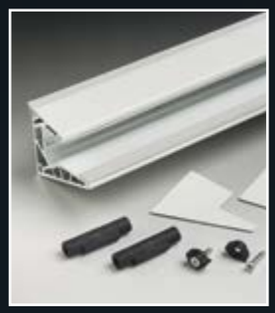
2 SYSTEMS FOR OUTDOORS

LOGLI MASSIMO
SAINT-GOBAIN


2018

SYSTEMS FOR OUTDOORS

CANOPIES



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LA PENSILINA

QUALITAL

OXY STYLE - Licence no.758
GEAL - Licence no.740

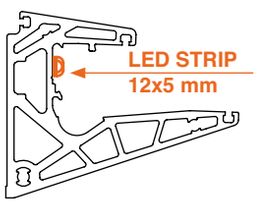
LA PENSILINA - CLASS 20
Minimum anodising thickness **20 micron**
Indicated for outdoor installations

KIT FOR CANTILEVERED CANOPY, NO RODS AND NO GLASS CUT OUT REQUIRED

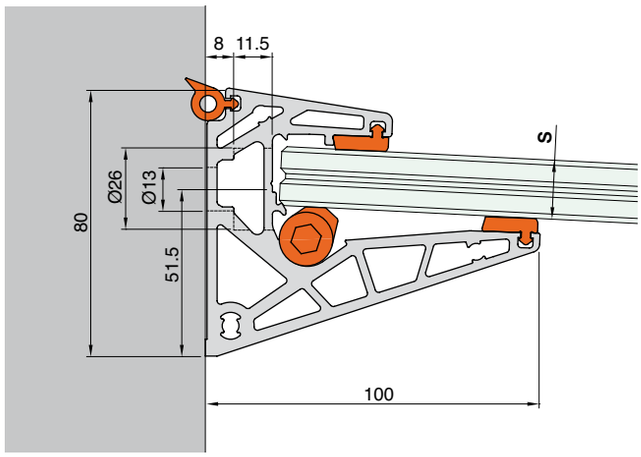
The kit consists of a load-bearing aluminium profile, gaskets and safety accessories and includes finishing end caps **without visible screws**.

Features:
Load-bearing extruded aluminium 6063-T6 for glass composition 88.2 (16.76 mm) or 88.4 (17.52 mm).
Grey TPE glazing bead and wall sealing gaskets. Grivory® locking cams and safety elements for maximum mechanical properties and ageing resistance. Aluminium end caps, to be applied with silicone.

Finish: matt aluminium, brushed stainless steel effect aluminium,
RAL 9010 (glossy white), raw-finish aluminium.
Other anodised and RAL finishes are available on demand



- EXTERNAL APPLICATION
LED5050RGB66
LED505066
LED352866



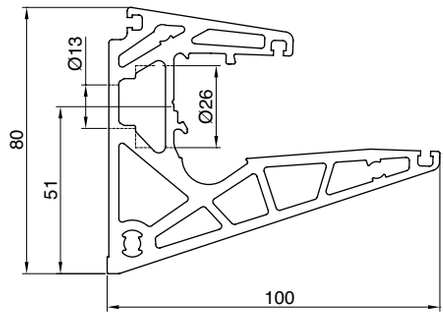
It is possible to insert LEDs between the profile and the glass.
We recommend using ultra-thin high brightness LEDs with minimum rating IP65 (Resistance class 6 to dust, class 5 to water jets)

Art.	Description	Length	S = For glass panes	Q.ty
PENKIT10	La Pensilina Kit H80 x P100 mm for 88.2 or 88.4 glass	1000 mm	16.76 / 17.52 mm	1 Kit
PENKIT15	La Pensilina Kit H80 x P100 mm for 88.2 or 88.4 glass	1500 mm	16.76 / 17.52 mm	1 Kit
PENKIT20	La Pensilina Kit H80 x P100 mm for 88.2 or 88.4 glass	2000 mm	16.76 / 17.52 mm	1 Kit
PENKIT30	La Pensilina Kit H80 x P100 mm for 88.2 or 88.4 glass	3000 mm	16.76 / 17.52 mm	1 Kit

LA PENSILINA

ALUMINIUM PROFILE

Material: 6063-T6 aluminium
Features: load-bearing extruded aluminium 6063-T6 for glass composition 88.2 (16.76 mm) or 88.4 (17.52 mm).
Grey TPE glazing bead and wall sealing gaskets.
Finish: matt aluminium, brushed stainless steel effect aluminium, RAL 9010 (glossy white), raw-finish aluminium.
Other anodised and RAL finishes are available on demand



Art.	Dimensions	Length	Q.ty
PEN10	H80 x P100 mm for 88.2 or 88.4 glass	1000 mm	1 Pc
PEN15	H80 x P100 mm for 88.2 or 88.4 glass	1500 mm	1 Pc
PEN20	H80 x P100 mm for 88.2 or 88.4 glass	2000 mm	1 Pc
PEN30	H80 x P100 mm for 88.2 or 88.4 glass	3000 mm	1 Pc

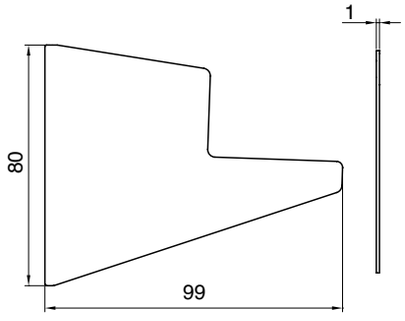
LOCKING CAMS

Material: Grivory®
Features: Grivory®
Features: Grivory® locking cams and safety elements for excellent mechanical and ageing resistance.

Art.	Description	Q.ty
PENGRY	Locking cams	1 Kit

CAP KIT

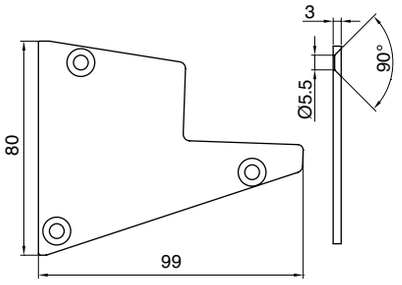
Material: aluminium
Features: aluminium end caps to be applied with silicone
Finish: matt aluminium, brushed-steel-effect aluminium, RAL 9010 (glossy white), raw aluminium



Art.	Description	Q.ty
PENT01	Pair of aluminium end caps	1 Pair

CAP KIT WITH SCREWS

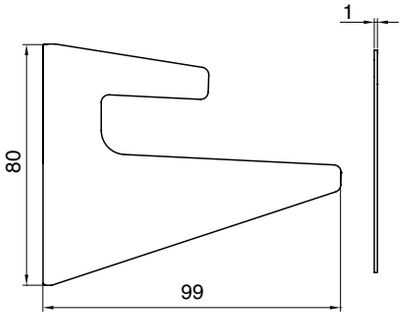
Material: aluminium caps, class A4 fastening screws
Features: pair of end caps with screw fastening for profile La Pensilina, the kit includes the fastening screws
Finish: matt aluminium,
brushed-steel-effect aluminium,
RAL 9010 (glossy white), raw aluminium
Other anodised and RAL finishes are available on demand



Art.	Description	Q.ty
PENT03	Two end caps with fastening screws	1 Kit

OPEN CAPS KIT

Material: aluminium
Features: pair of open aluminium end caps
Finish: matt aluminium,
brushed-steel-effect aluminium,
RAL 9010 (glossy white), raw aluminium
Other anodised and RAL finishes are available on demand



Art.	Description	Q.ty
PENT05	Pair of open end caps	1 Pair

KEY FOR LOCKING CAM LA PENSILINA

Material: alloy steel
Features: bent size 8 hexagonal key for La Pensilina cam locking.

Art.	Dimensions	Q.ty
PENCH	208x43 mm	1 Pc

CUSTOM CUTTING FOR LA PENSILINA KIT

Art.	Description	Q.ty
PENTAGLIO	Custom cutting for La Pensilina kit	1 Pc

LA PENSILINA - TECHNICAL FOREWORD

La **Pensilina** is a cantilevered canopy system requiring no rods and no glass cut out. The pane is held by a continuous aluminium profile, designed to withstand operating loads covering all possible load combinations (snow), in addition to the lifting action caused by wind. The profile can be anchored to the wall by means of mechanical or chemical anchors, depending on the type of support.

Logli Massimo S.p.A. performed system resistance tests at ISTITUTO GIORDANO laboratories.
The test was carried out by applying increasing loads, distributed evenly over the surface of the pane. In order to test the actual resistance of the glass-profile system, La Pensilina was anchored to a steel beam.

The tests show that the La Pensilina profile can withstand a distributed overload of 350 kg/m² without breaking, with a 1200 mm cantilever. In regards to the laminated glass pane, the resistance will depend on the laminated composition: the data for the tests at Istituto Giordano refer to a pane composed of two tempered and laminated glass panes with SentryGlas®. The reports for all tests issued by Istituto Giordano regarding the various configurations tested can be viewed by logging in on **www.loglimassimo.it.**

It should be noted that the maximum permissible cantilever for the installation depends crucially on the strength of the wall: the installer must know the composition of the façade and, with the help of a designer, identify the best type of anchor and maximum permissible cantilever.

To support these assessments, a chart of the stresses transmitted to the wall by the individual fixing is provided, in relation to the cantilever of the pane, to the geometry of our profile and to the design snow load calculated according to the Technical Regulations, depending on the installation area.

LA PENSILINA - SAFETY IN THE POST BREAKING STAGE

The performances after complete breaking of both glass panes have been assessed experimentally by Logli Massimo S.p.A. on laminated glass with tempered glass and SentryGlas® interlayer for a cantilever up to 1.20m !

In compliance with the criteria described in EAD 220025-00-0401, the tests show that the La Pensilina profile is able to hold the fully damaged pane inside it **for more than 24 hours**, regardless of the gradual flexion increase over time. Furthermore, it has been observed that the rate of deflection upon breakage of the glass is such as to allow for safe evacuation of the persons below without danger.

SHORT-TERM POST-BREAKAGE DEFLECTION

24 HOUR POST-BREAKAGE DEFLECTION

For safety in post-breakage conditions, UNI 7697 assumes that residual resistance can be assured by using at least one of the following elements: annealed glass, hardened glass or an interlayer that is rigid at the temperatures of use of the pane. Logli Massimo S.p.A. recommends using rigid interlayers for La Pensilina.

CHART OF THE EXTRACTION FORCES ACTING ON THE ANCHORS [KN]

cantilever [cm]

snow load [kg/m²]	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
50	0.69	0.78	0.88	0.99	1.10	1.21	1.33	1.46	1.59	1.72	1.86	2.01	2.16	2.31	2.47
60	0.73	0.84	0.95	1.07	1.19	1.32	1.46	1.60	1.75	1.90	2.06	2.22	2.39	2.57	2.75
70	0.78	0.90	1.02	1.15	1.29	1.43	1.58	1.74	1.90	2.08	2.25	2.44	2.63	2.83	3.03
80	0.83	0.96	1.09	1.24	1.39	1.54	1.71	1.88	2.06	2.25	2.45	2.65	2.87	3.09	3.32
90	0.88	1.02	1.16	1.32	1.48	1.65	1.83	2.02	2.22	2.43	2.65	2.87	3.10	3.35	3.60
100	0.93	1.08	1.23	1.40	1.58	1.76	1.96	2.17	2.38	2.61	2.84	3.09	3.34	3.61	3.88
110	0.98	1.14	1.30	1.48	1.67	1.87	2.09	2.31	2.54	2.78	3.04	3.30	3.58	3.87	4.16
120	1.03	1.20	1.38	1.57	1.77	1.98	2.21	2.45	2.70	2.96	3.23	3.52	3.82	4.13	4.45
130	1.08	1.26	1.45	1.65	1.87	2.09	2.34	2.59	2.86	3.14	3.43	3.74	4.05	4.39	4.73
140	1.13	1.31	1.52	1.73	1.96	2.21	2.46	2.73	3.02	3.31	3.63	3.95	4.29	4.64	5.01
150	1.18	1.37	1.59	1.82	2.06	2.32	2.59	2.87	3.18	3.49	3.82	4.17	4.53	4.90	5.29
160	1.22	1.43	1.66	1.90	2.15	2.43	2.71	3.02	3.33	3.67	4.02	4.38	4.77	5.16	5.58
170	1.27	1.49	1.73	1.98	2.25	2.54	2.84	3.16	3.49	3.85	4.22	4.60	5.00	5.42	5.86
180	1.32	1.55	1.80	2.06	2.35	2.65	2.96	3.30	3.65	4.02	4.41	4.82	5.24	5.68	6.14
190	1.37	1.61	1.87	2.15	2.44	2.76	3.09	3.44	3.81	4.20	4.61	5.03	5.48	5.94	6.42
200	1.42	1.67	1.94	2.23	2.54	2.87	3.22	3.58	3.97	4.38	4.80	5.25	5.72	6.20	6.71
225	1.54	1.82	2.12	2.44	2.78	3.14	3.53	3.94	4.37	4.82	5.29	5.79	6.31	6.85	7.41
250	1.67	1.97	2.29	2.64	3.02	3.42	3.84	4.29	4.77	5.26	5.79	6.33	6.90	7.50	8.12
275	1.79	2.12	2.47	2.85	3.26	3.69	4.16	4.65	5.16	5.71	6.28	6.87	7.50	8.15	8.83
300	1.91	2.26	2.65	3.06	3.50	3.97	4.47	5.00	5.56	6.15	6.77	7.41	8.09	8.80	9.53

DESIGNER TABLE

Key:

- Extraction force acting on the anchors in kN: the chart contains the values of the extraction force acting on the individual anchor in relation to the canopy cantilever and to the snow load, assuming there are 5 fastenings per metre.
- Snow load in kg/m²: the snow load is defined in the technical codes in relation to the geographical area, altitude and exposure.

The colours identify the fields of application with different types of anchor depending on the type of support:
"**Green**": chemical anchor on Alveolater wall, anchoring depth between 80 and 130 mm (Extraction load max 1.8 kN)
"**Yellow**": chemical anchor on perforated Doppio UNI brick wall, anchoring depth ≥ 130 mm (Extraction load max 2.6 kN)
"**Orange**": chemical anchor on solid brick wall, anchoring depth ≥ 100 mm (Extraction load max 3.6 kN)
"**Red**": chemical anchor on cracked concrete wall, anchoring depth ≥ 120 mm (Extraction load max 10.4 kN)
Note: these examples assume using an M10 threaded bar in class A4

Example:
Installation area: Florence - snow load 100 kg/m²
Design cantilever: 100 cm

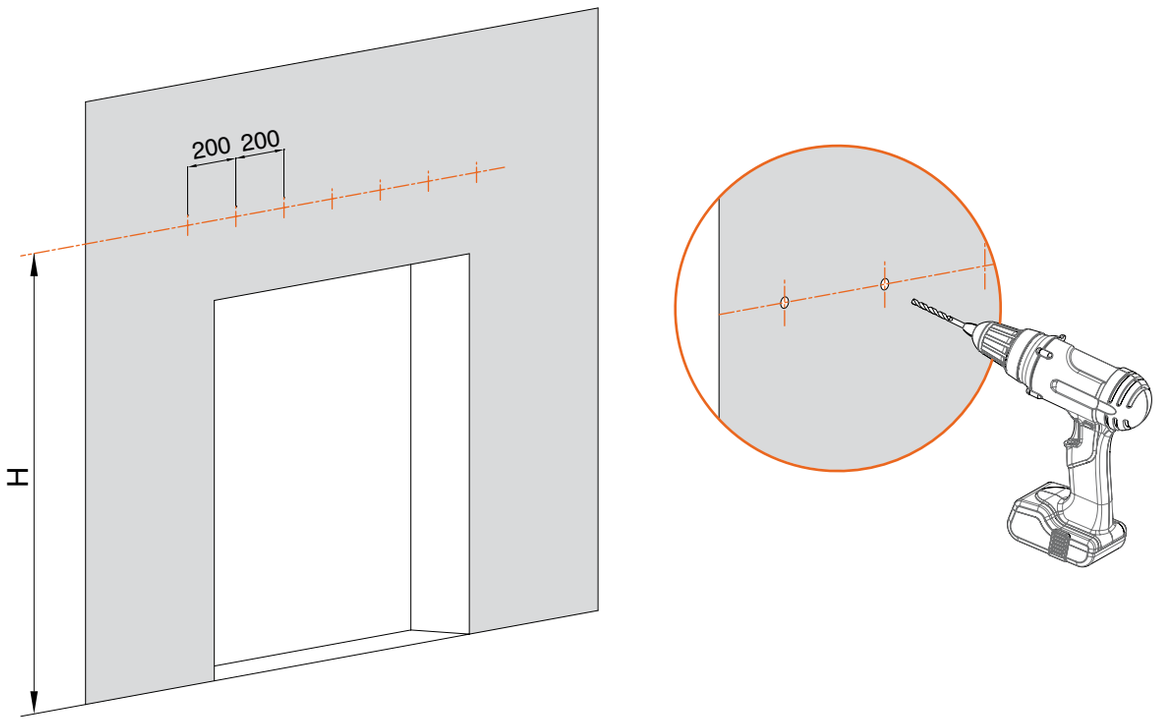
Use the chart of anchor extraction force values, finding the combination of design cantilever and snow load to obtain the extraction load on each anchor. In the case in question, Fe = 2.8 kN.
The installer must install La Pensilina using anchors with an extraction resistance equal to or greater than the design Fe.

WARNING! The resistance of the anchor is influenced by:
- type of support (e.g. brickwork, block wall, concrete beam, etc.)
- type and dimensions of the anchor (e.g. mechanical, chemical, etc.)
- anchor depth

Should it not be possible to achieve the required resistance conditions with any of the commercially available and compatible anchoring systems for the structure, the design cantilever must be reduced by finding the appropriate resistance figure in the chart.

