



ET

Paigaldus- ja hooldusjuhend

Ühe- ja kahetiivalised metalluksed (OD-uksed, H3G, H16G, HS75, H16S1)



Käesoleva dokumendi paljundamine, müümine ja selle sisu edastamine on keelatud, kui ei ole meiepoolset ühest luba. Selle rikkumisel tuleb hüvitada meile tekitatud kahju. Kõik õigused patendi, kaubamärgi või tunnuse sissekande tegemiseks reserveeritud. Jätame omale õiguse teha muudatusi.

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Austatud klient,
Meil on hea meel, et Te olete otsustanud meie toote kasuks.

1 Käesoleva juhendi kohta

Lugege see juhend läbi ja järgige seda. Juhend annab Teile vajaliku informatsiooni ukse paigaldamiseks ja hooldamiseks, lisaks on ta vajalik dokument ehitusaktide jaoks.

Kui Teil on pärast juhendi läbitöötamist veel küsimusi, pöörduge meie esinduste poole.

1.1 Kasutatud hoiatusmärgid

 Üldine hoiatussümbol tähistab ohtu, mille tulemusena võivad inimesed **vigastada** või **surma** saada. Juhendi tekstiosas kasutatakse üldist hoiatussümbolit koos järgnevalt kirjeldatud ohuastetega. Juhendi piltidega osas viitab täiendav märkus selgitustele tekstiosas.

 **OHT**

Tähistab ohtu, mis võib vahetult põhjustada surma või raskeid vigastusi.

1.2 Kasutatud sümbolid



Tuletõke



Suitsutõke



Turvauks



Müratõkkeus



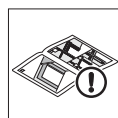
Funktsionaaluks



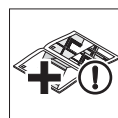
Oluline märkus



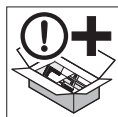
Vaata tekstiosa



Vaata pildiosa



Vaata paigaldusjuhendi lisade pakendis



Võimalik tellida tarvikutena



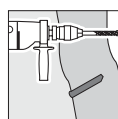
Õige toiming



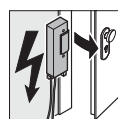
Lubamatu toiming (toimimisviis)



Keevitamine



Puurimine



Elektriline vasturaud



Sissemurdmisohut avanemisküljel



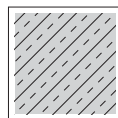
Sissemurdmisohut sulgemisküljel



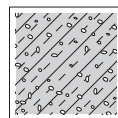
Evakuatsioonitee



Puit



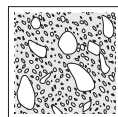
Betoon / müüritis



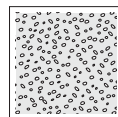
Poorbetoon



Kips



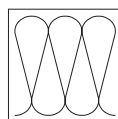
Betoon



Mörtel



Lengitähend CR
T60 / EI₂ 60 / HBS60
T90 / EI₂ 90 / HBS90
T120 / EI₂ 120 / HBS120
T30 / EI₂ 30 mineraalvillast täidisega



Isolatsioon A
(EN 13501-1)

2 Ohutusjuhised

OHT

Terasukse paigaldamine võib olla eluohtlik

Ukse paigaldamisel võib ukseara ümber kukkuda ja selle alla jääv inimene võib surma saada.

- Kindlustage uks ja leng enne ja paigaldustööde ajal ümberkukkumise vastu.

- Kasutage toote paigaldamiseks ainult kvalifitseeritud ja vastavate oskustega töötajaid.
- Elektritööd võivad teostada ainult vastava väljaõppe saanud spetsialistid.
- Ärge teostage toote juures muudatusi ega paigaldage lisasid, mis võivad mõjutada ohutust.
- Keevitustööd ja lihvimistööde vajadusel tuleb välistada tulest, gaasidest, tolmust, aurust, suitsust ja plahvatusel lähtuvaid ohte.
- Keevitustöödel tuleb vältida, et paisuvad materjalid keevitamisel eralduva kuumuse tõttu reageerivad ja nõnda oma toime kaotavad.

3 Uste omadused

Pange tähele, et uksele võib olla ainult üks omadus või siis erinevad omadused nagu tuletõke, suitsutõke, mürakaitse ja sissesmurdumiskindlus võivad olla omavahel kombineeritud või siis on ta hoopis funktsionaalüks.

3.1 Tule- ja suitsutõkkeüksed

- Vastava sertifikaadi leiate leheküljelt www.hoermann.de/dokumentation/zulassungsbescheide-feuerschutzabschluesse/. Vastava sertifikaadi koopia peab ukse kasutuskohas olema olemas.
- Antud informatsioon kujutab endas miinimumnõudeid toote paigaldamiseks Saksamaal. Teistes riikides paigaldamisel kehtivad vastavad riigi nõuded, seejuures peavad materjalid oma omadustelt vastama vähemalt DIN normidele.
- Järgige normi DIN 18093 (tuletõkkeuste paigaldus) ja DIN 18100 (uste avad) või siis kasutusriigi asjakohaseid nõudeid.

- Tootja võib üksikjuhtudel ehituse näidiseeskirja § 22 ja § 23 vastavalt väljastada vastavusdeklaratsiooni.
- Ukse kasutaja vastutab ukse tõrgeteta talitluse eest.**
- Vedruhingesisid ei või Saksamaal ustel ja luukidel kasutada, kui neil on järgmised omadused:
 - tiiva kaal > 80 kg
 - klaasisüstus
 - paigaldus elementseina (erand: mõõt < 1000 × 1000 mm)
 - kombinatsioonis suitsutõkkeustel vastavalt normile DIN 18095
 - 2-lehega

Väljaspool Saksamaad võivad kehtida teised eeskirjad, siiski soovitage kinni pidada Saksamaa vastavatest nõuetest.

- Kasutage suluseid, lukke, sulgemisvahendeid ja elektriseadmeid ainult siis, kui need on koos uksega katsetatud või sertifitseeritud või siis kui on olemas tootja vastav luba.
- Paigaldage 3-küljest valtsitud ning ilma alumise šahtüleminekuta ukseid šahtiseintesse põranda alumisele tasemele.
- Kipskartongseinad ja seinte paksused: vaata Tabel 1:
- Lubatud seinte materjal ja seinte paksused: vaata Tabel 2:
- Kui vastavas paigaldussituatsioonis ei ole kirjeldatud teisiti, siis täitke leng mineraalse tsemendibaasil mõrdiga nagu näiteks Sakret LM21. U-lengid ja nurklengid (ilma ja koos vastulengiga) tuleb enne mõrdiga täitmist toetada, et nad mõrtli survele ära ei vänduks.
- Suitsutõke:**
 - RS 65 - 1:** AbP Nr. P - 14 - 001829 - PR01-ift
 - RS 65 - 2:** AbP Nr. P - 14 - 001829 - PR02-ift
 - Kasutage põrandatihendit ja tihenduskiile (vaata piltidega osa punkt 10.6 ja 11).
 - Kui leng ei ole ümbert mõrdiga täidetud, tuleb lengilahendus sellega piirnevate komponentidega ühendada. Ühendage mõlemad küljed ja läveosa vahesid jätmata püsielastse materjali abil.
 - Kasutage lukusüdamikku.
- Tuletõkkeuste klaasisüst ei tohi jääda otsese päikesevalguse kätte.

Tabel 1: Lubatud paigaldada F90A klassiga seintesse, mille seinapaksus vastab tule- ja suitsutõkkeuste minimaalsetele nõuetele, kõrgus ≤ 5000 mm

Sertifikaadi nr.	Sein	H3 OD H_30 OD	H3-1G H_30 D1	¹⁾ H3-2 VM H_30 D2
P-3310/563/07-MPA BS	Knauf W 112	≥ 100 mm	≥ 100 mm	≥ 100 mm
P-3391/170/08-MPA BS	Knauf W 131	≥ 116 mm	—	—
P-3310/563/07-MPA BS	Knauf W 132	≥ 100 mm	—	—
P-3202/2028-MPA BS	Knauf W 352/W 353	≥ 100 mm	≥ 100 mm	≥ 100 mm
P-3956/1013-MPA BS	RiGips MW 12 RF, MW 12 RFI, MW 12 HA, MW 12 DH, MW 12 BF, MW 12 RFWF, MW 12 GX	≥ 100 mm	≥ 100 mm	≥ 100 mm
P-3014/1393-MPA BS	RiGips MW 11 DD	≥ 100 mm	≥ 100 mm	≥ 100 mm
P-3020/0109-MPA BS	RiGips BW 13 DDRF	≥ 165 mm	—	—
P-SAC-02/III-681	LaFarge L11 – L14	≥ 100 mm	≥ 100 mm	≥ 100 mm
P-MPA-E-98-005	LaFarge L15	≥ 100 mm	—	—
P-3515/0519-MPA BS	LaFarge L16	≥ 150 mm	—	—
P-3391/0890-MPA BS	LaFarge L18	—	—	—
P-MPA-E-99-047	Promat 450.81	≥ 140 mm	—	—
P-11-003478-PR01	B + M W 50/100 – W 100/150	≥ 100 mm	—	—
P-3854/1372-MPA BS	Fermacell 1 S 31/3.1	≥ 95 mm	≥ 95 mm	≥ 95 mm

1) max. 2750 × 2750 mm

Tabel 2: Lubatud seinatüübid ja minimaalsed seinapaksused tule- ja suitsutõkkeuste jaoks (mm) vaata 4.2

Sein	Terasused																			
Beton DIN 1045-1, tugevusklass ≥ C12/15	H3-1 OD H_30-1 OD		H3-2 OD H_30-2 OD		H3-1 G H_30 D1		H3-2 VM H_30 D2		H6-1 OD		H6-2 OD		H16-1 G H_90 D1 H_90 F-2		H16-S1 H_90 E-1		H16-1 OD H_90-1 OD		H16-2 OD H_90-2 OD	
	1) k ≤ 2500 100		2) k > 2500 140		1) k ≤ 2500 100		2) k > 2500 140		1) k ≤ 2500 140		2) k > 2500 140		140		120		e ≤ 1320 140			
	1) k ≤ 2500 115		k > 2500 175		1) k ≤ 2500 115		2) k > 2500 175		1) k ≤ 1250 ja k ≤ 1750		2) e ≤ 1500 ja k ≤ 2500		175		175		e ≤ 1250 k ≤ 2500		e ≤ 1500 k ≤ 2500	
Poorbetoonist plokid või soonplokid, DIN 4165-3, tugevusklass ≥ 4, Poorbetoonplaadid vastavalt üldine kasutusluba, tugevusklass ≥ 4.4	k ≤ 2500 150				k ≤ 2500 150		175		175		175		240		175		115		175	
	k ≤ 2500 150				k ≤ 2500 150		175		175		175		240		175		115		175	
	k ≤ 2500 150				k ≤ 2500 150		175		175		175		240		175		115		175	
Elementsein F90-A vastavalt ABP, järgige pilti 8.12, max kõrgus 5000 mm	3)				3)		3)		3)		3)		200		175		100		200	
	3)				3)		3)		3)		3)		200		175		100		200	
	3)				3)		3)		3)		3)		200		175		100		200	
Elementsein F90-A DIN 4102-4 / tabel 10.2, järgige pilti 8.12, max kõrgus 5000 mm	e ≤ 1320 100				e ≤ 2500 100		100		100		100		100		125		100		150	
	e ≤ 1320 100				e ≤ 2500 100		100		100		100		100		125		100		150	
	e ≤ 1320 100				e ≤ 2500 100		100		100		100		100		125		100		150	
Elementsein F90-B DIN 4102-4 / tabel 10.3, max kõrgus 5000 mm	e ≤ 1250 ja k ≤ 2500 100				e ≤ 2500 ja k ≤ 2500 100		100		100		100		100		125		100		150	
	e ≤ 1250 ja k ≤ 2500 100				e ≤ 2500 ja k ≤ 2500 100		100		100		100		100		125		100		150	
	e ≤ 1250 ja k ≤ 2500 100				e ≤ 2500 ja k ≤ 2500 100		100		100		100		100		125		100		150	
Elementsein F30-B AbP Nr.: P – SAC-02 / III-668	e ≤ 1125 ja k ≤ 2125 185				e ≤ 2500 ja k ≤ 2500 100		100		100		100		100		125		100		150	
	e ≤ 1125 ja k ≤ 2125 185				e ≤ 2500 ja k ≤ 2500 100		100		100		100		100		125		100		150	
	e ≤ 1125 ja k ≤ 2125 185				e ≤ 2500 ja k ≤ 2500 100		100		100		100		100		125		100		150	
Kipsist seinaplaadid VG Orth, P–SAC 02 / III-468, järgige pilti 9/A17	e ≤ 2500 100				e ≤ 2500 ja k ≤ 2500 100		100		100		100		100		125		100		150	
	e ≤ 2500 100				e ≤ 2500 ja k ≤ 2500 100		100		100		100		100		125		100		150	
	e ≤ 2500 100				e ≤ 2500 ja k ≤ 2500 100		100		100		100		100		125		100		150	

1) Minimaalsed seinapaksused 2) koos ülaosaga 3) vaata Tabel 1: 4) kaheosaline leng 5) Dryfix 6) Suitsutõke: puudub registreering Saksamaal 7) Suitsutõke, e ≤ 1320

3.2 Müratõkkeused

- Heliisolatsioon on sõltuvuses ust ümbritsevatest komponentidest. Sein ja ukse kombinatsioonist resulteeruv heliisolatsioon tuleb eraldi tõestada, kuna seda ei saa tuletada uste eraldi hinnatud heliisolatsiooni indeksist R_w või R.
- Antud heliisolatsiooni väärtus on saavutatav ainult siis, kui ukse ja põranda vaheline õhuvähe on max 10 mm.
- Jälgige, et tihendid oleksid vastu.
- Selleks, et põrandatihend täidaks täielikult oma tihendusfunktsiooni, peab põrand olema sirge.
- Lõigake betoonpõrand läve alas läbi.
- Kasutage tihenduskiile ja põrandatihendit (vaata piltidega osa punkt 10.6 ja 11).
- Kasutage lukusüdamikku.
- Täitke leng täielikult mõrtliga.
- Liimige nurga all lõigatud lengitihendi nurgad kokku nt Kõratan UC 41 abil.

3.3 Turvauksed

- Uksed vastavad sissemurdmiskindluse nõuetele ainult siis, kui riiv on täielikult suletud ja võti on eest ära tõmmatud.
- Kinnitage ukselehed kõigi 2 tiivaga RC - uste puhul hingede kohalt, igaüks kahe kruviga (vaata piltidega osa punkt 10.2).
- Kasutage RC 3 ja RC 4 juures ainult nurklenge, vastulengiga nurklenge ja põski ümbritsevaid lenge.
- Täitke RC 2 ustel leng lukustuspunktide, hingede ja turvanagade kohtades survekindla materjaliga.
- Täitke RC 3 klassi uste leng ümbertrinki survekindla materjaliga.
- Paigaldage klaasistusega uste puhul uks nii, et klaasistusraami turvakõrvad jääksid sinna poole, kust üritatakse sisse murda.
- Ülemise klaasi välja vahetamisel tuleb tagaklots paigaldada nii nagu enne paigaldust.
- Möötkte 2-lehelistel ustel alumised õhuvahed alates põrandasüvendist.
- Paanikafunktsiooniga ustel peab ukse alt sisse murdmine nt traadi abil olema raskendatud väikese põrandavahe või lameda läve kasutamisega.

3.3.1 Minimaalsed nõuded turvaustele

Turvalisusklass vastavalt DIN EN V 1627	RC 2	RC 3	RC 4
Müritis DIN 1053, osa 1 [mm] kivitugevus ≥ 12	115	115	240
Raudbetoon, vähemalt C12/15 [mm]	100	120	140
Poorbetoonkivid, kl 4 [mm]	175, 115 ¹⁾	240	–
Poorbetoonplaadid, kl 4 [mm]	150	–	–
Lukusüdamik vastavalt normile DIN 18252:2006-12 ^{2) 3)}	21-, 31-, 71-BZ	42-, 82-BZ	
Turvakate vastavalt normile DIN 18257:2003-03 ²⁾	ES1 (ZA)	ES2 (ZA)	ES3 (ZA)
Klaasid EN 356 (tuletõke)	P5A ⁴⁾ / P8B ⁵⁾	P5A ⁴⁾	–

1) ainult 1-tiivaga uksed, soovitame sein paksusi alates 150 mm

2) lukukate või lukusüdamik peavad olema tõmbekitsetega (ZA).

3) ei pea olema tarnekomplektis

4) mitte pääste- ja evakuatsiooniteedel

5) pääste- ja evakuatsiooniteedel

3.4 Funktsionaalsused

Lengid ei pea ilmtingimata täidetud olema.

3.5 Kasutamine välitingimustes

Paigaldamisel välitingimustesse järgige eraldi juhendit, art nr: 504 855. Juhendi leiate internetist aadressilt www.hormann.ee.

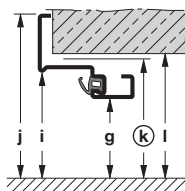
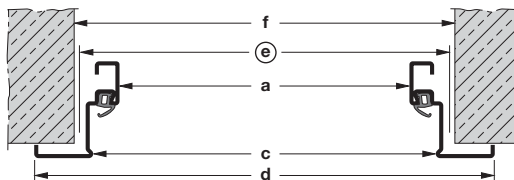
4 Paigaldus

4.1 Enne paigaldama asumist

Enne paigaldus tuleb leida vastus järgmistele küsimustele:

- Millised omadused on uksele?
- Kas seinakonstruktsioon on ukse paigalduseks sobiv?
- Kas põranda kõrgus on teada (kõrgusmärk +1 m)?
- Mis suunas peab uks avanema?
- Kas ehituseeskirju tuleb järgida?
- Kas sein tuleb seinakaitseraami piirkonnas välja lõhkuda?

4.2 Mõõdud vastavalt normile EN 12519



Pilt 20: Mõõdud

- a/g puhas valgusava laius / kõrgus
 c/i puhas valtsilaius / -kõrgus
 d/j lengi välislaius / -kõrgus
 e/k moodullaius / -kõrgus
 f/l puhas seinava laius / kõrgus (DIN 18100)

4.3 Paigaldamisel

- Järgige lisade pakis kaasas olevaid paigaldusjuhiseid.
- Kasutage paigaldusvahendeid, kui need on tarnekomplektiga kaasa pandud nt paigalduskõrvad, tüüblid või kruvid.
- Kasutage punktis 8 märgitud tüübleid.
- Kasutage nurklengi ja perforatsioon telliste või kipskivide ühendamisel FUR 10 x 80 / 100 mm tüüblit ning järgige paigaldusjuhendi punkti 8.
- Ärge kasutage perforatsioon telliste ja kärgtelliste korral lõõkpuuri.
- Horisontaalsete ja vertikaalsete puuravade korral peab minimaalne kaugus servast olema 50 mm ning arvestada tuleb tüübli laienemissuunaga.
- Valmis põrandale paigaldataval uksele tuleb alumine paigaldusvinkel enne paigaldust eemaldada.

4.4 Märkused juhendi piltidega osa kohta

Vaata punkt	Kirjeldus
8	Paigaldussituatsioonid ja lengitüübid
8.1a	Lai valts
8.1b	Lai mantelserv
8.2a / 8.2b	Kinnituspunktide arv
8.2c	Paigalduse käik
8.3a	Standardukse eemaldamine
8.3b	Turvaukse eemaldamine
8.4	Nurklengi kokkupanek
8.5	Põrandasüvend ja montaažinurk
8.6	Kinnitusdetailid
8.7	Minimaalne servakaugus ja tüübli laienemissuund
8.8	Peitsooneprofiili paigaldus
8.9	Läbiviigutorud lengis
8.10	Elektriline vasturaud
8.11	Lengitasku kipsseintele
8.12	Kipsist tuletõkeseinte ülesehitus
9.0	Paigaldusvõimalused
10.1a	Paigaldus standardhingedega
10.1b	Paigaldus 3D-hingedega
10.2	Turvaukse paigaldus
10.3	Õhupilu reguleerimine
10.4	Põrandavinkli eemaldamine lengidel, mida ei valata põranda sisse
10.5	Vastulengi paigaldus
10.6	Kinnitage tihenduskiilud silikooni abil
10.7	Lengitihendi paigaldus
10.8	Ukse tõstmine
10.9	Uksehinge pingutamine
10.10	Lukuvastuse kontroll
10.11	Ventilatsioonivõre modifitseerimine
10.12	Klaasiraami muutmine
10.13	Isolatsioonikihi moodustav materjal tule- ja suitsutõkke korral
10.14	Isolatsioonikihi moodustav materjal turvanaga juures
10.15	Suurte klaaspindade tähistus
10.16	Paanika- ja turvauksed RC
10.17	Valvestusluku paigaldus mitmepunkti lukustuse korral
10.18	Uksemagneti ankurplaadi paigaldus
11	Põrandatihendid
12	Uksesulgur
13	Puuravad tiibukseajamite andurite paigalduse jaoks
14.1	Eemaldage paanikauste võti
14.2	Luku valesti kasutamise vältimine

5 Hooldus

5.1 Iga-aastased hooldustööd

- ▶ Otsige ukselehel, lengilt ja kinnitustelt mehaanilisi ja korrosioonist põhjustatud kahjustusi.
- ▶ Kontrollige luku funktsiooni ja määri vajadusel kaldkeelt.
- ▶ Määri poltlukke teflon määrdeainega.
- ▶ Kontrollige ukse külge kinnituvate osade kinnitusi nagu nt lingid, lukk, ukseulgur, uksehinged jne.
- ▶ Määri hingepolt ja laagringe.
- ▶ Kontrollige õhuvaheid.
- ▶ Kontrollige, kas tähistus on nähtav.



OHT

Eemaldunud isolatsioonikihi moodustavast materjalist lähtuv eluohu

Eemaldunud isolatsioonikihi moodustuva materjali tõttu kaotab tuletõkkeavataide oma funktsiooni.

- ▶ Asendage eemaldunud isolatsioonikihi moodustav materjal, vaata piltidega osa 10.13.

- ▶ Vahetage defektsed osad välja.
- ▶ Kasutage üksnes originaalvaruosi.

Kui Te avastate puudusi, mida Te ei saa ise kõrvaldada, siis kutsuge nende kõrvaldamiseks vastavale tööle spetsialiseerunud firma.

5.2 Kasutuselevõtt, paanikalukkude hooldus www.hoermann.de/dokumentation/zulassungsbescheide-fuer-feuerschutzabschluss/

(Vaata punkt 9)

5.3 Standardse krunditud pinnaga elementide pealispinna töötlemine

Ukselehe ja lengi pealispind on krunditud polüestripõhise epoksiidvaiguga pulbervärviga.

1. Eemaldage kõik tihendid.
2. Karestage kõik värvitavad pinnad välja arvatud isolatsioonikihi moodustava materjali.
3. Puhastage pealispindu korralikult.
4. Kasutage ukselehe, lengi ja isolatsioonikihi lõppviimistluse teostamiseks järgmist lahendust:
 - kruntimiseks 2-komponentset epoksiid-nakkekihti ja lõppviimistluseks sobilikku kaubandusvõrgust saada olevat värvi või
 - nii kruntimiseks kui lõppviimistluseks 2-komponentset polüuretaanvärvi.

Ilmastiku mõjud, näiteks päikesekiirgus, võivad ukselehte ajutiselt deformeerida. Tumedad värvid tugevdavad seda efekti, kuid tegemist ei ole siiski tooteveaga. Soovitame kasutada heledaid ja/või peegeldavaid värve.

Järgige seejuures BFS'i märgukirja nr 24 ning vastava värvitooja kasutusjuhiseid ning valmistage nakkeproov. Teostage ukse lõppviimistlus vähemalt kolm kuud peale ukse lõpliku paigaldust, et vältida korrosioonikahjustusi.

5. Paigaldage tihendid pärast värvi kuivamist uuesti.

5.4 Puhastamine

- ▶ Puhastage pealispindu puhta vee ja tavalise värvitud pindade puhastusainega.

5.5 Roostevabast terasest detailide hooldus

- ▶ Puhastage ja hooldage roostevabast terasest detaile regulaarselt Hörmannilt saada oleva roostevaba terase hooldusvahendiga ning kandke see pinnale pehme lapiga.

6 Etiketid ja märgistus

Uksetüüpid **D65-1, D65-2, D65-1 OD, D65-2 OD** etikett on määruse (EL) nr 305/2011 alusel tähistatud CE-vastavusmärgisega. Kasutatud ja rakendatud harmoneeritud Euroopa tootenorm on EN 14351-1:2006 + A1:2010 „Aknad ja ukse – Tootestandard, toimivusomadused – Osa 1: Aknad ja välisused, millele ei esitata tulepüsivus- ja/ või suitsutõkestusnõudeid.“ Vastava CE-märgise või toimivusdeklaratsiooni number asub ukse mantelserva alasse paigaldatud eelnevalt mainitud etiketil tootja logo ja CE-vastavusmärgistuse vahel.

Uksed, mille etiketil puudub CE-vastavusmärgis, ei kuulu ülal mainitud harmoneeritud Euroopa tootenormi kohaldatavuse alla ning neil ei tohi seetõttu olla CE-märgistust või siis toimivusdeklaratsiooni.

7 Üldteave

Ust ei või senikaua kasutusele võtta, kuni on kindlaks tehtud, et ta on meie juhiste järgi paigaldatud ja tema korrektset toimivust on kontrollitud. Kui toodet muudetakse siis kaotab toimivusdeklaratsioon kehtivuse.

8 Toimivusdeklaratsioon

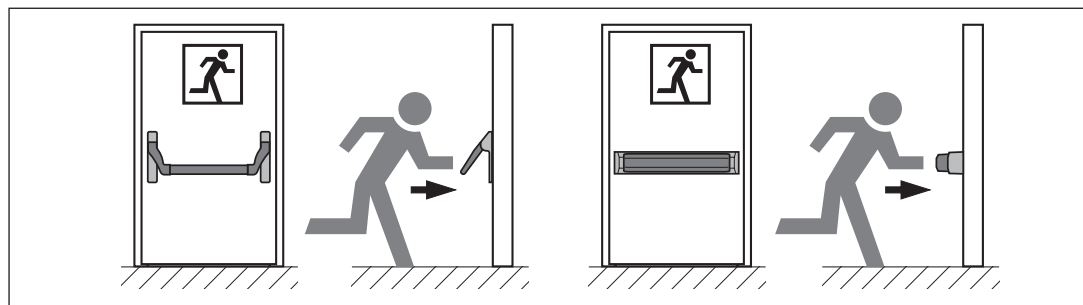
Toimivusdeklaratsioon vaata punkt **8.3**:

www.hoermann.com/dop

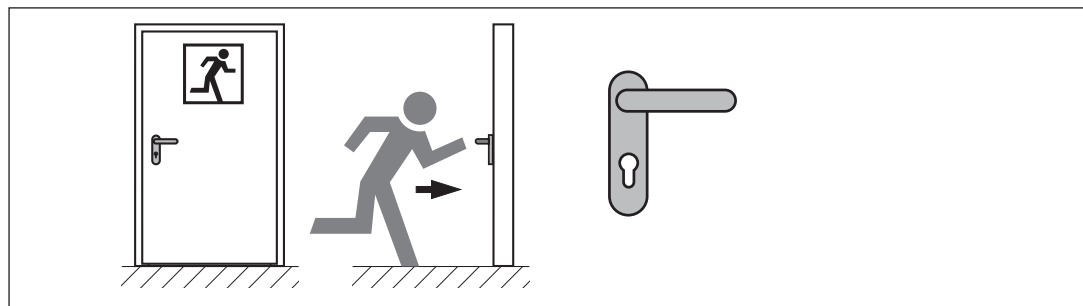
9 Paanikalukkude hooldus

Kasutuselevõtt		
Kliendi nr:	Klient:	
Kuupäev:	Paigaldaja:	
Aadress:		
Toode:	Paanikalukk vastavalt standardile EN 1125	☐
	Avariiväljapääsu lukk vastavalt standardile EN 179	☐

Paanikalukk vastavalt standardile EN 1125



Avariiväljapääsu lukk vastavalt standardile EN 179



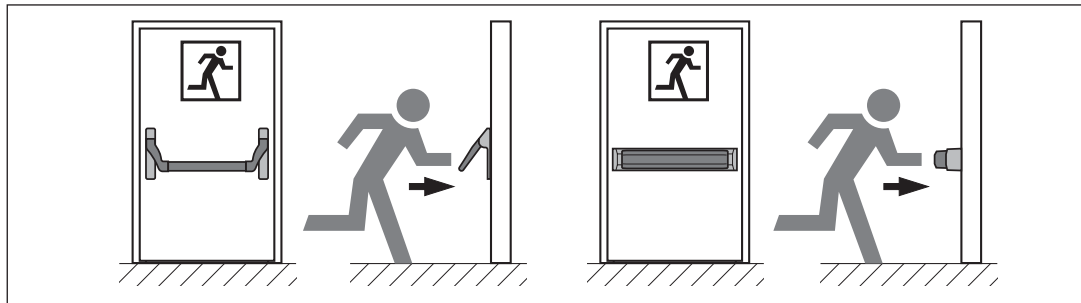
Kontroll-loend:

Lukuvastuste ja põrandasüvendite määrdumist on kontrollitud ja vajadusel tehtud puhastus	☐
Paigalduse läbiviimist on kontrollitud tootja paigaldusjuhendi alusel	☐
Lukk on määritud tootja juhiste järgi	☐
hilisemaid muudatusi ei leitud, nt täiendavate lukustusseadmete hilisem paigaldamine	☐
kõik seadme osad vastavad tarnitud ja heakskiidetud komponentide loetelule	☐
furnituuridel ei tuvastatud lahtisi kinnituskruvisid	☐
Kontrollitud, kas luku kasutamisel ja eelnevalt suletud riivi puhul on lukukeel ja riiv täielikult tagasi tõmmatud	☐

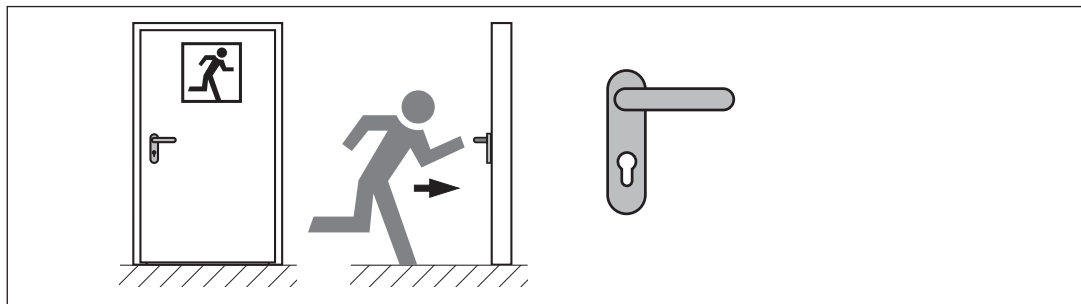
9 Paanikalukkude hooldus, kopeerimiseks mõeldud vorm

Kliendi nr:	Klient:			
Kuupäev:	Paigaldaja:			
Aadress:				
Toode: <table border="1"> <tr> <td>Paanikalukk vastavalt standardile EN 1125</td> <td>☐</td> </tr> <tr> <td>Avariiväljapääsu lukk vastavalt standardile EN 179</td> <td>☐</td> </tr> </table>	Paanikalukk vastavalt standardile EN 1125	☐	Avariiväljapääsu lukk vastavalt standardile EN 179	☐
Paanikalukk vastavalt standardile EN 1125	☐			
Avariiväljapääsu lukk vastavalt standardile EN 179	☐			

Paanikalukk vastavalt standardile EN 1125



Avariiväljapääsu lukk vastavalt standardile EN 179

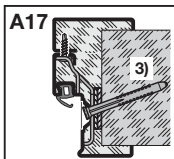
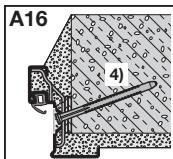
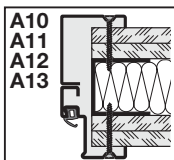
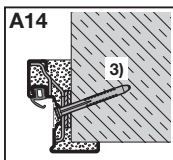
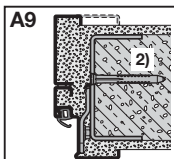
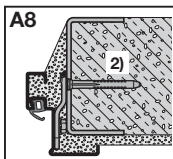
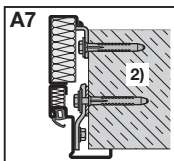
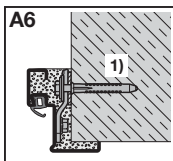
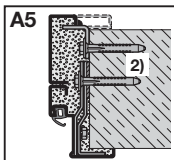
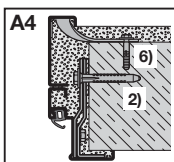
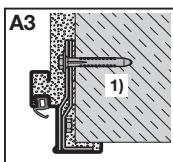
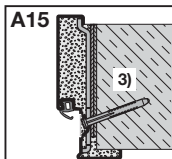
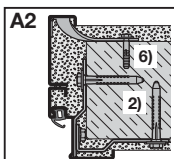
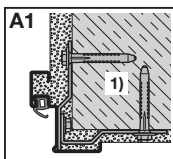
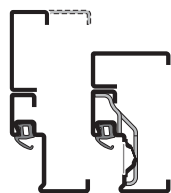


Kontroll-loend:

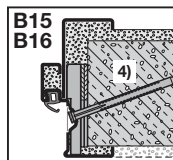
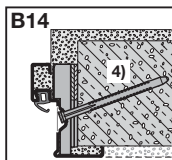
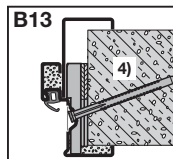
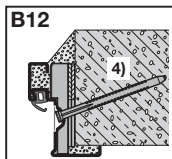
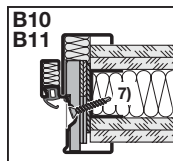
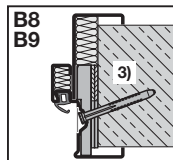
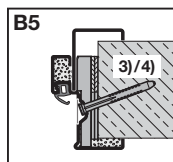
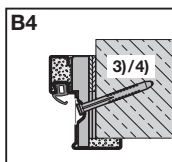
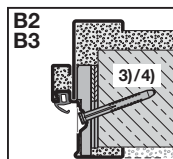
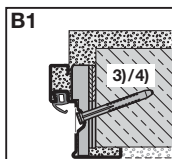
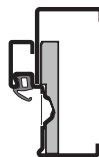
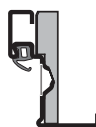
Lukuvastuste ja põrandasüvendite määrdumist on kontrollitud ja vajadusel tehtud puhastus	☐
Paigalduse läbiviimist on kontrollitud tootja paigaldusjuhendi alusel	☐
Lukk on määritud tootja juhiste järgi	☐
hilisemaid muudatusi ei leitud, nt täiendavate lukustusseadmete hilisem paigaldamine	☐
kõik seadme osad vastavad tarnitud ja heakskiidetud komponentide loetelule	☐
furnituuridel ei tuvastatud lahtisi kinnituskruvisid	☐
Kontrollitud, kas luku kasutamisel ja eelnevalt suletud riivi puhul on lukukeel ja riiv täielikult tagasi tõmmatud	☐

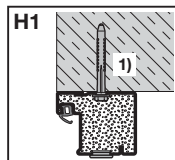
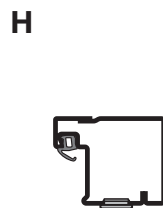
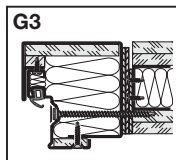
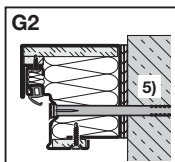
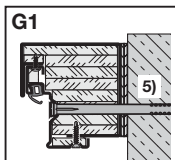
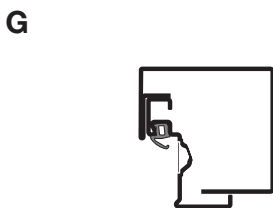
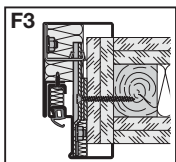
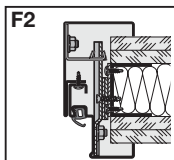
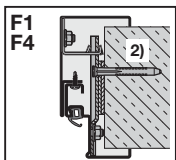
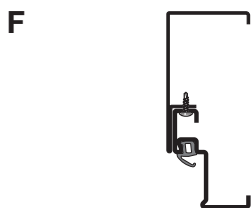
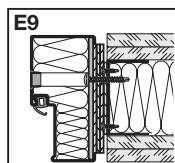
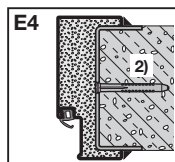
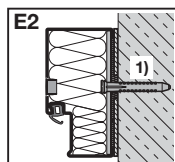
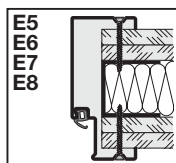
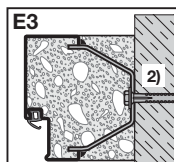
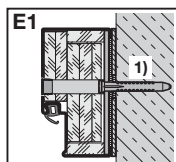
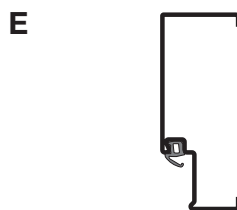
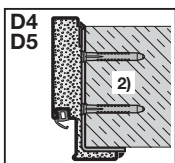
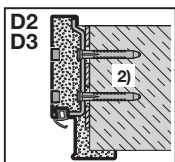
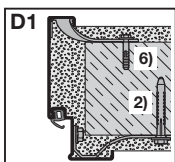
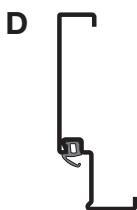
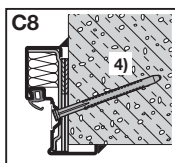
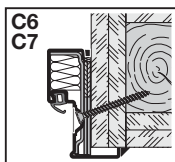
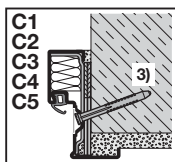
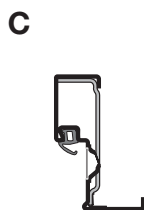
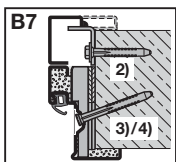
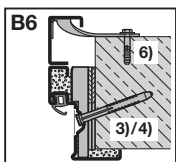
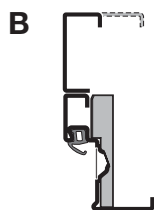


