System Schröders®
Innovation Tür und Tor

Installation and maintenance instructions

ModulSystem Schröders

Hinged steel doors / gates

open the System Schröders - door

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ModulSystem Schröders hinged steel doors / gates

Single-leaf version

Combinable performance characteristics
(please note any technical limitations)

- Fire resistance	$EI_2$30 - $EI_2$120
- Fire resistance	T30/T90
- Fire resistance	E30-E240
- Smoke control	S_{a4}/S_{200}
- Smoke control	RS
- Continous operation	C2 - C5
- Bullet resistance	up to class FB6
- Burglar resistance	up to class RC4
- Acoustic performance	up to 53 db
- Resistance to wind load	up to class C5
- Airtightness	up to class 4
- Watertightness	up to class 8A
- Positive and negative pressure	up to 5,000 Pa
- Thermal insulation	$U_D \geq 1.3$ W/(m²K)

Double-leaf version

Combinable performance characteristics
(please note any technical limitations)

- Fire resistance	$EI_2$30 - $EI_2$90
- Fire resistance	T30/T90
- Fire resistance	E30-E240
- Smoke control	S_{a4}/S_{200}
- Smoke control	RS
- Continous operation	C2 - C5
- Bullet resistance	up to class FB6
- Burglar resistance	up to class RC4
- Acoustic performance	up to 48 db
- Resistance to wind load	up to class C4
- Airtightness	up to class 3
- Watertightness	up to class 4A
- Positive and negative pressure	up to 3,800 Pa
- Thermal insulation	$U_D \geq 1.2$ W/(m²K)

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1. General information

1.1 Foreword

This manual is divided into descriptive texts and illustrations that show you the various steps involved in installing doors and fittings, as well as care and maintenance. We have compiled this manual with the utmost care, but for reasons of clarity we are unable to describe all possible installation, operation and maintenance variants. We only provide relevant examples here, which must be applied accordingly.

No guarantee of completeness is given; technical changes are reserved and do not entitle the purchaser to make a complaint.

If you require additional information for your local situation, you can request this directly from the door manufacturer (see label).

Please note that working with and on heavy loads and with electrical or manual tools can lead to injury, death and/or damage/destruction of the product. Only use safe lifting equipment and have work that is not part of your area of responsibility carried out by appropriate specialists (e.g. electricians).

Handle the delivered product with care, check the delivery note to ensure that the delivery is complete and follow the installation instructions provided by the hardware manufacturer with the respective products.

Keep these instructions in a safe place.

1.2 General

- The installation instructions are based on the general building authority approvals, the general building authority test certificates in their current and valid version, the European classification reports and the reports on the extended scope of application of the respective design, as well as the current DIN 18093 "Installation of fire and/or smoke protection closures: Installation and maintenance".
- **The instructions apply mutatis mutandis to all Schröders hinged doors, including doors without fire and/or smoke protection functions, but are not binding for these multi-purpose doors.**
- Any printing errors or missing information do not entitle the purchaser to make any claims.
- We reserve the right to make technical changes.
- When fastening with dowels, only dowels that comply with technical building regulations and are suitable for the respective wall type may be used.
- If accessories other than those described in these installation instructions, such as fittings, handle sets, locks and/or locking devices, are used, the manufacturer's special installation instructions must be used and applied accordingly.
- However, the basic prerequisite for installation is always that suitability, if required (especially for fire and/or smoke protection), has been verified and the components are marked accordingly.

Fire protection closures in exterior walls:

The external wall is the wall of a building that separates the outside area/climate from the interior. If approved doors are installed in external walls for this purpose, care must be taken to ensure that they are not exposed to direct weathering as far as possible. This can be supported by structural protective measures such as rain guards or canopies. Door leaves, frames and built-in/attached components must be protected against water ingress by sealing them as far as possible.

Smoke protection:

Smoke protection doors must be equipped with a sliding or drop-down floor seal to seal the air gap at the bottom. The floor surface in the opening area must be horizontal, level, smooth, solid and joint-free. When using sliding seals and in the case of uneven floors in the opening area (e.g. with tile joints, raw concrete), a hump threshold must be installed on the floor. The wall connection joints must be sealed on one side with a permanently elastic sealant (e.g. with paintable acrylic).

Electrical work/locking system: Always work with the power disconnected!

The connection of the power supply/power supply unit to the public power grid (hard-wiring of the power supply to 230V AC) may only be carried out by authorised persons in accordance with the applicable VDE regulations and guidelines. Power supply units that are already plug-ready can be plugged directly into a socket provided by the customer. Electric door openers, block locks, locking devices, smoke detectors, etc. can be connected directly to the low-voltage terminals (24V DC) in accordance with the circuit diagram, provided that the available current (A) is sufficient.

After the installation of a general building authority-approved hold-open system is ready for operation, its proper functioning must be ensured by means of an acceptance test. This must be carried out by the manufacturer's specialists or by persons authorised by the manufacturer. It must be arranged/commissioned by the operator.

The hold open system must be kept in constant working order by the operator and checked for proper functioning at least once a month in the first year and then quarterly thereafter. In addition, the operator is obliged to have maintenance carried out at least once a year.

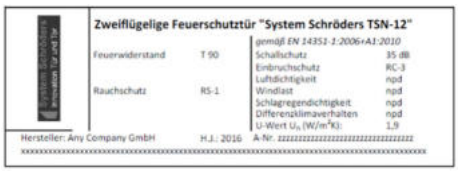
Preparation for installation

The specifications of the general building approval (abZ) and any other performance certificates (e.g. general building test certificate (abP), general and construction project-related expert reports, etc.) must be observed.

All information on "doors" also applies to "flaps" and designs designated as "gates" due to their size or function.

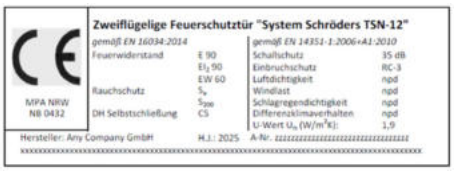
Check the door type for the respective opening using the manufacturer's delivery documents in conjunction with the door's identification plate (usually in the door rebate of the active leaf, see point **4**). Fire and smoke protection doors in interior areas have a Ü mark **and** a K mark; multi-purpose doors in interior areas only have a K mark (until EN14351-2 is harmonised); fire/smoke protection and multi-purpose doors in exterior areas (according to EN 14351-1) and **all** gates (according to EN 13241) receive a CE marking label.

K mark



Ü mark

CE mark



The door frame and door leaf are delivered as a complete unit (possibly in individual parts that can be screwed or welded together) and must only be installed as such.

The wall type and thickness must comply with the specifications in section **2.2** of these instructions.

The completeness of all delivered parts must be checked against the delivery note before installation.

The rough opening (width x height), the opening direction (DIN right or DIN left) using the delivery documents, and the height (1m level, meter mark) for installation. Marking the required meter mark and maintaining the metre line until acceptance is the responsibility of the client/site manager (**see VOB Part B, DIN 1961 §3 and DIN 18360**).

The door frame is usually supplied as a corner frame and may be extended to form a surrounding frame with an additional frame. For transport reasons, frames and additional frames may be delivered in several parts and assembled/connected on site.

In principle, anchoring must be carried out in accordance with the anchor plans under points **4.**1 and **4.2**, and the sequence of work steps in accordance with points **5.1** and **5.5**. **ALWAYS use ALL fastening/anchor points pre-set by the manufacturer, back them up with pressure-resistant material and fasten them according to the frame variant and wall type.**

We recommend fully mortaring the corner frames of fire doors (see also point 3.1). Minor cavities/hollow spaces are permissible due to the grouting process, but should be avoided as far as possible. The adhesive bond between the frame and the mortar does not need to be verified after setting. It is therefore not a cause for concern if the mortar detaches from the frame after setting. The frame mirror may remain unfilled if the frame rests on the building wall with relatively few gaps. In the case the door frame sticks out of the wall or uneven walls, care must be taken to mortaring the frame mirror as far as possible.

Post-installation finishing

The door leaves, frames and, in the case of fire protection closures, the "THELESOL" fire protection strips may be coated with all common primers and paints. Paints that intumescent in the event of fire are not permitted.

The elastic rubber seals, as well as the lock faceplate, lock latches and bolts, **must not** be painted over and must be removed/masked off before painting and reinstalled after drying.

After installation, all door and accessory parts must be tested for proper interaction (functional test) and corrected if necessary (see also Maintenance).

The door installation, door closers, closing sequence control, sealing profiles, fittings and any hold-open system must comply in every detail with these installation instructions and the applicable approvals and installation instructions. Deviations are only permitted after consultation with the door manufacturer.

If fire and smoke protection doors are normally open, they may only be held open using a suitable and approved hold-open system.

When installing smoke, soundproof or exterior doors, ensure that the floor is smooth and level in the area of the floor seal. A floor threshold may be required on site.

When installing fire and smoke protection doors at a great height (if the lower edge of the shell opening is >500 mm above the upper edge of the floor on one or both sides), a lower fire and smoke protection seal (optionally frame on four sides) must be fitted.

For fire doors with general building authority approval (abZ), combustible floor coverings must be **separated** under the door.

1.3 Scope of application: Door/gate type

The instructions apply to fire and/or smoke protection doors and are to be applied mutatis mutandis to multi-purpose and security doors from the System Schröders. For fire doors, they are part of the general building authority approval or classification, so these instructions apply to the following door types:

1) Fire doors with and without smoke protection properties with general building authority approval (abZ) / general type approval (aBG) in accordance with DIN 4102 and smoke protection doors with general building authority test certificate (abP) in accordance with DIN 18095.

1-leaf

T30-1 FSA or T30-1-RS-FSA "System Schröders TSN-1"
T90-1 FSA or T90-1-RS-FSA "System Schröders TSN-11"
RS-1 " System Schröders RSN-1 " (DIN 18095)

2-leaf

T30-2 FSA or T30-2-RS-FSA "System Schröders TSN-2"
T90-2 FSA or T90-2-RS-FSA "System Schröders TSN-12"
RS-2 "System Schröders RSN-2 " (DIN 18095)

2) Fire protection closures with and without smoke protection and smoke protection closures, CE marked in accordance with EN16034 and EN13241/EN 14351-1.

1-leaf

EI_2 30 S_{a4} /S_{200} C2-C5 "System Schröders TSN-1"
EI_2 60 S_{a4} /S_{200} C2-C5 "System Schröders TSN-3"
EI_2 90 S_{a4} /S_{200} C2-C5 "System Schröders TSN-11"
S_{a4} /S_{200} C2-C5 "System Schröders RSN-1 " (EN1634-3)

EI_2 60 S_{a4} /S_{200} C2-C5 "System Schröders EIS-1"
EI_2 120 S_{a4} C_2 -C5 "System Schröders EIS11"

E60 C2-C5 "System Schröder ES-1"
E120 C2-C5 "System Schröders ES-1"
E180 C2-C5 "System Schröders ES-1
E240 C2-C5 "System Schröders ES-1"

2-leaf

EI_2 30 S_{a4} /S_{200} C2-C5 "System Schröders TSN-2"
EI_2 60 S_{a4} /S_{200} C2-C5 "System Schröders TSN-4"
EI_2 90 S_{a4} /S_{200} C2-C5 "System Schröders TSN-12"
S_{a4}/S_{200} C2-C5 "System Schröders RSN-2" (EN 1634-3)

EI_2 60 S_{a4}/S_{200} C2-C5 "System Schröders EIS-2"
EI_2 90 S_{a4} /S_{200} C2-C5 "System Schröders EIS-12"

E60 C2-C5 "System Schröders ES-2"
E120 C2-C5 "System Schröders ES-2"
E180 C2-C5 "System Schröders ES-2
E240 C2-C5 "System Schröders ES-2"

3) Multi-purpose doors without fire or smoke protection.

1-leaf

Single-leaf exterior door	"System Schröders ASN-1“
Single-leaf interior door	"System Schröders ISN-1"
Single-leaf bullet-resistant door	"System Schröders FBN-1"
Single-leaf burglar-resistant door	"System Schröders ESN-1"
Single-leaf soundproof door	"System Schröders SN-1"

2-leaf

Double-leaf external door	"System Schröders ASN-2"
Double-leaf interior door	"System Schröders ISN-2"
Double-leaf bullet-resistant door	"System Schröders FBN-2"
Double-leaf burglar-resistant door	"System Schröders ESN-2"
Double-leaf soundproof door	"System Schröders SN-2"

2. Types of walls

2.1 Wall types for fire and smoke protection closures

(*Door size* restrictions only apply to doors with abZ/aBG or abP)

1) Walls made of **masonry** in accordance with DIN 771-1 with a minimum compressive strength of 12, with masonry mortar and frame grouting mortar in accordance with DIN 998-2 mortar class 5 or DIN 18580 mortar group ≥ II

2) Walls made of (steel) **concrete** with a minimum strength class of C12/15 in accordance with EN1992

3) Walls made of aerated concrete blocks or flat blocks in accordance with DIN EN 771-4 DFK 4 or reinforced, horizontal or vertical aerated concrete wall panels DFK 4 with mortar at least mortar group II or thin-bed mortar at least mortar group III.

4) Flexible walls

Installation in classified walls made of gypsum boards (**height ≤ 5000 mm**) – at least fire resistance class F90, designation (abbreviation) F90-A – with steel uprights and crossbars with cladding on both sides made of plasterboard (GKF) and a non-combustible mineral wool insulation layer, which are certified as follows :

- according to DIN 4102-4 Table 10.2

(W x H) ≤ 1250/2500 x ≤ 2500 mm		Thickness ≥ 100 mm

or

- by general type approval

No. Z-19.32-2163	S31	Thickness ≥ 95 mm

- by general building inspection test certificates:

No. P-3956/1013-MPA BS	3.40.04	Thickness ≥ 100 mm
No. P-3014/1393-MPA BS	MW11DD	Thickness ≥ 150 mm
No. P-3310/563/07-MPA BS	W112	Thickness ≥ 100 mm
No. P-3202/2028-MPA BS	W352/W353	Thickness ≥ 100 mm
No. P-SAC 02/III-681	L16	Thickness ≥ 150 mm
No. P-3020/0109-MPA BS	SB	Thickness ≥ 166 mm

Reinforced post/beam profile according to static requirements at the opening, continuous from the subfloor to the ceiling and fixed. **Unplanked towards the reveal.**

The wall types listed are **also** recommended **for CE-marked doors in Germany**. In other European countries, different minimum requirements may apply, which must/may then be applied.

The installation of fire/smoke protection doors with CE marking is permitted in other flexible walls, e.g. with wooden studs and corresponding F30/F90 classification.

5) Clad steel columns/beams:

Installation is permitted on steel columns clad with non-combustible building boards (continuously from the raw floor to the raw ceiling) and/or steel beams – fire resistance class F90, designation (abbreviation) F90-A – provided that these are connected over their entire length or height to room-enclosing components with at least the same fire resistance and are verified as follows:

- in accordance with DIN 4102-4 Section 7.2, Table 7.3, or Section 7.3, Table 7.6

(W x H) ≤ 2500 x ≤ 2500 mm	Thickness ≥ 100 mm
(W x H) > 2500 x > 2500 mm	Thickness ≥ 140 mm

- through general building test certificates (AbP):

No. P-3186/4559-MPA BS	according to static verification
No. P-3698/6989-MPA BS	according to static verification
No. P-3738/7388-MPA BS	according to static verification
No. P-3193/4629-MPA BS	according to static verification
No. P-3802/8029-MPA BS	according to static verification

(W x H) ≤ 2500 x ≤ 2500 mm	Thickness ≥ 100 mm
(W x H) > 2500 x > 2500 mm	Thickness ≥ 140 mm

2.2 Wall type/thickness table

abZ / aBG / abP		Z-6.20-1909			Z-6.20-1937			CE-classification								P-BWU03-I 17.67.15		P-BWU03-I 17.67.16	ASN/ISN SN FBN ESN DKN #)
walltyp \	doortyp	T30-RS TSN-1	T30-RS TSN-2	T90-RS TSN-11	T90-RS TSN-12	EI_230 TSN-1	EI_230 TSN-2	EI_260 TSN-3	EI_260 TSN-4	EI_290 TSN-11	EI_290 TSN-12	EI_2120 Sa EIS-11	S200 RSN-1 / -2 (EN1634)	RS RSN-1 (DIN18095)	RS RSN-2 (DIN18095)	
Concrete in accordance with DIN 1053-1 FK ≥ C12		≤1350	>1350	≤2500	>2500	≤1350	>1350	≤2500	>3000	≤1500	>1500	≤3000	>3000	≤1500	>1500	≤3000	>3000	≤1400	>1400	≤2750	>2750					100
		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					RC3≥120
		≤2500	>2500	≤2500	>2500	≤2500	>3000	≤2500	>3000	≤3000	>3000	≤3000	>3000	≤2950	>2950	≤2950	>2950	≤2700	>2700	≤2700	>2700					RC4≥140
		100	140	100	140	140	200	140	200	100	140	100	140	140	140	140	140	140	140	140	140	140	100	100		
Masonry in accordance with DIN 1053-1 DFK≥ 12; MG ≥ II		≤1350	>1350	≤2500	>2500	≤1350	>1350	≤2500	>3000	≤1500	>1500	≤3000	>3000	≤1500	>1500	≤3000	>3000	≤1400	>1400	≤2750	>2750					115
		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					RC4≥240
		≤2500	>2500	≤2500	>2500	≤2500	>2500	≤2500	>3000	≤3000	>3000	≤3000	>3000	≤2950	>2950	≤2950	>2950	≤2700	>2700	≤2700	>2700	175	115	115	115	
		115	175	115	175	175	240	175	240	115	175	115	175	175	175	175	175	175	240	175	240					
Aerated concrete blocks in accordance with DIN 4165-3; FK ≥ 4		≤1350	>1350	≤2500	>2500	≤1350	>1350	≤2500	>3000	≤1500	>1500	≤3000	>3000	≤1500	>1500	≤3000	>3000	≤1400	>1400	≤2750	>2750					150
		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					
		≤2500	>2500	≤2500	>2500	≤2500	>3000	≤2500	>3000	≤3000	>3000	≤3000	>3000	≤2950	>2950	≤2950	>2950	≤2700	>2700	≤2700	>2700	150	150	-	-	
		175	200	175	200	175	240	175	240	150	200	150	200	150	200	150	200	175	240	175	240					
Aerated concrete slabs Block and flat bricks		≤1350	>1350	≤2500	>2500	≤1350	>1350	≤2500	>3000	≤1500	>1500	≤3000	>3000	≤1500	>1500	≤3000	>3000	≤1400	>1400	≤2750	>2750					150
		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					
		≤2500	>2500	≤2500	>2500	≤2500	>3000	≤2500	>3000	≤3000	>3000	≤3000	>3000	≤2950	>2950	≤2950	>2950	≤2700	>2700	≤2700	>2700	150	150	-	-	
		175	200	175	200	175	240	175	240	150	200	150	200	150	200	150	200	175	240	175	240					
fire proof mounting walls acc. DIN 4102-4 Tab. 10.2		≤1350	>1350	≤2500	>2500	≤1350	>1350	≤2500	>2500	≤1500	>1500	≤3000	>3000	≤1500	>1500	≤3000	>3000	≤1400	>1400	≤2750	>2750					100 *)
		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					
		≤2500	>2500	≤2500	>2500	≤2500	>2500	≤2500	>2500	≤3000	>3000	≤3000	>3000	≤2950	>2950	≤2950	>2950	≤2700	>2700	≤2700	>2700	-	100 *)	-	-	
		100 *)	-	100 *)	-	100 *)	-	100 *)	-	100 *)	140 *)	100 *)	140 *)	100 *)	140 *)	100 *)	140 *)	100 *)	140 *)	100 *)	140 *)					
Plasterboard wall with aBG or abP		≤1350	>1350	≤2500	>2500	≤1350	>1350	≤2500	>2500	≤1500	>1500	≤3000	>3000	≤1500	>1500	≤3000	>3000	≤1400	>1400	≤2750	>2750					100 *)
		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					
		≤2500	>2500	≤2500	>2500	≤2500	>2500	≤2500	>2500	≤3000	>3000	≤3000	>3000	≤2950	>2950	≤2950	>2950	≤2700	>2700	≤2700	>2700	-	100 *)	-	-	
		100 *)	140 *)	100 *)	140 *)	100 *)	140 *)	100 *)	140 *)	-	100 *)	100 *)	140 *)	100 *)	140 *)	100 *)	140 *)	100 *)	140 *)	100 *)	140 *)					
teel columns or beams covered		≤1350	>1350	≤2500	>2500	≤1350	>1350	≤2500	>2500	≤1500	>1500	≤3000	>3000	≤1500	>1500	≤3000	>3000	≤1400	>1400	≤2750	>2750					100 *)
		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					
		≤2500	>2500	≤2500	>2500	≤2500	>2500	≤2500	>2500	≤3000	>3000	≤3000	>3000	≤2950	>2950	≤2950	>2950	≤2700	>2700	≤2700	>2700	-	100 *)	-	-	
		100 *)	140 *)	100 *)	140 *)	100 *)	140 *)	100 *)	140 *)	100 *)	140 *)	100 *)	140 *)	100 *)	140 *)	100 *)	140 *)	100 *)	140 *)	100 *)	140 *)					
Assembly wall with wooden studs		-	-	-	-	-	-	-	-	≤1500	>1500	≤3000	>3000	≤1500	>1500	≤3000	>3000	≤1400	>1400	≤2750	>2750					120 *)
										x	x	x	x	x	x	x	x	x	x	x	x					
		-	-	-	-	-	-	-	-	≤3000	>3000	≤3000	>3000	≤2950	>2950	≤2950	>2950	≤2700	>2700	≤2700	>2700	-	120 *)	-	-	
										120 *)	140 *)	120 *)	140 *)	120 *)	140 *)	120 *)	140 *)	120 *)	140 *)	120 *)	140 *)					

#) Doors with special functions (e.g. security doors) may require different wall thicknesses. When used in conjunction with fire or smoke protection, the minimum thickness specified here must be increased.

