



PT

Instruções de montagem e manutenção

Portas em aço com um e dois batentes (Portas OD, H3G, H16G, HS75, H16S1)

PORTUGUÊS..... 3



..... 9

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Exma. cliente, Exmo. cliente, agradecemos ter optado por um dos nossos produtos.

1 Relativamente a estas instruções

Por favor leia e respeite estas instruções. As mesmas dão-lhe informações importantes acerca da montagem, manutenção e conservação da sua porta em aço e são um documento importante para o dossier da obra.

Entre por favor em contacto com a nossa assistência a clientes, se persistir alguma dúvida após a leitura destas instruções.

1.1 Instruções de aviso utilizadas

 O símbolo geral de aviso assinala um perigo, que poderá levar a **lesões** ou à **morte**. Na parte escrita, o símbolo geral de aviso é utilizado em conjunto com os seguintes níveis de aviso. Na parte ilustrada, uma informação adicional remete para as explicações na parte escrita.

 **PERIGO**

 Assinala um perigo, que poderá levar imediatamente à morte ou a lesões graves.

1.2 Simbologia utilizada



Protecção corta-fogo



Protecção corta-fumo



Porta de segurança



Isolamento acústico



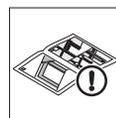
Porta funcional



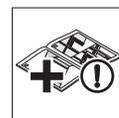
Instrução importante



Ver parte escrita



Ver parte ilustrada



Ver instrução de montagem no volume dos acessórios



Encomendar como acessório



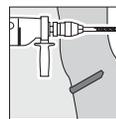
Procedimento correcto



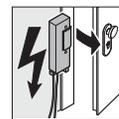
Procedimento inadmissível (forma de procedimento)



Soldadura



Perfuração



Abertura eléctrica da porta



Perigo de intrusão no lado de abertura



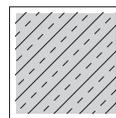
Perigo de intrusão no lado de fecho



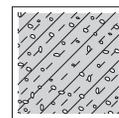
Saída de emergência



Madeira



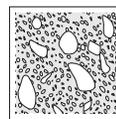
Alvenaria / betão



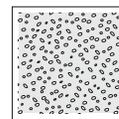
Betão poroso



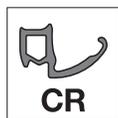
Gesso



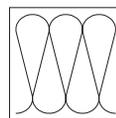
Betão



Argamassa



Vedação do aro CR T60 / E₂ 60 / HBS60 T90 / E₂ 90 / HBS90 T120 / E₂ 120 / HBS120 T30 / E₂ 30 com preenchimento posterior com lã mineral



Material isolante A (EN 13501-1)

2 Instruções de segurança

PERIGO

Perigo de vida durante a montagem da porta em aço

Durante a montagem, a porta ou o aro da porta pode cair e matar pessoas.

- ▶ Antes e durante os trabalhos de montagem, proteja a porta e o aro contra quedas.

- Recrute apenas pessoal qualificado e devidamente instruído para proceder à montagem e à manutenção.
- Os trabalhos eléctricos só poderão ser realizados por pessoal habilitado.
- Não faça alterações, como construções adicionais ou remodelações, que possam pôr em causa a segurança.
- Exclua o perigo resultante de fogo, gás, poeira, vapor, fumo, incêndio e explosão aquando de trabalhos de soldadura, combustão e polimento.
- Evite que, durante os trabalhos de soldadura, materiais de construção espumosos reajam devido ao registo térmico e percam, dessa forma o seu efeito.

3 Informações relativas às características da porta

Tenha em atenção, que a porta possa cumprir características isoladas, uma combinação de características, como protecção corta-fogo, protecção corta-fumo, isolamento acústico e protecção contra a intrusão ou possa ser uma porta funcional.

3.1 Portas corta-fogo e portas corta-fumo

- Poderá visualizar a respectiva homologação em fogo na página www.hoermann.de/dokumentation/zulassungsbescheide-fuer-feuerschutzabschluss/. A homologação terá de estar disponível no local de aplicação.
- As informações apresentadas são exigências mínimas para a montagem na Alemanha. Para a montagem noutros países são válidas as respectivas homologações nacionais, tendo, no entanto, que se tomar como base os valores característicos de materiais, segundo a norma DIN.

- Cumpra a DIN 18093 (montagem de portas com protecção corta-fogo) e a DIN 18100 (aberturas na parede para portas) ou os regulamentos de cada país.
- O fabricante poderá, em casos particulares, emitir uma declaração de conformidade, nos termos dos §§ 22º e 23º do regulamento de construção civil.
- **O utilizador é responsável pelo perfeito estado da porta.**
- As dobradiças de molas **não** podem ser utilizadas na Alemanha em portas e tampas com as seguintes características:

- Peso da folha > 80 kg
- Visor
- Aplicação em paredes de montagem (excepção: dimensões < 1000 × 1000 mm)
- Combinação como portas corta-fumo, de acordo com a DIN 18095
- 2 batentes

Fora da Alemanha podem vigorar outras regulamentações, efectivamente recomendamos o cumprimento das especificações alemãs.

- Paredes de cartão-gesso e espessuras de parede: ver Tab. 1:
- Paredes e espessuras de parede admissíveis: ver Tab. 2:
- Utilize ferragens, fechaduras, meios de fecho e peças anexas eléctricas somente se forem componentes da homologação da porta ou houver uma permissão do fabricante.
- Monte portas ranhuradas nos 3 lados, sem remate de compartimento, em compartimentos no nível mais inferior do pavimento.
- Preencha o aro com argamassa mineral numa base de cimento, p. ex. LM21 da Sakret, se no ato de montagem não houver nenhuma descrição em contrário. Escore os aros em U e os aros angulares (com e sem contra-aros) antes do preenchimento posterior para que os mesmos não se deformem com a pressão da argamassa.
- **Protecção corta-fumo:**
 - Utilize vedações de solo e calços de vedação (ver parte ilustrada, ponto 10.6 e 11).
 - Vede a ligação do aro com os elementos de construção adjacentes de ambos os lados e sem fendas de forma permanente e elástica, se o aro não tiver sido preenchido posteriormente com argamassa.
 - Utilize canhões de fecho.

Tab. 1: Paredes de montagem F90A permitidas com espessuras mínimas de parede para portas corta-fogo e portas corta-fumo, altura ≤ 5000 mm

Documento de ensaio nº	Parede	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 × 2750 mm

Tab. 2: Paredes permitidas e espessuras mínimas das paredes para portas corta-fogo e corta-fumo (mm) ver 4.2

Parede	H3-1 OD H_30-1 OD		H3-2 OD H_30-2 OD		H3-1 G H_30 D1	H3-2 VM 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							
Porta em aço Betão DIN 1045-1, resistência ≥ 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
Avenaria DIN 1053-1, resistência ≥ 12, grupo de argamassa ≥ 2	¹⁾ k ≤ 2500 115	k > 2500	¹⁾ k ≤ 2500 115	²⁾ k > 2500 175	175	175	240	240	175	115	175
Bloco de betão poroso ou tijolos planos, DIN 4165-3, classe de resistência ≥ 4, Placas de betão poroso, segego = homologação geral por parte da direcção da obra, classe de resistência. 4.4	k ≤ 2500		k ≤ 2500		—	—	—	—	—	—	—
Parede de montagem F90-A segego a ABP, Respeitar a ilustração 9D, altura máx. 5000 mm	³⁾		³⁾		³⁾	³⁾	—	—	³⁾	—	—
Parede de montagem F90-A DIN 4102-4/ tab. 48, Respeitar a ilustração 9D, altura máx. 5000 mm	e ≤ 1320		e ≤ 2500		—	e ≤ 2750 e k ≤ 2750	—	—	—	—	—
Parede de montagem F90-B DIN 4102-4/ tab. 49, Respeitar a ilustração 9D, altura máx. 5000 mm	100		100		100	100	—	—	125	125	125
Parede de montagem F30-B	e ≤ 1250 e k ≤ 2500		e ≤ 2500 e k ≤ 2500		—	—	—	—	—	—	—
	⁴⁾ 100 / ⁵⁾ 130		⁴⁾ 100 / ⁵⁾ 130		—	—	—	—	—	—	—
	e ≤ 1125 e k ≤ 2125		—		—	—	—	—	—	—	—
	185		—		—	—	—	—	—	—	—
Placas de gesso VG Orth, P-SAC 02 / III-488, ilustração 9/A17	—		—		—	—	—	—	—	—	—
	100		100		—	—	—	—	—	—	—

1) sem peça superior 2) com peça superior 3) ver Tab. 1: 4) aço com dois revestimentos 5) Dryfix

- Não exponha os visores de portas corta-fogo à exposição solar direta.

3.2 Portas com isolamento acústico

- Todo o isolamento acústico depende dos elementos de construção adjacentes. O isolamento acústico resultante da parede e da porta terá de ser comprovado em separado, uma vez que não resulta unicamente da dimensão avaliada de isolamento acústico R_w ou R da porta.
- Tenha em atenção à vedação / às vedações integralmente adjacentes.
- O solo terá de estar liso para que possa ser garantida uma função integral da vedação de solo.
- Separe a betonilha na zona da soleira.
- Utilize calços de vedação e vedação de solo (ver parte ilustrada, ponto 10.6 e 11).
- Utilize canhões de fecho.
- Preencha posteriormente o aro por completo com argamassa.
- Cole os cantos cortados em esquadria da vedação do aro p. ex. com Köratan UC 41.

3.3 Portas à prova de intrusão

- A porta só cumpre as características da protecção à prova de intrusão, se o ferrolho estiver completamente fechado e a chave estiver fora da fechadura.
- Proteja as folhas de porta em portas RC4/B e em todas as portas RC com 2 batentes, em dobradiças com dois parafusos (ver parte ilustrada, ponto 8.3b).
- Utilize apenas aros angulares, aros angulares com contra-aro e aros em U.
- Em portas RC2/N faça o preenchimento posterior do aro na zona dos pontos de bloqueio, das dobradiças e dos pinos de retenção, de forma resistente à pressão.
- Em portas RC3/A e RC4/B faça o preenchimento posterior do aro a toda a volta, de forma resistente à pressão.
- Em portas com vidros, monte o caixilho de suporte do vidro com talas de protecção, do lado de corrosão.
- Monte o calço posterior aquando da substituição do visor superior, à semelhança do verificado antes da montagem.
- Em portas com 2 batentes, meça as dimensões inferiores da fenda da tina de solo.
- Dificulte em portas anti-pânico o contacto com arame, por exemplo através do recurso a ar reduzido de solo ou à utilização de uma soleira redonda e plana.
- Preencha os aros de portas RC2 integralmente com argamassa, se os mesmos forem aplicados em paredes de montagem F90A.

3.3.1 Exigências mínimas em portas à prova de intrusão

Classe de resistência, de acordo com a DIN EN V 1627 / DIN EN 1627 / VDS	RC2 / N	RC3 / A	RC4 / B
Alvenaria DIN 1053, parte 1 (mm)	115	115	240
Betão armado, min. C12/ 15 (mm)	100	120	140
Tijolos em betão poroso, classe 4 (mm)	175, 115 ¹⁾	300	-
Placas em betão poroso, classe 4 (mm)	150	-	-
Parede de montagem F90 A	✓	-	-
Canhão perfurado, de acordo com a DIN 18252 ³⁾	P2BS	P2BS	P3BS

Classe de resistência, de acordo com a DIN EN V 1627 / DIN EN 1627 / VDS	RC2 / N	RC3 / A	RC4 / B
Canhão perfurado ^{2) 3) 4)}	Classe A	Classe A	Classe B
Ferragem de segurança, segundo a DIN 18257 ³⁾	ES1 (ZA)	ES2 (ZA)	ES3 (ZA)
Ferragem de segurança ^{2) 3)}	Classe A	Classe A	Classe B
Vidros EN 356 (protecção corta-fogo)	P4A	P6B/P7B	-

- 1) só com 1 folha, recomendamos espessuras de parede a partir de 150 mm
- 2) para portas reconhecidas VdS
- 3) a ferragem de protecção ou o canhão perfurado terá de estar provido de protecção contra estiramento (ZA).
- 4) não tem obrigatoriamente de se encontrar no volume de entrega

3.4 Portas funcionais

Os aros não terão obrigatoriamente de ser preenchidos posteriormente.

3.5 Protecção corta-fogo e aplicação exterior

A protecção corta-fogo e a aplicação exterior requerem uma homologação própria. Tenha em atenção as instruções de montagem, que se encontram em separado, art.º n.º 479166.

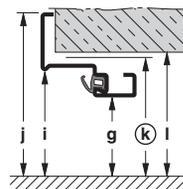
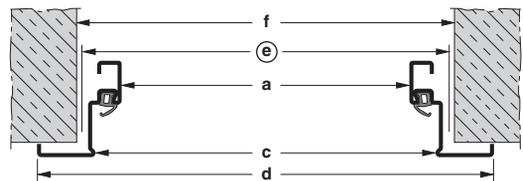
4 Montagem

4.1 Antes da montagem

Antes da montagem esclareça as seguintes questões:

- Quais as características da porta?
- O tipo de construção da parede é adequado à montagem da porta?
- A altura do solo é conhecida (fenda por metro)?
- Em que sentido deve abrir a porta?
- Têm de ser cumpridas normas de construção?
- A parede na zona das caixas de protecção do muro tem de ser entalhada?

4.2 Dimensões



$$\begin{aligned}
 a &= e - 82 & g &= k - 42 \\
 c &= e - 36 & i &= k - 19 \\
 d &= e + 64 & j &= k + 31 \\
 f &= e + 10 & l &= k + 5
 \end{aligned}$$

Ilust. 1: Dimensões

- a/g** altura / largura interior da abertura
- c/i** altura / largura interior do rebaixamento
- d/j** altura / largura da medida exterior do aro
- e/k** altura / largura da medida da dimensão modular
- f/l** altura / largura interior da medida da construção em bruto EN 12519

4.3 Aquando da montagem

- Respeite as instruções de montagem, que se encontram nos volumes dos acessórios.
- Utilize as peças de montagem, se as mesmas forem fornecidas, por exemplo, talas de bucha, buchas ou parafusos.
- Utilize as buchas mencionadas no ponto 8.
- Utilize, em combinação com aro angular e tijolos com pequenos buracos ou gesso a bucha FUR 10 x 80 / 100 mm e respeite o ponto 8 da instrução de montagem.
- Perfure os tijolos com pequenos buracos e tijolos de câmara oca sem choque.
- Tenha em atenção à distância mínima do rebordo de 50 mm em perfurações horizontais ou verticais e o sentido de expansão das buchas.
- Tenha em atenção, que em aros sem inserção de solo tem de ser removida a cantoneira inferior de montagem antes de proceder à montagem.

4.4 Instruções sobre a parte ilustrada

Ver ponto	Descrição
8	Situações de montagem e formas de aro
8.1a	Obtuso
8.1b	Folha fina
8.1c	Folha grossa
8.2a / 8.2b	Número de pontos de fixação
8.2c	Descarga de montagem
8.3a	Desmontagem da porta standard
8.3b	Desmontagem da porta de segurança
8.4	Montagem do aro angular
8.5	Cavidade do solo e cantoneira de montagem
8.6	Peças de fixação
8.7	Distância mínima do rebordo e sentido de expansão da bucha
8.8	Montagem dos perfis ranhurados
8.9	Tubos ocos no aro
8.10	Abertura eléctrica da porta
8.11	Caixa de protecção do muro em paredes de material sintético reforçado com fibra de vidro
8.12	Construção das paredes GKF
9.0	Situações de montagem
10.1a	Montagem com dobradiças standard
10.1b	Montagem com dobradiças 3D
10.2	Montagem da porta de segurança
10.3	Ajuste da fenda de ar
10.4	Remoção das cantoneiras de solo em aros sem inserção no solo
10.5	Montagem da caixilha oposto
10.6	Fixar o calço de vedação com silicone
10.7	Montagem da vedação do aro
10.8	Levantamento da porta
10.9	Tensionamento da dobradiça de mola
10.10	Verificação da engrenagem do trinco
10.11	Alteração da grelha de ventilação
10.12	Transformação do caixilha do envidraçado
10.13	Extracto da camada de isolamento em protecção corta-fogo e corta-fumo
10.14	Extracto da camada de isolamento nos pinos de segurança
10.15	Marcação de grandes superfícies de vidro
10.16	Portas com barras anti-pânico e RC3

Ver ponto	Descrição
10.17	Montagem da fechadura de bloco aquando de bloqueio múltiplo
11	Vedações de solo
12	Fecho de porta
13.1	Retirar a chave em portas anti-pânico
13.2	Evitar operação incorrecta da fechadura

5 Manutenção e conservação

5.1 Trabalhos de manutenção anuais

- ▶ Controle a folha de porta, o aro e a fixação quanto a danos mecânicos e corrosivos.
- ▶ Controle a função da fechadura e, se for necessário, lubrifique o trinco.
- ▶ Lubrifique as fechaduras de pino com spray Teflon.
- ▶ Controle a fixação das peças anexas, como por exemplo, puxador, fechadura, dispositivo de fecho da porta, dobradiças, etc.
- ▶ Lubrifique os pinos das dobradiças e os olhais do apoio.
- ▶ Controle as dimensões da fenda.
- ▶ Controle a visibilidade da marcação.



PERIGO

Perigo de vida devido aos extractos das camadas de isolamento soltos

Devido aos extractos das camadas de isolamento soltos, o remate com protecção de fogo perde sua função.

- ▶ Substitua os extractos das camadas de isolamento soltos, ver a parte ilustrada 10.13.

- ▶ Substitua as peças defeituosas.
- ▶ Utilize apenas peças sobressalentes de origem do fabricante.

Se verificar defeitos, que não consiga reparar, recrute uma empresa especializada para o efeito.

5.2 Tratamento de superfície necessário para elementos com lacagem standard

A superfície da folha de porta e do aro é composta por uma lacagem de base em poliéster epoxi.

1. Remova a vedação / as vedações.
2. Faça o polimento até ao extracto da camada de isolamento de todas as superfícies a lacar.
3. Limpe profundamente as superfícies.
4. Utilize para o tratamento final da folha de porta, do aro e do extrato da camada de isolamento a seguinte estrutura de lacagem:
 - Lacagem de base 2 K epoxi com base de aderência e lacagem final com vernizes adequados e correntes ou
 - Lacagem de base e lacagem final com verniz 2K PUR.

Não utilizar tintas escuras aquando da insolação direta. Tenha em atenção a ficha técnica do BFS nº 24, bem como as instruções de tratamento do fabricante do verniz e faça um ensaio de aderência. Realize o tratamento final dentro de três meses após a montagem para evitar danos de corrosão.

5. Após a secagem da tinta, aplique novamente a vedação / as vedações.

5.3 Limpeza

- ▶ Limpe as superfícies com água límpida ou com um produto de limpeza corrente para verniz.

5.4 Cuidados a ter com peças em aço inox

- ▶ Limpe e cuide regularmente as peças em aço inox com o produto de conservação para aço inox de nobre brilho disponível na Hormann e aplique-o com um pano macio.

6 Rotulagem e marcação

A etiqueta dos **modelos de porta D65-1, D65-2, D65-1 OD, D65-2 OD** apresenta a marca de conformidade CE, tendo como base o regulamento (UE) n.º 305/2011. A norma de produto europeia harmonizada e aplicada é a EN 14351-1:2006 + A1:2010 “Janelas e portas – Norma de produto, características de desempenho – Parte 1: Janelas e portas exteriores sem características de resistência ao fogo e/ou de estanquidade ao fumo.” O número da respetiva marcação CE ou da declaração de desempenho está especificado na zona de dobra da porta, na etiqueta acima referida entre o logótipo do fabricante e a marcação de conformidade CE. As portas, que não tenham inscrita a marca de conformidade CE na respetiva etiqueta, não estão em conformidade com o âmbito de aplicação da norma de produto europeia harmonizada acima referida, não podendo dispor de uma marcação CE ou da declaração de desempenho.

7 Generalidades

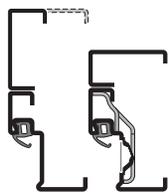
É proibido colocar a porta em funcionamento antes de garantir que a mesma foi montada, de acordo com as nossas especificações e verificada quanto ao seu correto funcionamento. A declaração de desempenho perde a sua validade, se forem feitas alterações ao produto.

8 Declaração de desempenho

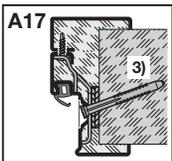
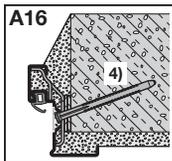
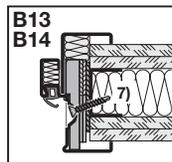
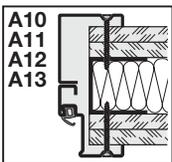
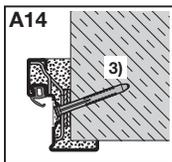
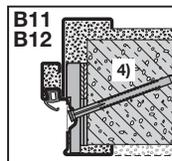
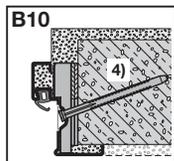
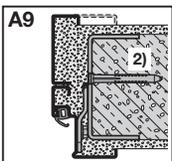
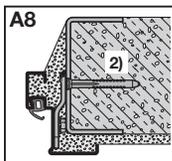
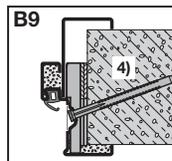
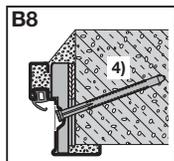
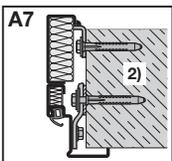
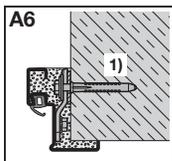
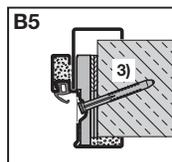
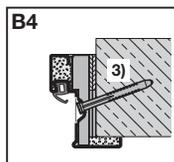
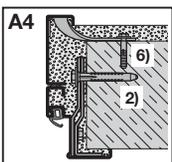
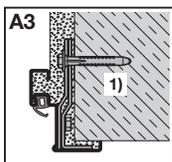
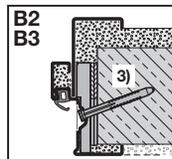
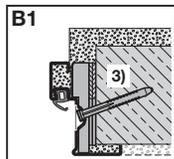
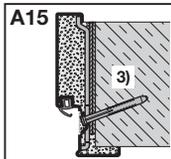
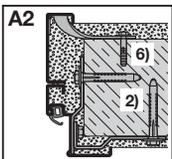
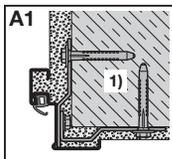
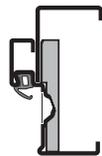
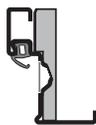
Declaração de desempenho ver ponto **8.3**:
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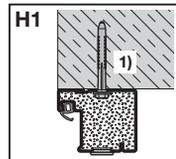
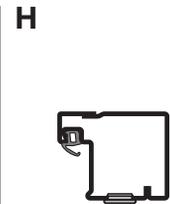
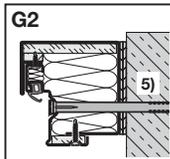
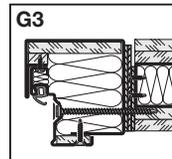
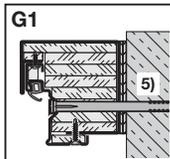
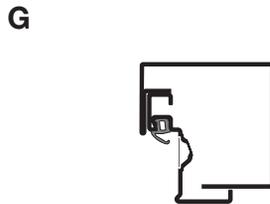
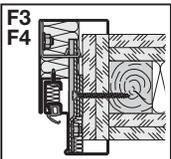
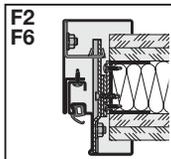
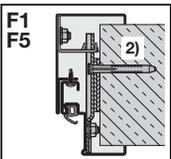
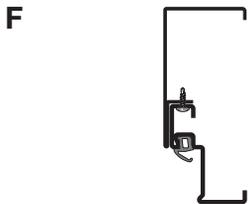
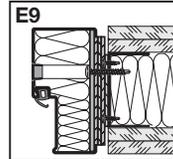
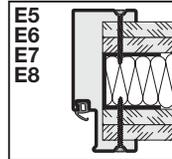
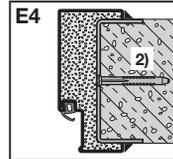
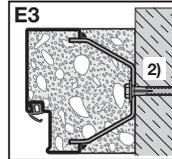
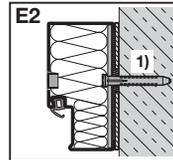
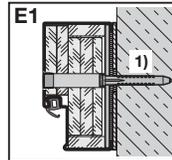
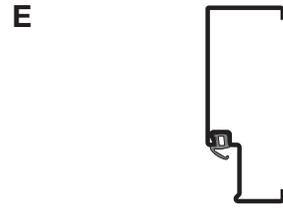
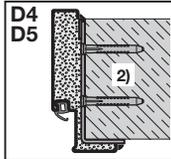
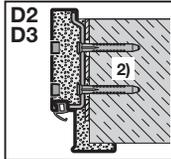
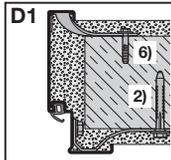
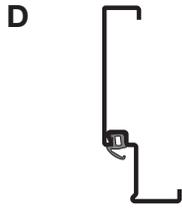
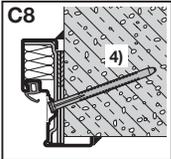
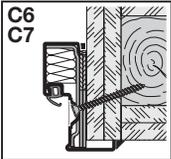
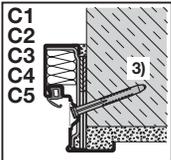
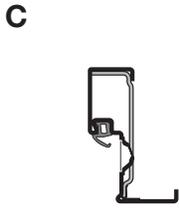


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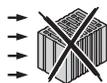


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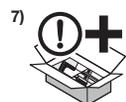


1) Fischer: FUR 10 × 80/100
Fischer: SXS 10 × 80/100
Hilti: HRD 10 × 80/100
MEA: MFR 10 × 80/100
Würth: W-UR 10 × 80/100

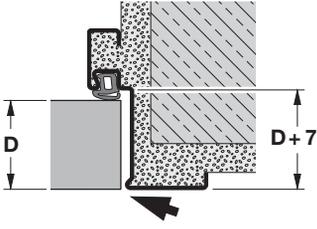


2) Fischer: FUR 10 × 80/100/115
Fischer: SXS 10 × 80/100/120
Hilti: HRD 10 × 80/100
MEA: MFR 10 × 80/100/115
Würth: W-UR 10 × 80/100/115

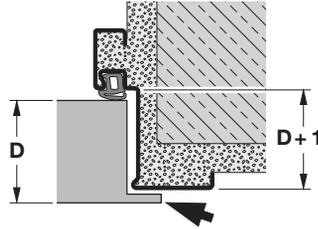
3) Fischer: FUR 10 × 100
4) Fischer: FUR 10 × 160
5) Fischer: FUR 10 × 200
6 8 × 40



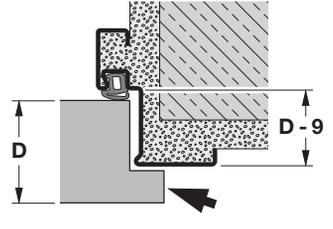
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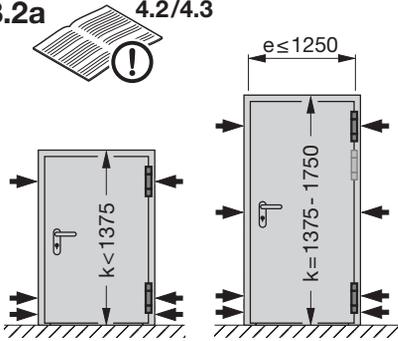
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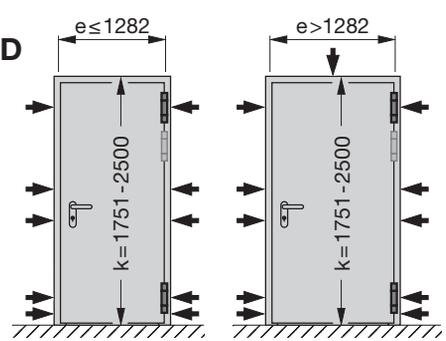
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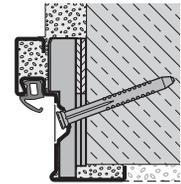
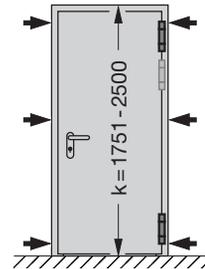
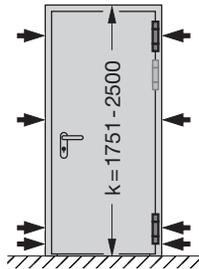
8.2a 4.2/4.3



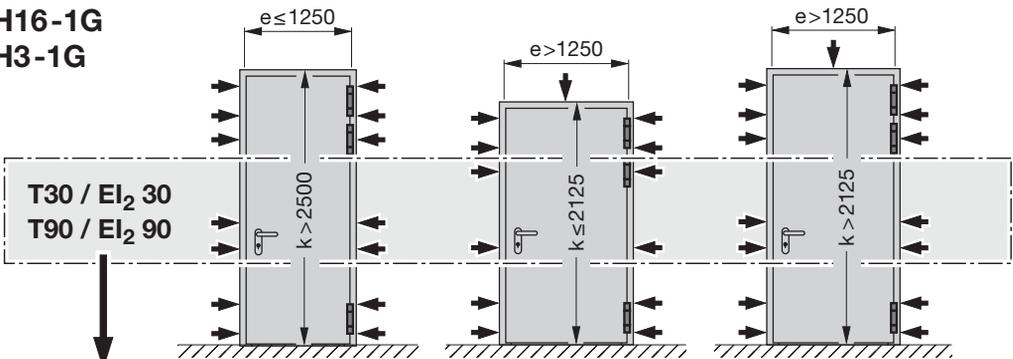
H16-S1
H16-1 OD
HS75



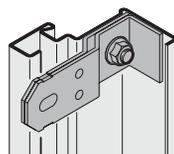
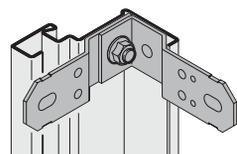
D65-1 OD
H3-1 OD



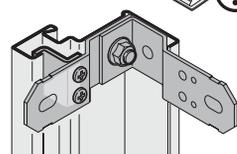
H16-1G
H3-1G



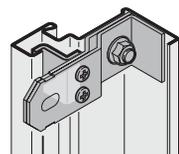
T30 / EI₂ 30



T90 / EI₂ 90



8.6a
8.6b

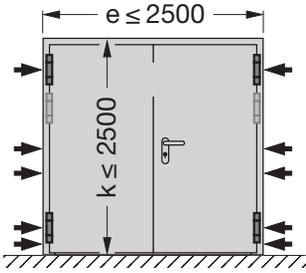


8.2b

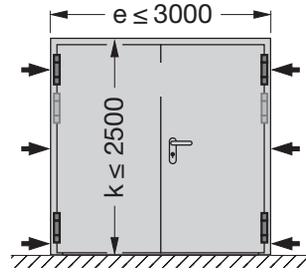


4.2/4.3

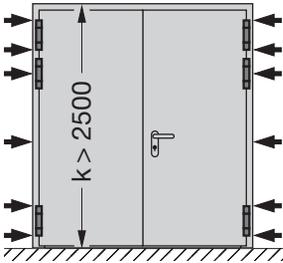
H16-2 OD
H3-2 OD



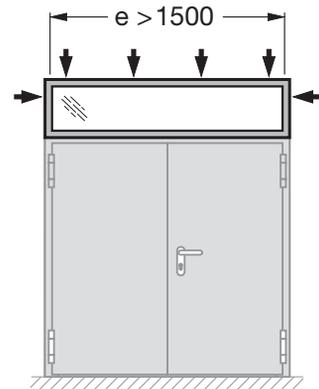
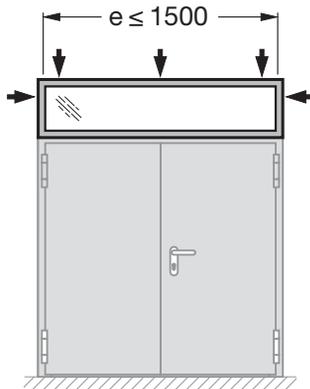
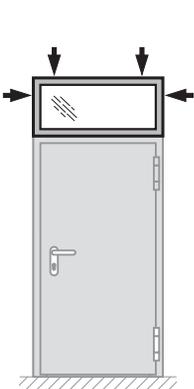
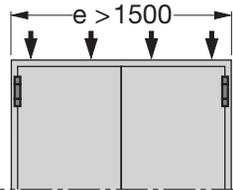
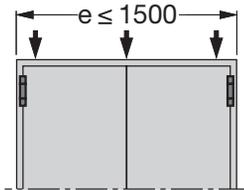
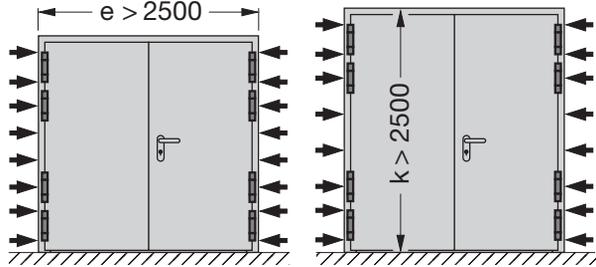
D65-2 OD



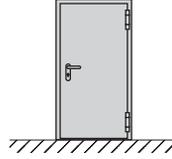
H3-2 VM



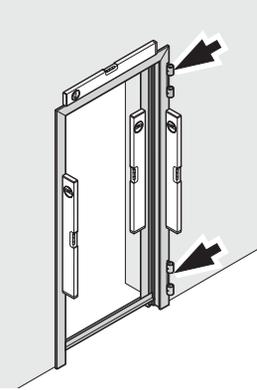
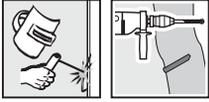
H16-2 G
H_90 F2



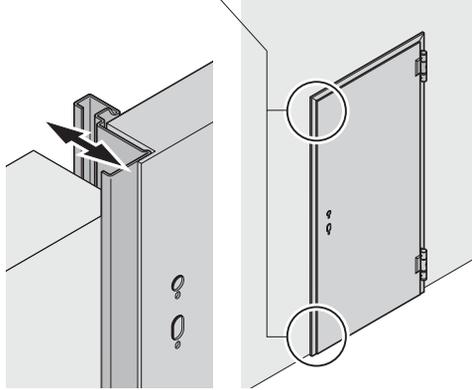
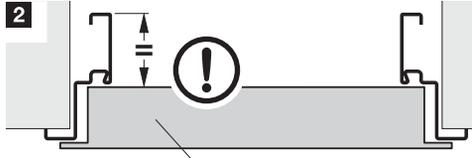
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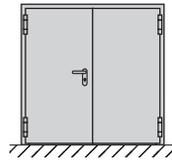
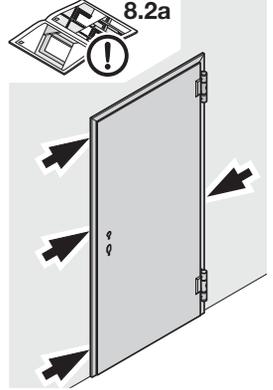
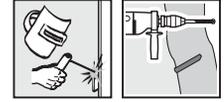
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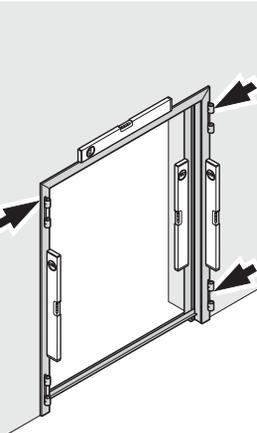
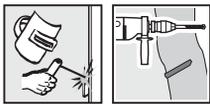
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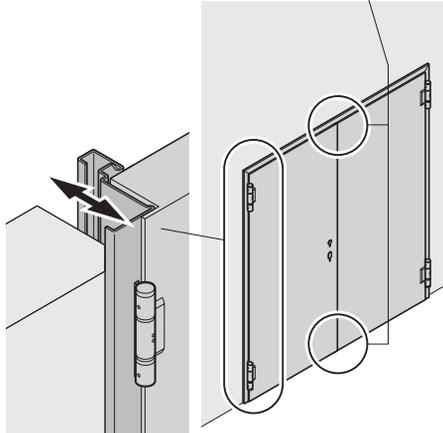
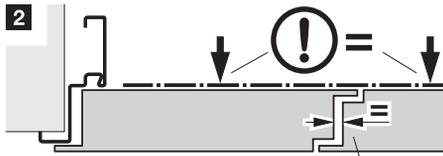
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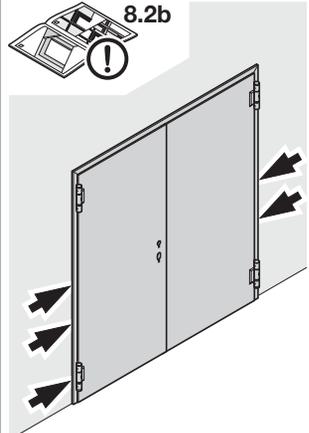
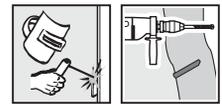
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2



3

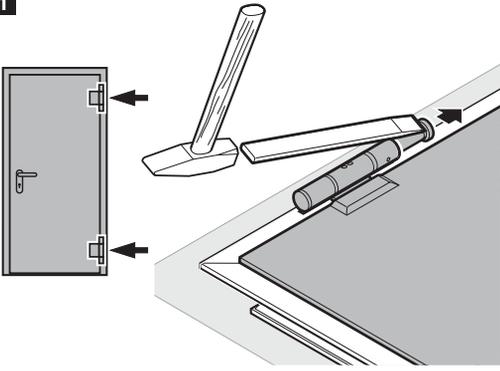


8.3a

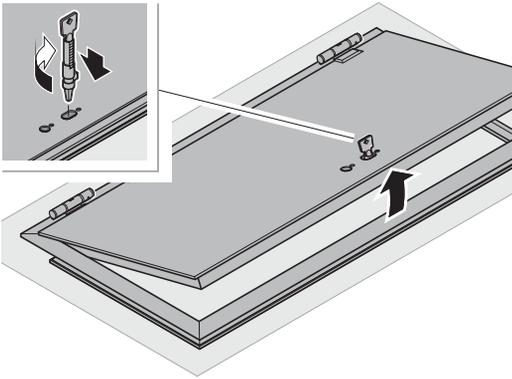
4.3



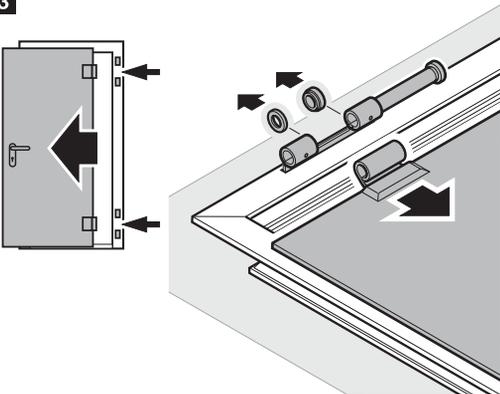
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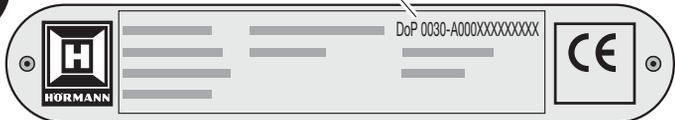
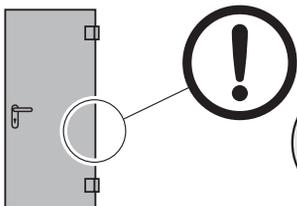
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3



