



BG

Инструкция за монтаж и поддръжка

Еднокрили и двукрили стоманени врати (Врати OD, H3G, H16G, HS75, H16S1)

БЪЛГАРСКИ..... 3

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Уважаеми клиенти,
радостни сме от факта, че сте решили да закупите
продукт от нашия асортимент.

1 За настоящата инструкция

Моля, прочетете и вземете под внимание настоящата инструкция. Тя ще Ви даде важна информация за монтажа и поддръжката на Вашата стоманена врата и представлява важна част от строителната документация.

В случай че след като се запознаете с настоящата инструкция имате още въпроси, се обърнете към нашите консултанти.

1.1 Използвани предупреждения



Общоприетият символ за предупреждение обозначава опасност, която може да доведе до **телесни наранявания** или **смърт**. В текстовата част общоприетият символ за предупреждение се използва заедно с описаните по-долу степени на предупреждение. В частта с фигурите допълнително указание препраща към разясненията в текстовата част.

 **ОПАСНОСТ**

Обозначава опасност, която може да доведе директно до смърт или тежки телесни наранявания.

1.2 Използвани символи



Противопожарна защита



Димозащита



Защитна врата



Шумоизолация



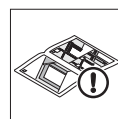
Врата с определени функции



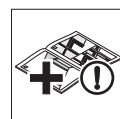
Важно указание



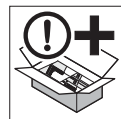
Виж текстовата част



Виж частта с фигурите



Виж инструкцията за монтаж в комплекта с принадлежностите



Поръчва се като принадлежност



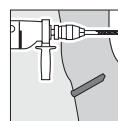
Правилно действие



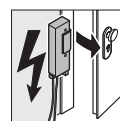
Неправилно действие (начин на действие)



Заваряване



Пробиване на отвори



Електрически напреженик



Опасност от проникване с взлом от страната на отваряне



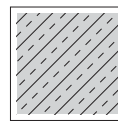
Опасност от проникване с взлом от страната на затваряне



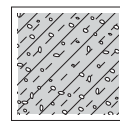
Път за евакуация



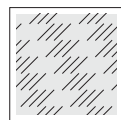
Дърво



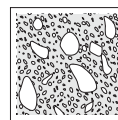
Зид / Бетон



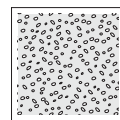
Газобетон



Гипс



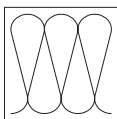
Бетон



Строителен разтвор



Уплътнение
на касата CR
T60/El₂ 60/HBS60
T90/El₂ 90/HBS90
T120/El₂ 120/HBS120
T30/El₂ 30 с пълнеж от минерална вата



Изолационен
материал A
(EN 13501-1)

2 Указания за безопасност

ОПАСНОСТ

Опасност за живота при монтирането на стоманената врата

По време на монтажа е възможно вратата или нейната рамка да падне и да отнеме човешки живот.

- Обезопасете вратата и касата срещу падане преди и по време на монтажа.

- Монтирането и техническата поддръжка на вратата трябва да се извършват само от квалифициран и инструктиран персонал.
- Оставете работите по електрическата част да бъдат извършени само от специалисти със съответното образование.
- Не предприемайте промени, като добавяне на елементи или реконструиране на вратата, защото това би довело до намаляване на безопасността ѝ.
- При заваряване, изгаряне и шлифоване сведете до минимум рисковете, които могат да възникнат вследствие на огън, газ, прах, пара, дим, пожар и експлозия.
- При извършването на заваръчни работи внимавайте разпенващите се строителни материали да не реагират вследствие на възникващата топлина и да не загубят ефективността си.

3 Информация за свойствата на вратата

Обърнете внимание, че вратата може да притежава някое или комбинация от свойствата противопожарна защита, димозащита, шумоизолация или защита от взлом или да бъде врата с определени функции.

3.1 Пожарозащитни и димозащитни врати

- Съответното удостоверение за допускане можете да намерите на сайта www.hoermann.de/dokumentation/zulassungsbescheide-fuer-feuerschutzabschluesse/. Удостоверението за допускане трябва да е налично на мястото на приложение на вратата.
- Посочената информация се отнася до минималните изисквания за монтиране в Германия. При монтиране в други държави са в сила съответните национални удостоверения за допускане, при което характеристиките на материалите трябва да са залегнали в основата минимум на стандарта DIN.
- Вземете под внимание стандартите DIN 18093 (Монтаж на пожароустойчиви врати) и DIN 18100 (Стенни отвори за врати), респ. специфичните за съответната държава разпоредби.
- В отделни случаи, съгласно § 22 и § 23 от Строителният наредби и предписания, производителят може да издаде декларация за съответствие.
- Потребителят поема отговорността за безупречното състояние на вратата.
- В Германия изхвърлящи панти **не** могат да се използват при врати и клапи със следните характеристики:
 - тегло на крилото > 80 кг.
 - остъкление
 - вграждане в монтажни стени (изключение: размери < 1000 × 1000 mm)
 - комбинация като димозащитни врати съгласно DIN 18095
 - 2-крила

Възможно е извън Германия да са в сила други разпоредби, но въпреки това препоръчваме германските предписания да бъдат спазени.

Табл. 1: Допустими стени за монтаж клас F90A с минимални дебелини за пожароустойчиви и димозащитни врати, височина ≤ 5000 mm

Сертификат от изпитване No.	Стена	H3 OD H_30 OD	H3-1G H_30 D1	¹⁾ H3-2 VM H_30 D2	H16 S1 H_90 E1
P-3310/563/07-MPA BS	Knauf W 112	≥ 100 mm	≥ 100 mm	≥ 100 mm	≥ 125 mm
P-3391/170/08-MPA BS	Knauf W 131	≥ 116 mm	—	—	≥ 177 mm
P-3310/563/07-MPA BS	Knauf W 132	≥ 100 mm	—	—	—
P-3202/2028-MPA BS	Knauf W 352 / W 353	≥ 100 mm	≥ 100 mm	≥ 100 mm	≥ 150 mm
P-3956/1013-MPA BS	RiGips 3.40.01ff. / 3.41.01ff.	≥ 100 mm	≥ 100 mm	≥ 100 mm	—
P-3014/1393-MPA BS	RiGips 3.60.20	≥ 100 mm	≥ 100 mm	≥ 100 mm	≥ 125 mm
P-3020/0109-MPA BS	RiGips 6.70.10	≥ 165 mm	—	—	≥ 165 mm
P-SAC-02/III-681	LaFarge L11 – L14	≥ 100 mm	≥ 100 mm	≥ 100 mm	—
P-MPA-E-98-005	LaFarge L15	≥ 100 mm	—	—	≥ 125 mm
P-3515/0519-MPA BS	LaFarge L16	≥ 150 mm	—	—	≥ 150 mm
P-3391/0890-MPA BS	LaFarge L18	—	—	—	≥ 161 mm
P-MPA-E-99-047	Promat 450.81	≥ 140 mm	—	—	≥ 140 mm
P-11-003478-PR01	B + M W 50 / 100 – W 100 / 150	≥ 100 mm	—	—	—
P-3854/1372-MPA BS	Fermacell 1 S 31/3.1	≥ 95 mm	≥ 95 mm	≥ 95 mm	—

1) макс. 2750 × 2750 mm

Табл. 2: Допустими стени и минимална дебелина на стените за вграждане на пожароустойчиви и димозащитни врати (мм) Виж 4.2

Стена	Стенова врата		H3-1 OD H_30-1 OD		H3-2 OD H_30-2 OD		H3-1 G H_30 D1	H3-2 VM H_30 D2	H16-1 G H_90 D1	H16-2 G H_90 F-2	H16-S1 H_90 E-1	H16-1 OD H_90-1 OD		H16-2 OD H_90-2 OD
	Бетон DIN 1045-1, якост $\geq$ C12/15	Зид DIN 1053-1, якост $\geq$ 12, група строителен разтвор $\geq$ 2	¹⁾ $k \leq 2500$	²⁾ $k > 2500$	¹⁾ $k \leq 2500$	²⁾ $k > 2500$	—	—	—	—	—	—	—	—
			100	140	100	140	140	140	140	140	120	140	—	140
			¹⁾ $k \leq 2500$	$k > 2500$	¹⁾ $k \leq 2500$	²⁾ $k > 2500$	—	—	—	—	—	$e \leq 625$ $k \leq 750$	$e > 625$ $k > 750$	—
			115	175	115	175	175	175	240	240	175	115	175	175
	Блокчета или тухли от порест бетон, DIN 4165-3, якост $\geq$ 4, Плочи от порест бетон съгласно удостоверение за допускане от Службата за строителен надзор, якост $\geq$ 4.4		$k \leq 2500$		$k \leq 2500$		—	—	—	—	—	—	—	—
	Монтажна стена F90-A съгласно АВР Погледнете фиг. 8.12 , макс. височина 5000 мм		150		150		175	175	200	200	175	200	—	200
	Монтажна стена F90-A DIN 4102-4/табл. 48, Погледнете фиг. 8.12 , макс. височина 5000 мм		$e \leq 1320$		$e \leq 2500$		—	$e \leq 2750$ или $k \leq 2750$	—	—	—	—	—	—
	Монтажна стена F90-B DIN 4102-4/табл. 49, макс. височина 5000 мм		$e \leq 1250$ или $k \leq 2500$		$e \leq 2500$ или $k \leq 2500$		—	—	—	—	—	—	—	—
	Монтажна стена F30-B		$e \leq 1125$ или $k \leq 2125$		—		—	—	—	—	—	—	—	—
	Гипсови панели за стена VG Orth, P-SAC 02 / III-488, Погледнете фиг. 9/A17		185		—		—	—	—	—	—	—	—	—
	Минимална дебелина на стените		100		100		—	—	—	—	—	—	—	—

1) без горна част 2) с горна част 3) виж Табл. 1: 4) каса с две обшивки 5) Дупфх

- Използвайте обкови, брави, автомати за затваряне и електрически елементи, само ако те са неразделна част от удостоверението за допускане на вратата или за тях е налице одобрение от производителя.
- Вратите с фалц от 3-те страни без плътно затваряне на шахтата отдолу се монтират към шахти на най-ниското ниво на пода.
- Стени от гипсокартон и дебелини на стените: виж Табл. 1:
- Допустими видове стени и дебелини на стените: виж Табл. 2:
- Ако за съответната монтажна ситуация не е посочено друго, подмажете касата с минерален хоросан на циментова основа, напр. LM21 на Sakret. Преди подмазването укрепете обхващащите и ъгловите каси (с и без насрещна каса), за да не се деформират вследствие на натиска от разтвора.
- **Димозащита:**
 - Използвайте подови уплътнения и уплътнителни клинове (виж частта с фигурите, точки 10.6 и 11).
 - Запечатайте връзката между касата и граничещите с нея части, от двете страни и без пропуски, трайно еластично, ако касата не е подмазана с хоросан.
 - Използвайте патрон.
- Не излагайте остъкленията на пожароустойчивите врати на директна слънчева светлина.

3.2 Шумоизолирани врати

- Общата шумоизолация зависи от заобикалящите строителни компоненти. Резултиращата шумоизолация от стената и вратата трябва да е удостоверена отделно, тъй като тя не може да се представи само от изчислената стойност за шумоизолацията R_w , респ. R , на вратата.
- Следете уплътнението /ята да е/ са плътно прилепнало /ли.
- Подът трябва да е равен, за да се гарантира пълната функция на подовото уплътнение.
- Отделете подовата настилка в областта на прага.
- Използвайте уплътнителни клинове и подово уплътнение (виж частта с фигурите, точки 10.6 и 11).
- Използвайте патрон.
- Подмажете цялата каса с хоросан.
- Залепете изрязаните под герунг ъгли на уплътнението на касата напр. с Köratan UC 41.

3.3 Врати със защита от взлом

- Вратата изпълнява качествата си на защита срещу кражби с взлом, само когато резето е добре затворено и ключът е изваден.
- Обезопасете платната на всички врати с 2 крила и клас устойчивост RC като поставите по два винта в областта на пантите (виж частта с фигурите, точки 10.2).
- Използвайте само ъглови каси, ъглови каси с насрещна каса и обхождащи каси.
- При вратите RC2/N подмажете касата в областта на точките на заключване, пантите и осигурителните болтове, за да е устойчива на натиск.
- При вратите RC3 / A подмажете касата, обхождайки я от всички страни, за да е устойчива на натиск.
- На остъклените врати монтирайте рамката на стъклото със защитни планки от работната страна.
- При подмяна на горното остъкление монтирайте подложните трупчета както и преди монтажа.

- При 2-крилите врати измерете долните луфтове от вдлъбнатината откъм пода.
- При антипаник вратите затруднете задействането с тел, напр. с по-малък луфт откъм пода или с използване на полуобъбл праг.

3.3.1 Минимални изисквания към вратите със защита от взлом

Клас устойчивост съгласно DIN EN V 1627 DIN EN 1627 / VDS	RC2 / N	RC3 / A	RC4 / B
Зид DIN 1053 част 1 [mm] якост ≥ 12	115	115	240
Стоманобетон, мин. C12/15 [mm]	100	120	140
Блокчета от порест бетон кл. 4 (mm)	175, 115 ¹⁾	300	–
Плочи от порест бетон кл. 4 [mm]	150	–	–
Секретен патрон съгласно DIN 18252 ³⁾	P2BS	P2BS	P3BS
Секретен патрон ^{2) 3) 4)}	Клас А	Клас А	Клас В
Защитен обков съгласно DIN 18257 ³⁾	ES1 (ZA)	ES2 (ZA)	ES3 (ZA)
Защитен обков ^{2) 3)}	Клас А	Клас А	Клас В
Стъкла EN 356 (противопожарна защита)	P5A ⁵⁾ / P8B ⁶⁾	P5A ⁵⁾	–

1) само 1-крили, препоръчваме дебелина на стената мин. 150 mm

2) за одобрени от VdS врати

3) защитният обков или секретният патрон трябва да е изпълнен със защита срещу изтегляне (ZA)

4) може и да не се включва в обхвата на доставката

5) не важи за маршрути за евакуация

6) за маршрути за евакуация

3.4 Врати с определени функции

Не е задължително касите да бъдат подмазани.

3.5 Противопожарна защита и приложение на открито

Относно противопожарната защита и приложението на открито е необходимо отделно удостоверение за допускане. Вземете под внимание отделната инструкция за монтаж арт. No. 479166.

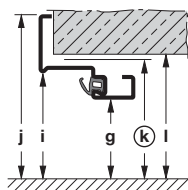
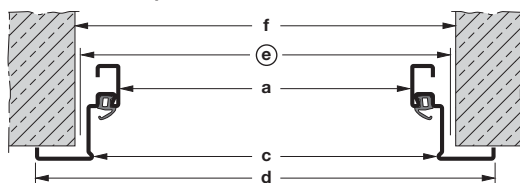
4 Монтаж

4.1 Преди монтажа

Преди да пристъпите към монтажа изяснете следните въпроси:

- С какви свойства е вратата?
- Типът стена подходящ ли е за монтирането на вратата?
- Известна ли е котата на пода (отметка обозначаваща разстояние от 1 м над бъдещото ниво готов под?)
- В каква посока трябва да се отваря вратата?
- Има ли строителни разпоредби, на които трябва да се обърне внимание?
- Стената трябва ли да се издълбае в областта на защитните кутии за зида?

4.2 Размери съгласно EN 12519



Фиг. 1: Размери

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

a/g светла ширина / височина на отваряне
c/i светла ширина / височина на фалца
d/j външна ширина / височина на касата
e/k модулна ширина / височина
f/l светла ширина / височина на грубия строеж (DIN 18100)

4.3 При монтажа

- Следвайте указанията за монтаж, приложени в комплектите с принадлежностите.
- Използвайте доставените с вратата компоненти за монтиране, напр. карабинери, дюбели или винтове.
- Използвайте дюбелите, посочени в точка 8.
- В комбинация с ъглова каса и тухли с отвори, съответно гипсови тухли използвайте дюбел FUR 10 x 80 / 100 мм и вземете под внимание точка 8 от инструкцията за монтаж.
- Пробивайте тухлите с отвори без удар.
- Вземете под внимание минималното отстояние от канта от 50 мм при хоризонтални, съответно вертикални отвори и посоката на разпъване на дюбелите.
- Обърнете внимание, че при касите без вмъкване в пода долният монтажен винкел трябва да бъде отстранен преди монтажа.

4.4 Разяснения към фигурите

Виж точка	Описание
8	Монтажни ситуации и форми на касите
8.1	Челно съединение
8.1b	Тънък фалц
8.1c	Дебел фалц
8.2a / 8.2b	Брой точки на закрепване
8.2c	Етапи на работа
8.3a	Демонтаж на стандартна врата
8.3b	Демонтаж на защитна врата
8.4	Сглобяване на ъговата каса
8.5	Жлеб на пода и монтажен ъгъл
8.6	Елементи за закрепване
8.7	Минимално разстояние от края и посока на разтваряне на дюбела
8.8	Вграждане на профилите за скрит жлеб
8.9	Кухи тръби в касата

Виж точка	Описание
8.10	Електрически насрещник
8.11	Защитна кутия в стени от GKF
8.12	Конструкция: стени от пожароустойчив гипсокартон
9.0	Монтажни ситуации
10.1a	Монтаж със стандартни панти
10.1b	Монтаж с 3D панти
10.2	Монтаж на защитна врата
10.3	Регулиране на хлабините
10.4	Отстраняване на подовия винкел при каси без вграждане в пода
10.5	Монтаж на насрещната каса
10.6	Фиксирайте уплътнителните клинове със силикон
10.7	Монтаж на уплътнението на касата
10.8	Повдигане на вратата
10.9	Натягане на изхвърлящата панта
10.10	Проверка на навлизането на езика
10.11	Обръщане на вентилационните решетки
10.12	Преустройство на стъклени рамки
10.13	Изоляционни материали при противопожарна и димна защита
10.14	Изоляционни материали по осигурителните болтове
10.15	Обозначение на големи стъклени площи
10.16	Паник врати и RC3/A
10.17	Монтаж на блокова брава при блокировка в няколко точки
11	Подови уплътнения
12	Автомат за затваряне на вратата
13.1	При паник вратите изваждайте ключа
13.2	Избягвайте неправилното управление на бравата

5 Поддръжка и почистване

5.1 Годишни работи по техническата поддръжка

- Контролирайте платното, касата и крепежните елементи за механични повреди и корозия.
- Контролирайте функцията на бравата и смазвайте езичето при необходимост.
- Смажете касовите брави с тefлонов спрей.
- Контролирайте фиксирането на допълнително монтираните детайли, като напр. дръжки, брава, автомат за врата, панти и т.н.
- Смажете болтовете на пантите и лагерните пръстени.
- Контролирайте хлабините.
- Контролирайте видимостта на обозначението.

⚠ ОПАСНОСТ

Опасност за живота вследствие на отделени изоляционни материали

При отделени изоляционни материали пожароустойчивата врата губи функцията си.

- Подменете отделените изоляционни материали, виж частта с фигурите, точка 10.13.

- Подменяйте дефектните части.
- Използвайте само оригинални резервни части на производителя.

Ако установите наличието на дефекти, които не можете да отстраните сами, се обърнете към специализирана фирма.

5.2 Необходима обработка на повърхността за елементи със стандартно грундиране

Повърхността на платното и касата е обработена с основно прахообразно покритие на основата на епоксидна смола и полиестер.

1. Отстранете уплътнението(ята).
2. Шлифовайте всички подлежащи на боядисване повърхности до достигане на изолационния слой.
3. Почистете повърхностите добре.
4. При окончателната обработка на платното, касата и изолационния материал приложете следния начин за нанасяне на покритие:
 - Основно покритие с двукомпонентен епоксиден грунд и окончателно покритие с подходяща стандартна боя за строителни компоненти или
 - Основно и окончателно покритие с 2K PUR-двукомпонентна полиуретанова боя.

При директно излагане на слънчевите лъчи не използвайте тъмни бои. Вземете под внимание информационния лист BFS No 24, както и указанията на производителя на боята, и подгответе проба за проверка на сцеплението. Окончателната обработка извършете в рамките на три месеца от монтажа, за да избегнете щети от корозия.

5. След като боята изсъхне, поставете обратно уплътнението(ята).

5.3 Почистяване

- Почиствайте повърхностите с чиста вода или стандартен препарат за боядисани повърхности.

5.4 Поддръжка на компоненти от благородна стомана

- Почиствайте и поддържайте редовно частите от благородна стомана с предлагания от HORMANN продукт за поддръжка на благородна стомана Edel Glanz, като го нанасяте с мека кърпа.

6 Етикетиране и обозначение

Върху етикета на **вратите тип D65-1, D65-2, D65-1 OD, D65-2 OD** е поставен знака за съответствие CE, съгласно Наредба (EC) No. 305/2011. Привлечената и приложена европейска продуктова норма е EN 14351-1:2006 + A1:2010 „Прозорци и врати – продуктова норма, експлоатационни характеристики – част 1: Прозорци и външни врати без характеристики по отношение на противопожарната защита и/или димозащитата.“ Номерът на принадлежащото обозначение CE, респ. на декларацията за експлоатационни характеристики е поставен в областта на фалца на вратата, върху споменатия етикет, между логото на производителя и знака за съответствие CE.

Вратите, на чийто етикет няма знак за съответствие CE, не попадат в областта на приложение съгласно гореспоменатата хармонизирана европейска продуктова норма и поради това не разполагат с обозначение CE, респ. декларация за експлоатационните характеристики.

7 Обща информация

Пускането на вратата в експлоатация е забранено, докато не бъде установено, че тя е монтирана в съответствие с нашите предписания и докато не бъде проверено правилното ѝ функциониране. В случай промени по продукта декларацията за експлоатационните характеристики губи валидността си.

8 Декларация за експлоатационни показатели

Декларация за експлоатационни показатели виж точка **8.3: www.hoermann.com/dop**

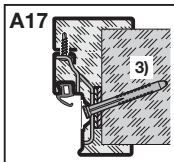
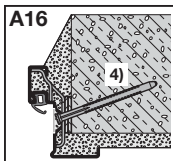
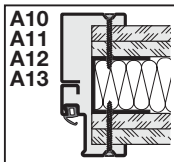
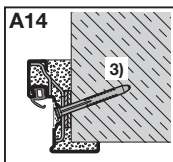
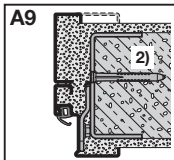
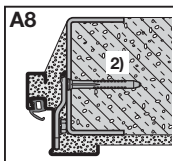
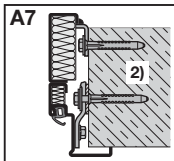
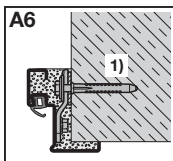
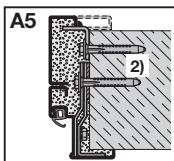
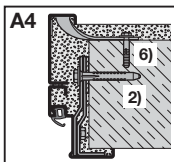
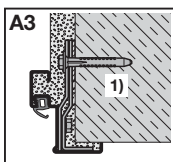
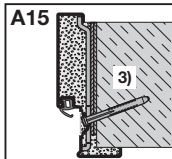
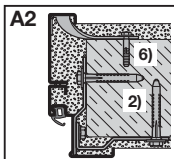
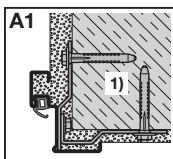
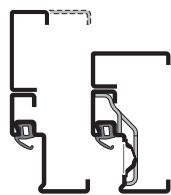


4.3/4.4

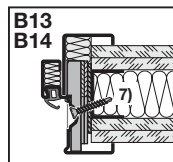
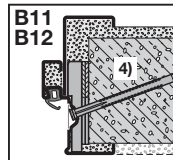
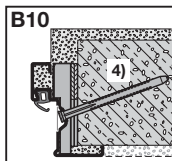
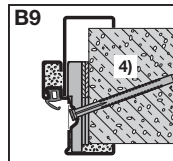
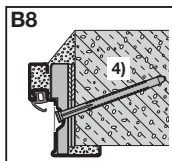
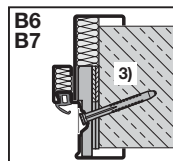
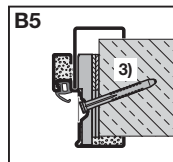
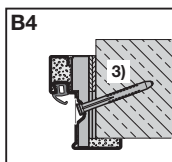
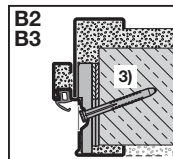
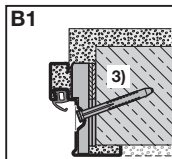
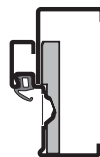
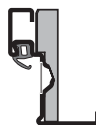


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A

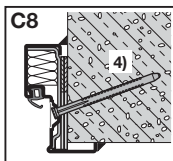
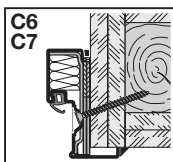
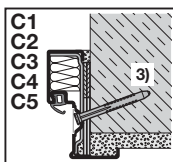


B

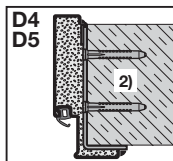
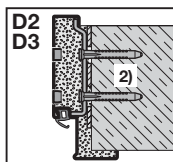
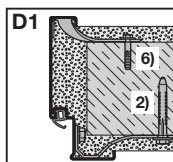




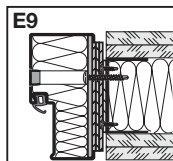
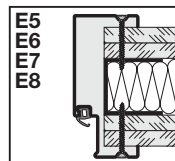
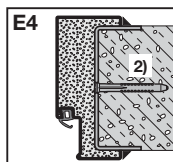
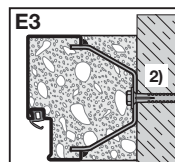
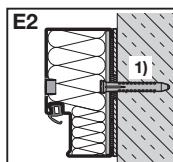
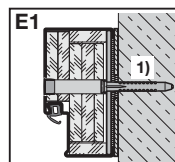
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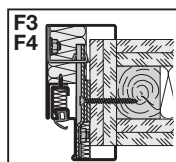
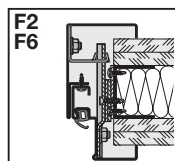
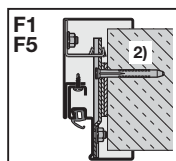
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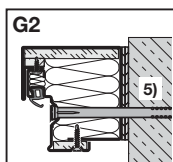
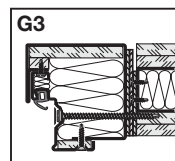
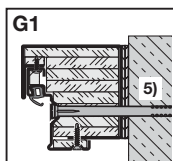
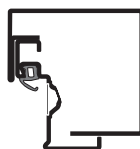
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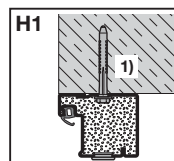
F



G



H



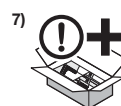
1) Fischer: FUR 10 × 80/100

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

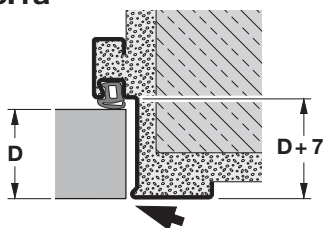


2) Fischer: FUR 10 × 80/100/115
Fischer: SXS 10 × 80/100/120
Hilti: HRD 10 × 80/100
MEA: MFR 10 × 80/100/115
Würth: W-UR 10 × 80/100/115

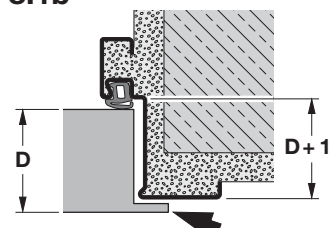
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4) Fischer: FUR 10 × 160
5) Fischer: FUR 10 × 200
6) 8 × 40



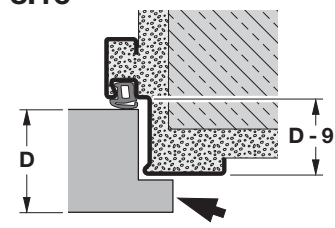
8.1a



8.1b

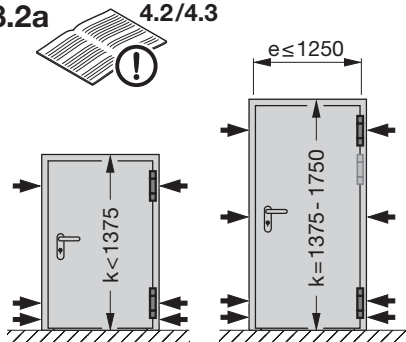


8.1c



8.2a

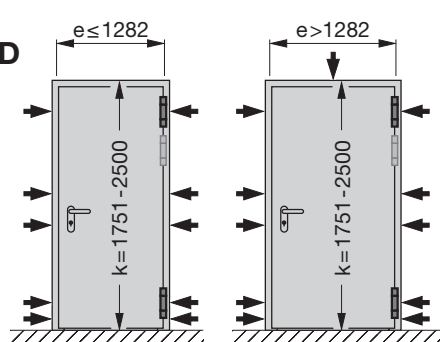
4.2/4.3



H16-S1

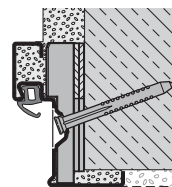
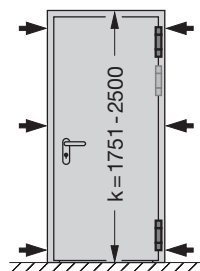
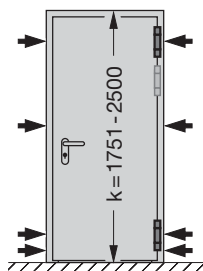
H16-1 OD

HS75



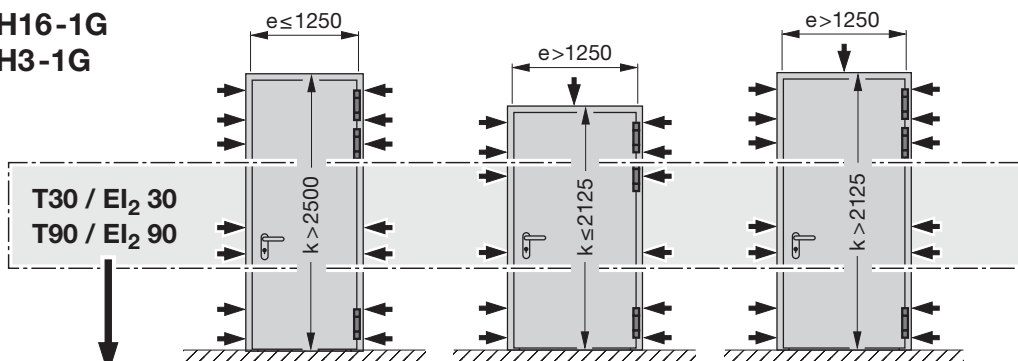
D65-1 OD

H3-1 OD

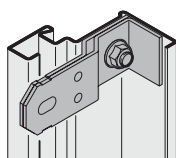
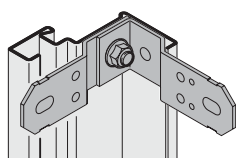


H16-1G

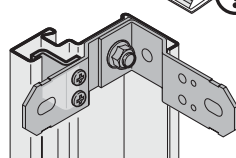
H3-1G



T30 / EI₂ 30

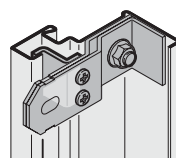


T90 / EI₂ 90



8.6a

8.6b

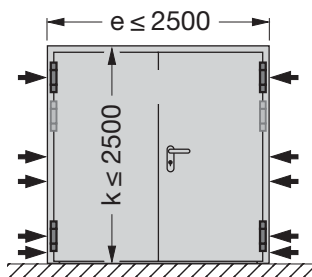


8.2b

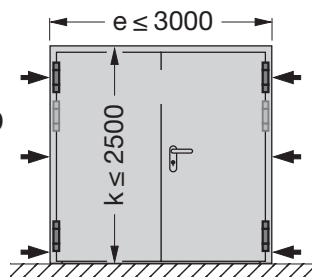
4.2/4.3



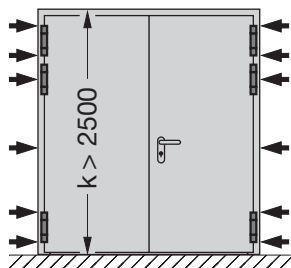
H16-2 OD
H3-2 OD



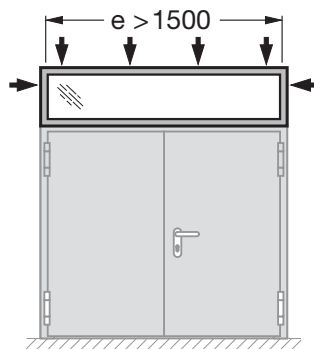
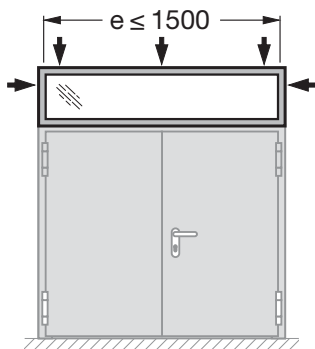
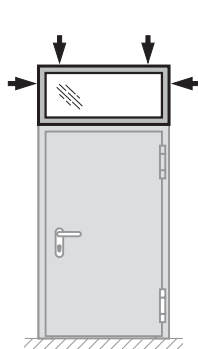
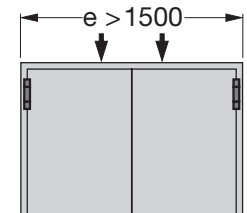
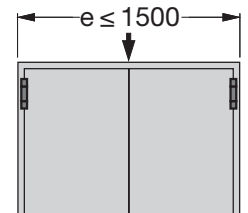
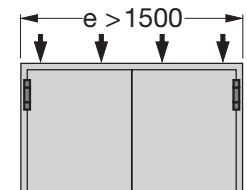
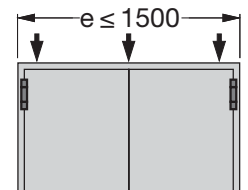
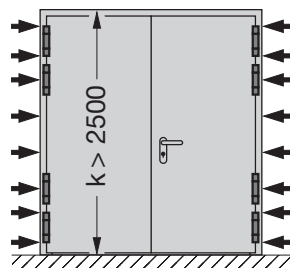
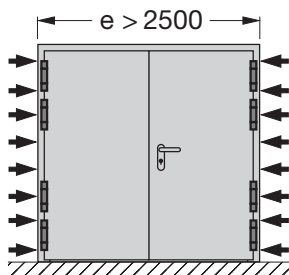
D65-2 OD



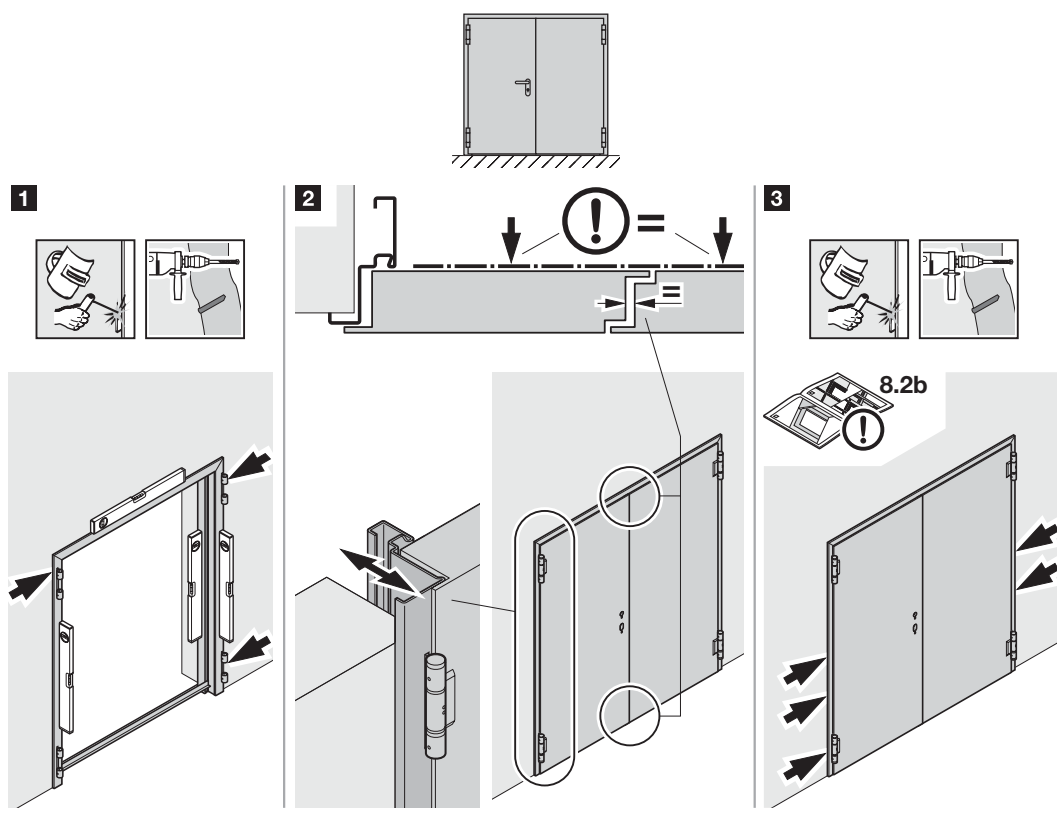
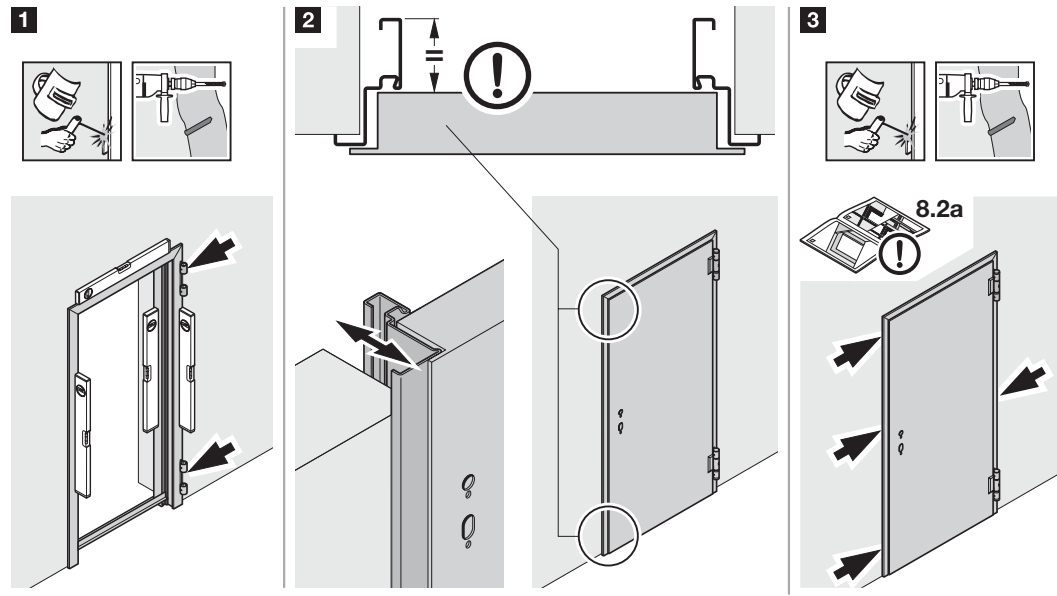
H3-2 VM



H16-2 G
H_90 F2



8.2c

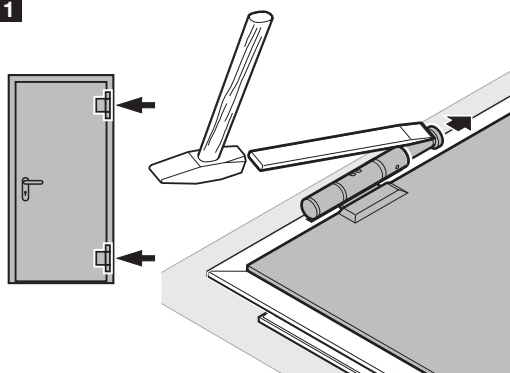


8.3a

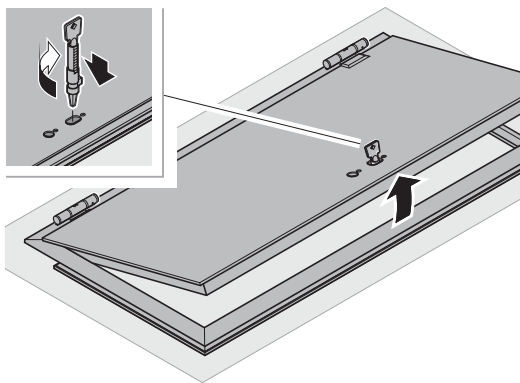
4.3



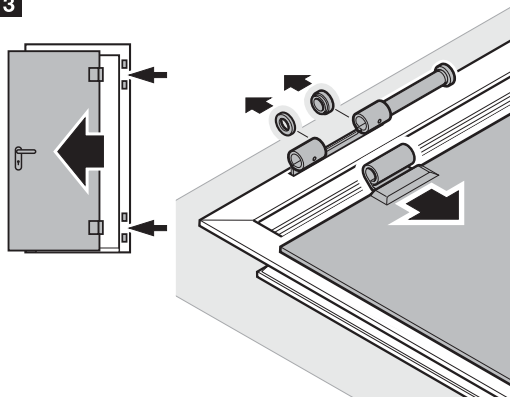
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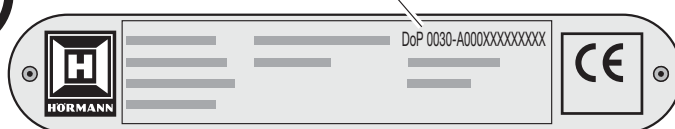
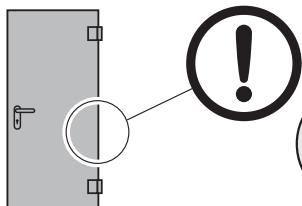
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3



