



CS

Návod k montáži a údržbě

Jednokřídlé a dvoukřídlé ocelové dveře (Dveře OD, H3G, H16G, HS75, H16S1)

ČESKY..... 3



..... 8

Šíření a rozmnožování tohoto dokumentu, zžitkování a sdělování jeho obsahu je zakázáno, pokud není výslovně povoleno. Jednání v rozporu s tímto ustanovením zavazuje k náhradě škody. Všechna práva pro případ zápisu patentu, užitého vzoru nebo průmyslového vzoru vyhrazena. Změny vyhrazeny.

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Vážená zákaznice, vážený zákazníku,
těší nás, že jste se rozhodli pro výrobek z našeho podniku.

1 K tomuto návodu

Přečtěte si prosím tento návod a dodržujte ho. Poskytuje vám důležité informace o vestavbě, údržbě a péči o ocelové dveře a je důležitým dokumentem pro stavební úkony.

Pokud po přečtení tohoto návodu budete mít ještě nějaké dotazy, obraťte se na naši zákaznickou službu.

1.1 Použité výstražné pokyny

⚠ Obecný výstražný symbol označuje nebezpečí, které může vést ke **zranění osob** nebo smrti. V textové části je obecný výstražný symbol používán ve spojení s následně popsanými výstražnými stupni. V obrazové části odkazuje doplňkový údaj na vysvětlení v textové části.

⚠ NEBEZPEČÍ

Označuje nebezpečí, které bezprostředně vede ke smrti nebo těžkému zranění.

1.2 Použité symboly



Požární ochrana



Protikouřová ochrana



Bezpečnostní dveře



Protihluková ochrana



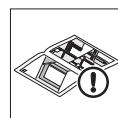
Funkční dveře



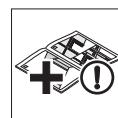
Důležité upozornění



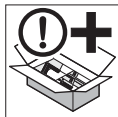
Viz textová část



Viz obrazová část



Viz montážní návod
v odpovídajícím
balení příslušenství



Lze objednat jako
příslušenství



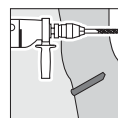
Korektní
postup



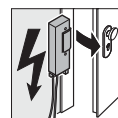
Nepřípustný
postup



Svařování



Vrtání



Elektrický
otevrač dveří



Nebezpečí vloupání
ze strany pantů



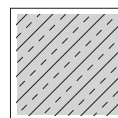
Nebezpečí vloupání
ze strany protipantů



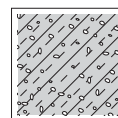
Úniková cesta



Dřevo



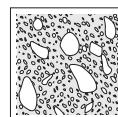
Zdivo / beton



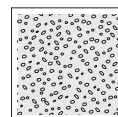
Porobeton



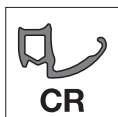
Sádra



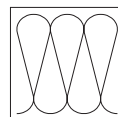
Beton



Malta



Zárubňové těsnění CR
T60 / El₂ 60 / HBS60
T90 / El₂ 90 / HBS90
T120 / El₂ 120 / HBS120
T30 / El₂ 30 s výplní minerální vlnou



Izolační hmota A
(EN 13501-1)

2 Bezpečnostní pokyny

NEBEZPEČÍ

Nebezpečí ohrožení života při vestavbě ocelových dveří

Při vestavbě se mohou dveře nebo rám dveří převrhnout a zabít osoby.

- ▶ Zajistěte dveře a zárubeň před a během montážních prací proti převrnutí.

- Montáží a údržbou pověřujte jen kvalifikovaný a poučený personál.
- Elektrotechnické práce nechte provádět jen školenými odborníky.
- Neprovádějte žádné změny nastavení a přestavbami, které by mohly ovlivnit bezpečnost.
- Vylučte nebezpečí vyvolané ohněm, plynem, prachem, párou, kouřem, požárem a explozí při svařování, pálení a broušení.
- Zabraňte tepelné reakci a tím ztrátě účinku vypěňovacích konstrukčních materiálů při svaření.

3 Informace o vlastnostech dveří

Dbejte na to, aby dodané dveře mohly splňovat jednotlivé vlastnosti nebo kombinaci vlastností požární ochrany, protikouřové ochrany, hlukové ochrany nebo ochrany proti vzloupání, nebo mohly být funkčními dveřmi.

3.1 Požární ochrana a protikouřová ochrana

- Příslušné schválení je vynecháno naleznete na webové stránce www.hoermann.de/dokumentation/zulassungsbescheide-fuer-feuerschutzabschluesse/ Schválení musí být k dispozici na místě použití.
- Uvedené informace jsou minimálními požadavky pro montáž v Německu. Při montáži v jiných zemích platí příslušné národní homologace, přičemž základem musí být parametry materiálu minimálně vyhovující DIN.
- Dodržujte normy DIN 18093 (Montáž protipožárních dveří) a DIN 18100 (Otvory stěn pro dveře), popřípadě místní předpisy.
- Výrobce může v jednotlivých případech podle § 22 a § 23 Vzorového uspořádání staveb vystavit prohlášení o shodě.
- **Provozovatel odpovídá za bezvadný stav dveří.**

- Pružinové závěsy **nesmí** být v Německu použity na dveřích a klapkách s následujícími vlastnostmi:
 - hmotnost křídla > 80 kg
 - prosklení
 - vestavba do předmontované stěny (výjimka: rozměry < 1000 × 1000 mm)
 - kombinace jako kouřotěsné dveře podle DIN 18095
 - dvoukřídle

Mimo území Německa mohou platit jiné předpisy, doporučujeme ovšem dodržování německých zadání.

- Kování, zámky, uzavírací prostředky a elektrické přídavné díly používejte, jen když jsou součástí osvědčení dveří nebo jsou schváleny výrobcem.
- V šachtách na úrovni nejspodnější podlahy vestavte dveře s třístrannou polodrážkou bez spodního uzávěru šachty.
- Sádrokartonové stěny a tloušťky: stěn viz Tab. 1:
- Přípustné stěny a tloušťky: stěn viz Tab. 2:
- Zaplňte zárubeň minerální maltou na bázi cementu, např. LM21 od firmy Sakret, není-li v montážní situaci popsáno jinak. Zárubně U a rohové zárubně (s protizárubní nebo bez ní) před vyplněním podepřete, aby se tlakem malty neprohnuly.
- **Protikouřová ochrana:**
 - Použijte podlahová těsnění a těsnící klíny (viz obrazová část, body 10.6 a 11).
 - Uzavřete napojení zárubně na okolní stavební díly oboustranně a bez mezer trvale elasticky, pokud zárubeň není vyplněna maltou.
 - Použijte válcové vložky zámku.
- Prosklení protipožárních dveří nevystavujte přímému slunečnímu záření.

3.2 Protihlukové dveře

- Celkové tlumení hluku závisí na okolních stavebních dílech. Výsledné tlumení hluku stěny a dveří musíte prokazovat odděleně, protože je nelze odvodit z vyhodnocené míry útlumu hluku R_w nebo R samotných dveří.
- Dbejte na to, aby těsnění zcela přiléhalo.
- Podlaha musí být hladká, aby byla zaručena dokonalá těsnící funkce podlahového těsnění.
- Přerušte potěr v oblasti prahu.
- Použijte těsnící klíny a podlahové těsnění (viz obrazová část, body 10.6 a 11).
- Použijte válcové vložky zámku.

Tab. 1: Schválené předmontované stěny F90A s minimální tloušťkou pro protipožární a kouřotěsné dveře, výška ≤ 5000 mm

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

1) max. 2750 × 2750 mm

Tab. 2: Přípustné stěny a minimální tloušťky stěn pro protipožární a kouřotěsné dveře (mm) viz 4.2

Stěna	H3-1 OD H_30-1 OD		H3-2 OD H_30-2 OD		H3-1 G H_30 D1	H3-2 VM H_30 D2	H16-1 G H_90 D1	H16-2 G H_90 F-2	H16-S1 H_90 E-1	H16-1 OD H_90-1 OD		H16-2 OD H_90-2 OD	
	1) k ≤ 2500	2) k > 2500	1) k ≤ 2500	2) k > 2500						—	—	—	—
Beton DIN 1045-1, pevnost ≥ C12/15	100	140	100	140	140	140	140	140	120	—	—	—	140
Zdivo DIN 1053-1, pevnost cihel ≥ 12, skupina malty ≥ 2	1) k ≤ 2500	k > 2500	1) k ≤ 2500	2) k > 2500	—	—	—	—	—	e ≤ 625 k ≤ 750	e > 625 k > 750	—	—
Pórobetonový blok nebo ploché tvárnice , DIN 4163-3, třída pevnosti ≥ 4, Pórobetonové desky podle ABP, mějte na zřeteli obr. 9D, třída pevnosti ≥ 4,4	115	175	115	175	175	175	240	240	175	115	175	175	175
	k ≤ 2500	k > 2500	k ≤ 2500	k > 2500	—	—	—	—	—	—	—	—	—
Předmontovaná stěna F90-A podle ABP, mějte na zřeteli obr. 9D, max. výška 5000 mm	150	—	150	—	175	175	200	200	175	200	200	200	200
	3)	—	3)	—	3)	3)	—	—	3)	—	—	—	—
Předmontovaná stěna F90-A DIN 4102-4/ tab. 48, mějte na zřeteli obr. 9D, max. výška 5000 mm	e ≤ 1320	—	e ≤ 2500	—	—	—	—	—	—	—	—	—	—
	100	—	100	—	100	100	—	—	125	125	125	125	125
Předmontovaná stěna F90-B DIN 4102-4/ tab. 49, mějte na zřeteli obr. 9D, max. výška 5000 mm	e ≤ 1250 a k ≤ 2500	—	e ≤ 2500 a k ≤ 2500	—	—	—	—	—	—	—	—	—	—
	4) 100 / 5) 130	—	4) 100 / 5) 130	—	—	—	—	—	—	—	—	—	—
Předmontovaná stěna F30-B	e ≤ 1125 a k ≤ 2125	—	—	—	—	—	—	—	—	—	—	—	—
	185	—	—	—	—	—	—	—	—	—	—	—	—
Sádrové příčkovky VG Orth, P-SAC 02/III-468, mějte na zřeteli obr. 9/A17	—	—	—	—	—	—	—	—	—	—	—	—	—
	100	—	100	—	—	—	—	—	—	—	—	—	—

1) bez horního dílu

2) s horním dílem

3) stěn viz Tab. 1:

4) dvourámová zárubněn

5) Dryfix

- Vyplňte zárubeň zcela maltou.
- Rohy těsnění zárubeň seřiznuté na pokos slepte např. lepidlem Kórtan UC 41.

3.3 Dveře chránící proti vloupání

- Dveře splňují vlastnosti ochrany proti vloupání pouze tehdy, když je zástrčka kompletně uzamčená a klíč je vytažen.
- Zajištěte dveřní křídla u dveří RC4/B a u všech dvoukřídlových dveří na závěsech vždy dvěma šrouby (viz obrazová část, body 8.3b).
- Používejte jen rohové zárubeň, rohové zárubeň s protizárubní a zárubeň U.
- U dveří RC2/N vyplňte zárubeň v prostoru uzamykacích bodů, závěsů a pojistných čepů odolně proti tlaku.
- U dveří RC3/A a RC4/B vyplňte zárubeň po celém obvodu odolně proti tlaku.
- U dveří se sklem namontujte na dveře rám držáku skla se zabezpečovacími sponami na straně působení.
- Při výměně horního prosklení namontujte zadní vložku jako před montáží.
- U dvoukřídlových dveří změňte rozměry spodní mezery podlahového vybrání.
- U antipanikových dveří ztižte zásah drátem např. malou vzduchovou mezerou u podlahy nebo použitím plochého zaobleného prahu.
- Jsou-li zárubeň dveří RC2 instalovány do montovaných příček F90A, vyplňte je kompletně maltou.

3.3.1 Minimální požadavky na dveře zamezující vloupání

Třída odporu dle DIN EN V 1627 / DIN EN 1627 / VDS	RC2 / N	RC3 / A	RC4 / B
Zdivo DIN 1053 díl 1 (mm)	115	115	240
Železobeton, min. C12 / 15 (mm)	100	120	140
Pórobetonové cihly třídy 4 (mm)	175, 115 ¹⁾	300	-
Pórobetonové desky třídy 4 (mm)	150	-	-
Předmontovaná stěna F90 A	✓	-	-
Profilová cylindr. vložka podle DIN 18252 ³⁾	P2BS	P2BS	P3BS
Profilová cylindrická vložka ^{2) 3) 4)}	Třída A	Třída A	Třída B
Bezpečnostní kování podle DIN 18257 ³⁾	ES1 (ZA)	ES2 (ZA)	ES3 (ZA)
Bezpečnostní kování ^{2) 3)}	Třída A	Třída A	Třída B
Skla EN 356 (požární ochrana)	P4A	P6B/P7B	-

- 1) jen jednokřídle, doporučujeme tloušťku stěny od 150 mm
- 2) pro dveře uznané VdS
- 3) ochranné kování nebo profilová cylindrická vložka musí být v provedení s ochranou proti vytažení (ZA)
- 4) nemusí být nutně součástí dodávky

3.4 Funkční dveře

Zárubeň nemusí být nutně vyplněny.

3.5 Požární ochrana a venkovní použití

Požární ochrana a venkovní použití vyžadují zvláštní schválení. Dodržujte samostatný návod k montáží, č. zboží 479166.

4 Montáž

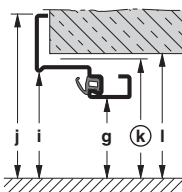
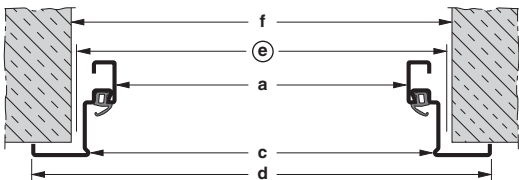
4.1 Před montáží

Před montáží si objasněte následující otázky:

- Jaké vlastnosti mají dveře?
- Je druh stěny vhodný k montáží dveří?
- Je známa výška čisté podlahy (metrový rys)?

- Kterým směrem se mají dveře otvírat?
- Je nutno dodržet stavební předpisy?
- Je nutno v oblasti ochranné skříňky zdi vysekat zed'?

4.2 Rozměry



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

Obr. 1: Rozměry

- a/g světlá šířka / výška otvoru
- c/i světlá šířka / výška drážky
- d/j šířka/výška vnějšího rozměru zárubeň
- e/k šířka/výška směrného rozměru stavby
- f/l světlá šířka / výška rozměru hrubé stavby EN 12519

4.3 Při montáží

- Dodržujte montážní pokyny v baleních s příslušenstvím.
- Pokud jsou přiloženy montážní díly, například hmoždinkové příložky, hmoždinky nebo šrouby, je nutno je použít.
- Použijte hmoždinky uvedené pod bodem 8.
- V kombinaci s rohovou zárubní a příčně děrovanými cihlami, resp. sádrovými tvárnicemi použijte hmoždinky FUR 10 x 80 / 100 mm a dodržujte bod 8 návodu k montáží.
- Příčně děrované cihly a dutinové tvárnice vrtejte bez přiklepu.
- Dodržujte minimální vzdálenost od okraje 50 mm u horizontálního, resp. vertikálního vrtání a respektujte směr rozpínání hmoždinek.
- Dbejte na to, aby u zárubní bez zápuštěné části do podlahy byl před montáží odstraněn spodní montážní úhelník.

4.4 Pokyny k obrazové části

Viz bod	Popis
8	Montážní situace a tvary zárubeň
8.1a	Bez polodrážky
8.1b	Tenká polodrážka
8.1c	Tlustá polodrážka
8.2a / 8.2b	Počet upevňovacích bodů
8.2c	Průběh montáže
8.3a	Demontáž standardních dveří
8.3b	Demontáž bezpečnostních dveří
8.4	Smontování rohové zárubeň
8.5	Zvýšení podlahy a montážní úhelník
8.6	Upevňovací díly
8.7	Minimální vzdálenost od okraje a směr rozpínání hmoždinky

Viz bod	Popis
8.8	Montáž stínových drážkových profilů
8.9	Trubka v zárubni
8.10	Elektrický otevírač dveří
8.11	Ochranná skříňka zdi do sádkartonových stěn GKF
8.12	Konstrukce stěn z protipožární sádkartonových desek
9.0	Montážní situace
10.1a	Montáž se standardními závěsy
10.1b	Montáž s 3D závěsy
10.2	Montáž bezpečnostních dveří
10.3	Nastavení vzduchové mezery
10.4	Odstranění podlahového úhelníku u zárubni bez zápusné části do podlahy
10.5	Montáž protizárubně
10.6	Těsnící klíny upevněte silikonem
10.7	Montáž zárubňového těsnění
10.8	Zvednutí dveří
10.9	Napnutí pružinového závěsu
10.10	Kontrola zapadnutí západky
10.11	Přemontování větracích mřížek
10.12	Přestavba zasklívacího rámu
10.13	Intumescentní nátěr u protipožární a protikouřové ochrany
10.14	Intumescentní nátěr u pojistných čepů
10.15	Označení velkých skleněných ploch
10.16	Panikové dveře a RC3/A
10.17	Montáž blokového zámku u vícenásobného uzamknutí
11	Podlahová těsnění
12	Zavírač dveří
13.1	Vytažení klíče u panikových dveří
13.2	Zabránění chybné obsluhy zámku

5 Údržba a péče

5.1 Roční údržbářské práce

- ▶ Zkontrolujte, zda dveřní křídlo, zárubeň a upevnění nejsou mechanicky poškozeny nebo poškozeny korozí.
- ▶ Kontrolujte funkci zámku a v případě potřeby namažte západku.
- ▶ Čepový zámek mažte teflonovým sprejem.
- ▶ Zkontrolujte upevnění dodatečných dílů, například kliky, zámku, dveřního zavírače, závěsů atd.
- ▶ Namažte tukem čepy závěsů a ložiskové kroužky.
- ▶ Zkontrolujte rozměry mezery.
- ▶ Zkontrolujte viditelnost označení.

NEBEZPEČÍ

Nebezpečí ohrožení života v důsledku odloupaného intumescentního nátěru

V důsledku odloupaní intumescentního nátěru ztrácí protipožární uzávěry svou funkci.

- ▶ Nahraďte odloupaný intumescentní nátěr, viz 10.13.

- ▶ Vyměňte vadné díly.
- ▶ Používejte jen originální náhradní díly výrobce.

Zjistíte-li nedostatky, které nemůžete sami odstranit, pověřte odstraněním odbornou firmu.

5.2 Potřebné ošetření povrchu prvků se standardním základním nátěrem

Povrch dveřního křídla a zárubně sestává ze základové práškové vrstvy na bázi polyesterové epoxidové pryskyřice.

1. Odstraňte těsnění.
2. Vybruste až na intumescentní vrstvu všechny povrchy určené k lakování.
3. Povrchy důkladně očistěte
4. Pro konečné zpracování dveřního křídla, zárubně a intumescentní vrstvy použijte následující strukturu nánosu:
 - Základový adhezivní nános 2K Epoxi a konečný povrchový nástřik vhodnými běžně dostupnými konstrukčními laky nebo
 - Základový a konečný nástřik lakem 2K PUR.
 Při přímém slunečním ozáření nepoužívejte tmavé nátěry. Sledujte prospekt BFS č. 24 a pokyny pro zpracování výrobce laků a proveďte zkoušku přilnavosti. Konečné zpracování proveďte do tří měsíců po montáži, aby nedošlo k poškození korozi.
5. Po zaschnutí barvy znovu nasadte těsnění.

5.3 Čištění

- ▶ Čištěte povrchy čistou vodou nebo běžným čisticím na lak.

5.4 Péče o konstrukční díly z ušlechtilé oceli

- ▶ Čištěte a ošetřujte pravidelně konstrukční díly z ušlechtilé oceli prostředkem pro čištění ušlechtilé oceli „Edel Glanz“ dostupným u firmy Hörmann; nanášejte jej měkkou tkaninou.

6 Etiketování a označení

Etiketa dveří typu **D65-1, D65-2, D65-1 OD, D65-2 OD** je na základě vyhlášky (EU) č. 305/2011 opatřena označením o shodě CE. Příslušná a použitá harmonizovaná evropská norma výrobku je EN 14351-1:2006 + A1:2010 „Okna a dveře – norma výrobku, funkční vlastnosti – Část 1: Okna a vnější dveře bez vlastností požární odolnosti a/nebo kouřotěsnosti.“ Číslo příslušného označení CE, popř. prohlášení o funkčních vlastnostech je uvedeno na výše uvedené etiketě mezi logem výrobce a označením o shodě CE.

Dveře, na jejichž etiketě není vyobrazeno označení o shodě CE, nespadají do oblasti použití výše uvedené harmonizované evropské normy výrobku a nesmějí být tudíž opatřeny označením CE, popř. prohlášením o funkčních vlastnostech.

7 Všeobecně

Uvedení dveří do provozu je zakázáno, dokud není zjištěno, že byly montovány podle našich zadání a byla přezkoušena jejich řádná funkce. Při změně výrobku, ztrácí prohlášení o funkčních vlastnostech svou platnost.

8 Prohlášení o vlastnostech

Prohlášení o vlastnostech viz bod 8.3:

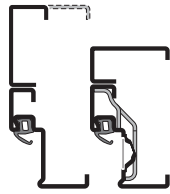
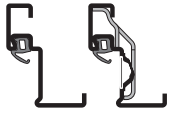
www.hoermann.com/dop



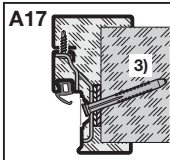
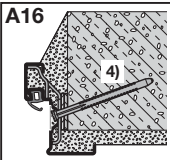
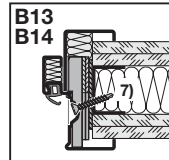
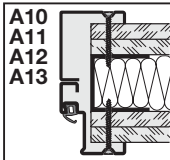
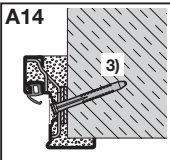
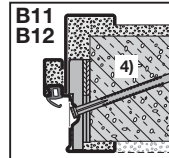
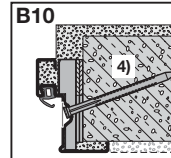
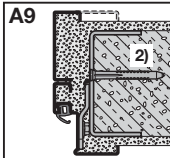
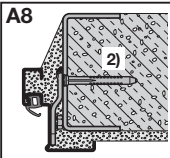
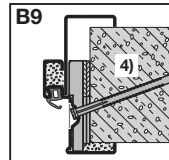
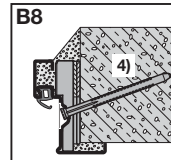
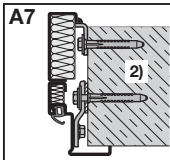
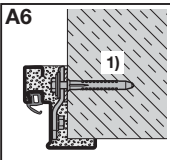
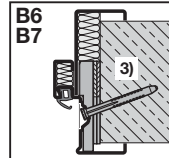
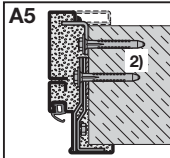
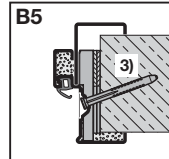
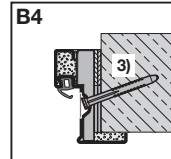
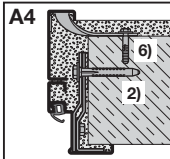
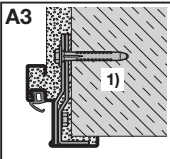
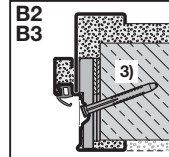
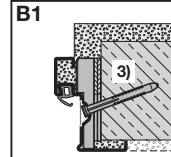
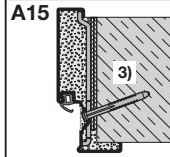
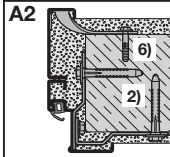
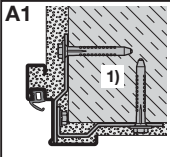
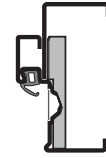
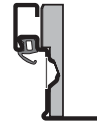
4.3/4.4



A



B



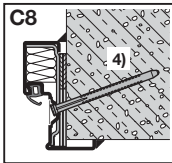
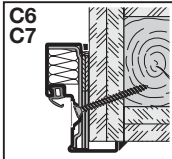
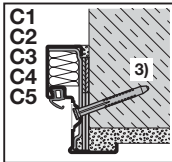
8

4.3/4.4

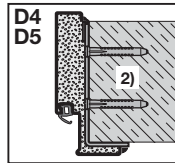
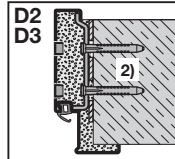
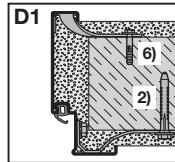
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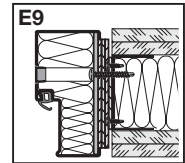
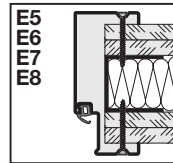
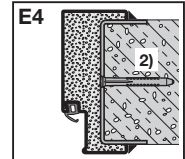
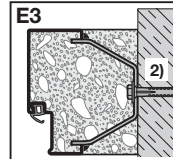
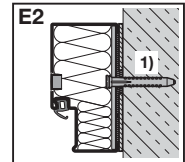
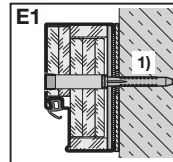
C



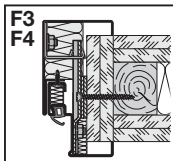
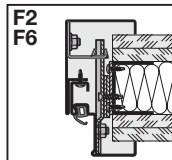
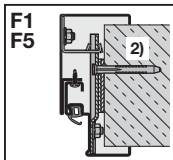
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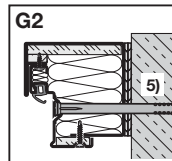
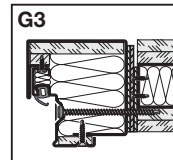
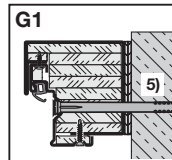
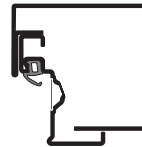
E



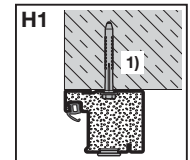
F



G



H



1) Fischer: FUR 10 x 80/100

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

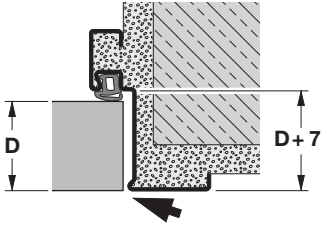


2) Fischer: FUR 10 x 80/100/115
 Fischer: SXS 10 x 80/100/120
 Hilti: HRD 10 x 80/100
 MEA: MFR 10 x 80/100/115
 Würth: W-UR 10 x 80/100/115

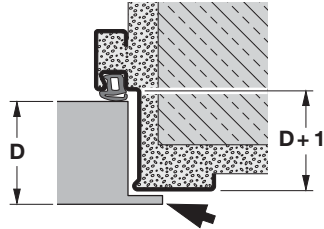
3) Fischer: FUR 10 x 100
 4) Fischer: FUR 10 x 160
 5) Fischer: FUR 10 x 200
 6) 8 x 40

7)

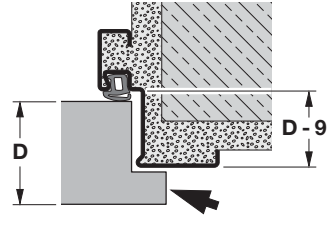
8.1a



8.1b

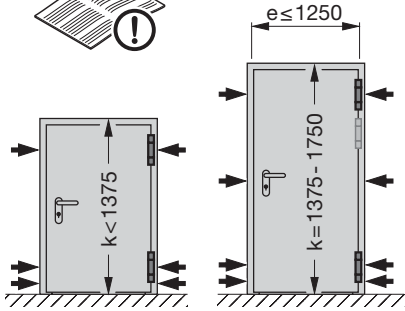


8.1c



8.2a

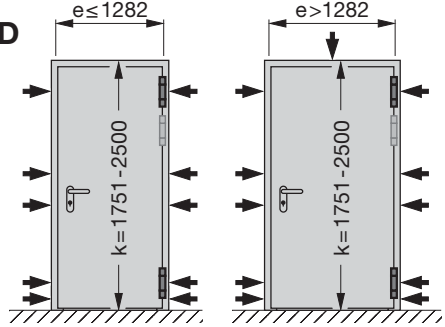
4.2/4.3



H16-S1

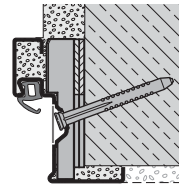
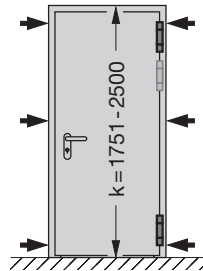
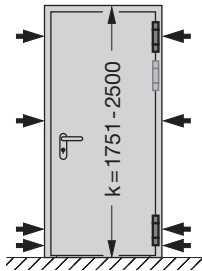
H16-1 OD

HS75



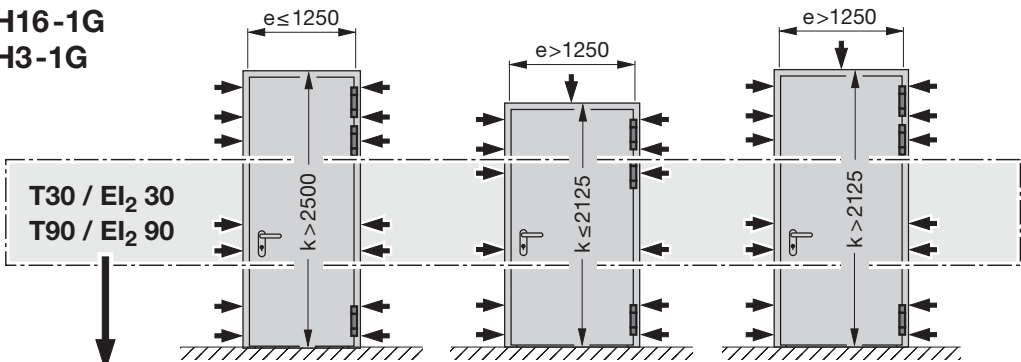
D65-1 OD

H3-1 OD



H16-1G

H3-1G

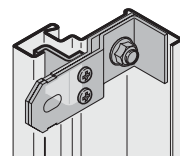
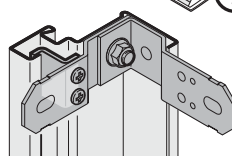
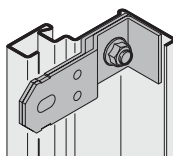
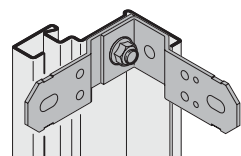


T30 / EI₂ 30

T90 / EI₂ 90

8.6a

8.6b

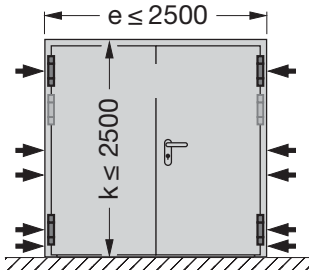


8.2b

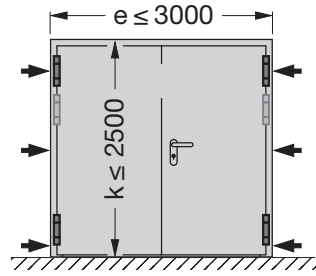


4.2/4.3

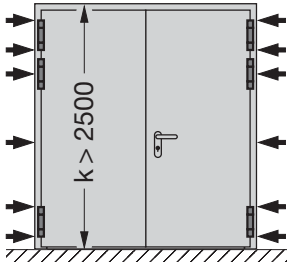
H16-2 OD
H3-2 OD



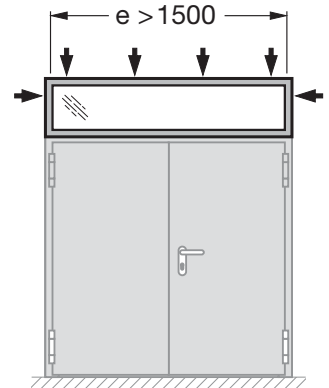
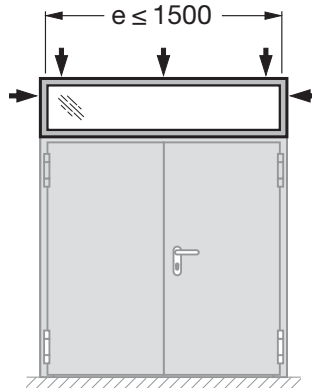
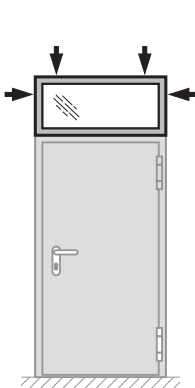
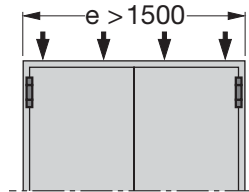
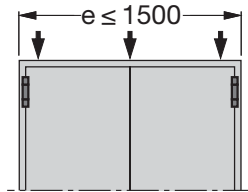
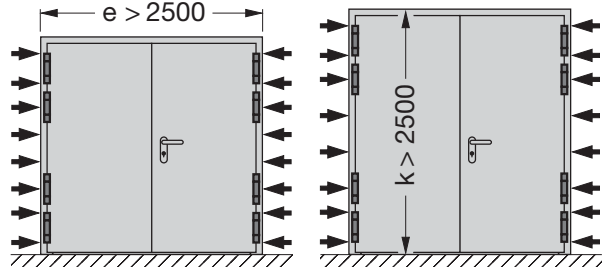
D65-2 OD



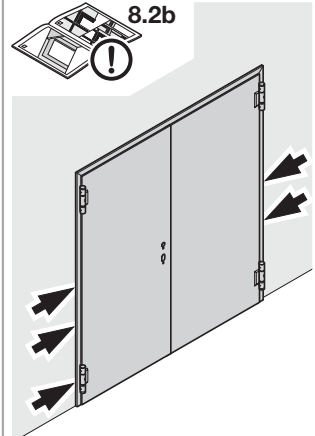
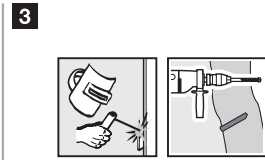
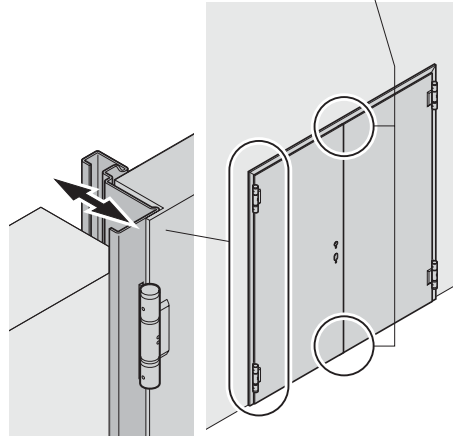
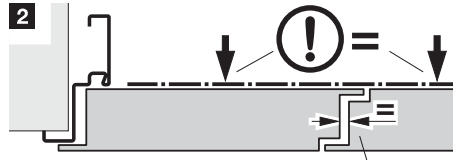
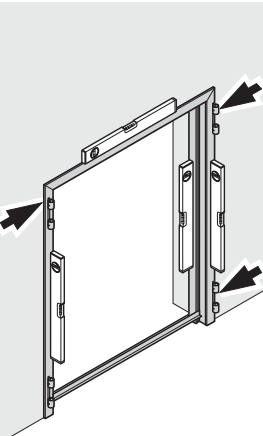
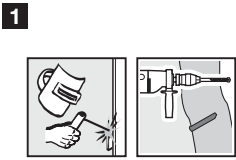
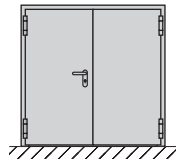
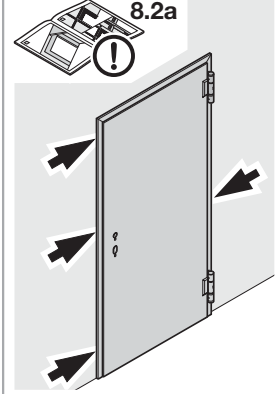
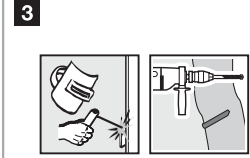
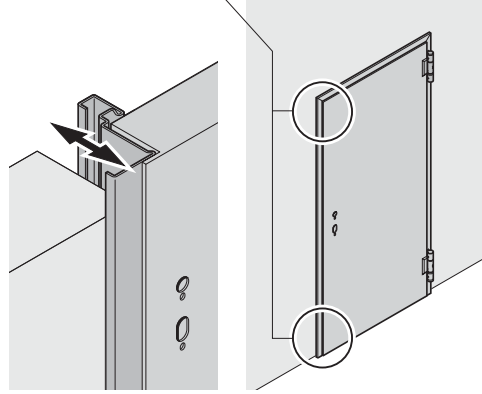
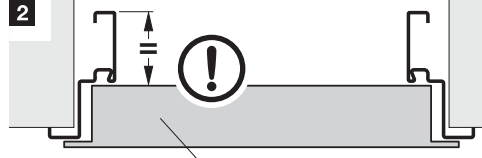
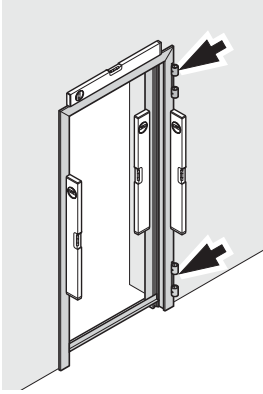
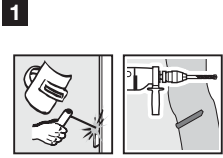
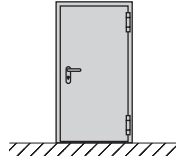
H3-2 VM



H16-2 G
H_90 F2



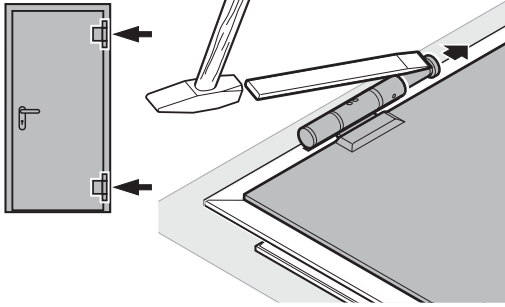
8.2c



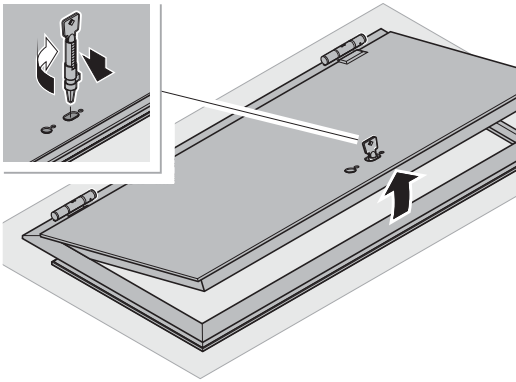
8.3a 4.3



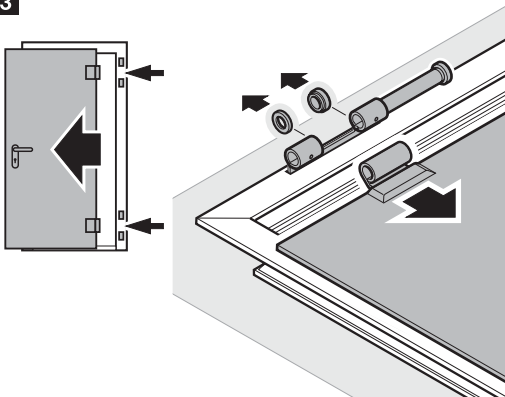
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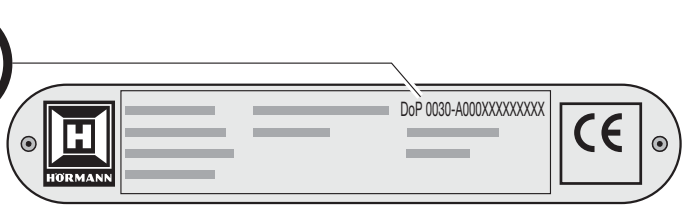
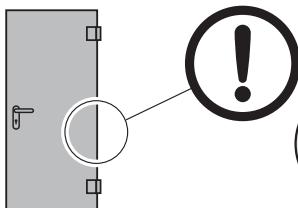
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3



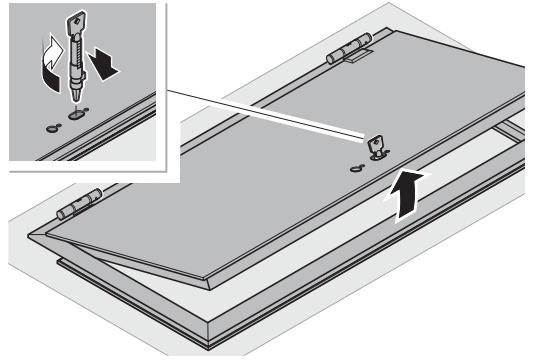
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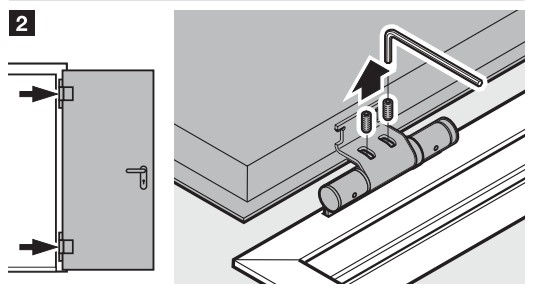
8.3b 3.3/4.3



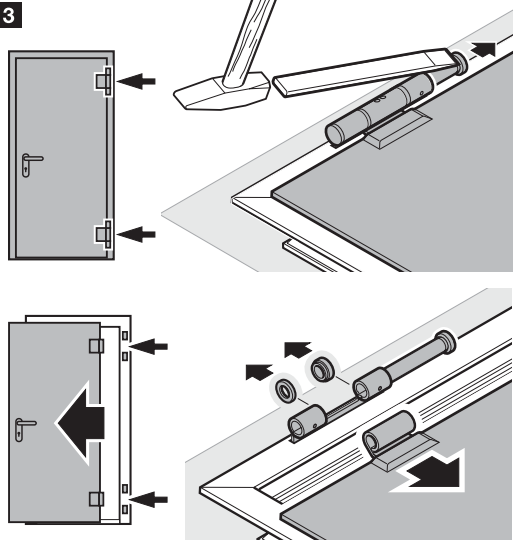
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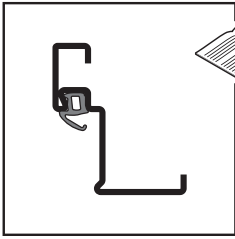
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3

