

STEEL FAÇADE FS-I

THERM⁺ FS-I — Merging glass into steel!







CONTENTS

Merging glass into steel!	4
System overview THERM ⁺ FS-I	5
The shape of things to come	6
T-connectors SC/SCL	10
Standard connector SC	10
Ladder connector SCL	11
Technology in detail	12
Overview	12
Structural steel profiles	13
Curtain wall options / drainage system	16
Gasket options	17
Corrosion protection	18
Assembly cross point	19
Glass loads SC — variant L (light)	20
Glass loads SC — variant H (heavy)	22
Glass loads SC — variant cross point glass carrier	23
Glass loads SCL — variant L (light)	24
Glass loads SCL — variant cross glass carrier	26

MERGING GLASS INTO STEEL!



Can be combined with all other THERM⁺ systems!



Excellent product properties

- Sharp edged profiles due to small radii.
- System widths 50 and 56 mm.
- Add-on construction for RAICO threaded tubes (width 50 or 60 mm).
- Infill thickness from 4 to 64 mm.
- Maximum energy saving by variable thermal insulation with insulating block options up to Um,t= 0.75 W/($m^{2}K$) including the screw influence.
- Passive house certified in all system widths.
- All profiles can be used as well for mullions as for transoms.

Optimum planning

- Threaded tubes available in many varying dimensions and wall thicknesses for a wide range of static requirements.
- Vertical curtain wall and glass roof up to 2° roof inclination.
- Different steel connectors for single bar or ladder assembly available.
- Special steel connector even for heavy loads.
- Extensive system accessories, e.g. sun protection fixations.

Efficient installation

- Integrated screw channel in tube reduces planning, manufacturing and installation costs.
- No welding needed for the curtain wall construction.
- Direct mounting of the pressure profile into the steel substructure.
- Sendzimir galvanised profiles ensure a broad corrosion protection.
- Special technology for invisible screwed transom connection of the steel tubes.
- Two options for interior gaskets.
- Guidance of gasket with one-part synthetic profile.
- Integrated drainage at the continuous gasket in three levels.
- Separation of screw penetration and water-bearing level by hat gaskets.
- Design variants: burglar-resistance up to RC3, Structural Glazing SG2, fire protection up to El 30.

Test type/Standard	Classification/Result
Wind resistance (EN 12179)	Permissible load 2.5 kN/m² \cdot Increased load 3.75 kN/m²
Air permeability (EN 12153)	AE (>600)
Water penetration (EN 12155)	RE 1950
Airborne sound insulation (if requested) (EN ISO 140-3)	$R_w(C;C_{tr}) = 34$ (-1;-4) dB until $R_w(C;C_{tr}) = 47$ (-1;-3) dB
Thermal transmittance (U_{cw} value) (DIN EN ISO 12631)	Calculation with data from RAICO $U_{m,t}$ -value tables



THE SHAPE OF THINGS TO COME

Text: Roman Felden · Photos: Andrea Jall

Just like a proud new dad — at RAICO: the latest member of the company's family of curtain wall systems is the THERM⁺ FS-I. Michael Kaufmann and his team have developed this steel curtain wall system using screw-in tubular profile sections. It is in fact a multi-parent affair, albeit with "custody" awarded to Mr Kaufmann. So what were the team's thoughts as they planned the design?

"We wanted to create a steel curtain wall system with integrated screw channel, for combining with our THERM⁺ range", explains Mr Kaufmann, before adding: "This gives architects greater freedom of movement to design, with these high- load-capacity system components at their disposal, and the people responsible for assembly are no longer obliged to put together the rigid-frame steel structure with welds, bolts or rivets. They can now screw the pressure profile directly to the structural system.

He adopted the original idea in his role as team leader for curtain walls, and lovingly nurtured the fledgling project that resulted. "I continued to develop, and then implement, the basic idea along with my team. So I am perhaps a midwife rather than a single dad."

An uncomplicated birth. Right from the start, Kaufmann and his team were at the heart of the THERM⁺ FS-I project: a functional groove with correspondingly matched, screw/ clip-on profile. When it came to fixing the pressure profile and structural system directly to each other, the key question was how to design the groove into which the screw is anchored. It took some time to determine the exact size of the gap that would allow easy insertion of the screw into the clip opening, while eliminating any play between the elements concerned. Mr Kaufmann even had to develop a new screw for the purpose. It had to be hard enough to self-tap into the steel profile and also highly resistant to corrosion, as its head may be exposed to the weather. "We have opted for a special screw that fulfils both of these requirements", he says.