4

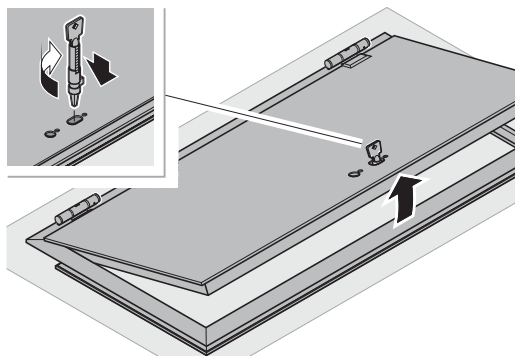


8.3b

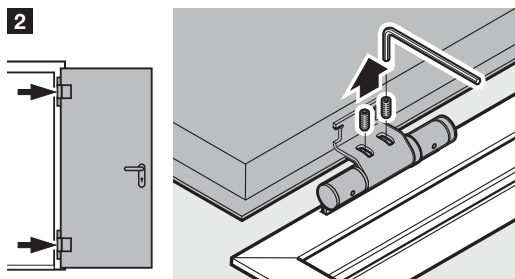
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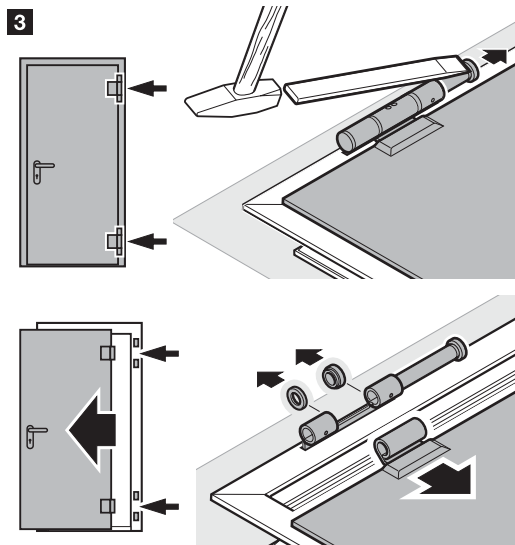
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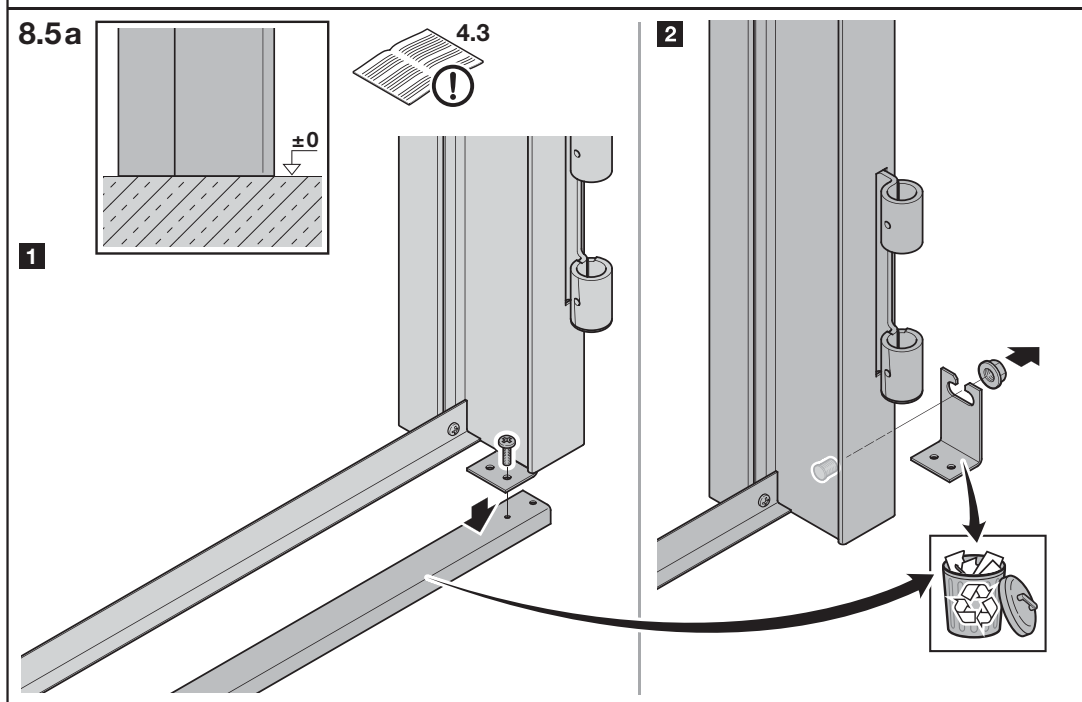
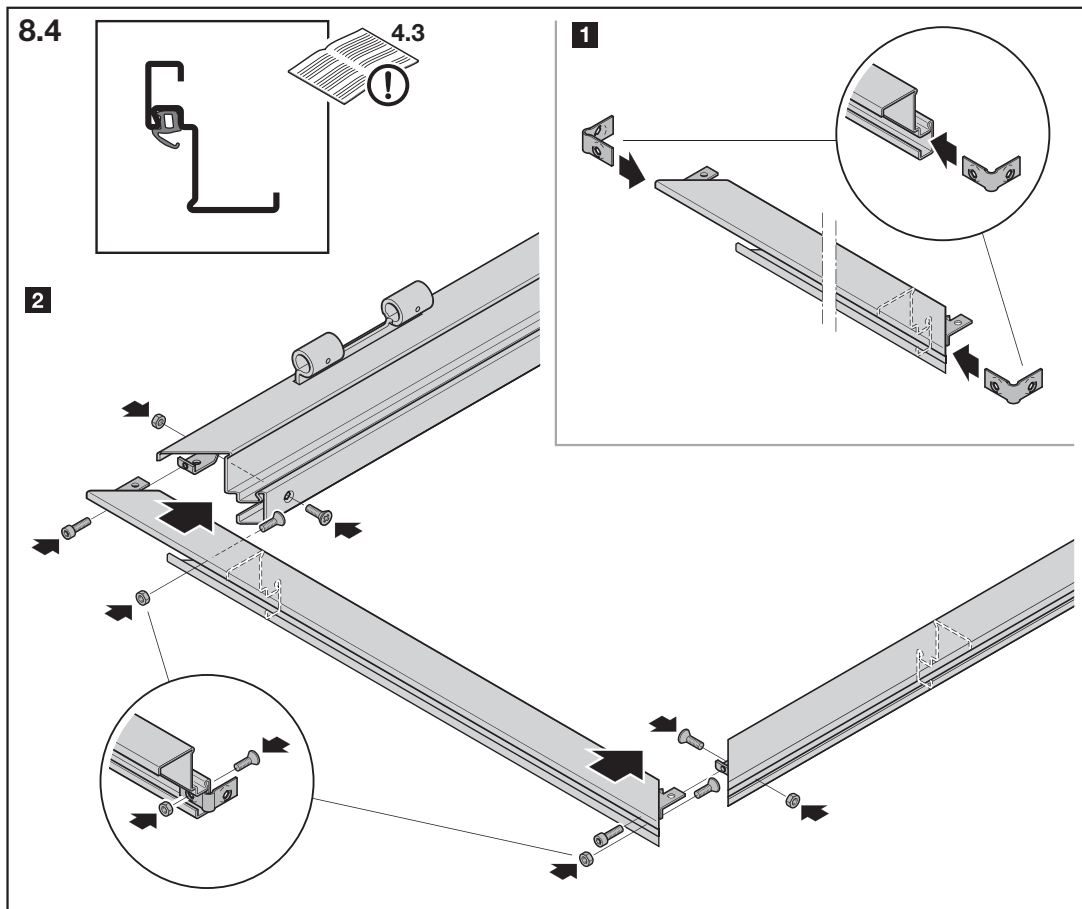


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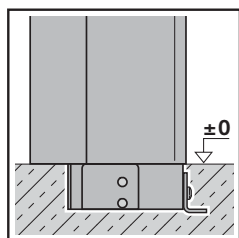
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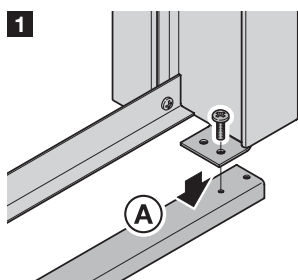


8.5b

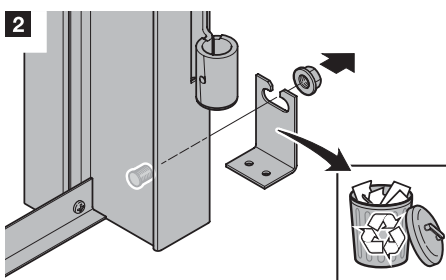
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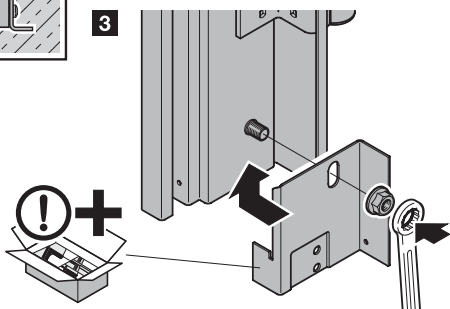
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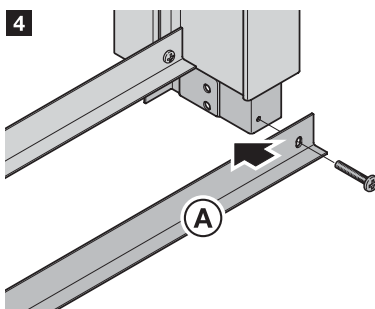
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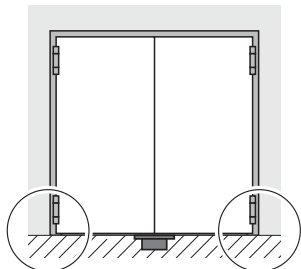
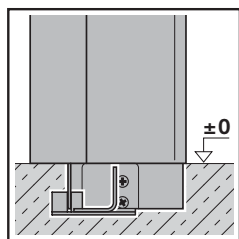


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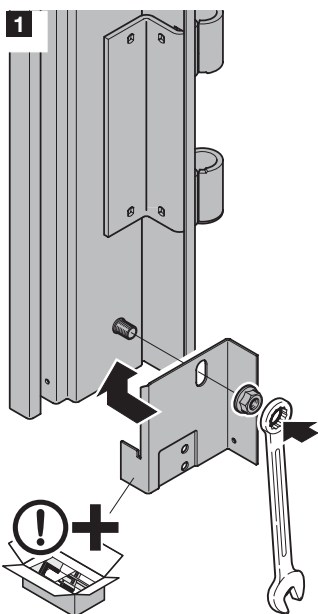


8.5c

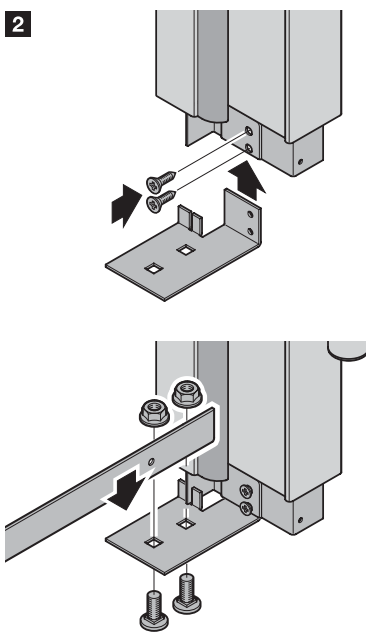
4.3



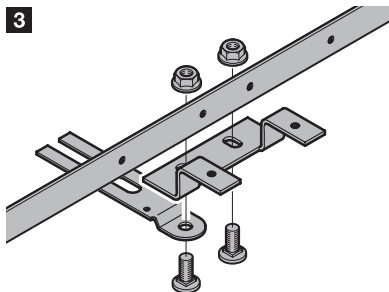
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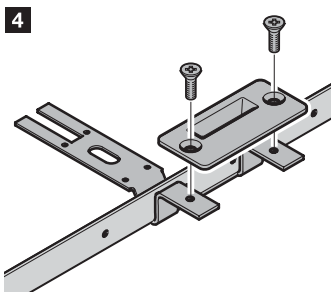
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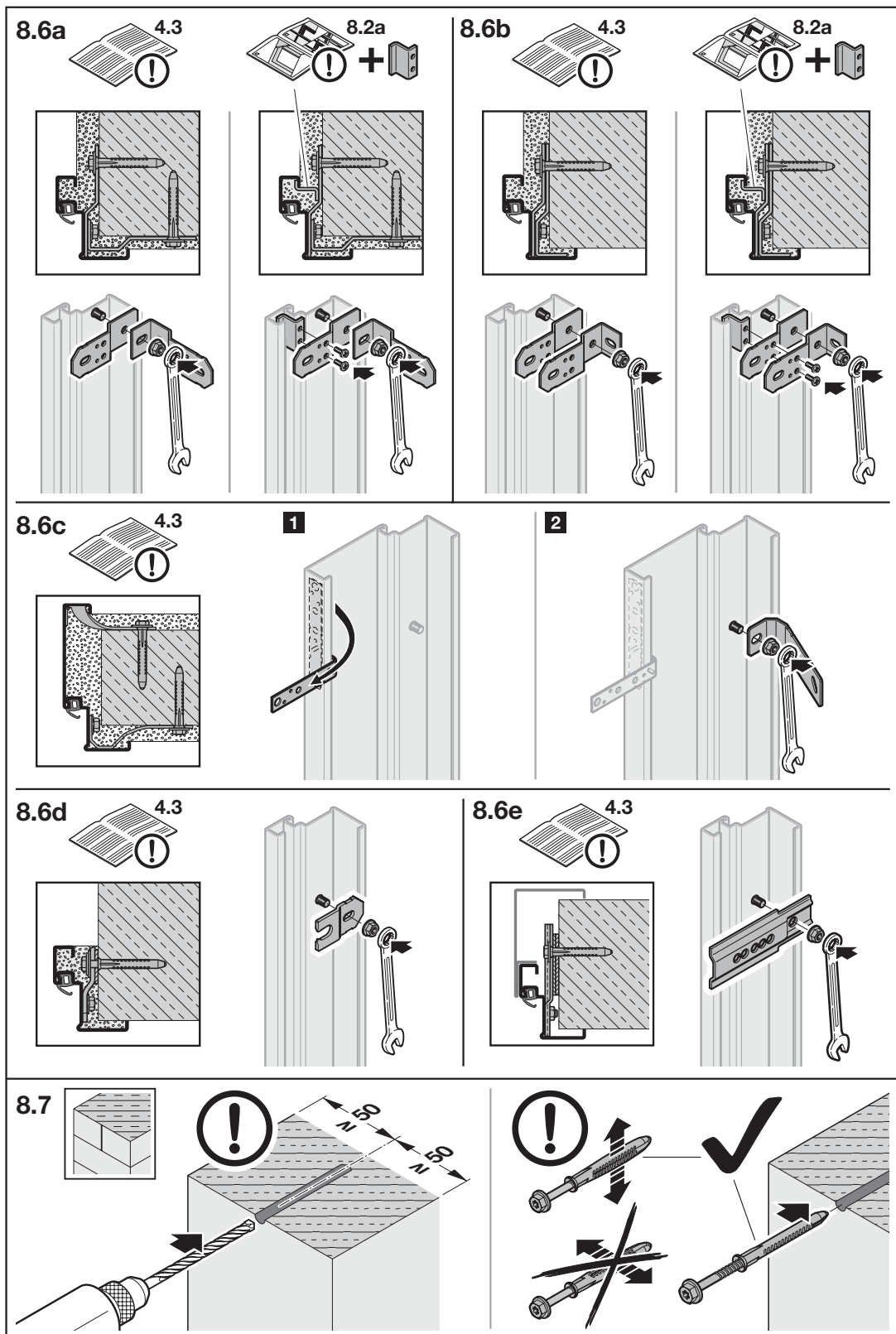


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4



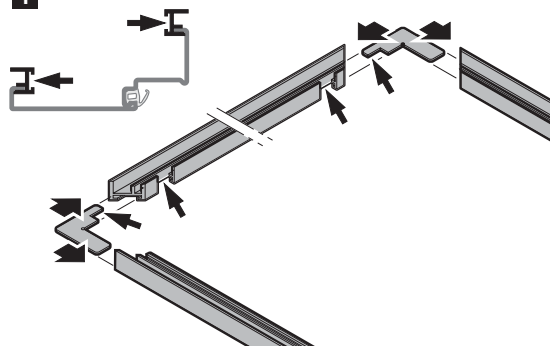


8.8

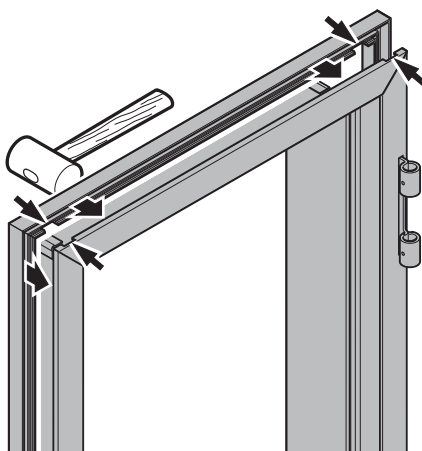
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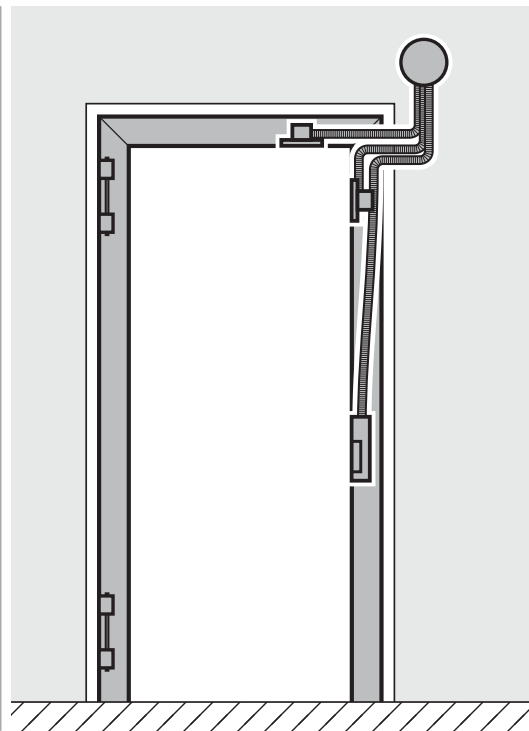
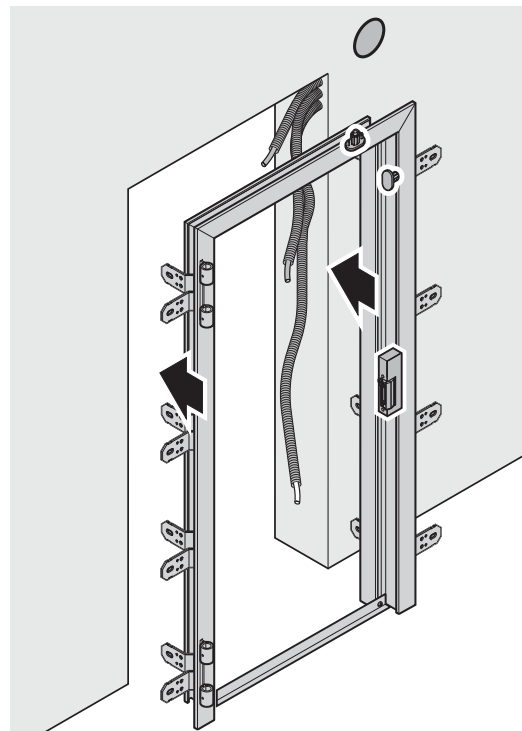
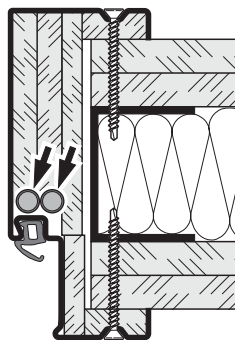
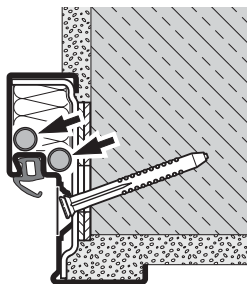
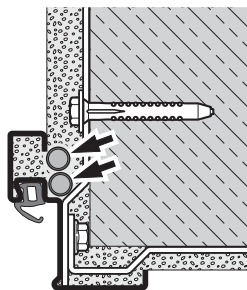
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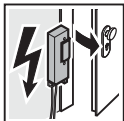
2



8.9



8.10

AC
~DC
≡

I.S.T. Systems

FT200/FT201

x

x

x

x

142 UF

x

x

x

x

x

x

effeff

143

x

x

x (T90/2)

x

x

x

x

14/34

x

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x

x

x

Dorma

447/Basic

x

x

x

x

x

Lucky Basic

x

x

x

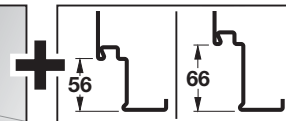
x

x

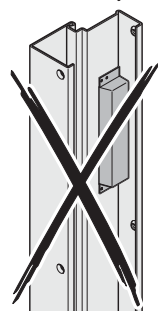
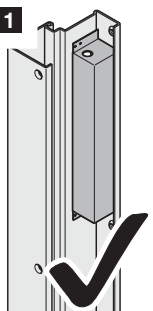
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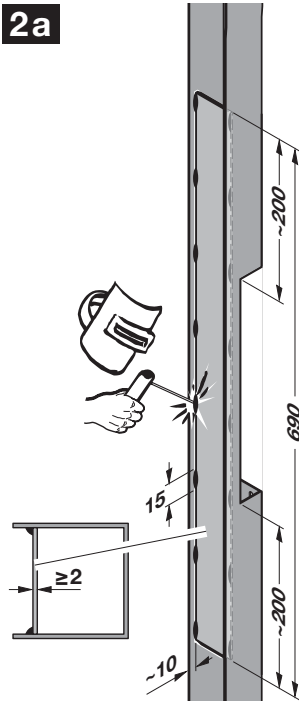
8.12



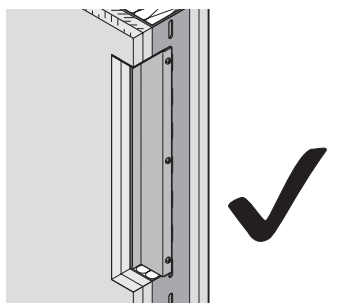
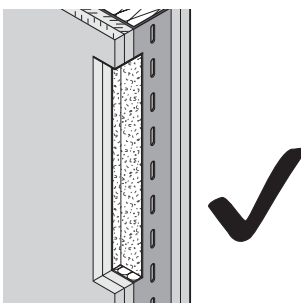
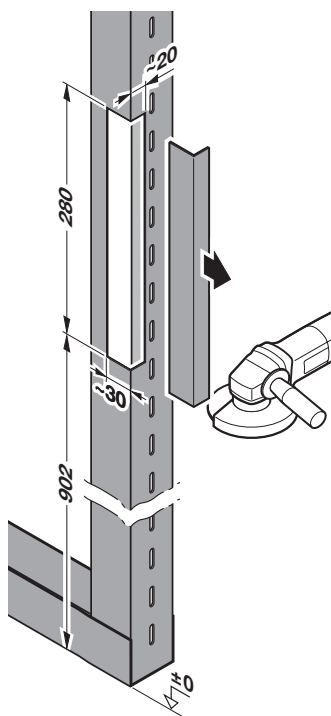
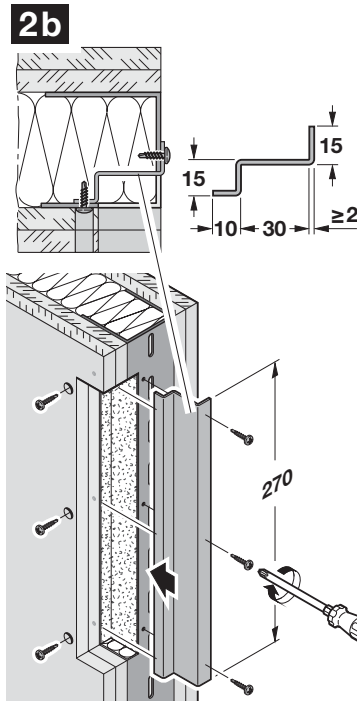
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2a



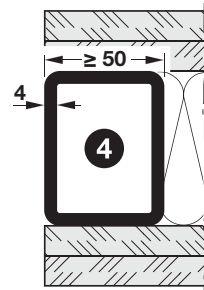
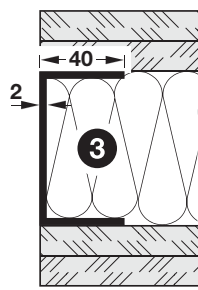
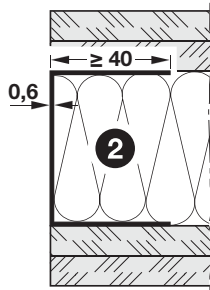
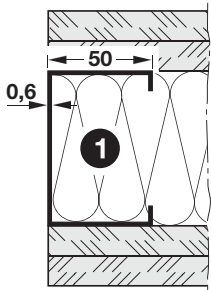
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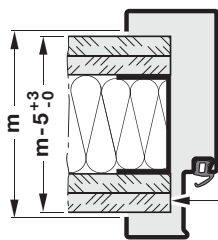
8.12

4.2

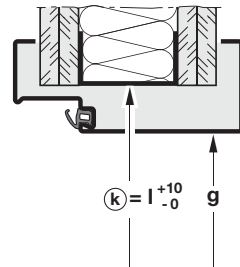
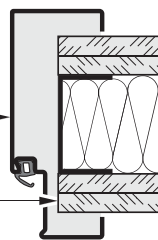
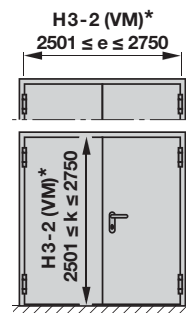
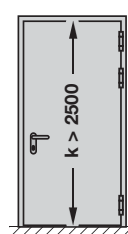
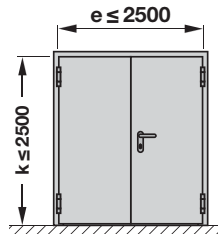
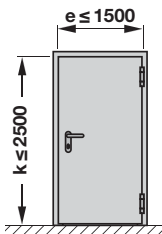
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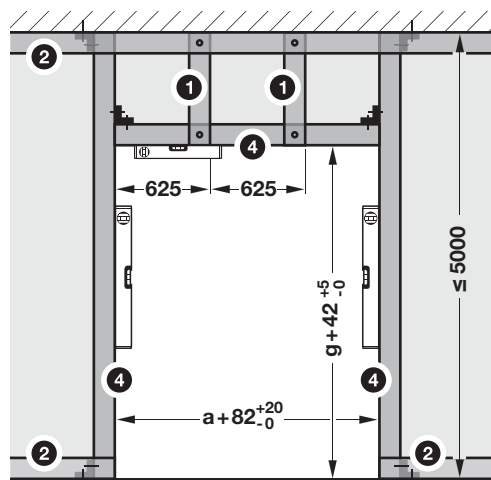
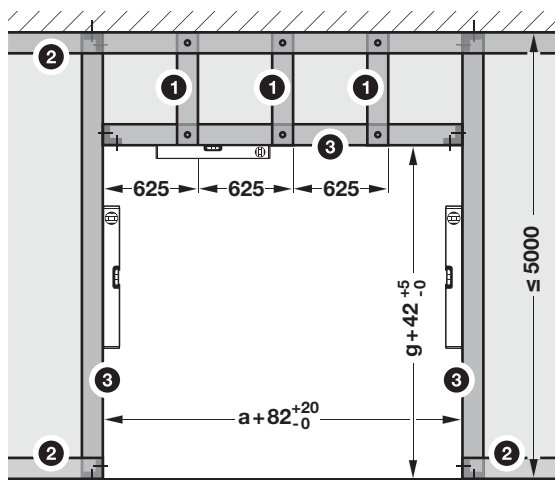
i www.felko-systeme.de



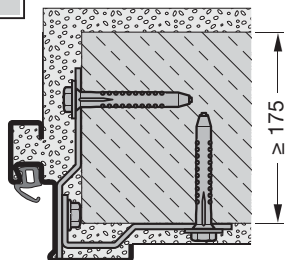
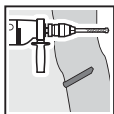
a

 $e = f + 20 - 0$

 $k = l + 10 - 0$


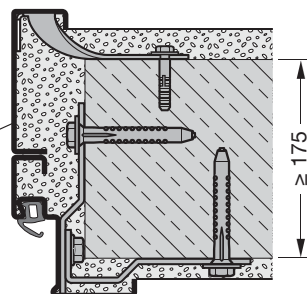
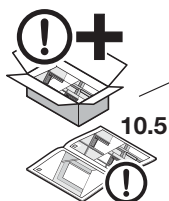
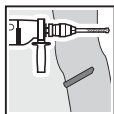
*www.felko-systeme.de



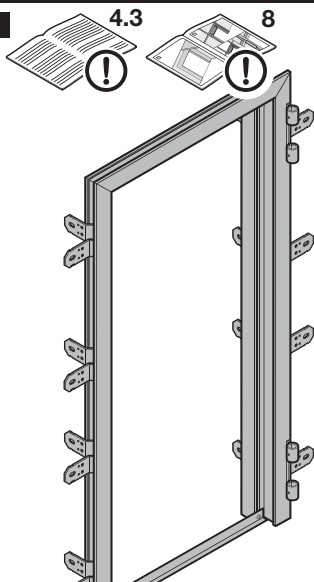
9/A1



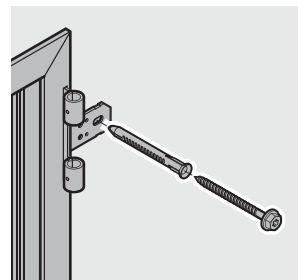
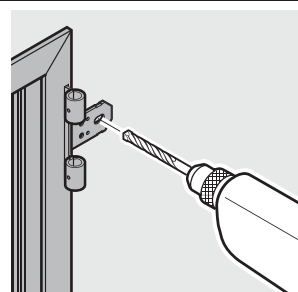
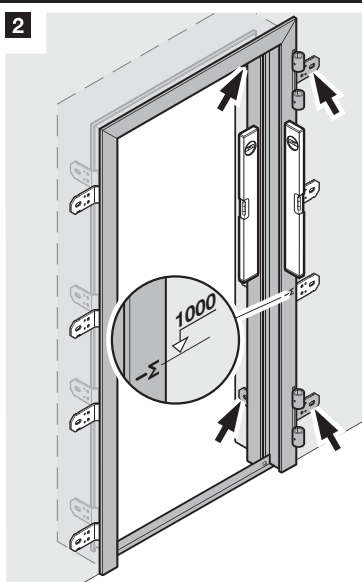
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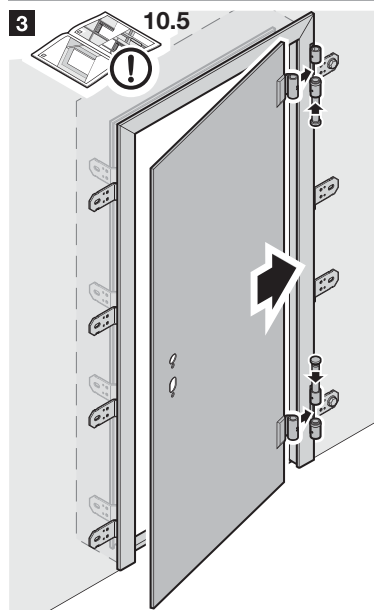
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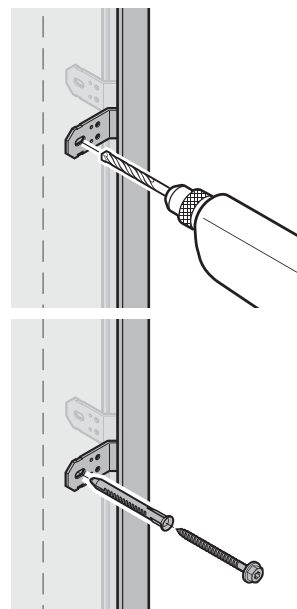
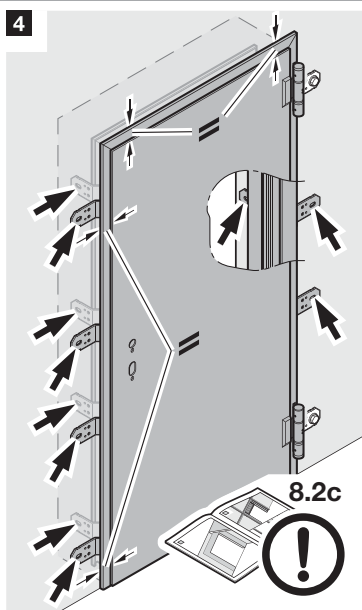
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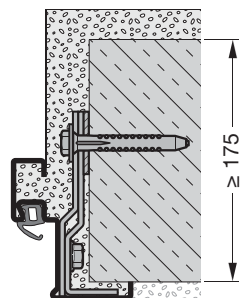
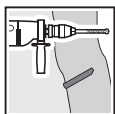
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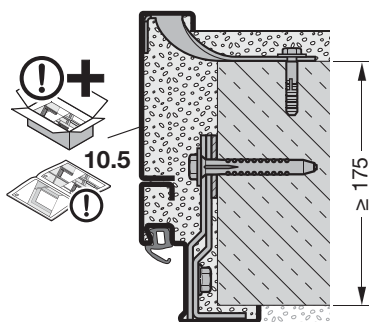
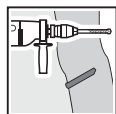
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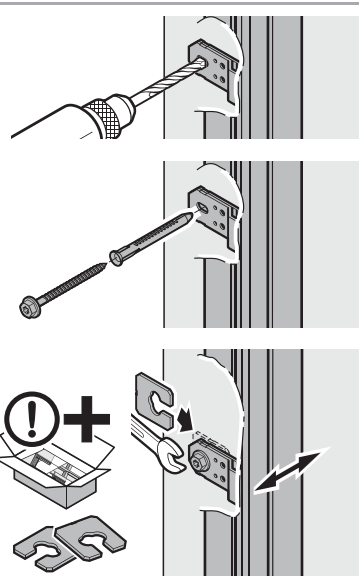
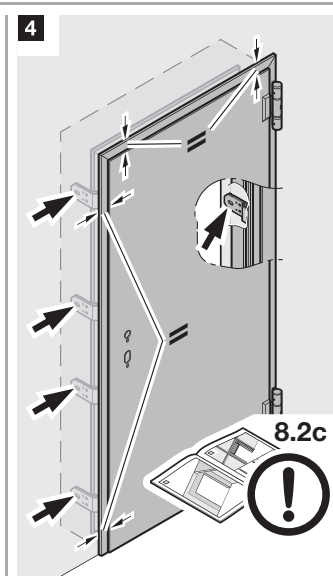
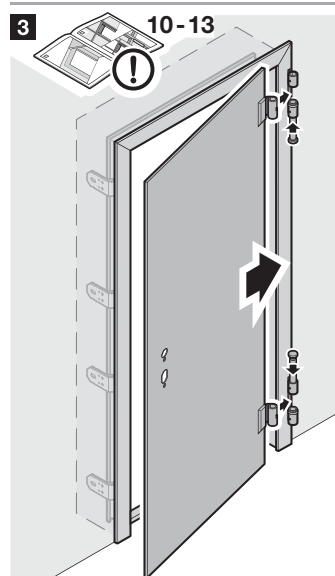
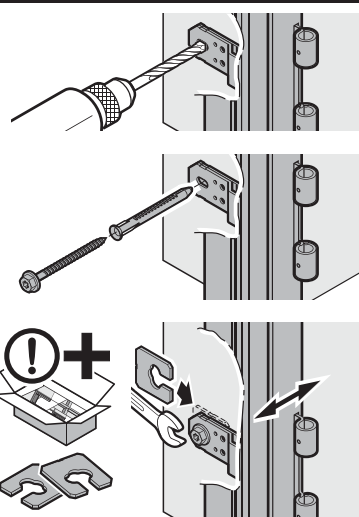
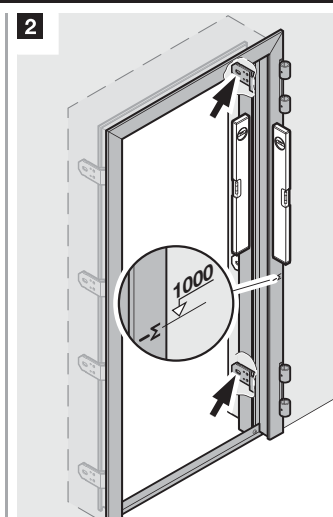
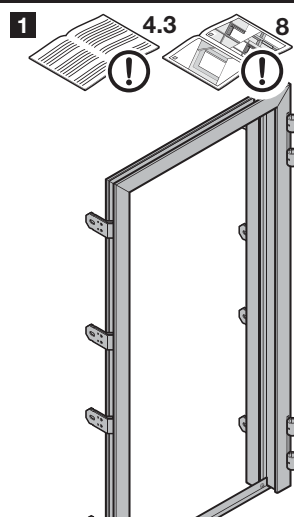
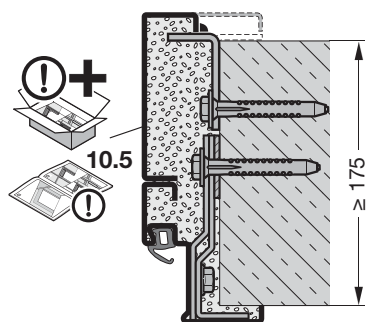
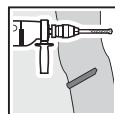
9/A3