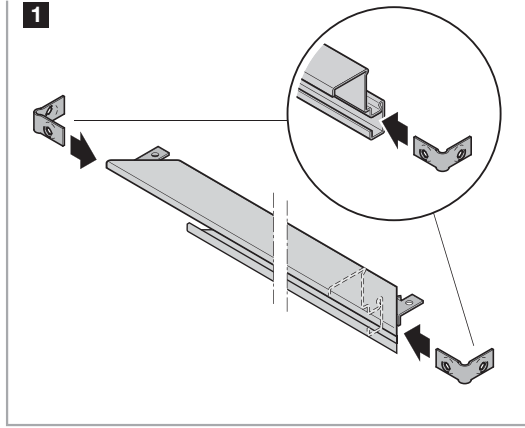


8.4

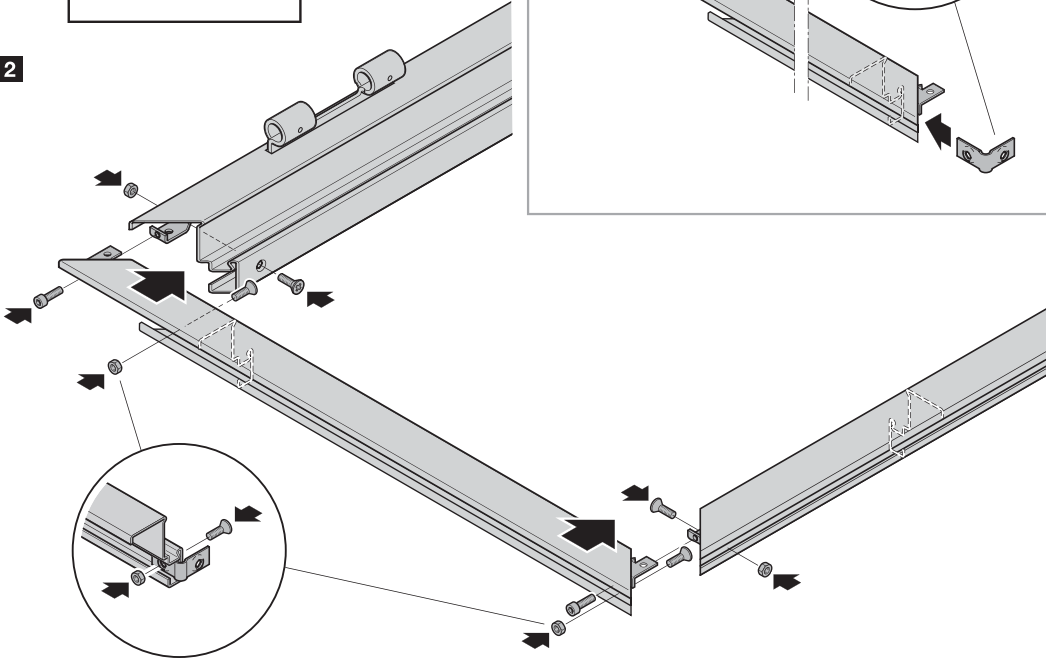


4.3

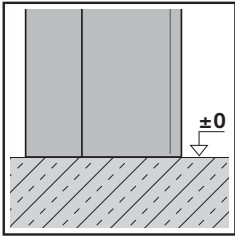
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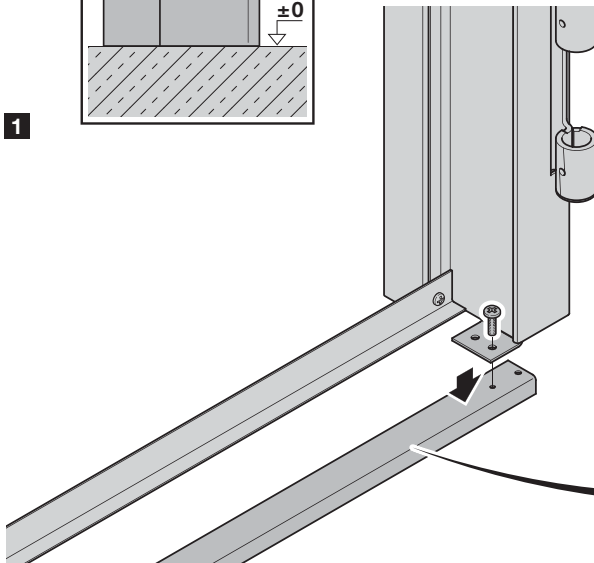


8.5a

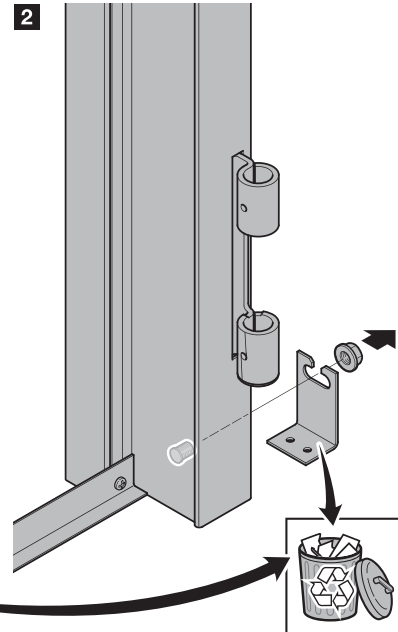


4.3

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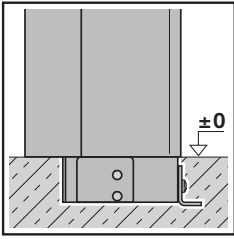


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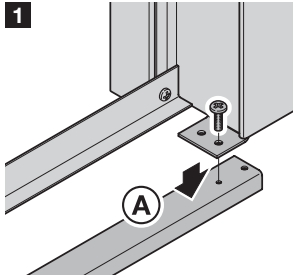


8.5b

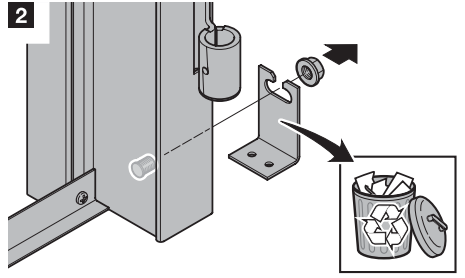
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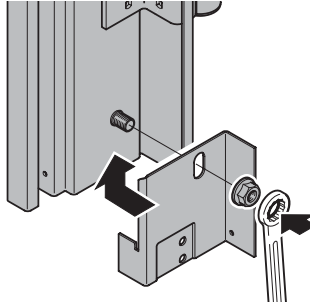
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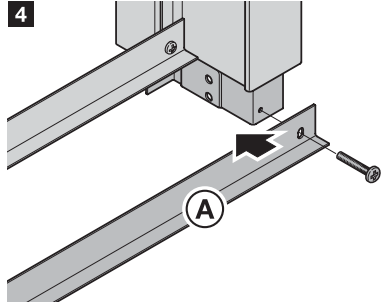
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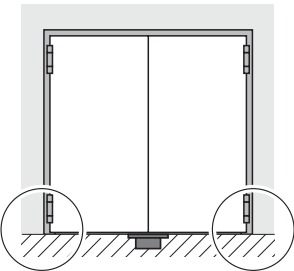
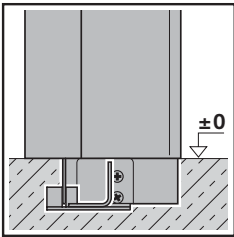


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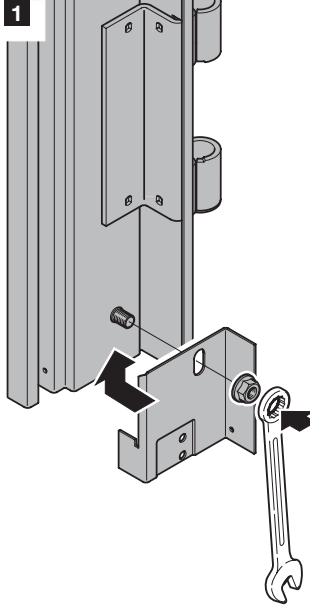


8.5c

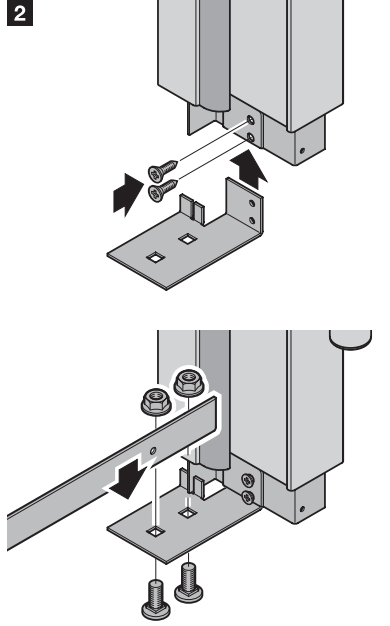
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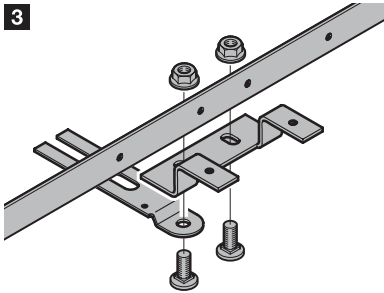
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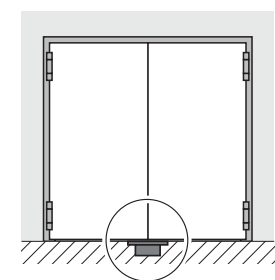
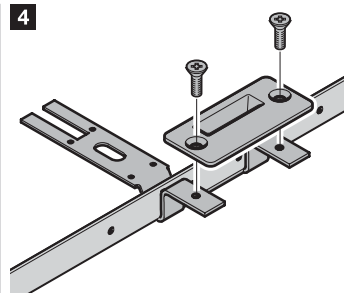
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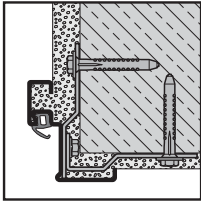
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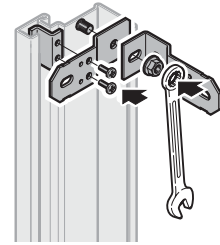
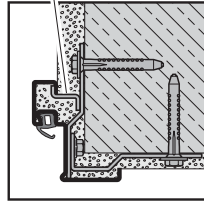
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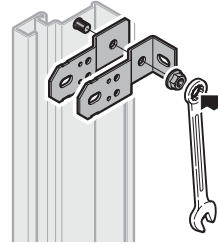
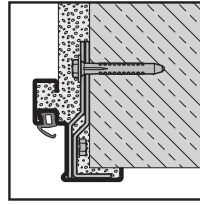
8.6a 4.3



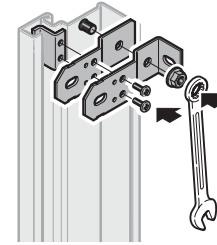
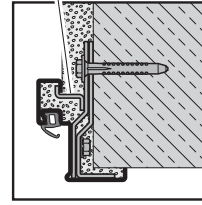
8.2a



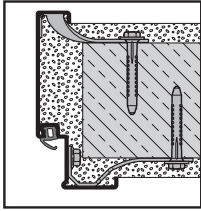
8.6b 4.3



8.2a



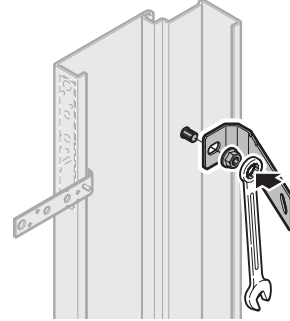
8.6c 4.3



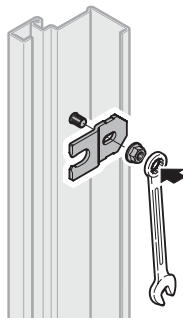
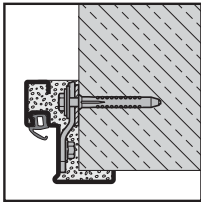
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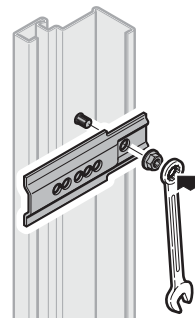
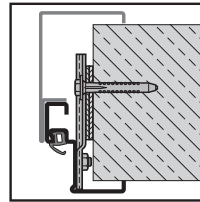
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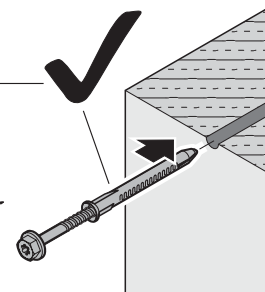
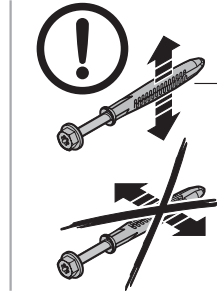
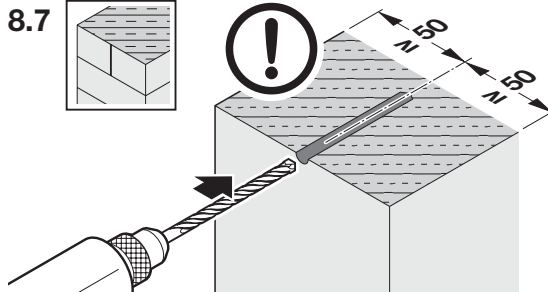
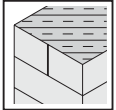
8.6d 4.3

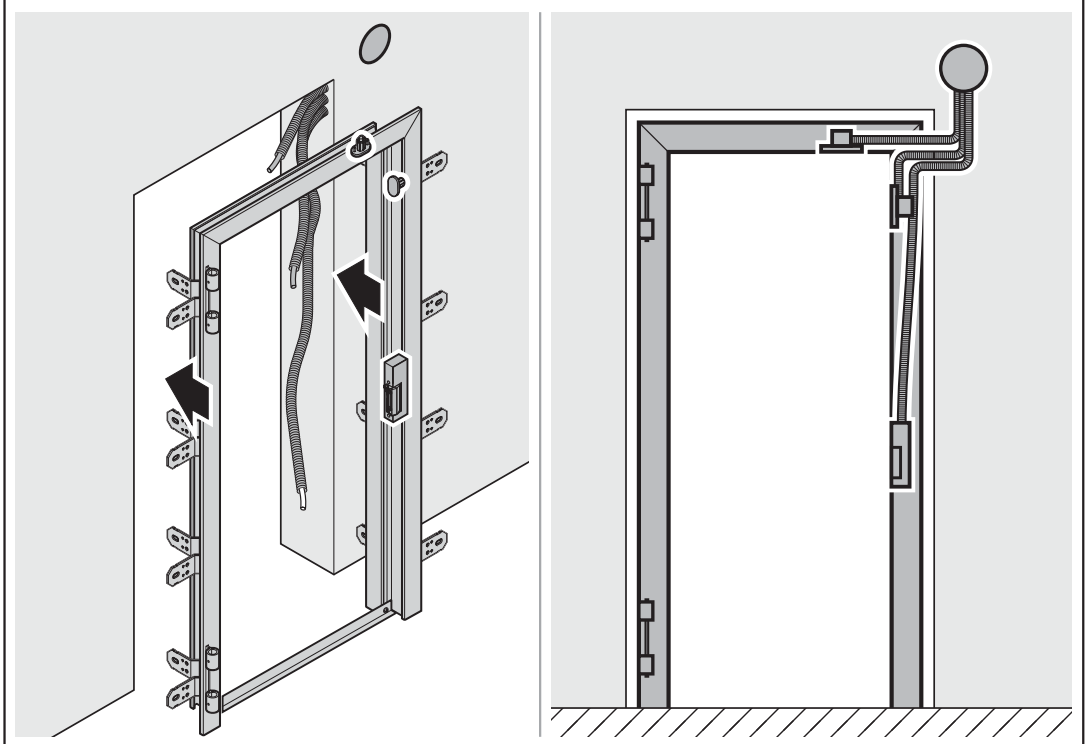
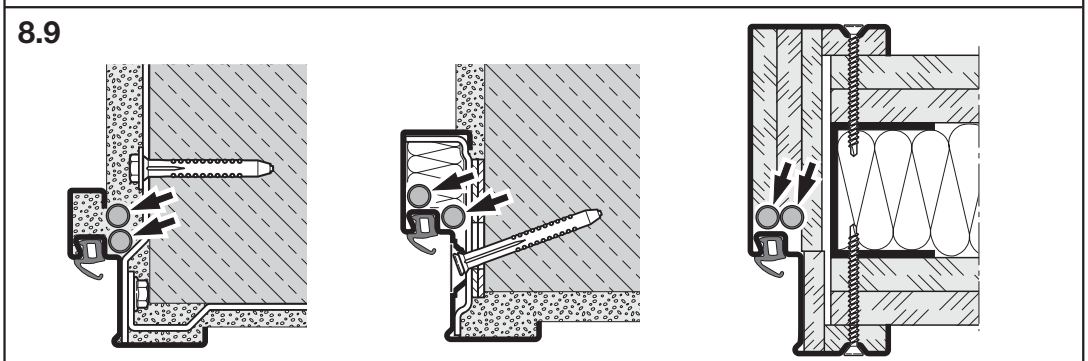
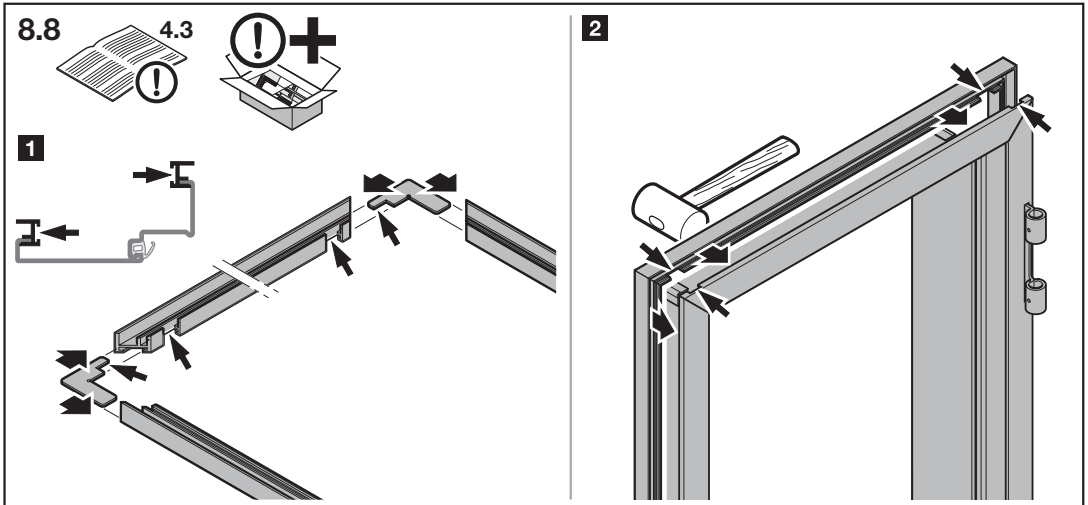


8.6e 4.3

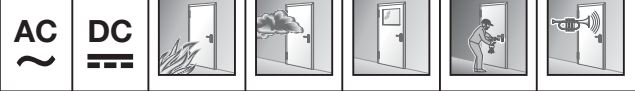
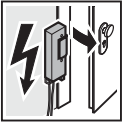


8.7





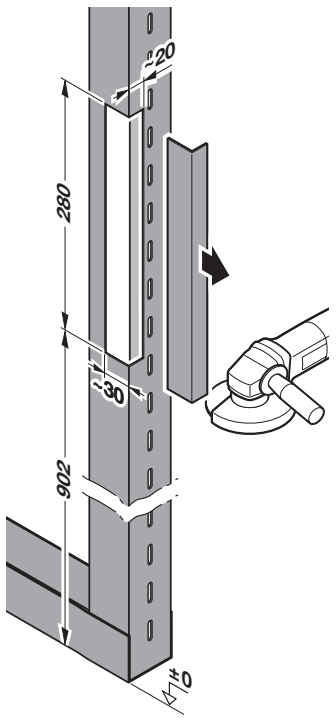
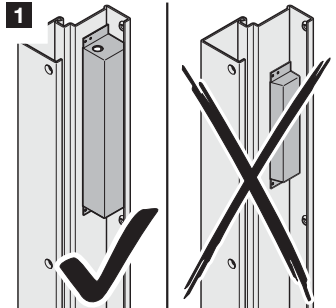
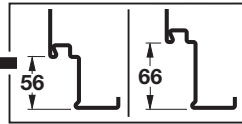
8.10



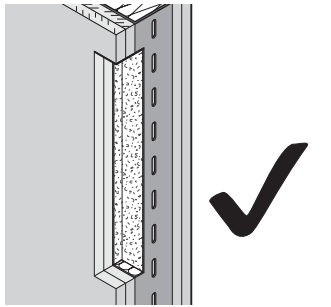
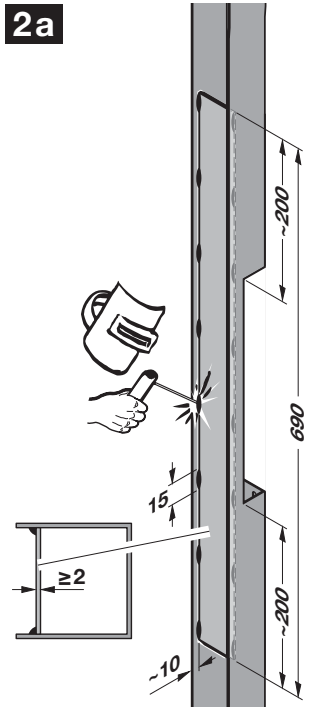
		AC ~	DC ≡					
I.S.T. Systems	FT200/FT201	x				x	x	x
	142 UF	x		x	x	x	x	x
effeff	143	x	x	x (T90/2)	x	x	x	x
	14/34	x				x	x	x
Dorma	447/Basic	x				x	x	x
	Lucky Basic		x			x	x	x

8.11

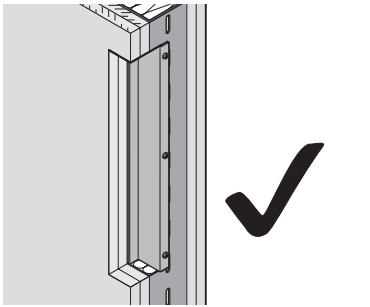
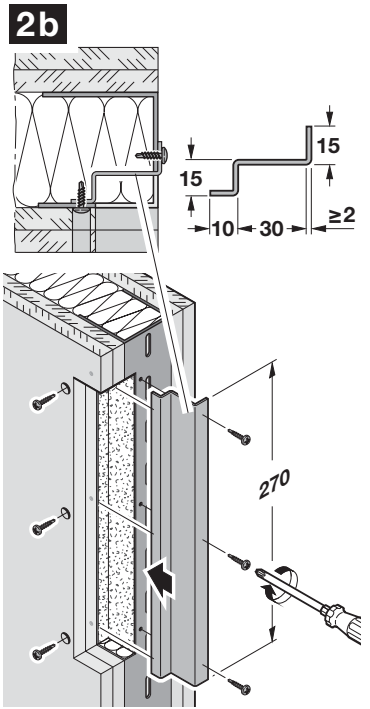
8.12



2a



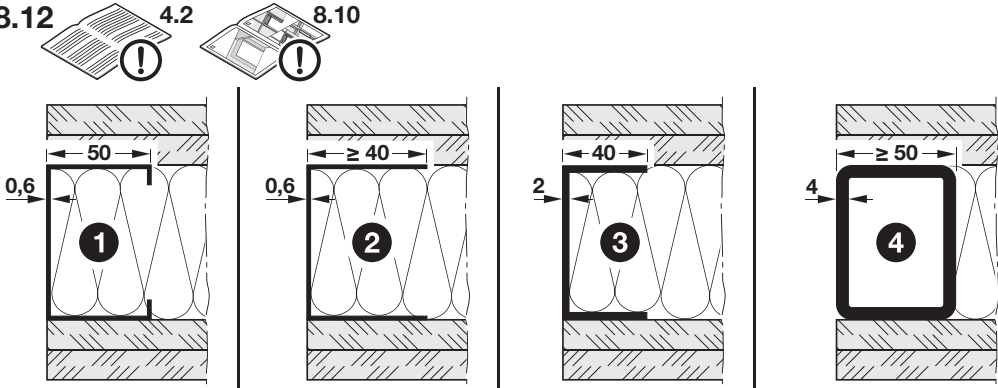
2b



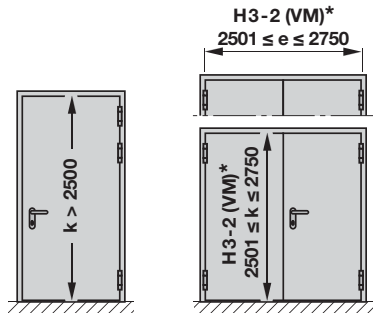
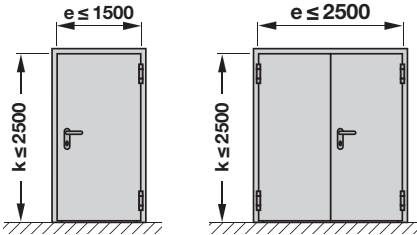
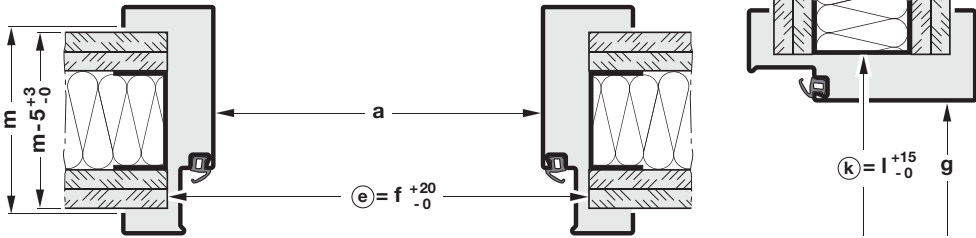
8.12

4.2

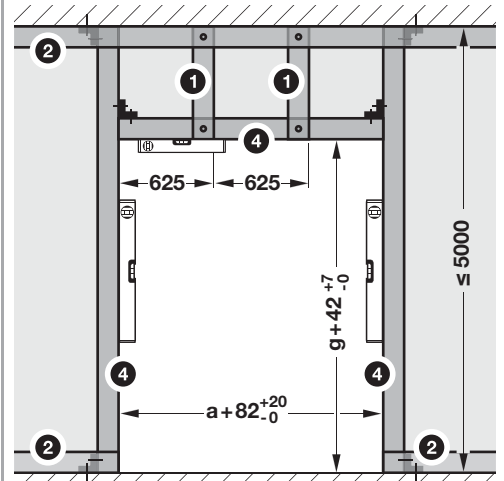
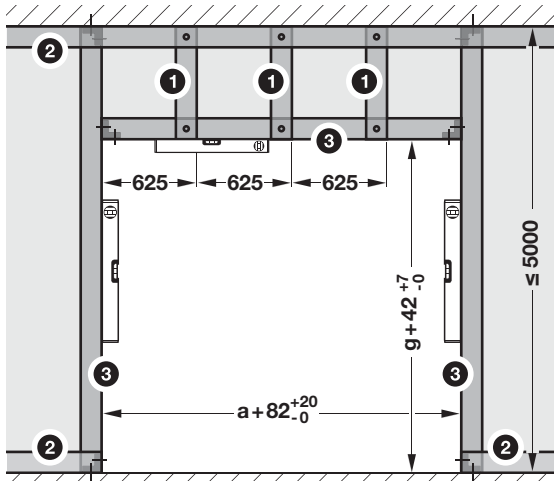
8.10



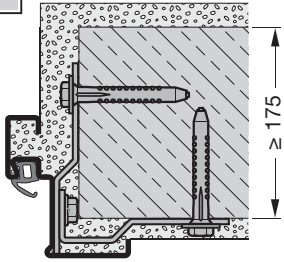
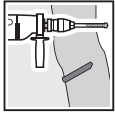
i www.felko-systeme.de/teleskopstuetzen.php



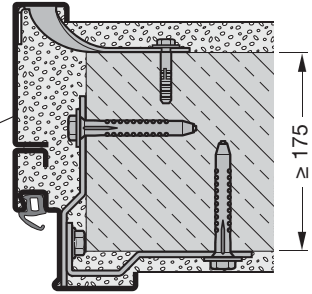
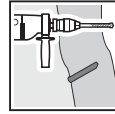
*www.felko-systeme.de/teleskopstuetzen.php



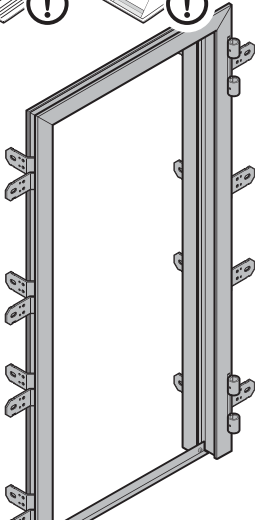
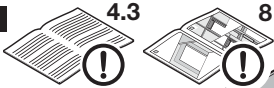
9/A1



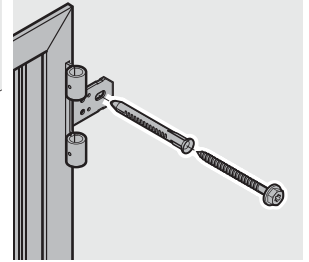
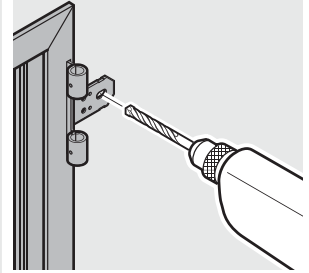
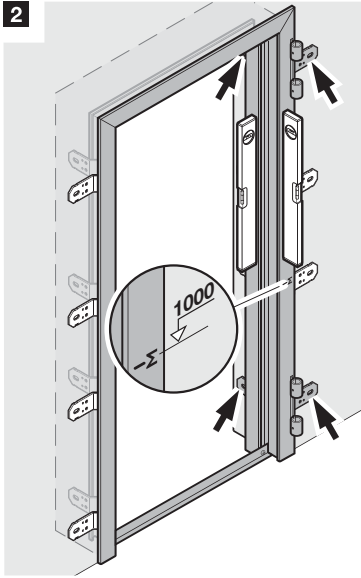
9/A2



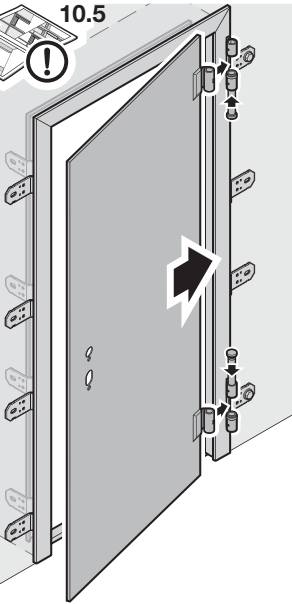
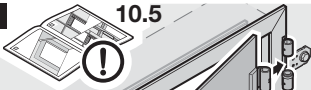
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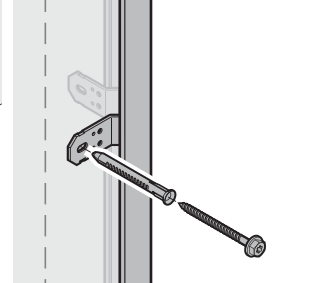
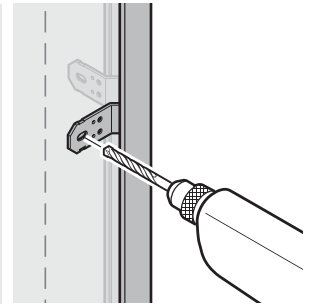
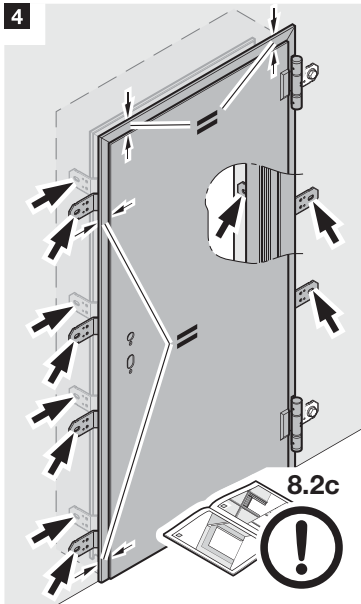
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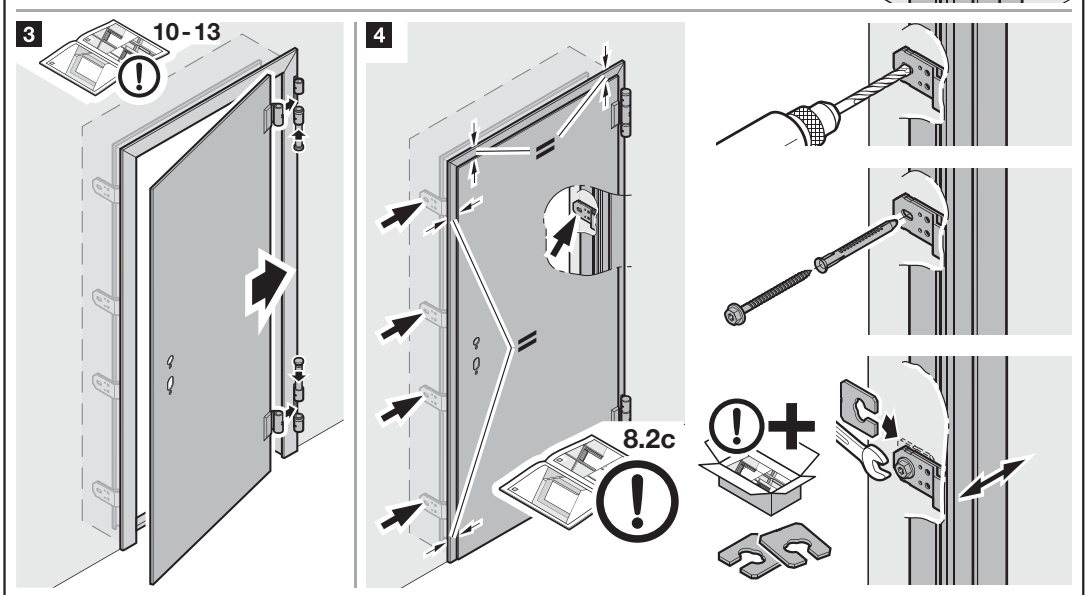
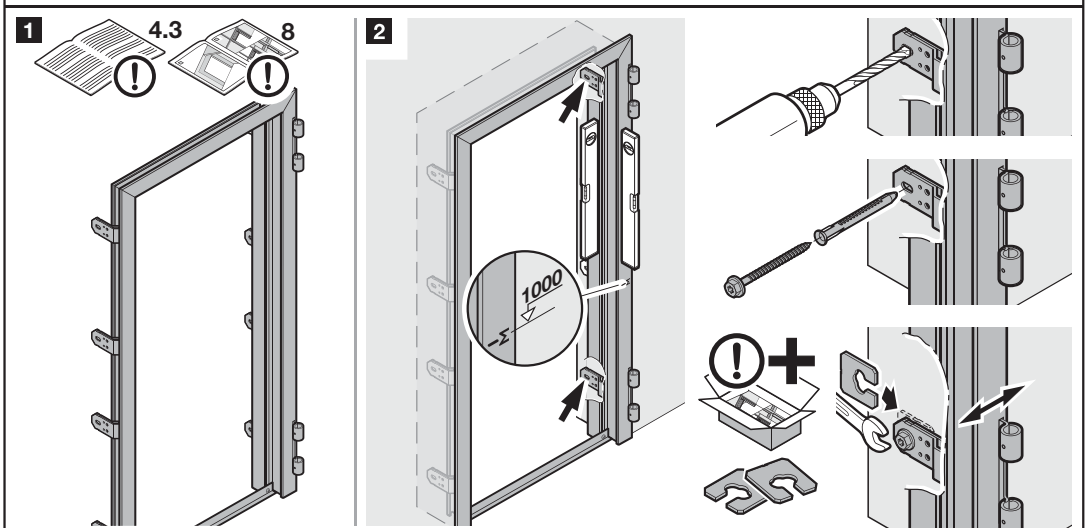
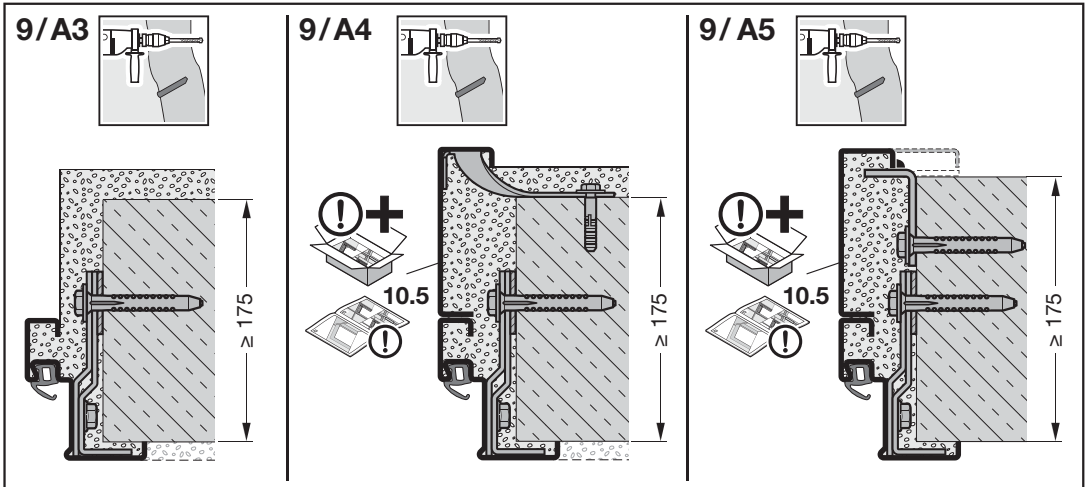


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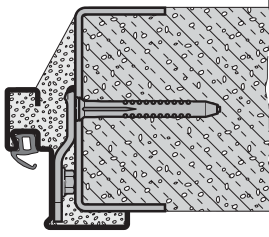


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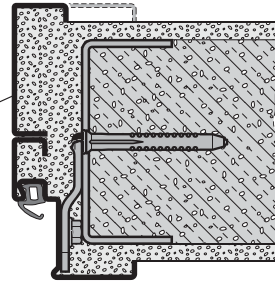
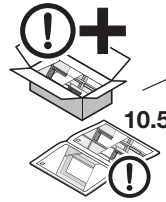
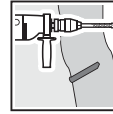




9/A8

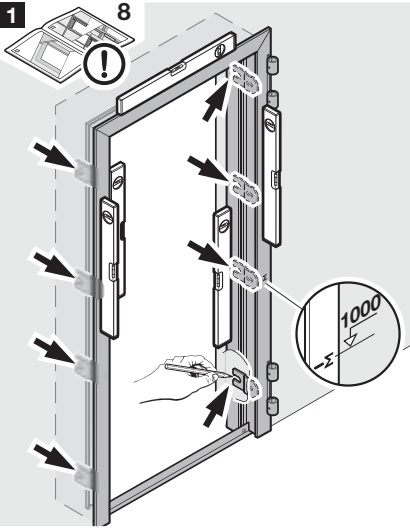


9/A9



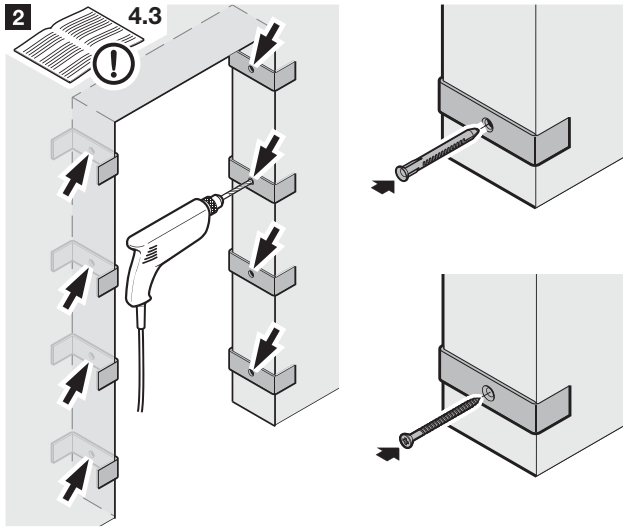
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8

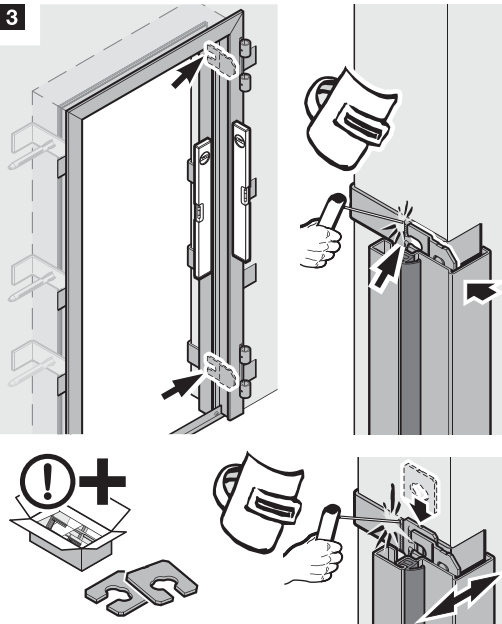


2

4.3

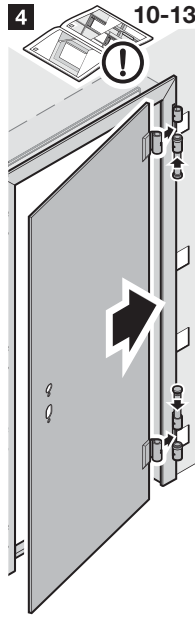


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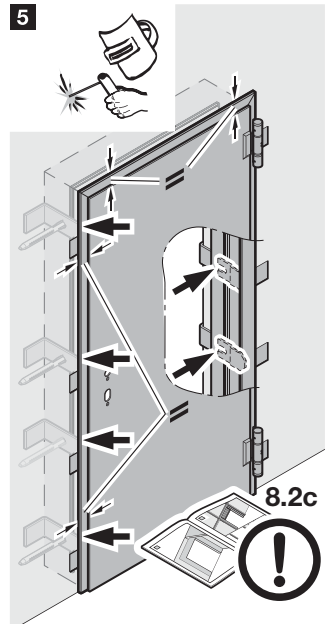


