



**DE**

## **Einbau- und Wartungsanleitung**

Ein- und zweiflügelige Stahltüren (OD-Türen, H3 G, H16 G, HS75, H16 S1)

**DEUTSCH ..... 3**



..... 11

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Sehr geehrte Kundin, sehr geehrter Kunde,  
wir freuen uns darüber, dass Sie sich für ein Produkt aus  
unserem Hause entschieden haben.

## 1 Zu dieser Anleitung

Bitte lesen und beachten Sie diese Anleitung. Sie gibt Ihnen  
wichtige Informationen zu Einbau, Wartung und Pflege Ihrer  
Stahltür und ist ein wichtiges Dokument für die Bauakte.

Sprechen Sie mit unserem Kundendienst, wenn Sie nach dem  
Durcharbeiten dieser Anleitung noch Fragen haben.

### 1.1 Verwendete Warnhinweise

 Das allgemeine Warnsymbol kennzeichnet eine Gefahr, die zu **Verletzungen** oder **zum Tod** führen kann. Im Textteil wird das allgemeine Warnsymbol in Verbindung mit den nachfolgend beschriebenen Warnstufen verwendet. Im Bildteil verweist eine zusätzlich Angabe auf die Erläuterungen im Textteil.

 **GEFAHR**

Kennzeichnet eine Gefahr, die unmittelbar zum Tod oder zu schweren Verletzungen führt.

### 1.2 Verwendete Symbole



Feuerschutz



Rauchschutz



Sicherheitstür



Schallschutz



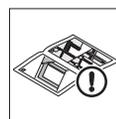
Funktionstür



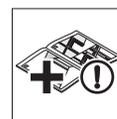
Wichtiger Hinweis



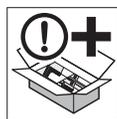
Siehe Textteil



Siehe Bildteil



Siehe Einbauanleitung  
im Zubehörpaket



Als Zubehör zu  
bestellen



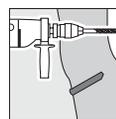
Korrektes Vorgehen



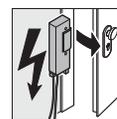
Unzulässiges Vorgehen  
(Vorgehensweise)



Schweißen



Bohren



Elektrischer Türöffner



Einbruchgefahr auf  
Öffnungsseite



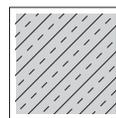
Einbruchgefahr auf  
Schließseite



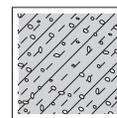
Fluchtweg



Holz



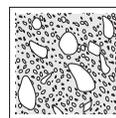
Mauerwerk / Beton



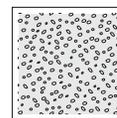
Porenbeton



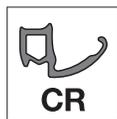
Gips



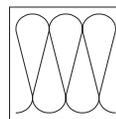
Beton



Mörtel



Zargendichtung CR  
T60 / EI<sub>2</sub> 60 / HBS60  
T90 / EI<sub>2</sub> 90 / HBS90  
HBS120  
T30 / EI<sub>2</sub> 30 mit Mineralwollhinterfüllung



Dämmstoff A  
(EN 13501-1)

## 2 Sicherheitshinweise

 **GEFAHR**

**Lebensgefahr beim Einbau der Stahltür**

Beim Einbau kann die Tür oder der Türrahmen umfallen und dabei Personen erschlagen.

- ▶ Sichern Sie Tür und Zarge vor und während der Montagearbeit gegen Umfallen.

- Setzen Sie nur qualifiziertes und unterwiesenes Personal für Montage und Wartung ein.
- Lassen Sie Elektroarbeiten nur von ausgebildeten Fachkräften durchführen.
- Führen Sie keine Veränderungen durch An- und Umbauten durch, die die Sicherheit beeinträchtigen können.
- Schließen Sie die Gefahr durch Feuer, Gas, Staub, Dampf, Rauch, Brand und Explosion bei Schweiß, Brenn- und Schleifarbeiten aus.
- Vermeiden Sie, dass bei Schweißarbeiten aufschäumende Baustoffe durch Wärmeeintrag reagieren und dadurch ihre Wirkung verlieren.

## 3 Informationen zu den Türeigenschaften

Beachten Sie, dass die Tür einzelne Eigenschaften, eine Kombination aus den Eigenschaften Feuerschutz, Rauchschutz, Schallschutz und Einbruchschutz erfüllen kann oder eine Funktionstür sein kann.

### 3.1 Feuerschutz- und Rauchschutztüren

- Die jeweilige Zulassung können Sie unter [www.hoermann.de/dokumentation/zulassungsbescheide-fuer-feuerschutzabschluesse/](http://www.hoermann.de/dokumentation/zulassungsbescheide-fuer-feuerschutzabschluesse/) einsehen. Die Zulassung muss an der Verwendungsstelle vorliegen.
  - Die angegebenen Informationen sind Mindestanforderungen für den Einbau in Deutschland. Bei Einbau in anderen Ländern gelten die jeweiligen nationalen Zulassungen, wobei die Materialkennwerte mindestens der DIN zugrunde gelegt werden müssen.
  - Beachten Sie die DIN 18093 (Einbau von Feuerschutz-türen) und die DIN 18100 (Wandöffnungen für Türen) bzw. die länderspezifischen Vorschriften.
- Der Hersteller kann in Einzelfällen nach § 22 und § 23 der Musterbauordnung eine Übereinstimmungserklärung ausstellen.
  - **Der Betreiber ist für den einwandfreien Zustand der Tür verantwortlich.**
  - In Deutschland dürfen Federbänder an Türen und Klappen mit folgenden Eigenschaften **nicht** verwendet werden:
    - Flügelgewicht > 80 kg
    - Verglasung
    - Einbau in Montagewände (Ausnahme: Maße < 1000 x 1000 mm)
    - Kombination als Rauchschutztüren nach DIN 18095
    - 2-flügelig
- Außerhalb Deutschlands können andere Vorschriften gelten, allerdings empfehlen wir die Einhaltung der deutschen Vorgaben.
- Verwenden Sie Beschläge, Schlösser, Schließmittel und Elektroanbauteile nur, wenn sie Bestandteil der Türzulassung sind oder eine Freigabe des Herstellers vorliegt.
  - Bauen Sie 3-seitig gefälzte Türen ohne unteren Schachtabschluss, in Schächten auf unterstem Bodenniveau ein.
  - Gipskartonwände und Wanddicken: siehe Tab. 1:
  - Zulässige Wände und Wanddicken: siehe Tab. 2:
  - Hinterfüllen Sie die Zarge mit mineralischem Mörtel auf Zementbasis, z. B. LM21 von Sakret, wenn es in der Einbausituation nicht anders beschrieben wird. Bei T30/El230 muss der Zargenspiegel nicht zwingend mit Mörtel verfüllt werden. Spreizen Sie U-Zargen und Eckzargen (mit und ohne Gegenzargen) vor dem Hinterfüllen ab, damit sie sich durch den Druck des Mörtels nicht verbiegen.
  - **Rauchschutz:**
    - **RS 65 - 1:** AbP Nr. P - 14 - 001829 - PR01-ift
    - **RS 65 - 2:** AbP Nr. P - 14 - 001829 - PR02-ift
    - Verwenden Sie Bodendichtungen und Dichtungskeile (siehe Bildteil Punkt 10.6 und 11).
    - Wenn die Zarge nicht komplett mit Mörtel hinterfüllt ist, müssen Sie den Zargenanschluss an die angrenzenden Bauteile versiegeln. Versiegeln Sie beide Seiten und den Fußbereich lückenlos mit dauerelastischem Material.
    - Verwenden Sie einen Schließzylinder.

Tab. 1: Zulässige F90A Montagewände mit Mindestwanddicken für Feuerschutz- und Rauchschutztüren, Höhe ≤ 5000 mm

Prüfzeugnis-Nr.	Wand	H3 OD H_30 OD	H3-1G H_30 D1	<sup>1)</sup> H3-2 VM H_30 D2
P-3310/563/07-MPA BS	Knauf W 112	≥ 100 mm	≥ 100 mm	≥ 100 mm
P-3391/170/08-MPA BS	Knauf W 131	≥ 116 mm	—	—
P-3310/563/07-MPA BS	Knauf W 132	≥ 100 mm	—	—
P-3202/2028-MPA BS	Knauf W 352/W 353	≥ 100 mm	≥ 100 mm	≥ 100 mm
P-3956/1013-MPA BS	RiGips MW 12 RF, MW 12 RFI, MW 12 HA, MW 12 DH, MW 12 BF, MW 12 RFWF, MW 12 GX	≥ 100 mm	≥ 100 mm	≥ 100 mm
P-3014/1393-MPA BS	RiGips MW 11 DD	≥ 100 mm	≥ 100 mm	≥ 100 mm
P-3020/0109-MPA BS	RiGips BW 13 DDRF	≥ 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	—	—
P-3515/0519-MPA BS	LaFarge L16	≥ 150 mm	—	—
P-3391/0890-MPA BS	LaFarge L18	—	—	—
P-MPA-E-99-047	Promat 450.81	≥ 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) max. 2750 x 2750 mm

Tab. 2: Zulässige Wände und Mindestwanddicken für Feuerschutz- und Rauchschutztüren (mm) siehe 4.2

Wand	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	H6-1 OD	H6-2 OD	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
<b>Stahltür</b> Beton DIN 1045-1, Festigkeit ≥ C12/15	1) k ≤ 2500 2) k > 2500	1) k ≤ 2500 2) k > 2500	140	140	140	140	140	140		e ≤ 1320	
	100	100	140	140	140	140	140	120		140	140
<b>Mauerwerk</b> DIN 1053-1, Steinfestigkeit ≥ 12, Mörtelgruppe ≥ 2	1) k ≤ 2500 k > 2500	1) k ≤ 2500 2) k > 2500			e ≤ 1250 und k ≤ 1750	e ≤ 1500 und k ≤ 2500				e ≤ 1250 e ≤ 1500 k ≤ 2500 k ≤ 2500	
	115	115	175	175	115	175	240	175	115	115	175
<b>Porenbeton-Block oder Plansteine</b> , DIN 4165-3, Festigkeitsklasse ≥ 4, Porenbetonplatten nach allgemeiner bauaufsichtlicher Zulassung, Festigkeitsklasse ≥ 4,4	k ≤ 2500	k ≤ 2500			3) e ≤ 1320	3) e ≤ 1320				e ≤ 1320 k ≤ 2500	e ≤ 2500 k ≤ 2500
	150	150	175	175	3) 150	3) 200	200	175	3) 200	3) 200	3) 200
<b>Montagewand F90-A</b> nach AbP, Bild 8.12 beachten, max. Höhe 5000 mm	3)	3)	3)	3)							
	e ≤ 1320	e ≤ 2500									
<b>Montagewand F90-A</b> DIN 4102-4/Tab. 10.2, Bild 8.12 beachten, max. Höhe 5000 mm	100	100	100	100	100	125	125	125	100	100	150
	e ≤ 1250 und k ≤ 2500 4) 100 / 3) 130	e ≤ 2500 und k ≤ 2500 4) 100 / 3) 130									
<b>Montagewand F30-B</b> AbP Nr.: P – SAC-02 / III-668	e ≤ 1125 und k ≤ 2125										
	185										
<b>Gips-Wandbauplatten</b> VG Orth, P – SAC 02 / III-468, Bild 9/A17 beachten	e ≤ 1250 und k ≤ 2500										
	100										

1) ohne Oberteil 2) mit Oberteil 3) siehe Tab. 1: 4) zweischalige Zarge 5) Dryfix 6) Rauchschutz, keine Zulassung in Deutschland 7) Rauchschutz, e ≤ 1320

- Setzen Sie Verglasungen von Feuerschutztüren keiner direkten Sonnenstrahlung aus.

**3.2 Schallschutztüren**

- Die gesamte Schalldämmung ist von den umgebenden Bauteilen abhängig. Die resultierende Schalldämmung von Wand und Tür müssen Sie gesondert nachweisen, da sie nicht aus dem bewerteten Schalldämmmaß  $R_w$  bzw.  $R$  der Tür allein abgeleitet werden kann.
- Achten Sie auf vollständig anliegende Dichtung(en).
- Der Boden muss glatt sein, damit die vollständige Dichtfunktion der Bodendichtung gewährleistet ist.
- Trennen Sie den Estrich im Schwellenbereich.
- Verwenden Sie Dichtungseile und Bodendichtung (siehe Bildteil Punkt 10.6 und 11).
- Verwenden Sie einen Schließzylinder.
- Hinterfüllen Sie die Zarge vollständig mit Mörtel.
- Verkleben Sie die auf Gehrung geschnittenen Ecken der Zargendichtung z. B. mit Kóratán UC 41.

**3.3 Einbruchschutztüren**

- Die Tür erfüllt ihre Einbrucheigenschaften nur, wenn der Riegel komplett vorgeschlossen und der Schlüssel abgezogen ist.
- Sichern Sie die Türblätter an allen RC3 und RC4 Türen an den Bändern mit je zwei Schrauben (siehe Bildteil Punkt 10.2)
- Verwenden Sie bei RC3 nur Eckzargen, Eckzargen mit Gegenzargen, U-Zargen und Blockzargen, ausgenommen Einbausituation H1.
- Verwenden Sie bei RC4 nur Eckzargen, Eckzargen mit Gegenzargen und U-Zargen.
- Hinterfüllern Sie die Zarge bei RC2 mindestens im Bereich der Verriegelungspunkte, Bänder, Sicherungsbolzen und Falzluftbegrenzer dauerhaft druckfest. Druckfestigkeit ca. 10 N/mm<sup>2</sup>.
- Hinterfüllen Sie die Zarge bei RC3 und RC4 Türen umlaufend druckfest. Druckfestigkeit ca. 10 N/mm<sup>2</sup>.
- Montieren Sie an Türen mit Gläsern den Glashalterahmen mit Sicherungsglaschen oder Sicherungswinkeln auf der Angriffsseite.
- Messen Sie bei 2-flügeligen Türen die unteren Spaltmaße von der Bodenbuchse.
- Verwenden Sie bei Antipaniktüren mit Drücker oder Stangengriff unseren L- Winkel mit Höckerschwelle, siehe 10.16.
- Stellen Sie sicher, dass sichtbare Zargen-Befestigungspunkte und Hinterfüllerteile von der Angriffsseite aus nicht demontierbar sind (z. B. sichtbare Schraubenantriebe nach der Zargen-Montage unbrauchbar machen oder dauerhaft überdecken).

**3.3.1 Mindestanforderungen an einbruchhemmende Türen**

Widerstandsklasse nach DIN EN 1627	RC2	RC3	RC4
Mauerwerk DIN 1053, Teil 1 [mm] Steinfestigkeit $\geq 12$	115	115	240
Stahlbeton, mind. C12/15 [mm]	100	120	140
Porenbetonsteine Klasse 4 [mm]	175, 115 <sup>1)</sup>	240	-
Porenbetonplatten Klasse 4 [mm]	150	-	-
Montagewand Knauf W118.de, WK2 [mm]	101	-	-
Holzständerwand nach DIN EN 1627	✓	-	-
Schließzylinder nach DIN 18252:2006-12 <sup>2) 3)</sup>	21-, 31-, 71-BZ	42-, 82-BZ	

Widerstandsklasse nach DIN EN 1627	RC2	RC3	RC4
Schutzbeschlag nach DIN 18257:2003-03 <sup>2)</sup>	ES1 (ZA)	ES2 (ZA)	ES3 (ZA)
Gläser EN 356 (Feuerschutz)	P5A <sup>4)</sup> P7B <sup>5)</sup>	P5A <sup>4)</sup>	-

- 1) nur 1-Flüglér, wir empfehlen Wanddicken ab 150 mm
- 2) Schutzbeschlag oder Schließzylinder muss mit Ziehschutz (ZA) ausgeführt sein.
- 3) nicht zwingend im Lieferumfang enthalten
- 4) nicht in Flucht- und Rettungswegen
- 5) in Flucht- und Rettungswegen

**3.4 Funktionstüren**

Die Zargen müssen nicht zwingend hinterfüllt werden.

**3.5 Außenanwendung**

Beachten Sie die separate Anleitung Art.-Nr.: 5 04 855 beim Einbau im Außenbereich. Sie finden die Anleitung unter www.hoermann.de.

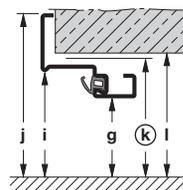
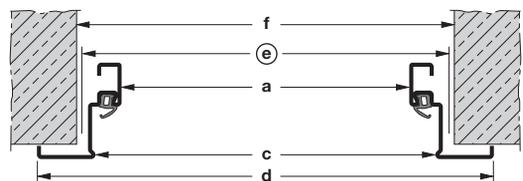
**4 Montage**

**4.1 Vor der Montage**

Klären Sie vor der Montage folgende Fragen:

- Welche Eigenschaften hat die Tür?
- Ist die Wandbauart zum Einbau der Tür geeignet?
- Ist die Höhenlage des Bodens bekannt (Meterriss?)
- In welche Richtung soll die Tür öffnen?
- Sind Bauvorschriften zu beachten?
- Muss die Wand im Bereich der Mauerschuttkästen ausgestemmt werden?

**4.2 Maße nach EN 12519**



$$\begin{aligned}
 a &= e - 82 & g &= k - 42 \\
 c &= e - 36 & i &= k - 19 \\
 d &= e + 64 & j &= k + 31 \\
 f &= e + 20_0 & l &= k + 15_0
 \end{aligned}$$

Abb. 1: Maße

- a/g lichte Öffnungsweite / -höhe
- c/i lichte Falzbreite / -höhe
- d/j Zargenaußenmaßbreite / -höhe
- e/k Baurichtmaßbreite / -höhe
- f/l lichte Rohbaumaßbreite / -höhe (DIN 18100)

**4.3 Bei der Montage**

- Beachten Sie die Einbauhinweise in den Zubehörpaketen.
- Verwenden Sie Montageteile, wenn sie mitgeliefert werden, z. B. Dübellaschen, Dübel oder Schrauben.
- Verwenden Sie die unter Punkt 8 angegebenen Dübel.
- Verwenden Sie in Verbindung mit Eckzarge und Hochlochziegel bzw. Gipssteinen den Dübel FUR 10 x 80 / 100 mm und beachten Sie Punkt 8 der Einbauanleitung.

- Bohren Sie Hochlochziegel und Hohlkammersteine ohne Schlag.
- Beachten Sie den Mindestrandabstand von 50 mm bei horizontalen bzw. vertikalen Bohrungen und die Spreizrichtung der Dübel.
- Beachten Sie, dass bei Zargen ohne Bodeneinstand der untere Montagewinkel vor der Montage entfernt werden muss.

#### 4.4 Hinweise zum Bildteil

siehe Punkt	Beschreibung
8	Einbausituationen und Zargenformen
8.1a	Dünnfalz
8.1b	Dickfalz
8.2a / 8.2b	Anzahl der Befestigungspunkte
8.2c	Einbauablauf
8.3a	Ausbau der Standardtür
8.3b	Ausbau der Sicherheitstür
8.4	Zusammenbau der Eckzarge
8.5	Bodenmulde und Montagewinkel
8.6	Befestigungsteile
8.7	Minimaler Randabstand und Spreizrichtung Dübel
8.8	Einbau Schattennutprofile
8.9	Leerrohre in der Zarge
8.10	Einsetzbare E – Öffner
8.11	Mauerschutzkästen in GKF – Wände
8.12	Aufbau GKF – Wände
9.0	Einbausituationen
10.1a	Einbau mit Standardbändern
10.1b	Einbau mit 3D – Bändern
10.2	Einbau der Sicherheitstür
10.3	Einstellen der Luftspalte
10.4	Entfernen der Bodenwinkel bei Zargen ohne Bodeneinstand
10.5	Einbau der Gegenzarge
10.6	Dichtungskeile mit Silikon befestigen
10.7	Einbau der Zargendichtung
10.8	Anheben der Tür
10.9	Spannen des Federbandes Umbau Glasrahmen
10.10	Überprüfung Falleneingriff
10.11	Umbau des Lüftungsgitters
10.12	Umbau Glasrahmen
10.13	Dämmschichtbildner bei Feuer- und Rauchschutz
10.14	Dämmschichtbildner an Sicherungsbolzen
10.15	Kennzeichnung großer Glasflächen
10.16	Paniktüren und RC
10.17	Einbau Blockschloss bei Mehrfachverriegelung
10.18	Einbau Ankerplatte für Türhaftmagnet
11	Bodendichtungen
12	Türschließer
13	Găuri pentru montarea senzorilor, sistemului de actionare a canalului batant
14.1	Schlüssel bei Paniktüren abziehen
14.2	Fehlbedienung des Schlosses vermeiden

## 5 Wartung und Pflege

### 5.1 Jährliche Wartungsarbeiten

- ▶ Kontrollieren Sie Türblatt, Zarge und Befestigung auf mechanische und korrosive Schäden.
- ▶ Kontrollieren Sie die Funktion des Schlosses und fetten Sie ggf. die Falle.
- ▶ Schmieren Sie Bolzenschlösser mit Teflonspray.

- ▶ Kontrollieren Sie die Befestigung der Anbauteile, wie z. B. Drücker, Schloss, Türschließer, Bänder usw.
- ▶ Fetten Sie Bandbolzen und Lagerringe.
- ▶ Kontrollieren Sie die Spaltmaße.
- ▶ Kontrollieren Sie die Sichtbarkeit der Kennzeichnung.



#### Lebensgefahr durch abgelöste Dämmschichtbildner

Durch abgelöste Dämmschichtbildner verliert der Feuerschutzabschluss seine Funktion.

- ▶ Ersetzen Sie abgelöste Dämmschichtbildner, siehe Bildteil Punkt 10.13.

- ▶ Tauschen Sie defekte Teile aus.
- ▶ Verwenden Sie nur Original-Ersatzteile des Herstellers.

Wenn Sie Mängel feststellen, die Sie nicht selbst beheben können, beauftragen Sie eine Fachfirma.

### 5.2 Inbetriebnahme und Wartung von Panikverschlüssen

[www.hoermann.de/dokumentation/zulassungsbescheide-fuer-feuerschutzabschluesse/](http://www.hoermann.de/dokumentation/zulassungsbescheide-fuer-feuerschutzabschluesse/)

(siehe Punkt 9)

### 5.3 Erforderliche Oberflächenbehandlung für Elemente mit Standardgrundierung

Die Oberfläche von Türblatt und Zarge besteht aus einer Pulvergrundbeschichtung auf Epoxidharz Polyester Basis.

1. Entfernen Sie die Dichtung(en).
2. Schleifen Sie, bis auf die Dämmschichtbildner alle zu lackierenden Oberflächen an.
3. Reinigen Sie die Oberflächen gründlich.
4. Kleben Sie das Kennzeichnungsschild ab.
5. Verwenden Sie für die Endbehandlung von Türblatt, Zarge und Dämmschichtbildner folgenden Beschichtungsaufbau:
  - Grundbeschichtung 2K Epoxi Haftgrund und Endbeschichtung mit geeigneten handelsüblichen Bautenlacken oder
  - Grund- und Schlussbeschichtung mit 2K PUR Lack.
 Witterungseinflüsse wie z. B. Sonneneinstrahlung können zu vorübergehender Verformung des Türblattes führen. Dunkle Anstriche verstärken diesen Effekt, der keinen Grund zur Beanstandung darstellt. Wir empfehlen helle und / oder reflektierende Anstriche. Beachten Sie das BFS Merkblatt Nr. 24 sowie die Verarbeitungshinweise der Lackhersteller und fertigen Sie eine Haftprobe an. Nehmen Sie die Endbehandlung innerhalb von drei Monaten nach Montage vor, um Korrosionsschäden zu vermeiden.
6. Bringen Sie die Dichtung(en) nach dem Trocknen der Farbe wieder an.

### 5.4 Reinigung

- ▶ Reinigen Sie die Oberflächen mit klarem Wasser oder handelsüblichem Lackreiniger.

### 5.5 Pflege von Edelstahlbauteilen

- ▶ Reinigen und pflegen Sie regelmäßig Bauteile aus Edelstahl mit der bei Hörmann erhältlichen Edel Glanz Edeldahlpflege und tragen Sie diese mit einem weichen Tuch auf.

## 6 Etikettierung und Kennzeichnung

Das Etikett der Türtypen **D65-1, D65-2, D65-1 OD, D65-2 OD** ist auf Grundlage der Verordnung (EU) Nr. 305/2011 mit dem CE-Konformitätskennzeichen versehen. Die herangezogene und angewandte harmonisierte europäische Produktnorm ist EN 14351-1:2006 + A1:2010 „Fenster und Türen – Produktnorm, Leistungseigenschaften – Teil 1: Fenster und Außentüren ohne Eigenschaften bezüglich Feuerschutz und / oder Rauchdichtheit.“ Die Nummer der zugehörigen CE-Kennzeichnung bzw. Leistungserklärung ist im Falzbereich der Tür auf dem oben genannten Etikett zwischen dem Herstellerlogo und dem CE-Konformitätskennzeichen angegeben.

Türen, auf deren Etikett kein CE-Konformitätskennzeichen abgebildet ist, fallen nicht in den Anwendungsbereich der oben genannten harmonisierten europäischen Produktnorm und dürfen daher nicht über eine CE-Kennzeichnung bzw. Leistungserklärung verfügen.

## 7 Allgemeines

Die Inbetriebnahme der Tür ist so lange untersagt, bis festgestellt wurde, dass sie nach unseren Vorgaben montiert und auf ihre ordnungsgemäße Funktion überprüft wurde. Bei einer Veränderung des Produkts verliert die Leistungserklärung ihre Gültigkeit.

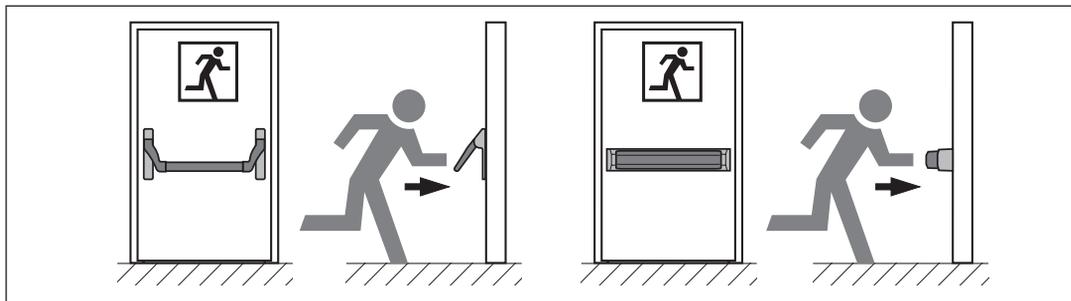
## 8 Leistungserklärung

Leistungserklärung siehe Bild 8.3:  
[www.hoermann.com/dop](http://www.hoermann.com/dop)

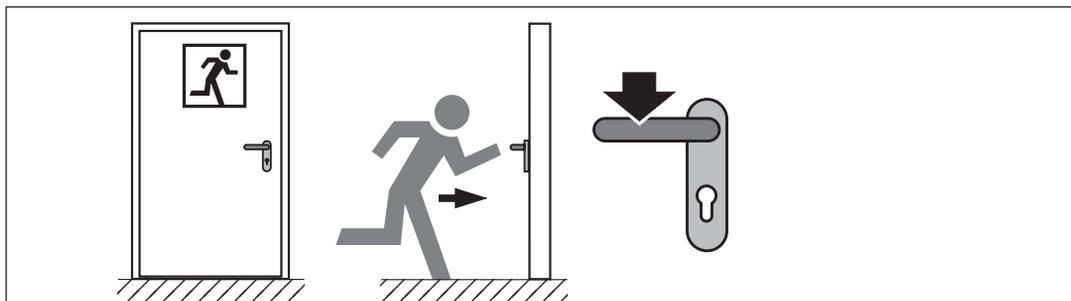
## 9 Wartung von Panikverschlüssen

Inbetriebnahme		
Kunden-Nr.:	Kunde:	
Datum:	Monteur:	
Anschritt:		
Produkt:	Panikverschluss nach EN 1125	<input type="checkbox"/>
	Notausgangverschluss nach EN 179	<input type="checkbox"/>

### Panikverschluss nach EN 1125



### Notausgangverschluss nach EN 179



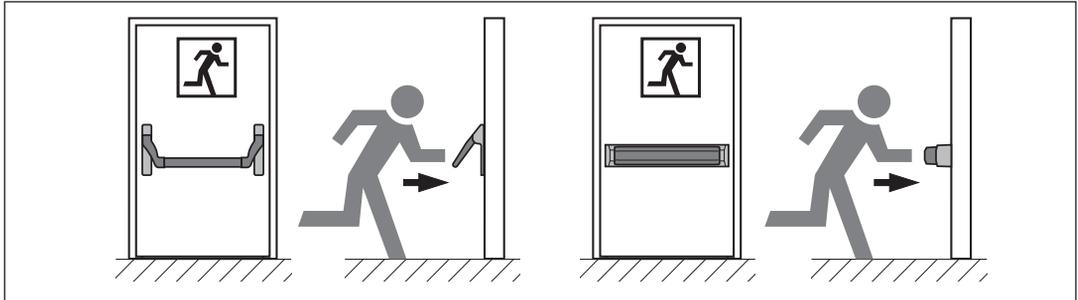
### Checkliste:

Sperrgegenstände wie Bodenmulden auf Verschmutzungen geprüft und ggf. gereinigt	<input type="checkbox"/>
Montagedurchführung entsprechend der Montageanleitung des Herstellers geprüft	<input type="checkbox"/>
Verschluss geschmiert entsprechend den Anweisungen des Herstellers	<input type="checkbox"/>
keine nachträglichen Veränderungen festgestellt, wie z. B. nachträglicher Anbau von zusätzlichen Verriegelungsvorrichtungen	<input type="checkbox"/>
sämtliche Bauteile der Anlage entsprechend der Auflistung der gelieferten und zugelassenen Bauteile	<input type="checkbox"/>
keine lockeren Befestigungsschrauben an den Beschlägen festgestellt	<input type="checkbox"/>
Kontrolle durchgeführt, ob bei Verschlussbetätigung und vorgeschlossenem Riegel, Falle und Riegel vollständig zurückgezogen werden	<input type="checkbox"/>

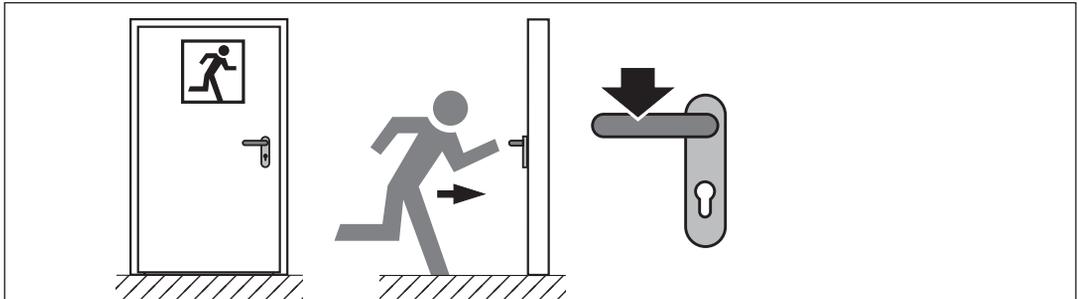
## 9 Wartung von Panikverschlüssen, Kopievorlage

Kunden-Nr.:	Kunde:
Datum:	Monteur:
Anschrift:	
Produkt:	Panikverschluss nach EN 1125 <input type="checkbox"/>
	Notausgangsverschluss nach EN 179 <input type="checkbox"/>

### Panikverschluss nach EN 1125



### Notausgangsverschluss nach EN 179

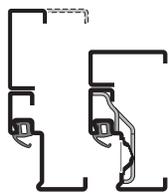
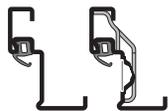


### Checkliste:

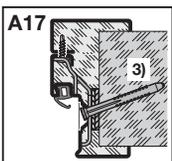
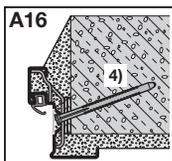
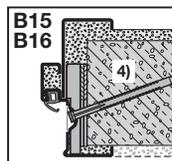
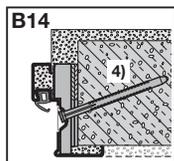
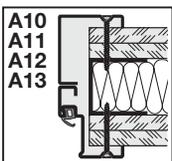
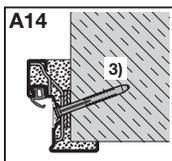
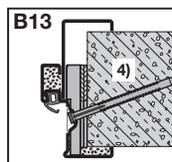
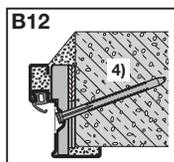
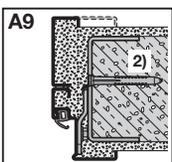
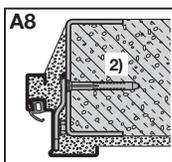
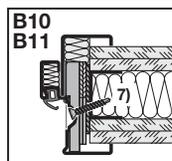
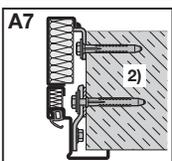
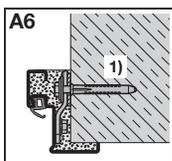
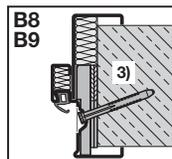
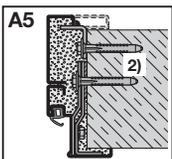
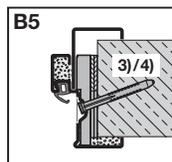
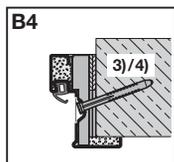
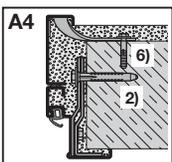
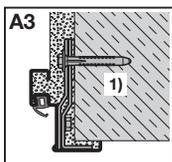
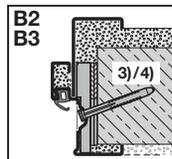
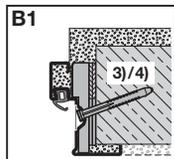
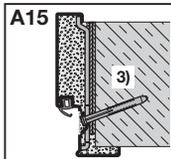
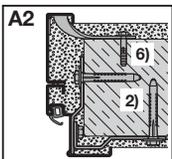
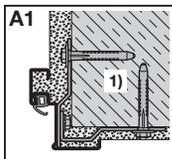
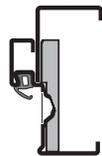
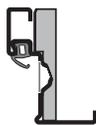
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Verschluss geschmiert entsprechend den Anweisungen des Herstellers	<input type="checkbox"/>
keine nachträglichen Veränderungen festgestellt, wie z. B. nachträglicher Anbau von zusätzlichen Verriegelungsvorrichtungen	<input type="checkbox"/>
sämtliche Bauteile der Anlage entsprechend der Auflistung der gelieferten und zugelassenen Bauteile	<input type="checkbox"/>
keine lockeren Befestigungsschrauben an den Beschlägen festgestellt	<input type="checkbox"/>
Kontrolle durchgeführt, ob bei Verschlussbetätigung und vorgeschlossenem Riegel, Falle und Riegel vollständig zurückgezogen werden	<input type="checkbox"/>

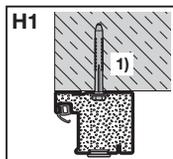
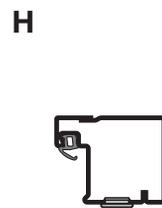
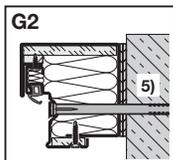
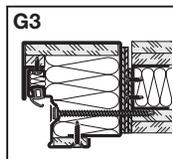
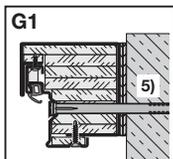
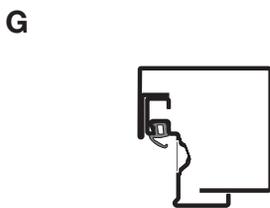
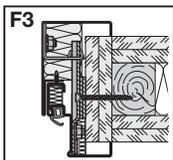
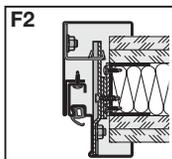
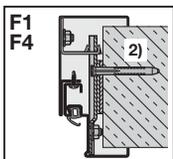
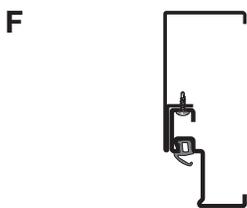
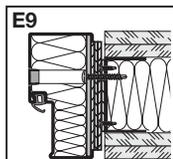
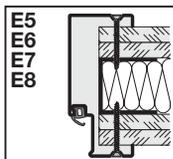
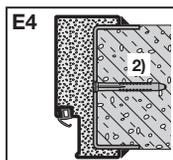
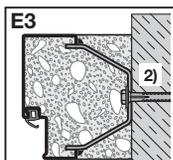
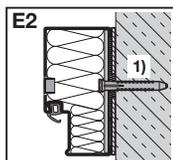
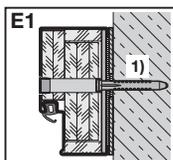
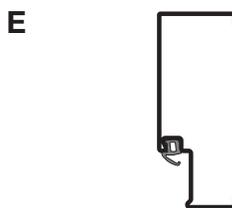
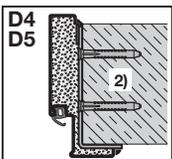
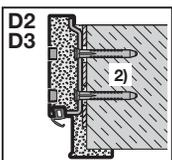
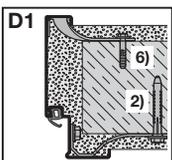
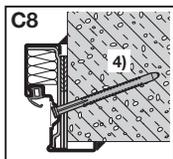
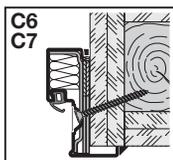
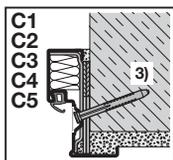
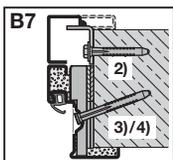
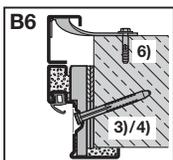
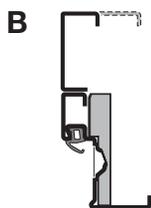


**A**



**B**





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

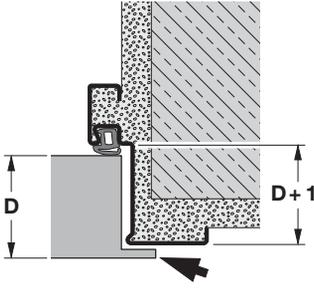


2) Fischer: FUR 10 × 80/100/115  
 Fischer: SXS 10 × 80/100/120  
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 Hilti: HRD 10 × 80/100  
 CELO: MFR 10 × 80/100/115  
 Würth: W-UR 10 × 80/100/115

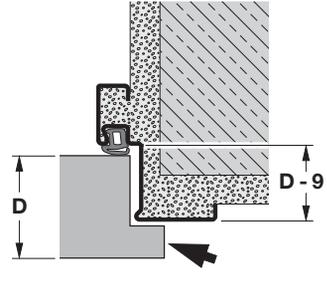
3) Fischer: FUR 10 × 100  
 4) Fischer: FUR 10 × 160  
 5) Fischer: FUR 10 × 200  
 6) 8 × 40



8.1a

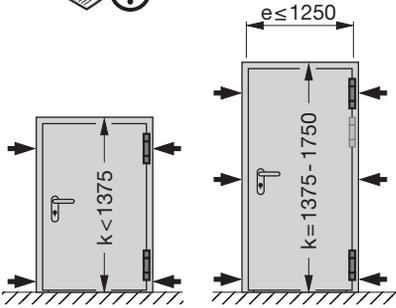


8.1b

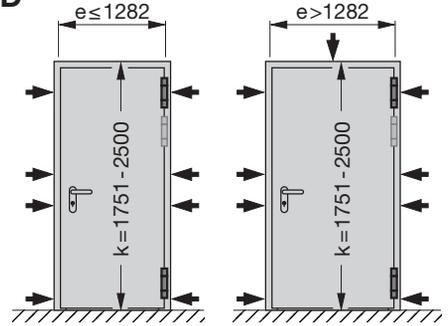


8.2a

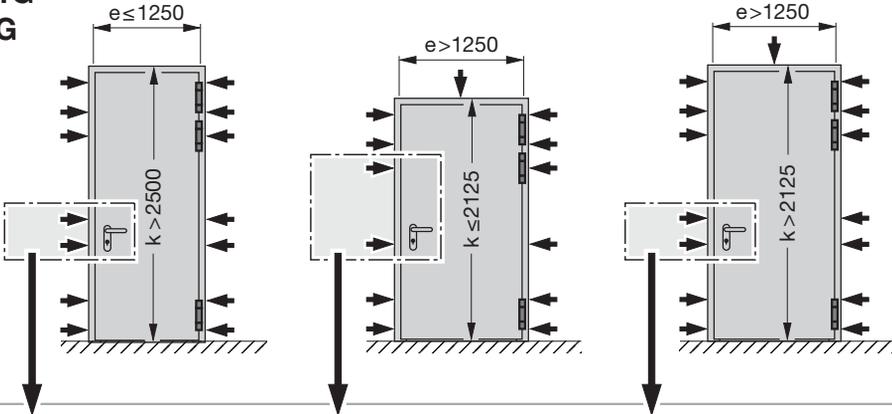
4.2/4.3



H16-S1  
H16-1 OD  
HS75

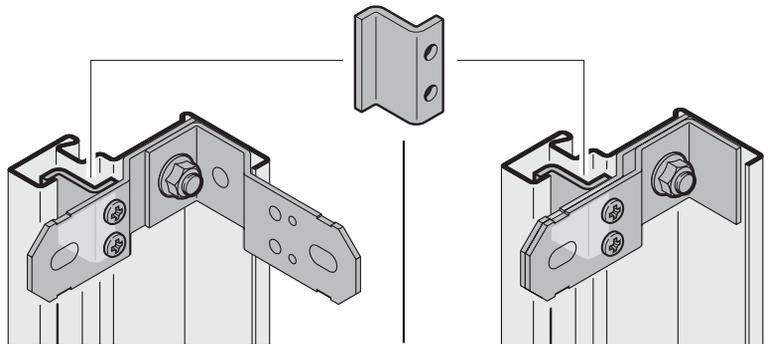


H16-1G  
H3-1G



T90-1 / EI<sub>2</sub> 90-1

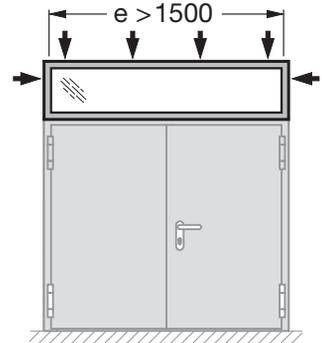
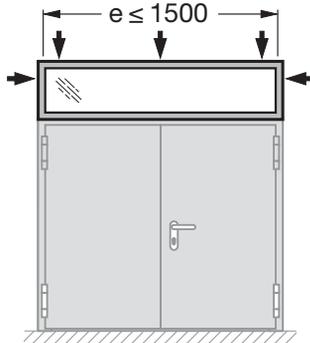
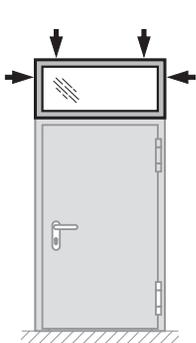
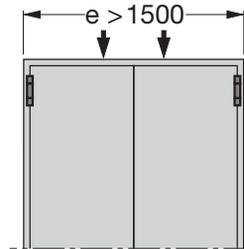
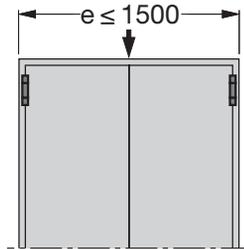
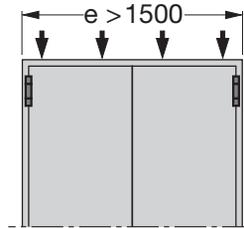
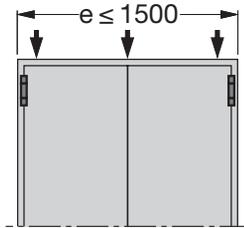
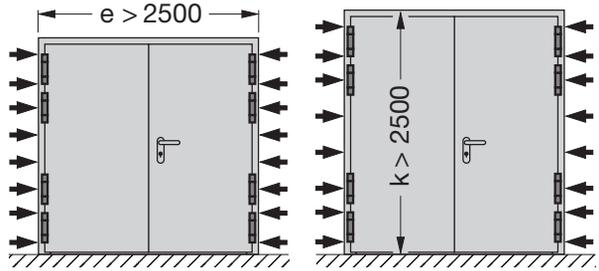
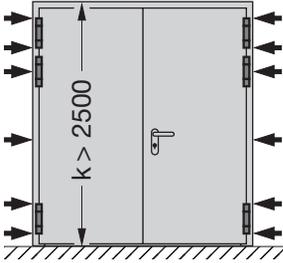
8.6a  
8.6b



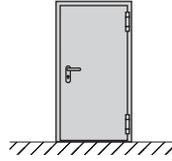


H3-2 VM

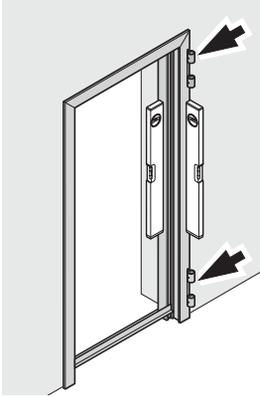
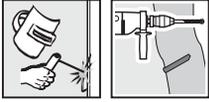
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H\_90 F2



