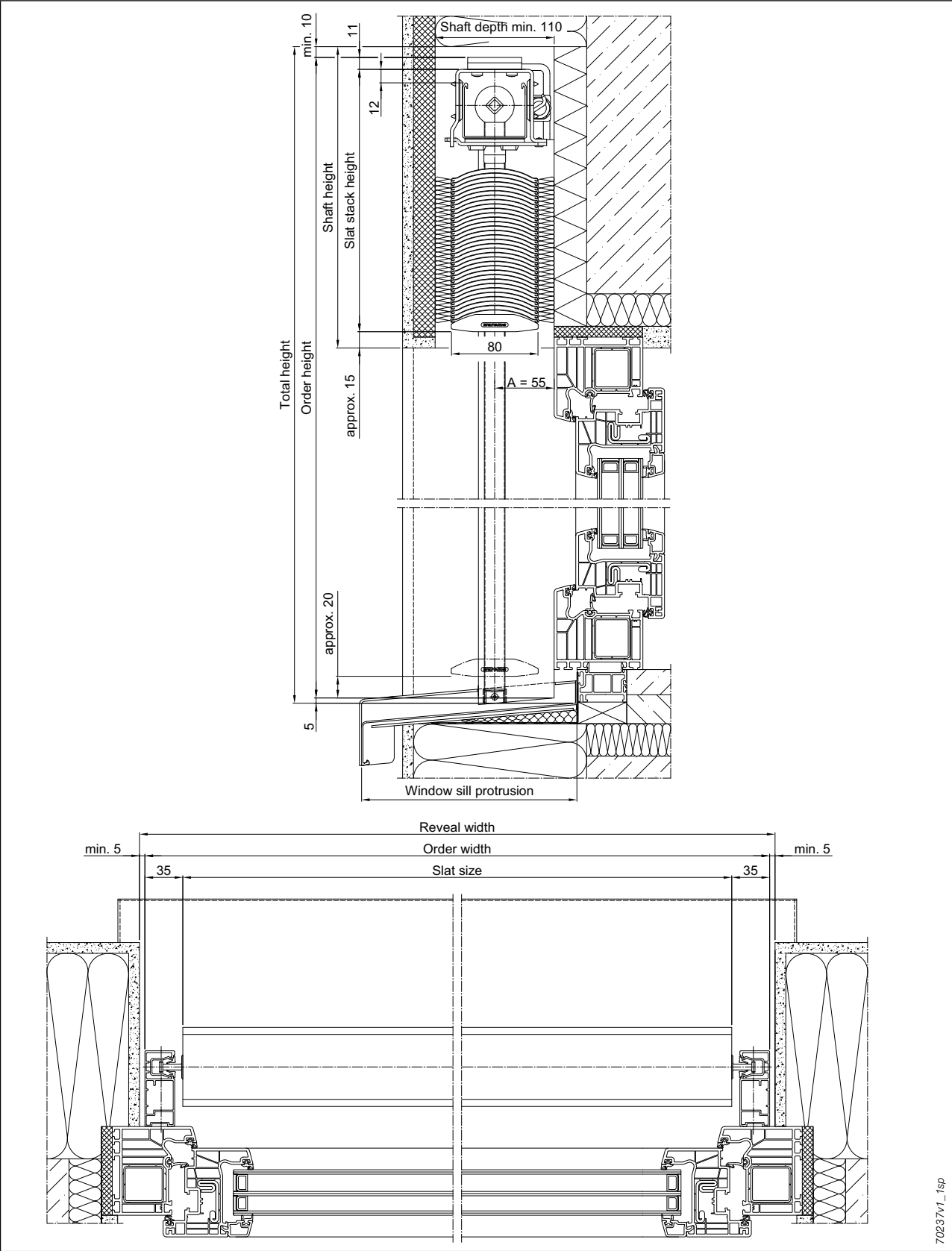
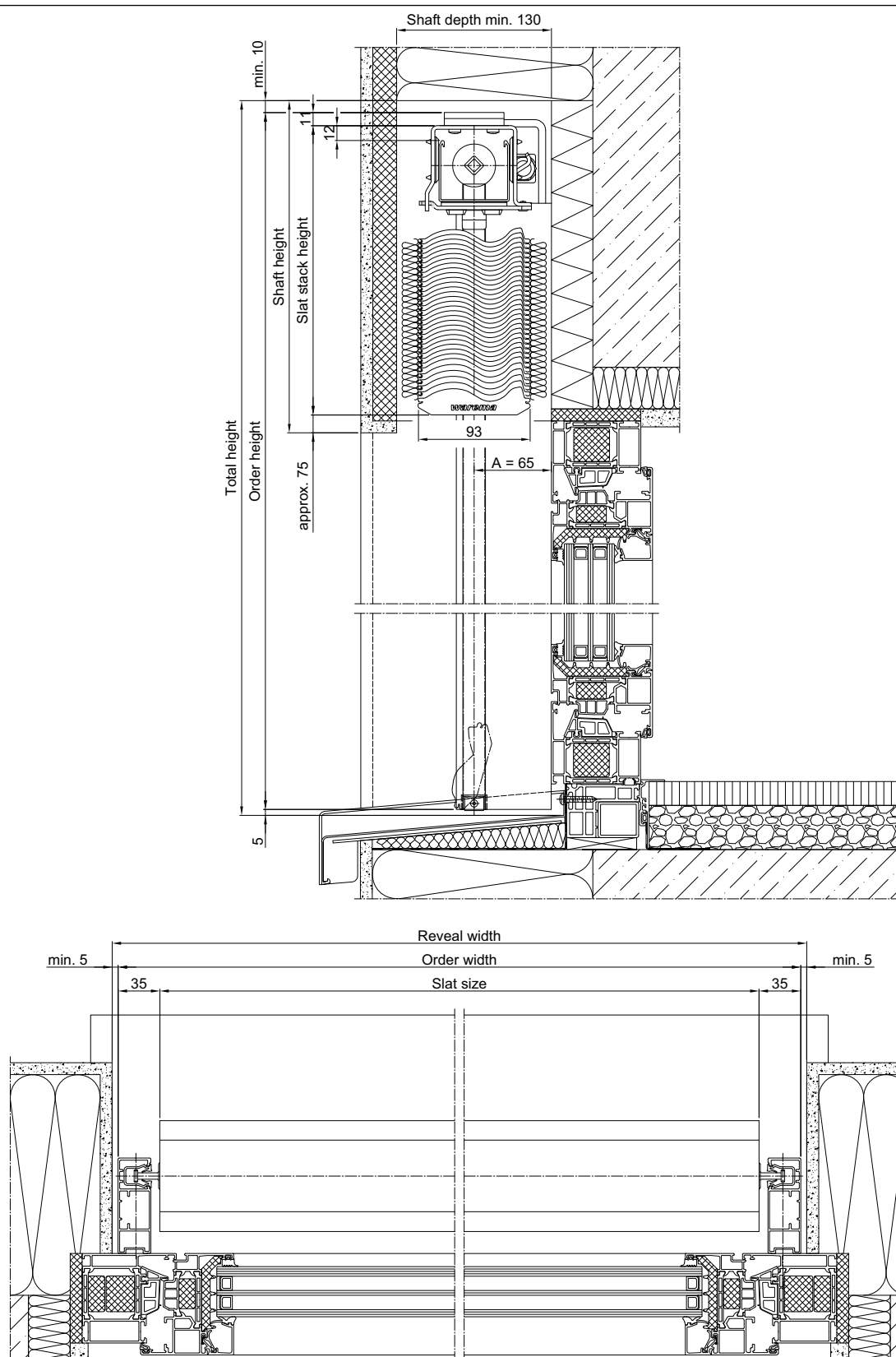


fig. 136: Mounting example, venetian blind window system FSR S2

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

## Mounting example

### Venetian blind window system FSR S2 E 93 A6



70414\_1sp

fig. 137: Mounting example, venetian blind window system FSR S2

# Mounting example

## Venetian blind window system FSR S2

### C 80 A6 S, with internal gear in existing shutter box

General information

Product characteristics

Basic facade external venetian blinds

Premium facade venetian blinds

Complete external venetian blinds

Light guidance/ external venetian blinds

Guides

Cover panels

Planning

Safety systems Accessories

Drives Control systems

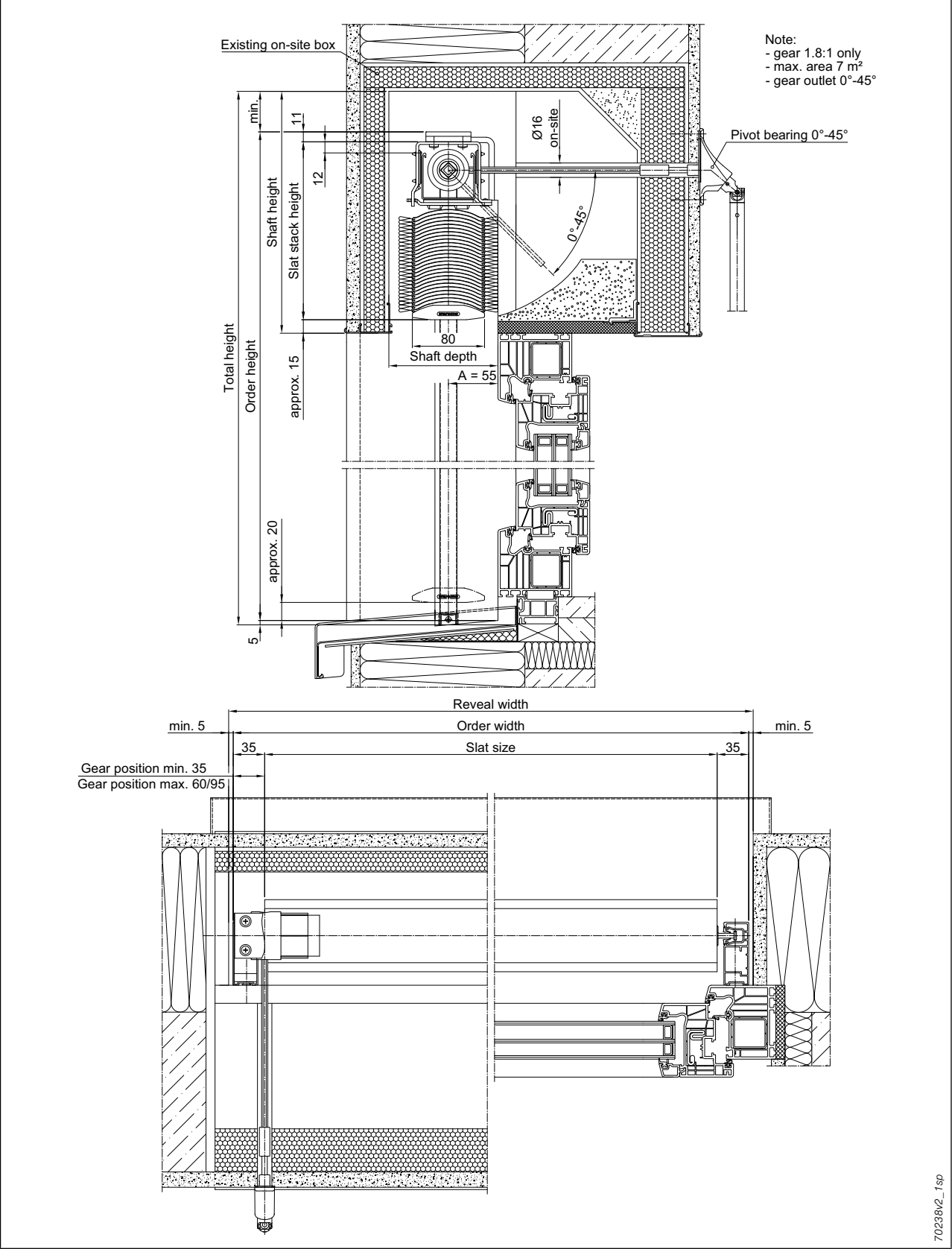
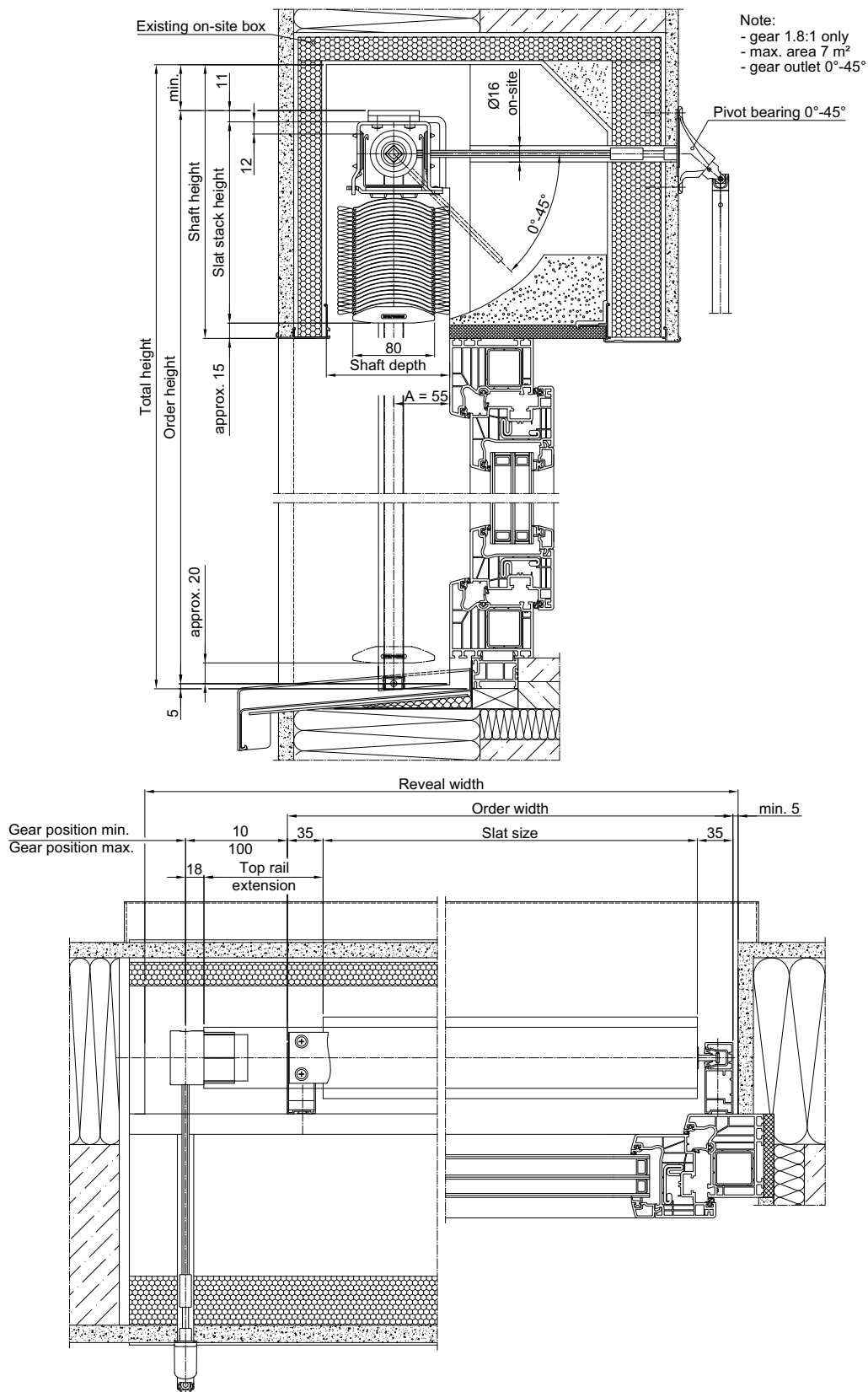


fig. 138: Mounting example, venetian blind window system FSR S2

## Mounting example

### Venetian blind window system FSR S2

#### C 80 A6 S, with external gear in existing shutter box



70224v2\_1.ssp

fig. 139: Mounting example, venetian blind window system FSR S2

## Description/construction limit values

### Insect screens with black, highly transparent WAREMA VisionAir gauze

#### Insect screen roller blind (optional)

##### Insect screen cassette roller blinds

Insect screen cassette roller blind for vertical mounting between sun shading curtain and window.

Operation: with handle rail, fixing of the handle rail by engaging into the labyrinth lock

##### Curtains

Material: plastic-coated fibreglass mesh gauze, polyamide coated  
Colour: WAREMA VisionAir gauze, black, highly transparent

##### Profiles

Material: aluminium, extruded  
Surface: powder-coated  
Dimensions (WxH): guide rails 24x34 mm  
Handle rail 17x40 mm  
Brush seal: brush seal in handle rail and guide rail

#### Insect screen swivel frame

Models with 1 or 2 wings with continuous mounting frame. The swivel frame opens outwards. Comprises integrated closing aid and surrounding brush sealing strip.

Operation: up to a frame height of 1800 mm with handle, from a frame height 1801 mm with cross rail with integrated handle rail.

##### Curtains

Material: plastic-coated fibreglass mesh gauze, polyamide coated  
Colours: WAREMA VisionAir gauze, black, highly transparent

##### Profiles

Material: aluminium, extruded  
Surface: powder-coated  
Dimensions (WxH): frame profile 12.5x30 mm and 12.5x28 mm; cross rail with integrated handle rail 10x52 mm

##### Plastic parts

Colours: white, grey, brown or black

#### Assignment usable insect screen types

Venetian blind window system	Swivel frame		Insect screen roller blind
	one-wing	two-wing	
FSR P	•	•	•
FSR E	•	•	•
FSR S1	•	•	•
FSR S2			

##### Note on integration of insect screen:

Please note: If the cover panel is ordered without rear edging, neither a swivel frame nor an insect screen roller blind can be used.

In order to integrate an insect screen roller blind, a rear edging of at least 37 mm must be ordered; for insect screen

swivel frames the rear edging must be at least 15 mm. For version FSR with cable guidance, the insect screen must be individually planned due to the variance of the tensioning angle and window frame version.

#### Construction limit values

Insect screen type	Model	Construction limit values				
		Width (mm)		Height (mm)		Area (m²)
		min.	max.	min.	max.	max.
Swivel frame, one-wing <sup>1)</sup>	for doors	500	1300	1800	2500	2.5
	for windows	500	1300	600	1800	2.5
Swivel frame, two-wing <sup>1)</sup>	for doors	900	2600 <sup>2)</sup>	1800	2500	5.0
	for windows	900	2600 <sup>2)</sup>	600	1800	5.0
Roller blind		650	2000	600	2400	5.0

<sup>1)</sup> Please specify door or window version when ordering.

<sup>2)</sup> Max. width for complete insect screen unit, max. width per wing = half of total width.

Construction limit values refer to insect screens. Deduction measurements for venetian blind window system are shown in the detailed figures on the following pages.

## Measuring instructions

### Venetian blind window system FSR with insect screen swivel frame, one-wing

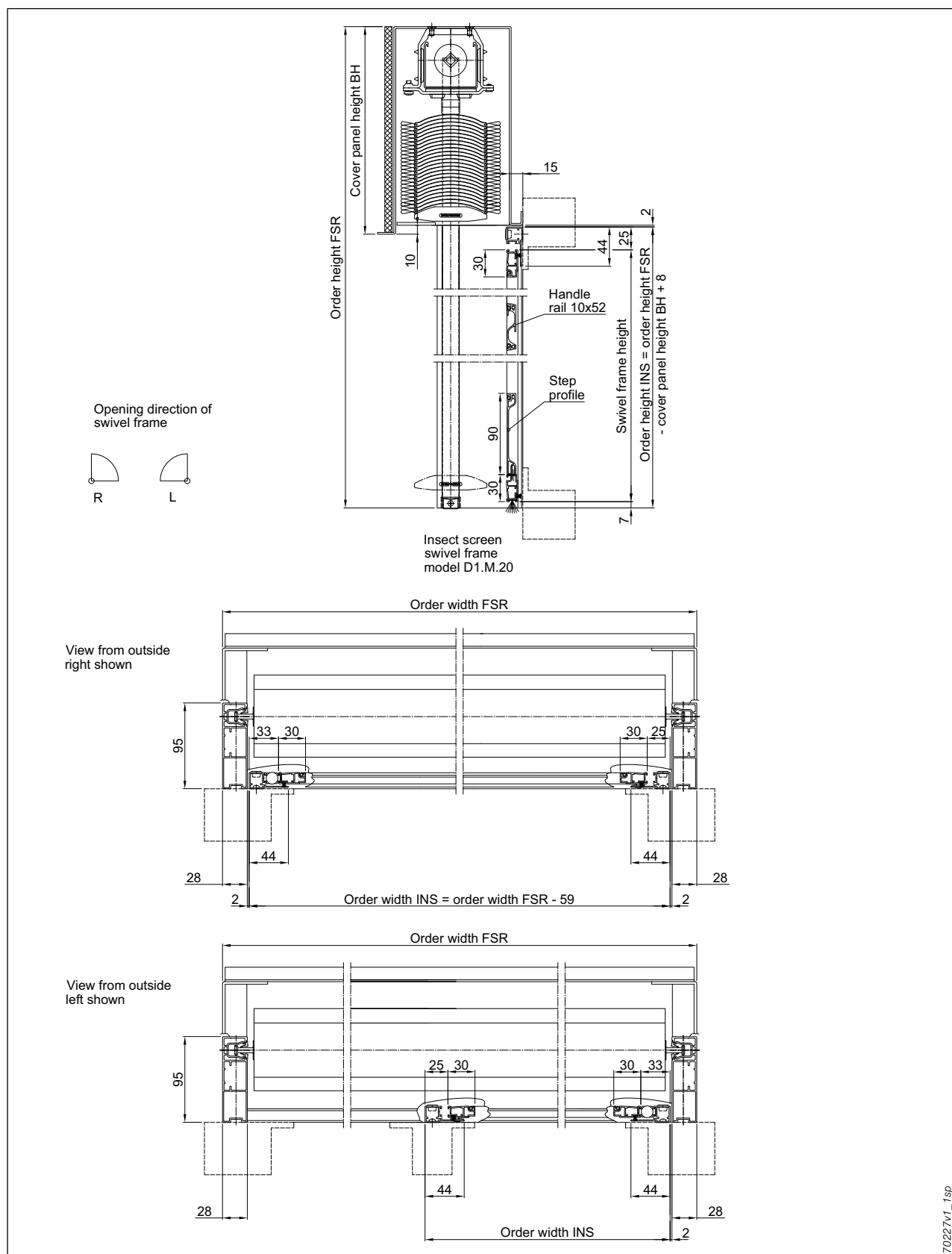


fig. 140: Measuring instructions for venetian blind window system FSR with insect screen swivel frame, one-wing

Measuring instructions

**Venetian blind window system FSR**

**with insect screen swivel frame, two-wing**

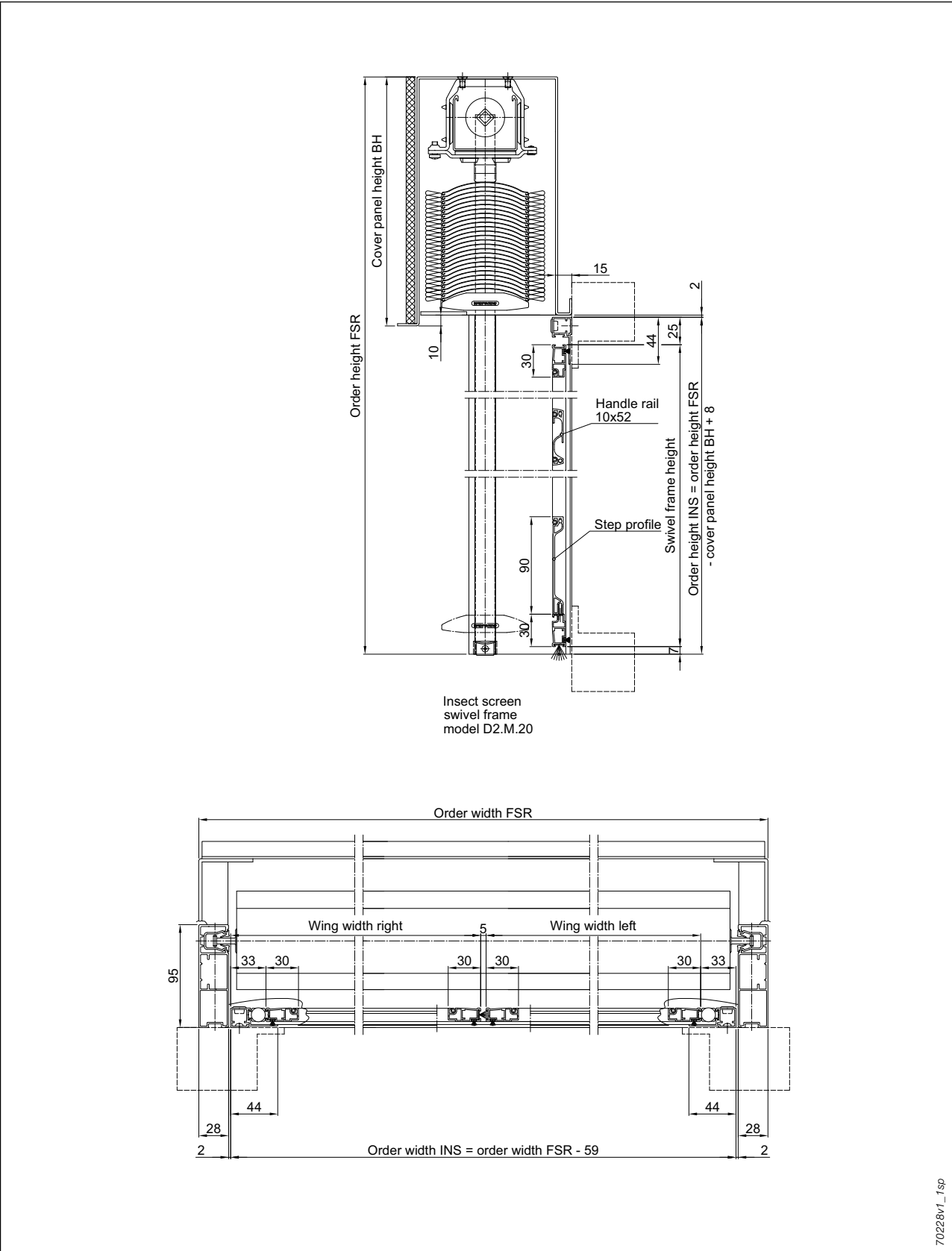
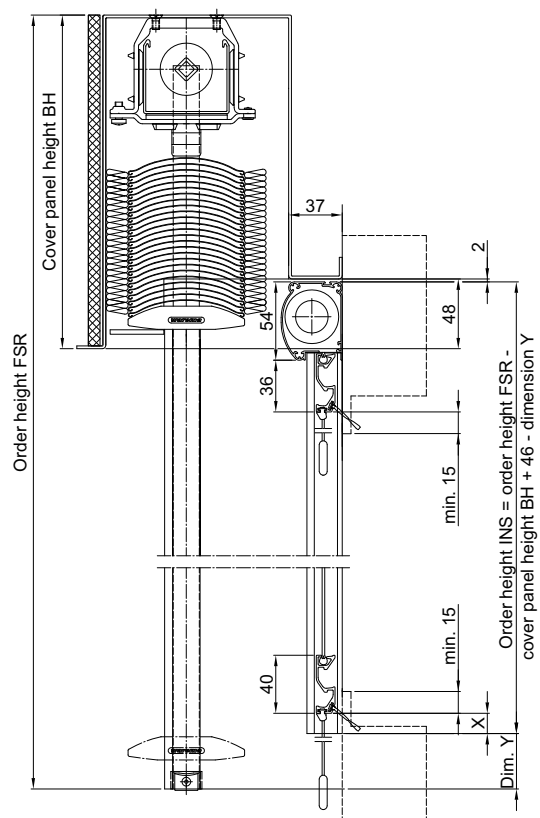


fig. 141: Measuring instructions for venetian blind window system FSR with insect screen swivel frame, two-wing

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

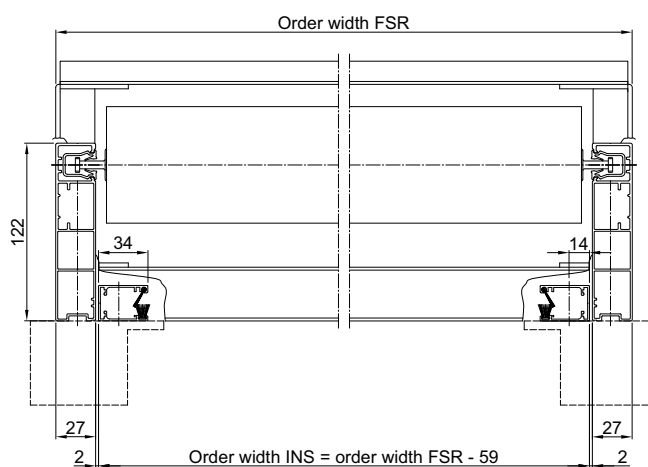
## Measuring instructions

### Venetian blind window system FSR with insect screen roller blind



Insect screen roller blind  
model R.S.10

X = bottom edge of handle rail to bottom edge of guide rail;  
standard setting X = 15 mm if ordered without further specification.



70226v3\_1sp

fig. 142: Measuring instructions for venetian blind window system FSR with insect screen roller blind



Measuring instructions

**Venetian blind window system FSR S1**

**with insect screen swivel frame, one-wing**

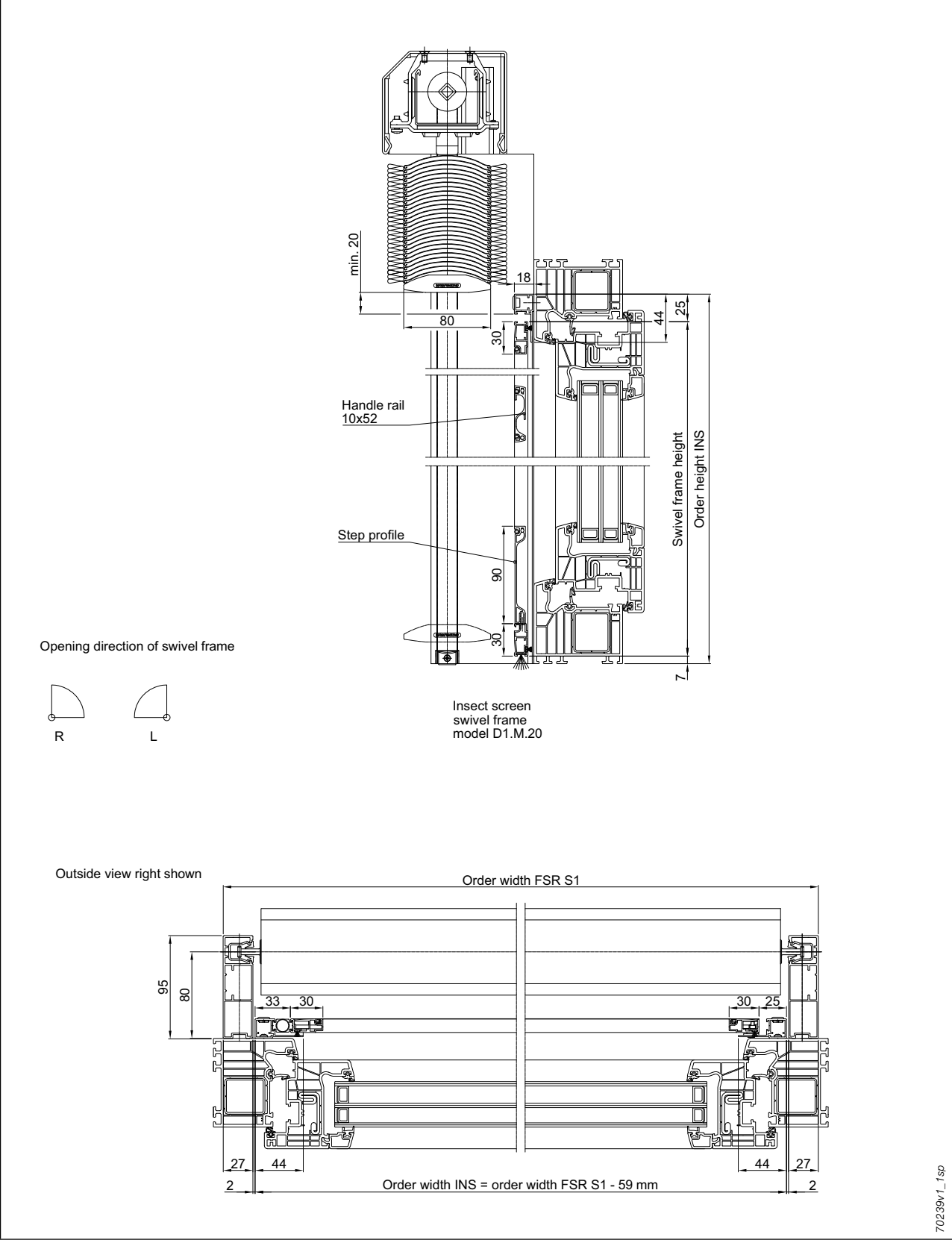
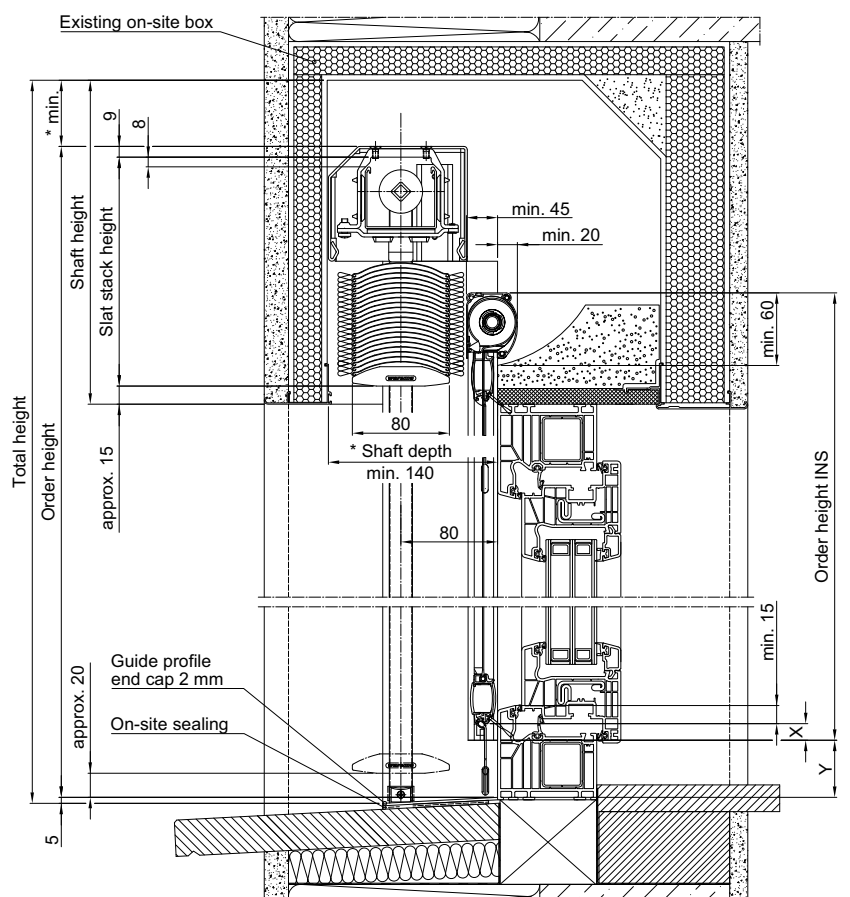


fig. 143: Measuring instructions for venetian blind window system FSR S1 with insect screen swivel frame, one-wing

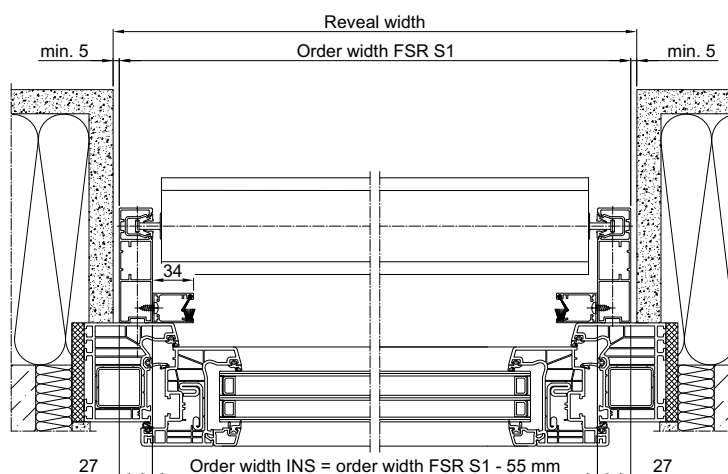
## Measuring instructions

### Venetian blind window system FSR S1 with insect screen roller blind



Insect screen roller blind model  
R.S.10

X = bottom edge of handle rail to bottom edge of guide rail standard setting  
X = 15 mm if ordered without further specification



70240v1\_1.sp

fig. 144: Measuring instructions for venetian blind window system FSR S1 with insect screen roller blind

## Contents

### Front-mounted external venetian blinds R6/R10

Description . . . . .	174
Construction limit values . . . . .	177
Box dimensions . . . . .	179
Determining dimensions/ordering data . . . . .	180
Adjusting/measuring insect screen . . . . .	183
Insect screen swivel frame . . . . .	184
Ordering data for combinations . . . . .	186
Box extension . . . . .	187
Operation details . . . . .	192

General  
information

Product  
characteristics

Basic facade  
external venetian  
blinds

Premium facade  
venetian blinds

Complete external  
venetian blinds

Light guidance/  
external venetian  
blinds

Guides

Cover panels

Planning

Safety systems  
Accessories

Drives  
Control systems

Solflex AB försäljning och service västra Skåne. Showroom och rådgivning;  
Malmö Slussplan 1, 040-979745. Helsingborg Garnisonsg 12, 042-161635.  
kontakter@solflex.se [www.solflex.se](http://www.solflex.se)

**You can find information on front-mounted roller shutters in the roller shutter technical data, art. no. 2016093**

## Description

### Front-mounted external venetian blinds R6/R10

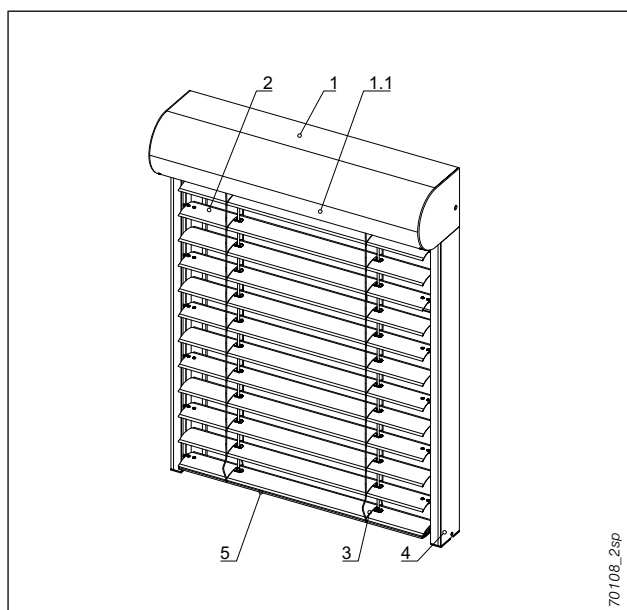


fig. 145: Front-mounted external venetian blind R6

- 1 Box**
  - 1.1 Inspection cover**
- 2 Slats**
  - 2.1 Beaded slats**
  - 2.2 Flat slats**
  - 2.3 Dim-out slats**
- 3 Tilting tape/lifting tape**
- 4 Lateral guidance**
- 5 Bottom rail**
- 6 Insect screen (optional)**
  - 6.1 Insect screen roller blind**
  - 6.2 Insect screen swivel frame**

## Application

Can be used for retrofitting but also for new buildings and renovations.

### Installation note:

Both with individual and coupled front-mounted external venetian blind systems, the slat stack is preinstalled in the box.

## Operation

### Motor

The slats are raised and lowered as well as tilted by actuating an operating switch.

Voltage: 230 V AC, other voltages optional

Frequency: 50 Hz, other frequencies optional

Degree of protection: IP 54

Plug-in connector: Hirschmann coupling

Shaft outlet on both sides.

The drive switches off upon reaching the upper or lower limit position using built-in, adjustable limit switches.

### Solar drive (optional)

Operation: via electric drive with hand-held radio transmitter

Voltage: 12 V

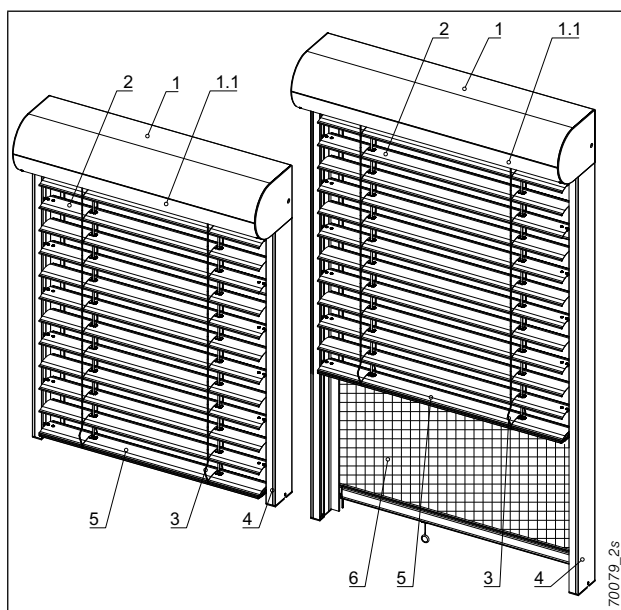


fig. 146: Front-mounted external venetian blind R10

Degree of protection: IP 54

Cover panel depth: min. 150 mm

Solar panel mounted externally on the box, external panel optional

### Crank

The slats are raised and lowered as well as tilted with the crank.

Crank rod with collapsible crank; sealed joint plate and square with thermal separation.

Material: aluminium

Surface: C0 anodised, optional powder coating in RAL 9016 or C34 anodised

Crank holder: Plastic, grey, white or brown, optionally crank holder with magnet

### Box (1)

4 box shapes, 2 box sizes, closed on 4 sides

Box shapes: rectangular, round, square, plaster

Material: aluminium, extruded

Material thickness: 3 mm

Dimensions: see table

Surface: powder-coated, optionally anodised

Lateral side covers: aluminium, diecast aluminium

Plaster base profile: standard 15, 20, 25, 40 mm

Maximum box width: 4000 mm

Plaster model with 8 mm polystyrene sheet as plaster base plate

When using sections to receive plastering the box of the external venetian blind can be laterally embedded in plaster up to 30 mm (with plaster base type standard).

### Inspection cover (1.1)

Material: aluminium, extruded

Surface: powder-coated, optionally anodised

Material thickness: 3 mm

## Description

### Front-mounted external venetian blinds R6/R10

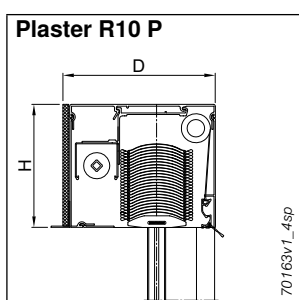
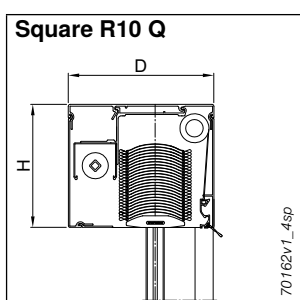
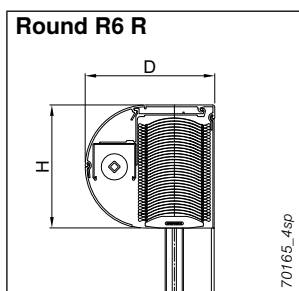
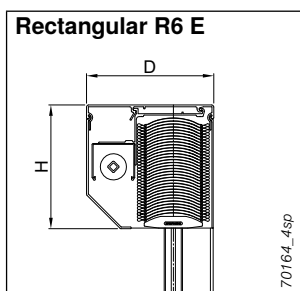


fig. 147: Box shapes R6/R10

#### Box dimensions in mm

Box size	Height H	Depth T for box shape			
<b>R6</b>					
16.5	169	174	177	174	184
18.5	189	194	197	194	204
<b>R10</b>					
16.5	169	200	203	200	210
18.5	189	220	223	220	230

#### Top rail

Material: aluminium, extruded  
 Material thickness: 1.5 mm  
 Dimensions (WxH): 59x51 mm  
 Profile: C-shaped profile  
 Surface: plain  
 Fixing: with aluminium supports, plain

#### Tilt rod

Material: steel, zinc-coated  
 Material thickness: 1 mm  
 Dimensions (WxH): 12x12 mm  
 Profile: square tube  
 Surface: plain

#### Bearing

Maintenance-free, enclosed  
 Housing: plastic, with Teflon  
 Tilting reel: plastic  
 Tape reel: plastic  
 Segment tilting to prevent self-acting adjustment of slats.

#### Slats (2)

##### Beaded slats (2.1)

Beaded on both sides, curved, type 80 S  
 Material: aluminium, special alloy  
 Material thickness: approx. 0.44 mm  
 Dimensions (W): 80 mm  
 Installation: convex  
 Surface: enamel finish resistant to corrosion using a special process  
 Colour: according to WAREMA colour chart for external venetian blinds

All cutouts in the slats are fitted with black eyelets to guide the lifting tapes (reduction of wear) and for attaching the webs of the tilting tape.

The blind moves down with the slats closed to the outside and moves up with the slats closed to the inside.

##### Flat slats (2.2)

Curved flat slat, no eyelets  
 Material: aluminium, special alloy  
 Material thickness: approx. 0.45 mm  
 Dimensions (W): 80 mm  
 Profile: convex  
 Surface: enamel finish resistant to corrosion using a special process  
 Colour: according to WAREMA colour chart for external venetian blinds

The top slat is reinforced.

Optionally all slats are available with protective eyelets. The blind descends with the slats closed to the outside and moves up with the slats tilted at approx. 55° to the inside.

##### Dim-out slats (2.3)

Edges beaded on both sides, special profile  
 Material: aluminium, special alloy  
 Material thickness: approx. 0.44 mm  
 Dimensions (W): 73 mm  
 Profile: special profile, front rolled beads with sealing strip made from flexible plastic  
 Surface: enamel finish resistant to corrosion using a special process  
 Colour: according to WAREMA colour chart for external venetian blinds

All edges of the cutouts in the slats are continuously beaded in order to reduce wear of the lifting tape to a minimum. The external venetian blind moves down with closed slats and up with horizontal slats.

#### Ladder tape/lift tape (3)

##### Tilting tapes (3.1)

Special heavy-duty version with double webs  
 Material: polyester, with Kevlar core  
 Colour: black, optionally grey  
 Each slat is attached to the top web of the tilting tape. For the model with dim-out slats, the loop cord is tied to the slat by means of stainless steel clips.

##### Raising tapes (3.2)

Material: polyester, with special coating  
 Colour: black, optionally grey

## Description

### Front-mounted external venetian blinds R6/R10

#### Lateral guidance (4)

Guide profile front-mounted external venetian blind with black 2 component plastic insertion profile for nipple guidance and noise attenuation.

In model which is watertight against driving rain with water-draining end caps.

Material: aluminium, extruded  
Dimensions (WxH): rail 30x68 mm/30x92 mm  
Fixing: directly screw-fixed on the window profile  
Surface: powder-coated, optionally anodised  
Guide pin: polyamide, fibreglass-reinforced, impact-resistant connection with the slats by means of ultrasonic welding. Slats alternately pinned (beaded slats and dim-out slats), every 3rd slat is pinned on both sides (flat slat).

The rails for the insect screen have already been integrated in the guide profiles and/or are optional.

#### Bottom rail (5)

With end caps

Material: aluminium, extruded  
Dimensions (WxH): 73/80x15 mm  
Surface: powder-coated, optionally anodised  
End caps: plastic, black, optionally grey  
Bottom rail for rail guidance A6 with movable guide pins with slotted end caps to prevent the curtain from unhinging.

#### Insect screen (6) (optionally for R10)

##### Insect screen roller blind (6.1)

Insect screen roller blind for vertical mounting between sun shading product and window.

Operation: with handle rail, handle shell is fixed by engaging in special labyrinth lock.

##### Curtains

Material: gauze made from plastic-coated fibre-glass mesh  
Colours: WAREMA VisionAir gauze, black, highly transparent

##### Profiles

Material: aluminium, extruded  
Surface: powder-coated  
Dimensions (WxH): guide rails insect screen rail profile 51x93 mm  
handle rail 13x40 mm  
Brush seal: brush seal in handle rail and guide rail  
Retrofit kit: for easy mounting in the existing external venetian blind element. Consists of gauze on the shaft with integrated spring mechanism, handle rail and two guide rails

##### Insect screen swivel frame (6.2)

Models with 1 or 2 wings with continuous mounting frame. The swivel frame opens outwards. Comprises integrated closing aid and surrounding brush sealing strip.

Operation: up to a frame height of 1800 mm with handle, from a frame height 1801 mm

with cross rail with integrated handle rail.

##### Curtains

Material: gauze made from plastic-coated fibre-glass mesh  
Colours: WAREMA VisionAir gauze, black, highly transparent

##### Profiles

Material: aluminium, extruded  
Surface: powder-coated  
Dimensions (WxH): frame profile 12.5x30 mm and 12.5x28 mm; cross rail with integrated handle rail 10x52 mm

##### Plastic parts

Colours: white, grey or black

#### Lintel insulation (optionally)

For optimum insulation of the box in the lintel area and for preventing thermal bridges. For details see page 326 f.

#### Colours

Powder coating of aluminium parts with chrome-free pre-treatment according to valid RAL CLASSIC colour chart (except camouflage and luminous colours) or in six DB colours as well as eight textured colours (W4914 - W4921), four anodised-look colours (WC31 - WC34) and further colours in accordance with WAREMA Colour World (in WAREMA colour specification). Other colour specifications and special colours are available on request at a surcharge.

## Construction limit values

### Front-mounted external venetian blinds R6/R10

You can also use our free planning programme on [www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de) for planning your sun shading control systems – here you can configure the product and create a technical drawing to be integrated into your plans.

#### Construction limit values for R6 and R10 without insect screen in mm

Box sizes R6	Types	Individual units						Combination		
		Width		Height			Area <sup>1)</sup> in m <sup>2</sup>	Width	Area <sup>1)</sup> in m <sup>2</sup>	Number of curtains
		min. <sup>2)</sup>	max.	max. <sup>3)</sup>	without protrusion	approx. protrusion per 100 mm additional height in mm				
16.5	C 80 AF A6	680	4000	4000	2750	3	7	6000	13	3
	E 80 AF A6	680	4000	4000	3550	3	16	6000	24	3
	C 80 AF A6 with eyelets	680	4000	4000	2450	3	7	6000	13	3
	E 80 AF A6 with eyelets	680	4000	4000	3600	3	16	6000	24	3
	E 80 A6 S	680	4000	4000	2600	5	16	6000	24	3
	E 73 A6	680	4000	4000	2180	6	15	6000	24	3
18.5	C 80 AF A6	680	4000	4000	3400	3	7	6000	13	3
	E 80 AF A6	680	4000	4000	4000		16	6000	24	3
	C 80 AF A6 with eyelets	680	4000	4000	3050	3	7	6000	13	3
	E 80 AF A6 with eyelets	680	4000	4000	4000		16	6000	24	3
	E 80 A6 S	680	4000	4000	3000	5	16	6000	24	3
	E 73 A6	680	4000	4000	2560	6	15	6000	24	3

<sup>1)</sup> Solar drive up to max. 5 m<sup>2</sup> curtain area, max. 2600 mm curtain height. Curtain coupling and R6 Plaster model not possible. Unit heights without protruding bottom rail according to table R10 with insect screen roller blind, construction limit values according to construction limit value diagram Page 367 ff.

<sup>2)</sup> Width = order width, back edge of the guide rail Solar drive min. width 760 mm.

<sup>3)</sup> Maximum height for models with daylight transport element 3000 mm

For types 80 AF A6, a tension cable must be used in the centre of the curtain as a slat size >2400 mm for wind protection reasons.

#### Construction limit values for R10 with insect screen in mm

Box size Combi (with insect screen roller blind) R10	Types	Individual units						Combination		
		Width <sup>1)</sup>		Height			Area <sup>2)</sup> in m <sup>2</sup>	Width	Area <sup>2)</sup> in m <sup>2</sup>	Number of curtains
		Min.	max.	max. <sup>2)</sup>	without protrusion	approx. protrusion per 100 mm additional height in mm				
16.5	C 80 AF A6	710	2000	2500	2500		5	6000	13	3
	E 80 AF A6	710	2000	2500	2500		5	6000	15	3
	C 80 AF A6 with eyelets	710	2000	2500	2450	3	5	6000	13	3
	E 80 AF A6 with eyelets	710	2000	2500	2500		5	6000	15	3
	E 80 A6 S	710	2000	2500	2100	5	5	6000	15	3
	E 73 A6	710	2000	2500	1710	6	5	6000	15	3
18.5	C 80 AF A6	710	2000	2500	2500		5	6000	13	3
	E 80 AF A6	710	2000	2500	2500		5	6000	15	3
	C 80 AF A6 with eyelets	710	2000	2500	2500		5	6000	13	3
	E 80 AF A6 with eyelets	710	2000	2500	2500		5	6000	15	3
	E 80 A6 S	710	2000	2500	2500		5	6000	15	3
	E 73 A6	710	2000	2500	2090	6	5	6000	15	3

<sup>1)</sup> Width = order width, back edge of the guide rail

<sup>2)</sup> Solar drive up to max. 5 m<sup>2</sup> curtain area, max. 2600 mm curtain height. Curtain coupling and R10 Plaster model not possible. Unit heights without protruding bottom rail according to table R10 with insect screen roller blind, construction limit values according to construction limit value diagram Page 367 ff.

#### Notes:

- The specified maximum areas in m<sup>2</sup> depend on the individual height (see “Height-to-width ratio of external venetian blinds” on page 392). All other dimensions are subject to individual clarification with the Application Technology department!
- For external venetian blinds with equipment variant vivamatic® or slowturn, the construction limit values and the cover panel height of the corresponding basic type should be assumed.
- In the case of flush mounting of the boxes a max. width of 4000 mm must not be exceeded.
- For types 80 AF A6, a tension cable must be used in the centre of the curtain as a slat size >2400 mm for wind protection reasons.
- Units exceeding the construction limit values for models with insect screen cannot be retrofitted with an insect screen roller blind.

## Construction limit values

### Front-mounted external venetian blinds R6/R10

#### Protrusion of bottom rail

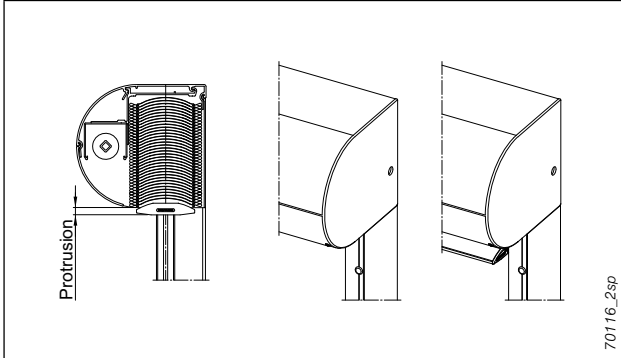


fig. 148: Protrusion of bottom rail

#### Tolerances

Stack parallelism with retracted external venetian blind:  $\pm 10$  mm

#### Construction limit values with insect screen swivel frame in mm

(element dimensions front-mounted external venetian blind R10)

R10	Width		Height <sup>1)</sup>		Area (m <sup>2</sup> )
	min.	max.	min.	max.	
one-wing	500	1300	700	2700	2.7
two-wing	1000	2600	700	2700	5.4

<sup>1)</sup> From order heights over 1900 mm a step profile and a bar are included in the standard delivery; if no dimension "W" is specified, the bar will be positioned centrally in the insect screen swivel frame.

#### Additional box fastening for elements set in plaster

For order widths of 1500 mm and more we recommend an additional box fastening (See fig. 171 on page 191).

#### Connection angle for rear side of box

Front-mounted external venetian blind R6 with guide profile for R10

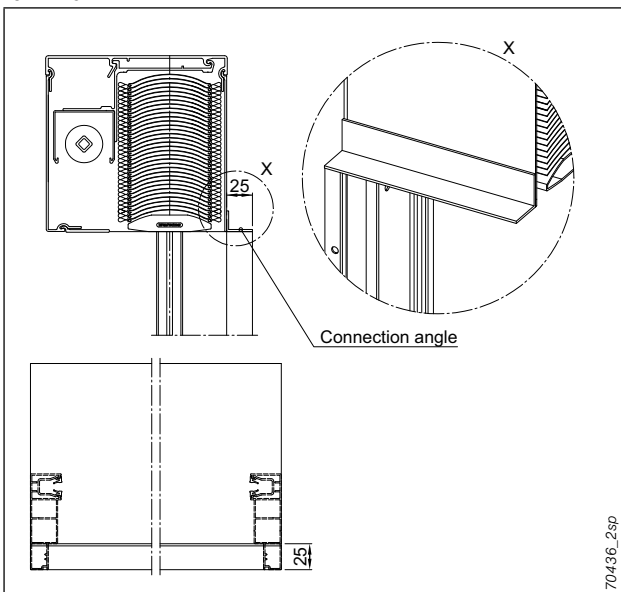


fig. 149: Connection angle for rear side of box



## Box dimensions

### Front-mounted external venetian blinds R6/R10

#### Box sizes R6

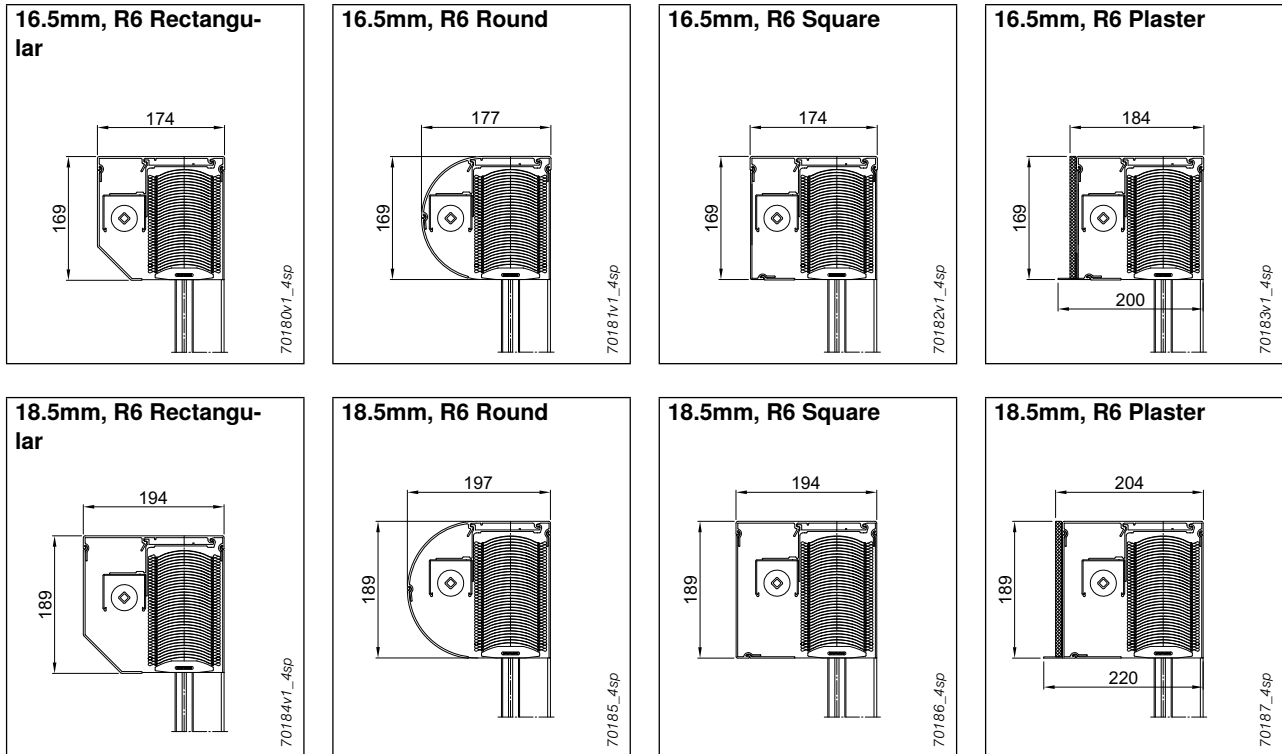


fig. 150: Box sizes

#### Box sizes R10

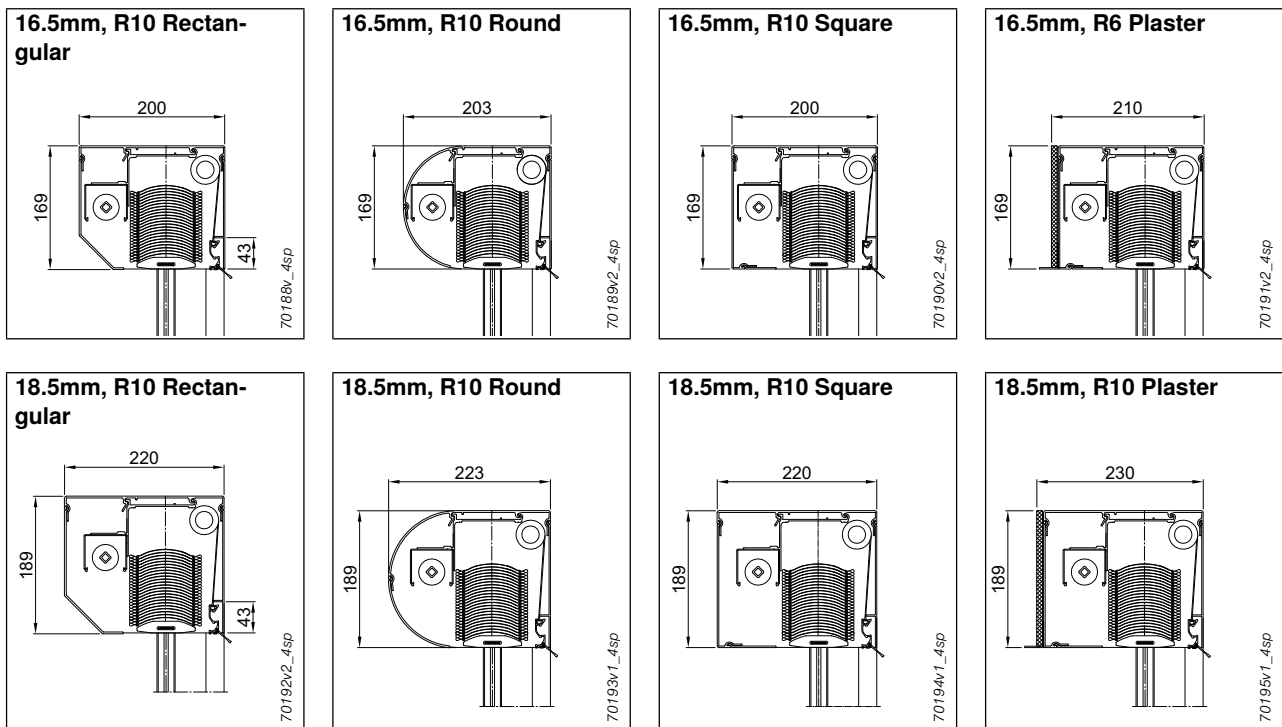


fig. 151: Box sizes

## Determining dimensions/ordering data

### Front-mounted external venetian blinds R6/R10

**Mounting in the reveal**

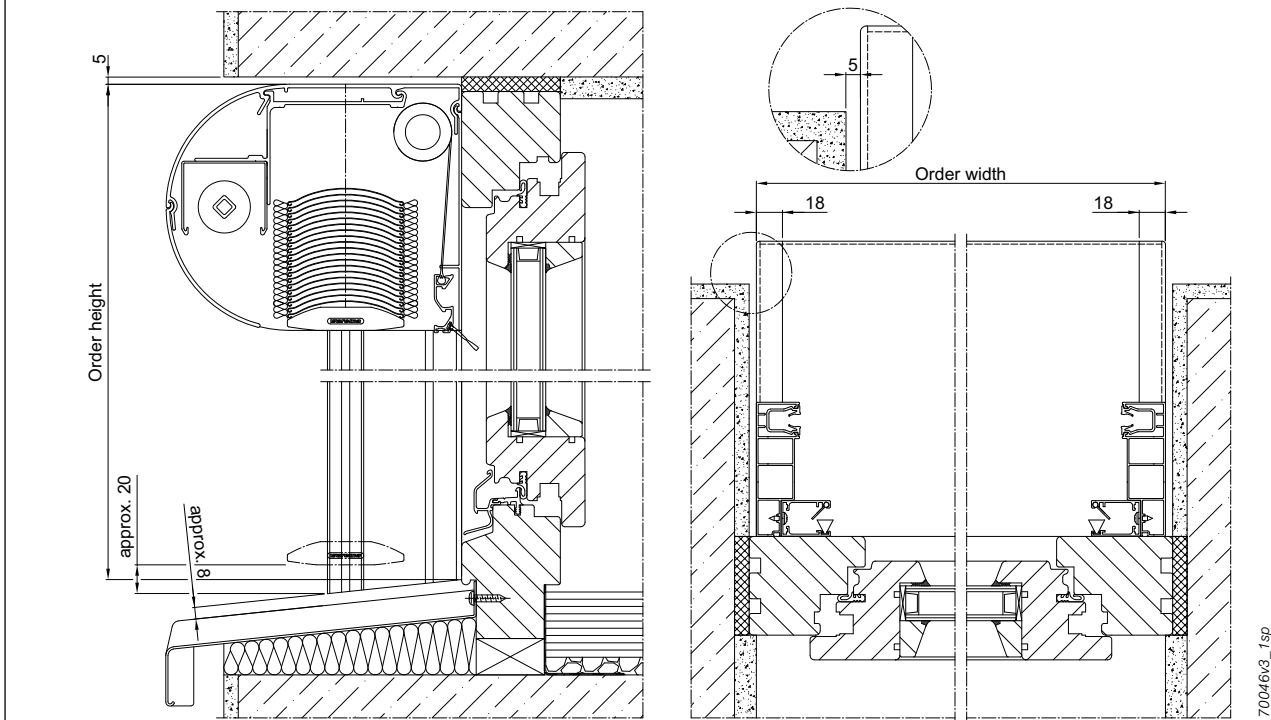


fig. 152: Mounting in the reveal

**Mounting in front of the reveal**

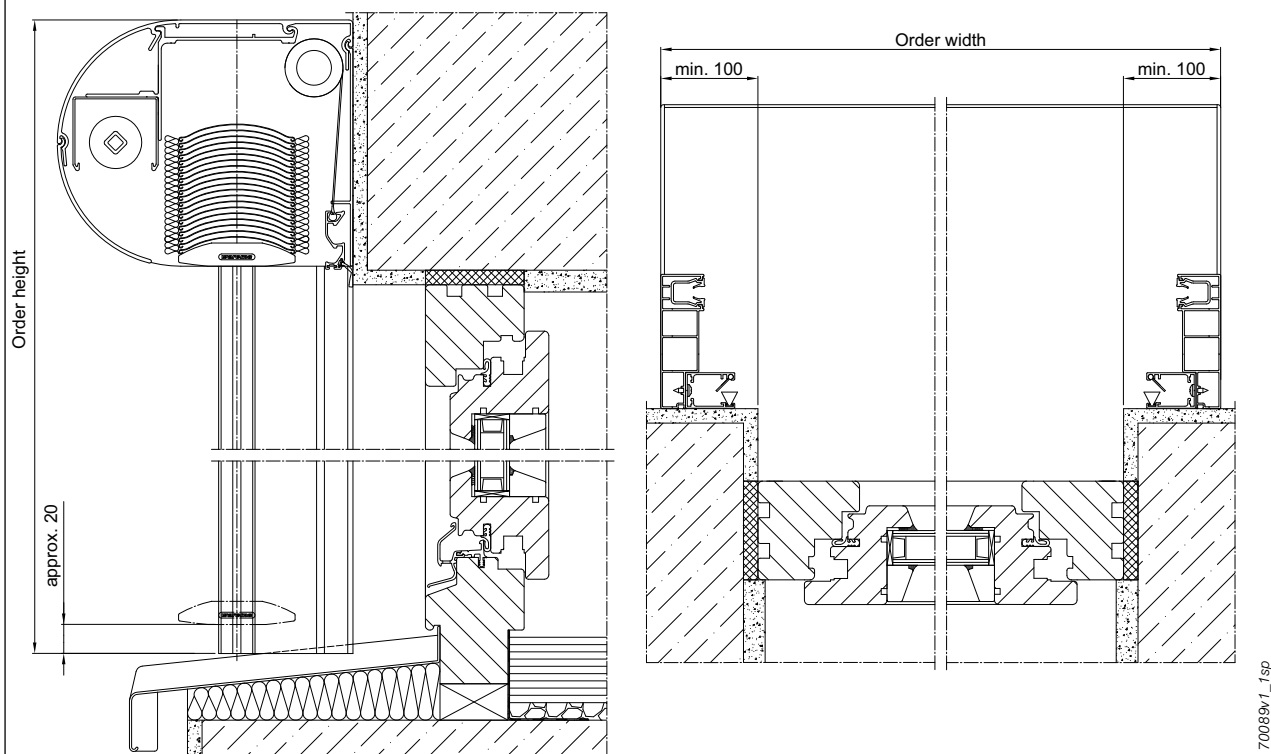


fig. 153: Mounting in front of the reveal

Attention! This requires increased attention to the suitability of the substructure for mounting.

Determining dimensions/ordering data

Front-mounted external venetian blinds R6/R10

Mounting in the reveal with box embedded in plaster

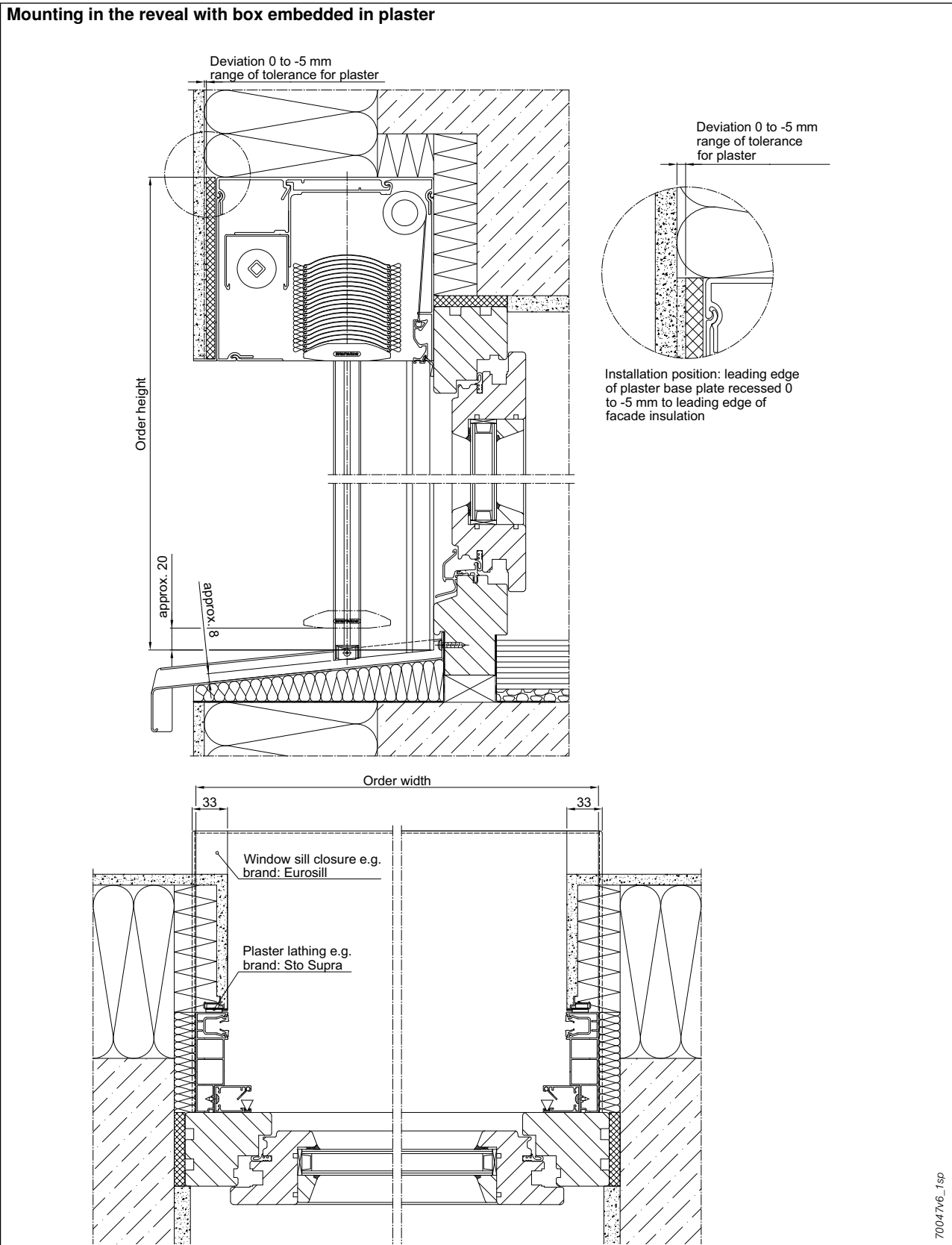


fig. 154: Mounting in the reveal with box embedded in plaster

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

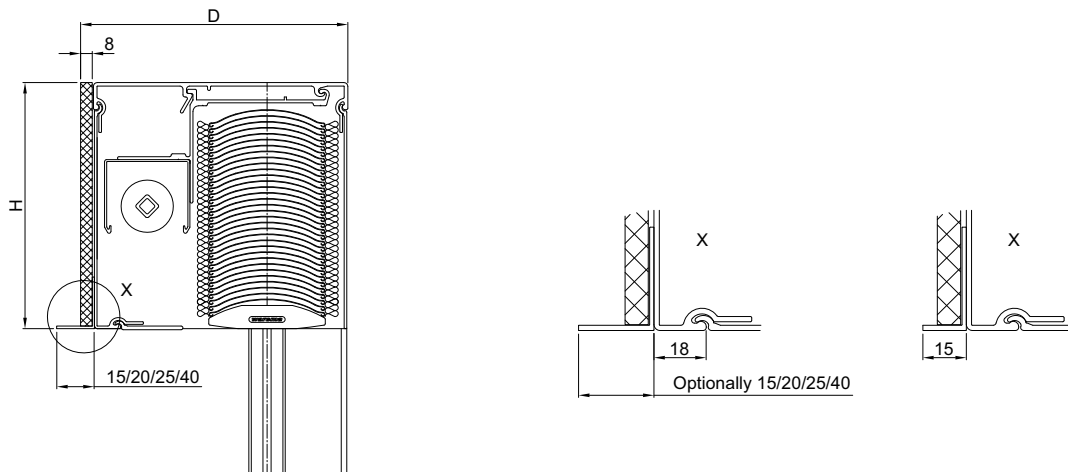
## Determining dimensions/ordering data

### Front-mounted external venetian blinds R6/R10

The details are general planning suggestions showing the construction of a wall structure. The illustration does not exempt any person from the obligation to carry out an individual examination of the particular building project for applicability and completeness. Adjoining constructions are only

schematic representations. All specifications and assumptions are to be adjusted to the circumstances on-site and coordinated. Plaster or reinforcement joining of the plaster base plate to the on-site insulation/masonry must be carried out in accordance with DIN specifications.

#### Plaster square version R6/10 Plaster

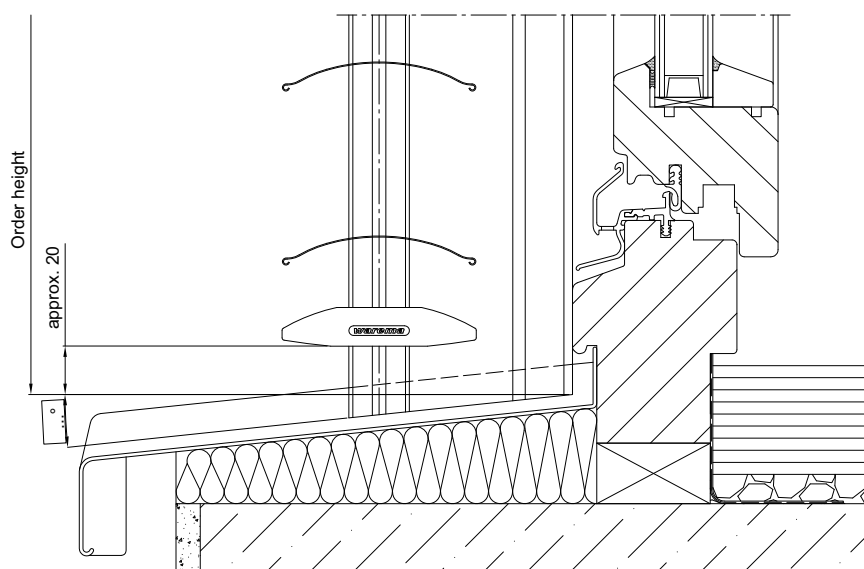


70094v1\_1.sp

fig. 155: Plaster square versions R6/10 plaster, standard projection = 25 mm (other plaster square projections are possible)

**Note:** The plaster base profile is notched in the box extension for the box shape plaster.

#### Diagonal cut guide profile



70081\_1.sp

fig. 156: Diagonal cut guide profile

Please state order height and inclination angle of window sill!

# Adjusting/measuring insect screen

## Front-mounted external venetian blinds R10

Presetting of the insect screen

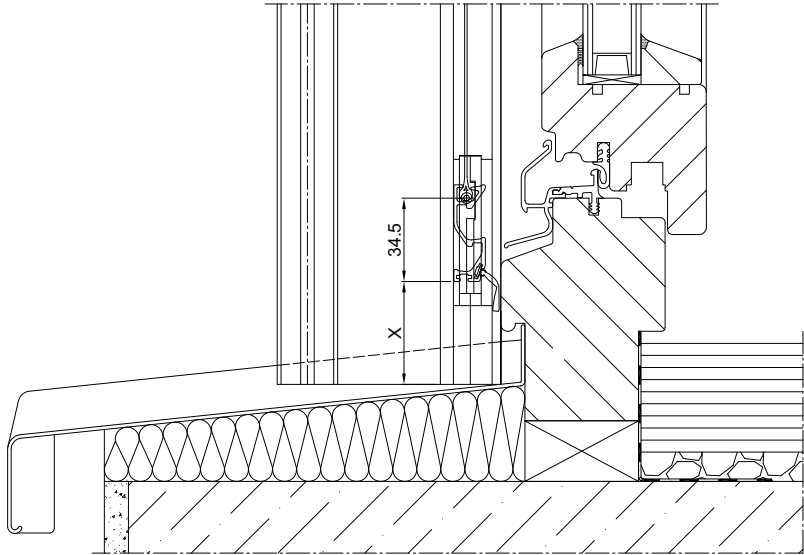


fig. 157: Presetting of the insect screen

"X" = bottom edge of handle rail to bottom edge of guide profile; standard setting "X" = 10 mm for order without specification.

Measuring for retrofitting insect screens



fig. 158: Measuring for retrofitting insect screens

Please state dimensions according to drawing or state order number and item.

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

**Insect screen swivel frame**  
**Front-mounted external venetian blinds R10**

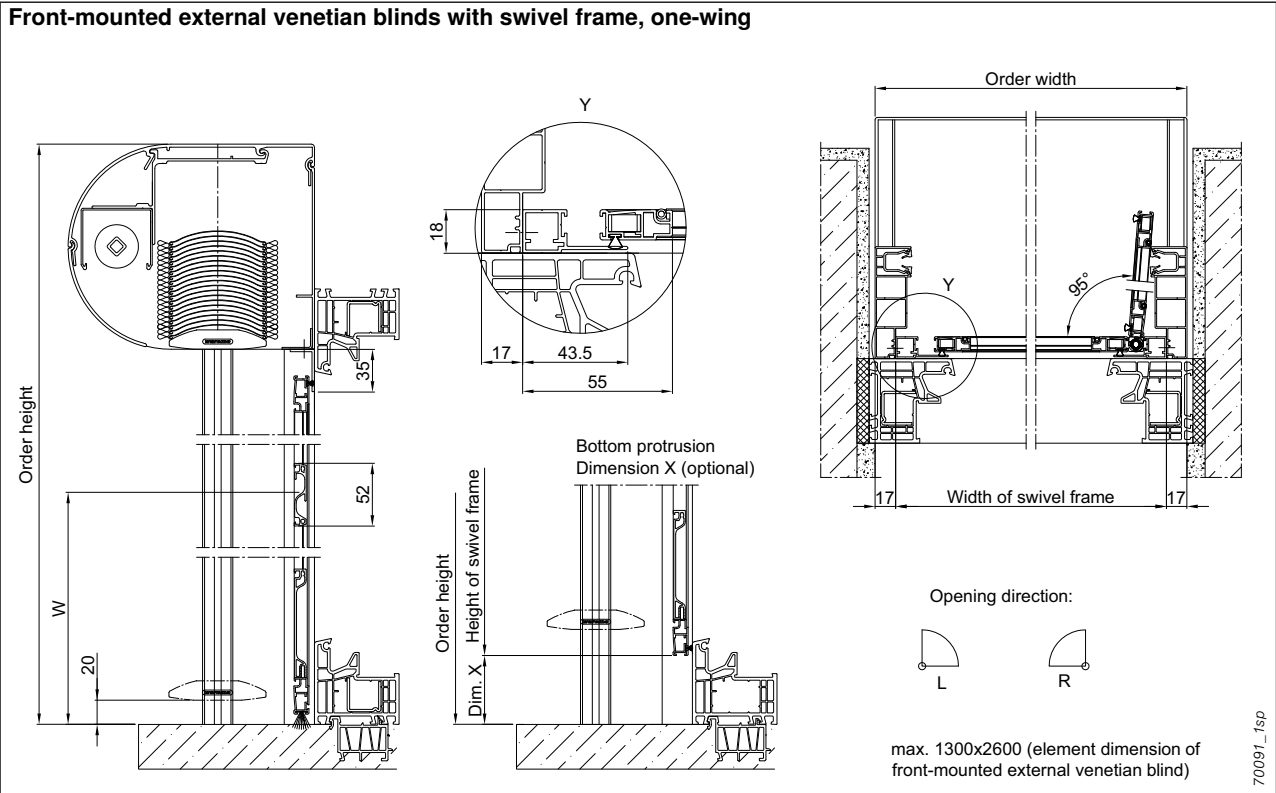


fig. 159: Front-mounted external venetian blinds with swivel frame, one-wing

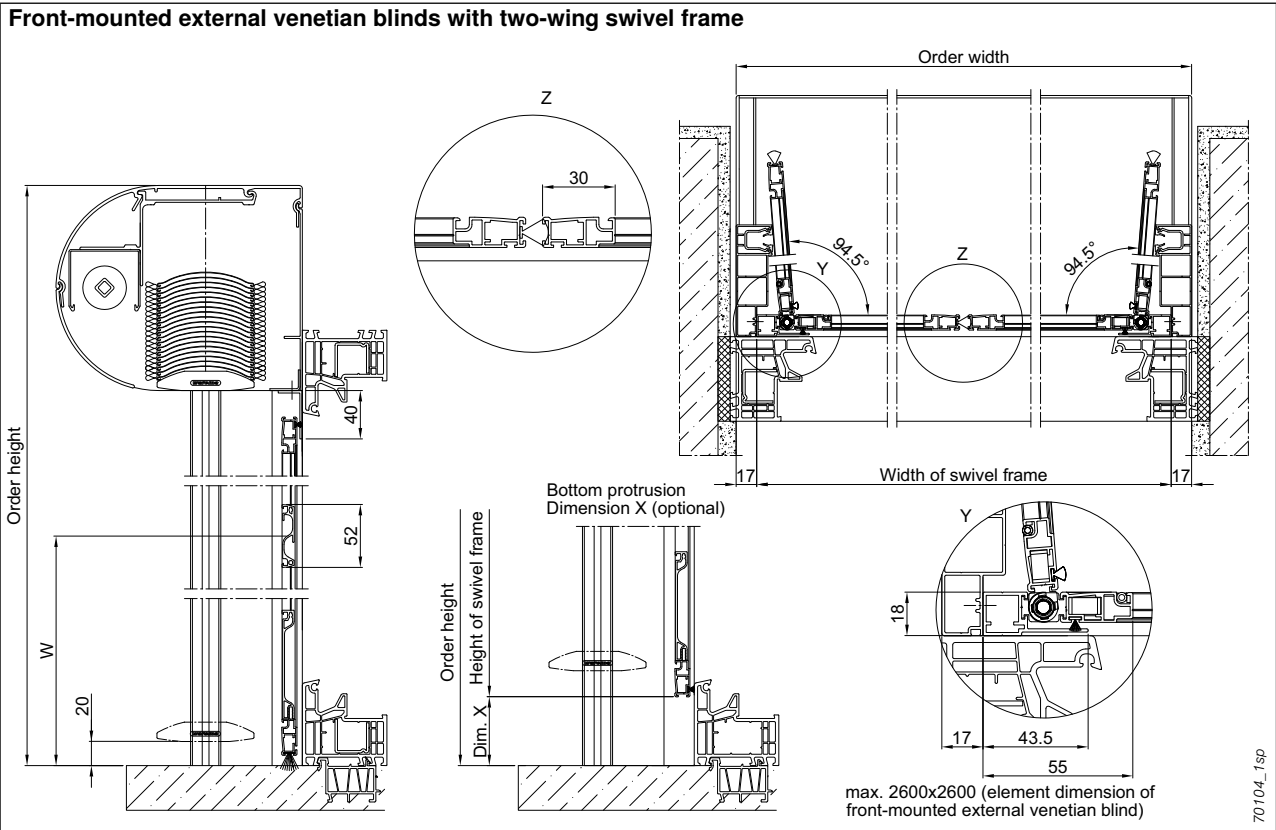


fig. 160: Front-mounted external venetian blinds with two-wing swivel frame

## Insect screen swivel frame

### Front-mounted external venetian blinds R10

General  
information

Product  
characteristics

Basic facade  
external venetian  
blinds

Premium facade  
venetian blinds

Complete external  
venetian blinds

Light guidance/  
external venetian  
blinds

Guides

Cover panels

Planning

Safety systems  
Accessories

Drives  
Control systems

#### Measuring for swivel frames – subsequent order

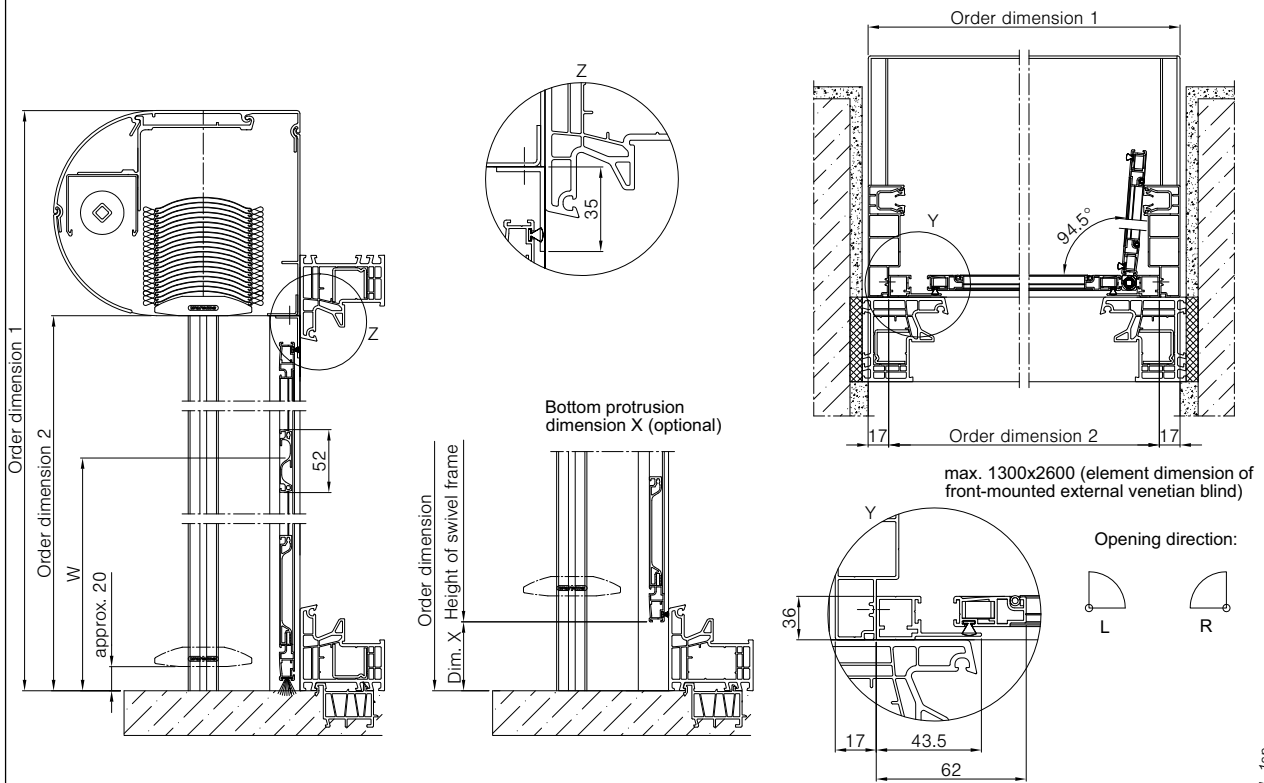


fig. 161: Front-mounted external venetian blinds with two-wing swivel frame

#### Construction limit values with insect screen swivel frame in mm

(element dimensions front-mounted external venetian blind R10)

R10	Width		Height <sup>1)</sup>	
	min.	max.	min.	max.
one-wing	500	1300	700	2700
two-wing	1000	2600	700	2700

<sup>1)</sup> From order heights over 1900 mm a step profile and a sash bar with an integrated handle rail is standard; if no dimension "W" is specified, the sash bar will be positioned centrally in the insect screen swivel frame.

For subsequent orders please state the box size.  
Alternatively the insect screen swivel frame can be ordered subsequently using the order and item number.

Ordering data for combinations

**Front-mounted external venetian blinds R6/R10**

Order data for K centre rail

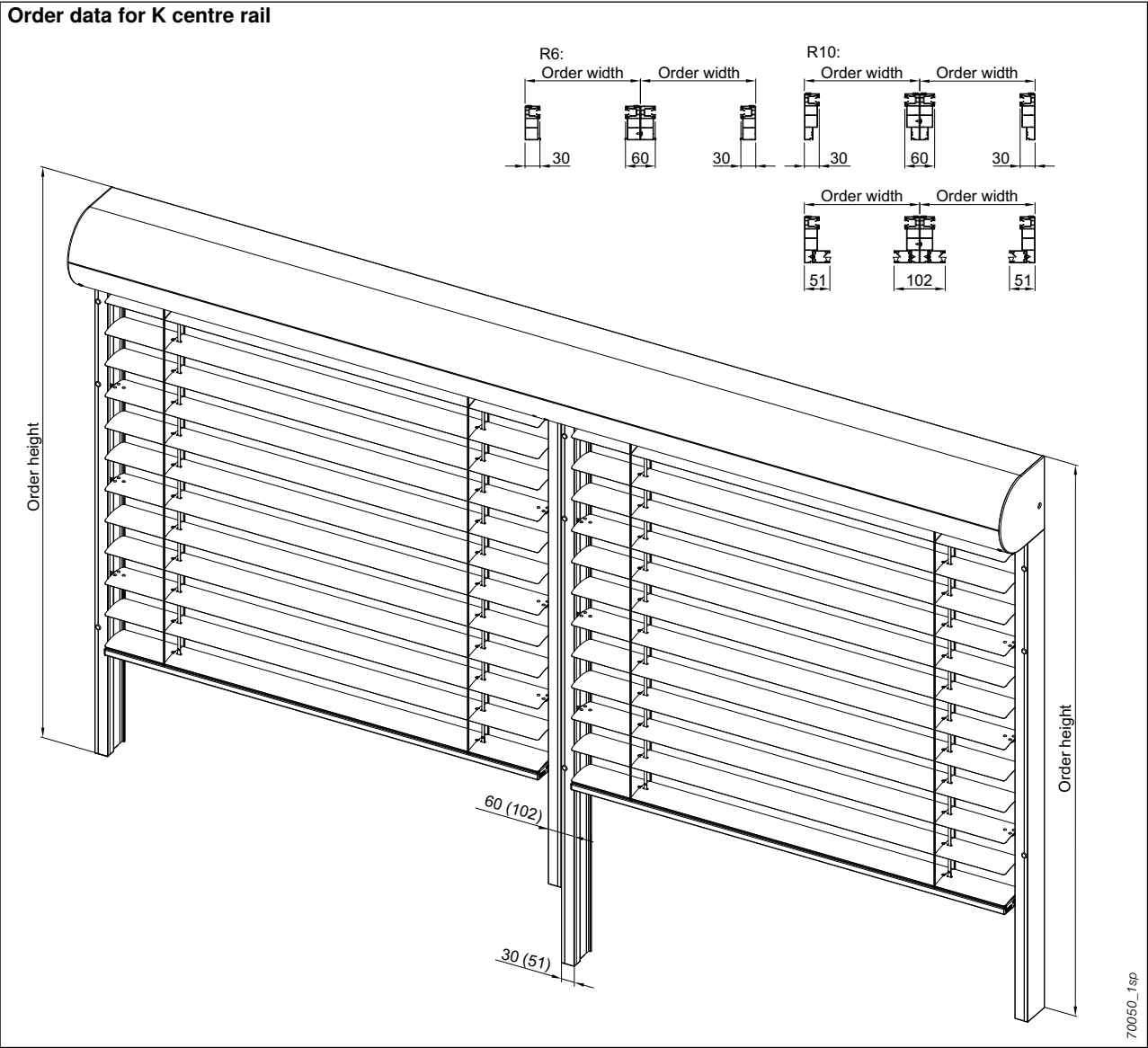


fig. 162: Order data for K centre rail



Box extension

Front-mounted external venetian blinds R6/R10

Box extension type 6

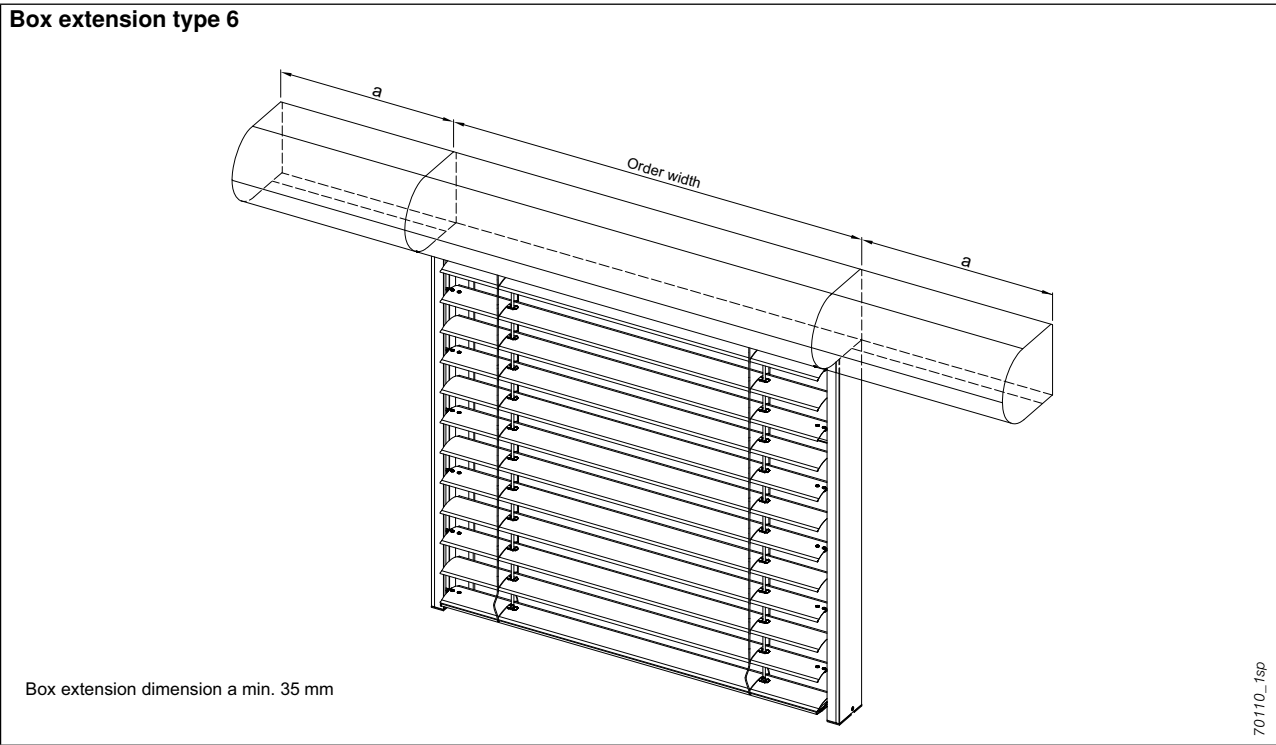


fig. 163: Box extension type 6

Box extension type 7

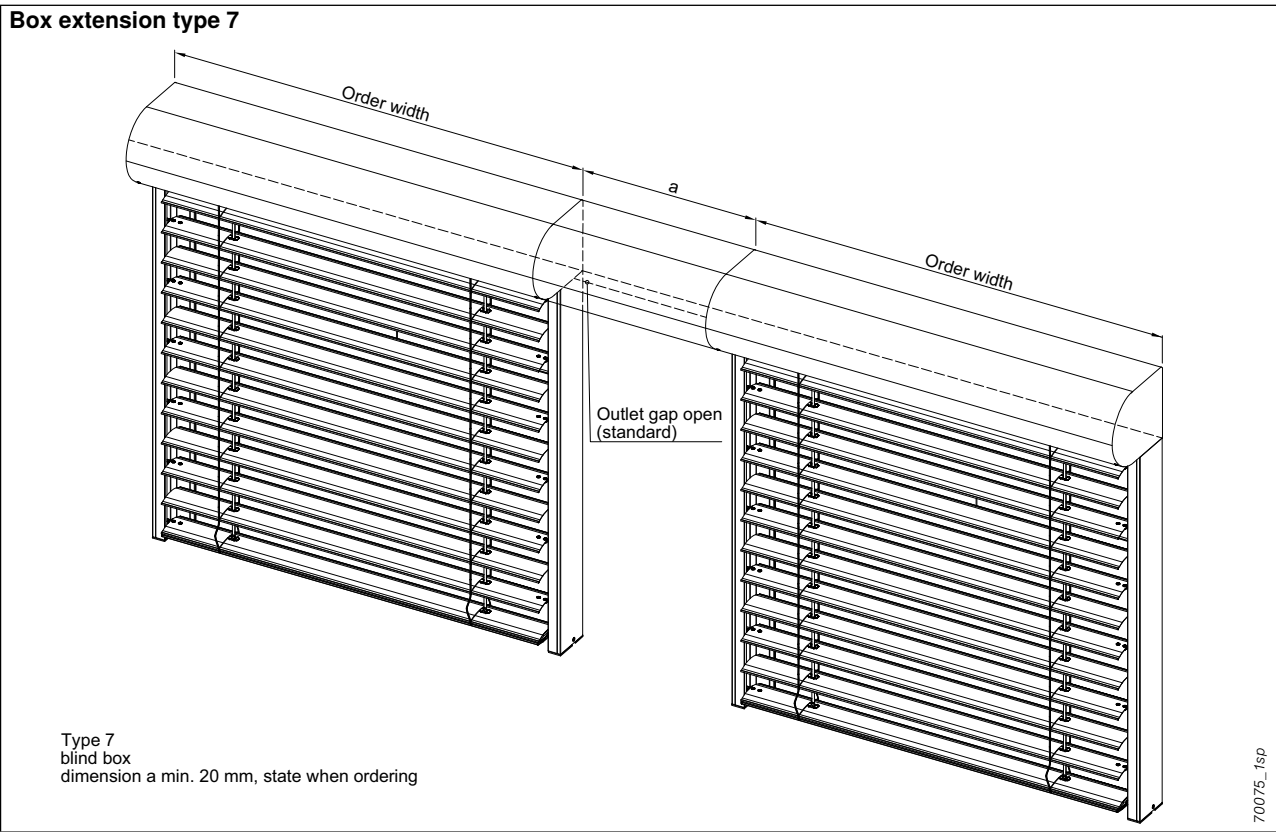


fig. 164: Box extension type 7

**Note:** The plaster base profile for box extensions and enlargements for model plaster is continuous up until the box end. Optionally without plaster base profile for enlargement/elongation.

## Box extension – outlet gap closed

### Front-mounted external venetian blinds R6/R10

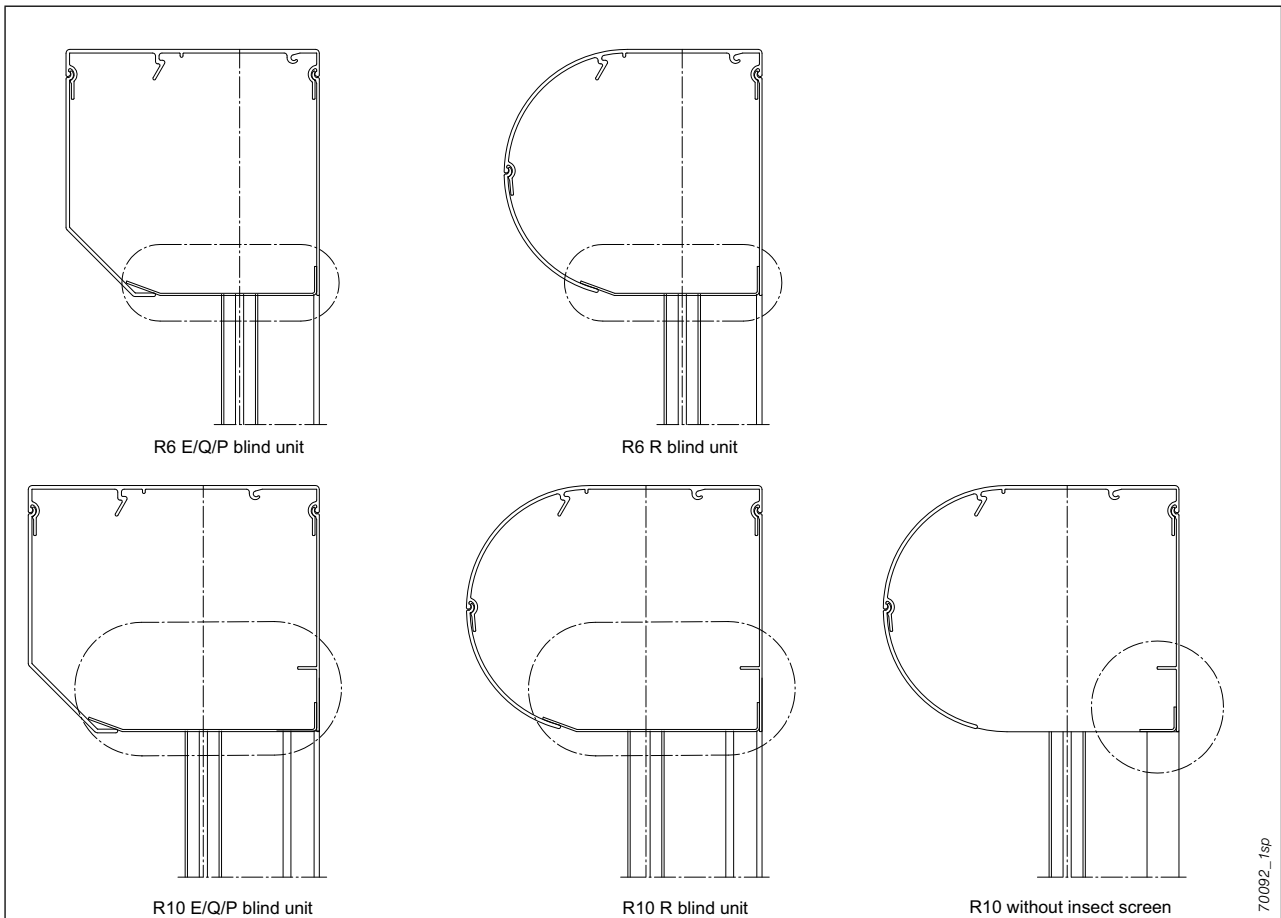


fig. 165: Box extension – outlet gap closed (optional)

### Possible cable outlets

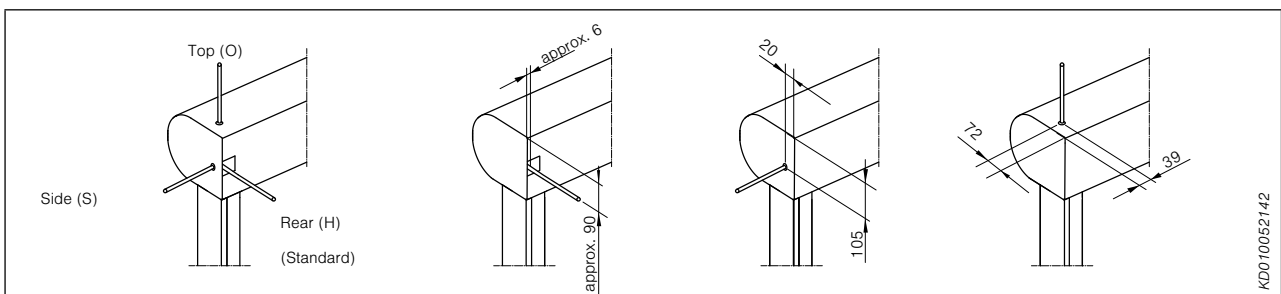


fig. 166: Cable exit

Cable exit at the rear = standard. With a lateral cable exit or one on the top, the motor line is sealed by means of plug-in grommet.  
Cable excess 1000 mm. Also optionally possible in 5000 mm or 10000 mm.

