



ES

Instrucciones de montaje y mantenimiento

Puertas de acero de una y dos hojas (Puertas OD, H3G, H16G, HS75, H16S1)

ESPAÑOL..... 3



..... 9

Doorgeven of kopiëren van dit document, gebruik en mededeling van de inhoud ervan zijn verboden indien niet uitdrukkelijk toegestaan. Overtredingen verplichten tot schadevergoeding. Alle rechten voor het inschrijven van een patent, een gebruiksmodel of een monster voorbehouden. Constructiewijzigingen voorbehouden.

Índice

1 Acerca de estas instrucciones 3
 1.1 Indicaciones de advertencia utilizadas 3
 1.2 Símbolos utilizados 3
2  Indicaciones de seguridad 4
3 Información sobre las características de la puerta 4
 3.1 Puertas cortafuego y cortahumo 4
 3.2 Puertas con aislamiento acústico 6
 3.3 Puertas antiintrusión 6
 3.4 Puertas funcionales 6
 3.5 Protección cortafuego y uso en el exterior 6
4 Montaje 6
 4.1 Antes del montaje 6
 4.2 Medidas 6
 4.3 Durante el montaje 6
 4.4 Indicaciones sobre la parte de ilustraciones 7
5 Mantenimiento y cuidado 7
 5.1 Trabajos de mantenimiento anuales 7
 5.2 Tratamiento superficial necesario para elementos con imprimación estándar 7
 5.3 Limpieza 7
 5.4 Cuidado de componentes de acero inoxidable 7
6 Etiquetado y marcado 8
7 Información general 8
8 Declaración de prestaciones 8

 9

Estimada cliente, estimado cliente:
 Nos complace que se haya decidido por un producto de calidad de nuestra casa.

1 Acerca de estas instrucciones

Lea y tenga en cuenta estas instrucciones. Contienen informaciones importantes para el montaje, el mantenimiento y el cuidado de su puerta de acero, y es un documento importante para el acta de obra.

Si después de estudiar estas instrucciones tiene alguna duda, póngase en contacto con nuestro Servicio al Cliente.

1.1 Indicaciones de advertencia utilizadas

 El símbolo de advertencia general indica un peligro que puede provocar **lesiones** o **la muerte**. En el texto se utiliza el símbolo de advertencia general combinado con los niveles de advertencia que se describen a continuación. En la parte de ilustraciones una indicación especial hace referencia a las explicaciones del texto.

 **PELIGRO**

Indica un peligro que puede provocar directamente la muerte o lesiones graves.

1.2 Símbolos utilizados



Protección cortafuego



Protección cortahumo



Puerta de seguridad



Aislamiento acústico



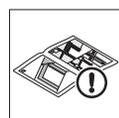
Puerta funcional



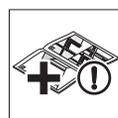
Indicación importante



Ver parte de texto



Ver parte de ilustraciones



Ver instrucciones de montaje contenidas en el paquete de accesorios



Pedir como accesorio



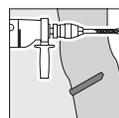
Procedimiento correcto



Procedimiento incorrecto



Soldar



Perforar



Abrepuertas eléctrico



Peligro de intrusión en el lado de apertura



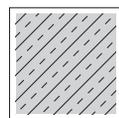
Peligro de intrusión en el lado de cierre



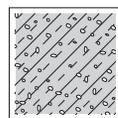
Vía de evacuación



Madera



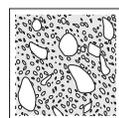
Mampostería / hormigón



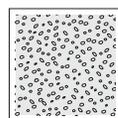
Hormigón poroso



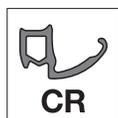
Yeso



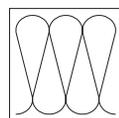
Hormigón



Mortero



Junta de cerco CR
 T60 / El₂ 60 / HBS60
 T90 / El₂ 90 / HBS90
 T120 / El₂ 120 / HBS120
 T30 / El₂ 30 con relleno de lana mineral



Material aislante A
 (EN 13501-1)

2 Indicaciones de seguridad

PELIGRO

Peligro de muerte durante el montaje de la puerta de acero

Durante el montaje, la puerta o el marco pueden caer sobre una persona y causar heridas mortales.

► Asegúrese de que la puerta y el cerco no puedan caerse antes ni durante los trabajos de montaje.

- Encargue el montaje y el mantenimiento únicamente a personal cualificado e instruido.
- Encargue los trabajos electrónicos únicamente a personal especializado con la correspondiente formación.
- No realice ninguna modificación mediante ampliaciones o reformas de la puerta que puedan poner en peligro su seguridad.
- Evite peligros por fuego, gas, polvo, vapor, humo y explosión durante los trabajos de soldadura, quemado y esmerilaje.
- Evite durante los trabajos de soldadura la exposición al calor de los materiales espumantes, ya que podrían reaccionar y perder sus propiedades.

3 Información sobre las características de la puerta

Tenga en cuenta que la puerta puede cumplir características individuales, una combinación de las características cortafuego, cortahumo, aislamiento acústico y protección antiintrusión, o las características de una puerta funcional.

3.1 Puertas cortafuego y cortahumo

- La respectiva homologación puede verse en la página web www.hoermann.de/dokumentation/zulassungsbescheide-fuer-feuerschutzabschluesse/. La homologación debe encontrarse en el lugar de empleo.
- La información indicada se refiere a los requisitos mínimos exigidos para el montaje en Alemania. Para el montaje en otros países, se aplica la homologación nacional correspondiente, debiéndose tomar de base como mínimo los valores característicos de los materiales según DIN.

- Tenga en cuenta las normas DIN 18093 (montaje de puertas cortafuego) y DIN 18100 (huecos en la pared para puertas) o las correspondientes normas nacionales.
- En determinados casos, el fabricante está autorizado a expedir una declaración de correspondencia según los artículos 22 y 23 del Marco común de leyes urbanísticas.
- **El propietario es responsable del perfecto estado de la puerta.**
- En Alemania **no** está permitido usar bisagras de muelle en puertas y registros con las siguientes características:
 - Peso de la hoja > 80 kg
 - Acristalamiento
 - Montaje en pared de montaje (excepto medidas < 1000 x 1000 mm)
 - Combinación como puertas cortahumo según DIN 18095
 - de 2 hojas

En otros países pueden existir normas diferentes, sin embargo recomendamos que se observen y cumplan las indicaciones vigentes para Alemania.

- Utilice herrajes, cerraduras, elementos de cierre y piezas electrónicas únicamente si forman parte del equipamiento homologado para la puerta o si existe una homologación del fabricante.
- Paredes de yeso encartonado y espesor del muro permitidos: ver Tabla 1:
- Paredes y espesor del muro permitidos ver Tabla 2:
- Monte puertas con galce en 3 lados, sin remate inferior, en el nivel más bajo del pozo.
- Rellene la parte posterior del cerco con mortero mineral sobre la base de cemento, p. ej. LM21 de Sakret, si no se indica algo diferente para la situación de montaje. Separe los cercos integrales y los cercos angulares (con o sin contracерco) antes del relleno, para que no se doblen debido a la presión ejercida por el mortero.
- **Protección cortahumo:**
 - Use juntas inferiores y cuñas de sellado (ver parte de las ilustraciones, puntos 10.6 y 11).
 - Selle la conexión del cerco a los componentes colindantes por ambos lados y con elasticidad permanente, si el cerco no se rellena con mortero.
 - Use cilindros de cierre.
- No exponga los acristalamientos de puertas cortafuego directamente al sol.

Tabla 1: Paredes de montaje F90A autorizadas con grosor mínimo para puertas de protección cortafuego y cortahumo, altura ≤ 5000 mm

Certificado de homologación n°	Pared	H3 OD H_30 OD	H3-1G H_30 D1	¹⁾ H3-2 VM H_30 D2	H16 S1 H_90 E1
P-3310/563/07-MPA BS	Knauf W 112	≥ 100 mm	≥ 100 mm	≥ 100 mm	≥ 125 mm
P-3391/170/08-MPA BS	Knauf W 131	≥ 116 mm	—	—	≥ 177 mm
P-3310/563/07-MPA BS	Knauf W 132	≥ 100 mm	—	—	—
P-3202/2028-MPA BS	RiGips W 352 / W 353	≥ 100 mm	≥ 100 mm	≥ 100 mm	≥ 150 mm
P-3956/1013-MPA BS	RiGips 3.40.01ff. / 3.41.01ff.	≥ 100 mm	≥ 100 mm	≥ 100 mm	—
P-3014/1393-MPA BS	RiGips 3.60.20	≥ 100 mm	≥ 100 mm	≥ 100 mm	≥ 125 mm
P-3020/0109-MPA BS	RiGips 6.70.10	≥ 165 mm	—	—	≥ 165 mm
P-SAC-02/III-681	LaFarge L11 – L14	≥ 100 mm	≥ 100 mm	≥ 100 mm	—
P-MPA-E-98-005	LaFarge L15	≥ 100 mm	—	—	≥ 125 mm
P-3515/0519-MPA BS	LaFarge L16	≥ 150 mm	—	—	≥ 150 mm
P-3391/0890-MPA BS	LaFarge L18	—	—	—	≥ 161 mm
P-MPA-E-99-047	Promat 450.81	≥ 140 mm	—	—	≥ 140 mm
P-11-003478-PR01	B + M W 50 / 100 – W 100 / 150	≥ 100 mm	—	—	—
P-3854/1372-MPA BS	Fermacell 1 S 31/3.1	≥ 95 mm	≥ 95 mm	≥ 95 mm	—

1) máx. 2750 x 2750 mm

Tabla 2: Paredes admitidas, y anchos de pared mínimos para puertas cortafuego y cortahumo (mm) ver 4.2

Pared	H3-1 OD H_30-1 OD		H3-2 OD H_30-2 OD		H3-1 G H_30 D1	H3-2 WM H_30 D2	H16-1 G H_90 D1	H16-2 G H_90 F-2	H16-S1 H_90 E-1	H16-1 OD H_90-1 OD	H16-2 OD H_90-2 OD
	¹⁾ k ≤ 2500 100	²⁾ k > 2500 140	¹⁾ k ≤ 2500 100	²⁾ k > 2500 140							
Hormigón DIN 1045-1, resistencia ≥ C12/15	¹⁾ k ≤ 2500 100	²⁾ k > 2500 140	¹⁾ k ≤ 2500 100	²⁾ k > 2500 140	140	140	140	140	120	140	140
Mampostería DIN 1053-1, resistencia ≥ 12, grupo de mortero ≥ 2	¹⁾ k ≤ 2500 115	k > 2500	¹⁾ k ≤ 2500 115	²⁾ k > 2500 175	175	175	240	240	175	115	175
Bloque de hormigón poroso o bloques de precisión , DIN 4165-3, clase de resistencia ≥ 4, Placas de hormigón poroso según = Homologación general para la construcción, clase de resistencia ≥ 4.4	k ≤ 2500		k ≤ 2500		—	—	—	—	—	—	—
Pared de montaje F90-A según ABP, Ilustr. 9D Tener en cuenta alto máx. de 5000 mm	³⁾		³⁾		³⁾	³⁾	—	—	³⁾	—	—
Pared de montaje F90-A DIN 4102-4 / tabla 48, Ilustr. 9D Tener en cuenta alto máx. de 5000 mm	e ≤ 1320		e ≤ 2500		—	e ≤ 2750 y k ≤ 2750	—	—	—	—	—
Pared de montaje F90-B DIN 4102-4 / tabla 49, Ilustr. 9D Tener en cuenta alto máx. de 5000 mm	100	e ≤ 1250 y k ≤ 2500	100	e ≤ 2500 y k ≤ 2500	100	100	—	—	125	125	125
Pared de montaje F30-B	⁴⁾ 100 / ⁵⁾ 130	⁴⁾ 100 / ⁵⁾ 130	⁴⁾ 100 / ⁵⁾ 130		—	—	—	—	—	—	—
	e ≤ 1125 y k ≤ 2125		—		—	—	—	—	—	—	—
	185		—		—	—	—	—	—	—	—
Bloques de yeso VG Orth, P-SAC 02 / III-468, Ilustr. 9/A17	—		—		—	—	—	—	—	—	—
	100		100		—	—	—	—	—	—	—

1) ohne Oberteil 2) mit Oberteil 3) ver Tabla 1: 4) cerco de 2 capas 5) Dryfix

3.2 Puertas con aislamiento acústico

- El aislamiento acústico total depende de los componentes colindantes. Los valores de aislamiento acústico de la pared y de la puerta no necesitan ser indicados por separado, ya que no pueden deducirse únicamente del valor de aislamiento acústico R_w o R de la puerta.
- Preste atención a que las juntas estén correctamente fijadas.
- El suelo debe ser plano para garantizar que la junta inferior selle completamente.
- Separe el pavimento de la zona del umbral.
- Utilice cuñas de sellado y una junta inferior (ver parte de las ilustraciones, puntos 10.6 y 11).
- Use cilindros de cierre.
- Rellene la parte posterior del cerco completamente con mortero.
- Pegue las esquinas cortadas a inglete de la junta de cerco, por ejemplo con Kóratan UC 41.

3.3 Puertas antiintrusión

- La puerta sólo cumple su función antiintrusión si el cerrojo está cerrado por completo y se ha retirado la llave.
- Fije las hojas de las puertas RC4/B y de todas las RC puertas de 2 hojas en las bisagras con dos tornillos respectivamente (ver parte de las ilustraciones, punto 8.3b).
- Utilice únicamente cercos angulares, cercos angulares con contracerco y cercos integrales.
- Rellene el cerco de las puertas RC2/N en la zona de los puntos de bloqueo, las bisagras y los bulones de seguridad de forma que queden resistentes a la presión.
- Rellene el cerco de las puertas RC3/A y RC4/B en todo su perímetro para que queden resistentes a la presión.
- En las puertas acristaladas monte el marco de sujeción del cristal con las lengüetas de seguridad en el lado de cierre.
- En caso de sustitución del acristalamiento superior, monte los bloques de sujeción como antes del montaje.
- En las puertas de 2 hojas, mida las medidas de ranura inferiores de la depresión del suelo.
- En las puertas antipánico, dificulte la intrusión mediante alambre, p. ej. por reduciendo la ranura inferior más empleando un umbral semirredondo.
- Rellene los cercos de las puertas RC2 completamente con mortero para montarlos en paredes de montaje F90A.

3.3.1 Requisitos mínimos para puertas antiintrusión

Clase de resistencia según DIN EN V 1627 / DIN EN 1627 / VDS	RC2 / N	RC3 / A	RC4 / B
Mampostería DIN 1053 parte 1 (mm)	115	115	240
Hormigón armado, mín. C12 / 15 (mm)	100	120	140
Bloques de hormigón poroso clase 4 (mm)	175, 115 ¹⁾	300	-
Pared de montaje F90 A	✓	-	-
Placas de hormigón poroso clase 4 (mm)	150	-	-
Bombín según DIN 18252 ³⁾	P2BS	P2BS	P3BS
Bombín ²⁾ ³⁾ ⁴⁾	Clase A	Clase A	Clase B
Herraje de seguridad según DIN 18257 ³⁾	ES1 (ZA)	ES2 (ZA)	ES3 (ZA)
Herraje de seguridad ²⁾ ³⁾	Clase A	Clase A	Clase B
Cristales EN 356 (cortafuego)	P4A	P6B/P7B	-

1) sólo de 1 hoja, se recomienda un espesor de muro de al menos 150 mm
 2) para puertas homologadas por VdS

- 3) El herraje de protección o el bombín deben tener una protección contra tracción (ZA).
- 4) No forma necesariamente parte del volumen de suministro.

3.4 Puertas funcionales

No es imprescindible rellenar los cercos por detrás.

3.5 Protección cortafuego y uso en el exterior

Para las características protección cortafuego y uso en el exterior se requiere una homologación individual. Tenga en cuenta las instrucciones de montaje separadas, n° de art. 479166.

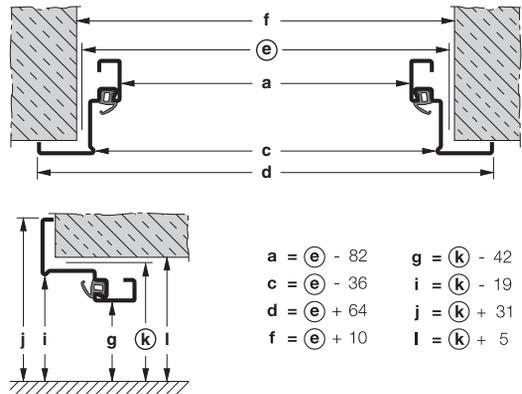
4 Montaje

4.1 Antes del montaje

Antes del montaje aclare las siguientes preguntas:

- ¿Qué características tiene la puerta?
- ¿El tipo de construcción de la pared es adecuado para el montaje de la puerta?
- ¿Se conoce la altura del suelo acabado (marca del metro)?
- ¿En qué dirección debe abrirse la puerta?
- ¿Se debe observar algún reglamento de construcción?
- ¿Se tiene que ahondar por escoplo la pared en la zona de la caja de protección del muro?

4.2 Medidas



Ilustr. 1: Medidas

- a/g** Ancho/alto luz de paso libre
- c/i** Ancho/alto luz de galce libre
- d/j** Ancho/alto exterior del cerco
- e/k** Ancho/alto de pedido BR
- f/l** Ancho/alto luz de estructura libre EN 12519

4.3 Durante el montaje

- Siga las indicaciones de montaje que se encuentran en los paquetes de los complementos.
- Si se adjuntan piezas de montaje como, p. ej., lengüetas de taco, tacos o tornillos, utilice las piezas suministradas.
- Utilice los tacos indicados en el punto 8.
- Utilice el taco FUR 10 x 80 / 100 mm en combinación con los cercos angulares y ladrillos perforados de canales verticales o anhidritas y tenga en cuenta el punto 8 de las instrucciones de montaje.
- Taladre los ladrillos perforados de canales verticales y los ladrillos huecos sin golpes.

- Preste atención al paso mínimo de 50 mm en las perforaciones horizontales o verticales y a la dirección de expansión de los tacos.
- Tenga en cuenta que en caso de cercos sin empotramiento debe retirarse el ángulo de montaje inferior antes del montaje.

4.4 Indicaciones sobre la parte de ilustraciones

Ver punto	Descripción
8	Situaciones de montaje y formas de cerco
8.1a	Enrasada
8.1b	Galce estrecho
8.1c	Galce hueco
8.2a / 8.2b	Cantidad de puntos de fijación
8.2c	Orden de los pasos de montaje
8.3a	Desmontaje de la puerta de serie
8.3b	Desmontaje de la puerta de seguridad
8.4	Ensamblaje del cerco angular
8.5	Depresión del suelo y ángulo de montaje
8.6	Elementos de fijación
8.7	Distancia mínima con el borde y expansión del taco
8.8	Montaje de perfiles de ranura ancha con bisel
8.9	Tubos huecos en el cerco
8.10	Abrepuertas eléctrico
8.11	Caja de protección de la pared en paredes de placas de yeso encartonado
8.12	Montaje posterior de paredes de placas de cartón yeso cortafuego
9.0	Situaciones de montaje
10.1a	Montaje con bisagras estándar
10.1b	Montaje con bisagras 3D
10.2	Montaje de la puerta de seguridad
10.3	Ajuste de las ranuras de aire
10.4	Retirar la escuadra inferior en cercos sin empotramiento
10.5	Montaje de contracerco
10.6	Fijar las cuñas de sellado con silicona
10.7	Montaje de la junta de cerco
10.8	Levantar la puerta
10.9	Tensar la bisagra de muelle
10.10	Comprobación del engranaje del resbalón
10.11	Desmontaje de la rejilla de ventilación
10.12	Reforma marco acristalado
10.13	Sustancias intumescentes en puertas cortafuego y cortahumo
10.14	Sustancias intumescentes en los bulones de seguridad
10.15	Marcación de grandes superficies acristaladas
10.16	Puertas antipánico RC3
10.17	Montaje de una cerradura de bloqueo en caso de bloqueo múltiple
11	Juntas inferiores
12	Cierrapuertas
13.1	Retirar la llave de las puertas antipánico
13.2	Evitar un manejo erróneo de la cerradura

5 Mantenimiento y cuidado

5.1 Trabajos de mantenimiento anuales

- ▶ Compruebe si presentan daños mecánicos y de corrosión la hoja, el cerco y la fijación.
- ▶ Compruebe el funcionamiento de la cerradura y, en caso necesario, engrase el gatillo.
- ▶ Lubrique las cerraduras de bulón con spray de teflón
- ▶ Compruebe la fijación de los componentes, como p. ej. tiradores, cerradura, cierrapuertas, bisagras, etc.
- ▶ Lubrique los bulones de la bisagra y las arandelas.
- ▶ Compruebe las medidas de las ranuras.
- ▶ Compruebe la visibilidad de la marcación.

 **PELIGRO**

Peligro de muerte por sustancias intumescentes disueltas

Si las sustancias intumescentes se disuelven, el cierre cortafuego pierde su funcionalidad.

- ▶ Sustituya las sustancias intumescentes disueltas, ver punto 10.13 en la parte de ilustraciones.

- ▶ Sustituya las partes defectuosas.
- ▶ Utilice únicamente recambios originales del fabricante.

Si detecta defectos que no pueda solucionar usted mismo, encargue la reparación a una empresa especializada.

5.2 Tratamiento superficial necesario para elementos con imprimación estándar

La superficie de la hoja y del cerco está dotada de una imprimación electrostática de resina a base de poliéster.

1. Retire la(s) junta(s).
2. Lije todas las superficies que se vayan a pintar, excepto las sustancias intumescentes.
3. Limpie las superficies cuidadosamente.
4. Para el tratamiento final de la hoja, el cerco y de la masa aislante refractaria utilice la siguiente estructura de recubrimiento:
 - Imprimación base con imprimación de reacción 2K Epoxi e imprimación final con lacas convencionales apropiadas
 - o
 - imprimación base y final con laca 2K PUR.

En caso de exposición directa al sol no use colores oscuros.

Tenga en cuenta la hoja de información n° 24 del Comité Federal de Colores BFS, así como las indicaciones de tratamiento de los fabricantes de las lacas, y realice una prueba de adherencia. Realice el tratamiento final en el plazo de tres meses después del montaje para evitar daños por corrosión.

5. Vuelva a fijar la(s) junta(s) después de que la pintura se haya secado.

5.3 Limpieza

- ▶ Limpie las superficies con agua clara o un limpiador de lacas convencional.

5.4 Cuidado de componentes de acero inoxidable

- ▶ Limpie y cuide con regularidad los componentes de acero inoxidable con la crema pulidora para acero inoxidable disponible en Hörmann, aplicándola con un paño suave.

6 Etiquetado y marcado

La etiqueta de los **tipos de puerta D65-1, D65-2, D65-1 OD, D65-2 OD** está provista de un marcado de conformidad CE conforme al reglamento (UE) n° 305/2011. La norma de producto europea armonizada consultada y aplicada es la norma EN 14351-1:2006 + A1:2010 "Ventanas y puertas – Norma de producto, prestaciones – Parte 1: Ventanas y puertas exteriores sin características de resistencia al fuego y/o control de humos." El número del correspondiente marcado CE o de la declaración de prestaciones debe indicarse en la zona de galce de la puerta en la etiqueta mencionada arriba, entre el logotipo del fabricante y el marcado de conformidad CE.

Las puertas en cuya etiqueta no esté ilustrado el marcado de conformidad CE no pertenecen al campo de aplicación del norma de producto europea armonizada mencionada arriba, y, por ello, no deben disponer de un marcado CE o de una declaración de prestaciones.

7 Información general

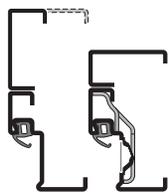
Queda prohibida la puesta en marcha de la puerta hasta que haya sido comprobado que ha sido montada según nuestras indicaciones y comprobada respecto a su correcto funcionamiento. En caso de una modificación del producto pierde toda validez la declaración de prestaciones.

8 Declaración de prestaciones

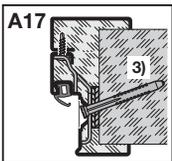
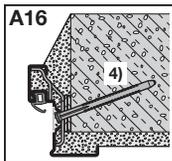
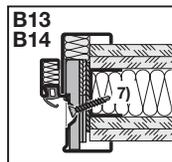
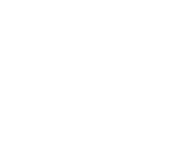
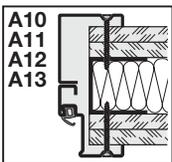
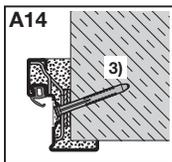
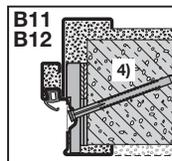
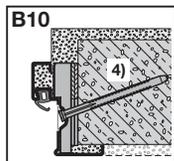
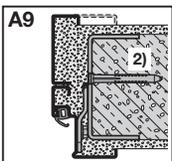
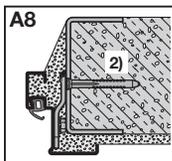
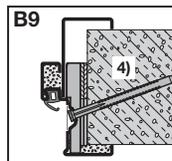
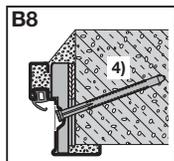
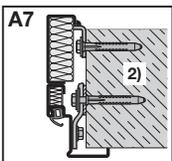
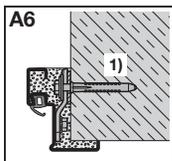
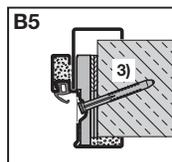
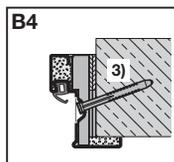
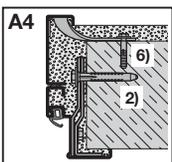
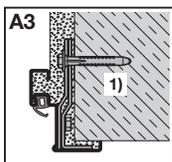
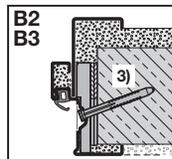
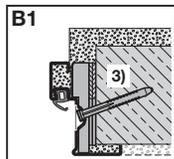
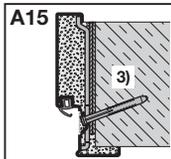
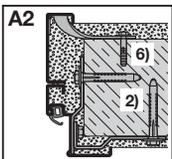
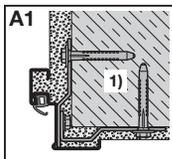
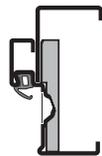
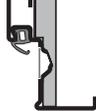
Declaración de prestaciones ver punto 8.3:
www.hoermann.com/dop

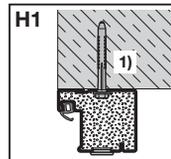
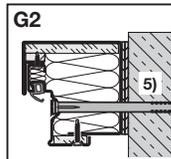
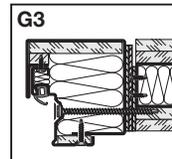
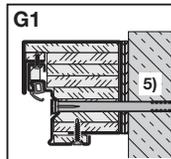
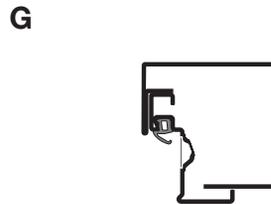
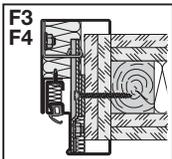
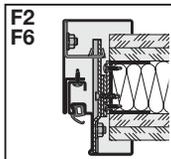
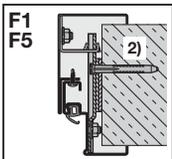
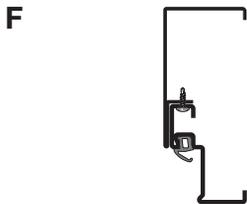
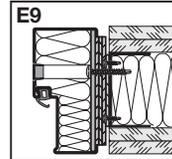
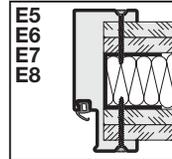
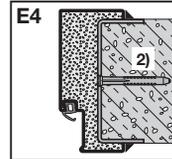
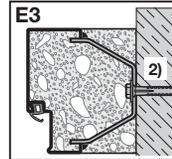
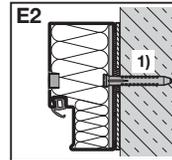
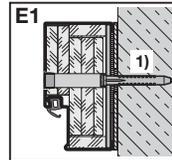
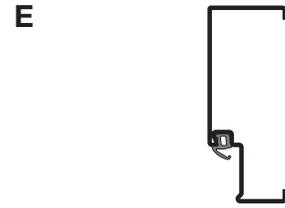
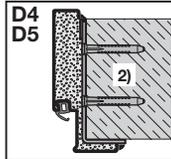
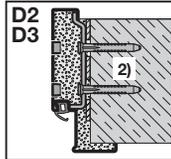
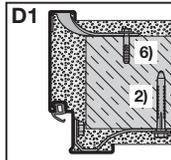
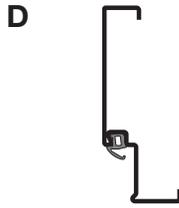
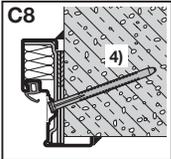
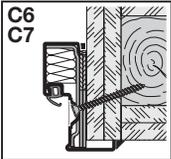
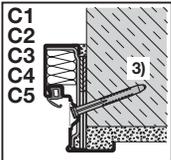
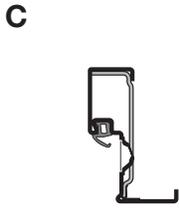


A



B





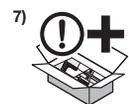
1) Fischer: FUR 10 × 80/100

Fischer: SXS 10 × 80/100
 Hilti: HRD 10 × 80/100
 MEA: MFR 10 × 80/100
 Würth: W-UR 10 × 80/100

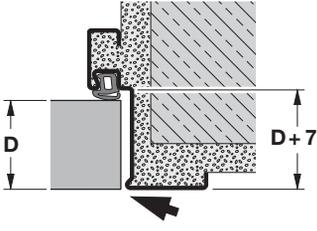


2) Fischer: FUR 10 × 80/100/115
 Fischer: SXS 10 × 80/100/120
 Hilti: HRD 10 × 80/100
 MEA: MFR 10 × 80/100/115
 Würth: W-UR 10 × 80/100/115

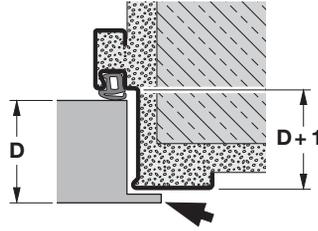
3) Fischer: FUR 10 × 100
 4) Fischer: FUR 10 × 160
 5) Fischer: FUR 10 × 200
 6) 8 × 40



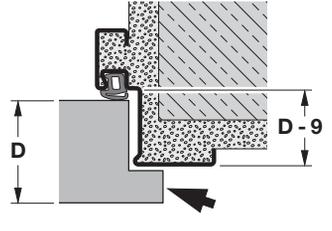
8.1a



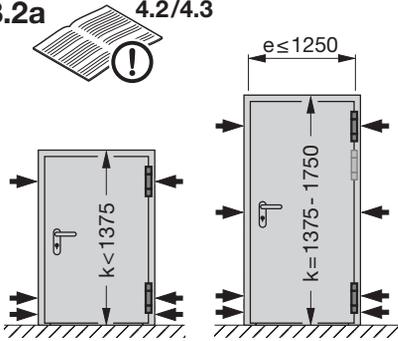
8.1b



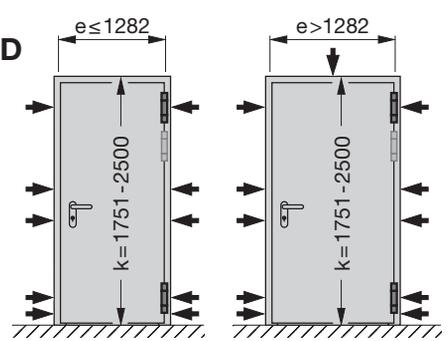
8.1c



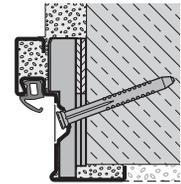
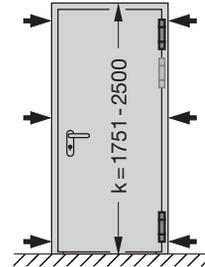
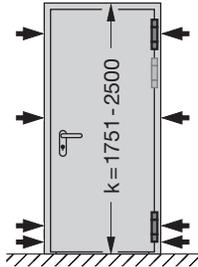
8.2a 4.2/4.3



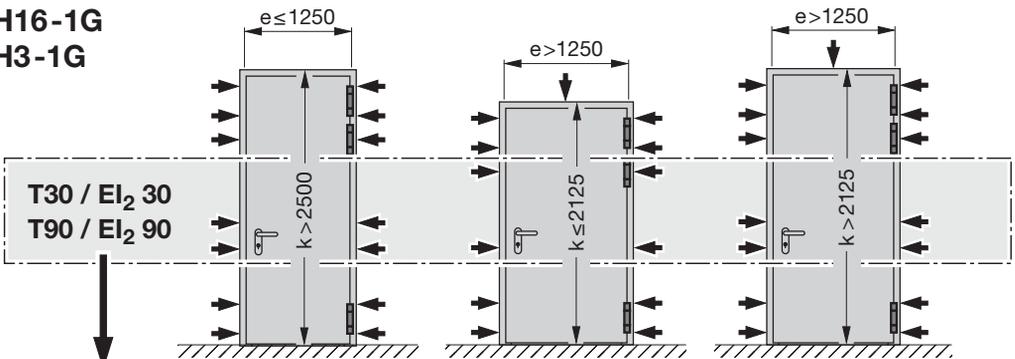
H16-S1
H16-1 OD
HS75



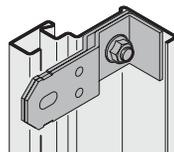
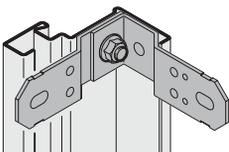
D65-1 OD
H3-1 OD



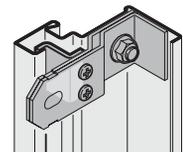
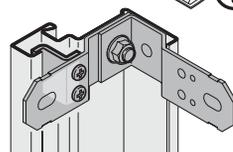
H16-1G
H3-1G



T30 / EI₂ 30



T90 / EI₂ 90



8.6a
8.6b

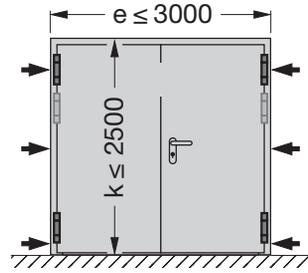
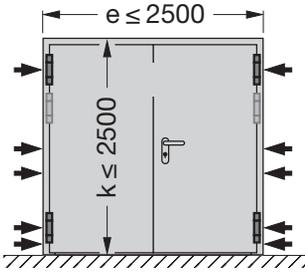
8.2b



4.2/4.3

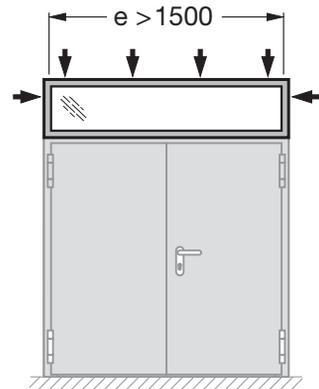
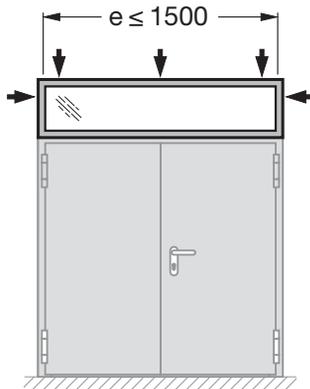
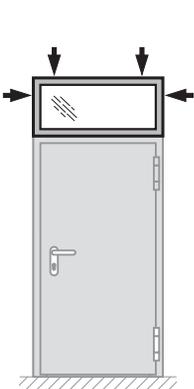
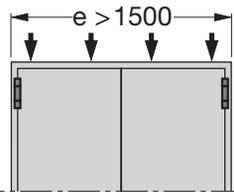
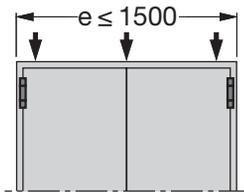
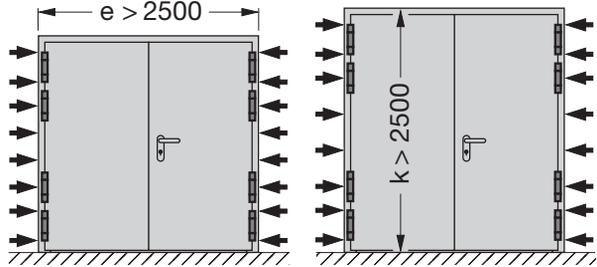
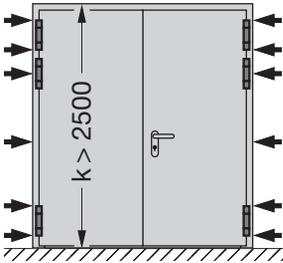
H16-2 OD
H3-2 OD

D65-2 OD

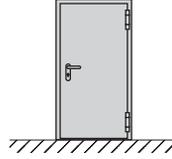


H3-2 VM

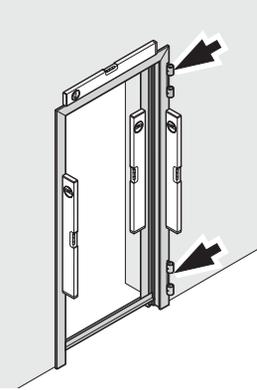
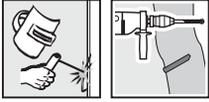
H16-2 G
H_90 F2



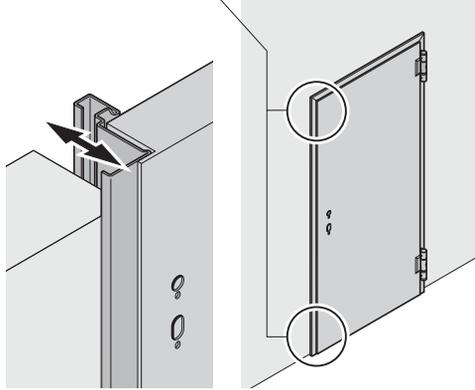
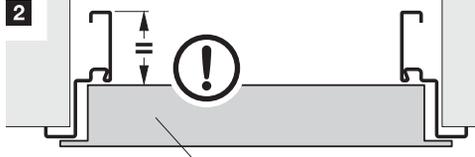
8.2c



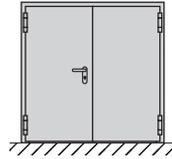
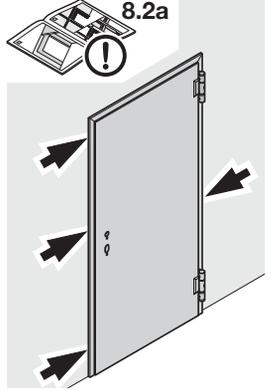
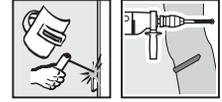
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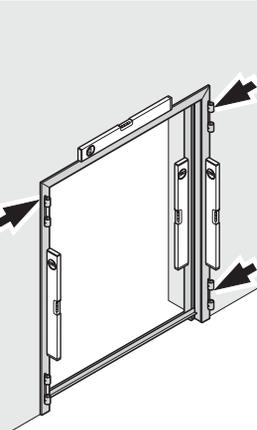
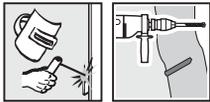
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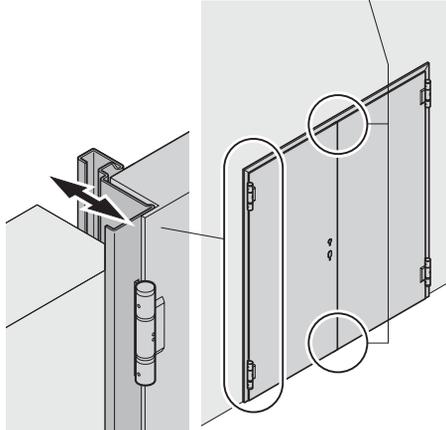
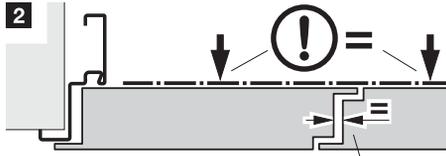
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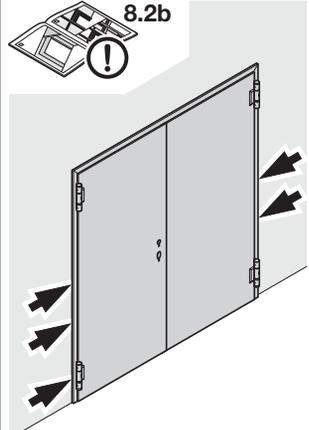
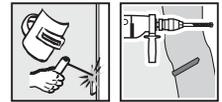
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2



3

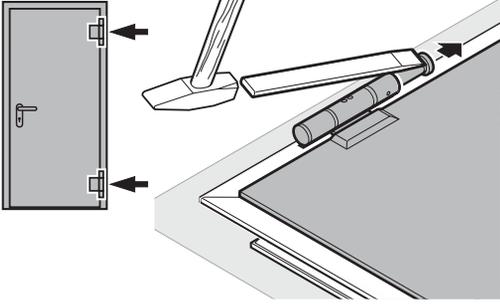


8.3a

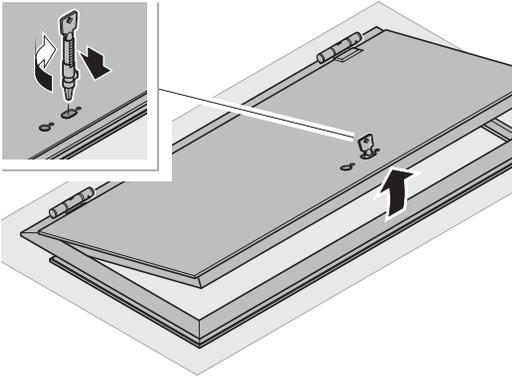
4.3



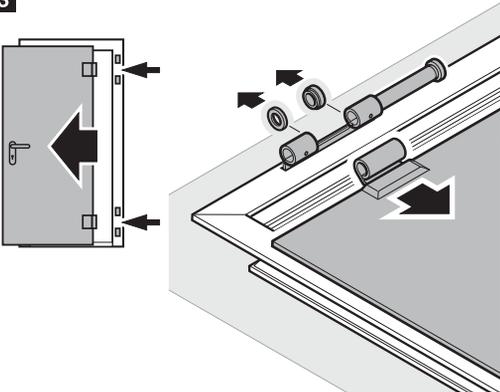
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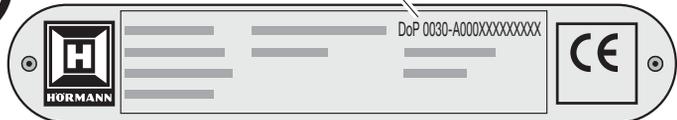
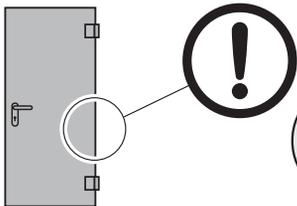
2



