



punctum[®]
SWS Pointfixture-System



Ideas. Passion. Perfection.

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SWS
Gesellschaft für Glasbaubeschläge mbH
Friedrich-Engels-Str. 12
51545 Waldbröl
DEUTSCHLAND
Telephone: (+49) 02291-7905-0
Telefax: (+49) 02291-7905-10
info@sws-gmbh.de
www.sws-gmbh.de

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BANGRATZ Engineering Office and SWS

A cooperation that will benefit you

The collaboration between the BANGRATZ Engineering Office and SWS means two companies are cooperating that are setting new standards in glass architecture based on their individual potential for innovation coupled with their extensive expertise. Through the congenial interplay between the product and constructional aspects, completely new facilities emerge, leading to profitability for planners and users alike. Along with the exchange of knowledge and experience at the highest levels, daily business is characterized by synchronised collaboration. Take advantage of this teamwork to implement your glass construction projects better, quicker and more cost effective.



RéBan tested type statics

Shorten the planning phase by three or four weeks

Static calculations in glass architecture are required, also in connection with a general construction supervisory approval for our punctum® point-fixtured system. The elaborate procedure costs time, money, and impedes planning confidence. Through the cooperation with the BANGRATZ Engineering Office, we can provide you with a special service: we can have your planning documents inspected. Usually, you will obtain a certified type static after only three days! This has been made possible through a fast comparison with the RéBan system, in which over 300.000 approved type statics for glass architecture are contained in the meantime.

The RéBan advantages:

100% planning reliability
approx. 80% time saving
approx. 40% reduction of costs

The operation

1. You send us your planning documents



2. We do the technical enquiry

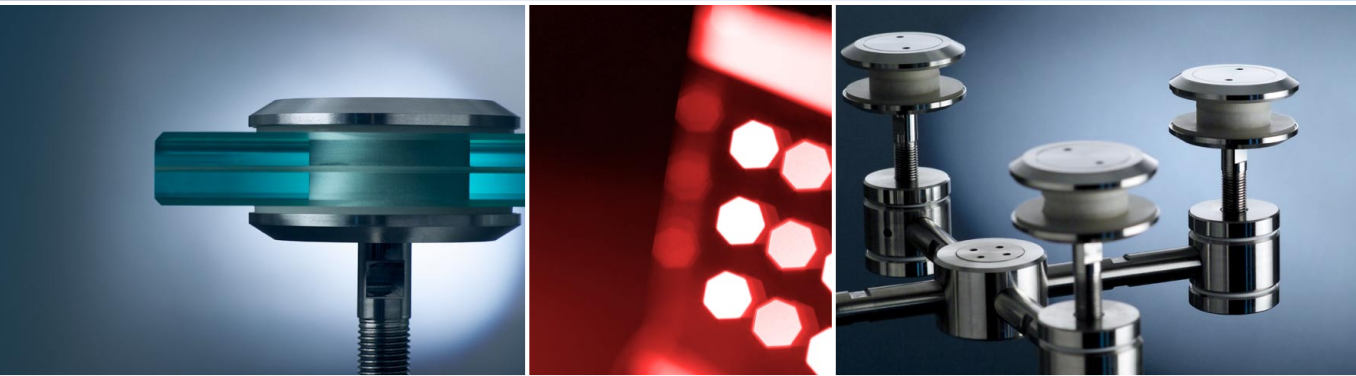


3. You will have the ***certified type statics***
latest after ***3 days***



punctum® is unique.

With our patented punctum® point-fixturing system, we have rung in a new era in glass architecture. Through uncompromising perfectionism in development and construction, we have managed to set new standards in form, function and operation.



punctum® meets the manifold challenges of glass-façade architecture with carefully conceived and unique detail solutions. We have found ways to provide considerably higher performance, from load distribution and on up through installation, including the aesthetics. One example is flexible support for working loads, which can allow a reduction of the glass thickness!

Many, many advantages emerge for users and planners. You can clearly profit from these in practice. In the future, implement glass architecture projects faster, better, easier and more efficiently with punctum®. By the way, punctum® has an AbZ (general construction supervisory approval) in part and the approval process is underway for other parts! On the following pages, we present you punctum® with all its advantages, possibilities and wide range of versions in detail.



Fascinating technology.

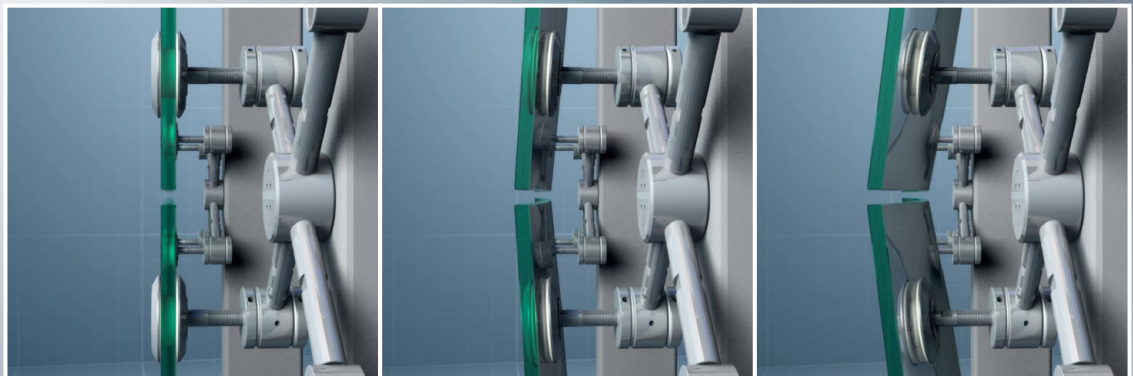
Permissible deviation of constructional elements, wind and traffic loads as well as thermal expansion are hot topics in glass architecture. With punctum®, we have developed very concrete solutions of the highest technical level for practical applications.

Reduce stress

punctum® handles working loads in an exceedingly intelligent manner. Instead of fixedly defying you, the system absorbs the forces and optimally distributes them to the supporting construction. This is possible through the patented interior swivel head, which harmoniously absorbs the forces in the middle of pane and conveys them to the supporting structure. In comparison with conventional systems that are equipped with front-set swivel heads, the loads are distributed considerably better – the glass thickness could be reduced potentially!

With balanced character

Often, dimensional deviations in the glass and supporting structure need to be compensated. punctum® optimally adapts to the circumstances through various adjustment facilities in connection with its flexible swivel head bearing. Loads are minimised by compensating for the deviation in the constructional elements.





Master of transformation

punctum® is a highly variable total system usable in indoor and outdoor areas with glass thicknesses of 10 to 21,52 mm. As the individual components are compatible with each other, punctum® provides a corresponding solution for almost any requirement – including the combination with the high-quality SWS spider technology.

Comes with AbZ

Parts of the punctum® programme already have an AbZ. That means you save time, costs and nerves because the approval procedure is omitted in certain cases. The approval procedure is being carried out for additional punctum® point-fixture system components.



Installed in no time at all.

punctum® provides many installation benefits in practice. The system components can be quickly and easily screwed together and, in combination with SWS tools can be precisely installed and adjusted in next to no time.

Always level

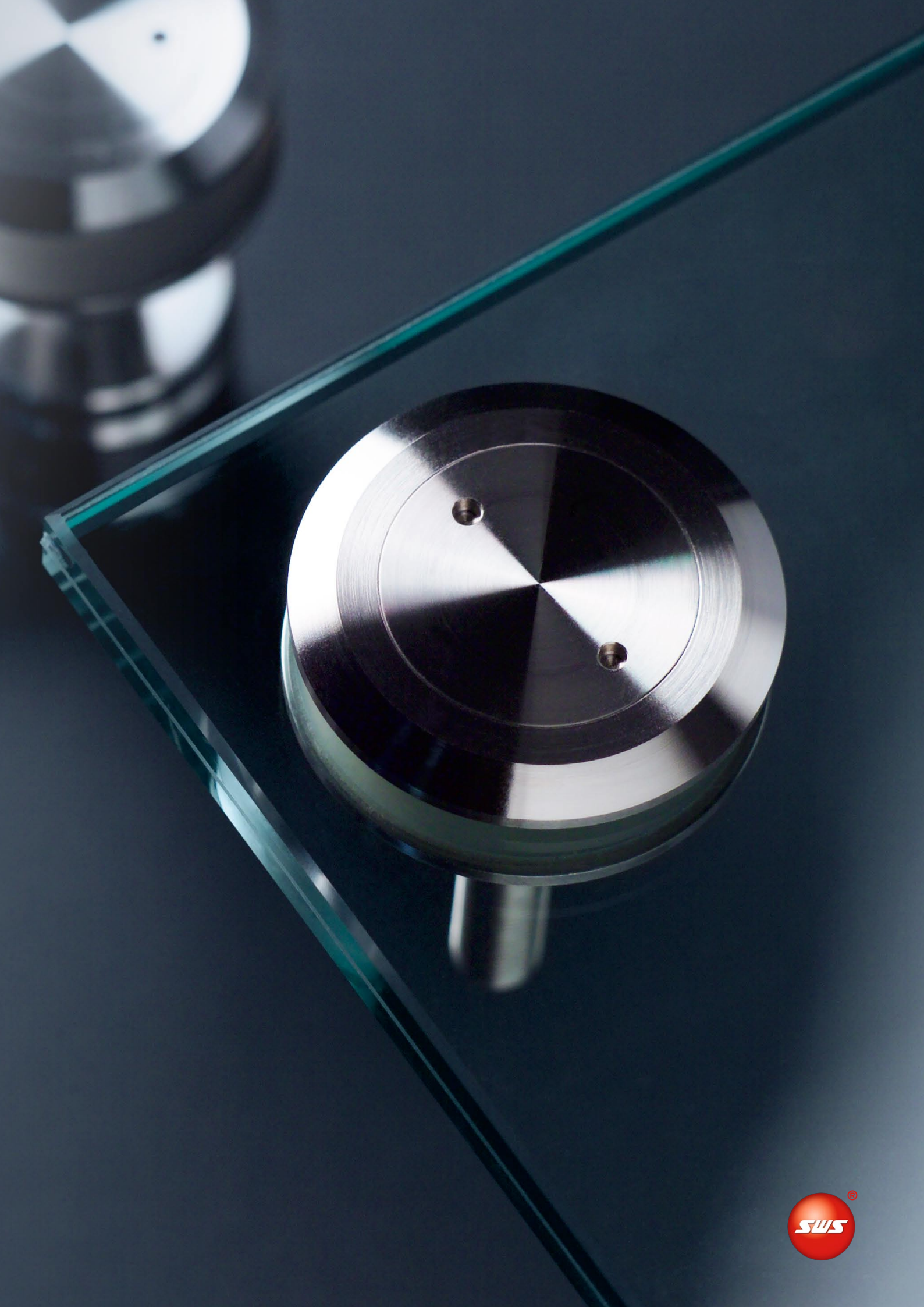
punctum® has a practical restore feature. A silicon washer in the interior always returns the flexibly supported pivot bolt back to a right angle to the glass surface. That extremely simplifies installation because the washer, along with the point fixture, can be threaded into the supporting-structure accommodation straight and controlled.

Installable from the back and front

Using an assembly wrench, the point fixture can be adjusted to the supporting structure from the back, and with a socket head wrench, also from the front. That means the fitter – depending on the construction situation – can optimally set the matching pane elements flush to each other, selecting the better and faster installation method each time.

From 12 to 3 o'clock

We've developed a simple installation method to ensure that installation runs as fast and uncomplicated as possible. For example, the correct torque [8 NM] is built-up while tightening the countersunk-head screw when, after tightening hand-tight, the assembly wrench is turned from 12 to 3 o'clock.



Really powerful.

SWS did not agree to any compromises when selecting the punctum® materials. Because one thing is permanently indispensable in glass-façade constructions: permanent safety.

Tough but fair

Stainless steel doesn't only look good, it is also especially durable – particularly the stainless steel quality we use. It is non-corroding, looks down its nose at the weather and is hardly impressed by yearlong usage.

With safety margins

To make sure there are absolutely no surprises, the material cross-sections used in individual punctum® building elements tend to be over dimensioned. In our tests, punctum® withstood load values of up to 41,77 KN (!). This value creates safety margins past the required level.

Gentle, durable support

To connect glass and stainless steel gently and well dampened with each other, the punctum® point fixtures are partially equipped with silicon rings and washers. Durability, weather resistance and the outstanding transparency of the materials perfectly underscore our preferred design-quality-demands.





Point fixture

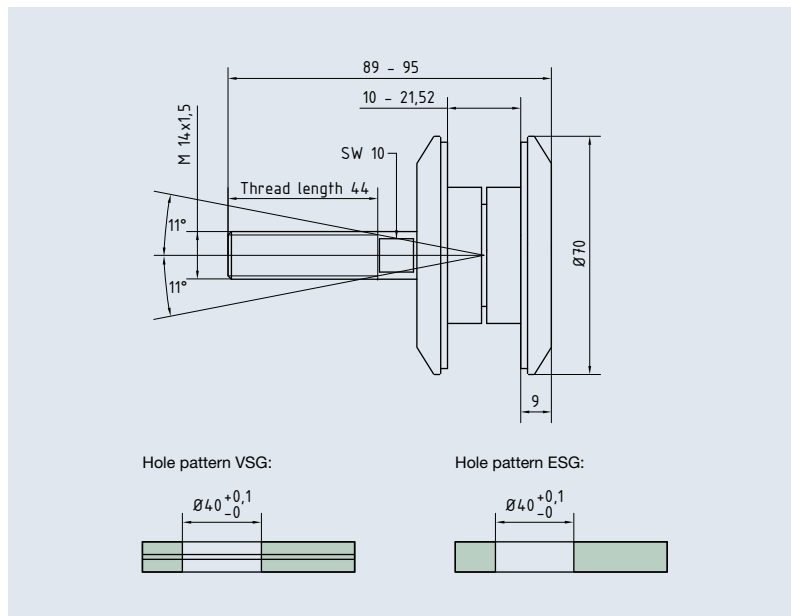


*Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	middle of pane
Glass thickness	10 - 21,52 mm
Diameter	70 mm
Thread length**	44 mm
Bore	see hole patterns

**Other thread lengths available on request!

Technical data:



Catalogue number:

Cat. no.	PU
17 001 5 65	4 pieces

Point fixture

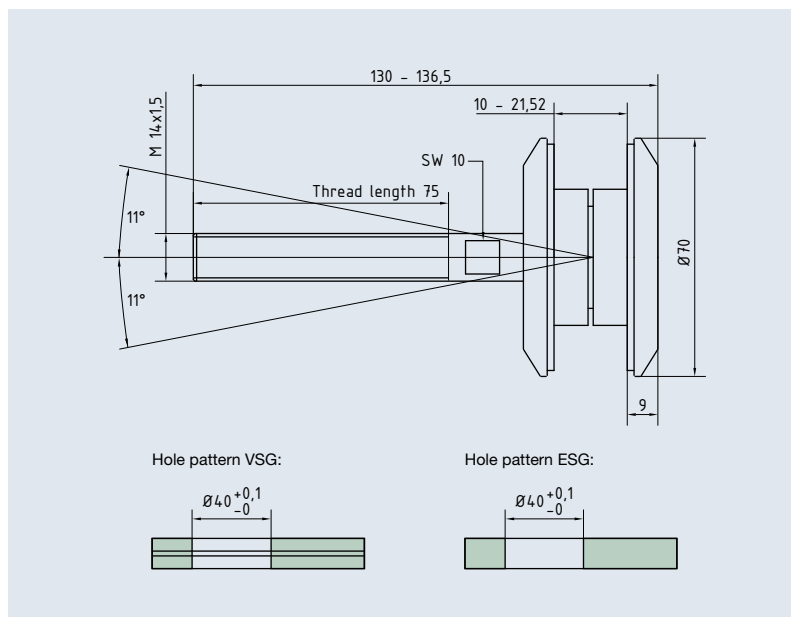


*Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	middle of pane
Glass thickness	10 - 21,52 mm
Diameter	70 mm
Thread length**	75 mm
Bore	see hole patterns

**Other thread lengths available on request!

Technical data:

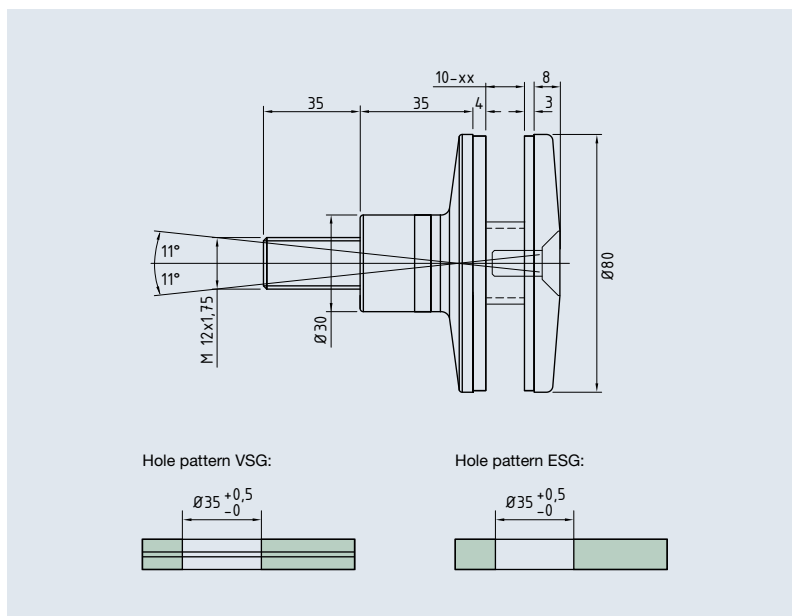


Catalogue number:

Cat. no.	PU
17 002 5 65	4 pieces

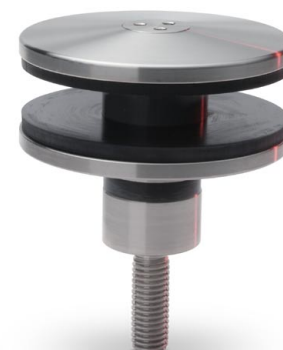
Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 005 5 65	4 pieces



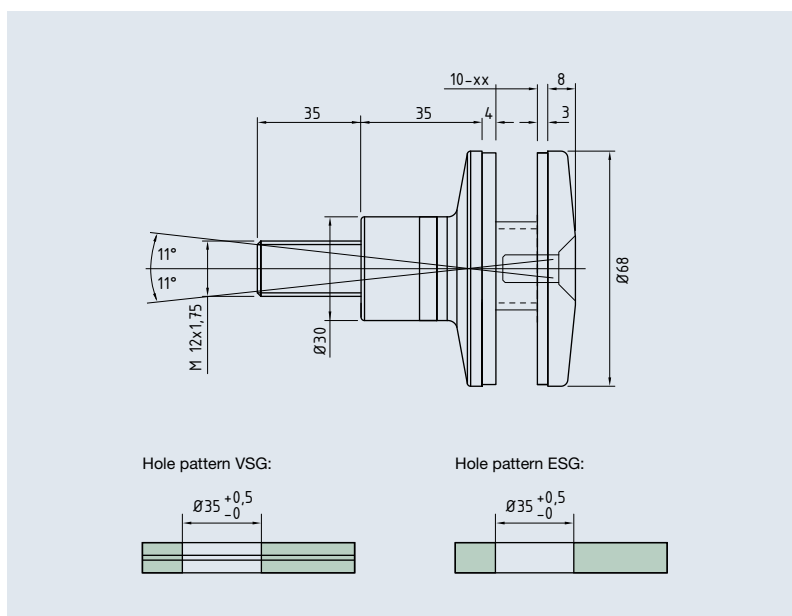
*General construction supervisory approval granted!!
Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	in front of the pane-middle
Glass thickness**	10 - xx mm
Diameter	80 mm
Thread length***	35 mm
Bore	see hole patterns

** Please state the glass thickness when placing orders!
***Other thread lengths/sizes available on request!

Point fixture

Technical data:



Catalogue number:

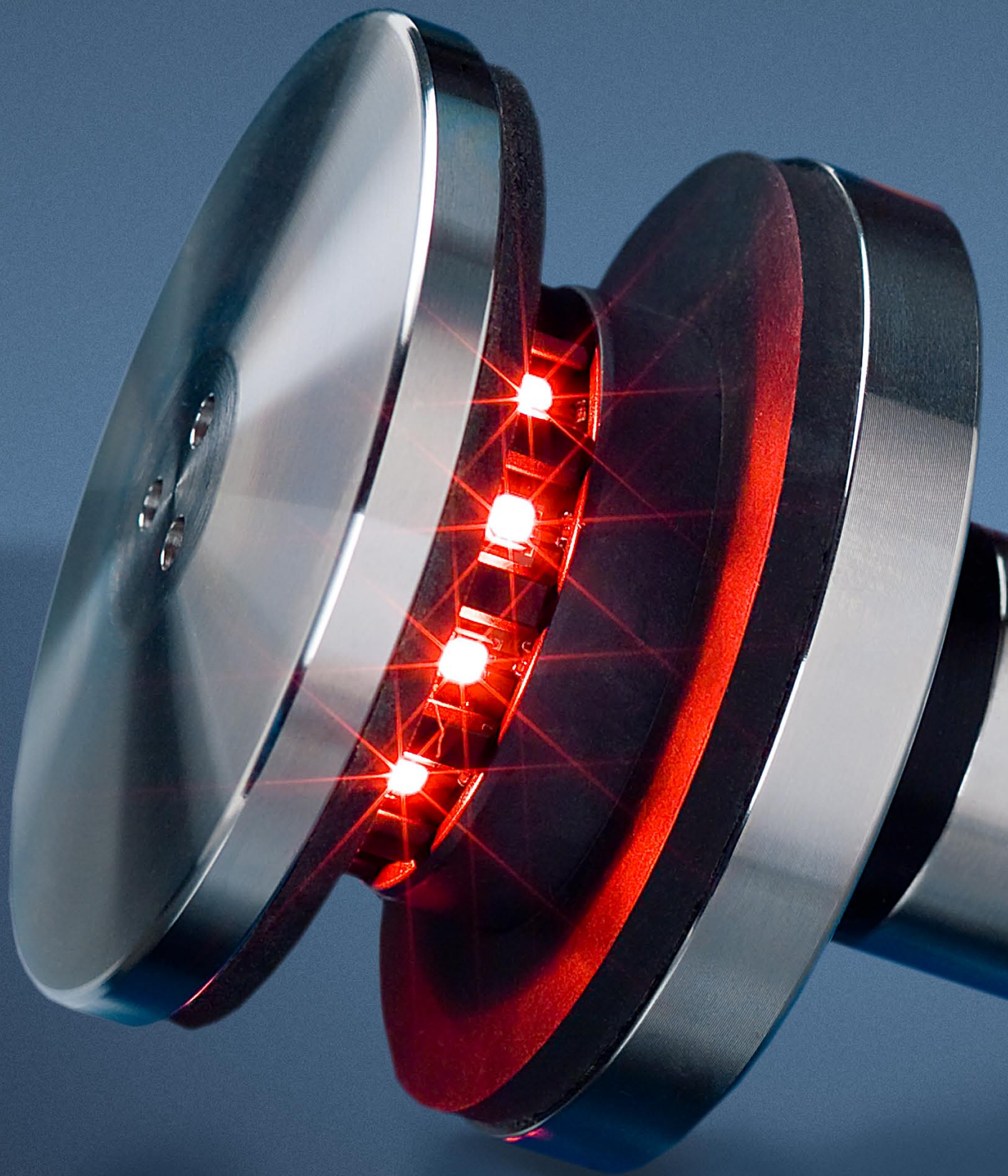
Cat. no.	PU
17 006 5 65	4 pieces



*General construction supervisory approval granted!!
Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	in front of the pane-middle
Glass thickness**	10 - xx mm
Diameter	68 mm
Thread length***	35 mm
Bore	see hole patterns

** Please state the glass thickness when placing orders!
***Other thread lengths/sizes available on request!



Sheds light on the darkness.

With punctum® lux, the companies INSTA and SWS have managed to turn a vision into a reality together. Using the point-fixture integrated LED technology, complete glass façades are illuminated in any conceivable colours.

Setting lighting accents

punctum® lux gives builders and architects a completely new deployment of the style element of light. Via illuminated façades, buildings are transformed into luminous elements and stand apart in the nightly urban silhouette, set accents and attract attention. Alternating light scenarios facilitate staging moods.



Modern design

During the day, the innovative point fixtures convince with a modern, reduced design. The matt lustre in the mirrored stainless steel surfaces gained by applying special fine-mechanics workmanship enhances the appealing aesthetics in modern glass façades.

INSTA and SWS

The development and realisation of the punctum® lux is based on the collaboration of the two companies INSTA and SWS. Only through the merging of the experiences and knowledge from the sectors electronic building-system engineering and glass construction-hardware has the demanding implementation become feasible.



Sophisticated and intelligently innovative.

The punctum® lux point fixture is a technical masterpiece. Connecting the holding function with the façade illumination, possible for the first time only after extensive development, stands in the centre of attention and convinces with many details.

Low-volt technology

The illuminated, entire glass façades were a great challenge even from the safety aspects. Thanks to punctum® lux low-volt technology, planning and installation – as compared with conventional systems – have now been considerably reduced. Additional advances are the high maintenance and energy efficiencies.

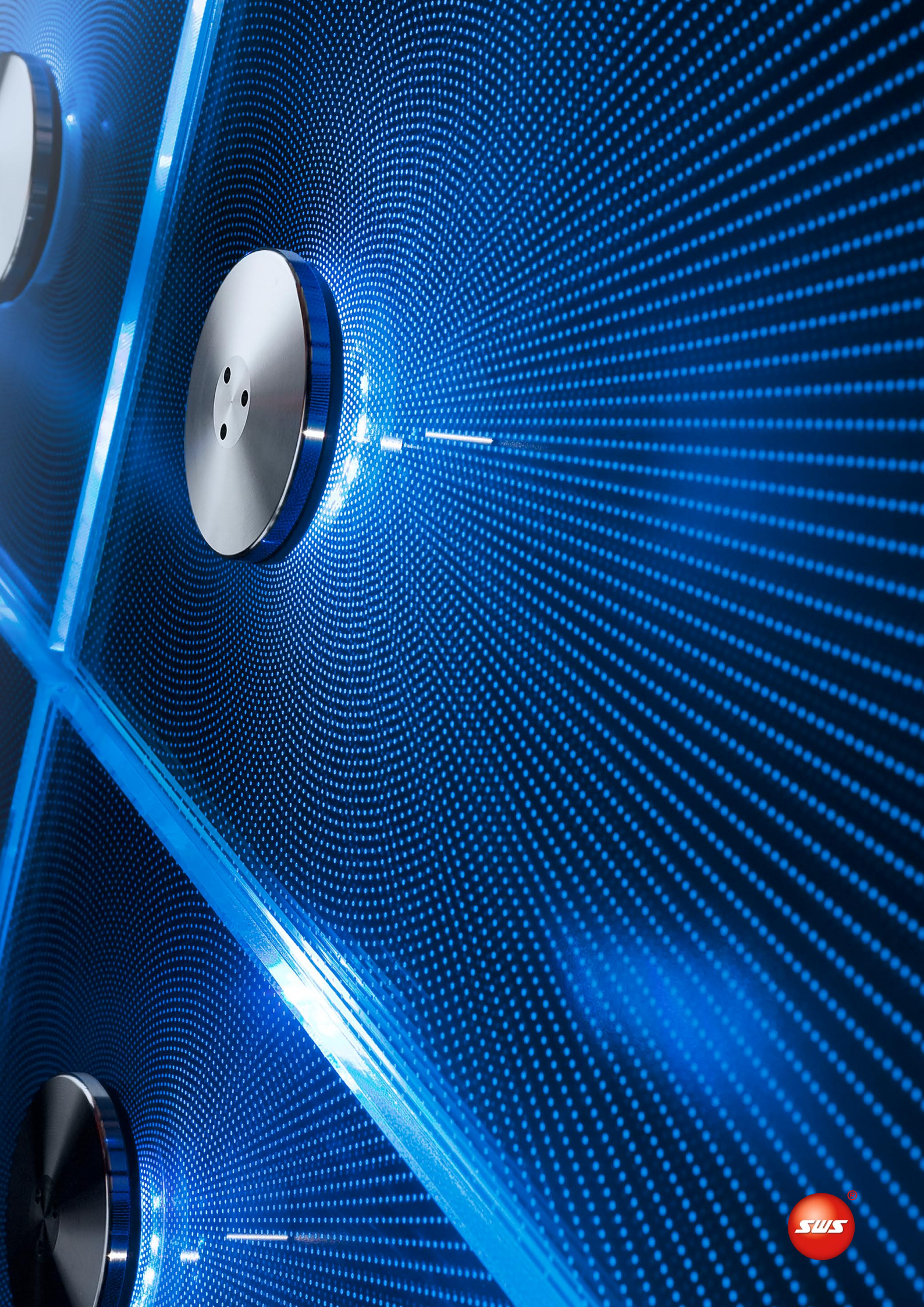
16,7 million colours

In connection with the instalight® LEDTRIX module, the colours of light in the RGB spectrum (16,7 million colours) can be freely selected. On top of that, by linking to the building engineering via a BUS system, comfortable control including programming impressive light scenarios is now also feasible.

Corporate architecture

Imprinting the glass makes the LED-light radiated into the glass surface by punctum® lux visible. This print can be designed so that light patterns arise, which, for example, let a corporate logo appear in the Corporate Design colours – additional room for creativity emerges for architects and designers.





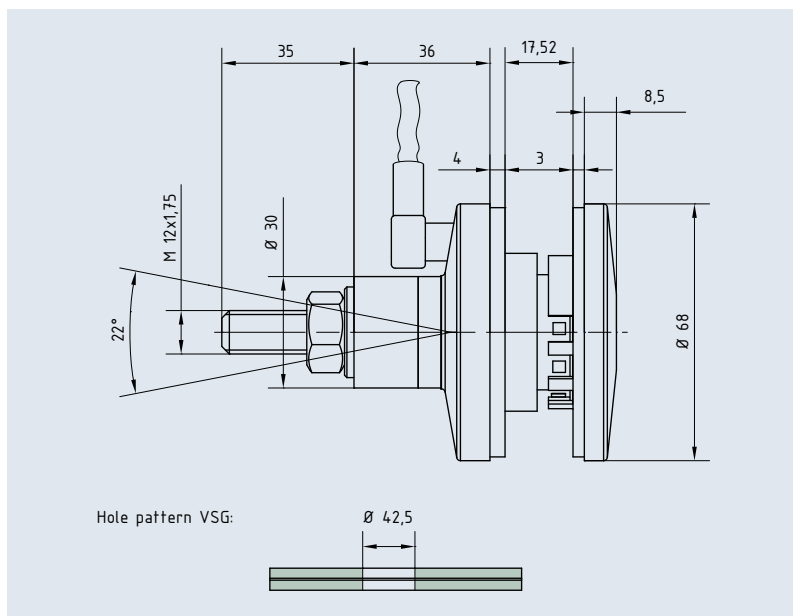


“Façade” application example



Point fixture

Technical data:



Version	VA mirrored
Retaining pin	flexible
Force initiation	in front of pane-middle
Glass thickness	17,52 mm
Diameter	68 mm
Thread length*	35 mm
Bore	see hole pattern

* Other thread lengths available on request!

Catalogue number:

Cat. no.	Rated voltage	LED-colours	Power	IP	Channels	Weight	PU
17 007 5 65	28 V DC	RGB	2,2 W	IP 67	3	ca. 0,7 kg	1 piece

Attention:

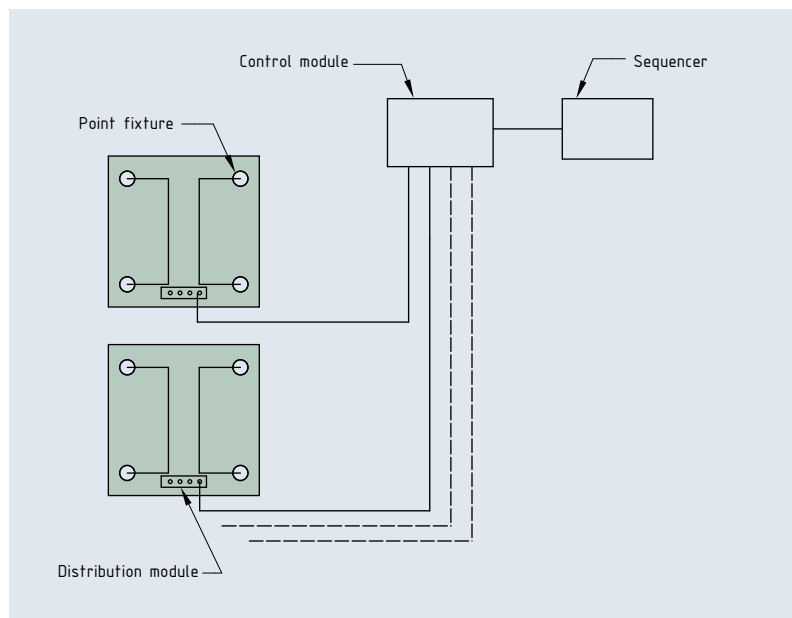
Please state your desired cable lengths.
available cable lengths: 0,3 m; 1 m; 2 m

Attention:

Individual project configuration!

Take advantage of our planning competence when configuring major construction projects!

“Wiring schema”

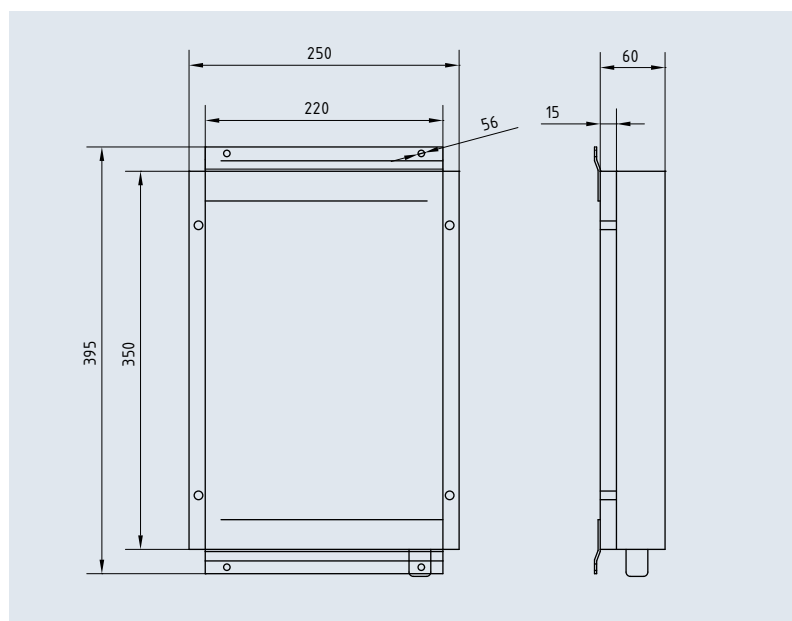


Point fixture control module

- control of max. 16 RGB-point fixtures in single operation
- or 48 RGB point fixtures in parallel operation with 4 point fixtures
- for interior use (IP 20)



Technical data:



Catalogue number:

Cat. no.	PU
17 010 0 00	1 piece

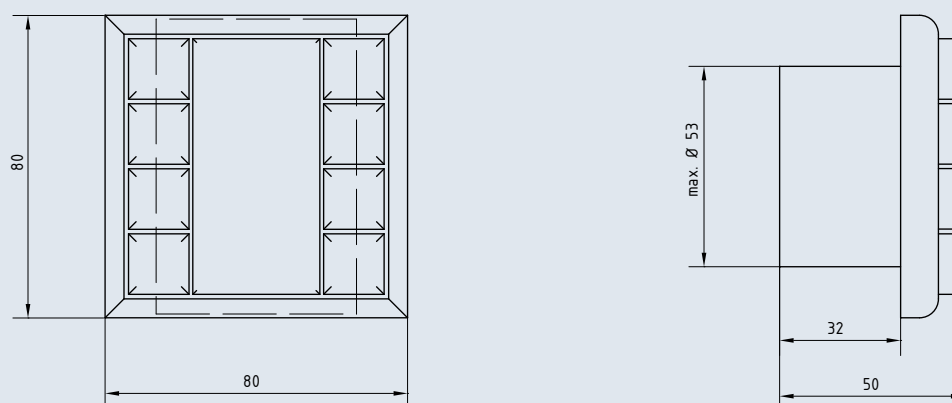
Vario Sequencer

- sequencer to control 48 single-colour or 16 RGB channels
- simple operation via 8 buttons
- the colours in a light scenario can be individually set
- retrieval of 2 colour sequences in 9 speeds piece



Structural shape	flush mounted device with adaptor and frame
Ambient temperature t_a	+5 °C to +45 °C
Display/control	5 status LED's/ 8 buttons
Short-circuit proof	yes
No load operation	fused
IP	IP 20
Protection class	III
Controllable channels	48
Specifications for laying	SELV
Thermal fuse	no, not required!

Technical data:



Catalogue number:

Cat. no.	Material	Surface style	Rated voltage	Power	PU
17 011 0 25	various materials	white	28 V DC	0,75 W	1 piece
17 011 0 59		stainless steel likewise			

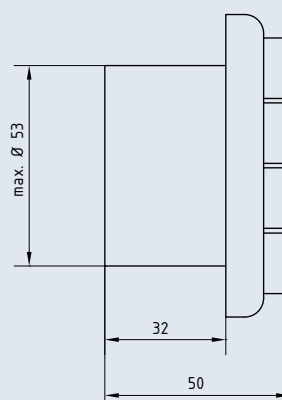
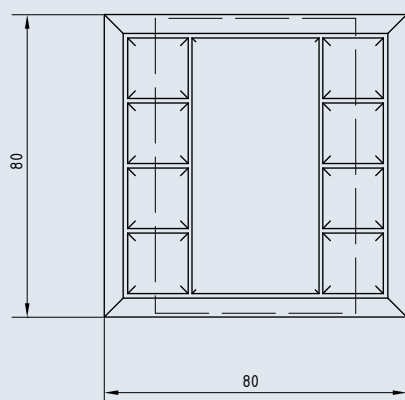
Vario Wireless Sequencer



- all the features of the Vario Sequencer plus control via remote control
- parallel control of multiple Vario Wireless Sequencers or individual control of up to three Vario Wireless Sequencers using a handheld remote control
- master dimming and integration into light scenarios is exclusively done via the handheld remote

Structural shape	flush mounted device with adaptor and frame
Ambient temperature ta	+5 °C to +45 °C
Display/control	1 status LED's/ 8 buttons
Short-circuit proof	yes
No load operation	fused
IP	IP 20
Protection class	III
Controllable channels	48
Specifications for laying	SELV
Thermal fuse	no, not required!
Carrier frequency (ASK)	433,42 MHz

Technical data:



Catalogue number:

Cat. no.	Material	OberflächenVersion	Rated voltage	Power	PU
17 012 0 25	various materials	white	28 V DC	0,75 W	1 set
17 012 0 59		stainless steel likewise			

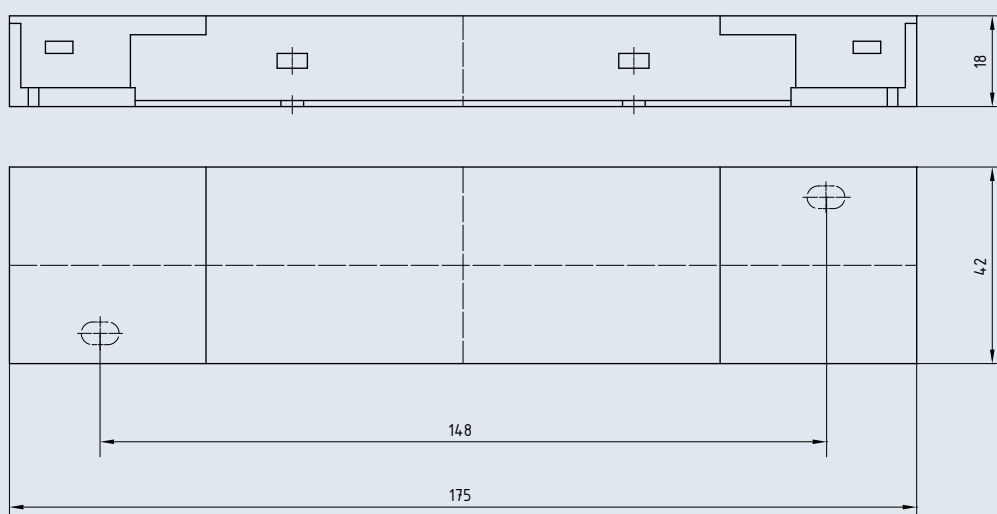
Vario Wireless Sequencer EB

- compact panel device with all the Vario Wireless Sequencer features but without control buttons
- control of all functions via the handheld remote



Structural shape	panel device
Ambient temperature t_a	+5 °C to +45 °C
Wireless triggering	handheld transmitter
Short-circuit proof	yes
No load operation	fused
IP	IP 20
Protection class	III
Controllable channels	48
Specifications for laying	SELV
Thermal fuse	no, not required!
Carrier frequency (ASK)	433,42 MHz

Technical data:

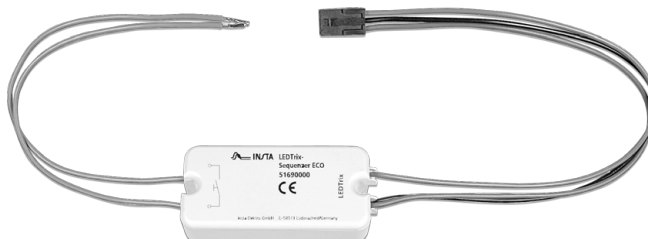


Catalogue number:

Cat. no.	Rated voltage	Power	PU
17 013 0 00	28 V DC	1,3 W	1 set

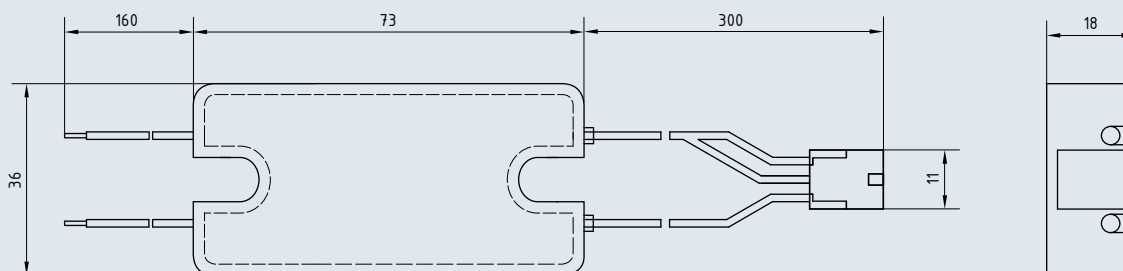
Eco Sequencer

- economical, cost effective starter variant for small standard applications, e.g. advertising displays/ luminous advertising
- function to switch on the most recently activated colour scheme
- retrieval of 2 colour sequences in 3 speeds each
- the sequencer is operated using the supplied button



Structural shape	panel device
Ambient temperature t_a	+5 °C to +35 °C
Display/control	no/one external button
Short-circuit proof	yes
No load operation	fused
IP	IP 20
Protection class	III
Controllable channels	48 single-colour or 16 mixed colours (RGB)
Specifications for laying	SELV
Thermal fuse	no, not required!