Another highlight lies in the innovative T-connection system: The

standard SC connector for mullion and transom profiles has a variably adjustable fixing element designed to match internal tube-diameter tolerances. It can be transported easily, and is suitable for use with threaded tubes and standard press-on steel profiles, and also as a screw-on expansion transom and for subsequent transom installation. The SCL ladder connector can also be screwed in to provide contact pressure.

The newly born FS-I is kept nice and dry with a cover seal to stop surrounding water penetrating the screw. It is also largely impervious to temperature changes, as its onepiece plastic profile conducts considerably less heat than one made of metal. Various insulating blocks based on the existing THERM⁺ system can be used, depending on the required heat insulation and desired heat transfer coefficients. FS-I is thus certified for use in all "passive house" systems – with maximum thermal insulation of up to $U_m = 0.75$ W/(m²K), with screw factor included.

"And it's also really good to look at", says the proud joint parent. He is referring here to the reduced radii of the profile tubes, which give the FS-I its sharp-edged appearance. Architects appreciate this characteristic, because it allows them to create seamlessly merged glass façades and curtain wall profiles.

Confidential sources report that Mr Kaufmann and his helpers have already wet the new baby's head with a well-deserved beer or two. This was outside working hours of course, as midwives aren't allowed to drink on the job.



FUNCTION TESTING WITH THE FIRST PROTOTYPES FROM THE 3D PRINTER



WHAT IS THERM⁺ FS-I CAPABLE OF?

This curtain wall system with integrated screw channel is compatible with all other THERM⁺ systems. Architects can employ it freely with a massive range of dimensions and wall thicknesses, and use its sharp-edged look to create elegant, seamlessly merged glass and curtain wall profiles. Installers no longer need to worry about welding or riveting, as the FS-I system lets them screw the pressure profile and structural system directly to each other. The system also includes two different T-connectors for single-bar and ladder installation.

MISSION ACCOMPLISHED: A PROFILE TUBE WITH INTEGRATED SCREW CHANNEL AND CLIP ATTACHMENT





Scan QR code and be surprised!

EVEN MORE FREEDOM ...

Standard connector SC







- Transom to mullion connector.
- Adjuster to compensate for internal profile dimension tolerances.
- Smart Connector concept provides tolerance for the facade grid alignment.
- Threaded tube and custom steel profiles have twist lock fixings → to provide joint stability for transportation.
- Transoms fitted internally between mullions.
- Available in vertical facade and sloped glass roof formats.

... THANKS TO THE T-CONNECTORS SC AND SCL

Ladder connector SCL



- Connectors available for both threaded tube and custom steel profiles.
- On contact pressure screw fixing.
- Available in vertical facade and sloped glass roof formats.
- Also available as angled or polygon connection.

TECHNOLOGY IN DETAIL

THERM+ FS-1 under examination

- Pressure profiles and cover caps for curtain wall and roof light applications
 - Wide choice of profiles for all system widths.Project specific solutions available with short lead-in times.
 - Aesthetically pleasing flat pressure profiles with only 4 mm offset from glass surface.
 - Optimum cross point sealing system.



Gasket alignment with one-part synthetic base profile

- No gasket slippage.
- Secure pressure plate screw fixing into the steel grid.
- Slim sight-line glazing without expensive on-site welding.
- Long term quality assured by established RAICO technology.

A range of threaded tubes to meet project requirements

- System widths of 50 and 56 mm (internally 50 or 60 mm).
- Threaded tubes available in a variety of sizes and wall thicknesses.
- Covers a wide range of static requirements.
- Integrated screw channel within profile.
- Small radii corners provide almost sharp edges.