3



4

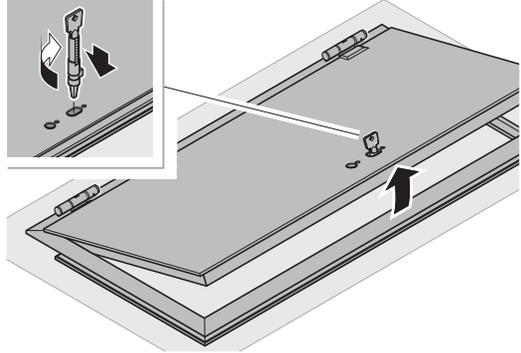


8.3b

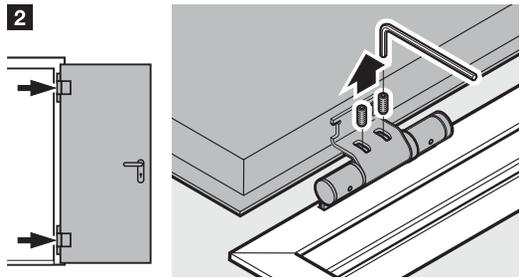
3.3/4.3



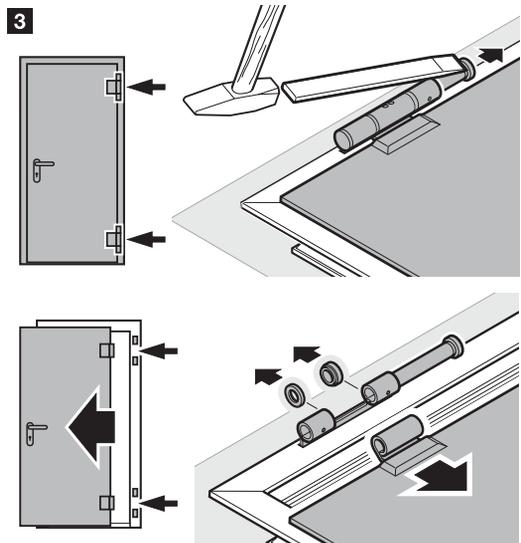
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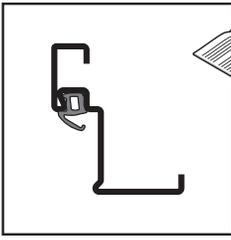
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3

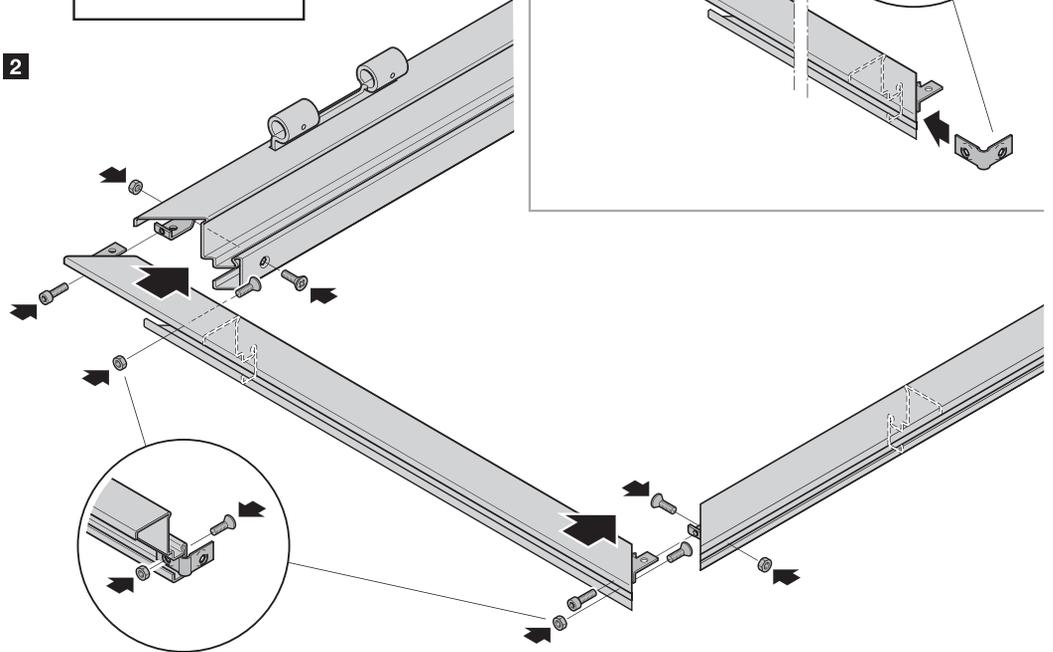


8.4

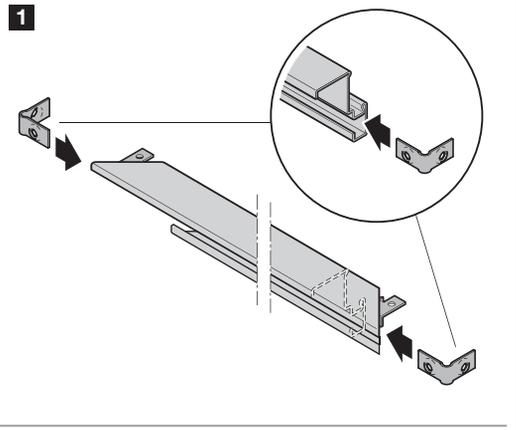


4.3

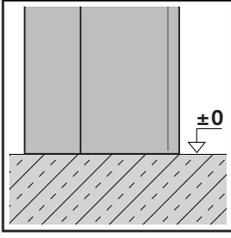
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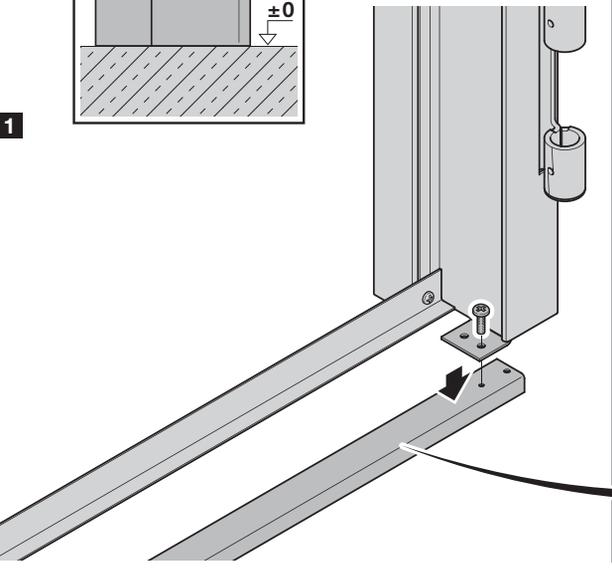


8.5a

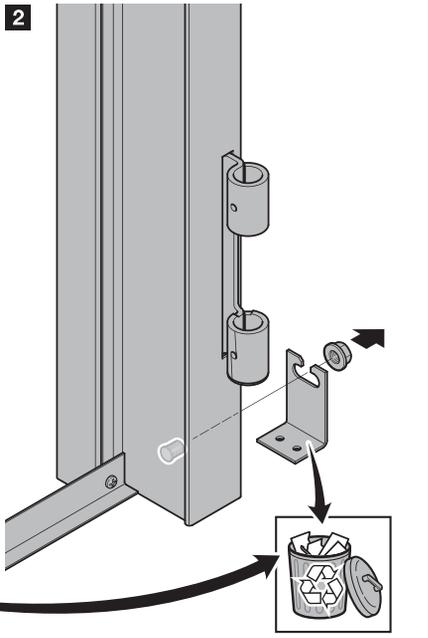


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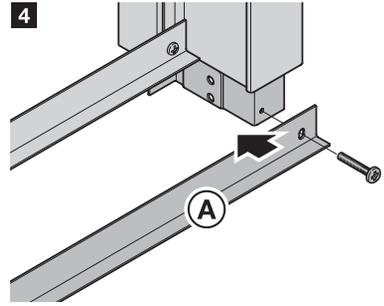
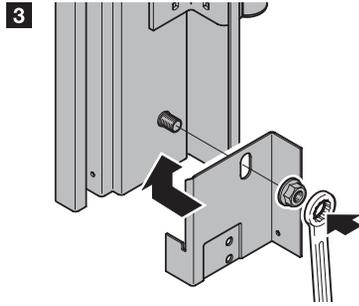
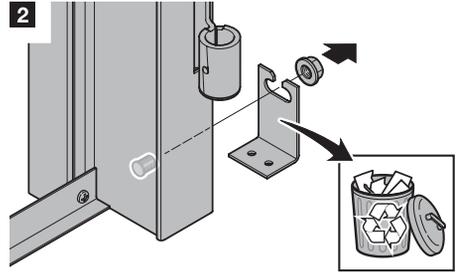
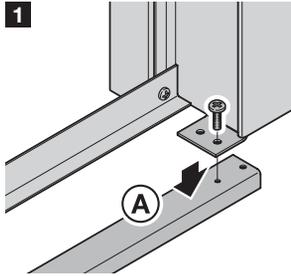
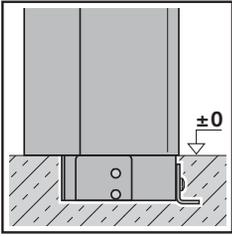


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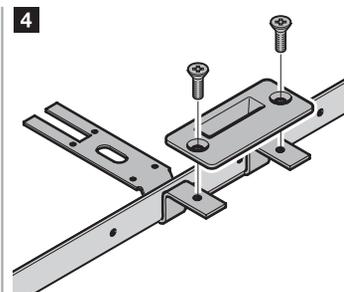
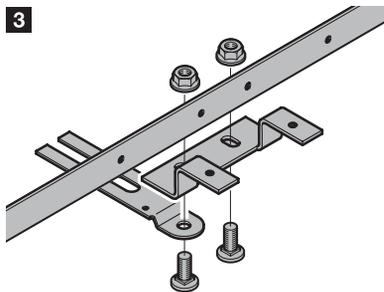
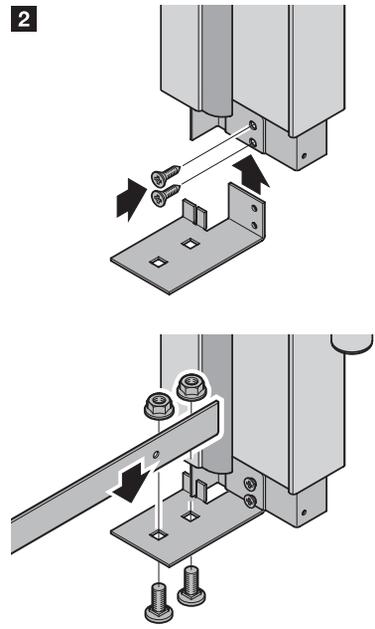
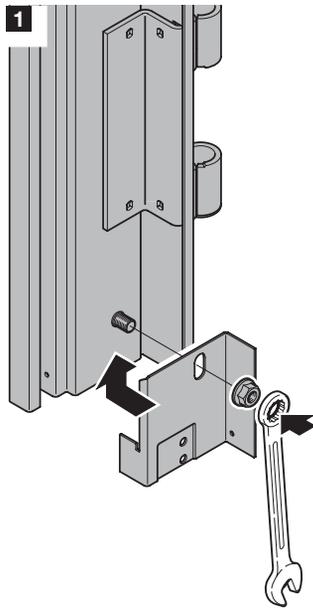
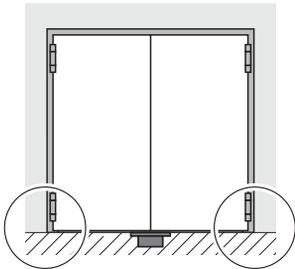
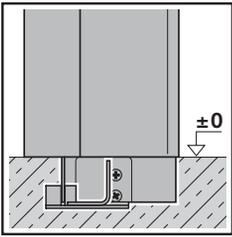
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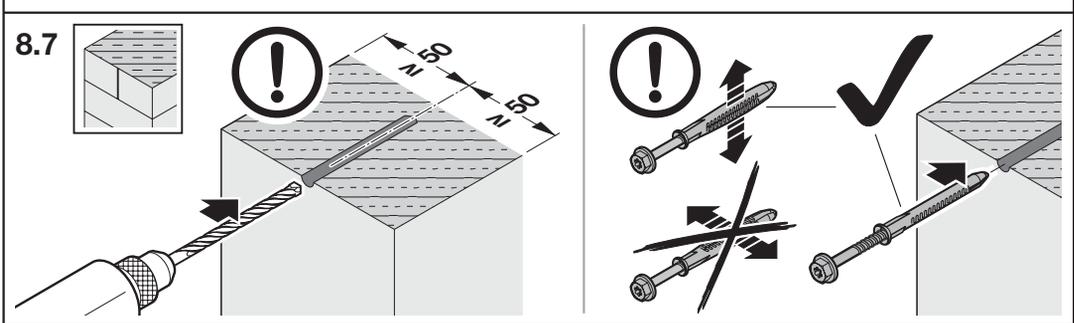
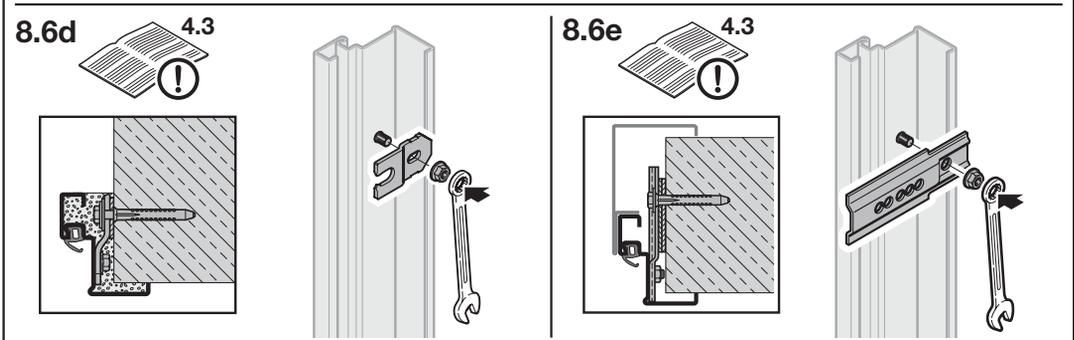
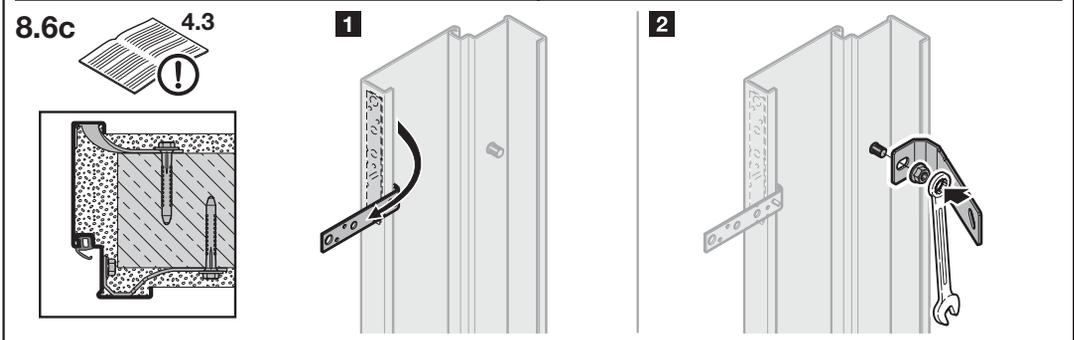
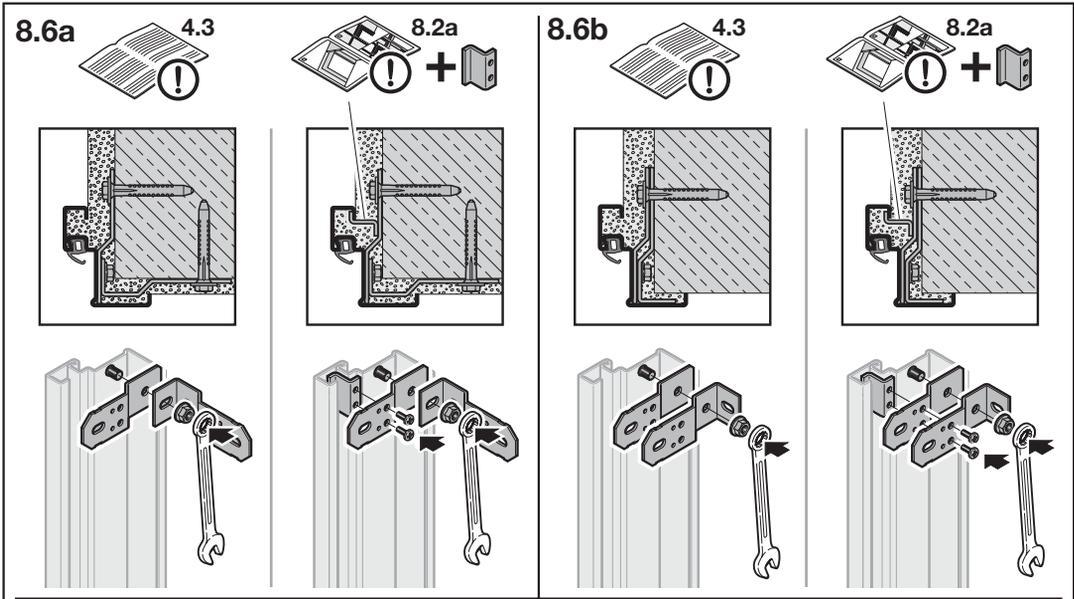
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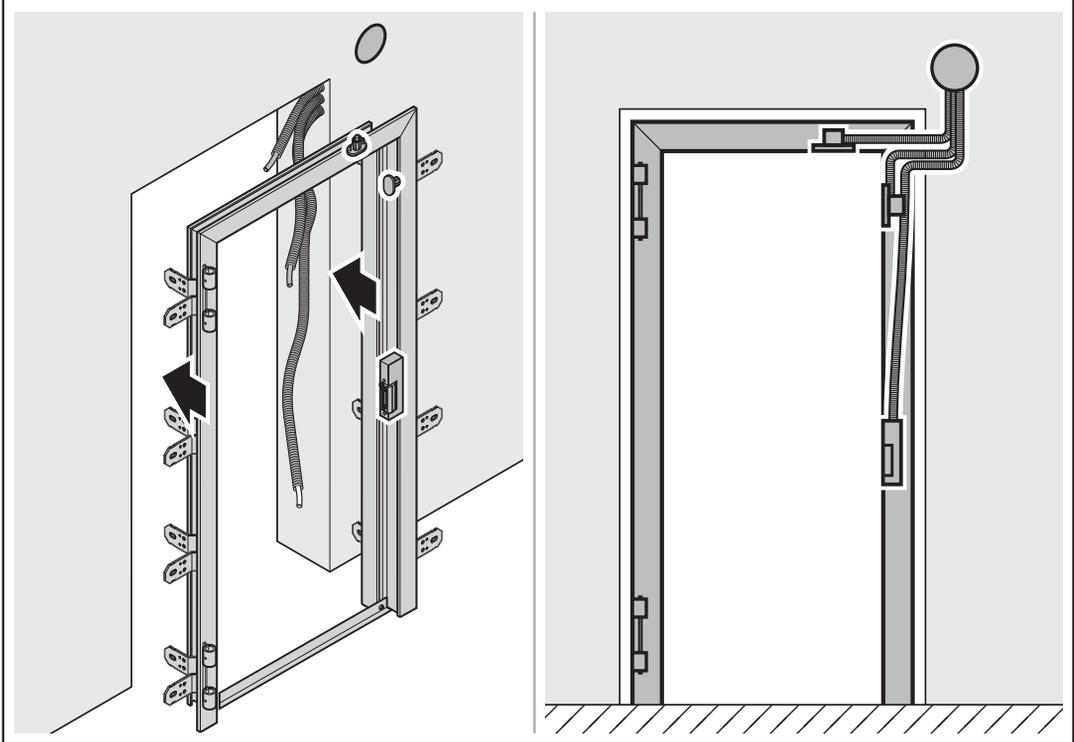
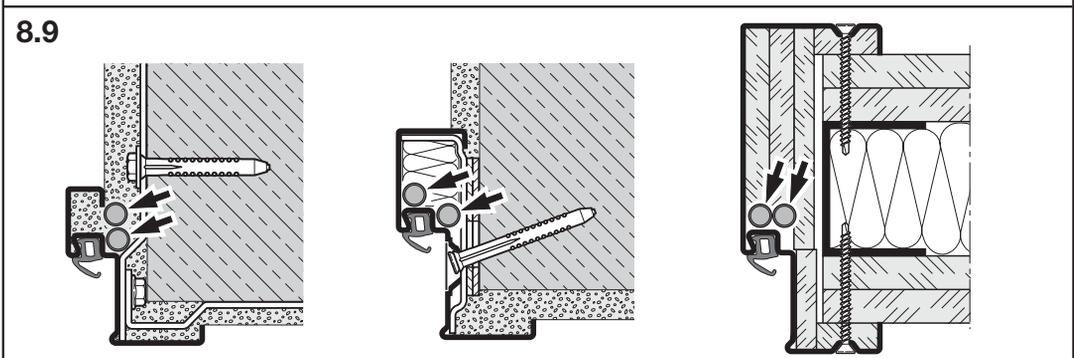
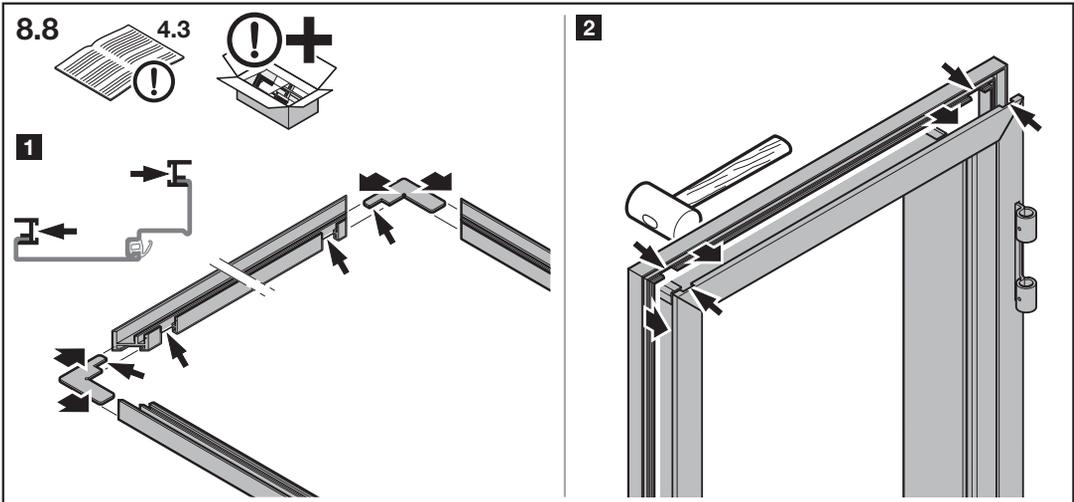


8.5c

4.3







8.10



AC
~

DC
≡



I.S.T. Systems

FT200/FT201

x

x

x

x

142 UF

x

x

x

x

x

effeff

143

x

x (79/2)

x

x

x

x

14/34

x

x

x

x

Dorma

447/Basic

x

x

x

x

Lucky Basic

x

x

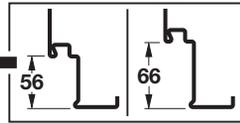
x

x

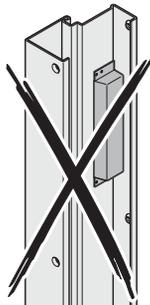
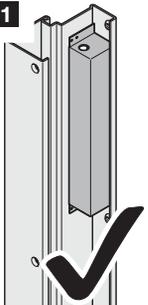
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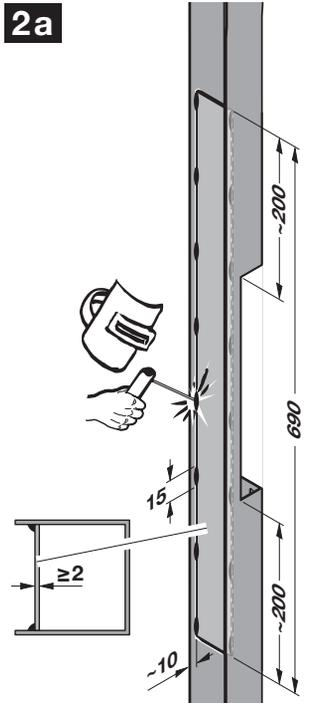
8.12



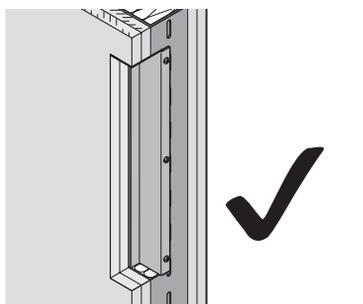
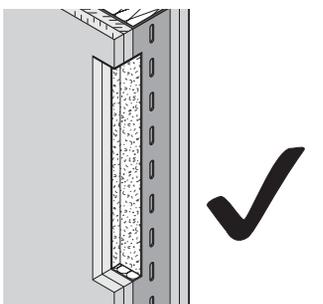
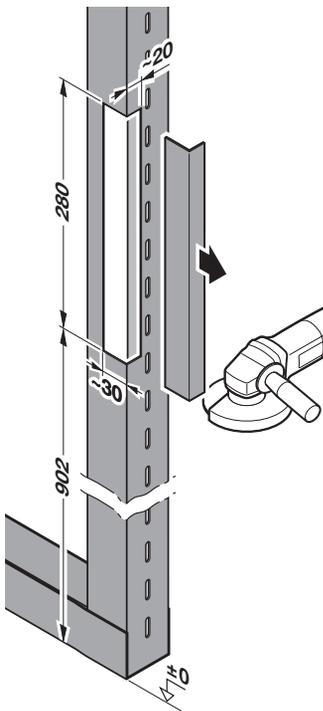
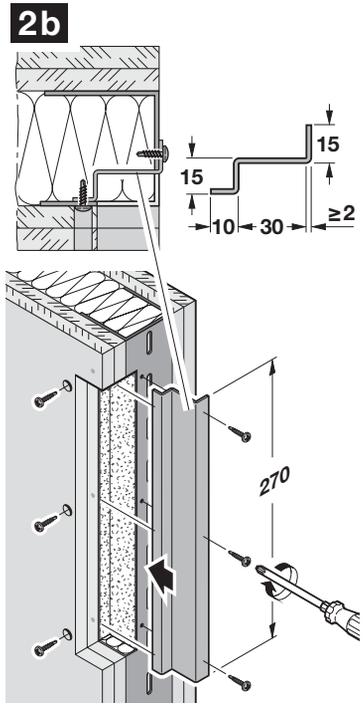
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2a



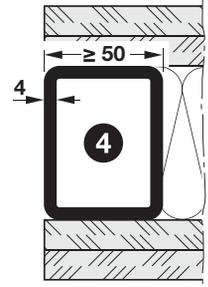
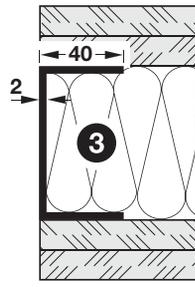
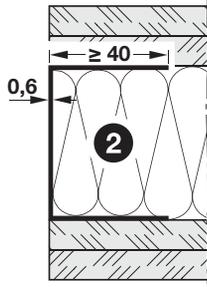
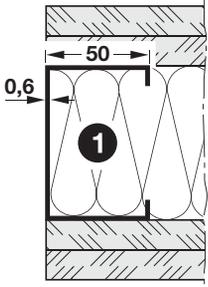
2b



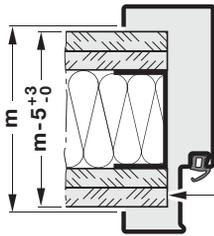
8.12

4.2

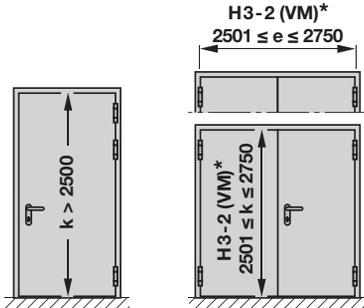
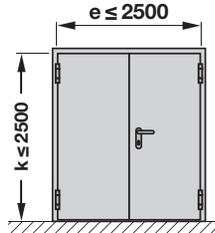
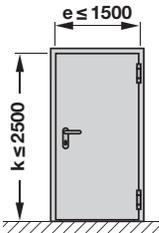
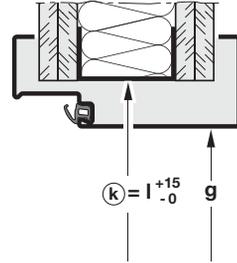
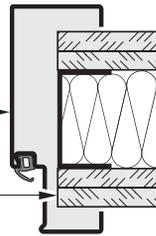
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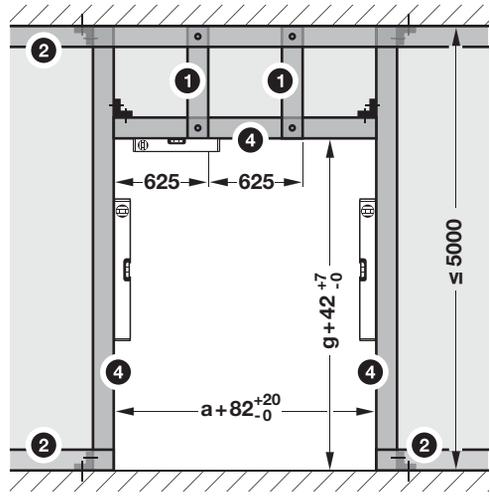
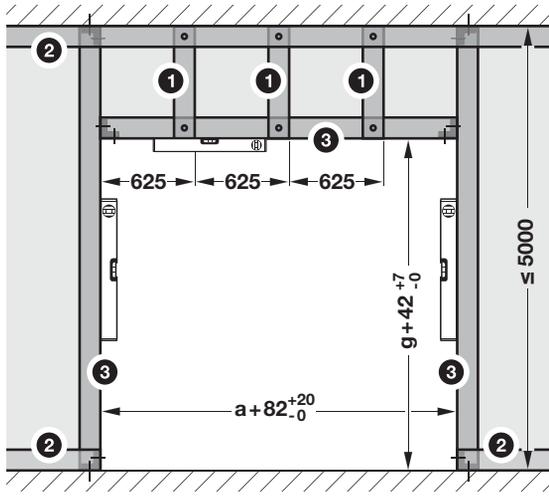
i www.felko-systeme.de/teleskopstuetzen.php



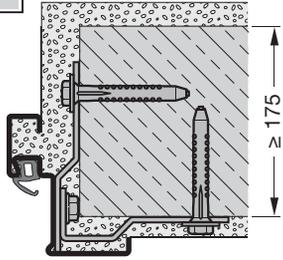
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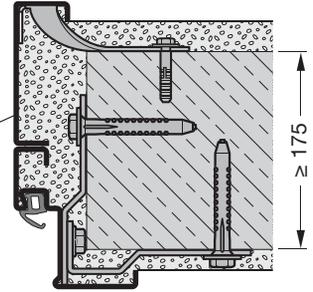
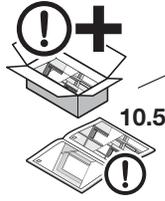
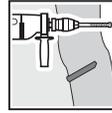
*www.felko-systeme.de/teleskopstuetzen.php



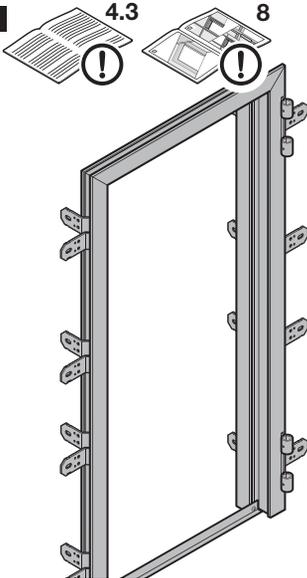
9/A1



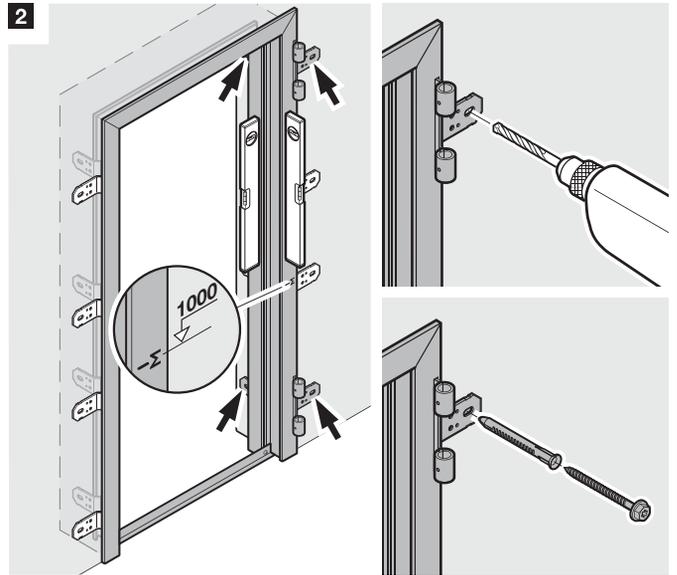
9/A2



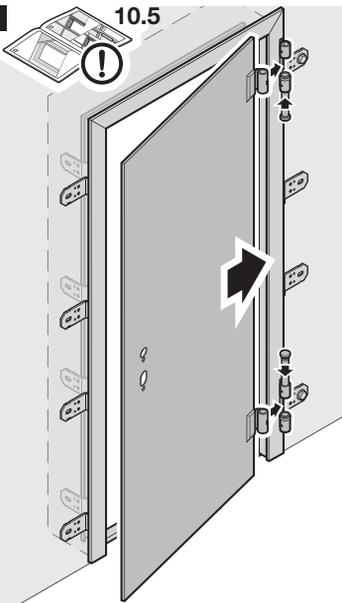
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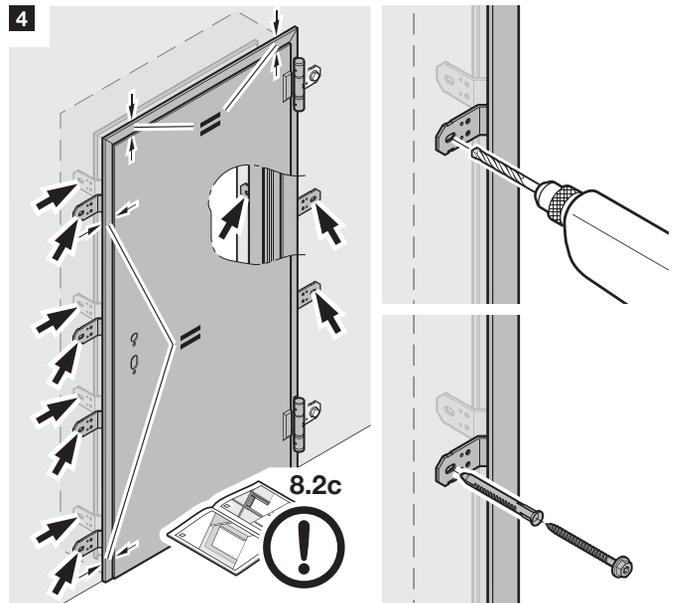
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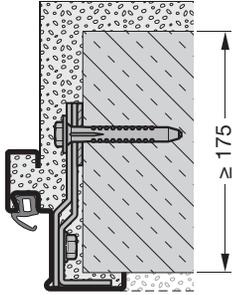
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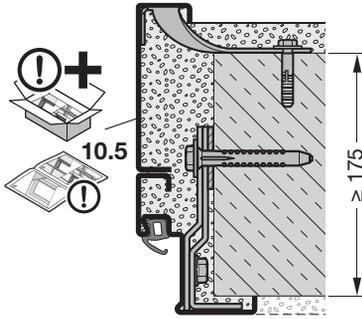
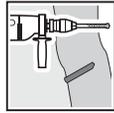
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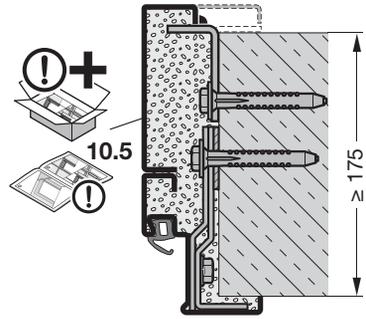
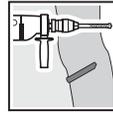
9/A3



9/A4



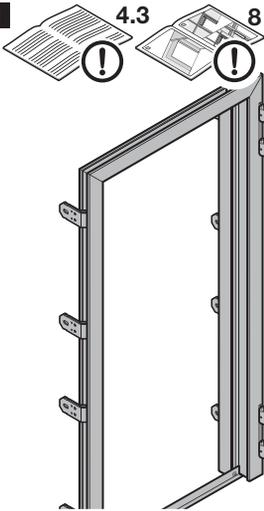
9/A5



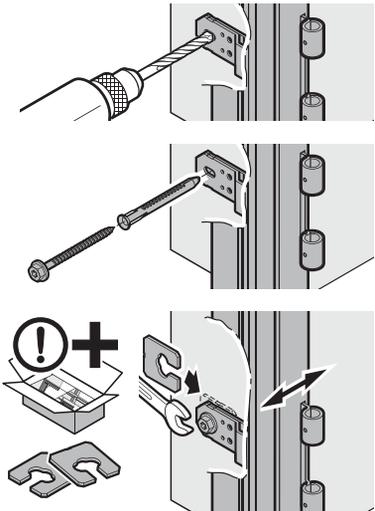
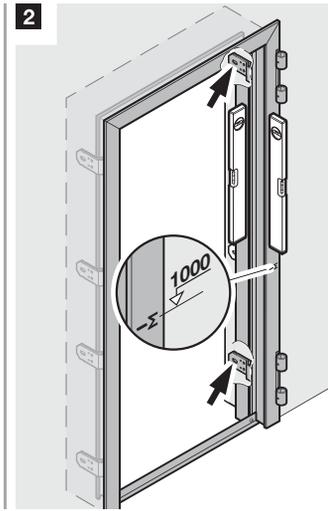
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4.3

8

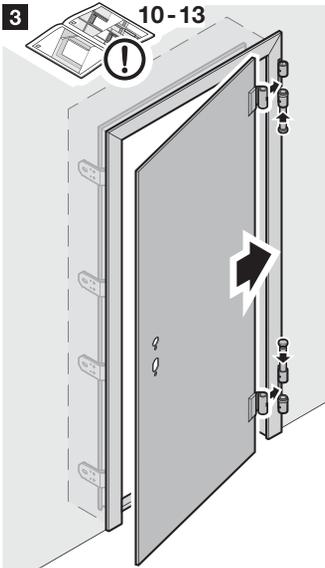


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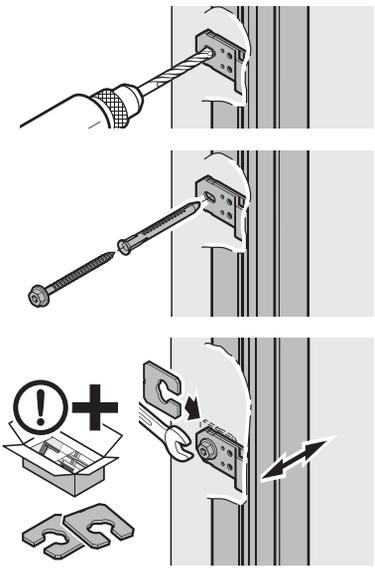
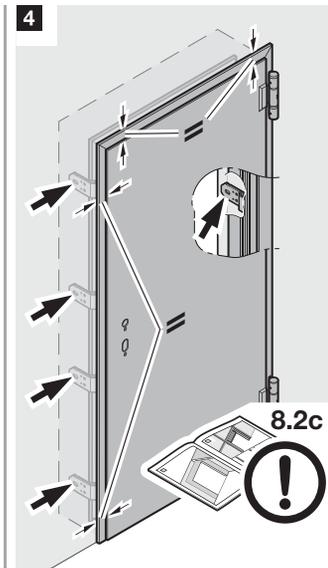


3

10-13



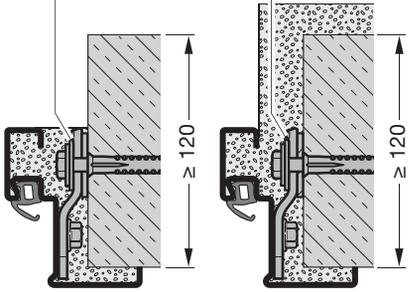
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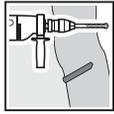
9/A6



DIN 9021-8.4-140 HV

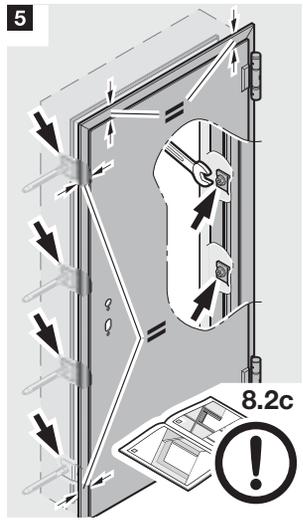
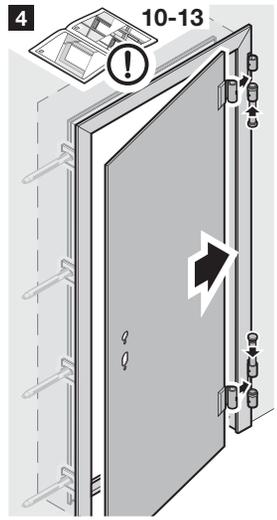
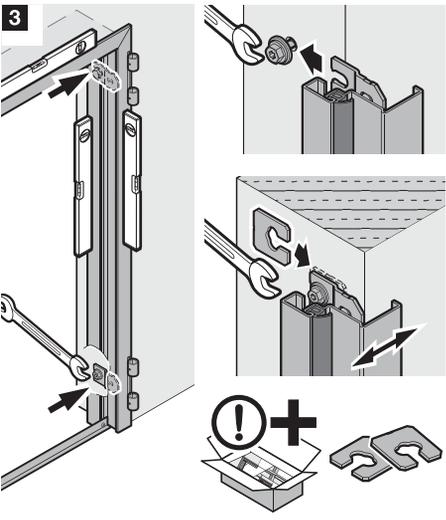
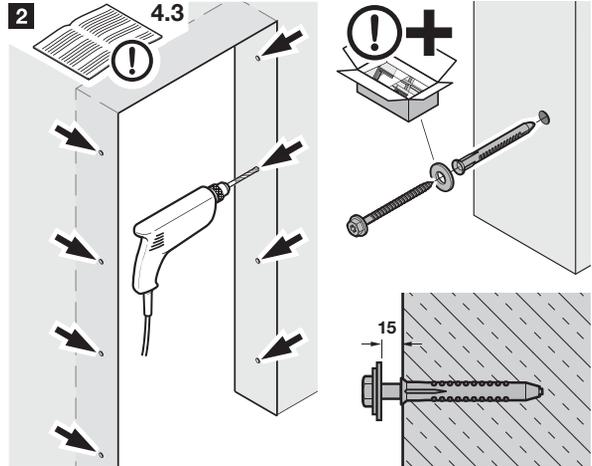
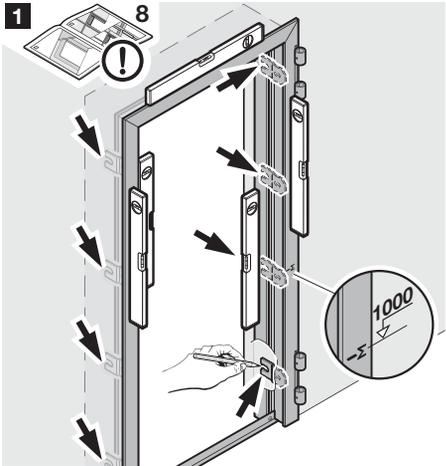
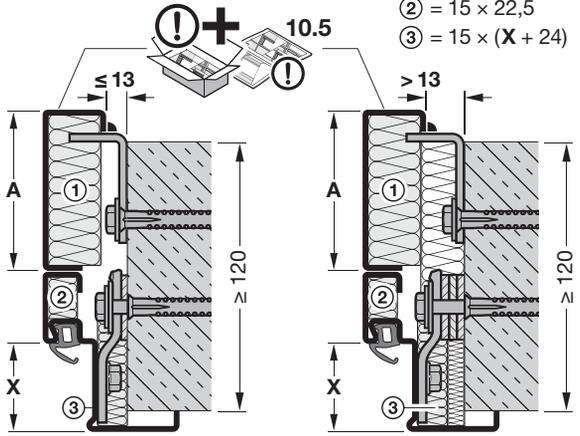