Box extension/corners

Front-mounted external venetian blinds R6/R10

Corner position outer angle

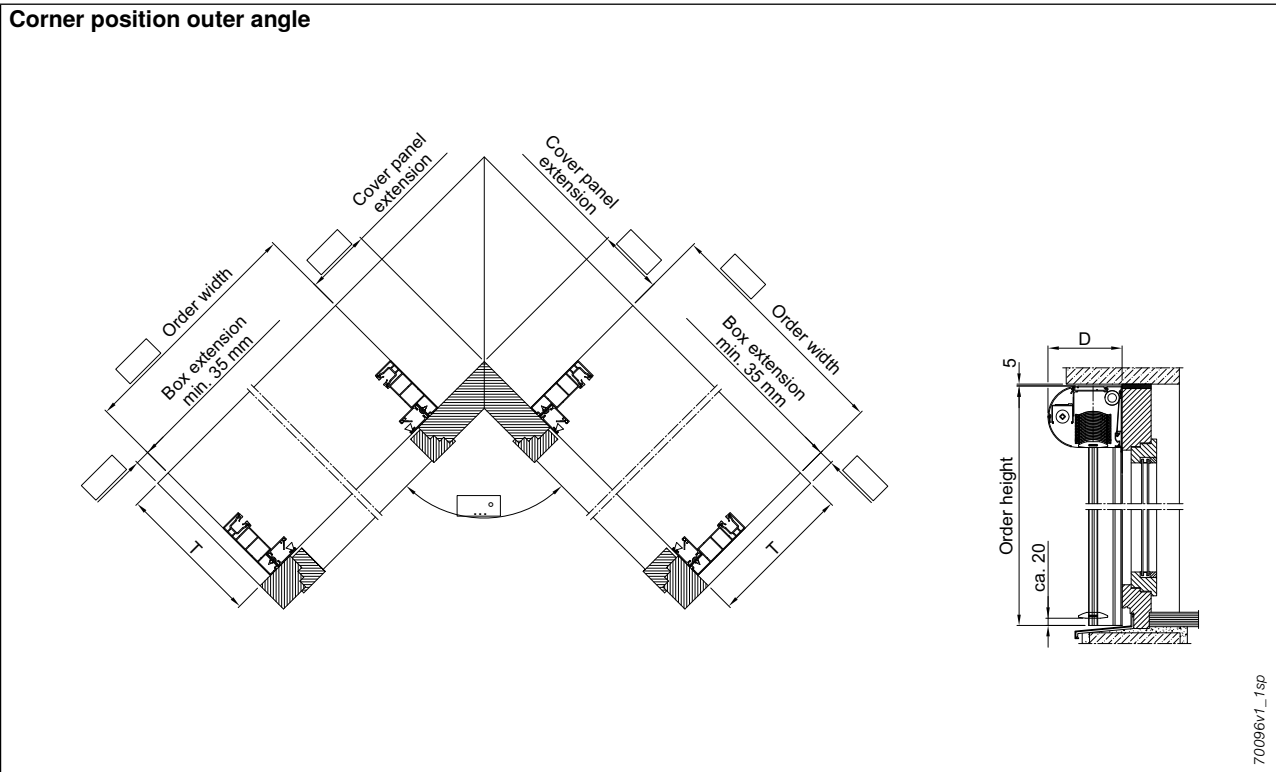


fig. 167: Corner position outer angle

Corner position outer angle – oriel

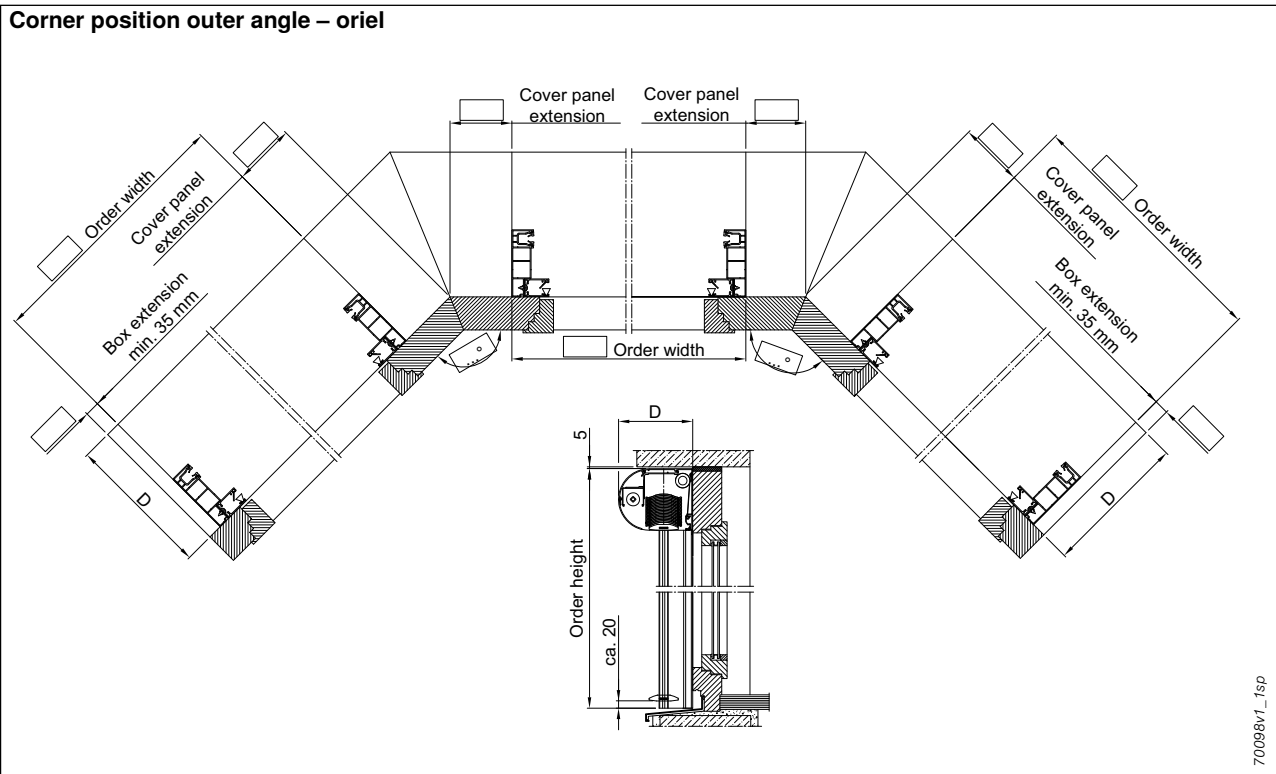


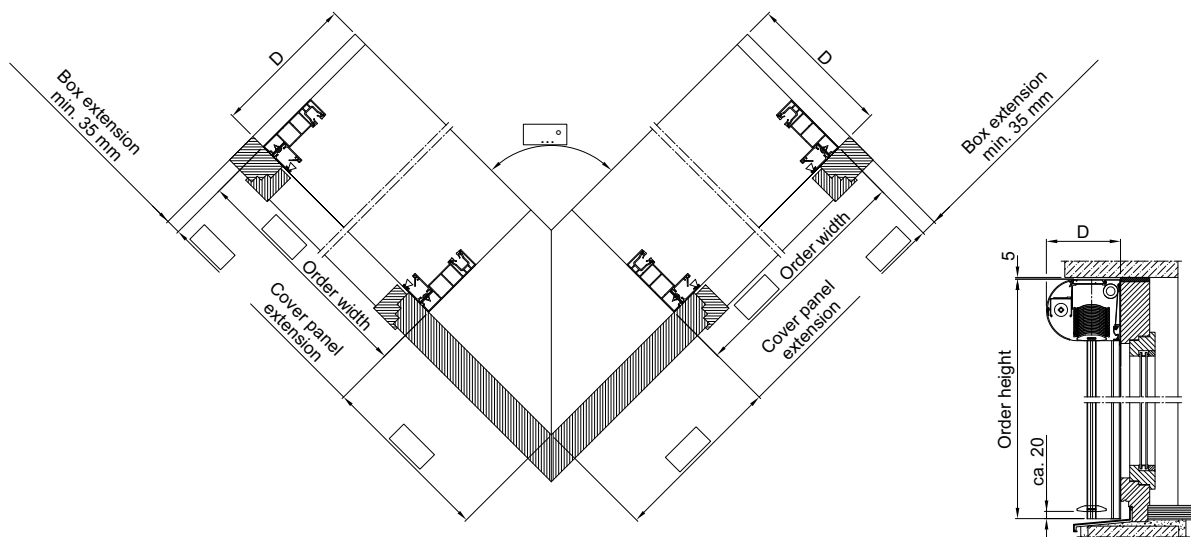
fig. 168: Corner position outer angle – oriel

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

## Box extension/corners

### Front-mounted external venetian blinds R6/R10

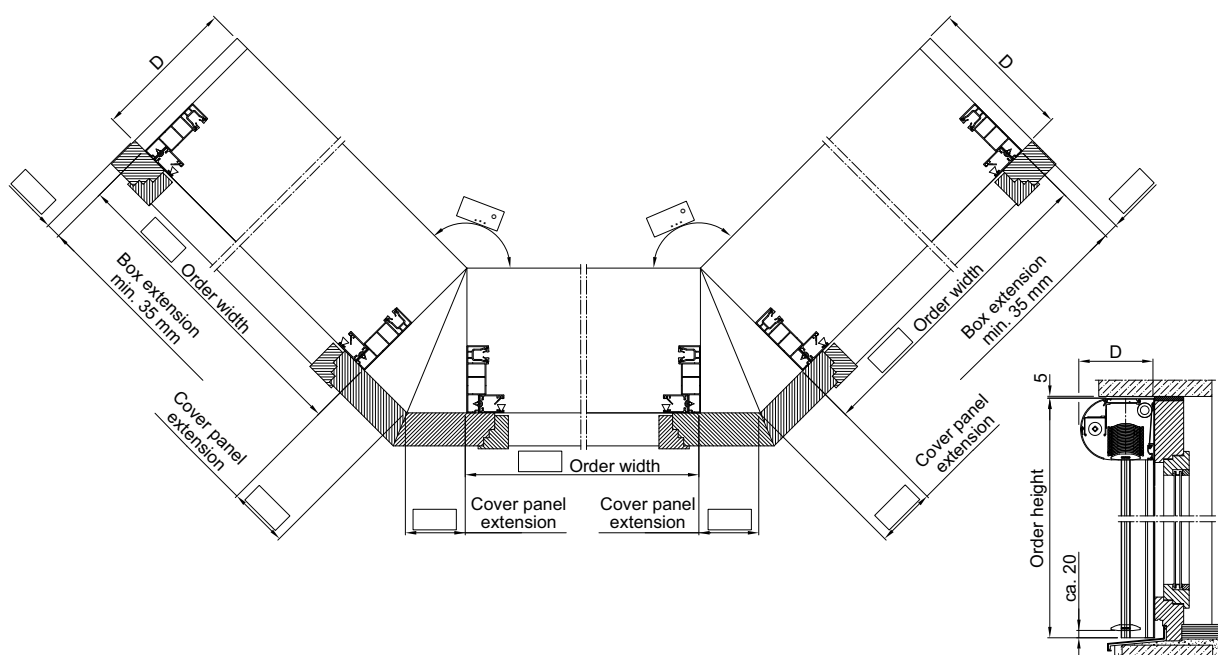
Corner position inner angle



70100v1\_1sp

fig. 169: Corner position inner angle

Corner situation inside corner – oriel



70102v1\_1sp

fig. 170: Corner situation inside corner – oriel

## Additional box fastening

### Front-mounted external venetian blinds R6/R10

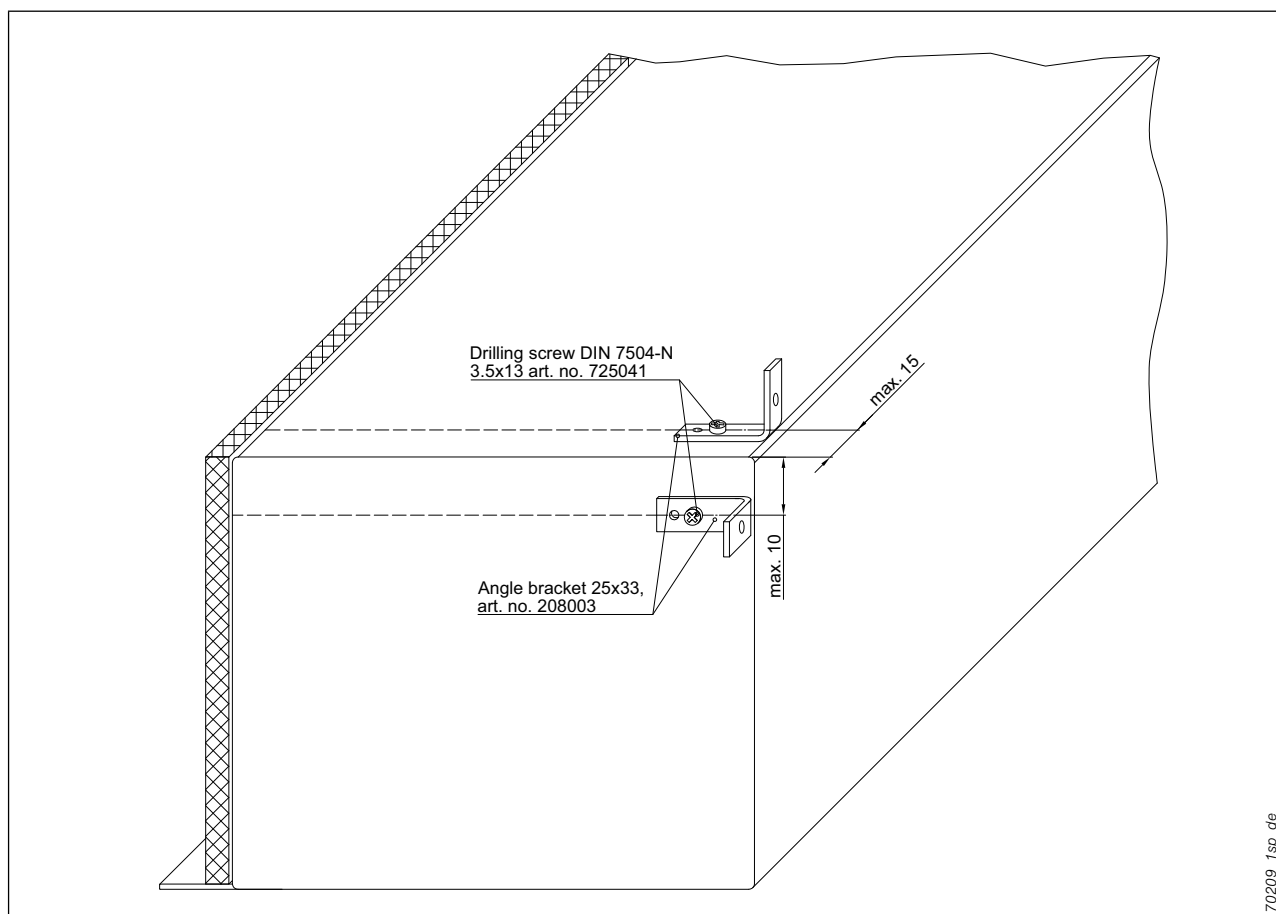


fig. 171: Additional box fastening

**From order widths over 1500 mm we recommend an additional box fixing for elements set in plaster. For models with plaster elements or for box shape Plaster these are always supplied without surcharge.**

#### Scope of delivery

Angle bracket 25x33 mm, art. no. 208003  
per angle bracket: 2 drilling screws DIN 7504-3.5x13,  
art. no. 725041

#### Notes:

- The fixing brackets can be positioned alternatively at the top or at the side
- Do not use any screws longer than the ones supplied
- The maximum clearances (10 and 15 mm, resp.) have to be observed
- The angle bracket can also be turned and moved along the lines shown

Drilled hole for on-site installation 4.2 mm

# Operation details Front-mounted external venetian blinds R6/R10

80 mm flat slats

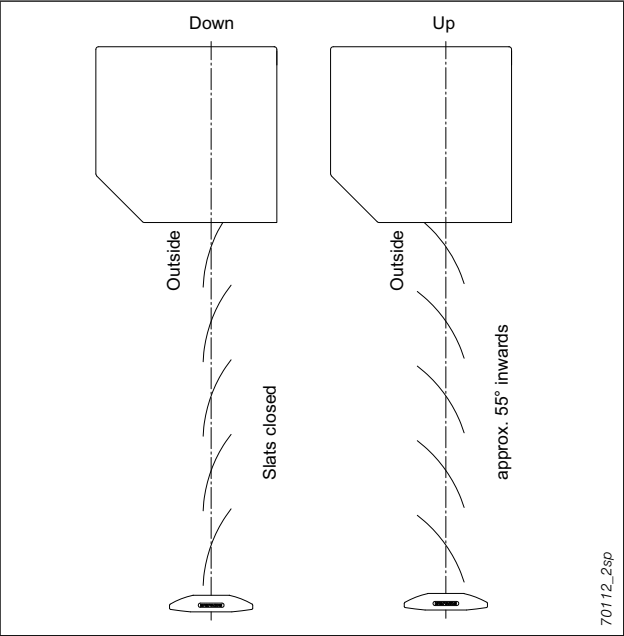


fig. 172: Tilting behaviour 80 mm flat slat

Model with flat slats

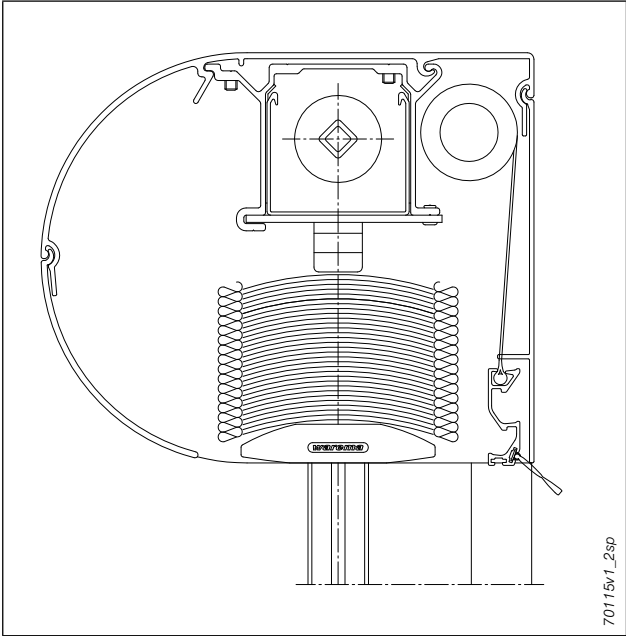


fig. 174: Model with flat slats

Tension cable bracket type S01 for 80 mm flat slats

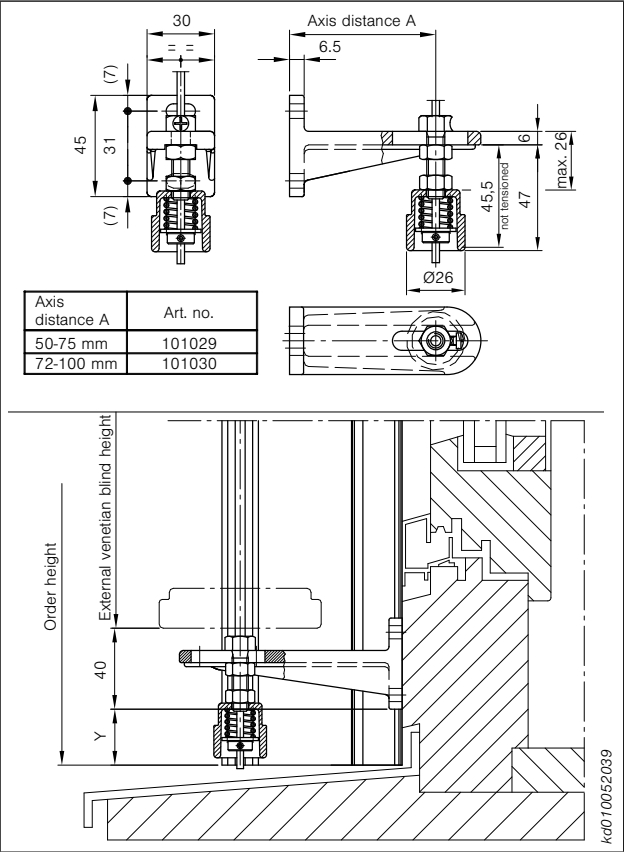


fig. 173: Tension cable bracket type S01 for 80 mm flat slats

For models with flat slats type 80 AF A6 the unit is also produced with the top rail above the slats, depending on curtain height, box size and options.  
For models with crank drive only this model is used.

For models with flat slats type 80 AF A6, a tensioning cable must be used in the centre of the curtain for wind protection from an ordered width of 2400 mm.

Specify dimension "Y" when ordering.

## Operation details

### Front-mounted external venetian blinds R6/R10

#### Crank operation

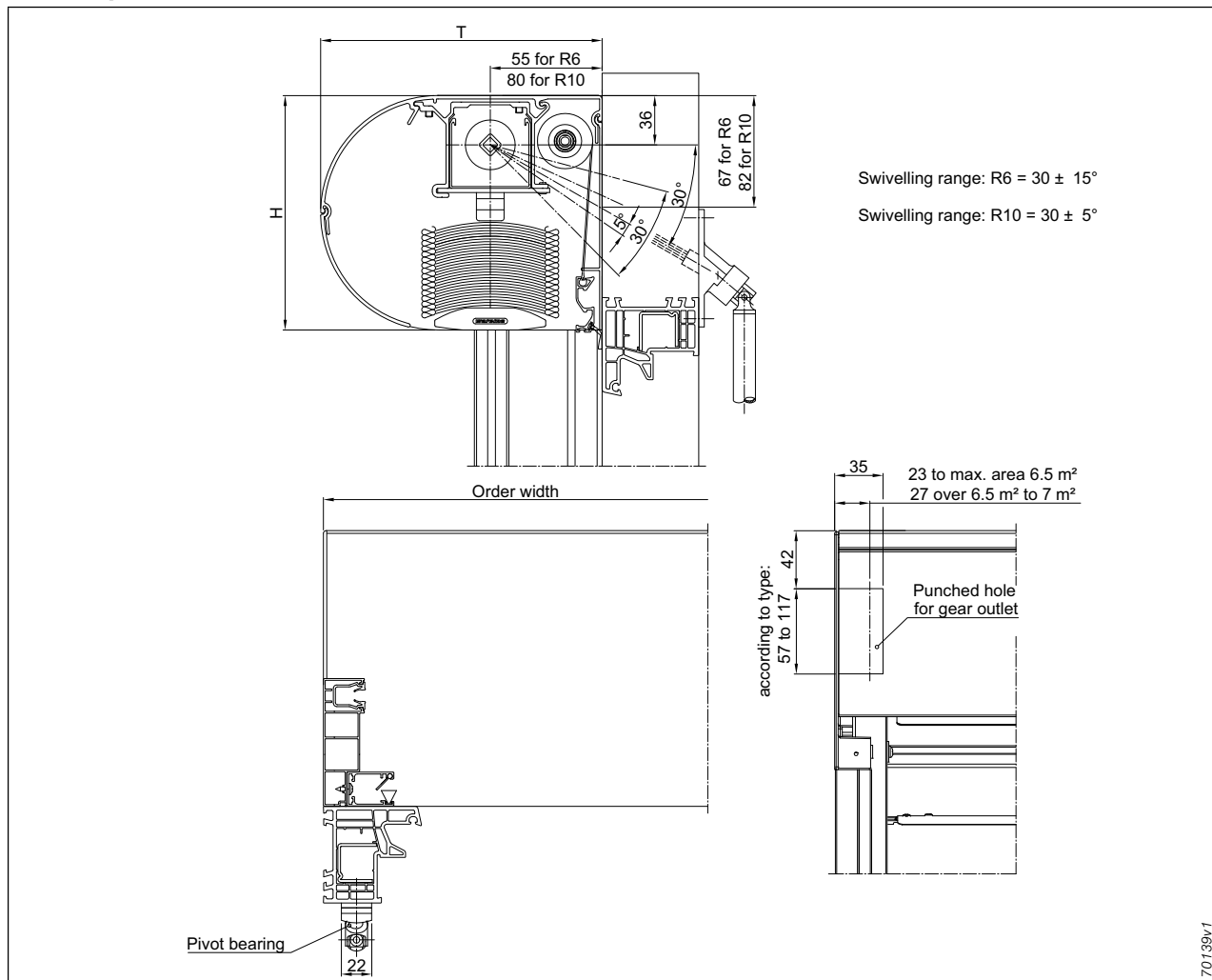


fig. 175: Crank operation

#### Notes:

- Max. curtain area for crank drive 7 m<sup>2</sup>
- Max. 3 units can be coupled, only opposite side to operation side
- Gear outlet according to drawing
- Steel pivot bearing, nickel plated, crank C0 anodised
- External gear or gear in box extension not possible
- Only available for type 80 AF A6

#### Solar drive <sup>1)</sup>(optional)

Concealed, maintenance-free 12 V DC middle motor with flanged planetary gear and shaft outlet on both sides. Integrated control electronics for speed regulation and limit position limitation. Battery-aided 12 V controller with EWFS hand-held radio transmitter, time logic function, 12 V battery and solar panel. Upper and lower limit position adjustable.

**Note:** Control via weather station not possible!

#### Construction limit values for solar drive

	Width in mm	
	min.	max.
1 solar panel piece	760	according to table of construction limit values
2 solar panel pieces	1100 <sup>1)</sup>	according to table of construction limit values

<sup>1)</sup> for solar panel on box.

Solar panel mounted alternatively right or left.  
Can optionally be supplied loose.

<sup>1)</sup> Sold exclusively in Germany, Austria and Switzerland.

**Notes**



## Contents

### Top-mounted external venetian blinds for new buildings NA-RA

Description .....	196
Construction limit values .....	199
Determining dimensions/ordering data .....	200
Window connection .....	202
Box fastening .....	204
Integrated ventilation .....	209
Determining dimensions/ordering data .....	210
Slat tilting .....	221
Construction limit values for insect screens .....	223
Measuring instructions for insect screens .....	224
Test values .....	227

Solflex AB försäljning och service västra Skåne. Showroom och rådgivning;  
Malmö Slussplan 1, 040-979745. Helsingborg Garnisonsg 12, 042-161635.  
kontakter@solflex.se www.solflex.se

**You can find information on top-mounted roller shutters for new buildings in the roller shutter technical data, art. no. 2016093**

## Description

### Top-mounted external venetian blinds for new buildings NA-RA

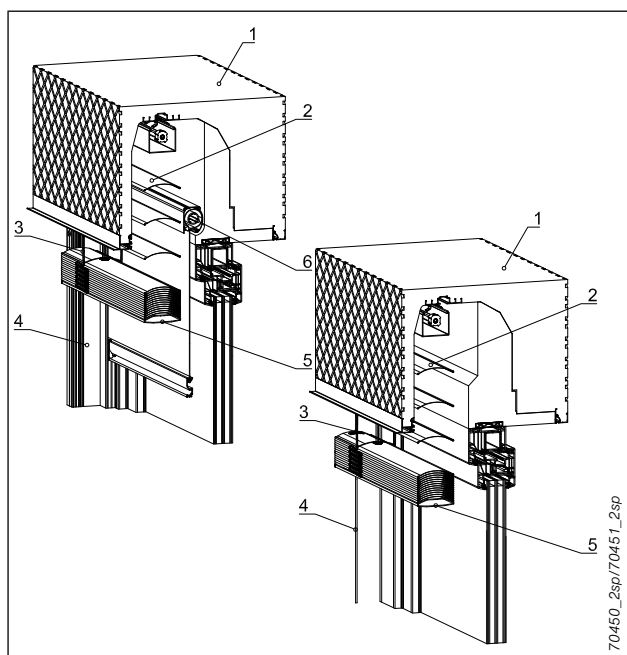


fig. 176: Top-mounted external venetian blind for new buildings NA-RA M

- 1 Box
- 2 Slats
- 3 Tilting and lifting tape
- 4 Guide rail/tension cable
- 5 Bottom rail
- 6 Insect screen roller blind

## Application

For mounting on the window frame on new buildings.

## Installation note

For NA-RA individual systems the external venetian blinds are preinstalled in the boxes at the factory.  
For group units the curtains are supplied loose. For clinker brick model (K) the venetian blind is not supplied pre-installed in the box.

## Operation

### Motor

The slats are raised and lowered as well as tilted by actuating a switch.

Voltage: 230 V AC, other voltages optional

Frequency: 50 Hz, other frequencies optional

Degree of protection: IP 54

Plug-in connector: Hirschmann coupling

The drive switches off upon reaching the upper or lower limit position using built-in, adjustable limit switches.

### Box (1)

2 box shapes (M/K), 3 box depths, 1 box height

Material: polystyrene with foamed, profiled steel plates for reinforcements in the side of the box

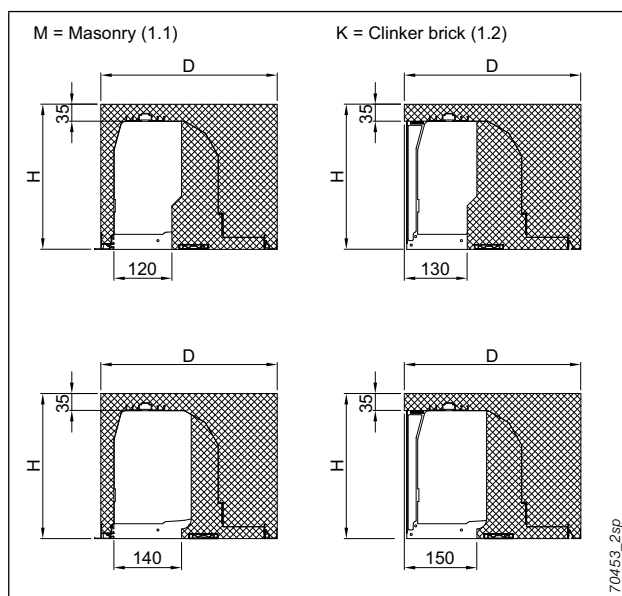
Dimensions: see table

Lateral side covers: plastic

Plaster base profile: standard 11 mm

For information on heat and sound insulation, see page 227.

Boxes type "M" are supplied with the preinstalled venetian blind in the box.



## Box dimensions in mm

Box size	D	H
300	365	300
365	365	300
425	425	300

## Top rail

Material: aluminium, extruded

Material thickness: 1.5 mm

Dimensions (WxH): 59x51 mm

Profile: C-shaped profile

Surface: plain, optionally powder-coated or anodised

Fixing: with noise-optimised top rail brackets made of plain aluminium.

## Tilt rod

Material: steel, zinc-coated

Material thickness: 1 mm

Dimensions (WxH): 12 x 12 mm

Profile: square tube

Surface: plain

## Bearing

Maintenance-free, enclosed

Housing: plastic, with Teflon

Tilting reel: plastic

Tape reel: plastic

Segment tilting to prevent self-acting adjustment of slats.

## Description

# Top-mounted external venetian blinds for new buildings NA-RA

## Slats (2)

### Beaded slats (2.1)

Beaded on both sides, curved, type 80 S

Material: aluminium, special alloy

Material thickness: approx. 0.44 mm

Dimensions (W): 80 mm

Installation: convex

Surface: enamel finish resistant to corrosion using a special process

Colour: according to WAREMA colour chart for external venetian blinds

All cutouts in the slats are fitted with black eyelets to guide the lifting tapes (reduction of wear) and for attaching the webs of the tilting tape.

Optional: Slat cutouts with surrounding beaded edges, instead of eyelet for lifting tape, outlet size approx.

6.5 x 8.5 mm, tilting tape connection via horseshoe cutout.

The blind moves down with the slats closed to the outside and moves up with the slats closed to the inside.

### Flat slats (2.2)

Curved, no eyelets

Material: aluminium, special alloy

Material thickness: approx. 0.45 mm

Dimensions (W): 80 mm

Profile: convex

Surface: enamel finish resistant to corrosion using a special process

Colour: according to WAREMA colour chart for external venetian blinds

The top slat is reinforced.

Optionally all slats are available with protective eyelets.

The blind descends with the slats closed to the outside and moves up with 55° slats tilted to the inside.

### Dim-out slats (2.3)

Edges beaded on both sides, special profile

Material: aluminium, special alloy

Material thickness: approx. 0.44 mm

Dimensions (W): 73/93 mm

Profile: special profile, front rolled beads with sealing strip made from flexible plastic

Surface: enamel finish resistant to corrosion using a special process

Colour: according to WAREMA colour chart for external venetian blinds

All edges of the cutouts in the slats are continuously beaded in order to reduce wear of the lifting tape to a minimum.

The external venetian blind moves down with the slats closed and moves up with the slats positioned horizontally.

## Tilting tape/lifting tape (3)

### Tilting tapes (3.1)

Special heavy-duty version with double webs

Material: polyester, with Kevlar core

Colour: black, optionally grey

Each slat is attached to the top web of the tilting tape.

For the model with dim-out slats, the loop cord is tied to the slat by means of stainless steel clips.

### Lifting tapes (3.2)

Material: polyester, with special coating

Colour: black, optionally grey

## Lateral guidance (4)

### Rails

With plastic guide profile for nipple guiding and noise reduction, incl. water-repelling end caps.

Material: aluminium, extruded

Dimensions (WxD): 27.5x87/95 mm

Surface: powder-coated, optionally anodised

Fixing: directly on the window frame

Guide pin: polyamide, fibreglass-reinforced, impact-resistant connection with the slats. Slats alternately pinned (beaded slats and dim-out slats), every 3rd slat is pinned on both sides (flat slat).

On models with insect screen the guide rails for the insect screen are screwed to the rails or can be optionally retrofitted.

## Bottom rail (5)

with end caps (moving with the unit for types 73/90/93)

Material: aluminium, extruded

Dimensions (WxH): 73/93x20 mm/80x15 mm

Surface: powder-coated, optionally anodised

End caps: plastic, black, optionally grey

Bottom rail with sliding guide pins with slotted end caps to prevent the blind from unhinging. For dim-out slats with bottom rail with stabilising webs, integrated fall protection and clip-on slat with matching design as lower closure.

## Colours

Powder coating of aluminium parts with chrome-free pre-treatment according to valid RAL CLASSIC colour chart (except camouflage and luminous colours) or in six DB colours as well as eight textured colours (W4914 - W4921), four anodised-look colours (WC31 - WC34) and further colours according to WAREMA Colour World (in WAREMA colour specification).

Other colour specifications and special colours are available on request at a surcharge.

## Description

### Top-mounted external venetian blinds for new buildings NA-RA

#### Insect screen (6) (optional)

##### Insect screen cassette roller blind (6.1)

Insect screen cassette roller blind for vertical mounting between sun shading curtain and window.

Operation: with handle rail, fixing of handle rail by engaging into the labyrinth closure

##### Curtain

Material: gauze made from plastic-coated fibre-glass mesh

Colour: WAREMA VisionAir gauze, black, highly transparent

##### Profiles

Material: aluminium, extruded

Surface: powder-coated

Dimensions (WxH): guide rails 24x34 mm  
Handle rail 40x13 mm

Brush seal: brush seal in handle rail and guide rail

##### Insect screen swivel frame (6.2)

Models with 1 or 2 wings. The swivel frame opens outwards. Comprises integrated closing aid and surrounding brush sealing strip.

Operation: up to a frame height of 1800 mm with handle, from a frame height 1801 mm with cross rail with integrated handle rail.

##### Curtain

Material: gauze made from plastic-coated fibre-glass mesh

Colours: WAREMA VisionAir gauze, black, highly transparent

##### Profiles

Material: aluminium, extruded

Surface: powder-coated

Dimensions (WxH): frame profile 12.5x30 mm and 12.5x28 mm; cross rail with integrated handle rail 10x52 mm

##### Plastic parts

Colours: white, grey, brown or black

Dimensions (WxH): frame profile 12.5x50 mm, cross rail 10x25 mm with integrated handle rail 10x52 mm

## Construction limit values

### Top-mounted external venetian blinds for new buildings NA-RA

You can also use our free planning programme on [www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de) for planning your sun shading control systems – here you can configure the product and create a technical drawing to be integrated into your plans.

For further installation examples for different wall structures for use in consultations please see our external venetian blinds brochure, art. no. 115201.

#### Construction limit values in mm

Box height	Type <sup>1)</sup>	Individual units				Combinations		
		Width		Order height without stack protrusion	approx. protrusion per 100 mm additional height in mm	Area <sup>2)</sup> in m <sup>2</sup>	Coupled width <sup>3)</sup> continuous box	Slat width
Rail guidance								
300	E 80 A6 S	680	4000	3200	5	16	4000	80
	E 80 A6 S TG	680	4000	3200	5	16	4000	80
	E 80 AF A6	680	4000	4000	3	16	4000	80
	E 80 AF A6 (with eyelets)	680	4000	4000	3	16	4000	80
	E 73 A6	680	4000	2800	5	15	4000	73
	E 90/93 A6	680	4000	3800	4	15	4000	93
Cable guidance								
300	E 80 A2 S	680	4000	3200	5	16	4000	80
	E 80 A2 S TG	680	4000	3200	5	16	4000	80
	E 80 AF	680	4000	4000	–	16	4000	80
	E 80 AF (with eyelets)	680	4000	4000	–	16	4000	80
	E 73 A2	680	4000	2800	5	15	4000	73
	E 90/93 A2	680	4000	3800	4	15	4000	93

<sup>1)</sup> Asymmetrical running of slats cannot be prevented for smaller widths, min. width = back edge of external venetian blinds guide rail

<sup>2)</sup> The specified maximum areas depend on the individual height (see "Height-to-width ratio of external venetian blinds" on page 392).

<sup>3)</sup> The construction limit values defined for each item under the individual units must be adhered to for combinations as well, max. 3 units can be coupled.

#### Note:

For external venetian blinds with vivamatic® or slowturn equipment, the construction limit values of the respective basic type apply. In this case, up to 3 curtains can be used as a group unit using one drive.

If insect screens are used, the construction limit values on page 223 are applicable.

## Determining dimensions/ordering data

### Top-mounted external venetian blinds for new buildings

#### NA-RA 300/365/425 M/K

##### Protrusion of bottom rail

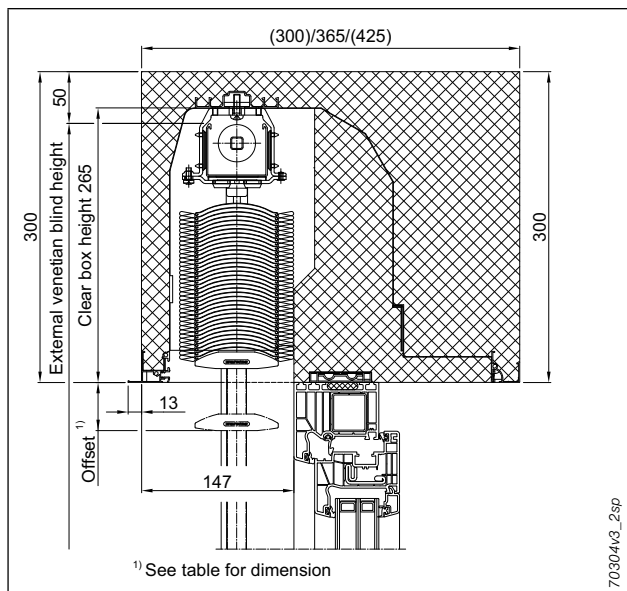


fig. 177: Protrusion of bottom rail

##### Tolerances

Slat stack height:  $\pm 10$  mm

Stack parallelism with retracted external venetian blind:  $\pm 10$  mm

##### Additional box fastening

Details of box fastening on page 206.

##### Note on general order data:

- Note offset of guide rails (see details)
- Order width = window width
- Order height = window height + box height
- Operation side seen from inside
- Specify box size (see overview of boxes on page 201)
- Note connection to window sill (page 286 f.)
- For units from 2400 mm width and flat slats, please state position of the tension cable brackets (page 216)

##### Note on measuring:

Box length = width of the window frame, this should be at least 20 mm, but no more than 60 mm narrower than the width of the masonry opening. This is necessary to ensure best possible application of PU foam in the area of the side cover and the masonry. Any valid guidelines and regulations have to be complied with.

##### Cable exit

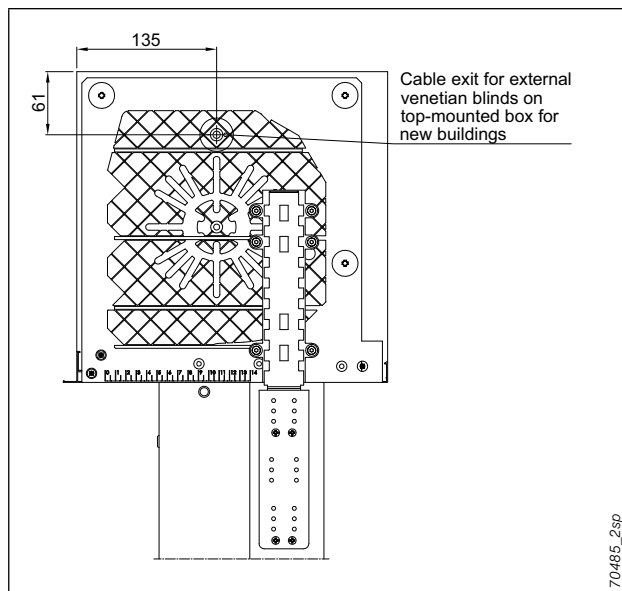


fig. 178: Cable exit

##### Cable exit

- cable exit left or right at end of box
- Standard 1000 mm cable whip, optionally 5000 mm or 10000 mm also possible.
- Motors for other operating voltages are available on request.

## Dimension diagrams for boxes

### Top-mounted external venetian blinds for new buildings NA-RA 300/365/425 M/K

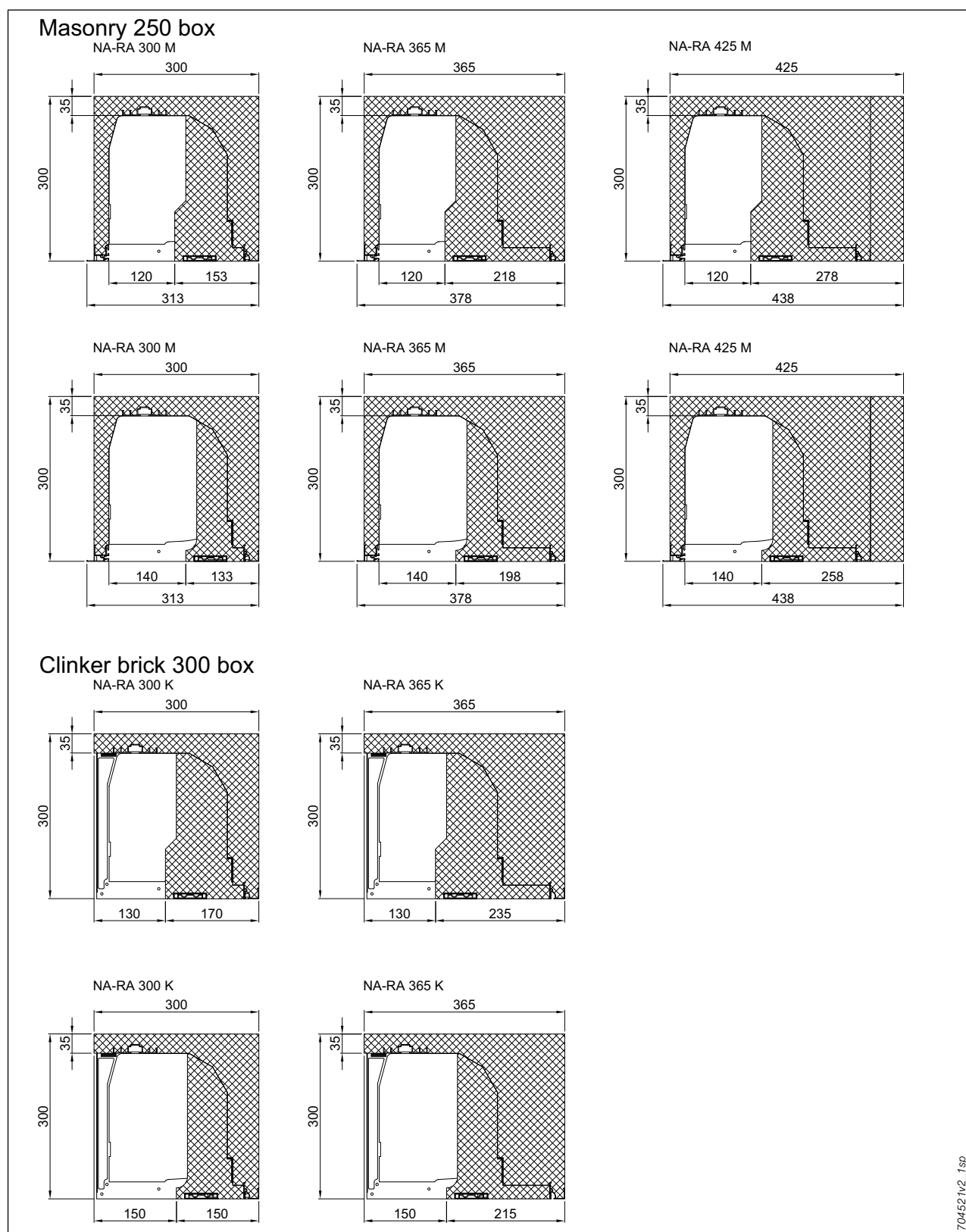


fig. 179: Dimension diagram for box NA-RA M and NA-RA K

## Window connection

### Top-mounted external venetian blinds for new buildings NA-RA

#### Window connection using plastic profile (standard)

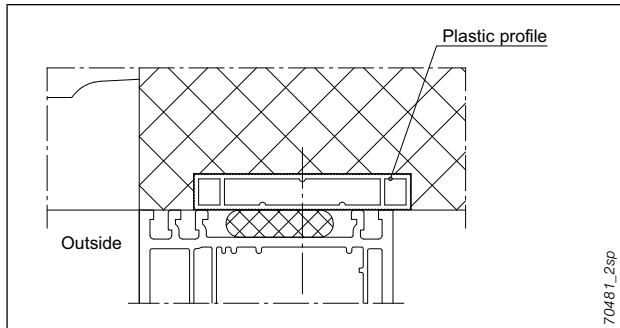


fig. 180: Window connection using plastic profile

##### Note:

- Plastic profile, white, integrated/bonded in the insulating wedge of the lintel box

##### Fixing:

- The box is bolted across the window width on the window frame from below through the plastic profile.

Recommendation: from a width of 1600 mm, we recommend the use of an additional stiffener profile made of steel.

#### Window connection using plastic profile with additional stiffener profile made of steel (optional)

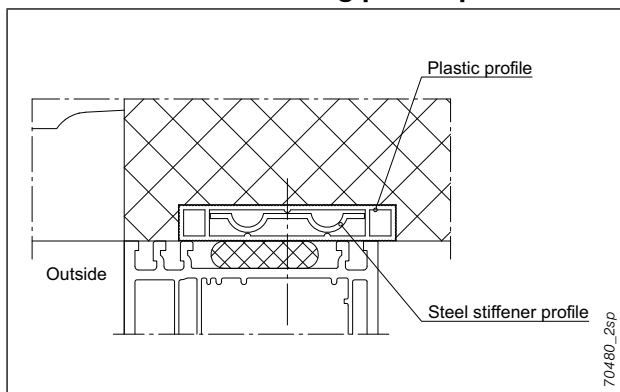


fig. 181: Window connection using plastic profile with stiffener profile made of steel

##### Notes:

- Model as above, but with an additional stiffener profile made of steel which is pushed into the plastic profile.
- We recommend this model for a width of 1600 mm and more.

##### Fixing:

- The box is bolted across the window width on the window frame from below through the plastic and steel profile.

Stiffener profile made of steel:

Area moment of inertia  $I_y = 0.89 \text{ cm}^4$



### Window connection through clip attachment using window adapter profile made of plastic (optional)

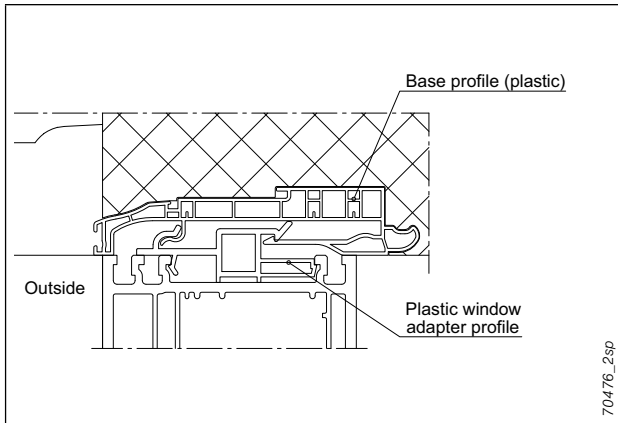


fig. 182: Window connection through clip attachment, plastic adapter profile

#### Notes:

- For a permanent connection over the entire window width
- Available for all box sizes and window frame thicknesses from 70 mm
- Basic profile integrated/bonded in the insulating wedge
- Plastic window adapter profile to match the window frame, various models available

#### Fixing:

- Depending on the window type, the window adapter profile is clipped or bolted onto the window frame.
- The box is then pushed onto the window adapter profile and clipped in position using the integrated basic profile

### Window connection through clip attachment using window adapter profile made of steel (optional)

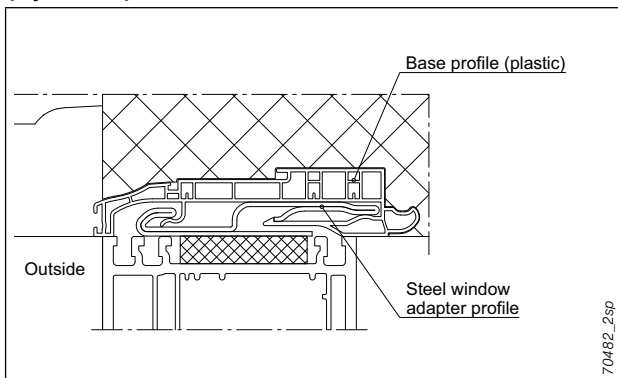


fig. 183: Window connection through clip attachment, steel adapter profile

#### Notes:

- Model as above, but with a window adapter profile made of steel for additional stiffening of the window to increase the moment of inertia.
- We recommend this model for a width of 1600 mm and more.

#### Fixing:

- The window adapter profile is bolted onto the window frame
  - The box is then pushed onto the window adapter profile and clipped in position using the integrated basic profile
- Window adapter profile made of steel  
Area moment of inertia  $I_y = 8.3 \text{ cm}^4$

#### Notes:

- The connecting joint between the window frame and the box (depending on the window connection) must be sealed in accordance with the circumstances on site
- To improve the structural strength, the use of structural consoles is possible in the version "Window connection using plastic profile with additional stiffener profile made of steel". You can find details about this model at [www.warema.de/NA-RO](http://www.warema.de/NA-RO) in the Accessories section.

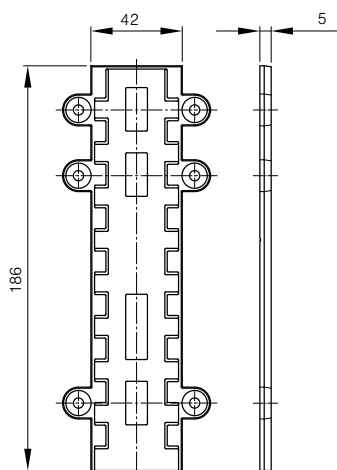
## Box fastening

### Top-mounted external venetian blinds for new buildings NA-RA

#### Standard fixation of box on window

##### Mounting sleeve

Art. no. 304181



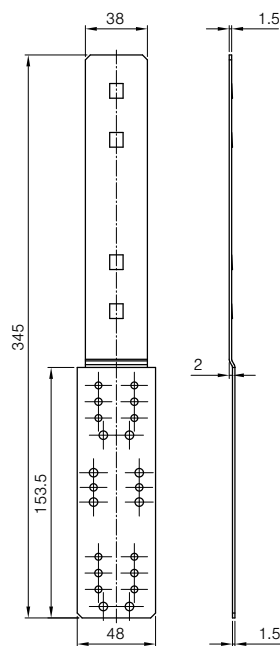
KD031900730

fig. 184: Mounting sleeve

##### Connecting plate, universal

345x48 with 2 mm drawn-in

Art. no. 2009848

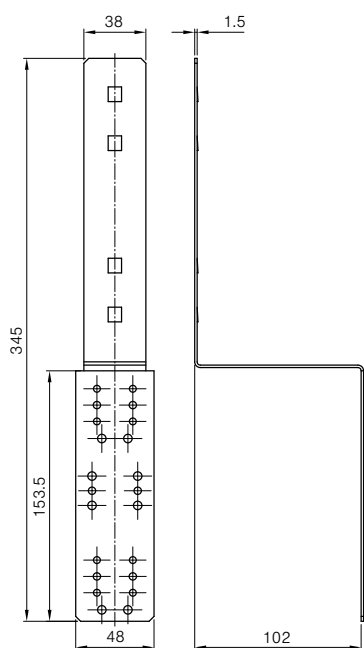


KD031900731

fig. 185: Connecting tab

##### Z tab at an angle of 90° for box extension type 5 with dimension 100 mm

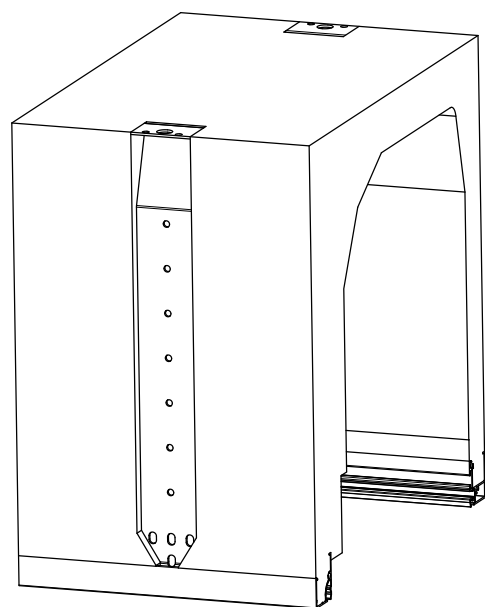
Art. no. 2009849



KD031900732

fig. 186: Z tab at an angle of 90° for box extension type 5

##### Ceiling mounting for box



KD031900805

fig. 187: Tab for ceiling mounting for combinations

Box fastening

Top-mounted external venetian blinds for new buildings NA-RA

Top-mounted external venetian blinds for new buildings NA-RA

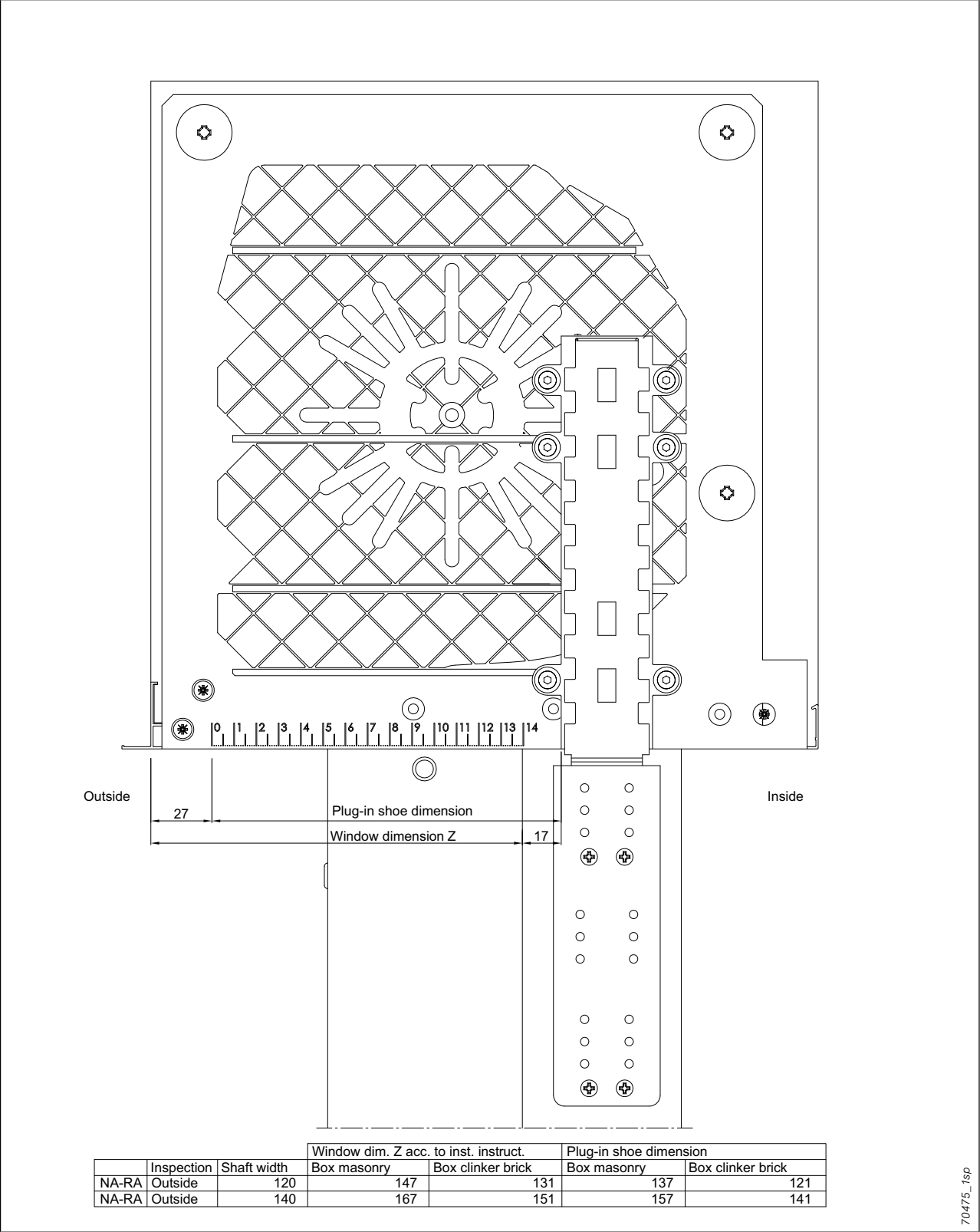


fig. 188: Positioning of mounting sleeve for top-mounted external venetian blinds for new buildings NA-RA

Box fastening

Additional box fastening/ceiling mounting

Note: for cable-guided external venetian blinds, box fastening exceeding 1000 mm is required.

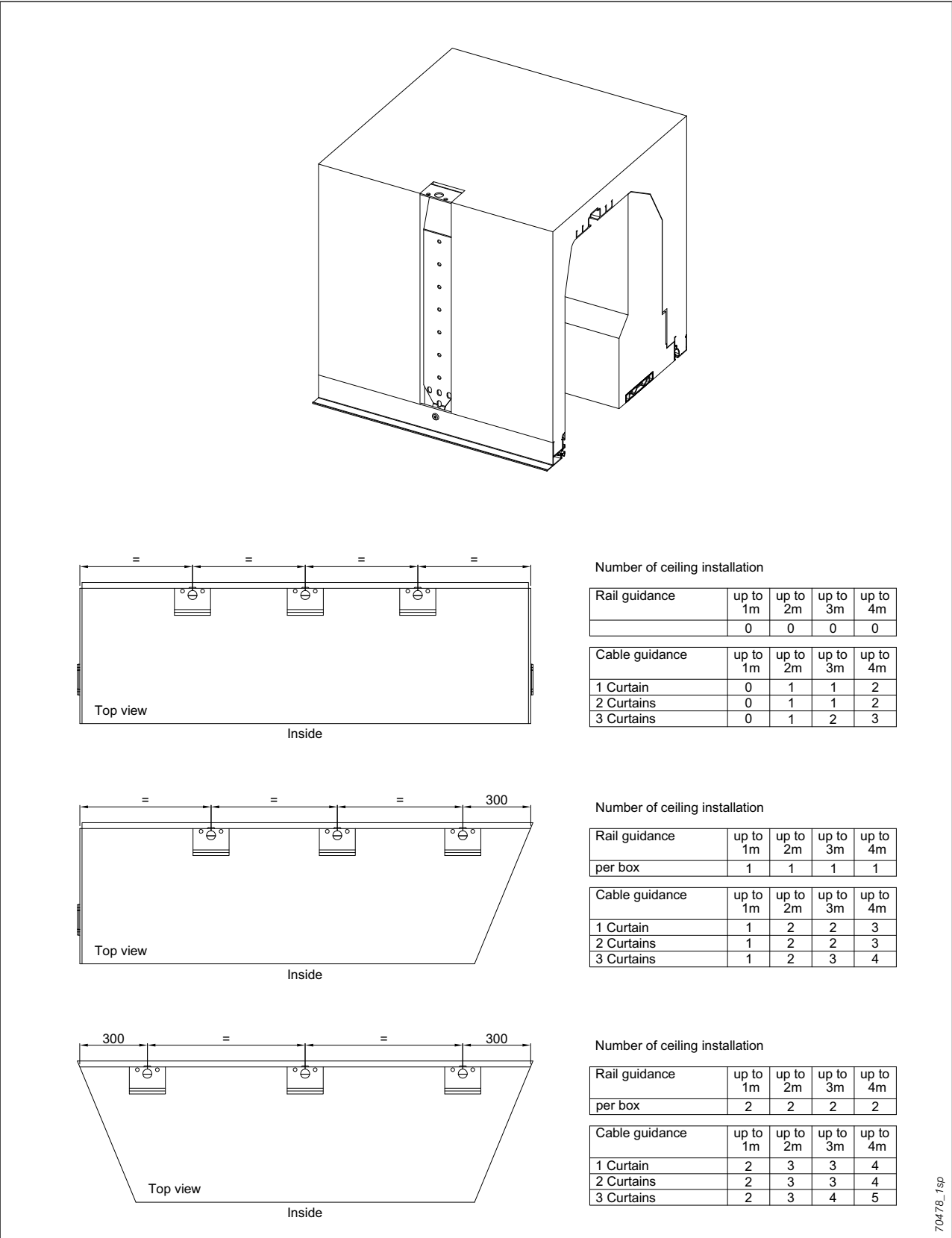


fig. 189: Additional box fastening for monolithic masonry walls

## Box fastening

### Additional box fastening/mounting brackets

**Note:** for cable-guided external venetian blinds, box fastening exceeding 1000 mm is required.

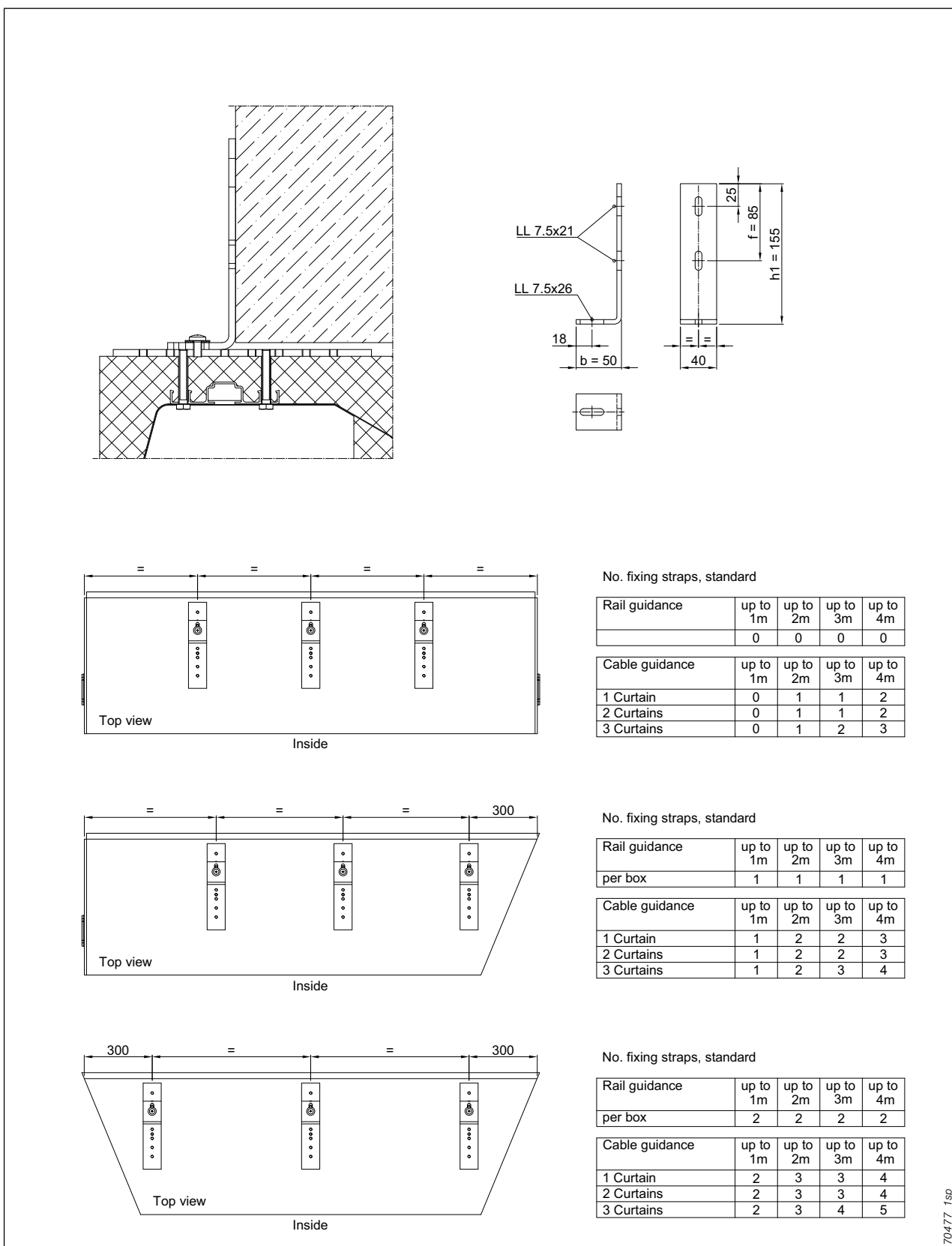


fig. 190: Additional box fastening for composite heat insulation system or masonry

**Box fastening/structural console**  
**Top-mounted external venetian blinds for new buildings NA-RA**

**Notice:** The maximum window frame width of 105 mm may not be exceeded in connection with the structural console and the 300/365 mm box.

**Structural console**

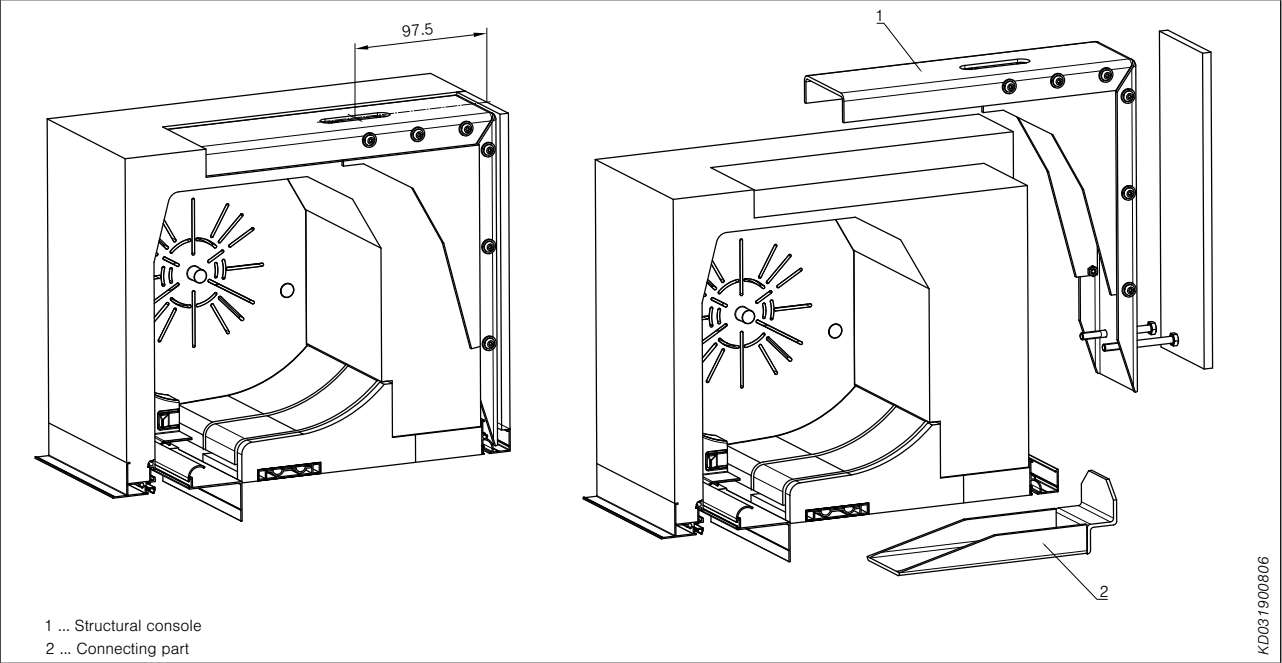


fig. 191: Structural console for NA-RA and NA-RO, inspection from outside

Field of application for structural console		Shaft depth	
Design	Box size	120	140
Masonry	300x300	–	–
	365x300	●	●
Clinker brick	300x300	–	–
	365x300	●	●

### Model with ventilation system AEROMAT midi Passive ventilator for ventilating closed rooms (supply air)

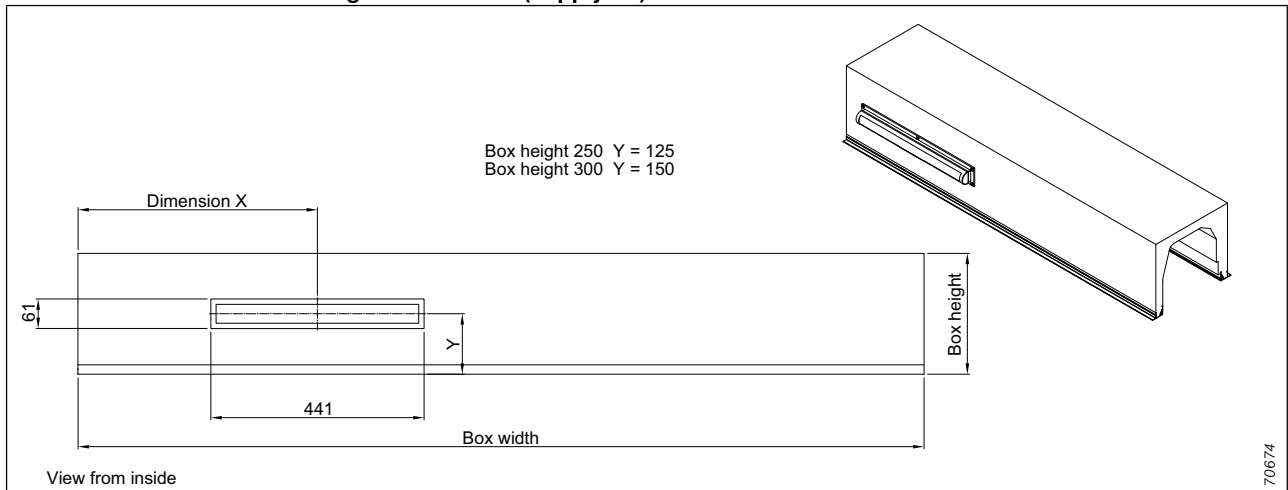


fig. 192: Integrated ventilation with ventilation system AEROMAT midi

#### Notes:

- Pressure compensation between outside and inside air (pressure differential principle)
- Available for all box dimensions
- Specification of dimension X and number of desired fan elements required
- Data sheet on request

### Model with milled area for on-site fan unit

For holding a passive window fan for ventilating closed rooms (supply air).

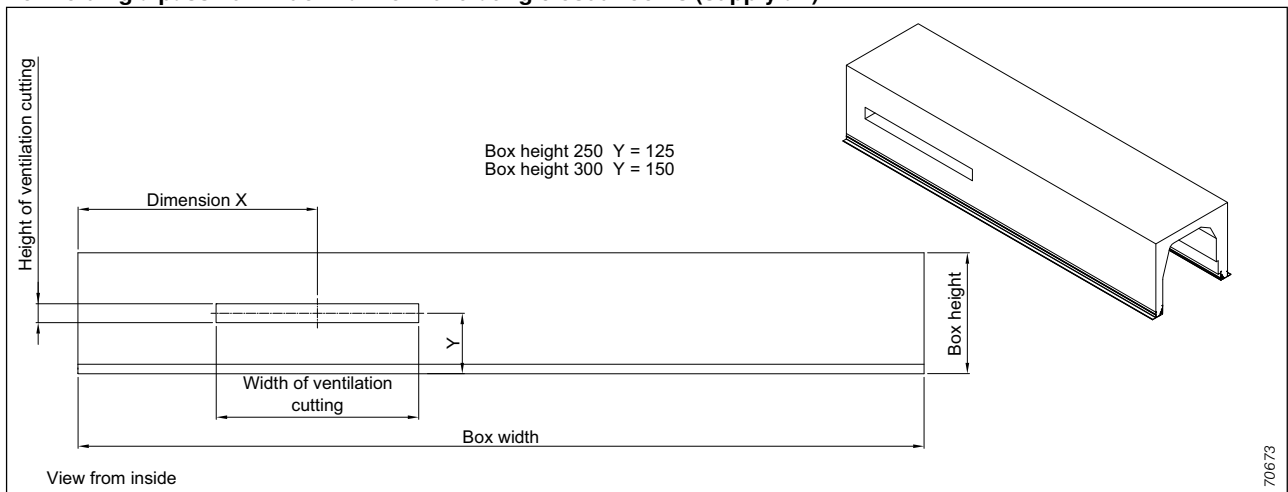


fig. 193: Integrated ventilation with milled area for on-site fan unit

#### Notes:

- Specification on the number of milled areas, make and dimension X required
- Data sheet on request

Please contact Application Technology External Venetian Blinds for individual technical clarification about a model with a milled fan.

#### General note on the use of ventilation systems:

In general, only supply air systems may be used (exhaust air is not possible via the external venetian blind box).

To order a model with an integrated fan system or milled fan, please use the supplemental order form for Box Accessories, art. no. 2010110.

## Determining dimensions/ordering data

### Top-mounted external venetian blinds for new buildings

#### NA-RA 300/365/425 M/K

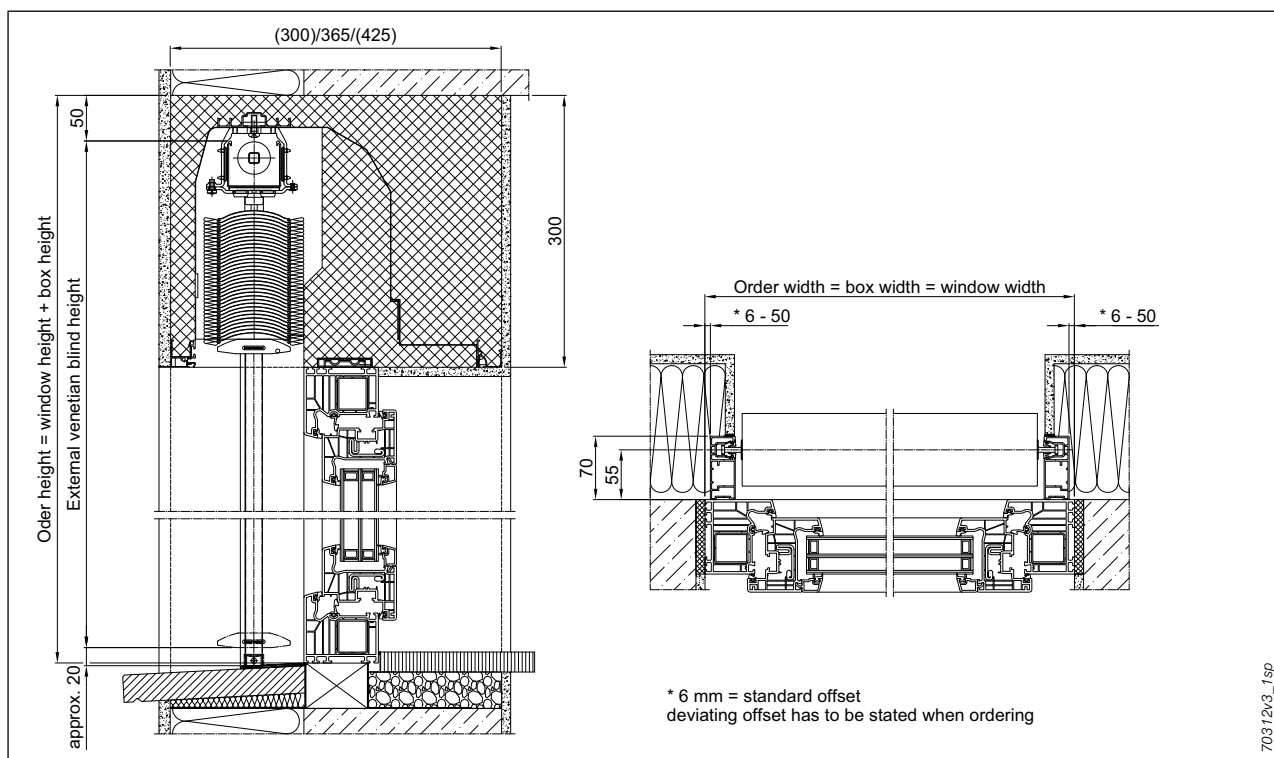


fig. 194: Ordering/measuring instructions for top-mounted ext. ven. blind for new buildings NA-RA M with E 80 A6 S in 120 mm shaft

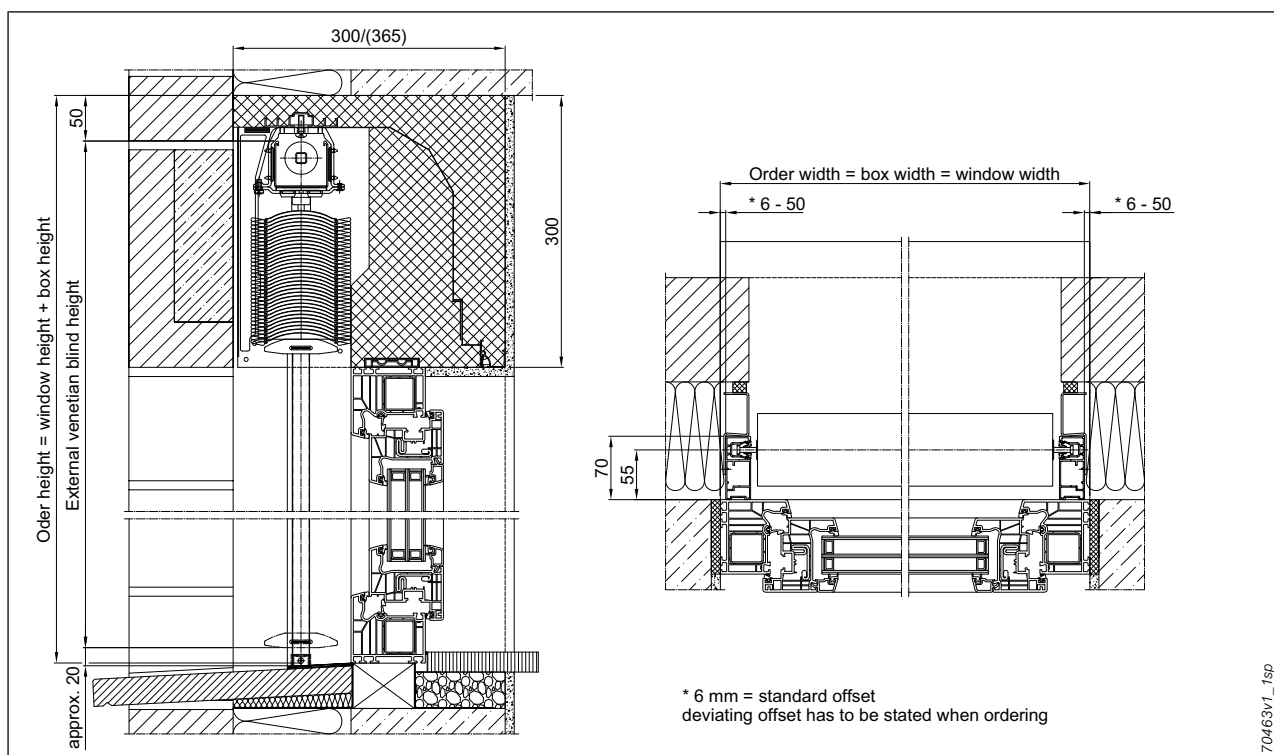


fig. 195: Ordering/measuring instructions for top-mounted ext. ven. blind for new buildings NA-RA K with E 80 A6 S in 120 mm shaft



## Top-mounted external venetian blinds for new buildings NA-RA 300/365/425 M/K

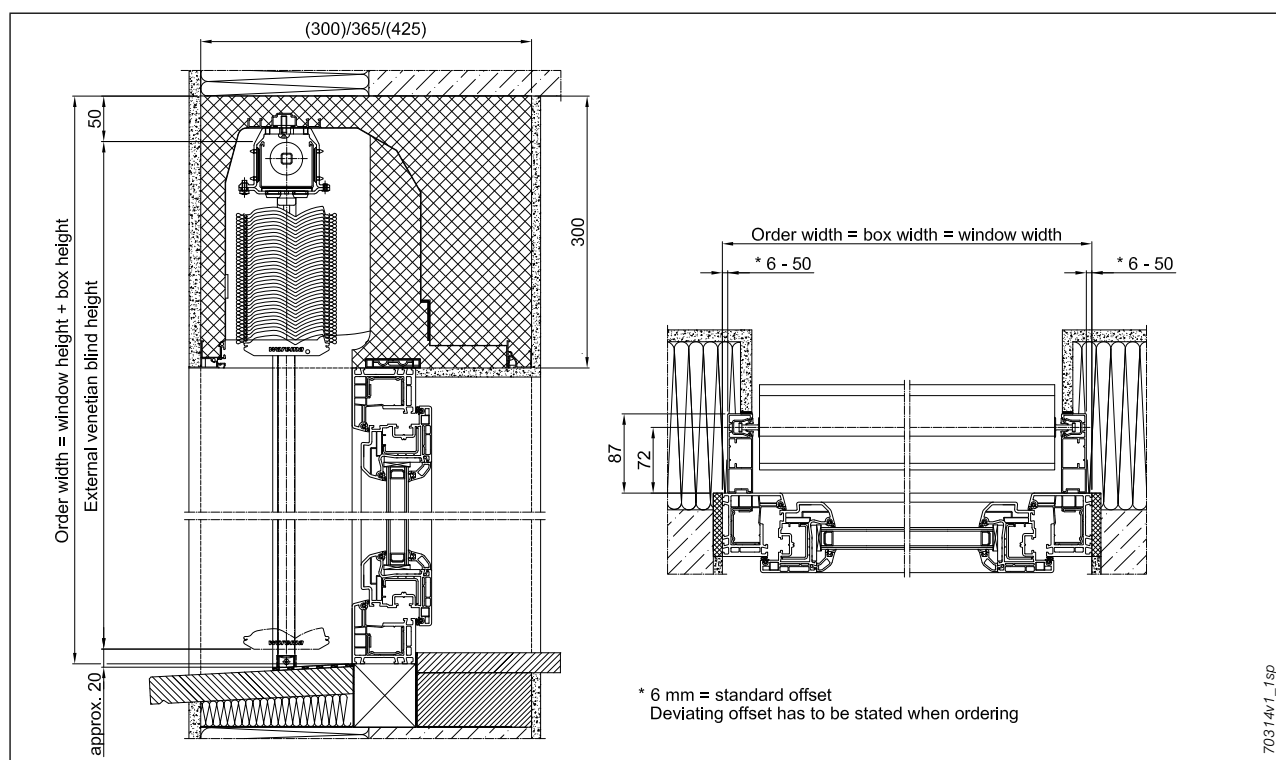


fig. 196: Top-mounted ext. ven. blinds for new buildings NA-RA M with E 90 A6 in 140 mm shaft

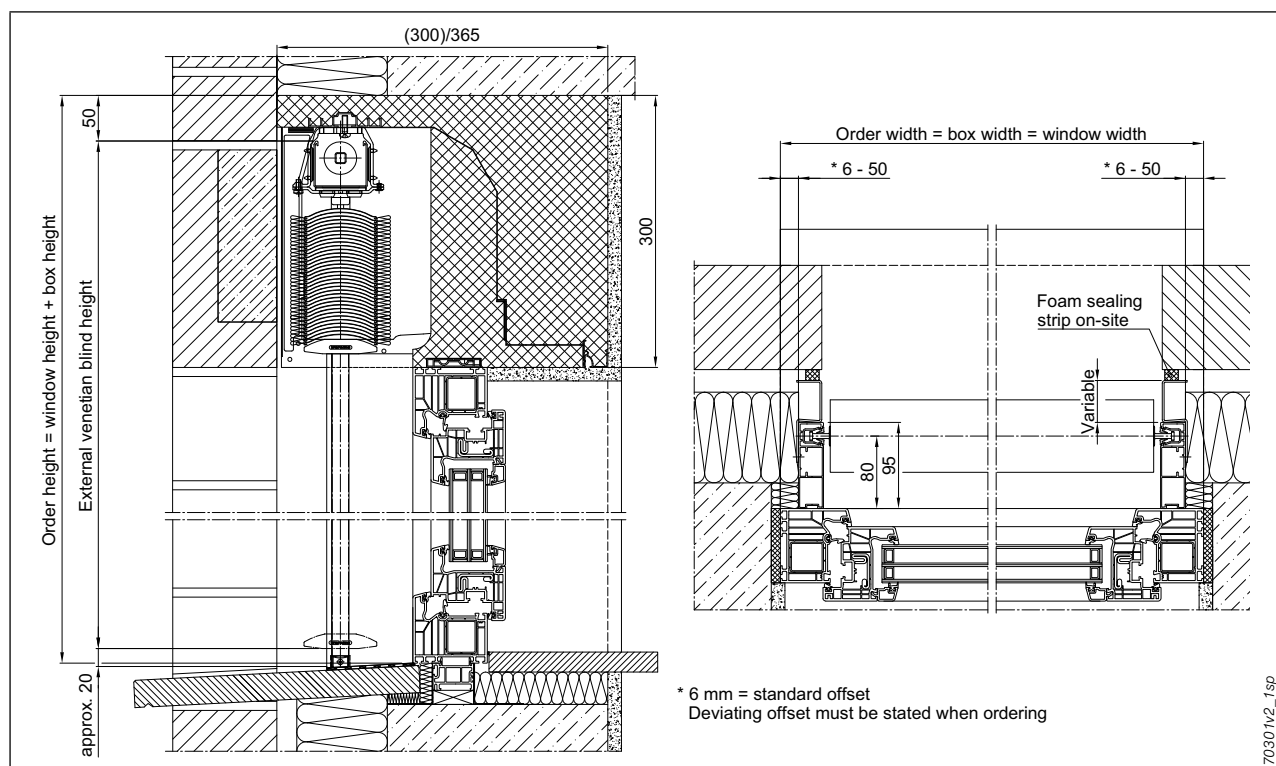


fig. 197: Top-mounted ext. ven. blinds for new buildings NA-RA K with E 80 A6 S in 150 mm shaft

## Determining dimensions/ordering data

### Top-mounted external venetian blinds for new buildings

#### NA-RA 300/365/425 M/K

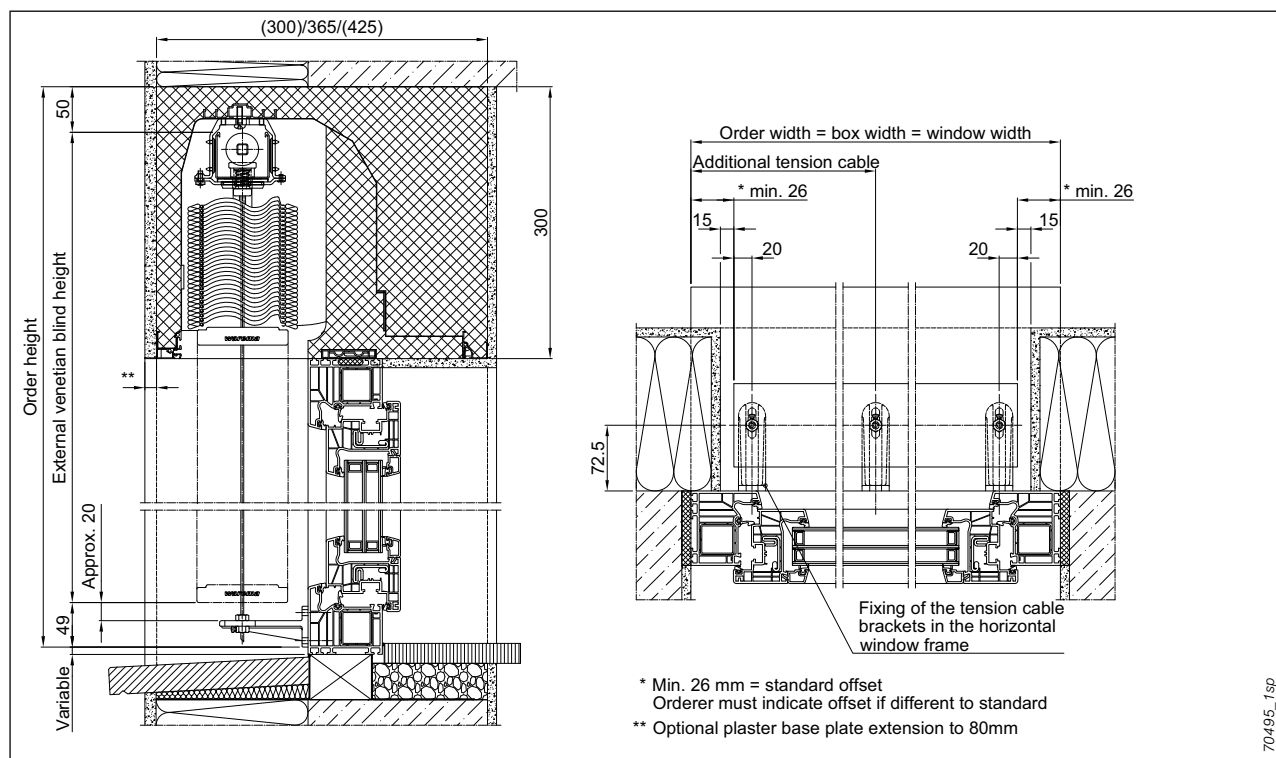


fig. 198: Top-mounted ext. ven. blinds for new buildings NA-RA M with E 90 A2 in 140 mm shaft

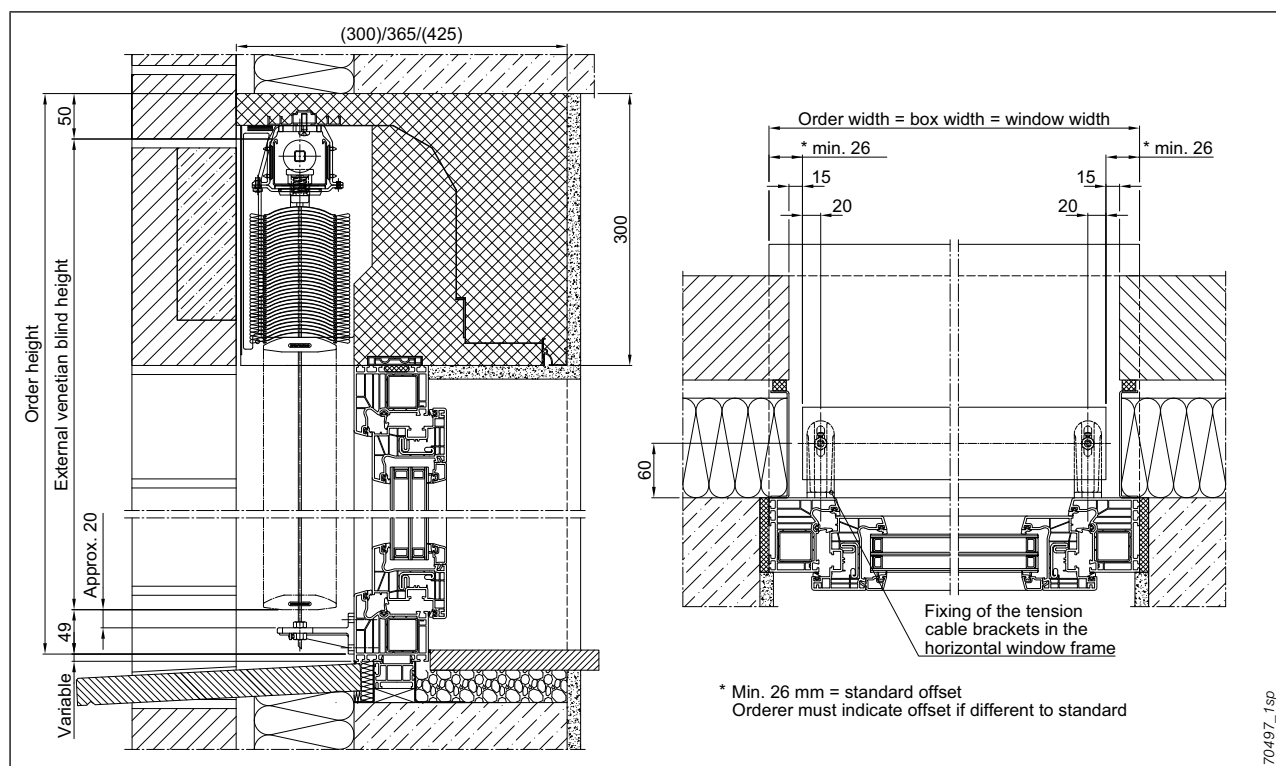


fig. 199: Top-mounted ext. ven. blinds for new buildings NA-RA K with E 80 A2 S in 130 mm shaft

Box dimension determination

Combination

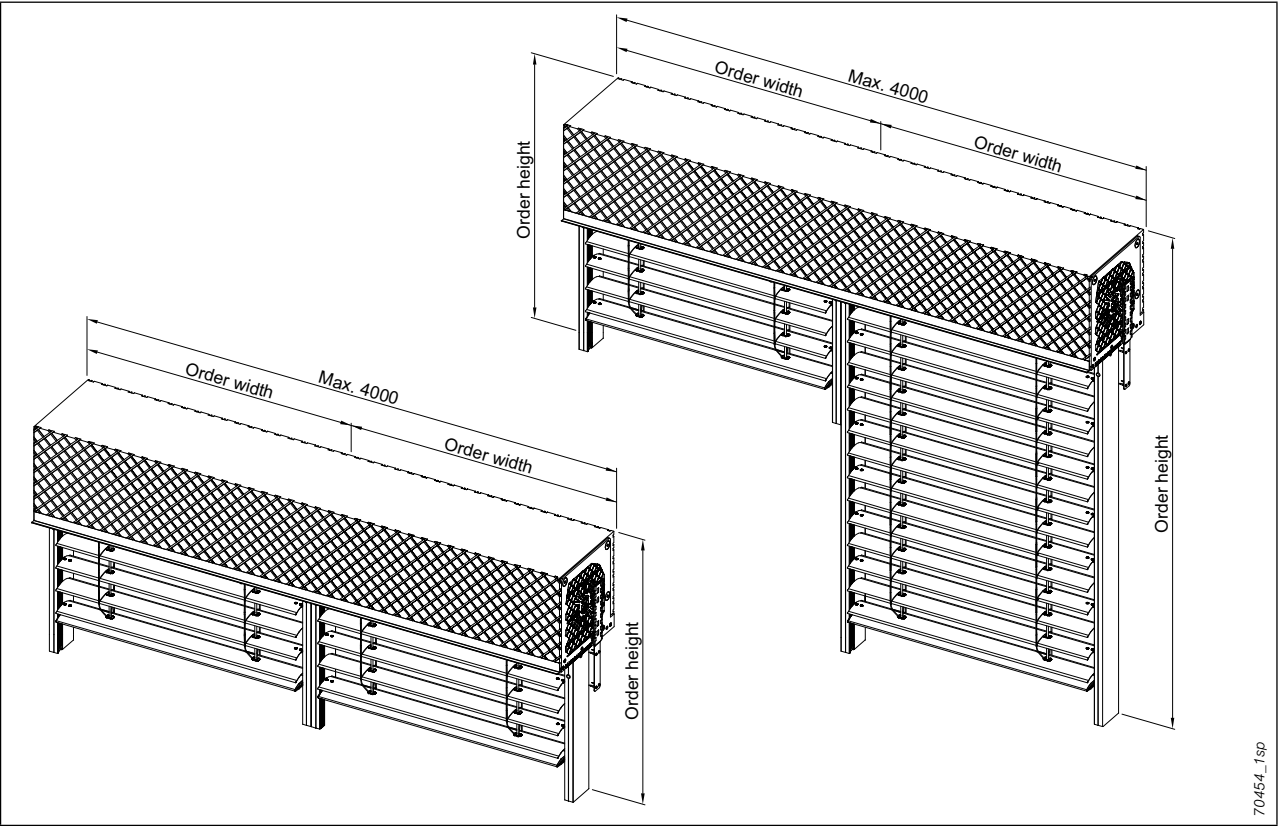


fig. 200: Combination with continuous cover panel strip

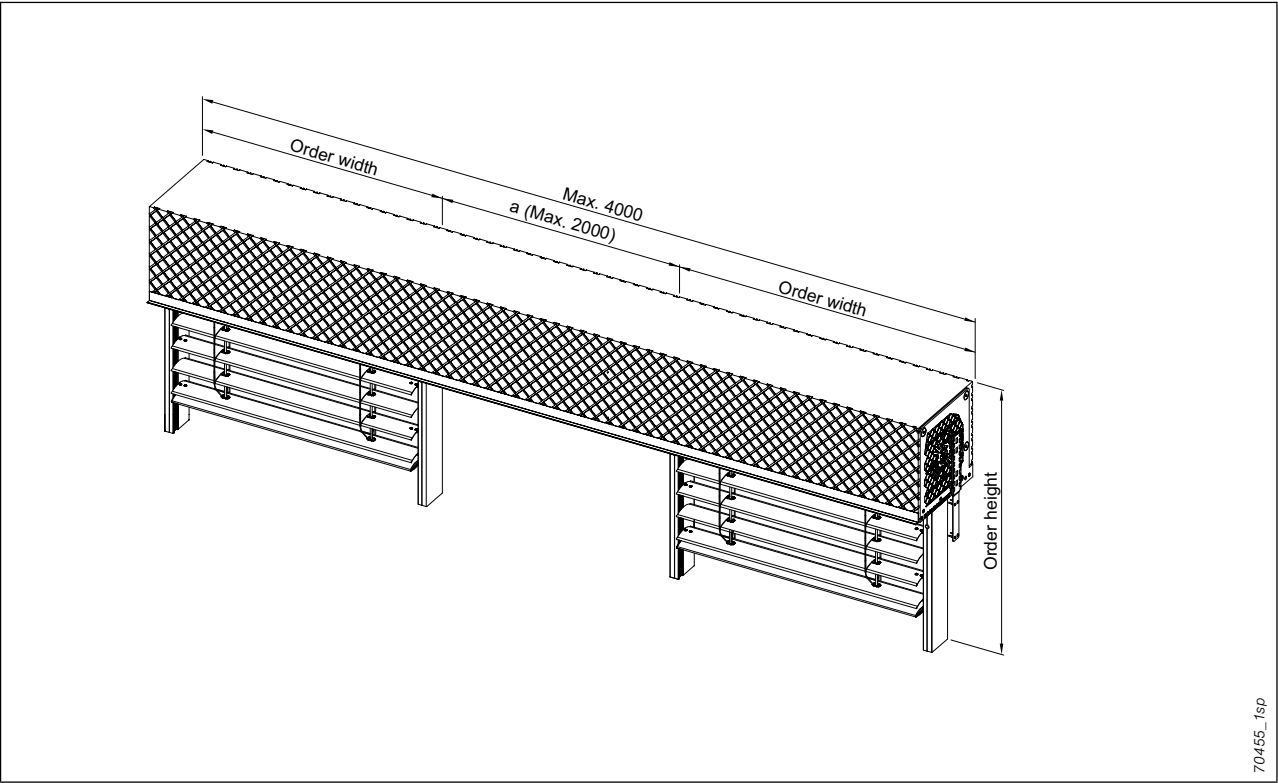


fig. 201: Combination with continuous cover panel strip

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

# Box dimension determination Combination

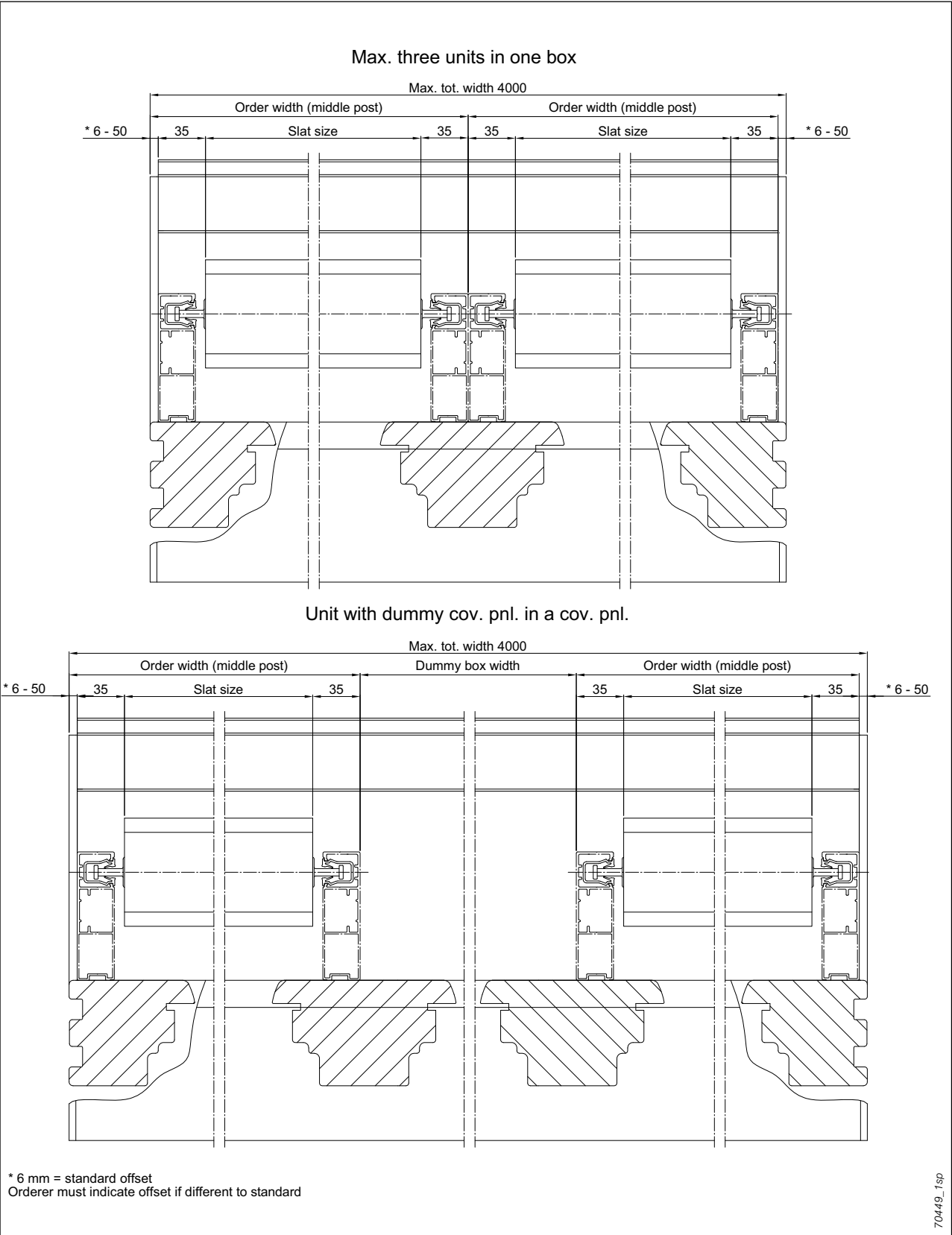


fig. 202: Measuring instructions for combination

# Dimension diagram for guide profiles

## Top-mounted external venetian blinds for new buildings

### NA-RA 300/365/425 M/K

#### Matching guide profiles

	Shaft depth	E 73 A6	E 80 A6 S	E 80 AF A6	E 90/93 A6
Guide rail 27.0 x 70	120 mm	●	●	●	—
Guide rail 27.0 x 95	140 mm	●	●	●	—
Guide rail 27.0 x 87.5	140 mm	—	—	—	●
Guide rail 27.5 x 95	140 mm	●	●	●	—
Guide rail 27.5 x 87.5	140 mm	—	—	—	●

**Note:** Insect screen only available for 140 mm shaft depths.

For an overview of the guide profiles, see chapter "Guides in Applied Engineering, applications for 2017" from page 223

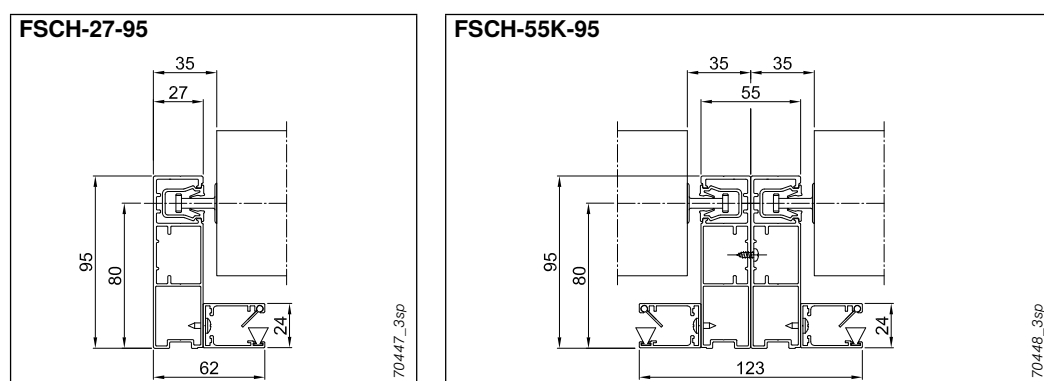


fig. 203: Guide profile with rail guidance for insect screen roller blind

Details

**Additional cord guides for models with flat slats**

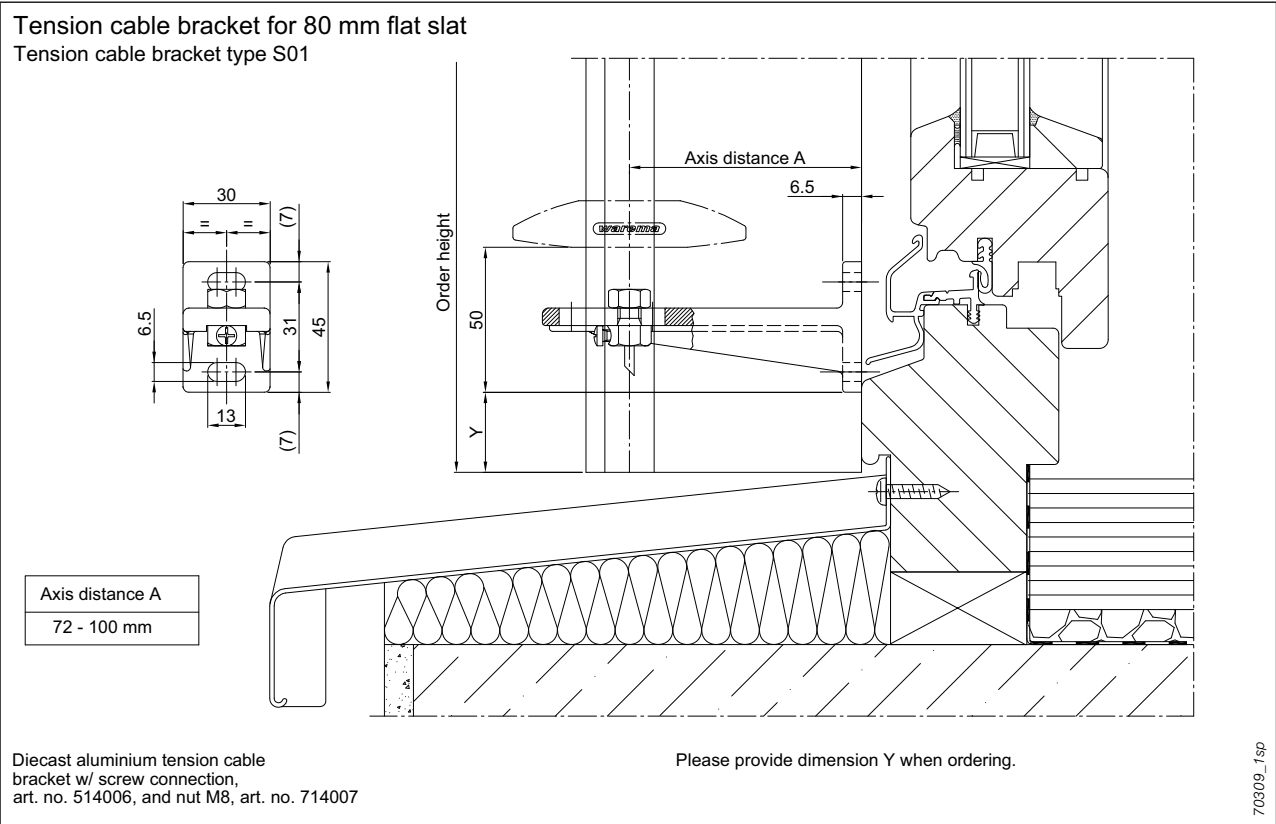


fig. 204: Measuring instructions for additional cord guides

From 2400 mm fabric width a tension cable is required as an additional wind protection for models with flat slats. Specify dimension "Y" when ordering.