A



B





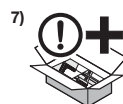
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Fischer: SXS 10 × 80/100
Hilti: HRD 10 × 80/100
CELO: MFR 10 × 80/100
Würth: W-UR 10 × 80/100

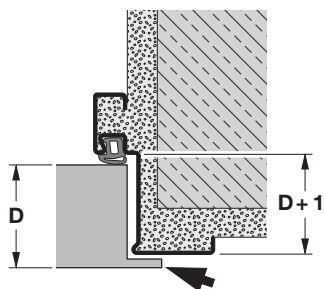


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Hilti: HRD 10 × 80/100
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Würth: W-UR 10 × 80/100/115

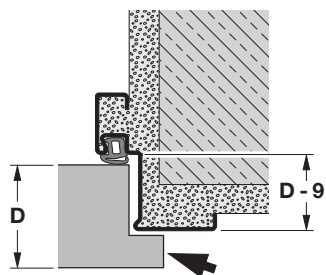
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4) Fischer: FUR 10 × 160
5) Fischer: FUR 10 × 200
6) 8 × 40



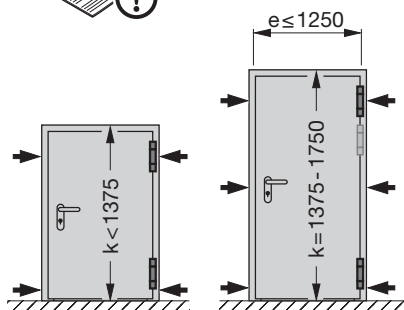
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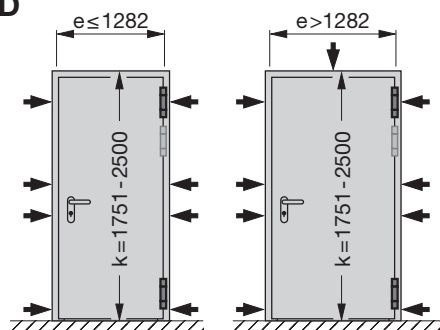
8.1b



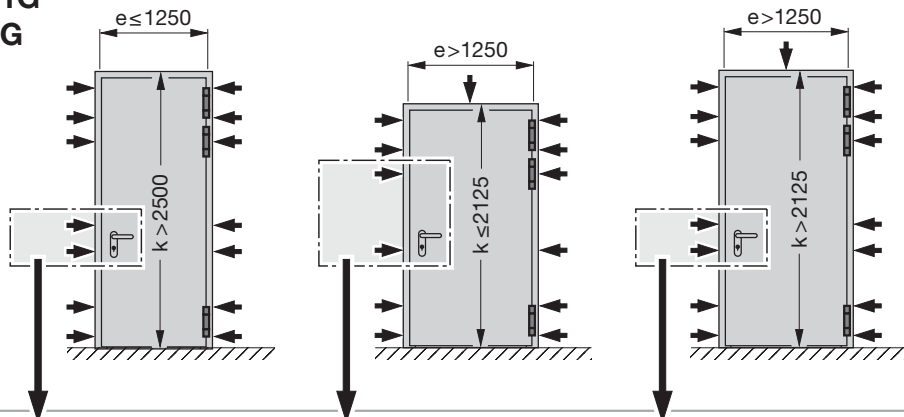
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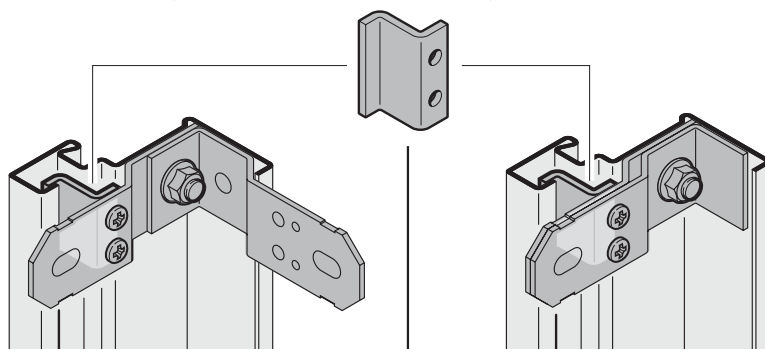
H16-S1
H16-1 OD
HS75



H16-1G
H3-1G

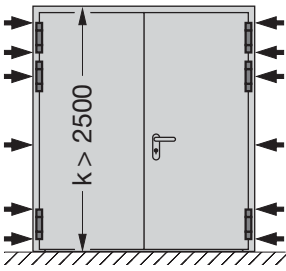


T90-1 / EI₂ 90-1

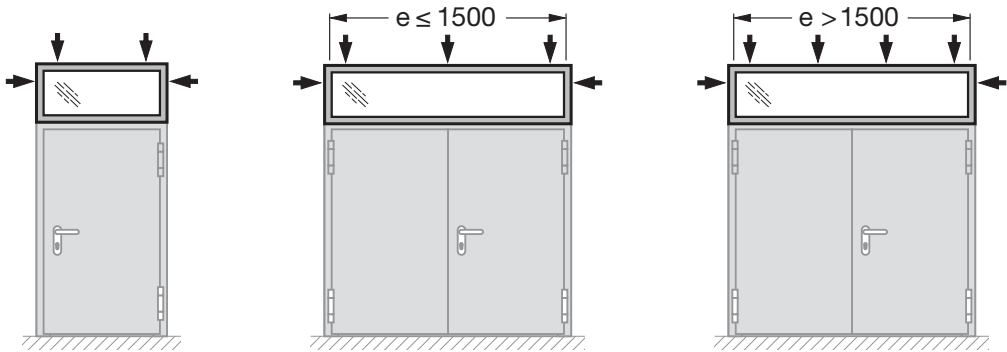
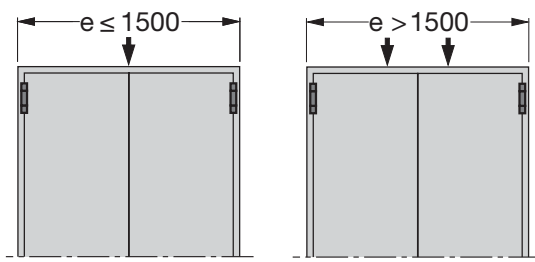
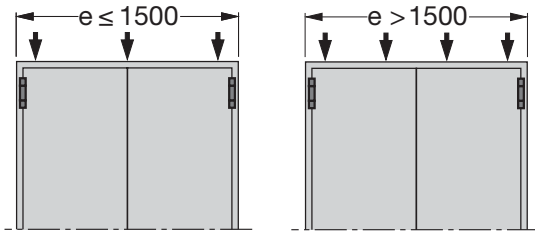
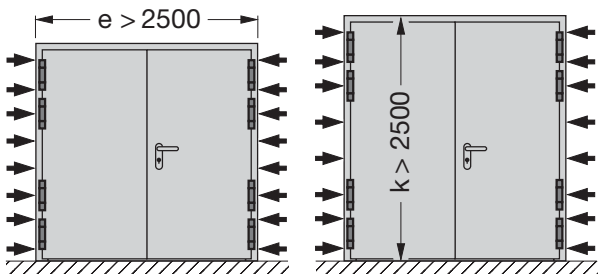




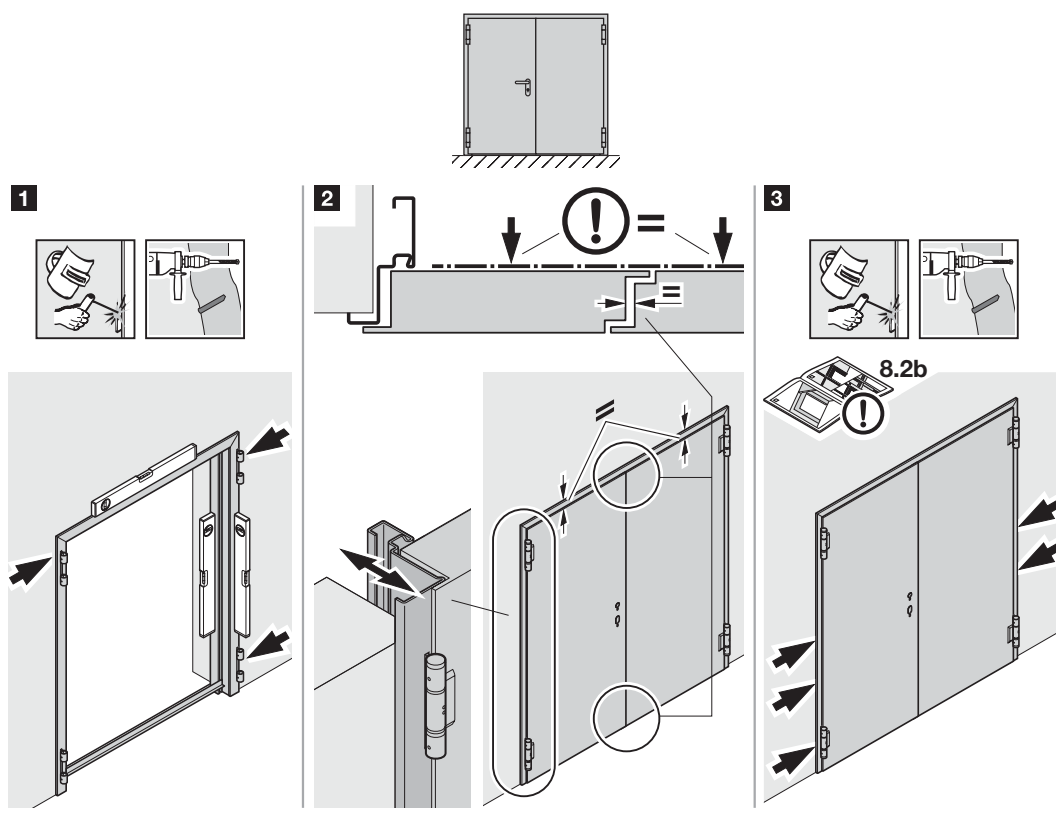
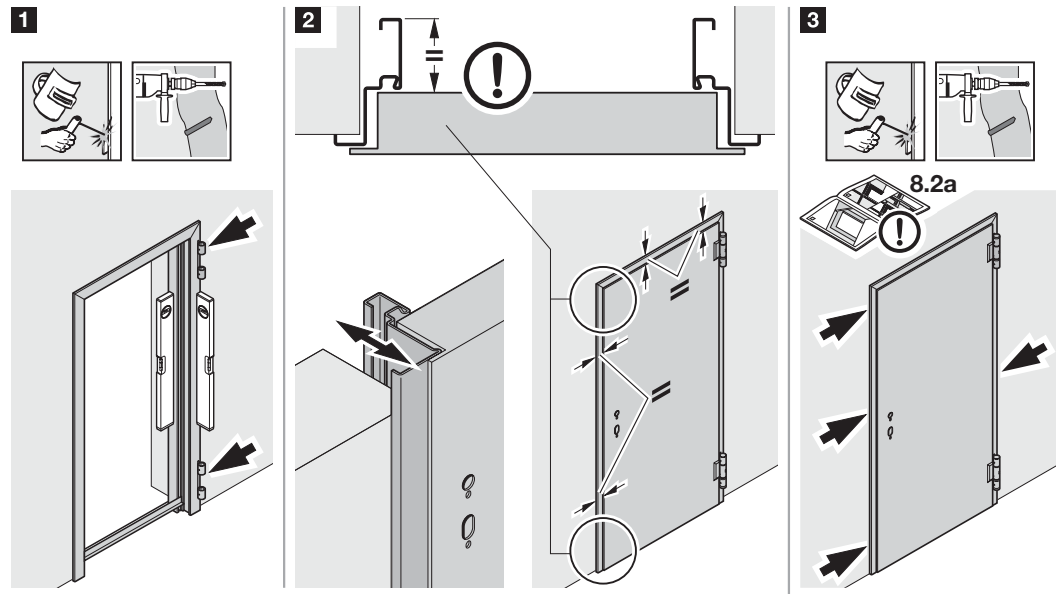
H3-2 VM



**H16-2 G
H_90 F2**



8.2c

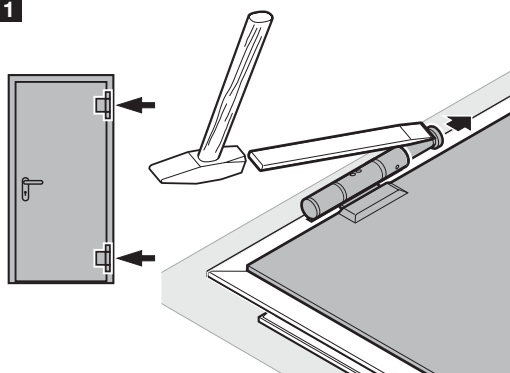


8.3a

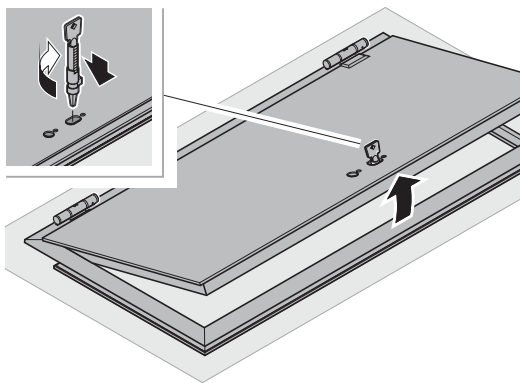
4.3



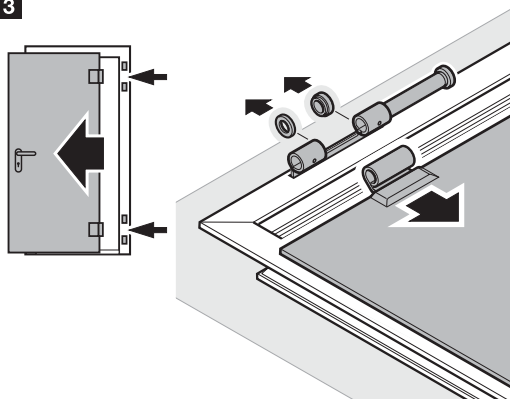
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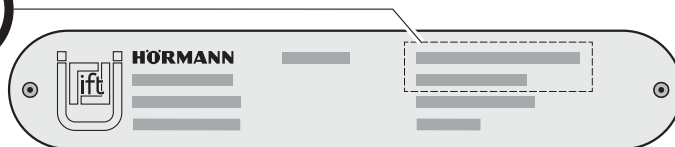
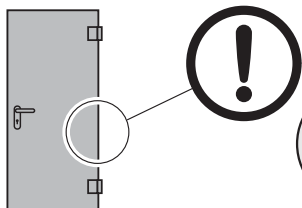
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3



4

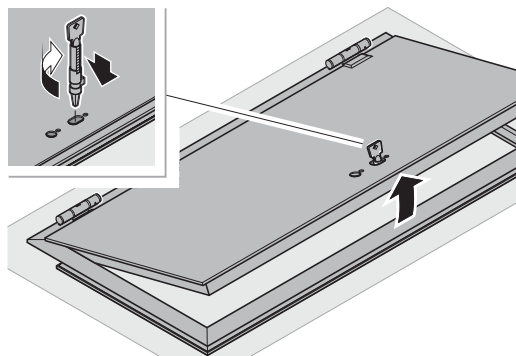


8.3b

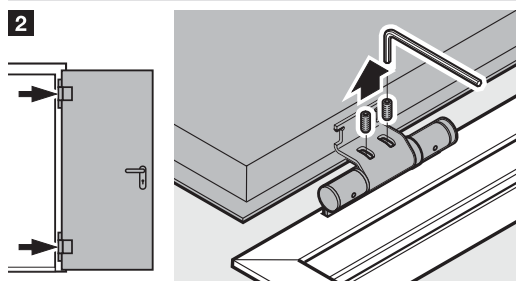
4.3



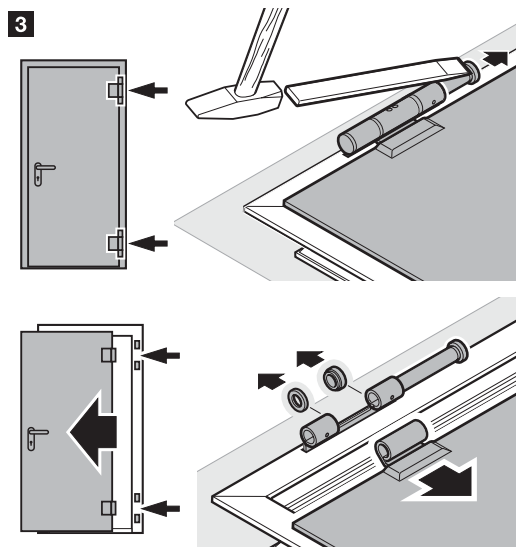
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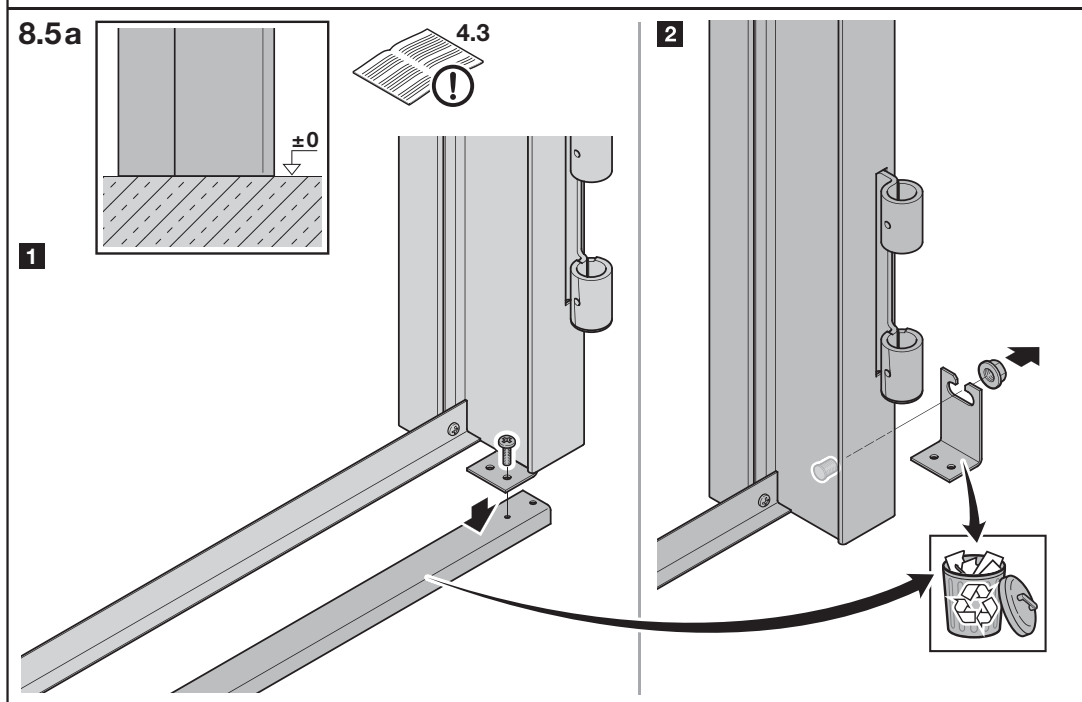
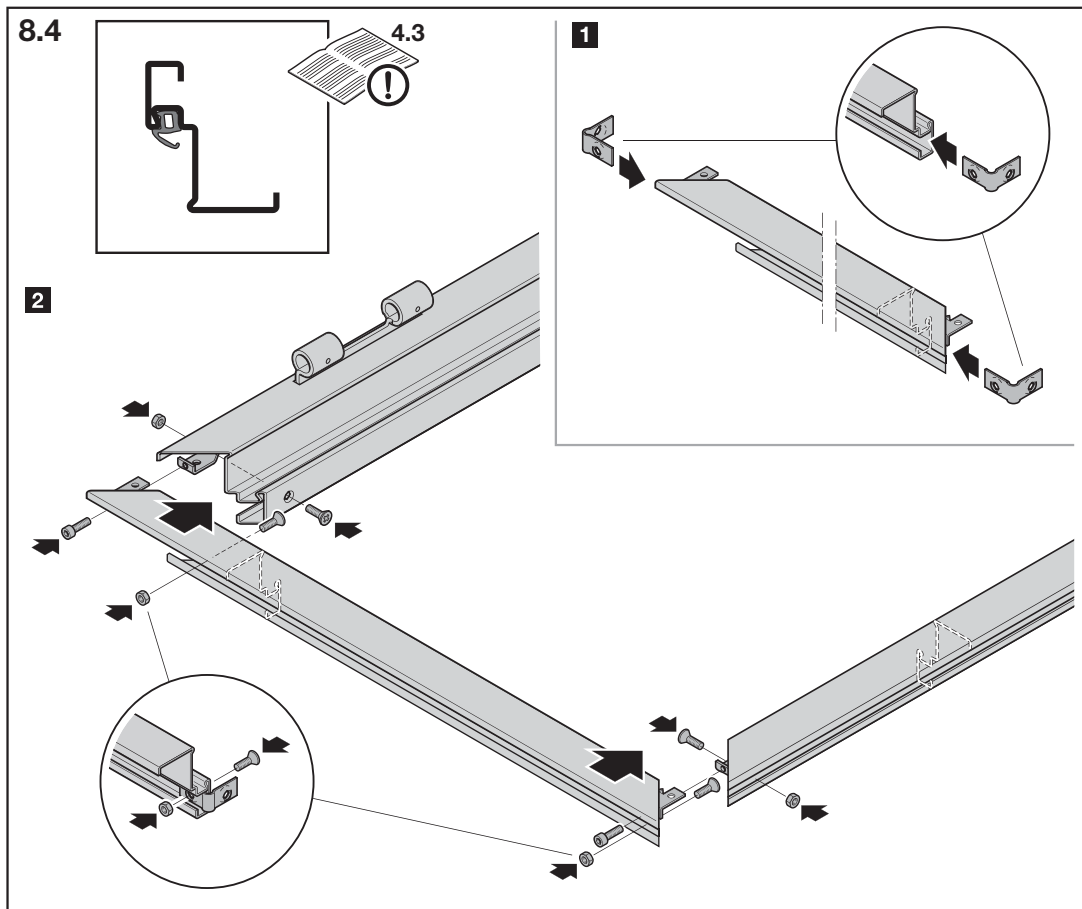


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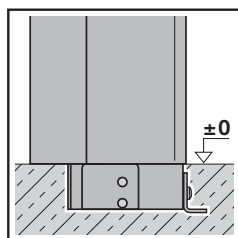
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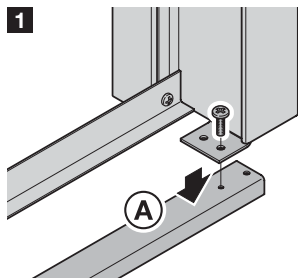


8.5b

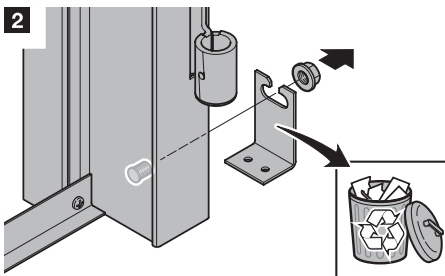
4.3



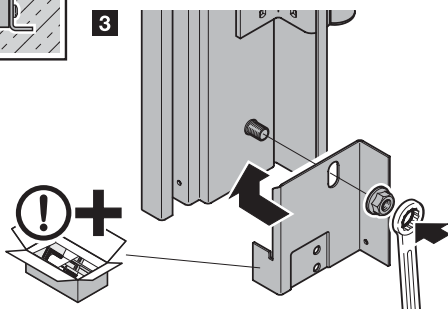
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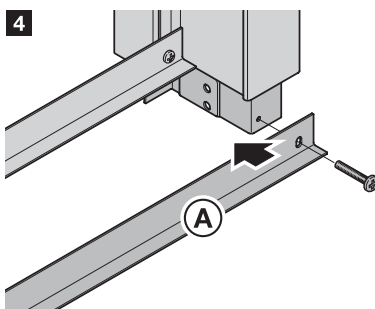
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3

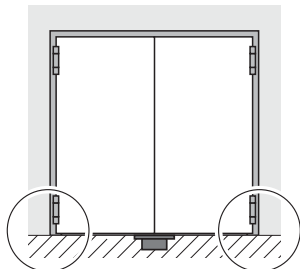
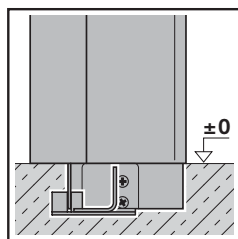


4

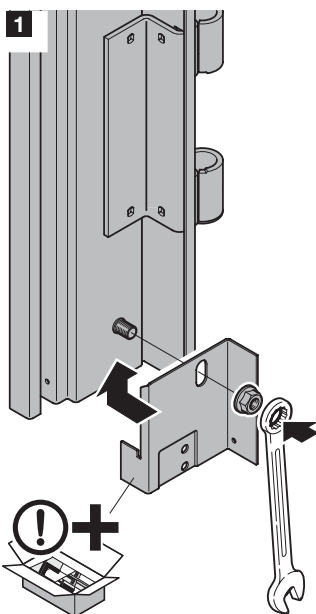


8.5c

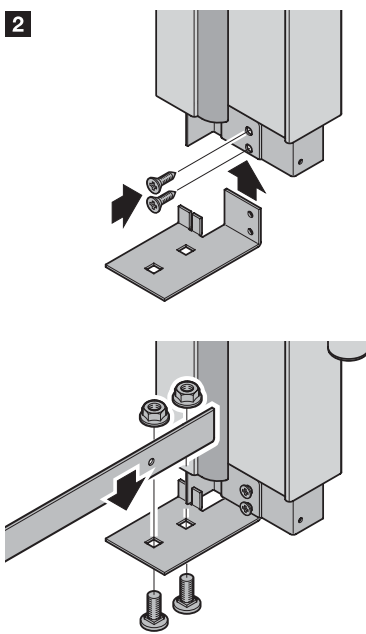
4.3



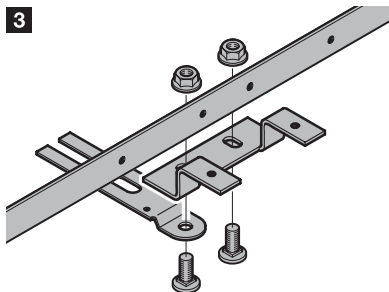
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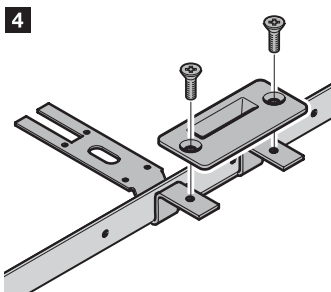
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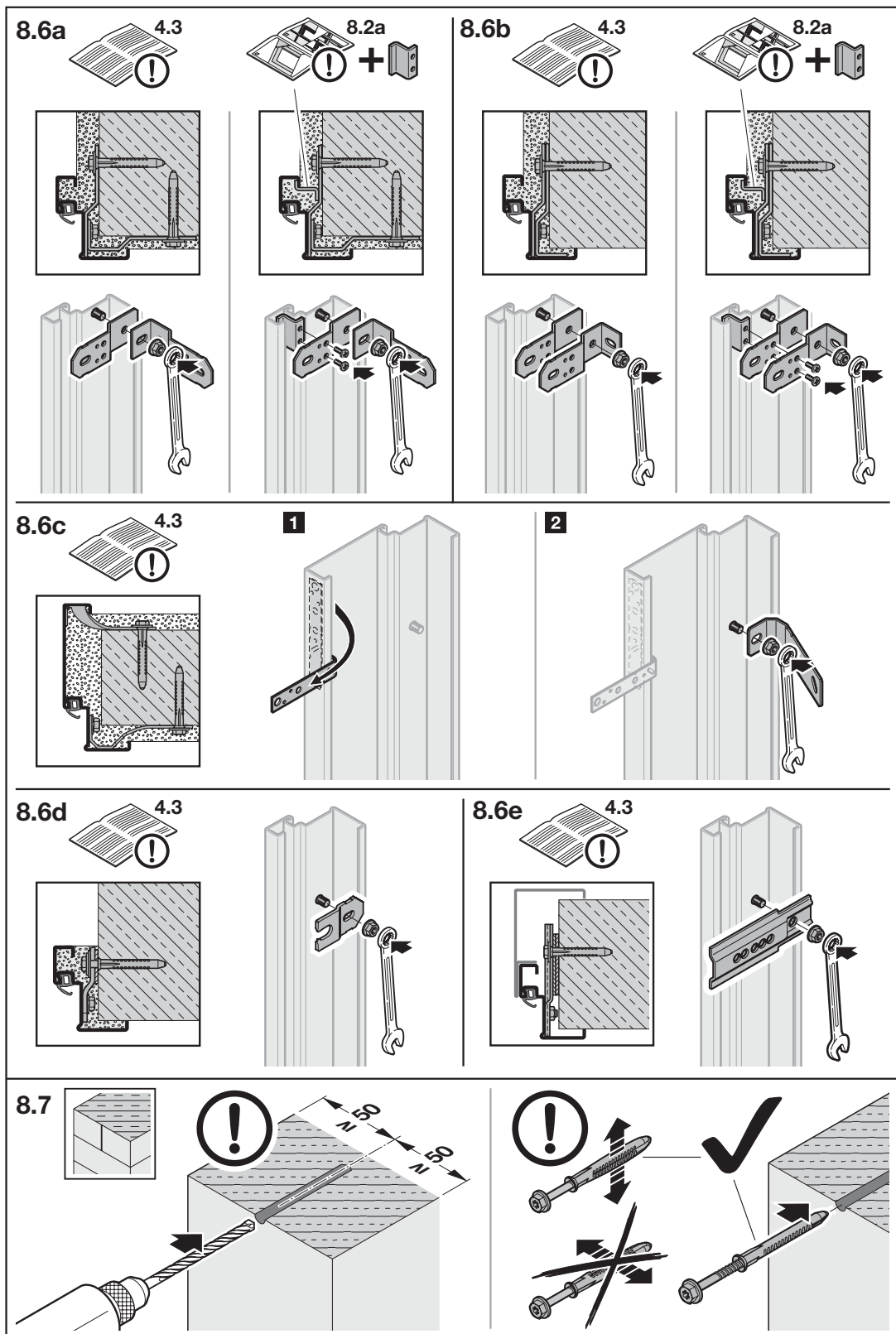


3



4



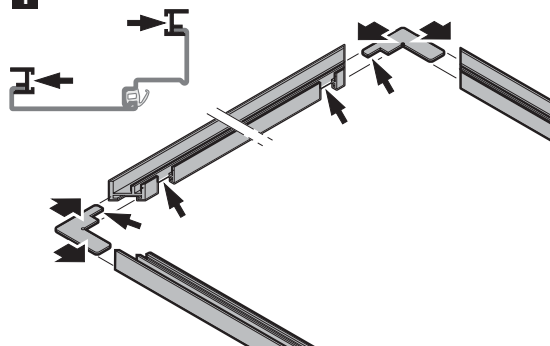


8.8

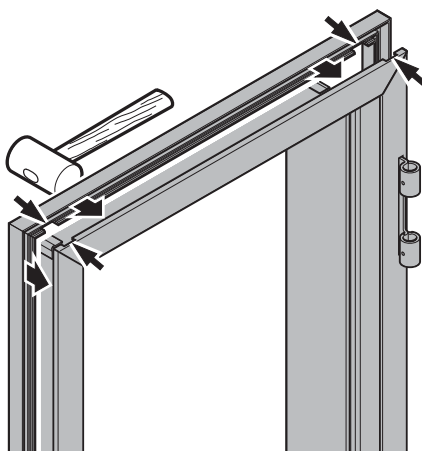
4.3



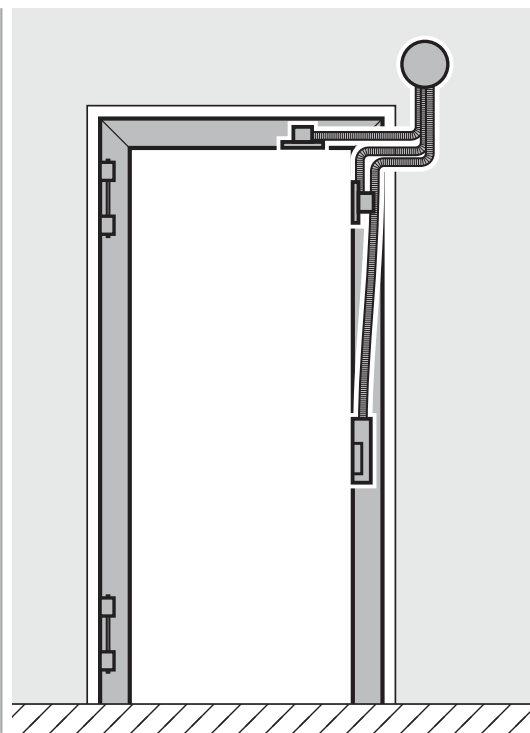
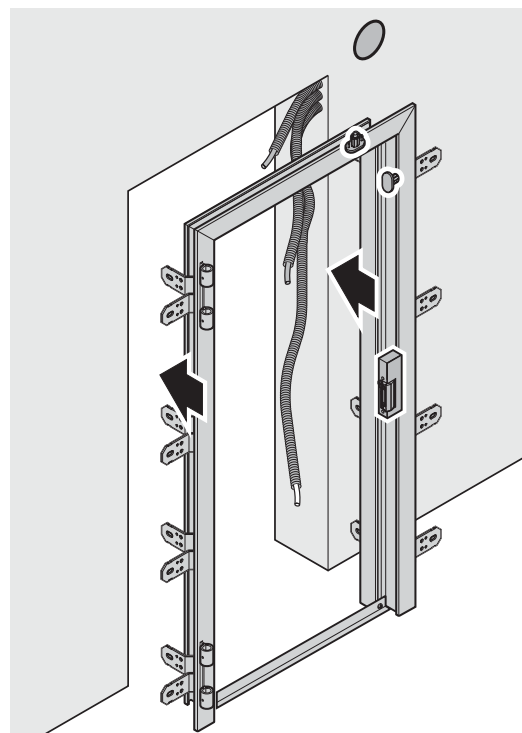
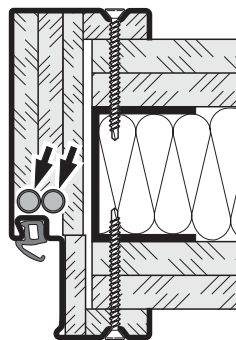
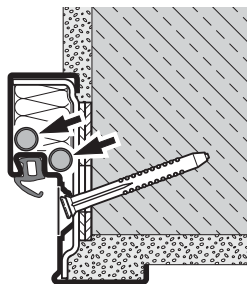
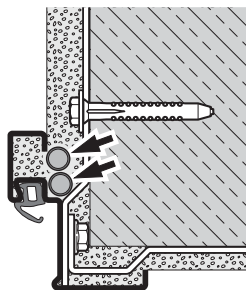
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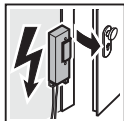
2



8.9



8.10



AC

DC



I.S.T. Systems

FT200/FT201

x

x

x

x

effeff

142 UF

x

x

x

x

x

143

x

x

x

x

x

x

14/34

x

x

x

x

Dorma

Basic

x

x

x

x

Lucky Basic 448

x

x

x

x

Smoke

x

x

x

x

x

Lucky Smoke 448

x

x

x

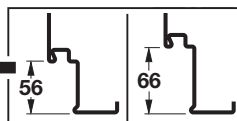
x

x

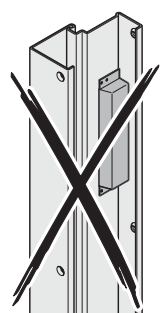
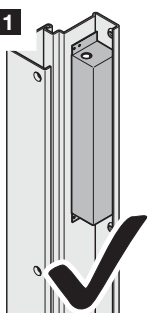
8.11