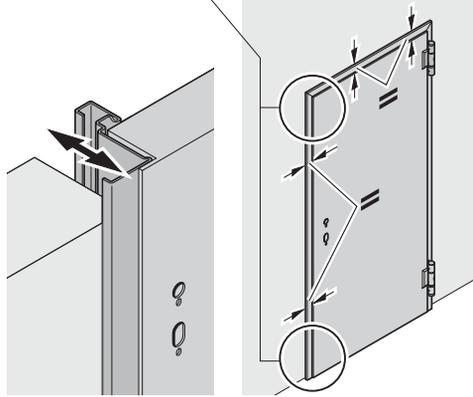
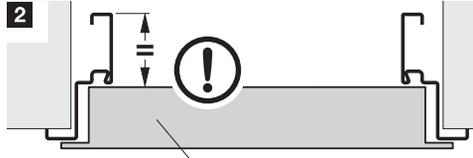
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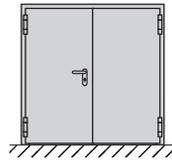
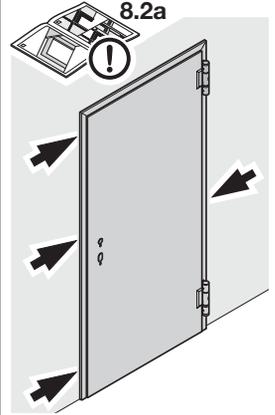
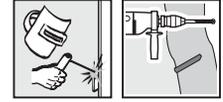
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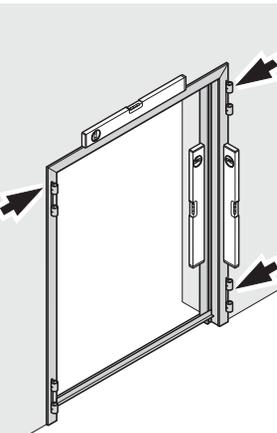
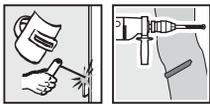
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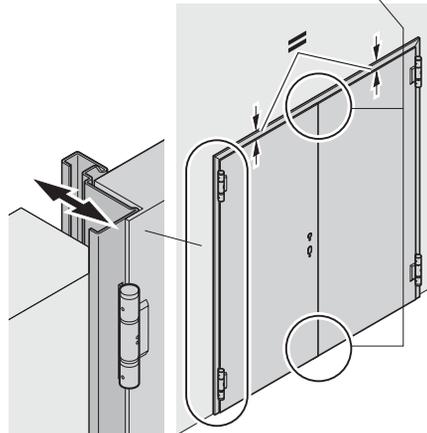
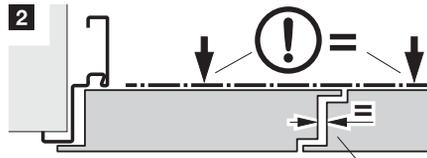
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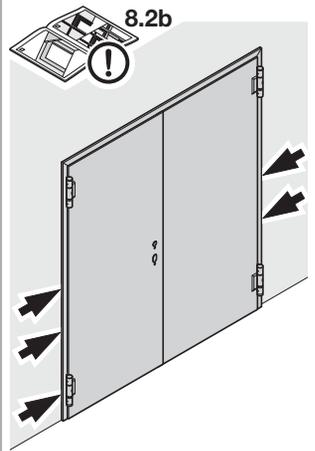
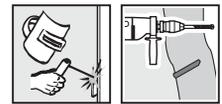
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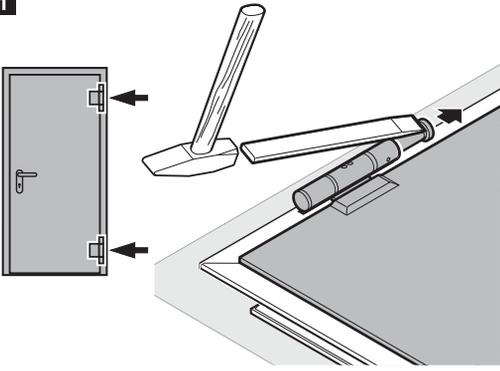
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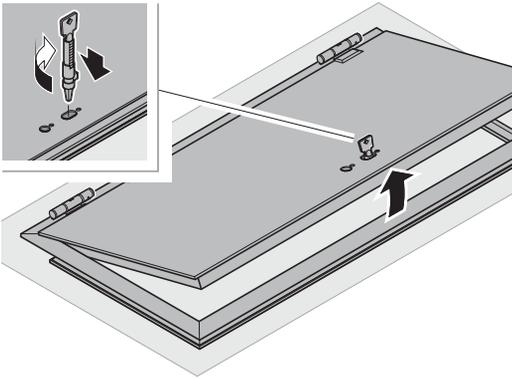
8.3a 4.3



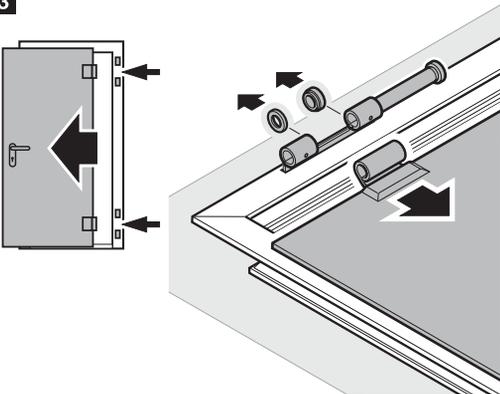
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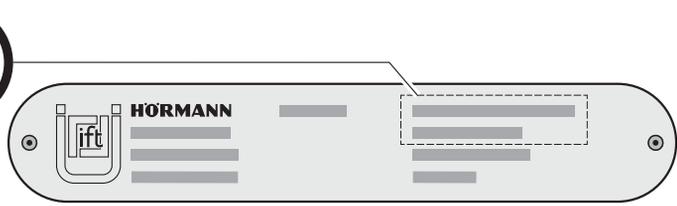
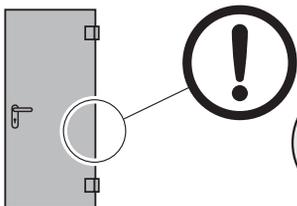
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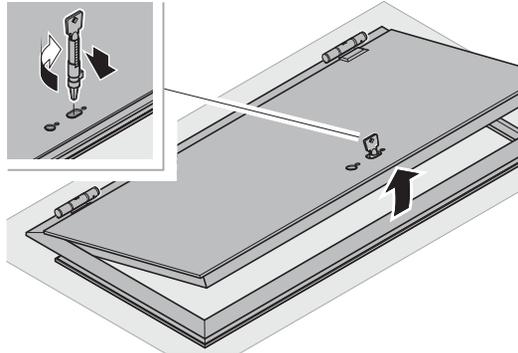
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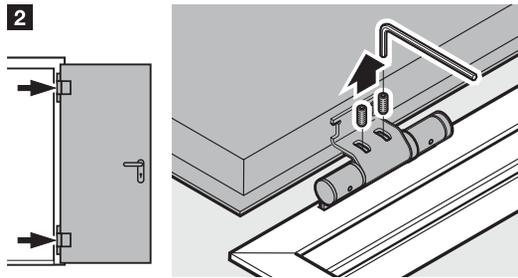
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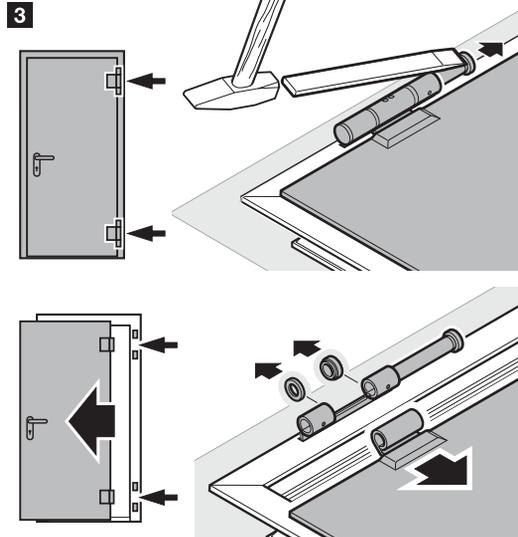
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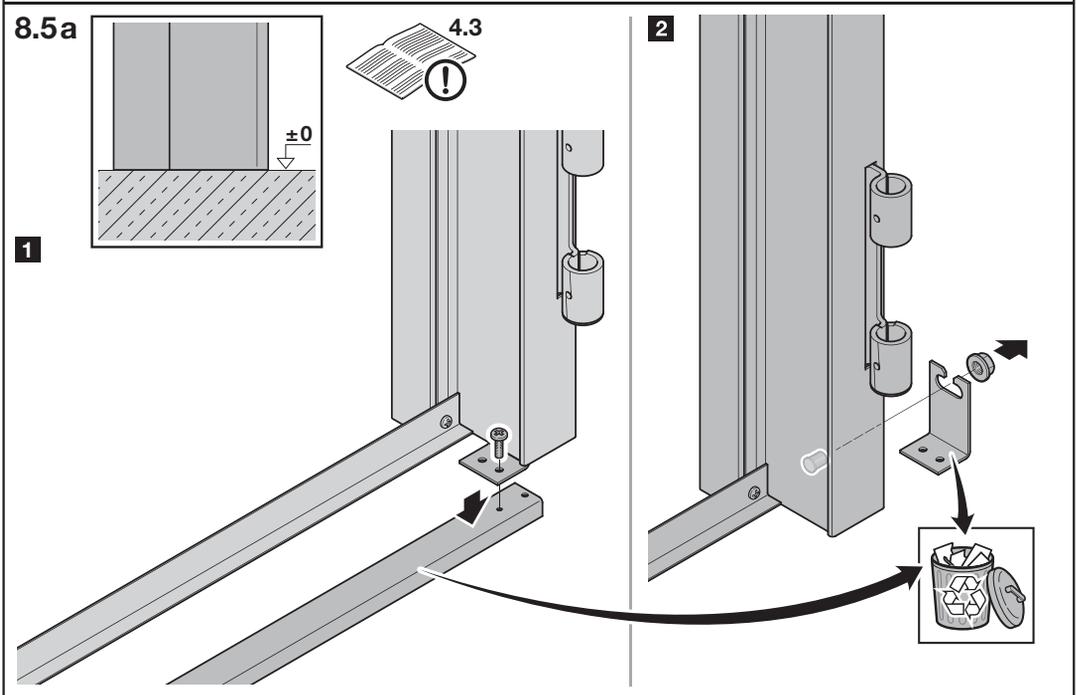
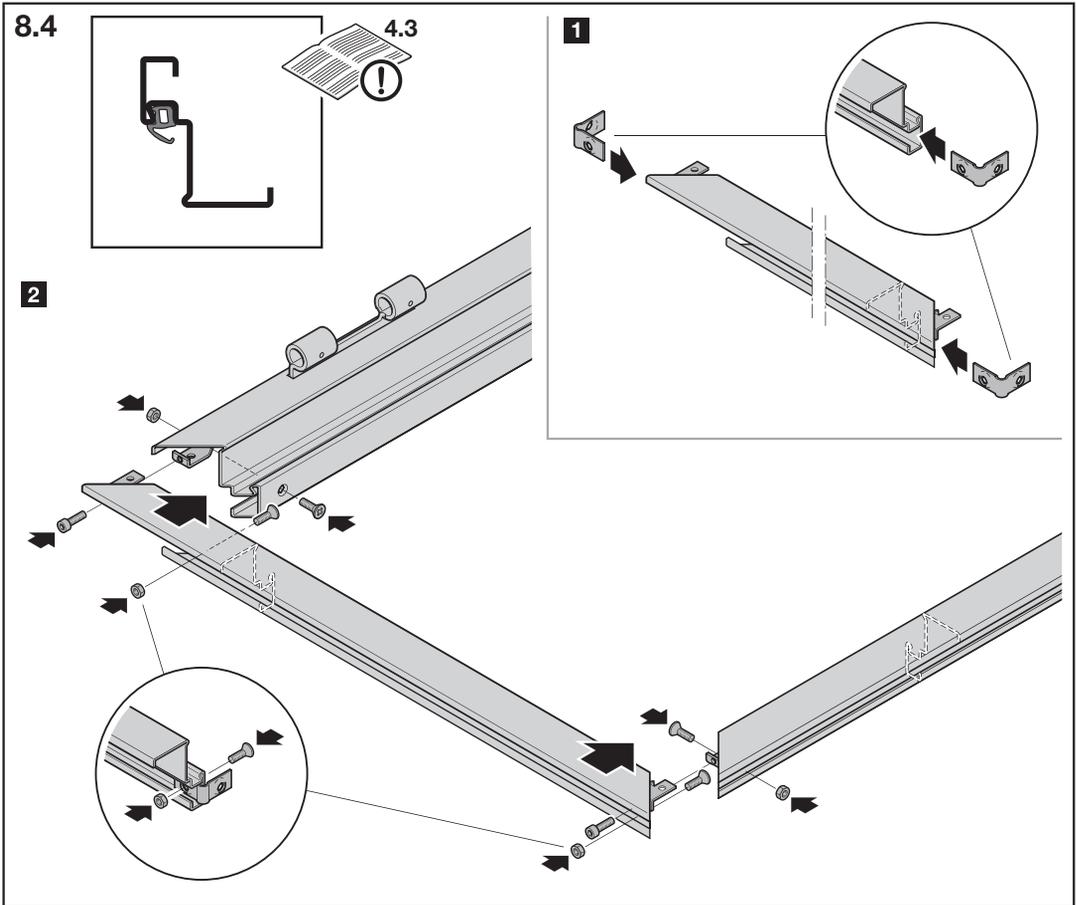


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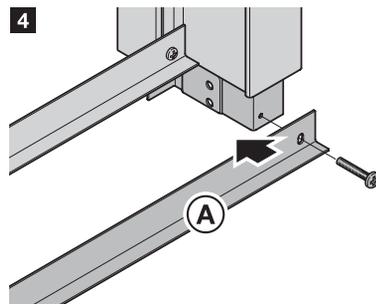
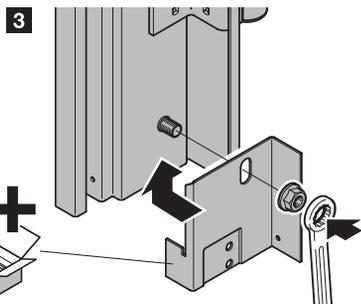
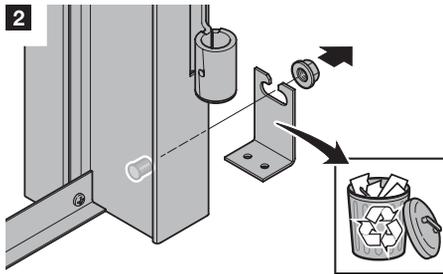
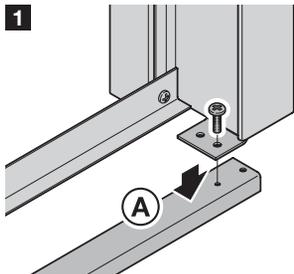
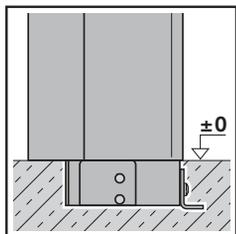
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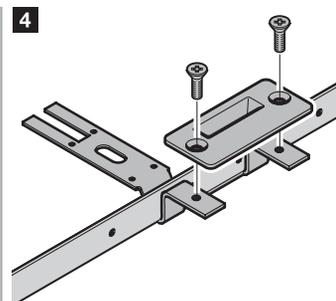
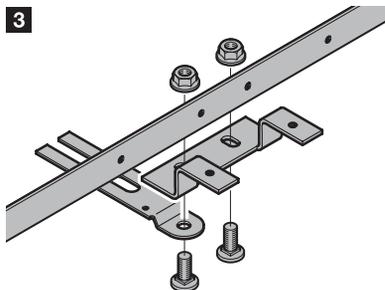
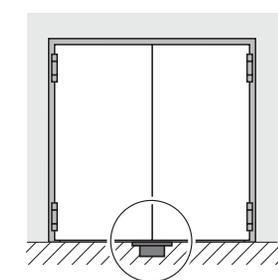
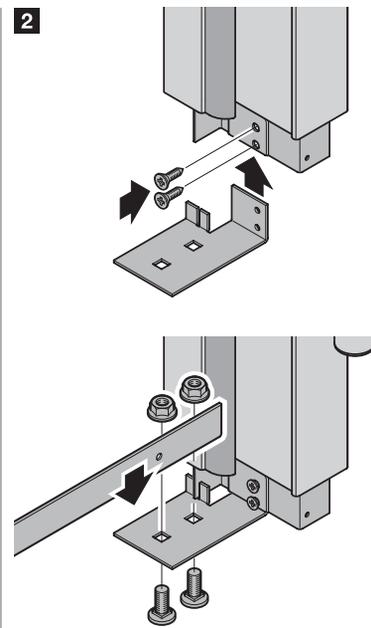
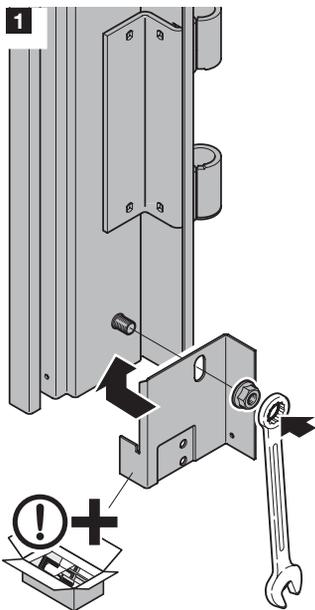
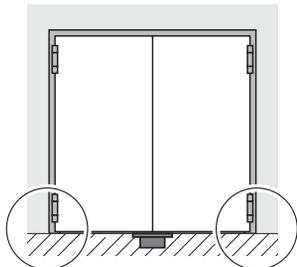
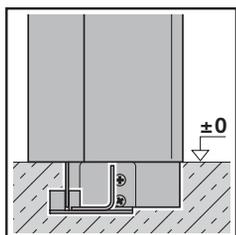
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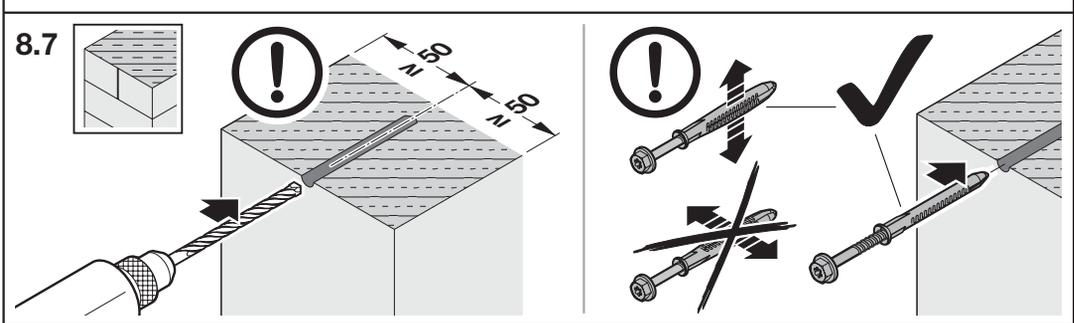
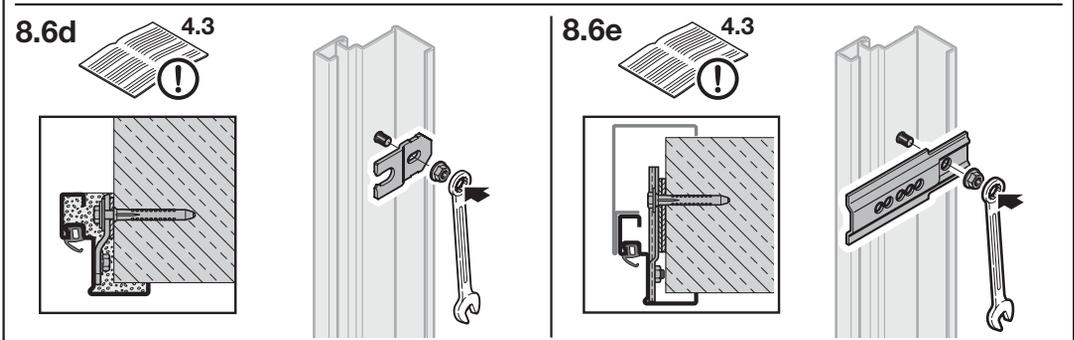
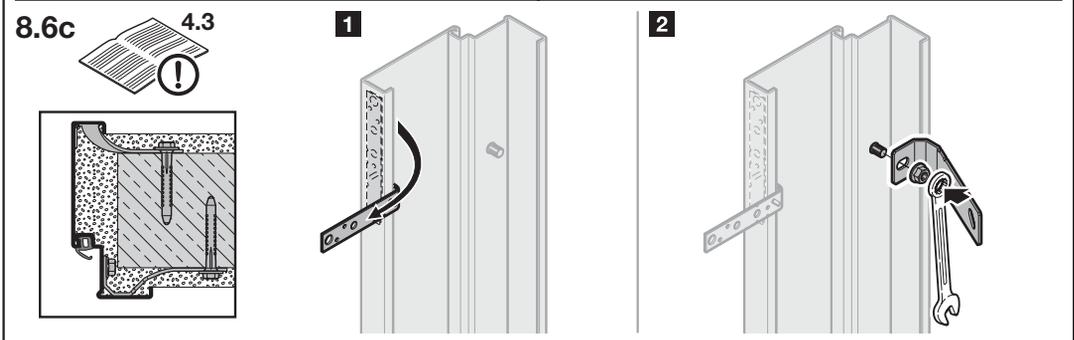
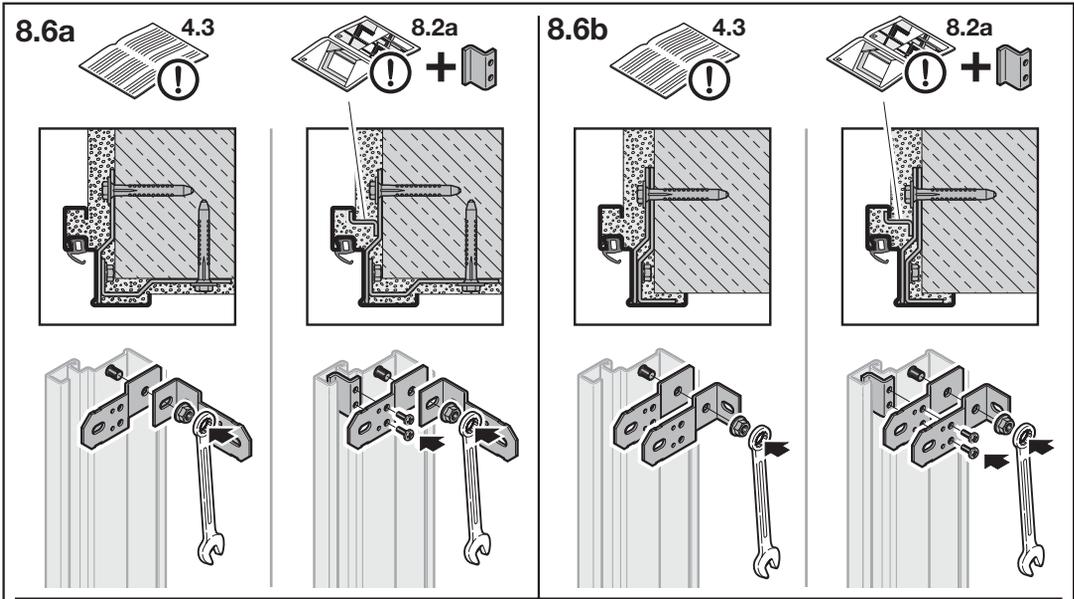
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8.5c

4.3



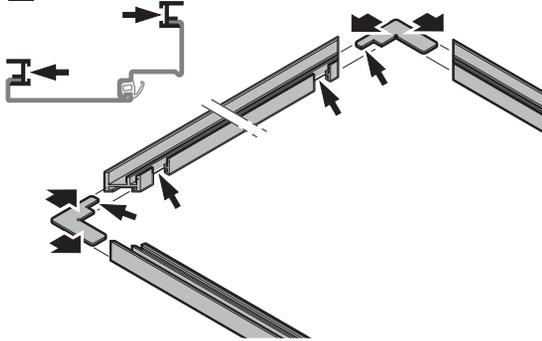


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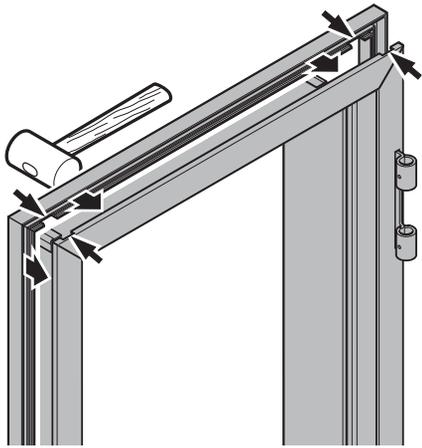
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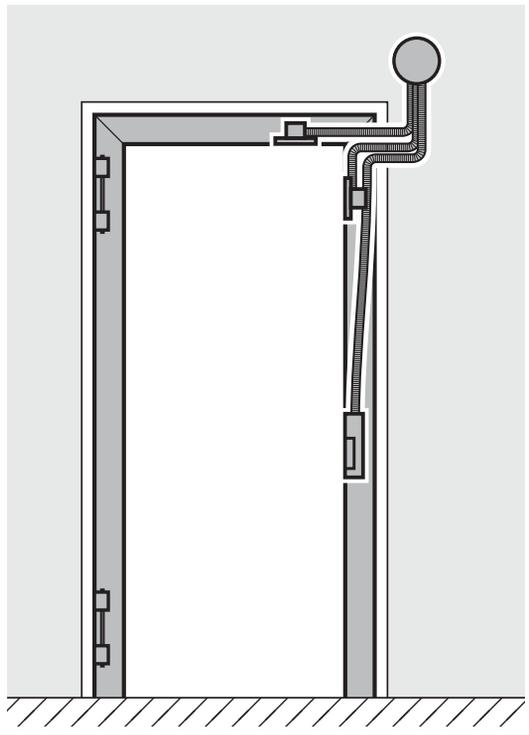
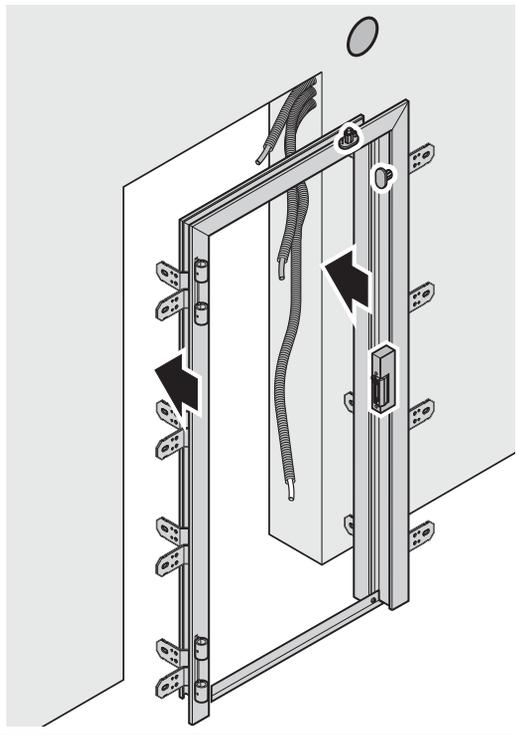
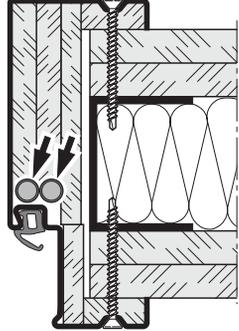
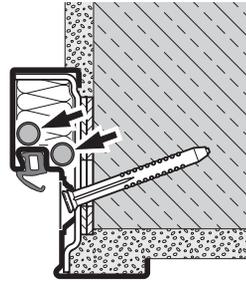
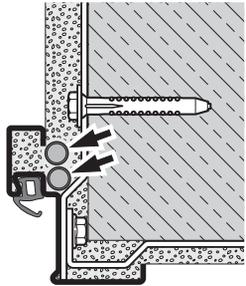
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2



8.9



8.10



AC  
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DC  
≡



I.S.T. Systems

FT200/FT201

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142 UF

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Smoke

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x

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Lucky Smoke 448

x

x

x

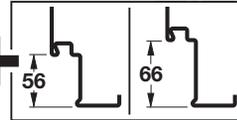
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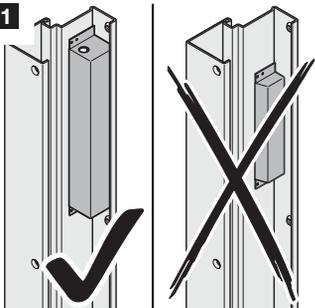
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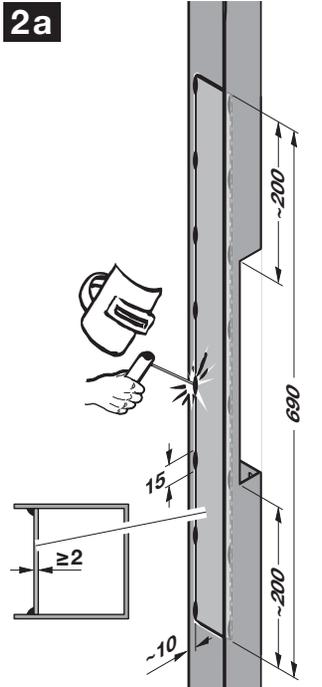
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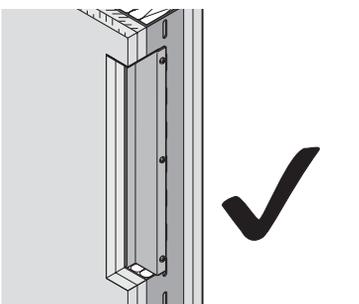
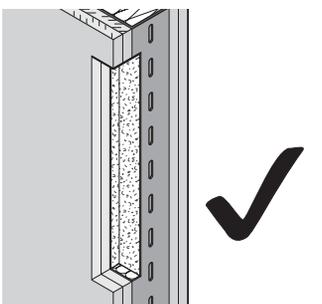
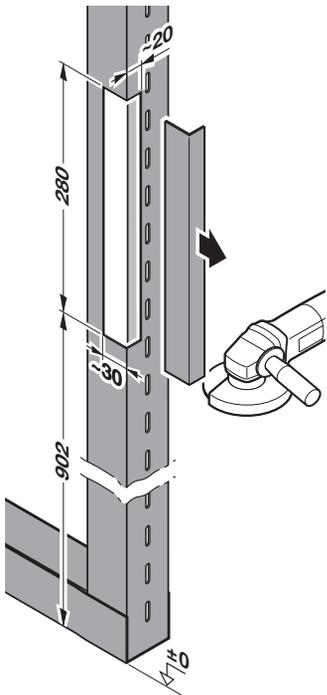
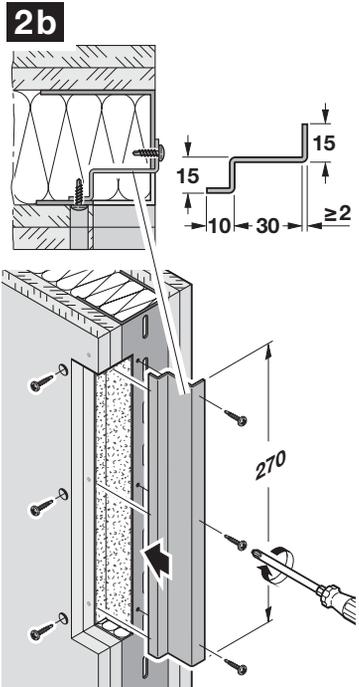
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2a



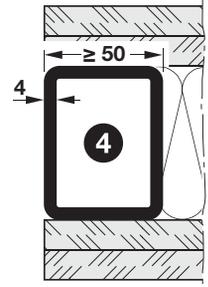
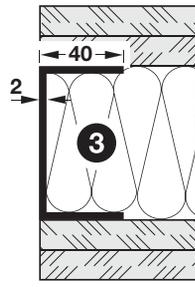
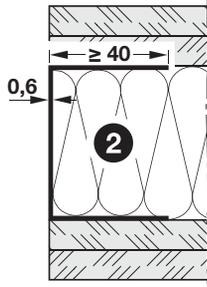
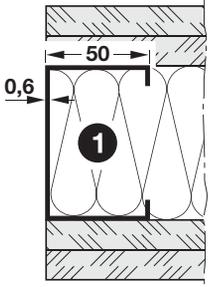
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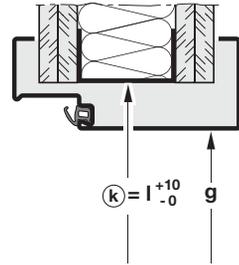
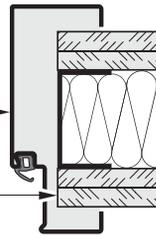
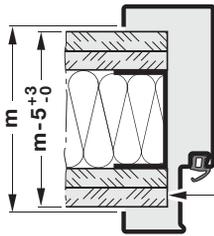
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4.2

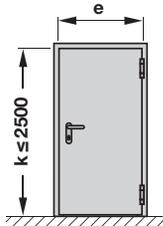
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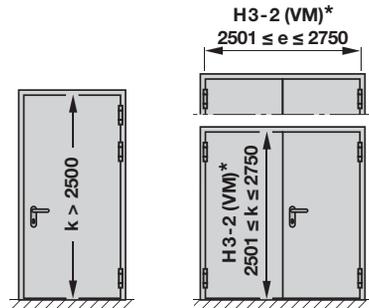
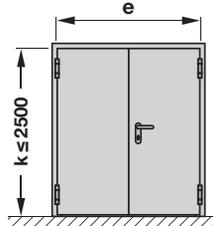
**f** [www.felko-systeme.de](http://www.felko-systeme.de)



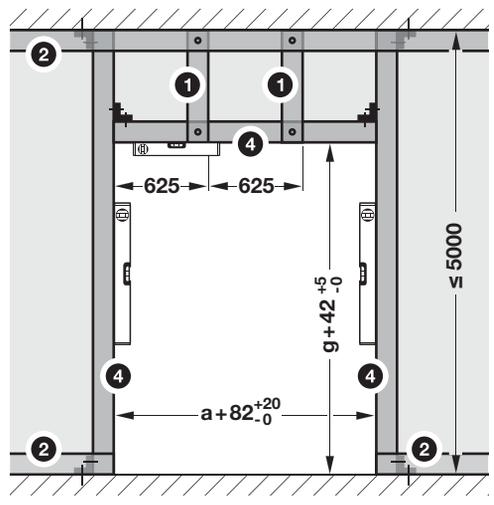
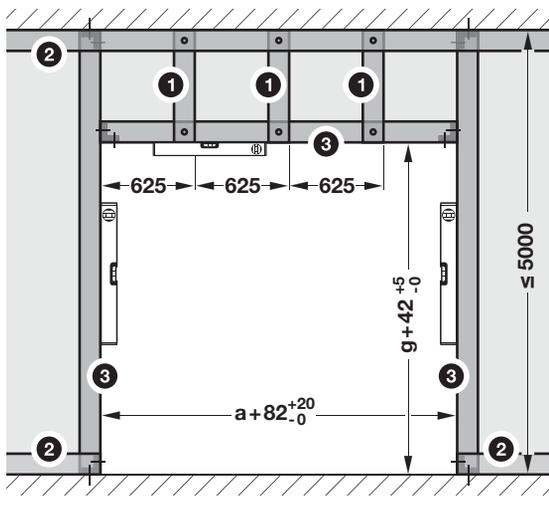
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 $e \leq 1500$  (max. T30/EI<sub>2</sub>30)



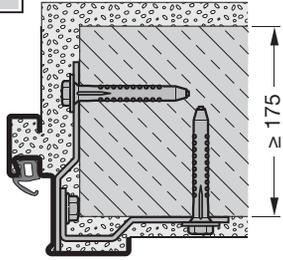
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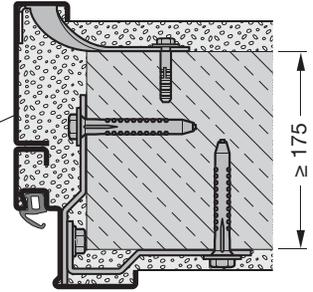
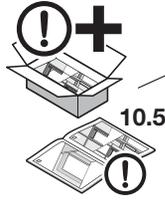
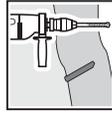
\*[www.felko-systeme.de](http://www.felko-systeme.de)



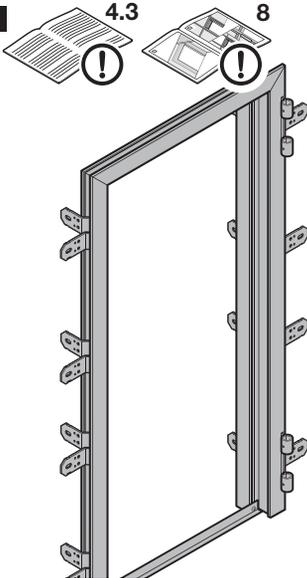
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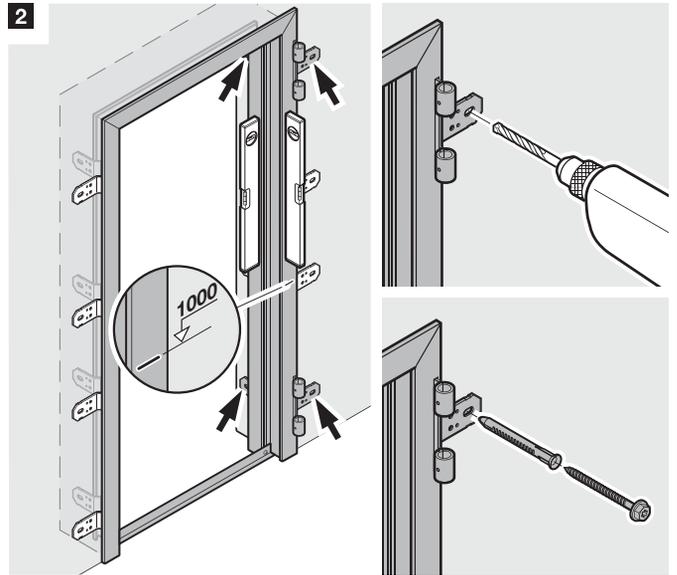
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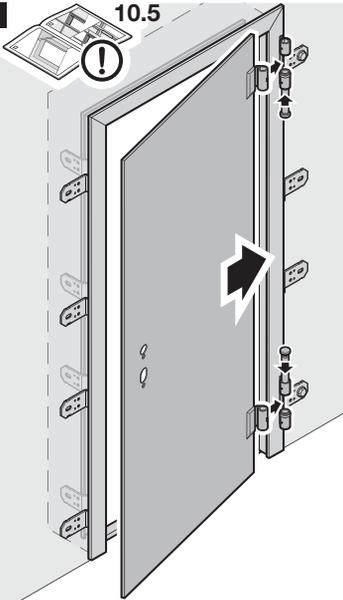
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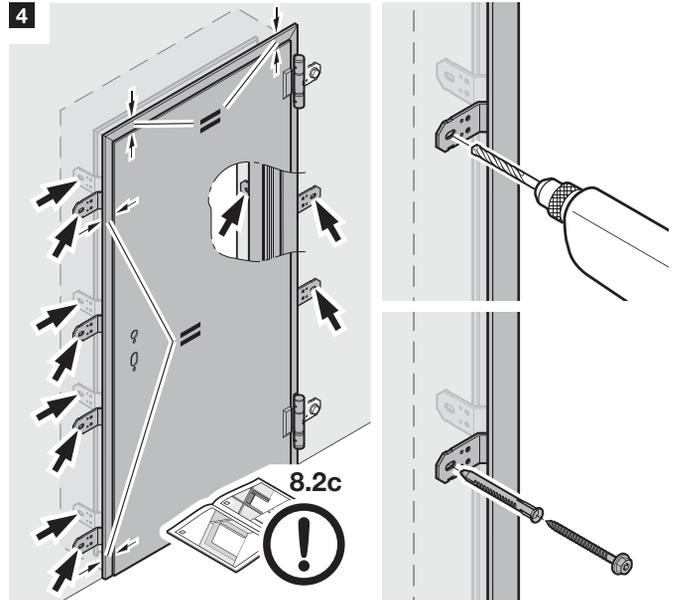
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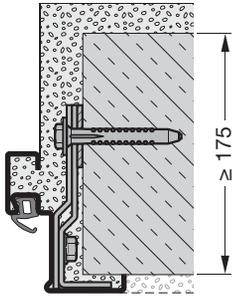
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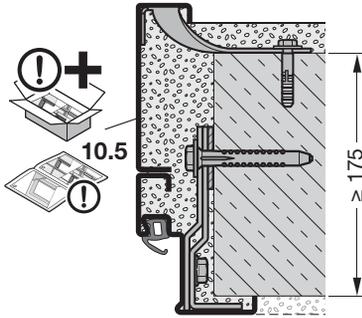
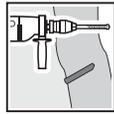
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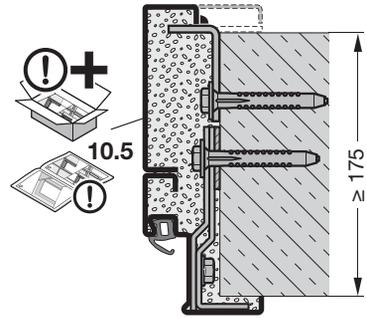
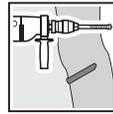
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9/A4



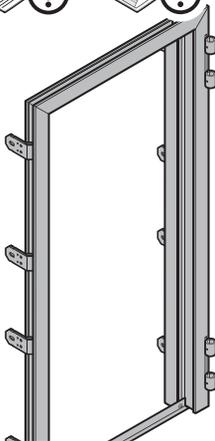
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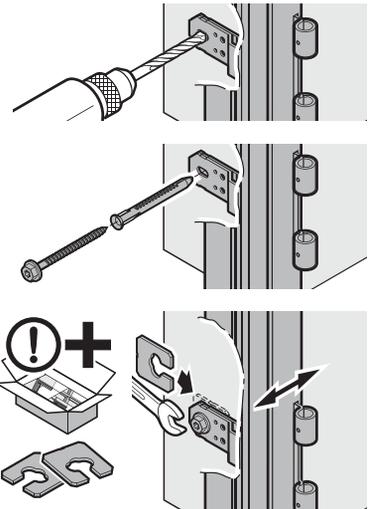
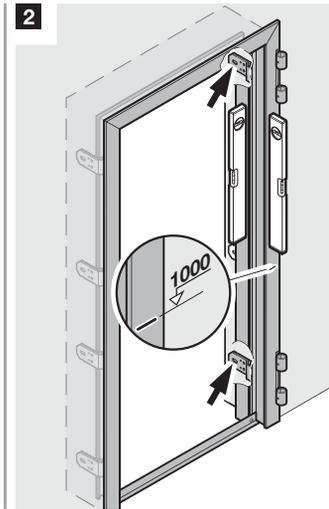
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4.3

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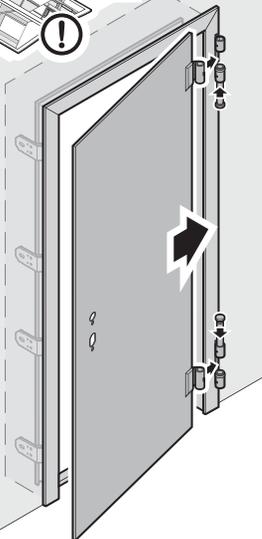


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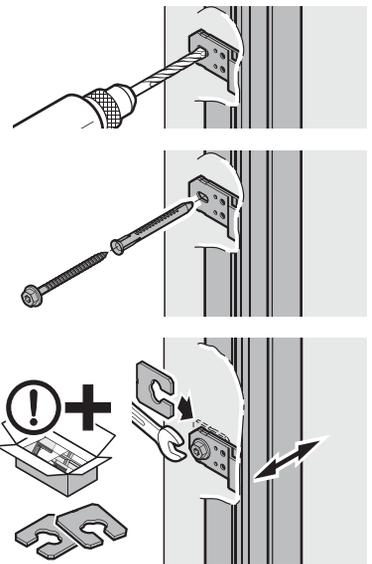
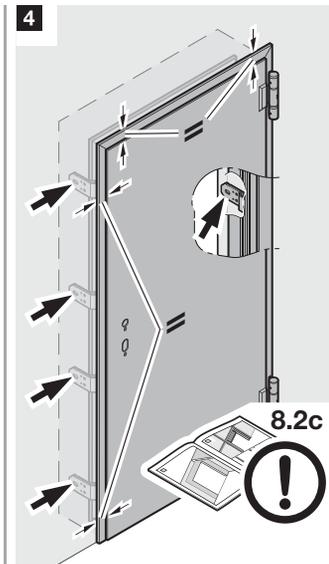


3

10-13



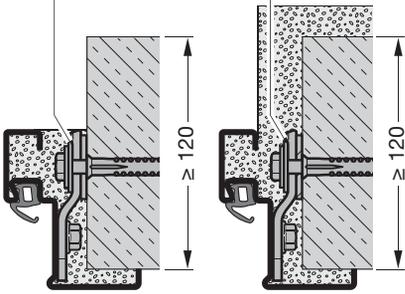
4



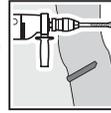
9/A6



DIN 9021-8.4-140 HV

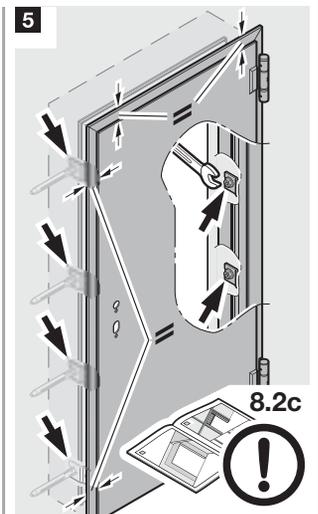
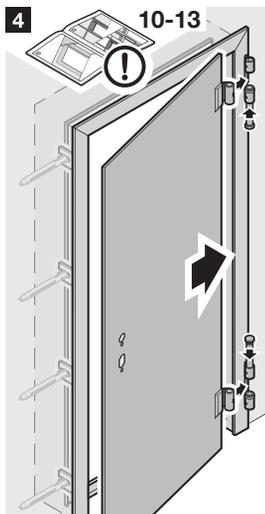
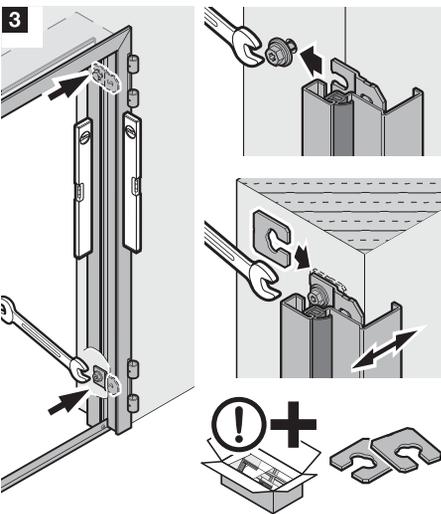
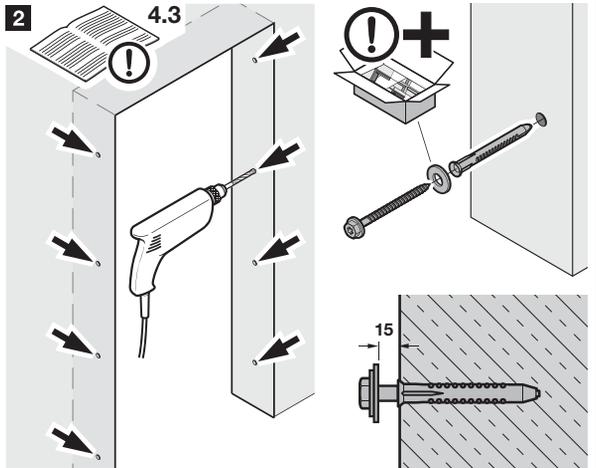
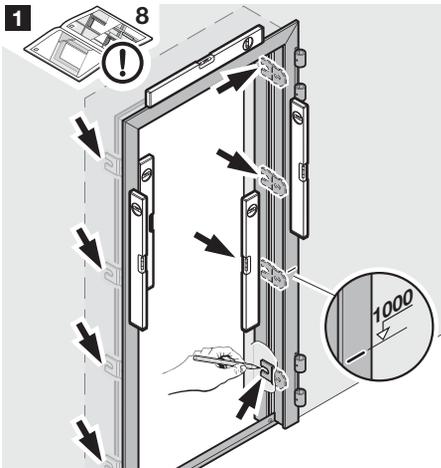
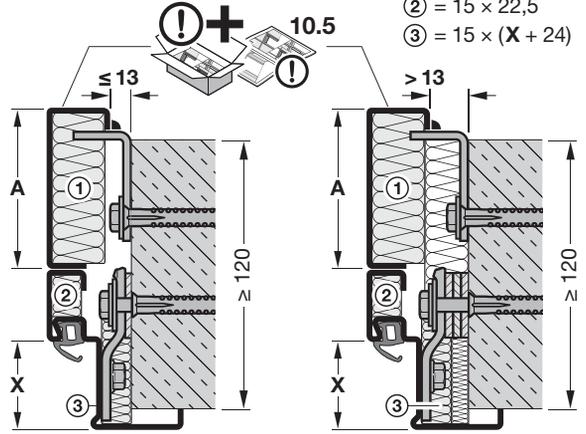