In European countries, different minimum wall thicknesses may be required or considered sufficient. Please observe national regulations.

For doors and gates that do not provide fire or smoke protection, deviations from the minimum wall thicknesses listed above are permitted; however, a structural analysis is required. Follow the wall thickness specified by the manufacturer of the door or gate for the specific function of the door.

***)** Observe the minimum thickness and maximum height (<5 m FS+RS) of the mounting wall **as specified by the wall owner. Do NOT install cladding on the soffit.** Install vertical reinforced soffit profiles (structurally verified) continuously from the subfloor to the subceiling and secure them in place.

2.3 Permissible wall-dowel combinations

Use the recommended fasteners. Equivalent dowel types from other manufacturers are permitted. The anchor spacings specified in the anchor plans are maximum spacings which, depending on the structural conditions, may be reduced by adding additional fastening points.

All fastening points pre-set by the manufacturer must be used.

Walls	Dowel
Masonry walls	● Plastic dowels ≥ø10 with special screws ≥ø7 in accordance with technical building regulations, anchoring depth ≥100 *e.g. fischer SXRL 10x120 T (ETA-07/121) o.e.*[1)]
Concrete walls	● Plastic dowels ≥ø10 with special screws ≥ø7 in accordance with technical building regulations, anchoring depth ≥100 *e.g. fischer SXRL 10x120 T (ETA-07/121) o.e.* [1)] ● Steel dowels ≥M8 in accordance with technical building regulations, anchoring depth ≥70 *e.g. fischer FAZ-II M8x100 (*ETA-19/0520) or *Concrete screw FBS 8/10 (*ETA-20/0321) o.e. [1)] *Follow the manufacturer's instructions for use)* ● Injection anchors/adhesive anchors ≥ M8 *e.g. fischer FHB II A M8x60/50 ETA-21/0948) o.e.* [1)]
Walls made of aerated concrete blocks or flat stones	● Plastic dowels ≥ø10 with special screws ≥ø7 in accordance with technical building regulations, anchoring depth ≥100, *e.g. fischer SXRL 10x120 T (ETA-07/121),* *GB10 Z-21.2-123 or FPX-I M8 ETA-12/0456 o.e.* [1)]
Walls made of reinforced horizontal or vertical aerated concrete slabs	● Plastic dowels ≥ø10 with special screws ≥ø7 in accordance with technical building regulations, anchoring depth ≥100, *e.g. fischer SXRL 10x120 T (ETA-07/121),* *GB10 Z-21.2-123 or FPX-I M8 ETA-12/0456 o.e.* [1)]
Stud wall/GFK walls (height ≥ 5 m)	● Self-tapping screw or sheet metal screw ≥ø4.8
Clad steel columns and/or beams	● Steel screw I-Skt-, Skt-, countersunk head M8, for hollow profiles also Würth BoxBolt M8 o.e. [1)]

1) o.e. – or equivalent

Please note that stainless steel screws/dowels must be used for fastening in certain installation situations.

Note:
We generally *recommend* mortaring frames for fire and smoke protection closures as well as doors and gates with large dimensions and leaf weights, although filling with GKF strips is also permitted. The installer is responsible for the fastening.
For block frame and stud wall frame variants, the frames can also be pre-filled with GKF strips at the factory, which then only need to be dowelled and sealed during installation.

Regardless of this, any remaining gaps **≤ 5 mm** on uneven walls must be sealed,
gaps **≥ 5 and ≤ 20 mm** must be filled with rock wool/mortar and sealed.

3. Frames

3.1 Frame filling for fire doors

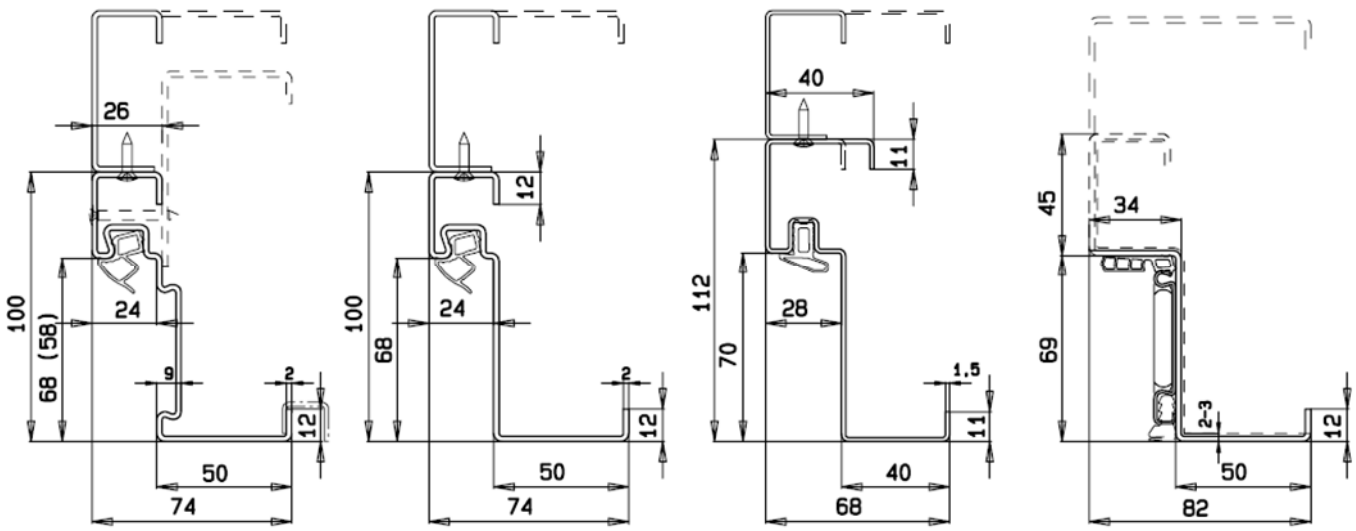
The durability and functional reliability of doors and gates – with particular emphasis here on all types of fire and smoke protection closures and security doors – is largely determined by a stable backfill and connecting to the building structure.
We recommend mortaring the frames.

	Masonry	**Concrete**	**Aerated concrete**	**Flexible wall**	**clad steel beams/ columns**
Corner frame	Mortar [1)] Mineral wool [2)]	Mortar [1)] Mineral wool [2)]	Mortar [1)]	Mortar [1)] plasterboard	Mortar [1)] plasterboard
Supplementary frame	Without Mortar Mineral wool plasterboard plasterboard B	Without Mortar Mineral wool plasterboard plasterboard B	Mortar [1)] plasterboard [3)]	Mortar [1)] plasterboard	Mortar [1)] plasterboard
Block frame	Mortar [1)] plasterboard	Mortar [1)] plasterboard	–	–	–

1) Frame grouting mortar, e.g. from quick-mix, Sakret, etc.
Frame grouting mortar, min. mortar group MG II according to DIN 18580 / mortar class MK 5 according to EN998-2/EN20000-412
DO NOT use lime or gypsum mortar
2) Only for E30/EW30/EI_2 30; ONLY up to BRM ≤1250/2500x2500mm, backfill with **A1 stone/mineral wool** ≥150kg/m³
3) Not for doors with abZ

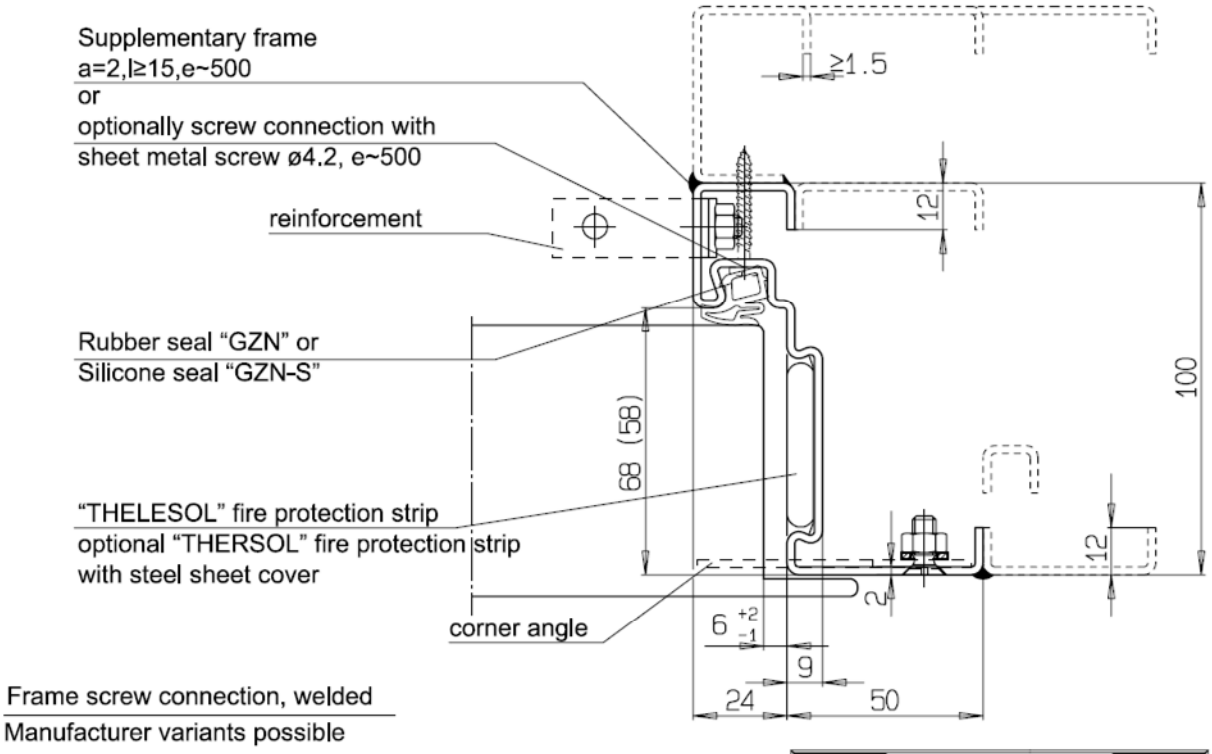
3.2 Frame shapes

ZNG 68/ZNG 58 ZG 68

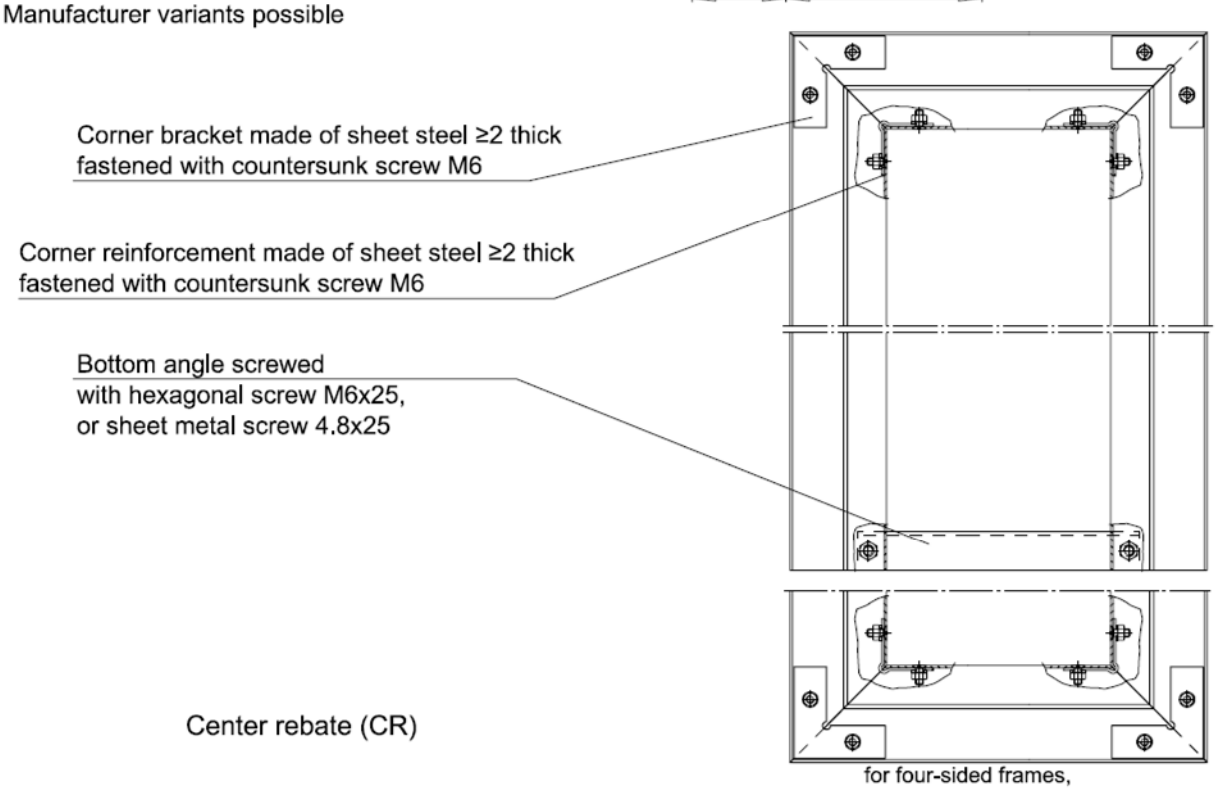


(subject to technical/dimensional changes)

3.3 Frame screw connection

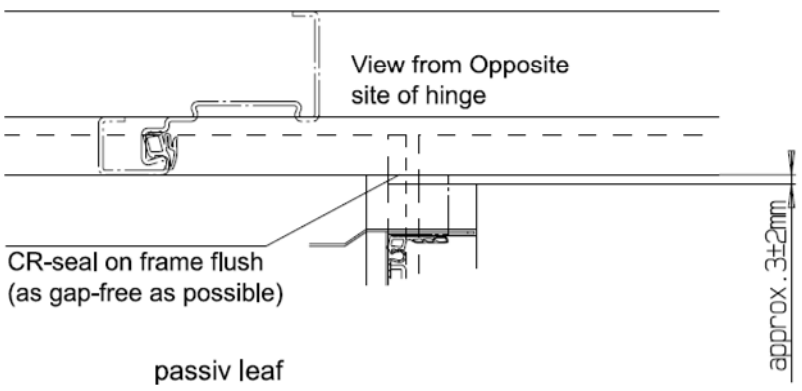


Frame screw connection, welded
Manufacturer variants possible



for four-sided frames,
design may vary

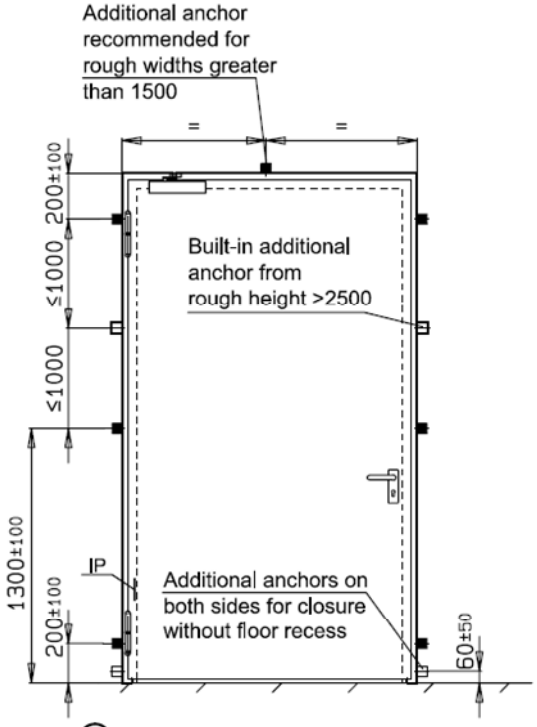
Center rebate (CR)