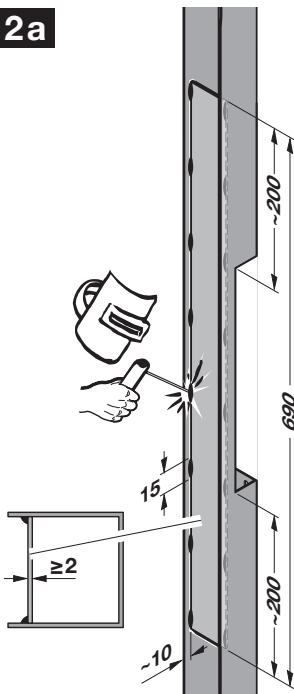
8.12



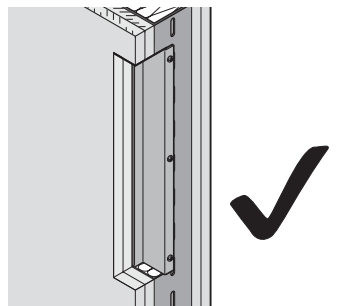
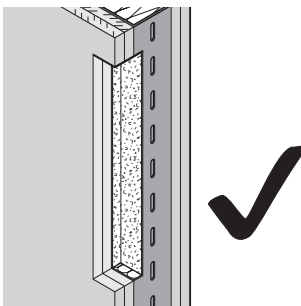
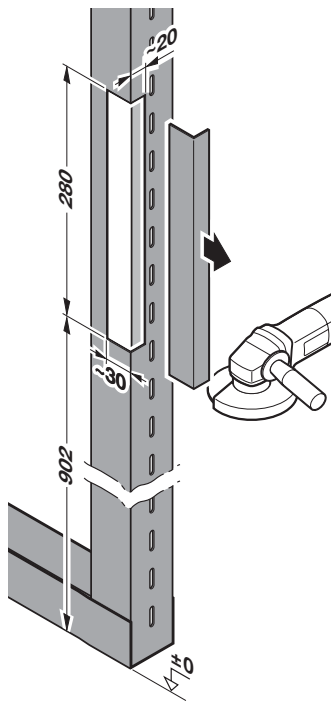
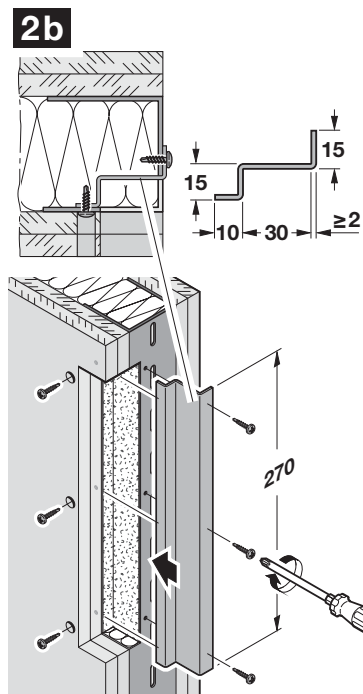
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2a



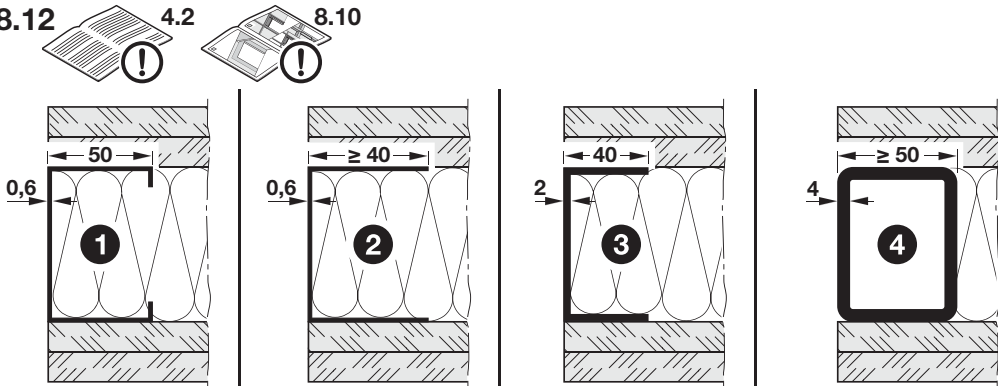
2b



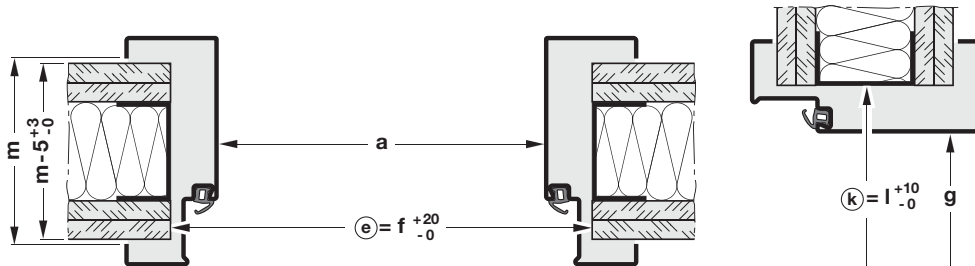
8.12

4.2

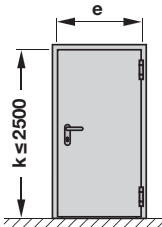
8.10



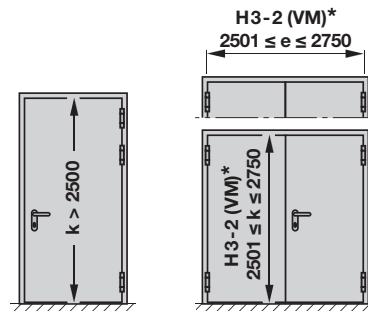
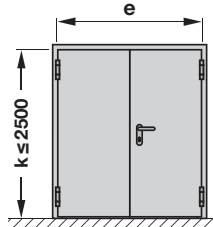
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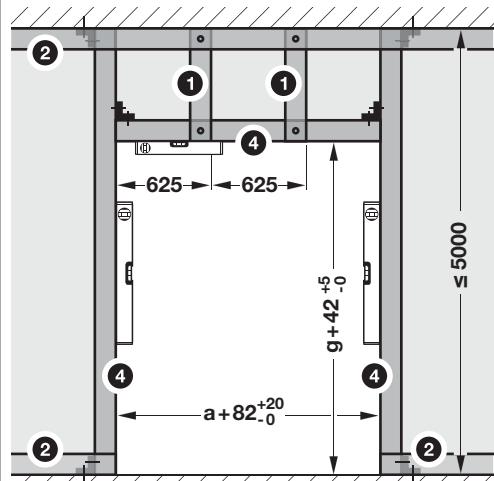
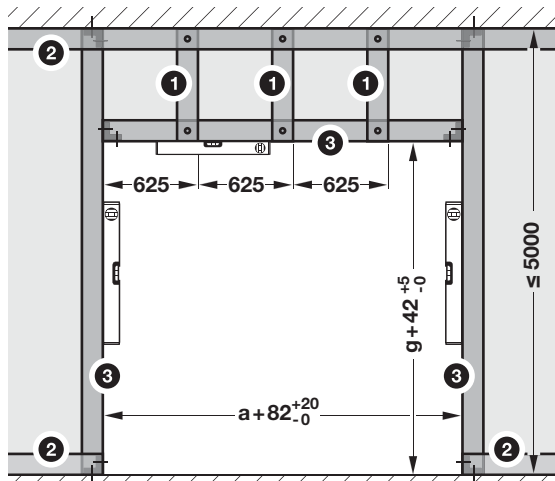
$e \leq 1320$ (max. T90/EI₂90)
 $e \leq 1500$ (max. T30/EI₂30)



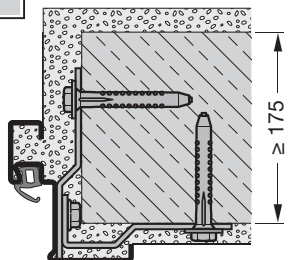
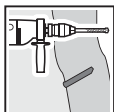
$e \leq 2500$ (max. T90/EI₂90)
 $e \leq 3000$ (max. T30/EI₂30)



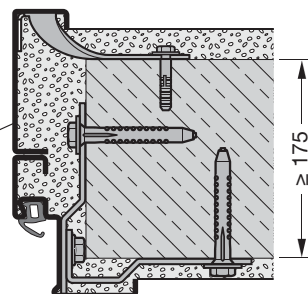
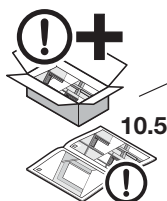
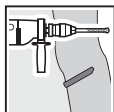
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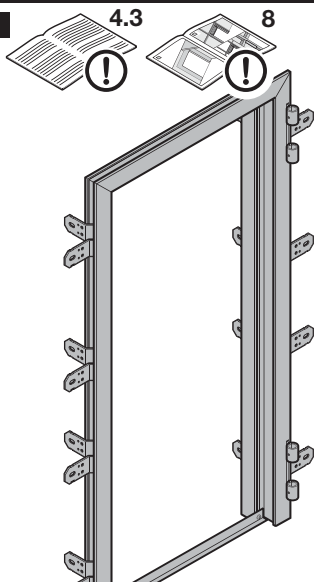
9/A1



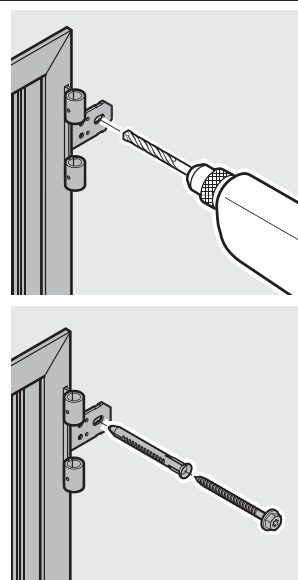
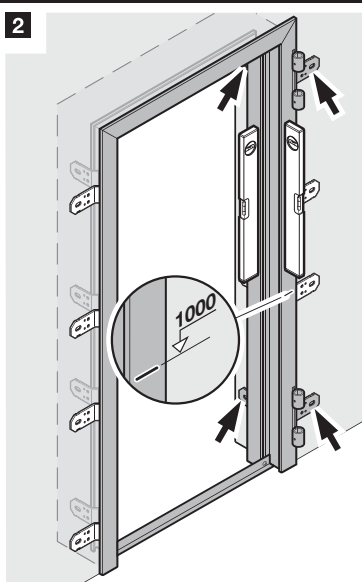
9/A2



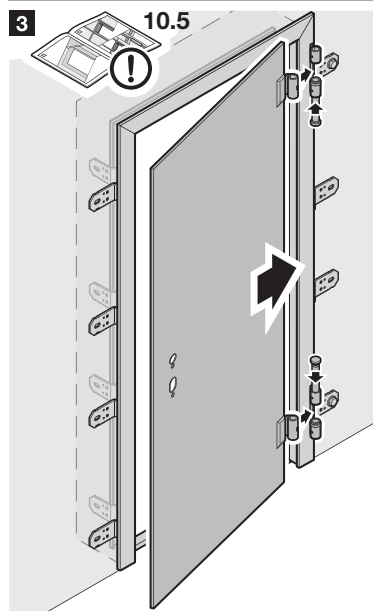
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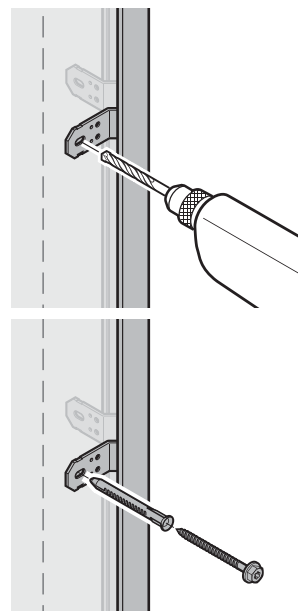
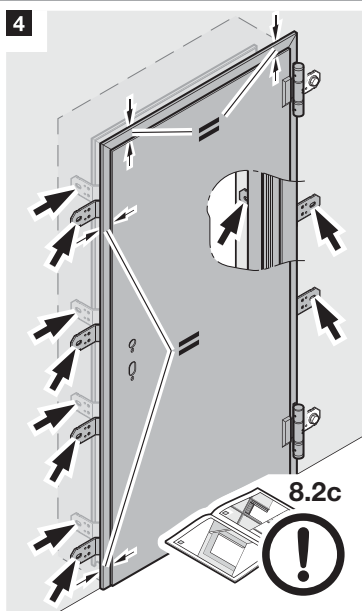
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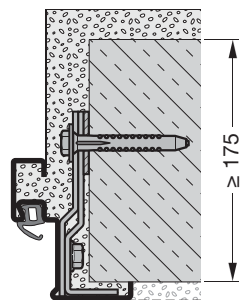
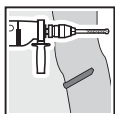
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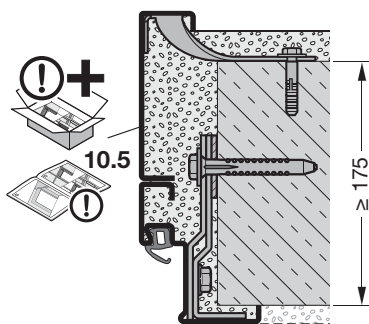
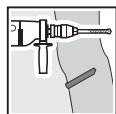
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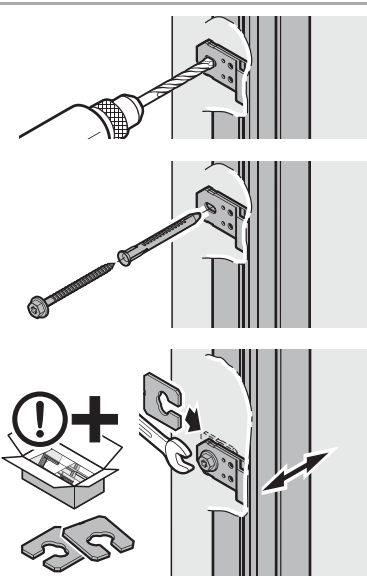
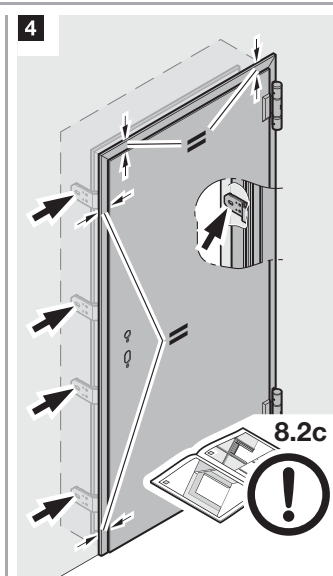
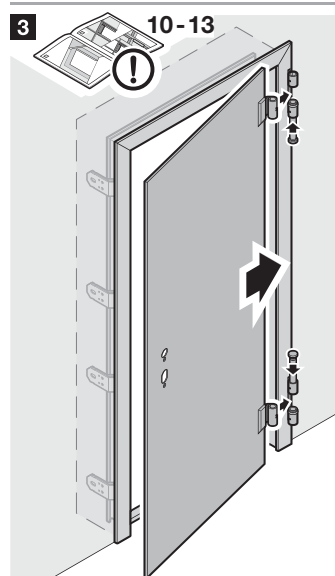
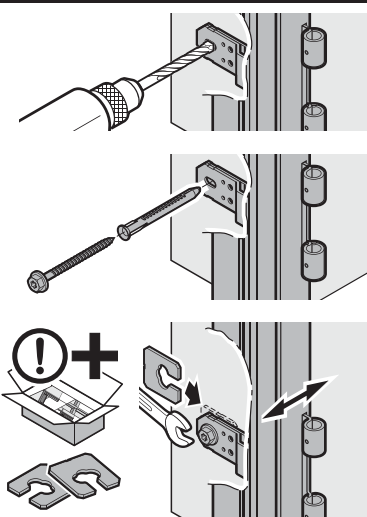
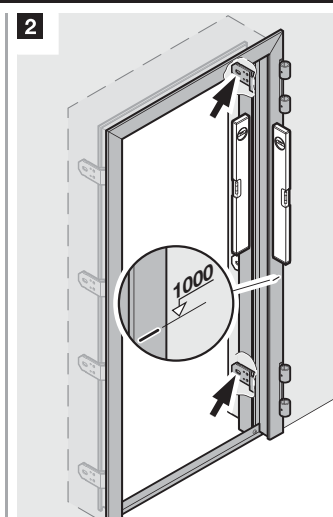
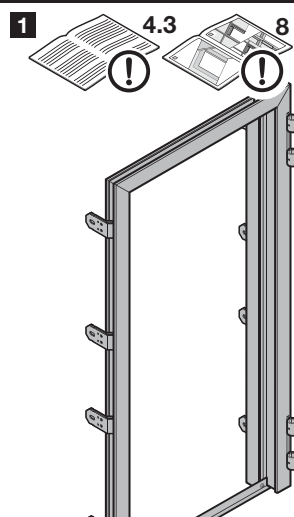
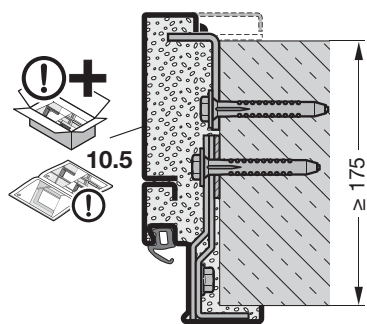
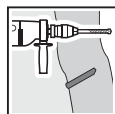
9/A3



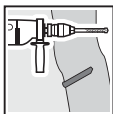
9/A4



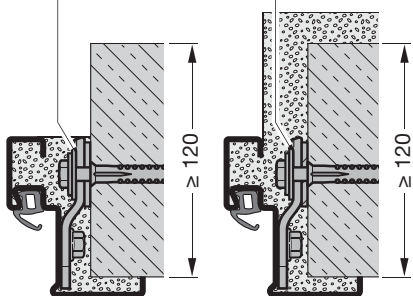
9/A5



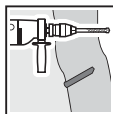
9/A6



DIN 9021-8.4-140 HV

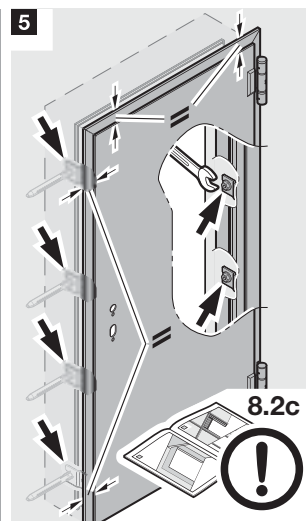
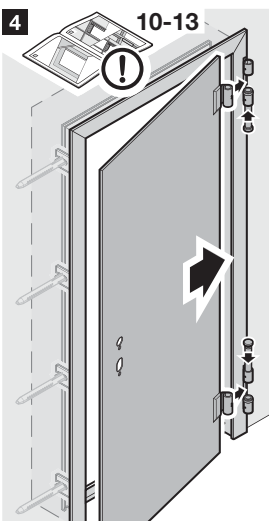
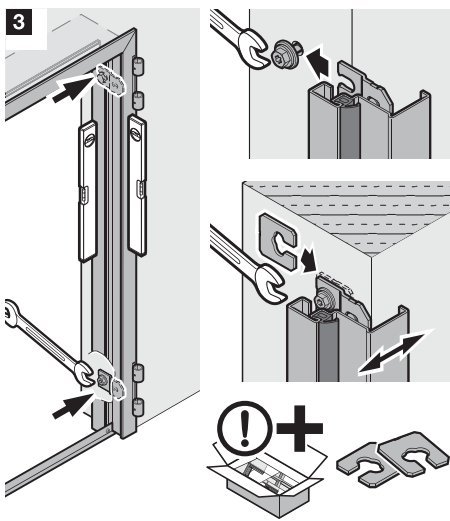
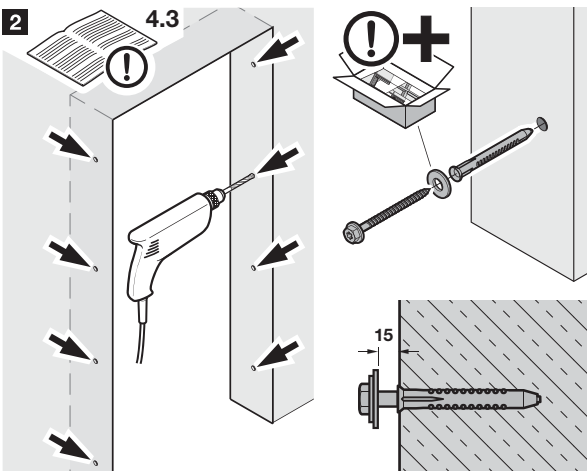
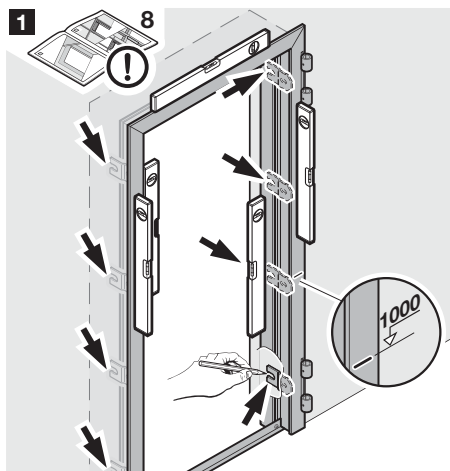
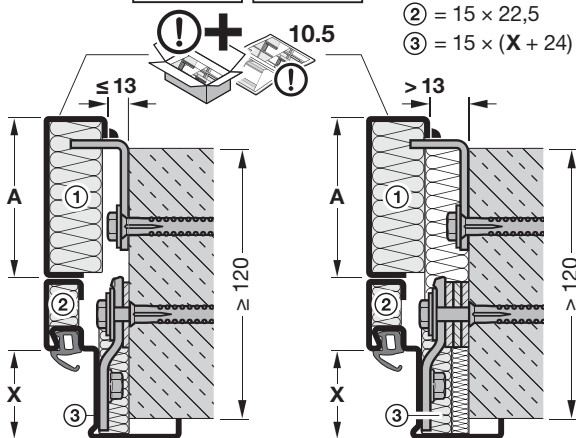


9/A7
max. T30

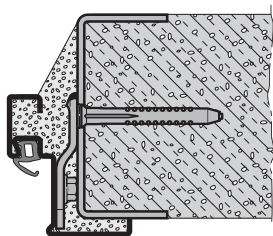
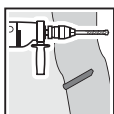


$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100

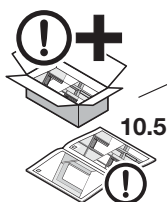
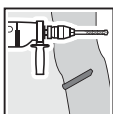
- ① = $30 \times (A - 5)$
- ② = $15 \times 22,5$
- ③ = $15 \times (X + 24)$



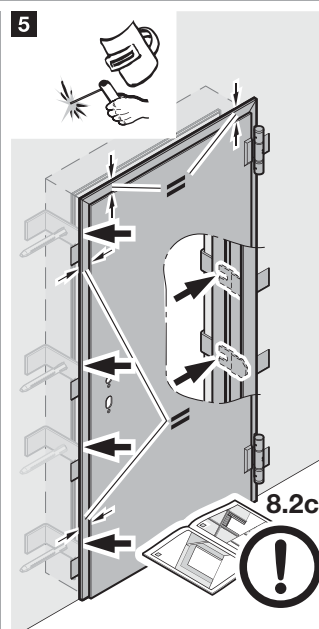
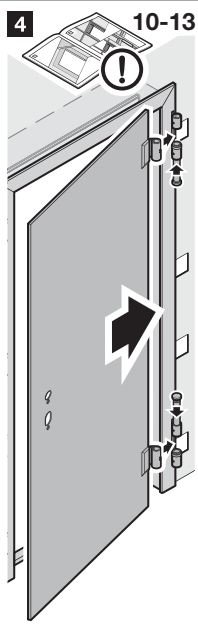
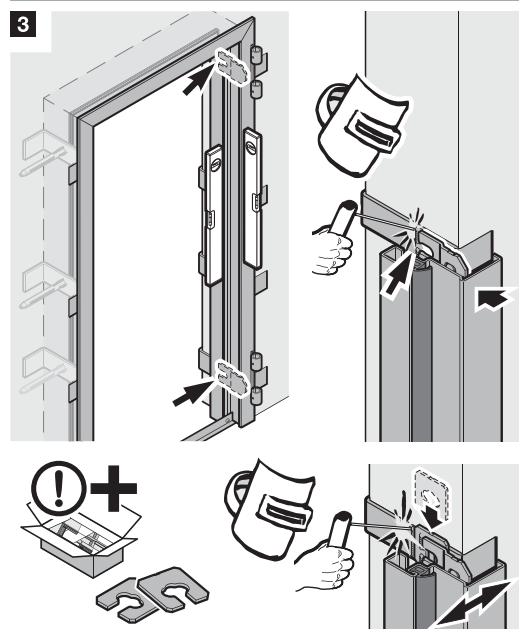
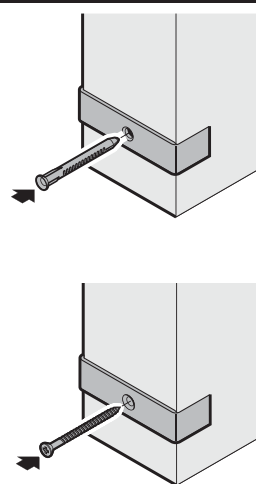
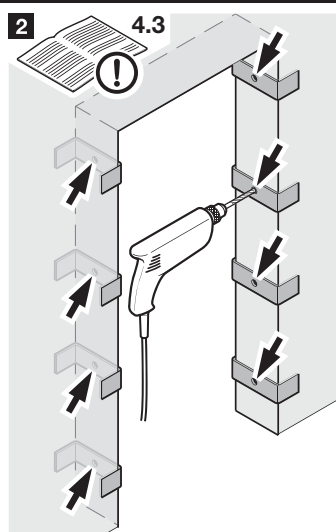
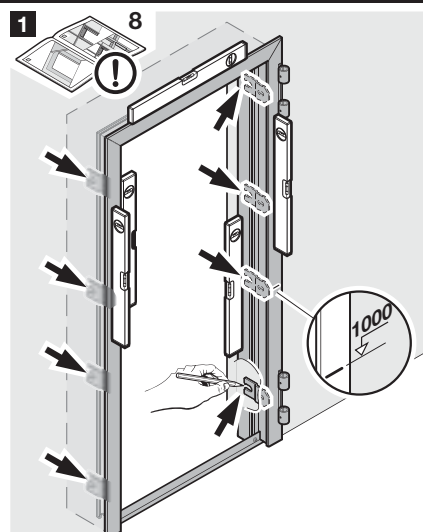
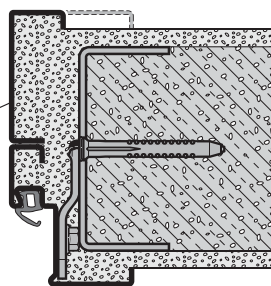
9/A8



9/A9



10.5

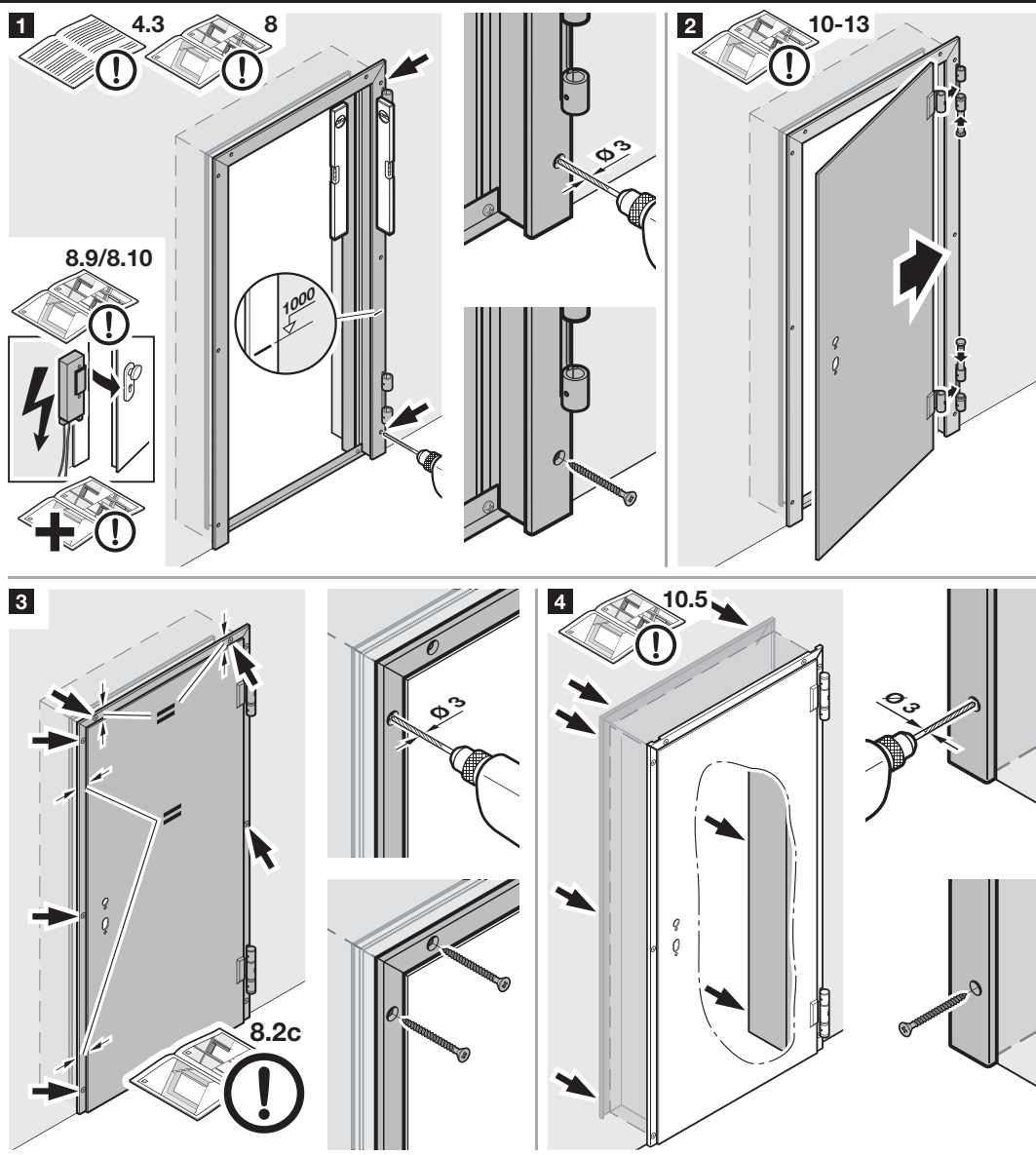
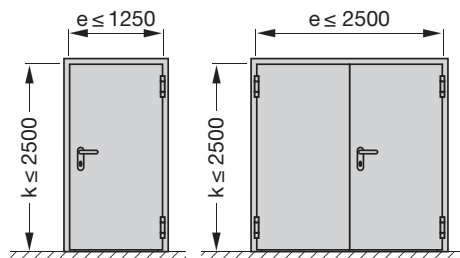
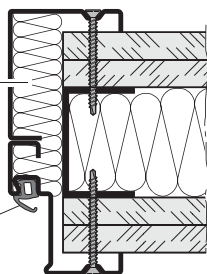


9/A10

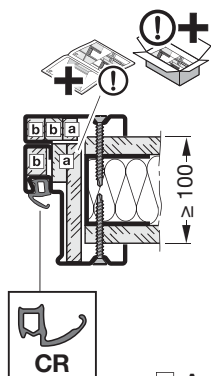
max. T30/
EI₂₃₀



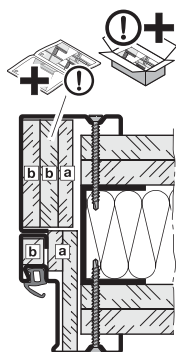
$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



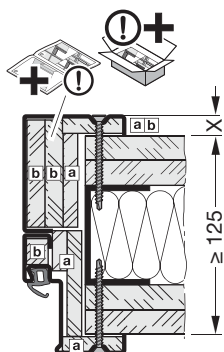
9/A11
T30/EI₂30



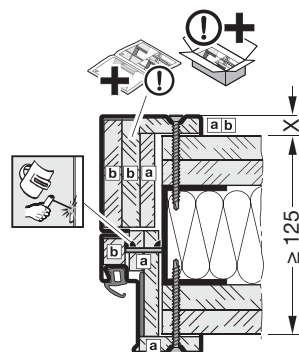
9/A12
T30/EI₂30



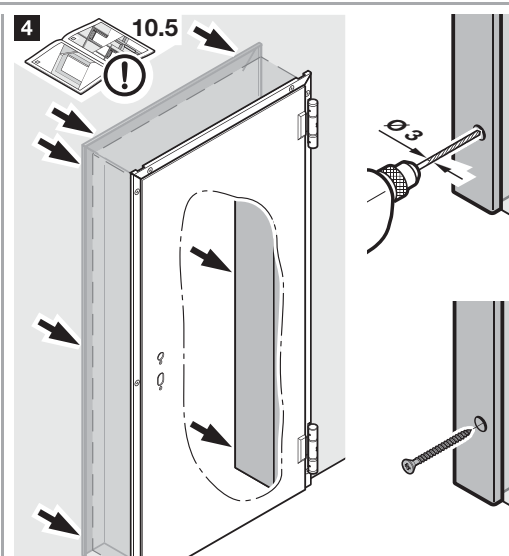
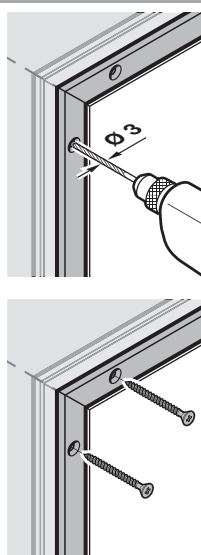
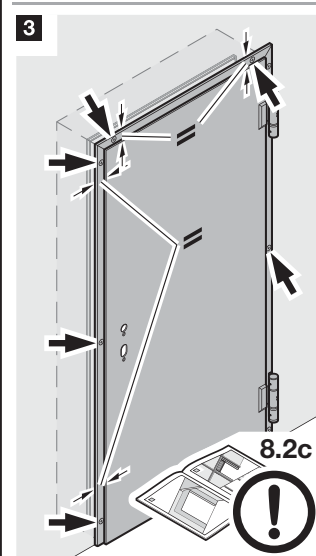
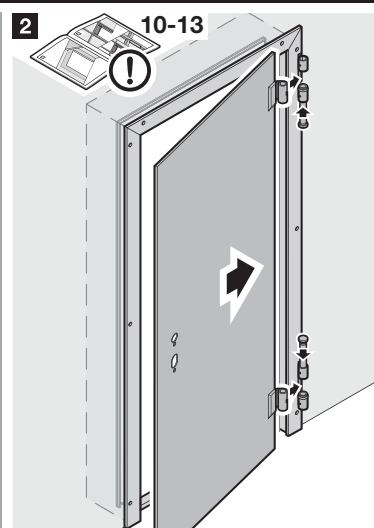
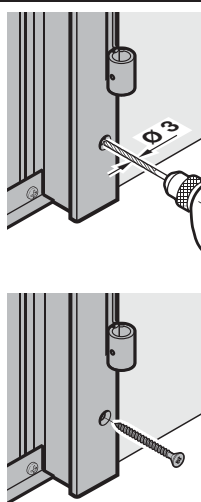
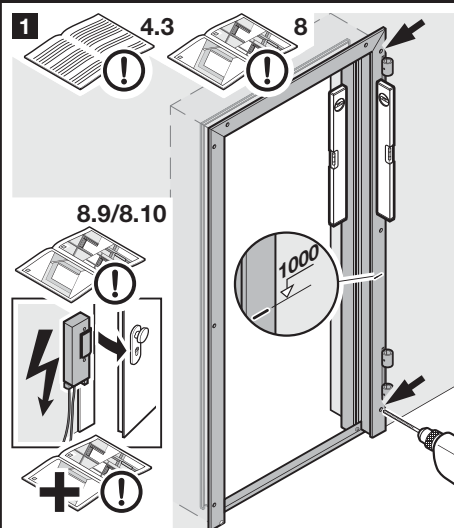
9/A13
T60/EI₂60



T90/EI₂90

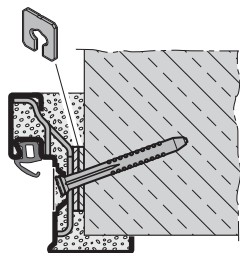
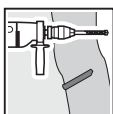


a A-9,5-EN 520 / b A-12,5-EN 520 / X = 10 → a / X = 15 → b



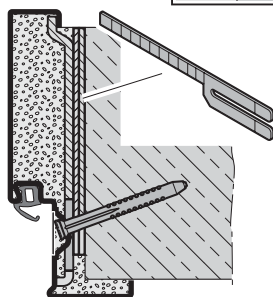
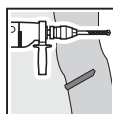
9/A14

max. T30/
EI₂30

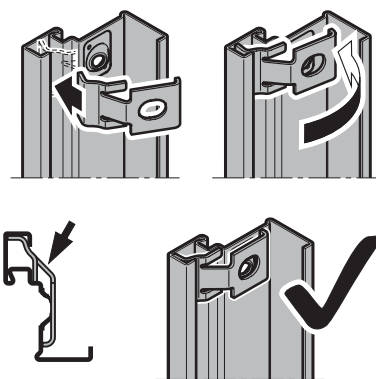


9/A15

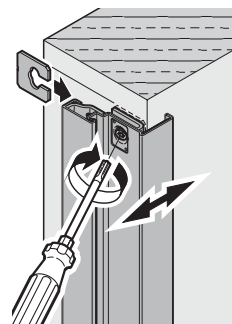
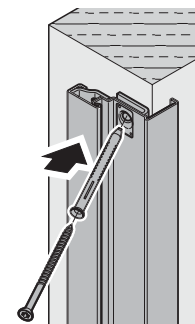
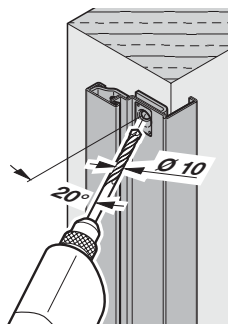
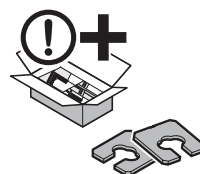
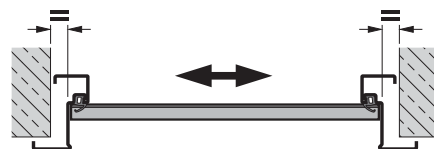
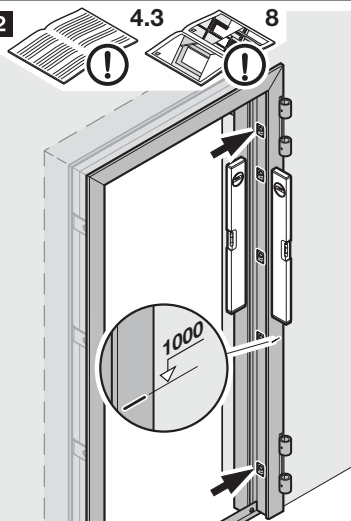
max. T90/
EI₂90