System width 50/56 mm Structural steel profiles I-Series

50



Article	Width mm	Height mm	Weight kg/m	Wall thick- ness mm	Sur- face area m	No.	l _x cm⁴	l _y cm⁴	e _x cm	e _y cm	W _x cm ³	W _y cm ³
Threaded tube 50/60/2	50	60	4,07	2	0,265	445010	23,51	16,87	3,25	2,50	7,24	6,75
Threaded tube 50/90/2	50	90	5,01	2	0,325	445015	65,03	23,79	4,94	2,50	13,16	9,52
Threaded tube 50/120/2	50	120	5,95	2	0,385	445020	134,9	30,7	6,57	2,50	20,52	12,28
Threaded tube 50/120/3	50	120	8,79	3	0,382	445025	194,11	43,73	6,56	2,50	29,60	17,94
Threaded tube 50/150/3	50	150	10,21	3	0,442	445030	345,64	53,68	8,15	2,50	42,39	21,47
Threaded tube 50/150/4	50	150	13,43	4	0,440	445035	444,75	68,09	8,14	2,50	54,66	27,24

Technical information

- Possible for assembly as mullion or transom profile.
- Profile width: 50 mm.
- Material:

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- Steel S280GD + Z275MAO
- Surface: sendzimir galvanised.
- Execution class EXC2.
- PU: 7 m.

System width 50/56 mm **Structural steel profiles** I-Series



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Article	Width mm	Height mm	Weight kg/m	Wall thick- ness mm	Sur- face area m	No.	l _x cm⁴	l _y cm⁴	e _x cm	e _y cm	W _x cm³	W _y cm³
Threaded tube 60/60/2	60	60	4,38	2	0,285	445060	26,9	25,61	3,23	3,00	8,33	8,54
Threaded tube 60/90/2	60	90	5,32	2	0,345	445065	72,85	35,7	4,91	3,00	14,82	11,90
Threaded tube 60/90/4	60	90	10,28	4	0,340	445070	132,08	64,79	4,88	3,00	27,05	21,60
Threaded tube 60/120/2	60	120	6,27	2	0,405	445075	148,95	45,8	6,54	3,00	22,76	15,27
Threaded tube 60/120/4	60	120	12,17	4	0,400	445080	275,26	83,64	6,51	3,00	42,26	27,88

Technical information

- Possible for assembly as mullion or transom profile.

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- Profile width: 60 mm.
- Material:
 Steel S280GD + Z275MAO
- Surface: sendzimir galvanised.
- Execution class EXC2.
- PU: 7 m.

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System width 50/56 mm Structural steel profiles I-Series







Article	Width mm	Height mm	Weight kg/m	Wall thick- ness mm	Sur- face area m	No.	l _x cm⁴	l _y cm⁴	e _x cm	e _y cm	W _x cm ³	W _y cm³
Threaded tube 60/150/3	60	150	10,68	3	0,462	445085	378,31	80,28	8,12	3,00	46,57	26,76
Threaded tube 60/150/4	60	150	14,05	4	0,460	445090	487,71	102,48	8,11	3,00	60,14	34,16
Threaded tube 60/180/3	60	180	12,10	3	0,522	445095	602,72	94,92	9,70	3,00	62,15	31,64
Threaded tube 60/180/5	60	180	19,70	5	0,517	445100	946,86	145,38	9,67	3,00	97,96	48,46
Threaded tube 60/180/5	60	180	19,70	5	0,517	445100.F10000	946,86	145,38	9,67	3,00	97,96	48,46
Threaded tube 60/200/5	60	200	21,27	5	0,557	445105	1247,02	160,55	10,71	3,00	116,48	53,52
Threaded tube 60/200/5	60	200	21,27	5	0,557	445105.F10000	1247,02	160,55	10,71	3,00	116,48	53,52

Technical information

- Possible for assembly as mullion or transom profile.
- Profile width: 60 mm.
- Material:
- Steel S280GD + Z275MAO
- Surface: sendzimir galvanised.
- Execution class EXC2.
- PU: 7 m.
- PU: 10 m for no. 445100.F10000 and 445105.F10000.

Steel curtain wall 50/56 mm Curtain wall options/drainage system

SG2 Structural Glazing

- System widths of 50 and 56 mm
- Glazing system provides all glass appearance
- High thermal performance using SG insulation blocks
- Simple and economic fabrication

Burglar proof curtain wall RC2/RC3 - System widths 50, and 56 mm.

- Simple processing.

- Optimized design variant.

 Non visible glass retention on screens up to 8 m (subject to local building standards)

- Resistance class RC2 and RC3 permitted.

- Identical technology to the basic system.







- Tested up to E30/EW30/EI30.
- Mullion-transom connection with steel connector SCL.
- Only a few additional components required.

Drainage system

- The drainage groove of the mullion and transom gasket is arranged on various levels.
- In all THERM⁺ systems the ventilation and drainage principle is so designed that a controlled condensate removal from transom to the mullion rebate is secured via interior gaskets.
- Separation of screw penetration and water-bearing level.