4

10-13

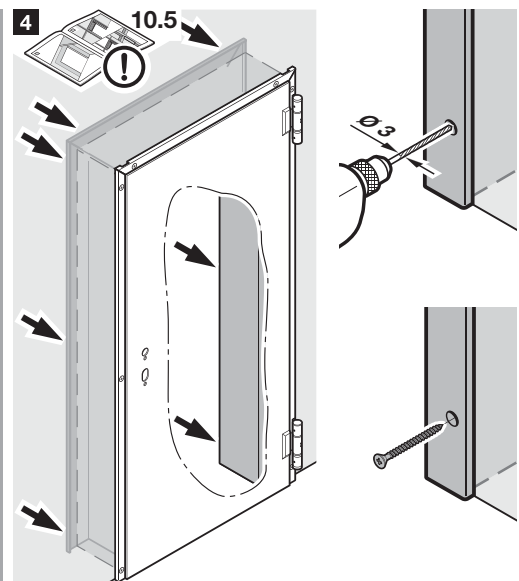
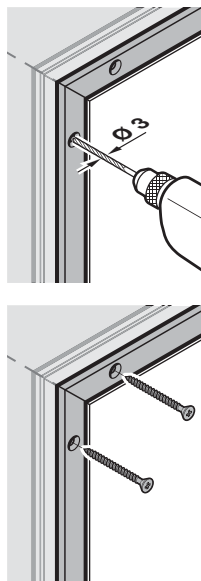
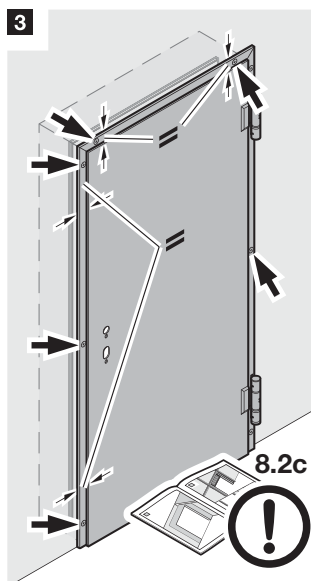
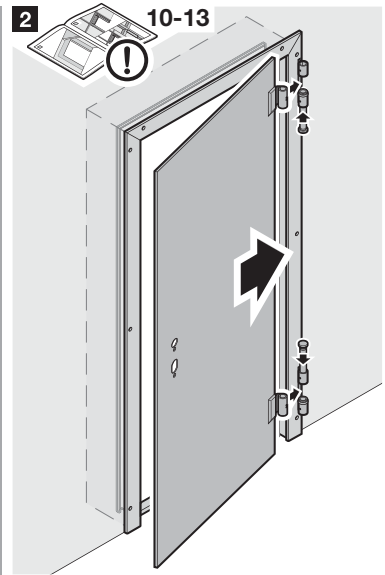
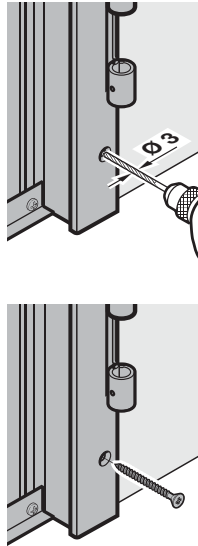
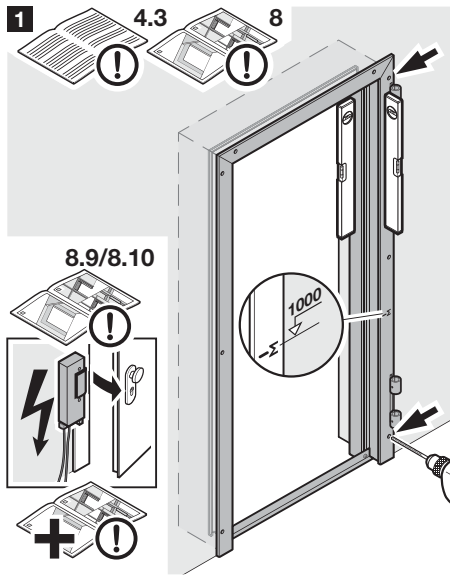
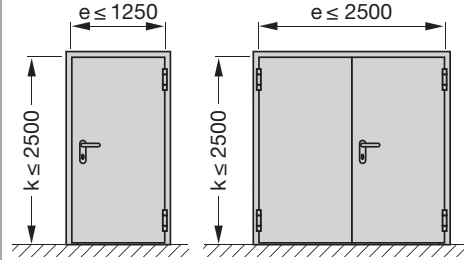
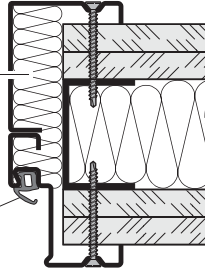
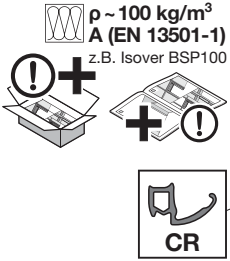
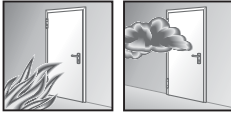


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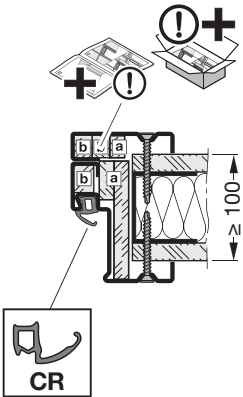


9/A10

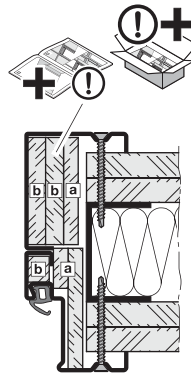
max. T30/
EI₂30



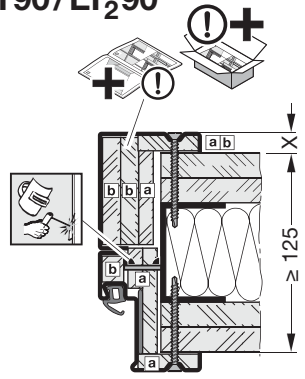
9/A11



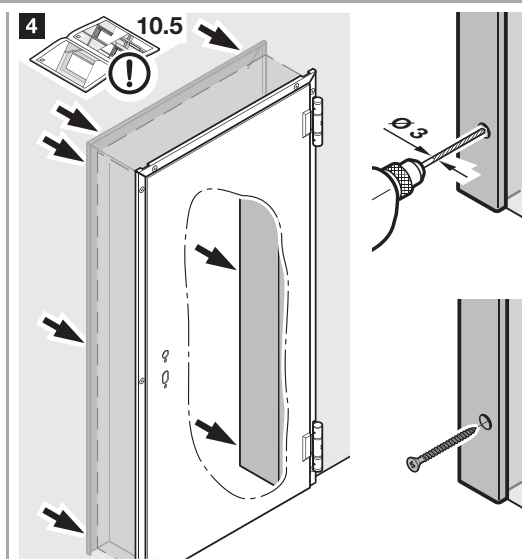
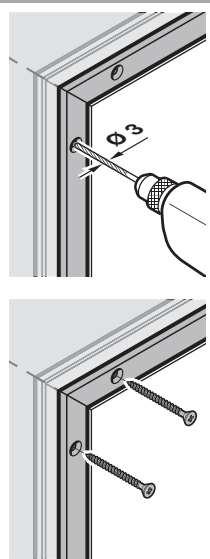
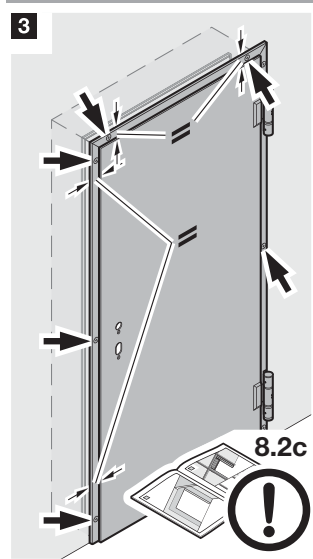
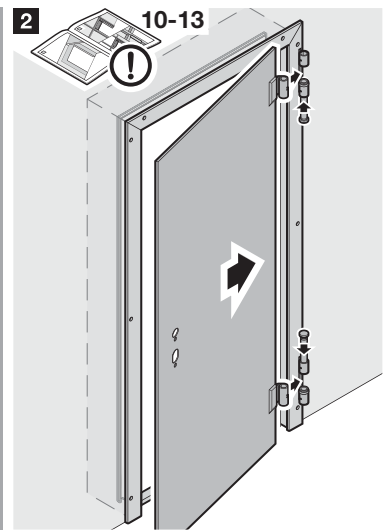
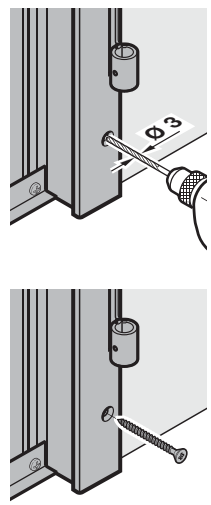
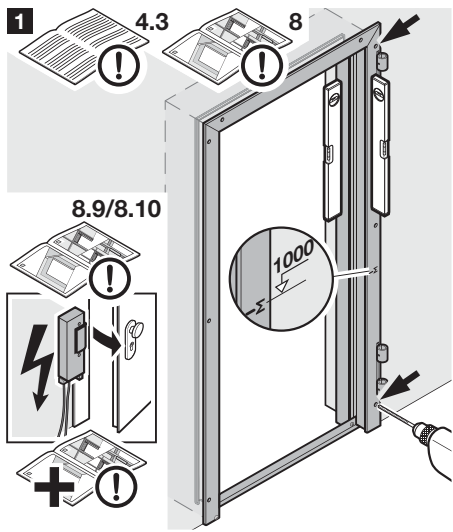
9/A12



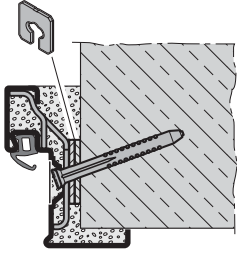
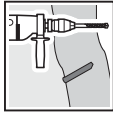
9/A13
T90/EI₂90



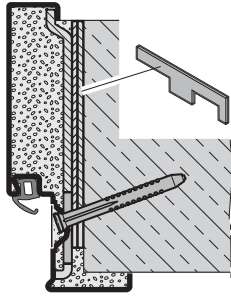
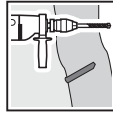
a A-9,5-EN 520 / b A-12,5-EN 520 / X = 10 → a / X = 15 → b



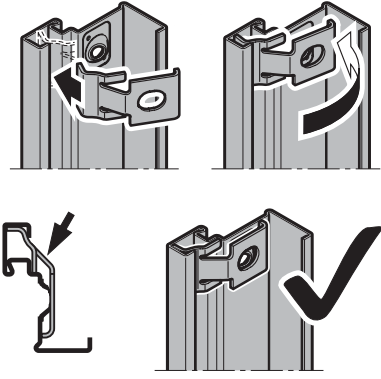
9/A14
max. T30/
EI₂30



9/A15
max. T90/
EI₂90



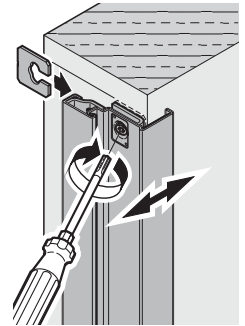
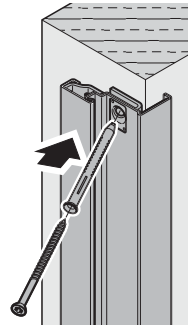
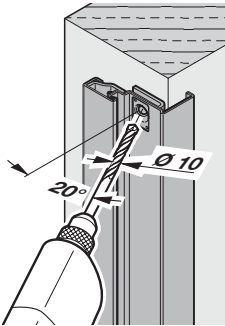
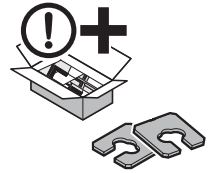
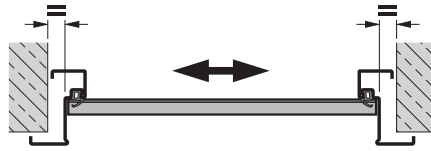
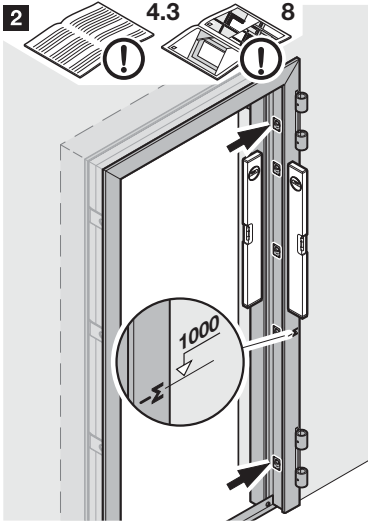
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2

4.3

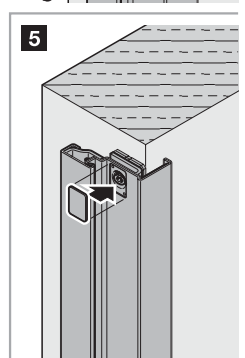
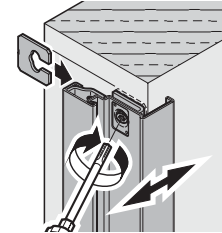
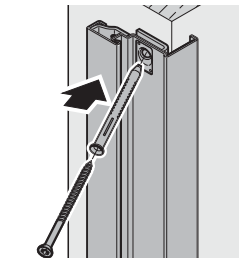
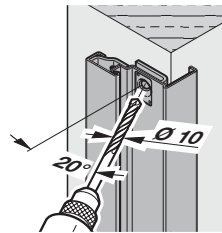
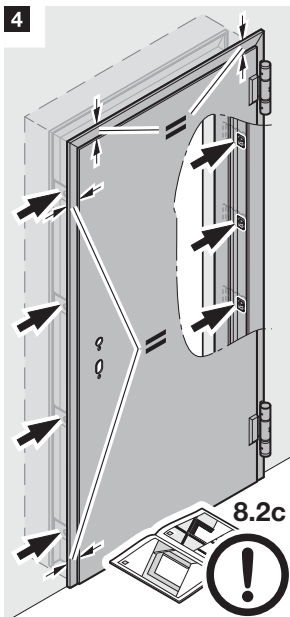
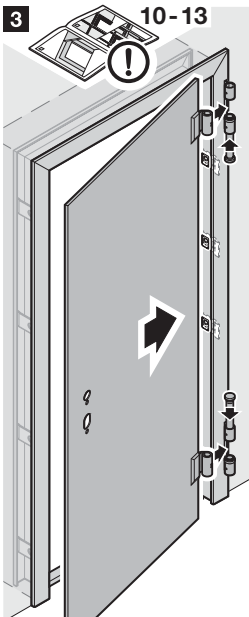
8



3

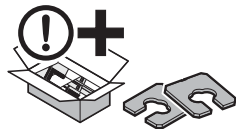
10-13

4

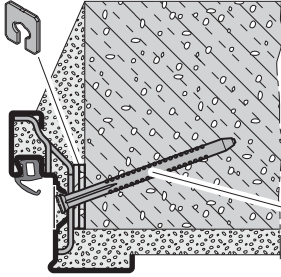
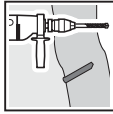


5

8.2c

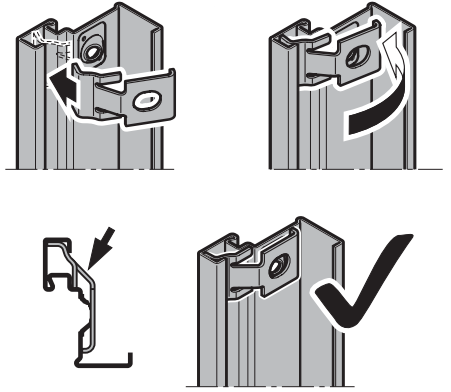


9/A16
max. T30



FUR 10 x 160

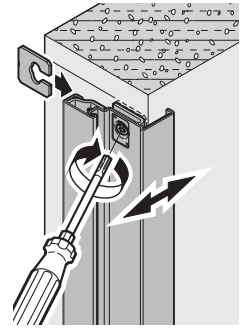
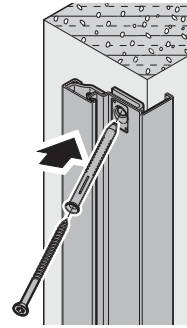
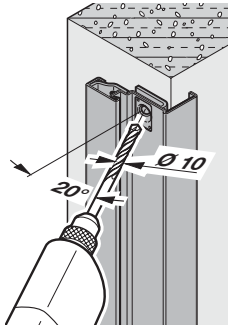
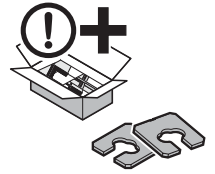
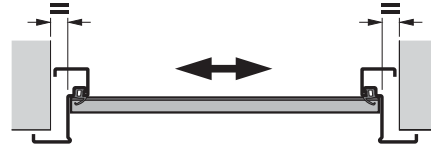
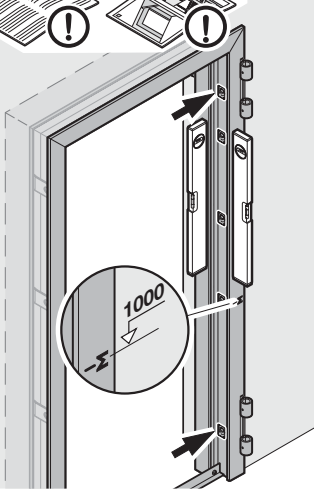
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2

4.3

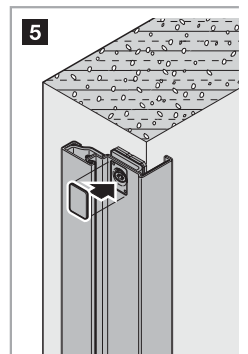
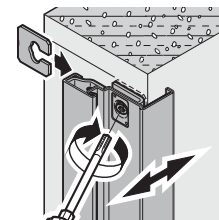
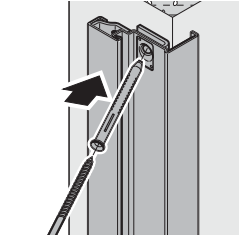
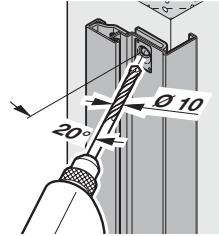
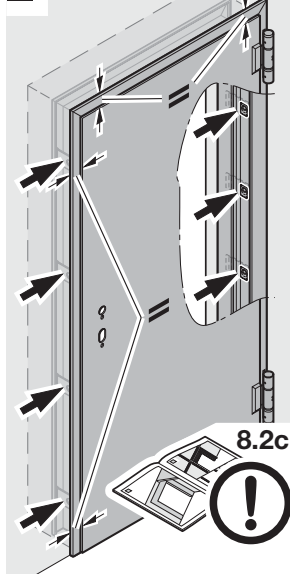
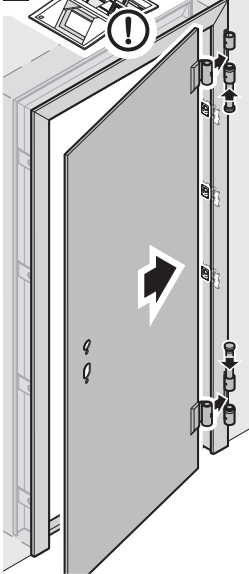
8



3

10-13

4



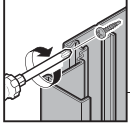
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9/A17



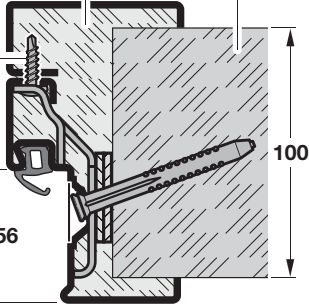
Multi Gips
FG 70

VG ORTH



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

max. 56

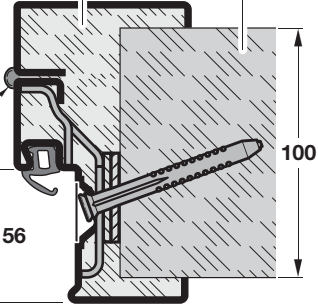


$2V_x > 10$

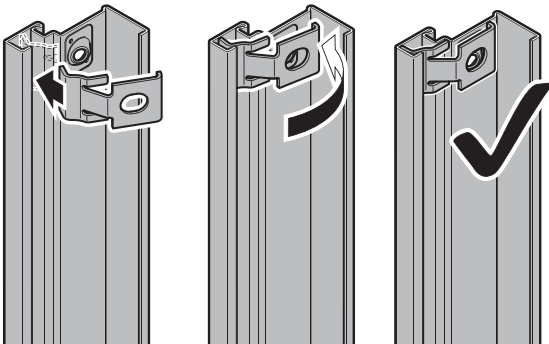
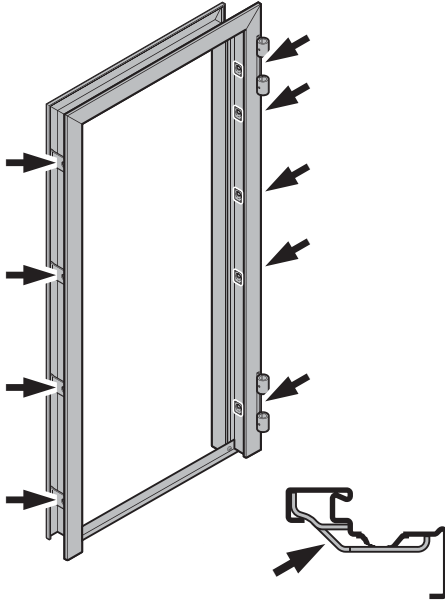
Multi Gips
FG 70

VG ORTH

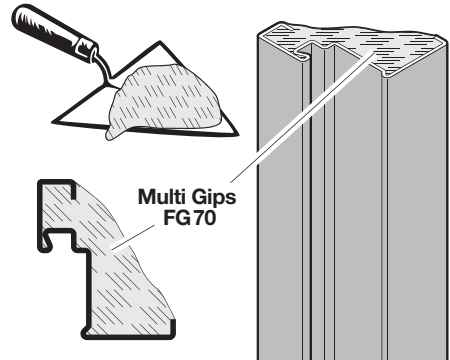
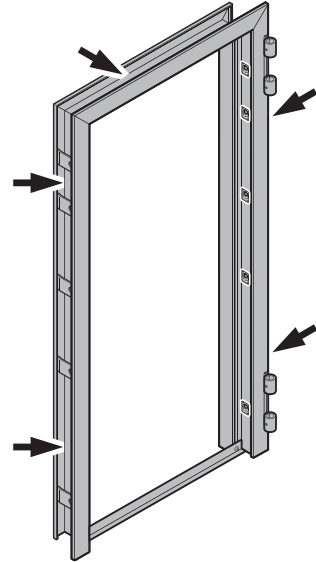
max. 56

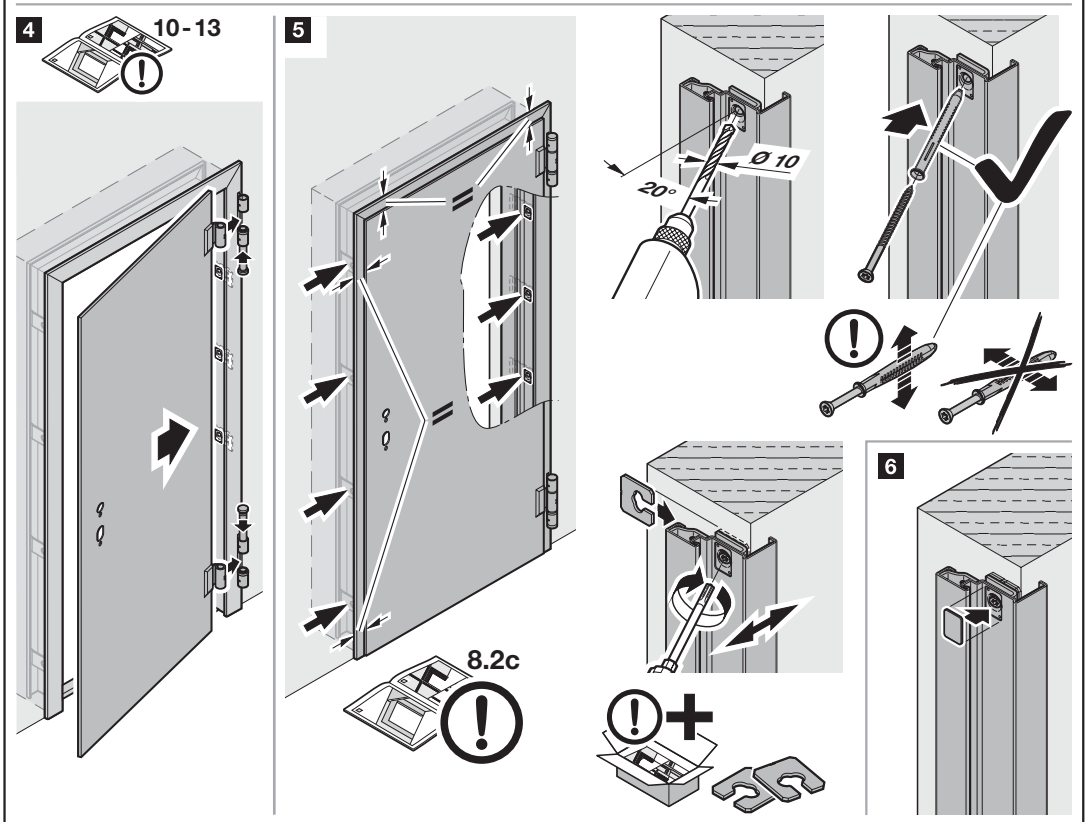
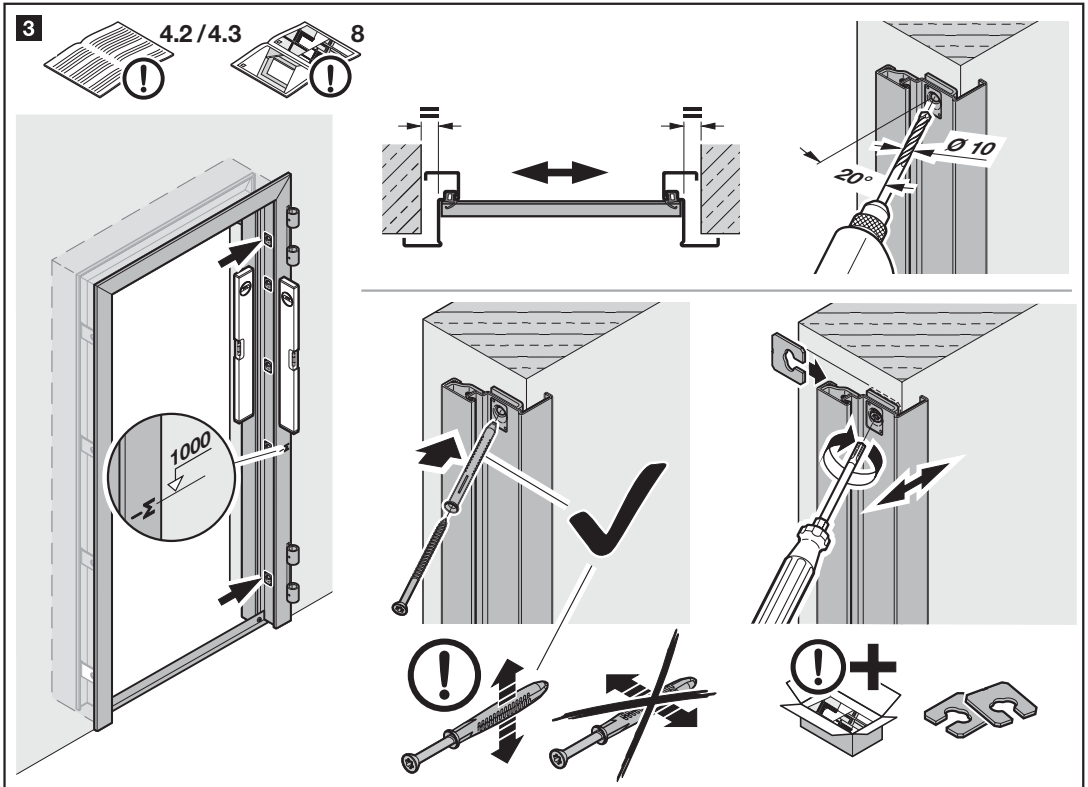


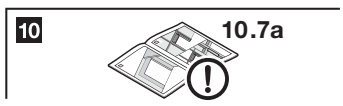
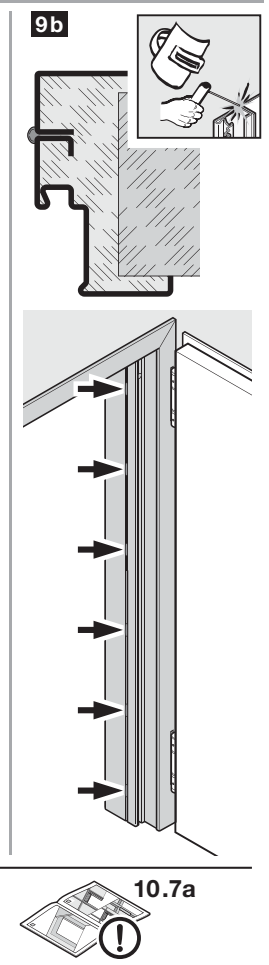
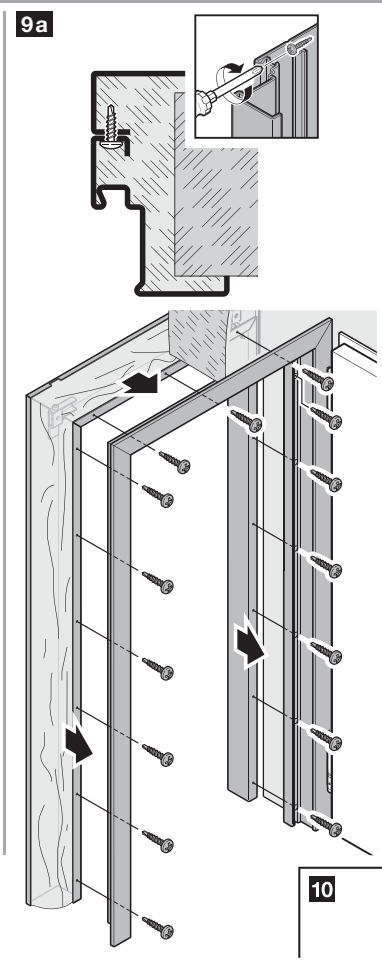
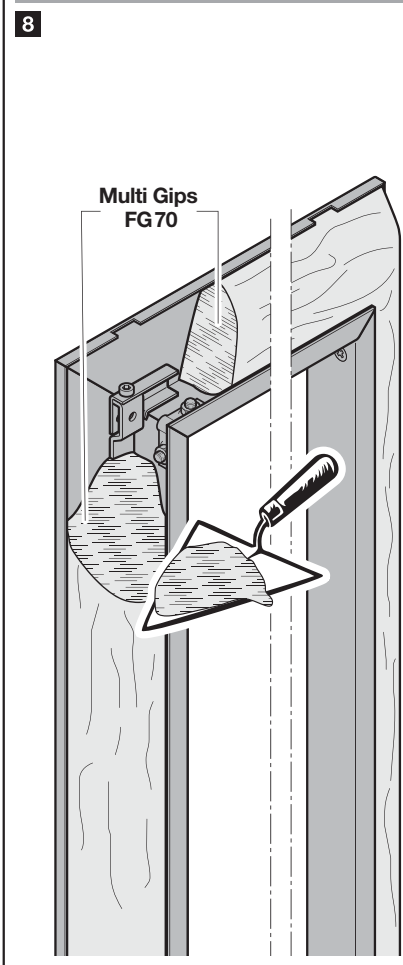
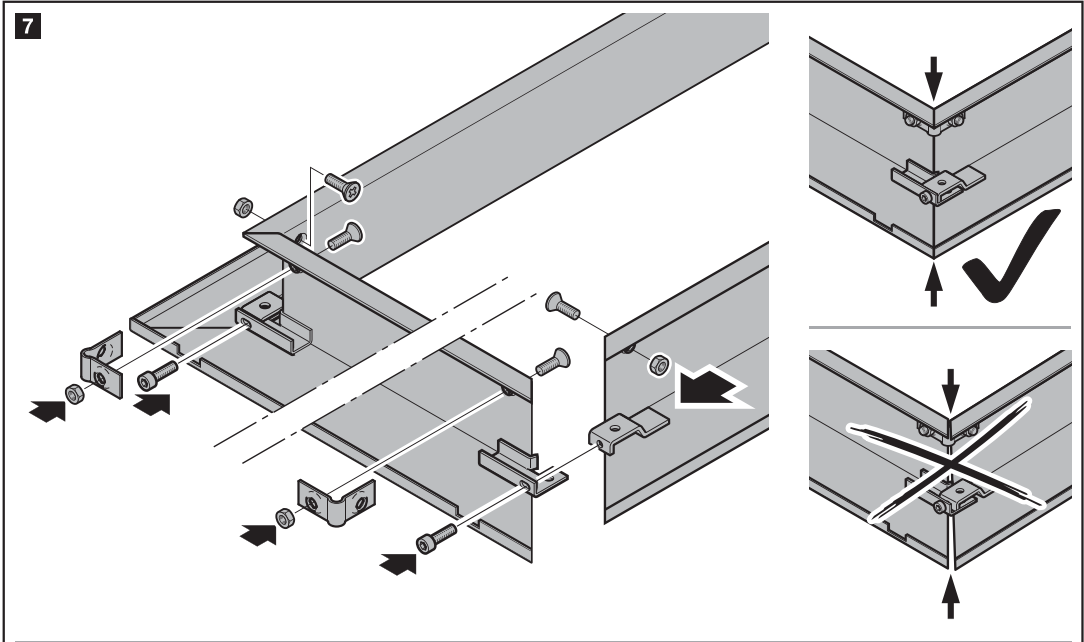
1



2

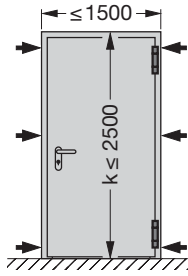




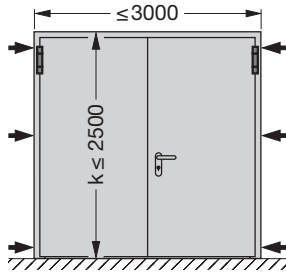


9/B1-B14

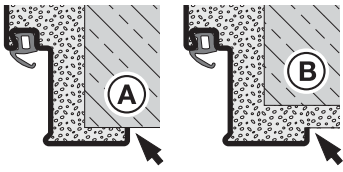
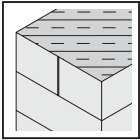
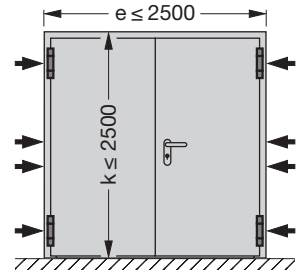
D65 - 1 OD



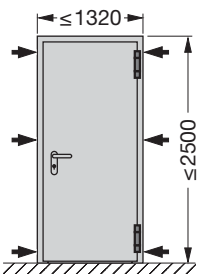
D65 - 2 OD



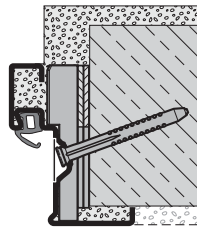
H3 - 2 OD



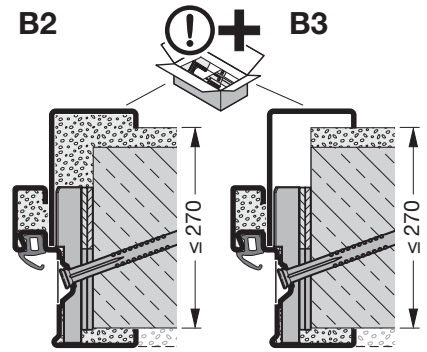
H3 - 1 OD



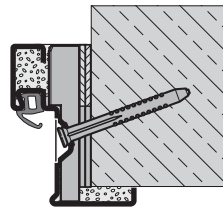
B1



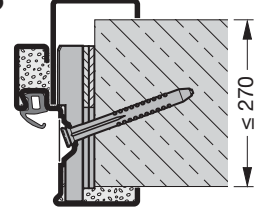
B2



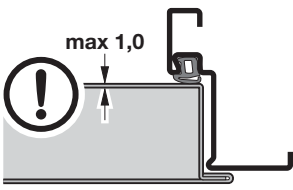
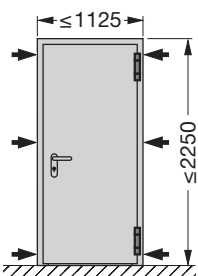
B4



B5



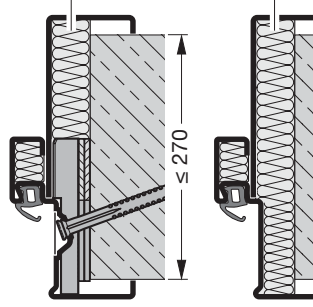
H3 - 1 OD



B6



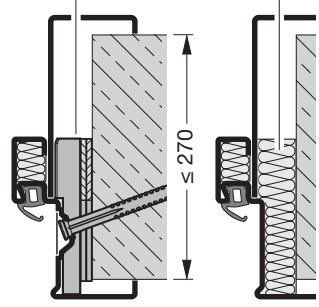
$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100

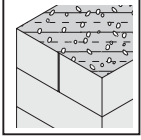


B7

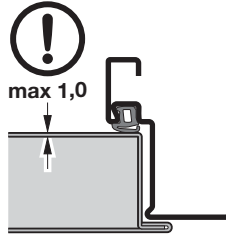
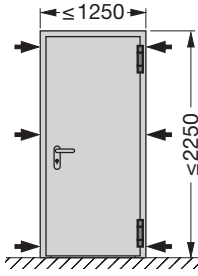


$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100

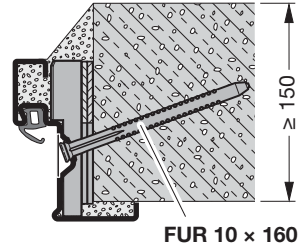




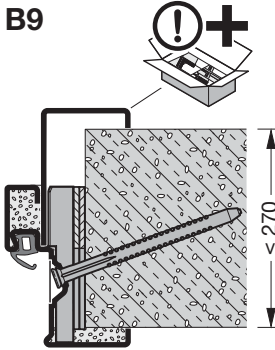
H3-1 OD



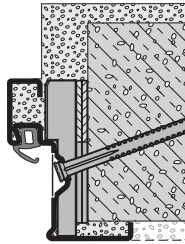
B8



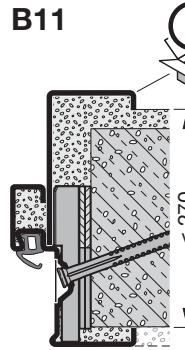
B9



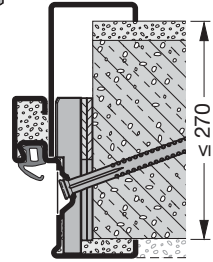
B10



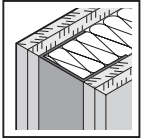
B11



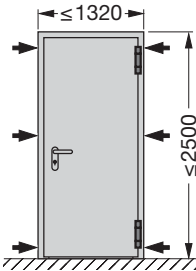
B12



➔ 1 2 3a 4 ...