9/A7
max. T30

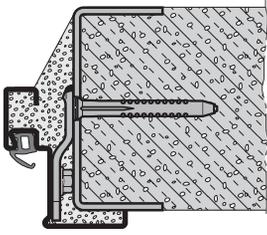


$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100

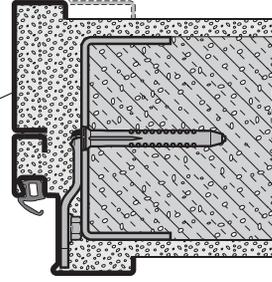
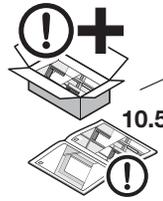
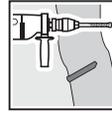
- ① = $30 \times (A - 5)$
- ② = $15 \times 22,5$
- ③ = $15 \times (X + 24)$



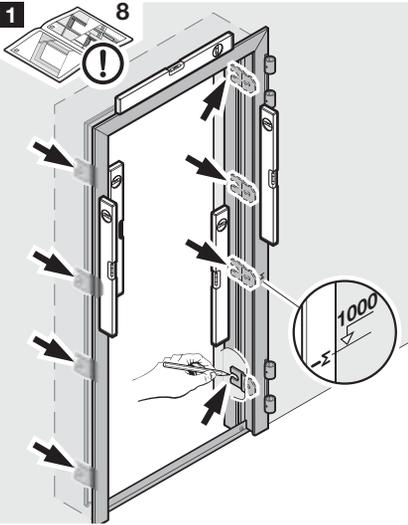
9/A8



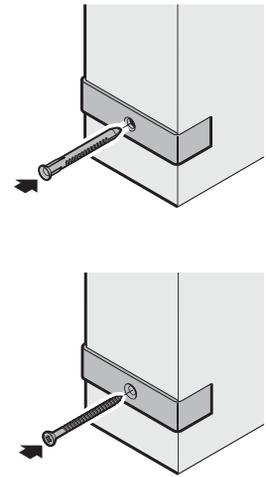
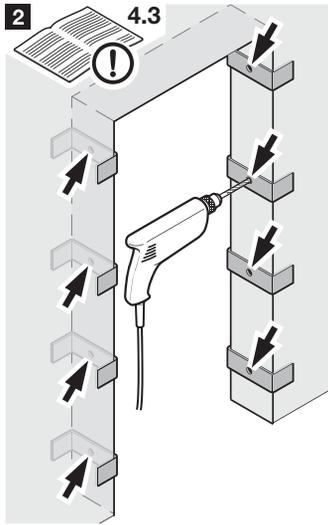
9/A9



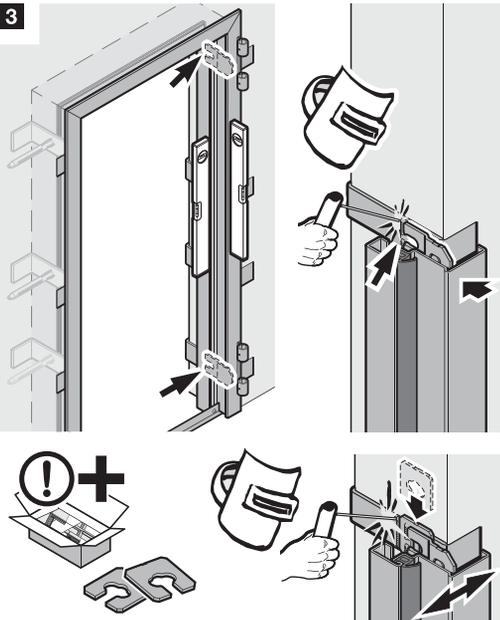
1 8



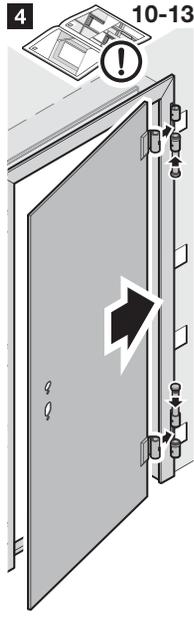
2 4.3



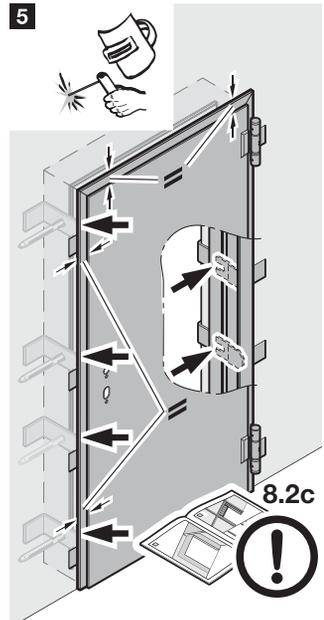
3



4 10-13

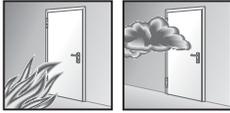


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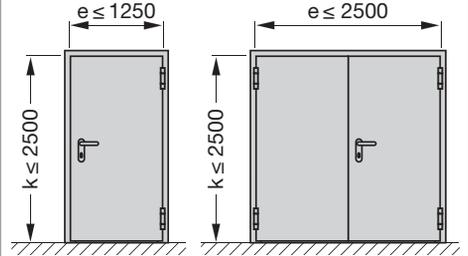
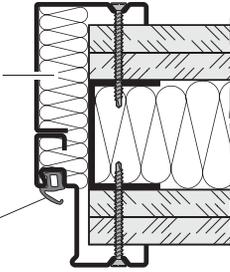
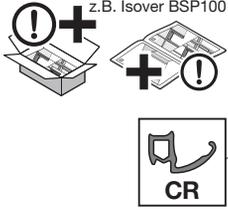


9/A10

max. T30/
EI₂₃₀



$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



1 4.3 8

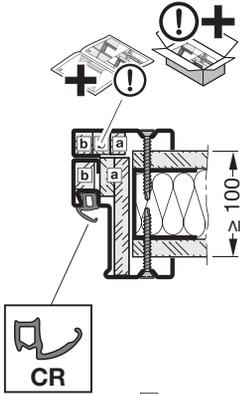
8.9/8.10

2 10-13

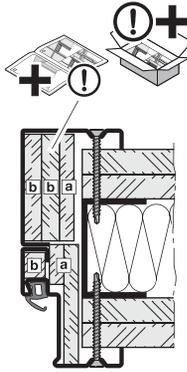
3 8.2c

4 10.5

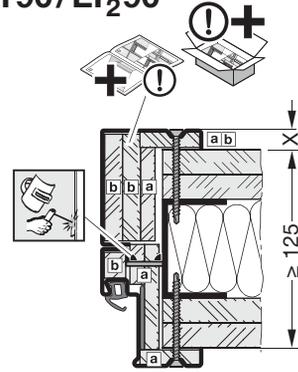
9/A11



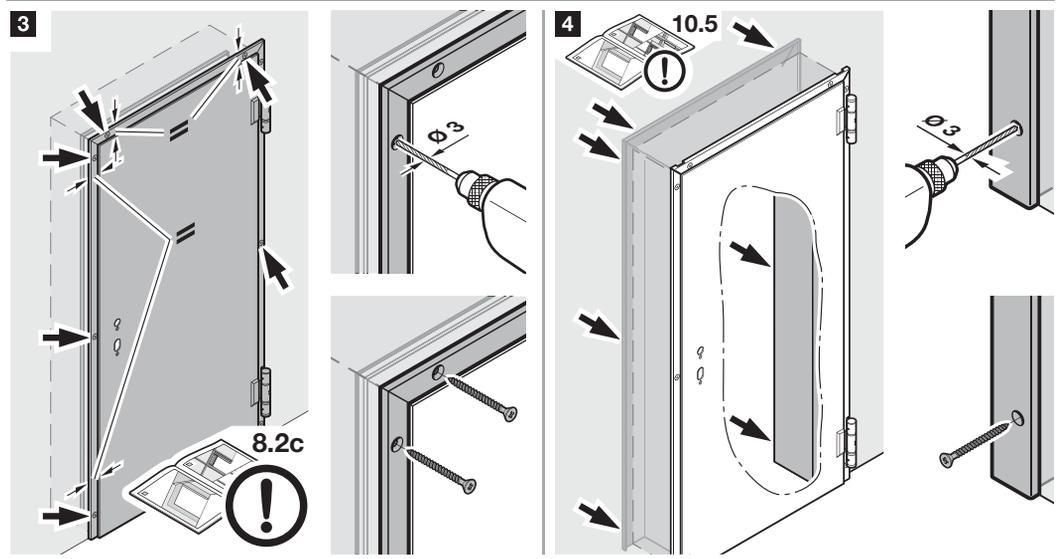
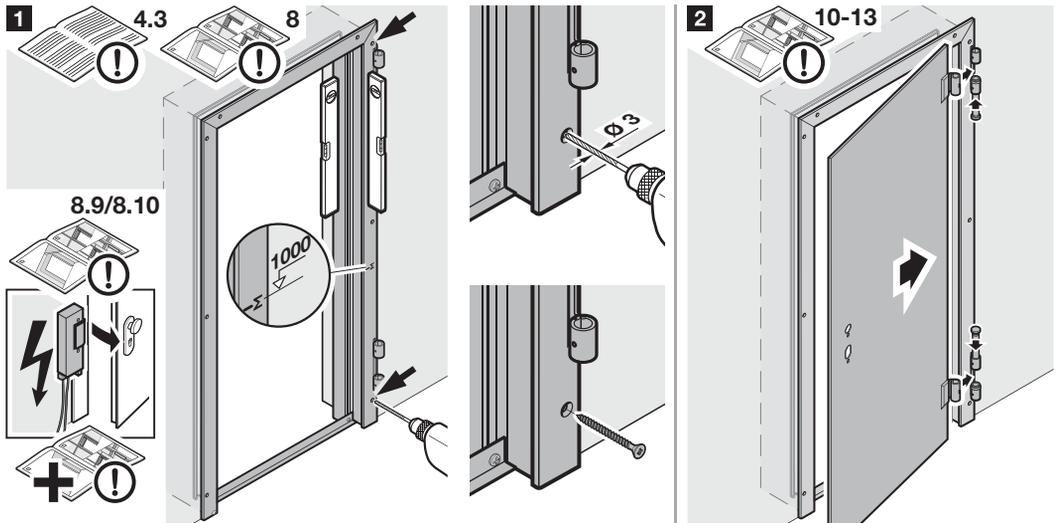
9/A12



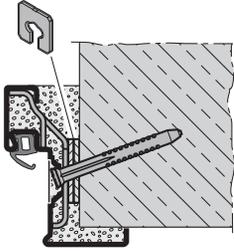
9/A13
T90/EI₂90



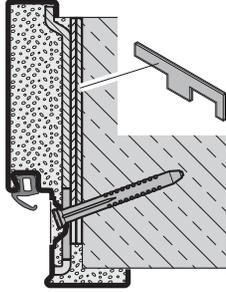
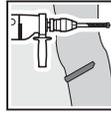
a A-9,5-EN 520 / b A-12,5-EN 520 / X = 10 → a / X = 15 → b



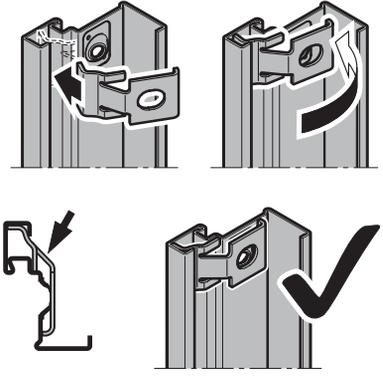
9/A14
max. T30/
EI₂30



9/A15
max. T90/
EI₂90



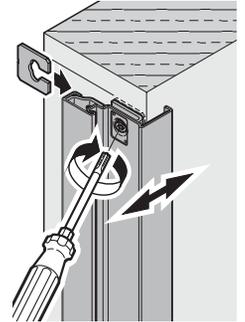
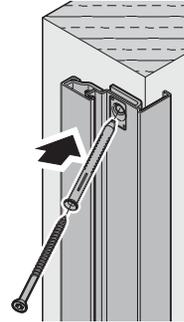
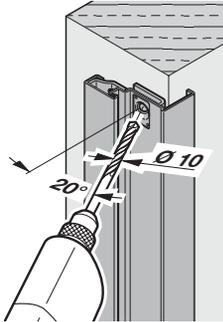
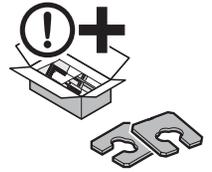
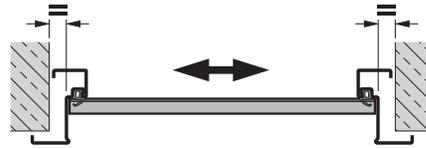
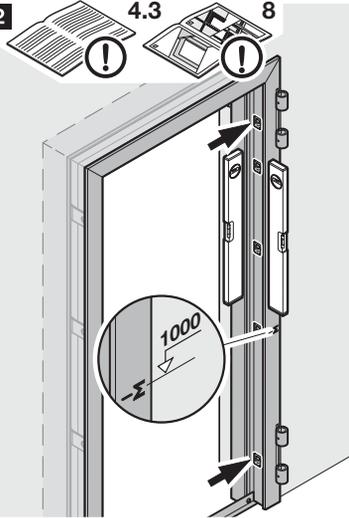
1



2

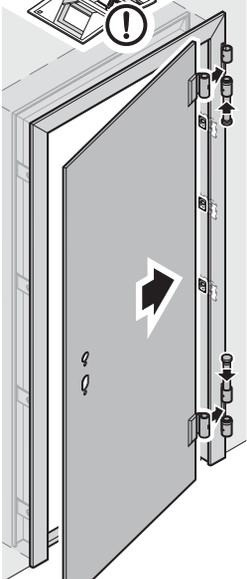
4.3

8

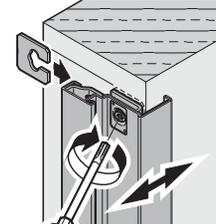
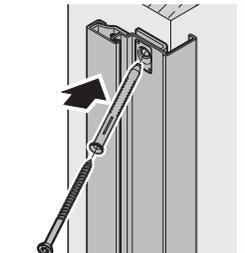
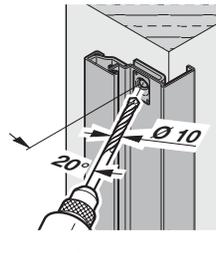
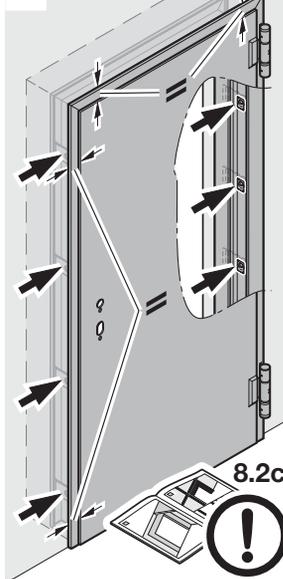


3

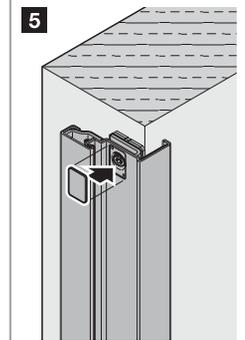
10-13



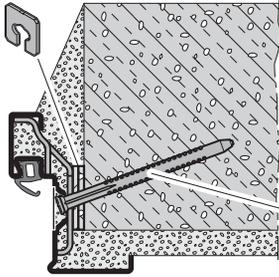
4



5

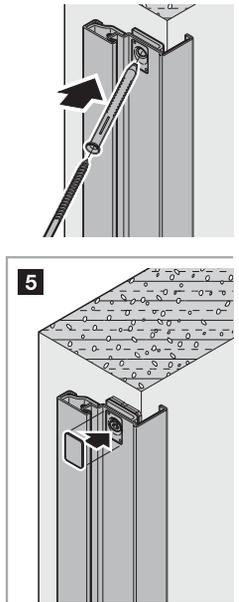
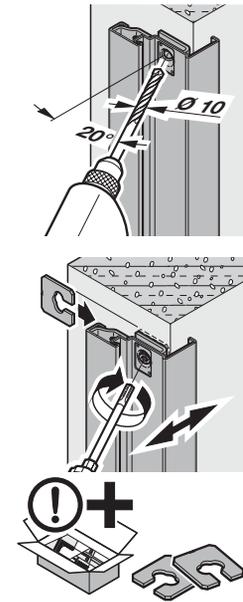
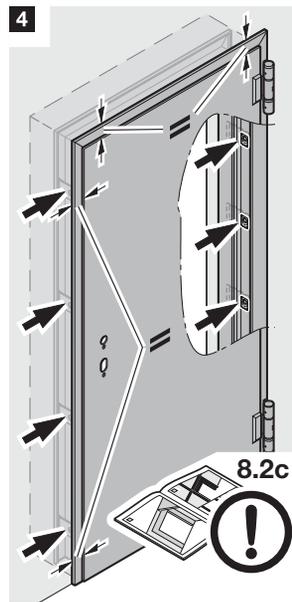
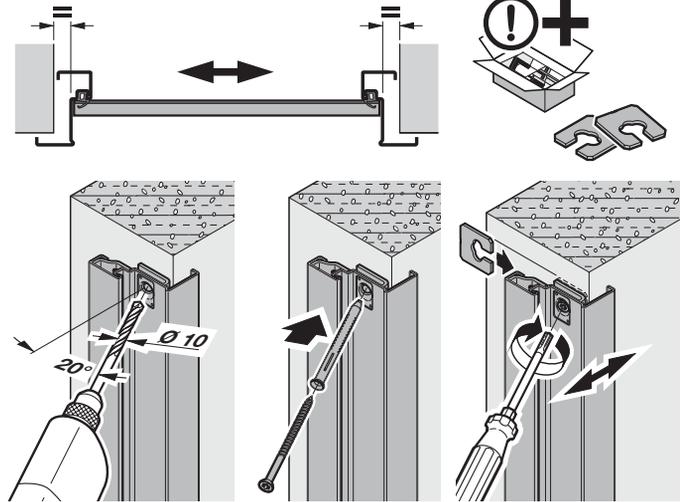
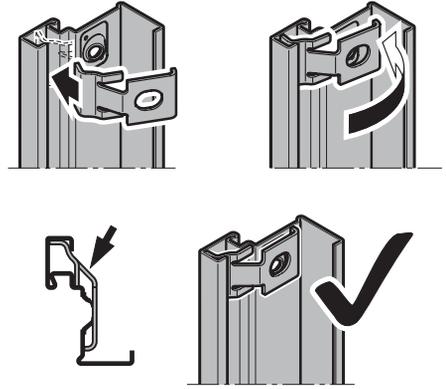


9/A16
max. T30



FUR 10 x 160

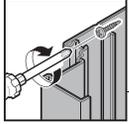
1



9/A17

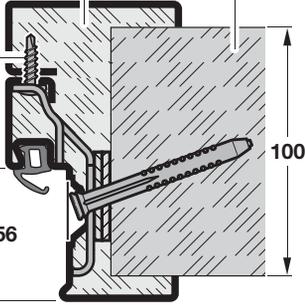


Multi Gips
FG70



DIN 7504 ST
4,8 x 19-N-H
DIN 7981
4,8 x 16

max. 56

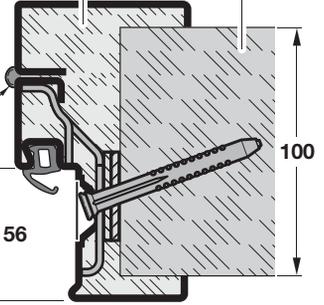


Multi Gips
FG70

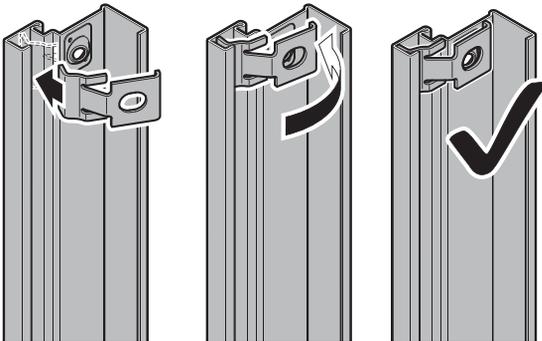
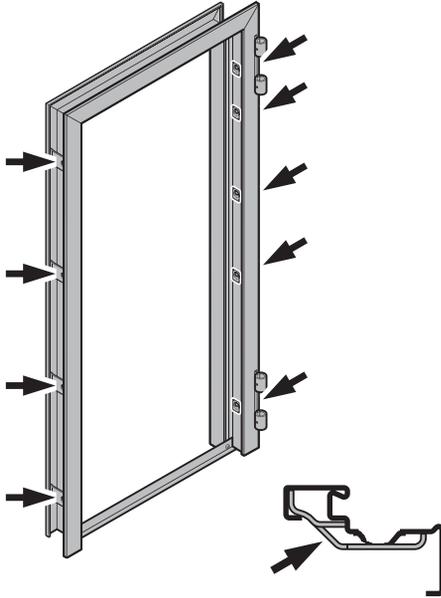


$2\sqrt{x} > 10$

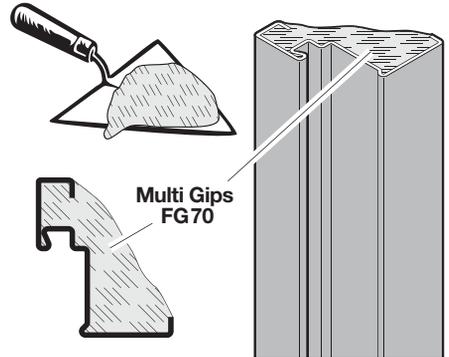
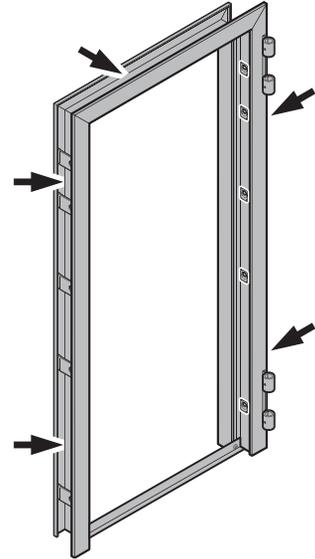
max. 56



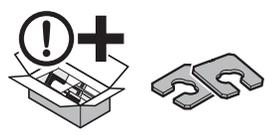
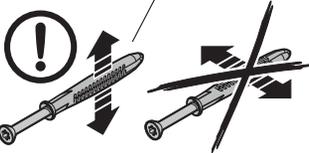
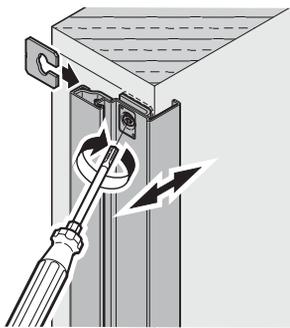
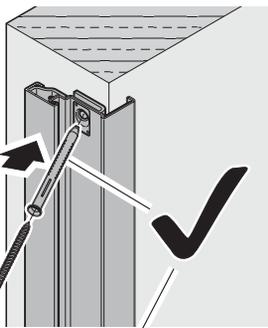
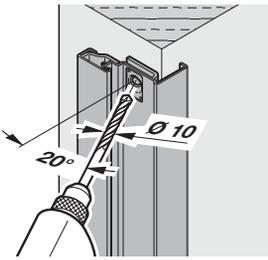
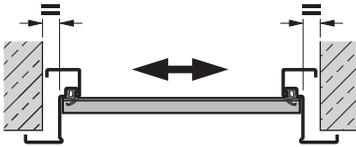
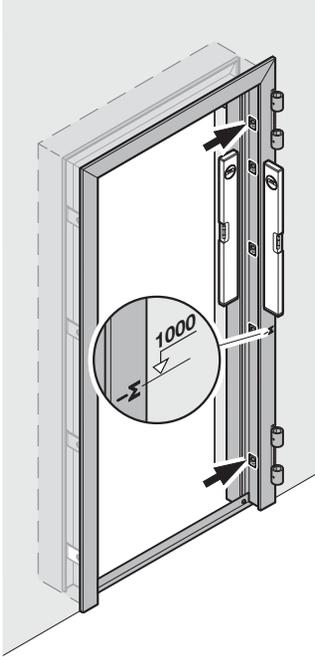
1



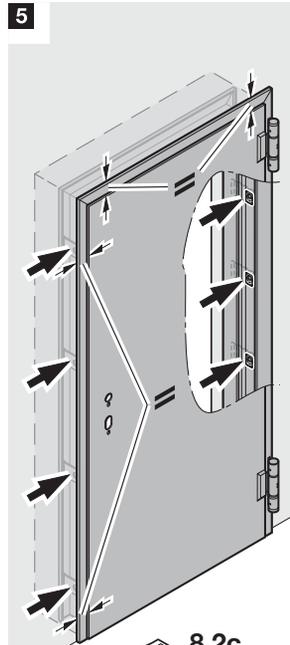
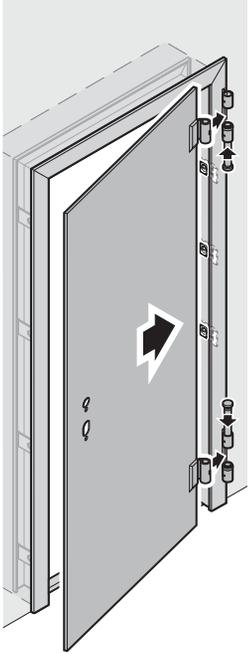
2



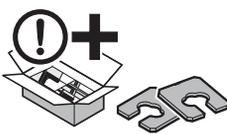
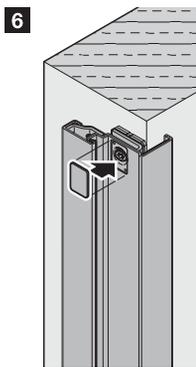
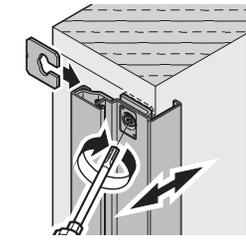
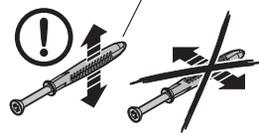
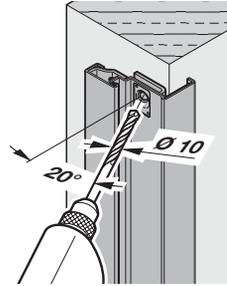
3 4.2/4.3 8

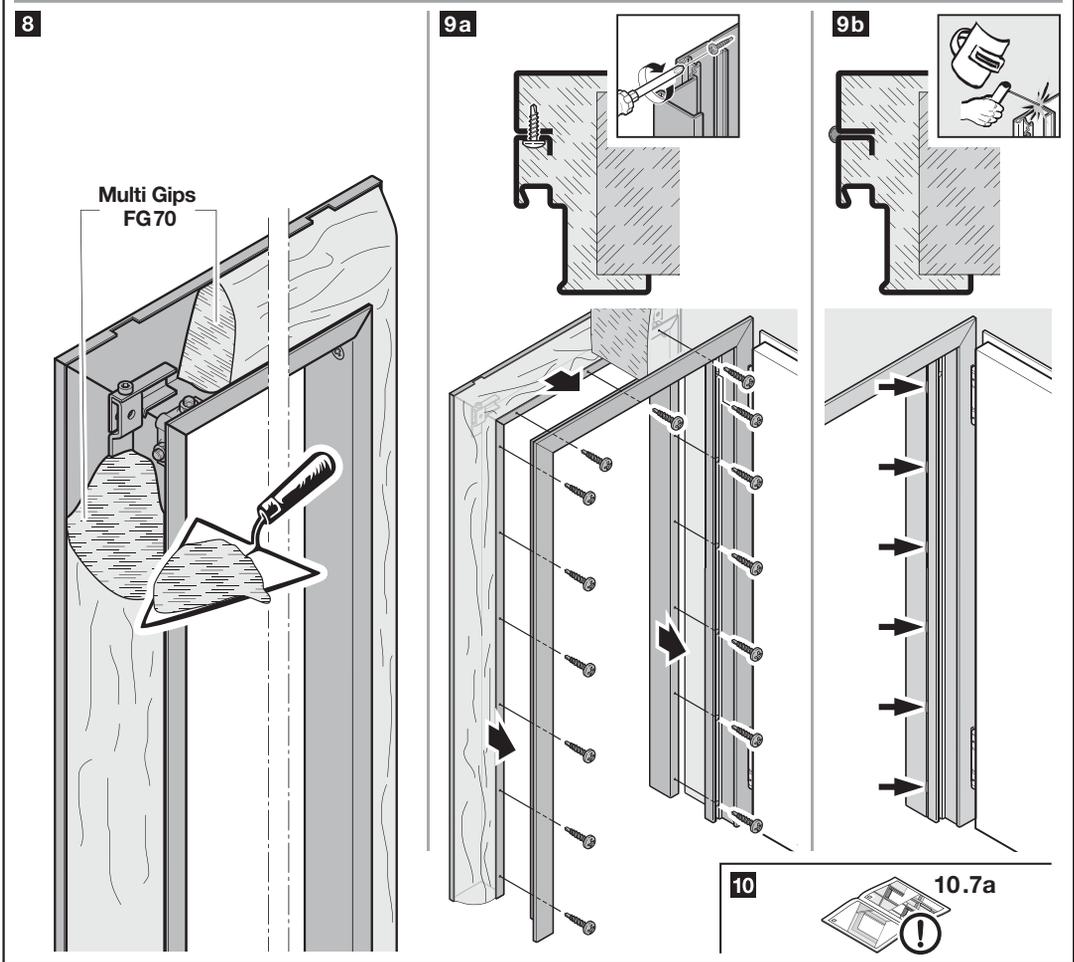
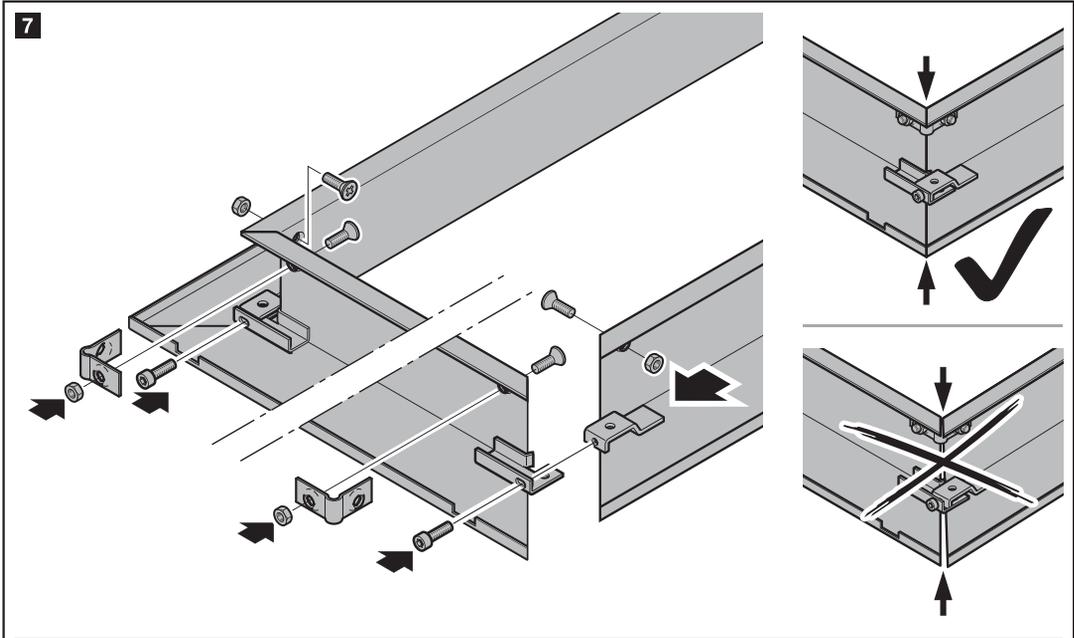


4 10-13



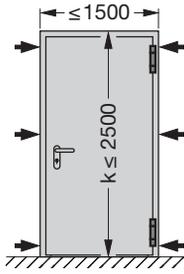
8.2c



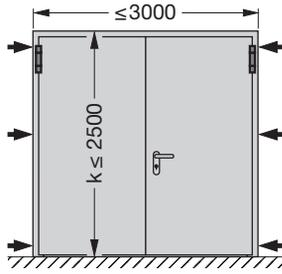


9/B1-B14

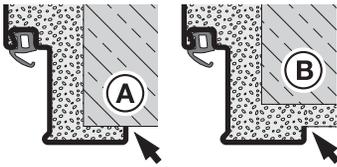
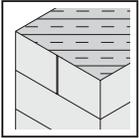
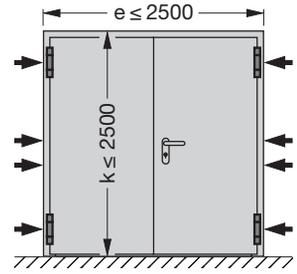
D65 - 1 OD



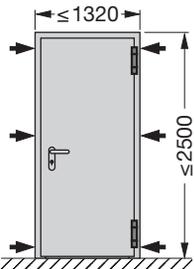
D65 - 2 OD



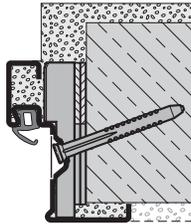
H3 - 2 OD



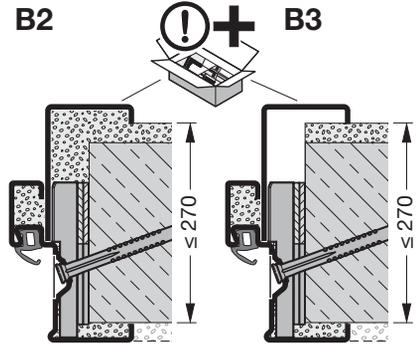
H3 - 1 OD



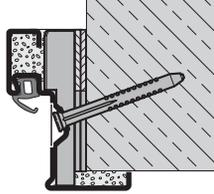
B1



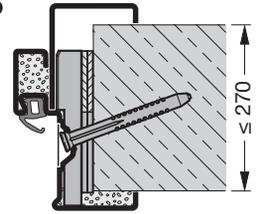
B2



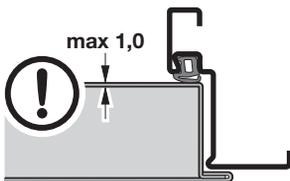
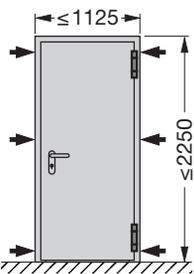
B4



B5



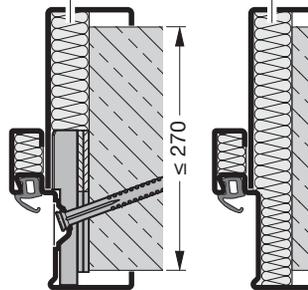
H3 - 1 OD



B6



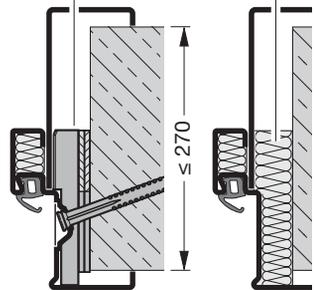
$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



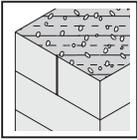
B7



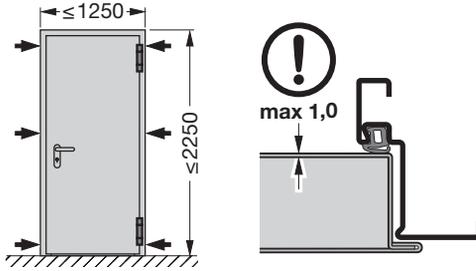
$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



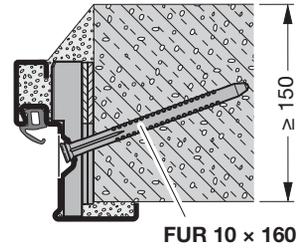
➔ 1 2 3a 4 ...



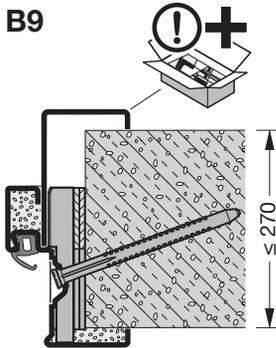
H3-1 OD



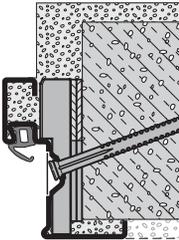
B8



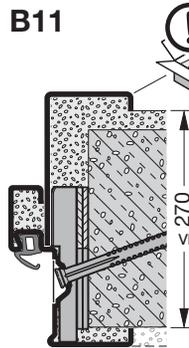
B9



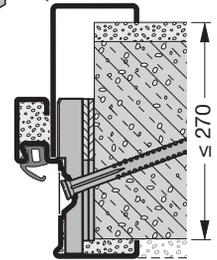
B10



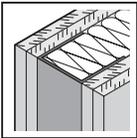
B11



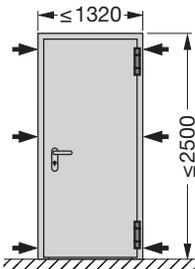
B12



➔ 1 2 3a 4 ...