LA PENSILINA - INSTALLATION INSTRUCTIONS

1



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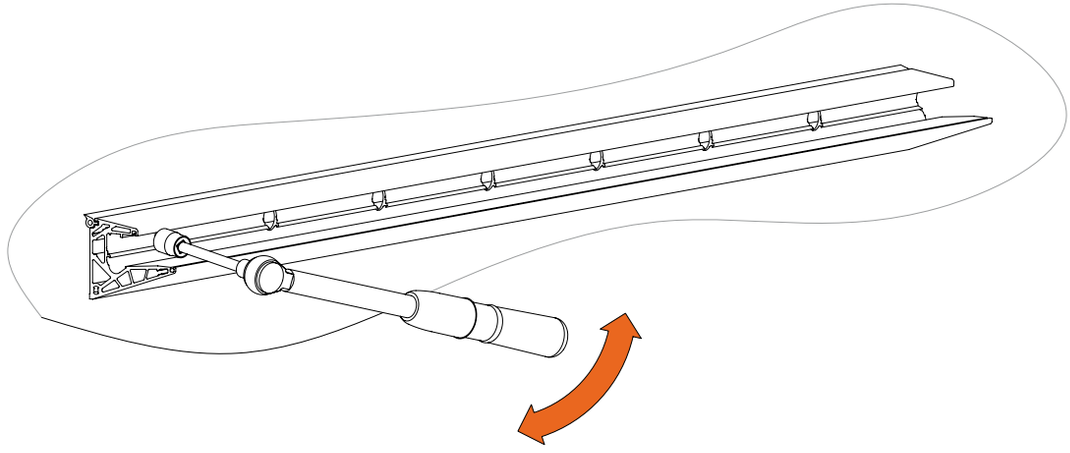

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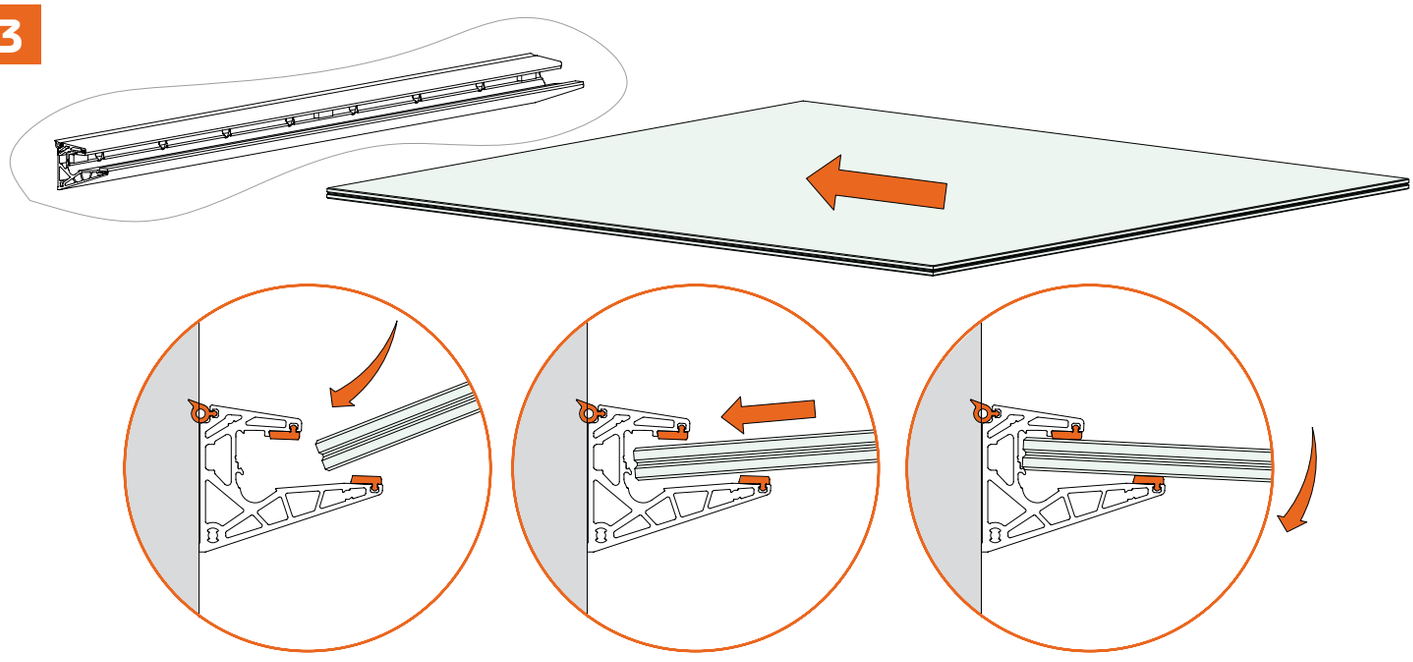

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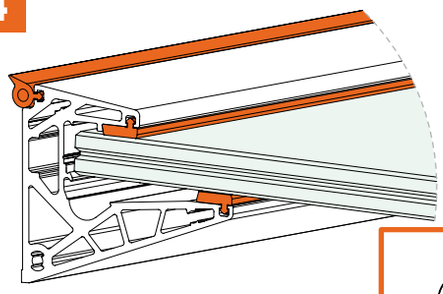
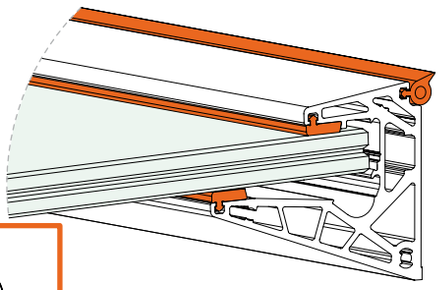
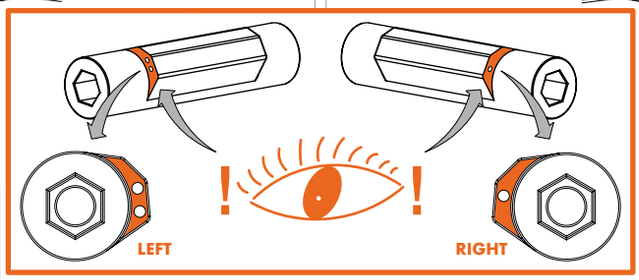
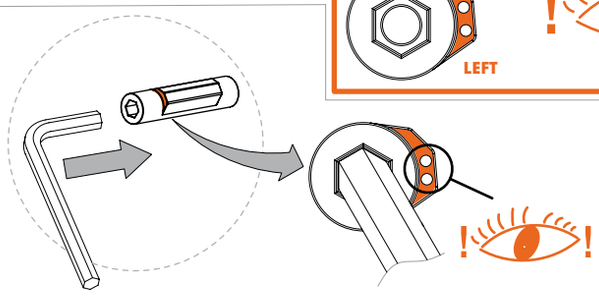


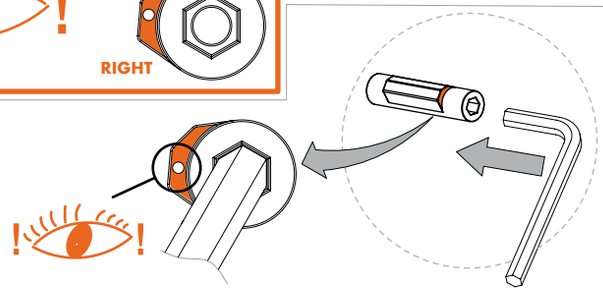


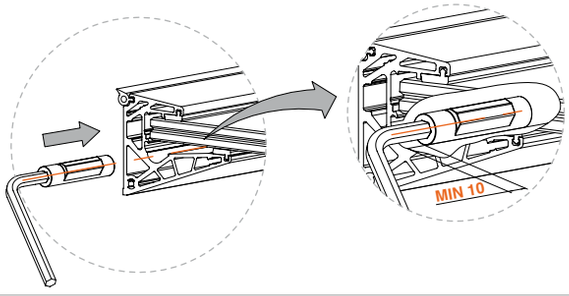
LEFT

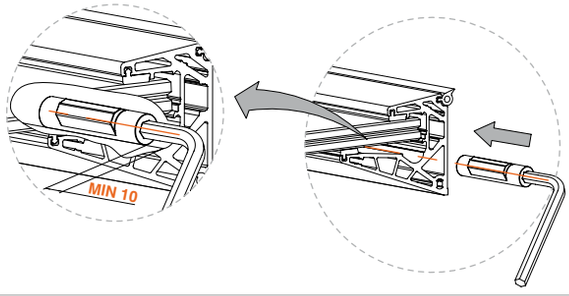
RIGHT

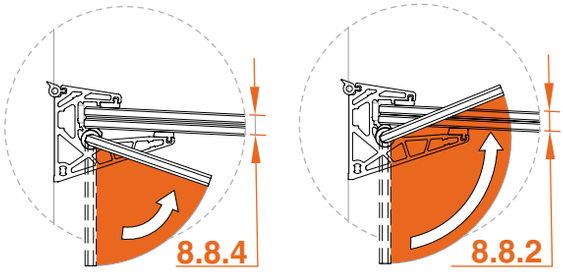


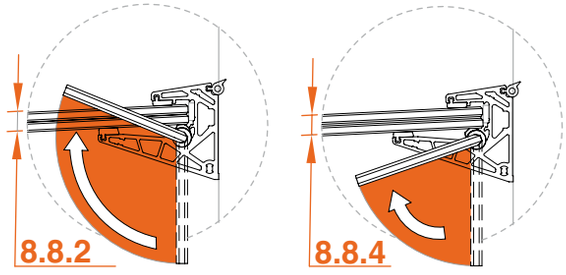


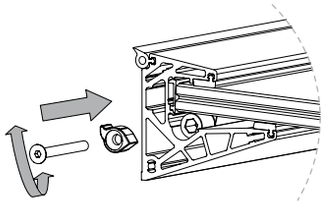


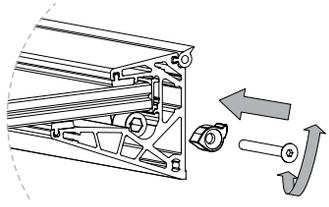












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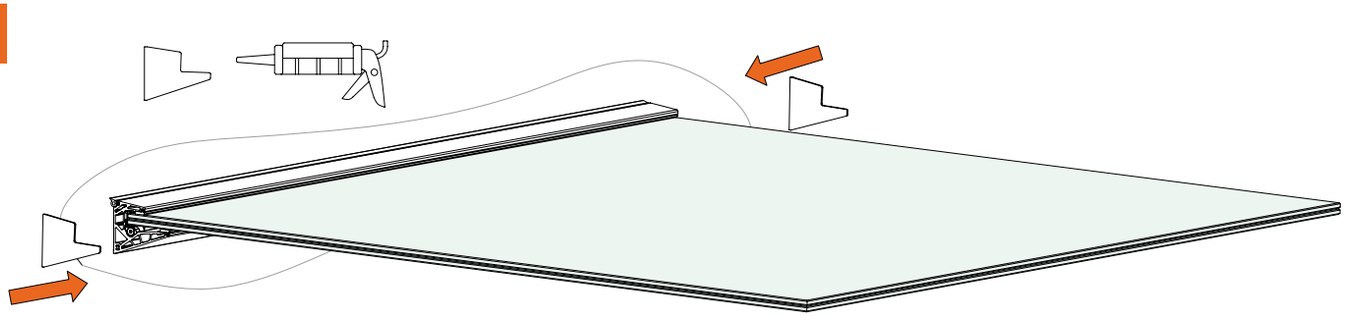
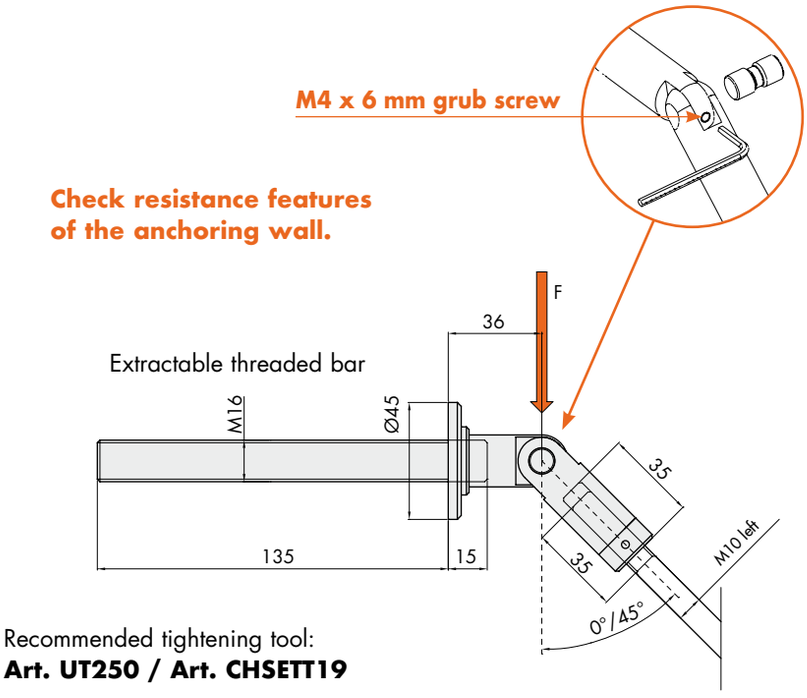


CANOPY LIGHT REGISTERED MODEL

CANOPY LIGHT - WALL JOINT - AISI 316L

Material: machined AISI 316L steel
Features: wall joint with Ø10 mm junction pin.
Finish: machined steel (CNC)
F max = 400 daN (1 daN corresponds approximately to a weight of 1 kg)

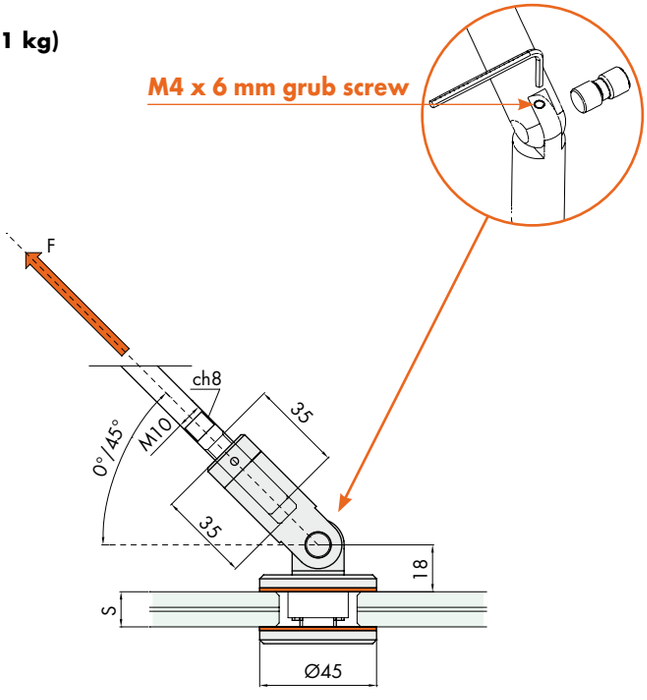


Recommended tightening tool:
Art. UT250 / Art. CHSETT19

Art.	Dimensions	Q.ty
GCL21	Stud Ø45 mm - Bar M16 x 135 mm - Angle 0 / 45°	1 Pc

CANOPY LIGHT - ARTICULATED STUD - AISI 316L

Material: machined AISI 316L steel
Features: glass stud with junction pin Ø10 mm.
Finish: machined steel (CNC)
F max = 400 daN (1 daN corresponds approximately to a weight of 1 kg)

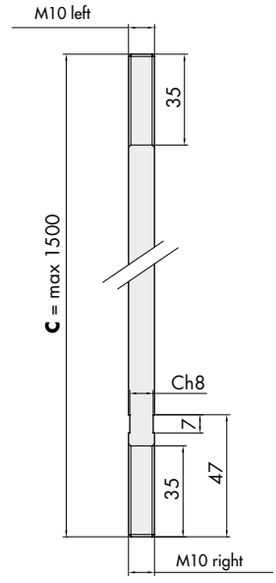


Recommended tightening tool:
Art. UT300 / Art. CHSETT19

Art.	Dimensions	Glass hole	Glass thickness	Q.ty
GCL15	Stud Ø45 mm - Angle 0 / 45° - L = 35 mm	Ø30 mm	11.52 - 17.52 mm	1 Pc

CANOPY LIGHT - TIE ROD - AISI 316L

Material: machined AISI 316L steel
Features: tie rod Ø10 mm **with threaded ends, M10 right and M10 left, respectively**.
Finish: brushed steel
N.B. To calculate C, see the diagram on the next page.

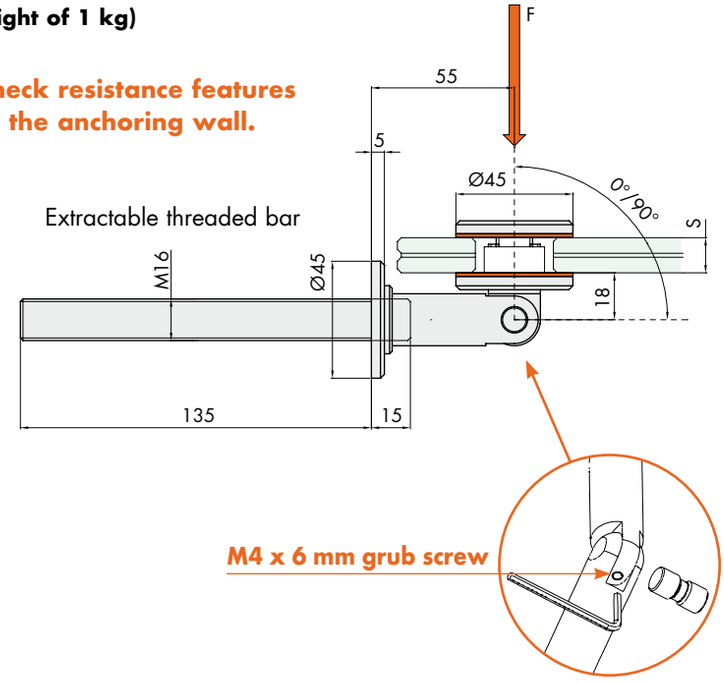


Art.	Dimensions	Q.ty
GCL23	Ø10 mm x maximum length 1500 mm	1 Pc

CANOPY LIGHT - WALL-MOUNTED CONNECTOR - AISI 316L

Material: machined AISI 316L steel
Features: wall-mounted connector with Ø10 mm junction pin.
Finish: machined steel (CNC)
F max = 400 daN (1 daN corresponds approximately to a weight of 1 kg)

Check resistance features of the anchoring wall.