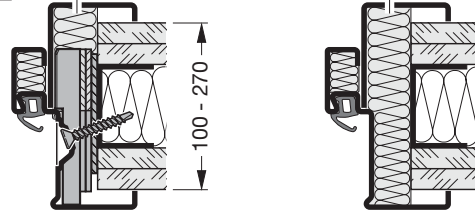
H3-1 OD



B13



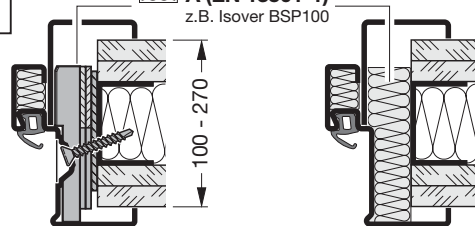
$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



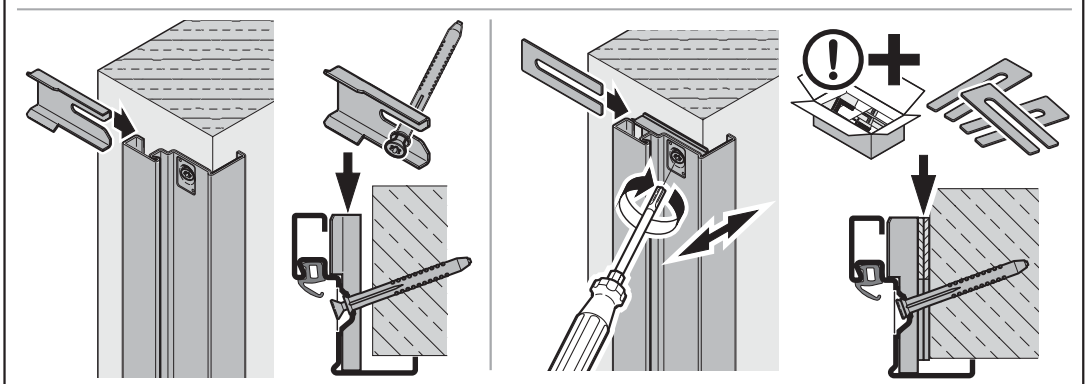
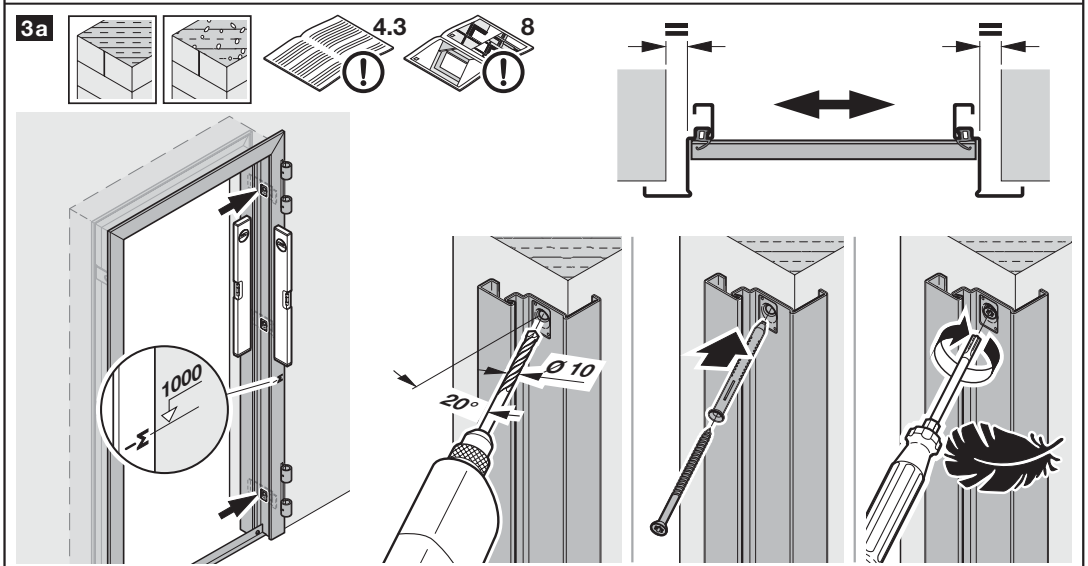
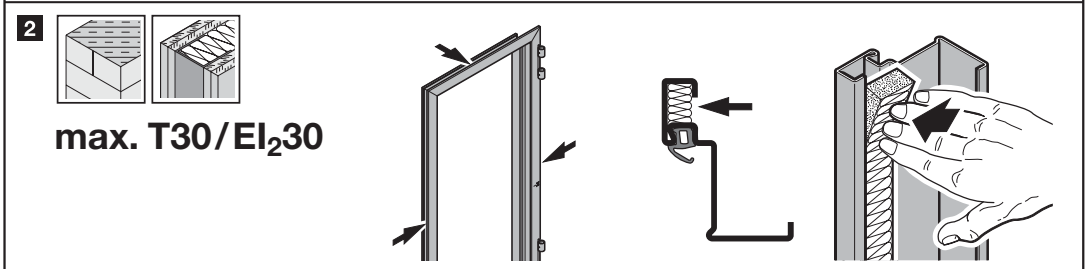
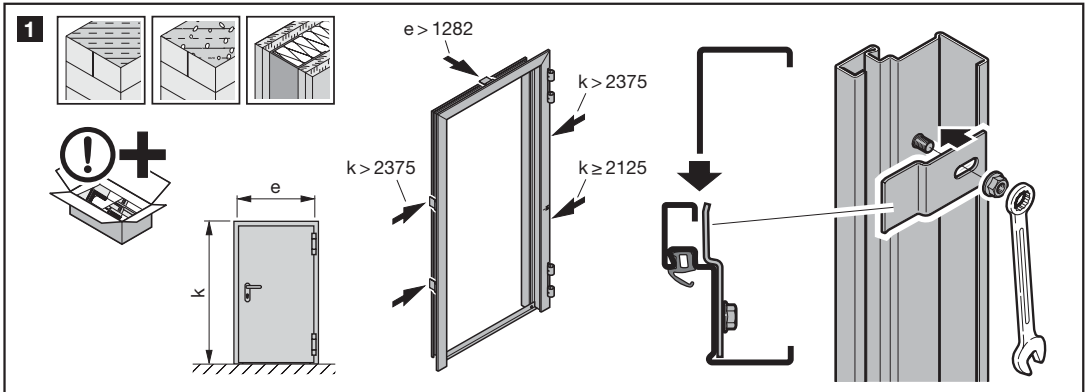
B14

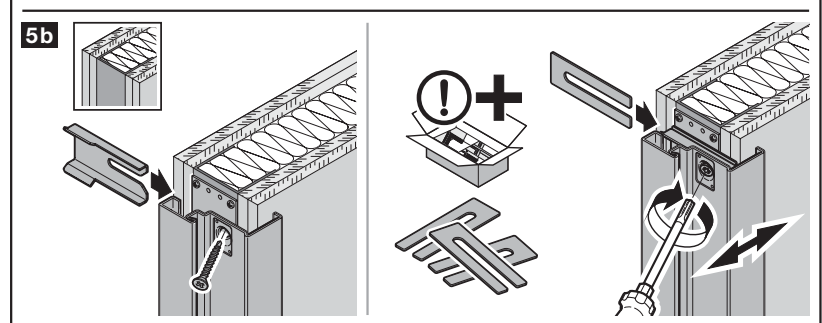
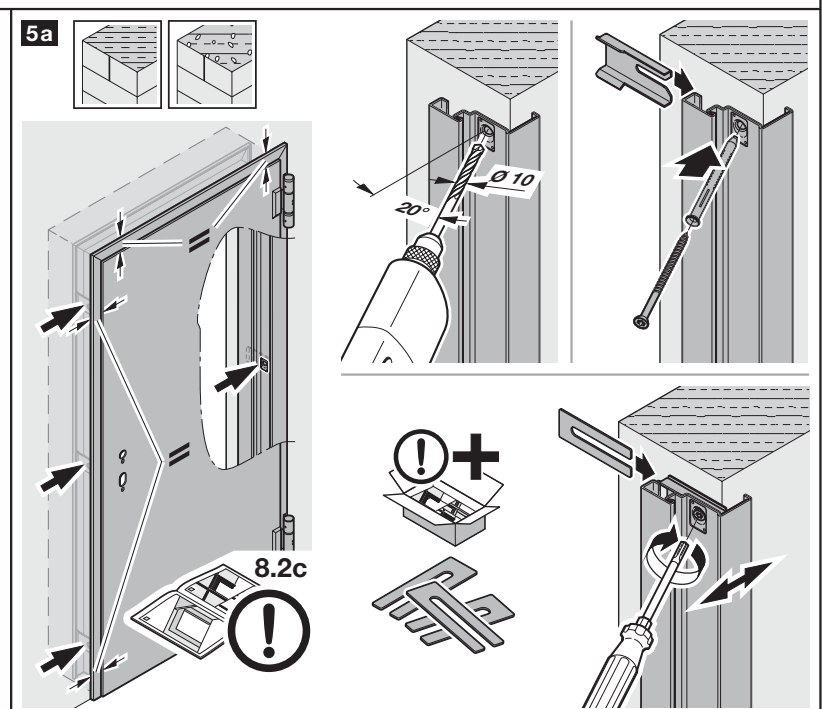
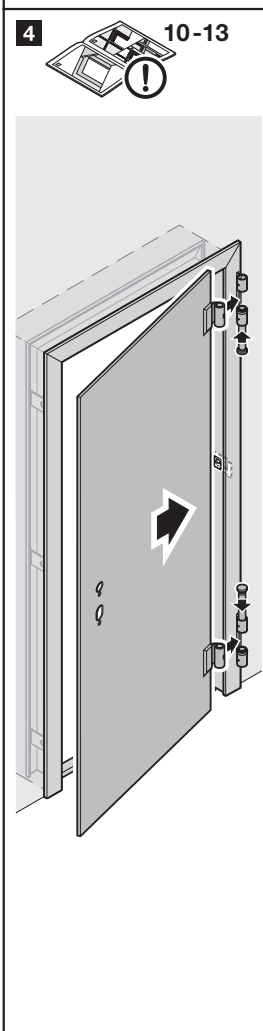
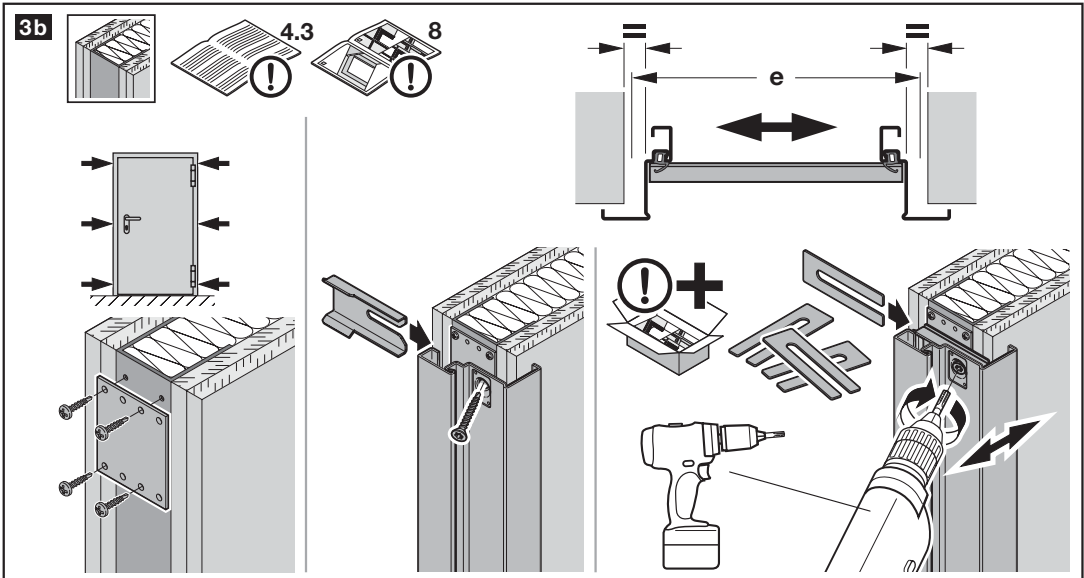


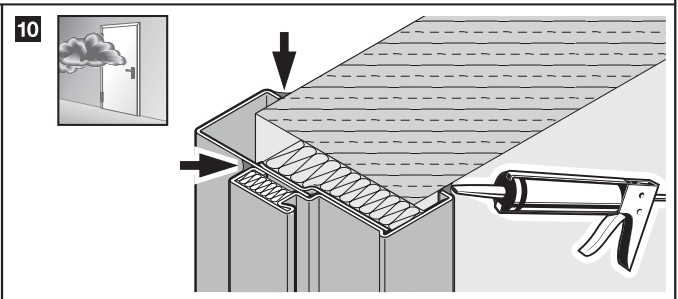
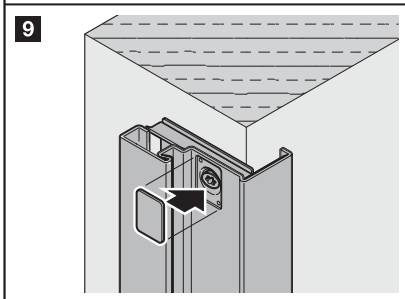
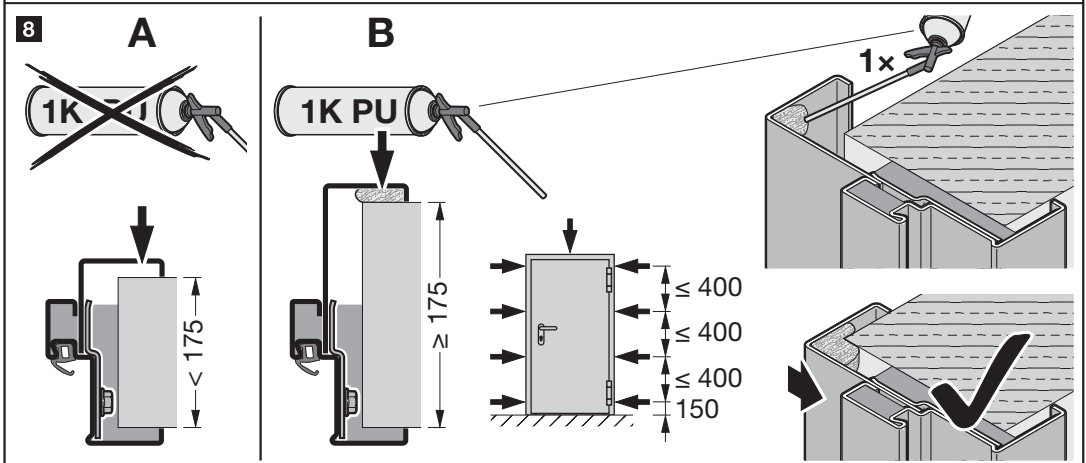
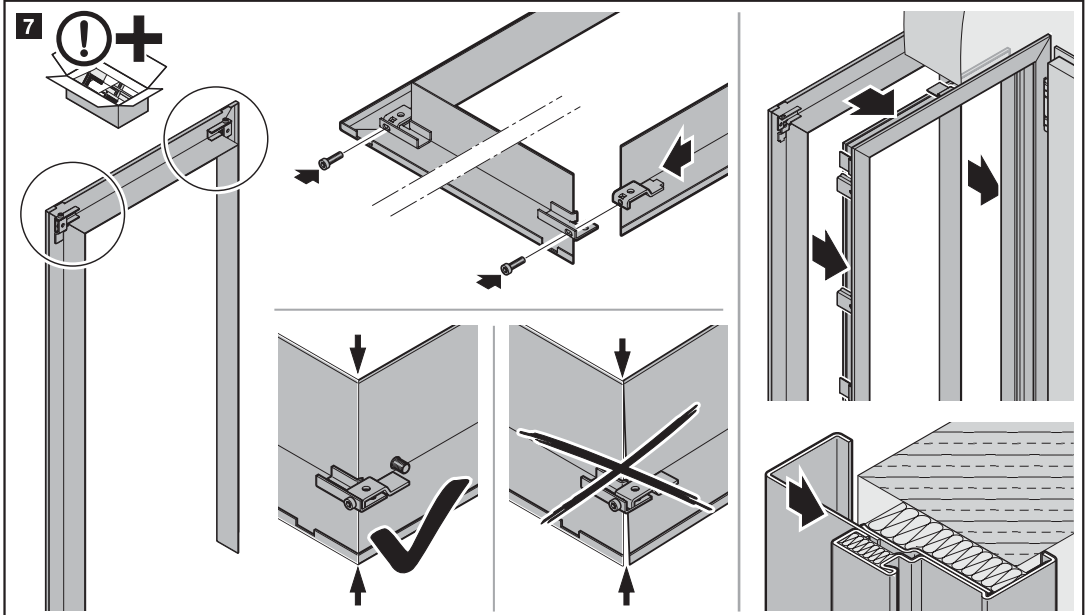
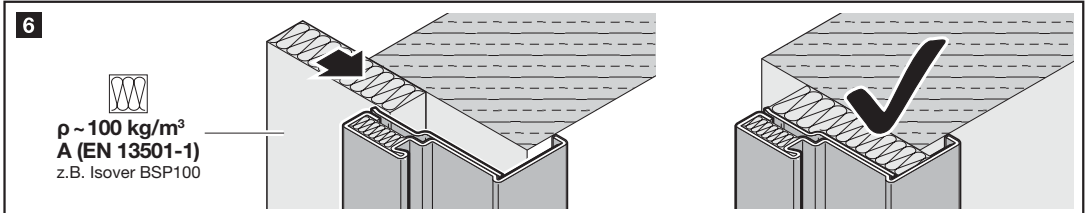
$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



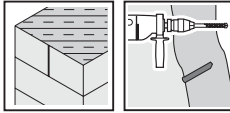
➔ 1 2 3b 4 ...



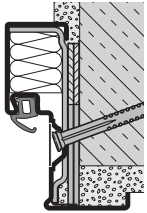




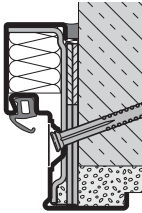
9/C1-C8
max. T30/
EI₂30



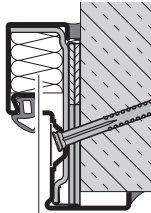
C1



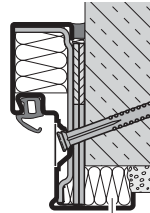
C2



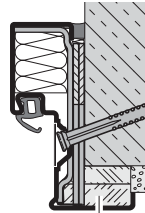
C3



C4

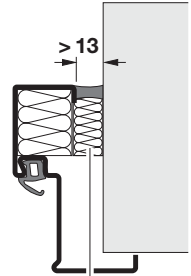


C5



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

A-EN 520

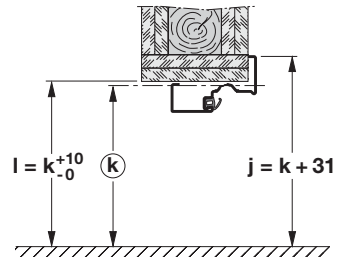
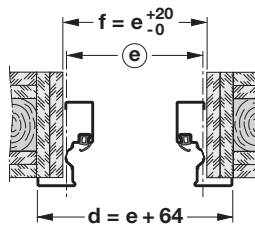
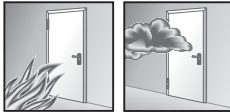


$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100

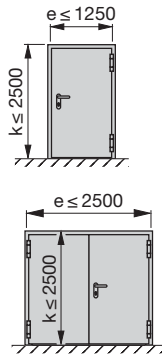
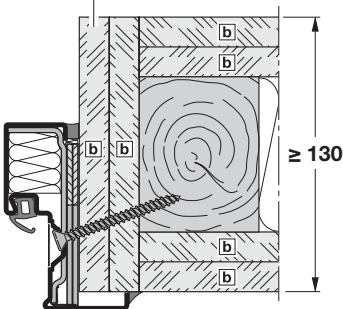
➔ 1a 2 ...


➔ 6

max. T30/
EI₂30

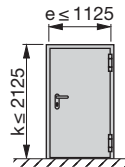
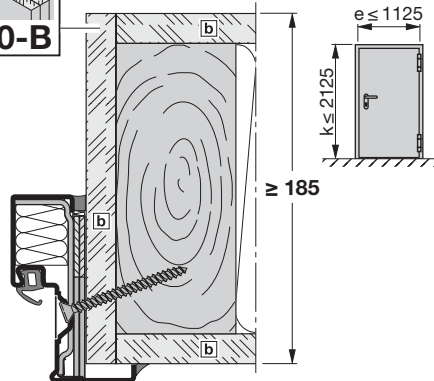


C6 F90B DIN 4102-4 Tab. 49



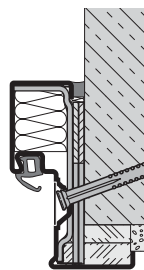
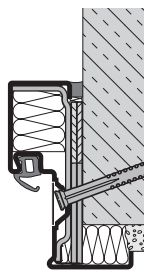
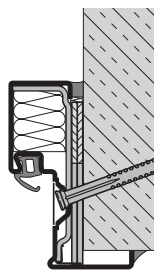
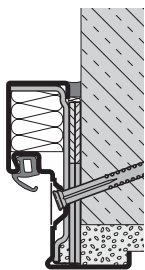
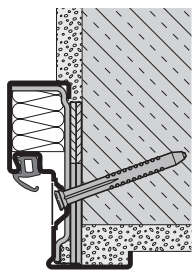
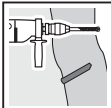
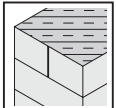
 A-12,5-EN 520

C7 F30B DIN 4102-4 Tab. 49

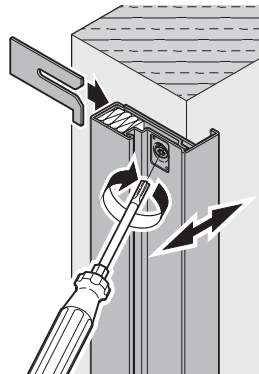
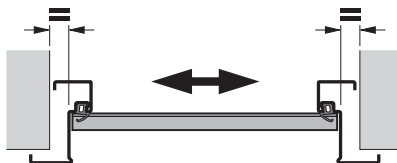
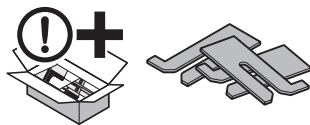
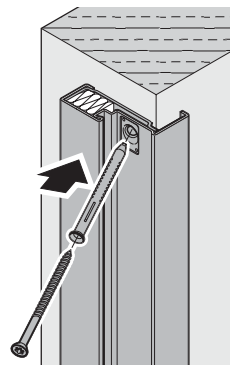
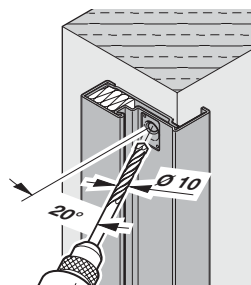
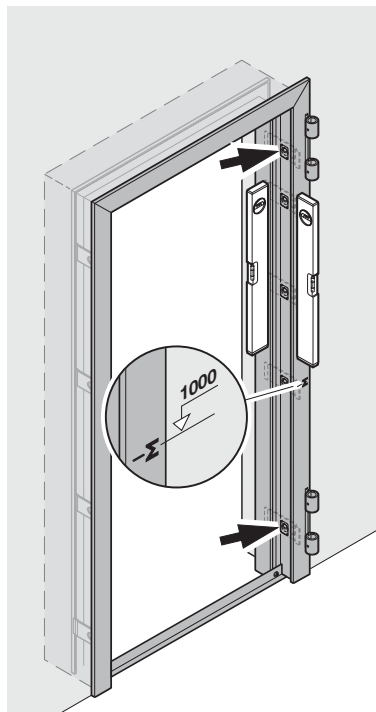
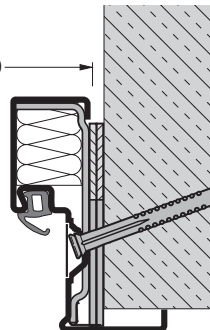


➔ 1b 2 ...

1a



e-10

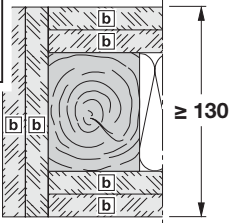


➔ 2

1b



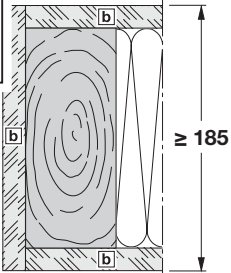
F90-B



≥ 130

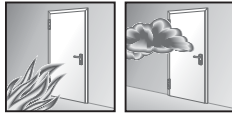


F30-B



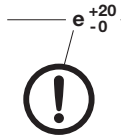
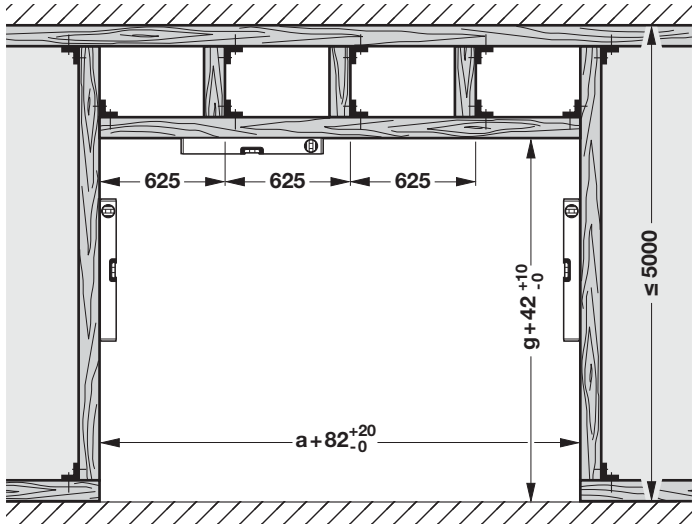
≥ 185

b) A-12,5-EN 520

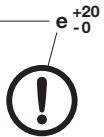
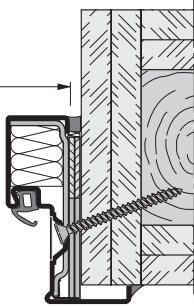


4.2/4.3

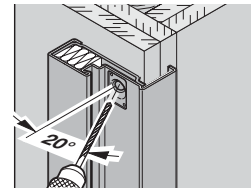
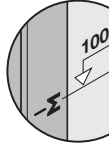
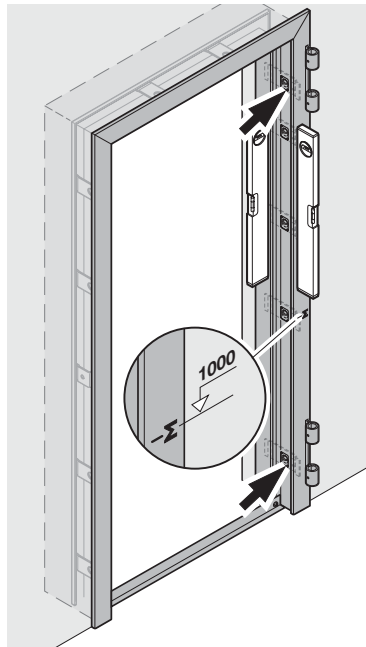
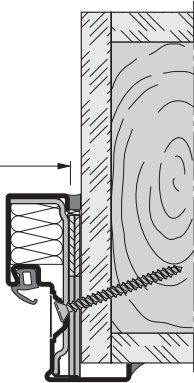
8



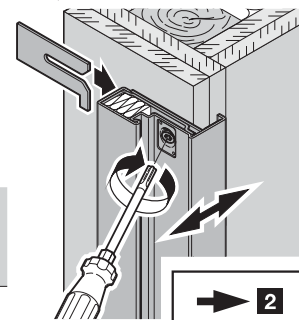
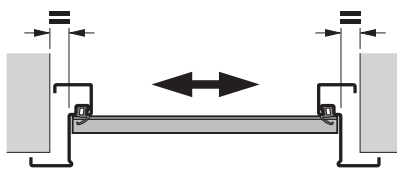
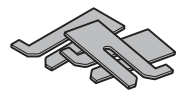
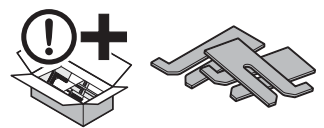
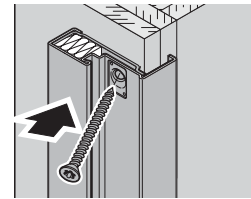
e +20 -0



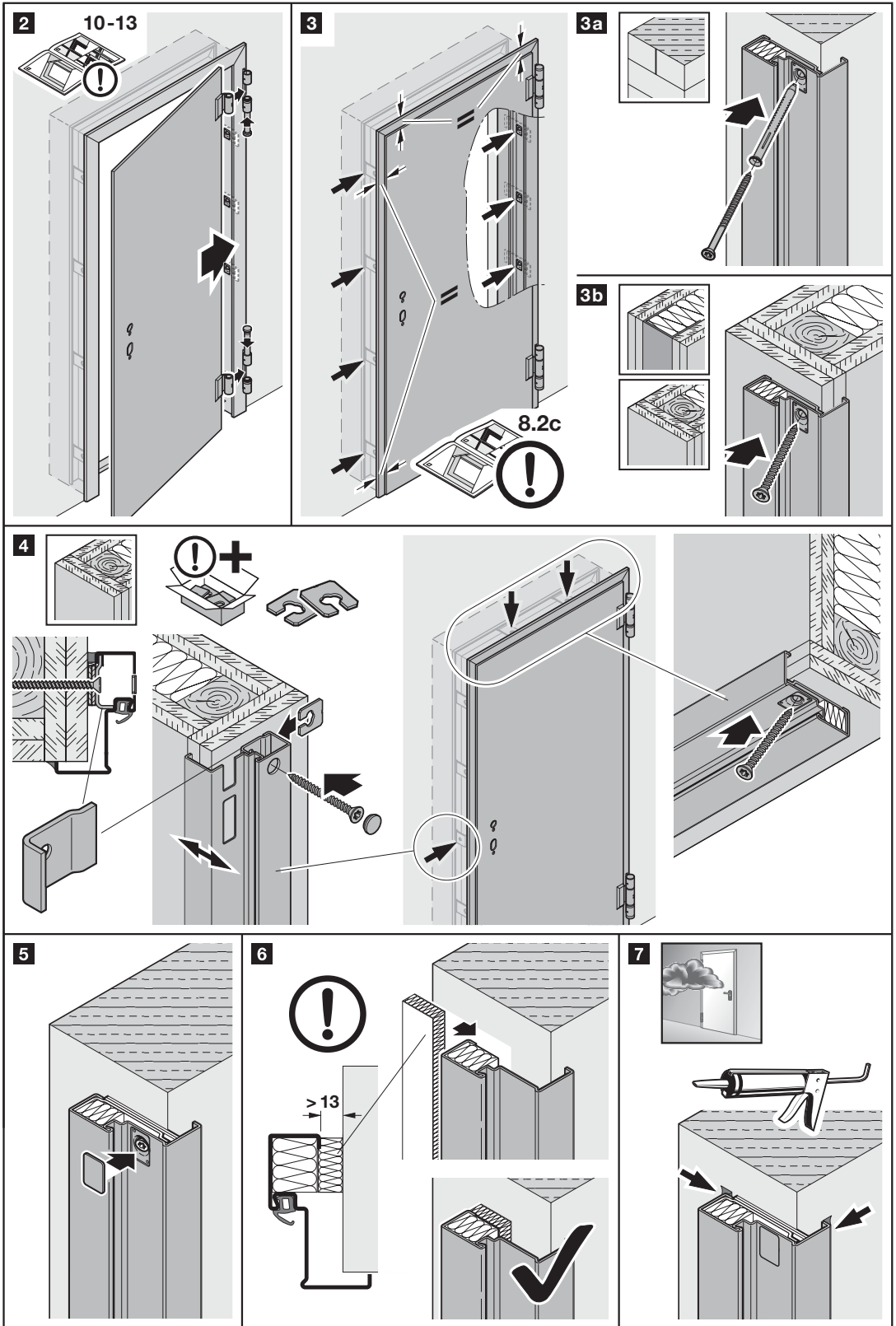
e +20 -0



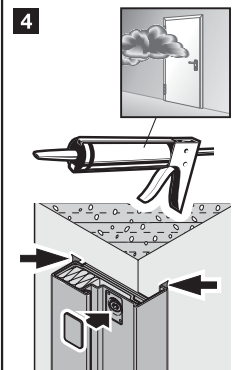
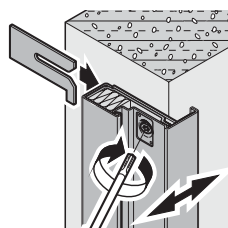
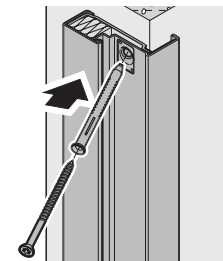
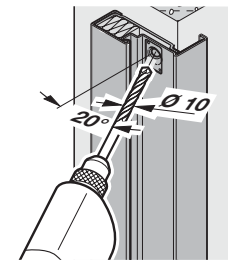
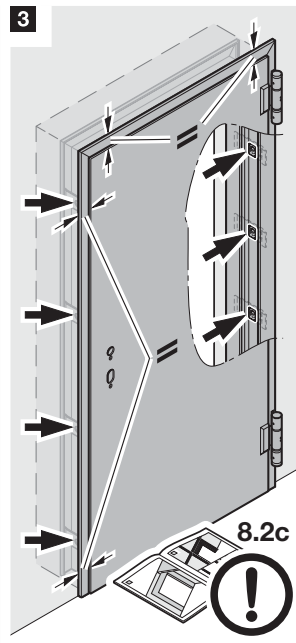
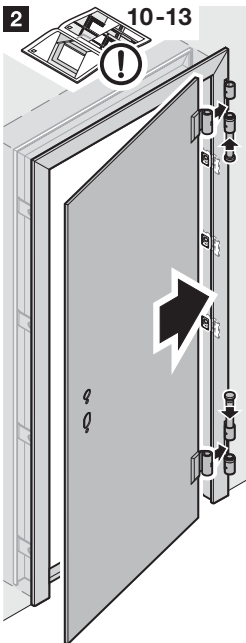
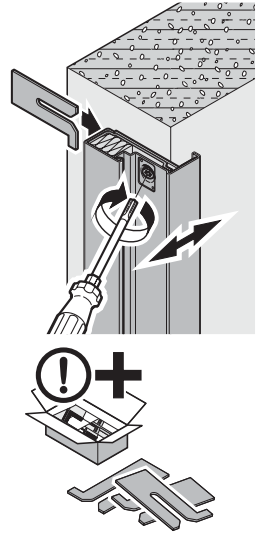
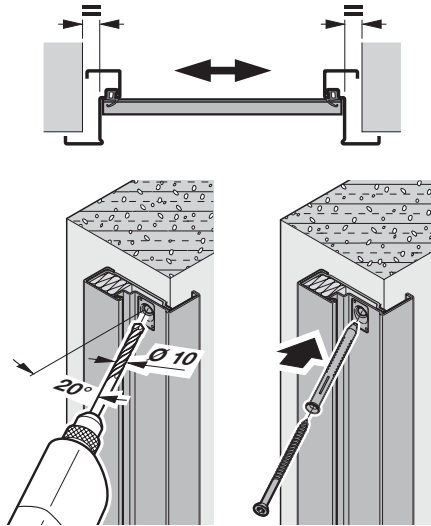
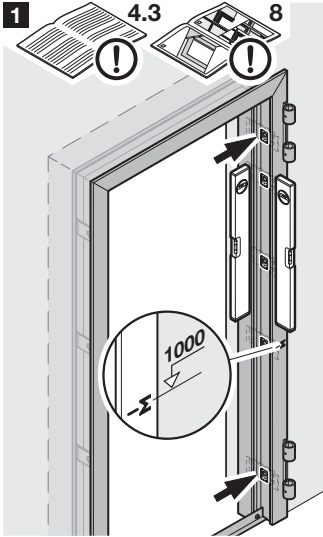
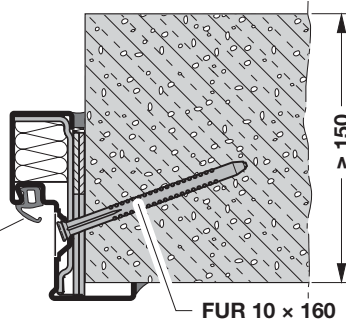
20°

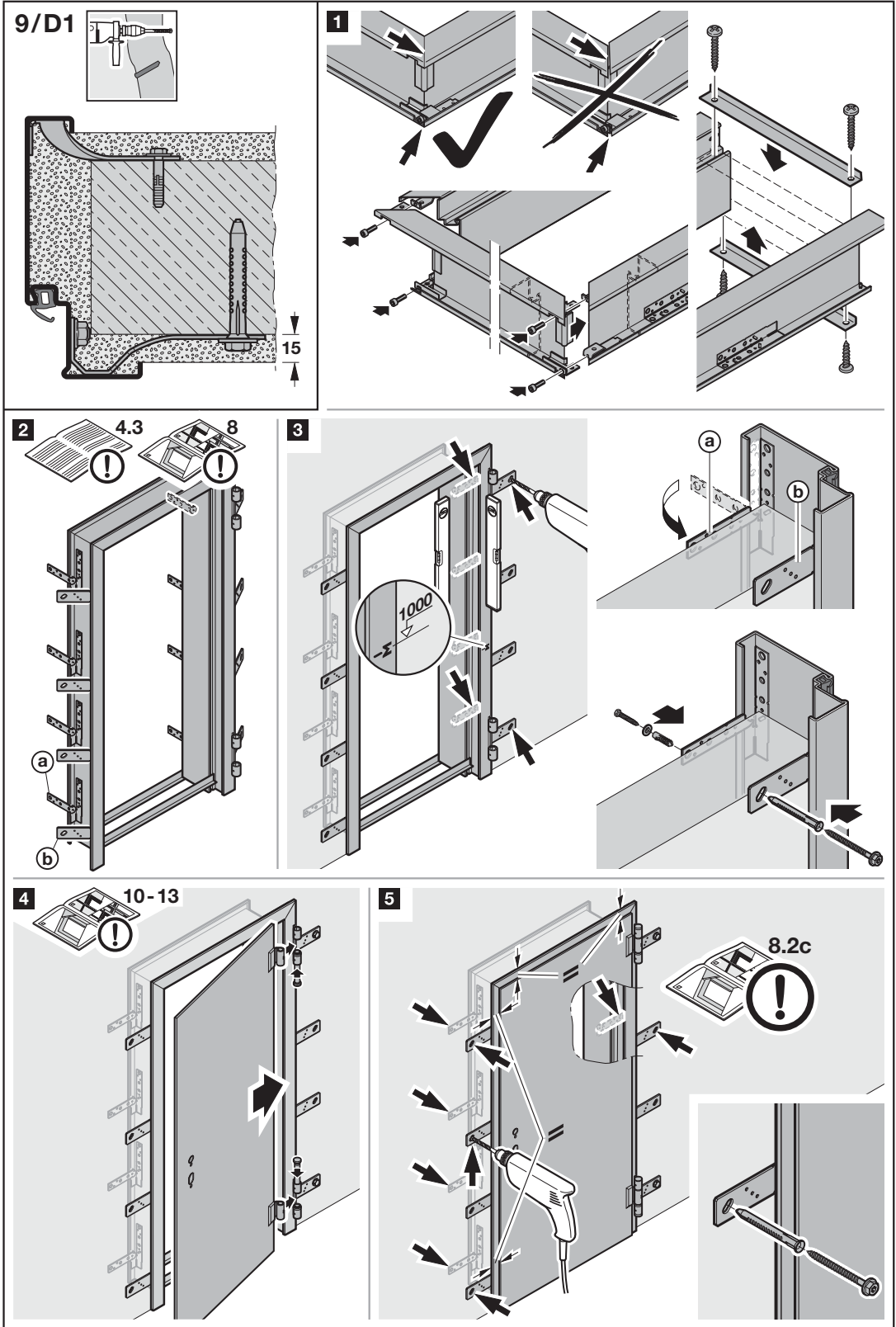


2



9/C8
max. T30





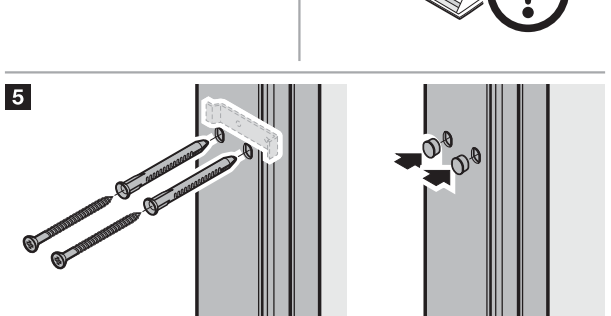
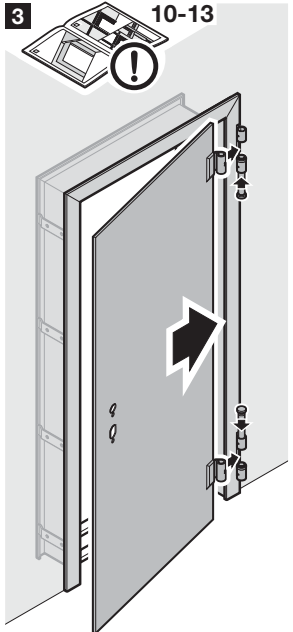
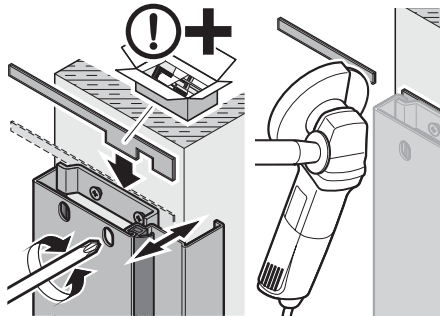
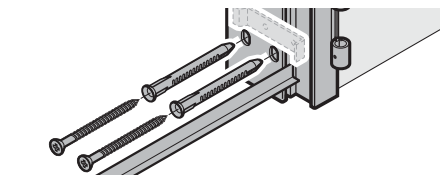
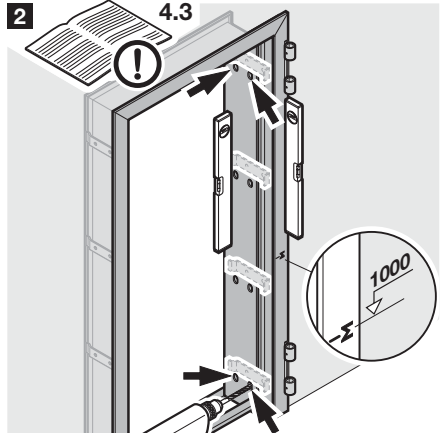
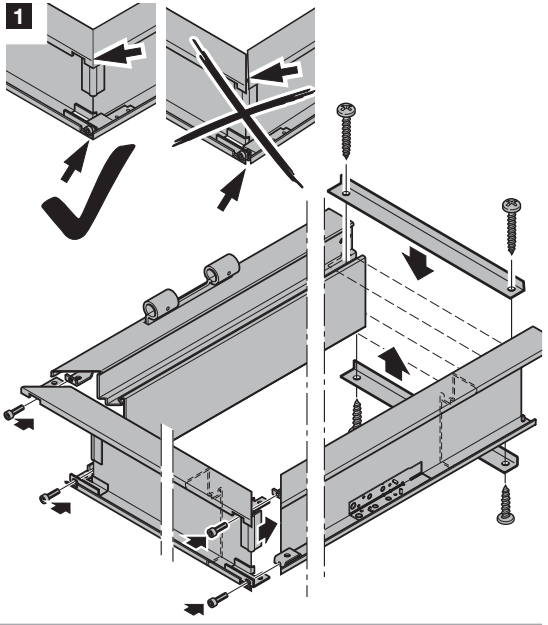
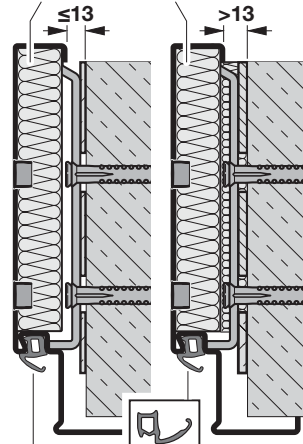
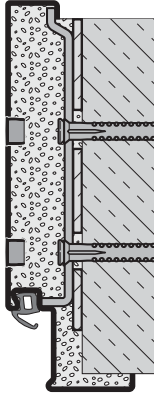
9/D2

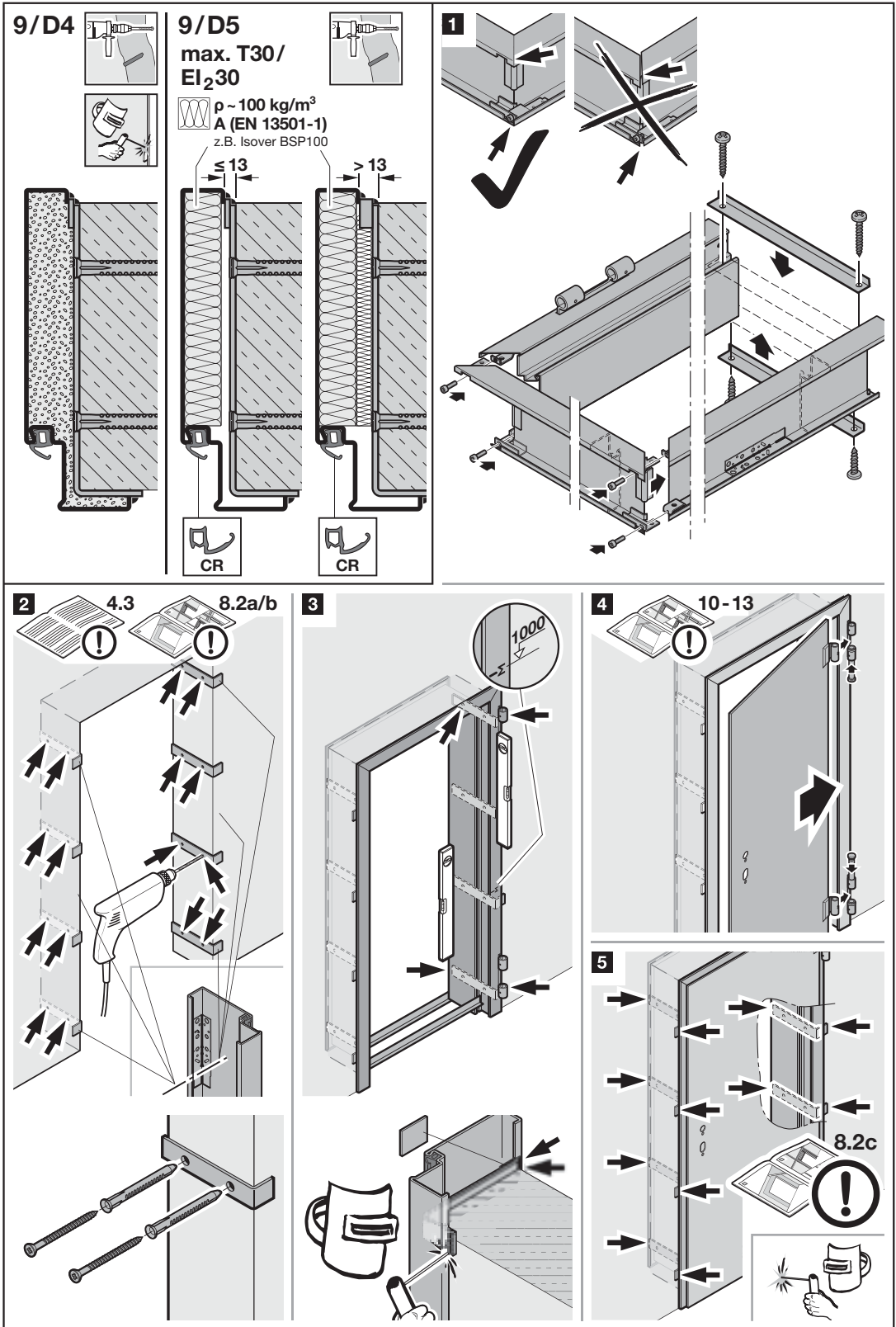


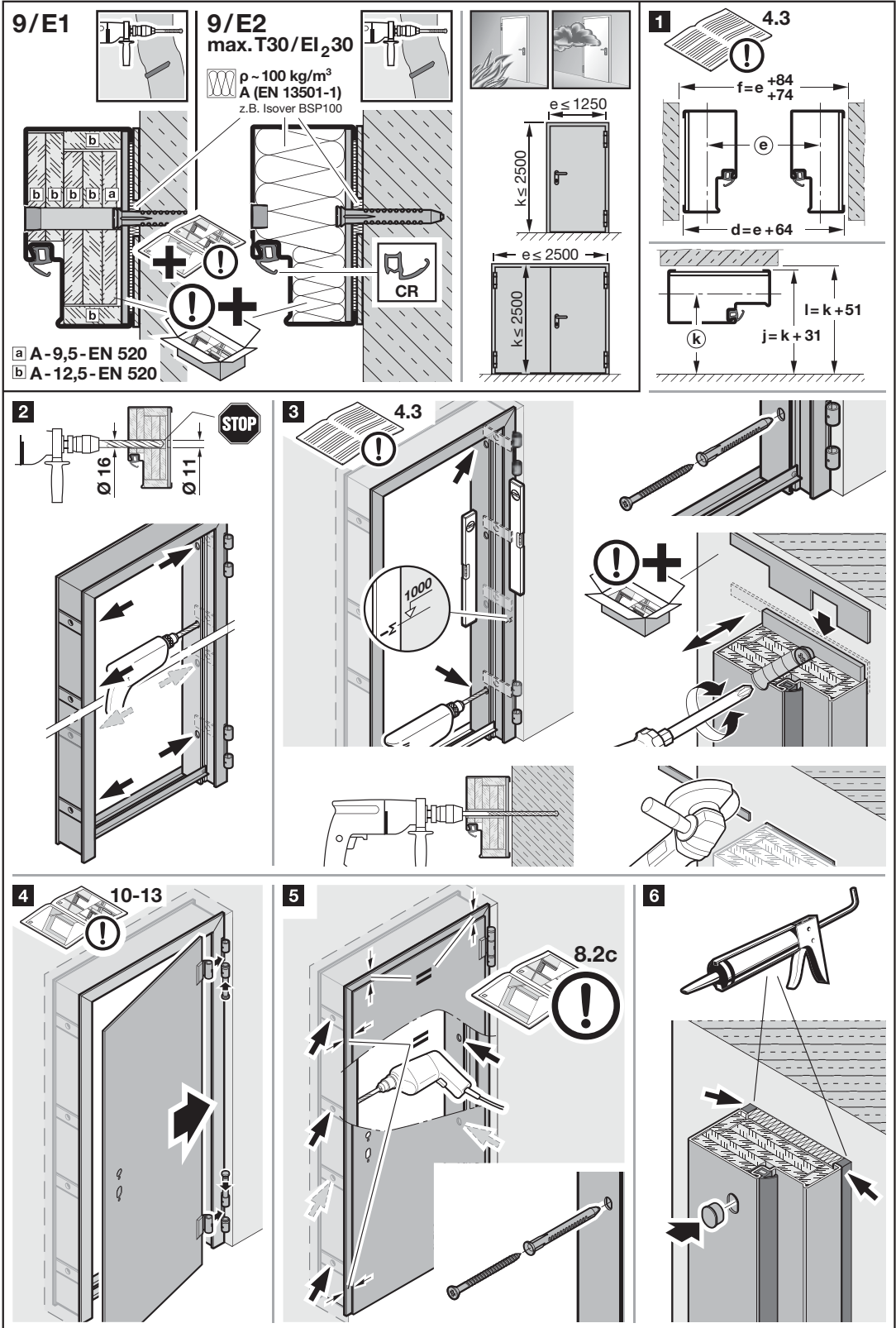
9/D3

max. T30/EI₂30

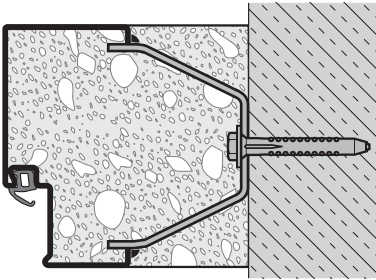
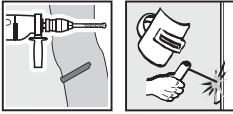
$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