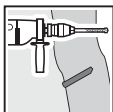
9/A4



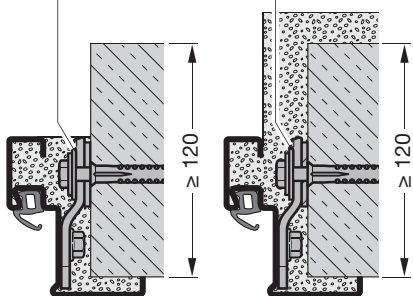
9/A5



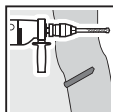
9/A6



DIN 9021-8.4-140 HV

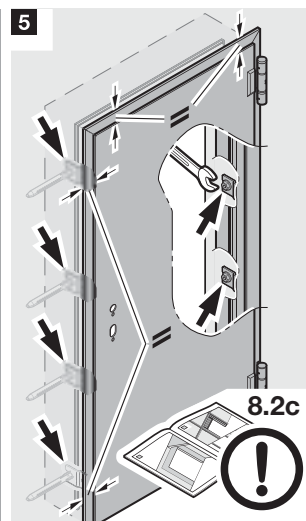
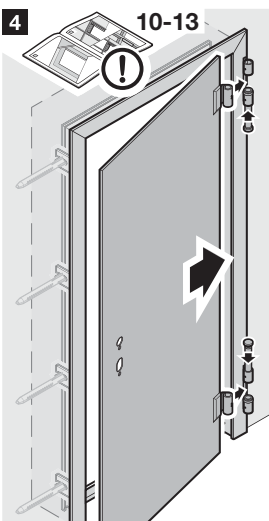
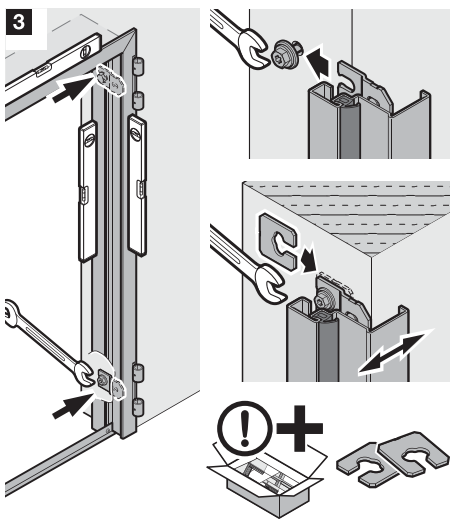
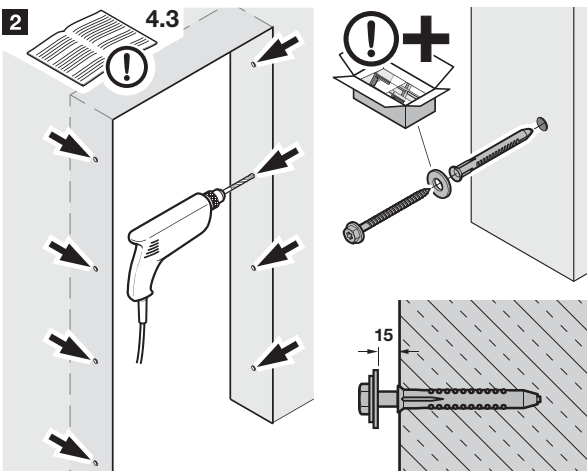
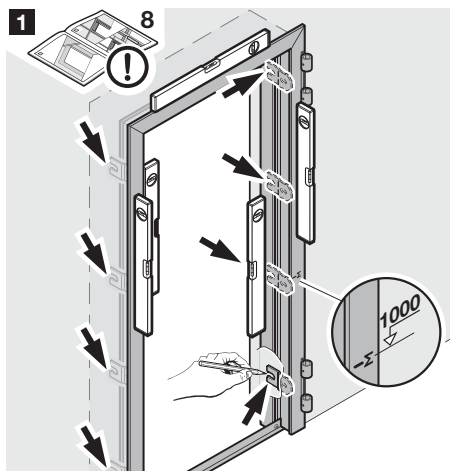
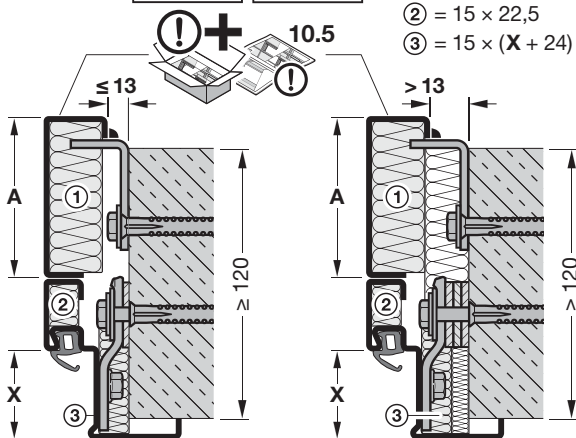


9/A7
max. T30

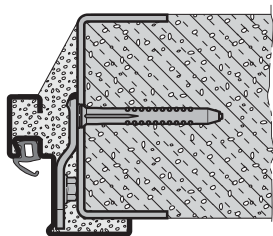
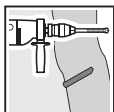


$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100

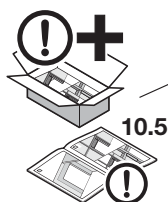
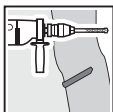
- ① = $30 \times (A - 5)$
- ② = $15 \times 22,5$
- ③ = $15 \times (X + 24)$



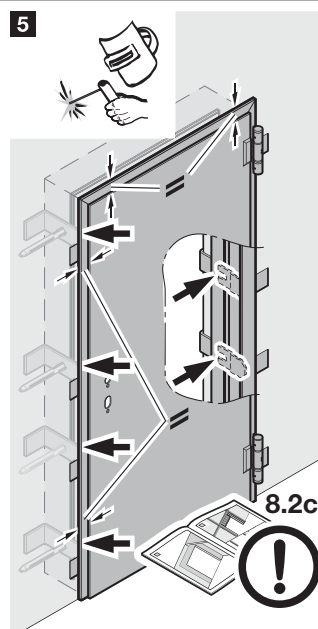
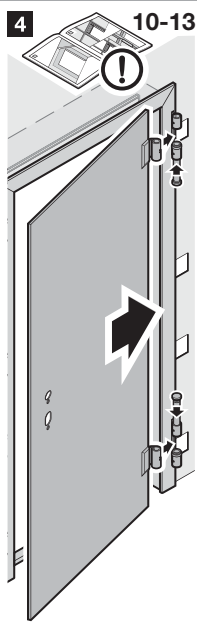
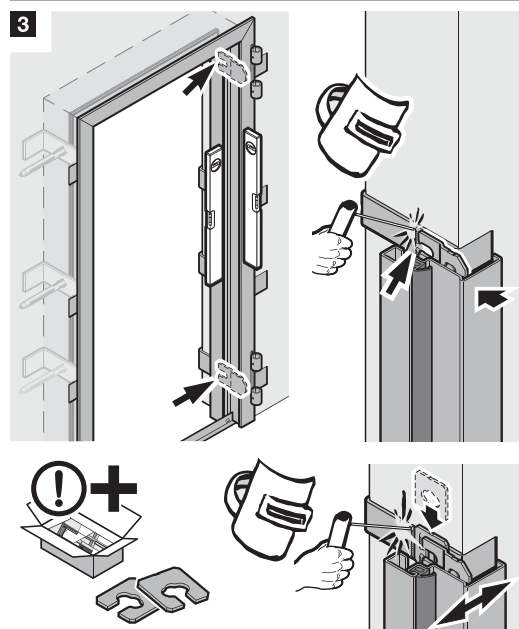
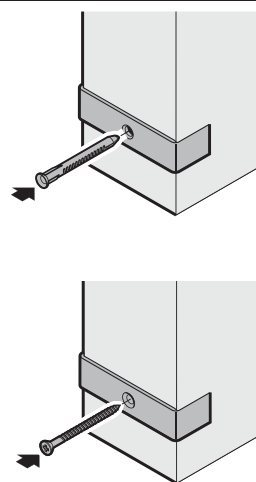
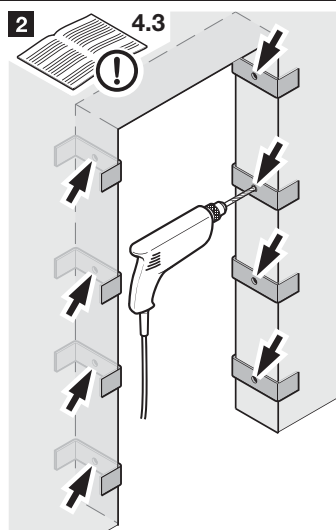
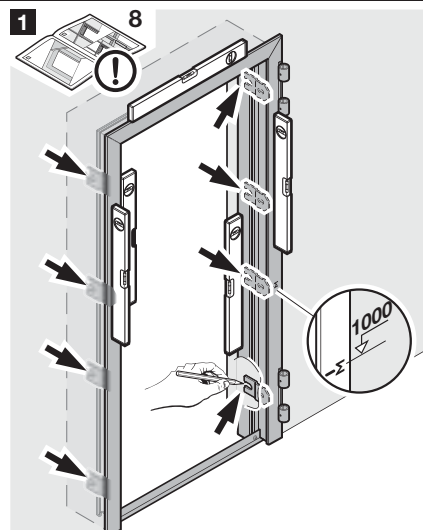
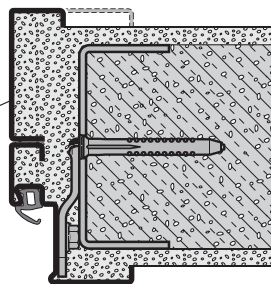
9/A8



9/A9



10.5

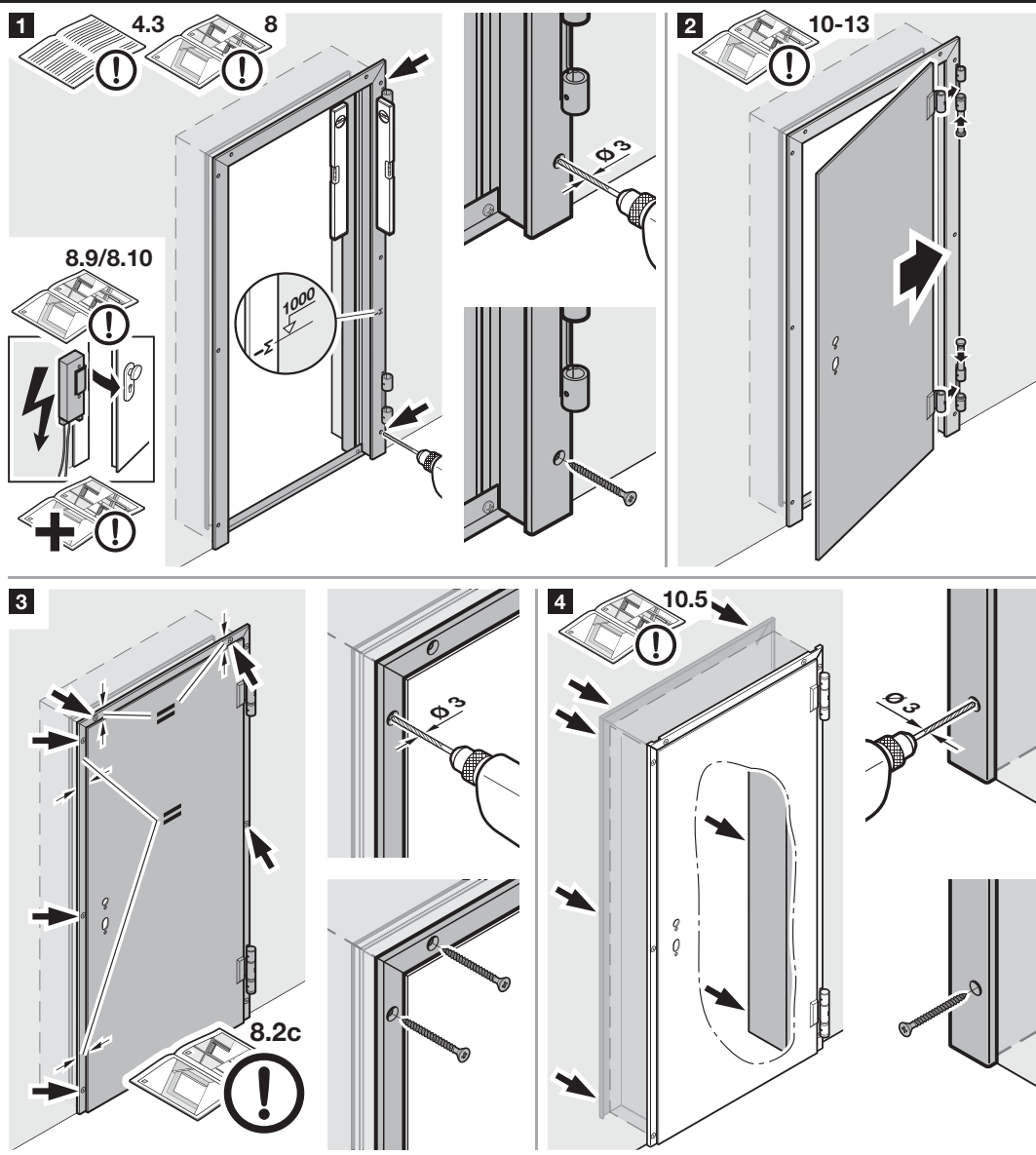
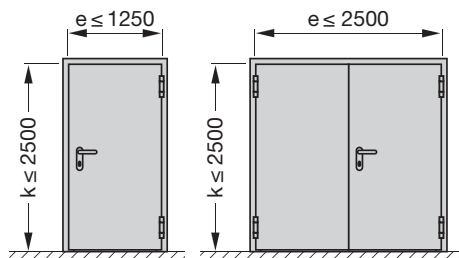
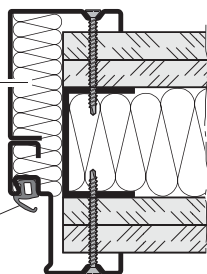


9/A10

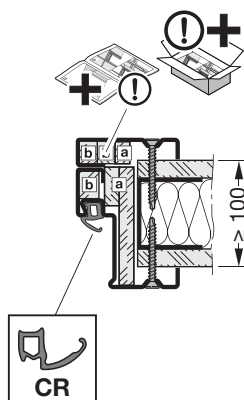
max. T30/
EI₂30



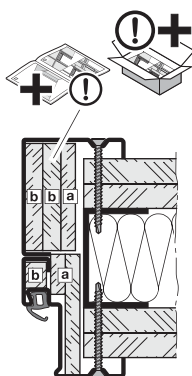
$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



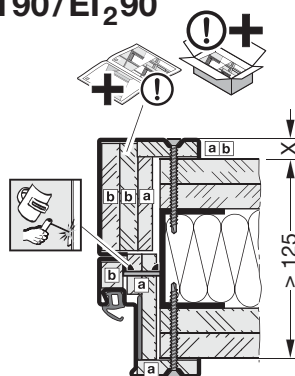
9/A11



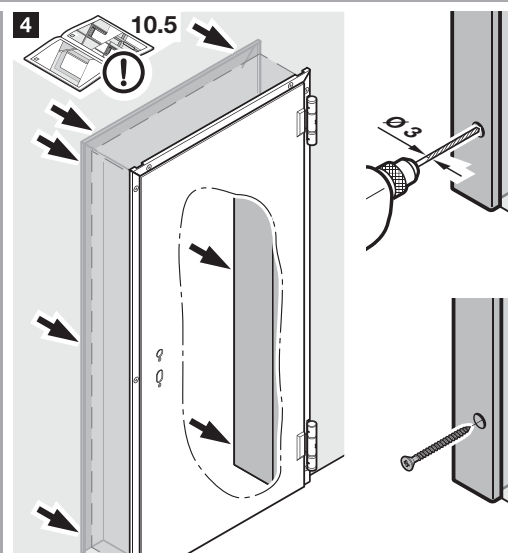
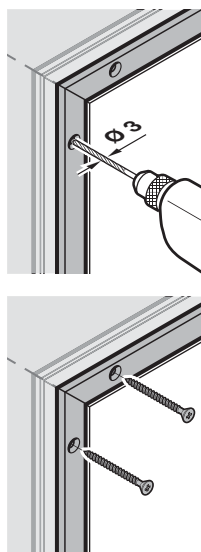
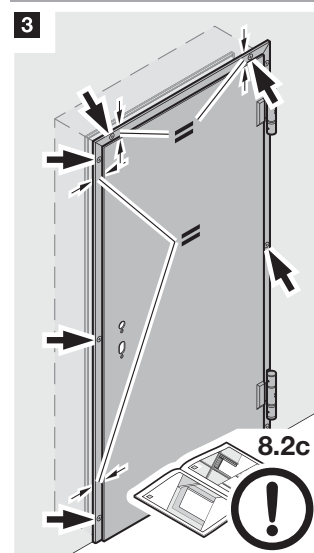
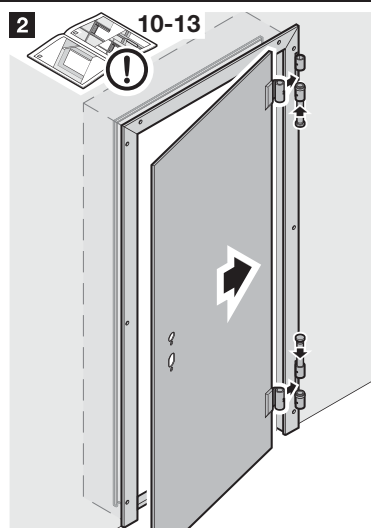
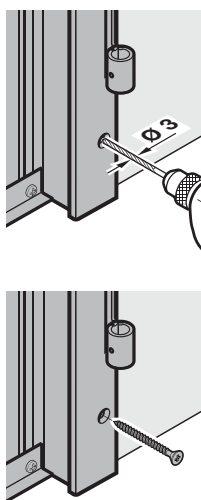
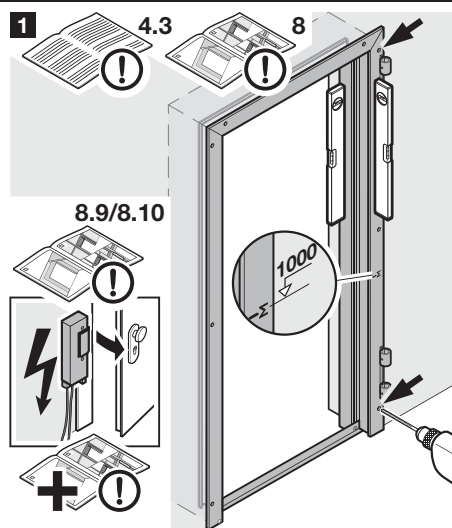
9/A12



9/A13
T90/EI₂90

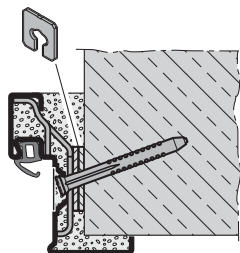
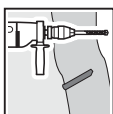


a A-9,5-EN 520 / b A-12,5-EN 520 / X = 10 → a / X = 15 → b



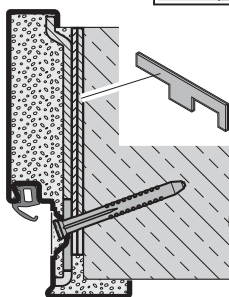
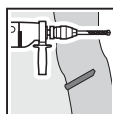
9/A14

max. T30/
EI₂30

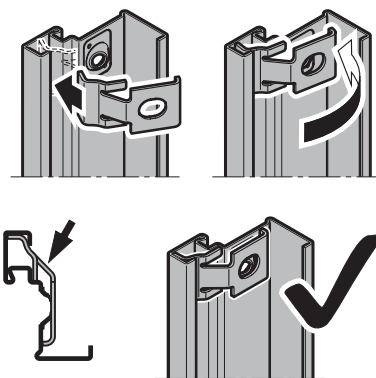


9/A15

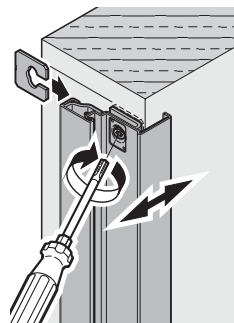
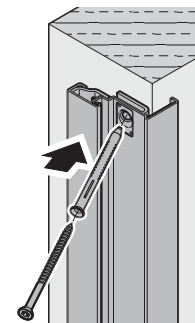
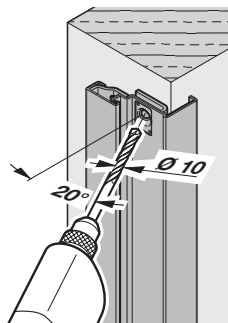
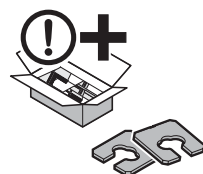
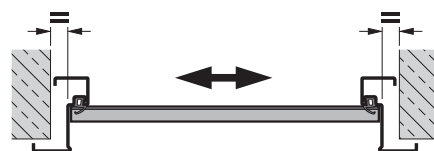
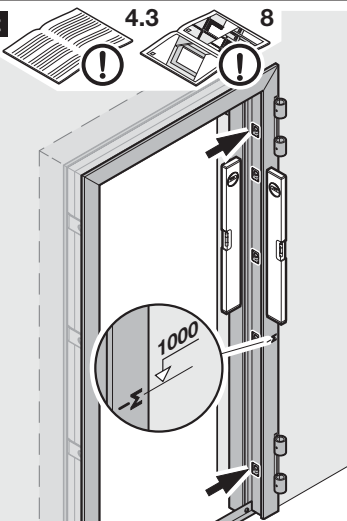
max. T90/
EI₂90



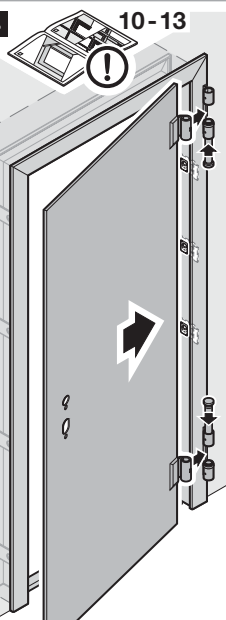
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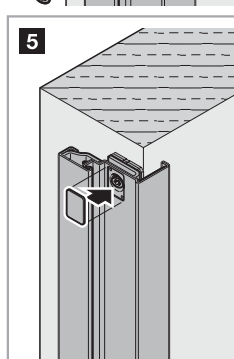
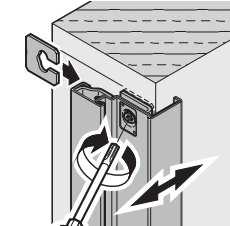
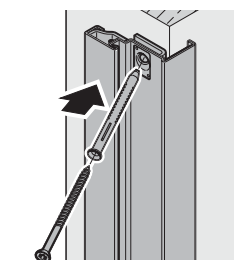
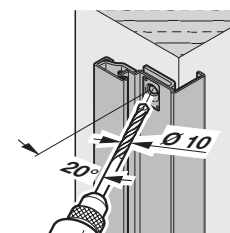
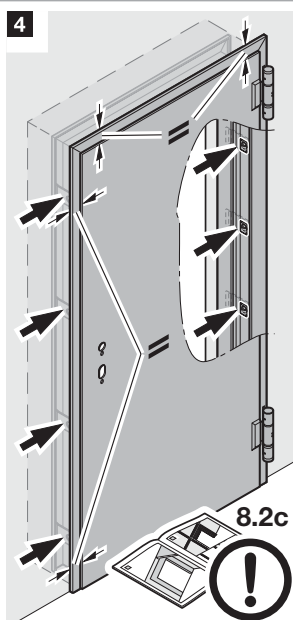
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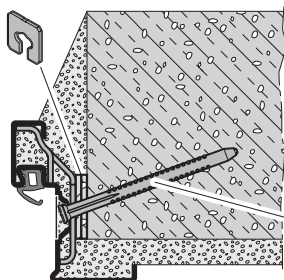
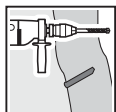
3



4

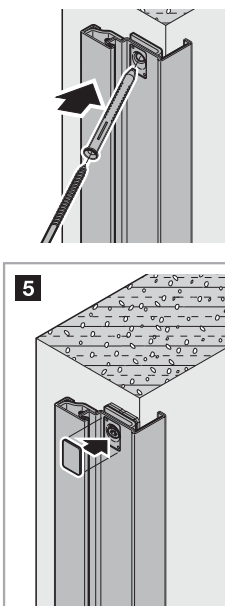
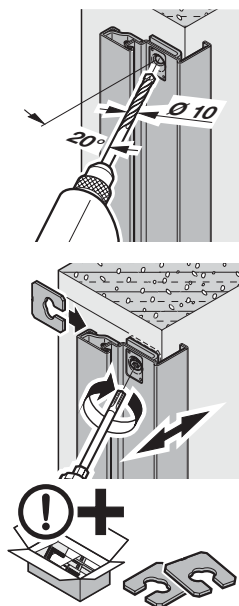
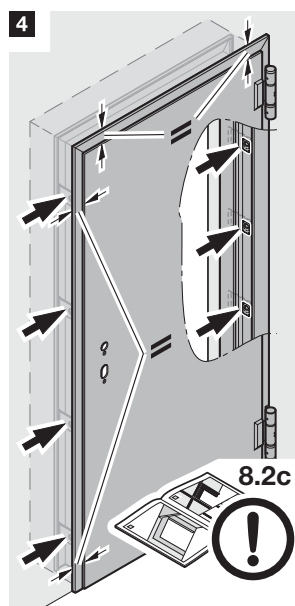
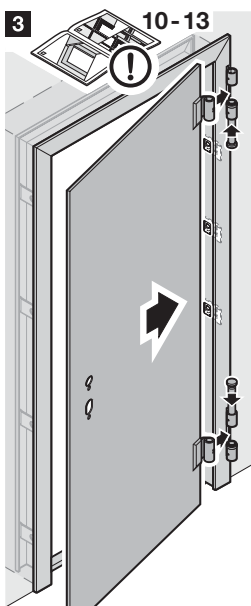
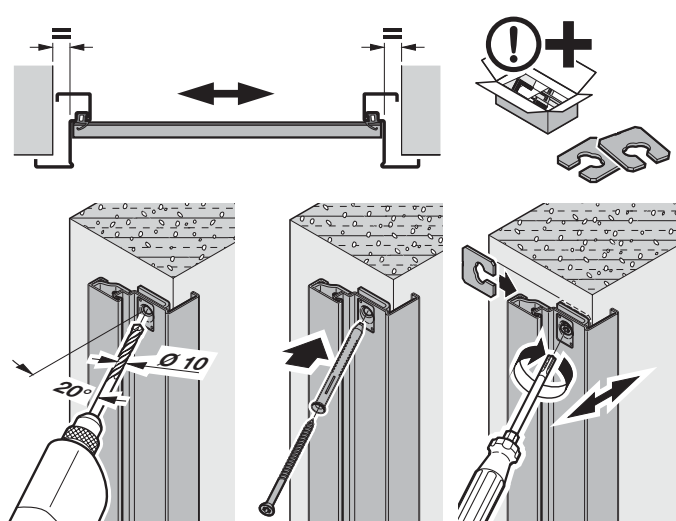
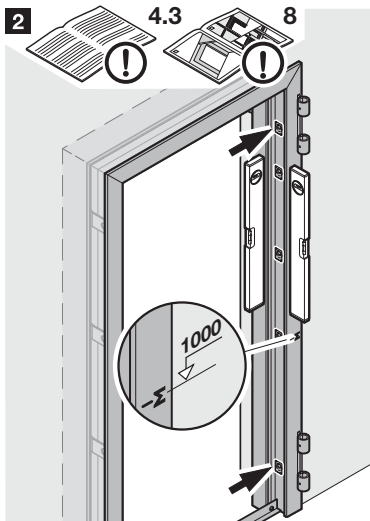
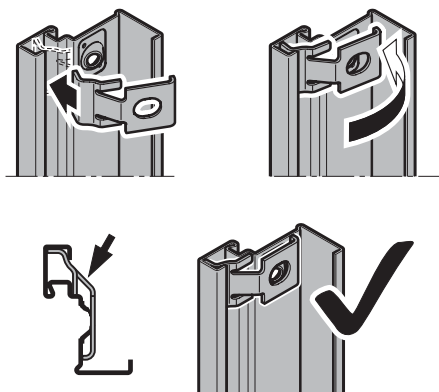


9/A16
max. T30

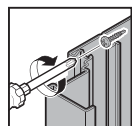
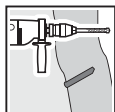


FUR 10 x 160

1



9/A17



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

max. 56

Multi Gips
FG70



VG ORTH

100



$2\sqrt{x} > 10$

max. 56

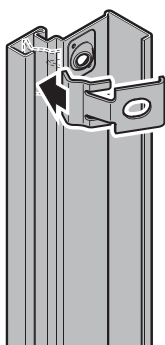
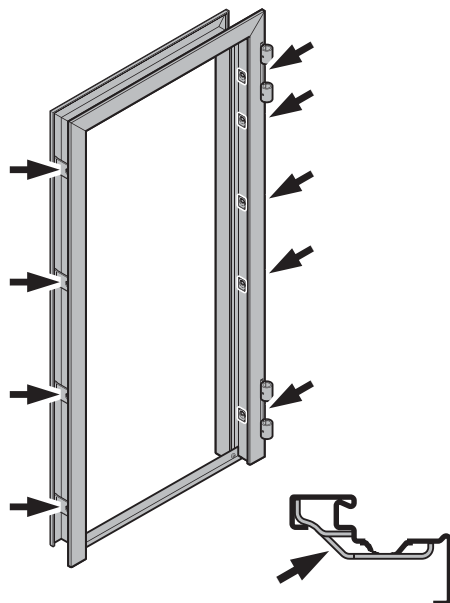
Multi Gips
FG70



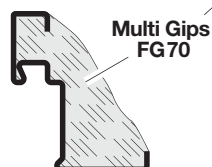
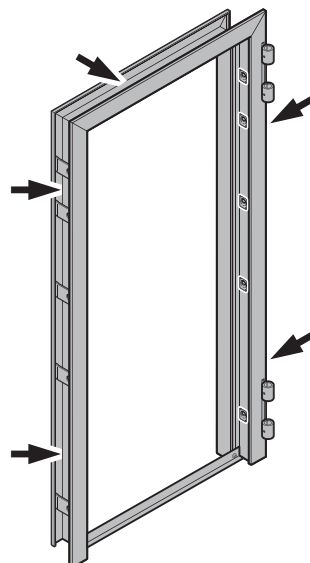
VG ORTH

100

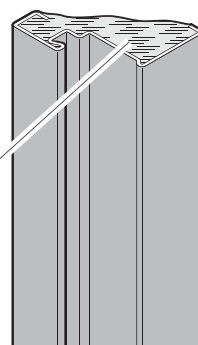
1



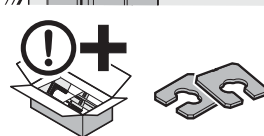
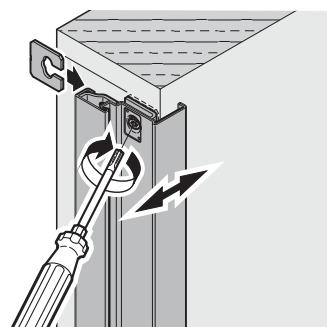
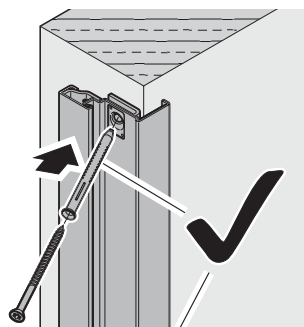
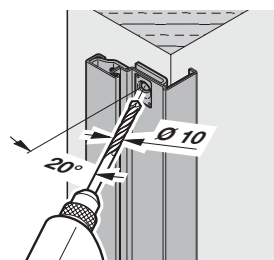
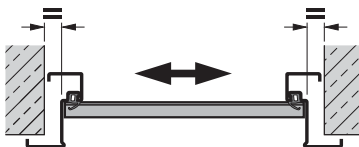
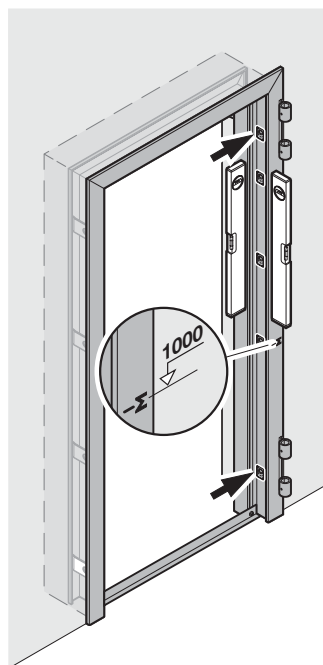
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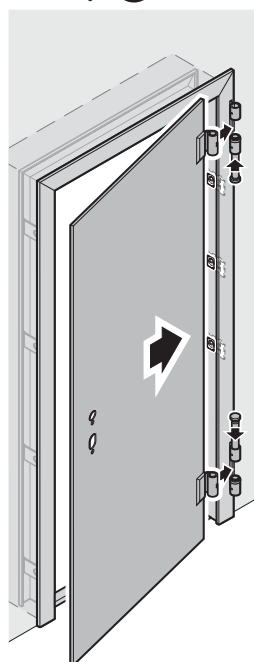
Multi Gips
FG70



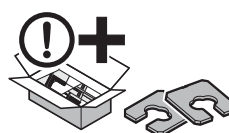
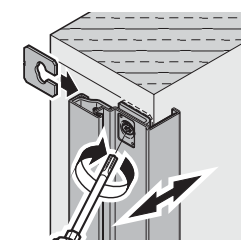
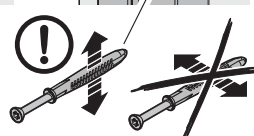
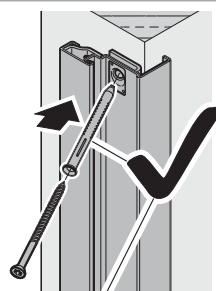
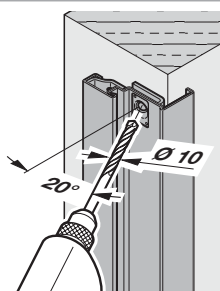
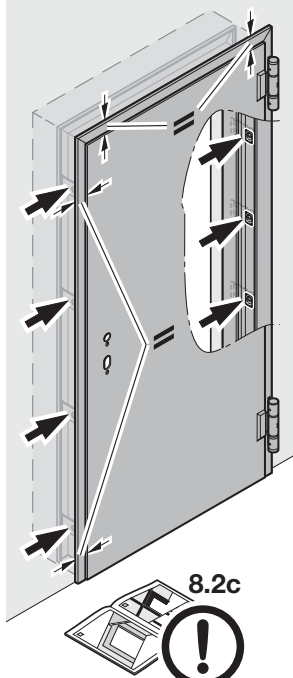
3 4.2/4.3 8



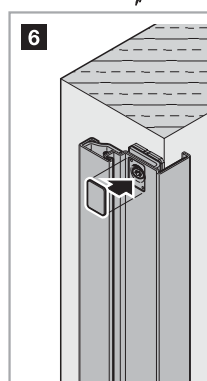
4 10-13



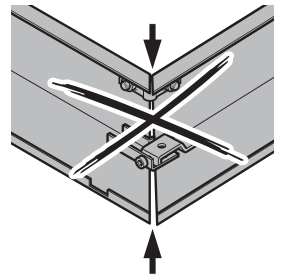
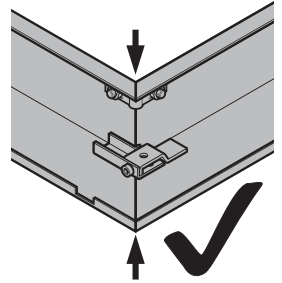
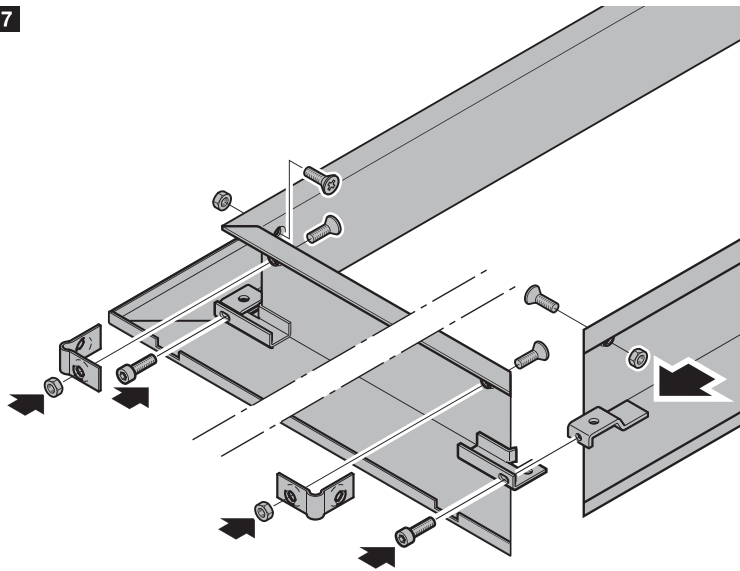
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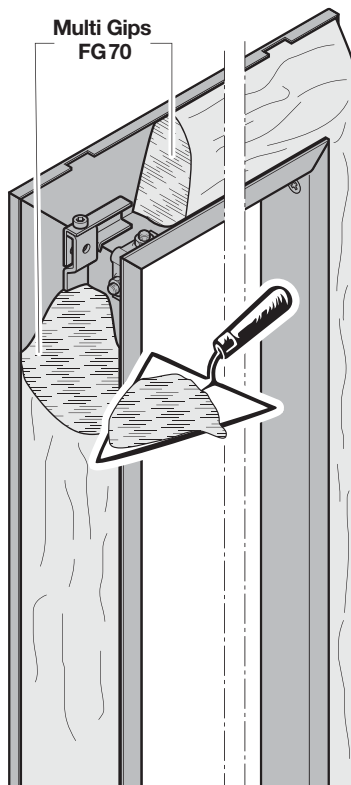
6



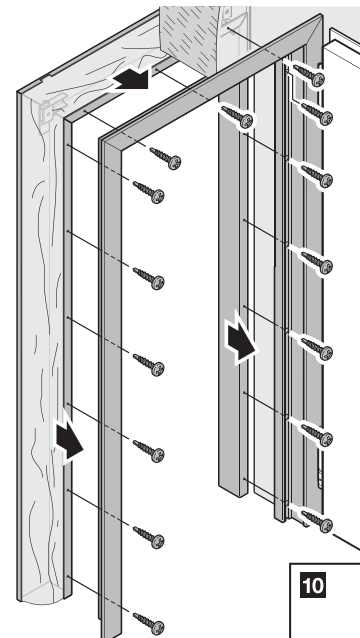
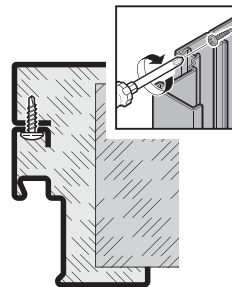
7



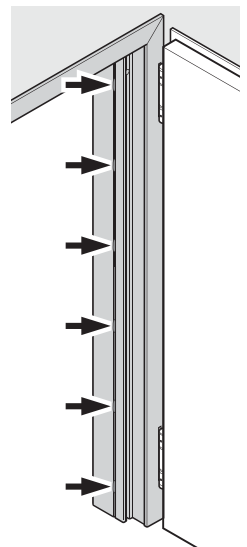
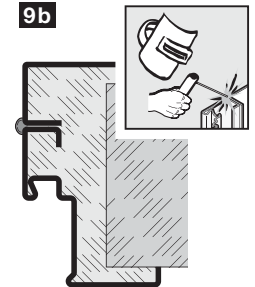
8



9a



9b



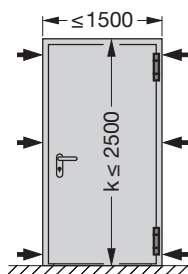
10



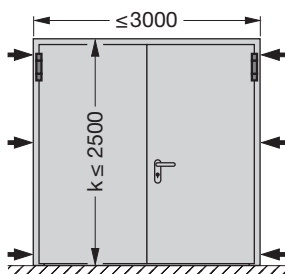
10.7a

9/B1-B14

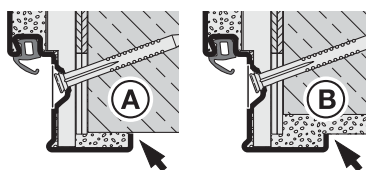
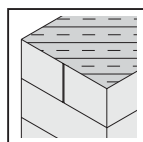
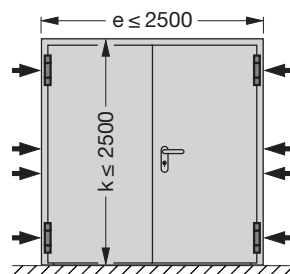
D65 - 1 OD



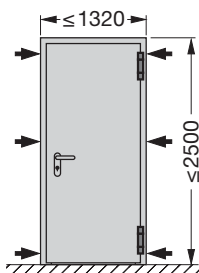
D65 - 2 OD



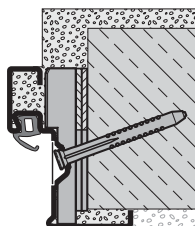
H3 - 2 OD



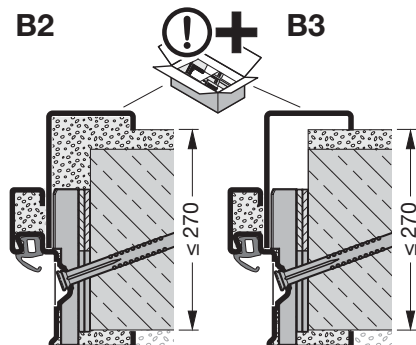
H3 - 1 OD



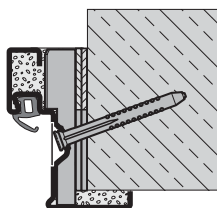
B1



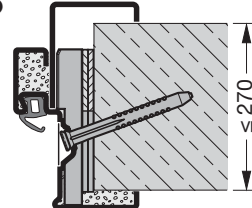
B2



B4

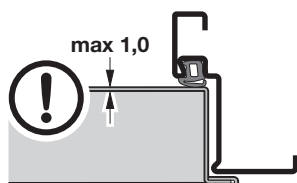
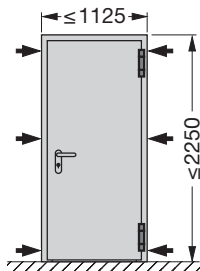


B5



max. T30/EI₂₃₀

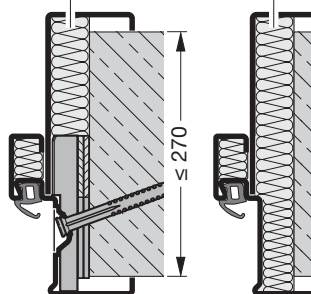
H3 - 1 OD



B6



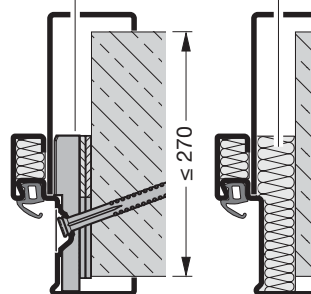
$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



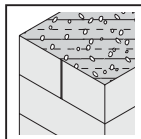
B7



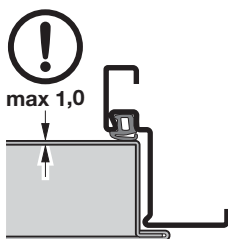
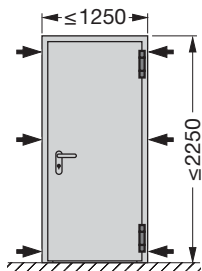
$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



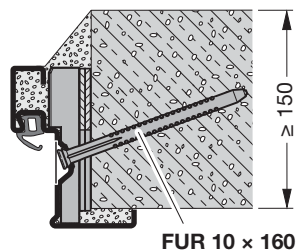
➔ 1 2 3a 4 ...