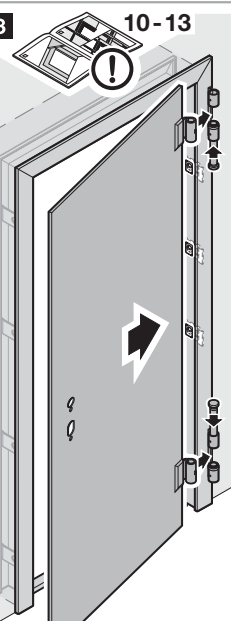
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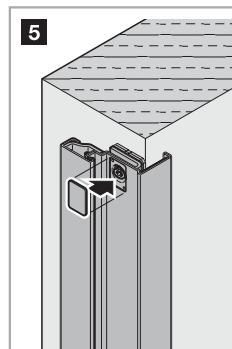
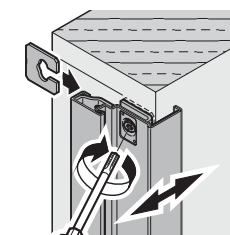
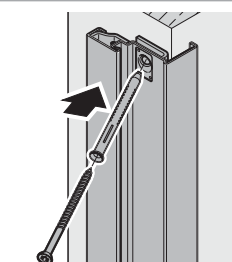
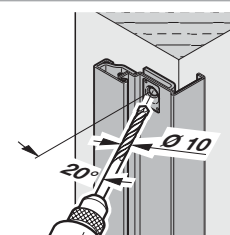
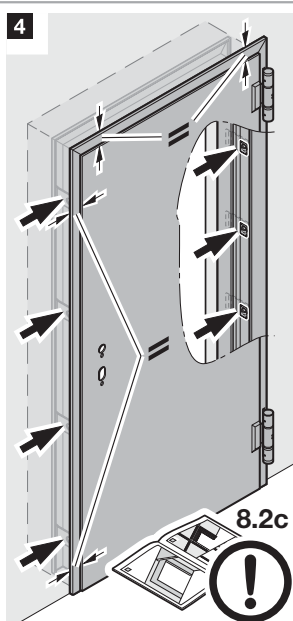
2



3

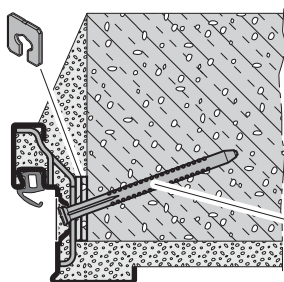
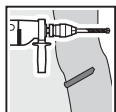


4



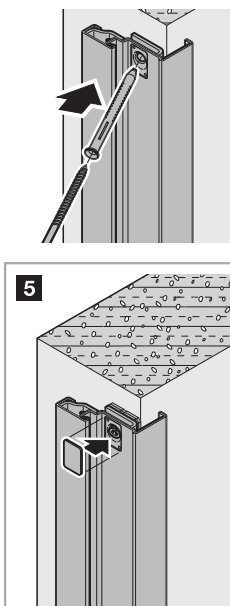
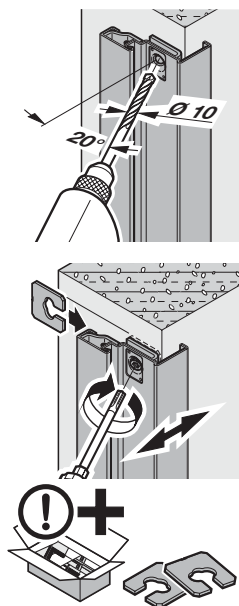
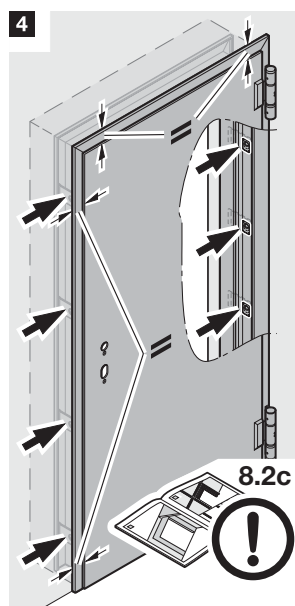
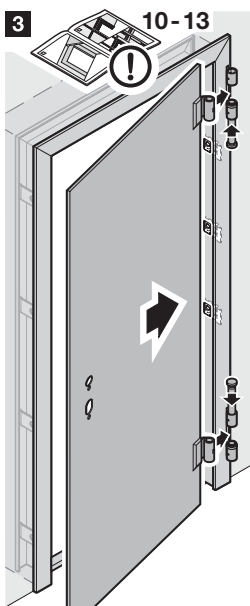
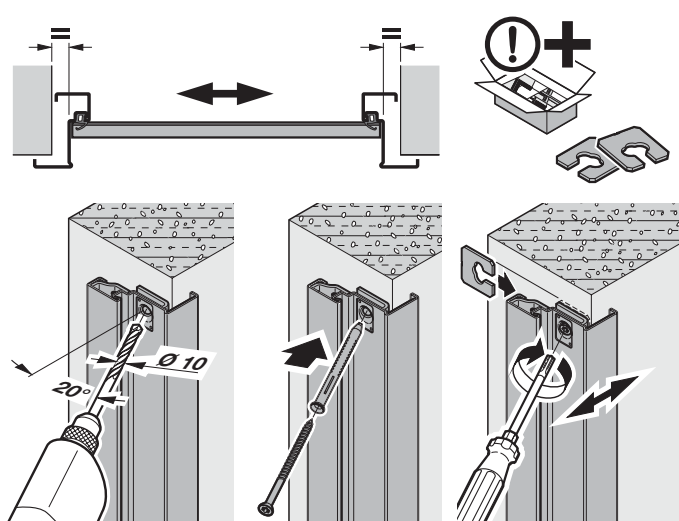
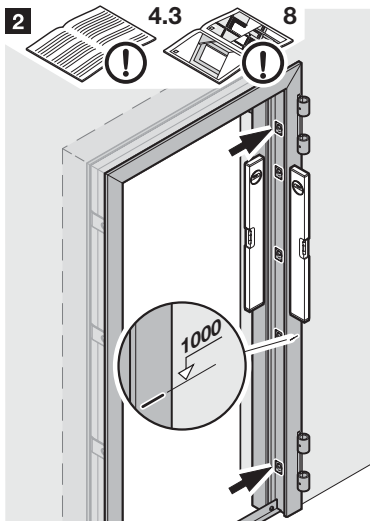
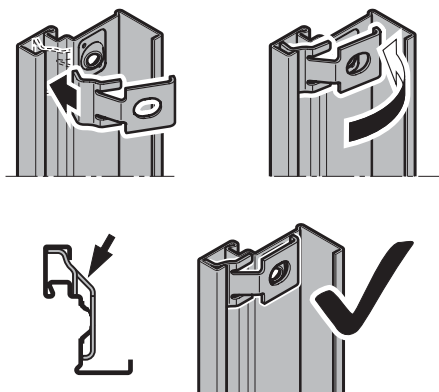
5

9/A16
max. T30

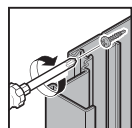
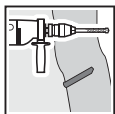


FUR 10 x 160

1



9/A17
max. T30

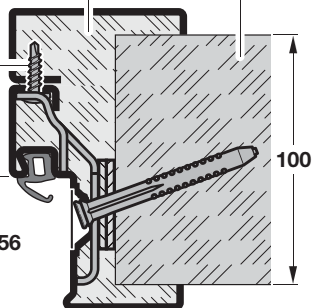


DIN 7504 ST
4,8 x 19-N-H
DIN 7981
4,8 x 16

max. 56

Multi Gips
FG70

VG ORTH

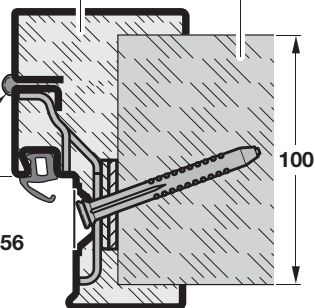


$2\sqrt{x} > 10$

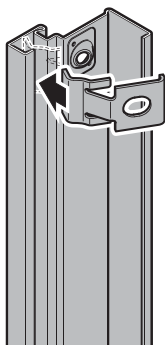
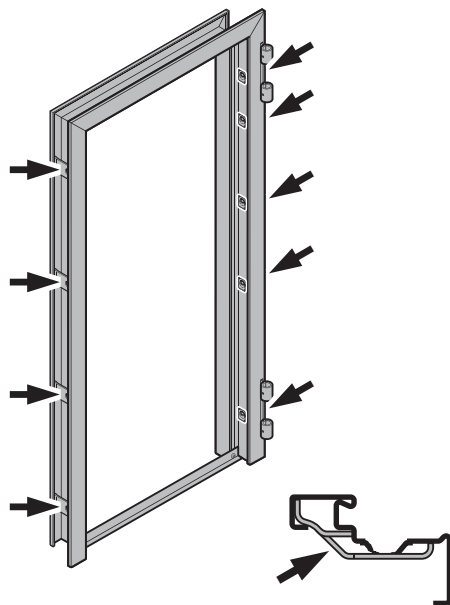
max. 56

Multi Gips
FG70

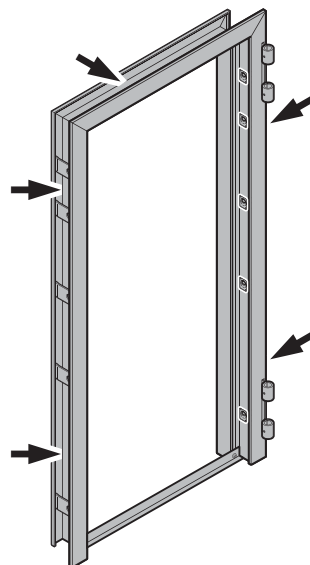
VG ORTH



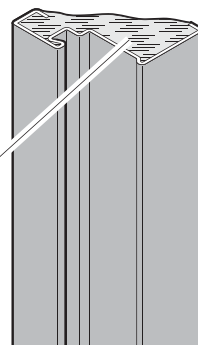
1



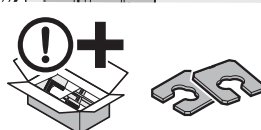
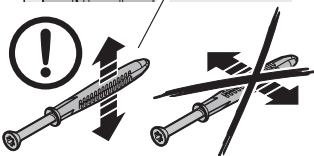
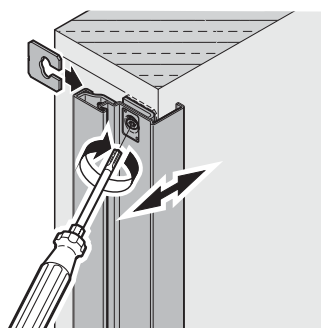
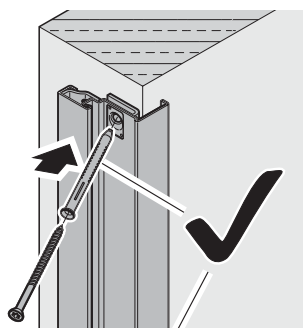
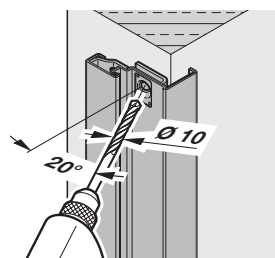
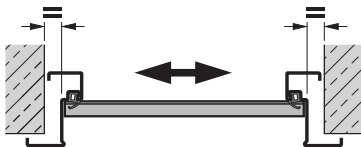
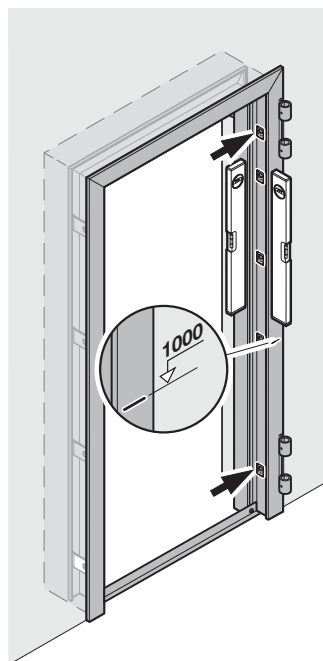
2



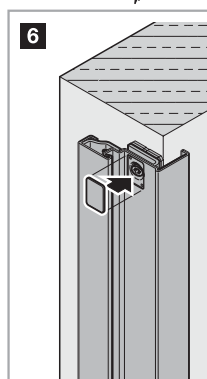
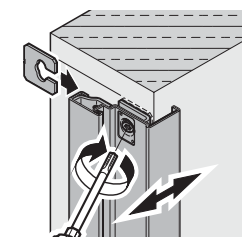
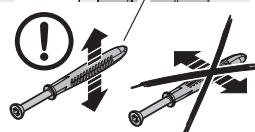
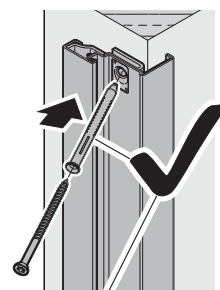
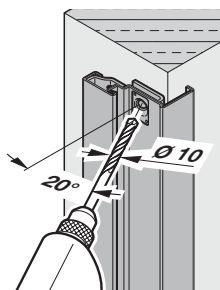
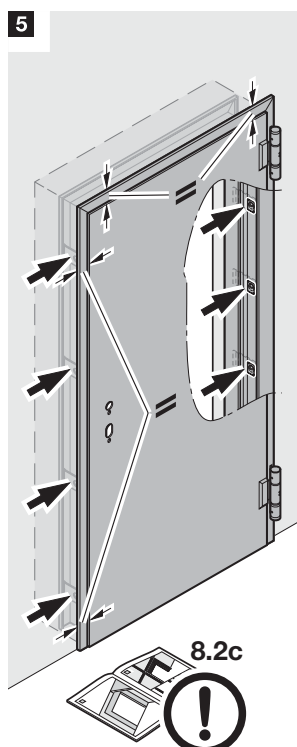
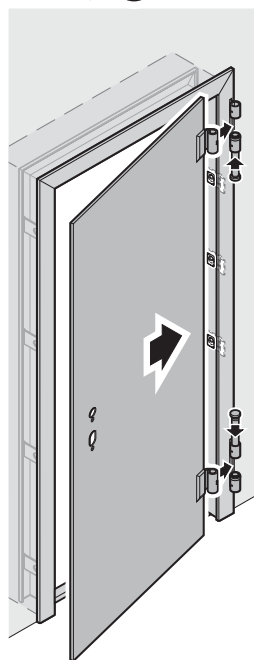
Multi Gips
FG70



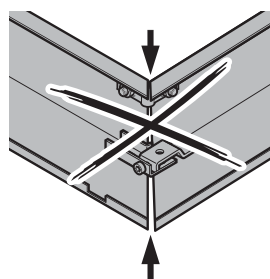
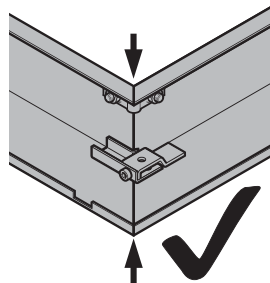
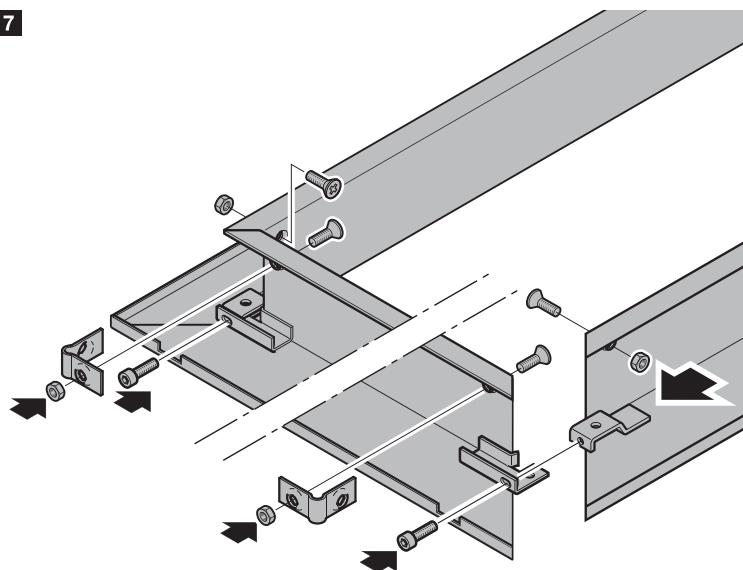
3 4.2/4.3 8



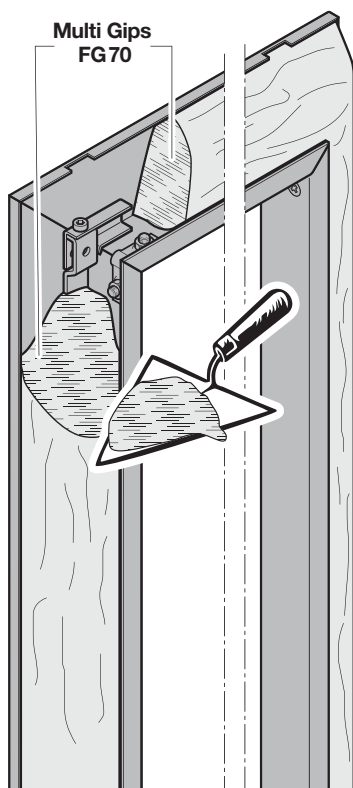
4 10-13



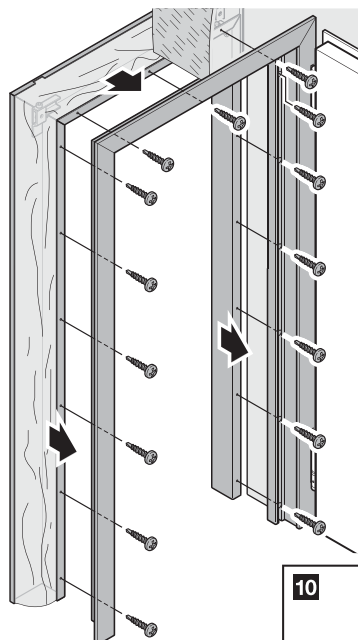
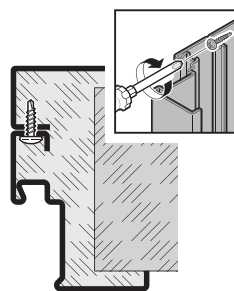
7



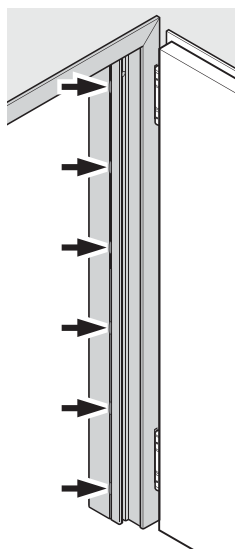
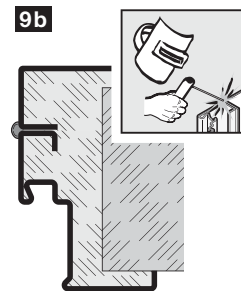
8



9a



9b



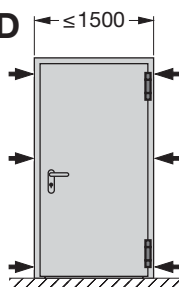
10



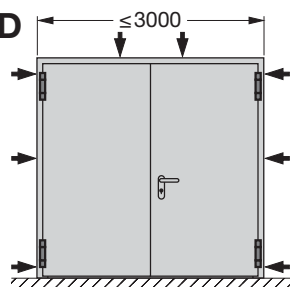
10.7a

9/B1-B16

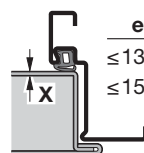
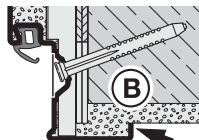
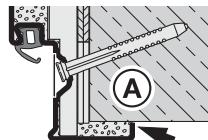
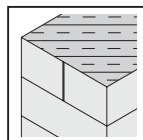
D65 - 1 OD



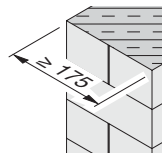
D65 - 2 OD



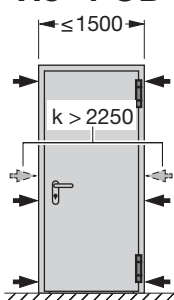
➔ Fischer: FUR 10 × 100



e	X
≤ 1320	1,0/1,5
≤ 1500	1,0



H3-1 OD

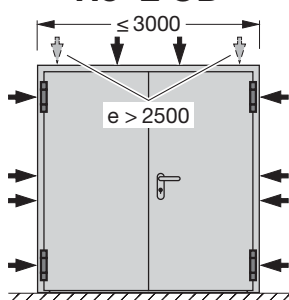


k ≤ 2500 ➔

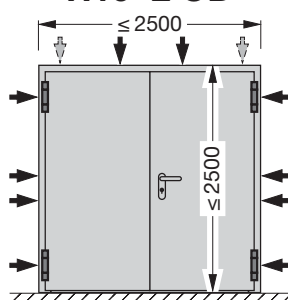
3) Fischer: FUR 10 × 100

k > 2500 ➔ 4) Fischer: FUR 10 × 160

H3-2 OD

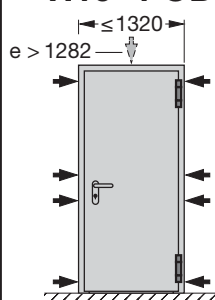


H6-2 OD
H16-2 OD

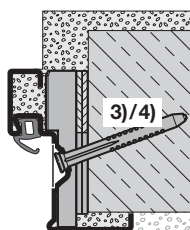


➔ 4) Fischer: FUR 10 × 160

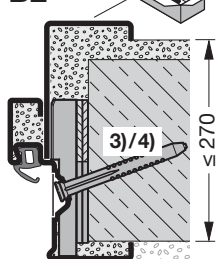
H6-1 OD
H16-1 OD



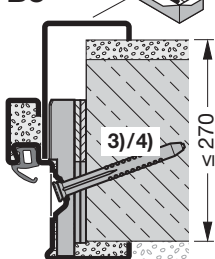
B1



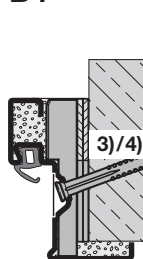
B2



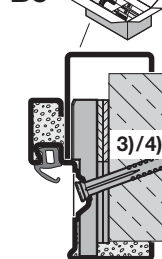
B3



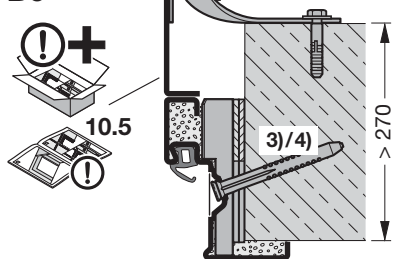
B4



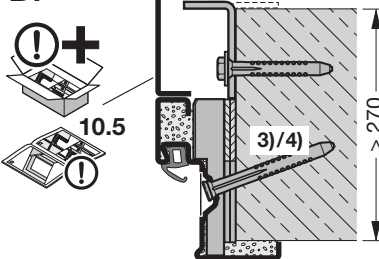
B5



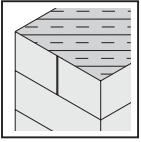
B6



B7

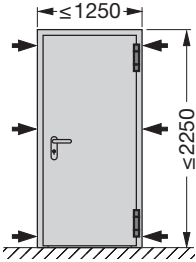


➔ 1 2 3a 4 ...



max. T30/EI₂30

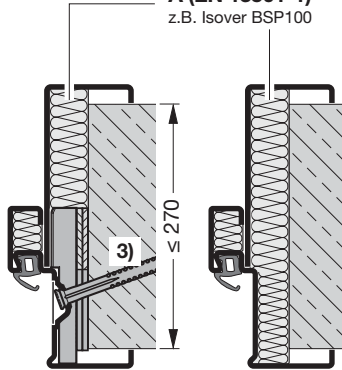
H3-1 OD



B8



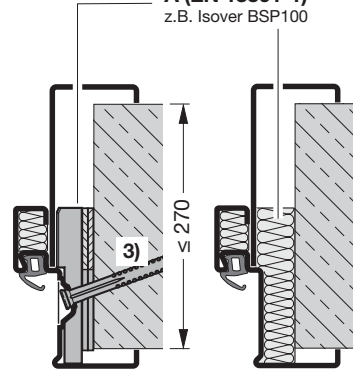
$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



B9

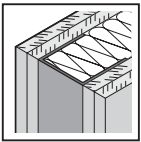


$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



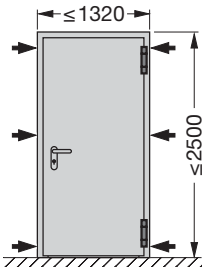
➔ **3) Fischer:** FUR 10 × 100

➔ **1 2 3a 4 ...**



max. T30/EI₂30

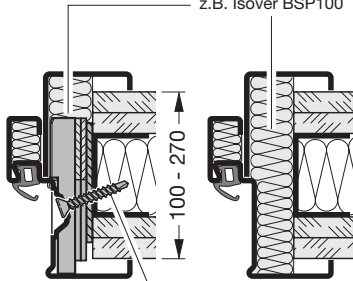
H3-1 OD



B10



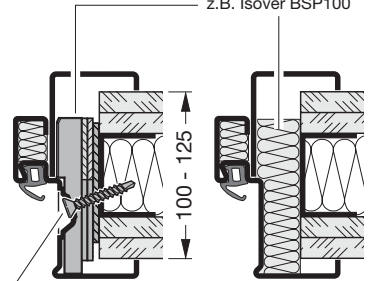
$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



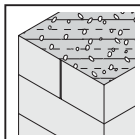
B11



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

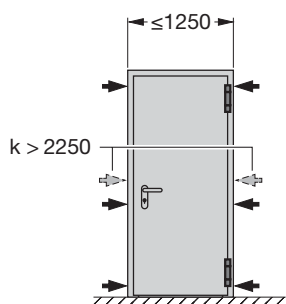


➔ **1 2 3b 4 ...**



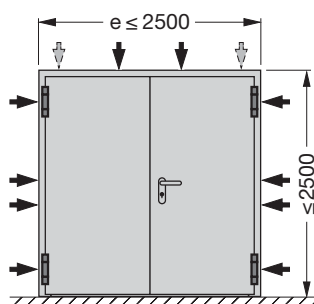
max. T30/EI₂30

H3-1 OD



➔ 4) Fischer: FUR 10 × 160

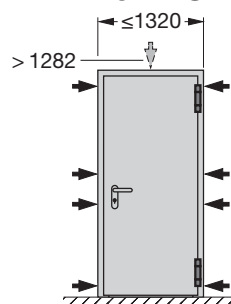
H3-2 OD



➔ 4) Fischer: FUR 10 × 160

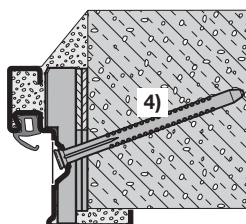


H6-1 OD H16-1 OD

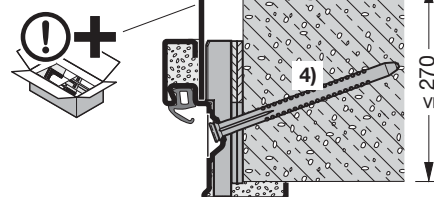


➔ 4) Fischer: FUR 10 × 160

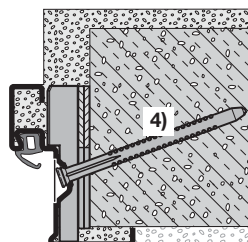
B12



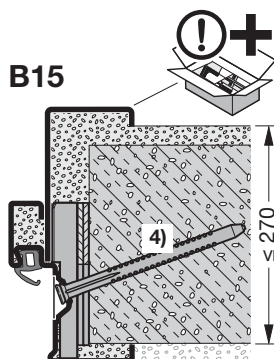
B13



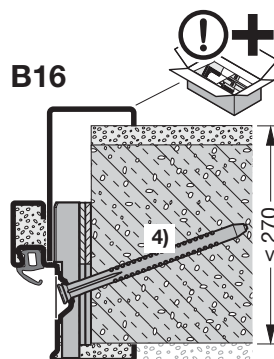
B14



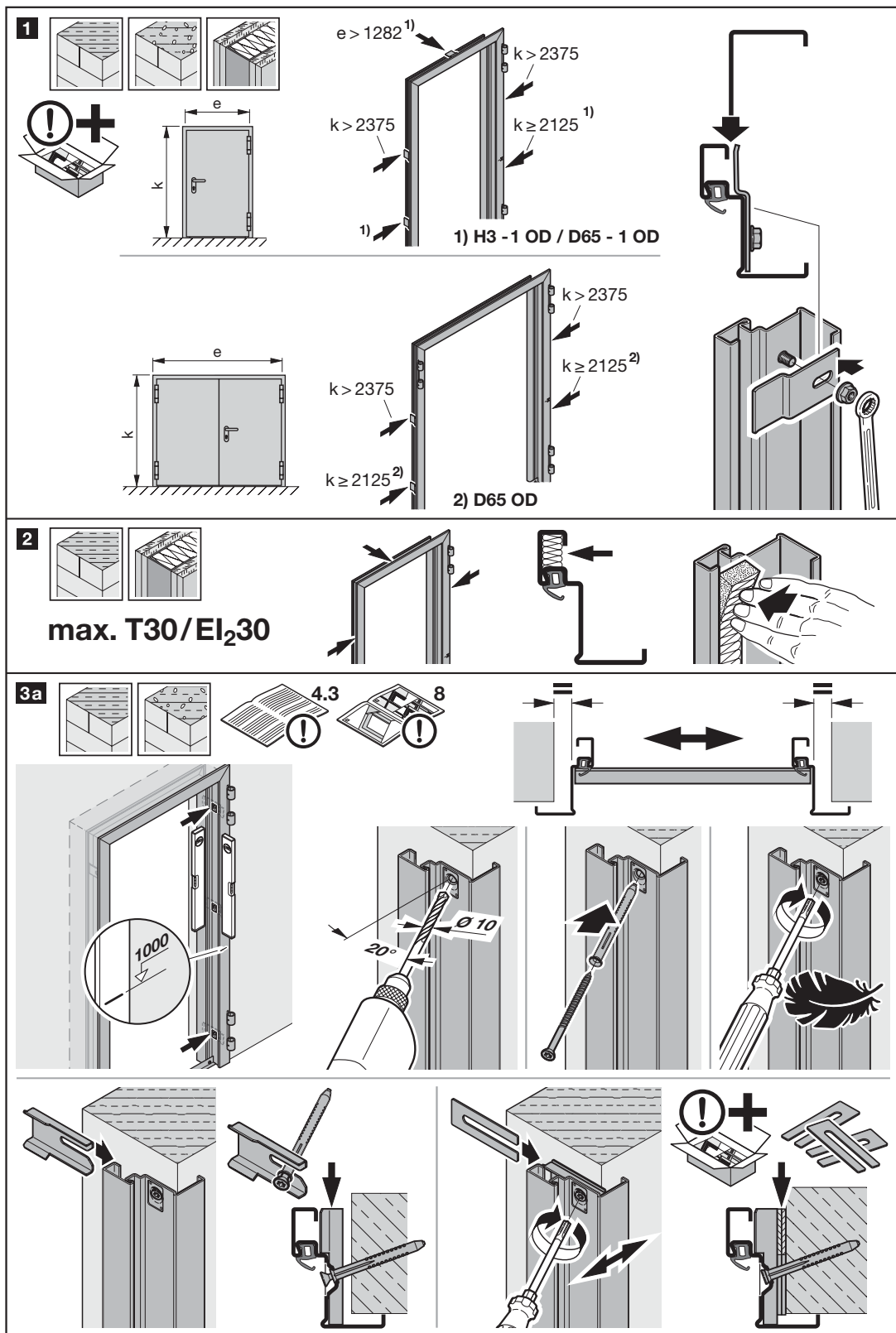
B15

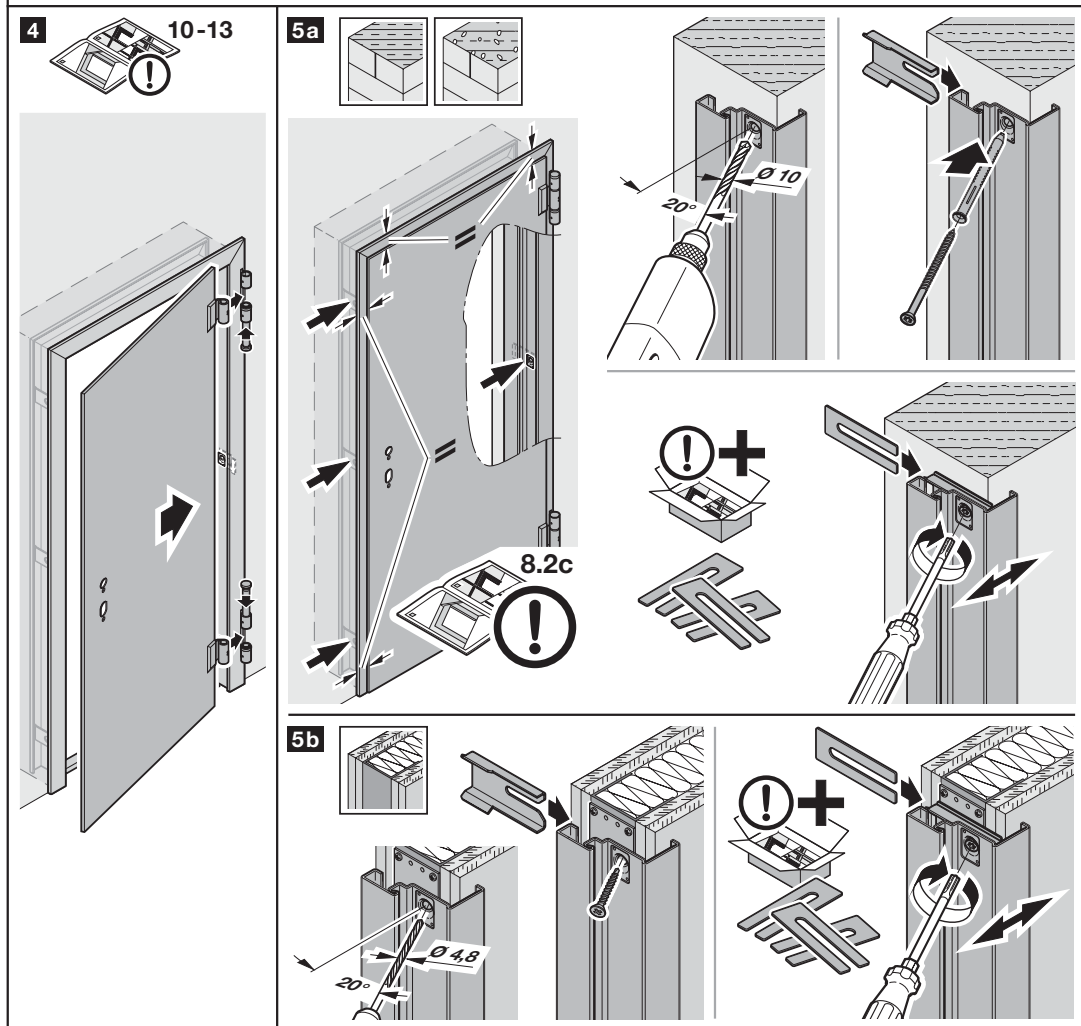
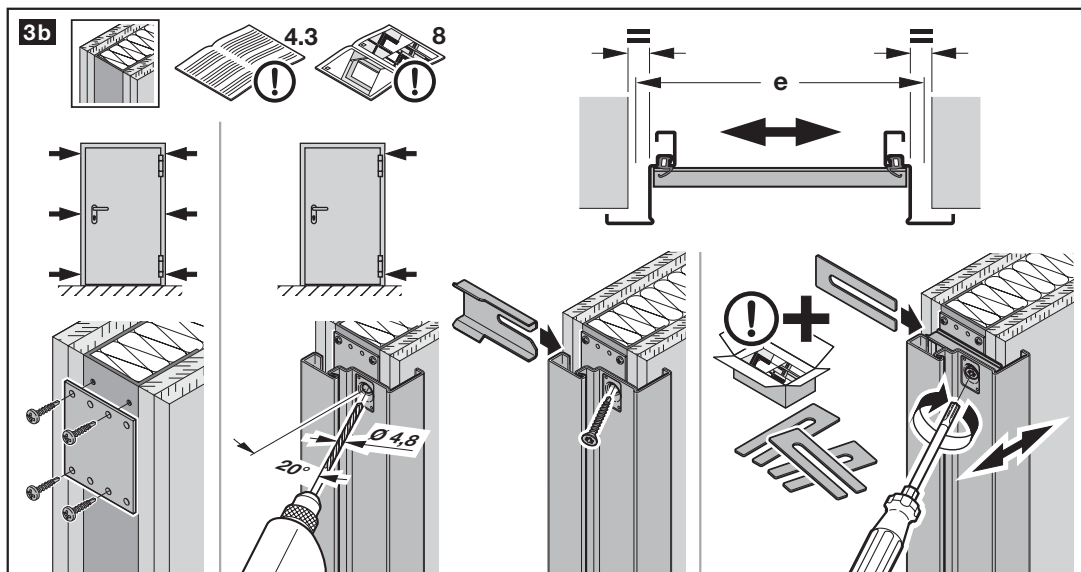