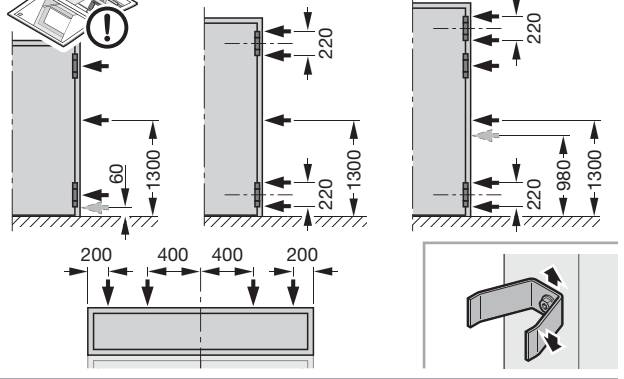




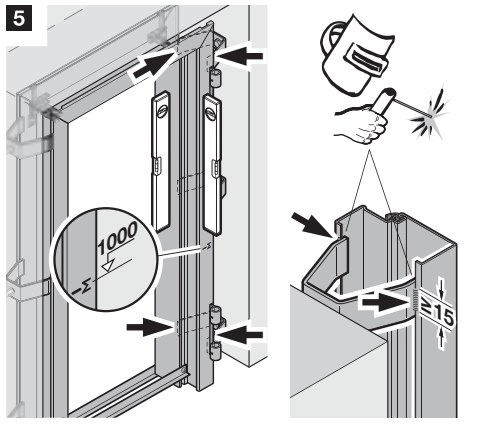
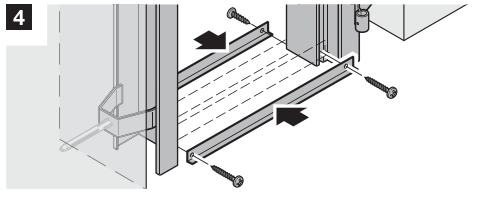
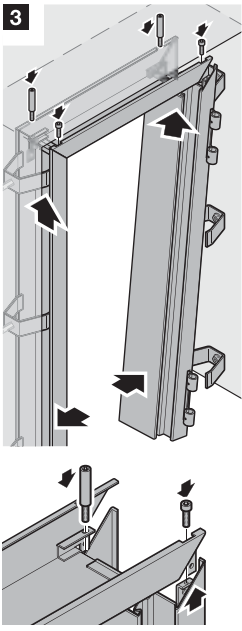
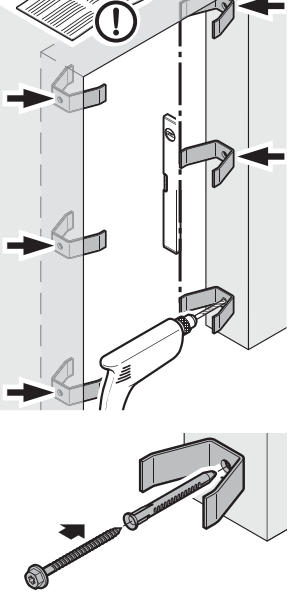
9/E3



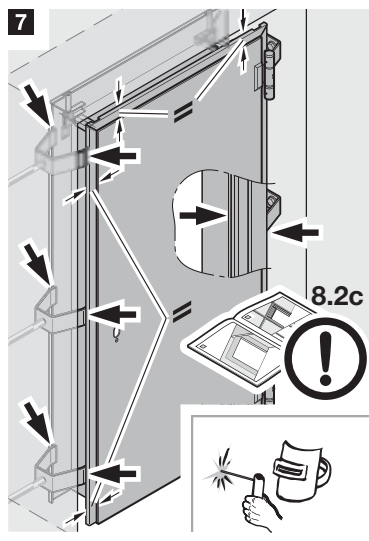
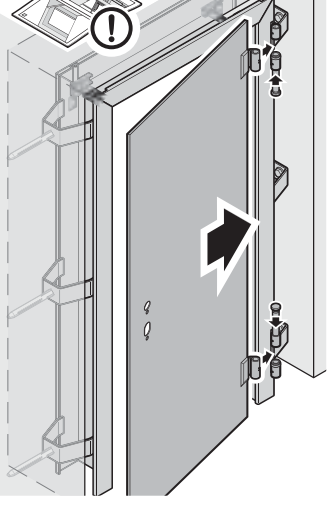
1 8.2a/b



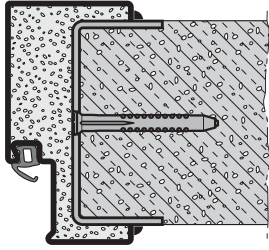
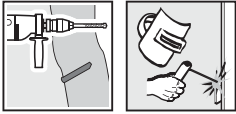
2 4.3



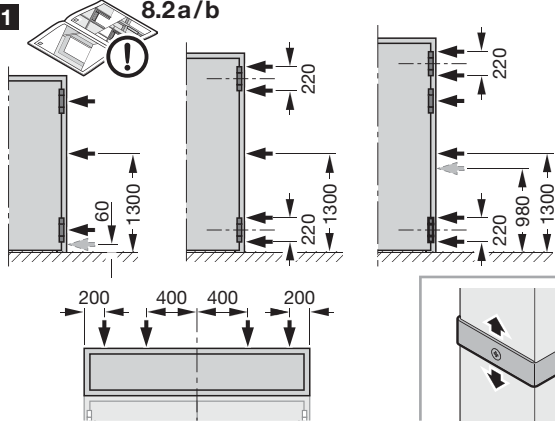
6 10-13



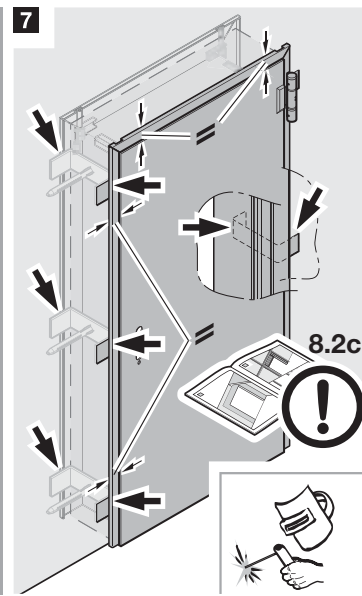
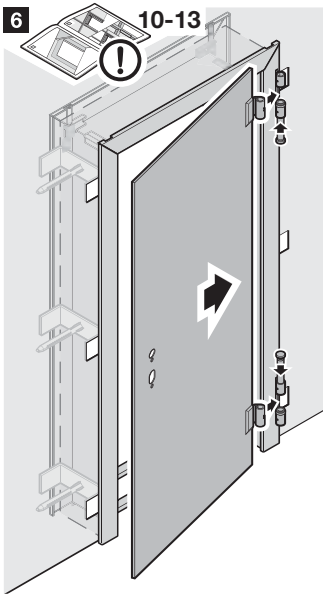
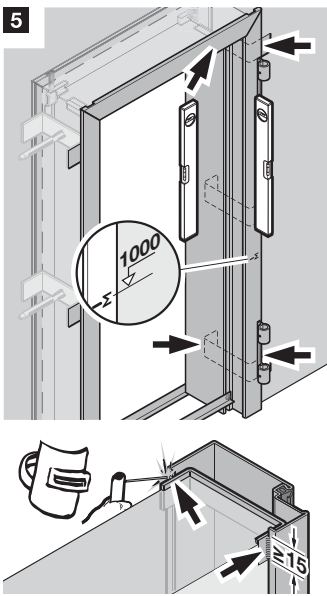
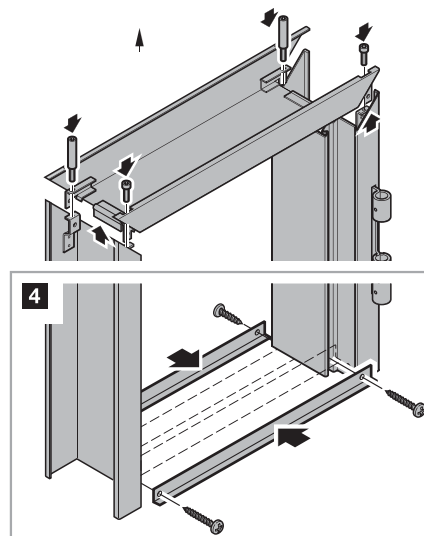
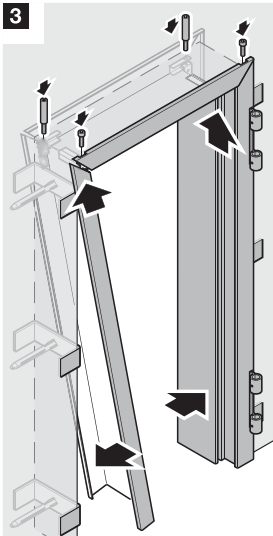
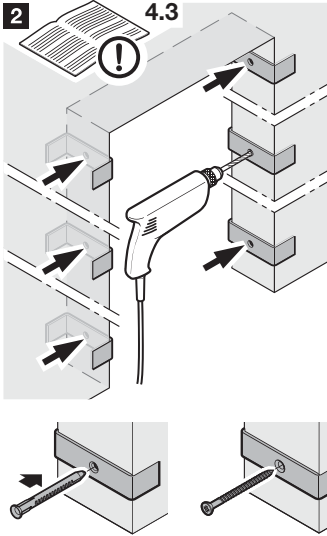
9/E4



1 8.2a/b



2 4.3

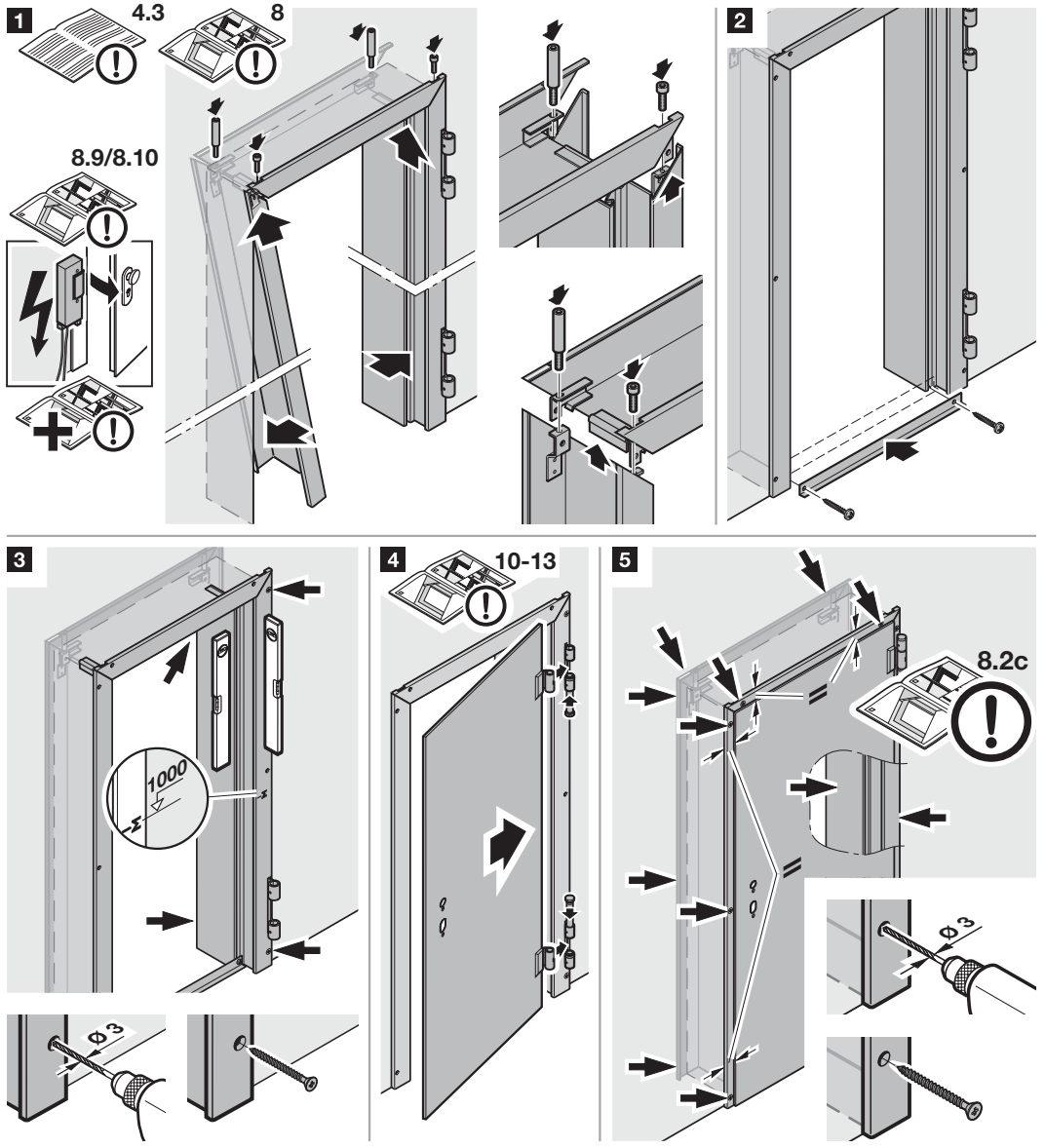
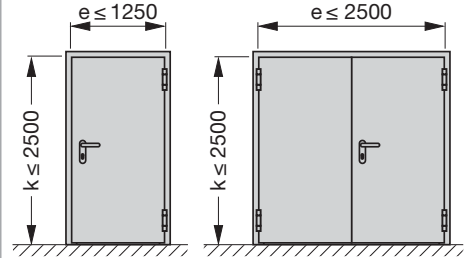
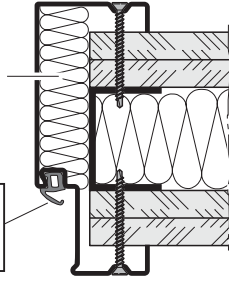
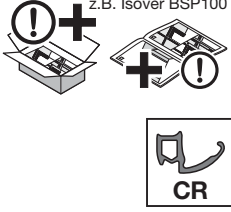


9/E5

max. T30/
EI₂30

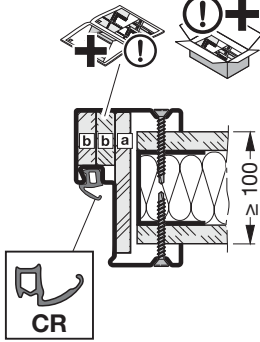


$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



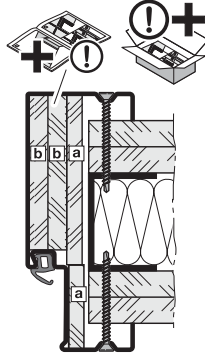
9/E6

max T30/EI₂30



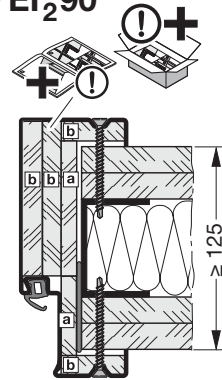
9/E7

max T30/EI₂30

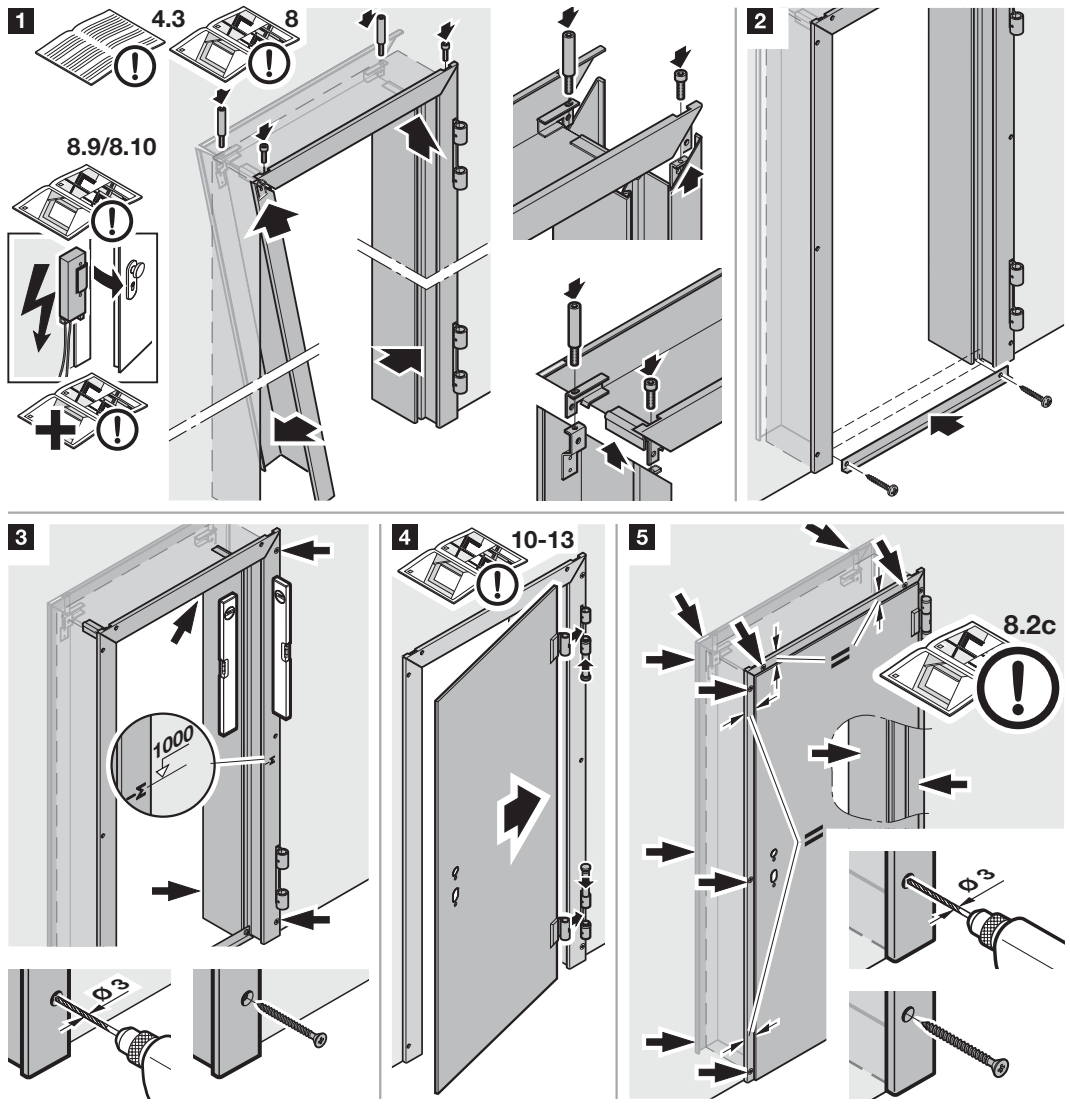


9/E8

T90/EI₂90

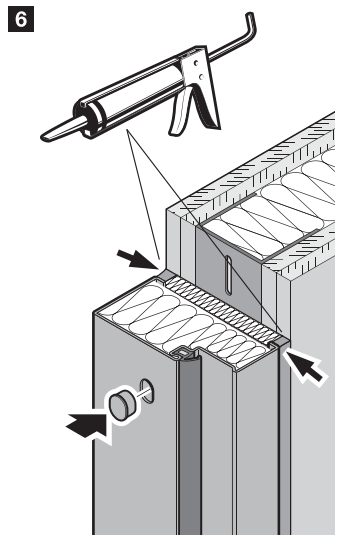
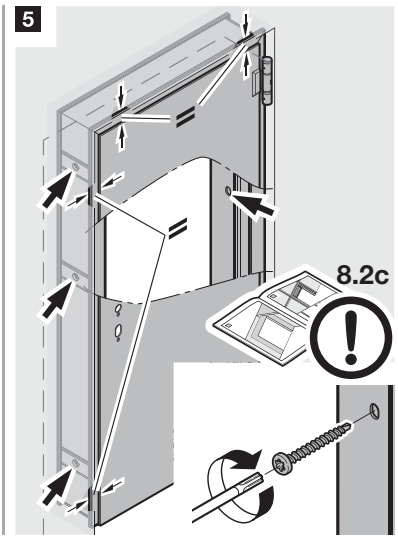
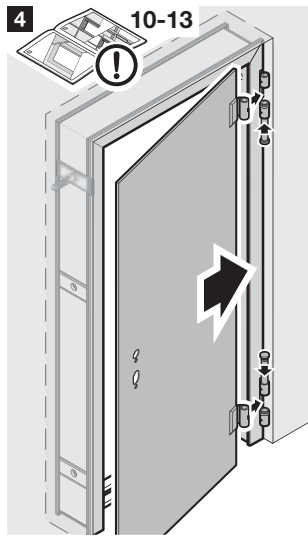
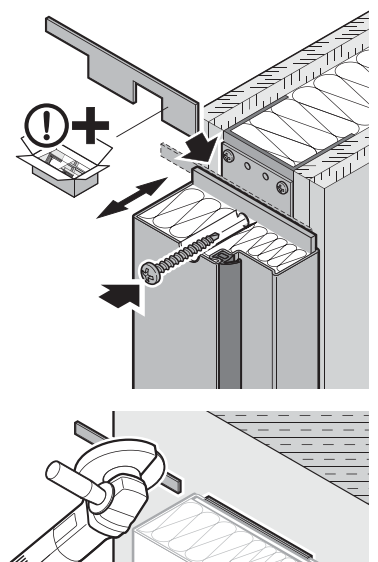
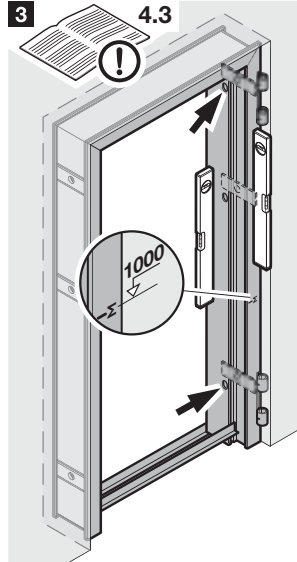
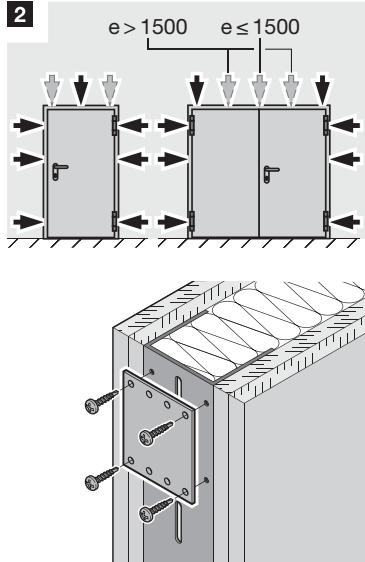
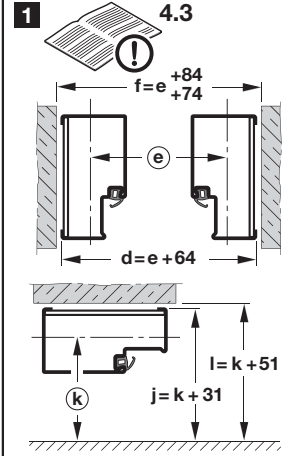
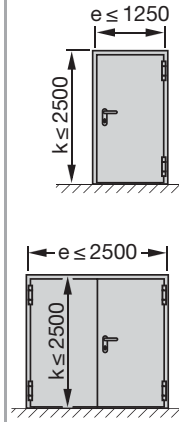
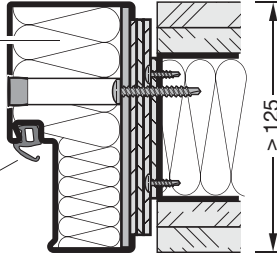
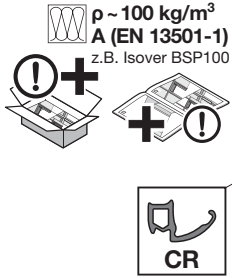
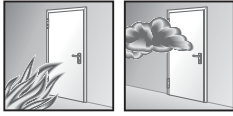


a A-9,5-EN 520 / b A-12,5-EN 520



9/E9

max. T30/
EI₂₃₀

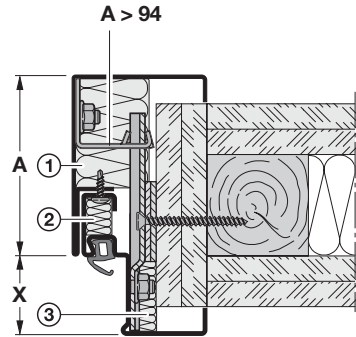
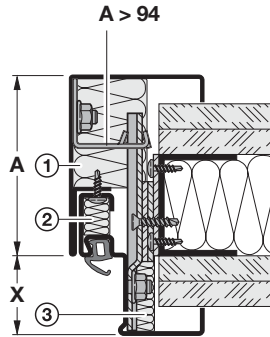
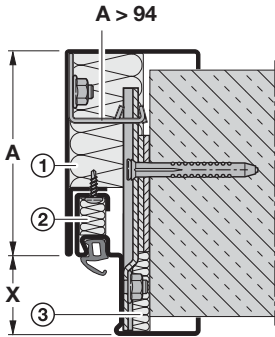
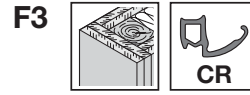
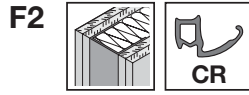
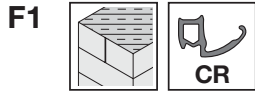
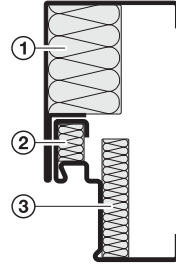


9/F1-F4

max. T30/ EI₂30

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

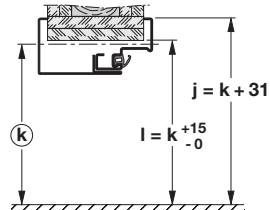
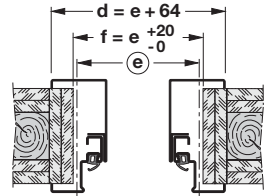
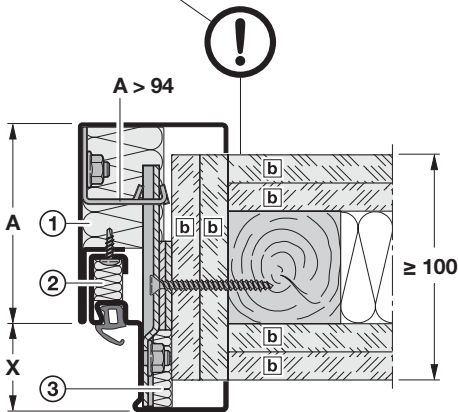
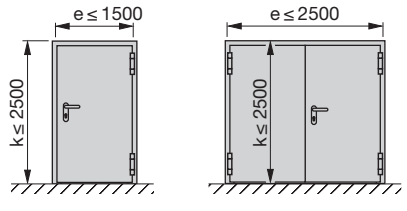
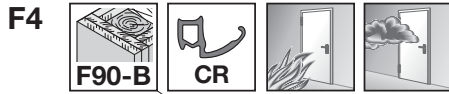
- ① = $40 \times (A - 42)$
- ② = $15 \times 22,5$
- ③ = $15 \times (X + 24)$



➔ **1 2a 2b 3 ...**

➔ **1 2c 3 ...**

➔ **1 2d 3 ...**



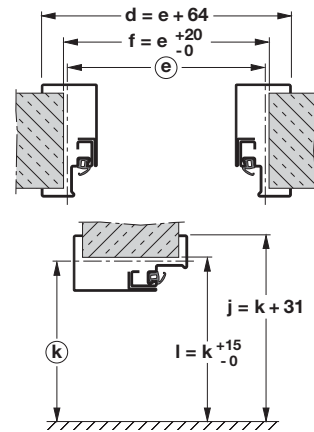
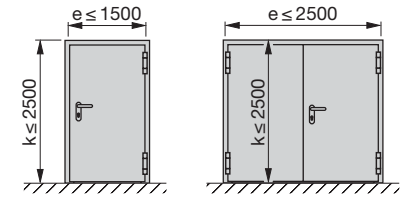
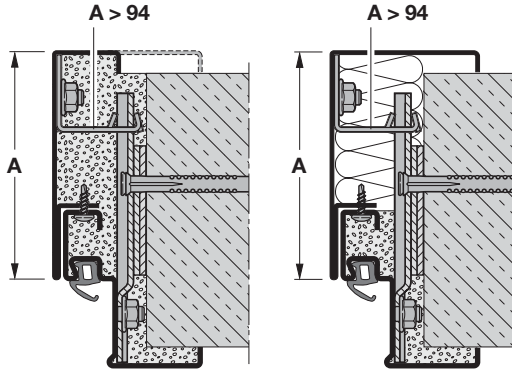
F90B DIN 4102-4 Tab. 49 **b** A-12,5-EN 520

➔ **1 2e 3 ...**

9/F5-F6

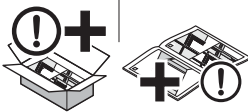
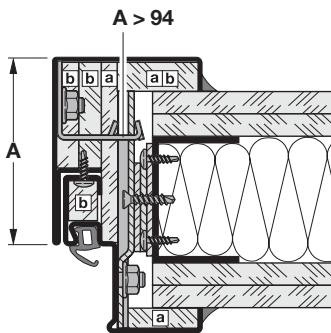
max. T90/ EI₂90

F5

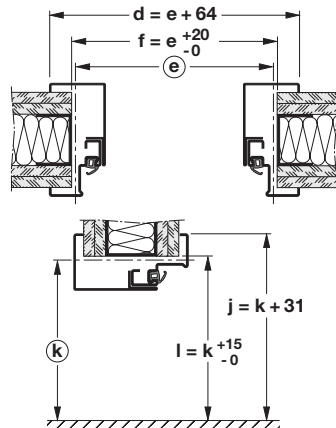
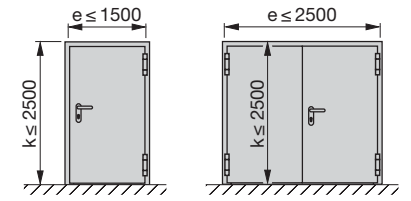


➔ 2a 2b 3 ...

F6

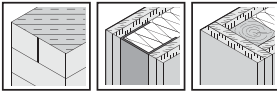


[a] A-9,5-EN 520 / [b] A-12,5-EN 520

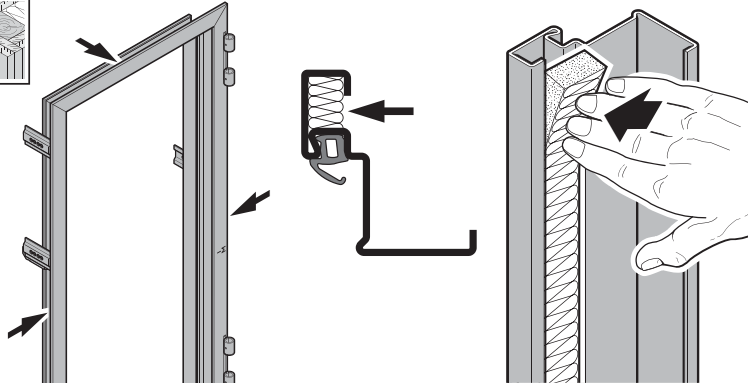


➔ 2c 3 ...

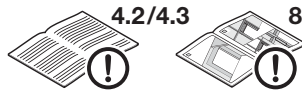
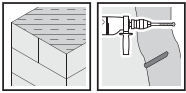
1



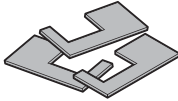
max. T30/EI₂30



2a

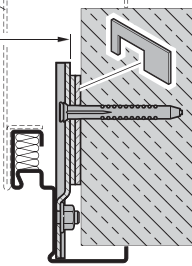


$y \geq 175$

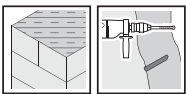


$y \geq 175$

$e - 10$



2b

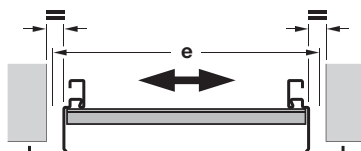
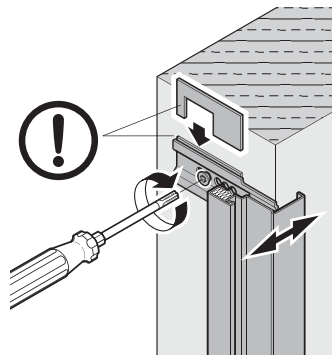
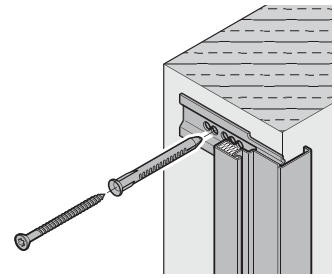
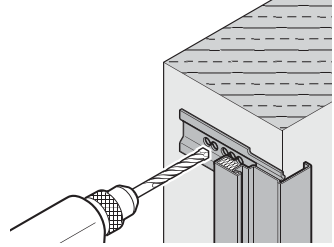
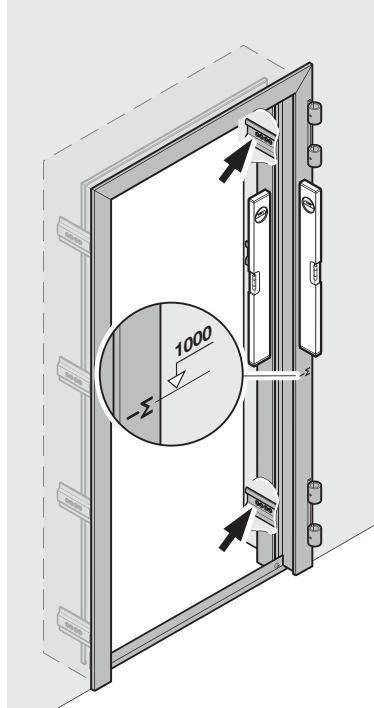
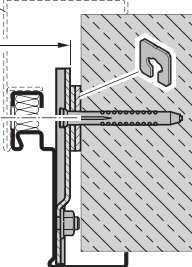


$y < 175$

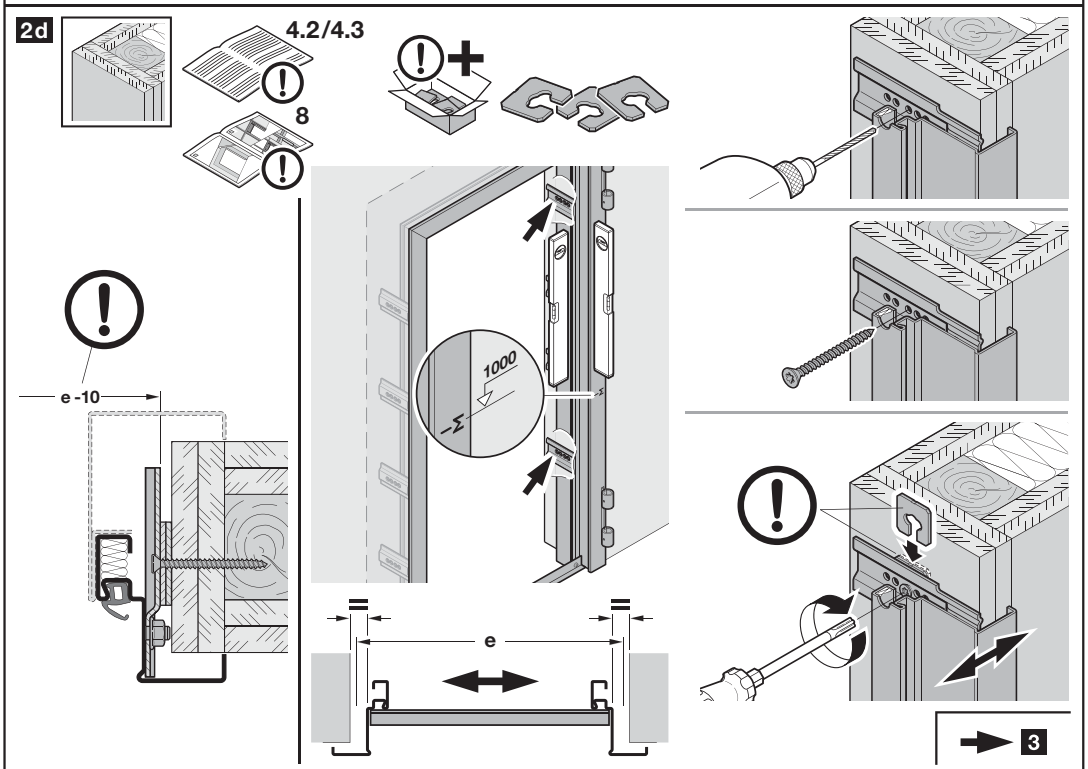
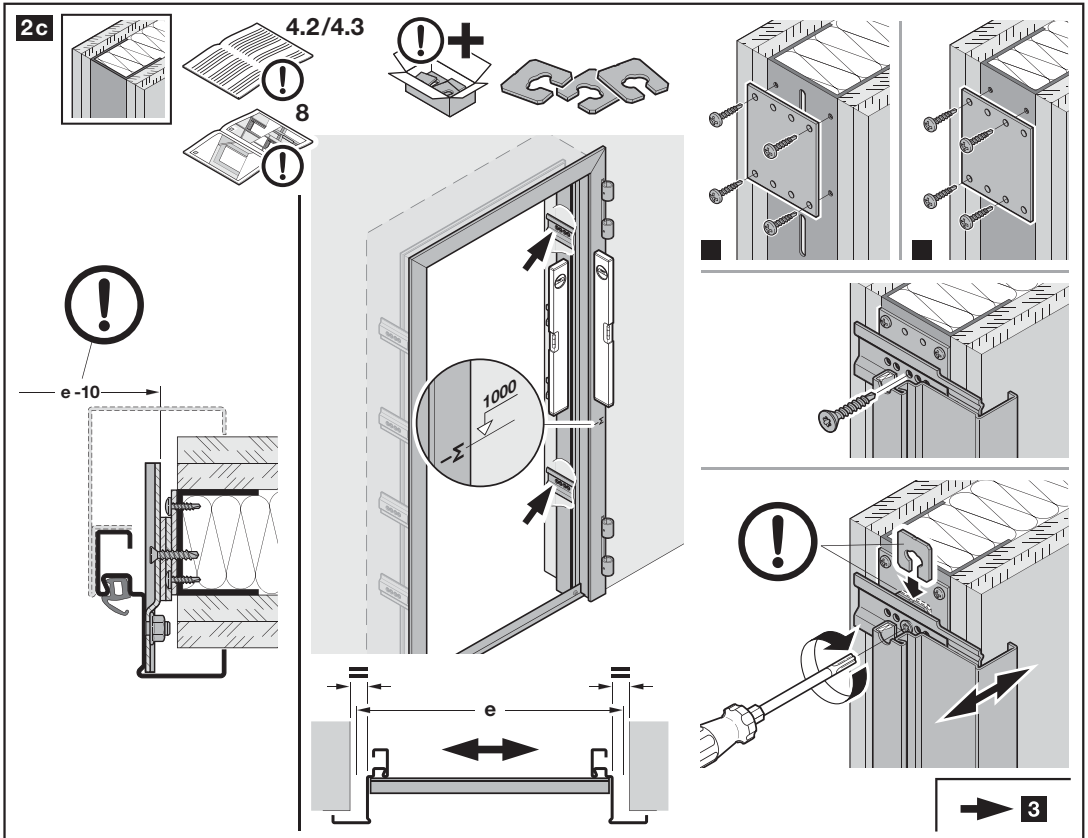