H3-1 OD

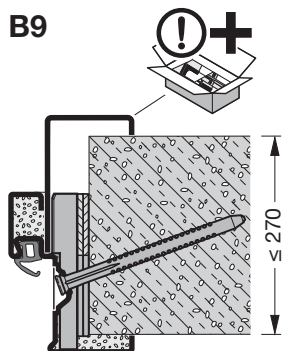


B8

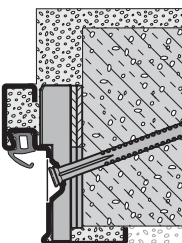


FUR 10 x 160

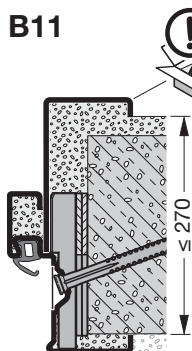
B9



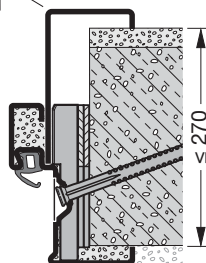
B10



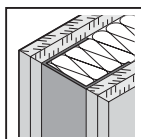
B11



B12

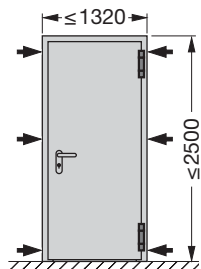


➔ 1 2 3a 4 ...



max. T30/EI₂₃₀

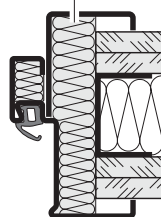
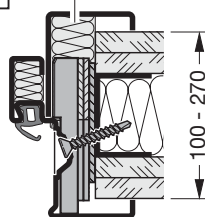
H3-1 OD



B13



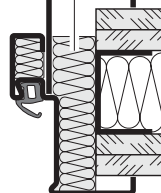
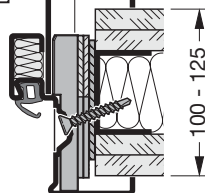
$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



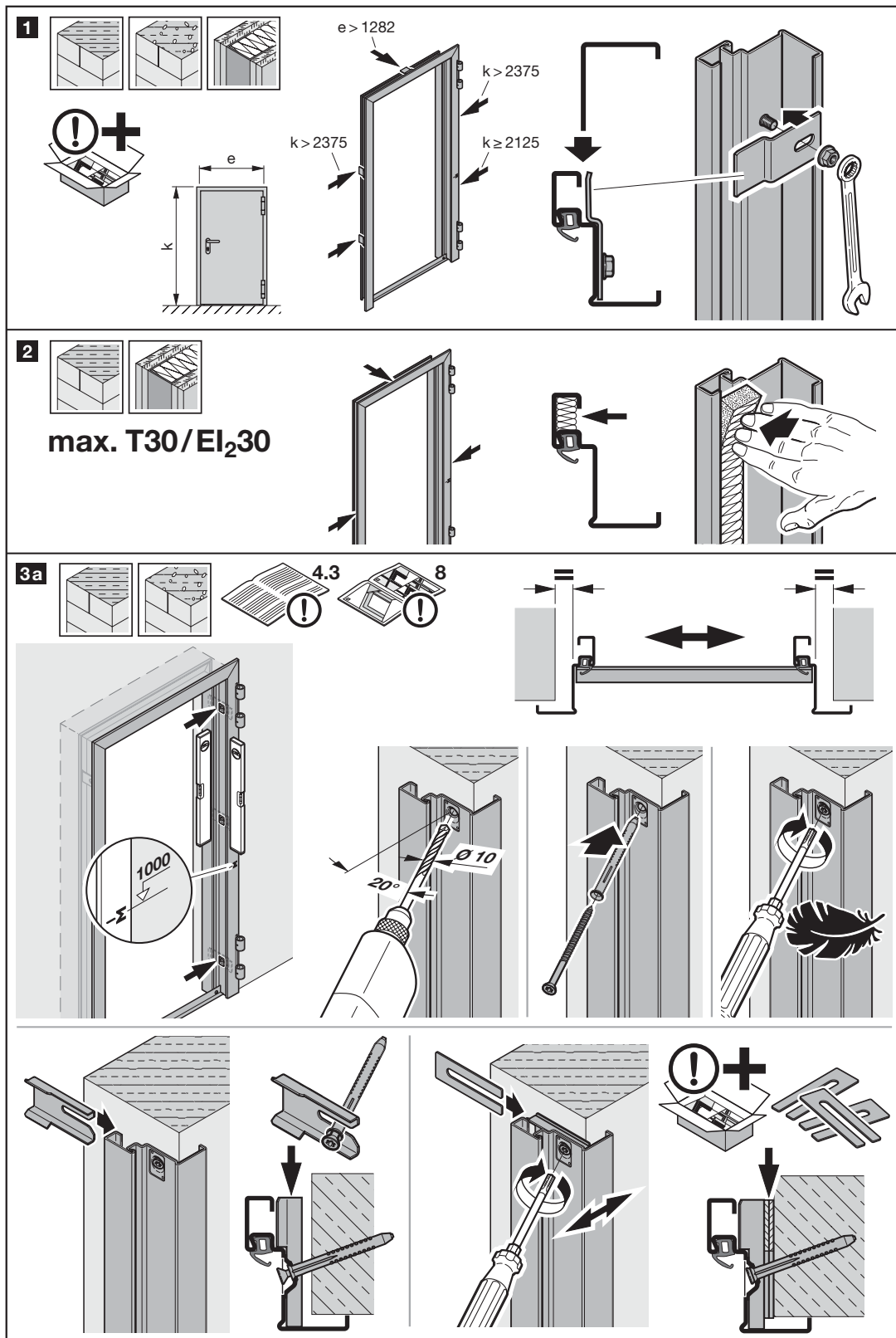
B14

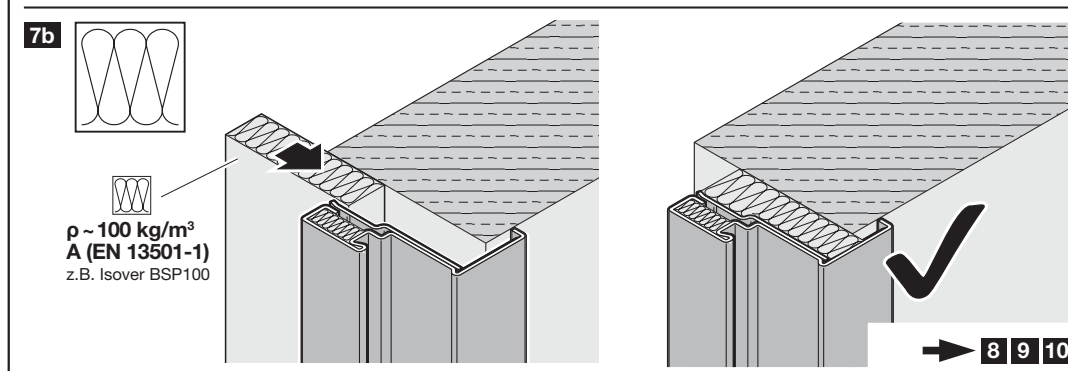
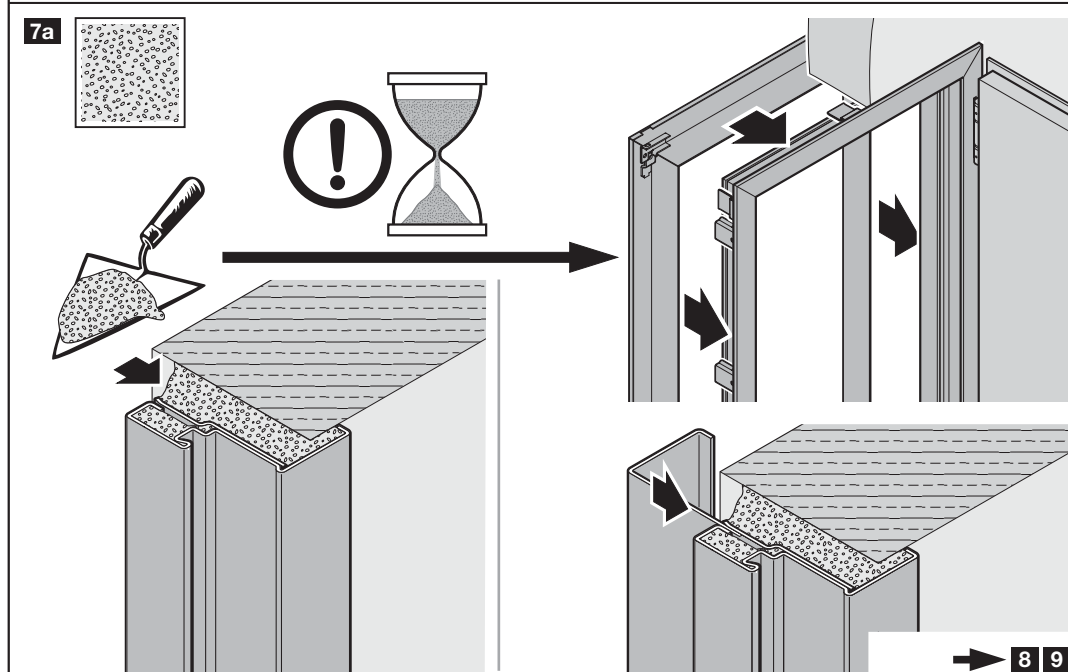
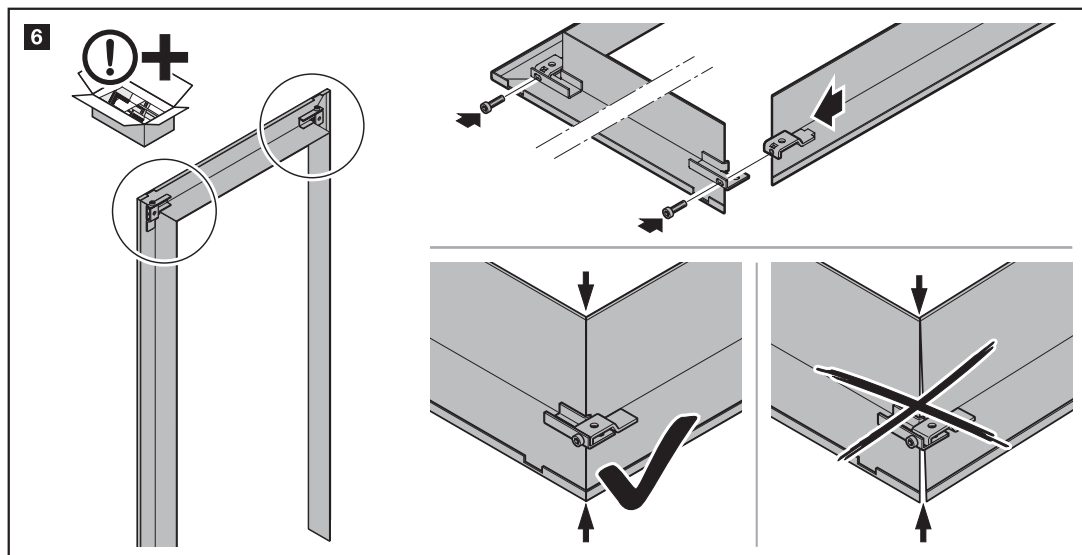


$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100

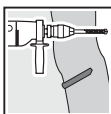
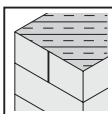


➔ 1 2 3b 4 ...

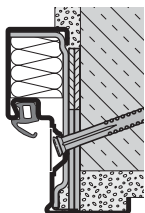




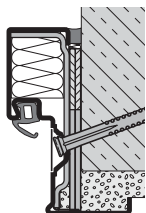
9/C1-C8
max. T30/
EI₂30



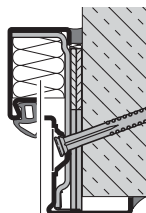
C1



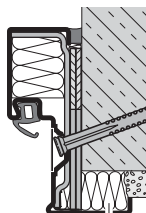
C2



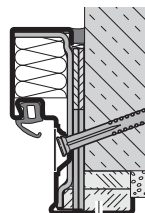
C3



C4

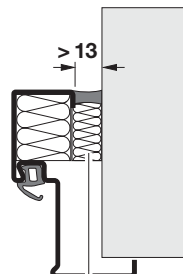


C5



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

A-EN 520

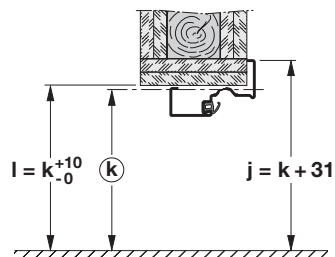
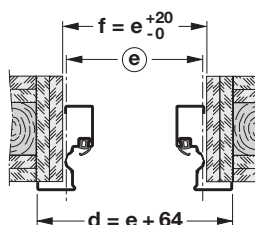


$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100

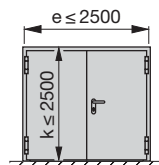
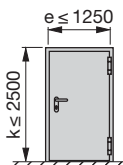
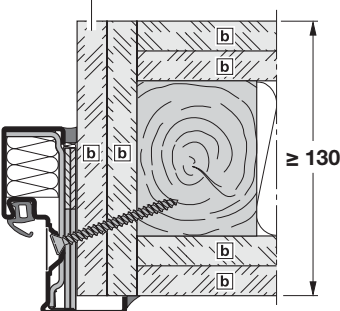
➔ 1a 2 ...

➔ 6

max. T30/
EI₂30

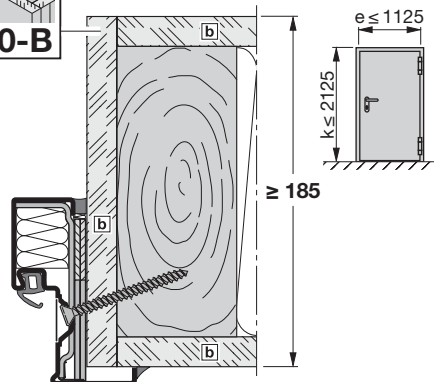


C6 F90B DIN 4102-4 Tab. 49



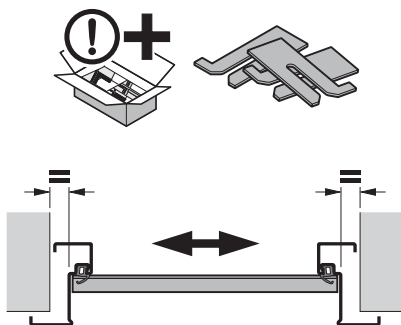
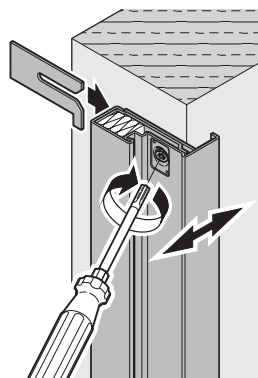
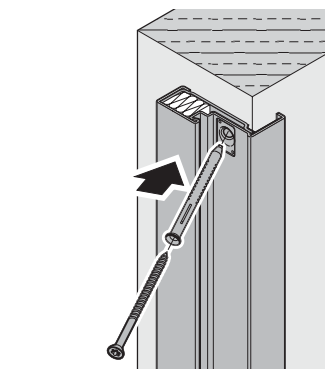
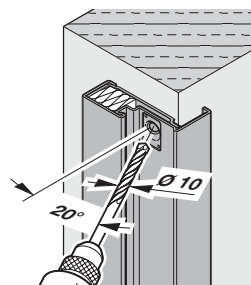
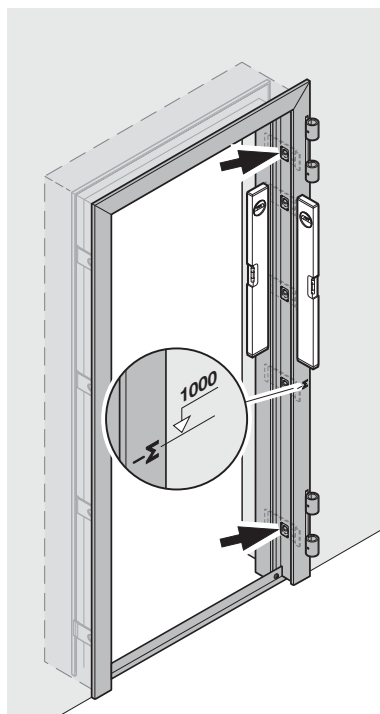
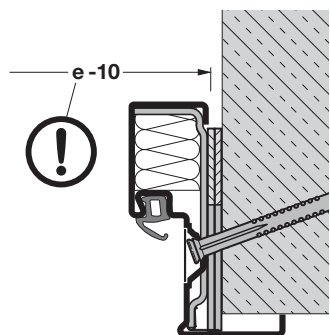
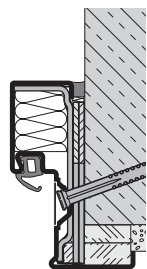
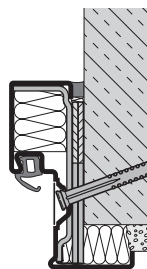
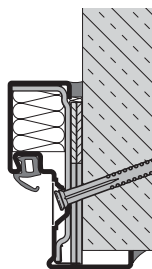
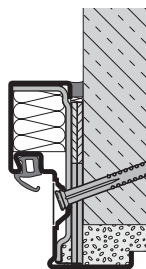
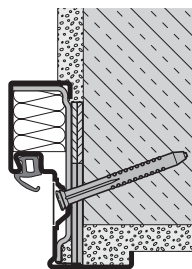
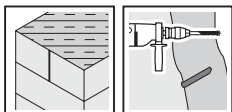
➔ A-12,5-EN 520

C7 F30B DIN 4102-4 Tab. 49



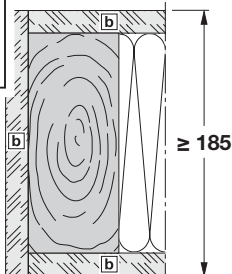
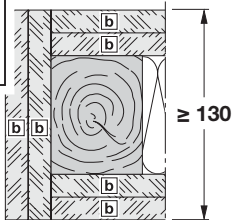
➔ 1b 2 ...

1a



➔ 2

1b

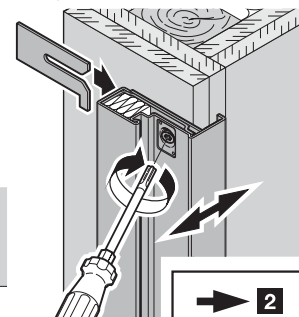
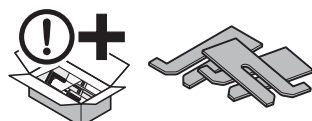
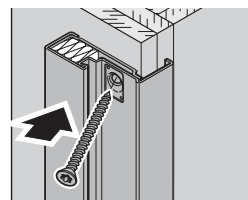
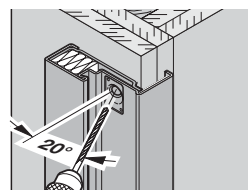
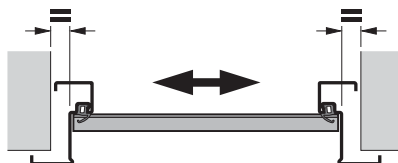
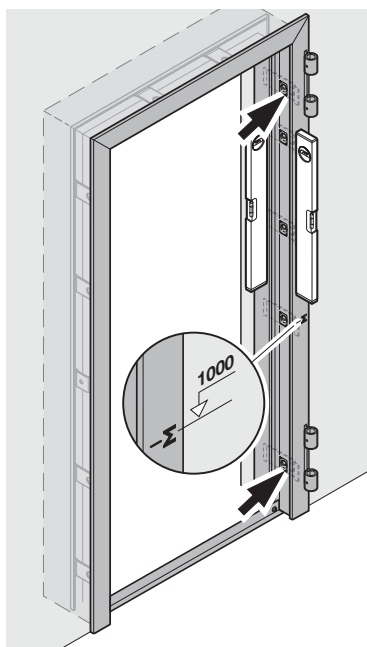
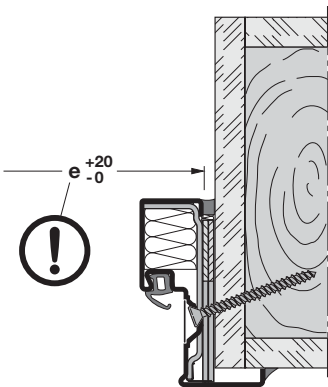
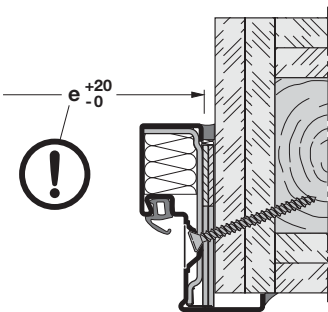
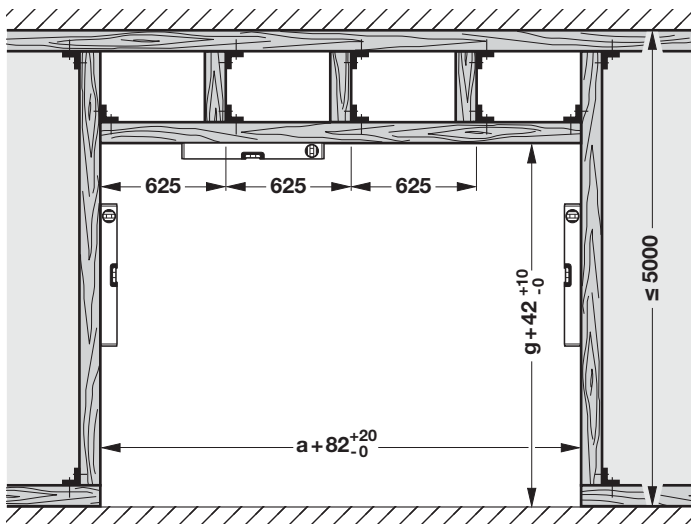


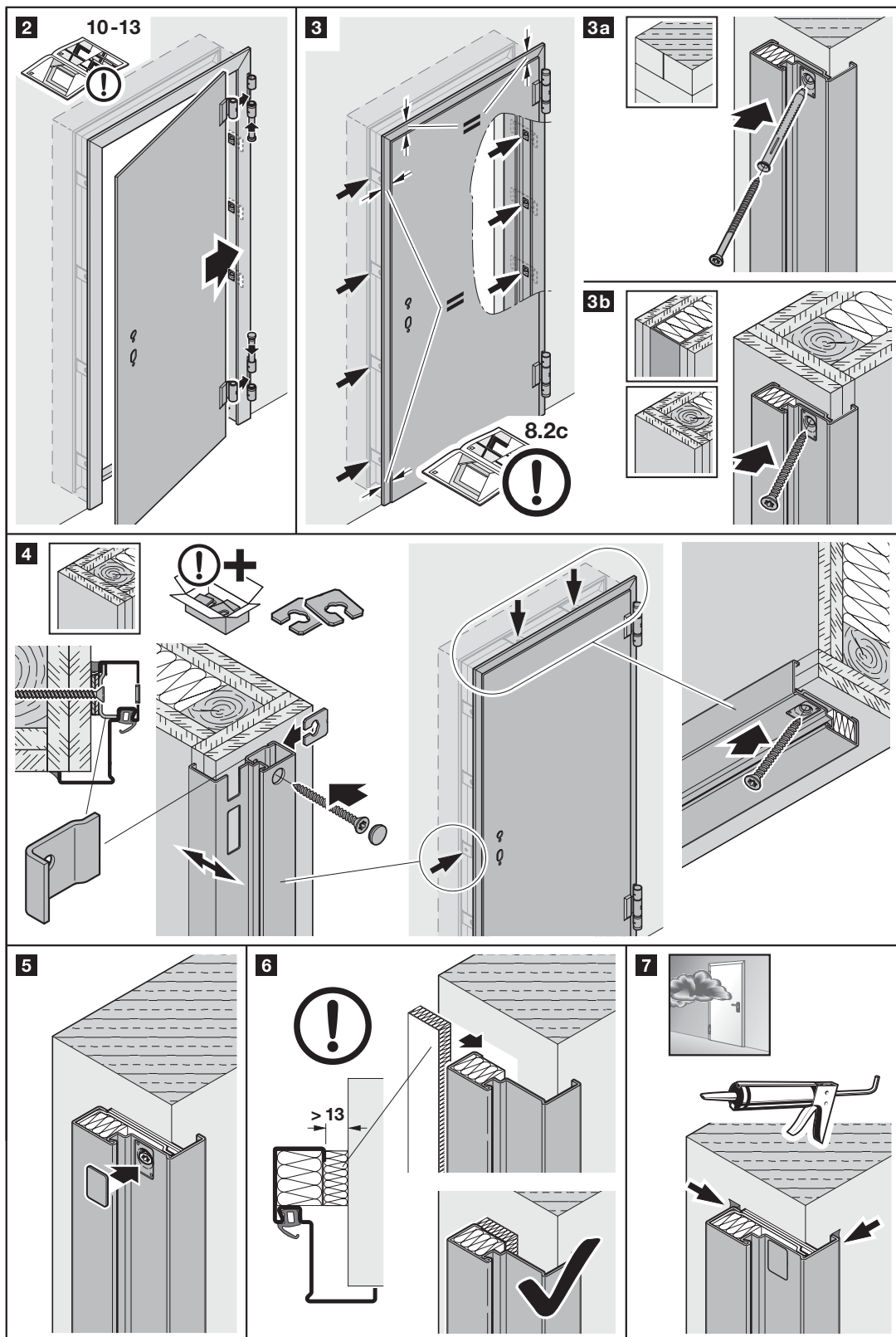
ⓑ A-12,5-EN 520



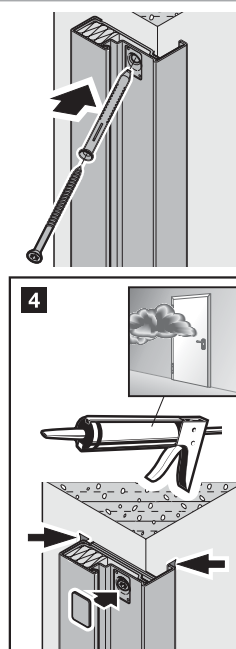
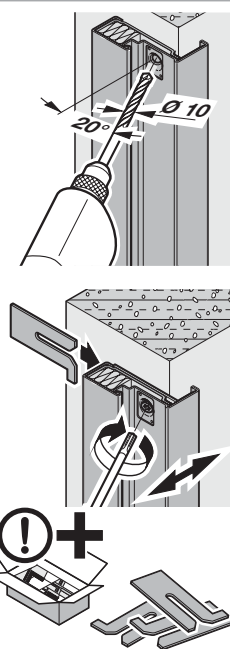
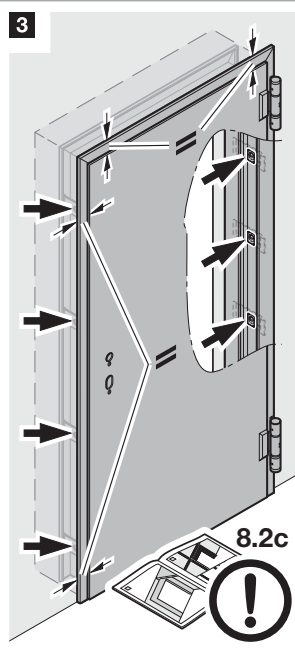
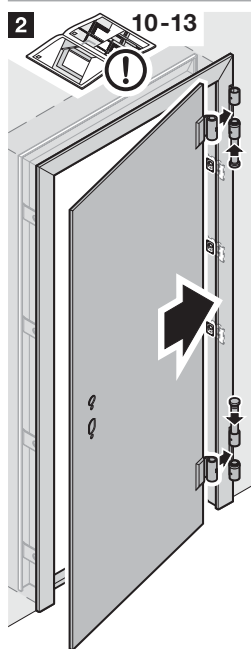
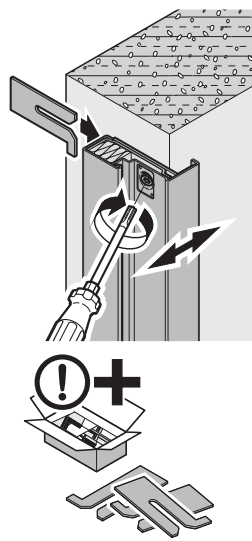
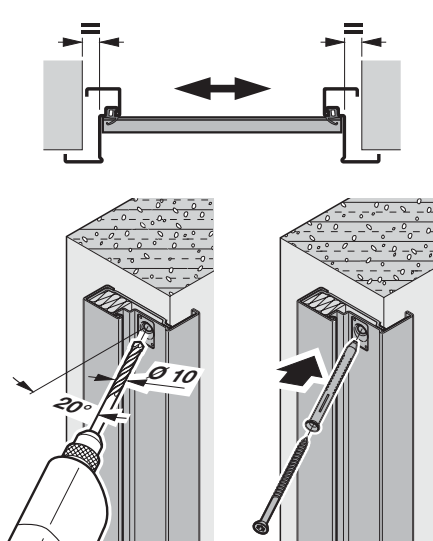
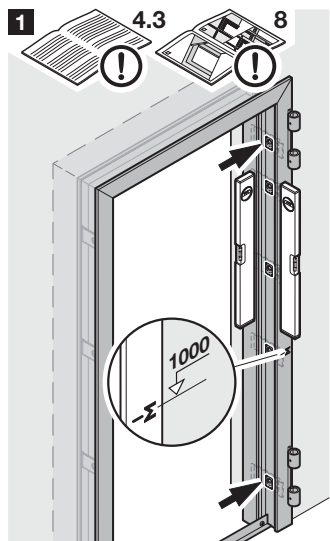
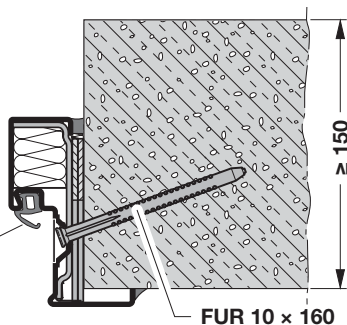
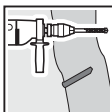
4.2/4.3

8

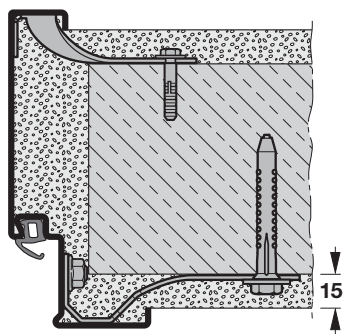
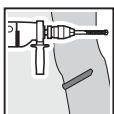




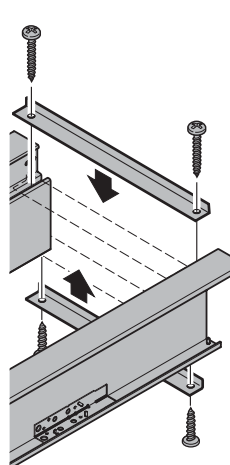
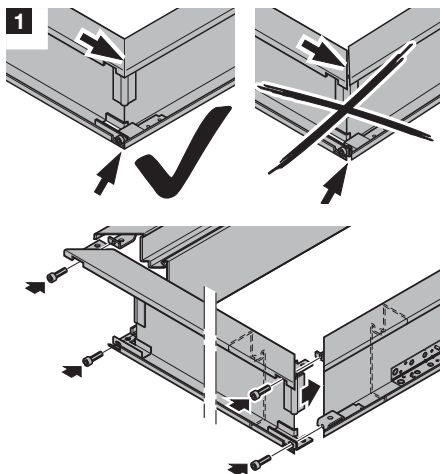
9/C8
max.T30



9/D1



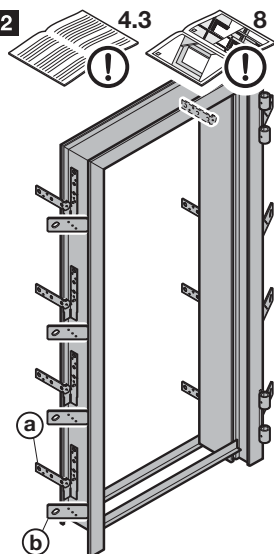
1



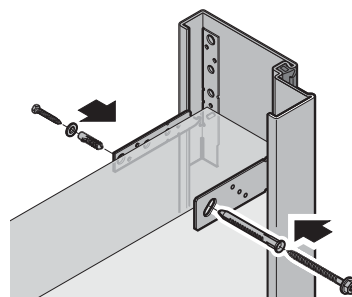
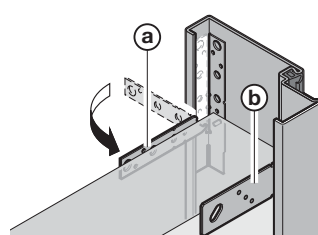
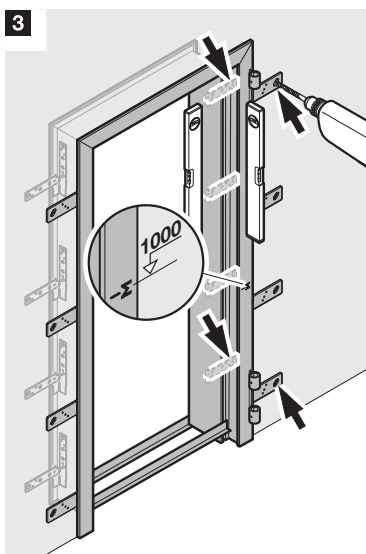
2

4.3

8

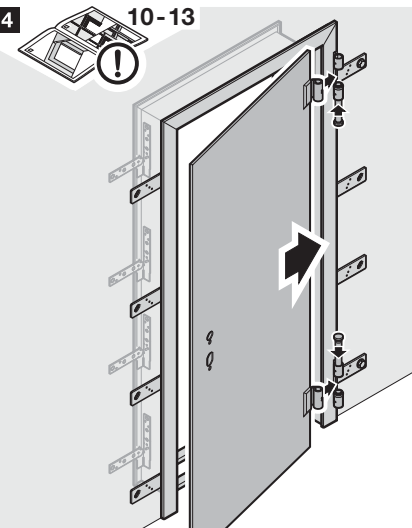


3

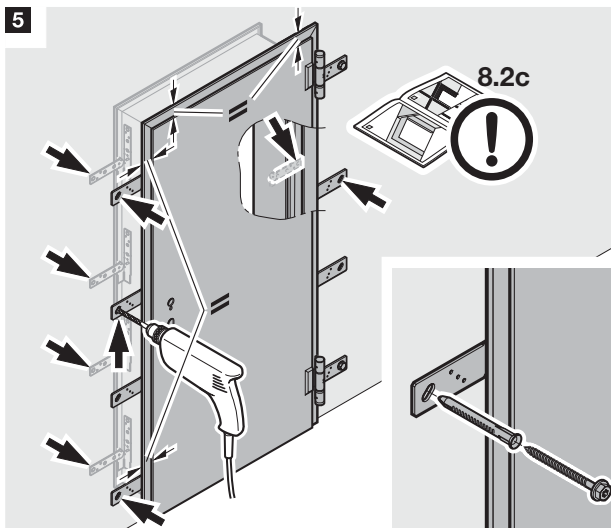


4

10-13



5



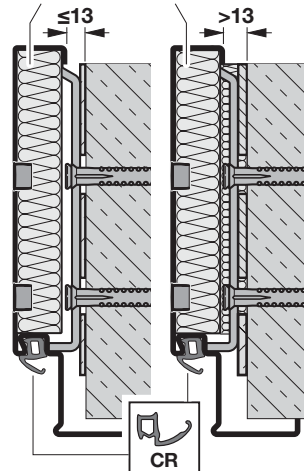
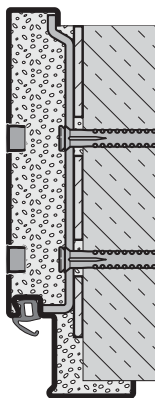
9/D2



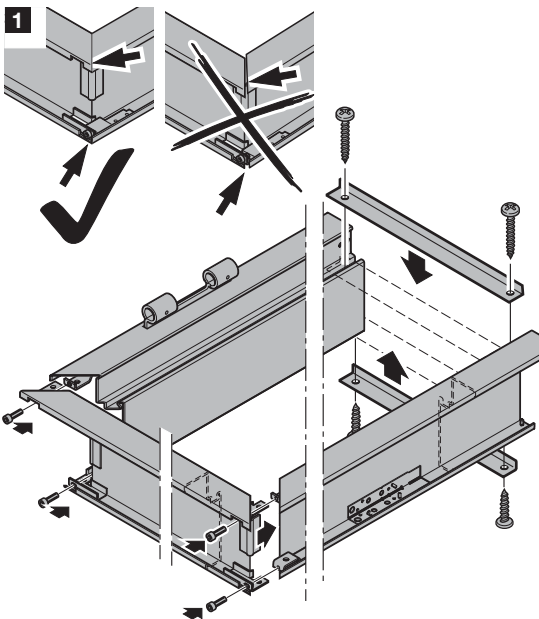
9/D3

max. T30/EI₂30

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

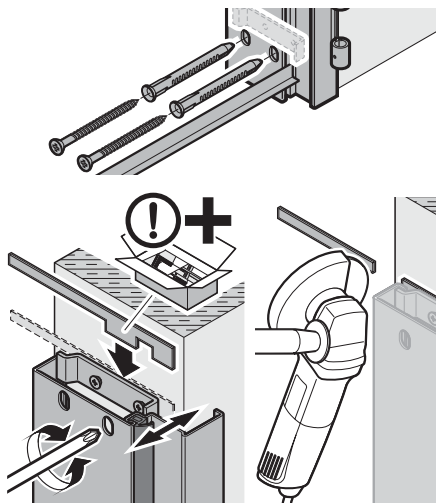
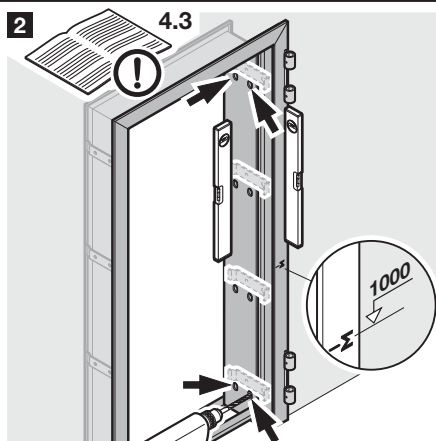


1



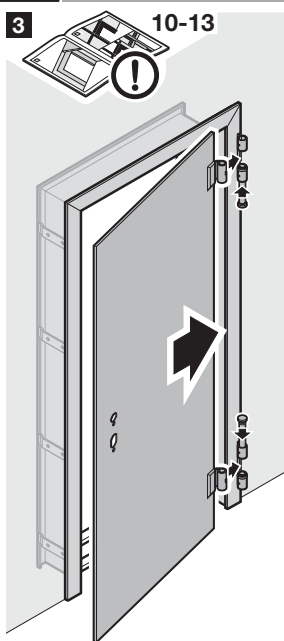
2

4.3

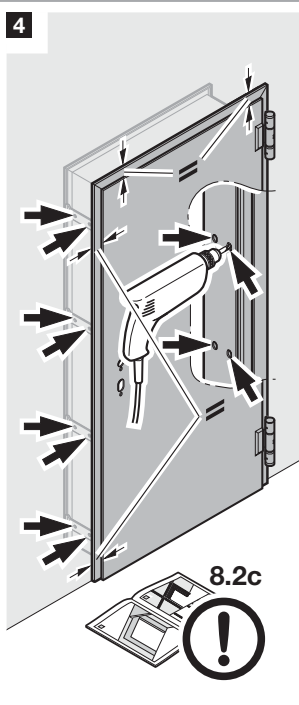


3

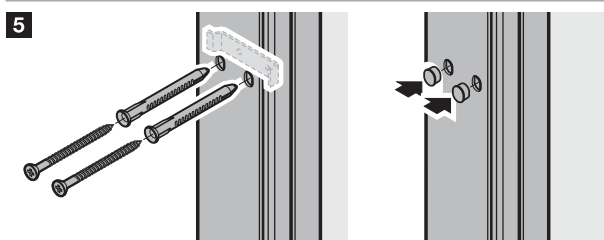
10-13



4



5



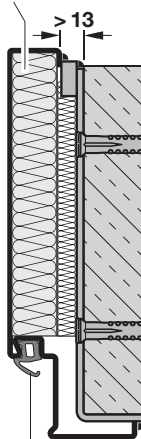
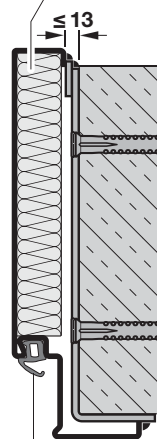
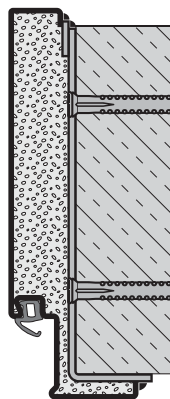
9/D4