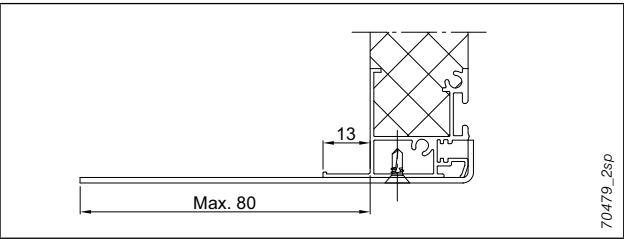


fig. 205: Plaster base square extension

fig. 206: Measuring instructions for outer angle masonry box

fig. 207: Measuring instructions for outer angle clinker brick box

**Note:** 2 stabilising angles per corner are supplied for screw-fixing the boxes to the corner.

## Box dimension determination

### Box extension/corners

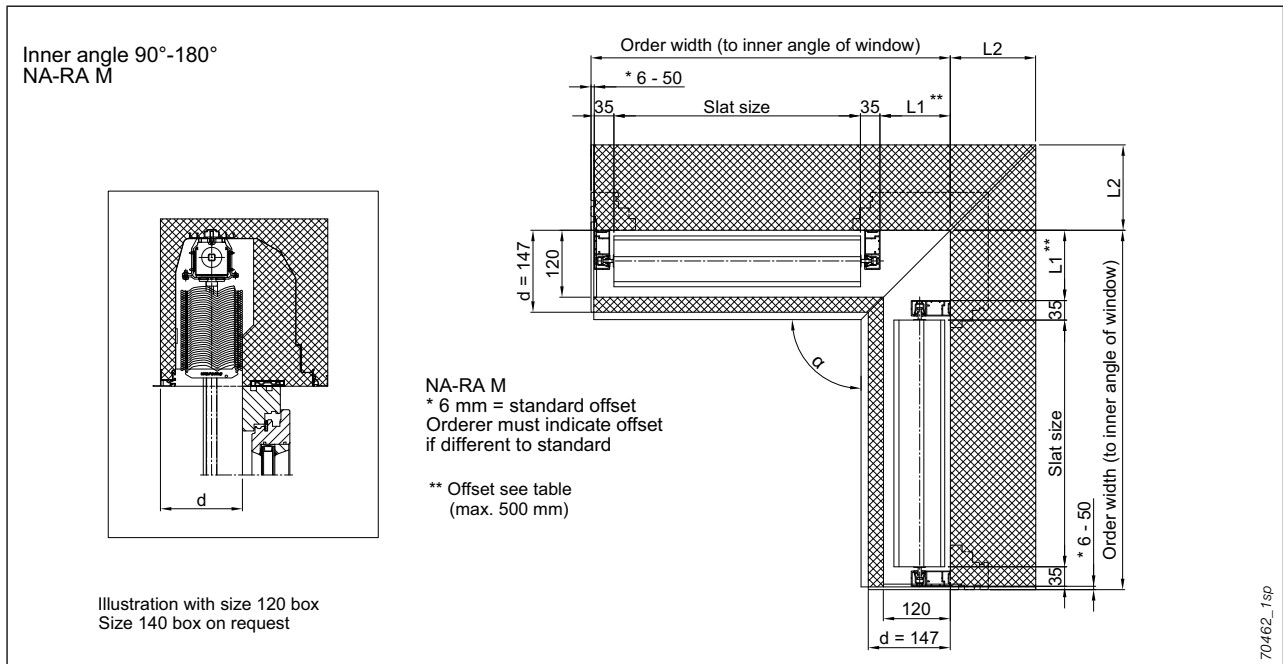


fig. 208: Measuring instructions for inner angle masonry box

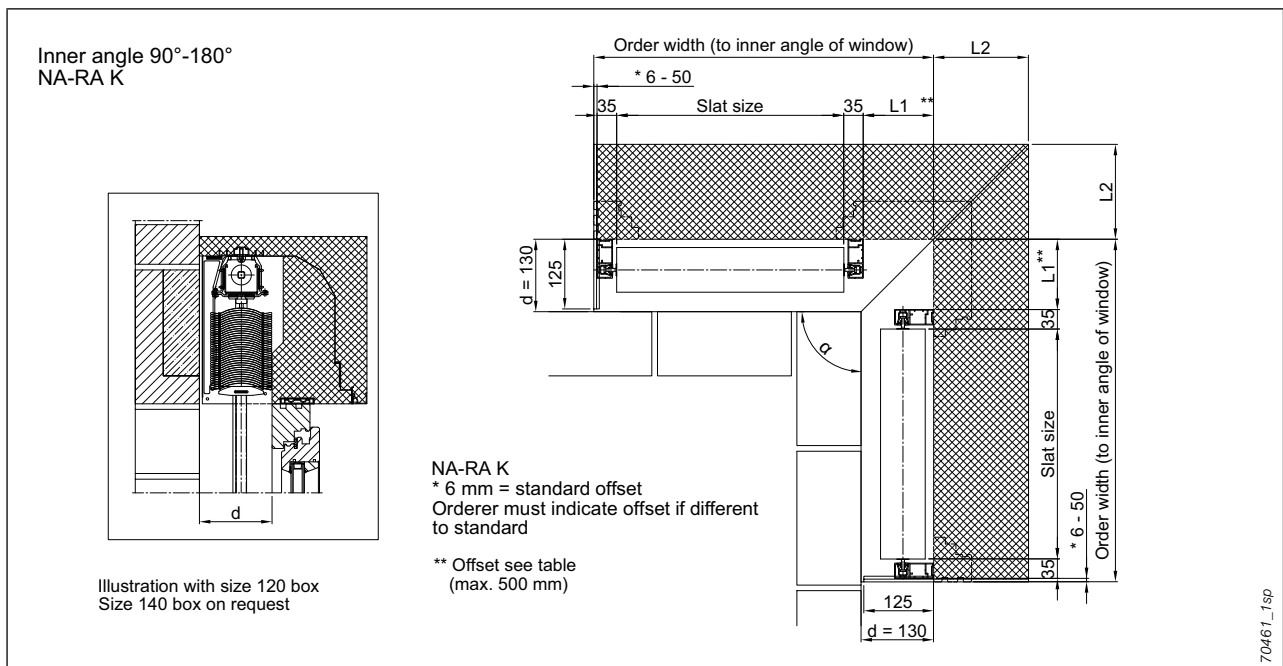


fig. 209: Measuring instructions for inner angle clinker brick box

#### Minimum offset dimension for inner angle

(L1) angle $\alpha$	min. offset
90°	100 mm
135°	41.5 mm
180°	0 mm

For other angles the minimum offset can be calculated using the following formula:

$$\text{Offset} = 100 / \tan(\alpha/2)$$

**Note:** 2 stabilising angles per corner are supplied for screw-fixing the boxes to the corner.



Drives	Safety systems Accessories	Planning	Cover panels	Guides	Light guidance/ external venetian	Completeexternal venetian blinds	Premium facade venetian blinds	Basic facade external venetian	Product characteristics	General information
--------	-------------------------------	----------	--------------	--------	--------------------------------------	-------------------------------------	-----------------------------------	-----------------------------------	----------------------------	------------------------



**Note:** 2 stabilising angles per corner are supplied for screw-fixing the boxes to the corner.

**Box dimension determination**  
**Corner position cable/rail combination**

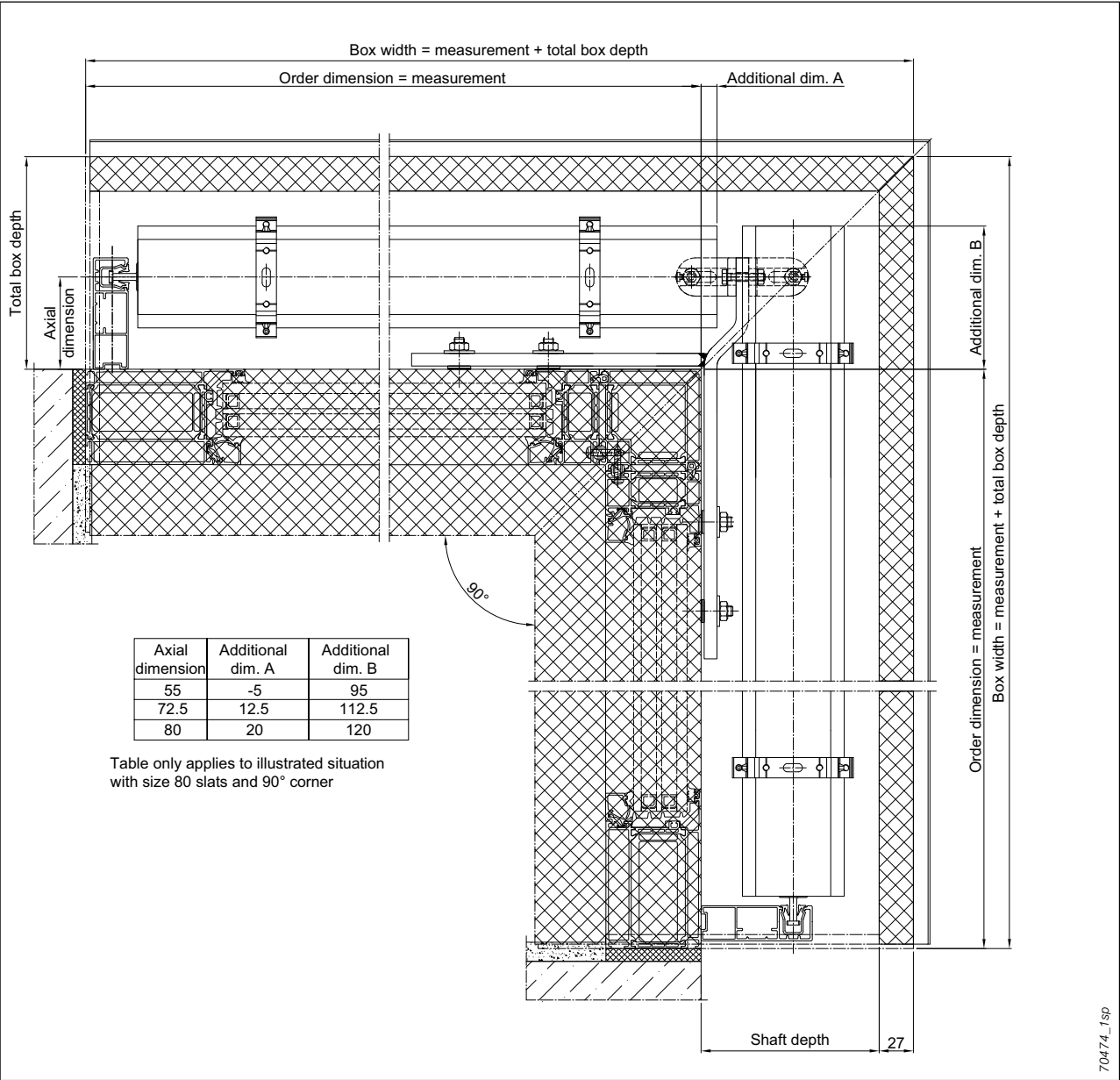


fig. 211: Corner position cable/rail combination

Slat tilting

Top-mounted external venetian blinds for new buildings

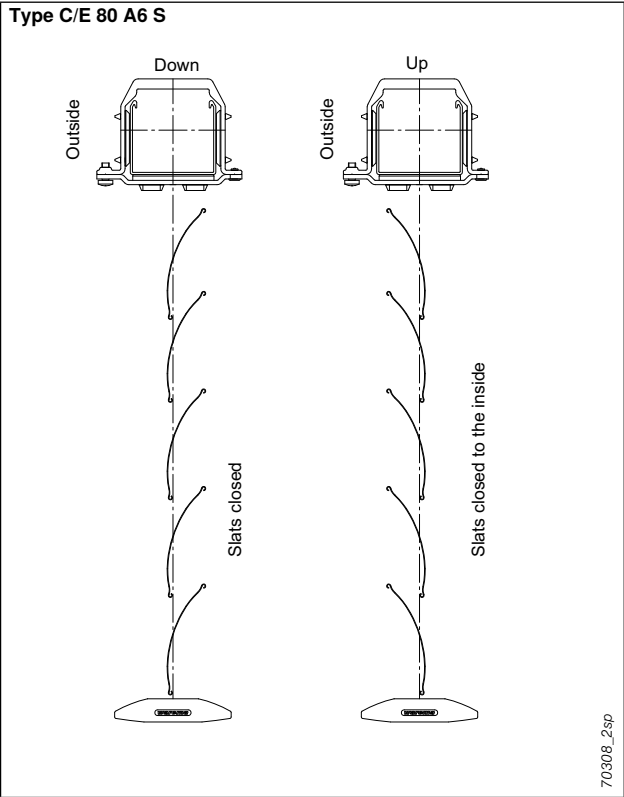


fig. 212: Slat tilting 80 A6 S

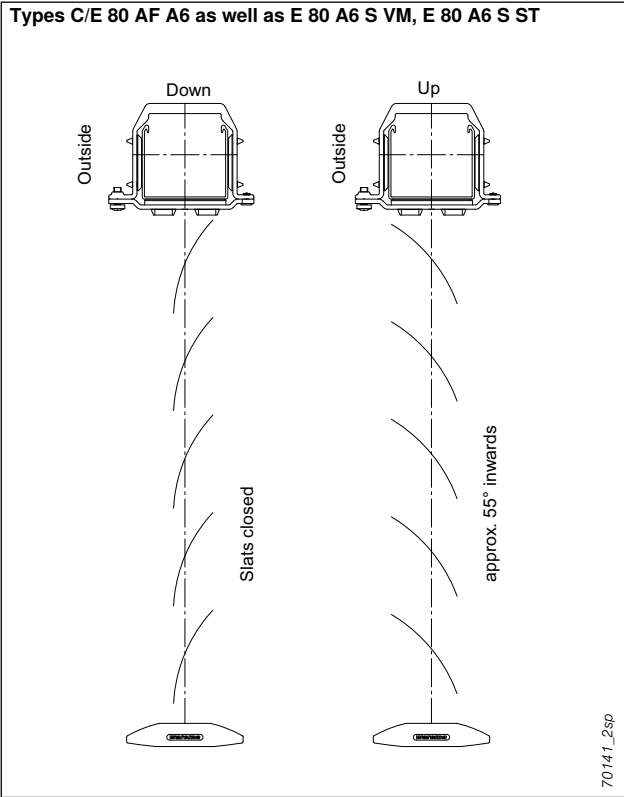


fig. 213: Slat tilting 80 AF A6

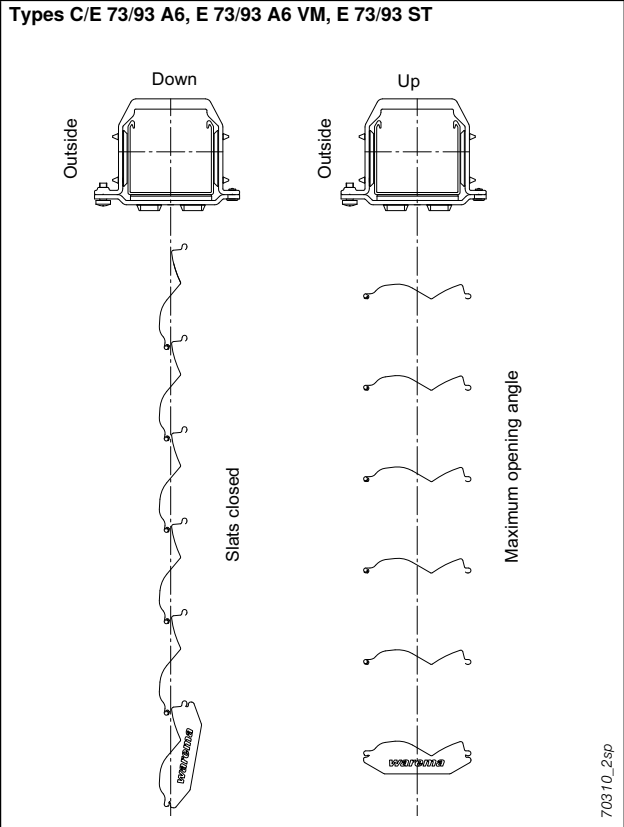


fig. 214: Slat tilting 73/93 A6

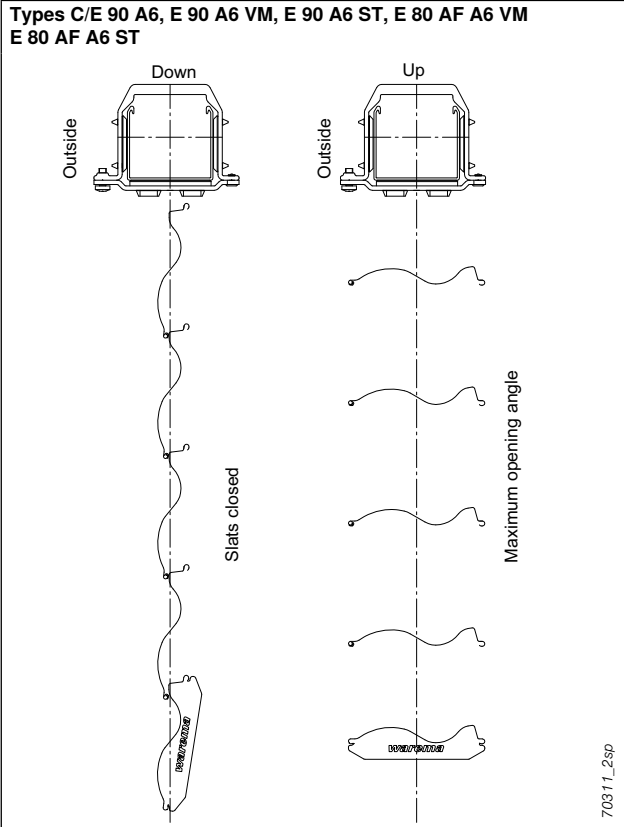


fig. 215: Slat tilting 90 A6

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

# Slat tilting

## Daylight transport element TLT

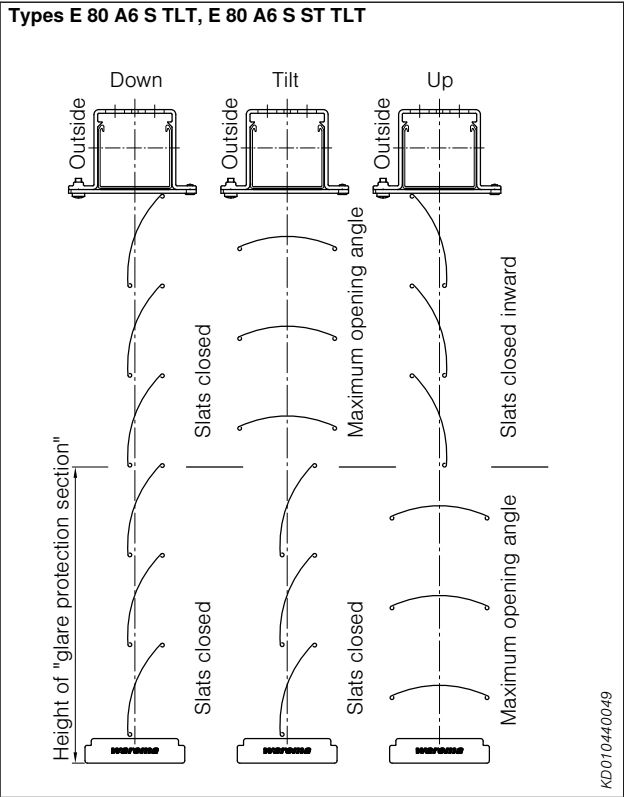


fig. 216: Slat tilting 80 A6 S TLT

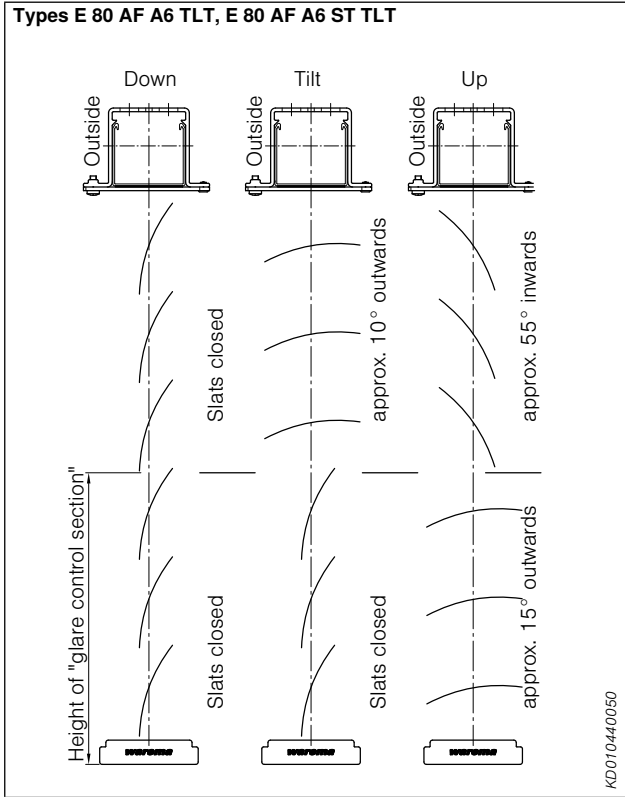


fig. 217: Slat tilting 80 AF A6 TLT

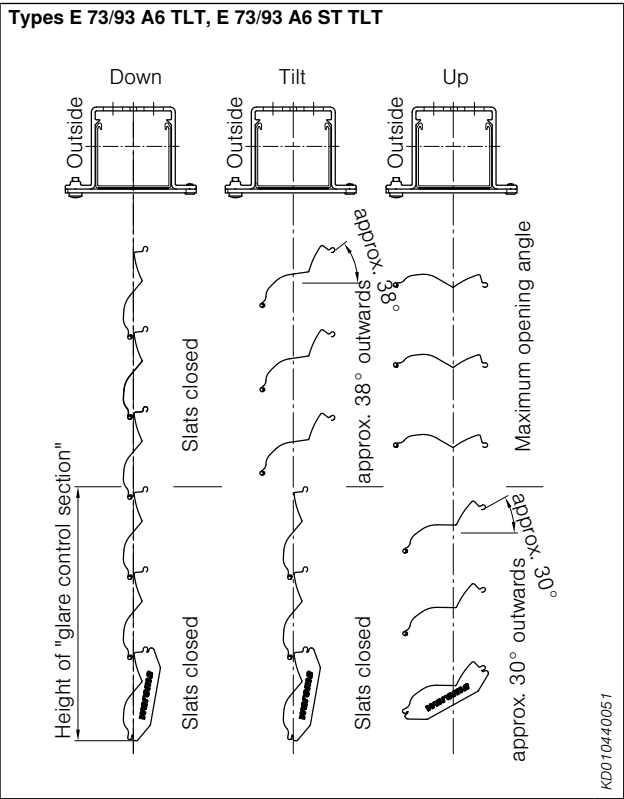


fig. 218: Slat tilting 73/93 A6 TLT

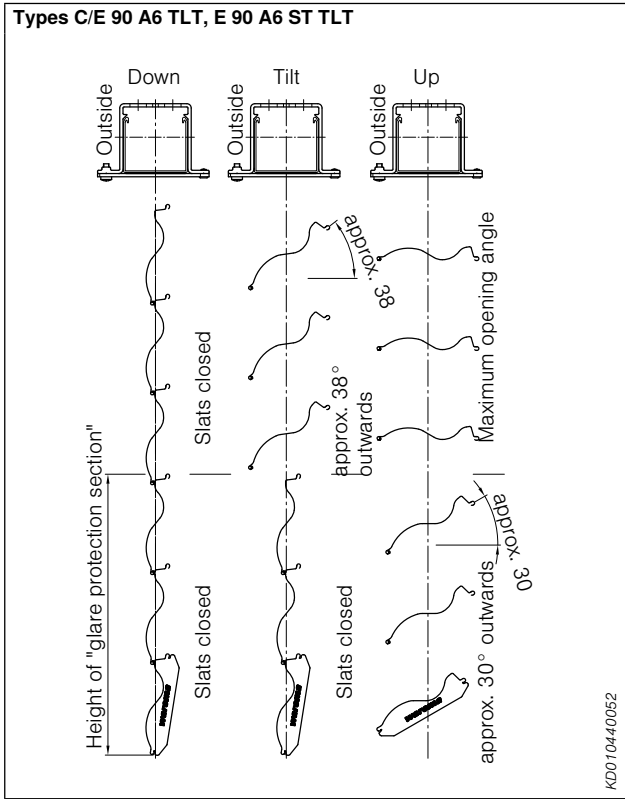


fig. 219: Slat tilting 90 A6 TLT

## Construction limit values

### Top-mounted external venetian blinds for new buildings NA-RA with insect screen

#### Construction limit values in mm

Insect screen type	Model	Construction limit values					Height reference measurement = order height minus
		Width		Height		Area in m²	
		min.	max.	min.	max.	max.	
Swivel frame, one-wing <sup>1)</sup>	for doors	500	1300	1800	2500	2.5	348
	for windows	500	1300	600	1800	2.5	348
Swivel frame, two-wing <sup>1)</sup>	for doors	900	2600 <sup>2)</sup>	1800	2500	5.0	348
	for windows	900	2600 <sup>2)</sup>	600	1800	5.0	348
Cassette roller blind <sup>3)</sup>		650	2000	600	2400	5.0	230

<sup>1)</sup> Please specify door or window version when ordering.

<sup>2)</sup> Max. width for complete insect screen unit, max. width per wing = half of total width.

<sup>3)</sup> Cannot be used with C/E 90 A6 or C/E 93 A6.

Construction limit values refer to insect screens. Deduction measurements for top-mounted external venetian blinds for

new buildings are shown in the detailed drawings on the following pages.

#### Matching insect screens

External venetian blinds	Guide profile 27.5x95	Guide profile 27.5x87.5	Swivel frame		Insect screen roller blind
	Dimension A = 80	Dimension A = 72.5	one-wing D1.O.10/11	two-wing D2O.10/11	
E 80 A6 S	x	O	x	x	x
E 80 AF A6	x	O	x	x	x
E 73 A6	x	O	x	x	x
E 90/93 A6		x			

x = possible

O = support profile optionally possible, but only without insect screen

General information

Product characteristics

Basic facade external venetian blinds

Premium facade venetian blinds

Complete external venetian blinds

Light guidance/ external venetian blinds

Guides

Cover panels

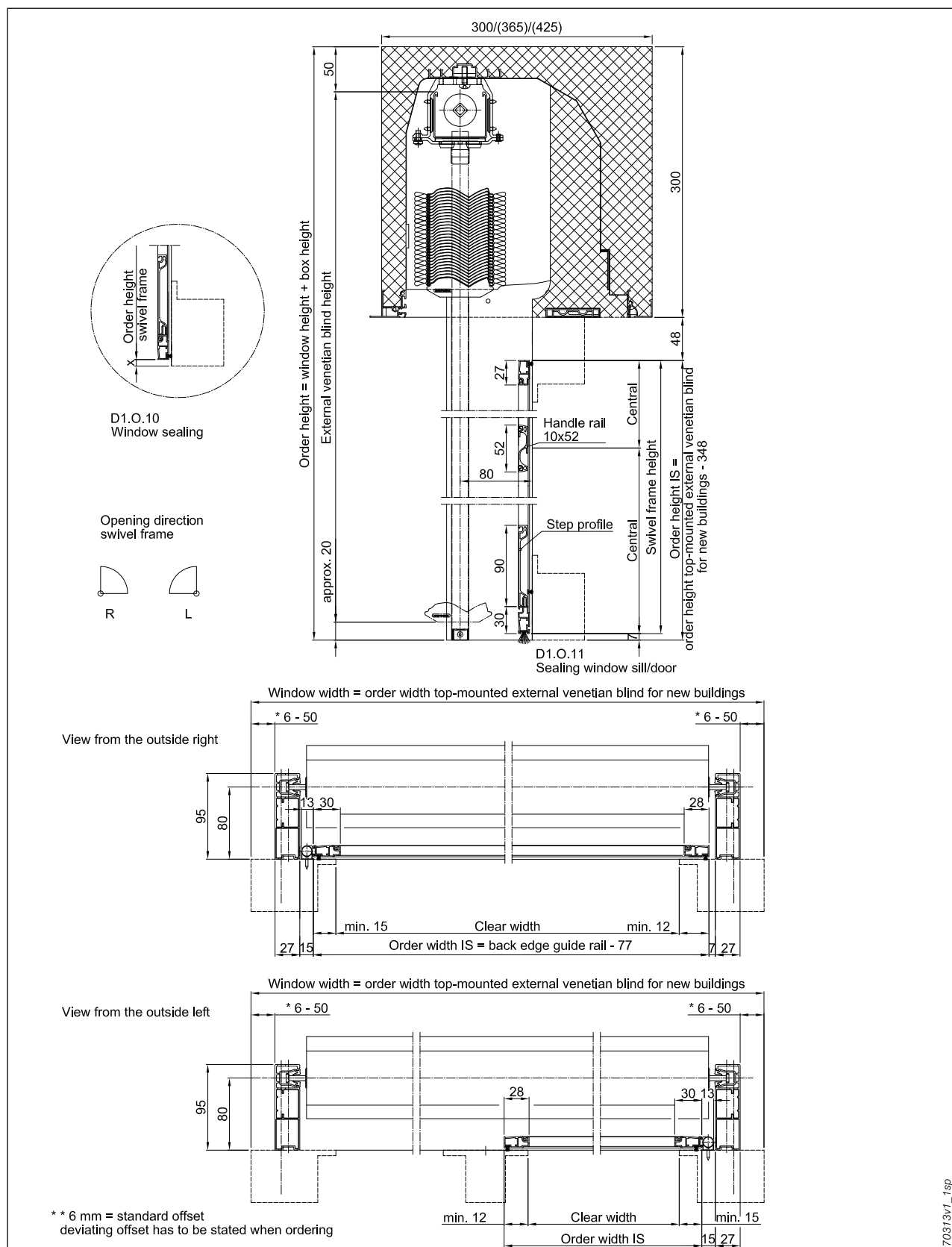
Planning

Safety systems Accessories

Drives Control systems

## Measuring instructions for insect screens

### Top-mounted external venetian blind for new buildings NA-RA M with insect screen swivel frame, one-wing



70313v1\_1.sp

fig. 220: Measuring instructions for insect screen swivel frame, one-wing

# Measuring instructions for insect screens

## Top-mounted external venetian blind for new buildings NA-RA M with insect screen swivel frame, two-wing

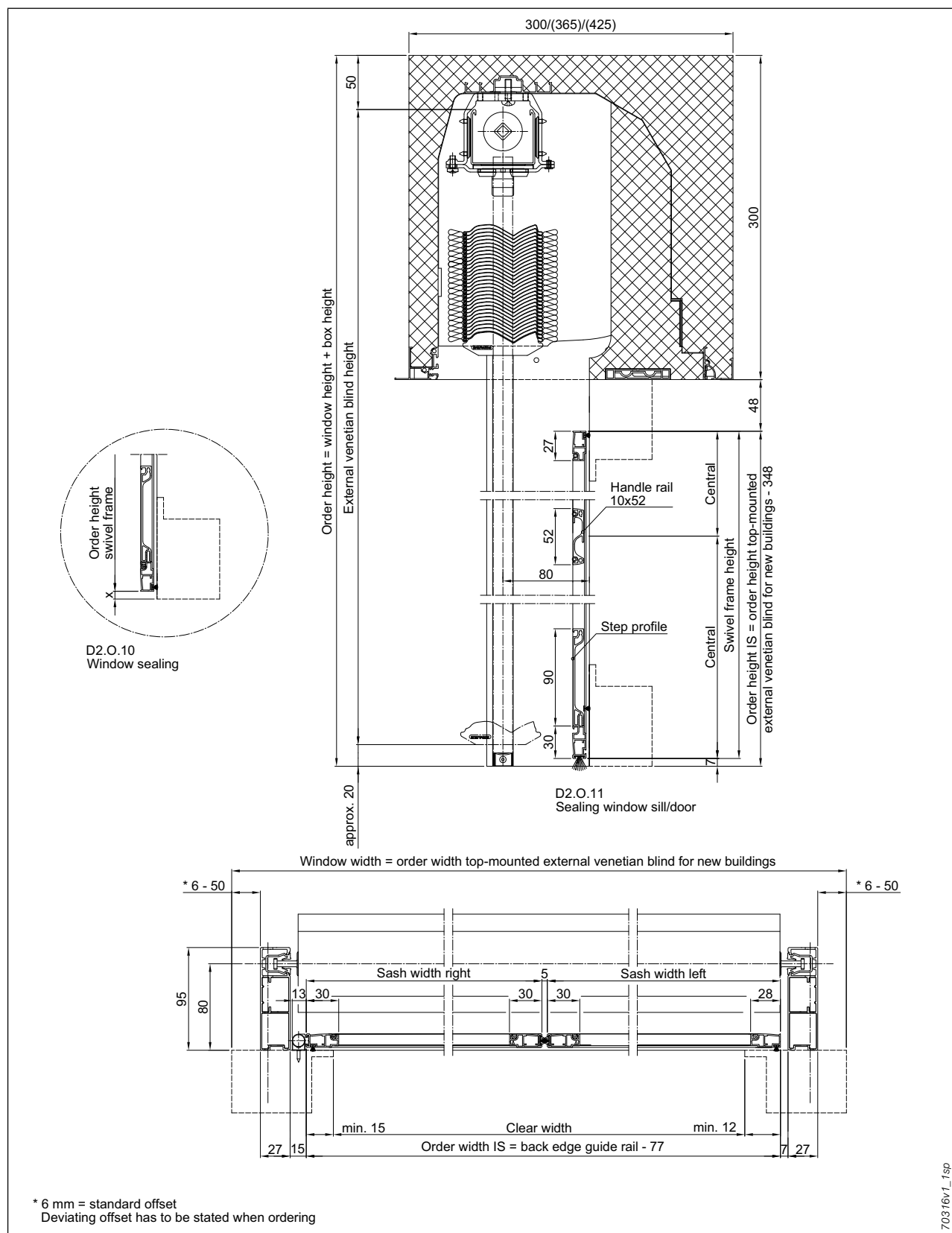
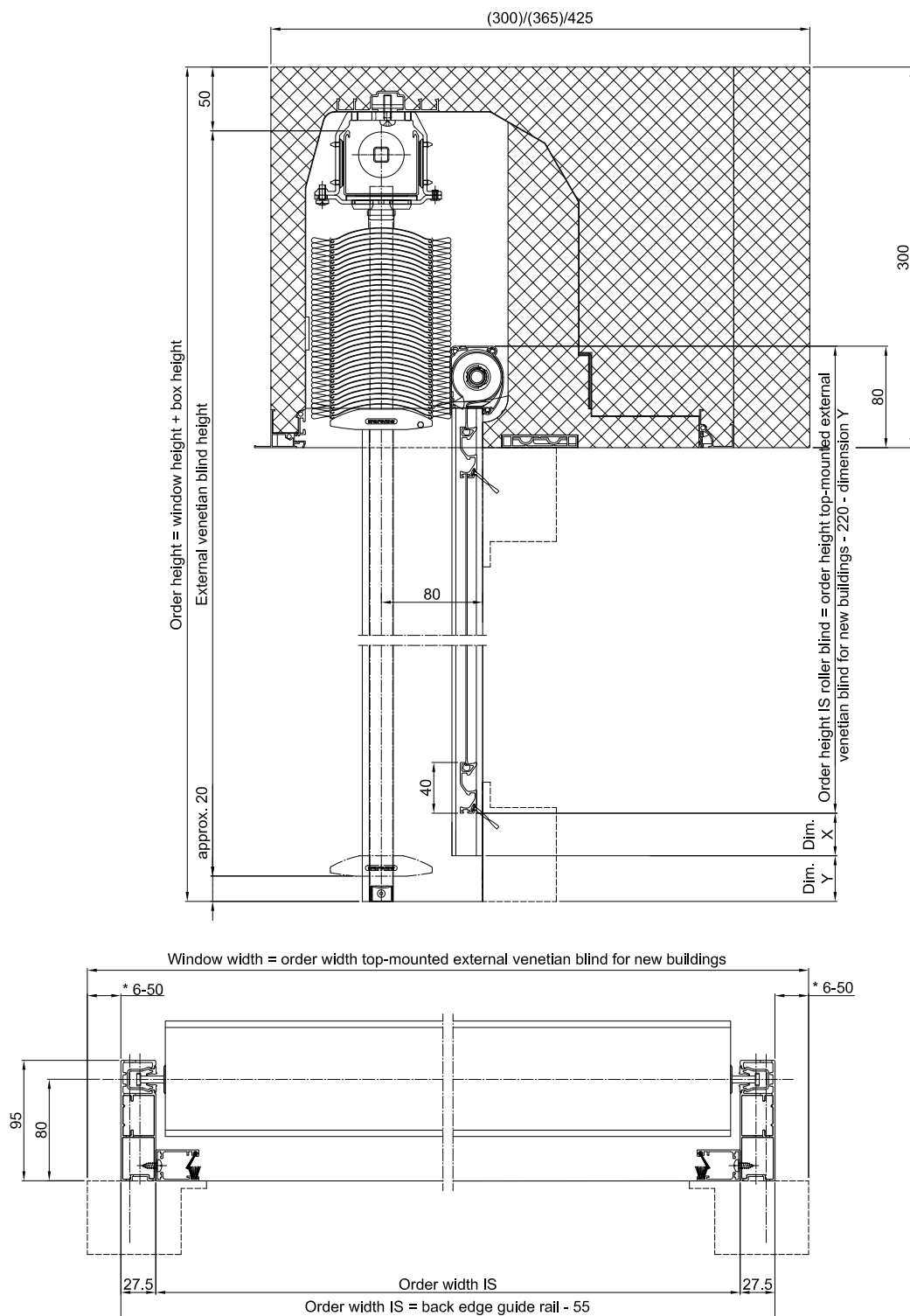


fig. 221: Measuring instructions for insect screen swivel frame, two-wing

## Measuring instructions for insect screens

### Top-mounted external venetian blind for new buildings NA-RA M with insect screen roller blind



\* 6 mm = standard offset  
Deviating offset has to be stated when ordering

70315v1\_1.sp

fig. 222: Measuring instructions for insect screen roller blind (cannot be used with 90mm or 93mm dim-out slats)



## Test values

### Top-mounted external venetian blinds for new buildings NA-RA

#### Box types

##### Window connection using plastic profile (standard)

NA-RA masonry	Box size	300x300 mm	365x300 mm	425x300 mm
Thermal bridge loss coefficient Psi W/(mK)	Monolithic masonry	0.12	0.13	0.15
Thermal values U <sub>SB</sub> W/(m²K)		0.38	0.32	0.296

NA-RA clinker brick	Box size	300x300 mm	365x300 mm
Thermal bridge loss coefficient Psi W/(mK)	Monolithic masonry	0.17	0.12
Thermal values U <sub>SB</sub> W/(m²K)		0.35	0.31

##### Window connection using clip profile (optional)

NA-RA masonry	Box size	300x300 mm	365x300 mm	425x300 mm
Thermal bridge loss coefficient Psi W/(mK)	Monolithic masonry	0.11	0.12	0.13
Thermal values U <sub>SB</sub> W/(m²K)		0.31	0.27	0.25

NA-RA clinker brick	Box size	300x300 mm	365x300 mm
Thermal bridge loss coefficient Psi W/(mK)	Monolithic masonry	0.162	0.11
Thermal values U <sub>SB</sub> W/(m²K)		0.31	0.26

Water vapour diffusion resistance factor according to DIN EN 12086: 85

Fire behaviour of EPS foams Styropor®F, Neopor®, Peripor® according to Euro class: E

Building materials class: B1 flame resistant

#### Note:

The detailed basic conditions for the determination of test values, test certificates and information on sound absorbing coefficients (measurement according to EN ISO 10140) are provided at [www.warema.com/NA-RA](http://www.warema.com/NA-RA).



# Contents

## Light guidance

vivamatic® . . . . .	230
slowturn . . . . .	233
Work setting . . . . .	234
Daylight transport element TLT . . . . .	235
Double curtain venetian blinds . . . . .	242
Daylight guiding venetian blinds . . . . .	247
Daylight guiding venetian blinds Genius . . . . .	251
Daylight guiding venetian blinds with double curtain . . . . .	255
External venetian blinds . . . . .	258

General  
information

Product  
characteristics

Basic facade  
external venetian  
blinds

Premium facade  
venetian blinds

Complete external  
venetian blinds

Light guidance/  
external venetian  
blinds

Guides

Cover panels

Planning

Safety systems  
Accessories

Drives  
Control systems

Solflex AB försäljning och service västra Skåne. Showroom och rådgivning;  
Malmö Slussplan 1, 040-979745. Helsingborg Garnisonsg 12, 042-161635.  
kontakter@solflex.se www.solflex.se



#### WAREMA vivamatic® – Daylight Management for external venetian blinds

External venetian blinds with vivamatic® technology are the blinds of the future, both with regard to energy efficiency and to economy. In contrast to conventional external venetian blinds they are lowered with the slats already perfectly adjusted to the sun azimuth circle angle, achieving ideal illumination of the room and heat protection during lowering. This results in optimised incidence of energy from the first moment while at the same time the user is not disturbed unnecessarily or even forced to manually readjust the slats. External venetian blinds with vivamatic® are generally controlled by the intelligent WAREMA climatronic® 3.0 central control system which is ideally coordinated with this system. It uses current time of day, date, positioning of the building and insolation intensity to determine the best possible slat angle and positions the external venetian blind slats perfectly.

The reduced slat tilting time slowturn is a standard feature for external venetian blinds with vivamatic®!

#### Highlights:

- Maximum daylight utilisation without darkening the room already during lowering (user remains undisturbed)
- Reduced slat tilting speed for more precise positioning (slowturn)
- Variable slat positioning at the best possible angle through intelligent control with WAREMA climatronic®3.0 already before lowering the external venetian blinds
- Continuous automated readjustment of the slat angle during the course of the day – no readjustment by the user required.
- Reduced use of artificial light, artificial light not required for the short period of lowering the external venetian blinds
- Reduced cooling loads for air-conditioned rooms
- Models generally with standard external venetian blinds motors 230 V AC

More information, visualisations as well as a demo tool can be found on [www.vivamatic.com](http://www.vivamatic.com).



#### Table of available types with vivamatic® (VM)

vivamatic®	Maximum dimensions
E 60/80 A2 S VM	see resp. ext. venetian blind basic type <b>Note:</b> For coupled curtains and the equipment variant vivamatic® (VM), please observe the maximum curtain area per individual unit of 10 m <sup>2</sup> .
E 60/80 A6 S VM	
E 60/80/100 AF A6 VM	
E 60/80/100 AF VM	
E 73/90/93 A6 VM	

#### Notes:

- Tilting/movement behaviour
  - 60/80 mm beaded slats: closed down/ -55° up
  - 60/80/100 mm flat slats: closed down/ 0° up
  - 73/90/93 mm dim-out slats: closed down / 0° up (page 30).
- Controlled via WAREMA climatronic® 3.0 with vivamatic® actuator 4M 230i
- Also optionally available with motor control unit vivamatic® with limited functionalities

#### Operating principle of vivamatic®

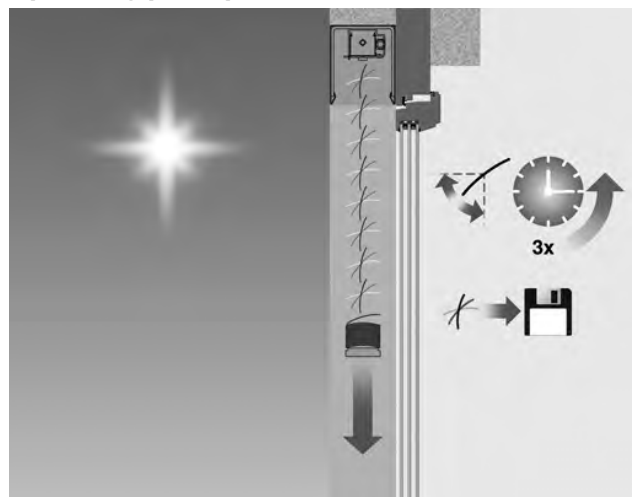


fig. 223: Operating principle of external venetian blinds with vivamatic®

## Mounting example

### WAREMA venetian blinds facade system with vivamatic® E 80 A6 S VM with angular cover panel, internal roller blind and WAREMA climatronic® 3.0

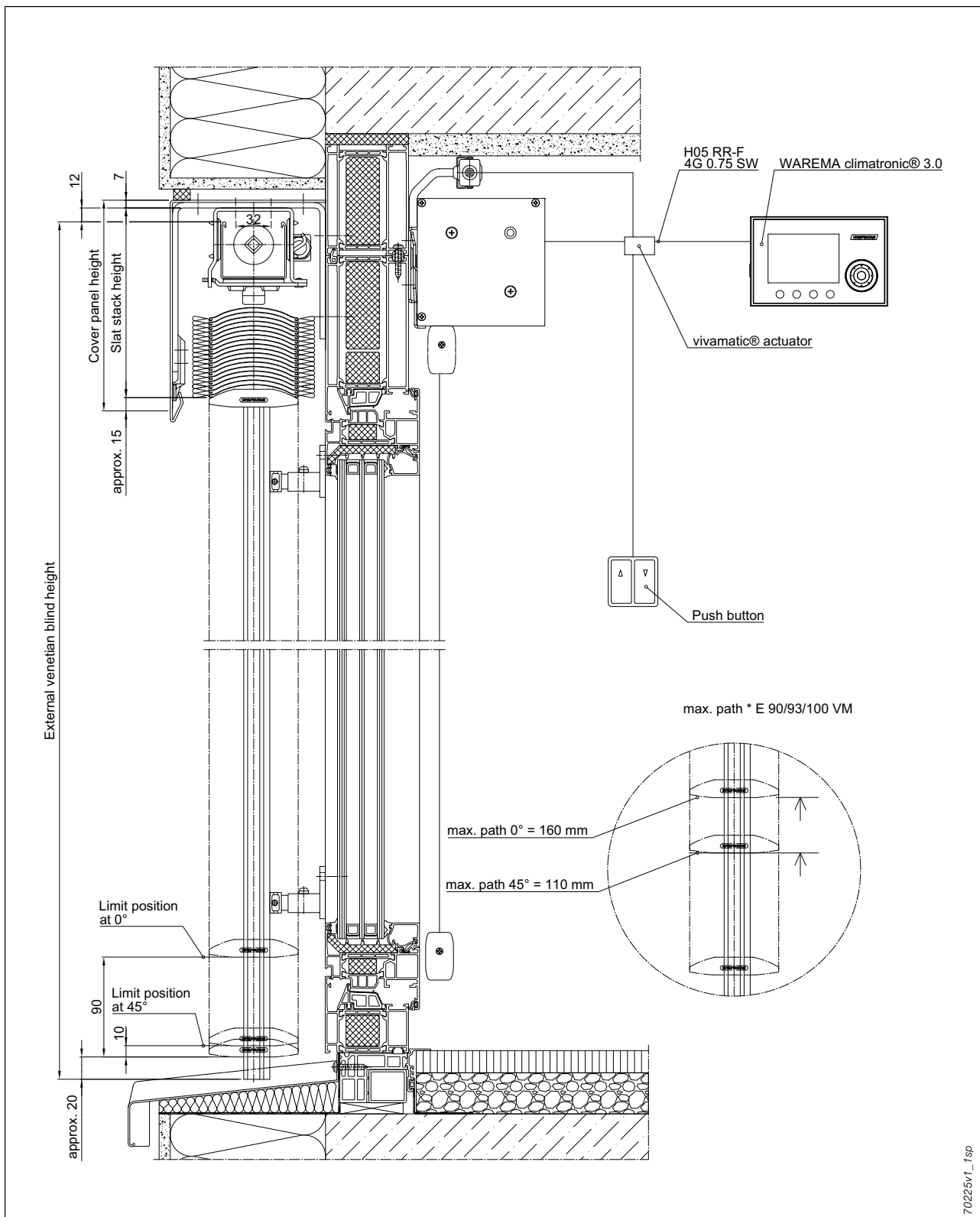


fig. 224: Mounting example of venetian blind facade system with vivamatic®

\*maximum temporarily required movement path depending on external venetian blind type and slat position. This allows readjusting or closing the slats when the external venetian blind is completely lowered. This function is automated and controlled by the higher level control. User intervention is not required.

## Mounting example

### WAREMA venetian blinds facade system with vivamatic®

### E 93 A6 VM with angular cover panel, interior blind and WAREMA climatronic® 3.0

**MINERGIE®**

Mehr Lebensqualität, tiefer Energieverbrauch  
Meilleure qualité de vie, faible consommation d'énergie

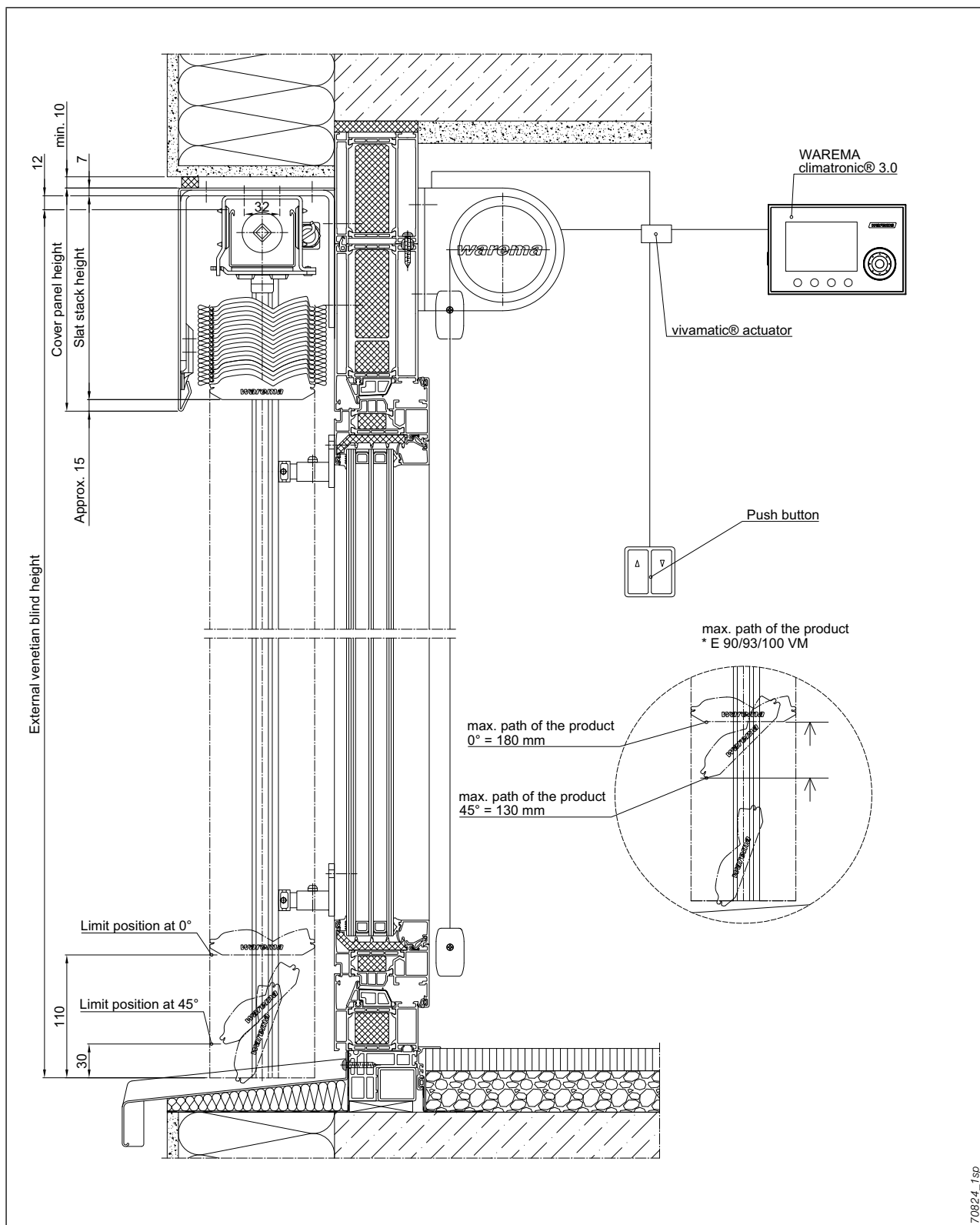


fig. 225: Mounting example of venetian blind facade system with vivamatic®

\*maximum temporarily required movement path depending on external venetian blind type and slat position. This allows readjusting or closing the slats when the external venetian blind is completely lowered. This function is automated and controlled by the higher level control. User intervention is not required.

## Description/type overview

### slowturn

#### slowturn – reduced slat tilting speed for external venetian blinds

External venetian blinds with the equipment option slowturn feature a reduced slat tilting speed which allows more exact positioning of slats compared to external venetian blinds without supplementary accessory, with higher-level control system as well as with manual operation. The available tilting time is three times as long as for external venetian blinds without supplementary accessory. The movement speed of external venetian blinds is not affected by the slowturn function.

#### Highlights:

- More precise slat positioning through reduced slat tilting time
- Models generally with standard external venetian blinds motors 230 V AC
- We recommend control via an intelligent WAREMA sun shading control system for best possible energy efficiency.

#### Notes:

- Control should be carried out via a sun shading control system with adjustable slat tilting times (e.g. WAREMA climatronic® 3.0).
- When using WAREMA mobile system (WMS), commissioning has to be carried out via the WMS Studio software. Operation with WAREMA radio system EWFS is not possible, for control systems with preset time logic function please consult WAREMA before execution.

#### Table of available types with slowturn

slowturn	Maximum dimensions
E 60/80 A2 S ST	see resp. ext. venetian blind basic type
E 60/80 A6 S ST	
E 60/80/100 AF ST	
E 60/80/100 AF A6 ST	
E 73/90/93 A2/A6 ST	
E 50/80 Genius ST	

#### Notes:

- Tilting/movement behaviour
  - 60/80 S beaded slats: closed down / closed to the inside up
  - 60/80/100 mm flat slats: closed down / 0° up
  - 73/90/93 dim-out slats: closed down / 0° up (page 30).
- Max. 3 units can be coupled mechanically

slowturn with daylight transport element	Maximum dimensions
E 60/80 A2 S ST TLT <sup>1)</sup>	see resp. ext. venetian blind basic type
E 60/80 A6 S ST TLT <sup>1)</sup>	
E 60/80/100 AF ST TLT <sup>1)</sup>	
E 60/80/100 AF A6 ST TLT <sup>1)</sup>	
E 73/90/93 A2/A6 ST TLT <sup>1)</sup>	

<sup>1)</sup> Tilting behaviour of external venetian blinds with slowturn and daylight transport element from page 30 ff.

#### Notes:

- Slat tilting of external venetian blinds from closed towards the outside down to horizontal up (page 30)
- Max. 3 units can be coupled mechanically

#### Operating principle of slowturn

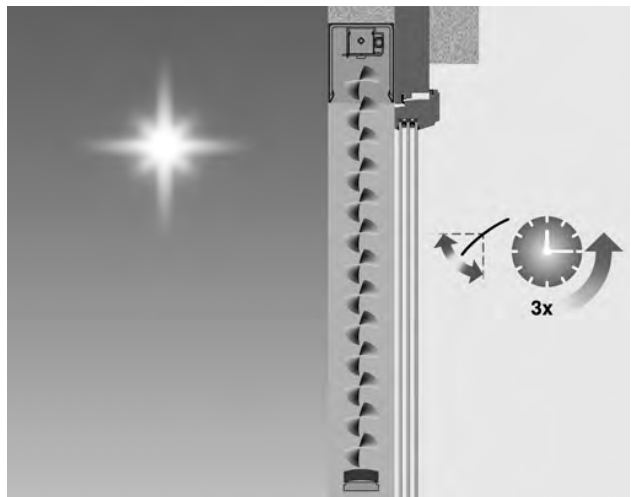


fig. 226: Operating principle of external venetian blinds with slowturn

## Description

### Work setting

#### Work setting snap-action switch (standard work setting)

The slats move down in 38° work setting and up with max. opened slat position. The slats can be tilted to any intermediate position from 38° to horizontal. The closing of the curtains with individual setting option of the user is carried out in the limit position.

Instead of the model with work setting, we recommend the use of the equipment option vivamatic®, since the slat angle is also freely adjustable to the current sun elevation angle during lowering and the slat angle can also be freely adjusted and closed in each curtain position.

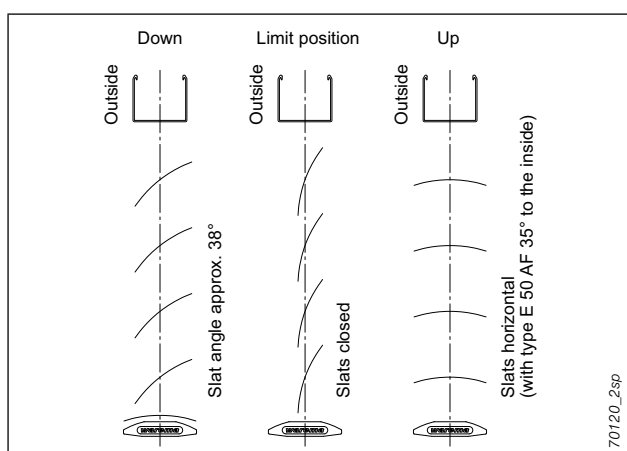


fig. 227: Snap-action switch

#### Work setting snap-action switch with motor with 2 lower limit switches

Model as described above, but motor with 2 lower limit switches. The 1st lower limit switch prevents the closing of the curtains in the limit position, the 2nd lower limit switch enables the path of the product until the closed position. Model only possible with suitable motor control unit, e.g. MSE. Furthermore, a 5-wire connecting line is necessary for the motor.

Instead of the model with work setting, we recommend the use of the equipment option vivamatic®, since the slat angle is also freely adjustable to the current sun elevation angle during lowering and the slat angle can also be freely adjusted and closed in each curtain position.

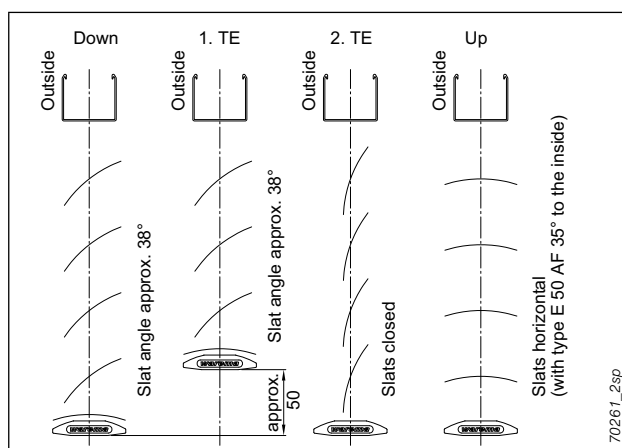


fig. 228: Snap-action switch with 2 lower limit switches



## Description

### Daylight transport element TLT



fig. 229: Daylight transport system

**1 glare protection section**

**2 light control section**

- Glare-free computer workstations
- Sun shading system and room lighting at the same time
- Optimises the ratio between thermal radiation transmission and incidence of daylight, reducing the costs for cooling load and artificial light while ensuring optimum comfort!

**Light guidance and glare control** – external venetian blinds and daylight guiding venetian blinds with the additional benefit of guiding daylight to the back of rooms while at the same time providing glare-free workplaces.

The requirements for modern sun shading systems – especially for office and computer workstations – have become more complex and demanding.

In addition to the known advantages of external venetian blinds and daylight guiding venetian blinds, an ideal sun shading system should also meet additional requirements:

- Glare-free zone in the work area – even when the sun is low
- Daylight guiding for even lighting within a room and thus also a reduction of artificial light
- The individual adjustment of external venetian blinds and daylight guiding venetian blinds by the user ensures visual contact to the outside.

#### Note:

Convenient double curtains allow independent tilting of each slat section.

## Construction limit values

### Daylight transport element TLT

#### Construction limit values for daylight transport elements in mm

Types	Construction limit values								Average weight in kg/m <sup>22</sup>
	Individual unit				Group unit				
	Width <sup>1)</sup>		Height	Area <sup>2)</sup> in m <sup>2</sup>	max. width	Area <sup>2)</sup> in m <sup>2</sup>	left/right of driving curtain max. coupl. each side		
	min. <sup>3)</sup>	max.					Area in m <sup>2</sup>	Number of curtains	
External venetian blinds, beaded slats with cable and rail guidance									
C 60/80 A2/A6 S	450	5000	4000	12	12000	12	12	2	2.7/2.8
E 60/80 A2/A6 S	600	5000	4000	20	12000	26–30	13	2	3.0/3.1
External venetian blinds, flat slats with cable guidance									
C 50/60/80/100 AF	450	5000	4000	13	12000	13	13	2	2.3–2.5
E 50/60/80/100 AF	600	5000	4000	20	12000	32–35	13	2	2.5–2.7
E 150 AF	600	5000	4000	20	12000	24–26	13	2	2.9
External venetian blinds, flat slats with rail guidance									
C 60/80/100 AF A2/A6	450	5000	4000	13	12000	13	13	2	2.3–2.5
E 60/80/100 AF A6	600	5000	4000	20	12000	32–35	13	2	2.5–2.7
External venetian blinds, dim-out slats with cable and rail guidance									
C 73/90/93 A2	450	4500	4000	10	12000	10	10	2	2.9
E 73/90/93 A2	650	4500	4000	15	12000	23–24	13	2	3.2
C 73/90/93 A6	450	4500	4000	10	12000	10	10	2	2.9
E 73/90/93 A6	600	4500	4000	15	12000	23–24	13	2	3.2
External venetian blinds with cable guidance									
C 50 A1	450	4000	3000	12	12000	30	20	2	2.3
E 50 A1	600	4000	3000	12	12000	30	20	2	2.5
Daylight guiding venetian blinds, slats with concave top surface									
C 50 L	450	3000	3000	9	9000	20	9	1	2.3
E 50 L	600	3000	3000	9	9000	27	9	1	2.6
C 60/80 L	450	3000	3000	8	9000	8	8	1	3.9
E 60/80 L	600	3000	3000	9	9000	19	9	1	4.2

<sup>1)</sup> Width = slat size, slat size + 65 mm for model A6 = back edge of the guide rail for guide rail types 1 and 2

<sup>2)</sup> The maximum areas indicated depend on the height; see "Height-to-width ratio of external venetian blinds" on page 392.

<sup>3)</sup> Asymmetrical running of slats cannot be prevented for small widths. (Please pay attention to the external venetian blind guideline ITRS Industrieverband Technische Textilien – Rollläden – Sonnenschutz e.V.)

#### Notes:

- Any other dimensions are subject to individual clarification with the Applied Engineering department!
- For external venetian blinds with equipment variant slow-turn the construction limit values and slat stack heights of the corresponding basic type should be assumed. In this case, up to 3 curtains can be used as a group unit using one drive.
- The model AS + TLT together is not available for external venetian blinds with dim-out slats.
- For 60 AF A6 TLT, the noise-optimised bracket, art. no. 2001461 with a one-piece lining clip, art. no. 2012281, is used as standard, see page 334.

# Description/Measuring instructions

## Daylight transport element TLT

### Standard version

up to 1499 mm clear height<sup>1)</sup>: "glare protection section"  
 max. ½ clear height  
 up to 1500 mm clear height<sup>1)</sup>: "glare protection section"  
 max. ⅔ clear height  
 Other heights for the daylight transport section are available on request.

### General notes:

We recommend a large daylight transport section to be able to use as much daylight as possible. For computer workstations the daylight section should start approx. 30 cm above the head of a person when sitting.

### Notes for front-mounted external venetian blinds:

- Maximum order height for models with daylight transport element: 3000 mm.
- For front-mounted external venetian blinds, the clearance height applies as order height.

Clearance height = order height - box height

Box heights = 169 mm und 189 mm

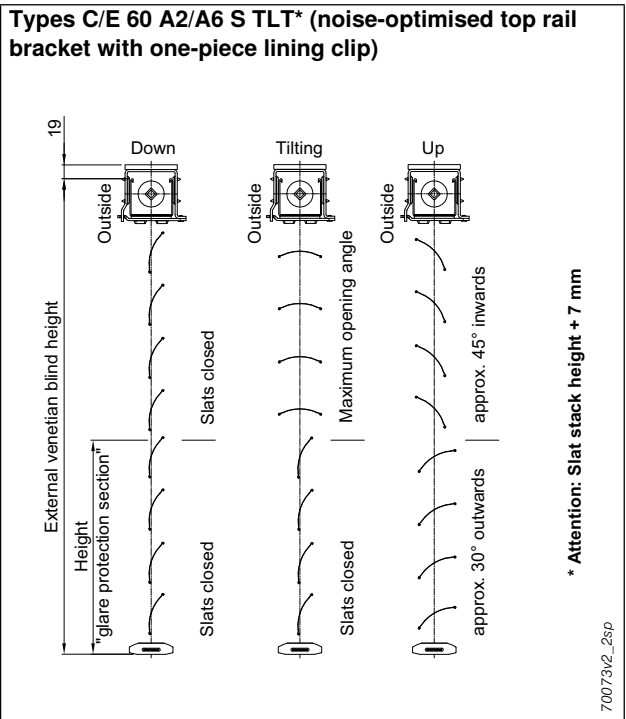
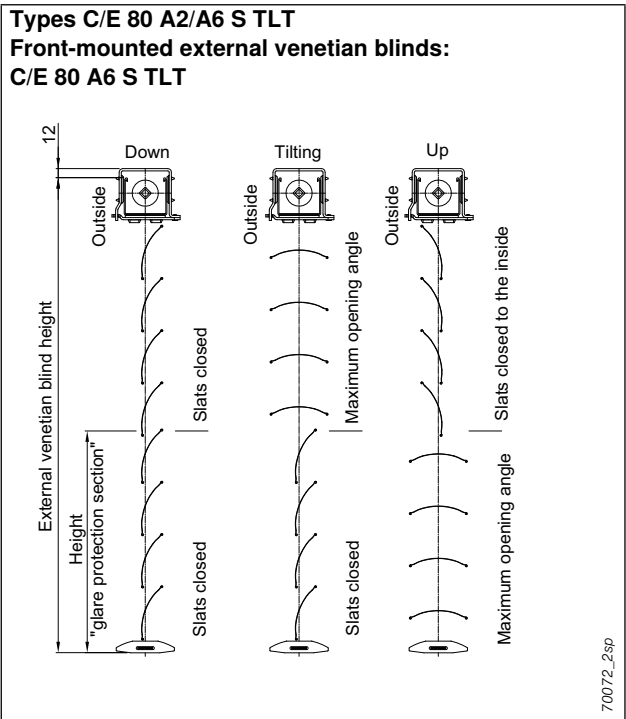


fig. 230: Movement behaviour and slat positions of different types

<sup>1)</sup> Clear height = lower edge of stack to bottom edge of bottom rail



General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

## Description/Measuring instructions

### Daylight transport element TLT

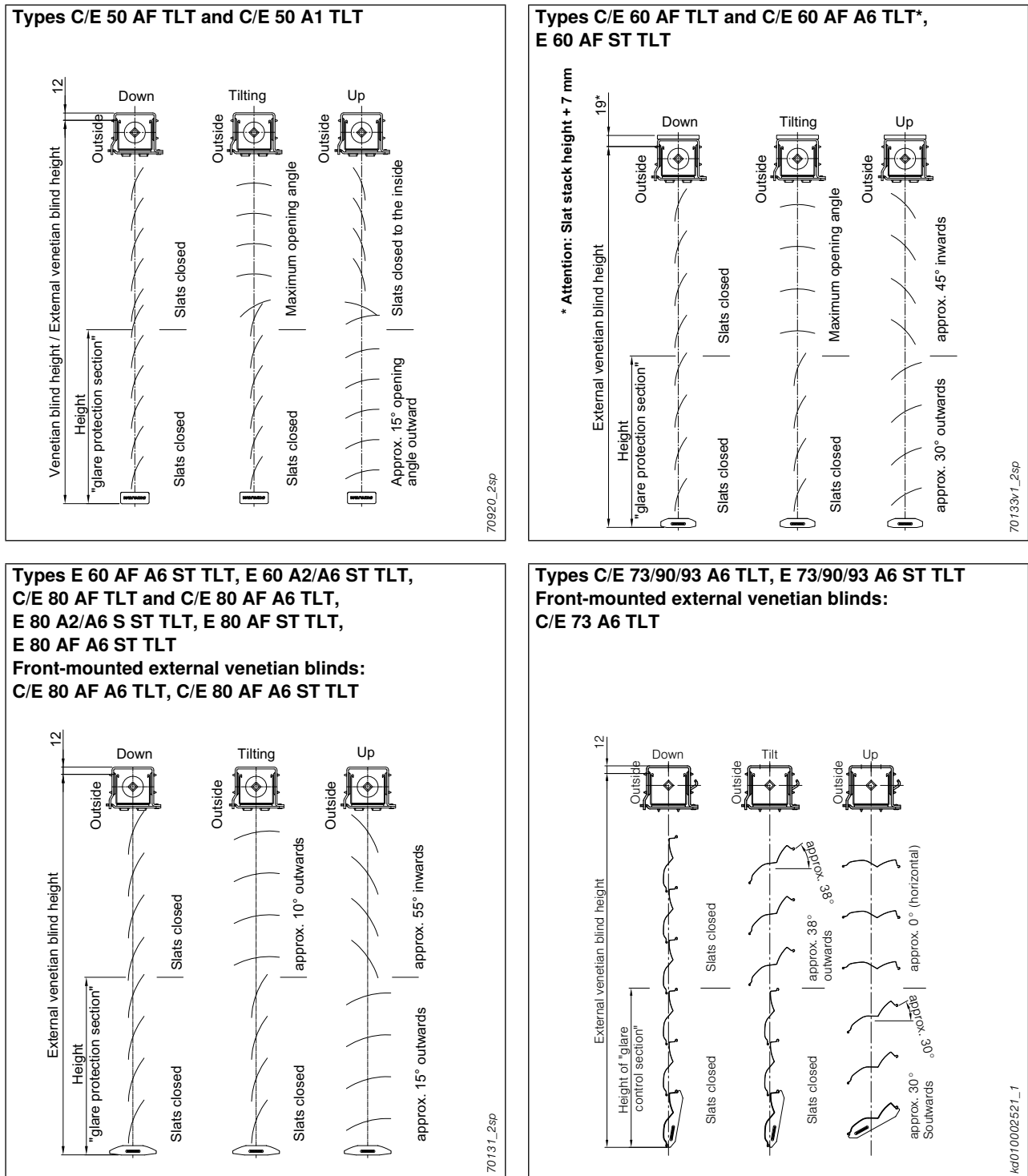


fig. 231: Movement behaviour and slat positions of different types

Description/Measuring instructions

Daylight transport element TLT

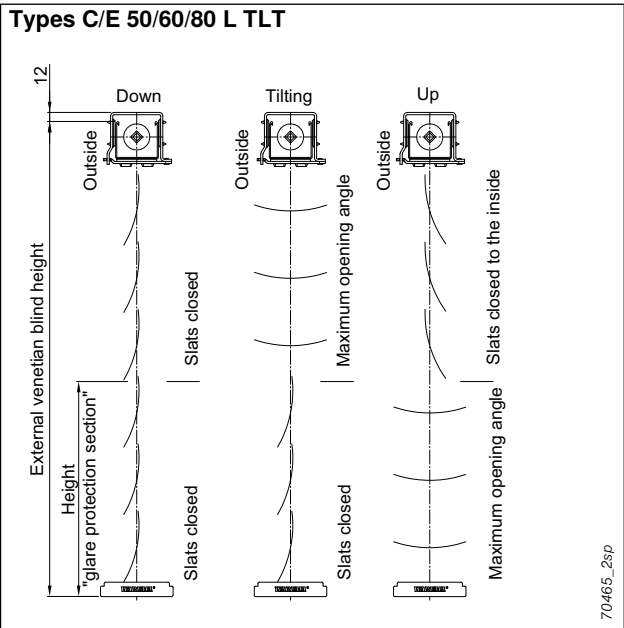
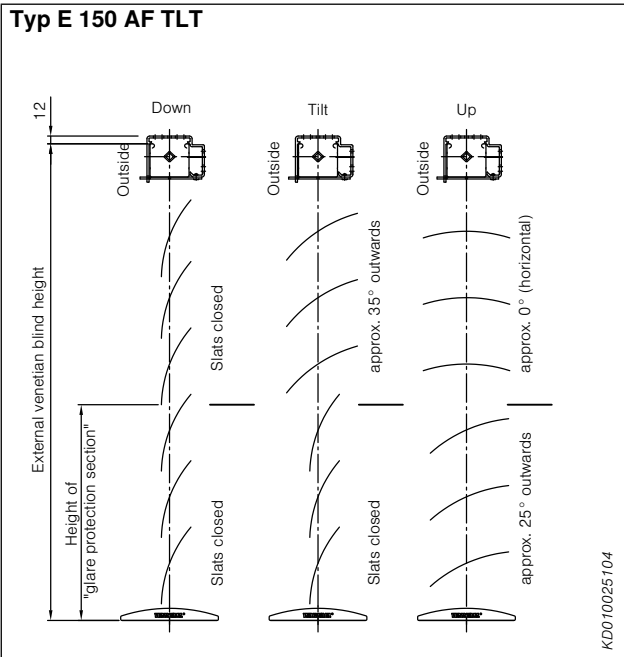
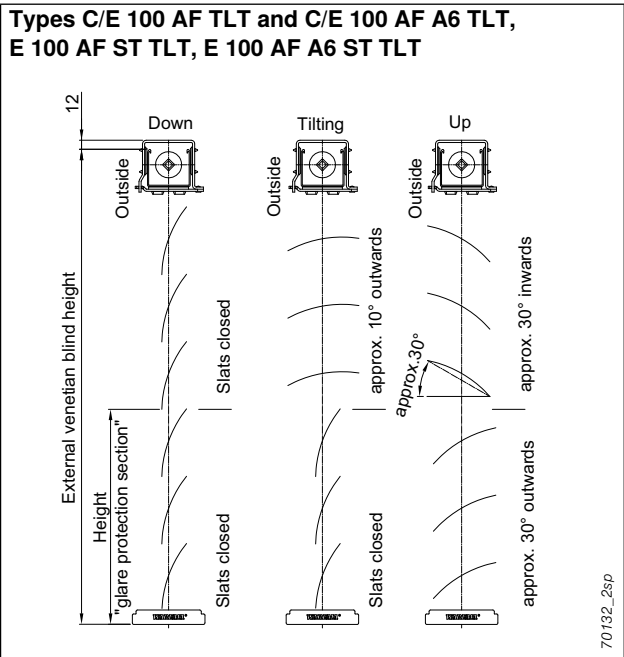


fig. 232: Movement behaviour and slat positions of different types

Drives Control systems	Safety systems Accessories	Planning	Cover panels	Guides	Light guidance/ external venetian blinds	Complete external venetian blinds	Premium facade venetian blinds	Basic facade external venetian blinds	Product characteristics	General information
---------------------------	-------------------------------	----------	--------------	--------	--	--------------------------------------	-----------------------------------	---	----------------------------	------------------------

## Slat perforation

### External venetian blinds

Model with perforated slats subject to surcharge, additional perforations on request.

Delivery time for model with perforated slats is up to 12–14 weeks, standard perforation/colour combinations usually in stock.

**Note:** Not possible for all slat models.

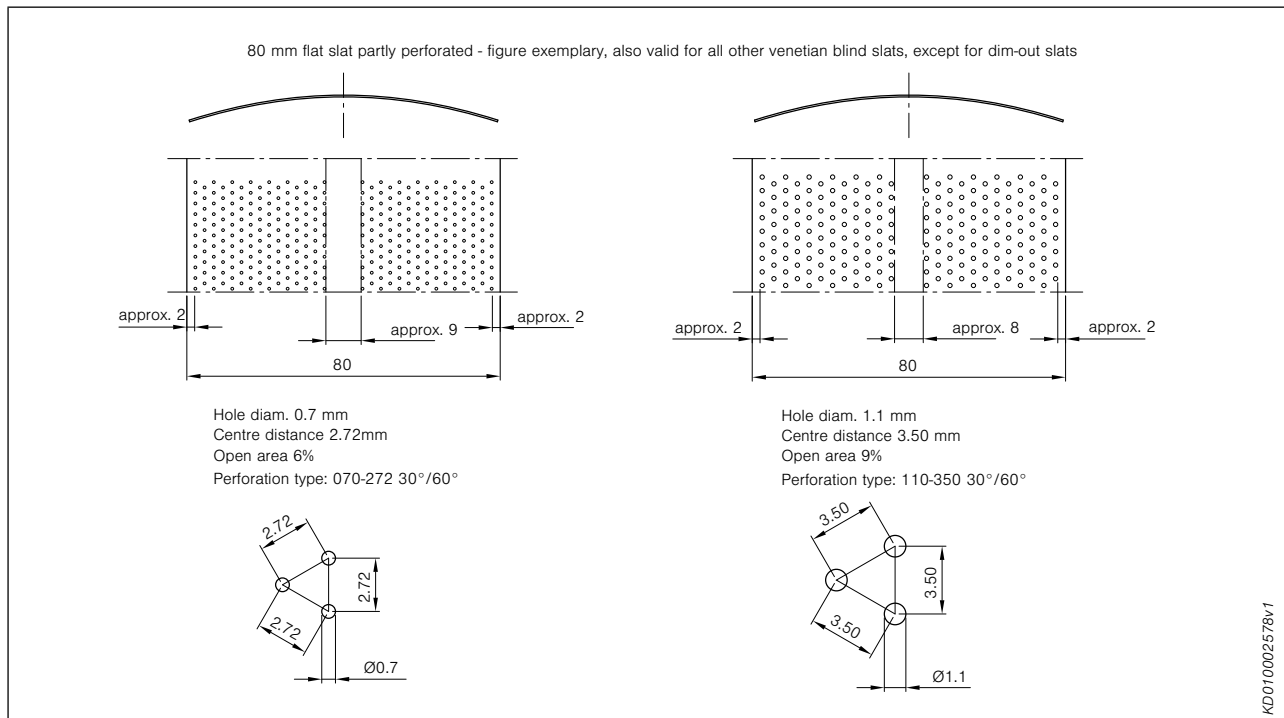


fig. 233: 80 mm flat slat partly perforated

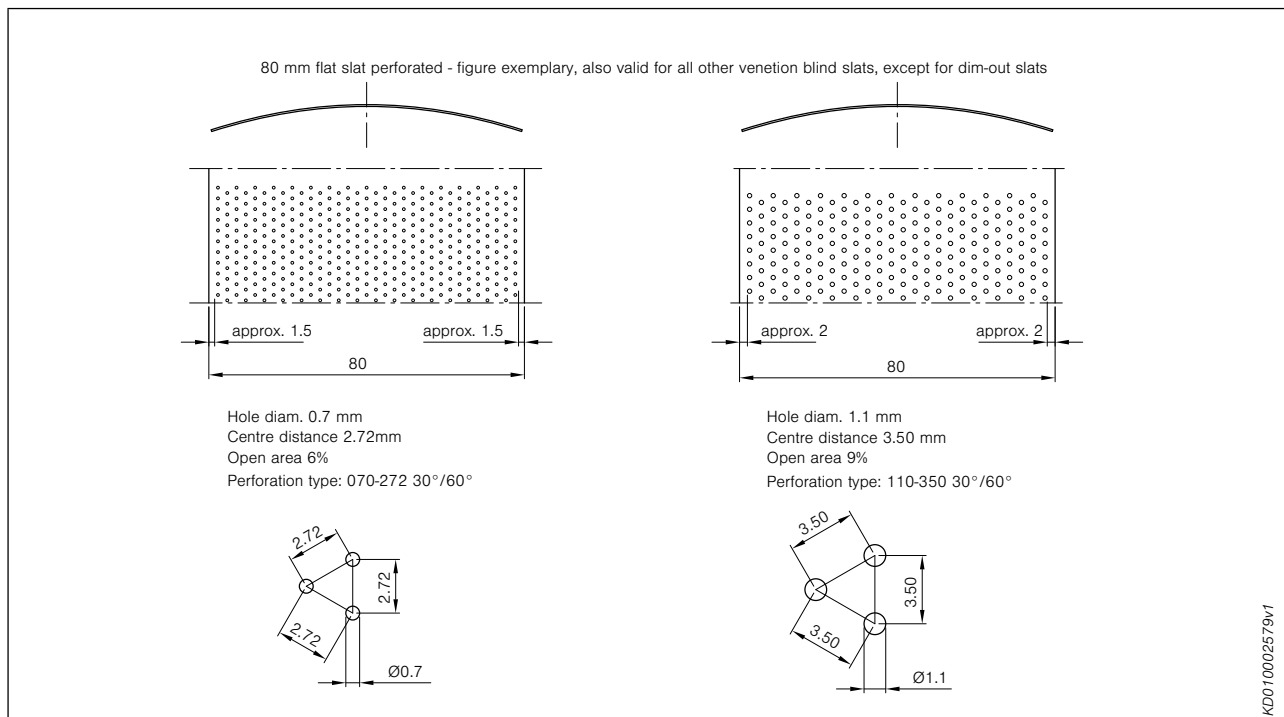


fig. 234: 80 mm flat slat perforated

Notes

Drives Control systems	Safety systems Accessories	Planning	Cover panels	Guides	Light guidance/ external venetian blinds	Complete external venetian blinds	Premium facade venetian blinds	Basic facade external venetian blinds	Product characteristics	General information
---------------------------	-------------------------------	----------	--------------	--------	--	--------------------------------------	-----------------------------------	---	----------------------------	------------------------

## Description

### External venetian blinds with double curtain, with beaded slats/flat slats

**E 80 A2 S D, E 80 A6 S D, E 80 AF D**

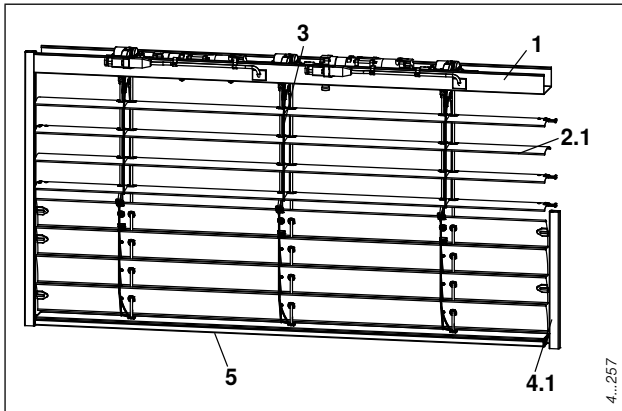


fig. 235: Double curtain E 80 A6 S D

- 1 Top rail
- 2 Slats
  - 2.1 Beaded slat
  - 2.2 Flat slat
- 3 Tilting and lifting tape
- 4 Lateral guidance
  - 4.1 Rail
  - 4.2 Tension cable
- 5 Bottom rail

### Application

For mounting on transom and mullion facades or conservatories, in the reveal or in ventilated facades, in double skin facades, in front of the facade or indoors.

### Operation

#### Motor

2 motors, raising and lowering as well as tilting by actuating a switch, slat turning for the light control section by actuating a tilt switch.

Voltage: 230 V AC, other voltages optional

Frequency: 50 Hz, other frequencies optional

Degree of protection: IP 54

Plug-in connector: Hirschmann coupling

Upon reaching the upper and lower limit position the drive switches off using built-in, adjustable limit switches.

The height of the external venetian blind can be flexibly divided. The slats of both curtain sections are continuously and independently adjustable (patented). The tilting range is limited from the slats being closed to the outside to being in the horizontal slat position.

#### Top rail (1)

Material: aluminium, extruded

Material thickness: 1.5 mm

Dimensions (WxH): 100x51 mm

Profile: C-shaped profile

Surface: plain, optionally powder-coated or anodised

Fixing: with aluminium supports, plain

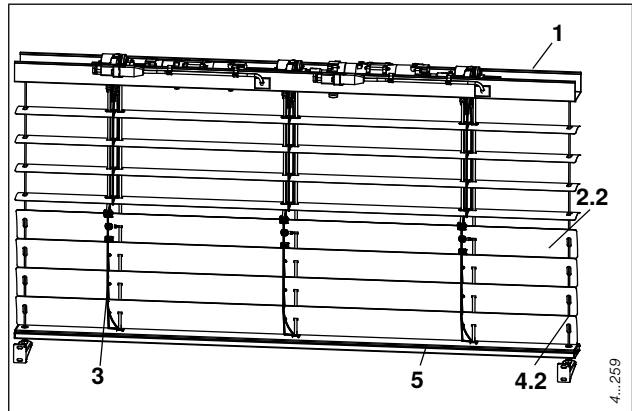


fig. 236: Double curtain E 80 AF D

### Tilt rod

Material: steel, zinc-coated

Material thickness: 1 mm

Dimensions (WxH): 12x12 mm

Profile: square tube

Surface: plain

### Bearing

Maintenance-free, enclosed

Housing: plastic, with Teflon

Tilting reel: plastic

Tape reel: plastic

Segment tilting for the slats of the glare protection section (lower curtain section) and forced tilting for the slats of the light control section (upper curtain section) to prevent the slats from automatically self-adjusting.

### Slats (2)

#### Beaded on both sides, curved, type 80 S (2.1)

Material: aluminium, special alloy

Material thickness: approx. 0.44 mm

Dimensions (W): 80 mm

Installation: convex

Surface: enamel finish resistant to corrosion using a special process

Colour: according to WAREMA colour chart for external venetian blinds

All cutouts in the slats are fitted with black eyelets to guide the lifting tapes (reduction of wear) and for attaching the webs of the tilting tape.

#### Flat slats, curved, no eyelets (2.2)

Material: aluminium, special alloy

Material thickness: approx. 0.45 mm

Dimensions (W): 80 mm

Profile: convex

Surface: enamel finish resistant to corrosion using a special process

Colour: according to WAREMA colour chart for external venetian blinds

The top slats as well as the deflection slats in the partition area of the blind are reinforced and equipped with black eyelets (to reduce abrasion).



## Description

### External venetian blinds with double curtain, with beaded slats/flat slats

#### E 80 A2 S D, E 80 A6 S D, E 80 AF D

The slats of the lower panel section are closed to the outside while being lowered and open horizontally while being raised. The slats of the upper panel section move up and down with the slats at a pre-set slat angle. The spacing between the slats is 72 mm.

four anodised-look colours (WC31 - WC34) and further colours according to WAREMA Colour World (in WAREMA colour specification).

Other colour specifications and special colours are available on request at a surcharge.

#### Tilting tape/lifting tape (3)

##### Tilting tapes

Special heavy-duty version with double webs

Material: polyester, with Kevlar core

Colour: black, optionally grey

Each slat is attached to the top web of the tilting tape and threaded between the double webs.

##### Lifting tapes

Material: polyester, with special coating

Colour: black, optionally grey

#### Lateral guidance (4)

##### Rail – A6 (4.1)

With black sealing strips inserted for noise reduction

Material: aluminium, extruded

Dimensions (WxD): 25x18 mm, other rail variants optional, from page 273

Profile: C-shaped profile

Surface: powder-coated, optionally anodised

Fixing: 2-piece guide rail bracket, aluminium and plastic

End cap: plastic, black, optionally grey

Sealing strip: weather-proof, UV stable, black

Guide pin: polyamide, fibreglass-reinforced, impact-resistant connection with the slats, alternately pinned.

##### Tension cable – A2 (4.2)

Stranded wire

Material: steel, corrosion-resistant

Coating: polyamide

Dimensions (Ø): 3.3 mm

Colour: black or transparent coating

Fixing: tension cable bracket, aluminium

The cable guidances are fixed with a special spring tension device to compensate for thermal changes in the length of the top rail. Cable guidances run through the slats and the bottom rail. They are fixed to the window or the wall using tension cable brackets.

#### Bottom rail (5)

With end caps

Material: aluminium, extruded

Dimensions (WxH): 80x15 mm

Surface: powder-coated, optionally anodised

End caps: plastic, black, optionally grey

Bottom rail for guide rails A6 with sliding guide pins to prevent the external venetian blind from unhinging.

#### Colours

Powder coating of aluminium parts with chrome-free pre-treatment according to valid RAL CLASSIC colour chart (except camouflage and luminous colours) or in six DB colours as well as eight textured colours (W4914 - W4921),

## Construction limit values/Measuring instructions

### Double curtains

#### Construction limit values in mm

Types	Construction limit values									Average weight in kg/ m²
	Individual unit					Group unit				
	Width <sup>1)2)</sup>		Height		Area in m²	max. width	Area <sup>3)</sup> in m²	left/right of driving curtain max. coupl. each side		
	min.	max.	Total	light control section				Area in m²	Number of curtains	
E 80 A2 S D	900	4000	3800	2500	15	12000	17–22	13	1	3.7 <sup>4)</sup>
E 80 A6 S D	900	4000	3800	2500	15	12000	17–22	13	1	3.7
E 80 AF D	900	4000	3800	2000	15	12000	17–25	13	1	3.5 <sup>4)</sup>

Tab. 13: Construction limit values double curtain E 80 A2 S D/A6 S D/AF D

- <sup>1)</sup> Asymmetrical running of slats cannot be prevented for small widths. (Please pay attention to the external venetian blind guideline ITRS Industrieverband Technische Textilien – Rollläden – Sonnenschutz e.V.)
- <sup>2)</sup> Width = slat size, slat size + 65 mm = back edge of the guide rail for guide rail types 1 and 2.
- <sup>3)</sup> The maximum areas indicated depend on the height; see "Height-to-width ratio of external venetian blinds" on page 392.
- <sup>4)</sup> Cable force: 350 N per tension cable.

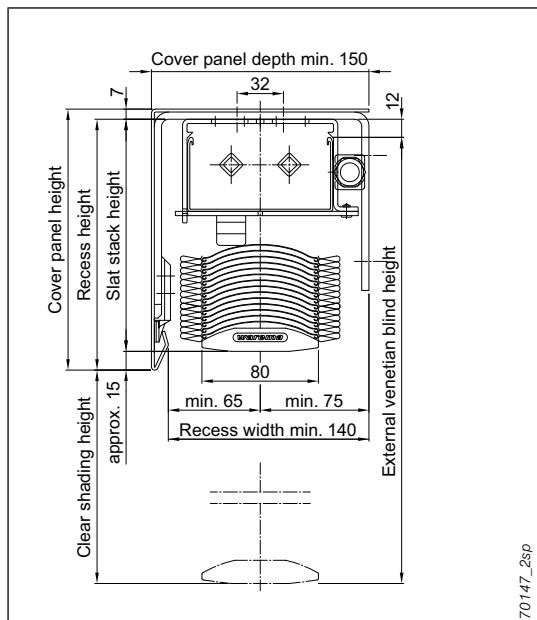


fig. 237: Measuring instructions double curtain  
E 80 A2 S D/A6 S D/AF

#### Measuring instructions

Slat stack height as per table

Recess height = slat stack height + 15 mm

Cover panel height = slat stack height + 20 mm

#### Number of cable guidances

Slat size	Cable guidances
Up to 3000 mm	2
From 3001 mm	3

When ordering, please indicate positioning of additional cable guiding (starting inside from the left)!

#### Slat stack height determined from external venetian blind height

Types	External venetian blind height in mm														
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800
E 80 A2 S D/A6 S D	156	167	178	189	200	211	222	233	244	255	266	277	288	299	310
E 80 AF D	132	137	142	147	152	157	162	167	172	177	182	187	192	197	202

#### Slat stack height determined from clear shading height

Types	Clear shading height in mm														
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	
E 80 A2 S D/A6 S D	165	177	188	200	212	223	235	247	258	270	281	293	305	–	
E 80 AF D	135	141	146	151	156	161	166	171	176	182	187	192	197	202	

Slat stack heights are approximate values. For technical reasons, they might be higher or lower.

# Mounting example Double curtainsBeaded slats with rail guidance E 80 A6 S D with angular cover panel

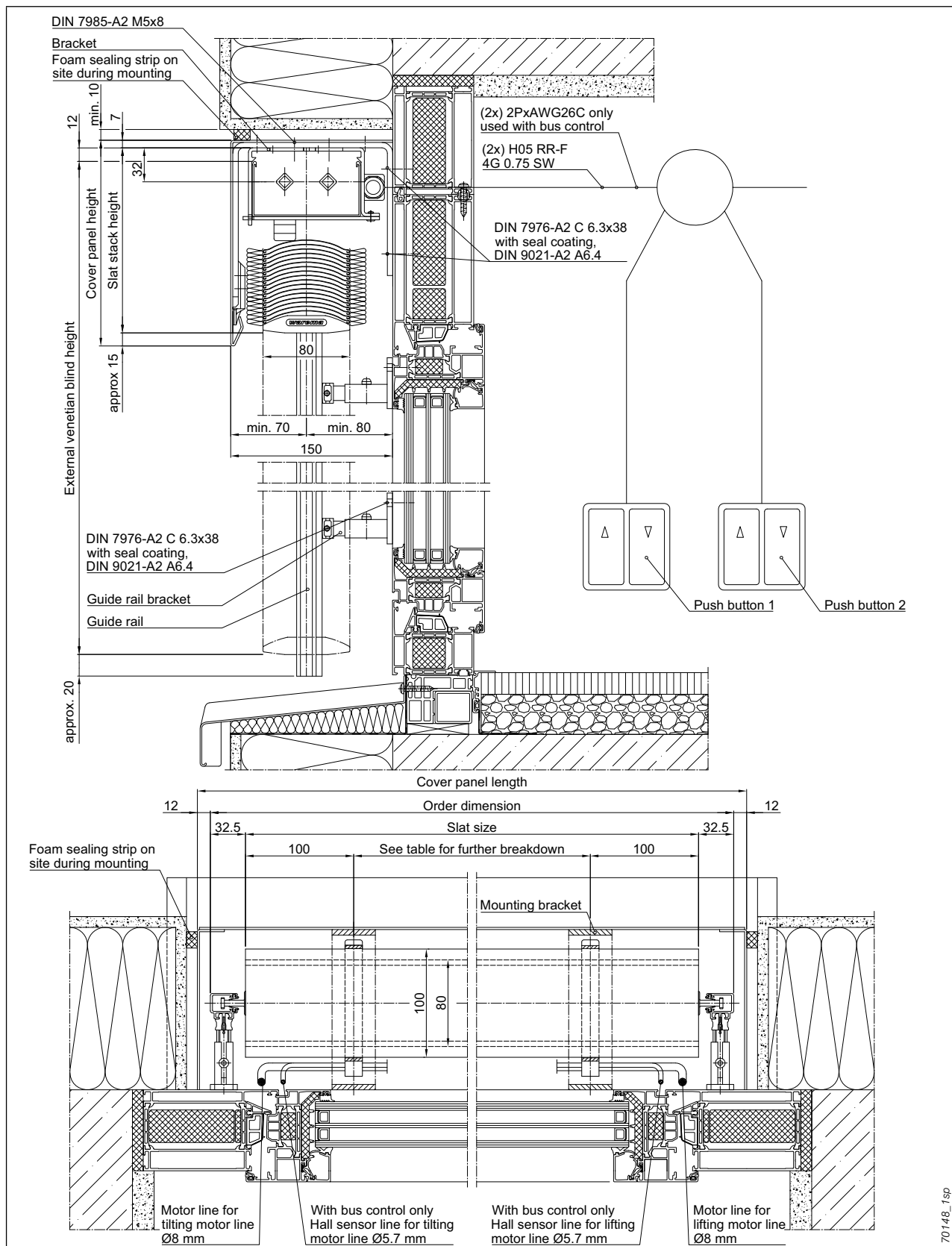


fig. 238: Mounting example, double curtain E 80 A6 S D with angular cover panel

## Mounting example

### Double curtains

### Flat slats with cable guidance

E 80 AF D with angular cover panel

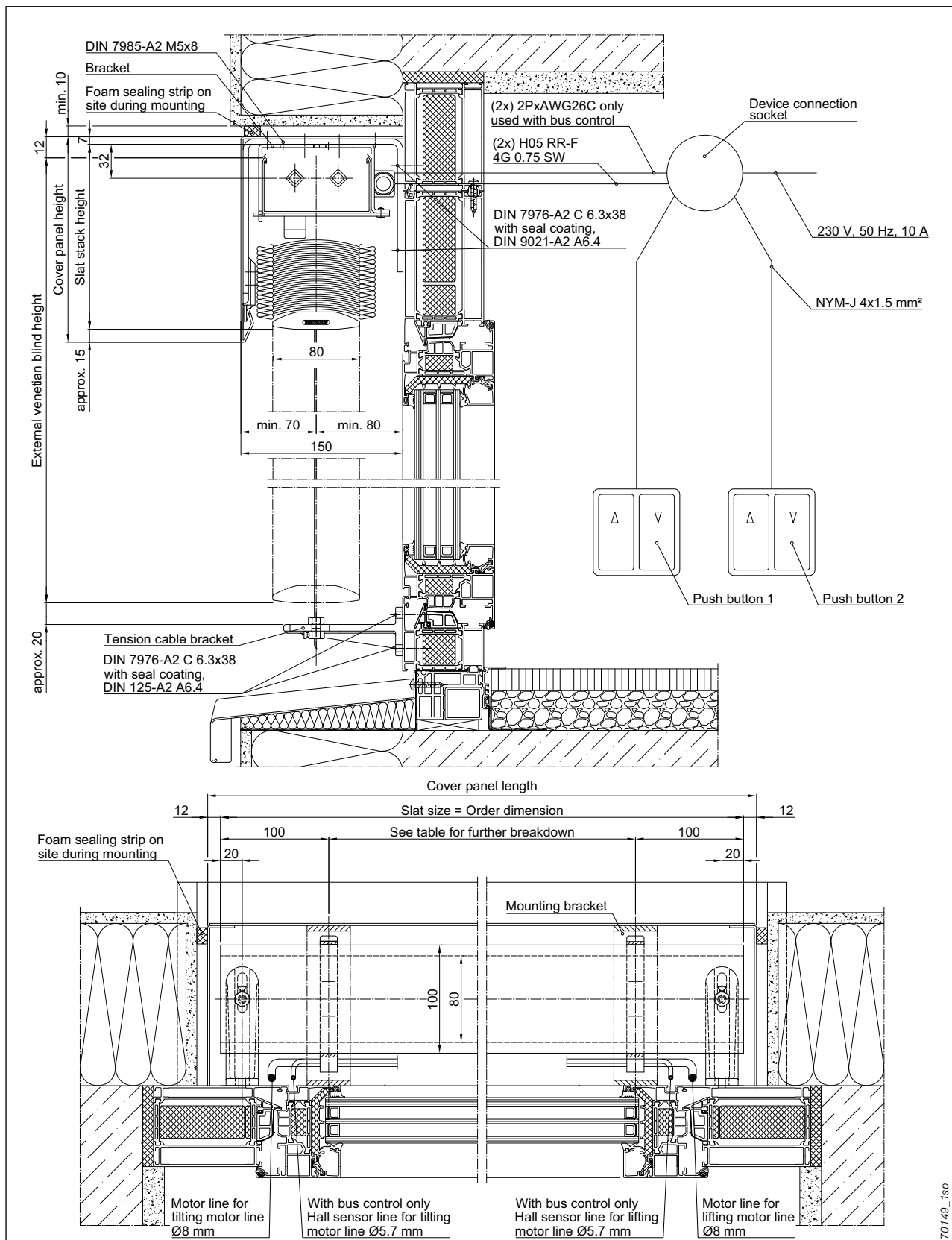


fig. 239: Mounting example, external venetian blind E 80 AF D with angular cover panel

70149\_1sp

## Description

### Daylight guiding venetian blinds C 50/60/80 L, E 50/60/80 L

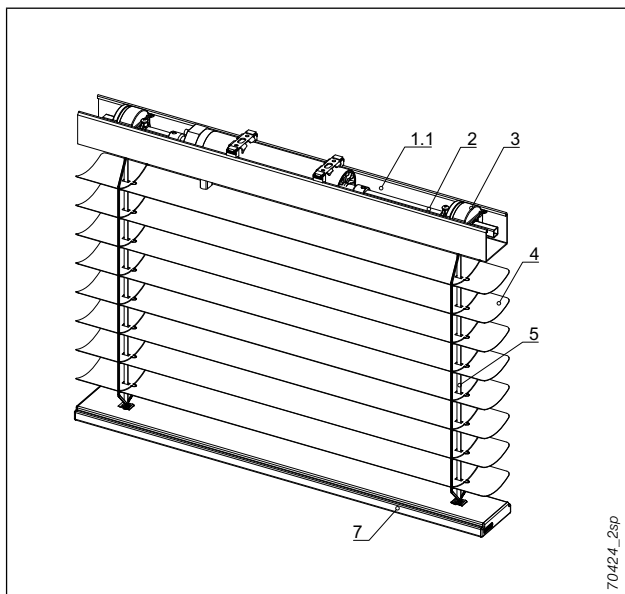


fig. 240: Daylight guiding venetian blinds E 80

- 1 Top rail
  - 1.1 Standard top rail
- 2 Tilt rod
- 3 Bearing
- 4 Slats
- 5 Tilting and lifting tape
- 6 Lateral guidance
  - 6.1 Rail
  - 6.2 Tension cable
- 7 Bottom rail
  - 7.1 for C/E 50/60/80 L
  - 7.2 Optional: half-round bottom rail

#### Application

For mounting indoors or in double skin facade protected from the weather.

#### Operation

##### Motor

The slats are raised and lowered as well as tilted by actuating an operating switch.

Voltage: 230 V AC, other voltages optional

Frequency: 50 Hz, other frequencies optional

Degree of protection: IP 54

Plug-in connector: Hirschmann coupling

The drive switches off upon reaching the upper or lower limit position using built-in, adjustable limit switches.

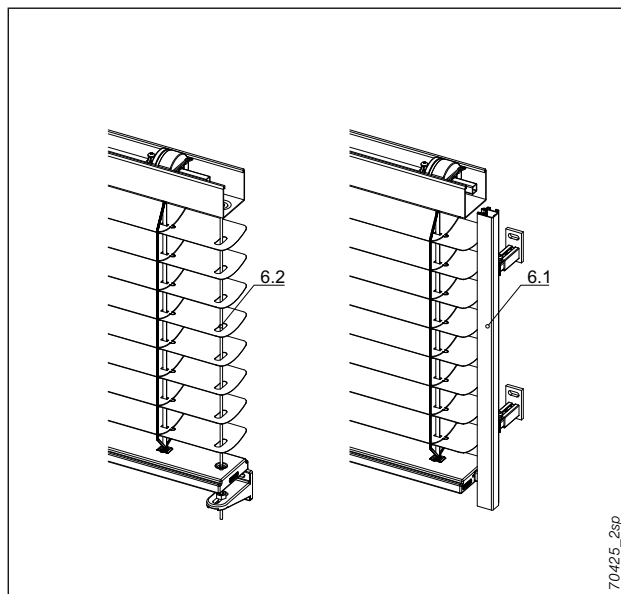


fig. 241: Daylight guiding venetian blinds E 80 with lateral guidance

#### Crank

The slats are raised and lowered as well as tilted with the crank.

Crank rod with collapsible crank; sealed joint plate and square with patented thermal separation

Material: aluminium

Surface: C0 anodised, optional powder coating in RAL 9016 or C34 anodised

Crank holder: plastic, grey, white or brown, crank holder with magnet optional

#### Top rail (1.1)

##### Standard top rail

Material: aluminium, extruded

Material thickness: 1.5 mm

Dimensions (WxH): 59x51 mm

Profile: C-shaped profile

Surface: plain, optionally powder-coated or anodised

Fixing: with noise-optimised top rail brackets made of plain aluminium.

#### Tilt rod (2)

Material: steel, zinc-coated

Material thickness: 1 mm

Dimensions (WxH): 12x12 mm

Profile: square tube

Surface: plain

#### Bearing (3)

Maintenance-free, enclosed

Housing: plastic, with Teflon

Tilting reel: plastic

Tape reel: plastic

Segment tilting to prevent self-acting adjustment of slats.

## Description

### Daylight guiding venetian blinds C 50/60/80 L, E 50/60/80 L

#### Slats (4)

##### Flat slats, curved

Material: aluminium  
Material thickness: 0.24 mm, 0.53 mm, 0.53 mm  
Dimension (W): 50 mm, 60 mm, 80 mm  
Installation: concave  
Surface: Top surface coated with mirror foil (50) or made from mirror-finished purest aluminium with highly reflective coating (60/80) – quality Miro 3, underside lacquered in RAL 7030 matt

alternatively half-sided perforated:

size 50 slat, perforation percentage 8.16 %, slat spacing 29 mm  
size 60 slat, perforation percentage 27.9 %, slat spacing 33 mm  
size 80 slat, perforation percentage 27.9 %, slat spacing 46 mm

##### Alternative:

Material thickness: 0.45 mm  
Dimensions (W): 60/80 mm  
Profile: concave  
Surface: enamel finish, resistant to corrosion using a special process, including edge coating  
Colour: according to WAREMA colour chart for external venetian blinds

The daylight guiding venetian blind moves down with the slats closed to the outside and moves up with the slats closed to the inside.