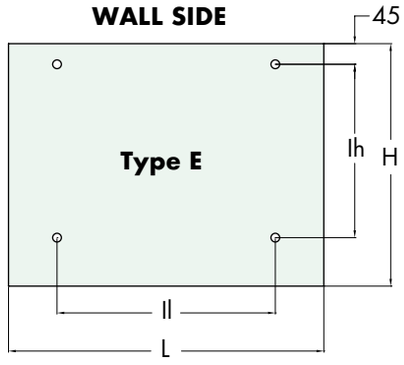
Recommended tightening tool:
Art. UT300

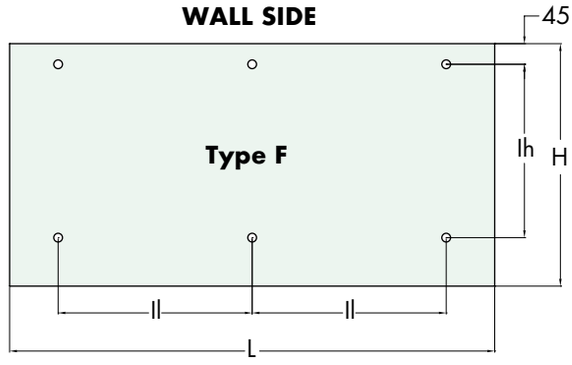
Art.	Dimensions	Glass hole	Glass thickness	Q.ty
GCL19	Stud Ø45 mm - Angle 0 / 90° - L = 55 mm	Ø30 mm	11.52 - 17.52 mm	1 Pc

DIAGRAM WITH RECOMMENDED GLASS PANES

The following table sets out the approximate measurements and recommended thicknesses for the glass panes supported with the GLASS CANOPY system.

The geometry of the pane is considered as if it were tempered glass laminated with PVB. The glass thickness has been calculated by taking into account an accidental load equal to 160 kg/m^2 and the pane's own weight. Moreover, the calculation was carried out with safety coefficients required by Draft Standard PrEN13474-3, based on which the mechanical behaviour of the laminated safety glass (in accordance with UNI7697) is equivalent to analysing monolithic glass. In the case of tempered glass, we recommend to subsequently have it undergo the HST (Heat Soak Test) treatment to drastically reduce the risk of spontaneous breaking.





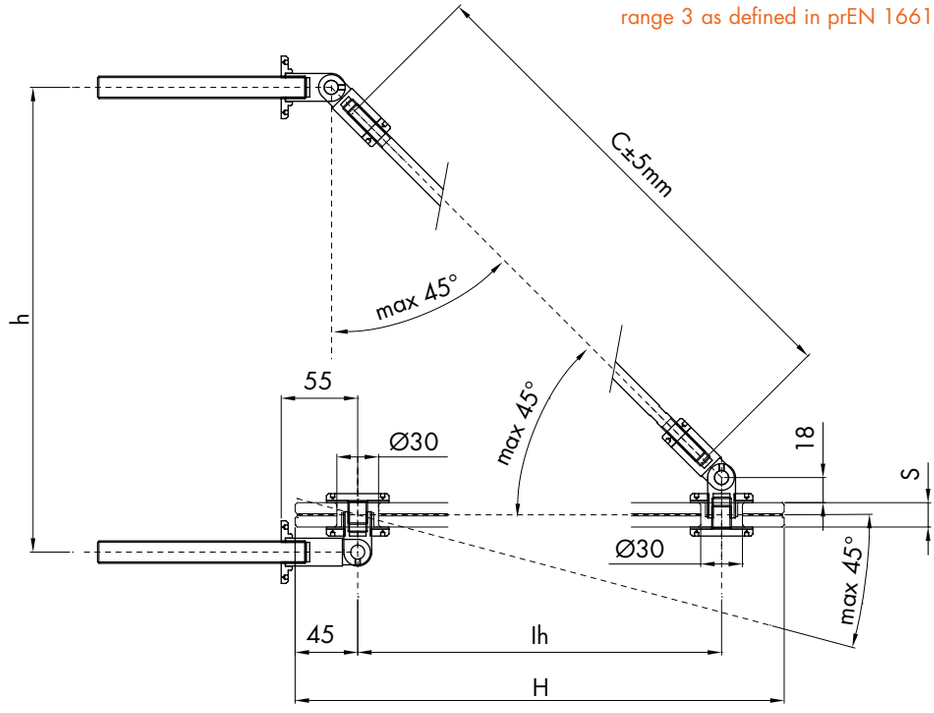
Type	L (mm)	H (mm)	ll (mm)	lh (mm)	Tempered + PVB + Tempered	Glass hole (mm)
	1500	1000	1000	700	5 + 5 + 1.52	Ø30
Type E - 2 Tie Rods	1800	1200	1100	800	6 + 6 + 1.52	Ø30
	2200	1500	1400	1200	8 + 8 + 1.52	Ø30
	2500	1000	1000	700	5 + 5 + 1.52	Ø30
Type F - 3 Tie Rods	2800	1200	1100	800	6 + 6 + 1.52	Ø30
	3200	1500	1400	1200	8 + 8 + 1.52	Ø30

N.B.: standard UNI 7697 applies at the time of publication of this catalogue, requiring the use of laminated safety glass (in accordance with UNI EN ISO 12543-1), as well as the implementation of measures to limit the risk of immediate collapse after breakage, such as the use of a rigid interlayer, i.e. from range 3 as defined in prEN 16613

NORMAL HOLE (45° angle between glass pane and tie rod)

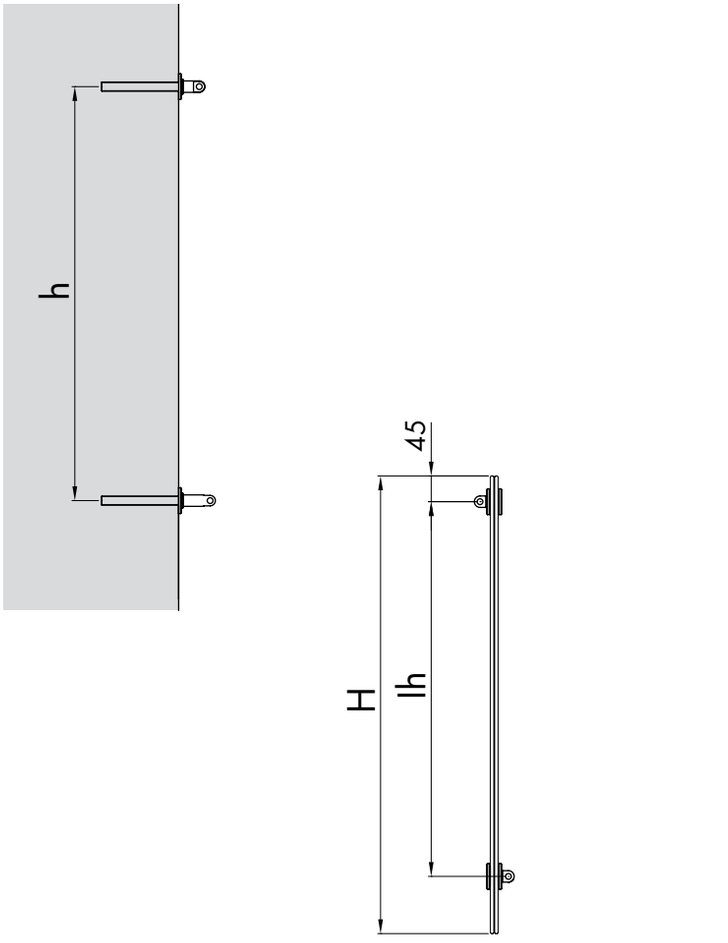
With known lh:
C = lh x 1.4 - 15
h = lh + 70