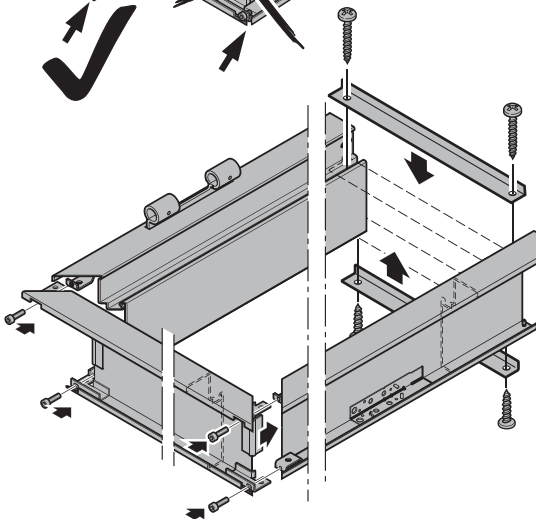
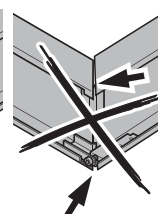
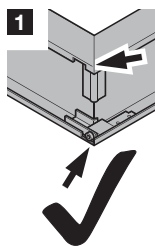
9/D5

max. T30/
EI₂₃₀

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



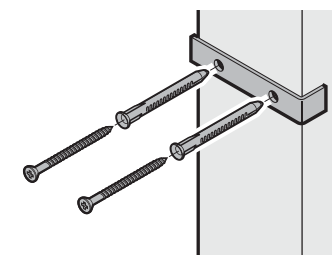
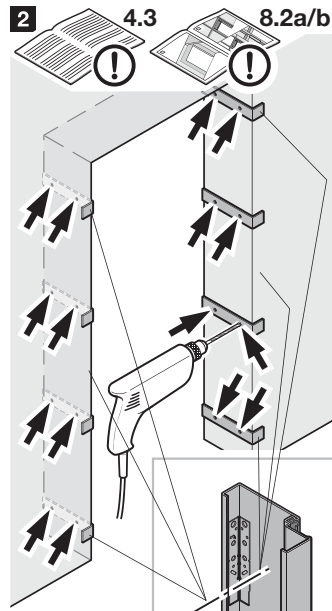
1



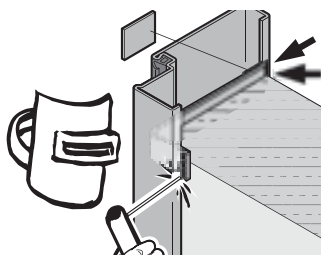
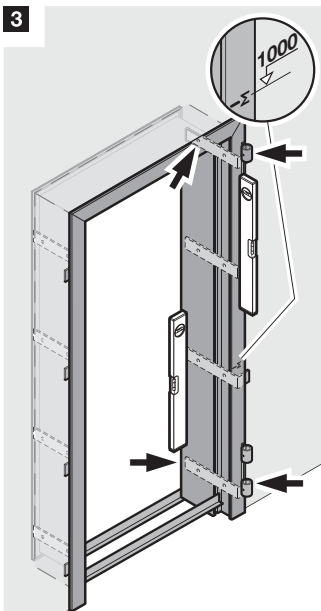
2

4.3

8.2a/b

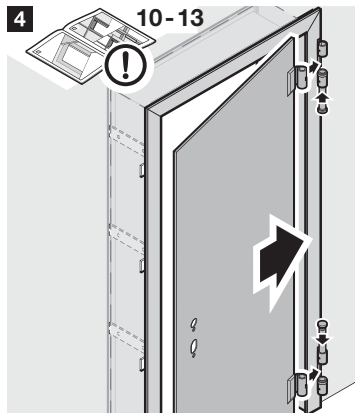


3

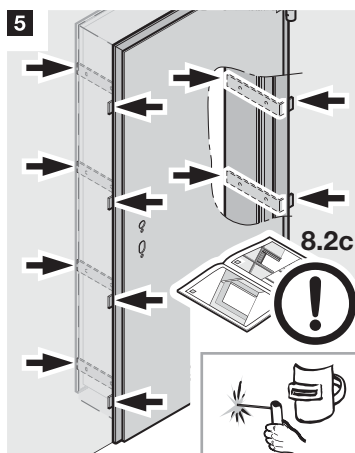


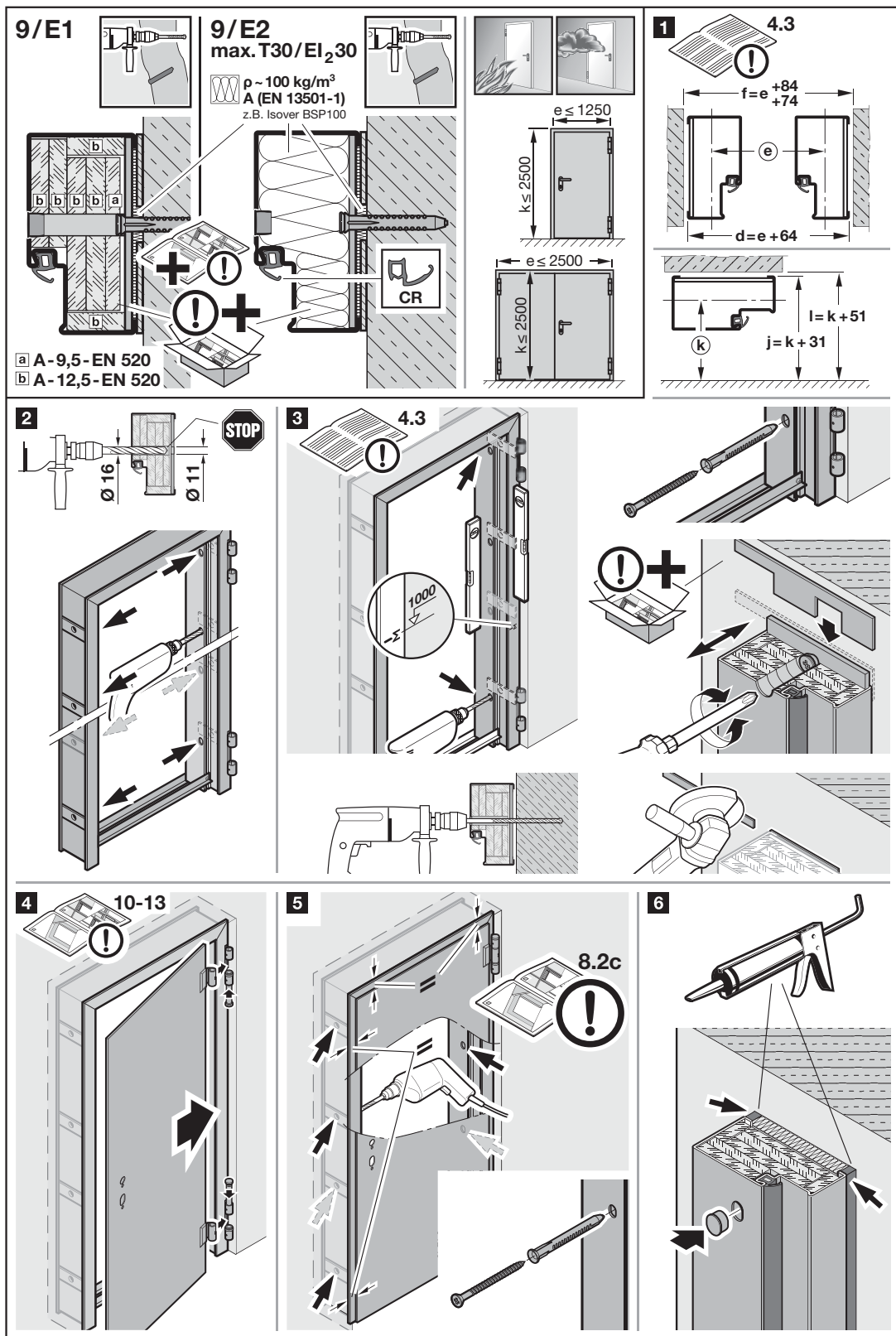
4

10-13

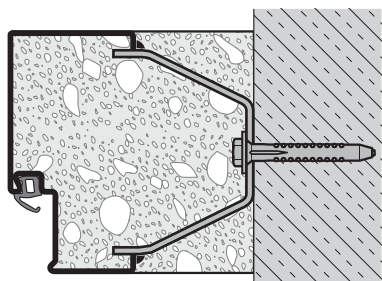


5

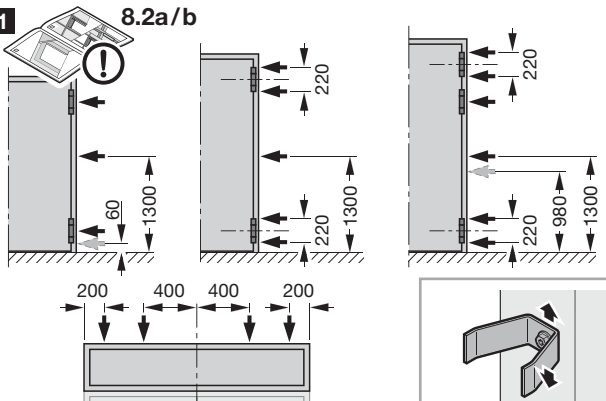




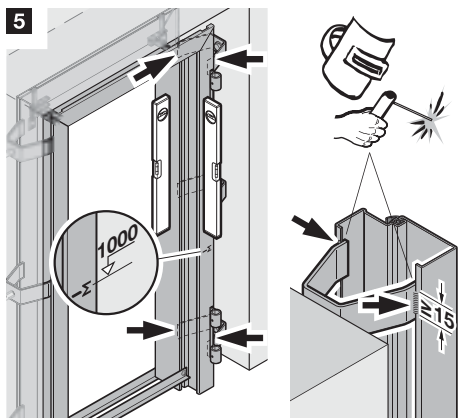
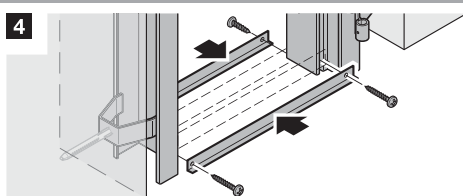
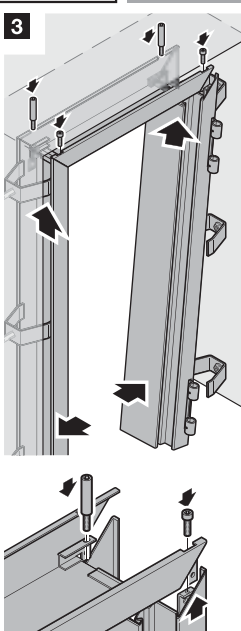
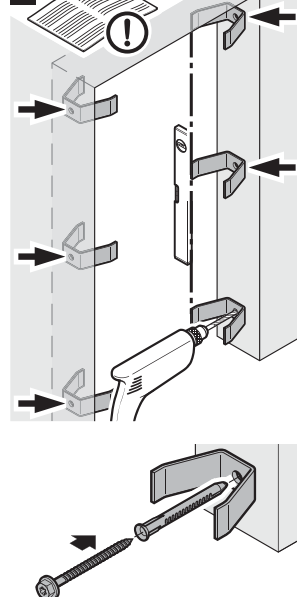
9/E3



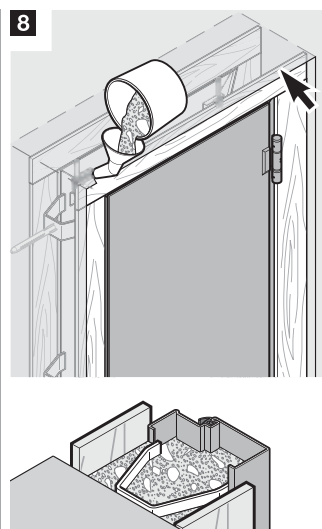
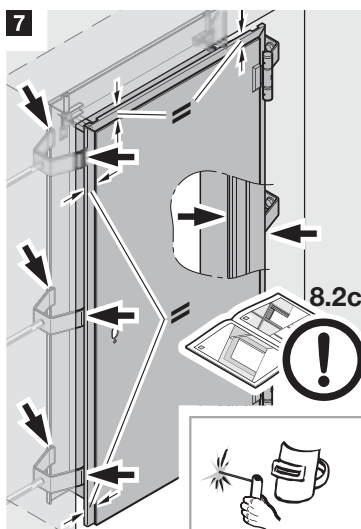
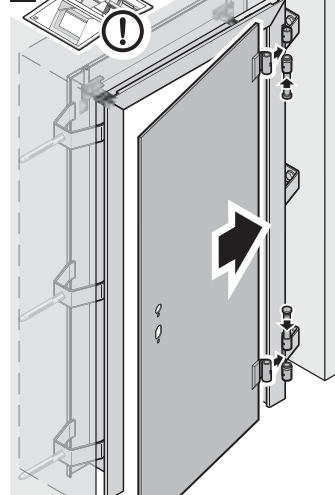
1 8.2a/b



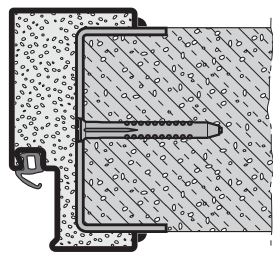
2 4.3



6 10-13

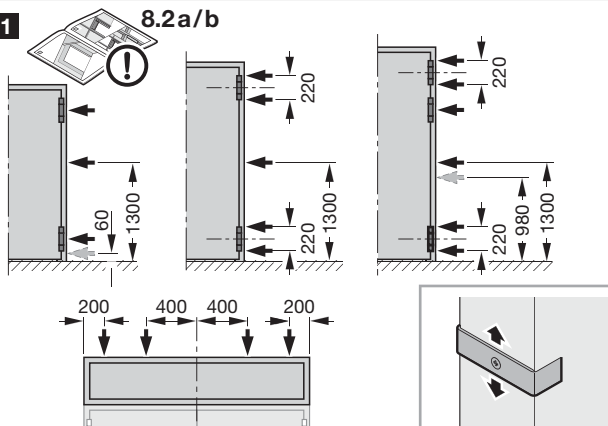


9/E4



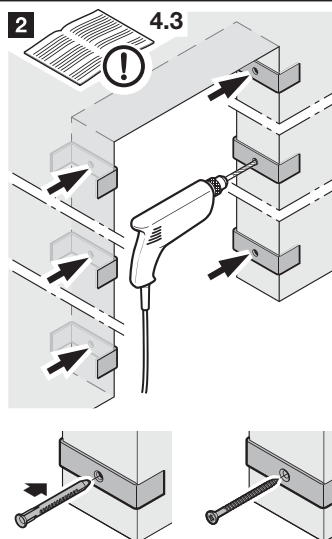
1

8.2a/b

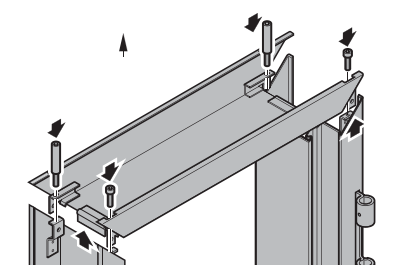
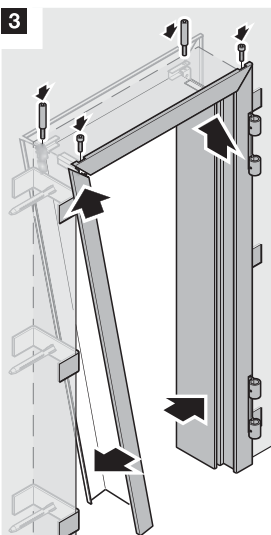


2

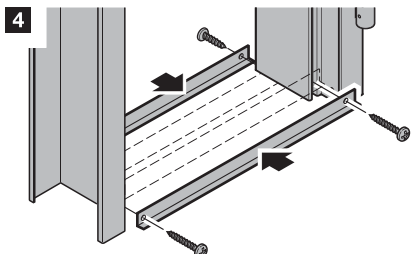
4.3



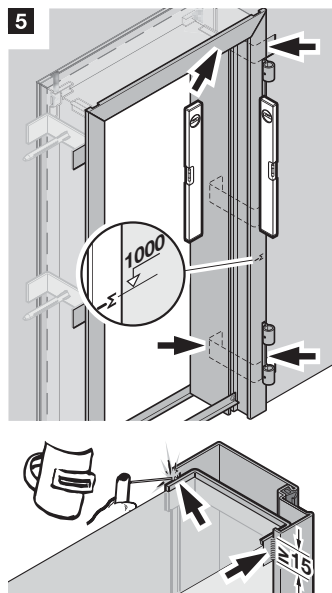
3



4

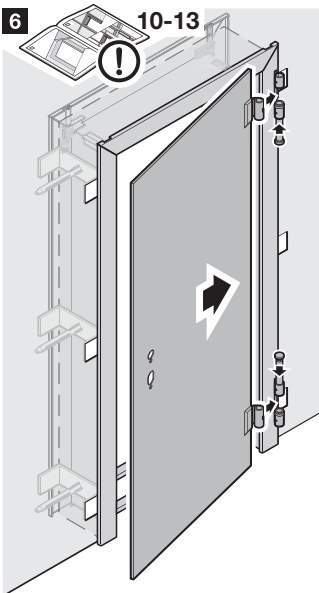


5

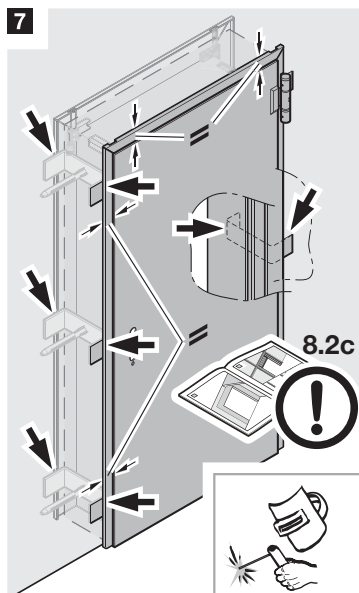


6

10-13



7



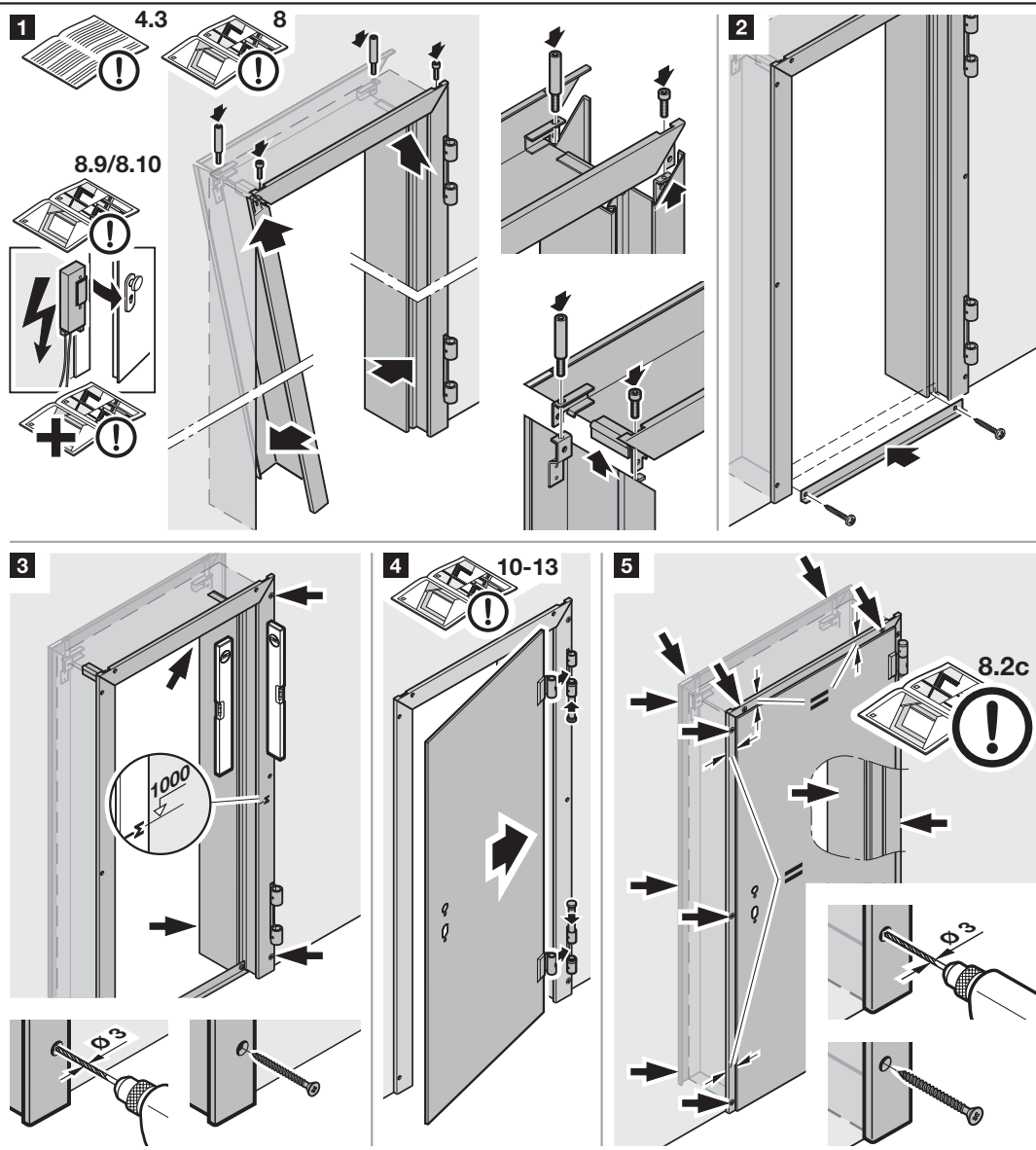
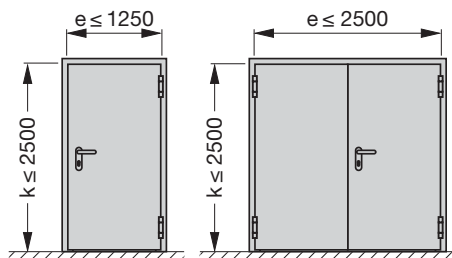
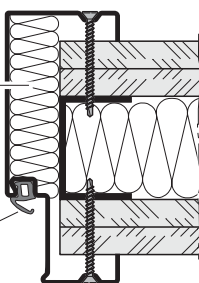
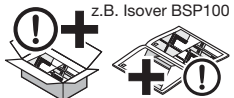
8.2c

9/E5

max. T30/
EI₂30

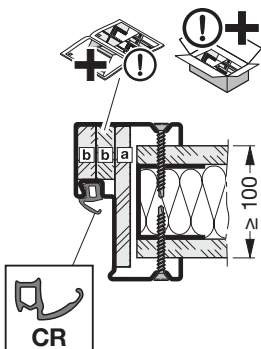


$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



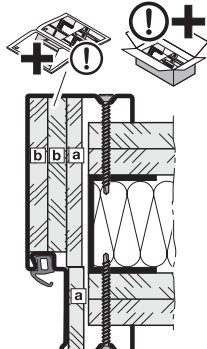
9/E6

max T30/EI₂30



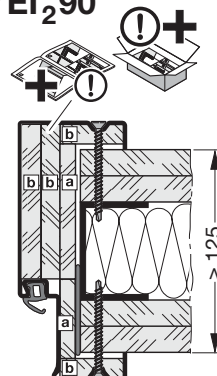
9/E7

max T30/EI₂30

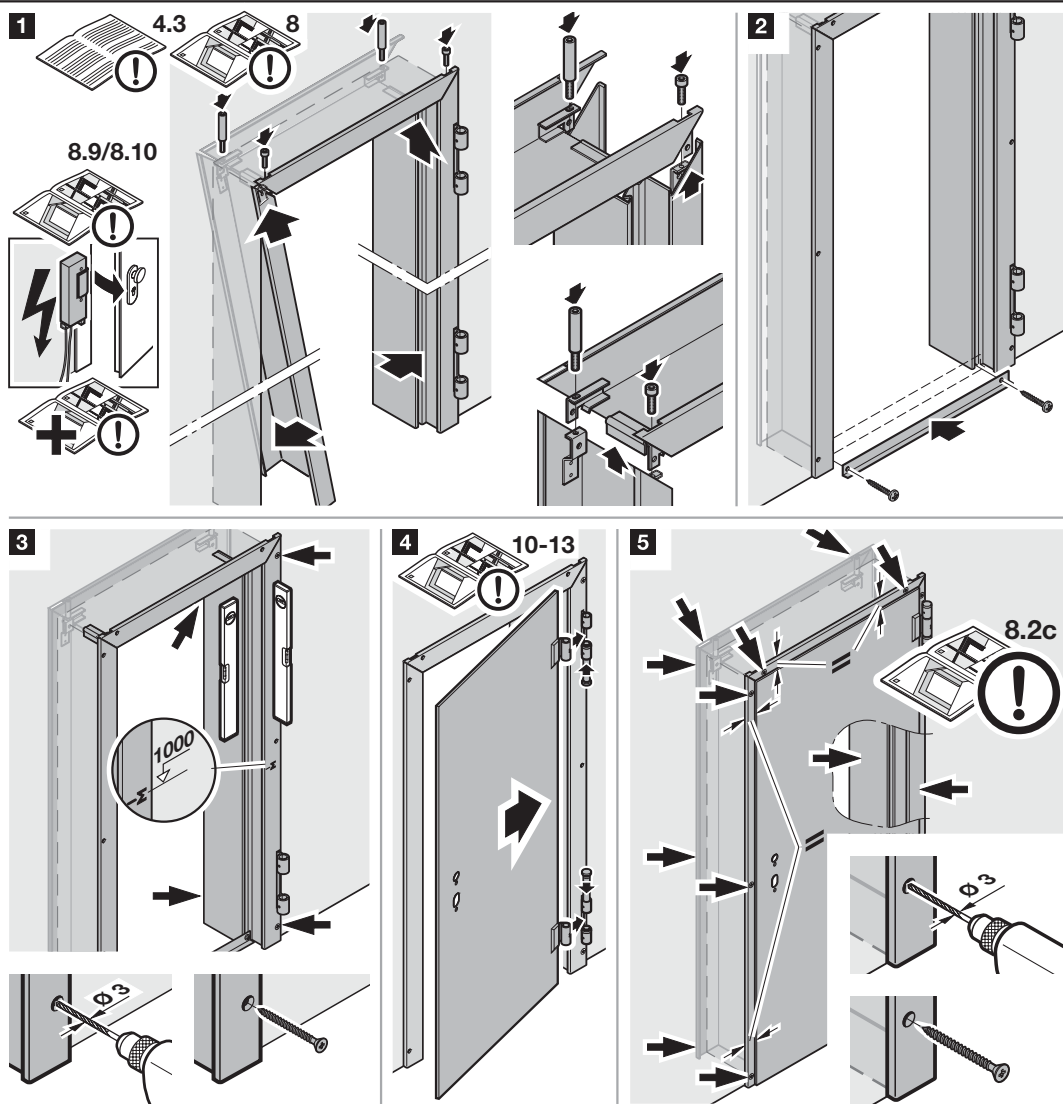


9/E8

T90/EI₂90



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



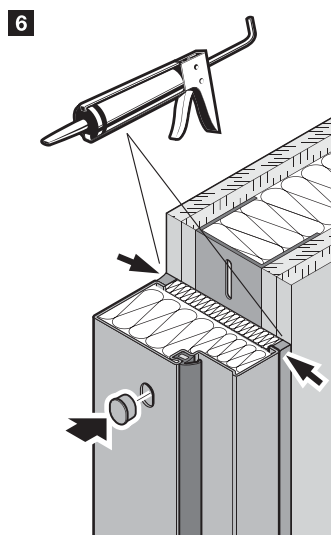
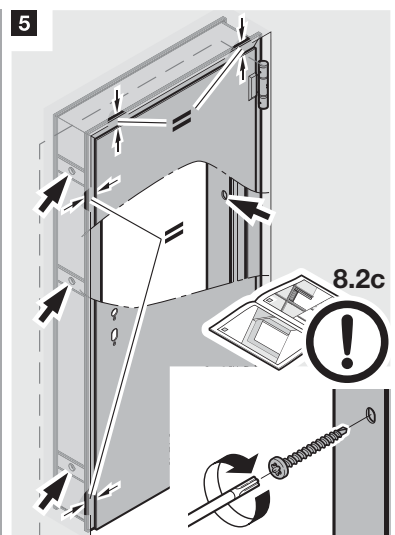
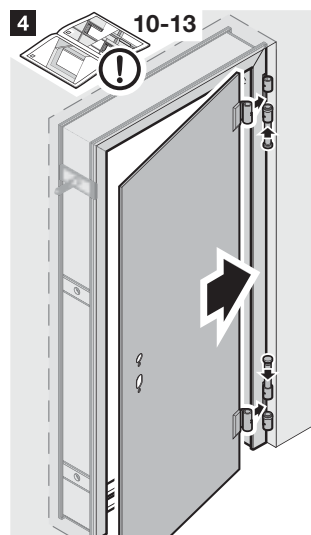
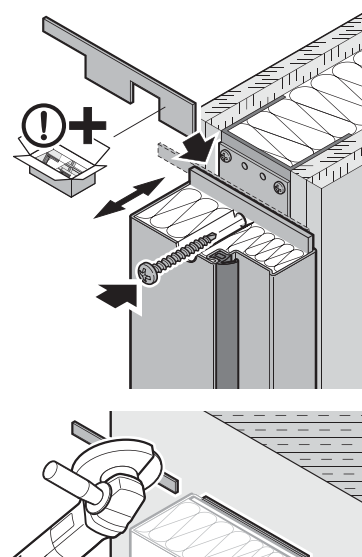
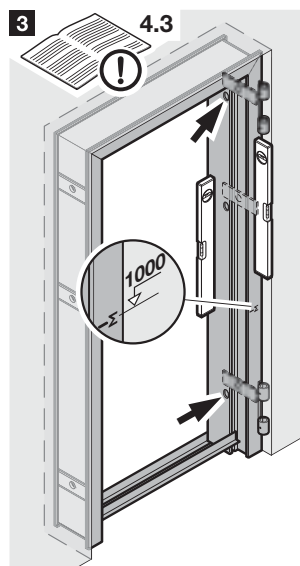
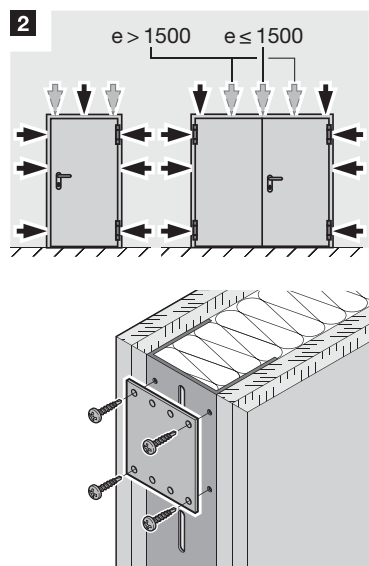
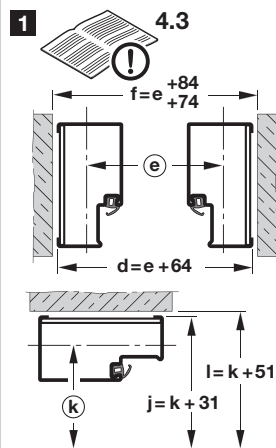
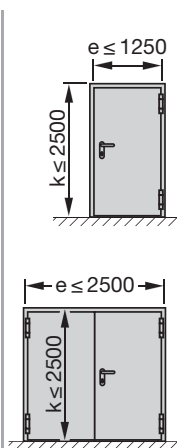
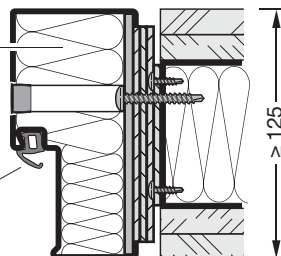
9/E9

max. T30/
EI₂30



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

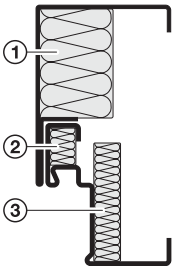
z.B. Isover BSP100



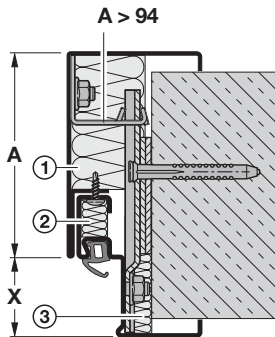
9/F1-F4 max. T30/ EI₂₃₀

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

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

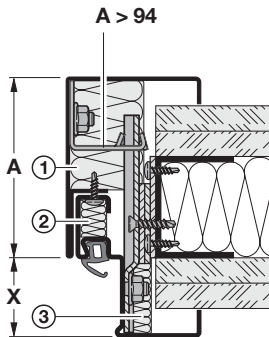


F1



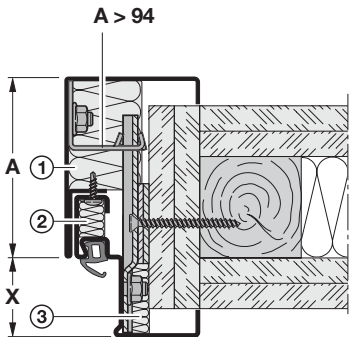
➔ **1 2a 2b 3 ...**

F2



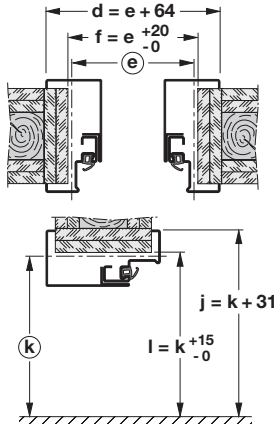
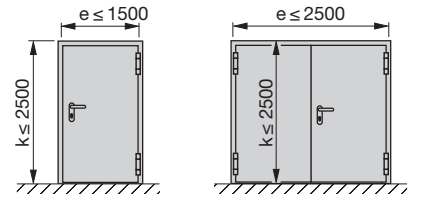
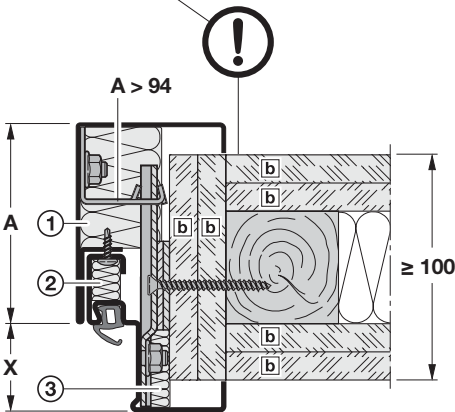
➔ **1 2c 3 ...**

F3



➔ **1 2d 3 ...**

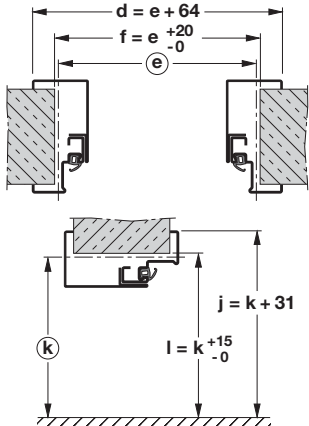
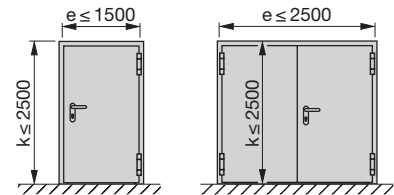
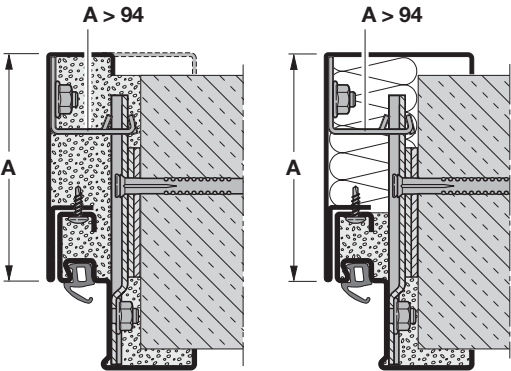
F4



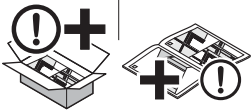
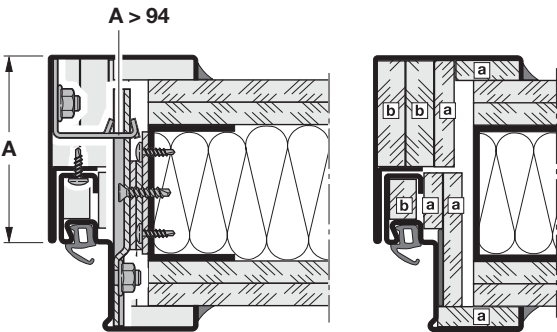
F90B DIN 4102-4 Tab. 49 **b** A-12,5-EN 520

➔ **1 2e 3 ...**

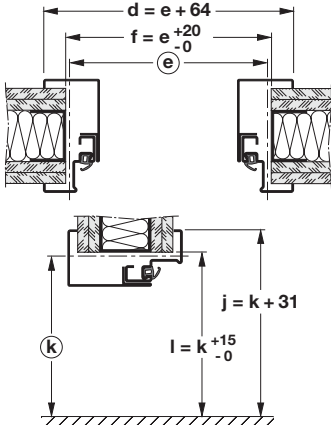
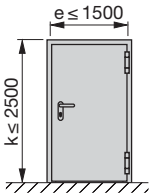
9/F5-F6
max. T90/ EI₂90



➔ 2a 2b 3 ...

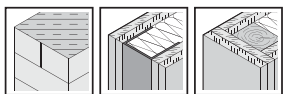


- a A-9,5-EN 520
- b A-12,5-EN 520

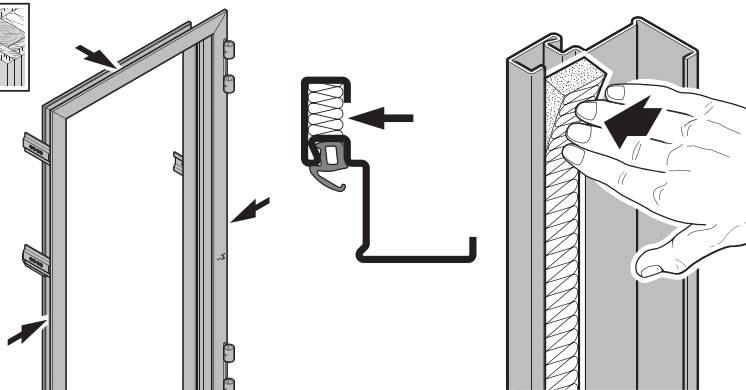


➔ 2c 3 ...