#### Tilting tape/lifting tape (5)

##### Tilting tapes (5.1)

Special heavy-duty version with double webs  
Material: polyester, with Kevlar core  
Colour: grey  
Each slat is attached to the top web of the tilting tape and threaded between the double webs.

##### Lifting tapes (5.2)

Material: polyester, with special coating  
Colour: grey

#### Lateral guidance (6)

##### Rail (6.1) (not available for E 50 L)

With black sealing strips inserted for noise reduction

Material: aluminium, extruded  
Dimensions (WxD): 25x18 mm  
Profile: C-shaped profile  
Surface: powder-coated  
Fixing: 2-piece guide rail bracket, aluminium and plastic  
End cap: plastic, grey  
Sealing strip: weather-proof, UV stable, black  
Guide pin: polyamide, sliding, fibreglass-reinforced, in the end cap of the bottom rail

The slats are not guided, guidance is only provided on the bottom rail.

#### Tension cable (6.2)

Stranded wire

Material: steel, corrosion-resistant  
Coating: polyamide  
Dimensions (Ø): 2.3 mm for 50 mm slats  
3.3 mm for 60/80 mm slats

Colour: black or transparent coating  
Fixing: tension cable bracket, aluminium

The cable guidances are fixed with a special spring tension device in the top rail. Cable guidances run through the slats and the bottom rail. They are fixed to the window or the wall using tension cable brackets.

#### Bottom rail (7)

##### for C/E 50/60/80 L (7.1)

Material: aluminium, extruded  
Dimensions (WxH): 50/60/80x20 mm  
Surface: powder-coated, optionally anodised  
End caps: plastic, grey

##### Optional: half-round bottom rail (7.2)

Material: aluminium, extruded  
Dimensions (WxH): 60/80x20 mm  
Surface: powder-coated, optionally anodised  
End caps: plastic, grey

The bottom rail is adapted to the shape of the slats.

#### Colours

Powder coating of aluminium parts with chrome-free pre-treatment according to valid RAL CLASSIC colour chart (except camouflage and luminous colours) or in six DB colours as well as eight textured colours (W4914 - W4921), four anodised-look colours (WC31 - WC34) and further colours according to WAREMA Colour World (in WAREMA colour specification).  
Other colour specifications and special colours are available on request at a surcharge.

#### Accessories

From page 235.

## Construction limit values/Measuring instructions

### Daylight guiding venetian blinds

#### Slats with concave top surface

#### Construction limit values in mm

For external venetian blinds with equipment variant slowturn the construction limit values and slat stack heights of the corresponding basic type should be assumed. In this case, up to 3 curtains can be used as a group unit using one drive.

Types	Construction limit values								Average weight in kg/m²
	Individual unit				Group unit				
	Width <sup>1)</sup>		Height	Area in m²	max. width	Fläche <sup>2)</sup> in m²	left/right of driving curtain max. coupl. each side		
	min. <sup>3)</sup>	max.					Area in m²	Number of curtains	
C 50 L	450	3000	3000	9	9000	20	9	1	2.3
E 50 L	600	3000	3000	9	9000	27	9	1	2.6
C 60/80 L	450	3000	3000	8	9000	8	8	1	3.9
E 60/80 L	600	3000	3000	9	9000	19	9	1	4.2

Tab. 14: Construction limit values for daylight guiding venetian blinds C/E 50/60/80 L

<sup>1)</sup> Width = slat dimension

<sup>2)</sup> The maximum areas indicated depend on the height; see "Height-to-width ratio of external venetian blinds" on page 392.

<sup>3)</sup> Asymmetrical running of slats cannot be prevented for small widths. (Please pay attention to the external venetian blind guideline ITRS Industrieverband Technische Textilien – Rollläden – Sonnenschutz e.V.)

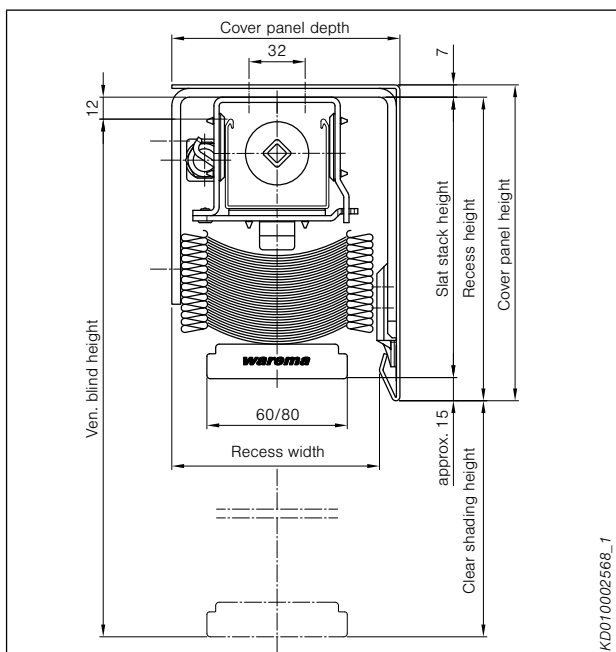


fig. 242: Measuring instructions for daylight guiding venetian blinds C/E 50/60/80 L

#### Measuring instructions

Slat stack height as per table

Recess height = slat stack height + 15 mm

Cover panel height = slat stack height + 20 mm

Types	Min. recess width	Min. cover panel depth
50 L	110	120
60 L	110	120
80 L	120	130

Minimum recess height = 110 mm

(Overlapping between lower edge of cover panel and top slat is ensured when the slats are closed)

#### Slat stack height determined from venetian blind height

Types	Venetian blind height in mm										
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000
E 50 L	139	146	152	159	165	172	179	185	192	198	205
E 60 L	154	164	173	183	192	202	212	221	231	240	250
E 80 L	139	146	152	159	165	172	179	185	192	198	205

#### Slat stack height determined from clear shading height

Types	Clear shading height in mm										
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	
E 50 L	144	151	157	164	171	178	185	192	198	205	
E 60 L	162	172	182	192	202	212	222	233	243	253	
E 80 L	144	151	157	164	171	178	185	192	198	205	

For units with crank drive the slat stack height is reduced by 20 mm.

Slat stack heights are approximate values. For technical reasons, they might be higher or lower.

## Mounting example

### Daylight guiding venetian blinds

Types E 50/60/80 L in existing recess

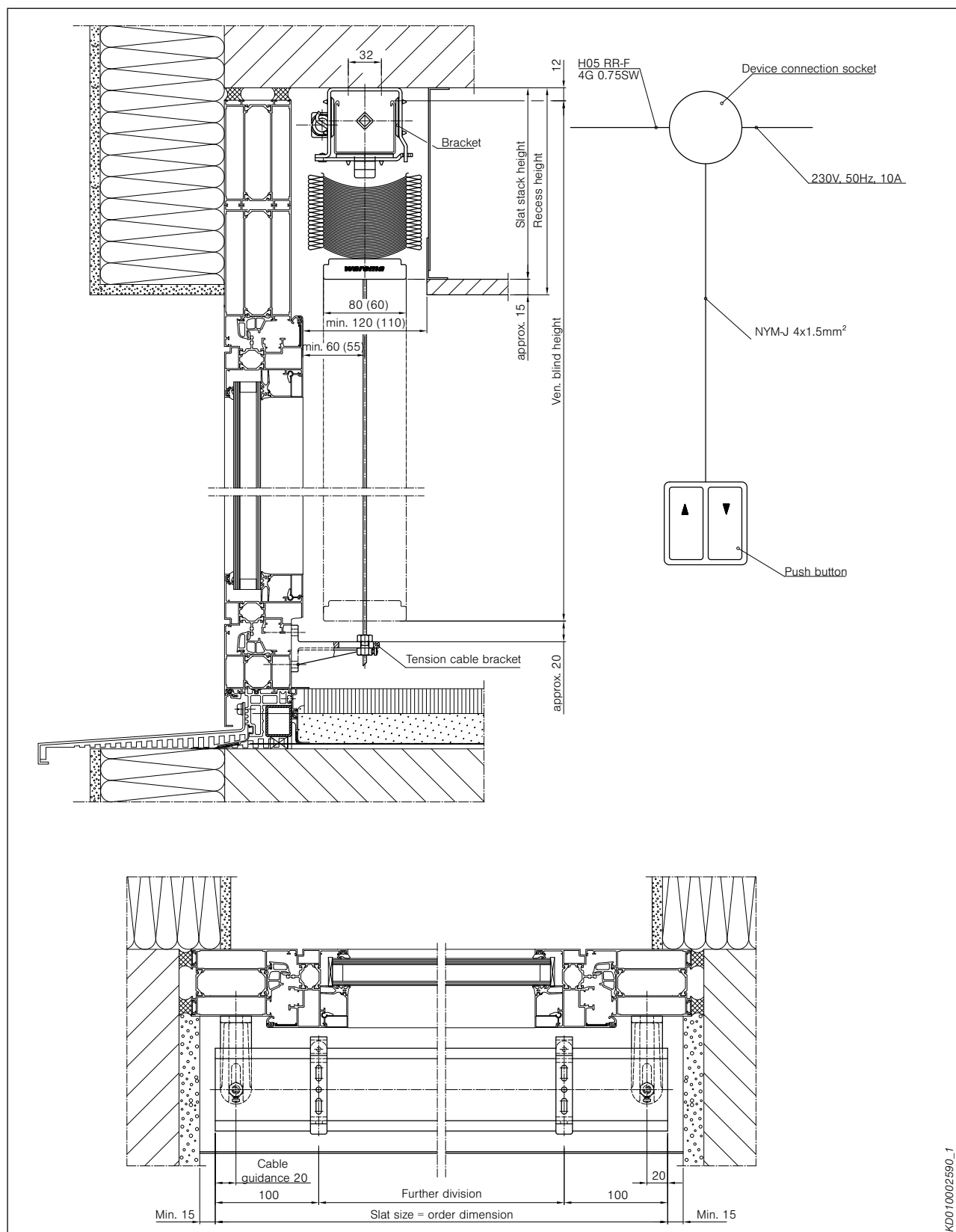


fig. 243: Measuring instructions for types E 50/60/80 L in on-site notch



## Description

### Daylight guiding venetian blinds Genius with special slats C 50/80 Genius, E 50/80 Genius

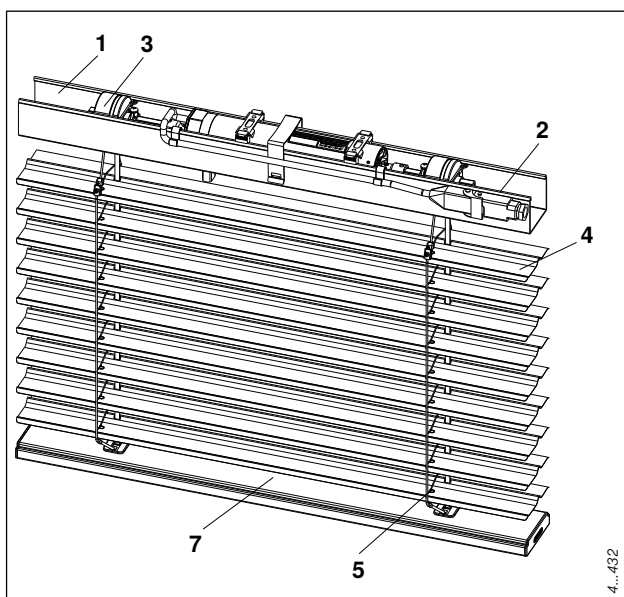


fig. 244: Daylight guiding venetian blind E 80 Genius

- 1 Top rail
- 2 Tilt rod
- 3 Bearing
- 4 Slats
- 5 Tilting and lifting tape
- 6 Lateral guidance
  - 6.1 Rail
  - 6.2 Tension cable
- 7 Bottom rail

## Application

For mounting indoors or in double skin facades protected from the weather.

## Operation

### Motor

The slats are raised and lowered as well as tilted by actuating an operating switch.

Voltage: 230 V AC, other voltages optional

Frequency: 50 Hz, other frequencies optional

Degree of protection: IP 54

Plug-in connector: Hirschmann coupling

The drive switches off upon reaching the upper or lower limit position using built-in, adjustable limit switches.

### Crank

The slats are raised and lowered as well as tilted with the crank.

Crank rod with collapsible crank; sealed joint plate and square with patented thermal separation

Material: aluminium

Surface: C0 anodised, optional powder coating in RAL 9016 or C34 anodised

Crank holder: plastic, grey, white or brown, crank holder with magnet optional

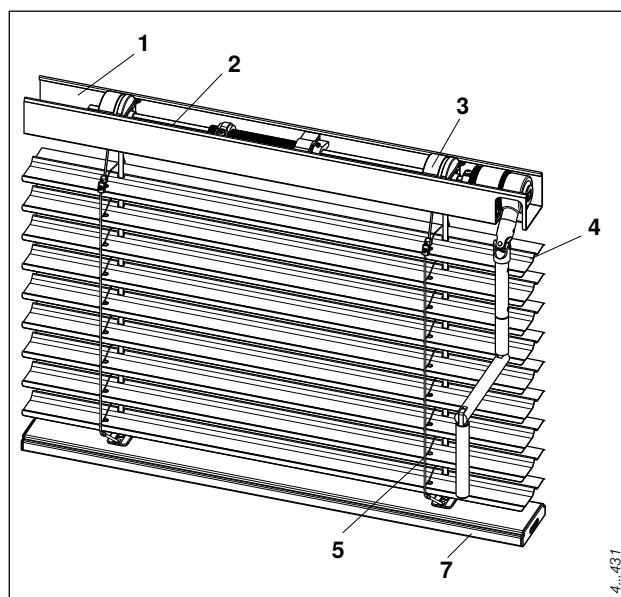


fig. 245: Daylight guiding venetian blind C 80 Genius

### Top rail (1)

Material: aluminium, extruded

Material thickness: 1.5 mm

Dimensions (WxH): 59x51 mm

Profile: C-shaped profile

Surface: plain, optionally powder-coated or anodised

Fixing: with noise-optimised top rail brackets made of plain aluminium.

### Tilt rod (2)

Material: steel, zinc-coated

Material thickness: 1 mm

Dimensions (WxH): 12x12 mm

Profile: square tube

Surface: plain

### Bearing (3)

Maintenance-free, enclosed

Housing: plastic, with Teflon

Tilting reel: plastic

Tape reel: plastic

Segment tilting to prevent self-acting adjustment of slats.

### Slats (4)

#### Genius slat

Material: aluminium

Material thickness: 0.27/0.45 mm

Dimensions (W): 50/80 mm

Profile: photometrically optimised Genius slat geometry

Surface: top surface with white, highly reflective special paint (similar to RAL 9016), bottom side light grey matt (RAL 7035)

Optionally available half-sided perforated (27.9% perforated). Special cut-outs for locking mechanism of tilting tape.

## Description

### Daylight guiding venetian blinds Genius with special slats C 50/80 Genius, E 50/80 Genius

The daylight guiding venetian blind moves down with closed slats and up with horizontal slats.

#### Tilting tape/lifting tape (5)

##### Tilting tapes (5.1)

Special heavy-duty version with double webs

Material: polyester, with Kevlar core

Colour: grey

Each slat is attached to the top web of the tilting tape and threaded between the double webs.

##### Lifting tapes (5.2)

Material: polyester, with special coating

Colour: grey

#### Lateral guidance (6)

##### Rail (6.1)

With black sealing strips inserted for noise reduction

Material: aluminium, extruded

Dimensions (WxD): 25x18 mm

Profile: C-shaped profile

Surface: powder-coated, optionally anodised

Fixing: 2-piece guide rail bracket, aluminium and plastic

End cap: plastic, grey

Sealing strip: weather-proof, UV stable, black

Guide pin: polyamide, sliding, fibreglass-reinforced, in the end cap of the bottom rail

The slats are not guided, guidance is only provided on the bottom rail.

##### Tension cable (6.2)

Stranded wire

Material: steel, corrosion-resistant

Coating: polyamide

Dimension (Ø): 2.3 mm for 50 mm Genius slats  
3.3 mm for 80 mm Genius slats

Colour: black or transparent

Fixing: tension cable bracket, aluminium

The cable guidances are fixed with a special spring tension device in the top rail. Cable guidances run through the slats and the bottom rail. They are fixed to the window or the wall using tension cable brackets.

#### Bottom rail (7)

Material: aluminium, extruded

Dimensions (WxH): 60/80x20 mm

Surface: powder-coated, optionally anodised

End caps: plastic, grey

With patented special tensioning system for the tilting tape.

#### Colours

Powder coating of aluminium parts with chrome-free pre-treatment according to valid RAL CLASSIC colour chart (except camouflage and luminous colours) or in six DB colours as well as eight textured colours (W4914 - W4921), four anodised-look colours (WC31 - WC34) and further colours according to WAREMA Colour World (in WAREMA colour specification).

Other colour specifications and special colours are available on request at a surcharge.

#### Accessories

From page 235.

# Construction limit values/measuring instructions

## Daylight guiding venetian blinds Genius

### Special slats

#### Construction limit values in mm

For external venetian blinds with equipment variant slowturn the construction limit values and slat stack heights of the corresponding basic type should be assumed. In this case, up to 3 curtains can be used as a group unit using one drive.

Types	Construction limit values								Average weight in kg/ m²
	Individual unit				Group unit				
	Width <sup>1)</sup>		Height	Area in m²	Width max.	Area in m²	left/right of driving curtain max. coupl. each side		
	min. <sup>2)</sup>	max.					Area in m²	Number of curtains	
C 50 Genius	450	4000	3000	12	12000	17	12	1	2.5
E 50 Genius	600	4000	3000	12	12000	36	12	1	3.0
C 80 Genius	450	3600	3000	10	10800	10	10	1	3.5
E 80 Genius	600	3600	3000	11	10800	22	11	1	4.1

Tab. 15: Construction limit values for daylight guiding venetian blinds C/E 50/80 Genius

<sup>1)</sup> Width = slat dimension

<sup>2)</sup> Asymmetrical running of slats cannot be prevented for small widths. (Please pay attention to the external venetian blind guideline ITRS Industrieverband Technische Textilien – Rollläden – Sonnenschutz e.V.)

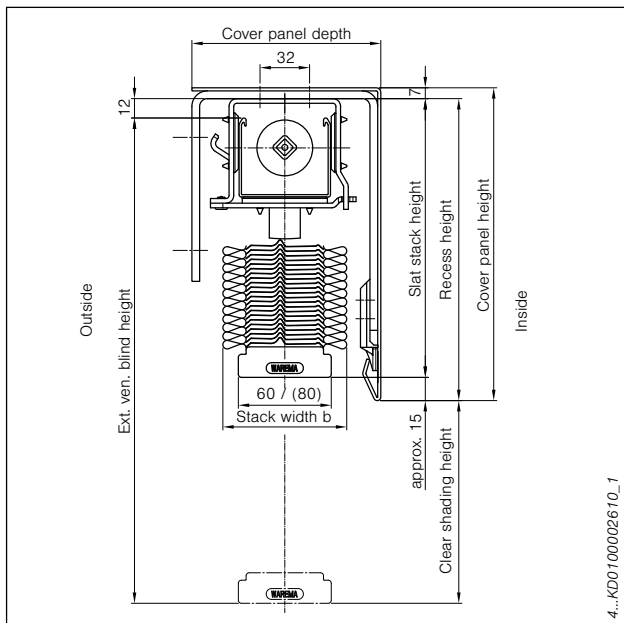


fig. 246: Measuring instructions for daylight guiding venetian blinds C/E 50/80 Genius

#### Measuring instructions

Slat stack height as per table

Recess height = slat stack height + 15 mm

Cover panel height = slat stack height + 20 mm

Minimum recess height = 210 mm (overlapping between the lower edge of the cover panel and the top slat is ensured)

#### Cable guidance

The cable guide is drawn-in 15 mm from the slat end.

Types	Min. recess width	Min. cover panel depth
50 Genius	110	120
80 Genius	120	130

#### Slat stack height determined from venetian blind height

Types	Venetian blind height in mm										
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000
E 50 Genius	162	173	184	195	206	217	228	239	250	261	272
E 80 Genius	159	169	180	190	201	211	221	232	242	253	263

#### Slat stack height determined from clear shading height

Types	Clear shading height in mm									
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800
E 50 Genius	172	183	195	207	218	230	241	253	265	276
E 80 Genius	168	179	190	201	212	223	234	245	256	267

Slat stack heights are approximate values. For technical reasons, they might be higher or lower.

Daylight guiding venetian blinds with crank drive: Slat stack height is reduced by 15 mm.

## Mounting example

### Daylight guiding venetian blinds Genius Special slats

E 50/80 Genius in double skin facade

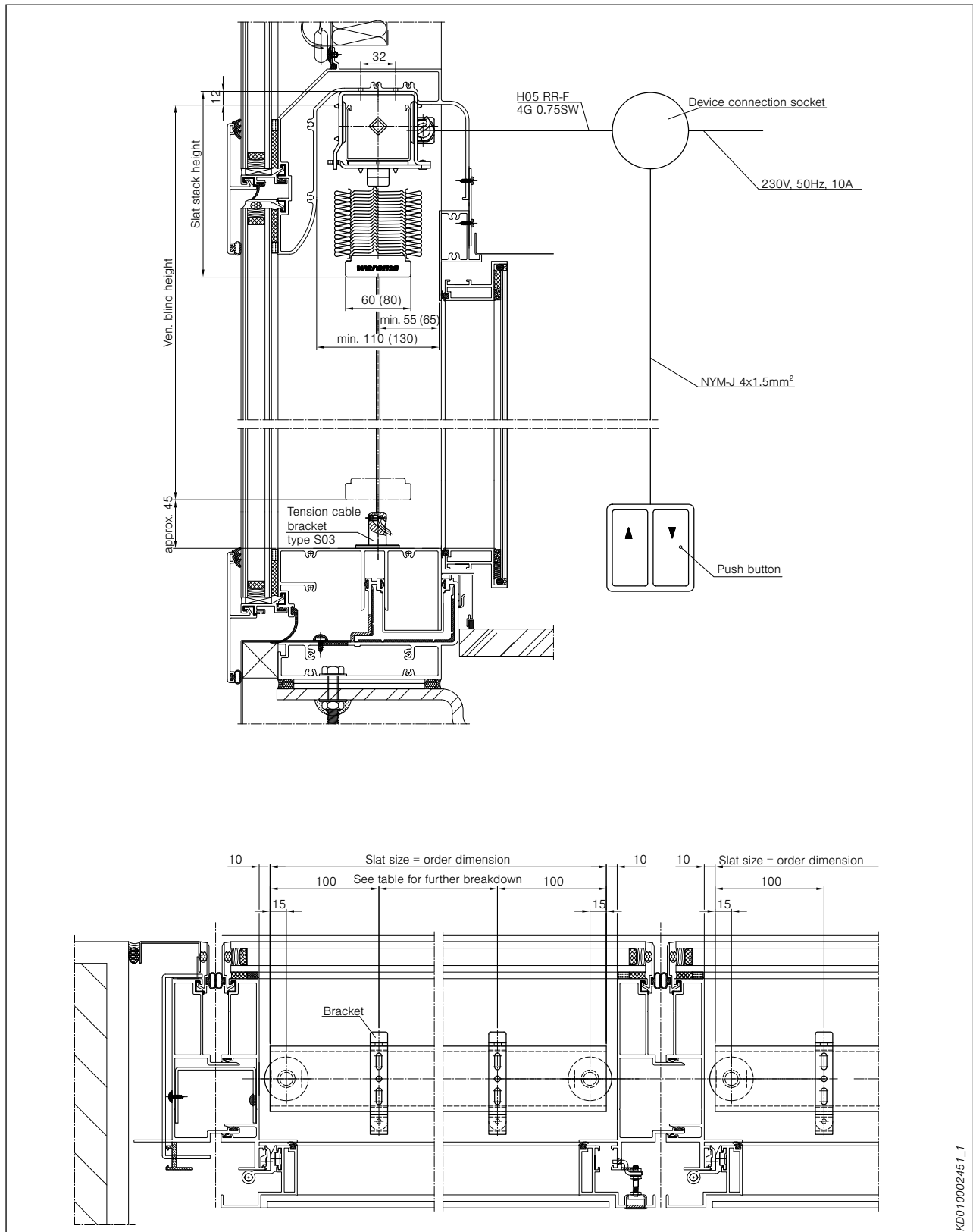


fig. 247: Mounting example for daylight guiding venetian blinds Genius E 50/80 in double skin facade

## Description

### Daylight guiding venetian blind with double curtain E 80 LD

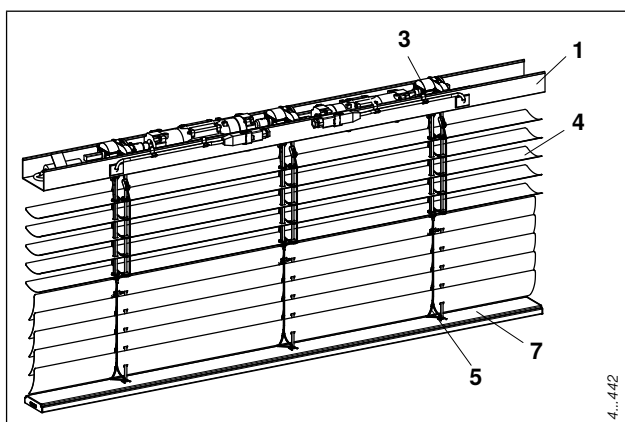


fig. 248: Daylight guiding venetian blind with double curtain  
E 80 LD

- 1 Top rail
- 2 Tilt rod
- 3 Bearing
- 4 Slats
- 5 Tilting and lifting tape
- 6 Lateral guidance
- 7 Bottom rail

#### Application

For mounting indoors or in double skin facades protected from the weather.

#### Operation

##### Motor

2 motors, raising and lowering as well as tilting by actuating a switch, slat turning for the light control section by actuating a tilt switch.

Voltage: 230 V AC, other voltages optional

Frequency: 50 Hz, other frequencies optional

Degree of protection: IP 54

Plug-in connector: Hirschmann coupling

Upon reaching the upper and lower limit position the drive switches off using built-in, adjustable limit switches.

The daylight guiding venetian blind can be flexibly divided.

The slats of both curtain sections are continuously and independently adjustable (patented). The tilting range is limited from the slats being closed to the outside to being in the horizontal slat position.

#### Top rail (1)

Material: aluminium, extruded

Material thickness: 1.5 mm

Dimensions (WxH): 100x51 mm

Profile: C-shaped profile

Surface: plain, optionally powder-coated or anodised

Fixing: with aluminium supports, plain

#### Tilt rod(2)

Material: steel, zinc-coated

Material thickness: 1 mm

Dimensions (WxH): 12x12 mm

Profile: square tube

Surface: plain

#### Bearing (3)

Maintenance-free, enclosed

Housing: plastic, with Teflon

Tilting reel: plastic

Tape reel: plastic

Segment tilting for the slats of the glare protection section (lower curtain section) and forced tilting for the slats of the light control section (upper curtain section) to prevent the slats from automatically self-adjusting.

#### Slats (4)

##### Flat slat, curved

Material: aluminium

Material thickness: 0.53 mm

Dimensions (W): 80 mm

Profile: concave

Surface: top surface made from mirror-finished purest aluminium, quality Miro 3, bottom varnished in RAL 7030 matt

Optionally available half-sided perforated (27.9% perforated, slat spacing 46 mm).

Special cut-outs for locking the tilting tape, double top slat and deflection slats in the partitioning, equipped with grey protective eyelets.

##### Alternative:

Material: aluminium, special alloy

Material thickness: 0.45 mm

Dimensions (W): 80 mm

Profile: concave

Surface: enamel finish, resistant to corrosion using a special process, including edge coating

Colour: according to WAREMA colour chart for external venetian blinds

The daylight guiding venetian blind can be flexibly divided. The slats of both curtain sections are continuously and independently adjustable. In a horizontal slat position, the concave side (top side) points upwards. The slats of the lower panel section are closed to the outside while being lowered and open horizontally while being raised. The slats of the upper panel section move up and down with the slats at a pre-set slat angle. The spacing between the slats is 46 mm.

#### Tilting tape/lifting tape (5)

##### Tilting tapes (5.1)

Special heavy-duty version with double webs

Material: polyester, with Kevlar core

Colour: grey

Each slat is attached to the top web of the tilting tape and threaded between the double webs.

##### Lifting tapes (5.2)

Material: polyester, with special coating

Colour: grey

## Description

### Daylight guiding venetian blind with double curtain E 80 LD

#### Lateral guidance (6)

##### Tension cable

Stranded wire

Material: steel, corrosion-resistant

Coating: polyamide

Colour: black or transparent

Fixing: tension cable bracket, aluminium

The cable guidances are fixed with a special spring tension device in the top rail. Cable guidances run through the slats and the bottom rail. They are fixed to the window or the wall using tension cable brackets.

#### Bottom rail (7)

With end caps

Material: aluminium, extruded

Dimensions (WxH): 80x20 mm

Surface: powder-coated

End caps: plastic, grey

#### Colours

Powder coating of aluminium parts with chrome-free pre-treatment according to valid RAL CLASSIC colour chart (except camouflage and luminous colours) or in six DB colours as well as eight textured colours (W4914 - W4921), four anodised-look colours (WC31 - WC34) and further colours according to WAREMA Colour World (in WAREMA colour specification).

Other colour specifications and special colours are available on request at a surcharge.

#### Accessories

From page 235.

# Construction limit values/Measuring instructions

## Daylight guiding venetian blind with double curtain

### Slats with concave top surface

#### Construction limit values in mm

Type	Construction limit values								Average weight in kg/ m²
	Individual unit				Group unit				
	Width <sup>1)</sup>		Height	Area in m²	Width max.	Area in m²	left/right of driving curtain max. coupl. each side		
	min. <sup>2)</sup>	max.					Area in m²	Number of curtains	
E 80 LD	900	3000	3000	9	9000	13.5	9	1	4.8

Tab. 16: Construction limit values for daylight guiding venetian blinds with double curtain E 80 LD

<sup>1)</sup> Width = slat dimension

<sup>2)</sup> Asymmetrical running of slats cannot be prevented for small widths. (Please pay attention to the external venetian blind guideline ITRS Industrieverband Technische Textilien – Rollläden – Sonnenschutz e.V.)

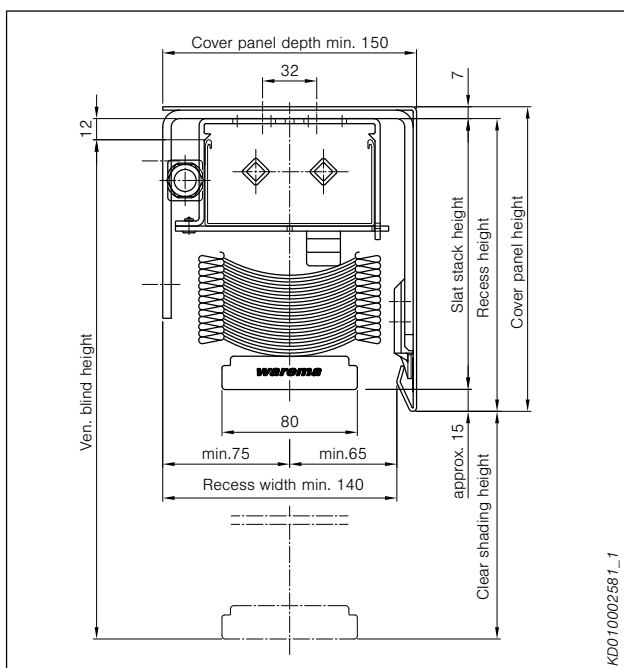


fig. 249: Measuring instructions for daylight guiding venetian blind with double curtain E 80 LD

#### Measuring instructions

Slat stack height as per table

Recess height = slat stack height + 15 mm

Cover panel height = slat stack height + 20 mm

#### Slat stack height determined from venetian blind height

Type	Venetian blind height in mm										
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000
E 80 LD	139	146	152	159	165	172	179	185	192	198	205

#### Slat stack height determined from clear shading height

Type	Clear shading height in mm									
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800
E 80 LD	144	151	157	164	171	178	185	192	198	205

Slat stack heights are approximate values. For technical reasons, they might be higher or lower.

## Description

### External venetian blind C 50 A1/A2, E 50 A1/A2

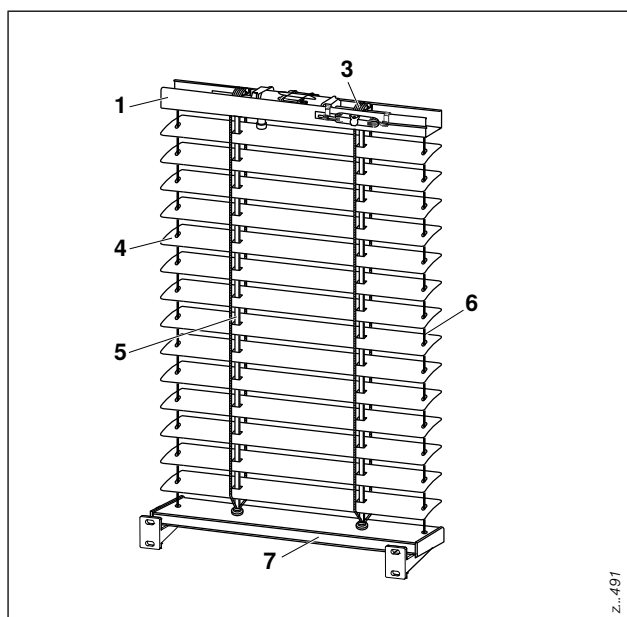


fig. 250: External venetian blind E 50 A1

- 1 Top rail
- 2 Tilt rod
- 3 Bearing
- 4 Slats
- 5 Tilting and lifting tape
- 6 Lateral guidance
- 7 Bottom rail

## Application

For installation in the reveal.

## Operation

### Motor

The slats are raised and lowered as well as tilted by actuating an operating switch.

Voltage: 230 V AC, other voltages optional

Frequency: 50 Hz, other frequencies optional

Degree of protection: IP 54

Plug-in connector: Hirschmann coupling

The drive switches off upon reaching the upper or lower limit position using built-in, adjustable limit switches.

### Crank

The slats are raised and lowered as well as tilted with the crank.

Crank rod with collapsible crank; sealed joint plate and square with patented thermal separation

Material: aluminium

Surface: C0 anodised, optional powder coating in RAL 9016 or C34 anodised

Crank holder: plastic, grey, white or brown, crank holder with magnet optional

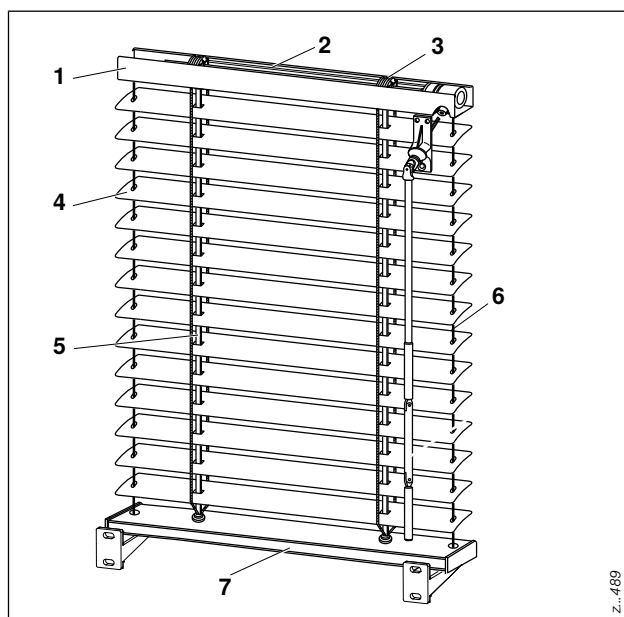


fig. 251: External venetian blind C 50 A1

### Top rail (1)

Material: aluminium, extruded

Material thickness: 1.5 mm

Dimensions (WxH): 59x51 mm

Profile: C-shaped profile

Surface: plain, optionally powder-coated or anodised

Fixing: with noise-optimised top rail brackets made of plain aluminium.

### Tilt rod (2)

Material: steel, zinc-coated

Material thickness: 1 mm

Dimensions (WxH): 12x12 mm

Profile: square tube

Surface: plain

### Bearing (3)

Maintenance-free, enclosed

Housing: plastic, with Teflon

Tilting reel: plastic

Tape reel: plastic

Segment tilting to prevent self-acting adjustment of slats.

### Slats (4)

#### Curved flat slats, no eyelets

Material: aluminium, special alloy

Material thickness: approx. 0.25 mm

Dimensions (B): 50 mm

Profile: convex

Surface: enamel finish resistant to corrosion using a special process

Colour: according to WAREMA colour chart for external venetian blinds



## Description

### External venetian blind C 50 A1/A2, E 50 A1/A2

The external venetian blind moves down with the slats closed to the outside and moves up with the slats closed to the inside.

#### Tilting tape/lifting tape (5)

##### Tilting tapes (5.1)

Special heavy-duty version with double webs

Material: polyester

Colour: white, optionally grey or black

##### Lifting tapes (5.2)

Material: polyester, with special coating

Colour: white, optionally grey or black

#### Lateral guidance (6)

##### Tension cable

Stranded wire

Material: steel, corrosion-resistant

Coating: polyamide

Colour: black or transparent coating

Fixing: tension cable bracket, aluminium

The cable guidances are fixed with a special spring tension device to compensate for thermal changes in the length of the top rail. Cable guidances run through the slats and the bottom rail. They are fixed to the window or the wall using tension cable brackets.

#### Bottom rail (7)

With end caps

Material: aluminium, extruded

Dimensions (WxH): 50x20 mm

Surface: powder-coated, optionally anodised

End caps: plastic, transparent, optionally grey or black

#### Colours

Powder coating of aluminium parts with chrome-free pre-treatment according to valid RAL CLASSIC colour chart (except camouflage and luminous colours) or in six DB colours as well as eight textured colours (W4914 - W4921), four anodised-look colours (WC31 - WC34) and further colours according to WAREMA Colour World (in WAREMA colour specification).

Other colour specifications and special colours are available on request at a surcharge.

#### Accessories

From page 235.

General  
information

Product  
characteristics

Basic facade  
external venetian  
blinds

Premium facade  
venetian blinds

Complete external  
venetian blinds

Light guidance/  
external venetian  
blinds

Guides

Cover panels

Planning

Safety systems  
Accessories

Drives  
Control systems

## Construction limit values/Measuring instructions

### External venetian blind

### Flat slats with cable guidance

#### Construction limit values in mm

Types	Construction limit values								Average weight in kg/m <sup>2</sup> <sup>1)</sup>
	Individual unit				Group unit				
	Width <sup>2)</sup>		Height	Area in m <sup>2</sup>	Width	Area <sup>3)</sup> in m <sup>2</sup>	left/right of driving curtain max. coupl. each side		
	min. <sup>4)</sup>	max.			max.		Area in m <sup>2</sup>	Number of curtains	
C 50 A1/A2	450	5000	4000	20	12000	30	20	2	2.3
E 50 A1/A2	600	5000	4000	20	12000	36-39	20	2	2.5

Tab. 17: Construction limit values for external venetian blind C/E 50 A1

<sup>1)</sup> Cable force: 350 N per tension cable.

<sup>2)</sup> Width = slat dimension

<sup>3)</sup> The maximum areas indicated depend on the height; see "Height-to-width ratio of external venetian blinds" on page 392.

<sup>4)</sup> Asymmetrical running of slats cannot be prevented for small widths. (Please pay attention to the external venetian blind guideline ITRS Industrieverband Technische Textilien – Rollläden – Sonnenschutz e.V.)

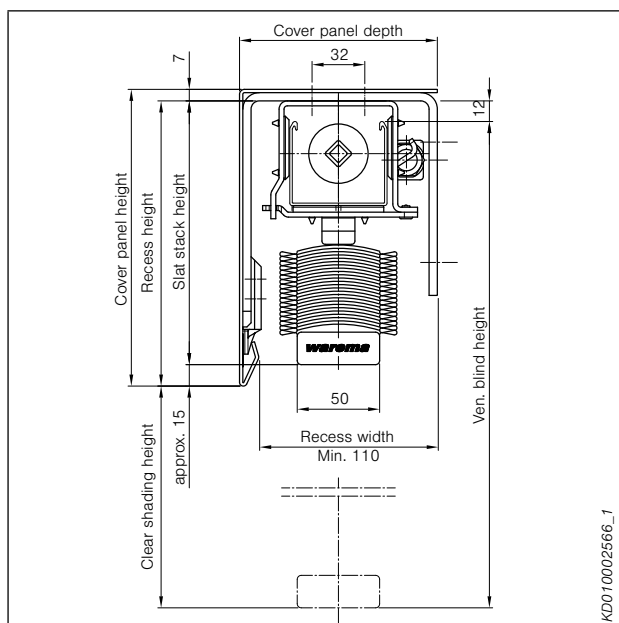


fig. 252: Measuring instructions for external venetian blind C/E 50 A1

#### Measuring instructions

Slat stack height as per table

Recess height = slat stack height + 15 mm

Cover panel height = slat stack height + 20 mm

#### Number of cable guidances

Slat size	Cable guidances
Up to 3000 mm	2
From 3001 mm	3
From 4001 mm	4

When ordering, please indicate positioning of additional cable guidance (starting inside from the left)!

#### Slat stack height determined from venetian blind height

Types	Venetian blind height in mm															
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800	4000
C 50 A1/A2	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185
E 50 A1/A2	132	137	142	147	152	157	162	167	172	177	182	187	192	197	202	207

#### Slat stack height determined from clear shading height

Types	Clear shading height in mm														
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800
C 50 A1/A2	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185
E 50 A1/A2	135	141	146	151	156	161	166	171	176	182	187	192	197	202	207

Slat stack heights are approximate values. For technical reasons, they might be higher or lower.

Mounting example

External venetian blind

Flat slats with cable guidance

C 50 A1/A2 with angular cover panel

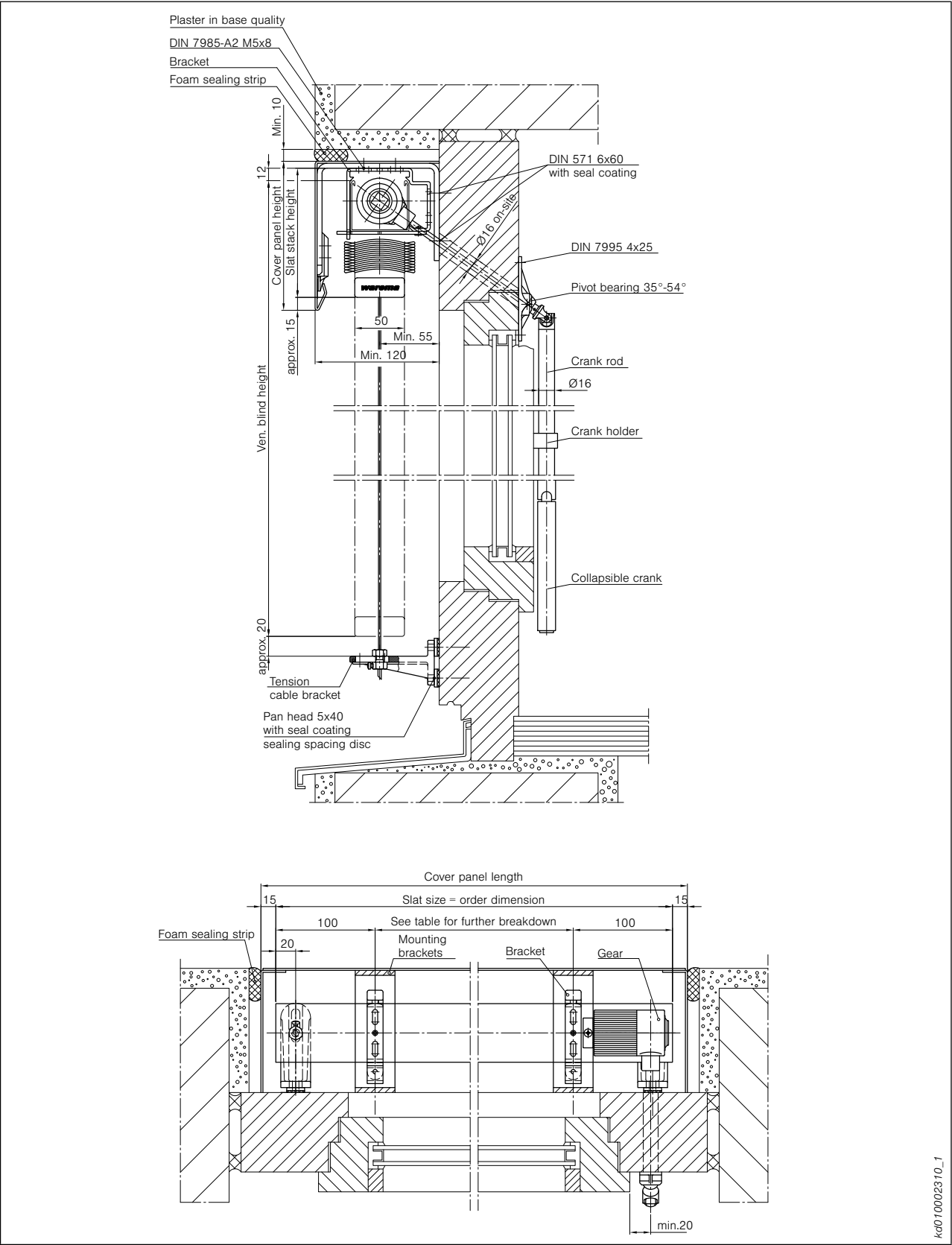
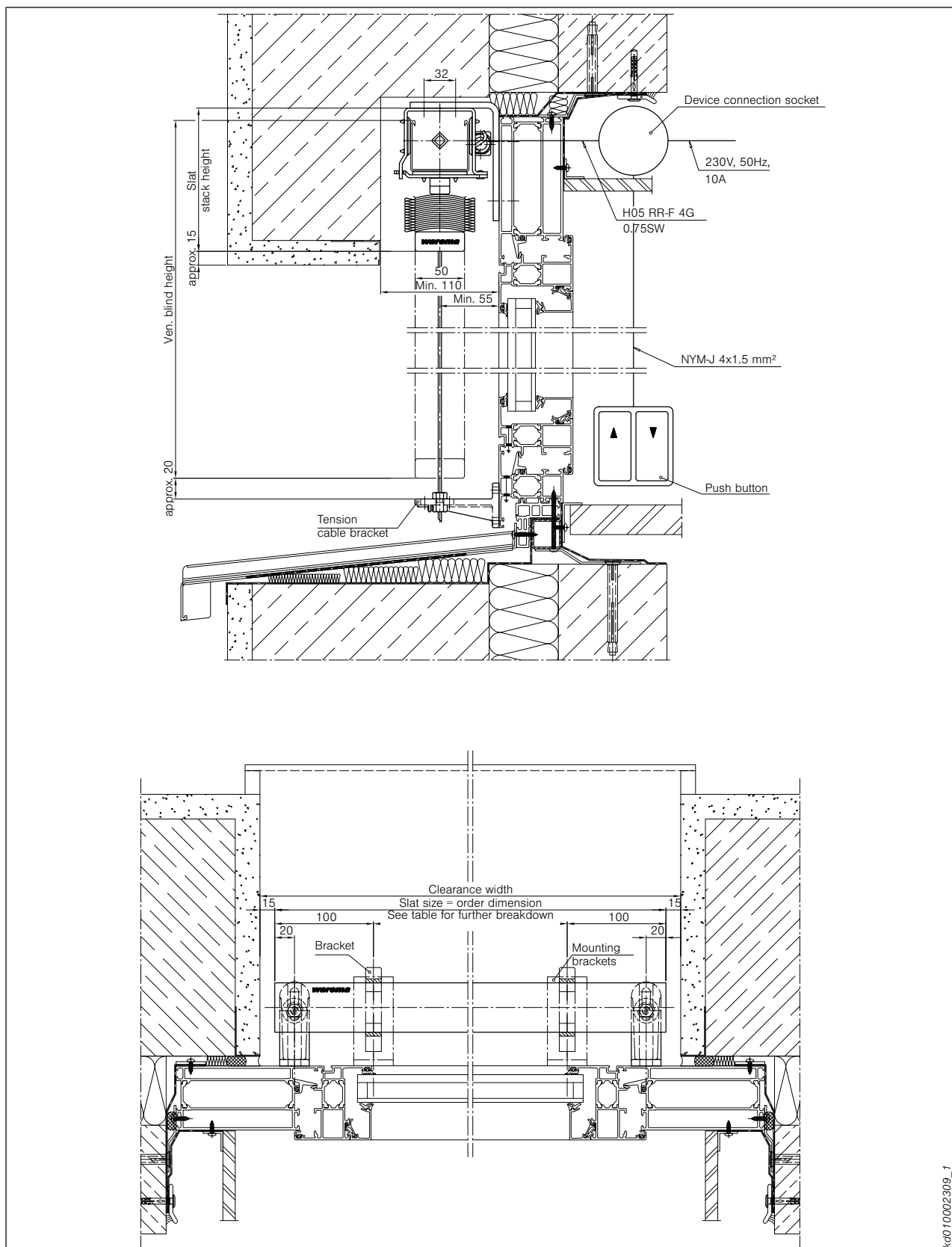


fig. 253: Mounting example for external venetian blind C 50 A1 with angular cover panel

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

**Mounting example**  
**External venetian blind**  
**Flat slats with cable guidance**  
 E 50 A1/A2 in existing recess



kd010002309\_1

fig. 254: Mounting example for external venetian blind E 50 A1 in on-site notch

## Description

### External venetian blind Crank operation K 50 A1 Cord operation Q 50 A1 S

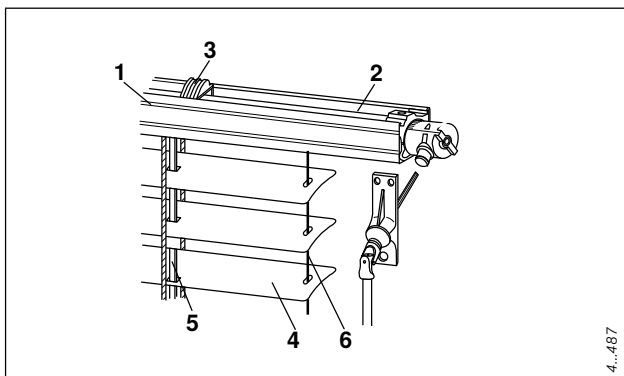


fig. 255: External venetian blind K 50 A1

- 1 Top rail
- 2 Tilt rod
- 3 Bearing
- 4 Slats
- 5 Tilting and lifting tape
- 6 Lateral guidance

## Application

For mounting in the reveal and indoors.

### Crank

The slats are raised and lowered as well as tilted with the crank.

Crank rod with collapsible crank; sealed joint plate and square with patented thermal separation

Material: aluminium  
Surface: C0 anodised, optional powder coating in RAL 9016 or C34 anodised  
Crank holder: plastic (grey, white or brown), crank holder with magnet optional

### Endless cord (Q)

The slats are raised and lowered as well as tilted with the endless cord.

The endless cord is fed through into the room at an angle between 0° and 20° via a cord deflection unit.

Cord holder: plastic

### Note:

Standard cord length: in 250 mm increments.

For the cord length, the next size down will be assigned to the order height.

Model is child safe according to EN 13120 depending on the product type. Please observe the notes in the installation instructions.

### Top rail (1)

Material: steel band, roll-formed  
Material thickness: 0.65 mm  
Dimensions (WxH): 40x36 mm  
Profile: C-shaped profile  
Surface: powder-coated  
Fixing: with aluminium supports, plain

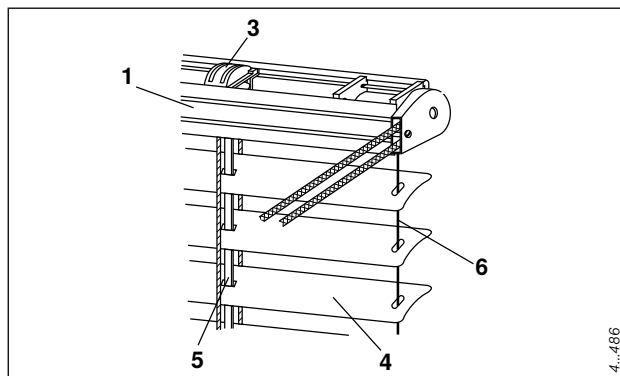


fig. 256: External venetian blind Q 50 A1 S

### Tilt rod (2)

Material: steel, zinc-coated  
Material thickness: 1 mm  
Dimensions (WxH): 12x12 mm  
Profile: hexagon tube  
Surface: plain

### Bearing (3)

Maintenance-free, enclosed  
Housing: plastic, with Teflon  
Tilting reel: plastic  
Tape reel: plastic  
Segment tilting to prevent self-acting adjustment of slats.

### Slats (4)

#### Slightly curved flat slats, no eyelets

Material: aluminium, special alloy  
Material thickness: approx. 0.25 mm  
Dimensions (W): 50 mm  
Profile: convex  
Surface: enamel finish resistant to corrosion using a special process  
Colour: according to WAREMA colour chart for external venetian blinds

The external venetian blind moves down with the slats closed to the outside and moves up with the slats closed to the inside.

### Tilting tape/lifting tape (5)

#### Tilting tapes (5.1)

Special heavy-duty version with double webs  
Material: polyester, with Kevlar core  
Colour: white, optionally grey or black  
Each slat is threaded between the double cross ladders.

#### Lifting tapes (5.2)

Material: polyester, with special coating  
Colour: white, optionally grey or black

## Description

### External venetian blind

#### Crank operation K 50 A1

#### Cord operation Q 50 A1S

### Lateral guidance (6)

#### Tension cable

Stranded wire

Material: steel, corrosion-resistant

Coating: polyamide

Colour: black or transparent

Fixing: tension cable bracket, aluminium

Cable guidances run through the slats and the bottom rail.

They are fixed to the window or the wall using tension cable brackets.

### Bottom rail

With end caps

Material: aluminium, extruded

Dimensions (WxH): 50x20 mm

Surface: powder-coated, optionally anodised

End caps: plastic, transparent, optionally black or grey

### Colours

Powder coating of aluminium parts with chrome-free pre-treatment according to valid RAL CLASSIC colour chart (except camouflage and luminous colours) or in six DB colours as well as eight textured colours (W4914 - W4921), four anodised-look colours (WC31 - WC34) and further colours according to WAREMA Colour World (in WAREMA colour specification).

Other colour specifications and special colours are available on request at a surcharge.

### Accessories

From page 235.

## Construction limit values/Measuring instructions

### External venetian blind

#### Flat slats with cable guidance, top rail 40 x 36 mm

Crank operation K 50 A1, cord operation Q 50 A1 S

#### Construction limit values in mm

Types	Construction limit values				Average weight in kg/m²
	Individual unit				
	Width <sup>1)</sup>		Height	Area in m²	
	min. <sup>2)</sup>	max.			
K 50 A1	400	4000	3000	7	2.0
Q 50 A1 S	400	4000	2800	6	2.0

Tab. 18: Construction limit values for external venetian blind K 50 A1, Q 50 A1S

<sup>1)</sup> Width = slat dimension

<sup>2)</sup> Asymmetrical running of slats cannot be prevented for small widths. (Please pay attention to the external venetian blind guideline ITRS Industrieverband Technische Textilien – Rollläden – Sonnenschutz e.V.)

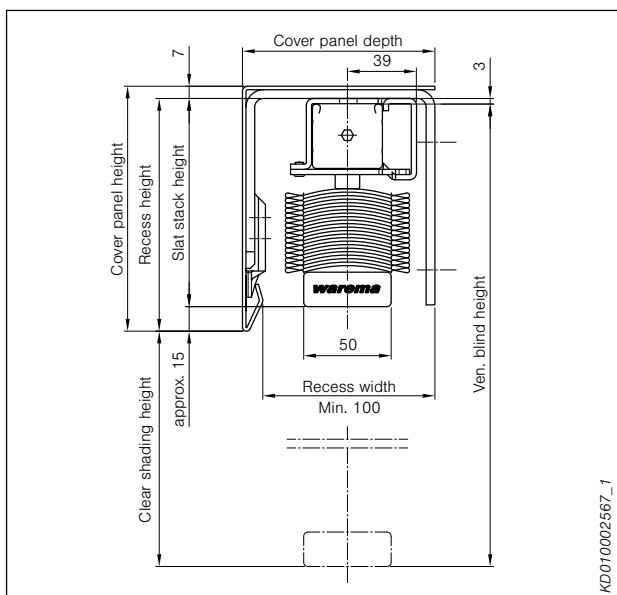


fig. 257: Measuring instructions for external venetian blind K 50 A1, Q 50 A1S

#### Measuring instructions

Slat stack height as per table

Recess height = slat stack height + 15 mm

Cover panel height = slat stack height + 20 mm

#### Number of cable guidances

Slat size	Cable guidances
Up to 3000 mm	2
From 3001 mm	3

When ordering, please indicate positioning of additional cable guidances (starting inside from the left)!

#### Slat stack height determined from venetian blind height

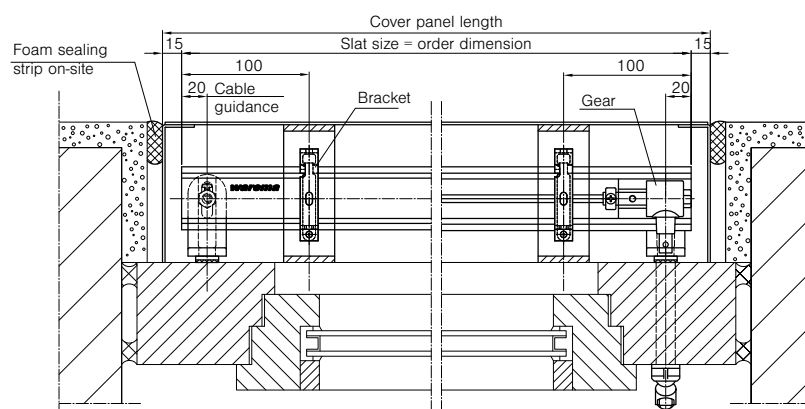
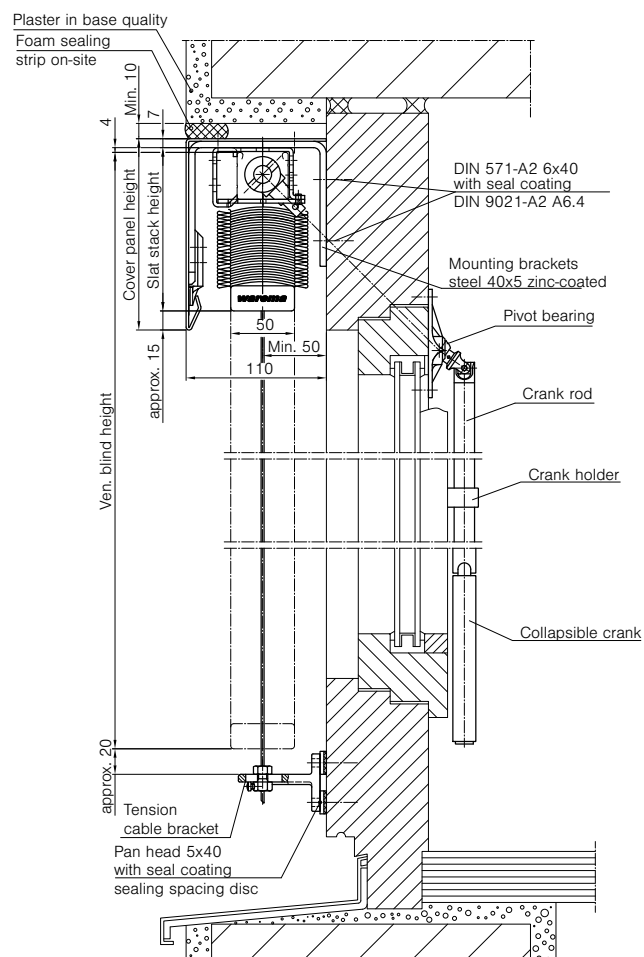
Types	Venetian blind height in mm										
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000
K 50 A1/Q 50 A1 S	87	91	96	101	105	110	115	119	124	129	134

#### Slat stack height determined from clear shading height

Types	Clear shading height in mm									
	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800
K 50 A1/Q 50 A1 S	89	93	98	103	108	113	118	122	127	132

Slat stack heights are approximate values. For technical reasons, they might be higher or lower.

# **Mounting example** **External venetian blind** **Flat slats with cable guidance** **K 50 A1 with angular cover panel**



ka010002555\_1

fig. 258: Mounting example for external venetian blind K 50 A1 with angular cover panel



# Mounting example **External venetian blind** **Flat slats with cable guidance** Q 50 A1 S with angular cover panel

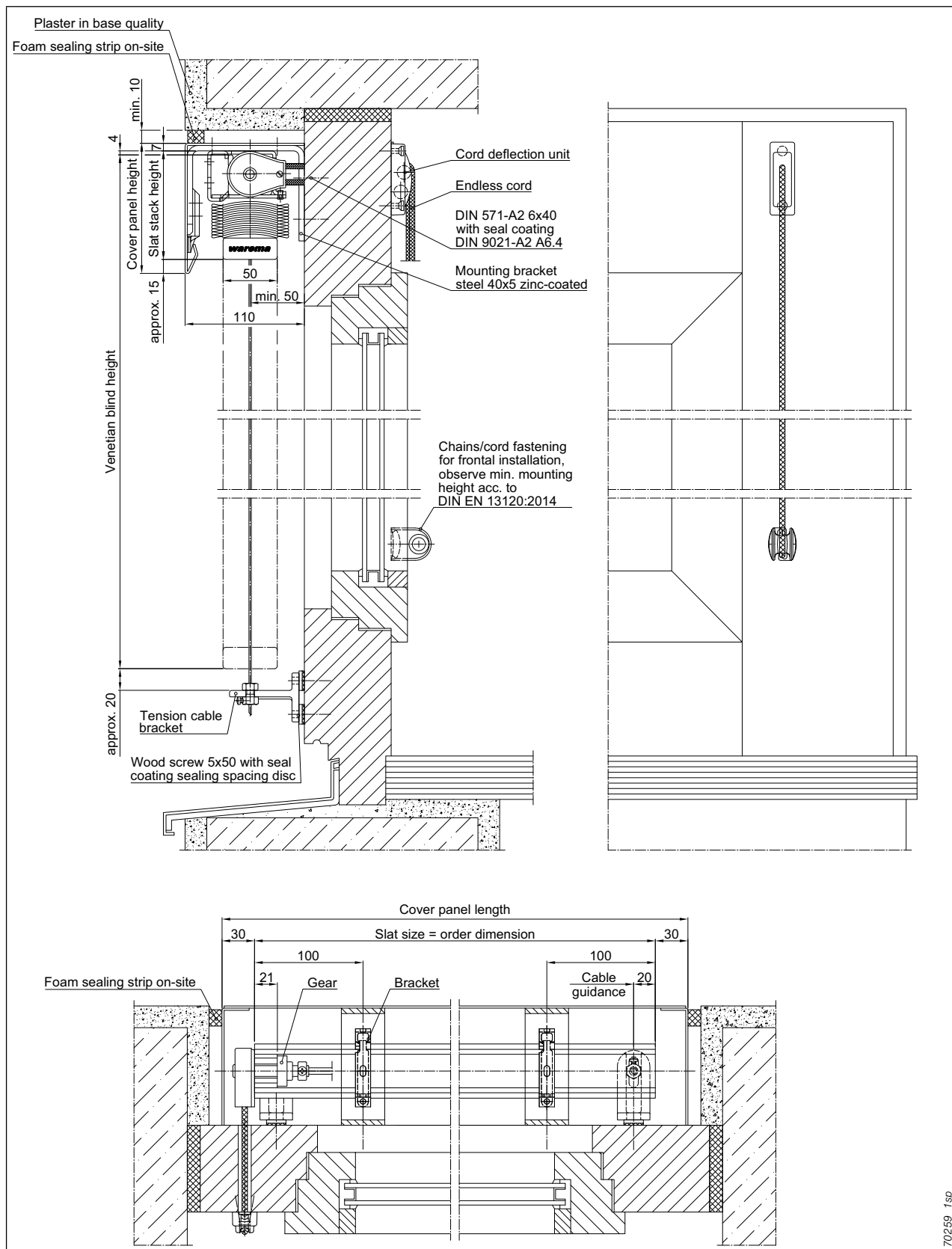


fig. 259: Mounting example for external venetian blind Q 50 A1S with angular cover panel

**Notes**

Contents

Guides

Guides

Rail guidance . . . . .	270
Guide profiles . . . . .	281
Cable guidance . . . . .	290

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

# Guides

## Rail guidance – order dimensions

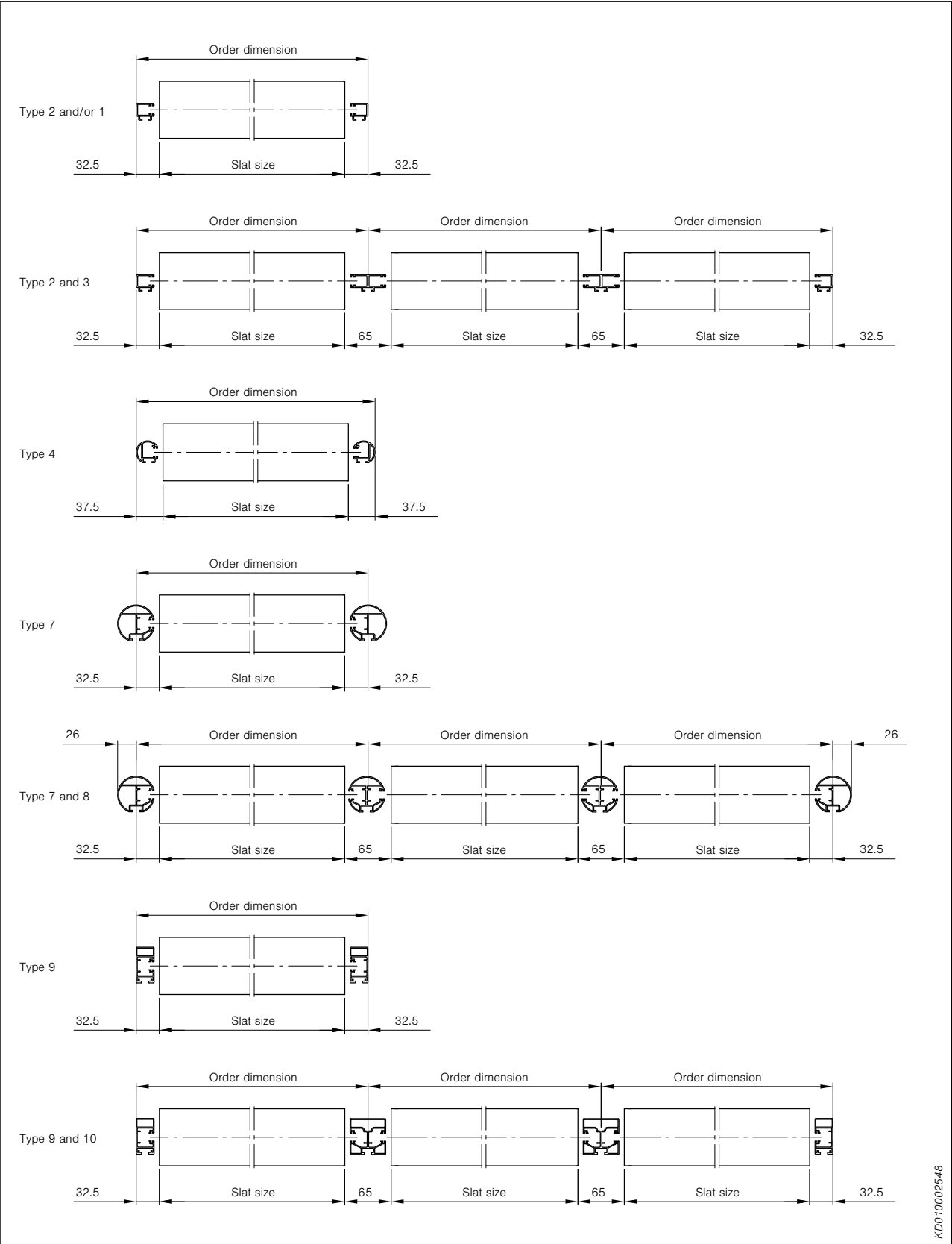


fig. 260: Rail dimensions/order dimensions

## Guides

### Rail guidance

#### Lateral guidance using guide rails and nipples on the slats – type designation ...A6

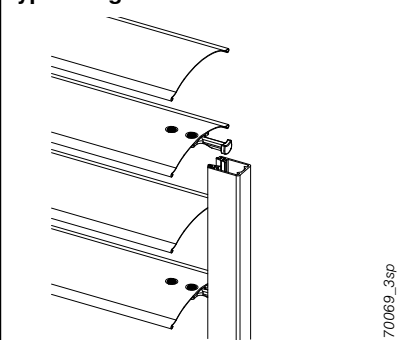


fig. 261: Slat guiding with guide rails

**Type A6:** Minimum guide rail length = external venetian blind height minus 30 mm.

**Max. external venetian blind length 5000 mm.**

**The following applies for dim-out slats:**

**Guide rail length = external venetian blind height – 50 mm**

Depending on the installation situation, we recommend smaller curtain sections or additional cable guidances:

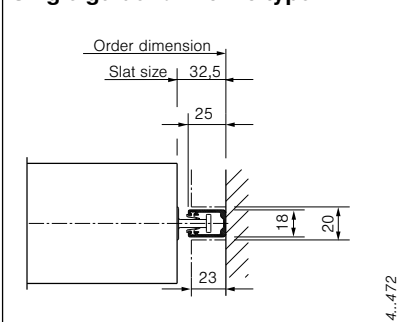
Cable guidances are not available for external venetian blinds with dim-out slats.

#### Number of cable guidances for external venetian blinds types C/E 60/80/100 AF A6

Slat size	Cable guidances
From 2401 mm	1
From 4001 mm	2

When ordering, please indicate positioning of additional cable guidances (starting inside from the left)!

#### Single guide rail 25x18 type 1



For frontal mounting on on-site existing substructure or in on-site grooves.

Recess dimensions: 23 mm deep  
20 mm high

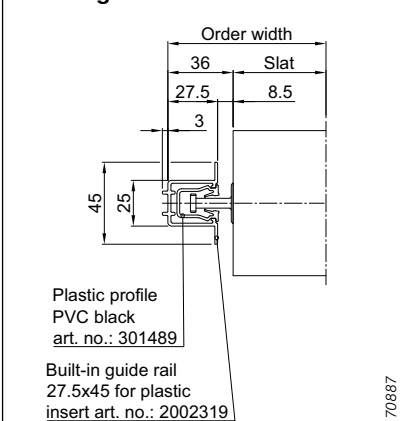
Recommended fixing screws:

- Aluminium: tapping screw C 4.2 x13 DIN 7982-A2
- Masonry: wood screw 4x40 DIN 7997-A2, screw anchor S 6
- Wood: wood screw 4x20 DIN 7997-A2
- Thread: screw M4x8 DIN 965-A2

For deviation of the external venetian blind axis  $\pm 2.5^\circ$ :

In the event of deviation of the external venetian blind axis, a rigid PVC sealing strip must be used.

#### Built-in guide rail 27x45



For frontal mounting on on-site existing substructure or in on-site grooves.

Recess dimensions: 30 mm deep  
27 mm high

Recommended fixing screws:

- Aluminium: tapping screw C 4.2 x13 DIN 7982-A2
- Masonry: wood screw 4x40 DIN 7997-A2, screw anchor S 6
- Wood: wood screw 4x20 DIN 7997-A2
- Thread: screw M4x8 DIN 965-A2

Guide rail length	Fixing points
600–1400	2
1401–2200	3
2201–3000	4
3001–3800	5
3801–4600	6
4601–5400	7
5401–6000	8

Shim plate

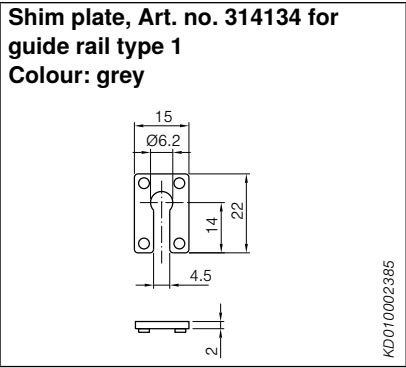


fig. 262: Shim plate

The spacers can be stacked.  
**Attention!** Different colour depending on thickness of the spacer.

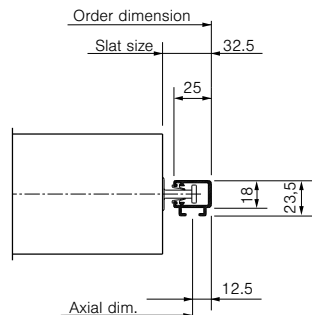
Available dimensions

WAREMA Art. No.	Dimension in mm
791126	40x30x1
791127	40x30x2
791128	40x30x3
791129	40x30x4
790930	40x30x5
791130	40x30x6
791281	40x30x8
790931	40x30x10
790048	65x52.5x6

## Guides

### Rail guidance

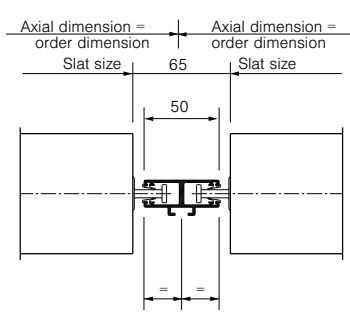
#### Single guide rail 25x18 type 2



For deviation of the external venetian blind axis  $\pm 2.5^\circ$ :  
In the event of deviation of the external venetian blind axis, a rigid PVC sealing strip must be used.

4...473

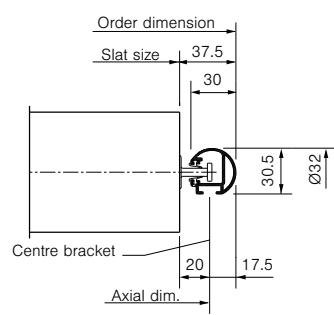
#### Double guide rail 50x18 type 3



For deviation of the external venetian blind axis  $\pm 2.5^\circ$ :  
In the event of deviation of the external venetian blind axis, a rigid PVC sealing strip must be used.

4...474

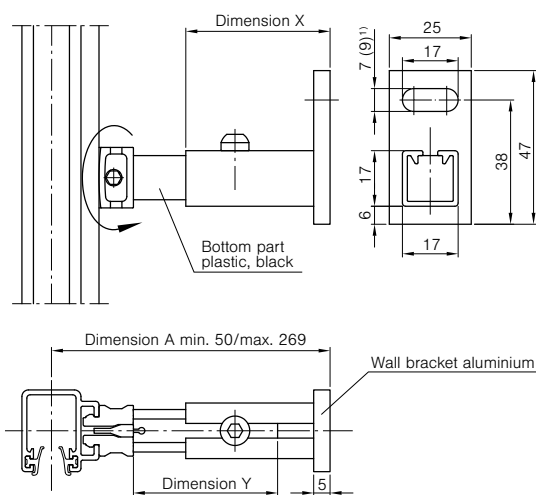
#### Single guide rail Ø32 type 4



For deviation of the external venetian blind axis  $\pm 2.5^\circ$ :  
In the event of deviation of the external venetian blind axis, a rigid PVC sealing strip must be used.

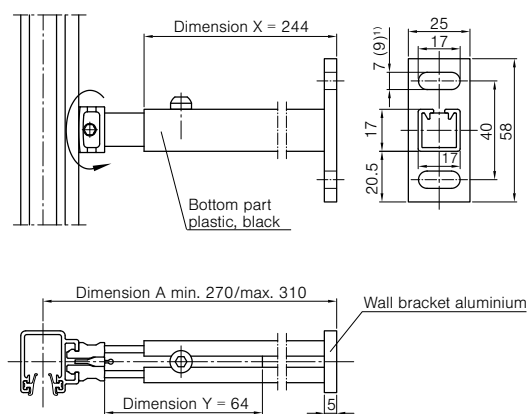
4...475

#### Guide rail bracket type H1



<sup>1)</sup> For fixing on threaded bolt M8 a guide rail bracket type H1 with 9 mm oblong hole is available. (Please state when ordering)

4...291



4...292

fig. 263: Guide rail bracket type H1

Dimension A	Shifting range	Dimension X	Dimension Y
50– 59	49–61	24	24
60– 69	59–74	34	34
70– 89	69–94	44	44
90–129	89–134	64	64
130–169	129–174	104	64
170–209	169–214	144	64
210–239	209–254	184	64
240–269	239–270	214	64
270–310 <sup>1)</sup>	269–310	244	64

<sup>1)</sup> Base plate with two oblong holes

#### Number of required guide rail brackets

Guide rail length	Number of guide rail brackets
Up to 1400	2
1401–2500	3
2501–3500	4
3501–4500	5
4501–5000	6

## Guides

### Rail guidance

#### Guide rail bracket Ø16 mm type H2

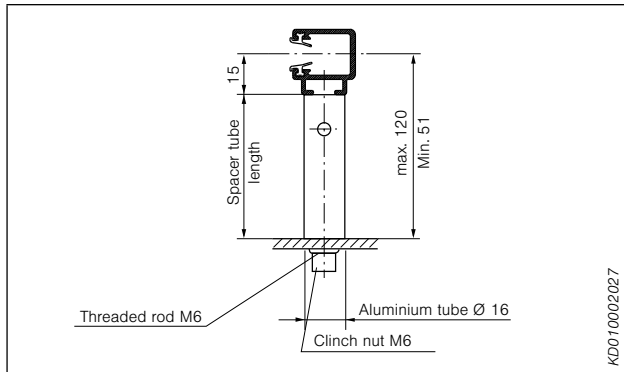


fig. 264: Guide rail bracket type H2

Fixing of the rails using guide rail bracket Ø16 mm is only permissible on sturdy metal surfaces.

#### Number of required guide rail brackets

Guide rail length	Number of guide rail brackets
Up to 1400	2
1401–2500	3
2501–3500	4
3501–4500	5
4501–5000	6

#### Special version for corner positions, combined rail/cable guidance

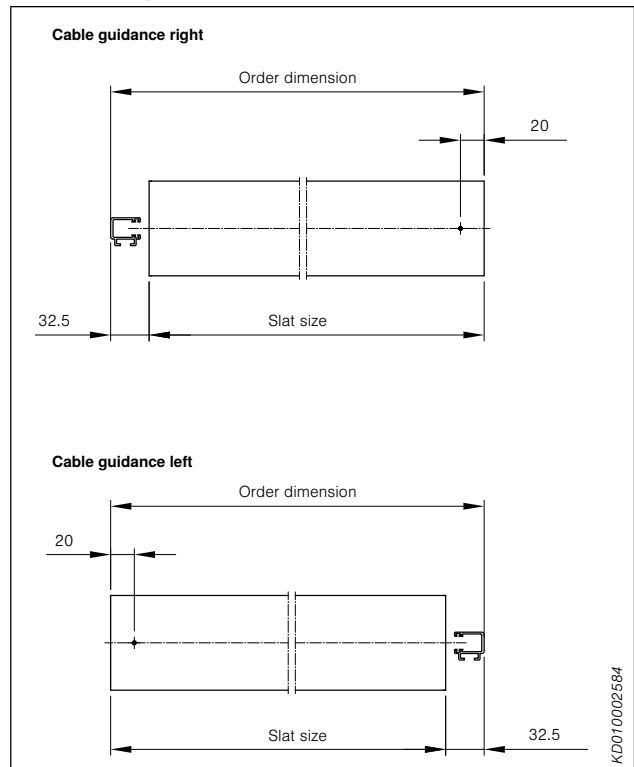


fig. 265: Different lateral guidance (combination rail/cable)

Different lateral guidance (combination rail/cable)

Special version for corner positions:

Please note that for types 60/80/73/90/93 A2/A6 with different lateral guidance (rail/cable), an uneven closing of the slats over the fabric width cannot be avoided.

For type 60/80 AF, only model with eyelets is available. Central tension cables are not available for type 73/90/93 A2/A6 maximum width 2400 mm.

Number of cable guidances for special version one side cable guidance/one side rail guidance for types 80 A6 and 80 AF A6.

Slat size	Cable guidances
From 2401 mm	1
From 4001 mm	2

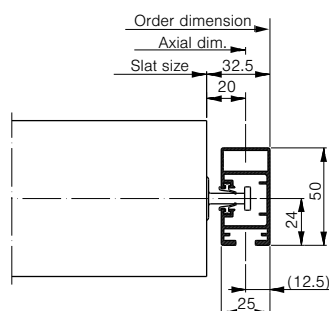
When ordering, please indicate positioning of additional cable guiding (starting inside from the left)!



# Guides

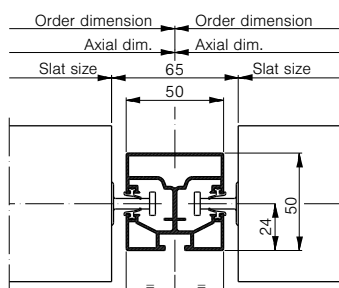
## Rail guidance

**Guide rail, single 25x50  
Type 9<sup>1)</sup>**



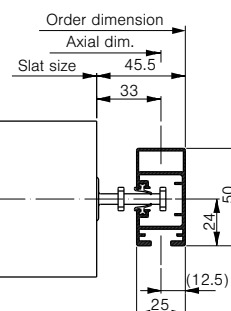
KD010002083\_1

**Double guide rail 50x50  
Type 10<sup>1)</sup>**



KD010002083\_2

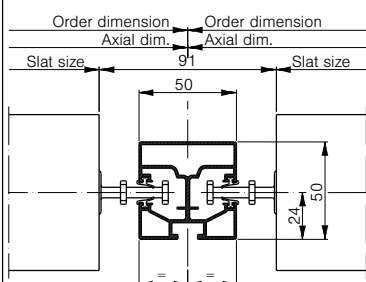
**Guide rail, single 25x50  
Type 9**



System: for mounting cover panels between the guide rails and for deviation of the external venetian blind axis from  $\pm 2.5^\circ$  up to max.  $\pm 15^\circ$ :  
Slats with extended guide pin 63 mm.  
In the event of deviation of the external venetian blind axis, a rigid PVC sealing strip must be used.

KD010002083\_3

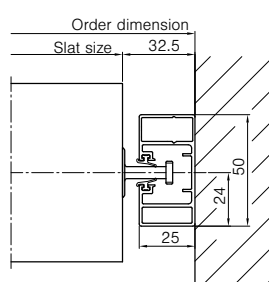
**Double guide rail 50x50  
Type 10, longer guide pin**



System: for mounting cover panels between the guide rails and for deviation of the external venetian blind axis from  $\pm 2.5^\circ$  up to max.  $\pm 15^\circ$ :  
Slats with extended guide pin 63 mm.  
In the event of deviation of the external venetian blind axis, a rigid PVC sealing strip must be used.

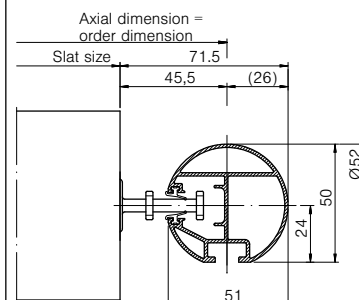
KD010002084

**Guide rail, single 25x50  
Type 17<sup>1)</sup> for reveal installation**



KD010002524\_1

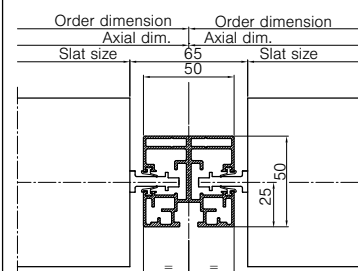
**Guide rail, single Ø52  
Type 7, longer guide pin**



System: for mounting cover panels between the guide rails and for deviation of the external venetian blind axis from  $\pm 7^\circ$  up to max.  $\pm 15^\circ$ :  
Slats with extended guide pin 63 mm.  
In the event of deviation of the external venetian blind axis, a rigid PVC sealing strip must be used.

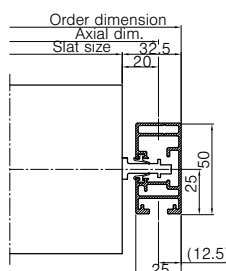
KD0002117\_3

**Double guide rail 50x50  
Type 19<sup>1)</sup> (only MSR)**



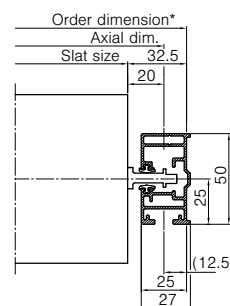
KD010002644v1

**Guide rail, single 25x50  
Type 18<sup>1)</sup> (only MSR)**



KD010002645v1

**Single guide rail (reveal installation)  
Type 20<sup>1)2)</sup> (only MSR)**



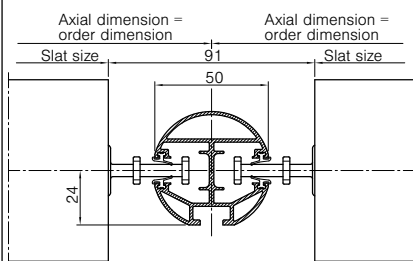
KD010002646

<sup>1)</sup> Maximum permitted deviation of the external venetian blind axis  $\pm 2.5^\circ$ .  
<sup>2)</sup> Attention: Note deduction measurements when ordering!

## Guides

### Rail guidance

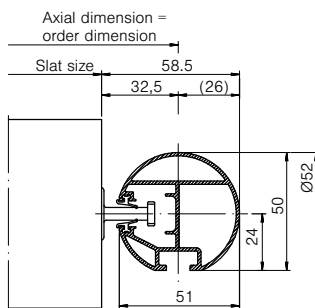
#### Double guide rail Ø52 Type 8, longer guide pin



System: for mounting cover panels between the guide rails and for deviation of the external venetian blind axis from  $\pm 7^\circ$  up to max.  $\pm 15^\circ$ .  
Slats with extended guide pin 63 mm.  
In the event of deviation of the external venetian blind axis, a rigid PVC sealing strip must be used.

KD010002117\_1

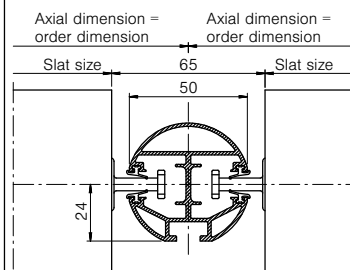
#### Guide rail, single Ø52 Type 7



For deviation of the external venetian blind axis  $\pm 7^\circ$ :  
In the event of deviation of the external venetian blind axis, a rigid PVC sealing strip must be used.

KD010002117\_2

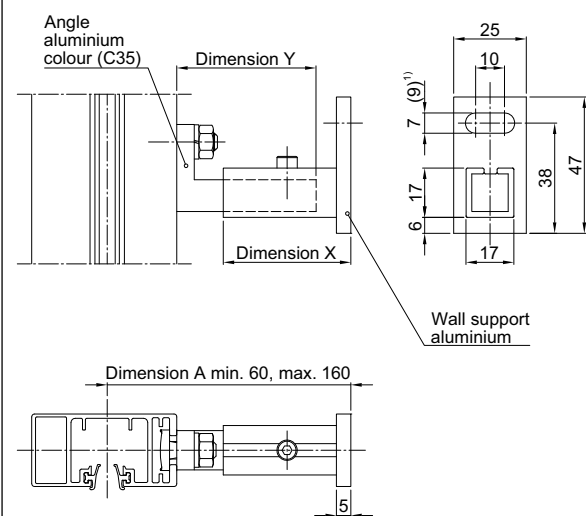
#### Double guide rail Ø52 Type 8



For deviation of the external venetian blind axis  $\pm 7^\circ$ :  
In the event of deviation of the external venetian blind axis, a rigid PVC sealing strip must be used.

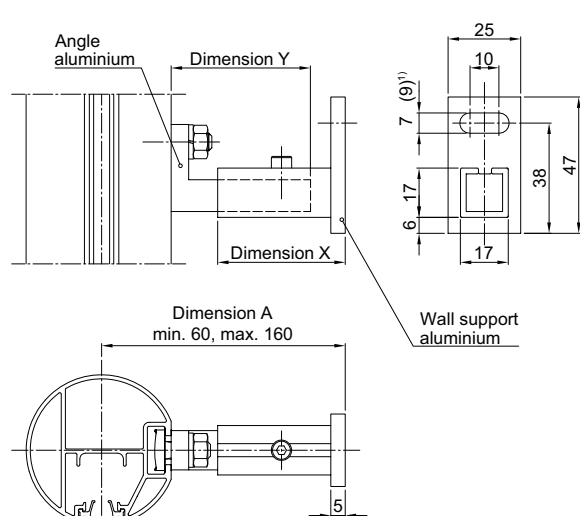
KD010002117\_3

#### Guide rail bracket type H5



1) For fixing on threaded bolt M8 a guide rail bracket type H5 with 9 mm oblong hole is available (please state when ordering)

70263v1\_2sp



70262\_2sp

fig. 266: Guide rail bracket type H5

#### Guide rail bracket type H5

Dimension A	Dimension X	Dimension Y
60– 70	30	36
70– 90	40	46
90–130	60	66
130–160	100	66

#### Number of required guide rail brackets

Guide rail length	Number of guide rail brackets
Up to 1400	2
1401–2500	3
2501–3500	4
3501–4500	5
4501–5000	6

## Guides

### Rail guidance

#### Guide rail bracket Ø20 mm type H6

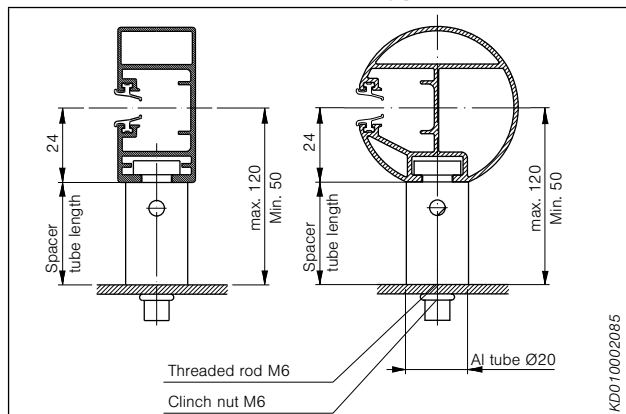


fig. 267: Guide rail bracket type H6

Fixing of the rails by means of guide rail bracket Ø20 mm is only permissible on sturdy metal surfaces.

#### Number of required guide rail brackets

Guide rail length	Up to 2000	2001–3800	3801–5000
Number of guide rail brackets	2	3	4

#### Guide rail bracket types H101 and H115

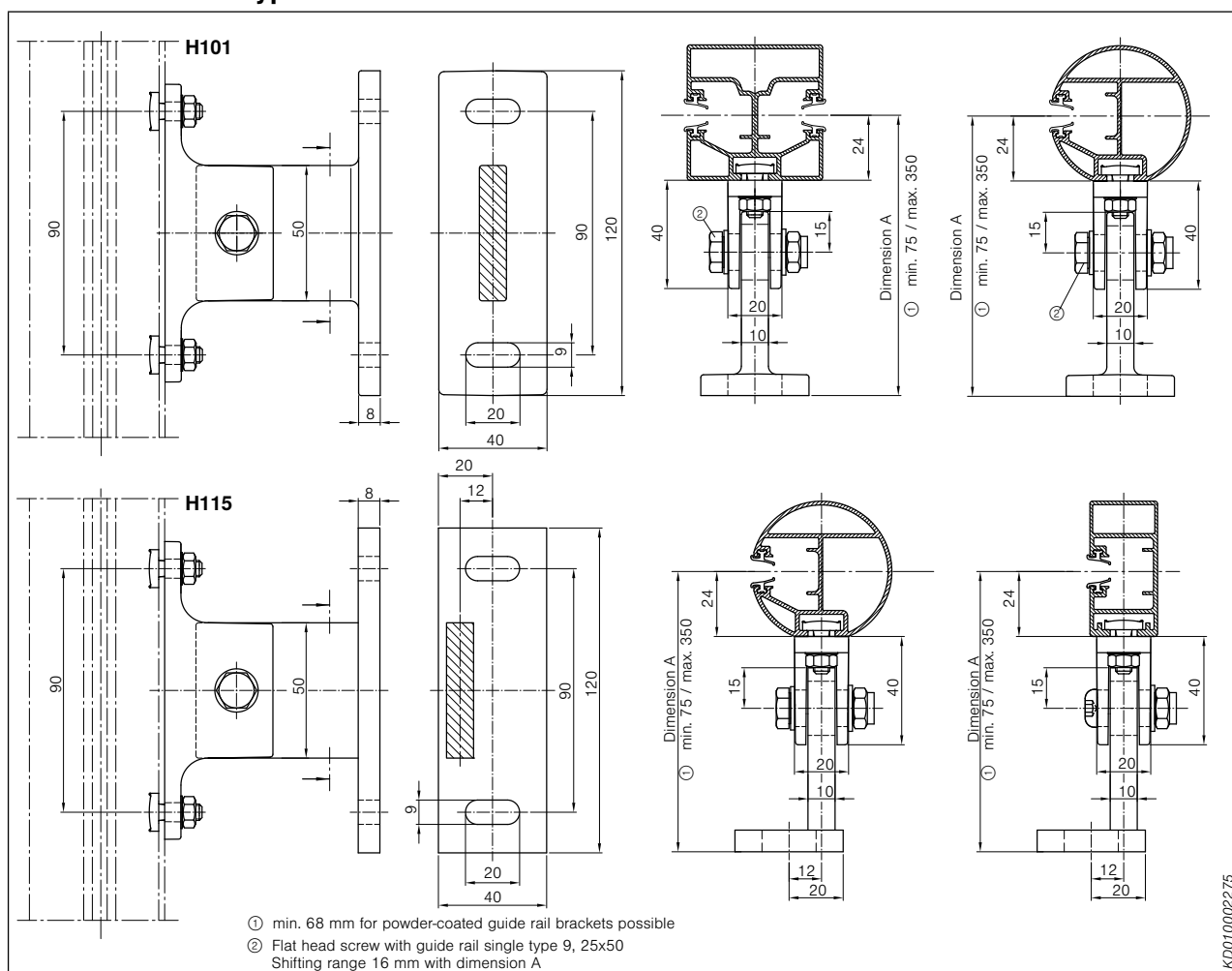


fig. 268: Guide rail bracket types H101 and H115

#### Number of guide Guide rail brackets

Guide rail length	Up to 3000	3001–5000
Number of guide rail brackets	2	3

Guides

**Rail guidance – corner version**

**Corner guide rail with adjustable angle for corner positions and polygon facades**

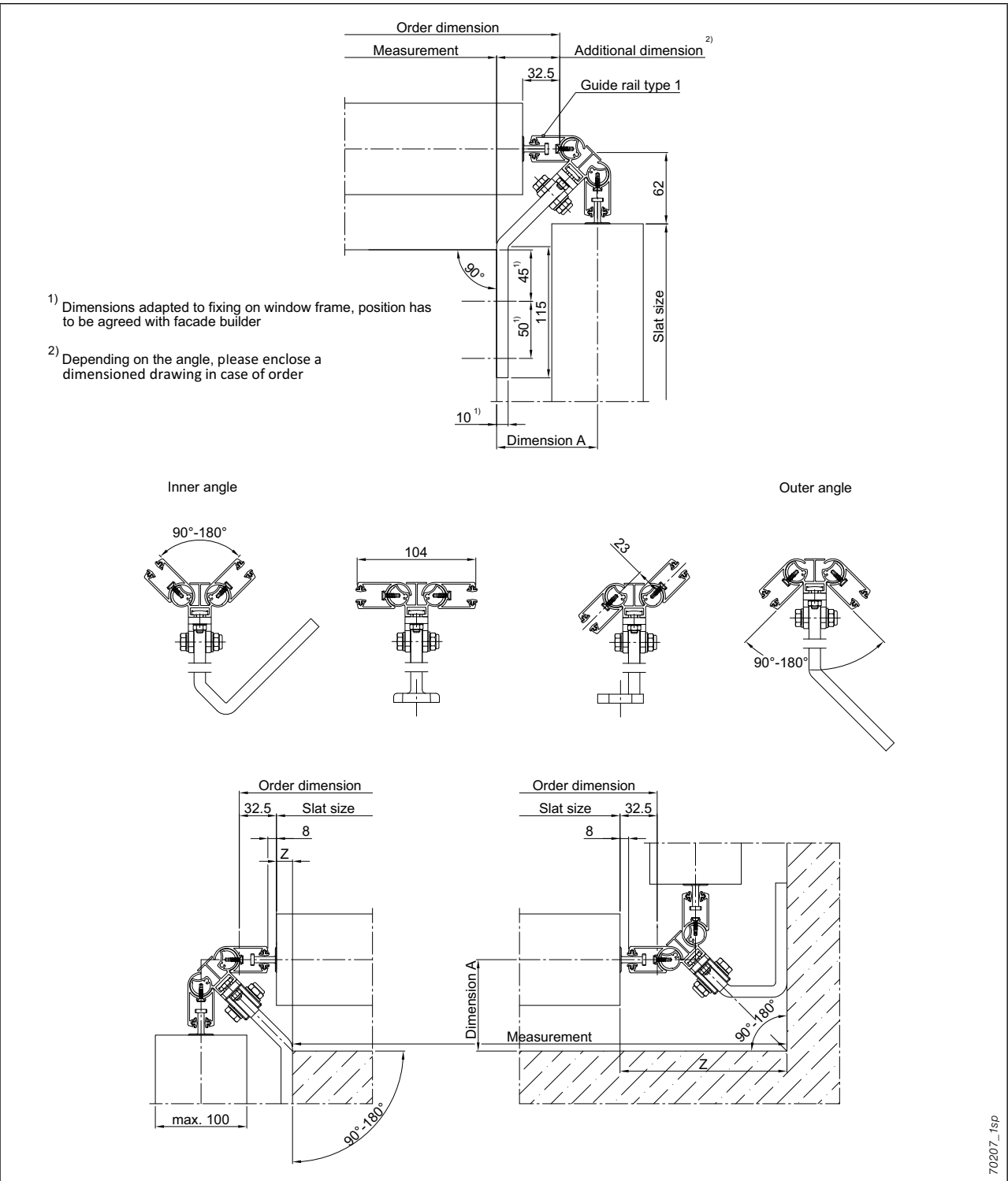


fig. 269: Rail guidance – corner guide rail with adjustable angle for corners and polygonal facades

**Number of guide rail brackets**

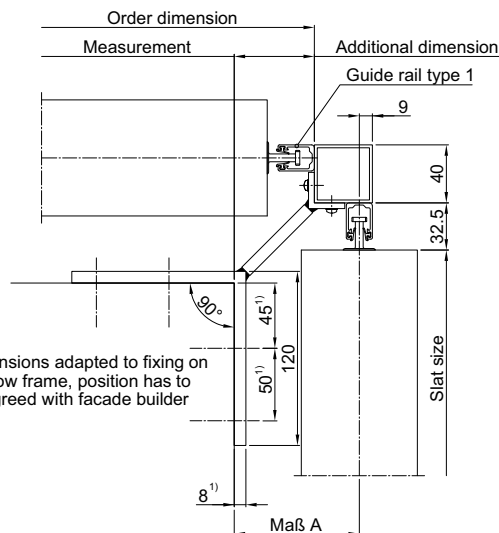
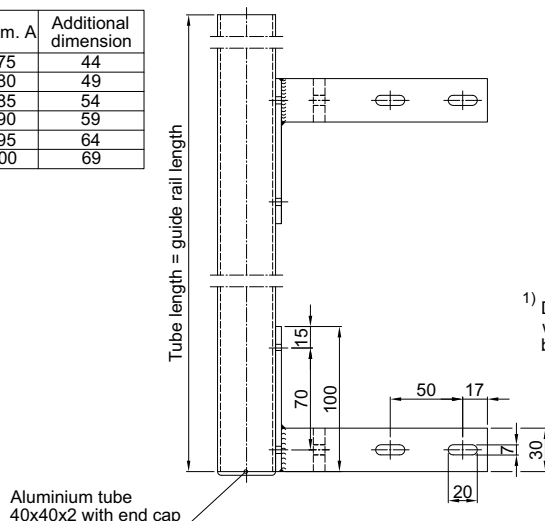
Guide rail length	Up to 3000	3001–5000
Number of guide rail brackets	2	3

## Rail guidance – corner version

### Special guide rail bracket for 90° outside corner

Variant 1: with square tube 40 mm and guide rails 25x18 type 1

Dim. A	Additional dimension
75	44
80	49
85	54
90	59
95	64
100	69

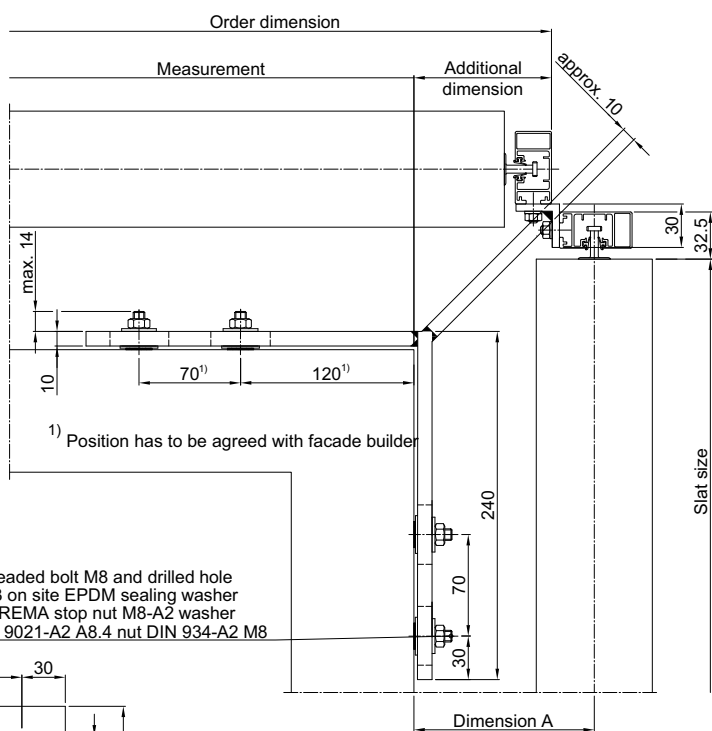
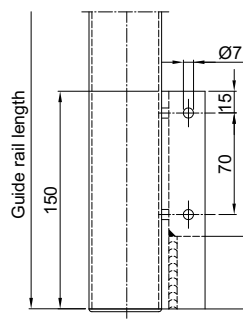


1) Dimensions adapted to fixing on window frame, position has to be agreed with facade builder

Aluminium tube  
40x40x2 with end cap

Variant 2: with guide rails 25x50 type 9

Dim. A	Additional dimension
75	46
80	51
85	56
90	61
95	66
100	71



Threaded bolt M8 and drilled hole  
Ø13 on site EPDM sealing washer  
WAREMA stop nut M8-A2 washer  
DIN 9021-A2 A8.4 nut DIN 934-A2 M8

1) Position has to be agreed with facade builder

70208v1\_1sp

fig. 270: Special guide rail bracket for 90° outside corner

## Number of guide Guide rail brackets

Guide rail length	Up to 3000	3001–5000
Number of guide rail brackets	2	3

Guides

Rail guidance

End closure and end caps for guide rails

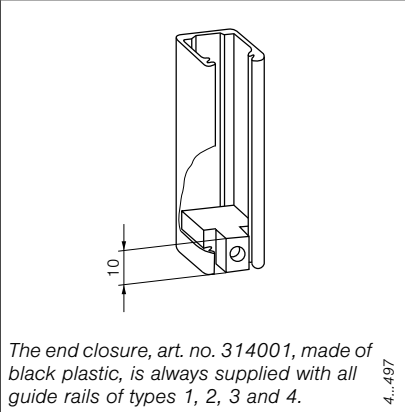
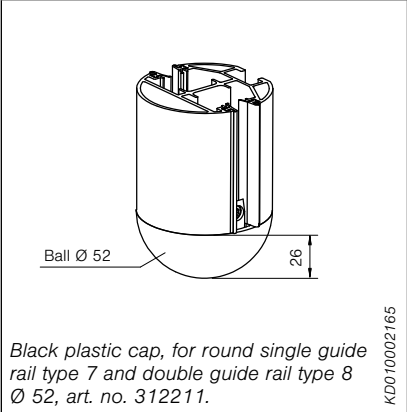
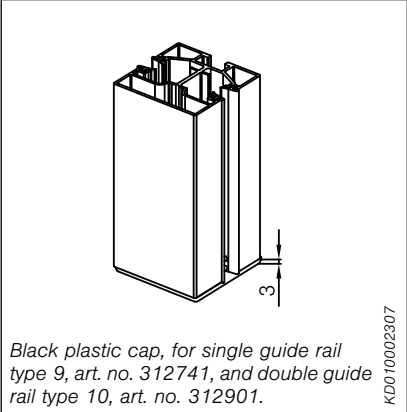


fig. 271: End closure/end caps



Guide rails with fascia

External venetian blinds C/E 73 A6 and C/E 93 A6

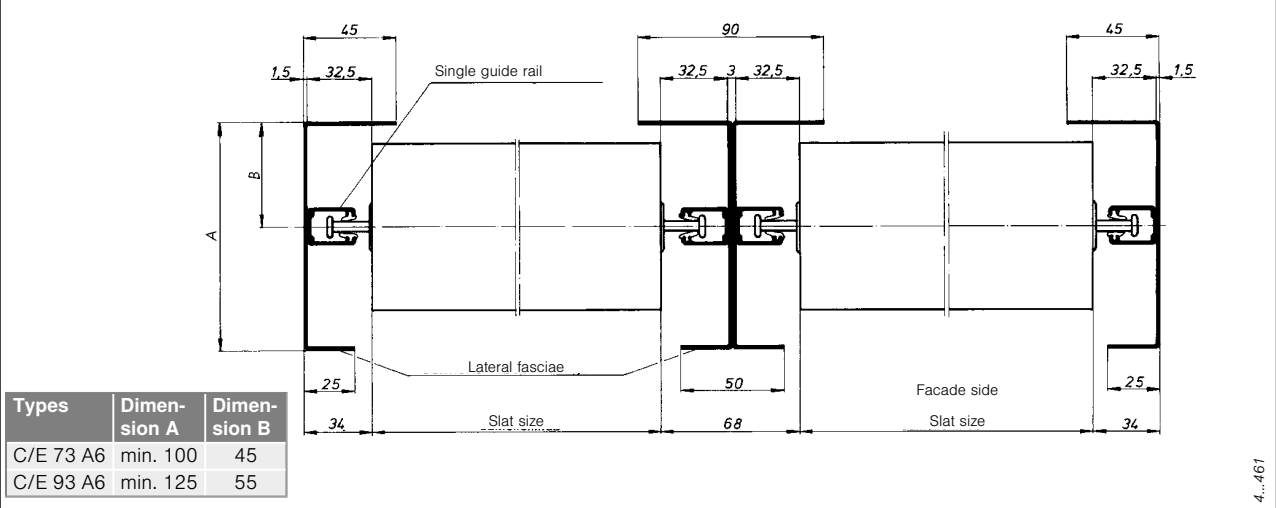


fig. 272: Guide rails with fascia

Field of application

For external venetian blind types C/E 73 A6 and C/E 93 A6 in order to achieve the best possible dim-out values. Dimensions for the partitioning are not fixed and may be adjusted to the structural conditions on-site. For larger dimensions the sheet thickness should be chosen from the table.