4

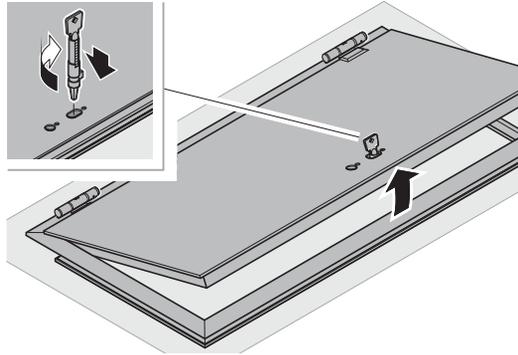


8.3b

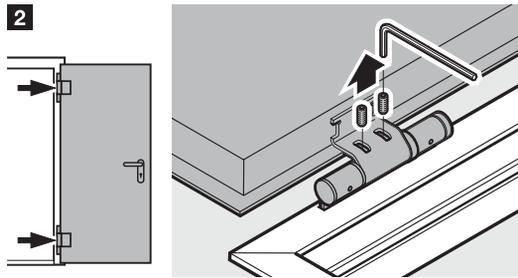
3.3/4.3



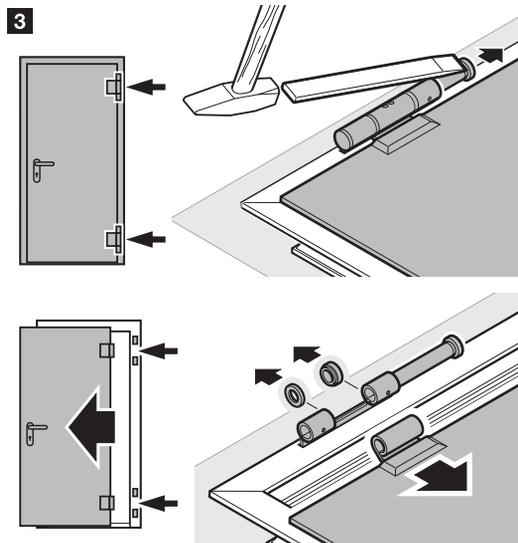
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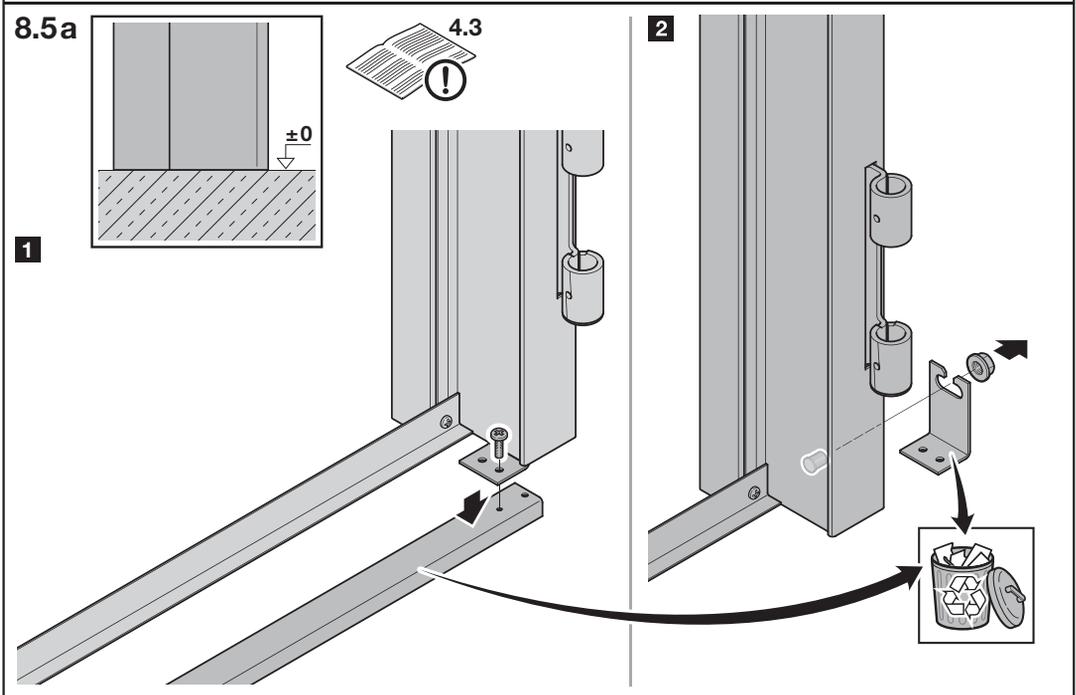
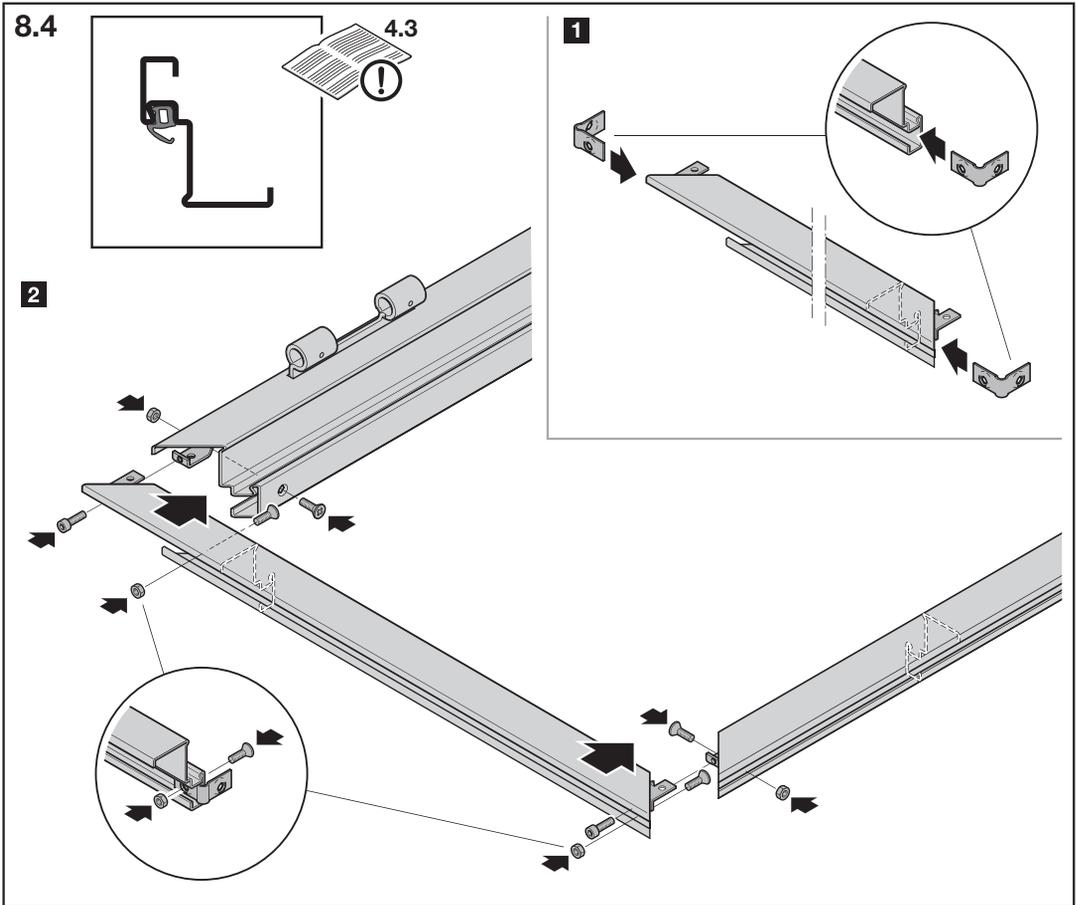


2



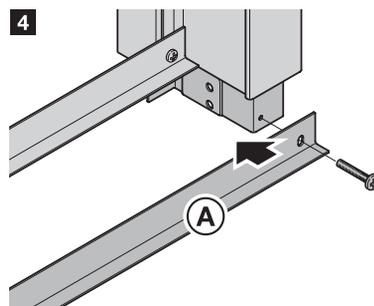
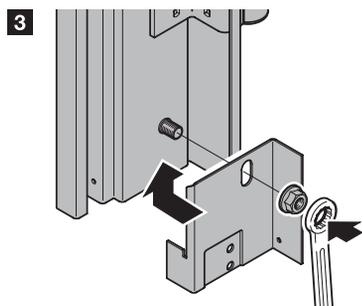
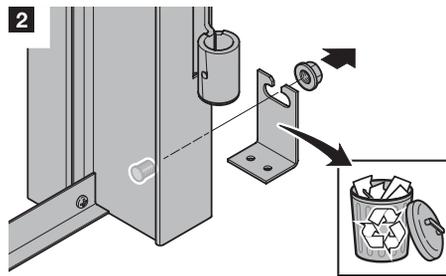
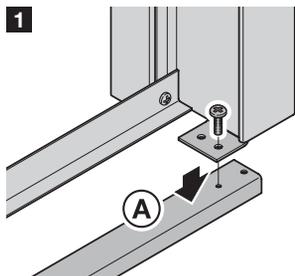
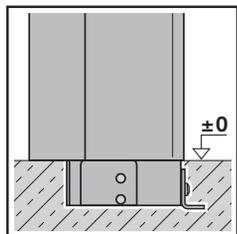
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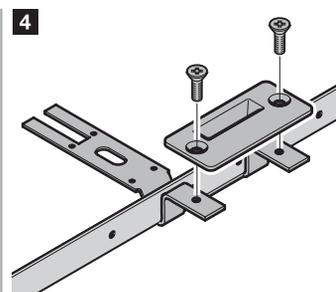
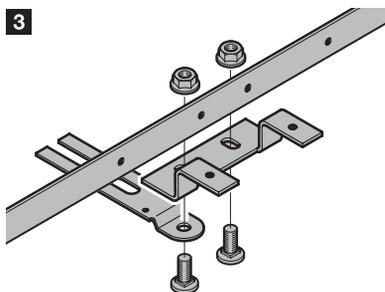
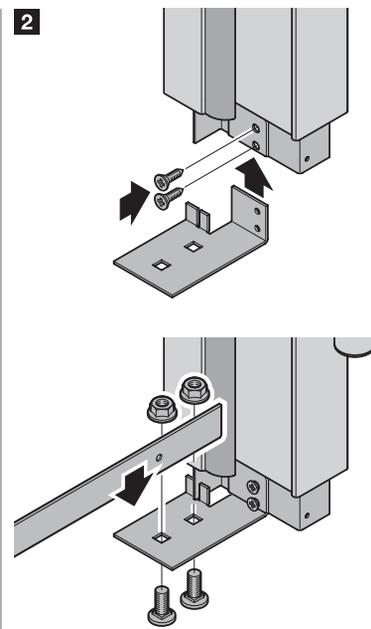
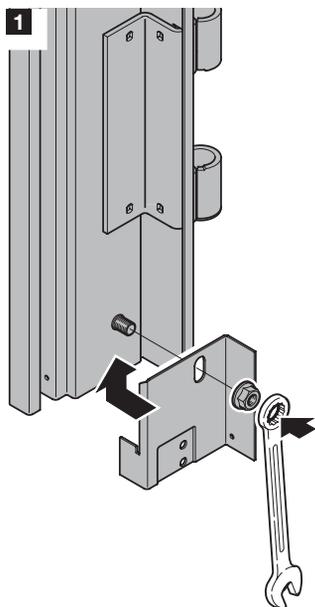
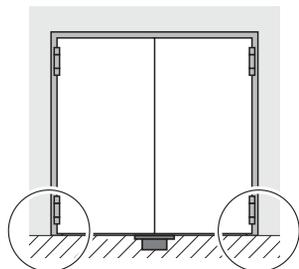
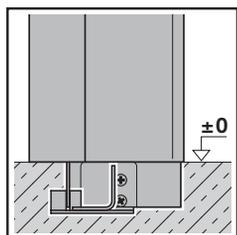
8.5b

4.3



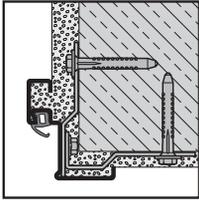
8.5c

4.3

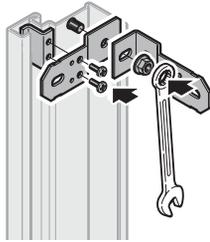
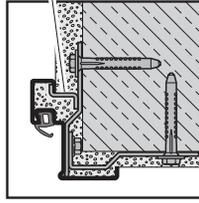


8.6a

4.3

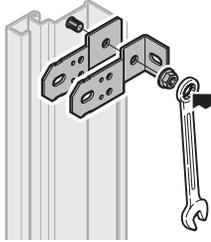
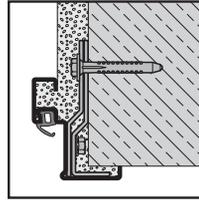


8.2a

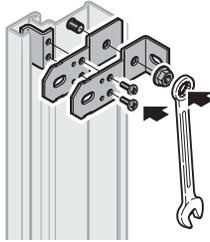
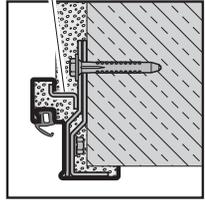


8.6b

4.3

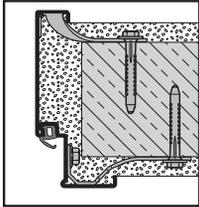


8.2a



8.6c

4.3



1

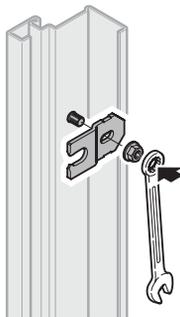
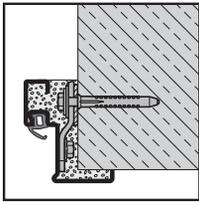


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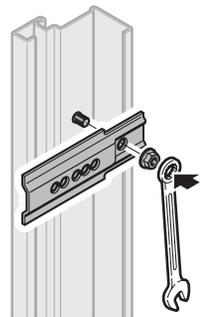
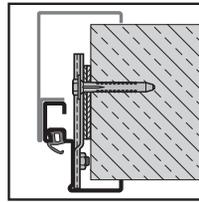
8.6d

4.3

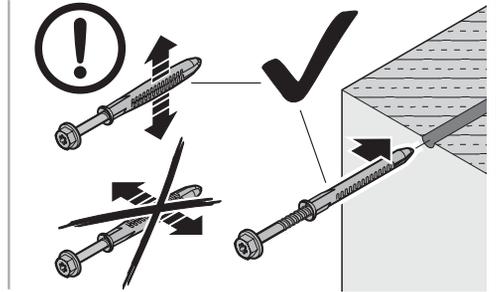
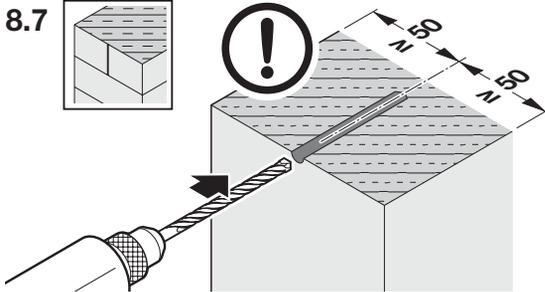


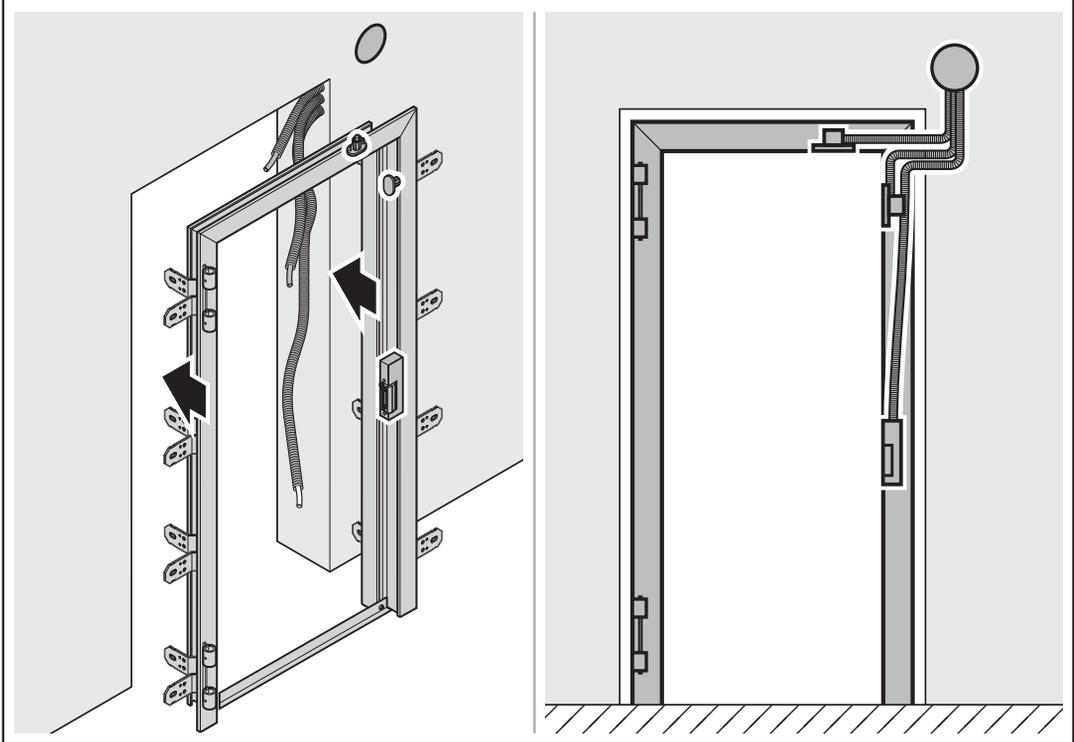
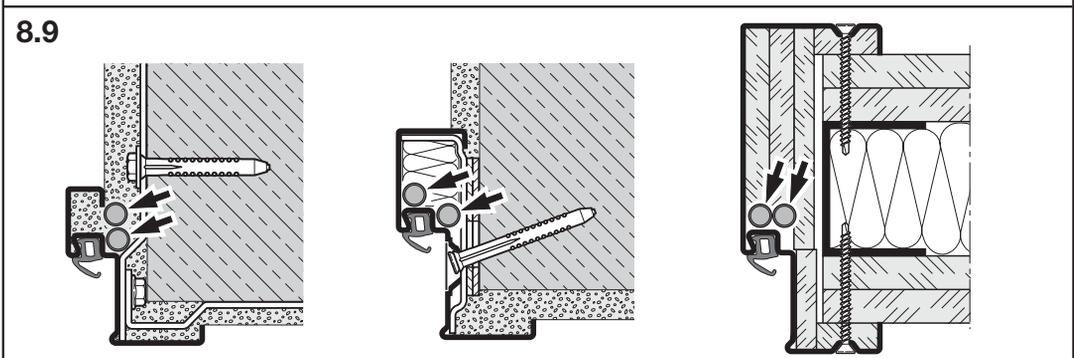
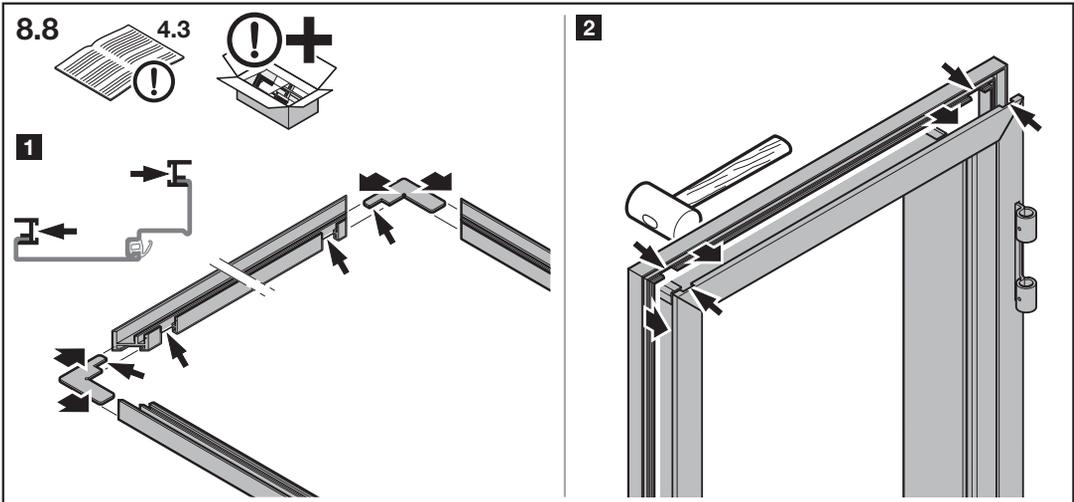
8.6e

4.3



8.7





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

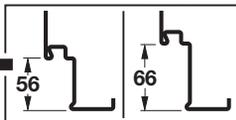
x

x

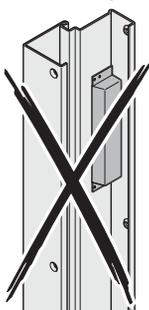
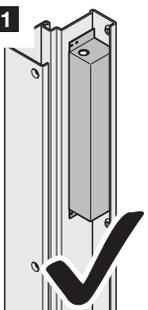
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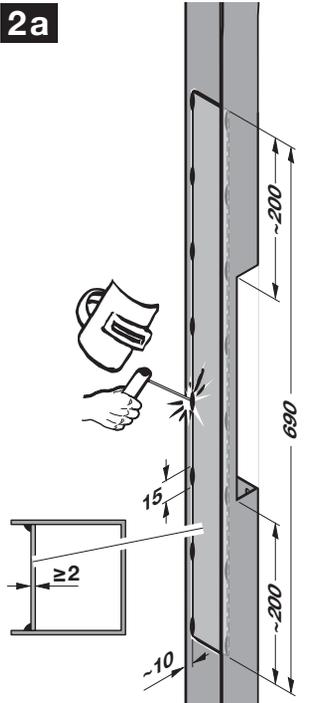
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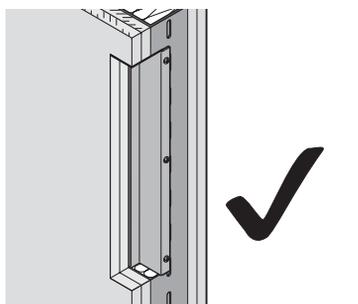
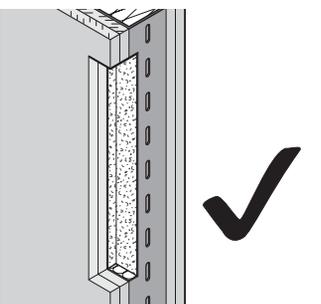
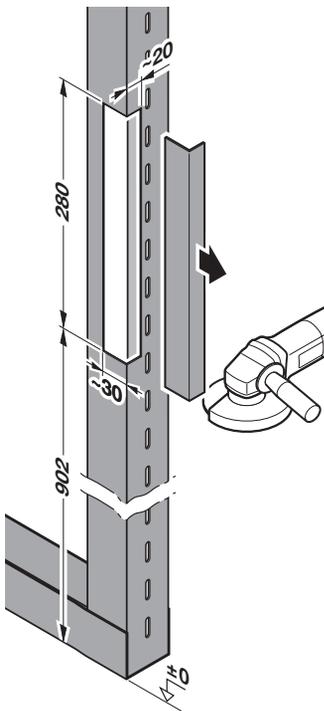
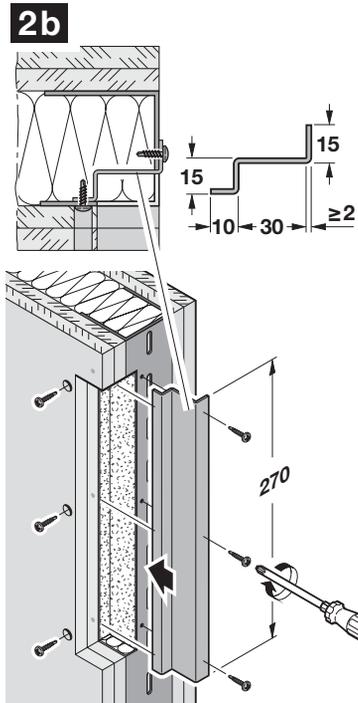
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2a



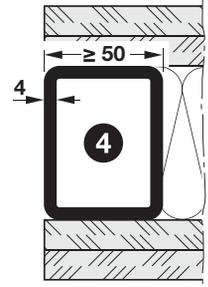
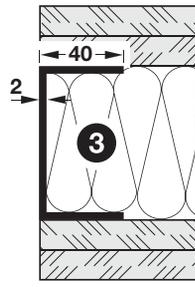
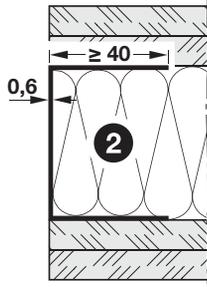
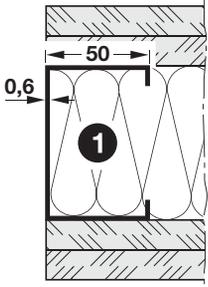
2b



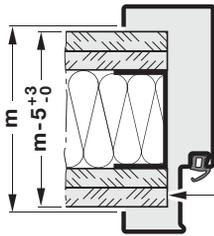
8.12

4.2

8.10

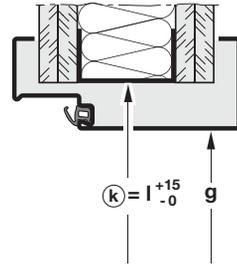
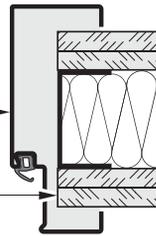


i www.felko-systeme.de/teleskopstuetzen.php

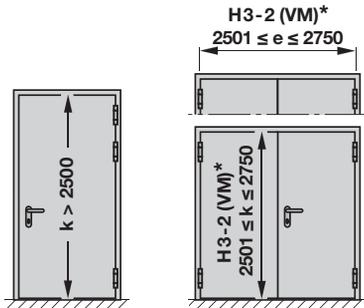
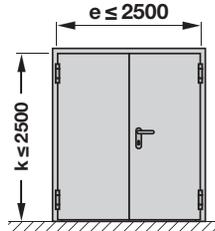
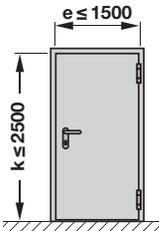


a

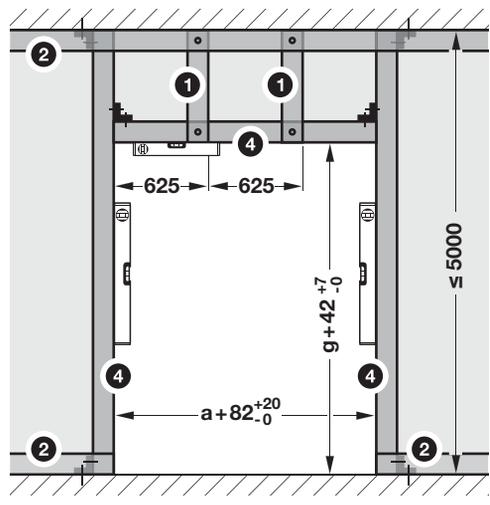
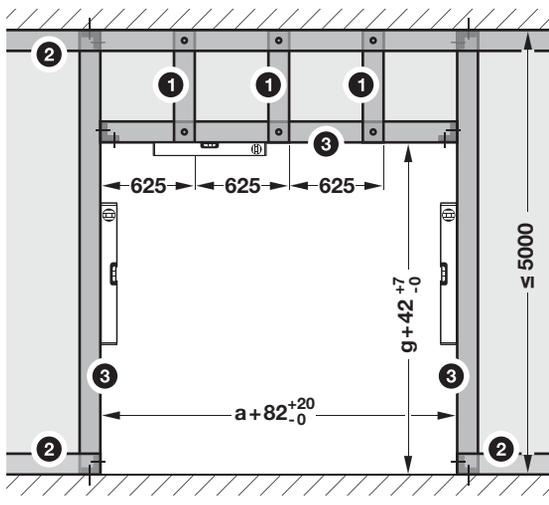
$$e = f + 20 - 0$$



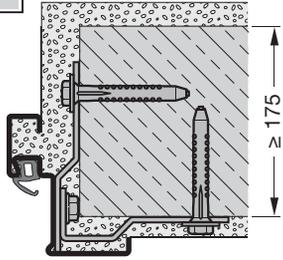
$$k = l + 15 - 0$$



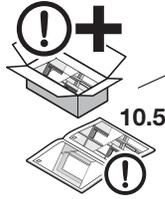
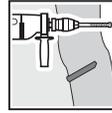
* www.felko-systeme.de/teleskopstuetzen.php



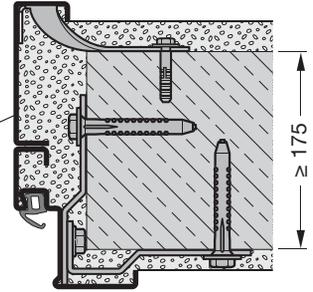
9/A1



9/A2



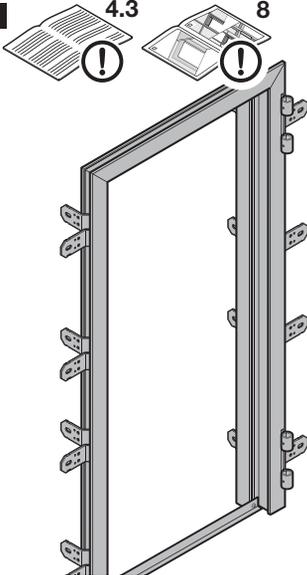
10.5



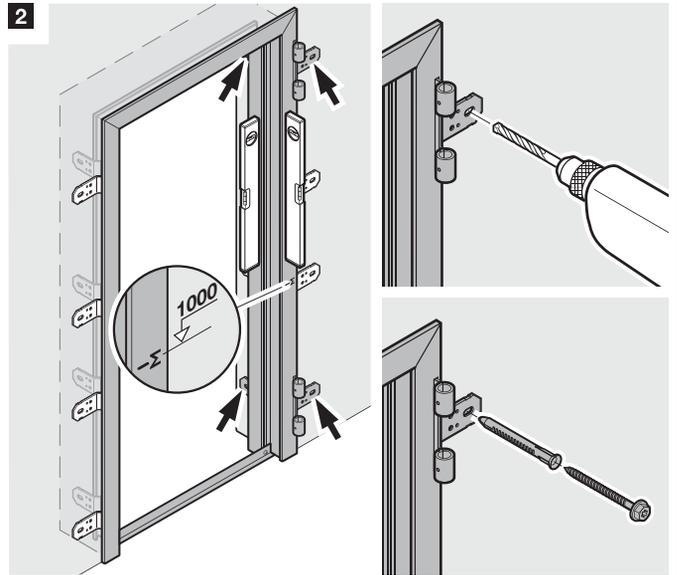
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4.3

8

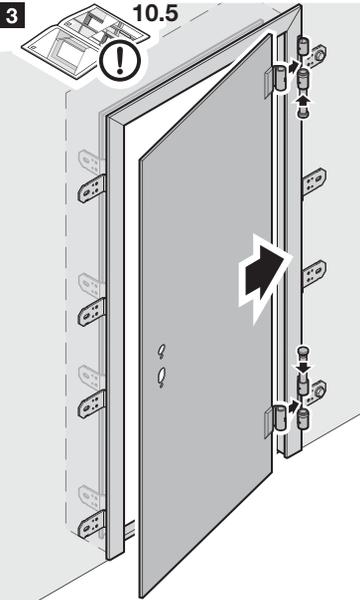


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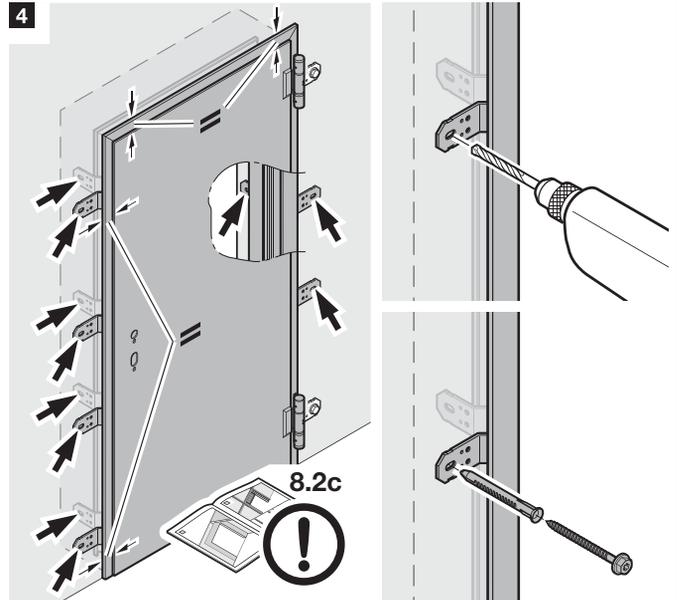


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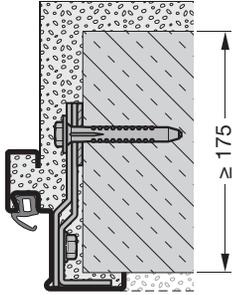
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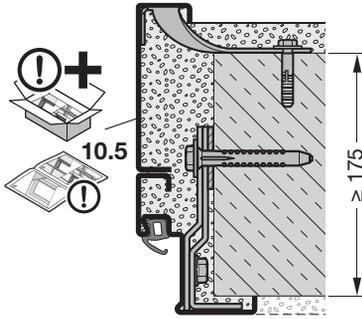
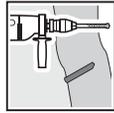
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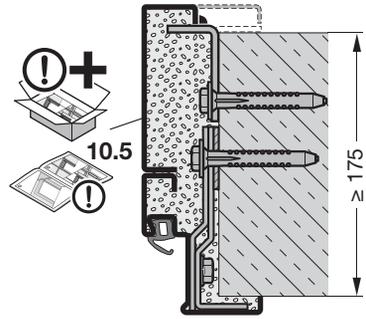
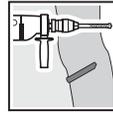
9/A3



9/A4



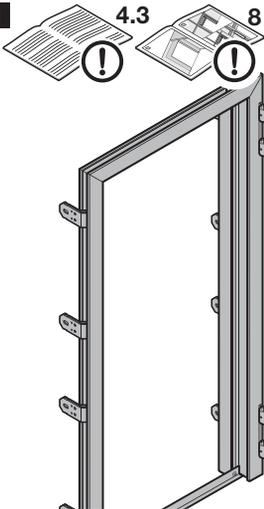
9/A5



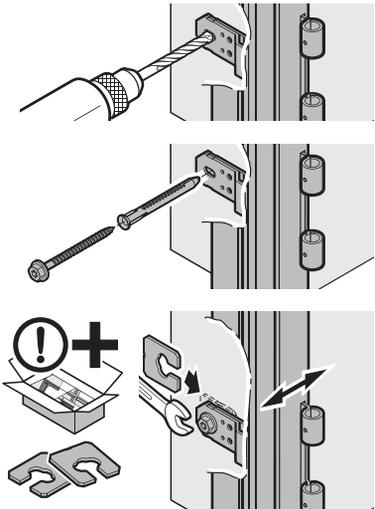
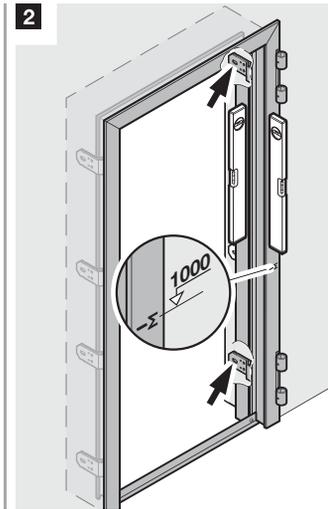
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4.3

8

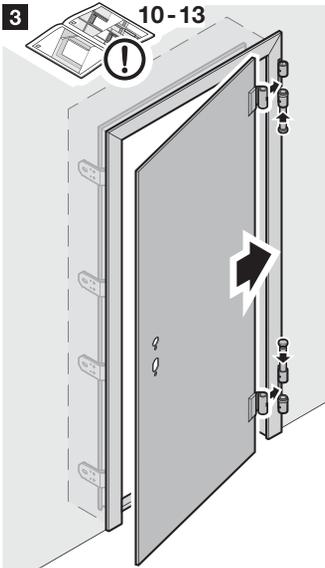


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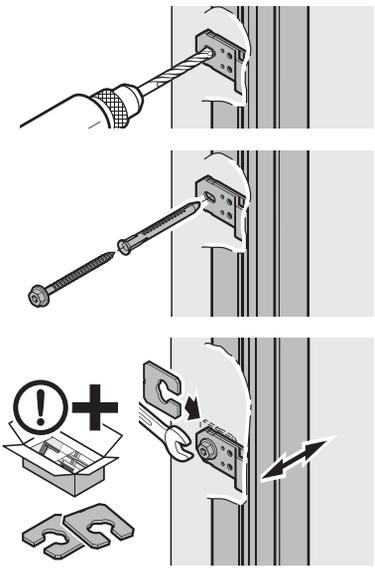
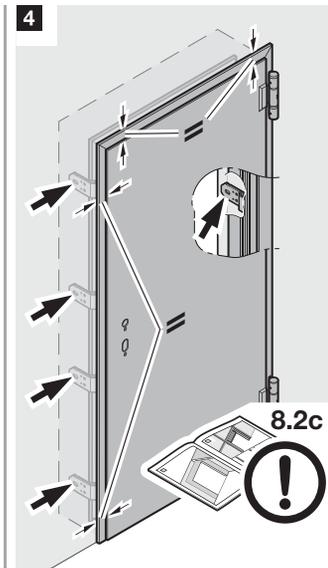


3

10-13



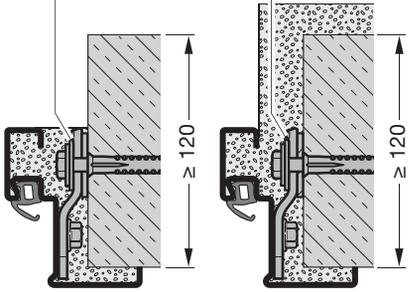
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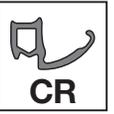
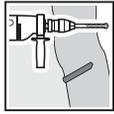
9/A6



DIN 9021-8.4-140 HV

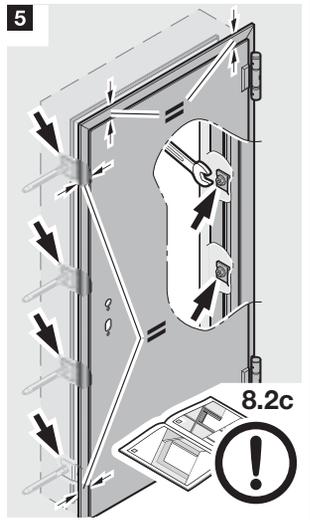
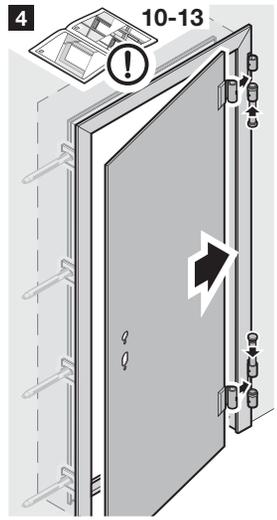
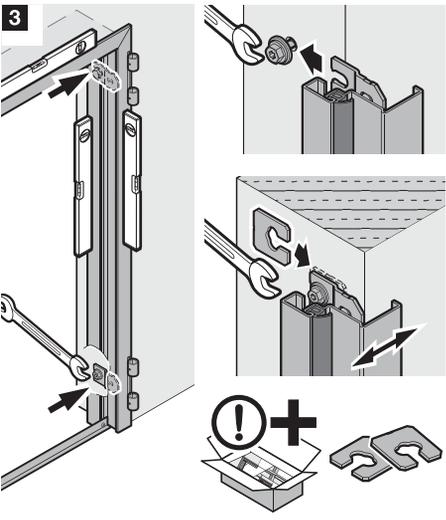
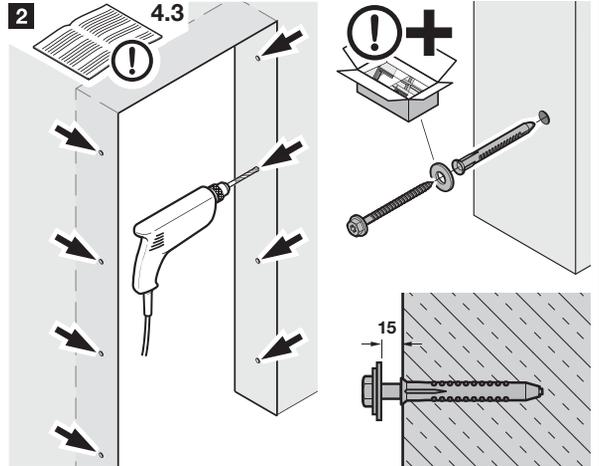
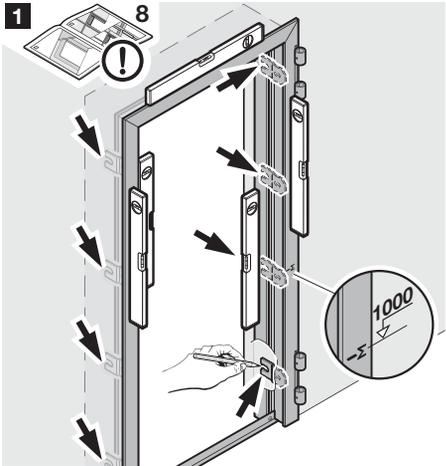
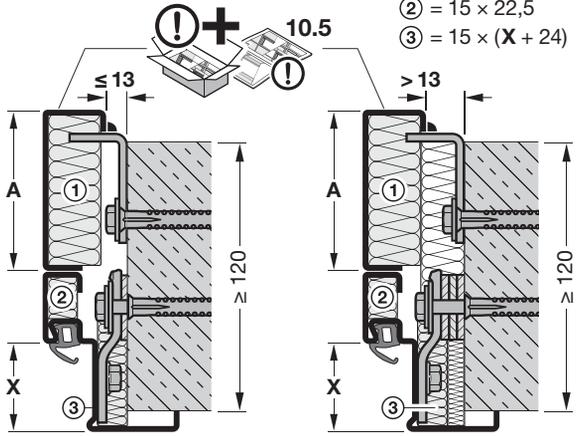


9/A7
max. T30

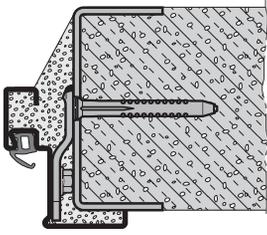


$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100

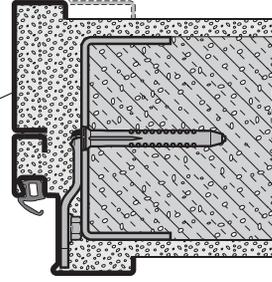
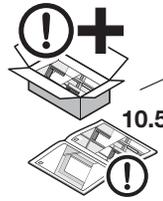
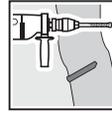
- ① = $30 \times (A - 5)$
- ② = $15 \times 22,5$
- ③ = $15 \times (X + 24)$



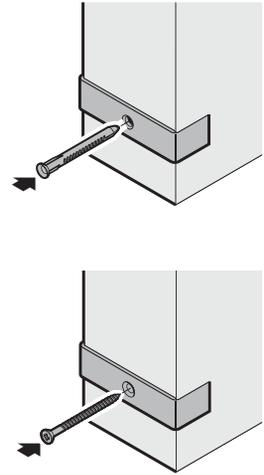
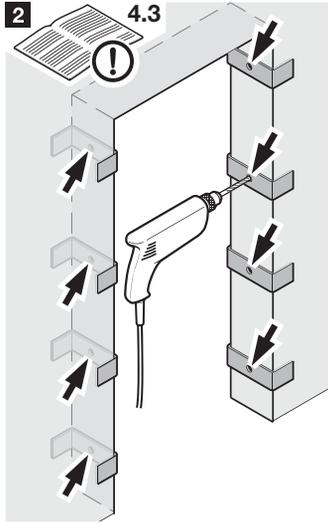
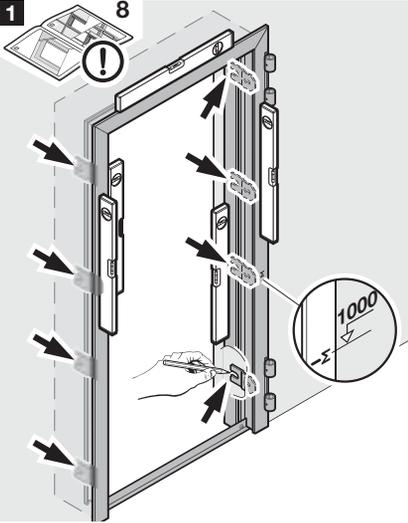
9/A8



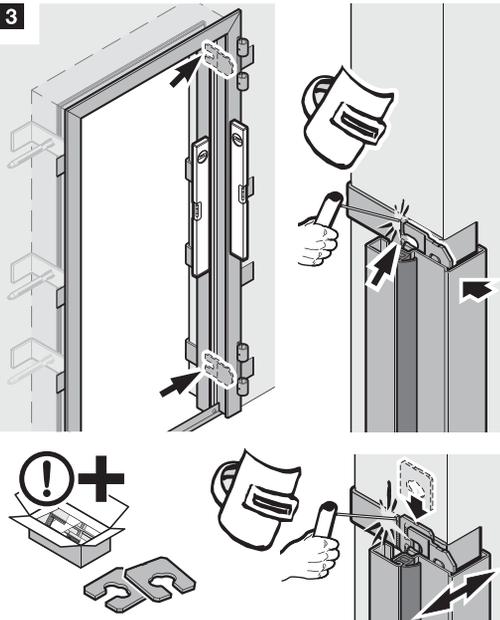
9/A9



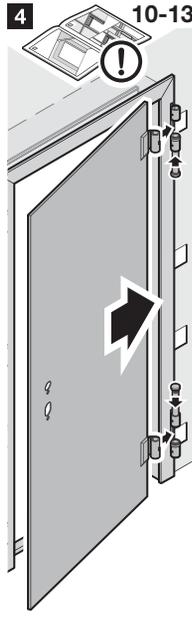
1 8



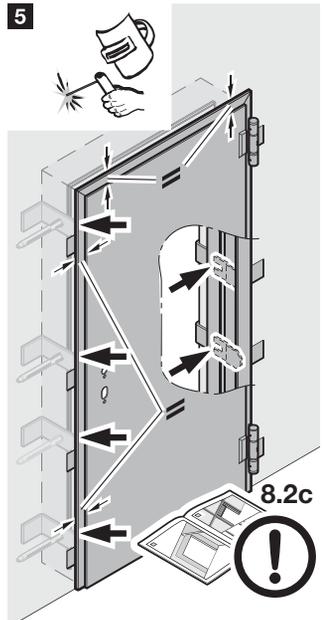
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4 10-13