9/A7  
max. T30

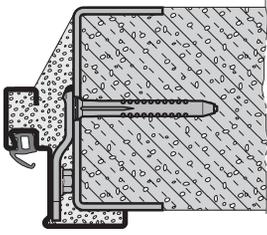


$\rho \sim 100 \text{ kg/m}^3$   
A (EN 13501-1)  
z.B. Isover BSP100

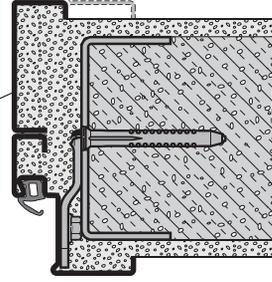
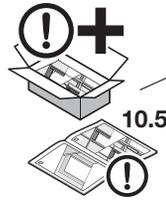
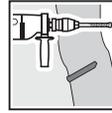
- ① =  $30 \times (A - 5)$
- ② =  $15 \times 22,5$
- ③ =  $15 \times (X + 24)$



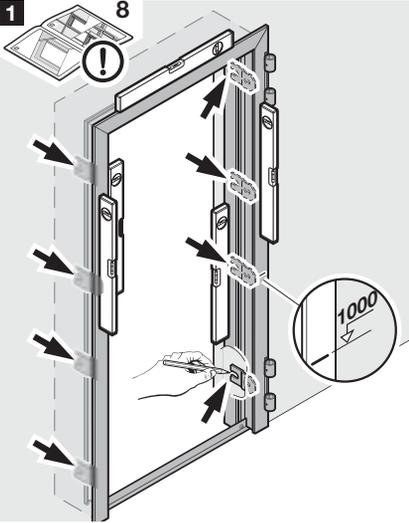
9/A8



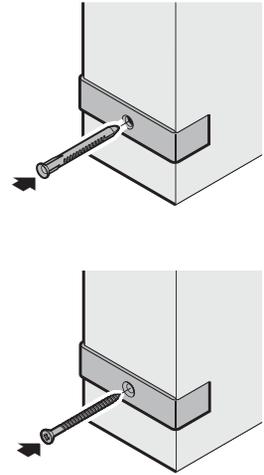
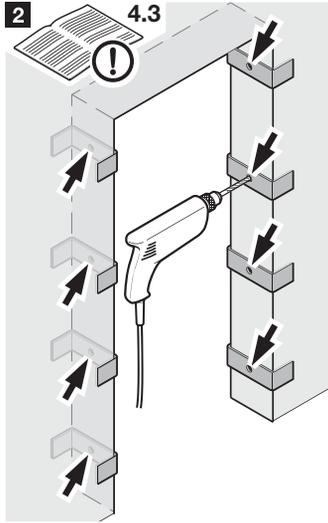
9/A9



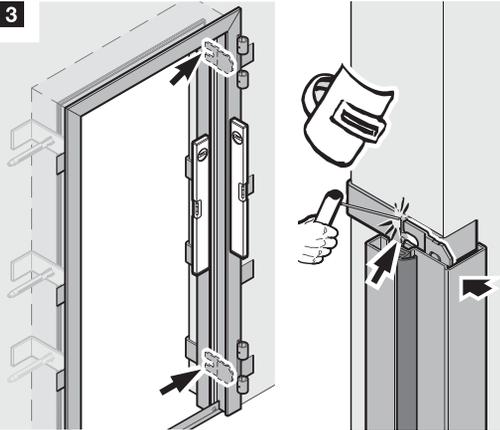
1 8



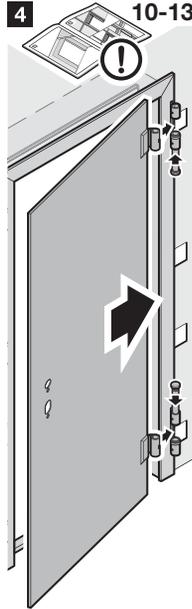
2 4.3



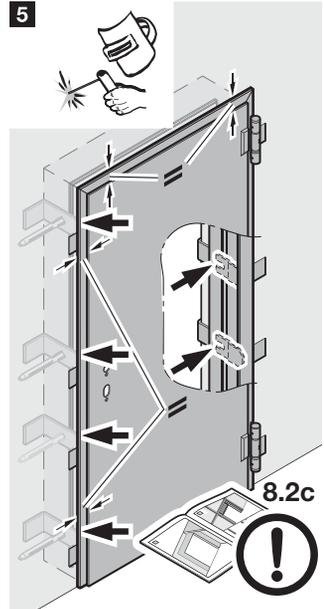
3



4 10-13

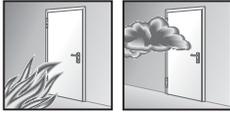


5

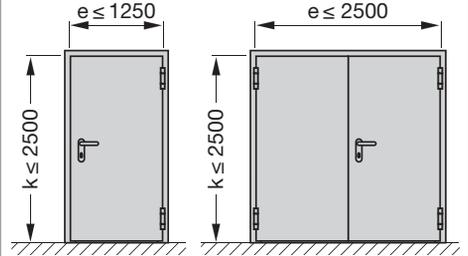
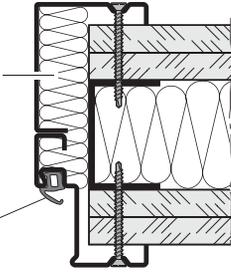
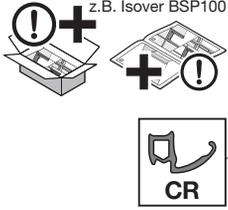


9/A10

max. T30/  
EI<sub>230</sub>



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



**1** 4.3 8

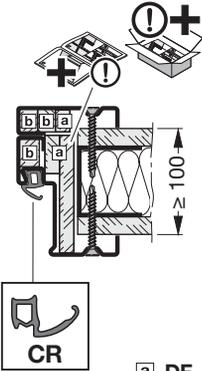
8.9/8.10

**2** 10-13

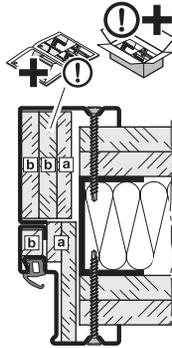
**3** 8.2c

**4** 10.5

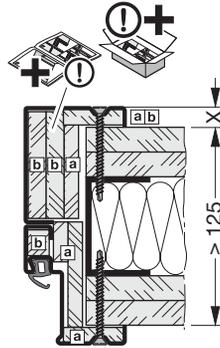
9/A11  
T30/EI<sub>2</sub>30



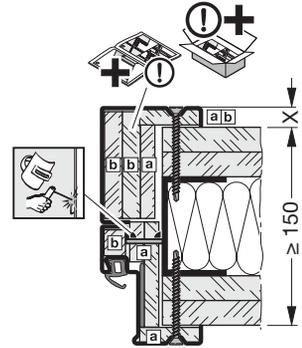
9/A12  
T30/EI<sub>2</sub>30



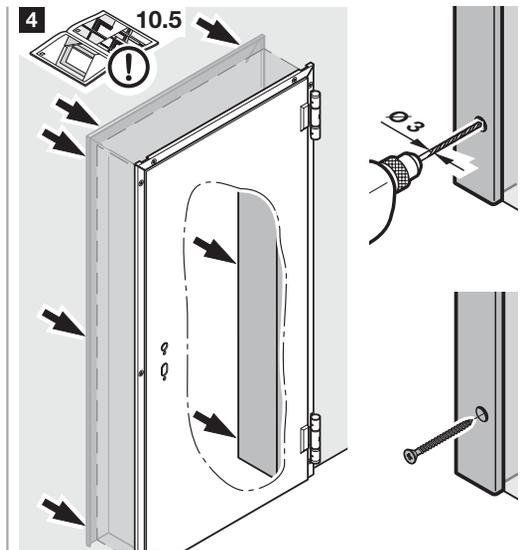
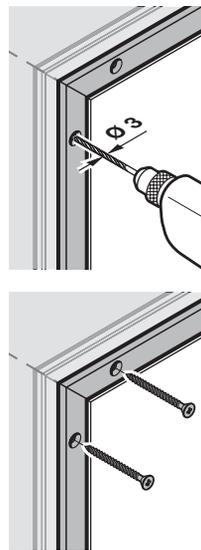
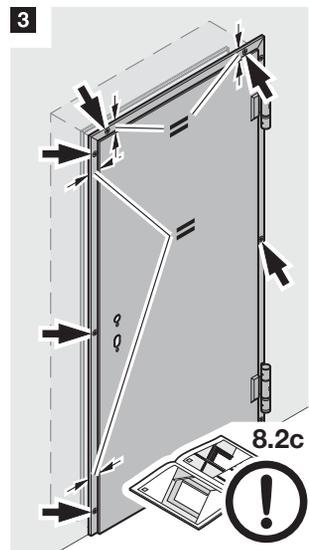
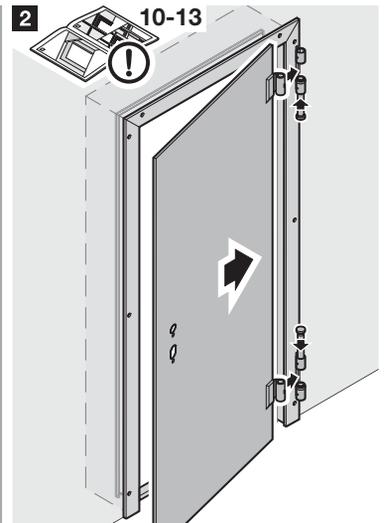
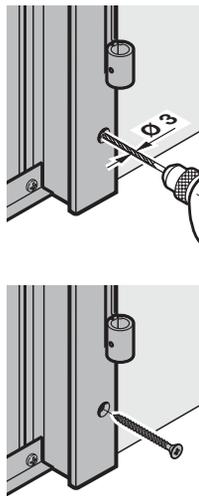
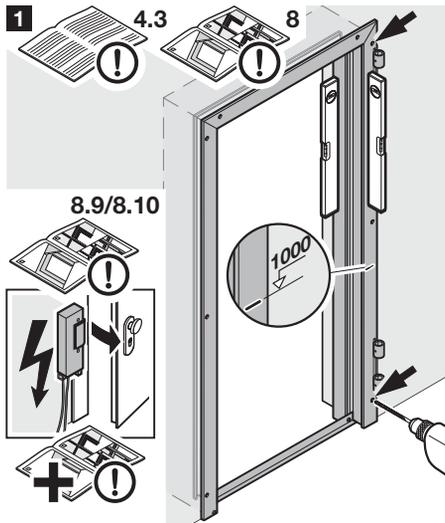
9/A13  
T60/EI<sub>2</sub>60

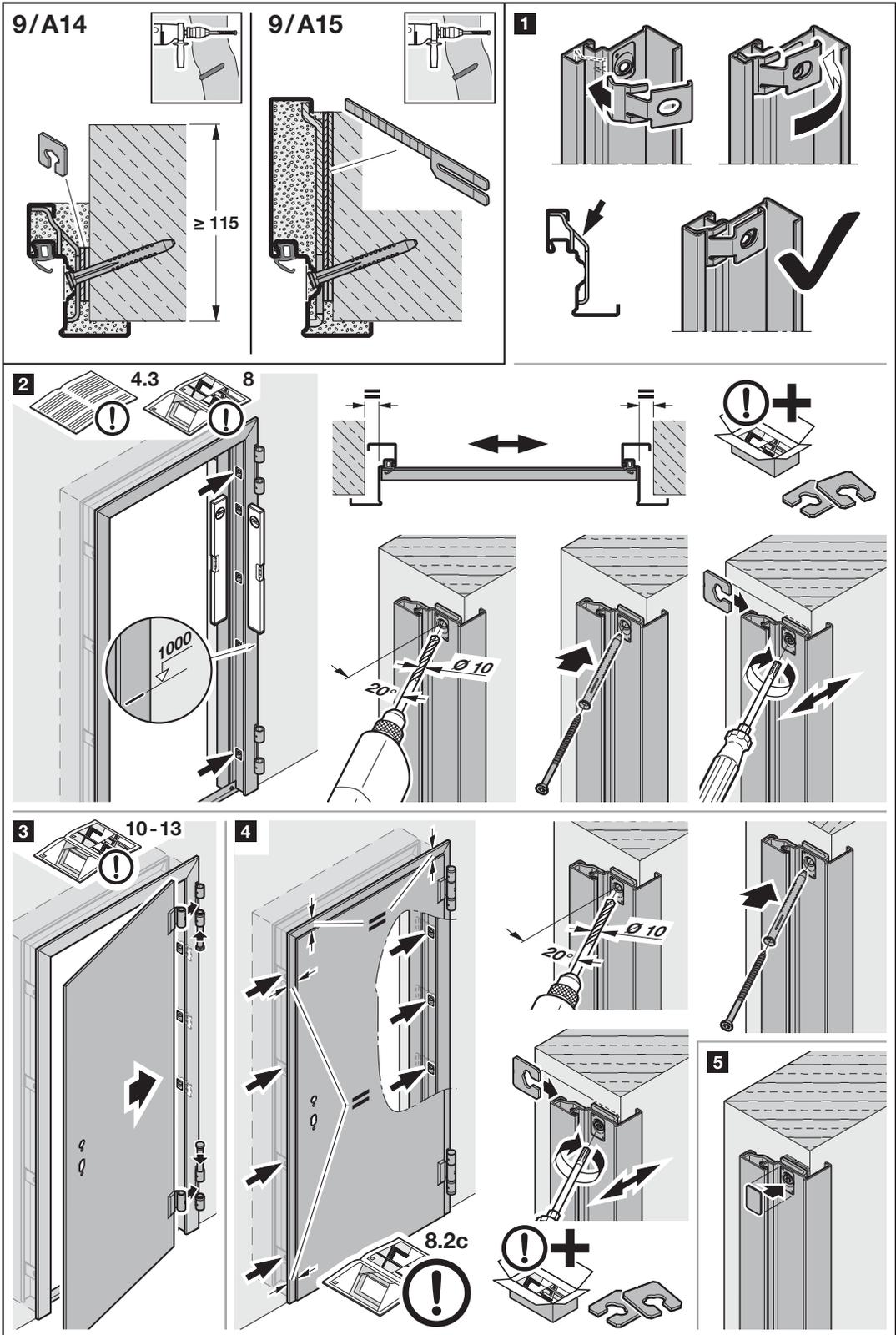


T90/EI<sub>2</sub>90

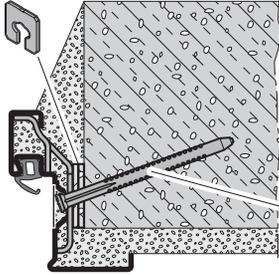


a DF-9,5-EN 520 / b DF-12,5-EN 520 / X = 10 → a / X = 15 → b



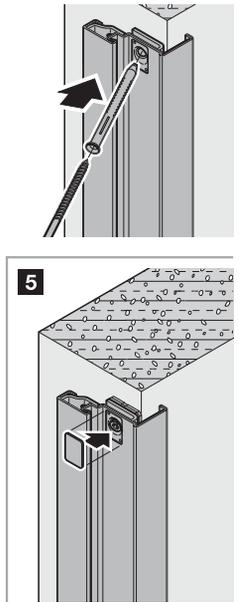
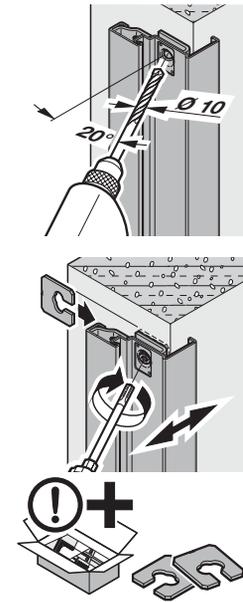
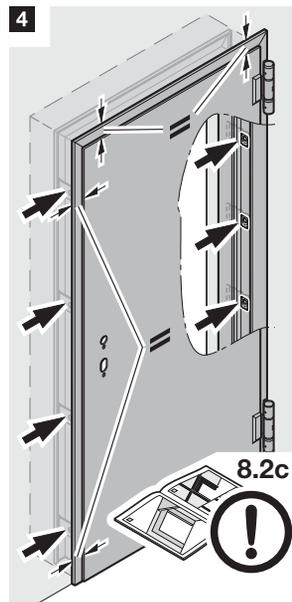
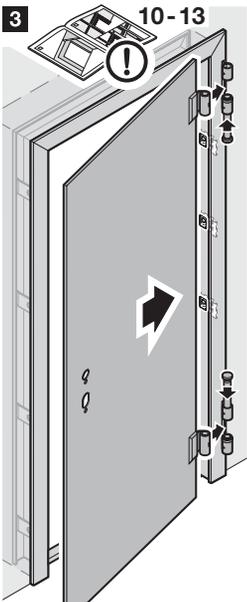
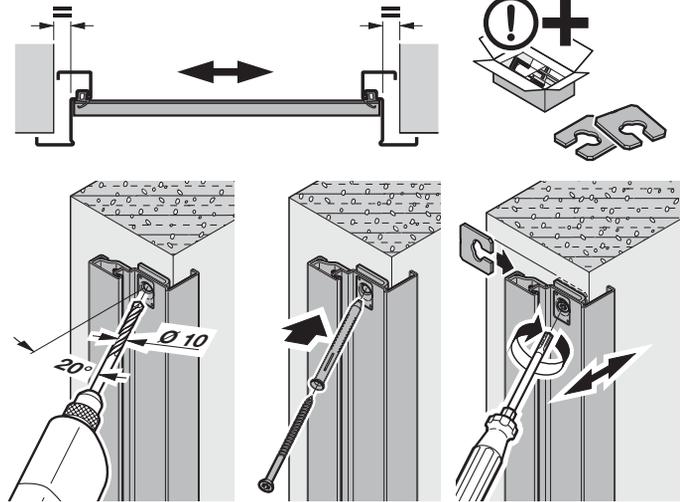
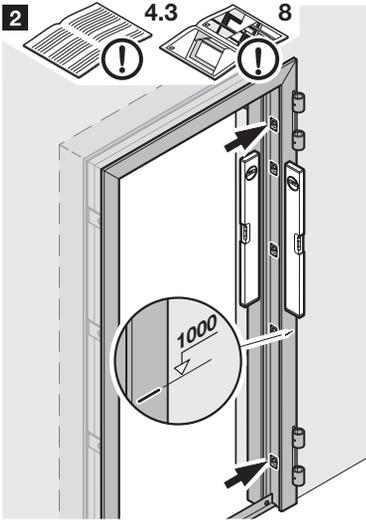
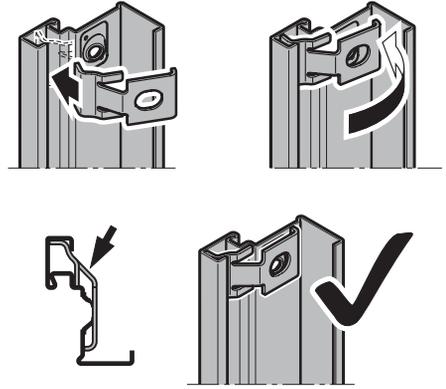


9/A16  
max. T30

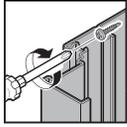


FUR 10 x 160

1



9/A17  
max. T30



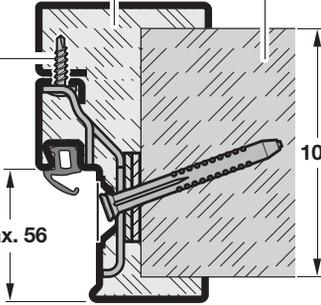
DIN 7504 ST  
4,8 x 19-N-H  
DIN 7981  
4,8 x 16

max. 56

Multi Gips  
FG70



100



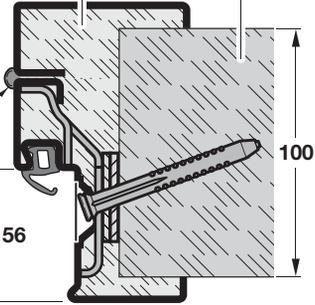
$2\sqrt{x} > 10$

max. 56

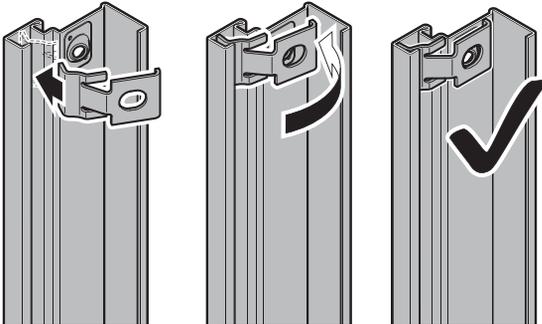
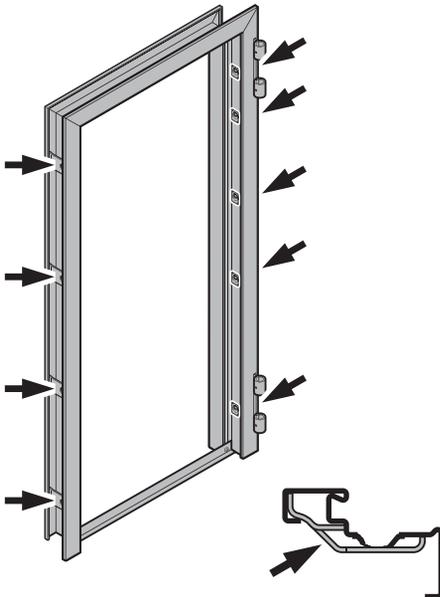
Multi Gips  
FG70



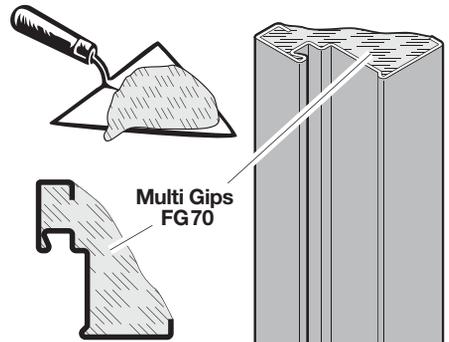
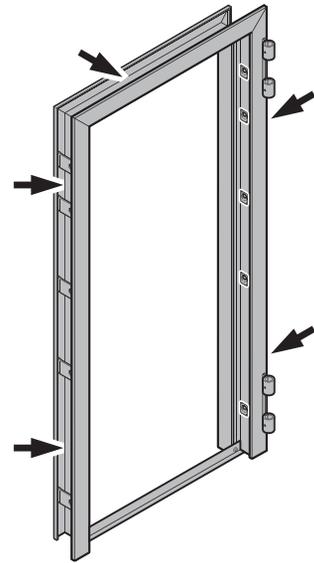
100



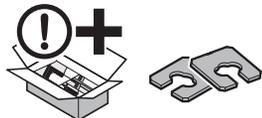
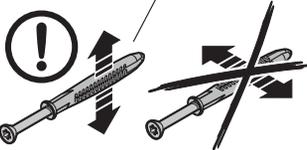
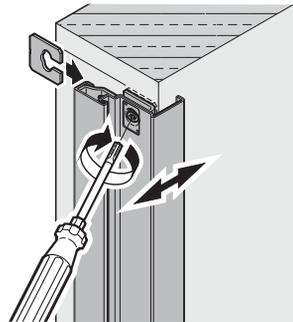
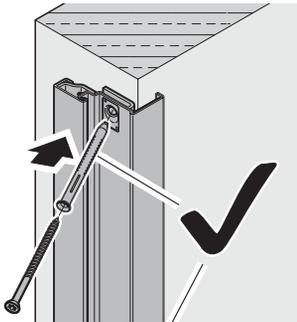
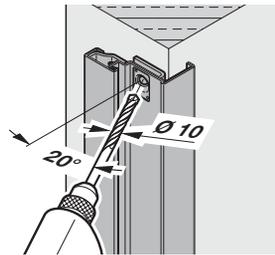
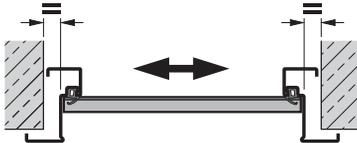
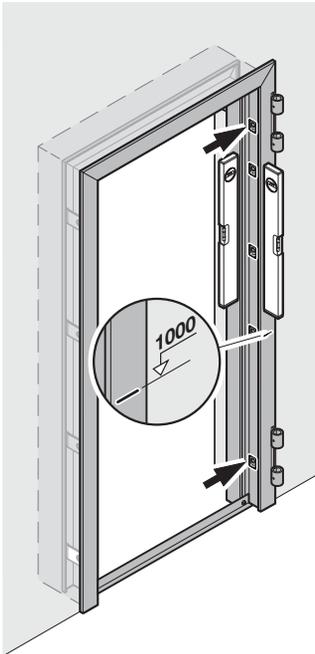
1



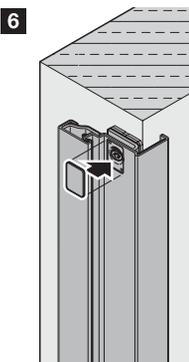
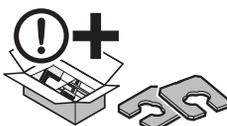
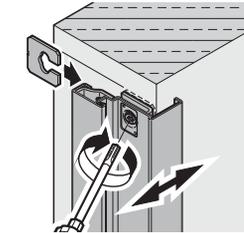
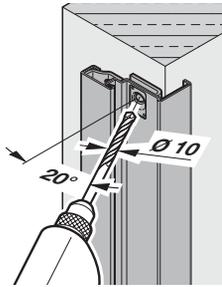
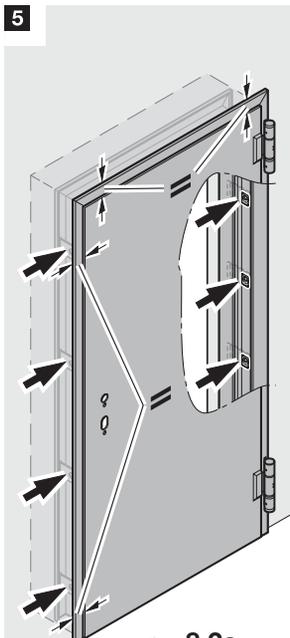
2

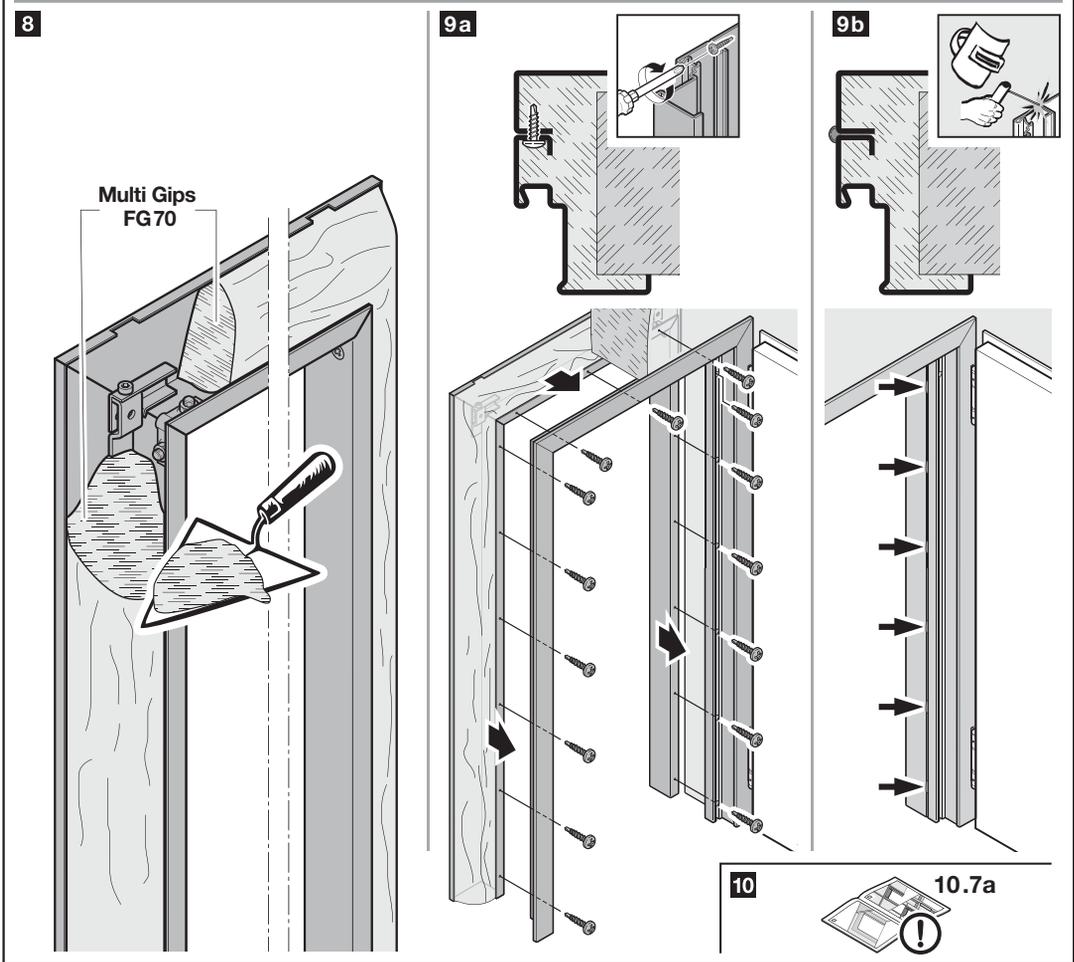
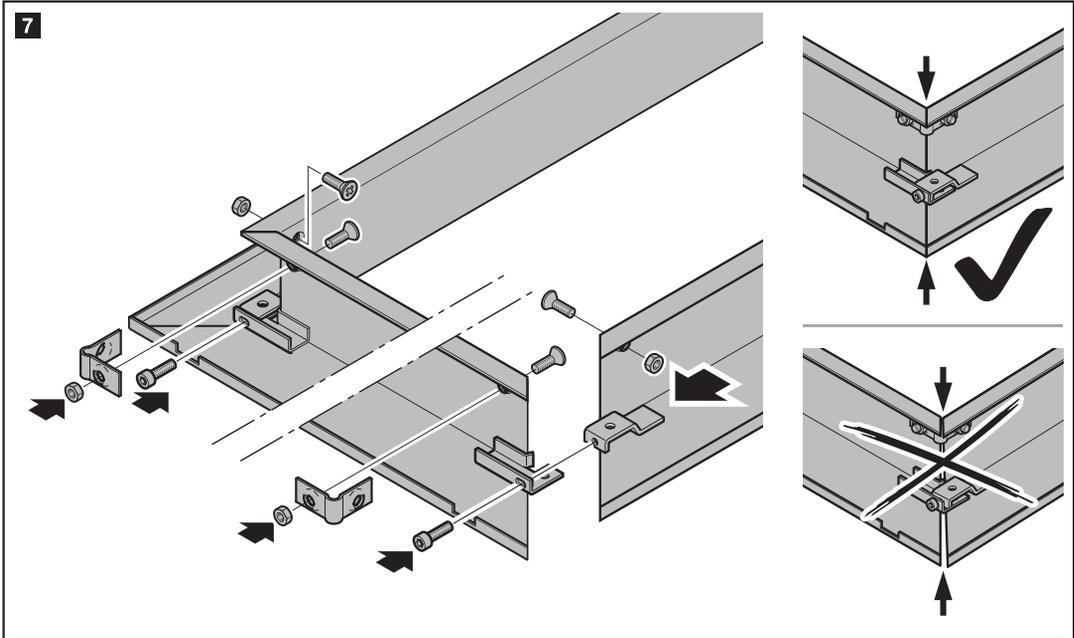


3 4.2/4.3 8



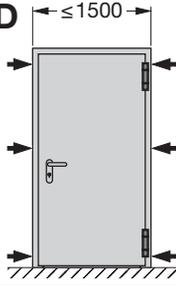
4 10-13



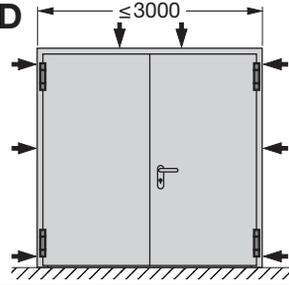


9/B1-B16

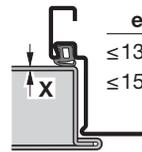
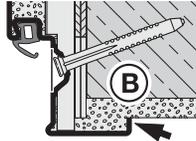
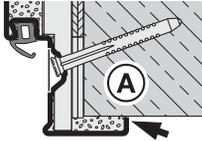
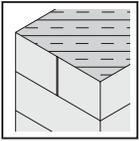
D65 - 1 OD



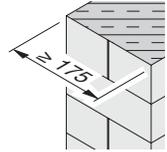
D65 - 2 OD



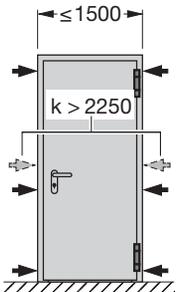
→ Fischer: FUR 10 × 100



e	X
≤ 1320	1,0/1,5
≤ 1500	1,0

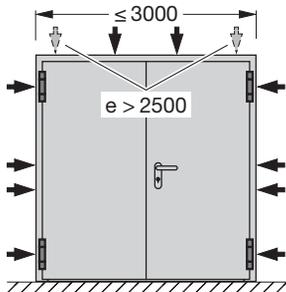


H3 - 1 OD

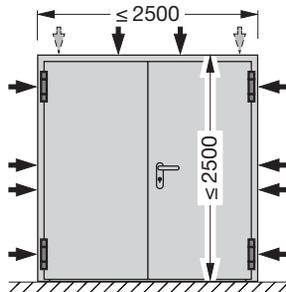


k ≤ 2500 → 3) Fischer: FUR 10 × 100  
k > 2500 → 4) Fischer: FUR 10 × 160

H3 - 2 OD

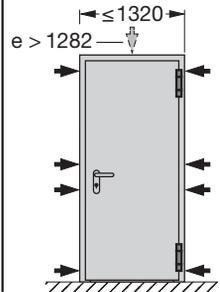


H6 - 2 OD  
H16 - 2 OD

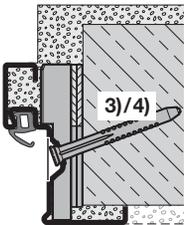


→ 4) Fischer: FUR 10 × 160

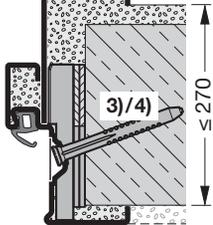
H6 - 1 OD  
H16 - 1 OD



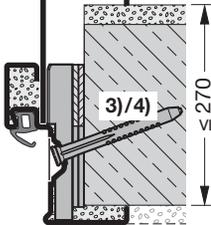
B1



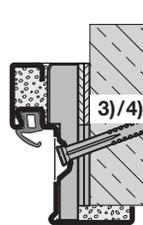
B2



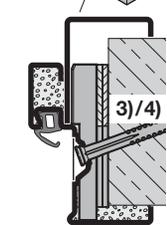
B3



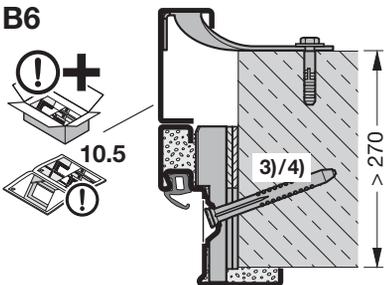
B4



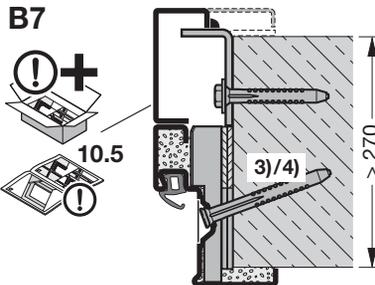
B5



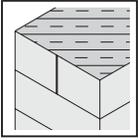
B6



B7

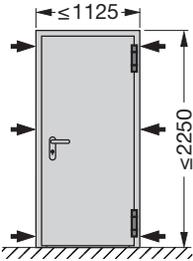


→ 1 2 3a 4 ...

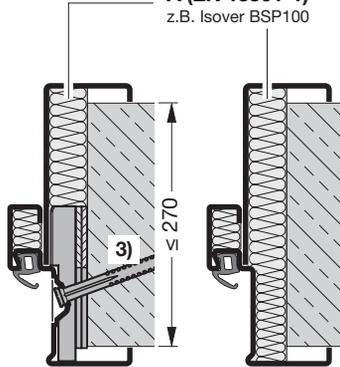


max. T30/EI<sub>2</sub>30

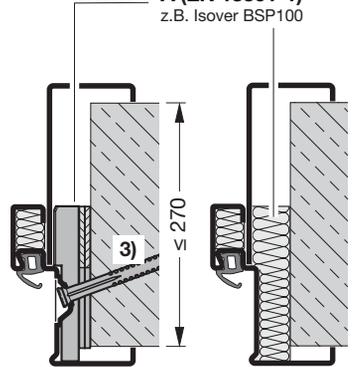
H3-1 OD



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

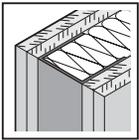


$\rho \sim 100 \text{ kg/m}^3$   
A (EN 13501-1)  
z.B. Isover BSP100



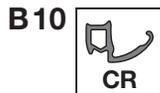
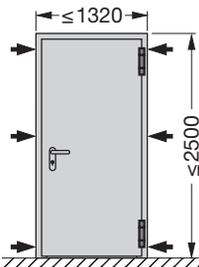
➔ 3) Fischer: FUR 10 × 100

➔ 1 2 3a 4 ...

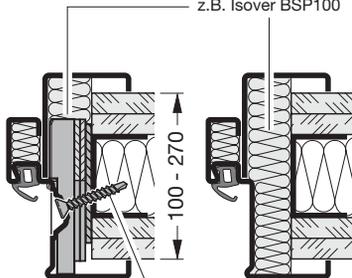


max. T30/EI<sub>2</sub>30

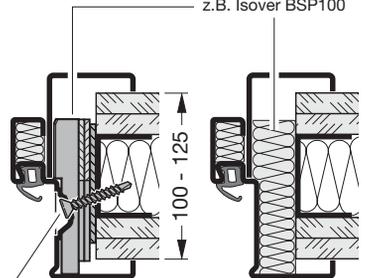
H3-1 OD



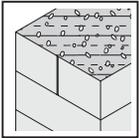
$\rho \sim 100 \text{ kg/m}^3$   
A (EN 13501-1)  
z.B. Isover BSP100



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

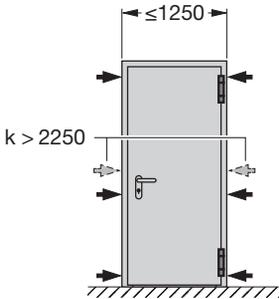


➔ 1 2 3b 4 ...



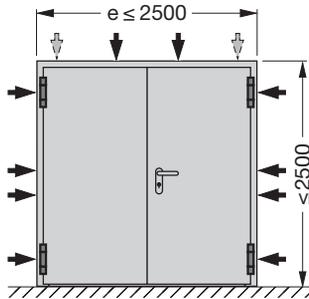
max. T30/EI<sub>2</sub>30

**H3-1 OD**



➔ 4) Fischer: FUR 10 × 160

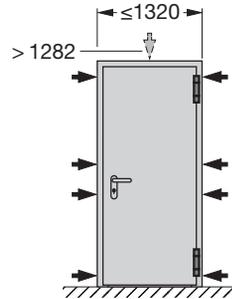
**H3-2 OD**



➔ 4) Fischer: FUR 10 × 160

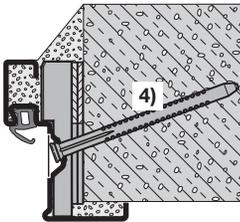


**H6-1 OD  
H16-1 OD**

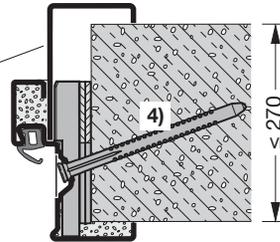


➔ 4) Fischer: FUR 10 × 160

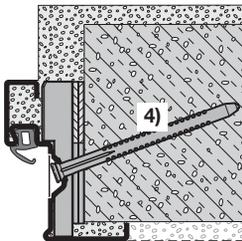
**B12**



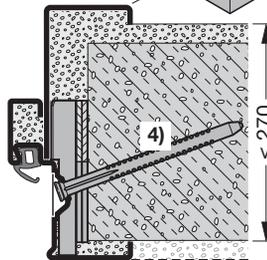
**B13**



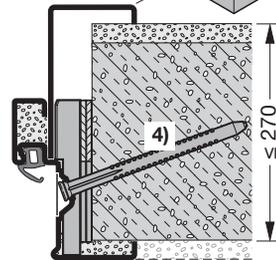
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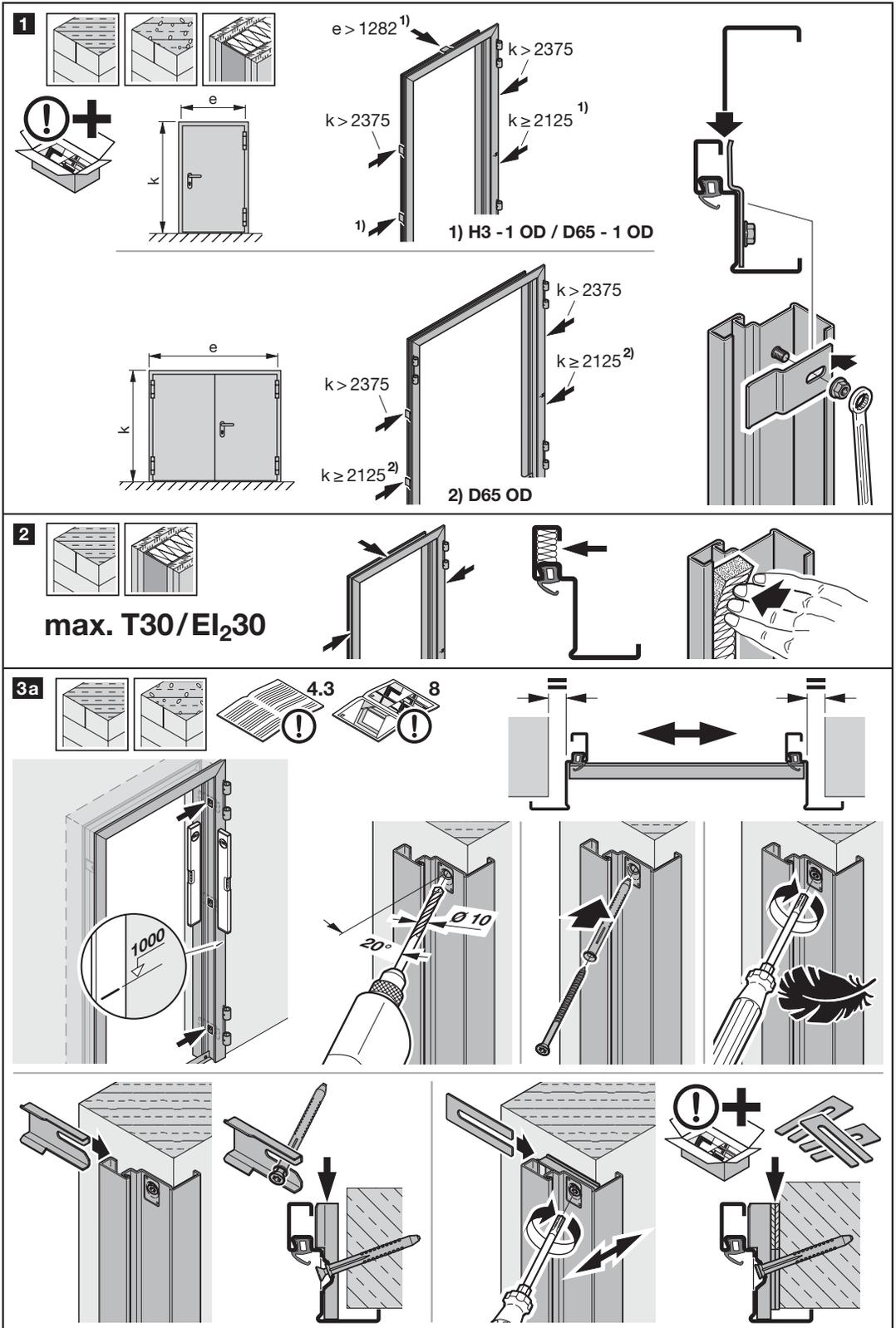
**B15**