Technical data:

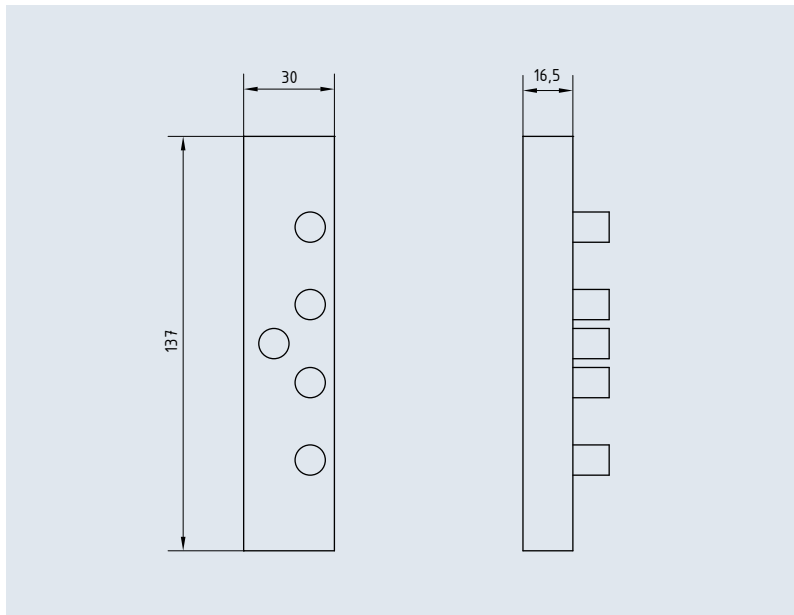


Catalogue number:

Cat. no.	Rated voltage	Power	PU
17 014 0 00	28 V DC	0,4 W	1 piece

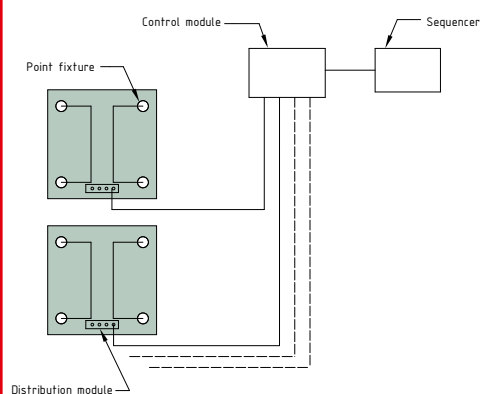
Point fixture distribution module

Technical data:



- distribution module for operating 4 point fixtures on one RGB control module output
- for outdoor use (IP 67)
- incl. feed line to control module, length: 15 m

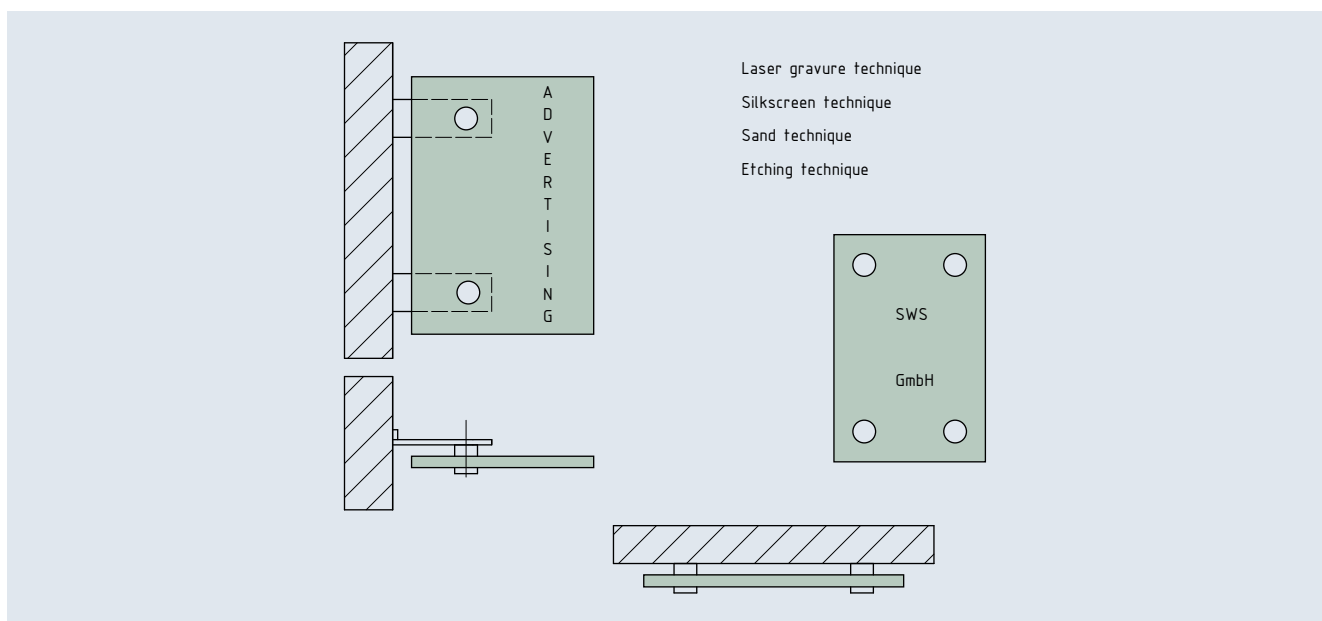
“Wiring schema”



Catalogue number:

Cat. no.	PU
17 015 0 00	1 piece

„Display“ control



Attention:

Please contact us for individual configurations for displays!

Point fixture

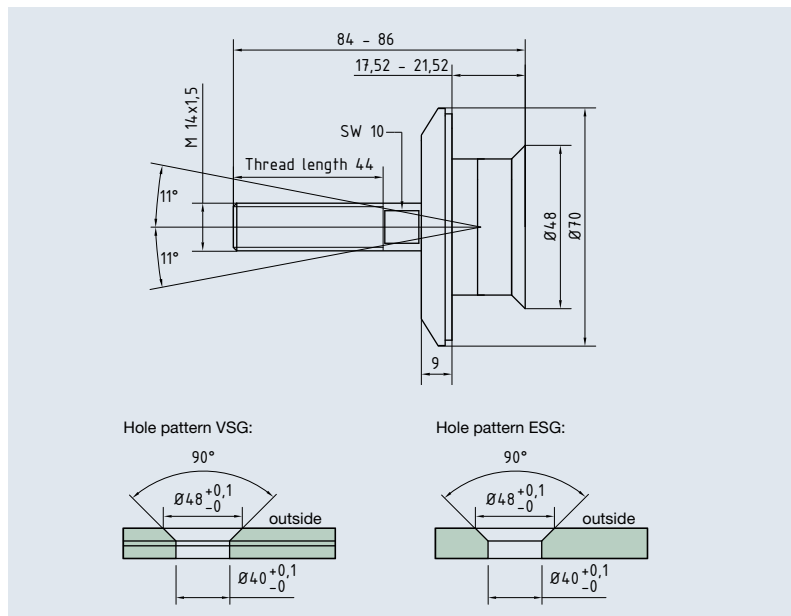


Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	middle of pane
Glass thickness	17,52 - 21,52 mm
Diameter	70 mm
Thread length*	44 mm
Bore	see hole patterns

*Other thread lengths available on request!

Technical data:



Catalogue number:

Cat. no.	PU
17 025 5 65	4 pieces

Point fixture

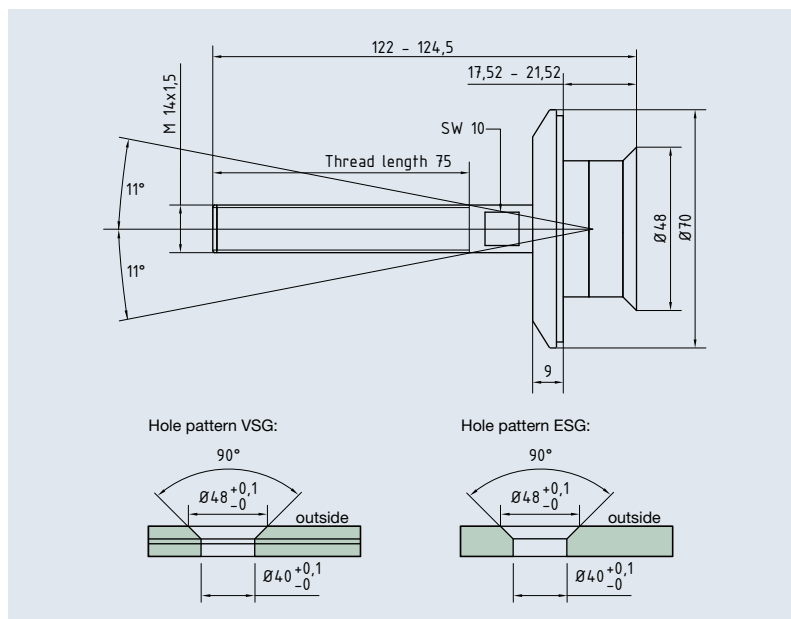


Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	middle of pane
Glass thickness	17,52 - 21,52 mm
Diameter	70 mm
Thread length*	75 mm
Bore	see hole patterns

*Other thread lengths available on request!

Technical data:

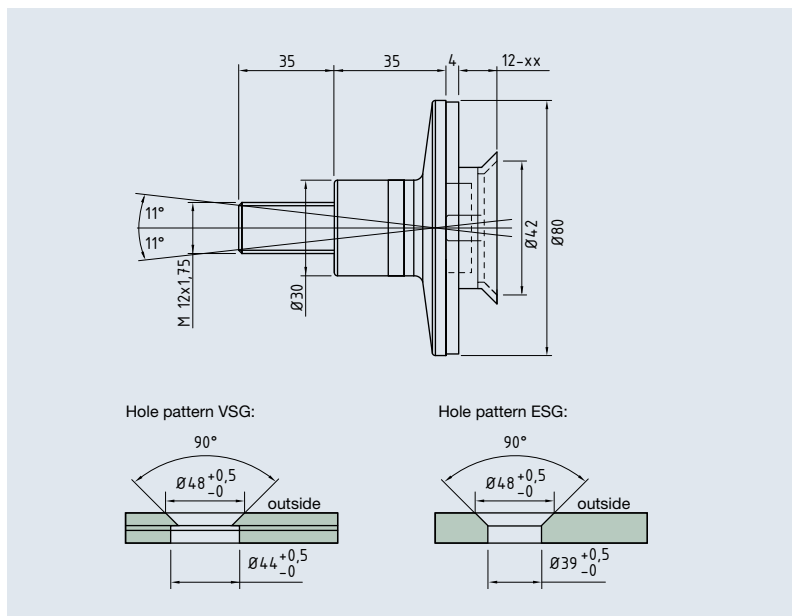


Catalogue number:

Cat. no.	PU
17 026 5 65	4 pieces

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 030 5 65	4 pieces



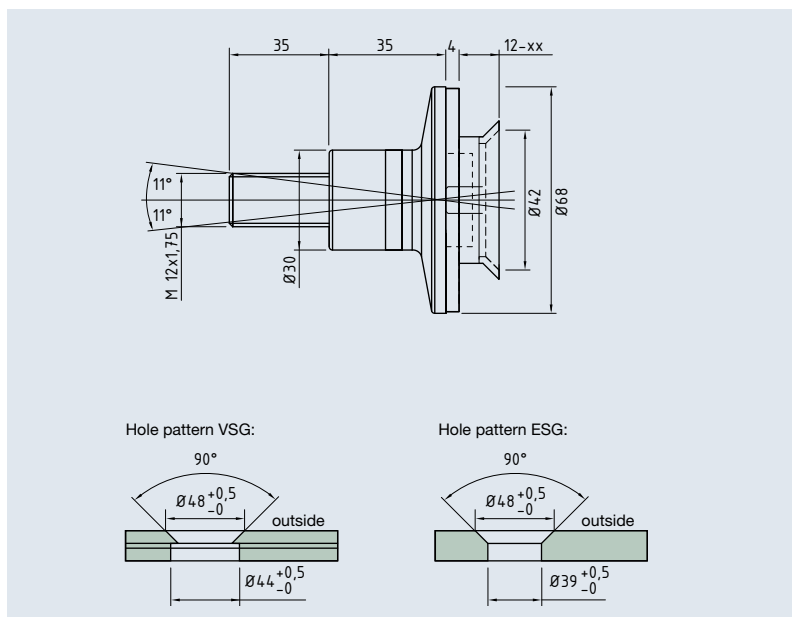
*General construction supervisory approval granted!
Scope of delivery: incl. 2 VA nuts + 2 VA fl at washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	in front of pane-middle
Glass thickness**	12 - xx mm
Diameter	80 mm
Thread length***	35 mm
Bore	see hole pattern

** Please state the glass thickness when placing orders!
***Other thread lengths available on request!

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 031 5 65	4 pieces



*General construction supervisory approval granted!
Scope of delivery: incl. 2 VA nuts + 2 VA fl at washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	in front of pane-middle
Glass thickness**	12 - xx mm
Diameter	68 mm
Thread length***	35 mm
Bore	see hole pattern

** Please state the glass thickness when placing orders!
***Other thread lengths available on request!

Point fixture

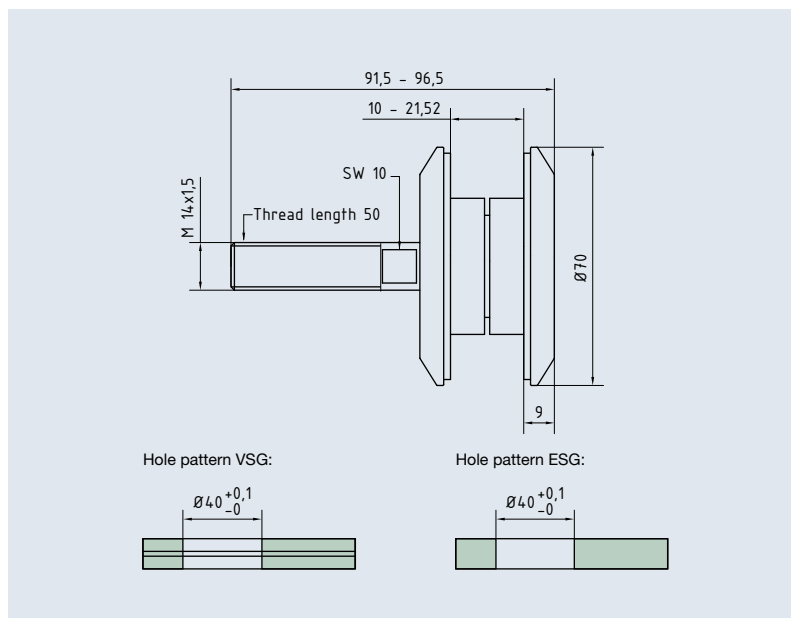


Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	fixed
Force initiation	middle of pane
Glass thickness	10 - 21,52 mm
Diameter	70 mm
Thread length*	50 mm
Bore	see hole patterns

*Other thread lengths available on request!

Technical data:



Catalogue number:

Cat. no.	PU
17 050 5 65	4 pieces

Point fixture

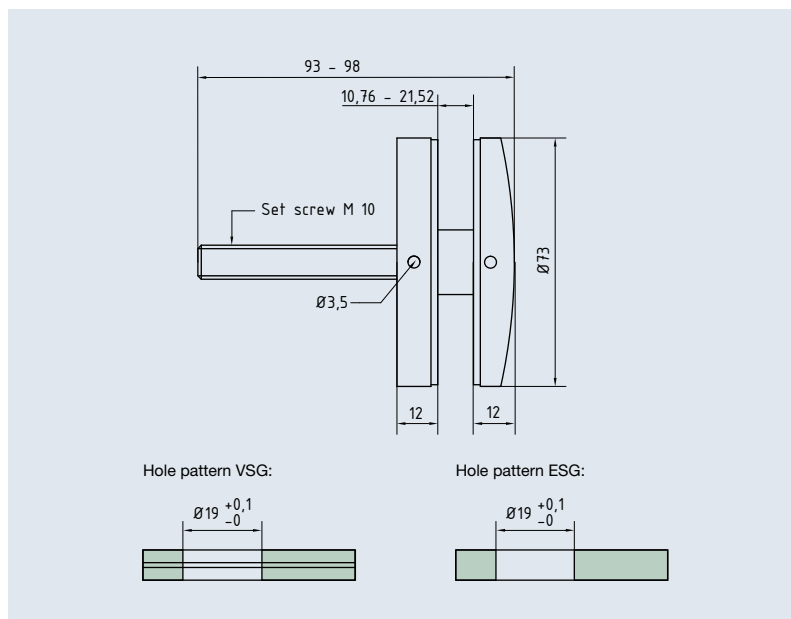


Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	fixed
Force initiation	middle of pane
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Thread length*	continuous
Bore	see hole patterns

*Other thread lengths available on request!

Technical data:

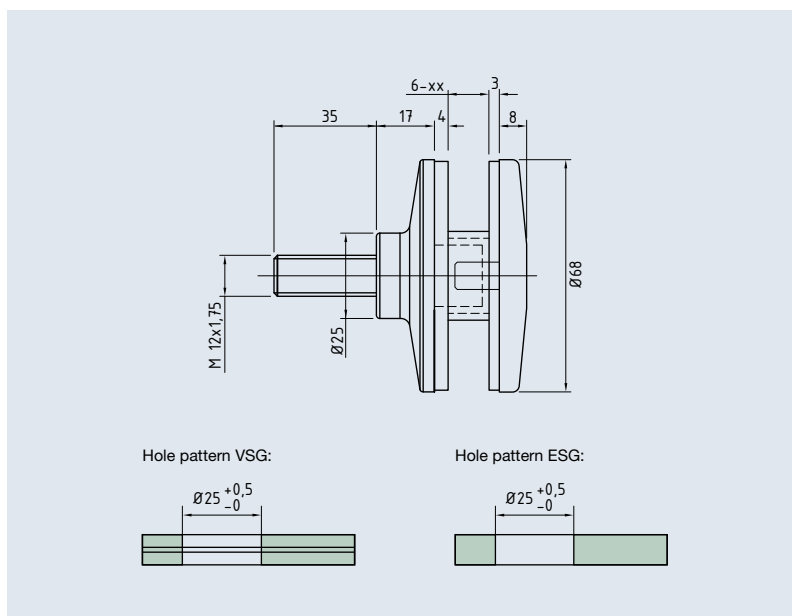


Catalogue number:

Cat. no.	PU
17 051 5 65	4 pieces

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 055 5 65	4 pieces



*General construction supervisory approval granted!!
Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

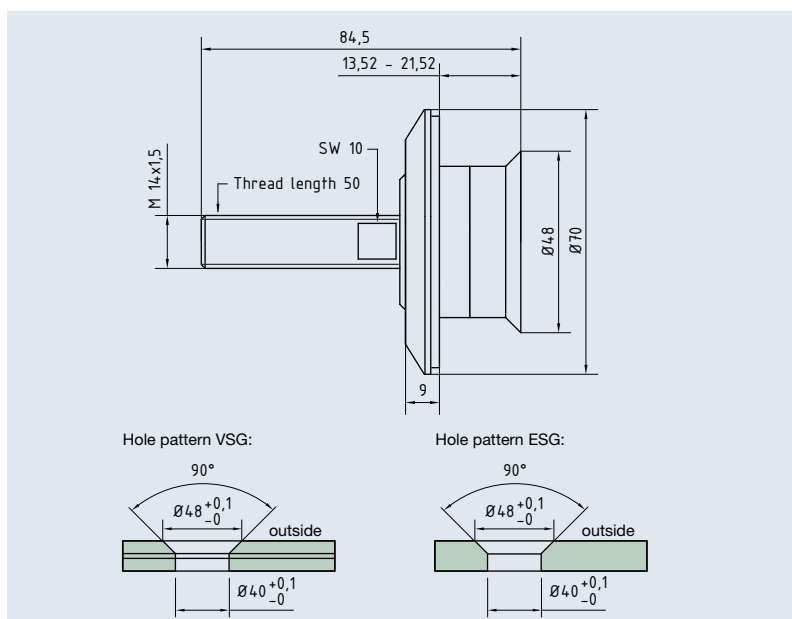
Version	VA mirrored
Retaining pin	fixed
Force initiation	middle of pane
Glass thickness**	6 - xx mm
Diameter	68 mm
Thread length***	35 mm
Bore	see hole patterns

** Please state the glass thickness when placing orders!

***Other thread lengths/sizes available on request!

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 075 5 65	4 pieces



Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	fixed
Force initiation	middle of pane
Glass thickness	13,52 - 21,52 mm
Diameter	70 mm
Thread length*	50 mm
Bore	see hole patterns

*Other thread lengths available on request!

Point fixture



*General construction supervisory approval granted!!
Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	fixed
Force initiation	middle of pane
Glass thickness**	8 - xx mm
Diameter	68 mm
Thread length***	35 mm
Bore	see hole patterns

** Please state the glass thickness when placing orders!
***Other thread lengths/sizes available on request!

Point fixture

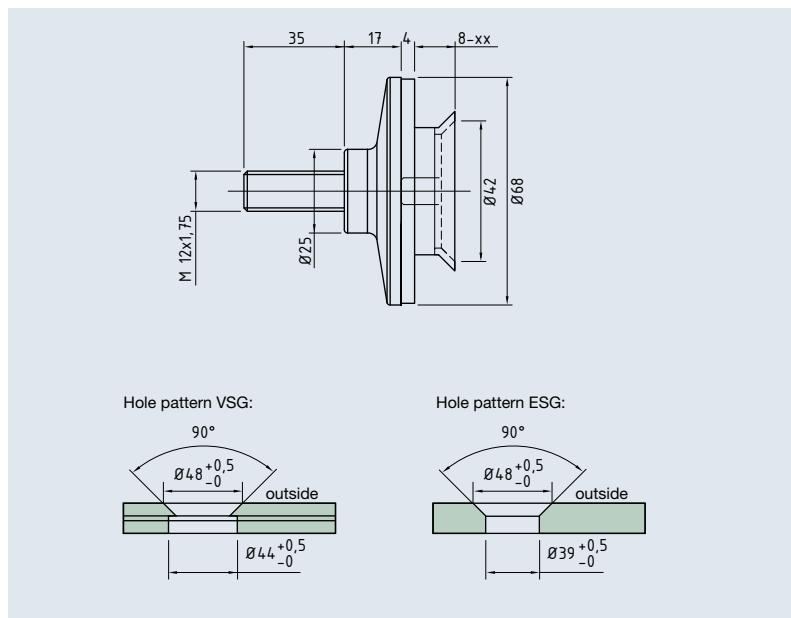


Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	in front of the pane-middle
Glass thickness	6 - 12 mm
Diameter	54 mm
Thread length*	44 mm
Bore	see hole patterns

*Other thread lengths available on request!

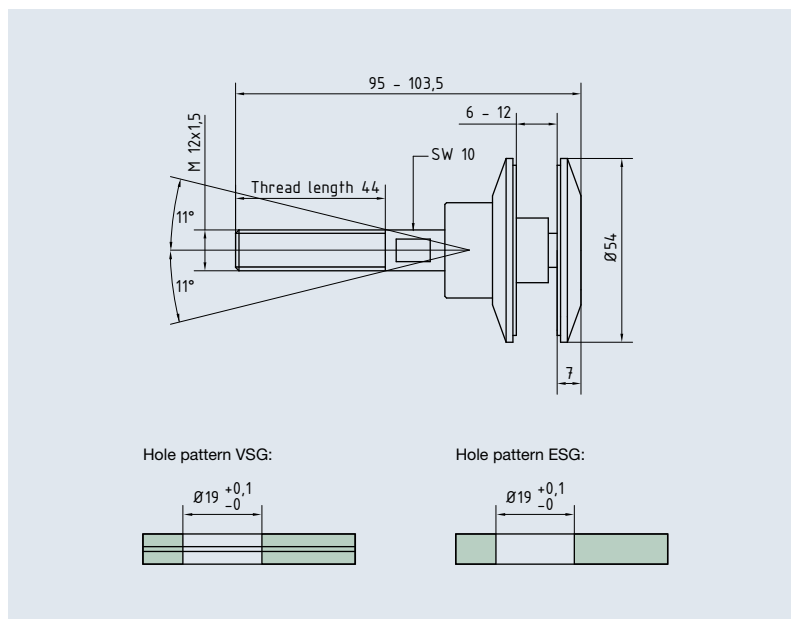
Technical data:



Catalogue number:

Cat. no.	PU
17 080 5 65	4 pieces

Technical data:

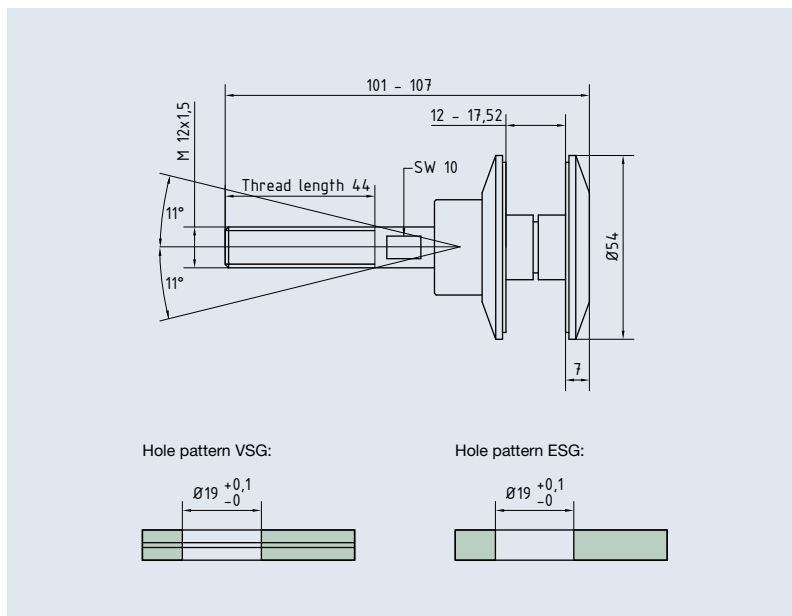


Catalogue number:

Cat. no.	PU
17 100 5 65	8 pieces

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 101 5 65	8 pieces



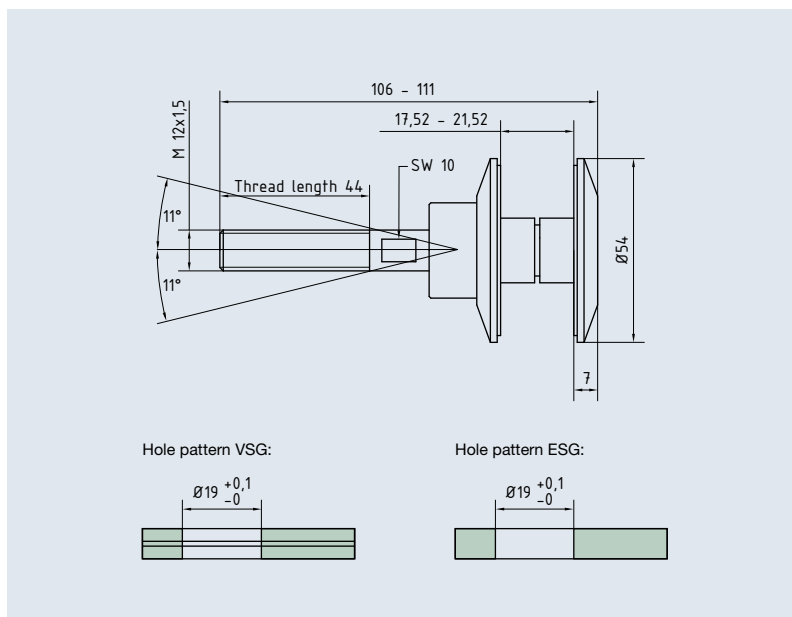
Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	in front of the pane-middle
Glass thickness	12 - 17,52 mm
Diameter	54 mm
Thread length*	44 mm
Bore	see hole patterns

*Other thread lengths available on request!

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 102 5 65	8 pieces



Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	in front of the pane-middle
Glass thickness	17,52 - 21,52 mm
Diameter	54 mm
Thread length*	44 mm
Bore	see hole patterns

*Other thread lengths available on request!

Point fixture



*General construction supervisory approval granted!!
Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	in front of the pane-middle
Glass thickness**	10 - xx mm
Diameter	52 mm
Thread length***	35 mm
Bore	see hole patterns

** Please state the glass thickness when placing orders!

***Other thread lengths/sizes available on request!

Point fixture

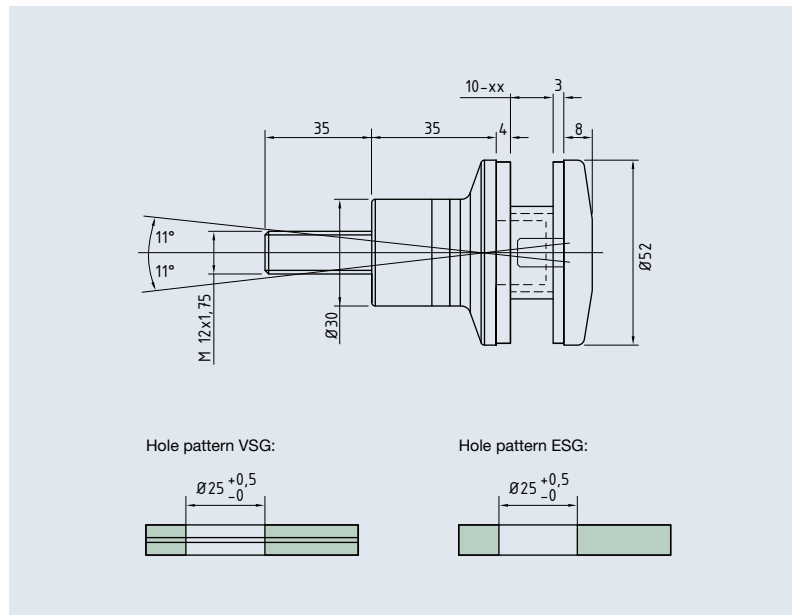


Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	in front of the pane-middle
Glass thickness	8 - 10 mm
Diameter	54 mm
Thread length*	44 mm
Bore	see hole patterns

*Other thread lengths available on request!

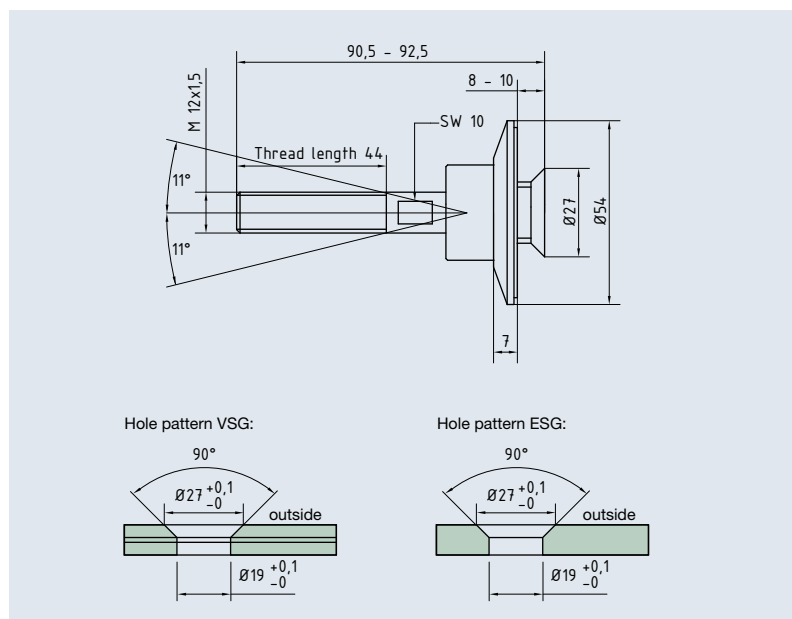
Technical data:



Catalogue number:

Cat. no.	PU
17 105 5 65	8 pieces

Technical data:

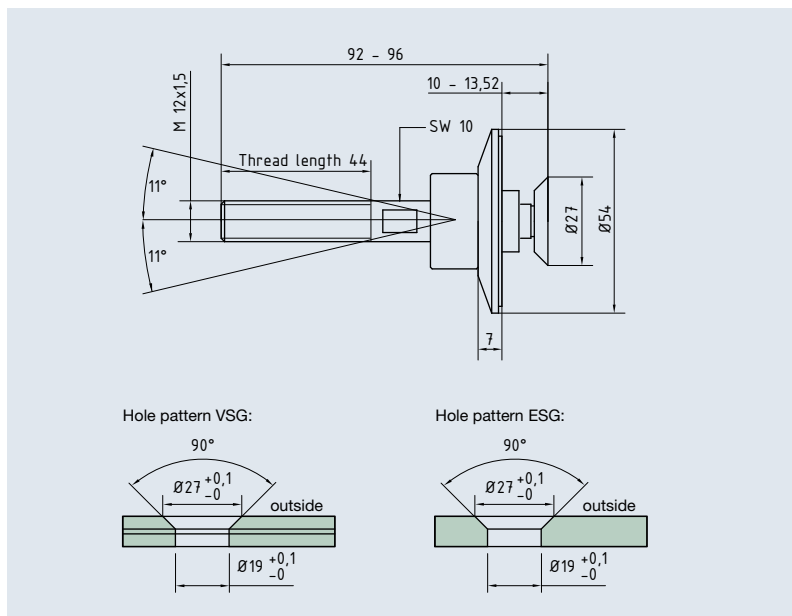


Catalogue number:

Cat. no.	PU
17 125 5 65	8 pieces

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 126 5 65	8 pieces



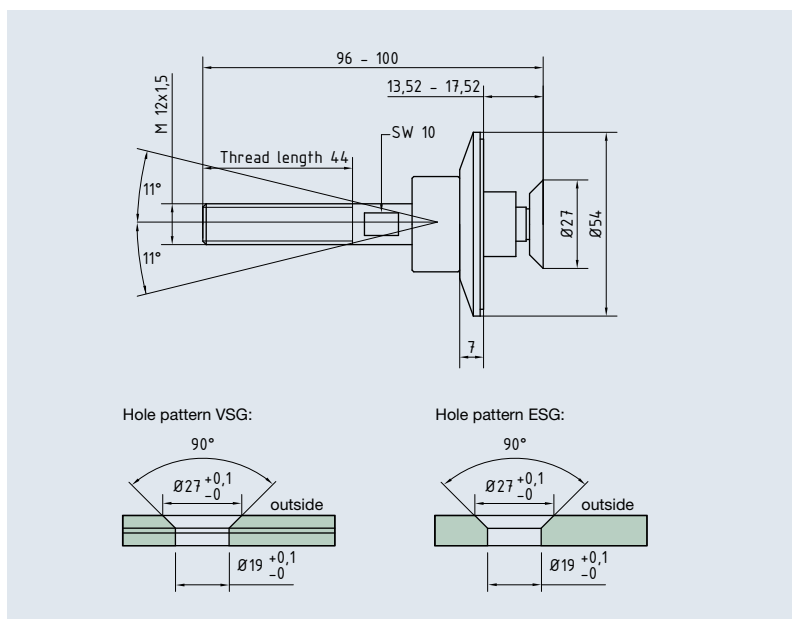
Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	in front of the pane-middle
Glass thickness	10 - 13,52 mm
Diameter	54 mm
Thread length*	44 mm
Bore	see hole patterns

*Other thread lengths available on request!

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 127 5 65	8 pieces



Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	in front of the pane-middle
Glass thickness	13,52 - 17,52 mm
Diameter	54 mm
Thread length*	44 mm
Bore	see hole patterns

*Other thread lengths available on request!

Point fixture

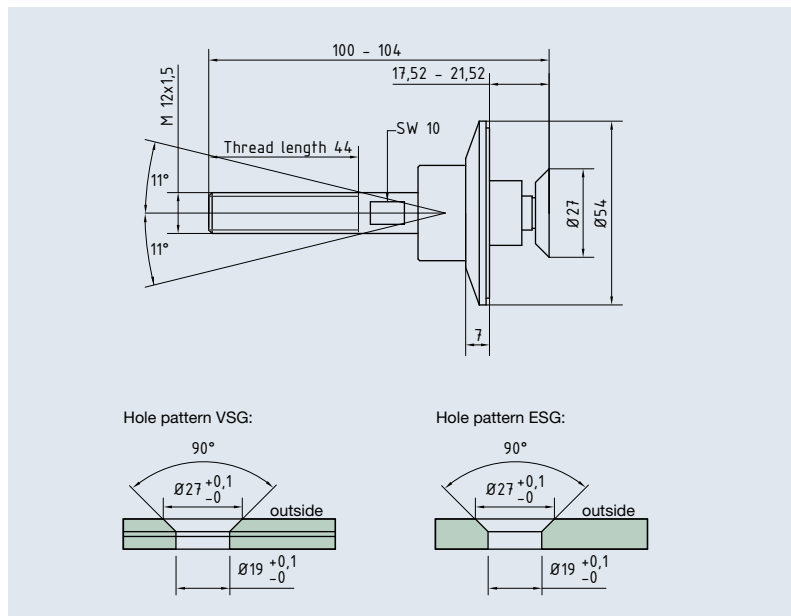


Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	in front of the pane-middle
Glass thickness	17,52 - 21,52 mm
Diameter	54 mm
Thread length*	44 mm
Bore	see hole patterns

*Other thread lengths available on request!