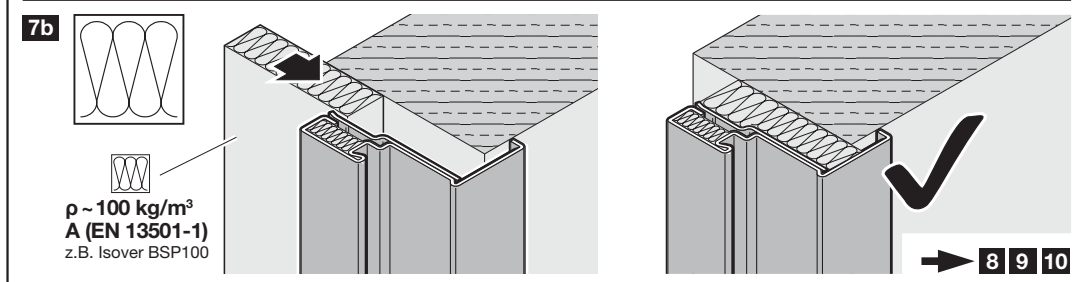
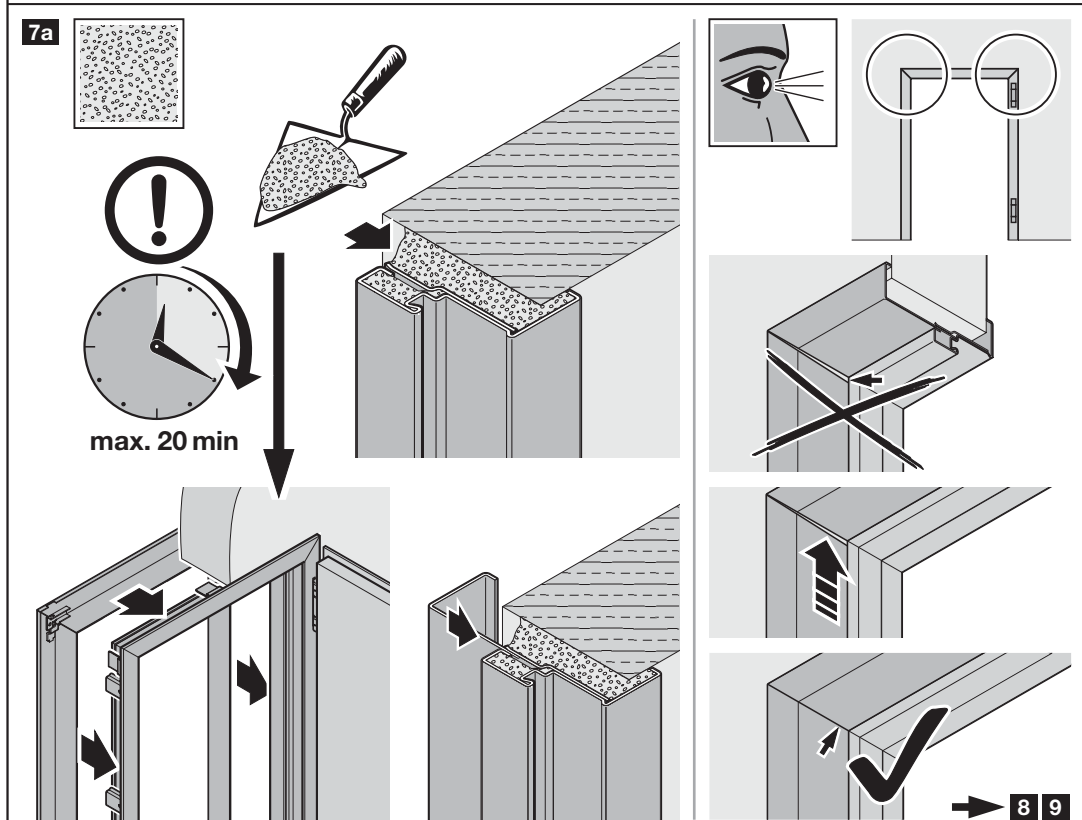
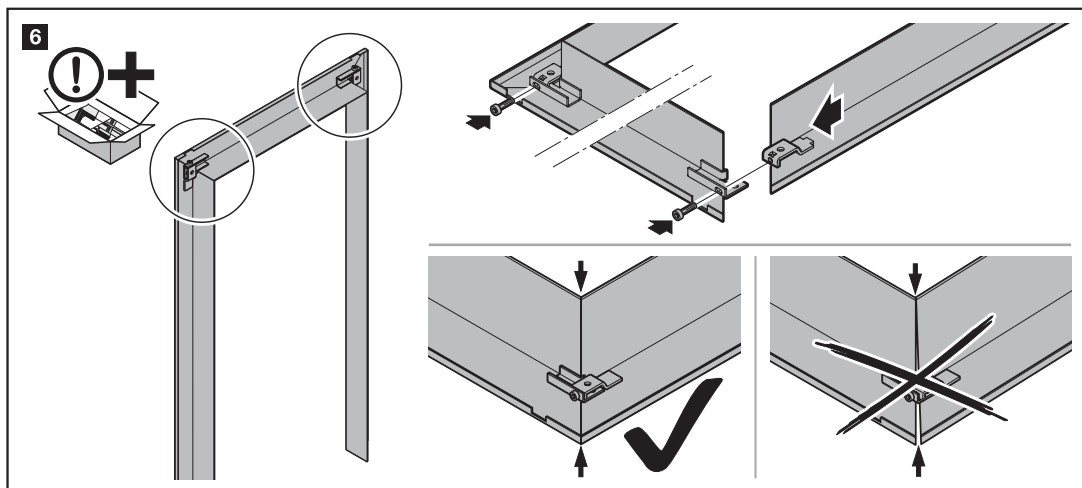
B16



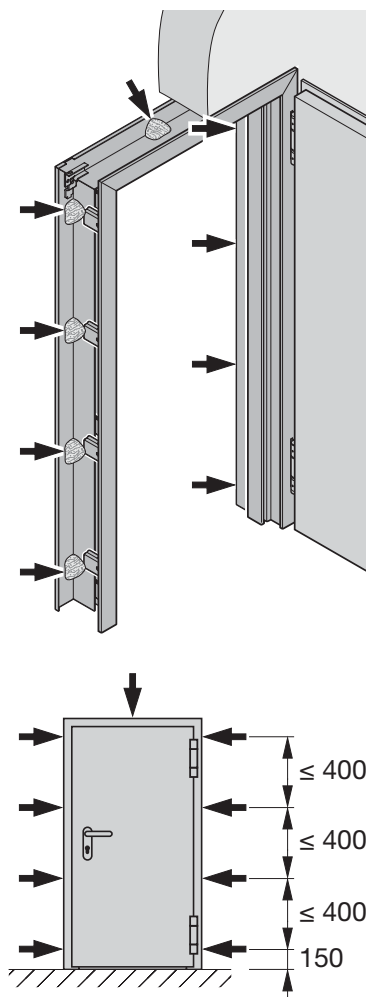
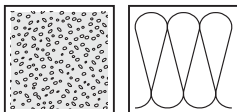
➔ 1 2 3a 4 ...



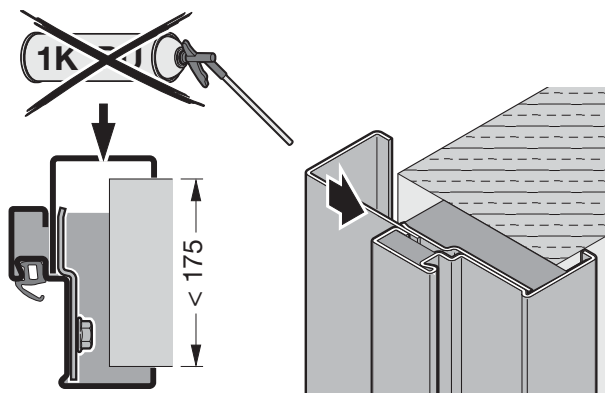




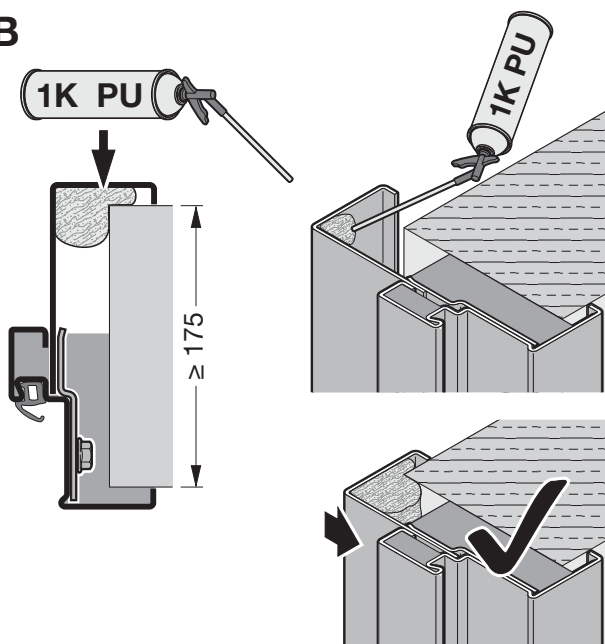
8



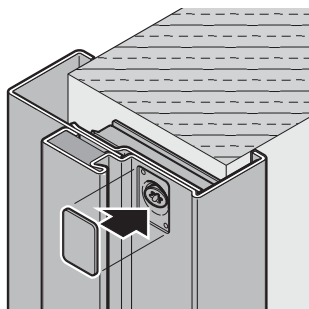
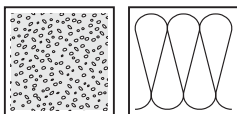
A



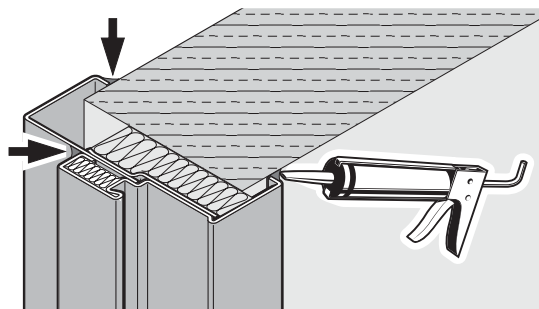
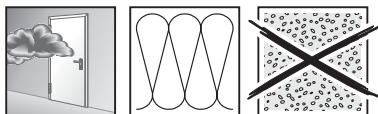
B



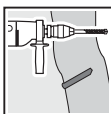
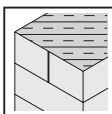
9



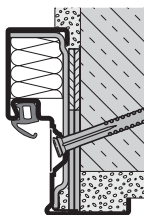
10



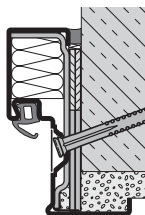
9/C1-C7
max. T30/
EI₂30



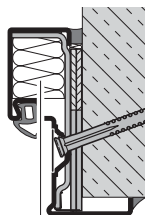
C1



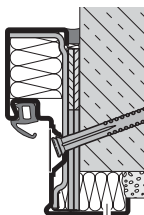
C2



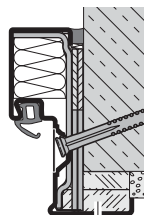
C3



C4

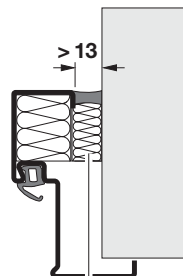


C5



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

A-EN 520

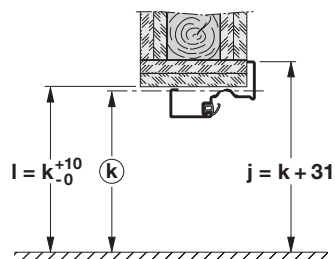
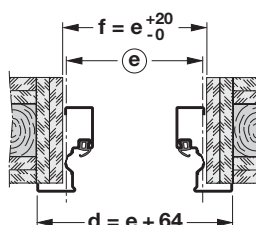


$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100

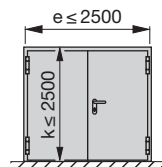
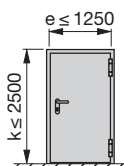
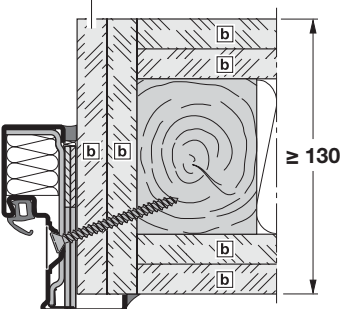
➔ 1a 2 ...

➔ 6

max. T30/
EI₂30

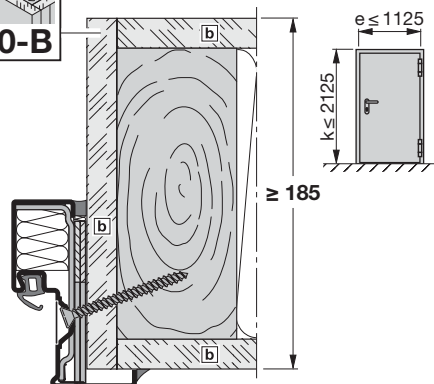


C6 F90B DIN 4102-4 Tab. 49



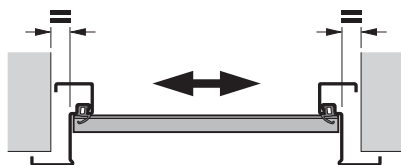
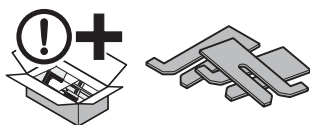
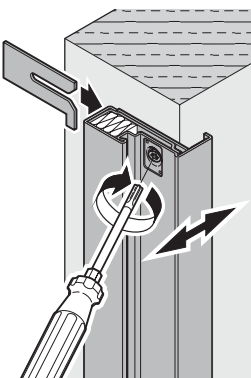
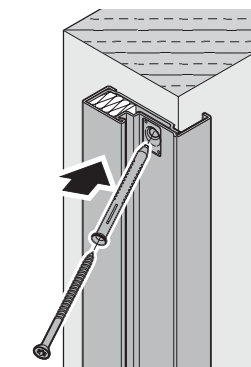
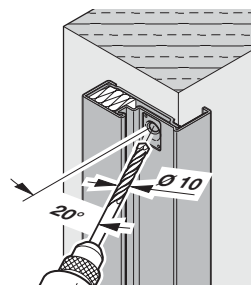
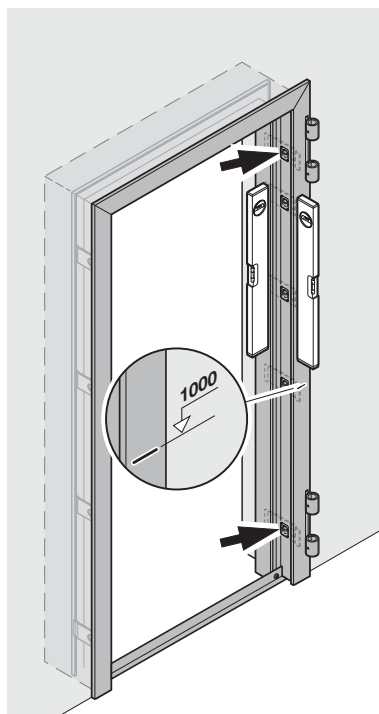
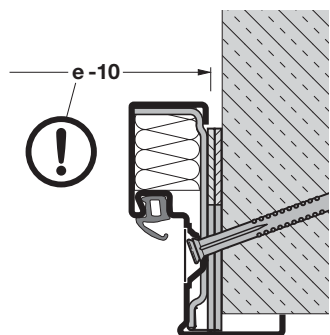
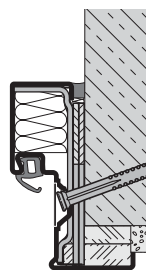
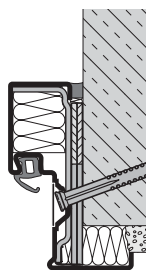
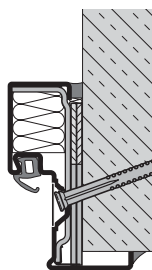
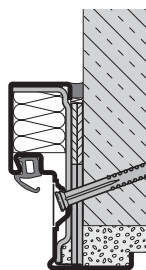
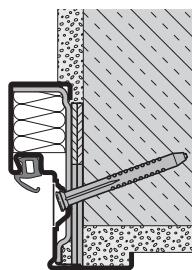
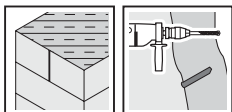
➔ A-12,5-EN 520

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



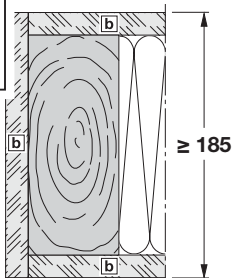
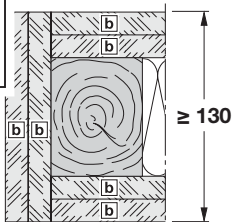
➔ 1b 2 ...

1a



➔ 2

1b

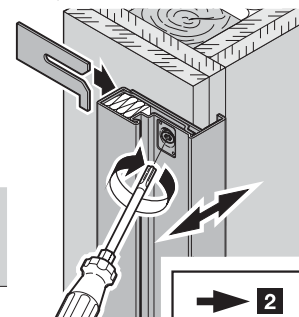
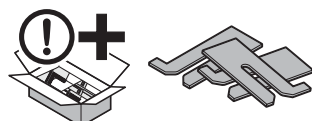
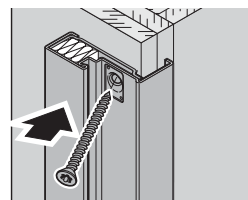
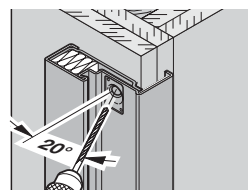
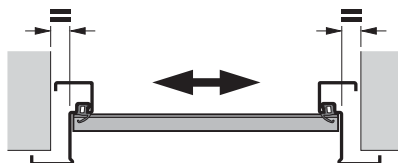
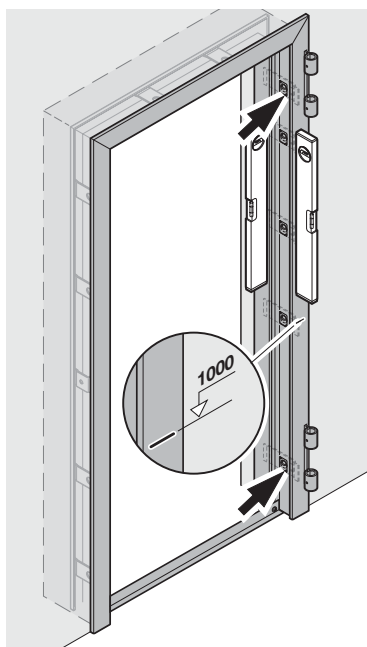
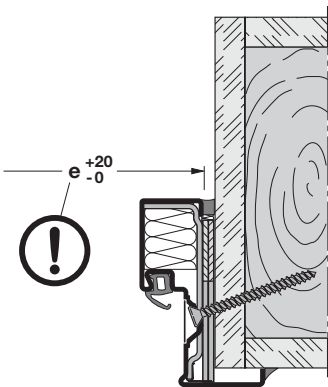
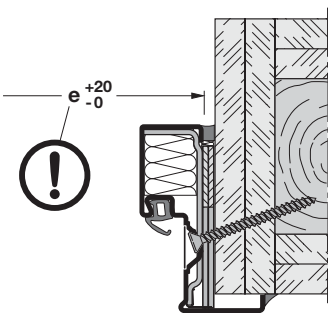
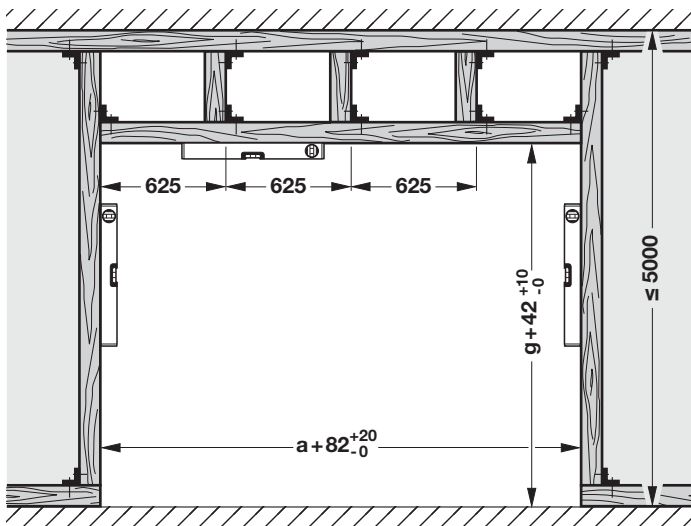


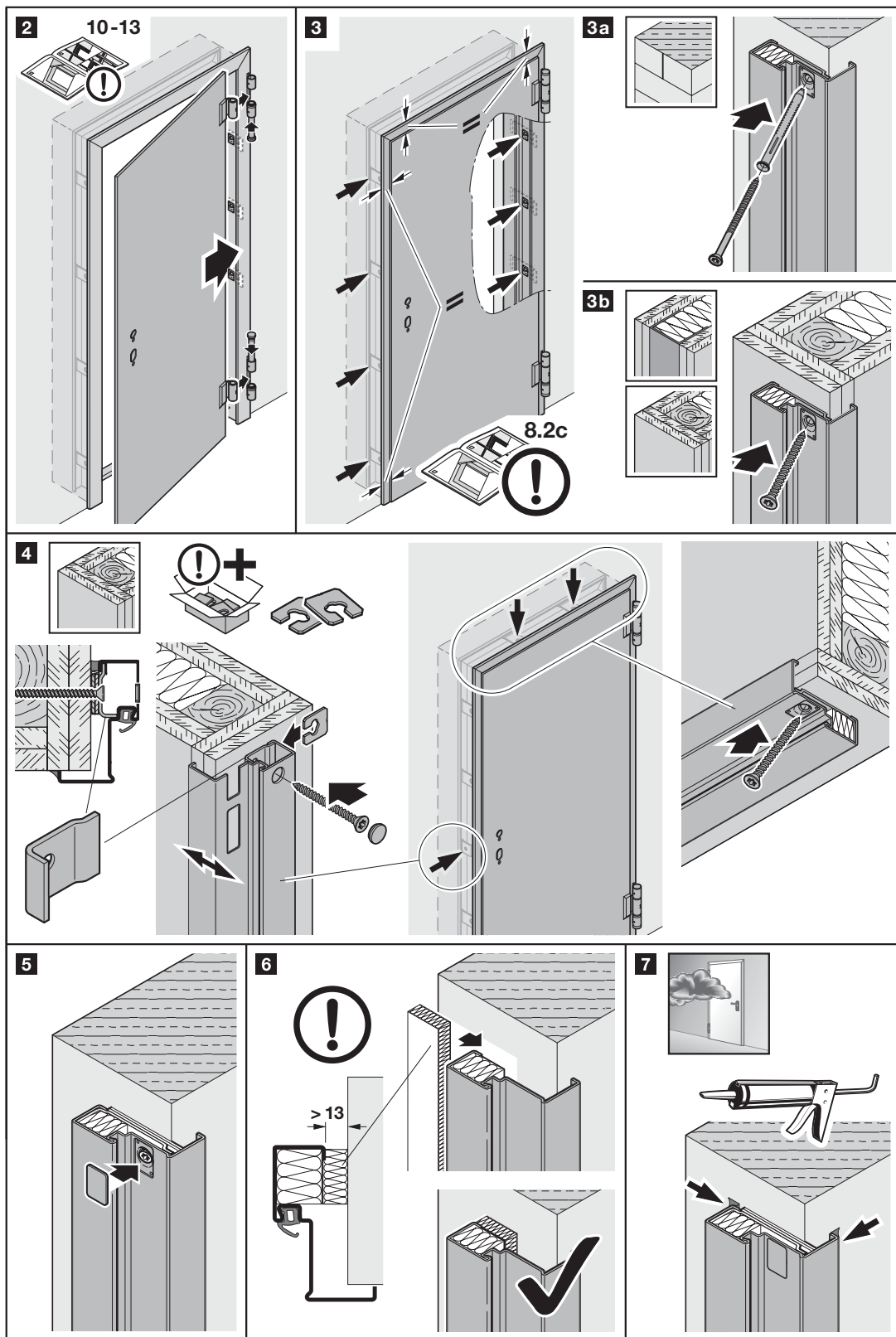
ⓑ A-12,5-EN 520



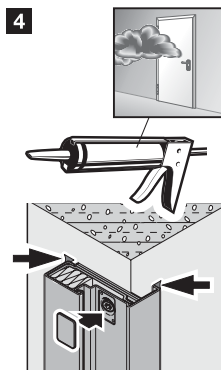
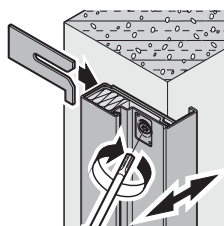
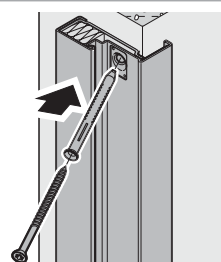
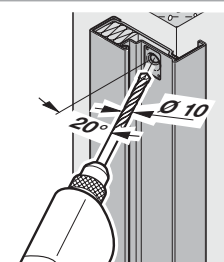
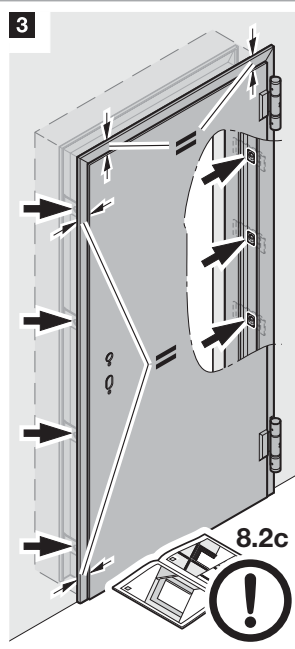
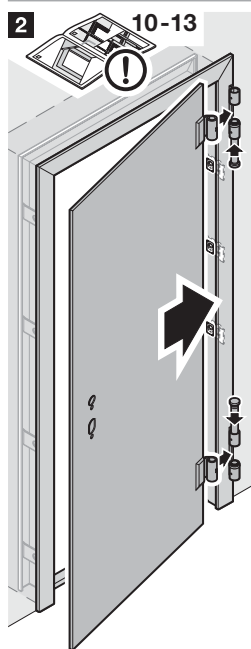
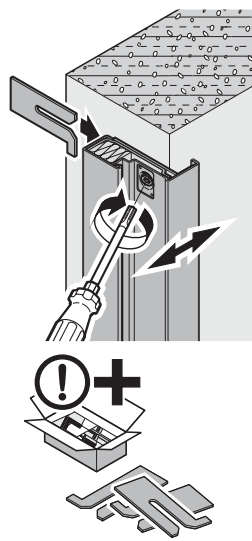
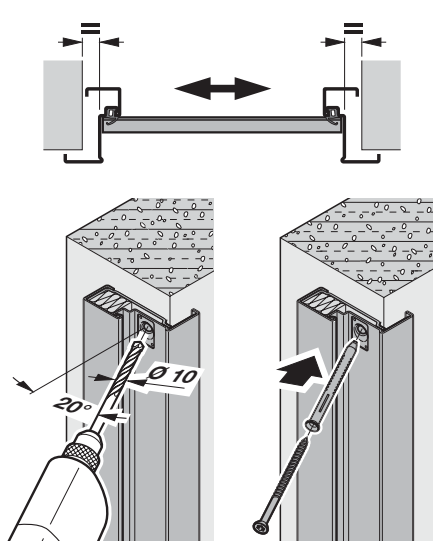
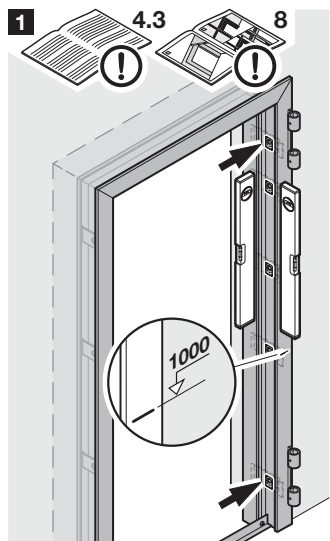
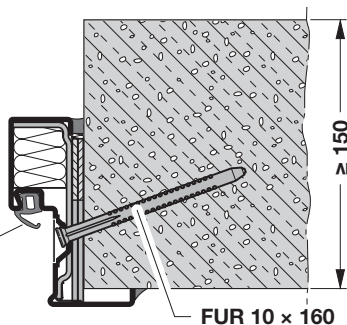
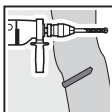
4.2/4.3

8

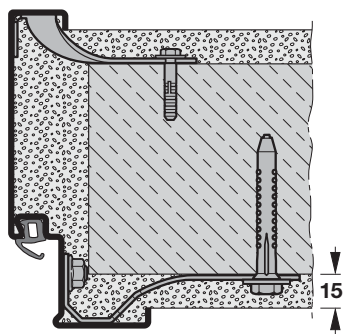
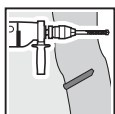




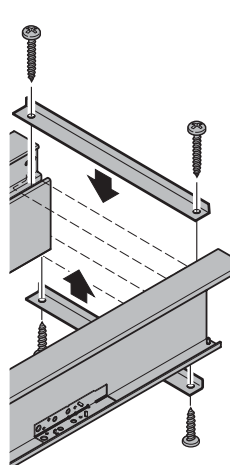
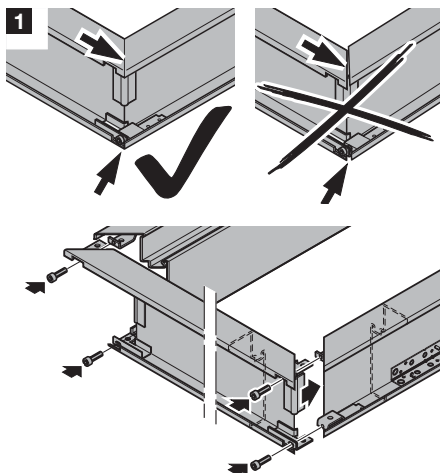
9/C8
max.T30



9/D1



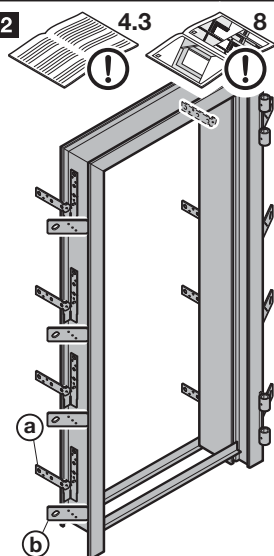
1



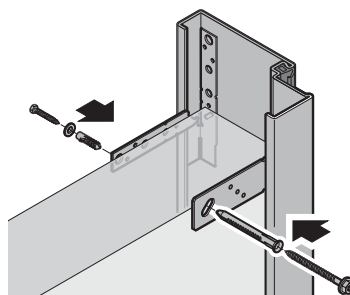
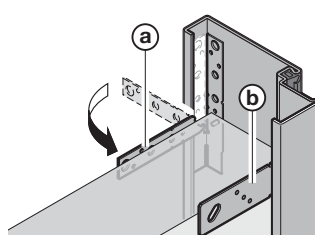
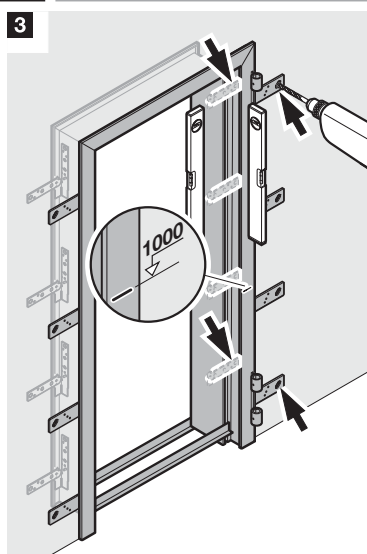
2

4.3

8

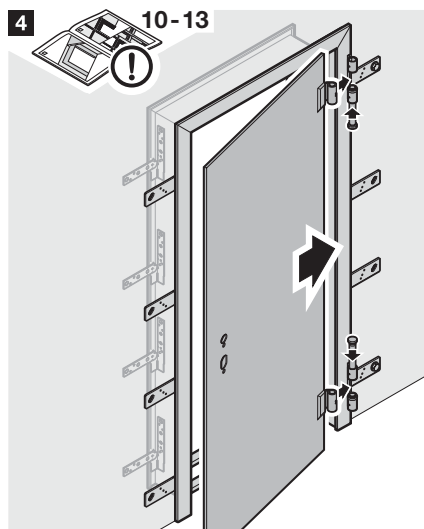


3

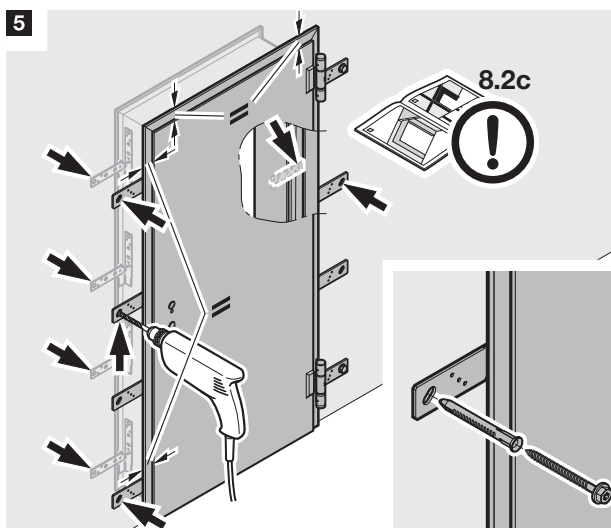


4

10-13



5



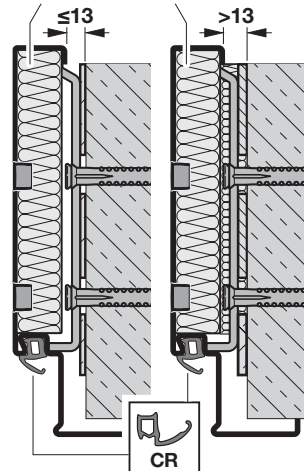
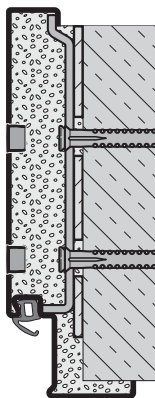
9/D2



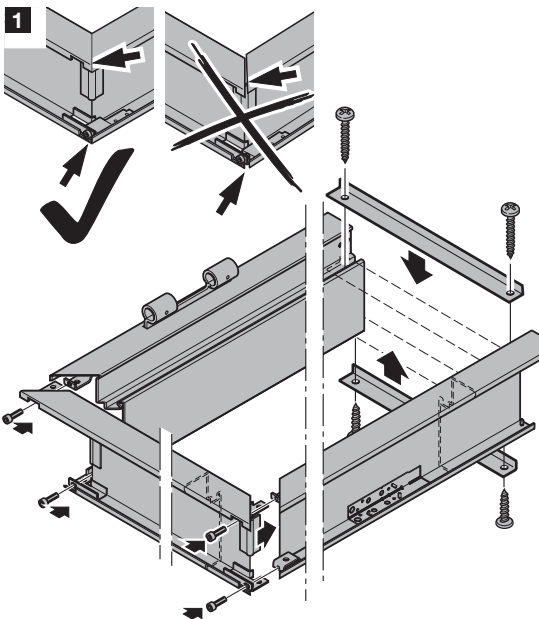
9/D3

max. T30/EI₂30

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

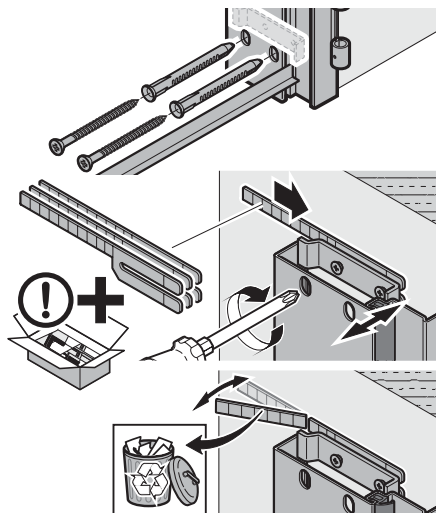
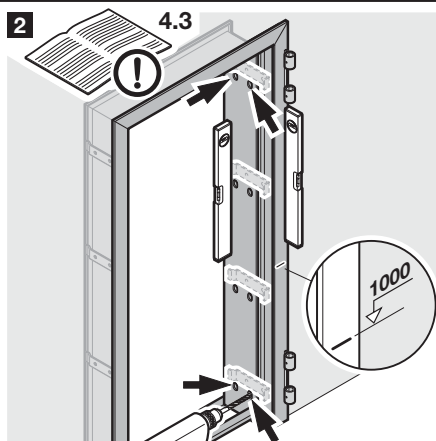