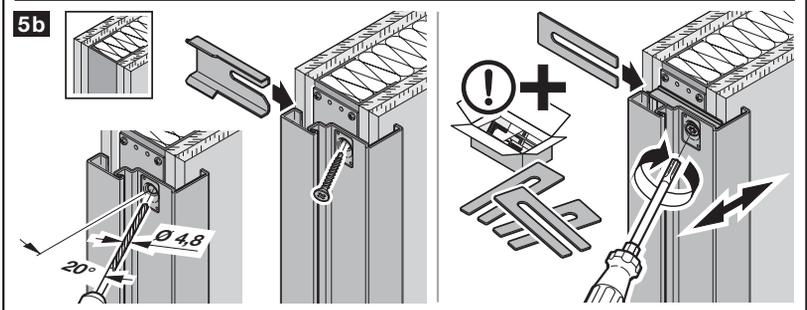
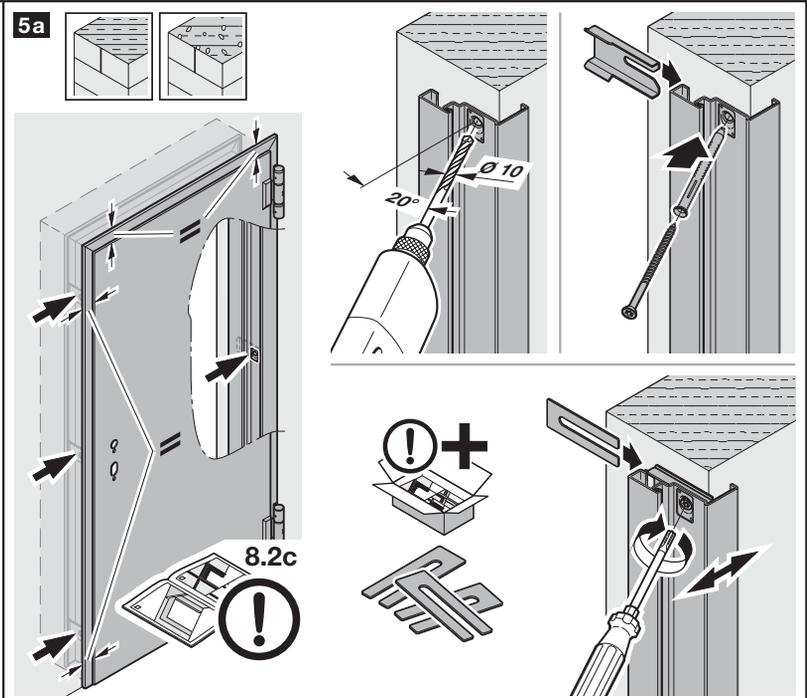
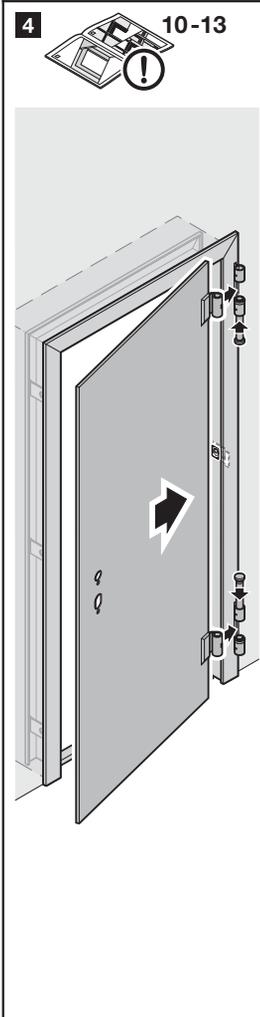
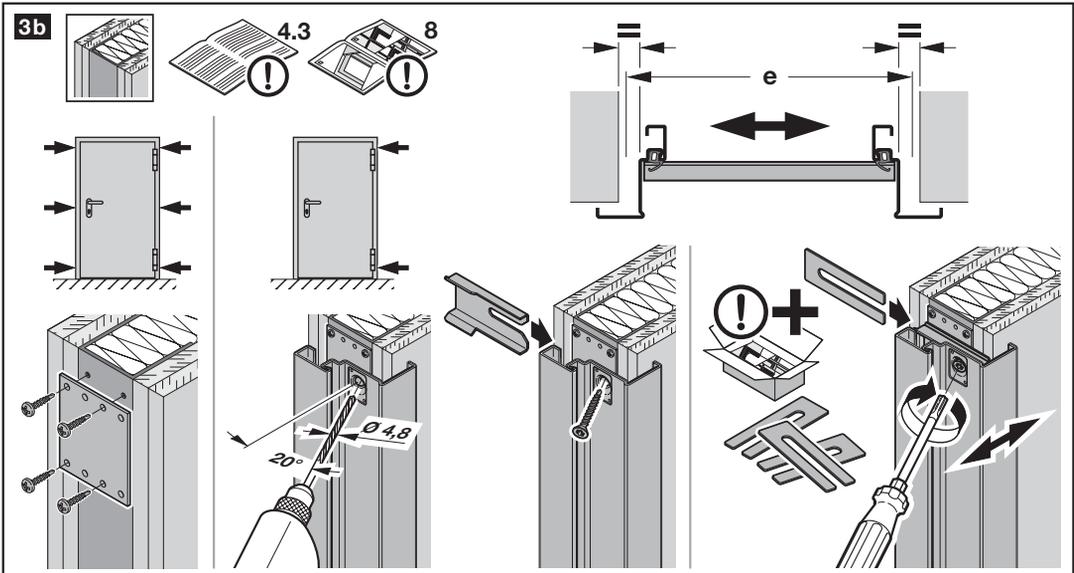


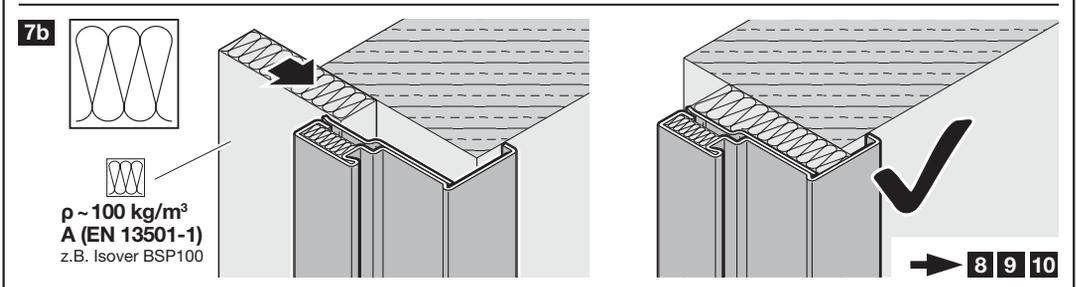
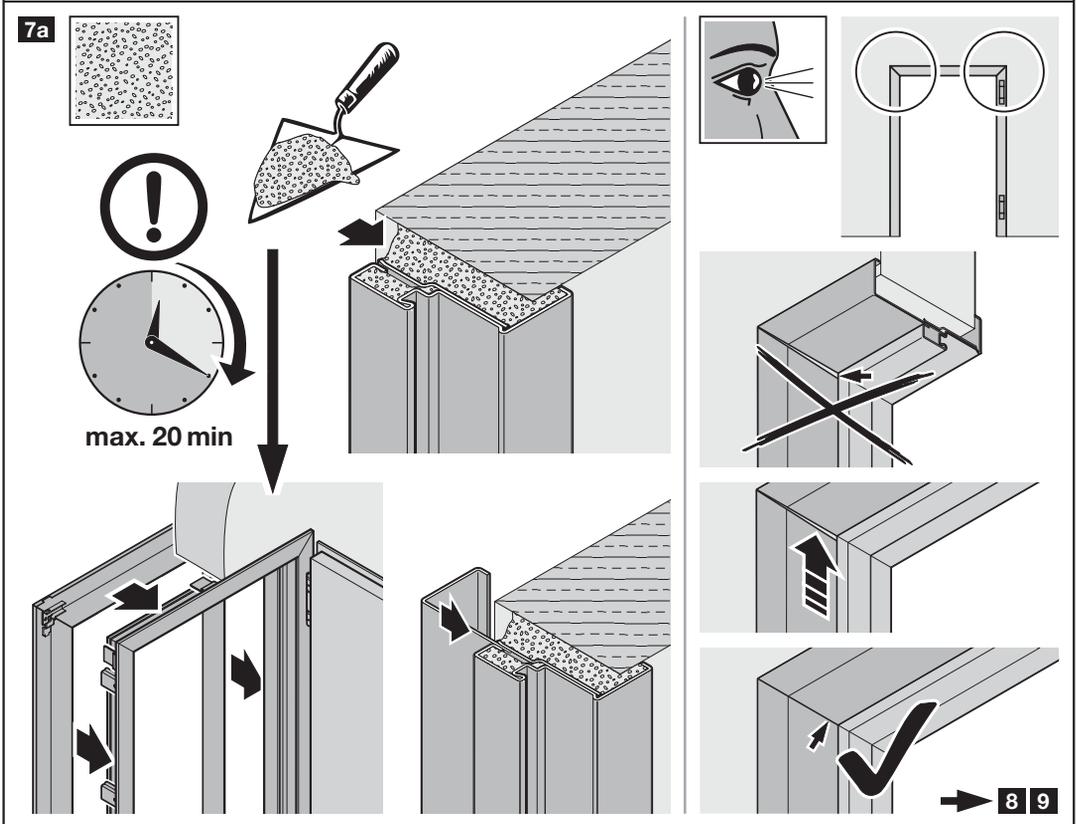
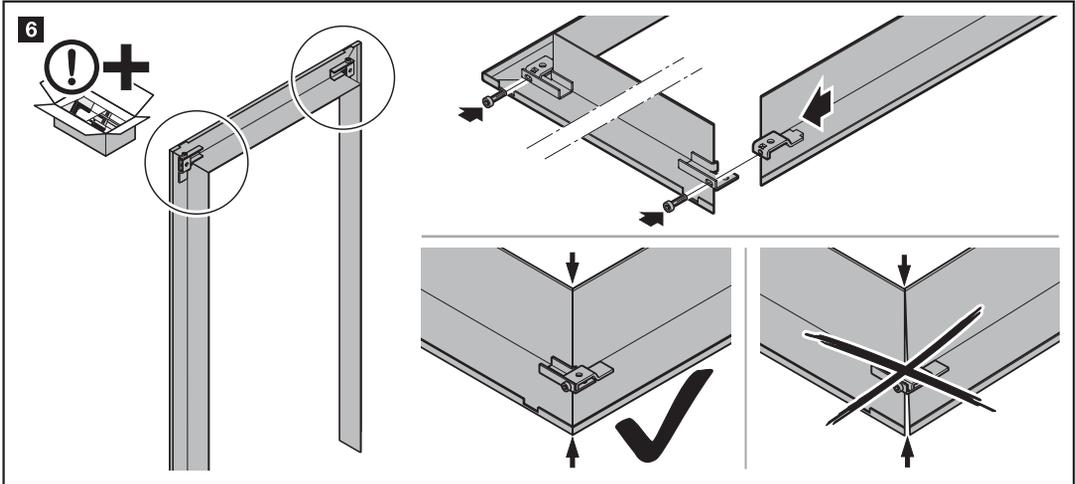
**B16**

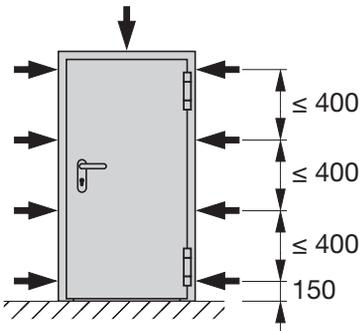
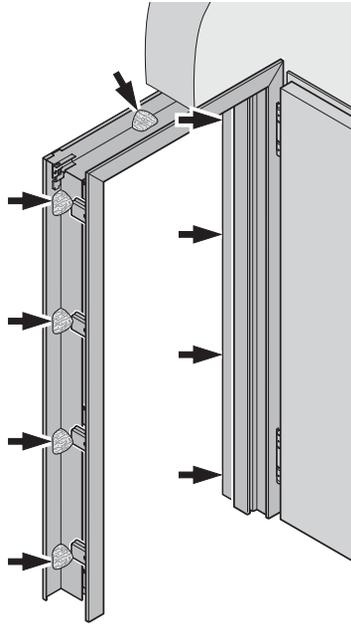
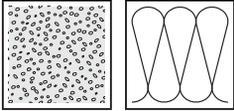
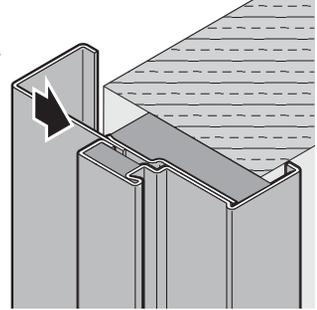
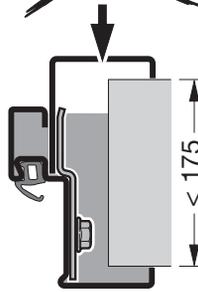
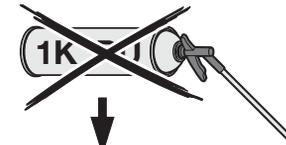
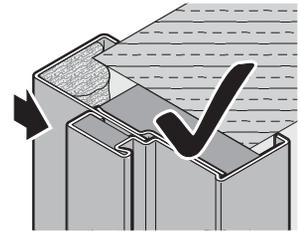
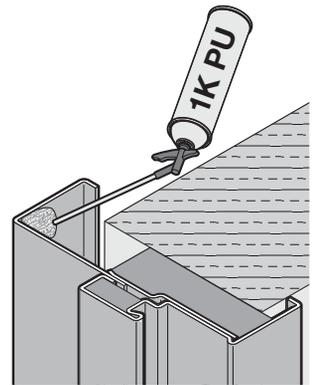
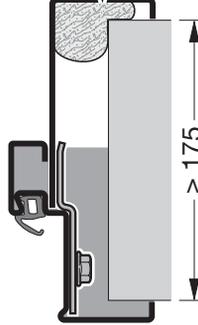
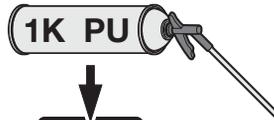
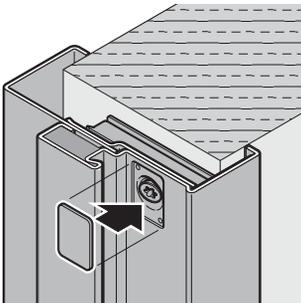
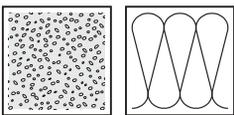
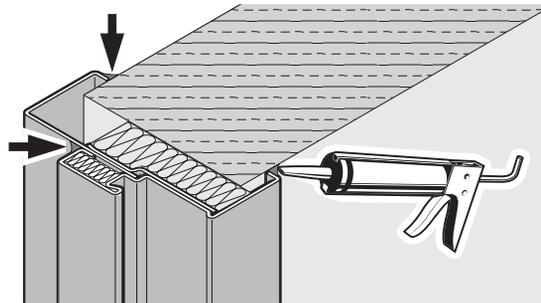
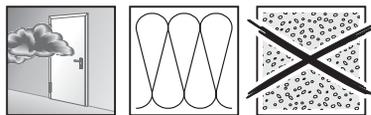


➔ 1 2 3a 4 ...

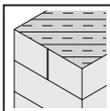




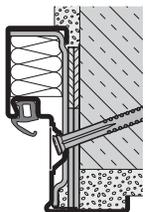


**8****A****B****9****10**

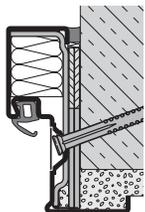
9/C1-C7  
max. T30/  
EI<sub>230</sub>



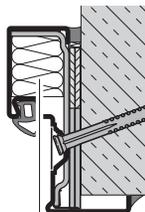
C1



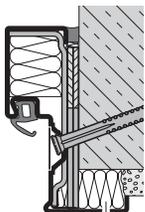
C2



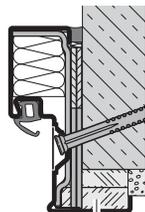
C3



C4

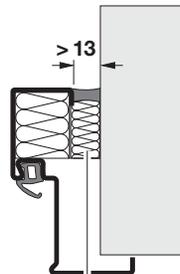


C5



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

DF-EN 520

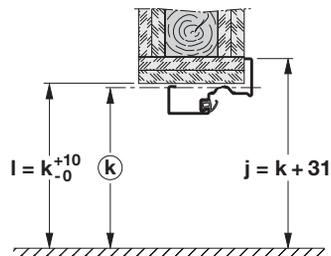
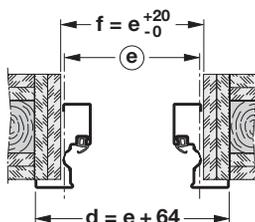


  $\rho \sim 100 \text{ kg/m}^3$   
A (EN 13501-1)  
z.B. Isover BSP100

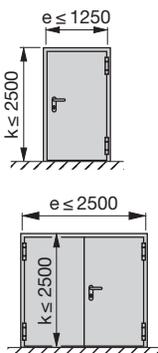
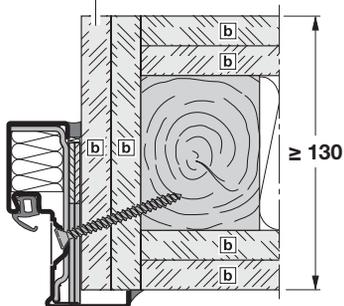
➔ 1a 2 ...

➔ 6

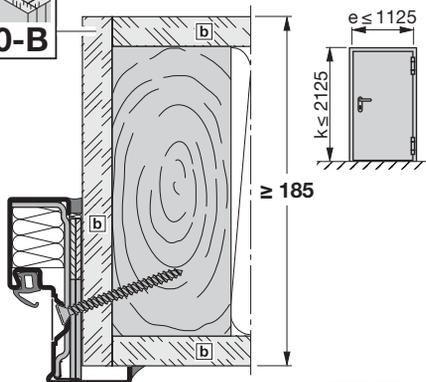
max. T30/  
EI<sub>230</sub>



C6 F90B DIN 4102-4 Tab. 10.3



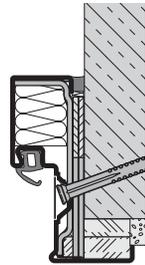
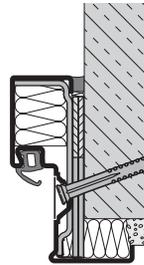
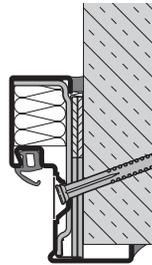
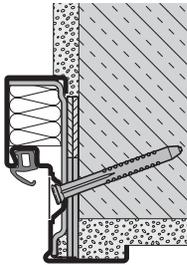
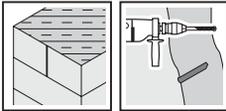
C7 F30B AbP Nr. P-SAC-02 / III-668



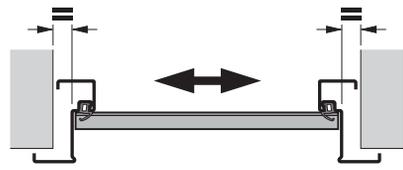
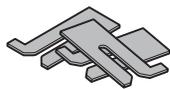
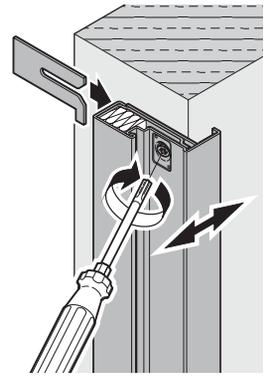
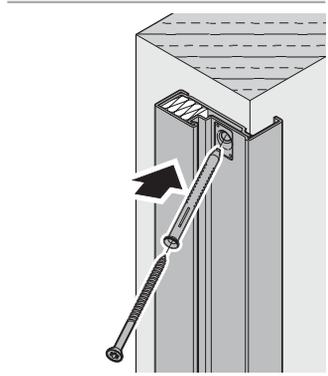
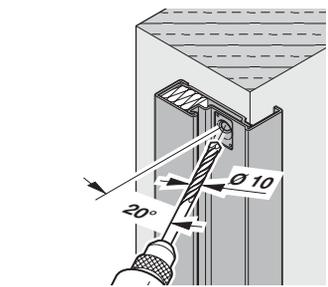
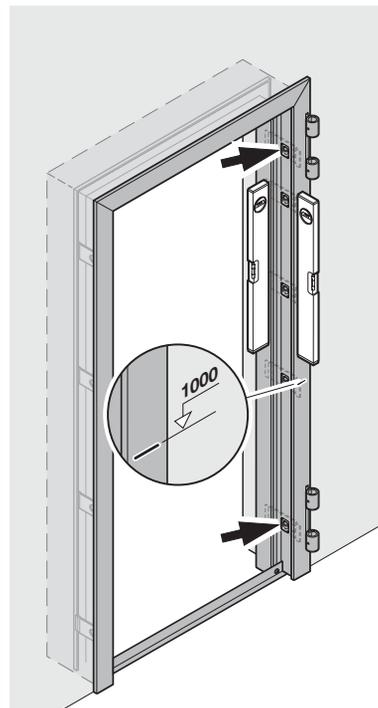
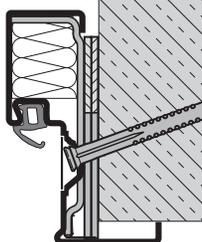
 DF-12,5-EN 520

➔ 1b 2 ...

1a

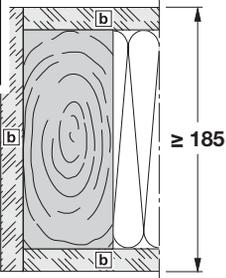
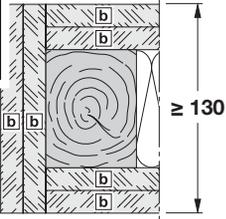


e-10

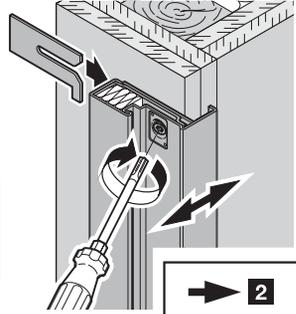
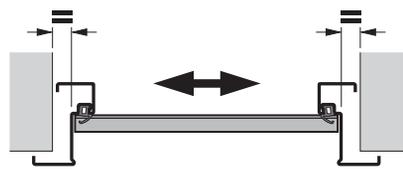
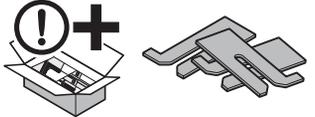
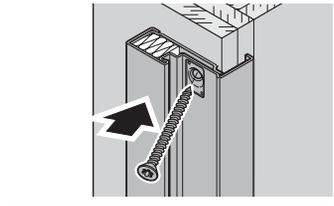
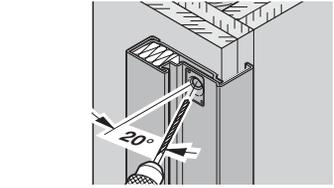
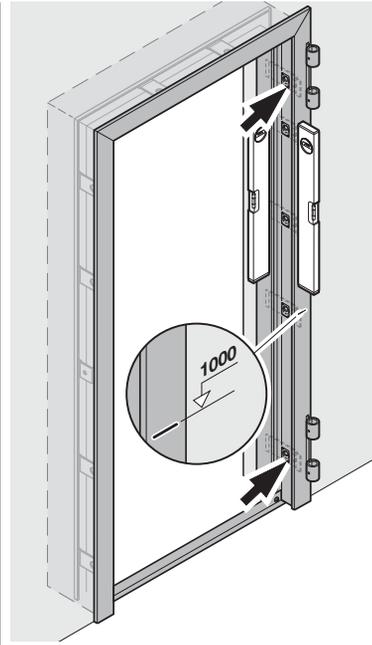
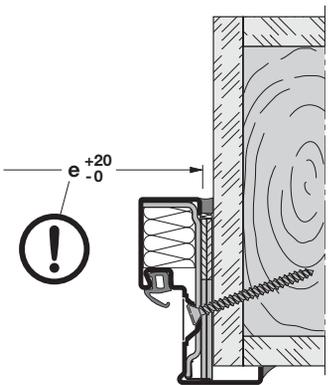
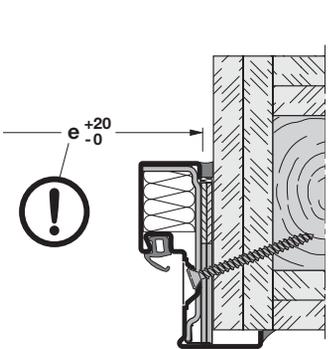
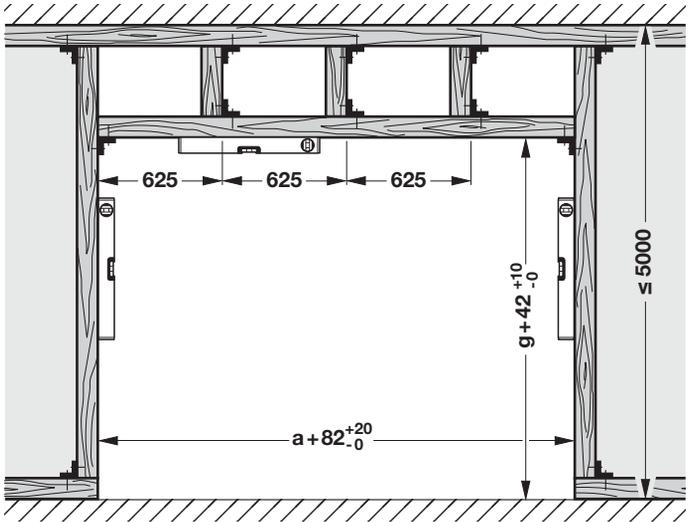
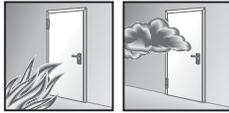


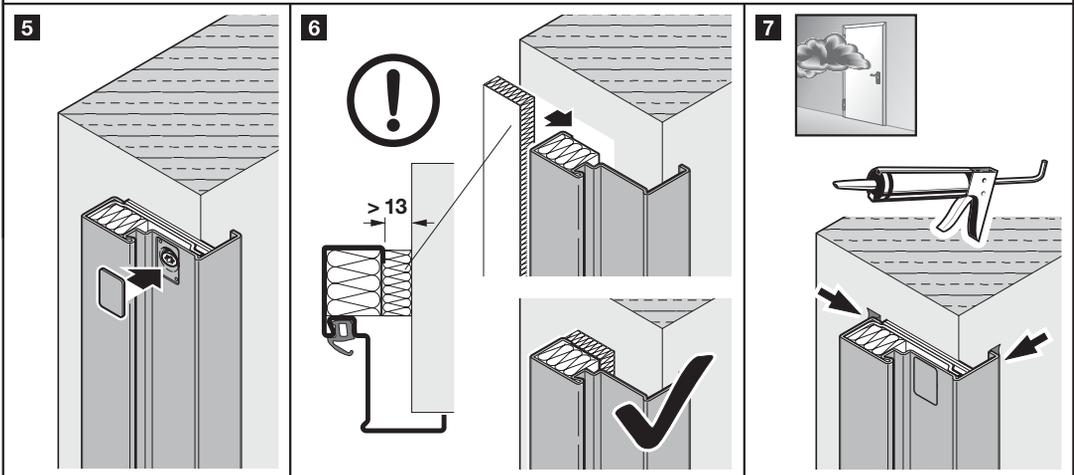
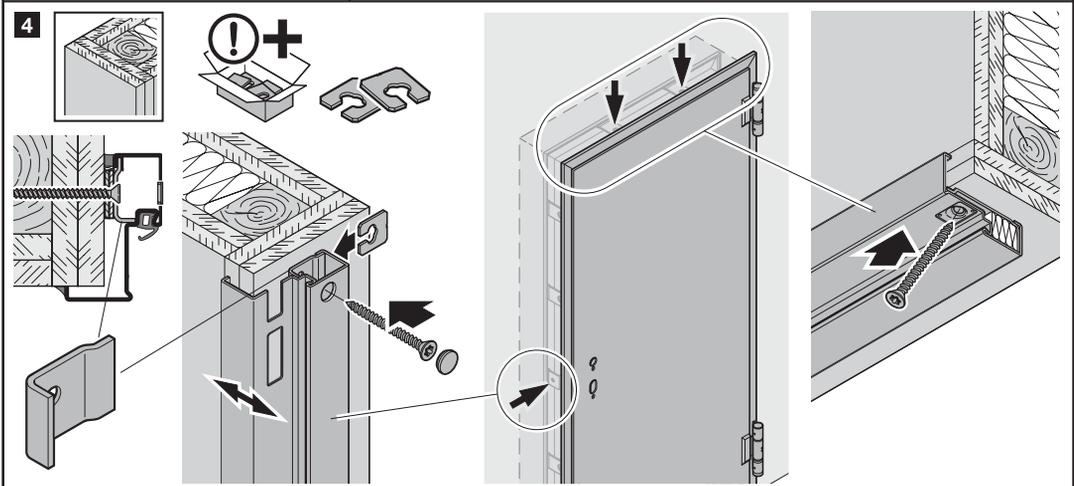
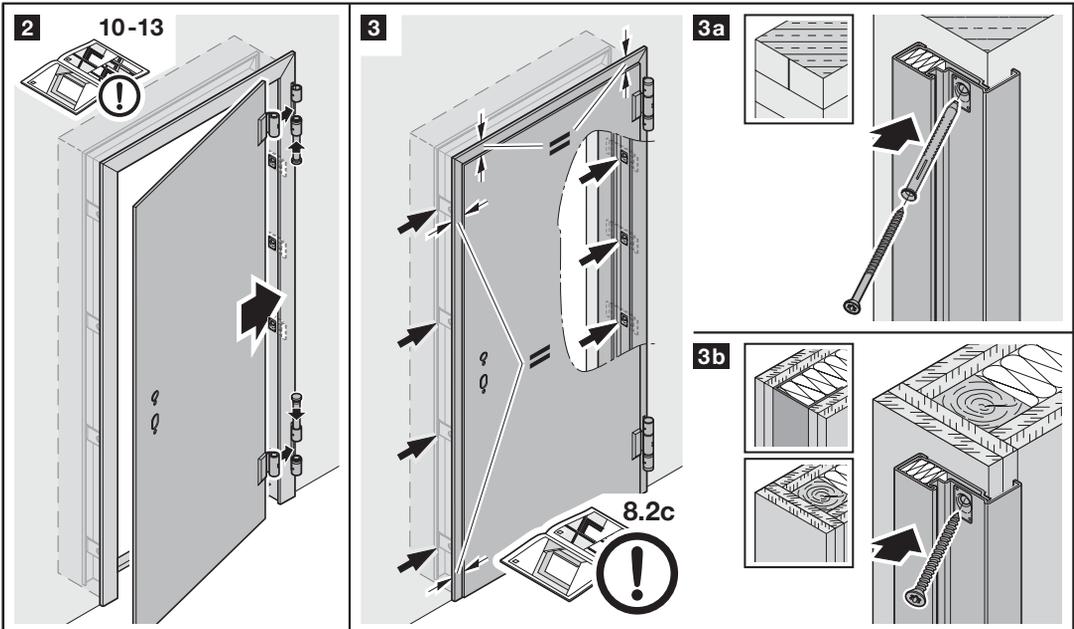
➔ 2

1b

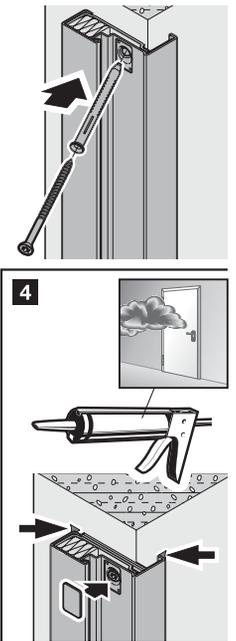
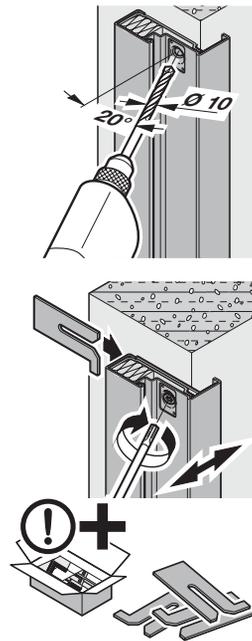
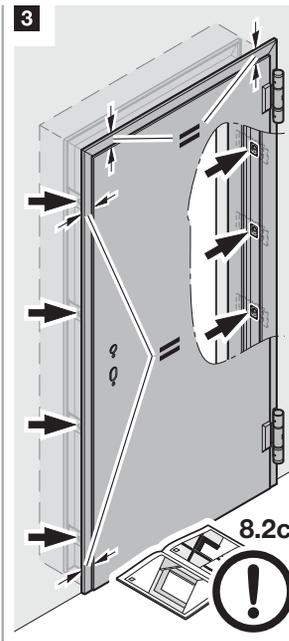
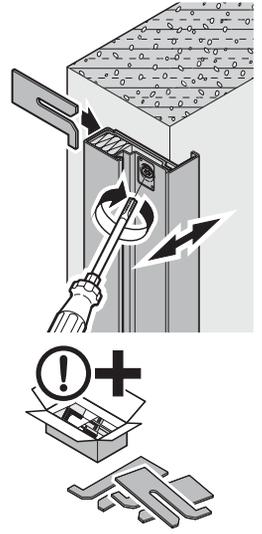
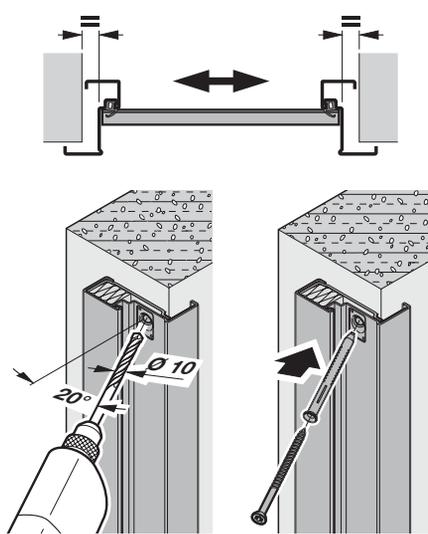
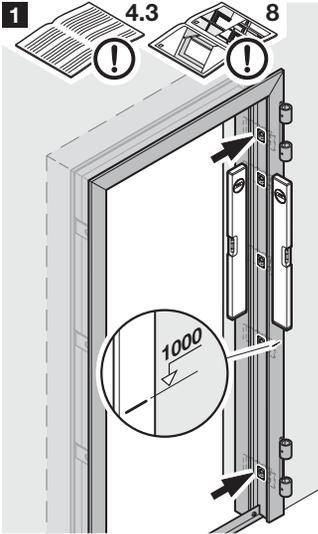
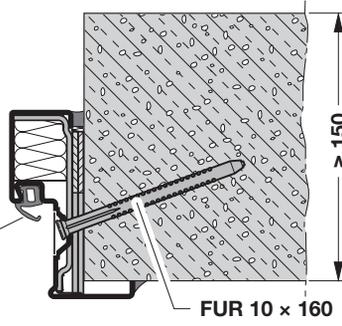
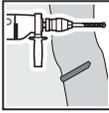


b) DF-12,5-EN 520

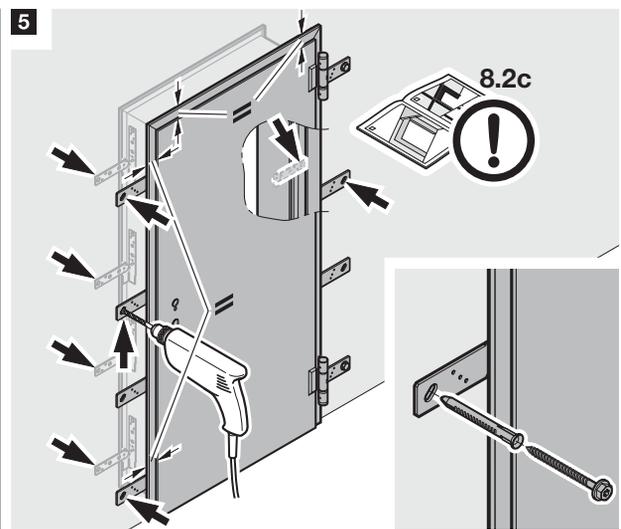
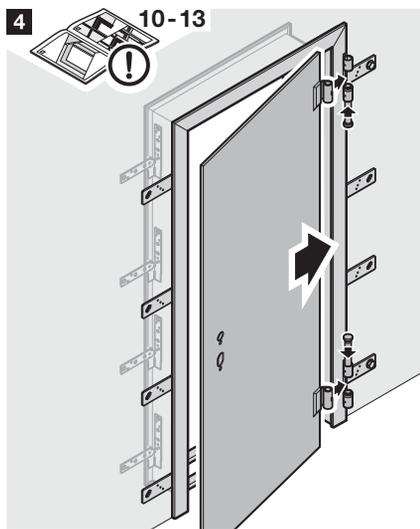
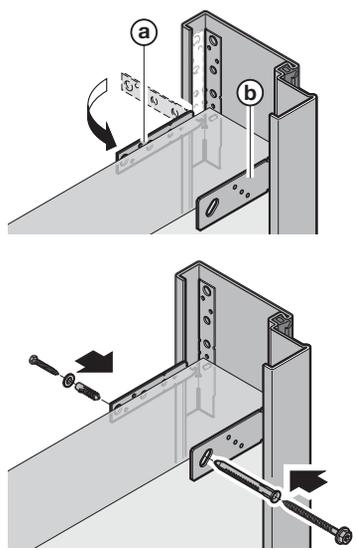
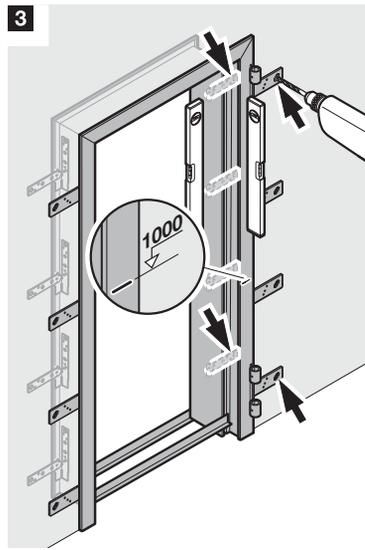
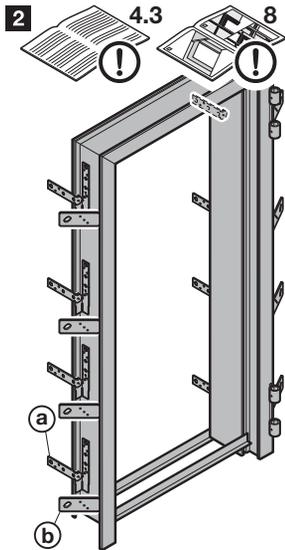
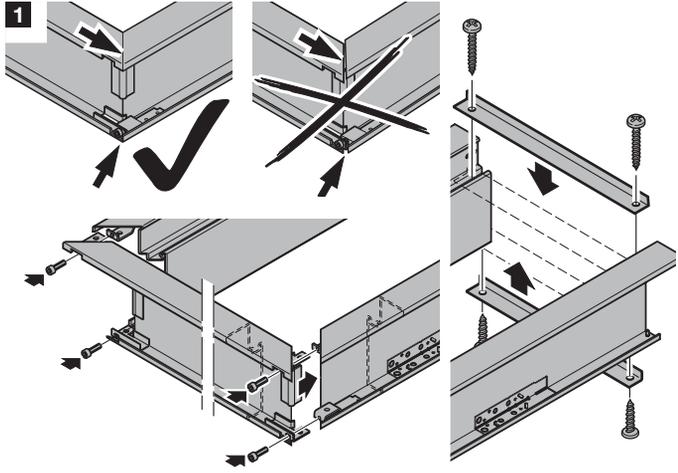
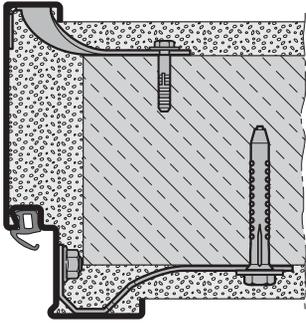


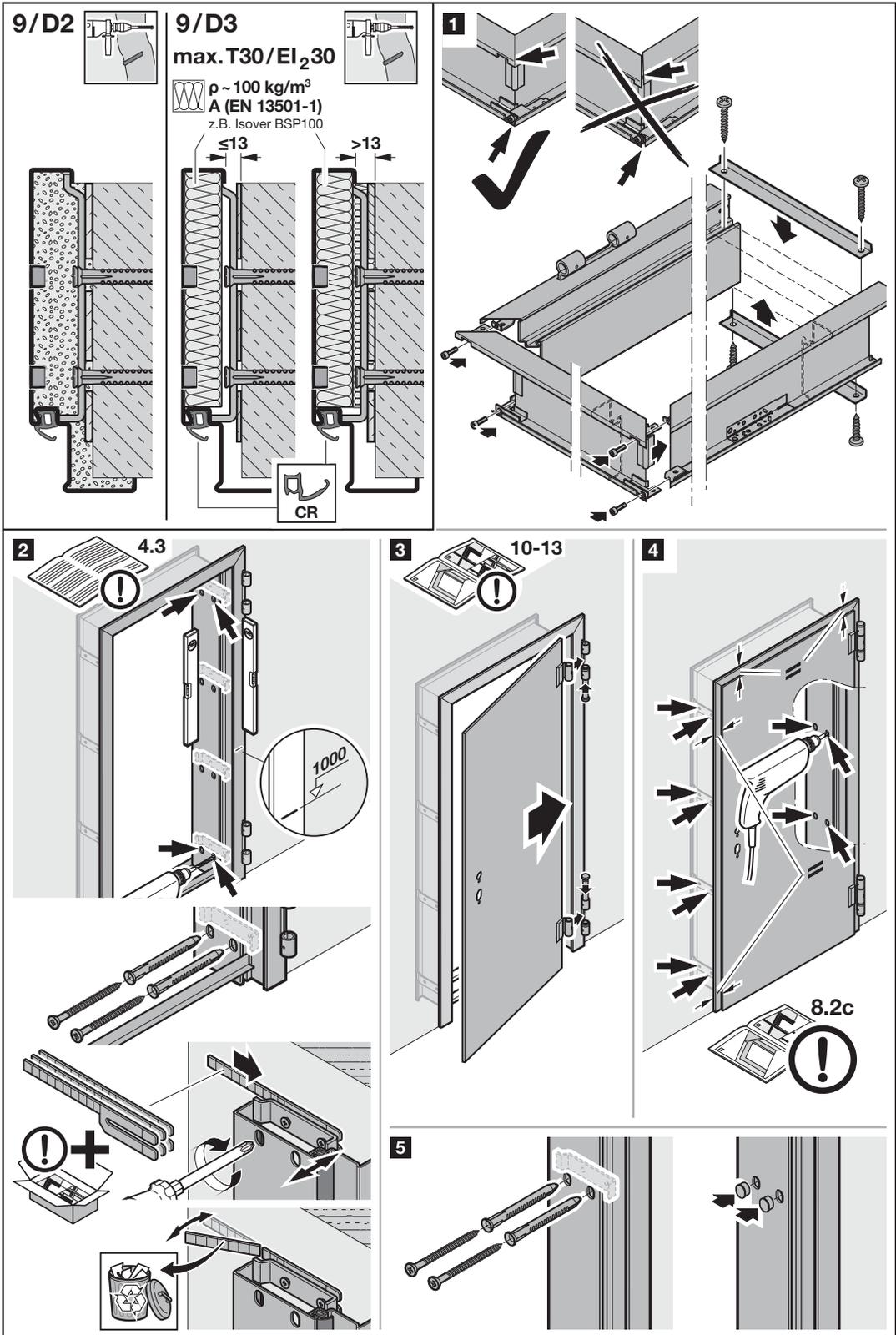


9/C8  
max. T30

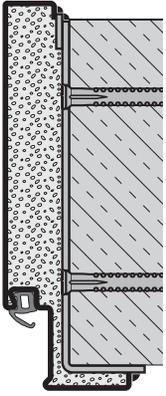


9/D1





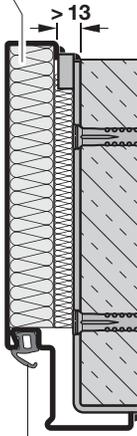
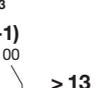
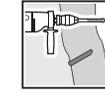
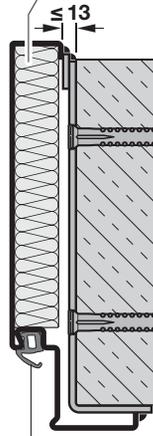
9/D4



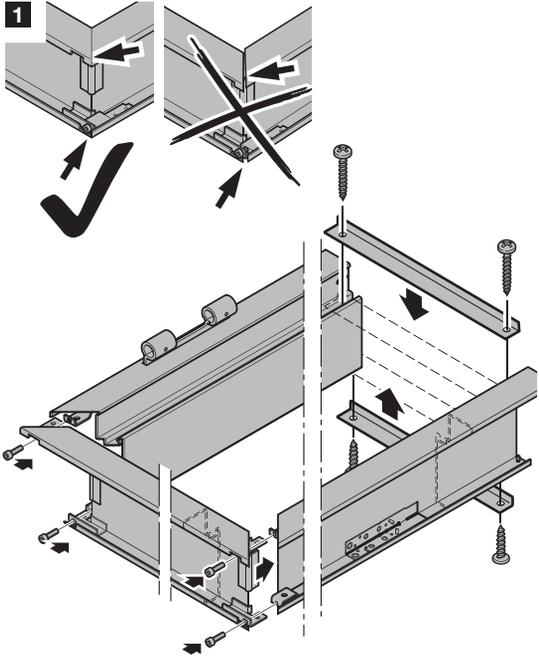
9/D5

max. T30/  
EI<sub>230</sub>

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



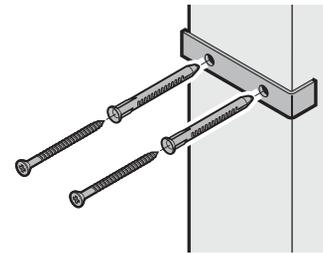
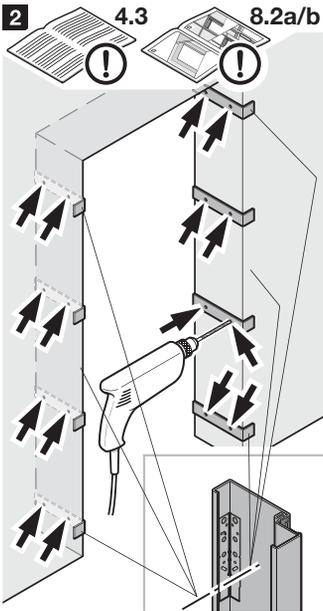
1



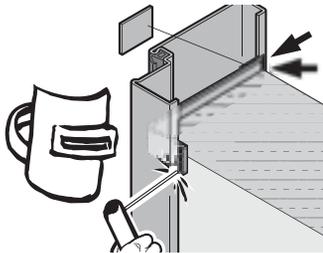
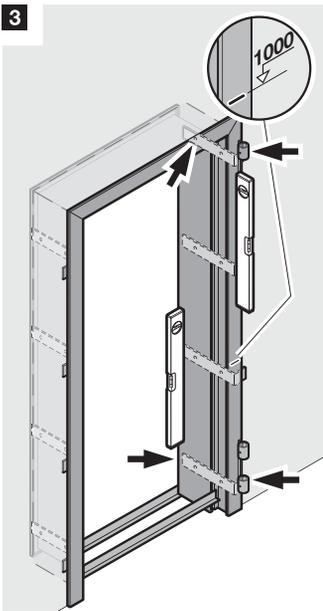
2