Steel curtain wall 50/56 mm Gasket options

Exterior gasket

- Various exterior gaskets and insulating block options available.
- Gradual adaptation of the insulation value.Maximum thermal insulation up to
- U_{m,t}= 0.75 W/(m²K) including screw influence. – Certified passive house curtain wall.
- Economic solution.



Insulating block 9



Insulating block 21

Insulating block P

Insulating block PH

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Transom and mullion gaskets

- Optimised shape for maximum thermal insulation and efficient fabrication.
- Complete covering and sealing of the base profile.
- Available in two materials: EPDM or silicone.
- Perfect and easy fitting on the structural profile (without silicone).
- Two options of gaskets with flaps for transom and base drainage as well as draining within the continuous gasket at the structural connections.
- Reliable drainage in two or three levels by simply notching.
- Tested with a roof inclination of up to 2°
- Special accessories for all applications,
 e. g. transom and mullion sealing elements.

Interior gasket options

- Type "S" for assembly with lateral guidance and fixation by a synthetic base profile.
- Type "L" with lateral lips for visual optimization using big radiuses of structural profiles lateral guidance like type "S".



Mullion gasket S



Base gasket for transom S with flap



Mullion gasket L



Polygon gasket



Transom gasket S



Gasket for transom S with flap



Transom gasket L



Mullion gasket single glazing

Steel curtain wall 50/56 mm **Protection against corrosion**

- Optimal corrosion protection
 - Proven THERM⁺ sealing technology ensures controlled drainage of condensate and prevents ingress of humidity.
 - Access to all surfaces enables easy and efficient treatment against corrosion.
 - Further corrosion protection with Sendzimir process pre-galvanised coated finish (See also RAICO coating guidelines for top coat finishes).



Synthetic base profile

- Push fit or lightly tap in with a mallet.
- Roll on the internal gaskets in the correct orientation.
- Plug in technology allows for quick and simple processing with just a few additional components.



Maximum cross point safety

- Choice of glass carriers to suit glass loads.
- Safe glass load retention with short length aluminium base profile.
- Base profile adapter for interior gasket alignment.
- Choice of SC and SCL steel connectors.



Steel curtain wall 50/56 mm **Admissible glass loads for steel connector SC – variant L (light)** Open screw channel (1 glass carrier per side)





Technical information

- The tests and evaluations for determining the glass loads were carried out according to EN 16758. A max. tipping over of 1 mm is recommended.
- The safety coefficients on the point of application side are extracted from the National Annexes (Germany) of the EUROCODES.
- A combination of glass load and horizontal load is calculated by linear interaction.
- The indicated wind loads refer to the maximum glass weight of 500 kg or 300 kg.
- Deviating constructions available on request.
- For the use of interior gaskets 26 mm please consult the RAICO customer service.
- The glass weights of all variants can be applied similarly to commercial steel tubes for the various fixing options of the base profiles (except the welded screw channel). They refer to one field.
- Intermediate figures can be interpolated.
- *Minimum face width 50 mm.
- $** Y_{\alpha} = 1.5$ considered.

Wall	Transom*			Eccer		Rated value			
thickness	Depth x	28	32	36	40	44	48	52	wind pressure/ suction**
mullion	thickness			Glass	F _{zul}				
	≥ 60 x 2	300	300	300	242	196	163	138	8.0 kN
	≥ 90 x 2	500	479	367	290	235	196	166	7.5 kN
> 2 mm	≥ 90 x 4	500	479	367	290	235	196	166	8.5 kN
2211111	≥ 120 x 2	500	479	367	290	235	196	166	8.0 kN
	≥ 120 x 3	500	479	367	290	235	196	166	9.5 kN
	≥ 120 x 4	500	479	367	290	235	196	166	9.0 kN

Fitness for use – tipping over 1.0 mm

Fitness for use – tipping over 2.0 mm

Wall	Transom*				Rated value				
thickness	Depth x	28	32	36	40	44	48	52	wind pressure/ suction**
mullion	thickness			F _{zul}					
	≥ 60 x 2	300	300	300	300	291	241	203	8.0 kN
	≥ 90 x 2	500	500	500	454	369	306	257	7.5 kN
> 2 mm	≥ 90 x 4	500	500	500	454	369	306	257	8.5 kN
2 2 11111	≥ 120 x 2	500	500	500	454	369	306	257	8.0 kN
	≥ 120 x 3	500	500	500	454	369	306	257	9.5 kN
	≥ 120 x 4	500	500	500	454	369	306	257	9.0 kN