With known h:
C = h x 1.4 - 115
lh max = h - 70

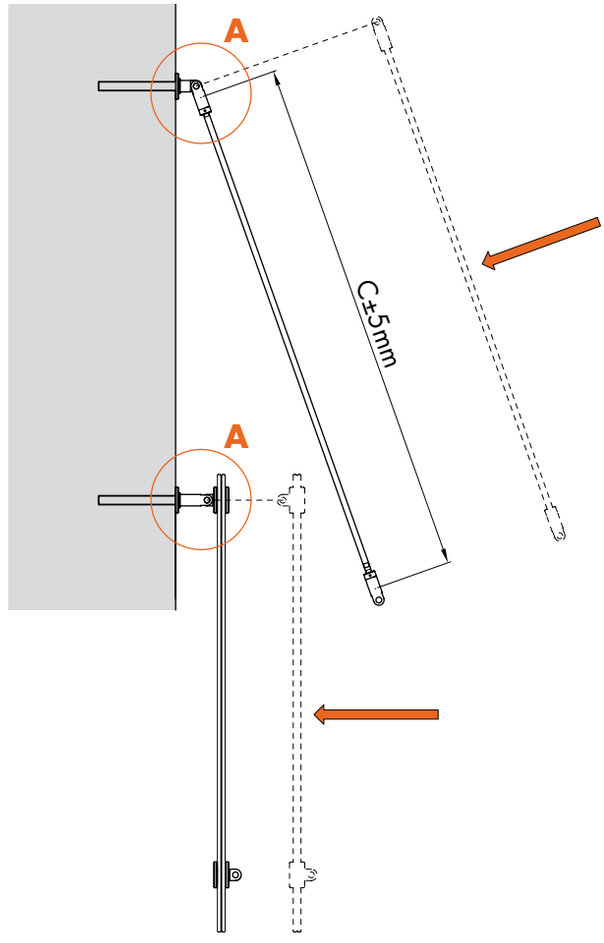


CANOPY LIGHT - INSTALLATION STEPS

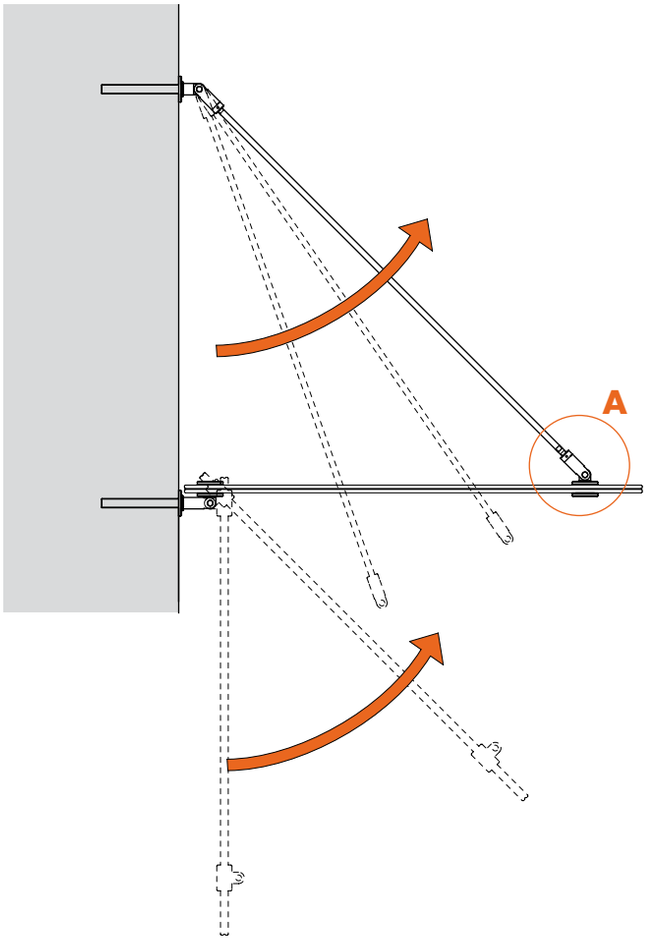
STEP 1

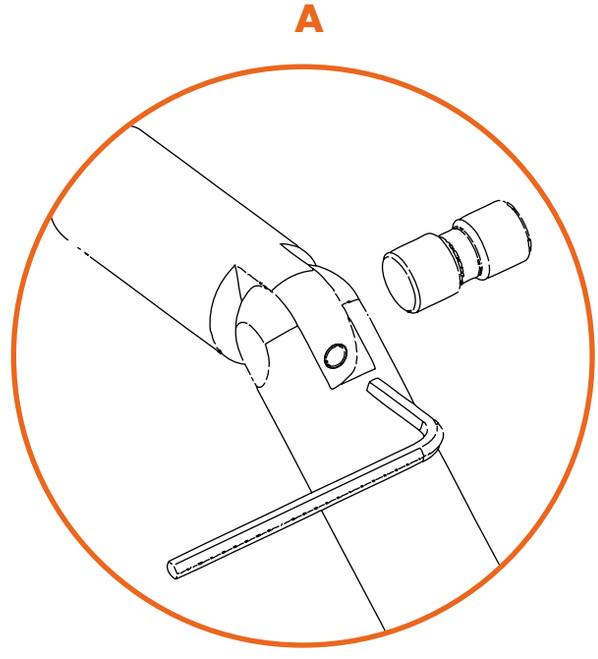


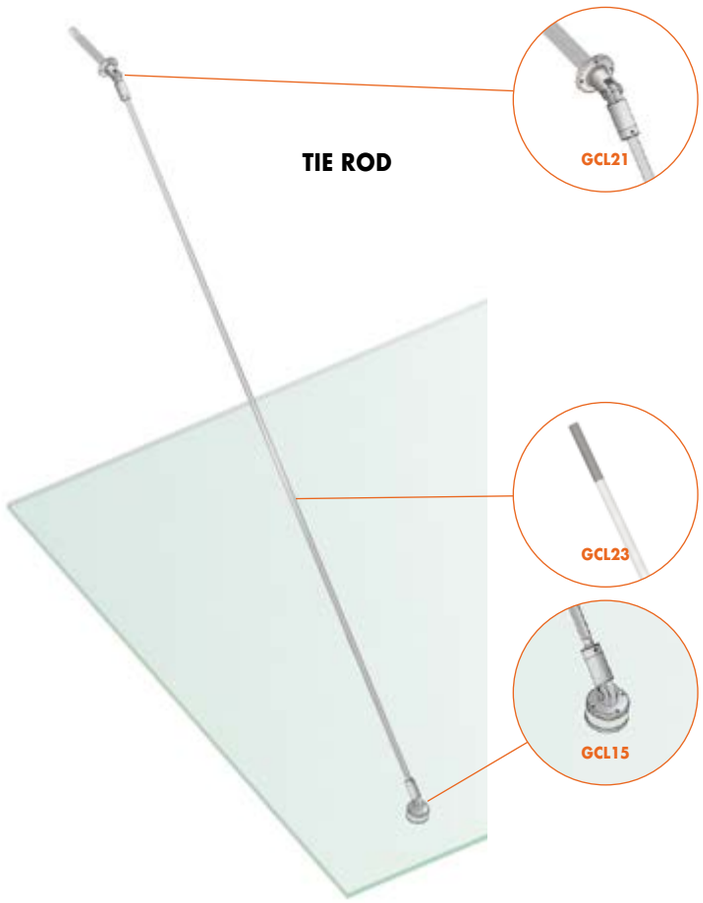
STEP 2



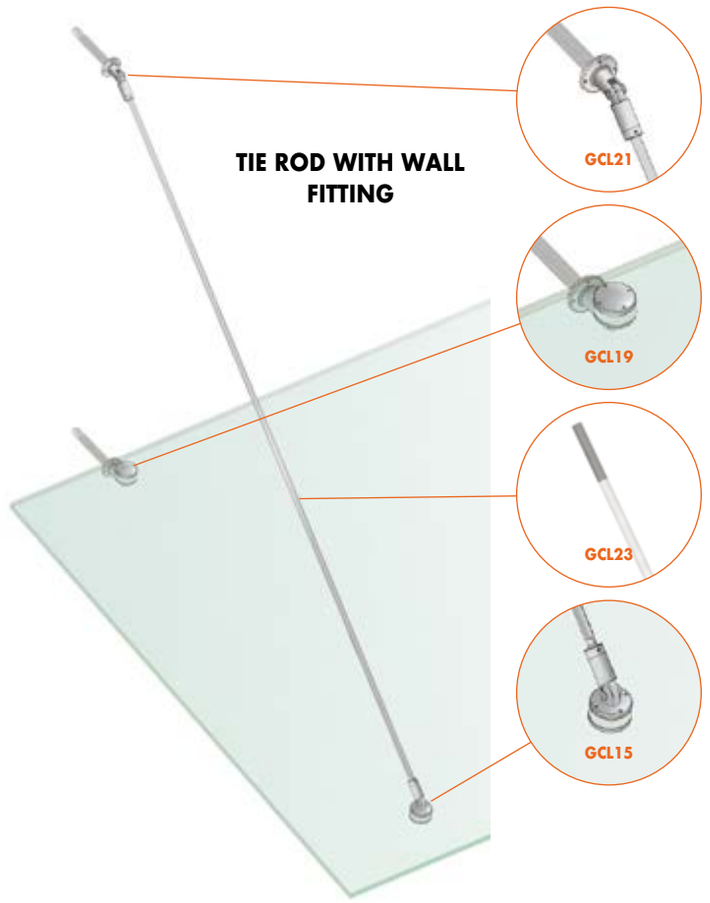
STEP 3







Art.	Dimensions	Q.ty
GC-SNOD15	With studs Ø45 and cable max L=1500 mm	1 Set



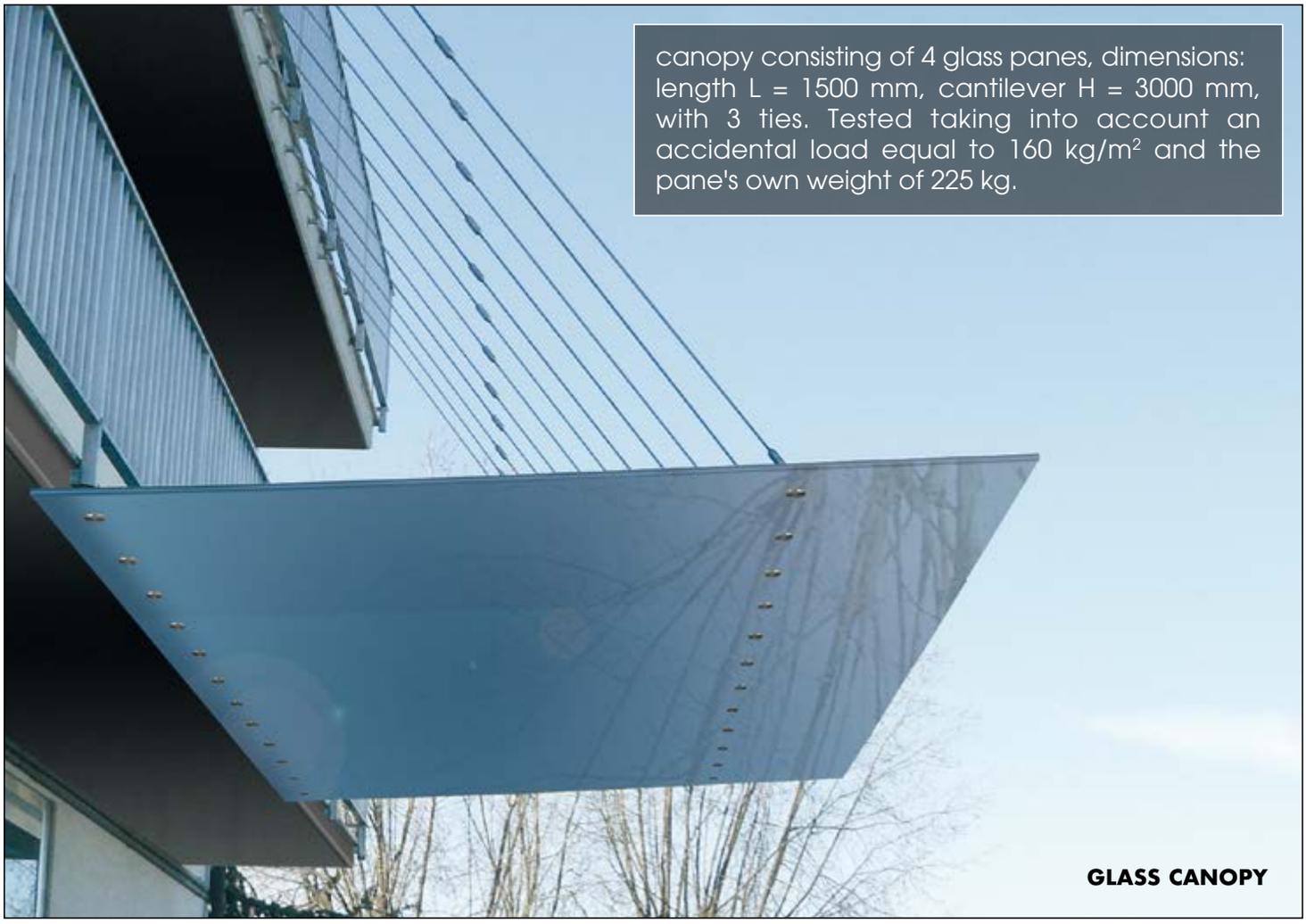
Art.	Dimensions	Q.ty
GC-CAV15	With studs Ø45 and cable max L=1500 mm	1 Set

>>> PRICE LIST REFERENCE Page 23 >>>

SYSTEM FOR GLASS CANOPIES - GLASS CANOPY

GLASS CANOPY GLASS CANOPIES FOR LONG CANTILEVERS

Hung glass and steel canopies are increasingly important in the architectural arena, to protect historical buildings to preserve their original aesthetic impact, as well as installation in new buildings that assure the utmost transparency and elegance. The innovative tie system stems from the cooperation between our Engineering Department and the University of Florence, Department of Mechanics and Industrial Technologies. Obtained by machining **AISI 316L** stainless steel, this system's innovative design features rotule joints with 45° tilted pin. This structure is unlike those currently on the market since the tie is directly connected to the ball of the rotule joint, thus reducing to the minimum any eccentricity that might result in tensions likely to break the glass pane. That is why the system is suited to significant cantilevers, assuring safety in line with current regulations.



canopy consisting of 4 glass panes, dimensions: length L = 1500 mm, cantilever H = 3000 mm, with 3 ties. Tested taking into account an accidental load equal to 160 kg/m^2 and the pane's own weight of 225 kg.

GLASS CANOPY

GLASS CANOPY details

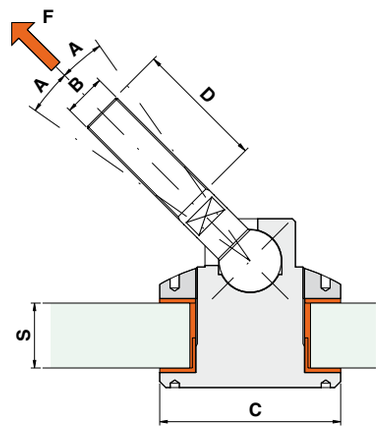
45° ARTICULATED ROTULE JOINT Ø55xM14 - AISI 316L

Material: AISI 316L steel machined from stock with white PVC gasket. Features: a new type of rotule joint designed by us with M14 threaded pin, 1.5 mm pitch with 45°±10° tilt including fixing stud and tightening ring nut Ø55 mm. The pin is supplied with milling required for adjustment during installation with the support of a 12mm spanner. Suited for variable thickness glass panes from 10 mm minimum to 25.52 mm maximum. Finish: machined steel (CNC).

F max = 550 daN

(1 daN corresponds approximately to 1 kg weight)

Recommended tightening tool:
Art. UT300



Art.	Dimensions	Glass hole	Q.ty
GC-ROT145	**A** 10° **B** M14 x 1.5 **C** Ø55 mm **D** 43 mm **S** 10/25.52 mm	Ø36 mm	1 Pc

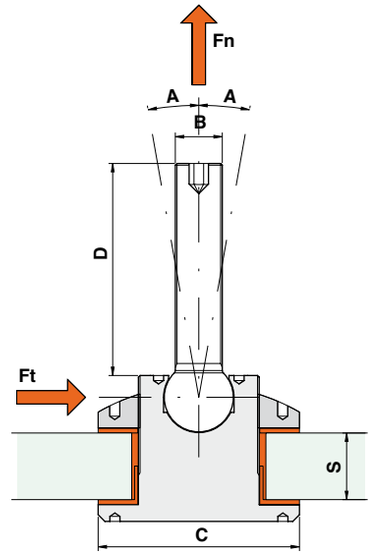
ARTICULATED ROTULE JOINT Ø55xM14 - AISI 316L

Material: AISI 316L steel machined from stock with white PVC gasket. Features: rotule joints with M14 threaded pin, 1.5 mm pitch with variable ±10° tilt including fixing stud and tightening ring nut Ø55 mm. The pin has a hex socket, located at the end, required for adjustments during installation with an 8mm hex key. Suited for variable thickness glass panes from 10 mm minimum to 25.52 mm maximum. Finish: machined steel (CNC).

Ft max = 500 daN

(1 daN corresponds approximately to 1 kg weight)

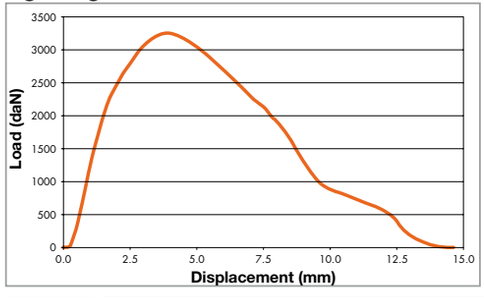
Recommended tightening tool:
Art. UT300



Art.	Dimensions	Glass hole	Q.ty
GC-ROT101	**A** 10° **B** M14 x 1,5 **C** Ø55 mm **D** 63 mm **S** 10/25.52 mm	Ø36 mm	1 Pc

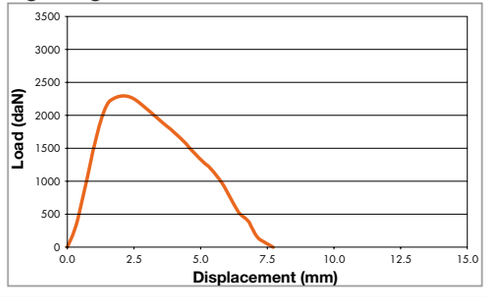
Art. GC-ROT145

TRACTION RESISTANCE TEST - F
F max = 550 daN
(1 daN corresponds approximately to 1 kg weight)

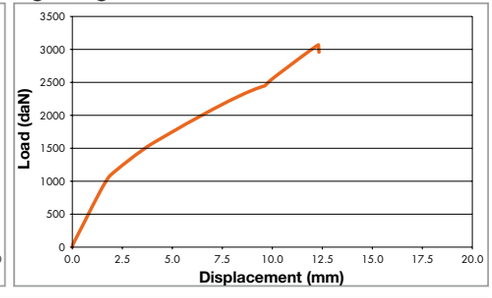


Art. GC-ROT101

TRACTION RESISTANCE TEST - Fn
Fn max = 380 daN
(1 daN corresponds approximately to 1 kg weight)



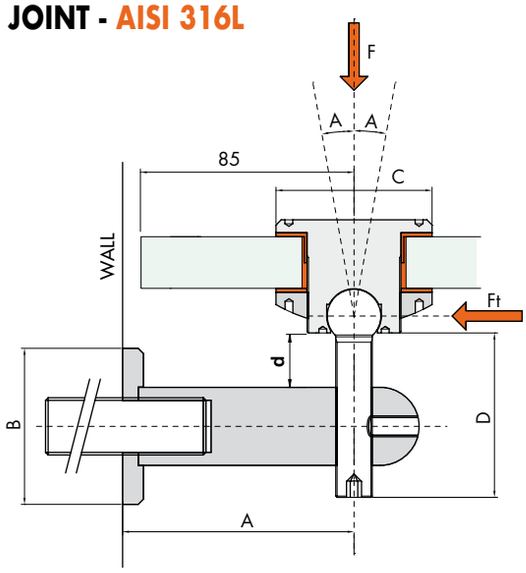
CUTTING RESISTANCE TEST - Ft
Ft max = 500 daN
(1 daN corresponds approximately to 1 kg weight)



WALL-MOUNTED CONNECTOR Ø30x120 mm WITH STUDDED ROTULE JOINT - AISI 316L

Material: AISI 316L machined steel (CNC)
Features: wall-mounted connector with threaded bar M22x150 mm pitch 1.5 mm, Ø60 mm wall stud and M8 rotule joint grub screw. Supplied with **art. GC-ROT101**
The threaded bar of the desired length can be supplied, to be charged separately and upon request from the customer. Finish: machined steel (CNC).

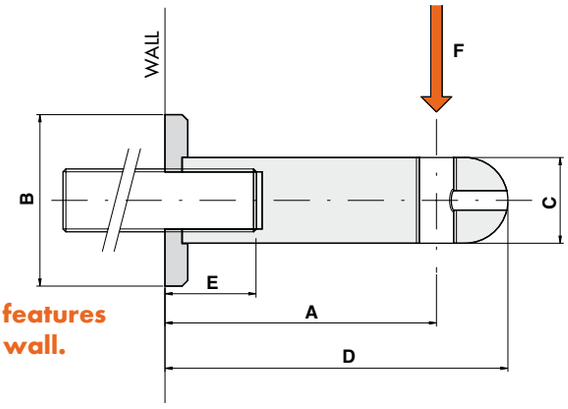
Recommended tightening tool:
Art. UT300



Art.	Dimensions	Glass hole	Q.ty
GC-PEROUT162	**A** 95 mm **B** Ø60 mm **C** Ø55 mm **D** 63 mm	Ø36 mm	1 Pc

WALL-MOUNTED CONNECTOR Ø30x120 mm - AISI 316L

Material: AISI 316L steel machined from stock.
Features: wall-mounted connector with threaded bar M22x150 mm pitch 1.5 mm, Ø60 mm wall stud and M8 rotule joint grub screw. The threaded bar of the desired length can be supplied, to be charged separately and upon request from the customer.
Finish: machined steel (CNC).
F max = 500 daN (1 daN corresponds approximately to 1 kg weight)



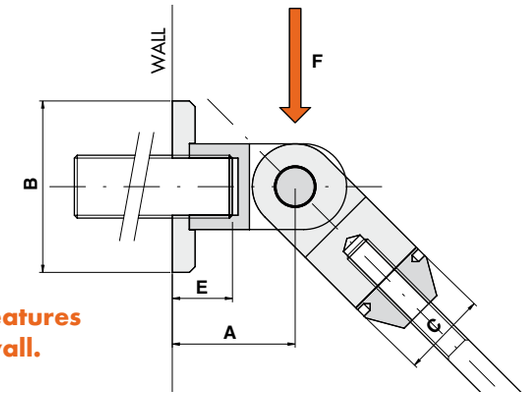
Check resistance features of the anchoring wall.

Art.	Dimensions	Q.ty
GC-PERN120	**A** 95 mm **B** Ø60 mm **C** Ø30 mm **D** 120 mm **E** 36 mm	1 Pc

ARTICULATED WALL JOINT Ø30x43 mm - AISI 316L

Material: AISI 316L steel machined from stock.
Features: wall-mounted joint with threaded bar M22x150 mm pitch 1.5 mm,Ø60 mm stud and special clamping nut for Ø10 mm tie rod. The threaded bar of the desired length can be supplied, to be charged separately and upon request from the customer.
Finish: machined steel (CNC).
F max = 600 daN
(1 daN corresponds approximately to 1 kg weight)

Recommended tightening tool:
Art. CHSET19

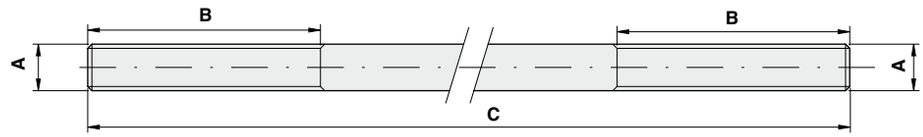


Check resistance features of the anchoring wall.

Art.	Dimensions	Q.ty
GC-SNOD143	**A** 43 mm **B** Ø60 mm **C** Ø30 mm **E** 21 mm	1 Pc

TIE ROD Ø10 - AISI 316L

Material: AISI 316L steel machined from stock.
Features: Ø10 mm bar with threaded ends M10x50 mm with left thread, of variable length according to the customer's requirements (see diagrams on Page 150-151).
Finish: machined steel (CNC).
N.B. For tie rods exceeding 3 metres, use Art: GC-GZT130

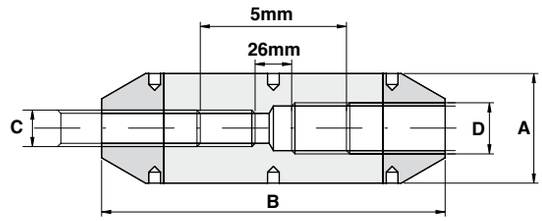


Art.	Dimensions	Q.ty
GC-CAV100	**A** M10 with left thread **B** 50 mm **C** up to 1500 mm	1 Pc
GC-CAV300	**A** M10 with left thread **B** 50 mm **C** from 1500 to 3000 mm	1 Pc

TENSIONER Ø30 mm - AISI 316L

Material: AISI 316L steel machined from stock.
Features: Ø30 mm tensioner to adjust the slope of the canopy with the four blind holes around it by using the hook wrench.
Adjustment length ±10 mm.
Finish: machined steel (CNC).