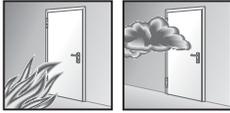


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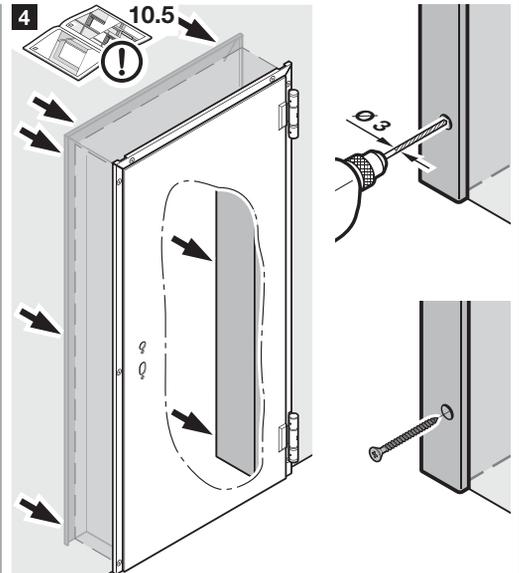
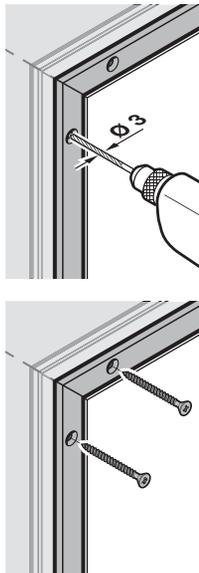
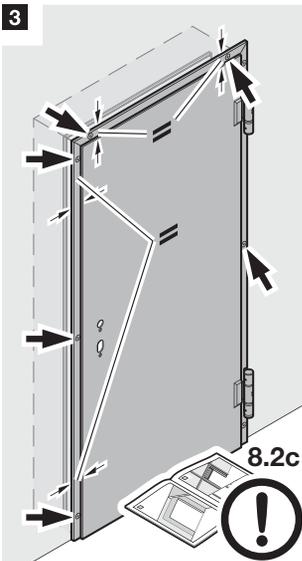
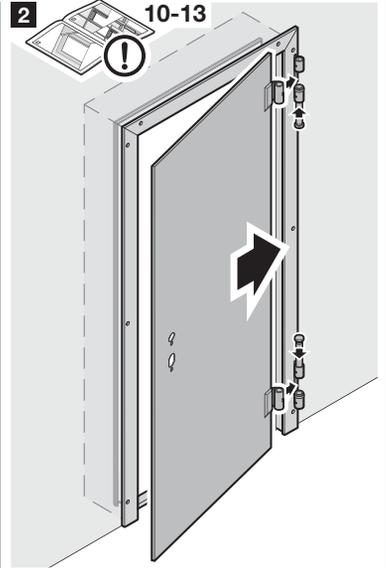
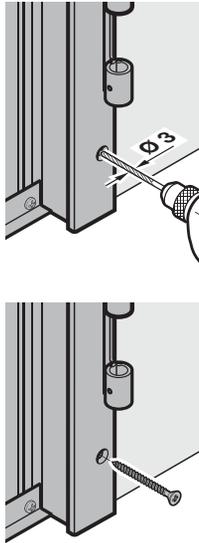
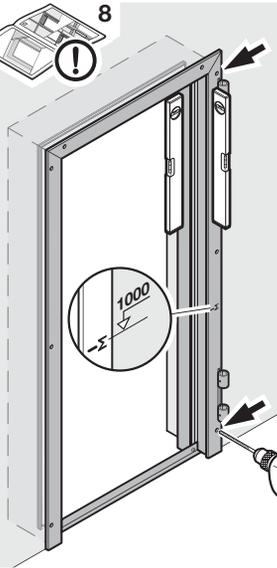
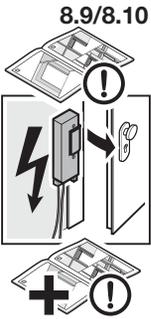
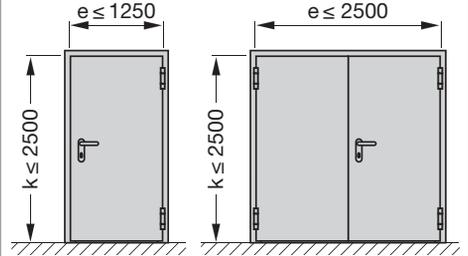
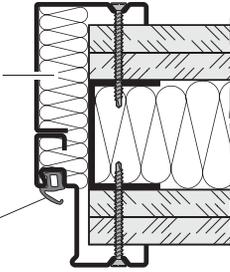
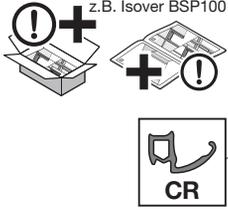


9/A10

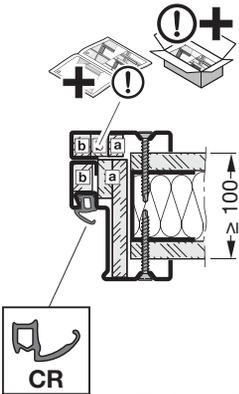
max. T30/
EI₂₃₀



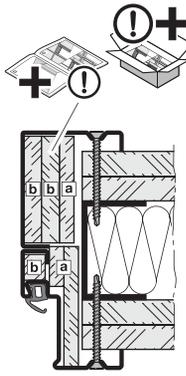
$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



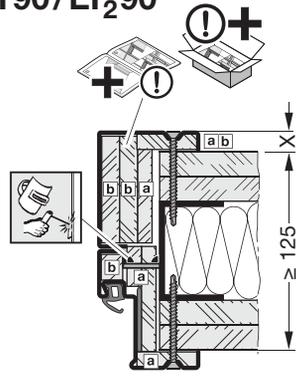
9/A11



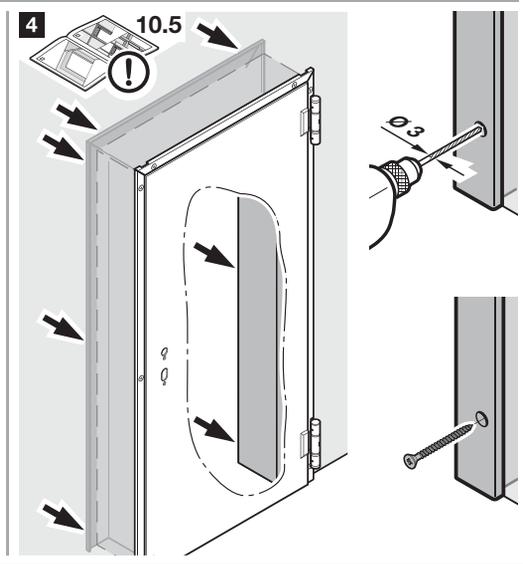
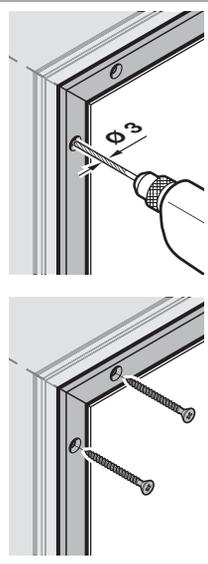
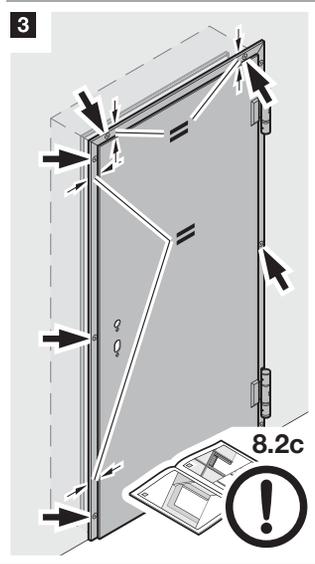
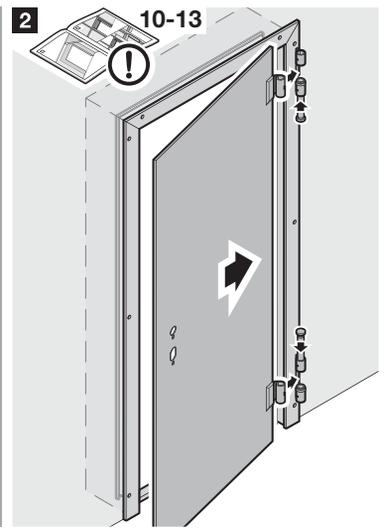
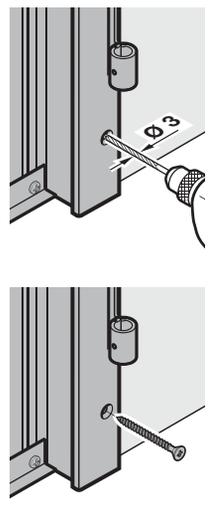
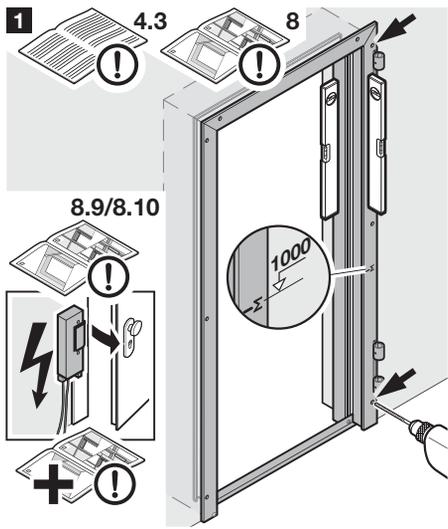
9/A12



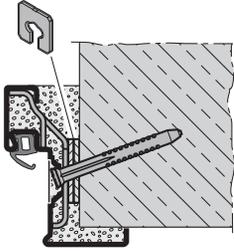
9/A13
T90/EI₂90



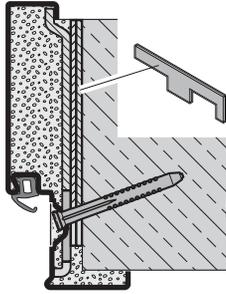
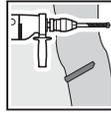
a A-9,5-EN 520 / b A-12,5-EN 520 / X = 10 → a / X = 15 → b



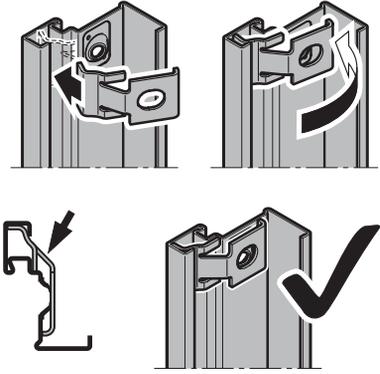
9/A14
max. T30/
EI₂30



9/A15
max. T90/
EI₂90



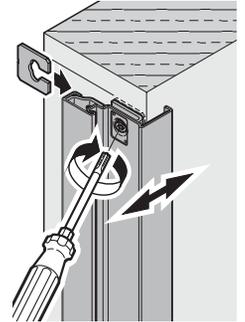
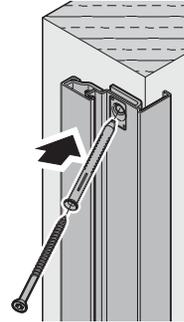
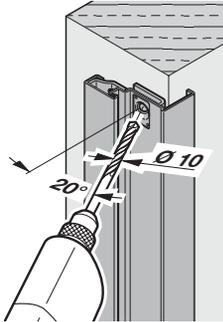
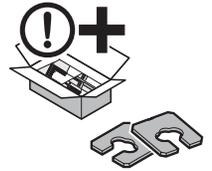
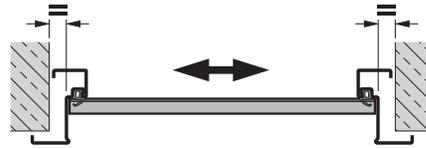
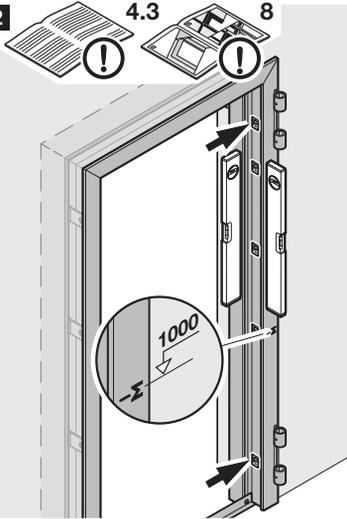
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2

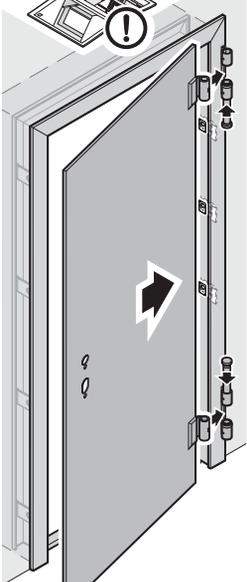
4.3

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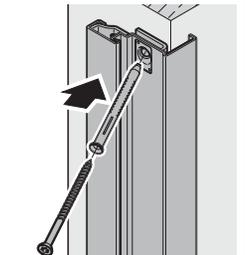
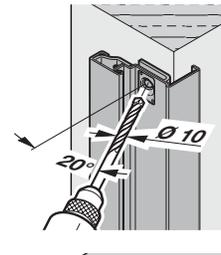
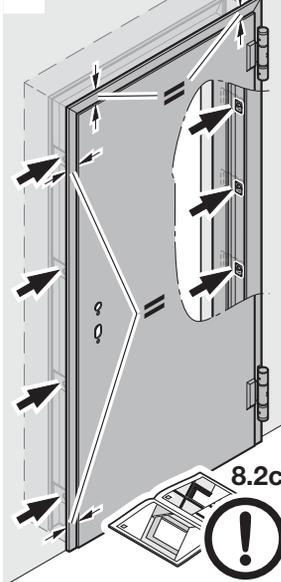


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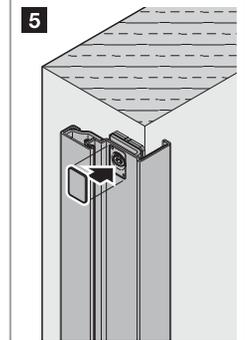
10-13



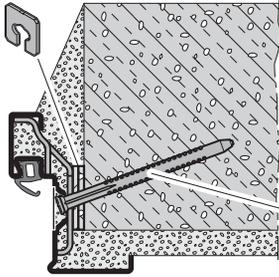
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5

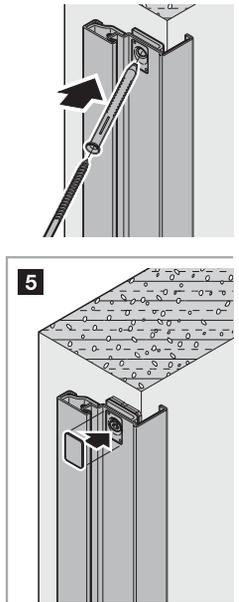
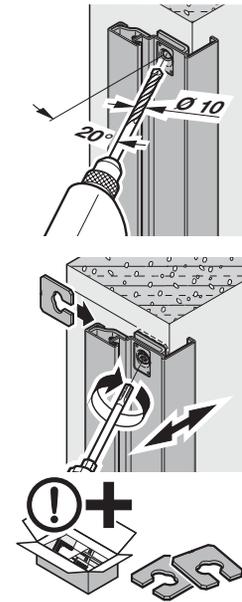
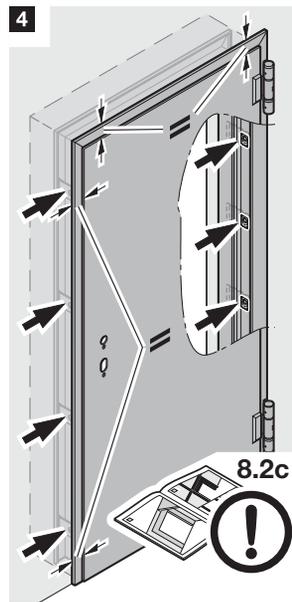
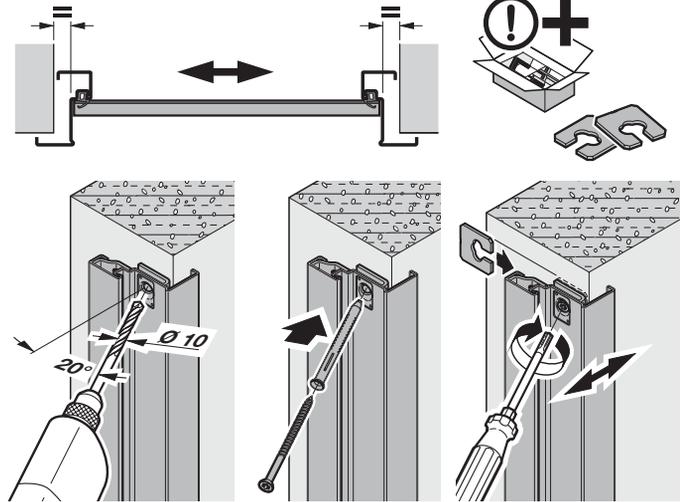
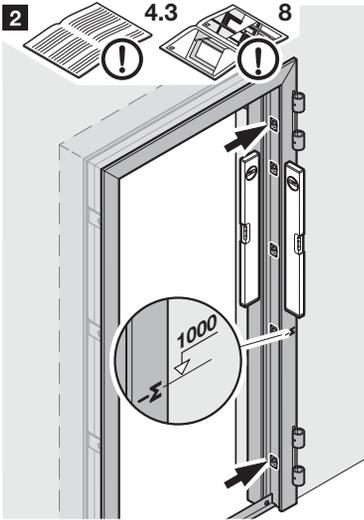
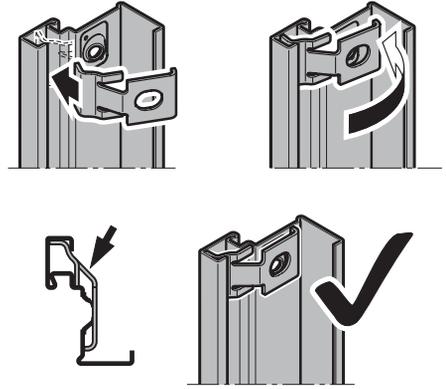


9/A16
max. T30



FUR 10 x 160

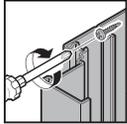
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9/A17

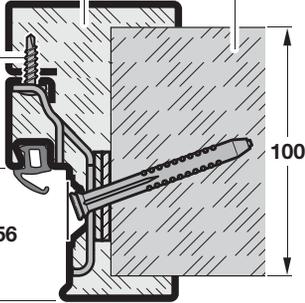


Multi Gips
FG70

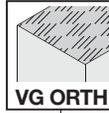


DIN 7504 ST
4,8 x 19-N-H
DIN 7981
4,8 x 16

max. 56

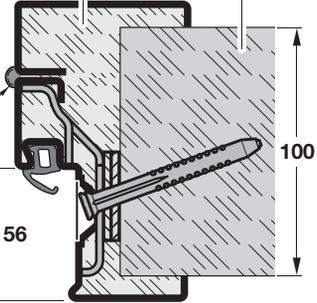


Multi Gips
FG70

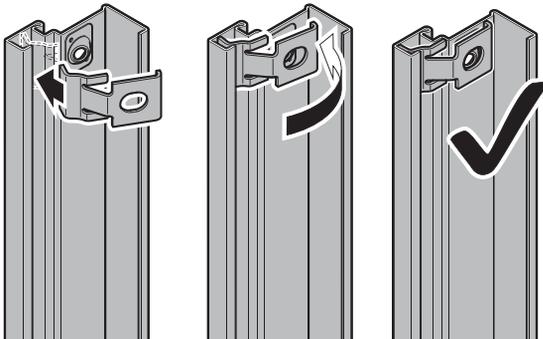
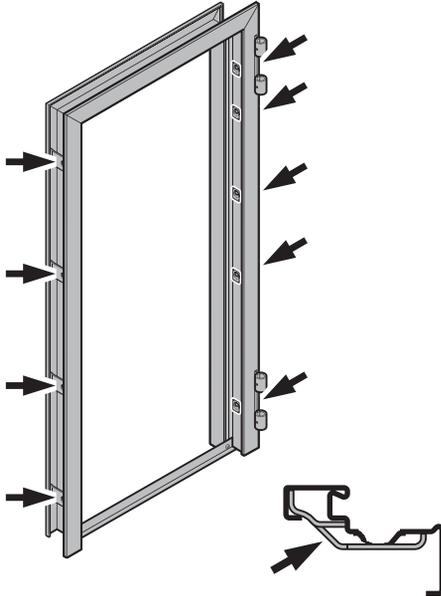


$2\sqrt{x} > 10$

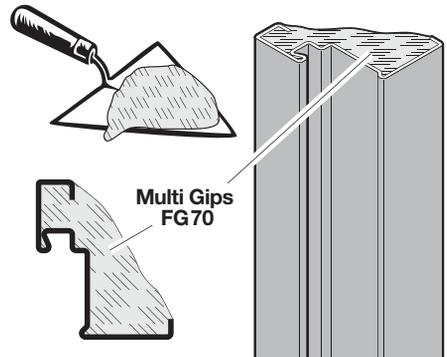
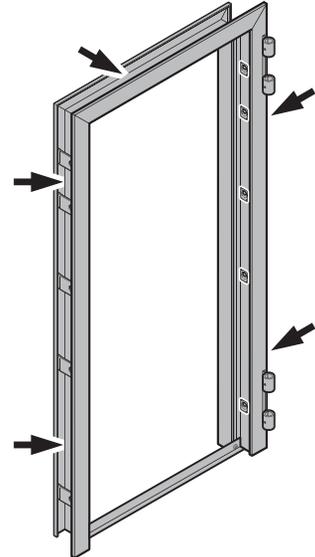
max. 56



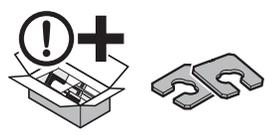
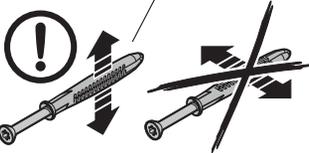
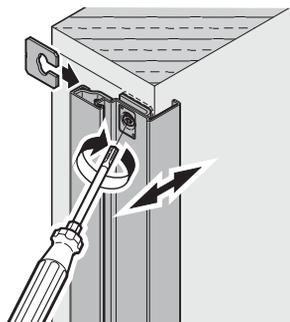
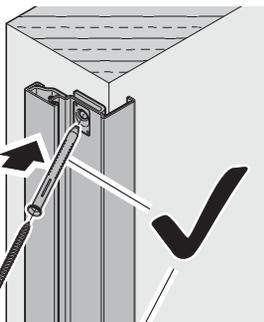
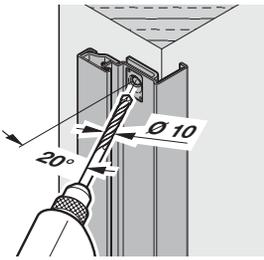
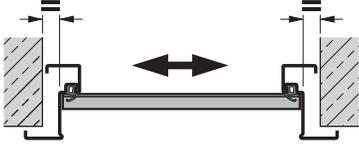
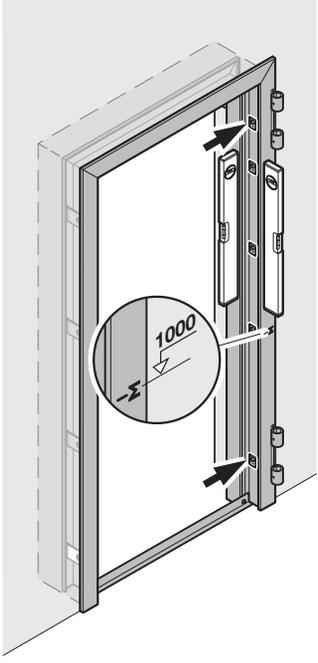
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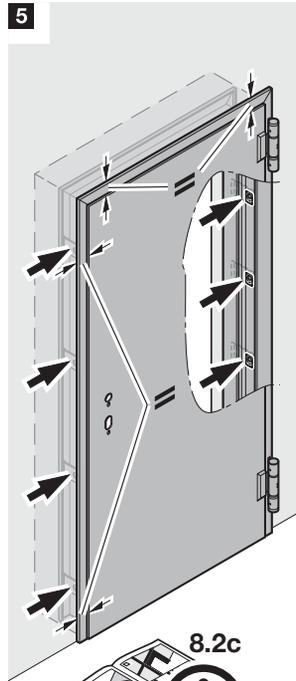
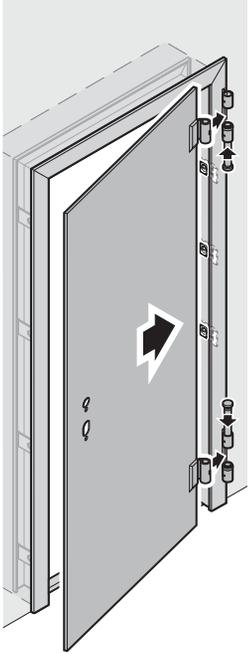
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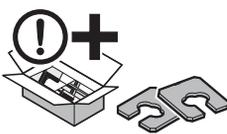
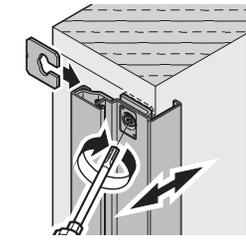
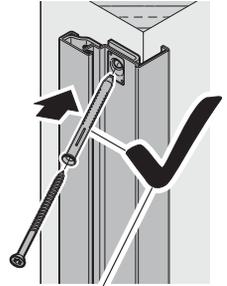
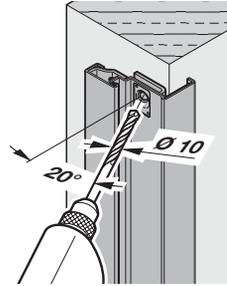
3 4.2/4.3 **8**



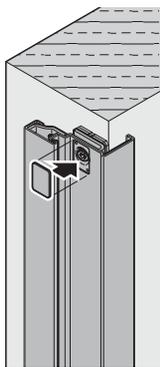
4 10-13

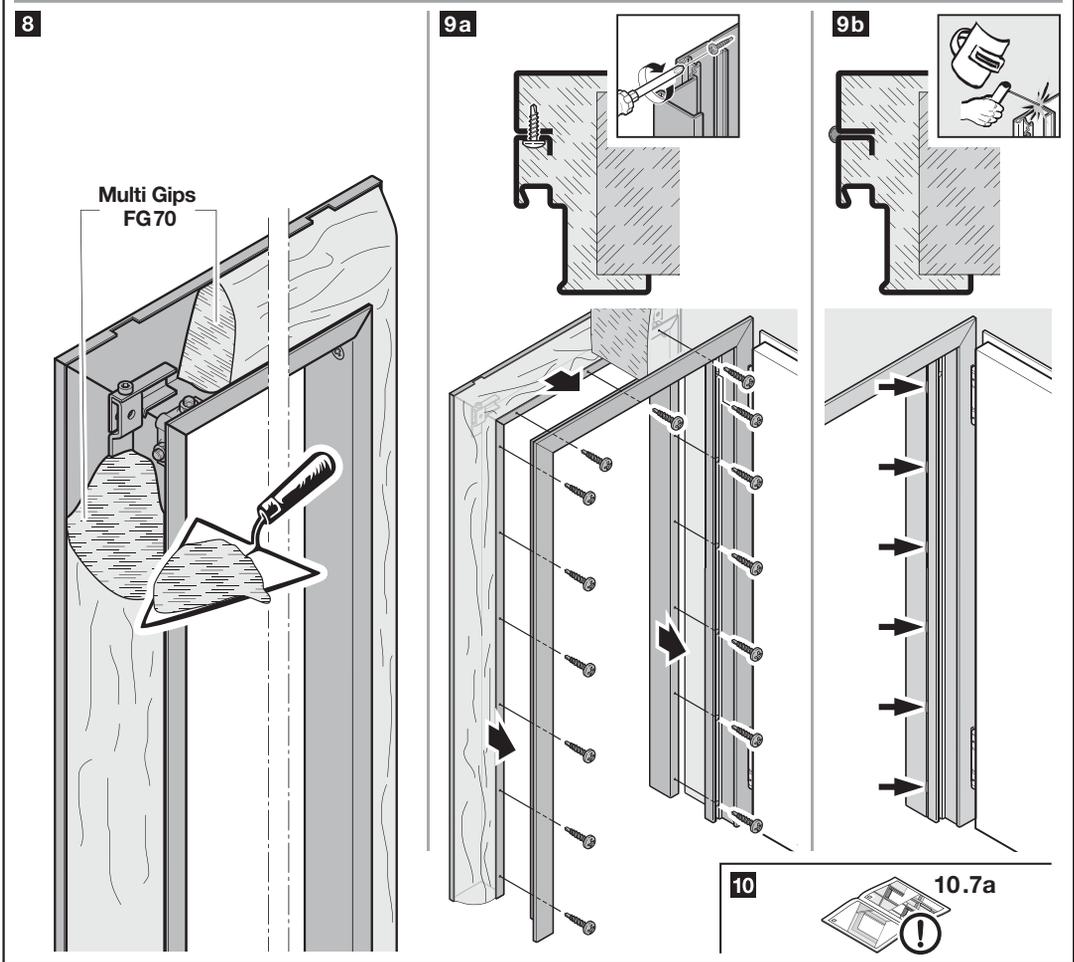
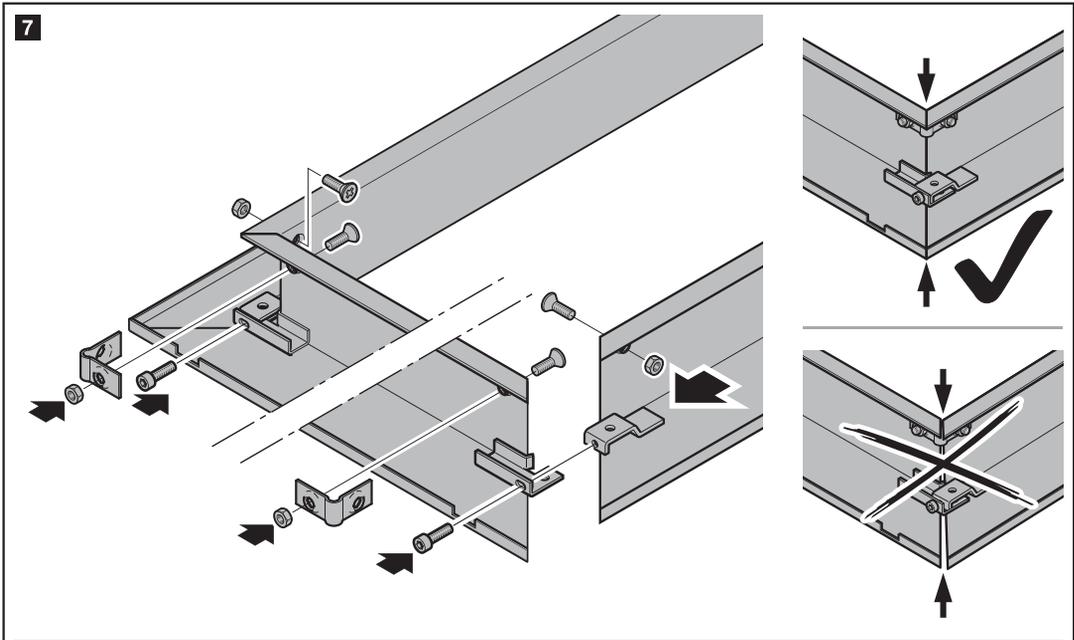


8.2c **!**



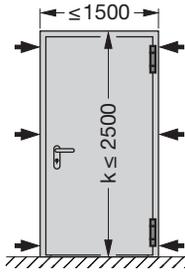
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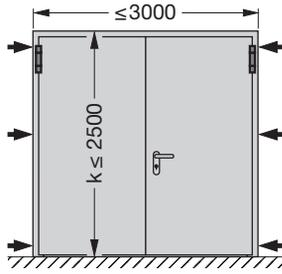


9/B1-B14

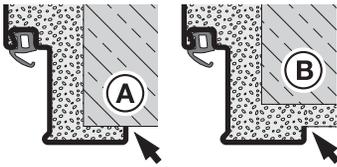
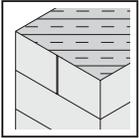
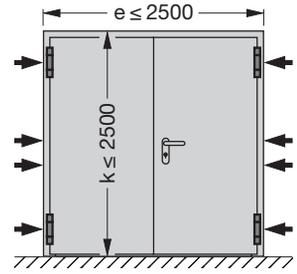
D65 - 1 OD



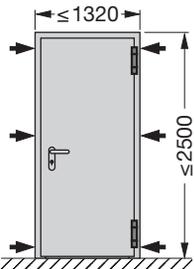
D65 - 2 OD



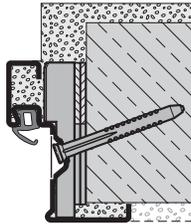
H3 - 2 OD



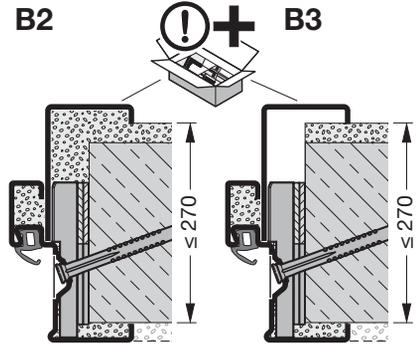
H3 - 1 OD



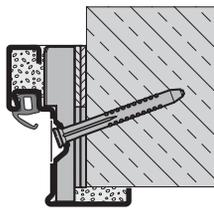
B1



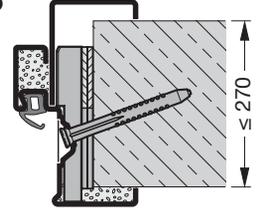
B2



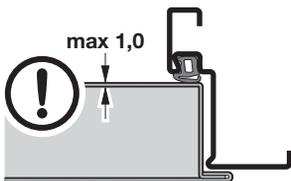
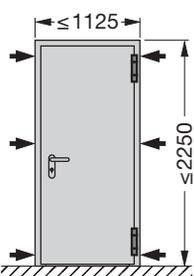
B4



B5



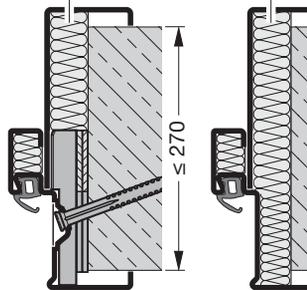
H3 - 1 OD



B6



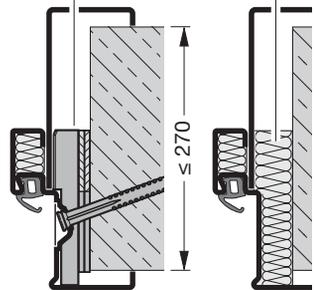
$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



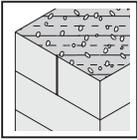
B7



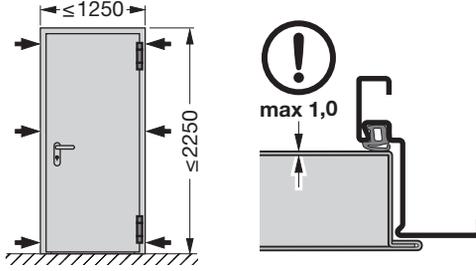
$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



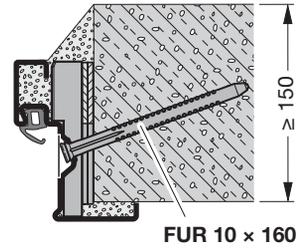
➔ 1 2 3a 4 ...



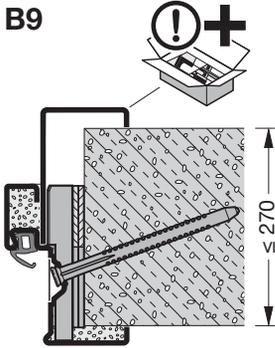
H3-1 OD



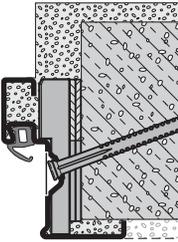
B8



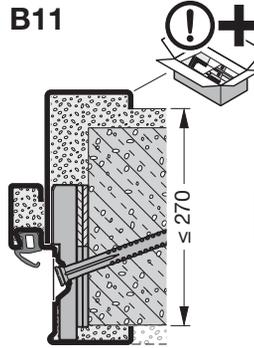
B9



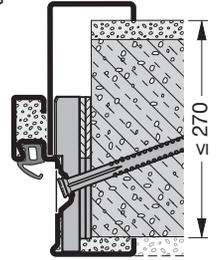
B10



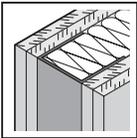
B11



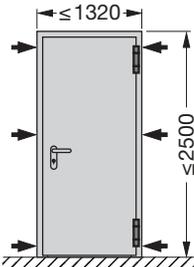
B12



➔ **1 2 3a 4 ...**



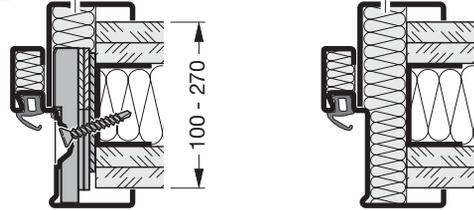
H3-1 OD



B13



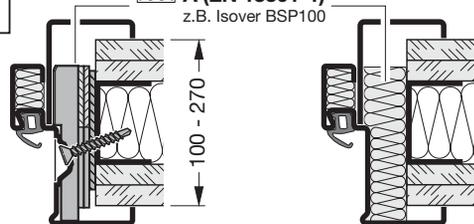
$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
 z.B. Isover BSP100



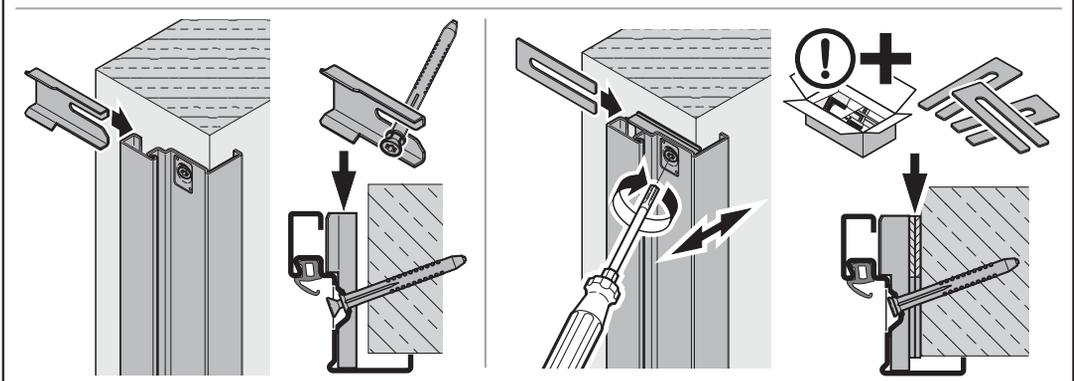
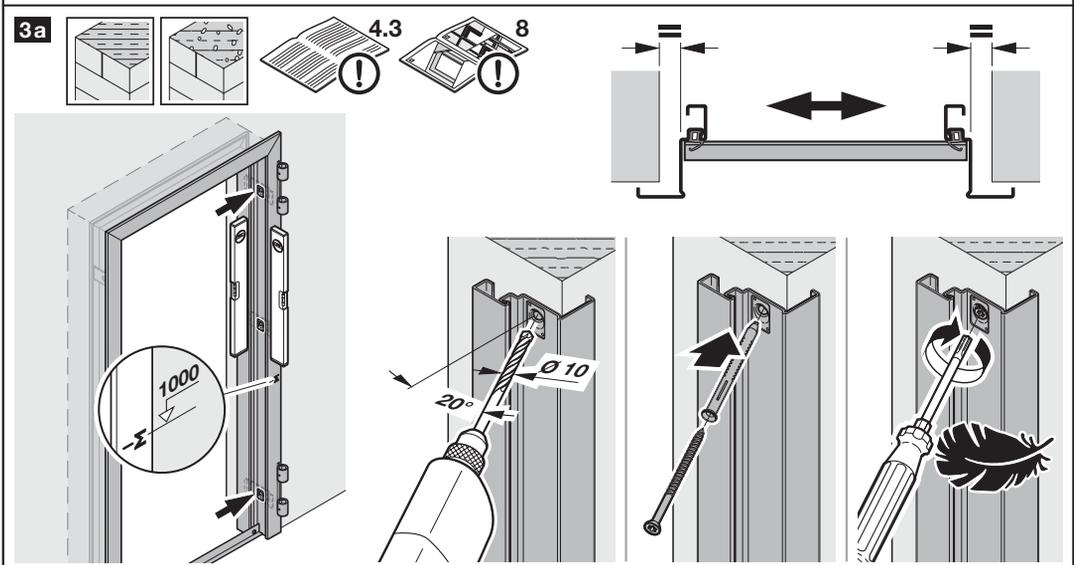
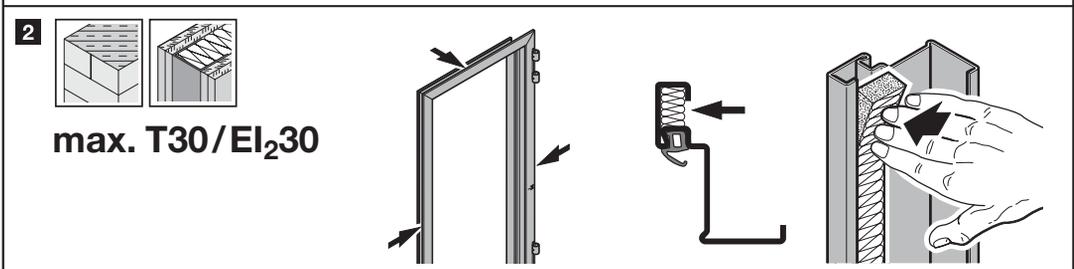
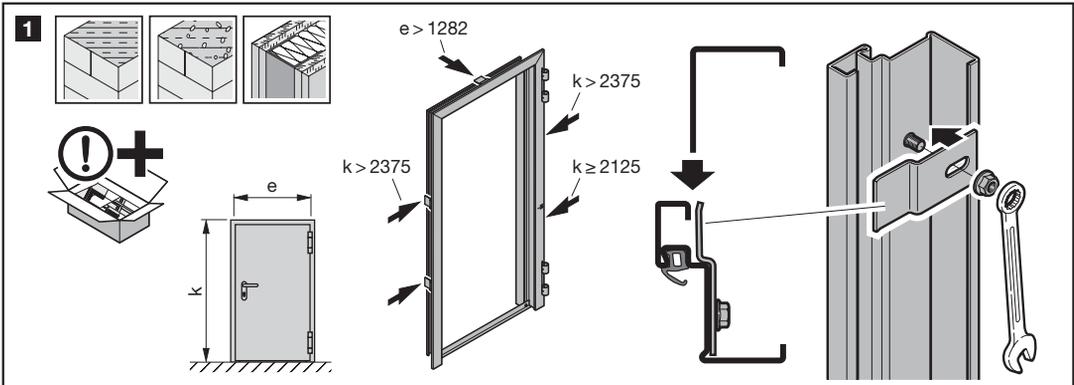
B14