1



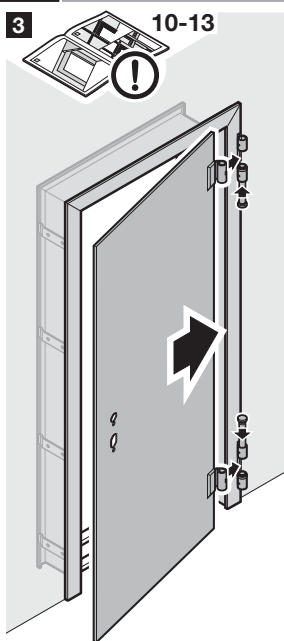
2

4.3

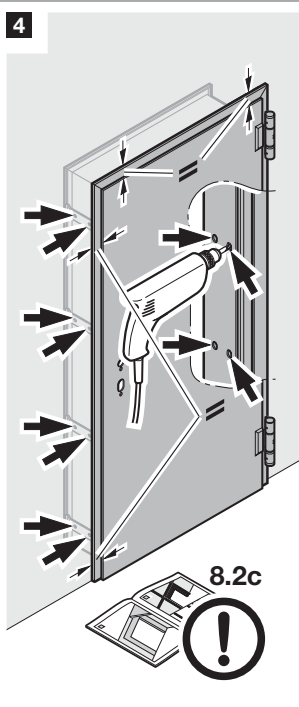


3

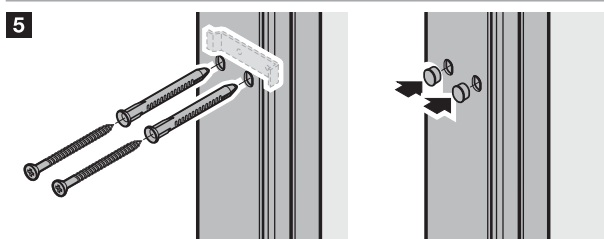
10-13



4



5



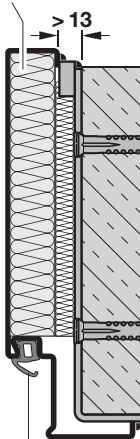
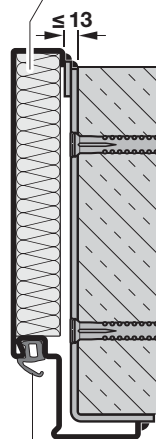
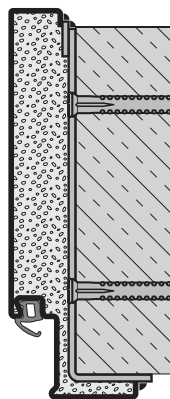
9/D4



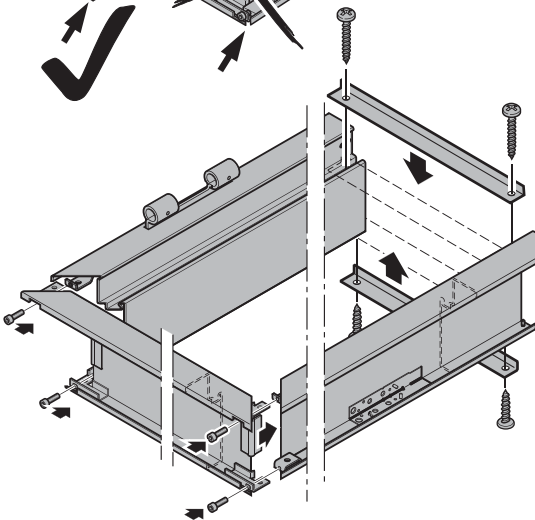
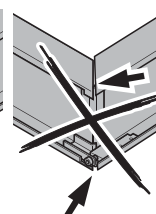
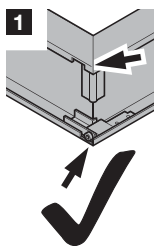
9/D5

max. T30/
EI₂₃₀

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



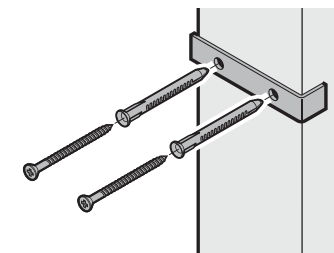
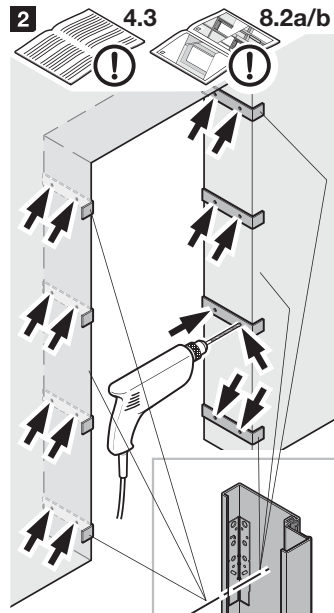
1



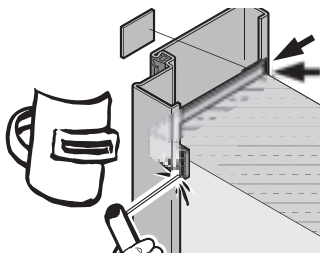
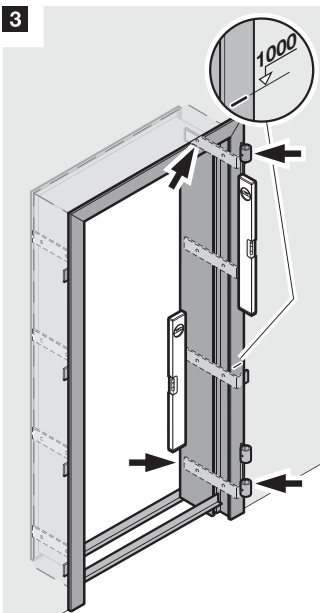
2

4.3

8.2a/b

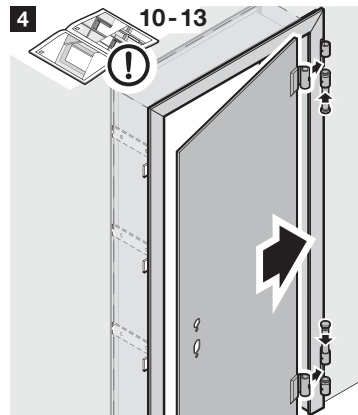


3



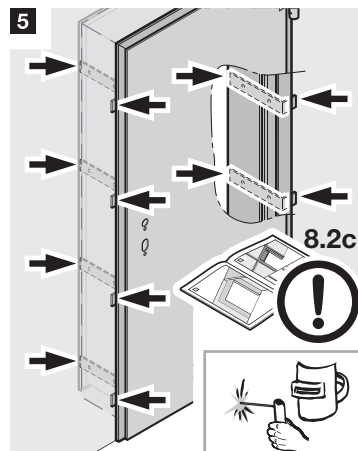
4

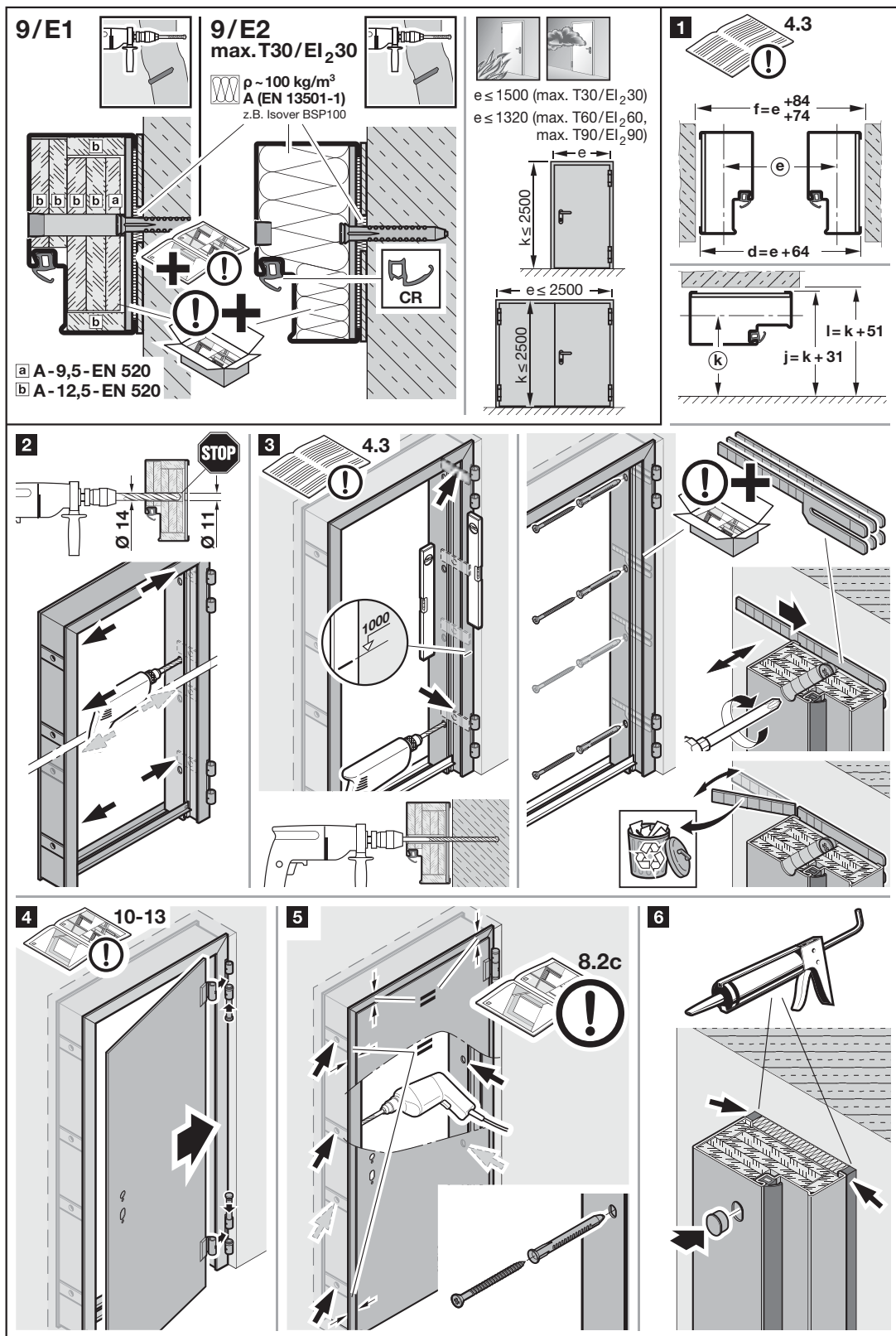
10-13



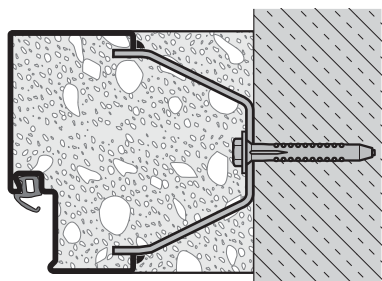
5

8.2c

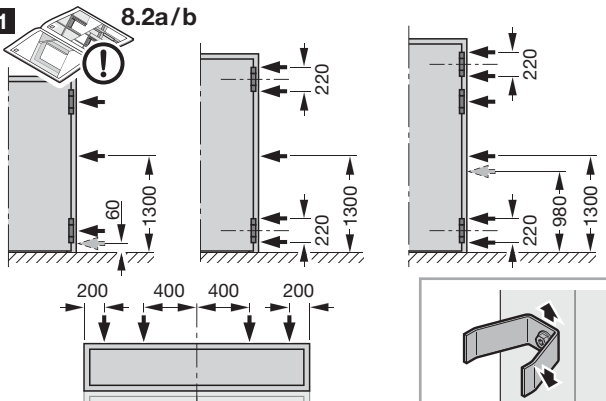




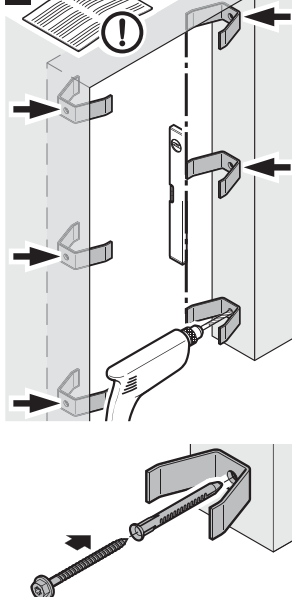
9/E3



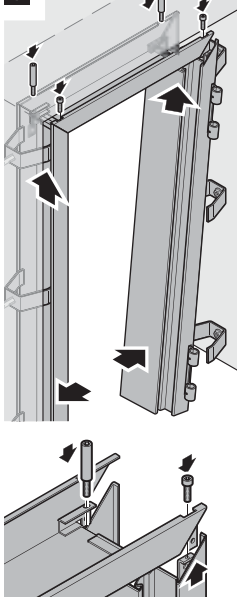
1 8.2a/b



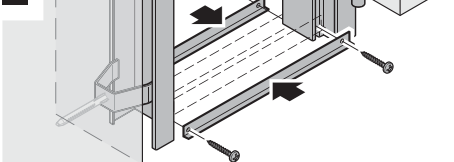
2 4.3



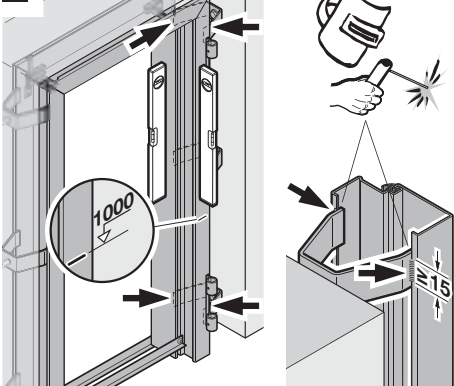
3



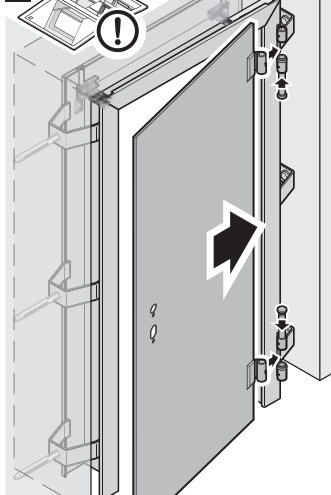
4



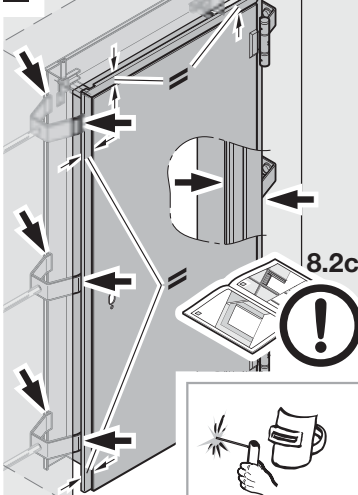
5



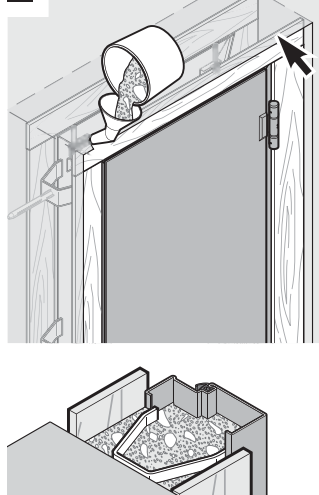
6 10-13



7



8

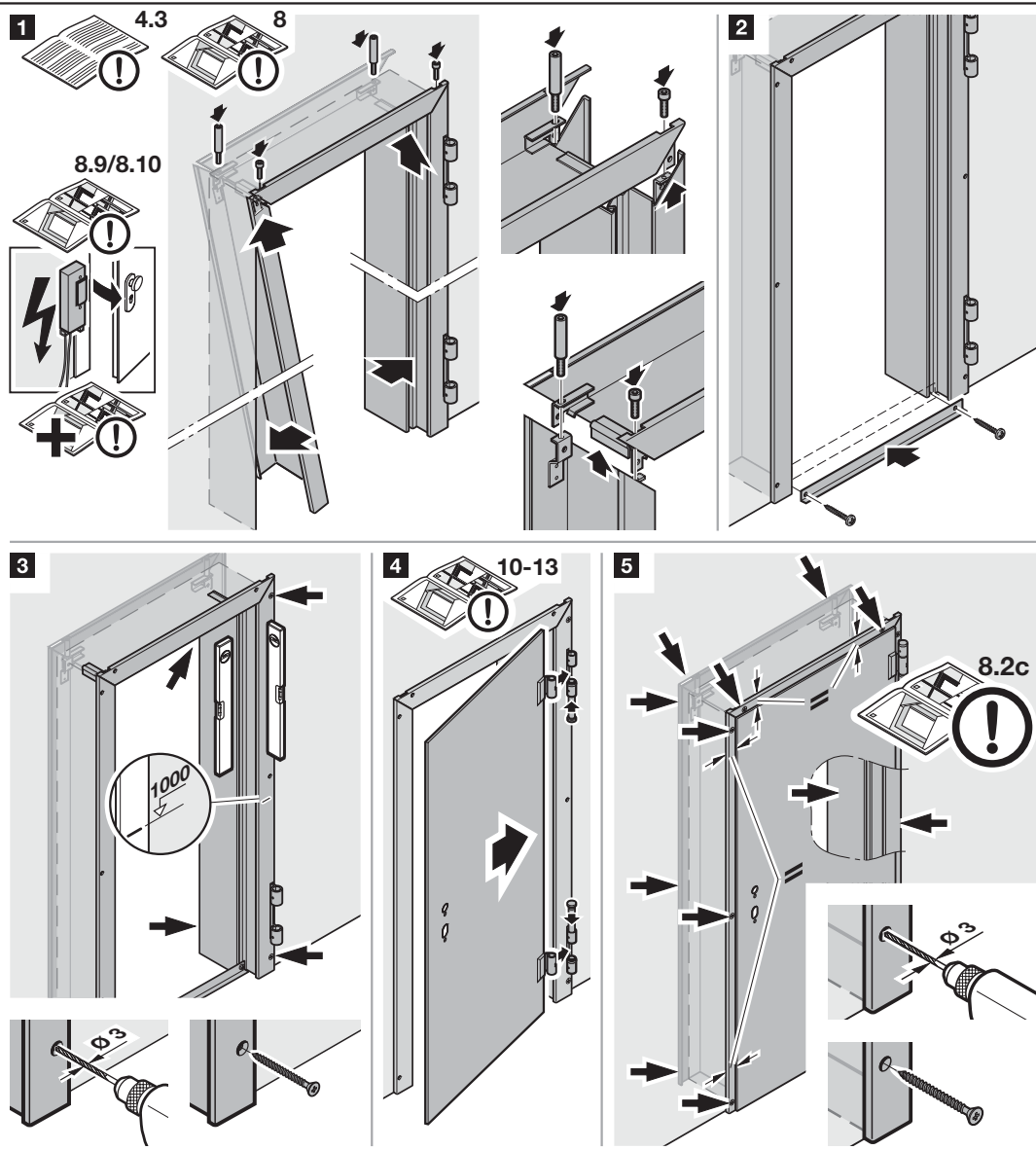
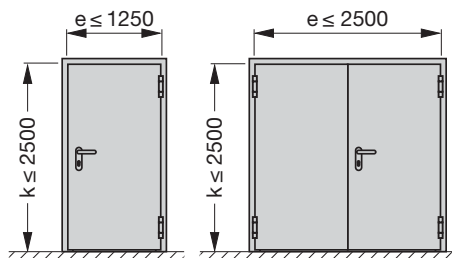
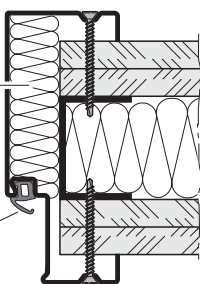
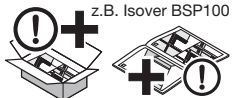


9/E5

max. T30/
EI₂30

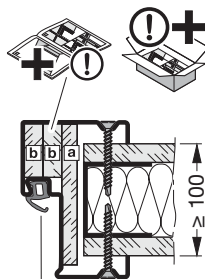


$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



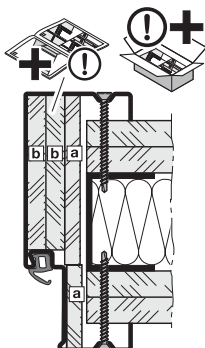
9/E6

max. T30/EI₂30



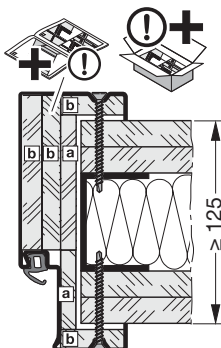
9/E7

max. T30/EI₂30

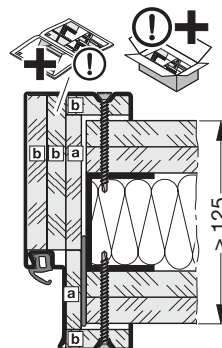


9/E8

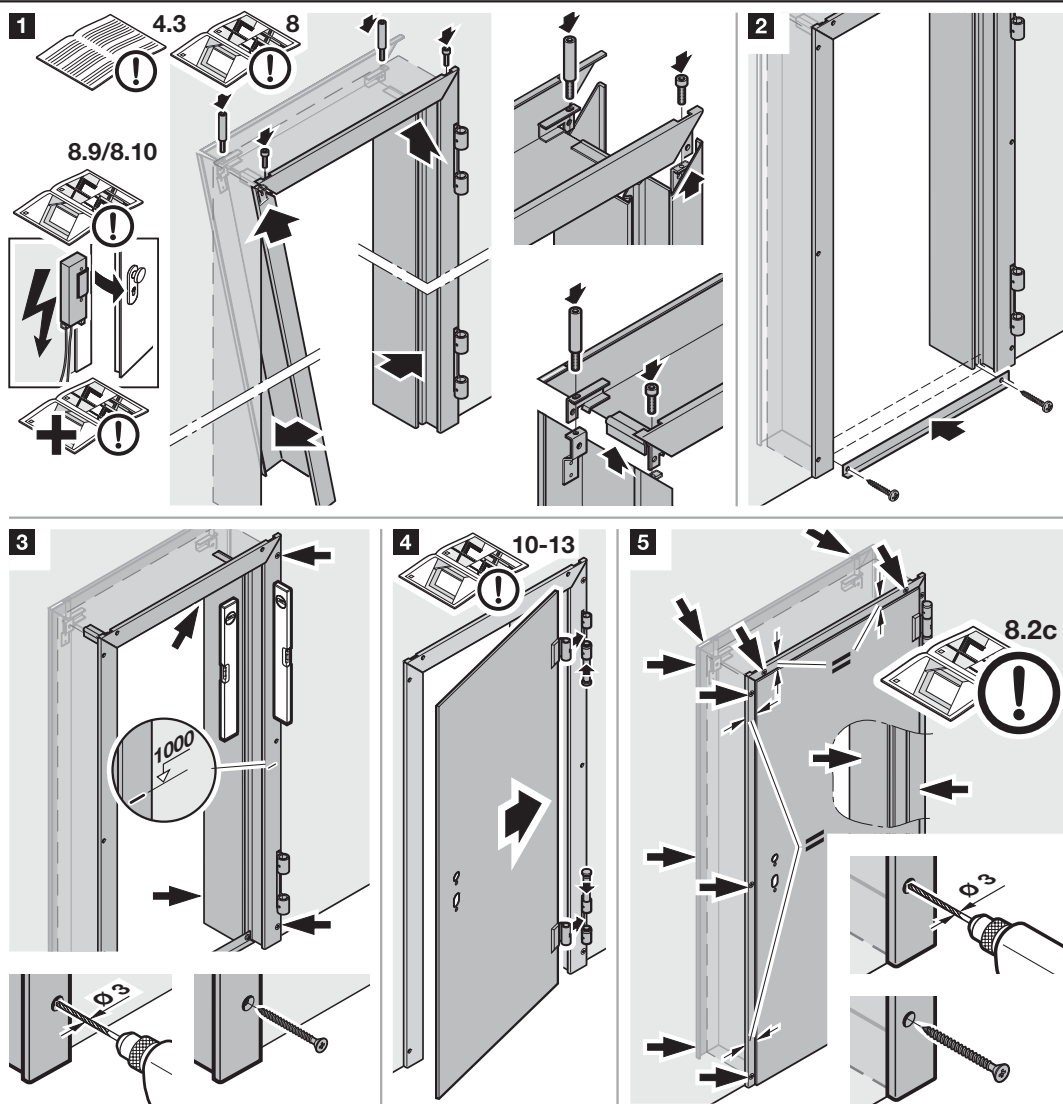
T60/EI₂60



T90/EI₂90



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

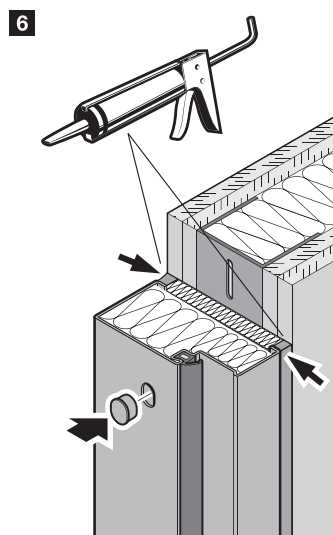
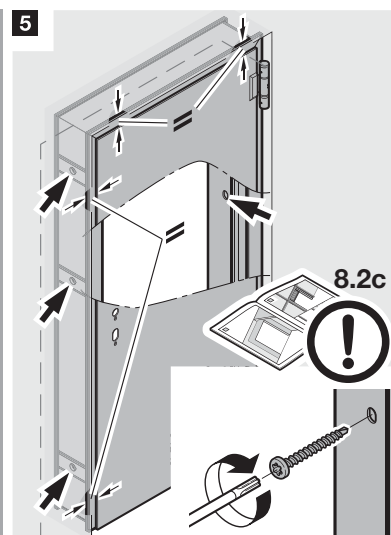
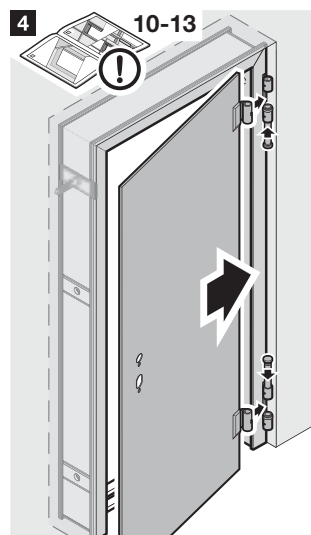
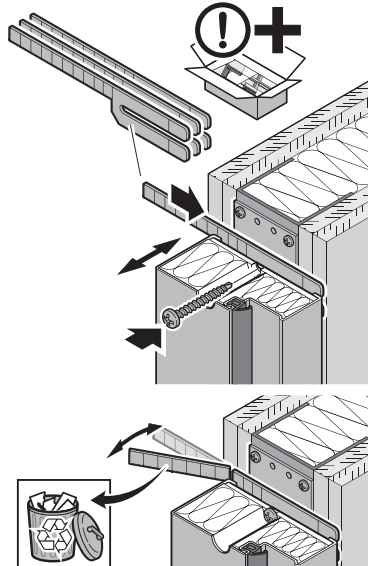
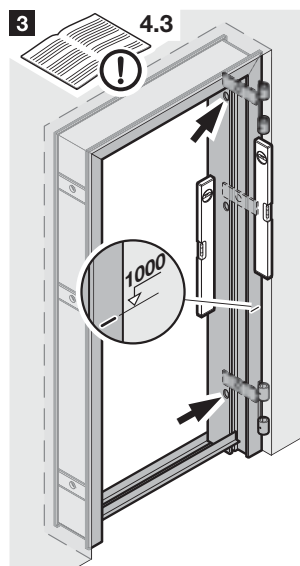
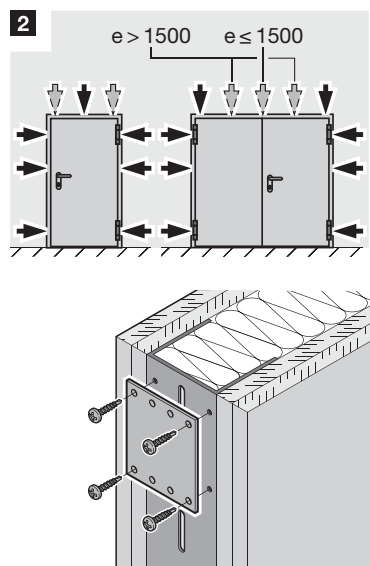
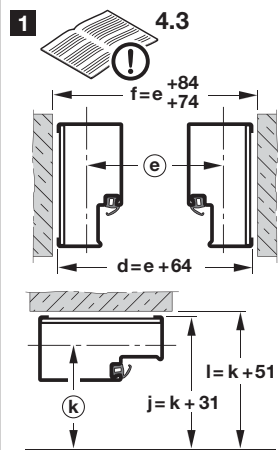
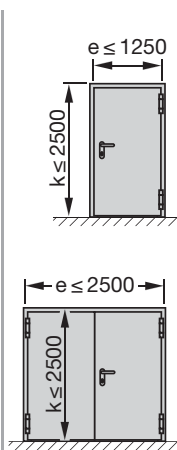
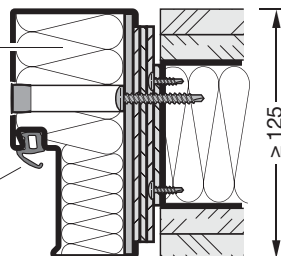


9/E9

max. T30/
EI₂30

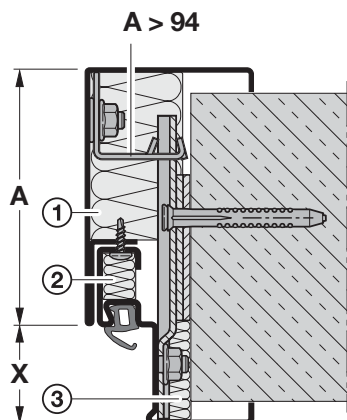


$\rho \sim 100 \text{ kg/m}^3$
A (EN 13501-1)
z.B. Isover BSP100



9/F1

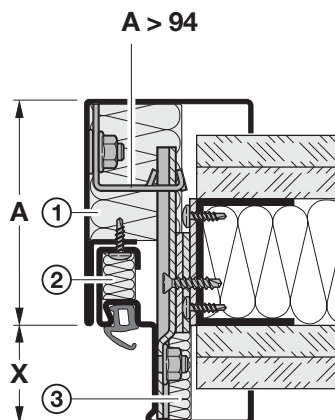
max. T30/ EI₂30



➔ 1 2a 2b 3 ...

9/F2

max. T30/ EI₂30

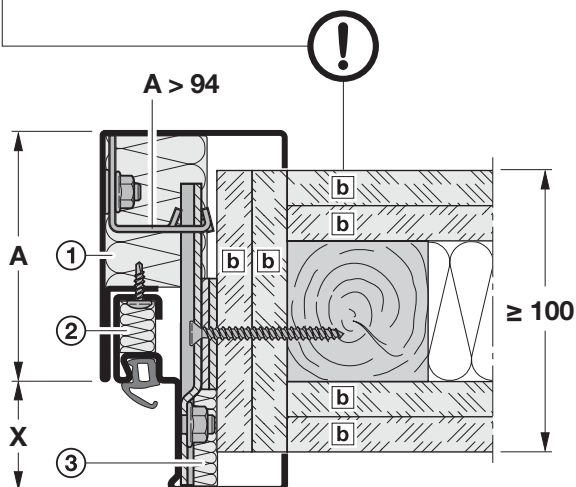


➔ 1 2c 3 ...

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9/F3

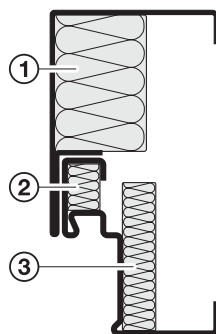
max. T30/ EI₂30



F90B DIN 4102-4 Tab. 49

b A-12,5-EN 520

➔ 1 2d 3 ...



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

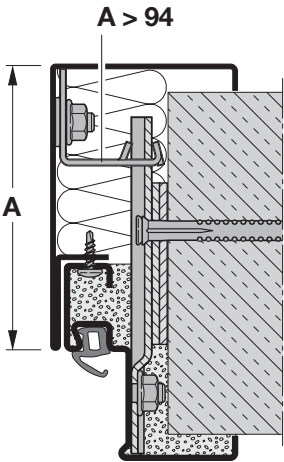
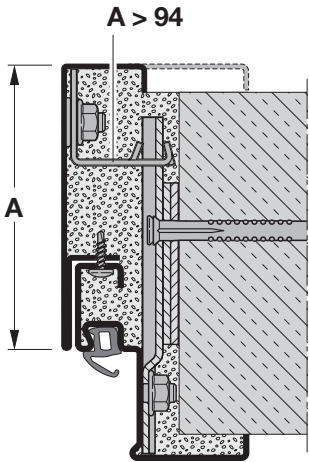
① = $40 \times (A - 42)$

② = $15 \times 22,5$

③ = $15 \times (X + 24)$

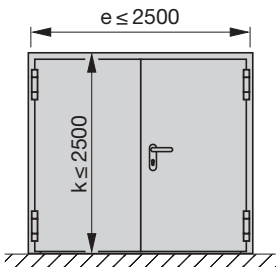
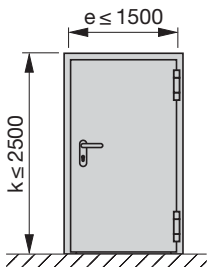
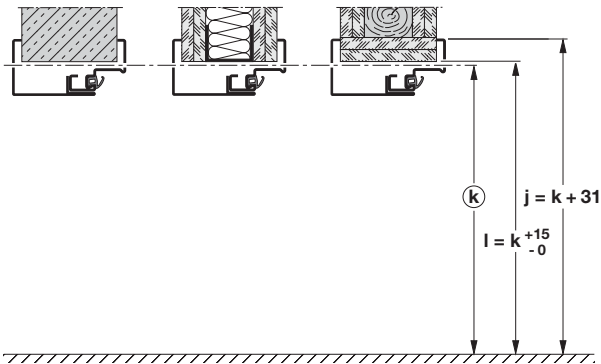
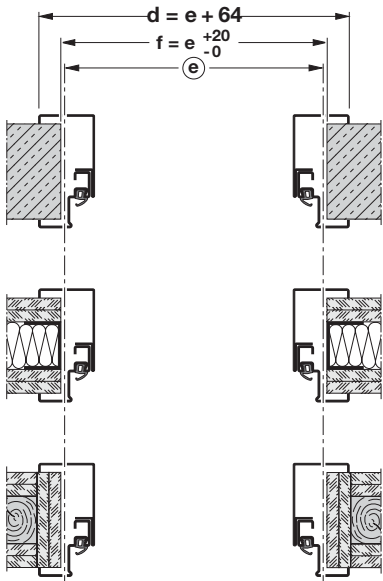
9/F4

max. T90/ EI₂90

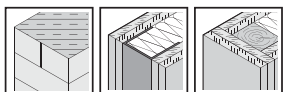


➔ 2a 2b 3 ...