Recommended tightening tool:
Art. CHSET19

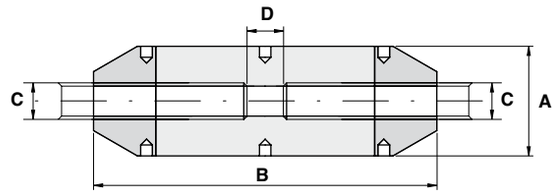


Art.	Dimensions	Adjustment	Q.ty
GC-TEND130	**A** Ø30 mm **B** 94 mm **C** M10 with left thread **D** M14	d = 5/35 mm	1 Pc

JOINT FOR TIE RODS Ø30 mm - AISI 316L

Material: AISI 316L steel machined from stock.
Features: Ø30 mm joint to connect M10 left threaded rods, in case of tie rods exceeding 3 m.
Finish: machined steel

Recommended tightening tools:
Art. CHSET19

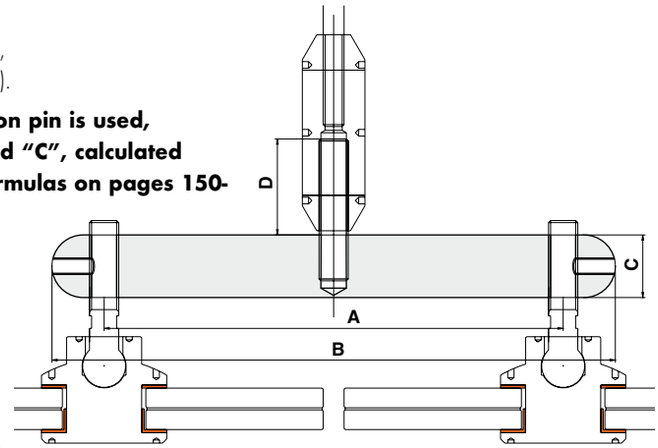


Art.	Dimensions	Q.ty
GC-GZT130	**A** Ø30 mm **B** 94 mm **C** M10 with left threaded rods **D** 10 mm	1 Pc

CONNECTING PIN Ø30x270 mm - AISI 316L

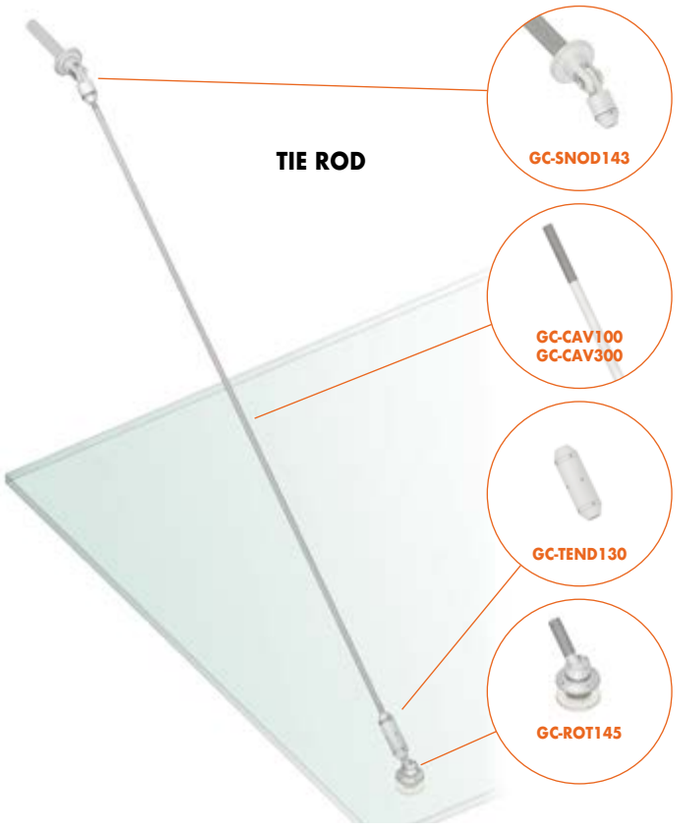
Material: AISI 316L steel - Features: connection pin between two adjacent panes, fitted with an M14x68 mm threaded bar, 1.5 mm pitch. Finish: machined steel (CNC).

N.B. If the connection pin is used, the length of tie rod "C", calculated according to the formulas on pages 150-151, must be reduced by 35 mm.



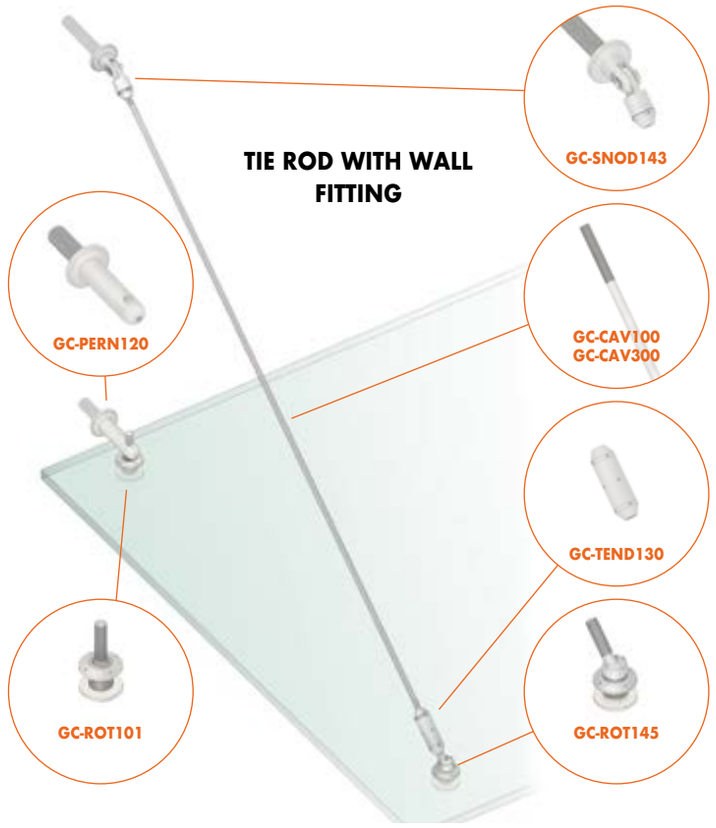
Art.	Dimensions	Q.ty
GC-PERN270	**A** 220 mm **B** 270 mm **C** Ø30 mm **D** 46 mm	1 Pc

TIE ROD



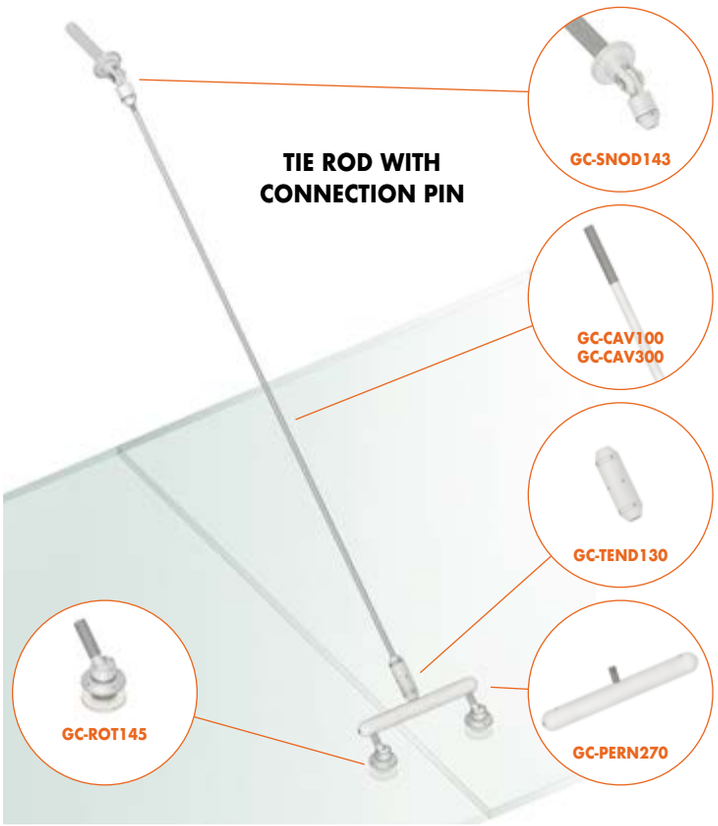
Art.	Dimensions	Q.ty
GC-SNOD1100	With studs Ø55 and cable max L =1500 mm	1 Set
GC-SNOD1300	With studs Ø55 and cable max L =3000 mm	1 Set

TIE ROD WITH WALL FITTING



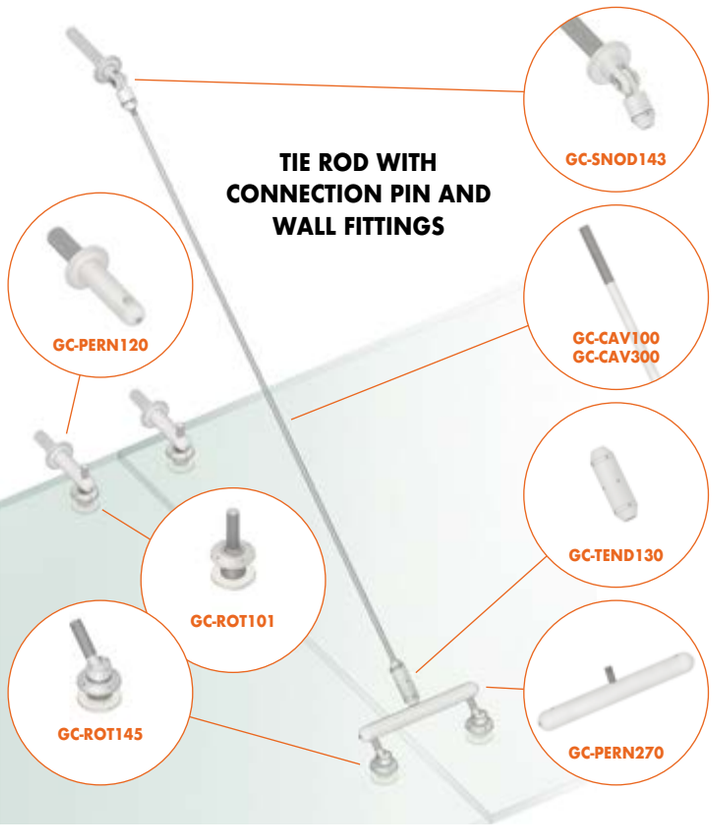
Art.	Dimensions	Q.ty
GC-CAV1100	With studs Ø55 and cable max L =1500 mm	1 Set
GC-CAV1300	With studs Ø55 and cable max L =3000 mm	1 Set

TIE ROD WITH CONNECTION PIN



Art.	Dimensions	Q.ty
GC-PERN155	With studs Ø55 and cable max L =1500 mm	1 Set
GC-PERN355	With studs Ø55 and cable max L =3000 mm	1 Set

TIE ROD WITH CONNECTION PIN AND WALL FITTINGS

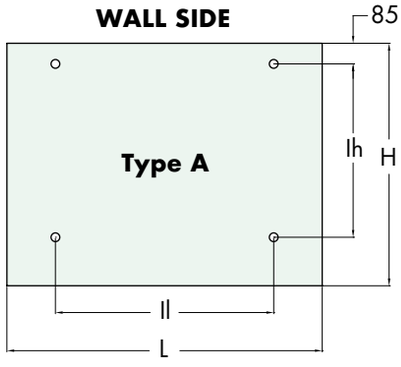


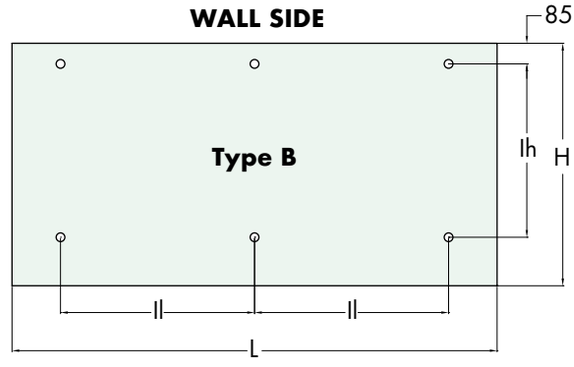
Art.	Dimensions	Q.ty
GC-PEROUT155	With studs Ø55 and cable max L =1500 mm	1 Set
GC-PEROUT355	With studs Ø55 and cable max L =3000 mm	1 Set

DIAGRAM WITH RECOMMENDED GLASS PANES

The following table sets out the approximate measurements and recommended thicknesses for the glass panes supported with the GLASS CANOPY system.

The geometry of the pane is considered as if it were tempered glass laminated with PVB. The glass thickness has been calculated by taking into account an accidental load equal to 160 kg/m^2 and the pane's own weight. Moreover, the calculation was carried out with safety coefficients required by Draft Standard PrEN13474-3, based on which the mechanical behaviour of the laminated safety glass (in accordance with UNI7697) is equivalent to analysing monolithic glass. In the case of tempered glass, we recommend to subsequently have it undergo the HST (Heat Soak Test) treatment to drastically reduce the risk of spontaneous breaking.





Type	L (mm)	H (mm)	II (mm)	Ih (mm)	Tempered + PVB + Tempered	Glass hole (mm)
	1500	1500	1000	1000	6 + 6 + 1.52	Ø36
Type A - 2 Tie Rods	2200	2200	1300	1700	8 + 8 + 1.52	Ø36
	2500	2500	1400	1800	10 + 10 + 1.52	Ø36
	2500	1500	900	1100	6 + 6 + 1.52	Ø36
Type B - 3 Tie Rods	3000	2000	1000	1400	8 + 8 + 1.52	Ø36
	3800	2400	1400	1800	10 + 10 + 1.52	Ø36

N.B.: standard UNI 7697 applies at the time of publication of this catalogue, requiring the use of laminated safety glass (in accordance with UNI EN ISO 12543-1), as well as the implementation of measures to limit the risk of immediate collapse after breakage, such as the use of a rigid interlayer, i.e. from range 3 as defined in prEN 16613

NORMAL HOLE

With known Ih:
C = Ih x 1.4 - 34
h = Ih + 119
h' = Ih + 34

With known h:
C = h x 1.4 - 202
Ih max = h - 119

With known h':
C = h' x 1.4 - 83
Ih max = h' - 34

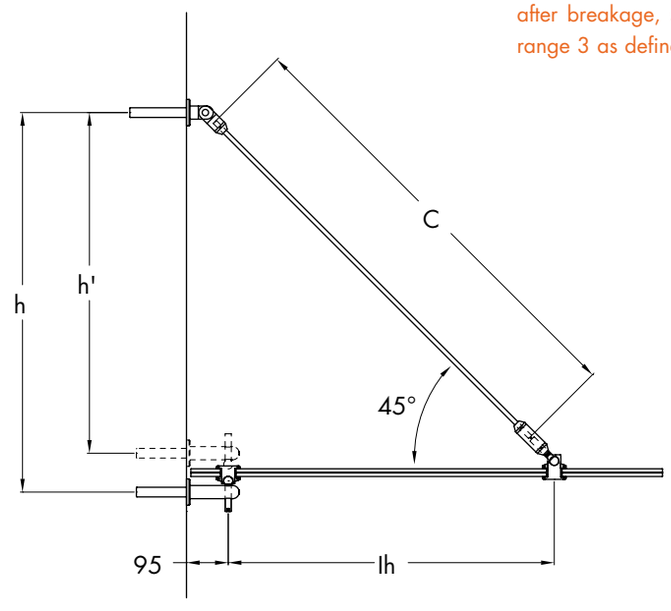
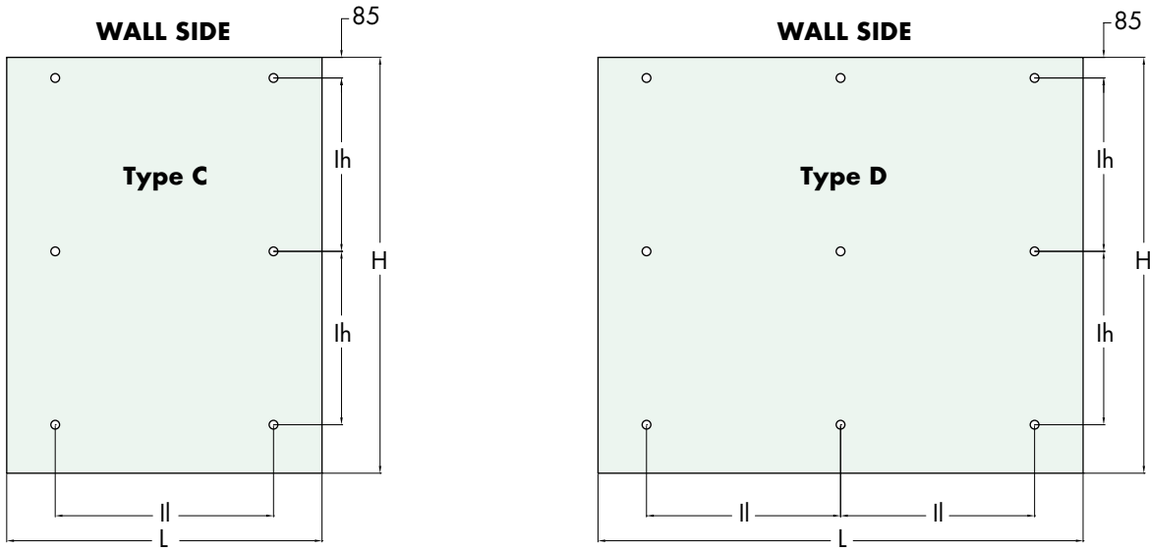


DIAGRAM WITH RECOMMENDED GLASS PANES FOR LONG CANTILEVERS

The following table sets out the approximate measurements and recommended thicknesses for the glass panes supported with the GLASS CANOPY system.

The geometry of the pane is considered as if it were tempered glass laminated with PVB. The glass thickness has been calculated by taking into account an accidental load equal to 160 kg/m^2 and the pane's own weight. Moreover, the calculation was carried out with safety coefficients required by Draft Standard PrEN13474-3, based on which the mechanical behaviour of the laminated safety glass (in accordance with UNI7697) is equivalent to analysing monolithic glass. In the case of tempered glass, we recommend to subsequently have it undergo the HST (Heat Soak Test) treatment to drastically reduce the risk of spontaneous breaking.