Dimension A	Sheet thickness
Up to 135	1.5
136-180	2
181-300	3

## Guide profiles

### Front-mounted external venetian blinds

Continuous aluminium support profile with guide rail for creating a reveal situation

#### Dimensioning of guide profile

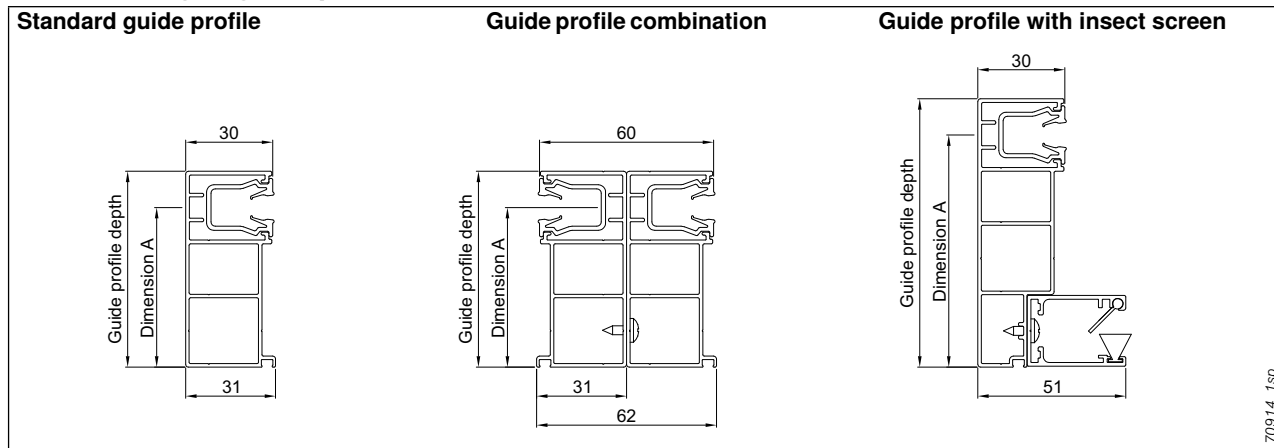


fig. 273: Guide profile front mount

#### Overview of guide profiles for front-mounted external venetian blinds

Guide profile types	Guide profile depth	Dimension A
FSCH 30-68	68	55
FSCH 30-68 K		
FSCH 30-92	92	80
FSCH 30-92 K		

K= guide profile for combination

#### End cap made of aluminium

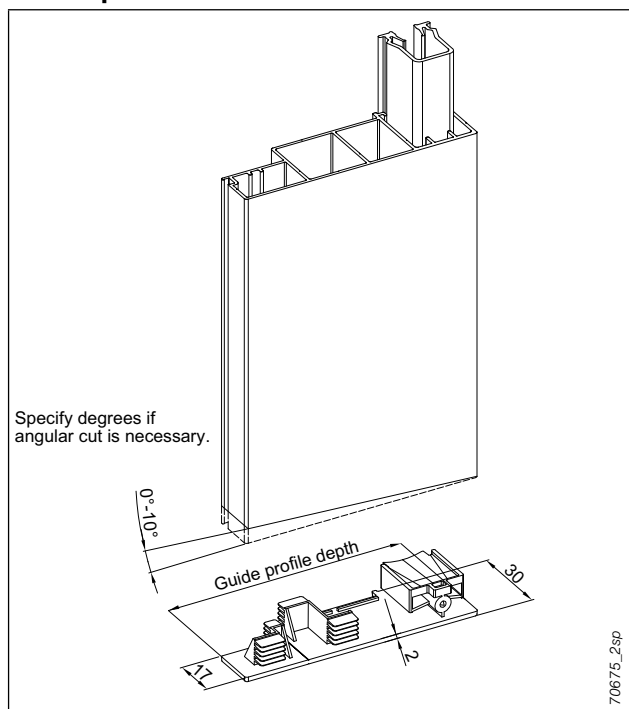


fig. 274: End cap for guide profile for front-mounted external venetian blinds

## Guide profiles

### Front-mounted external venetian blinds

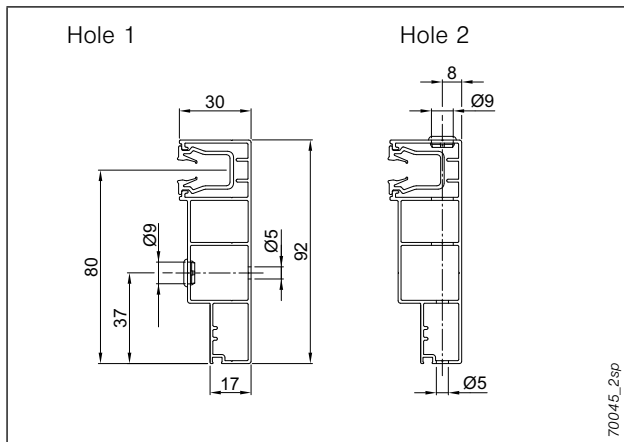


fig. 275: Fixing holes

#### Number of fixing holes

Front-mounted rail length	Quantity
Up to 1350	2
1351 to 2400	3
2401 to 3450	4

#### Note:

Bits/screw driver blades with min. 120 mm length with screw head Torx AW20 are required for mounting the screws of the guide profile. These are not included in the scope of delivery.

#### Suggestions for guide profiles

Substructure	Drilled hole 2 (installation in the window frame)				Head diameter (mm)	Head
	Art. no.	Designation	Hole diameter (mm)	Depth of drilled hole (mm)		
Aluminium/PVC with steel core	2010684	Drilling screw Zebra Pias zinc-coated LiKo 4.8x80	4	45	8.9	Torx AW20 <sup>1)</sup>
Wood	2004514	Chipboard screw LiKo 4.5x70	3.5	35	8.9	Torx AW20 <sup>1)</sup>
Concrete B15	2004514	Chipboard screw LiKo 4.5x70	6	65	8.9	Torx AW20 <sup>1)</sup>
	790516	Dowel SX 6x30				

<sup>1)</sup> Bits/screw driver blades with min. 120 mm length are required to mount these screws! These are not included in the delivery.



## Guide profile

### Venetian blind window system/Top-mounted ext. venetian blinds for new buildings/Basic ext. venetian blinds

Continuous aluminium guide profile for creating a reveal situation, standard for venetian blind window system, can also be combined with other external venetian blinds

#### Dimensioning of guide profile

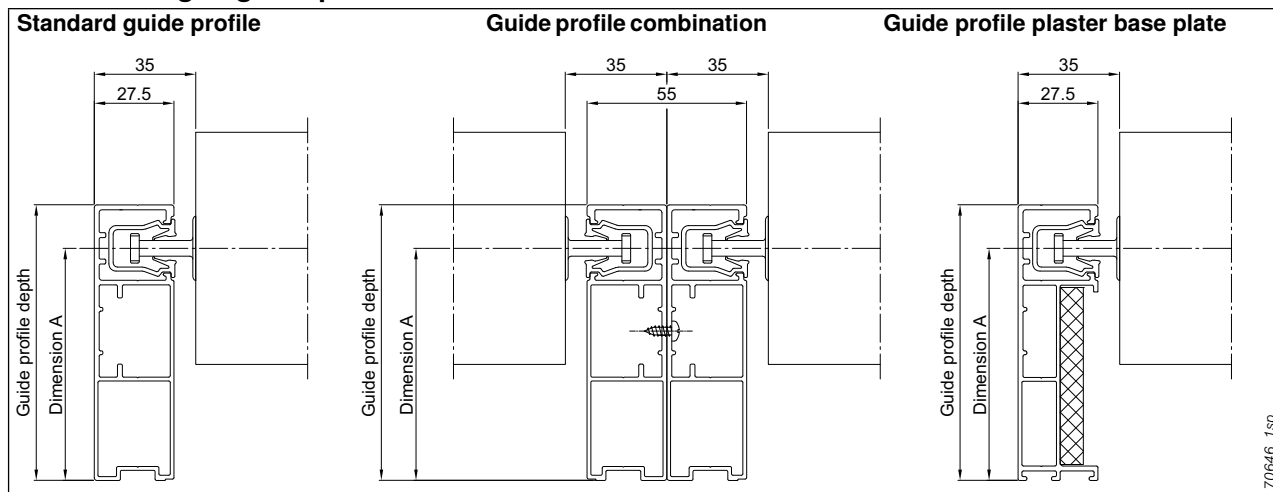


fig. 276: Guide profile FSR P/E, guide profiles 70, 80, 95 and 122, FSR S1 and S2 can also be used

#### Guide profile, basic ext. venetian blinds and venetian blind window system

Guide profile types	Guide profile depth	Dimension A
FSCH 27-70	70	55
FSCH 27-70 K		
FSCH 27-70 P		
FSCH 27-80	80	65
FSCH 27-80 K		
FSCH 27-80 P		
FSCH 27-87	87	72
FSCH 27-87 K		
FSCH 27-87 P		
FSCH 27-95	95	80
FSCH 27-95 K		
FSCH 27-95 P		
FSCH 27-109	109	94
FSCH 27-109 K		
FSCH 27-109 P		
FSCH 27-117	117	102
FSCH 27-117 K		
FSCH 27-117 P		
FSCH 27-122	122	107
FSCH 27-122 K		
FSCH 27-122 P		
FSCH 55K-40 (self-supporting)	40	25*

\*without fixing bracket

K = guide profile for combination

P = plaster base plate guide profile

#### Overview of guide profiles for top-mounted external venetian blind for new buildings

Guide profile types	Guide profile depth	Dimension A
FSCH 27-70	70	55
FSCH 27-70 K		
FSCH 27-70 P		
FSCH 27-87	87	72
FSCH 27-87 K		
FSCH 27-87 P		
FSCH 27-95	95	80
FSCH 27-95 K		
FSCH 27-95 P		

K = guide profile for combination

P = plaster base plate guide profile

**Plaster recommendation:** The patented guide profile with plaster base plate should be embedded in plaster with a pasty thin-film system. Plaster strips, fabric linings or similar aids can be dispensed with, since no plaster breaks due to thermal expansion are to be expected for the very narrow plaster stripe.

For individual orders in connection with venetian blind facade systems, please indicate length guide profile and length plastic inlay.

**Recommendation:** Length guide profile until bottom edge shaft/cover panel, length plastic insert until bottom edge top rail.

## Guide profile/fixing

### Venetian blind window system/Top-mounted ext. venetian blinds for new buildings/Basic ext. venetian blinds

#### Fixing holes in guide profile FSR/NA-RA

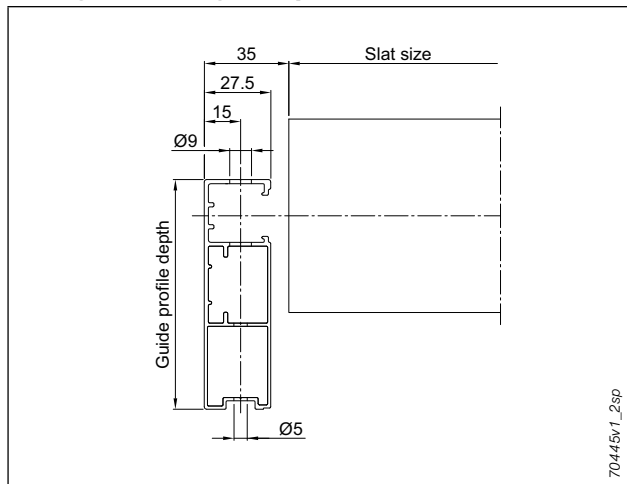


fig. 277: Fixing holes

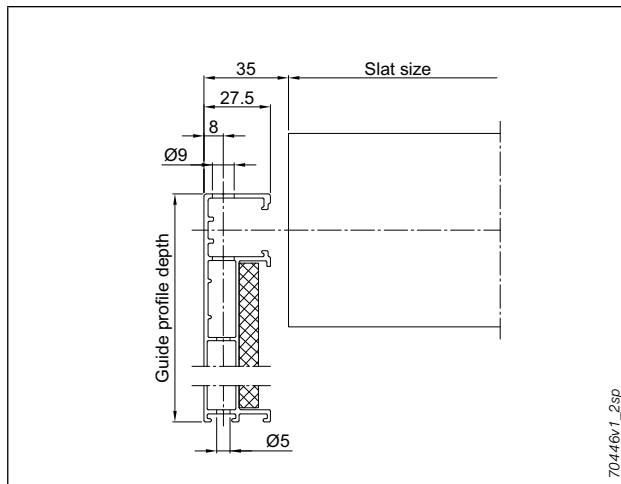


fig. 278: Fixing holes

#### Number of fixing bore holes

Guide profile length (mm)	Quantity
Up to 1350	2
1351 to 2400	3
2401 to 3450	4
3451 to 4000	5

#### Position of drilled holes

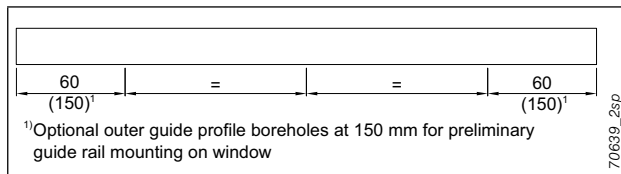


fig. 279: Position of drilled holes

#### Fixing material for support profile: 27.5x70/80/87.5/95/109.5/117/122.5

Substructure	Drilled hole 2 (installation in the window frame)				Head diameter (mm)	Head
	Art. No.	Designation	Hole diameter (mm)	Depth of drilled hole (mm)		
Aluminium/PVC with steel core	2010684	Drilling screw Zebra Pias galv. LiKo 4.8x80 (4.8x60 at 27.5x70/80)	4	45 (30 at 27.5x70/80)	8.9	Torx AW20 <sup>1)</sup>
Wood	2004514	Chipboard screw LiKo 4.5x70	3.5	35	8.9	Torx AW20 <sup>1)</sup>
Concrete C15	2004514	Chipboard screw LiKo 4.5x70	6	65	8.9	Torx AW20 <sup>1)</sup>
	790516	Dowel SX 6x30				

<sup>1)</sup> Bits/screw driver blades with min. 120 mm length are required to mount these screws! These are not included in the delivery.

# Guide profile/Lining/End cap/Clinker brick gap cover **Venetian blind window system/Top-mounted ext. venetian blinds for new buildings/Basic ext. venetian blinds**

## Lining for guide profiles

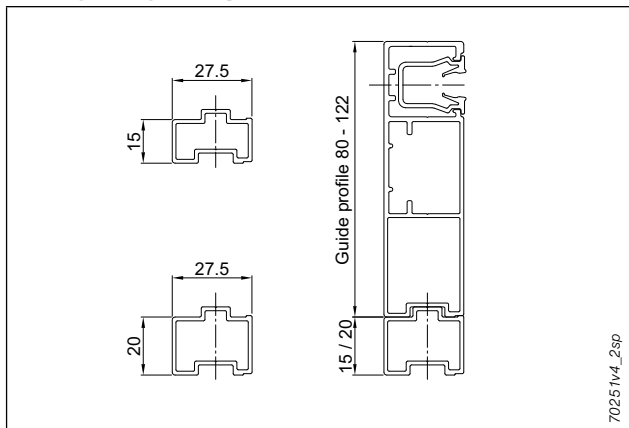


fig. 280: Lining for guide profiles

Lining preinstalled at the factory, max. 2 linings possible on the guide profile.

## Clinker brick gap covering

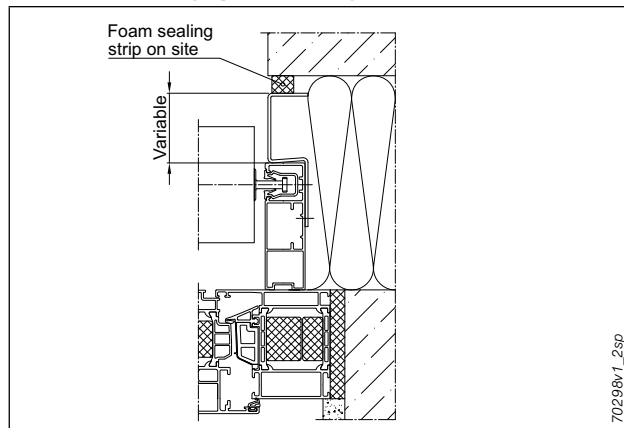


fig. 282: Clinker brick gap cover for guide rails

Clinker brick gap cover variably adjustable in depth, can be used for all FSR guide profiles. When ordering without depth indication, model until leading edge cover panel and/or plaster base plate.

## End cap made of aluminium

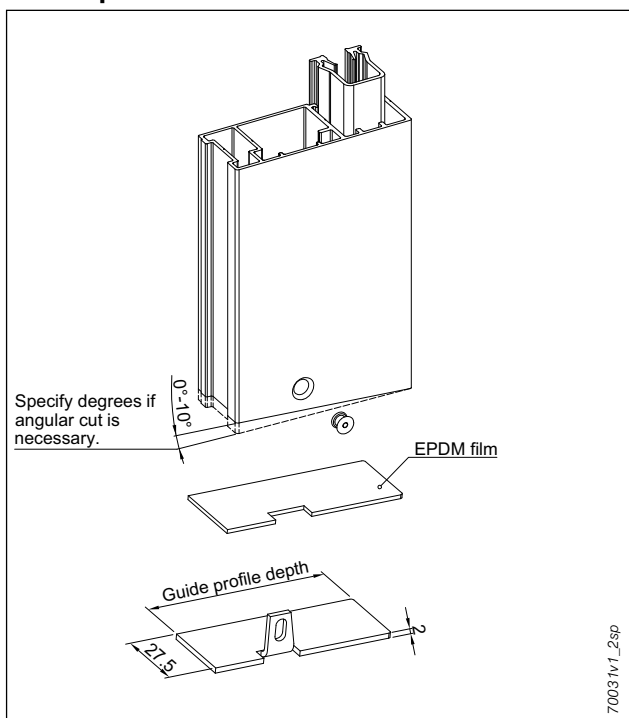


fig. 281: End cap for aluminium guide profile

**Note:** The optionally available end cap for the aluminium guide profile (colour black) is preinstalled at the factory. Also available for guide profiles up to max. 10° diagonal cut.

## Double guide profile FSCH 55K-40, self-supporting

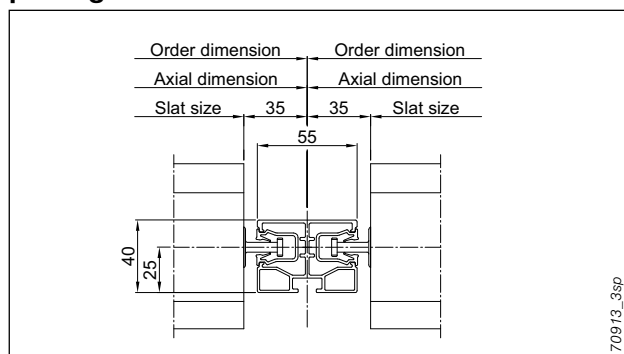


fig. 283: Double guide profile FSCH 55K-40, self-supporting, for insect screen sash frame

**Note:** Must be specified separately when ordering basic external venetian blinds.

## Window sill connection for guide profile Standard situation

**Recommendation:** End profiles from the brands Bug or Helopal aluminium system technology

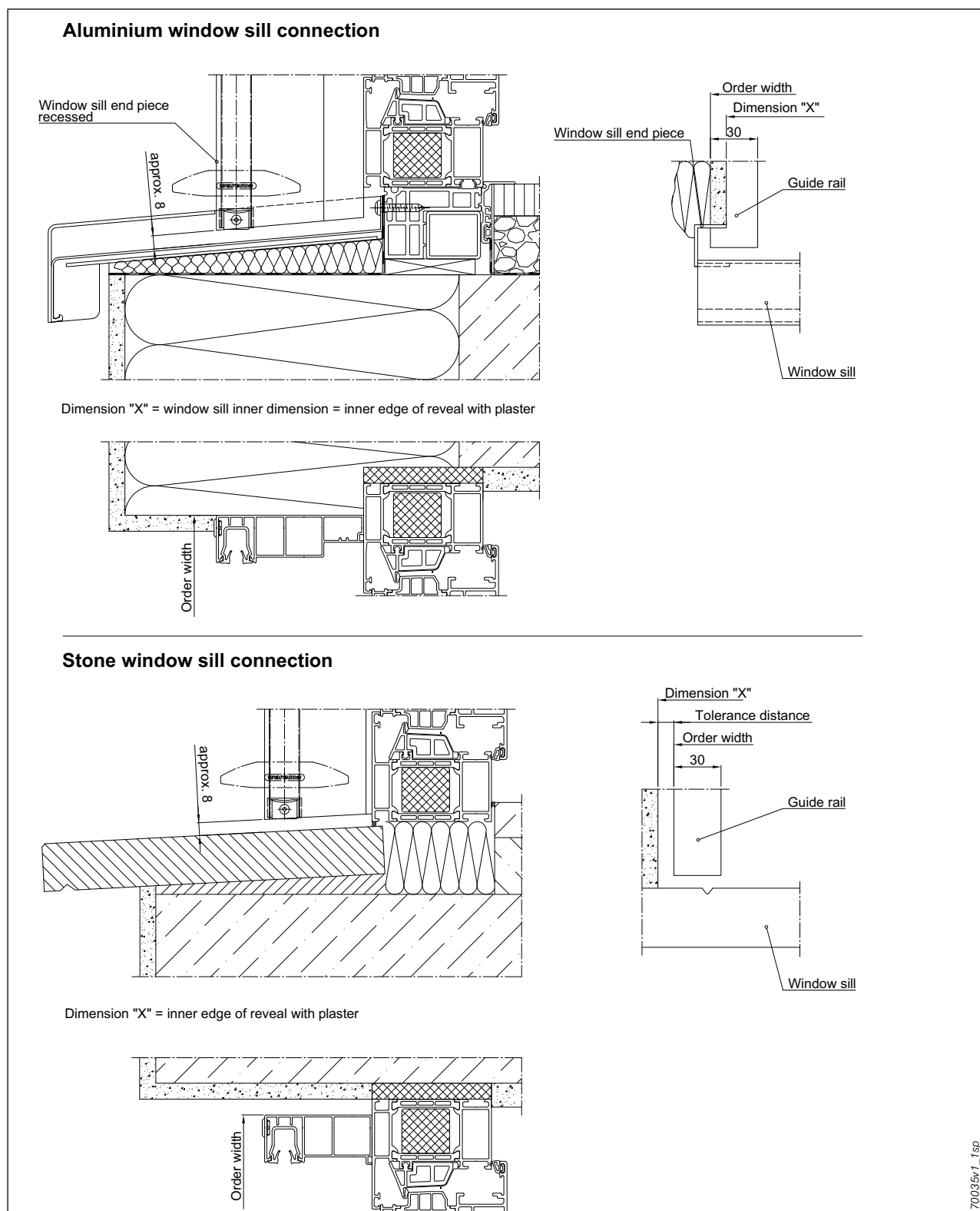


fig. 284: Window sill connection for guide profile – standard situation

If the support profiles are cut at an angle, the height of the external venetian blind height will still relate to the order height on the window frame. This produces a gap (depending on the slope) between the window sill and the bottom edge of bottom rail. If the guide profile has to be longer

than the window frame in order to protrude into the window sill closure, the order height has to be increased accordingly. Any valid guidelines and regulations have to be complied with.

70035v1\_1.sp

## Window sill connection for guide profile

### Guide rail embedded in plaster on the front

**Recommendation:** End profiles from the brands Bug or Helopal aluminium system technology

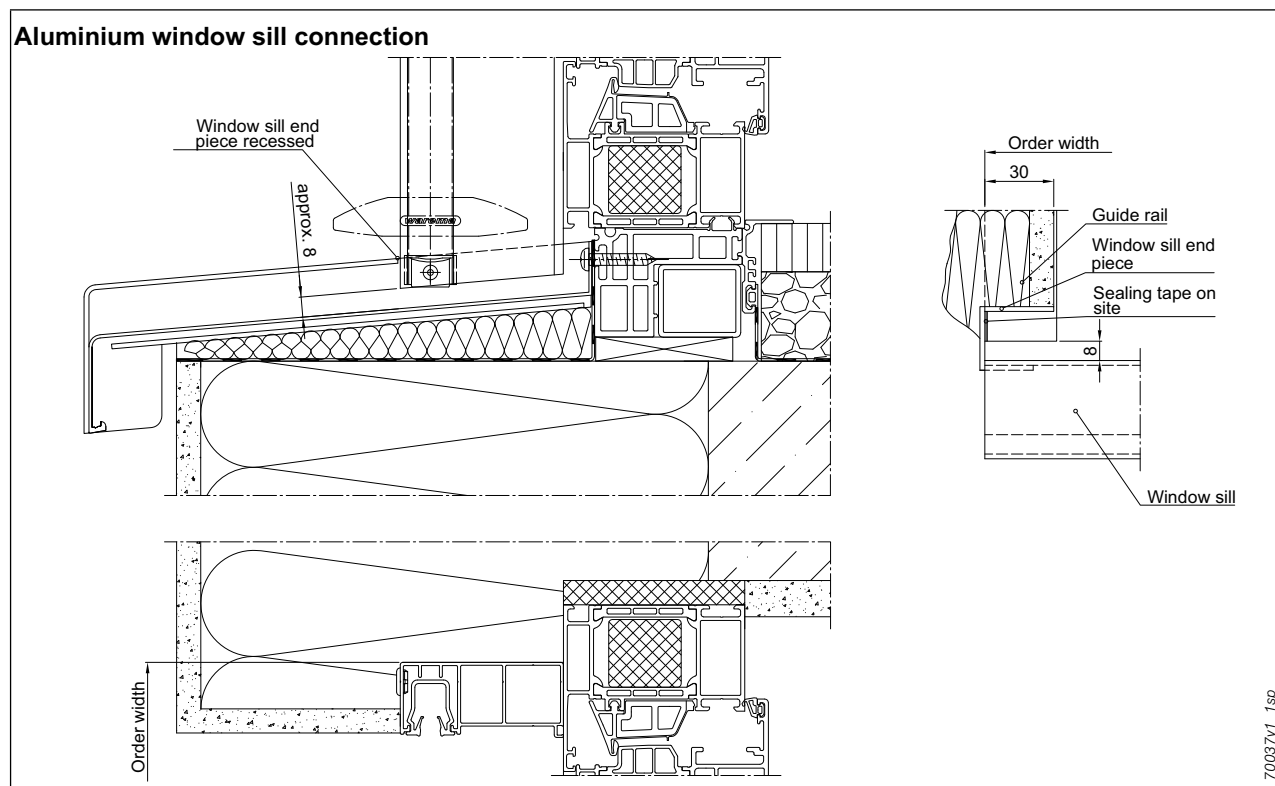


fig. 285: Window sill connection guide rail - special situation

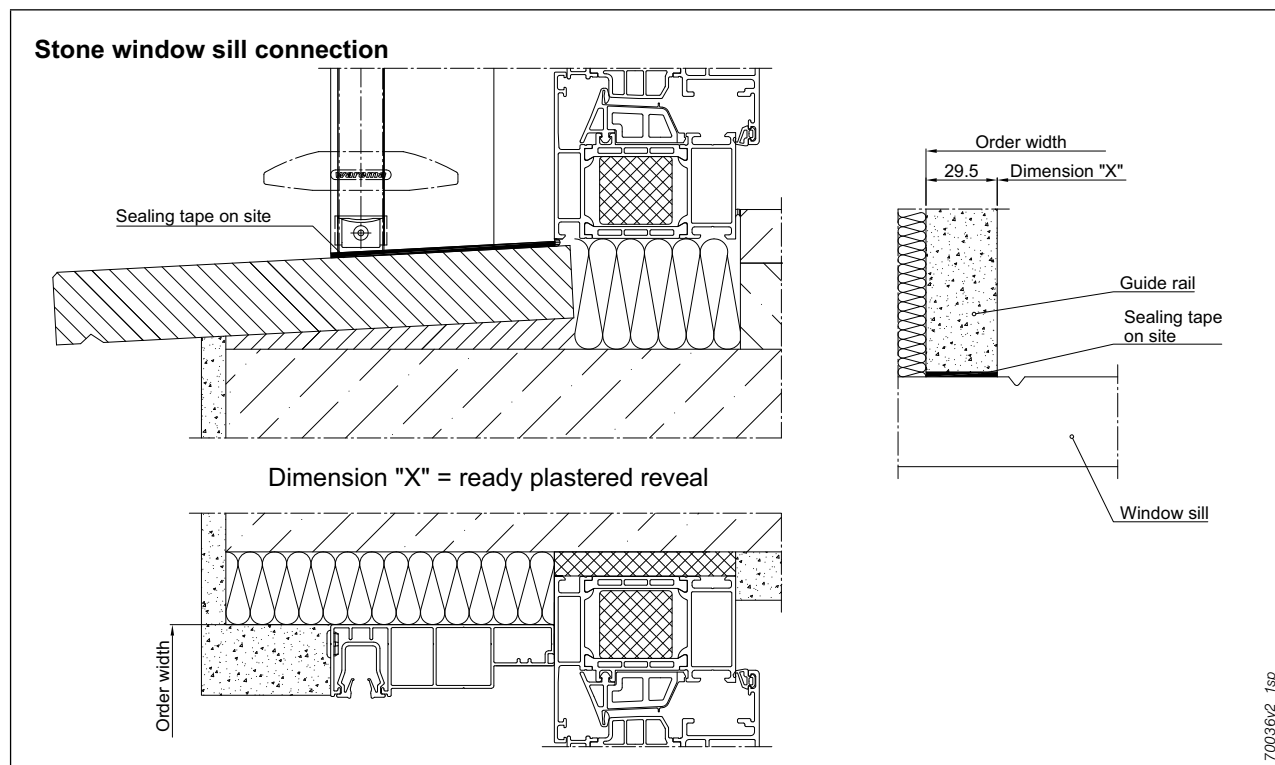


fig. 286: Window sill connection for guide rails – special situation: guide rail embedded in plaster at the front

If the support profiles are cut at an angle, the height of the external venetian blind height will still relate to the order height on the window frame. This produces a gap (depending on the slope) between the window sill and the bottom edge of bottom rail.

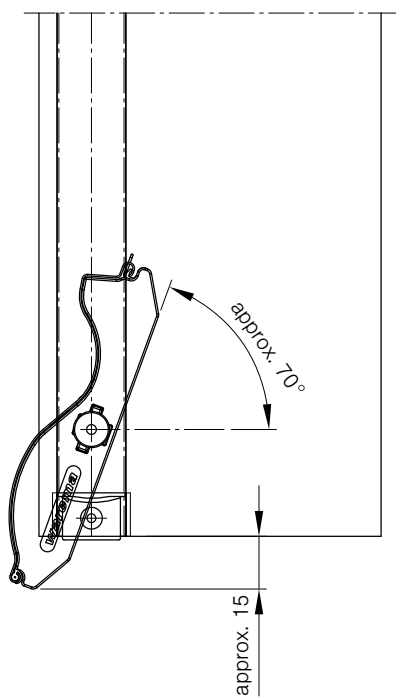
If the guide rail has to be longer than the window frame in order to protrude into the window sill closure, the order height has to be increased accordingly. Any valid guidelines and regulations have to be complied with.

## Curtain extension for dim-out external venetian blinds

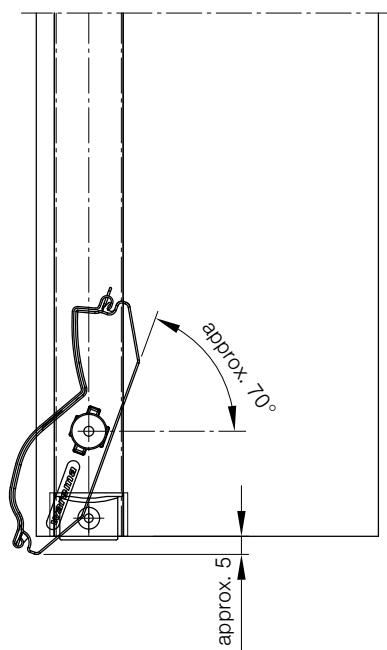
### Special version curtain extension

Max. possible bottom rail protrusion

size 93/90



Size 73



KD010420089

fig. 287: Curtain extension for dim-out external venetian blinds

Details

Additional cable guidance venetian blind window system

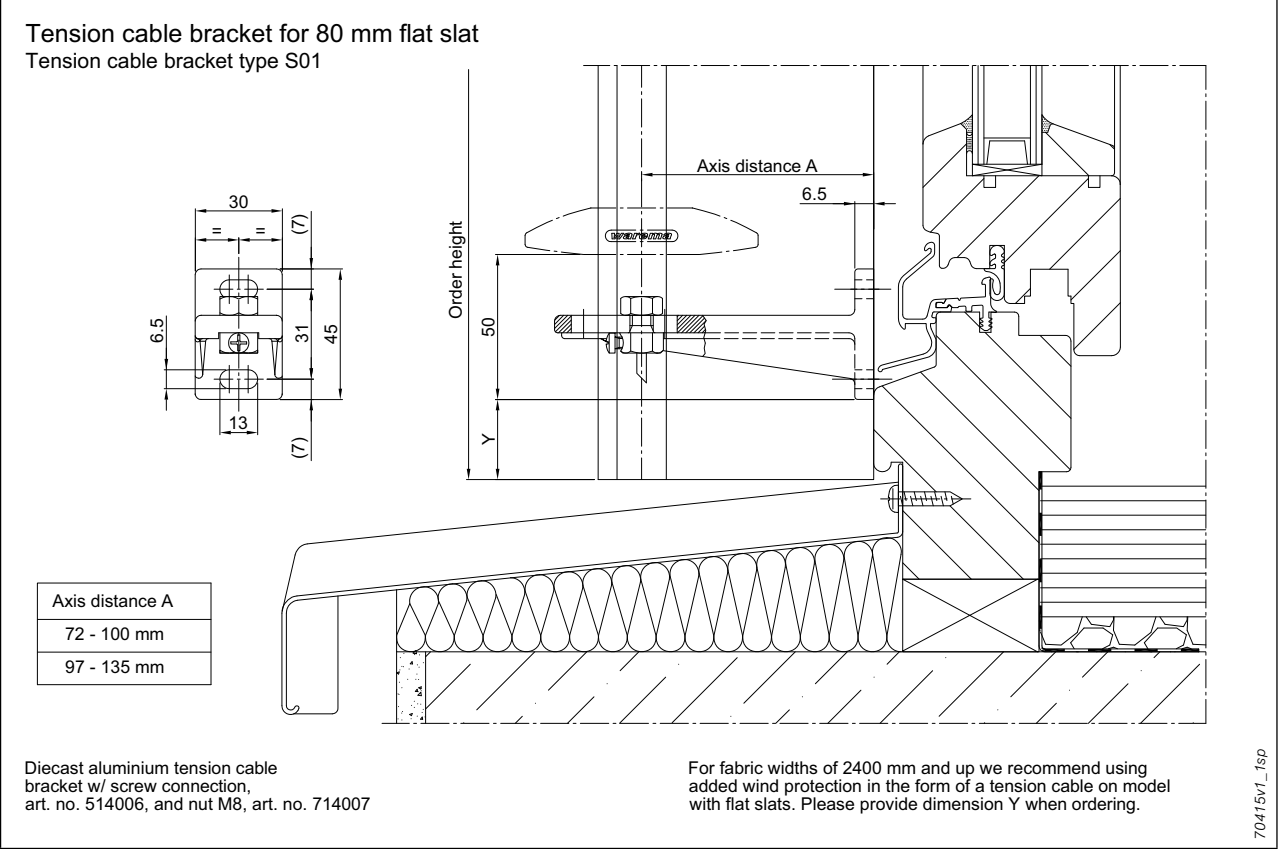
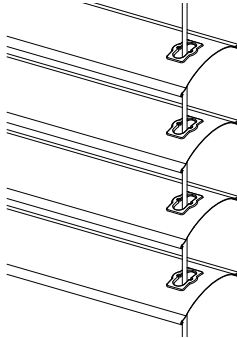


fig. 288: Additional cable guidance

## Guides

### Cable guidance

#### Lateral guidance with steel wire cord Type designation ...A2 (AF for flat slats) or A1



70070\_2sp

fig. 289: Lateral guidance with steel wire cord

#### Cable guidance

**Cable length** = external venetian blind height plus 100 mm.

Type A2 – polyamide-sheathed steel wire cord, diameter 3.3 mm.

Type A1 – polyamide-sheathed steel wire cord, diameter 2.3 mm (for external venetian blinds only).

#### Number of cable guidances

Slat size	Cable guidances
Up to 3000 mm	2
From 3001 mm	3
From 4001 mm	4

When ordering, please indicate positioning of additional cable guidances (starting inside from the left)!

The number of cable guidances depends on the installation situation. For larger distances to the facade or for installation in the corner area of the facade, additional cable guidances are to be provided.

#### Minimum spacings for cable guidance

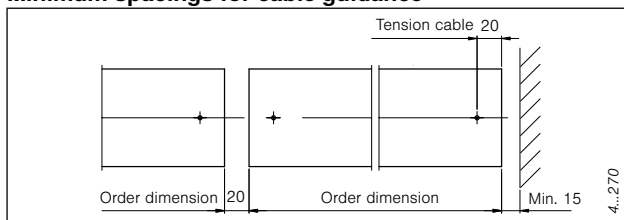
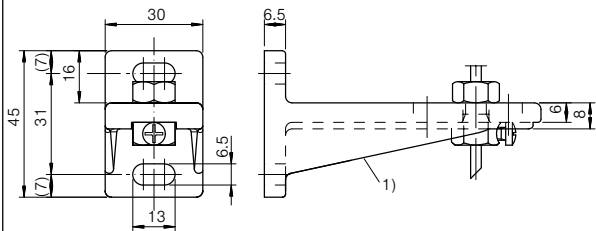


fig. 290: Minimum spacings

#### Tension cable bracket type S01



Distance from facade to centre of cable	Art. no.
1) 20–37 mm	101027
1) 34–54 mm	101028
50–75 mm	101029
72–100 mm	101030
97–135 mm	101031
132–180 mm	101032

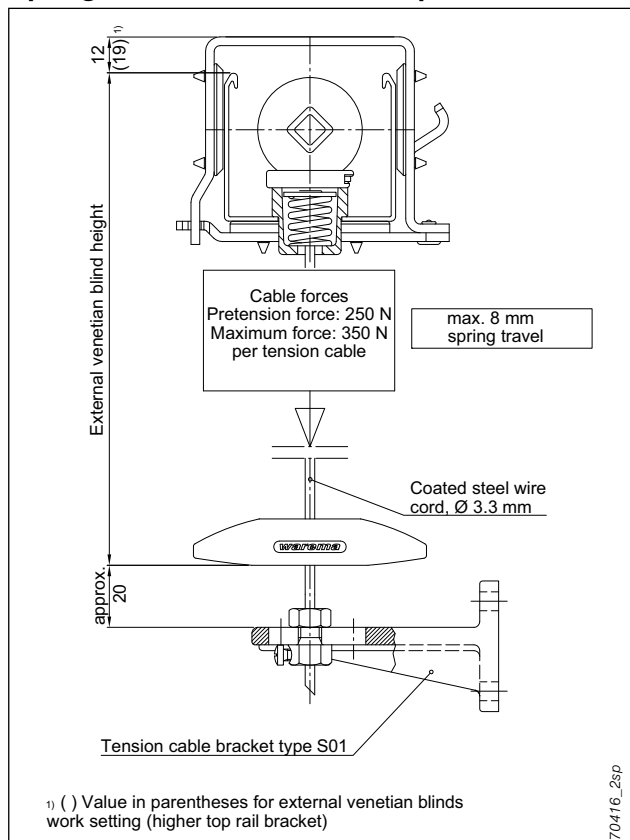
1) The webs are omitted with projections up to 54 mm

Diecast aluminium tension cable bracket w/ screw connection, art. no. 514006, and nut M8, art. no. 714007

KD010013077

fig. 291: Tension cable bracket type S01

#### Spring tension device in the top rail



1) ( ) Value in parentheses for external venetian blinds work setting (higher top rail bracket)

70416\_2sp

fig. 292: Tension cable with standard cable bracing



## Guides

### Cable guidance – special tension cable bracket

#### Standard tension cable bracket with base plate, material: aluminium

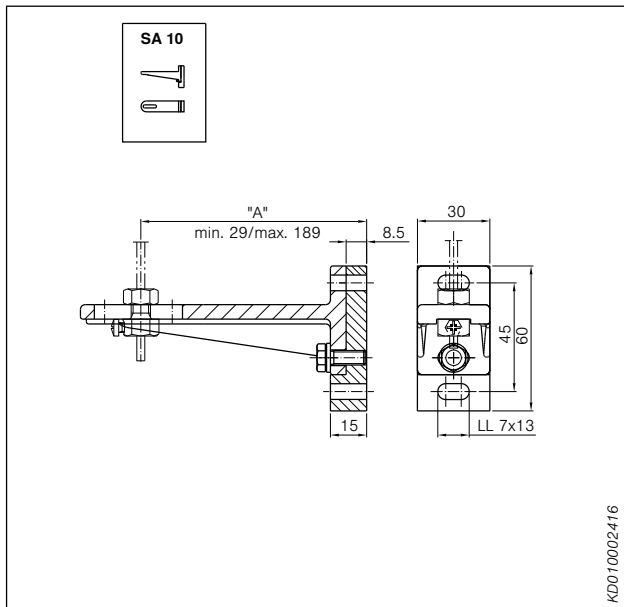
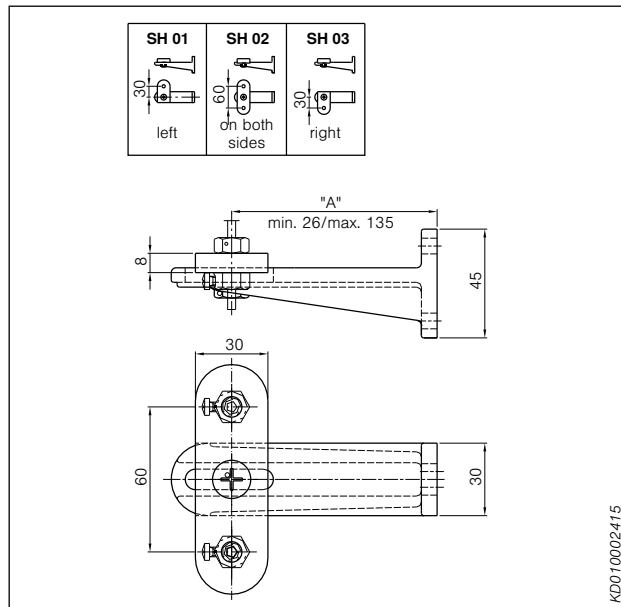


fig. 293: Standard tension cable bracket

#### Standard tension cable bracket with transverse plate, material: aluminium



#### Tension cable bracket for bottom and window sill mounting, material: aluminium

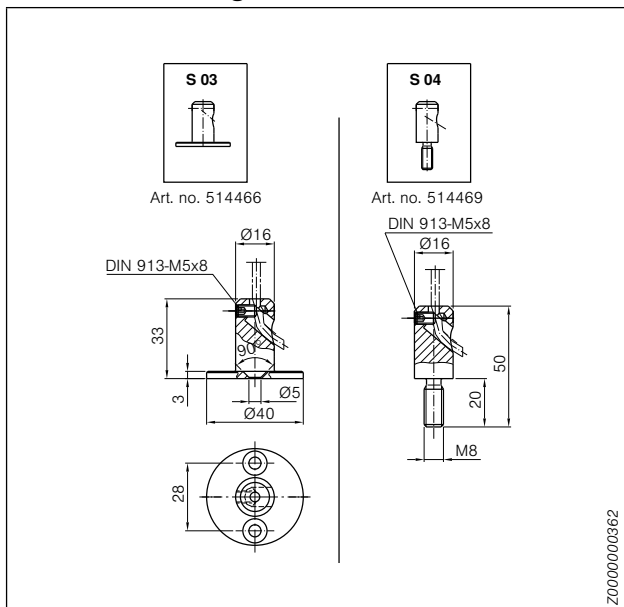


fig. 294: Tension cable bracket for floor and window sill mounting

#### Threaded insert with tension cable attachment for wood

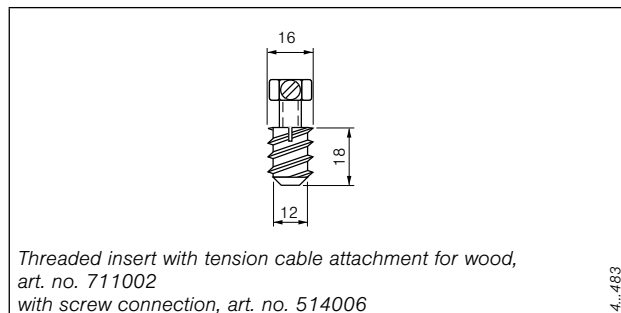


fig. 295: Threaded insert with tension cable attachment for wood

#### Tension cable bracket for floor and window sill mounting, material: aluminium

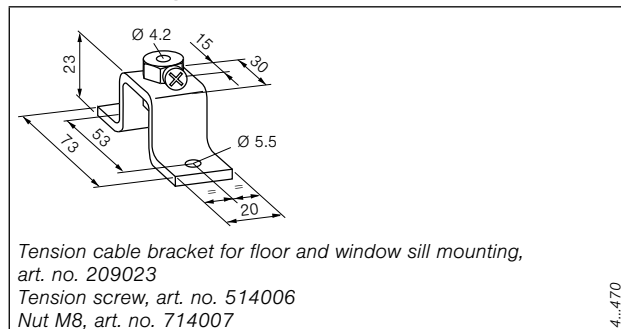


fig. 296: Tension cable bracket bent for floor and window sill mounting

## Cable guidance – special tension cable bracket

**SB 20 / SF 21 / SF 23**

Facade distance "A"	Base plate thickness "s"
up to 300 mm	8 mm

**SF 22**

Facade distance "A"	Base plate thickness "s"
up to 250 mm	8 mm
up to 300 mm	10 mm

KD010002409

**SC 20 / SG 21 / SG 23**

Facade distance "A"	Base plate thickness "s"
up to 300 mm	8 mm

**SG 22**

Facade distance "A"	Base plate thickness "s"
up to 250 mm	8 mm
up to 300 mm	10 mm

KD010002412

**SB 30 / SF 31 / SF 33**

Facade distance "A"	Base plate thickness "s"
up to 70 mm	8 mm
up to 90 mm	10 mm
up to 120 mm	12 mm
up to 160 mm	15 mm
up to 250 mm	20 mm

**SF 32**

Facade distance "A"	Base plate thickness "s"
up to 60 mm	10 mm
up to 80 mm	12 mm
up to 110 mm	15 mm
up to 190 mm	20 mm

KD010002411

**SC 30 / SG 31 / SG 33**

Facade distance "A"	Base plate thickness "s"
up to 70 mm	8 mm
up to 90 mm	10 mm
up to 120 mm	12 mm
up to 160 mm	15 mm
up to 250 mm	20 mm

**SG 32**

Facade distance "A"	Base plate thickness "s"
up to 60 mm	10 mm
up to 80 mm	12 mm
up to 110 mm	15 mm
up to 190 mm	20 mm

KD010002413

292

Guides

Cable guidance – special tension cable bracket

Tension cable bracket for window sill situation, material: aluminium

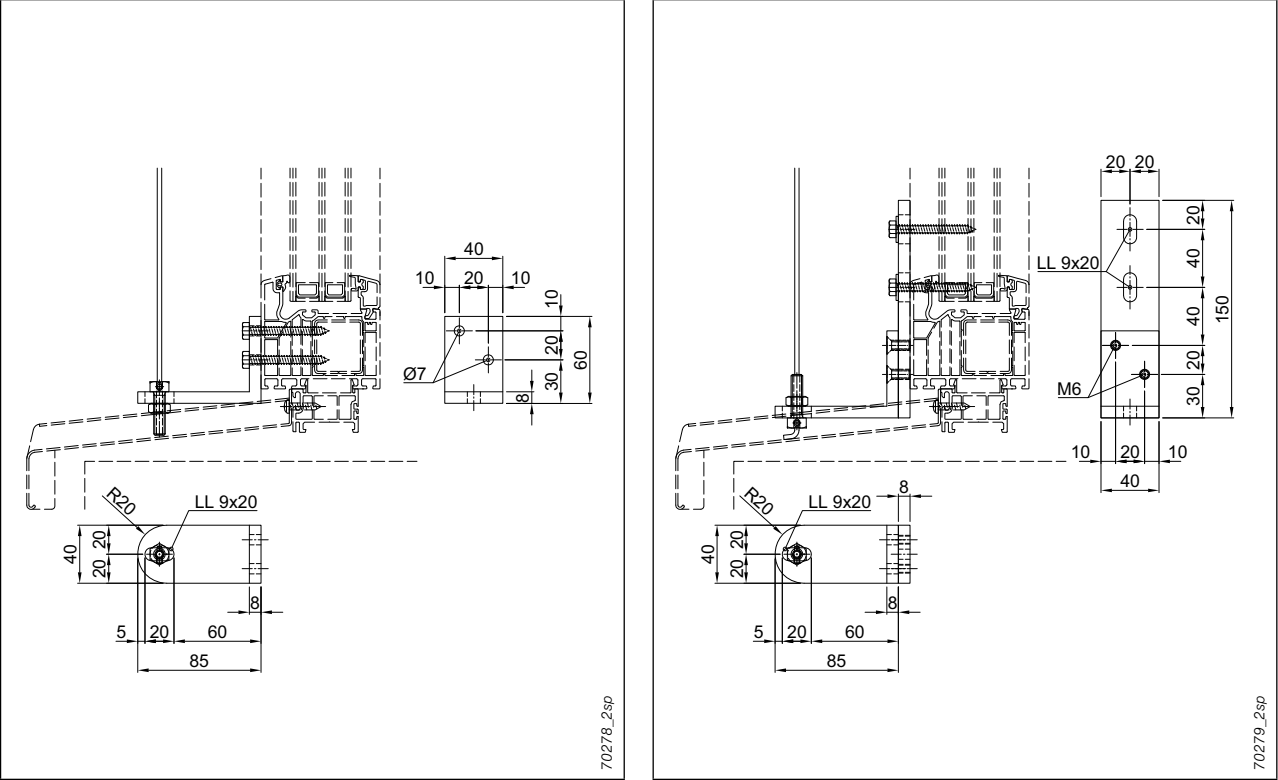


fig. 298: Tension cable bracket for window sill situations, material: aluminium

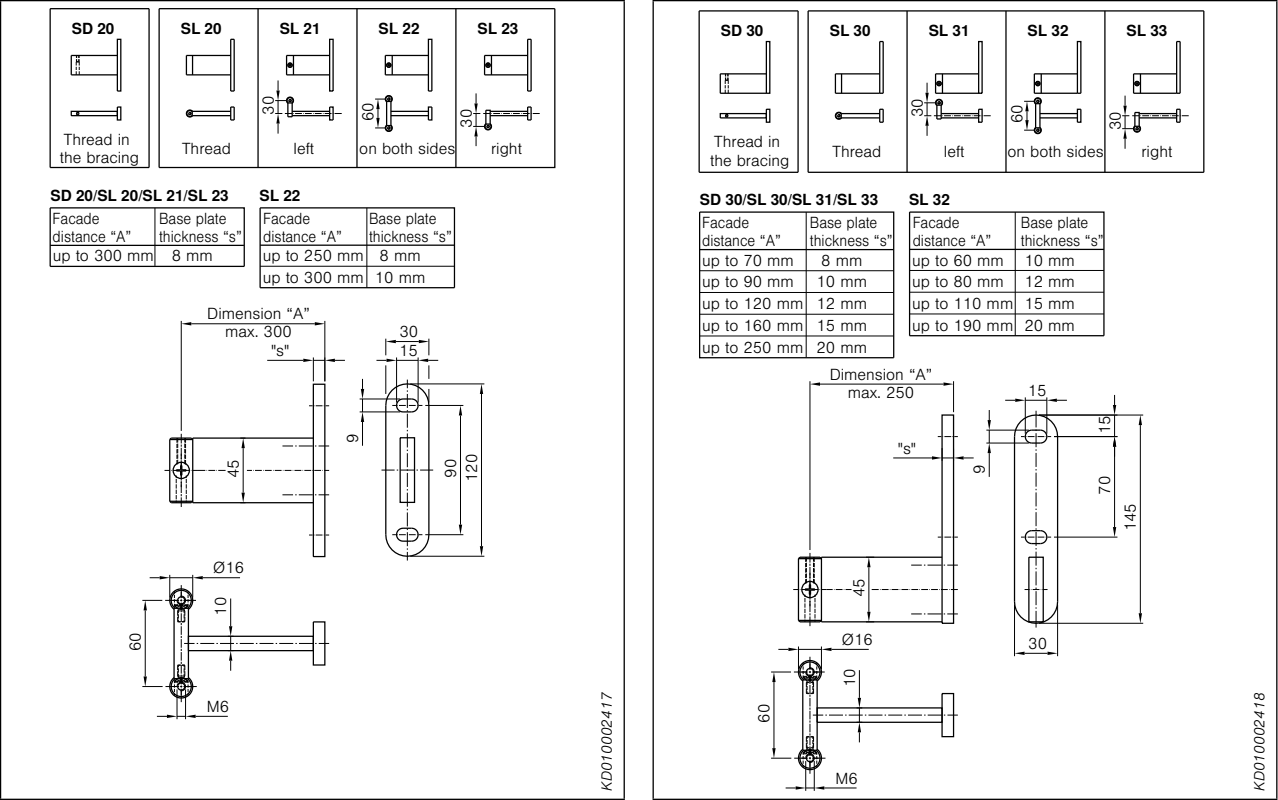


fig. 299: Tension cable bracket for cable bracing with M6 thread end piece, material: aluminium

# **Guides** **Cable guidance – corner version**

## **Special tension cable bracket for 90° outside corner**

Variant 1: slats up to diagonal with a distance of 20 mm

Slat Dim. A	Additional dimension			
	60	80	73	90/93
75	31	21	24	14
80	36	26	29	19
85	41	31	34	24
90	46	36	39	29
95	51	41	44	34
100	56	46	49	39

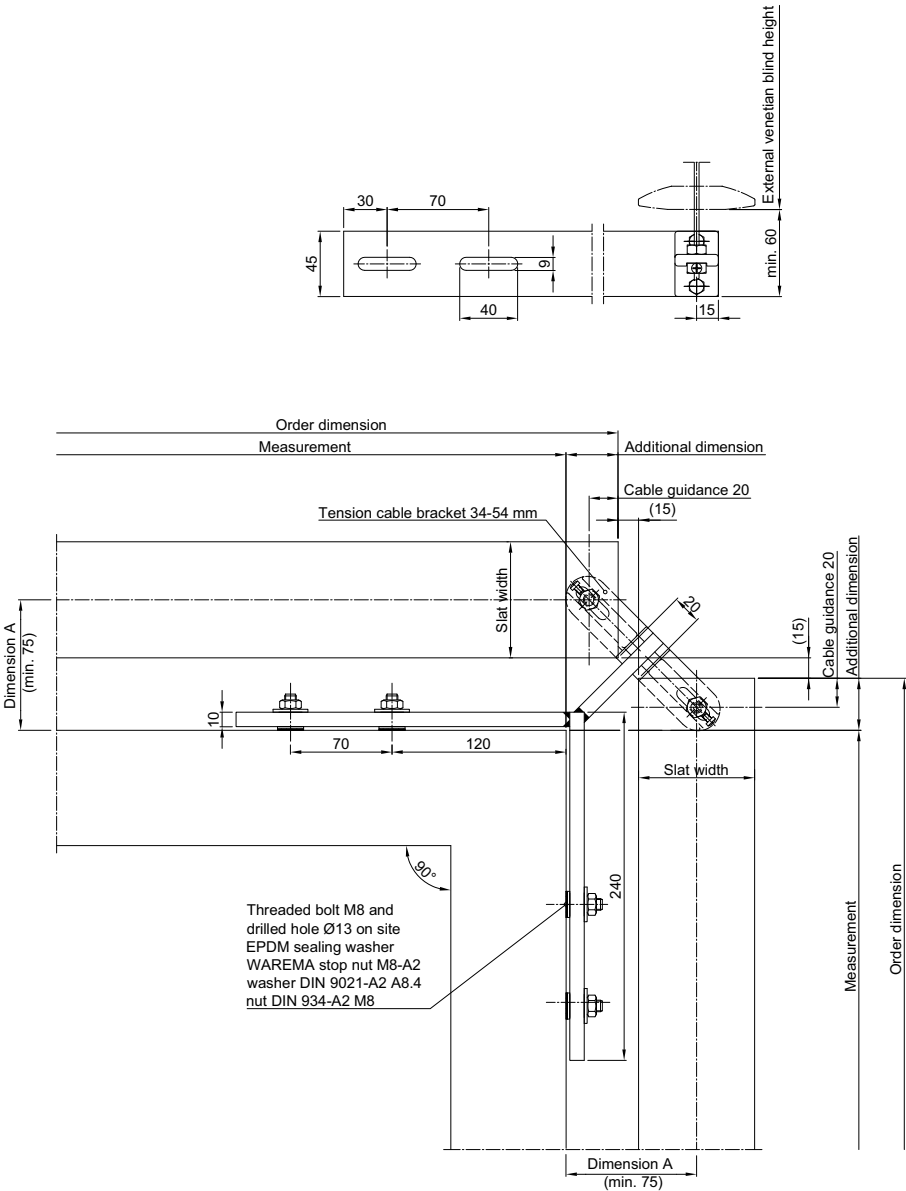


fig. 300: Special tension cable bracket for 90° outside corner

Special tension cable bracket for 90° outside corner

Variant 2: slats butt-jointed up to diagonal with a distance of 20 mm

Slat	Additional dimension 1				Additional dimension 2			
Dim. A	60	80	73	90/93	60	80	73	90/93
75	105	115	112	122	25	15	18	8
80	110	120	117	127	30	20	23	13
85	115	125	122	132	35	25	28	18
90	120	130	127	137	40	30	33	23
95	125	135	132	142	45	35	38	28
100	130	140	137	147	50	40	43	33

Alternatively:  
model with bolts Ø16 mm

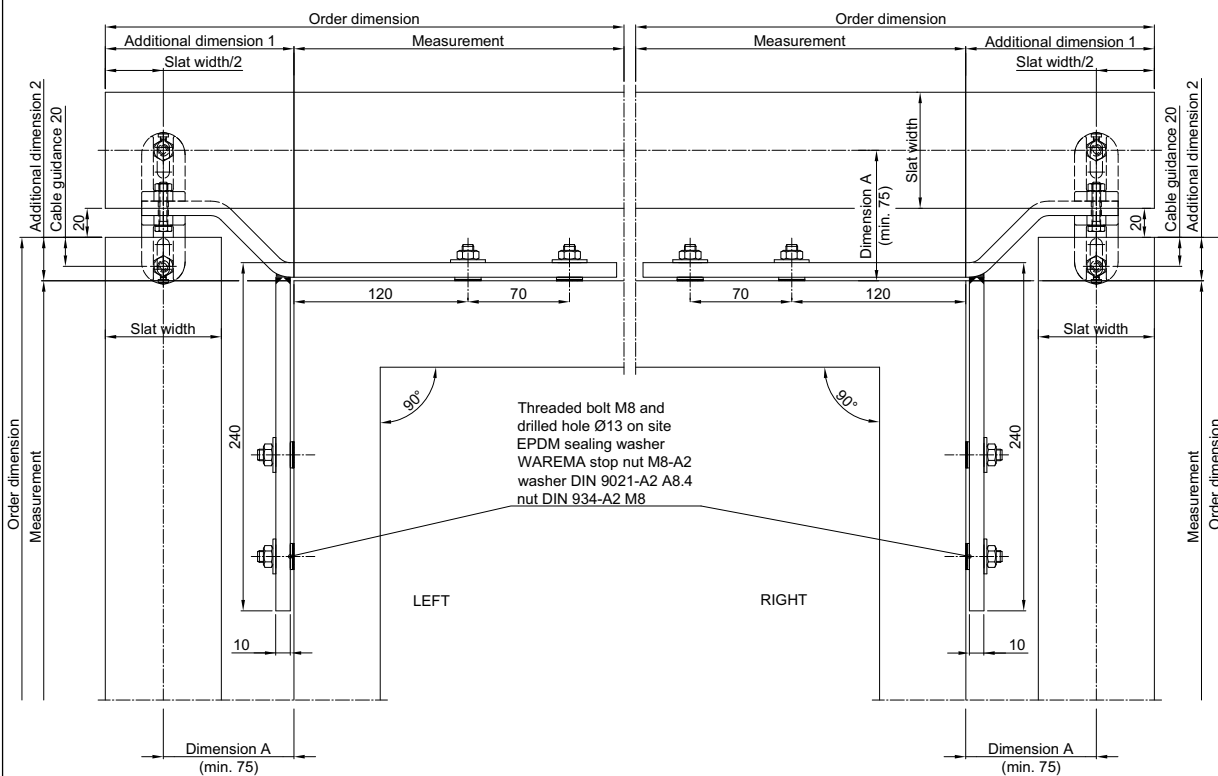
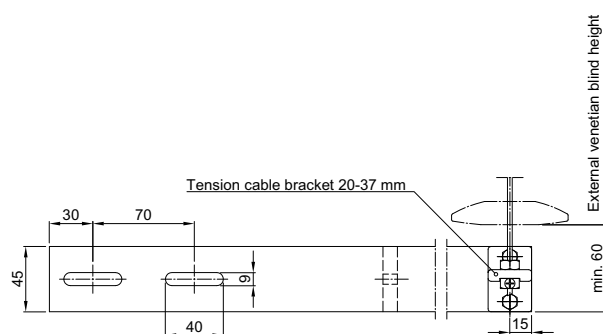
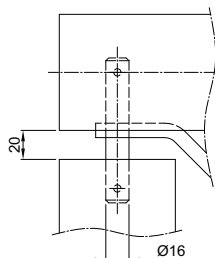


Illustration showing a size 80 slat

70145\_1sp

fig. 301: Special tension cable bracket for 90° outside corner

Spring tension device in the top rail, tension cable with threaded end part (surcharge)

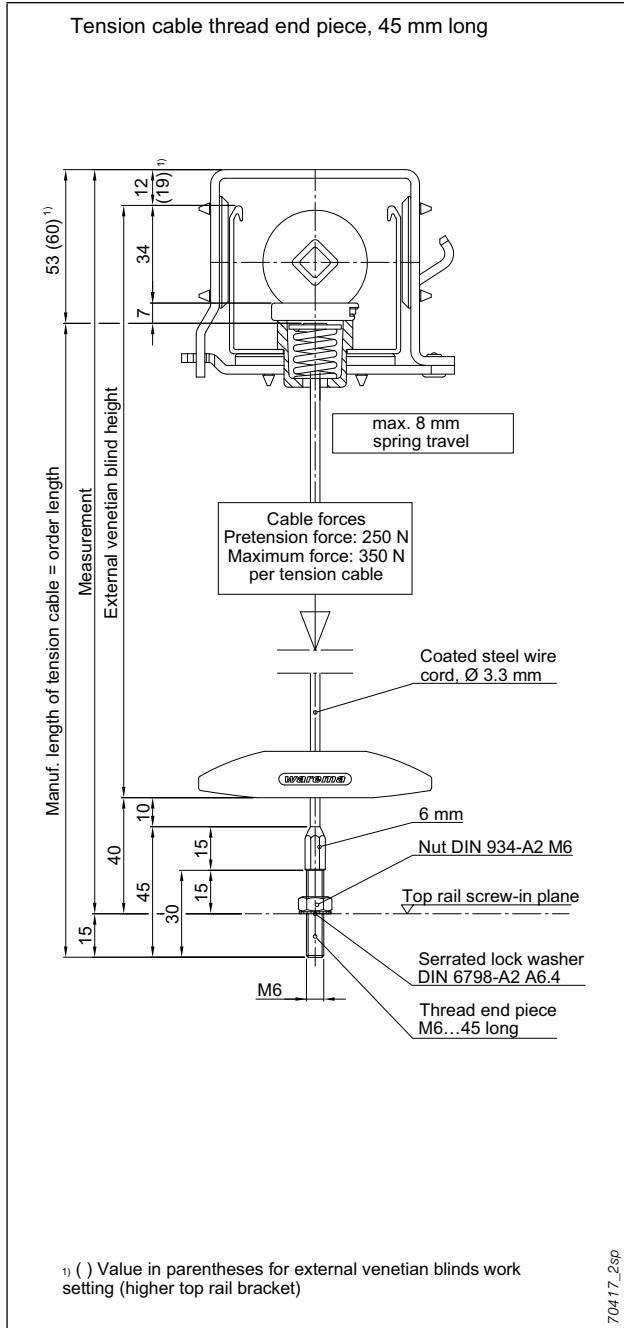


fig. 302: Tension cable with thread end piece 45 mm long

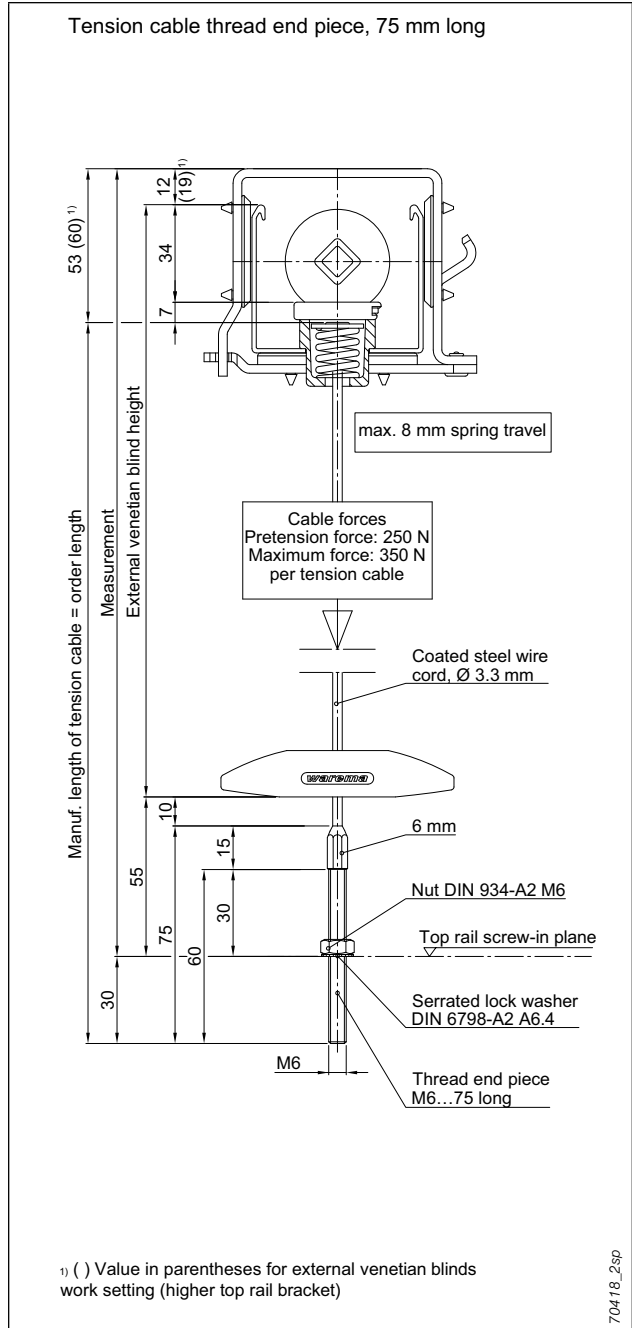


fig. 303: Tension cable with thread end piece 75 mm long

Contents

Cover panels

Cover panels

Overview of cover panels	298
Cover panels and brackets	300
ZK consoles for fixing the cover panel	324
Cover panel embedded in plaster	329
Pigeon protection/Dummy cover panel	331

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

## Cover panels/cover panel accessories

### Overview of cover panels

**Notice:** Built-in standard cover panels without plaster base plates. Plaster base plates must be specified separately when ordering.

#### Standard cover panels

For mounting bracket versions and dimensions, see the following pages.

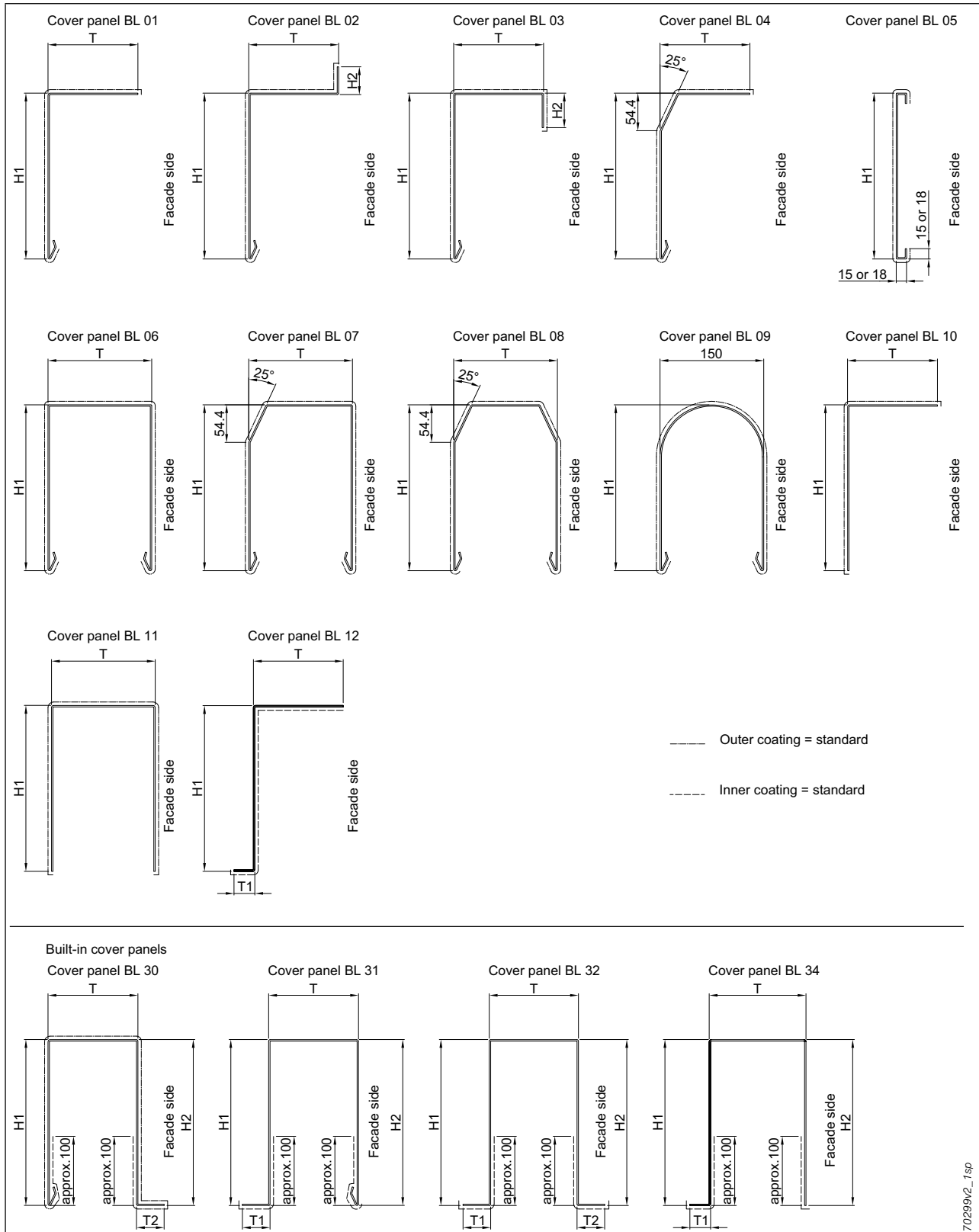


fig. 304: Overview of standard cover panels



Cover panels/cover panel accessories

Overview of cover panels

Cover panels

made of folded aluminium sheet

**Sheet thickness** 1.5 mm, 2.0 mm

**Length** maximum without joint 4000 mm for 2 mm sheet, max. 3000 mm for 1.5 mm sheet

**Surface** without surface treatment (plain), powder-coated according to the WAREMA Colour World, technically C0 anodised or bronze anodised (EURAS standard colours).

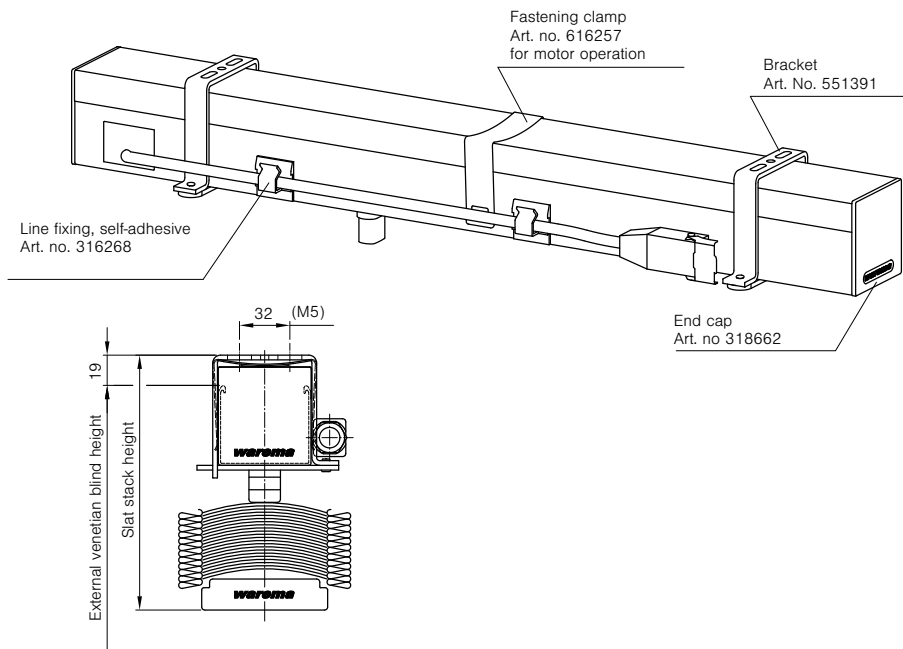
**Attention!** Subject to surcharge, we recommend a sound-deadening coating in the upper and front areas of the cover panel.

Recommended cover panel thicknesses

Cover panel height	Cover panel thick-ness
Up to 150 mm	1.5 mm
Exceeding 150 mm	2.0 mm

Cover panels with other edgings available on request, mini-mum depth per bending 12 mm.  
It is possible to glue 8 mm thick plaster base plates onto the cover panels.

Top rail cover



Colours for top rail cover according to external venetian blind slat colour chart, gloss level deviation of the stop rail cover with regard to slat colour cannot be avoided.  
Powder-coated or anodised model not possible.

KD010002560

fig. 305: Top rail cover

## Cover panels/cover panel accessories

### Cover panels and brackets

#### General notes

#### Note concerning mounting and stiffener brackets

##### How to proceed when defining fixing points for external venetian blinds

The WAREMA mounting and stiffener brackets are designed for standard situations. Please observe the workbook "WAREMA mounting brackets/stiffener brackets" for the selection and dimensioning of the bracket.

For other fixings, on-site substructures, and the mounting substructure itself, the following criteria must be taken into account:

1. Fixing points to be selected according to the following table

Width (slat size)	Up to 1500	Upto 2500	Up to 3500	Upto 4500	Up to 5500	Upto 6000
Number of brackets/sup- ports	2	3	4	5	6	7

2. Observe the distribution and application points of the following forces:
  - External venetian blind weight and number of tension cables (see construction limit values/ measuring instructions for the selected type)
  - Cover panel weight incl. bracket:
    - Sheet thickness 1.5 mm: approx. 65 N/m<sup>2</sup>
    - Sheet thickness 2.0 mm: approx. 80 N/m<sup>2</sup>

Alternatively, it can be roughly determined that the net weight (external venetian blind incl. cover panel and bracket) simply has a 6 kg/m<sup>2</sup> curtain area.

  - Tensile force per tension cable 350 N (for external venetian blinds with cable guidance and heights >4000 mm: 600 N)
3. The permissible bending stress for steel bracket is 180 N/mm<sup>2</sup> (ST37/S235JR; main load and additional load). For other materials, the relevant permissible bending stress figures for main load and additional load must be applied.

If no details are given for the bracket height h1 in the order, the mounting brackets BG 5-55 and BG 33-36 will be supplied with the following heights:

Cover panel height up to 200 mm: h1 = 100 mm

Cover panel height up to 250 mm: h1 = 150 mm

Cover panel height up to 300 mm: h1 = 200 mm

**Note:** Please always state the cover panel height H1 when ordering brackets!

#### Fixing suggestions for mounting brackets on existing substructure

Mounting sub-structure	Fixation suggestion	Art. no.
Aluminium	DIN 7976 6.3x38	720323
	DIN 9021 A2 6.4 washer	742006
Concrete (C 20/25)	DIN 571-A2 6x60	727002
	DIN 9021-A2 A6.4	742006
	Screw anchor SX8	790419
Plastic window with steel insert	DIN 7976-A2 C6.3x38 <sup>1)</sup>	721029
	DIN 9021-A2 A6.4	742006
Wood	DIN 571-A2 6x40 <sup>1)</sup>	727030
	DIN 9021-A2 A6.4	742006

<sup>1)</sup> Screw with seal coating prevents ingress of water into the screw connection.

#### Note:

The WAREMA Fastener Assistant provides a calculation tool which helps you to individually calculate the suitable and permitted fixing material for your application. The WAREMA Fastener Assistant is available at <http://befestigungsberater.warema.de>.

Cover panels/cover panel accessories

Cover panels and brackets

On-site shaft

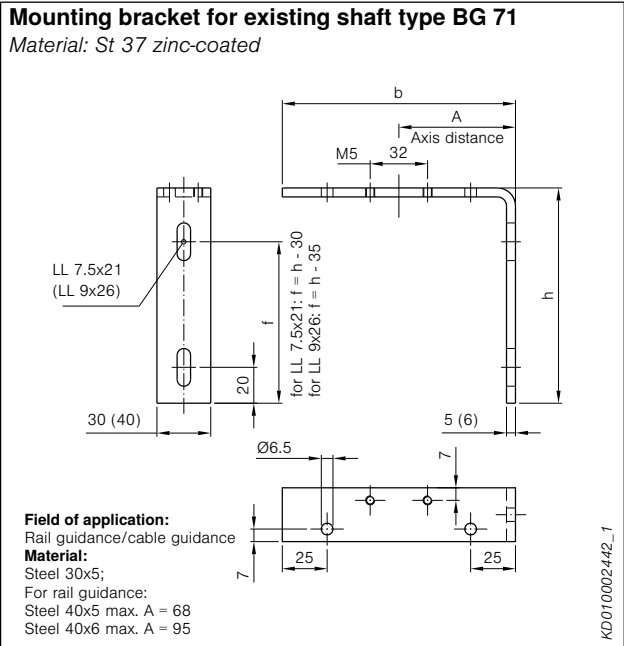


fig. 306: Mounting bracket type BG 71

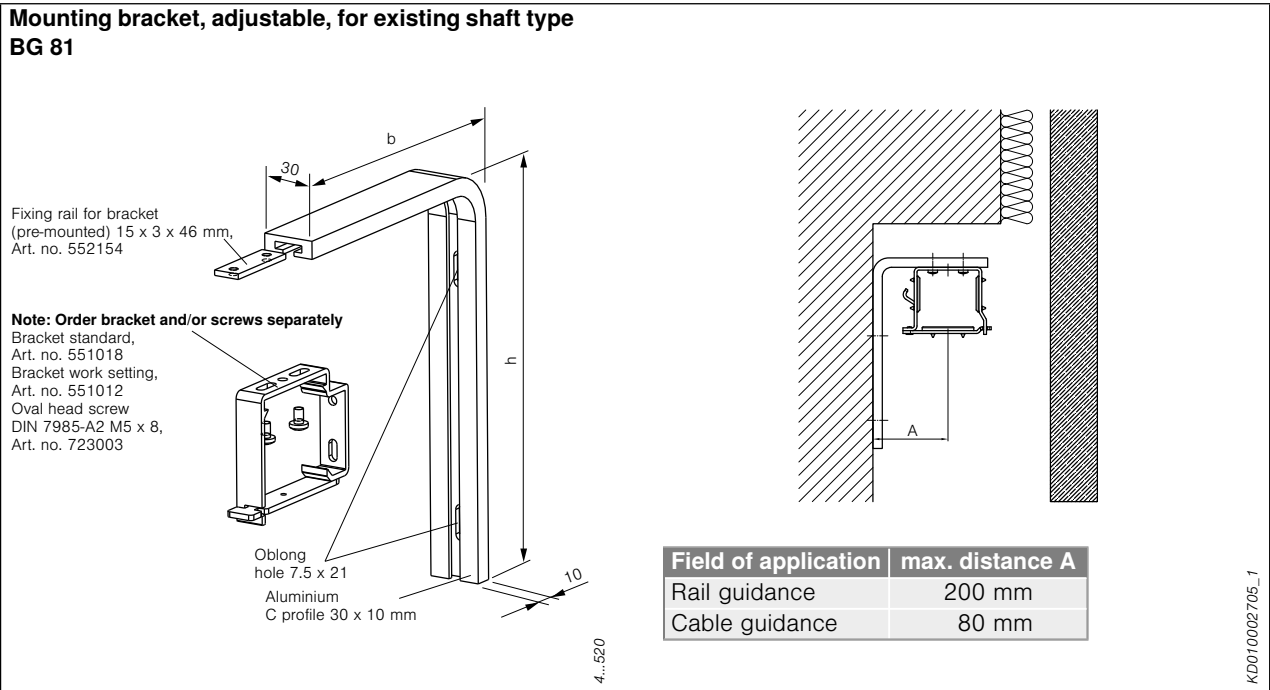


fig. 307: Mounting bracket type BG 81

**Note:** Please always state the cover panel height H1 when ordering brackets!

## Cover panels/cover panel accessories

### Cover panels and brackets

#### Angular cover panels

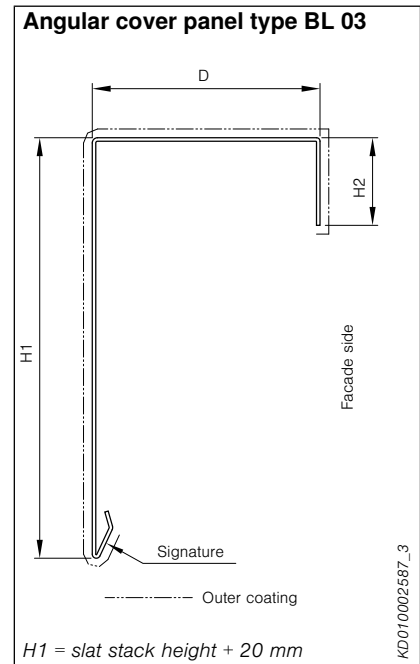
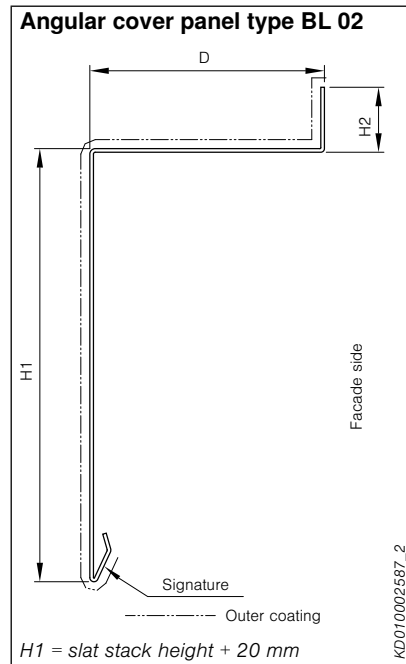
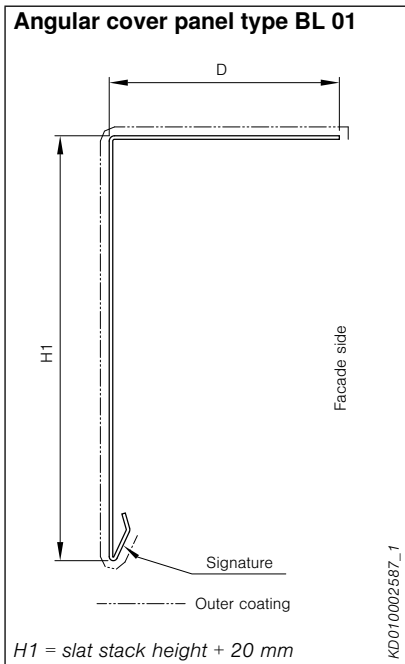


fig. 308: Angular cover panels

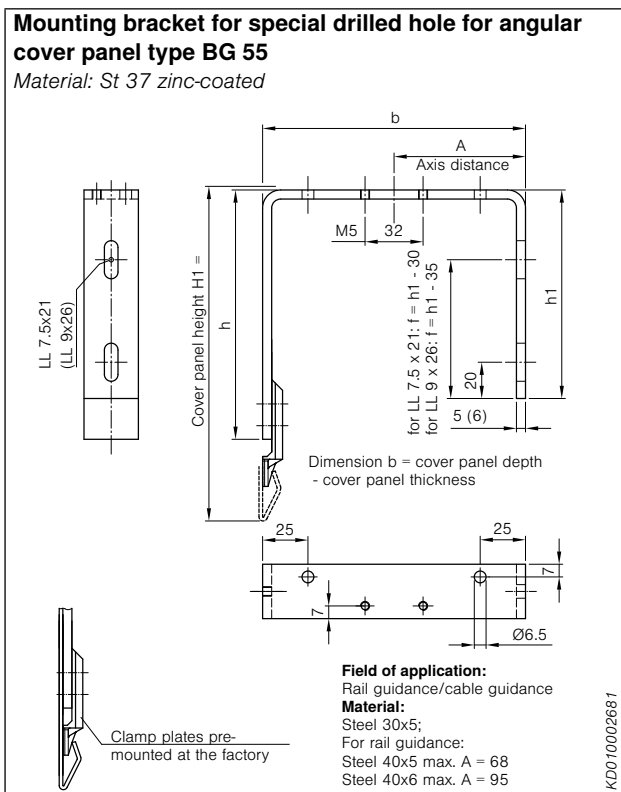
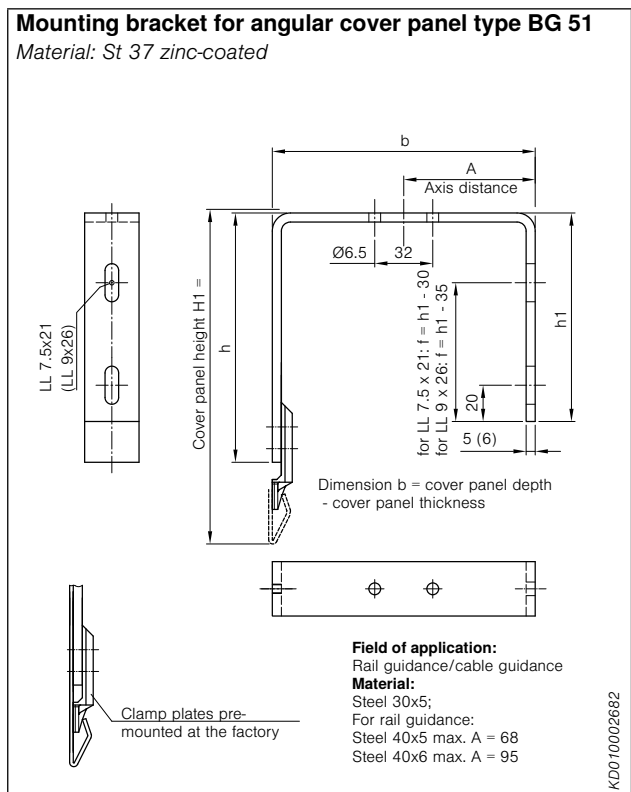


fig. 309: Mounting brackets



**Note:** Please always state the cover panel height  $H1$  when ordering brackets!  
If  $h1$  is not specified on the order, delivery will be carried out according to the table.

# Cover panels/cover panel accessories

## Cover panels and brackets

### Angular cover panels

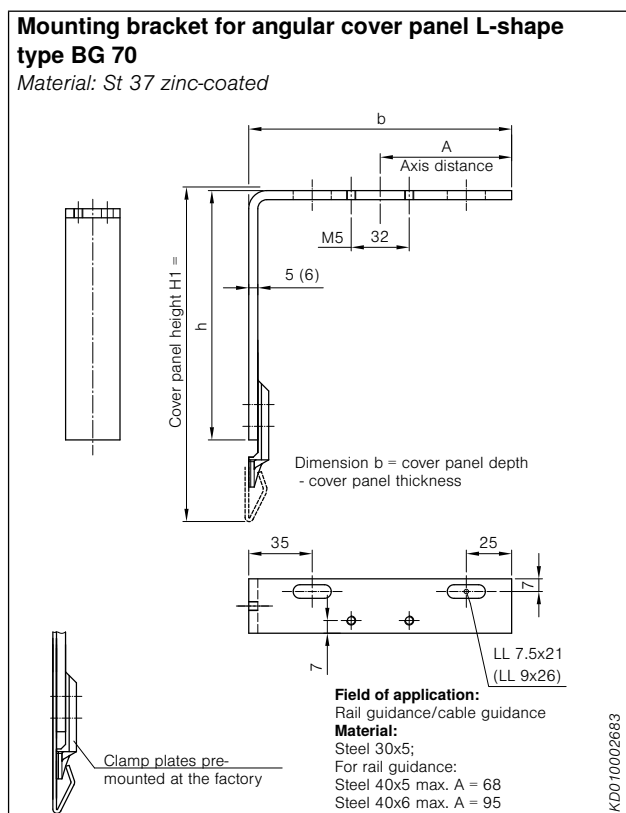


fig. 310: Mounting bracket for angular cover panel L-shape

**Note:** Please always state the cover panel height H1 when ordering brackets!

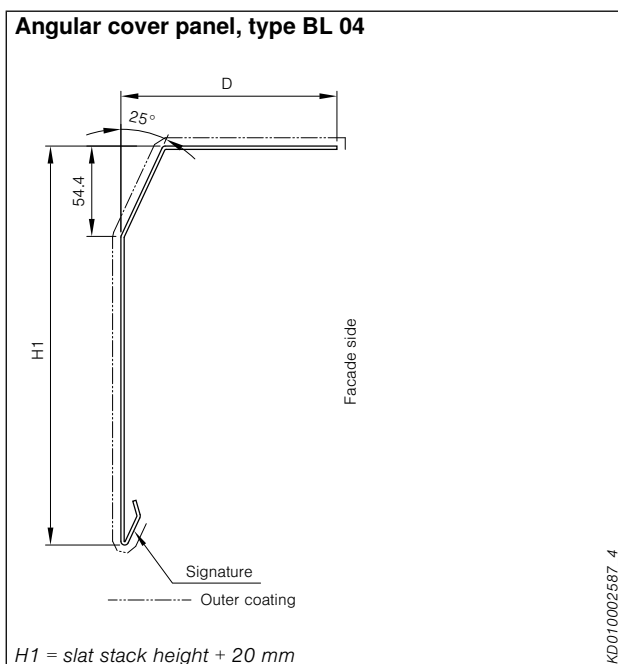


fig. 311: Angular cover panel type BL 04

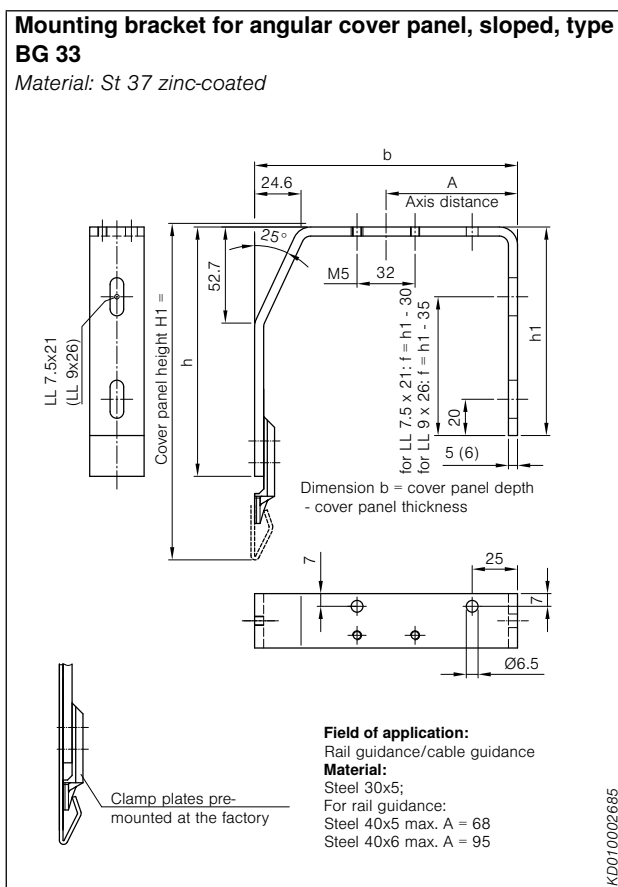


fig. 312: Mounting bracket for sloped angular cover panel

**Note:** Please always state the cover panel height H1 when ordering brackets!

Cover panels/cover panel accessories

Cover panels and brackets

Gallery panel

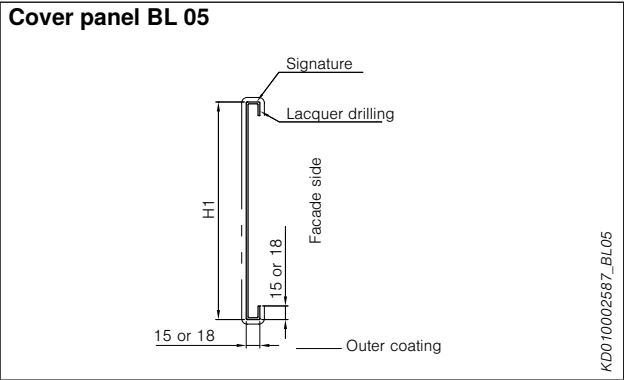


fig. 313: Cover panel BL 05

For mounting in on-site reveal.

By using multipart mounting brackets, structural tolerances can be compensated. The gallery panel can be adjusted vertically and horizontally to adjust to the lintel.

When ordering the mounting brackets for wall installation please specify model "standard" or "short".

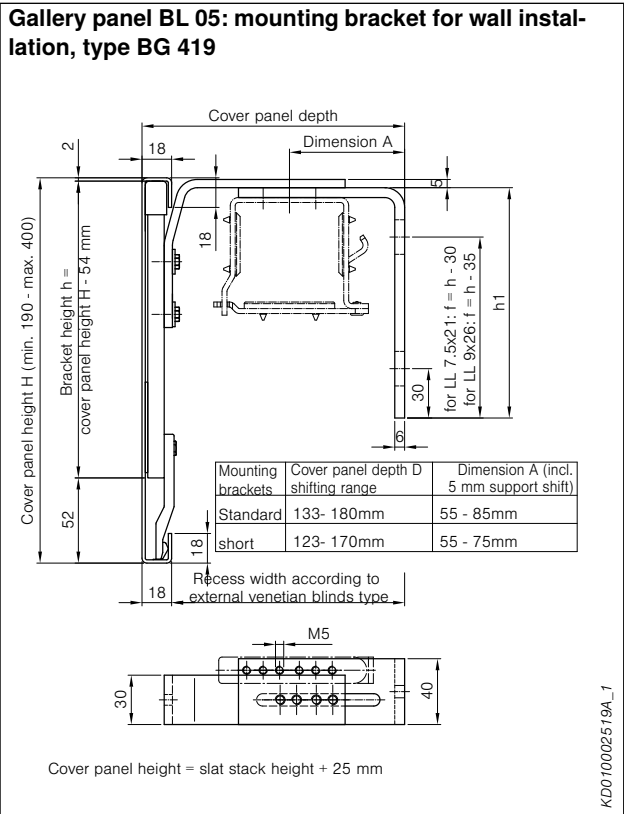


fig. 314: Wall installation

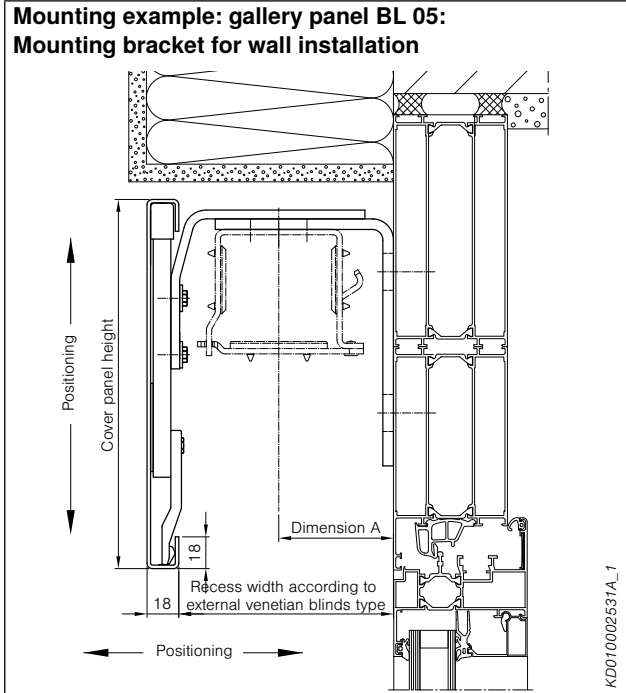


fig. 315: Mounting example

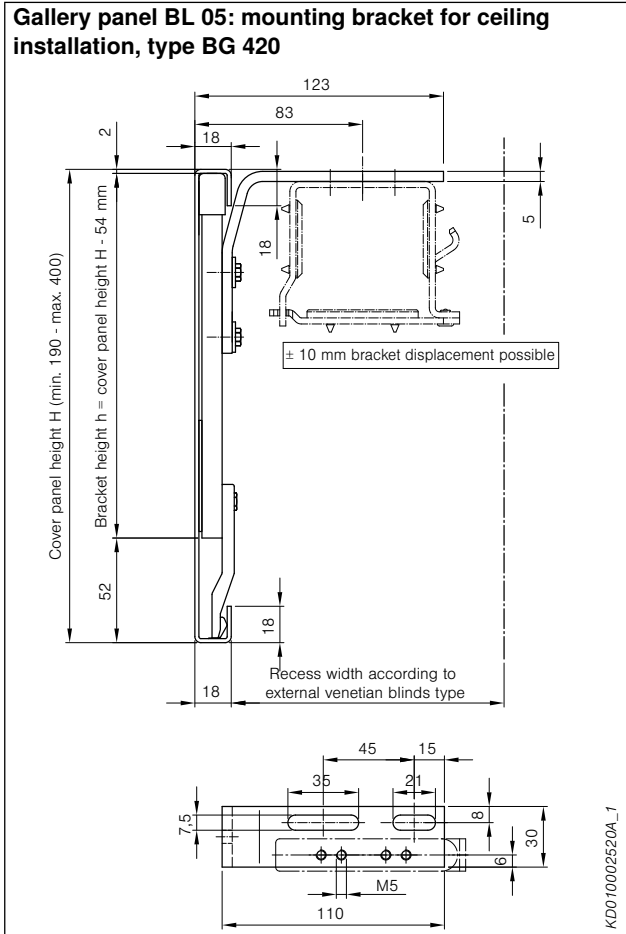


fig. 316: Ceiling installation

Cover panels/cover panel accessories

Cover panels and brackets

U-shaped cover panel

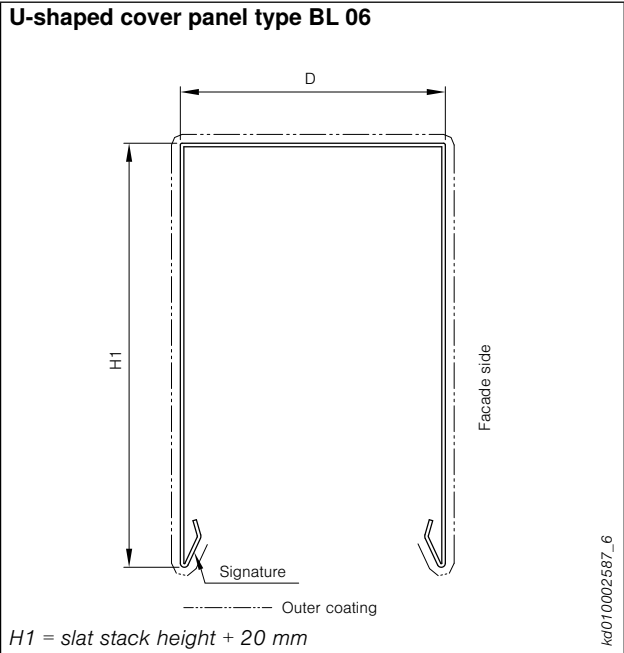


fig. 317: U-shaped cover panel type BL 06

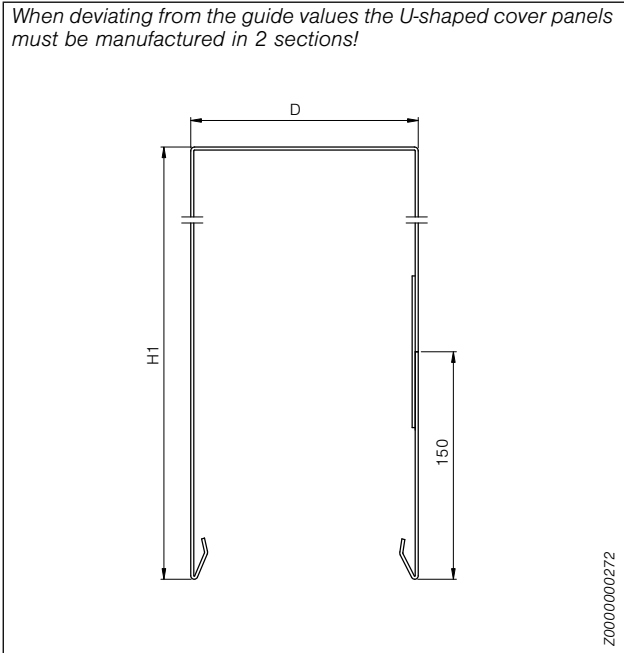


fig. 318: U-shaped cover panel, 2-piece version

Guide values for one-piece protective cover panels (types BL 05–09)

Types	Sheet thick-ness in mm	Cover panel sizes (mm)	
		D <sub>min</sub>	H <sub>max</sub>
BL 05	1.5 to 2.0	–	450
BL 06	1.5 to 2.0	130 140	410 450
BL 07 BL 08	2.0	150	450
BL 09	2.0	150	390

Special heights for multi-piece units on request!

## Cover panels/cover panel accessories

### Cover panels and brackets

#### U-shaped cover panel

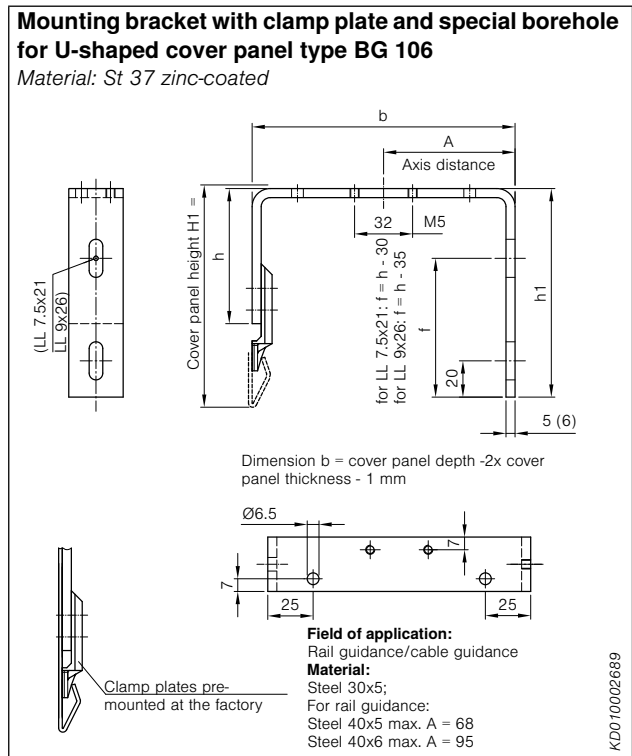
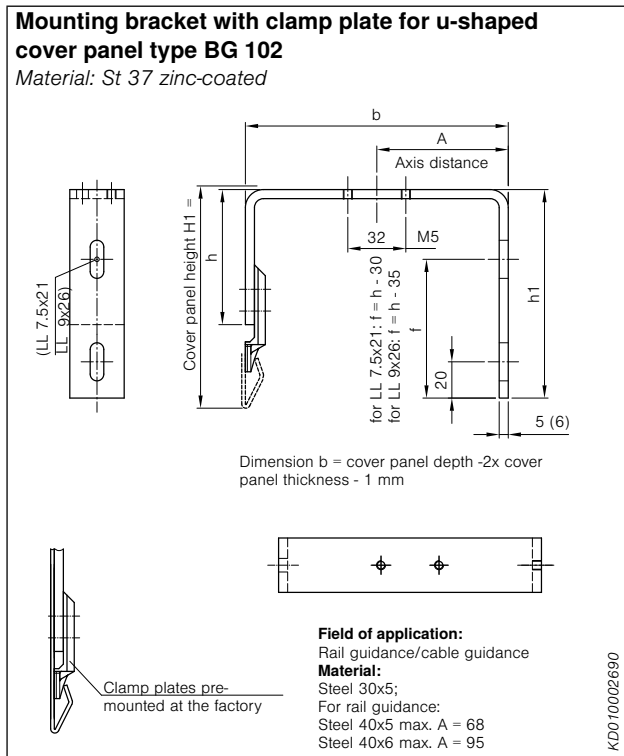


fig. 319: Mounting brackets

**Note:** Please always state the cover panel height H1 when ordering brackets!



## Cover panels/cover panel accessories

### Cover panels and brackets

#### Cover panel, sloped on one side

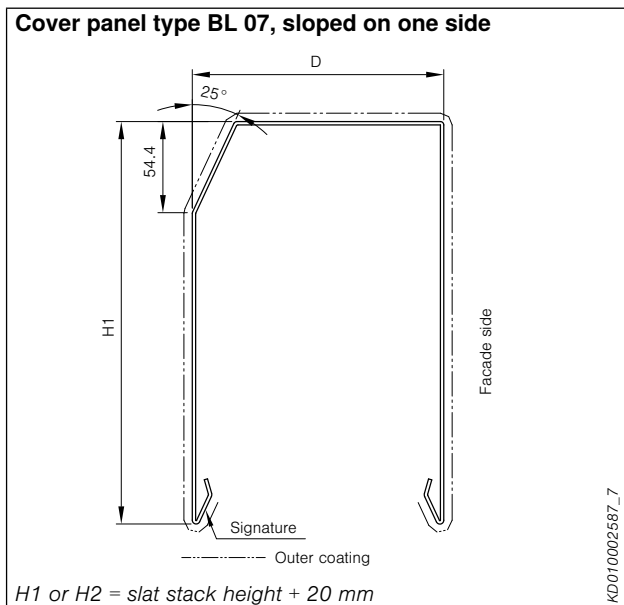


fig. 320: Cover panel type BL 07

Cover panel depth is always 150 mm, u-shaped cover panels sloped on one side are only possible up to a maximum total height of 380 mm. Special heights in several pieces are available on request.