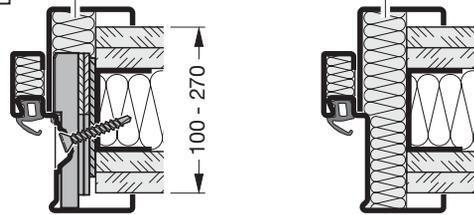
H3-1 OD



B13



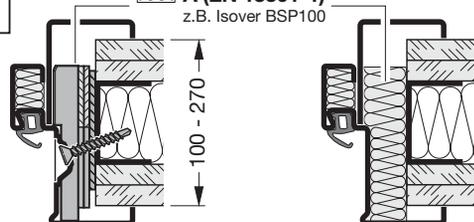
$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



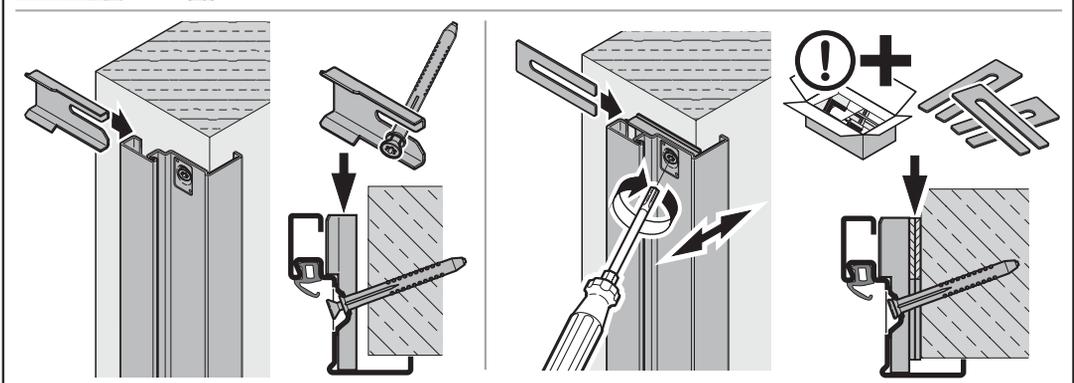
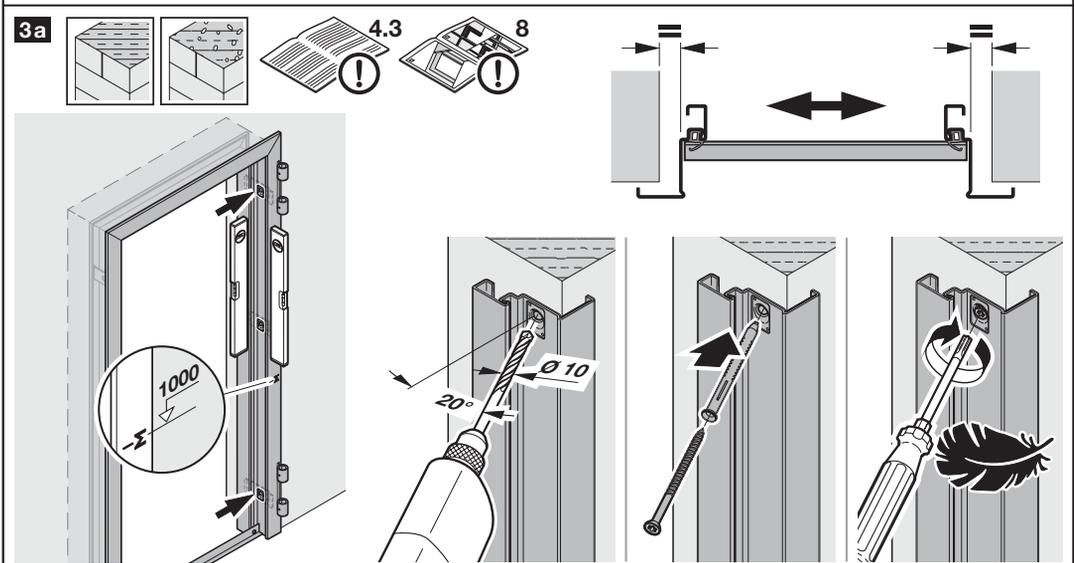
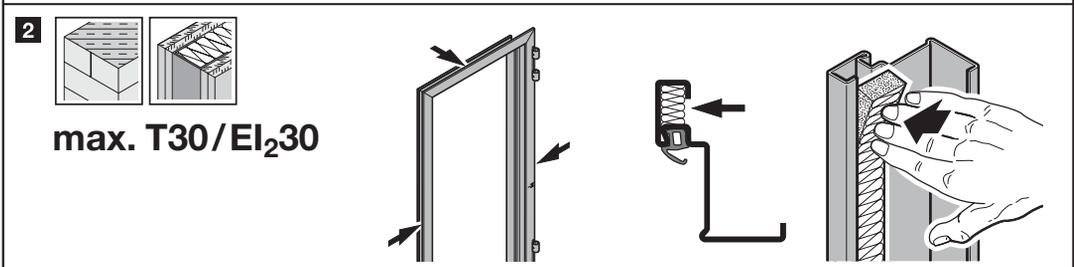
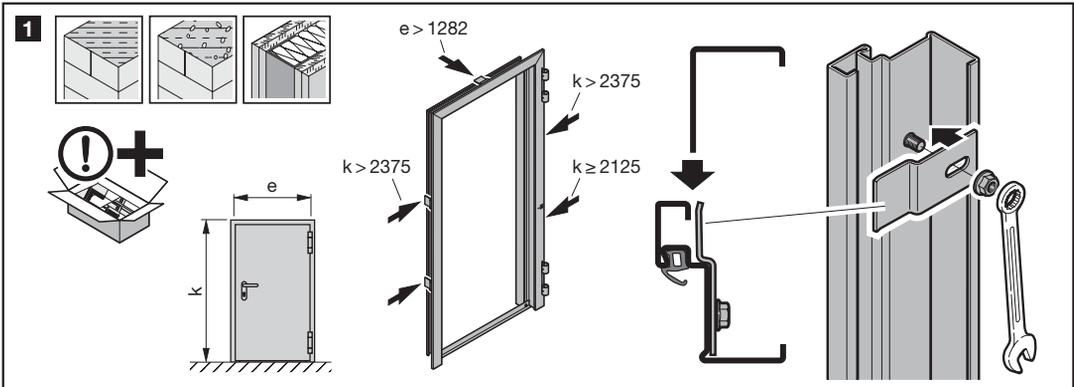
B14

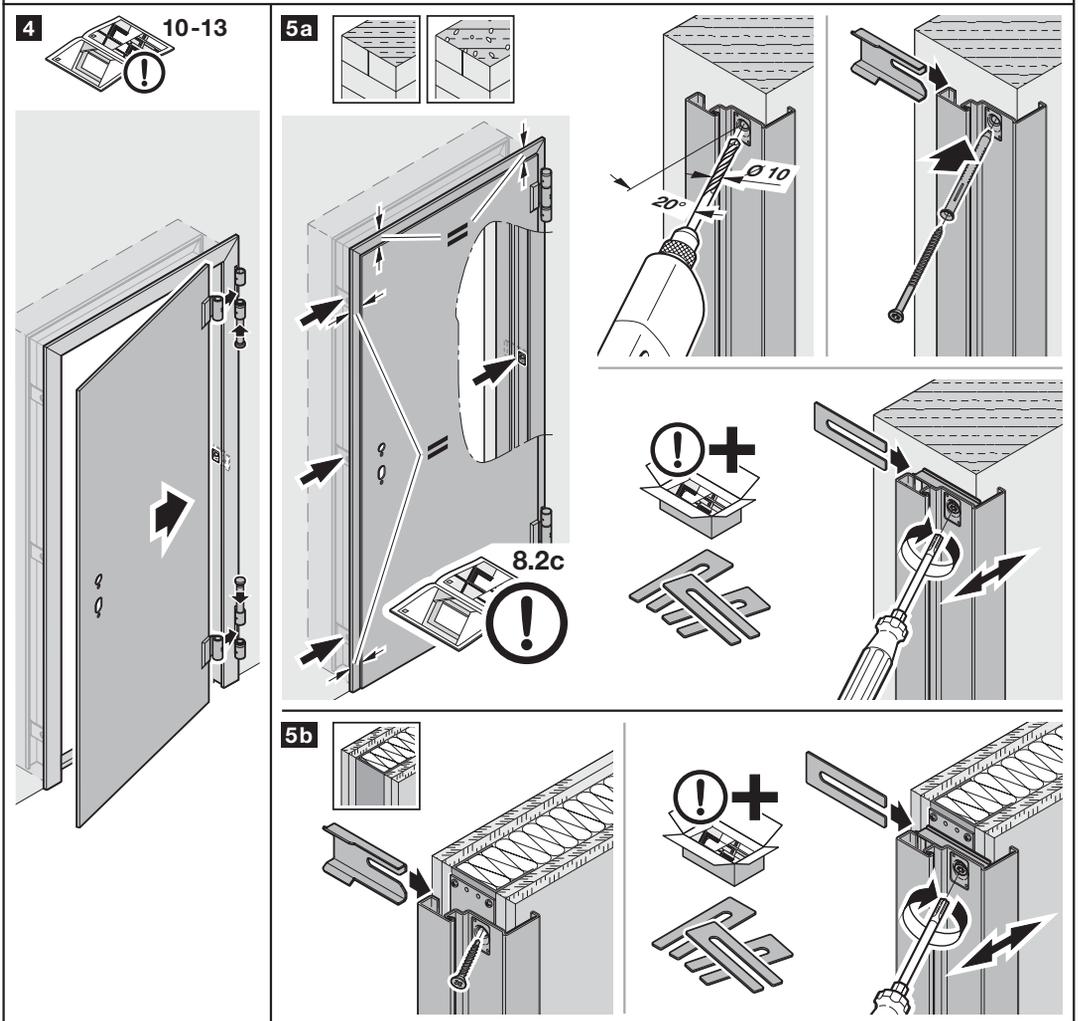
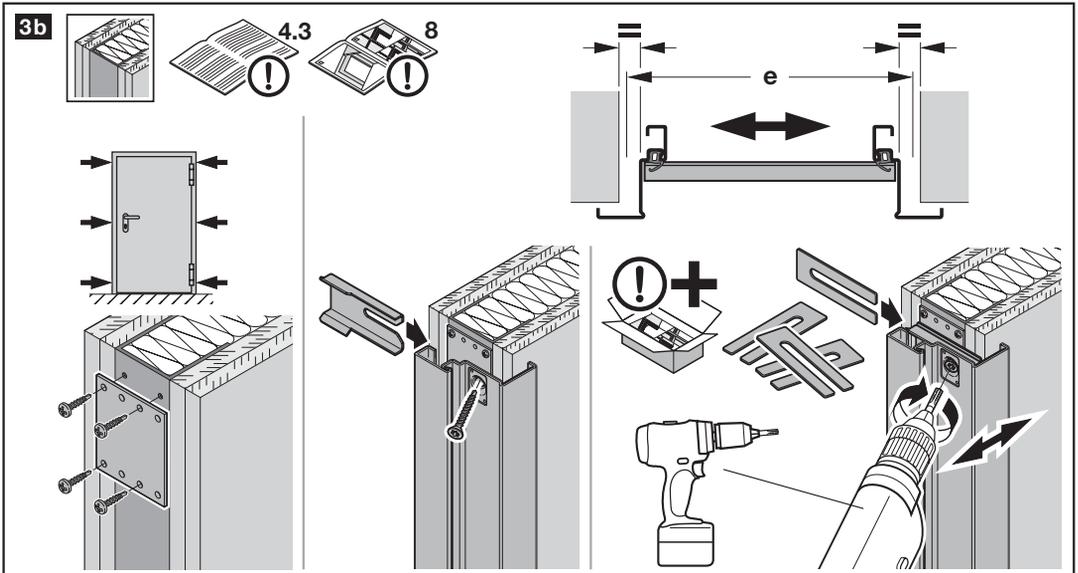


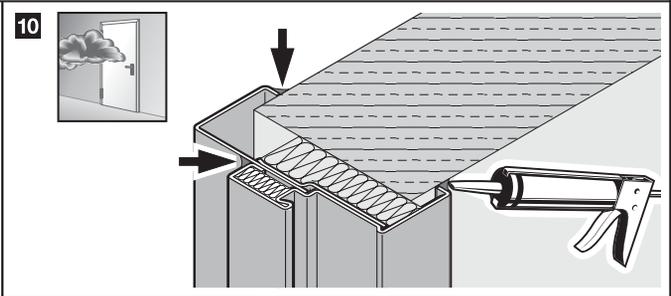
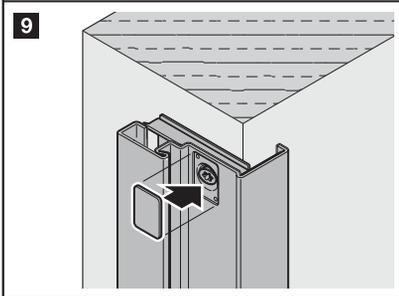
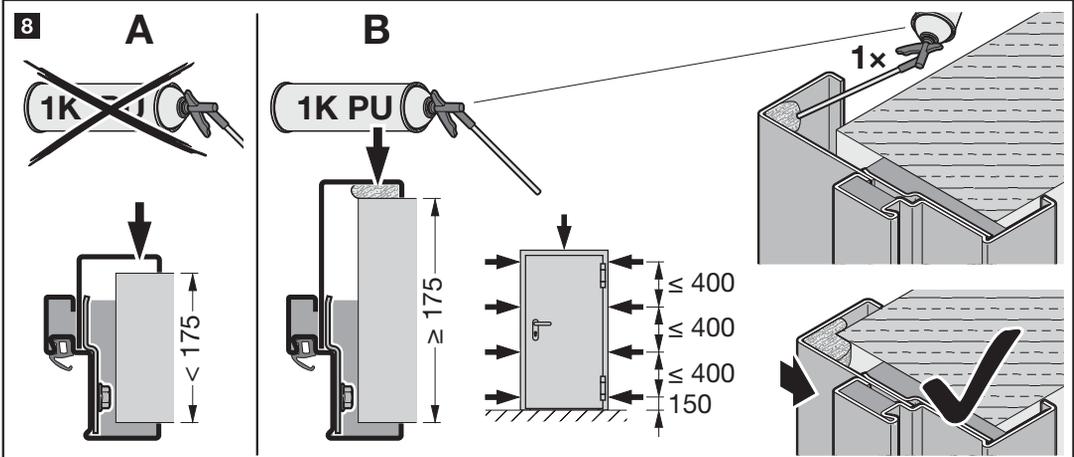
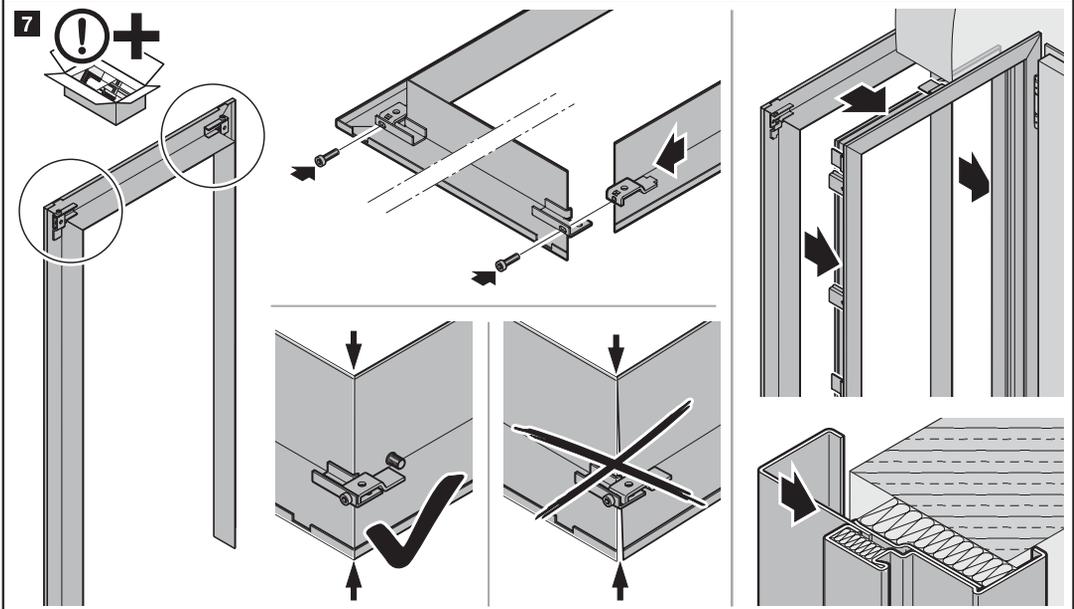
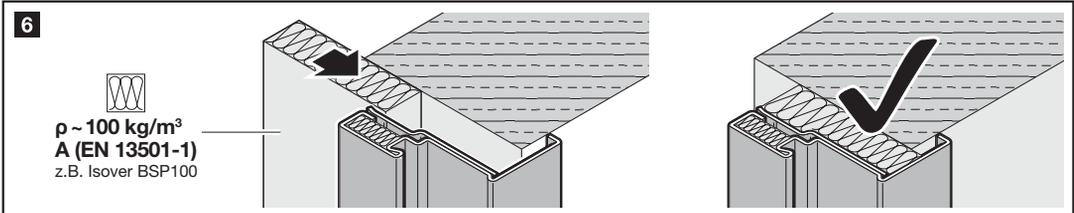
$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



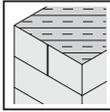
➔ 1 2 3b 4 ...



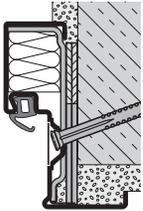




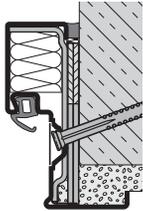
9/C1-C8
max. T30/
EI₂30



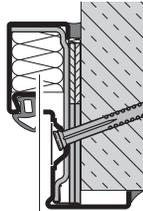
C1



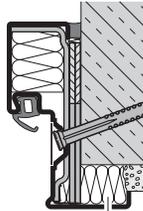
C2



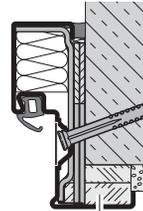
C3



C4

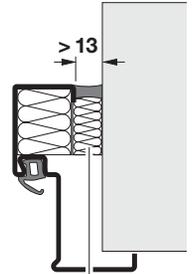


C5



$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100

A-EN 520

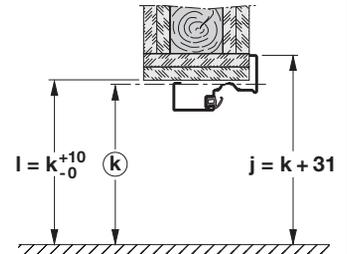
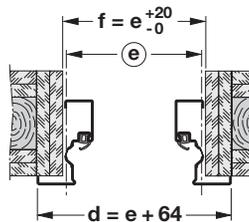


$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100

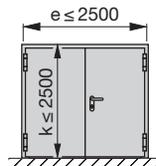
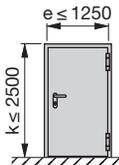
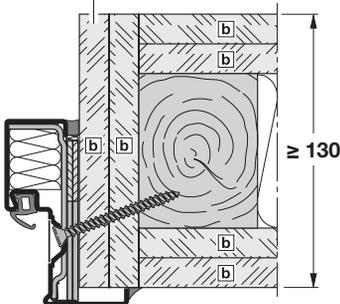
➔ 1a 2 ...

➔ 6

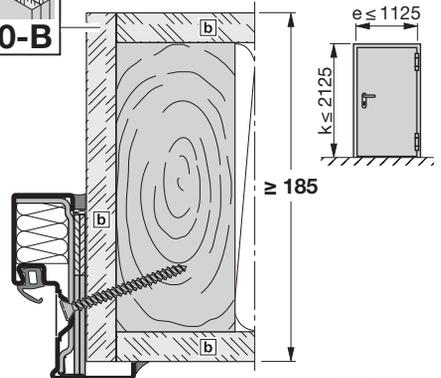
max. T30/
EI₂30



C6 F90B DIN 4102-4 Tab. 49



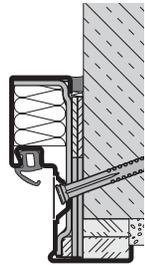
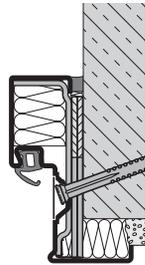
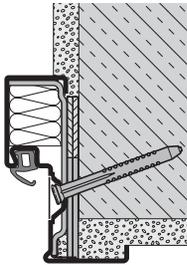
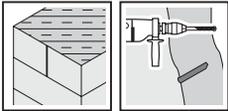
C7 F30B DIN 4102-4 Tab. 49



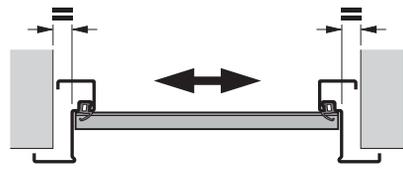
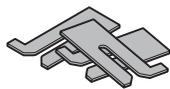
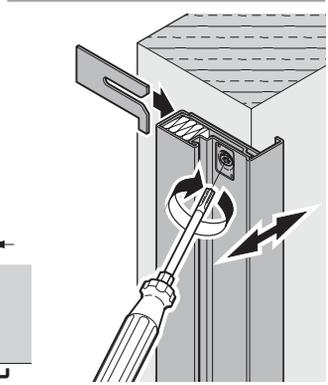
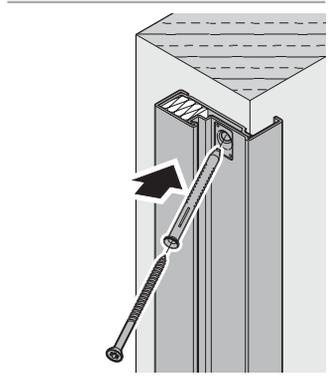
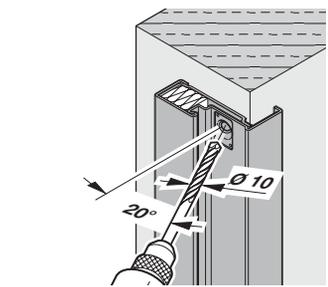
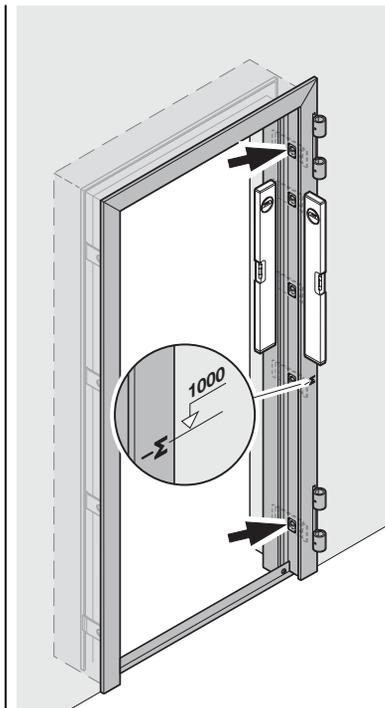
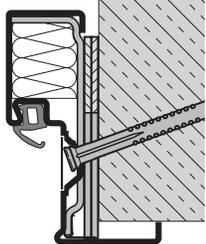
b A-12,5-EN 520

➔ 1b 2 ...

1a

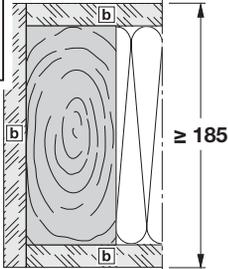
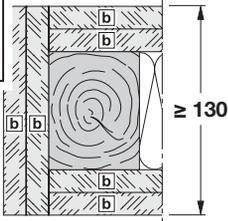


e-10

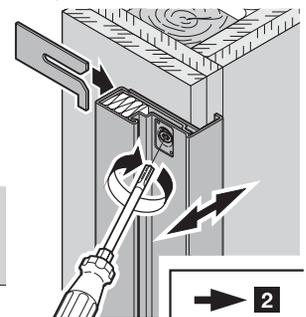
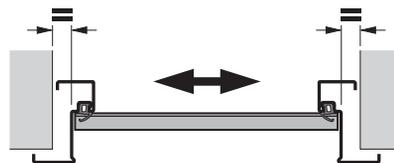
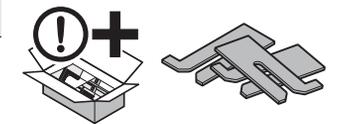
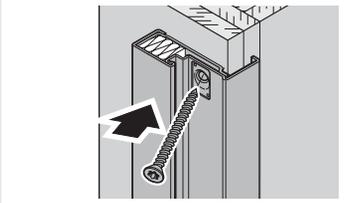
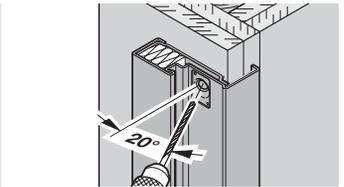
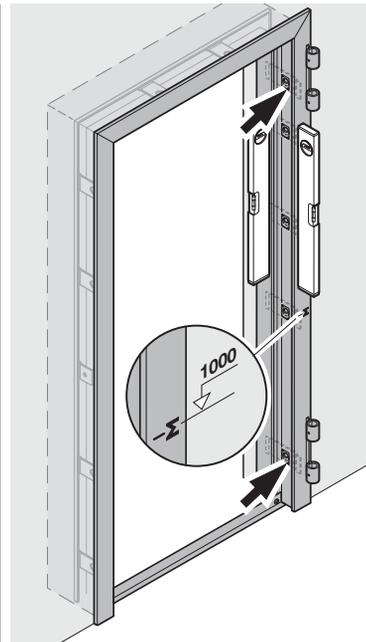
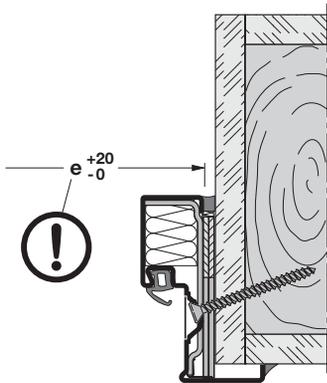
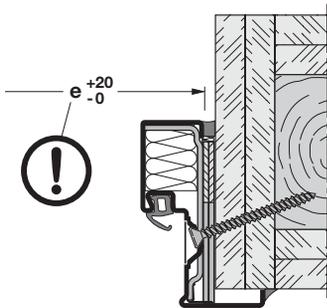
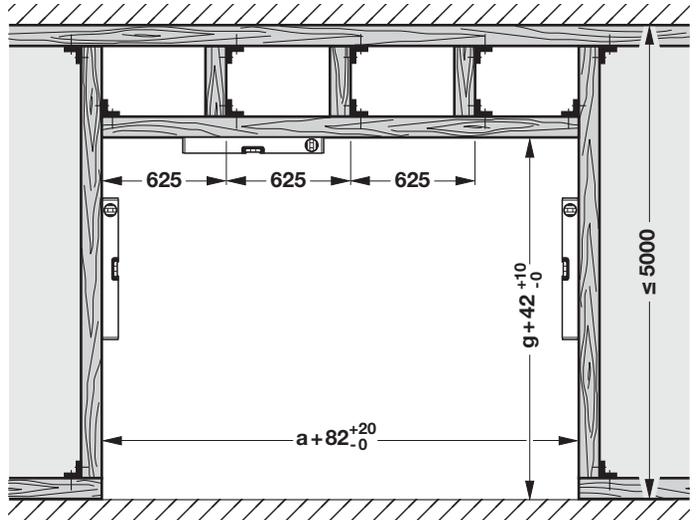
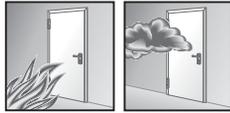


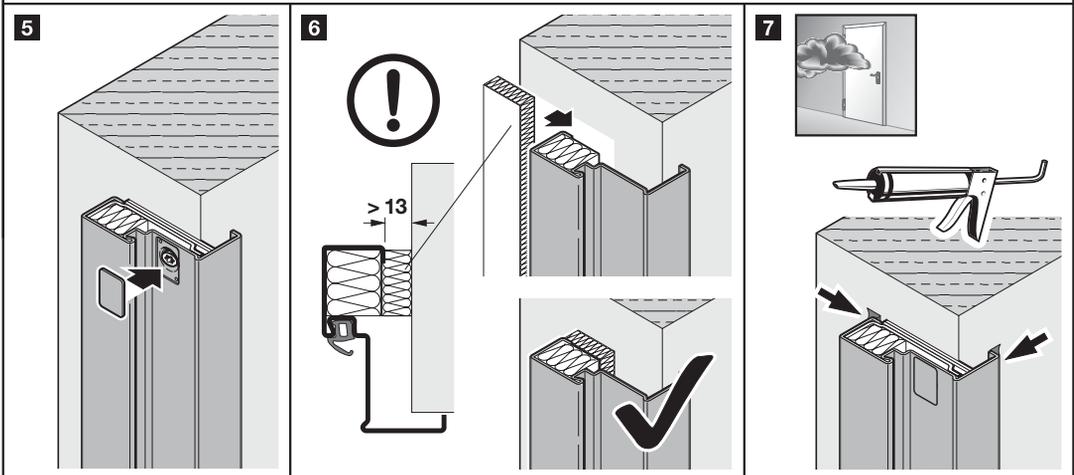
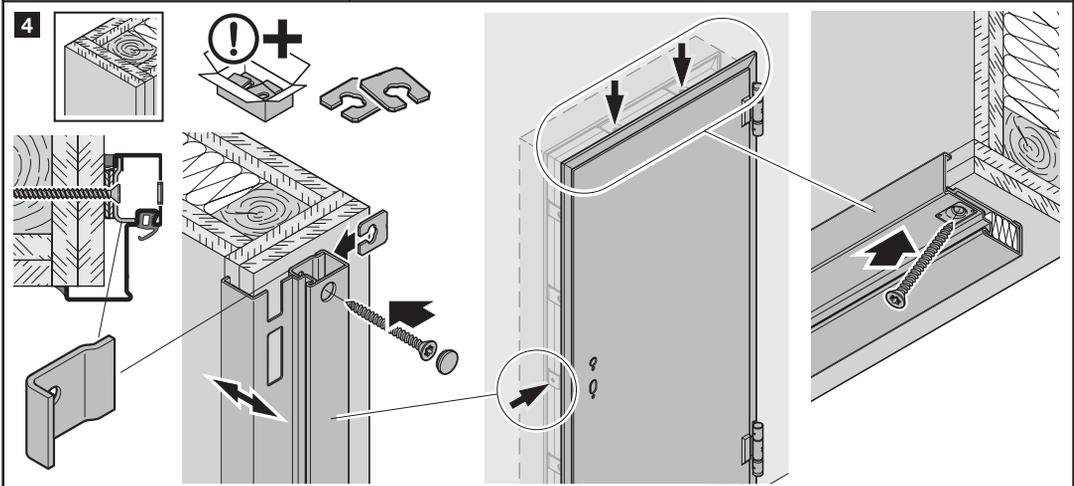
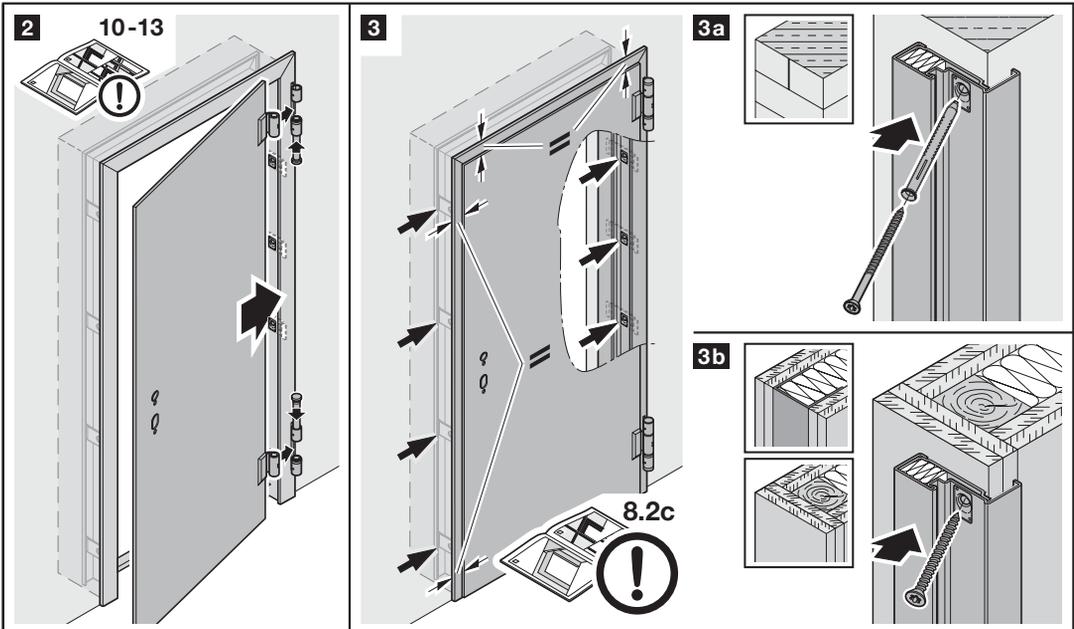
➔ 2

1b

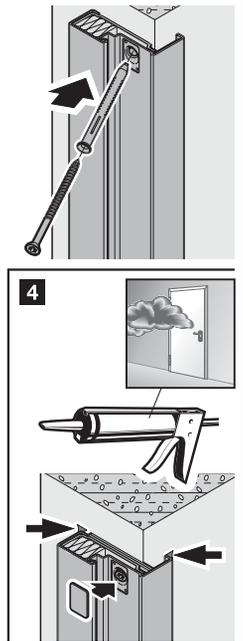
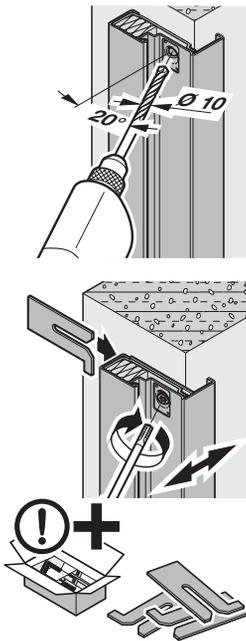
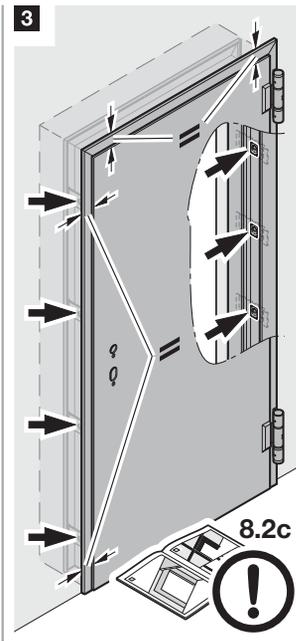
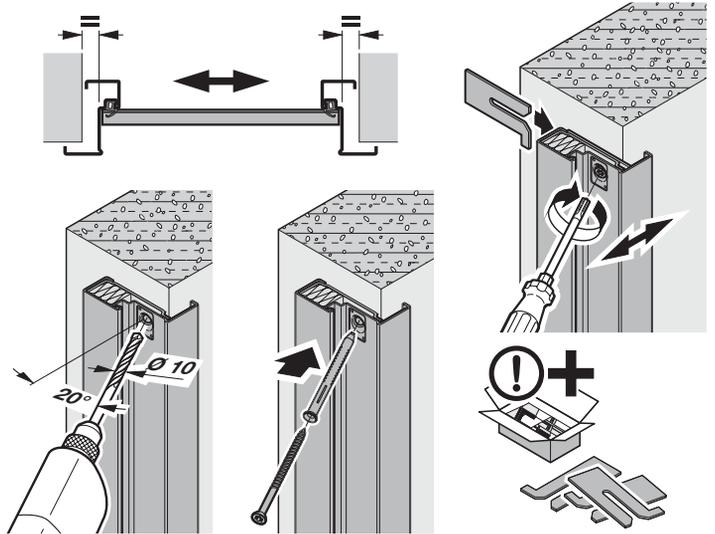
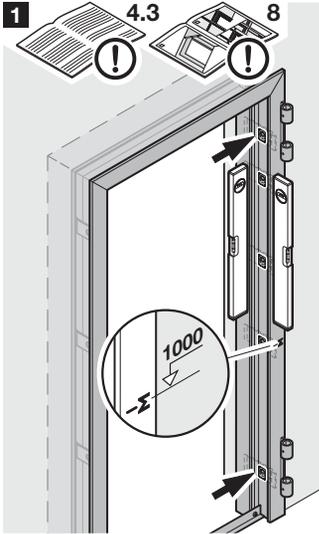
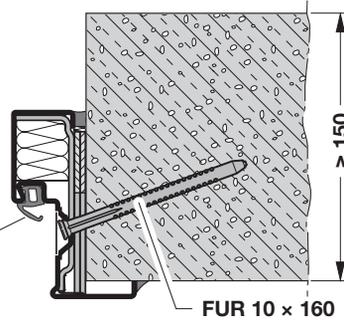


b) A-12,5-EN 520

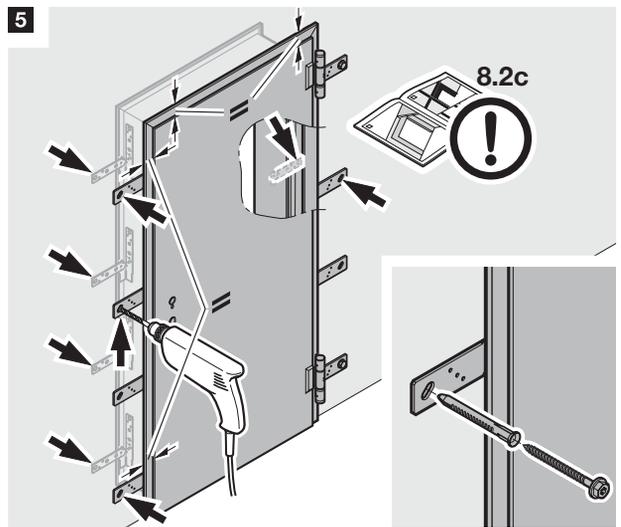
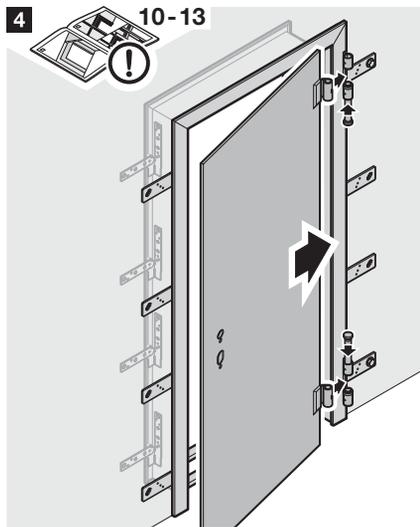
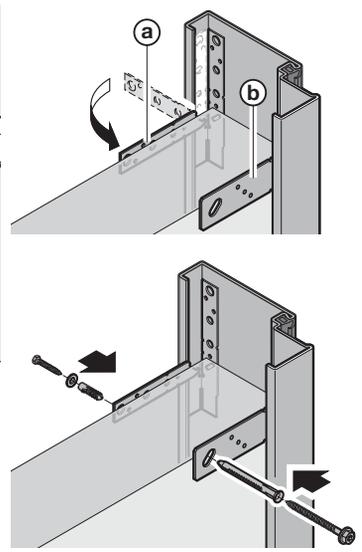
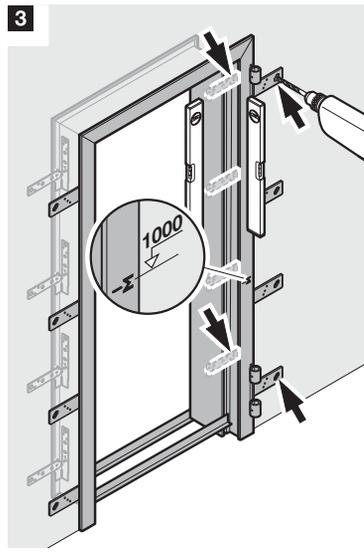
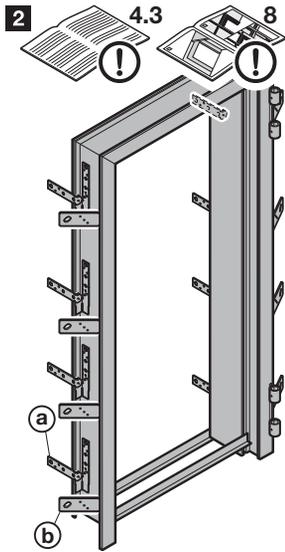
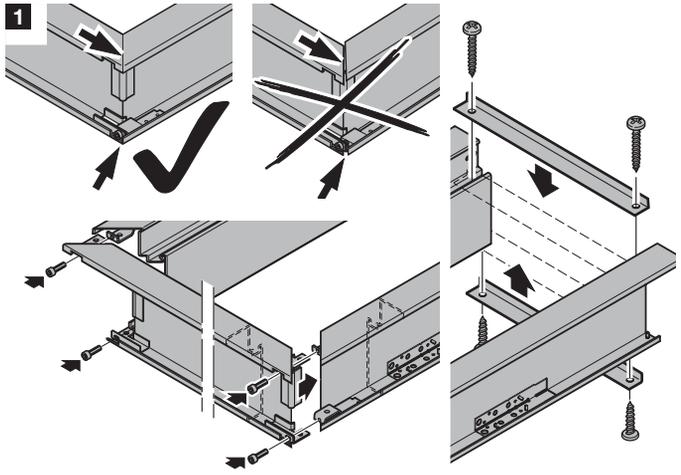
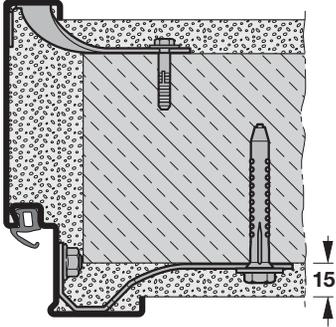


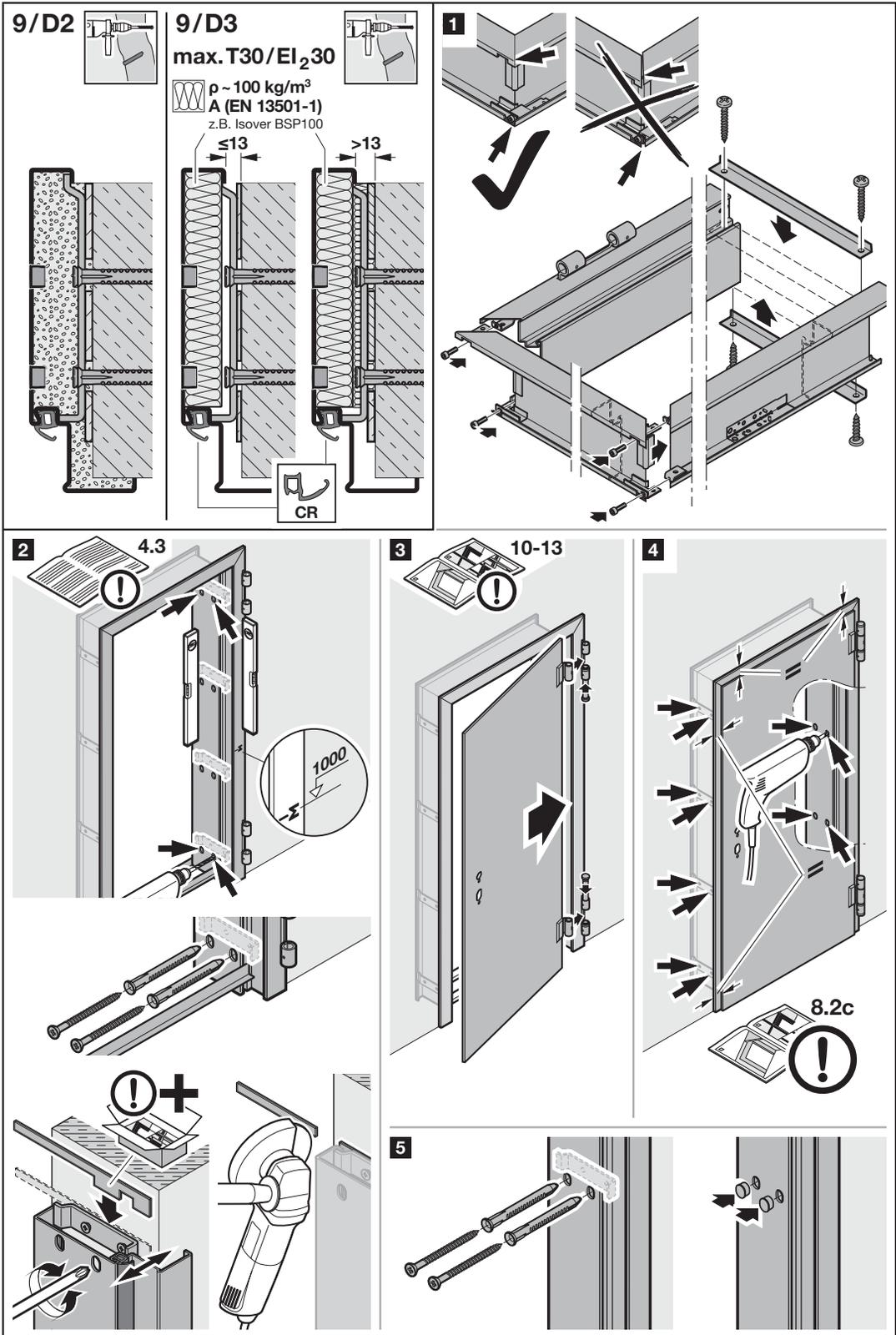


9/C8
max. T30

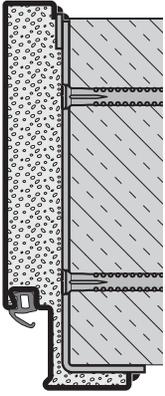


9/D1





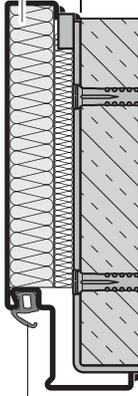
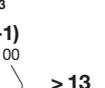
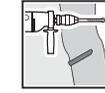
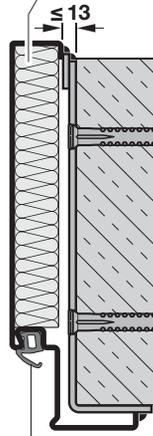
9/D4



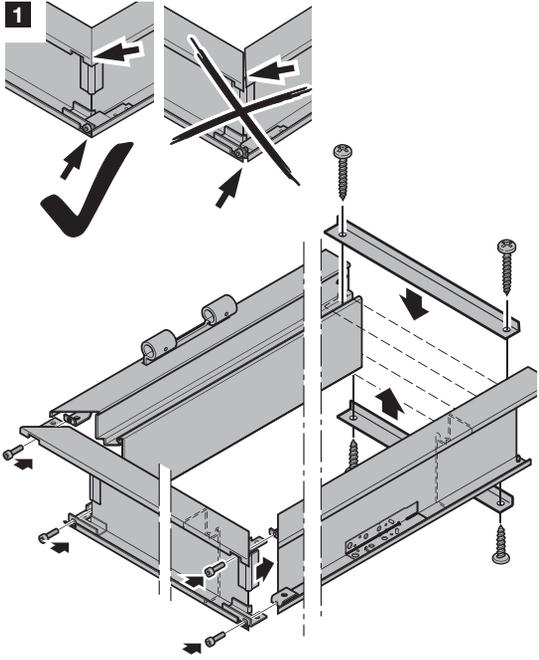
9/D5

max. T30/
EI₂₃₀

$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



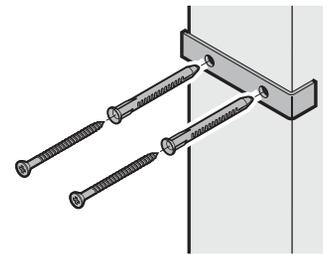
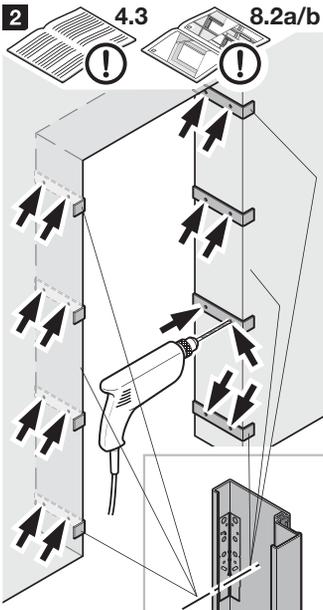
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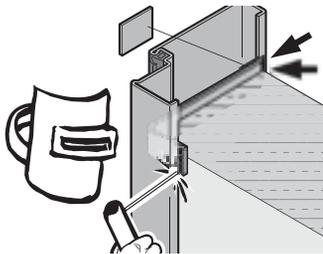
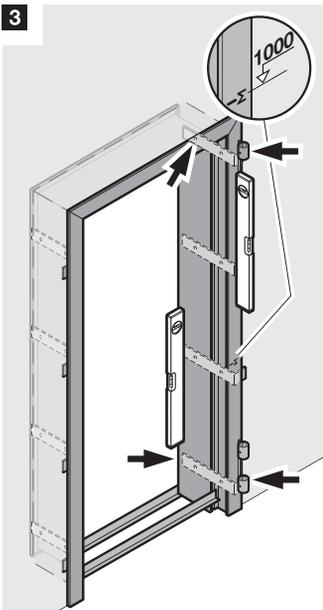
2