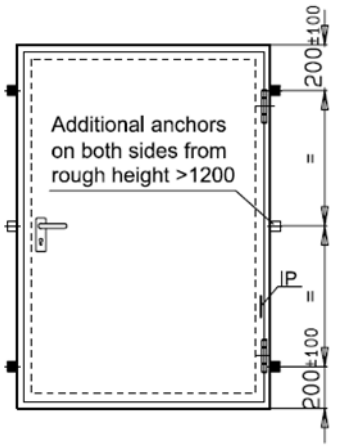
passiv leaf

4. Anchor plans

4.1 Single or double-leaf doors:

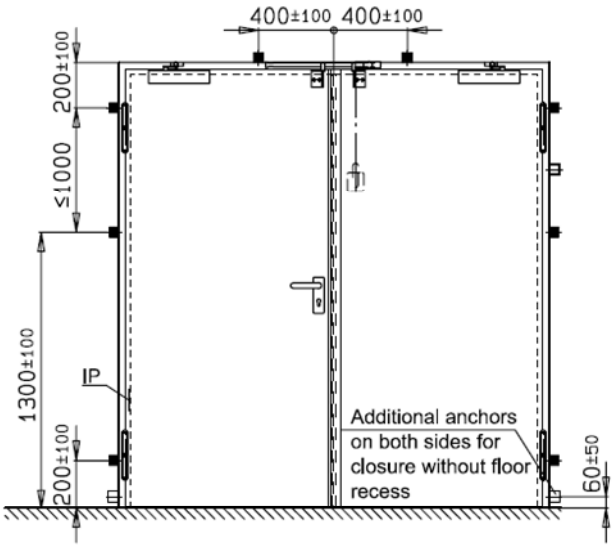


① single-leaf closure

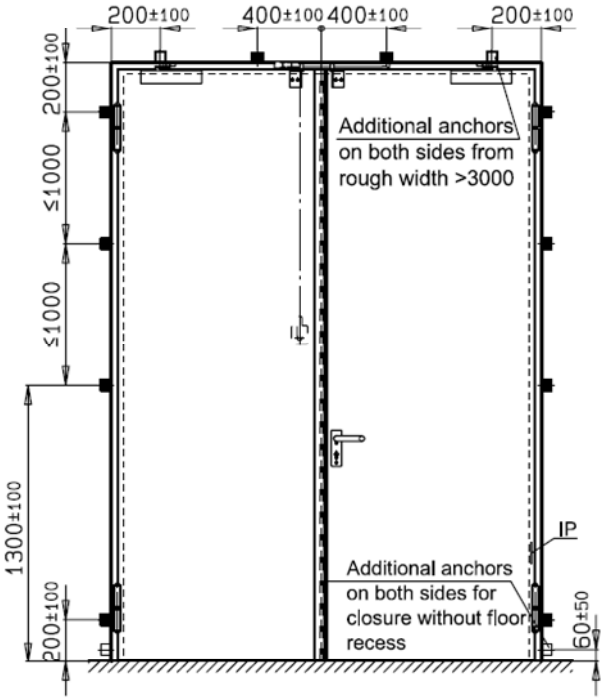


② Single-leaf wall flap

③ Double-leaf closure



④ Double-leaf closure with additional anchors



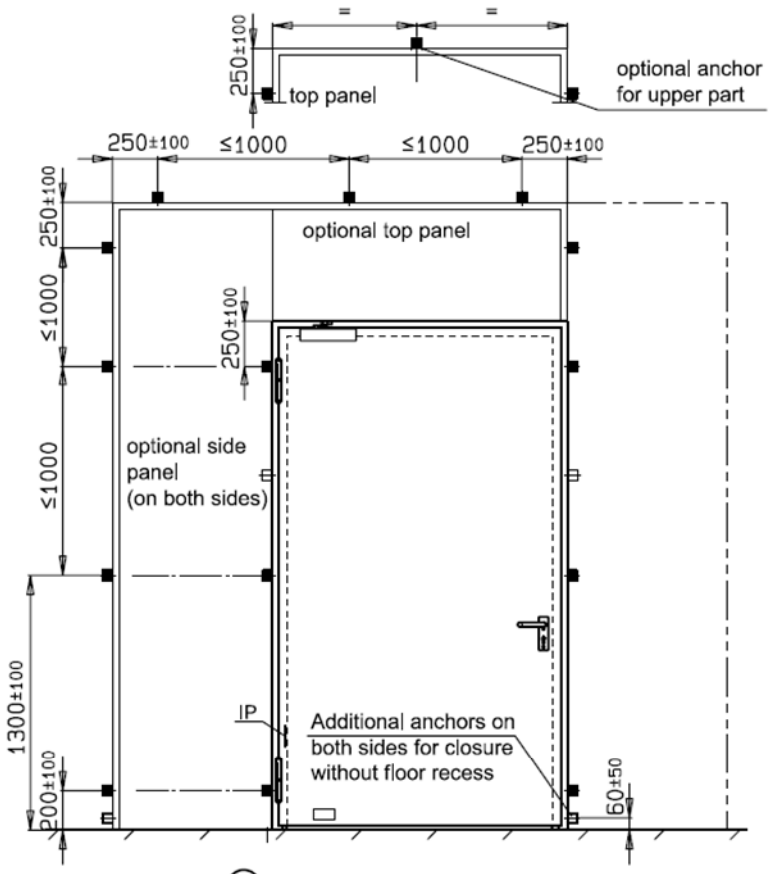
| IP - Identification plate(s) (Position may vary)

■ Standard anchor/fastening positions (minimum configuration)

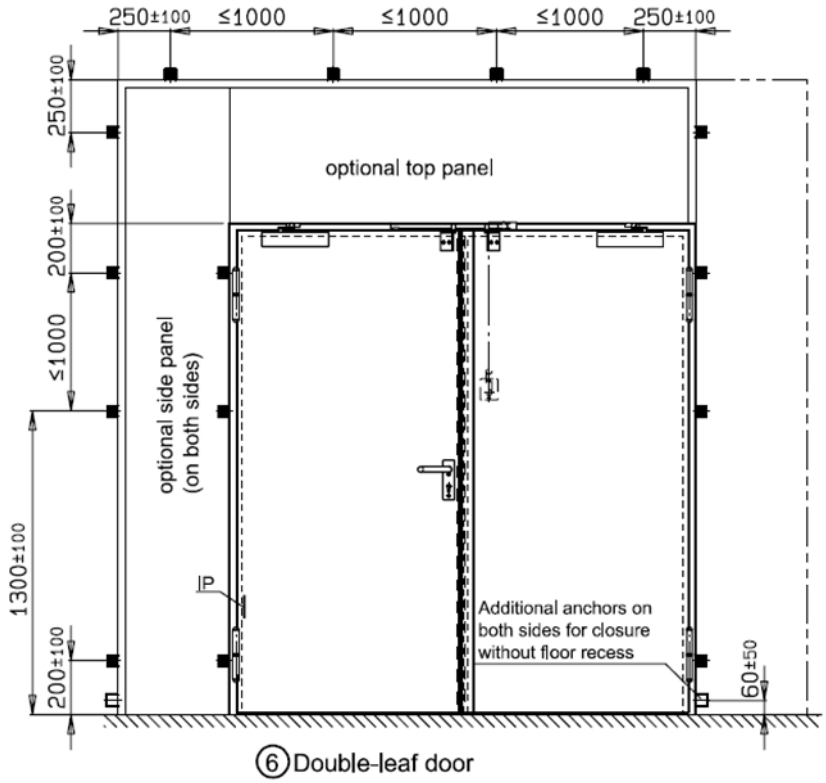
⊟ Additional anchors/fastenings when exceeding the load limit

Depending on (additional) functions, the manufacturer may install additional anchors.
ALL fastening points specified by the manufacturer must always be used during installation!

4.2 Closures with side and/or top sections



⑤ Single-leaf door



⑥ Double-leaf door

▌IP - Identification plate(s) (Position may vary)

■ Standard anchor/fastening positions (minimum configuration)

⊟ Additional anchors/fastenings when exceeding the load limit

Depending on (additional) functions, the manufacturer may install additional anchors.
ALL fastening points specified by the manufacturer must always be used during installation!

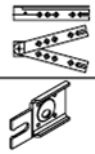
5. Frame fastening

5.1 to (exposed) masonry / concrete walls

Dowel according to technical determinations or
European Technical Assessment (ETA)
z.B. fischer Typ SXRL10x120 T
for concrete:
z.B. Liebig Bolzenanker BA(≥M8)
or concrete screw FBS II 10x100 oglw.
- Do not apply to joints
- Suitable for the wall-typ

mortar

Dowel anchor Fl ≥40x4-120lg
Optional swivel anchor
made of sheet steel ≥1.5 thick,
optional combination anchor

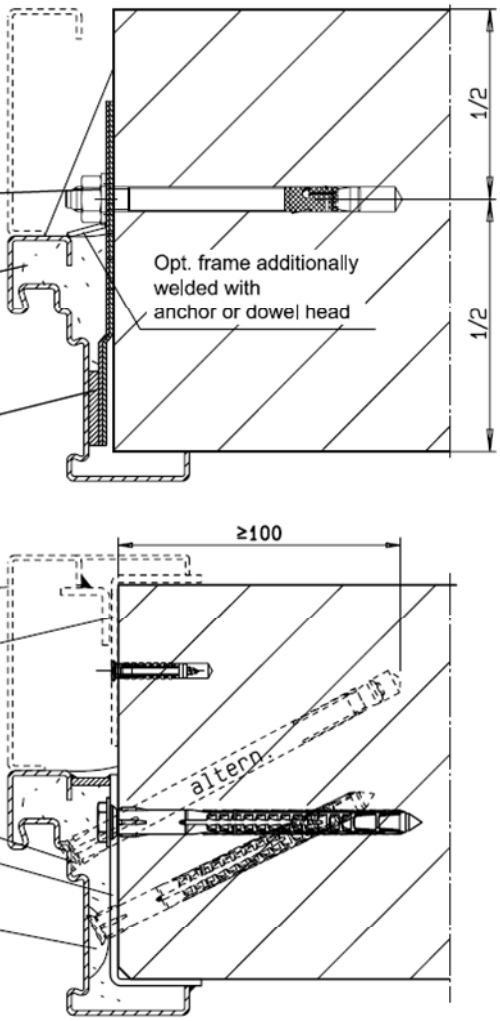


Optional with
supplementary frame

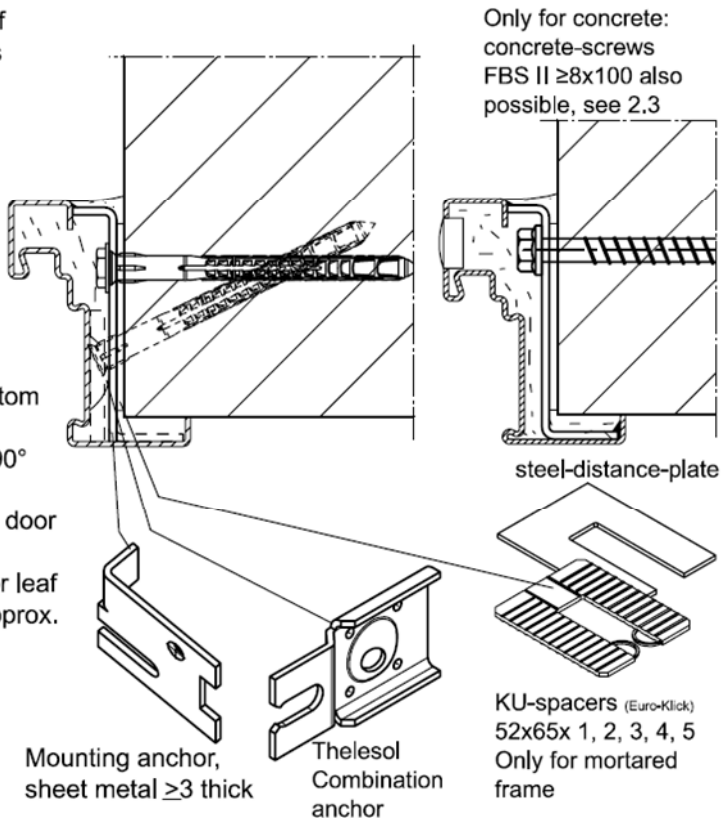
Anchor plate/angle ≥2.5 thick

Also Toge steel frame anchors
TU10X 132U for concrete, optionally
Type fischer F10 M132 for
solid brick or concrete possible
Dowel anchor
L≥80x30x3-~40lg

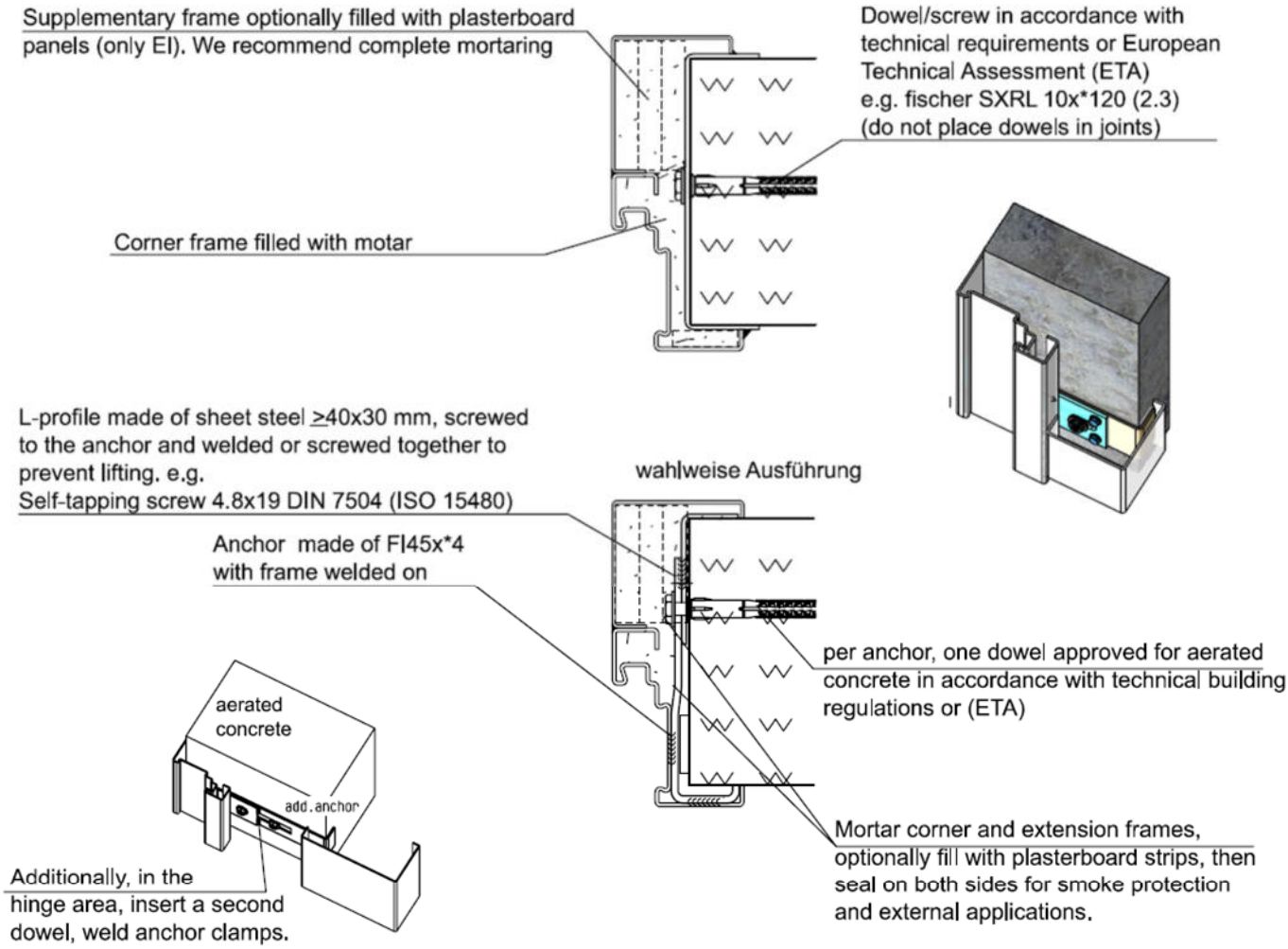
Angled dowel anchor



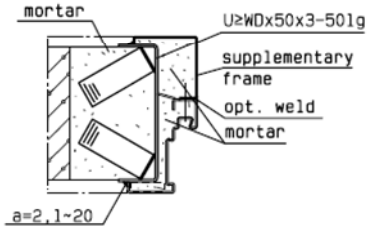
Installation sequence:
- Remove the door from the frame. (only for single-leaf doors). If necessary, screw the frame supplied in parts together at the corners.
- Bend out all fastening anchors on the frame if necessary (optionally spread the swivel anchors).
- Place the frame in the opening, support it according to the metre mark (if available) and align it vertically and horizontally. Secure it with clamps.
- Underlay and fasten the upper side anchors (see sketches).
- Hang the door leaf in the frame; align the frame so that the door rebates are flush with the frame on all sides and, if applicable, the centre fold. Check the bottom door gap .
- When angled dowel anchoring, either open the leaf 90° and underpin it or unhinge it.
Insert all anchors and fasten them securely. Close the door leaf.
- Then correct the air gaps. If necessary, align the door leaf with a hinge adjusting tool to ensure even air gaps (approx. 6mm, max. 10 mm – depending on function, observe manufacturer's instructions).
- Secure the corner frame with mortar (3.1). Plaster protruding anchors (not necessary for steel dowels).
- If present, adjust, align and secure/fasten supplementary frame. Fill as desired.



5.2 to aerated concrete walls



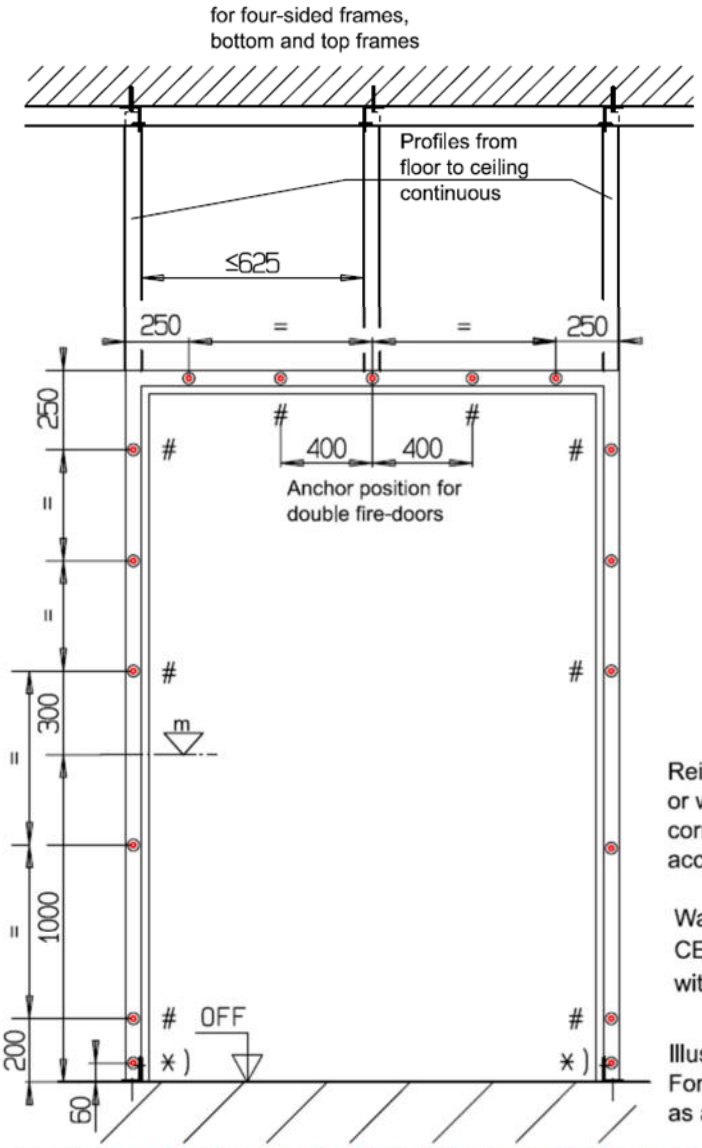
possible design
concrete-encased
wall anchor

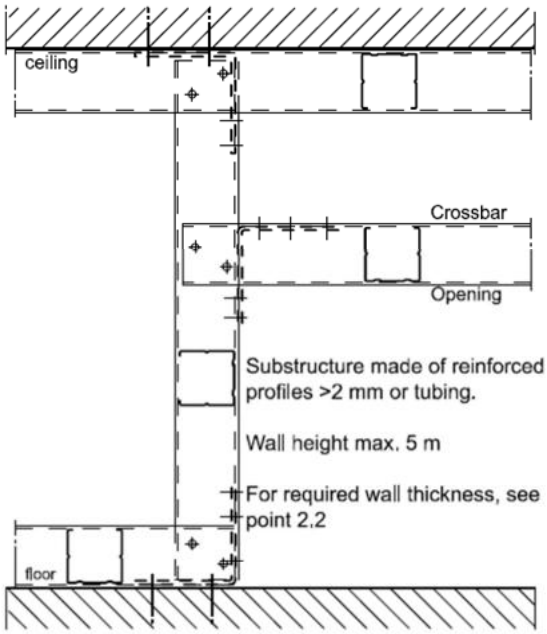


Installation sequence:
- Remove the door leaf from the frame. (only for single-leaf doors). If necessary, screw the frame, which is delivered in parts, together at the corners.
- Position the U-shaped anchor brackets according to the anchor plan and preferably dowel them in the centre (2.3).
- Place the frame in the opening, underlay the frame according to the metre mark (if available) and align it vertically/horizontally. Secure with clamps if necessary.
- Underlay the upper side anchors to the frame and weld them (see sketches).
- Hang the door leaf in the frame; align the frame so that the door rebates are flush with the frame on all sides and, if applicable, with the centre fold. Check the bottom door gap.
- If necessary, open the leaf 90° and underlay it or remove it. Underlay all existing anchors and weld them completely. Close the leaf.
- Then check the air gaps. If necessary, align the door leaf with a hinge adjusting tool to ensure even air gaps (approx. 6 mm all around, less than 10 mm at the bottom – depending on function, observe manufacturer's instructions).
- Backfill the corner frame with mortar (3.1).
- Adjust, align and screw/fasten the supplementary frame with plasterboards, if available.
- If supplied without plasterboard, completely fill the attachment frame with mortar.