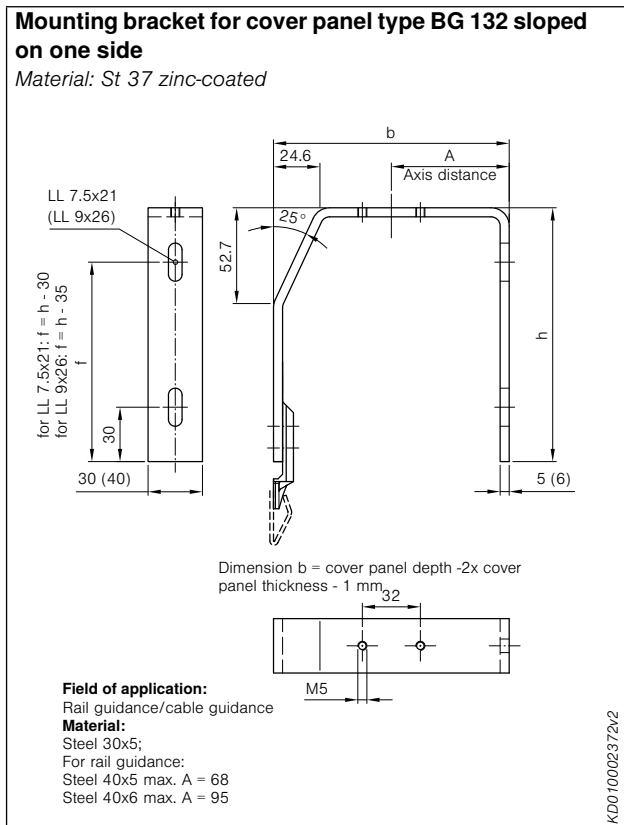


fig. 321: Mounting brackets

**Note:** Please always state the cover panel height H1 when ordering brackets!

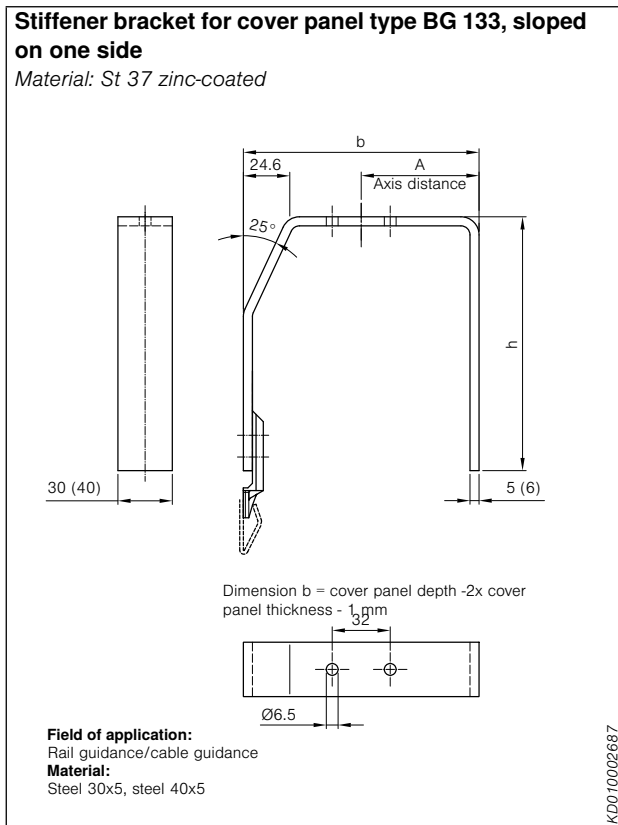


fig. 322: Stiffener brackets

## Cover panels/cover panel accessories

### Cover panels and brackets

#### Cover panel, sloped on both sides

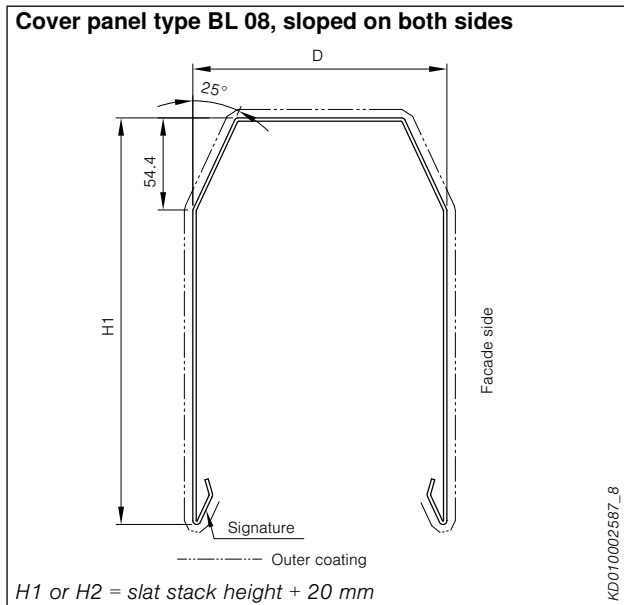


fig. 323: Cover panel type BL 08

Cover panel depth is always 150 mm, u-shaped cover panels sloped on both sides are only possible up to a maximum

total height of 380 mm. Special heights in several pieces are available on request.

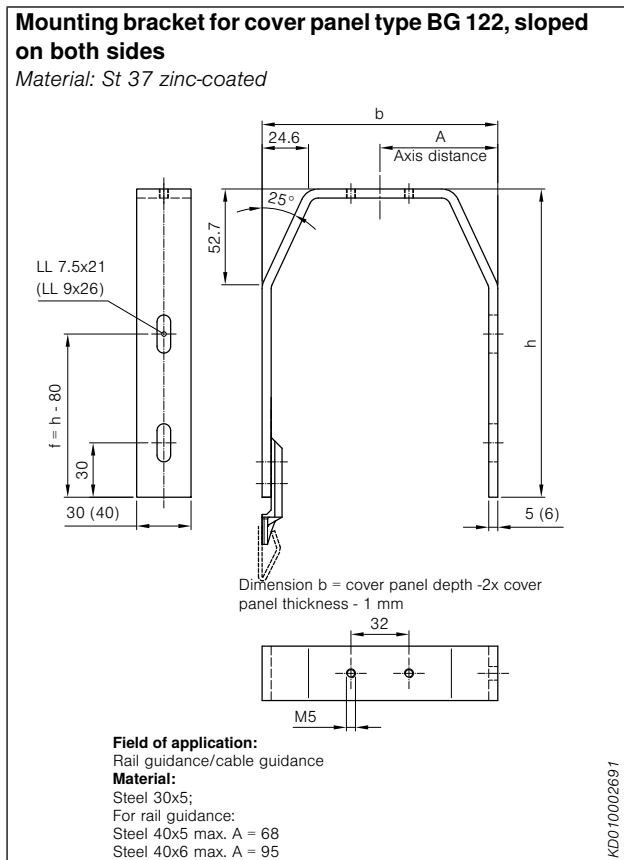


fig. 324: Mounting brackets

**Note:** Please always state the cover panel height H1 when ordering brackets!

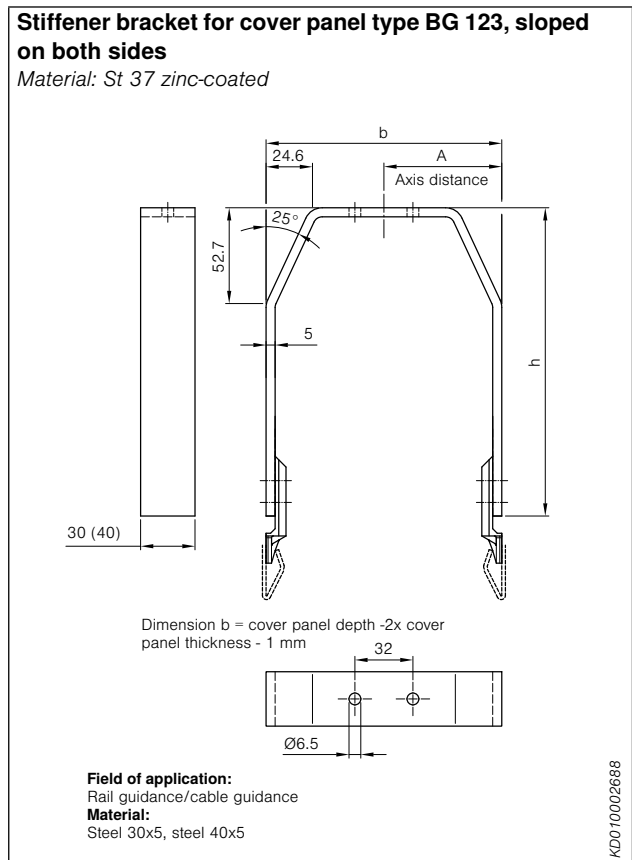


fig. 325: Stiffener brackets

Cover panels/cover panel accessories

Cover panels and brackets

Cover panel, sloped on both sides

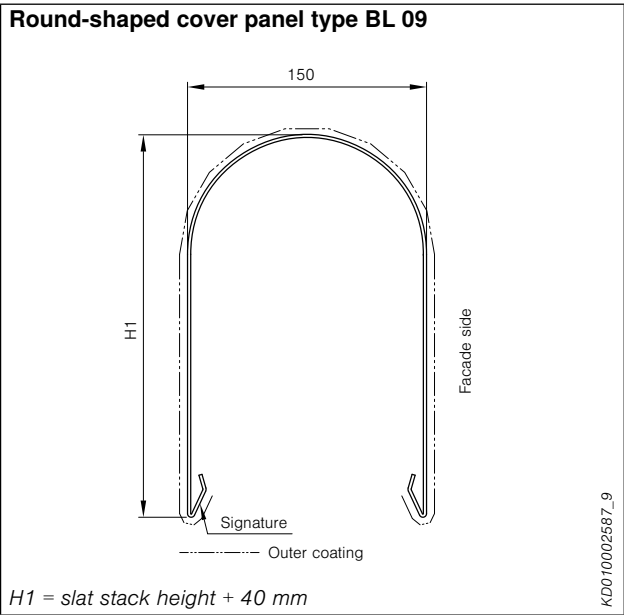


fig. 326: Cover panel type BL 09

Only available as 2 mm thick aluminium sheet. Cover panel depth always 150 mm. Round-shaped cover panels are only possible to a maximum total height of 380 mm. Special heights in several pieces available on request.

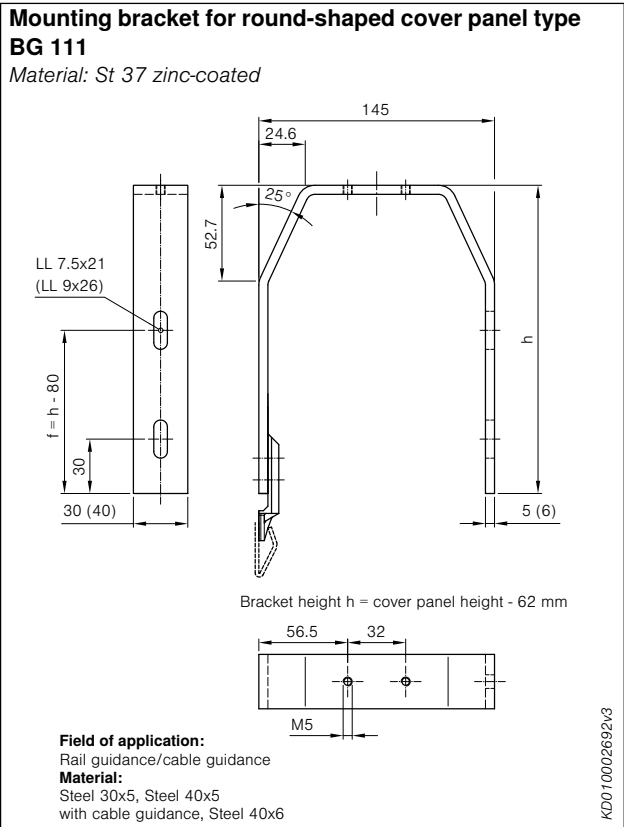


fig. 327: Mounting brackets

**Note:** Please always state the cover panel height H1 when ordering brackets!

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

# Cover panels/cover panel accessories

## Cover panels and brackets

**Note:** Built-in standard cover panels without plaster base plates. Plaster base plates must be specified separately when ordering.

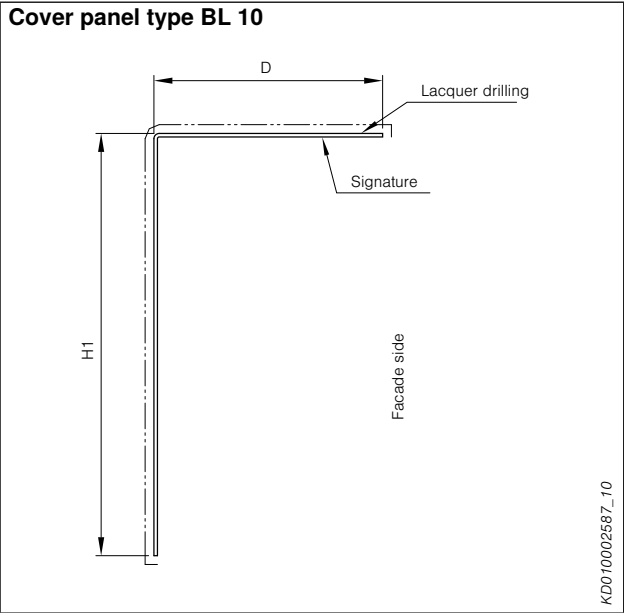


fig. 328: Cover panel type BL 10

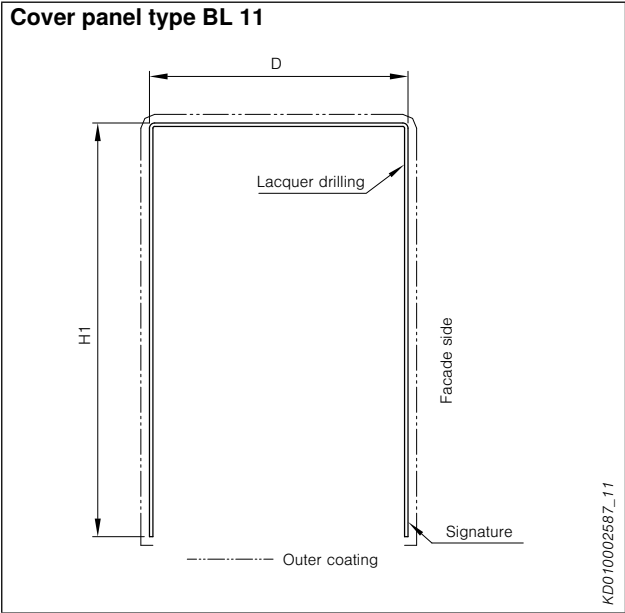


fig. 330: Cover panel type BL 11

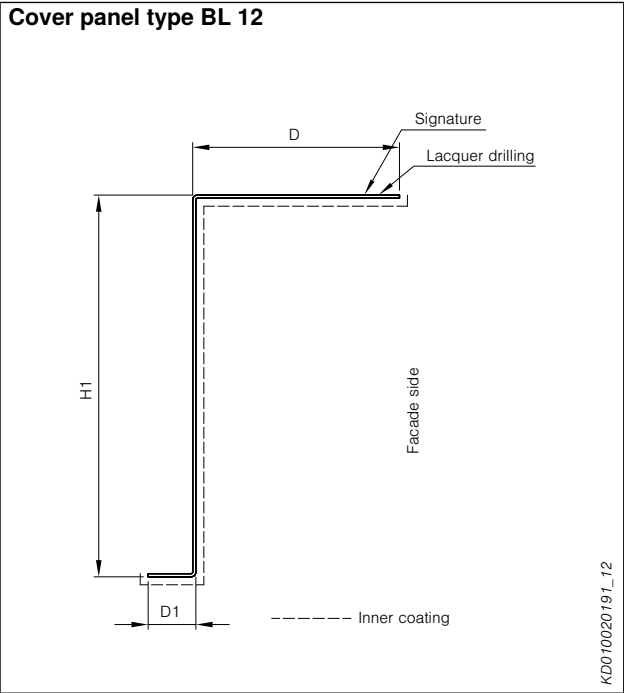


fig. 329: Cover panel type BL 12

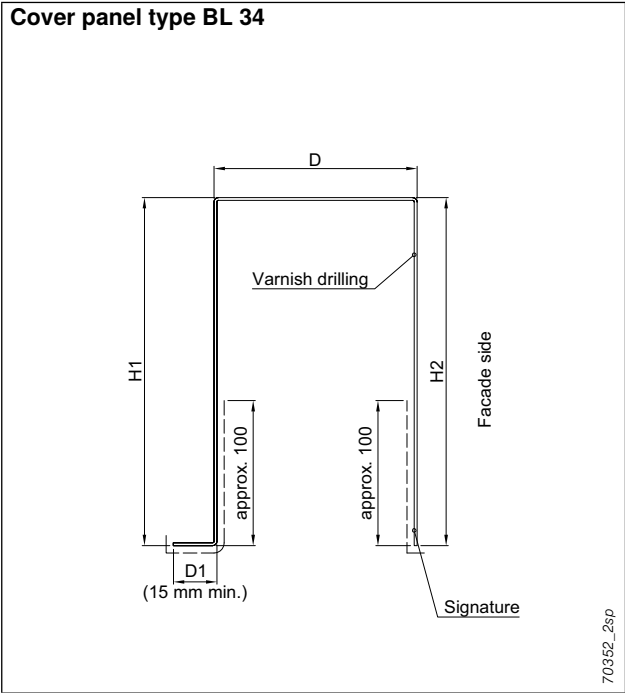


fig. 331: Cover panel type BL 34

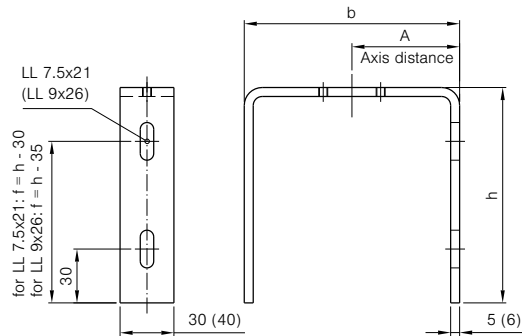
Drives	Safety systems Accessories	Planning	Cover panels	Guides	Light guidance/ external venetian	Completeexternal venetian blinds	Premium facade venetian blinds	Basic facade external venetian	Product characteristics	General information
--------	-------------------------------	----------	--------------	--------	--------------------------------------	-------------------------------------	-----------------------------------	-----------------------------------	----------------------------	------------------------

## Cover panels/cover panel accessories

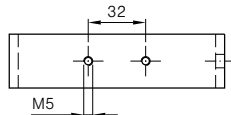
### Mounting bracket for cover panels without bead

#### Mounting bracket for U-shaped cover panel type BG 02

Material: St 37 zinc-coated



Dimension b = cover panel depth - 2x cover panel thickness - 1 mm  
Bracket height h = cover panel height - 20 mm



**Field of application:**  
Rail guidance/cable guidance

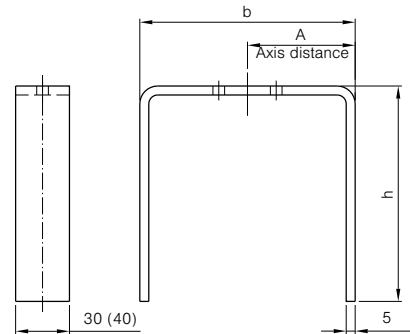
**Material:**  
Steel 30x5;  
For rail guidance:  
Steel 40x5 max. A = 68  
Steel 40x6 max. A = 95

KD010002445\_1

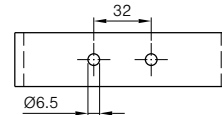
fig. 333: Mounting brackets

#### Stiffener bracket for U-shaped cover panel type BG 01

Material: St 37 zinc-coated



Dimension b = cover panel depth - 2x cover panel thickness - 1 mm  
Bracket height h = cover panel height - 20 mm



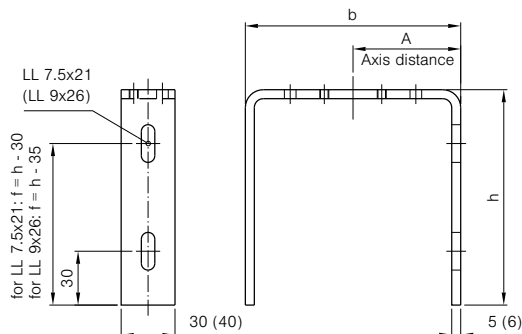
**Field of application:**  
Rail guidance/cable guidance

**Material:**  
Steel 30x5, steel 40x5

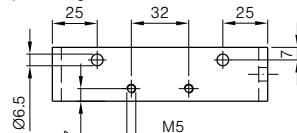
KD010002445\_2

#### Mounting bracket for U-shaped cover panel type BG 06

Material: St 37 zinc-coated



Dimension b = cover panel depth - 2x cover panel thickness - 1 mm  
Bracket height h = cover panel height - 20 mm



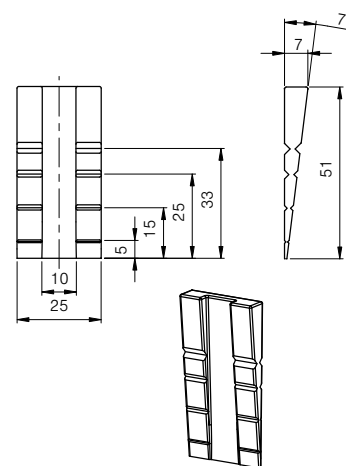
**Field of application:**  
Rail guidance/cable guidance

**Material:**  
Steel 30x5;  
For rail guidance:  
Steel 40x5 max. A = 68  
Steel 40x6 max. A = 95

KD010002445\_3

fig. 334: Mounting brackets

#### Clamping wedge



We recommend using:

Clamping wedge art. no. 316221 in order to level out tolerances and for attenuating between the cover panel and its bracket or between the joint connector and the cover panel (subject to surcharge)

KD01000231

fig. 335: Clamping wedge

**Note:** Please always state the cover panel height H1 when ordering brackets!

## Cover panels/cover panel accessories

### Mounting bracket with bracket lug

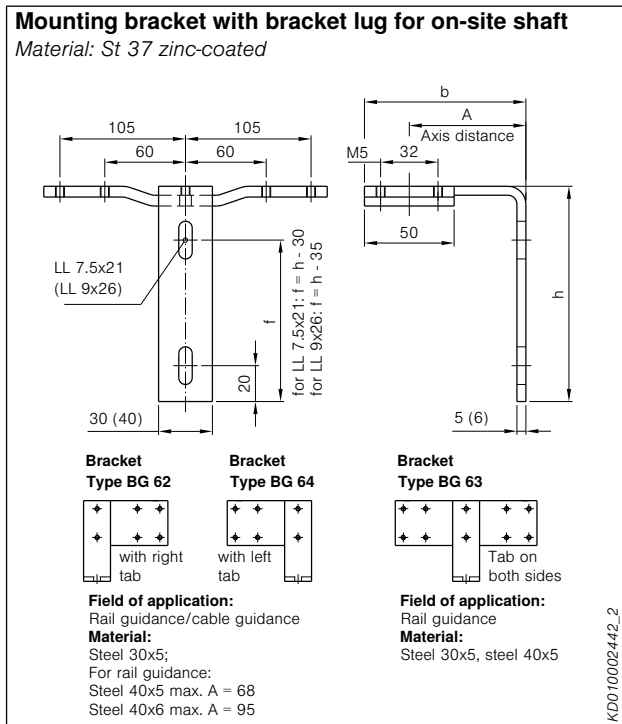


fig. 336: Mounting bracket with bracket lug

### Mounting bracket with bracket lug for angular cover panel

Material: St 37 zinc-coated

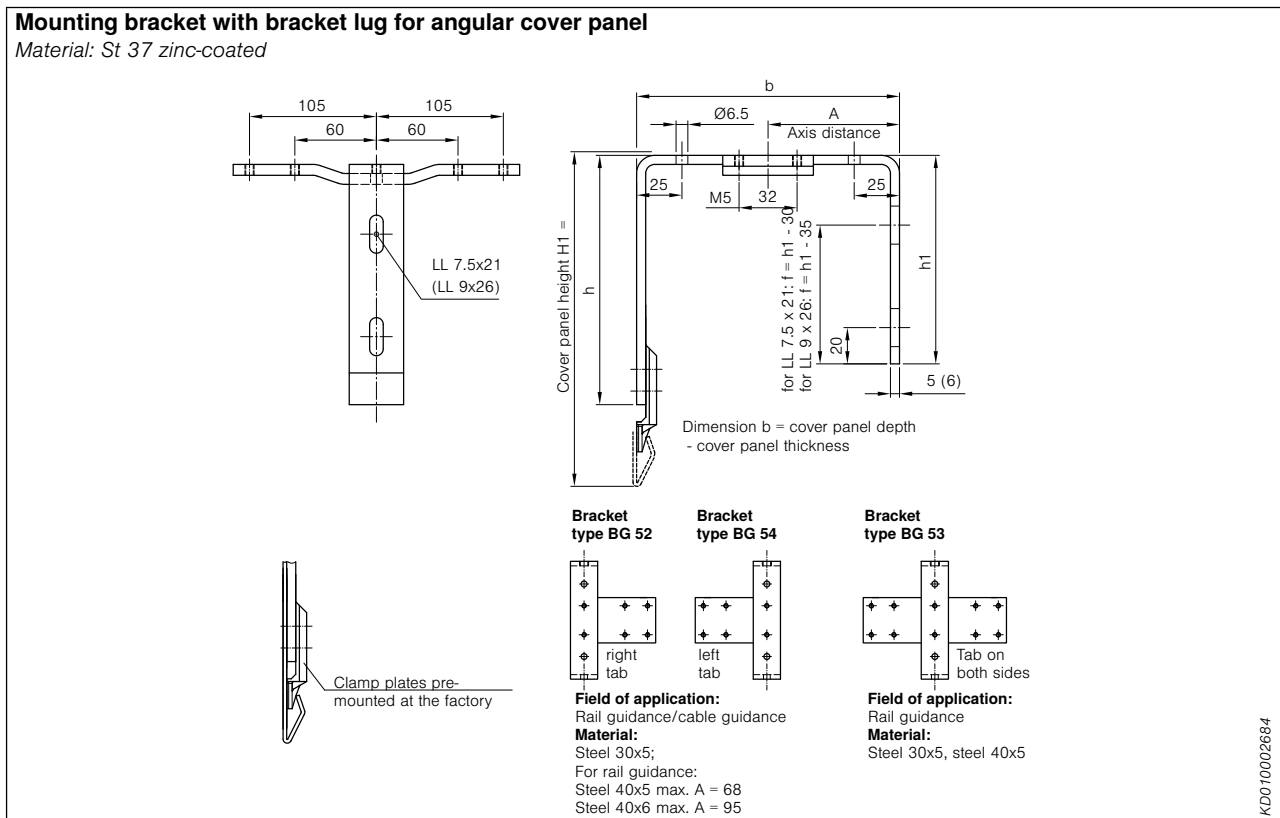


fig. 337: Mounting brackets

**Note:** Please always state the cover panel height H1 when ordering brackets!

## Cover panels/cover panel accessories

### Mounting bracket with bracket lug

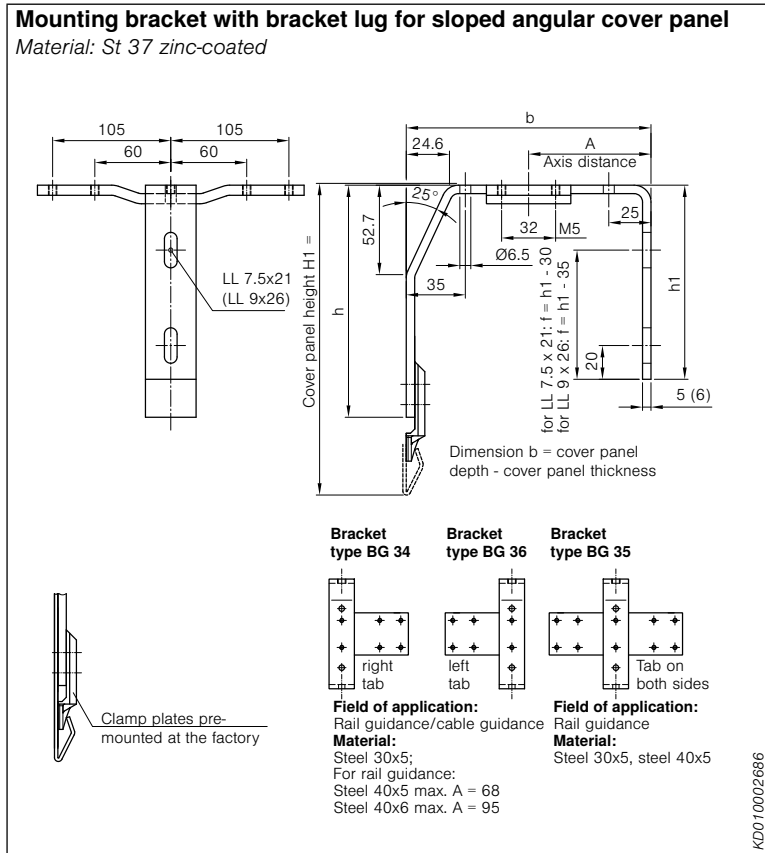


fig. 338: Mounting bracket for sloped angular cover panel

**Note:** Please always state the cover panel height H1 when ordering brackets!



Cover panels/cover panel accessories

Mounting bracket with bracket lug

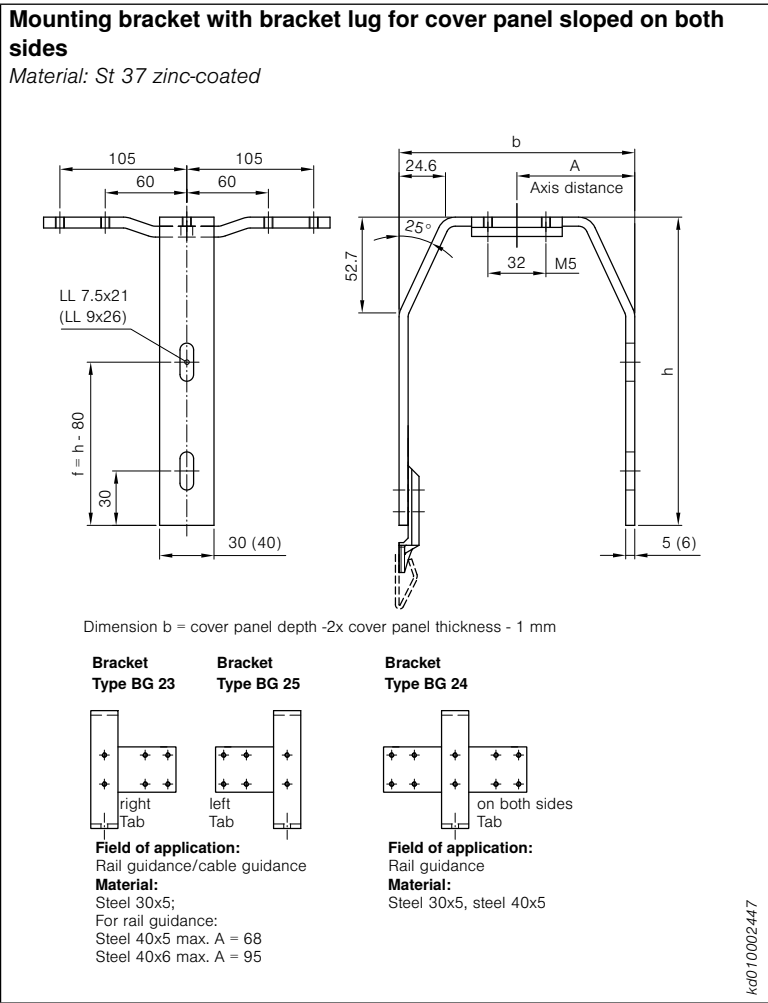


fig. 339: Mounting bracket with bracket lug

**Note:** Please always state the cover panel height H1 when ordering brackets!

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

# Cover panels/cover panel accessories

## Mounting bracket with bracket lug

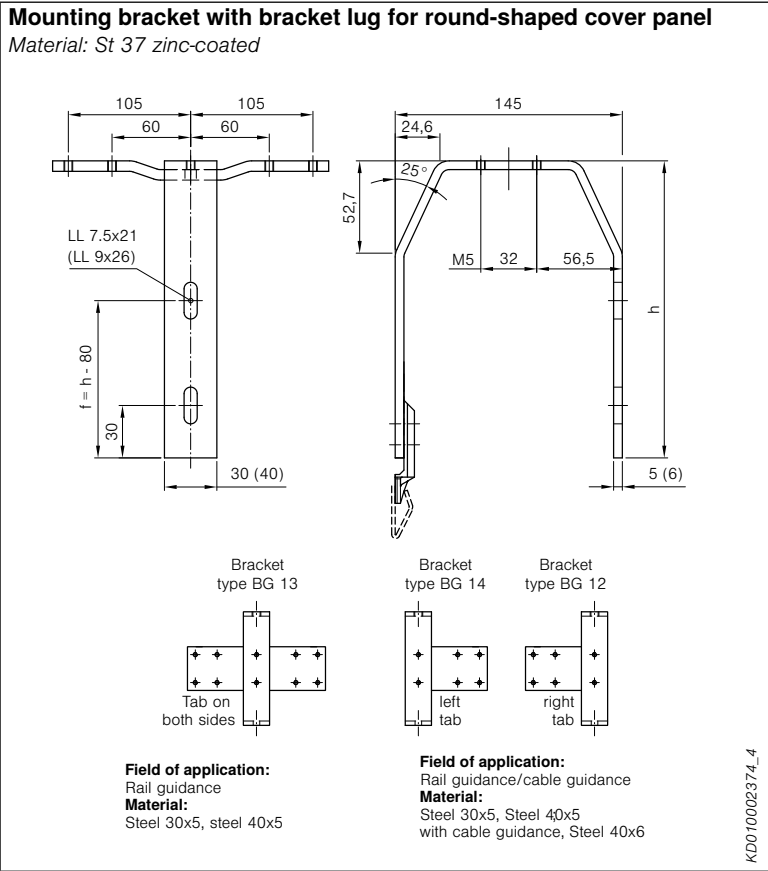


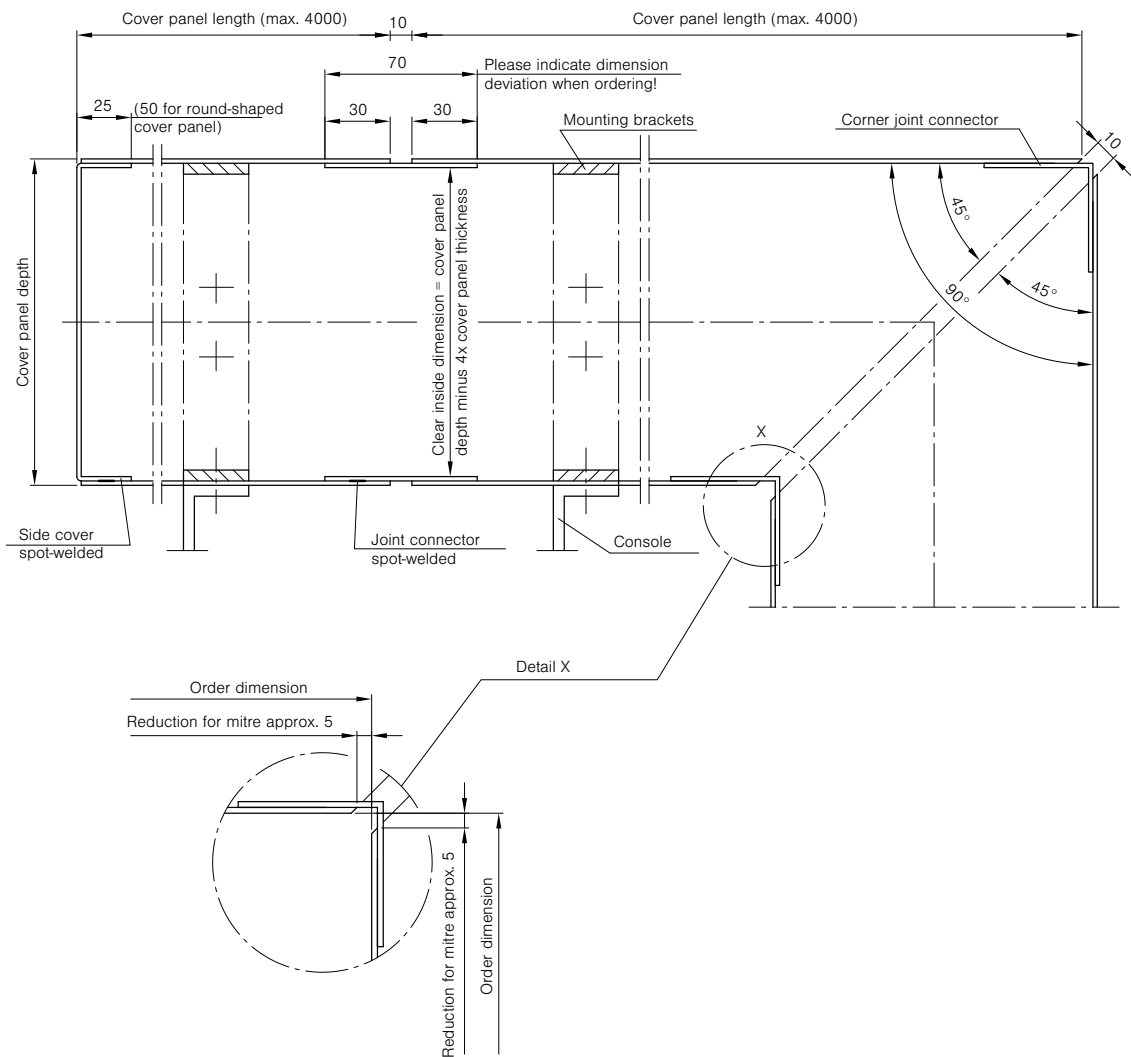
fig. 340: Mounting brackets

**Note:** Please always state the cover panel height H1 when ordering brackets!

# Cover panels/cover panel accessories

## Cover panel corner

### Side cover, joint connector and 90° corner (principle applies for all cover panels)



Please indicate on the order:  
 – side cover spot-welded/loose, left/right  
 – Joint connector spot-welded/loose, left/right

KD010002164

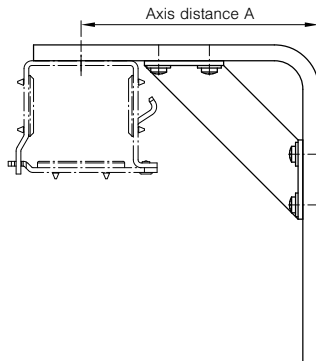
fig. 341: Side cover, joint connector and 90° corner

## Cover panels/cover panel accessories

### Cover panels and brackets

#### Adjustable mounting bracket/adjustable cover panel

Adjustable mounting bracket for on-site shaft



**Models:**

- without gusset plate
  - with short gusset plate
  - with long gusset plate
  - with long gusset plate, double
- The maximum axis distance is 300 mm.

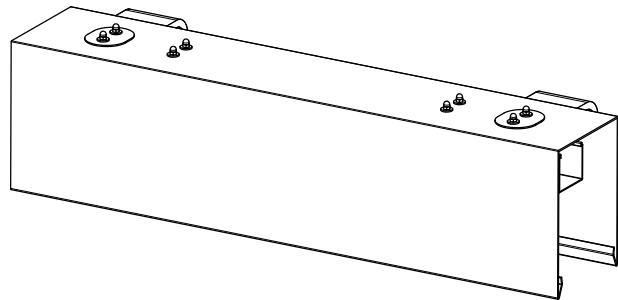
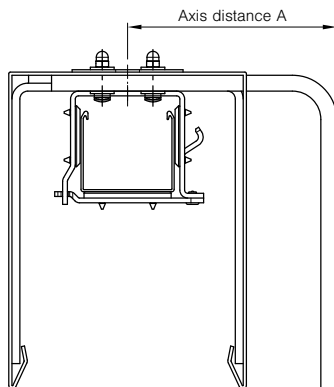
**Axis distances**

- min. 70 mm
- min. 151 mm
- min. 201 mm
- min. 201 mm

**Shifting range:**

- In plus direction (bigger axis distance): 20 mm
- In minus direction (smaller axis distance): difference betw. actual axis distance and minimum distance

Adjustable mounting bracket for adjustable U-shaped cover panel, push-on installation



**Models:**

- without gusset plate
  - with short gusset plate
  - with long gusset plate
  - with long gusset plate, double
- The maximum axis distance is 300 mm.

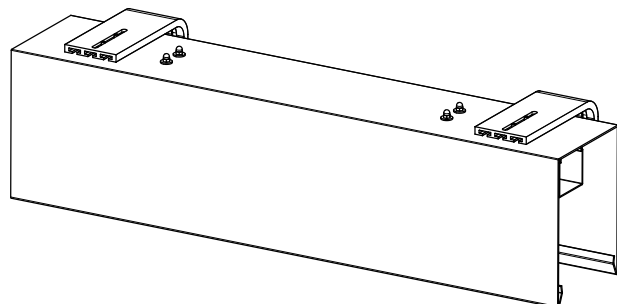
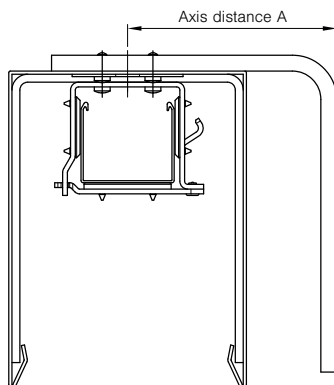
**Axis distances**

- min. 105 mm
- min. 186 mm
- min. 236 mm
- min. 236 mm

**Shifting range:**

- in plus direction (bigger axis distance): 20 mm
- in minus direction (smaller axis distance): 20 mm
- (Condition: axis distance min. 20 mm bigger than min. axis distance)

Adjustable mounting bracket for adjustable U-shaped cover panel, lintel fastening



\* The available model as well as the mounting bracket has to be checked statically by means of a calculation programme

KD010002527\_1

fig. 342: Adjustable mounting bracket

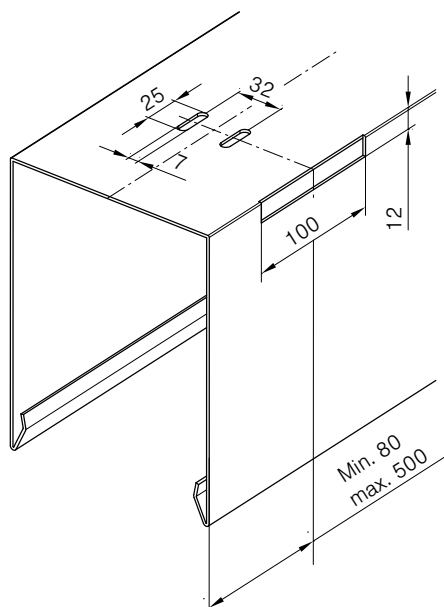
**Note:** Please always state the cover panel height H1 when ordering brackets!

# Cover panels/cover panel accessories

## Cover panels and brackets

### Adjustable bracket/adjustable cover panel

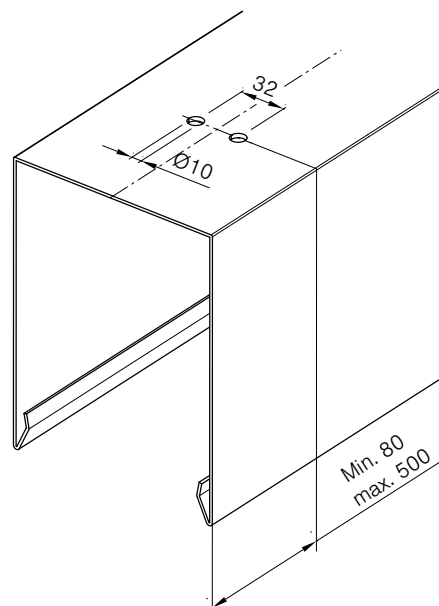
**Adjustable cover panel, push-on installation:**  
Please specify position of the mounting bracket when ordering



KD010002528\_1

fig. 343: Adjustable cover panel, push-on installation:

**Adjustable cover panel, lintel fastening**  
Cover panels are drilled during mounting

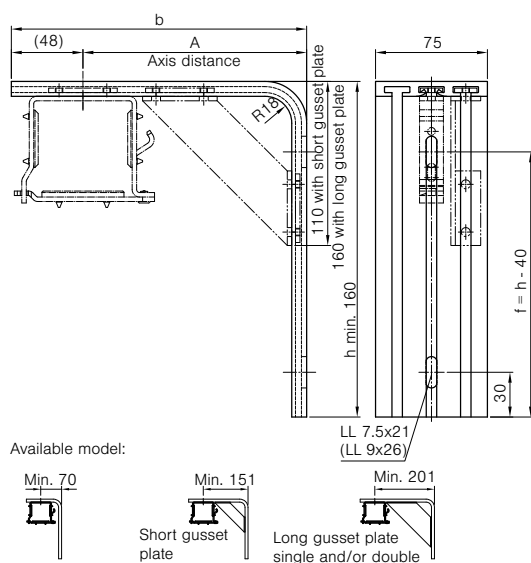


KD010002528\_2

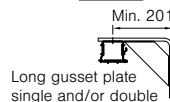
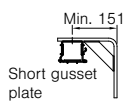
fig. 345: Adjustable cover panel, lintel fastening

**Adjustable mounting bracket for on-site shaft, C-profile 75x10 mm, type BG 82**

Material: aluminium



Available model:



The available model as well as the number of mounting brackets has to be checked statically by means of a calculation programme.

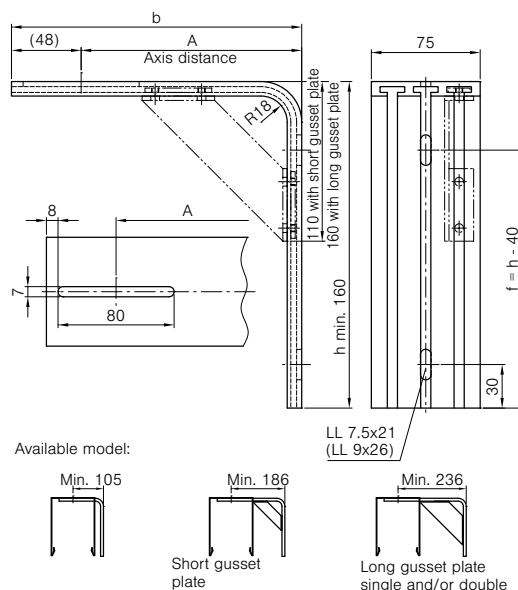
KD010002528\_3

fig. 344: Adjustable mounting bracket for on-site shaft

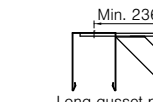
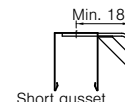
**Note:** Please always state the cover panel height H1 when ordering brackets!

**Adjustable mounting bracket for adjustable U-shaped cover panel, C-profile 75x10 mm, type BG 83**

Material: aluminium



Available model:



The available model as well as the number of mounting brackets has to be checked statically by means of a calculation programme.

KD010002528\_4

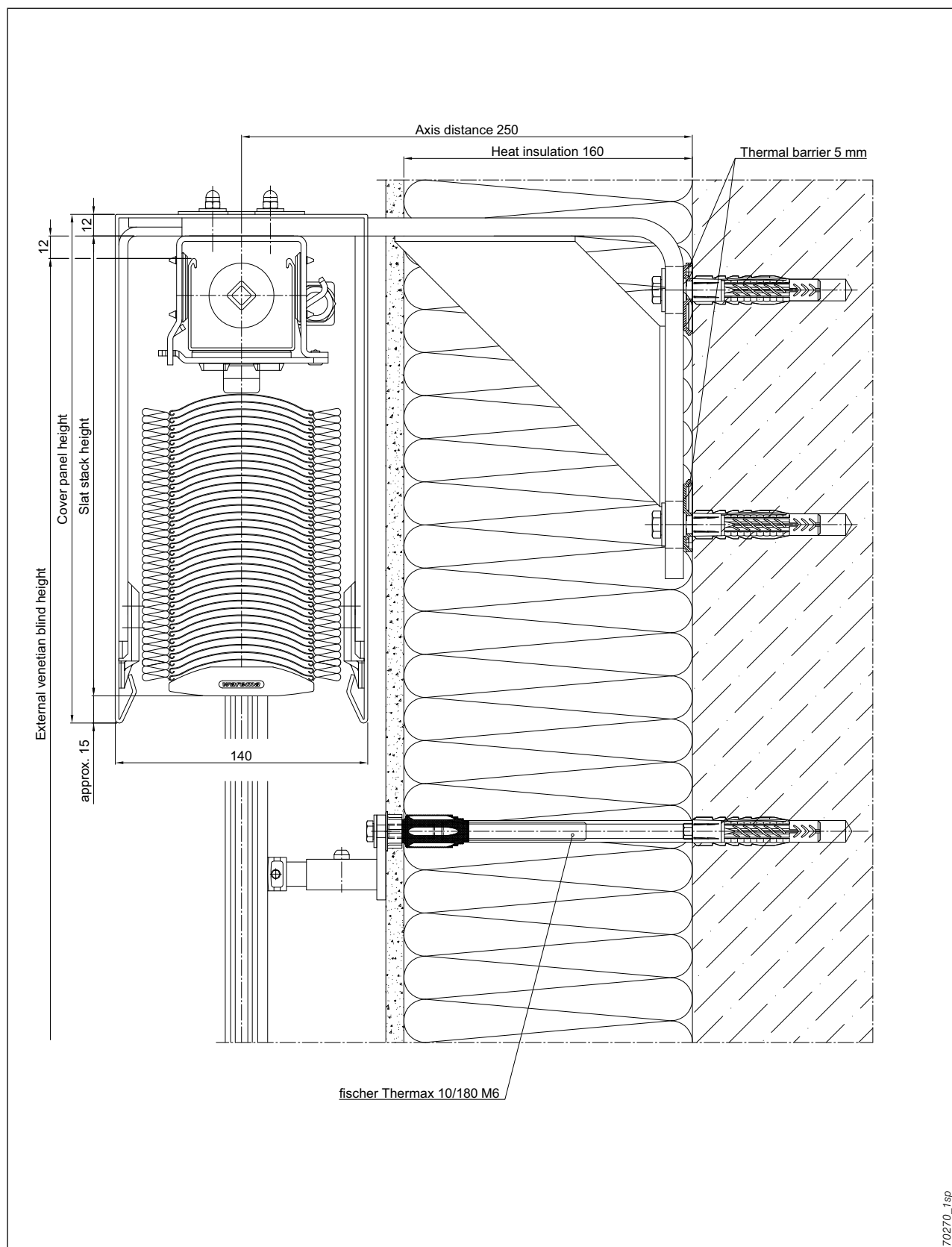
fig. 346: Adjustable mounting bracket for adjustable U-shaped cover panel

## Cover panels/cover panel accessories

### External venetian blinds

#### Beaded slats with rail guidance

E 80 A6 S with adjustable U-shaped cover panel, push-on mounting



70270\_1.sp

fig. 347: Mounting example for external venetian blinds E 80 A6 S with adjustable U-shaped cover panel

Drives Control systems	Safety systems Accessories	Planning	Cover panels	Guides	Light guidance/ external venetian blinds	Complete external venetian blinds	Premium facade venetian blinds	Basic facade external venetian blinds	Product characteristics	General information
---------------------------	-------------------------------	----------	--------------	--------	--	--------------------------------------	-----------------------------------	---	----------------------------	------------------------

## Cover panels/cover panel accessories

### BK consoles for fixing the cover panel

#### Cover panel consoles type BK/BKT

The aluminium cover panel consoles BK are characterised by high load capacity and variability. The cover panel consoles can be used both for cable and rail-guided units. The cover panel support is equipped with large oblong holes in order to be able to include mounting tolerances as well as a cavity to include the cage nut. Base plate optionally for fixing bracket with 8 or 12 pieces (LL 9x20 or LL 14x20).

The substructure on-site as well as the used fixing materials have to be approved for all occurring forces. The suitable fix-

ing material can be found via our Fastener Assistant at <http://befestigungsberater.warema.de>.

Available console depths:

- 30 mm
- 35 mm
- 40–330 mm (can be ordered exact to your specifications)

#### Type key cover panel console BK/BKT

**BK M 09 E 075**

Number BK = console depth in mm (min. 30 mm, 35 mm, from 40 mm in 1 mm increments)

Number BKT = (min. 80 mm ±7.5 mm, **NEW!** from 105 mm ±15 mm)

E = single base plate

D = double base plate

09 = 9 x 20mm LL in base plate

14 = 14 x 20mm LL in base plate

M = middle console

R = edge console

BK = cover panel console

BKT = projectable cover panel console **NEW!**

#### Construction limit values BK/BKT

External venetian blind height in mm	Maximum console depth				
	Rail-guided external venetian blinds max. console distance <sup>1)</sup>		Cable-guided external venetian blinds max. console distance <sup>1)</sup>		
	Individual units	Group units	Individual units	Group units	
	Up to 3000 mm	Up to 3000 mm	Up to 3000 mm	Up to 2000 mm	Up to 3000 mm
Up to 2000	330	230	300	230	180
Up to 3250	330	210	300	200	-
Up to 4000	330	190	300	-	-
Up to 5000	330	100	300	-	-

<sup>1)</sup> Values refer to one external venetian blind per console distance. Values = console height with cover panel depth 150 mm. If the console distances or cover panel depths are greater, please consult Applied Engineering.



## Cover panels/cover panel accessories

### BK brackets for fixing the cover panel

General  
information

Product  
characteristics

Basic facade  
external venetian  
blinds

Premium facade  
venetian blinds

Complete external  
venetian blinds

Light guidance/  
external venetian  
blinds

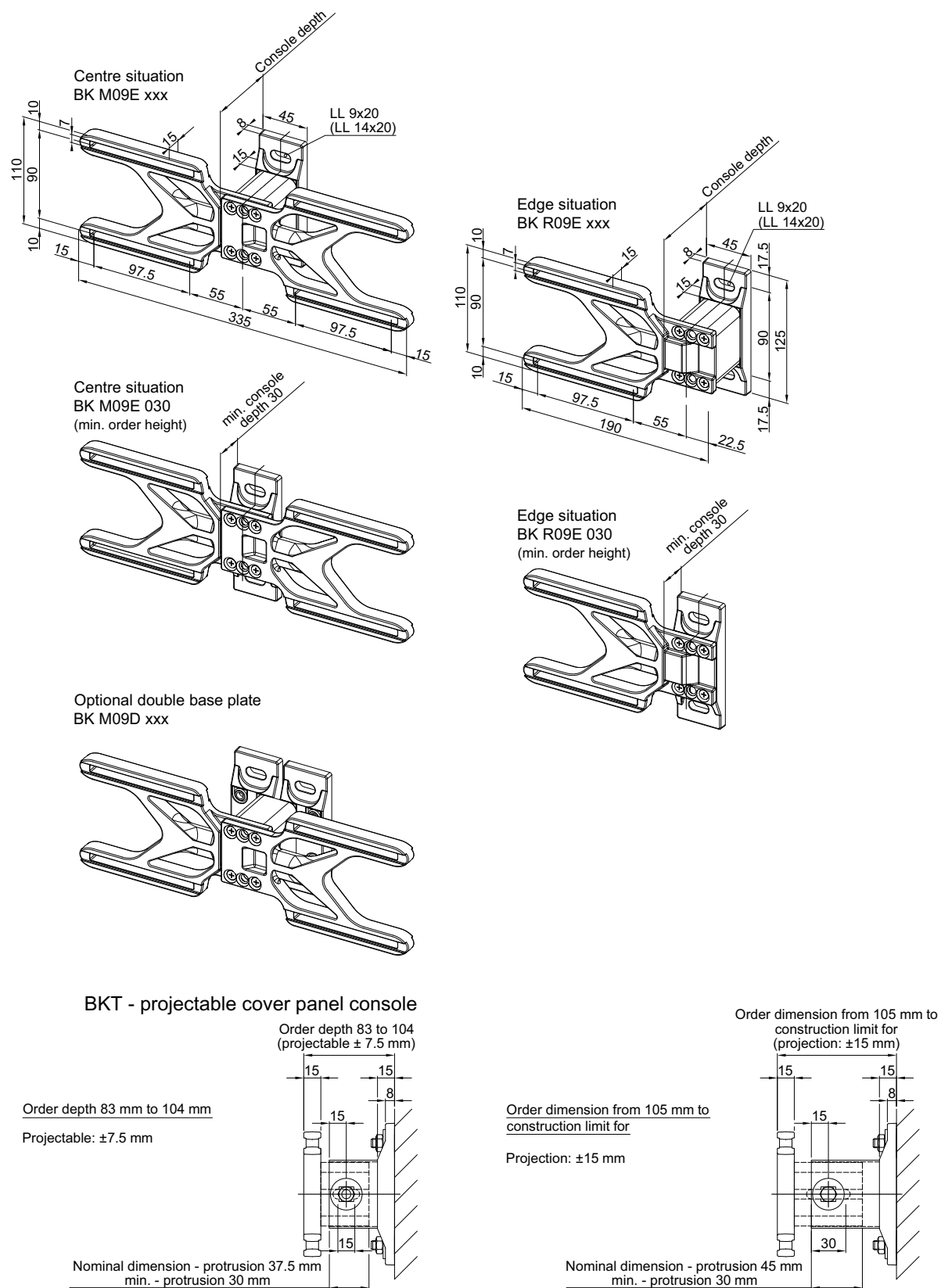
Guides

Cover panels

Planning

Safety systems  
Accessories

Drives  
Control systems



70022v3\_1sp

fig. 348: Cover panel consoles BK

## Construction limit values

### ZK consoles for fixing the cover panel

#### Construction limit values

Consoles	External venetian blind height in mm	External venetian blind width in mm						
		Rail guidance			Cable guidance			
		Up to 2400 mm	up to 4000 mm (1 cable)	up to 5000 mm (2 cables)	up to 2000 mm (2 cables)	up to 3000 mm (2 cables)	up to 4000 mm (3 cables)	up to 5000 mm (4 cables)
ZK0 (60–95 mm)	Up to 3000	2	3	4	2	3	4	5
	Up to 4000				3			6
	Up to 5000	3	4	5	–			
ZK2 (90–145 mm)	Up to 3000	2	4	5	3	4	5	6
	Up to 4000			6				–
	Up to 5000	3	5	–				
ZK3 (120–175 mm)	Up to 3000	3	4	6	–			
	Up to 4000		5					
	Up to 5000	4	5					

Consoles must be evenly spread across order dimension, max. cover panel depth 150 mm.  
Deviations possible after techn. clarification with Applied Engineering

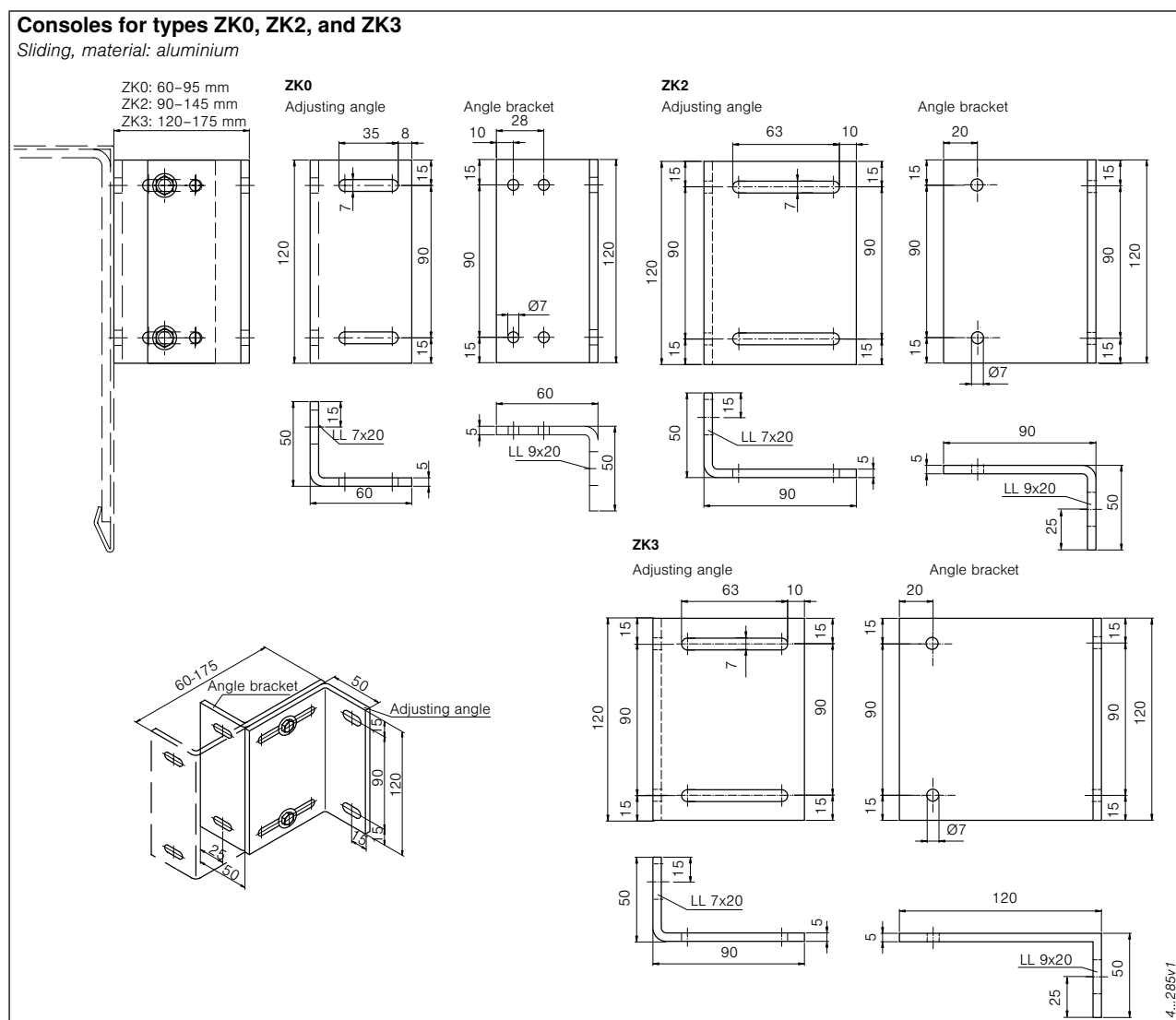


fig. 349: Z-shaped consoles. **Note:** Console ZK3 cannot be used for cable guidance.

Cover panels/cover panel accessories

Lining

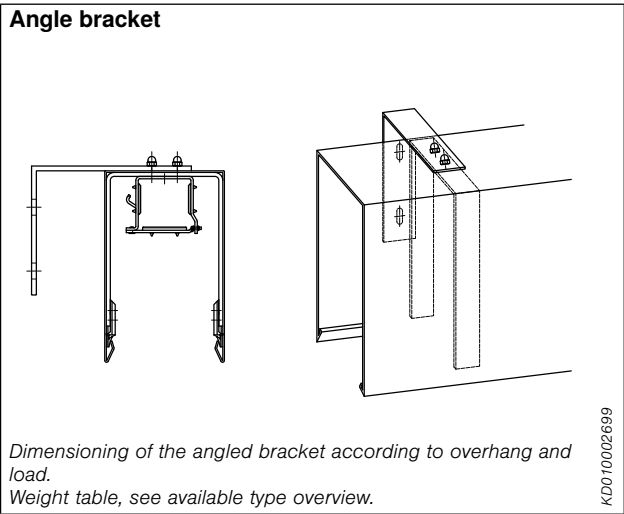


fig. 350: Angle bracket

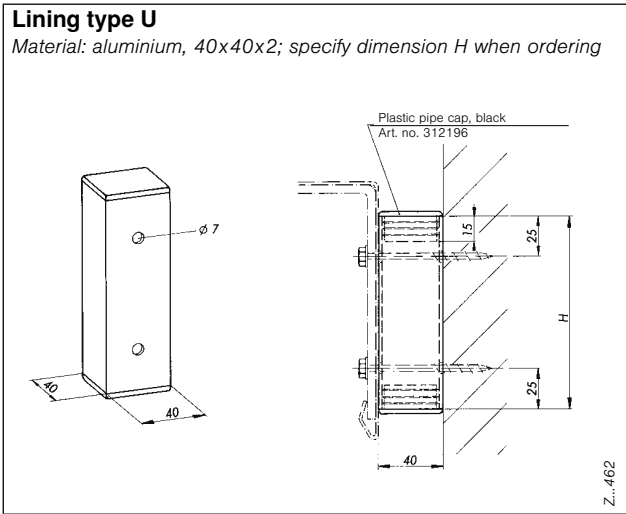


fig. 351: Lining type U

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

## External venetian blind covers with lintel insulation

### Determining dimensions/ordering data

#### Lintel insulation

- Thermal bridges in lintel area are prevented
- Insulation at top or rear of cover panel possible
- Insulation already attached to cover panel at the factory
- Ideal solution for being integrated in the insulation layer of a facade
- can be delivered for all cover panels

#### Available insulation thicknesses

15 mm, 20 mm, 30 mm, 40 mm, 50 mm and 60 mm.

Intermediate sizes are not possible!

Insulating material: polyurethane rigid foam (PUR) with aluminium lamination on both sides

Thermal conductivity  $\lambda = 0.024 \text{ W/(m}\cdot\text{K)}$

Thermal resistance R per insulation thickness

	Insulation thickness in mm					
	15	20	30	40	50	60
R	0.6	0.8	1.2	1.6	2	2.4

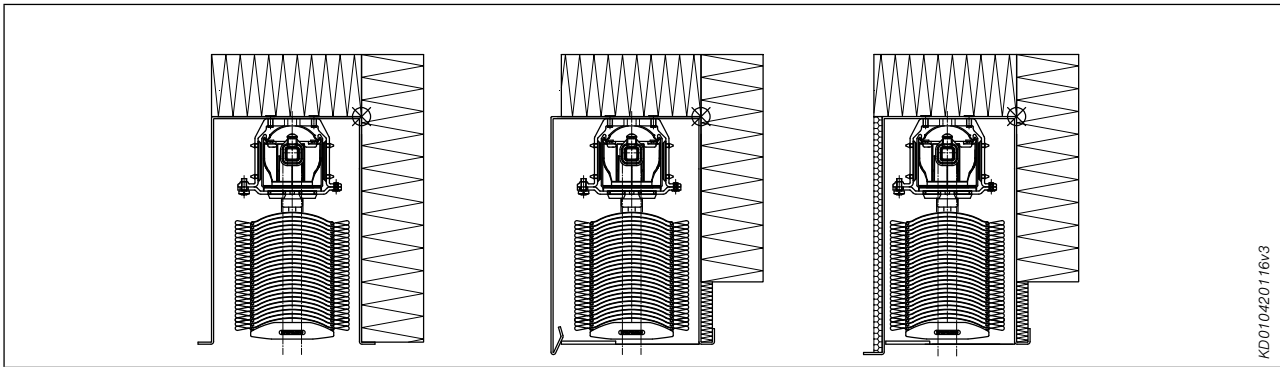


fig. 352: Available models lintel insulation

#### Measuring example executed with cover panel type .06

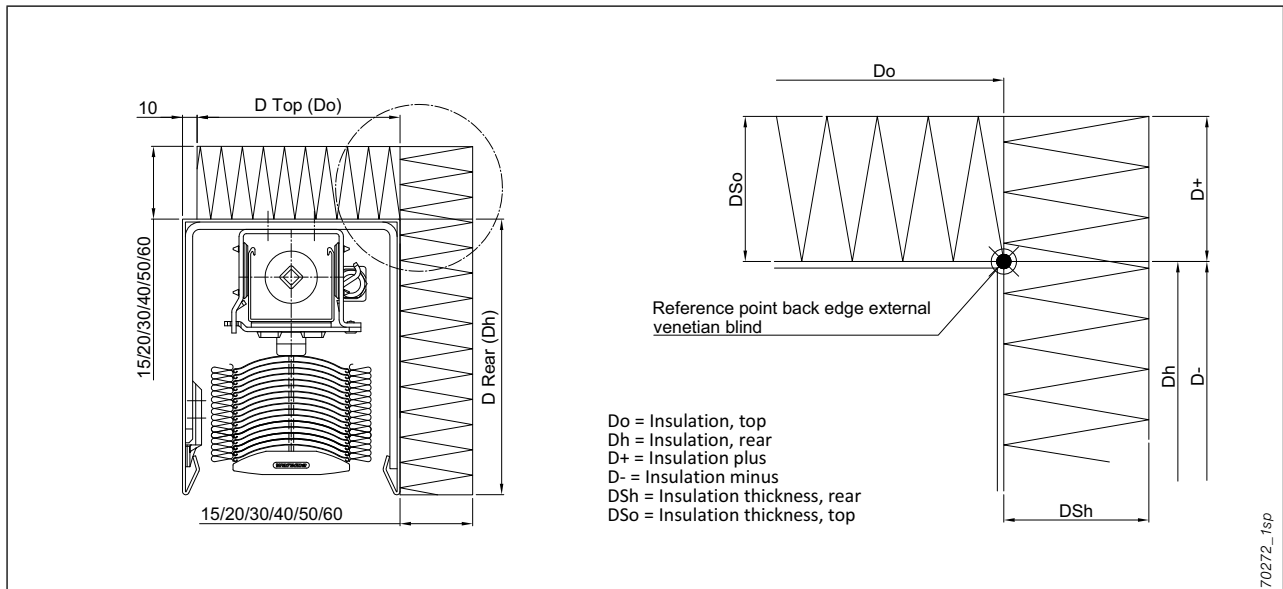


fig. 353: Measuring example executed with cover panel type .06

**Note:** The building tolerances must be observed (see fig. 356 on page 328).

## Integrated lintel insulation

### Front-mounted external venetian blinds R6/R10

#### Lintel insulation

- Thermal bridges in lintel area are prevented
- Optional insulation of the box
- Insulation at top or rear of the box possible
- Insulation already mounted on the box at the factory
- Ideal solution for integration in the insulation layer of a facade
- Available for all boxes

#### Available insulation thicknesses

15 mm, 20 mm, 30 mm, 40 mm, 50 mm and 60 mm.  
Intermediate sizes are not possible!

Insulating material: polyurethane rigid foam (PUR) with aluminium lamination on both sides  
Thermal conductivity  $\lambda = 0.024 \text{ W/(m}\cdot\text{K)}$

#### Thermal resistance R per insulation thickness

	Insulation thickness in mm					
	15	20	30	40	50	60
R	0.6	0.8	1.2	1.6	2	2.4

#### Variants and dimensions for each box shape

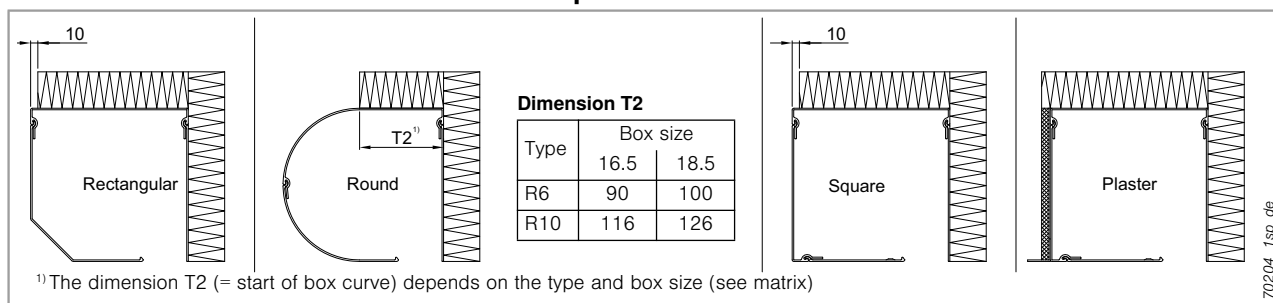


fig. 354: Overview of box shapes

#### Dimension determination effected with box shape plaster

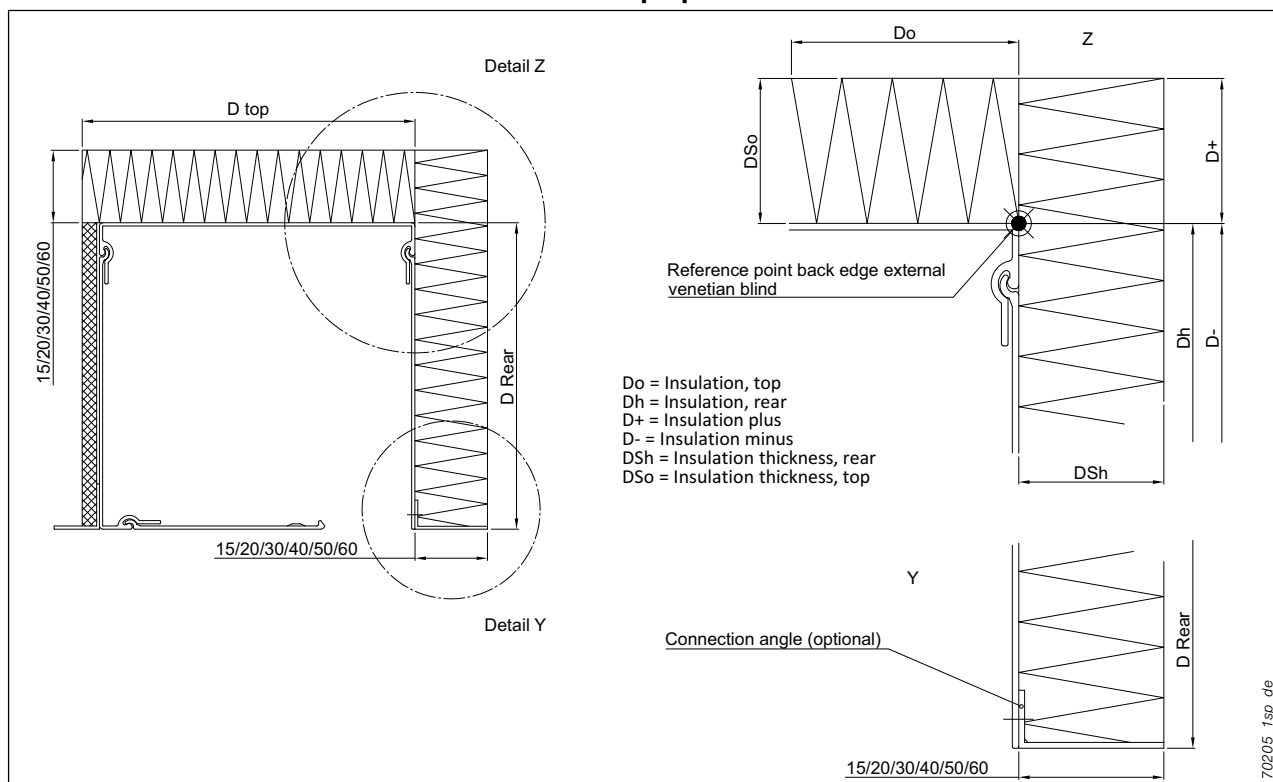


fig. 355: Dimension determination cover panel insulation, example executed with box shape plaster

**Note:** The building tolerances must be observed (see fig. 356 on page 328).

### Important information on measuring examples for insulation of boxes

- The reference point is generally located at the cover panel back edge, see fig.353 on page 326
- Dh (insulation rear) always has to be indicated.
- On boxes with an insulated top side, the rear insulation is completed as followed: D+ (insulation plus) = DSo (top insulation thickness).
- If the insulation of the box is only completed on one side of the box, then the insulation always ends on the reference point, unless D+ (insulation plus) is stated.
- If Dh (insulation rear) is to end below the reference point, D- (insulation minus) will have to be indicated.
- If Do (insulation top) is not completed over the complete box depth, (drawn-in on the front of the box), the dimension of the Do (insulation top) has to be stated.
- On boxes with plaster base plates the insulation Do (insulation top) always ends flush with the leading edge of the plaster base plate on the front of the box.
- We recommend to plan the cable exit laterally
- State and/or observe on-site tolerances
- Deviating models on request

### Mounting example

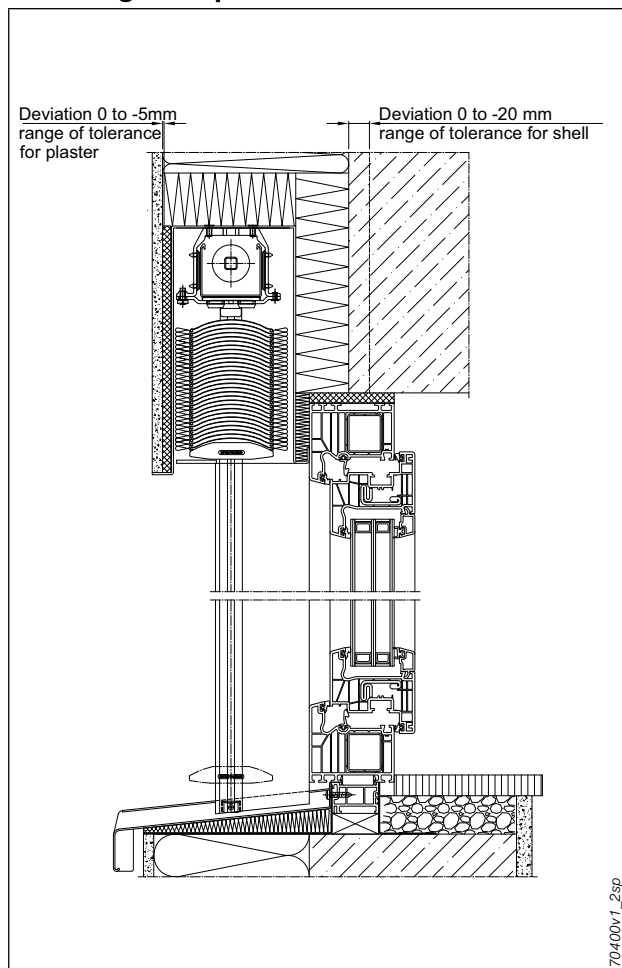


fig. 356: Mounting example of lintel insulation, back insulation (Dh) and top insulation (Do)

### Accessories for a proper connection of the external venetian blind to the facade

Designation		Art. no.	Unit
<b>Foam sealing strip</b>	- 20x5-12, self-adhesive, black	811023	5.6 m reel
	- 20x4-9, self-adhesive, black	811039	8 m reel
	- 20x2-6, self-adhesive, black	811007	12 m reel
<b>Connection bracket</b>	- to face the rear insulation		
	- incl. the finishing of the insulation		

#### Note:

For a connection to the structure which is free from back flow, insulation material adhesive foam (e.g. the brand Soudal Soudabond Easy) can also be used.

## Cover panels/cover panel accessories

### Cover panel embedded in plaster

As an alternative to the following illustration you can also use our venetian blind window system or top-mounted external venetian blinds for new buildings. These can be found in the separate technical documentation.

#### Cover panel embedded in plaster

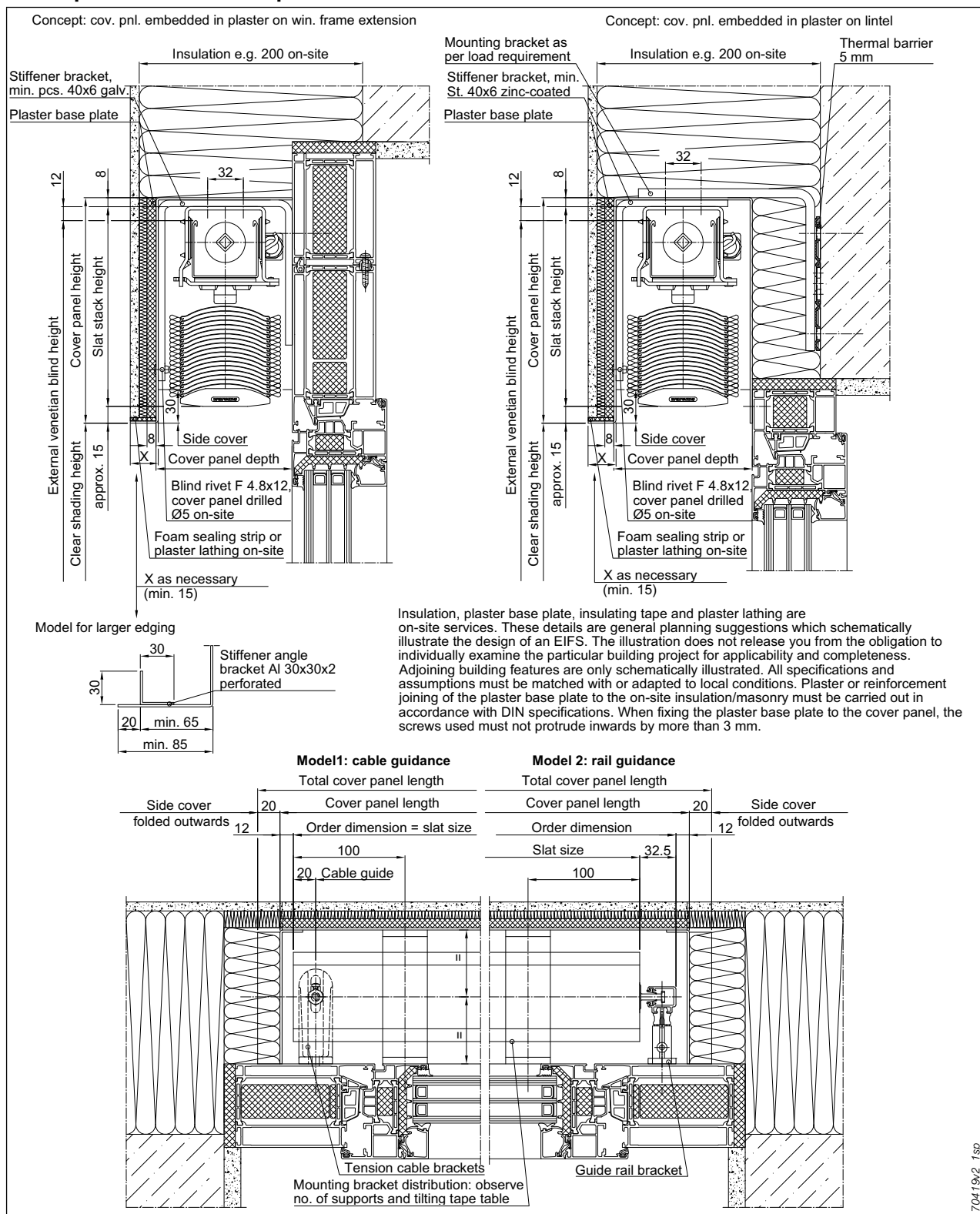


fig. 357: Cover panel embedded in plaster

- Cover panel depth depends on external venetian blind type and on-site insulation.
- We recommend placing a cover panel bracket every 600 mm for stiffening.
- Cover panel depth min. 120 mm for 80 mm wide slats.

## Cover panels/cover panel accessories

### Cover panel embedded in plaster

As an alternative to the following illustration you can also use our venetian blind window system or top-mounted external venetian blinds for new buildings. These can be found in the separate technical documentation.

#### Cover panel embedded in plaster

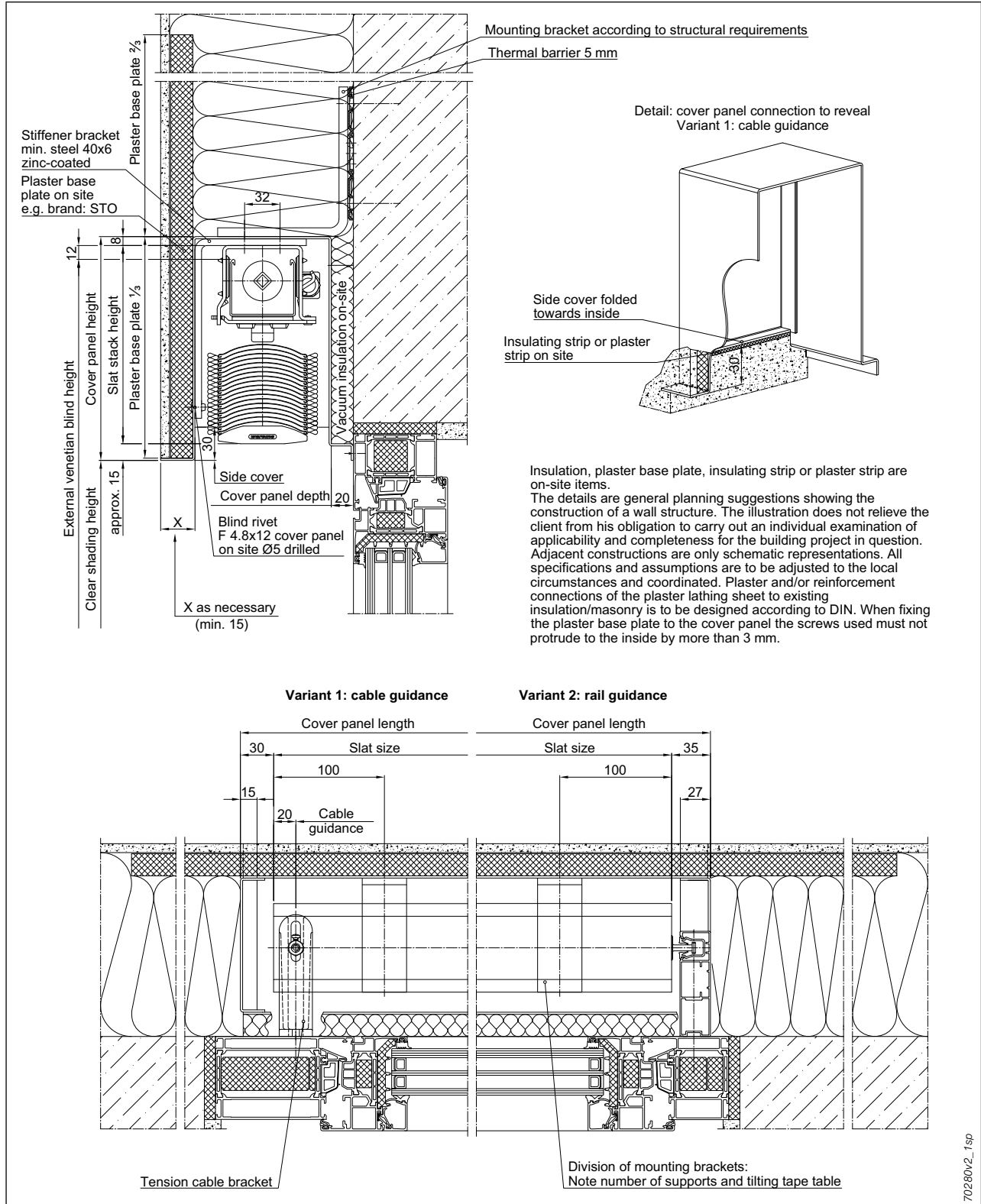


fig. 358: Cover panel embedded in plaster

- Cover panel depth depends on external venetian blind type and on-site insulation.
- We recommend placing a cover panel bracket every 600 mm for stiffening.
- Cover panel depth min. 120 mm for 80 mm wide slats.



Cover panels/cover panel accessories

Pigeon protection/Dummy cover panel

Pigeon protection: 1- and 2-row system (surcharge)

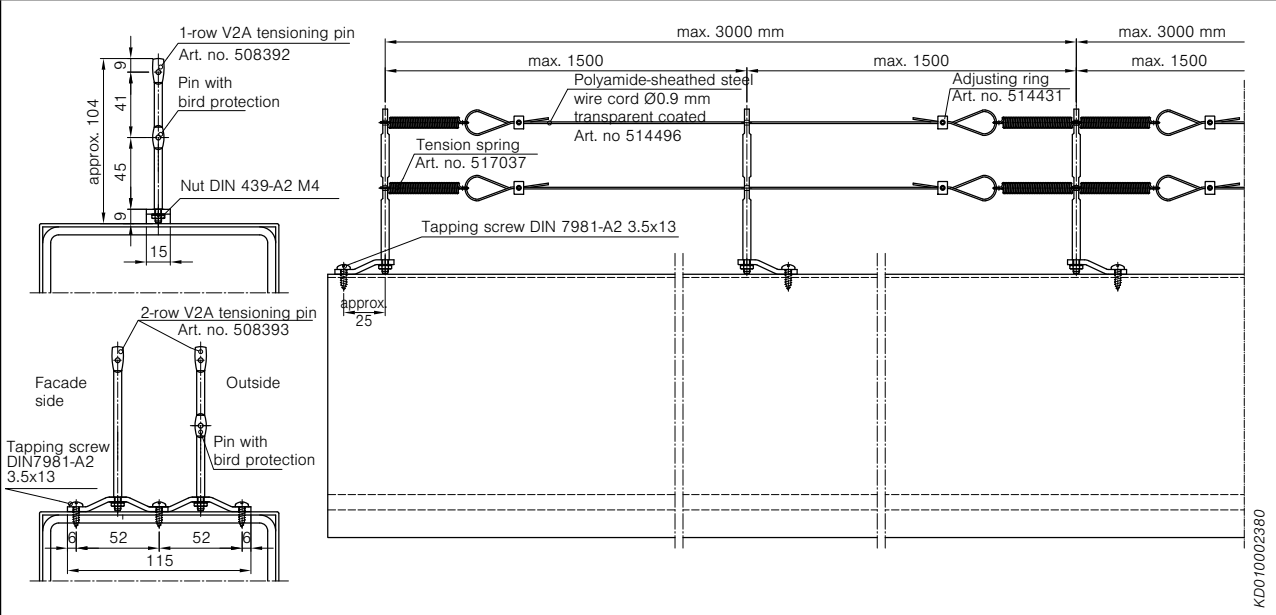


fig. 359: Pigeon protection

Pigeon protection: 1- and 2-row system in combination with cover panel joint (surcharge)

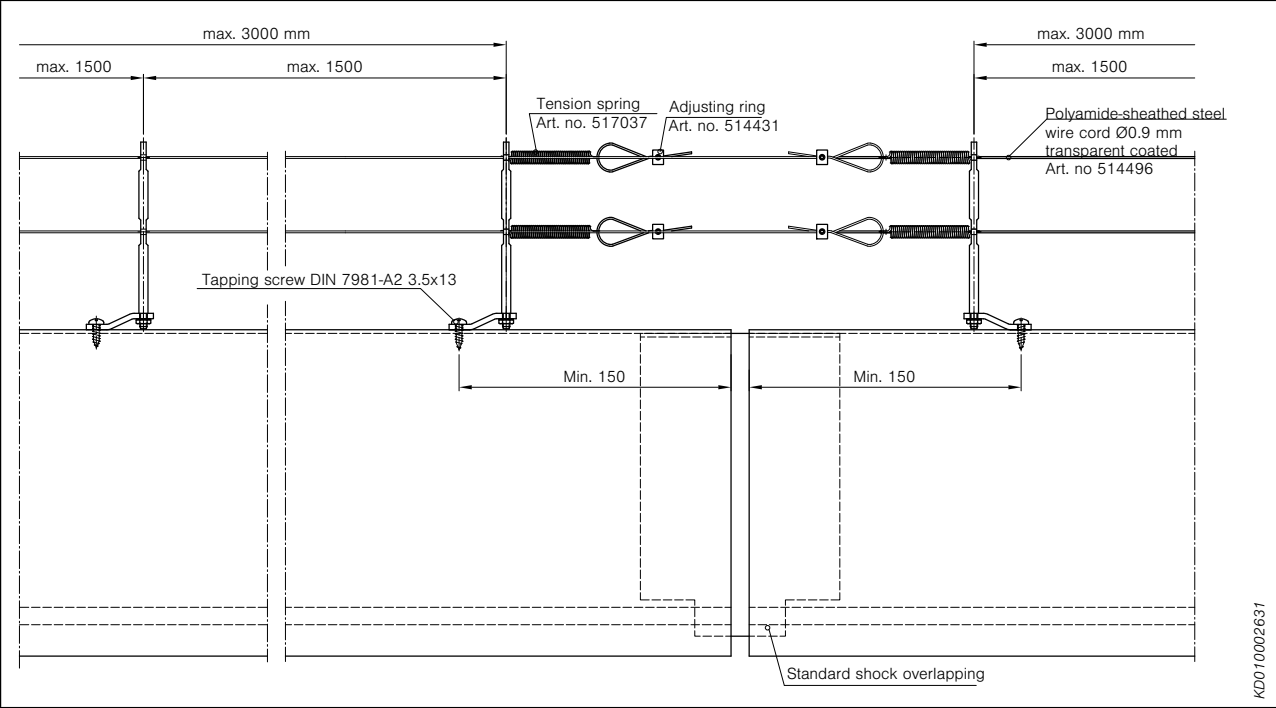


fig. 360: Pigeon protection

# Cover panels/cover panel accessories

## Dummy cover panel

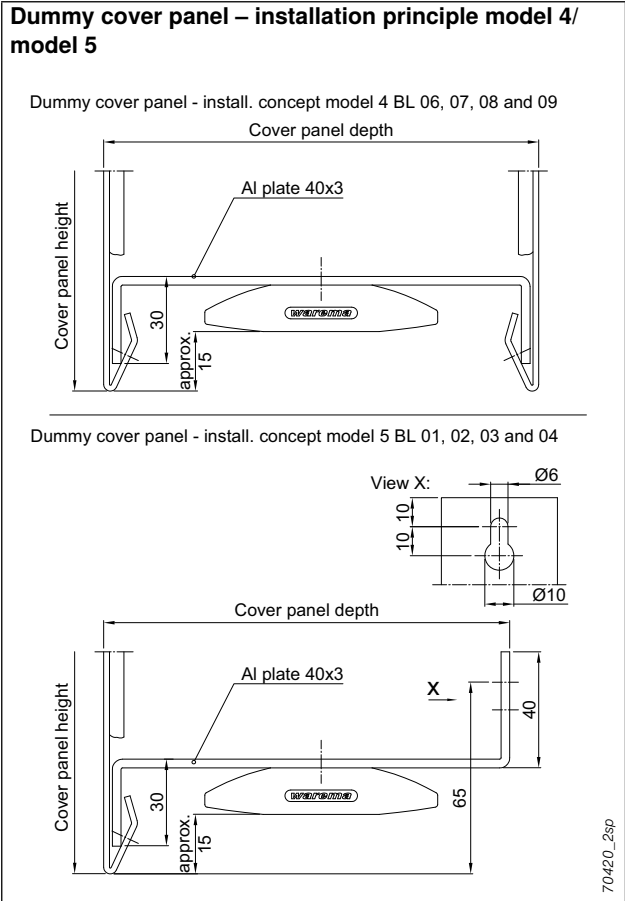
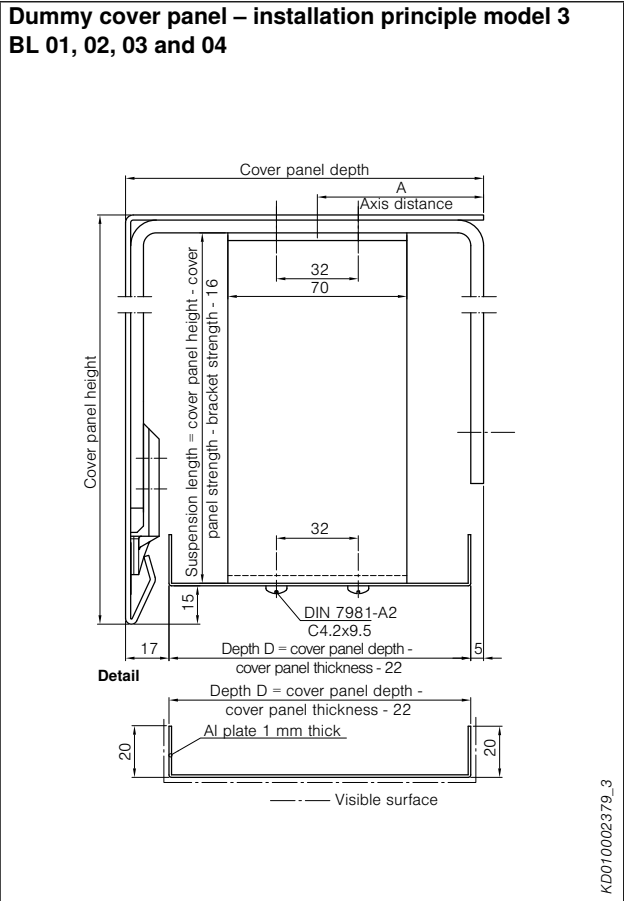
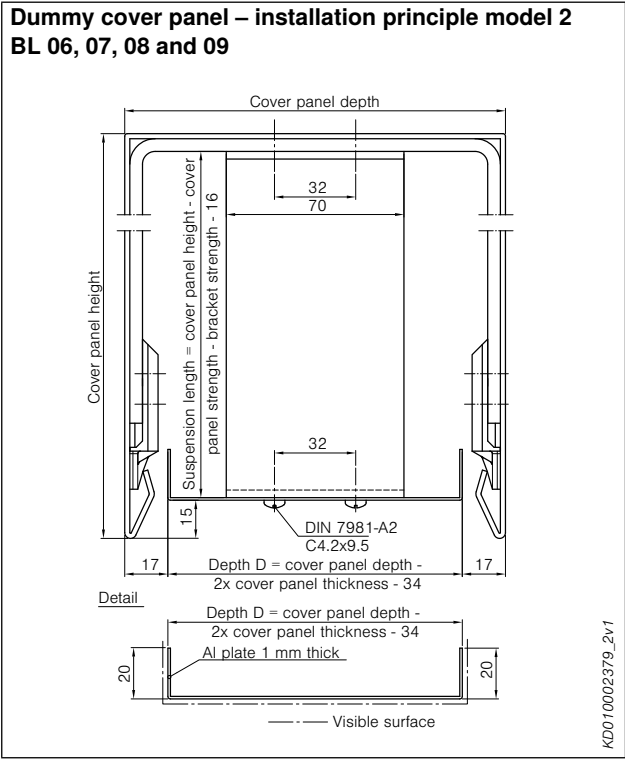
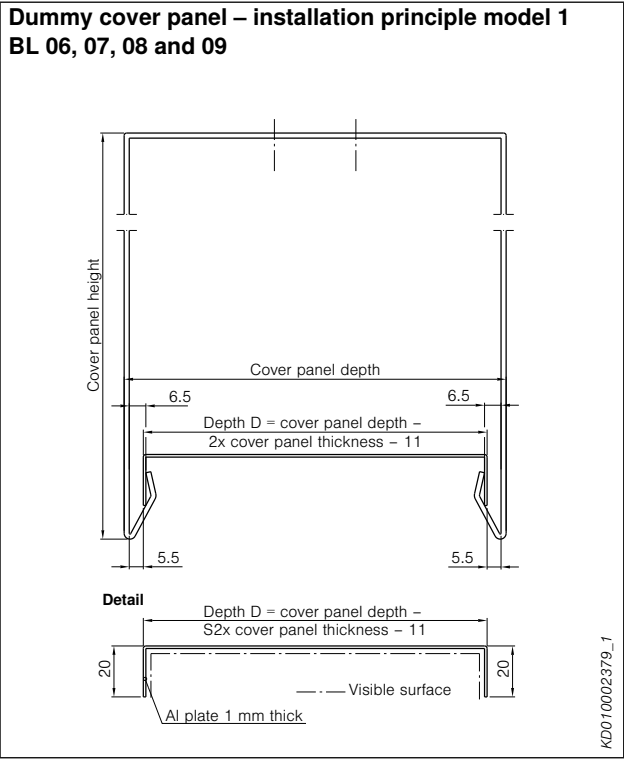


fig. 361: Dummy cover panels

Contents  
Planning

Measuring instructions  
Arrangement of top rail brackets for external venetian blinds . . . . . 334  
Tilting tape table . . . . . 336

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

## Measuring instructions

### Arrangement of top rail brackets for external venetian blinds

#### Number of top rail brackets for external venetian blinds/external blinds/daylight guiding venetian blinds C/E (top rail 59 x 51 mm)

Width (Slat size)	Up to 1500 <sup>1)</sup>	Up to 2500	Up to 3500	Up to 4500	Up to 5500	Up to 6000
Number of brackets	2	3	4	5	6	7

**Note:** The instructions on the next page must always be observed.

Tab. 19: Width/number of supports

<sup>1)</sup> for type 90/93 A8 up to 2000 mm

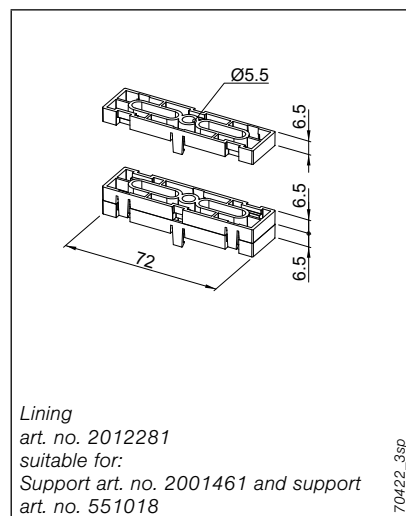
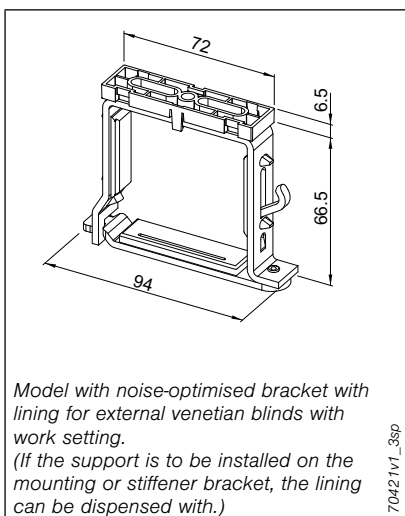
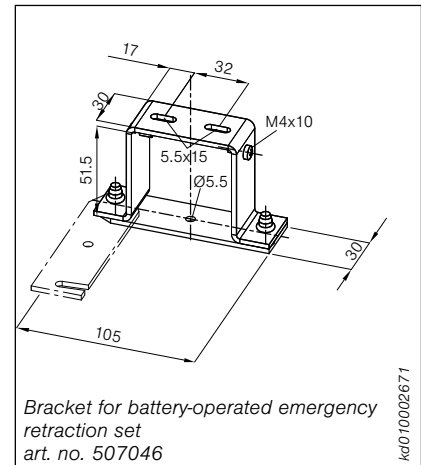
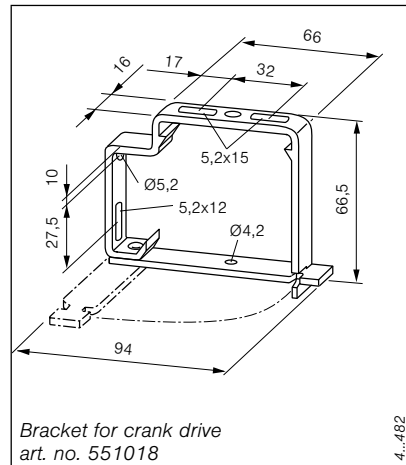
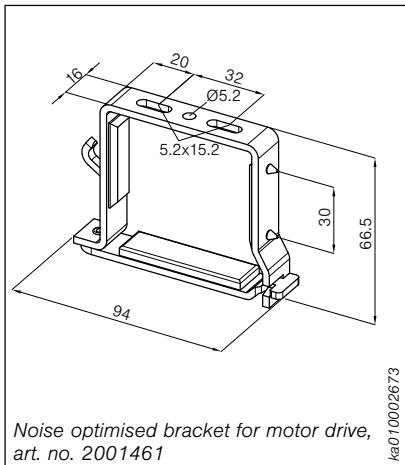


fig. 362: Support types

#### Note:

Use the new external venetian blinds pro tool in the sun shading system planner in order to create your individual support bracket diagram!  
[www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de)

# Measuring instructions

## Arrangement of top rail brackets for external venetian blinds

### Position of top rail brackets

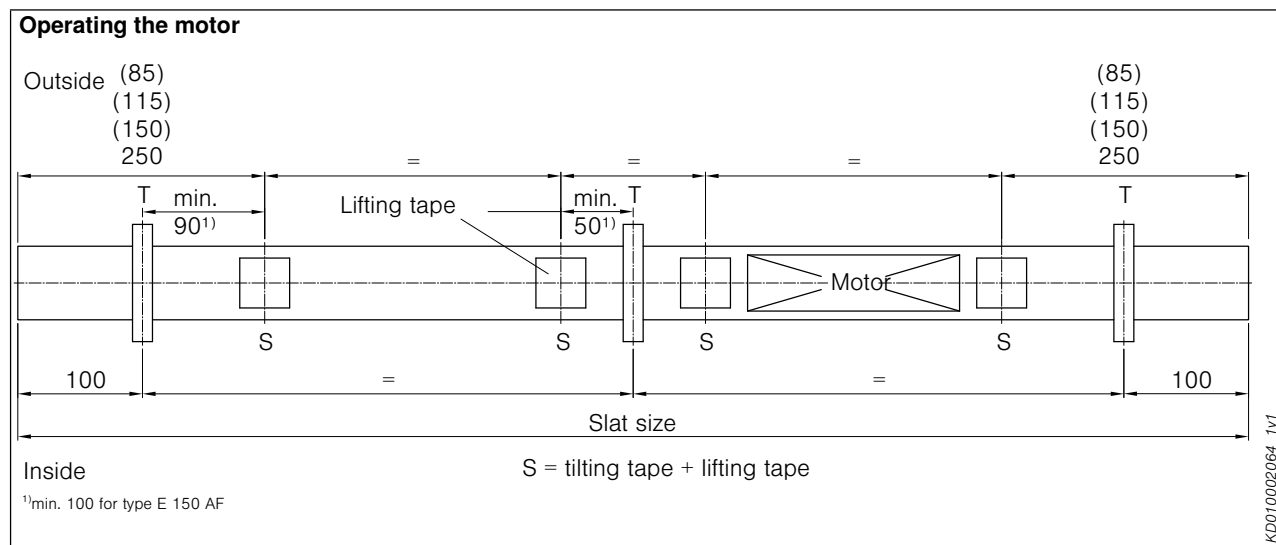


fig. 363: Position of the supports on the top rail with crank/motor operation

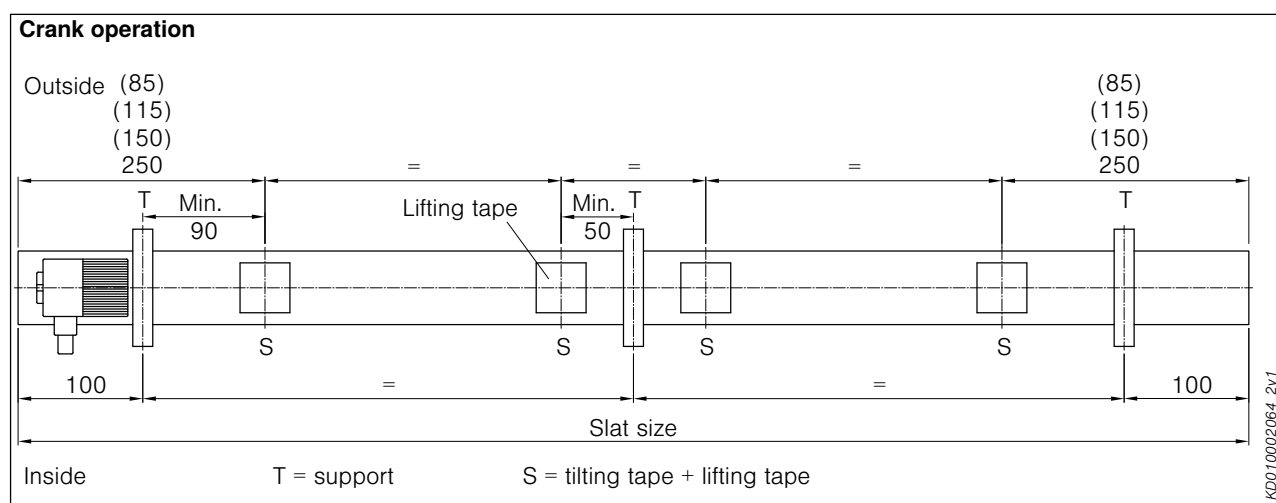


fig. 364: Position of the supports on the top rail with crank/motor operation

#### Note:

Use the new external venetian blinds pro tool in the sun shading system planner in order to create your individual support bracket diagram!  
[www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de)

#### Note:

The supports must generally be positioned with a minimum spacing of 50 mm (100 mm for E 150 AF) from the tilting tapes.