4.3

8.2a/b

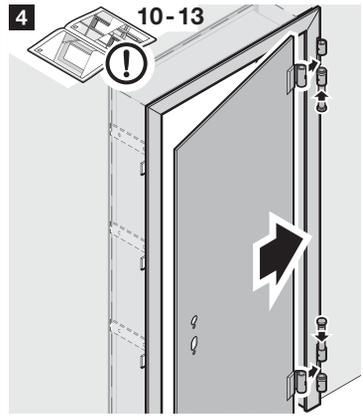


3



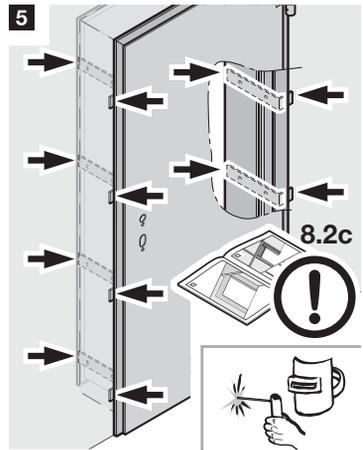
4

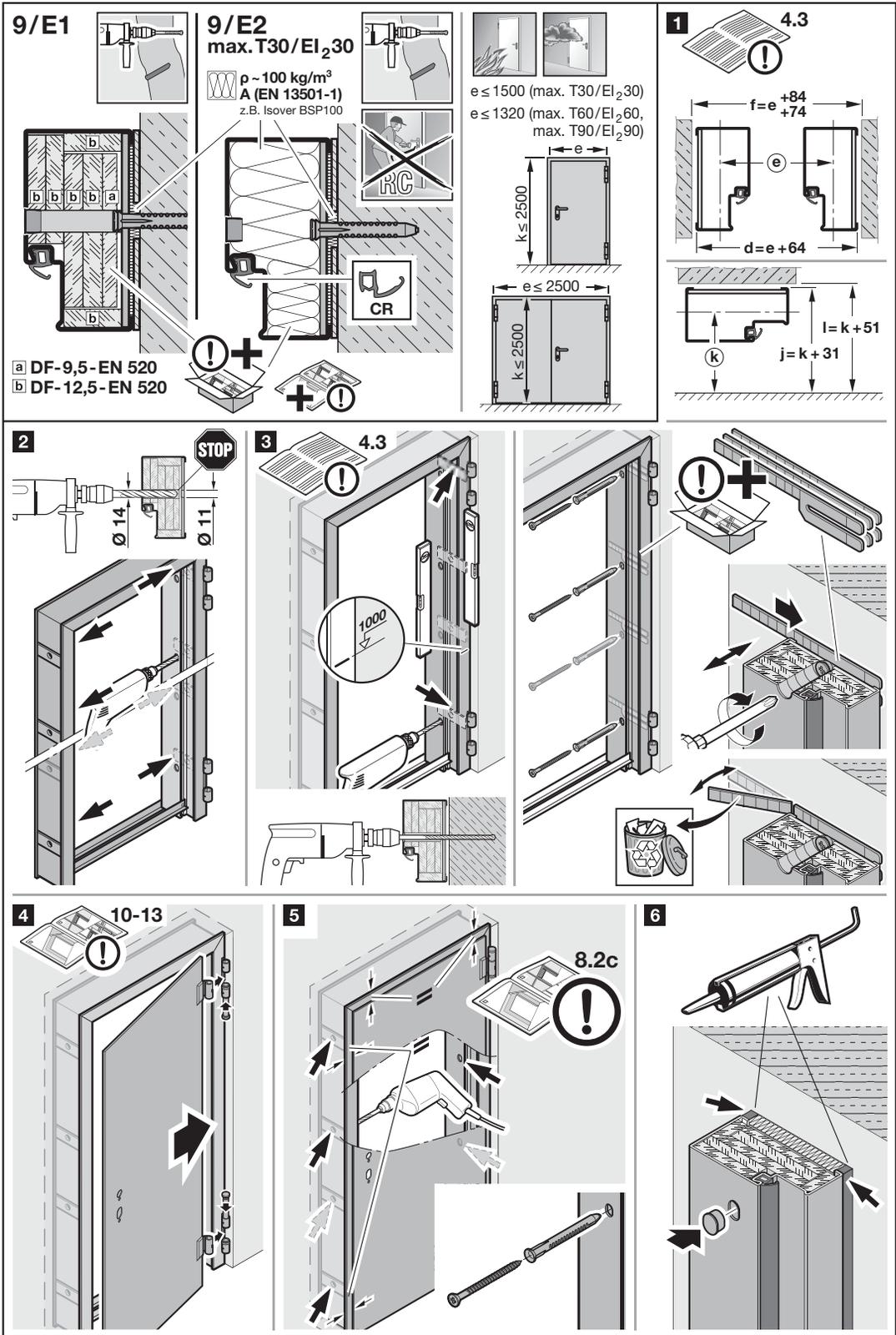
10-13



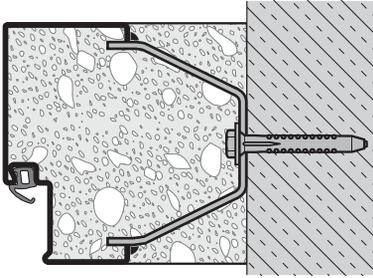
5

8.2c

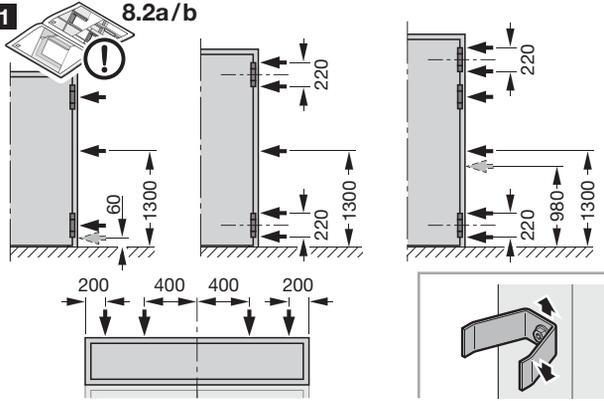




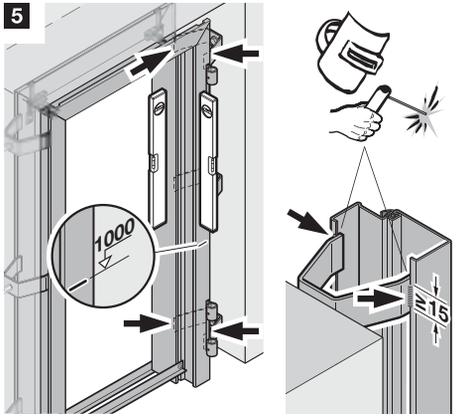
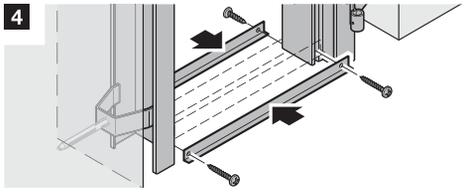
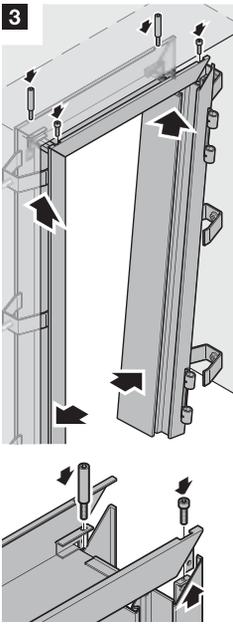
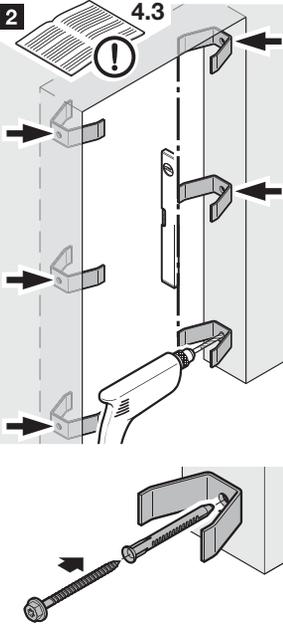
9/E3



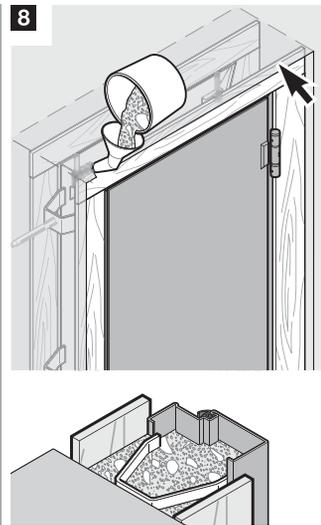
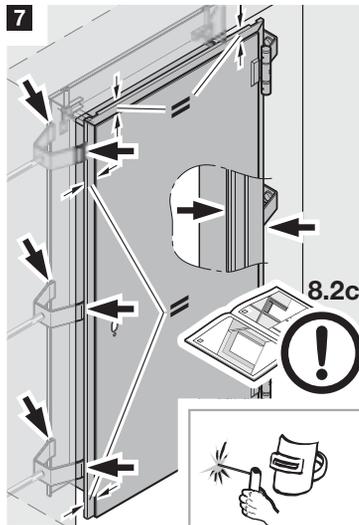
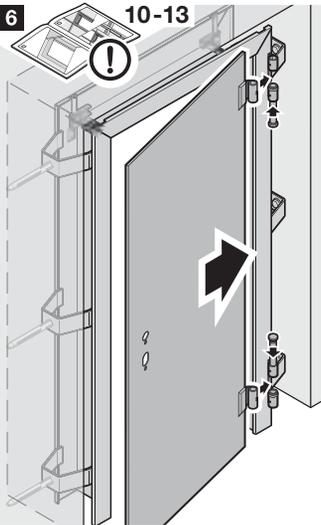
1 8.2a/b



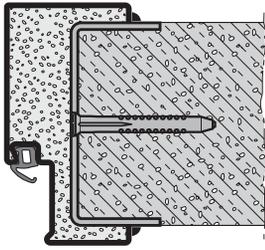
2 4.3



6 10-13

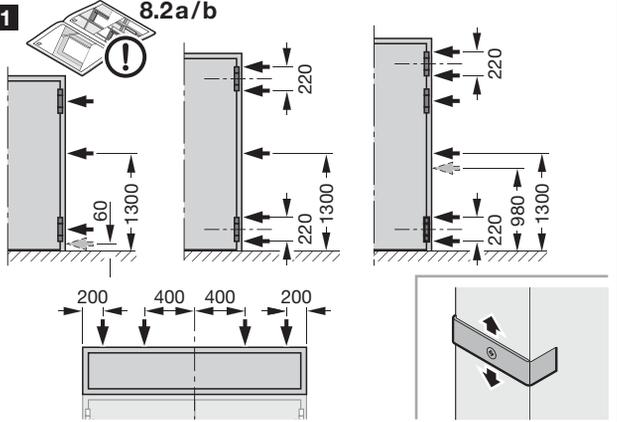


9/E4



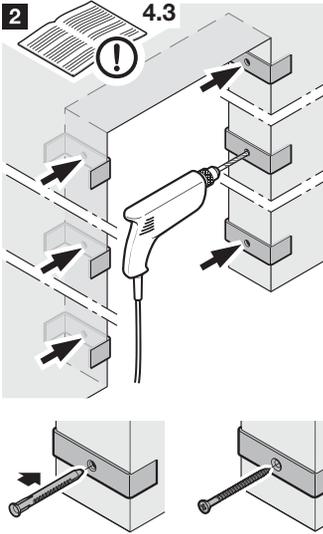
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8.2a/b

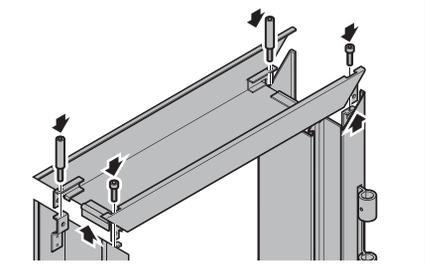
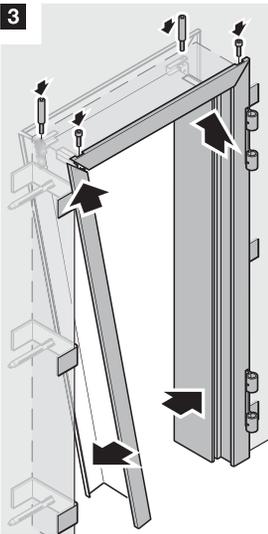


2

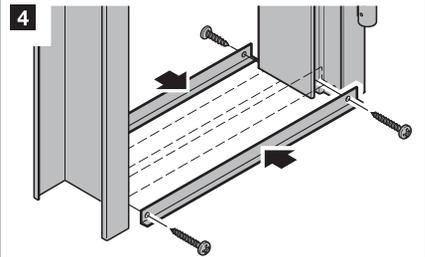
4.3



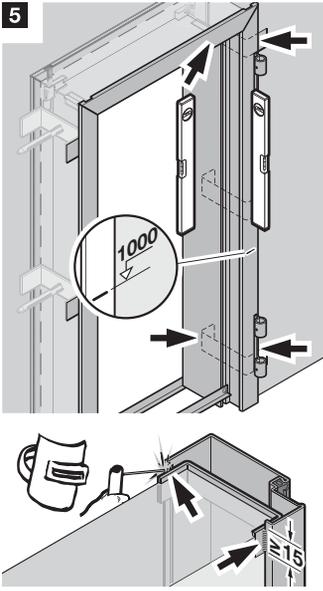
3



4

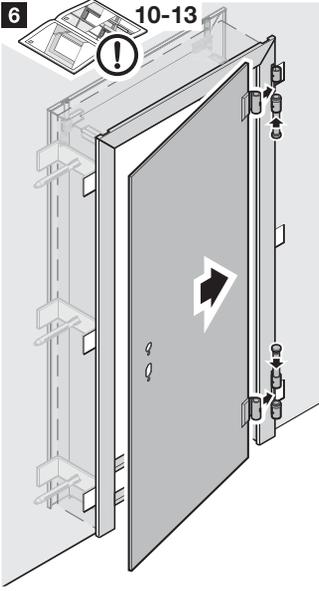


5

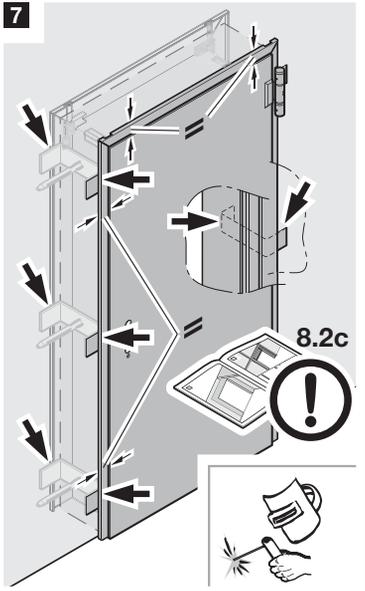


6

10-13

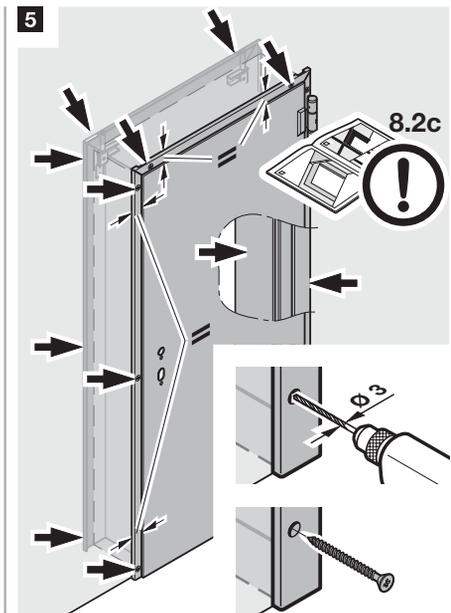
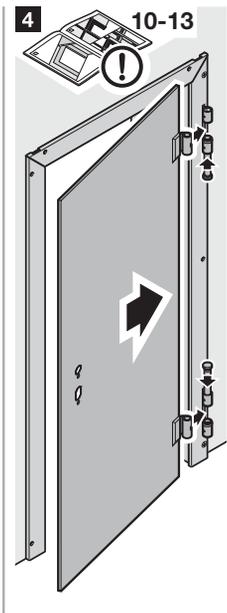
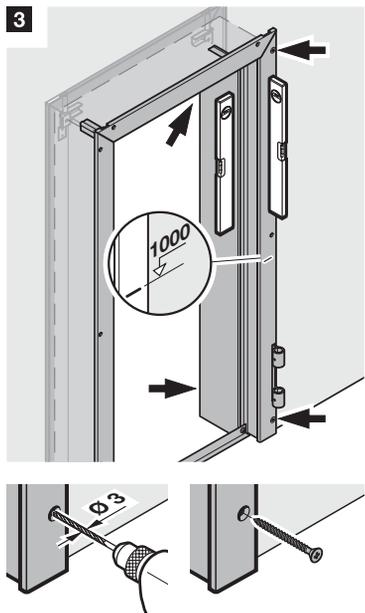
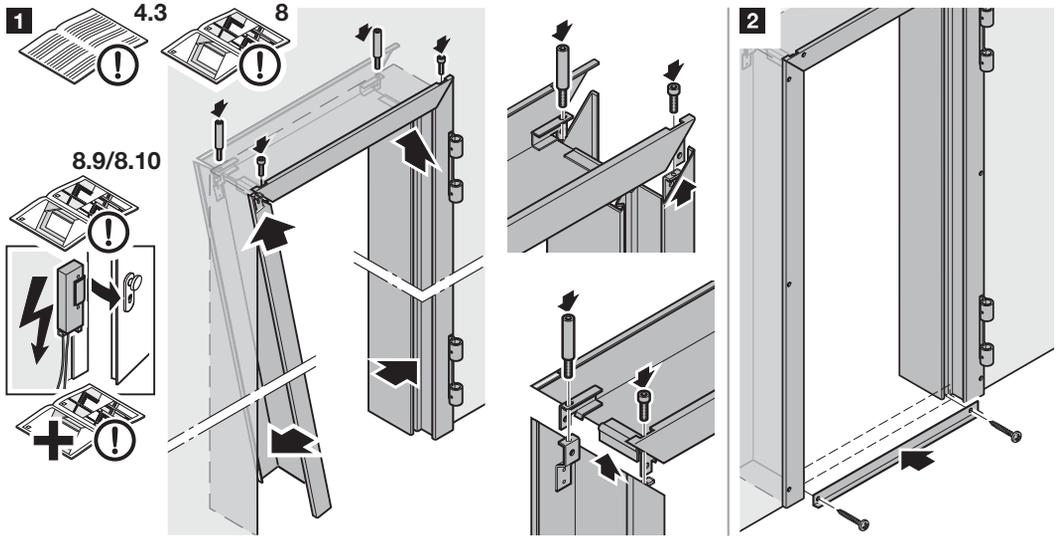
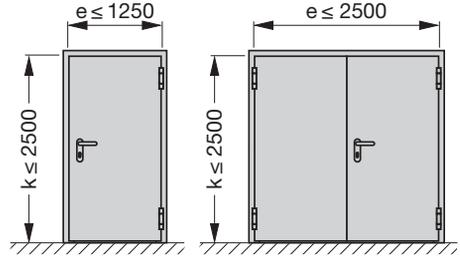
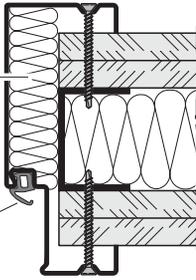
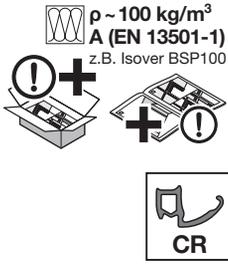


7



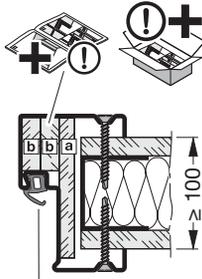
9/E5

max. T30/  
EI<sub>2</sub>30



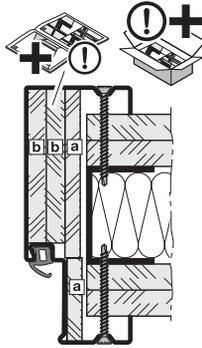
9/E6

max. T30/EI<sub>2,30</sub>



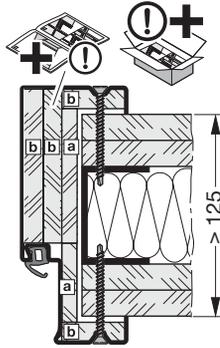
9/E7

max. T30/EI<sub>2,30</sub>

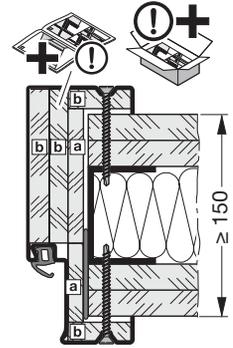


9/E8

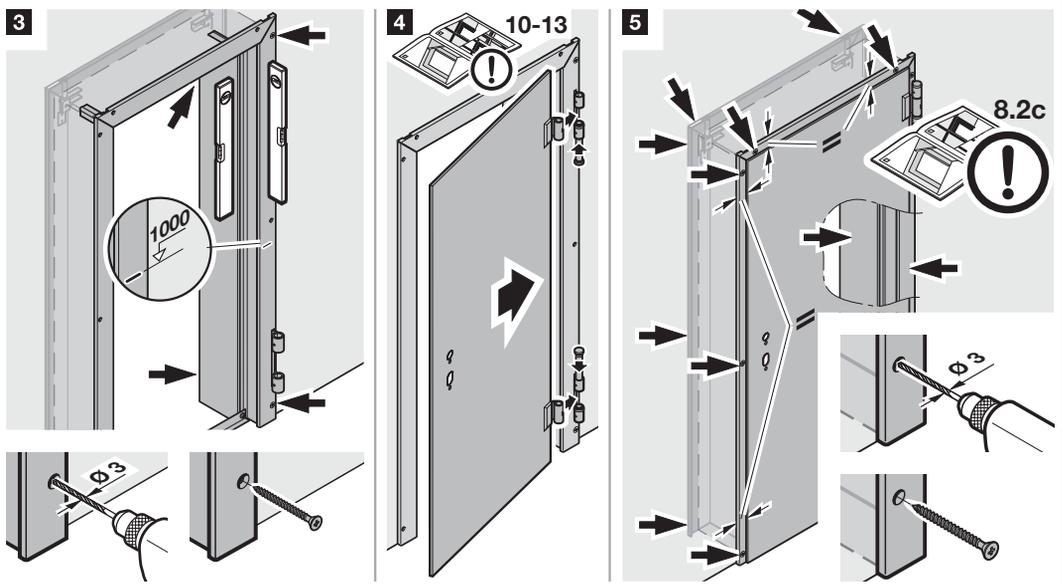
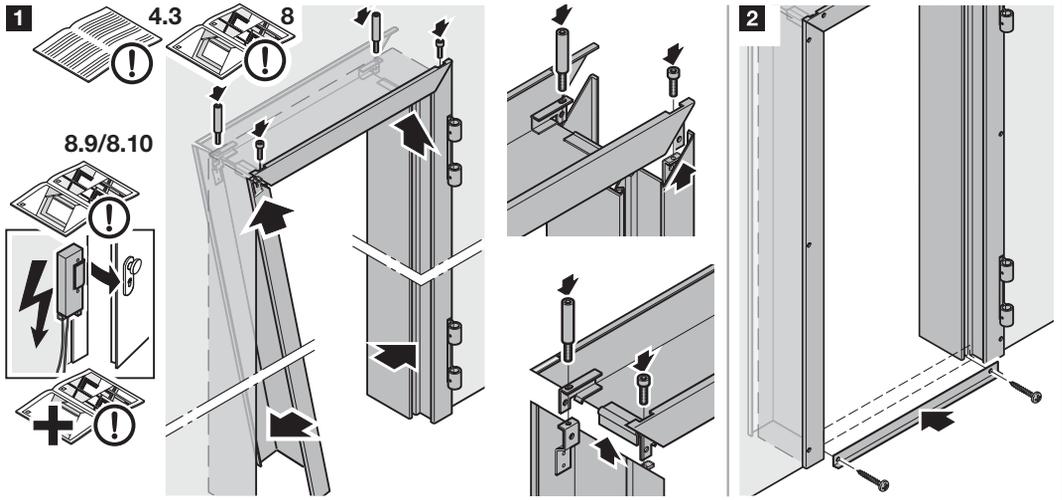
T60/EI<sub>2,60</sub>



T90/EI<sub>2,90</sub>



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

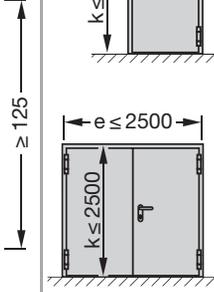
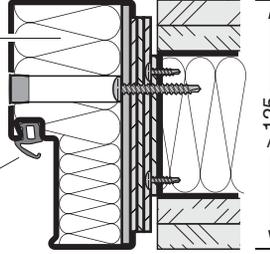
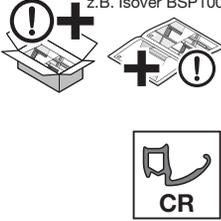


9/E9

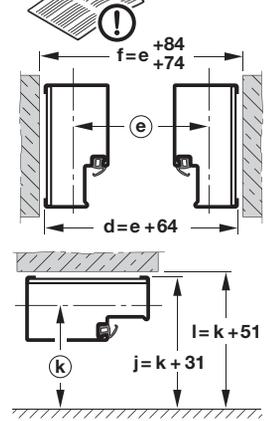
max. T30/  
EI<sub>2</sub>30



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

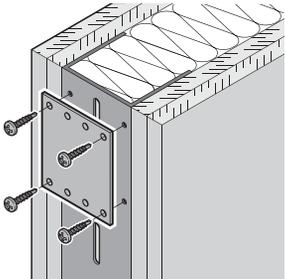
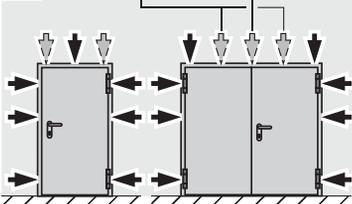


1 4.3

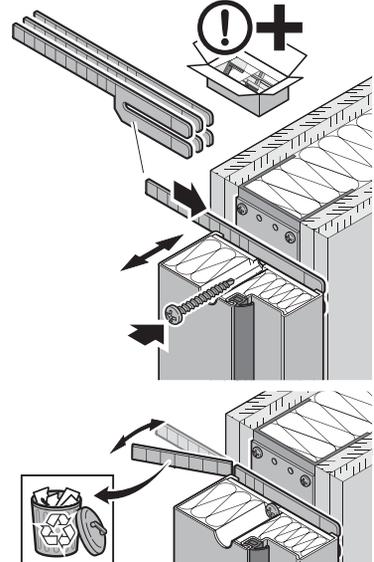
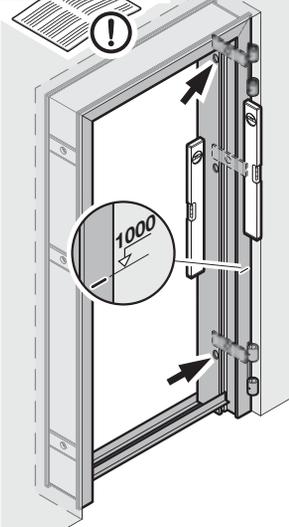


2

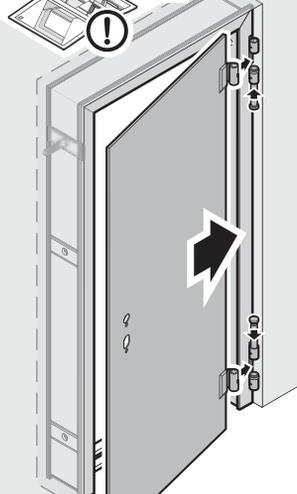
$e > 1500$      $e \leq 1500$



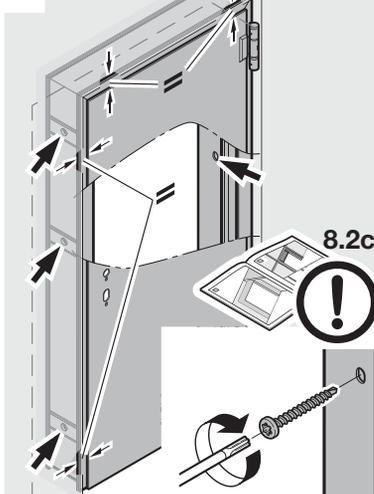
3 4.3



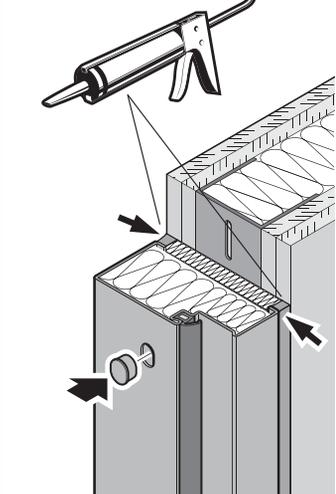
4 10-13



5

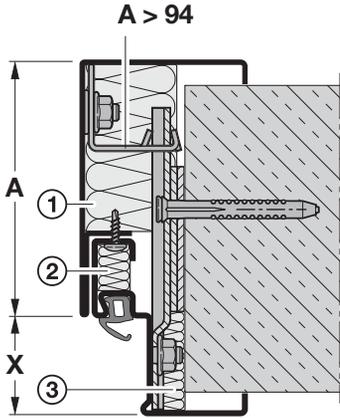


6



9/F1

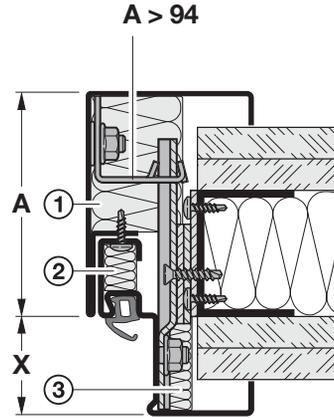
max. T30/ EI<sub>2</sub>30



➔ 1 2a 2b 3 ...

9/F2

max. T30/ EI<sub>2</sub>30

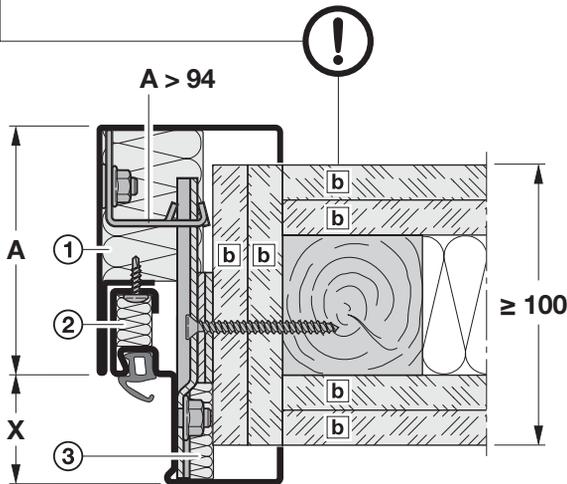


➔ 1 2c 3 ...

F90A DIN 4102-4 Tab. 10.2

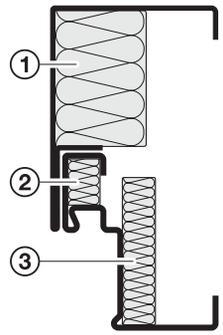
9/F3

max. T30/ EI<sub>2</sub>30



F90B DIN 4102-4 Tab. 10.3 b DF-12,5-EN 520

➔ 1 2d 3 ...

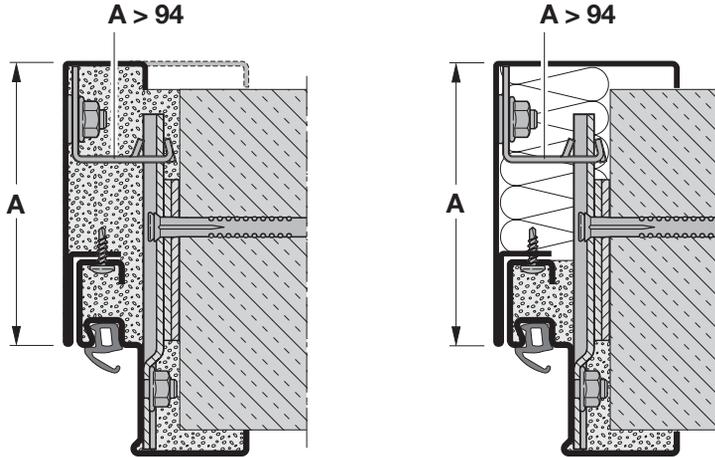


ρ ~ 100 kg/m<sup>3</sup>  
A (EN 13501-1)  
z.B. Isover BSP100

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

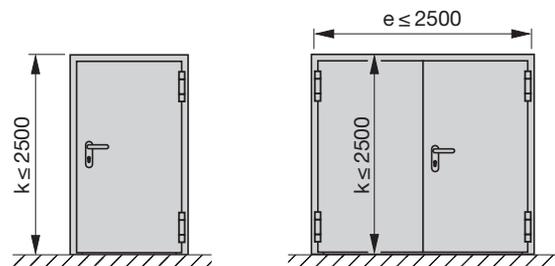
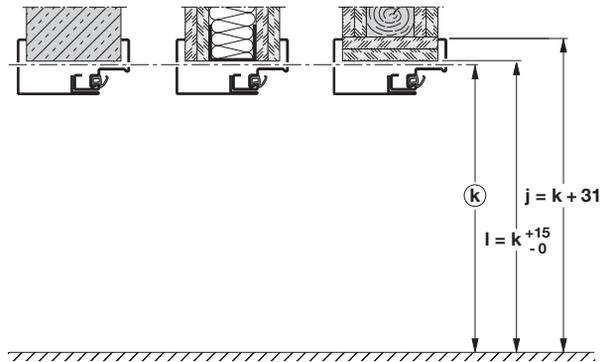
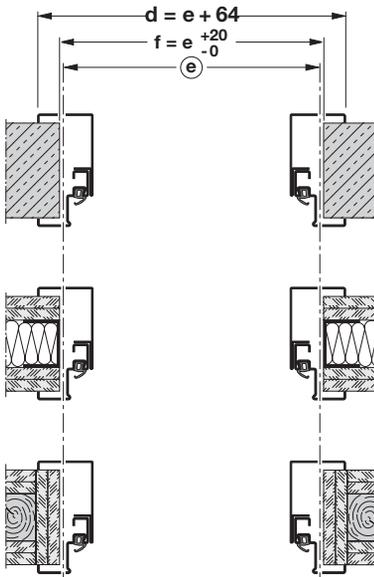
9/F4

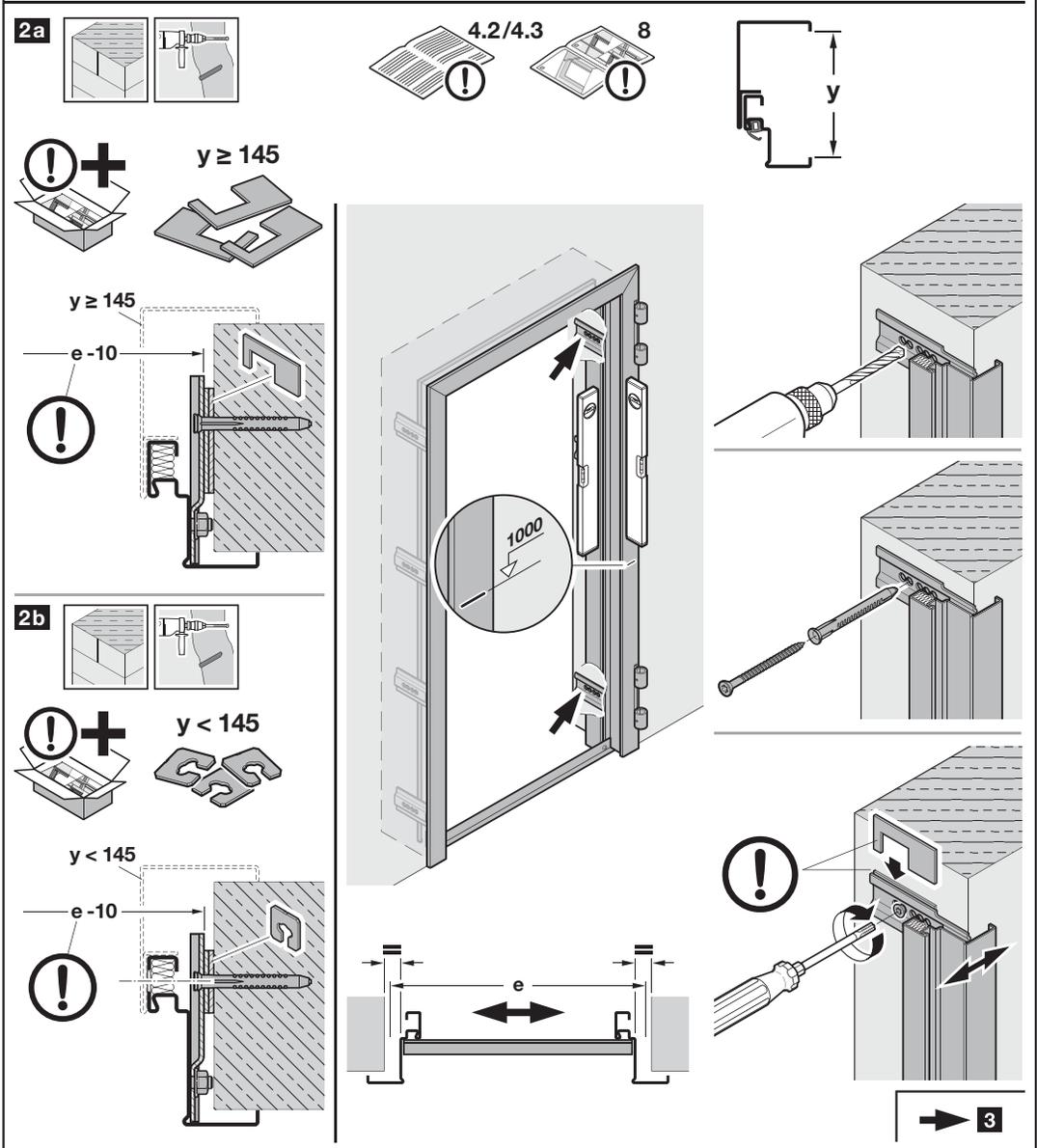
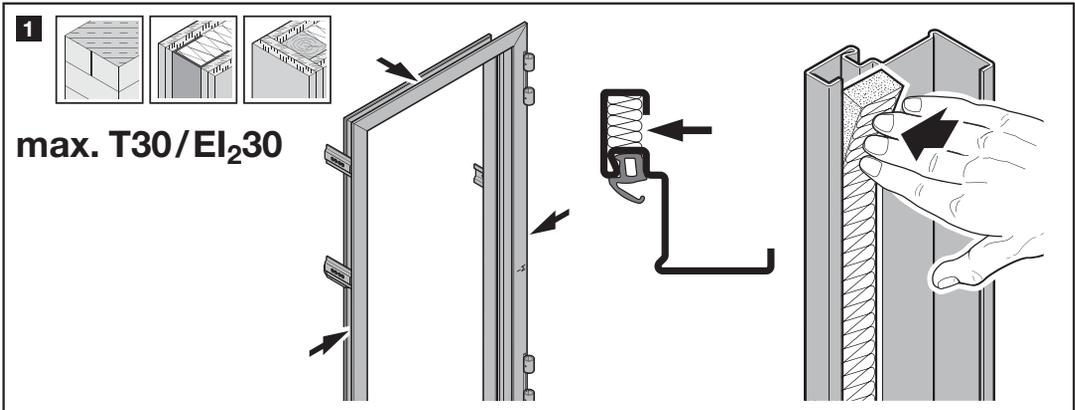
max. T90/ EI<sub>2</sub>90



➔ 2a 2b 3 ...

9/F1 - 9/F4

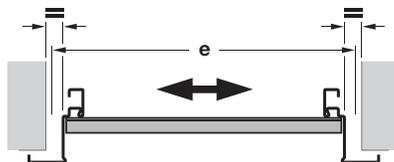
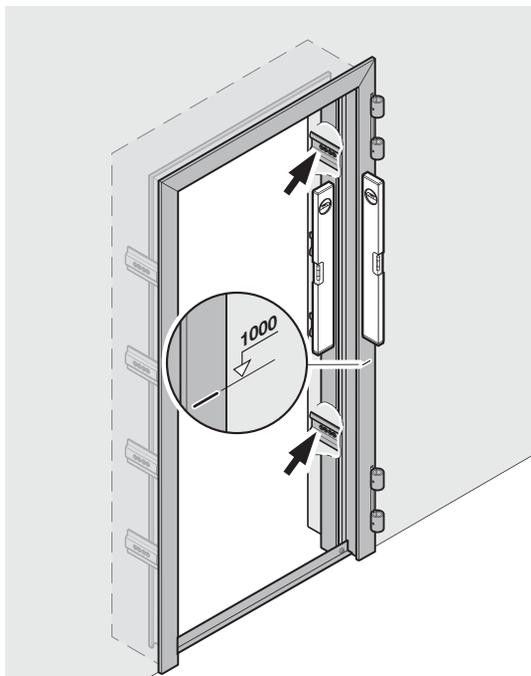
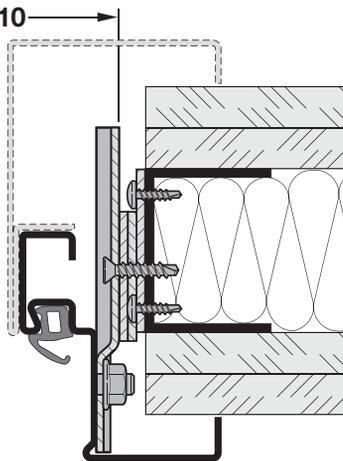




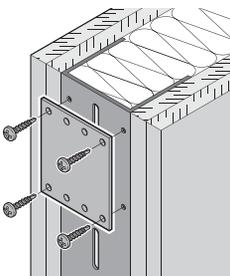
2c



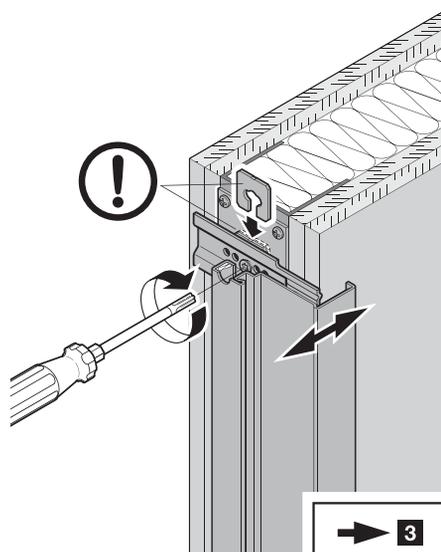
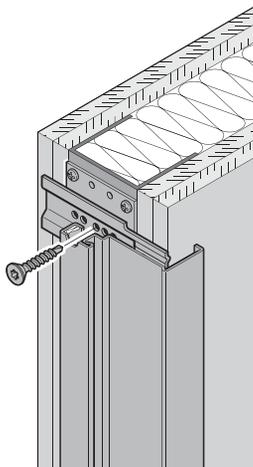
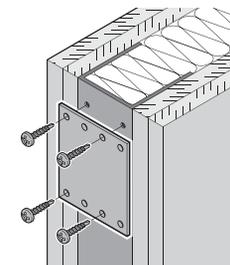
e - 10



A

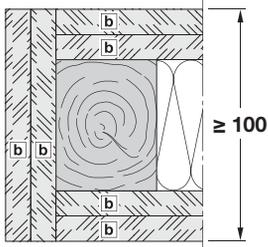


B

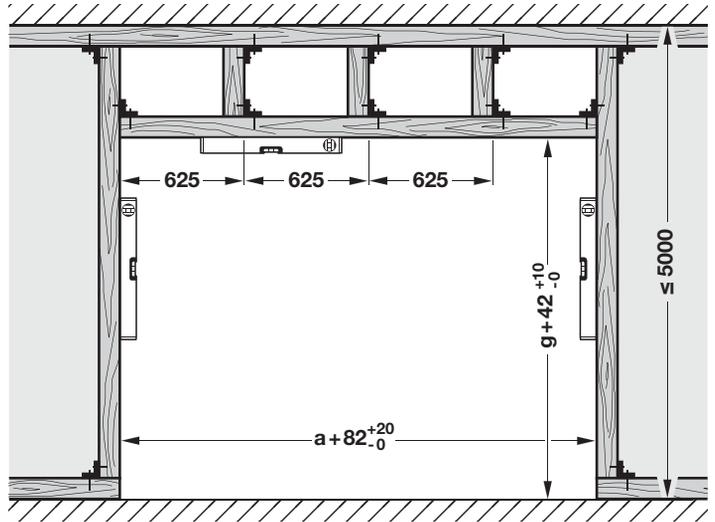


➔ 3

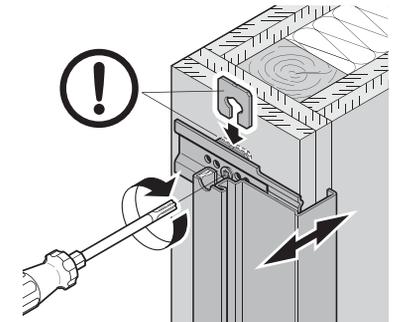
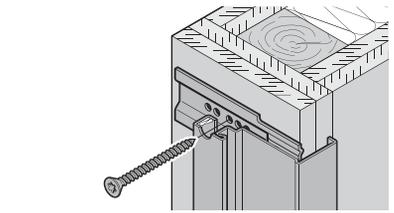
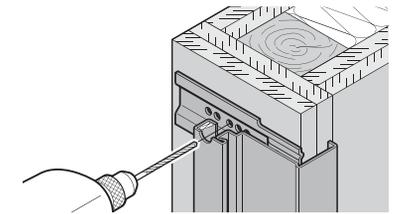
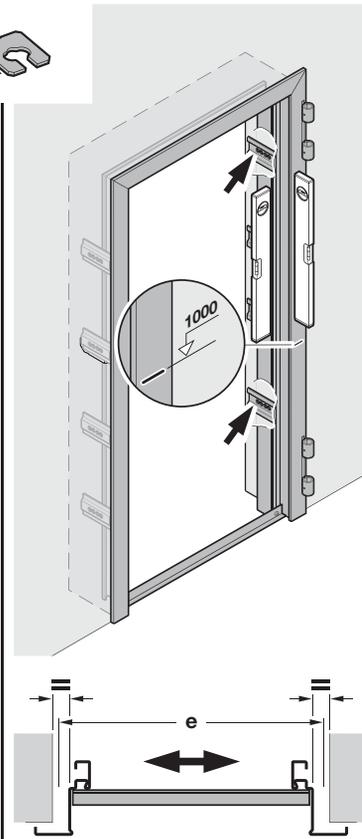
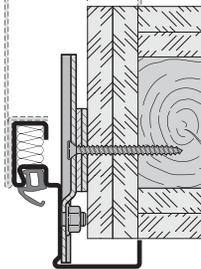
2d