$y < 175$

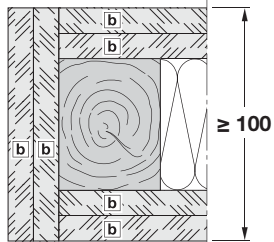
$e - 10$



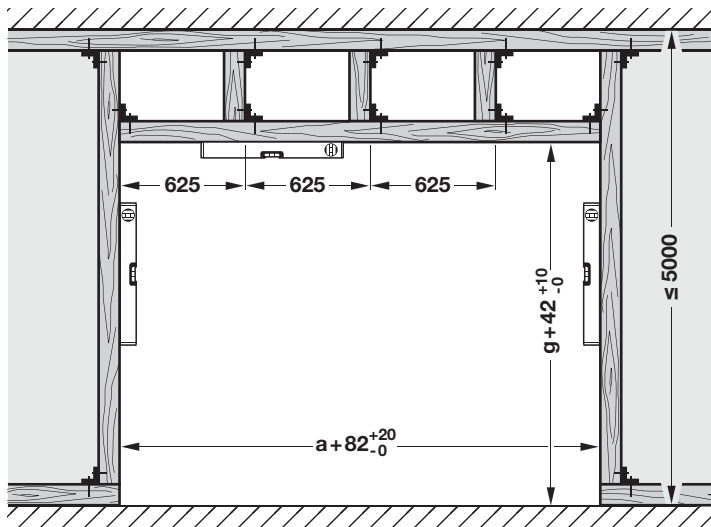
➔ 3



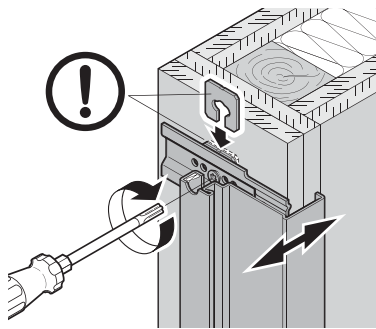
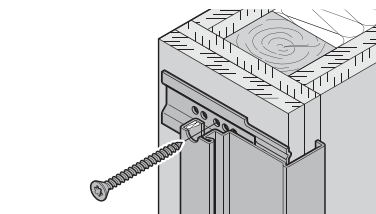
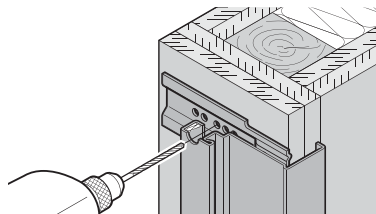
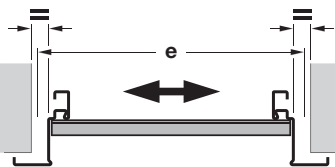
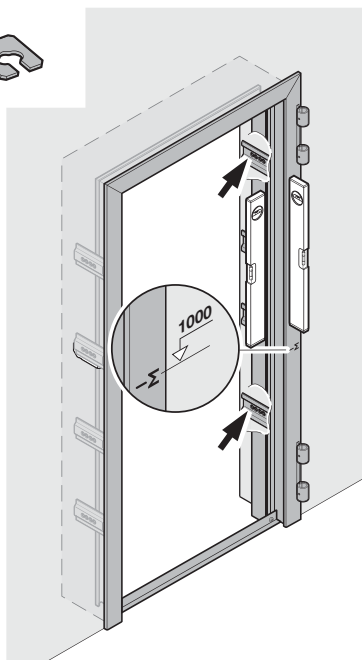
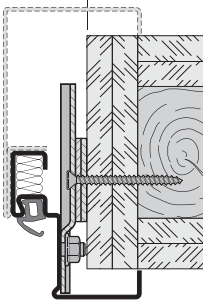
2e



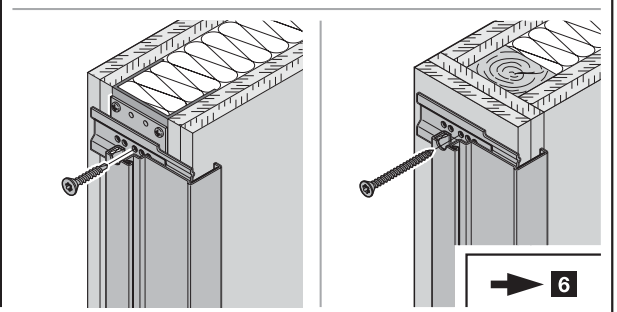
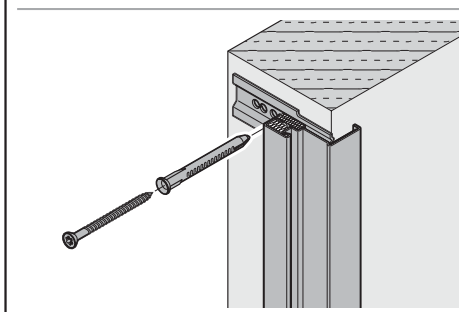
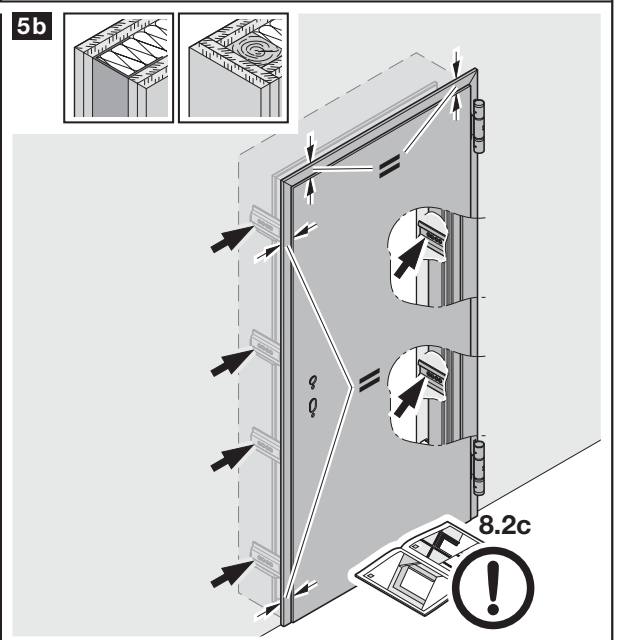
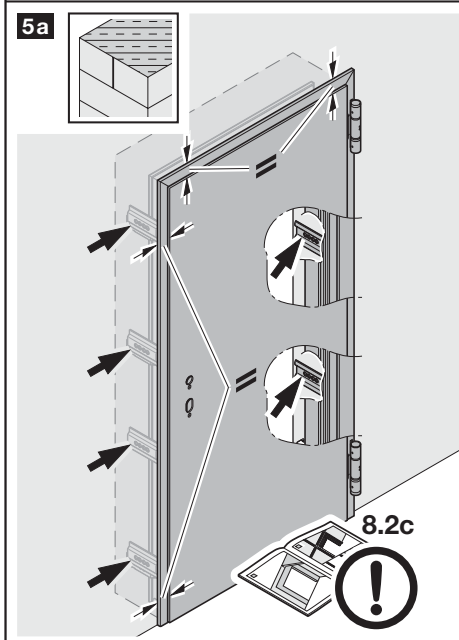
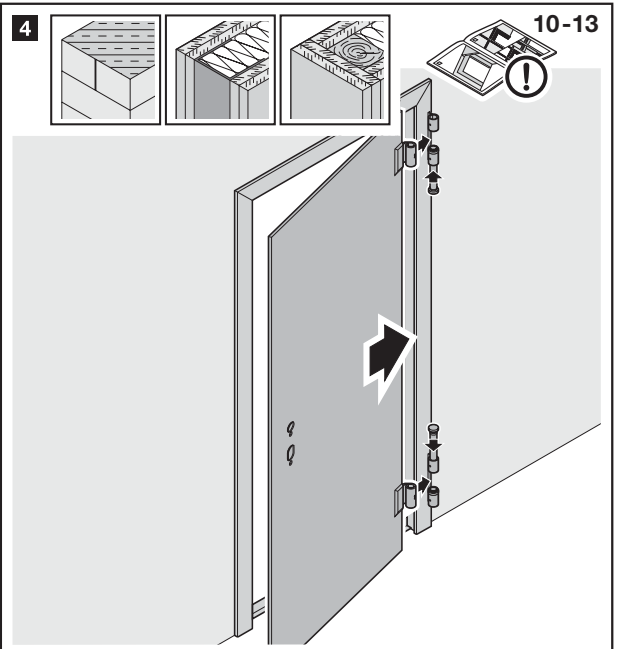
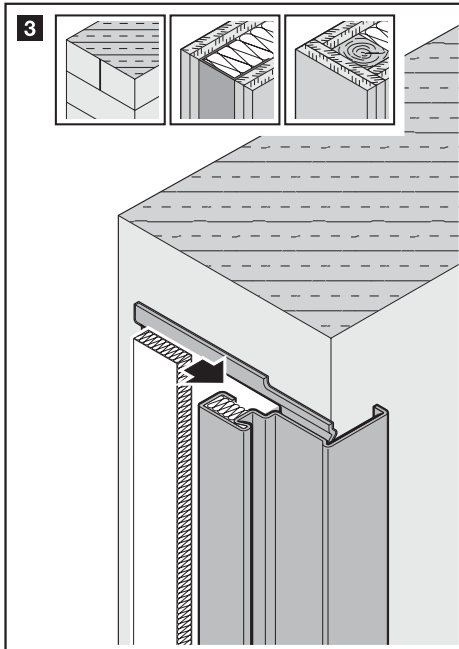
b A-12,5-EN 520

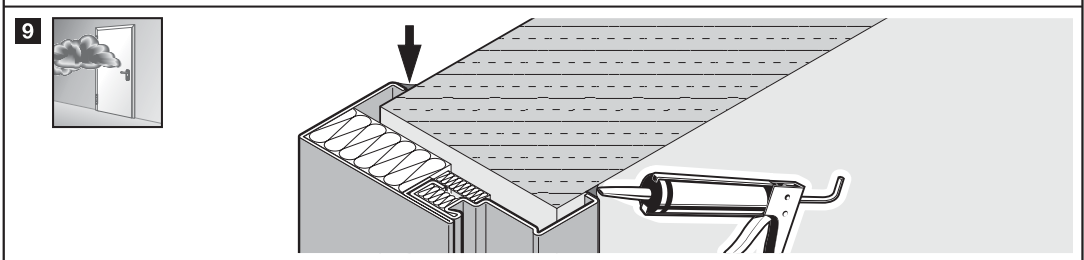
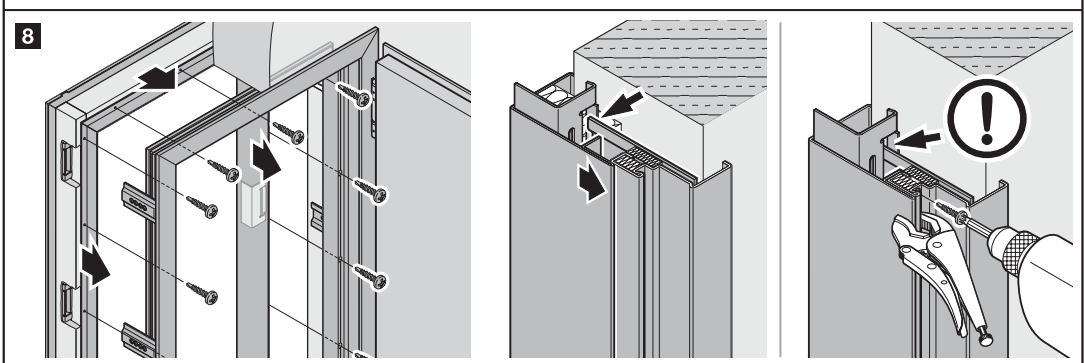
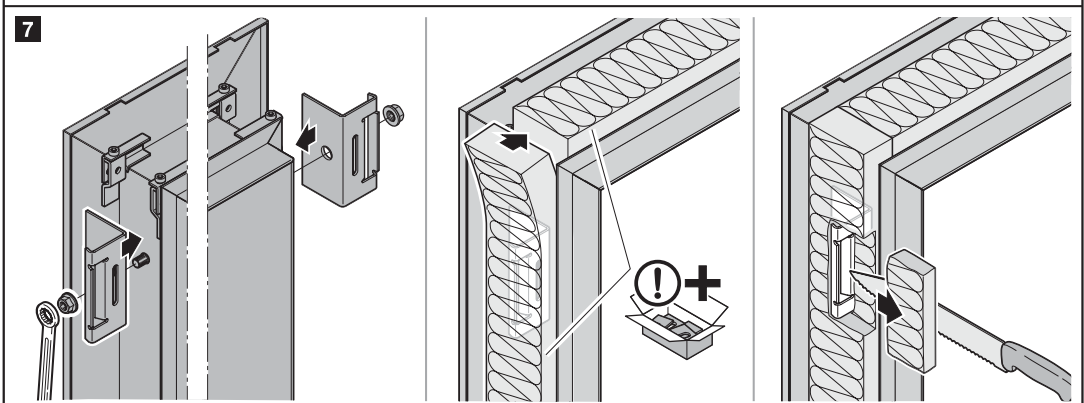
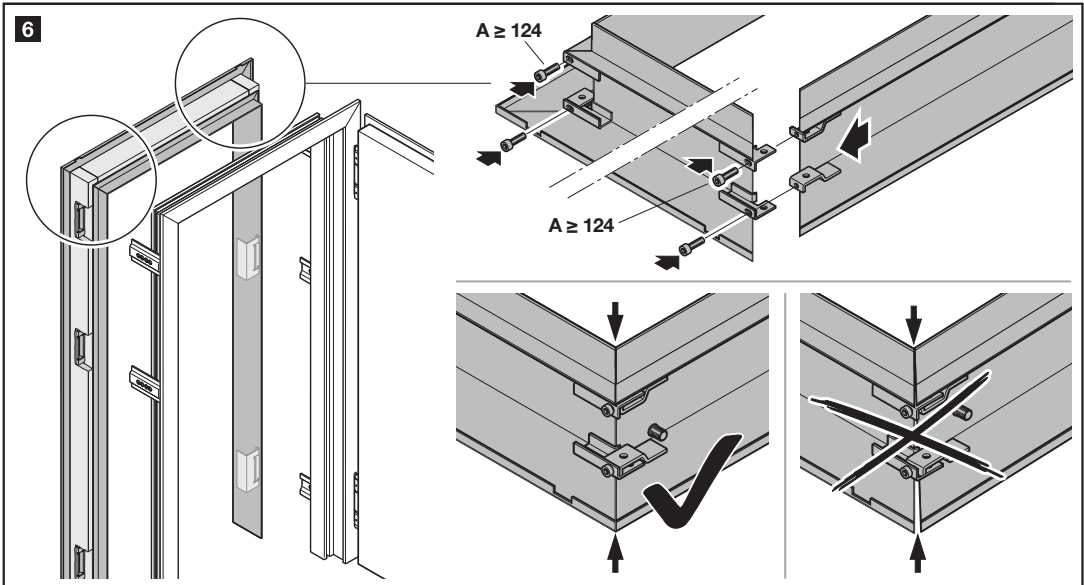


e⁺²⁰₋₀



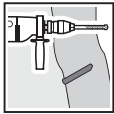
➔ 3





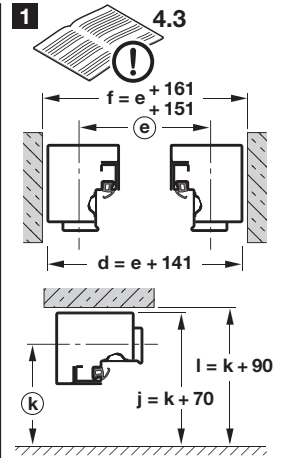
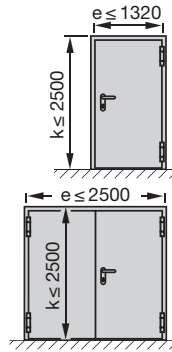
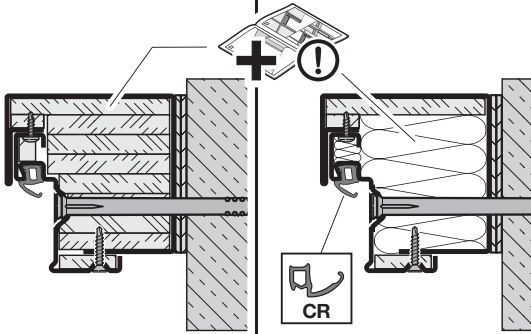
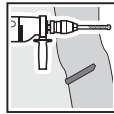
9/G1

max. T90/
EI₂90

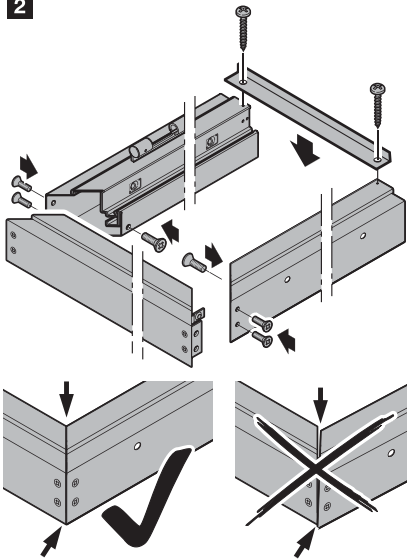


9/G2

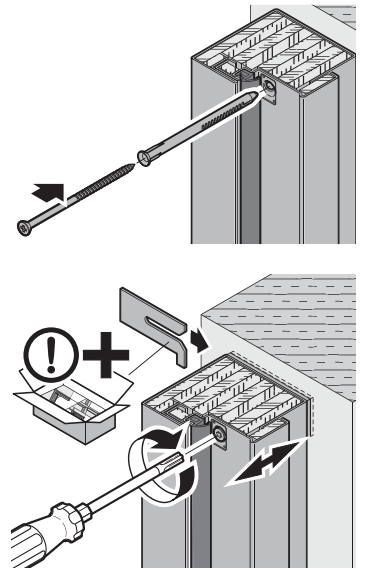
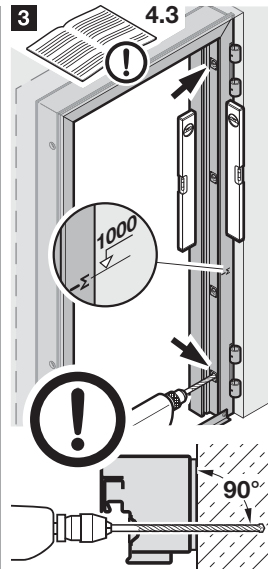
max. T30/
EI₂30



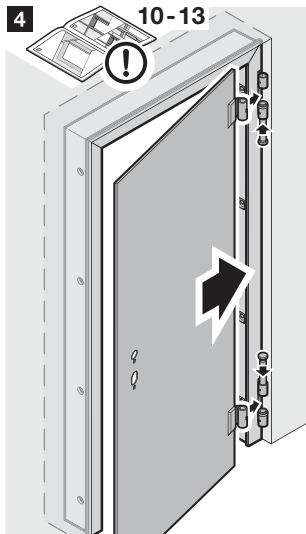
2



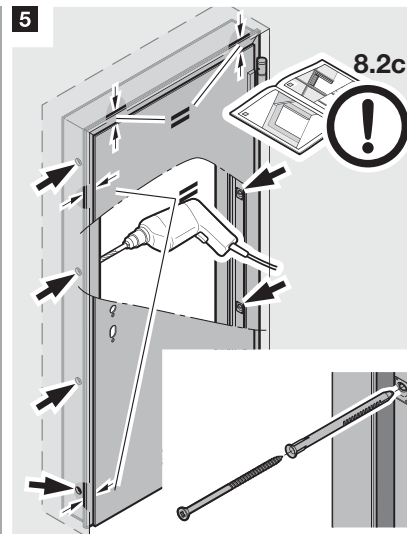
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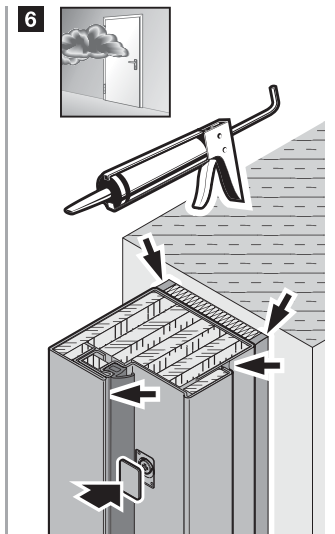
4



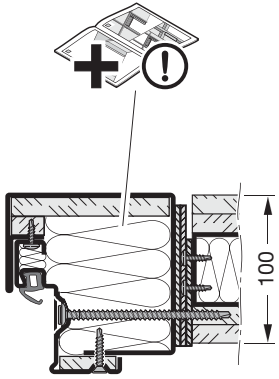
5



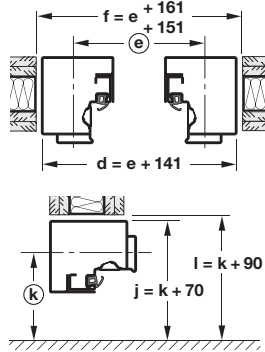
6



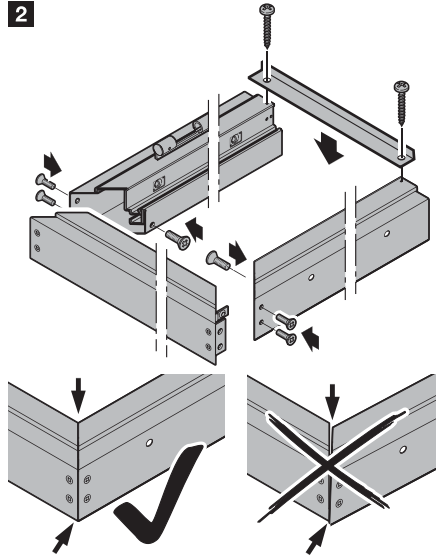
9/G3



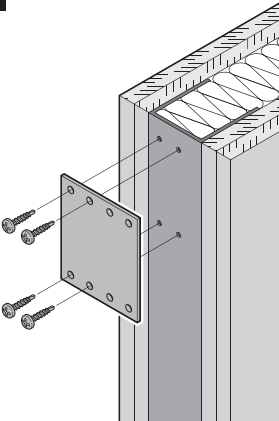
1 4.3



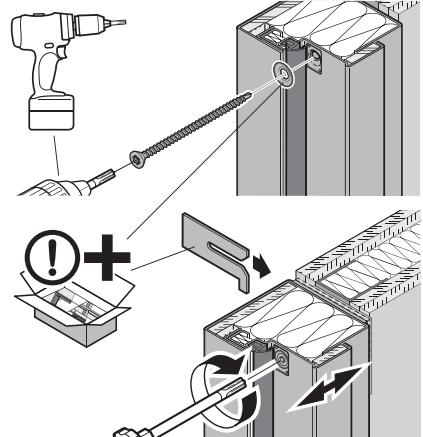
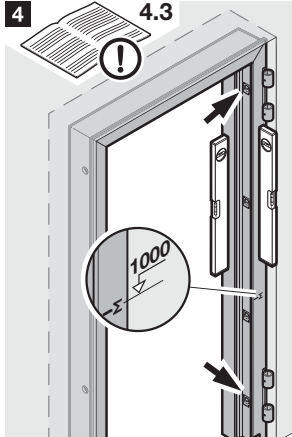
2



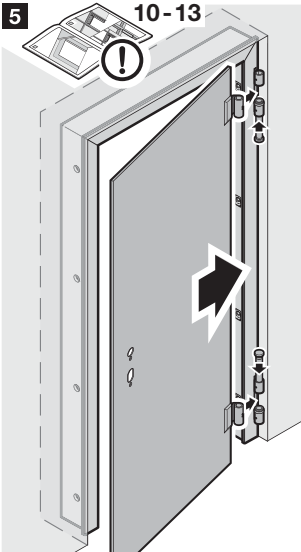
3



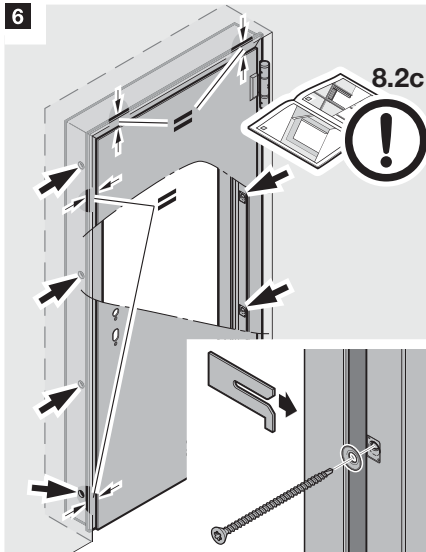
4 4.3



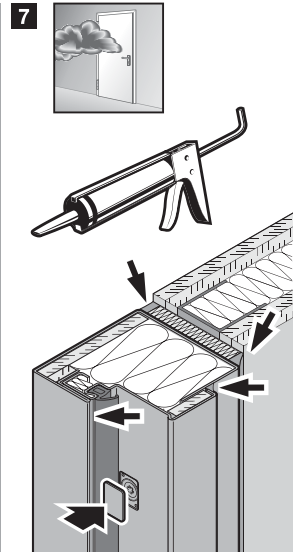
5 10-13



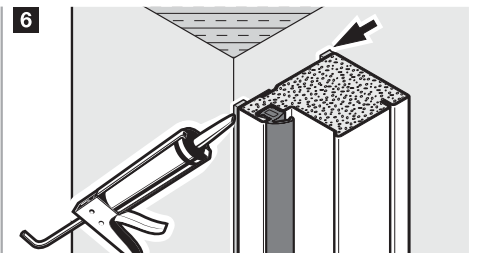
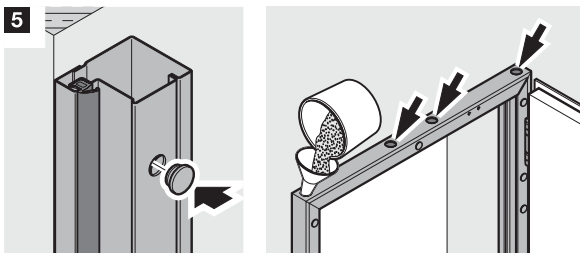
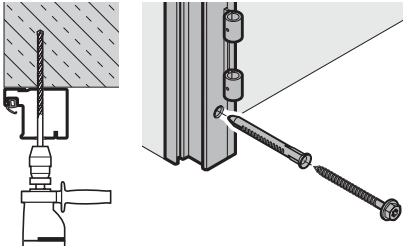
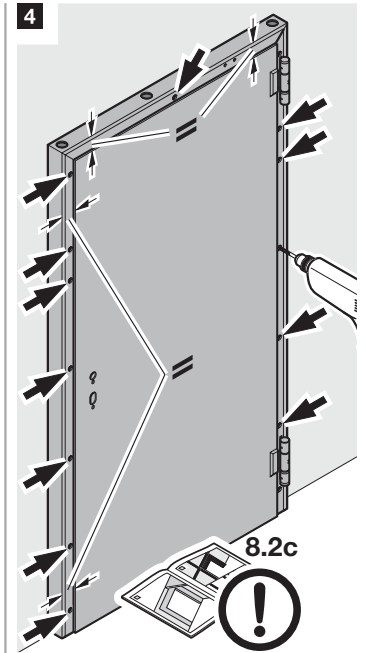
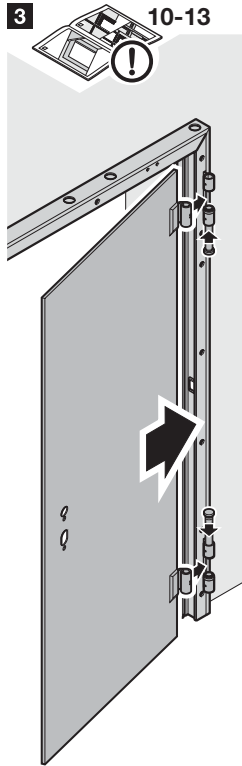
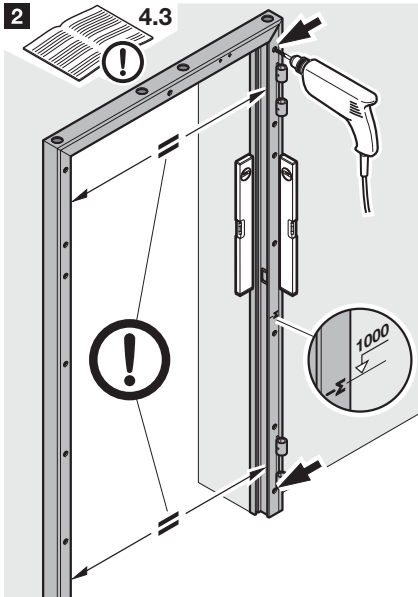
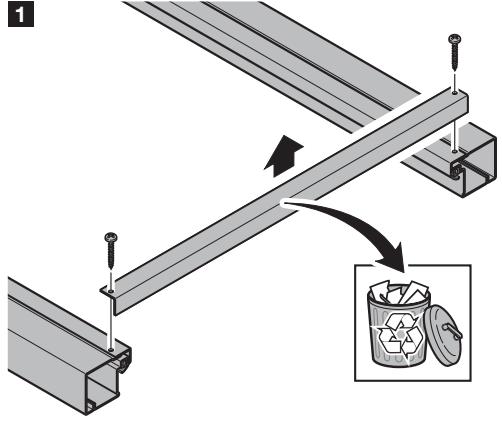
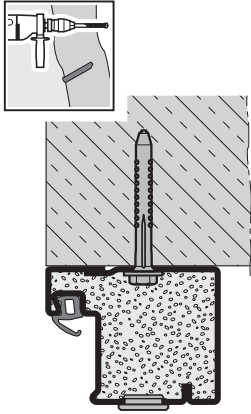
6



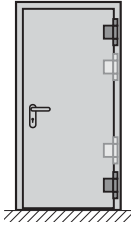
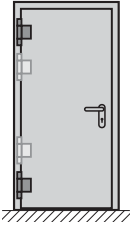
7



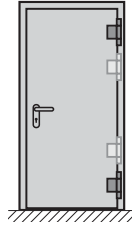
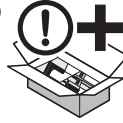
9/H1
max. T30/
EI₂30



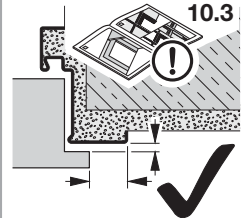
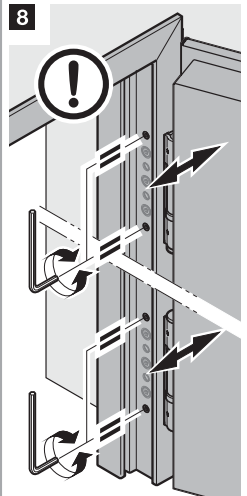
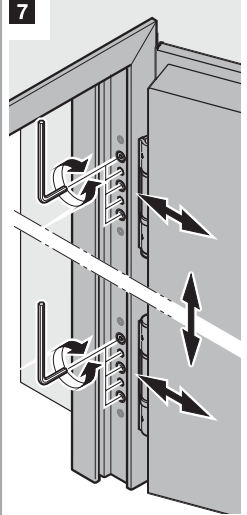
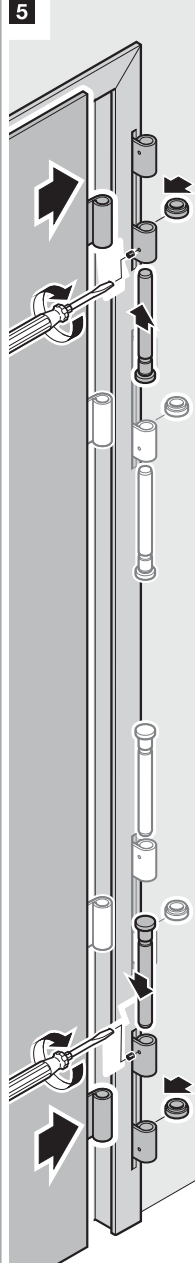
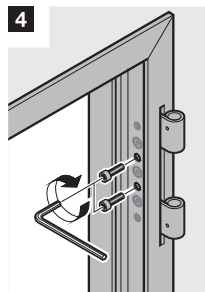
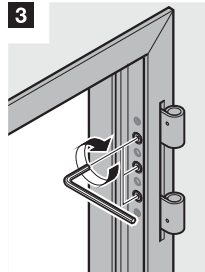
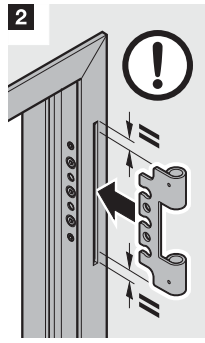
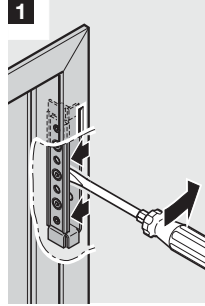
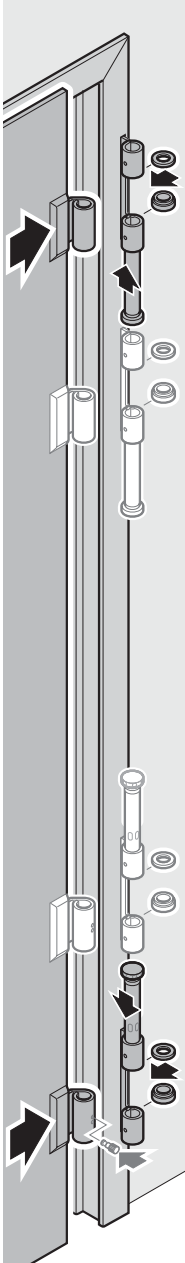
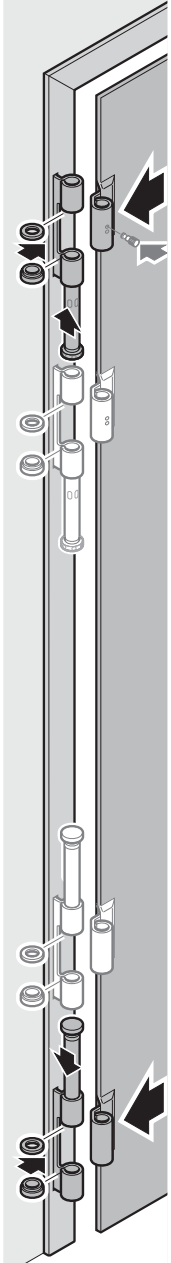
10.1a

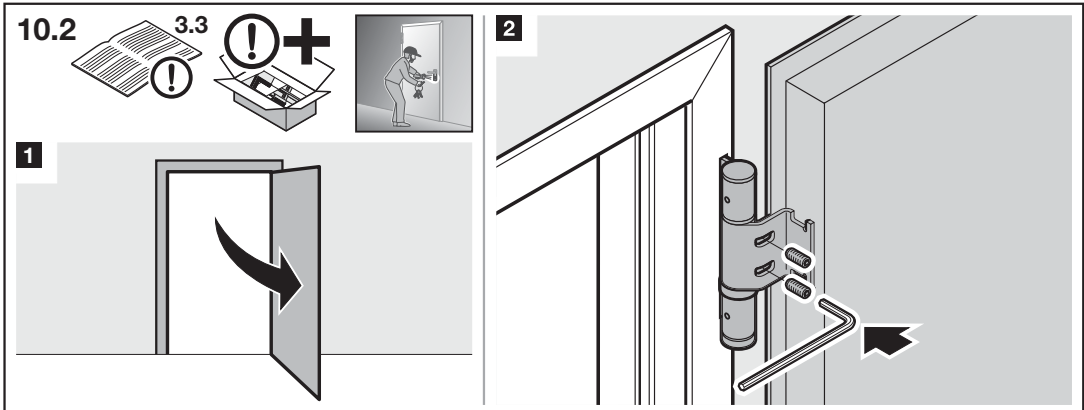



10.1b



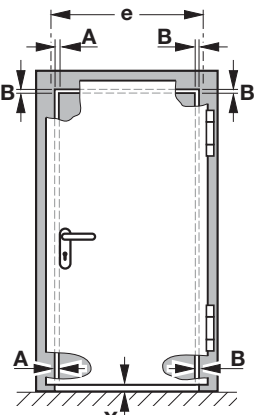
6

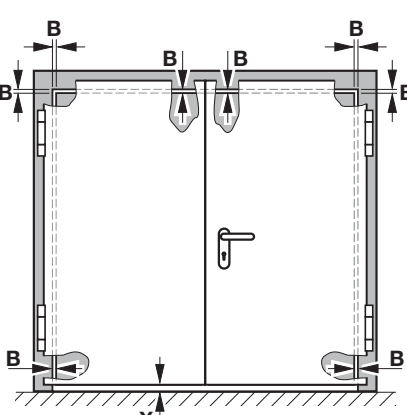









10.3 **4.2** 

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

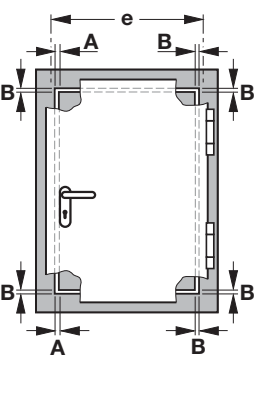
1 

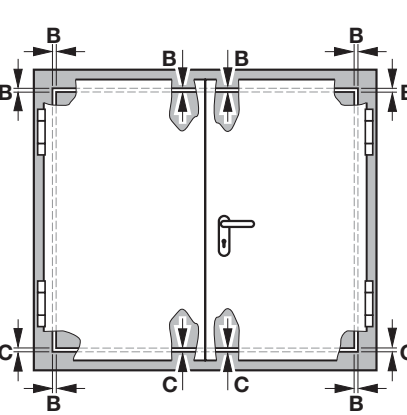
2 

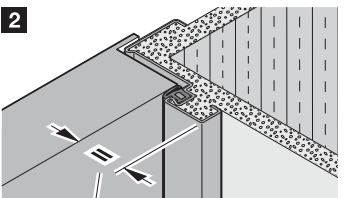
X=10±5 **X=10⁺²₋₅** **X=10-5**


    

≤ 48 dB

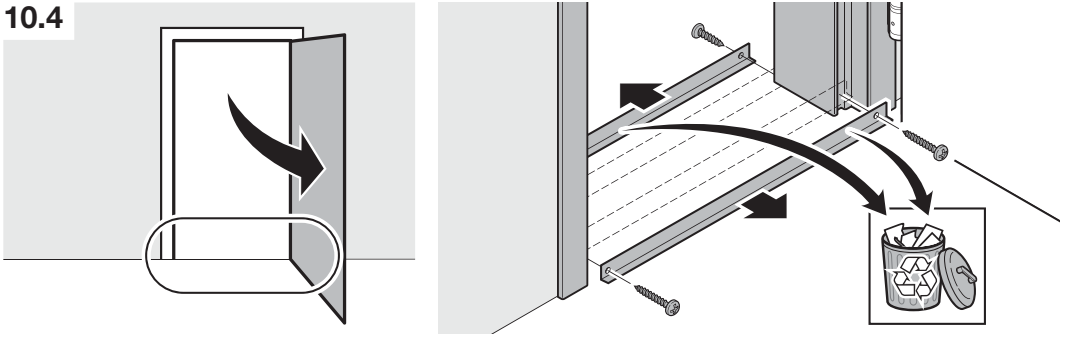




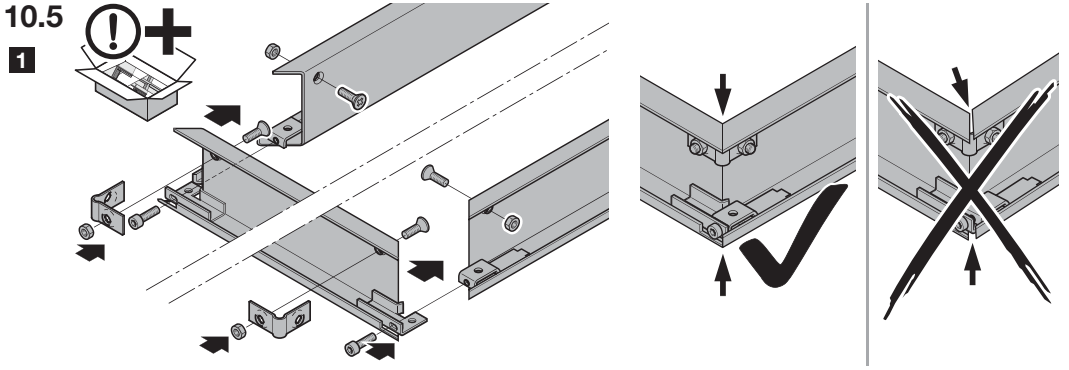




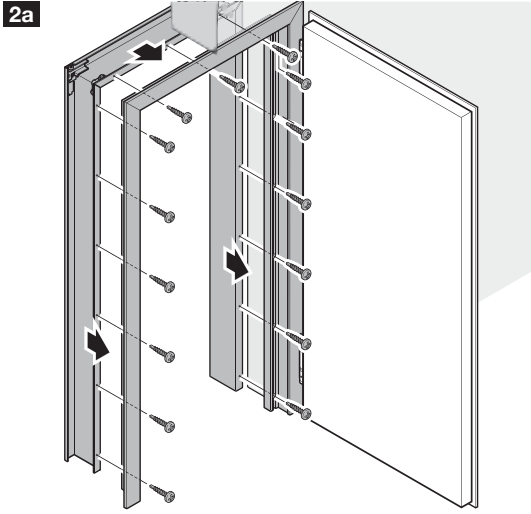
10.4



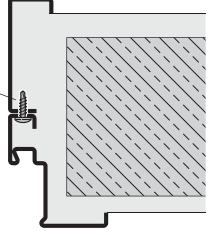
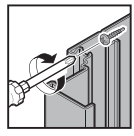
10.5



2a



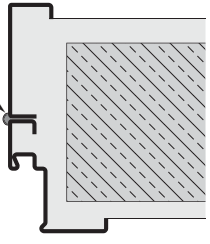
DIN 7504 ST 4,8 x 19-N-H
DIN 7981 4,8 x 16



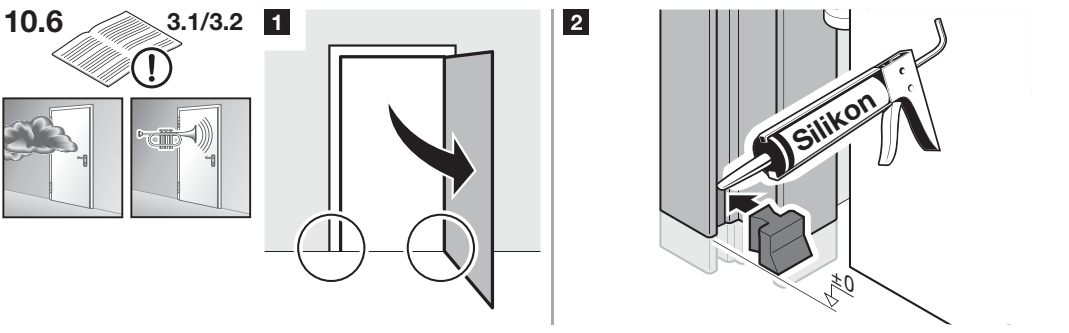
2b



2√x >10



10.6



3.1/3.2

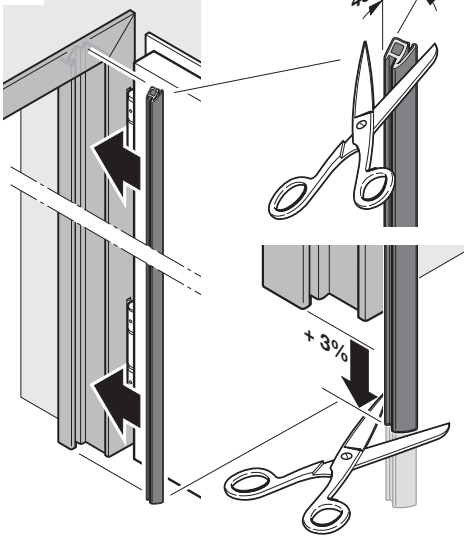
1

2

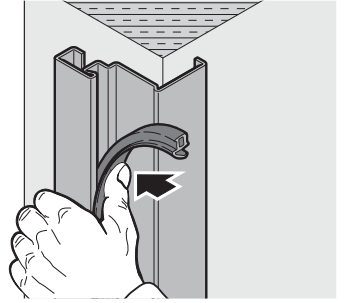


10.7a

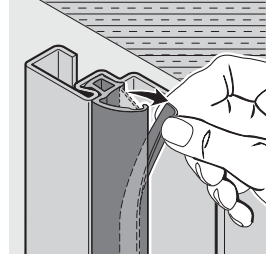
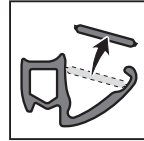
1



2



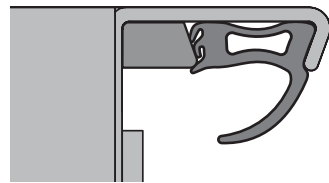
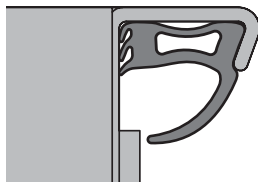
3



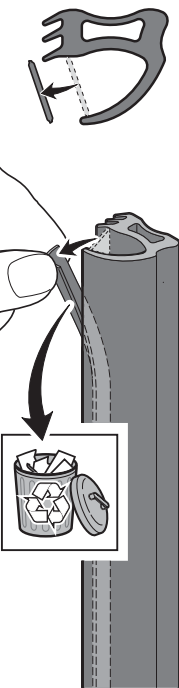
10.7b

A

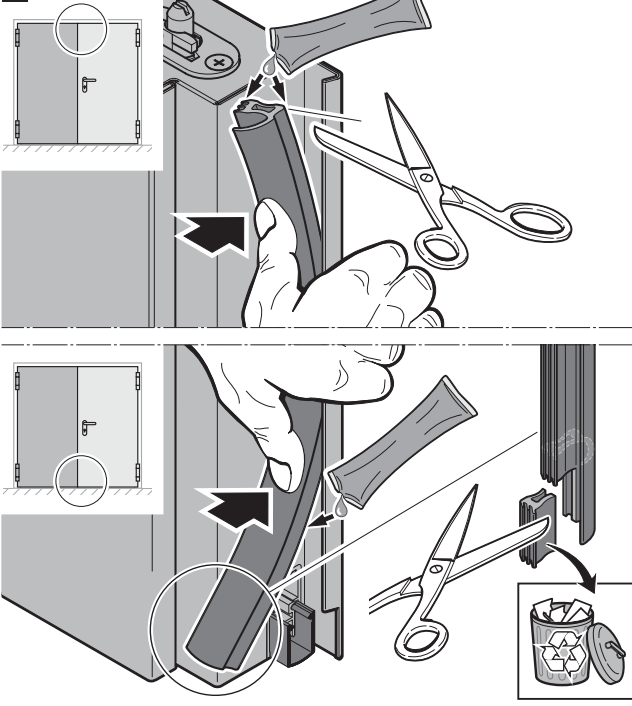
B



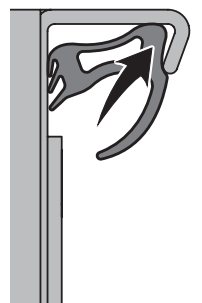
1



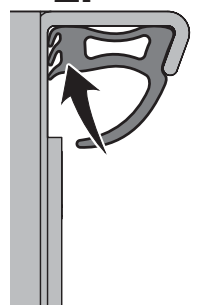
2



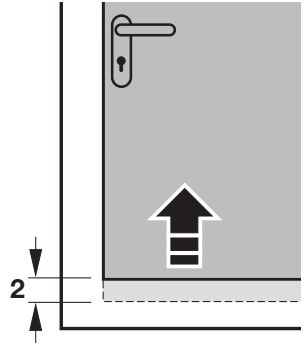
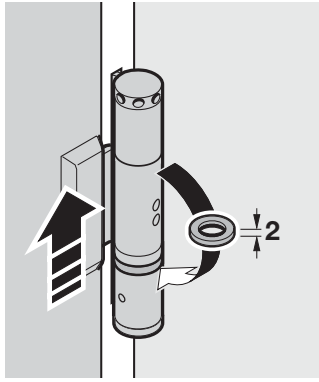
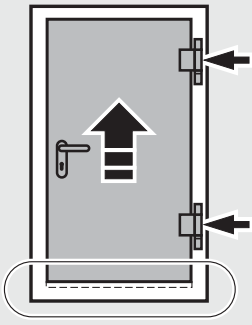
1.