4.3

8.2a/b

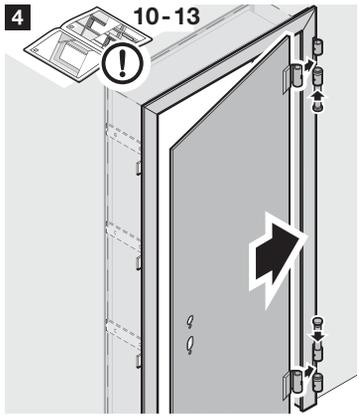


3



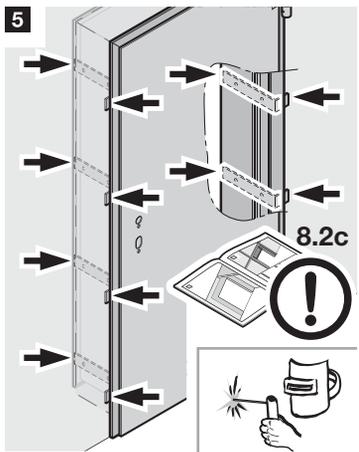
4

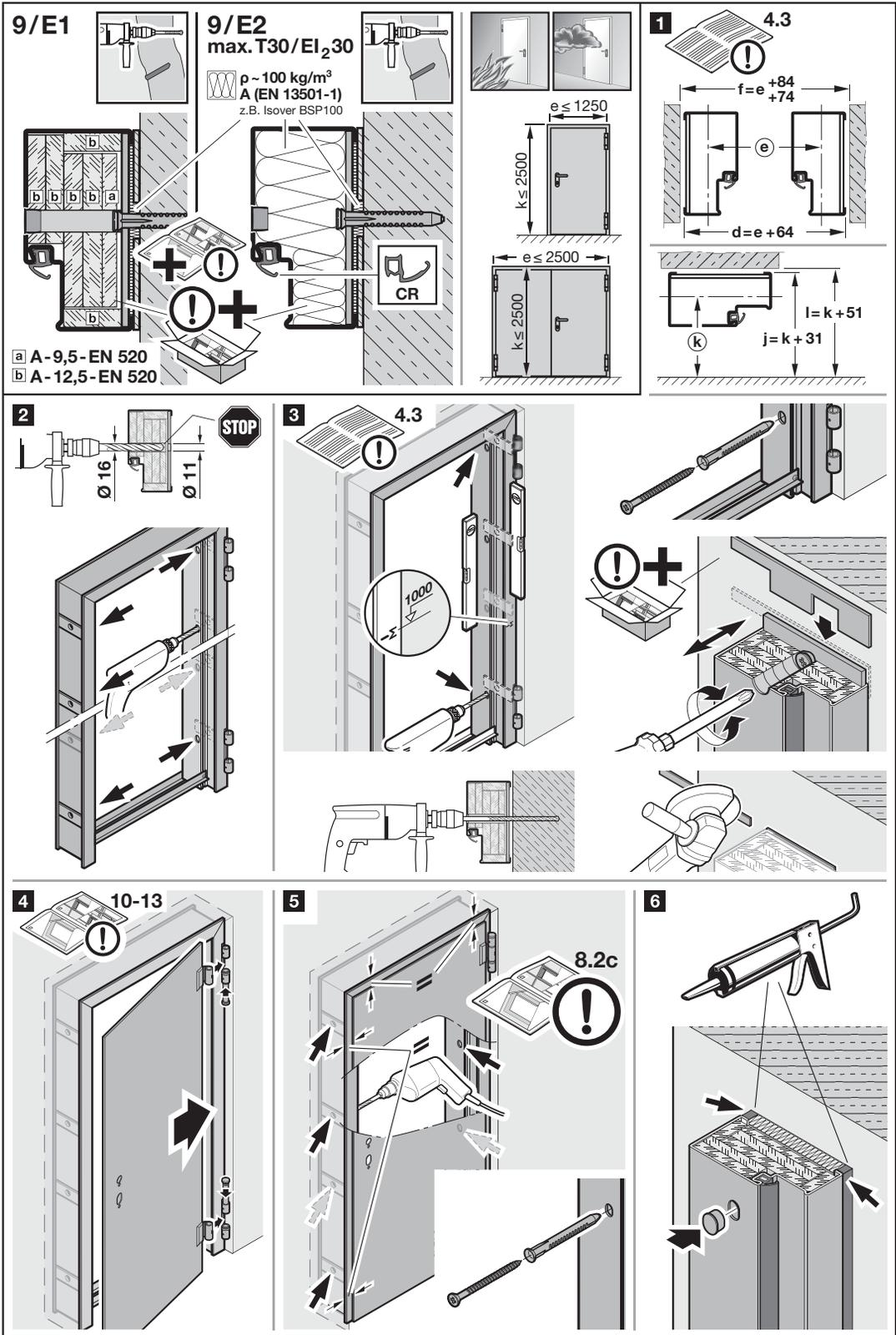
10-13



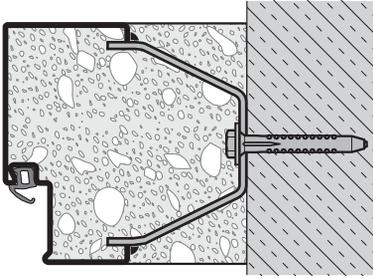
5

8.2c

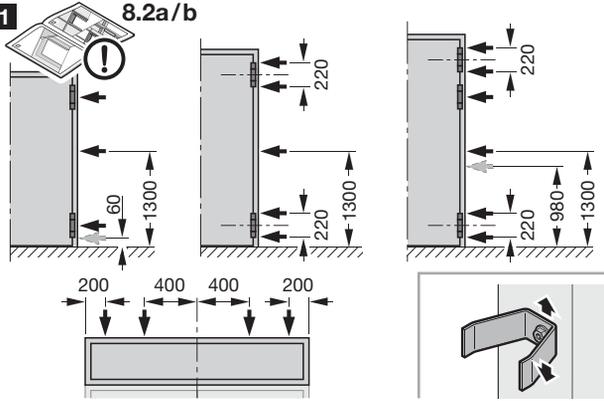




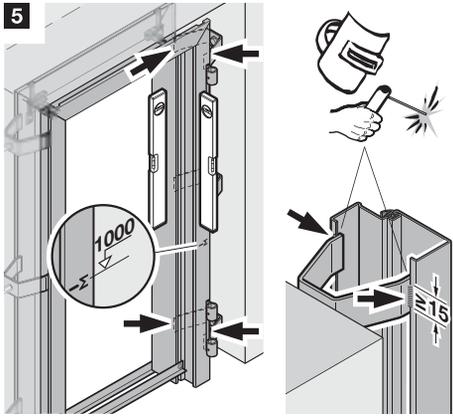
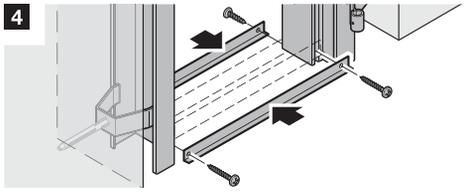
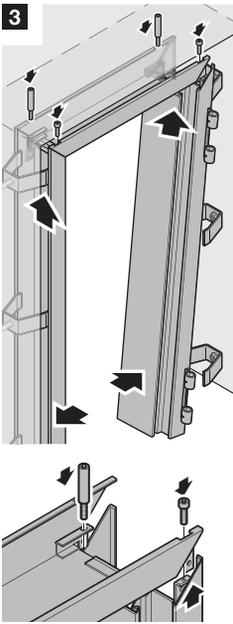
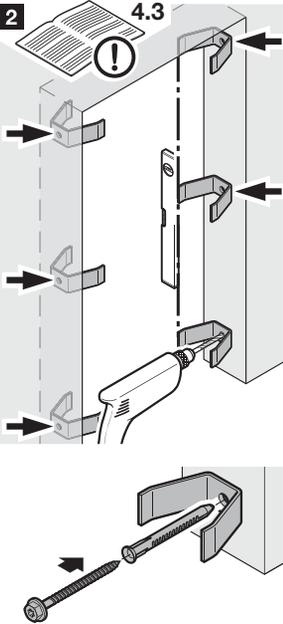
9/E3



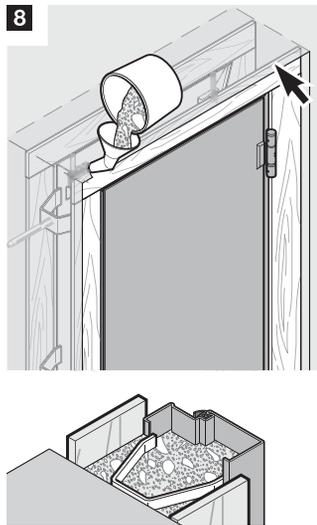
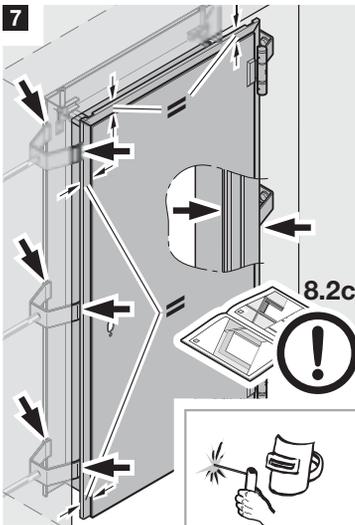
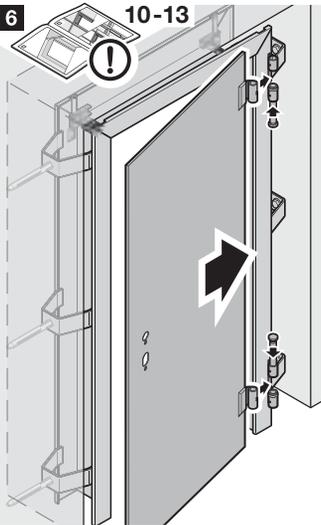
1 8.2a/b

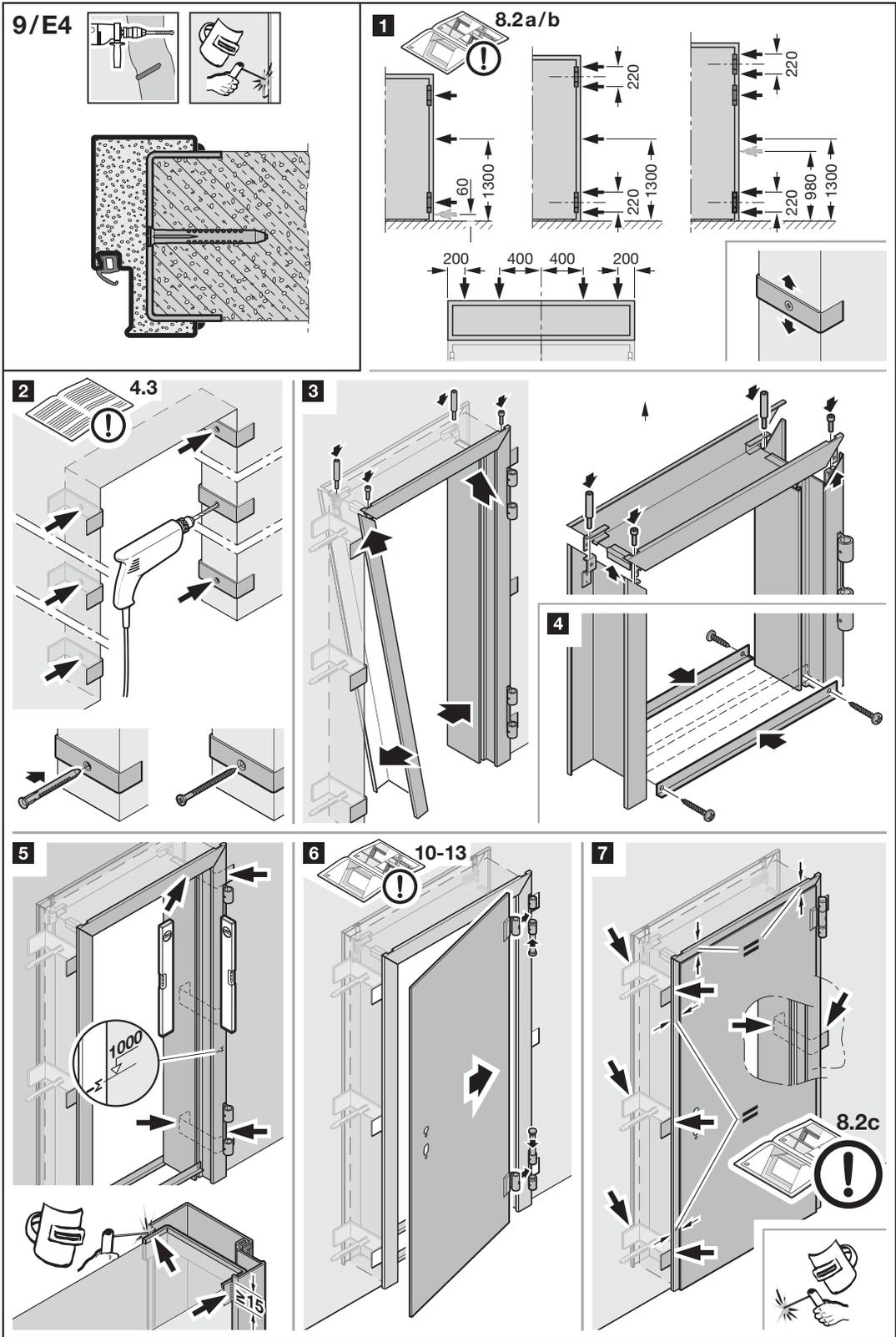


2 4.3



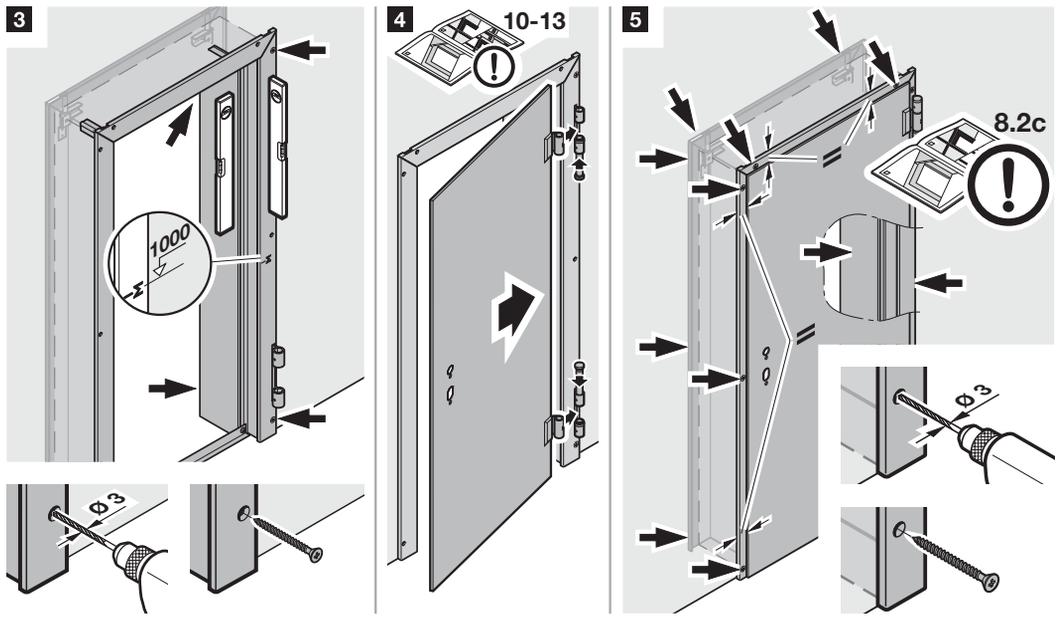
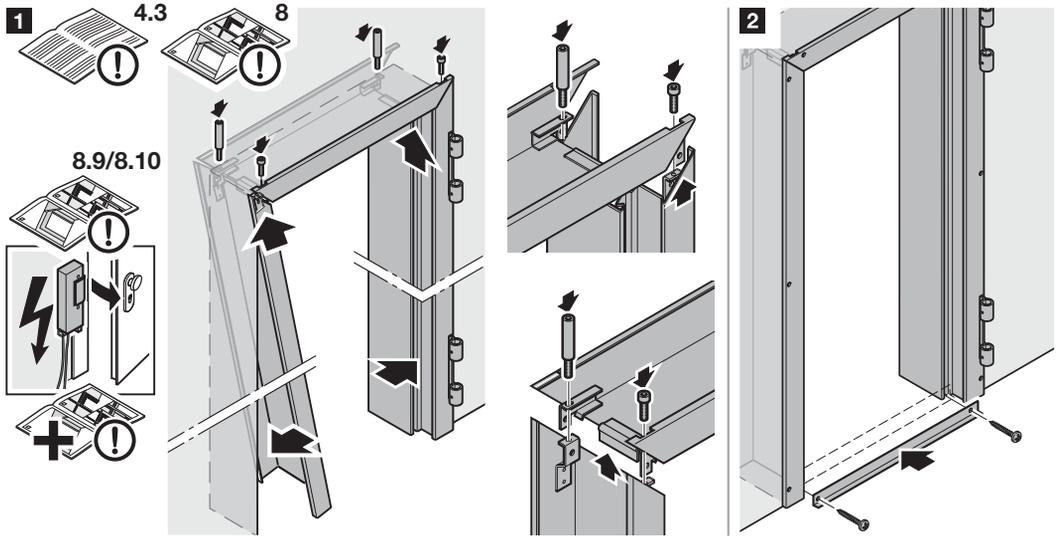
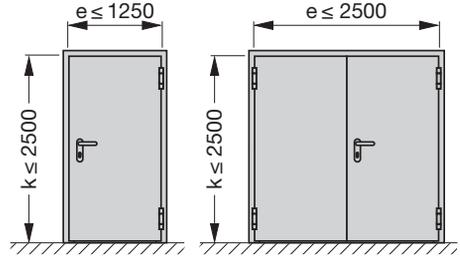
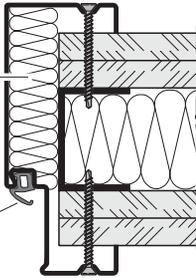
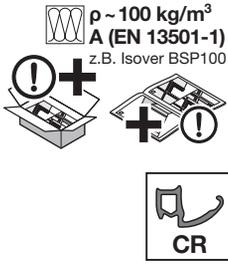
6 10-13



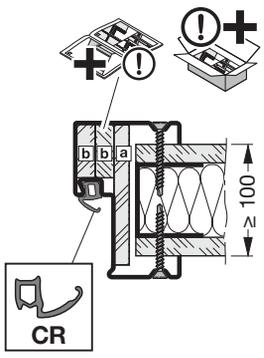


9/E5

max. T30/
EI₂30



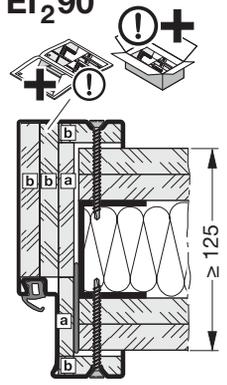
9/E6
max T30/EI₂30



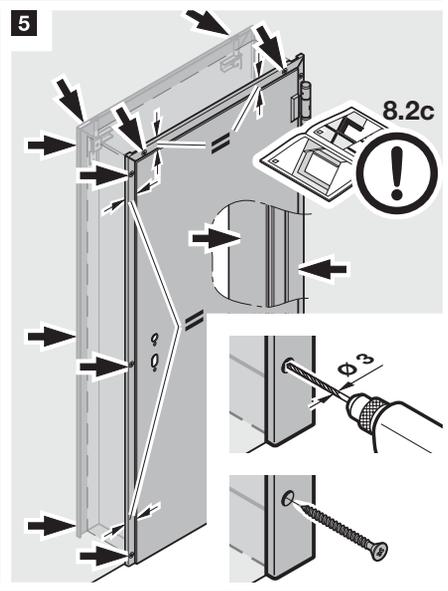
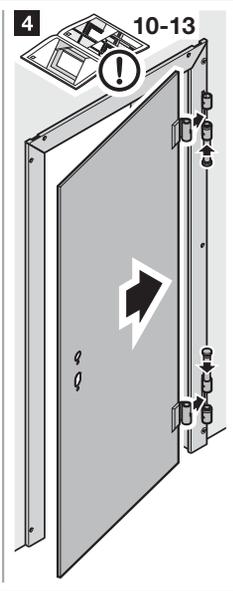
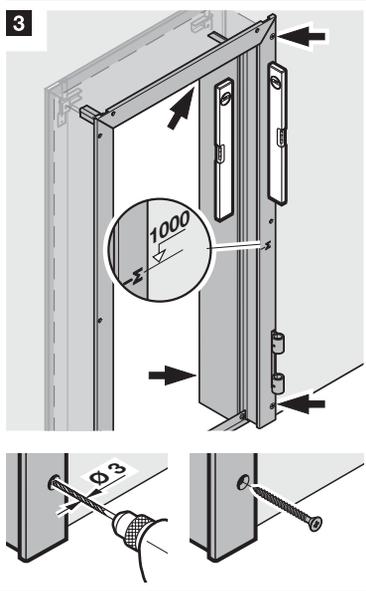
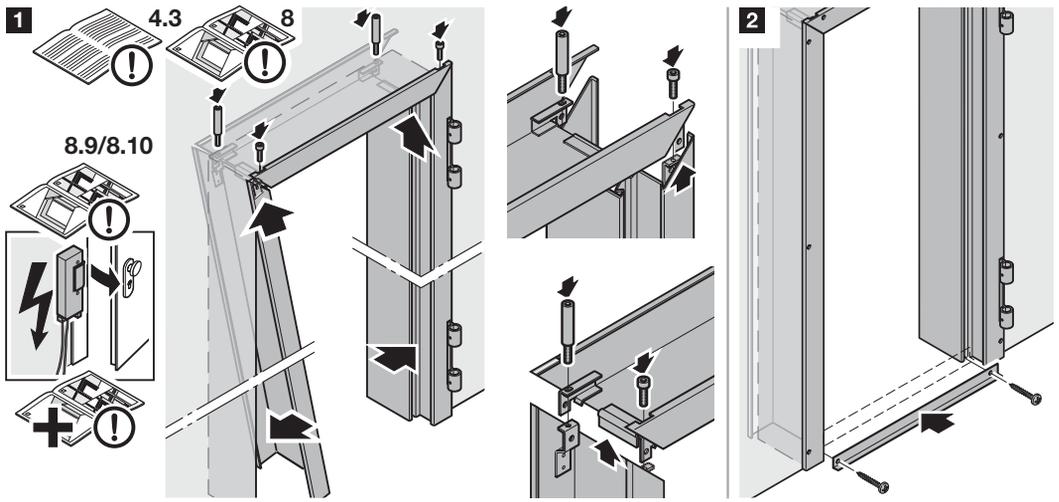
9/E7
max T30/EI₂30



9/E8
T90/EI₂90

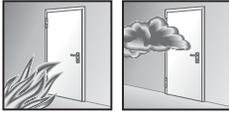


a A-9,5-EN 520 / b A-12,5-EN 520

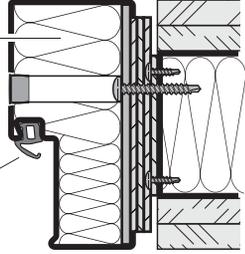
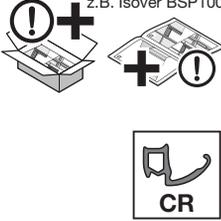


9/E9

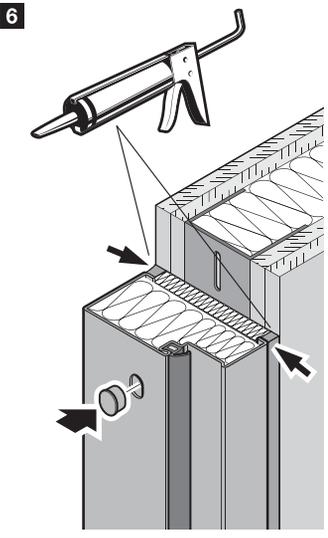
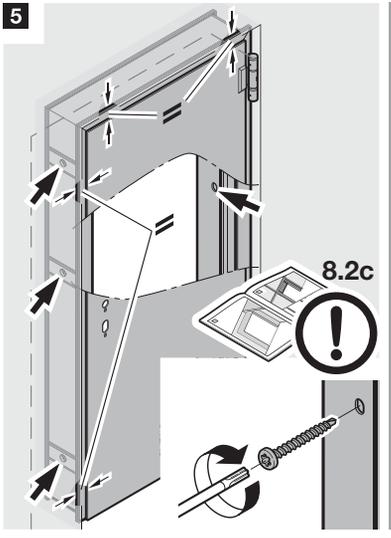
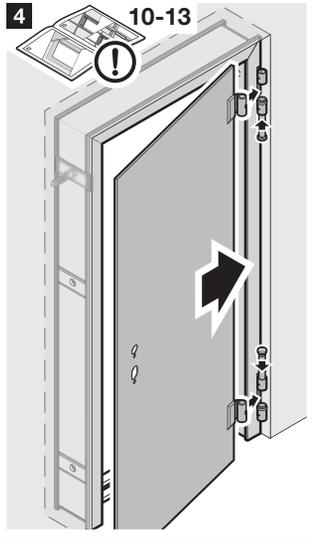
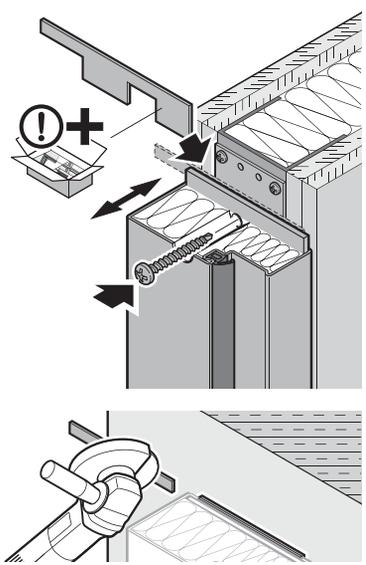
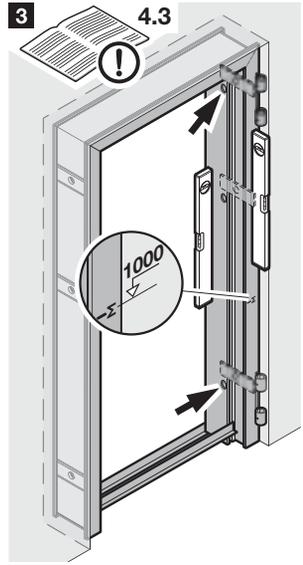
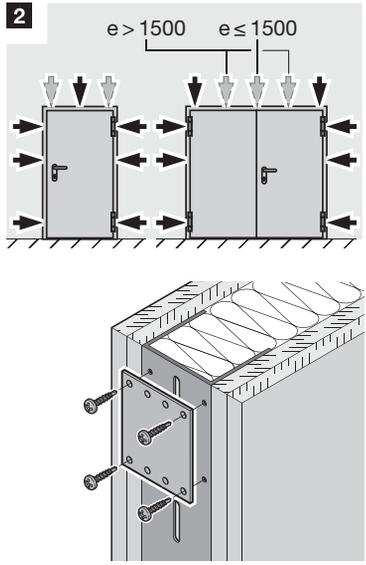
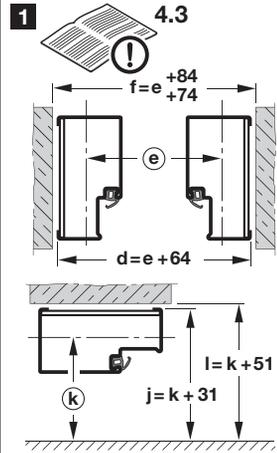
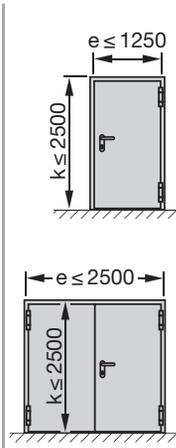
max. T30/
EI₂30



$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



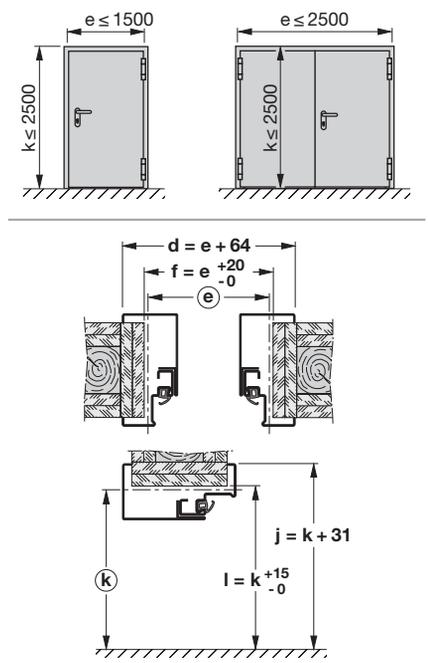
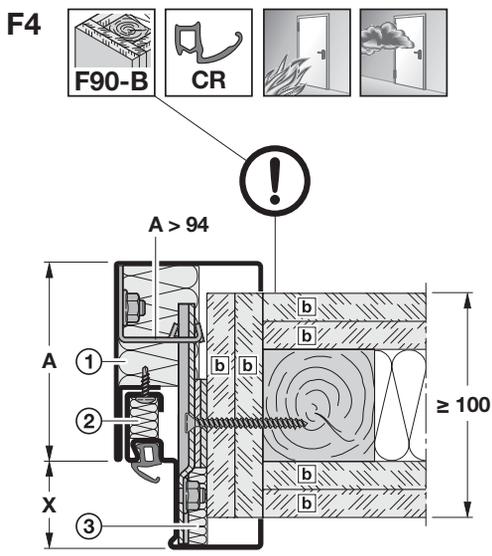
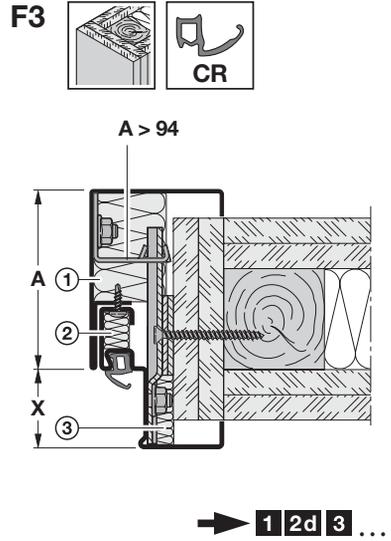
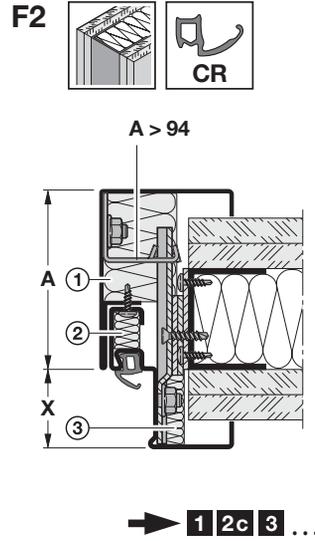
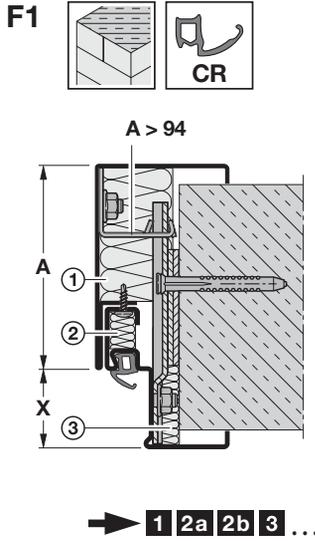
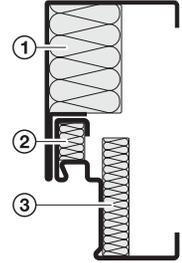
≥ 125



9/F1-F4
max. T30/ EI₂30

 $\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
 z.B. Isover BSP100

- ① = $40 \times (A - 42)$
- ② = $15 \times 22,5$
- ③ = $15 \times (X + 24)$



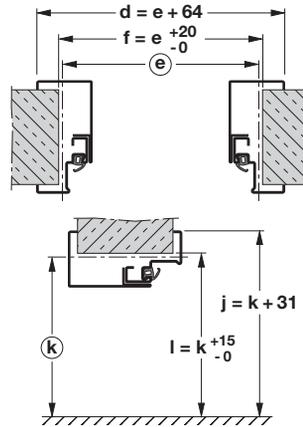
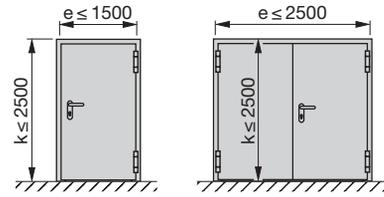
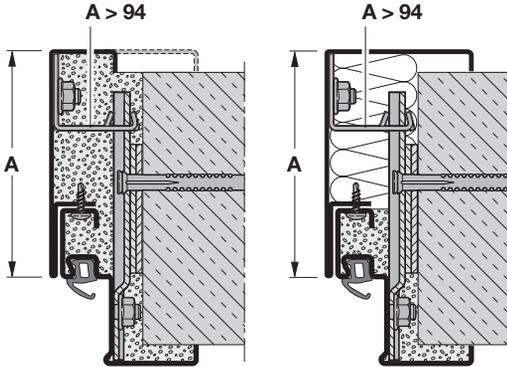
F90B DIN 4102-4 Tab. 49 **b** A-12,5-EN 520

➔ **1 2e 3 ...**

9/F5-F6

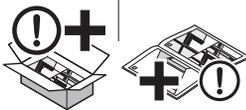
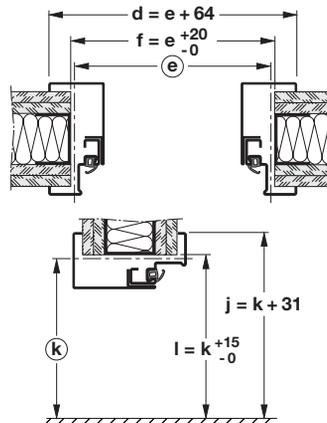
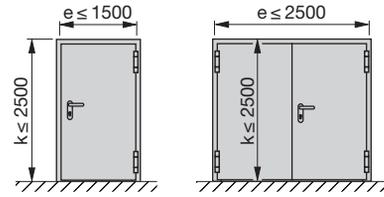
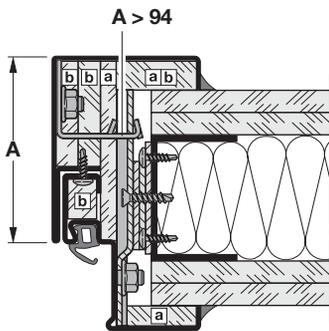
max. T90/ EI₂90

F5



➔ 2a 2b 3 ...

F6



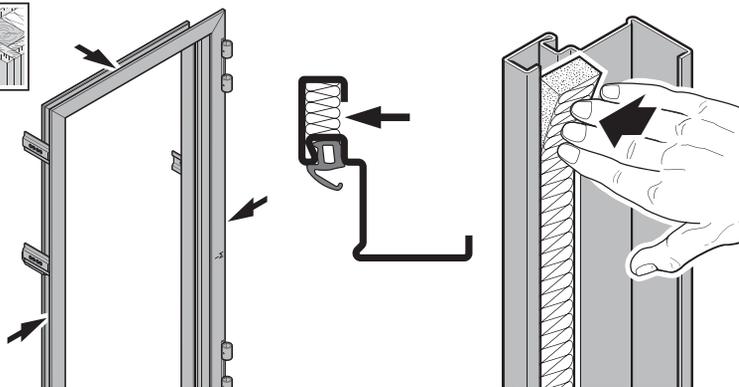
▣ A-9,5-EN 520 / ▣ A-12,5-EN 520

➔ 2c 3 ...