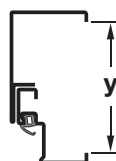
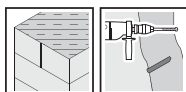
1



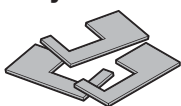
max. T30/EI₂30



2a

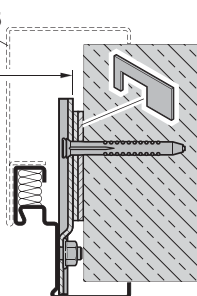


$y \geq 175$

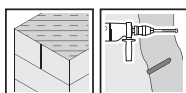


$y \geq 175$

$e - 10$



2b

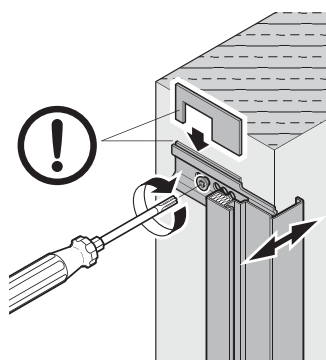
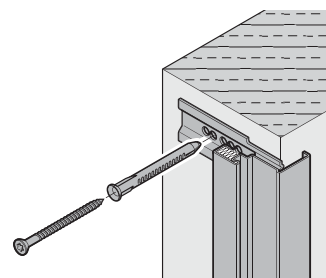
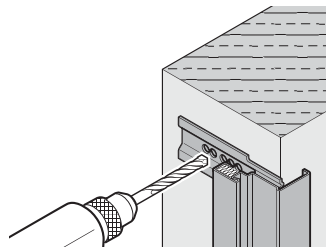
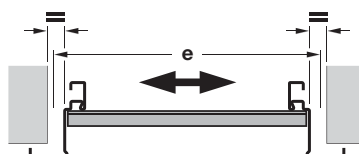
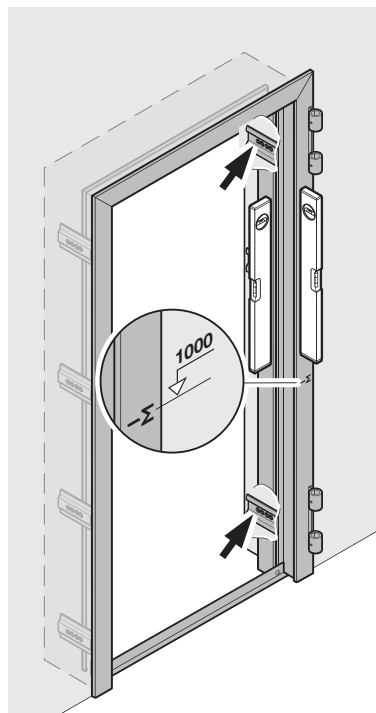
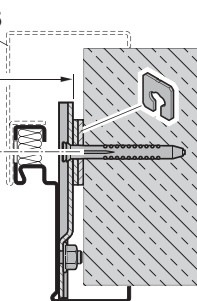


$y < 175$

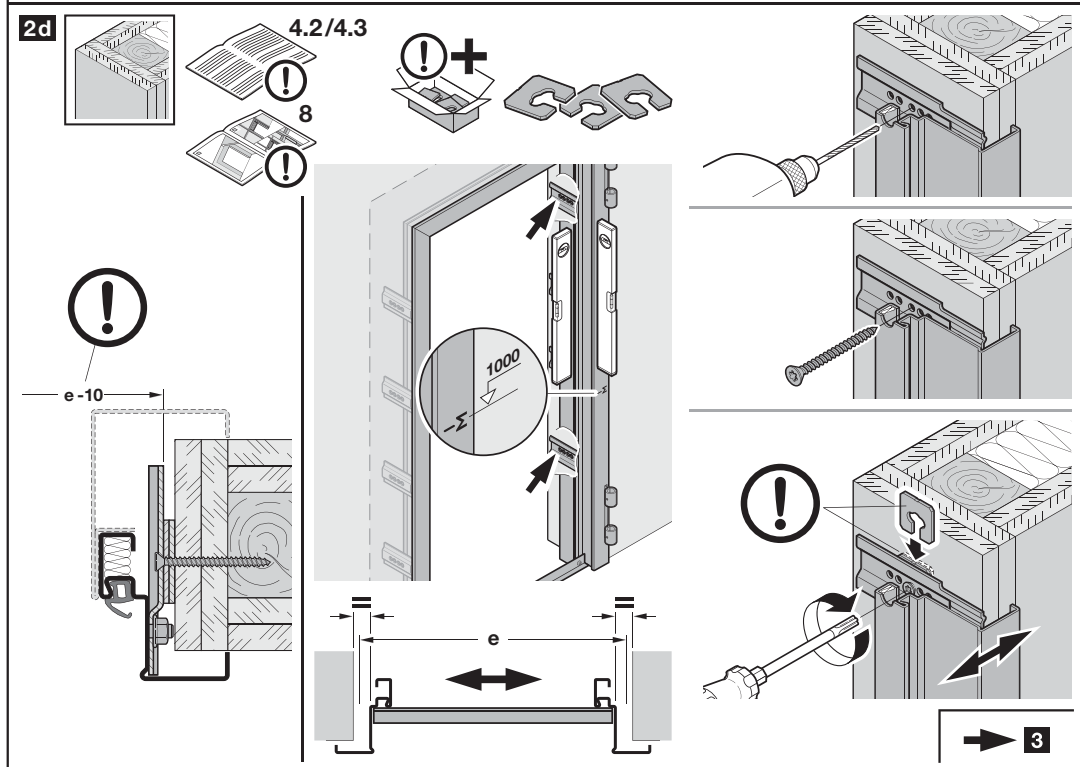
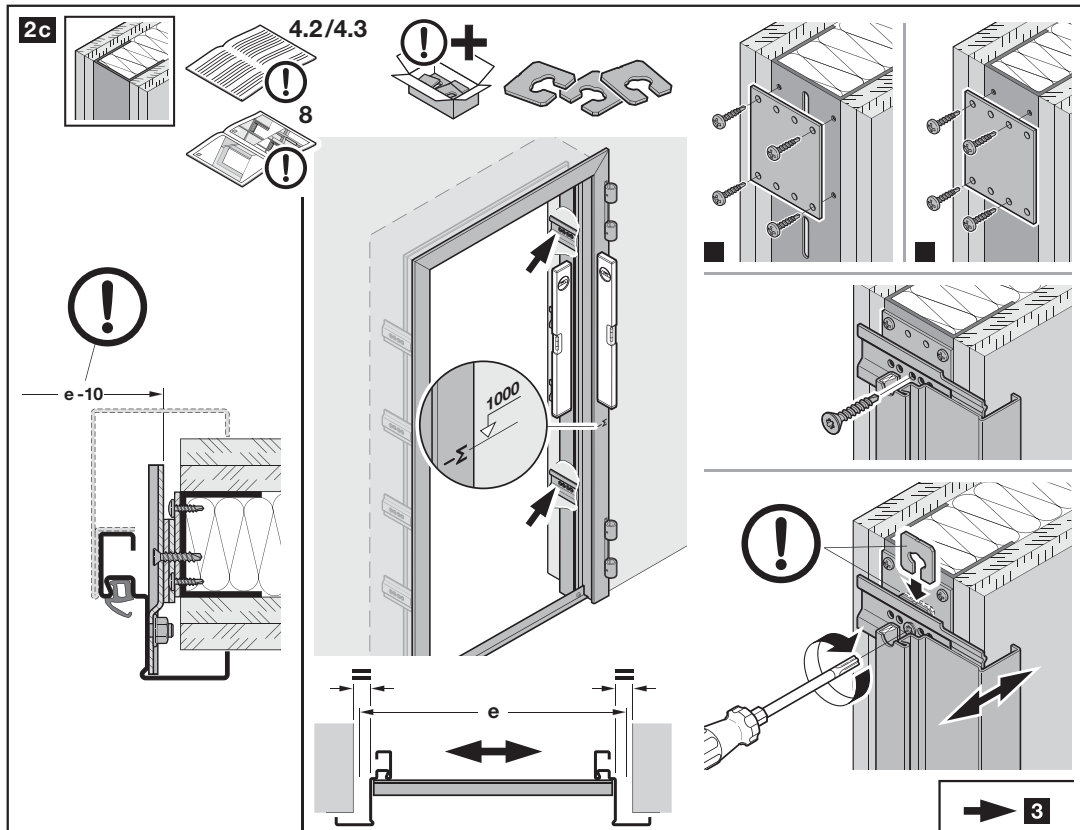


$y < 175$

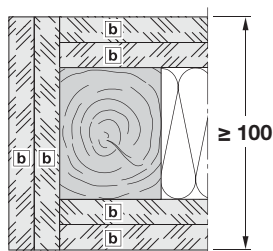
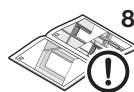
$e - 10$



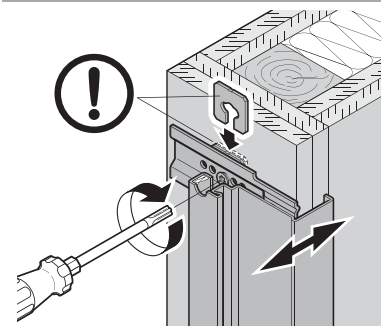
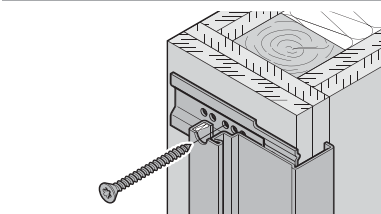
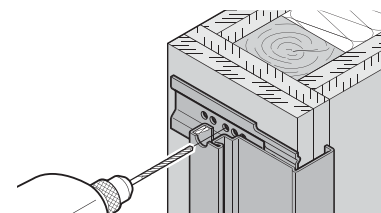
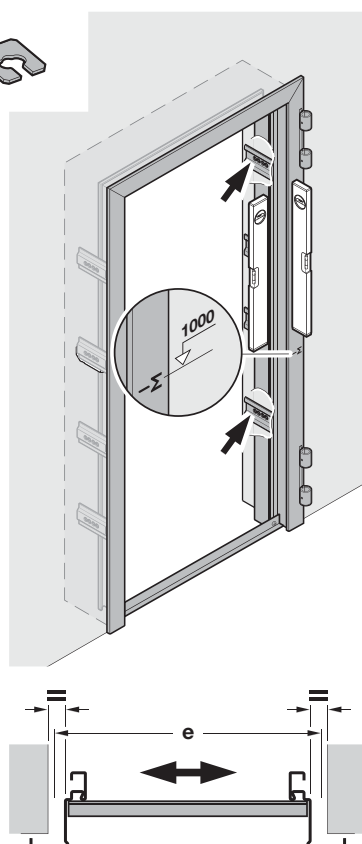
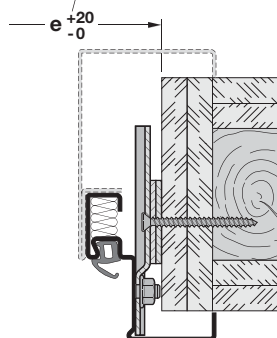
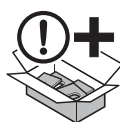
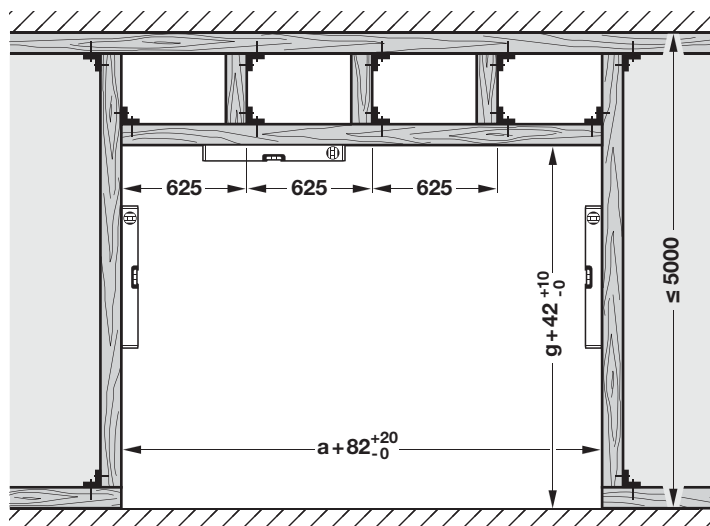
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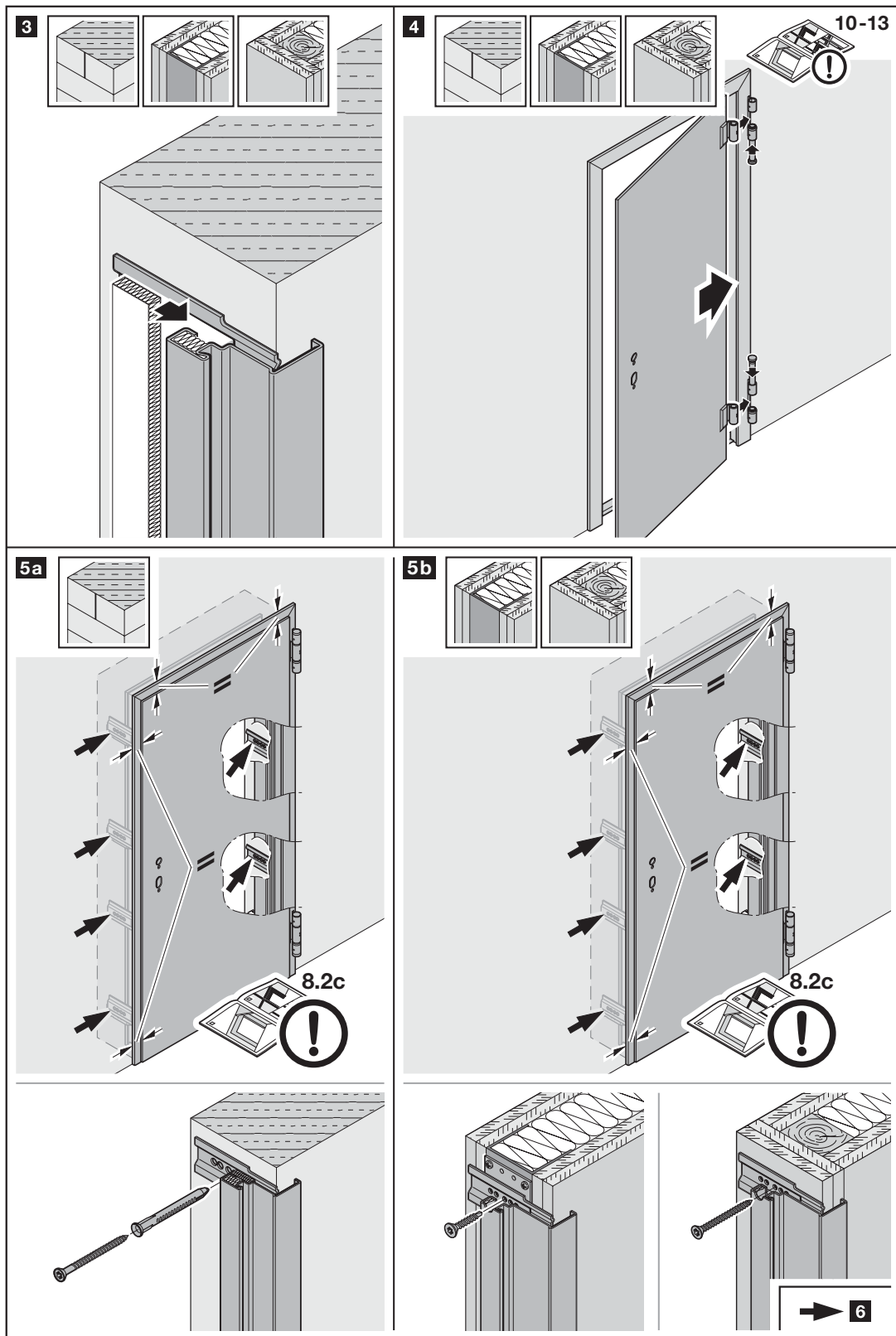
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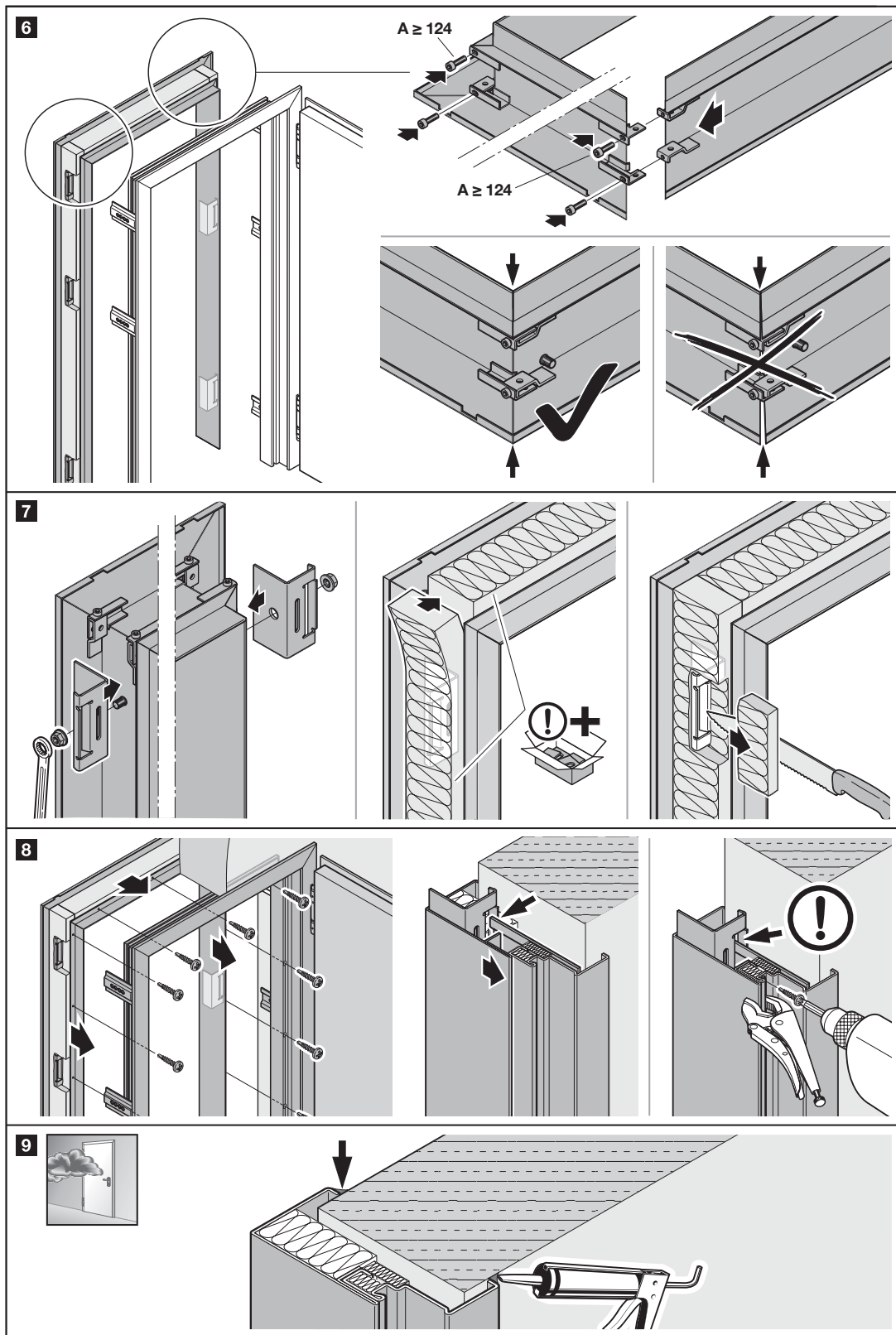


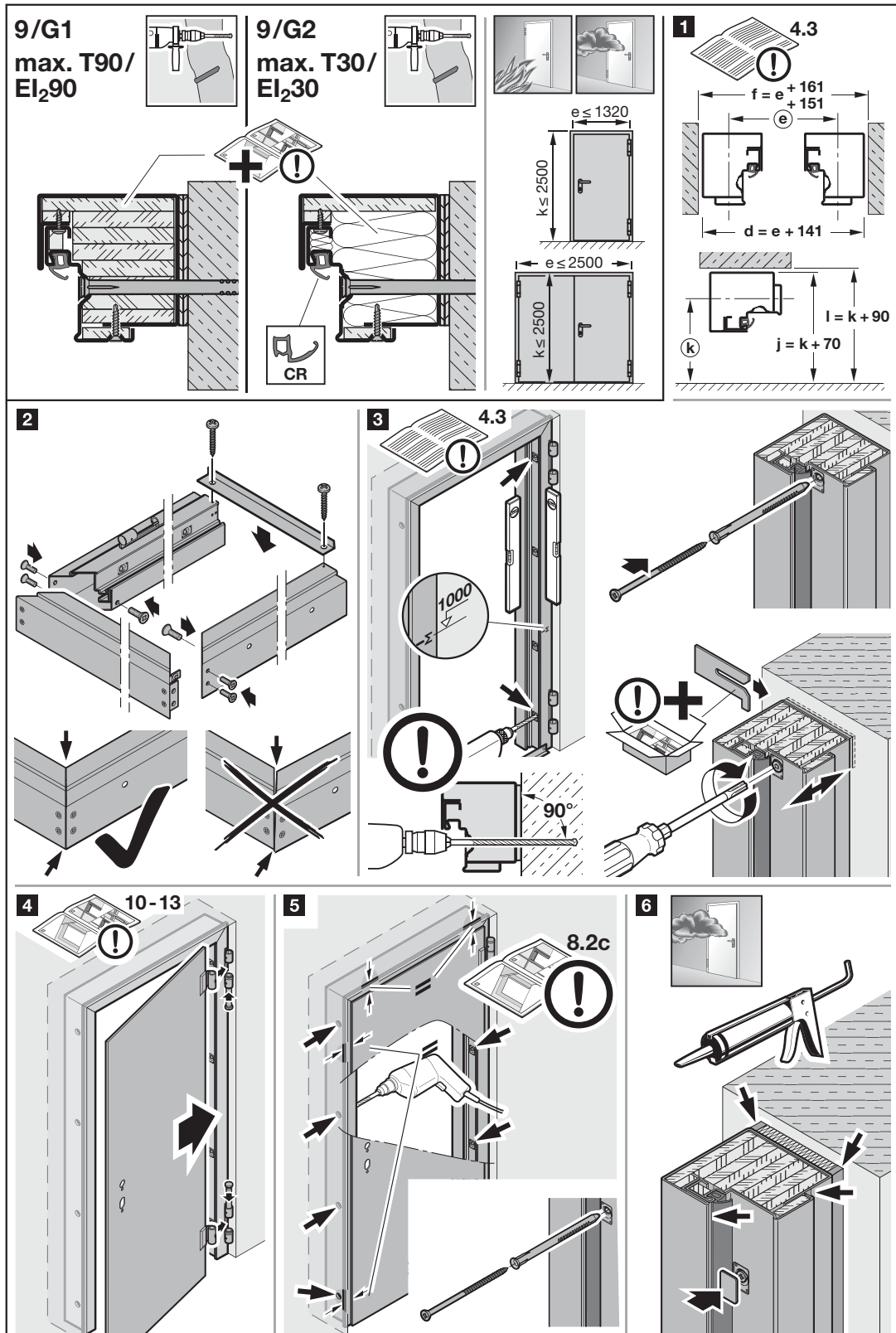
b A-12,5-EN 520



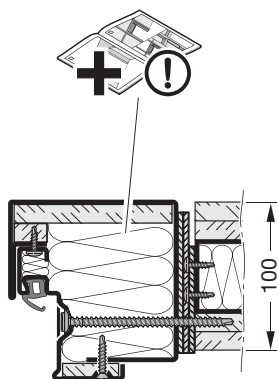
➔ **3**



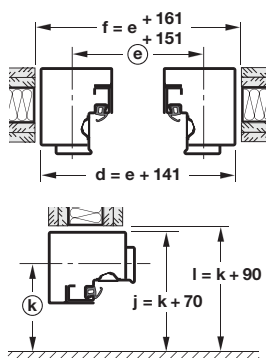




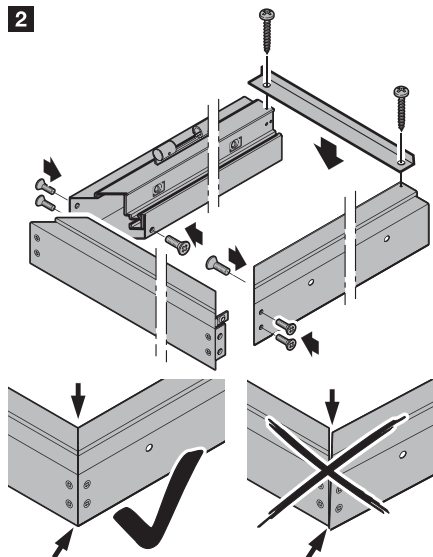
9/G3



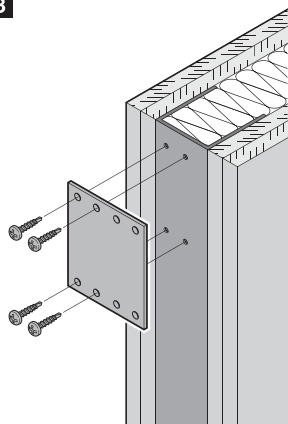
1 4.3



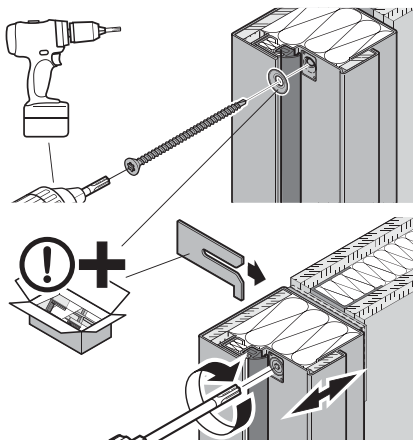
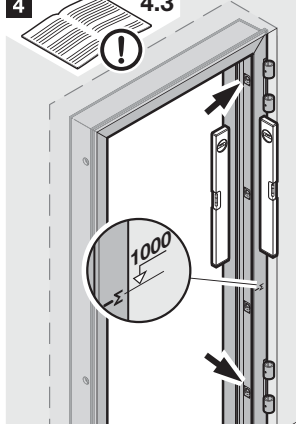
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3

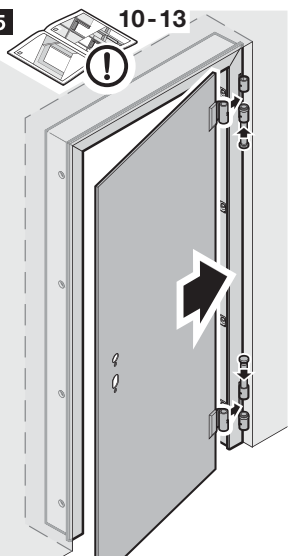


4 4.3

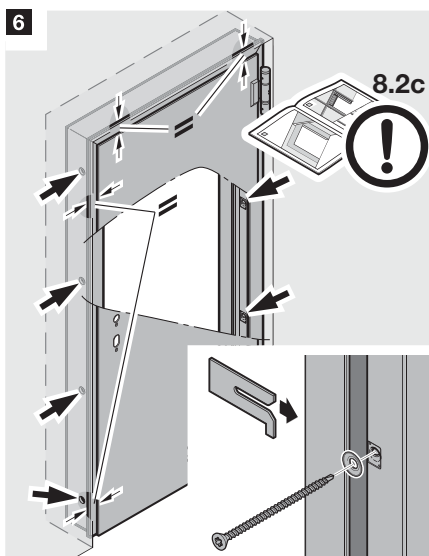


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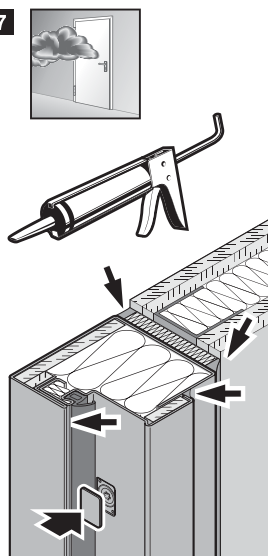
10-13



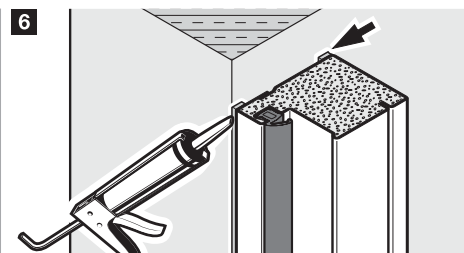
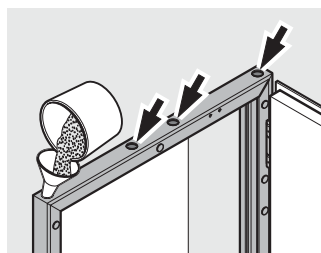
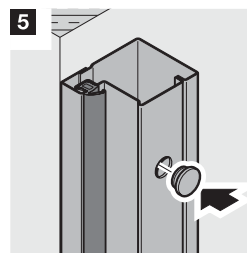
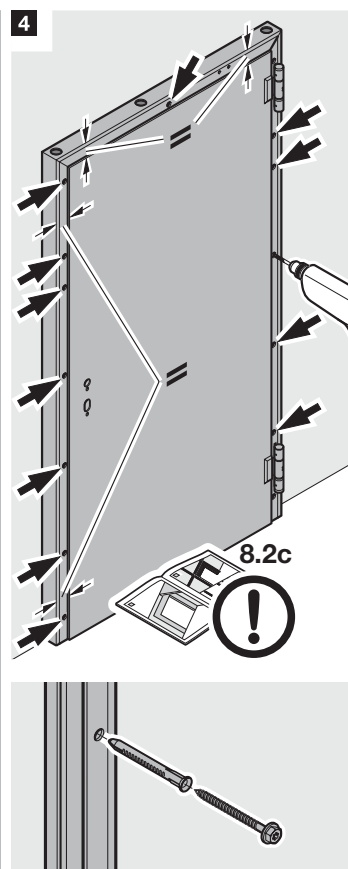
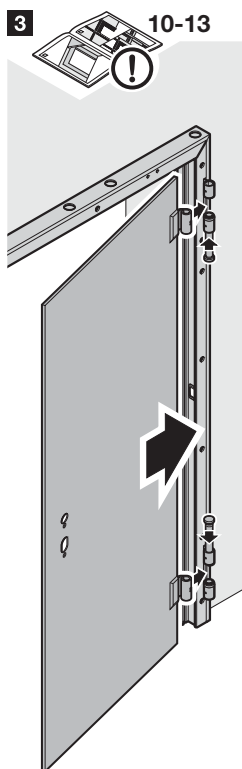
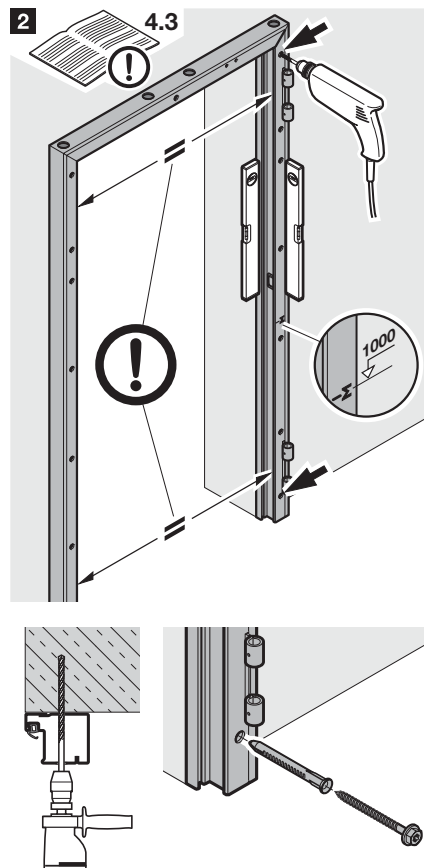
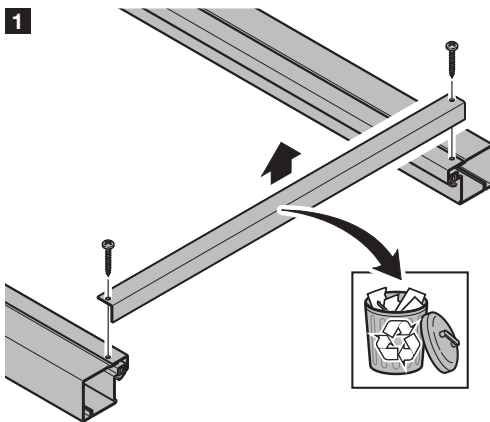
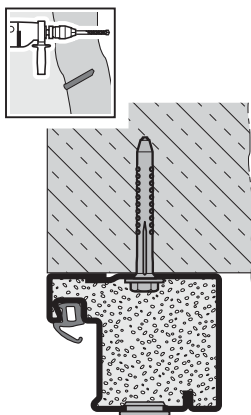
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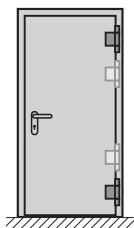
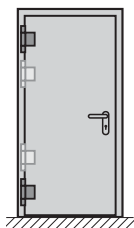
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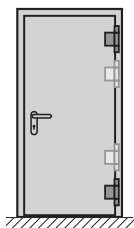
9/H1
max. T30/
EI₂30



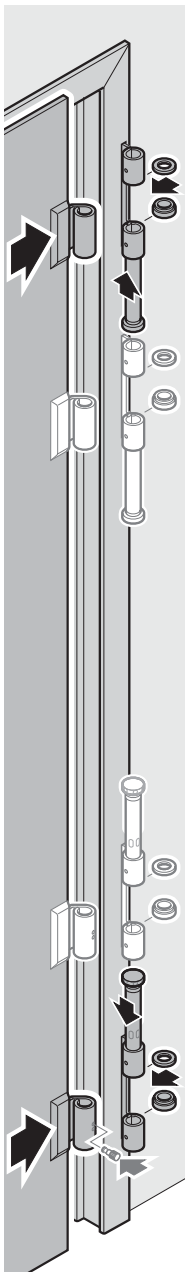
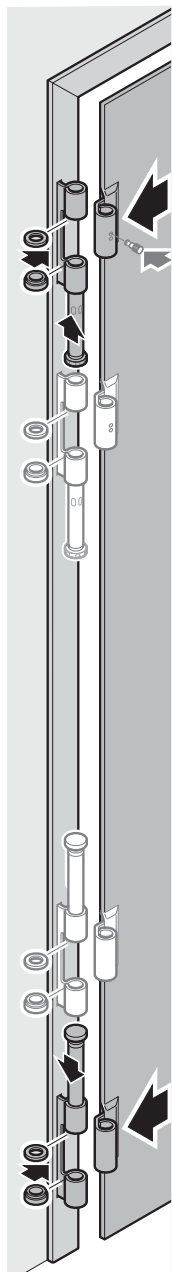
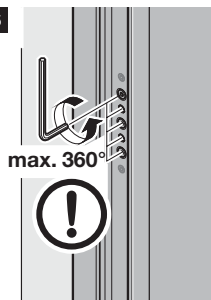
10.1a



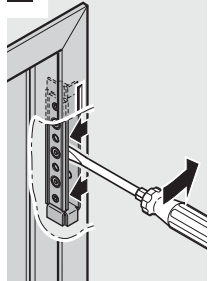
10.1b



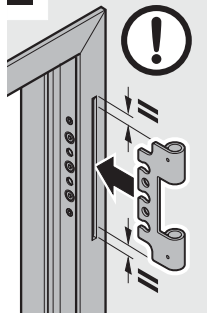
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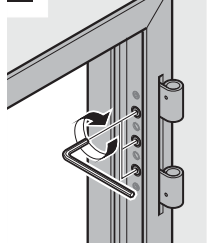
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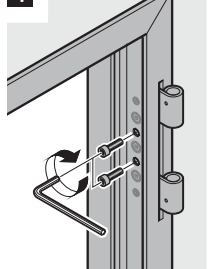
2



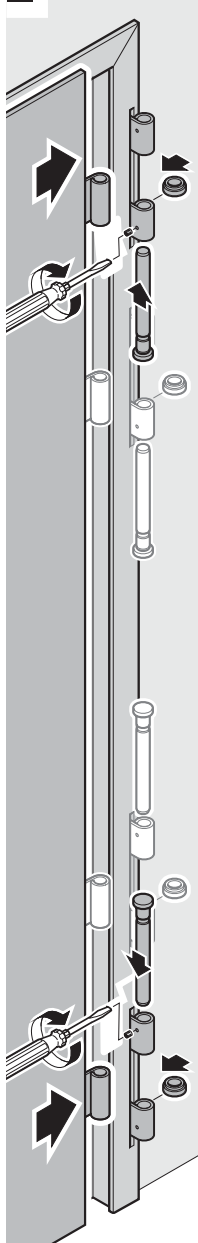
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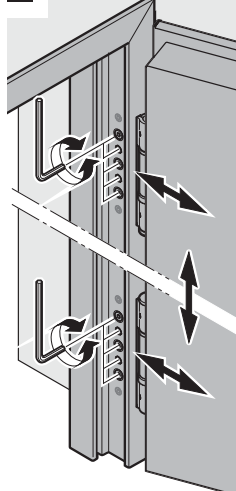
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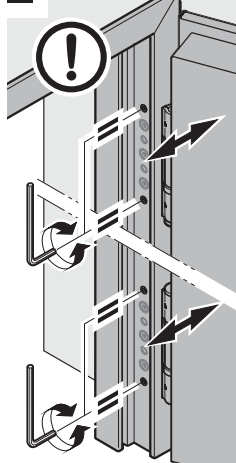
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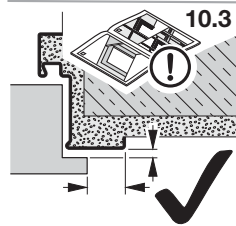
7



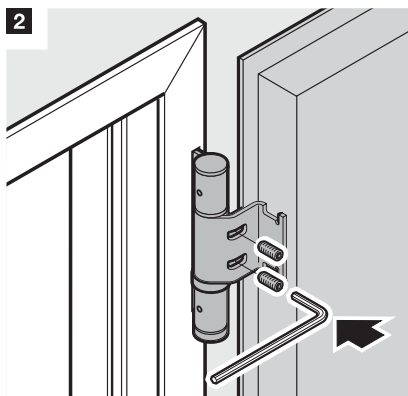
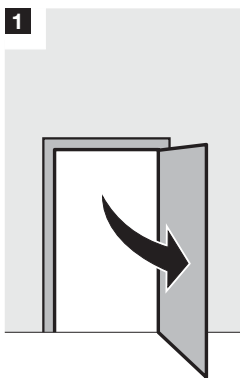
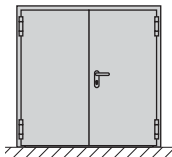
8



10.3



10.2



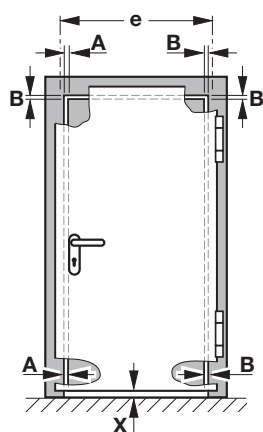
10.3



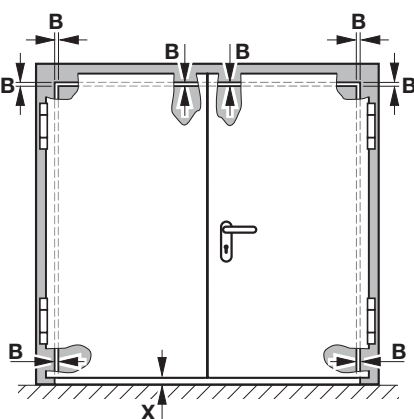
1

e	A
≤ 749	6 ⁺¹ ₋₂
750 - 874	6 ⁺¹ ₋₂
≥ 875	5 ⁺¹ ₋₂

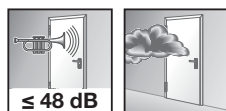
B	C max. T30	C T60, T90, T120
4±2	4±2	10±2



X=10±5

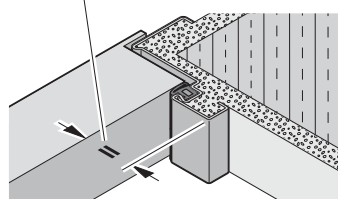
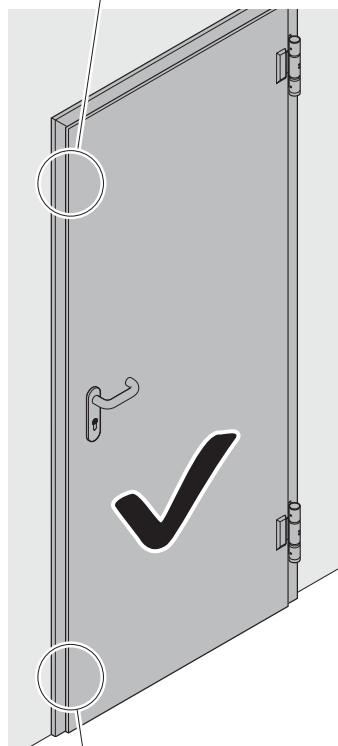
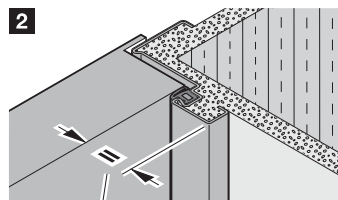
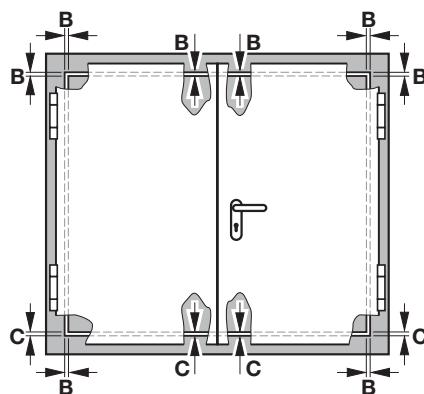
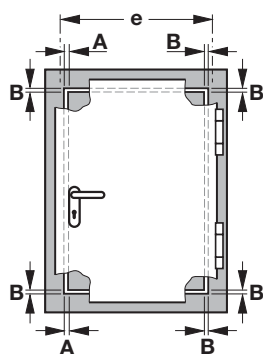