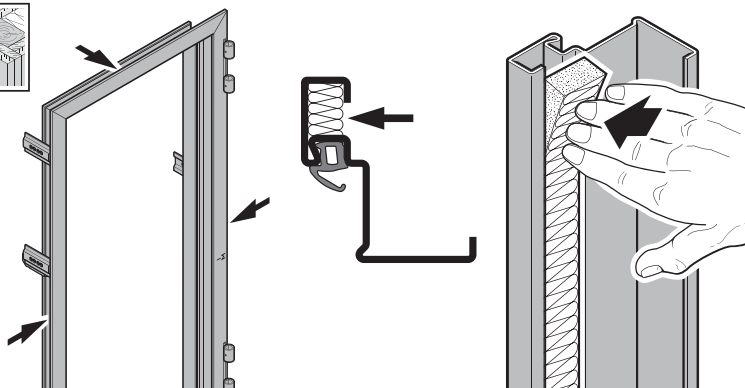
9/F1 - 9/F4



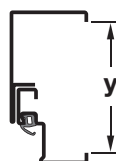
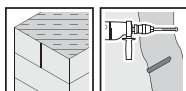
1



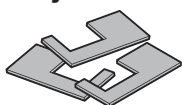
max. T30/EI₂30



2a

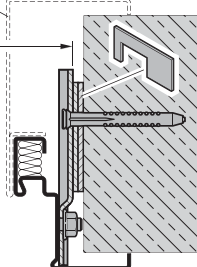


$y \geq 145$

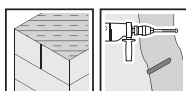


$y \geq 145$

e-10



2b

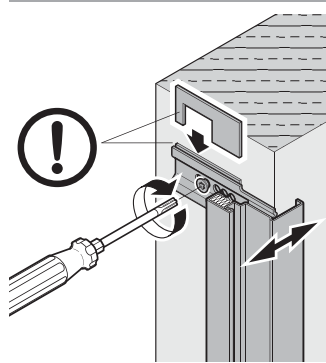
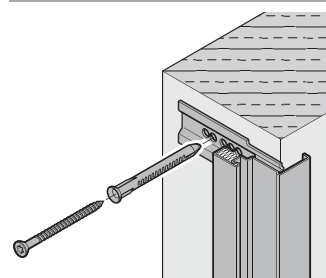
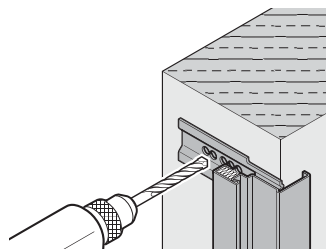
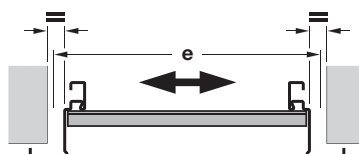
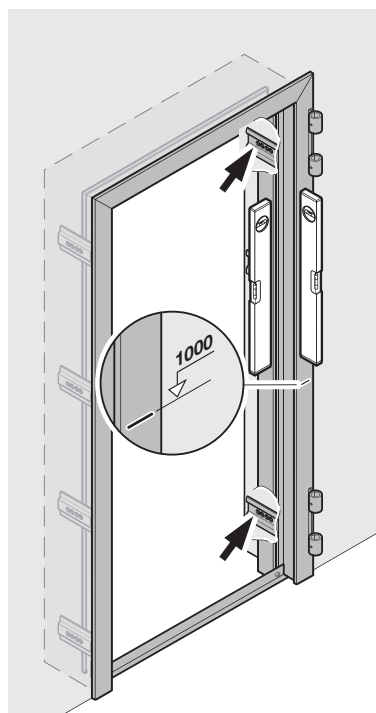
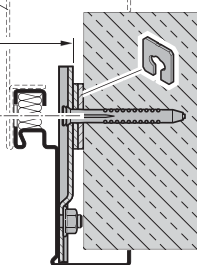


$y < 145$



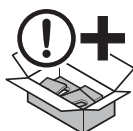
$y < 145$

e-10

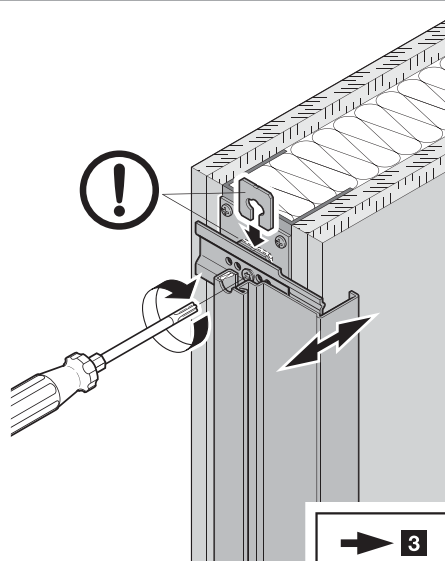
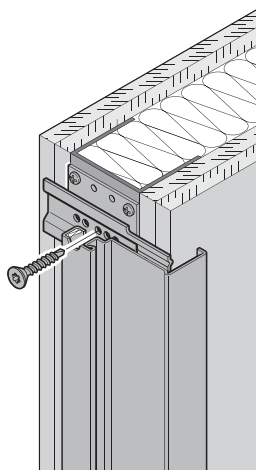
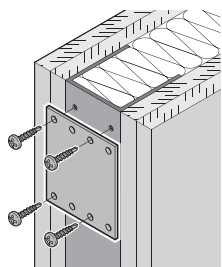
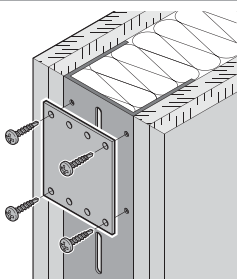
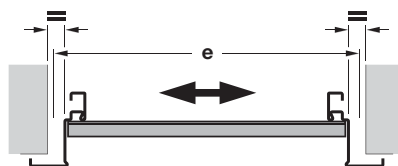
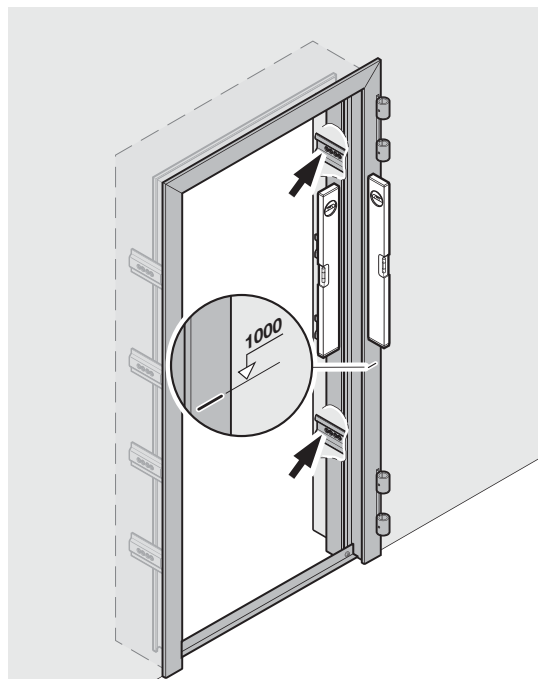
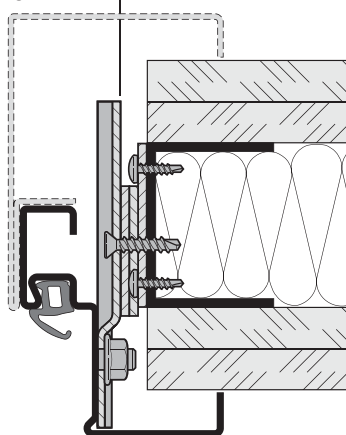


3

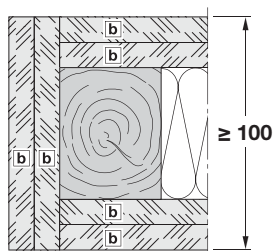
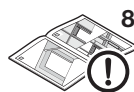
2c



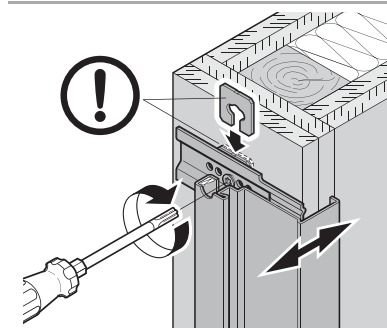
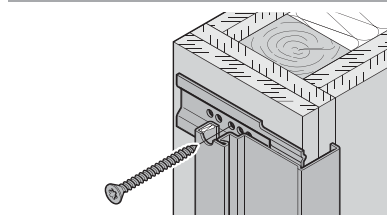
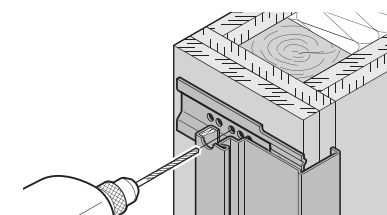
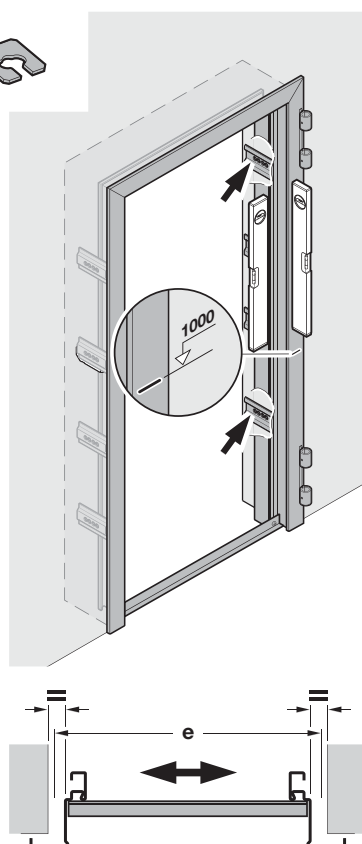
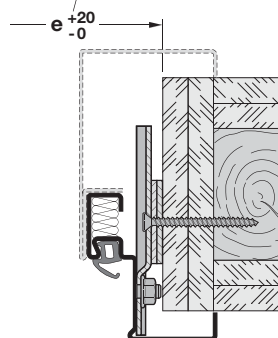
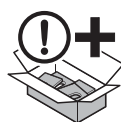
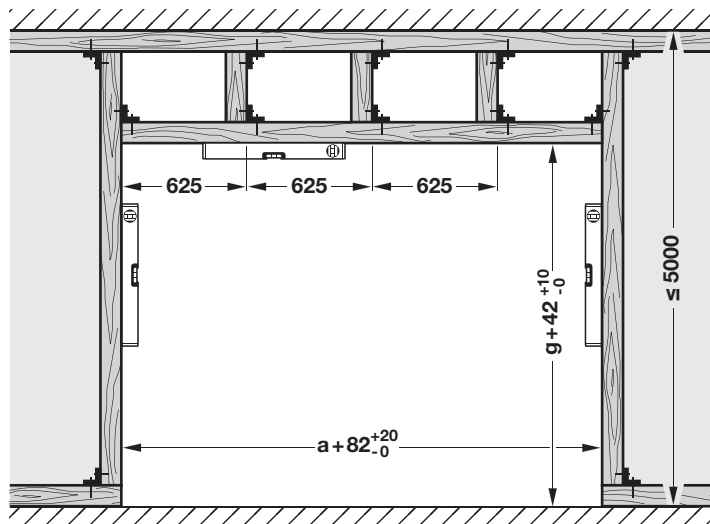
e - 10



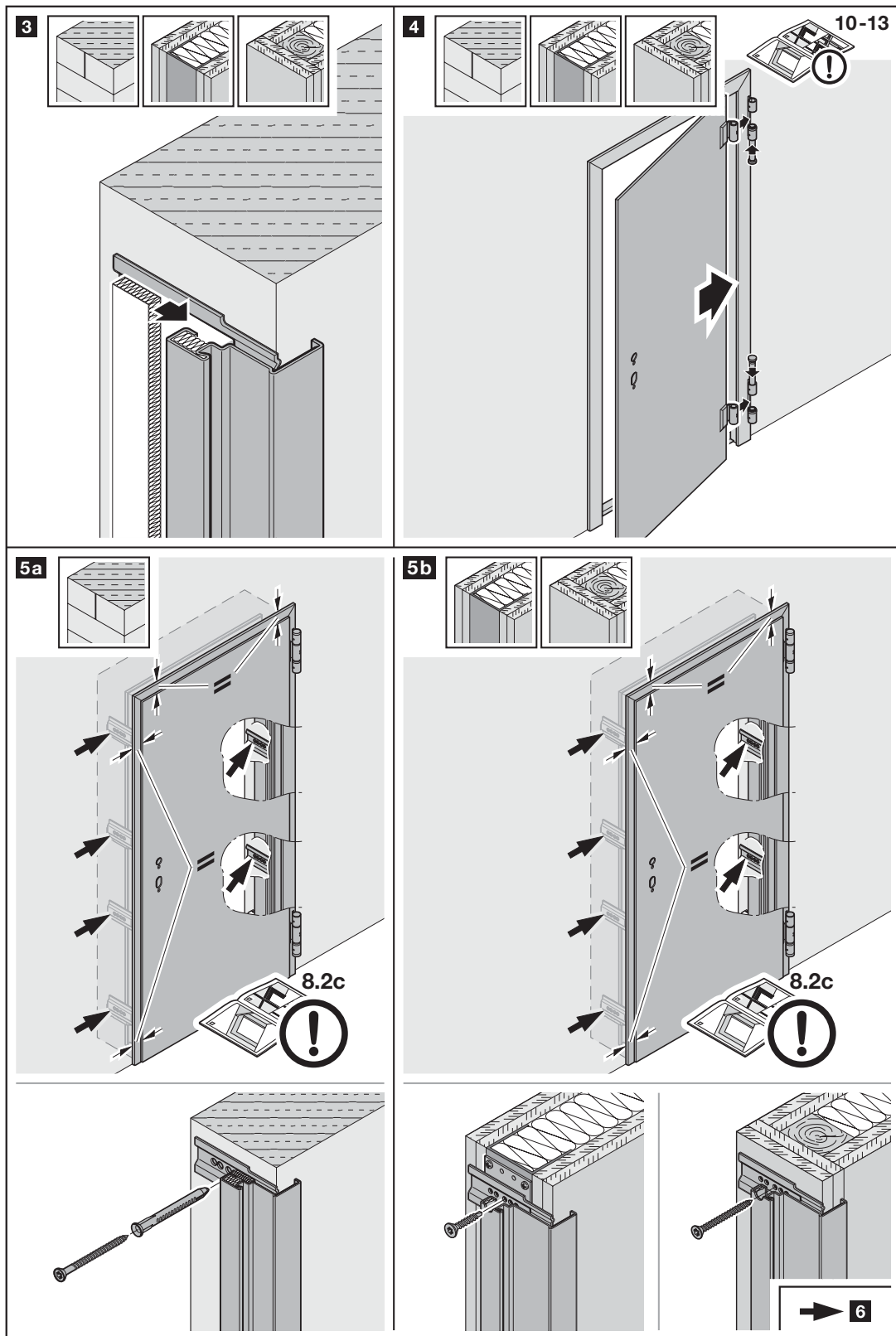
2d

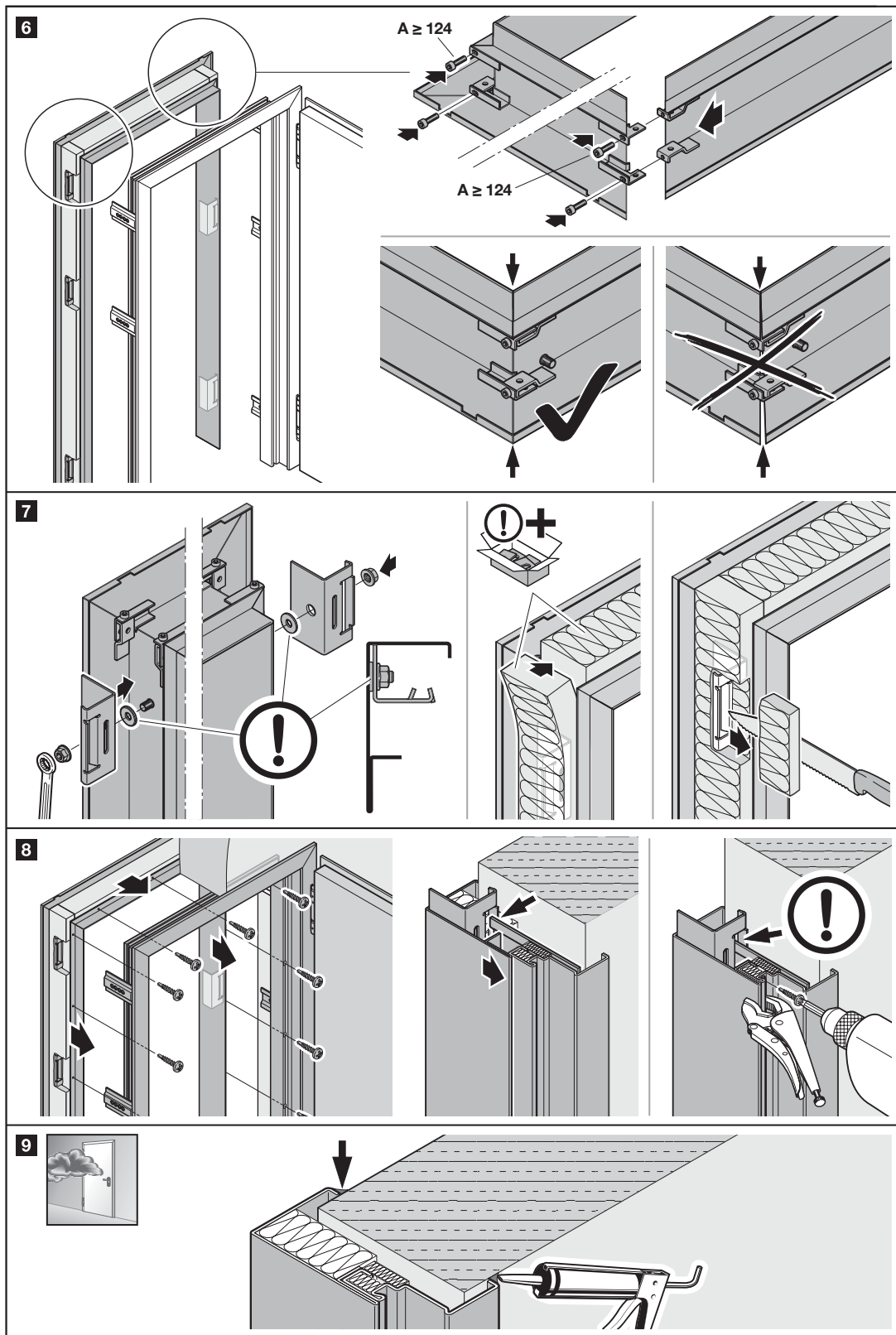


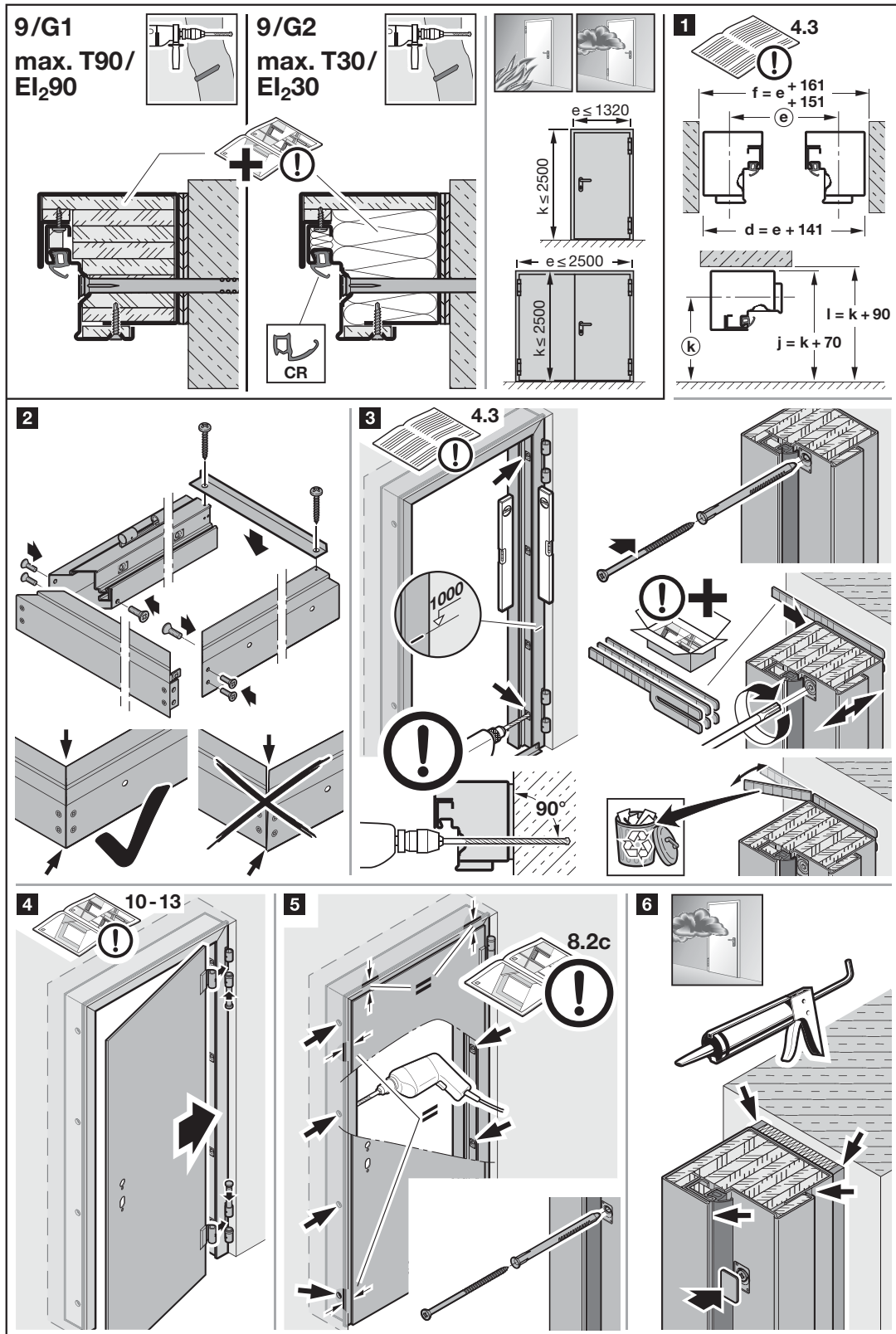
b A-12,5-EN 520



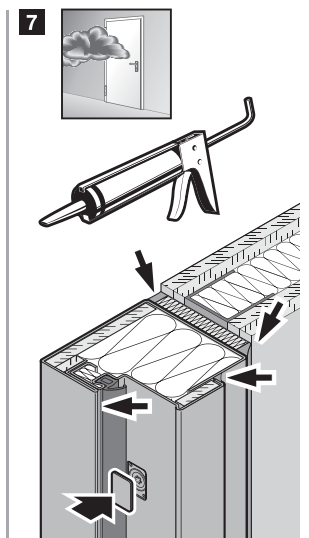
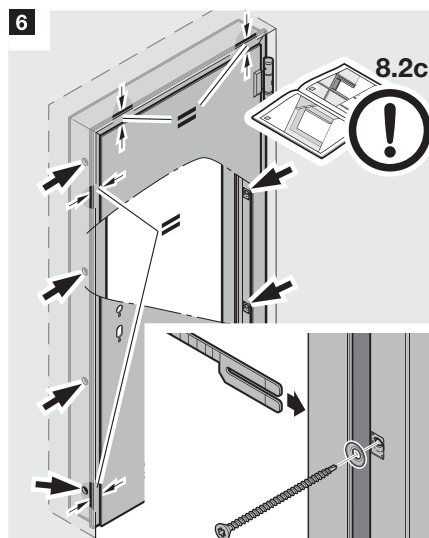
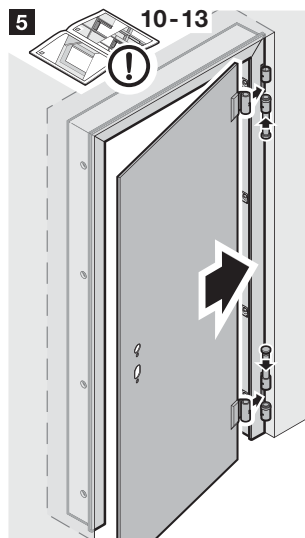
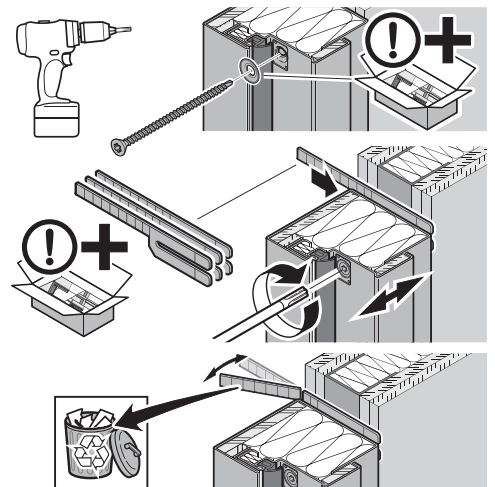
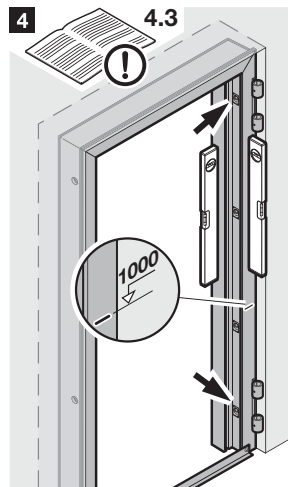
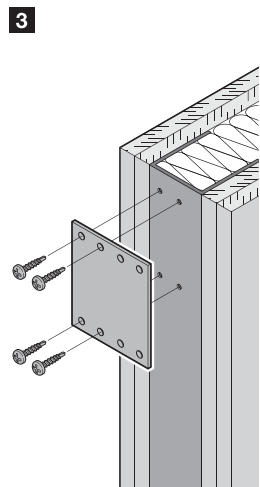
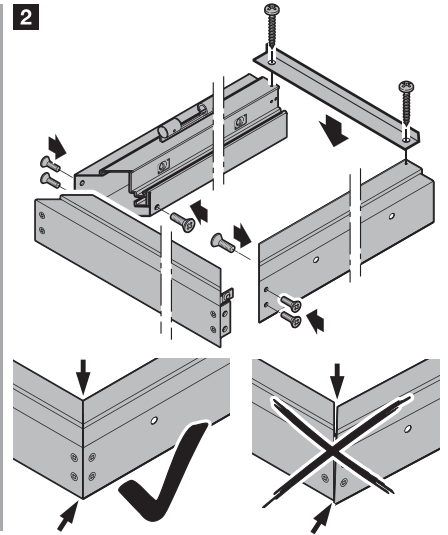
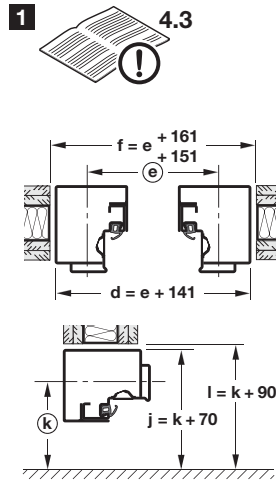
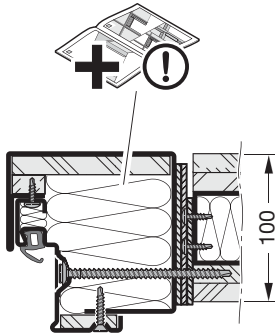
➔ **3**



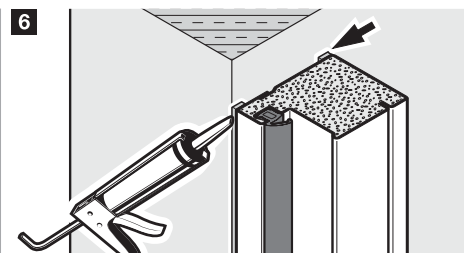
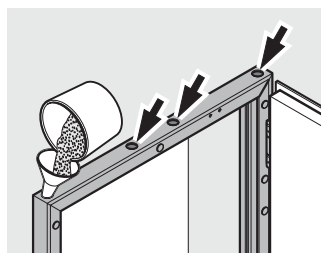
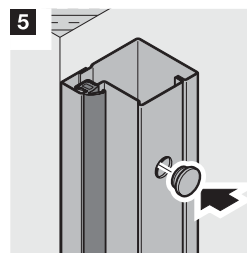
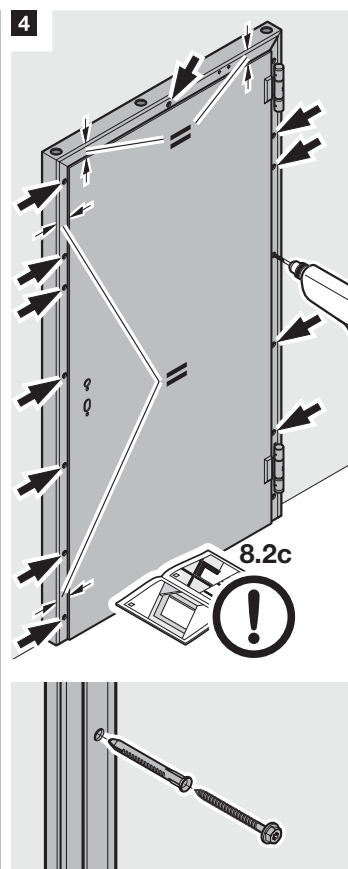
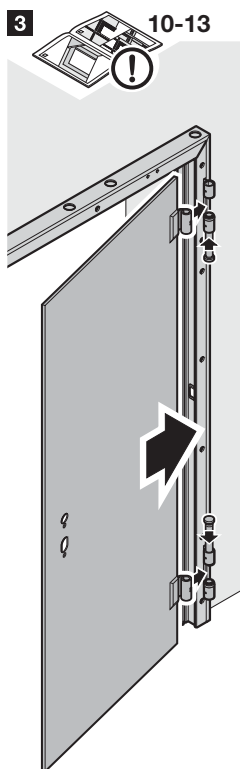
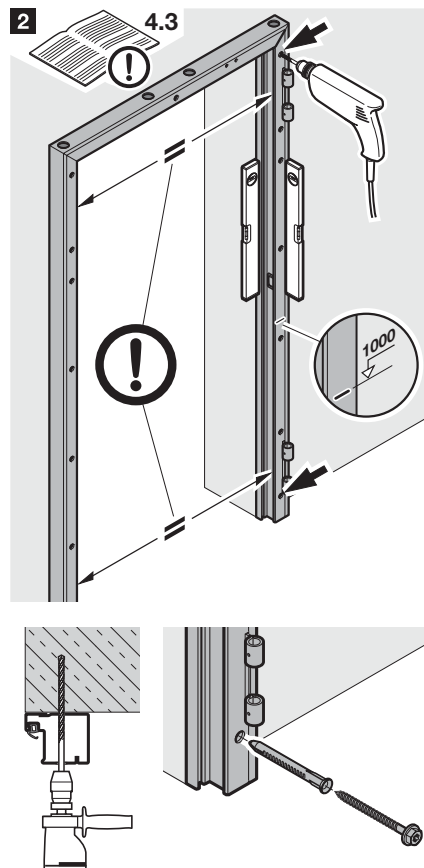
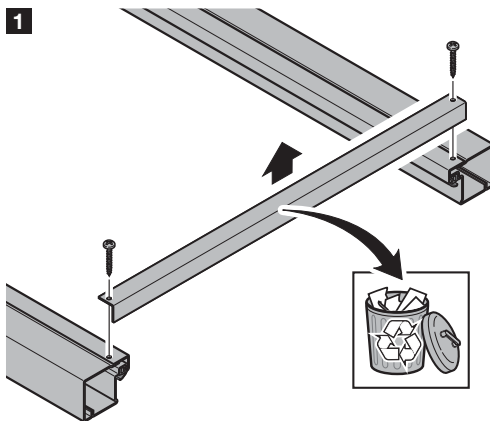
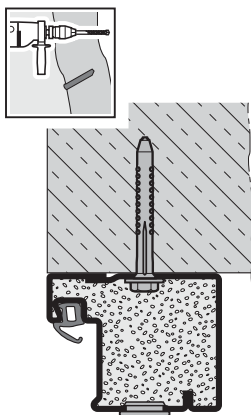




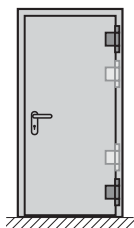
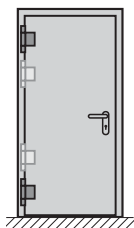
9/G3
max. T30/EI₂30



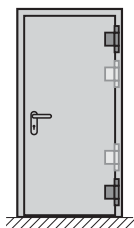
9/H1
max. T30/
EI₂30



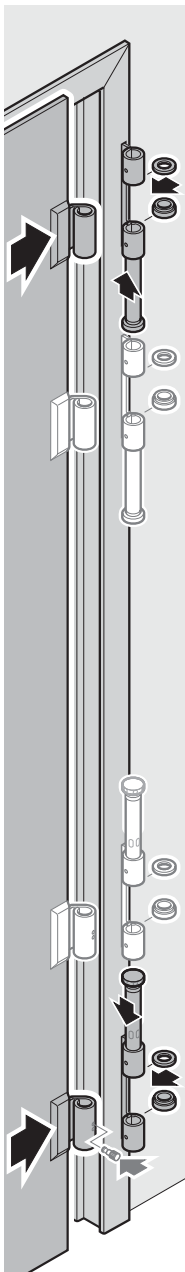
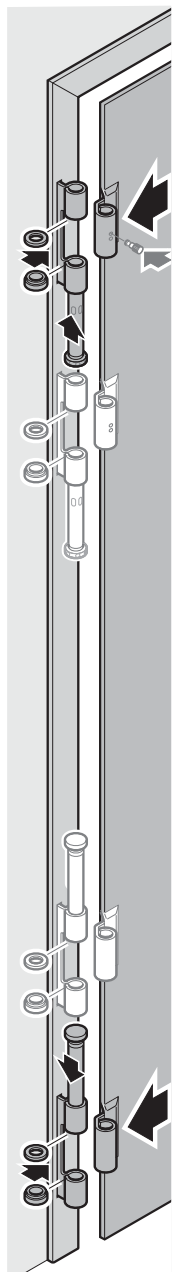
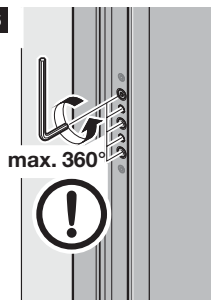
10.1a



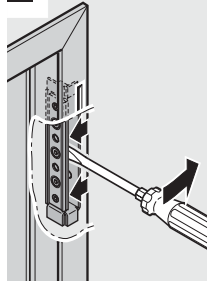
10.1b



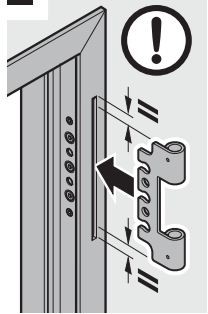
6



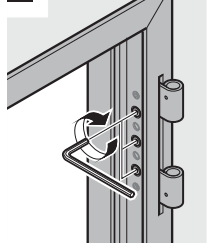
1



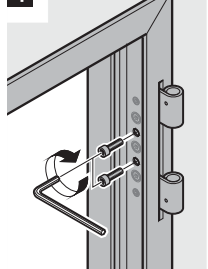
2



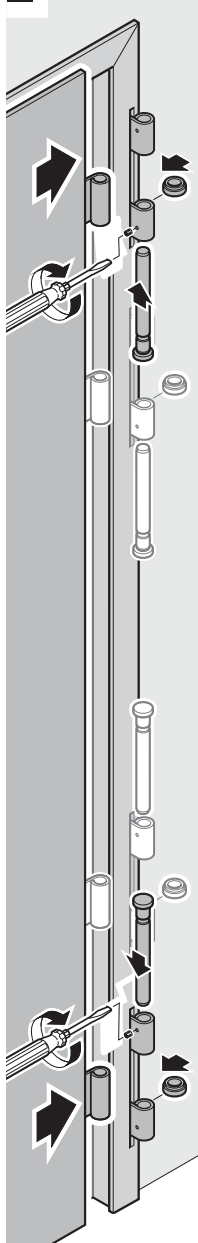
3



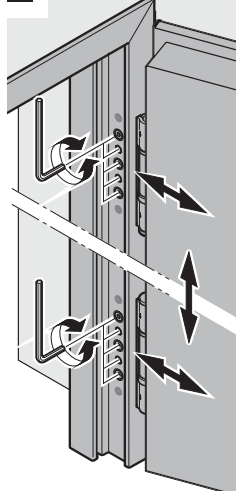
4



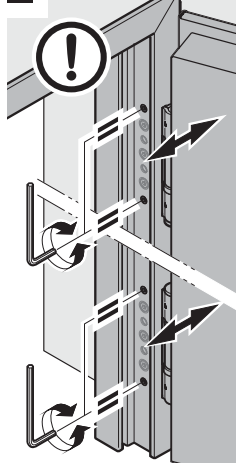
5



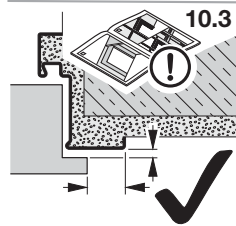
7



8

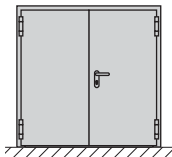


10.3

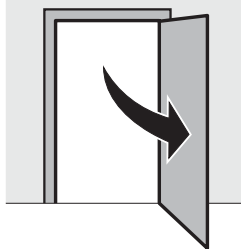


10.2

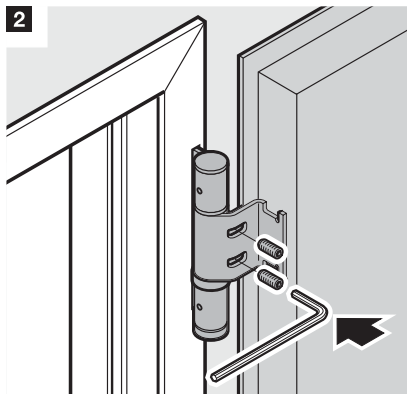
3.3



1



2



10.3

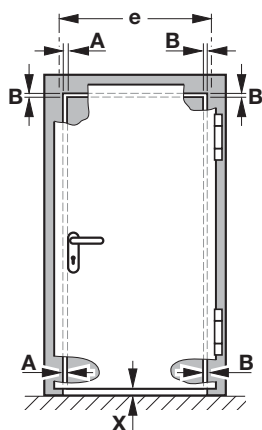
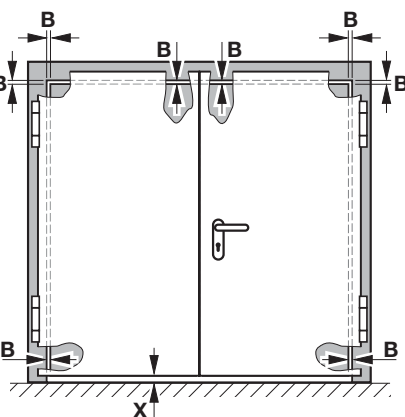
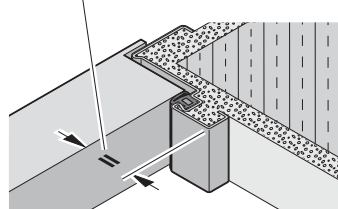
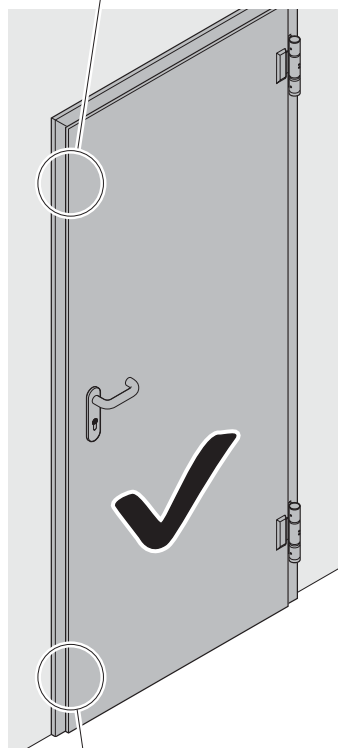
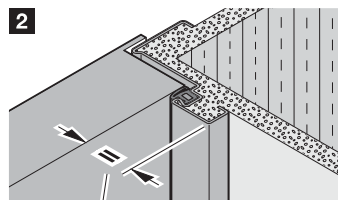
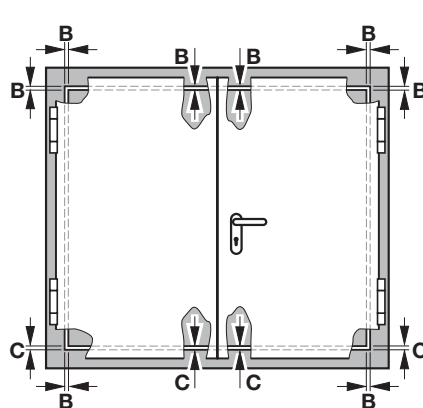
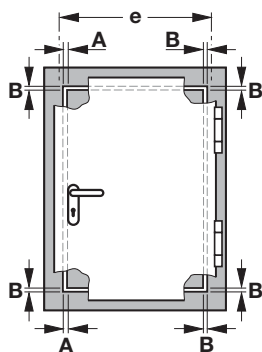
4.2