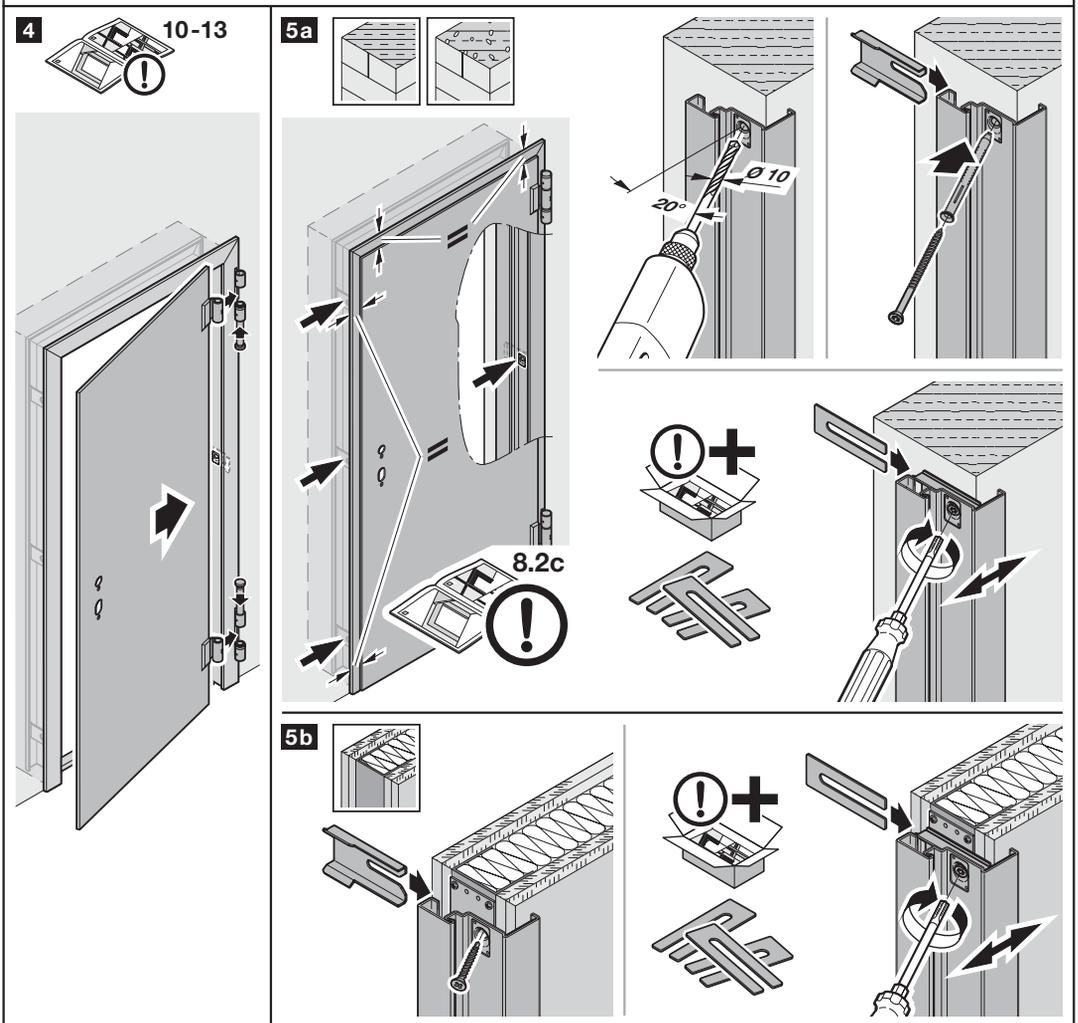
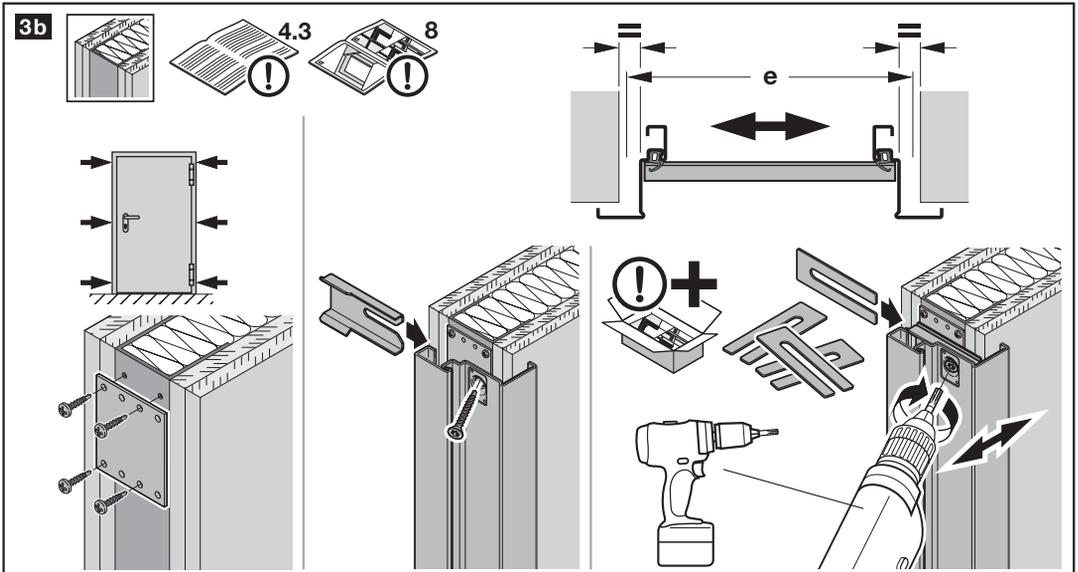


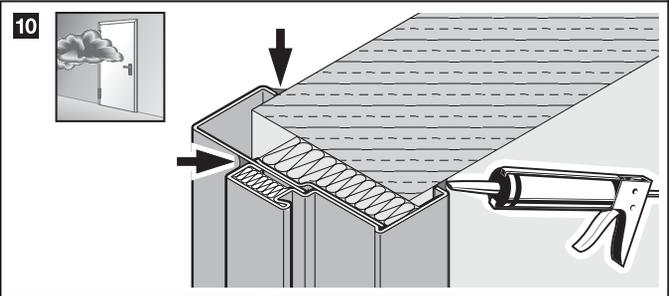
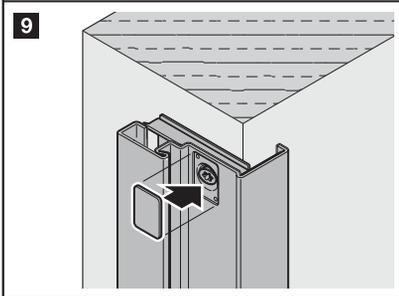
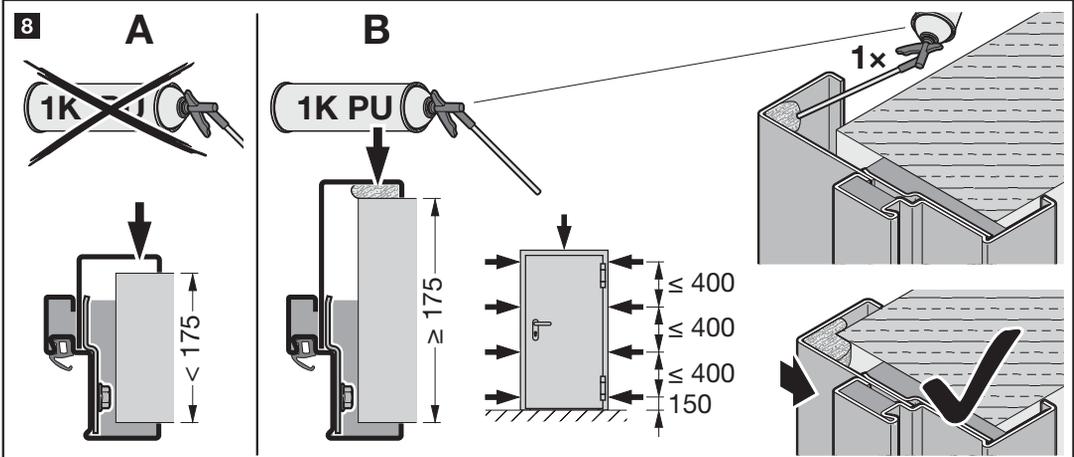
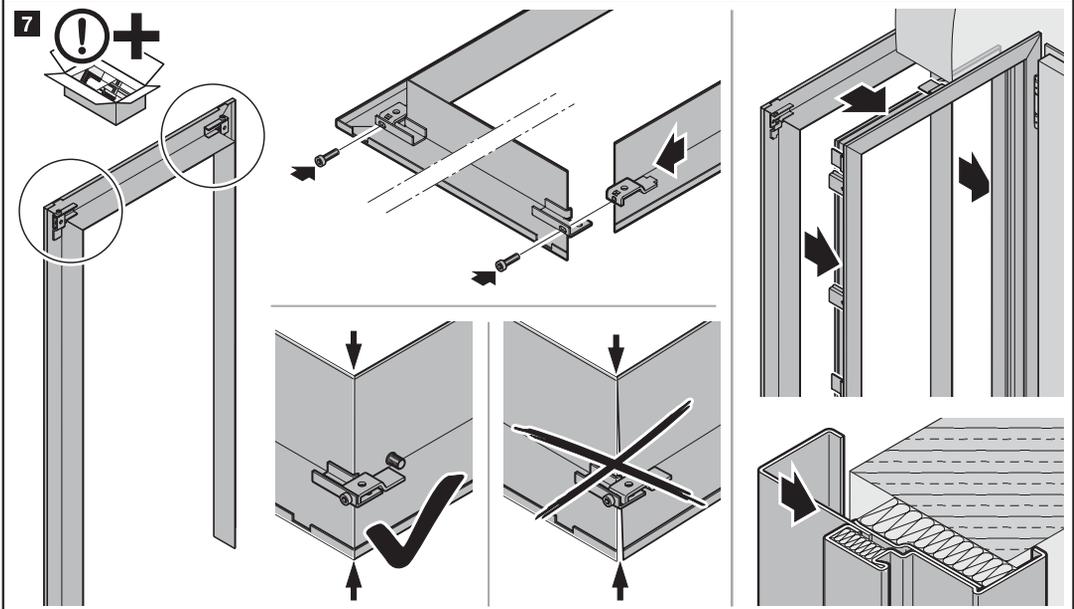
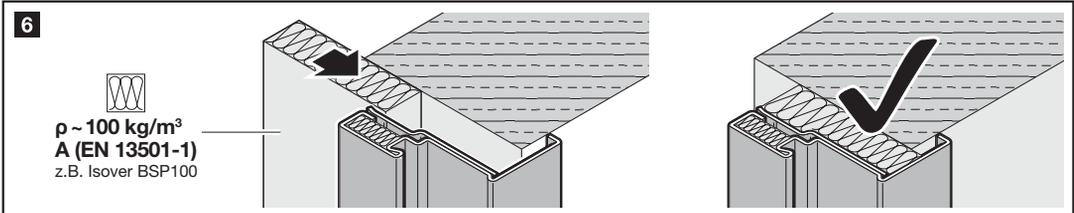
$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
 z.B. Isover BSP100



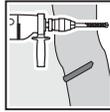
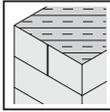
➔ **1 2 3b 4 ...**



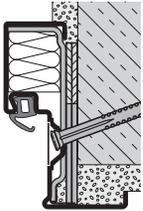




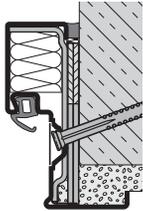
9/C1-C8
max. T30/
EI₂30



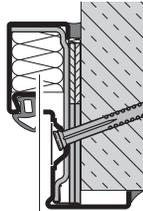
C1



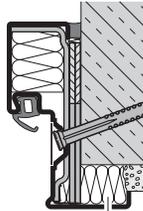
C2



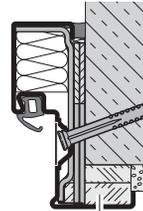
C3



C4

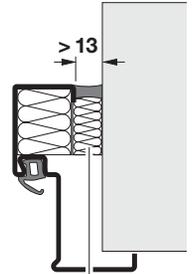


C5



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

A-EN 520

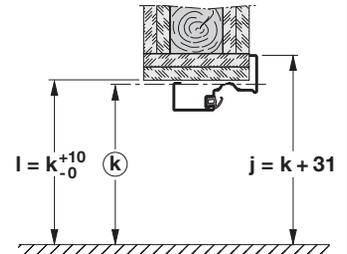
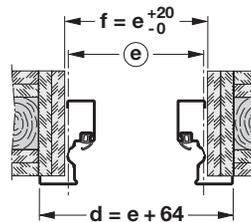


 $\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100

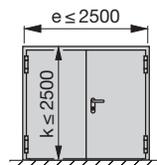
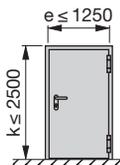
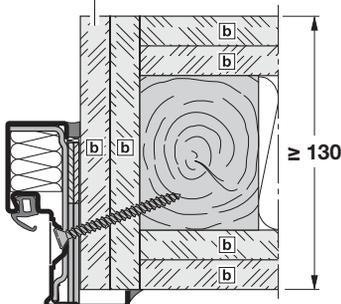
➔ 1a 2 ...

➔ 6

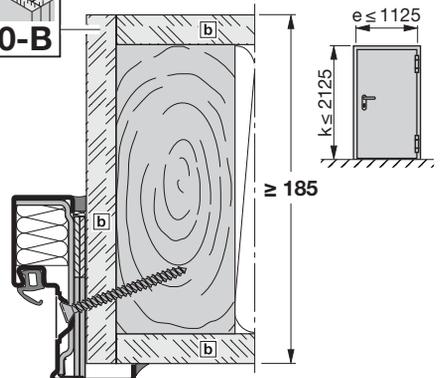
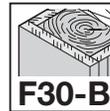
max. T30/
EI₂30



C6 F90B DIN 4102-4 Tab. 49



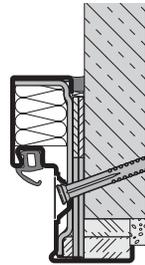
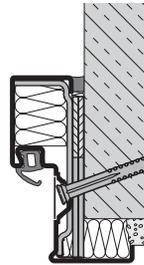
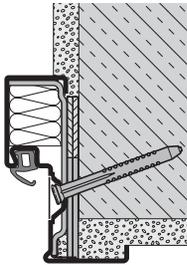
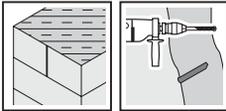
C7 F30B DIN 4102-4 Tab. 49



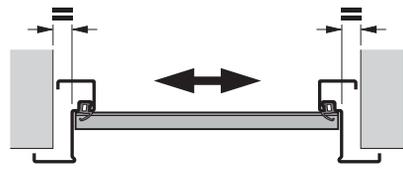
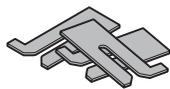
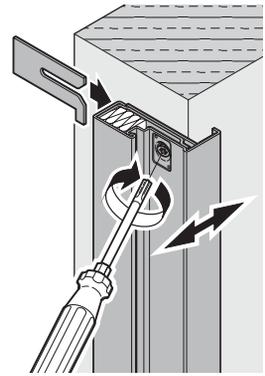
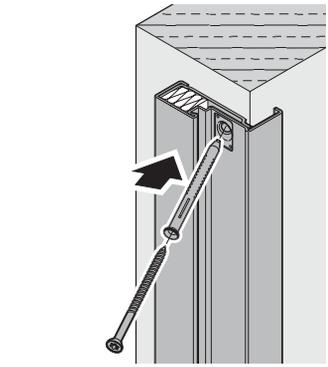
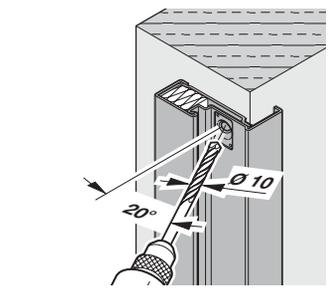
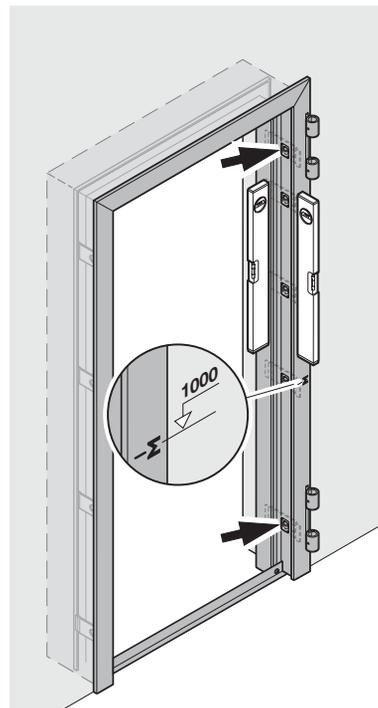
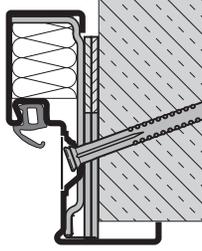
 A-12,5-EN 520

➔ 1b 2 ...

1a

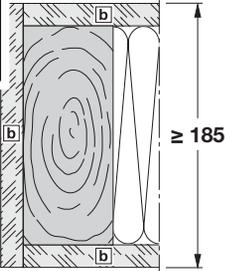
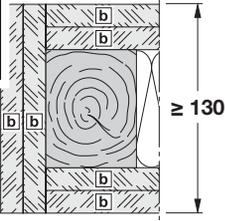


e-10

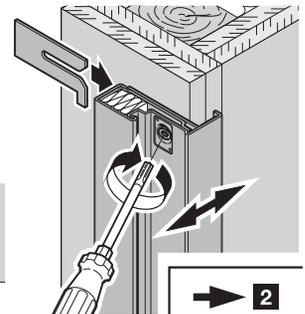
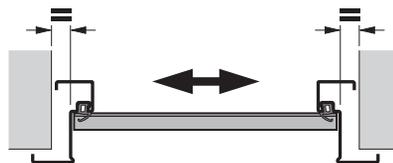
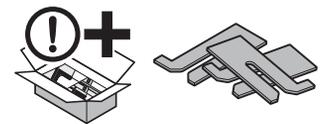
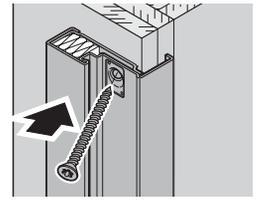
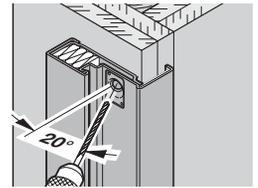
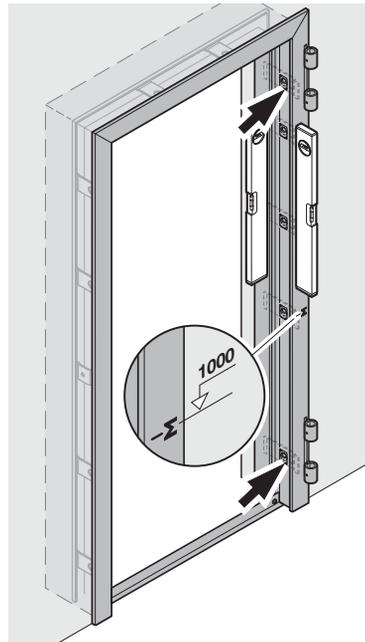
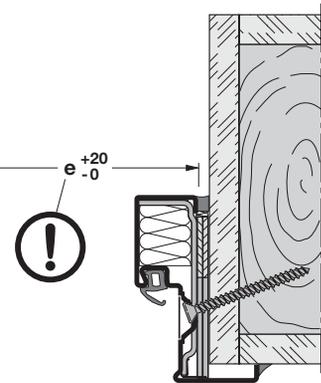
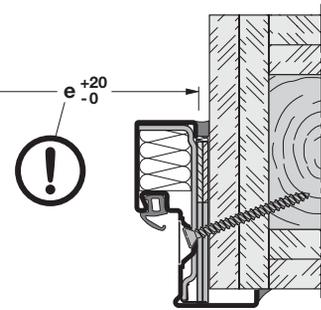
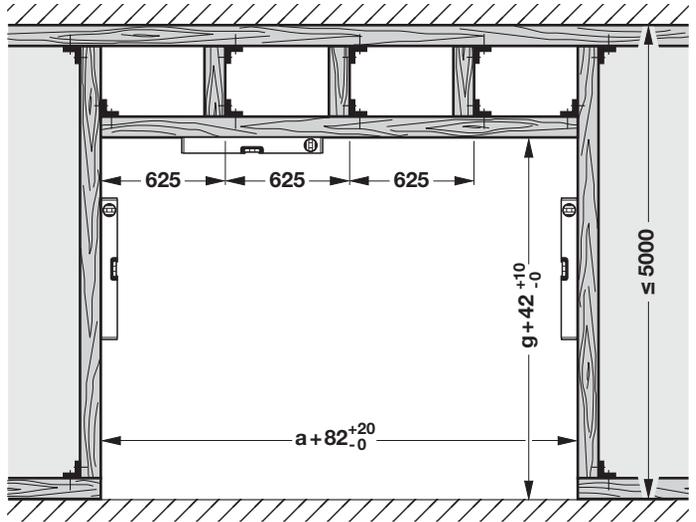
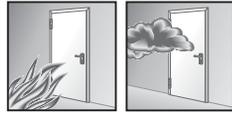


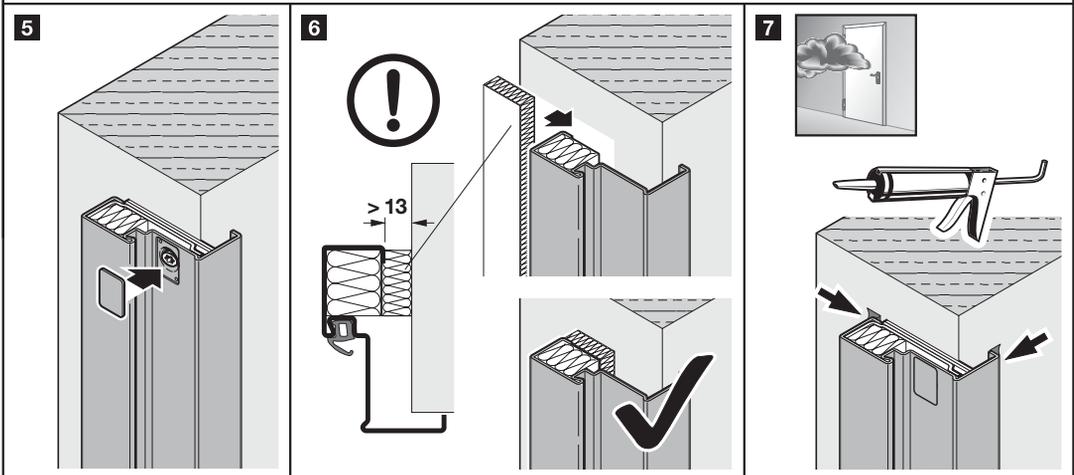
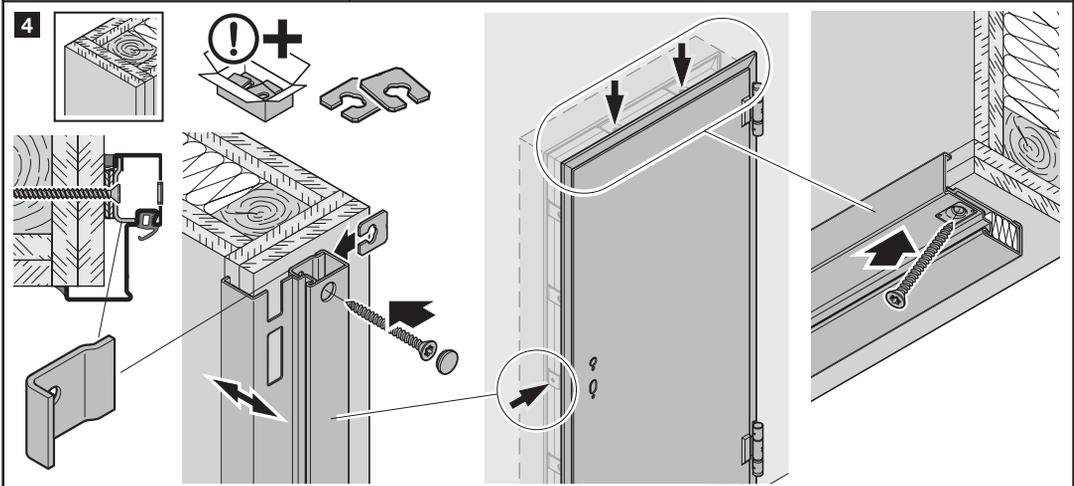
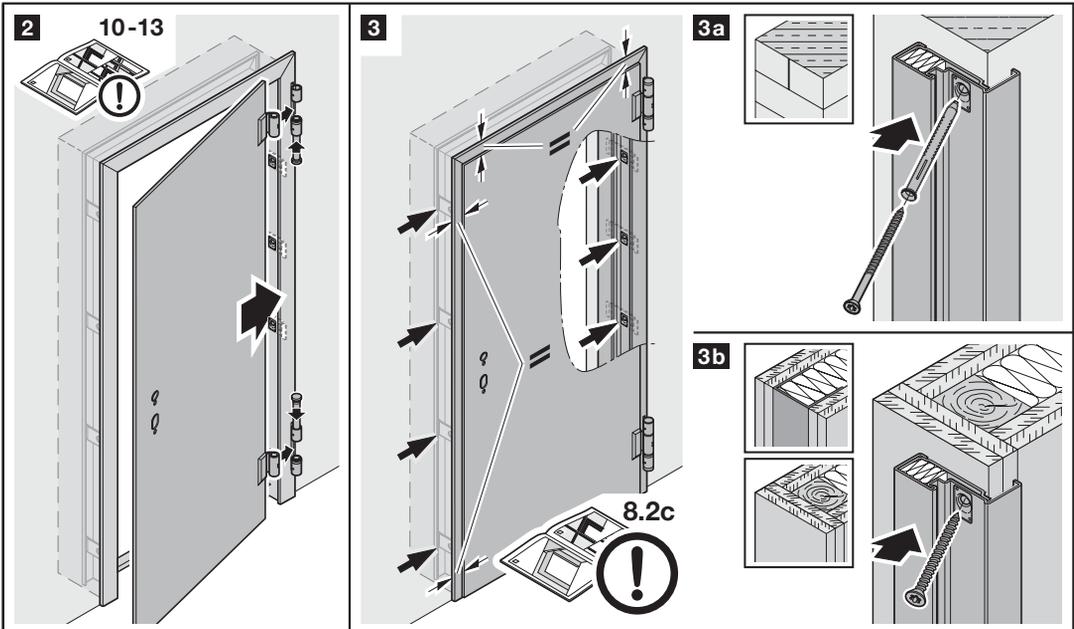
➔ 2

1b

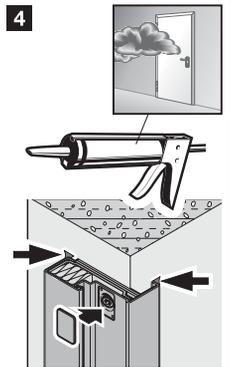
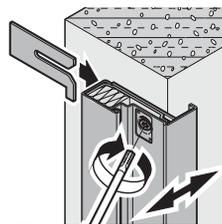
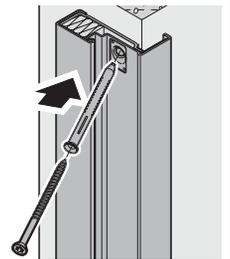
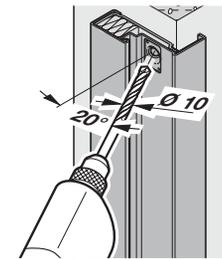
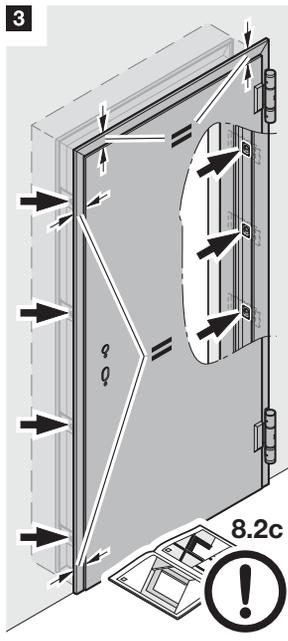
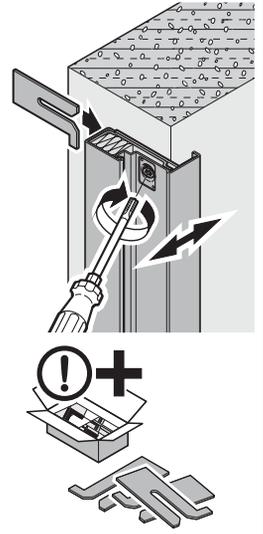
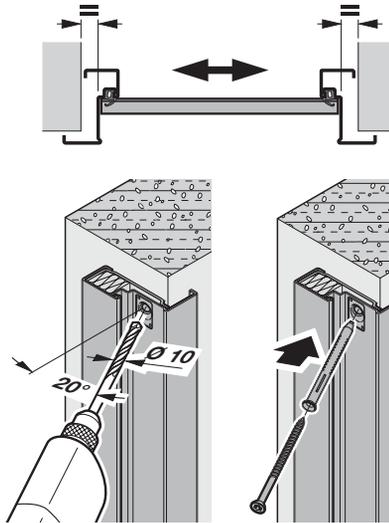
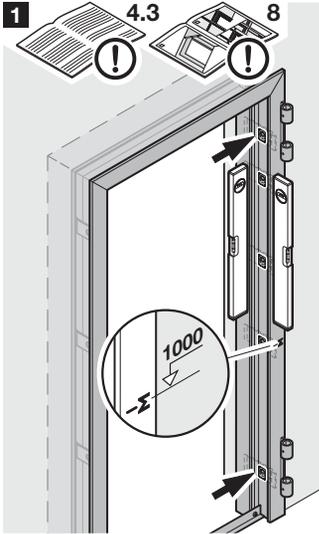
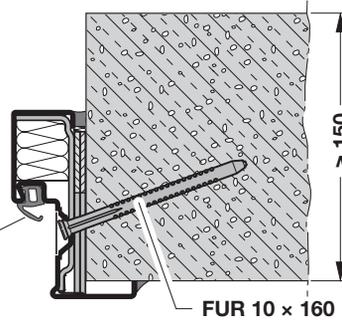


b) A-12,5-EN 520

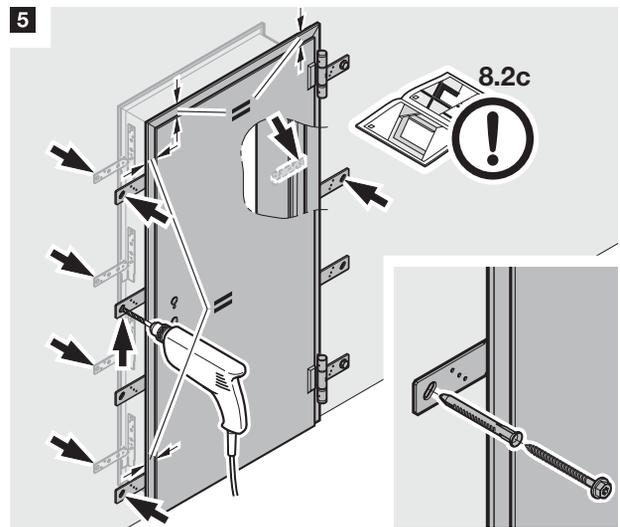
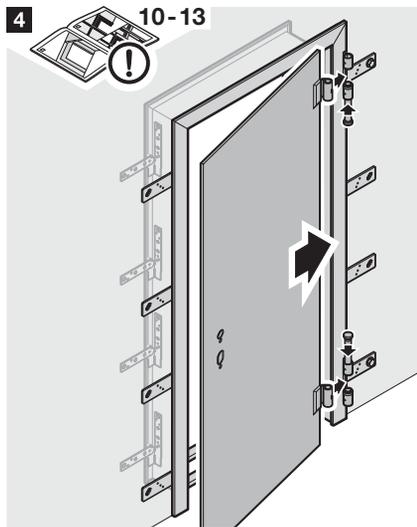
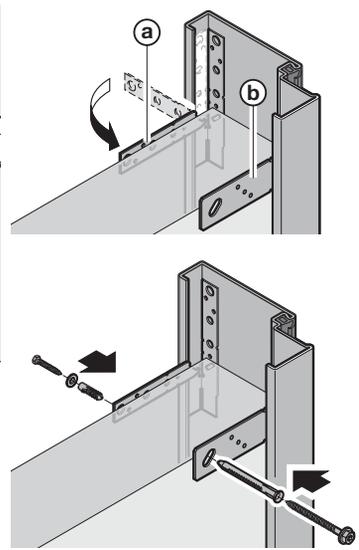
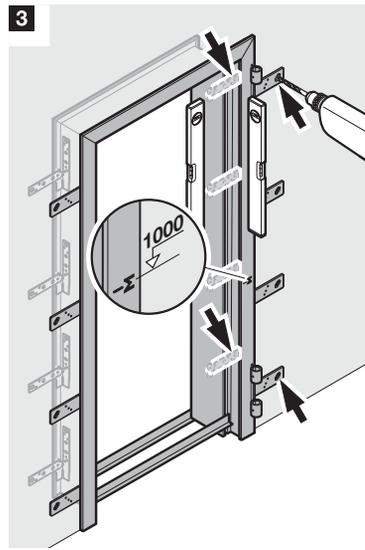
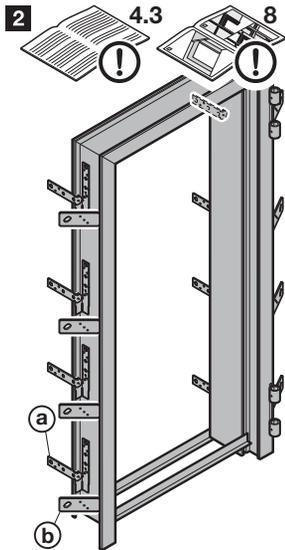
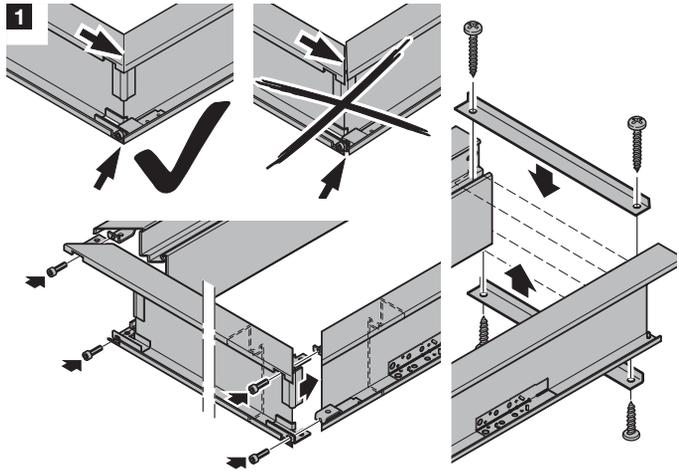
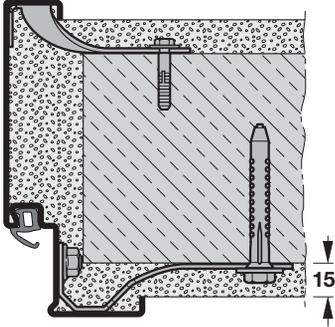


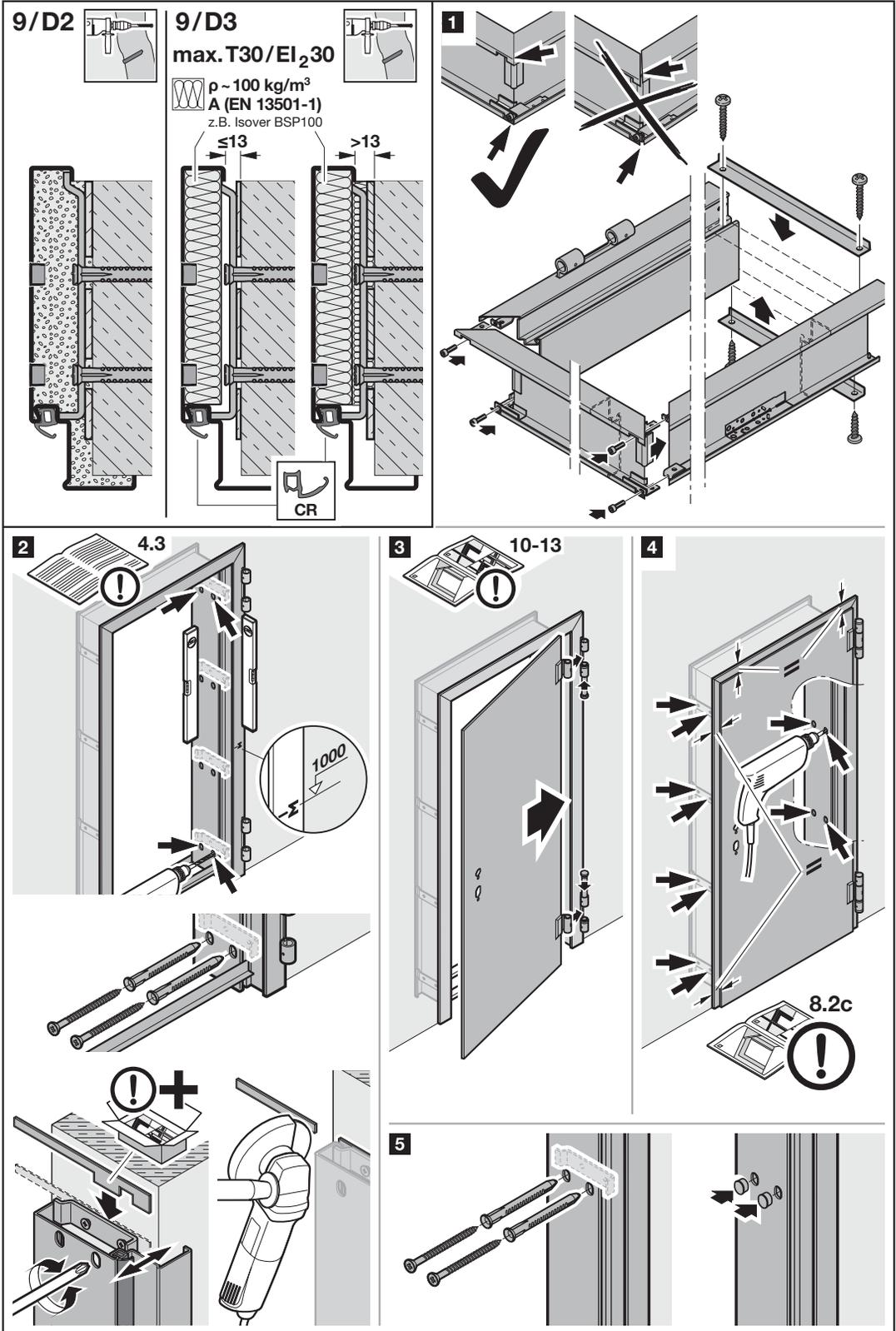


9/C8
max. T30

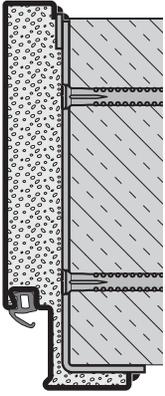


9/D1





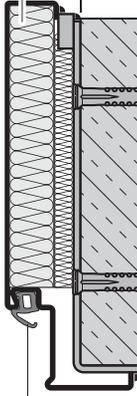
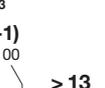
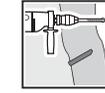
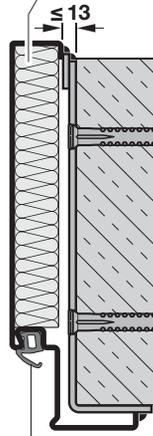
9/D4



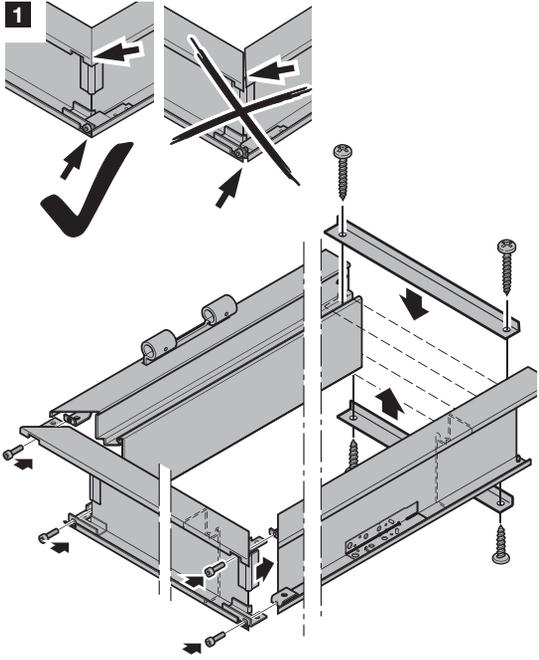
9/D5

max. T30/
EI₂₃₀

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



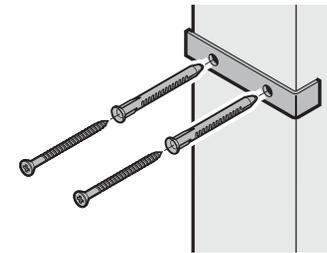
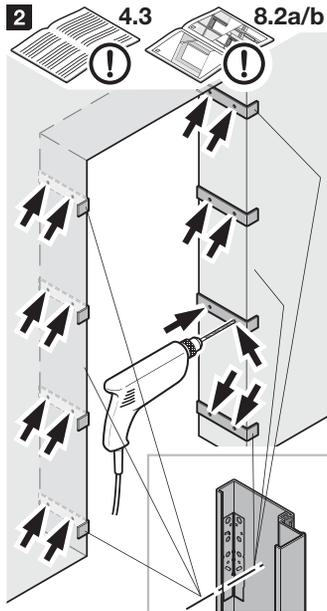
1



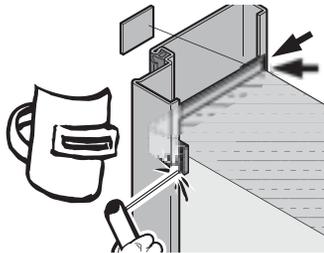
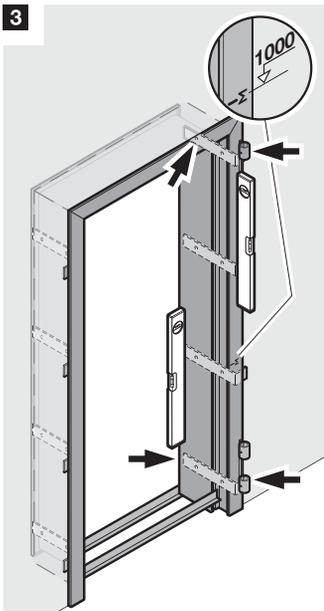
2