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Technical information

- The tests and evaluations for determining the glass loads were carried out according to EN 16758. A max. tipping over of 1 mm is recommended.
- The safety coefficients on the point of application side are extracted from the National Annexes (Germany) of the EUROCODES.
- A combination of glass load and horizontal load is calculated by linear interaction.
- The indicated wind loads refer to the maximum glass weight of 500 kg or 300 kg.
- Deviating constructions available on request.
- For the use of interior gaskets 26 mm please consult the RAICO customer service.
- The glass weights of all variants can be applied similarly to commercial steel tubes for the various fixing options of the base profiles (except the welded screw channel). They refer to one field.
- Intermediate figures can be interpolated.
- *Minimum face width 50 mm.
- $** Y_{\alpha} = 1.5$ considered.



Fitness for use – tipping over 1.0 mm	Fitness	for use	– tipping	over 1.	0 mm
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Wall	Transom*			Eccer	Rated value				
thickness	Depth x	28	32	36	40	44	48	52	wind pressure/ suction**
mullion	thickness			F _{zul}					
	≥ 60 x 2	300	300	300	277	225	187	159	8.0 kN
	≥ 90 x 2	500	500	425	336	273	227	192	7.5 kN
> 2 mm	≥ 90 x 4	500	500	500	403	327	272	231	8.5 kN
22100	≥ 120 x 2	500	500	500	420	341	283	240	8.0 kN
	≥ 120 x 3	500	500	500	420	341	283	240	9.5 kN
	≥ 120 x 4	500	500	500	420	341	283	240	9.0 kN

Fitness for use - tipping over 2.0 mm

M/all	Transom*			Eccer	Rated value				
thickness	Depth x	28	32	36	40	44	48	52	wind pressure/ suction**
mullion	thickness			Glass	weigh	ıt [kg]		F _{zul}	
	≥ 60 x 2	300	300	300	300	300	279	235	8.0 kN
	≥ 90 x 2	500	500	500	500	433	359	302	7.5 kN
> 2 mm	≥ 90 x 4	500	500	500	500	495	410	345	8.5 kN
≥ ∠ 11111	≥ 120 x 2	500	500	500	500	495	410	345	8.0 kN
	≥ 120 x 3	500	500	500	500	500	421	355	9.5 kN
	≥ 120 x 4	500	500	500	500	500	421	355	9.0 kN

Steel curtain wall 50/56 mm Admissible glass loads for steel connector SC – variant H (heavy) Closed screw channel (2 glass carriers per side)





Technical information

- The tests and evaluations for determining the glass loads were carried out according to EN 16758. A max. tipping over of 1 mm is recommended.
- The safety coefficients on the point of application side are extracted from the National Annexes (Germany) of the EUROCODES.
- A combination of glass load and horizontal load is calculated by linear interaction.
- The indicated wind loads refer to the maximum glass weight of 700 kg.
- Deviating constructions available on request.
- The glass weights of all variants can be applied similarly to commercial steel tubes for the various fixing options of the base profiles (except the welded screw channel). They refer to one field.
- Intermediate figures can be interpolated.
- *Minimum face width 50 mm.
- $** \Upsilon_{q} = 1.5$ considered.

Fitness for use - tipping over 1.0 mm

Wall	Transom*			Eccer		Rated value			
thickness	Depth x	28	32	36	40	44	48	52	wind pressure/ suction**
mullion	thickness			Glass	F _{zul}				
	≥ 90 x 4	700	700	676	550	457	387	333	7.0 kN
≥ 2 mm	≥ 120 x 3	700	700	700	597	497	420	362	8.5 kN
	≥ 120 x 4	700	700	700	637	530	449	386	7.5 kN

Fitness for use - tipping over 2.0 mm

Wall	Transom*	Eccentricity [mm]							Rated value
thickness	Depth x	28	32	36	40	44	48	52	wind pressure/ suction**
mullion	thickness			Glass	F _{zul}				
	≥ 90 x 4	700	700	700	700	700	599	516	7.0 kN
≥ 2 mm	≥ 120 x 3	700	700	700	700	700	683	588	8.5 kN
	≥ 120 x 4	700	700	700	700	700	683	588	7.5 kN