Type	L (mm)	H (mm)	II (mm)	Ih (mm)	Tempered + PVB + Tempered	Glass hole (mm)
Type C - 4 Tie Rods	1500	3000	1000	1200	8 + 8 + 1.52	Ø36
	2200	3500	1300	1400	10 + 10 + 1.52	Ø36
Type D - 6 Tie Rods	2500	3000	900	1200	8 + 8 + 1.52	Ø36
	3000	3500	1200	1300	10 + 10 + 1.52	Ø36

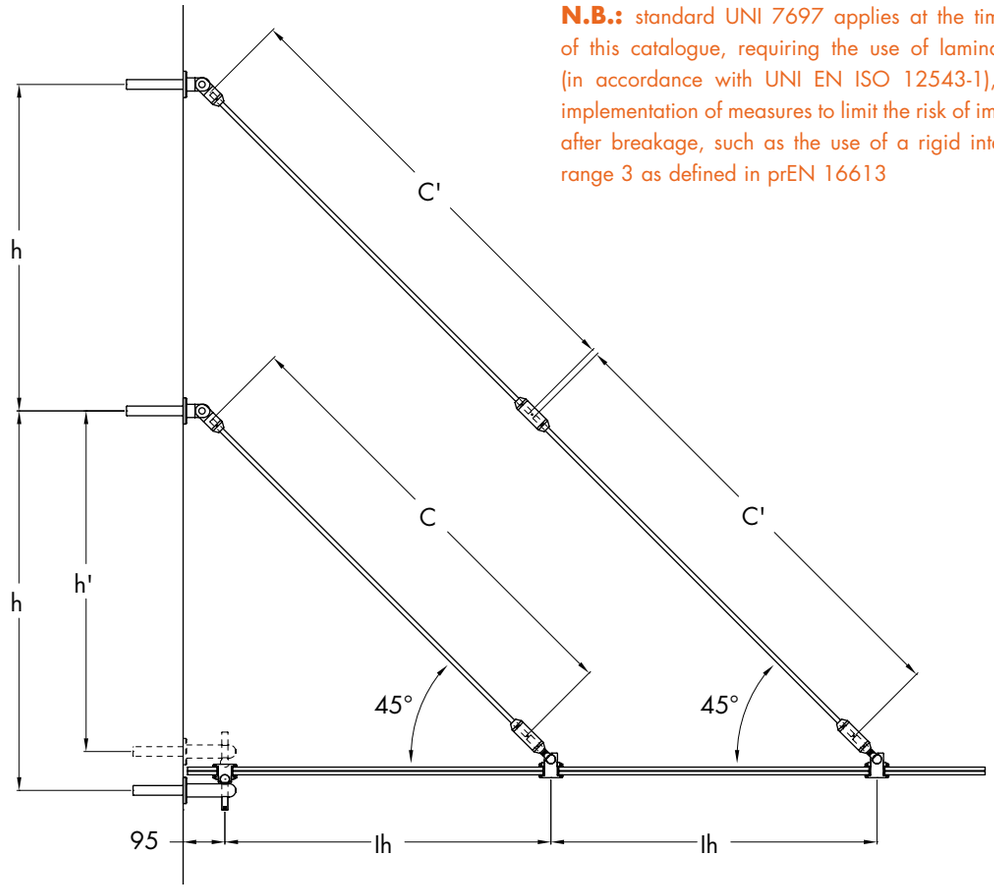
N.B.: standard UNI 7697 applies at the time of publication of this catalogue, requiring the use of laminated safety glass (in accordance with UNI EN ISO 12543-1), as well as the implementation of measures to limit the risk of immediate collapse after breakage, such as the use of a rigid interlayer, i.e. from range 3 as defined in prEN 16613

NORMAL HOLE

With known Ih:
C = Ih x 1.4 - 34
C'= C + 10
h = Ih + 119
h' = Ih + 34

With known h:
C = h x 1.4 - 202
C'= C + 10
Ih max = h - 119

With known h':
C = h' x 1.4 - 83
C'= C + 10
Ih max = h' - 34



FLUIDO CLAMP

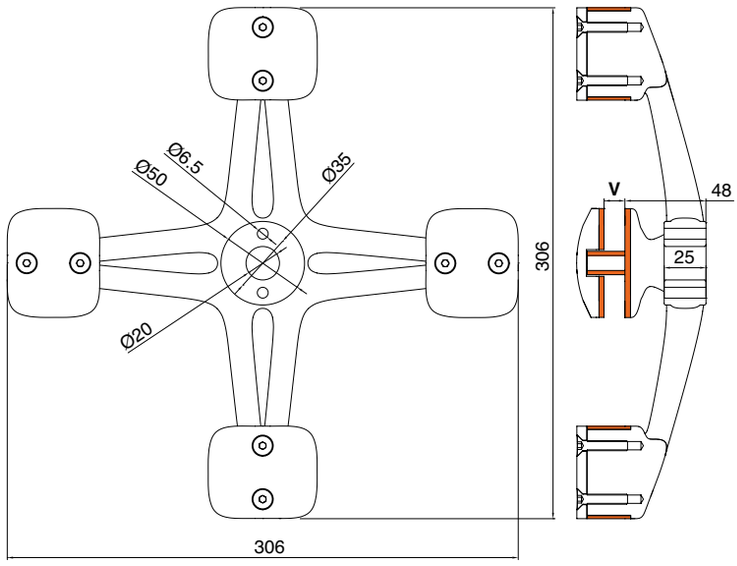
4-WAY SPIDER - AISI 316

Material: Body and fitting in AISI 316, EPDM gaskets
Features: 4-way spider for anchoring laminated glass panes with no drilling,
to be used with laminated glass thickness: from 13.52mm to 21.52mm.
Finish: brushed steel

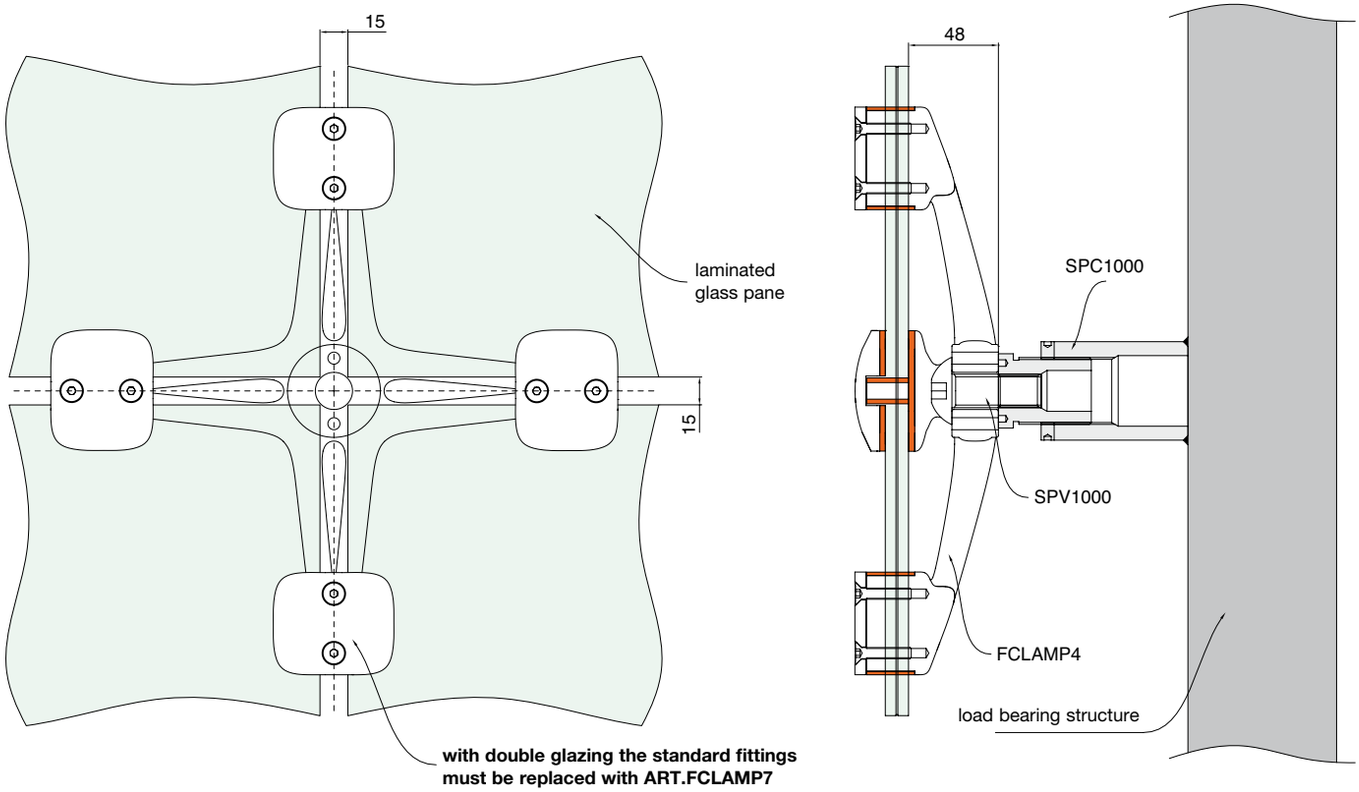
Art.	Spider Dimensions	Clamp dimensions	Weight	Glass thickness	Q.ty
FCLAMP4	306 x 306 mm	55 x 45 mm	3 kg	**V** = from 13.52 to 21.52 mm	1 Pc

>>> PRICE LIST REFERENCE Page 26 >>>

FLUIDO CLAMP FAÇADE SYSTEM

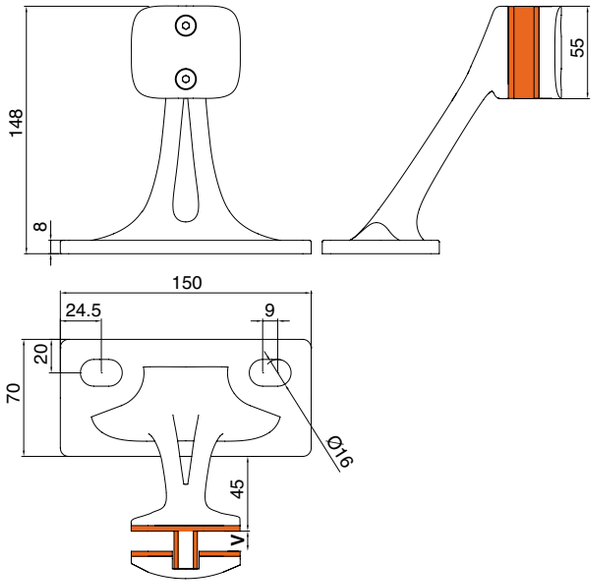


EXAMPLE OF INSTALLATION ON LOAD-BEARING STRUCTURE



1-WAY SPIDER - AISI 316

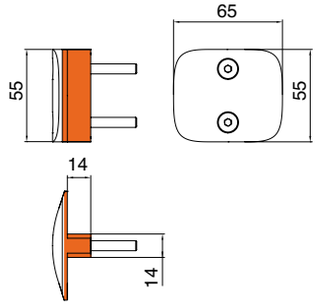
Material: Body and fitting in AISI 316, EPDM gaskets
Features: 1-way spider for anchoring laminated glass panes with no drilling, to be used with laminated glass thickness: from 13.52mm to 21.52mm.
Finish: brushed steel



Art.	Spider Dimensions	Clamp dimensions	Weight	Glass thickness	Q.ty
FCLAMP1	148 x 150 mm	55 x 45 mm	1.6 kg	**V** = from 13.52 to 21.52 mm	1 Pc

FITTING FOR DOUBLE GLAZING - AISI 316

Material: Body in AISI 316, EPDM gasket
Features: fitting for anchoring double glazing panes without glass cut-out, to be used with double glazing thicknesses: from 37mm to 55mm.
Finish: brushed steel



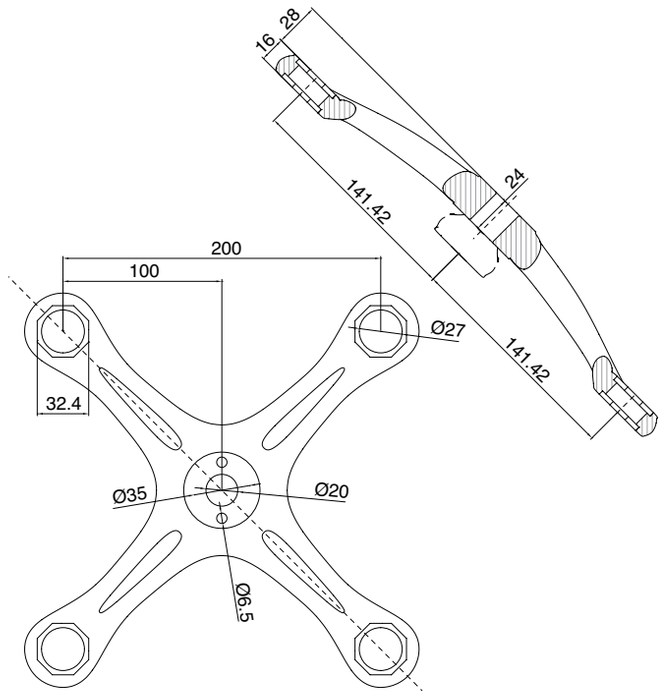
Art.	Dimensions	Weight	Glass thickness	Q.ty
FCLAMP7	55 x 45 mm	0.15 kg	**V** = from 37 to 55 mm	1 Pc

>>> PRICE LIST REFERENCE Page 26 >>>

FLUIDO

4-WAY SPIDER - AISI 316

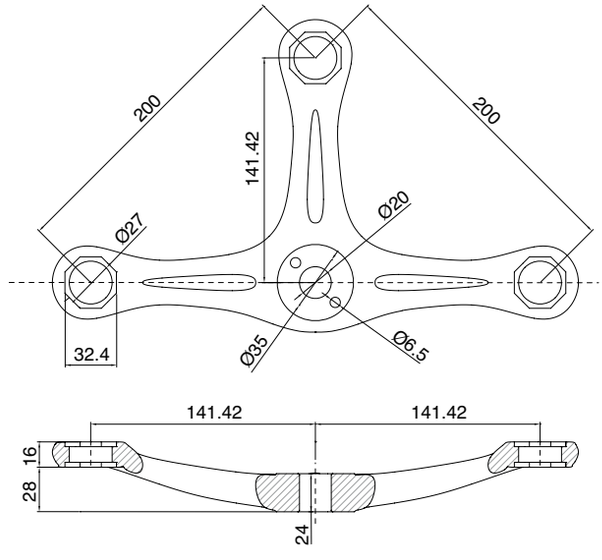
Material: AISI 316
Features: 4-way spider for connecting 4 rotule joints to the load bearing structure
Finish: brushed steel



Art.	Centre distance	Weight	Q.ty
FLUIDO360	200 mm	2.3 kg	1 Pc

3-WAY SPIDER - AISI 316

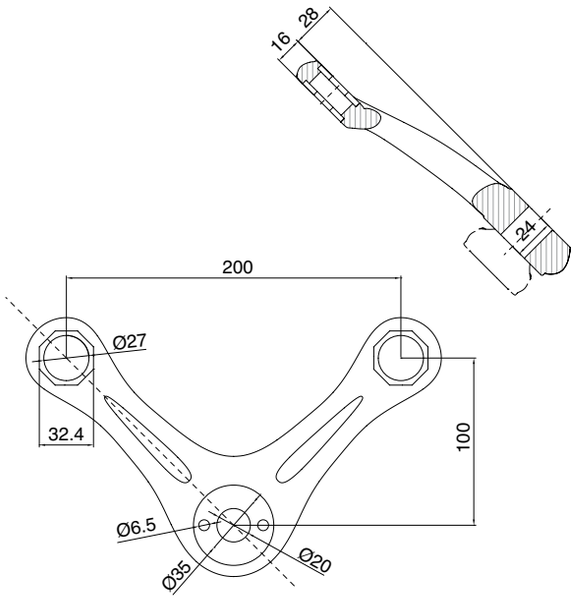
Material: AISI 316
Features: 3-way spider for connecting 3 rotule joints to the load bearing structure
Finish: brushed steel



Art.	Centre distance	Weight	Q.ty
FLUIDO270	200 mm	1.7 kg	1 Pc

90° 2-WAY SPIDER - AISI 316

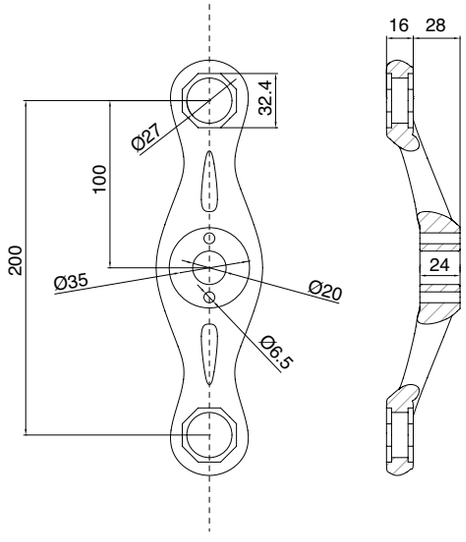
Material: AISI 316
Features: 2-way spider for connecting 2 rotule joints to the load bearing structure
Finish: brushed steel



Art.	Centre distance	Weight	Q.ty
FLUIDO90	200 mm	1.3 kg	1 Pc

2-WAY IN-LINE SPIDER - AISI 316

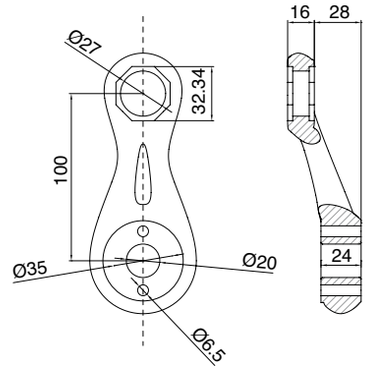
Material: AISI 316
Features: 2-way spider for connecting 2 rotule joints to the load bearing structure
Finish: brushed steel



Art.	Centre distance	Weight	Q.ty
FLUIDO180	200 mm	1.1 kg	1 Pc

1-WAY IN-LINE SPIDER - AISI 316

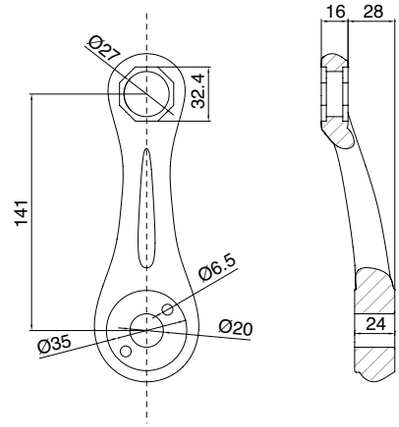
Material: AISI 316
Features: 1-way spider for connecting 1 rotule joint to the load bearing structure
Finish: brushed steel



Art.	Centre distance	Weight	Q.ty
FLUIDO100	100 mm	0.75 kg	1 Pc

45° 1-WAY SPIDER - AISI 316

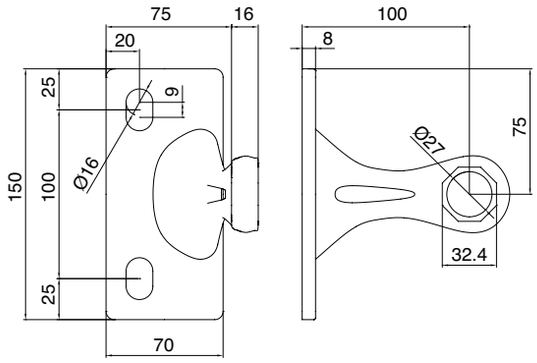
Material: AISI 316
Features: 1-way spider for connecting 1 rotule joint to the load bearing structure
Finish: brushed steel