4.3

8.2a/b

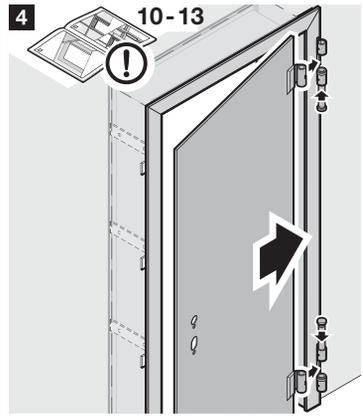


3



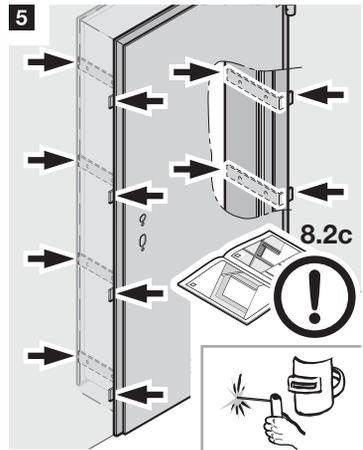
4

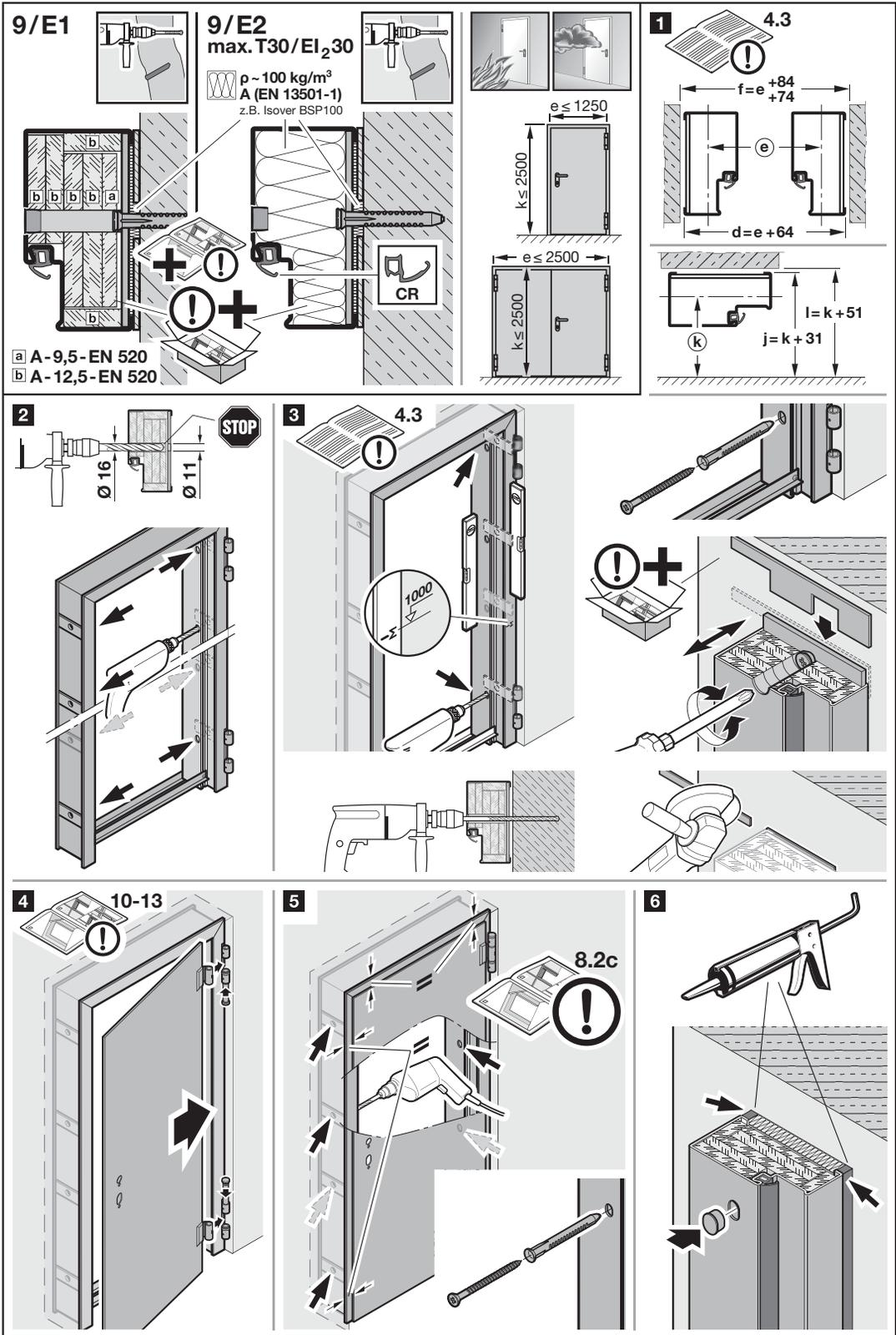
10-13



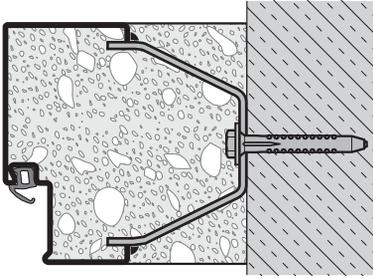
5

8.2c

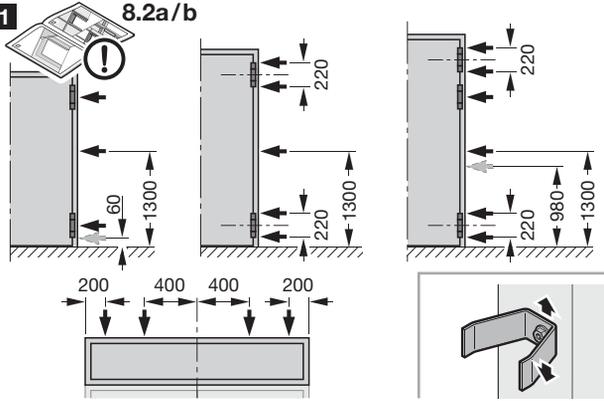




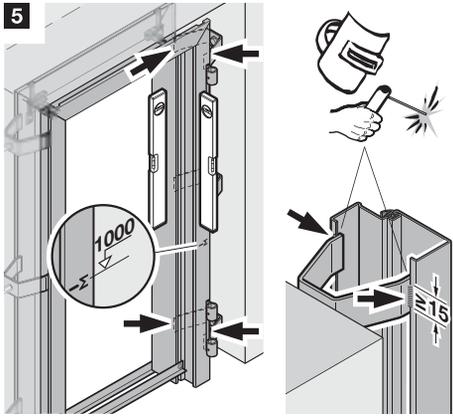
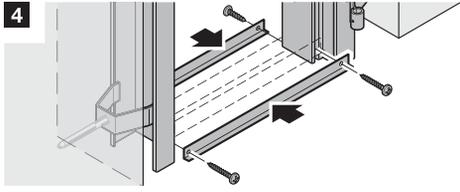
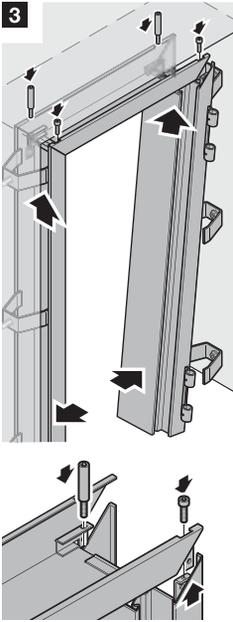
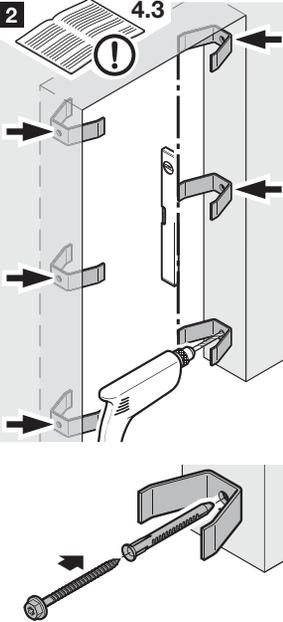
9/E3



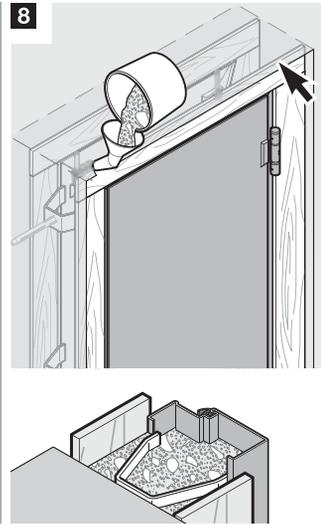
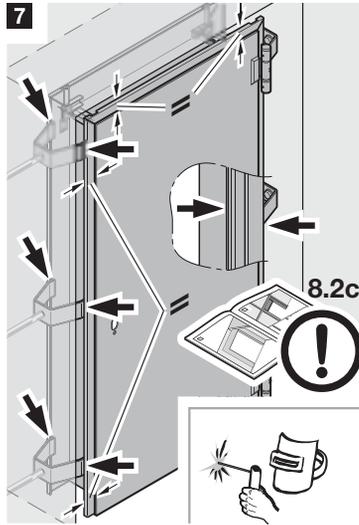
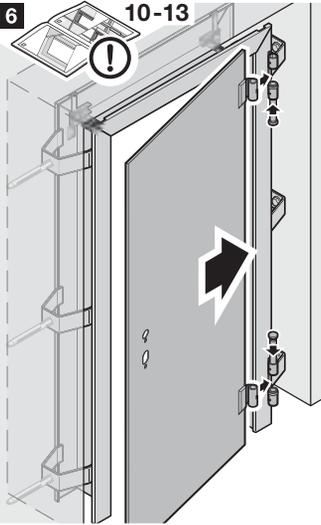
1 8.2a/b

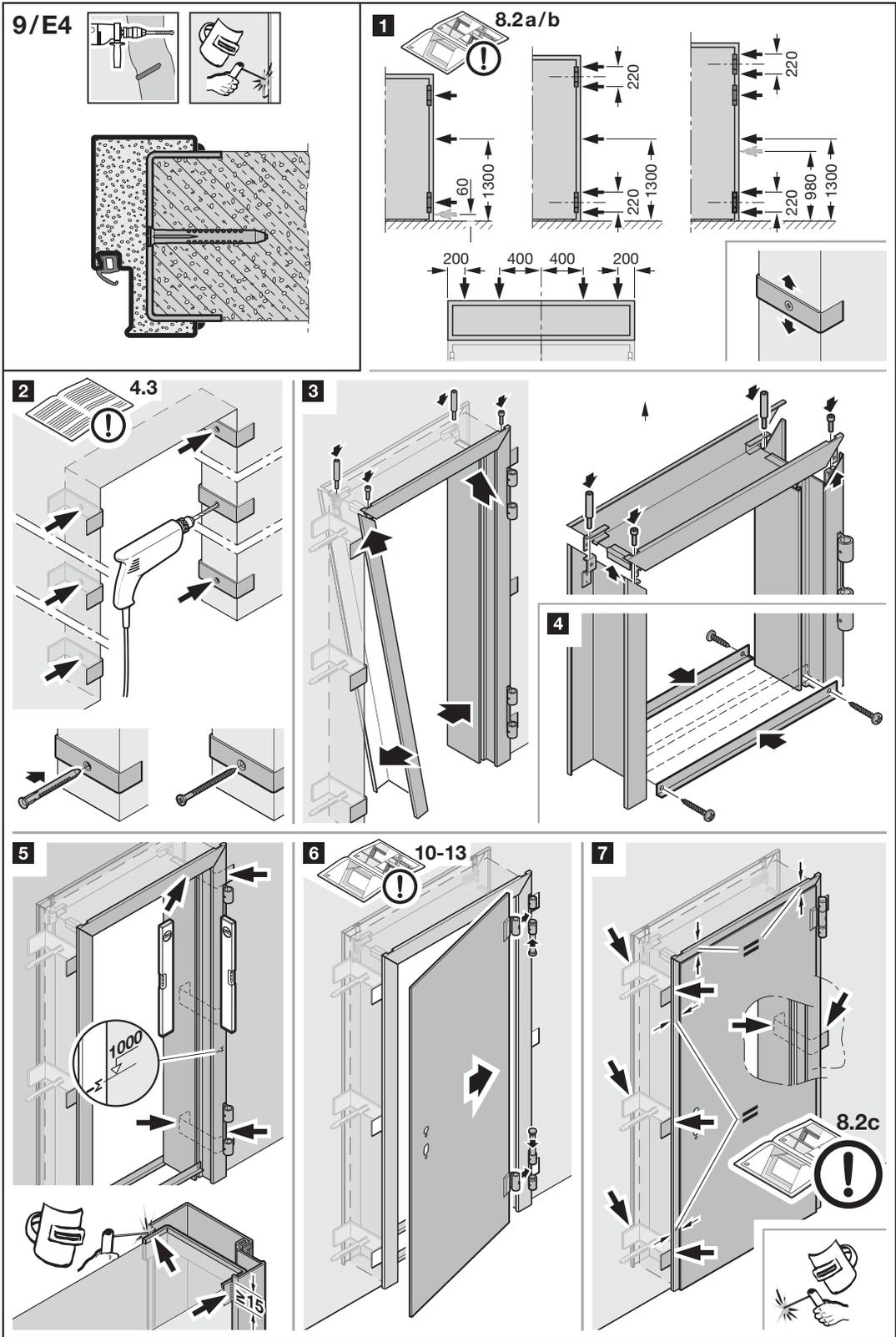


2 4.3



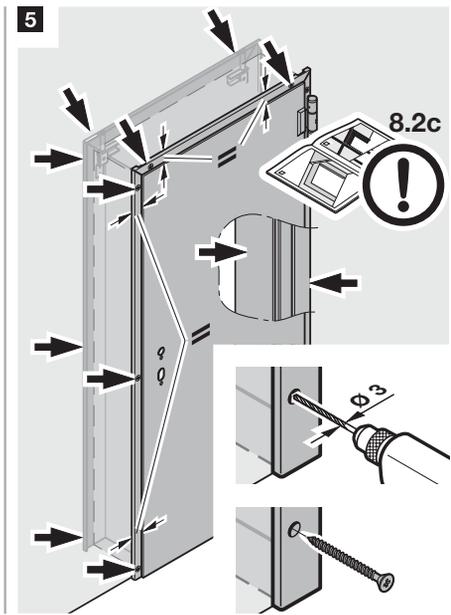
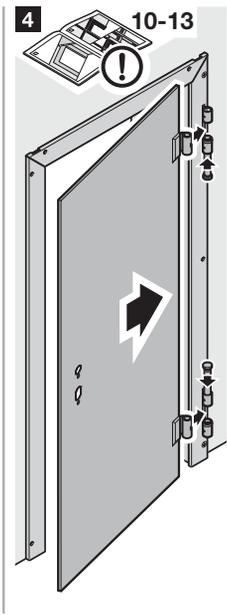
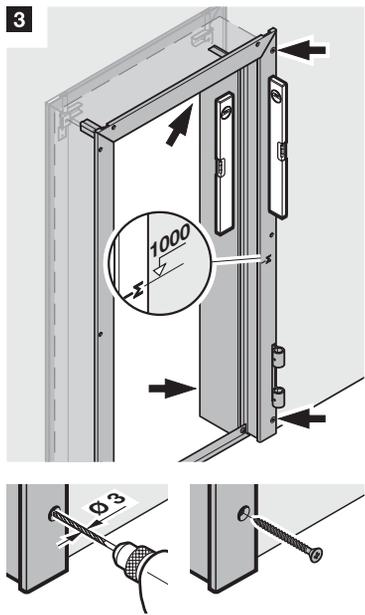
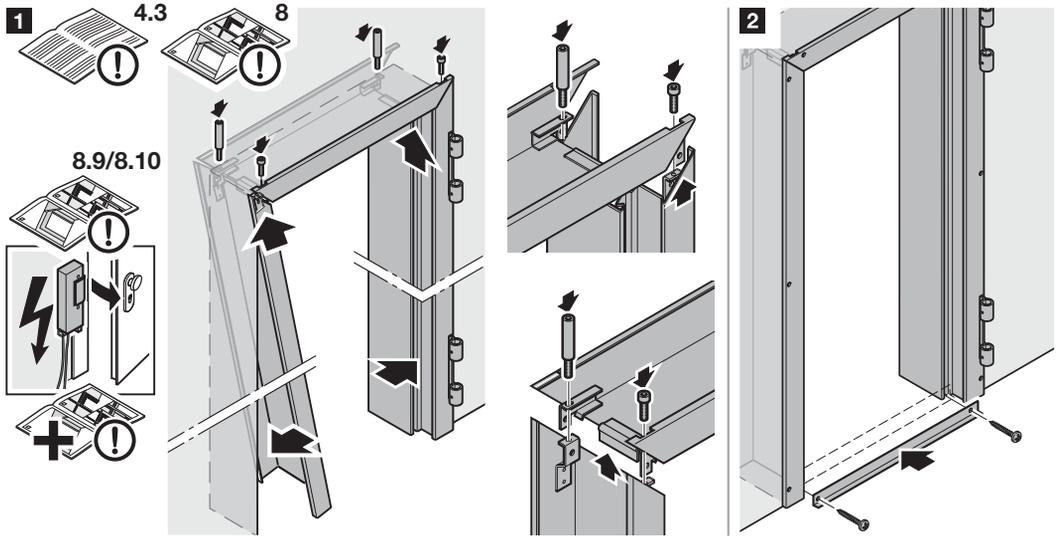
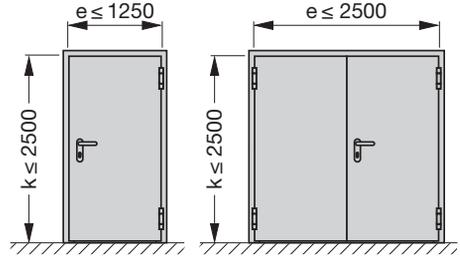
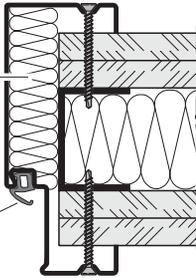
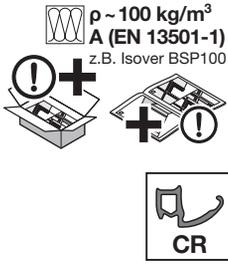
6 10-13





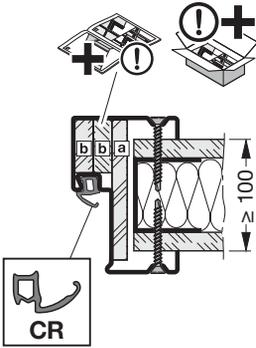
9/E5

max. T30/
EI₂30



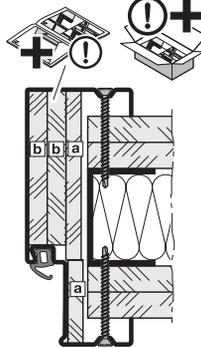
9/E6

max T30/EI₂30



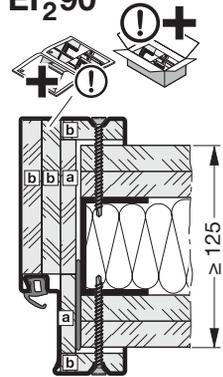
9/E7

max T30/EI₂30

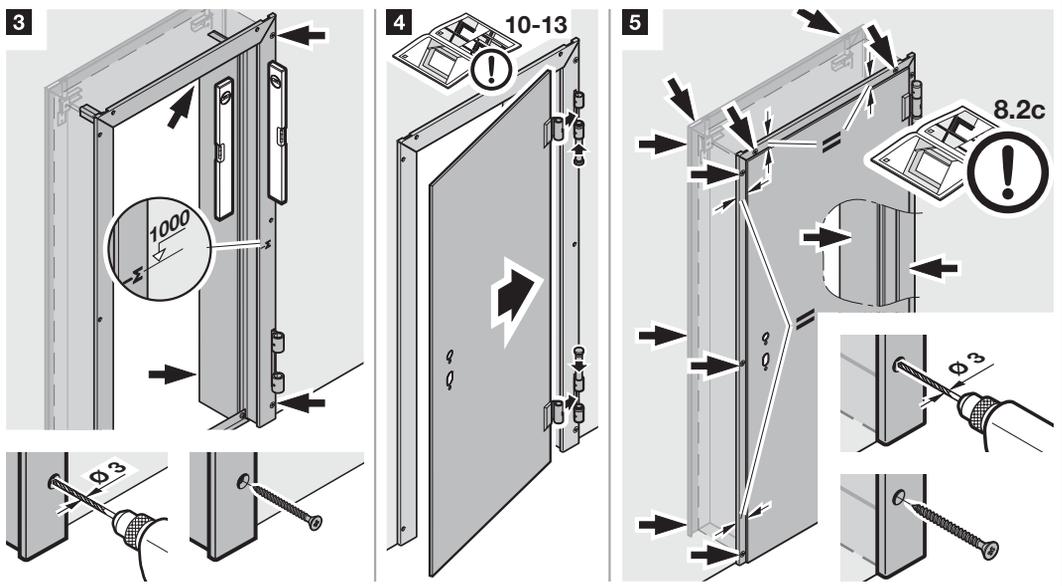
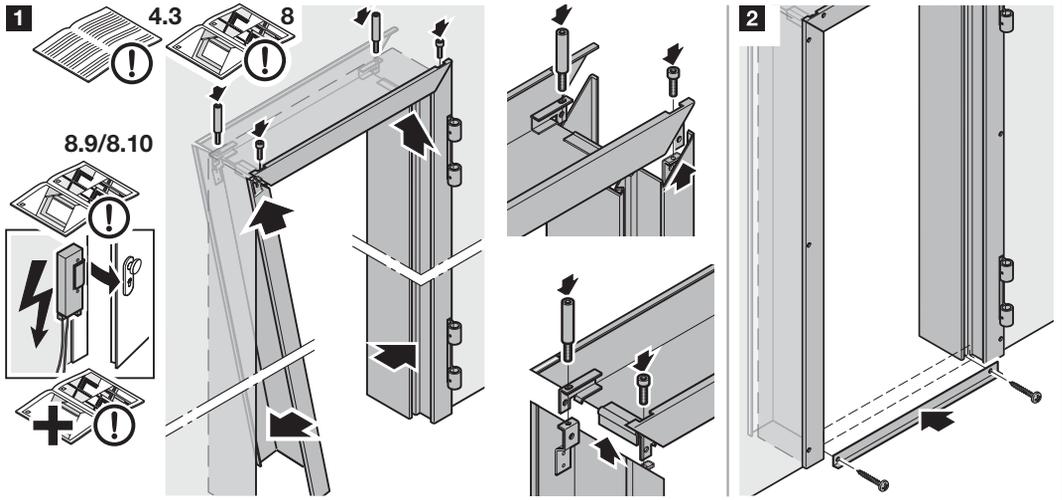


9/E8

T90/EI₂90

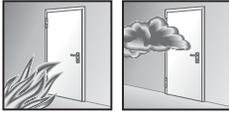


a A-9,5-EN 520 / b A-12,5-EN 520

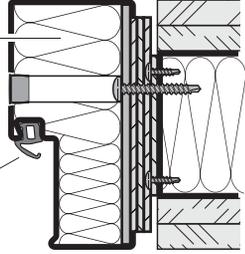
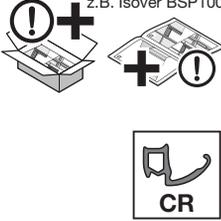


9/E9

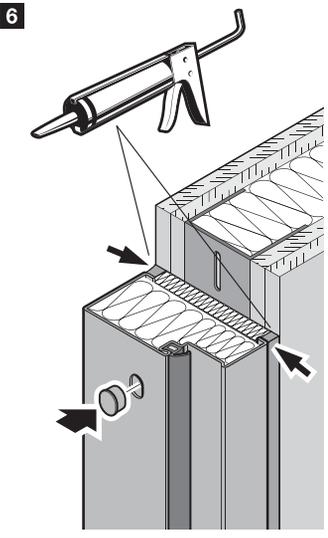
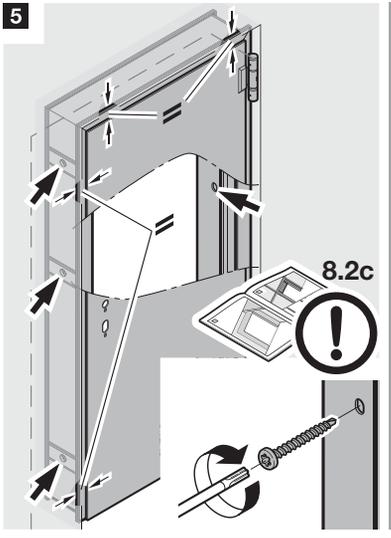
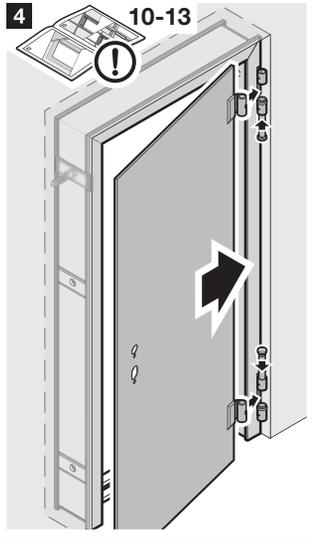
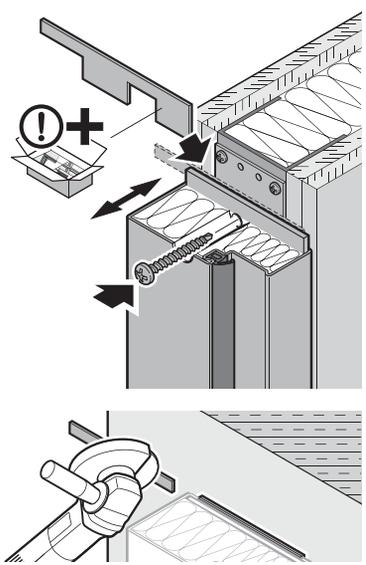
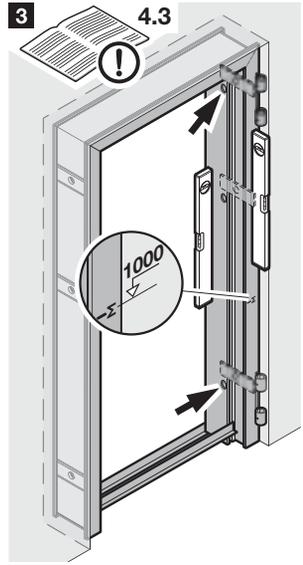
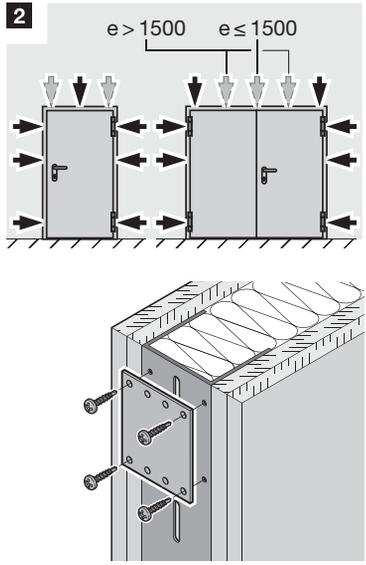
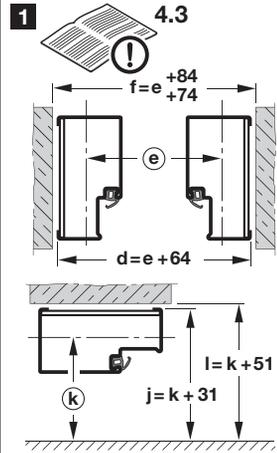
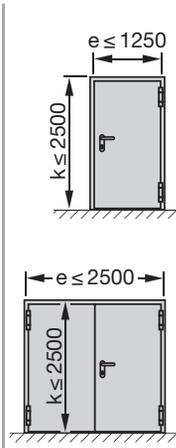
max. T30/
EI₂30



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



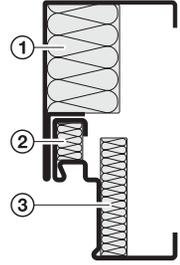
≥ 125



9/F1-F4
max. T30/ EI₂30

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

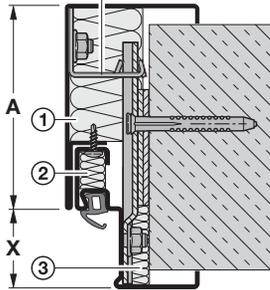
- ① = 40 × (A - 42)
- ② = 15 × 22,5
- ③ = 15 × (X + 24)



F1



A > 94

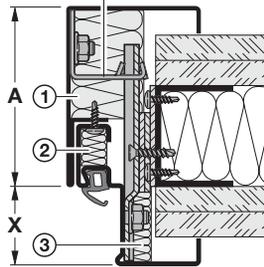


➔ 1 2a 2b 3 ...

F2



A > 94

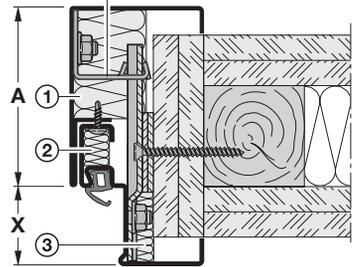


➔ 1 2c 3 ...

F3



A > 94

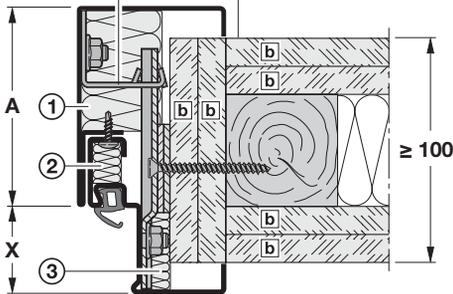


➔ 1 2d 3 ...

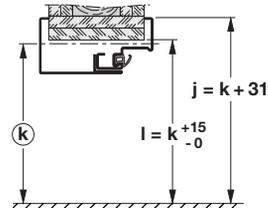
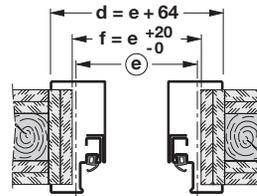
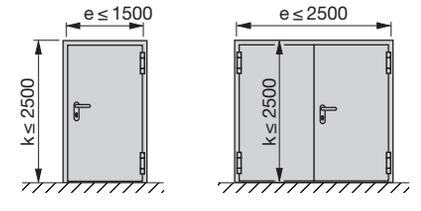
F4



A > 94



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

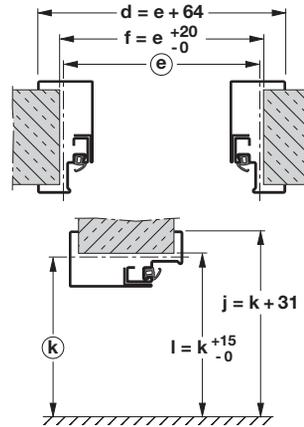
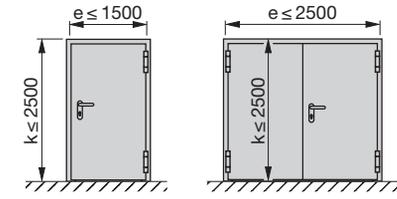
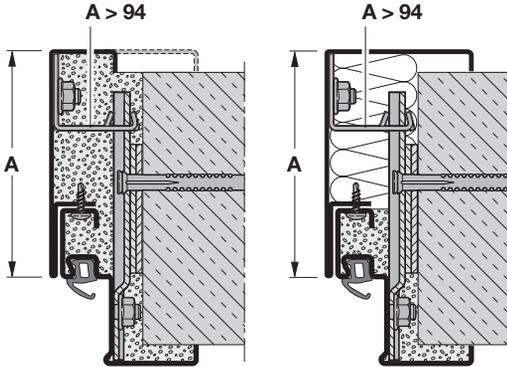


➔ 1 2e 3 ...

9/F5-F6

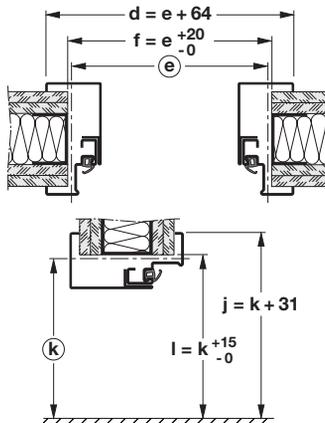
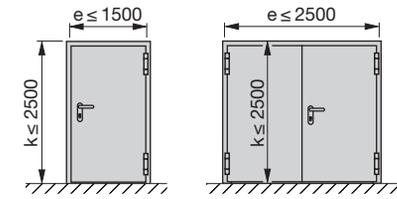
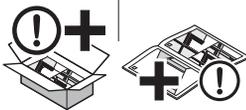
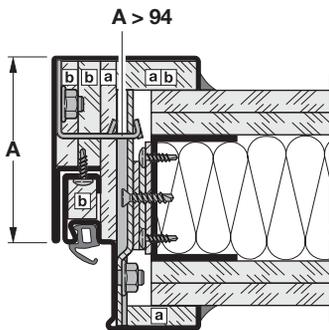
max. T90/ EI₂90

F5



➔ 2a 2b 3 ...

F6



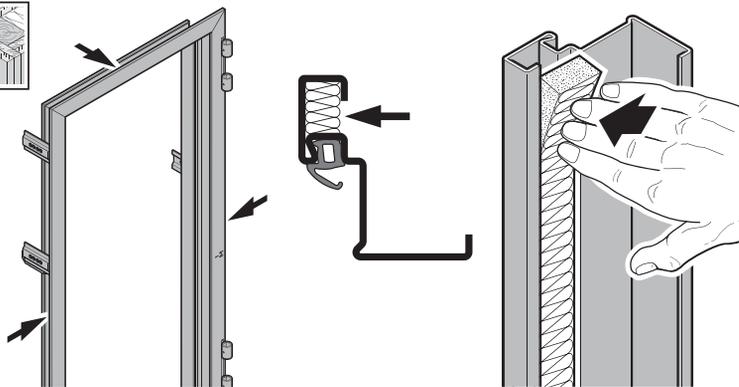
▣ A-9,5-EN 520 / ▣ A-12,5-EN 520

➔ 2c 3 ...

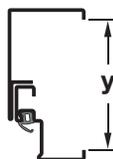
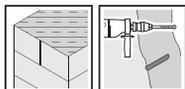
1



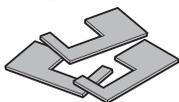
max. T30/EI₂30



2a

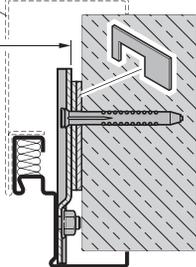


$y \geq 175$

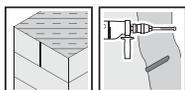


$y \geq 175$

e-10



2b

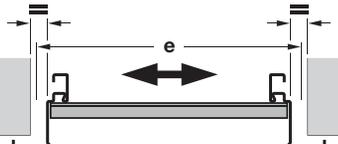
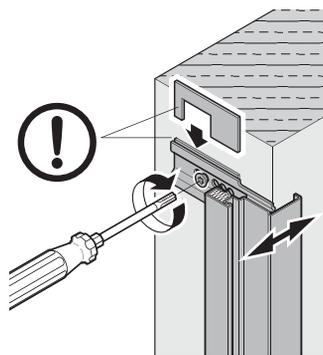
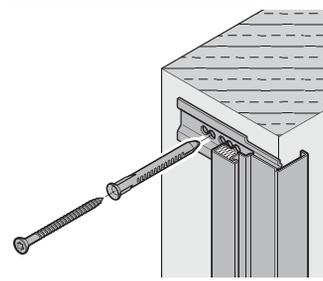
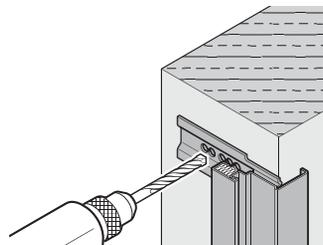
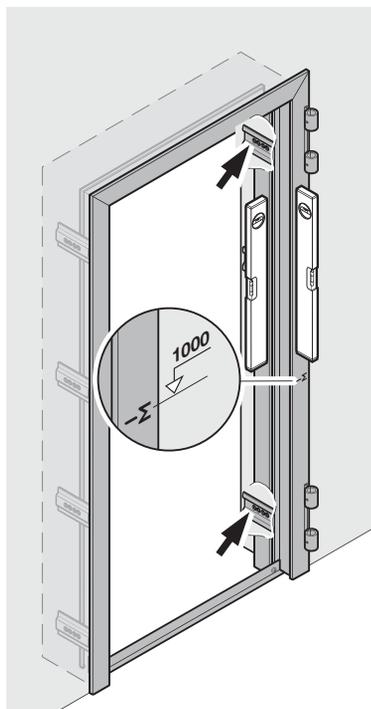
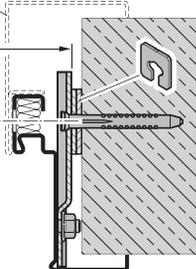


$y < 175$

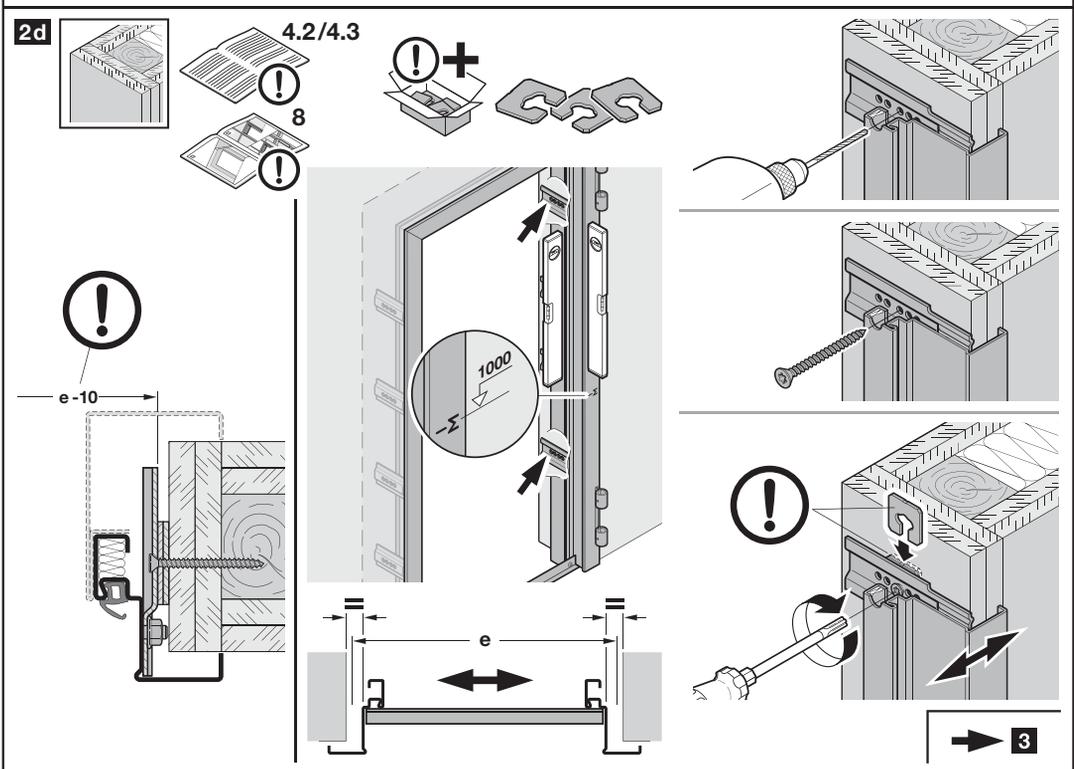
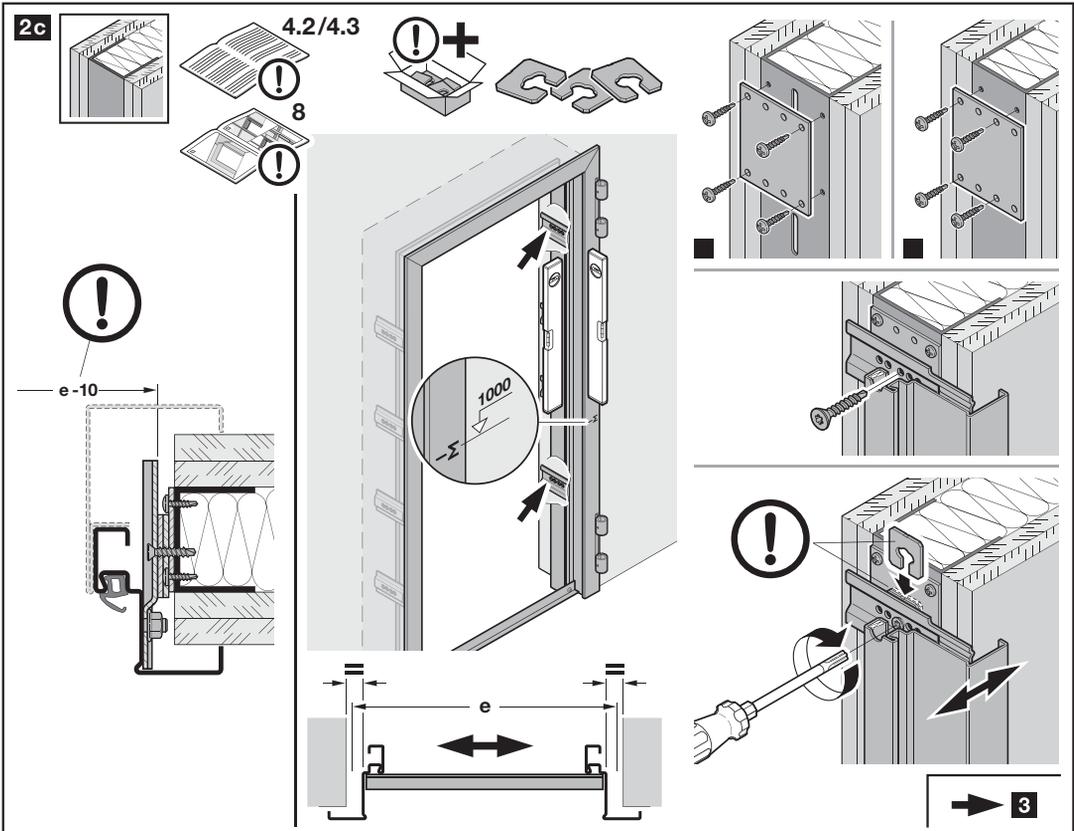