Technical data:



Catalogue number:

Cat. no.	PU
17 128 5 65	8 pieces

Point fixture

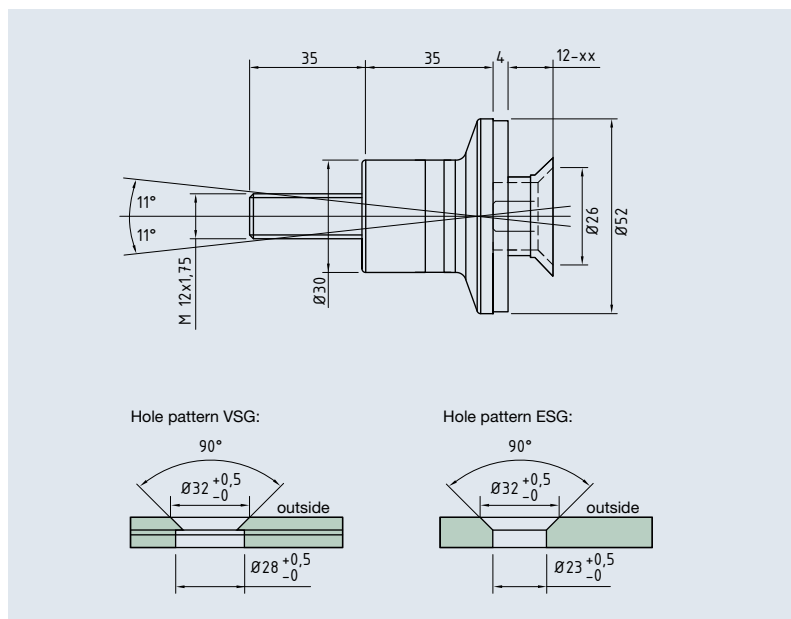


*General construction supervisory approval granted!!
Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	in front of the pane-middle
Glass thickness**	12 - xx mm
Diameter	52 mm
Thread length***	35 mm
Bore	see hole patterns

** Please state the glass thickness when placing orders!
***Other thread lengths/sizes available on request!

Technical data:

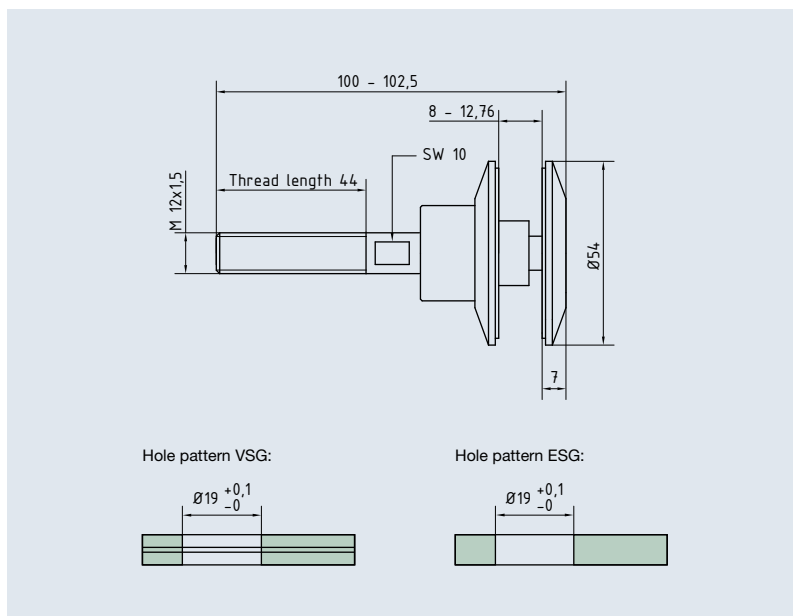


Catalogue number:

Cat. no.	PU
17 130 5 65	8 pieces

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 150 5 65	8 pieces



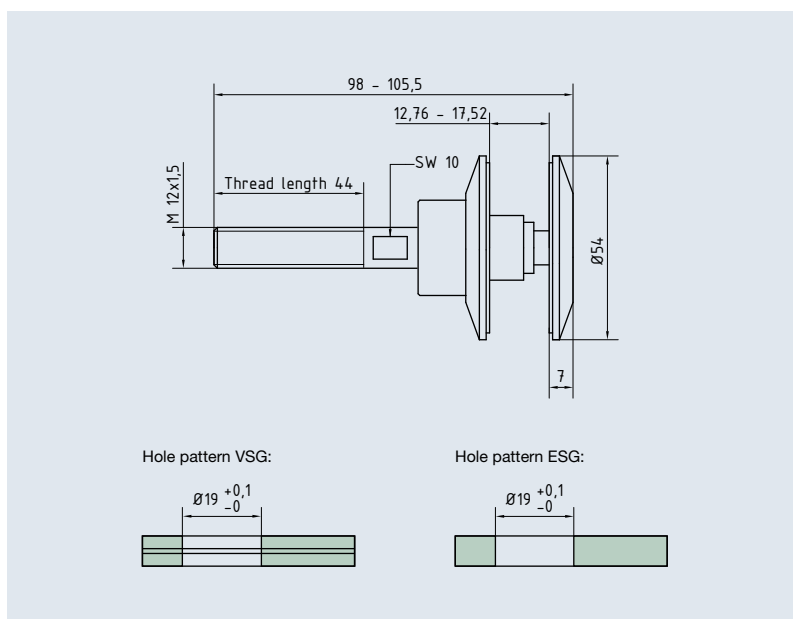
Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	fixed
Force initiation	in front of the pane-middle
Glass thickness	8 - 12,76 mm
Diameter	54 mm
Thread length*	44 mm
Bore	see hole patterns

*Other thread lengths available on request!

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 151 5 65	8 pieces



Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	fixed
Force initiation	in front of the pane-middle
Glass thickness	12,76 - 17,52 mm
Diameter	54 mm
Thread length*	44 mm
Bore	see hole patterns

*Other thread lengths available on request!

Point fixture

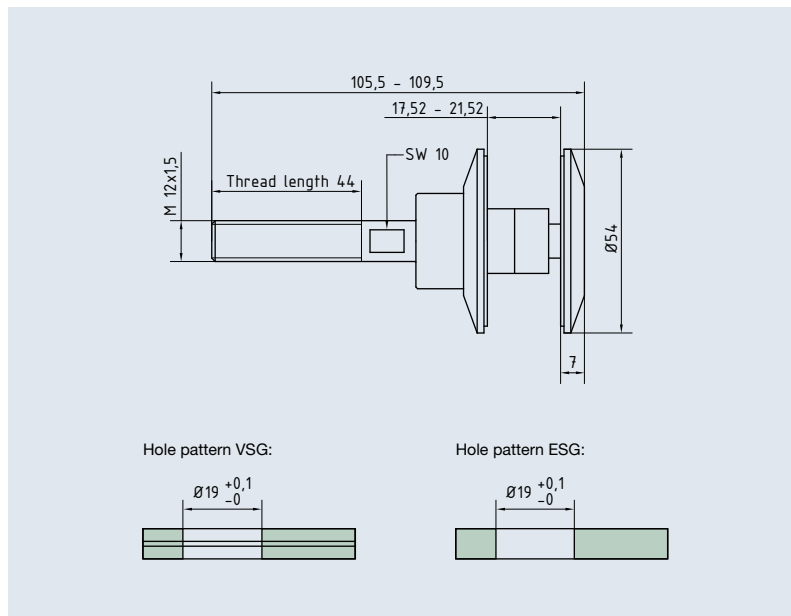


Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	fixed
Force initiation	in front of the pane-middle
Glass thickness	17,52 - 21,52 mm
Diameter	54 mm
Thread length*	44 mm
Bore	see hole patterns

*Other thread lengths available on request!

Technical data:



Catalogue number:

Cat. no.	PU
17 152 5 65	8 pieces

Point fixture

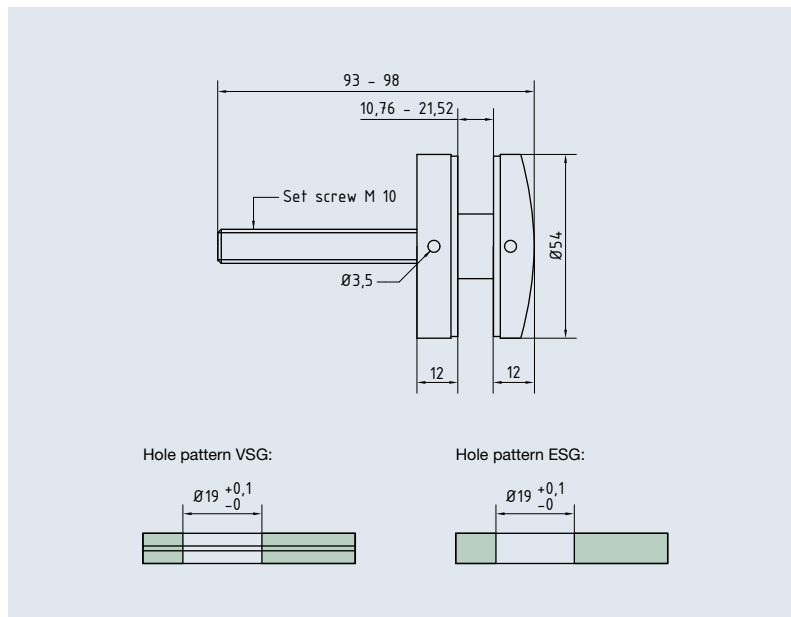


Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	fixed
Force initiation	middle of pane
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Thread length*	continuous
Bore	see hole patterns

*Other thread lengths available on request!

Technical data:

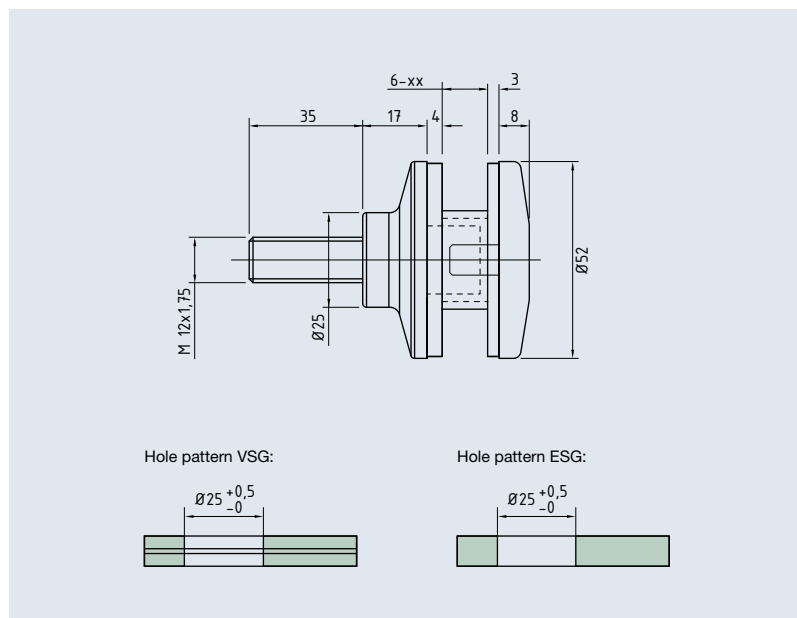


Catalogue number:

Cat. no.	PU
17 153 5 65	8 pieces

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 155 5 65	8 pieces



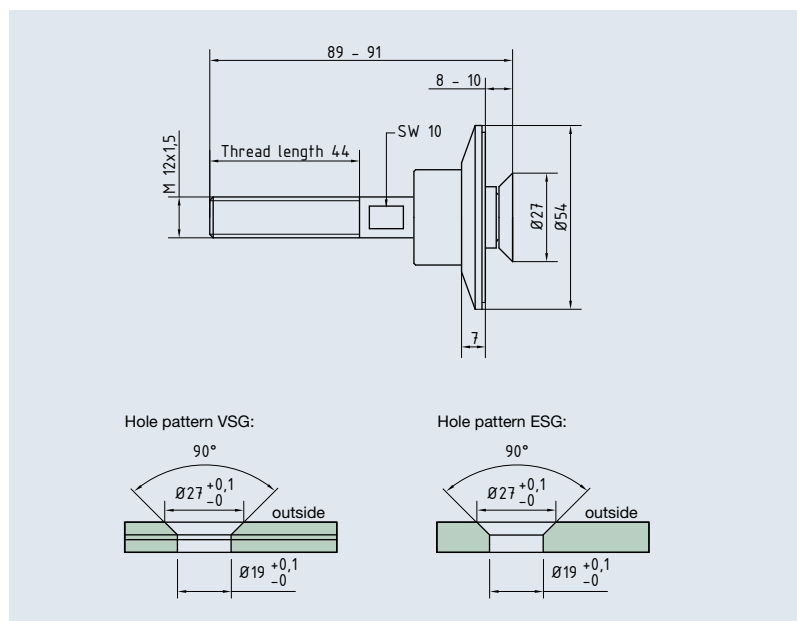
*General construction supervisory approval granted!!
Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	fixed
Force initiation	middle of pane
Glass thickness**	6 - xx mm
Diameter	52 mm
Thread length***	35 mm
Bore	see hole patterns

** Please state the glass thickness when placing orders!
***Other thread lengths/sizes available on request!

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 175 5 65	8 pieces



Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	fixed
Force initiation	in front of the pane-middle
Glass thickness	8 - 10 mm
Diameter	54 mm
Thread length*	44 mm
Bore	see hole patterns

*Other thread lengths available on request!

Point fixture

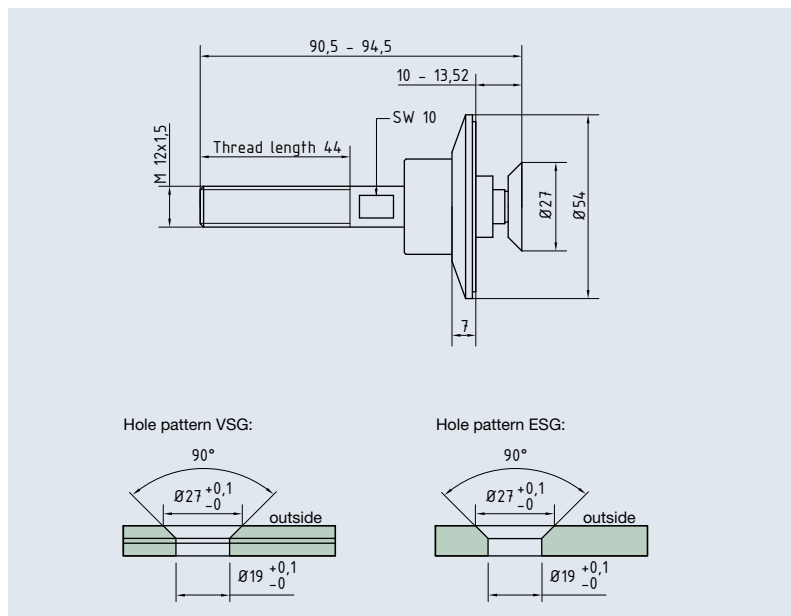


Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	fixed
Force initiation	in front of the pane-middle
Glass thickness	10 - 13,52 mm
Diameter	54 mm
Thread length*	44 mm
Bore	see hole patterns

*Other thread lengths available on request!

Technical data:



Catalogue number:

Cat. no.	PU
17 176 5 65	8 pieces

Point fixture

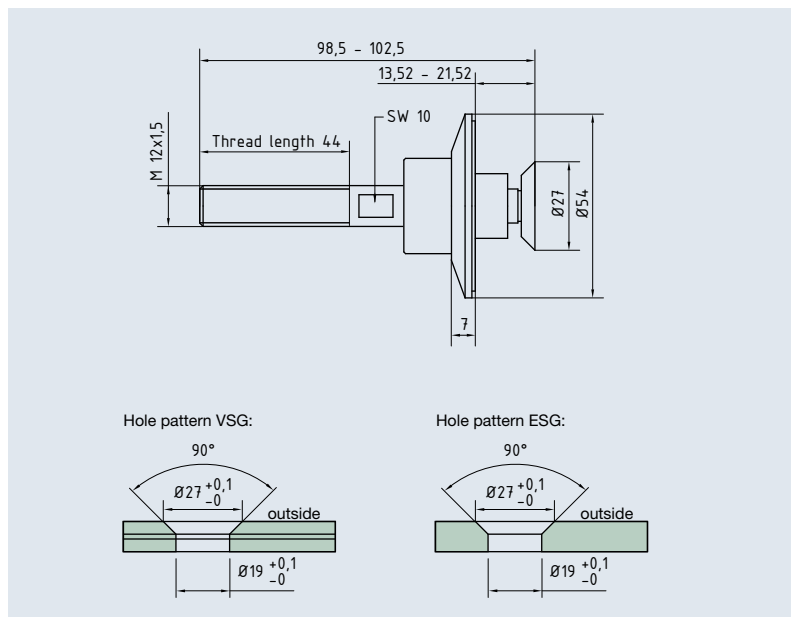


Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	fixed
Force initiation	in front of the pane-middle
Glass thickness	13,52 - 21,52 mm
Diameter	54 mm
Thread length*	44 mm
Bore	see hole patterns

*Other thread lengths available on request!

Technical data:

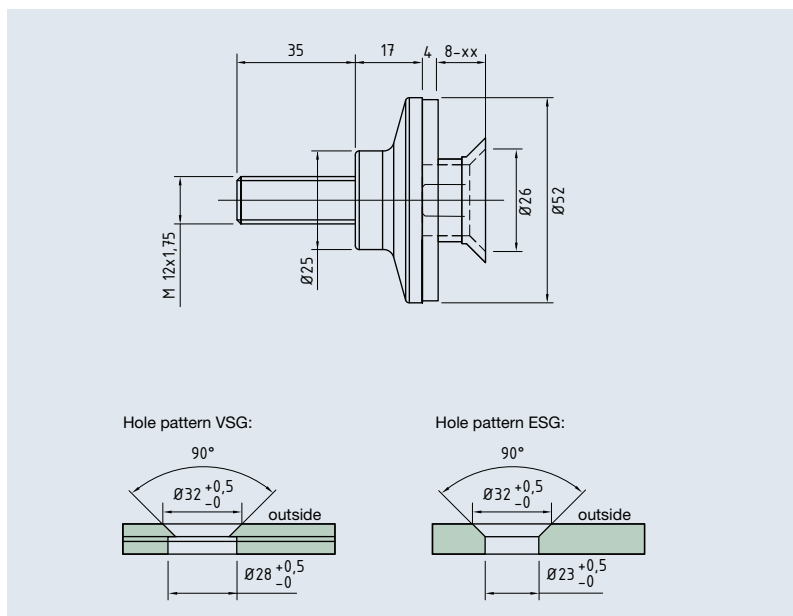


Catalogue number:

Cat. no.	PU
17 177 5 65	8 pieces

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 180 5 65	8 pieces



*General construction supervisory approval granted!!
Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

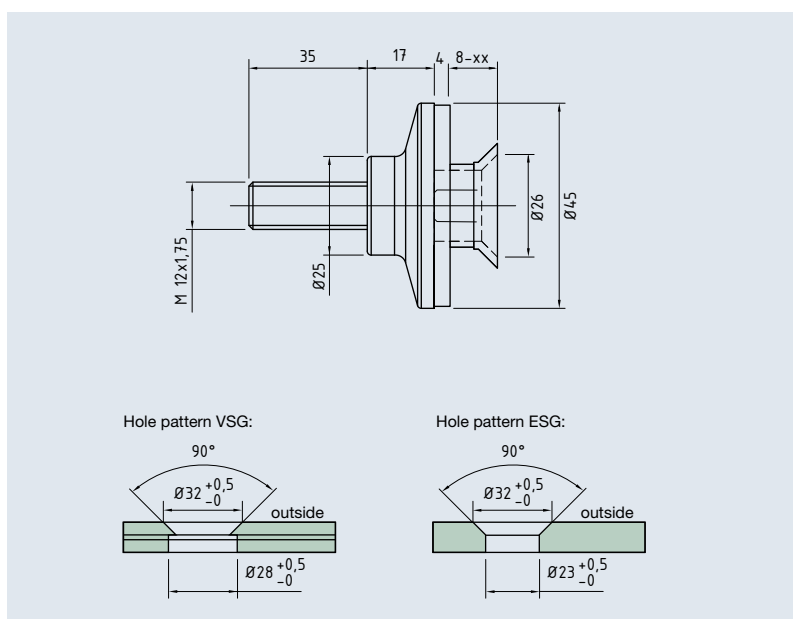
Version	VA mirrored
Retaining pin	fixed
Force initiation	middle of pane
Glass thickness**	8 - xx mm
Diameter	52 mm
Thread length***	35 mm
Bore	see hole patterns

** Please state the glass thickness when placing orders!

***Other thread lengths/sizes available on request!

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 181 5 65	8 pieces



*General construction supervisory approval granted!!
Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	fixed
Force initiation	middle of pane
Glass thickness**	8 - xx mm
Diameter	45 mm
Thread length***	35 mm
Bore	see hole patterns

** Please state the glass thickness when placing orders!

***Other thread lengths/sizes available on request!

Point fixture

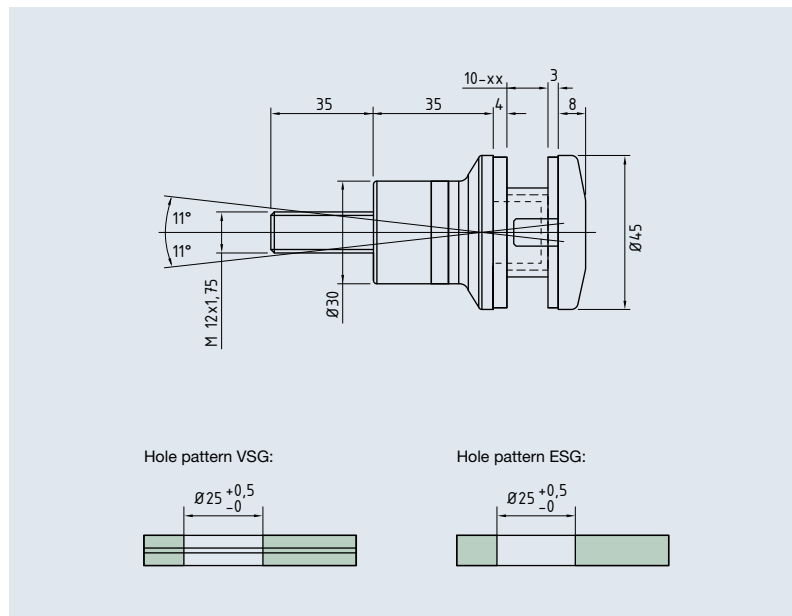


*General construction supervisory approval granted!!
Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	in front of the pane-middle
Glass thickness**	10 - xx mm
Diameter	45 mm
Thread length***	35 mm
Bore	see hole patterns

** Please state the glass thickness when placing orders!
***Other thread lengths/sizes available on request!

Technical data:



Catalogue number:

Cat. no.	PU
17 185 5 65	8 pieces

Point fixture

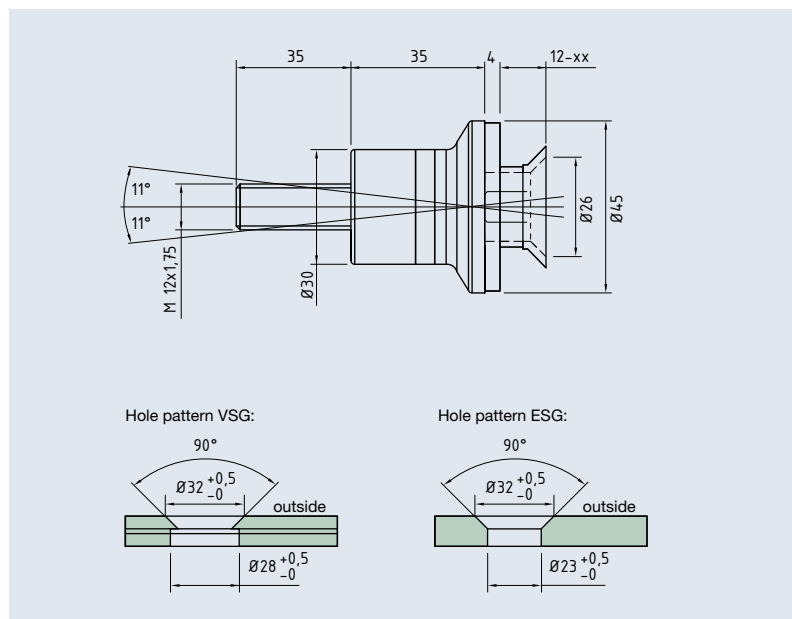


*General construction supervisory approval granted!!
Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	in front of the pane-middle
Glass thickness**	12 - xx mm
Diameter	45 mm
Thread length***	35 mm
Bore	see hole patterns

** Please state the glass thickness when placing orders!
***Other thread lengths/sizes available on request!

Technical data:

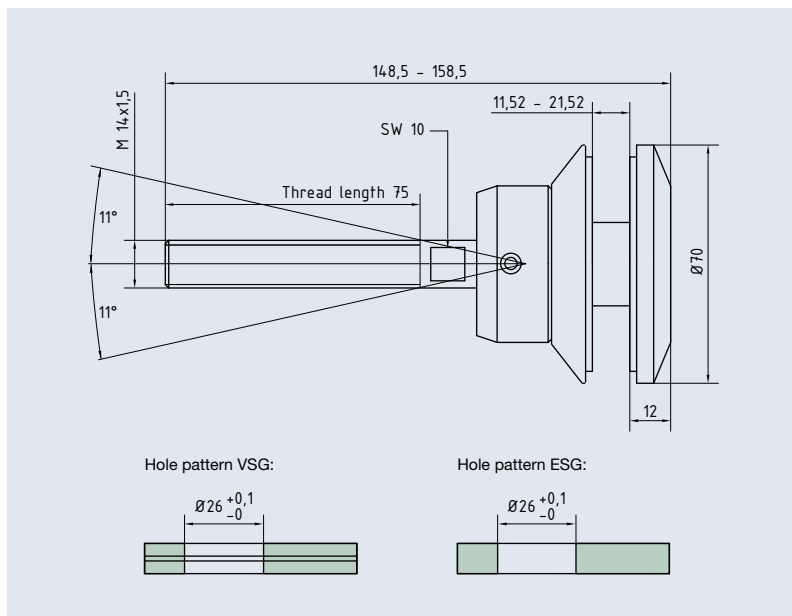


Catalogue number:

Cat. no.	PU
17 190 5 65	8 pieces

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 200 5 65	4 pieces



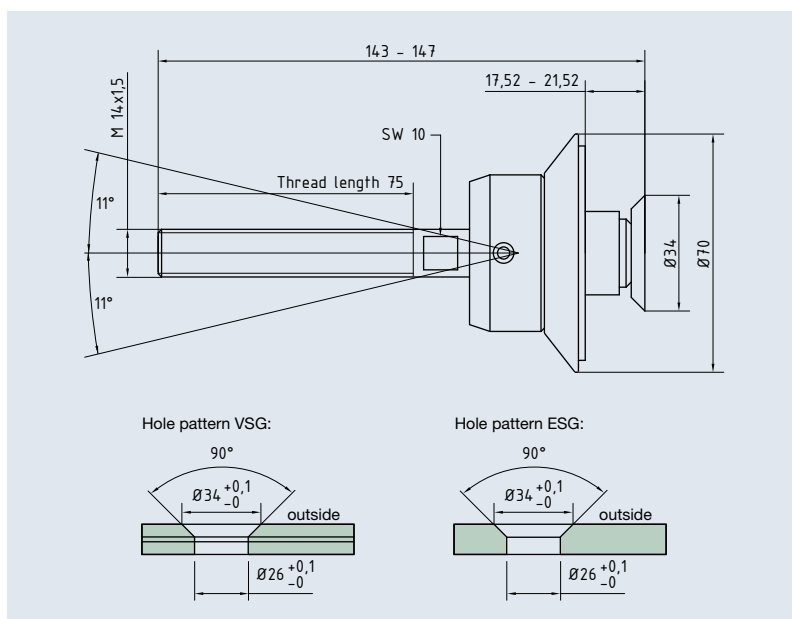
Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	in front of the pane-middle
Glass thickness	11,52 - 21,52 mm
Diameter	70 mm
Thread length*	75 mm
Bore	see hole patterns

*Other thread lengths available on request!

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 225 5 65	4 pieces



Scope of delivery: incl. 2 VA nuts + 2 VA flat washers

Version	VA mirrored
Retaining pin	flexible
Force initiation	in front of the pane-middle
Glass thickness	17,52 - 21,52 mm
Diameter	70 mm
Thread length*	75 mm
Bore	see hole patterns

*Other thread lengths available on request!

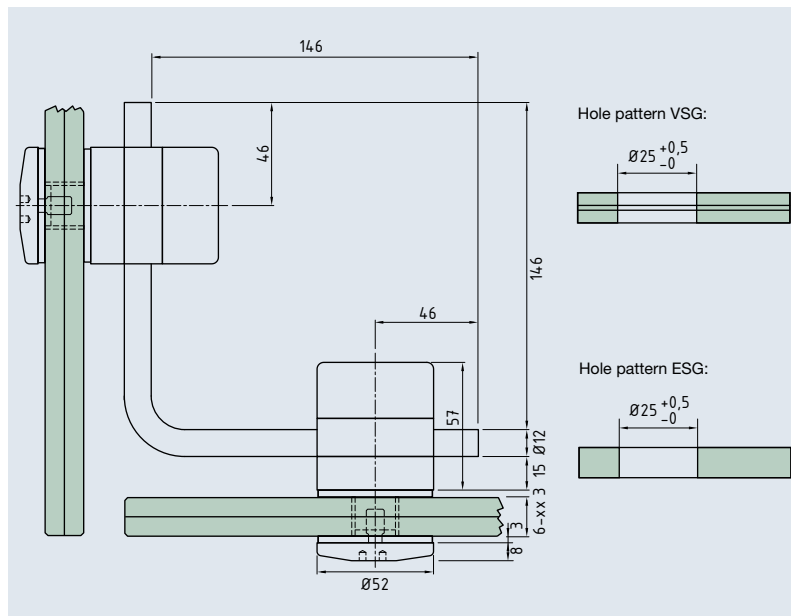
Point fixture



Version	VA mirrored
Retaining pin	fixed
Force initiation	middle of pane
Glass thickness*	6 - xx mm
Diameter	52 mm
Bore	see hole patterns

**Please state the glass thickness when placing orders!*

Technical data:



Catalogue number:

Cat. no.	PU
17 255 5 65	4 pieces

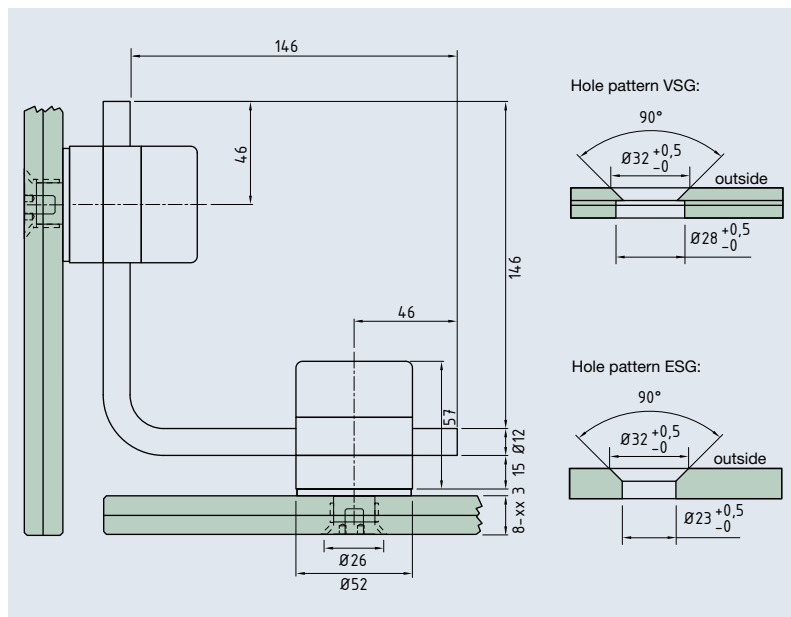
Point fixture



Version	VA mirrored
Retaining pin	fixed
Force initiation	middle of pane
Glass thickness*	8 - xx mm
Diameter	52 mm
Bore	see hole patterns

**Please state the glass thickness when placing orders!*

Technical data:

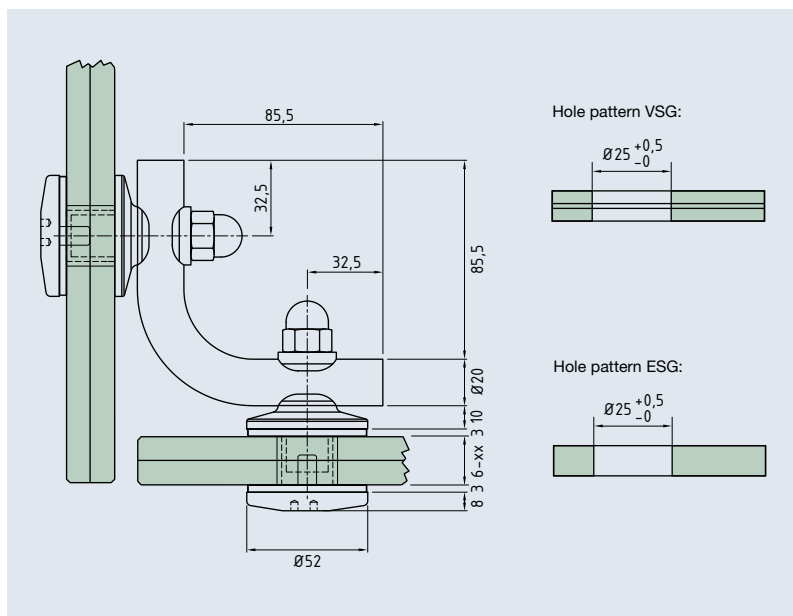


Catalogue number:

Cat. no.	PU
17 256 5 65	4 pieces

Point fixture

Technical data:



Version	VA mirrored
Retaining pin	fixed
Force initiation	middle of pane
Glass thickness*	6 - xx mm
Diameter	52 mm
Bore	see hole patterns

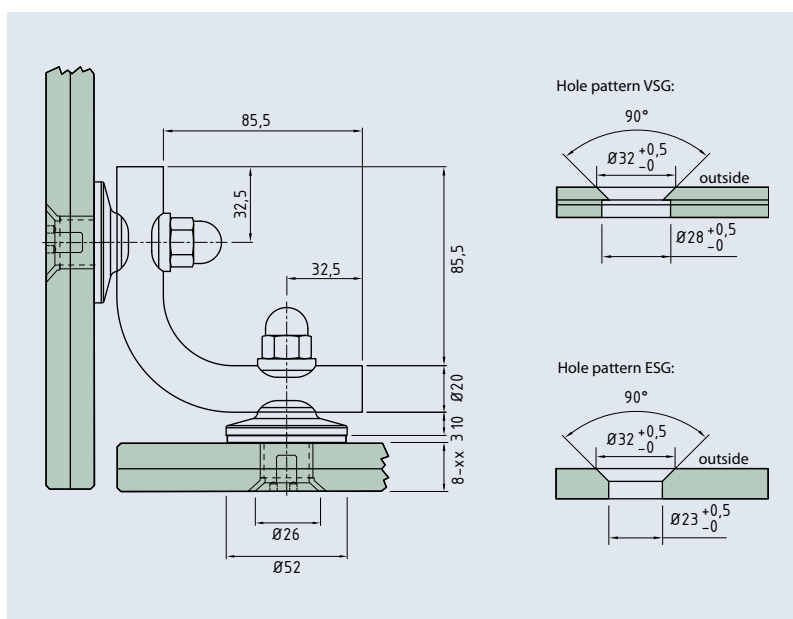
*Please state the glass thickness when placing orders!

Catalogue number:

Cat. no.	PU
17 265 5 65	4 pieces

Point fixture

Technical data:



Version	VA mirrored
Retaining pin	fixed
Force initiation	middle of pane
Glass thickness*	8 - xx mm
Diameter	52 mm
Bore	see hole patterns

*Please state the glass thickness when placing orders!

Catalogue number:

Cat. no.	PU
17 266 5 65	4 pieces

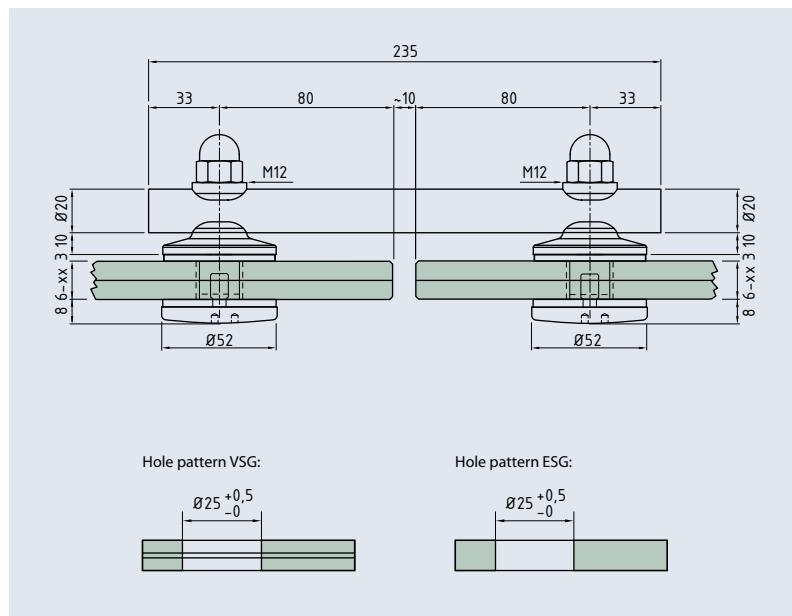
Point fixture

Technical data:



Version	VA mirrored
Retaining pin	fixed
Force initiation	middle of pane
Glass thickness*	6 - xx mm
Diameter	52 mm
Bore	see hole patterns

*Please state the glass thickness when placing orders!



Catalogue number:

Cat. no.	PU
17 275 5 65	4 pieces

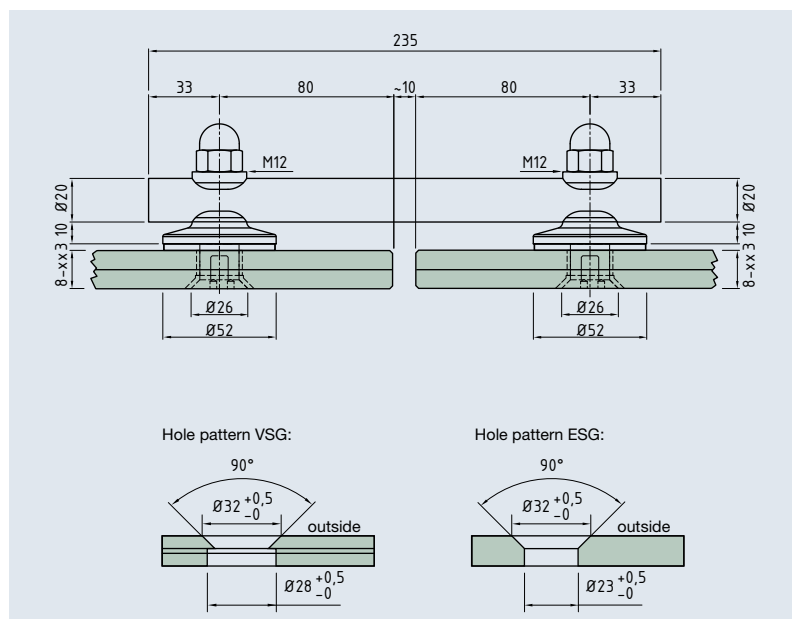
Point fixture

Technical data:



Version	VA mirrored
Retaining pin	fixed
Force initiation	middle of pane
Glass thickness*	8 - xx mm
Diameter	52 mm
Bore	see hole patterns

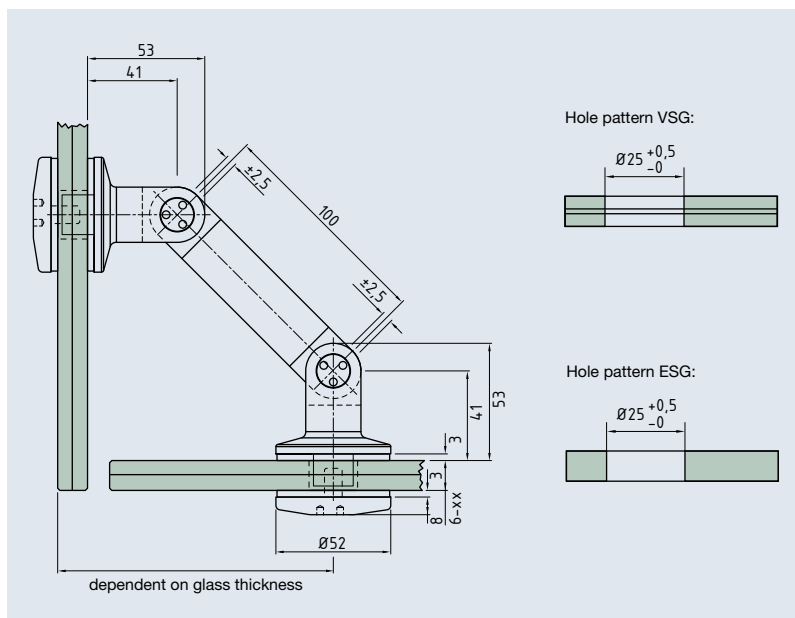
*Please state the glass thickness when placing orders!