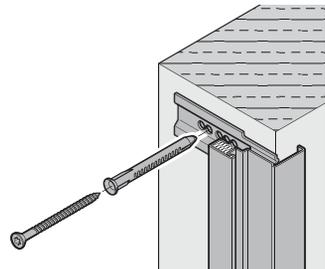
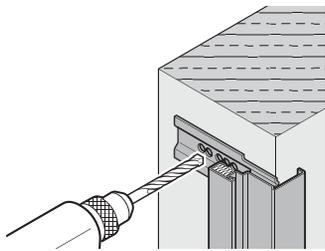
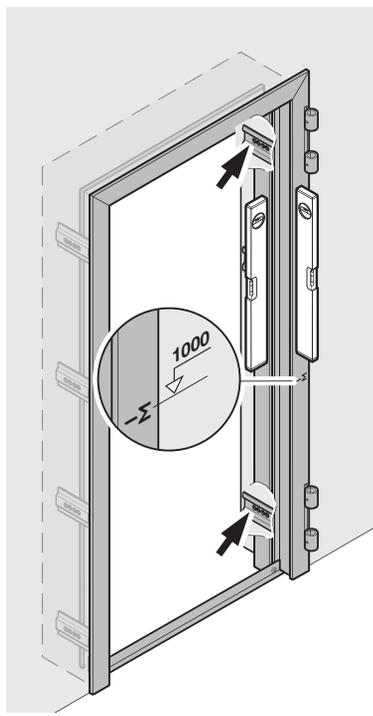
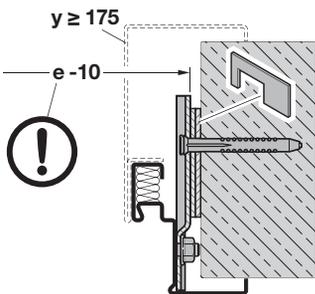
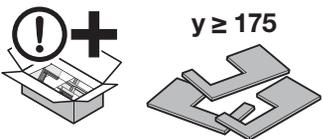
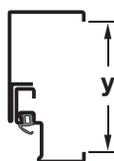
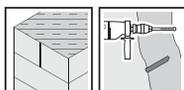
1



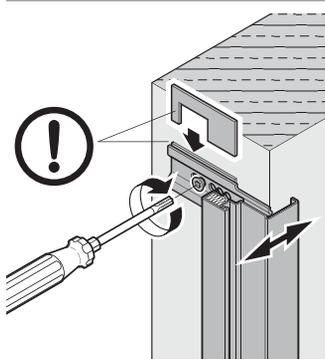
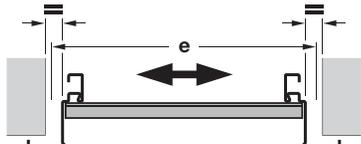
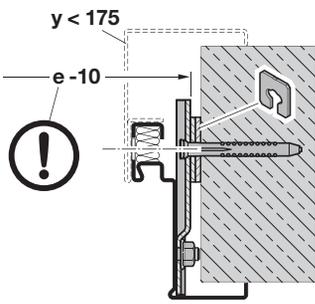
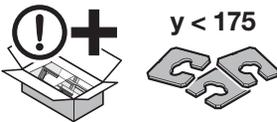
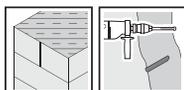
max. T30/EI₂30



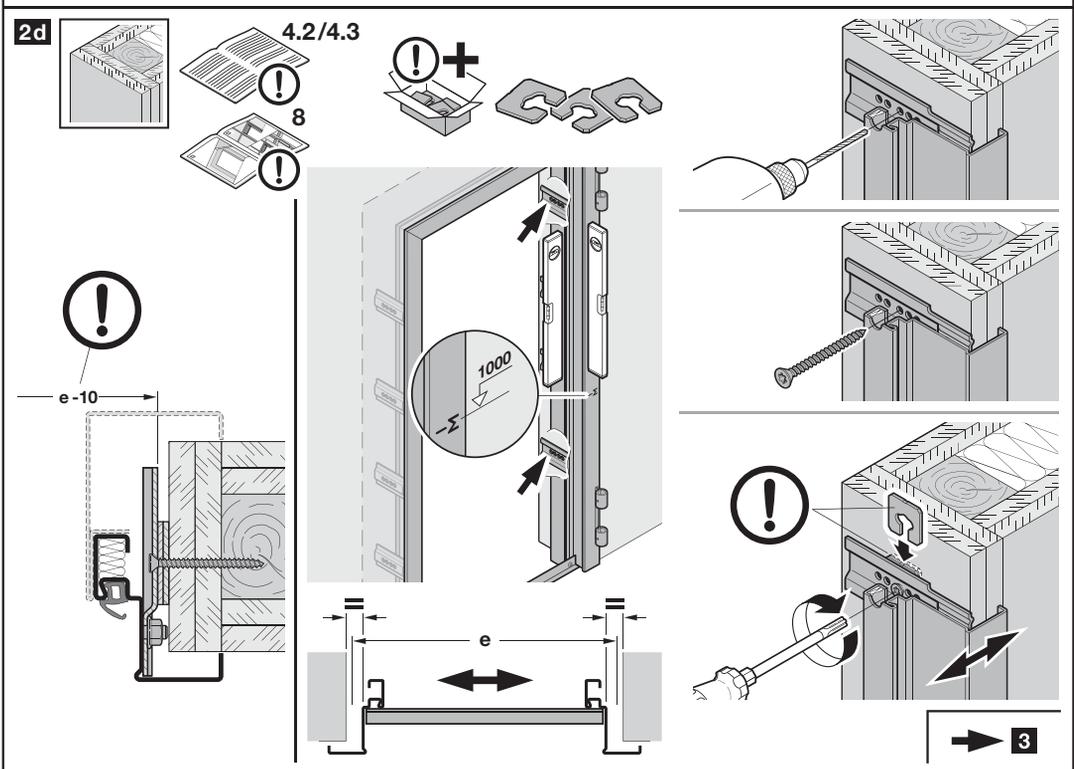
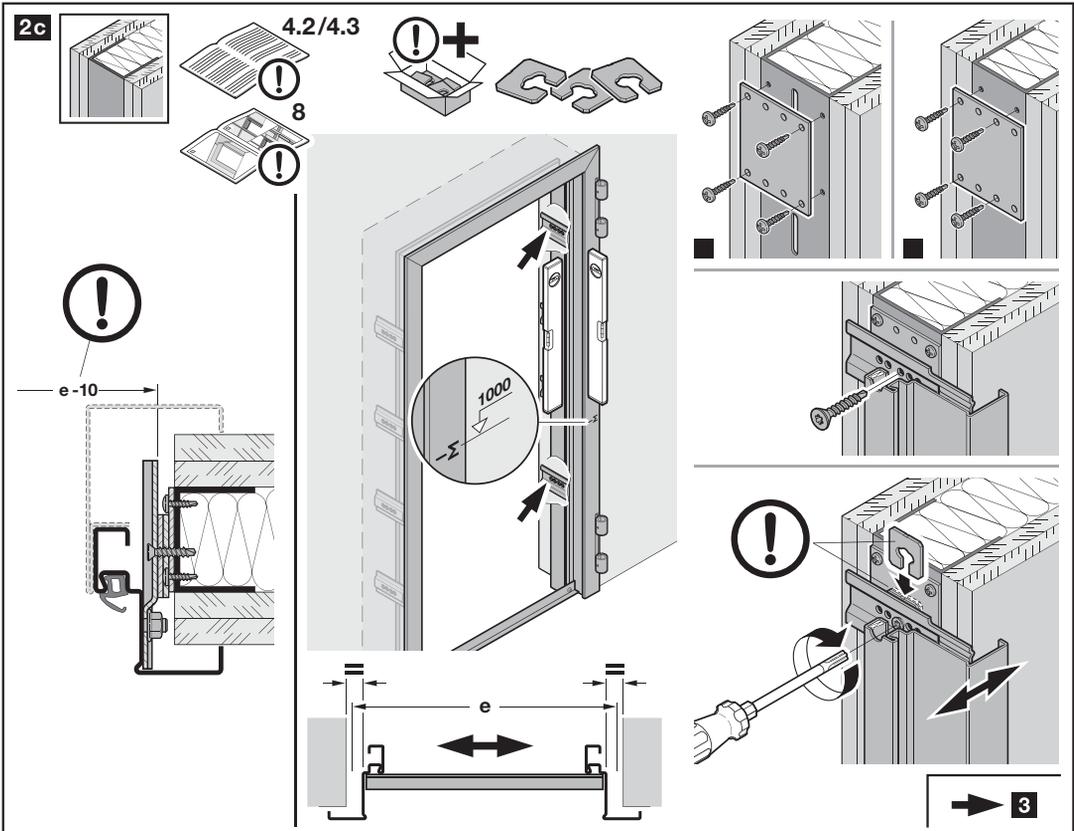
2a



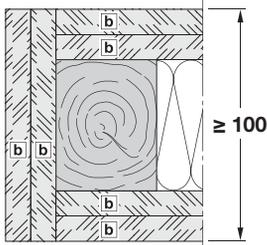
2b



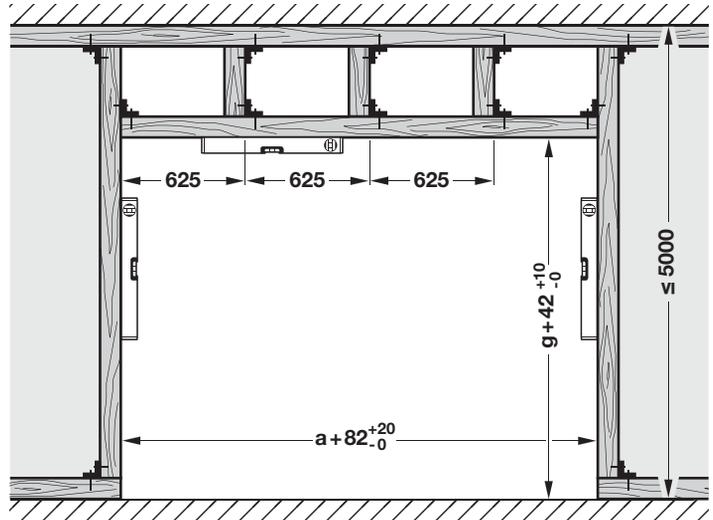
➔ 3



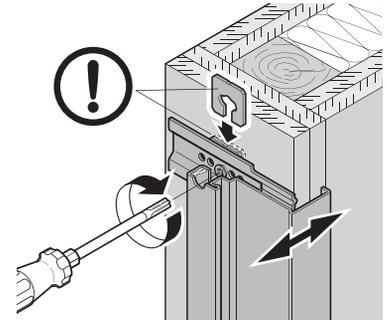
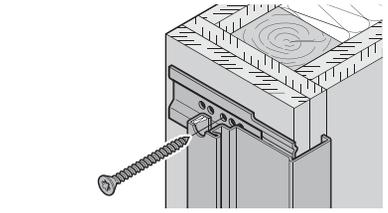
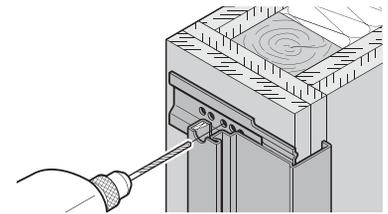
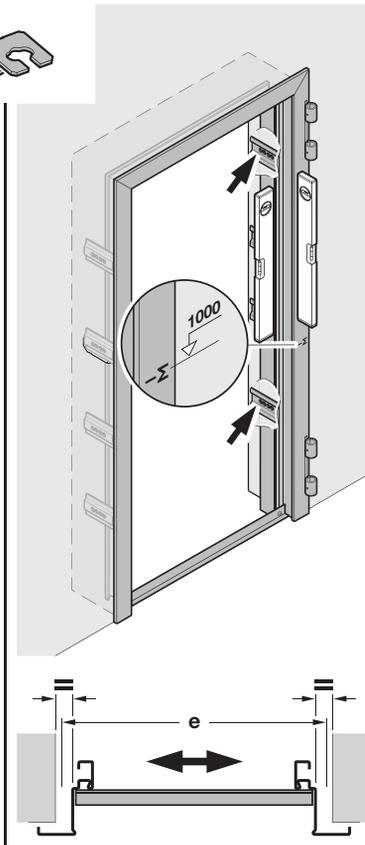
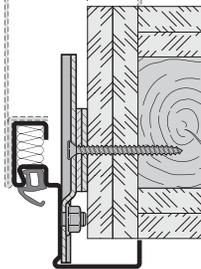
2e



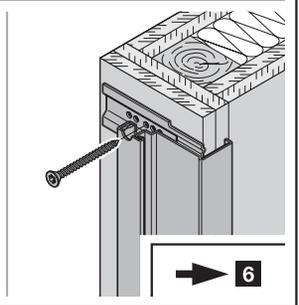
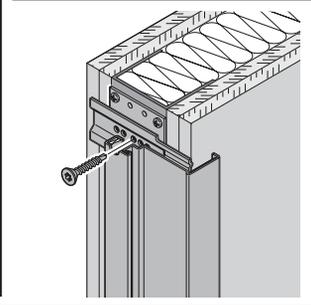
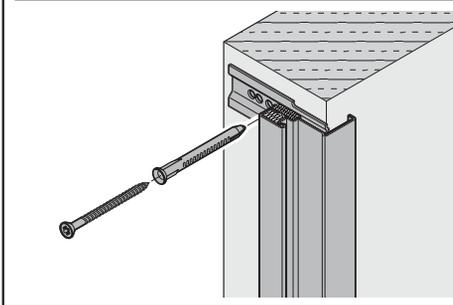
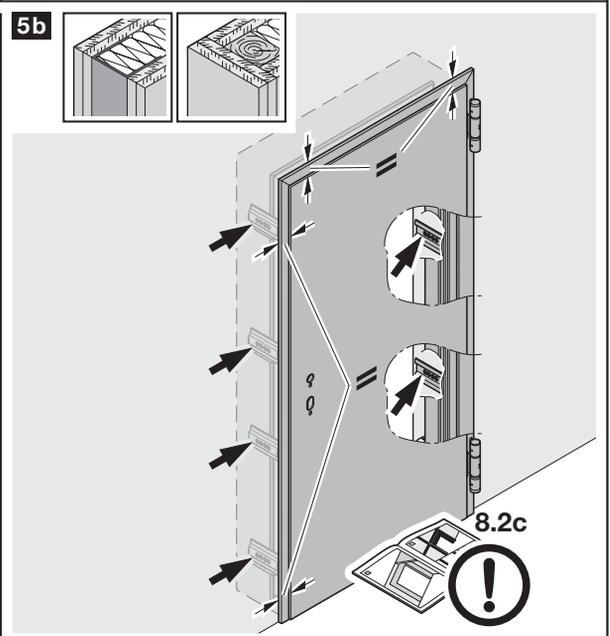
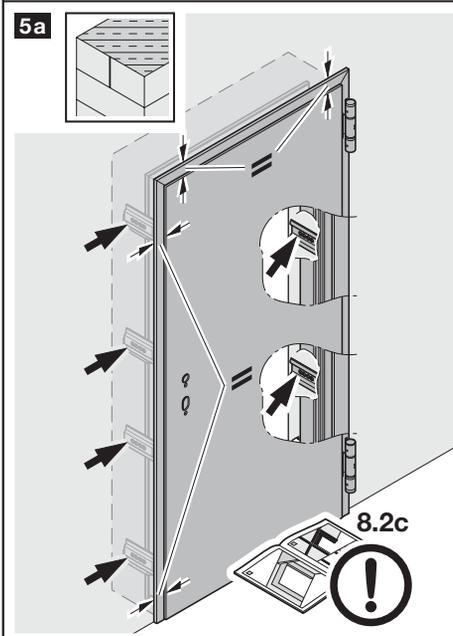
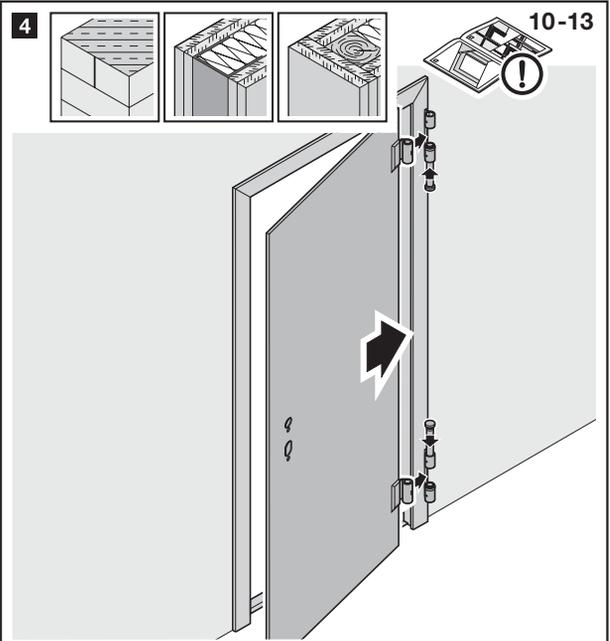
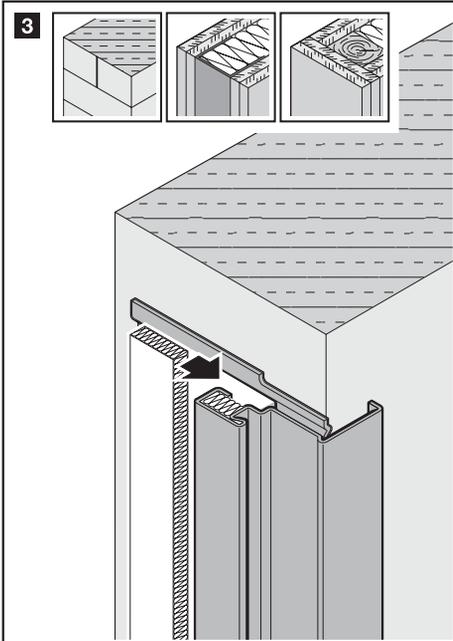
b A-12,5-EN 520

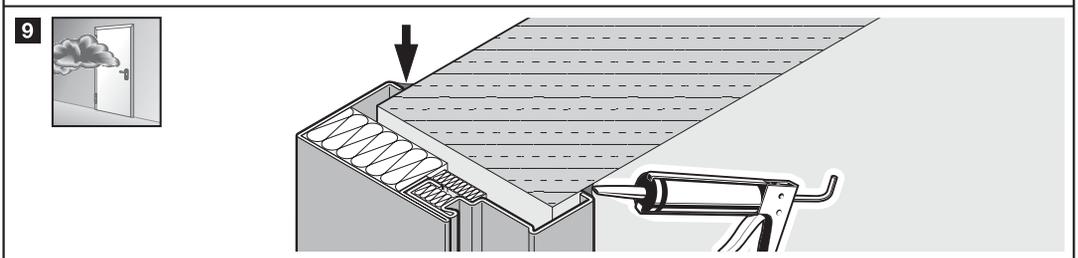
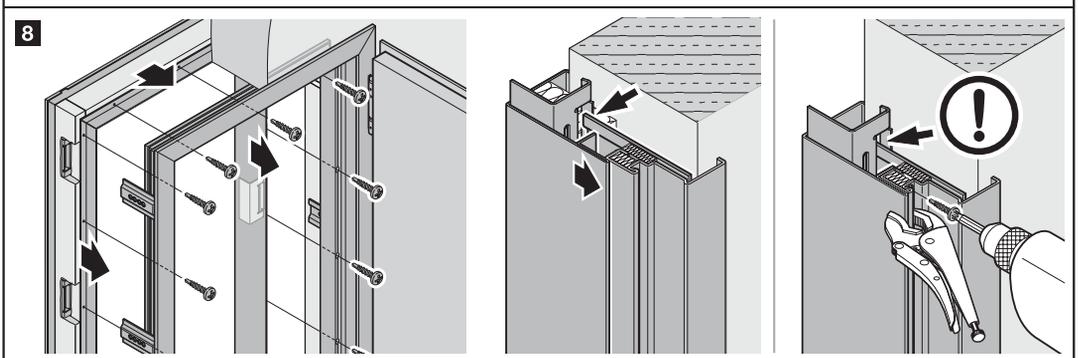
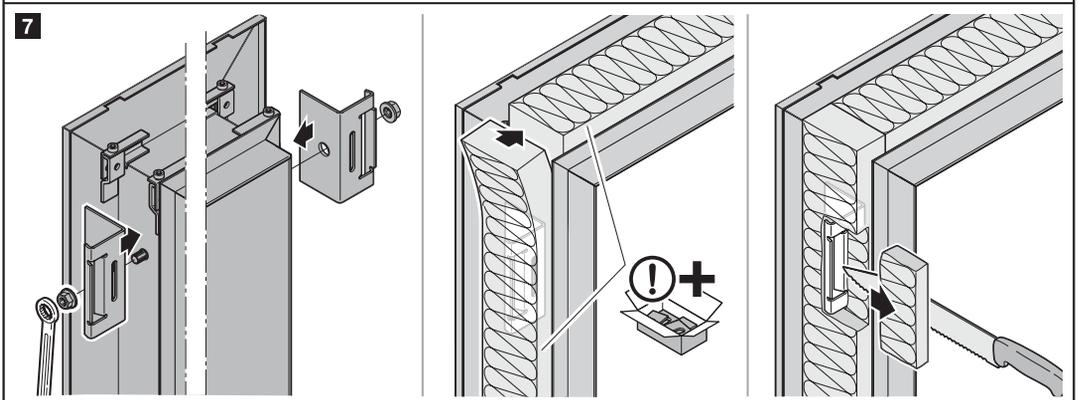
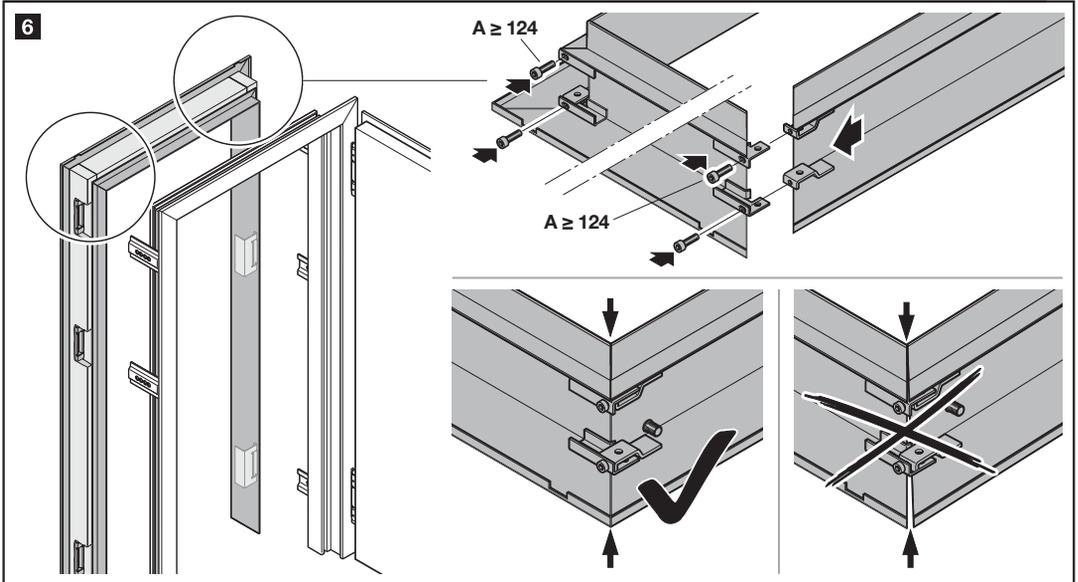


$e +20 -0$



3

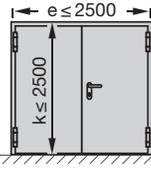
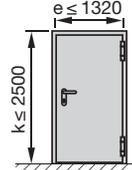




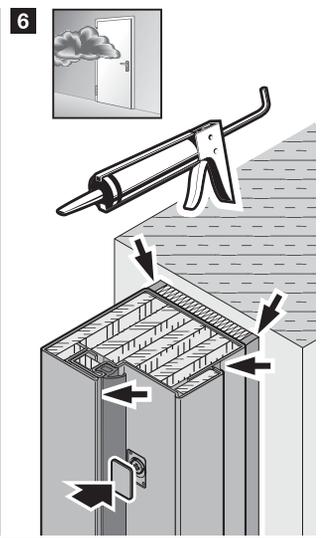
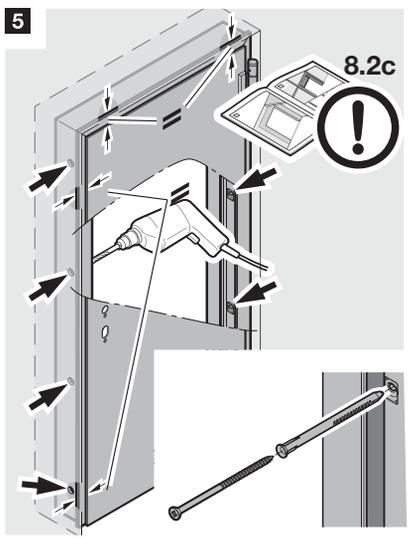
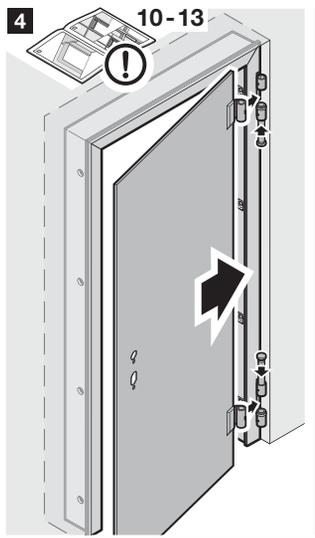
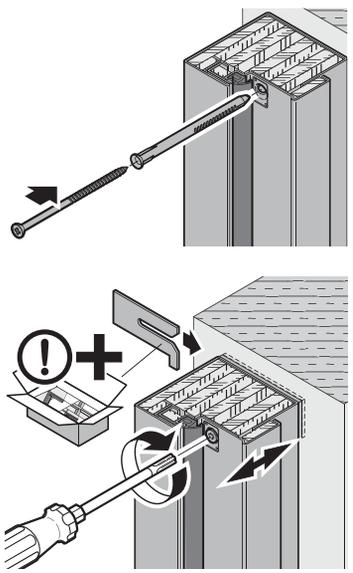
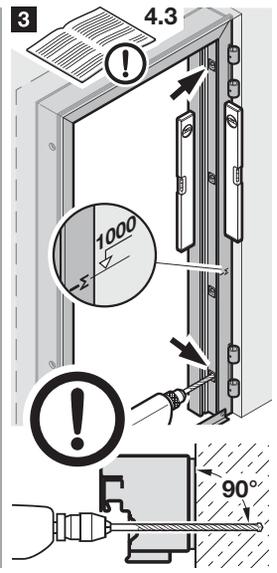
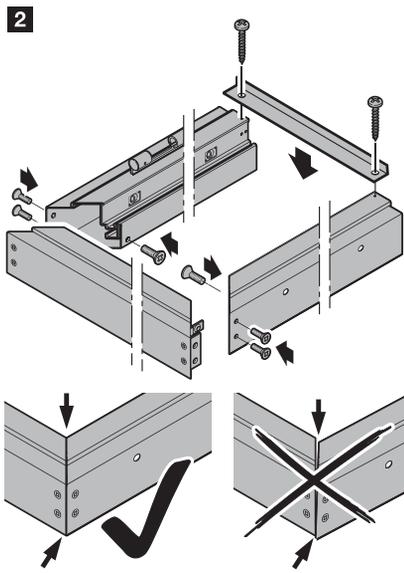
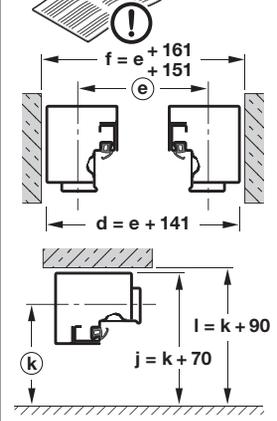
9/G1
max. T90/
EI₂90



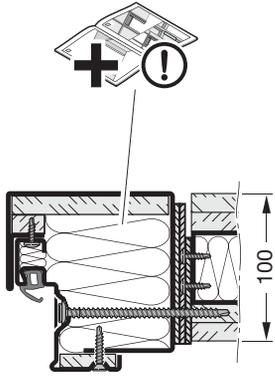
9/G2
max. T30/
EI₂30



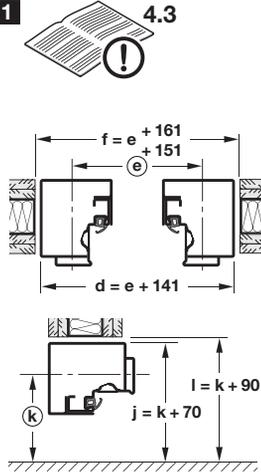
1 4.3



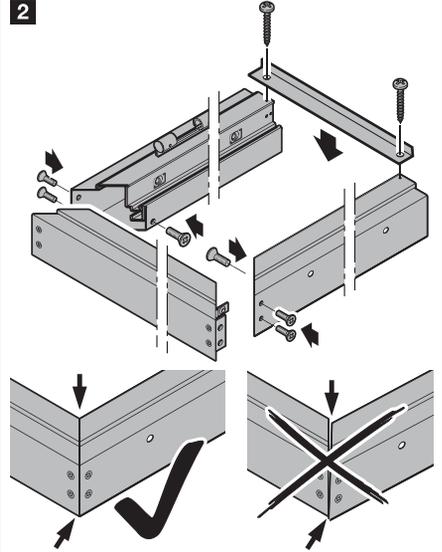
9/G3



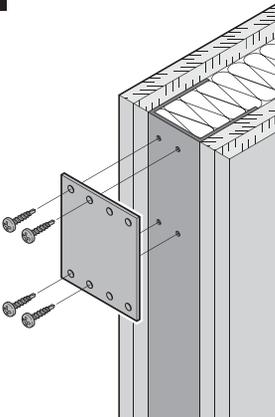
1 4.3



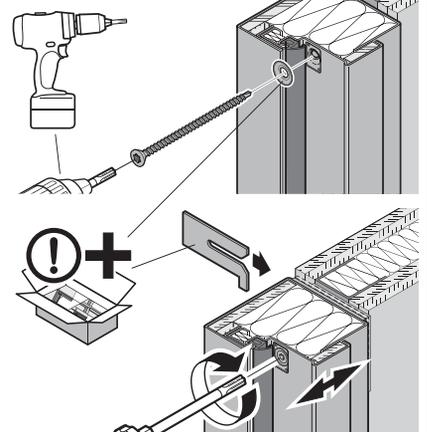
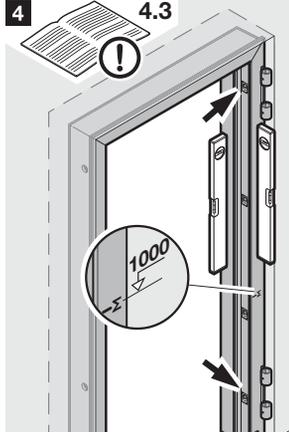
2



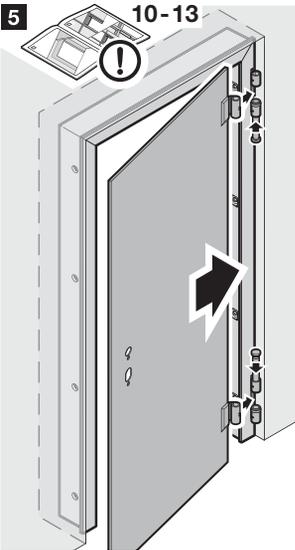
3



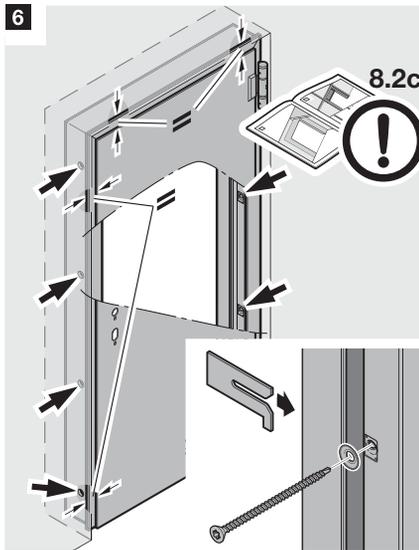
4 4.3



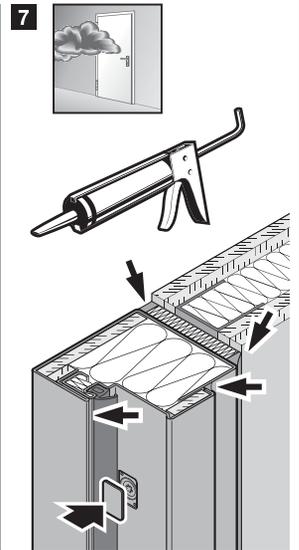
5 10-13



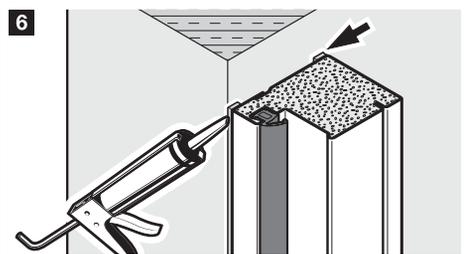
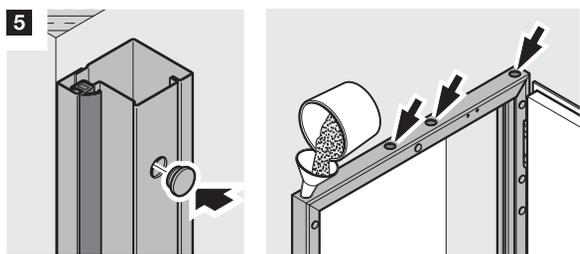
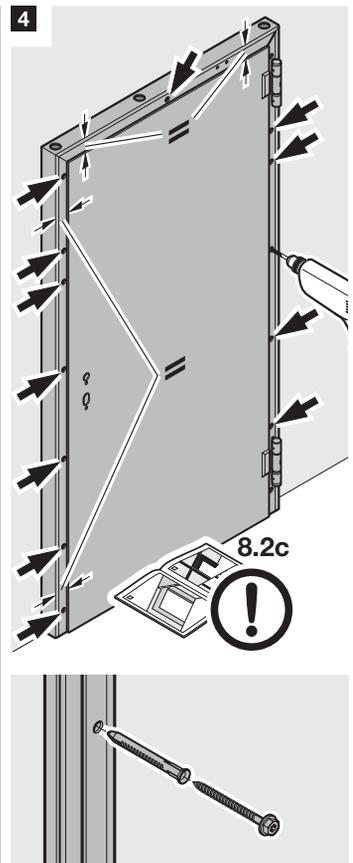
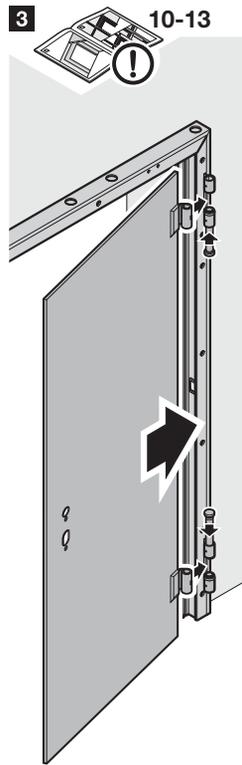
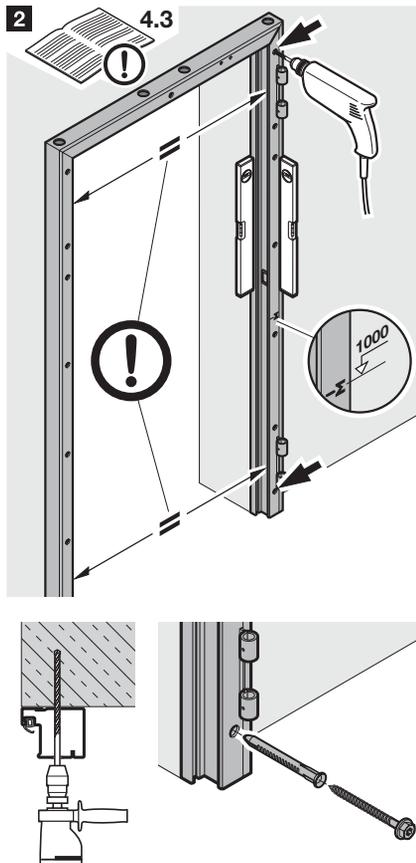
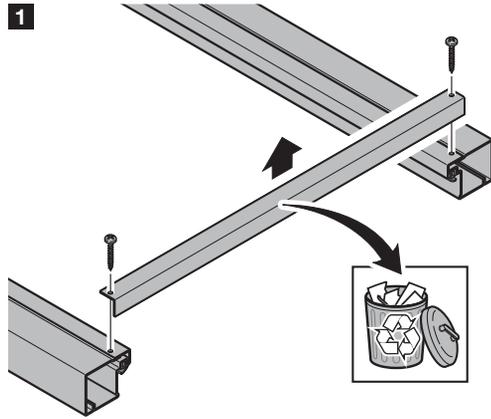
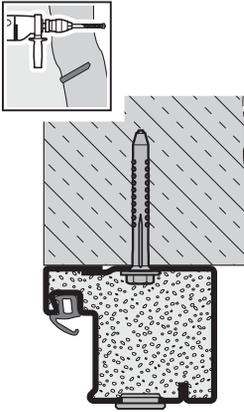
6 8.2c



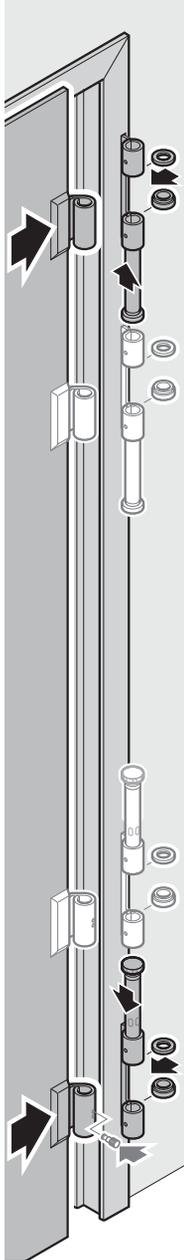
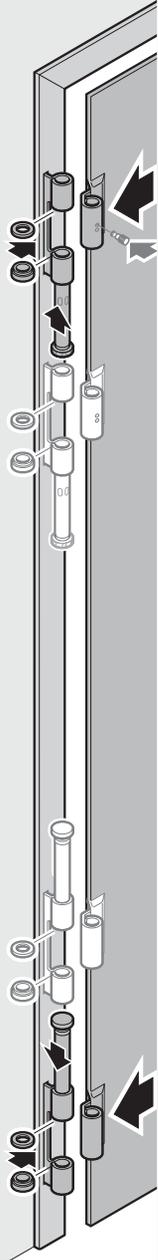
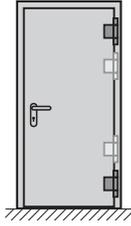
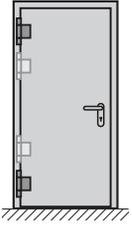
7



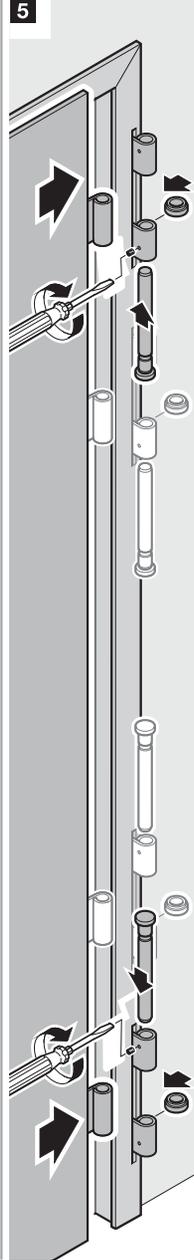
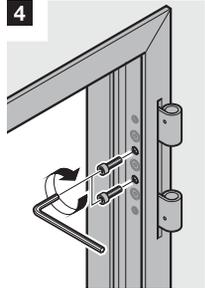
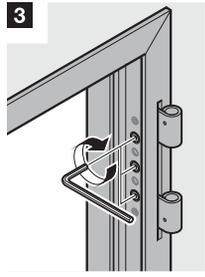
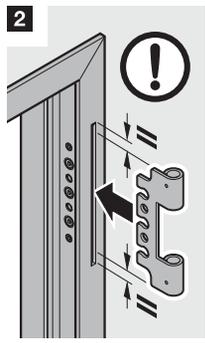
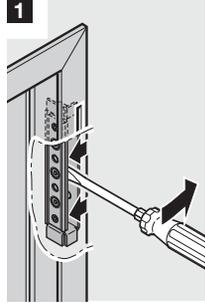
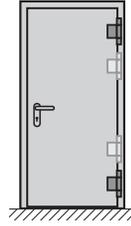
9/H1
max. T30/
EI₂30



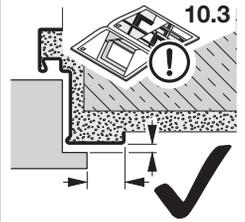
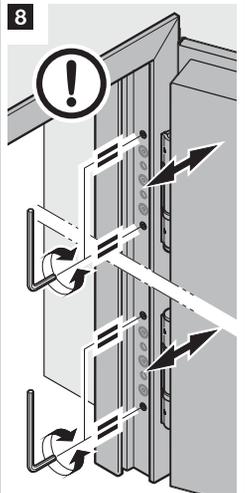
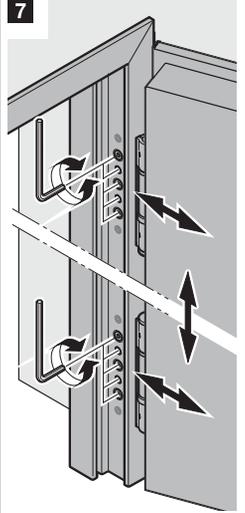
10.1a



10.1b



6

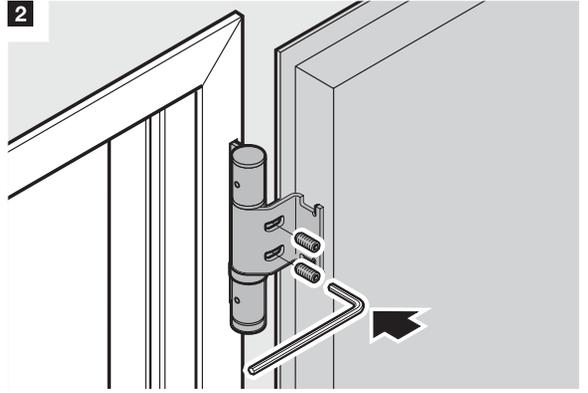


10.2

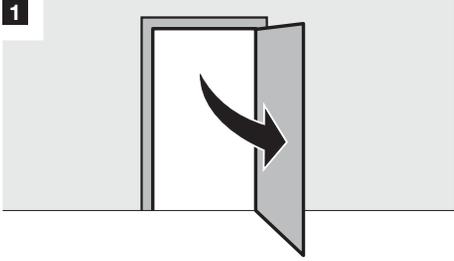
3.3



2



1



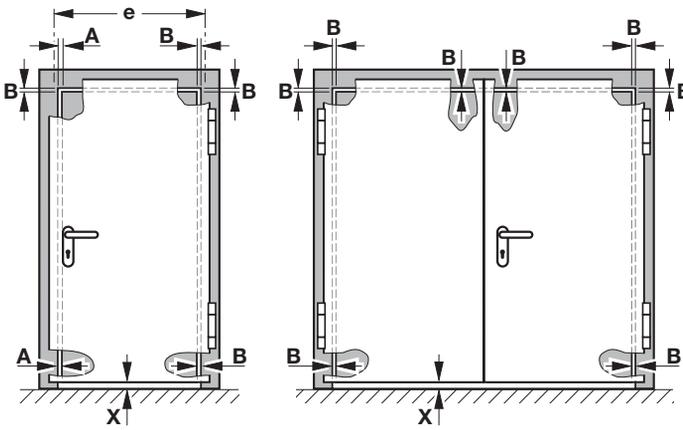
10.3

4.2



1

e	A	B	C max. T30	C T60, T90, T120
≤ 749	6 ⁺¹ ₋₂	4±2	4±2	10±2
750 - 874	6 ⁺¹ ₋₂			
≥ 875	5 ⁺¹ ₋₂			



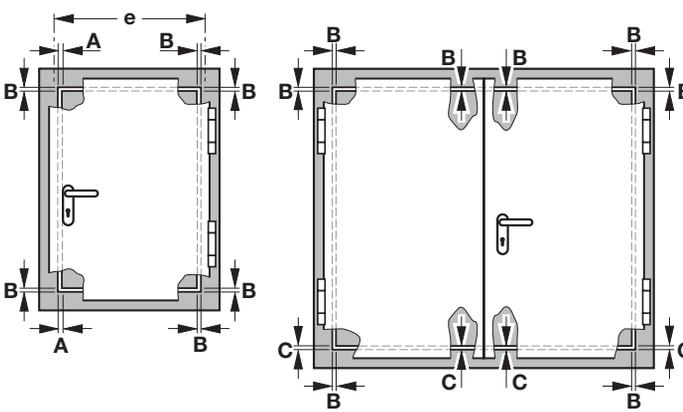
X=10±5

X=10⁺²₋₅

X=10-5



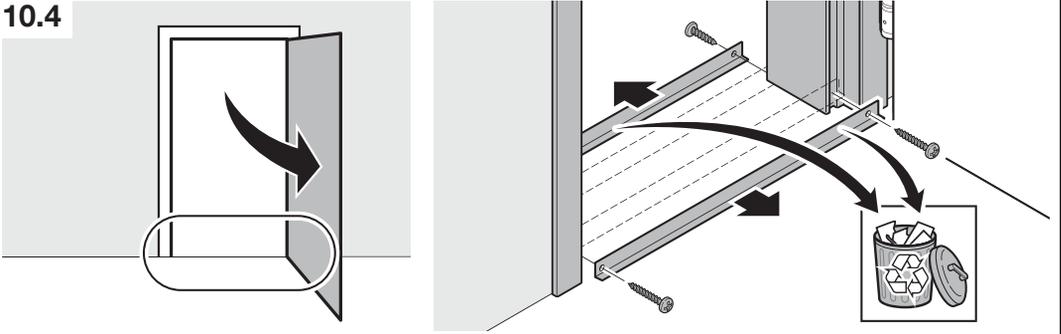
≤ 48 dB



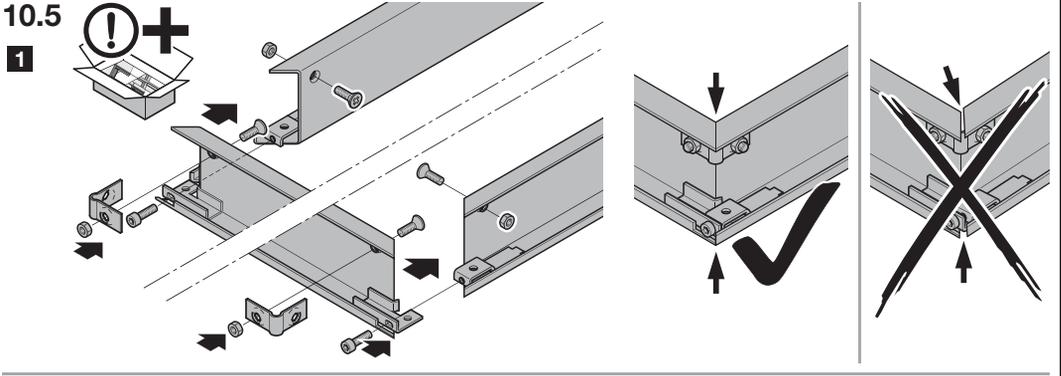
2



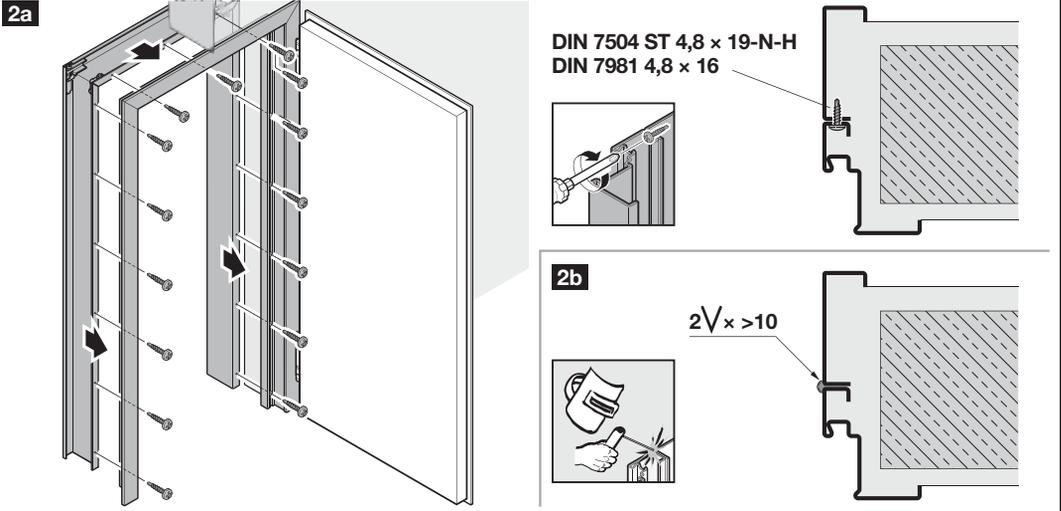
10.4



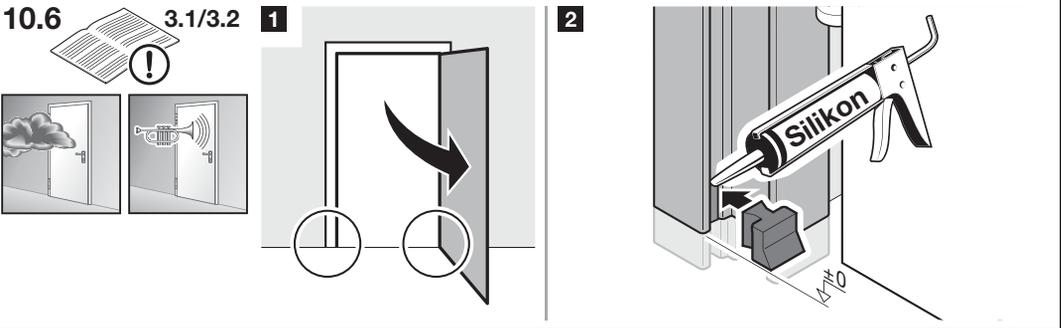
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2a