- Cut/chisel anchor recesses into the wall, fix the wall anchors and fill them with mortar (MG ≥II, DIN 18580), allow to set sufficiently.
- This method is also permitted for masonry or concrete walls. However, it should be carried out at least 1-3 weeks in advance in accordance with the anchor plan.
- The anchors must have been inserted into the wall at least 2-3 days before door installation.

5.3 to flexible walls



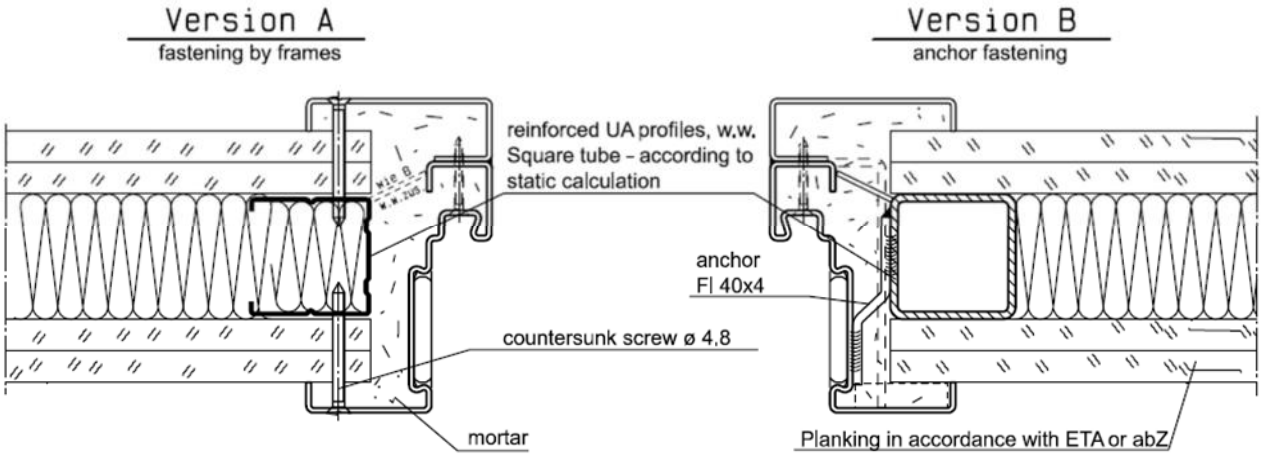


Reinforced U/UA profile made of sheet steel (square tube o.e.) or wooden frame construction, statically calculated, stable with corner connections/dowels fixed to the ceiling and floor in accordance with technical building regulations

Walls with timber stud profiles are only permitted for CE-marked fire-/smoke protection doors or multi-purpose doors without fire resistance.

Illustrations for three-sided connection of the flexible wall. For four-sided doors, wall construction and frame at the bottom as above. Combinations of fastening types are permitted.

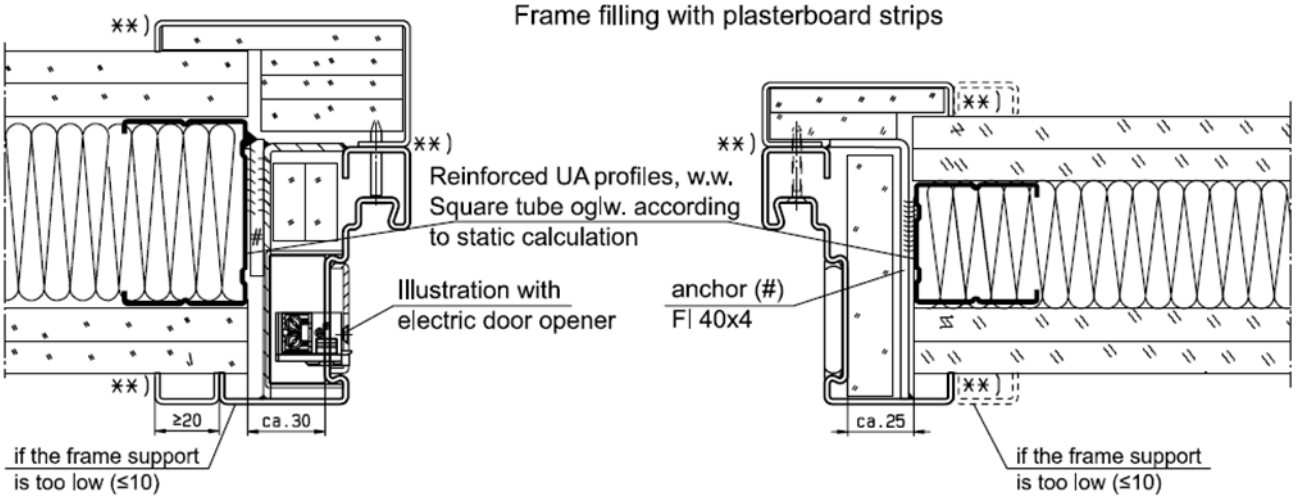
mounting points
- for version A
- # for version B (optional addition to A (≥50-100 offset)
- *) Additional fastening always required for frames without floor support



Multi-purpose doors without fire resistence, do not need to be grouted/filled. We also recommend filling as described in 3.1.

Anchor positions as in version B

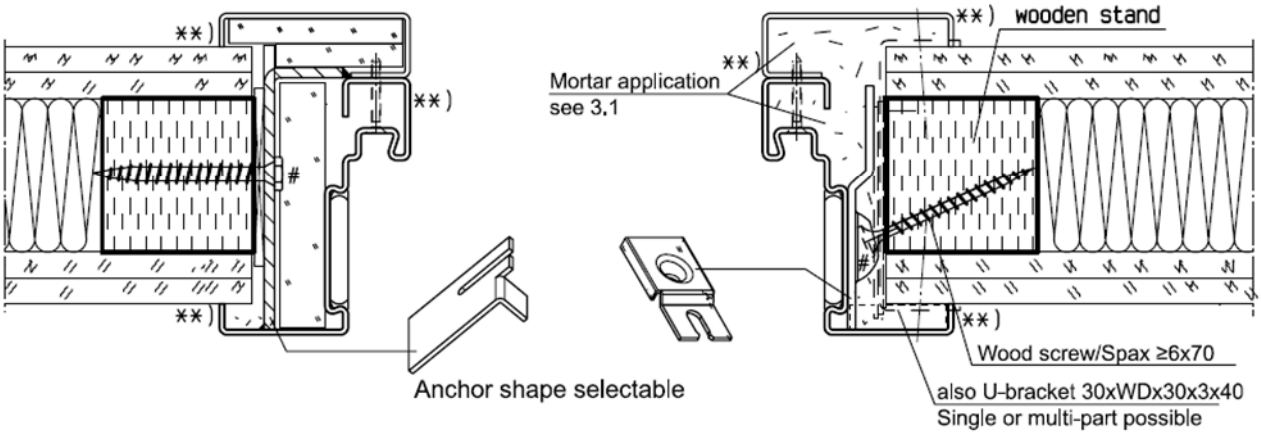
Frame filling with plasterboard strips



Walls with timber stud profiles are only permitted for CE-marked fire/smoke protection doors or multi-purpose doors. Observe the on-site structural verification!

Positions such as (#). Secure anchors with wood screws

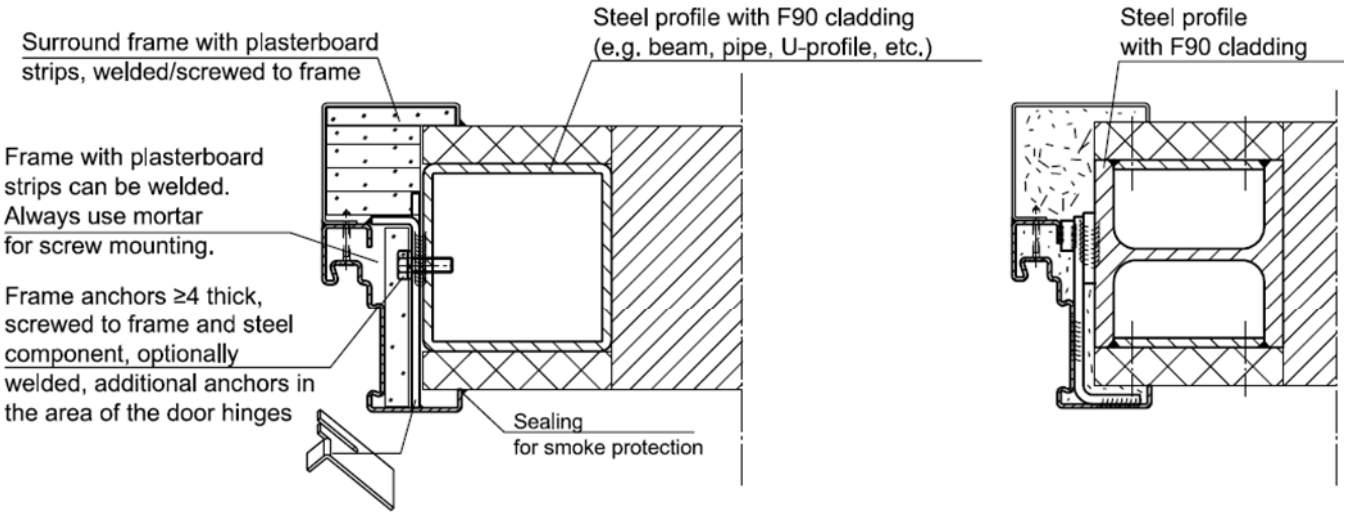
Anchor positions such as (#). [Additionally, A (≥50-100 offset to #) can be executed]



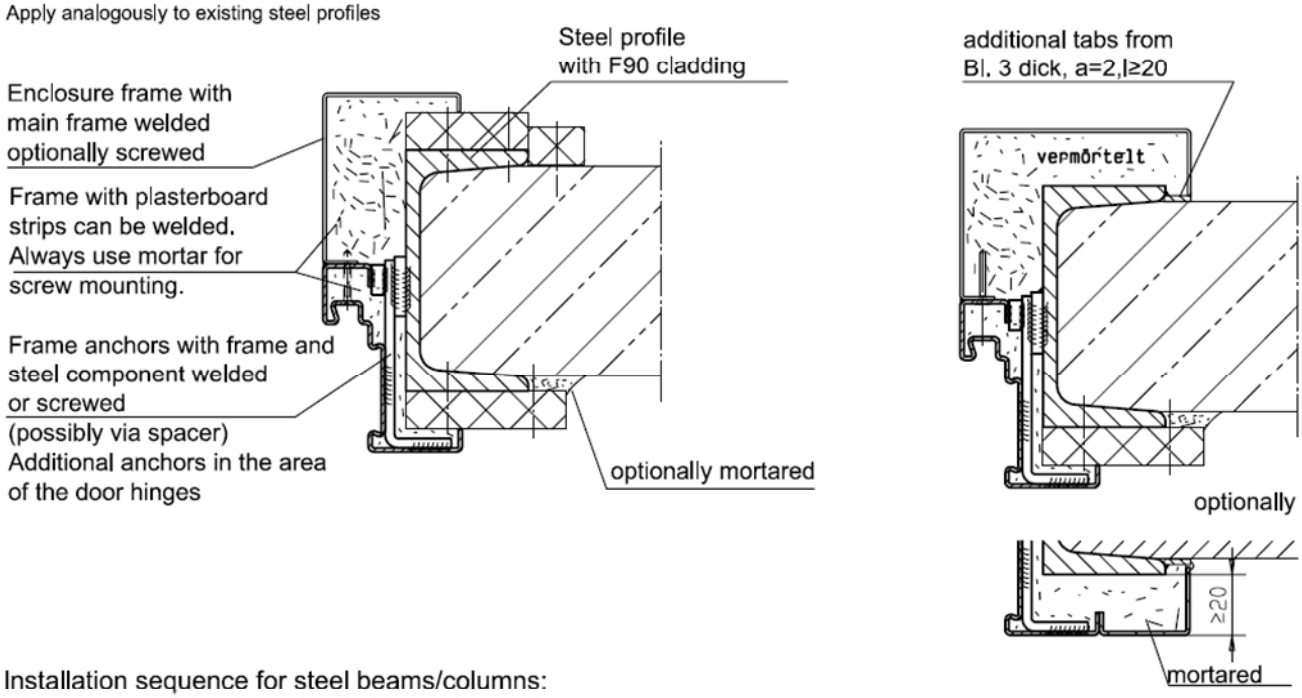
Installation sequence for mounting wall:
- Remove door leaf from frame. (only for single-leaf doors). If necessary, screw the frame, which is delivered in parts, together at the corners.
- The upright profile must be unplanked on the reveal side.
- Place the frame in the opening, underlay it according to the metre mark (if available) and align it vertically/horizontally. Secure with clamps o.e.
- Underlay and fasten the upper side anchors (see sketches).
- Hang the door leaf in the frame; align the frame so that the door rebates are flush with the frame on all sides and, if applicable, the centre fold. Check the bottom door gab.
- If necessary, open the leaf 90° and underlay it or remove it. Underlay all existing anchors and fasten completely according to the details. Close the leaf.
- Then check the air gaps. If necessary, align the door leaf with a hinge adjusting tool to ensure even air gaps (approx. 6 mm all around, <10 mm at the bottom – depending on function, observe manufacturer's instructions).
- Backfill the corner frame with mortar (3.1) if still necessary.
- Adjust, align and screw/fasten the suplementary frame. If not filled with plasterboard at the factory, fill the extension frame with mortar.

**) In combinations with smoke/sound protection or air/rain tightness, the transitions between the wall and the frame must be sealed all around on at least one side (i.e. the outside) with permanently elastic joint sealant. For smoke protection and frame filling with plasterboard strips, the frame MUST be sealed on both sides. Fully mortared frames do not need to be sealed.

5.4 to clad steel beams/columns



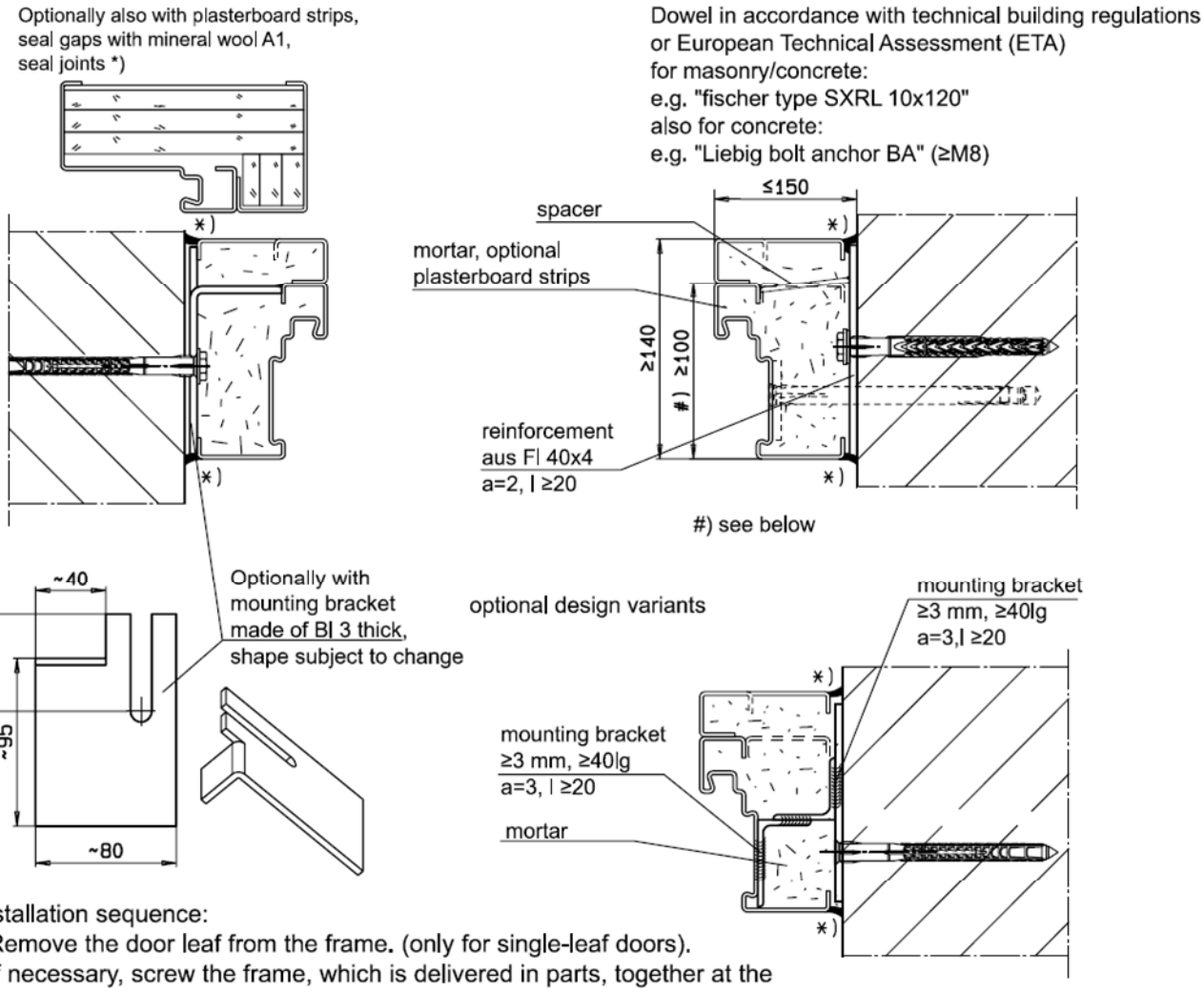
Examples of execution
Apply analogously to existing steel profiles



Installation sequence for steel beams/columns:
- Remove the door leaf from the frame. (only for single-leaf doors). If necessary, screw the frame, which is supplied in parts, together at the corners.
- If still necessary, cover existing steel beams/steel supports with Promatect-H boards in accordance with DIN 4102-4 or a general building authority test certificate. Unclad on the reveal side.
- Place the frame in the opening, underlay it according to the metre mark (if available) and align it vertically/horizontally. Secure with clamps if necessary.
- Underlay and fasten the upper side anchors (see sketches).
- Hang the door leaf in the frame; align the frame so that the door rebates are flush with the frame on all sides and, if necessary, with the centre fold. Check the bottom door gap.
- If necessary, open the leaf 90° and shim or remove it.
Underlay all existing anchors and fasten them completely. Close the leaf.
- Then check the air gaps. If necessary, align the door leaf with a hinge adjusting tool to ensure even air gaps (approx. 6 mm all around, bottom <10 – depending on function, observe manufacturer's instructions).
- Backfill the corner frame with mortar (3.1).
- Adjust, align and screw/fasten the extension frame. If not filled with plasterboard at the factory, fill the extension frame with mortar.

alternative for welding for steel profiles also hollow profile fastening Würth BoxBolt M8x50 o.e.

5.5 Blockframe installation

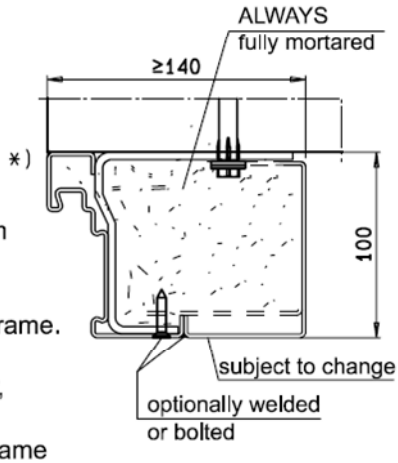


Installation sequence:

- Remove the door leaf from the frame. (only for single-leaf doors).
- If necessary, screw the frame, which is delivered in parts, together at the corners.
- Place the frame in the opening/installation position, underlay it according to the meter mark (if available) and align it vertically/horizontally. Secure it with wedges if necessary.
- Underlay and fasten the upper side anchors (see sketches).
- Hang the door leaf in the frame; align the frame so that the door rebates are flush with the frame on all sides and, if applicable, with the center fold. Check the bottom door gap .
- If necessary, open the leaf 90° and underlayor remove it.