Catalogue number:

Cat. no.	PU
17 276 5 65	4 pieces

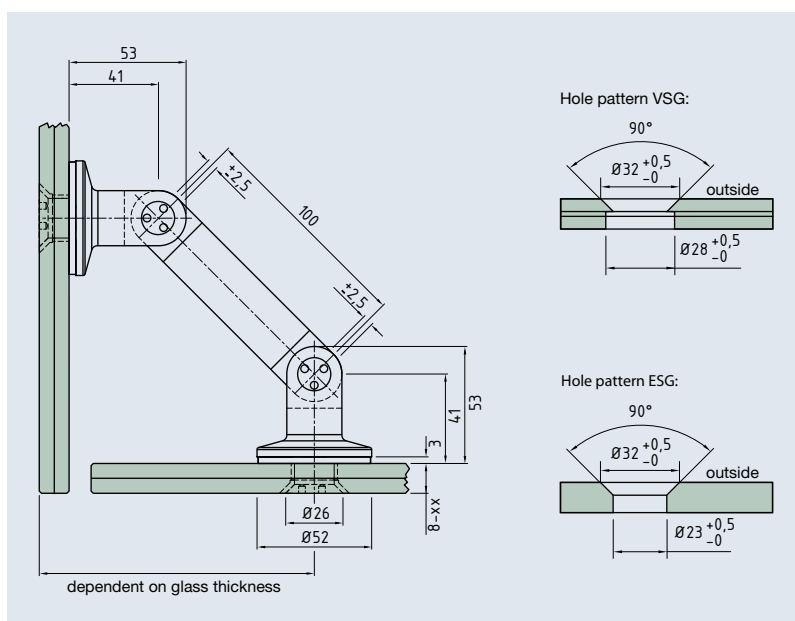
Point fixture

Technical data:

Version	VA mirrored
Retaining pin	fixed
Force initiation	middle of pane
Glass thickness*	6 - xx mm
Diameter	52 mm
Bore	see hole patterns

**Please state the glass thickness when placing orders!*

Point fixture

Technical data:

Version	VA mirrored
Retaining pin	fixed
Force initiation	middle of pane
Glass thickness*	8 - xx mm
Diameter	52 mm
Bore	see hole patterns

**Please state the glass thickness when placing orders!*

First-rate spiders.

The punctum® spider technology facilitates technical and aesthetically demanding implementation of elaborate glass-façade projects. When used together with the variously installable bearings and point fixtures, planners and users are endowed with maximum flexibility.

One congenial unit

punctum® spider and point fixtures are matched to each other with optical and technical perfection. Deviations in the supporting structure are precisely compensated and façade expansions are harmoniously absorbed through the interplay of the individual elements.

Well supported

The use of various supporting facilities can be managed with SWS spider technology without complications. Because fixed, loose and vertical bearings are simply pushed into the bearing sleeves and locked into place with a setscrew. That guarantees maximum support flexibility.

Just on the right spot

The point fixtures are connected with the spider using two spacer rings. The simple screwing turns exact adjustment and levelling of constructional tolerances during installation into child's play. High-grade sliding panes between the spacer-rings support flawless bearing functionality.

From another world

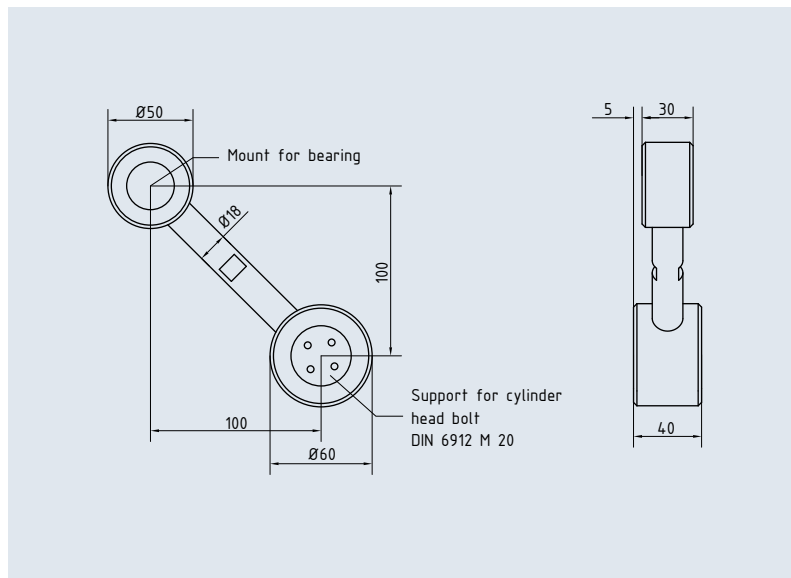
Form and function in perfection! The resolutely reduced design represents the qualities of SWS spider technology: Clarity, strength, intelligence. The numerous carefully conceived features are embedded in a materiality and vocabulary of forms that powerfully set a pioneering accent.





Spider

Technical data:

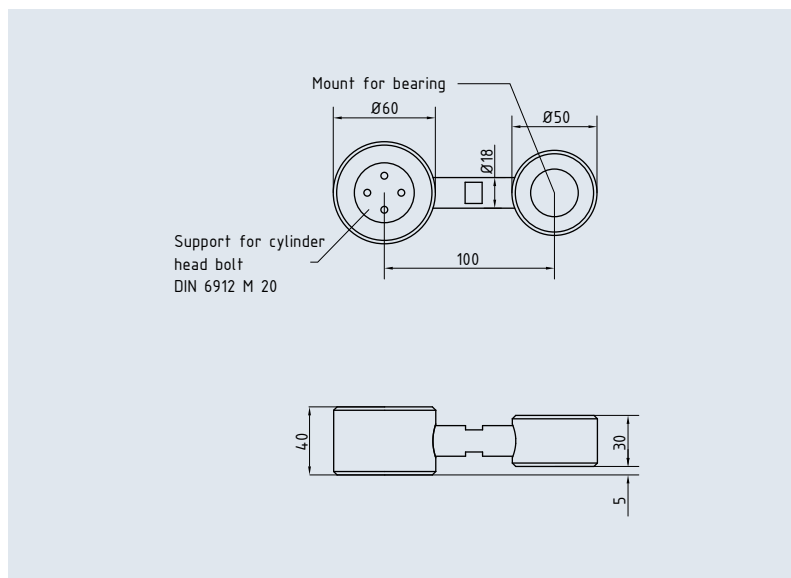


Catalogue number:

Cat. no.	Designation	Material	Surface style	PU
17 300 5 65	single-armed spider 45°	stainless steel (VA) set screw (VA)	mirrored	1 piece

Spider

Technical data:

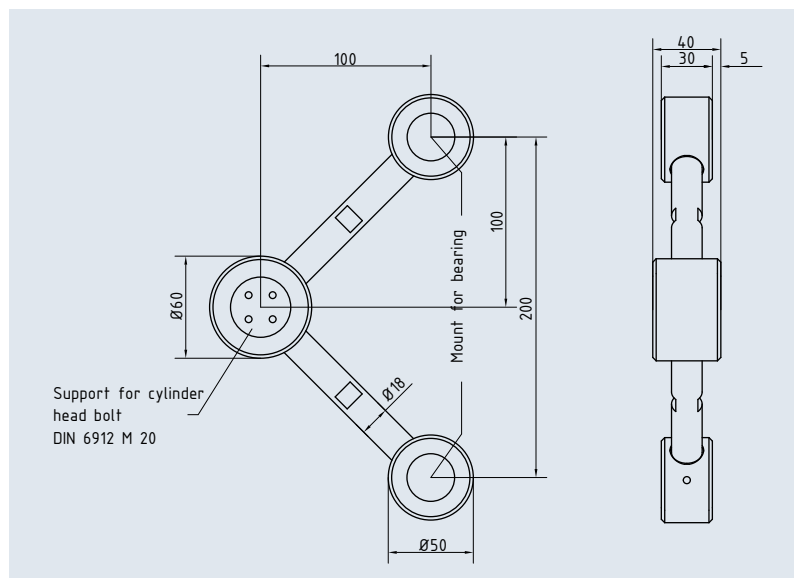


Catalogue number:

Cat. no.	Designation	Material	Surface style	PU
17 301 5 65	single-armed spider 90°	stainless steel (VA) set screw (VA)	mirrored	1 piece

Spider

Technical data:

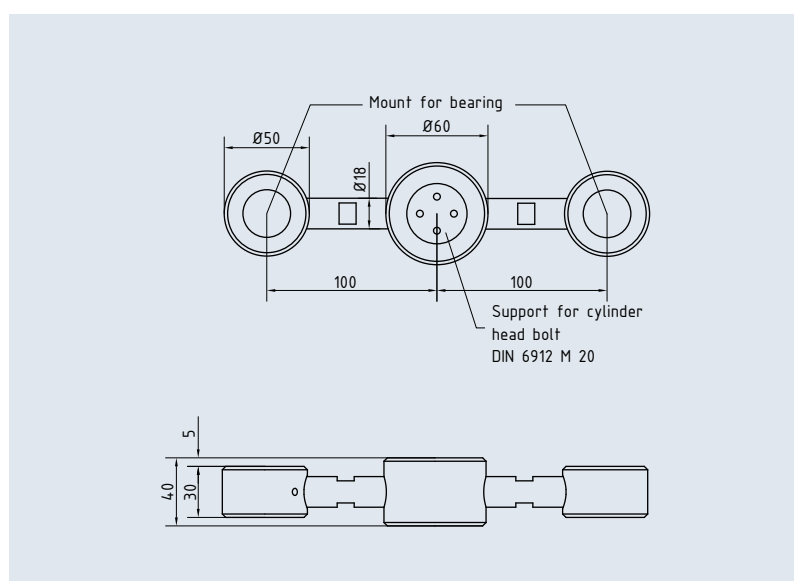


Catalogue number:

Cat. no.	Designation	Material	Surface style	PU
17 302 5 65	double-armed spider 90°	stainless steel (VA) set screw (VA)	mirrored	1 piece

Spider

Technical data:

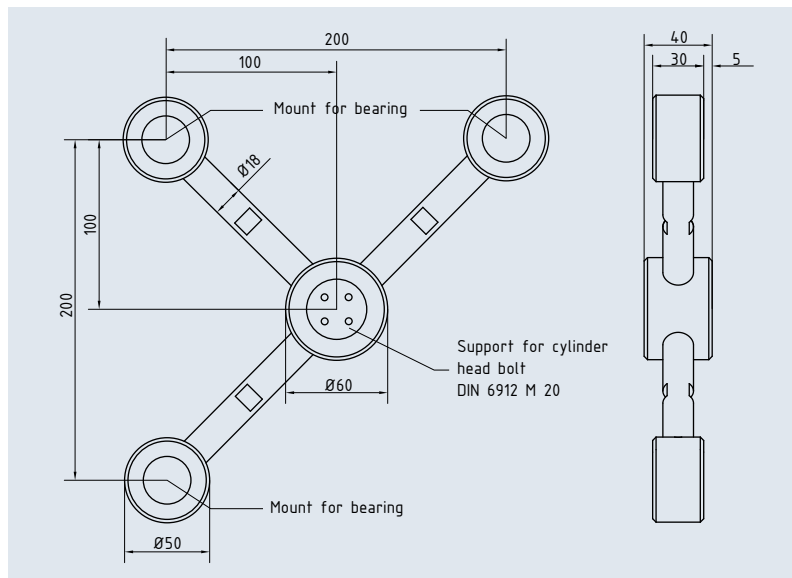


Catalogue number:

Cat. no.	Designation	Material	Surface style	PU
17 303 5 65	double-armed spider 180°	stainless steel (VA) set screw (VA)	mirrored	1 piece

Spider

Technical data:

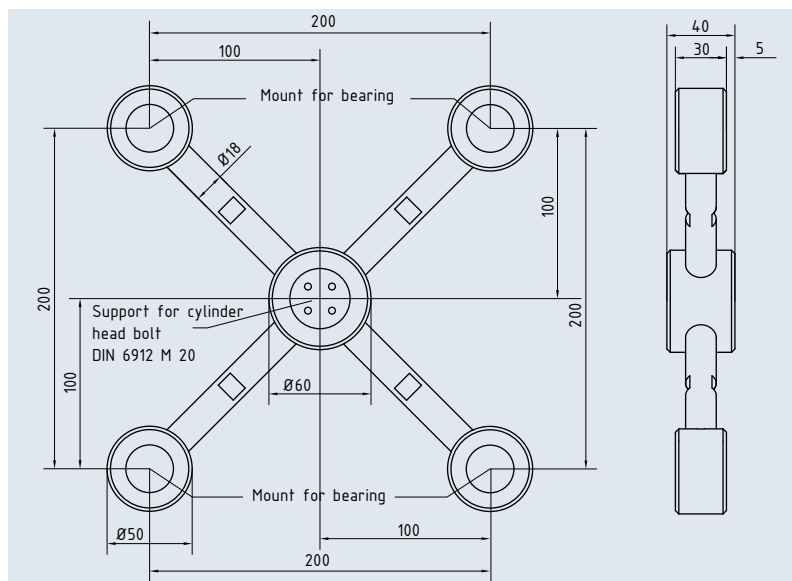


Catalogue number:

Cat. no.	Designation	Material	Surface style	PU
17 304 5 65	three-armed spider	stainless steel (VA) set screw (VA)	mirrored	1 piece

Spider

Technical data:

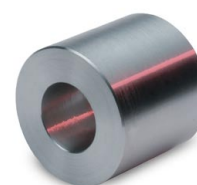
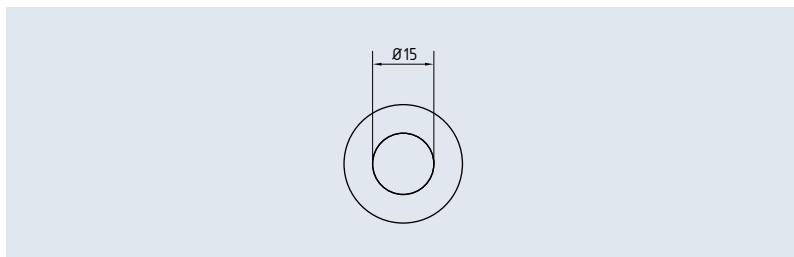


Catalogue number:

Cat. no.	Designation	Material	Surface style	PU
17 305 5 65	four-armed spider	stainless steel (VA) set screw (VA)	mirrored	1 piece

Fixed bearing

Technical data:

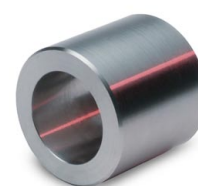
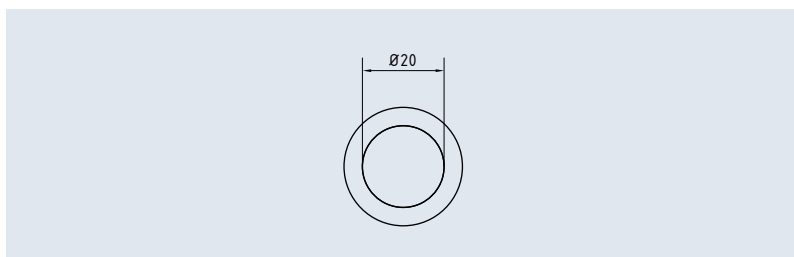


Catalogue number:

Cat. no.	Designation	Material	Surface style	PU
17 310 5 65	fixed bearing	stainless steel (VA)	mirrored	1 piece

Movable bearing

Technical data:

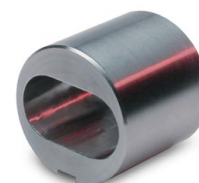
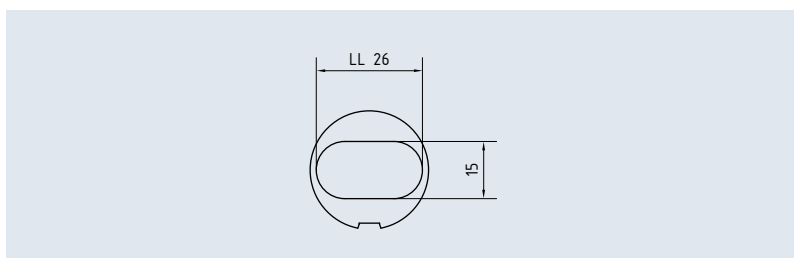


Catalogue number:

Cat. no.	Designation	Material	Surface style	PU
17 311 5 65	movable bearing	stainless steel (VA)	mirrored	1 piece

Vertical bearing

Technical data:



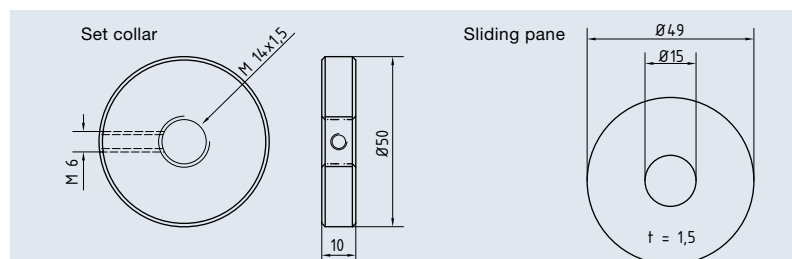
Catalogue number:

Cat. no.	Designation	Material	Surface style	PU
17 312 5 65	vertical bearing	stainless steel (VA)	mirrored	1 piece

Set collar / Sliding pane



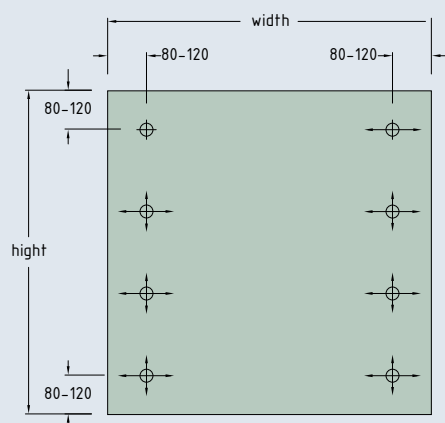
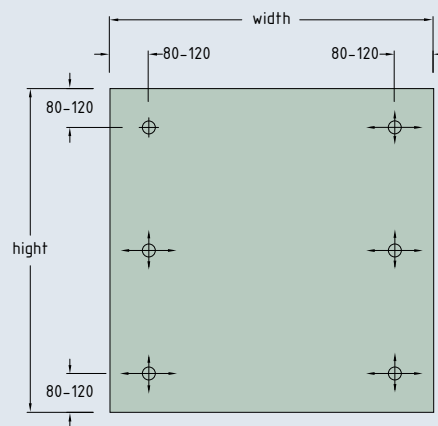
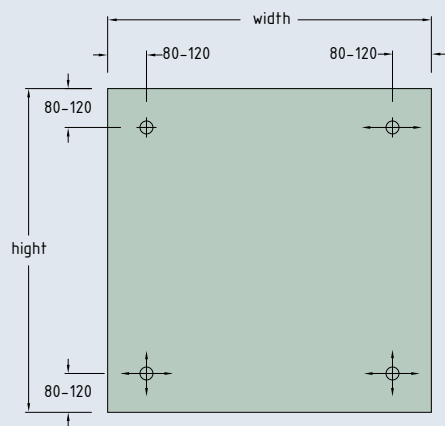
Technical data:

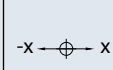
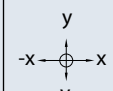


Catalogue number:

Cat. no.	Designation	Material	Surface style	PU
17 350 5 65	set collar	stainless steel (VA)	mirrored	1 piece
17 355 6 25	Sliding pane	Plastic (PTFE)	white	

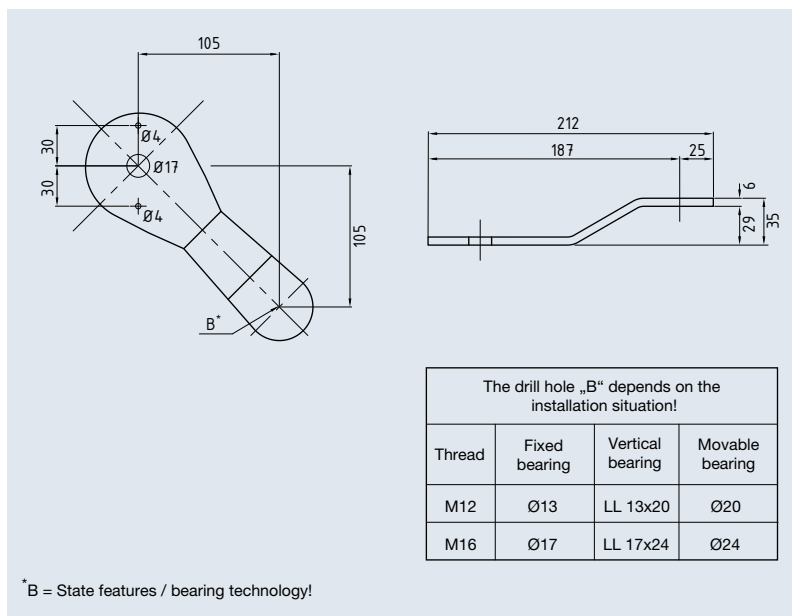
Functionality / Storage engineering



Fixed bearing		Fixed position in direction of X or Y-axis	
Vertical bearing		Degrees of freedom in direction of X-axis	
Movable bearing		Degrees of freedom in direction of X or Y-axis	

Spider

Technical data:

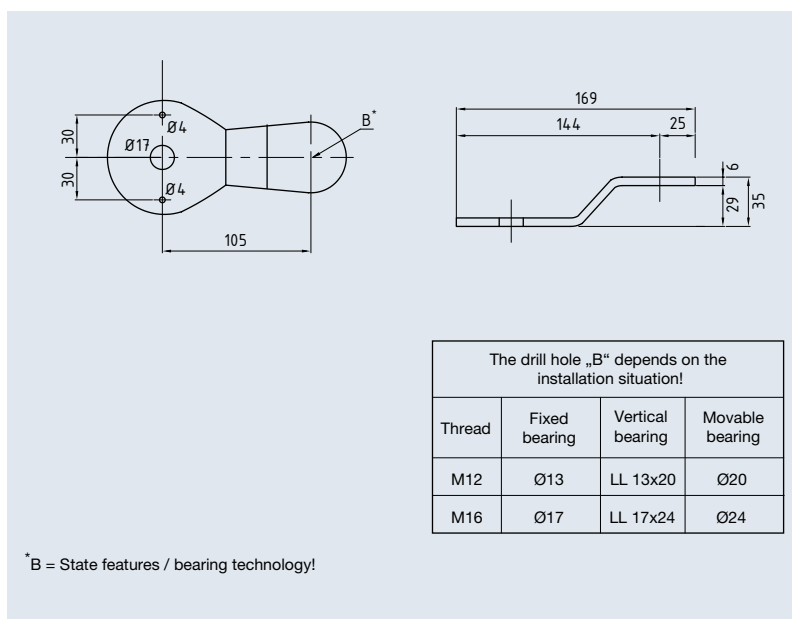


Catalogue number:

Cat. no.	Designation	Material	Surface style	PU
17 360 5 07	single-armed spider 45°	stainless steel (VA)	matt finished	1 piece

Spider

Technical data:



Catalogue number:

Cat. no.	Designation	Material	Surface style	PU
17 361 5 07	single-armed spider 90°	stainless steel (VA)	matt finished	1 piece

Spider



Catalogue number:

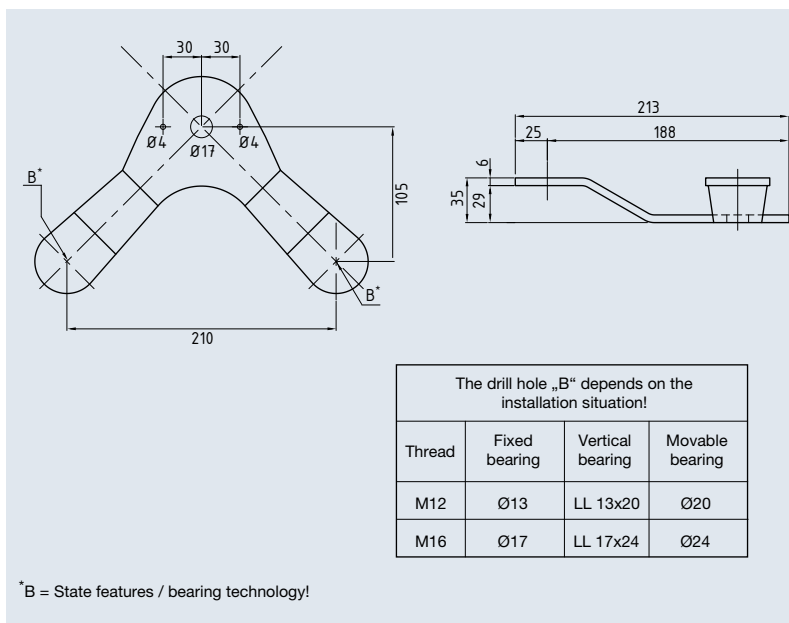
Cat. no.	Designation	Material	Surface style	PU
17 362 5 07	double-armed spider 90°	stainless steel (VA)	matt finished	1 piece

Spider

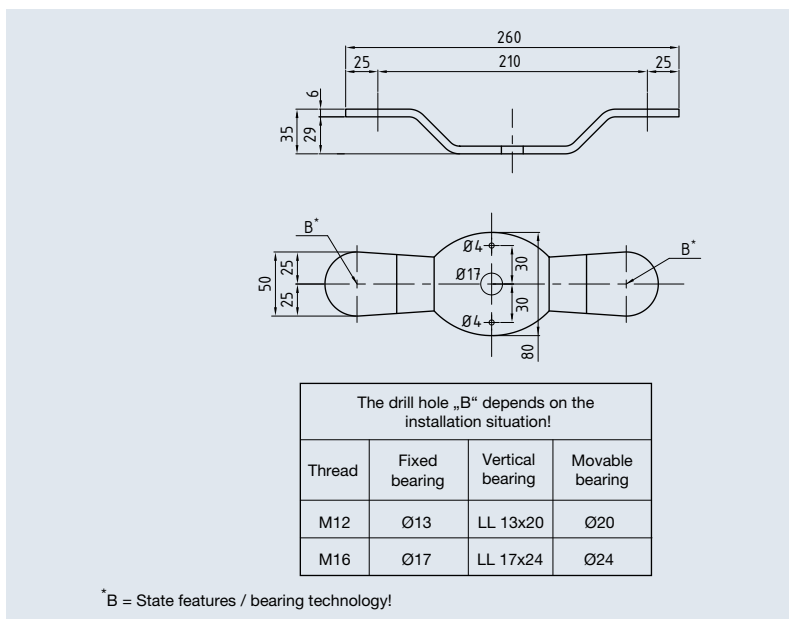


Catalogue number:

Cat. no.	Designation	Material	Surface style	PU
17 363 5 07	double-armed spider 180°	stainless steel (VA)	matt finished	1 piece

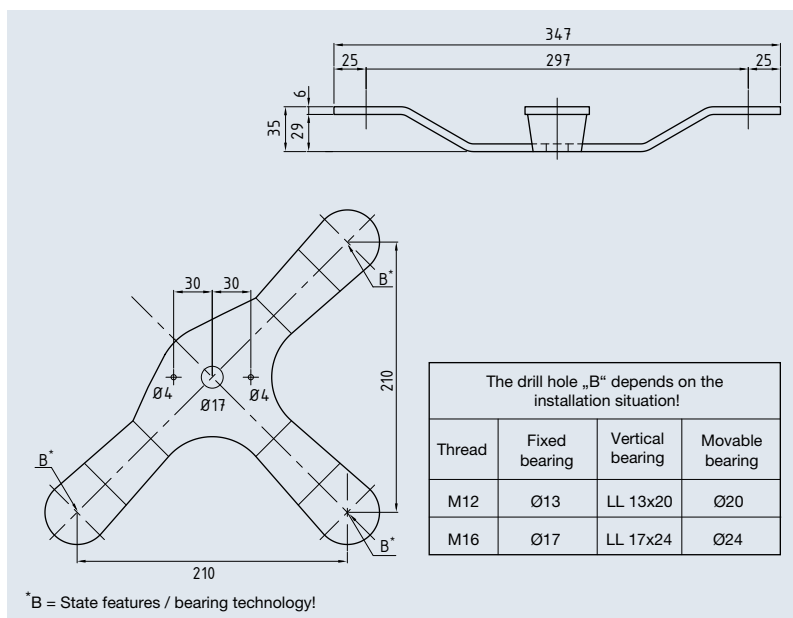
Technical data:

Technical data:



Spider

Technical data:

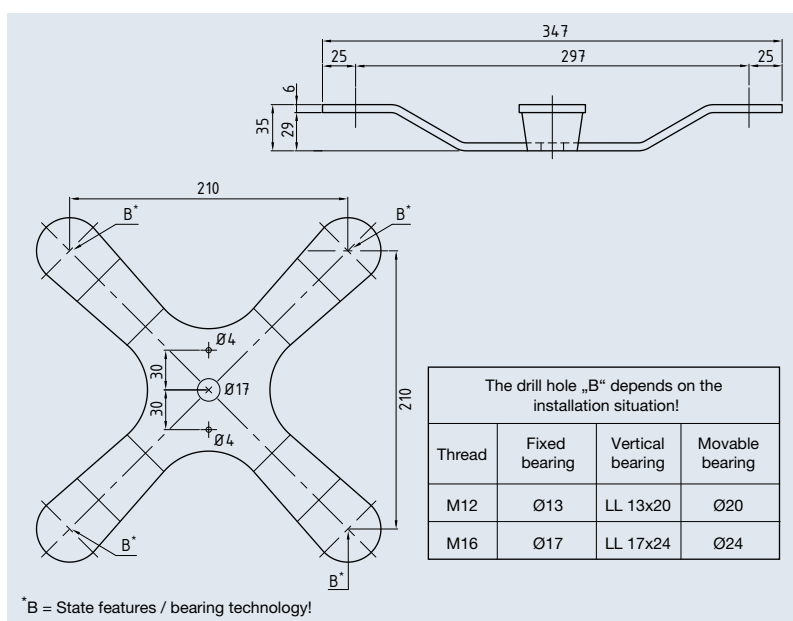


Catalogue number:

Cat. no.	Designation	Material	Surface style	PU
17 364 5 07	three arm spider	stainless steel (VA)	matt finished	1 piece

Spider

Technical data:



Catalogue number:

Cat. no.	Designation	Material	Surface style	PU
17 365 5 07	four arm spider	stainless steel (VA)	matt finished	1 piece

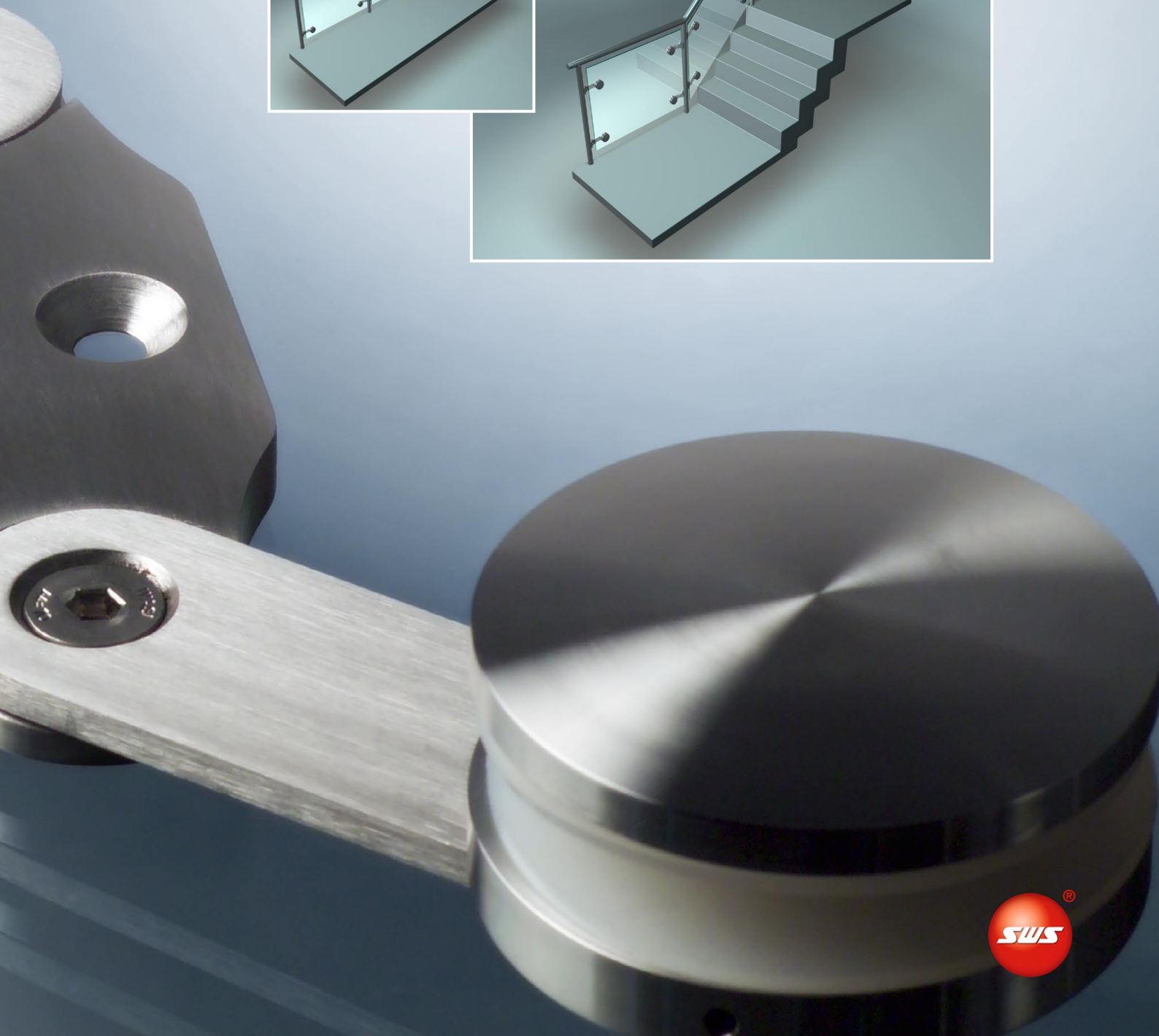
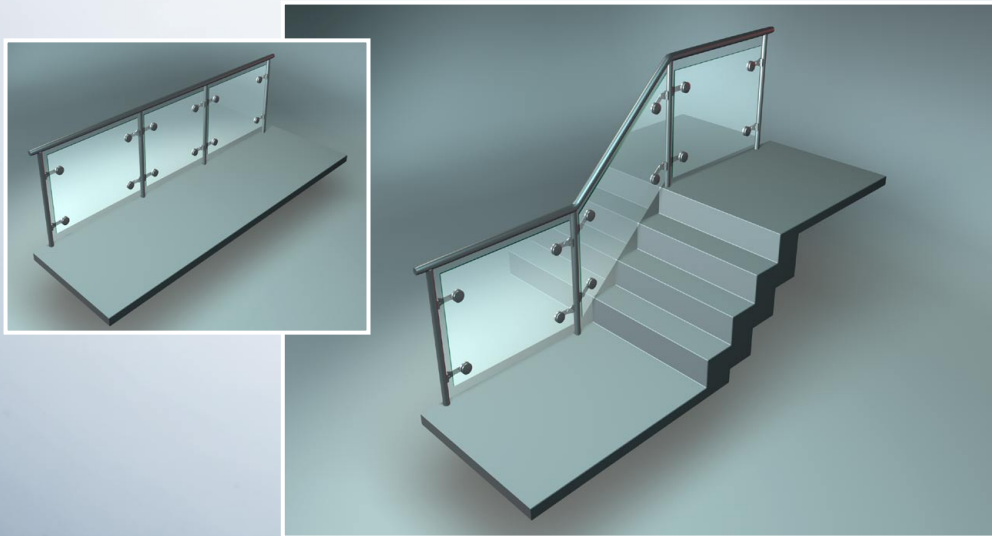


The latest punctum® technique in association with stable VA stainless steel lets permanently reliable safety emerge. On top of that, the brackets are TRaV conform, meaning you are relieved from expensive approval procedures in individual cases.

The punctum® fittings represent a unique synthesis of form and function. They satisfy the aesthetic demands of a modern, contemporary architecture one-hundred percent. With their many useful technical detailed solutions, they are way ahead of their time.

Beautiful and TraV conform!

In the segment of crushproof glazing, the punctum® family exhibits all its skills. The extensive range of models offers architects and users a great deal of room for creativity plus the right solution everywhere and at all times. For example, in the stairwell area, the inclination angle can be quickly and easily adapted to the customer's specifications through a sophisticated screw mechanism.

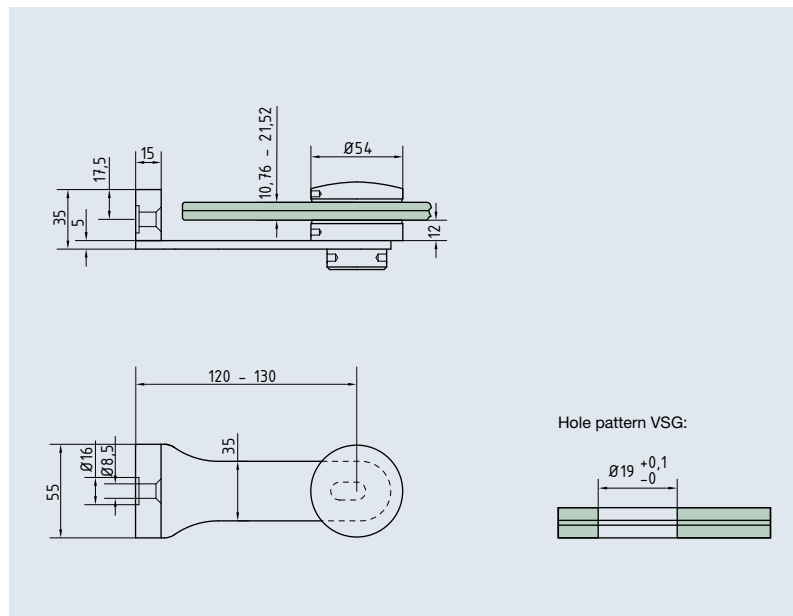


Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Bore	see hole pattern



Catalogue number:

Cat. no.	PU
17 400 5 65	4 pieces

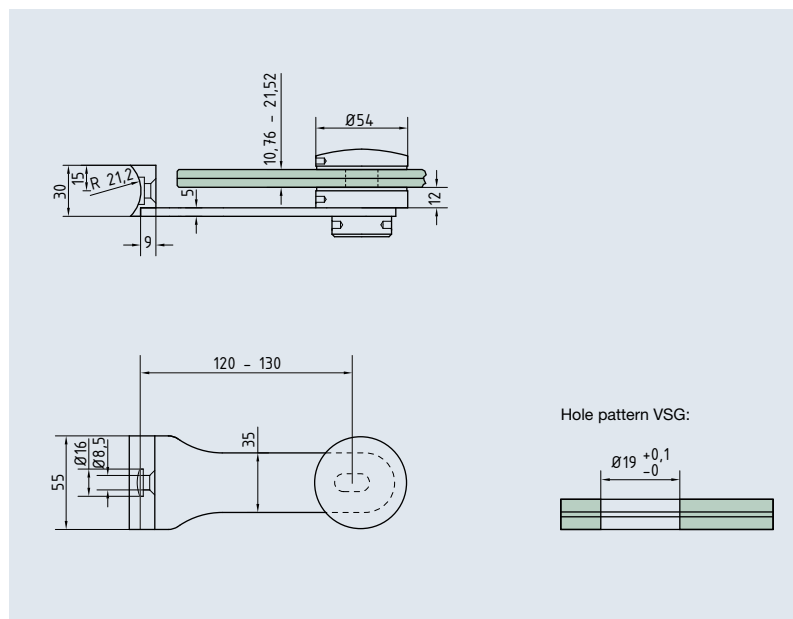
Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Bore	see hole pattern

*Other radii on request!