Closed screw channel (1 glass carrier per side)

Technical information

- The tests and evaluations for determining the glass loads were carried out according to EN 16758. A max. tipping over of 1 mm is recommended.
- The safety coefficients on the point of application side are extracted from the National Annexes (Germany) of the EUROCODES.
- A combination of glass load and horizontal load is calculated by linear interaction.
- The indicated wind loads refer to the maximum glass weight of 750 kg or 1000 kg.
- Deviating constructions available on request.
- In case of an additional load please consult the RAICO customer service.
- The glass weights refer to one field. All variants can be applied similarly to commercial steel tubes for the various fixing options of the base profiles (except the welded screw channel). In case of the demand for a cross glass carrier with two fields, please consult the RAICO customer service.
- Intermediate figures can be interpolated.
- *Minimum face width 50 mm.
- $** \Upsilon_{q} = 1.5$ considered.



Fitness	for	use –	tipping	over	1.0	mm
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Wall	Transom*			Rated value						
thickness	Depth x	28	32	36	40	44	48	52	wind pressure/ suction**	
mullion	thickness			F _{zul}						
≥ 2mm	≥ 90 x 2	750	750	750	750	750	750	750	14.0 kN	
	≥ 90 x 4	1.000	1.000	1.000	1.000	1.000	1.000	1.000	13.0 kN	
	≥ 120 x 2	750	750	750	750	750	750	750	14.0 kN	
	≥ 120 x 3	1.000	1.000	1.000	1.000	1.000	1.000	1.000	13.0 kN	
	≥ 120 x 4	1.000	1.000	1.000	1.000	1.000	1.000	1.000	13.0 kN	

Steel curtain wall 50/56 mm Admissible glass loads for steel connector SCL – variant L (light) Open screw channel (1 glass carrier per side)





Technical information

- The tests and evaluations for determining the glass loads were carried out according to EN 16758. A max. tipping over of 1 mm is recommended.
- The safety coefficients on the point of application side are extracted from the National Annexes (Germany) of the EUROCODES.
- A combination of glass load and horizontal load is calculated by linear interaction.
- The indicated wind loads refer to the maximum glass weight of 500 kg or 300 kg.
- Deviating constructions available on request.
- For the use of interior gaskets 26 mm please consult the RAICO customer service.
- The glass weights of all variants can be applied similarly to commercial steel tubes for the various fixing options of the base profiles (except the welded screw channel). They refer to one field.
- Intermediate figures can be interpolated.
- *Minimum face width 50 mm.
- $** Y_{\alpha} = 1.5$ considered.

Wall	Transom*			Rated value					
thickness	Depth x	28	32	36	40	44	48	52	wind pressure/ suction**
mullion	thickness			F _{zul}					
≥ 2 mm	≥ 60 x 2	300	300	300	284	231	192	163	23.5 kN
	≥ 90 x 2	500	471	360	284	231	192	163	19.5 kN
	\geq 90 x 4	500	471	360	284	231	192	163	21.5 kN
	≥ 120 x 2	500	471	360	284	231	192	163	20.5 kN
	≥ 120 x 3	500	471	360	284	231	192	163	23.5 kN
	≥ 120 x 4	500	471	360	284	231	192	163	23.5 kN

Fitness for use - tipping over 1.0 mm

Fitness for use – tipping over 2.0 mm

Wall	Transom*			Rated value							
thickness	Depth x	28	32	36	40	44	48	52	wind pressure/ suction**		
mullion	thickness			F _{zul}							
	≥ 60 x 2	300	300	300	300	300	294	248	23.5 kN		
	≥ 90 x 2	500	500	500	437	355	294	248	19.5 kN		
≥ 2 mm	≥ 90 x 4	500	500	500	437	355	294	248	21.5 kN		
	≥ 120 x 2	500	500	500	437	355	294	248	20.5 kN		
	≥ 120 x 3	500	500	500	437	355	294	248	23.5 kN		
	≥ 120 x 4	500	500	500	437	355	294	248	23.5 kN		



Technical information

- The tests and evaluations for determining the glass loads were carried out according to EN 16758. A max. tipping over of 1 mm is recommended.
- The safety coefficients on the point of application side are extracted from the National Annexes (Germany) of the EUROCODES.
- A combination of glass load and horizontal load is calculated by linear interaction.
- The indicated wind loads refer to the maximum glass weight of 500 kg or 300 kg.
- Deviating constructions available on request.
- For the use of interior gaskets 26 mm please consult the RAICO customer service.
- The glass weights of all variants can be applied similarly to commercial steel tubes for the various fixing options of the base profiles (except the welded screw channel). They refer to one field.
- Intermediate figures can be interpolated.
- *Minimum face width 50 mm.
- -** $V_{\alpha} = 1.5$ considered.