Back up all existing anchors and fasten them completely. Close the leaf.

in front of the wall
(not for Fire doors with abZ/aBG)



- Then check the air gaps. If necessary, align the door leaf with a hinge adjusting tool to ensure even air gaps (approx. 6 mm all around, <10 mm at the bottom – depending on function, observe manufacturer's specifications).

Depending on the manufacturer, the block frame can be delivered in individual parts (corner frame and extension frame separately) or as a connected block frame.

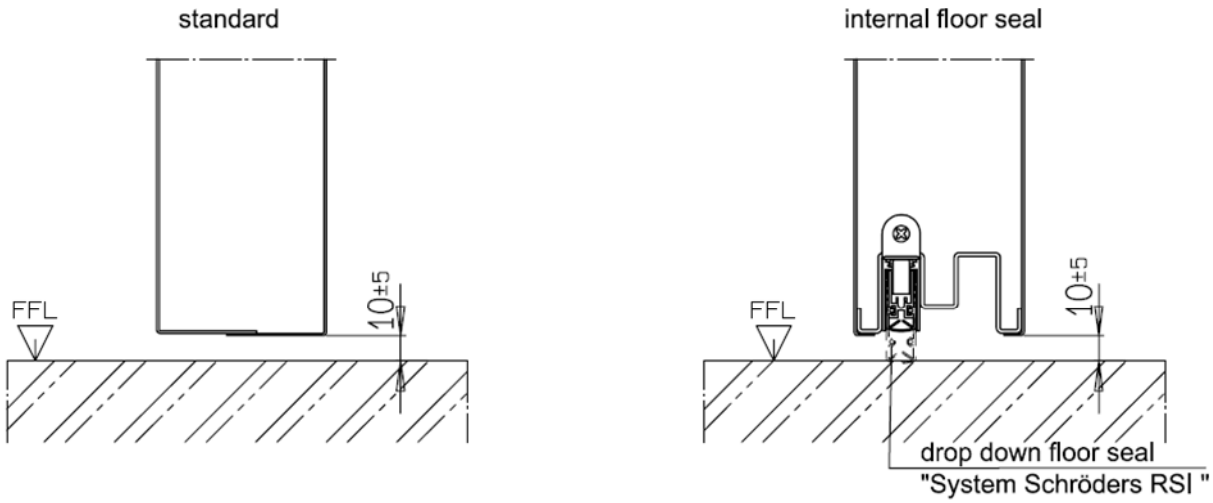
1. Backfill the corner frame with mortar (3.1). Adjust the extension frame, align it, and screw/fasten it in place. If not filled with plasterboard at the factory, fill the extension frame with mortar.

2. Fill the block frame through the filling openings (in the frame or extension frame mirror, alternatively lintel openings), preferably with a mortar pump using mortar (3.1).

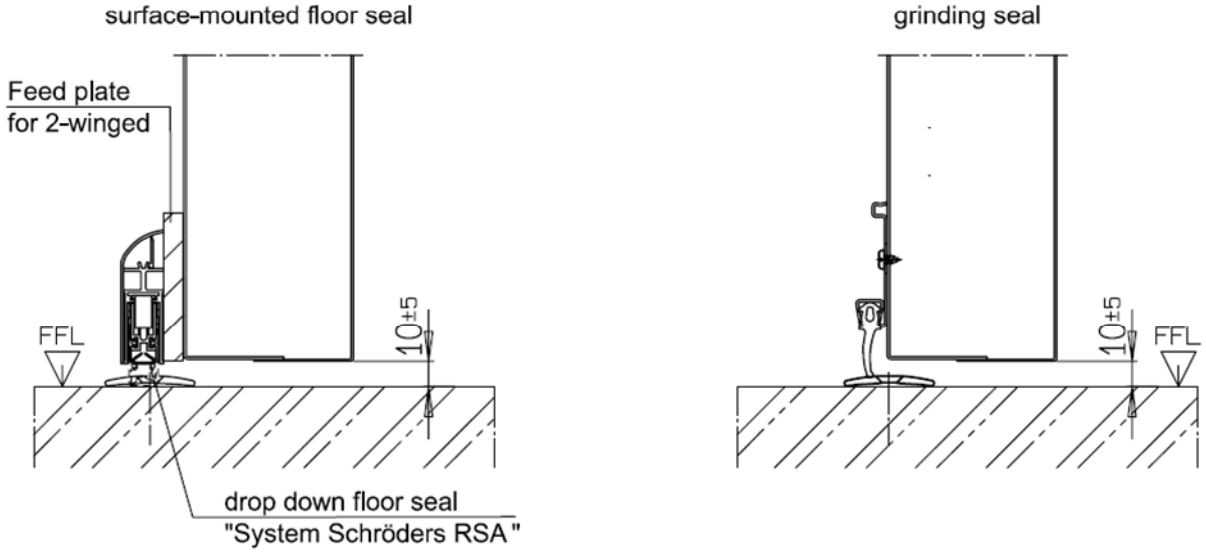
*) Always seal wall connection joints on smoke protection doors with permanently elastic sealant on at least one side.

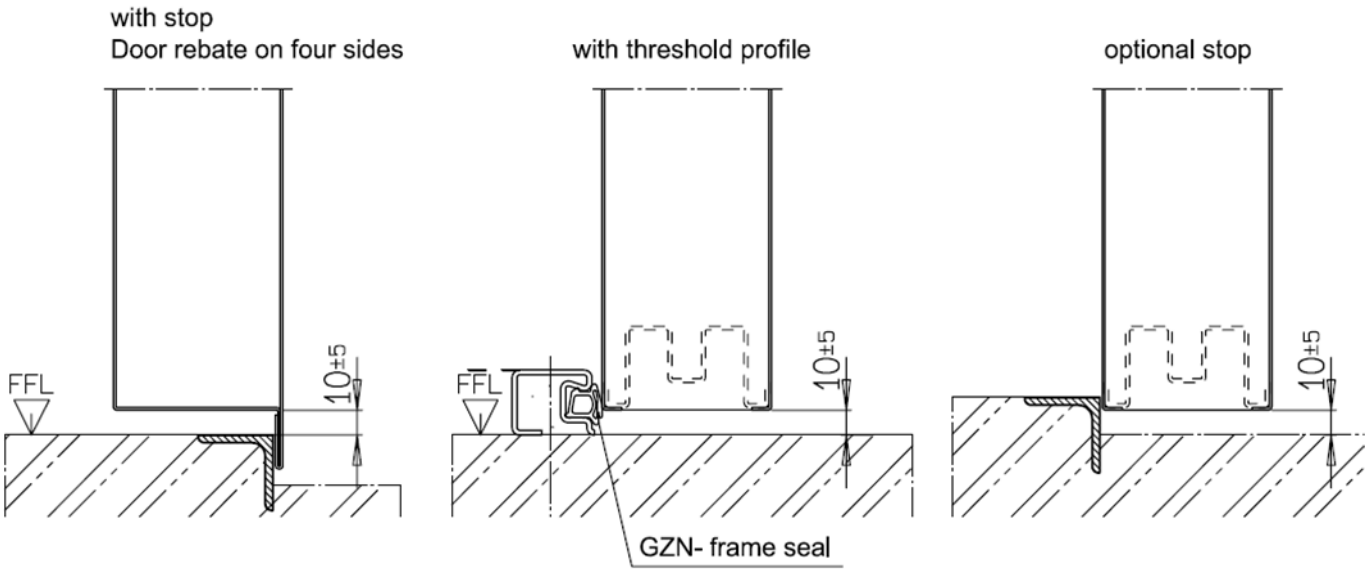
#) Block frame ≥100 mm for ISN/ASN doors and for T30/EI30 doors up to 1250/2500x2500

5.6 Base connection



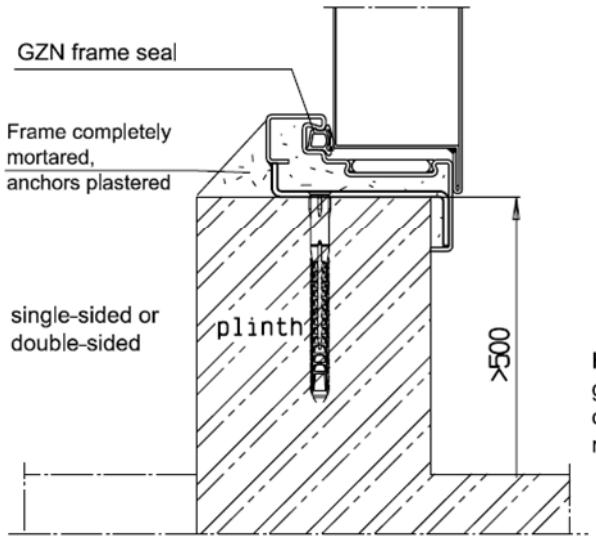
optional design variants

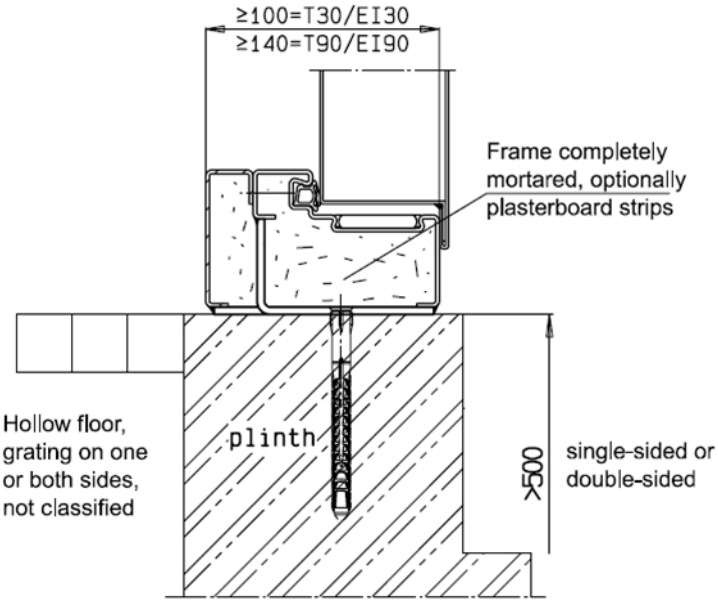




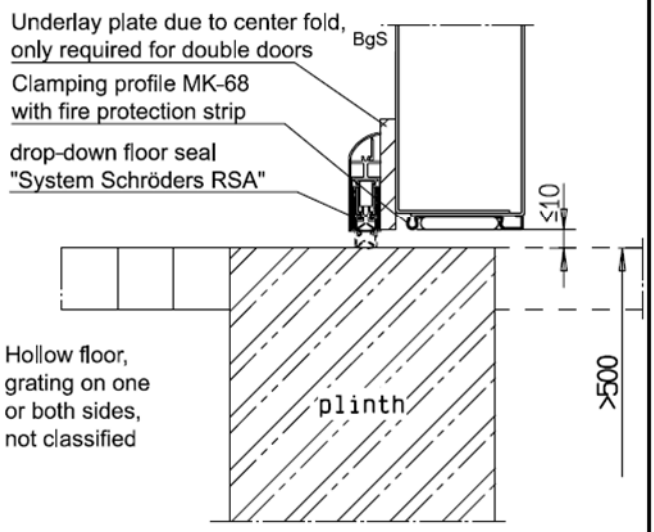
5.7 Base connection: Installation at great heights (>500mm above floor)

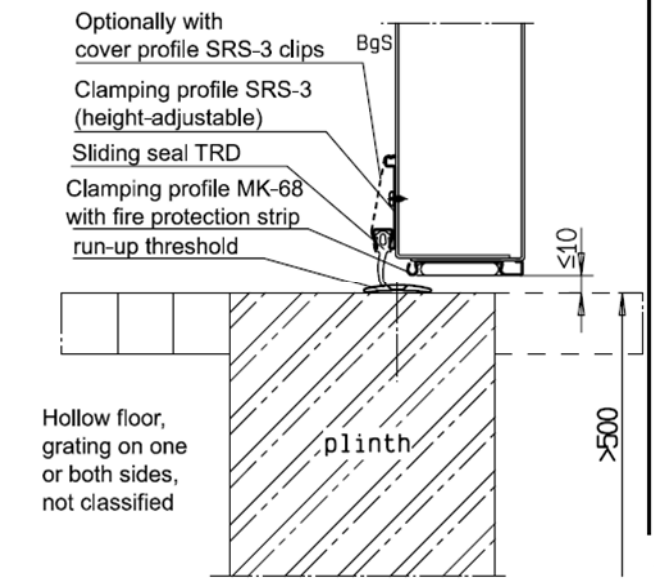
- with four-sided frame



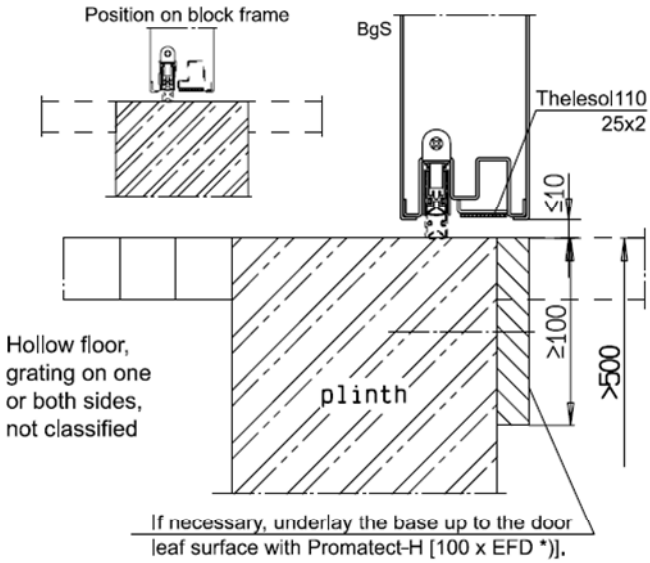


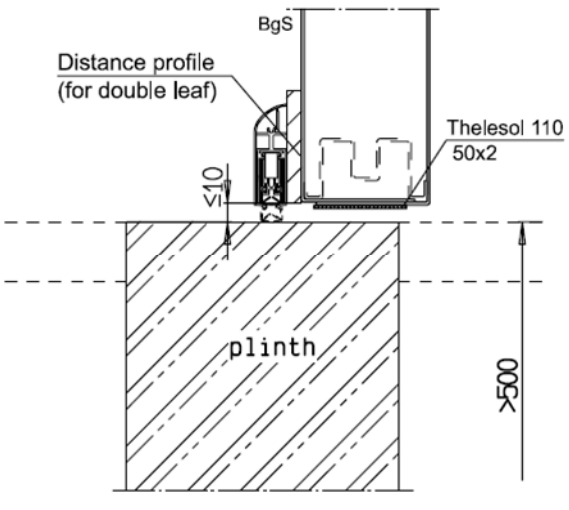
- with seal and fire protection strip (door with abZ or CE mark)





- Design variants only for CE-marked doors





*) EFD = External frame dimensions; BgS = opposite side of the hinge

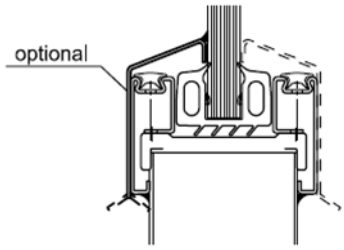
6. Accessories

6.1 Glazing

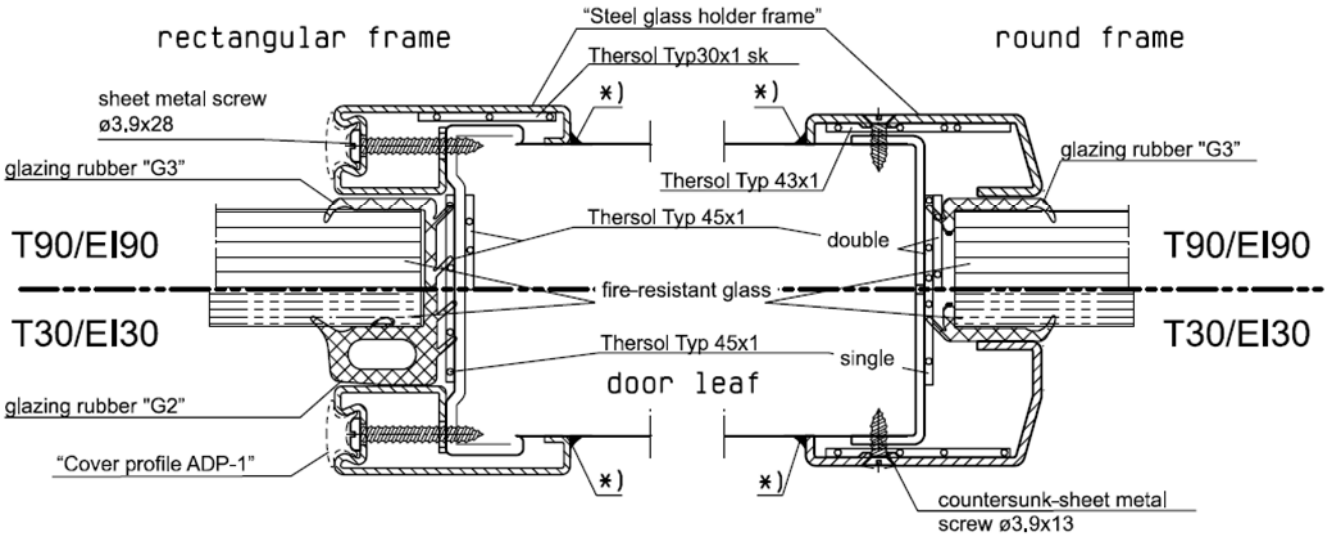
For transport reasons, the fire-resistant glass may be delivered separately and only installed in the fire door at the place of use.
The installation or replacement of fire-resistant glass may only be carried out by the door manufacturer or companies authorized by them.
They are responsible for the proper installation of the glass.

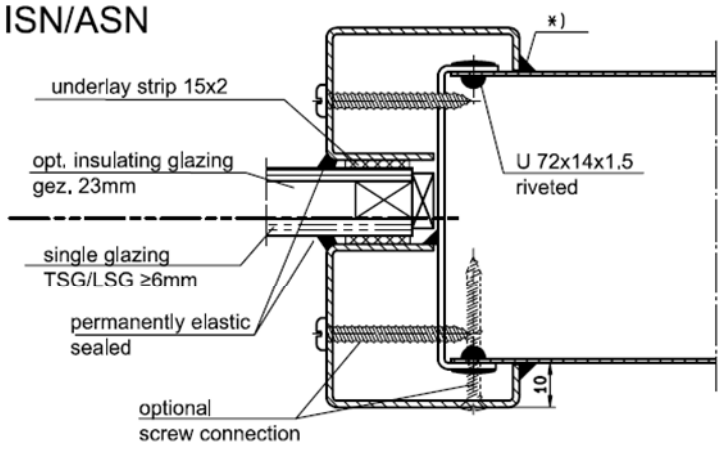
work instructions: Glazing with rectangular and/or round frames:

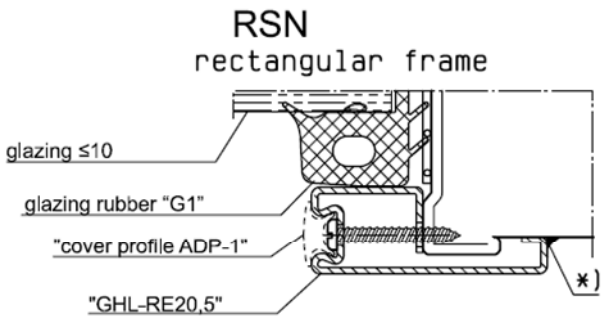
- Unscrew the “steel glass holder frame” (for round frames: with inserted “Palusol sealing strips”) on the non swing side.
- Pull the “glazing rubber” over the edge of the glass.
- Stick the “THERSOL" sealing strips into the edging profile (self-adhesive with double-sided adhesive tape).
- Insert the glass pane (glass type marked with an etching stamp) with the rubber profile frame.
- Screw the previously removed “steel glass holder frame” back on.
- Optionally, insert the “ADP-1" cover profile (on both sides). Always on smoke protection doors.
- If smoke protection is required, seal the glass holder frames on at least one side with a permanently elastic sealant.