Art.	Centre distance	Weight	Q.ty
FLUIDO45	141 mm	0.85 kg	1 Pc

1-WAY PLATE SPIDER - AISI 316

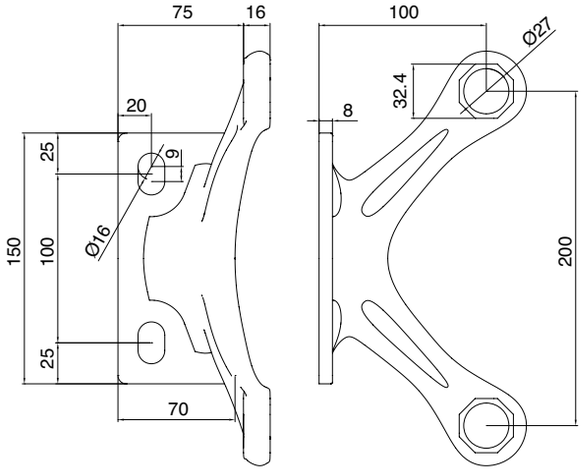
Material: AISI 316
Features: 1-way spider for connecting 1 rotule joint to the load bearing structure
Finish: brushed steel



Art.	Centre distance	Weight	Q.ty
FLUIDO1	100 mm	1.2 kg	1 Pc

2-WAY PLATE SPIDER - AISI 316

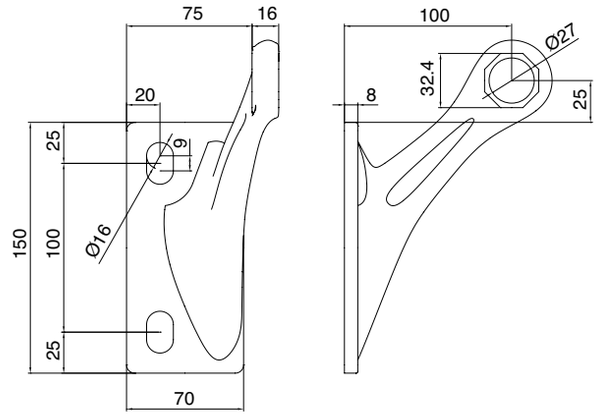
Material: AISI 316
Features: 2-way spider for connecting 2 rotule joints to the load bearing structure
Finish: brushed steel



Art.	Centre distance	Weight	Q.ty
FLUIDO2	200 mm	1.8 kg	1 Pc

1-WAY PLATE SPIDER LEFT - AISI 316

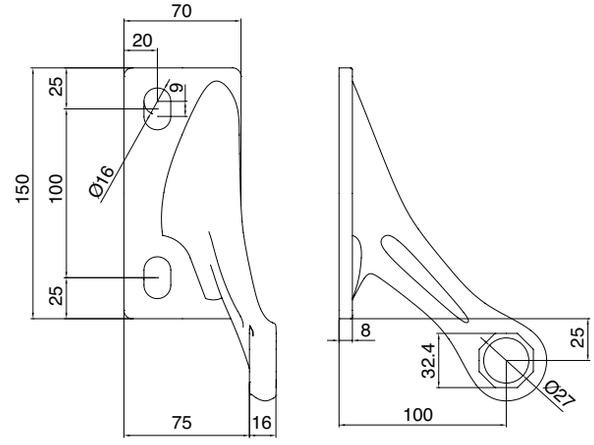
Material: AISI 316
Features: 1-way spider for connecting 1 rotule joint to the load bearing structure
Finish: brushed steel



Art.	Centre distance	Weight	Q.ty
FLUIDOSX	100 mm	1.4 kg	1 Pc

1-WAY PLATE SPIDER RIGHT - AISI 316

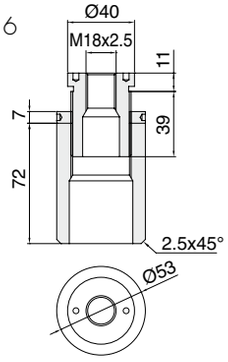
Material: AISI 316
Features: 1-way spider for connecting 1 rotule joint to the load bearing structure
Finish: brushed steel



Art.	Centre distance	Weight	Q.ty
FLUIDODX	100 mm	1.4 kg	1 Pc

SPIDER CONNECTOR - AISI 316

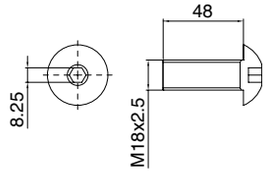
Material: casing to be welded in zinc-plated AVP, remaining parts in AISI 316
Features: spacer - adjustable connector for spider,
to be welded to load bearing structure. The connecting screw
is required to anchor the spider (ART.SPV1000).
Finish: machined steel (CNC)



Art.	Dimensions	Weight	Q.ty
SPC1000	Ø53 mm	1 kg	1 Pc

FLUIDO SERIES CONNECTING SCREW FOR SPIDER - AISI 316

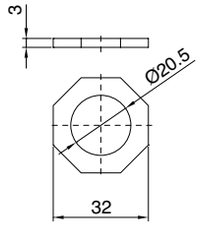
Material: AISI 316
Features: connecting screw to connect the spider to the
load bearing structure with or without connector.
Ø36 mm with threaded pin M18x2.5 mm pin length 48 mm.
Finish: machined steel (CNC)



Art.	Dimensions	Q.ty
SPV1000	Ø36 x L 48 mm - Thread M18 x 2.5	1 Pc

OCTAGONAL WASHER WITH HOLE - AISI 316

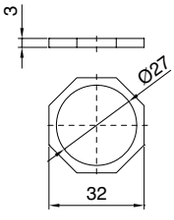
Material: AISI 316
Features: Octagonal washer with hole for M20 screw.
The external octagonal shape makes it compatible with fluido series spiders.
Finish: brushed steel



Art.	Description	Q.ty
STR10	Octagonal washer with hole	1 Pc

OCTAGONAL WASHER WITH WIDE HOLE - AISI 316

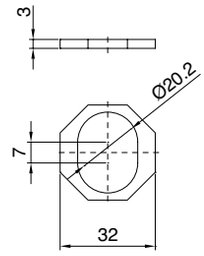
Material: AISI 316
Features: Octagonal washer with hole for M20 screw.
Up to 7mm adjustment possible.
The external octagonal shape makes it compatible with fluido series spiders.
Finish: brushed steel



Art.	Description	Q.ty
STR12	Octagonal washer with wide hole	1 Pc

OCTAGONAL WASHER WITH SLOT - AISI 316

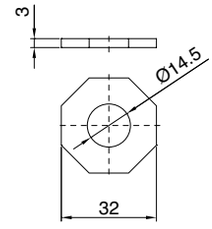
Material: AISI 316
Features: Octagonal washer with slot for M20 screw.
Up to 7mm adjustment possible along the slot direction.
The external octagonal shape makes it compatible with fluido series spiders.
Finish: brushed steel



Art.	Description	Q.ty
STR8	Octagonal washer with slot	1 Pc

M14 OCTAGONAL WASHER WITH HOLE - AISI 316

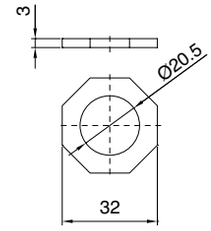
Material: AISI 316
Features: Octagonal washer with hole for M14 screw.
The external octagonal shape makes it compatible with fluido series spiders.
Finish: brushed steel



Art.	Description	Q.ty
STR14	Octagonal washer with M14 hole	1 Pc

M14 OCTAGONAL WASHER WITH WIDE HOLE - AISI 316

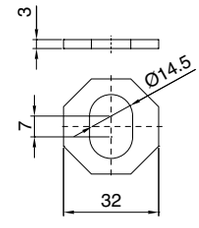
Material: AISI 316
Features: Octagonal washer with hole for M14 screw.
Up to 6mm adjustment possible. The external octagonal shape makes it compatible with fluido series spiders.
Finish: brushed steel



Art.	Description	Q.ty
STR16	Octagonal washer with wide M14 hole	1 Pc

M14 OCTAGONAL WASHER WITH SLOT - AISI 316

Material: AISI 316
Features: Octagonal washer with slot for M14 screw.
Up to 7mm adjustment possible along the slot direction.
The external octagonal shape makes it compatible with fluido series spiders.
Finish: brushed steel



Art.	Description	Q.ty
STR18	Octagonal washer with M14 slot 1 Pc	

FAÇADES - SPIDER

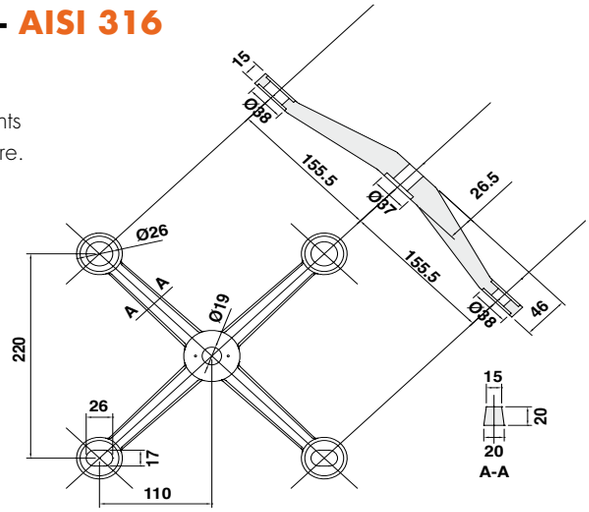
SPIDER RESISTANCE TEST

REFERENCE REGULATION:

The tests have been conducted according to the instructions set out under point B6 of technical document CSTB 3574 (2006)

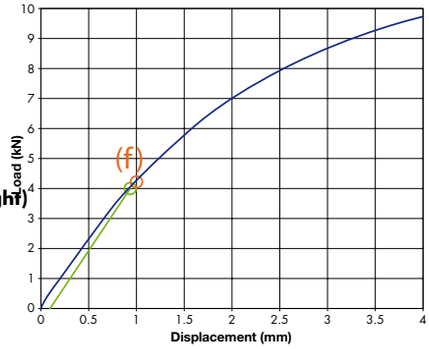
4-WAY SPIDER - AISI 316

Material: AISI 316 steel
Features: 4-way spider
for connecting 4 rotule joints
to the load bearing structure.
Finish: polished steel.



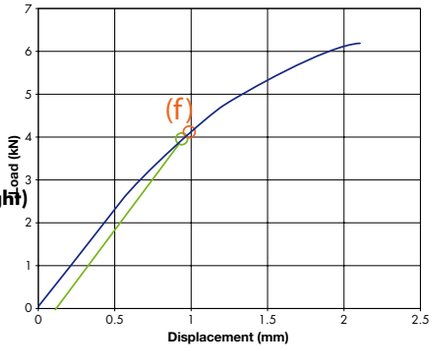
TRACTION RESISTANCE TEST AT RIGHT ANGLES WITH THE FAÇADE

Force (f) = 204.3 daN
Value of **(f)** measured
at a 1 mm
displacement
(1 daN corresponds approximately to 1 kg weight)



TRACTION RESISTANCE TEST PARALLEL TO THE FAÇADE

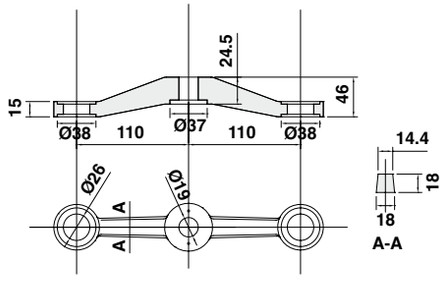
Force (f) = 415.3 daN
Value of **(f)** measured
at a 1 mm
displacement
(1 daN corresponds approximately to 1 kg weight)



Art.	Centre distance	Weight	Q.ty
SP2201	220 mm	2100 g	1 Pc

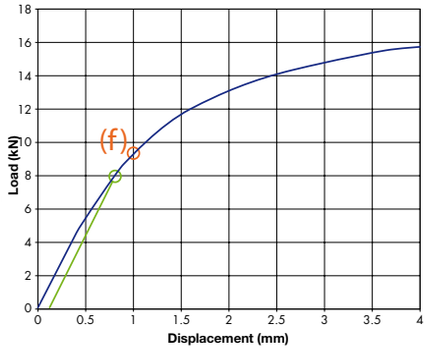
2-WAY IN-LINE SPIDER - AISI 316

Material: AISI 316 steel
Features: in-line 2-way spider for connecting 2 rotule joints to the load bearing structure.
Finish: polished steel.



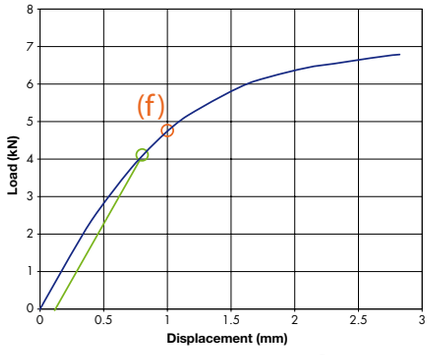
TRACTION RESISTANCE TEST AT RIGHT ANGLES WITH THE FAÇADE

Force (f) = 461.1 daN
Value of **(f)** measured
at a 1 mm
displacement
(1 daN corresponds approximately to 1 kg weight)



TRACTION RESISTANCE TEST PARALLEL TO THE FAÇADE

Force (f) = 477.5 daN
Value of **(f)** measured
at a 1 mm
displacement
(1 daN corresponds approximately to 1 kg weight)



Art.	Centre distance	Weight	Q.ty
SP2202	220 mm	950 g	1 Pc

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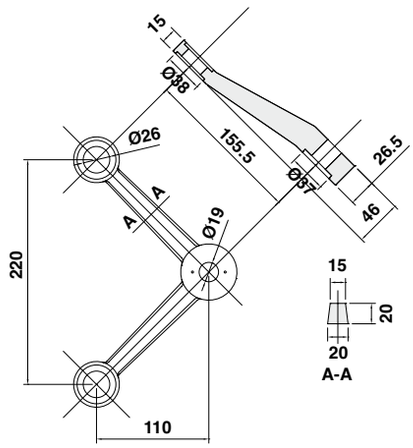
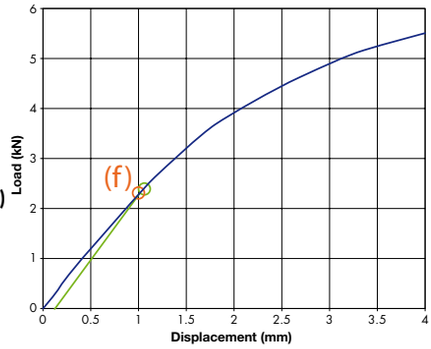
2-WAY 90° SPIDER - AISI 316

Material: AISI 316 steel
Features: 2-way 90° spider for connecting 2 rotule joints to the load bearing structure.
Finish: polished steel.



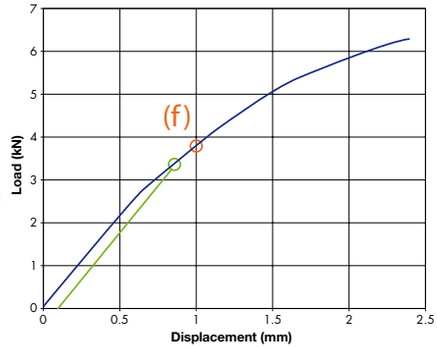
TRACTION RESISTANCE TEST AT RIGHT ANGLES WITH THE FAÇADE

Force (f) = 226.5 daN
Value of **(f)** measured at a 1 mm displacement
(1 daN corresponds approximately to 1 kg weight)



TRACTION RESISTANCE TEST PARALLEL TO THE FAÇADE

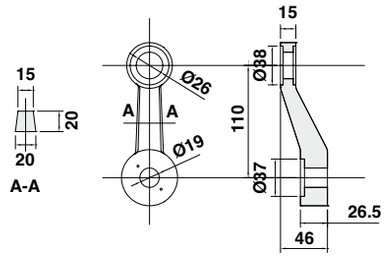
Force (f) = 387.3 daN
Value of **(f)** measured at a 1 mm displacement
(1 daN corresponds approximately to 1 kg weight)



Art.	Centre distance	Weight	Q.ty
SP2203	220 mm	1200 g	1 Pc

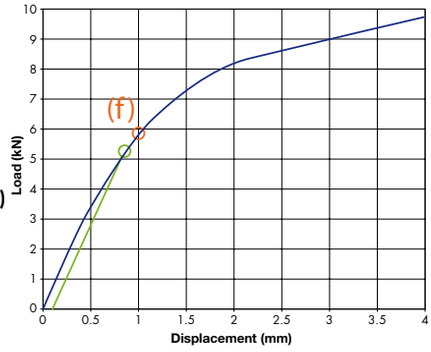
1-WAY IN-LINE SPIDER - AISI 316

Material: AISI 316 steel
Features: 1-way in-line spider for connecting one rotule joint to the load bearing structure.
Finish: polished steel.