Fitness for use - tipping over 1.0 mm

Wall	Transom*			Rated value							
thickness mullion	Depth x	28	32	36	40	44	48	52	wind pressure/ suction**		
	thickness			F _{zul}							
≥ 2 mm	≥ 60 x 2	300	300	300	300	273	227	192	23.5 kN		
	≥ 90 x 2	500	500	425	336	273	227	192	19.5 kN		
	≥ 90 x 4	500	500	478	378	307	255	216	21.5 kN		
	≥ 120 x 2	500	500	425	336	273	227	192	20.5 kN		
	≥ 120 x 3	500	500	478	378	307	255	216	23.5 kN		
	≥ 120 x 4	500	500	478	378	307	255	216	23.5 kN		

Fitness for use - tipping over 2.0 mm

M/all	Transom*			Eccer	Rated value				
thickness mullion	Depth x	28	32	36	40	44	48	52	wind pressure/ suction**
	thickness			Glass	Fzul				
≥ 2 mm	≥ 60 x 2	300	300	300	300	300	300	288	23.5 kN
	≥ 90 x 2	500	500	500	500	412	342	288	19.5 kN
	≥ 90 x 4	500	500	500	500	474	393	331	21.5 kN
	≥ 120 x 2	500	500	500	500	426	353	297	20.5 kN
	≥ 120 x 3	500	500	500	500	474	393	331	23.5 kN
	≥ 120 x 4	500	500	500	500	474	393	331	23.5 kN

Steel curtain wall 50/56 mm Admissible glass loads for steel connector SCL – variant cross glass carrier Closed screw channel (1 glass carrier per side)





Technical information

- The tests and evaluations for determining the glass loads were carried out according to EN 16758. A max. tipping over of 1 mm is recommended.
- The safety coefficients on the point of application side are extracted from the National Annexes (Germany) of the EUROCODES.
- A combination of glass load and horizontal load is calculated by linear interaction.
- The indicated wind loads refer to the maximum glass weight of 750 kg or 1000 kg.
- Deviating constructions available on request.
- In case of an additional load please consult the RAICO customer service.
- The glass weights refer to one field. All variants can be applied similarly to commercial steel tubes for the various fixing options of the base profiles (except the welded screw channel). In case of the demand for a cross glass carrier with two fields, please consult the RAICO customer service.
- Intermediate figures can be interpolated.
- *Minimum face width 50 mm.
- $-** \gamma_{q} = 1.5$ considered.

Fitness for use – tipping over 1.0 mm

Wall	Transom*			Eccei	Rated value				
thickness	Depth x	28	32	36	40	44	48	52	wind pressure/ suction**
mullion	thickness			Glass	F _{zul}				
≥ 2mm	≥ 90 x 2	750	750	750	750	750	750	750	23.5 kN
	≥ 90 x 4	1.000	1.000	1.000	1.000	1.000	1.000	1.000	21.0 kN
	≥ 120 x 2	750	750	750	750	750	750	750	23.5 kN
	≥ 120 x 3	1.000	1.000	1.000	1.000	1.000	1.000	1.000	21.5 kN
	≥ 120 x 4	1.000	1.000	1.000	1.000	1.000	1.000	1.000	21.0 kN

THE NEXT STEPS?

Further information ...

Pfosten-Riegelstoß ohne Spalt

... can be found in our planning and processing manuals!

The planning and processing documents THERM⁺ S-I/ FS-I offer architects, technical planners and processors an ideal starting point to create the most diverse steel façades. Apart from standard sections and numerous connection details the documents contain information showing the design, variations and selection tables to determine the materials required.

You can find quick and convenient access to all data in pdf format in the download area of our website at www. raico.de. For printed versions of the planning or processing manual, please contact your local RAICO consultant.



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THERM⁺ FS-I ladder connector SCL youtu.be/zZBubMXNmag



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