Additional weather protection (splash guard) for glazing, shape subject to change, made of stainless steel, steel or aluminum sheet ~1,5 thick, glued, screwed or riveted (applies to System Schröders glazing)







*) For smoke protection and/or exterior doors:
Seal the glass frame and any secondary paths (recognisable openings/gaps visible from the outside) on at least one side/the outside with a permanently elastic sealant to protect against smoke and/or water.

6.2 Fittings

The door is equipped with a lock in accordance with EN 12209/DIN 18250/18251. Alternatively, locks with a panic function, including self-locking and/or motorised locks, may also be used.
The respective lock is fastened to the door leaf with two screws. Please observe the manufacturer's installation and connection instructions.

Fitting (active leaf)

The accessory package contains a handle set with short or long backplate or rosettes as well as the necessary connecting screws and sleeve nuts. Installation is carried out in accordance with the hardware manufacturer's specifications.

If special fittings (e.g. ES3) are used, these must be installed in the pre-set positions in accordance with the manufacturer's installation instructions

For fire and smoke protection doors, only lever handle/change sets with a 9 mm square spindle and steel core in accordance with DIN 18273 or EN 1906 are permitted.

To prevent accidents at doors in escape routes, the end of the door handle must be suitably designed (e.g. bended towards the door leaf plane). Alternatively, panic bar handles can be used on the non swing side of the hinge if the manufacturer has prepared the fixing points in the door accordingly.

Security doors/fittings in escape routes can also be equipped with “System Schröders” enclosures to prevent tampering. The enclosure is screwed together with the fitting and additionally secured if necessary.

The profile cylinder (40/45 or 45/45) must be provided by the customer.

Fitting (passive leaf)

-The passive leaf can be locked either with an SRI-77 snap-lock with gear box handle, a rebate drive bolt, or a (panic) drive bolt lock with handle, panic bar handle or equivalent. The corresponding lock, locking bar(s) and switch lock or snap bolt are installed.

If a drive bolt lock is used in the passive leaf, the handle set or panic bar handle must be installed in the pre-set positions according to the manufacturer's enclosed installation instructions. A lock with a rebate bolt lock is already fully installed.

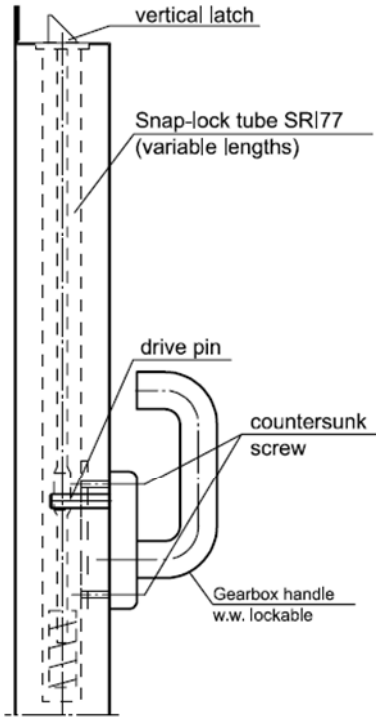
For the SRI-77, the accessory package includes a gear box handle with two mounting screws. This is connected to the snap bolt with the handle pointing upwards, through the hole in the fixed sash, and screwed in place (see below).

Fitting installation SRI-77

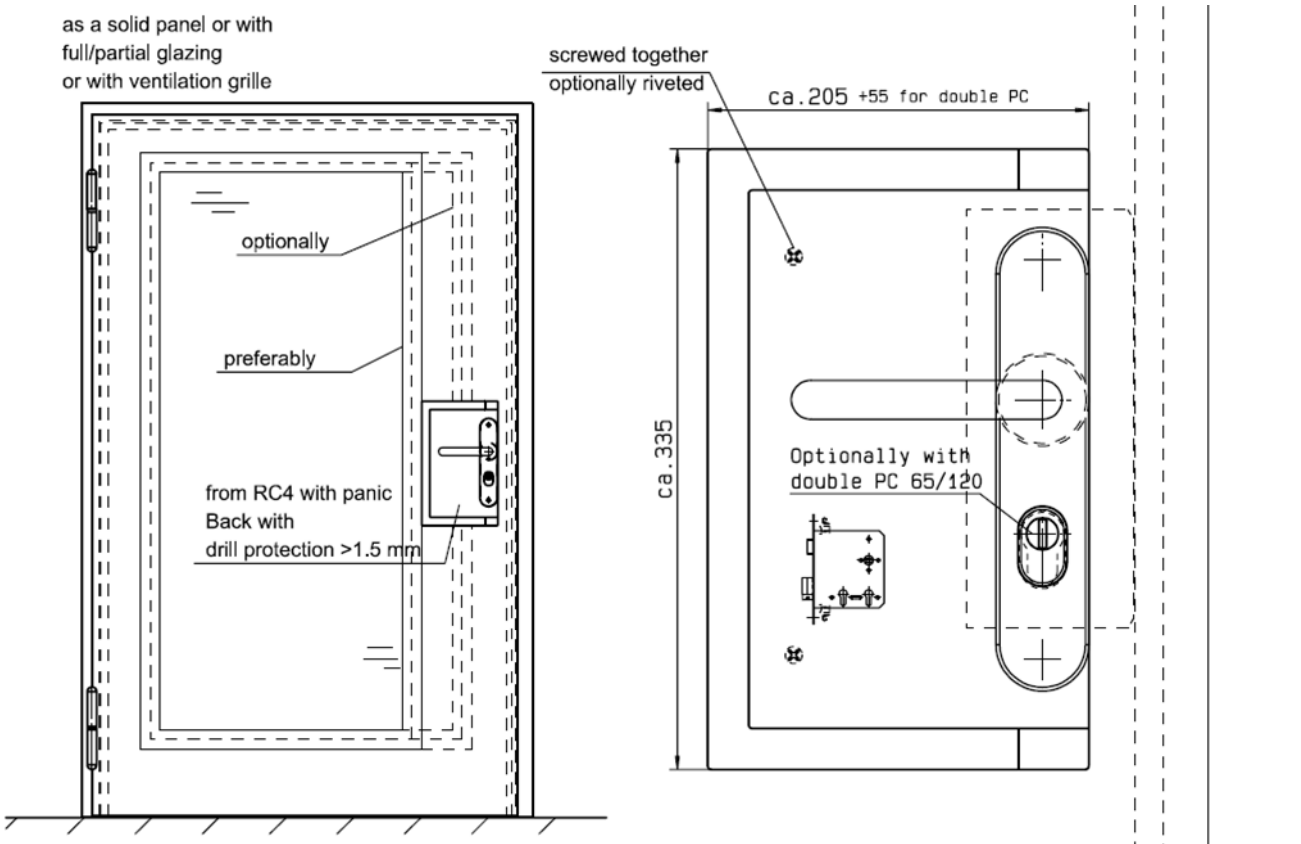
- Insert the drive pin of the gearbox into the slotted hole of the snap bolt tube.

- Screw the gearbox to the SRI-77 using countersunk screws.

- Check the bolt function.
The handle must spring back to its starting position, and the snap bolt must be freely movable/springy.



6.2.1 RC3 / RC4 security/panic fitting with enclosure

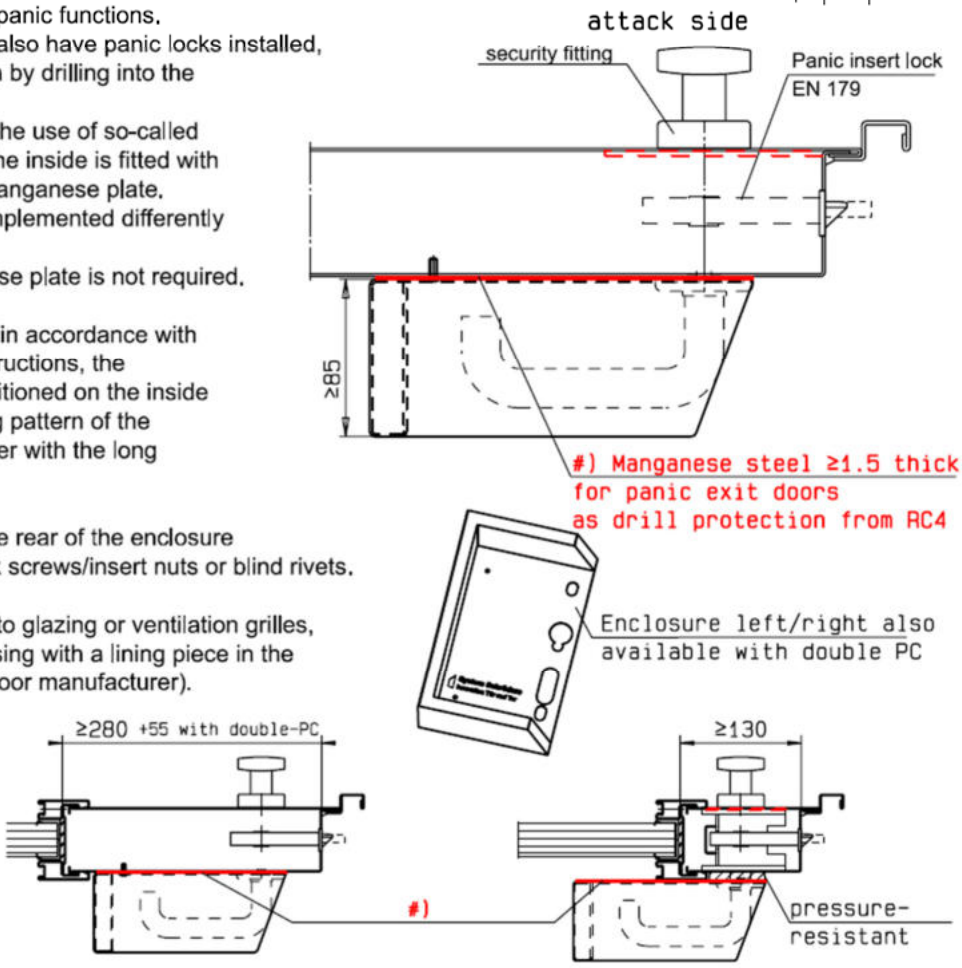


Doors in escape and rescue routes are often combined with security requirements and hazard/panic functions.
For doors from RC4 upwards that also have panic locks installed, there is also a risk of manipulation by drilling into the door leaves from the outside.
To prevent this type of attack and the use of so-called 'fishhooks', the security fitting on the inside is fitted with an enclosure AND an additional manganese plate.
(This drill protection can also be implemented differently by the manufacturer.)
For RC doors ≤RC3, the manganese plate is not required.

When attaching the security fitting in accordance with the manufacturer's installation instructions, the enclosure/manganese plate is positioned on the inside of the door on the door-side drilling pattern of the security fitting and screwed together with the long plate of the fitting.

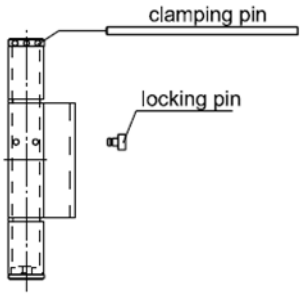
Additional holes are provided at the rear of the enclosure to fix the housing with countersunk screws/insert nuts or blind rivets.

For doors with narrow friezes due to glazing or ventilation grilles, it may be necessary to fix the housing with a lining piece in the frame thickness (supplied by the door manufacturer).

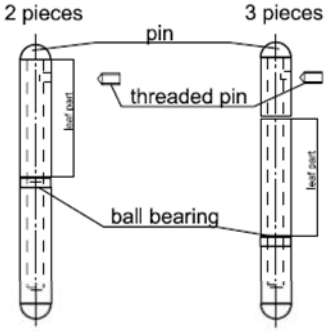


6.3 Hinge

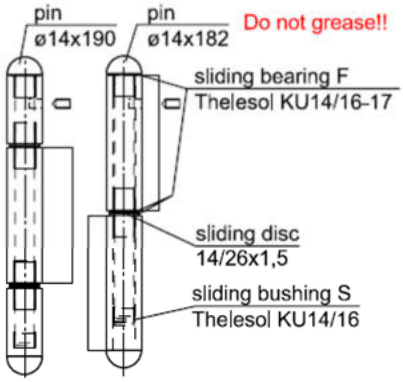
The doors are equipped with 2- or 3-part construction or 3D object hinges.
Adjustment and described below maintanance door.



1. Spring/construction hinge set (only for single-leaf doors up to 80 kg.
When the door is closed, the spring must be tensioned in the opening direction using the tension pin and secured with the locking pin. The door must close automatically from approx. 20°.
The spring hinge can be attached to the top OR bottom of the door. The second hinge is always without a spring.

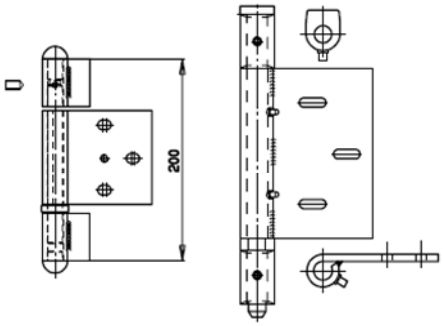


2. Construction hinge with ball bearing and hinge pin ø16, 2- or 3-part
Hinge flap welded to frame, wing part welded or screwed.
Insert the greased hinge pin from above, insert the bearing under the sash part, carefully hammer in the hinge pin until it stops and secure it with an M6 threaded pin to prevent it from "wandering up"

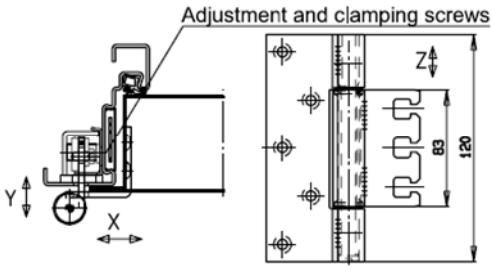


3. Smooth-running hinges, maintenance-free, 2- or 3-part
Insert plain bearing bushings (plastic) with ring on both sides into the upper frame (for 3-part) and leaf hinge flap. Insert a bearing with ring from above and a bearing bushing without ring from below into the lower frame strap. Insert half of the UNGREASED pin ø14. Insert a spacer between the bearings of the lower frame strap part and the wing part, insert the pin completely (do not hammer it in!) and secure it with a threaded pin.

Hinges with smooth-running bearings are maintenance-free!



4. Construction hinge for heavy doors
Type "THELESOL KOF-75 SLB" or "WSS 04.544" Heavy-duty hinge
Install, align, and mortar the door/gate according to the manufacturer's drawing.
Hinges with special ball bearings, for door leaf weights up to approx. 600 kg.
After final alignment of the wings and functional testing, screw in the M8 threaded pin firmly to permanently fix the setting.
2 or 3 hinges per door wing, grease the hinge pins and bearings regularly.



5. Three-dimensionally adjustable object hinge
Type "THELESOL 3D"
3D door hinge (caution: ALWAYS prop open the door leaf first) adjustable in the X and Y directions from the inside of the frame using an Allen key.
Secure the door leaf against falling over/slipping out before loosening the middle clamping screws (Y and Z).

To remove the door leaves, prop them up and secure them to prevent them from falling over.
Unscrew the securing screw of the hinge pins. Remove the lower locking knob (2. and 3.) and knock out the hinge pin from the bottom up (see maintenance). To prevent the hinge pins from "wandering" up on the door/gate, the threaded pins must be screwed into the upper hinge parts and tightened after installation.

6.4 Door closers / Closing sequence controllers / Pushing flaps

Door closers:

Only door closers in accordance with EN 1154/1158 are permitted for fire/smoke protection doors. They may be installed on the hinge side or the opposite side of the hinge. The mounting holes on the door are specified by the manufacturer or must be drilled in accordance with the drilling template supplied with the door closer. Internal door closers MUST ALWAYS be pre-set by the manufacturer. Any change to the specified/pre-set installation type of the door closer may only be made after prior consultation with the door manufacturer. Door closers may also be installed on multi-purpose doors without fire and/or smoke protection functions.

For single-leaf fire doors/flaps with a leaf weight of up to 80 kg, without glazing and/or drop down floor seal, which are installed in masonry or concrete, spring hinges in accordance with DIN 18272 may also be used as closing devices.

As an alternative to door closers, the use of swing door drives as part of a hold-open system is also permitted if the drive is approved for this purpose and its installation has been taken into account during manufacture of the door. Both "push" (non hinge side) and "pull" (hinge side) drives may be used if their suitability has been verified by the manufacturer.

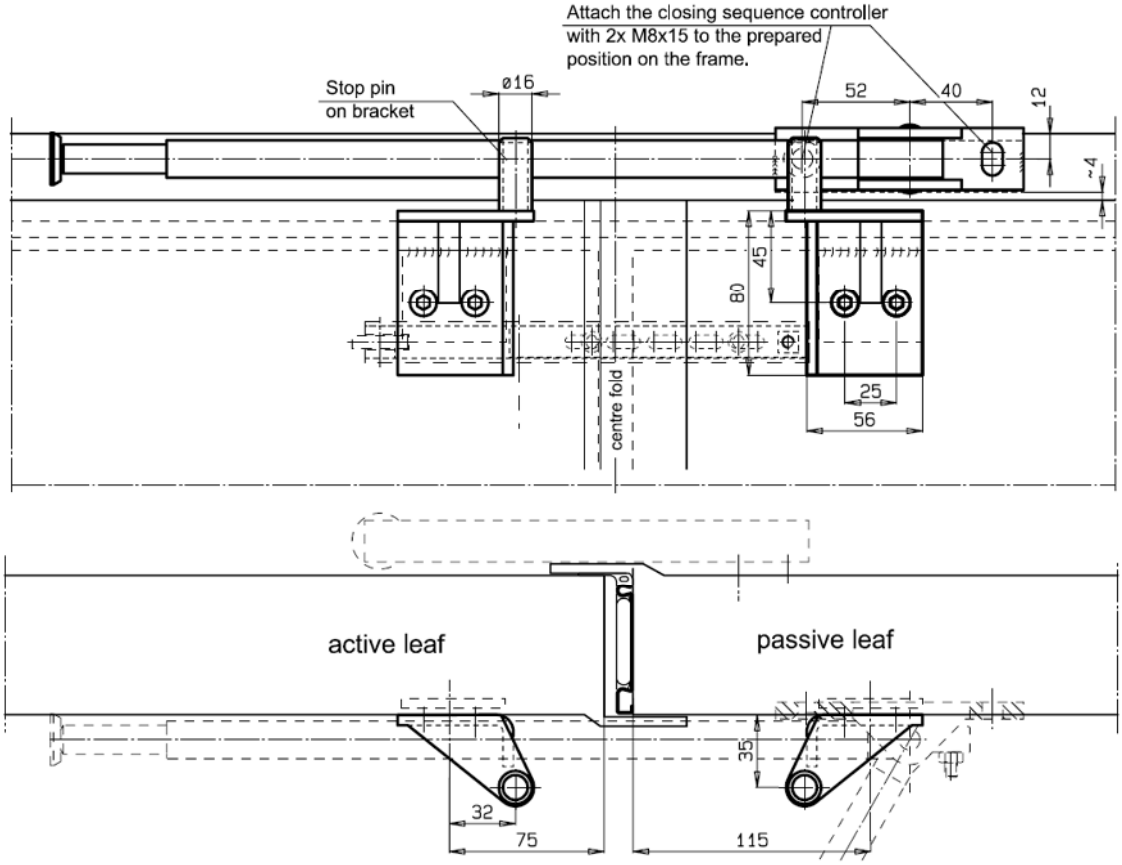
The closing device must be installed (and connected) in accordance with the separate instructions provided by the respective manufacturer.