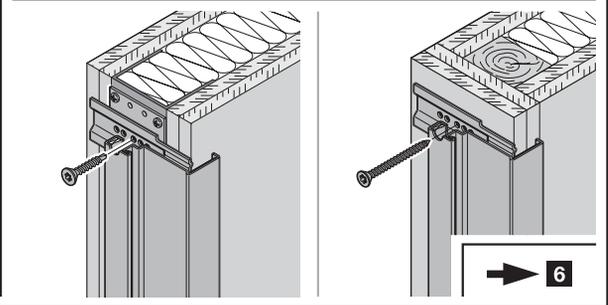
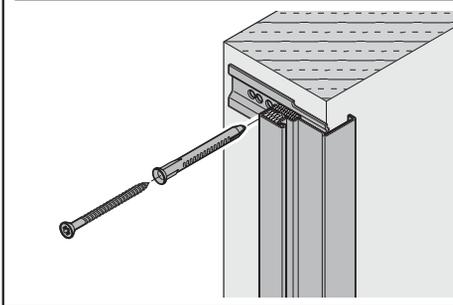
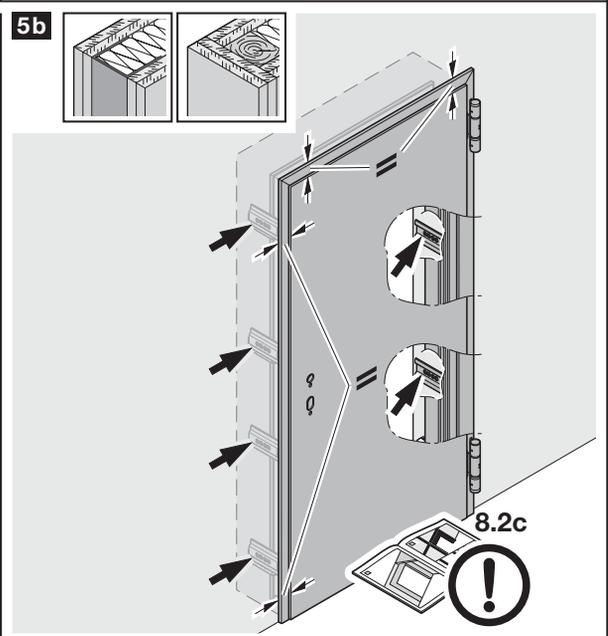
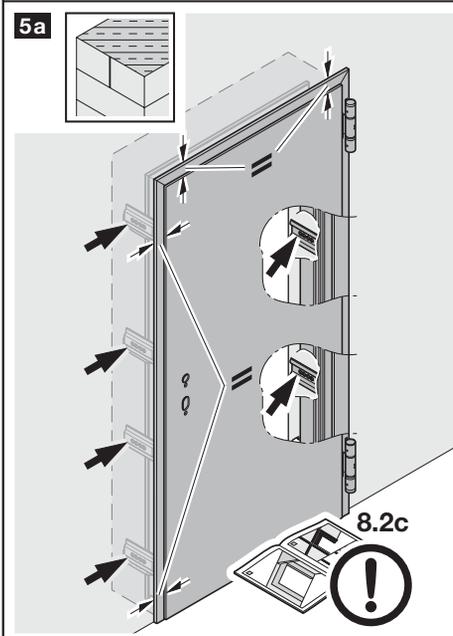
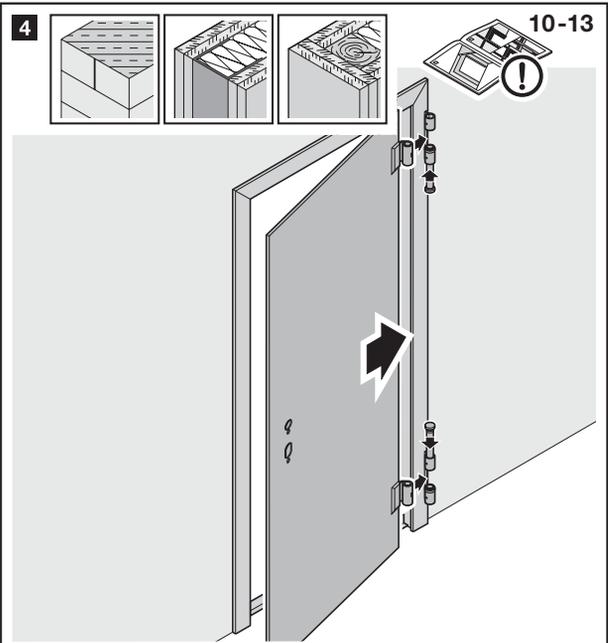
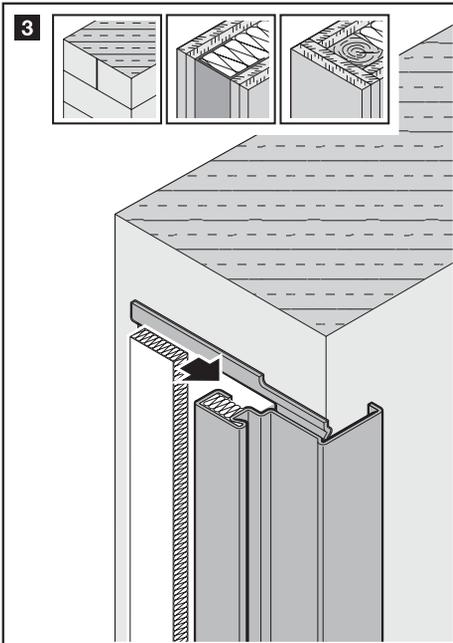
b DF-12,5-EN 520

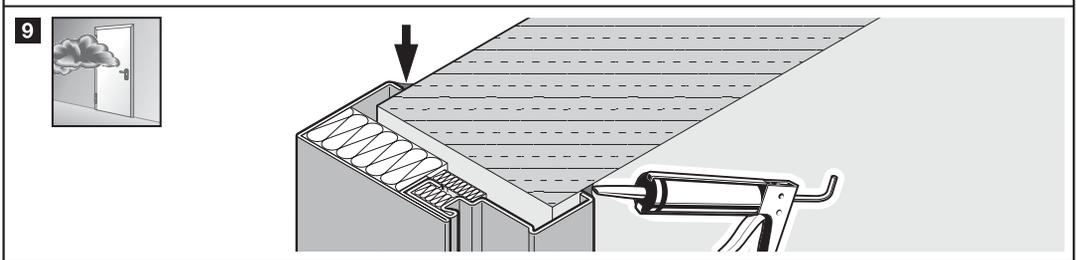
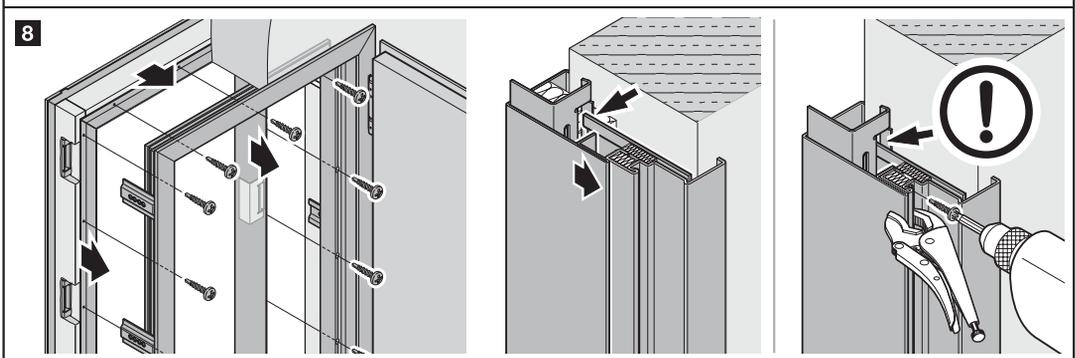
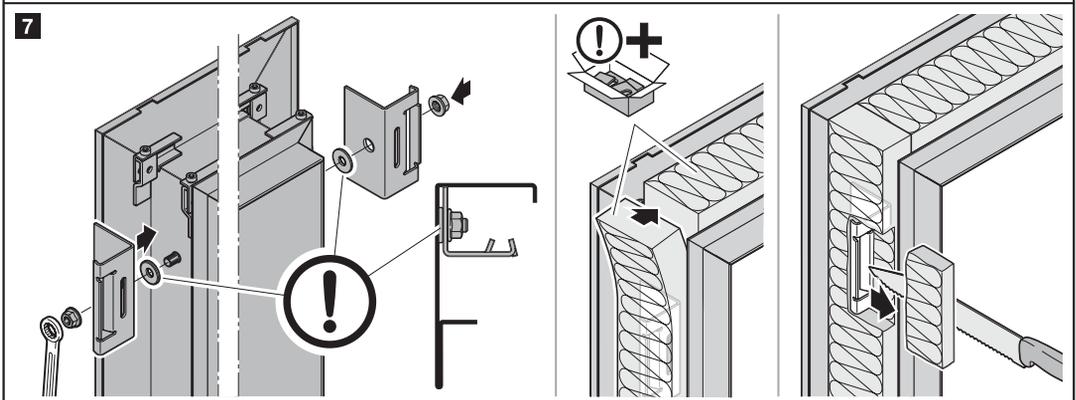
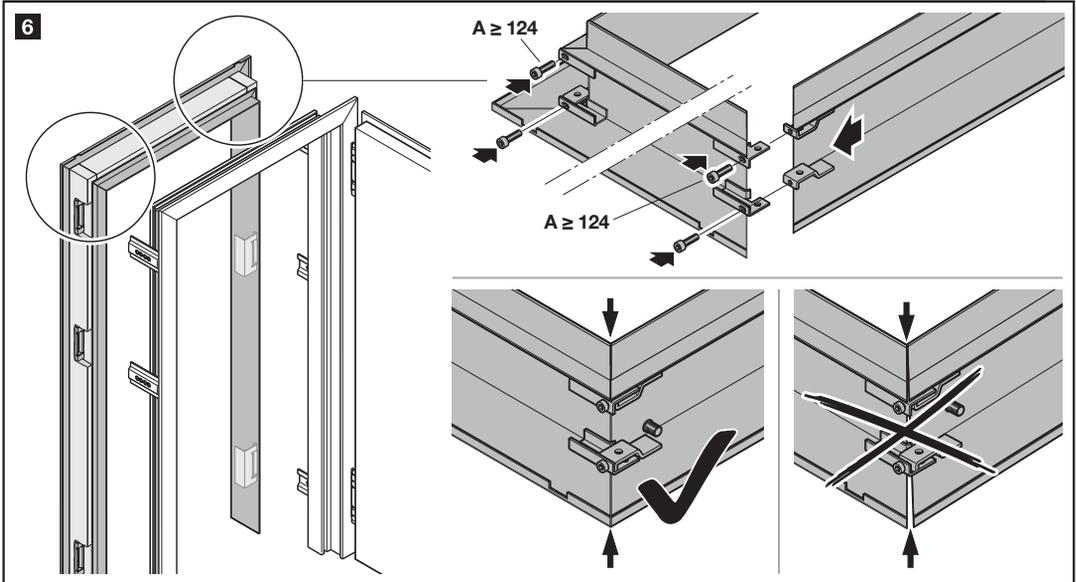


$e +20 -0$

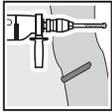


➔ 3

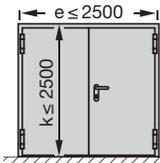
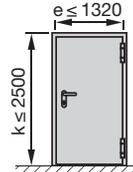
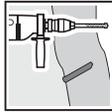




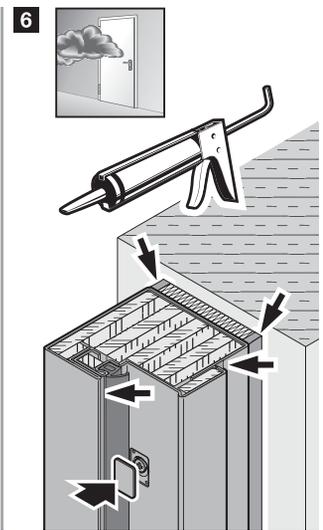
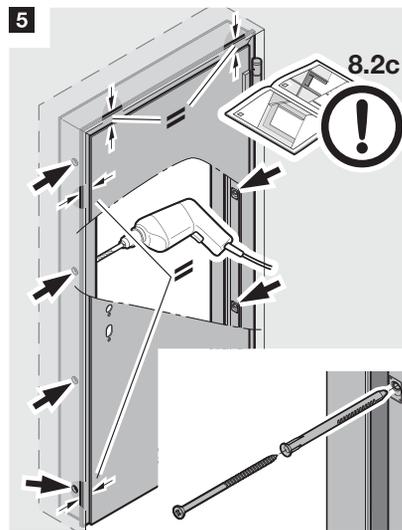
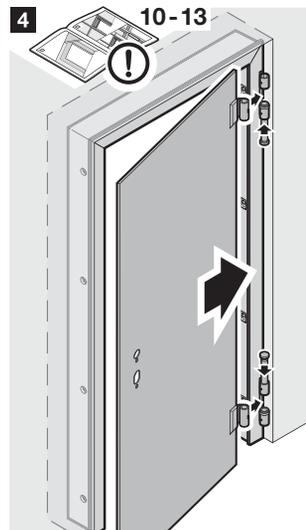
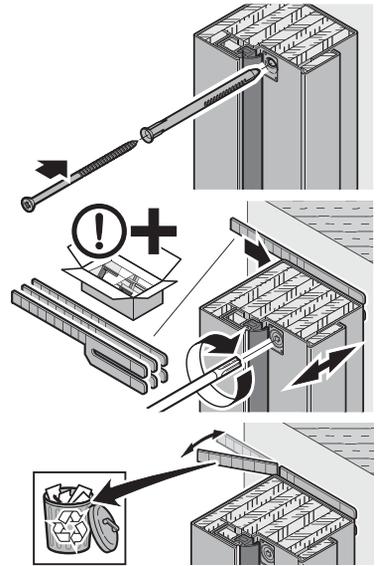
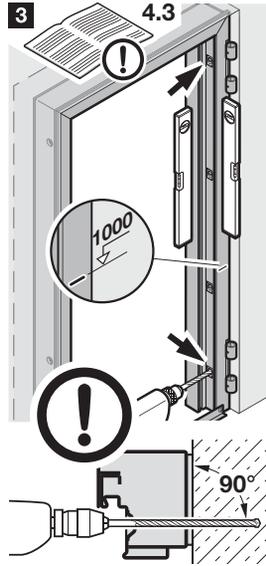
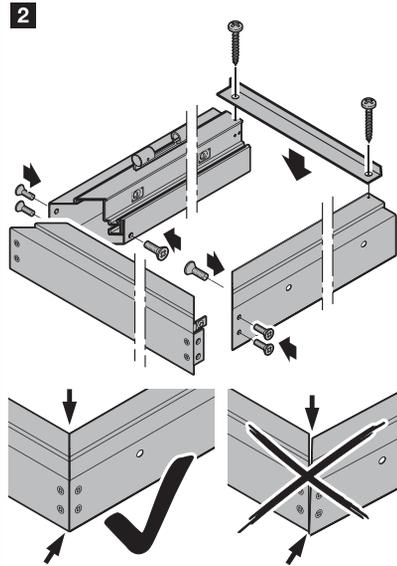
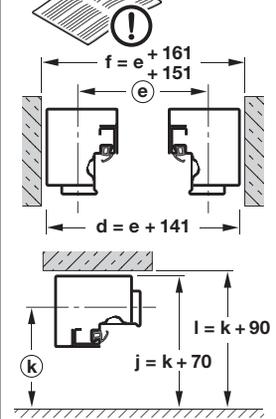
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9/G2  
max. T30/  
EI<sub>2</sub>30

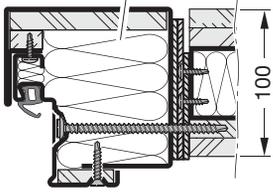


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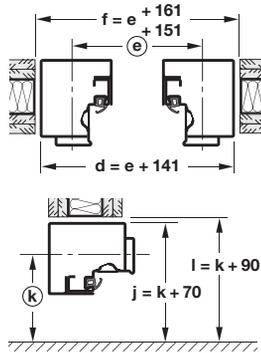


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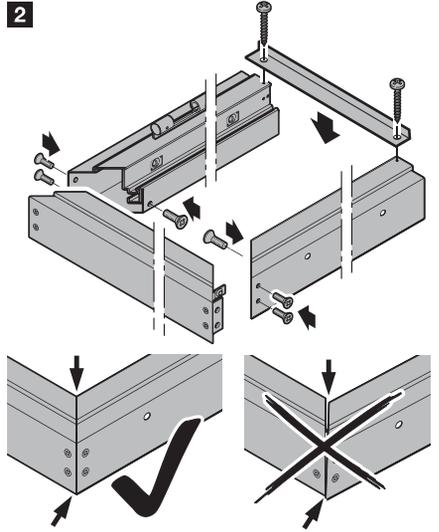
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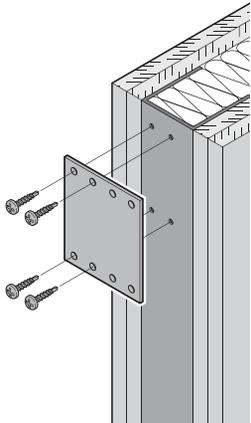
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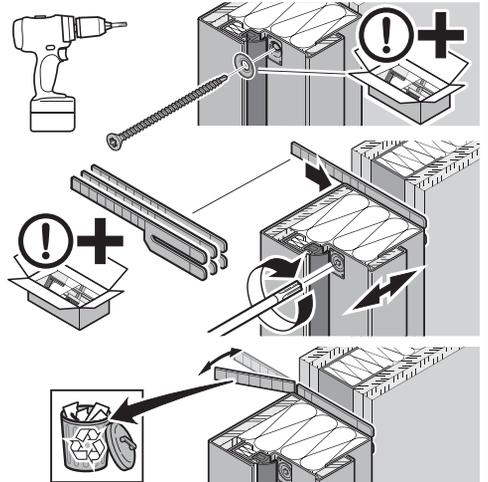
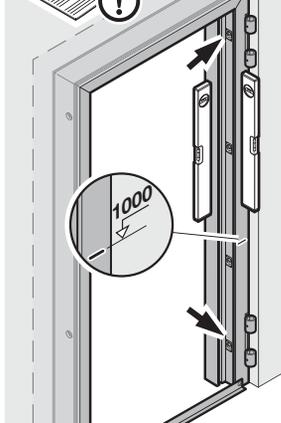
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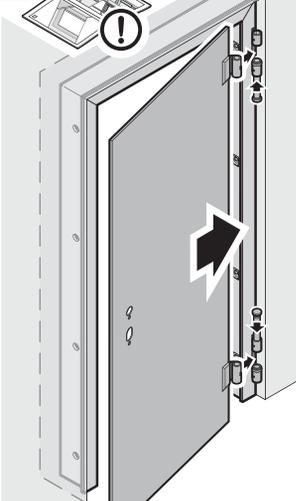
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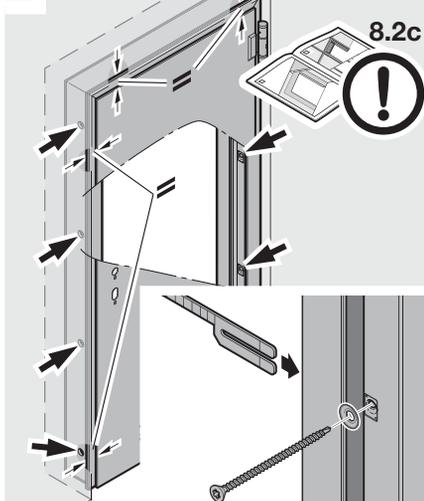
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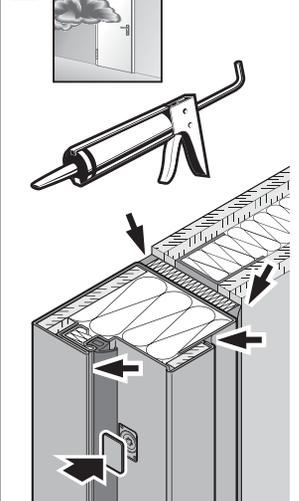
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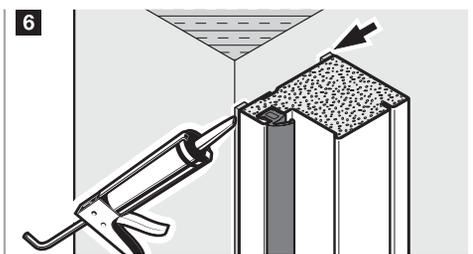
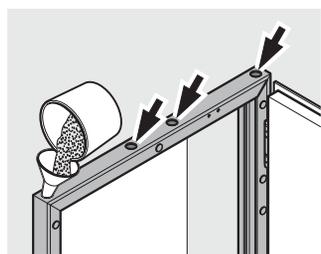
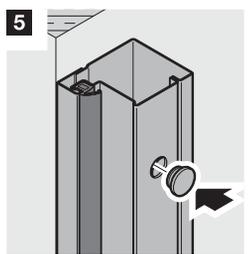
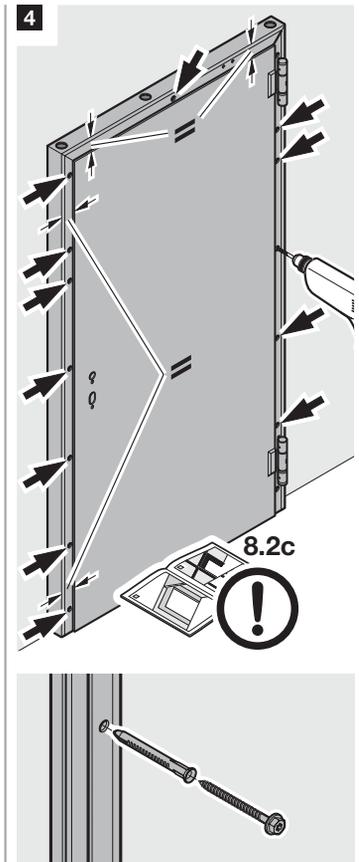
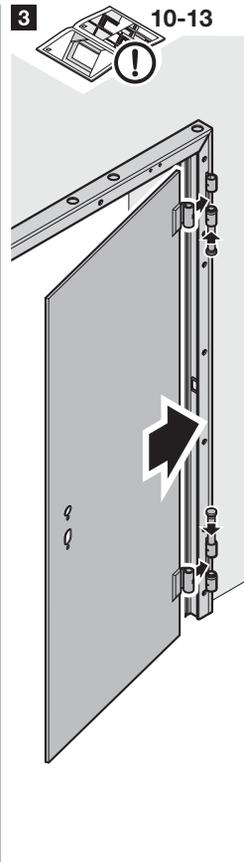
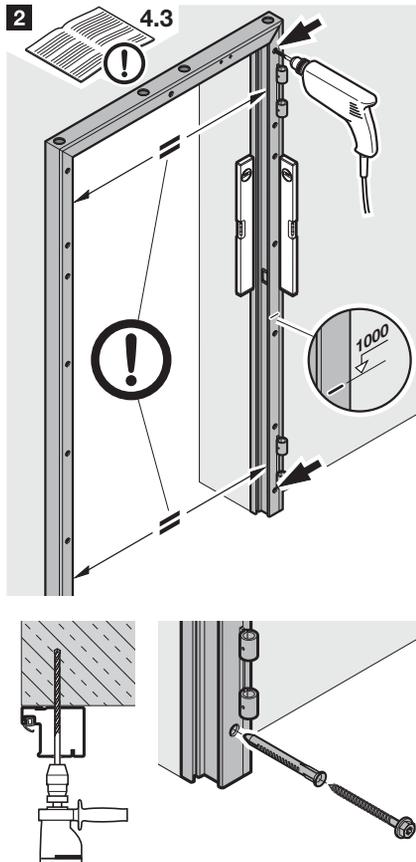
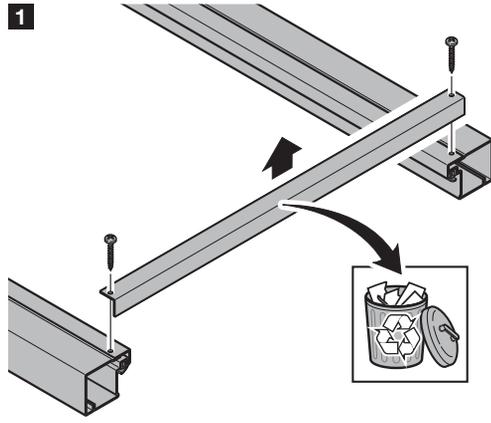
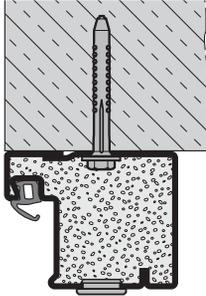
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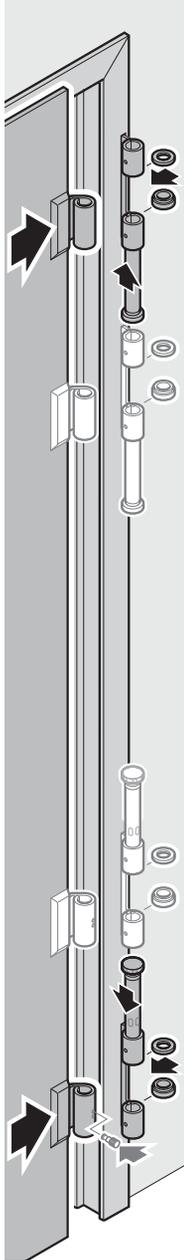
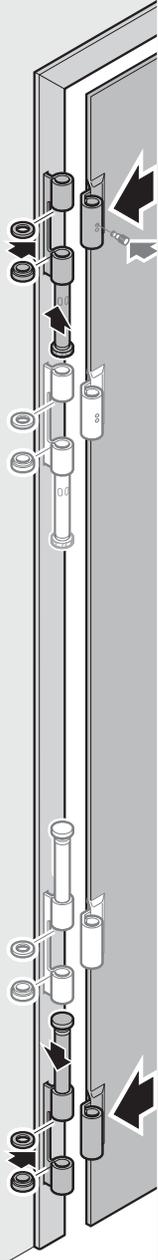
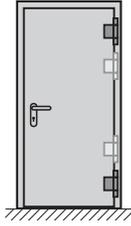
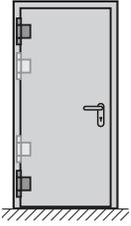
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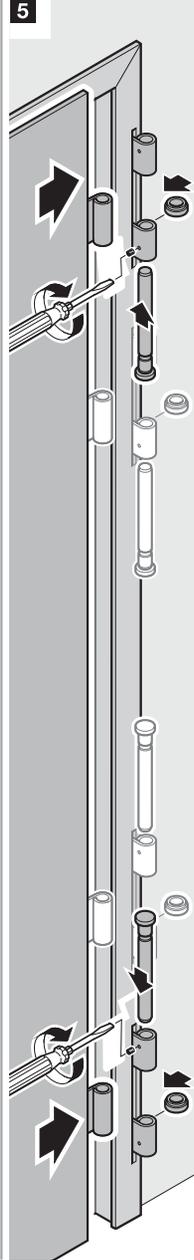
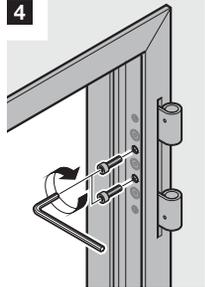
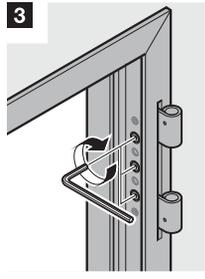
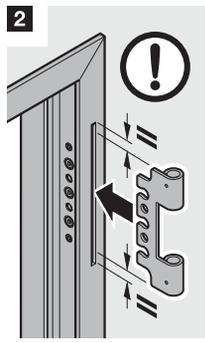
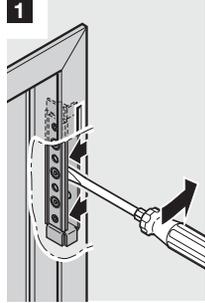
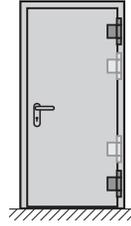
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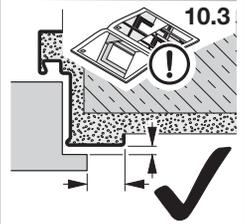
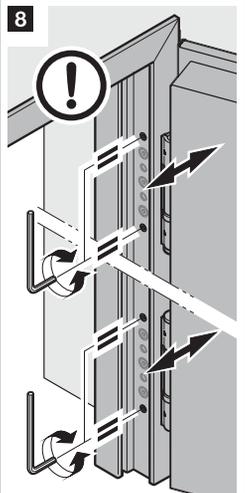
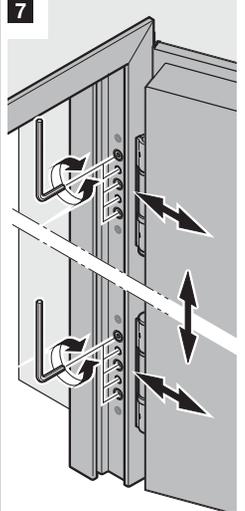
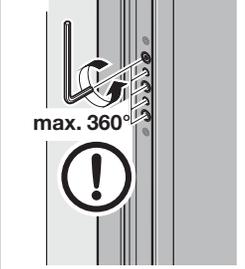
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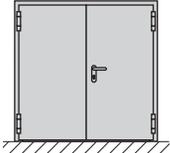
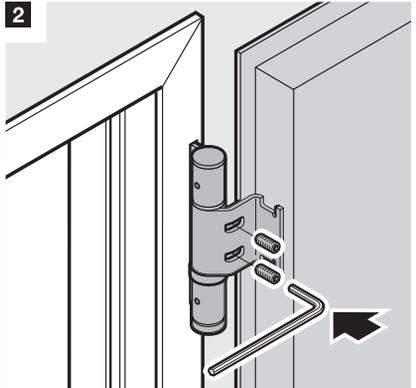
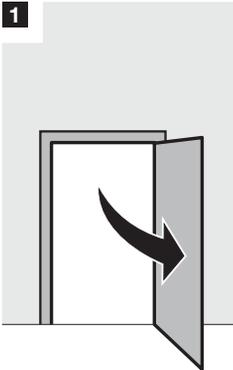
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6



10.2

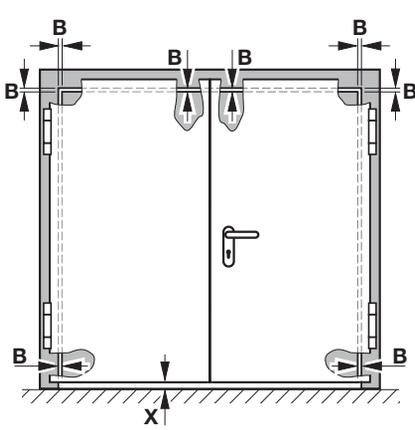
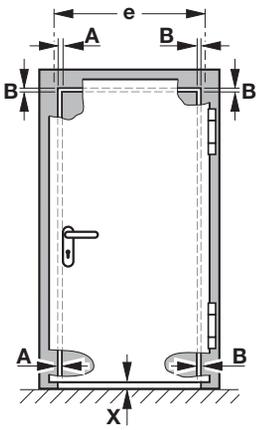


10.3



1

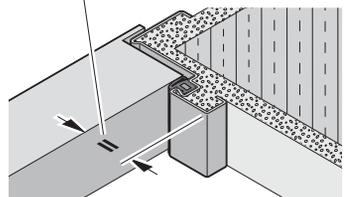
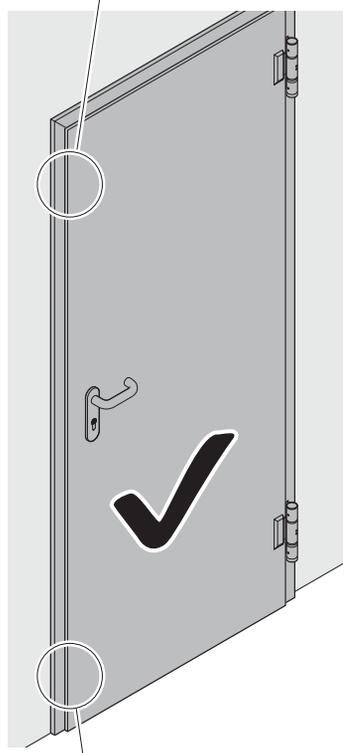
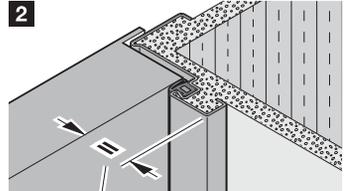
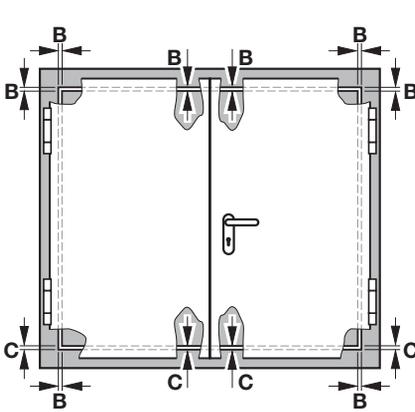
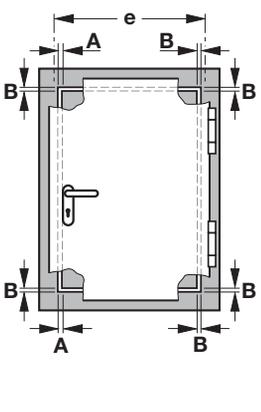
e	A	B	C max. T30	C T60, T90, T120
≤ 749	6 <sup>+1</sup> <sub>-2</sub>	4±2	4±2	10±2
750 - 874	6 <sup>+1</sup> <sub>-2</sub>			
≥ 875	5 <sup>+1</sup> <sub>-2</sub>			



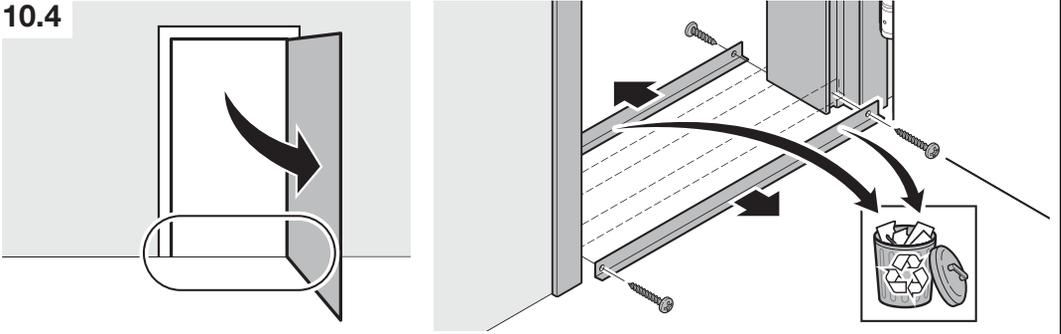
X=10±5

X=10<sup>+2</sup><sub>-5</sub>

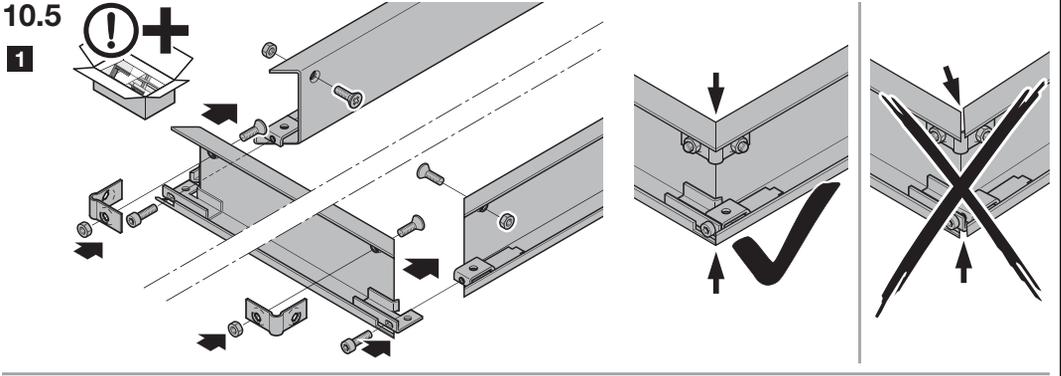
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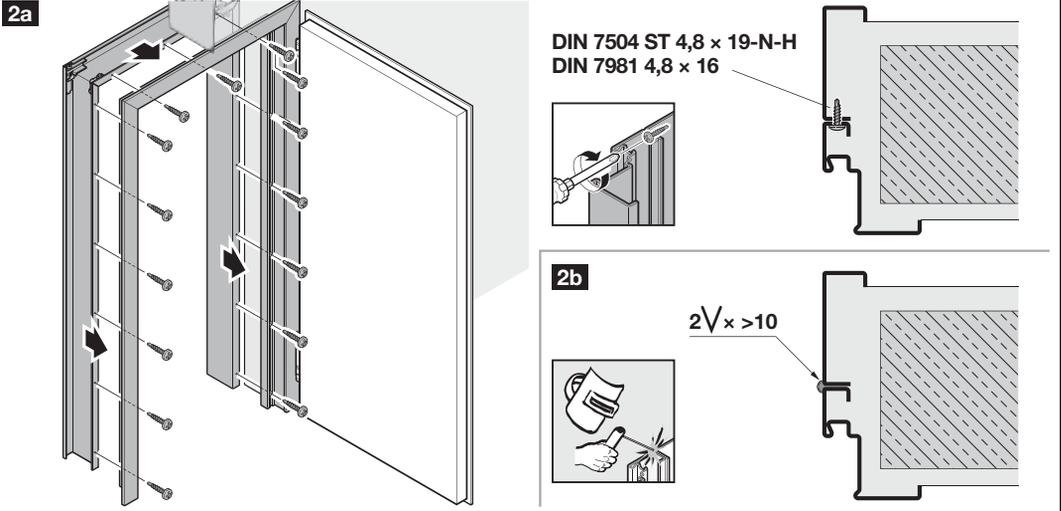
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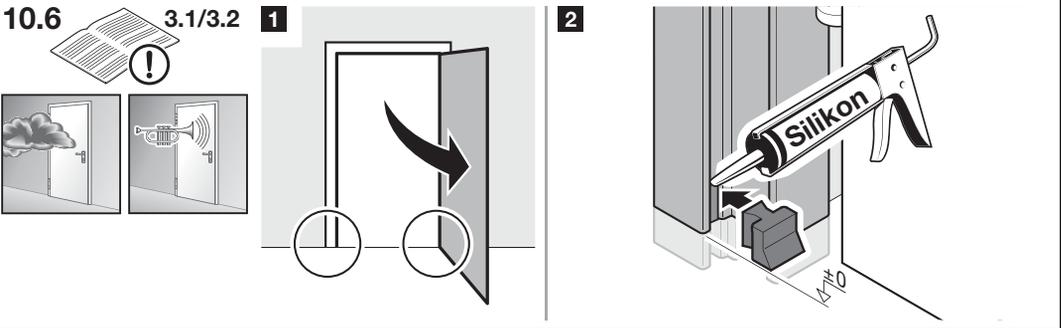
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2a

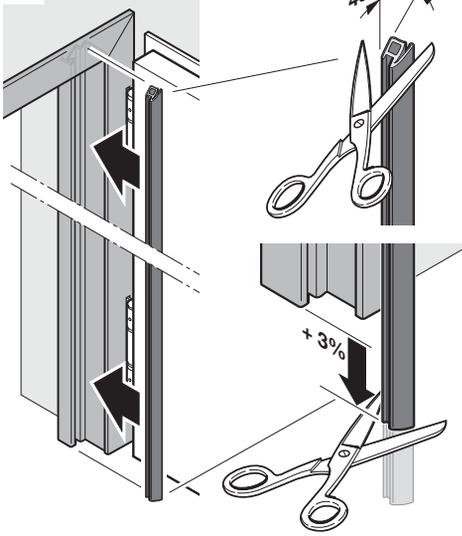


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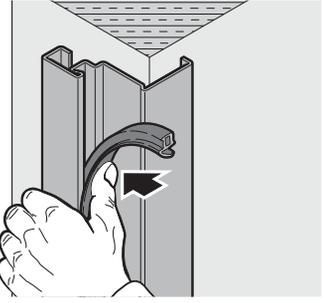


10.7a

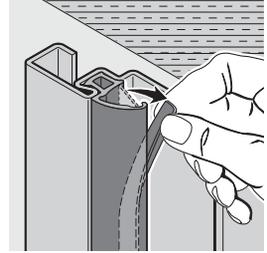
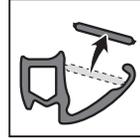
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2



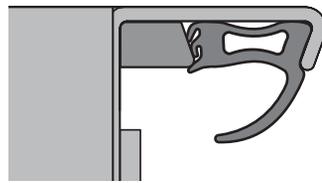
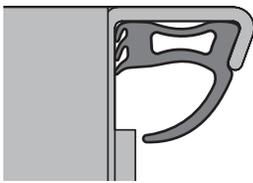
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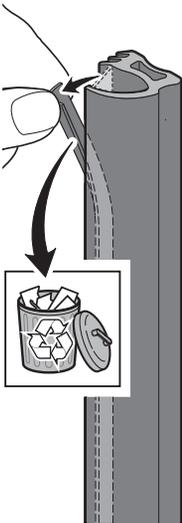
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A

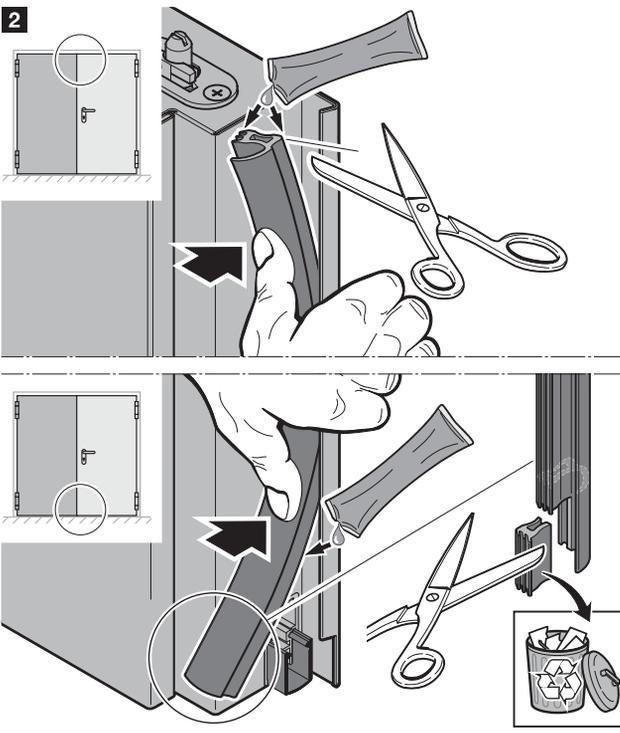
B



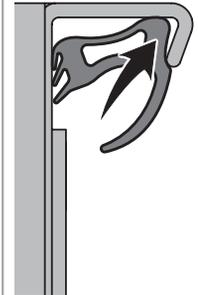
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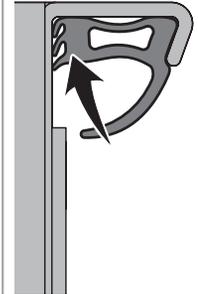
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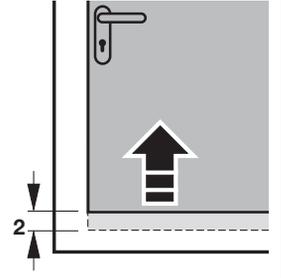
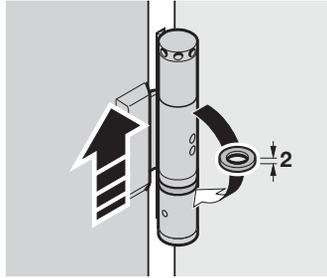
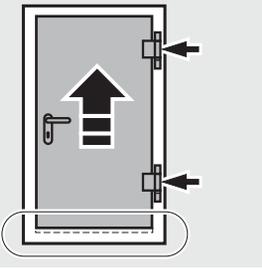
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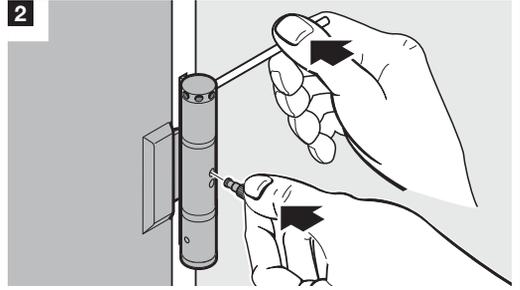
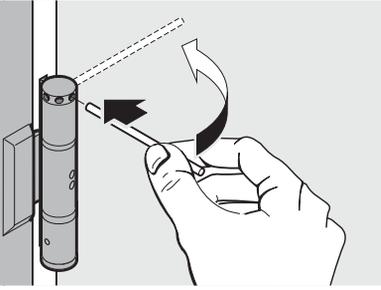
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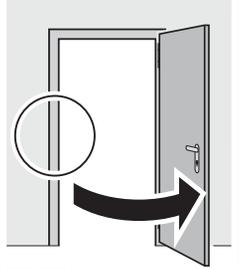
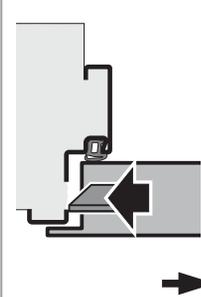
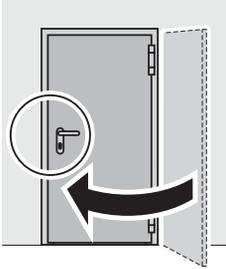
10.8



10.9 1

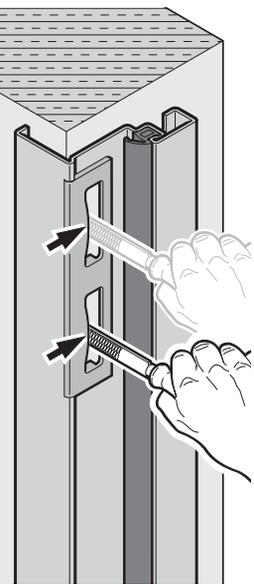


10.10a

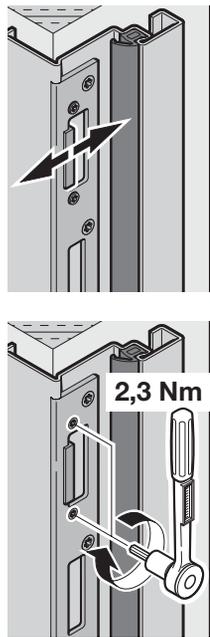
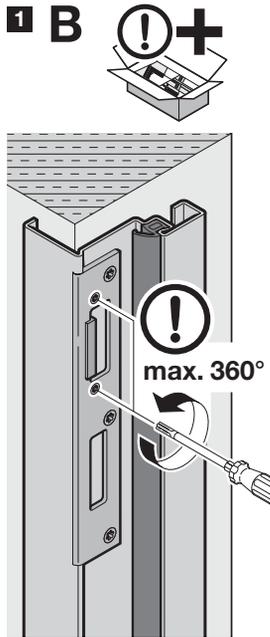