## Measuring instructions

### Tilting tape table

Also valid for external venetian blinds vivamatic® (VM), slowturn (ST) or with work setting (AS)

Width = slat dimension

Number of top rail brackets see previous pages

#### Up to 3000 mm height

Types	End distance <sup>1)</sup>	Width in mm	Number of tilting tapes							
			2	3	4	5	6	7	8	9
External venetian blinds, beaded slats with cable and rail guidance										
	85 (70) <sup>2)</sup>	up to...	600 (700) <sup>2)</sup>							
C/E 60/80 A2 S	115		900							
C/E 60/80 A6 S	150		1100							
	250		1400							
E 80 A2 SD	85	up to...	1050							
E 80 A6 SD	150		1250							
	250		1400							
External venetian blinds, flat slats with cable guidance										
	85 (70) <sup>2)</sup>	up to...	600 (700) <sup>2)</sup>							
C/E 50 AF	115		900							
C/E 60 AF	150		1000 (1100) <sup>2)</sup>							
C/E 80 AF	250		1250 (1400) <sup>2)</sup>							
E 150 AF										
E 80 AF D	85	up to...	1050							
	150		1250							
	250		1400							
External venetian blinds with cable guidance										
	85 (70) <sup>2)</sup>	up to...	600 (700) <sup>2)</sup>							
C/E 50 A1	115		900							
	150		1100							
K 50 A1	115	up to...	600							
Q 50 A1 S	150		1100							
External venetian blinds, flat slats with rail guidance										
	85 (70) <sup>2)</sup>	up to...	600 (700) <sup>2)</sup>							
C/E 60 AF A6	115		900							
C/E 80 AF A6	150		1000 (1100) <sup>2)</sup>							
C/E 100 AF A6	250		1250 (1400) <sup>2)</sup>							
External venetian blinds, dim-out slats with cable or rail guidance										
	85 (70) <sup>2)</sup>	up to...	600 (700) <sup>2)</sup>							
C/E 73/90/93 A2	115		900							
C/E 73 A6	150		1100							
C/E 90/93 A6	250		1400							
Metal system venetian blinds with rail guidance										
C/E 90/93 A8	250 <sup>3)</sup>	to	900	2300	3200	4000	–	–	–	–
			1400							
Wind-stable external venetian blinds with rail and cable guidance										
	85 (70) <sup>2)</sup>	up to...	600 (700) <sup>2)</sup>							
E 80 A6 S/93 A6 wind-stable	115		900							
	150		1100							
	250		1300 (1400) <sup>2)</sup>							

<sup>1)</sup> Minimum end distance for external venetian blinds with crank drive and lateral gear in the top rail: 115 mm for units without work setting or 150 mm for units with work setting

<sup>2)</sup> Only valid for external venetian blinds with vivamatic® (VM) or slowturn (ST)

<sup>3)</sup> The edge distance is not flexible for type E 90/93 A8. It is always 250 mm. The edge distance can only be reduced to 150 mm when the width of the external venetian blind is less than 900 mm.

#### Note:

Use the new external venetian blinds pro tool in the sun shading system planner in order to create your individual support bracket diagram!

[www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de)

## Measuring instructions

### Tilting tape table

Also valid for external venetian blinds with vivamatic® (VM), slowturn (ST) or work setting (AS)

Width = slat size, slat size + 65 mm = back edge of the guide rail for guide rail types 1 and 2

Number of top rail brackets see previous pages

#### From 3001 mm height

Types	End distance <sup>1)</sup>	Width in mm	Number of tilting tapes							
			2	3	4	5	6	7	8	9
External venetian blinds, beaded slats with cable and rail guidance										
C/E 60/80 A2 S	85 (70) <sup>2)</sup>	up to...	600 (700) <sup>2)</sup>							
C/E 60/80 A6 S	115		900							
	150		1100							
	250		1300 (1400) <sup>2)</sup>	2100	2900	3700	4500	5300	6000	–
E 80 A2 S D	85	up to...	1050							
E 80 A6 S D	150		1250							
	250		1400	2300	3200	4000	–	–	–	–
External venetian blinds, flat slats with cable guidance										
C/E 60 AF	85 (70) <sup>2)</sup>	up to...	600 (700) <sup>2)</sup>							
C/E 80 AF	115		900							
C/E 100 AF	150		1000 (1100) <sup>2)</sup>							
E 150 AF	250		1250 (1400) <sup>2)</sup>	1900	2600	3300	4000	4700	5400	6000
E 80 AF D	85	up to...	1050							
	150		1250							
	250		1400	1900	2600	3300	4000	–	–	–
External venetian blinds with cable guidance										
C/E 50 A1	85	up to...	600							
	115		900							
	150		1100	1900	2700	3500	4300	5100	5900	6000
External venetian blinds, flat slats with rail guidance										
C/E 60 AF A6	85 (70) <sup>2)</sup>	up to...	600 (700) <sup>2)</sup>							
C/E 80 AF A6	115		900							
C/E 100 AF A6	150		1000 (1100) <sup>2)</sup>							
	250		1250 (1400) <sup>2)</sup>	1900	2600	3300	4000	4700	5400	6000
External venetian blinds, dim-out slats with cable or rail guidance										
C/E 73/90/93 A2	85 (70) <sup>2)</sup>	up to...	600 (700) <sup>2)</sup>							
C/E 73 A6	115		900							
C/E 90/93 A6	150		1100							
	250		1300 (1400) <sup>2)</sup>	2100	2900	3700	4500	–	–	–
Metal system venetian blinds with rail guidance										
C/E 90/93 A8	250 <sup>3)</sup>	up to...	900 1400	2300	3200	4000	–	–	–	–
Wind-stable external venetian blinds with rail and cable guidance										
E 80 A6 S/93 A6	85 (70) <sup>2)</sup>	up to...	600 (700) <sup>2)</sup>							
wind-stable	115		900							
	150		1100							
	250		1300 (1400) <sup>2)</sup>	2000	2700	3000	–	–	–	–

<sup>1)</sup> Minimum end distance for external venetian blinds with crank drive and lateral gear in the top rail: 115 mm for units without work setting or 150 mm for units with work setting

<sup>2)</sup> Only valid for external venetian blinds with vivamatic® (VM) or slowturn (ST)

<sup>3)</sup> The edge distance is not flexible for type E 90/93 A8. It is always 250 mm. The edge distance can only be reduced to 150 mm when the width of the external venetian blind is less than 900 mm.

### Determining spacing between tilting tapes

#### Calculation example:

Type C 80 A6 S, slat size 2450 mm has 4 tilting tapes according to the above table.

#### Calculation:

Slat size minus 2x end distance divided by the number of tilting tapes minus 1, therefore:  $4 - 1 = 3$ .

#### Calculation:

$2450 - 2 \times 250 \text{ mm} = 1950$  and  $1950 : 3 = 650$ .

That means the tilting tape spacing for slat size 2450 mm is: 250–650–650–650–250.

Under special circumstances, the tilting tape spacing can be adjusted to the local conditions.

The maximum distance between 2 tilting tapes is:

- 900 mm for external venetian blinds with beaded slats and dim-out slats
- 800 mm for external venetian blinds
- 700 mm for flat slats and daylight guiding venetian blinds

## Measuring instructions

### Tilting tape table

Also valid for external venetian blinds with vivamatic® (VM), slowturn (ST) or work setting (AS)

Width = slat size, slat size + 65 mm = back edge of the guide rail for guide rail types 1 and 2

Number of top rail brackets see previous pages

Types	End distance	Width in mm	Number of tilting tapes				
			2	3	4	5	6
Daylight guiding venetian blinds							
C/E 50 L	85 (70) <sup>1)</sup>	up to...	600 (700) <sup>1)</sup>	1700	2400	3000	–
	115		900				
	150		1050 (1100) <sup>1)</sup>				
C/E 60 L	85 (70) <sup>1)</sup>	up to...	600 (700) <sup>1)</sup>	1900	2600	3000	–
	115		900				
	150		1000 (1100) <sup>1)</sup>				
C/E 80 L	250	up to...	1250 (1400) <sup>1)</sup>	1700	2250	2800	3400
	85 (70) <sup>1)</sup>		600 (700) <sup>1)</sup>				
	115		900				
C/E 50 Genius	150	up to...	1000 (1100) <sup>1)</sup>	1900	2600	3300	3600
	250		1150 (1400) <sup>1)</sup>				
	85 (70) <sup>1)</sup>		600 (700) <sup>1)</sup>				
C/E 80 Genius	115	up to...	900	1900	2600	3000	–
	150		1000				
	250		1250 (1400) <sup>1)</sup>				
E 80 LD	85	up to...	1050	1900	2600	3000	–
	150		1250				
	250		1400				

<sup>1)</sup> Only valid for daylight guiding venetian blinds with slowturn (ST)

### Determining spacing between tilting tapes

#### Calculation example:

Type C 80 A6 S, slat size 2450 mm has 4 tilting tapes according to the above table.

#### Calculation:

Slat size minus 2x end distance divided by the number of tilting tapes minus 1, therefore:  $4 - 1 = 3$ .

#### Calculation:

$2450 - 2 \times 250 \text{ mm} = 1950$  and  $1950 : 3 = 650$ .

That means the tilting tape spacing for slat size 2450 mm is:  $250 - 650 - 650 - 650 - 250$ .

Under special circumstances, the tilting tape spacing can be adjusted to the local conditions.

The maximum distance between 2 tilting tapes is:

- 900 mm for external venetian blinds with beaded slats and dim-out slats
- 800 mm for external venetian blinds
- 700 mm for flat slats and daylight guiding venetian blinds

#### Note:

Use the new external venetian blinds pro tool in the sun shading system planner in order to create your individual support bracket diagram!

[www.sonnenschutzplaner.de](http://www.sonnenschutzplaner.de)



### Arrangement of top rail brackets for external venetian blinds

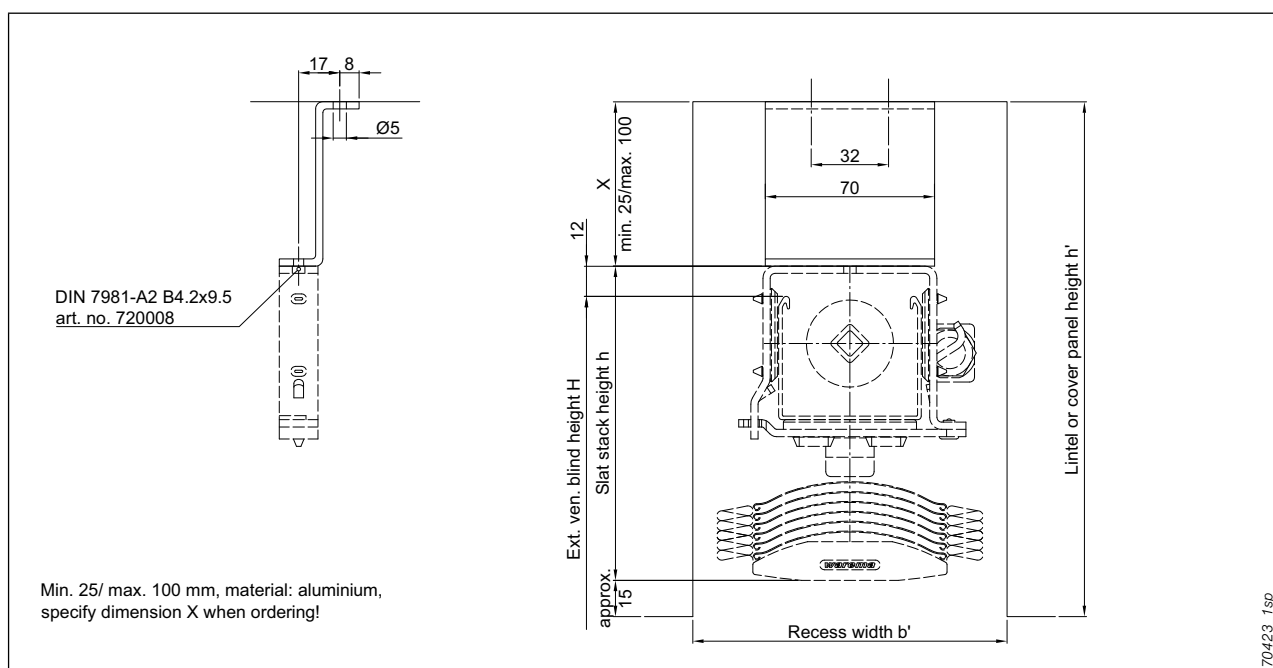


fig. 365: Bracket suspension

**Number of top rail brackets for external venetian blinds K/Q (top rail 40 x 36 mm)**

Width (Slat size)	Up to 1500	Up to 2750	Up to 4000
Number of brackets	2	3	4

Tab. 20: Width/number of supports

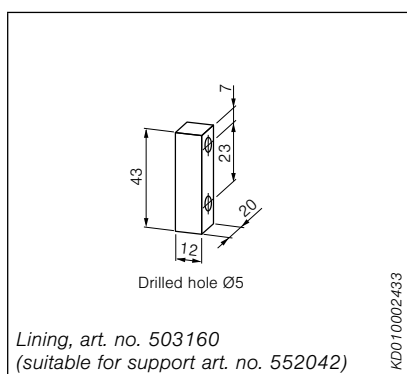
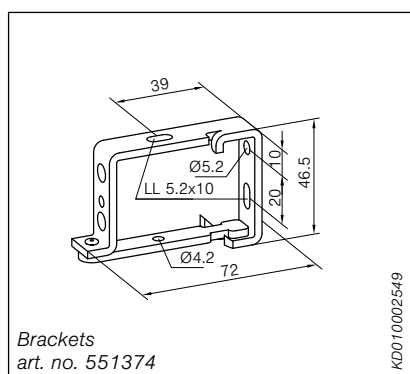


fig. 366: Support types

Measuring instructions

Arrangement of top rail brackets with double curtain

Number of top rail brackets for external venetian blinds/daylight guiding venetian blinds double curtain E 80 A2 S D/A6 S D/AFD, E 80 LD

Width (Slat size)	Up to 1500	Up to 2500	Up to 3500	Up to 4000
Number of brackets	2	3	4	5

Tab. 21: Width/number of supports

Bracket for top rail 100 x 51 mm

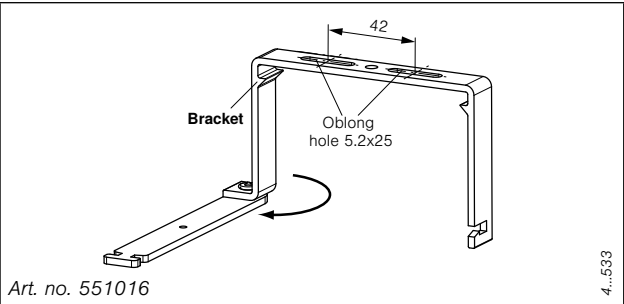


fig. 367: Top rail supports

Position of top rail brackets for external venetian blinds E 80 A2 S D/A6 S D/AF D

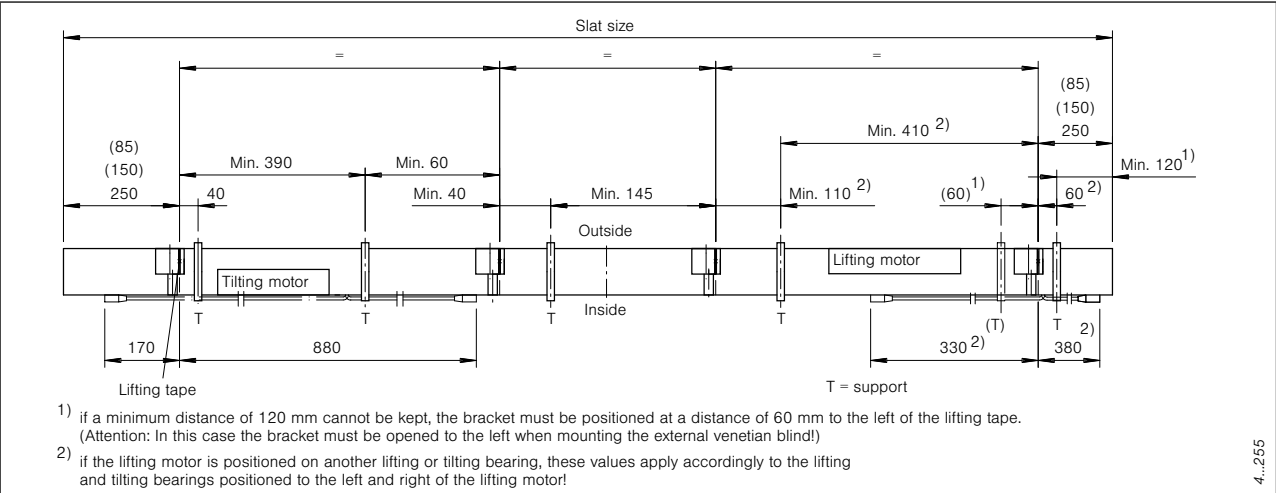


fig. 368: Position of brackets

Position of top rail brackets for daylight guiding venetian blinds E 80 LD

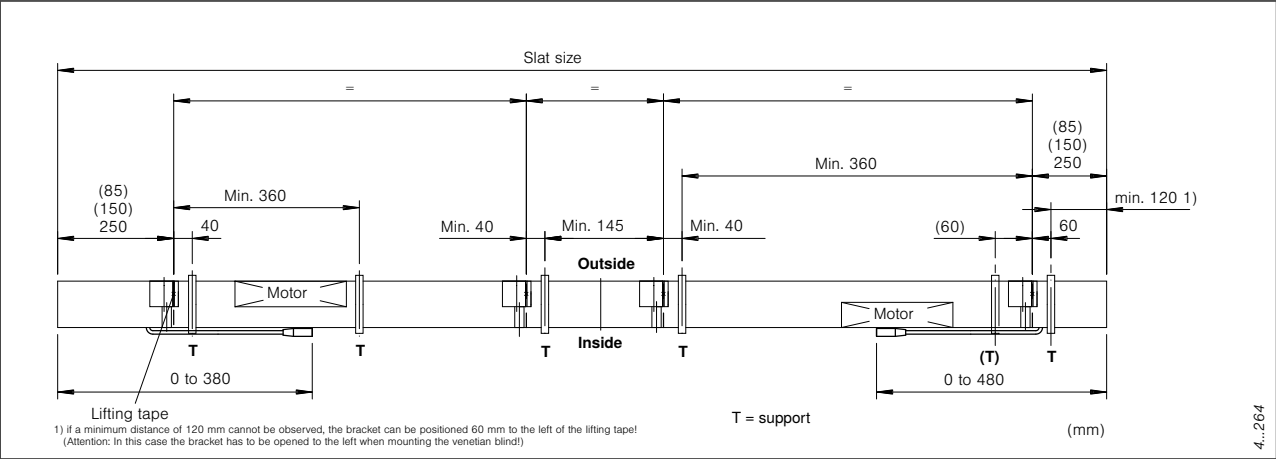


fig. 369: Position of the brackets on the top rail

## Contents

### Security systems/accessories

#### Security systems/accessories

External venetian blinds with auxiliary motor . . . . .	342
Battery-operated emergency power supply set/battery-operated emergency retraction set. . . . .	342
Motor with connection for additional crank operation . . . . .	348
WAREMA stop nut . . . . .	349
Self-sealing fixing system . . . . .	350
Fixing to exterior insulation and finish systems . . . . .	351
WAREMA insulating plate . . . . .	354

General  
information

Product  
characteristics

Basic facade  
external venetian  
blinds

Premium facade  
venetian blinds

Complete external  
venetian blinds

Light guidance/  
external venetian  
blinds

Guides

Cover panels

Planning

Safety systems  
Accessories

Drives  
Control systems

Solflex AB försäljning och service västra Skåne. Showroom och rådgivning;  
Malmö Slussplan 1, 040-979745. Helsingborg Garnisonsg 12, 042-161635.  
kontakter@solflex.se www.solflex.se

## Supplementary accessory/accessories

### External venetian blinds with auxiliary motor

### Battery-operated emergency power supply set/battery-operated emergency retraction set

#### External venetian blinds with auxiliary motor

External venetian blinds with motor drive can be equipped with a DC voltage auxiliary motor integrated directly into the top rail. For this model the 230 V drive motor has to be fitted on the side of the auxiliary motor and the tilting tape end distance must be 250 mm. The accessory drive is used to move the external venetian blind into the upper limit position.

Diameter approx. 10.5 mm

5 m Art. no. 2004831

10 m Art. no. 2004832

Sold by the metre  
Art. no. 614143

Sensor cable for incremental encoder incl. M12FS plug connector, diameter approx. 7 mm (without plug connector)

Phoenix SAC-4P-PUR

5 m Art. no. 634282

10 m Art. no. 634283

#### Accessories for external venetian blinds with auxiliary motor:

battery-operated control including storage battery pack (on-site emergency power supply is not required!)

Art. no. 1002920

Emergency power supply adapter pack Art. No. 1002921

Emergency trigger button Art. no. 603080

Outside temperature sensor for direct connection to the battery-operated control and mounted on the top rail of the external venetian blind, incl. cable, diameter approx. 7 mm, directly moulded on the sensor.

5 m Art. no. 623127

10 m Art. no. 623128

WAREMA recommends the following cable for emergency retraction drive. HELU Megaflex 500-C 2x4 mm<sup>2</sup> – or a different shielded cable with the same specification. This can be ordered from WAREMA.

#### Construction limit values

##### Maximum/minimum dimensions in mm

	E 60/80 A6 S, E 60/80 A2 S, E 60/80/100 AF A6, E 50/60/80/100 AF A2, E 50 Genius					
Order width	1000–2400	2401–2600	2601–2750	2751–3000	3001–3250	3251–3500
Minimum width <sup>1)</sup>	1000	1000	1000	1000	1000	1000
Max. height	5000 <sup>2)</sup>	5000 <sup>2)</sup>	4800 <sup>2)</sup>	4500 <sup>2)</sup>	4200 <sup>2)</sup>	4000 <sup>2)</sup>
Minimum height	1500	1500	1500	1500	1500	1500
Max. emergency retraction height <sup>3)</sup>	3000	3000	3000	3000	3000	3000

<sup>1)</sup> Minimum width = slat size, rail guidance = +65 mm – dimension for back edge of the guide rail

<sup>2)</sup> The construction limit values of standard types must **not** be exceeded, e.g. A2/AF = maximum height 4000 mm.

<sup>3)</sup> Only together with battery-operated emergency retraction set

##### Maximum/minimum dimensions in mm

	E 73/90/93 A6, E 150 AF A2					
Order width	1000–2400	2401–2600	2601–2750	2751–3000	3001–3250	3251–3500
Minimum width <sup>1)</sup>	1000	1000	1000	1000	1000	1000
Max. height	4300 <sup>2)</sup>	4300 <sup>2)</sup>	4300 <sup>2)</sup>	4000 <sup>2)</sup>	3800	3500
Minimum height	1500	1500	1500	1500	1500	1500
Max. emergency retraction height <sup>3)</sup>	3000	3000	3000	3000	3000	3000

<sup>1)</sup> minimum width = slat size

<sup>2)</sup> The construction limit values of standard types must **not** be exceeded, e.g. A2/AF = maximum height 4000 mm.

<sup>3)</sup> Only together with battery-operated emergency retraction set

Maximum dimensions **only** valid for types stated above, other types on request.

Cover panel and recess dimensions correspond to each external venetian blind type.

#### Only available as individual units, coupling not possible

In order to connect the auxiliary motor to the battery-operated control, a screened 2x4 mm<sup>2</sup> cable and the Phoenix SAC-4P-PUR sensor cable are required.

Supplementary accessory/accessories

External venetian blinds with auxiliary motor

Battery-operated emergency power supply set/battery-operated emergency retraction set

Application examples for external venetian blinds with auxiliary motor

1. Power failure

To protect external venetian blinds from damage as a result of extreme weather conditions (e.g. storm) in case of a power failure. In case of a power failure lasting more then 5 minutes the battery-operated control automatically moves the connected external venetian blind to the upper limit position. After the power failure the external venetian blind can be released again by pressing a reset button (installed by customer).

To facilitate ordering we have bundled the required items into an "emergency power supply set".

Emergency power supply set containing:

- External venetian blinds with auxiliary motor
- battery-operated control
- emergency power supply adapter pack
- Connecting line for auxiliary motor
- Sensor line for incremental encoder

2. Emergency exit

The battery-supported emergency retraction set can be used in front of glazed exit doors or emergency exit windows in escape routes. The following points have to be taken into account here.



WAREMA external venetian blinds with battery-operated emergency retraction set were designed especially for use in escape route areas and they are designed to be redundant (fail-safe) in all safety-relevant components (e.g. 2 motors). The emergency retraction set is designed so that the battery-

supported control detects possible failures and moves the blind to the upper limit position in an emergency, ensuring that the emergency route is not blocked. To facilitate ordering we have bundled the required items into an "emergency retraction set".

Battery-operated emergency retraction set containing:

- External venetian blinds with auxiliary motor
- battery-operated control
- Emergency push button
- Connecting line for auxiliary motor
- Sensor line for incremental encoder

Battery-operated emergency retraction set

At least 1x day the control checks that all connected components (e.g. motors) are capable of functioning and checks the connected cables for damage or loss of contact. In case of power failure the battery-operated emergency retraction set can always be triggered by the emergency button or a higher-level central fire alarm unit. When a power failure lasts longer than 5 minutes the battery-operated emergency retraction set automatically moves the blind to the upper limit position. The control checks whether the upper limit position has been reached using an incremental encoder integrated into the drive motor. After restoring the 230 V power supply the external venetian blind can be used again without any mechanical work.

The battery-operated emergency retraction set was tested for functionality in cooperation with the TÜV-Süd and a TÜV design certificate is available.

In the event of an emergency, the system is triggered using an emergency push button (housing colour RAL 7035 light grey) with the label "Emergency exit". It is also possible to use an on-site emergency push button in addition. It is also possible to connect the control to a fire alarm or a central fire alarm unit which triggers an emergency retraction in case of a central alarm. In case of a false trip or after a malfunction the external venetian blind has to be put back into operation by a trained person by pressing the reset button in the emergency push button (included).

## Supplementary accessory/accessories

### External venetian blinds with auxiliary motor

### Battery-operated emergency power supply set/battery-operated emergency retraction set

#### Important information on planning

There must be no obstacles or protruding components (e.g. door handles) in the working area of the external venetian blind, which could prevent the blind from opening when the emergency door is opened at the same time. If this cannot be prevented, other technical measures must be taken to prevent the lock of the door from opening before the emergency exit has been cleared by the external venetian blind with battery-operated emergency retraction set.

When installing the product in public buildings it is mandatory to connect the emergency retraction set to a central fire alarm unit.

External venetian blinds with battery-operated emergency retraction set have to be connected to a higher-level control with ice alarm or they have to be deactivated when temperatures drop below +3° C according to the operating instructions. It is optionally possible to add an outside temperature sensor to the battery-operated control so this can be used to shut it down independent of other external venetian blinds when the temperature falls below the minimum value.

The maximum opening times for the battery-operated emergency retraction set were determined based on DIN 18650-1:2010-02 "Automatic door systems – 5.8.2 Additional requirements for doors in emergency routes and emergency exits", because only this standard defines opening times for entire doors and not just for fittings/door locks as e.g. in DIN EN 1125 and DIN EN 179.

The use of external venetian blinds with battery-operated emergency retraction set has to be approved by the appropriate authority.

#### Maintenance

External venetian blinds with battery-operated emergency retraction set have to be serviced and tested at regular intervals, but at least once per year. All service and inspection work may only be carried out by a qualified specialist company (roller shutters and blind specialist) authorised by WAREMA.

If this maintenance is not performed, the statutory warranty obligations become void and there is a danger to life and limb.

#### The battery-operated emergency retraction set is available in the following countries:

- Belgium
- Germany
- England
- France
- Italy
- Luxembourg
- Netherlands
- Norway
- Austria
- Poland
- Switzerland

#### Opening times

The permissible opening time depends on the emergency retraction height or the order dimensions (higher value selected).

Example for the following table (the framed values are the opening times for each example):

##### Example 1B

Emergency retraction height = 2700 mm/order dimension = 3100 mm, therefore the permissible opening time for the height to be cleared of 2700 mm is 4.65 sec

##### Example 2B

Emergency retraction height = 3000 mm/order dimension = 2600 mm, therefore the permissible opening time for the height to be cleared of 3000 mm is 4.5 sec

Emergency retraction height	Order dimension (slat size)	Permissible opening times
Up to 2000 mm	Up to 2000 mm	3.00 s
Up to 2100 mm	Up to 2100 mm	3.15 s
Up to 2200 mm	Up to 2200 mm	3.30 s
Up to 2300 mm	Up to 2300 mm	3.45 s
Up to 2400 mm	Up to 2400 mm	3.60 s
Up to 2500 mm	Up to 2500 mm	3.75 s
Up to 2600 mm	Up to 2600 mm	3.90 s
Up to 2700 mm	Up to 2700 mm	4.05 s
Up to 2800 mm	Up to 2800 mm	4.20 s
Up to 2900 mm	Up to 2900 mm	4.35 s
Up to 3000 mm	Up to 3000 mm	4.50 s
Up to 3000 mm	Up to 3100 mm	4.65 s
Up to 3000 mm	Up to 3200 mm	4.80 s
Up to 3000 mm	Up to 3300 mm	4.95 s
Up to 3000 mm	Up to 3400 mm	5.10 s
Up to 3000 mm	Up to 3500 mm	5.25 secs

The emergency retraction time is based on the minimum opening time of automatic door systems according to DIN 18650-1:2010-02. Automatic door systems – Part 1: Product requirements and testing methods

## Mounting example

# External venetian blinds with auxiliary motor/emergency retraction/emergency power supply set

## Beaded slats with rail guidance

E 80 A6 S ANR/ANS with angular cover panel

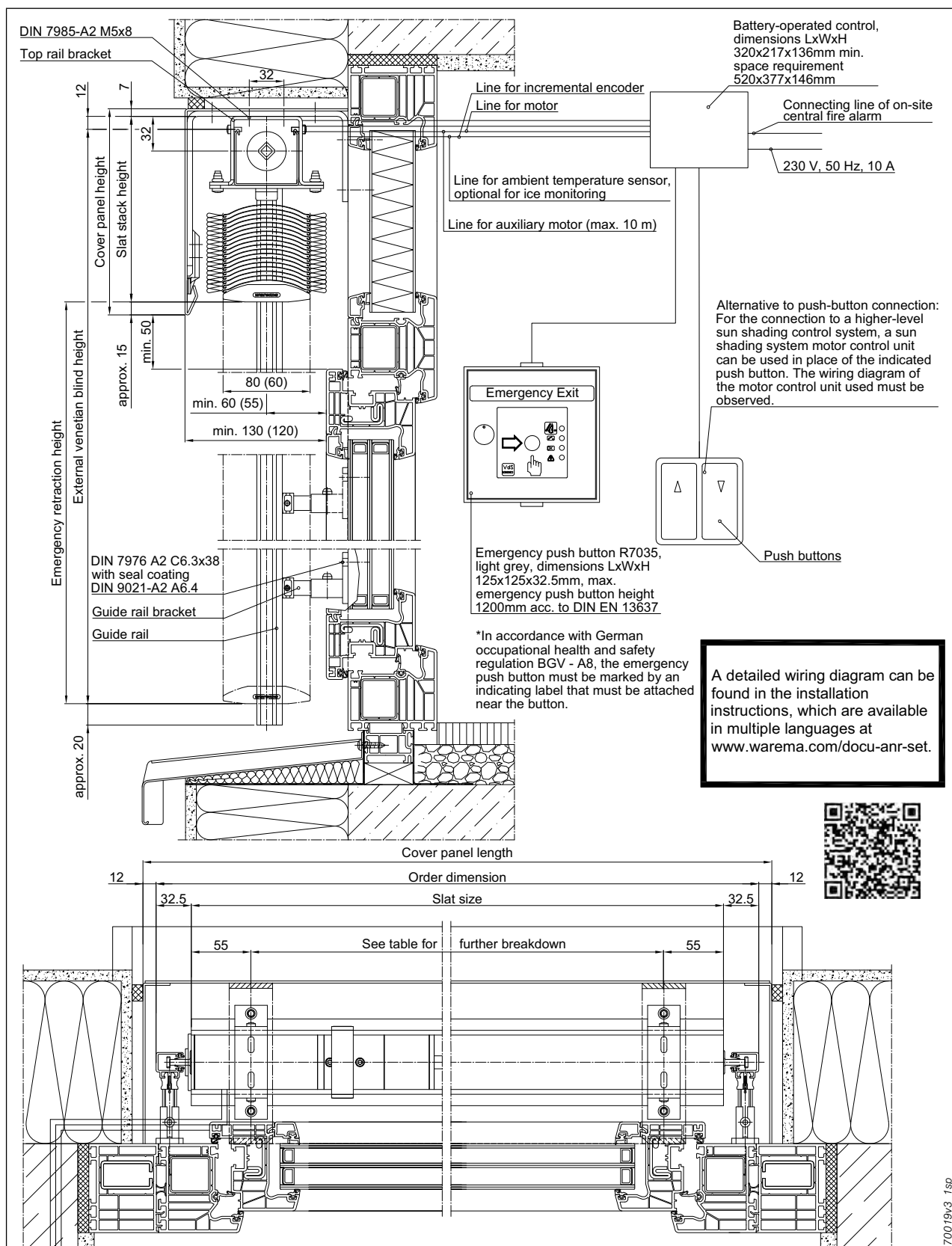


fig. 370: Supplementary accessories for external venetian blinds with auxiliary motor and battery-supported emergency retraction/emergency power supply set

## Supplementary accessory/accessories

### Emergency power supply kit for sun shading products

The emergency power supply kit for 230 V AC sun shading drives consists of a UPS (uninterrupted power supply) and the motor control unit (MSE) emergency power supply kit. The unit permits automatic, safe and higher-level raising of the connected sun shading products:

- In the case of a mains failure
- Through an on-site central control unit contact in an emergency
- Via an connectable push button (optional)

#### Intended use

The emergency power supply kit is a comfort control system intended to ensure that sun shading products are raised in the event of a power supply interruption.

#### The following regulations apply to Germany:

For buildings used solely in a private capacity, the kit can be used on a secondary emergency route, provided that the person responsible for fire safety under the applicable state building regulations (Section 66 German Model Building Code (MBO)) has inspected and approved the individual case of application.

#### WARNING

The emergency power supply kit must not be used on escape or primary emergency routes in public buildings! Use on a secondary emergency route is only permissible if the person responsible for fire safety according to the applicable state building regulations (Section 66 MBO) has inspected the individual application example and approved installation of an emergency power supply kit for the window/door to be shaded.

#### The following applies to the rest of the EU and Switzerland:

Compliance with legal provisions and country-specific regulations on site is the responsibility of the ordering party. There may be regional regulations and conditions that prohibit use of electrically operated sun shading systems with the emergency power supply kit. However, these cannot be investigated by WAREMA in every case.

#### Note:

Time required to move sun shading products with the emergency power supply kit per 2500 mm of height:

- External venetian blinds with standard motor, approx. 70 s
- Roller shutters with standard motor, e.g. approx. 45 s (depends on shutter profile)
- Window awnings with standard motor, e.g. approx. 100 s (depending on shaft and unit type)

#### Function

When the MCU emergency power supply kit is operating normally (STATUS LED lights up green), the upstream switching element (actuator, MCU or venetian blind switch) is directly connected to the sun shading drive. When the MCU emergency power supply kit is activated (STATUS LED lights up red), the sun shading drive is decoupled from the upstream switching element and the MCU emergency power supply kit moves the sun shading product to its upper limit position. The sun shading product then only remains in the upper limit position until the cause of the fault is no

longer present. When the trigger is no longer present (problem resolved), the sun shading product can, depending on the trigger priority, be operated again using the upstream switching element as soon as 5 minutes have passed or a manual reset has been performed.

The following triggers ("alarm signals") can cause a raising movement:

- Loss of the 230 V AC supply
- Empty, faulty or old storage batteries
- UPS overload
- Internal UPS fault
- Building control system (BCS), e.g. fire alarm system
- Up button

The supply to the MSE emergency power supply kit is always provided by the UPS (uninterrupted power supply), which is connected to the 230 V AC mains that also supplies the upstream switching element. This allows the UPS to detect a loss of power to the switching element.

A plug-in card on the UPS signals a possible power failure or UPS fault to the MSE emergency power supply kit. The UPS also protects the MSE emergency power supply kit against undervoltage and overvoltage.

A STATUS LED on the MSE emergency power supply kit indicates the status of the unit (fault: red / normal operation: green).

#### The MSE emergency power supply kit provides inputs with varying priority

##### Low priority = low Prio input

In this case, the sun shading products are raised during an alarm signal (e.g. power failure longer than 25 seconds). When the alarm signal is cancelled, the sun shading products are available for operation again after 5 minutes or a manual reset (reset via an additionally connected reset button, e.g. key-operated switch).

##### High priority = high Prio input

In this case, the sun shading products are raised when an alarm signal is issued (e.g. BCS). The sun shading products must be manually reset here (reset via an additionally connected reset button, e.g. key-operated switch) in order to be released for operation again.



Supplementary accessory/accessories

Emergency power supply kit for sun shading products

Functional principle:

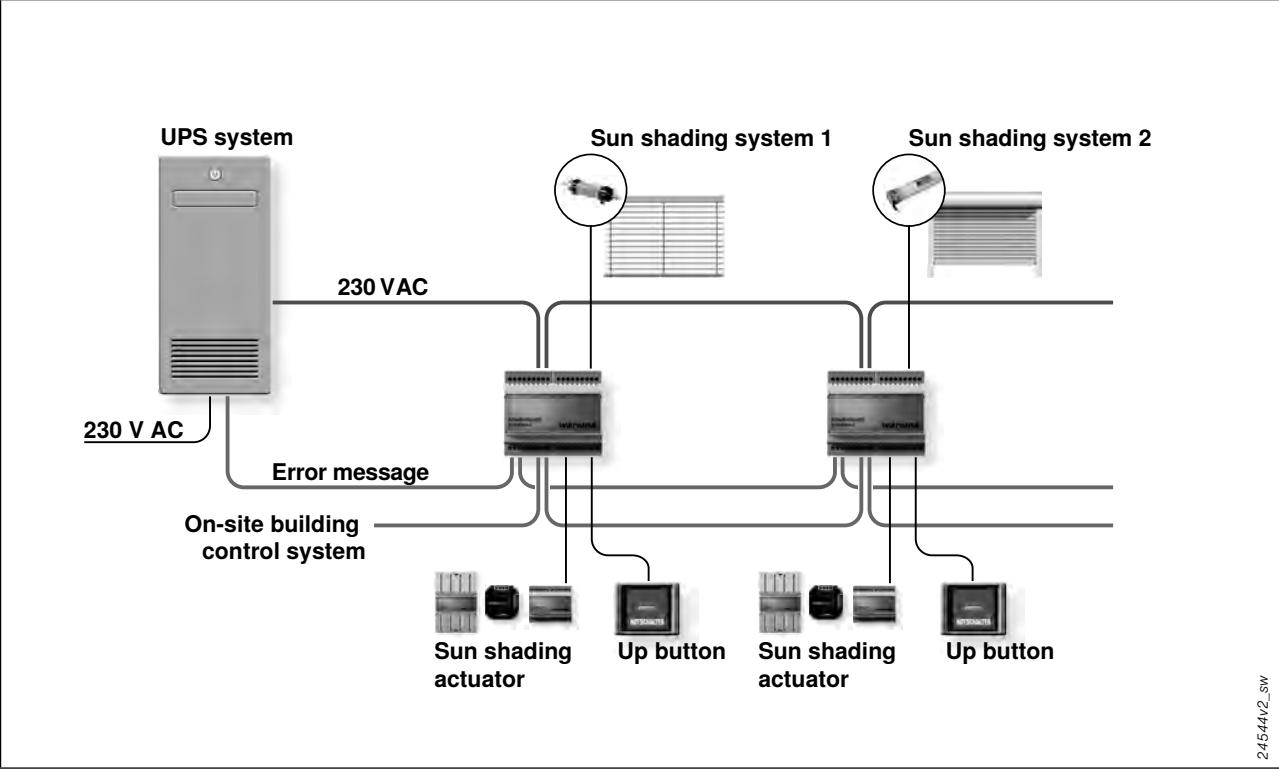


fig. 371: Functioning principle of the emergency power supply kit

## Supplementary accessory/accessories

### Motor with connection for additional crank operation

WAREMA external venetian blinds with motor with connection for additional crank operation are used if external venetian blinds with motor operation have to be opened by means of an additional crank, in the event of power failure or defect. For use in escape routes the local regulations have to be taken into account and approval from a responsible body is required. In this case a yearly maintenance and functional check have to be carried out obligatorily.

Types	Construction limit values in mm			
	Individual unit			
	Width		Height	Area in m²
	min.	max.		
E 60/80 A2 S	900	5000	4000	13
E 60/80 A6 S	900	5000	5000	12
E 50/60/80/100/150 AF	900	5000	4000	12
E 60/80/100 AF A6	900	5000	4000	12
E 73/90/93 A6	900	4500	4300	11

Tab. 22: Construction limit values for external venetian blinds with motor with connection for additional crank operation

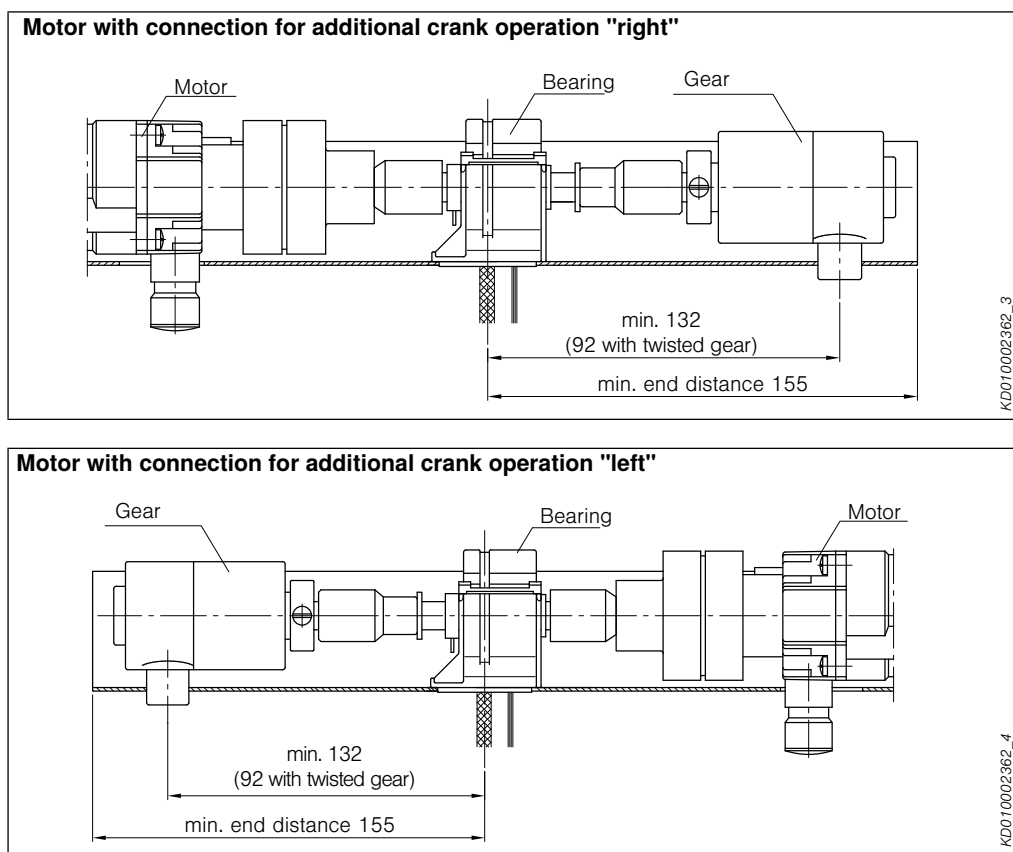


fig. 372: Motor with connection for additional crank operation

Maximum swivelling range gear see page 374.

## Supplementary accessory/accessories

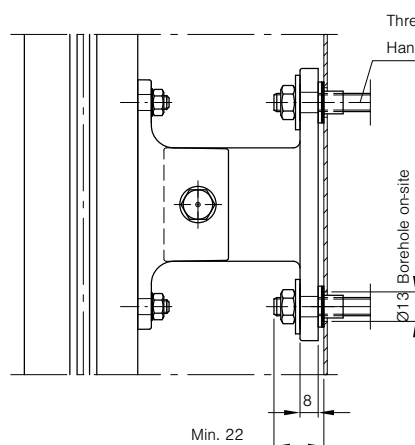
### WAREMA stop nut

### Fixing to transom and mullion facade or wood/aluminium window

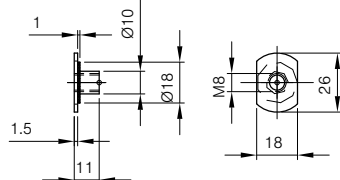
The WAREMA stop nut enables mounting on facade cover strips with the smallest possible spacing of the brackets and without exerting pressure on the cover strip. In comparison

to conventional nuts for locking on the facade bolts, this reduces the distance between console and cover strip by up to 10mm.

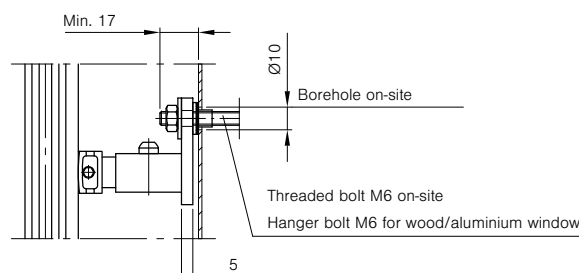
#### WAREMA stop nut and EPDM gasket: Example: guide rail bracket H101



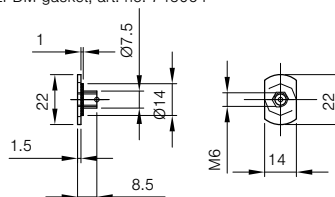
Stop nut M8, art. no. 711043  
EPDM gasket, art. no. 745065



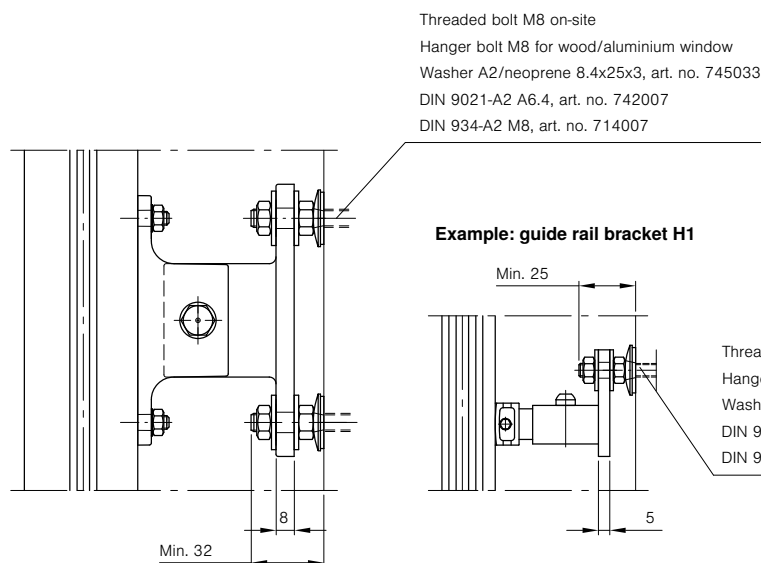
#### Example: guide rail bracket H1



Stop nut M6, art. no. 711021  
EPDM gasket, art. no. 745064



#### Lock nut and gasket: Example: guide rail bracket H101



#### Example: guide rail bracket H1

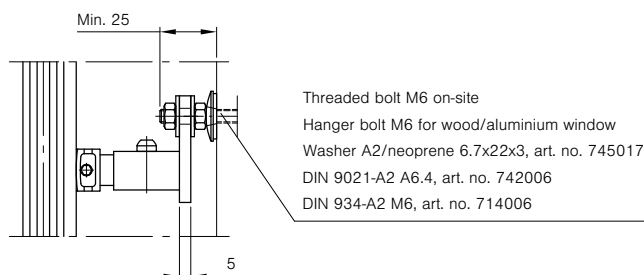


fig. 373: WAREMA fixing system with stop nut

kd010002557

## Supplementary accessory/accessories

### Self-sealing fixing system

#### Sealing spacing disc for mounting on wood, resistant to corrosion

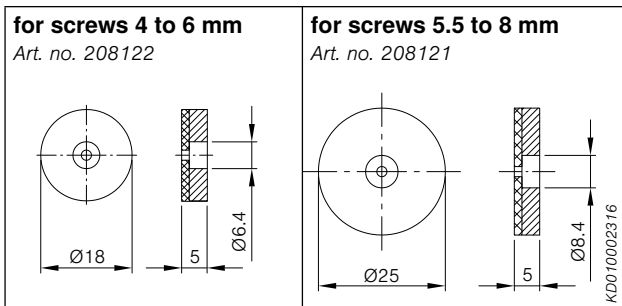


fig. 374: Sealing spacing discs

#### Example: guide rail bracket H 101

##### Sealing spacing disc for fixing to wood

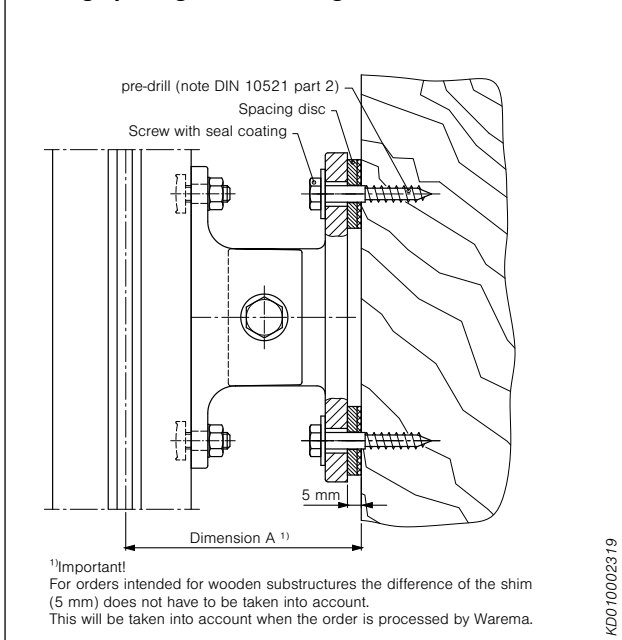


fig. 375: Sealing spacing disc

You can find further fixing material in our price list fixing systems or online under <http://befestigungsberater.warema.de>.

#### Hanger bolts with seal coating

Art. no.	Head shape		Number
746187		M6x70	
746188		M6x80	
746189		M6x130	
746239		M8x90	
746244		M8x110	
746245		M8x130	
746236		M8x150	
746242		M8x160	
746234		M8x180	
746248		M8x200	

#### Hanger bolts without seal coating (for fixing in screw anchor)

Art. no.	Head shape		Number
746048		M6x130	
746017		M8x90	
746064		M8x110	
746065		M8x130	
746050		M8x160	

#### WARWIC bolts with seal coating

Art. no.	Head shape		Number
557214		M8x90	
557215		M8x100	
557216		M8x110	
557217		M8x120	
557218		M8x130	
557219		M8x140	
557220		M8x160	
557221		M8x180	

## Supplementary accessory/accessories

### Fixing to exterior insulation and finish systems

#### fischer Thermax 8/Thermax 10

The thermal separation module for safe anchoring in exterior insulation and finish systems. Not suitable for cable-guided external venetian blinds.

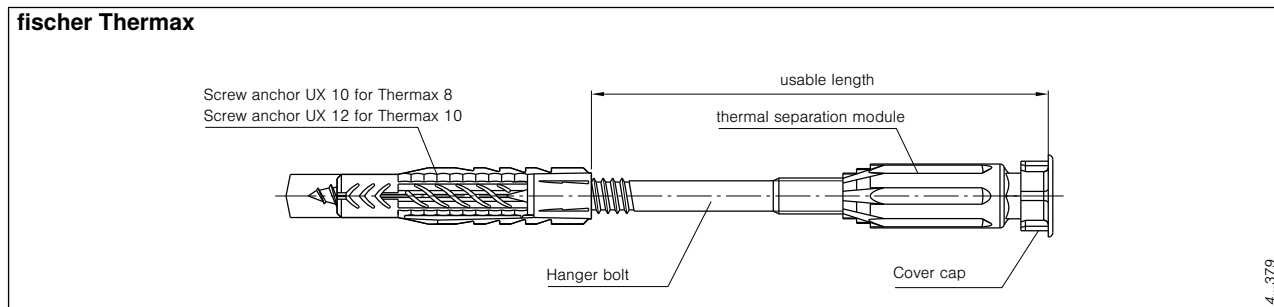


fig. 376: fischer Thermax

Art. no.	Designation	Usable length in mm
791041	Thermax 8/60 M6	45–60
791042	Thermax 8/80 M6	60–80
791043	Thermax 8/100 M6	80–100
791044	Thermax 8/120 M6	100–120
791045	Thermax 8/140 M6	120–140
791046	Thermax 8/160 M6	140–160
791047	Thermax 8/180 M6	160–180
791048	Thermax 10/100 M6	80–100
791049	Thermax 10/120 M6	100–120
791050	Thermax 10/140 M6	120–140
791051	Thermax 10/160 M6	140–160
791052	Thermax 10/180 M6	160–180
791053	Thermax 10/100 M8	80–100
791054	Thermax 10/120 M8	100–120
791055	Thermax 10/140 M8	120–140
791056	Thermax 10/160 M8	140–160

Price and delivery time on request.

General information

Product characteristics

Basic facade external venetian blinds

Premium facade venetian blinds

Complete external venetian blinds

Light guidance/ external venetian blinds

Guides

Cover panels

Planning

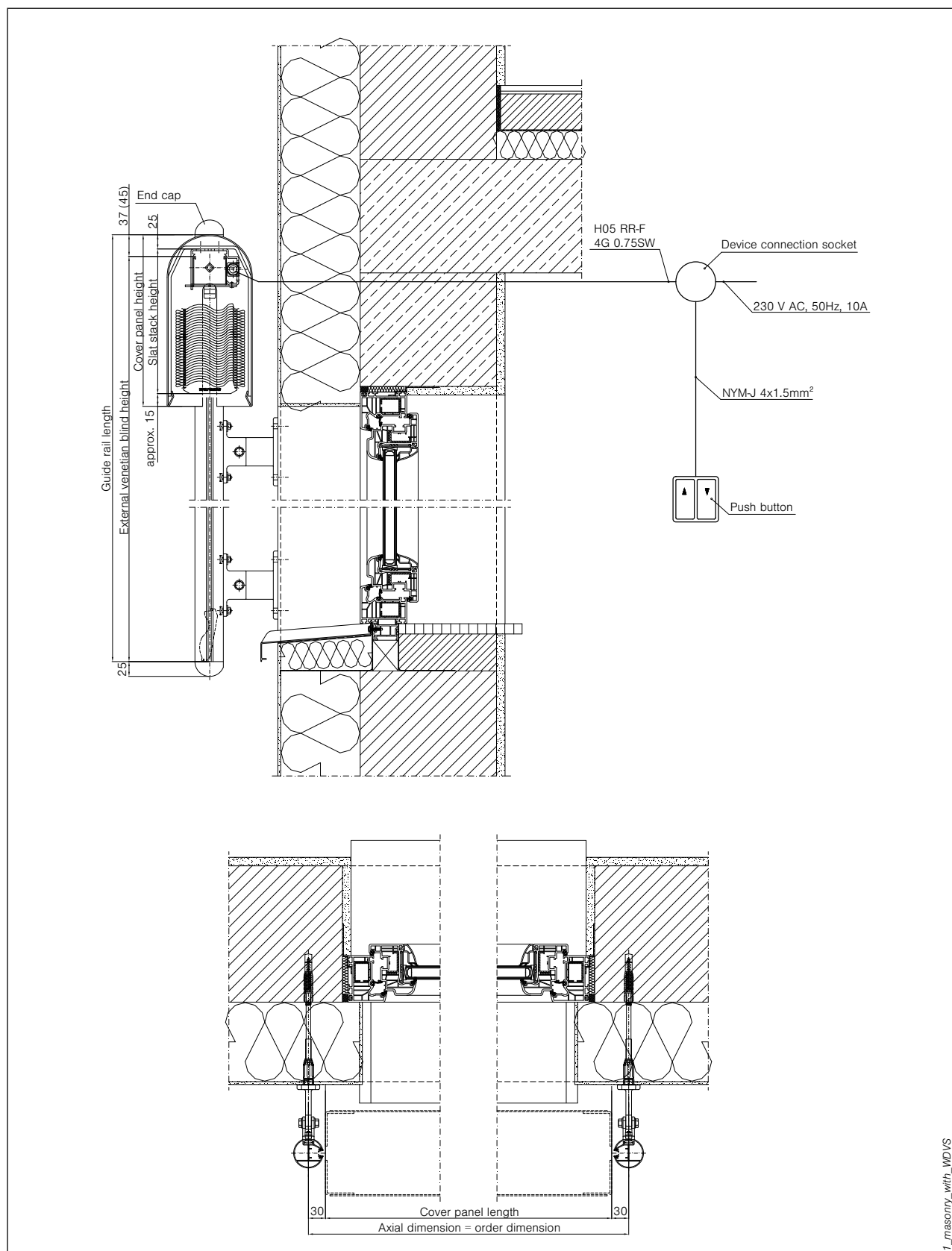
Safety systems Accessories

Drives Control systems

## Mounting example

### Dim-out slat with rail guidance, fischer Thermax

E 90 A6, self-supporting, with round-shaped cover panel, fischer Thermax  
on exterior insulation and finish system 140 mm



1\_masonry\_with\_WDVS

fig. 377: Mounting example for external venetian blind E 90 A6 self-supporting with round-shaped cover panel

Mounting example

Dim-out slat with rail guidance, fischer Thermax

E 90 A6, with sloped angular cover panel 04, Fischer Thermax

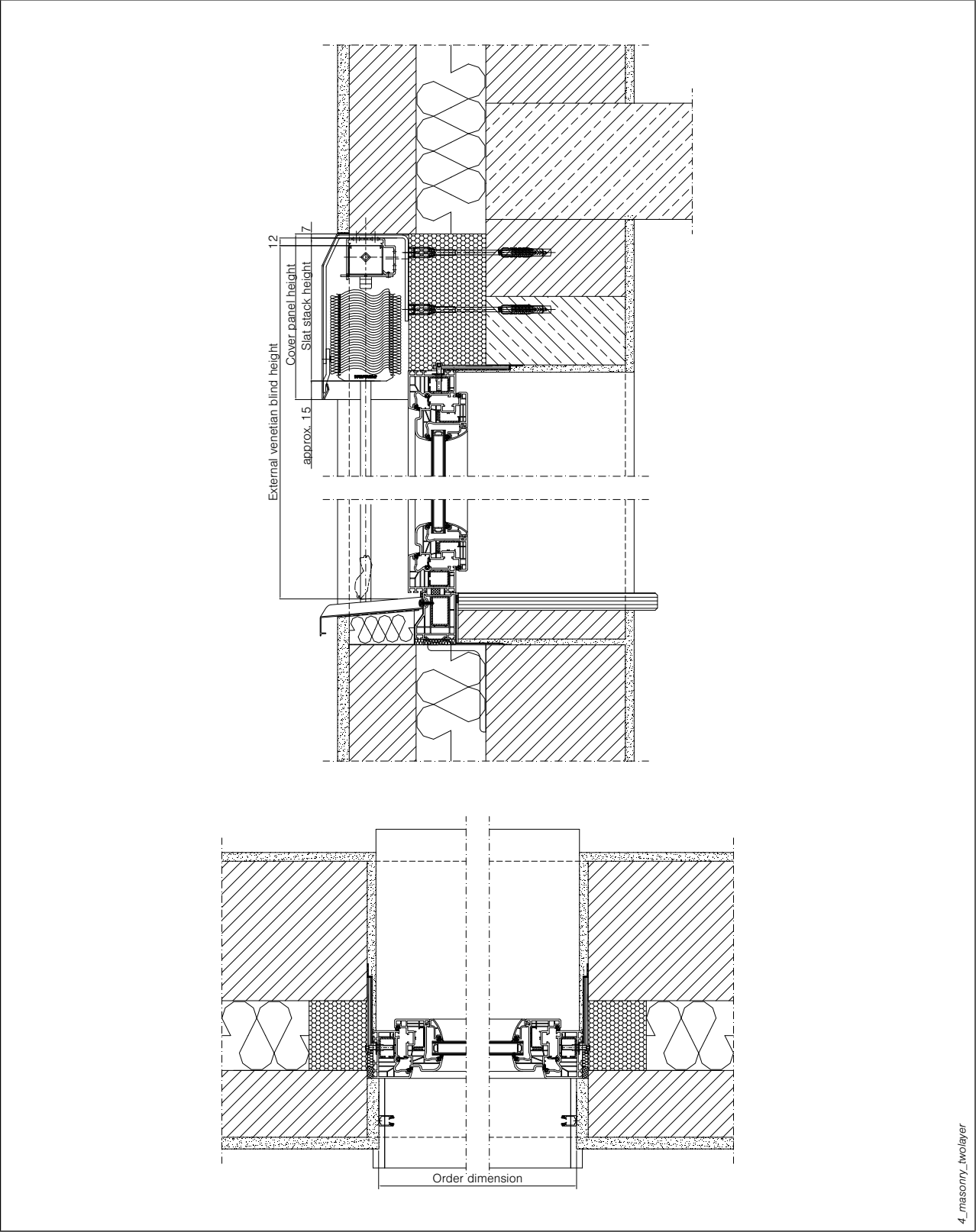


fig. 378: Mounting example for external venetian blind E 90 A6 with sloped angular cover panel

Drives Control systems	Safety systems Accessories	Planning	Cover panels	Guides	Light guidance/ external venetian blinds	Complete external venetian blinds	Premium facade venetian blinds	Basic facade external venetian blinds	Product characteristics	General information
---------------------------	-------------------------------	----------	--------------	--------	--	--------------------------------------	-----------------------------------	---	----------------------------	------------------------

## Supplementary accessory/accessories

### WAREMA insulating plate

#### Reducing thermal bridges

The WAREMA insulating plate provides thermal separation when mounting brackets, fixing brackets and guide rail brackets are mounted in the insulation. This reduces heat loss resulting from mounting components and effectively

lowers energy loss. 2 or 3 plates can be used between bracket and mounting substructure for even better thermal separation.

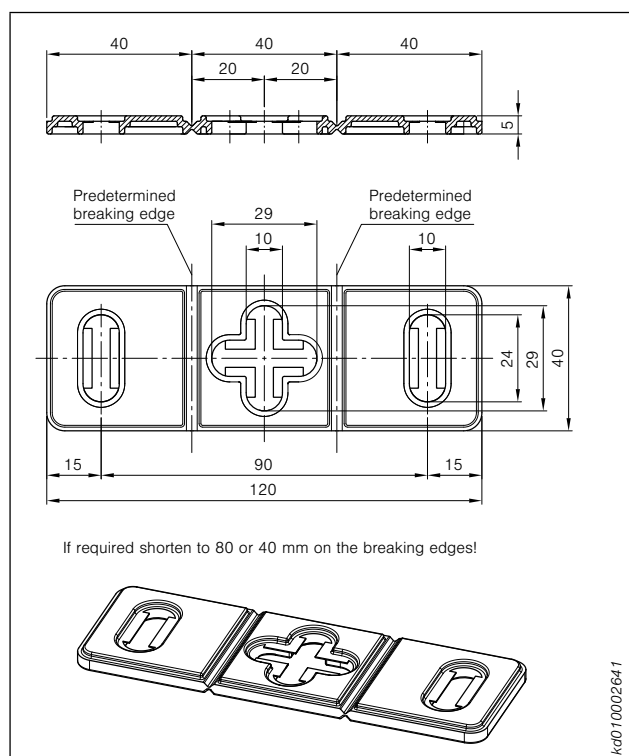


fig. 379: WAREMA insulating plate

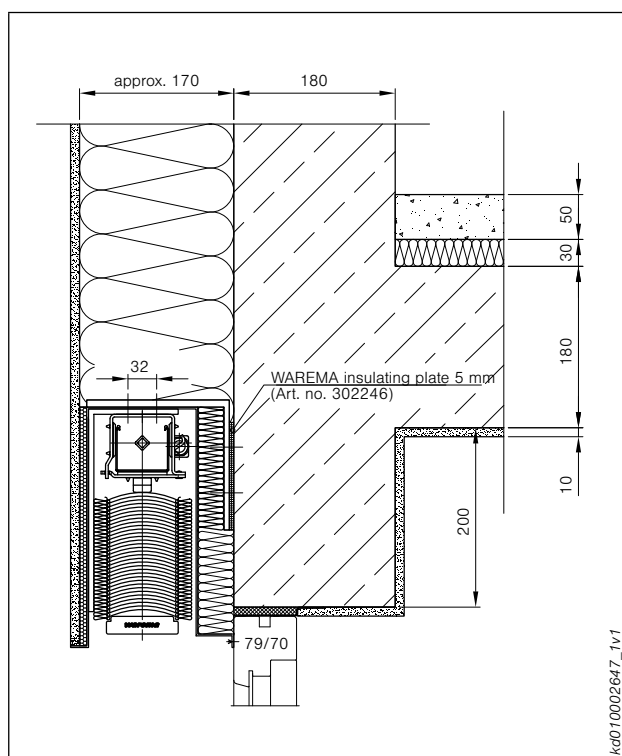


fig. 380: Mounting example for WAREMA insulating plate



# Contents

## Drives

### Drives

Operating the motor – Motor positioning .....	356
WAREMA drive solutions .....	359
Solar drive .....	366
Mechanical coupling .....	371
Crank operation .....	374
Cord operation .....	384

### Control systems

Function overview .....	386
EWFS – Standardised WAREMA Radio System .....	388
WMS – WAREMA Mobile System .....	389
WAREMA Wisotronic .....	390
WAREMA climatronic® 3.0 .....	391

General  
information

Product  
characteristics

Basic facade  
external venetian  
blinds

Premium facade  
venetian blinds

Complete external  
venetian blinds

Light guidance/  
external venetian  
blinds

Guides

Cover panels

Planning

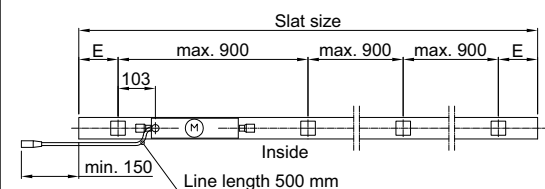
Safety systems  
Accessories

Drives  
Control systems

## Operating the motor – Motor positioning

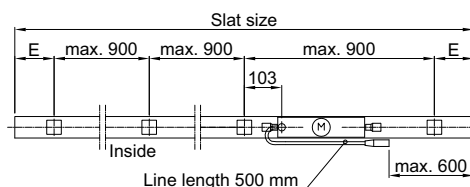
### External venetian blinds and external blinds E (top rail 59 x 51 mm)

**Length of cable – central motor on the left**



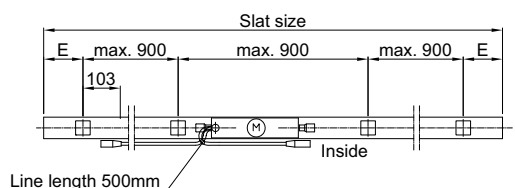
70426\_2sd

**Length of cable – central motor on the right**



70427 208

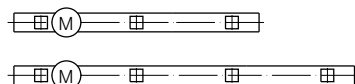
**Length of cable – central motor in the centre**



70428\_2sp

**Individual unit – central motor on the left**

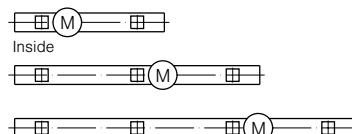
Central motor is situated in the left section.



KD010002099\_1

**Individual unit – central motor on the right**

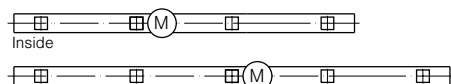
The central motor is situated in the right section.



✓D0010003000 3

**Individual unit – central motor in middle**

The central motor is situated in the middle of the curtain



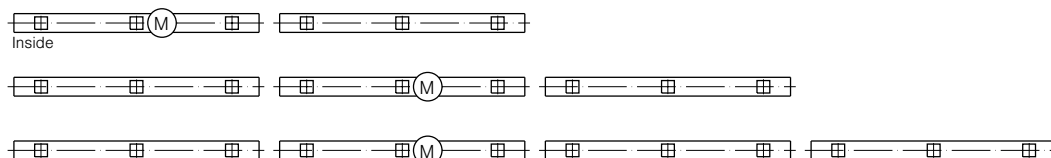
*Even number of bearings: central motor between the two central bearings.*

*Uneven number of bearings: central motor to the right of the central bearing.*

KD010002099\_3

**With flat slats with guide rails the middle motor can only be positioned in the right or left section.**

**Group units – recommended position for the middle motors**



*Even number of sun shading products: central motor in the left sun shading product when viewed from the centre.*

Even number of sun shading products: Middle motor in the middle sun shading products, max. 2 sun shading product can be coupled at the side.

*Central motor in the drive curtain: see individual unit.*

10010003000 1

fig. 381: Arrangement of the middle motors

Drives

Operating the motor – Motor positioning

Double curtain E 80 A2 S D/A6 S D/AFD (top rail 100x51 mm)

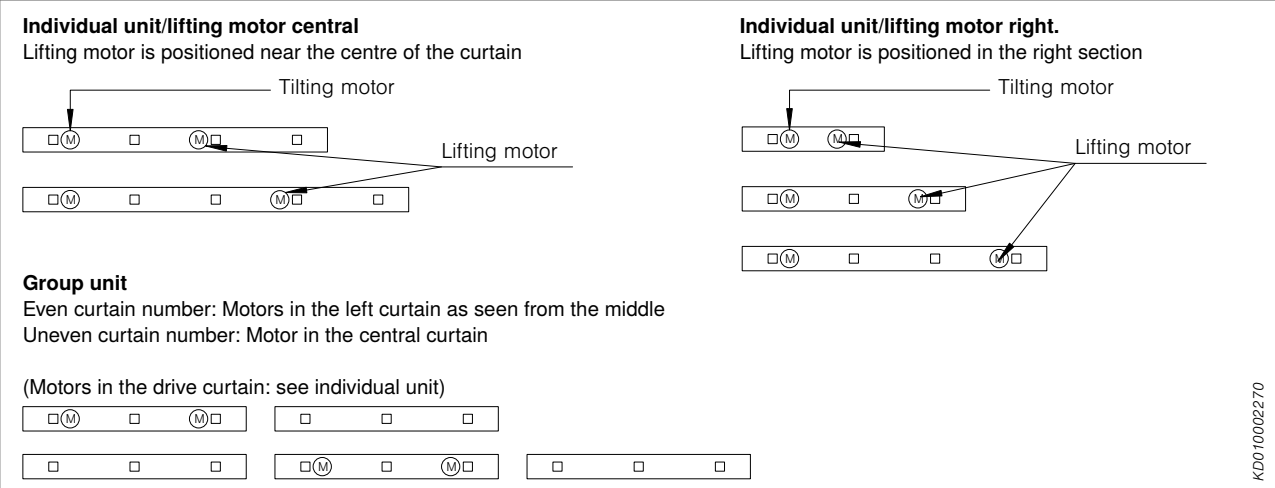


fig. 382: Arrangement of the middle motors

Daylight guiding venetian blind with double curtain E 80 LD (top rail 100 x 51 mm)

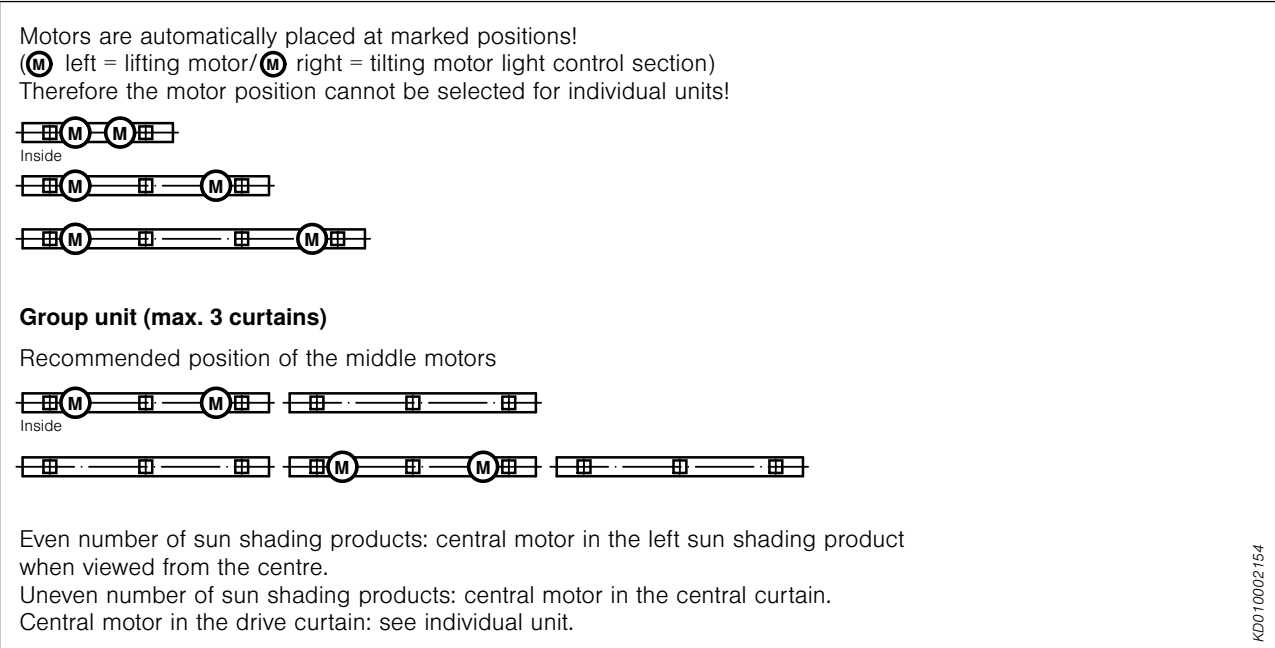


fig. 383: Arrangement of motors for individual and group units

## Overview

### Drives

WAREMA only uses innovative drives from reliable European quality suppliers, e.g. Dunkermotoren and Geiger-Antriebstechnik. These correspond to the highest quality standards and are being comprehensively tested continuously.

All drive solutions optimally match the corresponding WAREMA sun shading products as well as WAREMA control systems and are continuously further developed.

#### Technologies at a glance

##### Drive with mechanical limit switch-off

- Proven track record
- Reliable and precise
- Intuitive setting
- The following motors are available:

##### **Basic drive**

The slats are raised and lowered as well as tilted

##### **STM motor (super-fast terrace motor)**

Designed for quicker clearance of patio and balcony doors. Basic functions such as basic motor, however with approx. 3-fold movement speed. The speed of the slat tilting remains unchanged with regard to the slat tilting for basic motors.

Can also be used in office buildings to reduce travel times of the sun shading system.

##### **Silent motor**

Like the basic motor, but with components optimised with regard to reduction of running and braking noises

##### **Motor with position feedback**

Maximised positioning and tilting precision in connection with a suitable WAREMA control

##### **Motor with additional manual operation**

Operation via motor or manual crank possible

##### **Motor with 2 lower limit positions**

No room dim-out when lowering (only in connection with the WAREMA work setting bearing)

##### Drives with electronic limit switch-off

- Software/functions specially match the WAREMA external venetian blinds
- Comfortable adjustment of the motor limit positions with programming cable
- The following motors are available:

##### **Motor with frost protection**

Switches off in case of blockage (while iced over or in case of jamming the lowered external venetian blind is not damaged)

##### **SMI motor**

Maximised positioning and tilting precision of the slats, high-grade running behaviour (soft start, constant speed, fine adjustment)

##### **Solar motor**

Switches off in case of blockage, maximised positioning and tilting precision of the slats, high-grade running behaviour (soft start, constant speed, fine adjustment), no 230 V mains connection necessary!







## Description

### WAREMA drive solutions




Concealed AC motor with flanged planetary gear and built-in limit switch which switches off in the lower position. When the upper limit position is reached, the blind is switched off by a contact switch. This contact switch is required as the stack might be higher than previously calculated, e.g. due to ice forming on the slats. The upper and lower limit position can be set by using the setting buttons. The motor contains a built-in thermal protection which switches off automatically after approx. 4 minutes of overload and

then completes the selected operation procedure upon reactivation. Each drive is fitted with a miniature plug connector with a flexible cable. When ordering with motor position left or right we recommend to let the on-site cable end protrude by about 1000 mm. The coupling half for customer connection is fitted with bushing connection terminals. The motor must be covered (degree of protection IP44/IP54: "Protection against water spray/water jets from all directions"). Motors for other mains voltages are available on request.

## Applications

Motor type	Basic drive	STM motor <sup>1)</sup>	Silent motor	Motor with position feedback	Motor with additional manual operation	Motor with 2 lower limit positions
Limit switch-off	mechanical	mechanical	mechanical	mechanical	mechanical	mechanical
						
Venetian blind facade systems	●	●	●	○	○	○
Metal system venetian blinds	●	–	●	○	–	–
Venetian blind window systems	●	●	●	–	–	○
vivamatic®	●	–	●	–	–	–
slowturn®	●	–	●	○	○	–
Double curtains	●	–	●	○	–	–
Daylight guiding venetian blinds	●	–	●	○	○	○
Daylight guiding venetian blinds, double curtain	●	–	●	○	–	–
External venetian blinds	●	–	●	○	○	○
Solar external venetian blinds	–	–	–	–	–	–

<sup>1)</sup> 3-fold movement speed with constant tilting and slat positioning speed. Cannot be used for front-mounted external venetian blinds or asymmetrical external venetian blinds

Motor type	Motor with frost protection	SMI motor	Solar motor
Limit switch-off	electronic	electronic	electronic
			
Venetian blind facade systems	○	○	–
Metal system venetian blinds	○	–	–
Venetian blind window systems	○	○	–
vivamatic®	–	–	–
slowturn®	○	–	–
Double curtains	–	–	–
Daylight guiding venetian blinds	○	○	–
Daylight guiding venetian blinds, double curtain	–	–	–
External venetian blinds	○	○	–
Solar external venetian blinds	–	–	●

● standard; ○ optionally; – not possible

## Description

### WAREMA drive solutions

#### Function overview

Motor type	Basic drive	STM	Silent motor	Motor with position feedback	Motor with additional manual operation
Limit switch-off	mechanical	mechanical	mechanical	mechanical	mechanical
adjustable limit positions bottom/top	●	●	●	●	●
Safety switch-off	● <sup>1)</sup>	— <sup>2)</sup>	● <sup>1)</sup>	● <sup>1)</sup>	● <sup>1)</sup>
Speed-controlled simultaneous movement	—	—	—	—	—
Accurate positioning	—	—	—	●	—
Position feedback	—	—	—	●	—
Slow tilt	—	—	—	—	—
Soft start/stop	—	—	—	—	—
Compatible control systems	controllable with all WAREMA control product lines for 230 V	controllable with all WAREMA control product lines for 230 V	controllable with all WAREMA control product lines for 230 V	LON, WAREMA climatronic®, BALine	controllable with all WAREMA control product lines for 230 V

<sup>1)</sup> Contact switch top

<sup>2)</sup> Torque overload protection

Motor type	Motor with 2 lower limit positions	Motor with frost protection	SMI motor	Solar motor
Limit switch-off	mechanical	electronic	electronic	electronic
adjustable limit positions bottom/top	—	●	●	●
Safety switch-off	● <sup>1)</sup>	● <sup>1)</sup>	● <sup>1)</sup>	● <sup>2)</sup>
Speed-controlled simultaneous movement	—	—	●	●
Accurate positioning	—	—	●	—
Position feedback	—	—	●	—
Slow tilt	—	—	●	●
Soft start/stop	—	—	●	●
Compatible control systems	WAREMA motor control unit AS2TE	controllable with all WAREMA control product lines for 230 V, except for EWFS and WMS	LON, WAREMA climatronic®, BALine	EWFS solar control for external venetian blinds

<sup>1)</sup> Contact switch top

<sup>2)</sup> Contact switch top and torque switch-off

● standard; — not available

#### Adjustable limit positions bottom/top

Facilitate an accurate switch-off of the external venetian blinds both in the upper and in the lower limit position.

#### Safety switch-off

A protection device depending on the motor type (contact switch or torque monitoring) additionally protects the external venetian blind from damage during raising.

#### Speed-controlled simultaneous movement

Facilitates an almost synchronous raising and lowering for external venetian blinds with the same height, independent from the width by means of continuous, load-independent motor speed.

#### Accurate positioning

At a suitable operating panel the desired curtain height can be comfortably set by entering a percentage value of 0% (completely retracted curtain) to 100% (extended curtain). The slat angle is determined by entering an angle bracket value (in degrees).

#### Position feedback

The position feedback of the motor allows for very precise approaching of the set positions. By means of impulse counting of the covered motor revolutions the curtain height and the slat angle can be determined very precisely and reproducibly.

#### Slow tilting

During manual operation a very precise slat tilting is possible due to the reduced slat tilting speed.

During automatic operation more precise tilting steps (approx. 5° instead of 15°) can be controlled.

#### Soft start/stop

The motor does not start with full speed, but continuously accelerates until the corresponding movement speed has been reached.

The moving to the limit positions is carried out with continuously decreasing speed until standstill.

## Description

# WAREMA drive solutions

### Technical data

Motor type	Basic drive	STM	Silent motor	Motor with position feedback	Motor with additional manual operation	Motor with 2 lower limit positions
Limit switch-off	mechanical	mechanical	mechanical	mechanical	mechanical	mechanical
Rated voltage	230 V, 50 Hz					
Torque	6/10/20 Nm	6 Nm	6/10 Nm	9/19 Nm	9 Nm	6/10/19 Nm
Speed	26 rpm	74 rpm	26 rpm	26 rpm	26 rpm	26 rpm
Rated power consumption	108/140/218 W	190 W	108/140/218 W	131/218 W	131 W	100/140/218 W
Nominal current	0.49/0.67/0.97 A	0.85 A	0.49/0.67/0.97 A	0.57/0.97 A	0.57 A	0.45/0.67/0.97 W
Idling losses (Standby)	No	No	No	n/a	No	No
Minimum run time (at 23 °C)	4 min					
Degree of protection	IP54					
Motor line	0.5 m <sup>1)</sup>	0.5 m <sup>1)</sup>	0.5 m <sup>1)</sup>	2x 0.5 m <sup>2</sup>	0.5 m	0.5 m
Plug-in connector	STAS 3	STAS 3	STAS 3	STAS 3, STAS 200	STAS 3	STAS 4
Overheat protection	Yes					
Operating temperature (temporary)	-10 to +60 °C (-20 to +80 °C)					
Test/programming cable	Standard test cable up/down	Standard test cable up/down	Standard test cable up/down	Standard test cable up/down	Standard test cable up/down	WAREMA Art. no. 634089

<sup>1)</sup> Motor line 0.5 m is not available for all motor types.

Motor type	Motor with frost protection	SMI motor	Solar motor	Basic motor 120 V	Basic motor 100 V (D 339)
Limit switch-off	electronic	electronic	electronic	mechanical	mechanical
Rated voltage	230 V, 50 Hz		12 V DC	120 V, 60 Hz	100 V, 50–60 Hz
Torque	6/16 Nm	2x 5 Nm	2x 1.5 Nm	8/16 Nm	9 Nm
Speed	26 rpm		20 rpm	31 rpm	26–31 rpm
Rated power consumption	90/150 W	103 W	19.2 W	132/216 W	162 W
Nominal current	0.4/0.7 A	0.91 A	1.6 A	1.21/1.8 A	1.71 A
Idling losses (Standby)	No	1.17 W	No	No	No
Minimum run time (at 23 °C)	6 min			4 min	4 min
Degree of protection	IP54				
Motor line	0.5 m				
Plug-in connector	STAS 3	STAS 4	Molex 5557	STAS 3	STAS 3
Overheat protection	Yes		No	Yes	
Operating temperature (temporary)	-10 to +60 °C (-20 to +80 °C)				
Test/programming cable	WAREMA Art. no. 616226	WAREMA Art. no. 616227	WAREMA Art. no. 1002808	Standard test cable up/down	Standard test cable up/down

## Description

### WAREMA drive solutions

WAREMA only uses halogen-free lines which are resistant to UV rays and approved for permanent use outside and correspond to the norm requirements.

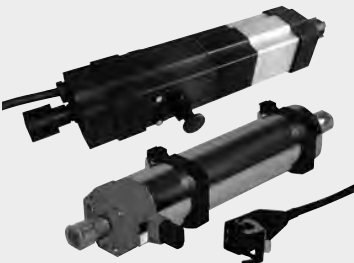
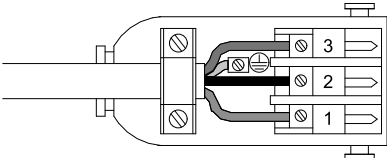
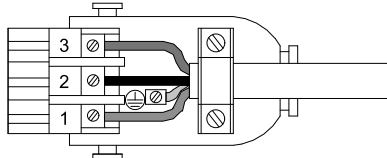

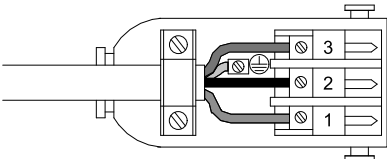
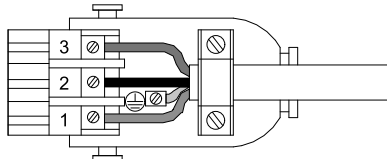
All products comprise motor line with connection plug. For the convenient on-site connection WAREMA delivers the matching plug-in connector for on-site wiring which easily facilitates an all-pole disconnection from the power supply system, if necessary.

### Connecting the plug-in connection

#### Attention!

Follow the wiring diagram carefully to avoid damage to the motor.

WAREMA will not accept liability for damage due to improper installation.

Schematic diagram	Description	Line type house connection	Compatible control
<b>Basic motor (mechanical)/motor with additional manual fixing (mechanical)</b>			
	– Switch-off via contact switch and external switch	H05RR-F 4 G 0.75 mm² black Type WAREMA	controllable with all WAREMA control product lines for 230 V
	<b>Wiring diagram</b> <b>Motor line with STAS 3 plug connector</b>  <p>3 brown 2 black 1 blue ⊕ yellow/green</p> <b>House connection with STAK 3 coupling</b>  <p>3 DOWN command (brown) 2 UP command (black) 1 Neutral conductor (blue) ⊕ PE conductor (yellow/green)</p>		
<b>Motor with frost protection (electronic)</b>			
	– Limit position adjustment by means of programming cable – Torque detection possible	H05RR-F 4 G 0.75 mm² black Type WAREMA	controllable with all WAREMA control product lines for 230 V, except for EWFS and WMS
	<b>Wiring diagram</b> <b>Motor line with STAS 3 plug connector</b>  <p>3 brown 2 black 1 blue ⊕ yellow/green</p> <b>House connection with STAK 3 coupling</b>  <p>3 DOWN command (brown) 2 UP command (black) 1 Neutral conductor (blue) ⊕ PE conductor (yellow/green)</p>		

### Motor with comfort switch-off, ice formation

The GJ 5606 e3 motor type is recommended for asymmetrical external venetian blinds, but can also be used for any other external venetian blinds up to a curtain surface of 8 m².





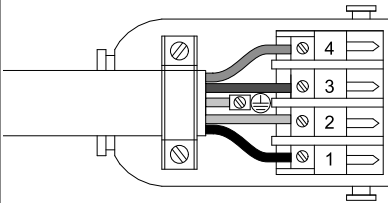
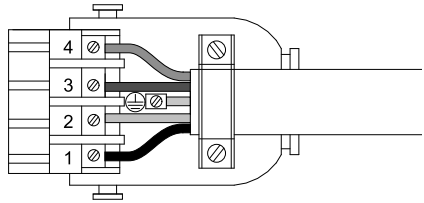
## Description

### WAREMA drive solutions

Schematic diagram	Description	Line type house connection	Compatible control
Motor with position feedback (mechanical)			
	<ul style="list-style-type: none"><li>– Limit position adjustment by means of adjustment button at the motor</li><li>– Position feedback via integrated signal generator</li><li>– accurate positioning is possible by means of a special control</li></ul>	H05RR-F 4 G 0.75 mm² black and LIHCH 2x2x0.14 mm² Type WAREMA	LON, WAREMA climatronic®, BALine
	Wiring diagram		
	Motor line with STAS 3 plug connector	House connection with STAK 3 coupling	
	<p>3 brown 2 black 1 blue ⊕ yellow/green</p>	<p>3 DOWN command (brown) 2 UP command (black) 1 Neutral conductor (blue) ⊕ PE conductor (yellow/green)</p>	
Wiring diagram (at drive) for signal generator (STAS 200)		Wiring diagram (on-site) for signal generator (STAK 200)	
<p>2 red 1 brown ⊕ black</p>	<p>2 Signal (red) 1 Operating voltage V+ (brown) ⊕ Ground 0 V (black)</p>		
Motor with 2 lower limit positions (mechanical)			
	<ul style="list-style-type: none"><li>– Limit position setting not possible</li></ul>	H05RR-F 5 G 0.75 mm² black Type WAREMA	WAREMA motor control unit AS2TE
	Wiring diagram		
	Motor line with STAS 4 plug connector – 2 TE	House connection with STAK 4 coupling – 2 TE	
	<p>4 blue 3 brown 2 grey 1 black ⊕ yellow/green</p>	<p>4 Neutral conductor (blue) 3 Up command (brown) 2 Down command 2 (grey) 1 Down command 1 (black) ⊕ PE conductor (yellow/green)</p>	

## Description

### WAREMA drive solutions

Schematic diagram	Description	Line type house connection	Compatible control
  	<ul style="list-style-type: none"> <li>– Limit position adjustment by means of programming cable</li> <li>– Position feedback via the SMI interface</li> <li>– accurate positioning is possible by means of a special control</li> <li>– Motors can be connected in parallel</li> <li>– Speed-controlled simultaneous movement</li> <li>– Soft start/stop and slow quiet tilting</li> </ul>	H05RR-F 5 G 0.75 mm² black Type WAREMA	LON, WAREMA climatronic®, BAline
	<p><b>Wiring diagram</b></p> <div> <p><b>Motor line with STAS 4 plug connector – SMI</b></p>  <p>           4 blue            3 brown            2 grey            1 black            ⊕ yellow/green         </p> </div> <div> <p><b>House connection with STAK 4 coupling – SMI</b></p>  <p>           4 Neutral conductor (blue)            3 Phase L (brown)            2 I- (grey)            1 I+ (black)            ⊕ PE conductor (yellow/green)         </p> </div>		

Details

# Plug-in connector with WMS/EWFS Plug receiver with enclosure

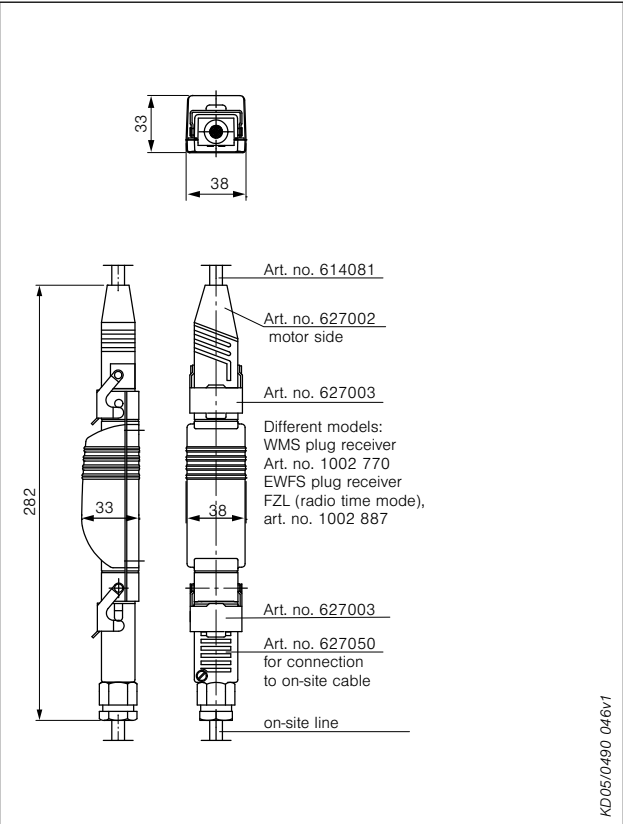


fig. 384: WMS /EWFS radio plug receiver

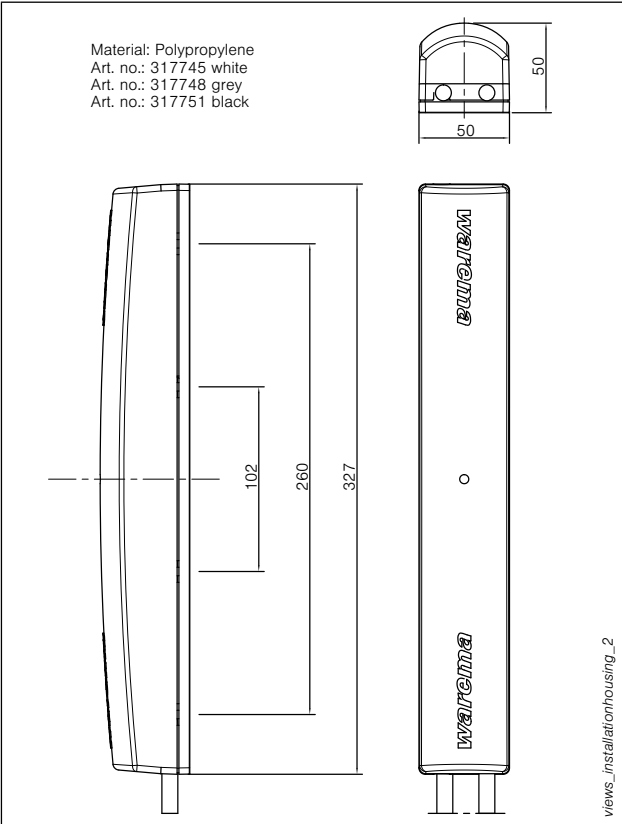


fig. 385: Housing for WMS/EWFS wireless plug receiver

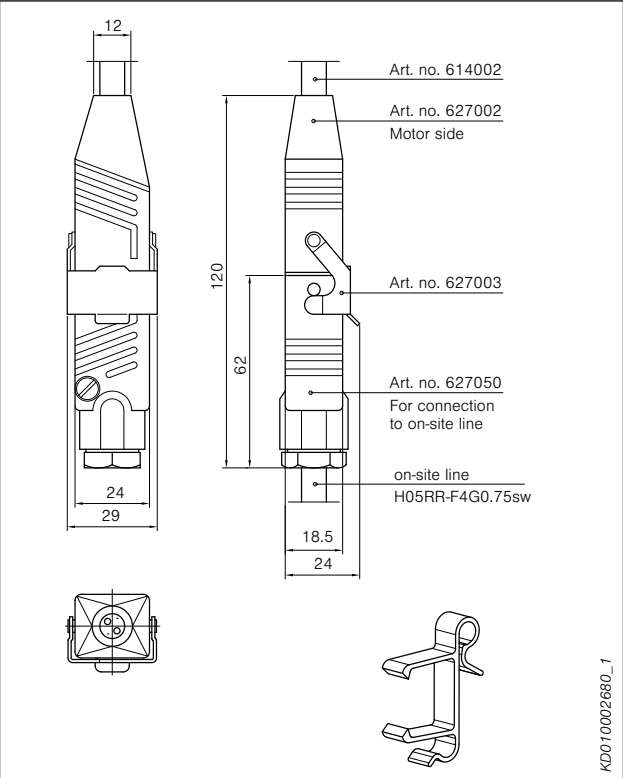


fig. 386: Plug-in connector and plug-in connector holder with integrated cable hook.

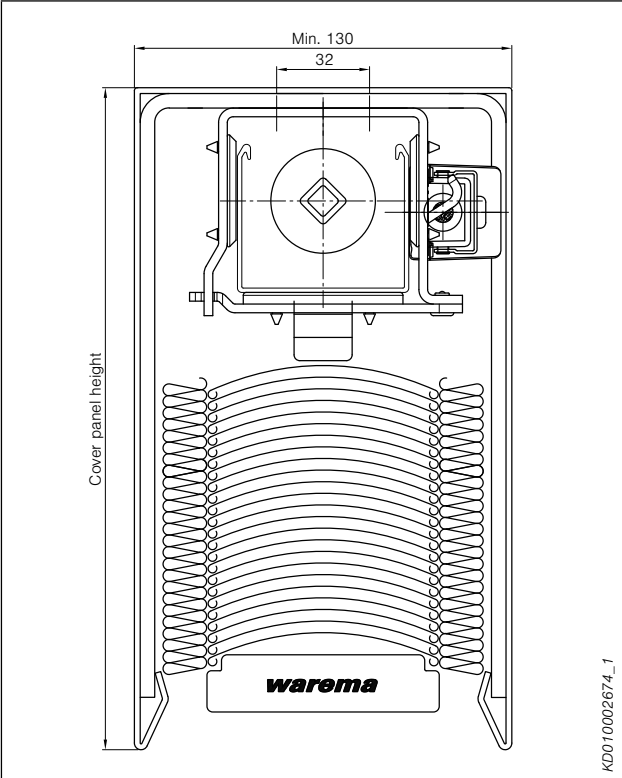


fig. 387: Mounting the radio plug receiver in the external venetian blind cover panel

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

## Drives

### Solar drive

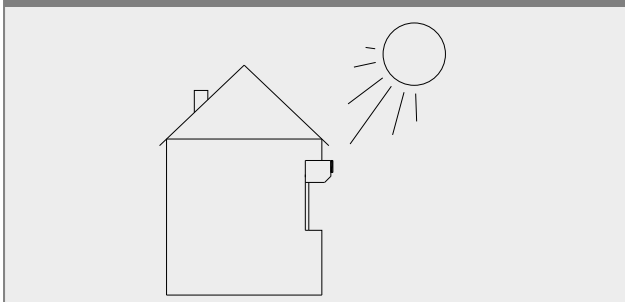
#### Fields of application

When planning installations, please make sure that no obstacles as described below are present at the installation location of the external venetian blind.

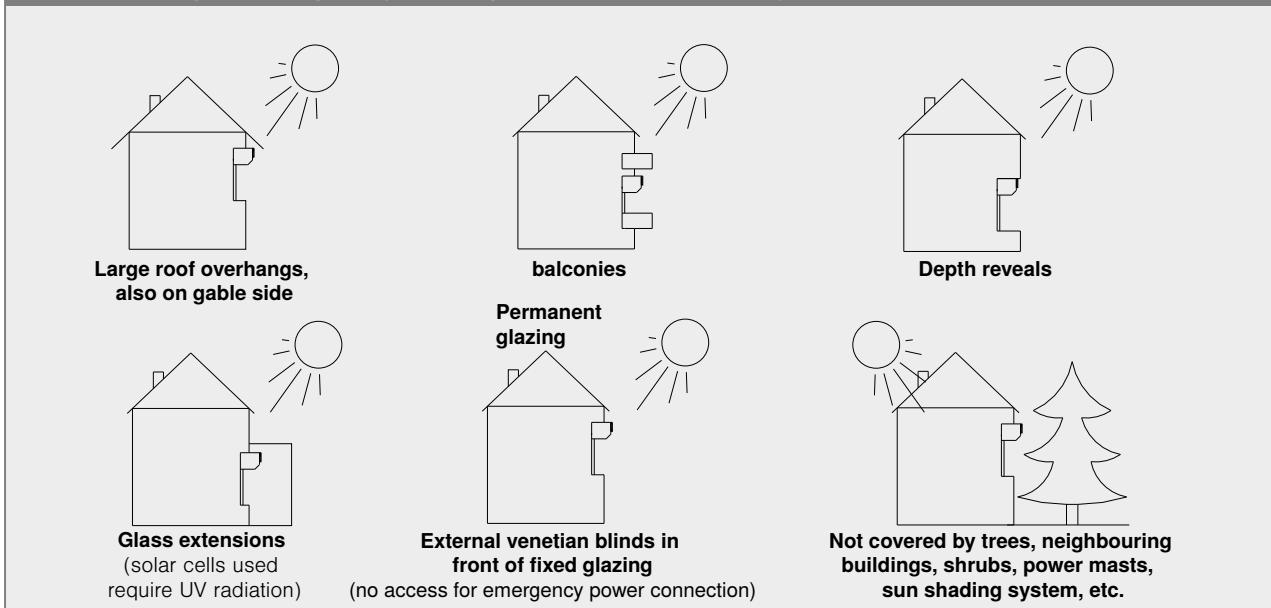
As a rule of thumb, you must ensure that the sky is directly visible from the angle of vision of the solar panel.

In the case of positioning of the shutters in a northern, north-western or north-eastern direction, the solar panel should have an unhindered view of the sky in all directions.

**Ideal state - Positioning: south, west, south-west, south-east and east**



**Unsuitable mounting locations (optionally, the solar panel can be mounted externally in a suitable location)**



**Possible solutions for external solar panel**



## Drives

### Solar drive

#### Solar drive<sup>1)</sup> (optional)

Concealed 12 V DC middle motor with flanged planetary gear and shaft outlet on both sides. Integrated control electronics for speed regulation and limit position limitation. Battery-operated 12 V control with EWFS hand-held radio trans-

mitter, time logic function, 12 V storage battery and solar panel. Adjustable upper and lower limit position, additional limit switch for the upper limit position.

**Note:** Control via weather station not possible!

#### Construction limit values for solar drive<sup>2)</sup>

	Width in mm	
	min.	max.
1 solar panel unit	760	according to maximum height table
2 solar panel units	1100 <sup>1)</sup>	according to maximum height table

<sup>1)</sup> for mounting of solar panel on cover panel.

#### Notes: Construction limit values

In the calculation used as a basis, all areas north of a line running from Koblenz — Fulda — Chemnitz (or north of the 50.3° parallel) are regarded as Central/Northern Germany.

#### Maximum height table for basic facade ext. ven. blinds (solar drive)<sup>2)</sup>

Types	Width <sup>1)</sup> in mm				
	2000	2500	3000	3500	4000
E 80 A2/A6 S	2600	2400	2100	1800	1600
E 80 AF/AF A6	2600	2600	2400	2100	1600
E 73 A6	2600	2200	1900	1600	1500
E 93 A6	2600	2400	2000	1700	1600

<sup>1)</sup> Minimum width 760 mm

#### Maximum height table for asymmetrical ext. ven. blinds (solar drive)

Type	Width (mm)									
	710	1000	1300	1500	1800	2000	2600	3000	3500	4000
E 80 AF SR	2600 (2400)	2600 (2200)	2600 (2000)	2600 (1950)	2600 (1800)	2400 (1750)	1900 (1600)	1700 (1550)	1450 (x)	1300 (x)

■ only valid for E 80 AF SRG

#### Maximum height table for front-mounted ext. ven. blinds (solar drive)

Type	Width in mm									
	760	1000	1300	1500	1800	2000	2500	3000	3500	4000
E 80 A6 S	2600 (2250)	2600 (2100)	2600 (1950)	2600 (1800)	2250 (1750)	2050 (1650)	1750 (1550)	1450 (x)	1250 (x)	1100 (x)
E 73 A6	2600 (2200)	2600 (2000)	2600 (1850)	2400 (1800)	2100 (1700)	1900 (1600)	1600 (1500)	1350 (x)	1150 (x)	1050 (x)
E 80 AF	2600 (2400)	2600 (2200)	2600 (2000)	2600 (1950)	2600 (1800)	2400 (1800)	1950 (1600)	1650 (1550)	1400 (x)	1250 (x)

#### Note: Asymmetrical ext. ven. blinds, front-mounted ext. ven. blinds

The values specified apply to Southern Germany. Solar drives are not possible for higher units.

Values in brackets are meant for Northern and Central Germany. Beyond these values up to maximum height a 2nd solar panel is required.