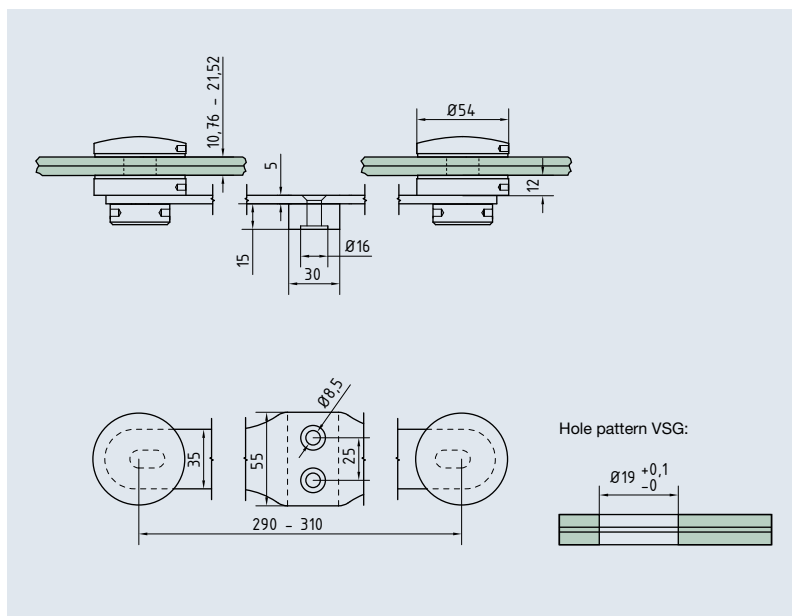


Catalogue number:

Cat. no.	PU
17 401 5 65	4 pieces

Point fixture

Technical data:



Catalogue number:

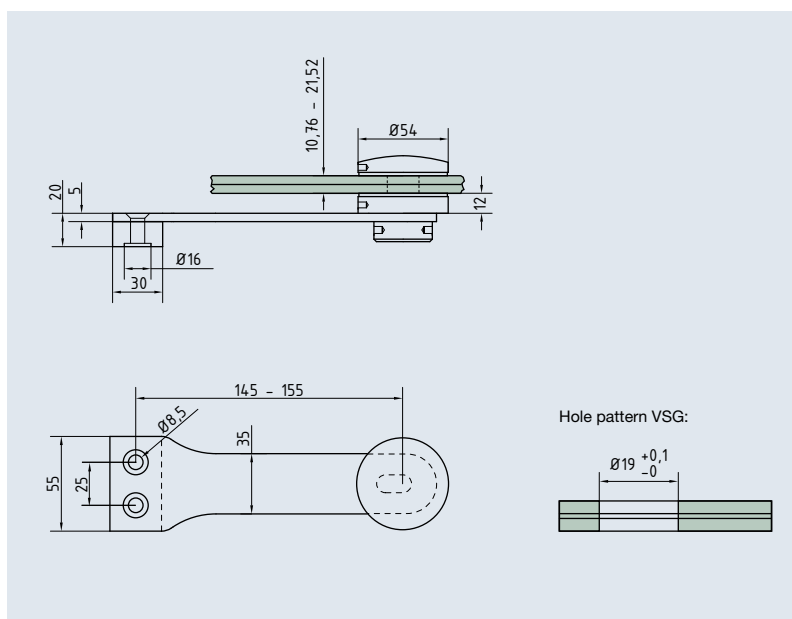
Cat. no.	PU
17 402 5 65	2 pieces



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Bore	see hole pattern

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 403 5 65	4 pieces



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Bore	see hole pattern

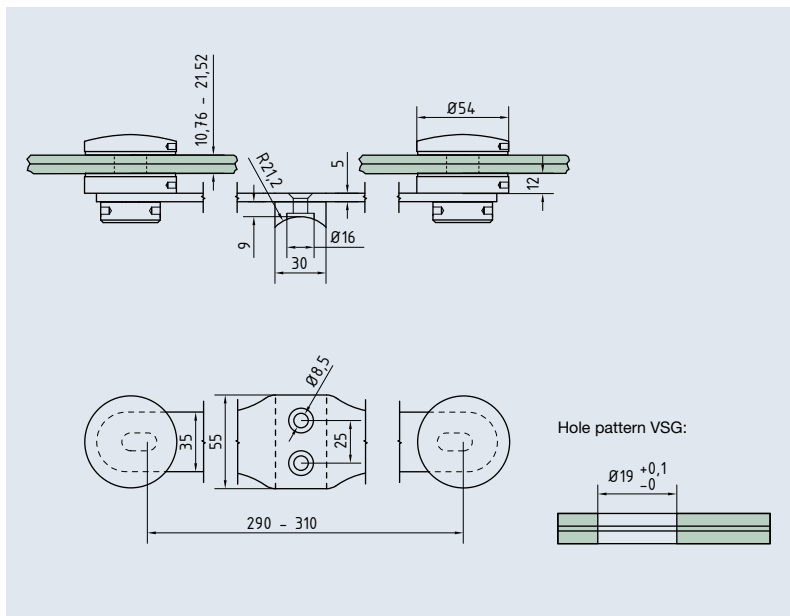
Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Bore	see hole pattern

*Other radii on request!



Catalogue number:

Cat. no.	PU
17 404 5 65	2 pieces

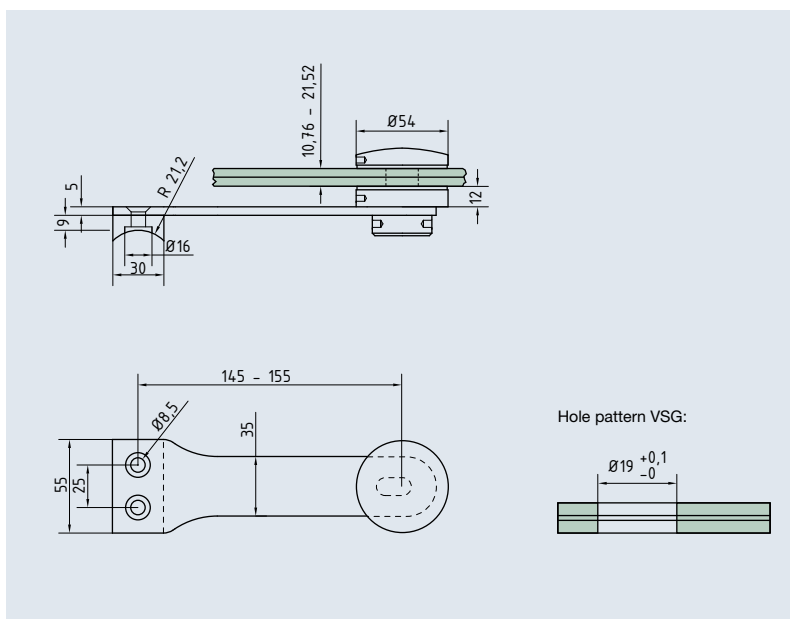
Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Bore	see hole pattern

*Other radii on request!

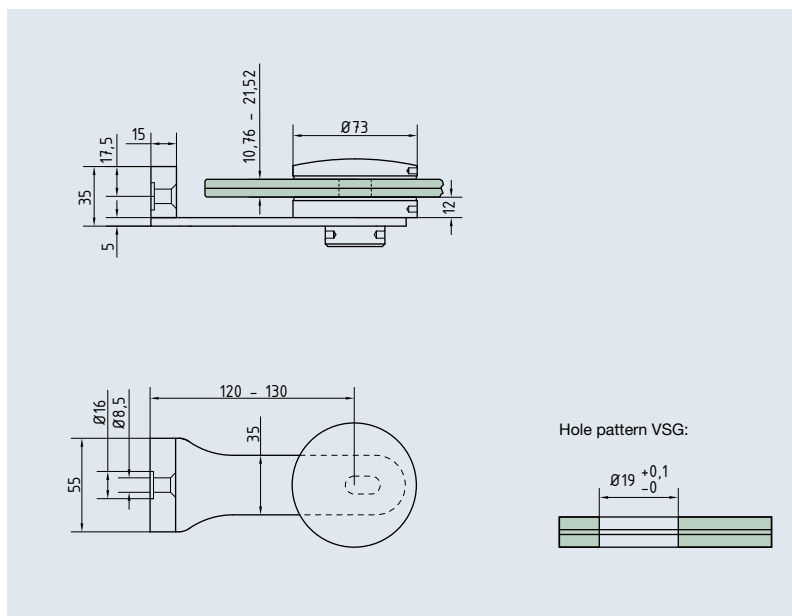


Catalogue number:

Cat. no.	PU
17 405 5 65	4 pieces

Point fixture

Technical data:



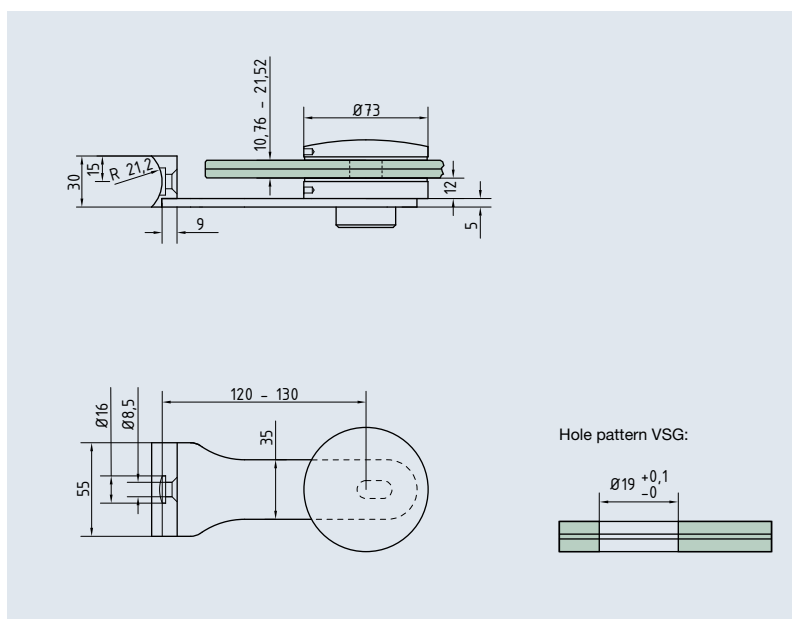
Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Bore	see hole pattern

Catalogue number:

Cat. no.	PU
17 406 5 65	4 pieces

Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Bore	see hole pattern

Catalogue number:

Cat. no.	PU
17 407 5 65	4 pieces

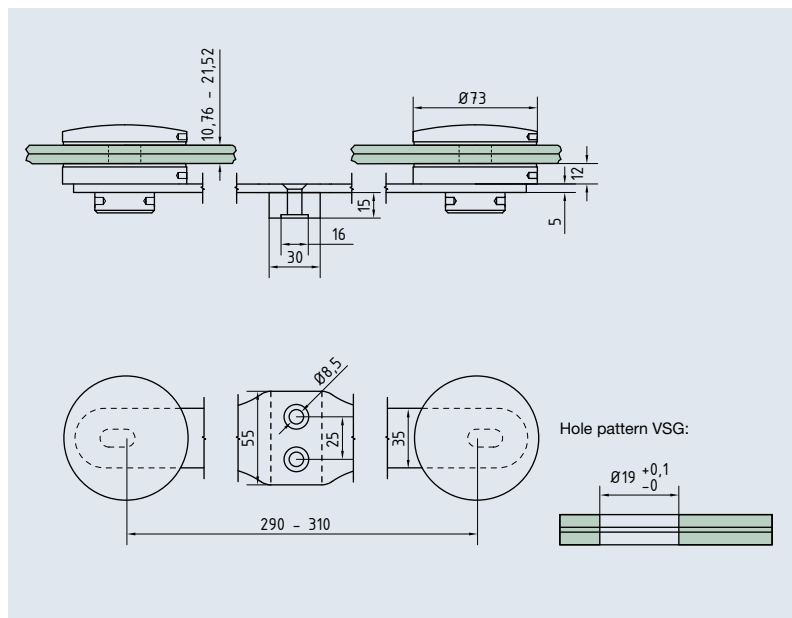
*Other radii on request!

Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Bore	see hole pattern



Catalogue number:

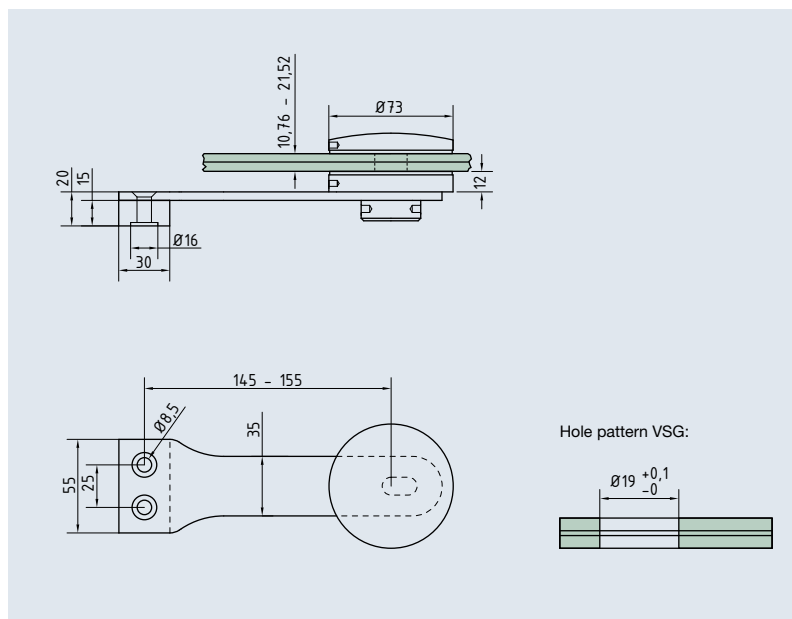
Cat. no.	PU
17 408 5 65	2 pieces

Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Bore	see hole pattern

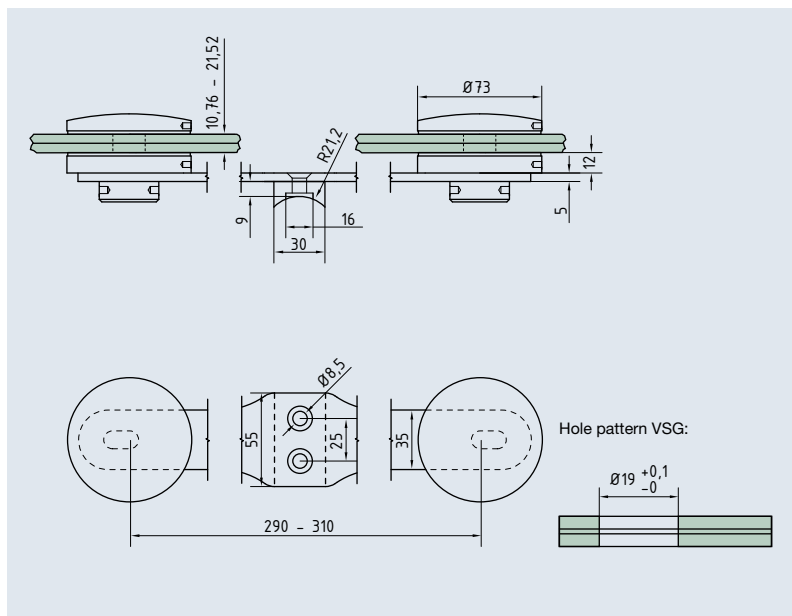


Catalogue number:

Cat. no.	PU
17 409 5 65	4 pieces

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 410 5 65	2 pieces

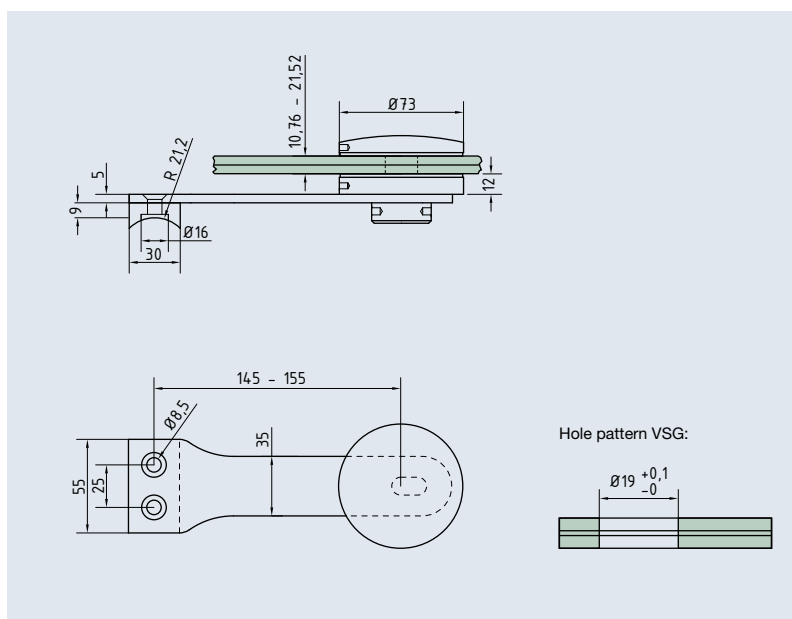


Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Bore	see hole pattern

*Other radii on request!

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 411 5 65	4 pieces



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Bore	see hole pattern

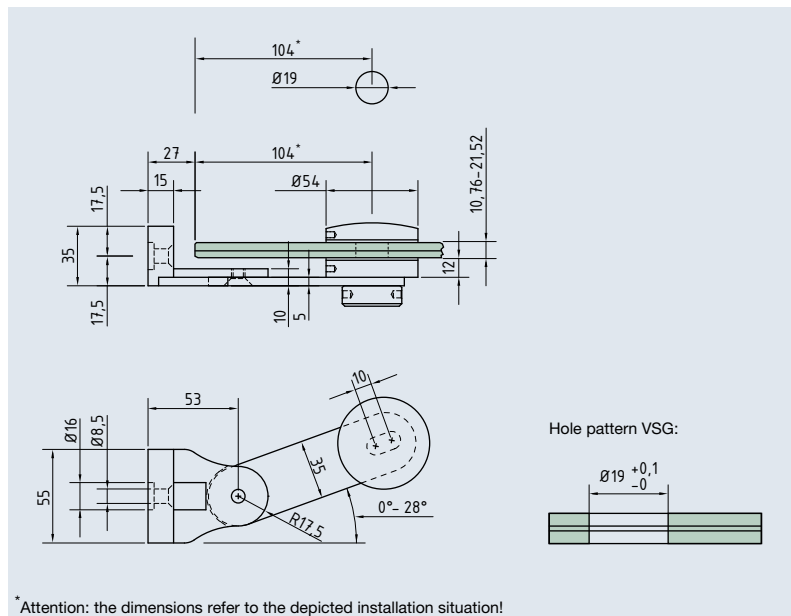
*Other radii on request!

Point fixture



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	0° - 28°
Bore	see hole pattern

Technical data:



Catalogue number:

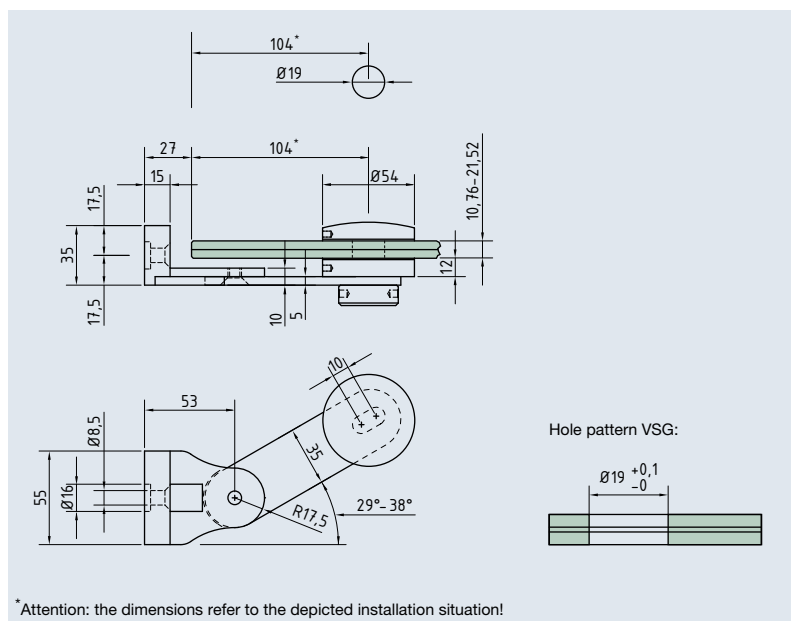
Cat. no.	PU
17 450 5 65	4 pieces

Point fixture



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	29° - 38°
Bore	see hole pattern

Technical data:

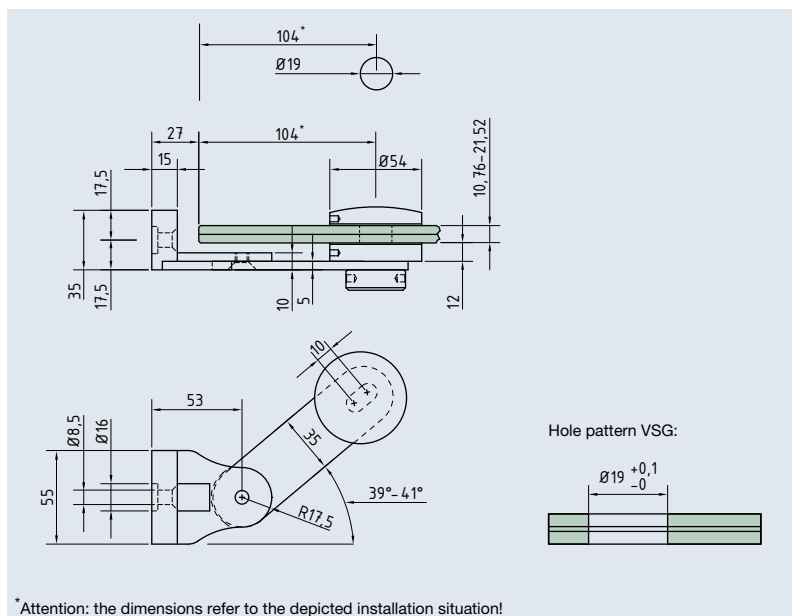


Catalogue number:

Cat. no.	PU
17 451 5 65	4 pieces

Point fixture

Technical data:



Catalogue number:

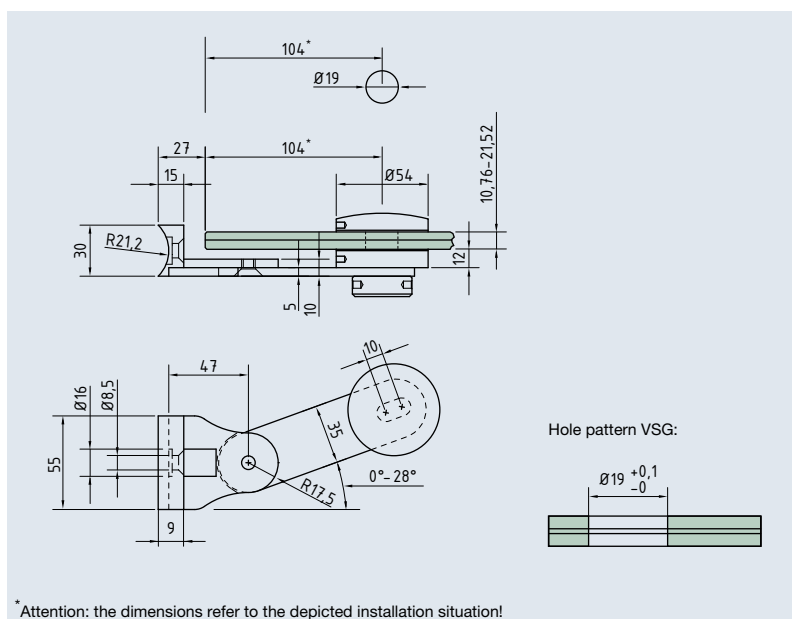
Cat. no.	PU
17 452 5 65	4 pieces



Material/version	stainless steel (VA) mirrored
Stud/Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	39° - 41°
Bore	see hole pattern

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 453 5 65	4 pieces



Material/version	stainless steel (VA) mirrored
Stud/Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	0° - 28°
Bore	see hole pattern

*Other radii on request!

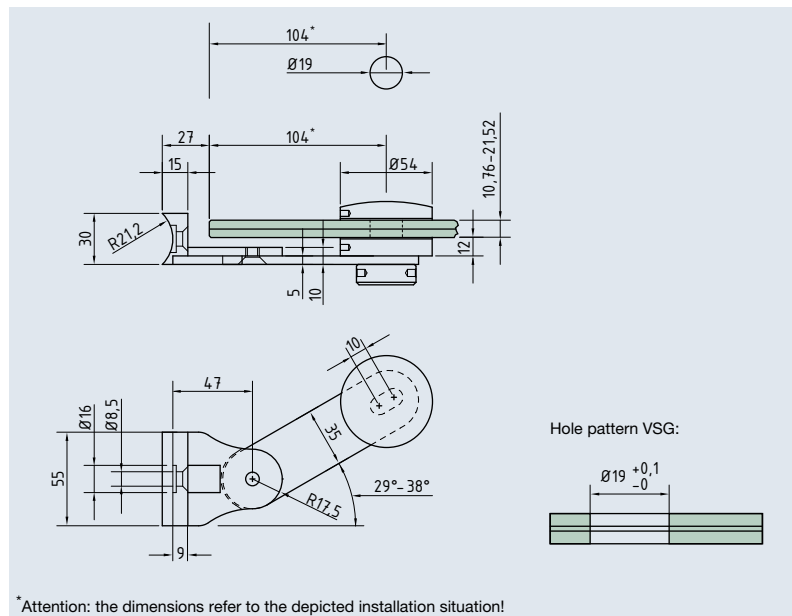
Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	29° - 38°
Bore	see hole pattern

*Other radii on request!



Catalogue number:

Cat. no.	PU
17 454 5 65	4 pieces

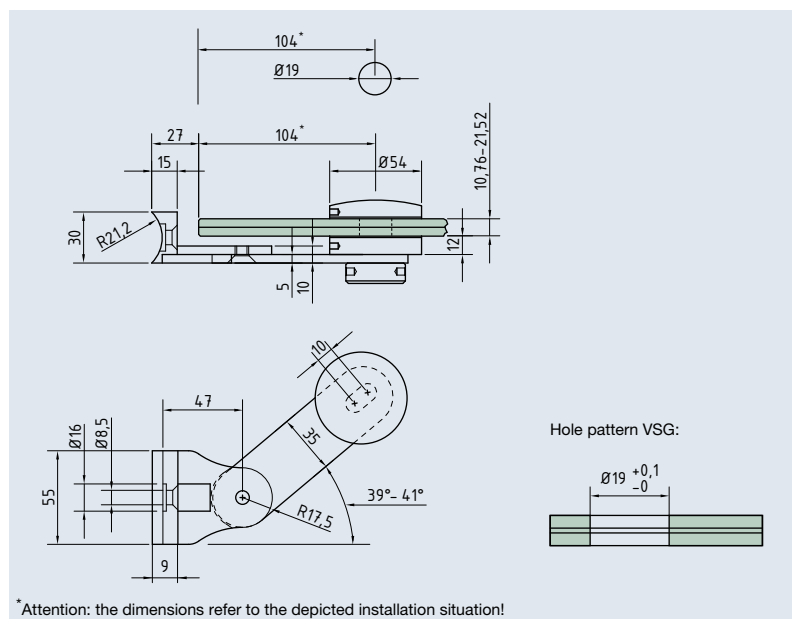
Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	39° - 41°
Bore	see hole pattern

*Other radii on request!

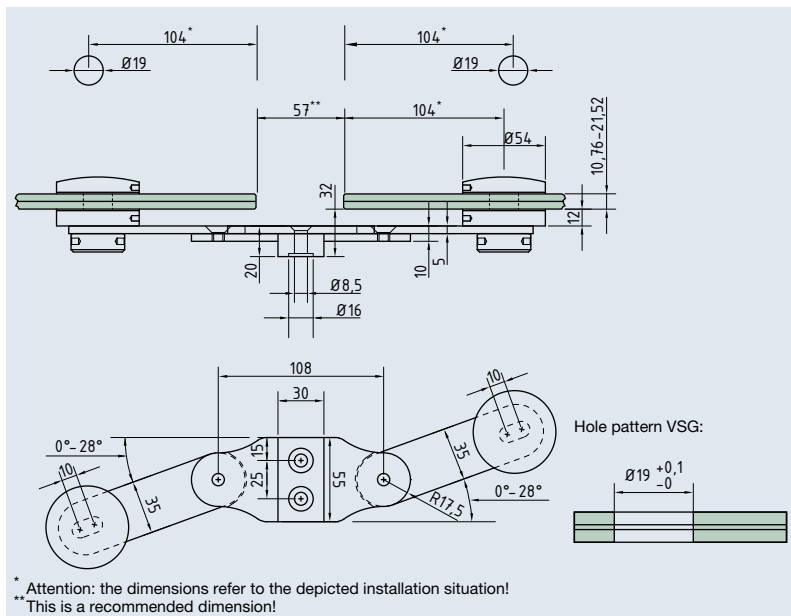


Catalogue number:

Cat. no.	PU
17 455 5 65	4 pieces

Point fixture

Technical data:



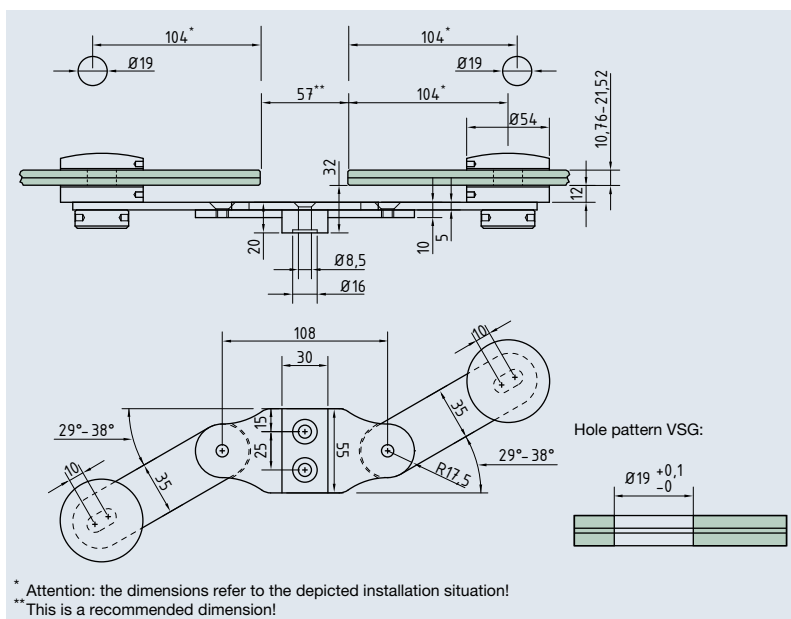
Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	0° - 28°
Bore	see hole pattern

Catalogue number:

Cat. no.	PU
17 456 5 65	2 pieces

Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	29° - 38°
Bore	see hole pattern

Catalogue number:

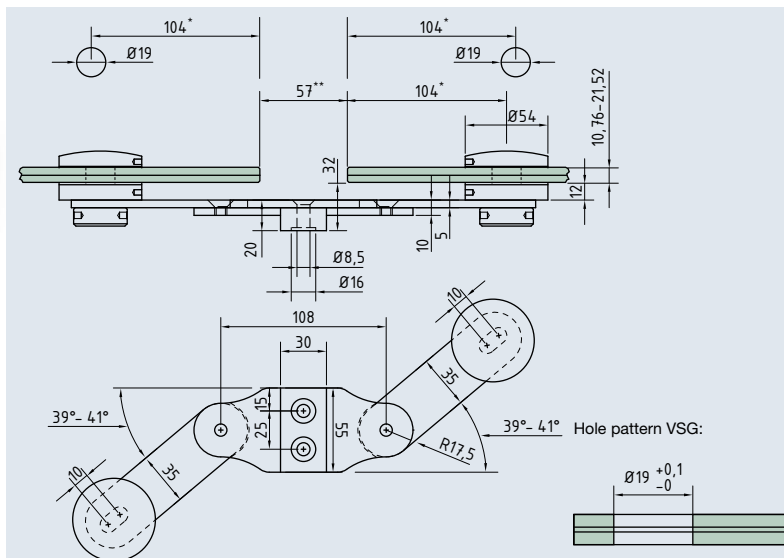
Cat. no.	PU
17 457 5 65	2 pieces

Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	39° - 41°
Bore	see hole pattern



Catalogue number:

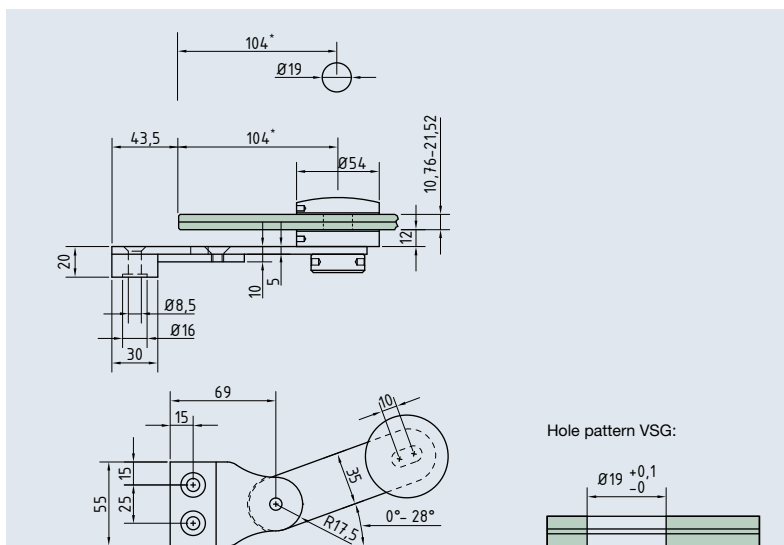
Cat. no.	PU
17 458 5 65	2 pieces

Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	0° - 28°
Bore	see hole pattern

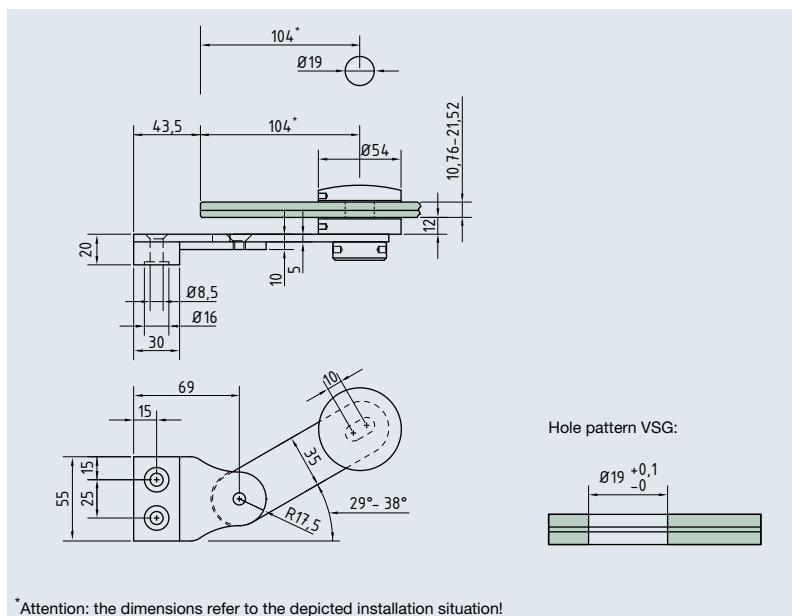


Catalogue number:

Cat. no.	PU
17 459 5 65	4 pieces

Point fixture

Technical data:



Catalogue number:

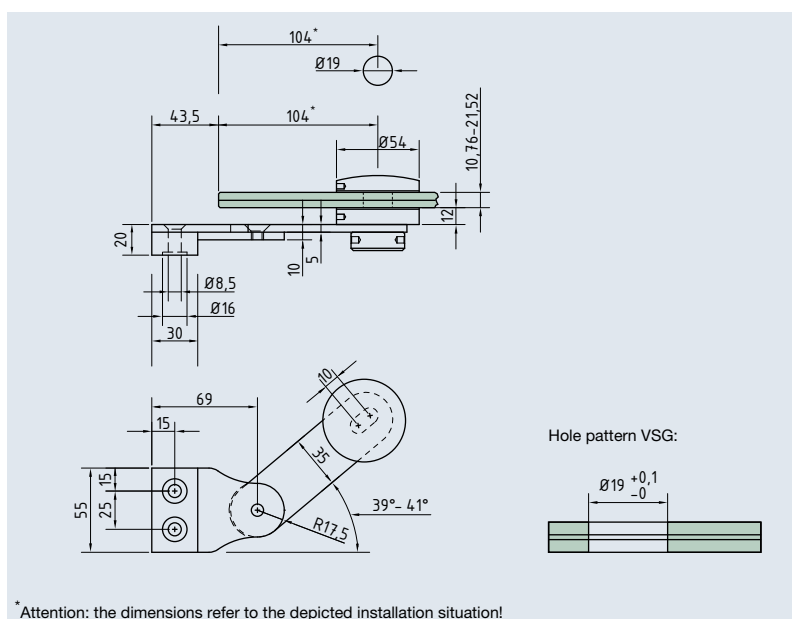
Cat. no.	PU
17 460 5 65	4 pieces



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	29° - 38°
Bore	see hole pattern

Point fixture

Technical data:



Catalogue number:

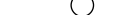
Cat. no.	PU
17 461 5 65	4 pieces



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	39° - 41°
Bore	see hole pattern

Point fixture



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	0° - 28°
Bore	see hole pattern

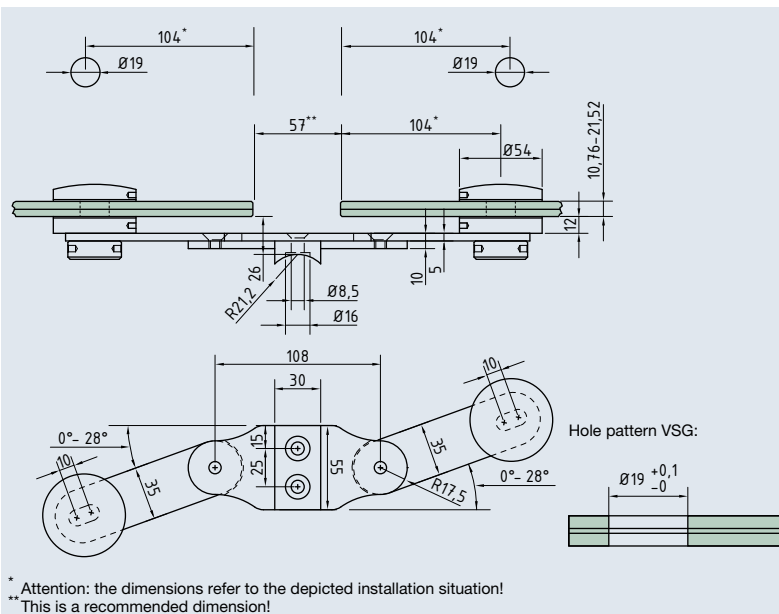
**Other radii on request!*

Point fixture



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	29° - 38°
Bore	see hole pattern

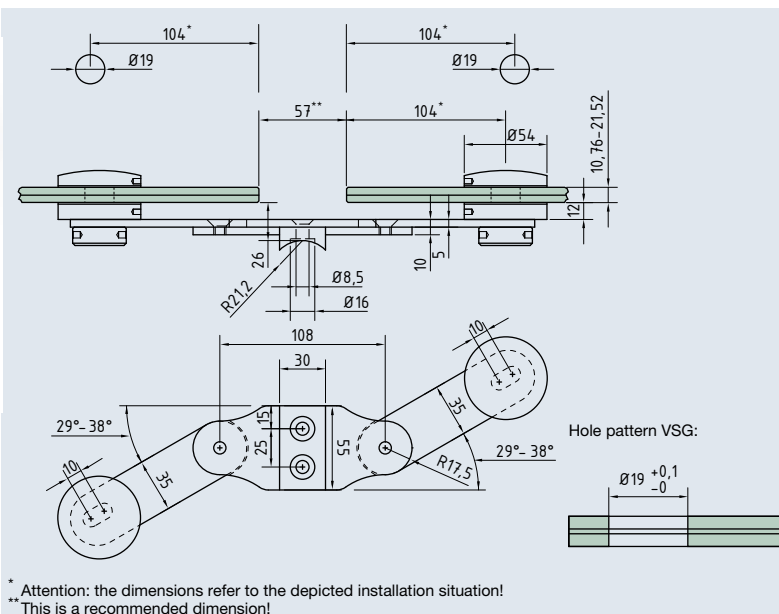
*Other radii on request!