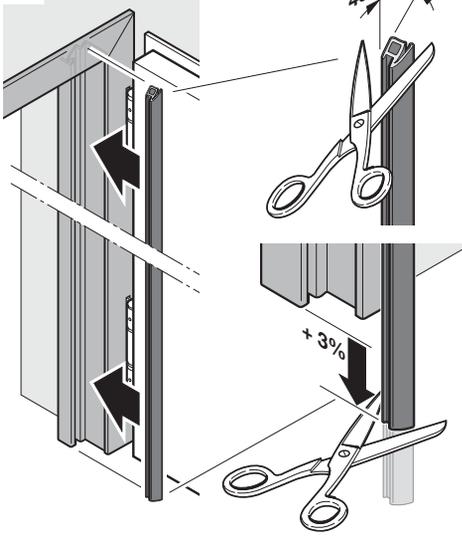


10.6

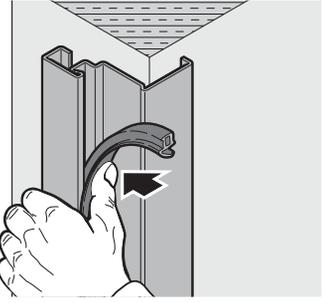


10.7a

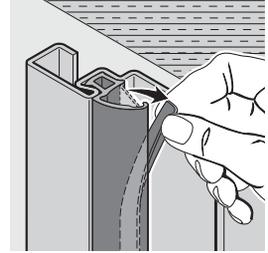
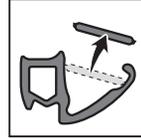
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2



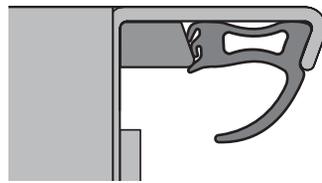
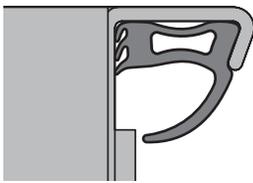
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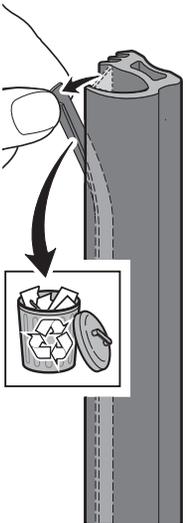
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A

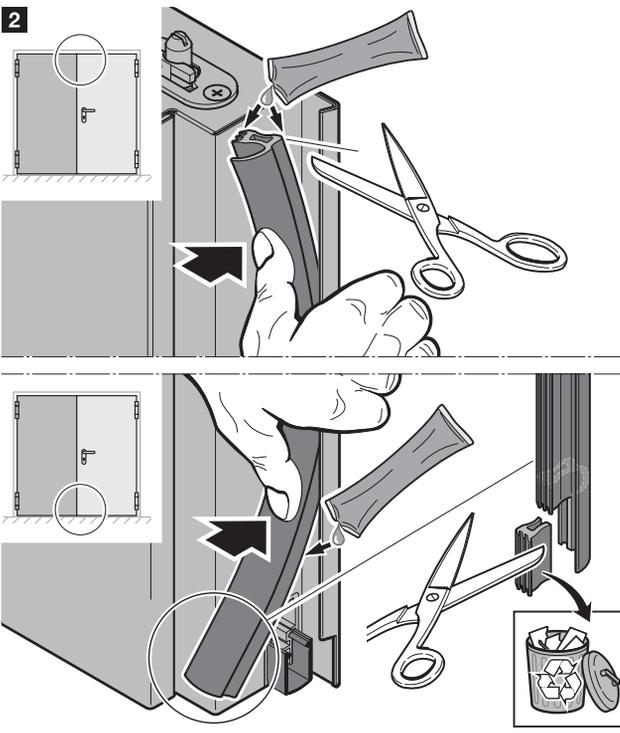
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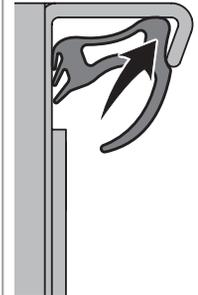
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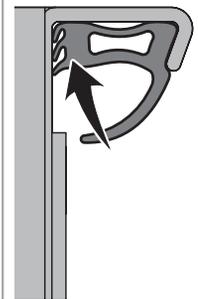
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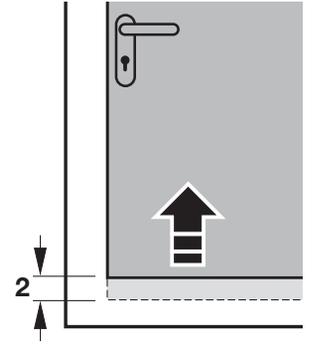
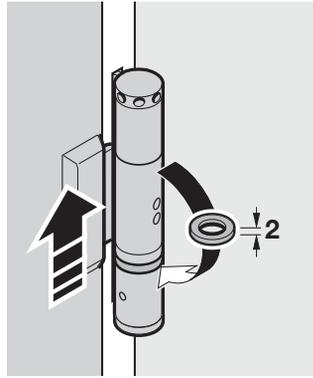
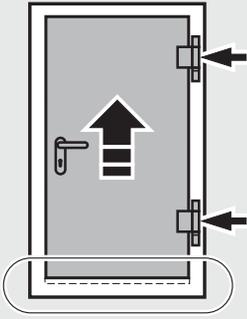
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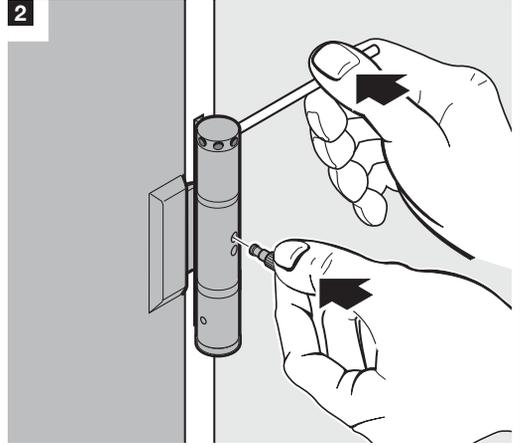
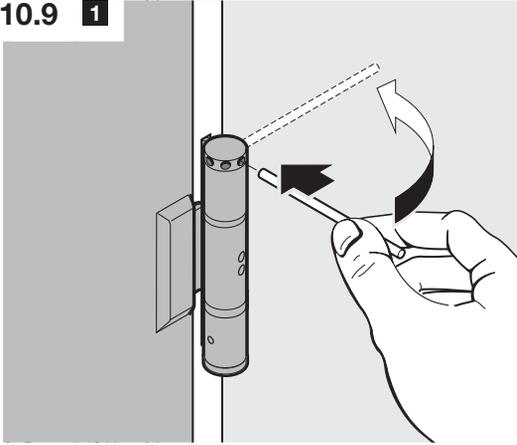
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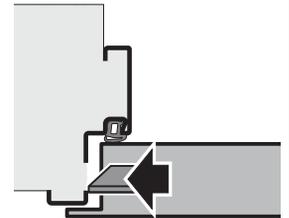
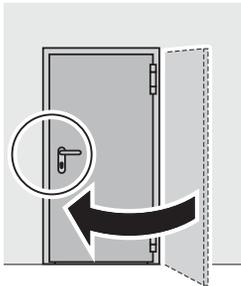
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10.9 1

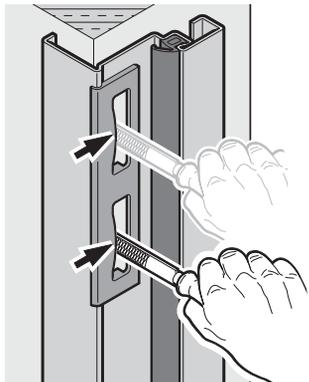


10.10a

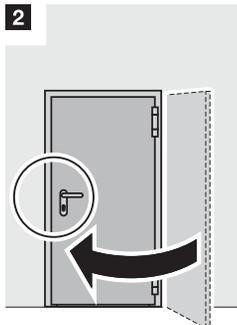


→ 1 2

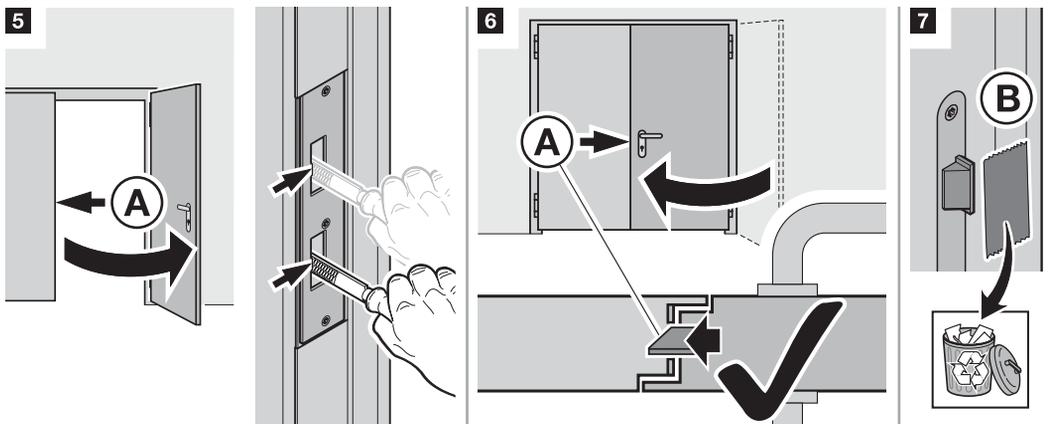
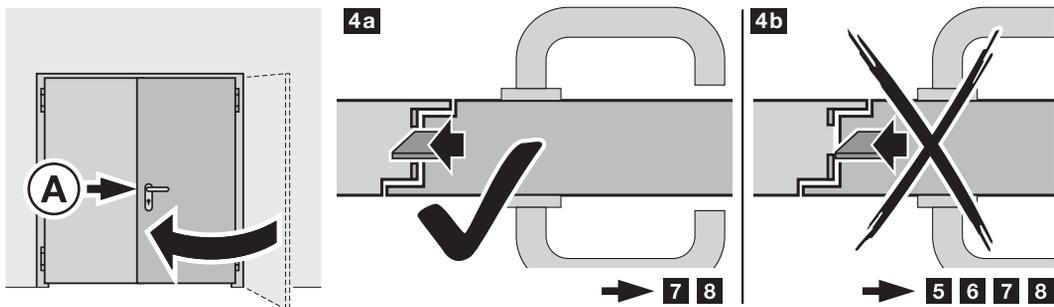
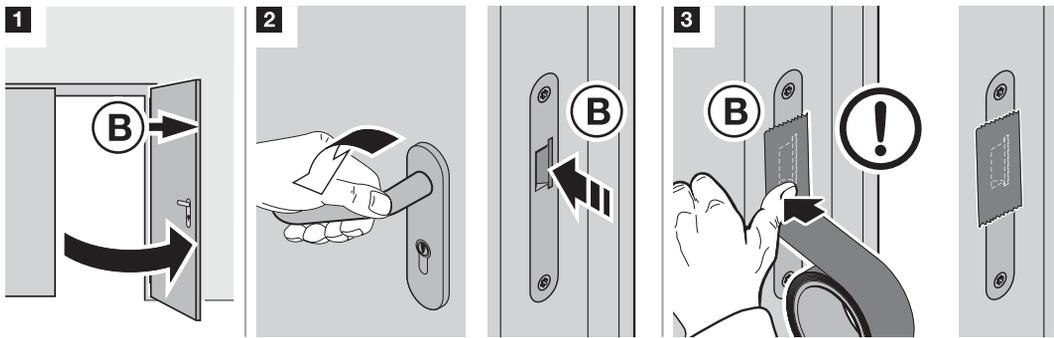
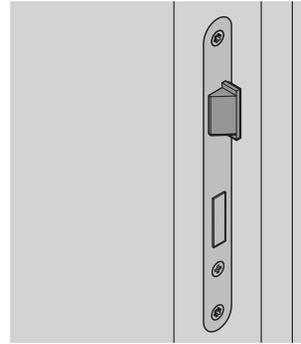
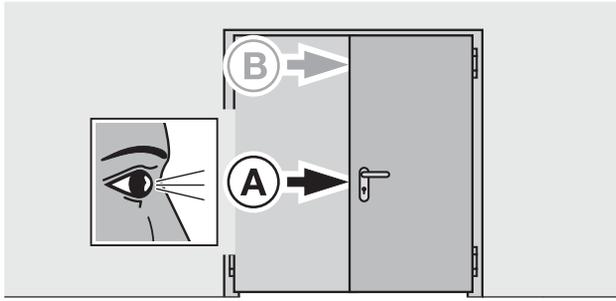
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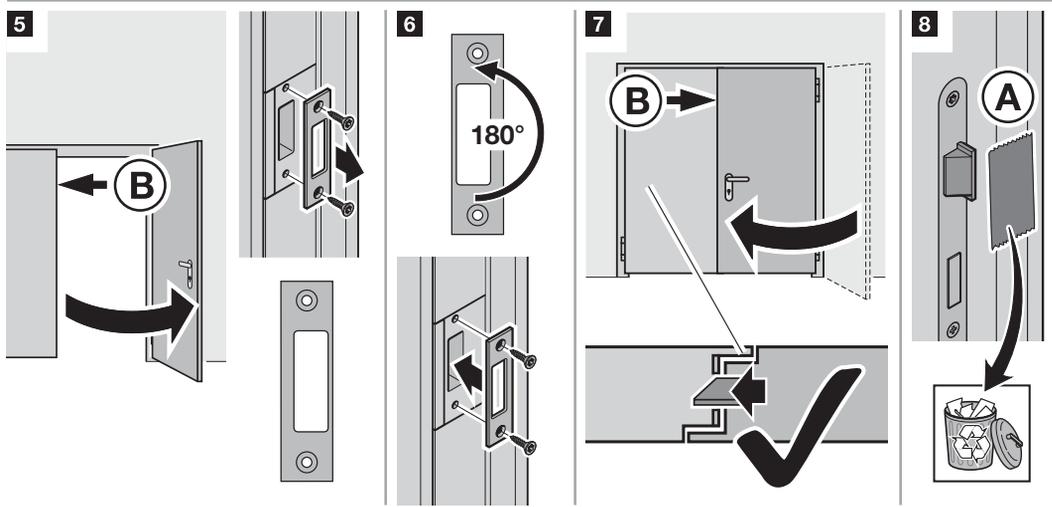
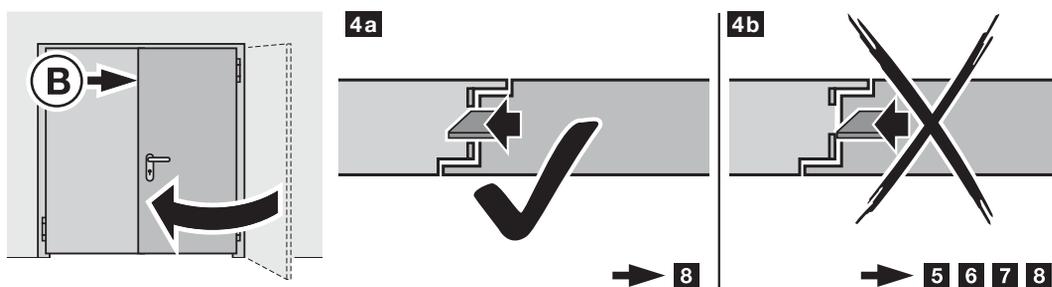
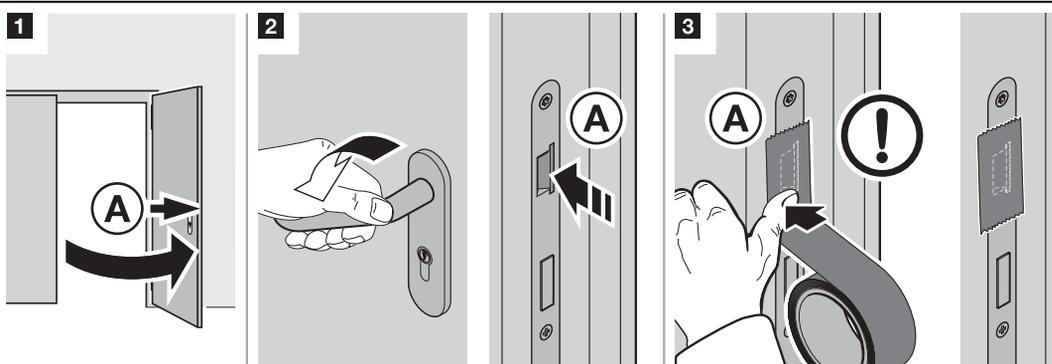
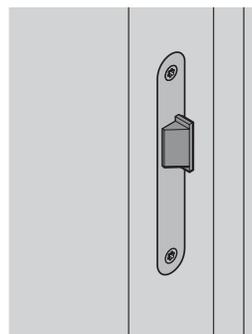
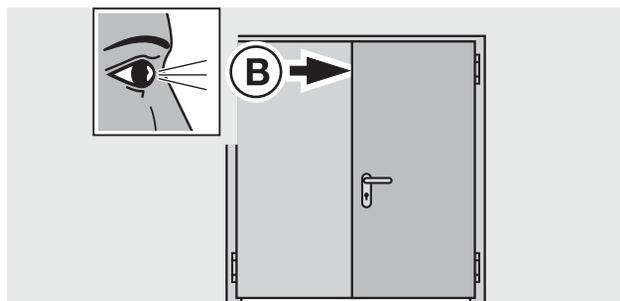
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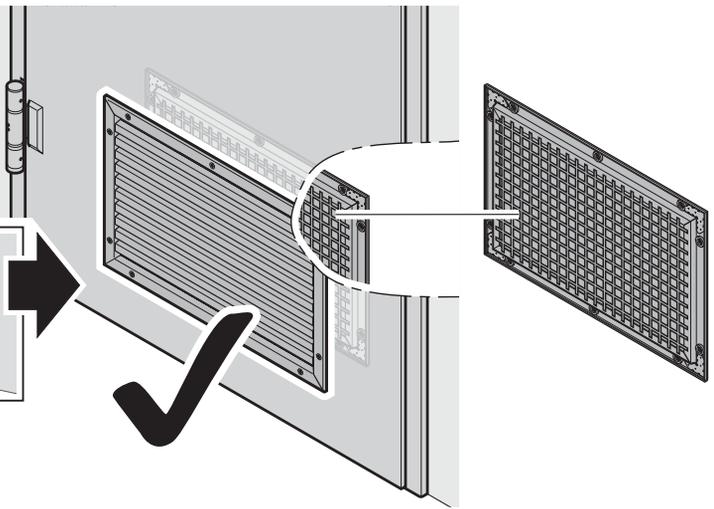
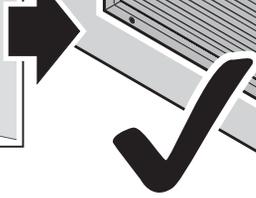
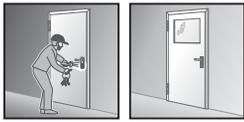
10.10b H16-2 G / H_90 F-2



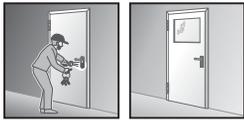
10.10c H16-2 G / H_90 F-2



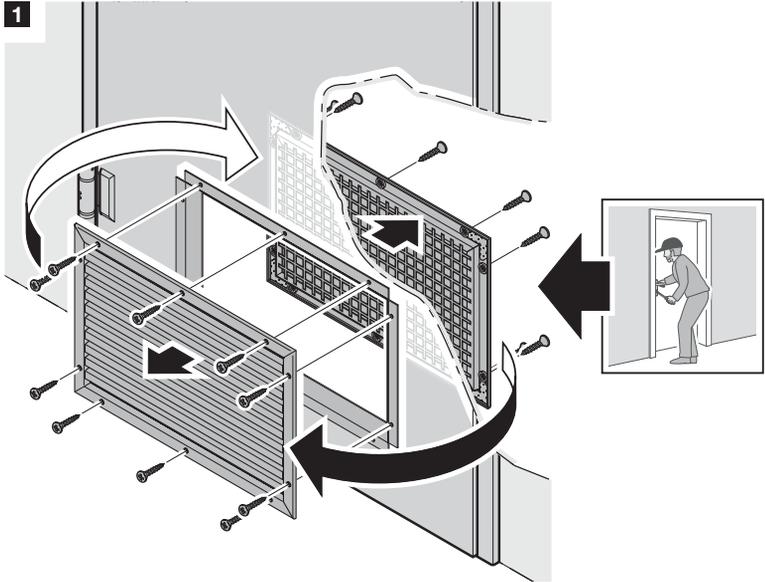
10.11a



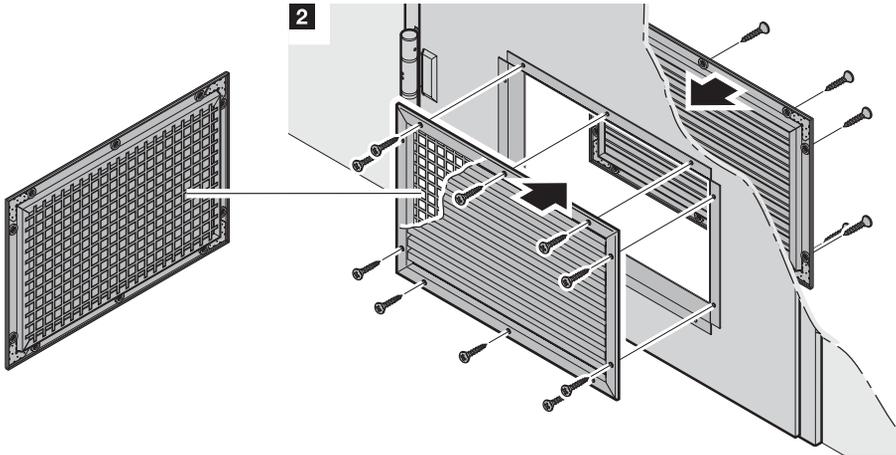
10.11b



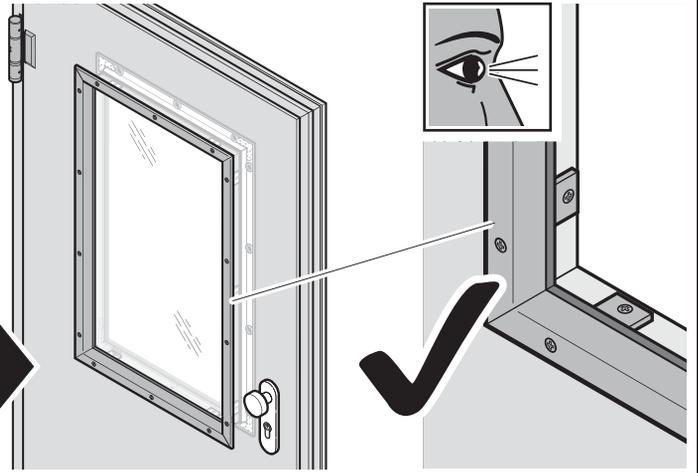
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2



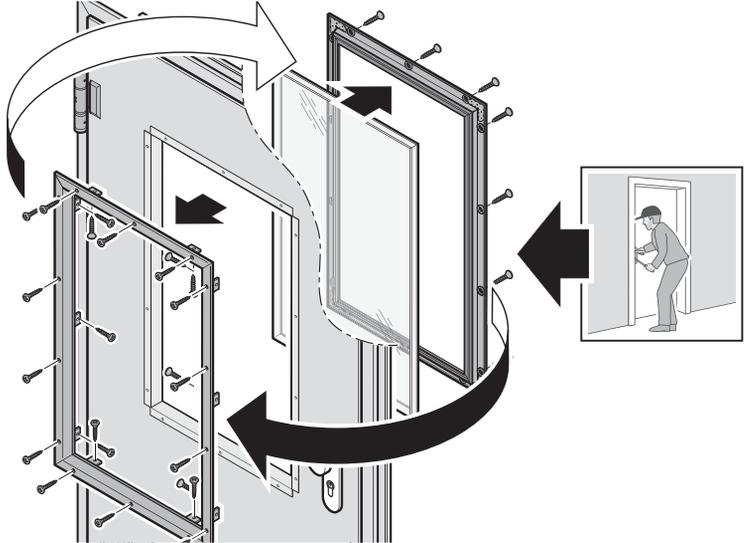
10.12a



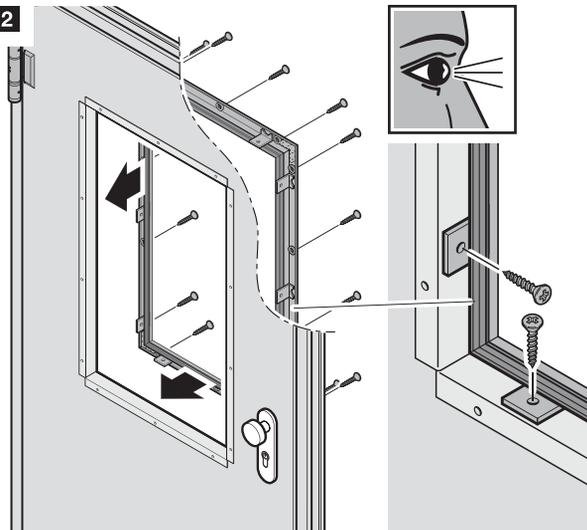
10.12b



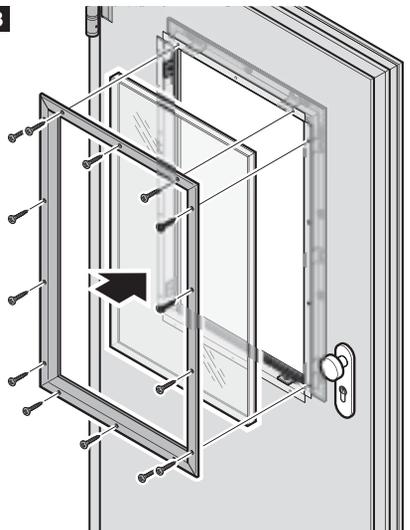
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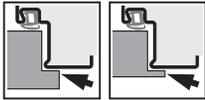
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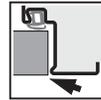
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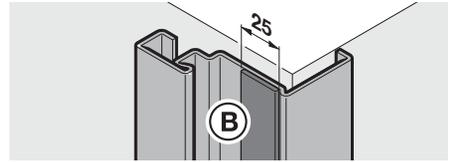
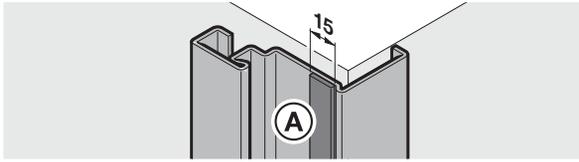
10.13a



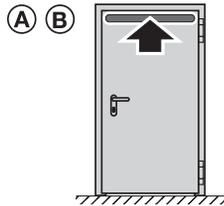
+ H3-1 OD
+ H3-2 OD



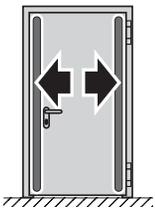
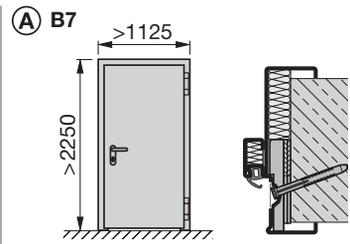
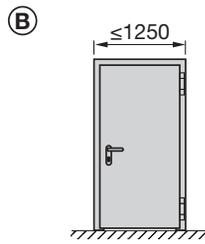
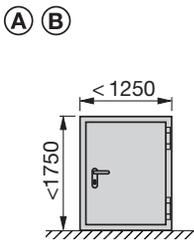
+ H3-1 OD
+ H3-2 OD



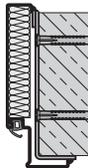
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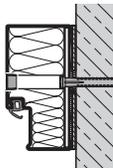
b



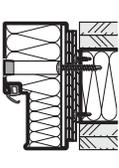
(A) (B)
D4 / D5



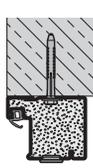
(A) (B) E2



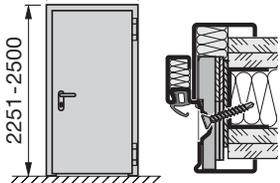
(A) (B) E9



(A) (B) H1



(A) B15
1125 - 1320



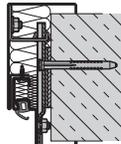
(A) (B) E5 / E6



(A) (B) C1



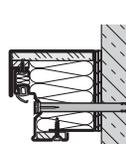
(A) (B) F1



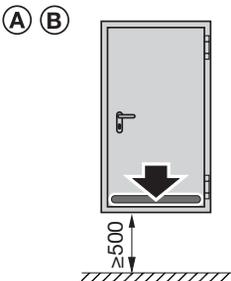
(A) (B) A7



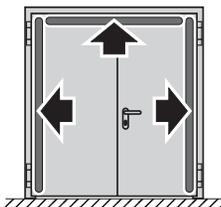
(A) (B) G2



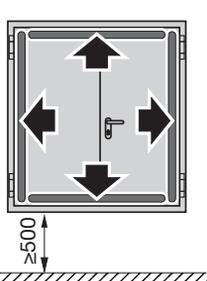
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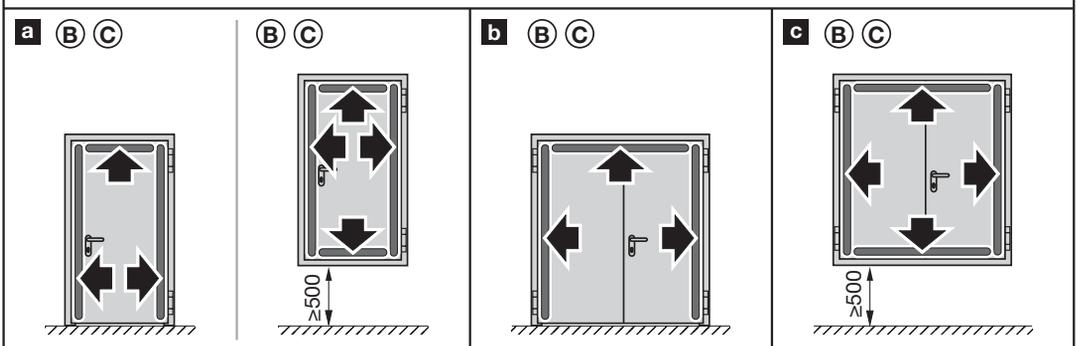
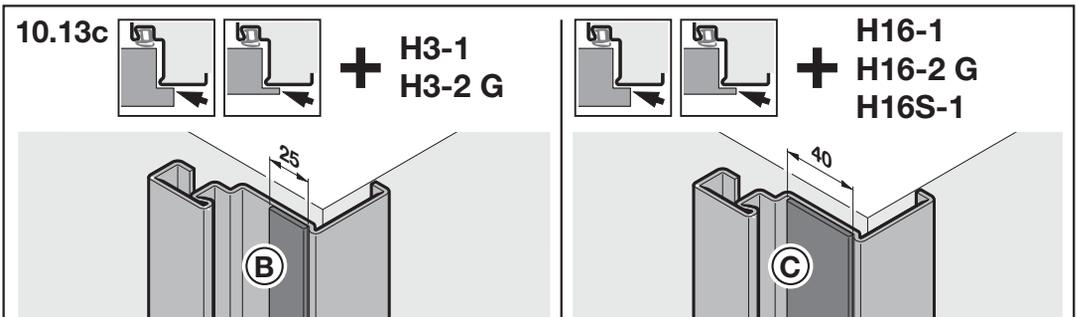
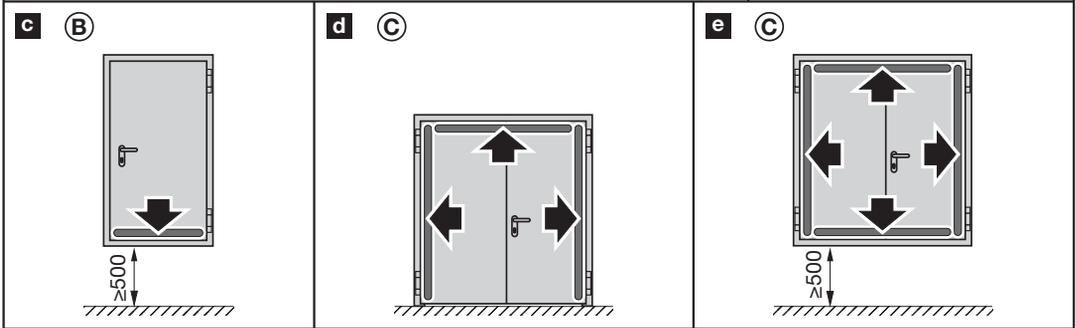
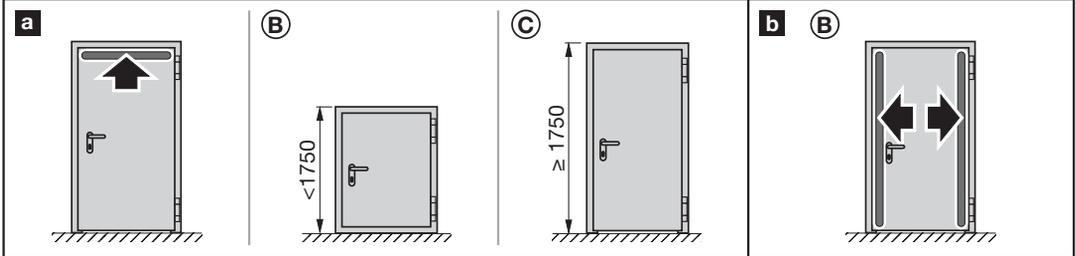
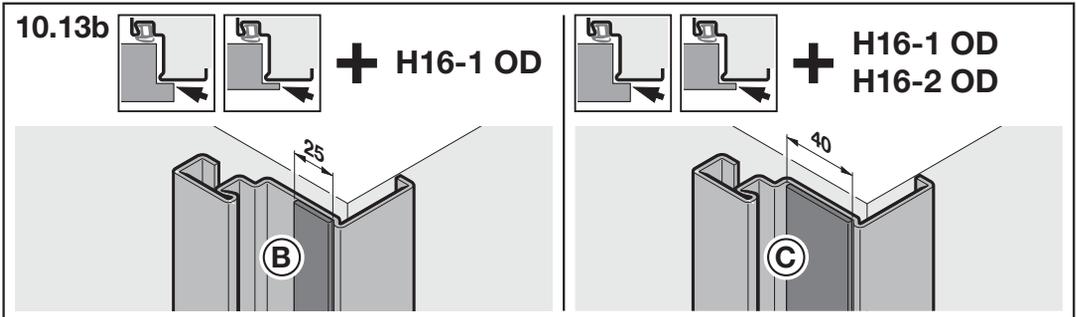


d (A) (B)

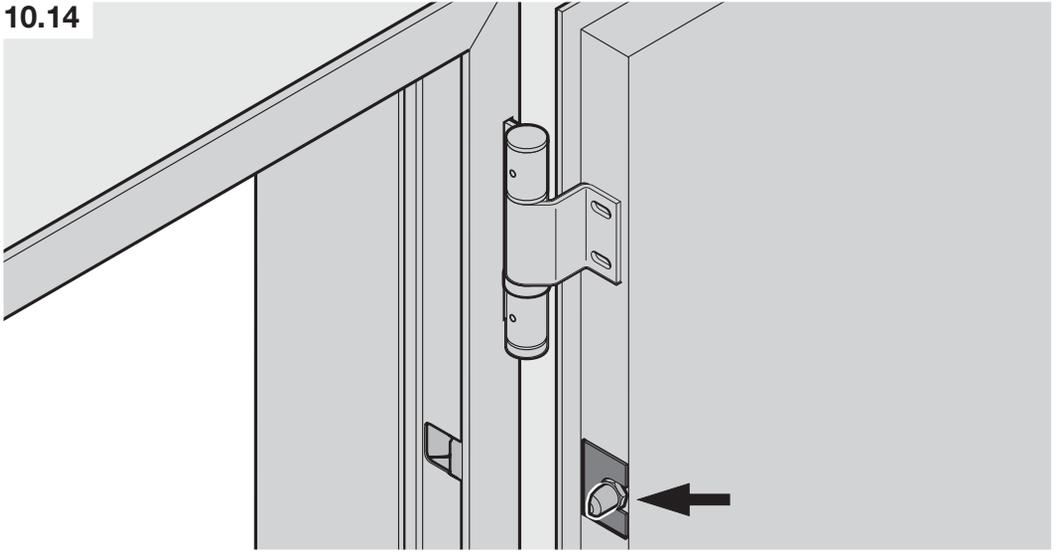


e (A) (B)

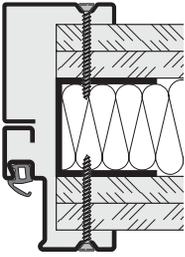




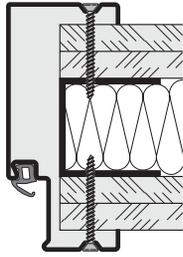
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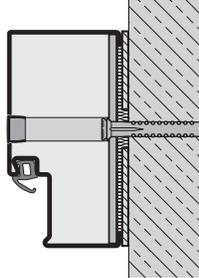
A10-A13



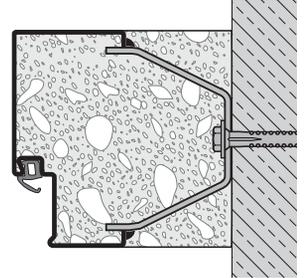
E5-E8



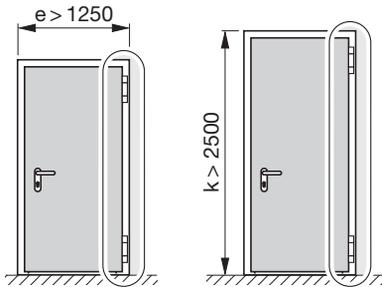
E1, E2



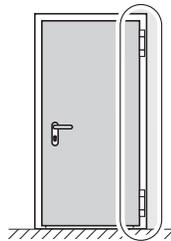
E3



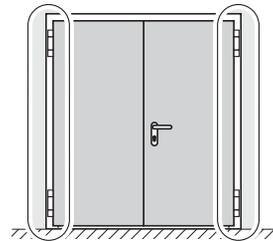
T30-1 / H_30-1



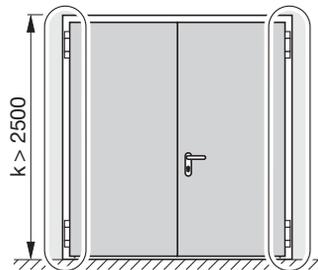
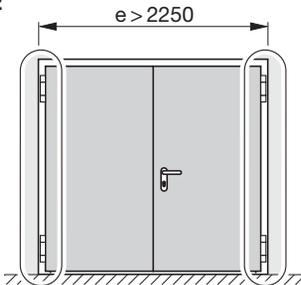
T90-1 / H_90-1



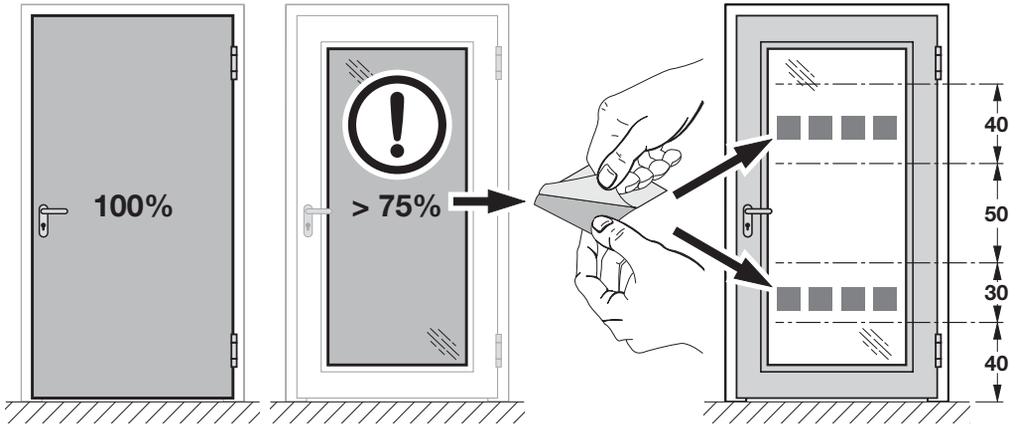
T30-2 RC3 / H_30-2 RC3



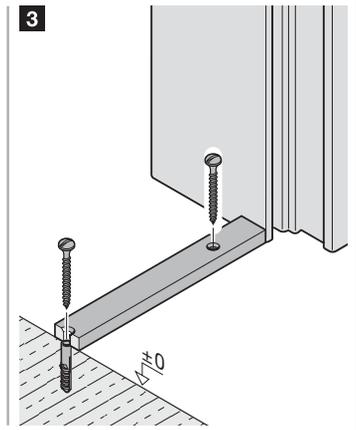
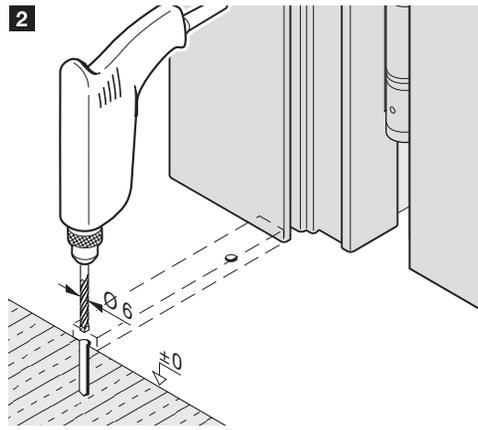
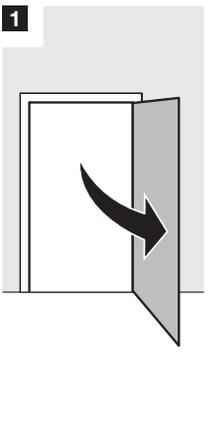
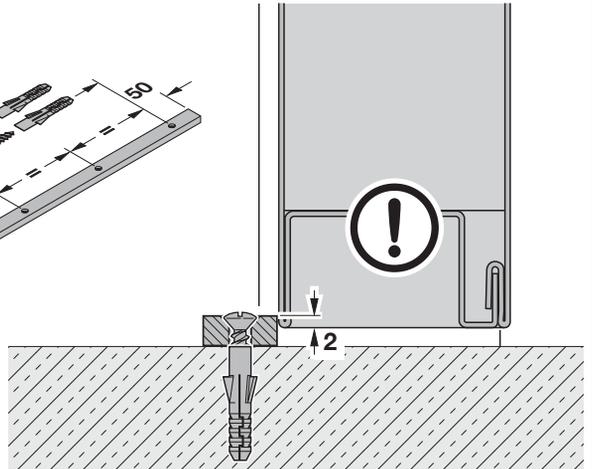
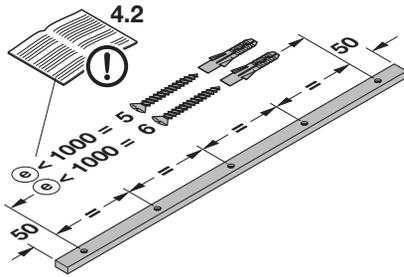
T90-2 / H_90-2