(x) for widths larger than those specified here, a second solar panel is also required for each type installed in Northern and Central Germany.

<sup>1)</sup> Sold exclusively in Germany, Austria and Switzerland

<sup>2)</sup> In northern and central Germany, a second solar panel is required for blinds >2.5 m<sup>2</sup>. A second solar panel is generally required for north-facing panels in northern and central Germany.

## Drives

### Solar drive

#### Mounting bracket for solar panel

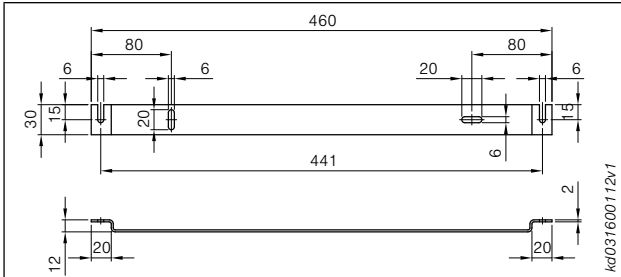


fig. 388: Mounting bracket for external mounting of solar panel

#### Extension cable for solar panel with plug-in connection on both sides

Art. no.	Length of solar panel extension cable
634149	0.7 m
634189	3.0 m
634190	5.0 m
634191	10.0 m

For external mounting of the solar panel, the cable must be protected from UV radiation by installing the cable in a conduit or by similar protective measures.

Additional cable length for the solar panel 3000 mm.

#### Control for solar drive

The control is mounted into the overlap of the collar of the cover panel using grub screws.

Dimensions of control 365 x 128 x 24 mm (w x h x d).

Connecting cable, motor to solar-powered control system 150 mm. Please state the precise position of the control in the cover panel when ordering. The controller can also be surface-mounted in slash-proof positions.

#### Minimum cover panel depth

Minimum cover panel depth 150 mm (with E90/E93 160 mm) for mounting of the solar-powered control within the cover panel.

#### Solar panel

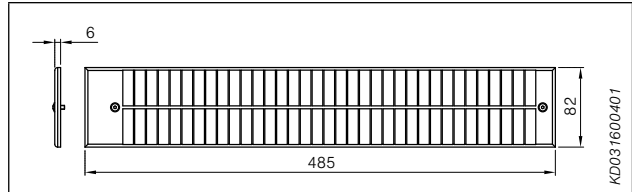


fig. 389: Solar panel

Drives

Front-mounted external venetian blinds R6/R10 Solar

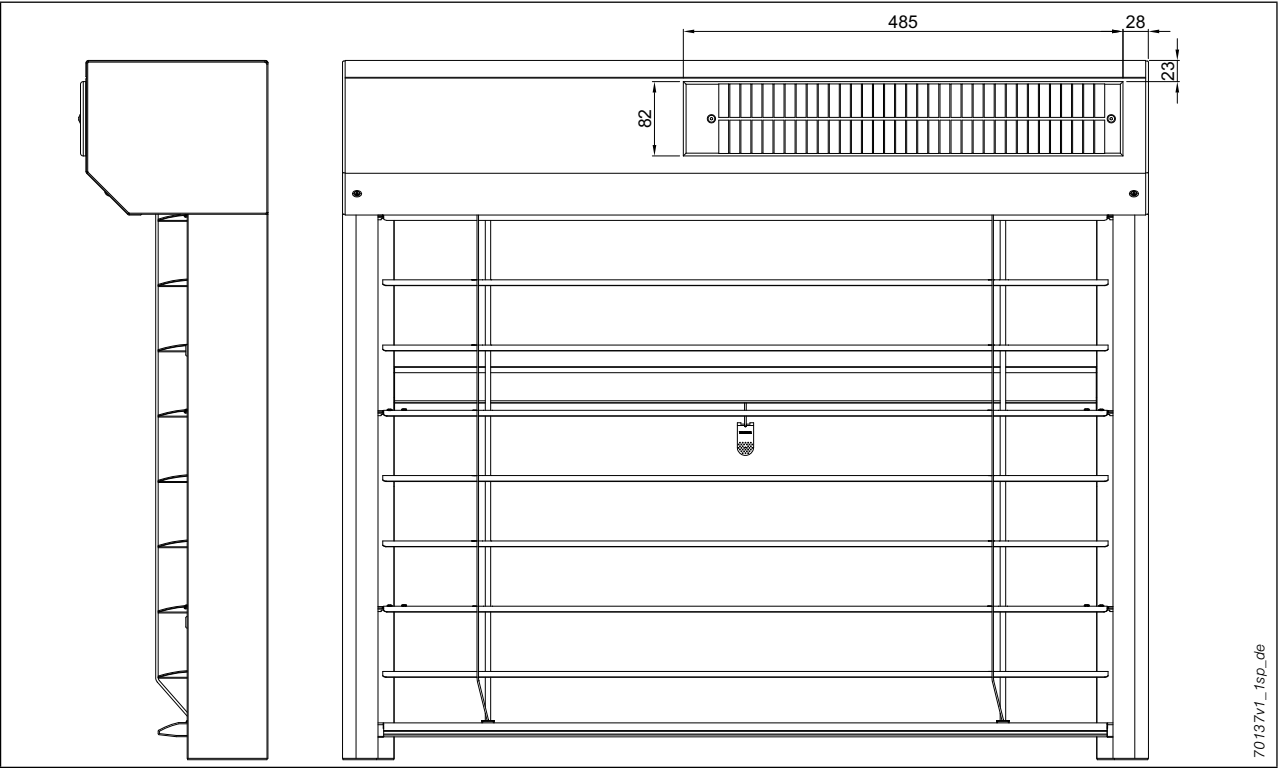


fig. 390: Solar panel, rectangular box

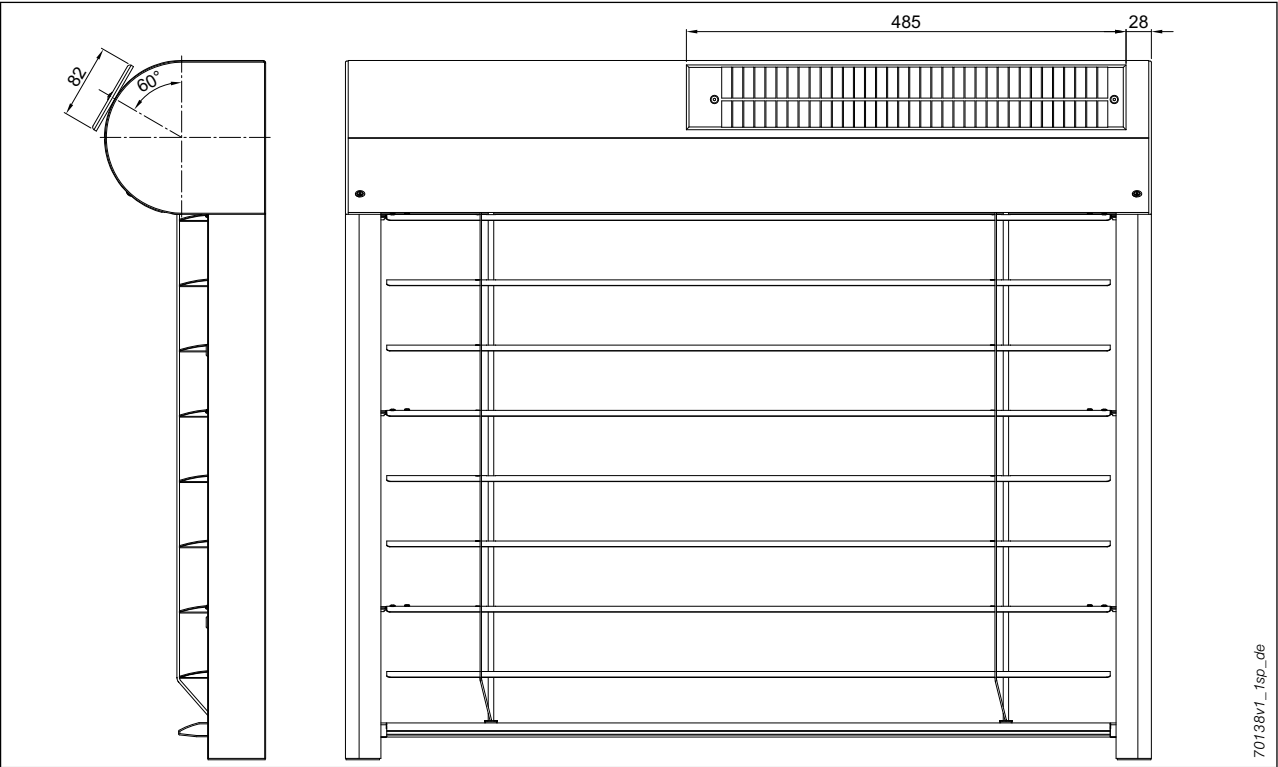


fig. 391: Solar panel, round box

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

### Plug-in grommets

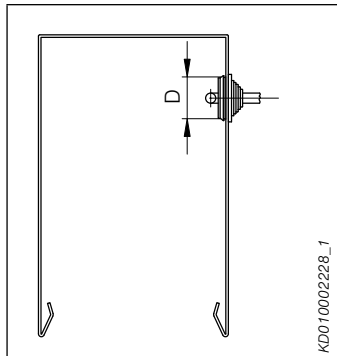


fig. 392: Plug-in grommets

Art. no.	Size	Drilled hole for mounting	Drilled hole suitable for	for wall thickness	Sealing area	Miscellaneous
607061	STM 20	Ø20.5 mm	–	1.5-4.0 mm	Ø5–16 mm	Closed
607069	STM 32	Ø33.0 mm	STAS/STAK 3	1.5-4.0 mm	Ø13–26.6 mm	Closed
607070	STM 40	Ø41.0 mm	STAS/STAK 4	1.5-4.0 mm	Ø13–34.0 mm	Closed

### Self-sealing grommet (with thread for counter nut)

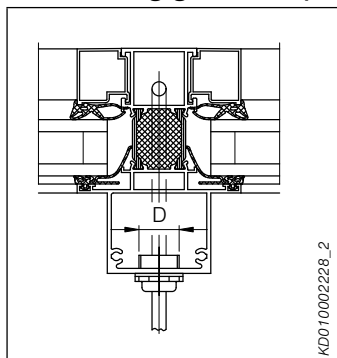


fig. 393: Self-sealing grommet (with thread for counter nut)

Art. no.	Size	Drilled hole		Thread length	Sealing area	Miscellaneous
		Core hole <sup>1)</sup>	Throughhole			
607071	M 16	Ø15.5 mm	Ø16.5 mm	8 mm	Ø6–8 mm	open
607072	M 20	Ø19 mm	Ø20.5 mm	10 mm	Ø9–12 mm	open
607073	M 25	Ø24 mm	Ø25.5 mm	12 mm	Ø11–17 mm	open
607078	M 32	Ø31 mm	Ø32.5 mm	14 mm	Ø16–22 mm	open

<sup>1)</sup> Diameter of core hole valid for impact mounting up to a material thickness of max. 3 mm.

### Self-sealing grommet with counter nut

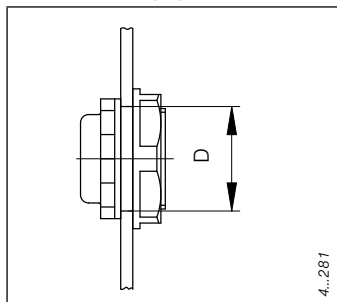


fig. 394: Self-sealing grommet with counter nut

Counter nut	
Art. no.	Size
607074	M 16
607066	M 20
607075	M 25

### Cable bushing on-site

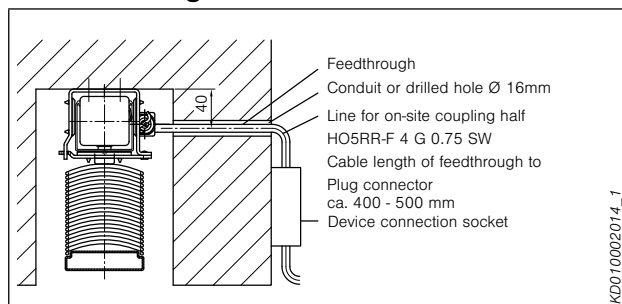


fig. 395: On-site cable bushing/position of plug-in connector

### Information on common cables

Designation	Application	Cable diameter
H 05 RR-F4G 0.75	Cable whip	approx. 7.0 mm
LIHCH 2x2x0.14 sq mm bk.	Incremental encoder cable	approx. 5.6 mm
NYM-J 3x1.5 mm <sup>2</sup>	Connecting line 230 V AC	approx. 9.5 mm
NYM-J 4x1.5 mm <sup>2</sup>	switch line	approx. 10.0 mm

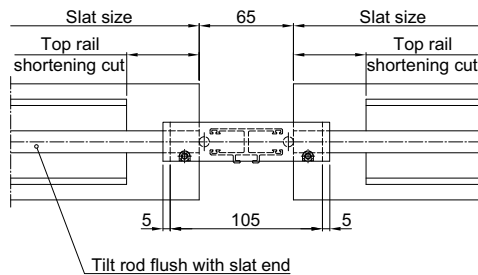
**Note:** When ordering with motor position left or right we recommend to let the on-site cable end protrude by about 1000 mm.



## Drives

### Mechanical coupling

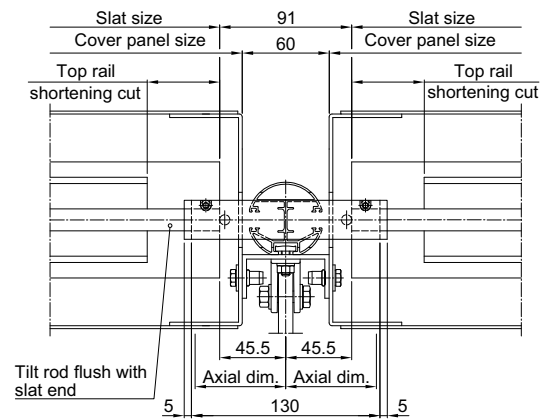
#### Coupling situation with rail guidance (without axial deviation)



Standard: 50 mm top edge shortening on the coupling side.  
Please indicate deviating dimensions when ordering!

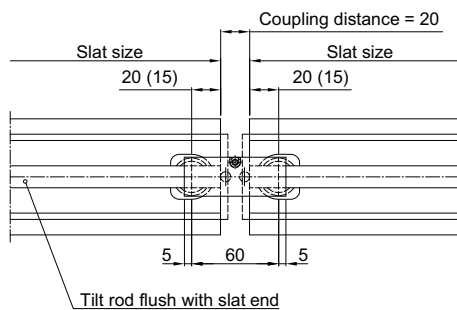
70405\_2sp

#### Coupling situation for cover panel mounting between guide rails



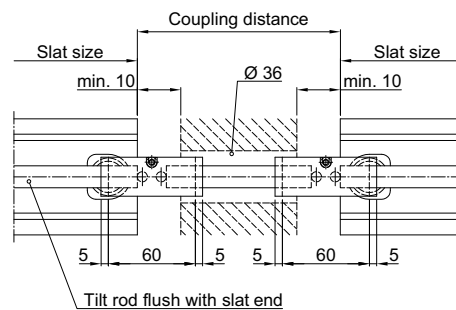
70406\_2sp

#### Coupling situation with cable guidance (without axial deviation)



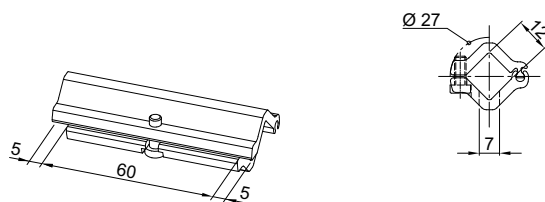
70407\_2sp

#### Coupling situation with cord guidance through existing components (without axial deviation)



70408\_2sp

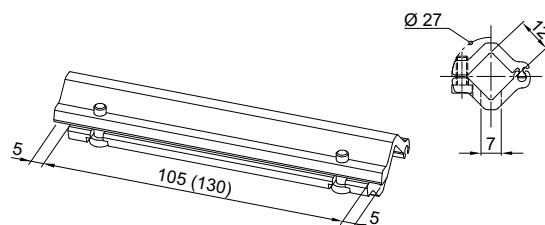
#### Hinged tilt rod coupling, 60 mm



70409\_2sp

- Drilled hole for mounting positioning
- Feedthrough generally through supports, pillar profiles, poles, etc. Ø36 mm.

#### Hinged tilt rod coupling, 105 mm



70410\_2sp

- Drilled hole for mounting positioning
- Feedthrough generally through supports, pillar profiles, poles, etc. Ø36 mm.

fig. 396: Coupling options

Bigger distances are bridged by means of the hingeable tilt rod coupling via 2 coupling pieces of 60 mm each and an additional tilt rod.

## Drives

### Mechanical coupling

#### Coupling situation with universal joint (axial deviation up to max. 45°)

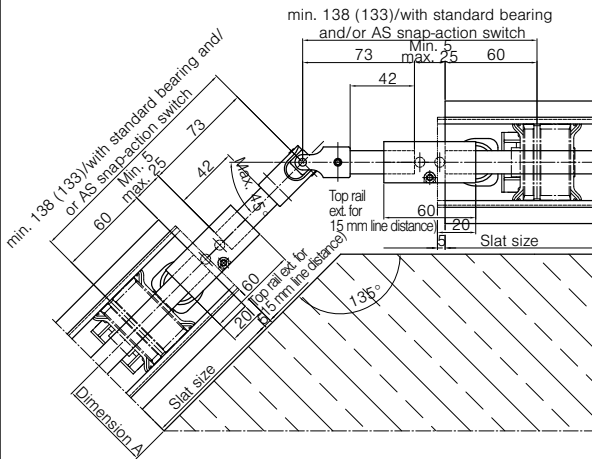
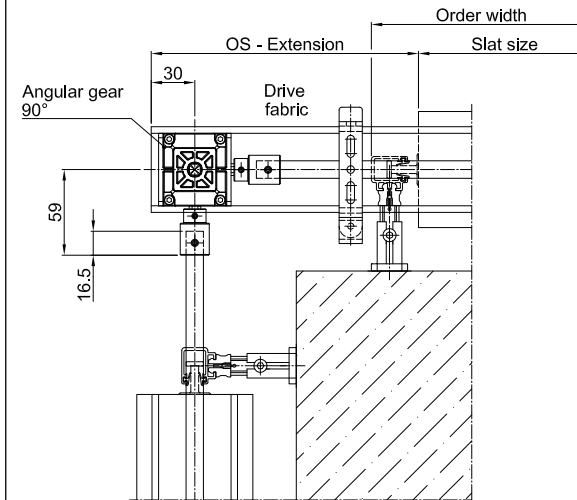


fig. 397: Coupling possibilities (cont.)

#### Coupling situation 90° angle with angle transmission

**Note:** The play in the gears may cause the slat position of the curtain to vary.



70398\_2sp

#### Universal joint, preinstalled

Art. no. 532051

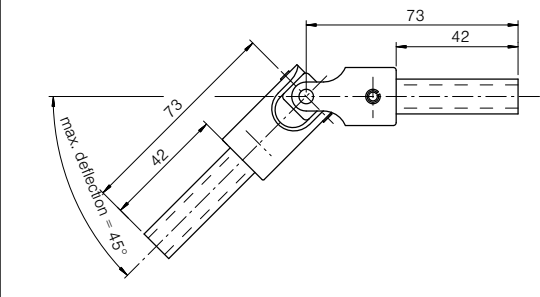


fig. 398: Universal joint

4...246

#### Adapter

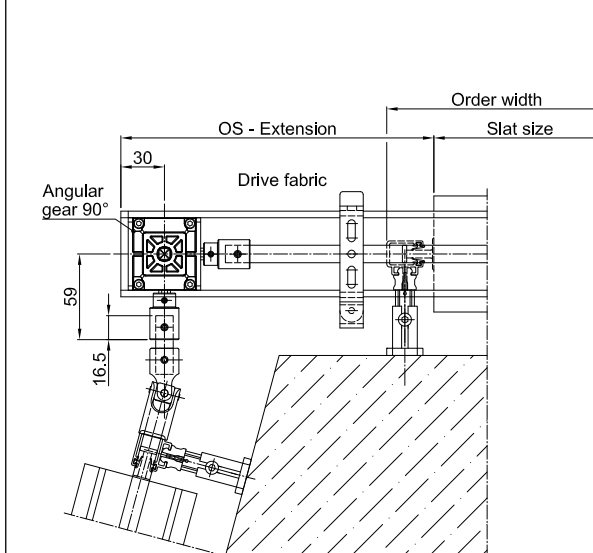
Coupling for tilt rod	Art. no.
60 mm	532052
80 mm	532021
150 mm	532022

#### Notes:

- Additional bearings are required at the end of the top rail.
- When using universal joints the top rail and the bracket must be screwed together (DIN 7981-A2 C3.5x9.5 Art. no. 720005).

#### Special version with mechanical coupling deviating from 90°

**Note:** The play in the gears may cause the slat position of the curtain to vary.



70399\_2sp

fig. 399: Coupling options

Coupling situations

Venetian blind window system FSR S1 and S2

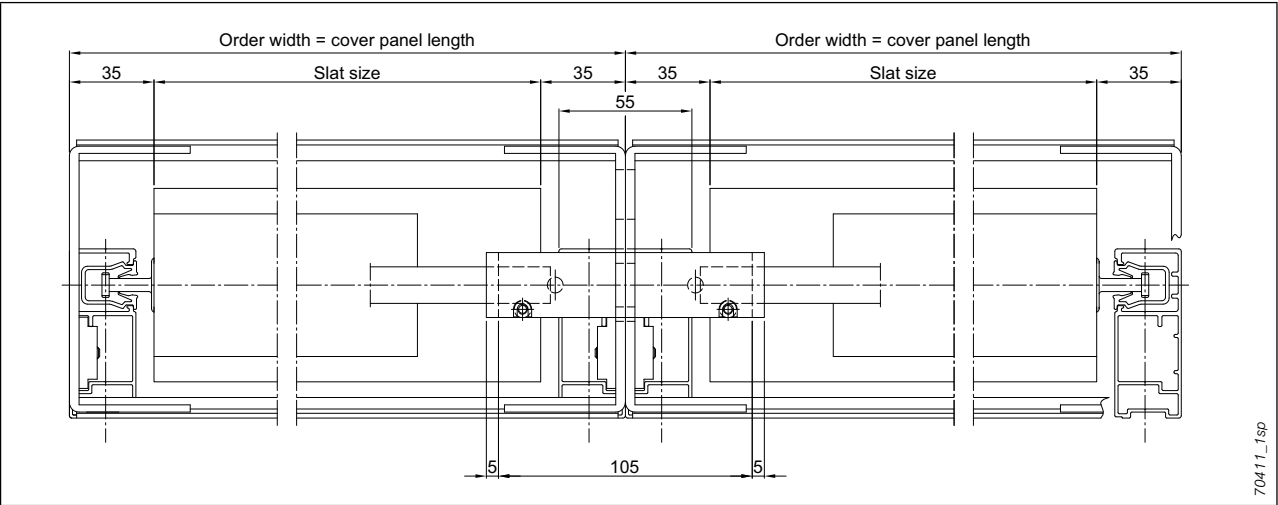


fig. 400: Coupling situation FSR S1

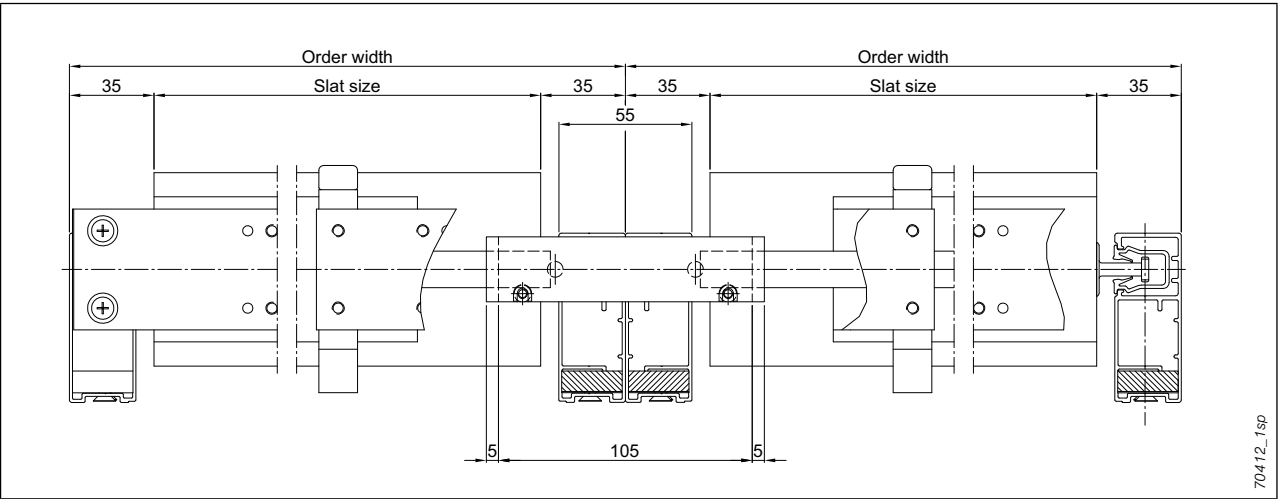


fig. 401: Coupling situation FSR S2

For group units the external venetian blinds are not preinstalled in the cover panel when delivered.

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

## Drives

### Crank operation

#### Gears for types C... (top rail 59x51mm)

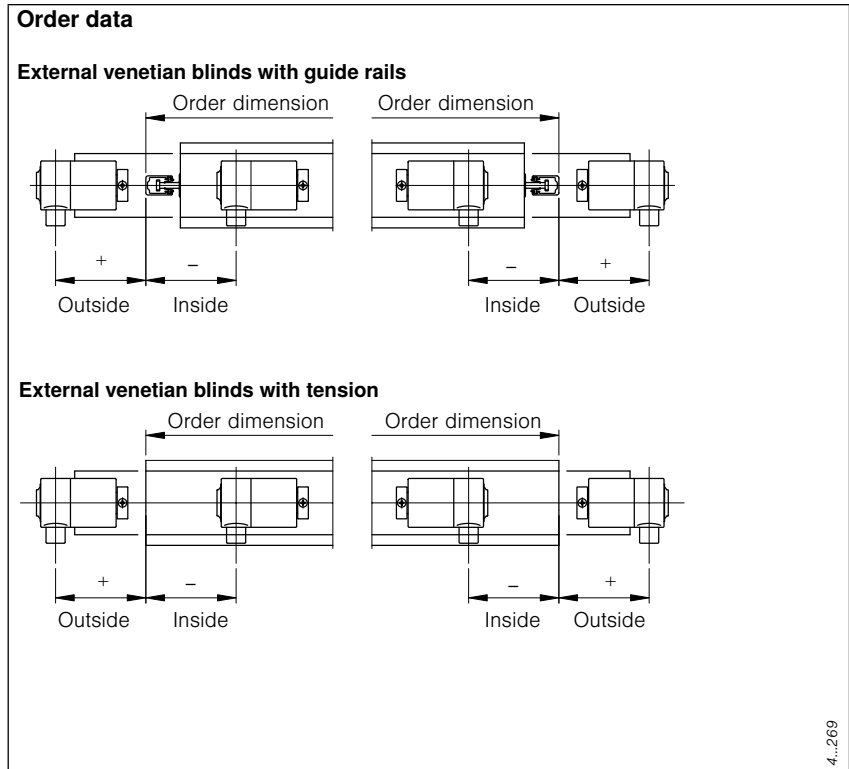
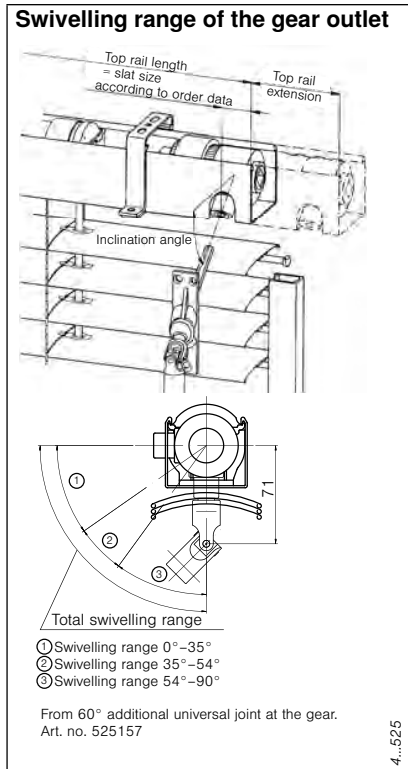


fig. 402: Swivelling range of the gear outlet

Slat width in mm	within the slat area	Maximum swivelling range within the guide rail (FS) area			
		GR 25x18 type 1	FSCH 25x18 Type 2 FSCH 50x18 Type 3 GR Ø 32 type 4	GR Ø 52 type 7/8 GR 25x50 type 9 GR 50x50 type 10	outside the slat and guide rail area
50	52°	–	–	–	90°
60	50°	55°	47°	37°	90°
73	50°				
80	45°				
93	42°				
100	38°				

Tab. 23: Maximum swivelling range depending on slat width

**Note:** Only use a spindle lock with 73/90/93 mm dim-out slats.

Drives

Crank operation

Shifting range of gears (top rail 59x51 mm)

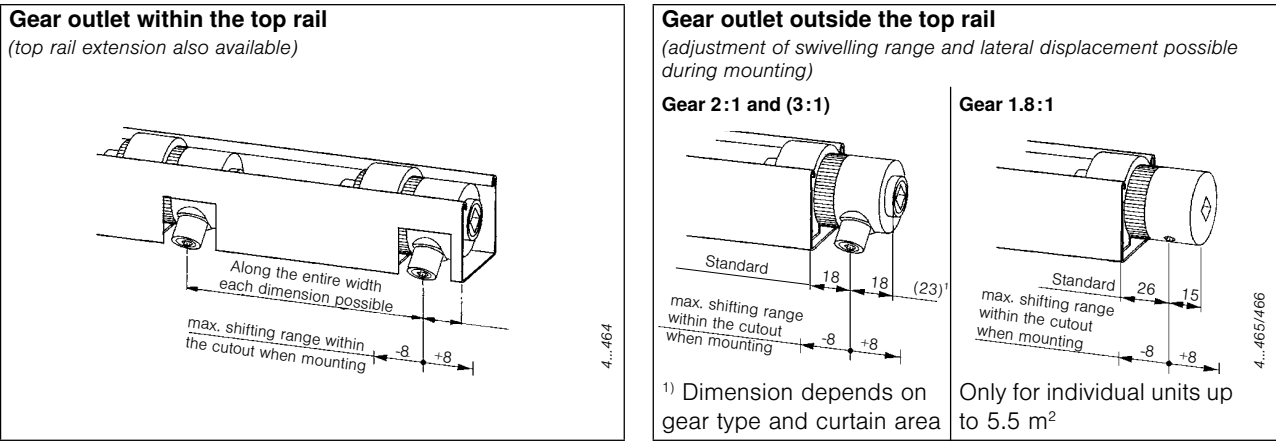


fig. 403: Shifting range of gears

Crank length = straight length from the pivot bearing to the end of the crank

**Spring tension device in the top rail not possible in the gear outlet area**

**Note:** Only use a spindle lock with 73/90/93 mm dim-out slats.

General information	Product characteristics	Basic facade external venetian blinds	Premium facade venetian blinds	Complete external venetian blinds	Light guidance/ external venetian blinds	Guides	Cover panels	Planning	Safety systems Accessories	Drives Control systems
---------------------	-------------------------	---------------------------------------	--------------------------------	-----------------------------------	--	--------	--------------	----------	----------------------------	------------------------

## Drives

### Crank operation/Cord operation – ext. ven. blinds

#### Gear for type K 50 A1 (top rail 40x36 mm)

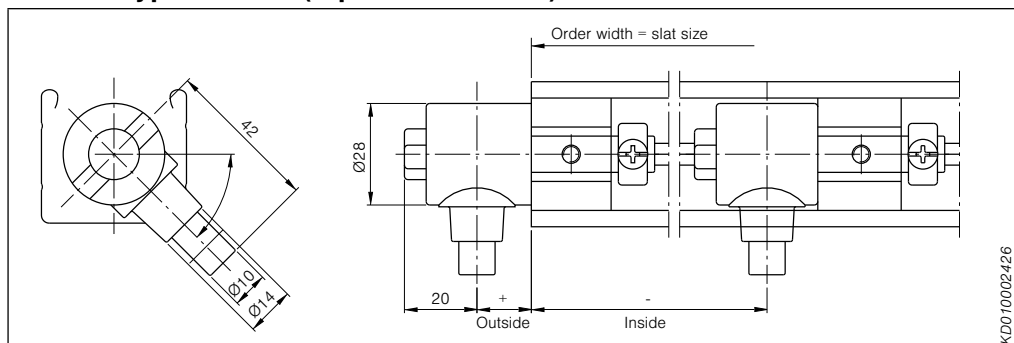


fig. 404: Gear

#### Protection options for the driving rod (surcharge)

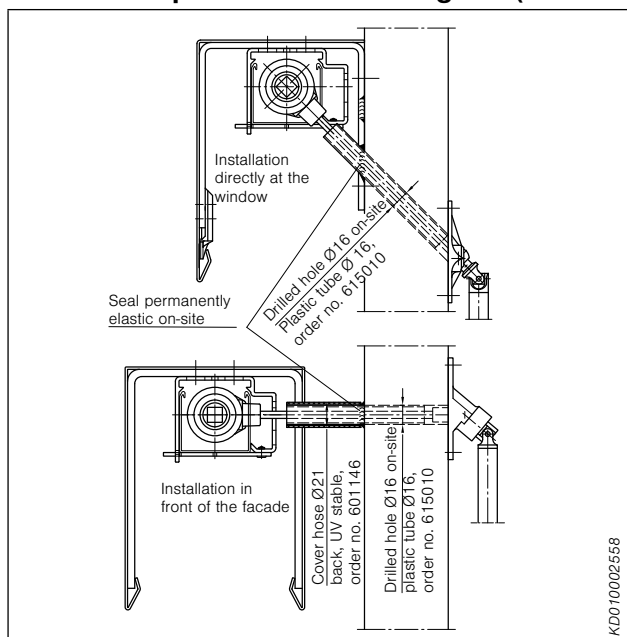


fig. 405: Plastic tube

Gear outlet diagonal or horizontal.  
The diameter of the tube depends on the possible drilling precision in the facade; however, it must not exceed 20 mm.  
The parts are manufactured to order.

This is the safest and most durable solution.

**Note:** Only use a spindle lock with 73/90/93 mm dim-out slats.

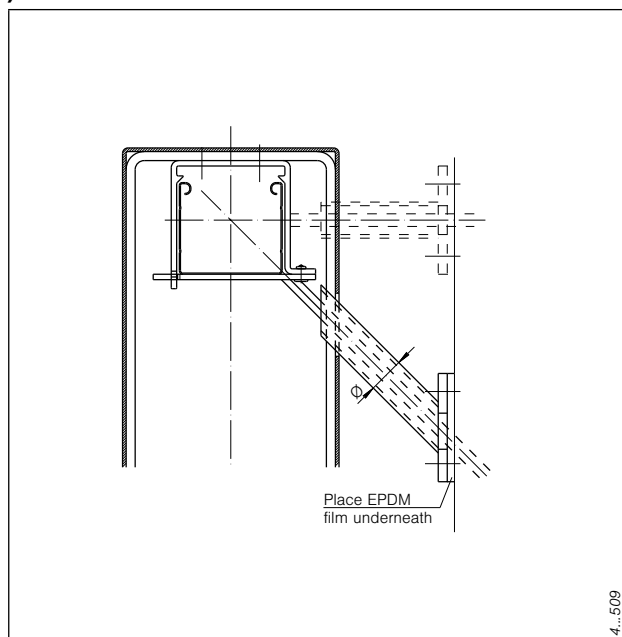


fig. 406: Aluminium tube with flange

Minimum dimension of the tube  $\varnothing 16 \times 1.5$  mm.

## Description

### Crank operation FSR S1 and S2

#### FSR S1 (cover panel variant)

##### Crank drive internal:

The maximum curtain area for crank drive is 5 m<sup>2</sup>. The gear 1.8:1 is generally used. The internal crank drive is fixed to a standard measurement of 28 mm from outer edge of box to centre of crank. This results in a top rail reduction of 18 mm.

##### Crank drive external:

The maximum curtain area is also 5 m<sup>2</sup>. A gear 4:1 with coupling piece is used for the tilt rod. The shifting ranges vary, depending on external venetian blind width or end distance. In general a blind bearing which is attached by a motor clamp has to be used on the gear side.

FSR S1	External venetian blind width			
	up to 759		up to max. width	
	min.	max.	min.	max.
Gear position + external	11	50	11	100

Tab. 24: Overview table of gear position FSR S1

#### FSR S2 (OS variant)

The gear 1.8:1 is generally used for the OS variant. The maximum curtain area is limited to 5 m<sup>2</sup>. The gear outlet is possible from 0 - 45°. The guide rail bracket and the support position on the bracket lug limit the shifting ranges. The gear

position has to be stated by the orderer. Depending on the gear position (inside or outside) the top rail has to be shortened or extended.

FSR S2	External venetian blind width							
	up to 672		up to 972		Up to 1172		up to max. width	
	min.	max.	min.	max.	min.	max.	min.	max.
Gear position – inside	–	–	35	60	35	95	35	95
Gear position + external	10	100	10	100	10	100	10	100

Tab. 25: Overview table of gear position FSR S2

**Note:** Only use a spindle lock with 73/90/93 mm dim-out slats.

## Description

### Crank operation venetian blind window system shaft

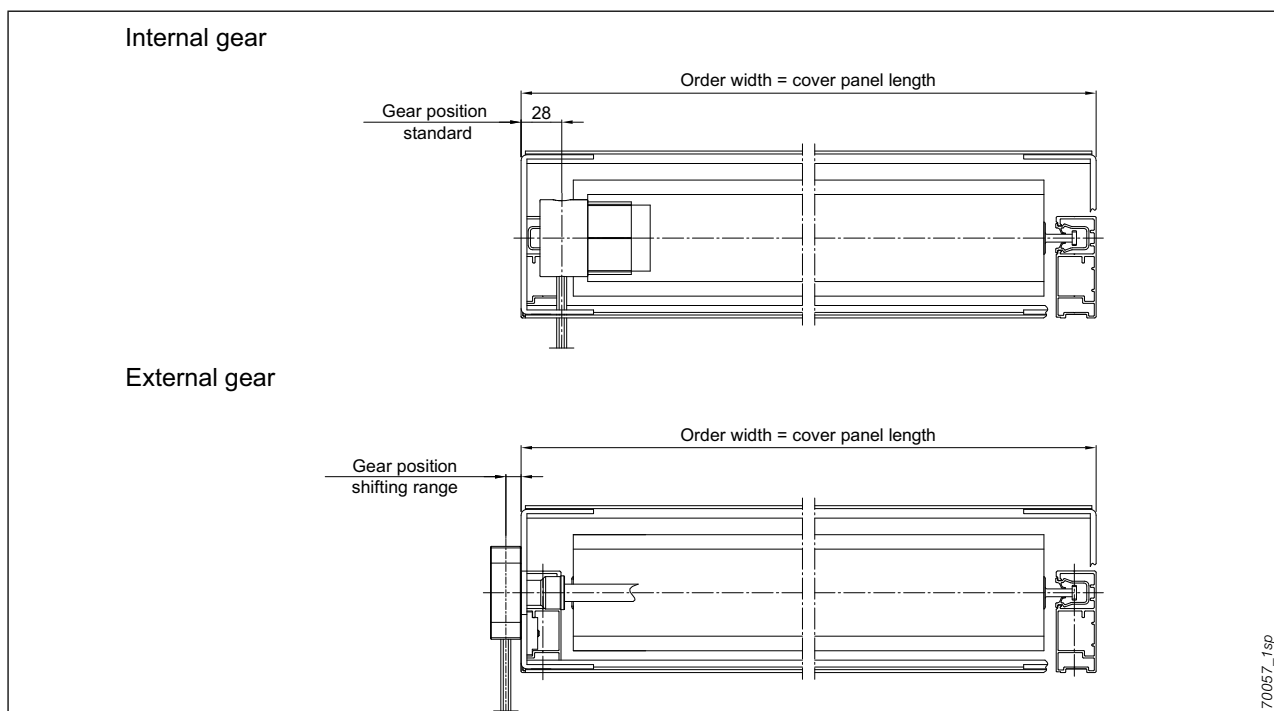


fig. 407: Crank – gear position S1

\* The shifting ranges vary, depending on external venetian blind width or end distance.

From 600 mm to 759 mm: shifting range from +11 mm to + 50 mm

From 760 mm to max. width: shifting range from +11 mm to +100 mm

Gear position: see "Overview table of gear position FSR S1" on page 377.

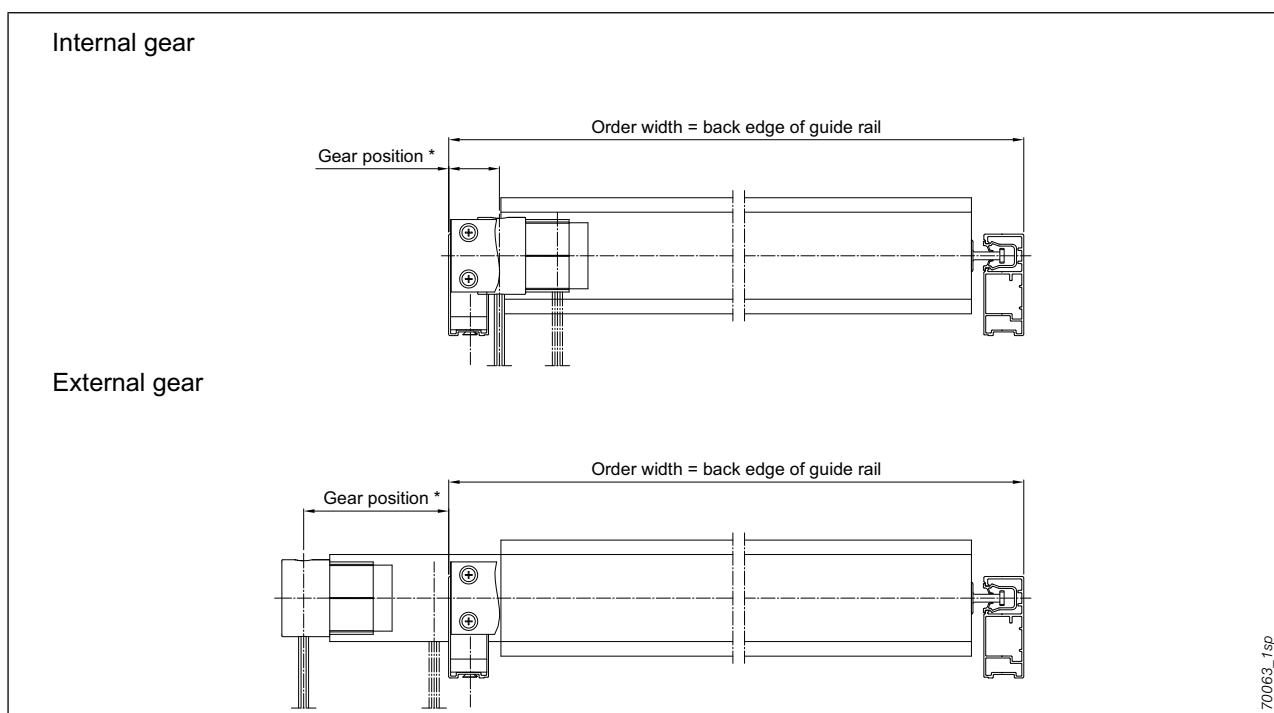


fig. 408: Crank – gear position S2

\*Gear position: see "Overview table of gear position FSR S2" on page 377.



Drives

Crank operation – Pivot bearing

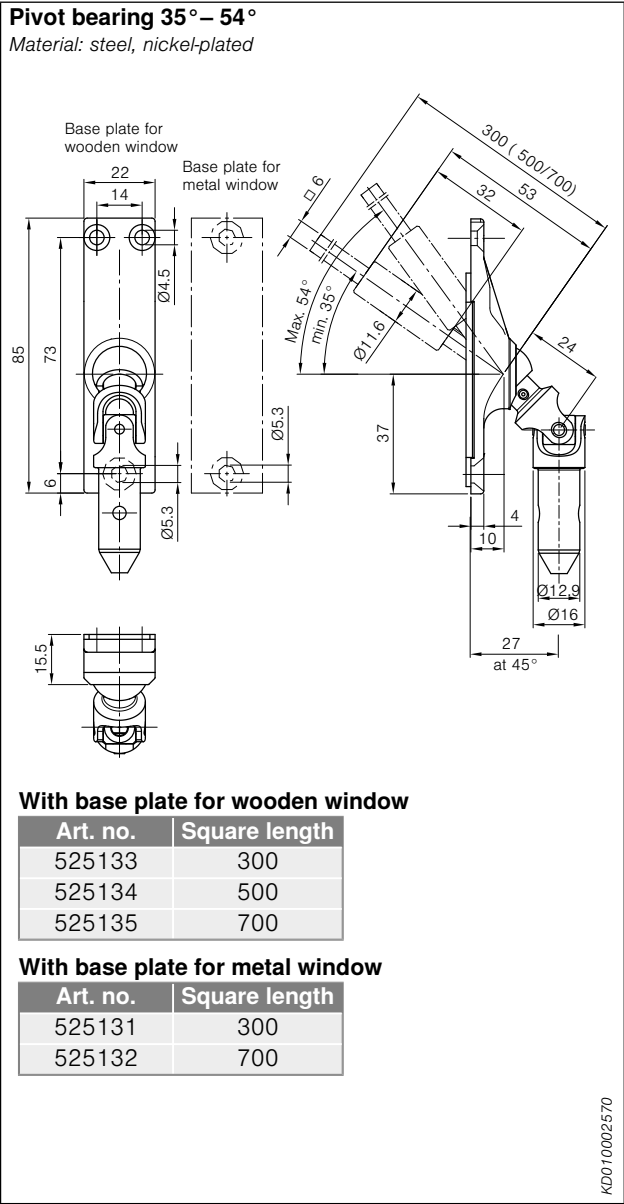


fig. 409: Pivot bearing 35°– 54°

# Drives

## Crank operation – Pivot bearing

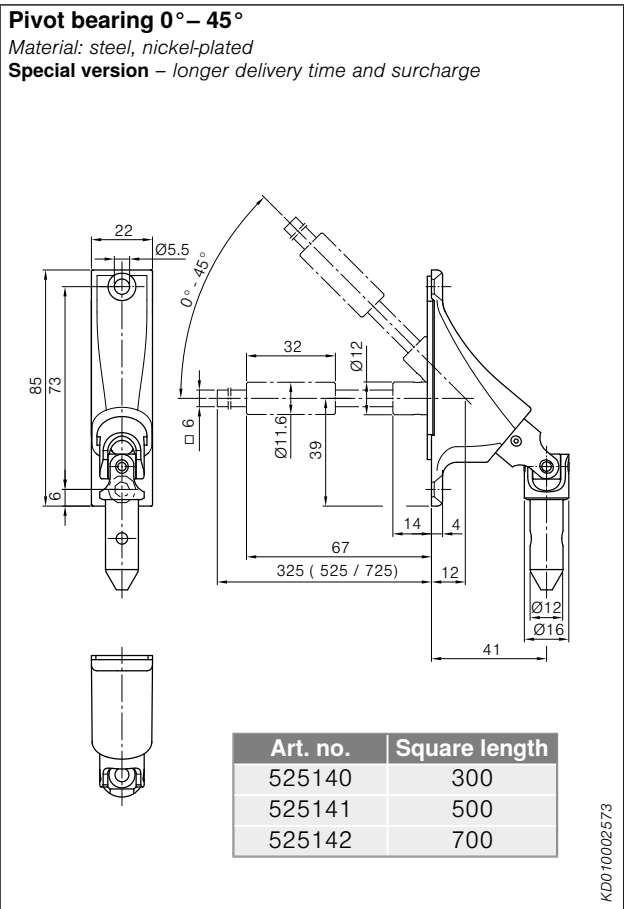


fig. 410: Pivot bearing 0° – 45°

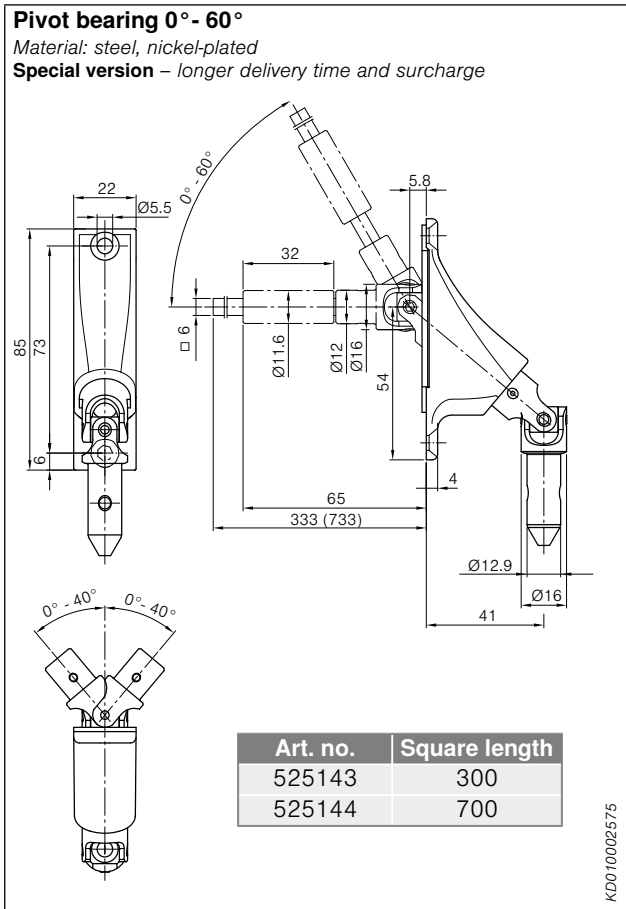


fig. 411: Pivot bearing 0°-60°

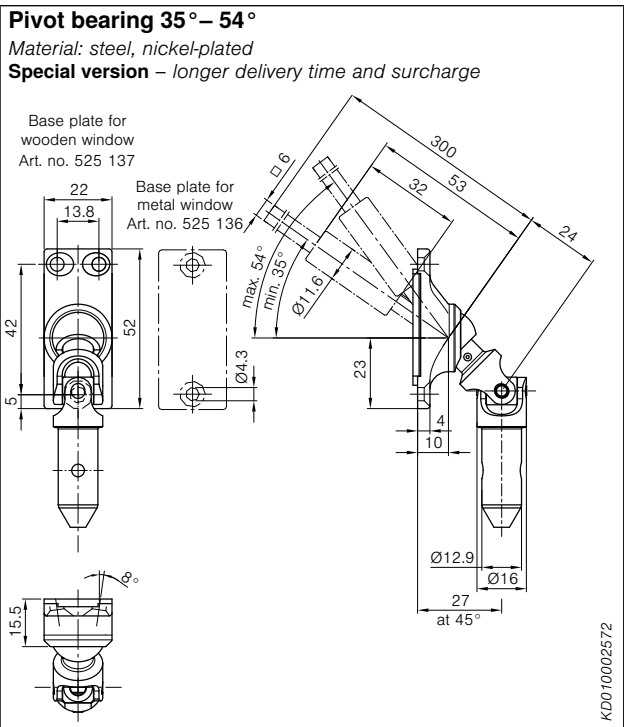


fig. 412: Pivot bearing 35° – 54°

Drives

**Crank operation – Pivot bearing**

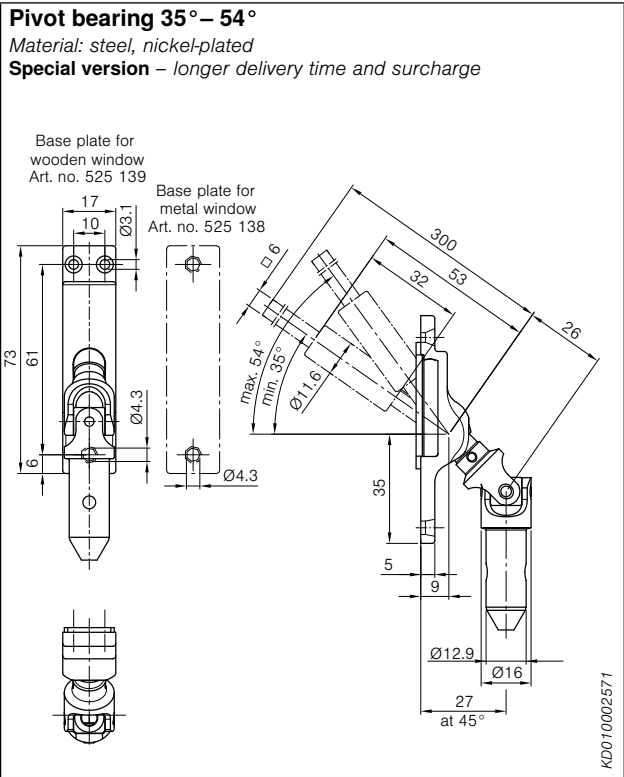


fig. 413: Pivot bearing 35° – 54°

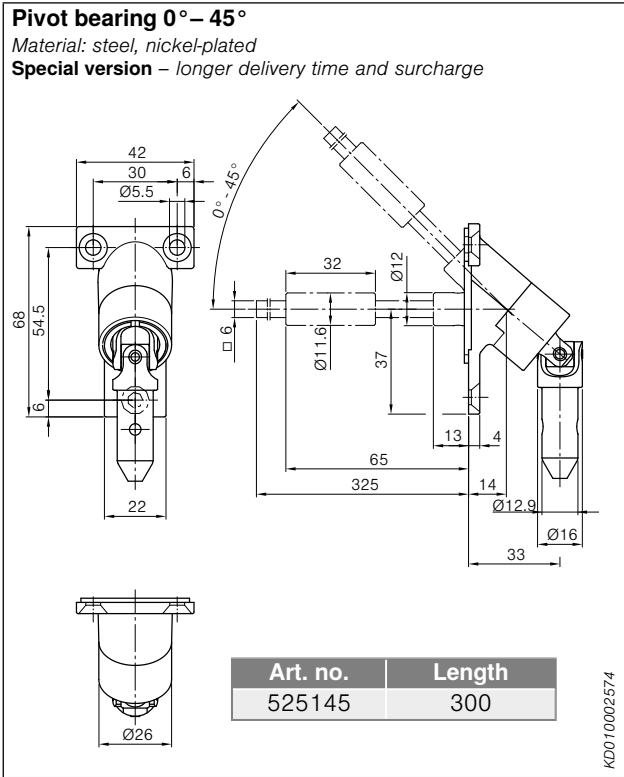


fig. 414: Pivot bearing 0° – 45°

## Drives

### Crank operation – Pivot bearing

#### Pivot bearing 0° - 60°, left, 22.5 mm axis offset Max. area 5.5 m²

Art. no. 525146

Material: plastic, white; steel, nickel-plated

**Special version** – longer delivery time and surcharge

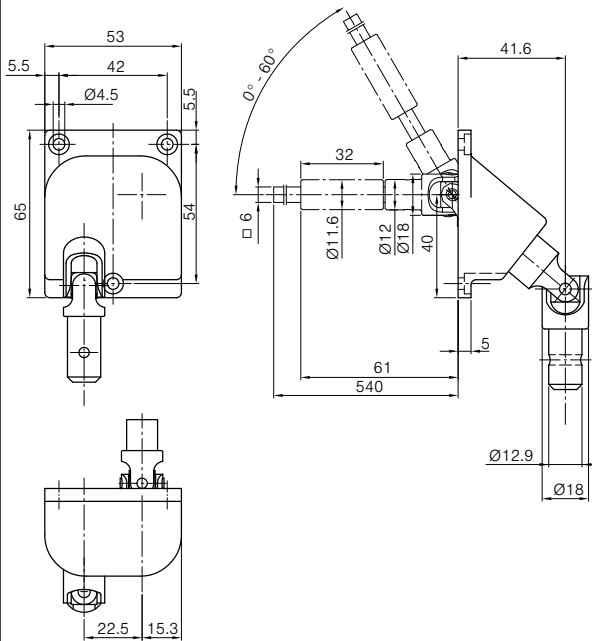


fig. 415: Pivot bearing 0° – 60°, left, 22.5 mm axis offset

#### Pivot bearing 0° - 60°, right, 22.5 mm axis offset Max. area 5.5 m²

Art. no. 525147

Material: plastic, white; steel, nickel-plated

**Special version** – longer delivery time and surcharge

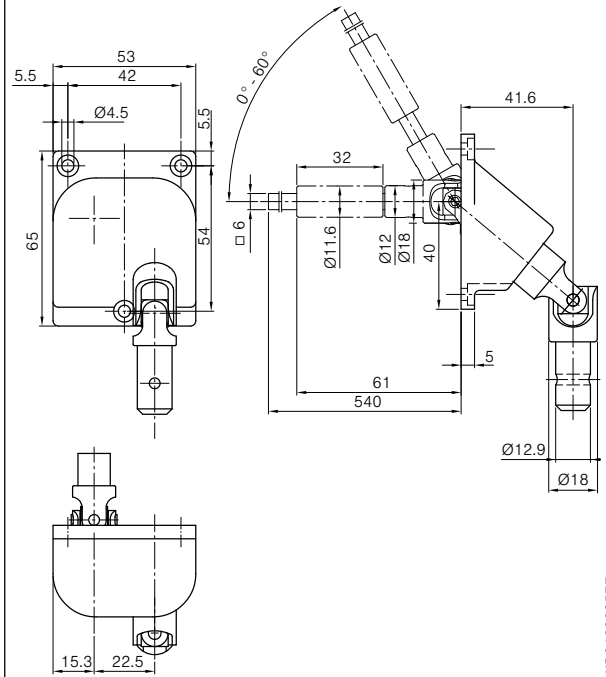


fig. 416: Pivot bearing 0° – 60°, right, 22.5 mm axis offset

#### Coupling funnel

Art. no. 521035

Material: steel, nickel-plated

**Special version** – longer delivery time and surcharge

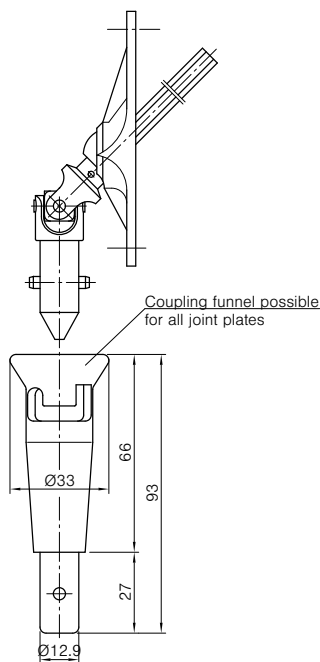


fig. 417: Coupling funnel

#### Tube bearing with universal joint

Material: steel, nickel-plated

**Special version** – longer delivery time and surcharge

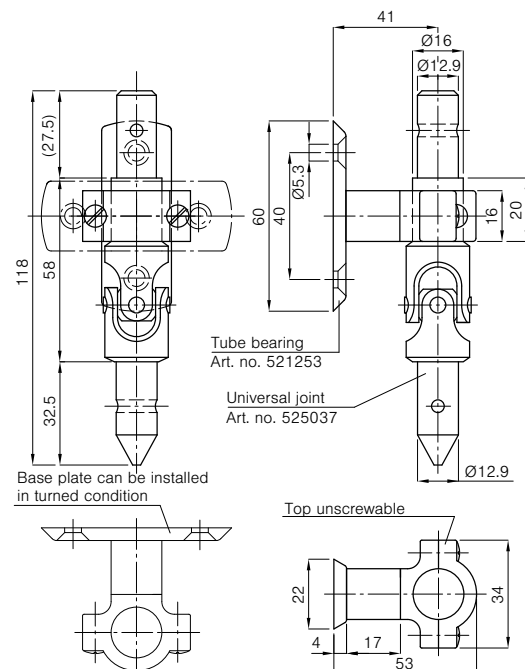


fig. 418: Tube bearing with universal joint

# Drives

## Crank operation

Shim plates for pivot bearing, without sealing

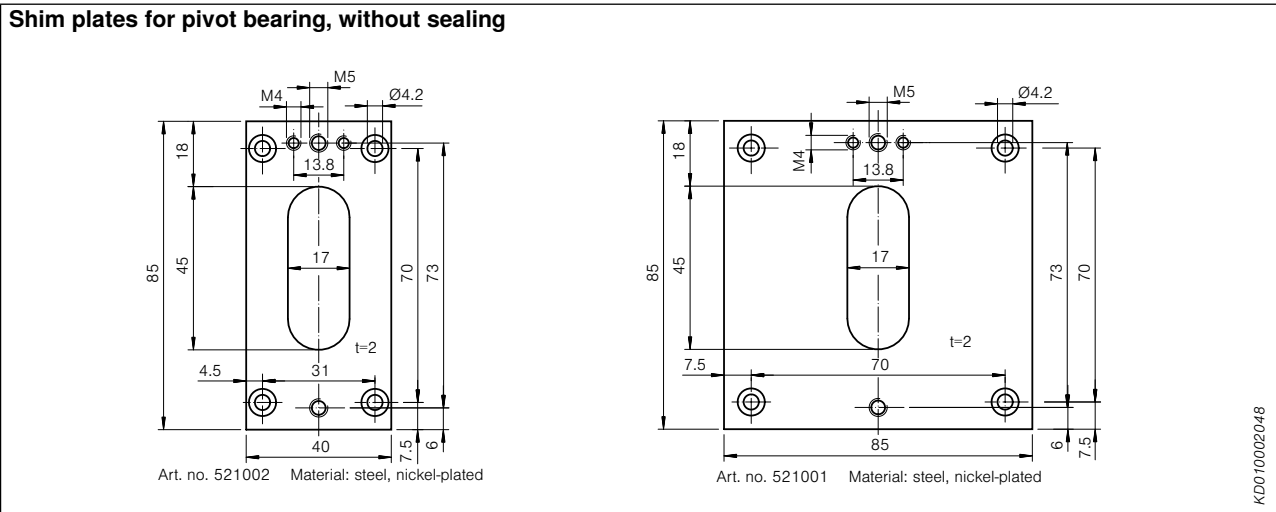


fig. 419: Shim plates for pivot bearing

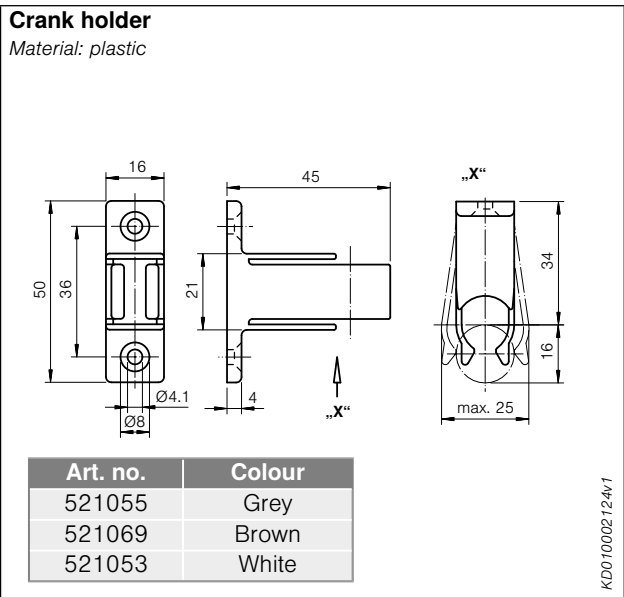


fig. 420: Crank holder

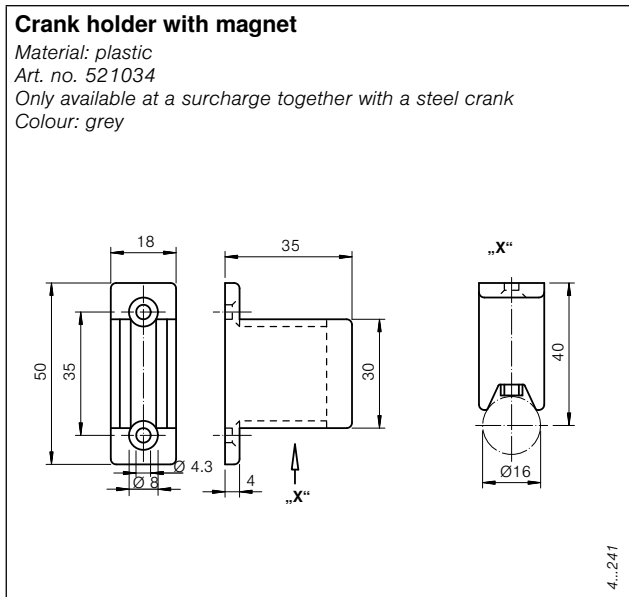


fig. 421: Crank holder with magnet

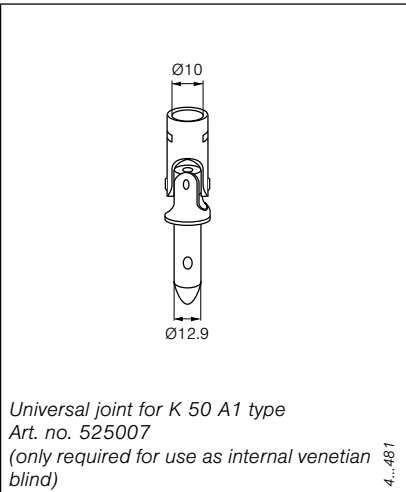


fig. 422: Universal joint

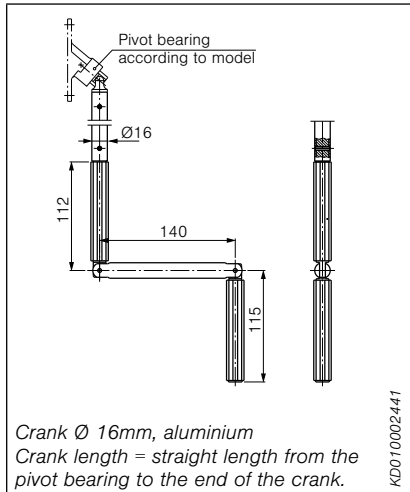


fig. 423: Crank

**Drives**  
**Cord operation**

**Gear for type Q 50 A1 S (top rail 40x36 mm)**

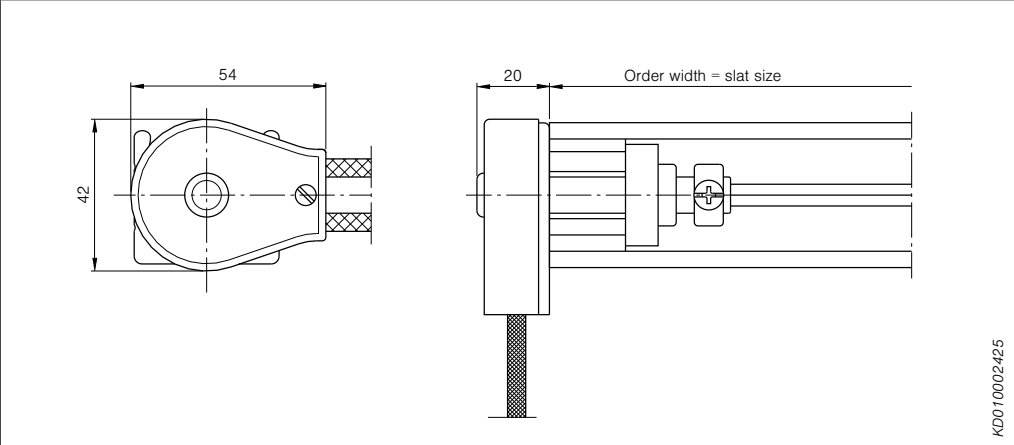
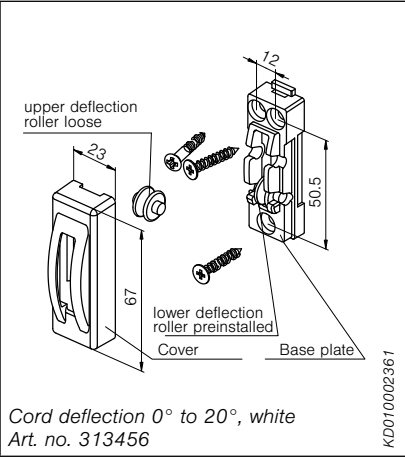
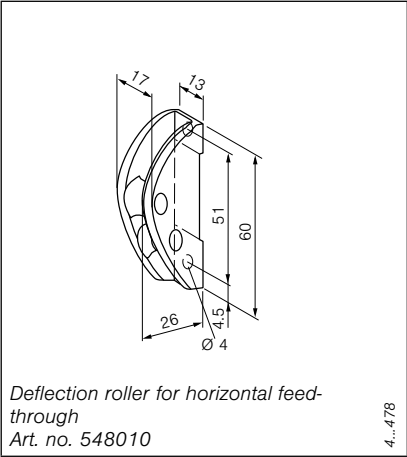


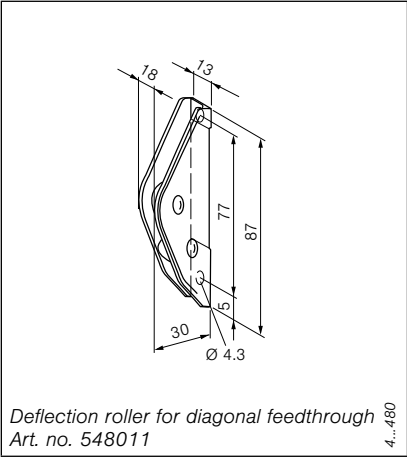
fig. 424: Gear for cord operation



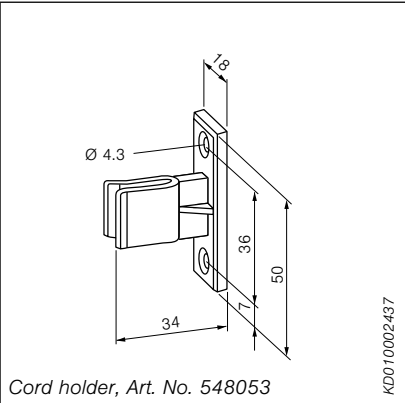
Cord deflection 0° to 20°, white  
Art. no. 313456



Deflection roller for horizontal feed-through  
Art. no. 548010



Deflection roller for diagonal feedthrough  
Art. no. 548011



Cord holder, Art. No. 548053





fig. 425: Accessories for ext. ven. blind Q 50 A1 S

Notes

Drives Control systems	Safety systems Accessories	Planning	Cover panels	Guides	Light guidance/ external venetian blinds	Complete external venetian blinds	Premium facade venetian blinds	Basic facade external venetian blinds	Product characteristics	General information
---------------------------	-------------------------------	----------	--------------	--------	--	--------------------------------------	-----------------------------------	---	----------------------------	------------------------

## Everything at a glance

### Function overview

		Radio systems		Central control systems	
		EWFS	WMS	WAREMA Timer	Time switch
					
Control channels		1/8	200	1	1
Transmission frequency		433.92 MHz	2.4 GHz	–	–
EWFS compatible		●	–	–	–
Automatic default settings for various sun shading products		–	●	–	–
Safety functions	Wind monitoring (max. connectible sensors)	●	●	–	–
	Direction-sensitive wind monitoring	–	–	–	–
	Precipitation monitoring	●	●	–	–
	Ice monitoring	–	●	–	–
Energy efficiency/comfort functions	Sun control	●	●	–	● <sup>2)</sup>
	Dawn/dusk control	–	●	● <sup>3)</sup>	● <sup>2)</sup>
	Time switch	●	●	●	●
	Control timer	–	●	–	–
	Temperature control according to sensor Inside temperature	–	●	–	–
	Temperature control according to sensor Outside temperature	–	–	–	–
	Differential temperature control	–	–	–	–
	Humidity control	–	–	–	–
	Adjustable blind runtime	–	●	●	●
	Window control	–	●	–	–
	Intermittent ventilation	–	–	–	–
	Slat tilting	–	●	–	–
	Slat tracking	–	–	–	–
	Radio clock (DCF-77)	–	–	–	–
	Dimming of light (230 V AC)	●	–	–	–
	Dimming of light (LED directly above dimmer)	–	●	–	–
	Switching of light (230 V AC)	●	●	–	–
	DALI	–	–	–	–
	Fan control	–	–	–	–
	Astro function	–	–	●	–
	Scenes	–	●	–	–
	Simulation of occupancy	–	–	●	–
	History for measuring values and trigger events	–	–	–	–
	Annual shading	–	–	–	–
	Programmable functionality	–	–	–	–
Operation	Mobile remote control	●	●	–	–
	Central control unit/wall-mounted transmitter	●	●	●	●
	by smartphone, mobile end devices	–	●	–	–
	External channel pushbutton connectible	–	–	–	–
	PC	–	●	–	–
	Control via BCS	–	–	–	–
	Data interface / remote access	–	–	–	–
Commissioning	online via computer	–	–	–	–
	offline via computer	–	●	–	–
	graphically programmable	–	–	–	–

● possible






– not possible

<sup>1)</sup> Weather station multisense is included in the max. number of sensors

<sup>2)</sup> Optional photo sensor with suction cup for window pane

<sup>3)</sup> Integrated Astro function



Central control systems				WAREMA climatronic®
Minitronic dialog	Wisotronic 1-channel	Wisotronic 2/3/4-channel	Quatronic dialog	WAREMA climatronic®
				
1	1	2-4	4	64
433.92 MHz	433.92 MHz	433.92 MHz	-	433.92 MHz
•	•	•	-	•
-	•	•	•	•
1	1	4 <sup>1)</sup>	4	12
-	-	-	-	•
•	•	•	•	•
-	•	•	•	•
•	•	•	•	•
-	•	•	•	•
-	•	•	•	•
-	•	•	•	•
-	•	•	•	•
-	•	•	-	•
-	-	-	•	•
•	•	•	•	•
-	•	•	-	•
-	•	•	-	•
•	•	•	•	•
-	-	-	-	•
-	-	-	•	•
-	-	-	-	•
-	-	-	-	•
-	•	•	•	•
-	-	-	-	-
-	-	-	-	•
-	-	-	-	-
-	•	•	-	•
-	-	-	-	-
-	•	•	-	•
-	-	-	-	-
-	-	-	-	-
•	•	•	-	•
•	•	•	•	•
-	-	-	-	•
-	•	•	•	•
-	-	-	-	•
-	-	•	•	•
-	-	-	-	-
-	-	-	-	•
-	-	-	-	•
-	-	-	-	-

## Description

### EWFS – Standardised WAREMA Radio System

- Simple and cost-effective retrofitting
- One transmitter can control any number of receivers within the radio operating range
- One receiver can be controlled by one main transmitter and up to 15 auxiliary transmitters.
- Several receivers can be grouped per transmission channel
- Simple teaching of transmitter and receiver
- Controls the connected products in terms of:
  - Brightness
  - Wind
  - Precipitation
  - Time
  - Dusk via Astro function



- 1 EWFS Timer
- 2 EWFS Wall-mounted transmitter
- 3 EWFS Wall-mounted transmitter slim
- 4 EWFS Hand-held transmitter
- 5 EWFS weather station eco
- 6 EWFS weather station plus
- 7 EWFS plug receiver
- 8 EWFS flush-mounted receiver

## Functional principle

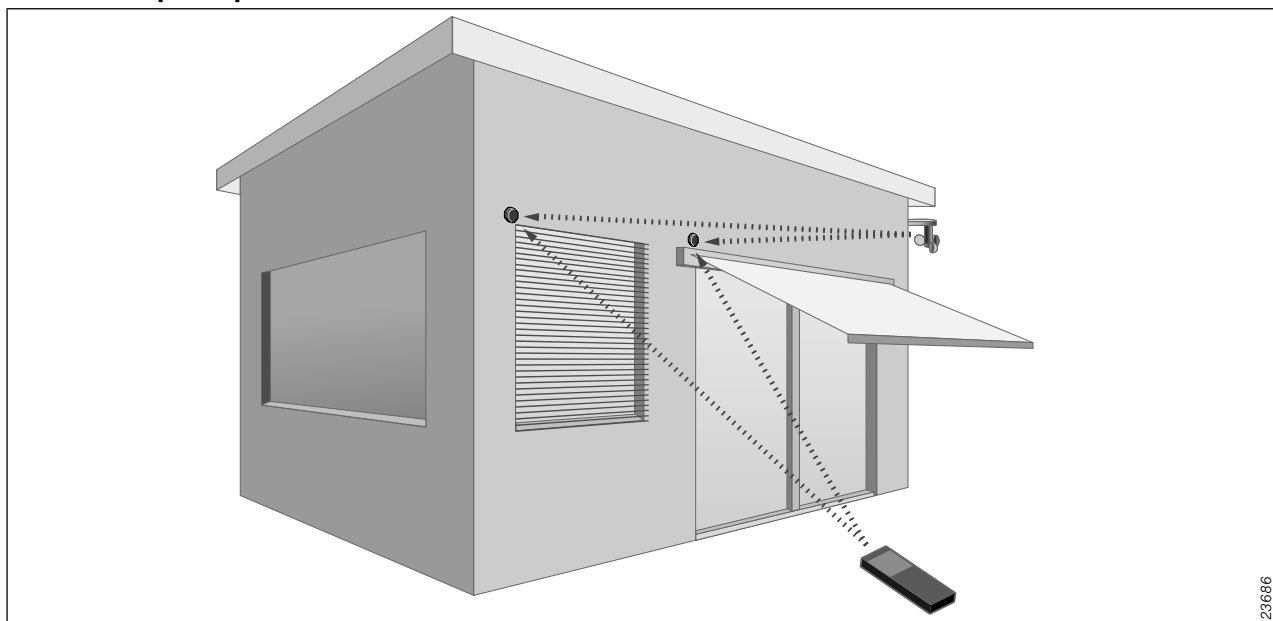


fig. 426: EWFS sender wirelessly transmits move commands to the receiver

23686

## Description

### WMS – WAREMA Mobile System

- Simple and cost-effective retrofitting
- Feedback from executed move commands, which were triggered by measured values or keystrokes
- Integrated routing function enables the transfer of a move command from one actuator to the next. In this way, actuators can be reached that are outside the range of the transmitter (bidirectional wireless technology)
- Encrypted transfer protocol
- Commissioning of the components via WMS Hand-held transmitter, WMS Central transmitter or comfortably via the WMS studio software
- Control via Android app, iOS app or via web browser with WMS WebControl
- Controls the connected products in terms of:
  - Brightness
  - Wind
  - Precipitation
  - Time
  - Dawn/dusk
  - Inside temperature
  - Ice monitoring



- 1 WMS WebControl
- 2 WMS Hand-held transmitter basic
- 3 WMS Wall-mounted transmitter basic
- 4 WMS Hand-held transmitter plus
- 5 WMS Wall-mounted transmitter plus
- 6 WMS Hand-held transmitter
- 7 WMS Central transmitter
- 8 WMS Temperature sensor
- 9 WMS Weather station eco
- 10 WMS Weather station plus
- 11 WMS Actuator flush-mounted
- 12 WMS Plug receiver
- 13 WMS Wind sensor
- 14 WMS Stick
- 15 WMS radio motor

## Functional principle

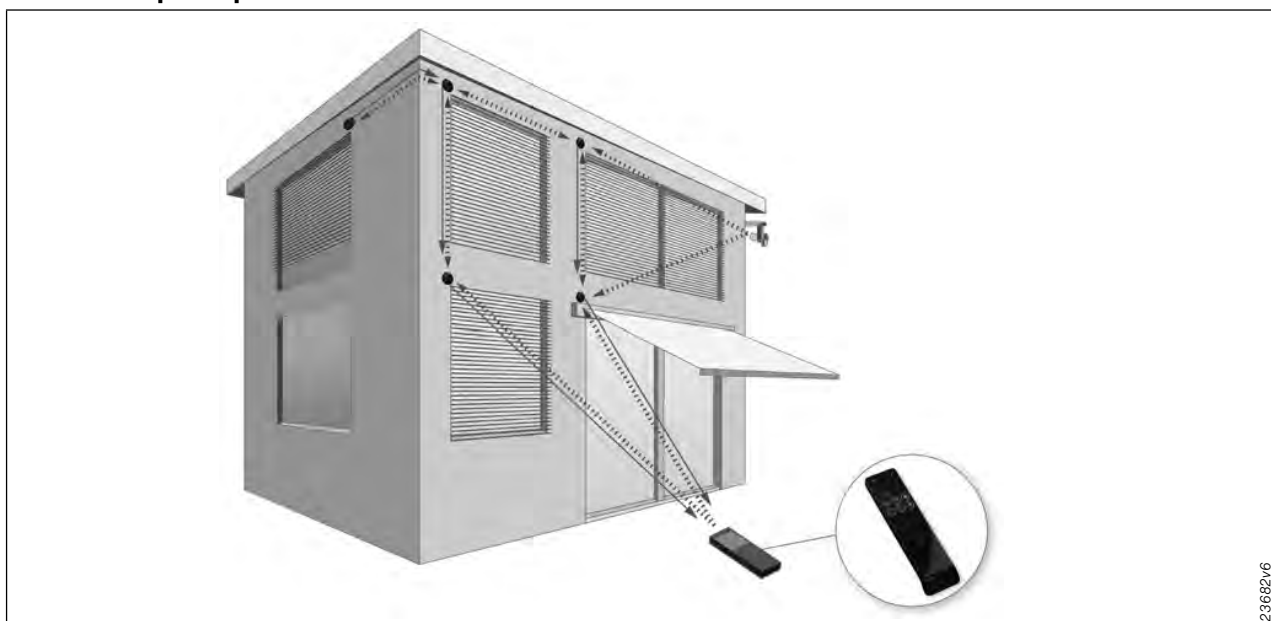


fig. 427: WMS: Intelligent routing function transmits commands to remote devices

## Description

### WAREMA Wisotronic

- 1-4 outputs/channels (floating and expandable by connecting motor control units)
- Controls the connected products in terms of:
  - Brightness
  - Dawn/dusk
  - Wind speeds
  - Precipitation
  - Ice
  - Time
  - Inside/outside temperature
- Inside temperature sensor is integrated in control panel
- Up to 4 individual scene statuses can be retrieved at the press of a button
- Operated via touch-sensitive sensor keys and sensor wheel
- Quickstart menu enables fast commissioning with only a few selection steps
- Different housing models are available for the control's panel's different mounting situations
- High-class design thanks to virtually flush installation in hollow wall housing
- Radio operation possible via EWFS hand-held or wall-mounted transmitter (optionally available)



- 1 Wisotronic control panel
- 2 Wisotronic power unit surface mounted
- 3 Wisotronic power unit DIN rail-mounted housing
- 4 Weather station multisense
- 5 EWFS Hand-held transmitter
- 6 Motor control unit (MSE)

## Functional principle

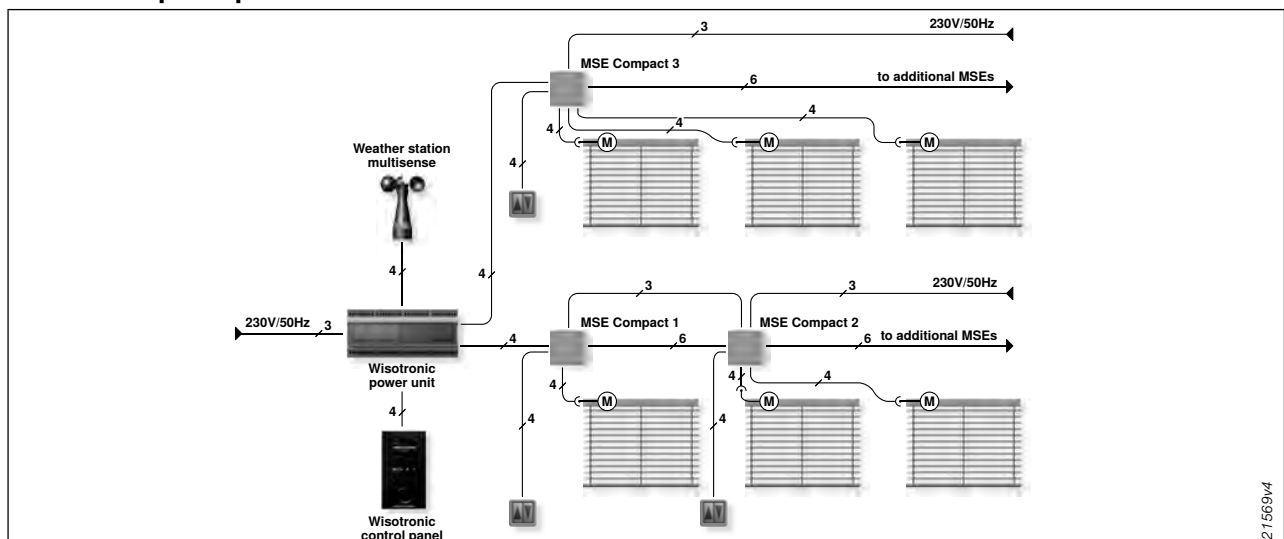


fig. 428: Wisotronic 2 channels with weather station multisense and MSE compact

## Description

### WAREMA climatronic® 3.0

- One control panel is required per WAREMA climatronic® system
- Administration of up to 64 channels per WAREMA climatronic® system
- For controlling up to 1200 actuators (max. 7200 power consumers)
- Operation of the connected power consumers is possible individually or in groups
- Up to 16 scenes can be set
- Temperature and humidity sensor integrated in the control panel
- Two additional sensors for inside temperature/humidity can be connected
- History of important events that resulted, for example, in a move command to the sun shading system and weather data
- Switching and dimming of light
- Integrated slat tracking based on the position of the sun ensures the optimum positioning of the external venetian blind slats
- Automatic functions can be activated or deactivated for each channel
- Important safety functions (e.g. wind) are password-protected
- 4 sensor buttons, multifunction wheel and intuitive menu navigation with plain text display
- Commissioning and settings on the control panel or via WAREMA climatronic® studio software
- User-defined assignment of channel, group and scene names
- USB interface for connection to a PC
- Settings can be saved on an SD card or settings changed via PC can be re-transferred
- Available in the languages German, English, French, Italian, Norwegian, Spanish, Swedish, Japanese and Chinese
- Control via Android app, iOS app or via web browser with WAREMA climatronic® WebControl
- Radio operation possible via EWFS hand-held or wall-mounted transmitter (optionally available)
- KNX gateway turns this control panel into a WAREMA climatronic® KNX central weather unit



- 1 WAREMA climatronic® control panel
- 2 WAREMA climatronic® WebControl
- 3 WAREMA climatronic® weather station
- 4 WAREMA climatronic® switch actuator DIN rail-mounted housing
- 5 EWFS Hand-held transmitter

## Functional principle

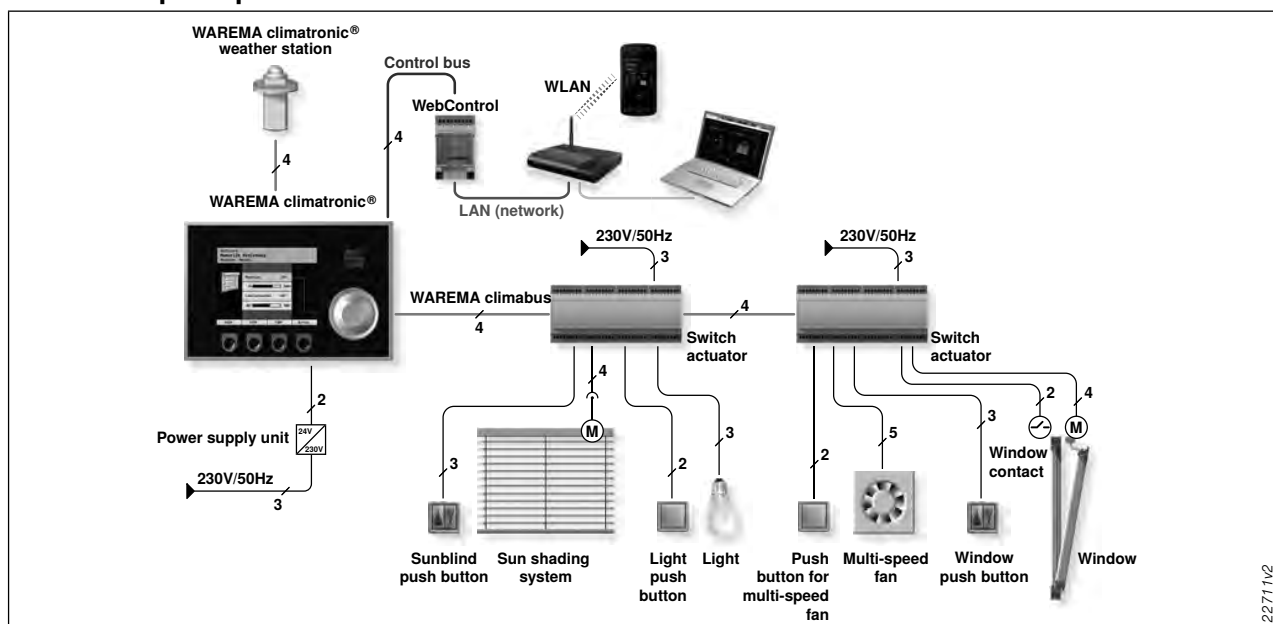


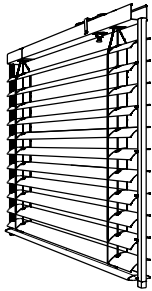
fig. 429: WAREMA climatronic®

# Requirements for external sun shading systems

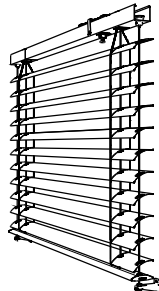
## External venetian blinds

### Product overview

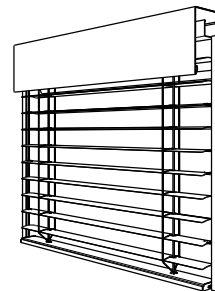
External venetian blinds, beaded slats with rail guidance



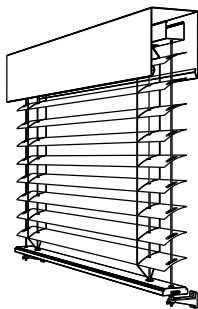
External venetian blinds, beaded slats with cable guidance



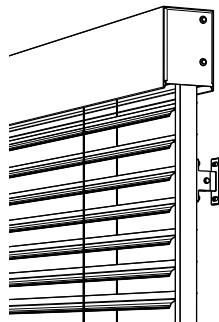
External venetian blinds, flat slats with rail guidance



External venetian blinds, flat slats with cable guidance



Metal system venetian blinds



### Height-to-width ratio of external venetian blinds

The maximum and minimum dimensions provided in the construction limit values depend on the height. For widths <1 m it has therefore to be ensured that the height does not exceed the size ratio of 1 to 4.

This means: for a width of 800 mm the external venetian blind can be produced only up to a height of 3200 mm without limiting the functionality.

For small fabric widths, maximum tolerances in accordance with the ITRS Industrieverband Technische Textilien – Roll-laden – Sonnenschutz e.V. guideline for assessing the product properties of external venetian blinds should be consulted.

### Manufacturing tolerances

Perfection lies in the detail - it's no wonder therefore that at WAREMA we pay a great deal of attention to even the smallest details: each product is manufactured with millimetre precision according to the preferences of the customer. Please note that this custom manufacturing process can lead to small production-related deviations:

Manufacturing tolerances T in mm	Order width W in mm	T	Order height H in mm	T
Dim-out slats	L ≤ 2000 2000 < L ≤ 4000 L > 4000	±1.5 ±2 ±2.5	H ≤ 4300	+0/-10
Beaded slats and flat slats	L ≤ 2000 2000 < L ≤ 4000 L > 4000	±1.5 ±2 ±2.5	H ≤ 5000	±5
Window system/Front-mounted ext. ven. blinds	W ≤ 2000 2000 < W ≤ 4000 W > 4000	±1.5 ±2 ±2.5	H ≤ 1500 1500 < H ≤ 2500 H > 2500	±2 ±3 ±5

### Weather protection

Rough climatic conditions place significant demands on external sun shading systems. WAREMA external venetian blinds have been tested in a wind tunnel and proven their

# Requirements for external sun shading systems

## External venetian blinds/External venetian blinds

qualities in practice – even under the most extreme weather conditions.

### Intended use

The external venetian blind and/or external blind is an external sun shading system and is used as sun or glare control. To ensure intended use of the product it must be retracted in time before any of the following conditions occur:

- Wind exceeding the admissible maximum wind limit value according to the tables on page 395
- Snowfall
- Thunderstorms and cold fronts (gusts)

Due to the nature of the system, entry of daylight cannot be completely avoided when closed. If complete dim-out of the room is required, additional dim-out measures must be taken.

Our oral and written advice is intended to explain the best possible use of our products and services to you. This does not release you from the obligation to examine this documentation thoroughly to convince yourself of the suitability of our products and services for your intended application. This primarily includes the examination of the general characteristics and specifically the adequate load bearing capacity of the mounting substructures, as well as the disclosure of all respective information in the order placed with us. If our product cannot be used as agreed by reason of incorrect or incomplete information, we or our vicarious agents shall accept contractual or non-contractual liability only in the event of intent or gross negligence. See also the valid terms and conditions.

### Operation in icy conditions

The operation of the product with temperatures around or below the freezing point can lead to malfunctions and/or damage to property in the case of unfavourable installation and building situations. After an impact with condensation water, rain or snow the product can freeze up with low temperatures. In the case of a control without ice alarm the control mode is to be switched off during winter. Before operation the product must be freed from snow and ice in order to make it operable. The operation of the product while iced over is forbidden.

### Products in the area of escape routes

External venetian blinds without special options must not be mounted in the area of escape routes, since external venetian blinds can not be retracted any more – e.g. in case of a power failure – and would thus block escape routes. Local regulations on escape routes have to be complied with.

### Wind resistance of extended unit

With external venetian blinds, the  $C_p$  value can vary greatly due to the dynamic movements of the curtain. For this reason, defining a wind speed would be unsuitable for evaluating this due to the static pressure, which an external venetian blind is able to withstand. This essential definition is made in Appendix A DIN EN 13659.

The substructure / distance to the facade/height/corner position also has an influence on the maximum possible wind speed and is not taken into account in the standard (DIN EN 1932:2013-09 Closures and awnings - Resistance to wind load - Test methods and performance criteria), even though these contributing factors have a significant impact on the product's wind resistance.

DIN EN 1932 (8.2.3 Layout and dimensions of the test piece) describes the test on a specified test value. (2000 mm x 2500 mm) and set static pressure, therefore the transferability of the tested wind resistance class (DIN EN 13659 Table 1 – Wind resistance classes) to deviating products is hardly possible in accordance with the standard DIN EN 13659.

In order to take these significant influences into account, recommendations for the correct use with maximum wind speeds in m/s are given on page 395 for the products (external venetian blinds). Please note that the maximum wind speeds here only apply for closed windows and not for corner positions.

In addition, the positioning and number of wind sensors used must be observed dependent on the geometry and position of the building. We are happy to advise you on this matter.

The external venetian blinds/external blinds will only meet the requirements of the stated wind speed limits in the mounted state, if

- the recommended number of brackets, holders and guides are mounted
- the instructions from the manufacturers for the screw anchors are followed

If the unit is installed on wood, it will not be possible to provide a wind speed limit due to the building material's inherent variability.

### Wind resistance of retracted unit

All WAREMA products designed for external use are designed for wind loads of 1.1 kN/m<sup>2</sup> in the retracted position.

The guideline "Wind loads for the construction of closures and awnings in a retracted position" determines the position where these products can be mounted without special precautions.

## Requirements for external sun shading systems

### External venetian blinds

#### Wind forces

The following Beaufort table contains the wind speeds allocated to Beaufort degrees and describes the effect of the wind.

Beaufort degree	Designation	Medium wind speed at a height of 10 m above ground in a free area		Back pressure (average value) q (N/m <sup>2</sup> )	Examples of the effects of inland wind
		(m/s)	(km/h)		
0	Calm	0–0.2	<1	0	Smoke rises vertically
1	Light air	0.3–1.4	1–5	0.6	Smoke drift indicates wind direction
2	Light breeze	1.5–3.4	6–12	6	Wind felt on exposed skin, leaves rustle, vanes begin to move
3	Gentle breeze Gentle wind	3.5–5.4	13–19	16	Leaves and small twigs constantly moving, light flags extended
4	Moderate breeze Moderate wind	5.5–7.4	20–27	30	Dust and loose paper raised, small branches begin to move
5	Fresh breeze Fresh wind	7.5–10.4	28–37	60	Small trees in leaf begin to sway, white horses begin to form on lakes
6	Strong breeze	10.5–13.4	38–48	110	Large branches in motion, whistling heard in overhead wires; umbrella use becomes difficult
7	High wind	13.5–17.4	49–62	160	Whole trees in motion. Effort needed to walk against the wind
8	Gale	17.5–20.4	63–73	230	Some twigs broken from trees, progress on foot is seriously impeded
9	Storm	20.5–24.4	74–87	330	Some branches break off trees, minor damage to buildings (roof tiles or smoke covers lifted off)
10	Storm	24.5–28.4	88–102	460	Wind breaks trees, extensive damage to buildings
11	Violent storm	28.5–32.4	103–117	600	Wind uproots trees, wide-spread storm damage
12	Hurricane-force	from 32.5	from 118	770	Serious devastation

Tab. 26: Wind forces in Beaufort



# Requirements for external sun shading systems

## External venetian blinds

Wind speed limits according to the Technical Directive Sheet 6.2, pages 1 and 2, of the German association "Rollladen + Sonnenschutz e. V.".

### Beaded slats

#### Rail-guided m/s

Height	Width	1000	1500	2000	2500	3000	3500	4000	4500	5000
1000	17	17	17	17	17	17	17	17	17	17
1500	17	17	17	17	17	13	13	13	13	13
2000	17	17	17	17	17	13	13	13	13	13
2500	17	17	17	17	17	13	13	13	13	13
3000	17	17	17	17	17	13	13	13	13	13
3500	17	17	17	13	13	13	13	13	13	10
4000	17	17	17	13	13	13	13	13	10	10
4500	17	17	17	13	13	13	10	10	10	10
5000	13	13	13	13	13	10	10	10	10	10

**Note:** For rail-guided units with dim-out slats, the next biggest table value may be used (up to a max. of 17 m/s).

### Flat slats

#### Rail-guided m/s

Height	Width	1000	1500	2000	2500	3000	3500	4000	4500	5000
1000	17	17	13	13	13	10	10	10	10	10
1500	17	17	13	13	13	10	10	10	10	10
2000	17	17	13	13	13	10	10	10	10	10
2500	17	17	13	13	13	10	10	10	10	10
3000	17	17	13	13	13	10	10	10	8	8
3500	17	17	13	13	13	10	10	10	8	8
4000	17	13	13	13	10	10	10	8	8	8
4500	13	13	13	10	10	10	8	8	8	8
5000	10	10	10	10	10	8	8	8	8	8

Table values should be changed in the following cases:

1. Facade distance  
>100 mm (rail-guided) or >200 mm (cable-guided) up to 300 mm:  
use next smallest table value  
>300 mm up to 500 mm: reduce table value by 2 steps
2. Reveal installation  
The next biggest table value may be used (max. of 17 m/s) for a max. width of up to 3000 mm
3. Material thickness  
<0.4 mm: use next smallest table value

To protect the external venetian blinds and for optimum shading, we recommend the usage of a WAREMA sun shading control system with wind and sun sensor.

#### Cable-guided m/s

Height	Width	1000	1500	2000	2500	3000	3500	4000	4500	5000
1000	17	17	17	13	13	13	13	13	13	13
1500	17	17	17	13	13	13	13	13	13	10
2000	17	17	17	13	13	13	13	13	13	10
2500	17	17	13	13	10	10	10	10	10	10
3000	13	13	13	10	10	10	8	8	8	8
3500	13	13	10	10	10	8	8	8	8	8
4000	13	10	10	10	8	8	8	8	8	8
4500	10	10	10	8	8	8	5	5	5	5
5000	10	10	8	8	8	5	5	5	5	5

#### Cable-guided m/s

Height	Width	1000	1500	2000	2500	3000	3500	4000	4500	5000
1000	17	17	13	13	13	10	10	10	10	10
1500	17	17	13	13	13	10	10	10	10	10
2000	17	17	13	13	13	10	10	10	10	10
2500	17	13	13	13	10	10	10	10	10	10
3000	13	13	13	10	10	10	8	8	8	8
3500	13	13	10	10	10	8	8	8	8	8
4000	13	10	10	10	8	8	8	8	8	8
4500	10	10	10	8	8	8	5	5	5	5
5000	10	10	8	8	8	5	5	5	5	5

### Fixing of products

When ordering, please ensure that the selected fixing accessories are suitable for the respective mounting substructure and that the processing instructions given by the fixing materials manufacturer are complied with.

External/internal venetian blinds without options must not be mounted in the area of escape routes, since external/internal venetian blinds can – e.g. in case of a power failure – not be retracted any more and would thus block escape routes. Local regulations on escape routes have to be complied with.

Noise emission level <70 dB(A)<sup>1)</sup>

1) For standard mounting, the noise emission level is <70 dB(A). This value may vary depending on the specific installation.

**Notes**

Drives Control systems	Safety systems Accessories	Planning	Cover panels	Guides	Light guidance/ external venetian blinds	Complete external venetian blinds	Premium facade venetian blinds	Basic facade external venetian blinds	Product characteristics	General information
---------------------------	-------------------------------	----------	--------------	--------	--	--------------------------------------	-----------------------------------	---	----------------------------	------------------------

## Customer Service Centre

### External venitian blinds

Tel. +49 93 91 20-3140 • Fax -3149  
raffstoren.international@warema.de

### Roller shutters

Tel. +49 93 91 20-3240 • Fax -3249  
rollladen.international@warema.de

### Blackout units

Tel. +49 93 91 20-3240 • Fax -3249  
verdunkelungen.international@warema.de

### Awnings

Tel. +49 93 91 20-3440, 3340  
Fax +49 93 91 20-3349  
markisen.international@warema.de

### Internal sun shading systems

#### Offers:

Tel. +49 93 91 20-3540 • Fax -3549  
inside.international@warema.de

### Order processing/Application technology:

Tel. +49 3722 710-3540 • Fax -3549  
inside.international@warema.de

### Control systems

Tel. +49 93 91 20-3740 • Fax -3749  
steuerungssysteme.international@warema.de



#### **WAREMA Renkhoff SE**

Hans-Wilhelm-Renkhoff-Straße 2  
97828 Marktheidenfeld • Germany  
Postfach 1355 • 97822 Marktheidenfeld  
Tel. +49 9391 20-0 • Fax -4299  
info@warema.de • www.warema.de

#### **WAREMA International GmbH**

Nordring 2  
97828 Marktheidenfeld • Germany  
Postfach 1355 • 97822 Marktheidenfeld  
Tel. +49 9391 20-0 • Fax -3899  
info@warema.com • www.warema.com

#### **WAREMA Austria GmbH**

Zaunweg 6  
5071 Wals bei Salzburg • Austria  
Tel. +43 662 853015-0 • Fax -99  
info@warema.at • www.warema.at

#### **WAREMA France SARL**

96, Avenue du Général de Gaulle  
92250 La Garenne Colombes • France  
Tel. +33 1 556609-40 • Fax -49  
info@warema.fr • www.warema.fr

#### **WAREMA Nederland B.V.**

Oude Graaf 8  
6002 NL Weert • Netherlands  
Tel. +31 495 530205  
Fax +31 495 524526  
info@warema.nl • www.warema.nl

#### **WAREMA Schweiz GmbH**

Staldenhof 1a  
6014 Luzern • Switzerland  
Tel. +41 41 25912-20 • Fax -49  
info@warema.ch • www.warema.ch

#### **WAREMA Sun Shading Systems (Shanghai) Co., Ltd.**

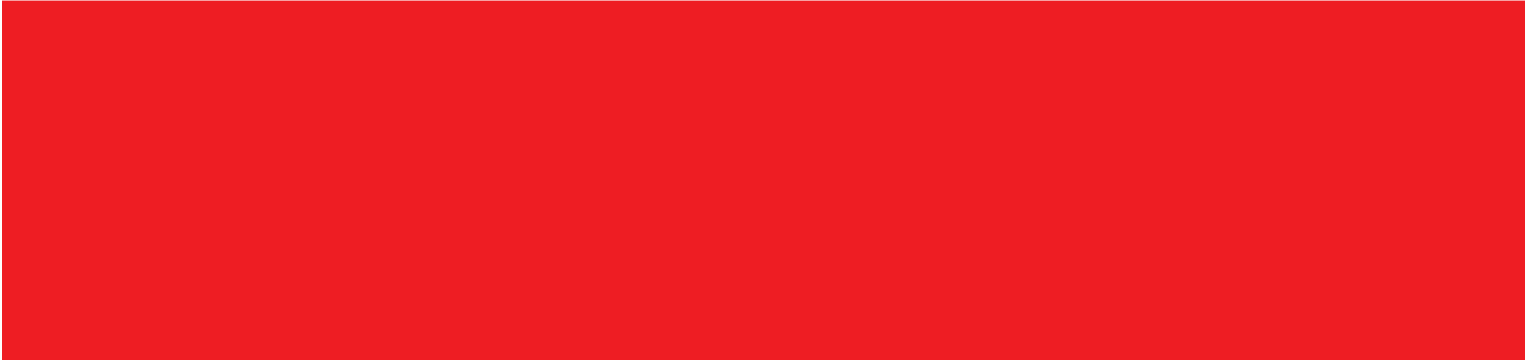
Bldg. 1, No. 123, Jiu Ye Road  
Shanghai Qingpu Industrial Zone  
201799 Shanghai • P.R. China  
Tel. +86 21 59869-288 • Fax -145  
info@warema.cn • www.warema.cn

#### **Beijing Office:**

Room 803, Building 11 • Jianwai SOHO  
39 East 3rd-Ring Road  
Chao Yang District  
100022 Beijing • P.R. China  
Tel. +86 10 586942-30 • Fax -23  
info@warema.cn • www.warema.cn

#### **WAREMA Korea Ltd.**

5F, Seongnam Chamber of Commerce  
and Industry 164 • Yanghyun-ro  
Bundang-gu • Seongnam-si  
Gyeonggi-do 463-829 • South Korea  
info@warema.co.kr  
www.warema.co.kr



**WAREMA International GmbH** • Nordring 2 • 97828 Marktheidenfeld • Germany  
[www.warema.com](http://www.warema.com) • [info@warema.com](mailto:info@warema.com)

Solflex AB försäljning och service västra Skåne. Showroom och rådgivning;  
Malmö Slussplan 1, 040-979745. Helsingborg Garnisonsg 12, 042-161635.  
[kontakter@solflex.se](mailto:kontakter@solflex.se) [www.solflex.se](http://www.solflex.se)