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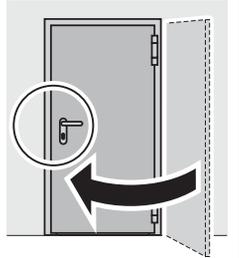
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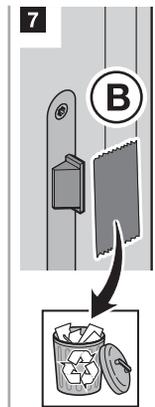
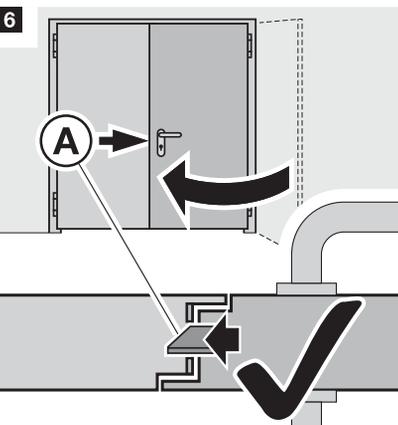
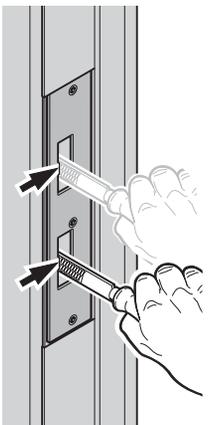
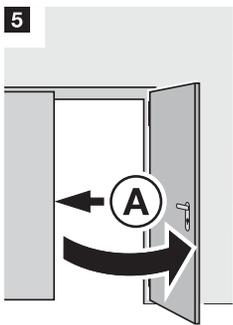
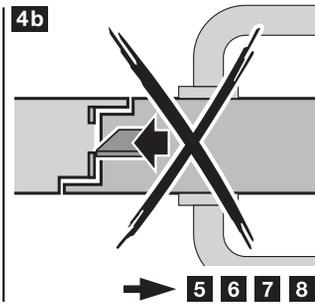
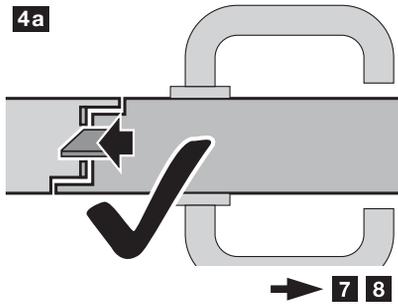
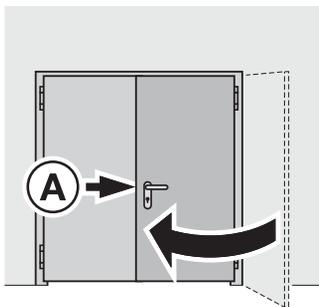
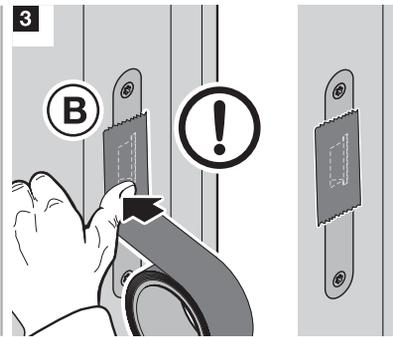
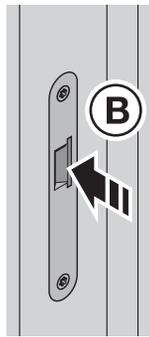
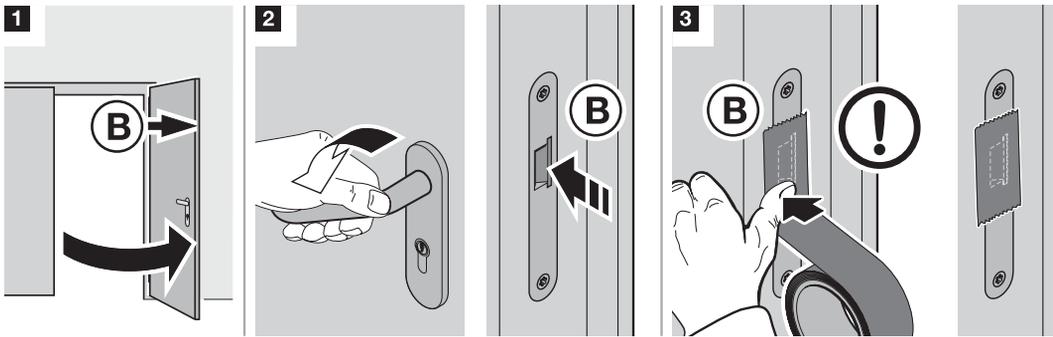
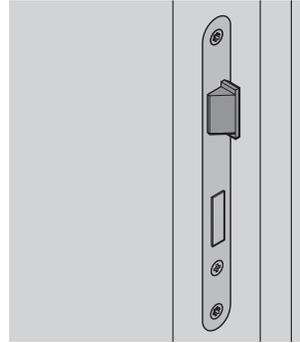
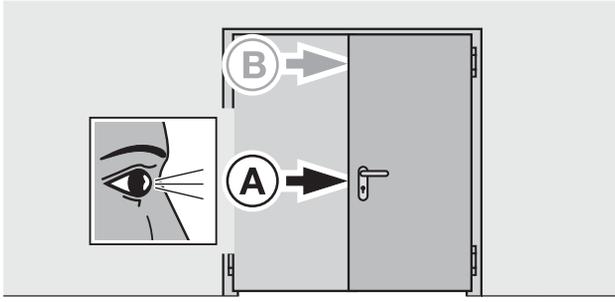
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2

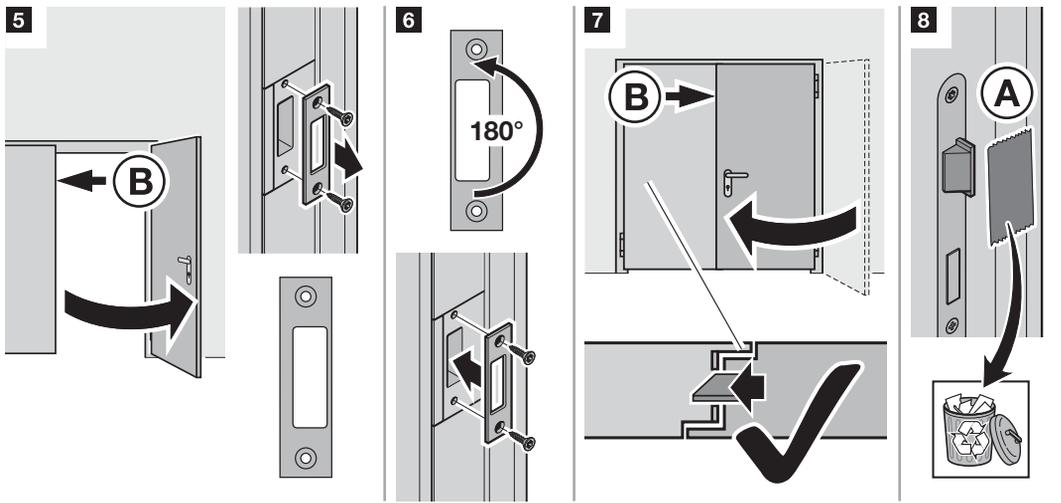
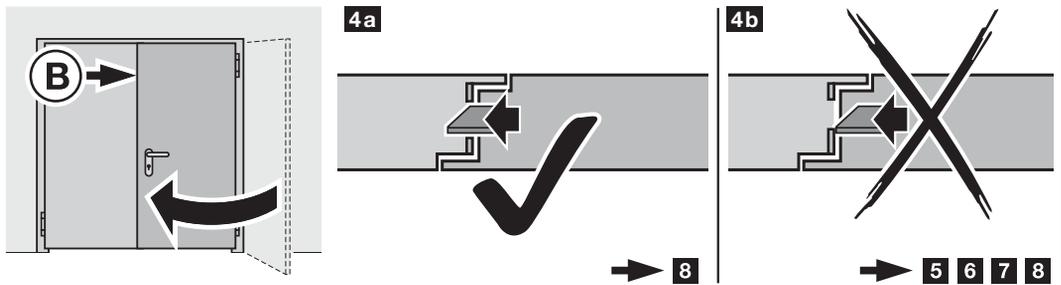
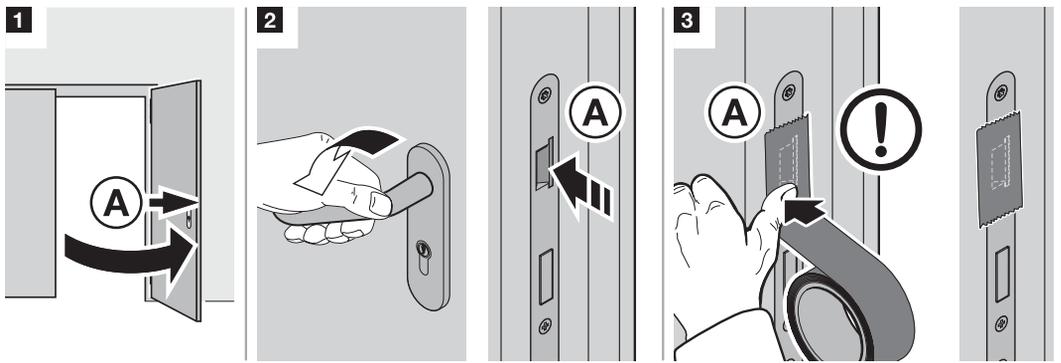
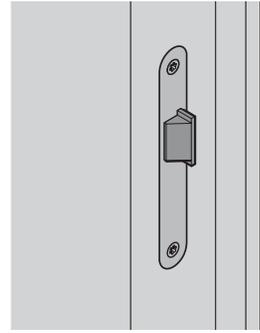
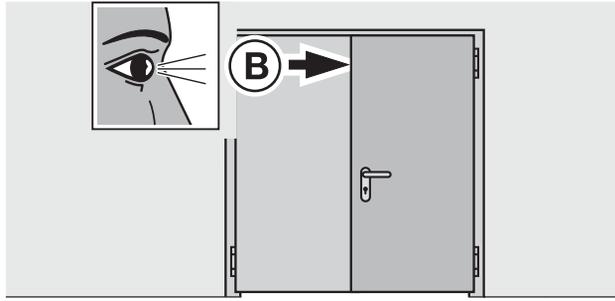


10.10b H16-2 G / H\_90 F-2

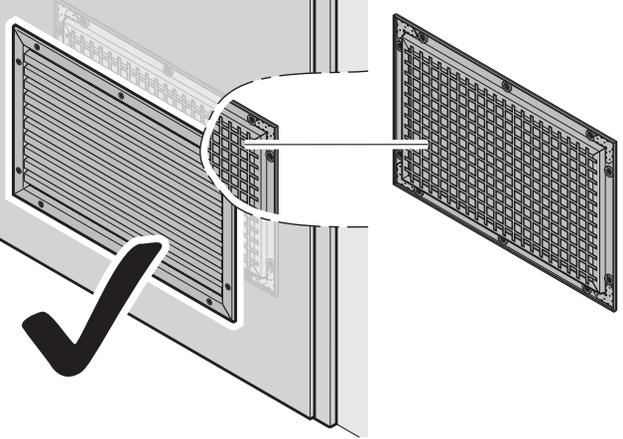
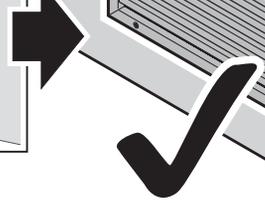


8 → 10.10c

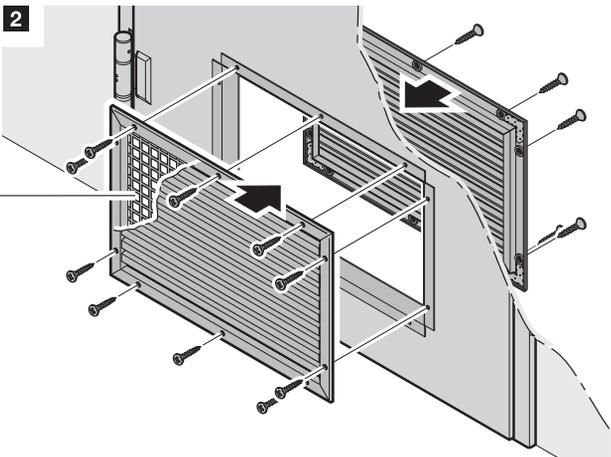
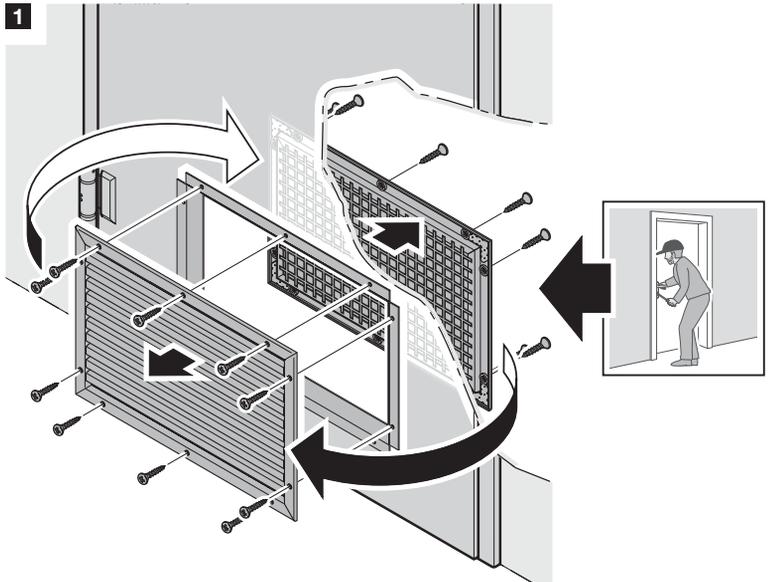
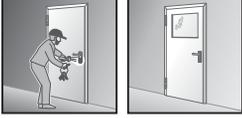
10.10c H16-2 G / H\_90 F-2



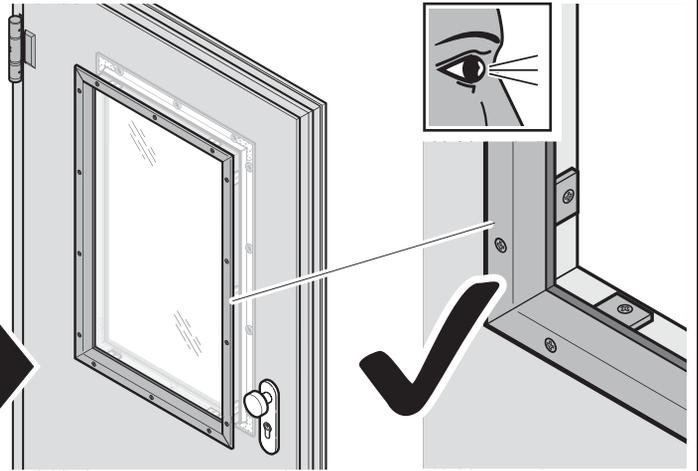
10.11a



10.11b



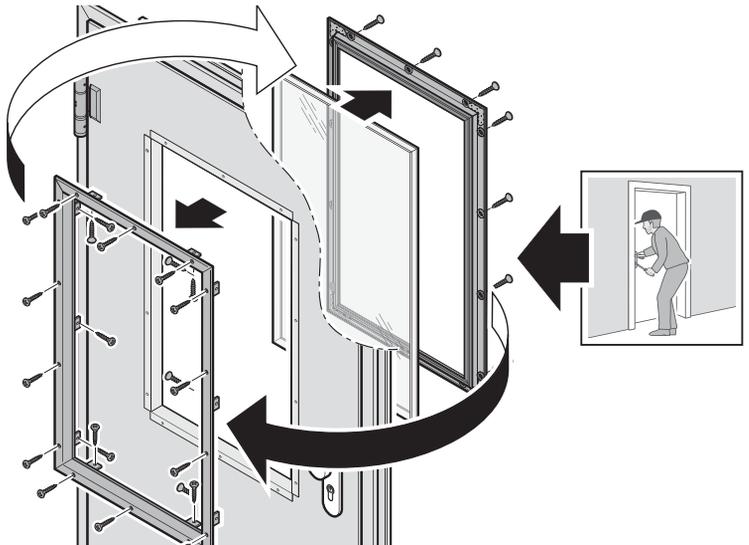
### 10.12a



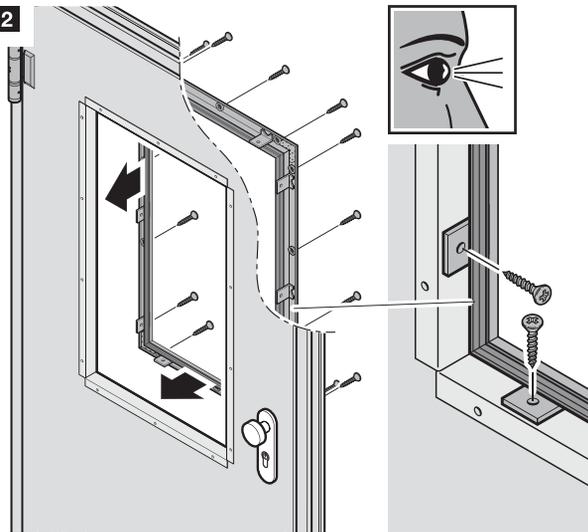
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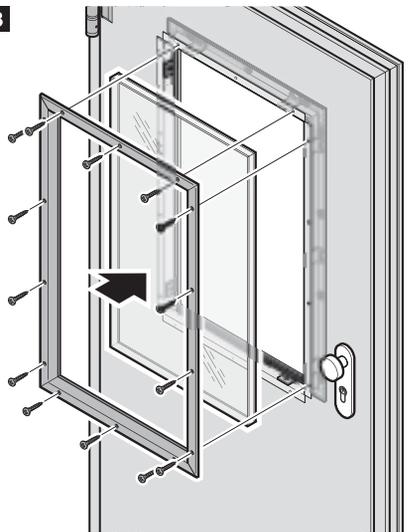
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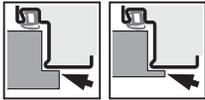
**2**



**3**



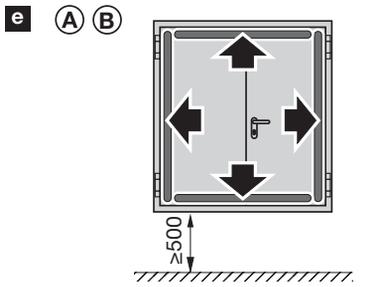
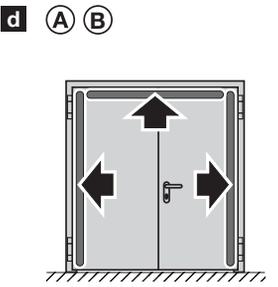
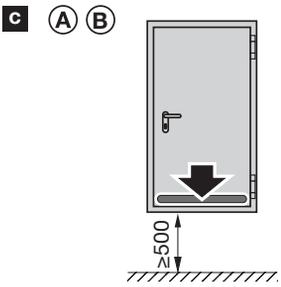
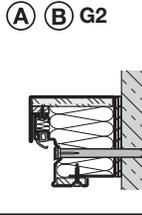
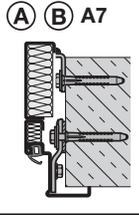
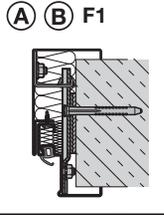
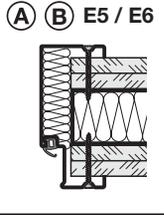
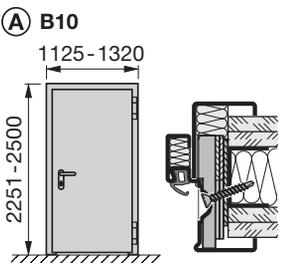
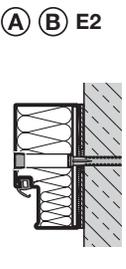
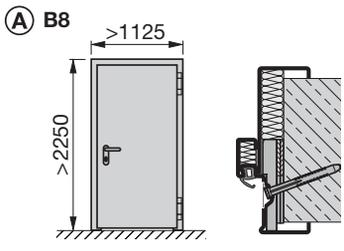
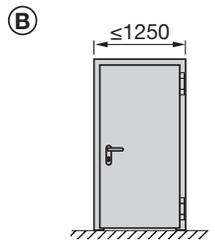
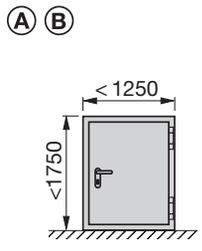
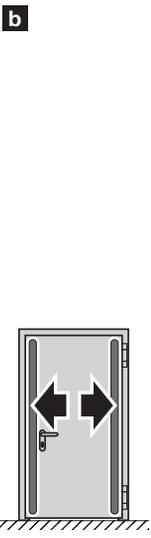
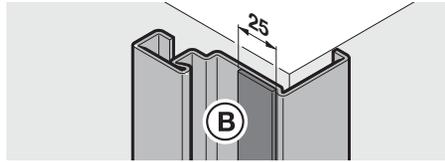
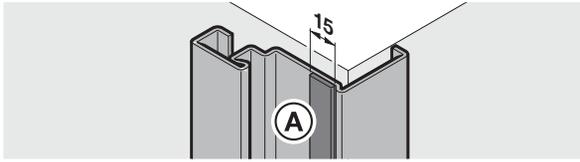
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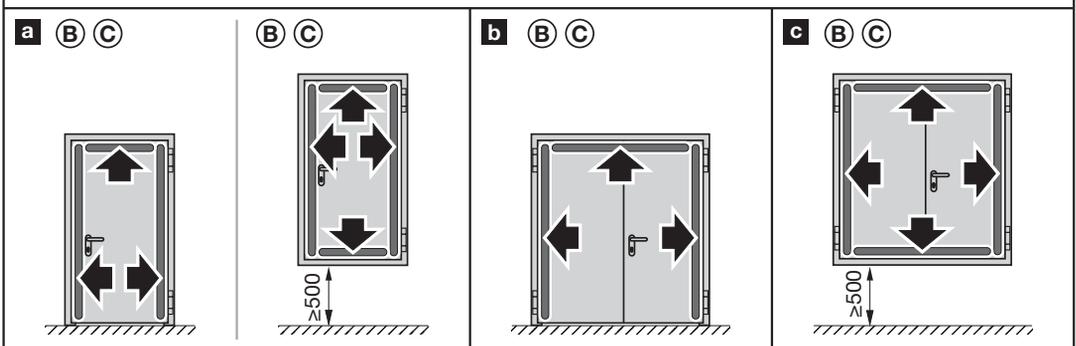
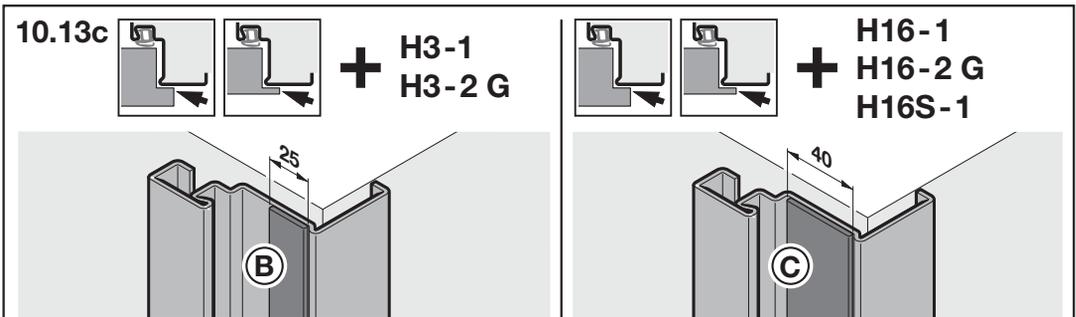
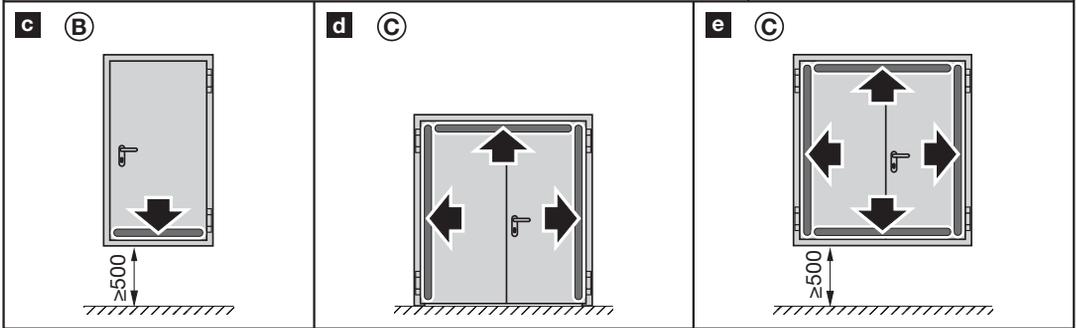
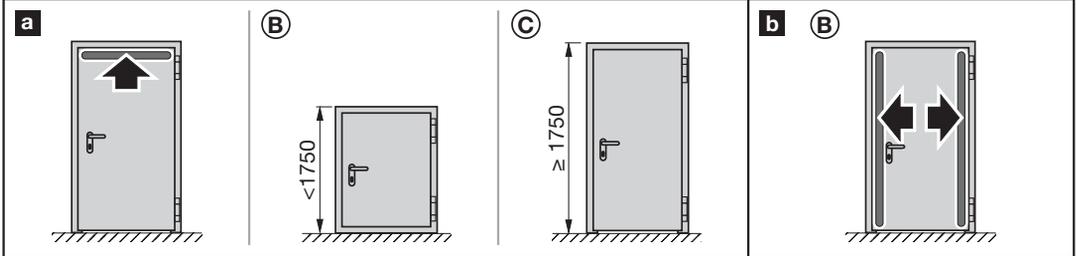
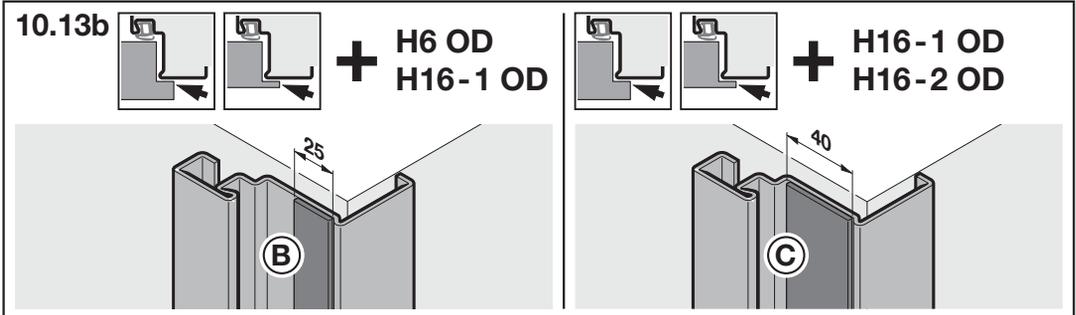


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+ H3-2 OD

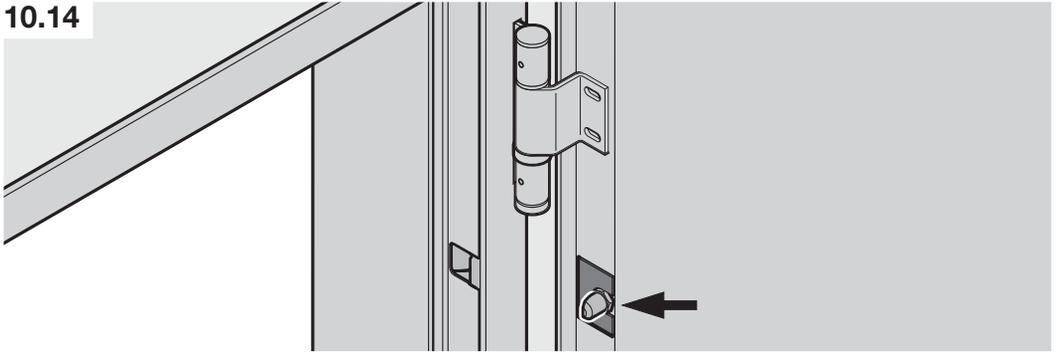


+ H3-1 OD  
+ H3-2 OD

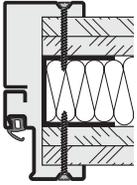




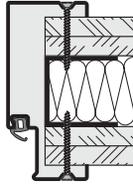
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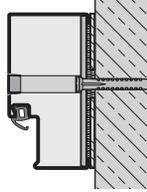
A10-A13



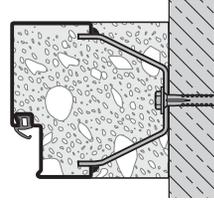
E5-E8



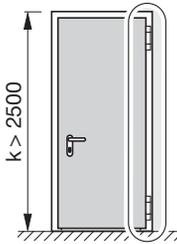
E1, E2



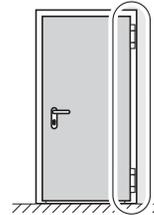
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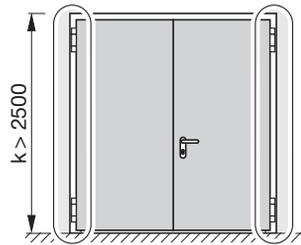
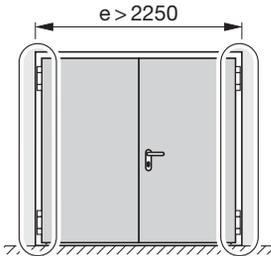
T30-1 / H\_30-1



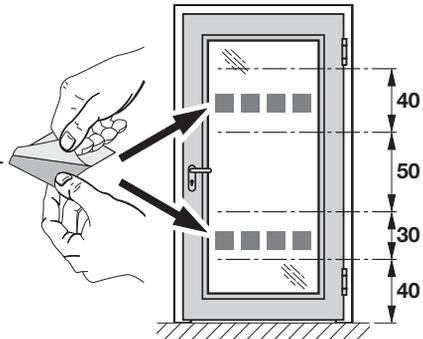
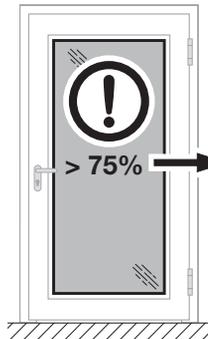
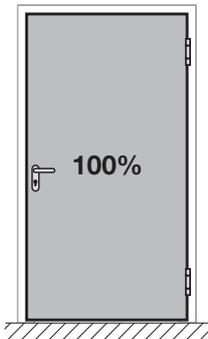
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T90-1 / H\_90-1



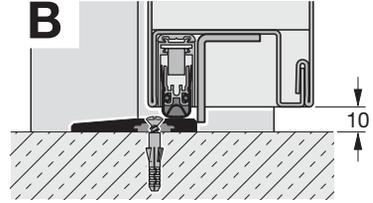
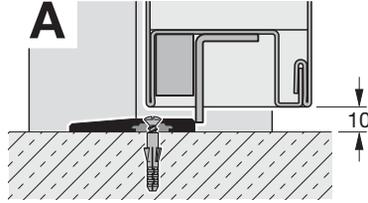
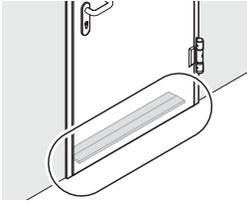
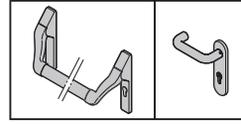
T60-2 / H\_60-2  
T90-2 / H\_90-2



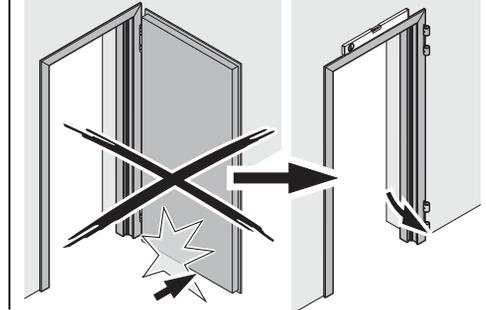
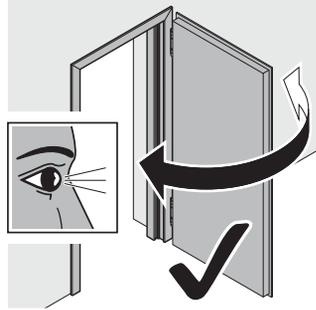
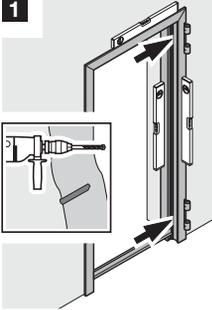
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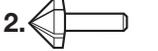
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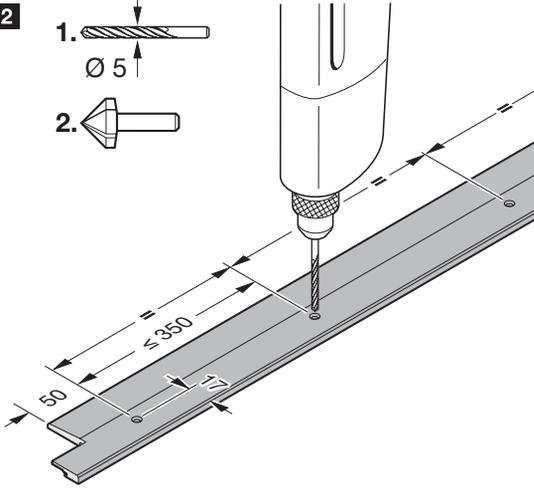


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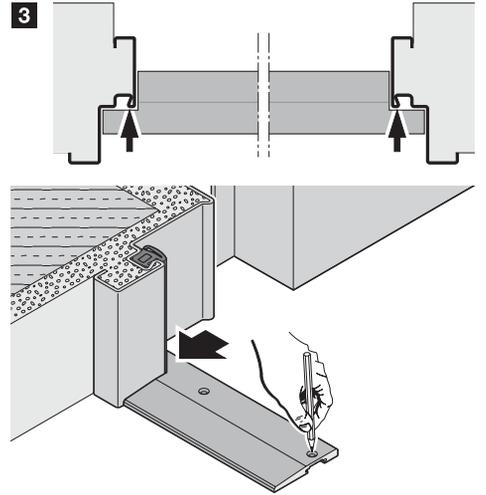


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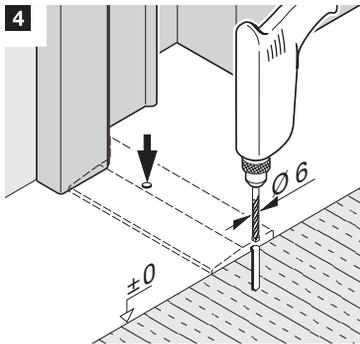
- 1.   $\uparrow$   
 $\varnothing 5$
- 2. 



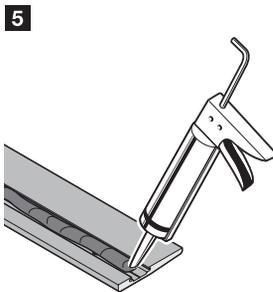
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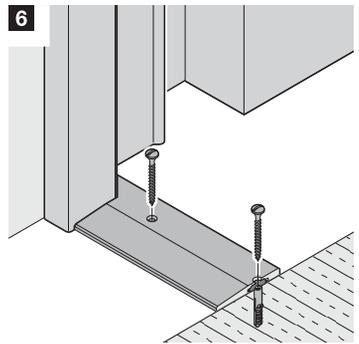
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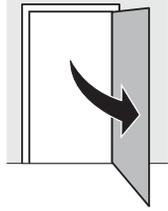
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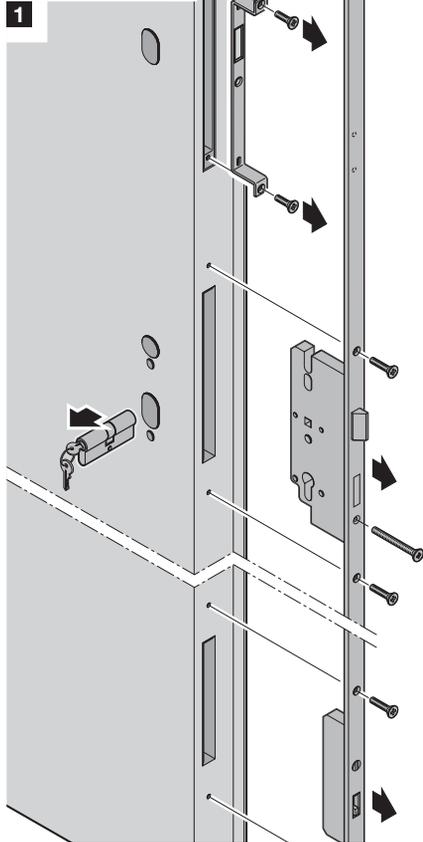
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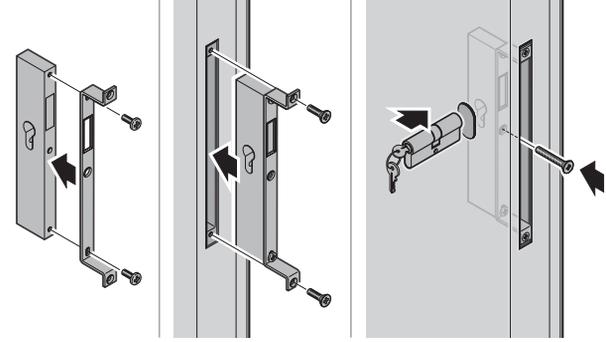
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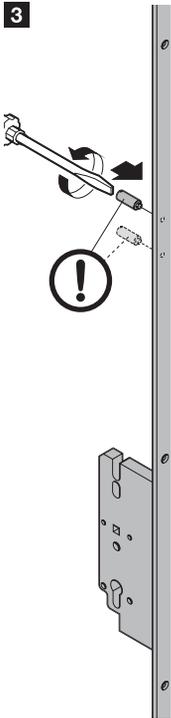
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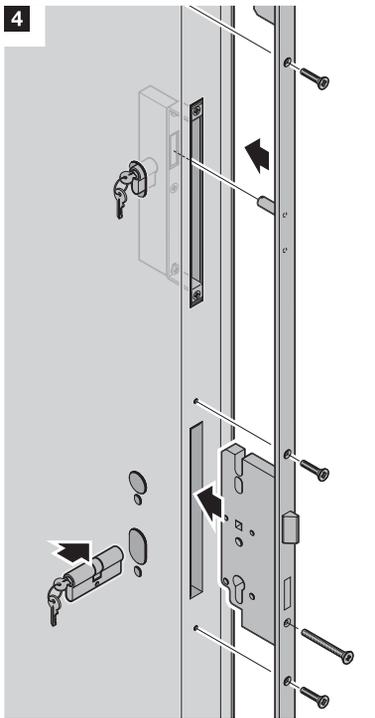
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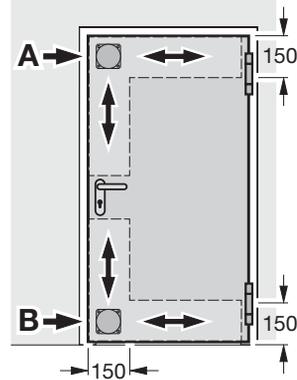
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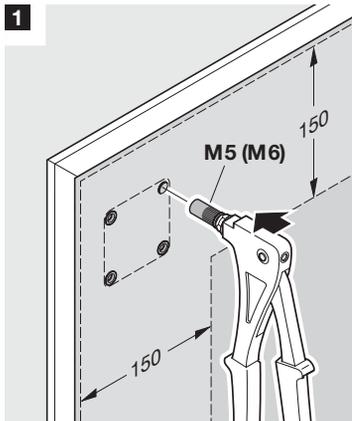
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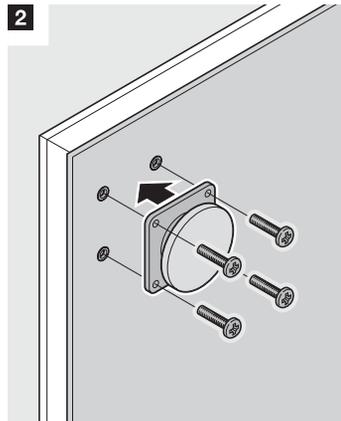
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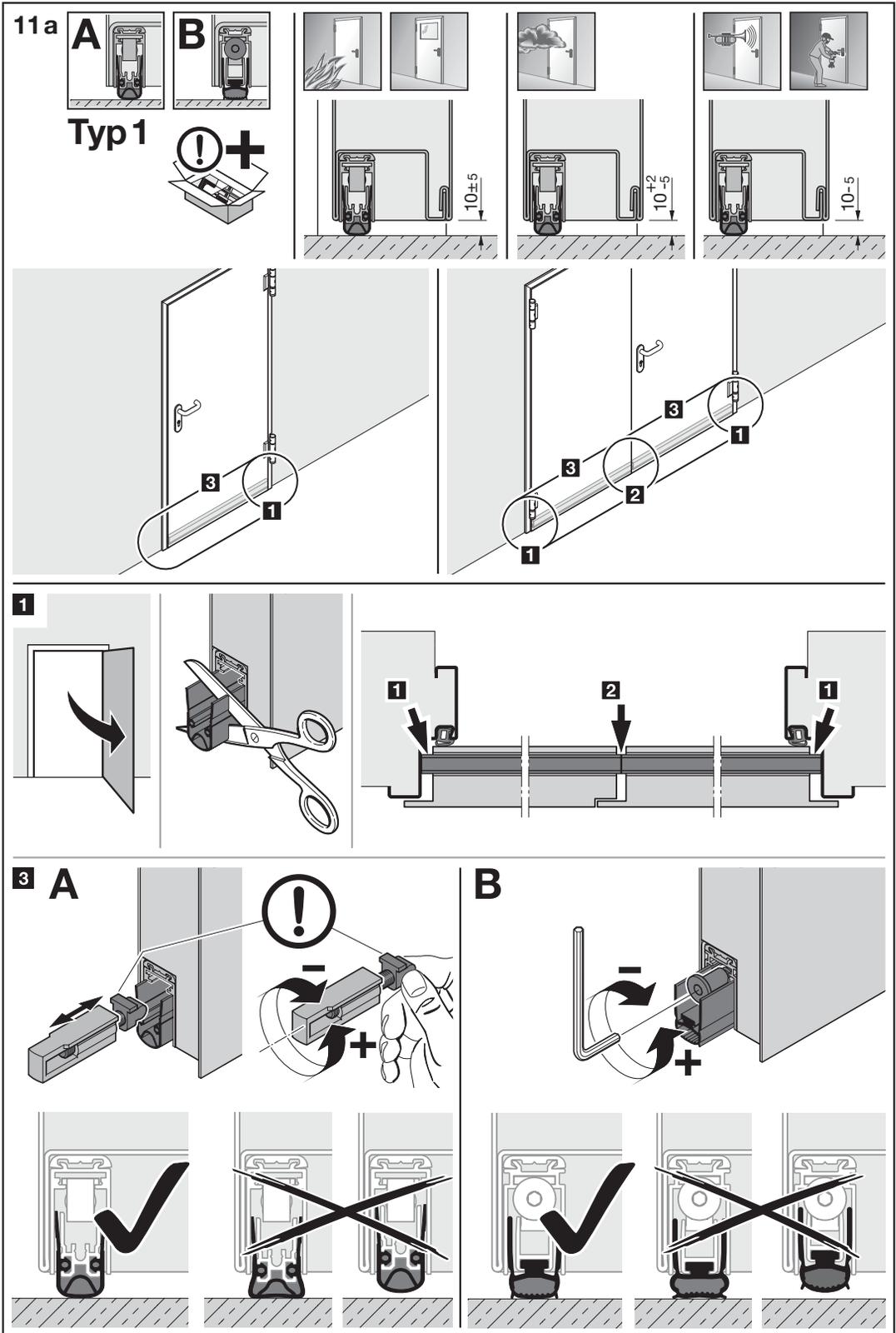