$y < 175$

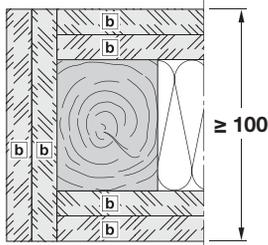
e-10



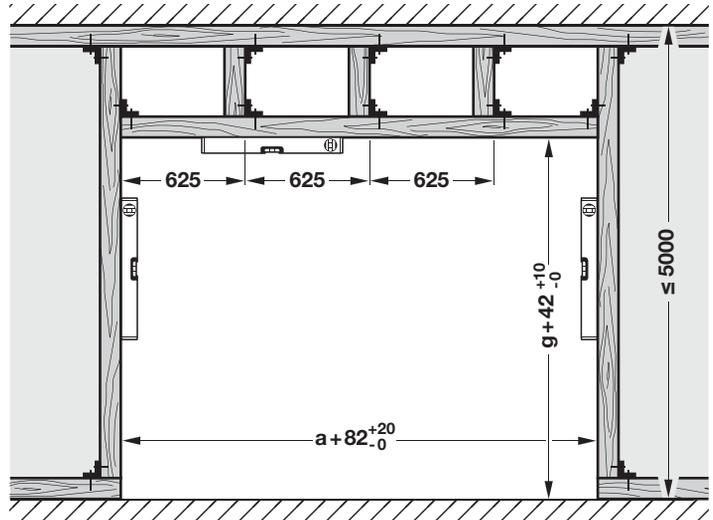
➔ 3



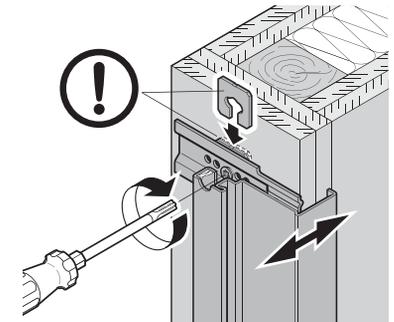
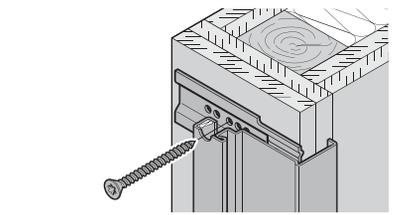
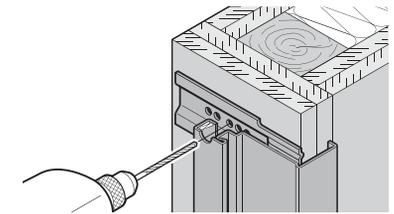
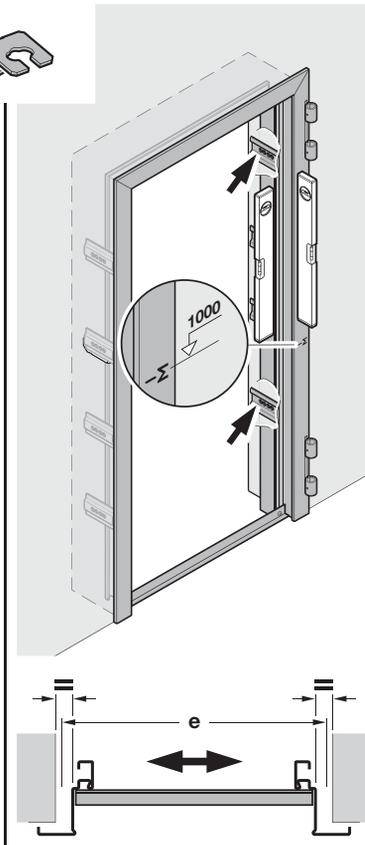
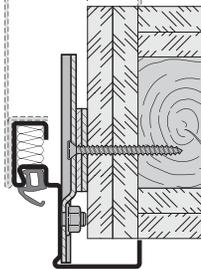
2e



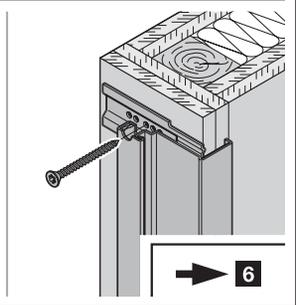
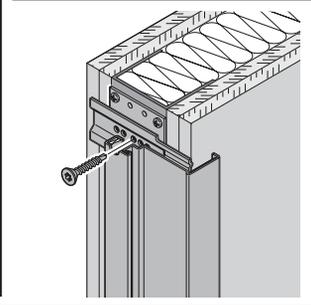
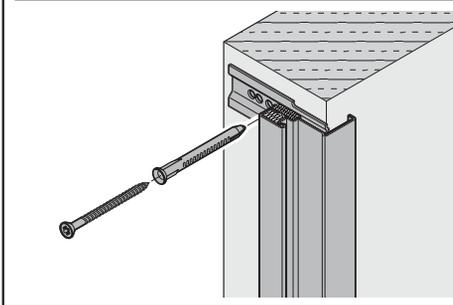
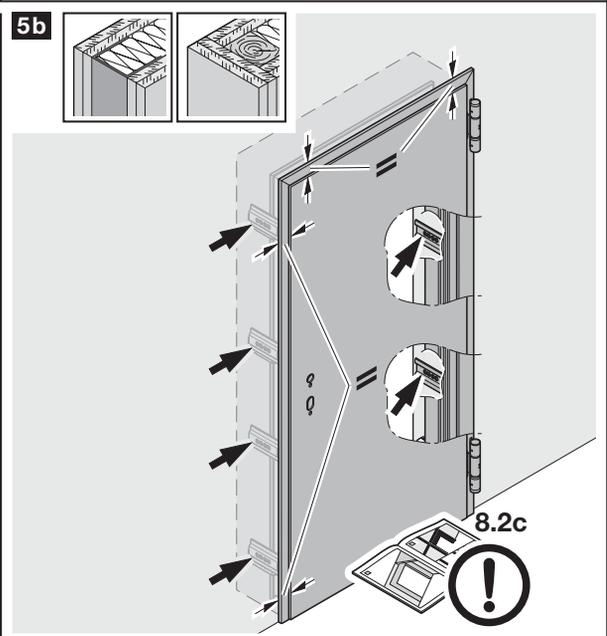
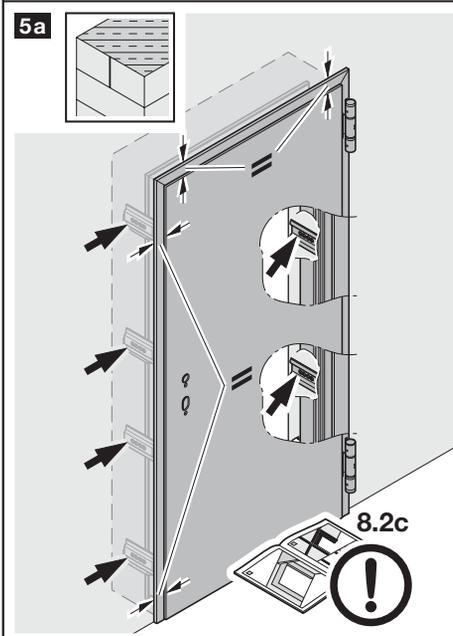
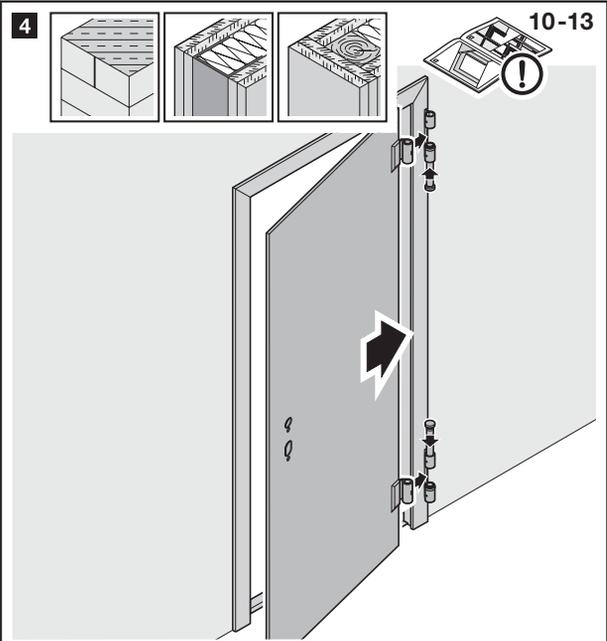
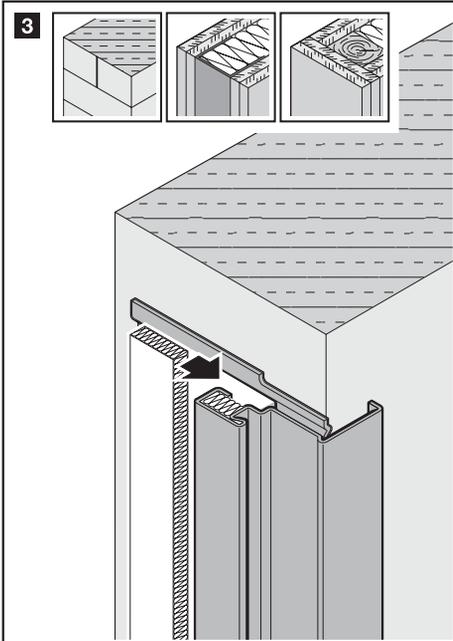
b A-12,5-EN 520

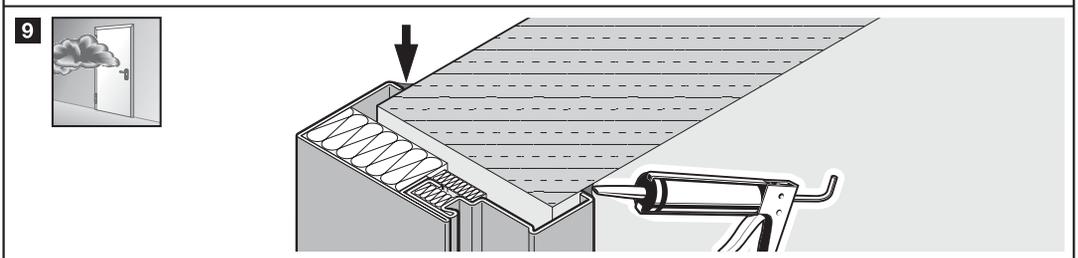
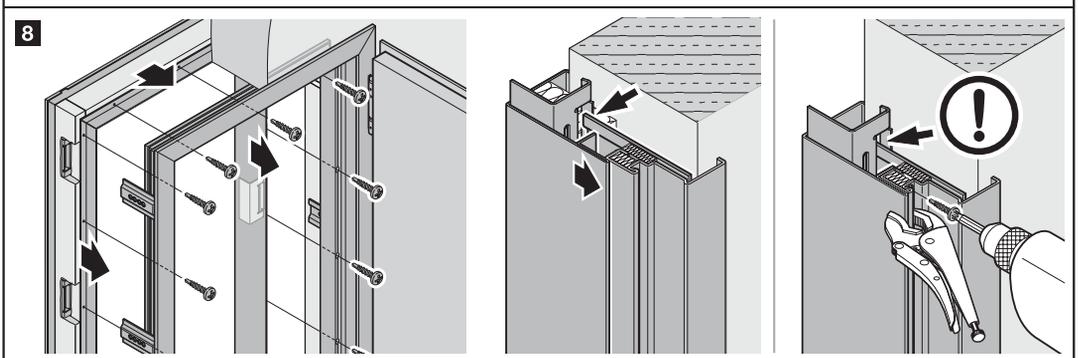
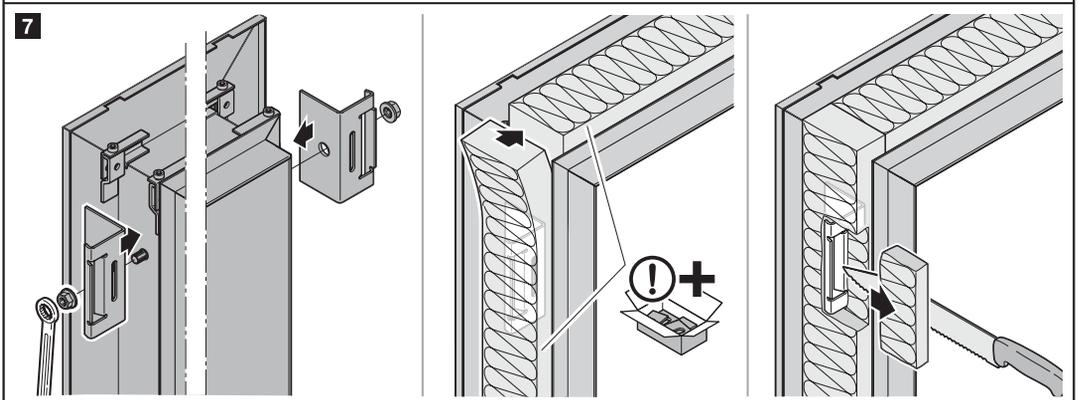
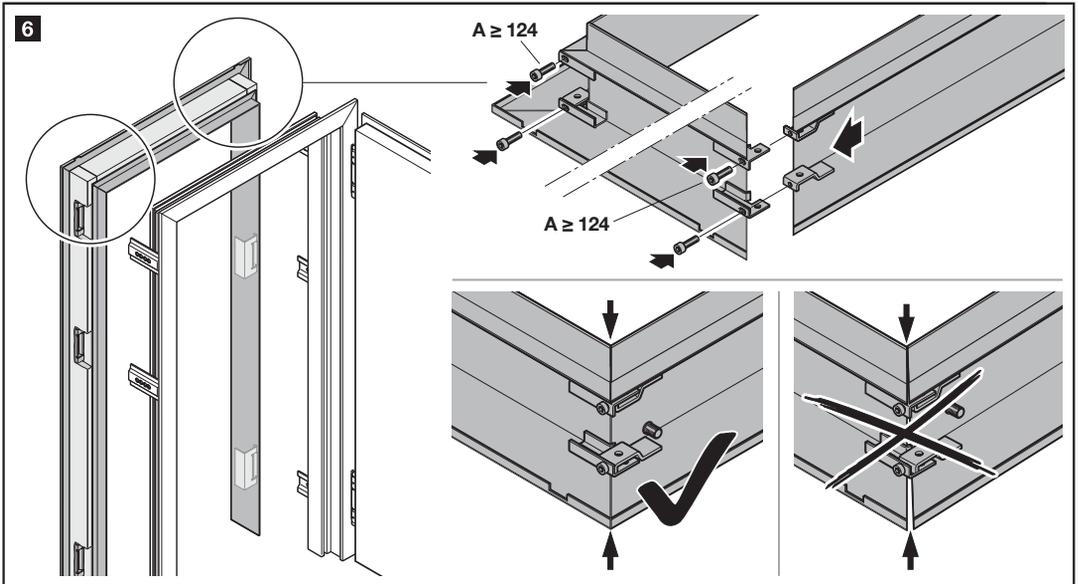


$e +20 -0$

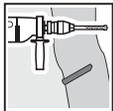


3

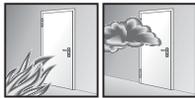




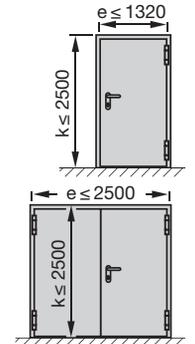
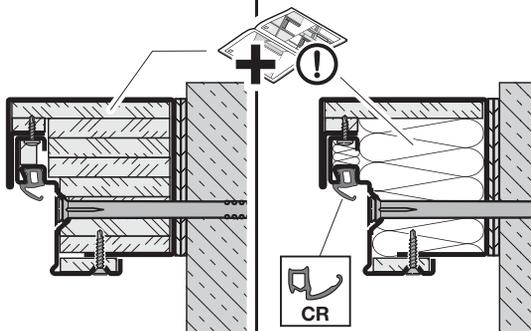
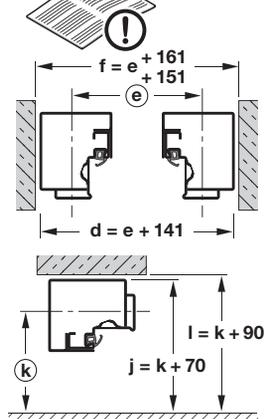
9/G1
max. T90/
EI₂90



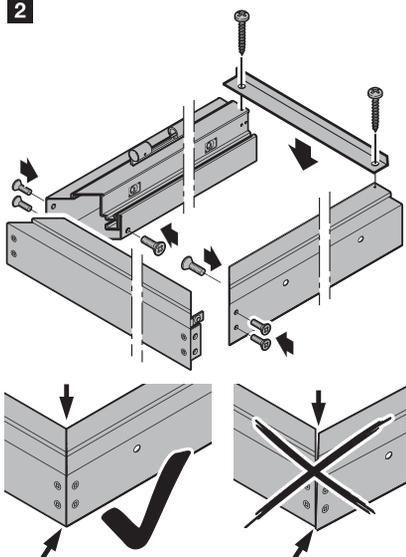
9/G2
max. T30/
EI₂30



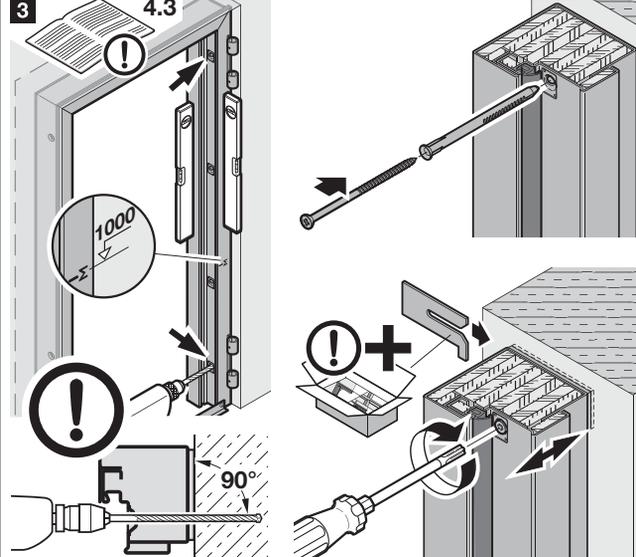
1 4.3



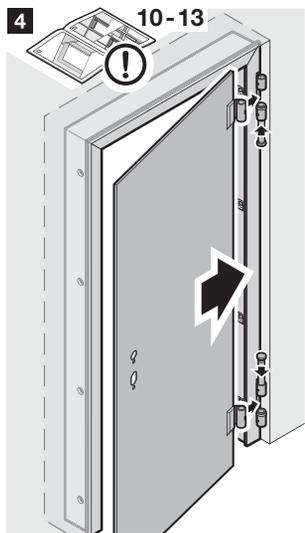
2



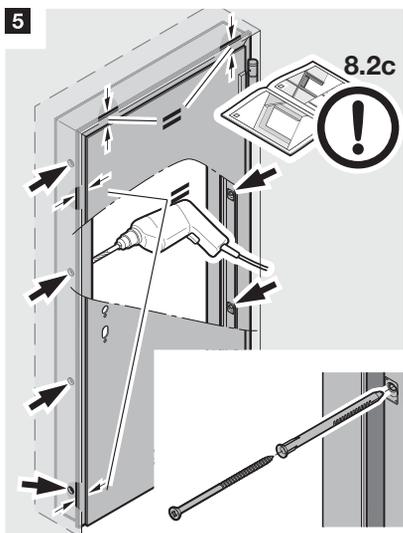
3 4.3



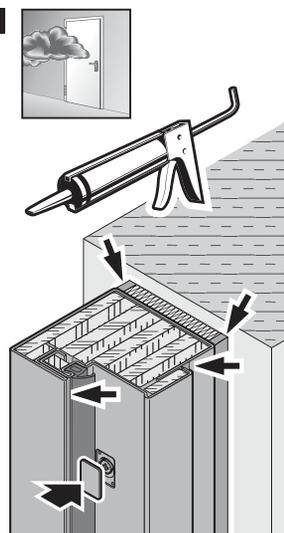
4 10-13



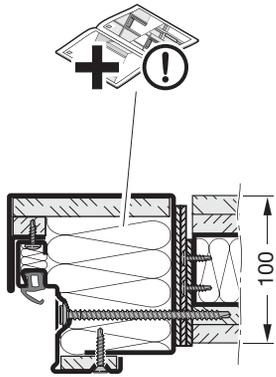
5



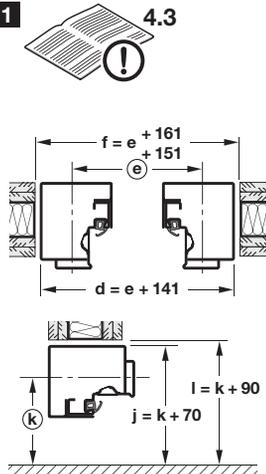
6



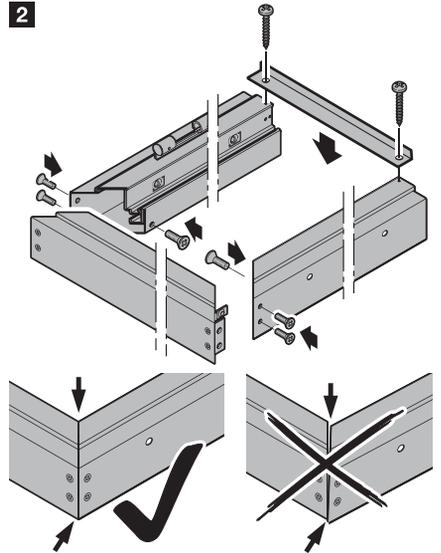
9/G3



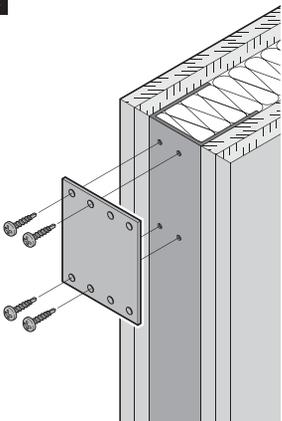
1 4.3



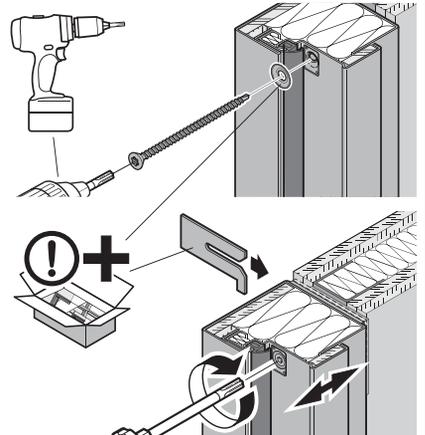
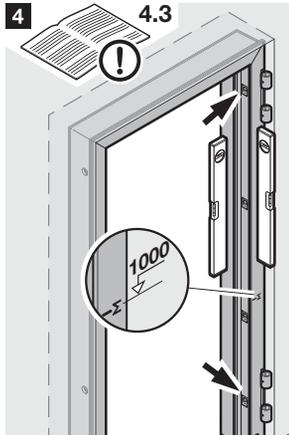
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3

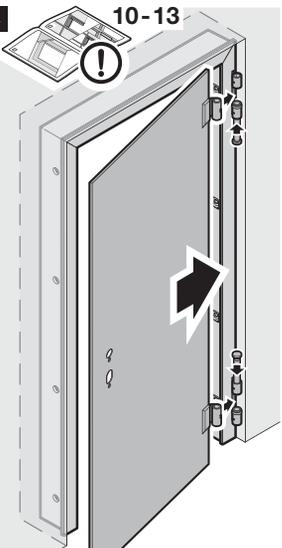


4 4.3

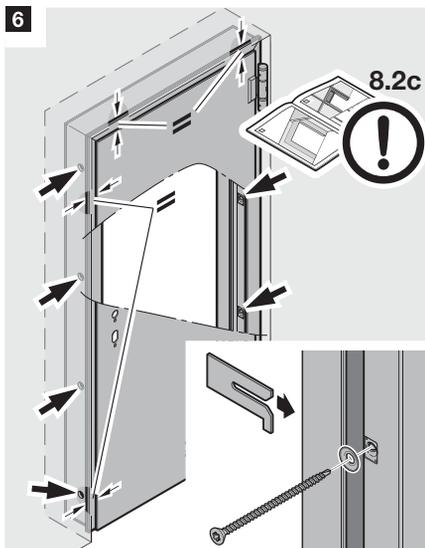


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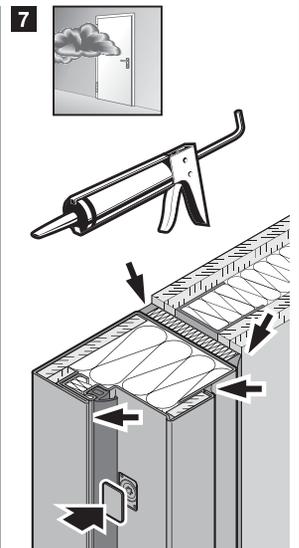
10-13



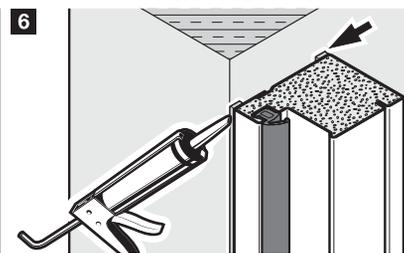
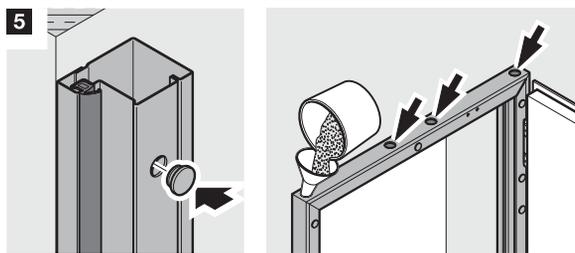
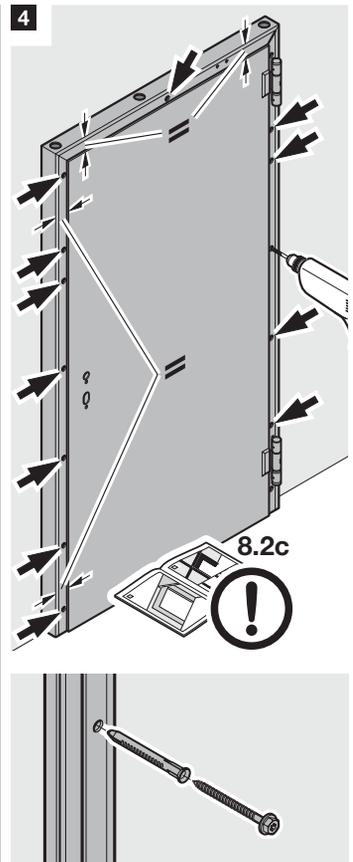
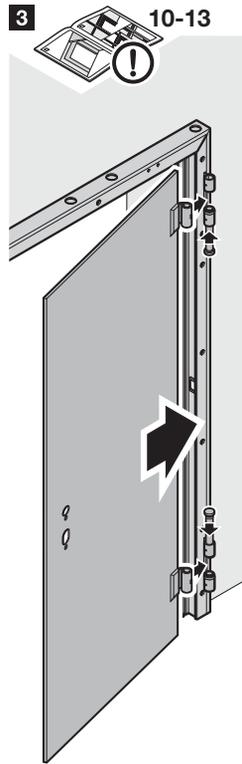
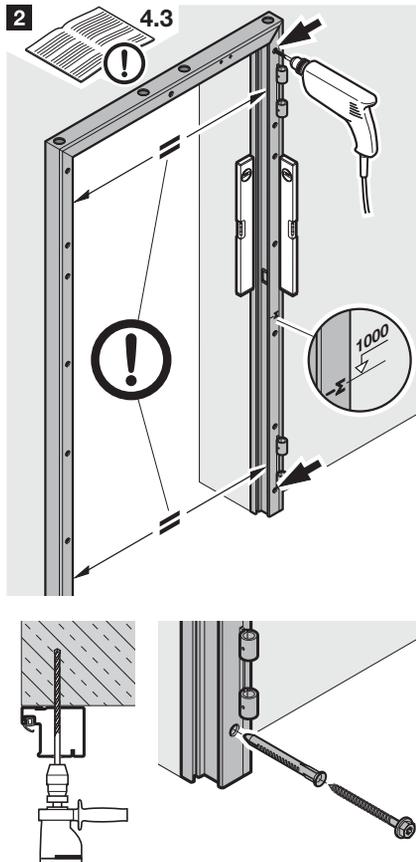
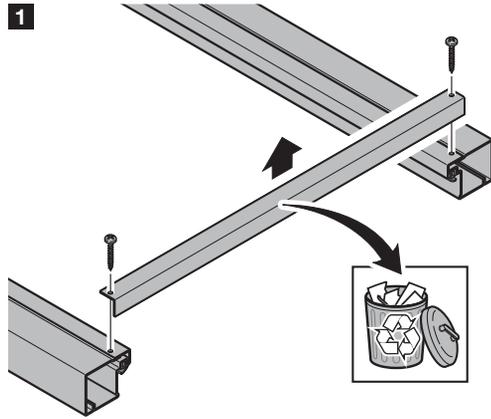
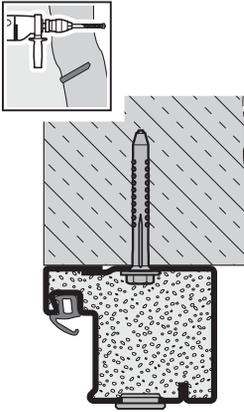
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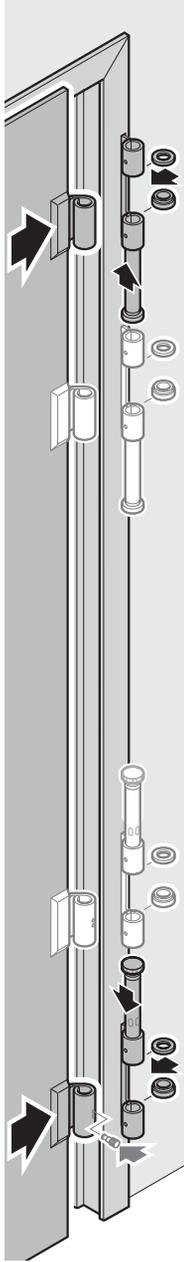
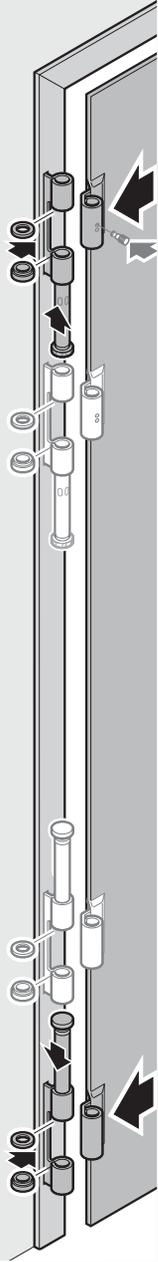
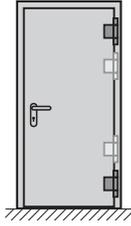
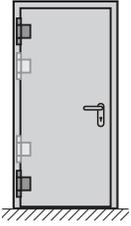
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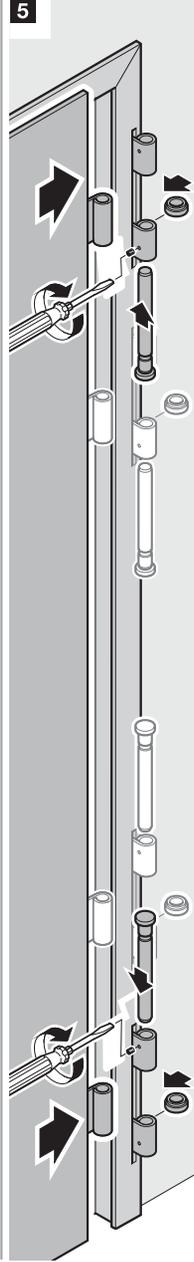
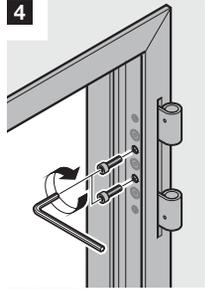
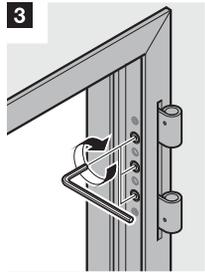
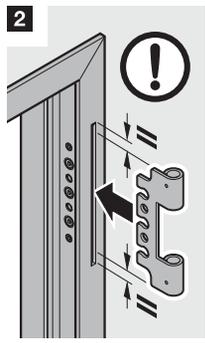
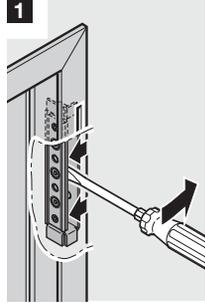
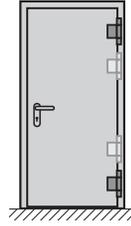
9/H1
max. T30/
EI₂30



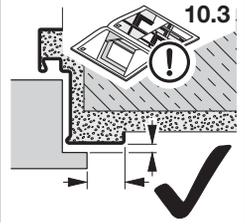
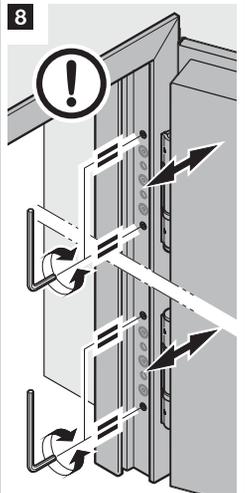
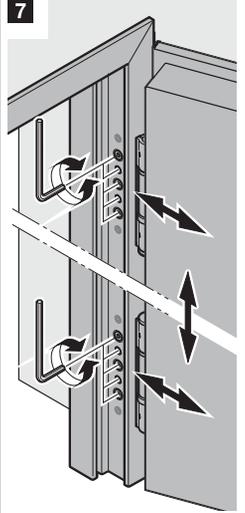
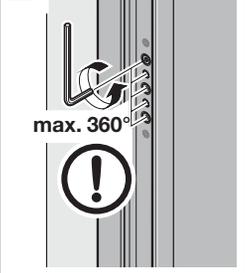
10.1a



10.1b



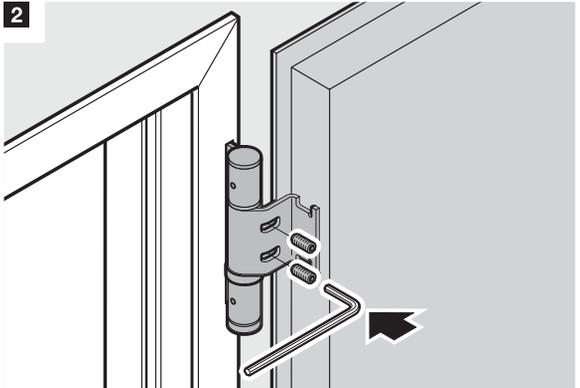
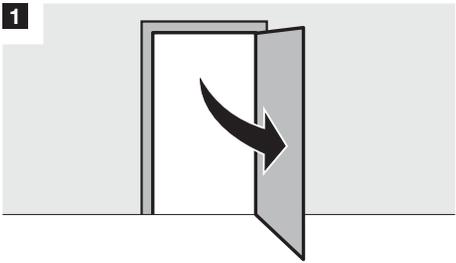
6



10.2



2

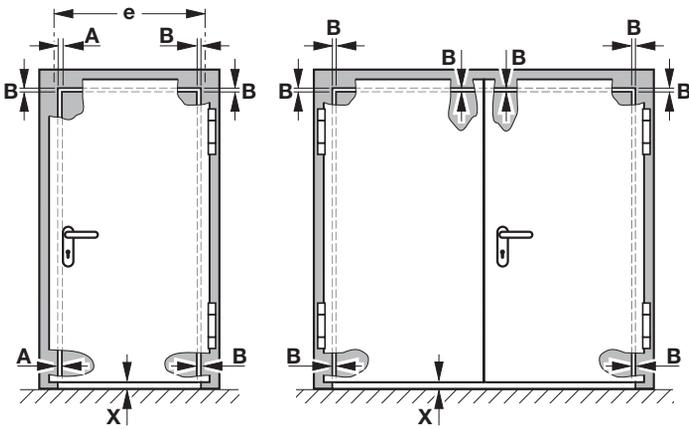


10.3



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			

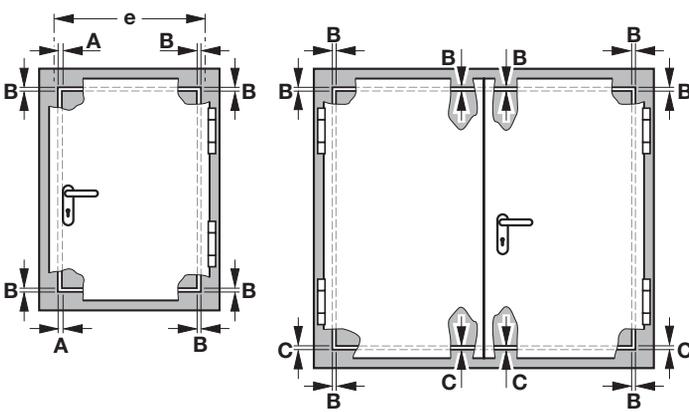
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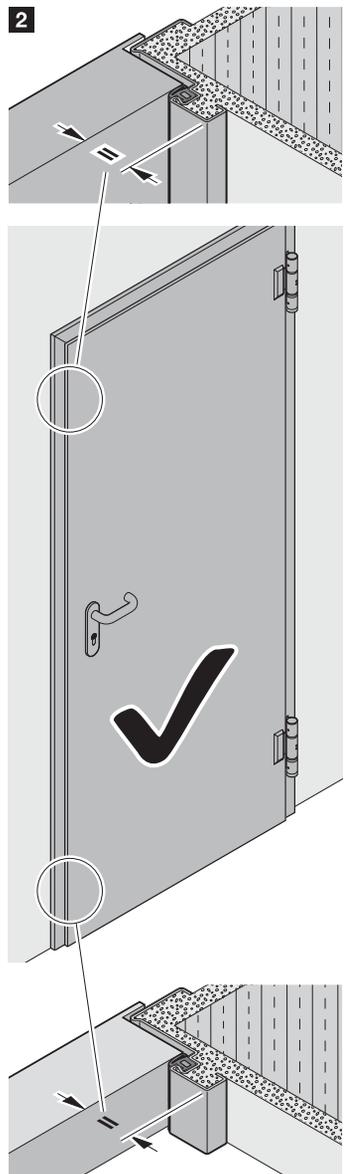
X=10±5

X=10⁺²₋₅

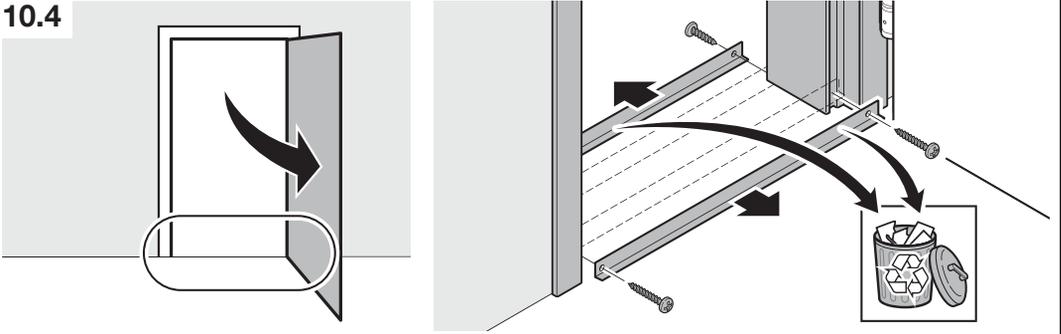
X=10-5



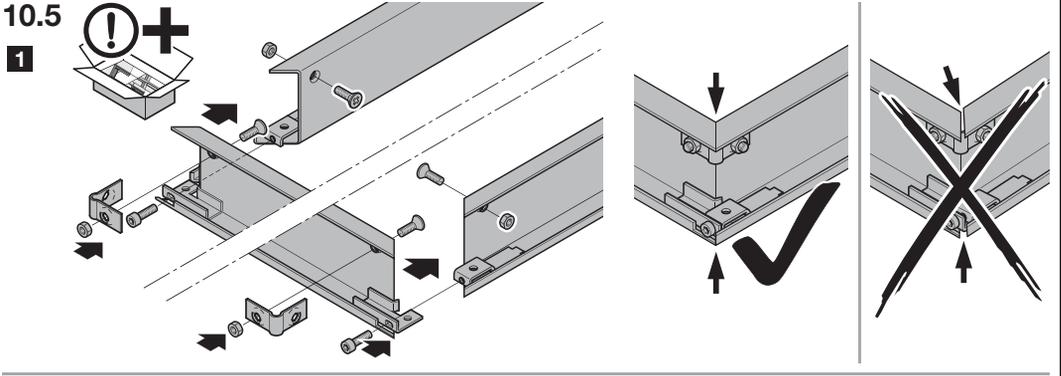
2



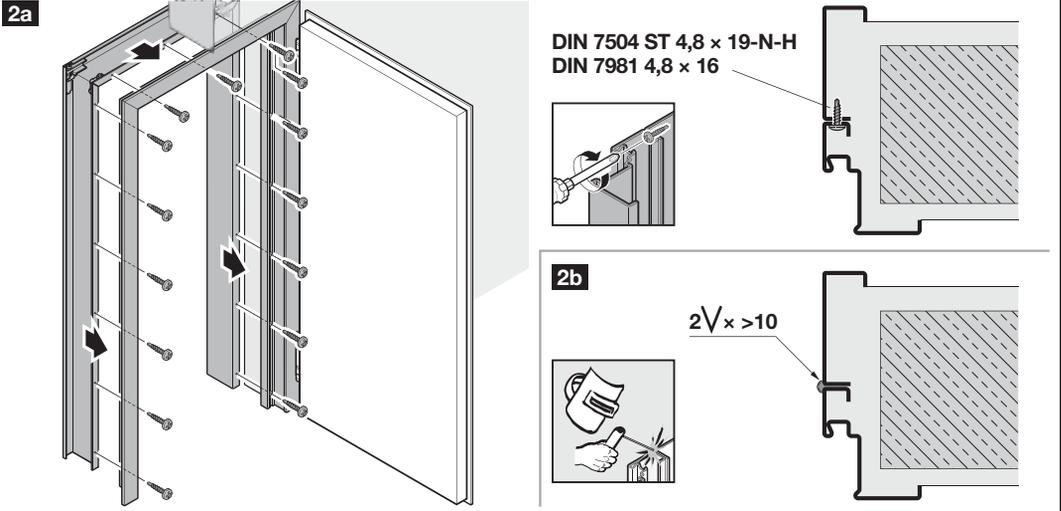
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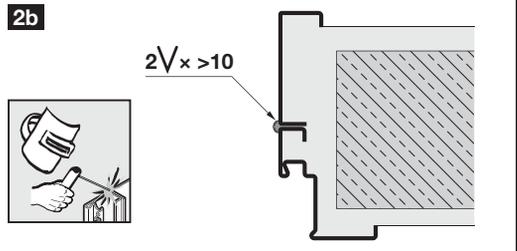
10.5



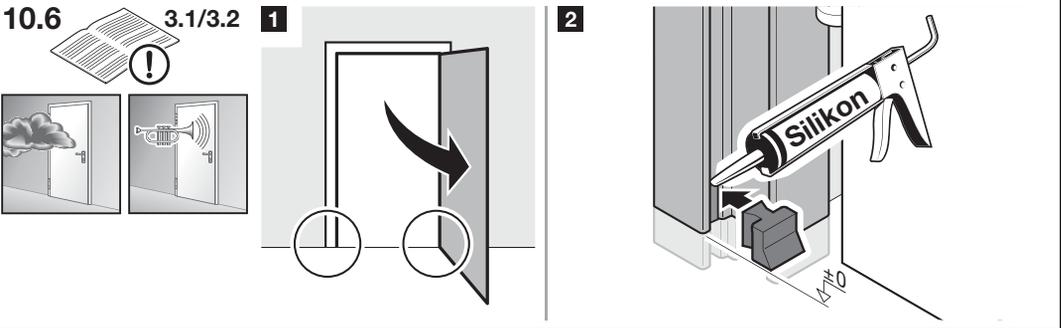
2a



2b

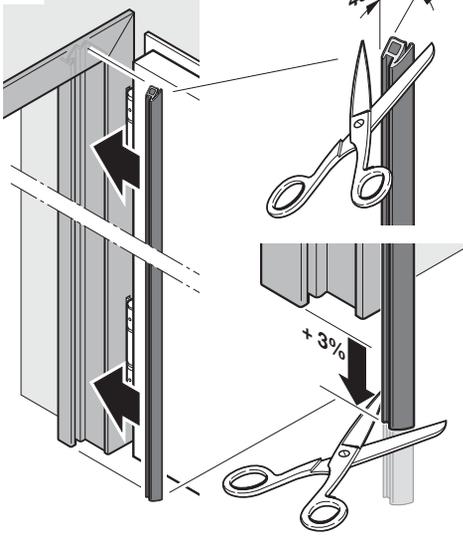


10.6

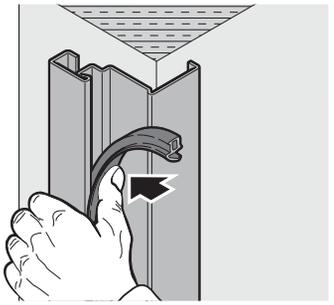


10.7a

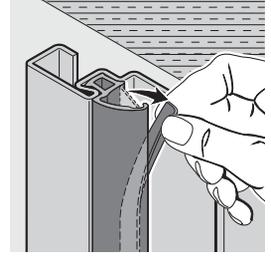
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2