TRACTION RESISTANCE TEST AT RIGHT ANGLES WITH THE FAÇADE

Force (f) = 554.3 daN
Value of **(f)** measured at a 1 mm displacement
(1 daN corresponds approximately to 1 kg weight)

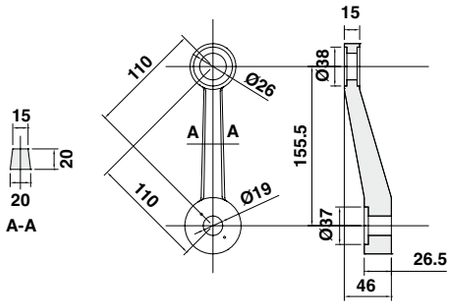


Art.	Centre distance	Weight	Q.ty
SP2204	110 mm	670 g	1 Pc

1-WAY 45° SPIDER - AISI 316

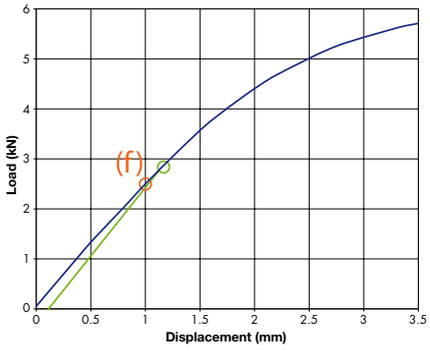
Material: AISI 316 steel

Features: 1-way 45° spider for connecting one rotule joint to load bearing structure. Finish: polished steel.



TRACTION RESISTANCE TEST AT RIGHT ANGLES WITH THE FAÇADE

Force (f) = 253 daN
Value of **(f)** measured at a 1 mm displacement
(1 daN corresponds approximately to 1 kg weight)

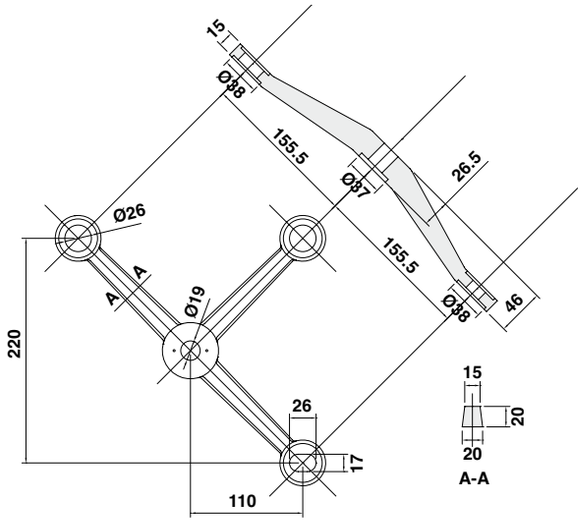


Art.	Centre distance	Weight	Q.ty
SP2205	155.5 mm	770 g	1 Pc

3-WAY SPIDER - AISI 316

Material: AISI 316 steel

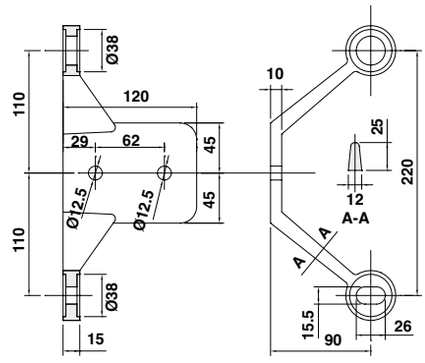
Features: 3-way spider for connecting 3 rotule joints to the load bearing structure. Finish: polished steel.



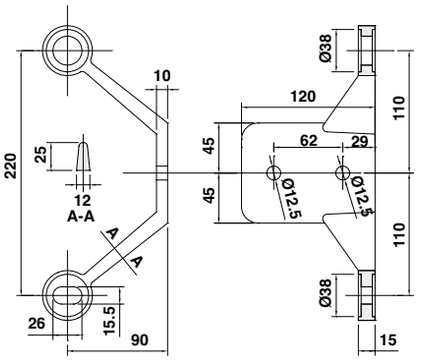
Art.	Centre distance	Weight	Q.ty
SP2206	220 mm	1700 g	1 Pc

2-WAY SPIDER FOR FITTING ON WALL AND GLASS-FIN - AISI 316

Material: AISI 316 steel
Features: in-line 2-way spider for connecting 2 rotule joints to the wall or on load bearing ribs (glass-fin).
Both right and left version - Finish: polished steel.



SP220L01

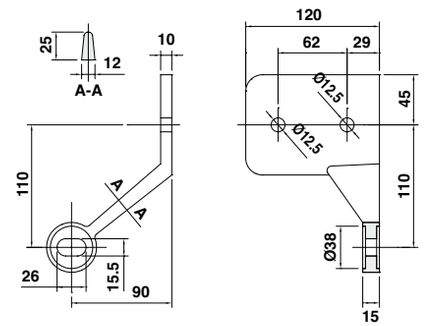


SP220L02

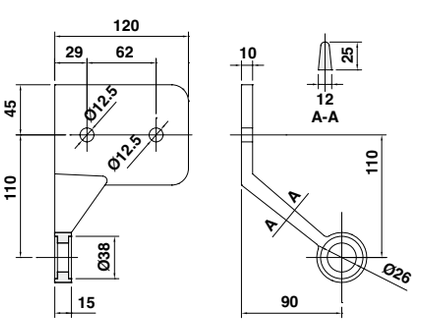
Art.	Dimensions	Description	Weight	Q.ty
SP220L01	Centre distance 220 mm	Left fitting	1350 g	1 Pc
SP220L02	Centre distance 220 mm	Right fitting	1350 g	1 Pc

1-WAY SPIDER FOR FITTING ON WALL AND GLASS-FIN - AISI 316

Material: AISI 316 steel
Features: in-line 1-way spider for connecting 1 rotule joint to the wall or on load bearing ribs (glass-fin).
Version with either slotted hole or circular hole - Finish: polished steel.



SP220L03

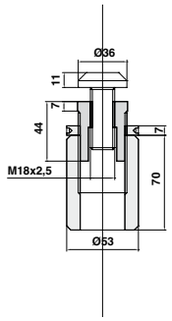


SP220L04

Art.	Dimensions	Description	Weight	Q.ty
SP220L03	Centre distance 110 mm	Slotted hole	1100 g	1 Pc
SP220L04	Centre distance 110 mm	Circular hole	1100 g	1 Pc

SPIDER CONNECTOR - AISI 316

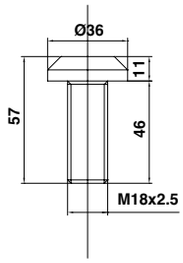
Material: casing to be welded in zinc-plated AVP, remaining parts in AISI 316
Features: spacer - adjustable connector for spider,
to be welded to load bearing structure. Supplied with AISI 316 steel screw
Finish: machined steel (CNC)



Art.	Dimensions	Weight	Q.ty
SP220Z	Ø53 mm	1000 g	1 Pc

CONNECTING SCREW FOR SPIDER - AISI 316

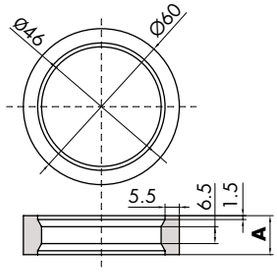
Material: AISI 316 steel
Features: connection screw for connecting the spider to the load bearing structure without a spacer. Ø36 mm with threaded pin M18x2.5 mm
pin length 46 mm.
Finish: machined steel (CNC)



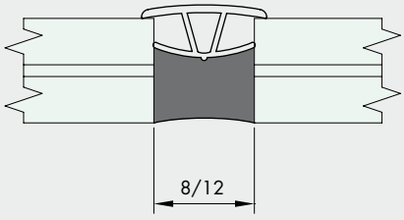
Art.	Dimensions	Q.ty
SP220Z04	Ø36 mm thread M18x46 mm - pitch 2.5 mm	1 Pc

ALUMINIUM RING NUTS

Material: aluminium
Features: ring nut for double glazing, to insert the rotule joints
Finish: matt aluminium

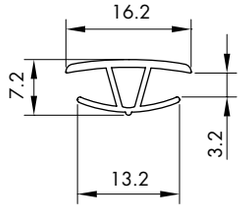


Art.	Dimensions	A	Q.ty
SP60ALL12	outer Ø 60 mm - inner Ø 46 mm	12 mm	1 Pc
SP60ALL15	outer Ø 60 mm - inner Ø 46 mm	15 mm	1 Pc
SP60ALL16	outer Ø 60 mm - inner Ø 46 mm	16 mm	1 Pc
SP60ALL20	outer Ø 60 mm - inner Ø 46 mm	20 mm	1 Pc

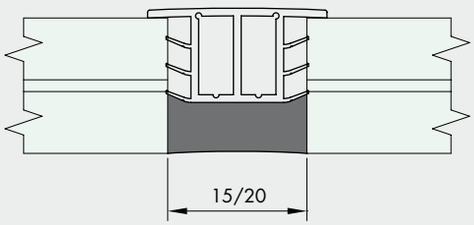


SILICONE GASKET

Material: silicone
Colour: transparent

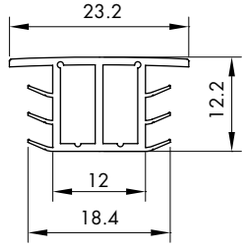


Art.	Dimensions	Q.ty
SP01	16.2 x 7.2 mm	1 m

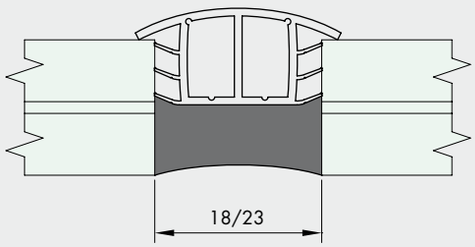


SILICONE GASKET

Material: silicone
Colour: transparent

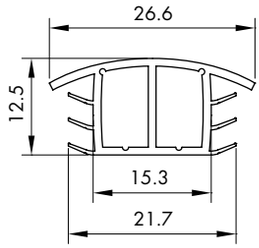


Art.	Dimensions	Q.ty
SP03	23.2 x 12.2 mm	1 m



SILICONE GASKET

Material: silicone
Colour: transparent



Art.	Dimensions	Q.ty
SP051	26.6 x 12.5 mm	1 m

ROTULE JOINT BREAK TEST

TRACTION TEST - CONCLUSIONS:

The load tests have been performed with the universal MTS810 test machine, equipped with Instron hydraulic grips. The load application equipment has been designed in order to reproduce real operating conditions. A traction load has been applied in axis with the threaded pin, until failure, operating in displacement control (5 mm/min) and measuring the force applied 20 times per second. The graph shows the results concerning the worst of the 5 samples examined.

CUTTING TEST - CONCLUSIONS:

The load tests have been performed with the universal MTS810 test machine, equipped with Instron hydraulic grips. The load application equipment has been designed in order to reproduce real operating conditions. A load has been applied in orthogonal direction to the threaded pin axis, operating in displacement control (5 mm/min) and measuring the force applied 20 times per second. The tests were discontinued at a 3000 daN load, before reaching failure; the samples however show significant permanent plastic deformations. The graph shows the results concerning the worst of the 5 samples examined.

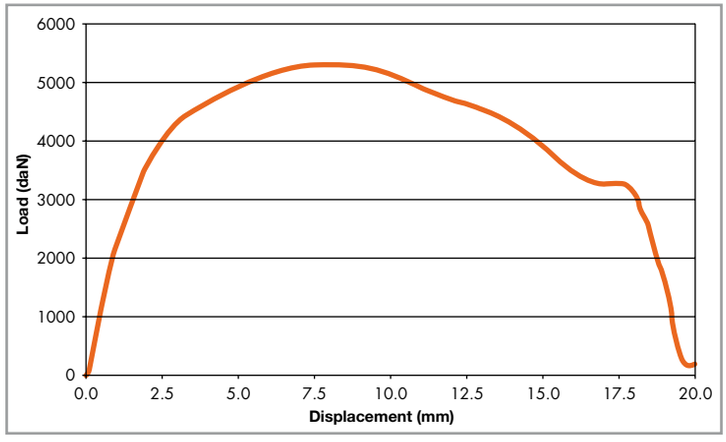
In cooperation with:

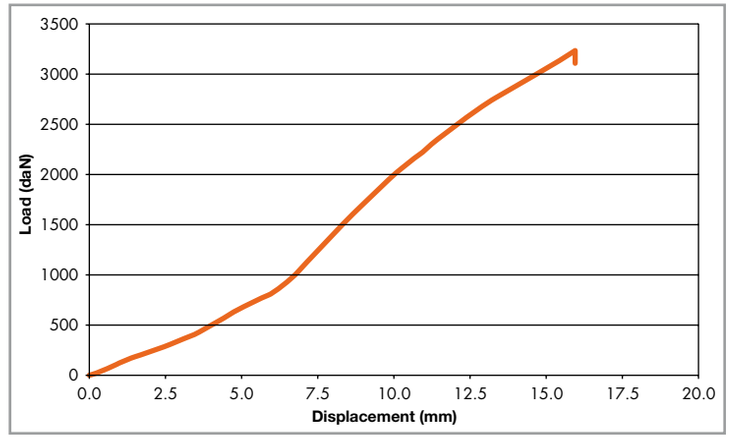
TRACTION
RESISTANCE TEST- Fn

Fn max = 890 daN
(1 daN corresponds approximately to 1 kg weight)

CUTTING
RESISTANCE TEST - Ft

Ft max = 500 daN
(1 daN corresponds approximately to 1 kg weight)



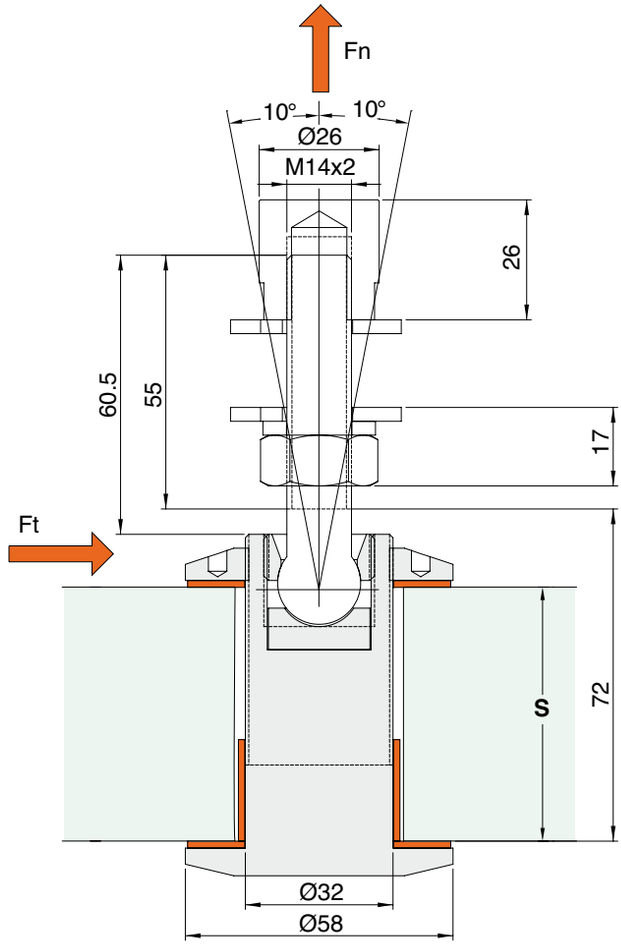


ARTICULATED ROTULE JOINT Ø58xM14 - AISI 316 GLASS THICKNESS 23/57 mm

Material: AISI 316 steel with white PVC gasket.

Features: rotule joints with M14 threaded pin, with variable ±10° tilt including fixing stud and tightening ring nut Ø58 mm. Supplied with two slotted washers, an elastic washer, a nut and a finishing bush. Suited for glass panes of variable thickness from 23 mm minimum to 57 mm maximum. Finish: machined steel (CNC).

Recommended tightening tool: **Art. UT300**



Art.	Dimensions	Glass hole	Glass thickness	Q.ty
ROT02D	Ø58 mm	Ø38 mm	S = 23 - 57 mm	1 Pc

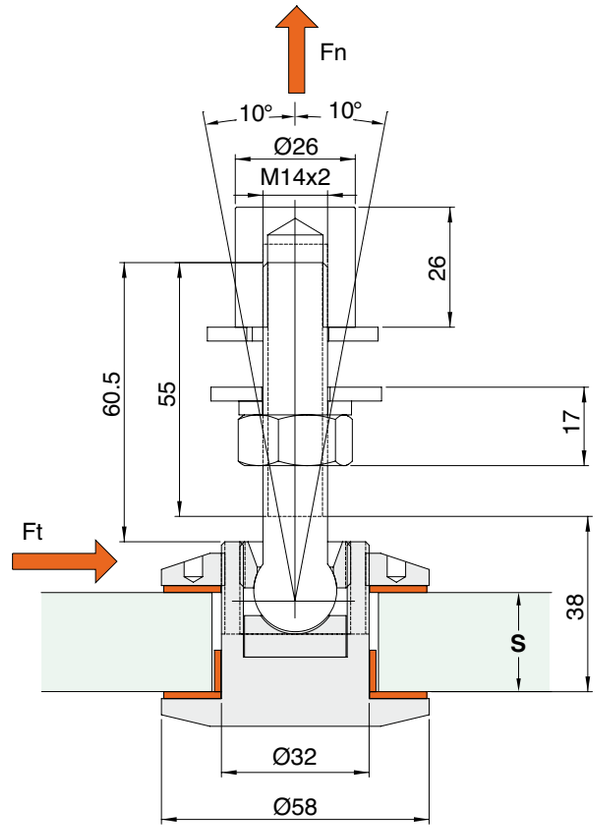
>>> PRICE LIST REFERENCE Page 28 >>>

FAÇADES - ROTULE JOINTS

ARTICULATED ROTULE JOINT Ø58xM14 - AISI 316 GLASS THICKNESS 10/23 mm

Material: AISI 316 steel with white PVC gasket.
Features: rotule joints with M14 threaded pin, with variable ±10° tilt including fixing stud and tightening ring nut Ø58 mm. Supplied with two slotted washers, an elastic washer, a nut and a finishing bush. Suited for glass panes of variable thickness from 10 mm minimum to 23 mm maximum. Finish: machined steel (CNC).

Recommended tightening tool: **Art. UT300**



Art.	Dimensions	Glass hole	Glass thickness	Q.ty
ROT02	Ø58 mm	Ø38 mm	S = 10 - 23 mm	1 Pc

>>> PRICE LIST REFERENCE Page 28 >>>