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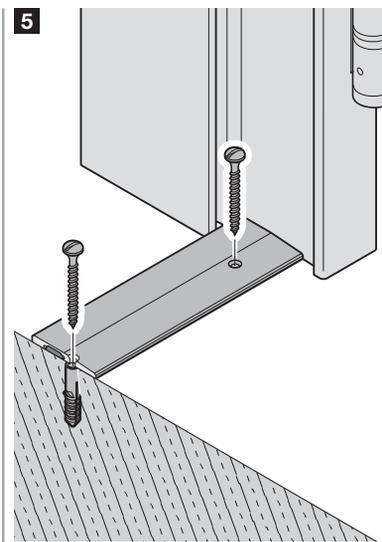
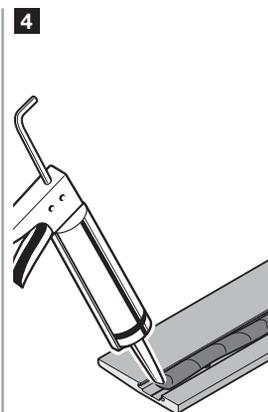
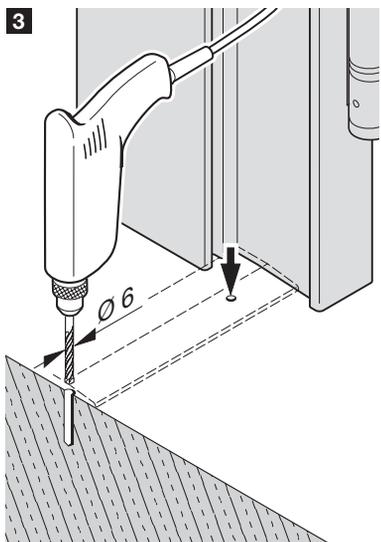
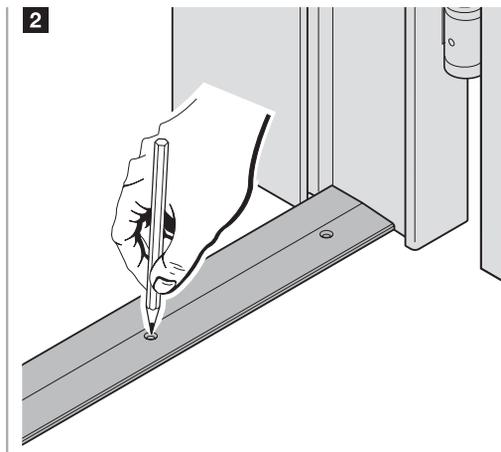
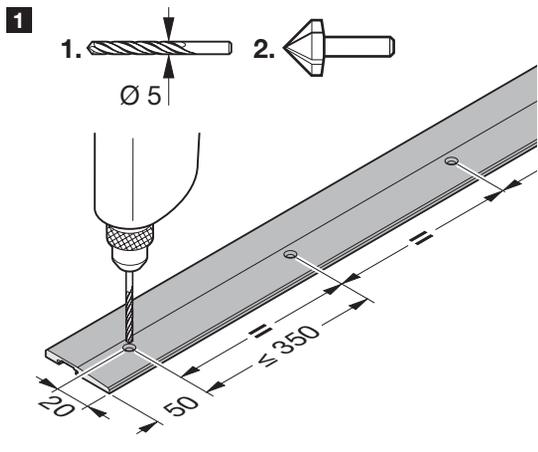
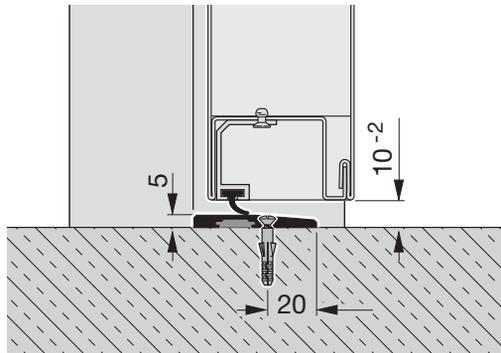
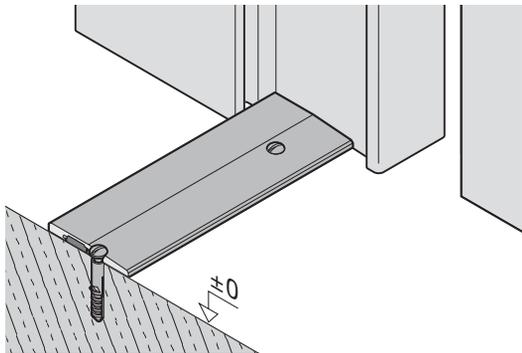
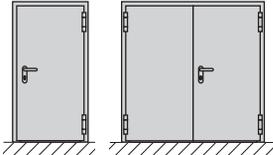
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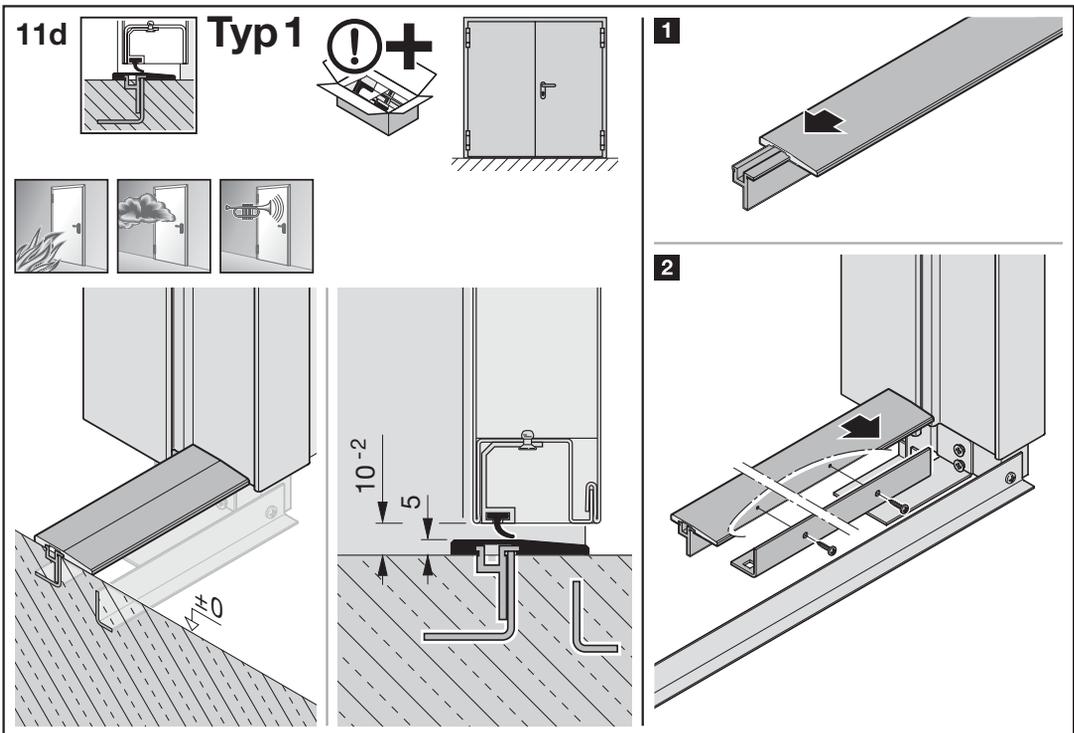
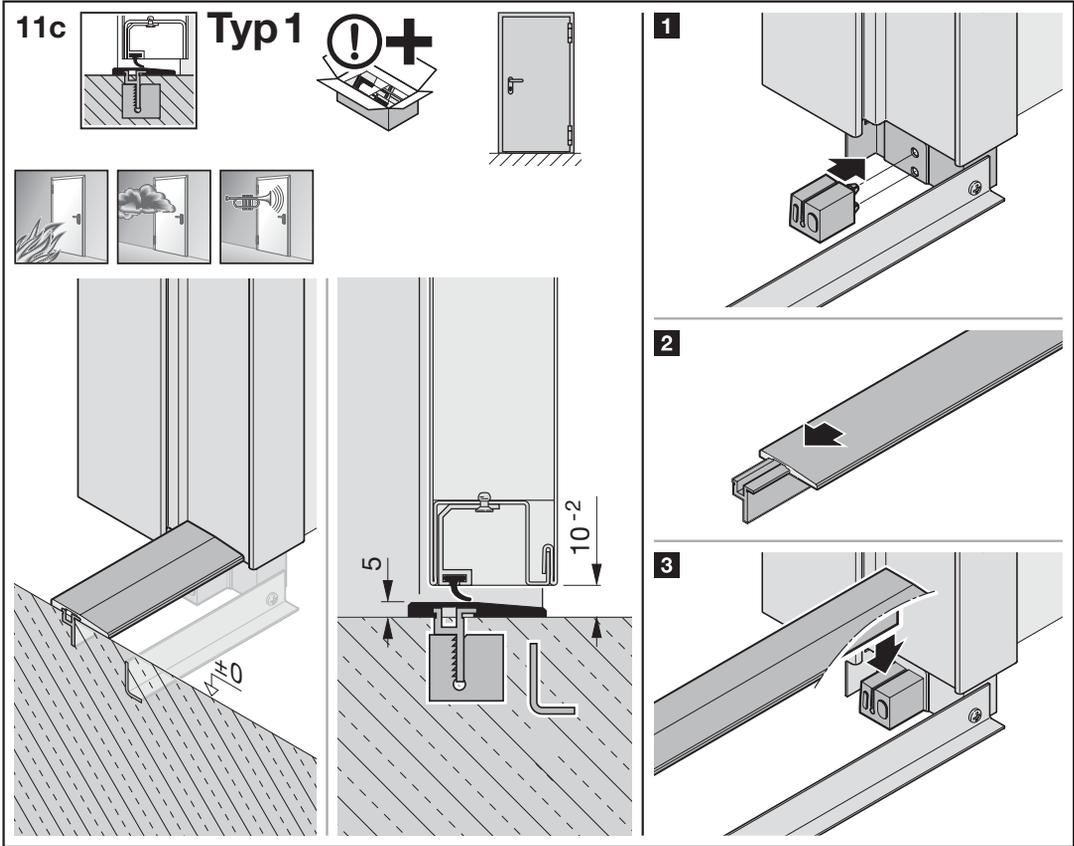




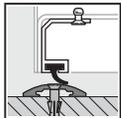
11b

Typ 1

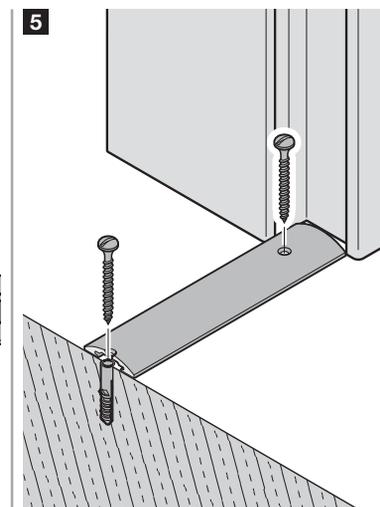
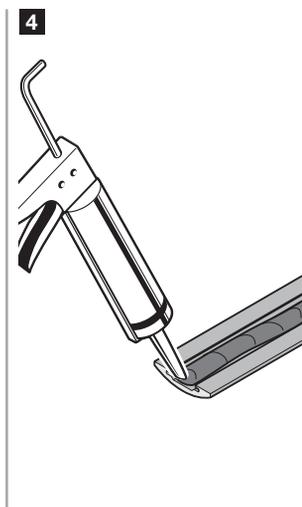
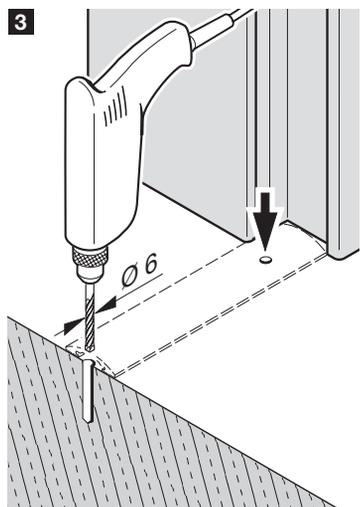
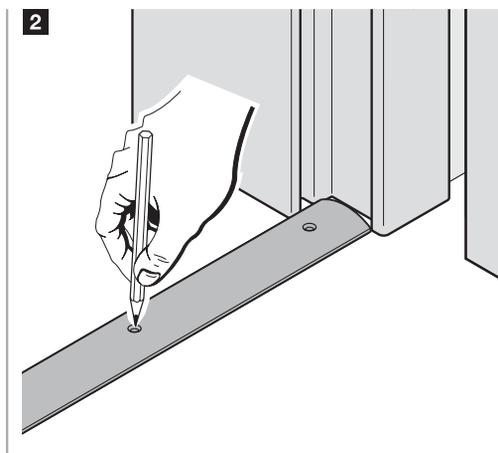
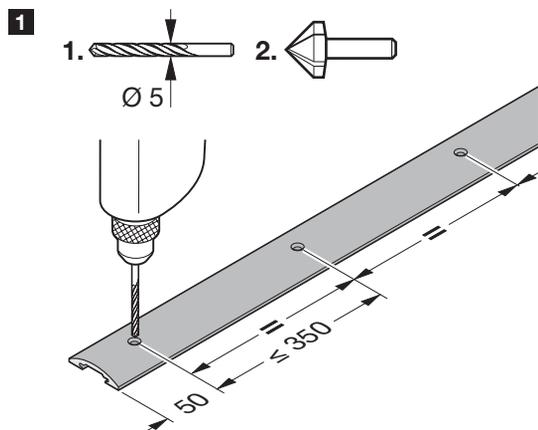
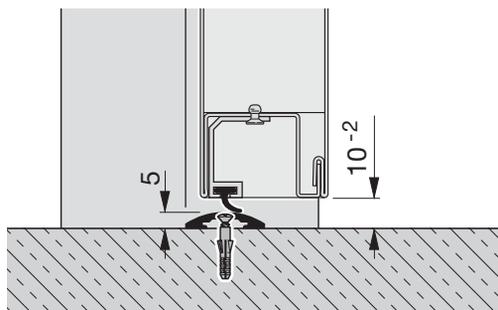
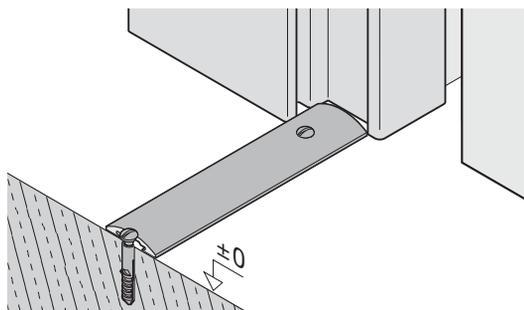
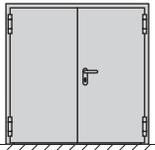


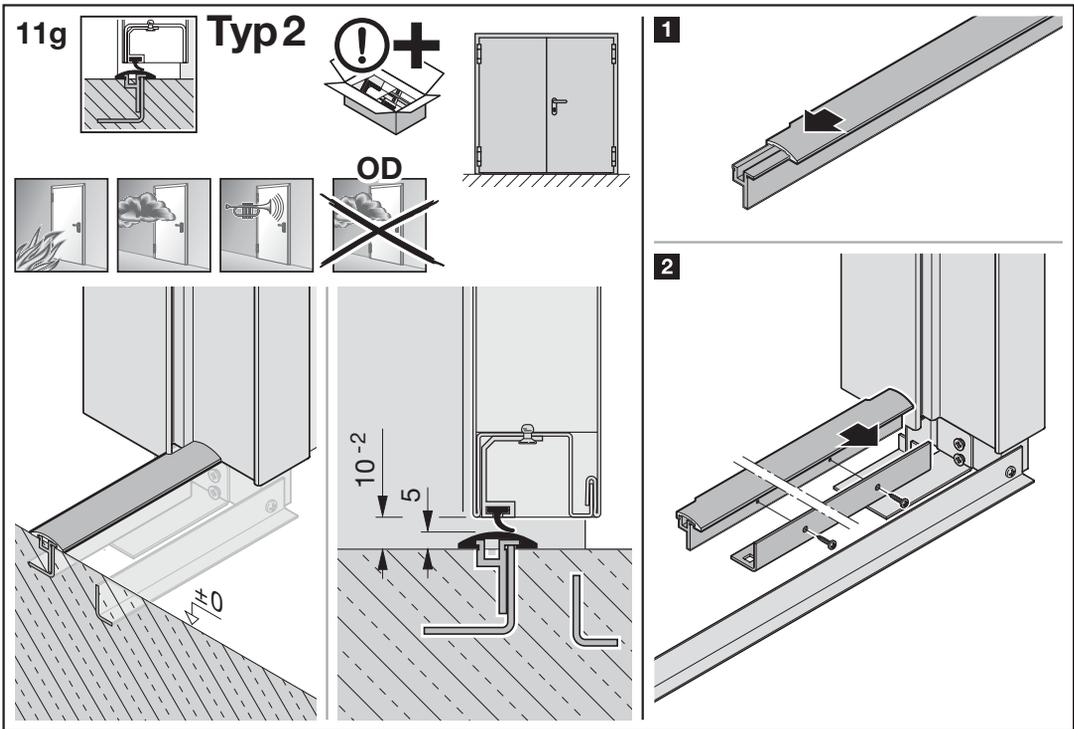
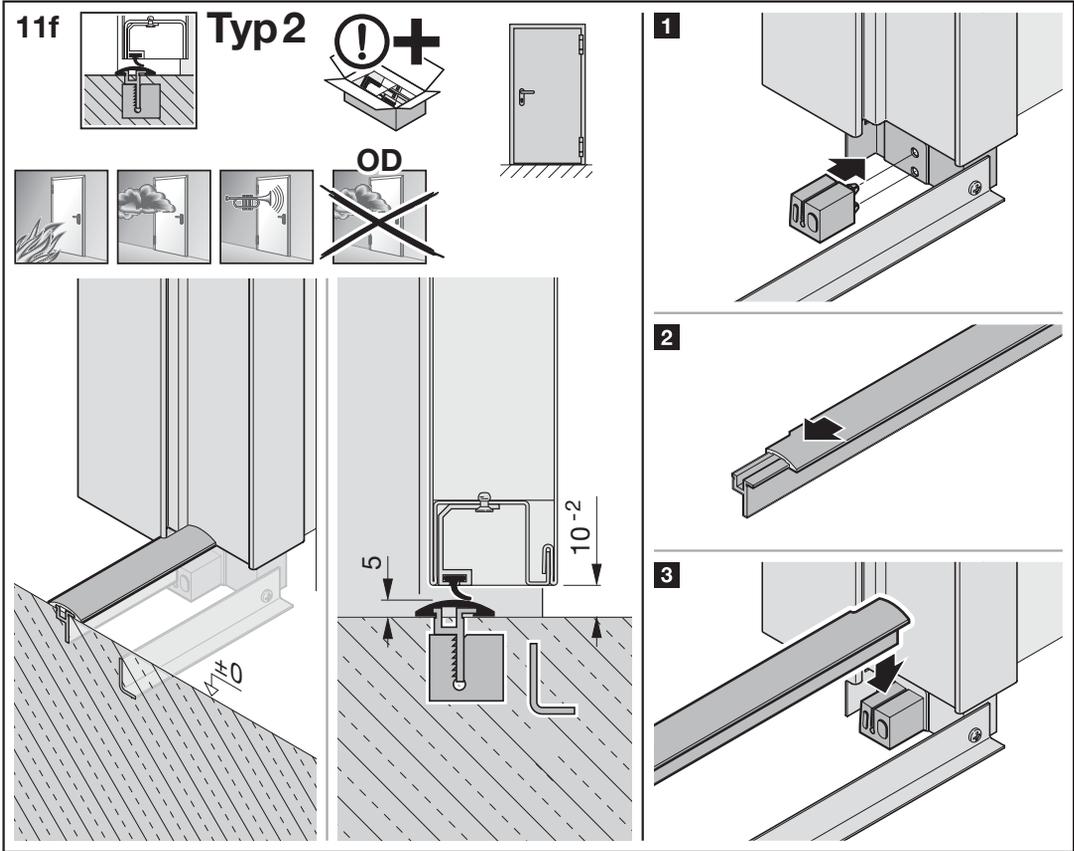


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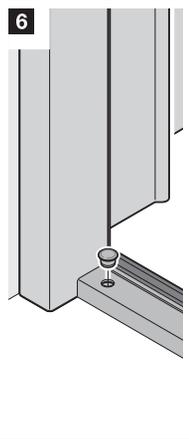
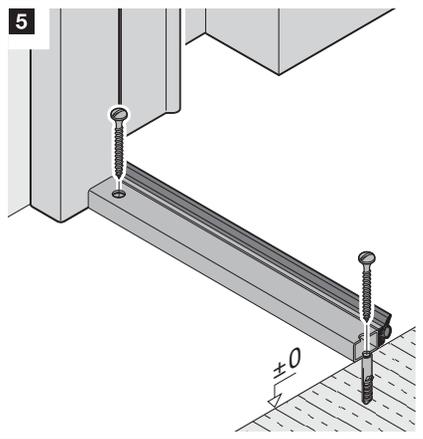
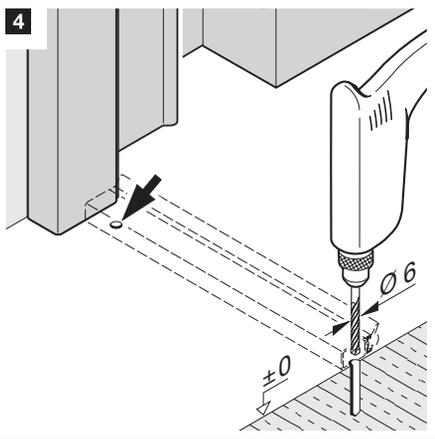
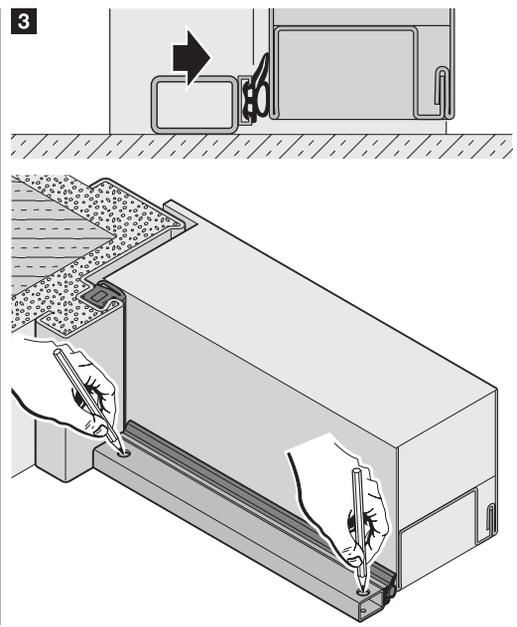
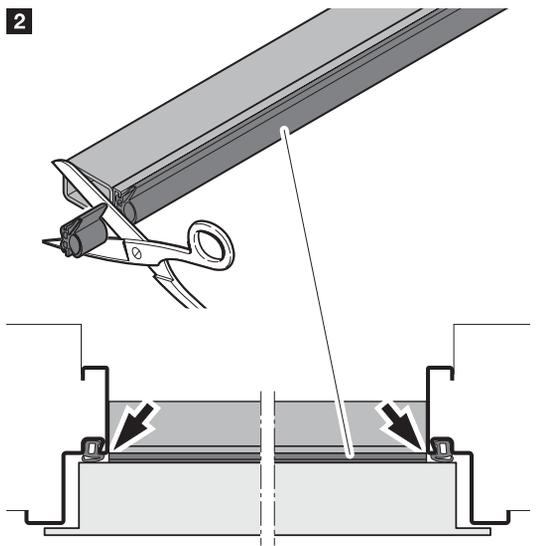
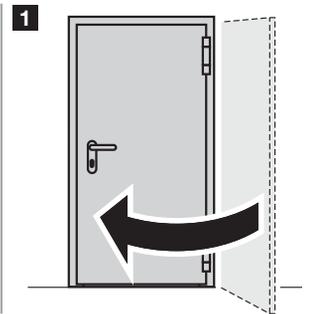
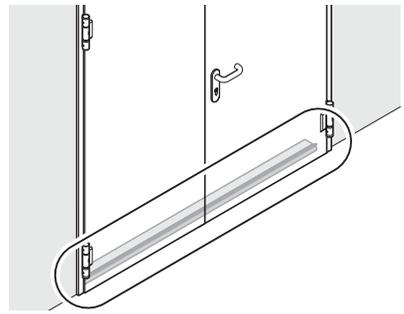
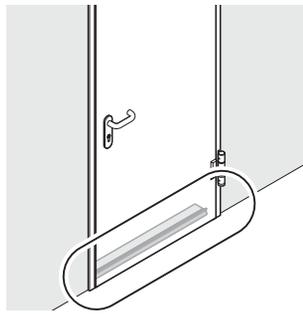
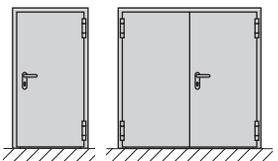
Typ2





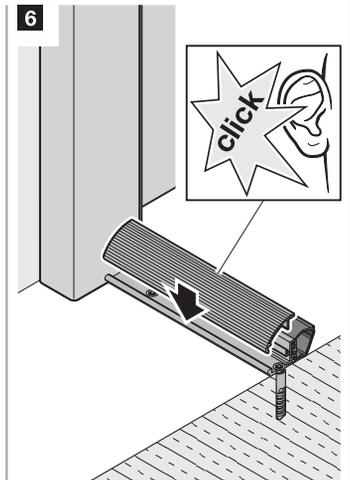
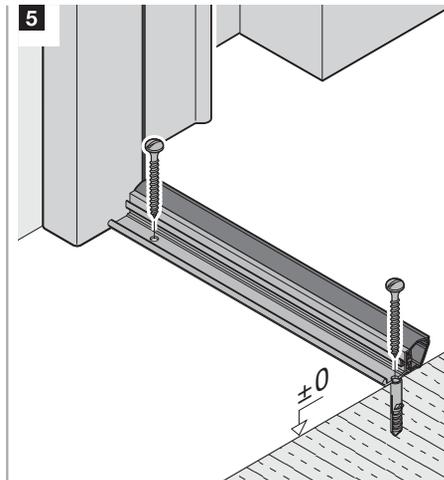
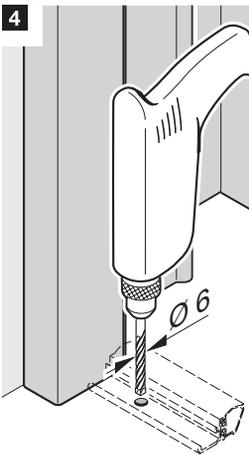
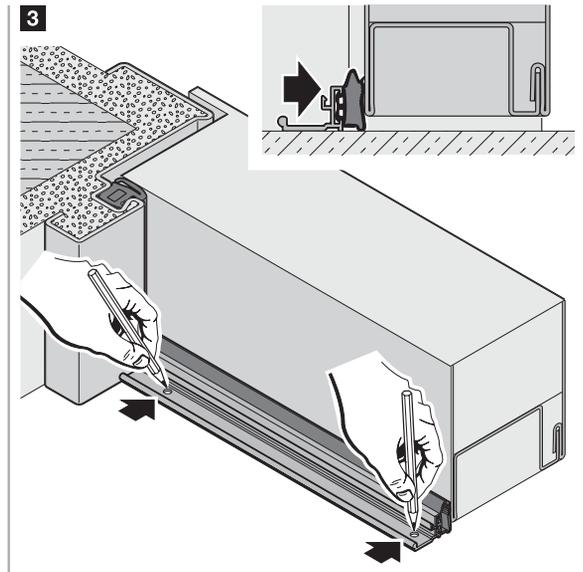
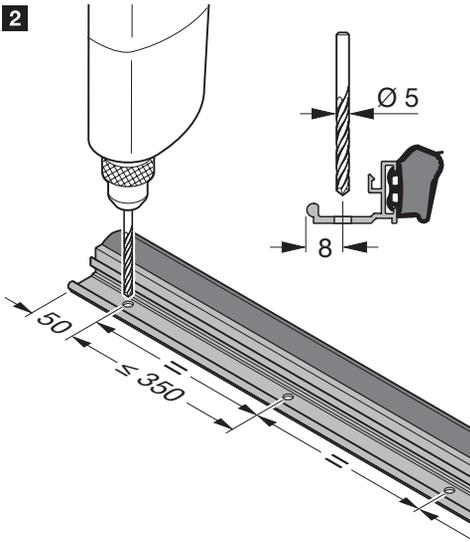
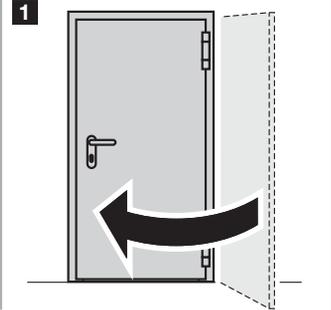
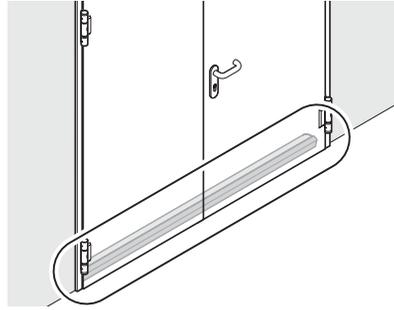
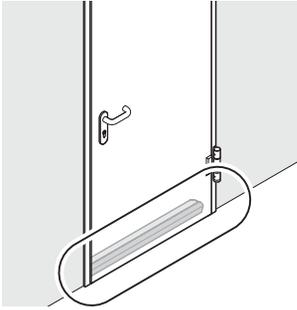
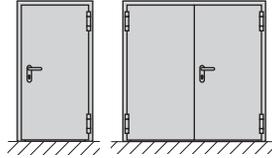
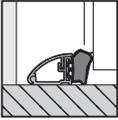
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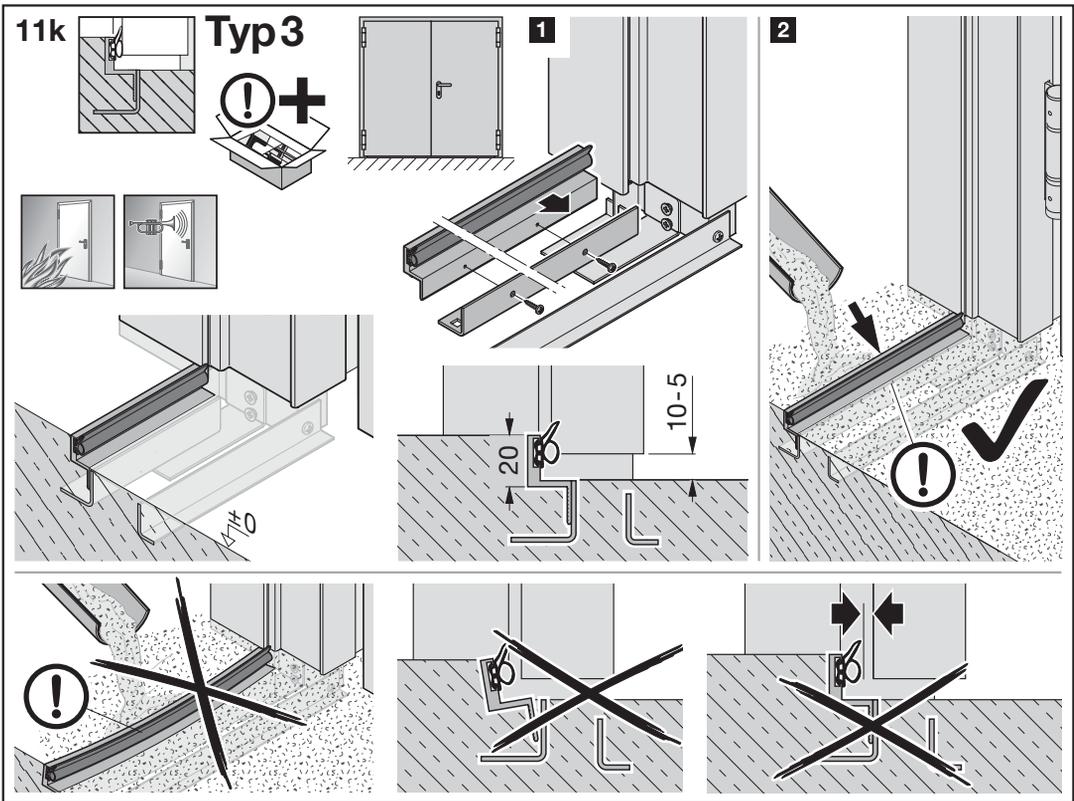
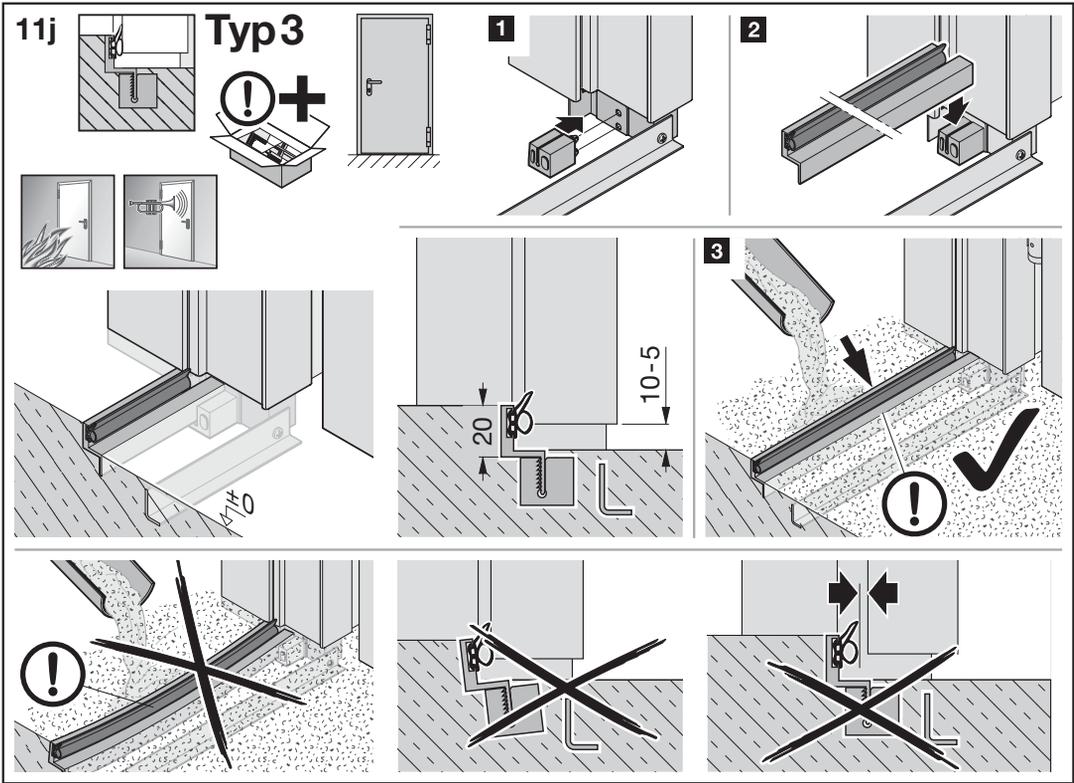
Typ 1



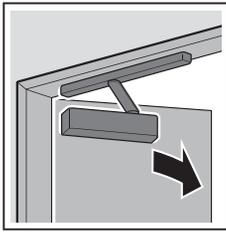
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# Typ 2

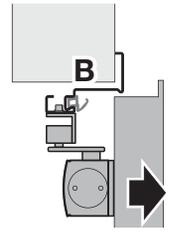
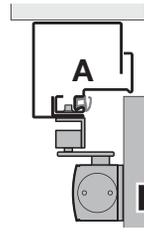




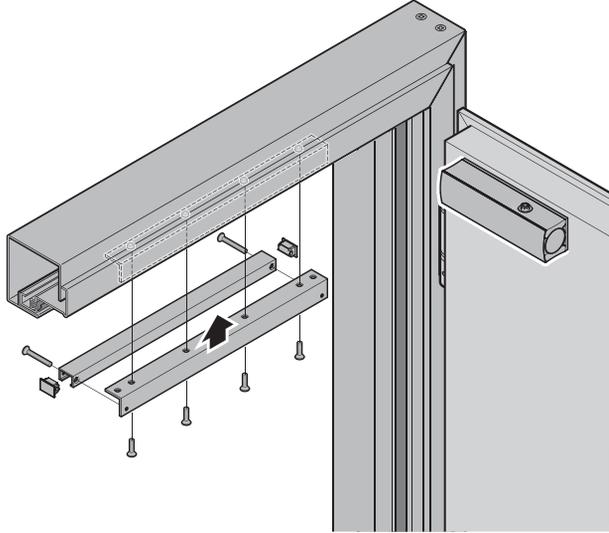
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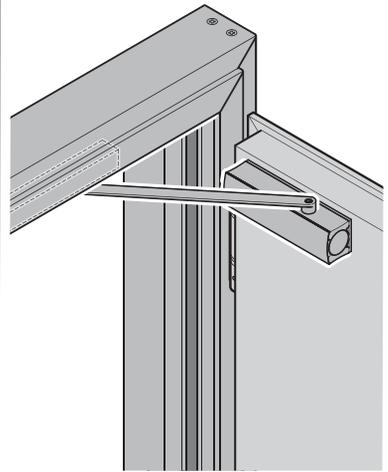
# HDC 35 BG



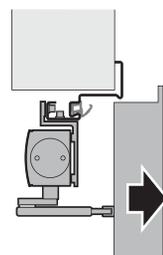
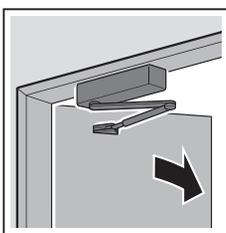
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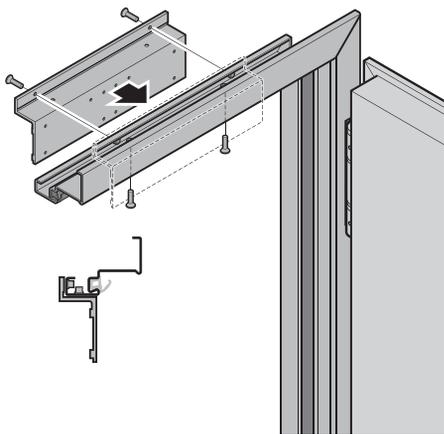
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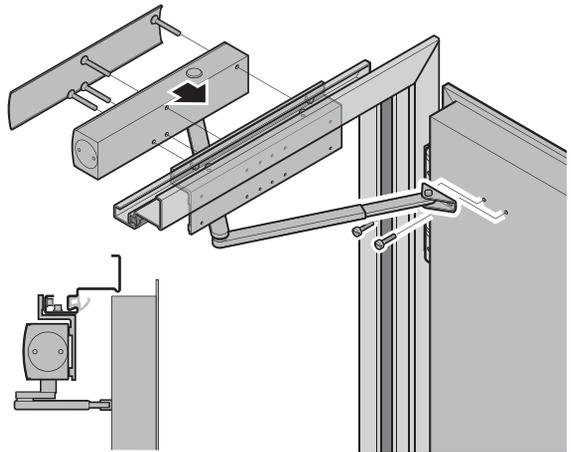
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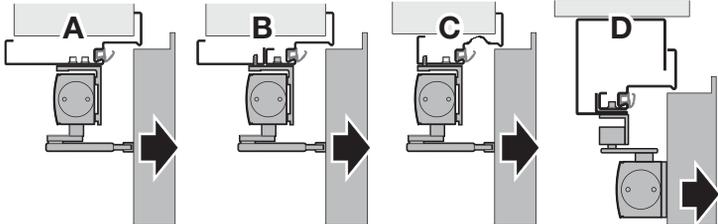
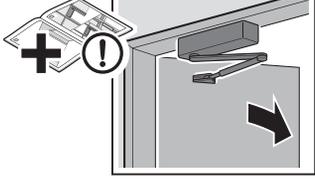
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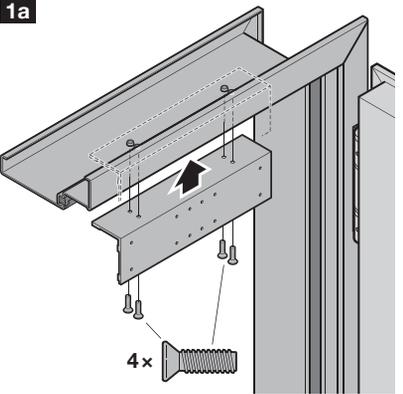
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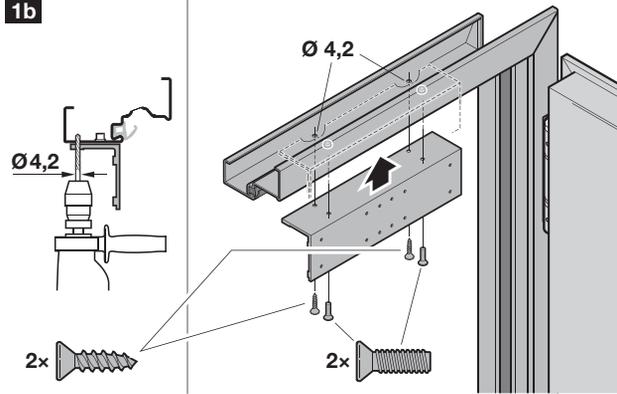
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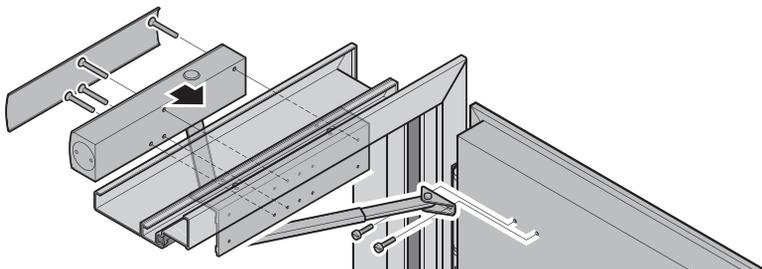
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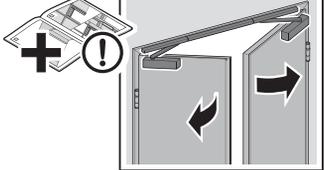
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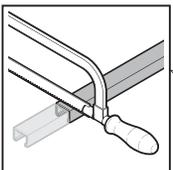
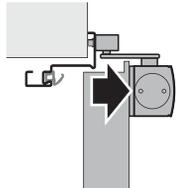
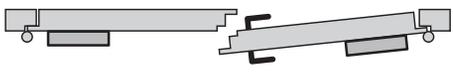
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12d

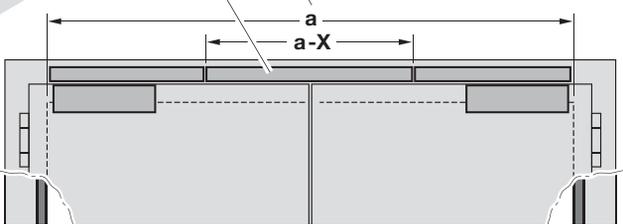


**GEZE TS 5000  
DORMA TS 93**

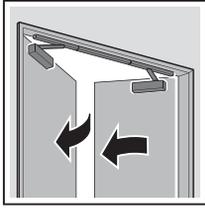


4.2 (EN 12519)

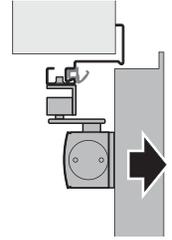
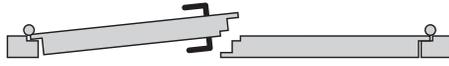
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GEZE TS 5000	1021
DORMA TS 93	1062



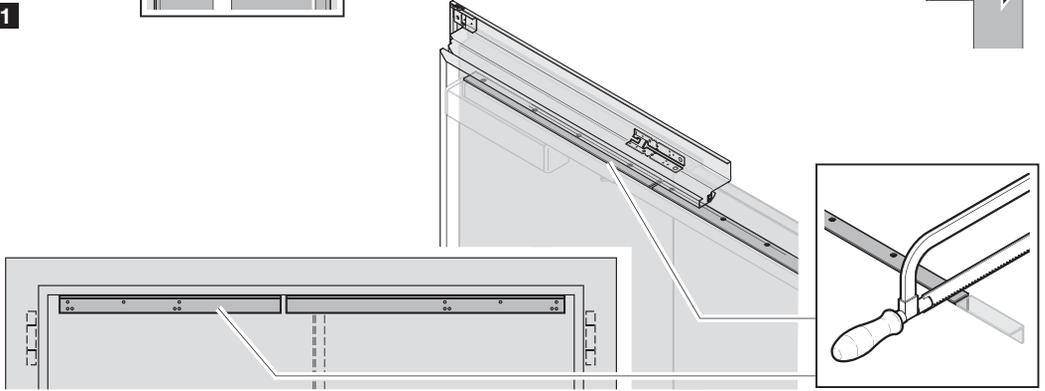
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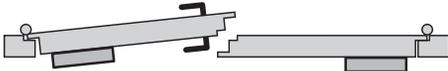
## GEZE TS 5000 DORMA TS 93



1

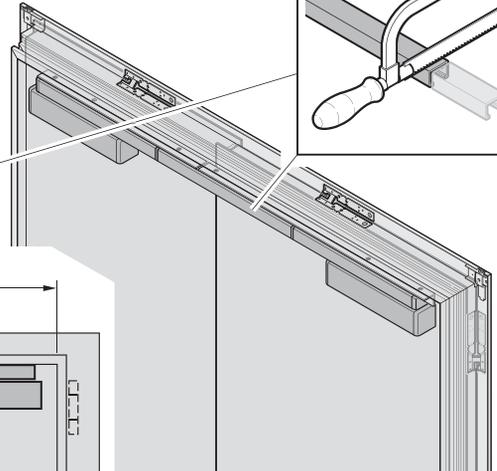
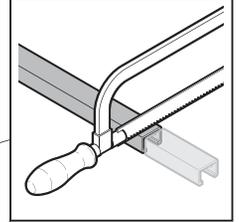
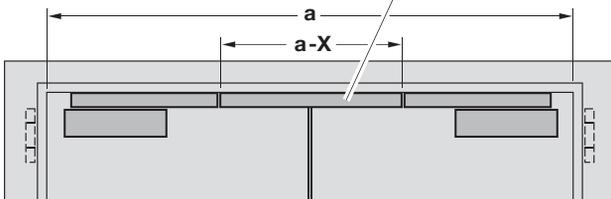


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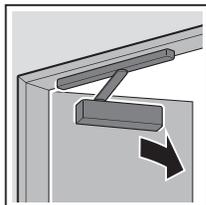


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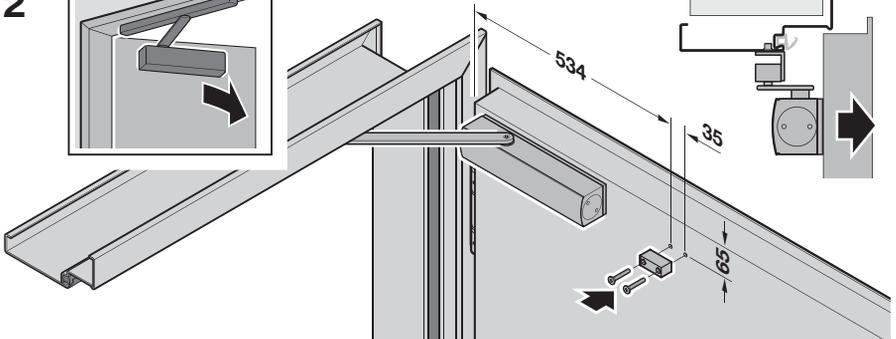
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GEZE TS 5000	1130
DORMA TS 93	1179



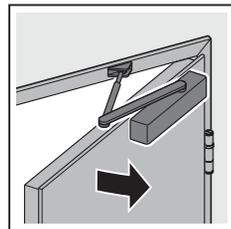
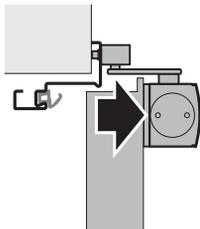
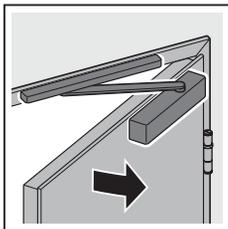
12f H16-2  
H3-2



## TS 93 GSR BG



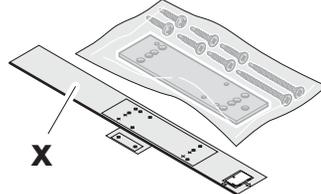
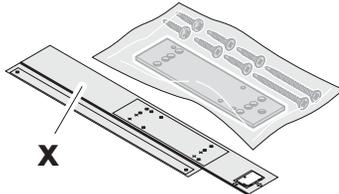
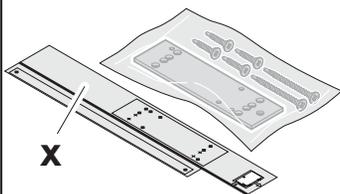
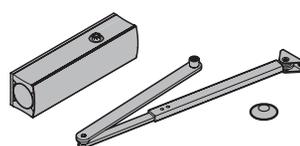
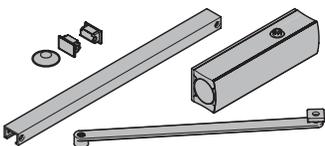
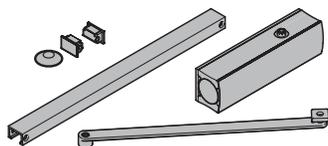
12g



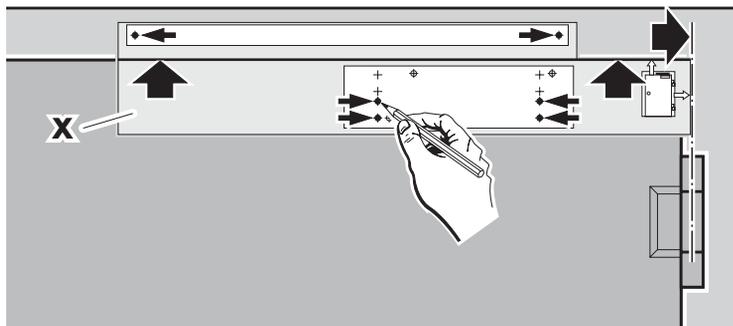
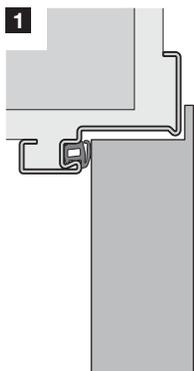
### HDC 35

### TS 5000

### TS 4000



1



### 2a HDC 35 TS 5000

### 2b TS 4000