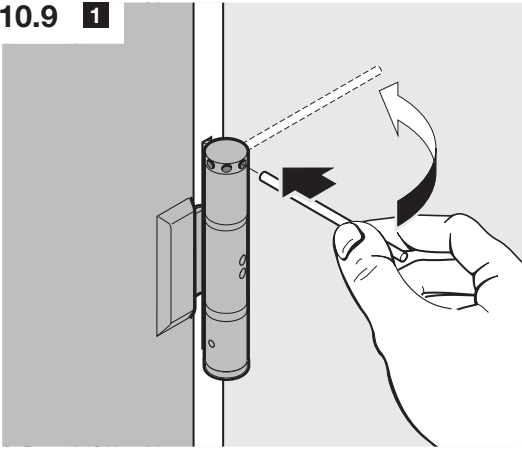
2.



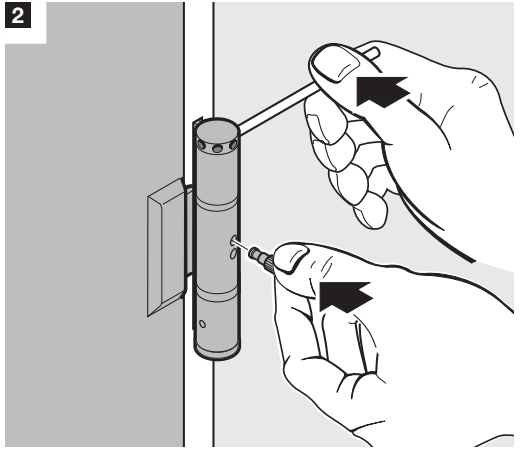
10.8



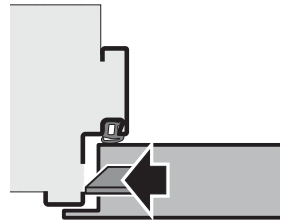
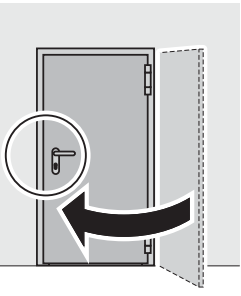
10.9 1



2

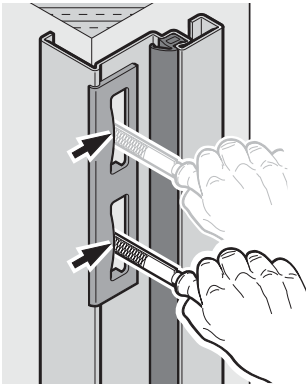
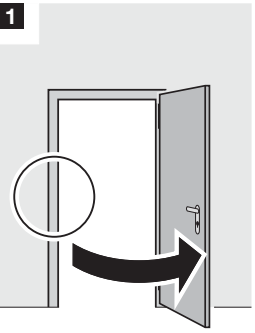


10.10a

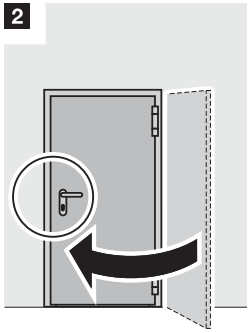


→ 1 2

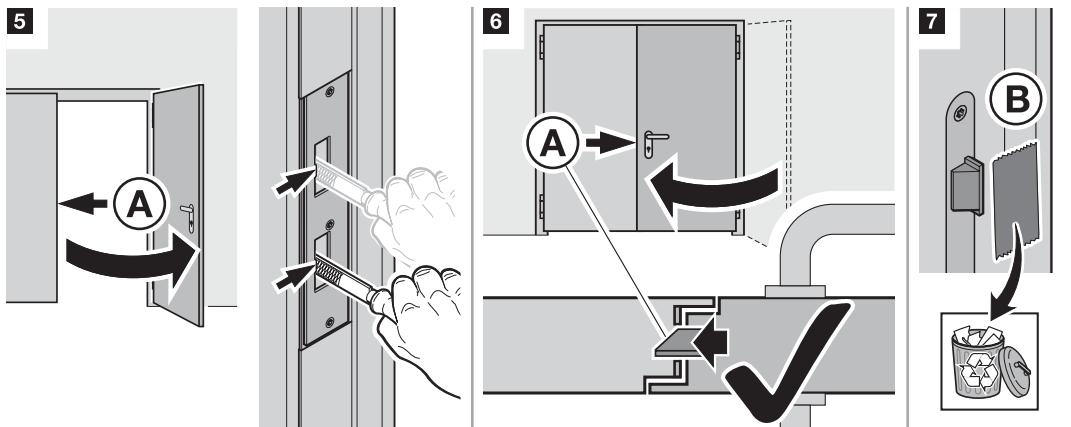
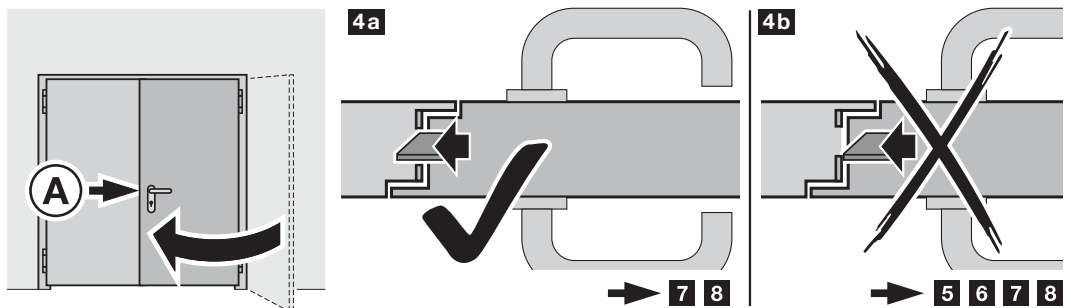
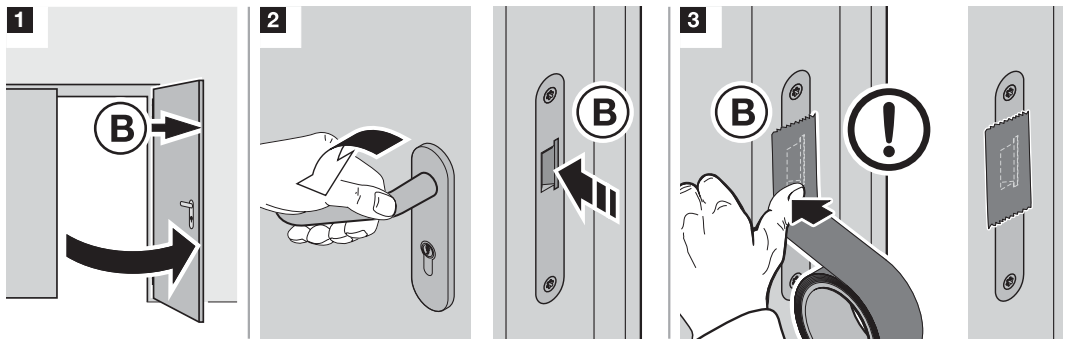
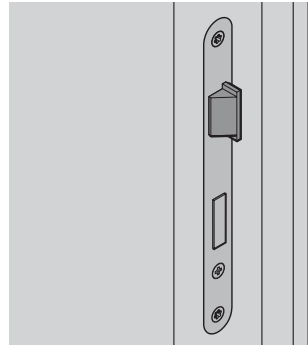
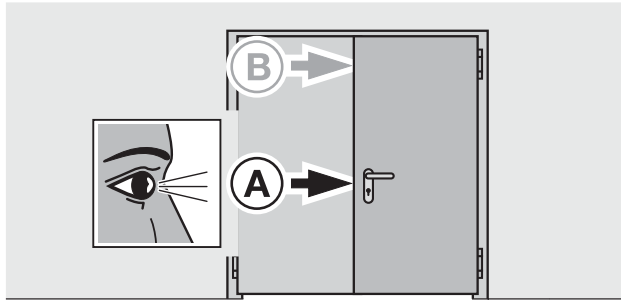
1



2

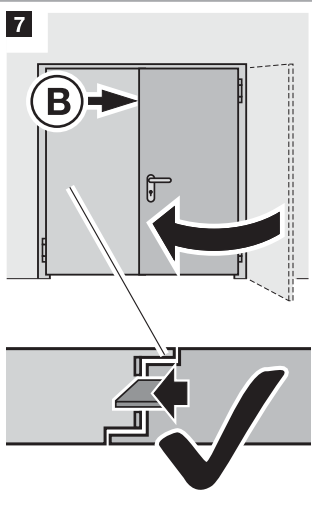
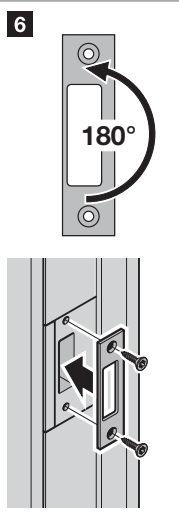
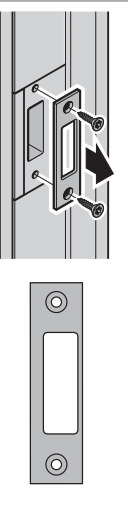
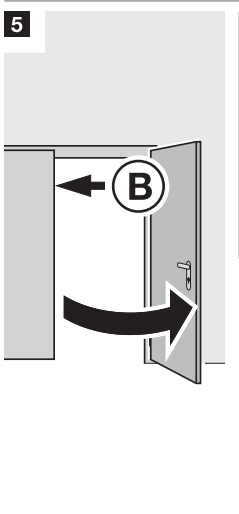
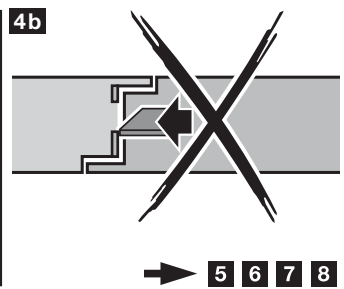
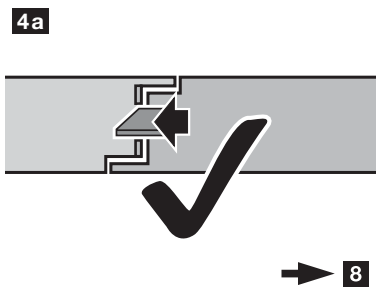
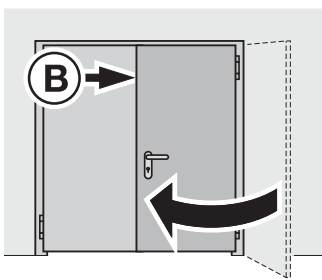
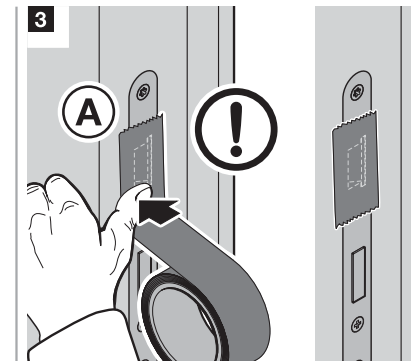
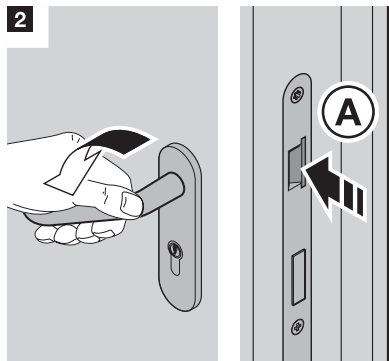
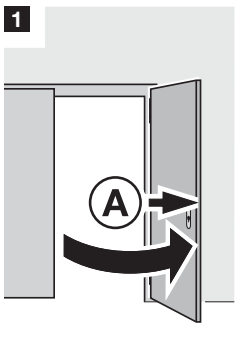
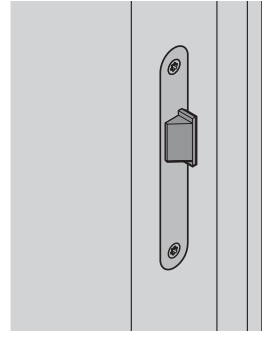
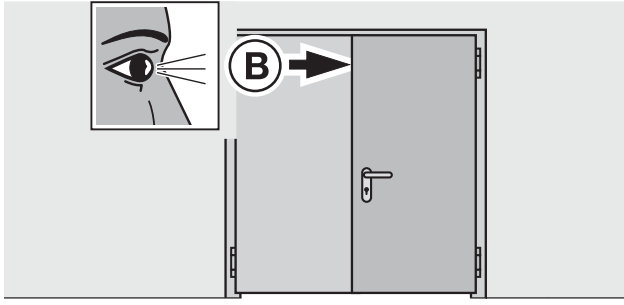


10.10b H16-2 G / H_90 F-2

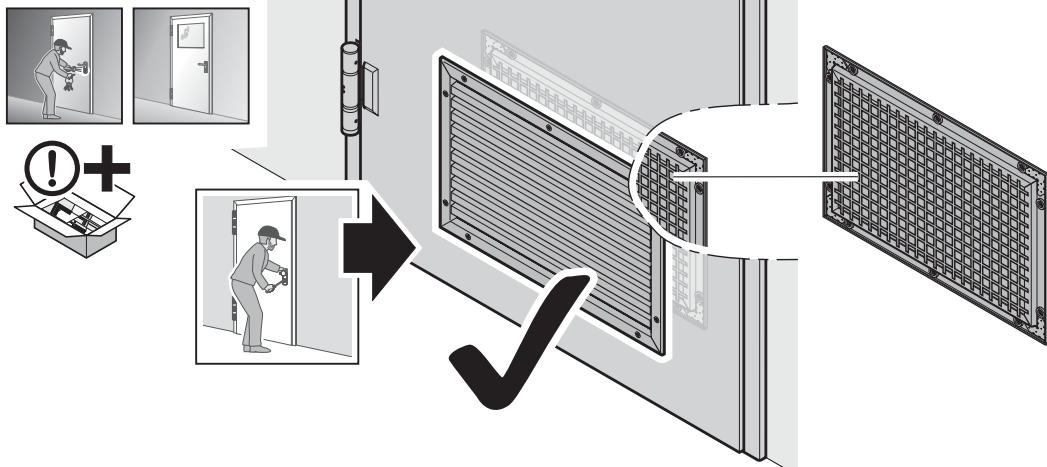


8 → 10.10c

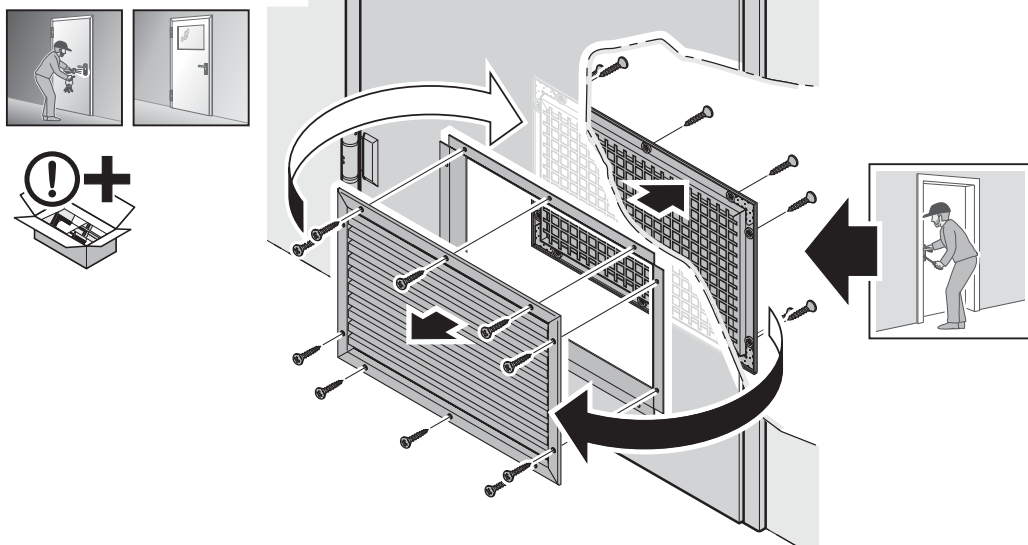
10.10c H16-2 G / H_90 F-2



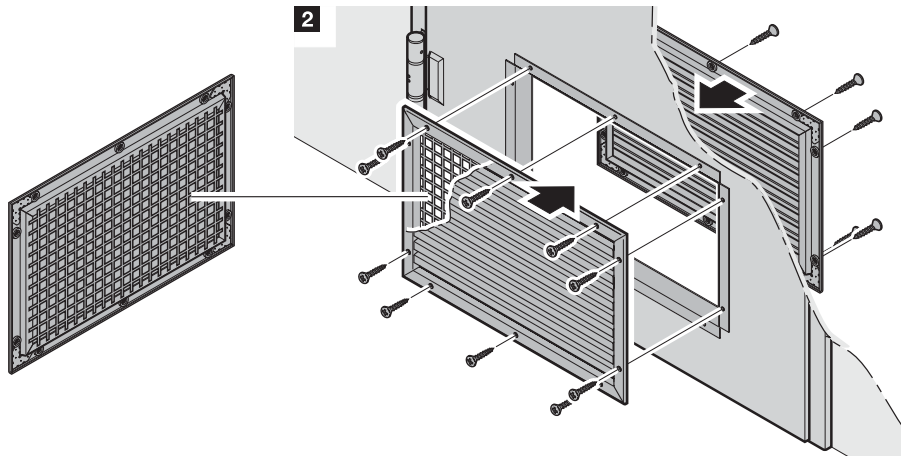
10.11a



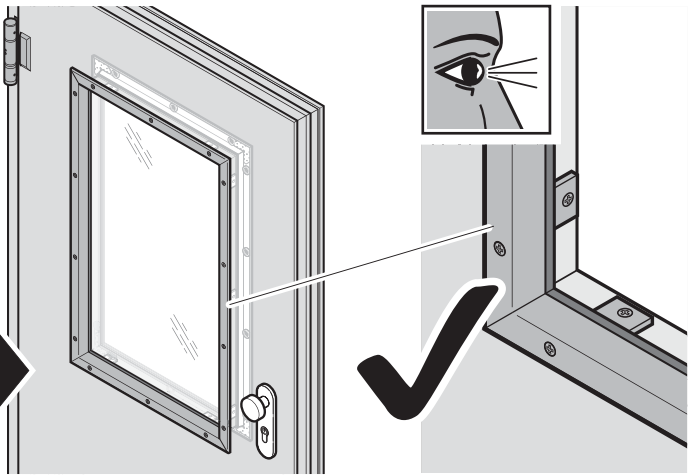
10.11b



2

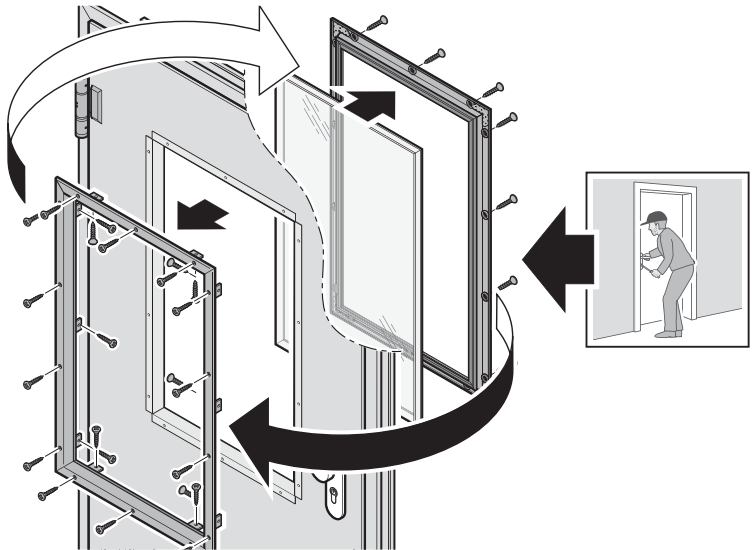


10.12a

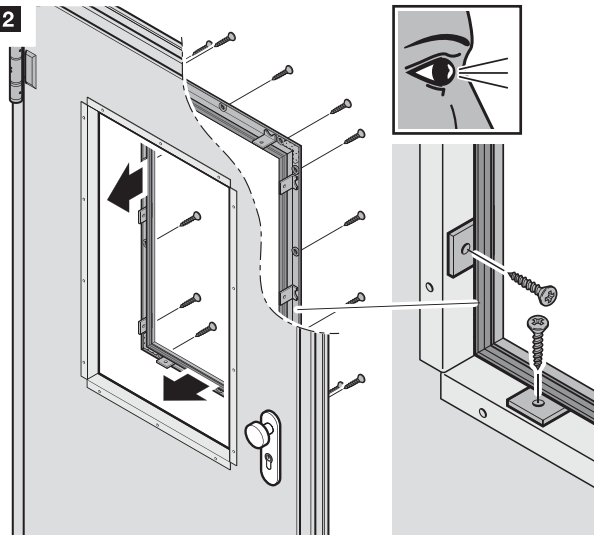


10.12b

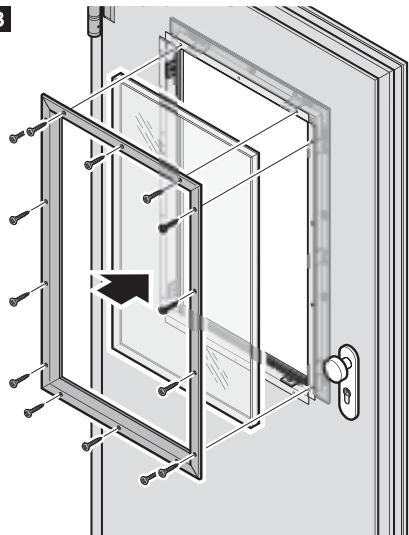
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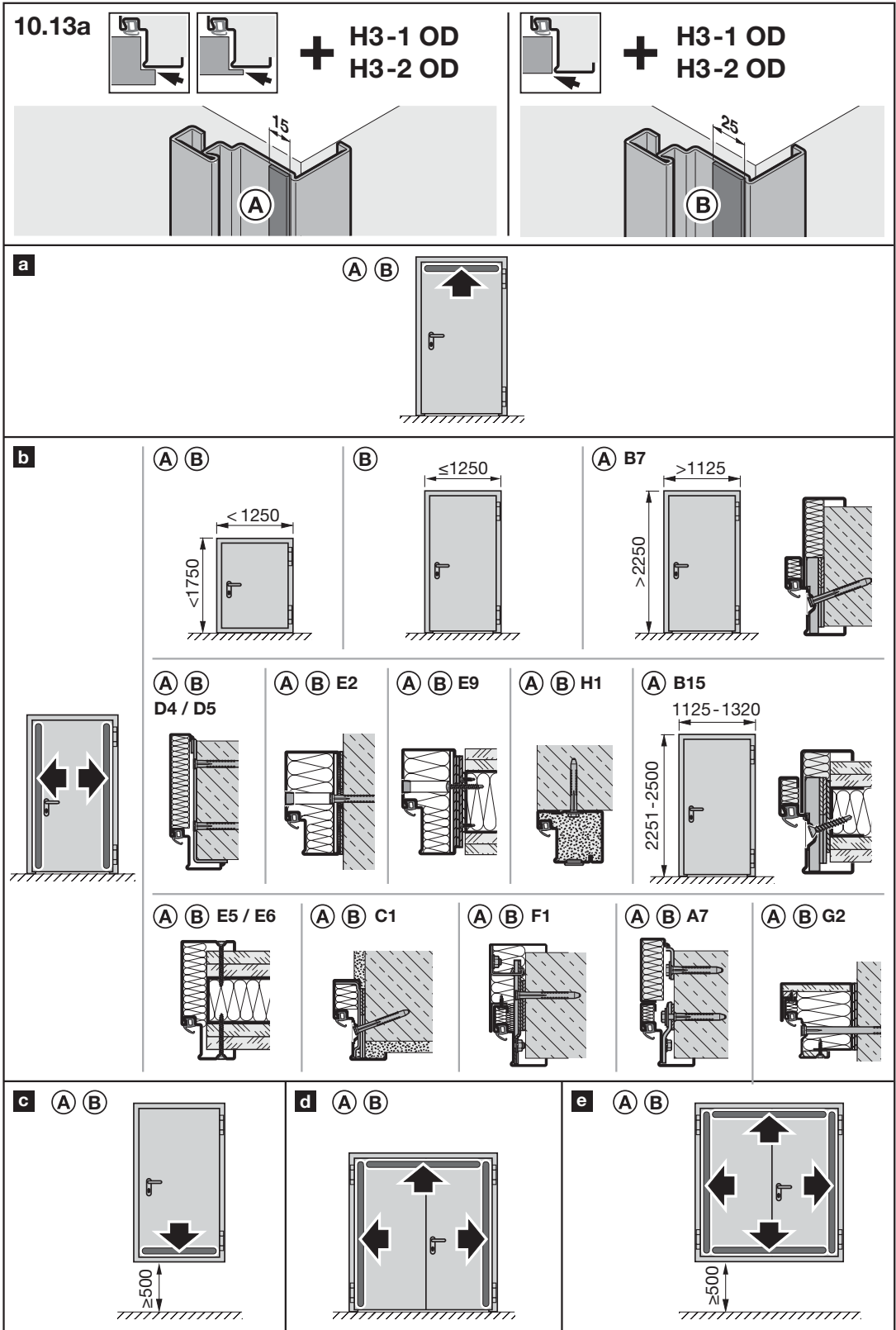


2

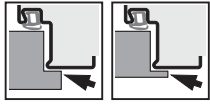


3

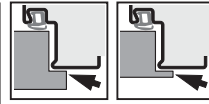




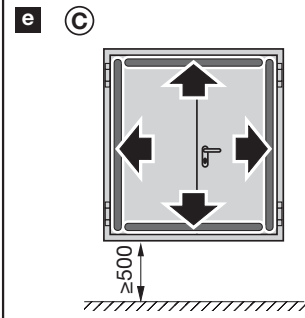
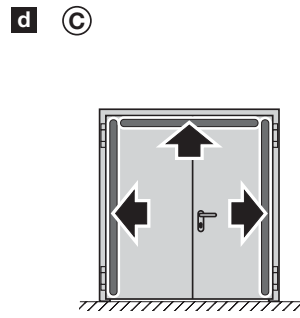
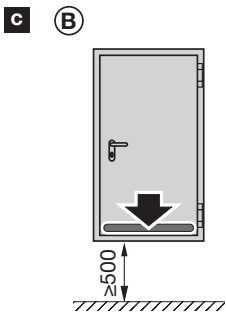
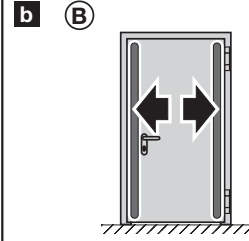
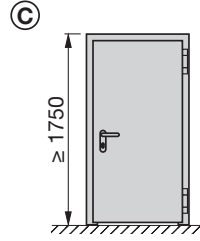
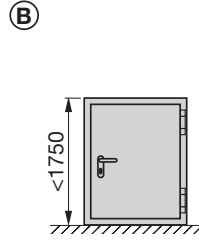
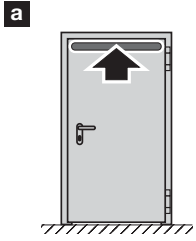
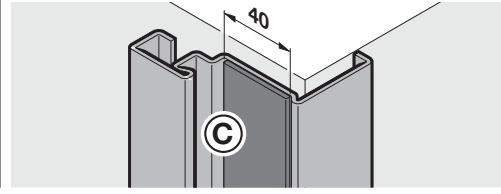
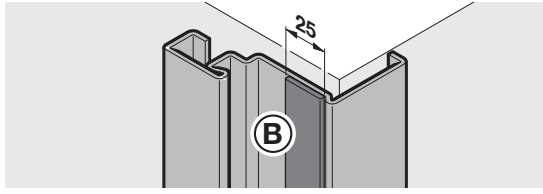
10.13b



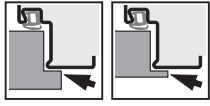
+ H16-1 OD



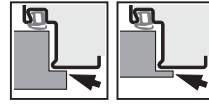
+ H16-1 OD
+ H16-2 OD



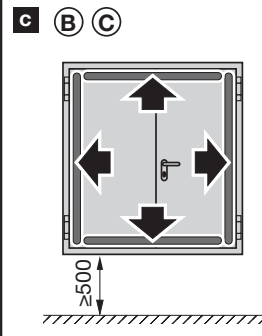
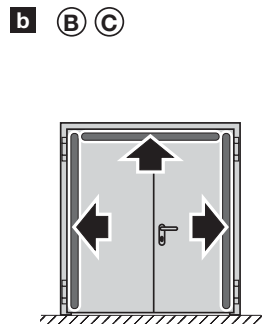
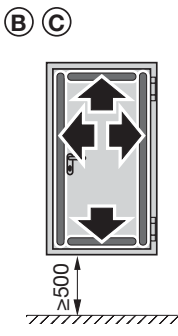
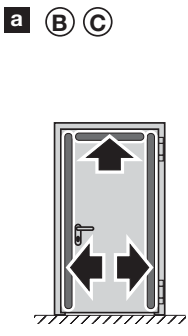
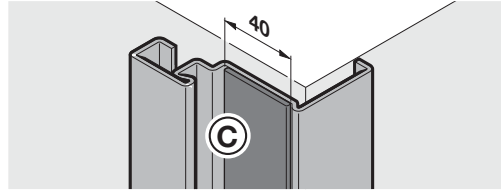
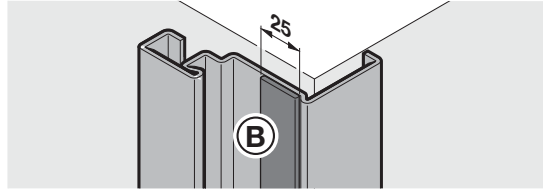
10.13c



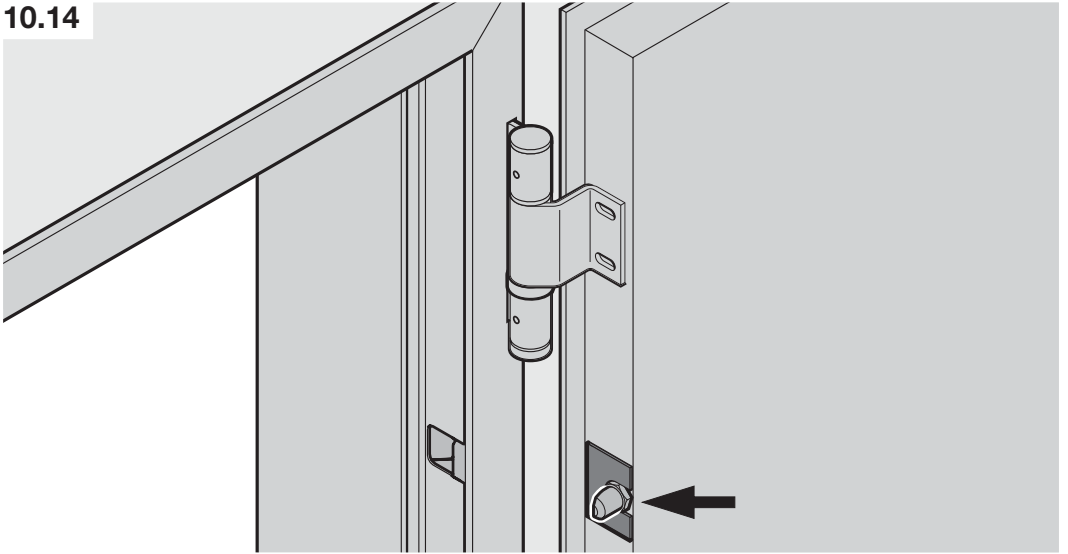
+ H3-1
+ H3-2 G



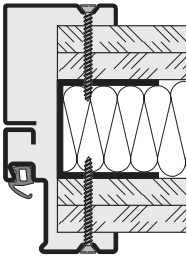
+ H16-1
+ H16-2 G
+ H16S-1



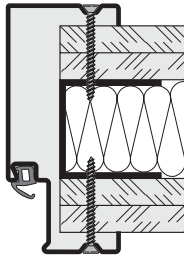
10.14



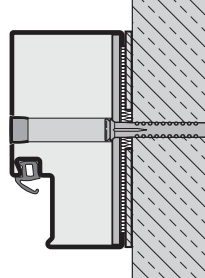
A10-A13



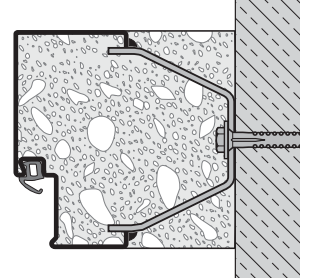
E5-E8



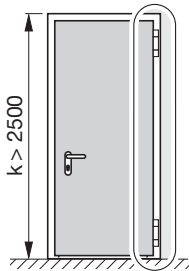
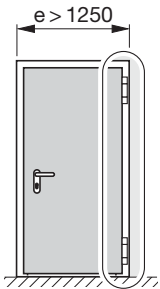
E1, E2



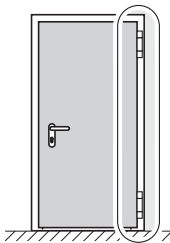
E3



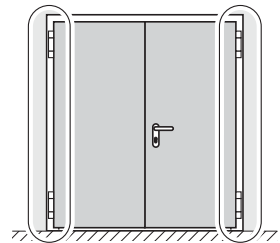
T30-1 / H_30-1



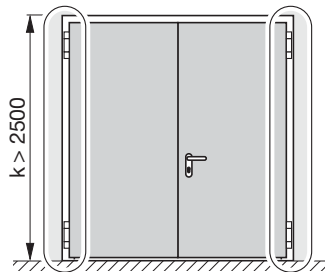
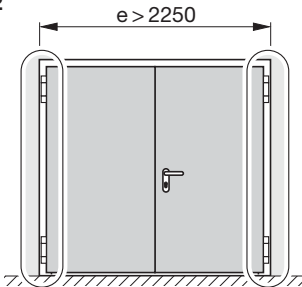
T90-1 / H_90-1



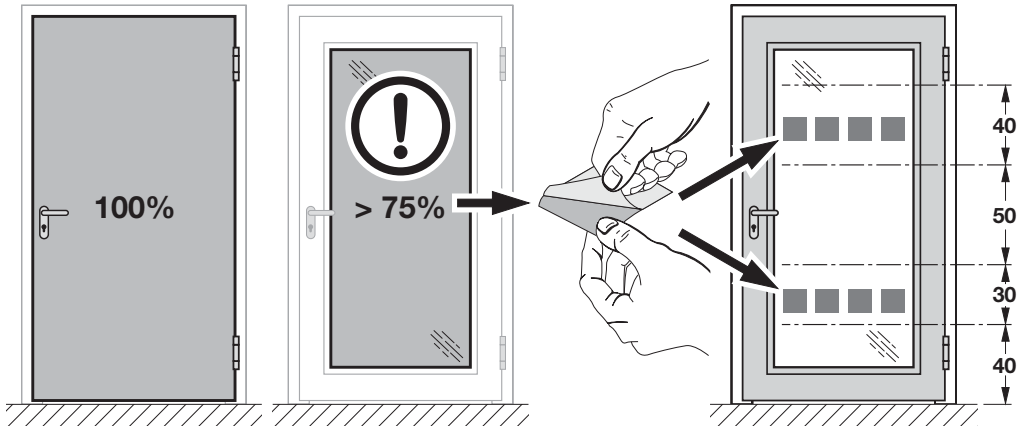
T30-2 RC3 / H_30-2 RC3



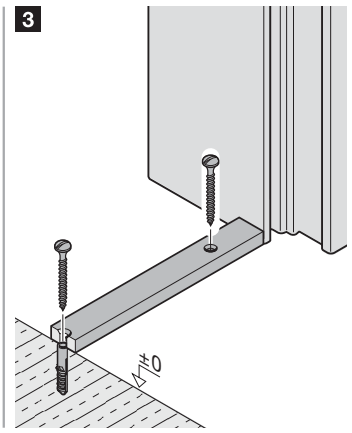
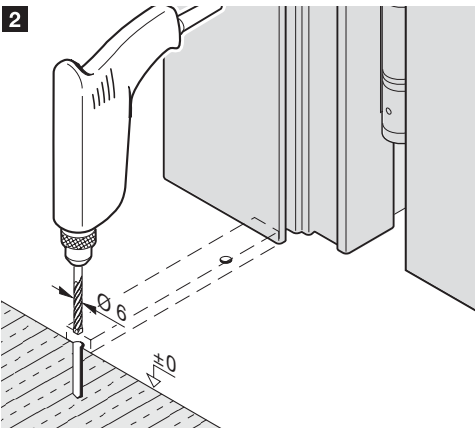
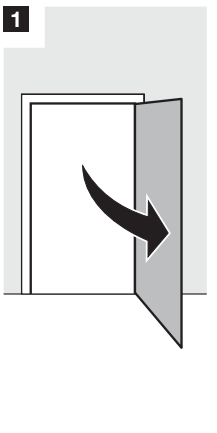
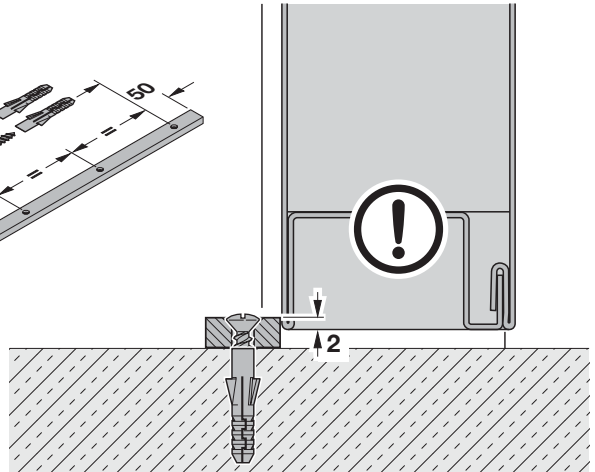
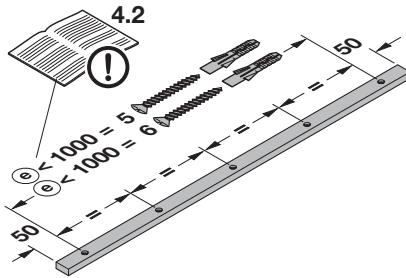
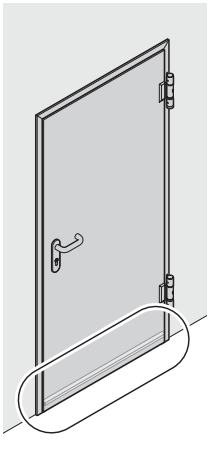
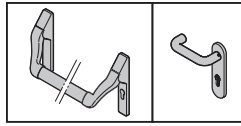
T90-2 / H_90-2