Technical data:

Catalogue number:

Cat. no.	PU
17 462 5 65	2 pieces

Technical data:

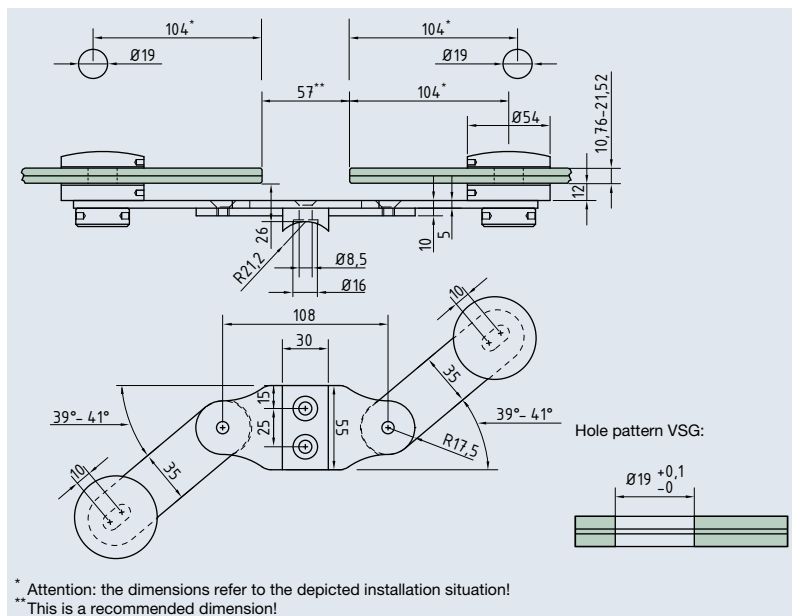


Catalogue number:

Cat. no.	PU
17 463 5 65	2 pieces

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 464 5 65	2 pieces

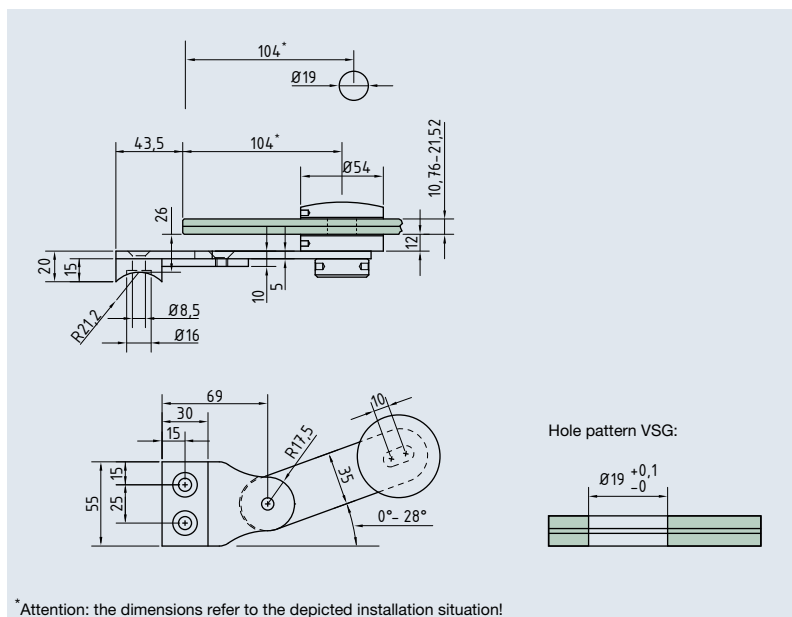


Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	39° - 41°
Bore	see hole pattern

*Other radii on request!

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 465 5 65	4 pieces



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	0° - 28°
Bore	see hole pattern

*Other radii on request!

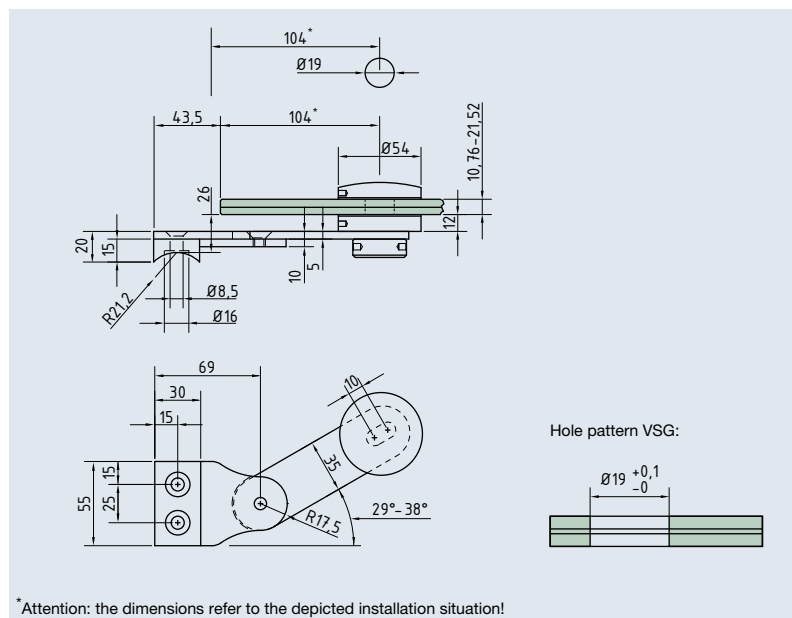
Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	29° - 38°
Bore	see hole pattern

*Other radii on request!



Catalogue number:

Cat. no.	PU
17 466 5 65	4 pieces

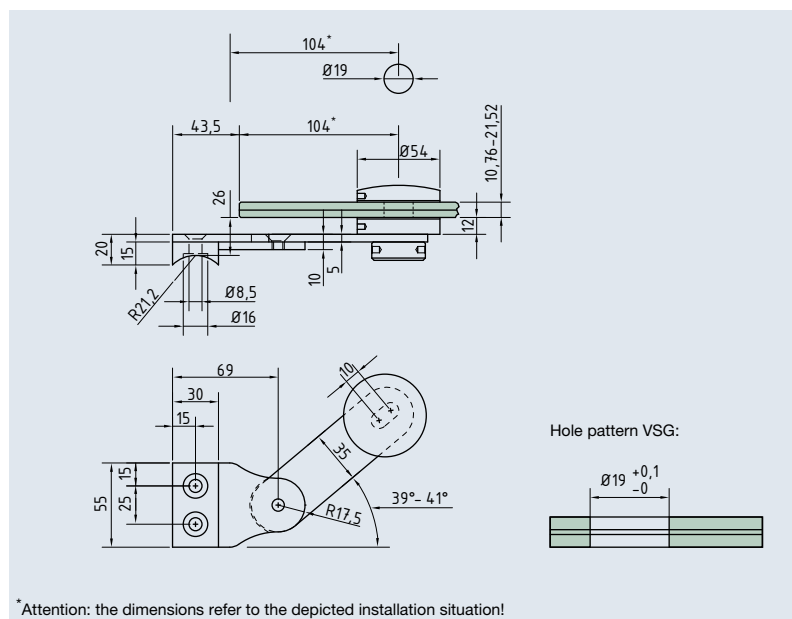
Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	39° - 41°
Bore	see hole pattern

*Other radii on request!

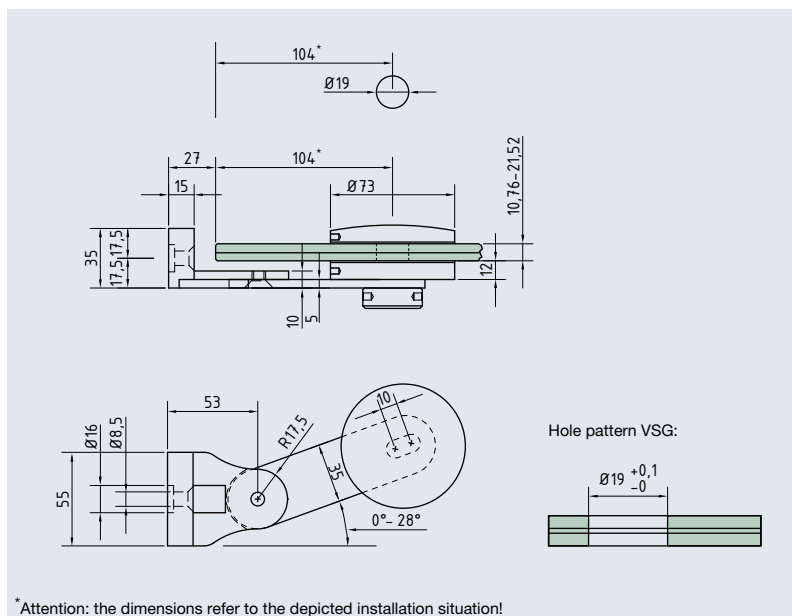


Catalogue number:

Cat. no.	PU
17 467 5 65	4 pieces

Point fixture

Technical data:



Catalogue number:

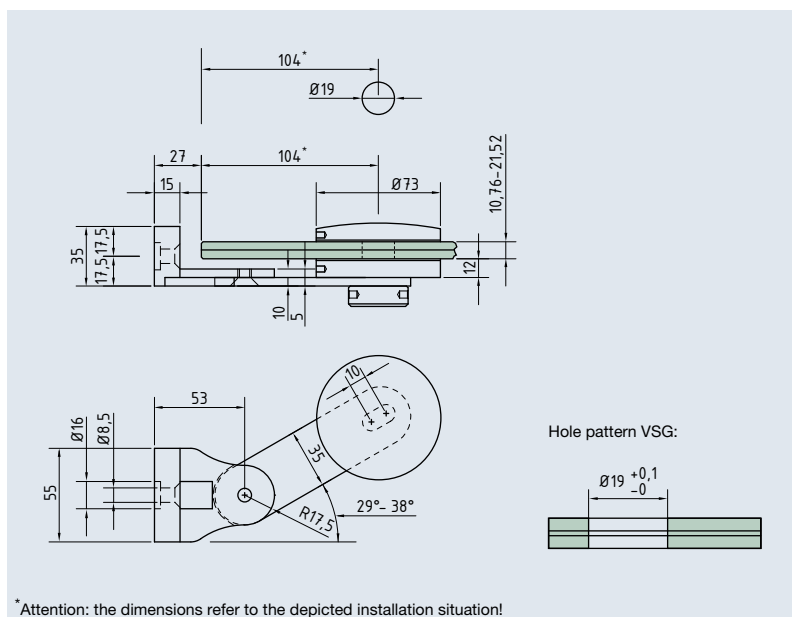
Cat. no.	PU
17 468 5 65	4 pieces



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	0° - 28°
Bore	see hole pattern

Point fixture

Technical data:



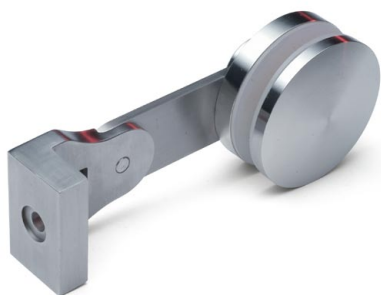
Catalogue number:

Cat. no.	PU
17 469 5 65	4 pieces



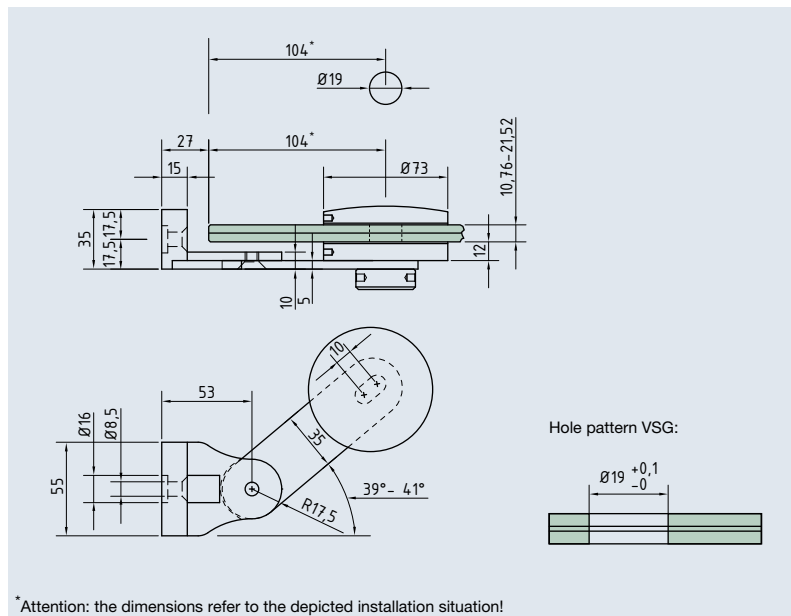
Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	29° - 38°
Bore	see hole pattern

Point fixture



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	39° - 41°
Bore	see hole pattern

Technical data:



Catalogue number:

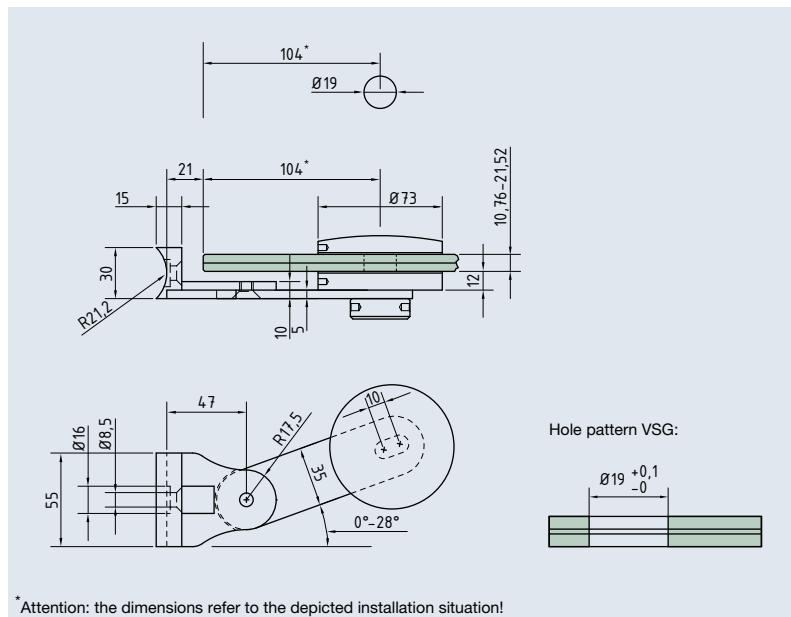
Cat. no.	PU
17 470 5 65	4 pieces

Point fixture



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	0° - 28°
Bore	see hole pattern

Technical data:



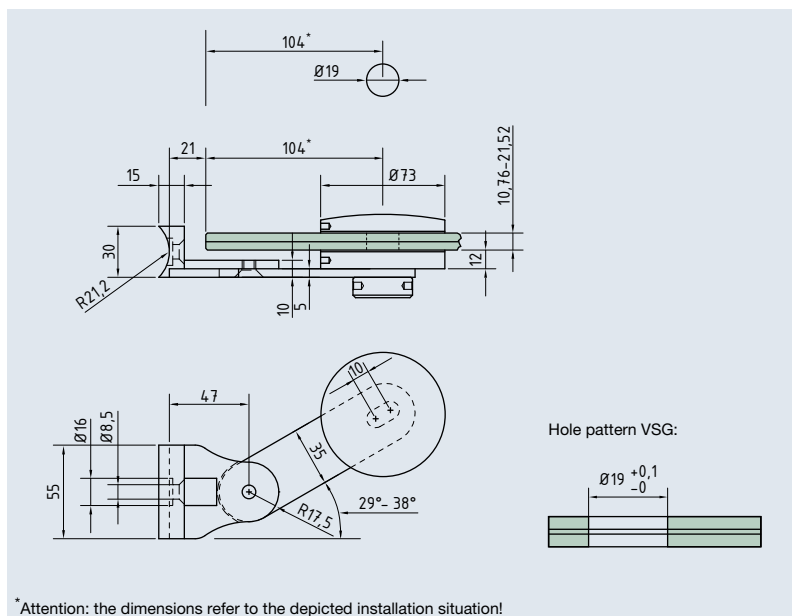
Catalogue number:

Cat. no.	PU
17 471 5 65	4 pieces

*Other radii on request!

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 472 5 65	4 pieces

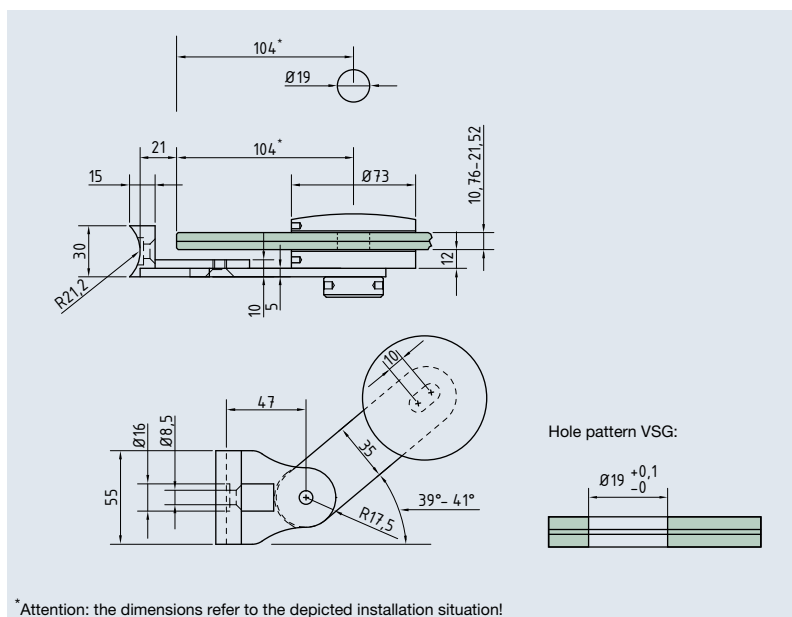


Material/version	stainless steel (VA) mirrored
Stud/Installation position	○ — — — ○
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	29° - 38°
Bore	see hole pattern

*Other radii on request!

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 473 5 65	4 pieces



Material/version	stainless steel (VA) mirrored
Stud/Installation position	○ — — — ○
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	39° - 41°
Bore	see hole pattern

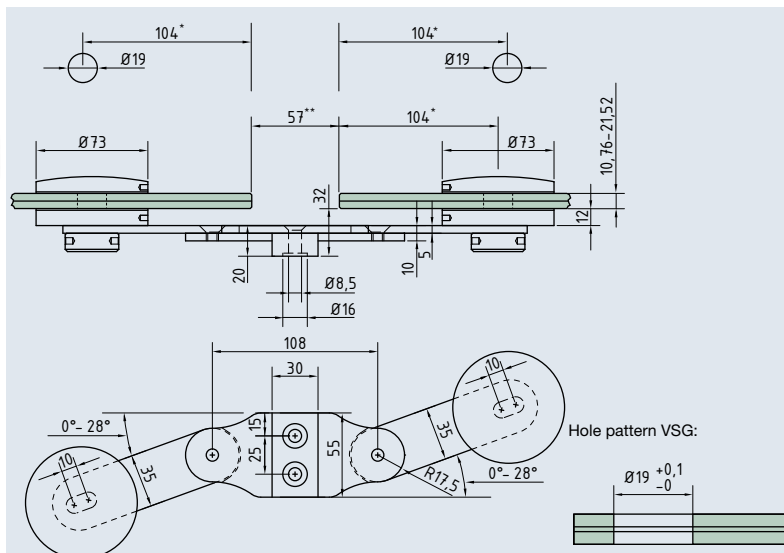
*Other radii on request!

Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	0° - 28°
Bore	see hole pattern



* Attention: the dimensions refer to the depicted installation situation!
 ** This is a recommended dimension!

Catalogue number:

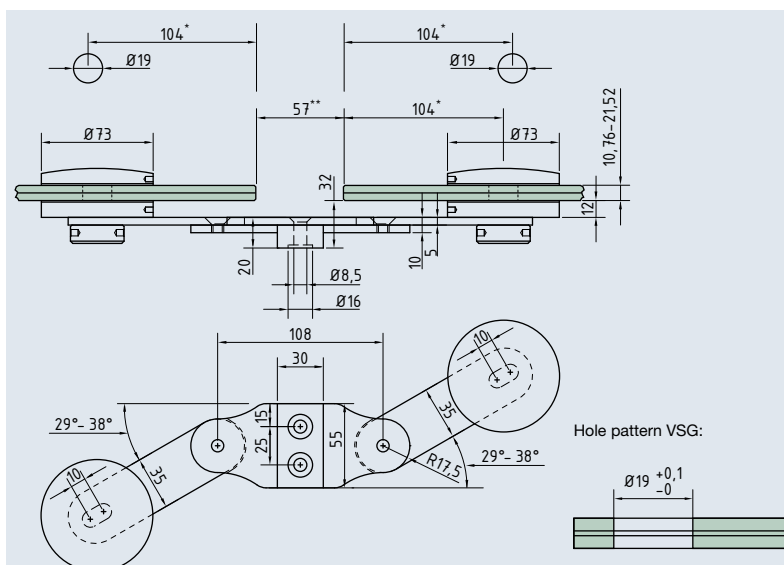
Cat. no.	PU
17 474 5 65	2 pieces

Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	29° - 38°
Bore	see hole pattern



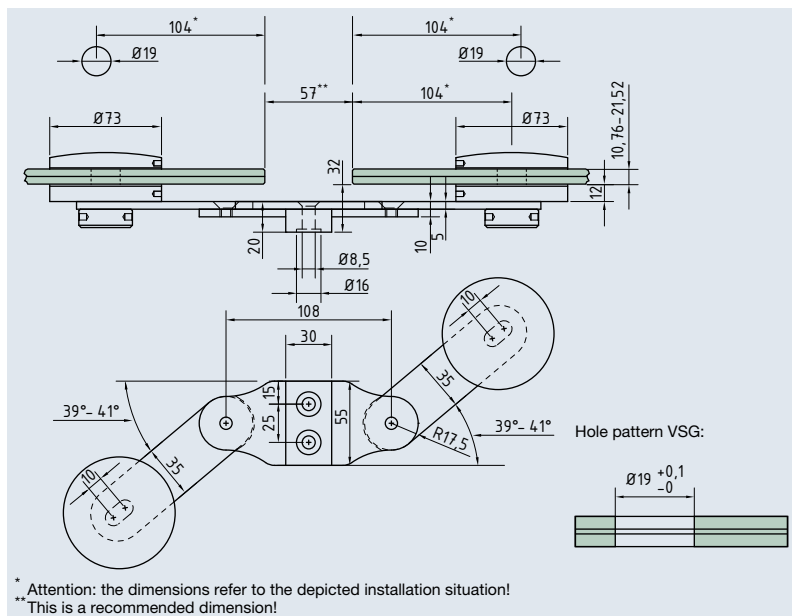
* Attention: the dimensions refer to the depicted installation situation!
 ** This is a recommended dimension!

Catalogue number:

Cat. no.	PU
17 475 5 65	2 pieces

Point fixture

Technical data:



Catalogue number:

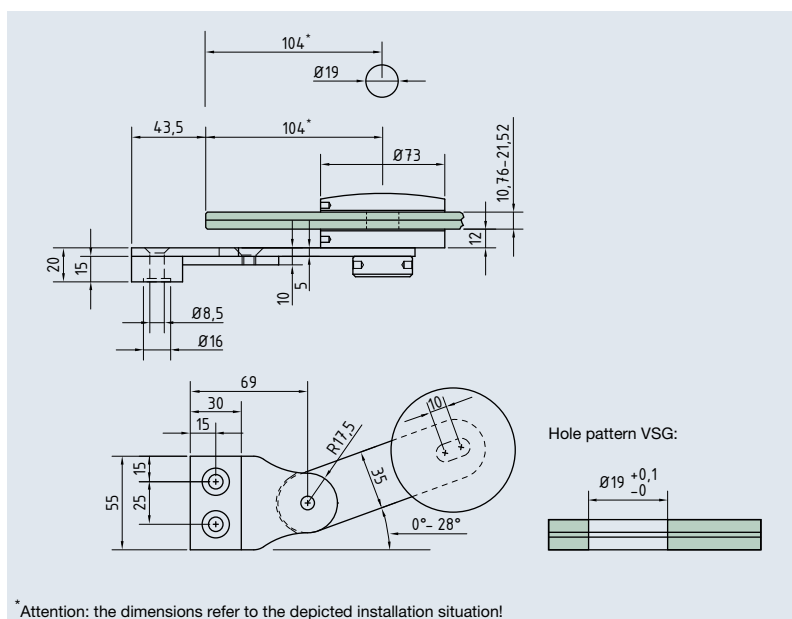
Cat. no.	PU
17 476 5 65	2 pieces



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	39° - 41°
Bore	see hole pattern

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 477 5 65	4 pieces



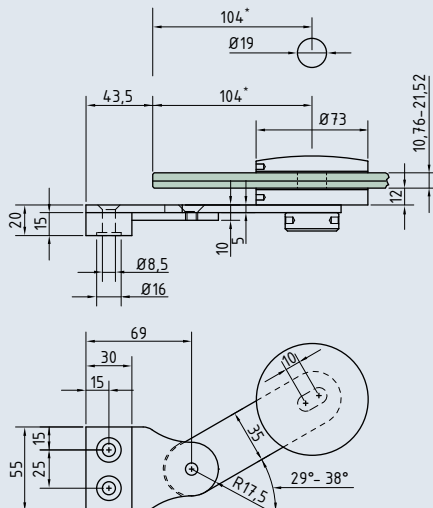
Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	0° - 28°
Bore	see hole pattern

Point fixture

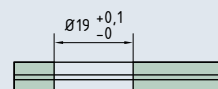


Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	29° - 38°
Bore	see hole pattern

Technical data:



Hole pattern VSG:



*Attention: the dimensions refer to the depicted installation situation!

Catalogue number:

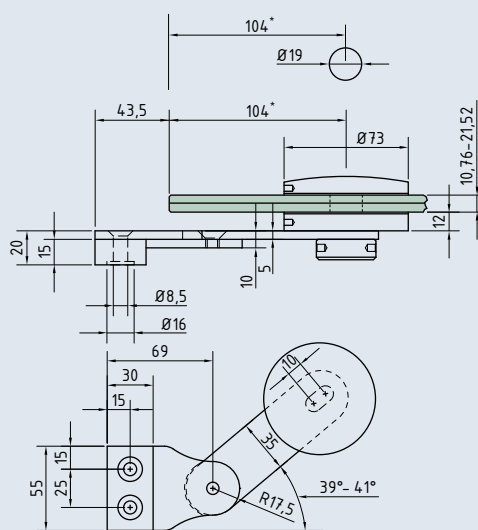
Cat. no.	PU
17 478 5 65	4 pieces

Point fixture

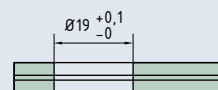


Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	39° - 41°
Bore	see hole pattern

Technical data:



Hole pattern VSG:



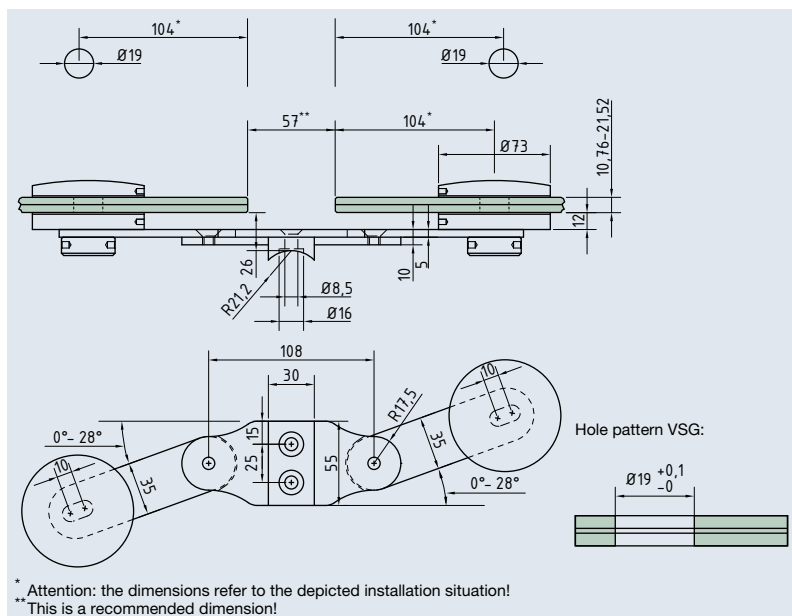
Attention: the dimensions refer to the depicted installation situation!

Catalogue number:

Cat. no.	PU
17 479 5 65	4 pieces

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 480 5 65	2 pieces

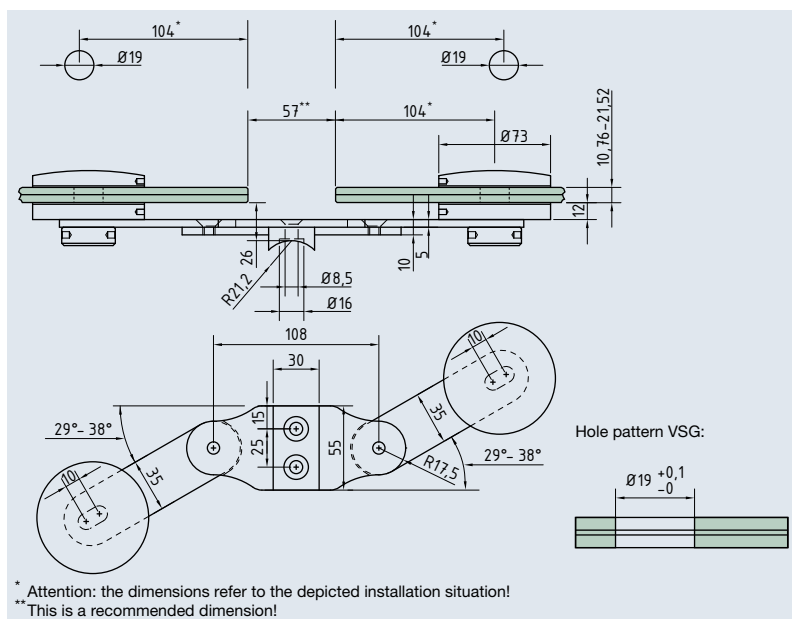


Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	0° - 28°
Bore	see hole pattern

*Other radii on request!

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 481 5 65	2 pieces



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	29° - 38°
Bore	see hole pattern

*Other radii on request!

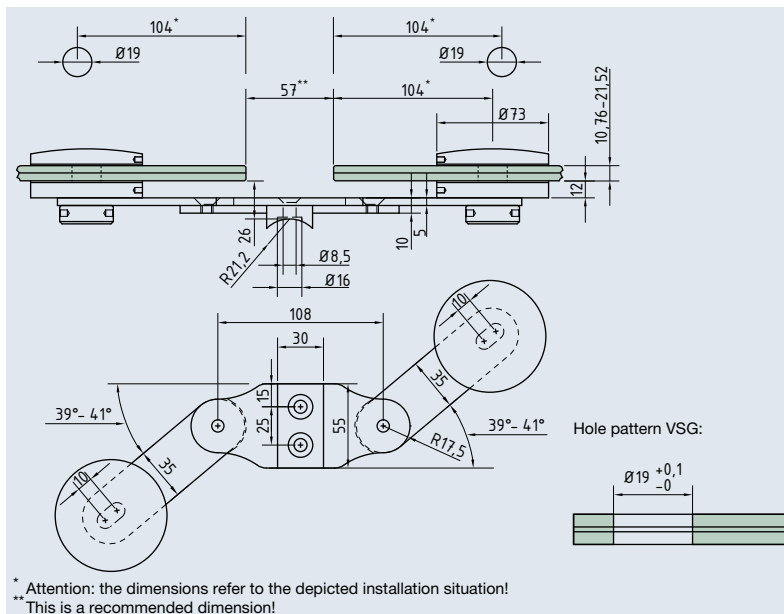
Point fixture



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	39° - 41°
Bore	see hole pattern

*Other radii on request!

Technical data:



Catalogue number:

Cat. no.	PU
17 482 5 65	2 pieces

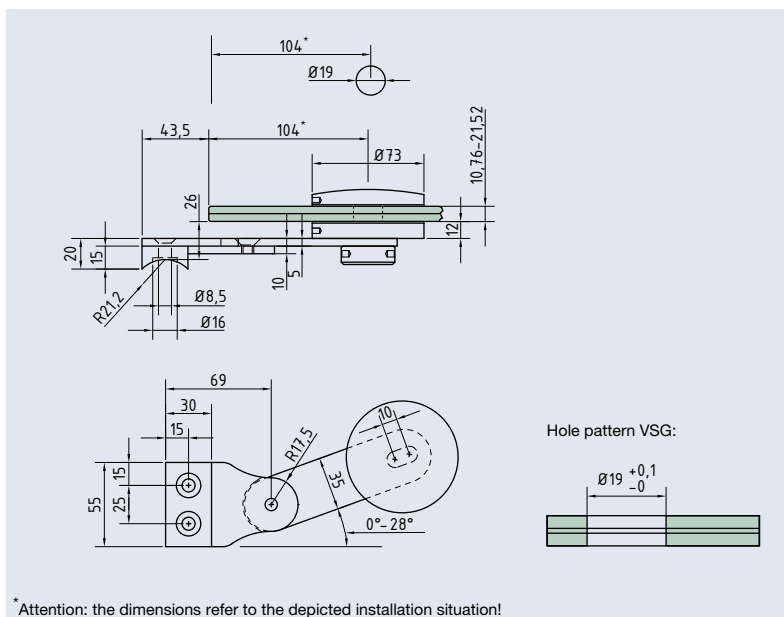
Point fixture



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	0° - 28°
Bore	see hole pattern

*Other radii on request!

Technical data:

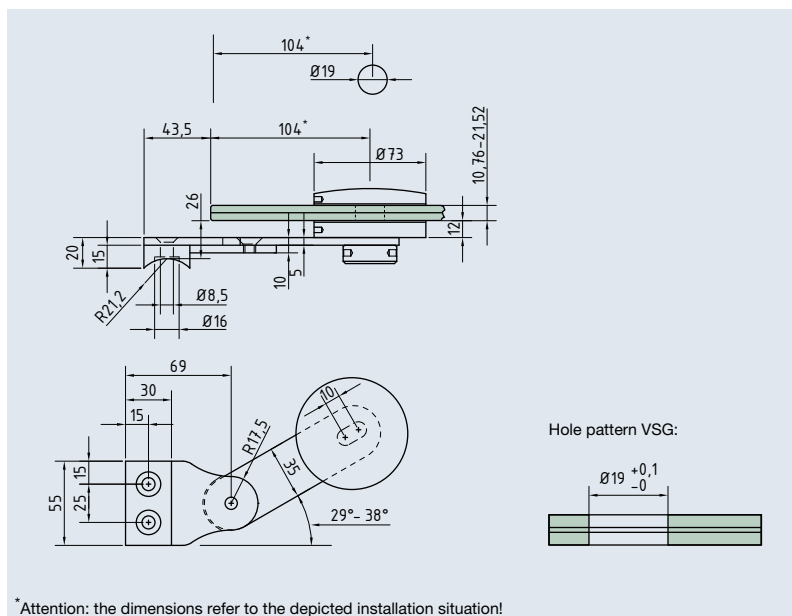


Catalogue number:

Cat. no.	PU
17 483 5 65	4 pieces

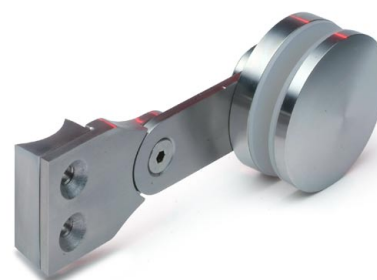
Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 484 5 65	4 pieces

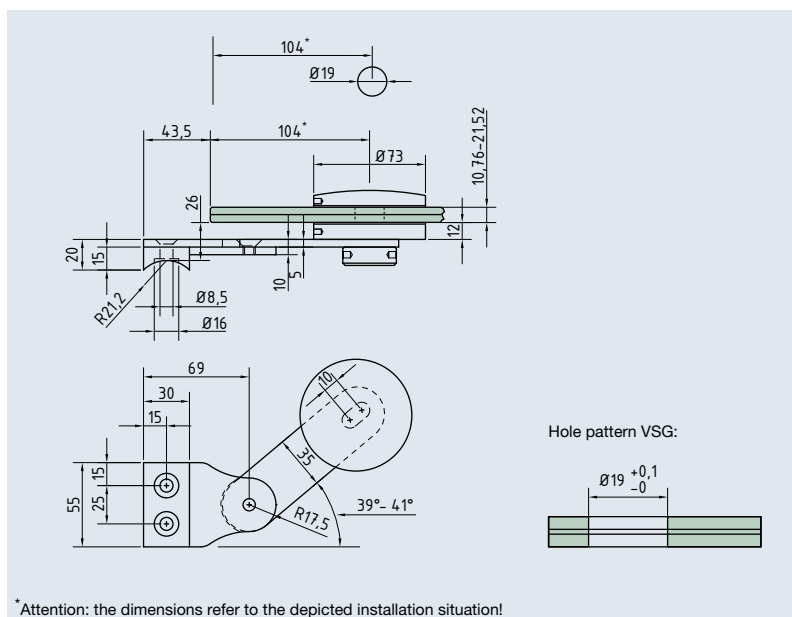


Material/version	stainless steel (VA) mirrored
Stud/Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	29° - 38°
Bore	see hole pattern

*Other radii on request!

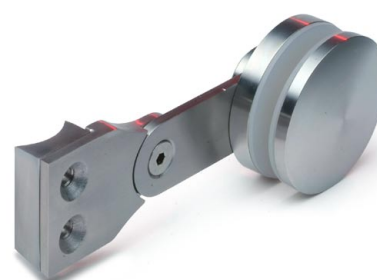
Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 485 5 65	4 pieces



Material/version	stainless steel (VA) mirrored
Stud/Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	39° - 41°
Bore	see hole pattern

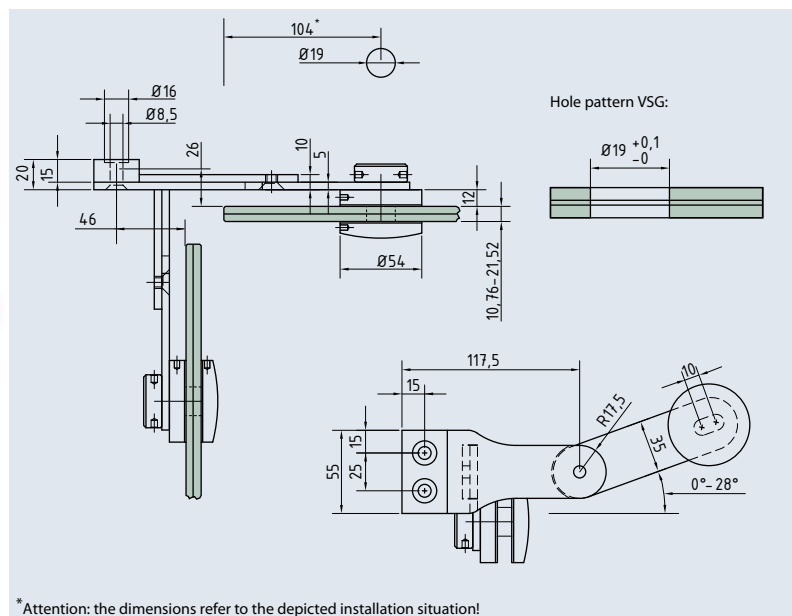
*Other radii on request!

Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	0° - 28°
Bore	see hole pattern



Catalogue number:

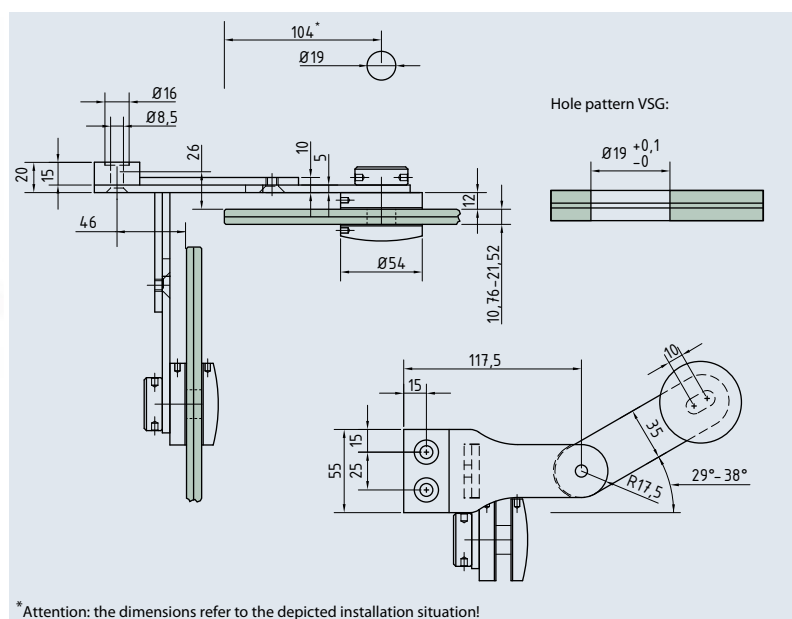
Cat. no.	PU
17 486 5 65	2 pieces

Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	29° - 38°
Bore	see hole pattern

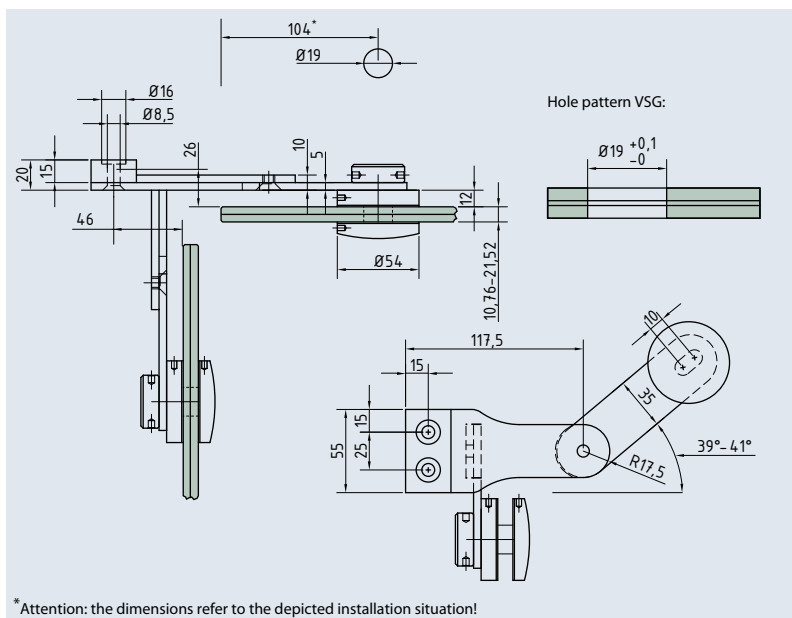


Catalogue number:

Cat. no.	PU
17 487 5 65	2 pieces

Point fixture

Technical data:



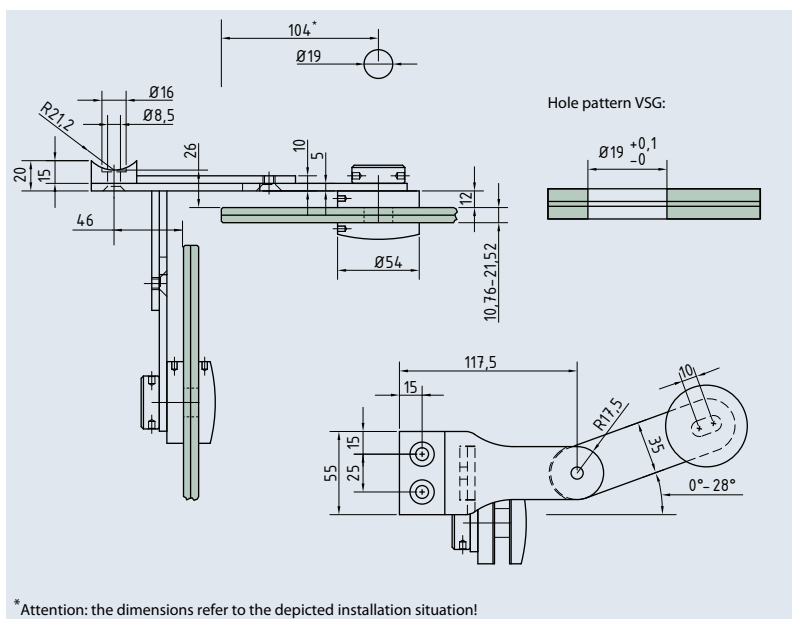
* Attention: the dimensions refer to the depicted installation situation!



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	39° - 41°
Bore	see hole pattern

Point fixture

Technical data:



* Attention: the dimensions refer to the depicted installation situation!



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	0° - 28°
Bore	see hole pattern

*Other radii on request!

Catalogue number:

Cat. no.	PU
17 489 5 65	2 pieces

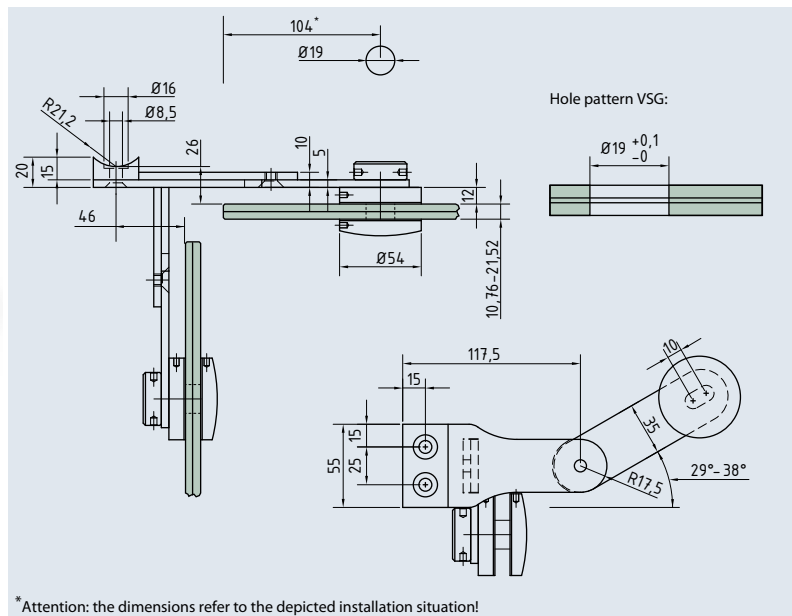
Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	29° - 38°
Bore	see hole pattern

*Other radii on request!



Catalogue number:

Cat. no.	PU
17 490 5 65	2 pieces

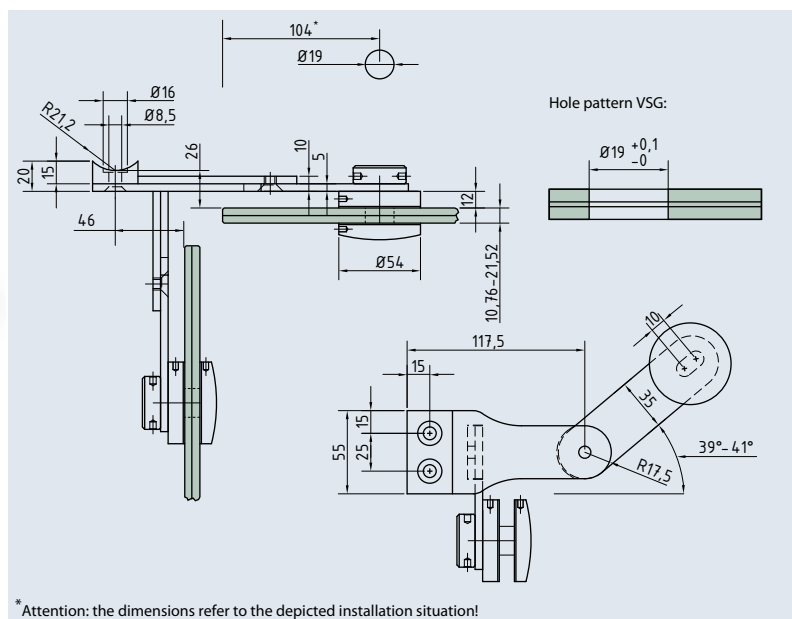
Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	54 mm
Gradient angle	39° - 41°
Bore	see hole pattern

*Other radii on request!

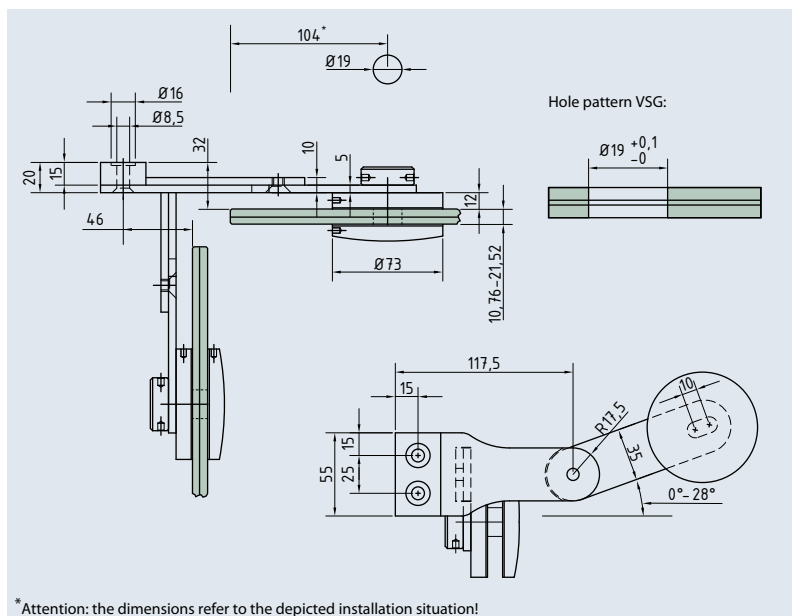


Catalogue number:

Cat. no.	PU
17 491 5 65	2 pieces

Point fixture

Technical data:



Catalogue number:

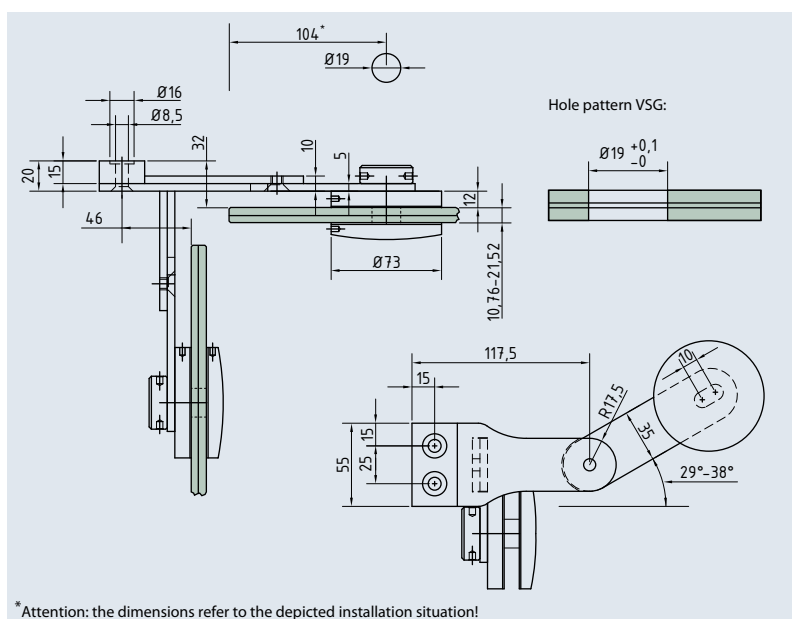
Cat. no.	PU
17 492 5 65	2 pieces



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	0° - 28°
Bore	see hole pattern

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 493 5 65	2 pieces

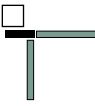


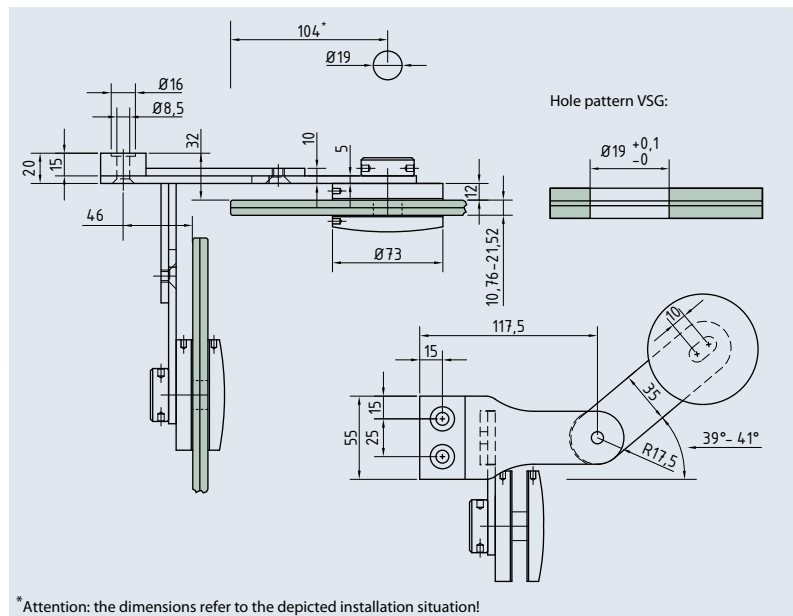
Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	29° - 38°
Bore	see hole pattern

Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	39° - 41°
Bore	see hole pattern



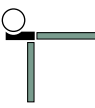
Catalogue number:

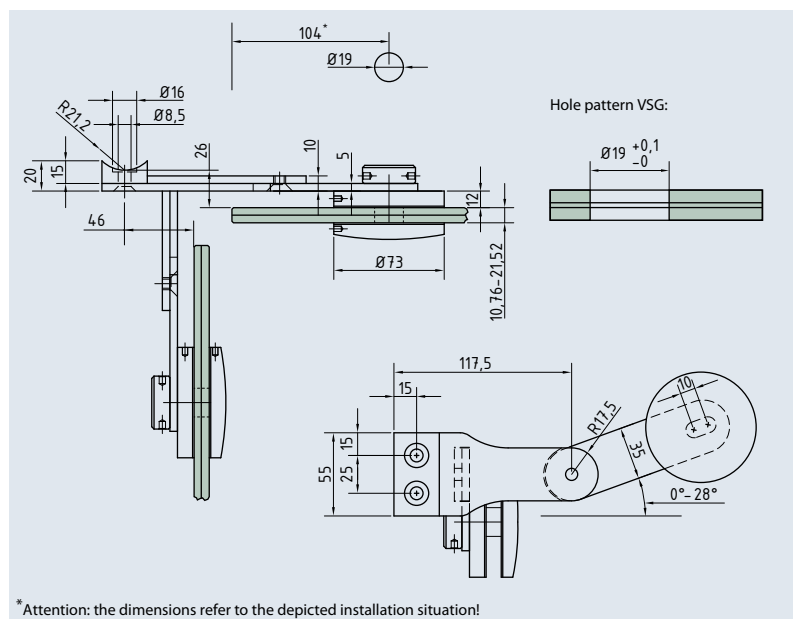
Cat. no.	PU
17 494 5 65	2 pieces

Point fixture

Technical data:



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	0° - 28°
Bore	see hole pattern



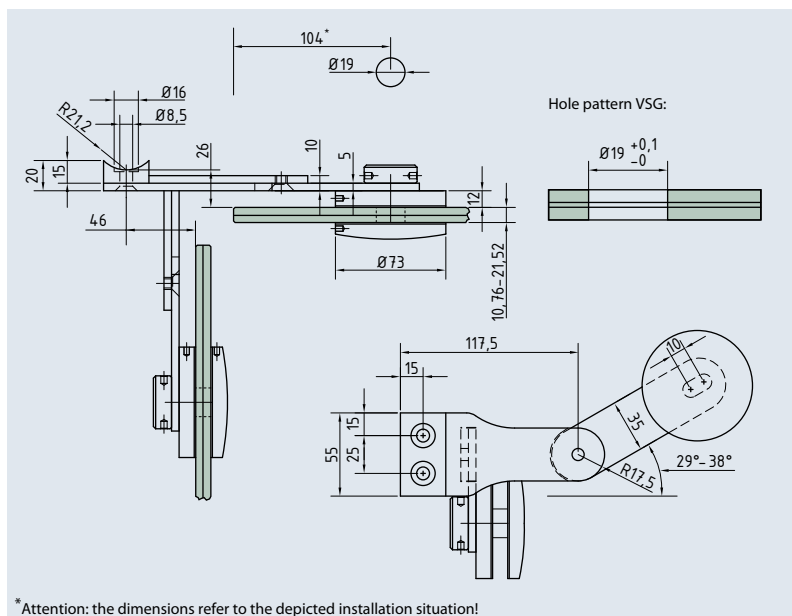
Catalogue number:

Cat. no.	PU
17 495 5 65	2 pieces

*Other radii on request!

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 496 5 65	2 pieces

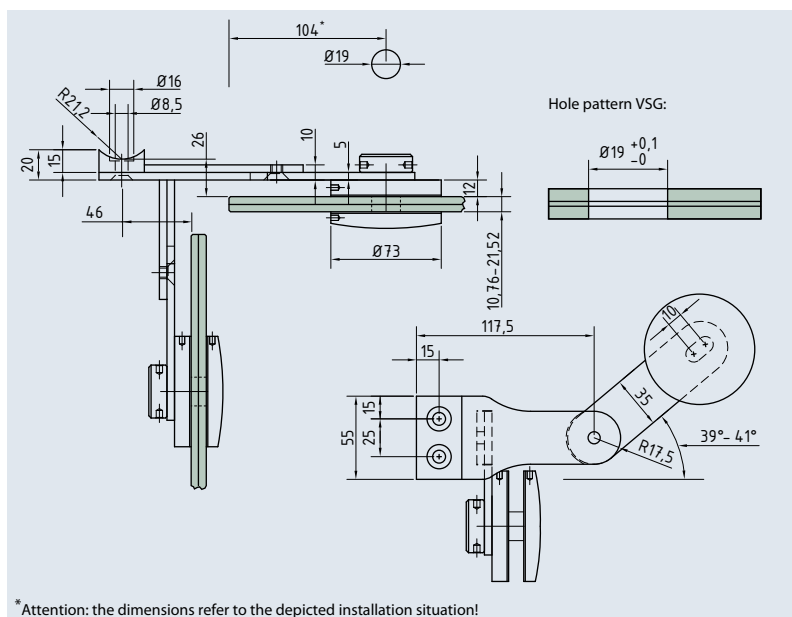


Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	29° - 38°
Bore	see hole pattern

*Other radii on request!

Point fixture

Technical data:



Catalogue number:

Cat. no.	PU
17 497 5 65	2 pieces



Material/version	stainless steel (VA) mirrored
Stud/ Installation position	
Radius	R = 21,2 mm*
Glass thickness	10,76 - 21,52 mm
Diameter	73 mm
Gradient angle	39° - 41°
Bore	see hole pattern

*Other radii on request!





Well thought through!

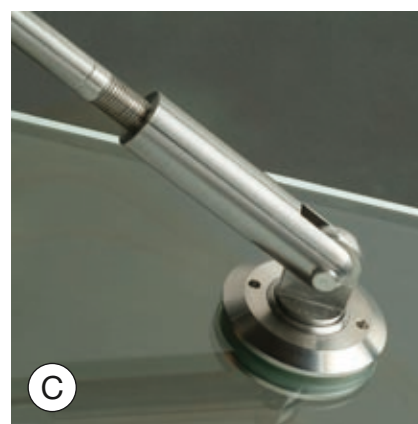
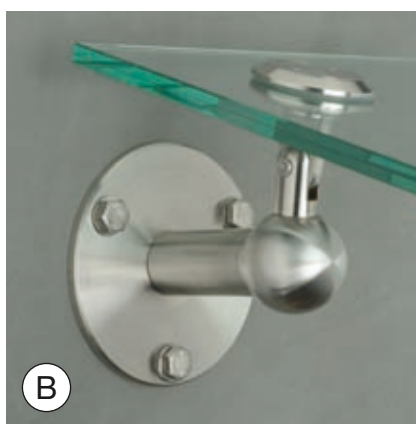
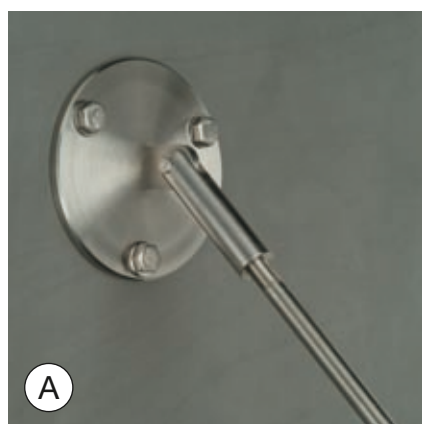
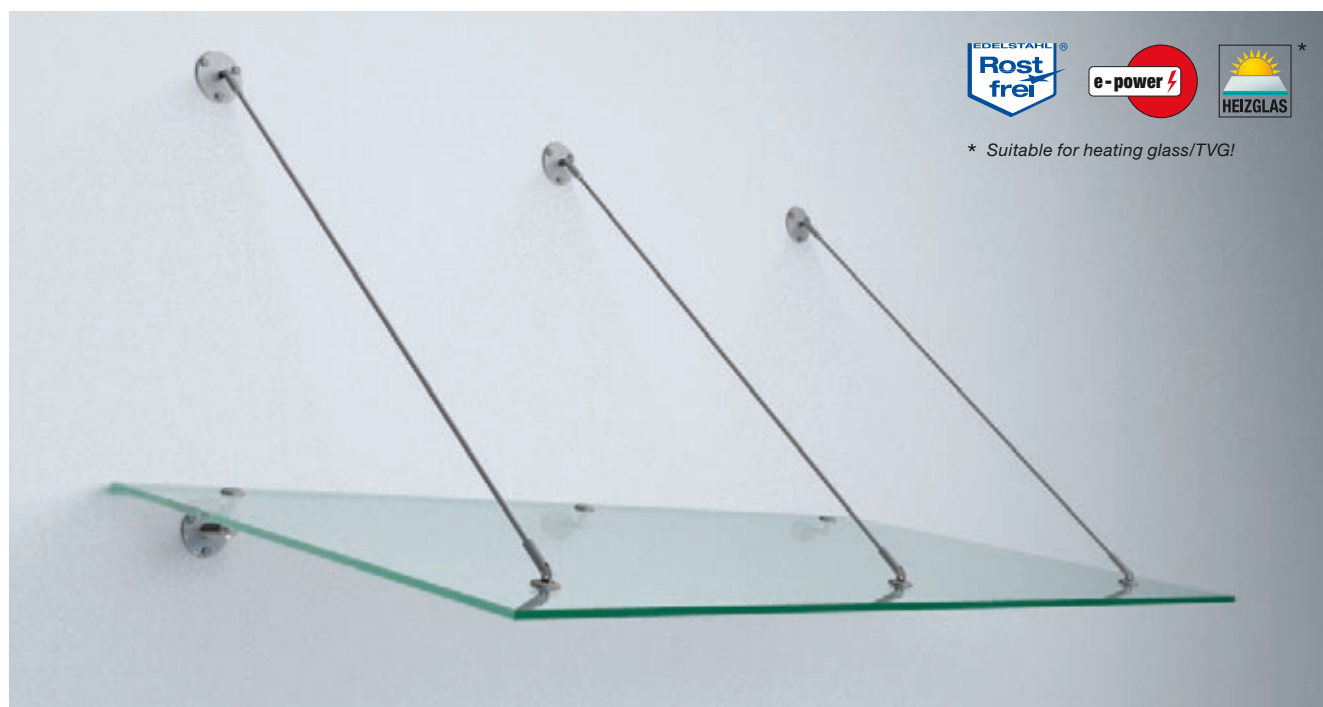
The SWS canopy system has what hardly any other canopy system has. It provides a multitude of additional functional options over and above classical weather protection. This is possible through our patented E-coupling, which in connection with the building- and raw material glass presents new and exceptional opportunities.

SWS canopies can, for instance, be completely automatically heated – snowfall simply evaporates! Heavy snow loads and suddenly skidding snow cover are prevented. Light emitting diodes can be integrated to create evocative illumination. Motion detectors inserted into the glass can be connected with alarm systems. Solar cells can elegantly produce electricity.

Along with these visions, which are already reality, our canopy systems convince through their noble, delicate design. Withdrawn, high-grade stainless steel fittings and tie rods put the glass impressively into the scene.



Canopy system, 1700 mm outreach

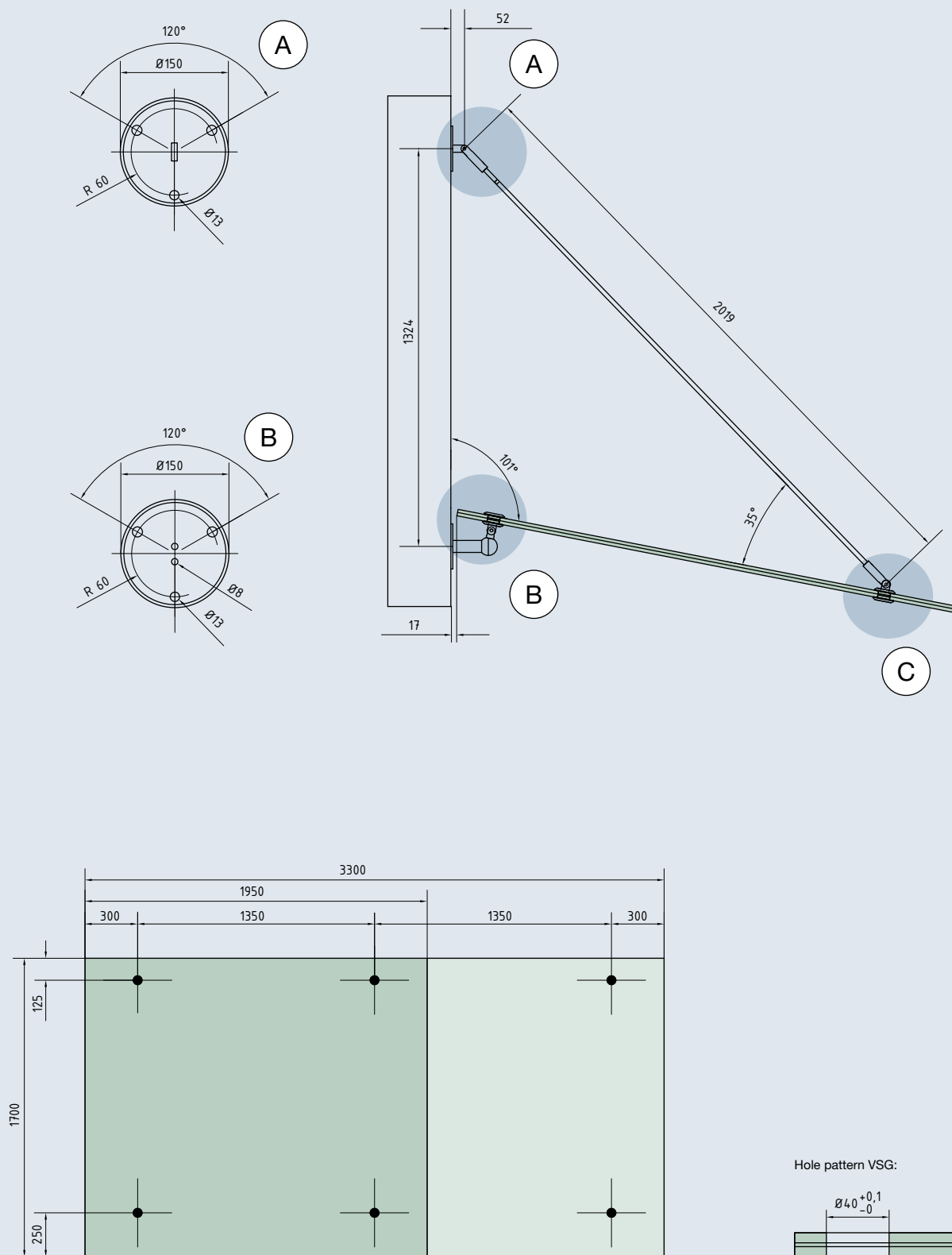


Catalogue number:

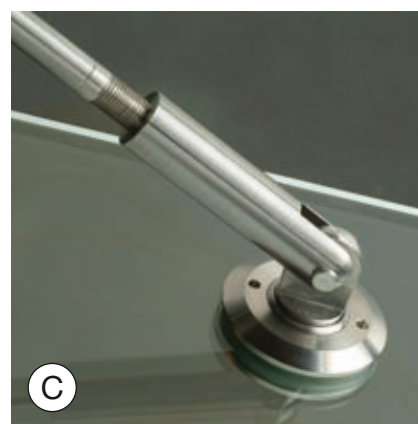
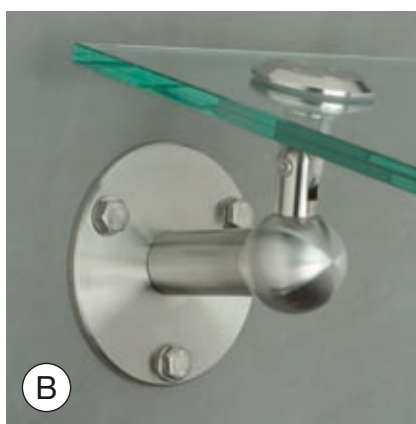
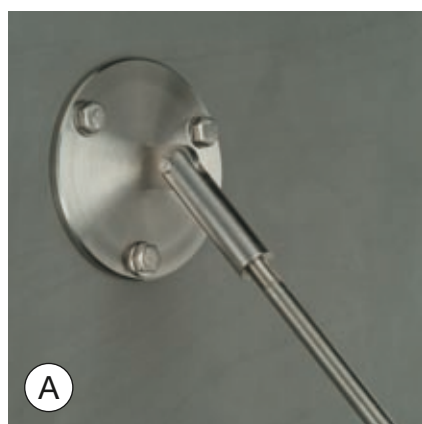
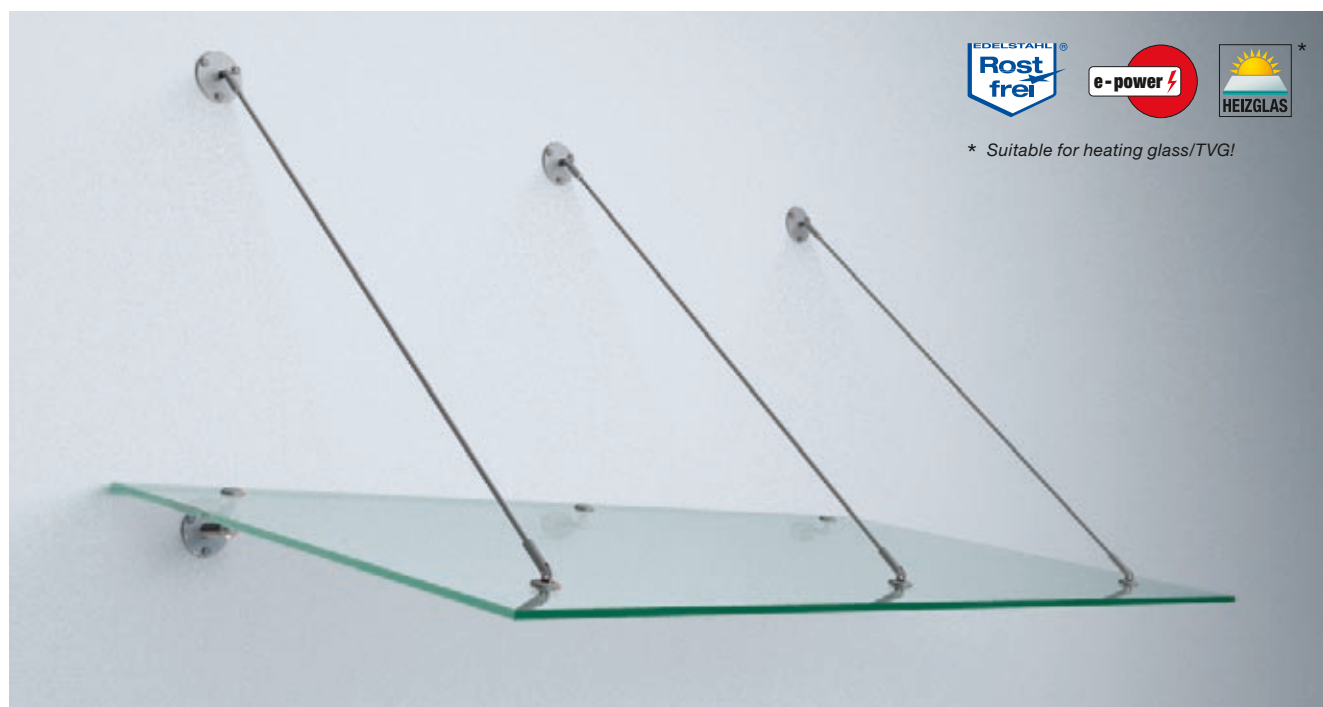
Cat. no.	Designation	Glass thickness	Material	Surface style	PU
17 600 5 65	Canopy set	13,52-21,52 mm	stainless steel (VA)	mirrored	1 set***
17 602 5 65	Tie rod with fork crown	13,52-21,52 mm	stainless steel (VA)	mirrored	1 piece
17 603 5 65	Wall attachments for tie rod				
17 604 5 65	Wall connection with fork crown				
17 608 5 65	Point fixture with eyelet				

*** Scope of delivery: 1x tie rod with fork crown (cat. no.: 17 602 5 65), 1x wall attachment for tie rod (cat.-no.: 17 603 5 65), 1 x wall connector with fork crown (cat. no.: 17 604 5 65), 2x point fixtures cat. no.: 17 608 5 65)

Canopy system, 1700 mm outreach



Canopy system, 1300 mm outreach

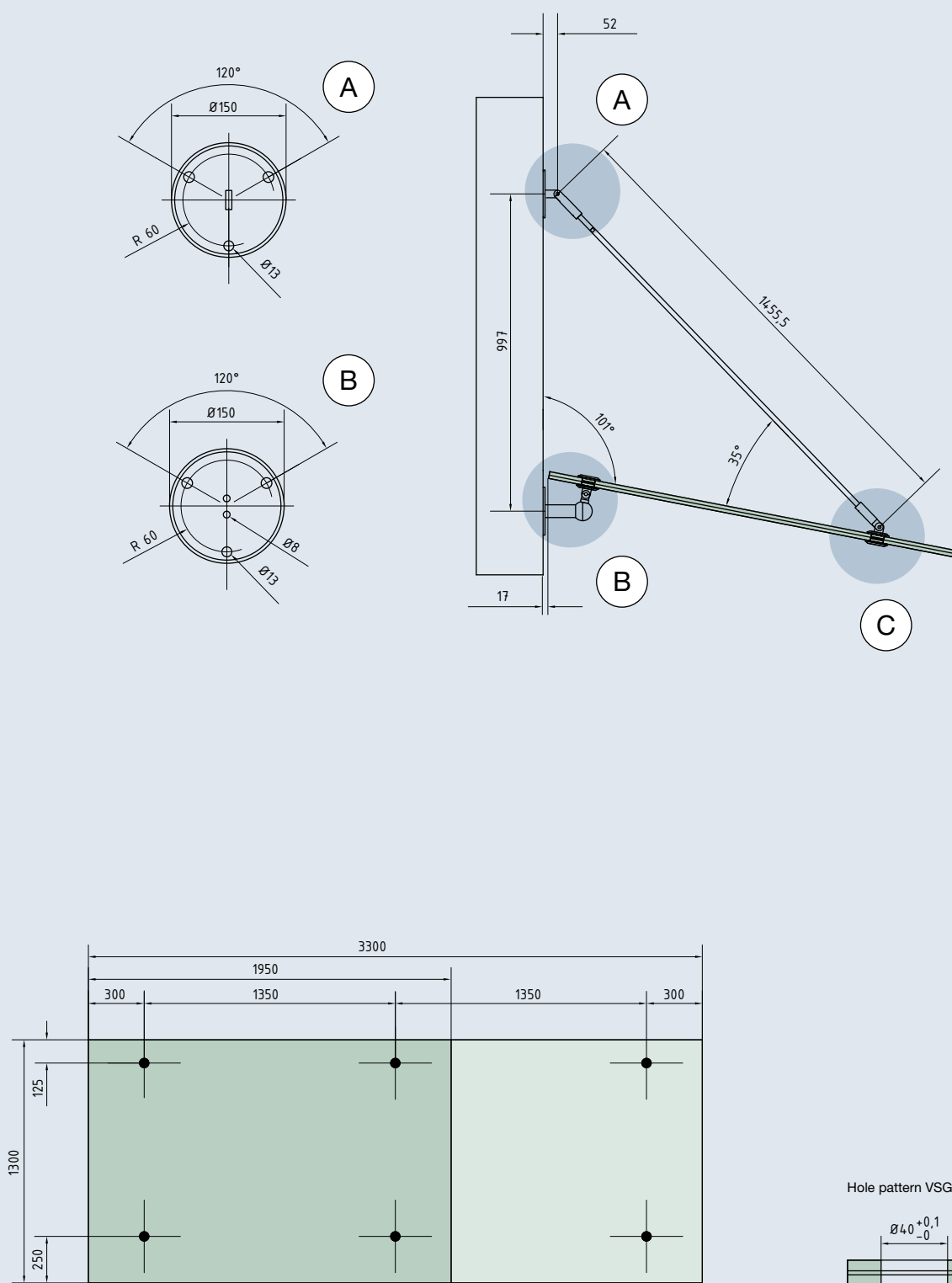


Catalogue number:

Cat. no.	Designation	Glass thickness	Material	Surface style	PU
17 605 5 65	Canopy set	13,52-21,52 mm	stainless steel (VA)	mirrored	1 set***
17 601 5 65	Tie rod with fork crown	13,52-21,52 mm	stainless steel (VA)	mirrored	1 piece
17 603 5 65	Wall attachments for tie rod				
17 604 5 65	Wall connection with fork crown				
17 608 5 65	Point fixture with eyelet				

*** Scope of delivery: 1x tie rod with fork crown (Cat. no.:17 601 5 65), 1x wall attachments for tie rod (Cat. no.:17 603 5 65), 1x Wall connection with fork crown (Cat. no.: 17 604 5 65), 2x point fixtures (Cat. no.:17 608 5 65)

Canopy system, 1300 mm outreach



Window-alteration canopy system, 1700 mm outreach

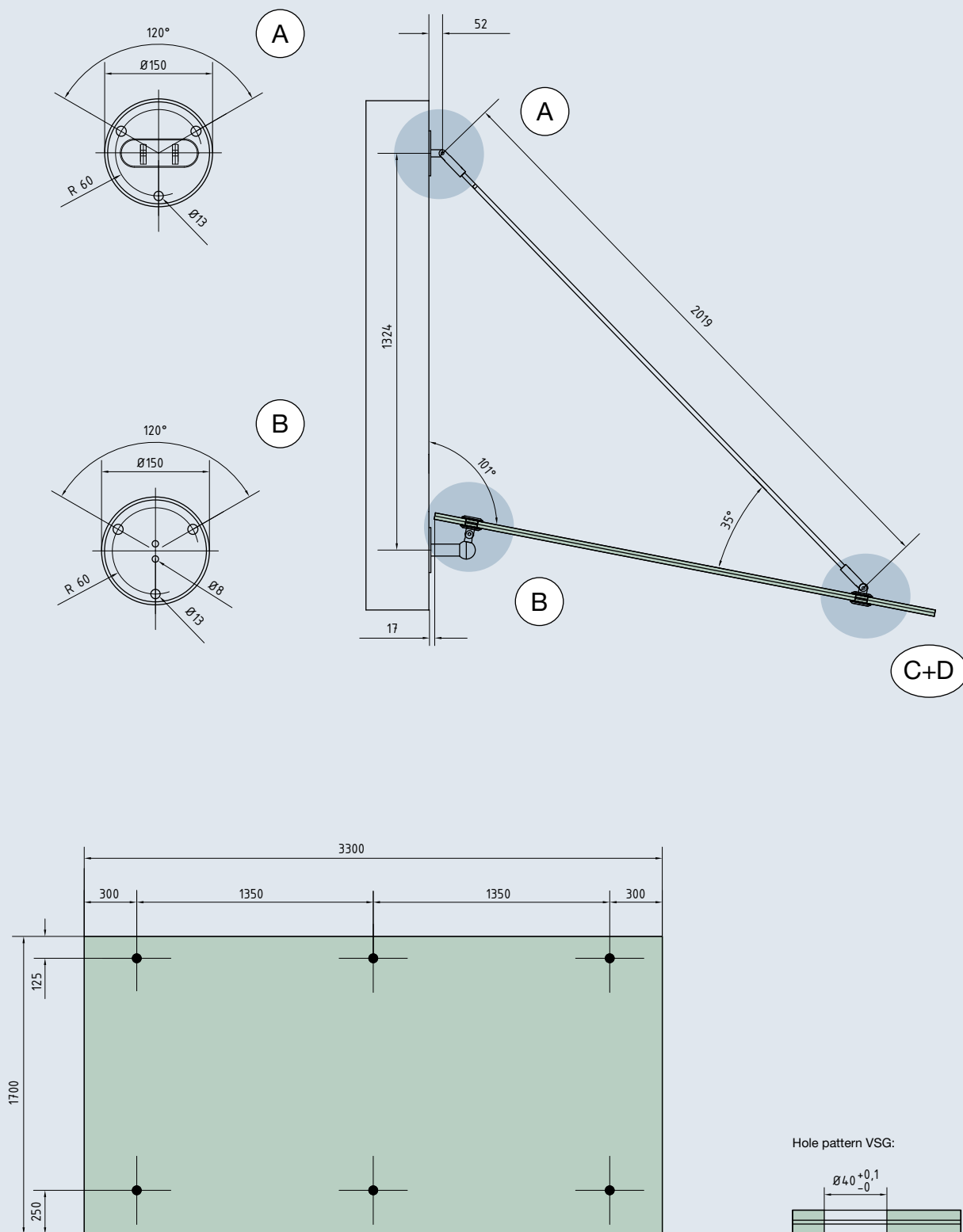


Catalogue number:

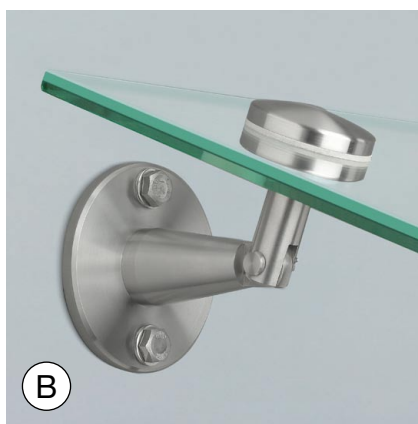
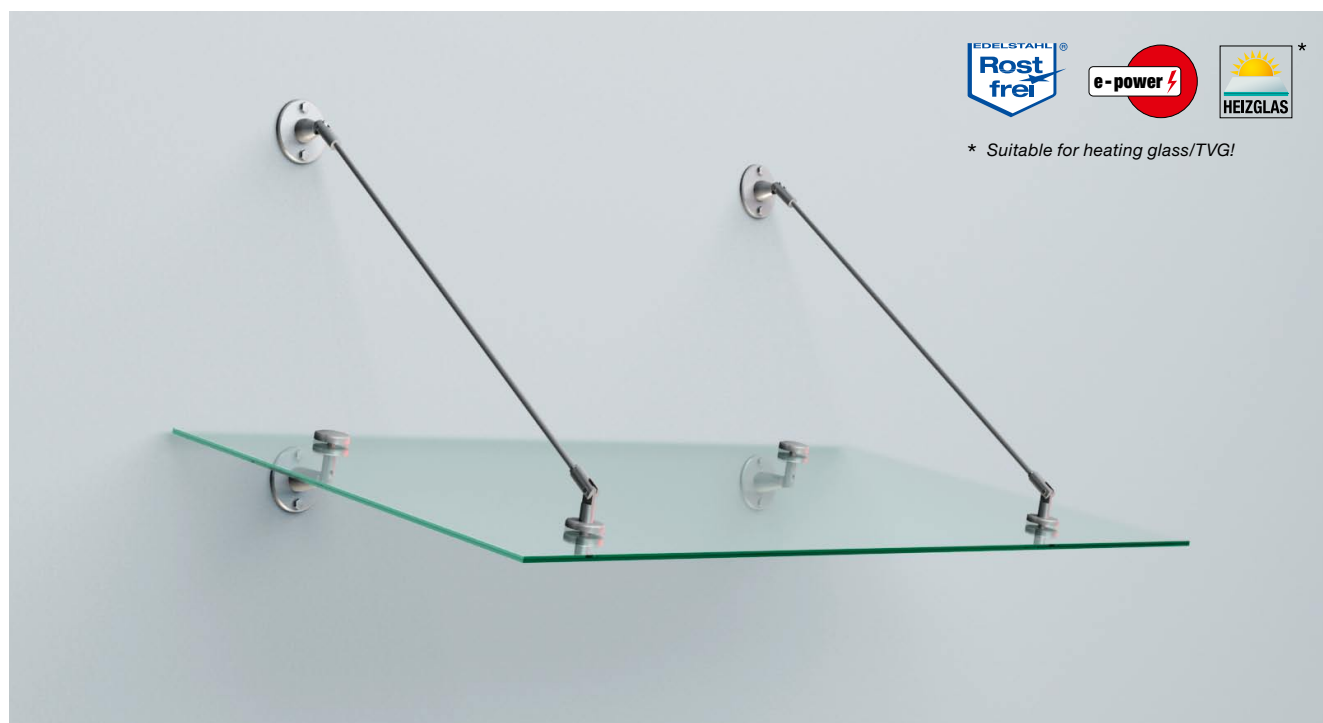
Cat. no.	Designation	Glass thickness	Material	Surface style	PU
17 610 5 65	Canopy set	13,52-21,52 mm	stainless steel (VA)	mirrored	1 set***

*** Scope of delivery: 4x tie rod with fork crown, 2x wall attachments for tie rod, 3x wall connection with fork crown, 6x point fixtures

Window-alteration canopy system, 1700 mm outreach



Canopy system, 1000 mm outreach

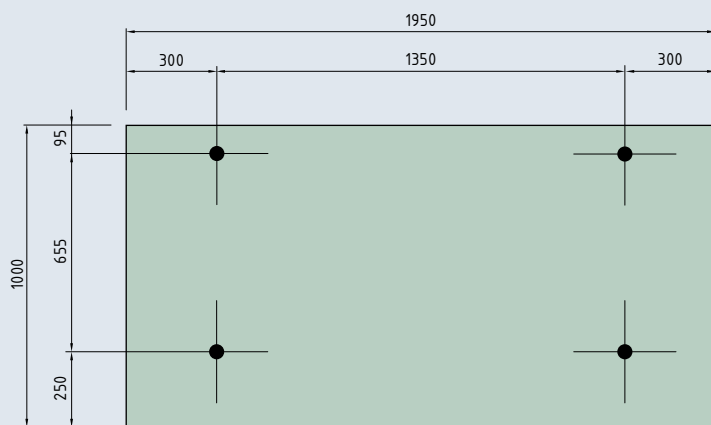
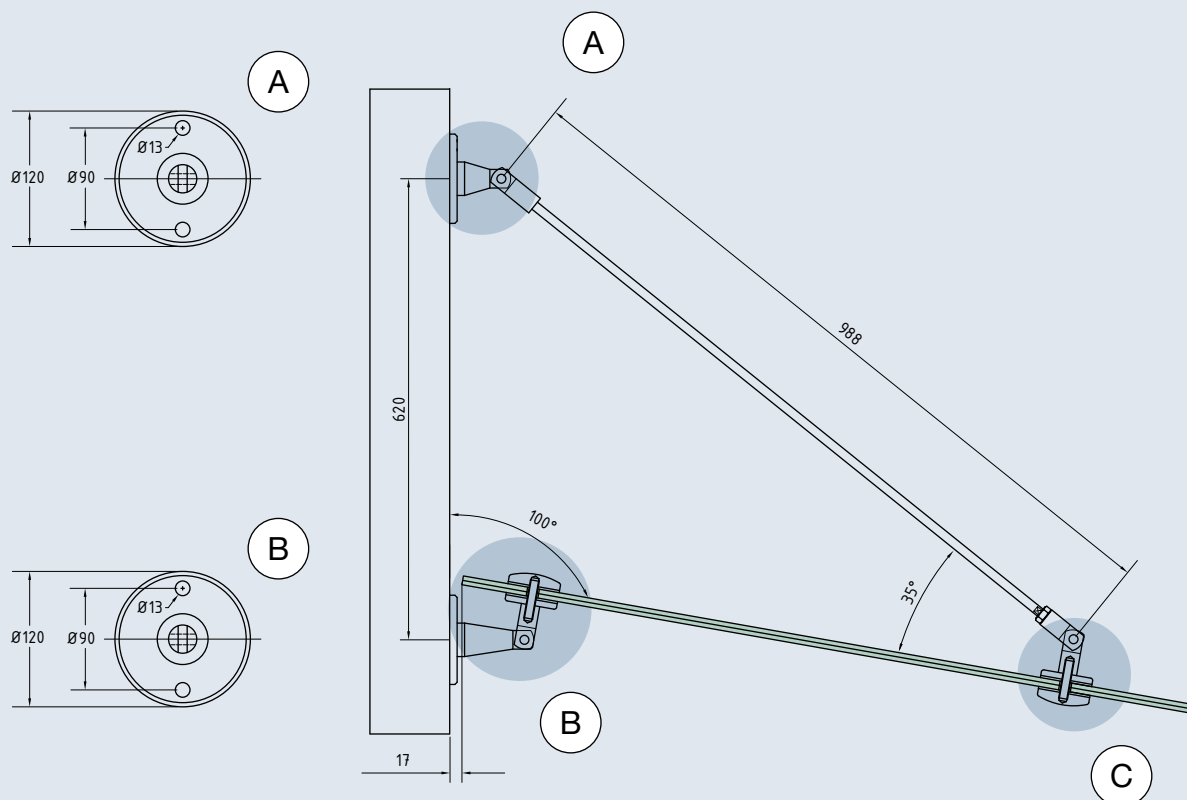


Catalogue number:

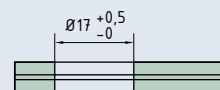
Cat. no.	Designation	Glass thickness	Material	Surface style	PU
17 620 5 65	Canopy set	13,52-21,52 mm	stainless steel (VA)	mirrored	1 set**

** Scope of delivery: 1x tie rod with fork crown, 1x wall attachments for tie rod, 1x wall connection with fork crown, 2x point fixtures

Canopy system, 1000 mm outreach



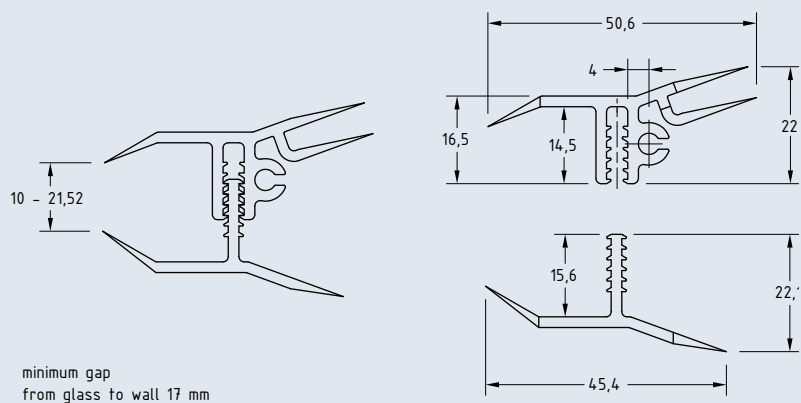
Hole pattern VSG:



Projecting roof seals



Technical data:



Catalogue number:

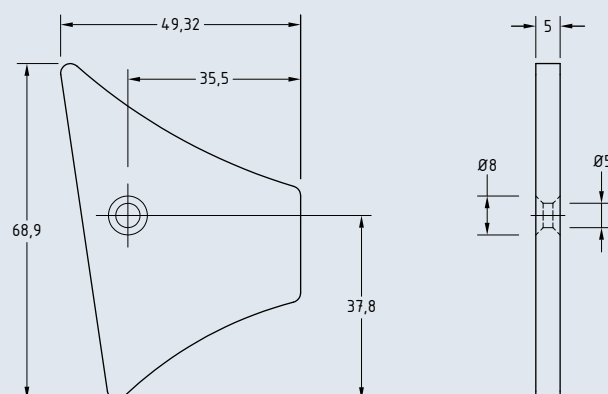
Cat. no.	Profile length	Material	Surface style	PU
17 900 6 24	2000 mm	Plastic	transparent	10 m
17 901 6 24	3300 mm	Plastic	transparent	16,5 m

Endcap

- right and left compatible
- inclusive 2 countersunk headscrews



Technical data:



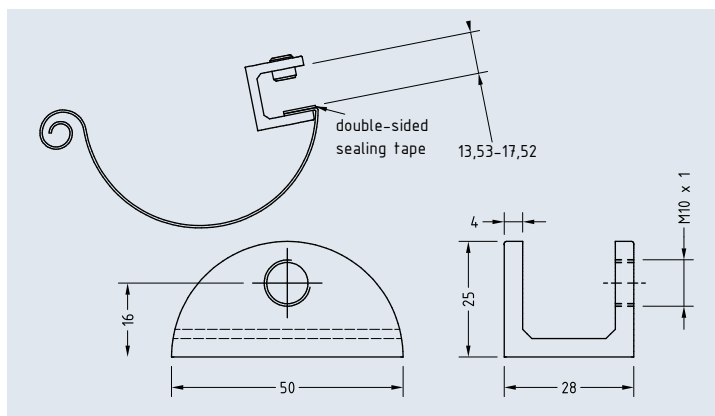
Catalogue number:

Cat. no.	Material	Surface style	PU
17 902 6 24	Plastic	transparent	2 pieces
17 902 6 49	Plastic	grey	2 pieces

Gutter bracket



Technical data:



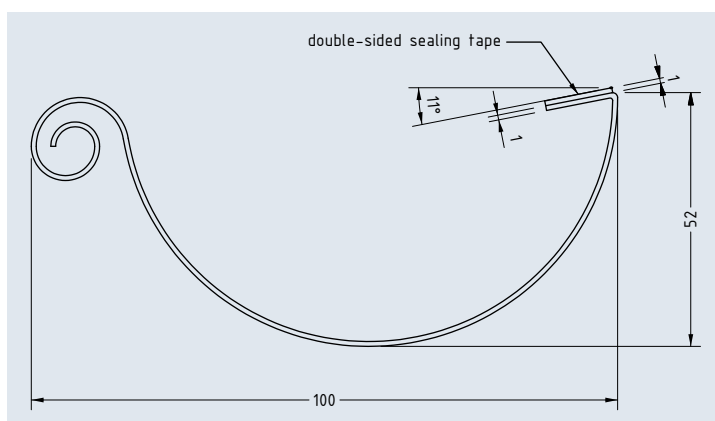
Catalogue number:

Cat. no.	Material	Surface style	PU
17 903 5 55	stainless steel (VA)	ground	4 pieces

Gutter



Technical data:



- Gutter stainless steel inclusive sealing tape

Catalogue number:

Cat. no.	Material	Surface style	PU *
17 904 5 00	stainless steel (VA)	raw	2 m

* Gutterlengths 2000 mm

Assembly key for point fixtures

Catalogue number:

Cat. no.	Material	PU
99 898 4 22	Steel	1 piece

suitable for the models:

- 17 005 5 65 · 17 255 5 65
- 17 006 5 65 · 17 265 5 65
- 17 055 5 65 · 17 275 5 65
- 17 105 5 65 · 17 285 5 65*
- 17 155 5 65 · 17 286 5 65*

*For this art. you need the no. 99 899 4 22 additionally.



Assembly key for point fixtures

Catalogue number:

Cat. no.	Material	PU
99 899 4 22	Steel	1 piece

suitable for the models:

- 17 030 5 65 · 17 181 5 65 · 17 276 5 65
- 17 031 5 65 · 17 185 5 65 · 17 285 5 65*
- 17 080 5 65 · 17 190 5 65 · 17 286 5 65*
- 17 130 5 65 · 17 256 5 65
- 17 180 5 65 · 17 266 5 65

*For this art. you need the no. 99 898 4 22 additionally.



Assembly key for point fixtures

Catalogue number:

Cat. no.	Material	PU
99 900 5 65	stainless steel (VA)	1 piece

suitable for the models:

- 17 001 5 65 · 17 100 5 65 · 17 128 5 65 · 17 177 5 65
- 17 002 5 65 · 17 101 5 65 · 17 150 5 65 · 17 200 5 65
- 17 025 5 65 · 17 102 5 65 · 17 151 5 65 · 17 225 5 65
- 17 026 5 65 · 17 125 5 65 · 17 152 5 65 · 17 600 5 65
- 17 050 5 65 · 17 126 5 65 · 17 175 5 65 · 17 605 5 65
- 17 075 5 65 · 17 127 5 65 · 17 176 5 65 · 17 610 5 65



Assembly key for point fixtures

Catalogue number:

Cat. no.	Material	PU
99 901 4 31	Steel	1 piece

suitable for the models:

- 17 001 5 65 · 17 100 5 65 · 17 128 5 65 · 17 177 5 65
- 17 002 5 65 · 17 101 5 65 · 17 150 5 65 · 17 200 5 65
- 17 025 5 65 · 17 102 5 65 · 17 151 5 65 · 17 225 5 65
- 17 026 5 65 · 17 125 5 65 · 17 152 5 65 · 17 600 5 65
- 17 050 5 65 · 17 126 5 65 · 17 175 5 65 · 17 605 5 65
- 17 075 5 65 · 17 127 5 65 · 17 176 5 65 · 17 610 5 65



C-spanner for point fixtures



Catalogue number:

Cat. no.	Material	PU
99 902 4 31	Steel	1 piece

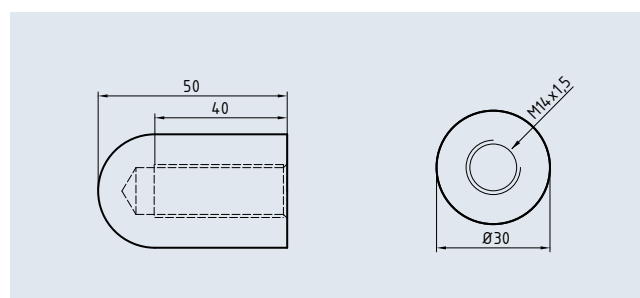
suitable for the models:

- 17 051 5 65
- 17 153 5 65
- 17 400 5 65 bis 17 497 5 65
- 17 620 5 65

M14 x 1.5 weld-on sleeve



Technical data:



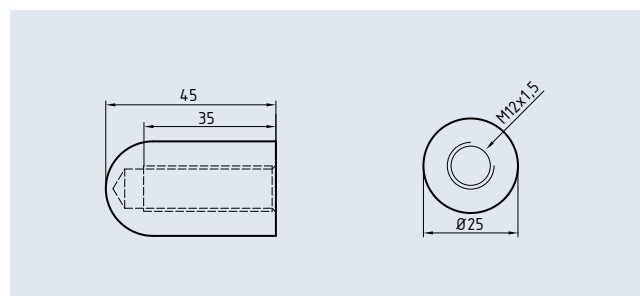
Catalogue number:

Cat. no.	Material	PU
99 902 5 65	stainless steel (VA)	1 piece

M12 x 1.5 weld-on sleeve



Technical data:



Catalogue number:

Cat. no.	Material	PU
99 903 5 65	stainless steel (VA)	1 piece

Lock washer, 50 ml

Catalogue number:

Cat. no.	PU
99 904 0 00	1 piece



Lock washer, 10 ml

Catalogue number:

Cat. no.	PU
99 905 0 00	1 piece



Our partners



Gebr. Willach GmbH
Stein 2
53809 Ruppichteroth
DEUTSCHLAND

Phone: (+49) 02295-9208-00
Fax: (+49) 02295-9208-499

www.willach.com



KL-megla GmbH
Wecostr. 15
53783 Eitorf
DEUTSCHLAND

Phone: (+49) 02243-92300-00
Fax: (+49) 02243-92300-36

www.kl-megla.de



Insta Elektro GmbH
Wefelshohler Str. 35
58511 Lüdenscheid
DEUTSCHLAND

Phone: (+49) 02351-9360
Fax: (+49) 02351-936178

www.insta.de



Saint Gobain Glas Deutschland
Viktoriaallee 3-5
52066 Aachen
DEUTSCHLAND

Phone: (+49) 0241-5160
Fax: (+49) 0241-5162444

www.saint-gobain.de

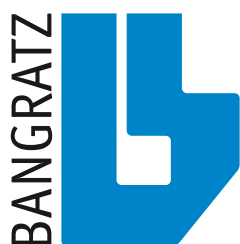


Feldmann + Weynand GmbH
Pauwelsstr. 19
52074 Aachen
DEUTSCHLAND

Phone: (+49) 0241-9632480
Fax: (+49) 0241-9632490

www.fw-ing.de

Our partners



Ingenieurbüro Bangratz
Paul-Göbel-Str. 1
74076 Heilbronn
DEUTSCHLAND

Phone: (+49) 07131-172126
Fax: (+49) 07131-173726

www.bangratz.de



PowerGlas GmbH
Mallastr. 55
68219 Mannheim
DEUTSCHLAND

Phone: (+49) 0621-407025
Fax: (+49) 0621-407026

www.powerglas.de



lif GmbH - light innovation future
Etzwiesenstr. 33
72108 Rottenburg
DEUTSCHLAND

Phone: (+49) 07457-948580
Fax: (+49) 07457-948590

www.lif-germany.de



mkt Markt Kommunikation Trends GmbH
Edelweissstr. 11-13
52477 Alsdorf
DEUTSCHLAND

Phone: (+49) 02404-59955-0
Fax: (+49) 02404-59955-10

www.mkt-gmbh.net



bitec GmbH
Büro für Informationstechnik, Chemnitz
Rosmarinstr. 18
09117 Chemnitz
DEUTSCHLAND

Phone: (+49) 0371-81580-0
Fax: (+49) 0371-81580-41

www.bitec.de



CERTIFICATE OF APPROVAL

This is to certify that the Quality Management System of:

SWS Gesellschaft für Glasbaubeschläge mbH
Friedrich-Engels-Str. 12, 51545 Waldbröl
Germany

has been approved by Lloyd's Register Quality Assurance
to the following Quality Management System Standards:

DIN EN ISO 9001:2000

The Quality Management System is applicable to:

**Design, manufacture and sales of
fittings for the glass industry.**

Approval
Certificate No: KLN 0208398

Original Approval: 2 March 2000

Current Certificate: 1 March 2009

Certificate Expiry: 13 November 2010



Issued by: Lloyd's Register Quality Assurance GmbH

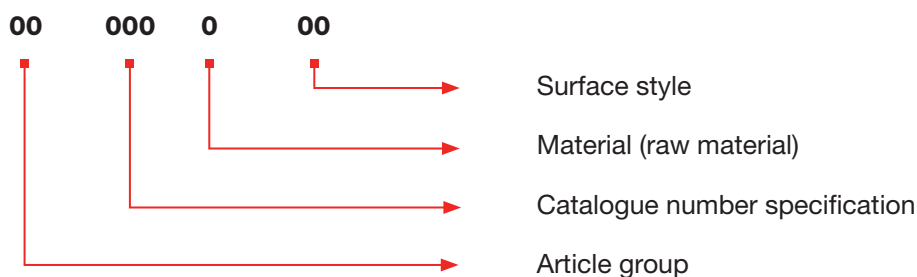


This document is subject to the provision on the reverse
Innere Kanalstr. 15, 50823 Cologne, Germany, Handelsregister No B 34587
This approval is carried out in accordance with the LRQA assessment and certification procedures and monitored by LRQA.
The use of the UKAS Accreditation Mark indicates Accreditation in respect of those activities covered by the Accreditation Certificate Number 001
Macro Revision 13

Catalogue number system

Catalogue numbering organisation:

The SWS catalogue numbering system is organised numerically and consists of 8 digits. In detail, these digits have the following meaning:



Article groups:

10	Clamp fixtures (ESG) (tempered safety glass)
15	Clamp fixtures (VSG) (composite glass)
17	Point fixture systems
20	Plate glass supports
22	Sign holders
30	Glass connectors
40	Glass door hinges
42	Glass doorknobs / Glass door handles
45	Bath fittings
47	Solid glass door fittings
50	Glass door locks
60	Mirror fasteners
70	Profiles
75	Glazing profiles
80	Sliding glass door fittings
82	Solid sliding glass door systems
99	Accessories / tools

Materials:

0	Various materials
1	Zinc die-casting
2	Aluminium
3	Brass
4	Steel
5	Stainless steel (VA)
6	Plastic
7	Rubber
8	Magnesium
9	Glass

With publishing this catalogue we have made modifications of some catalogue numbers. All previous brochures lose its validity.

General notifications



General construction supervisory approval

Products that boast the „AbZ“ logo have received general construction supervisory approval from the German Institute for Constructional Engineering!



Rustproof stainless steel

We have been members of the Warenzeichenverband Edelstahl Rostfrei E.V., (Rustproof Stainless Steel Trademark Association) since 2004. That means our product groups carrying this symbol are manufactured according to the association's strict directives!



e-power

... is used to represent an activation of electricity and control signals, which can be transported into the pane-level electricity-conducting glazing. The use of revolutionary LED technology is thus ensured!



Heating glass

... is used to represent an activation of electricity and control signals, which can be transported into the pane-level electricity-conducting glazing. This ensures heating panes can be utilized!



Technical directives for using crushproof glazing (TRaV)

The TRaV were passed by the DIBt (German Institute for Construction, Berlin) in January 2003. Products that carry this symbol are orientated on the TRaV directives and provisions!



RéBan system

World's largest technical database with approved type statics for glass architecture. Type statics are available in the RéBan system for direct access for products in which this logo is specified.

Delivery and payment conditions



Freight conditions:

From 1.000,- Euro merchandise net value, we deliver free domicile within the Federal Republic of Germany, packing included.

Parcel shipping service:

24-hour service within the Federal Republic of Germany
48-hour service within the EU



Payment conditions:

8 days 3% cash discount

2 days 5% cash discount (upon presentation of your bank direct debit order)

30 days net

General terms and conditions

1. GENERAL

- 1.1 The following conditions apply to all our deliveries and services including information and consultation.

Conditions posed by the customer apply only and insofar as they have been explicitly accepted in writing.

Divergent agreements are only respectively valid for a defined contract and not for subsequent contracts unless specifically otherwise agreed.

- 1.2 All agreements, collateral agreements, and contract modifications require the written form. This also applies to any annulment of this written form clause. In order to become effective, oral and written promises deviating from our terms and conditions and/or the order confirmation require the consent of our managing director or the assent of company officers in a number authorized to represent. Apart from that, our office and field representatives do not have any authority to make deviating agreements or grant special conditions.

2. INFORMATION AND CONSULTATIONS

Information and consultations regarding our products occur based on our previous experiences and the respective current state of knowledge. We assume no obligation for exact compliance with the values and applications possibilities. Clause 11 of these conditions covers any possible liability.

3. OFFER AND CONTRACT CONCLUSION

- 3.1 Our offers are non-binding. A supply or other contract is formed only if the customer order or other order has been confirmed in writing and the goods have been delivered.
- 3.2 Samples and tryouts are non-obligatory approval samples. The right to deviations that are customary in the trade or within the frame of normal fabrication tolerances is reserved in cases of purchases based on samples or tryouts. In cases of deliveries of samples or tryouts, the characteristics of the sample or tryout is not considered promised unless this has been explicitly defined in the order confirmation or in the catalogue/brochure.
- 3.3 All statements about our products, especially those in our offers, catalogues, printed matter, and electronic media, contain illustrations, technical drawings, weight and dimensional properties that are not guaranteed properties but rather descriptions and/or identifications of our products.

Insofar as no limits have been established for permissible deviations in the order confirmation and these have been identified as such, deviations customary in the trade (manufacturing tolerances) and DIN tolerances are permissible.

4. PRICES

- 4.1 Prices are applied according to our respectively current price lists per meter/piece/series/set.
- 4.2 If our other material procurement costs, power costs, or the wage and non-wage add-on costs increase between the date of the order confirmation and the date of delivery, we are authorised to accordingly adapt the agreed purchase price.
- 4.3 Value added tax, which the customer is to pay to the full legal extent, is to be calculated on top of all prices.
- 4.4 Unless otherwise expressly agreed, the customer is to pay all freight costs, insurance costs, extra charges, public charges and customs.

- 4.5 Upon delivery of the goods via pallets, control of the pallet delivery and the return via the creation of a pallet account is carried out, which is to be adjusted with the customer semi-annually. In case of deficiencies, the customer is obliged to compensate the contractor.

- 4.6 Overtime needed for the proper fulfilment of the contract can be invoiced separately. Clauses 4.1 and 4.2 are accordingly applied.

5. DELIVERY

- 5.1 Delivery times (deadlines) begin with the date of our order confirmation, but not before receipt of any possibly agreed deposit and not before the final clarification of all details of the order including production of possibly needed certifications. They are considered complied with upon the notification of the readiness for dispatch if the goods could not be sent on-time for reasons for which we are not responsible.
- 5.2 In cases of deadlines and dates not explicitly named in the order confirmation as fixed, the customer can fix a reasonable deadline for delivery/performance two weeks after its expiration. We can only then fall into arrears after this deadline has expired.
- 5.3 Deadlines and dates are automatically extended by the period in which the customer does not fulfil his obligations to us, without this damaging our right from delays. In cases of our default or of impossibility – regardless of the reason – we are liable for compensation claims of all kinds only under the proviso of clause 11 of these conditions. § 287 BGB (German Civil Code) is excluded.
- 5.4 The right of self-delivery remains reserved.
- 5.5 In cases of acts of God and other events over which we have no influence and that make delivery/performance significantly more difficult or impossible, such as interruptions of operations (e.g., fire, damage to tools, lack of materials or power) transportation delays, strikes, legal lock-outs, official measures, and the non-supply, late, or incorrect supply by our suppliers discharge us of the obligation from the respective contract, but obstacles of only temporary nature only for the period of the obstruction plus reasonable preparation time. Insofar as the customer cannot be expected to accept the delay, it can withdraw from the contract after previous consultation with us by immediately making a written declaration insofar as we have not yet partially fulfilled it.
- 5.6 The obligation to deliver and delivery deadlines are suspended as long as the customer is in arrears to us.
- 5.7 We are authorized to make partial deliveries.

6. DELIVERY AND PASSING OF RISKS

- 6.1 In all deliveries – even in deliveries made carriage free and delivered construction site – shipping and transport always follows at the customer's risk. The risk is transferred to the customer, even in partial deliveries, as soon as the shipment has been transferred to the person executing the transportation or has left our warehouse to be forwarded or has left our factory for delivery.
- 6.2 If the delivery of the shipment is delayed for reasons which lie with the customer, the passing of risk occurs upon notification of the customer of the readiness to ship. Warehousing costs are carried after passing of risk by the customer. In case of storage in our factory or warehouse, the storage costs amount to 1 % of the invoice amount per month. The right to prove higher storage costs remains reserved. We are authorised to dispose of the delivery through other means after fruitless expiration of a reasonable deadline set by us and to supply

the customer within a reasonably extended deadline.

7. BLANKET AND CALL ORDERS

- 7.1 Blanket and call orders oblige the customer to acceptance of the total amount upon which the blanket or call order is based.
- 7.2 Insofar as no specific call-up date is specified in the contract, the total quantity of the blanket/call order is to be called up within twelve months.
- 7.3 If the call dates are not maintained by the customer, we are authorised to completely deliver and invoice the entire quantity four weeks after written declaration with reference to the consequence of omission of the call. Our rights concerning delay by the customer remain unaffected. Clause 6.2 applies accordingly.

8. PAYMENT

- 8.1 Payments are to be made in Euros and are to be carried out free of costs and postage and only to the paying agent we have stated. Bills of exchange and checks are only considered valid as payment after redemption and are accepted without any obligation to prompt presentation and protest declaration.
- 8.2 Insofar as nothing else has been explicitly agreed, payments are to be made within 30 days of the invoice date without any discount.
- 8.3 In case of the exceeding of payment deadlines, we are authorized to charge interest in the amount of the respective bank rates for overdraft facilities but at least 3 % p.A. over the base interest rate of the European Central Bank. Every contract party is authorised to prove other and further contract damages.
- 8.4 The withholding of payments due to counterclaims or offsetting against counterclaims by the customer is only permissible if these counterclaims are uncontested or have been legally established.
- 8.5 All our demands – even those from other contracts with the customer – become immediately payable independent of the term of possibly accepted or credited bills of exchange in cases of delays of payment, exceeding the agreed credit line in the amount of more than 5 %, the protest of the bill of exchange or the stoppage of payment by the customer or if we otherwise become aware of circumstances that could give rise to justified and significant doubt of the solvency or credit worthiness of the customer. That also applies if these circumstances were present at the customer during contract conclusion but of which we were not aware or must not have been aware of. In all named cases, we are also authorised to carry out still-open deliveries against prepayment only or against securities, and, if the prepayment or security has not been initiated within two weeks, to withdraw from the contract without a renewed appointment of a date. Further claims remain unaffected.
- 8.6 Exchange rate differences will be charged to the payer.

9. RESERVATION OF TITLE

- 9.1 All delivered goods remain our property (reserved goods) until fulfilment of all demands, regardless of for which legal reason, including future arising or conditional demands resulting from simultaneous or later-concluded contracts. That also applies if payments on specifically identified demands have been made.
- 9.2 Processing and handling of the reserved goods are carried out for us as a manufacturer in the sense of § 950 BGB, without any obligation on our part. The processed goods are considered reserved goods in the sense of clause 9.1. During processing, connection, and mixing of the reserved goods with other goods by the customer, our joint ownership of the new item is in proportion to the invoice value of the reserved

goods to the invoice value of the otherwise used goods. If our ownership extinguishes through connection or mixing, the customer already now transfers its entitled ownership rights to the new holding or matter to the extent of the invoice value of the reserved goods and stores these on our behalf at no cost to us. The joint ownership rights coming into existence later are considered reserved goods in the sense of clause 9.1.

- 9.3 The customer is only authorised to sell the reserved goods, to process them, or to connect them with other items or to otherwise install them within the frame of a proper business operation and only so long as it is not in arrears, (following also called „resale“). Every other disposal of the reserved goods is impermissible. Seizure or other access to the reserved goods by third parties are to be reported immediately. All intervention costs will be charged the customer insofar as they cannot be confiscated (opponent of the protest suit) and the third party objection protest claim has been justifiably raised. If the customer grants its customer the purchase price, it must pass on the ownership of the reserved goods at the same conditions under which we have reserved the ownership of the delivery of reserved goods; however, the customer is not obliged to reserve the ownership for itself in consideration of future arising demands against his customer. Otherwise, the customer is not authorized to resell.
- 9.4 The customer's demands from the resale of the reserved goods are herewith assigned to us already now. They are used for security to the same extent as the reserved goods. The customer is only authorised and entitled to resale if it has been secured that the demands it is entitled to from the sale are transferred to us.
- 9.5 If the reserved goods are sold at a total price by the customer together with other goods not supplied by us, the cession of the demands from reselling the reserved goods are applicable only in the amount of the invoice value of our respective reserved property.
- 9.6 In case the seceded demands are included in a running invoice, the customer already now herewith secedes to us a part of the amount that corresponds to the amount of this demand including the final account balance from the open account.
- 9.7 The customer is entitled to collect the demands assigned to us up to our revocation. We are authorised to revocation if the customer does not properly fulfil its payment obligations to us based on business dealings or if circumstances become known to us that are suitable to significantly minimise the customer's credit worthiness. If the prerequisites for the exercising of the right to revocation are present, the customer must immediately inform us of the seceded demands and its debtor upon our demand, to make all information available needed to collect the demands, to handover the related documents to us, and to inform the debtor of the cession. We are authorised to inform the debtor about the assignment ourselves.
- 9.8 If the nominal value (invoice value of the goods or nominal amount of the demands) exceeds the securities assigned to us by more than 20 percent of secured demands assigned to us, we are obliged to release the securities in accordance with our choice, if so requested by the customer.
- 9.9 If we enforce the reservation of title, this is only considered a withdrawal from the contracts if we have explicitly declared such. The right of the customer to possess the reserved goods expires if it does not fulfil its duties in this or another contract.

10. CLAIMS DUE TO DEFECTS

We perform warranty for property and legal defects under exclusion of further claims subject to clause 11 as follows:

- 10.1 The customer is obliged to immediately carefully inspect the delivered goods – even if samples and tryouts were previously forwarded – upon receipt at his premises for completeness and due form.

The delivery is considered approved if the complaint was not received within five working days after its discovery in writing, electronically, or per telefax or if the defect was not recognizable after a proper inspection.

- 10.2 The carrier is to be notified of transport damage; the duties of notification of the General German Carrier Conditions (ADSp) and in the case of transnational transports the Convention on the Contract for the International Carriage of Goods by Road (CMR) apply.
- 10.3 Within the frame of legal regulations, the customer has the right to withdraw from the contract if we – with consideration of the legal exceptional cases – allow a reasonable deadline for the repair or replacement delivery for reasons of material defects to expire without fruitful results. If only an insignificant defect is present, the customer has the right merely to a reduction of the agreed price. The right to a reduction of the agreed price is excluded for any other reason.

Additional claims are determined by clause 11 of the conditions.

- 10.4 A material defect is not present in cases of deviations that are standard in the industry between the order confirmation and the delivered goods.

11. LIABILITY

- 11.1 If the goods cannot be utilized by the customer in accordance with the contract due to our responsibility as a consequence of neglectful or defective execution of suggestions or consultations that took place before or after contract conclusion or due to the violation of other contractual collateral duties, the regulations in the clauses 10 and 11 clause 2 apply accordingly with exclusion of any further rights of the customer.
- 11.2 For damage not arising in the delivered goods itself, we are liable, regardless of the legal arguments, only for intent, in cases of gross negligence by ourselves or our employees and sales representatives, in cases of culpable harm to life, body, or health, in cases of defects we have fraudulently concealed or the absence of which we have guaranteed, in cases of defects of the supplied object insofar as liability exists according to the product liability laws for persons and/or damage and privately used objects. In cases of culpable violation of significant contract obligations, in cases of gross negligence by non-managing employees or in case of slight negligence we are also liable restricted to the contract typical reasonable predictable damage.

Additional claims are excluded.

12. LIMITATION

- 12.1 All claims by the customer, regardless of the legal reason, expire in 12 months.
- 12.2 For compensation claims in clause 11, clause 2, the legal deadlines apply. They also apply for defects in a structure and for delivered objects used in a structure in accordance with their standard usage and which have caused faultiness.

13. FABRICATION IN ACCORDANCE WITH CUSTOMER INSTRUCTIONS

- 13.1 In cases of manufacturing according to customer drawings, samples, or the instructions from the customer, we assume no guarantee or liability for the functionability of the product or for any other defects insofar as the circumstances are due to the customer's instructions.
- 13.2 The customer releases us from all claims against us from third

parties, even due to product liability, from damage or harm caused by the goods unless we have caused the damage or harm through intent or gross negligence.

- 13.3 The customer grants us the guarantee the manufacture and delivery of the goods fabricated in accordance with its instructions will not violate any third parties' protective rights. In case of the enforcement of protective rights against us, we are authorised, without any legal examination of the possible claims by third parties, to withdraw from the contract after consultation with the customer unless the third party withdraws its enforcement of the protective rights against us within 8 days in the written form. The customer must indemnify us for any possibly arising damage or loss caused by the enforcement of the protective rights. In case of a withdrawal, work we have previously performed is to be compensated. Additional rights in legal regulations remain unaffected.
- 13.4 The dies, moulds, tools, and construction documentation we manufacture to execute the order remains exclusively our property. The customer is not entitled to any claims to these. This also applies if it has participated in the cost of fabrication of the moulds, dies, tools, and construction documents unless something else was explicitly agreed.

14. LEGAL VENUE, AUTHORITY, AND APPLICABLE LAW

- 14.1 The legal venue for our deliveries and payments by the customer is Waldbrol.
- 14.2 The authority for all disputes arising from this contract is our headquarters or the customer's headquarters as we choose, for customer's suits exclusively our headquarters. Legal regulations concerning exclusive authorities remain unaffected.
- 14.3 The laws of the Federal Republic of Germany apply to all legal relations between the customer and us. The United Nations Convention on Contracts for the International Sale of Goods (CISG) as well as other intergovernmental conventions, even after being taken over into German law, are not applicable.

15. SEVERABILITY CLAUSE

If a clause in these general terms and conditions becomes inoperative for any reason, the validity of the other clauses is not affected by this. In this case, the participants are obliged to replace the inoperative clause by an effective one with which the same commercial success is achieved as far as possible. Oral agreements have no validity.

Waldbrol, January 2005



SWS
Gesellschaft für
Glasbaubeschläge mbH

Friedrich-Engels-Str. 12
51545 Waldbröl
DEUTSCHLAND

Telephone: (+49) 02291-7905-0
Telefax: (+49) 02291-7905-10

info@sws-gmbh.de
www.sws-gmbh.de