X=10±5

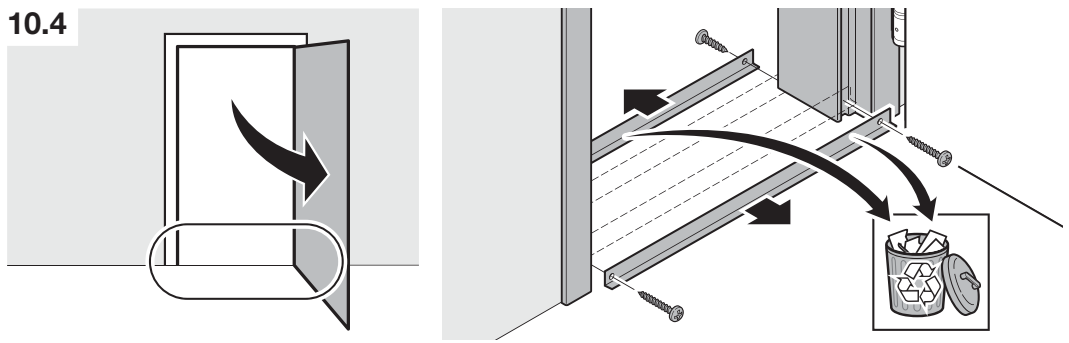


≤ 48 dB

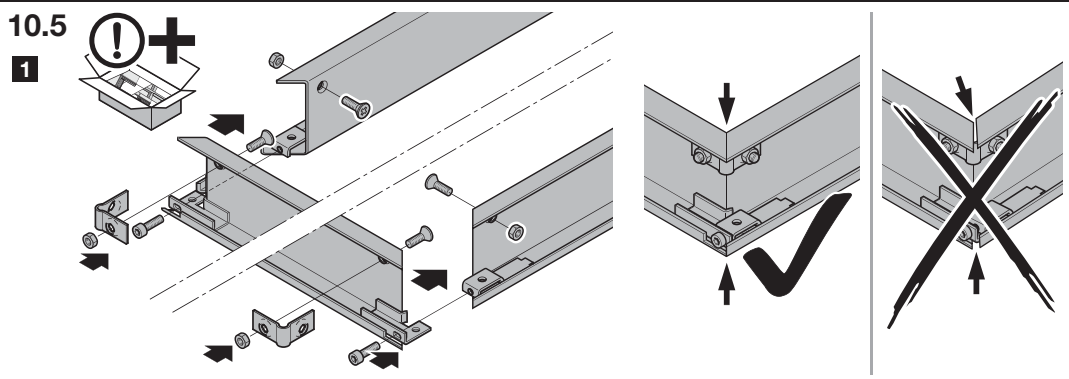
X=10-5



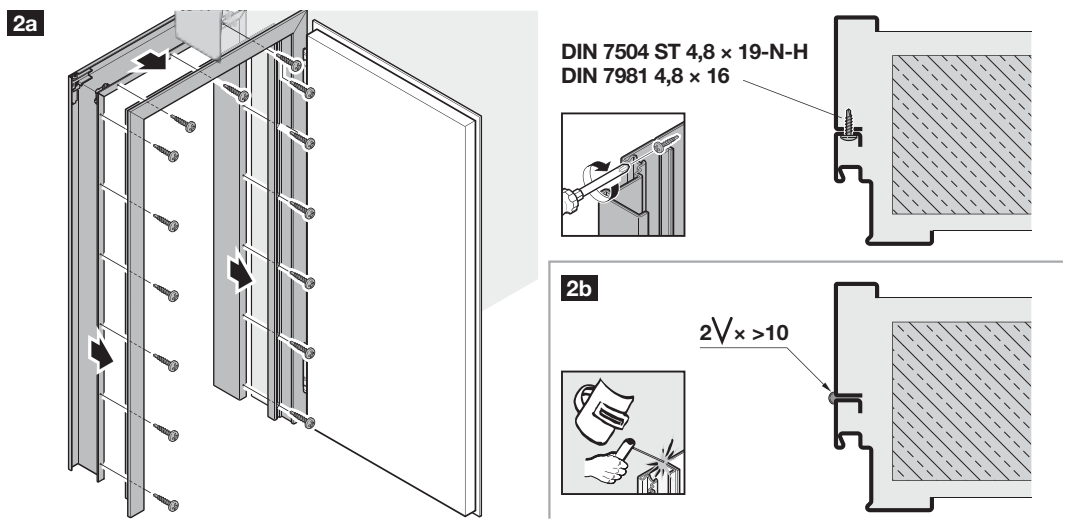
10.4



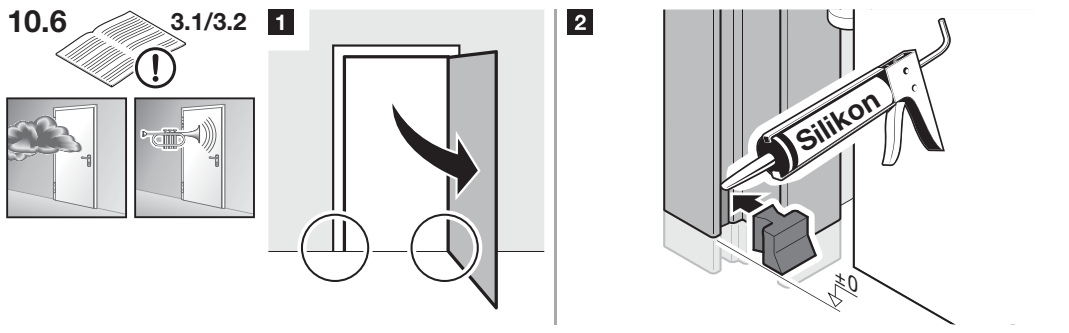
10.5



2a

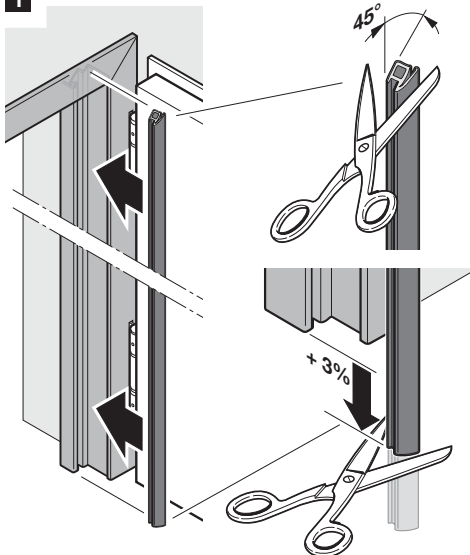
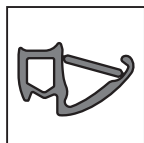


10.6

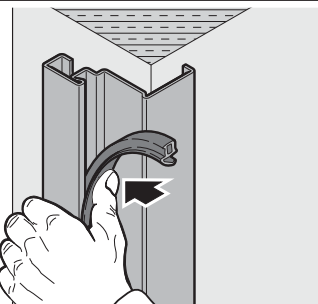


10.7a

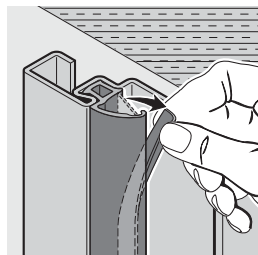
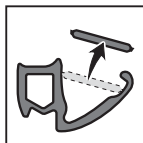
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2



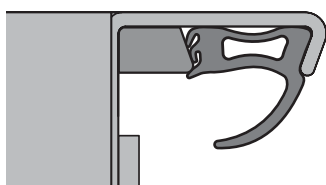
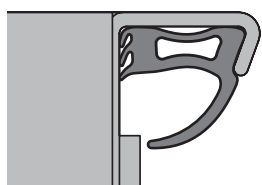
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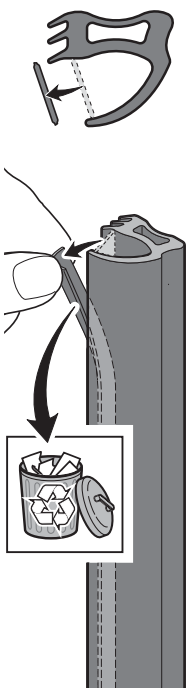
10.7b

A

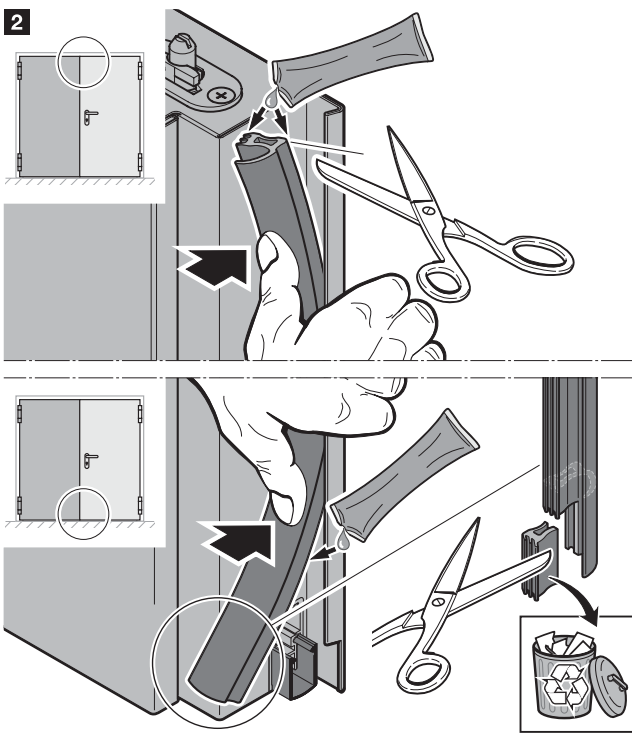
B



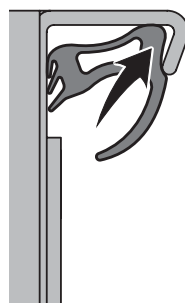
1



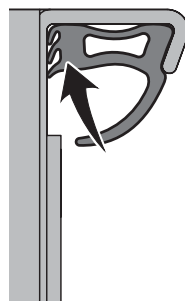
2



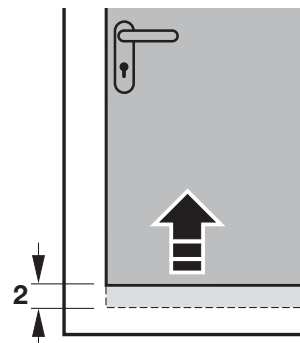
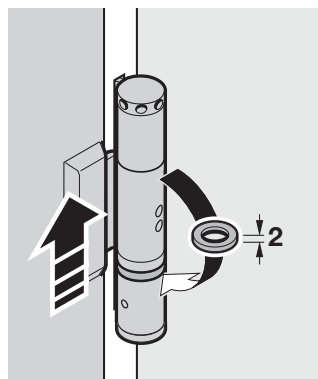
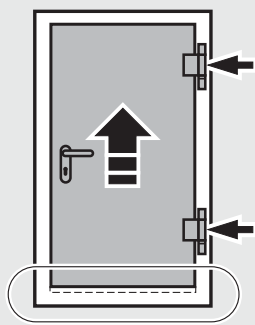
1.



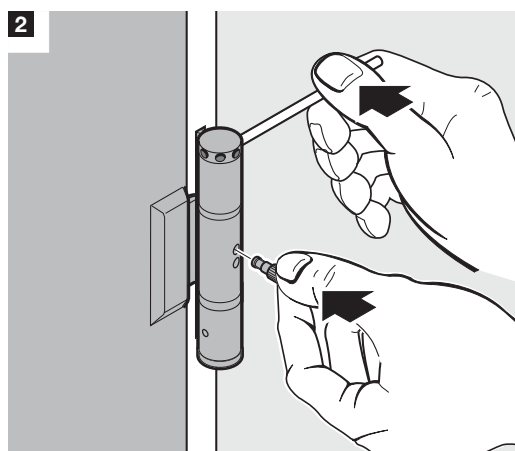
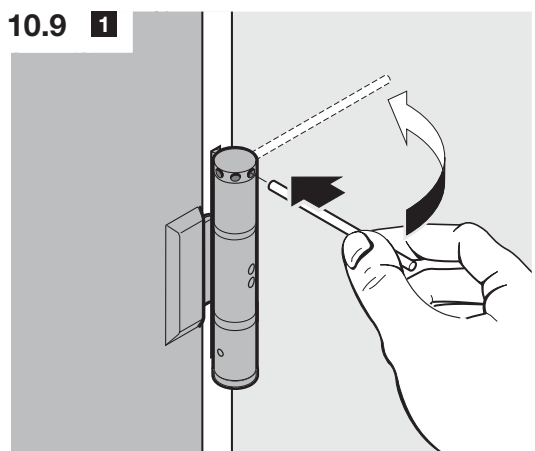
2.



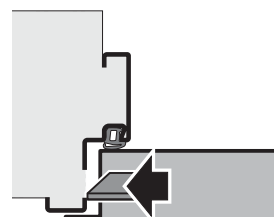
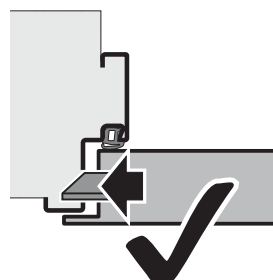
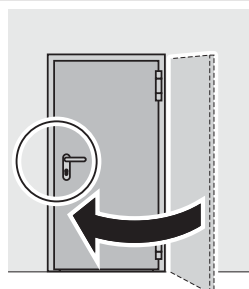
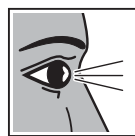
10.8



10.9 1

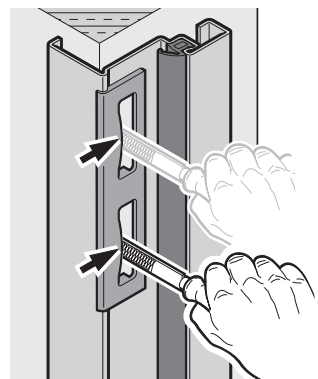


10.10a

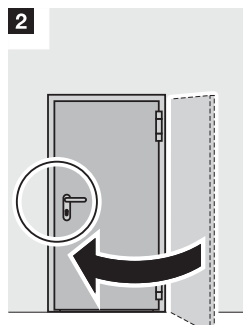


→ 1 2

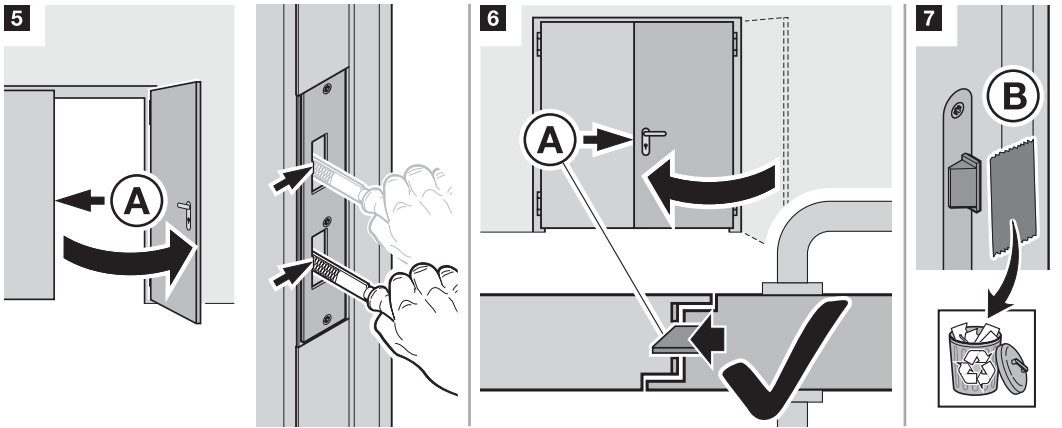
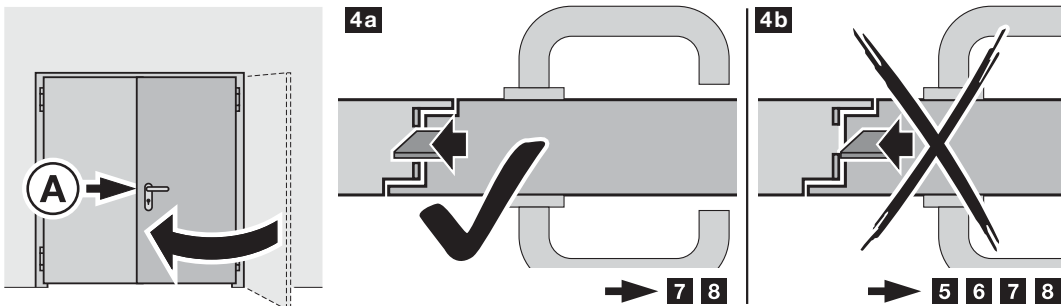
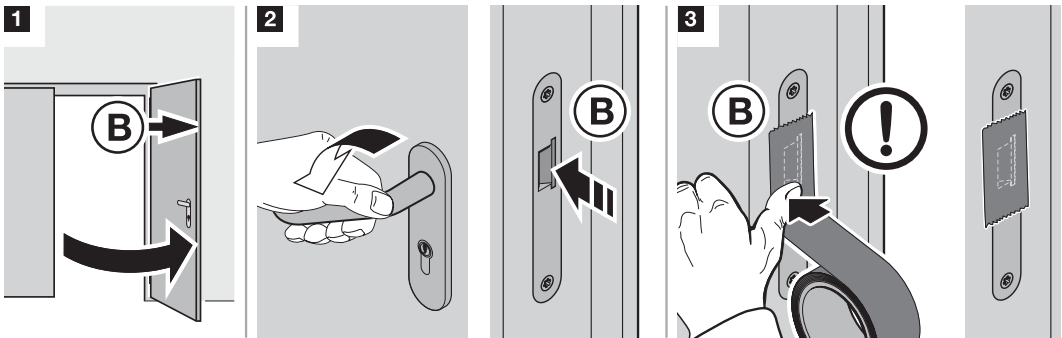
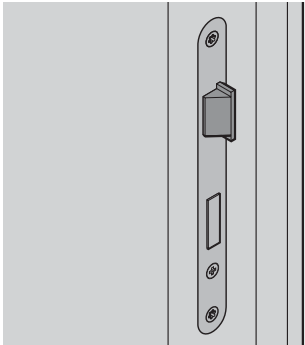
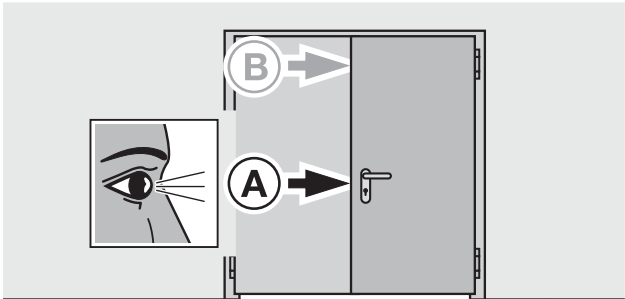
1



2

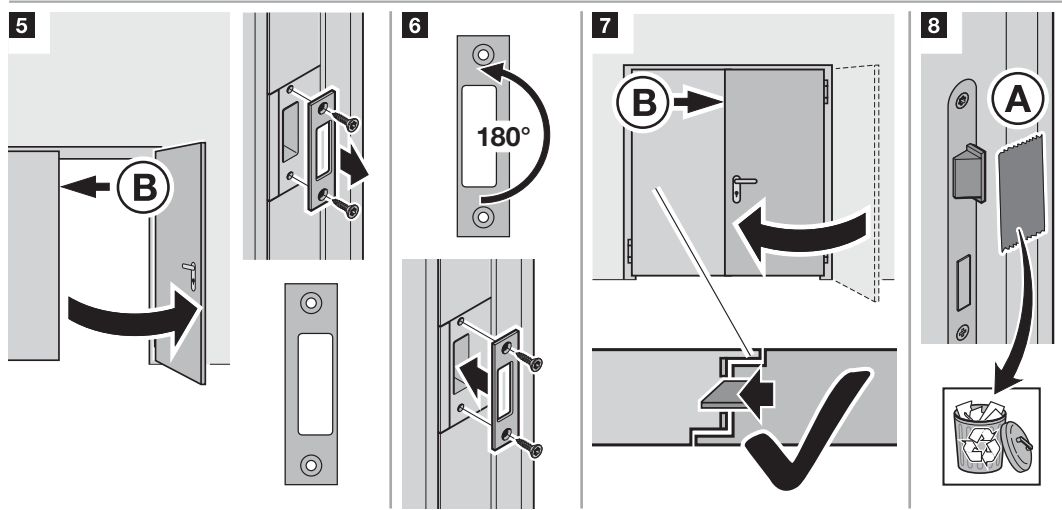
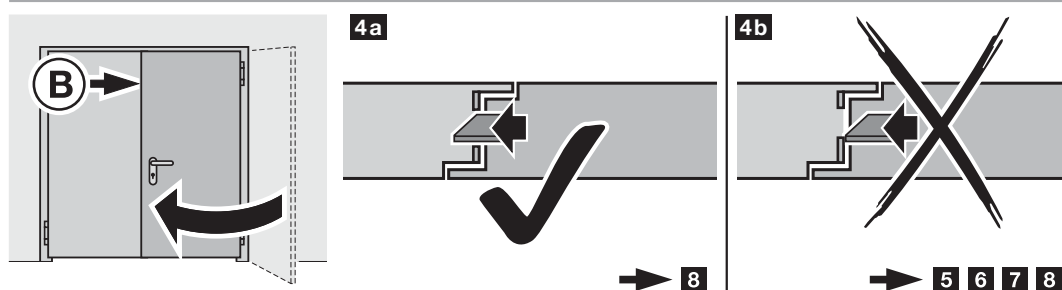
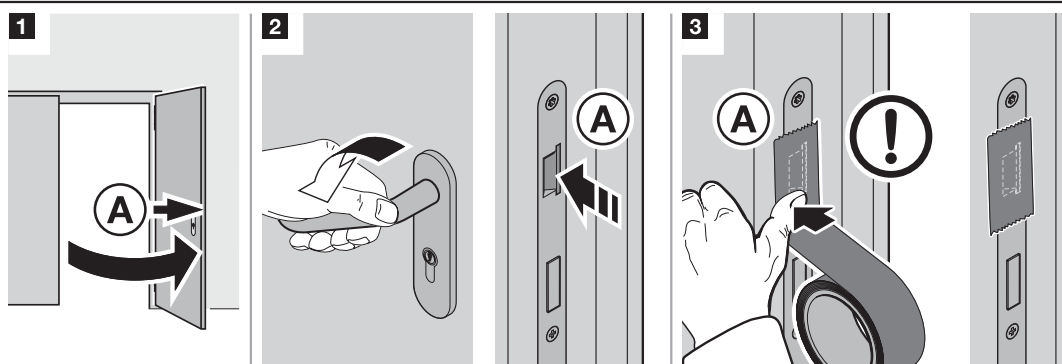
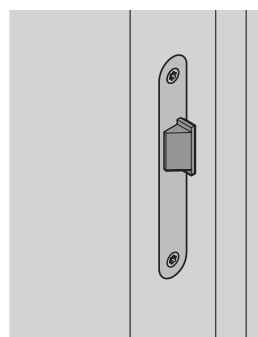
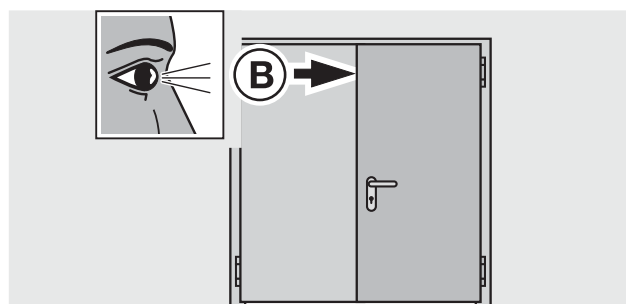


10.10b H16-2 G / H_90 F-2

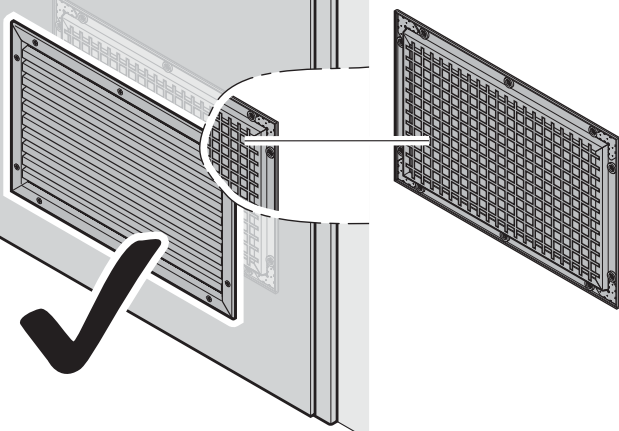


8 → 10.10c

10.10c H16-2 G / H_90 F-2



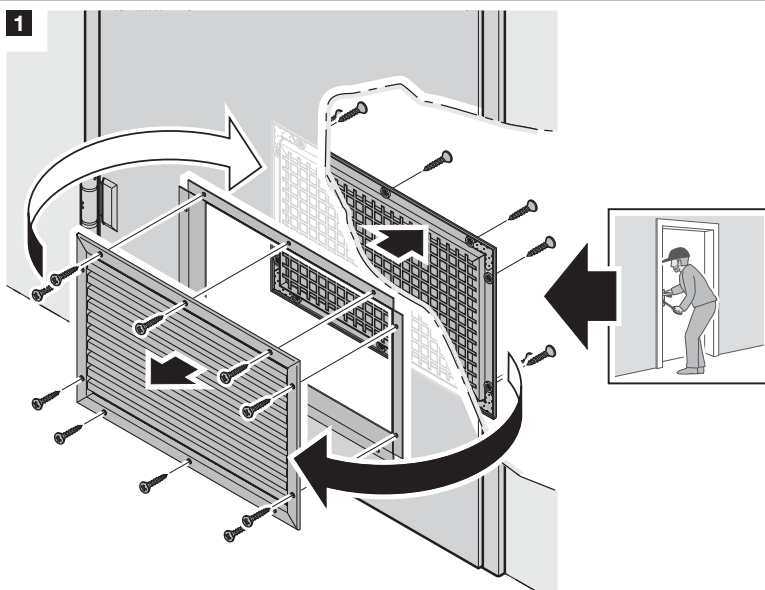
10.11a



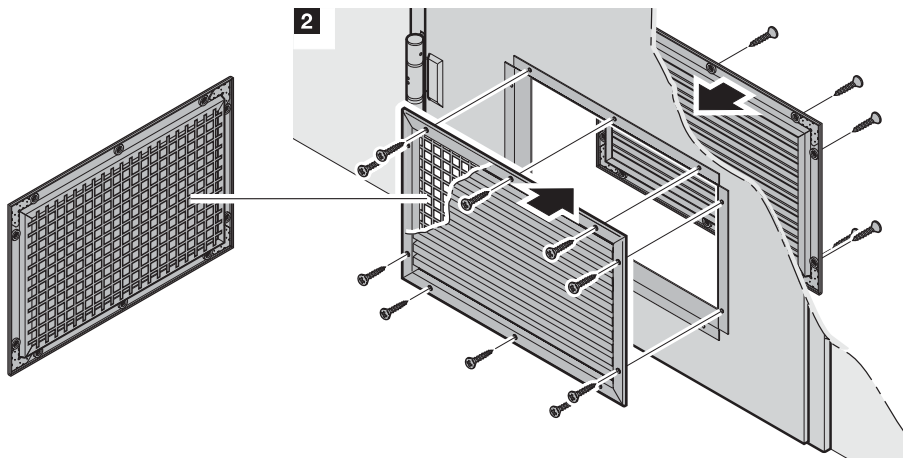
10.11b



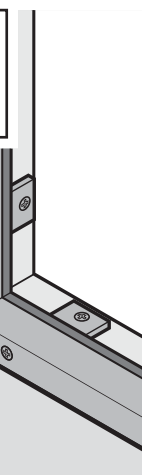
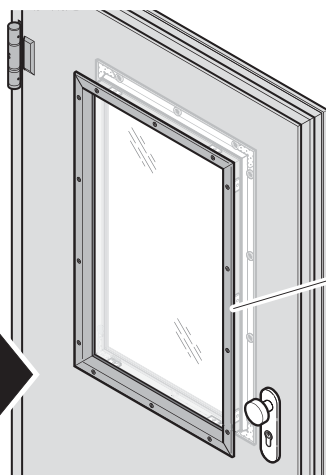
1



2

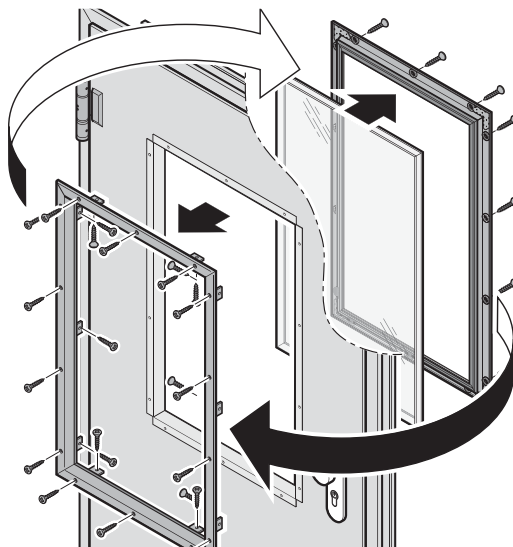


10.12a

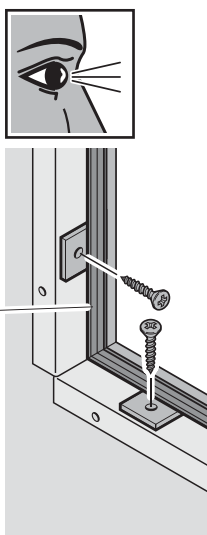
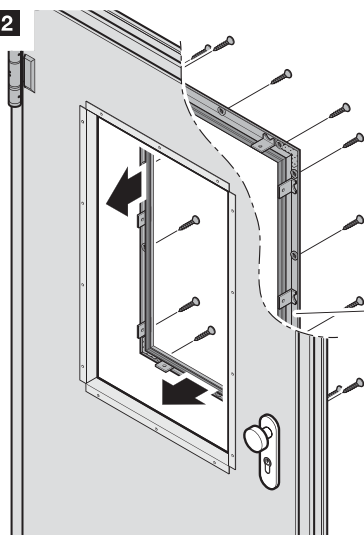


10.12b

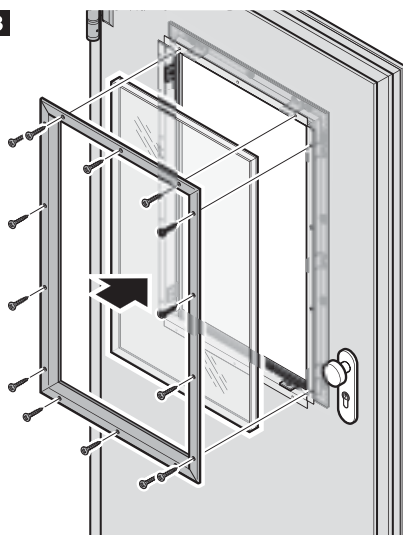
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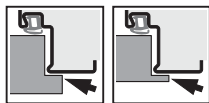
2



3



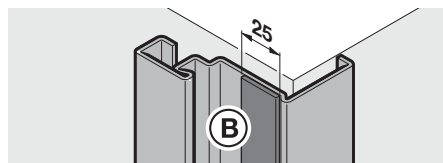
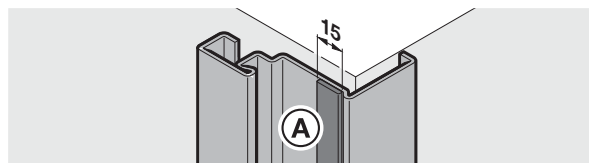
10.13a



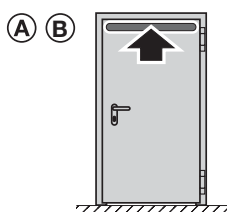
+ H3-1 OD
H3-2 OD



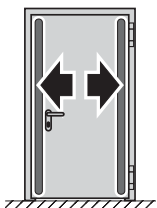
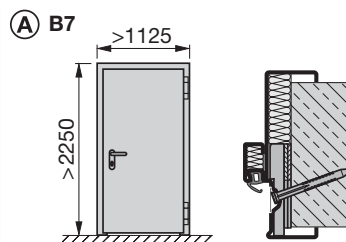
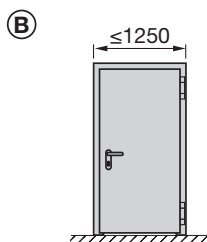
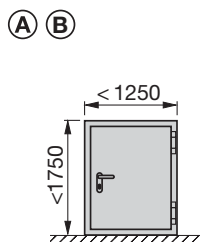
+ H3-1 OD
H3-2 OD



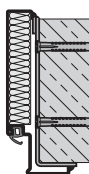
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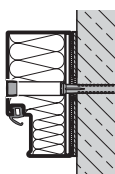
b



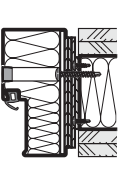
(A) (B)
D4 / D5



(A) (B) E2



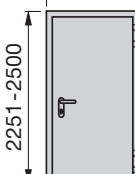
(A) (B) E9



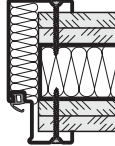
(A) (B) H1



(A) B15
1125 - 1320



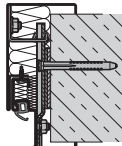
(A) (B) E5 / E6



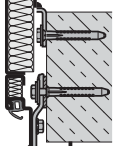
(A) (B) C1



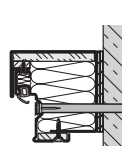
(A) (B) F1



(A) (B) A7

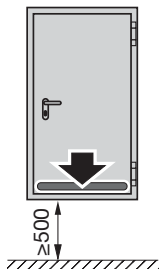


(A) (B) G2



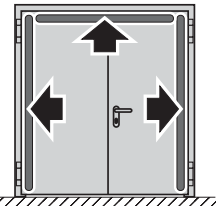
c

(A) (B)



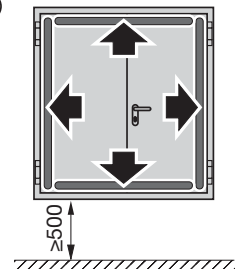
d

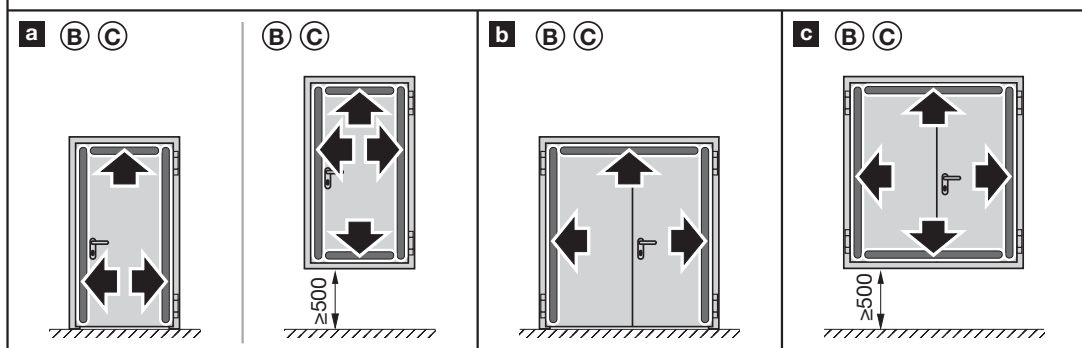
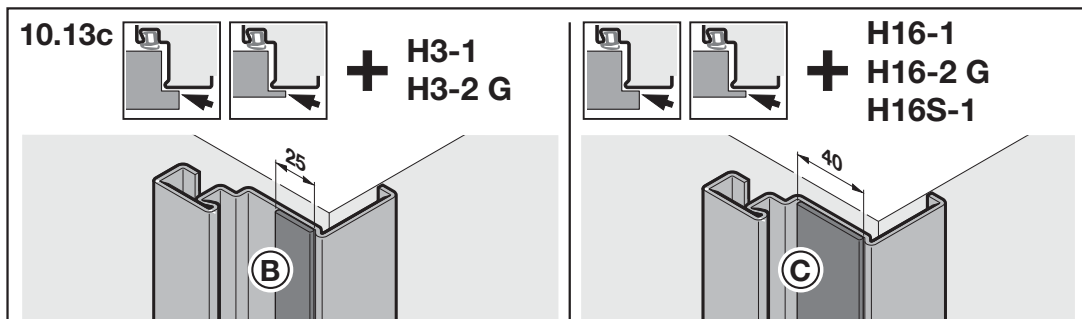
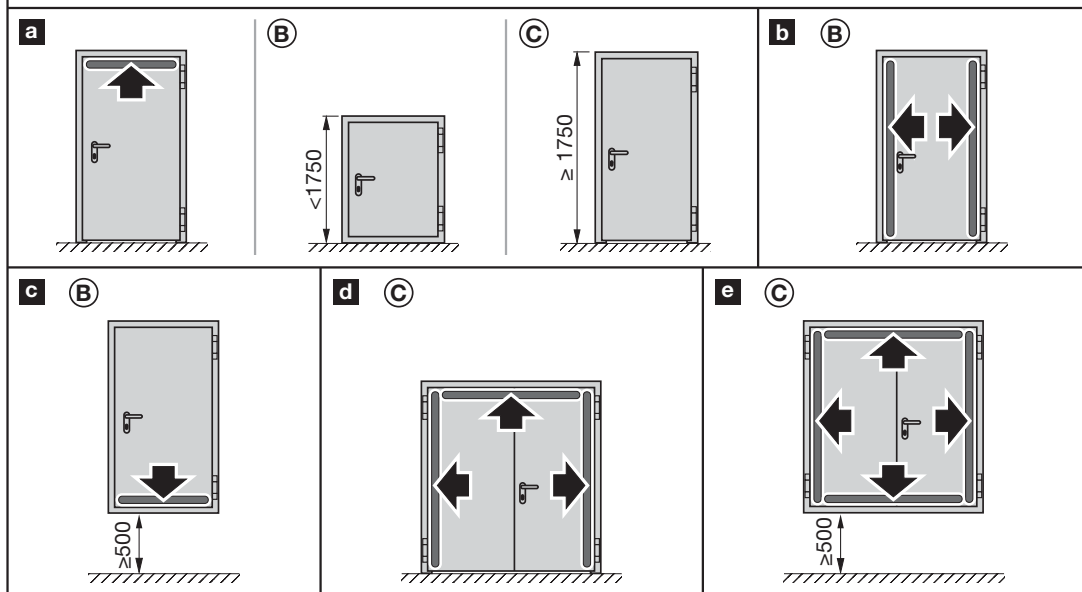
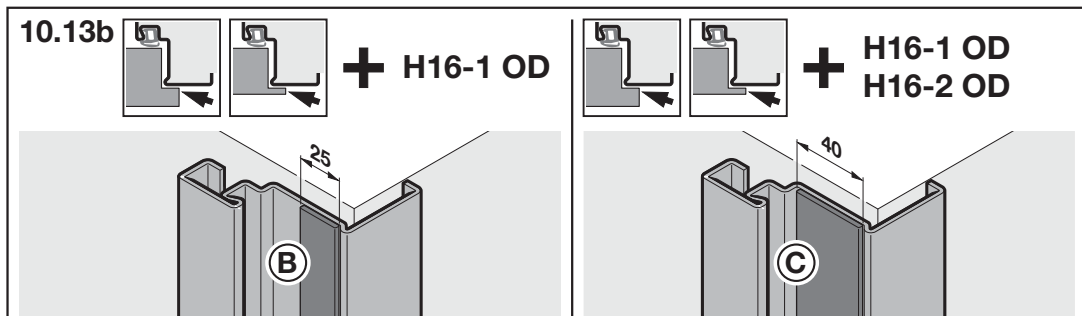
(A) (B)



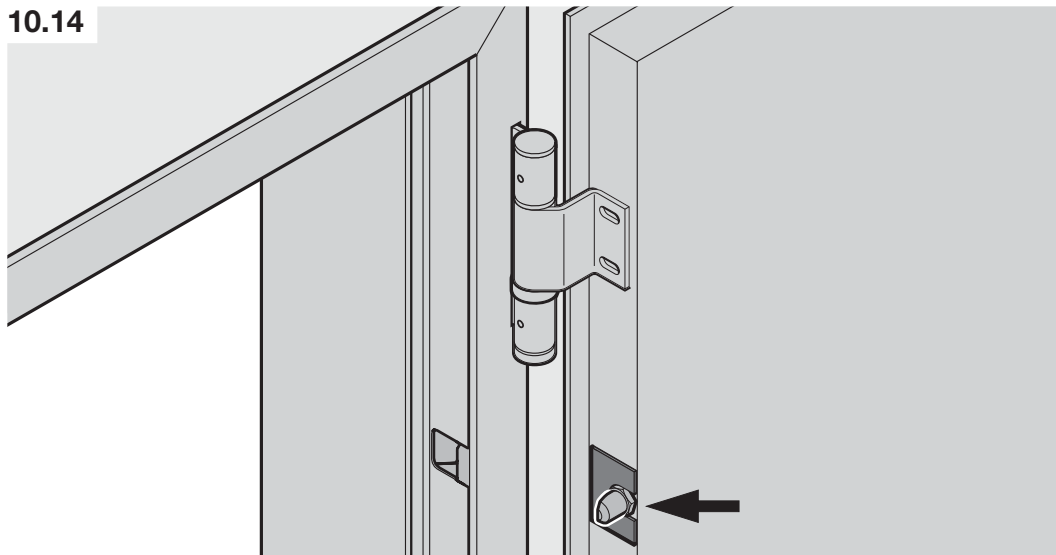
e

(A) (B)