10.15

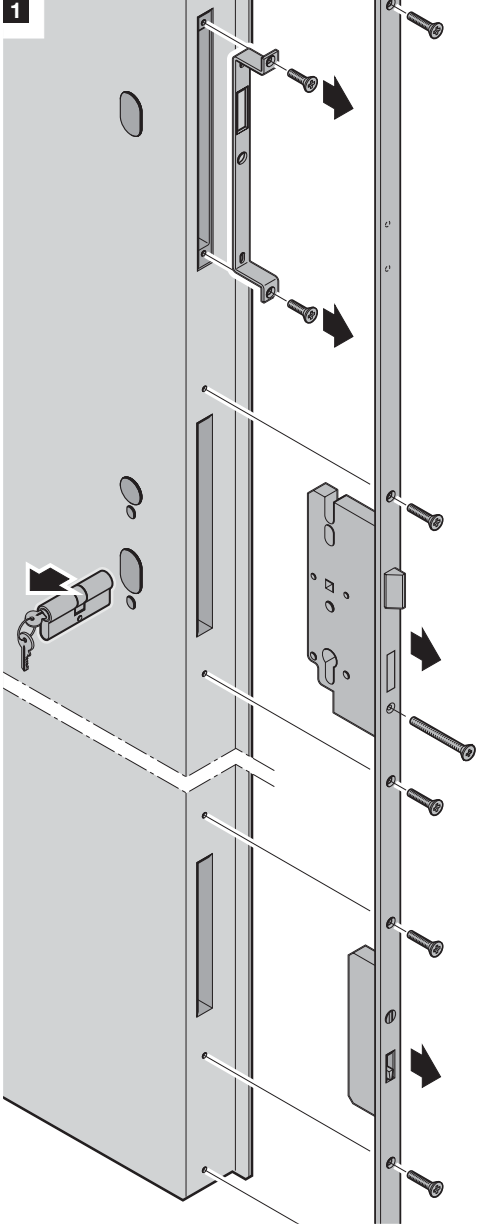


10.16

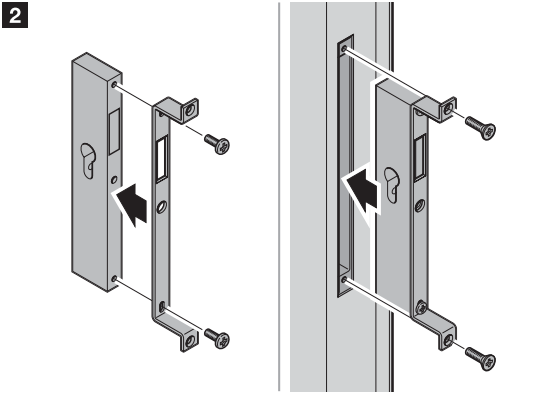


10.17

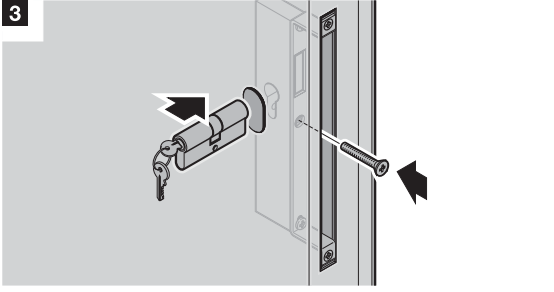
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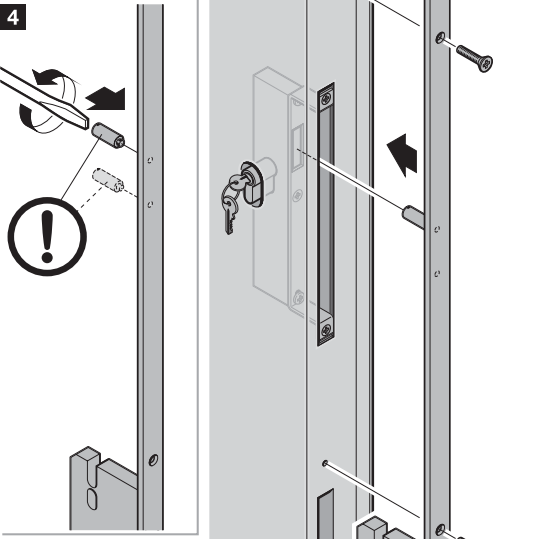
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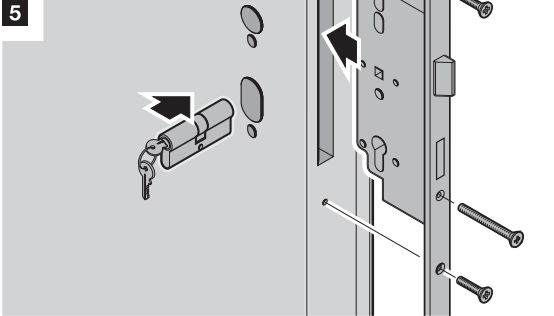
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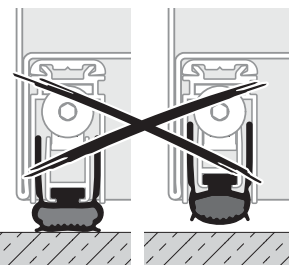
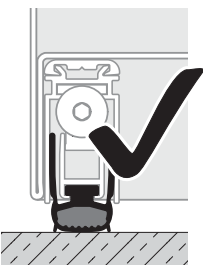
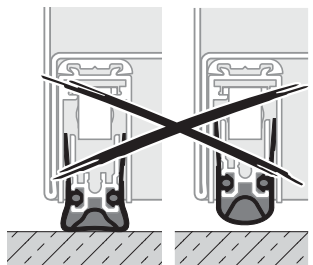
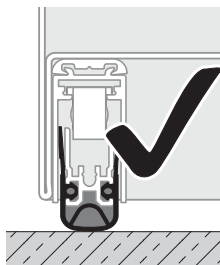
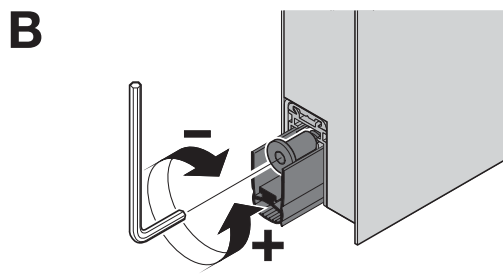
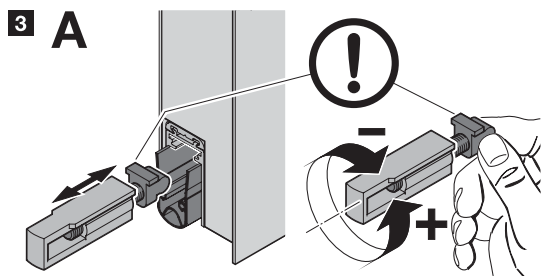
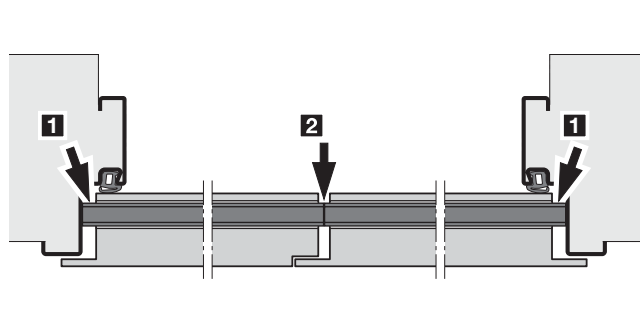
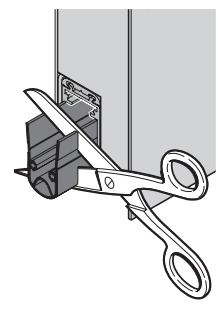
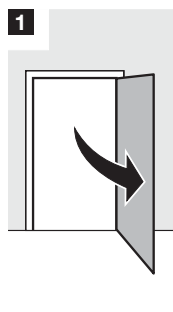
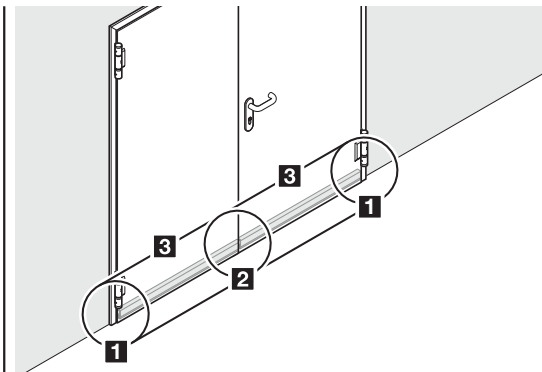
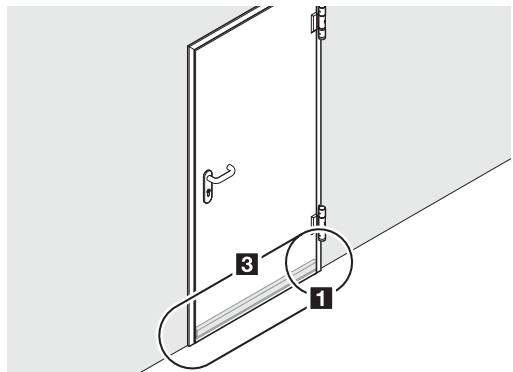
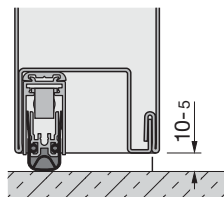
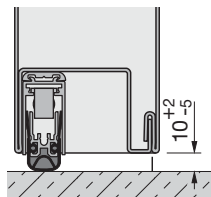
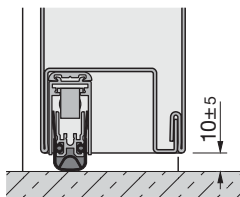
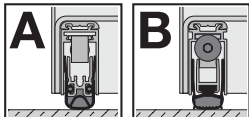
4

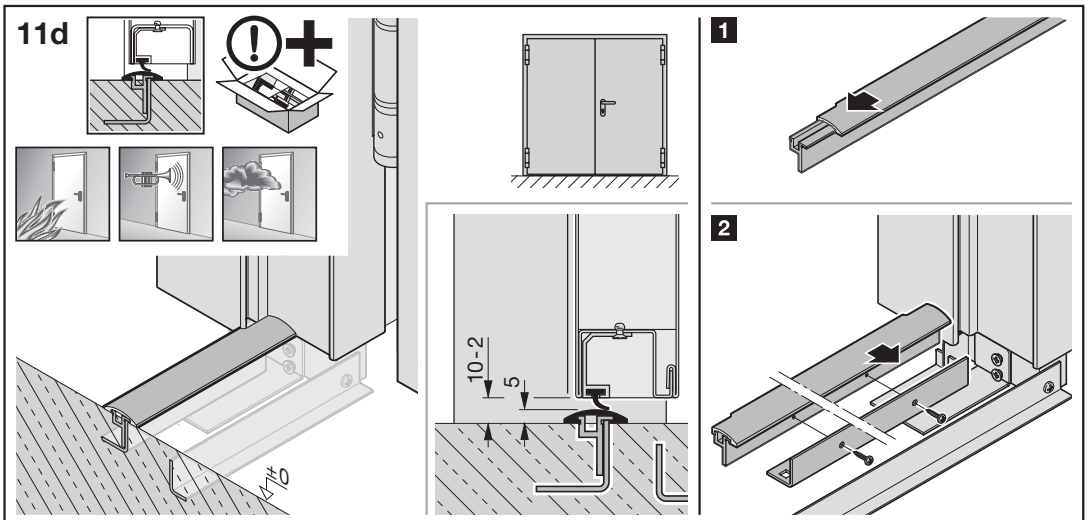
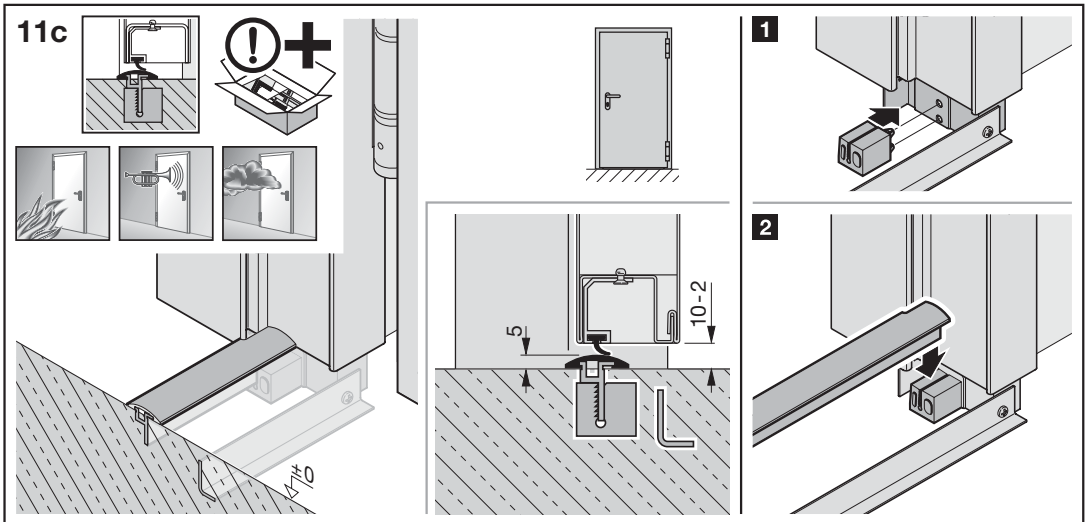
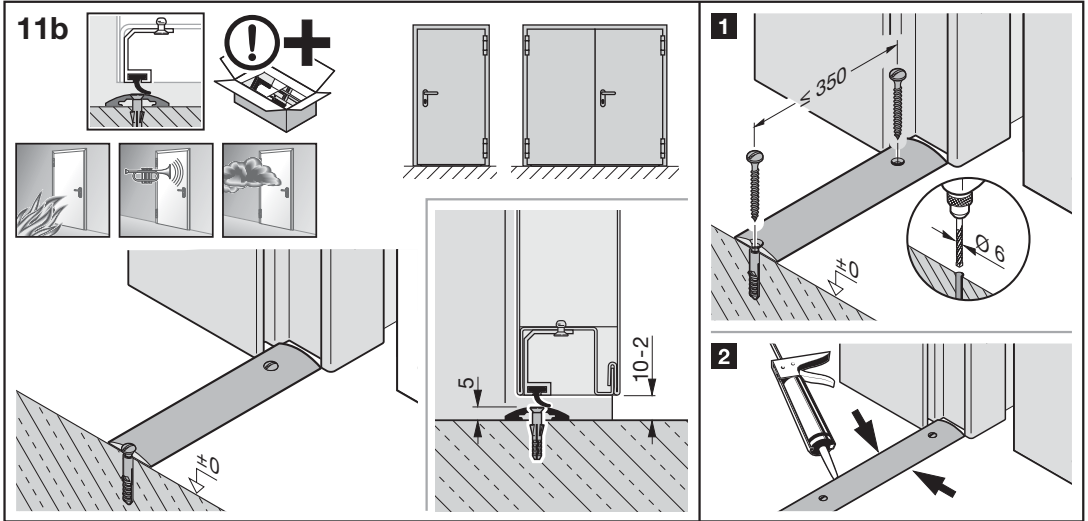


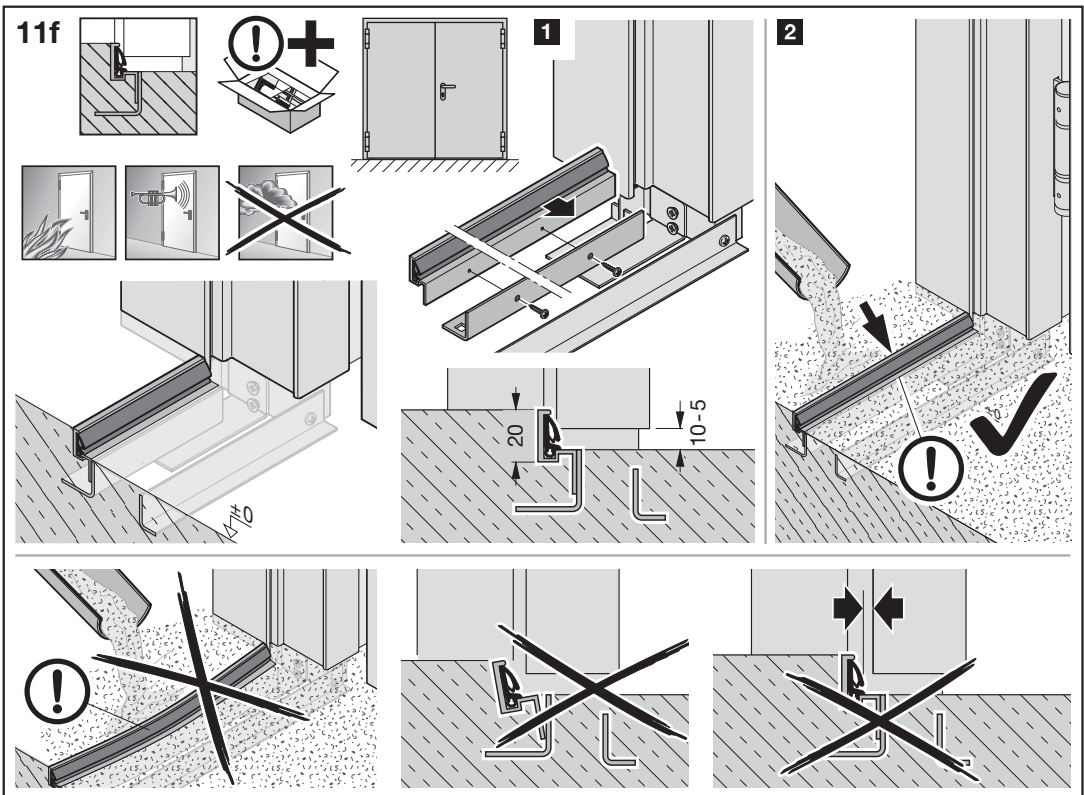
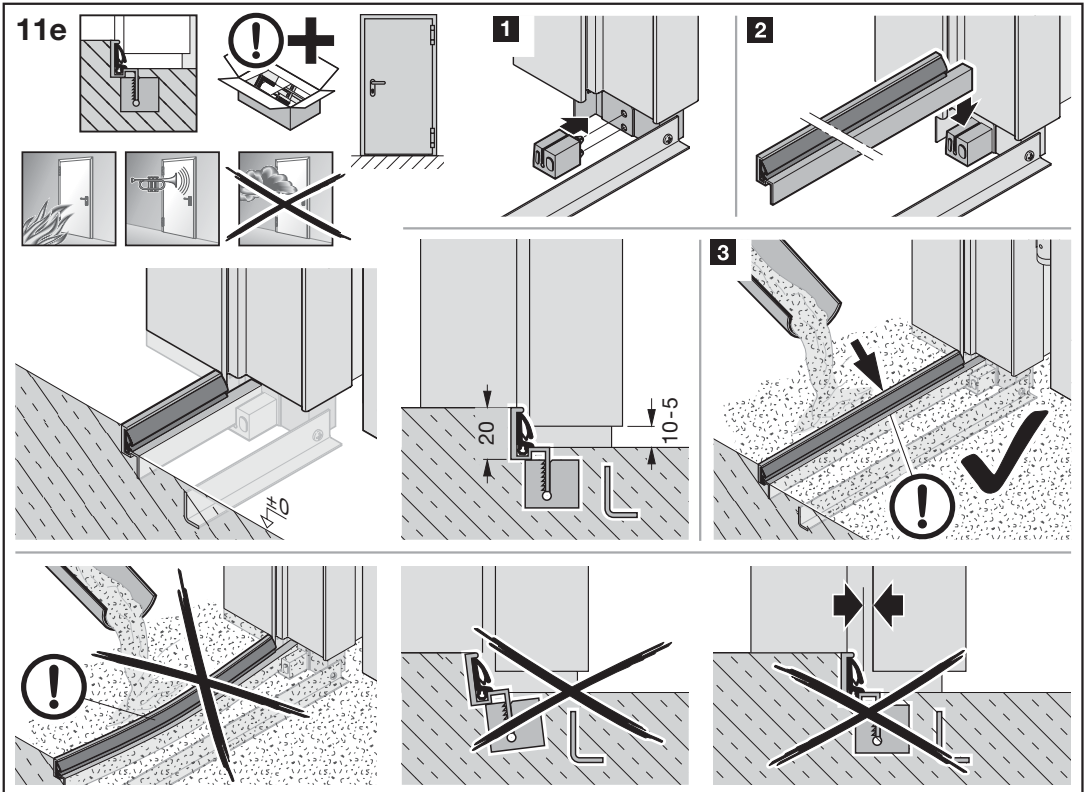
5

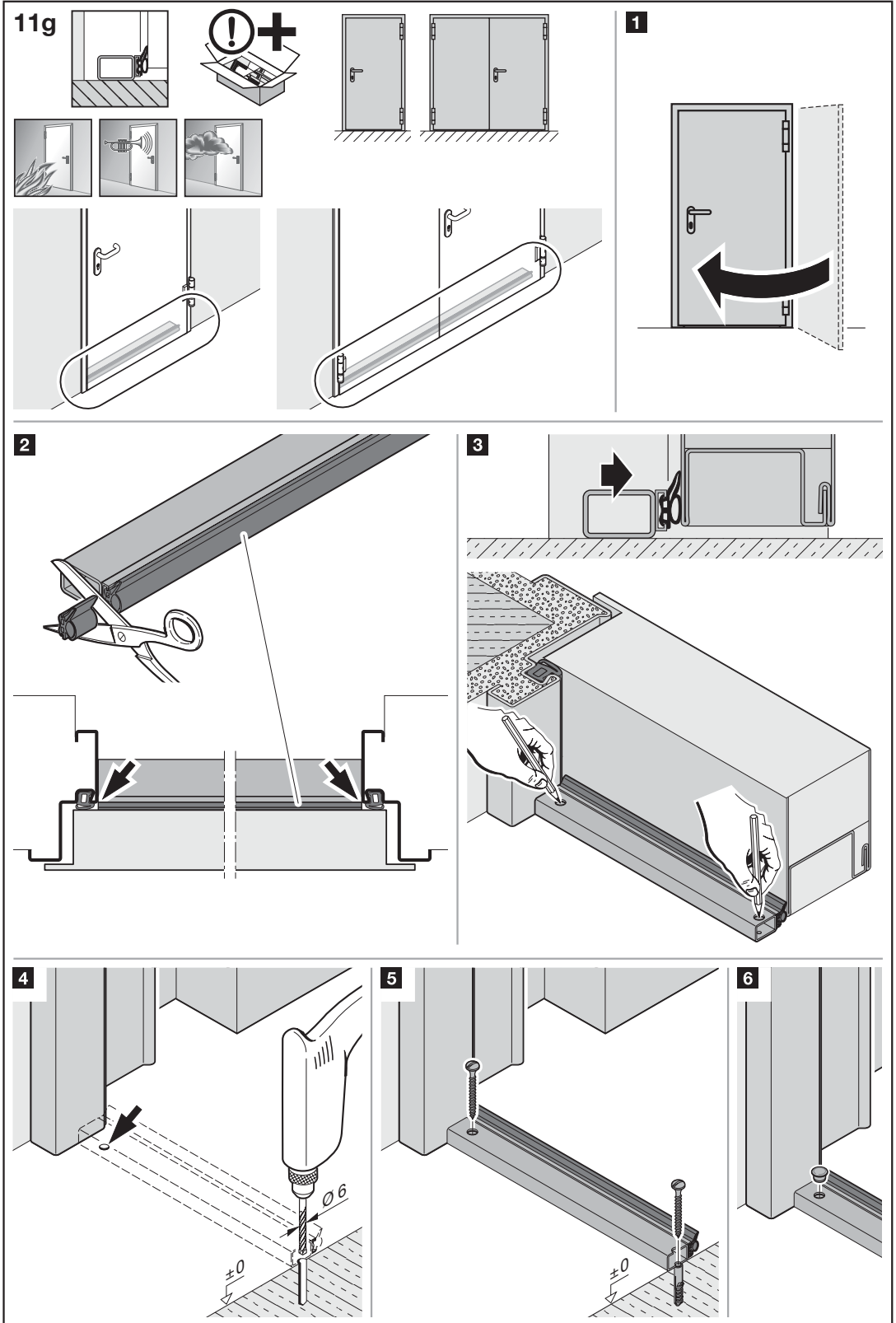


11a

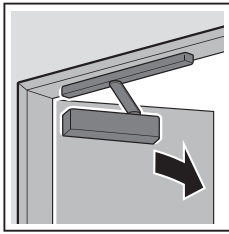




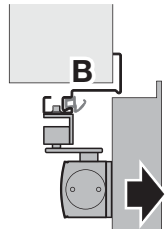
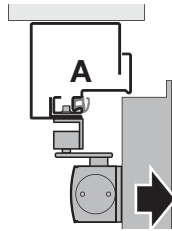




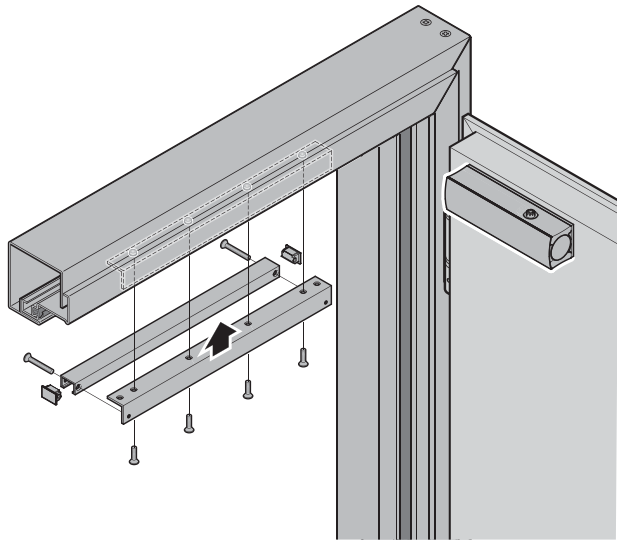
12a



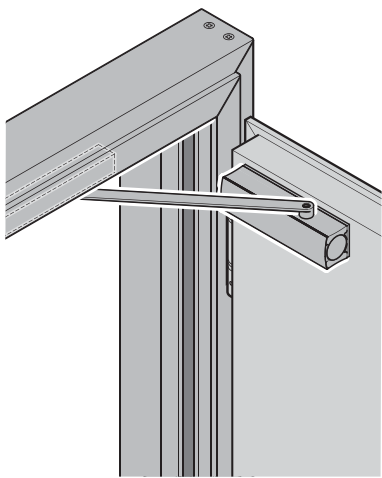
HDC 35 BG



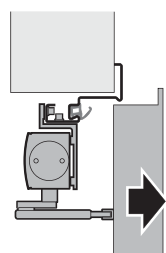
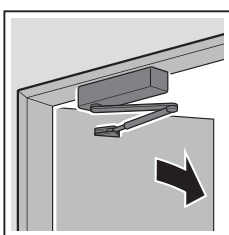
1



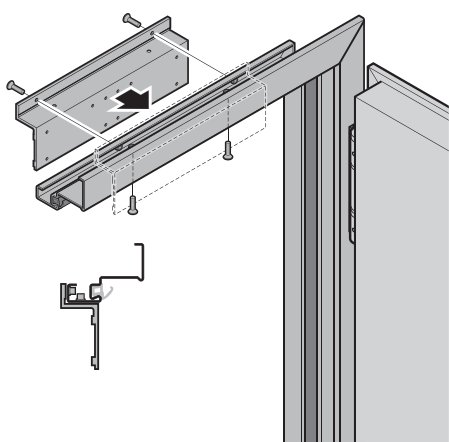
2



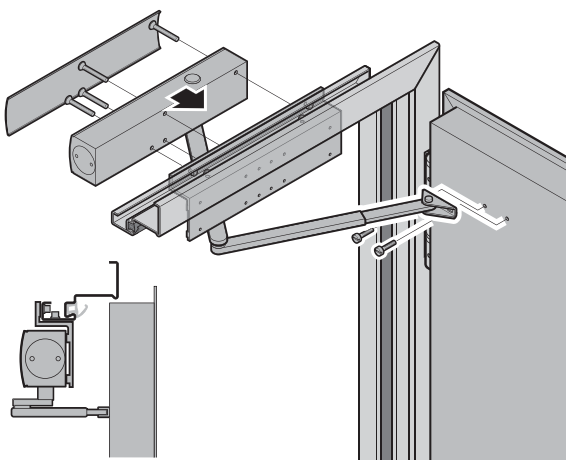
12b

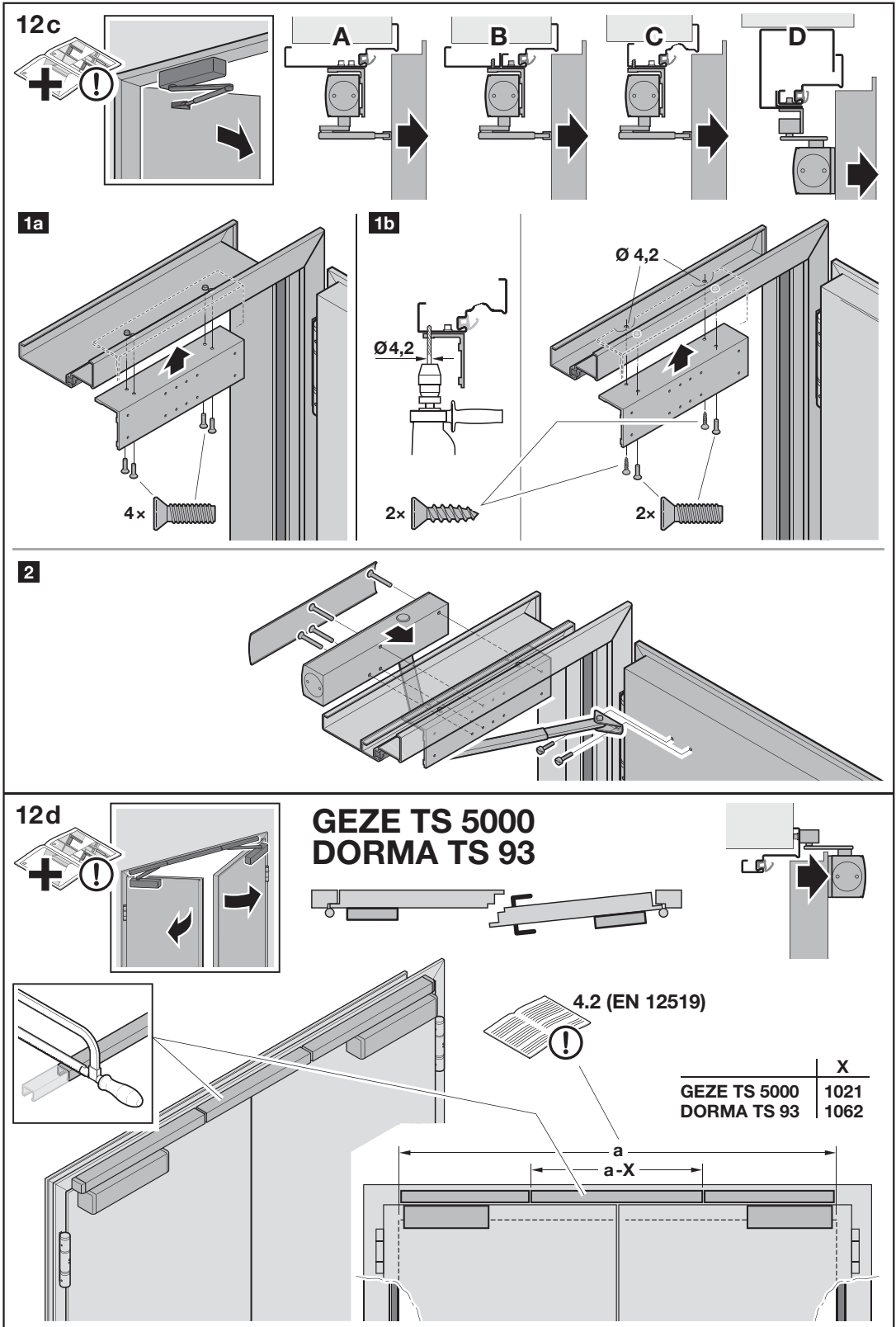


1

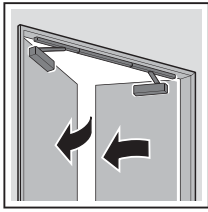


2

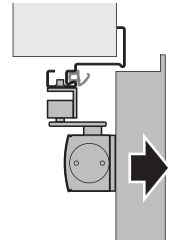
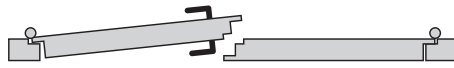




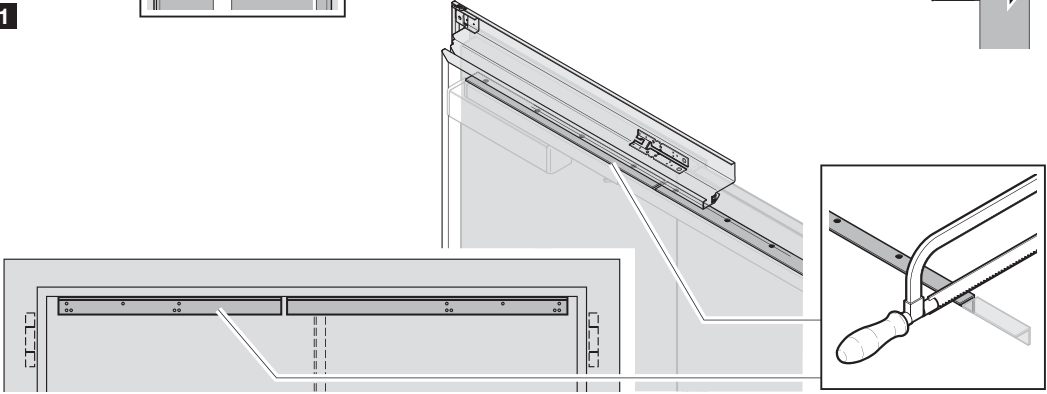
12e



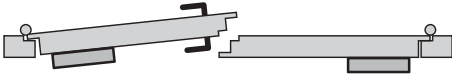
**GEZE TS 5000
DORMA TS 93**



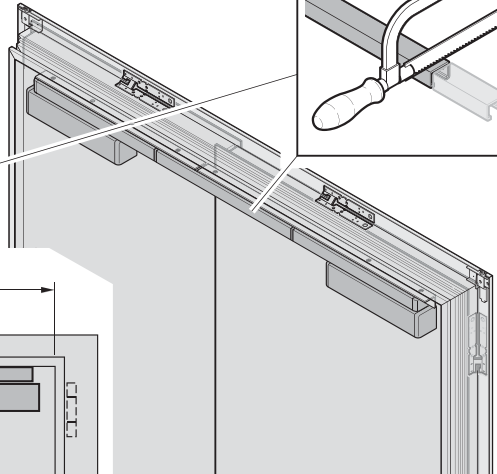
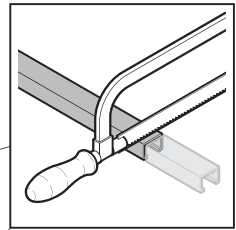
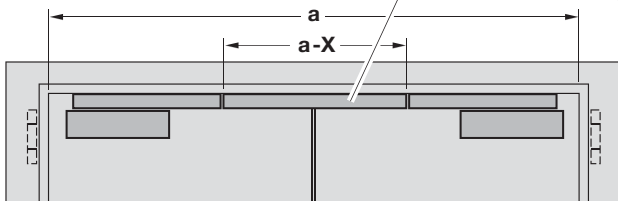
1



2

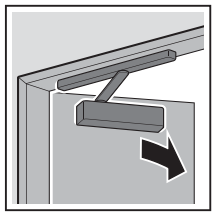


	X
GEZE TS 5000	1130
DORMA TS 93	1179

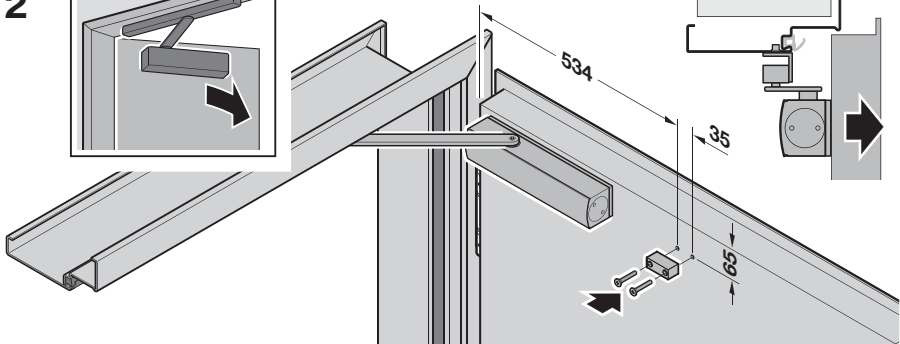


12f

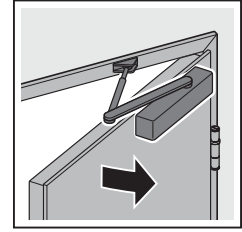
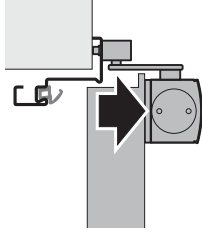
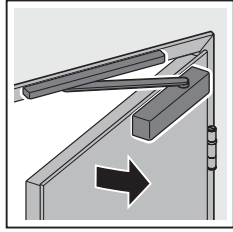
**H16-2
H3-2**



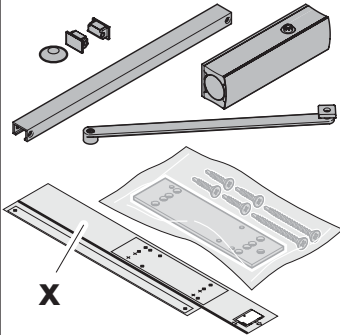
TS 93 GSR BG



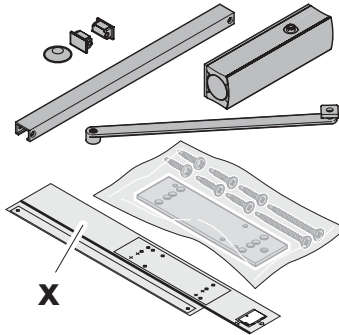
12g



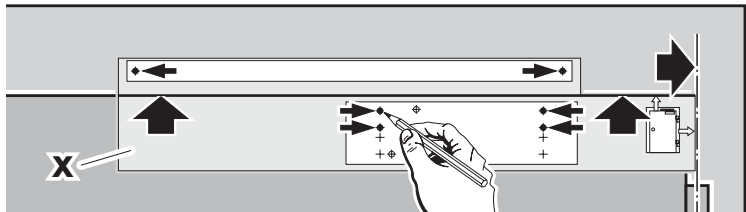
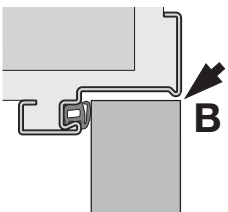
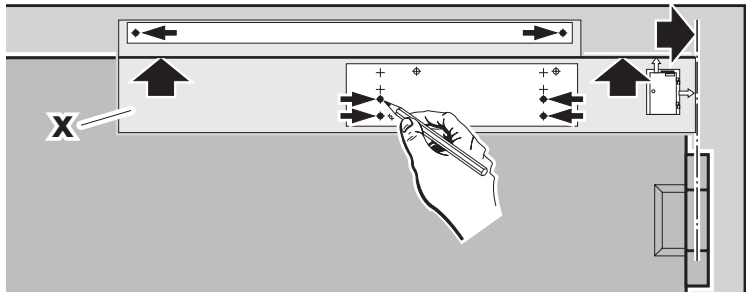
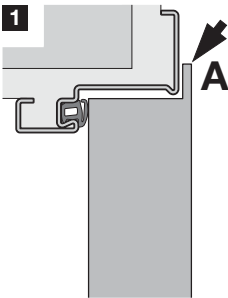
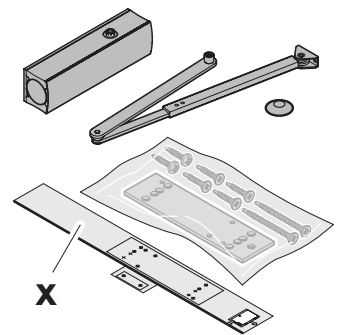
HDC 35



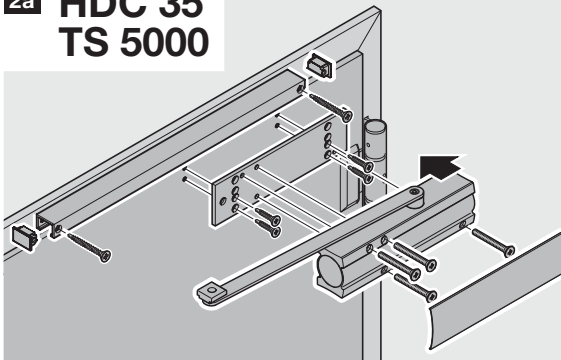
TS 5000



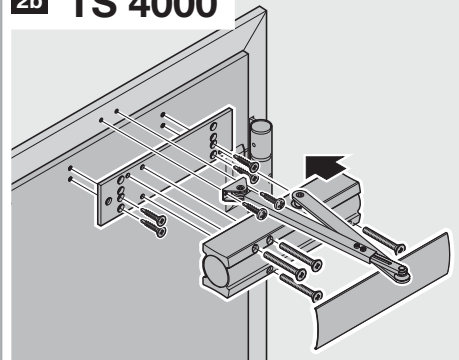
TS 4000



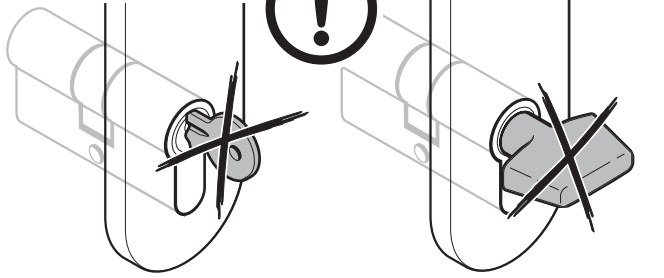
2a HDC 35 TS 5000



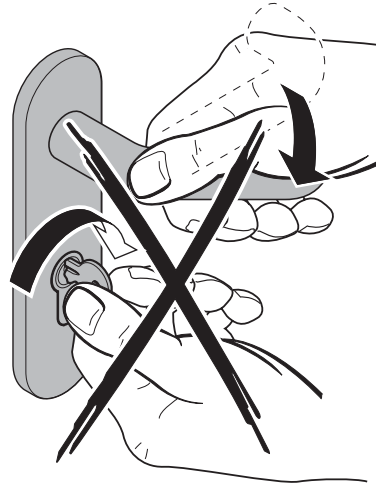
2b TS 4000



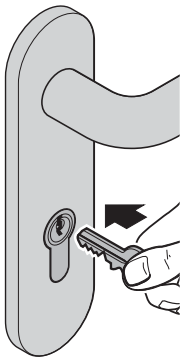
13.1a



13.1b



1



2

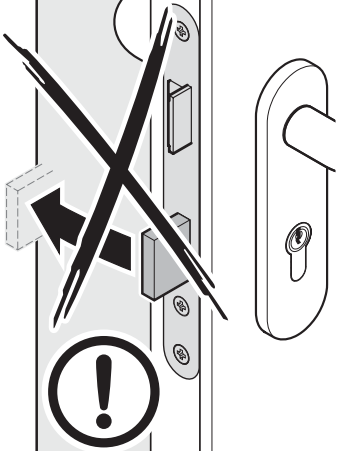


3

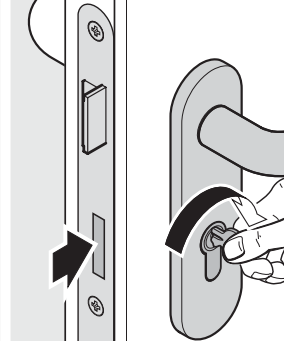


13.2

1



2



3