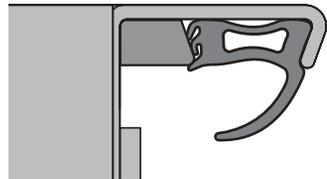
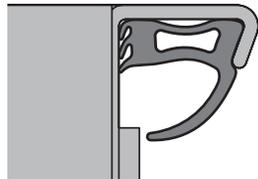
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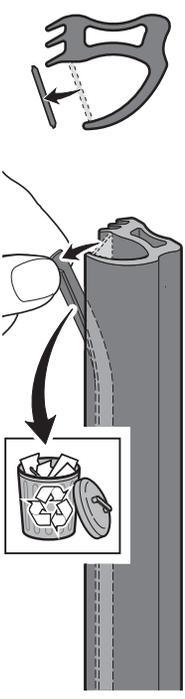
10.7b

A

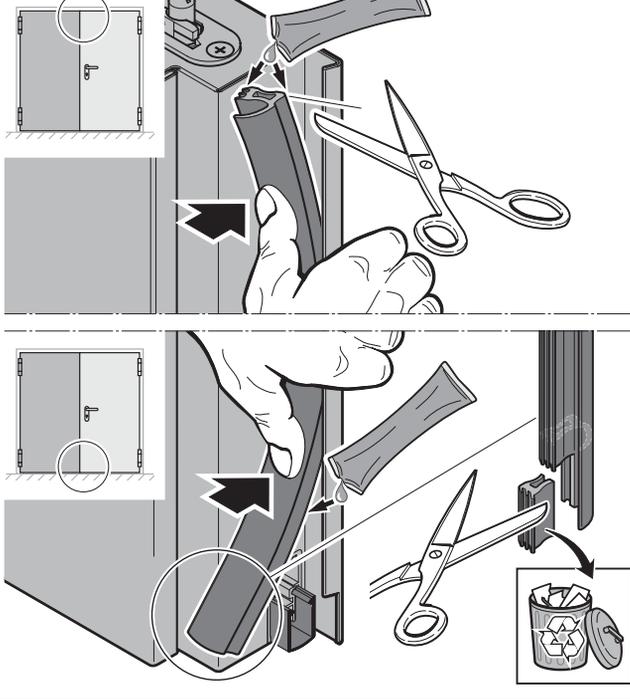
B



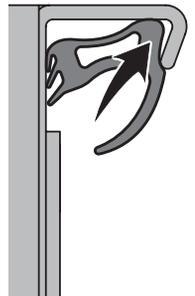
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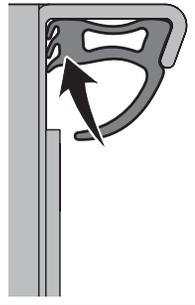
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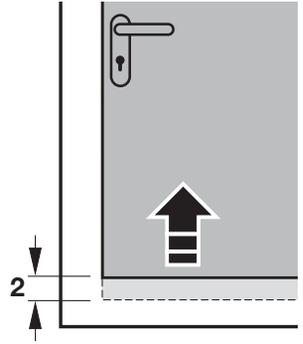
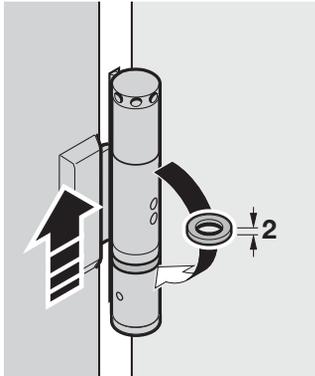
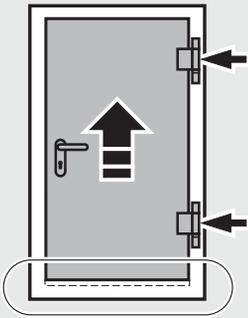
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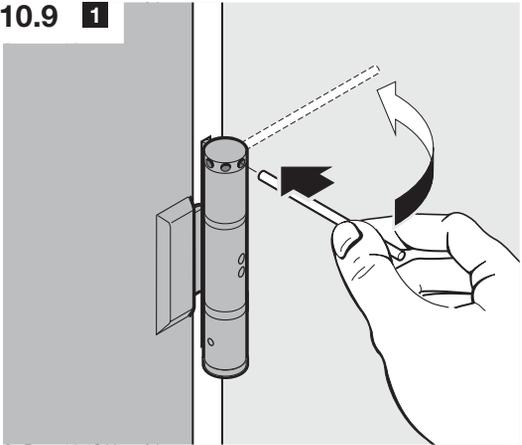
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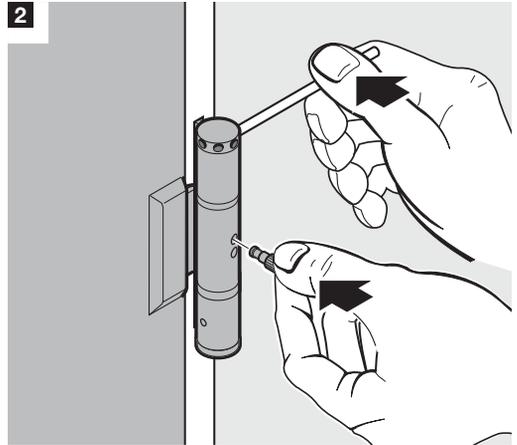
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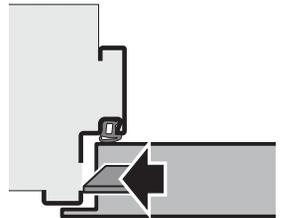
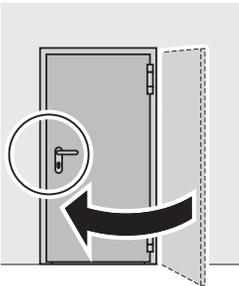
10.9 1



2

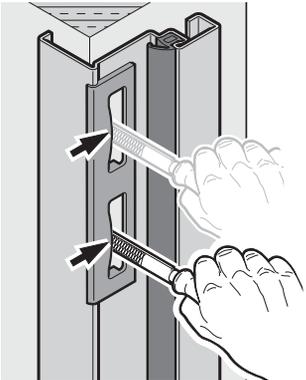


10.10a

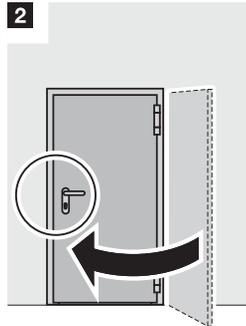


→ 1 2

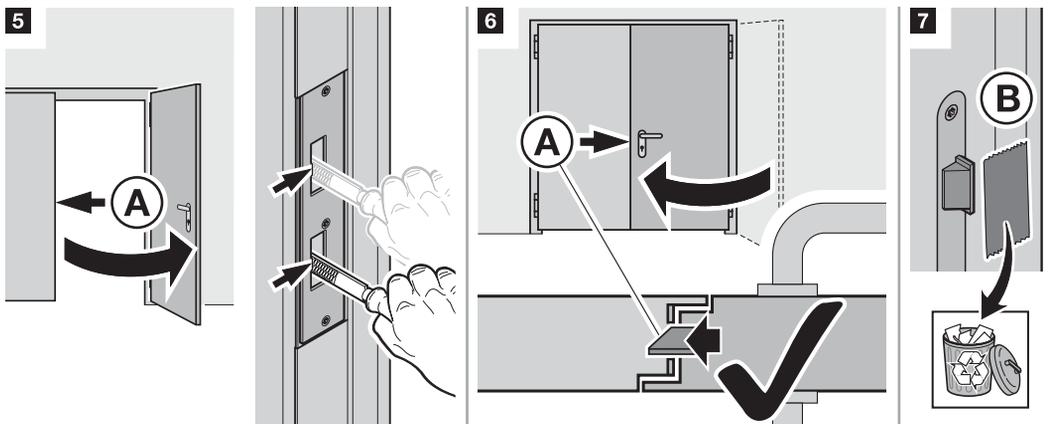
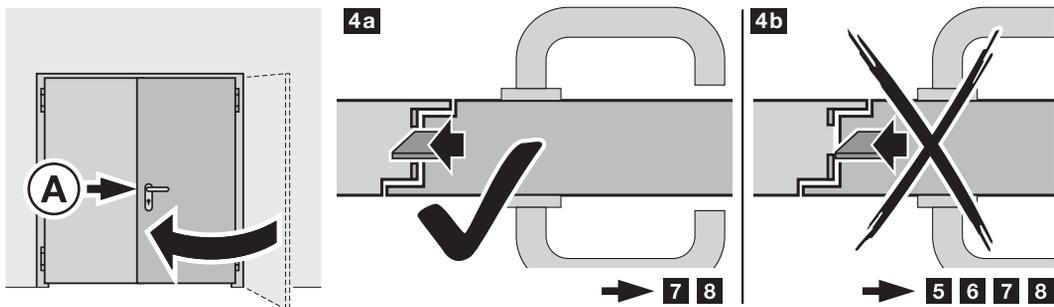
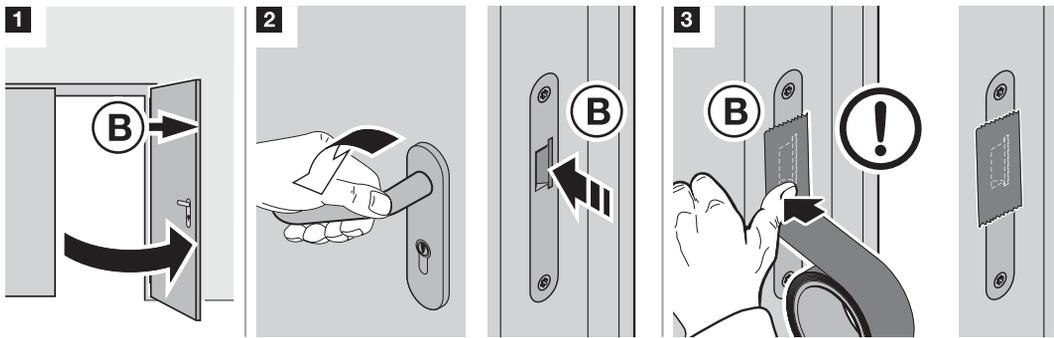
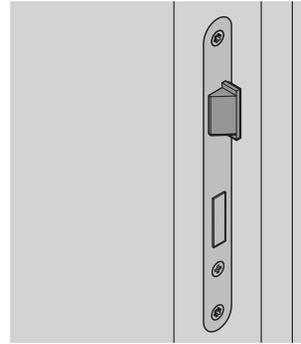
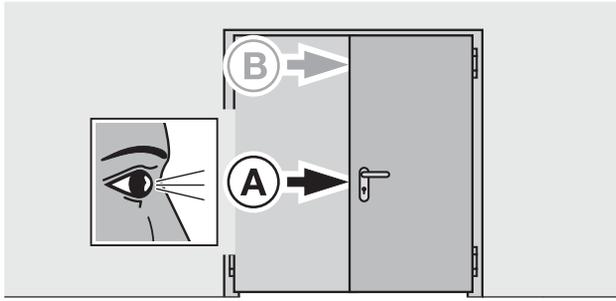
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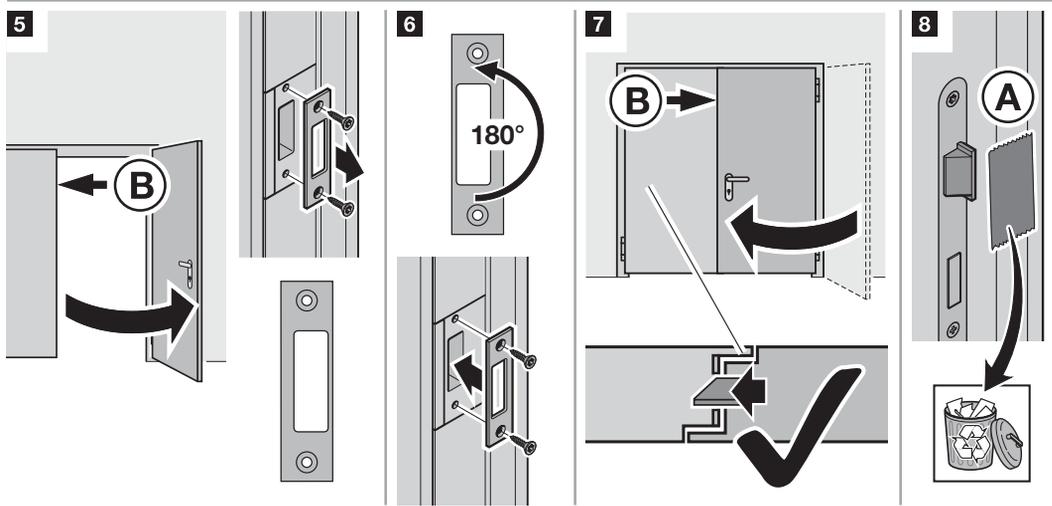
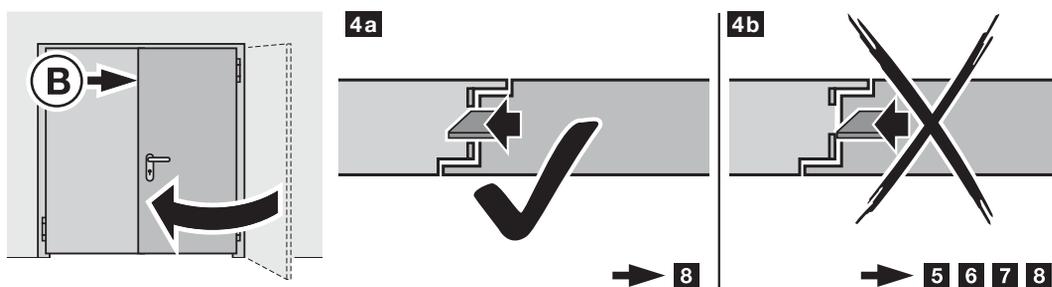
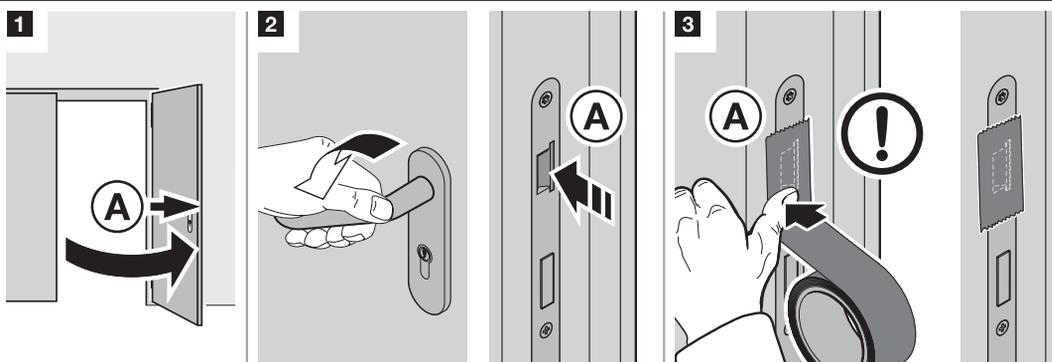
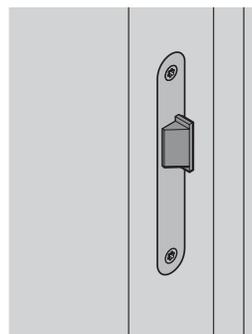
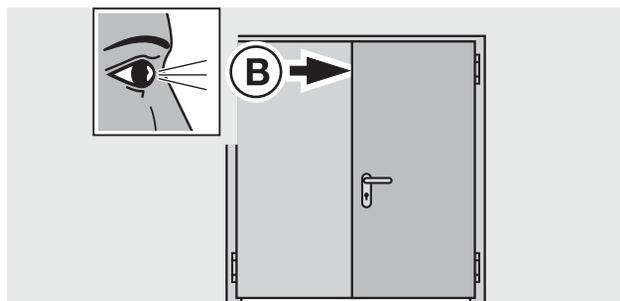
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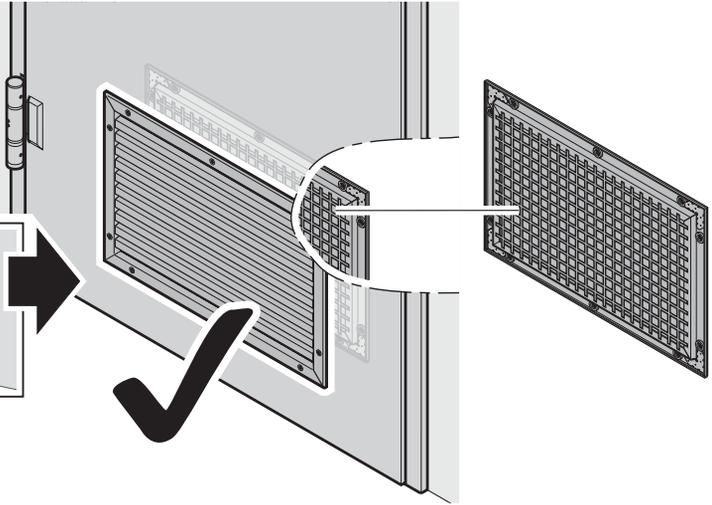
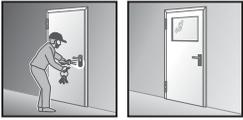
10.10b H16-2 G / H_90 F-2



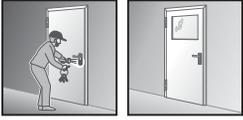
10.10c H16-2 G / H_90 F-2



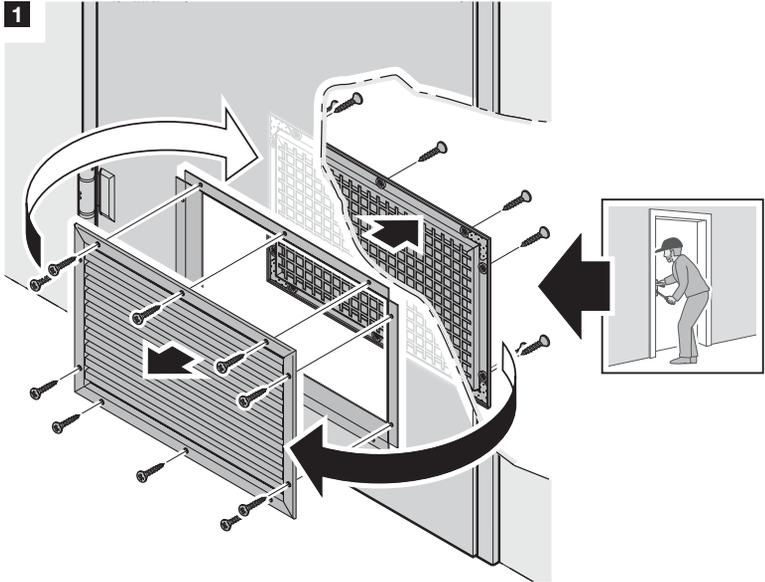
10.11a



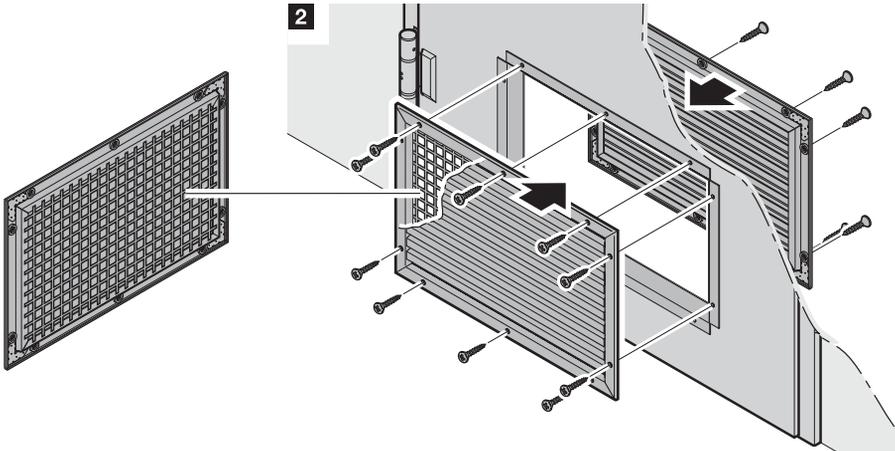
10.11b



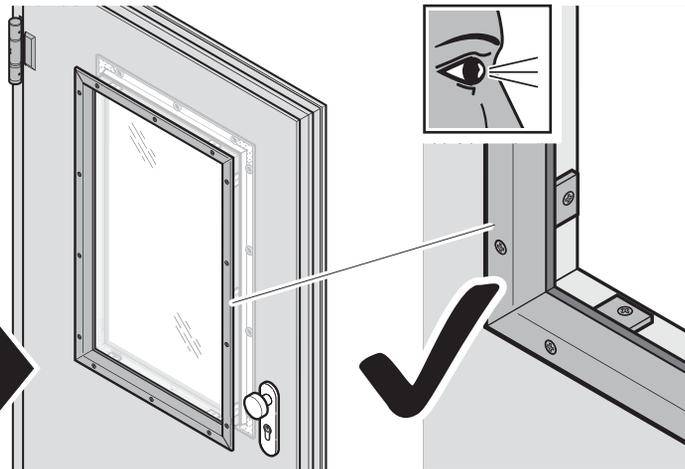
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2



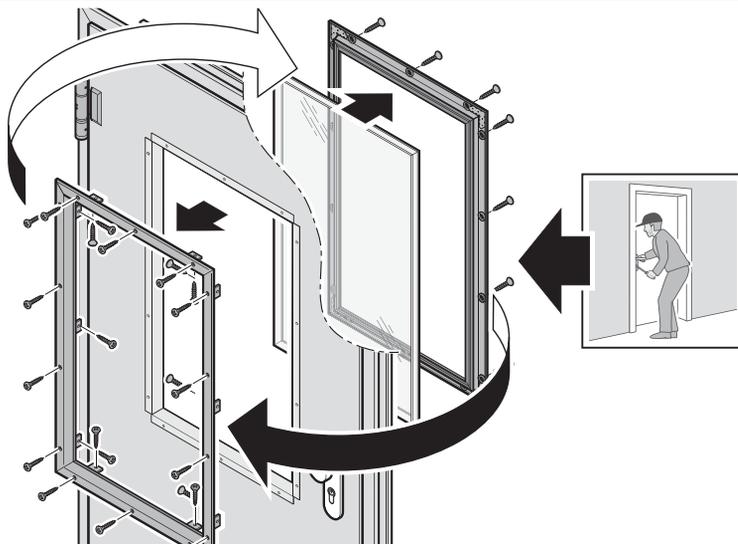
10.12a



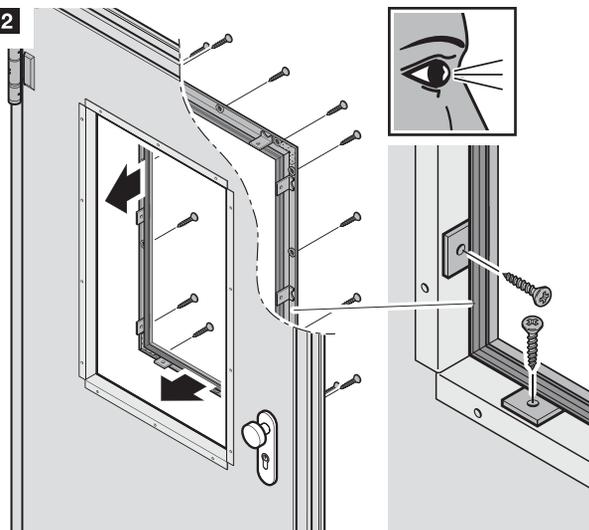
10.12b



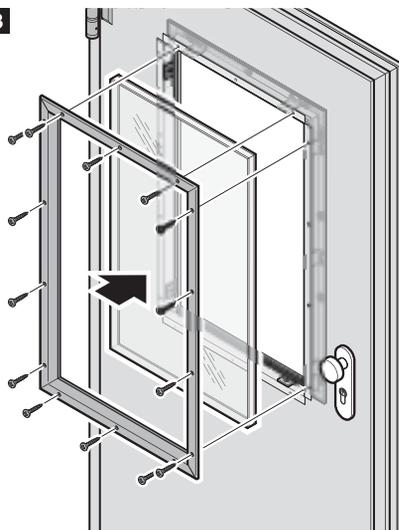
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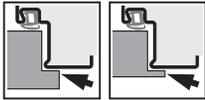
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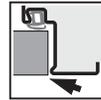
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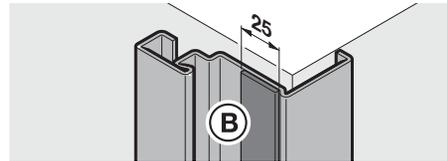
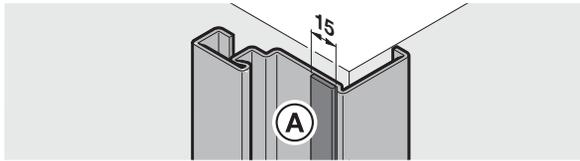
10.13a



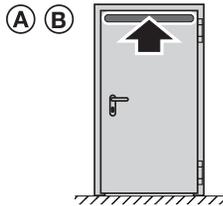
+ H3-1 OD
+ H3-2 OD



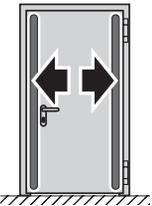
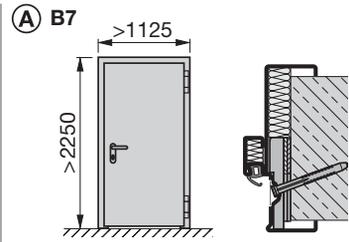
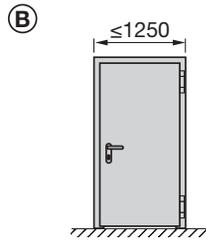
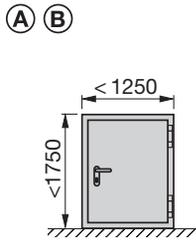
+ H3-1 OD
+ H3-2 OD



a



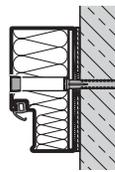
b



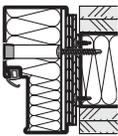
(A) (B)
D4 / D5



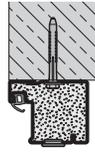
(A) (B) E2



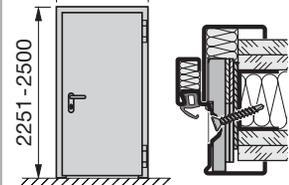
(A) (B) E9



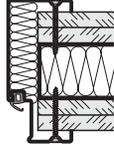
(A) (B) H1



(A) B15
1125 - 1320



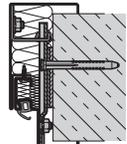
(A) (B) E5 / E6



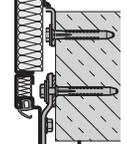
(A) (B) C1



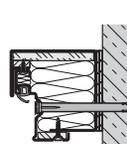
(A) (B) F1



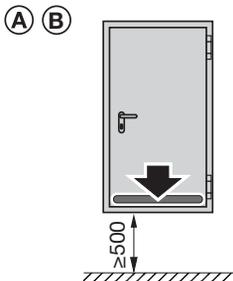
(A) (B) A7



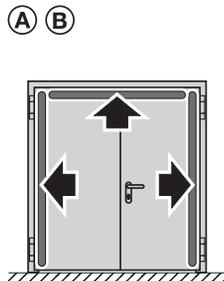
(A) (B) G2



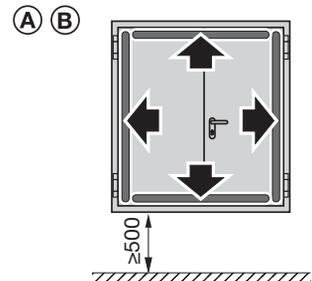
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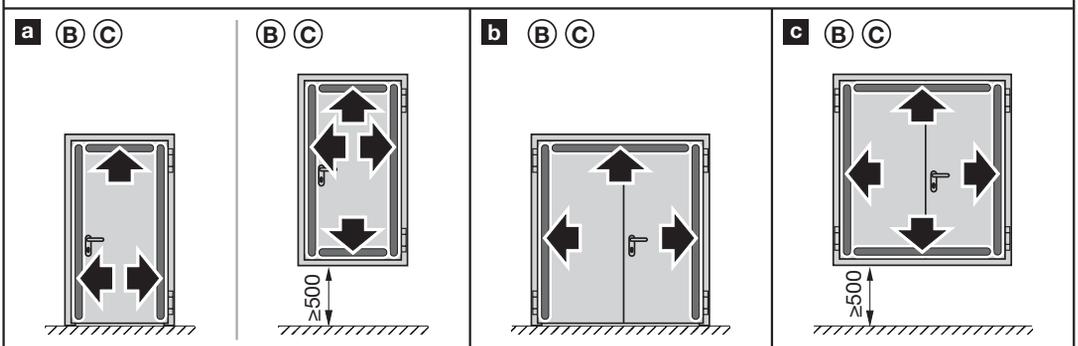
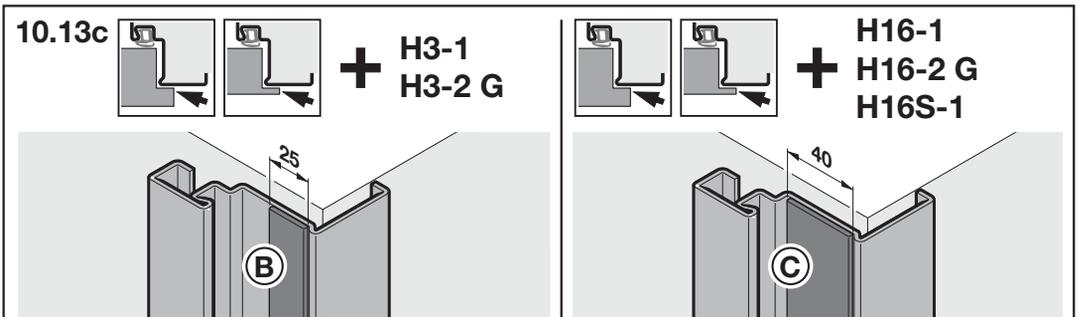
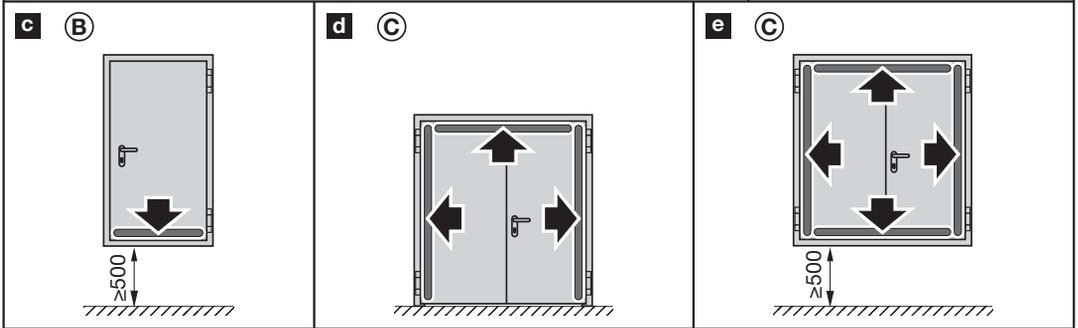
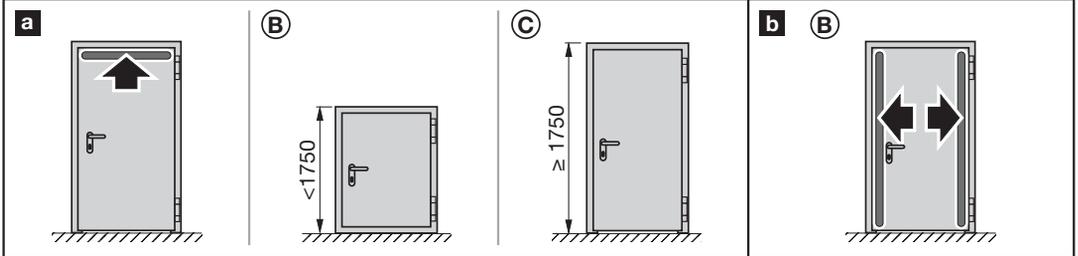
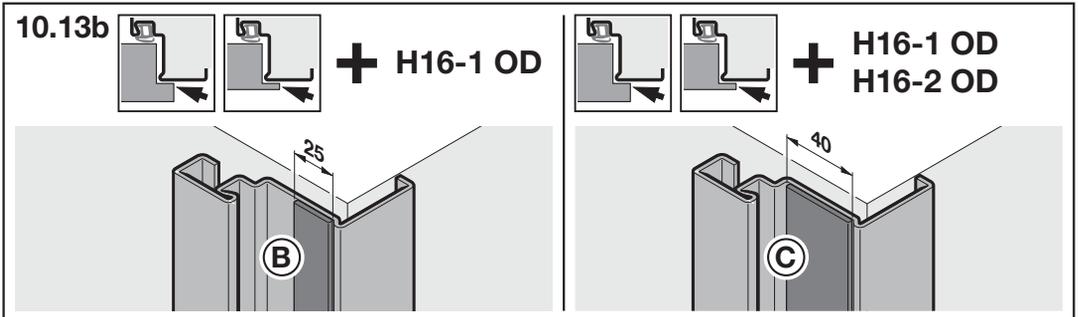


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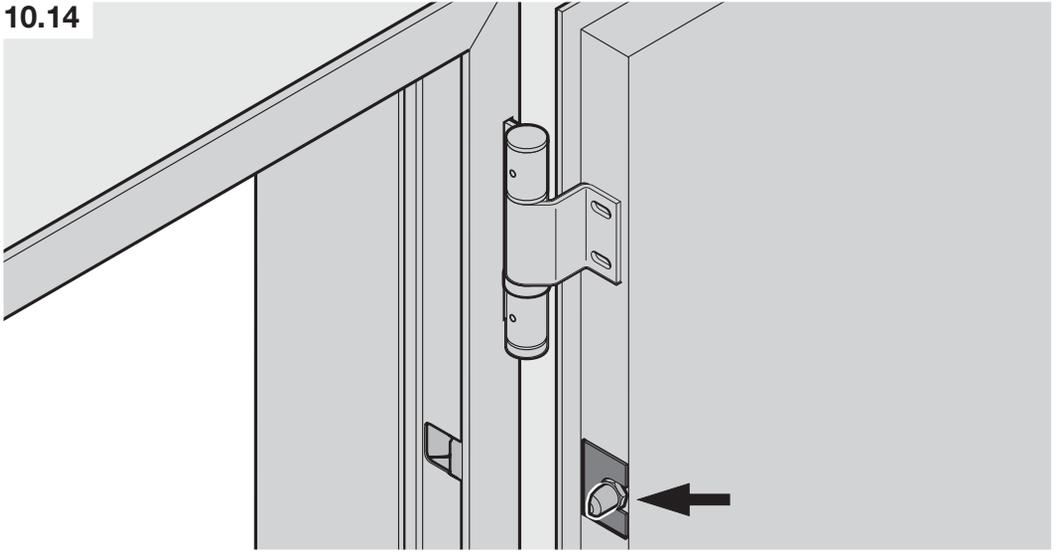


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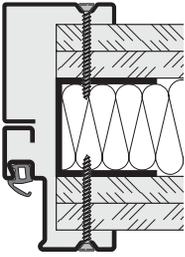




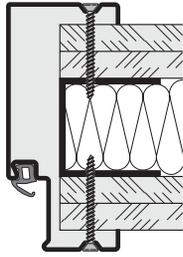
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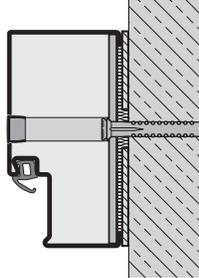
A10-A13



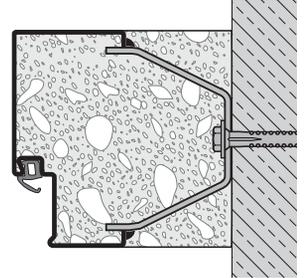
E5-E8



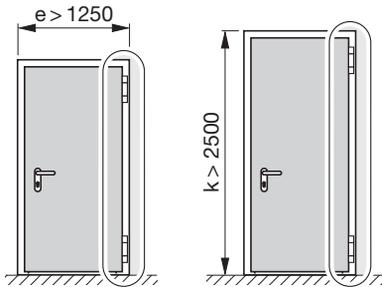
E1, E2



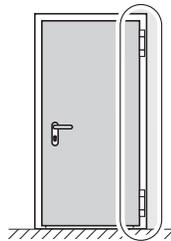
E3



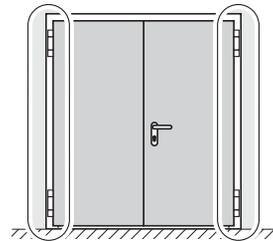
T30-1 / H_30-1



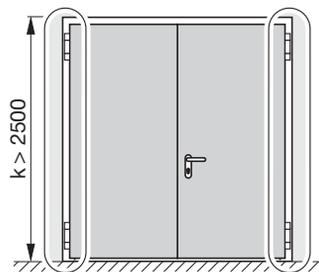
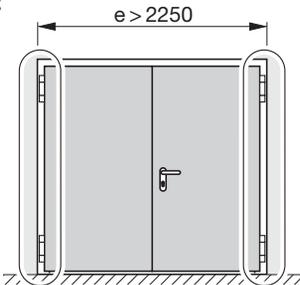
T90-1 / H_90-1



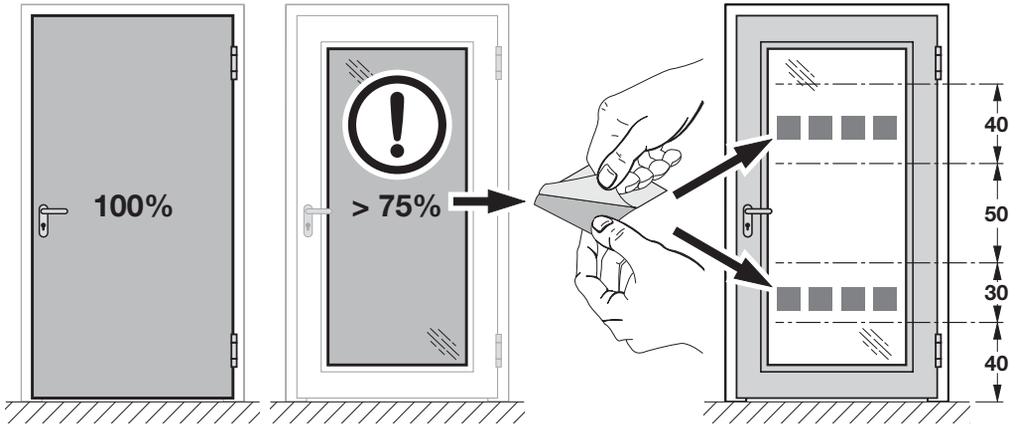
T30-2 RC3 / H_30-2 RC3



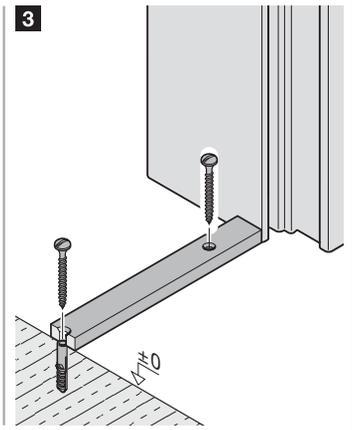
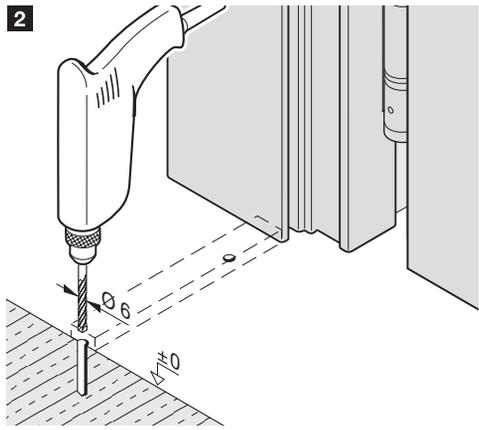
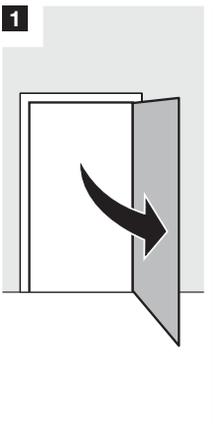
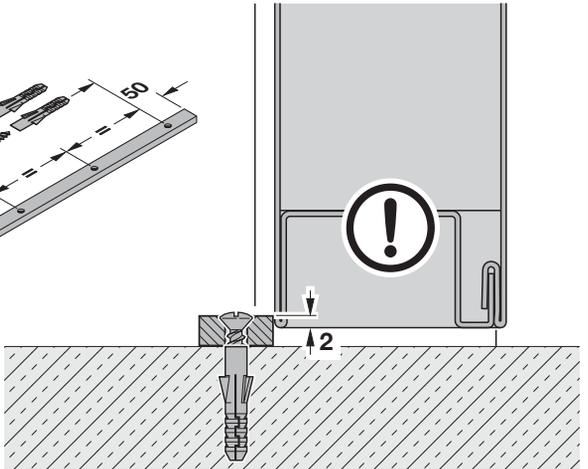
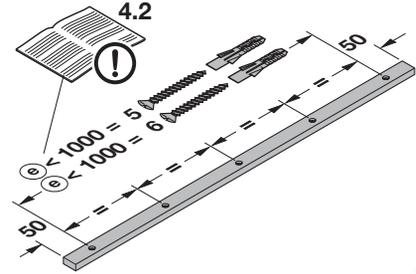
T90-2 / H_90-2