Electrical work may only be carried out by trained personnel.

Closing sequence controller:

Double-leaf fire and smoke protection doors must be equipped with a closing sequence controller unless the closing sequence control is integrated in the door closer. The closing sequence controller keeps the active leaf partially open until the passive leaf is closed.

Installation is carried out in accordance with the manufacturer's instructions. All components on the frame and door leaf must be fixed in the pre-set positions.

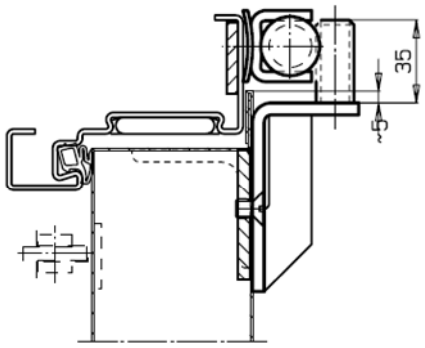


Fasten the closing sequence controller with 2x M8x15 screws to the prepared position above the fixed sash on the frame.

Screw the two enclosed drive pins, each with 2x M8 screws, to the upper middle corner of the active and passi leaf and tighten.

Open the active and passive leaf and secure them.
Close the active leaf until the adjusted controller-arm rests against the stop pin. Lock the controller-arm and tighten it securely.

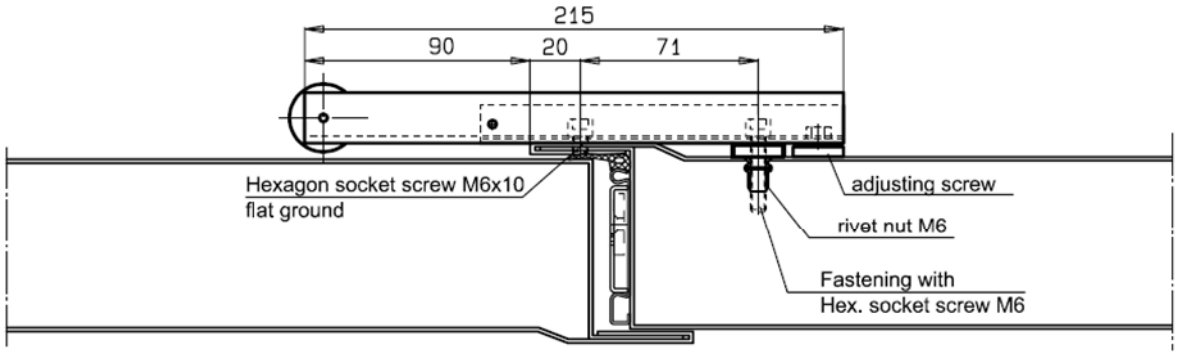
Function test:
Open both leaves completely and close the active leaf using the door closer. The closing sequence controller holds the active leaf open at approx. 30°. Close the passive leaf. The regulator arm is folded in by the driver pin and the passive leaf closes in front of the active leaf.



Pushing flap:

Double-leaf fire and smoke protection doors **with anti-panic function** in the active and passive leaves (full panic) must be equipped with a pushing flap on the passive leaf. When the door is opened via the passive leaf, the active leaf is opened and pushed forward by the pushing flap to such an extent that there is no jamming between the door leaves and the proper functioning of the closing sequence regulator is ensured.

Installation must be carried out in accordance with the manufacturer's instructions.

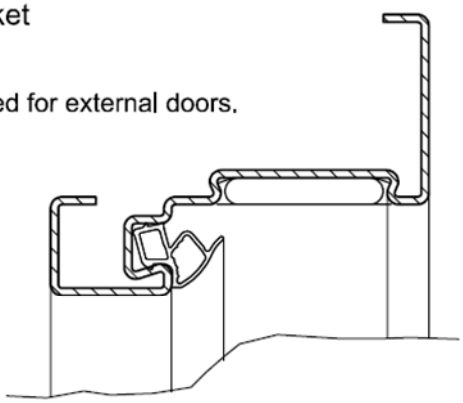


Attach the pushing flap with 2x M6 screws to the prepared position on the centre bar of the passive leaf. Adjust the flap so that the closing sequence controller keeps the aktive leaf open and the passive leaf opens without jamming.

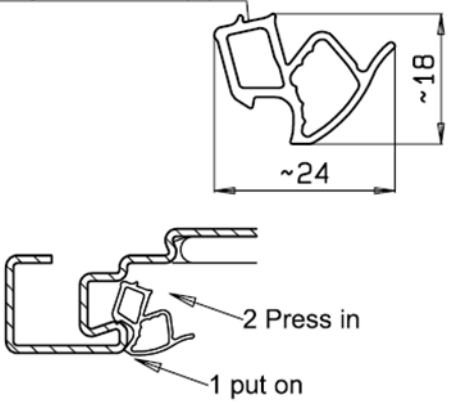
6.5 Gaskets

- Frame gasket

GZN-S required for external doors.



Frame gasket GZN (S)



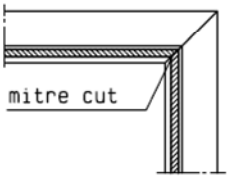
Press the separately supplied gaskets into the frame groove. DO NOT STRETCH!
Always press the sealing lip in so that it faces the frame rebate!
Use a lubricant (e.g. talcum powder) if necessary.

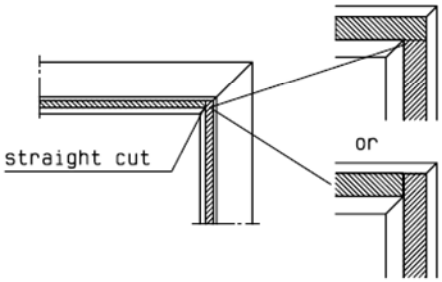
Using talcum powder:
Application: Apply a small amount of talcum powder (baby powder) to a clean microfibre cloth.

Distribution: Carefully rub the powder into the rubber seals.

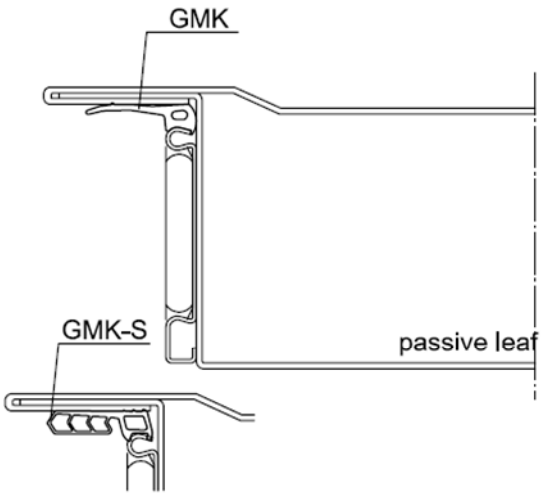
Advantages: It keeps the rubber supple, protects against heat and moisture, and prevents sticking.

Corner formations GZN optional:

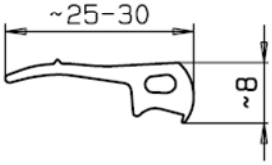




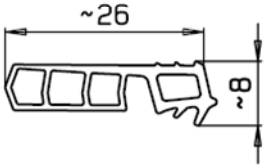
- Centre fold gasket



Centre fold gasket GMK



Centre fold gasket GMK-S



Caution: Gaskets must not be painted over!

Gaskets are usually made of EPDM with a Shore hardness of approx. 60-65 Shore A
Silicone gaskets are additionally marked with an 'S'. The hardness is approx. 60 Shore A

6.6 Smoke protection - floor seal

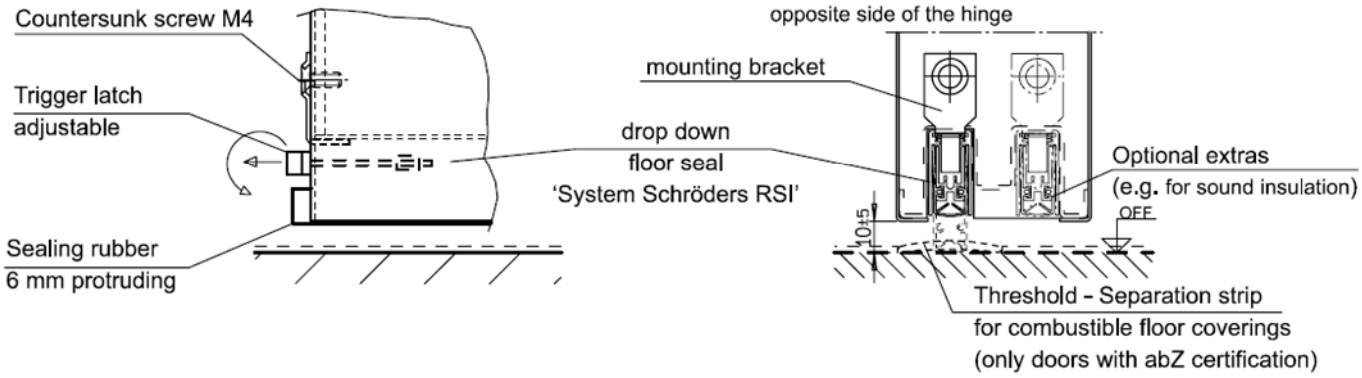
1. Drop down floor seal

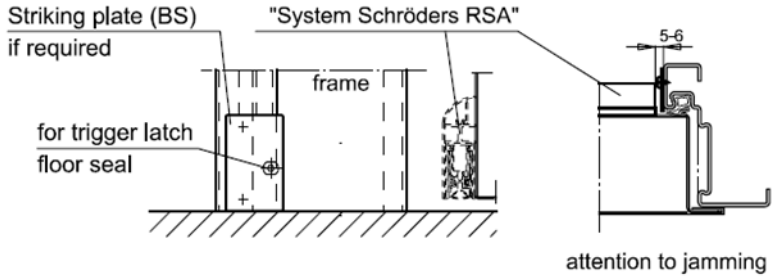
The floor gap for a drop down floor seal may be 10±5. Observe the delivery/dimension/function specifications provided by the door manufacturer, as a small floor gap may be required in some cases depending on the function (RC/sound, etc.)

Attach the first fixing bracket with a countersunk screw ≥M4 to the rebate side on the security side door leaf. Slide the floor seal on/in from the lock side (the release mechanism faces the hinge side). Slide the second fixing bracket into the aluminium profiles and fix it to the door leaf.

When the door is closed, the seal must rest firmly on the finished floor across its entire width with moderate pressure. If necessary, pull out the side release latch slightly, adjust it by turning it and push it back in (test the pressure with a sheet of paper, for example).

The floor must be level, horizontal and joint-free in the area of the floor seal and must not have any carpet or tile/hollow joints. . If necessary (e.g. uneven floor), install a threshold strip as described below. With the floor seal in place, screw a stop plate for the release cam onto the bottom of the frame (sheet metal screw ≥ø3.5x9.5).





Suitable floor seals:
'System Schröders RSI' (internal)
'System Schröders RSI-V' (internal)
'System Schröders RSA' (external)

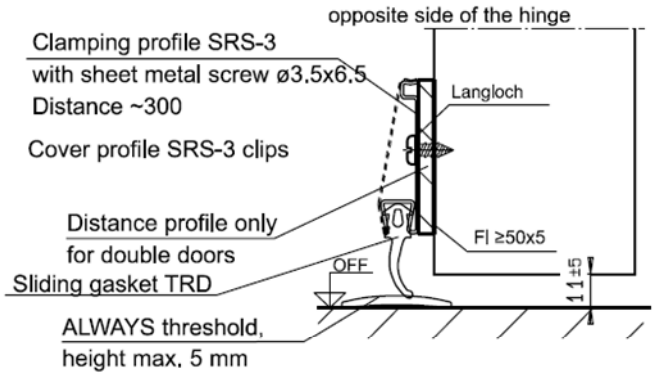
Not for doors with CE marking
'Planet HS' (internal)
'Planet FT' with base profile (external)

2. sliding gasket

- Clamp profile SRS-3 with recessed rubber gasket (and flat iron ≥50x5 - only for 2-leaf FSA) on the opposite side of the hinge, loosely screw to the door leaf with sheet metal screw ø3.5, optionally M4.
- For 2-leaf door Fl0x5, screw on due to centre rebate.

- With the door closed, align the threshold (max. height 5 mm) with the finished floor behind the rubber seal and fasten with a countersunk screw and expansion dowel ø6.

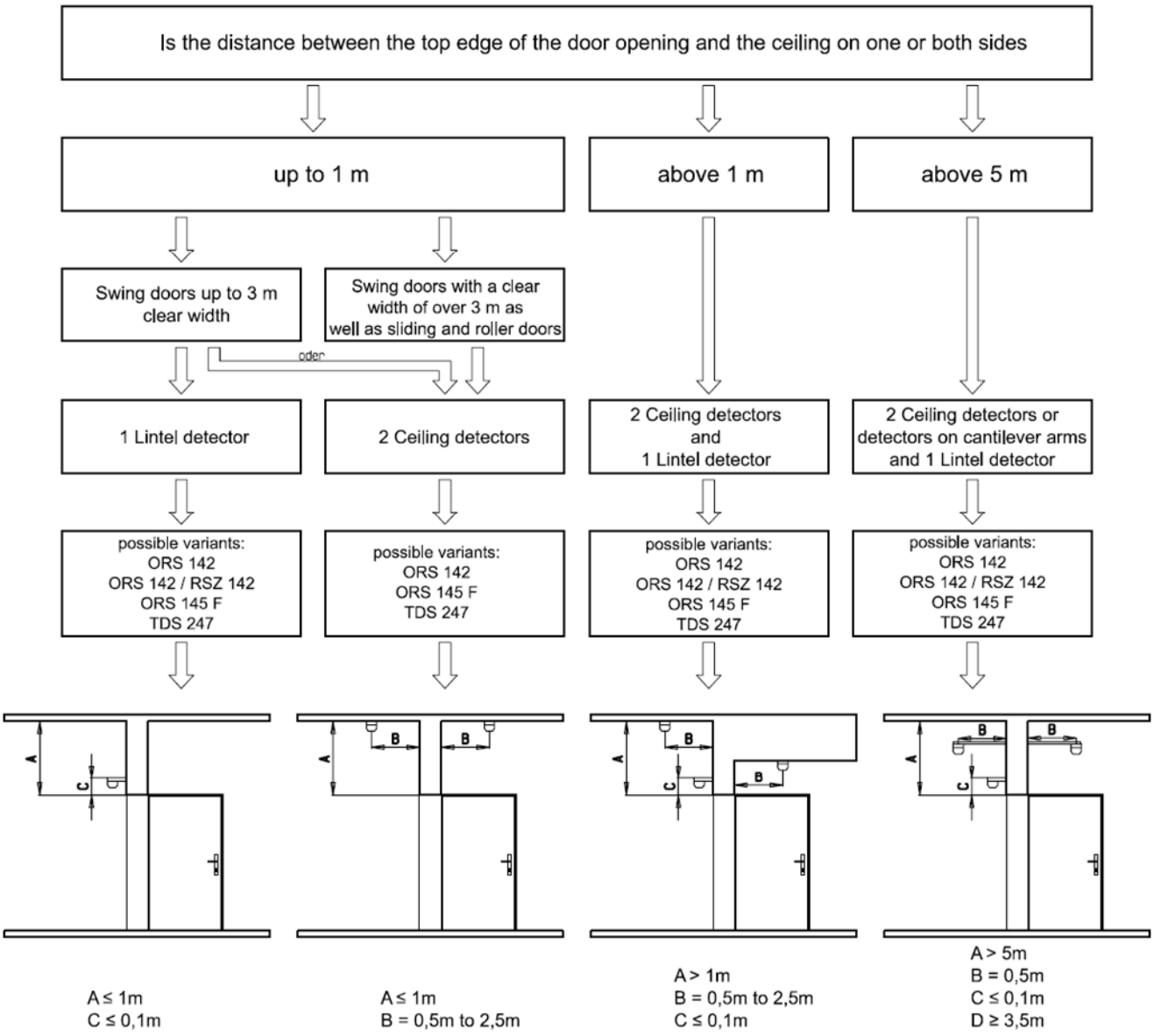
- With the door closed, adjust the height and tighten the screws. When the door is closed, the sliding gasket must rest on the threshold across the entire width of the door and move freely when the door is opened.



- Seal the connections to the door leaf with a permanently elastic sealant.

For smoke protection: seal any secondary paths (joints visible from the outside) against smoke with a permanently elastic sealant.

6.7 Hold-open system



Components from Hekatron are given here as examples. Alternatively, any hold-open systems that have general type approval for fire and smoke protection closures can be used. Please note that all components used are listed in the type approval.

Once a hold-open system has been installed and is ready for operation at the place of use, its proper functioning and correct installation must be verified by means of an acceptance test. This must be commissioned by the building owner/operator. The acceptance test for hold-open systems on fire protection / smoke control doors may only be carried out by specialists employed by the holder of the general building authority approval, or by specialists authorised by them, or by specialists from a testing centre designated by the DIBt.

The maintenance standard DIN 14677 specifies both the content and the intervals of the functional test (inspection).

If twelve functional tests carried out at monthly intervals reveal no functional defects, the hold-open system only needs to be checked every three months. If a functional defect is detected during the quarterly functional tests, operability must be restored immediately and verified by at least three consecutive monthly functional tests.

The functional tests and results must be recorded and kept by the operator.

7. Requirements for special functions

7.1 Security doors: bullet resistance up to FB6, burglary protection up to RC4

Wall thicknesses for resistance classes

Resistance class	masonry DIN 1053-1 Strength class ≥12 Mortar group II	concrete DIN 1045 Strength class ≥B15	aerated concrete Strength class ≥4.4	flexible wall with RC certification
RC1	≥115 (≥175 T90;EI90)	≥100 (≥140 T90;EI90)	-	≥100
RC2	≥115 (≥175 T90;EI90)	≥100 (≥140 T90;EI90)	-	≥100
RC3	≥115 (≥175 T90;EI90)	≥120 (≥140 T90;EI90)	≥150	≥100
RC4	≥240	≥140	≥150	-
FBN-FB4	≥115	≥100	-	manufacturer's specifications
FBN-FB6	≥150	≥140	-	

Locking system: Mortise lock to DIN 18250 / DIN 18251 / EN 12209, Class 3 or higher; electromechanical locks in accordance with EN 14846 or multi-point locks in accordance with EN 15685, or emergency exit or panic locks in accordance with EN 179 and EN 1125.

Fittings:

	profile cylinder	Protective fittings/handles	Glazing
EN 1627	DIN 18252	DIN 18257	DIN EN 356
RC1 N	1 BZ	ES 1	–
RC2 N	1 BZ	ES 1	–
RC2	1 BZ	ES 1	P4A
RC3	1 BZ	ES 2	P5A
RC4	2 BZ	ES 3	P6B

(FBN doors are subject to higher requirements in accordance with the manufacturer's delivery documents.)

Hinge side security: At least 1 security bolt with gap reduction per leaf.
Secure hinge pin after installation (e.g. spot welding or ball joint).

Lock side security: RC3 and RC4: Burglary-resistant profile "ESP" (only on the attack side).
(Not applicable to single-leaf doors with attack side on not hinge side).
Install lift stop on the top edge(s) of the leaf(s).

Bullet resistance:

System Schröders FBN-1 or FBN-2; FB4 or FB6, bullet-resistant doors should be installed in walls with the appropriate resistance class. For lime-sand brick walls (NO vertically perforated bricks) in thin-bed mortar, a wall thickness of ≥115 mm is specified for FB4 and a wall thickness of ≥150 mm for FB6.

There are no generally applicable protection classes for concrete walls; here, the type of concrete, reinforcement and construction. Have the wall confirmed by the site management before installation. For fire and/or smoke protection doors with additional safety requirements, the minimum wall thicknesses required for fire protection requirements in accordance with point 2.2 Wall type/thickness.