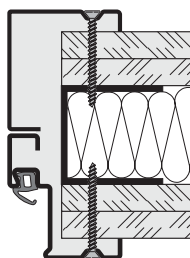




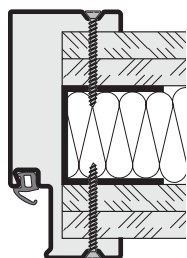
10.14



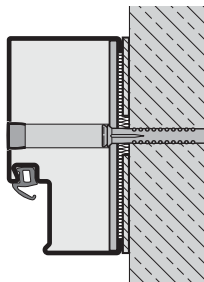
A10-A13



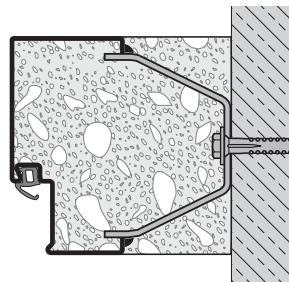
E5-E8



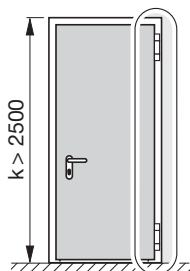
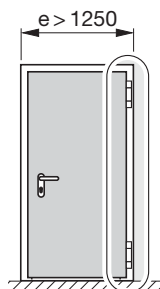
E1, E2



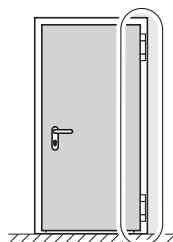
E3



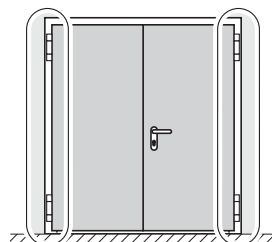
T30-1 / H_30-1



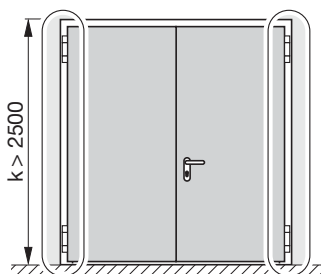
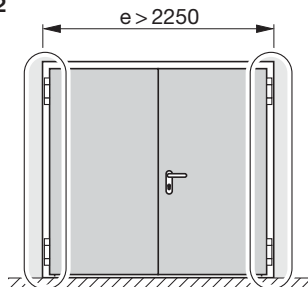
T90-1 / H_90-1



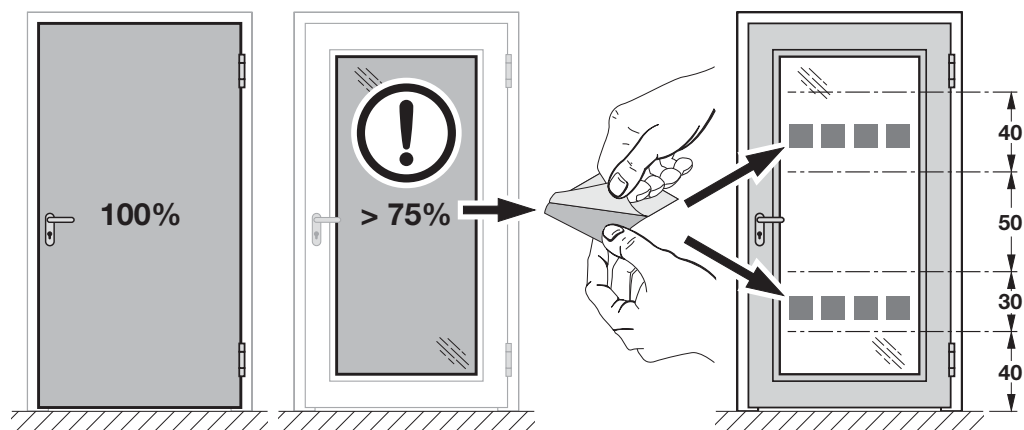
T30-2 RC3 / H_30-2 RC3



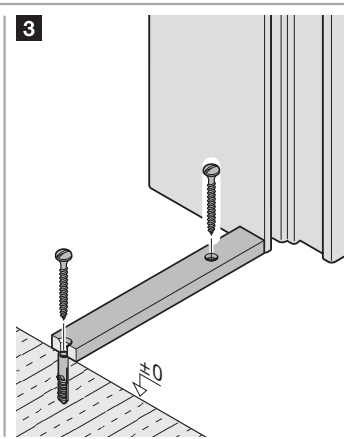
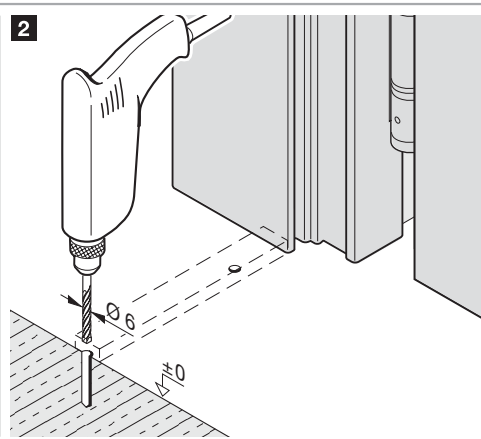
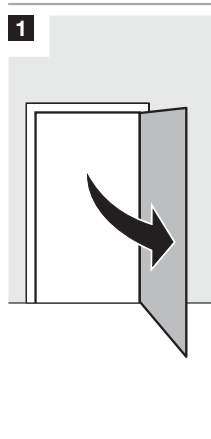
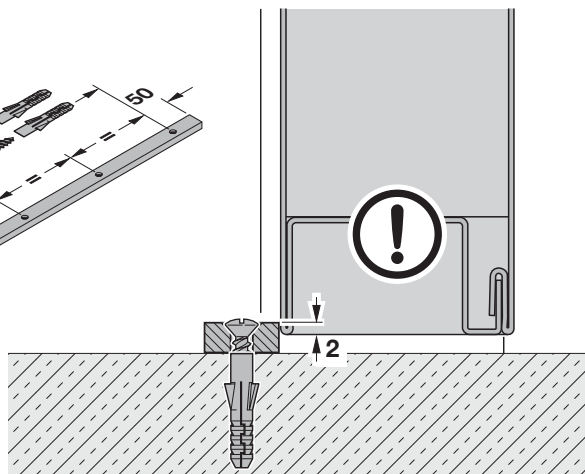
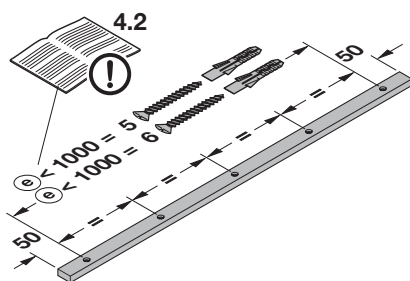
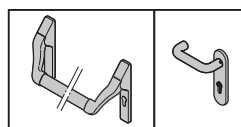
T90-2 / H_90-2



10.15

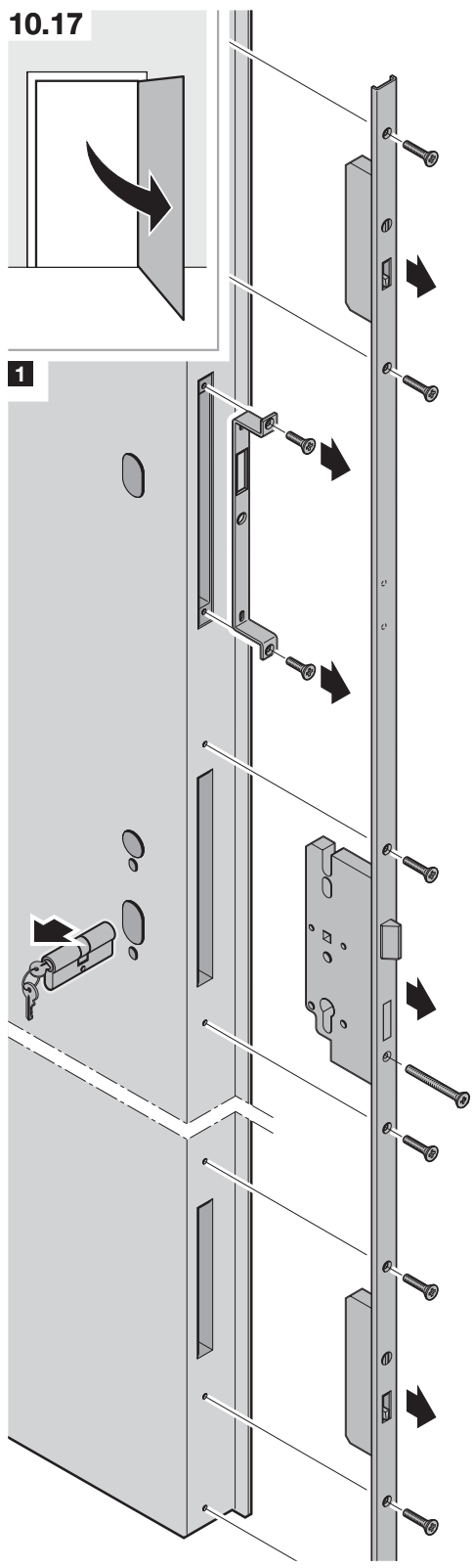


10.16

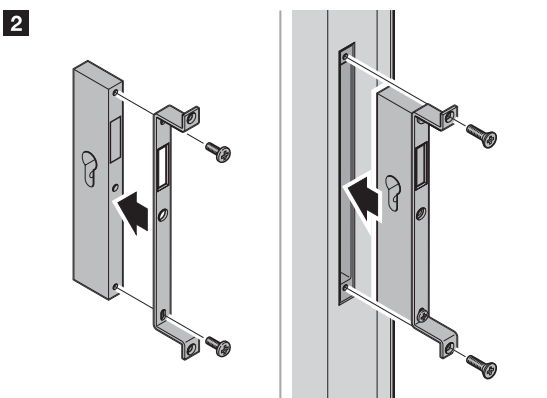


10.17

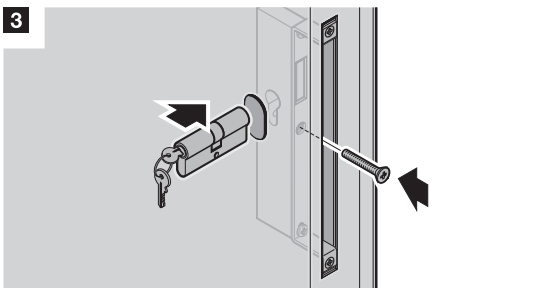
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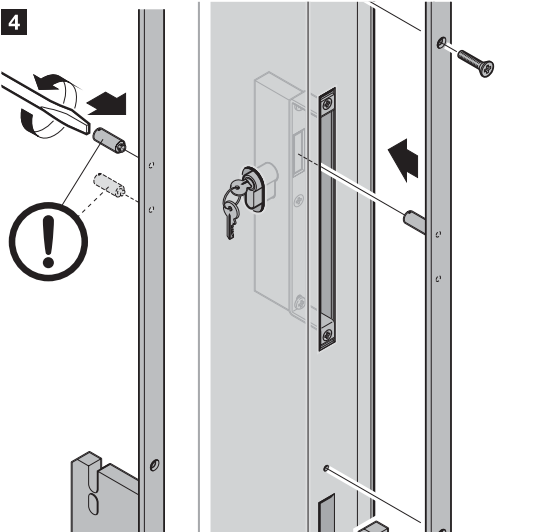
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3

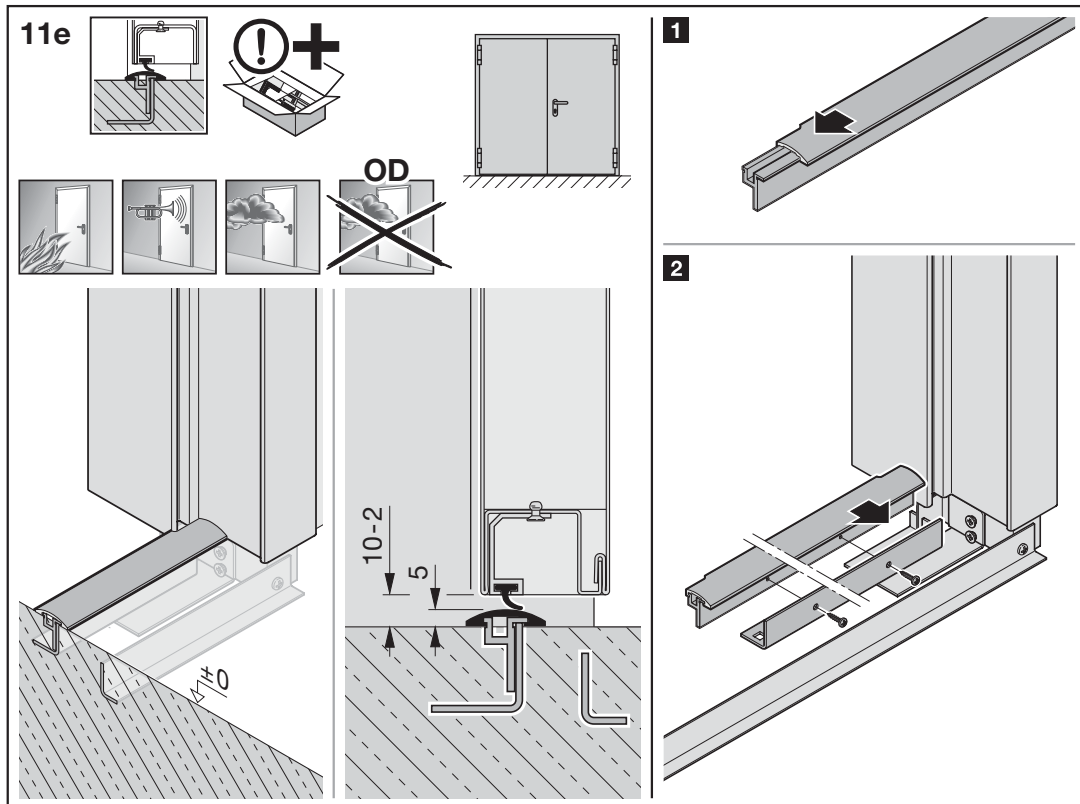
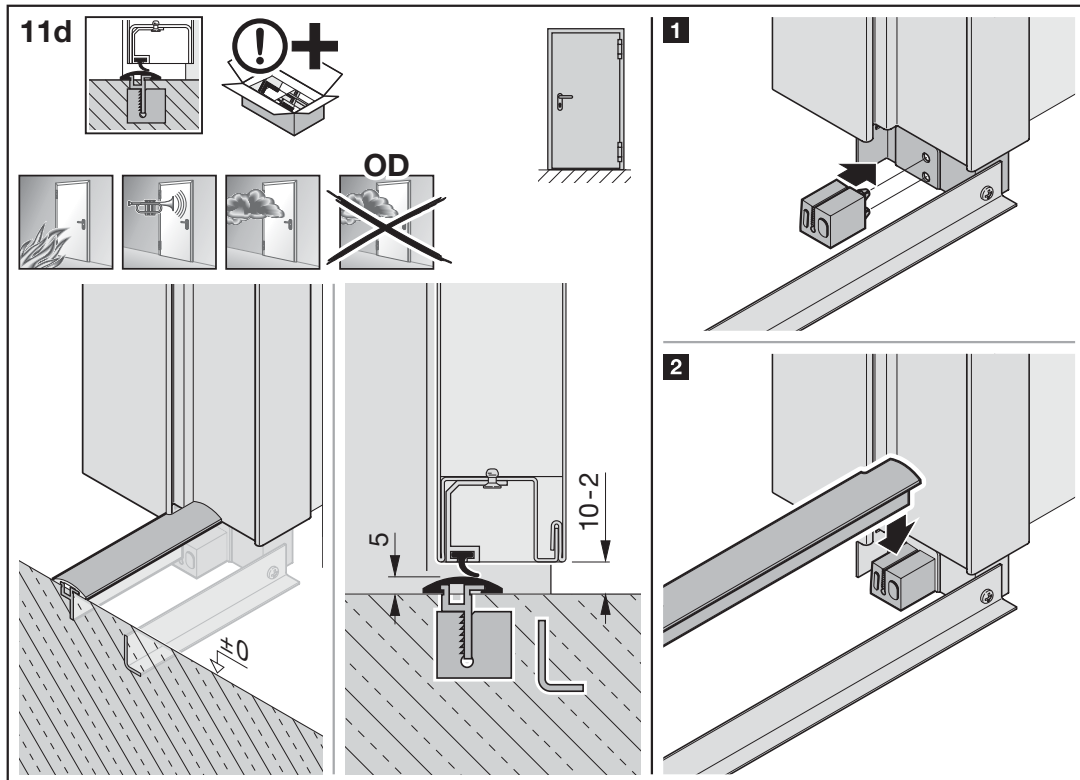


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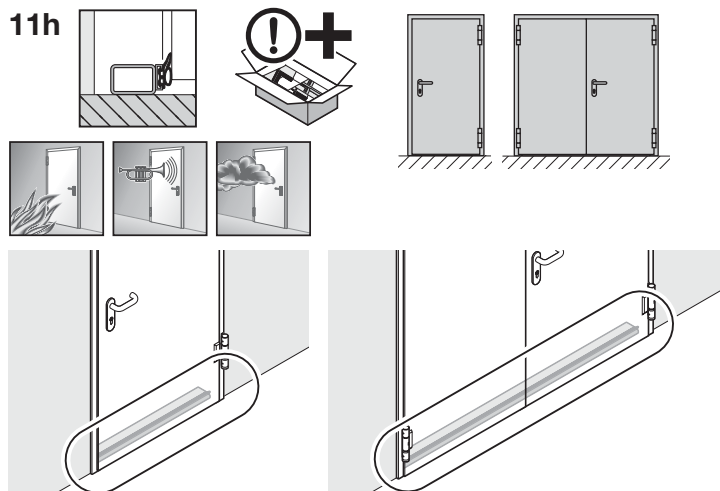


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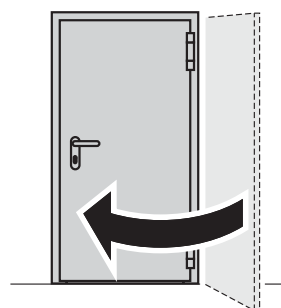




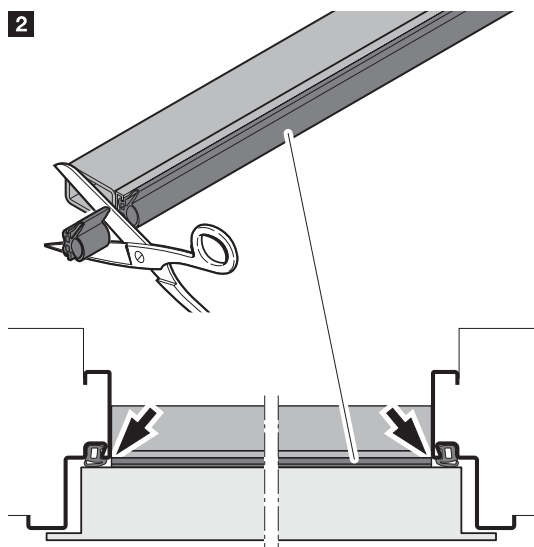
11h



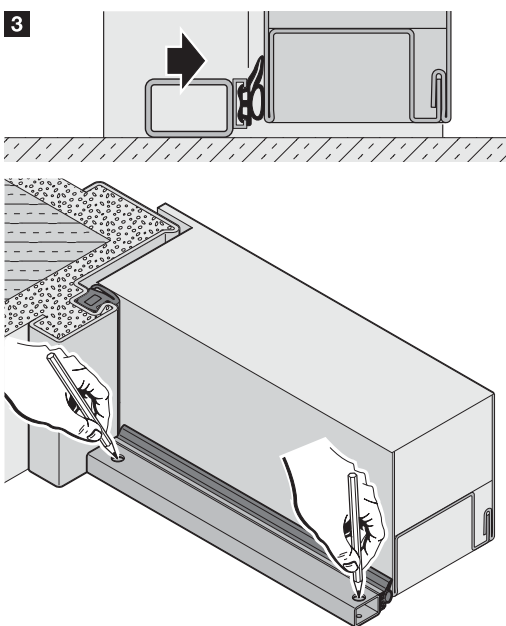
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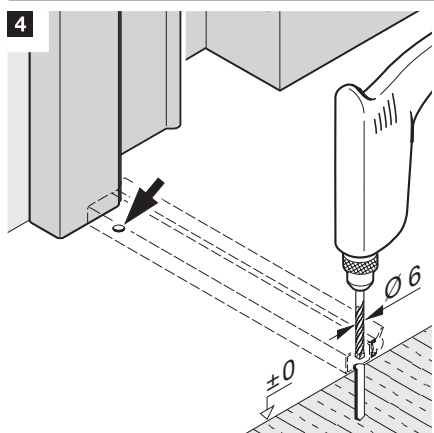
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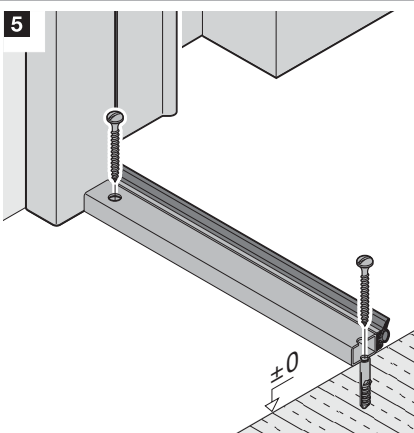
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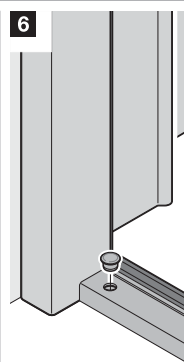
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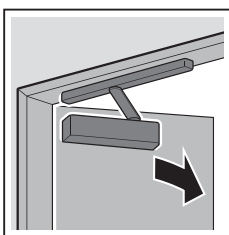
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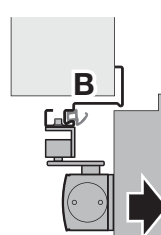
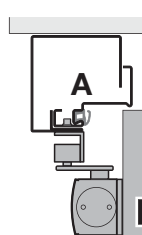
6



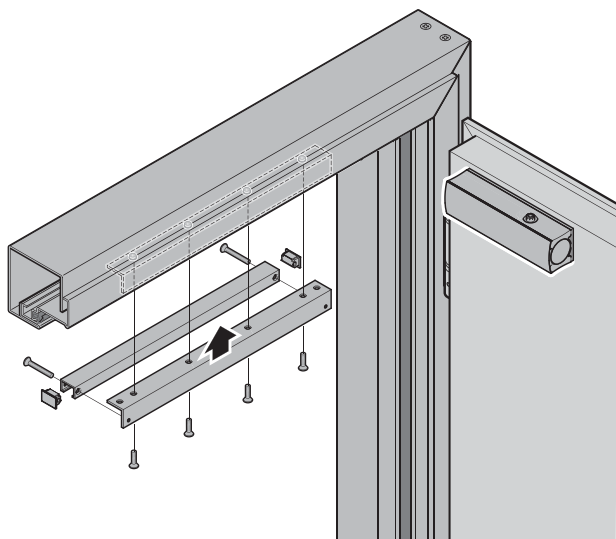
12a



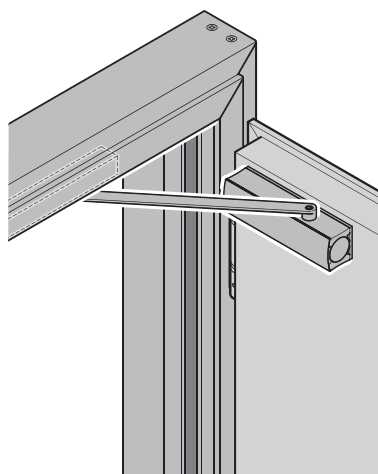
HDC 35 BG



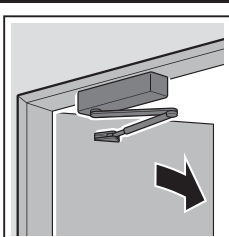
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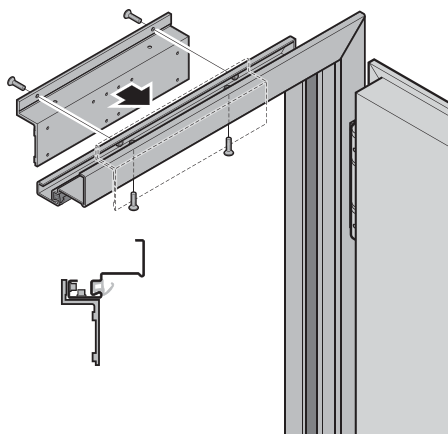
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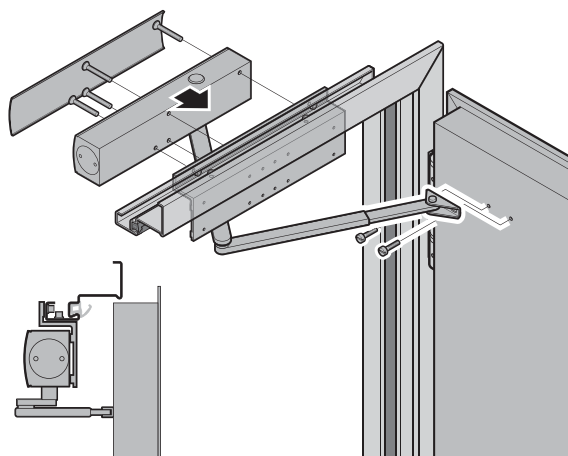
12b

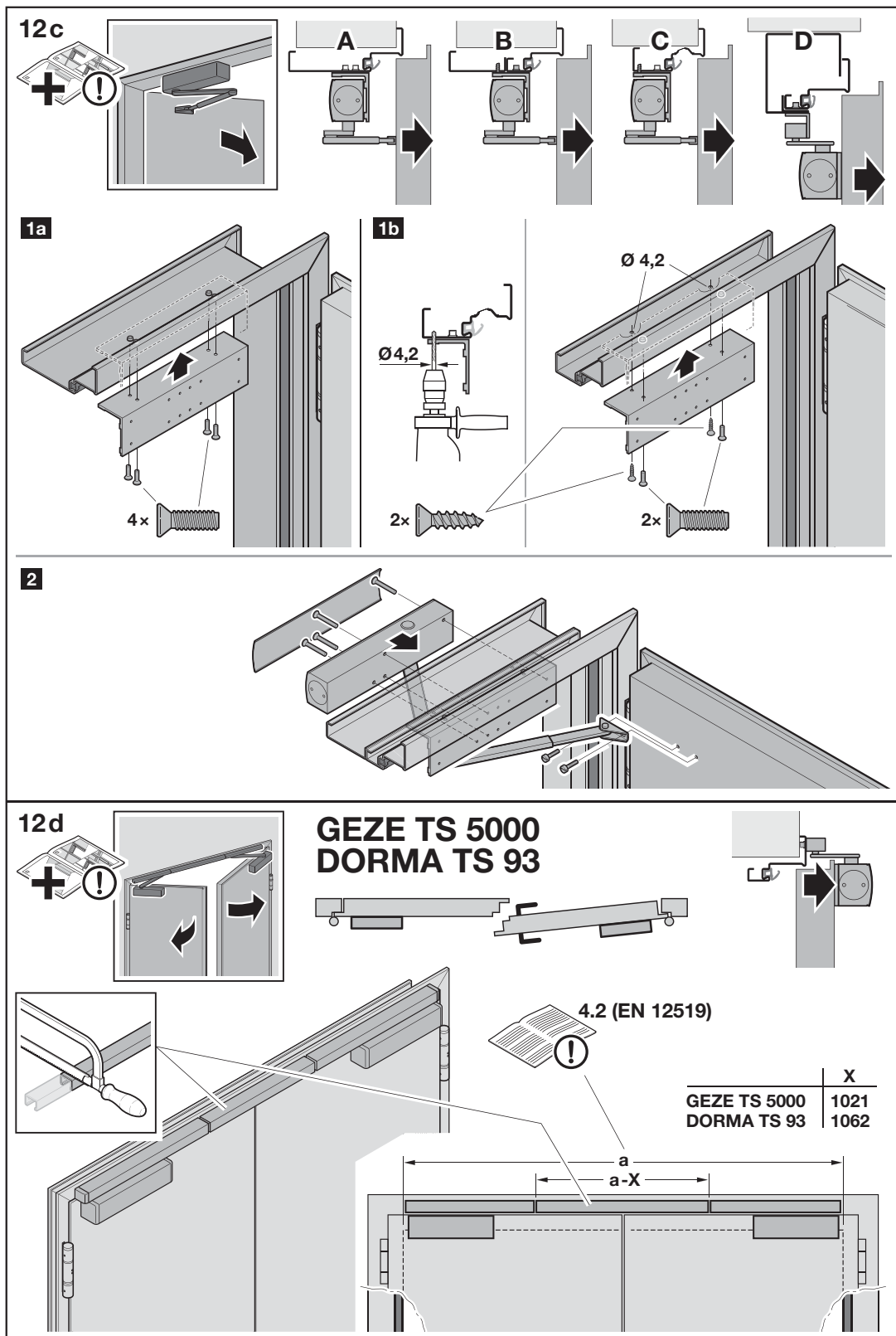


1

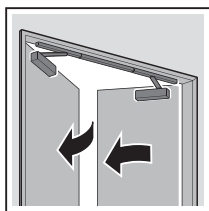


2

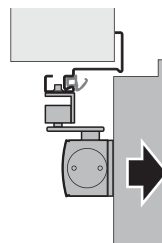




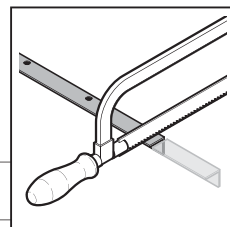
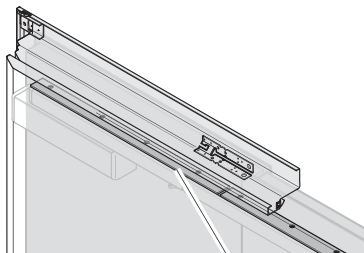
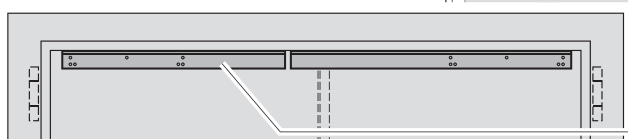
12e



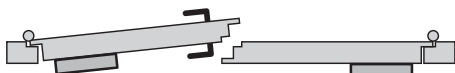
**GEZE TS 5000
DORMA TS 93**



1

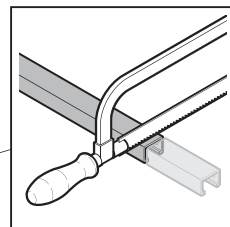
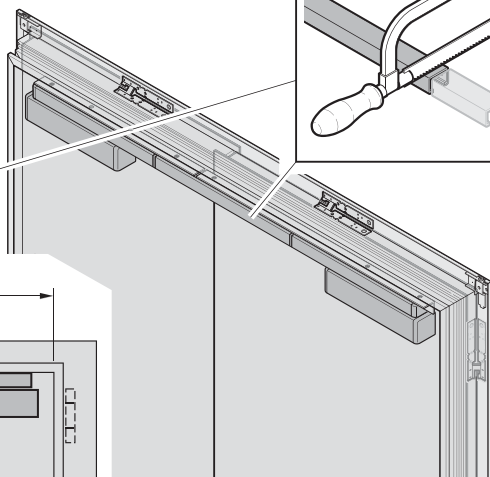
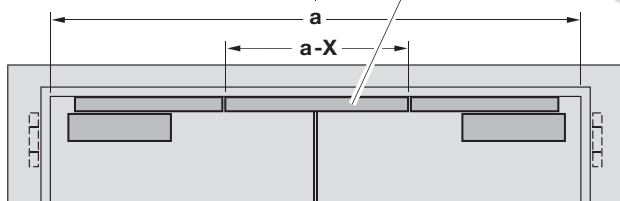


2

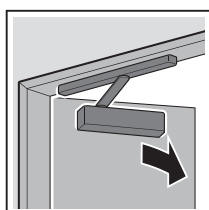


4.2 (EN 12519)

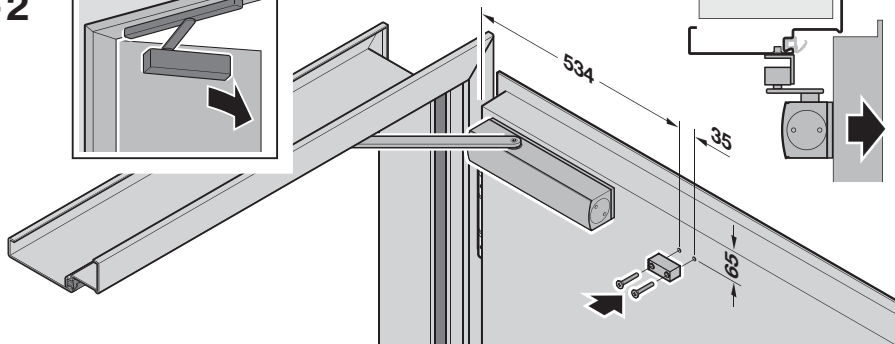
	X
GEZE TS 5000	1130
DORMA TS 93	1179



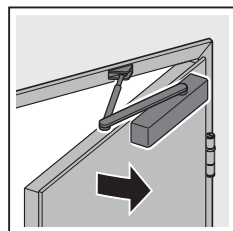
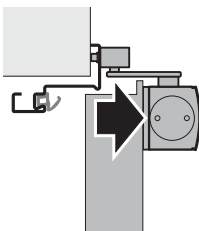
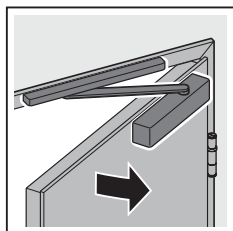
12f **H16-2
H3-2**



TS 93 GSR BG



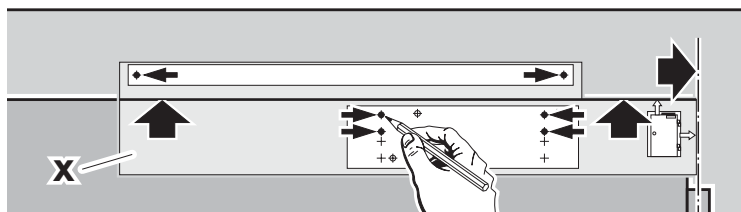
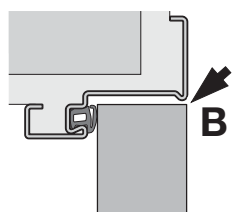
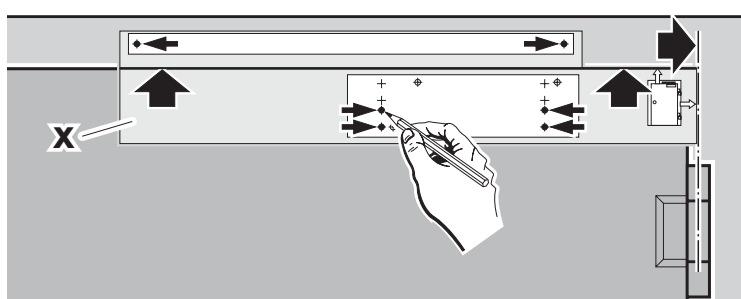
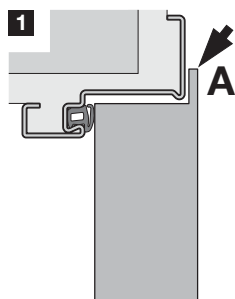
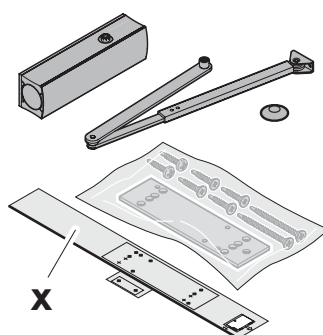
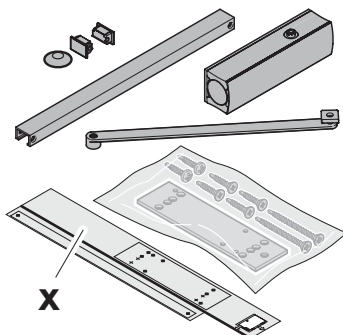
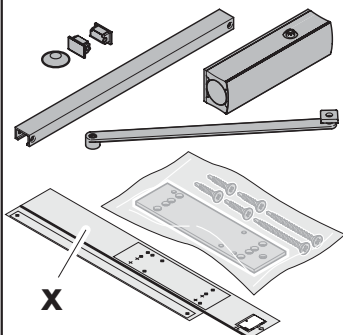
12g



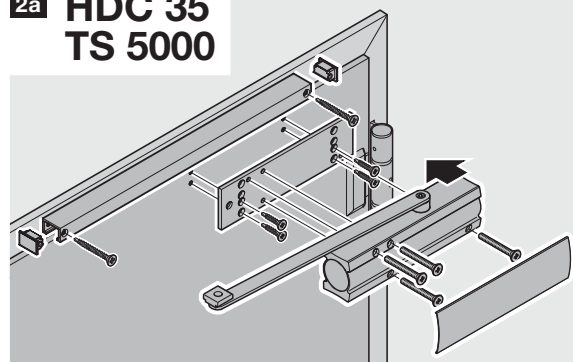
HDC 35

TS 5000

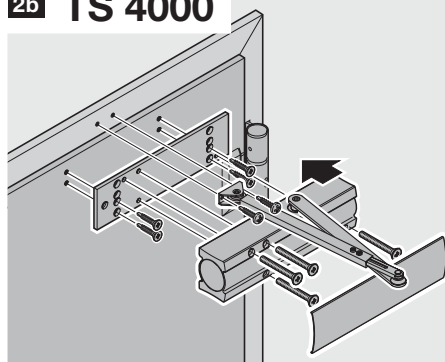
TS 4000



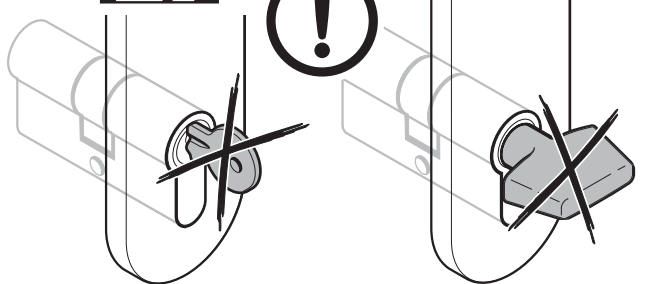
2a **HDC 35**
TS 5000



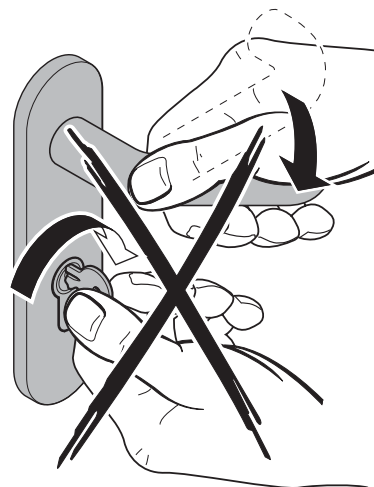
2b **TS 4000**



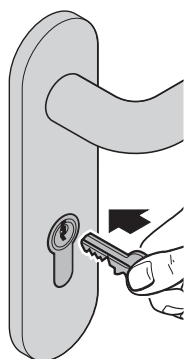
13.1a



13.1b



1



2

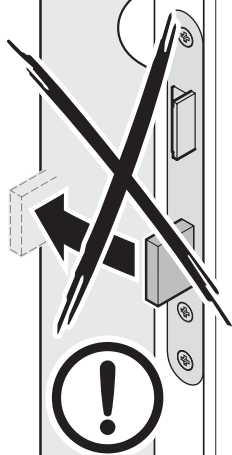


3

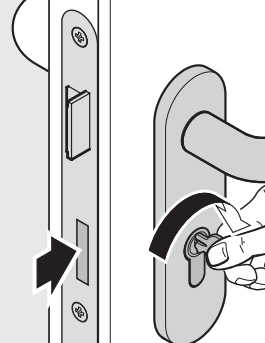


13.2

1



2



3