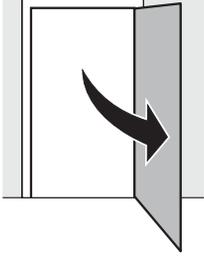
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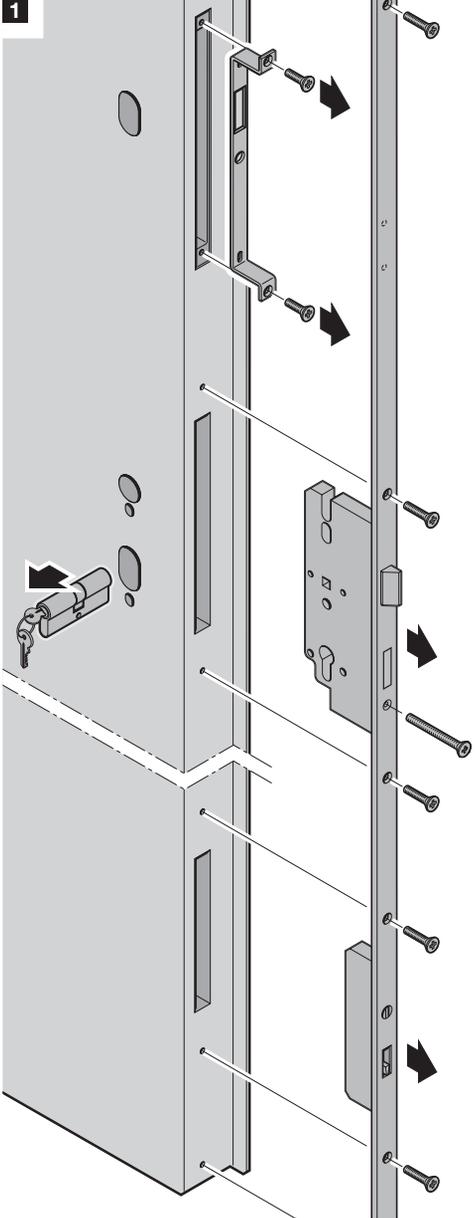
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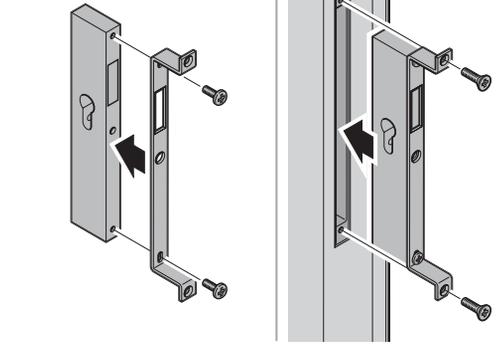
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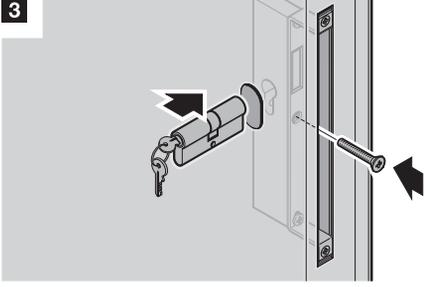
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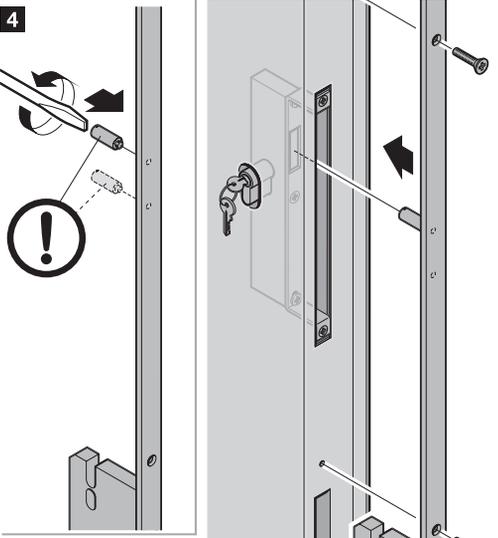
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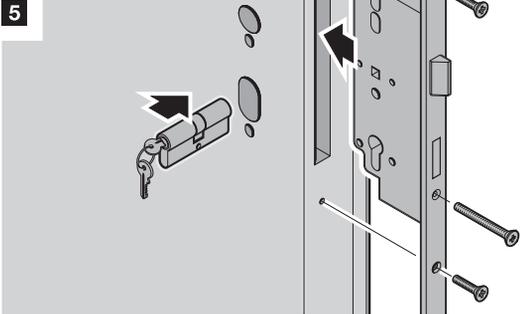
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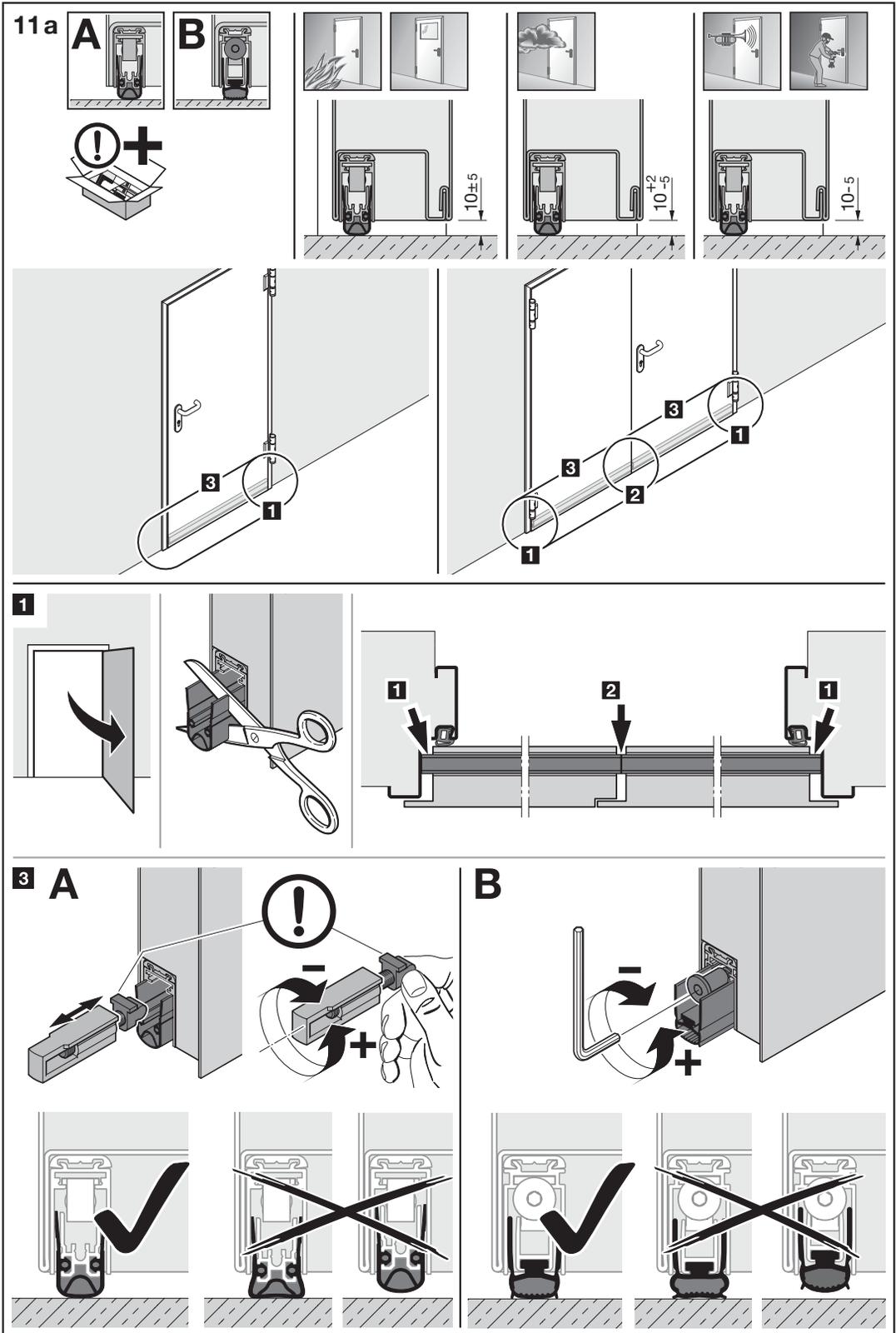


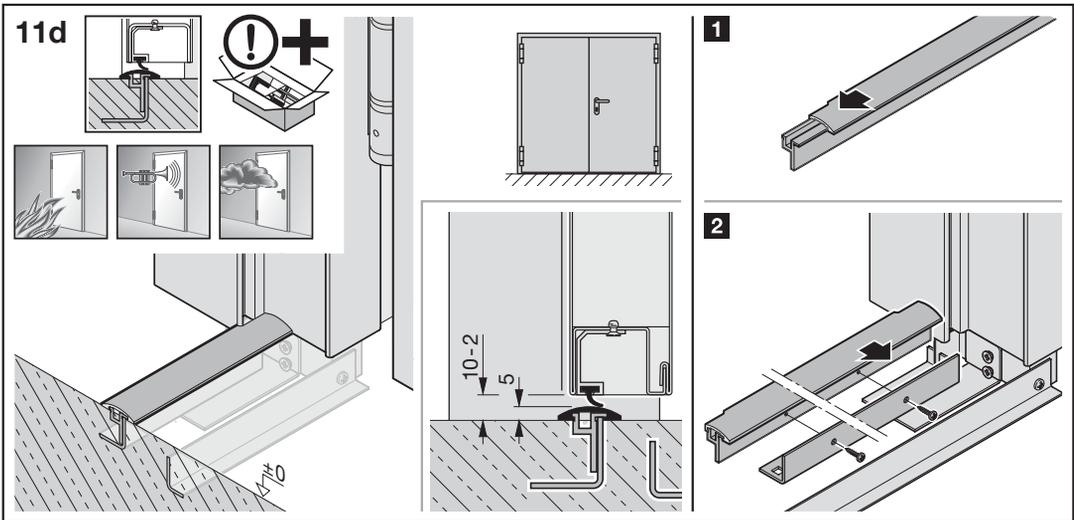
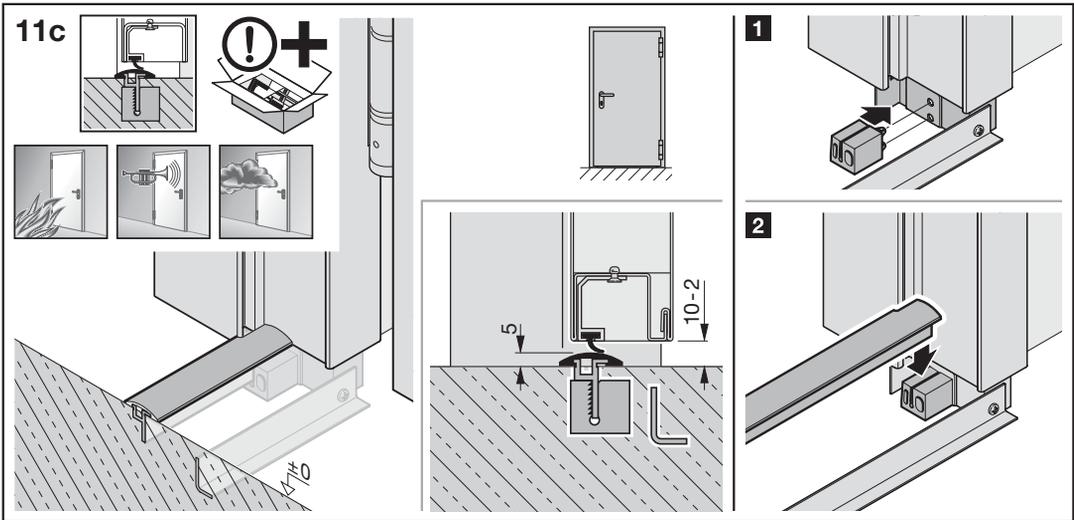
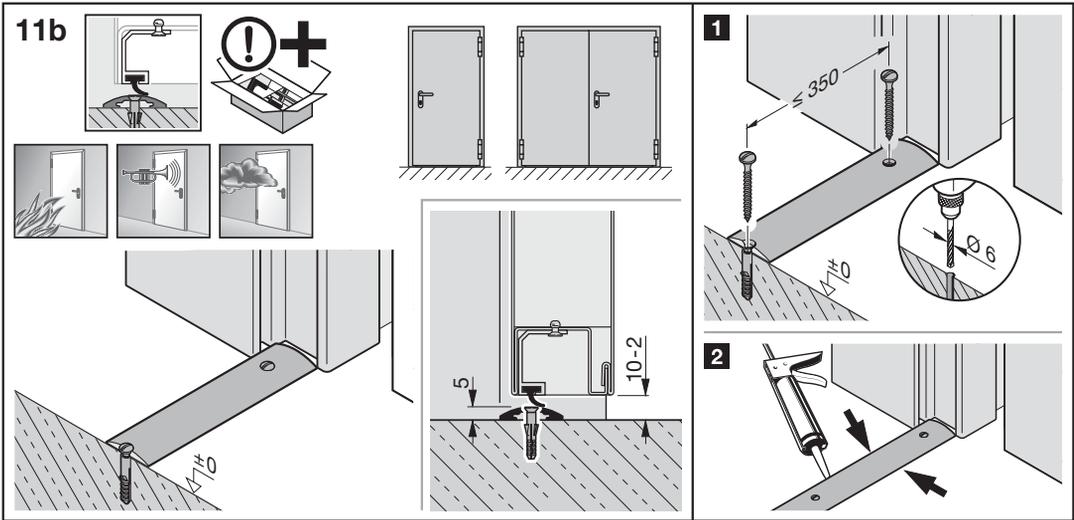
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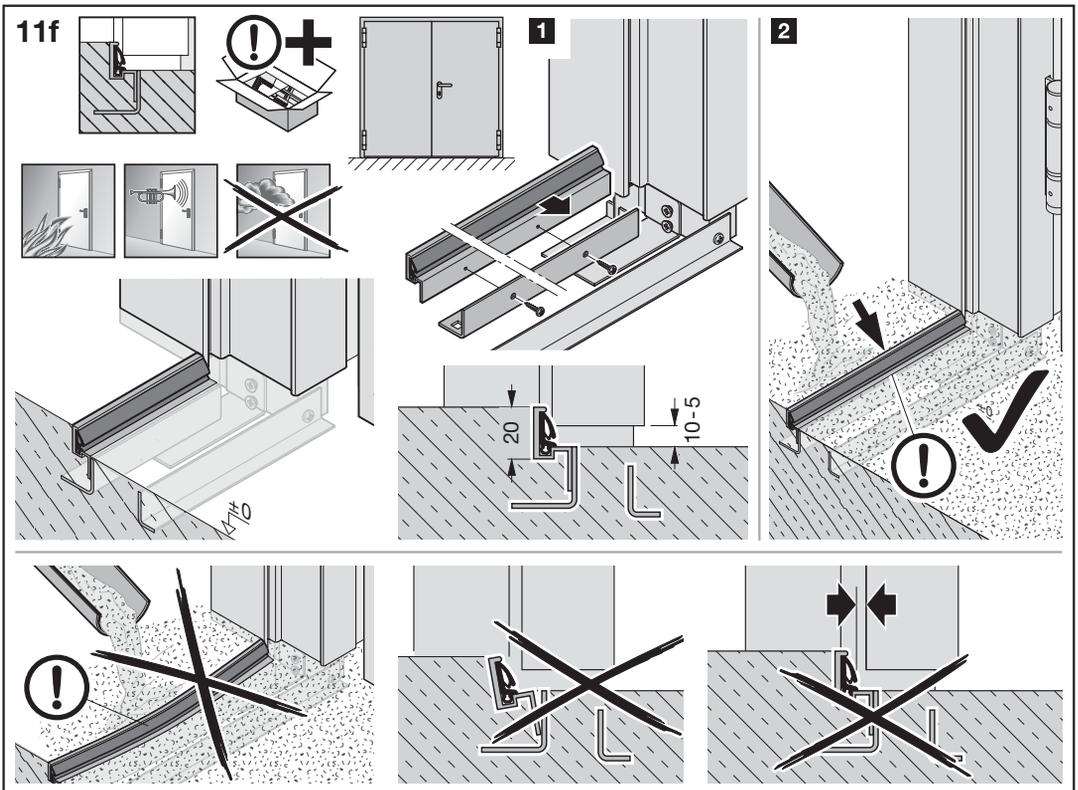
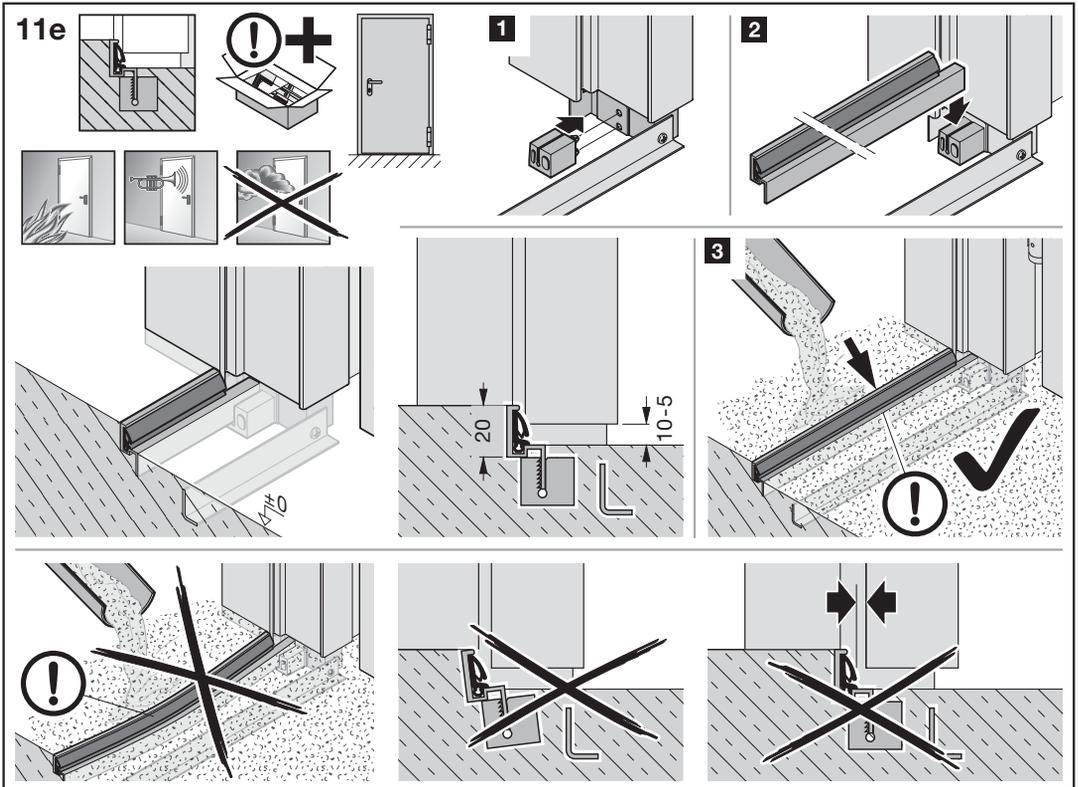


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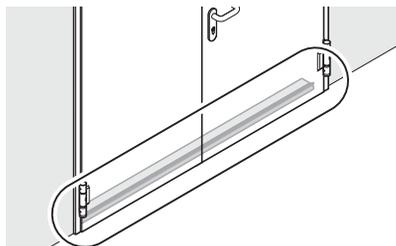
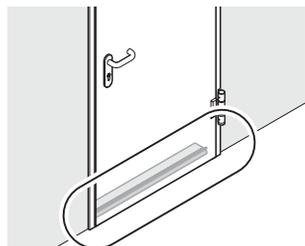
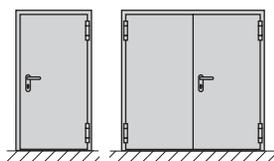
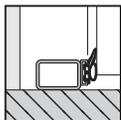




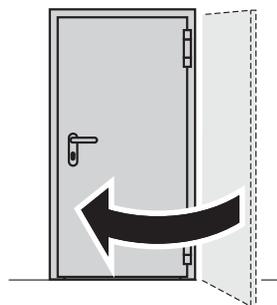




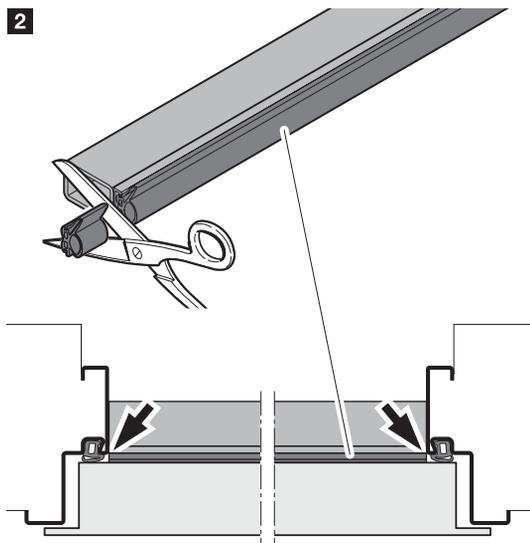
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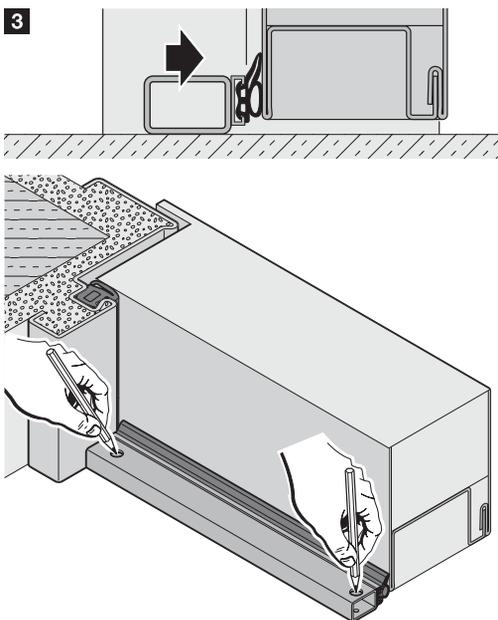
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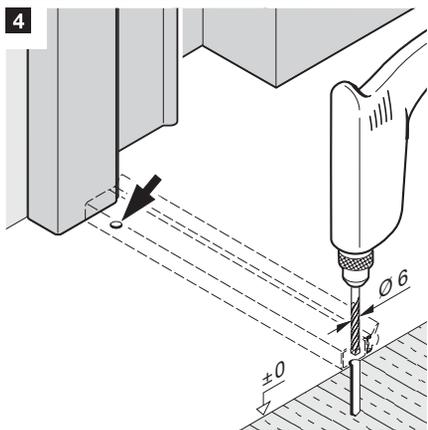
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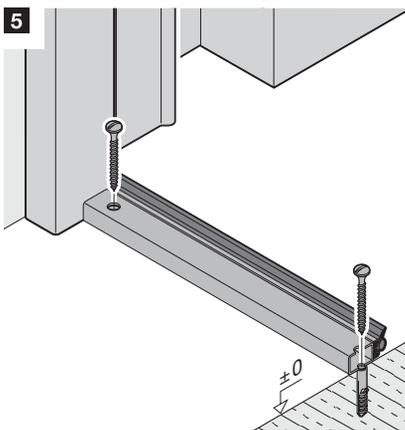
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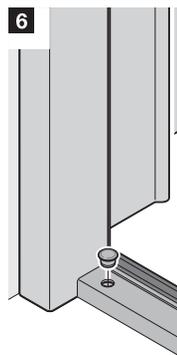
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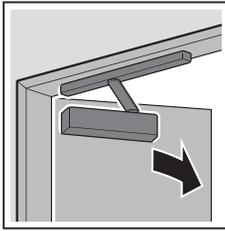
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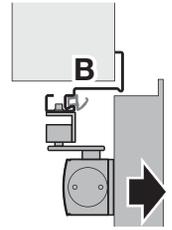
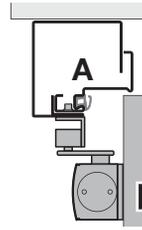
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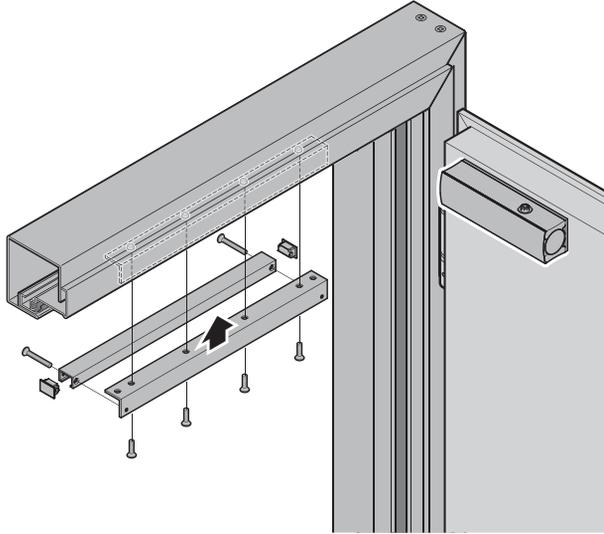
12a



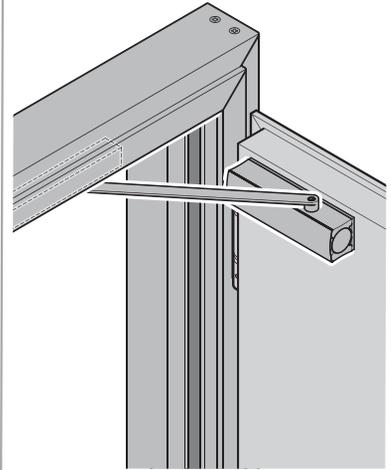
HDC 35 BG



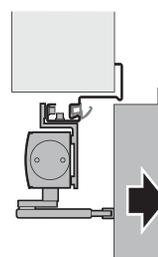
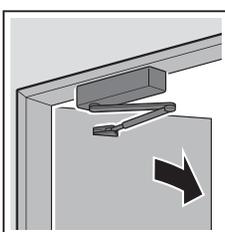
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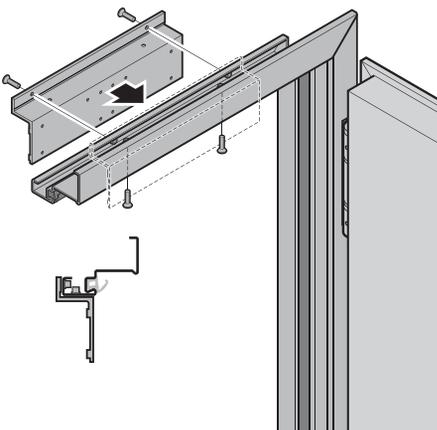
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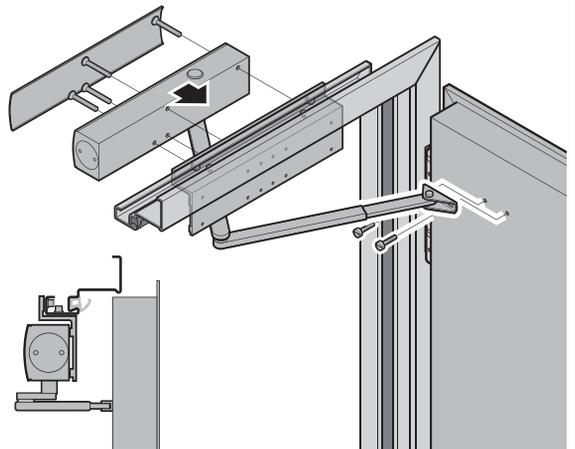
12b

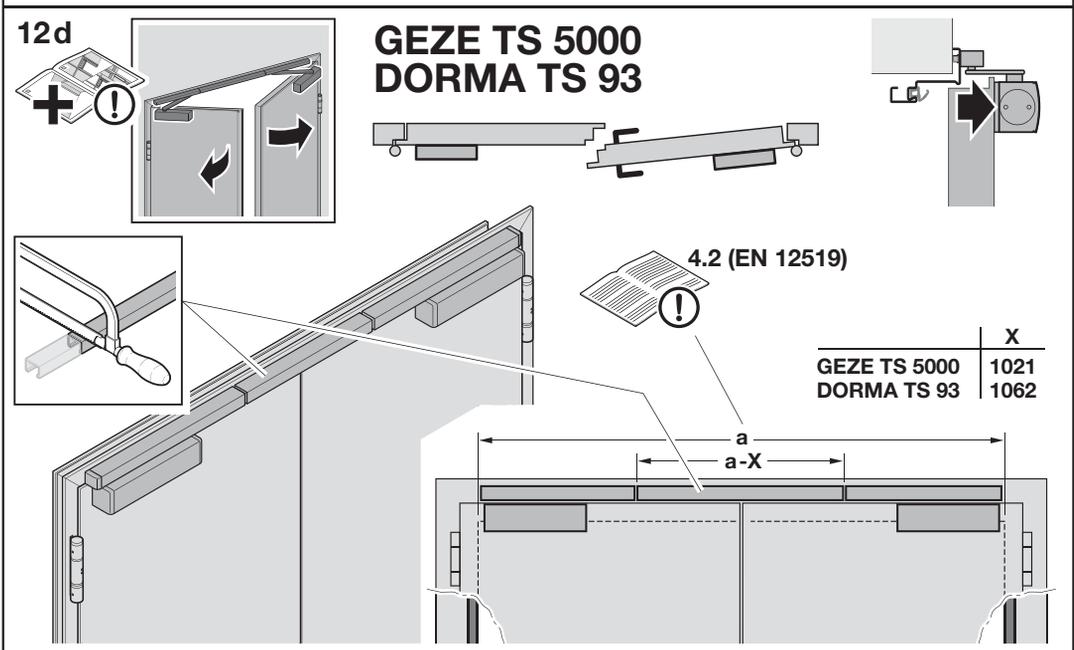
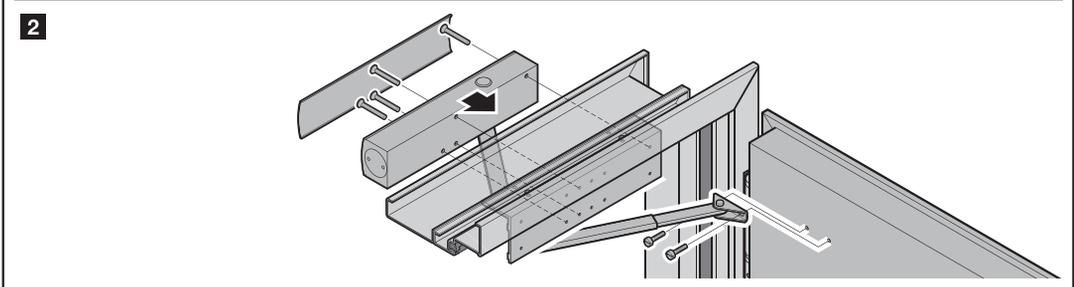
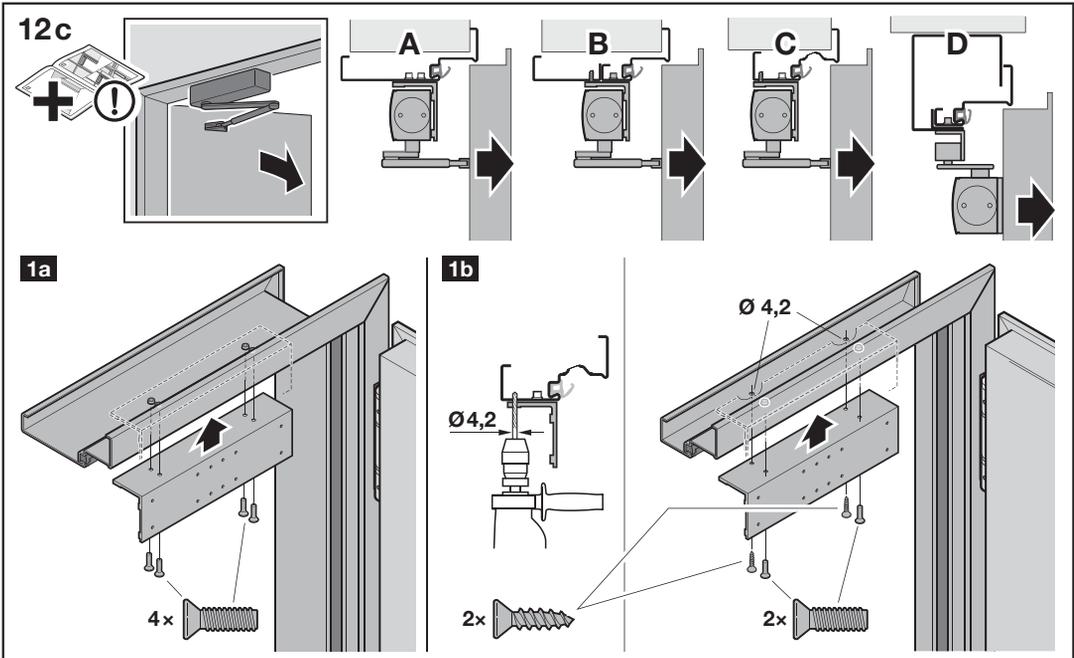


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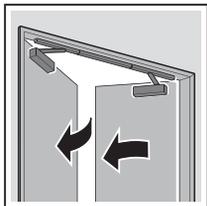


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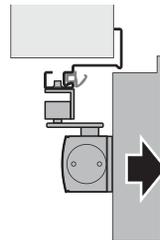
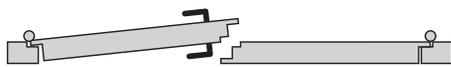




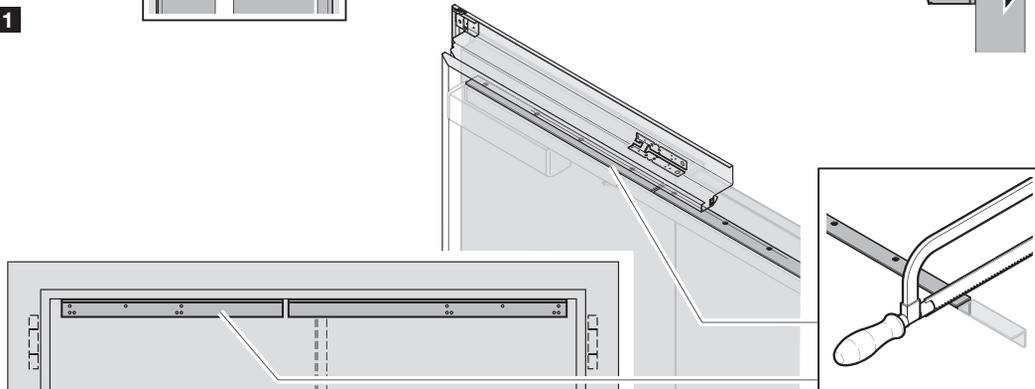
12e



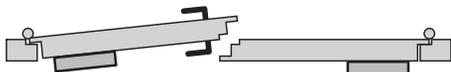
**GEZE TS 5000
DORMA TS 93**



1

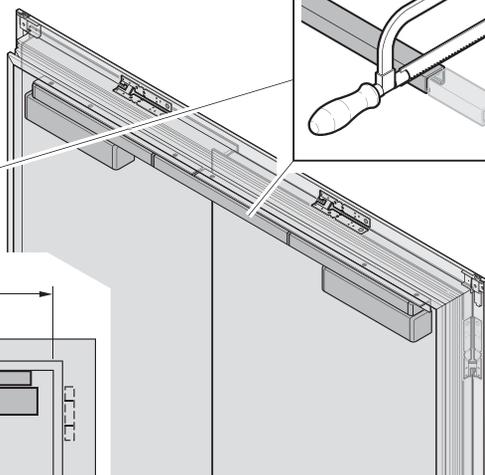
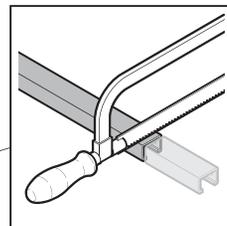
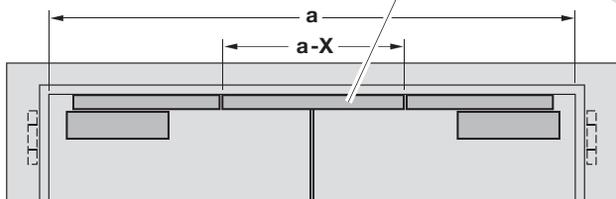


2

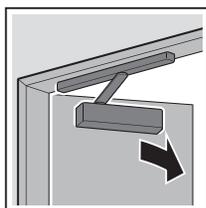


4.2 (EN 12519)

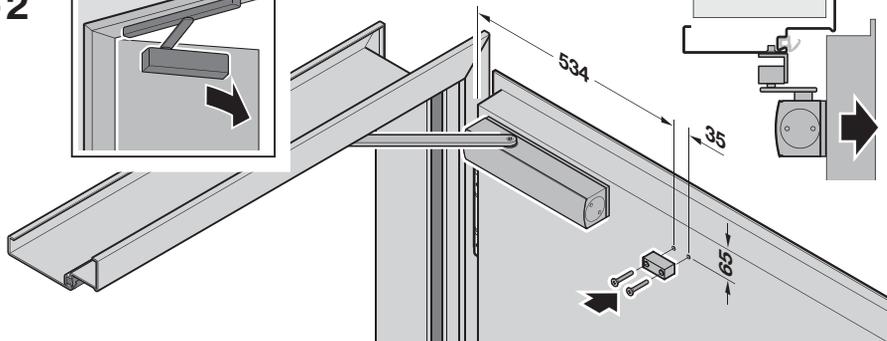
	X
GEZE TS 5000	1130
DORMA TS 93	1179



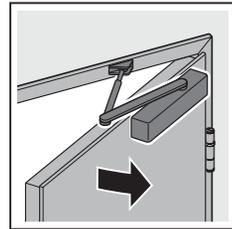
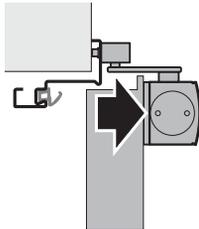
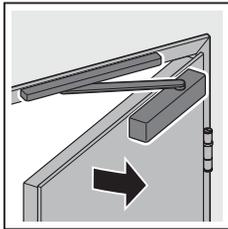
12f **H16-2
H3-2**



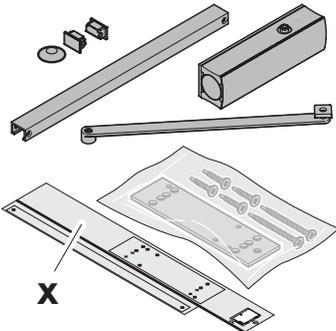
TS 93 GSR BG



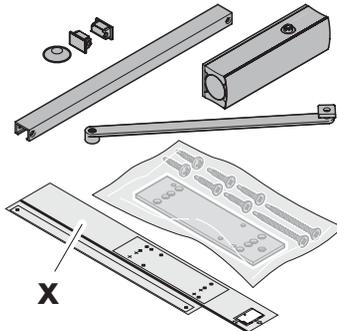
12g



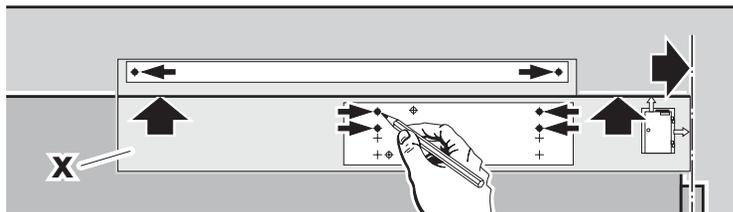
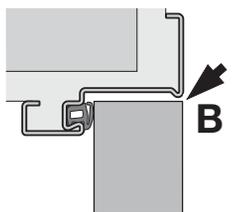
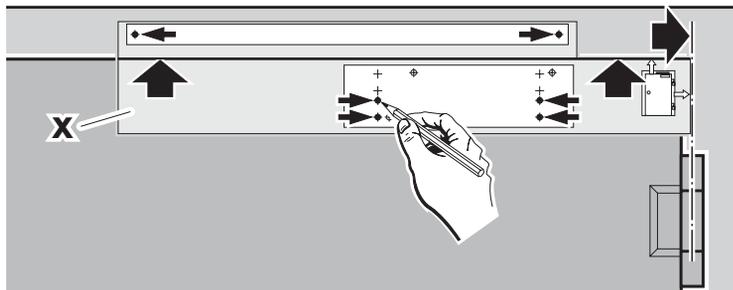
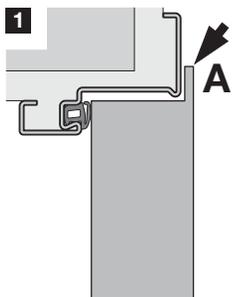
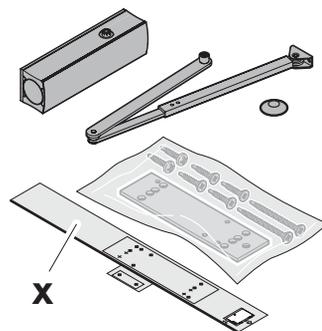
HDC 35



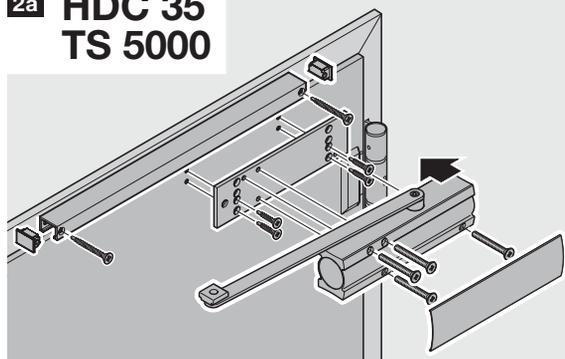
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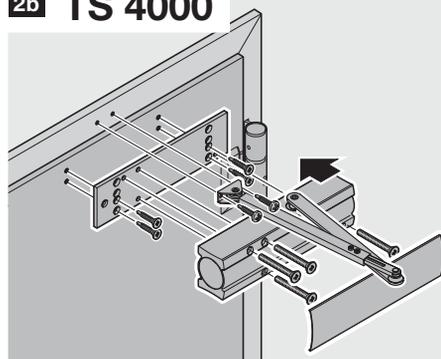
TS 4000



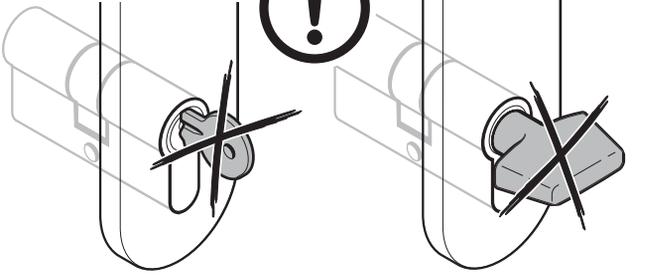
2a HDC 35 TS 5000



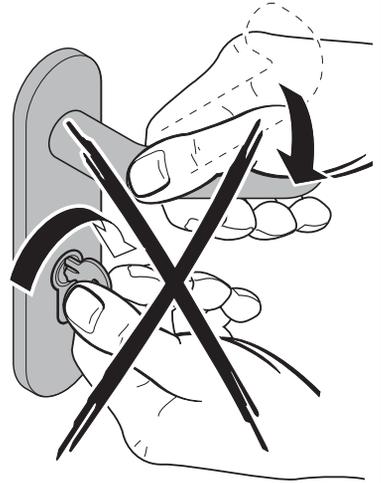
2b TS 4000



13.1a



13.1b



1



2



3

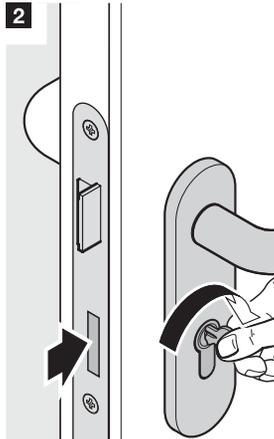


13.2

1



2



3