Installation sequence:

The installation sequence for security doors such as burglar-proof doors or bullet-resistant doors corresponds to the procedures described in section 5, frame fastening. Please note, however, that security doors may be significantly heavier than normal functional doors due to their design.

Use suitable aids/transport and carrying equipment to avoid injury and damage.

Secure the frame placed in the opening against tipping out, align it and underlay and fasten it on the hinge side as described in point 5 ff.

Hang the door leaf and align the frame. Adjust the air gaps at the edges and in the middle (6–1) as well as the gap between the door rebate and the frame. Back up and fasten all anchor points of the frame accordingly.

If the attack side is not the side of the hinge, open fastening points must be mortared or (from RC4) covered and secured with a supplementary frame.

Fit the fittings in accordance with the manufacturer's installation instructions and check that they are working properly. Secure hinge pins against being knocked out (e.g. with a spot weld or ball bearing).

An installation confirmation must be issued for each construction project, confirming that the installation has been carried out correctly. The confirmation must be handed over to the client or their representative.

7.2 Sound insulation

Depending on the door type/size and features, the following gaskets must be used in accordance with the enclosed delivery documents to meet sound insulation requirements (see also points 6.5 and 6.6)

- Frame:

System Schröders - Gasket GZN (EPDM) / GZN-S (silicone)

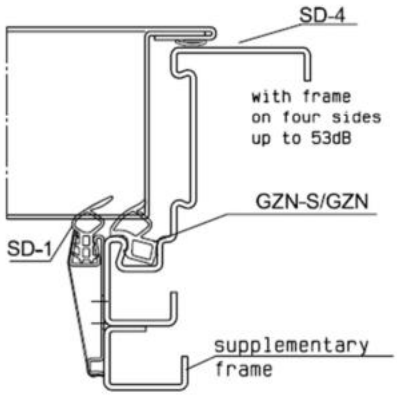
- Fire door: Version with silicone gaskets always for external doors, for internal doors optionally

Insert gasket profile into frame see section 6.5

Additional SD-1 attachment gasket, silicone seal

Additional fold gasket SD-4, self-adhesive

Insert the SD-1 gasket into the SRS-3 steel profile, screw it to the frame and, with the door leaf closed, adjust and tighten. Observe the contact pressure. An fire door must close securely on its own. Optionally attach the SRS-3 steel profile clips.

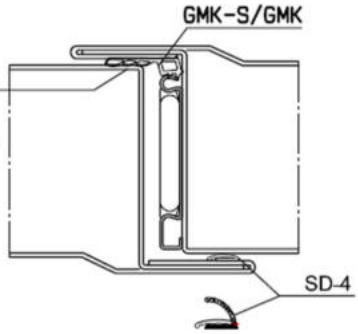


To ensure sound insulation, the frame must be completely mortared and care must be taken to ensure that all sealing profiles on both the door leaf and the floor are pressed against the frame with sufficient pressure (seal the frame mirror on the outside of external doors/gates).

- centre fold:

Centre fold gasket GMK-S (silicone) / GMK (EPDM)

- Fire door: Always use a silicone gasket for external doors, for internal doors, optionally insert a gasket between the clamping profile and the centre rebate.



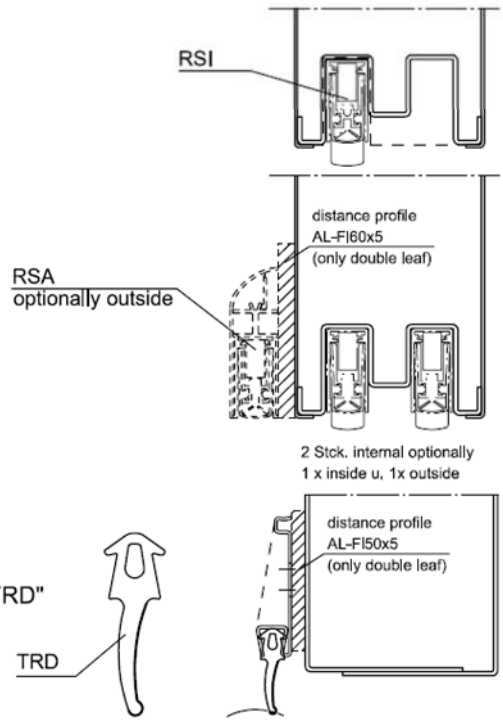
- Base / bottom edge:

Performance characteristics depend on door size and fittings (see delivery note)

1 piece of internal drop-down floor seal
"System Schröders RSI"
Adjusting the seals using the side release pin
(test the contact pressure with a sheet of paper)

2 pieces of internal drop-down floor seal
"System Schröders RSI"
Adjusting the seals using the side-mounted release pin
(test the contact pressure individually with a sheet of paper)

1 piece internal and 1 piece external
drop-down floor seal
Adjusting the seals using the side-mounted release pin
(test the contact pressure individually with a sheet of paper)



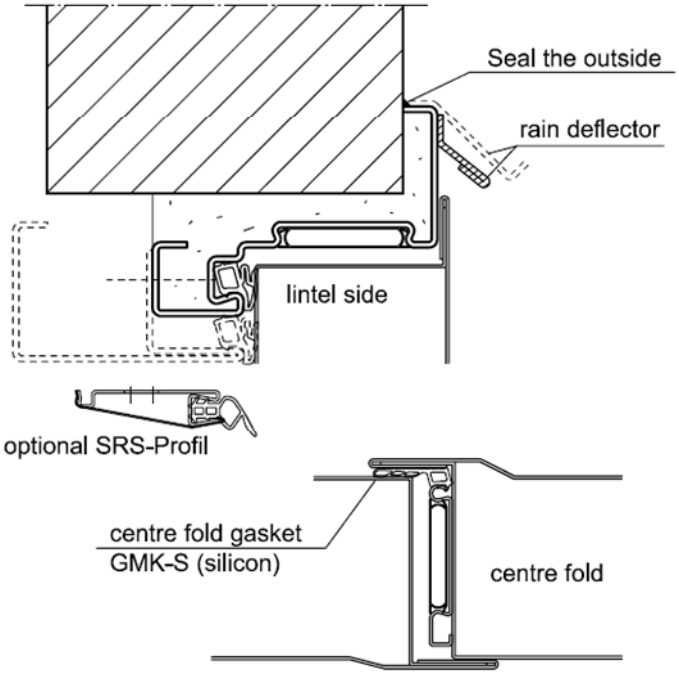
sliding gasket "System Schröders TRD"
with clamping profile SRS-3

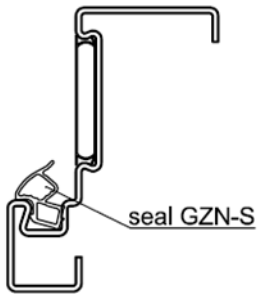
7.3 Air- / wind- / driving rain tightness

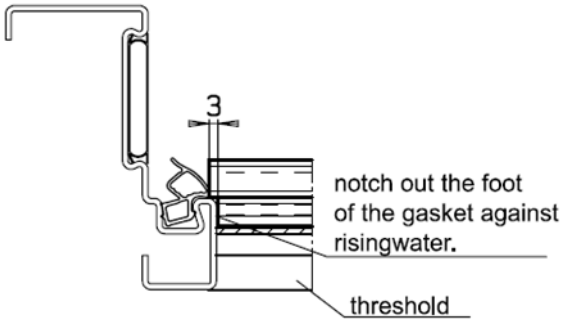
Doors for outdoor use must be fitted with the GZN-S frame gasket and, in the case of double doors, with the GMK-S centre rebate gasket.

Insert the gasket into the frame profile on three or four sides (see point 6.5).

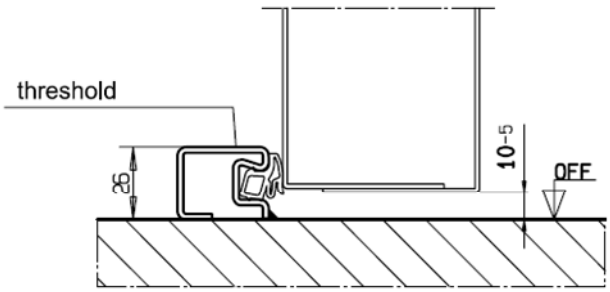
For designs with an inserted lower threshold profile, notch out the foot of the lower horizontal gasket approx. 3 mm at the side

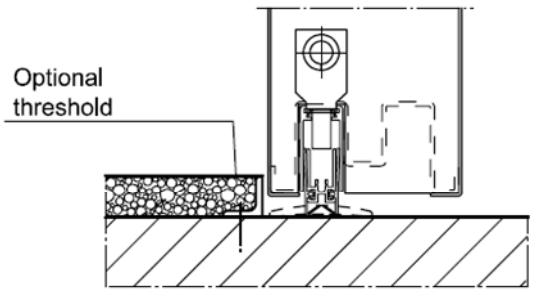




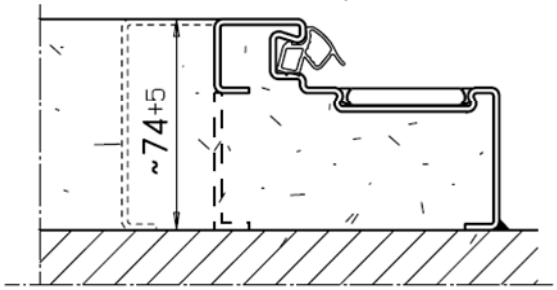


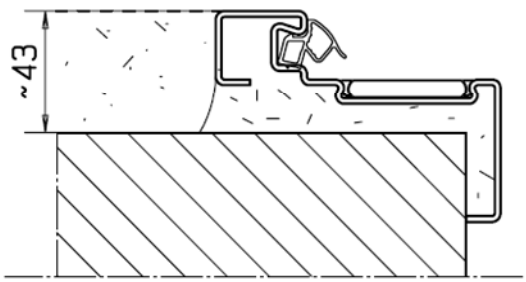
(rainproof only with lower threshold/
frame profile and gasket)





Optional threshold-side frame design





To ensure performance characteristics, ensure that the sealing profiles are in contact with the door leaf or the floor. The wall connections of the frame and the threshold profile, where moisture could penetrate, must be sealed on three sides with permanently elastic sealant, as must the door leaf rebate.

8. Surface cleaning and Maintenance

Surfaces: painting, cleaning/treatment, gaskets

The door leaf and frame are made of stainless steel or galvanised and optionally primed or powder-coated, e.g. with a 2-component epoxy-based primer or alternative water-based primers. If primed, it is recommended that a top coat be applied to the door and frame within 3 months of delivery. Suitable primers and top coats must be used on zinc substrates.

When carrying out painting work, care must be taken to ensure that the gaskets (EPDM or silicone) in the frame or on the door leaf are ***not*** painted over. Fire protection strips, whether clipped or glued, may be painted over.

The *frame gaskets must be removed from the frame before painting* and, once the paint is completely dry (caution with silicone gaskets!)**, they must be reinserted** (press in, do not stretch).

Locks (latch, bolt and faceplate) as well as contacts, door openers, bearings, etc. **must not** be painted over.

Cleaning:

General: Only cleaning agents that do not contain any corrosive, acidic and/or harmful components may be used!

Stainless steel doors require special cleaning agents. Test the cleaning agent on an inconspicuous area (e.g. rebate on the hinge side) before using it on visible surfaces.

Use personal protective equipment!

Gaskets:

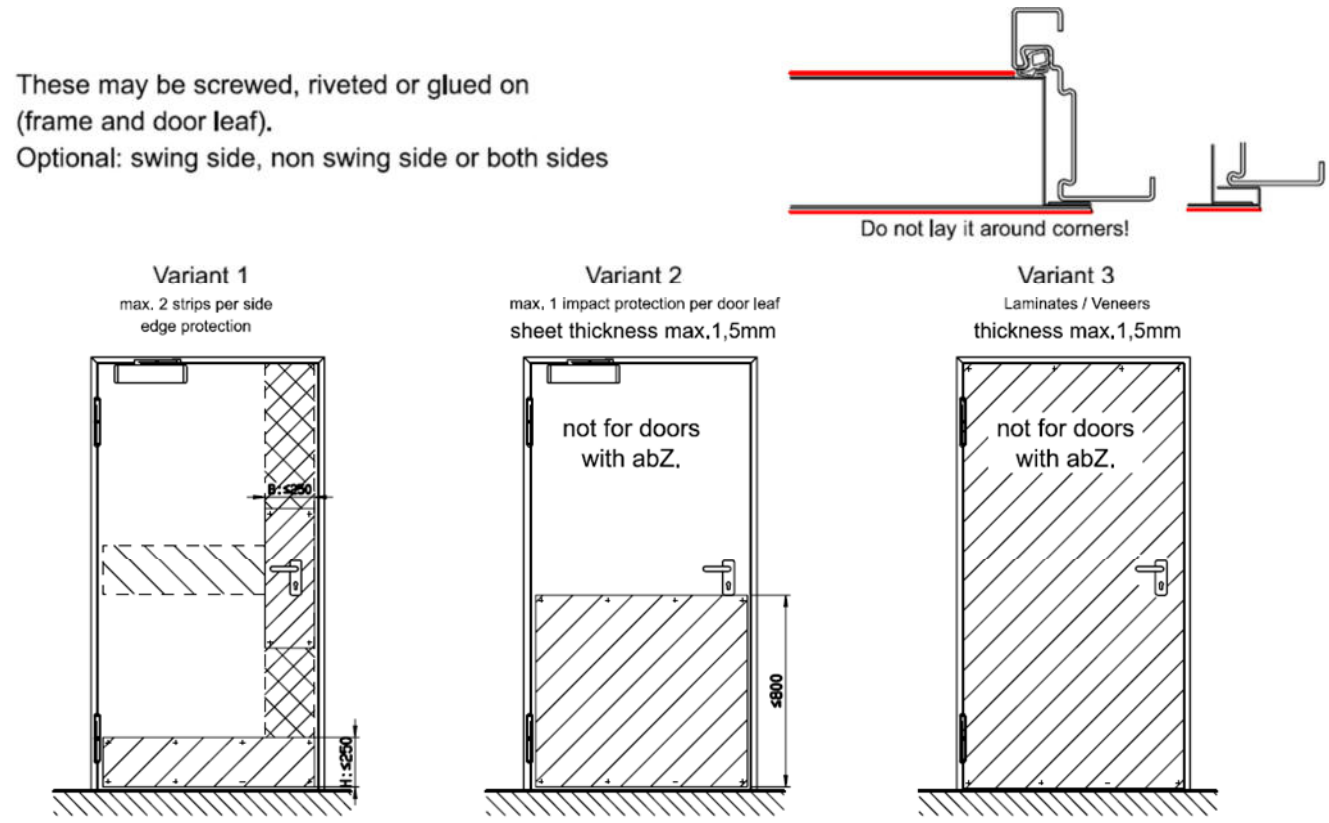
Gaskets should be cleaned with a clean cloth and warm water, adding liquid soap if necessary. Petrol, benzene, turpentine and similar substances must not be used for cleaning!

Gaskets essential for the proper functioning of doors and gates and must be checked regularly by the operator for damage and loss of elasticity. In the event of damage, missing or hard gaskets, please contact the manufacturer of the door (see identification plate) for replacement/exchange/new delivery.

9. Permissible modifications to already installed fire and/or smoke protection doors

(No restrictions for doors without fire or smoke protection function)

- Attachment of contacts, e.g. magnetic contacts and strike plate contacts (bolt contacts) for door monitoring, provided they can be attached or inserted into existing recesses.
- Routing of cables on the door leaf (this includes a hole - ø≤10 mm - from a door leaf edge or surface into the lock pocket).
- Replacement of the lock with a suitable, self-locking lock with a latch, provided that this lock can be installed in the existing lock pocket and no modifications to the strike plate and door leaf are required. The number and position of the locking points must be maintained.
- Screwing, riveting or gluing information signs onto the door leaf.
- Screwing, riveting or sticking on metal strips
  - V1 - for **doors with abZ**.: only up to 250 mm width or height,
  - V2 - for CE-marked doors: up to a maximum of handle height, made of max. 1.5 mm sheet metal e.g. step or edge protection.
  - V3 - Application of decorative laminates or veneers (**not for doors with abZ.**)



- Attachment of protective bars, provided that suitable fixing points are available.
- Addition of Z- and steel corner frames to steel surround frames.
- Gluing of strips made of wood, plastic, aluminium or steel in any shape and position to glass panes.
- Attachment of retaining plates for magnetic hold-open devices to the fixing points on the door leaf.
- Attachment of finger protection profiles – roller blinds (e.g. for door drives).
- Install renovation frames over existing frames if the old frame is stuck and completely covered/enclosed. The new frame **must** be filled with mortar.
- Additional supplementary frames, screwed or welded, even without insulation.
- Colour coatings (including fire protection strips) **but not with intumescent paint!**

10. Maintenance instructions

To ensure that the built-in door functions properly, we recommend checking it at least once a year and rectifying any faults if necessary. Please note that work on electrical systems may only be carried out by electrical laymen up to the safety extra-low voltage (voltage-free).

1. General:
   - Visual inspection of door leaf and frame for mechanical and/or corrosion damage.
2. Lock:
   - Check the fastening of the lock and handle set, tighten if necessary.
   - Lightly grease the latch and bolt. Check the latch action.
   - Function check of the lock and handles or panic bar handles.
3. Hinges:
   - Check the fastening and fit. Replace worn parts.
   - Grease the hinge pins on ball bearing hinges. Hinges with plain bearing bushings are maintenance-free and must not be greased.
   - Grease and tension the spring belt pin (if present).
   - Function check: Door must close securely (see closing devices).
4. Closing mechanism:
   - Check door closer attachment, tighten if necessary. Check closing process.
   - In accordance with DIN 18093, self-closing must occur from an opening angle of ≥10° (spring hinge ≥30°), all lock bolts must engage securely when the gaskets are in place.
   - For double doors, check the closing sequence regulator and adjust if necessary.
   - If necessary, adjust the closing force/speed, opening damping and end push.
5. Air gaps:
   - Check the circumferential and central (double-leaf) air gaps and realign the door leaf if necessary.
6. Gaskets:
   - Check the frame gasket (and floor seal, if present) for damage.
   - Replace damaged gaskets.
   - Check that the door leaf is flush with the frame gasket.
   - If present, check the release latch and pressure of the drop-down floor gasket, if necessary, readjust.
   - Check the permanently elastic gasket and replace them if necessary.
   - Check fire protection strips. Damaged strips must be replaced.
7. Glass:
   - Visually inspect the glass panes for cracks or chips.
   - Check the surrounding glazing rubber for damage.
   - Have damaged panes and glazing rubber replaced by authorised specialists by the manufacturer.
8. Electrical attachments:
   - If present, check the function of the electric door opener, the locking system, electric locks, safety and monitoring devices, etc.

For electric locks in escape and rescue routes, the statutory inspections and monitoring requirements as well as the manufacturer's maintenance specifications must be observed. Hold-open systems must be tested, serviced and maintained in accordance with DIN 14677-1.

Note:
To ensure that the doors remain in good working order, we recommend taking out a maintenance contract.

11. Installation confirmation

Construction project:

_____

Location:

_____

Installed on: _____

by company: _____

_____

Door/gate manufacturer:

_____

Type: _____

Door type according to point 1.3, type plate or manufacturer's documents

Serial/door no. or door list no.: _____

_____

_____

(This installation confirmation may relate to several closures of the same door type in the same construction project)

I hereby confirm that the above-mentioned closure(s) has/have been professionally installed and adjusted in accordance with the installation instructions in all respects.

_____ _____

Place, date **Signature**

_____

Name in BLOCK CAPITALS

(This confirmation may be used by the builder for any necessary forwarding to the competent building control authority.)

12. Notes/sketches:

13. Info (links)

https://www.system-schroeders.de

For further advice, maintenance work, repairs, conversions and additions, please contact the manufacturer of the door/gate.

System Schröders
Innovation Tür und Tor

Theo Schröders
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