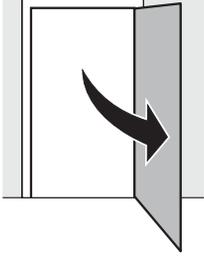
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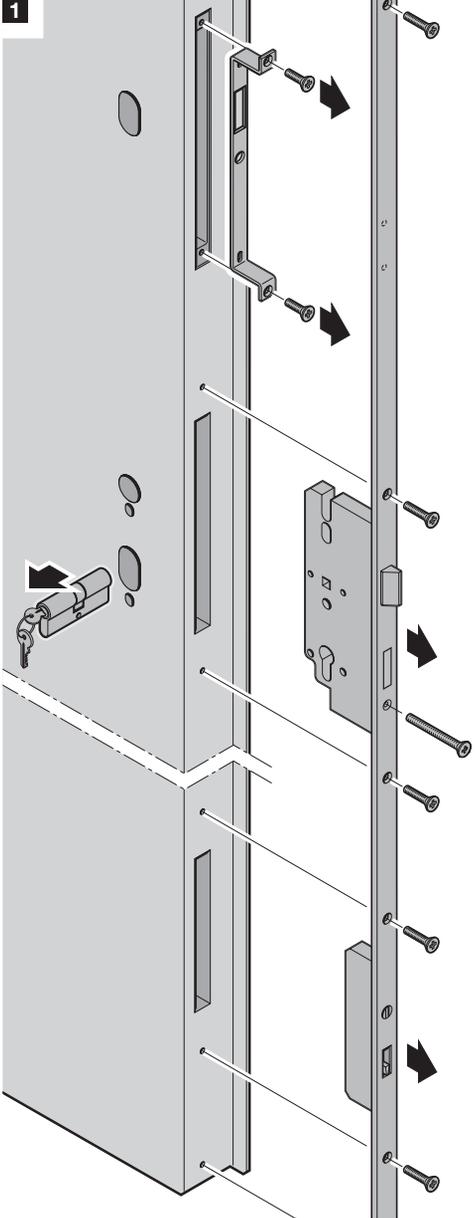
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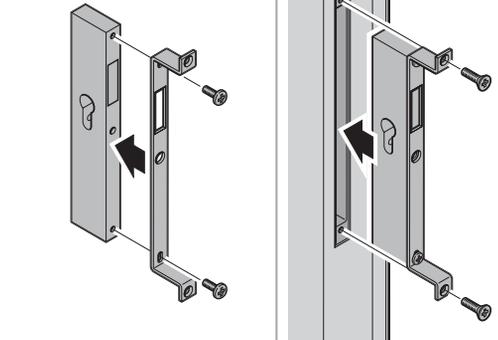
10.17



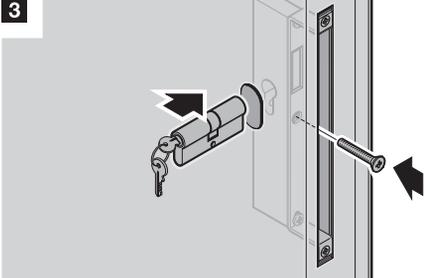
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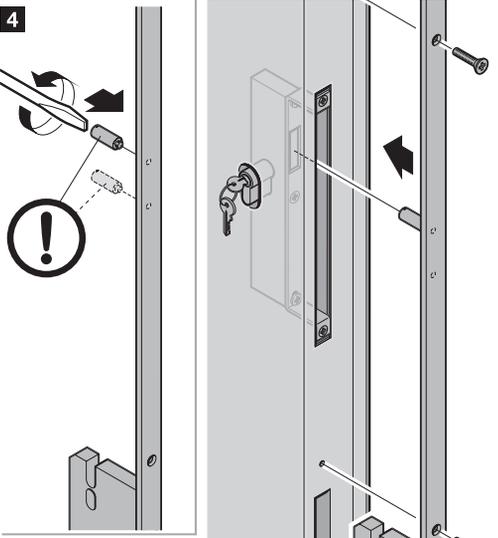
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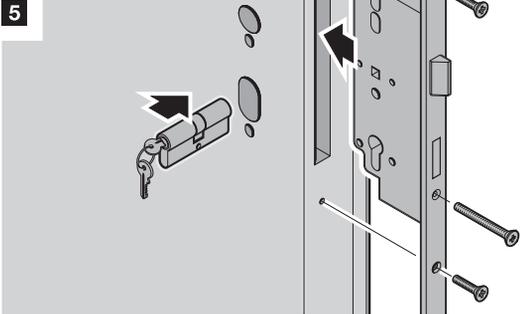
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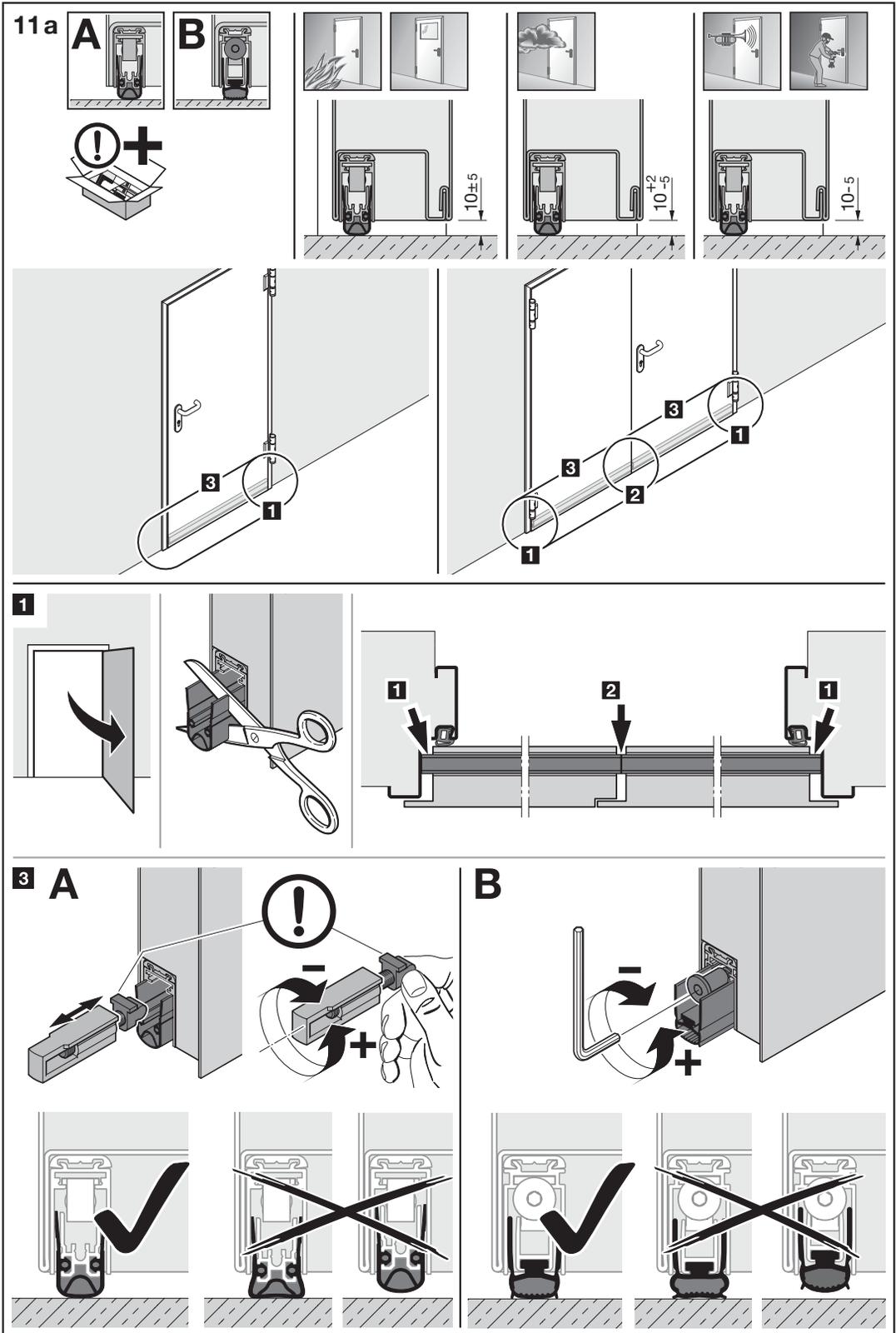


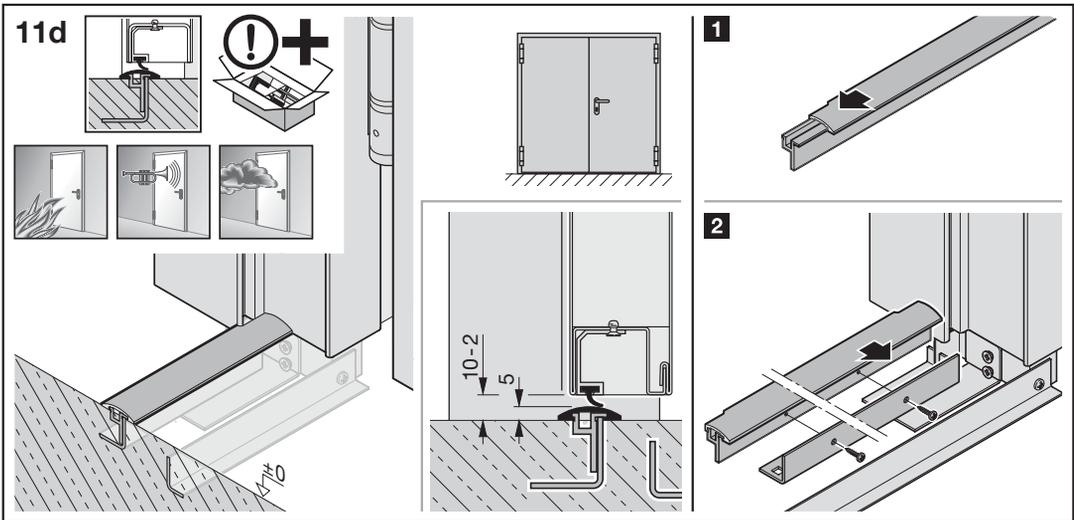
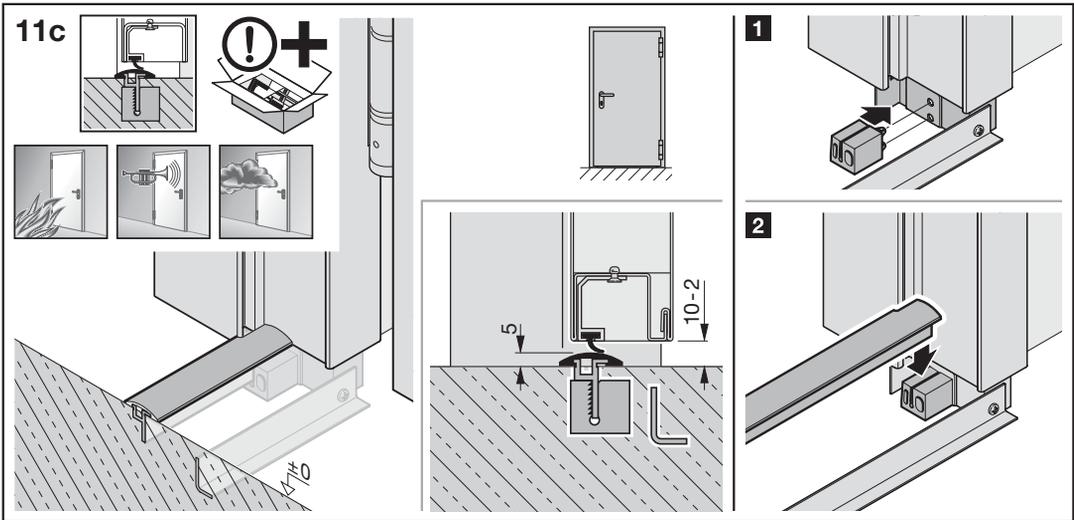
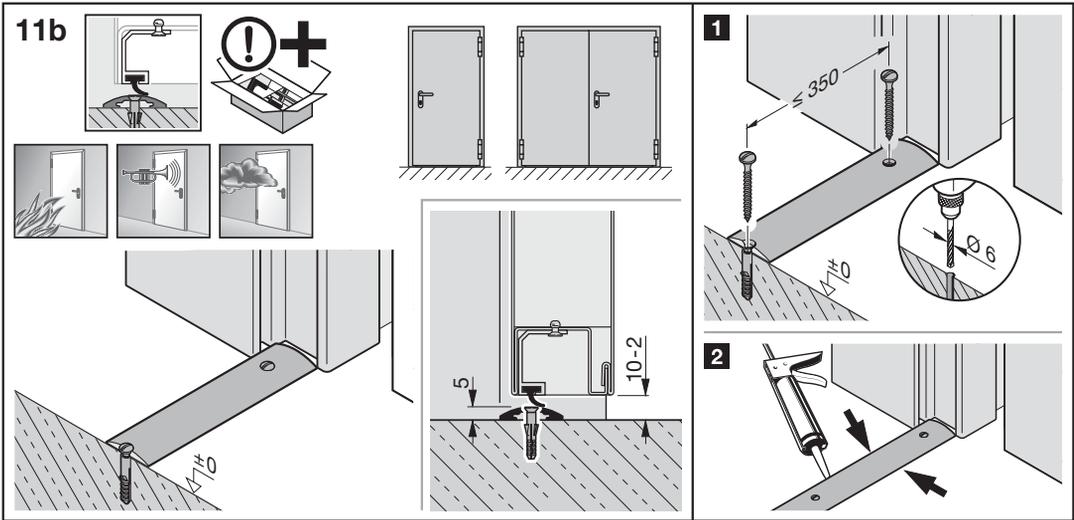
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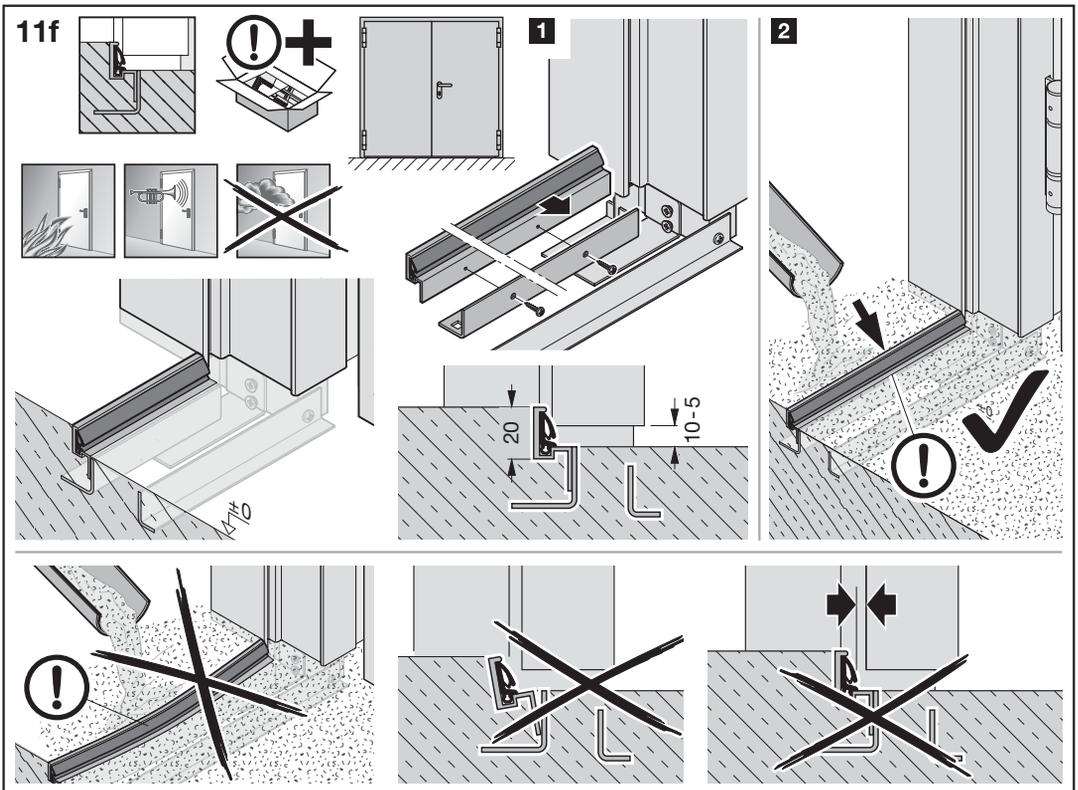
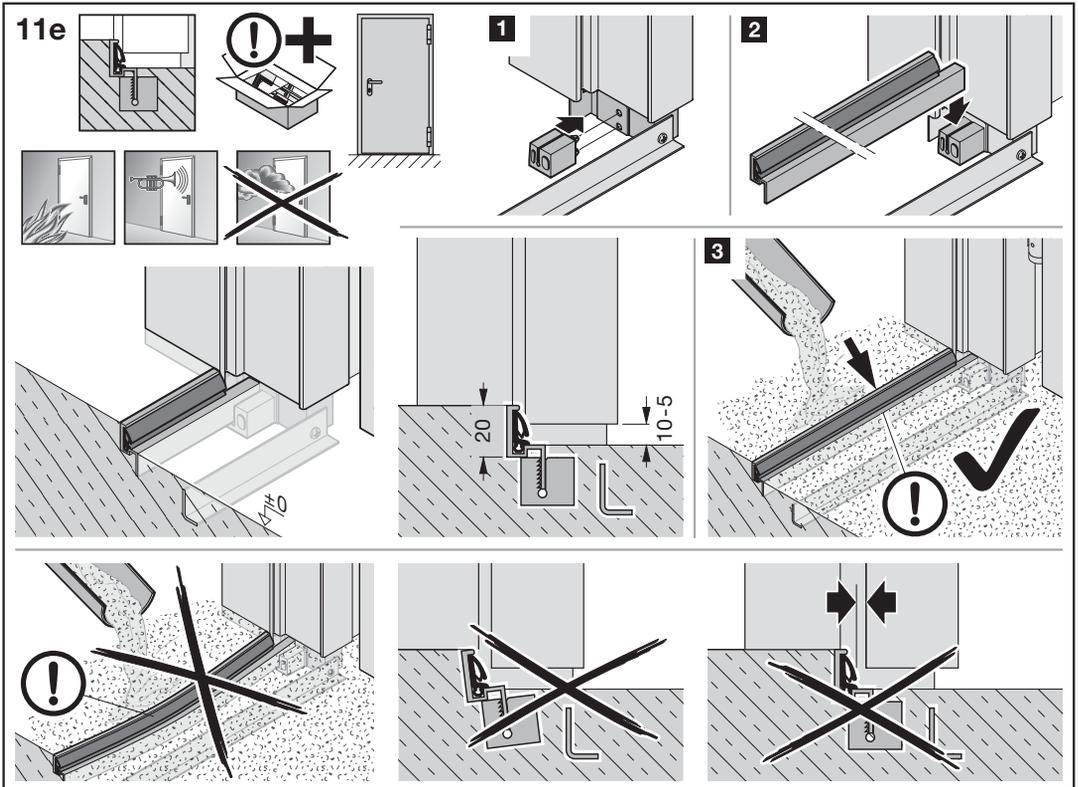


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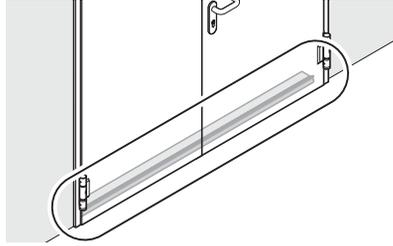
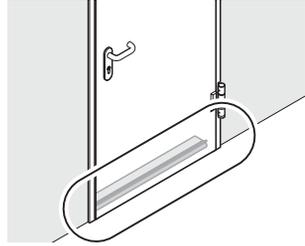
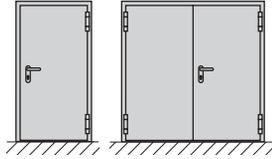
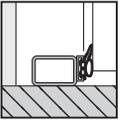




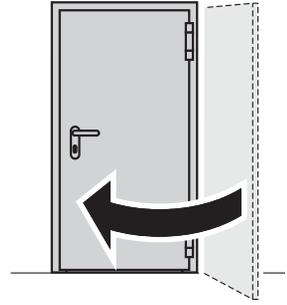




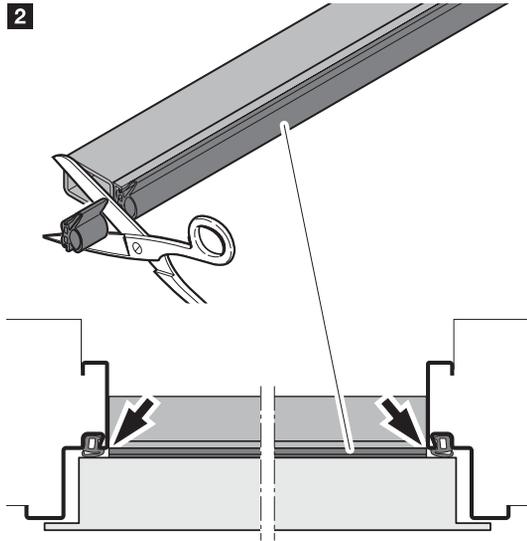
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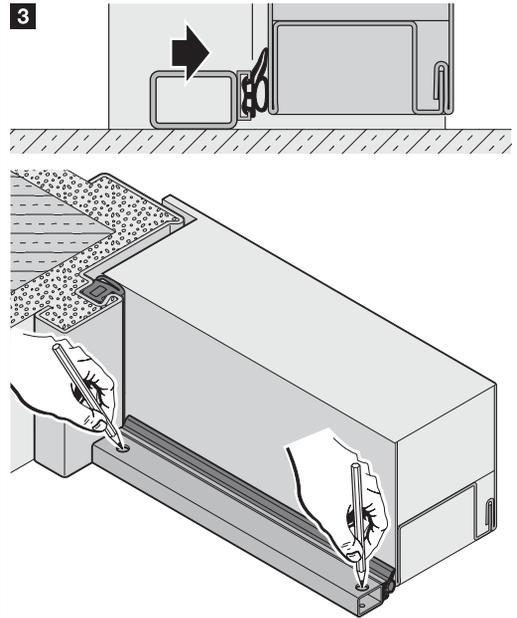
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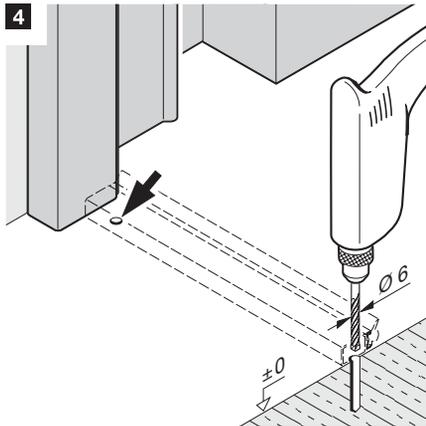
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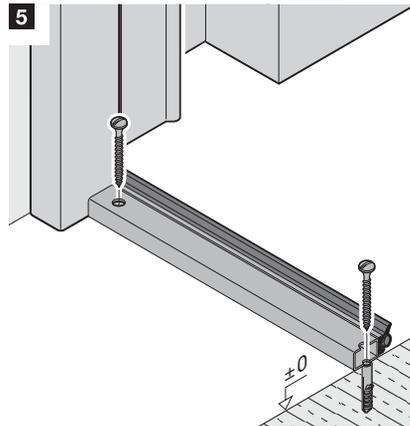
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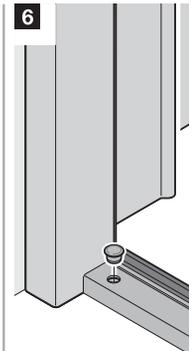
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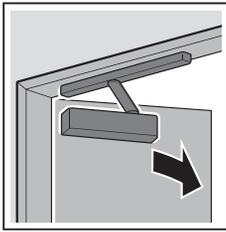
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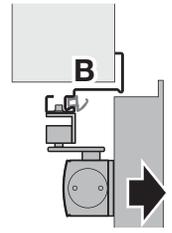
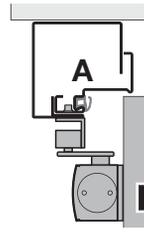
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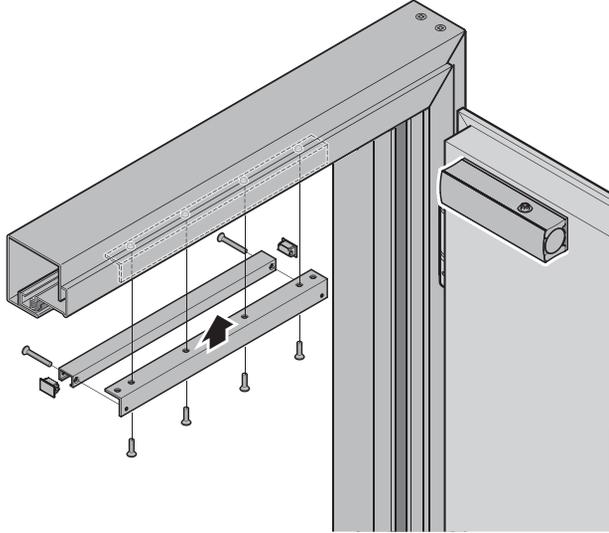
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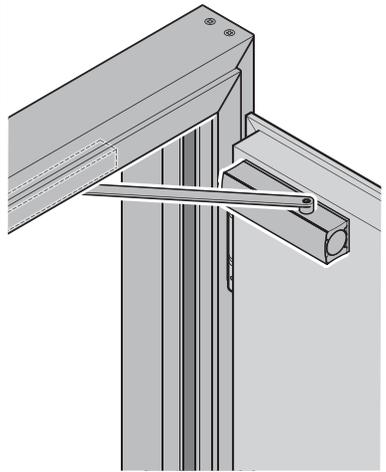
HDC 35 BG



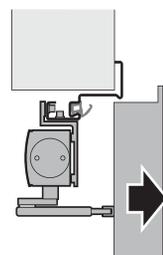
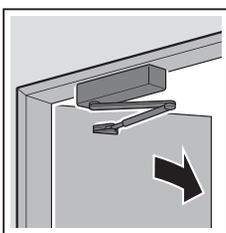
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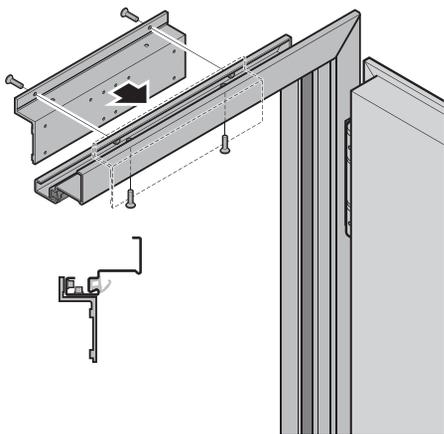
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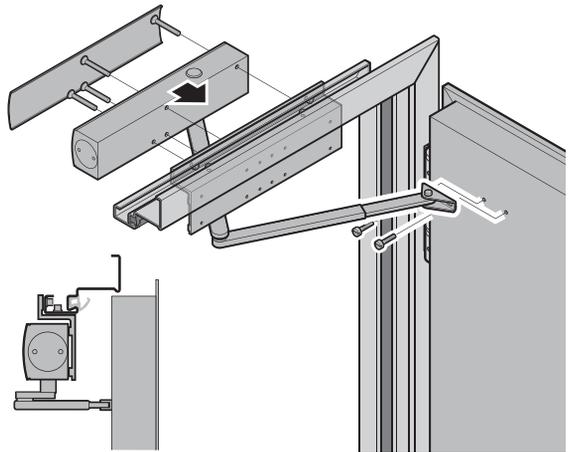
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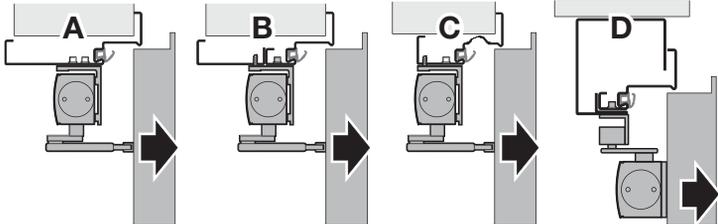
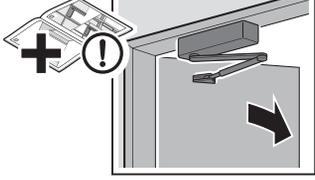
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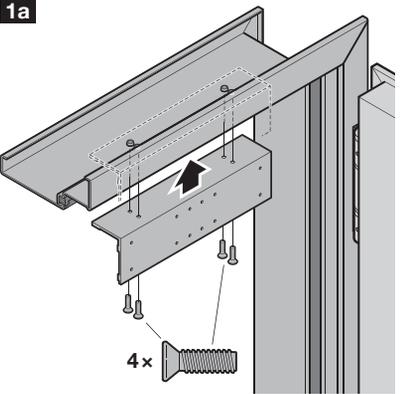
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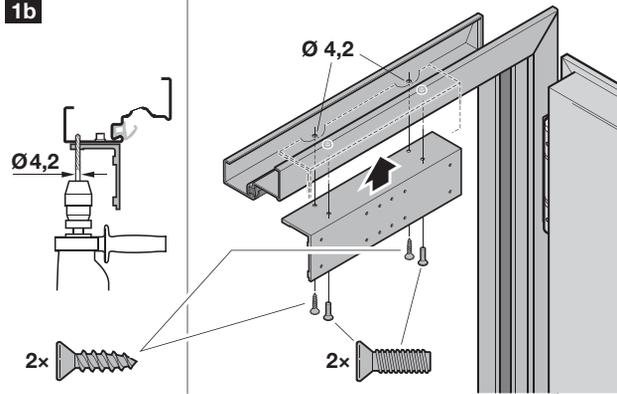
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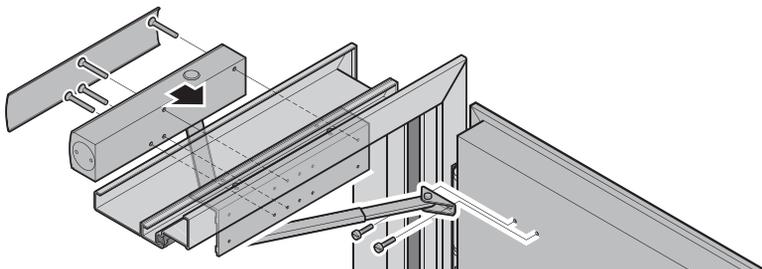
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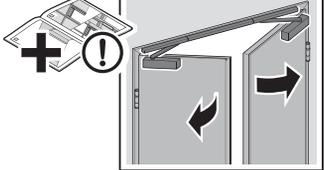
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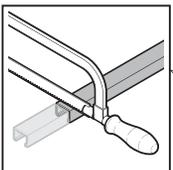
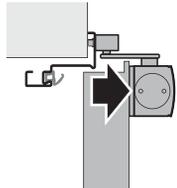
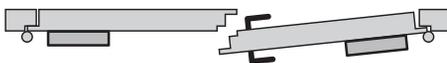
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12d



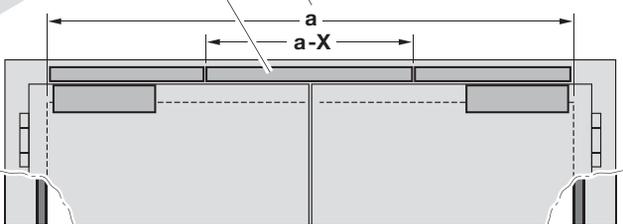
GEZE TS 5000
DORMA TS 93



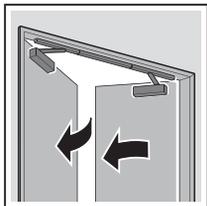
4.2 (EN 12519)

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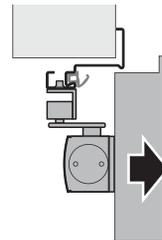
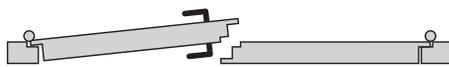
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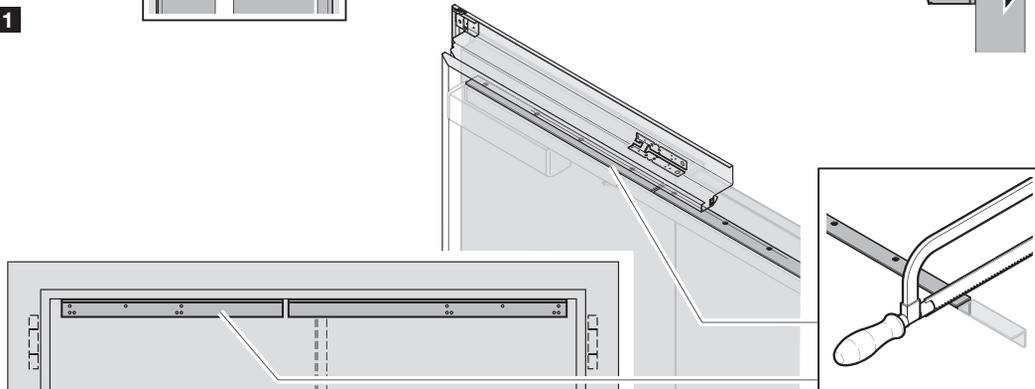
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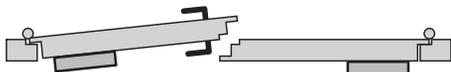
**GEZE TS 5000
DORMA TS 93**



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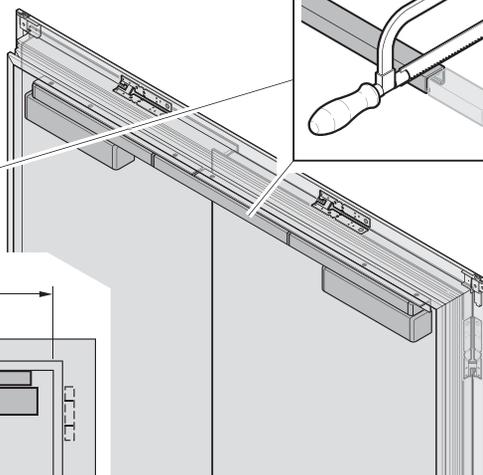
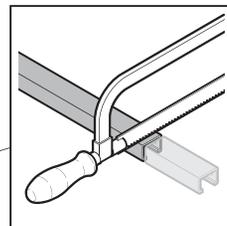
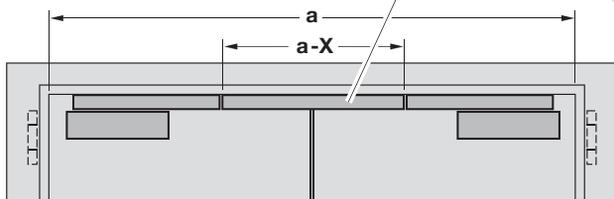


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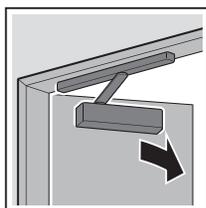


4.2 (EN 12519)

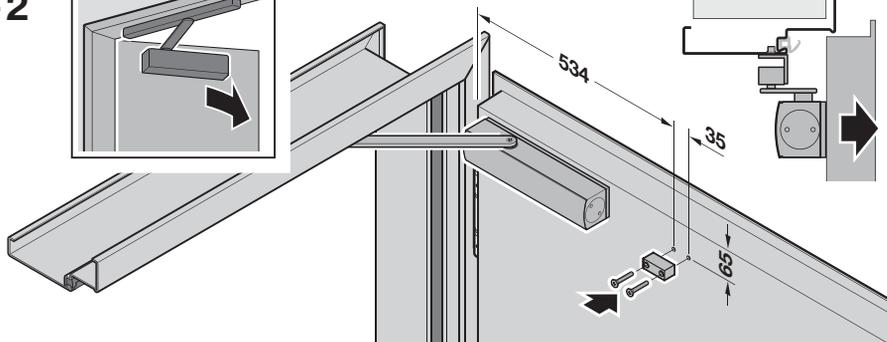
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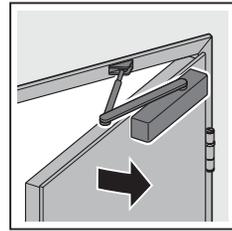
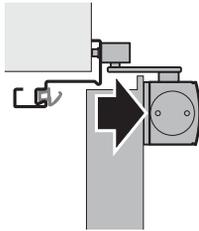
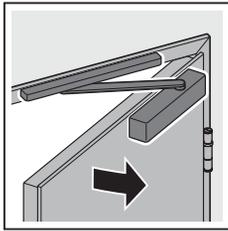
12f **H16-2
H3-2**



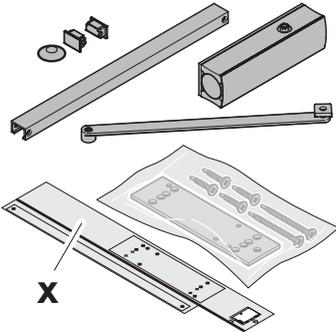
TS 93 GSR BG



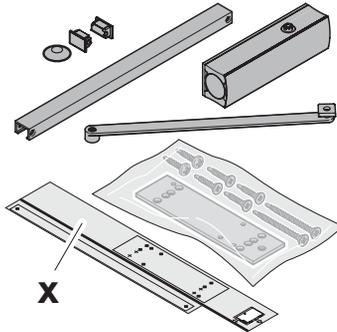
12g



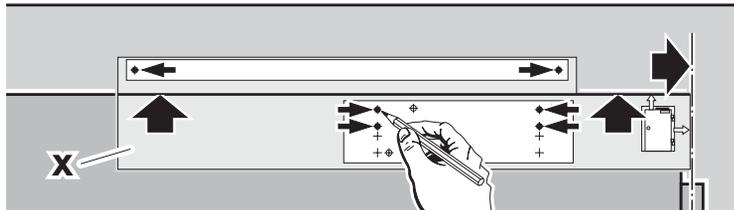
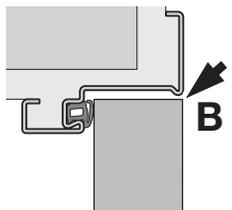
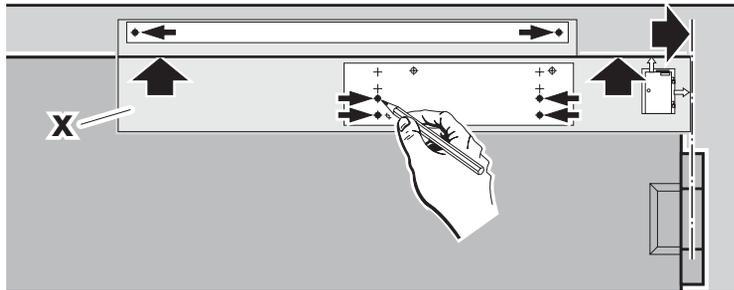
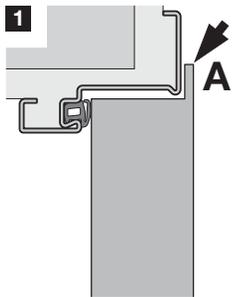
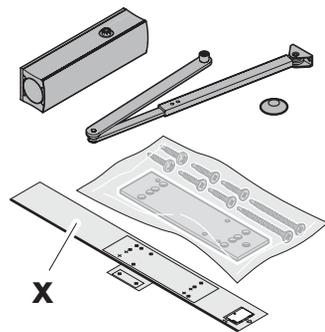
HDC 35



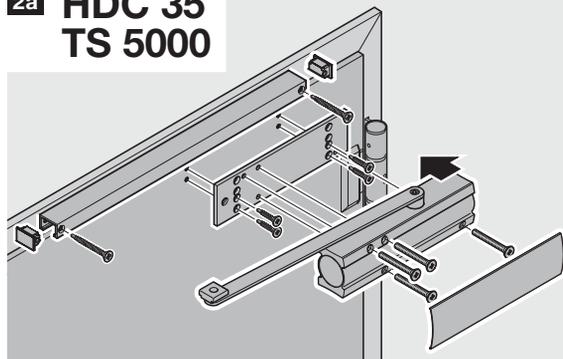
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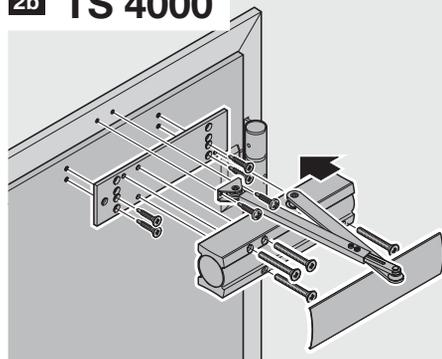
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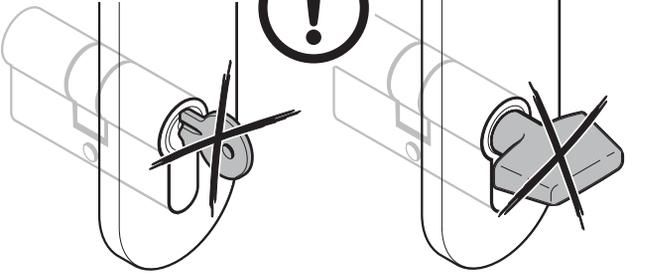
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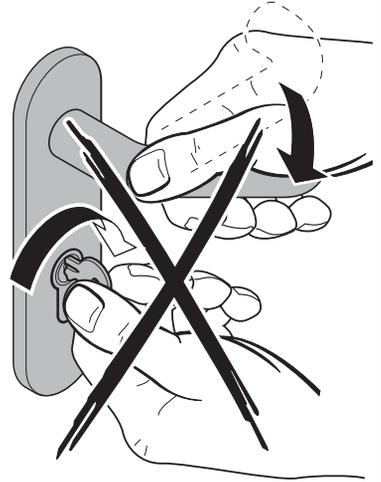
2b TS 4000



13.1a



13.1b



1



2

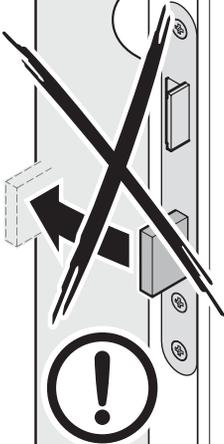


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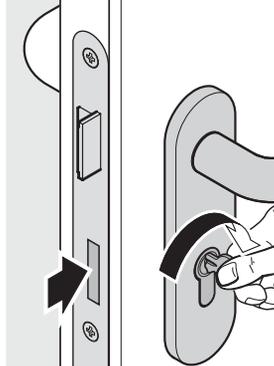


13.2

1



2



3