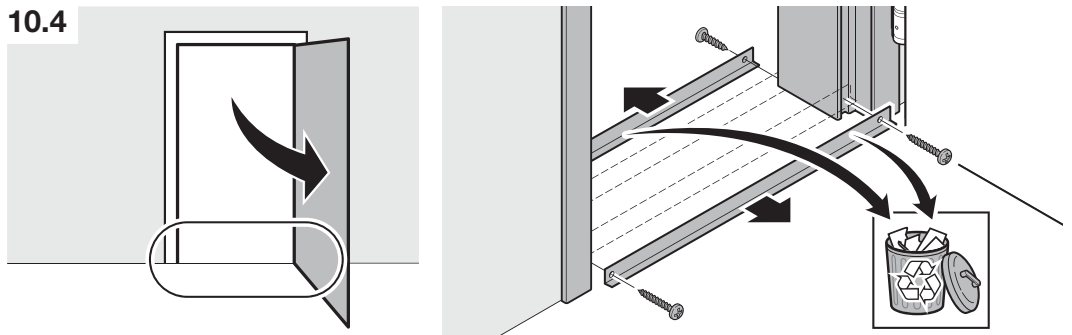
1

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

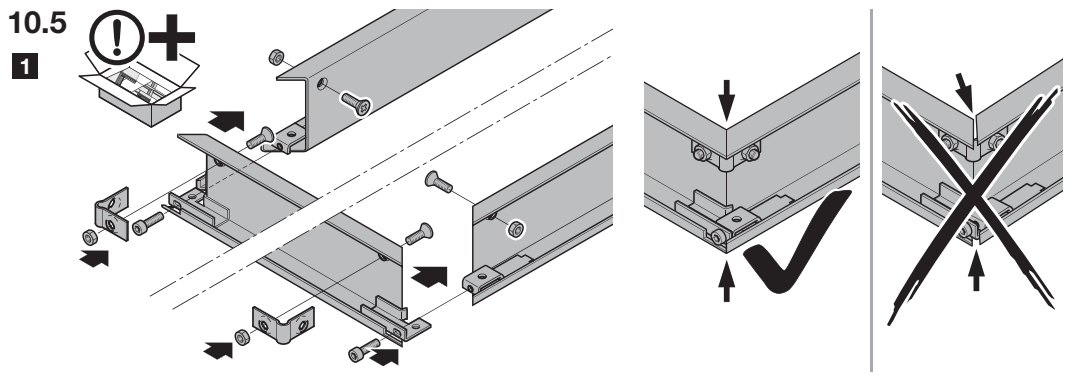
B	C max. T30	C T60, T90, T120
4±2	4±2	10±2

 $X = 10 \pm 5$  $X = 10 \pm 5$  $X = 10 - 5$ 

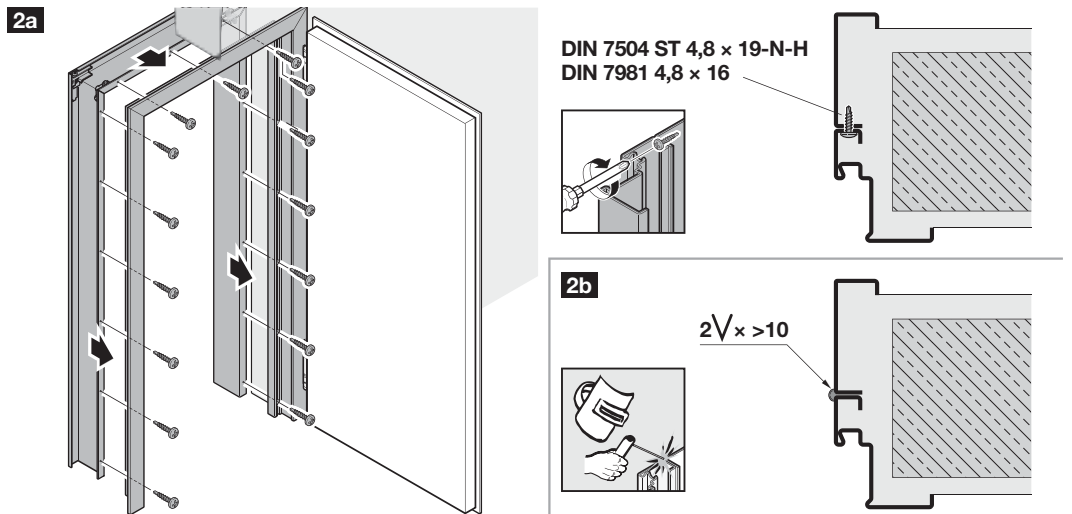
10.4



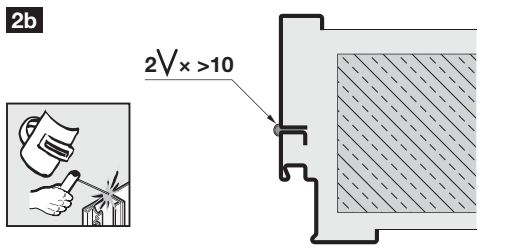
10.5



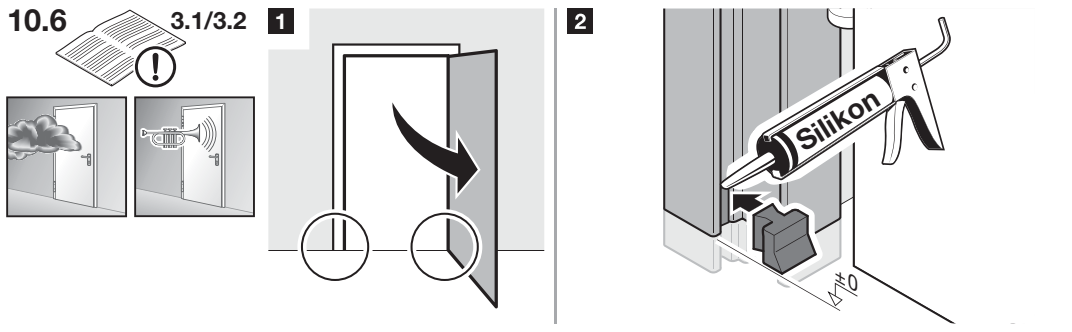
2a



2b

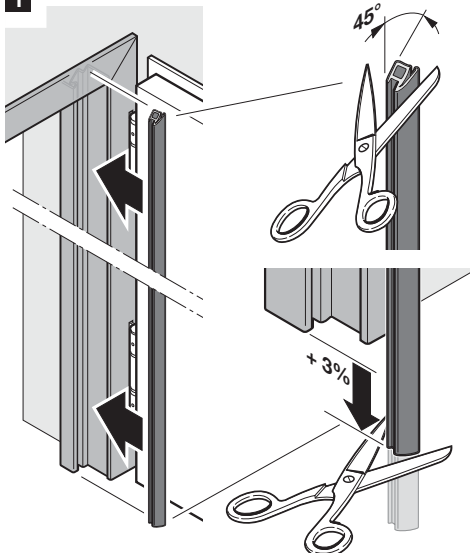
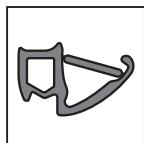


10.6

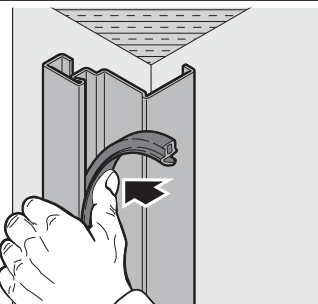


10.7a

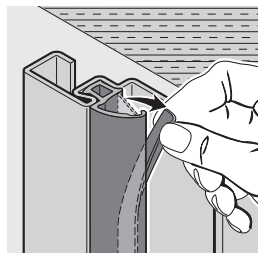
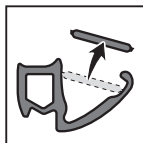
1



2



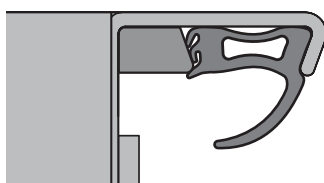
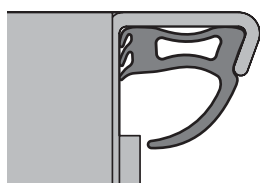
3



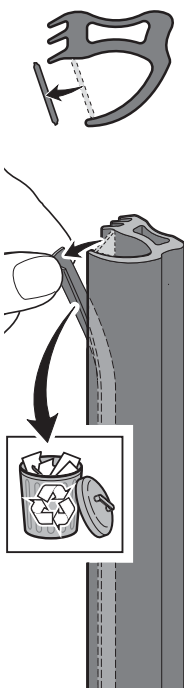
10.7b

A

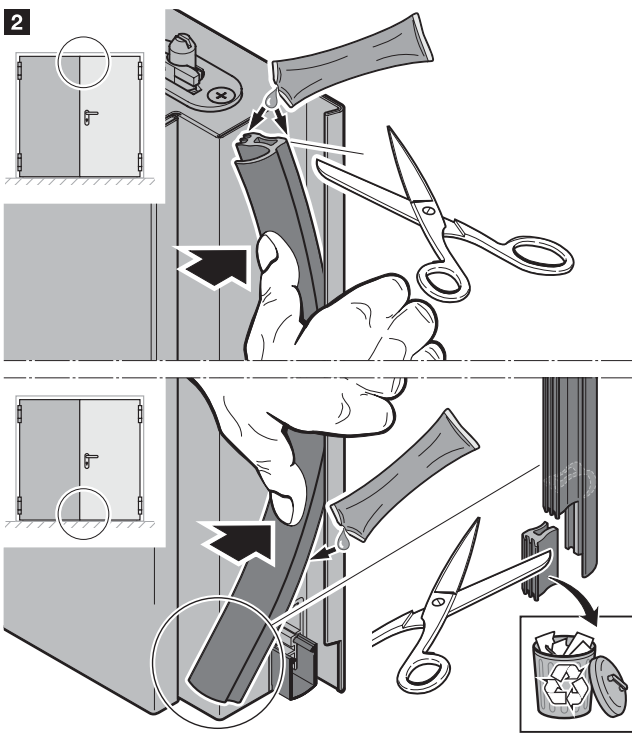
B



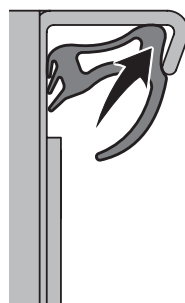
1



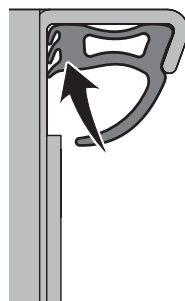
2



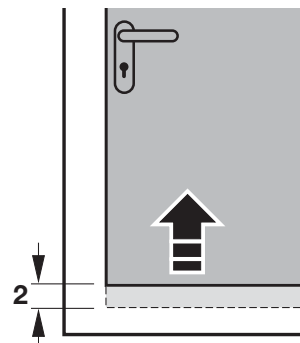
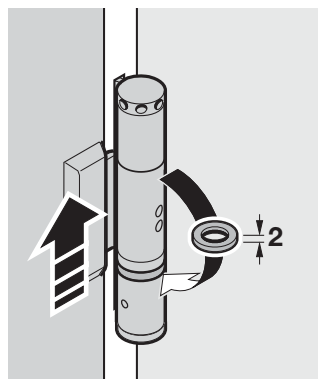
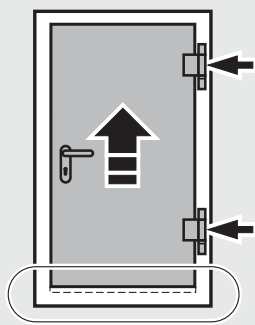
1.



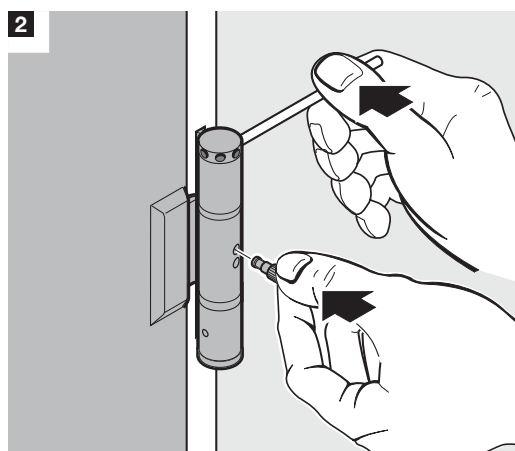
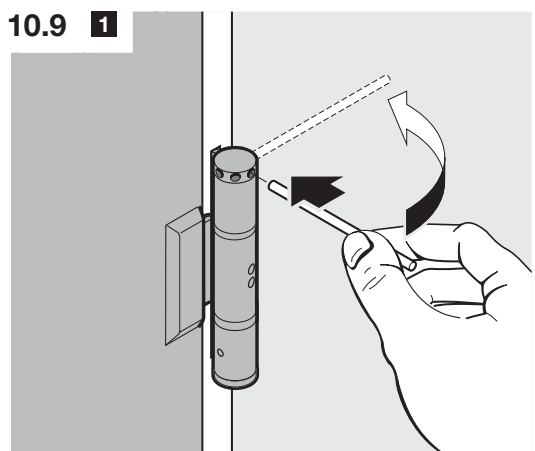
2.



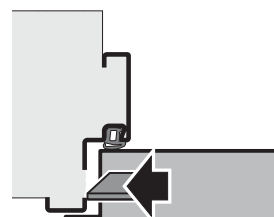
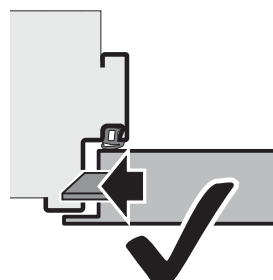
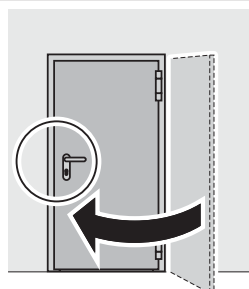
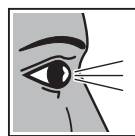
10.8



10.9 1

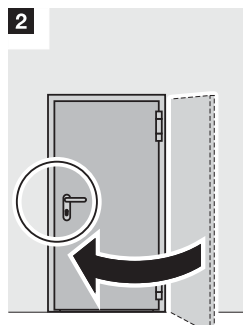
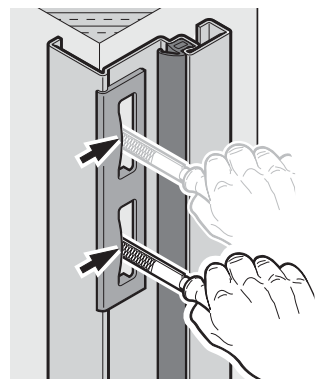


10.10a



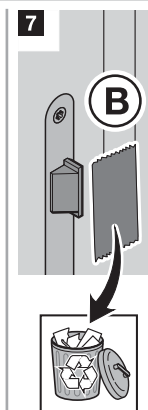
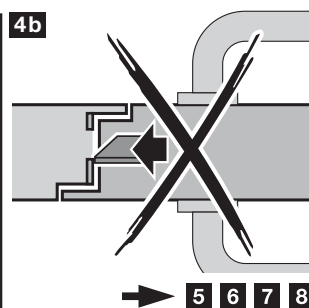
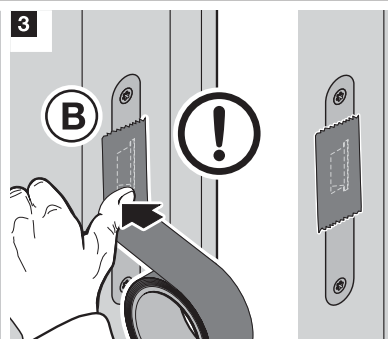
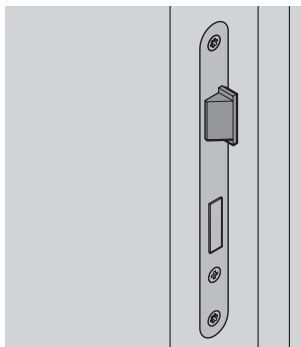
→ 1 2

1



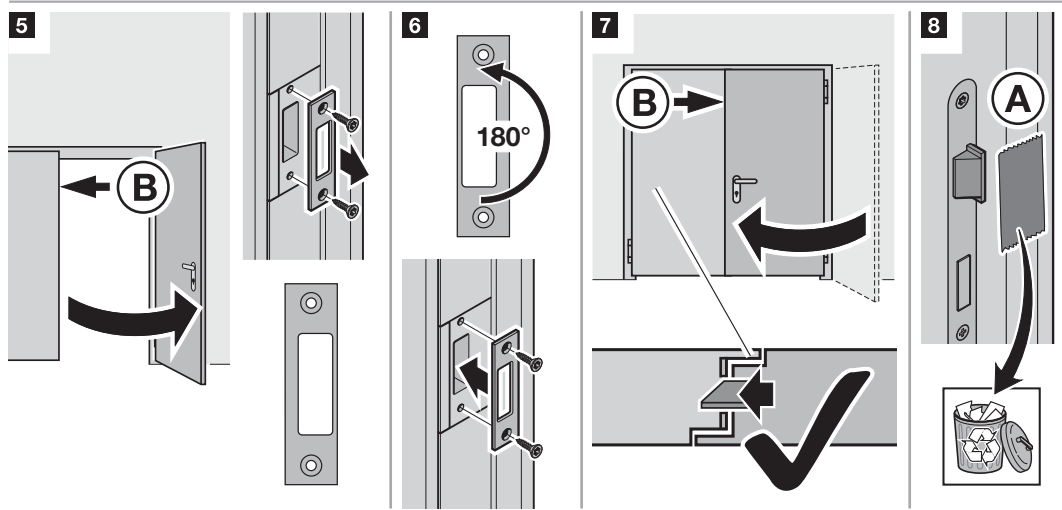
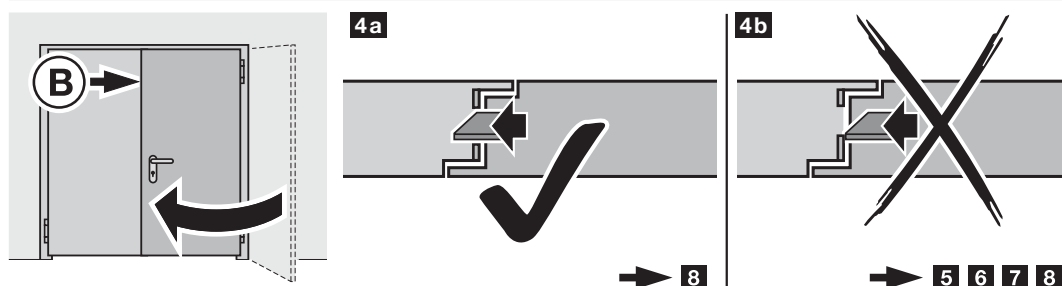
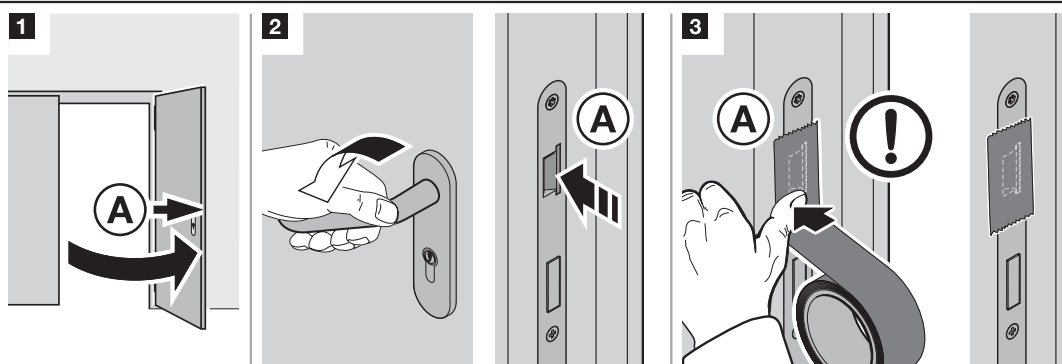
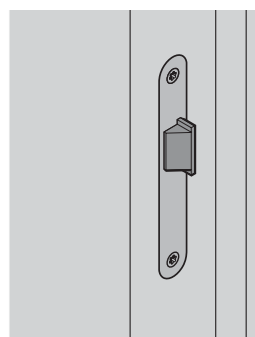
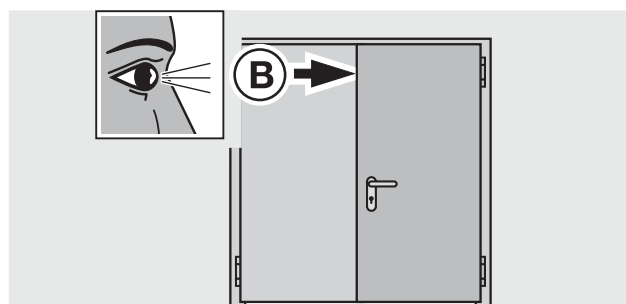
→ 1 2

10.10b H16-2 G / H_90 F-2

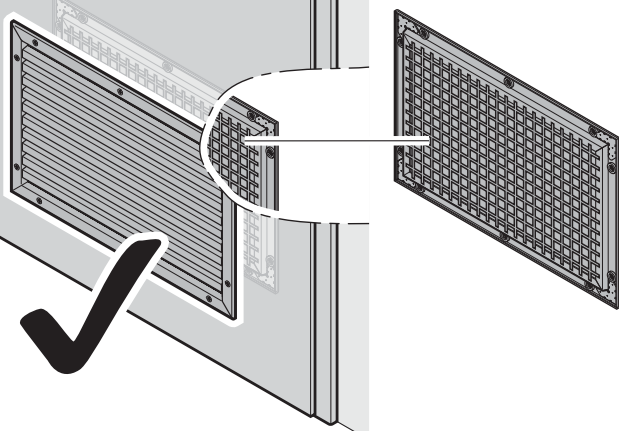


➔ **10.10c**

10.10c H16-2 G / H_90 F-2



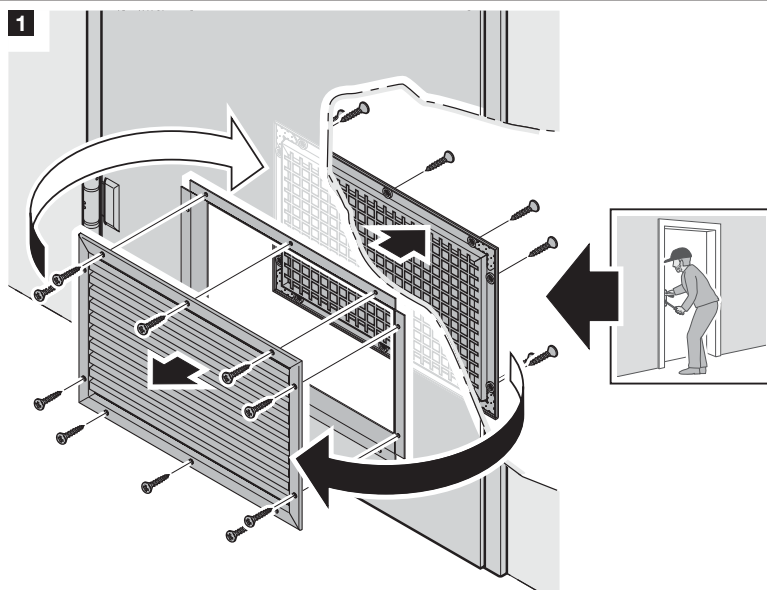
10.11a



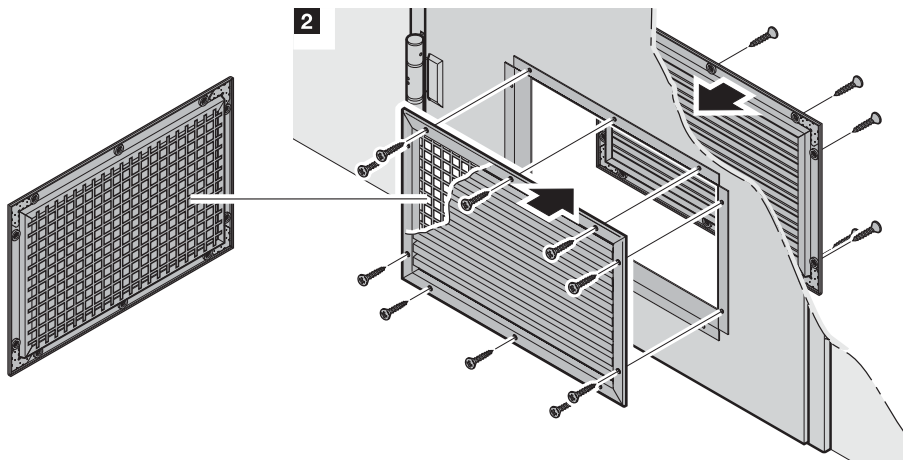
10.11b



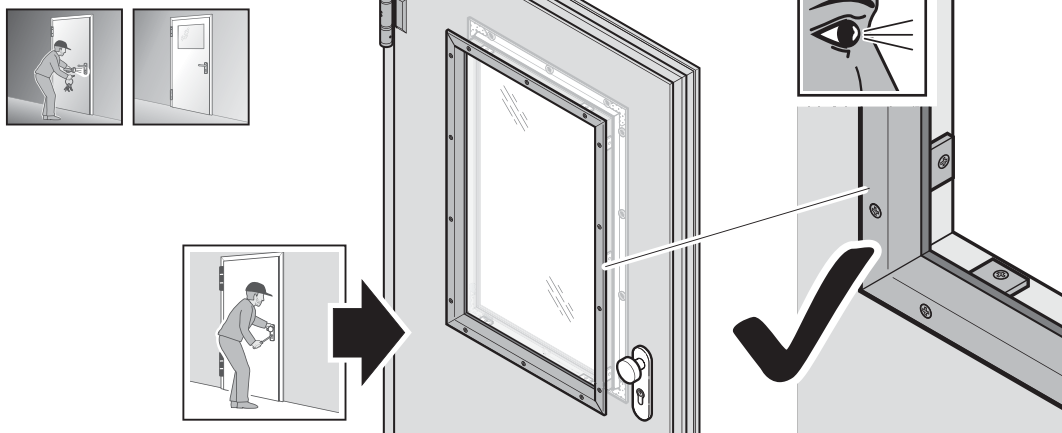
1



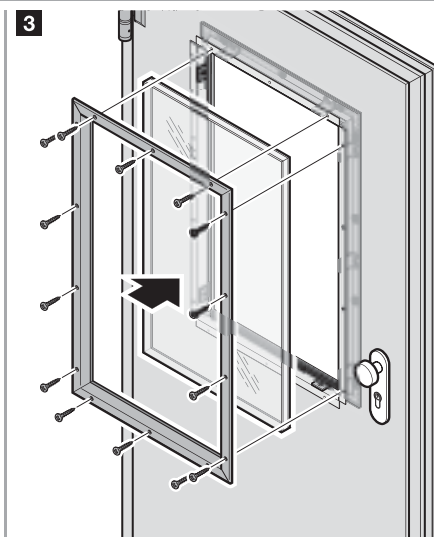
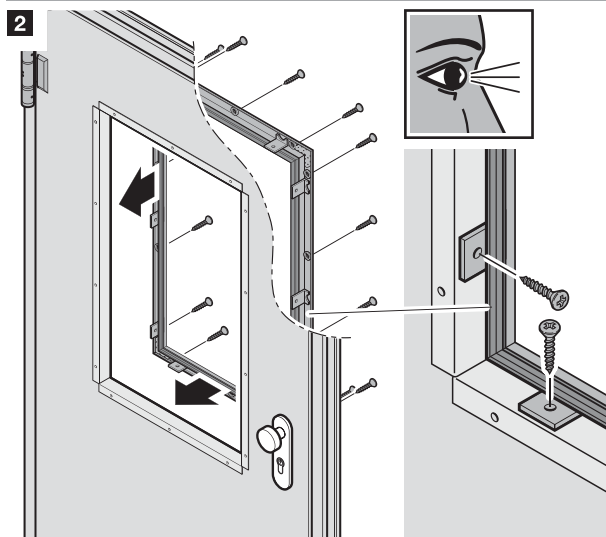
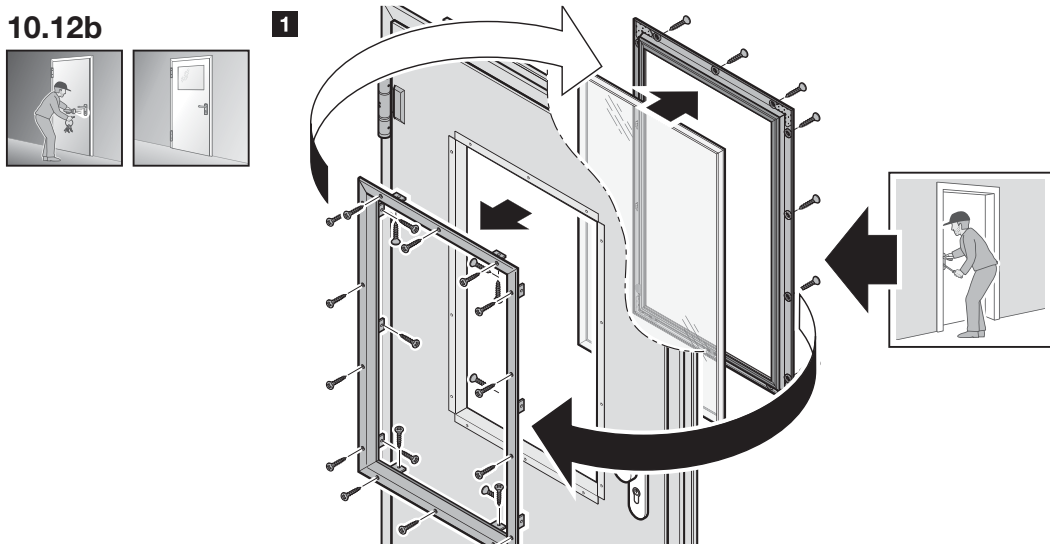
2



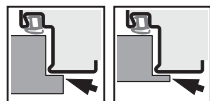
10.12a



10.12b



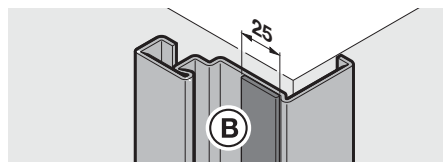
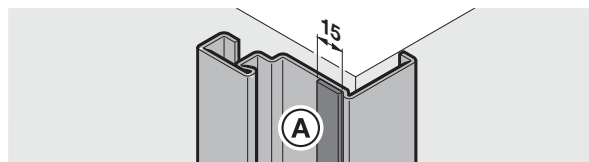
10.13a



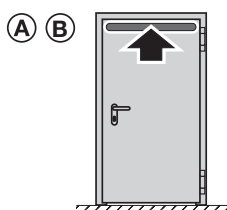
+ H3-1 OD
H3-2 OD



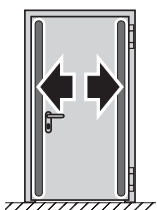
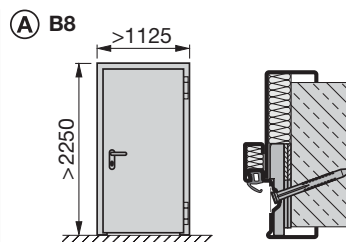
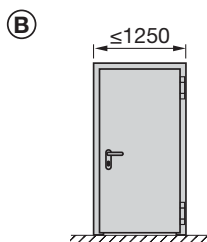
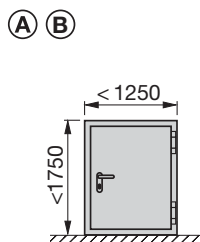
+ H3-1 OD
H3-2 OD



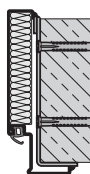
a



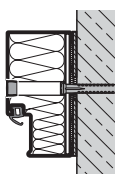
b



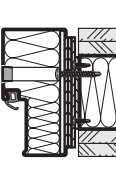
(A) (B)
D4 / D5



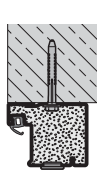
(A) (B) E2



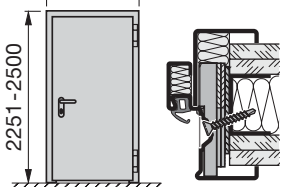
(A) (B) E9



(A) (B) H1



(A) B10
1125 - 1320



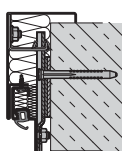
(A) (B) E5 / E6



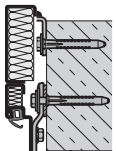
(A) (B) C1



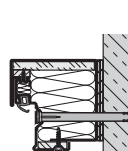
(A) (B) F1



(A) (B) A7

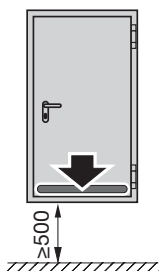


(A) (B) G2



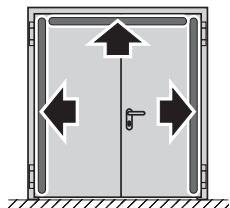
c

(A) (B)



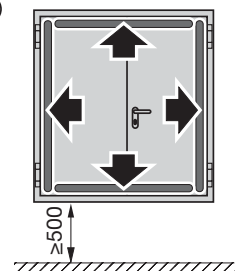
d

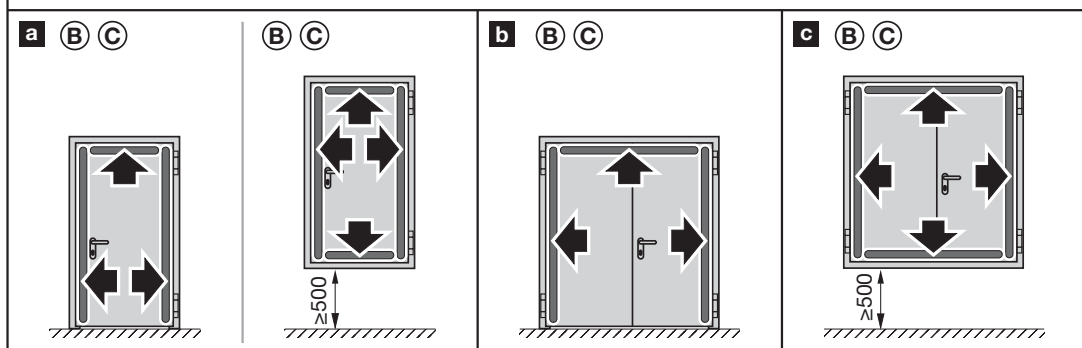
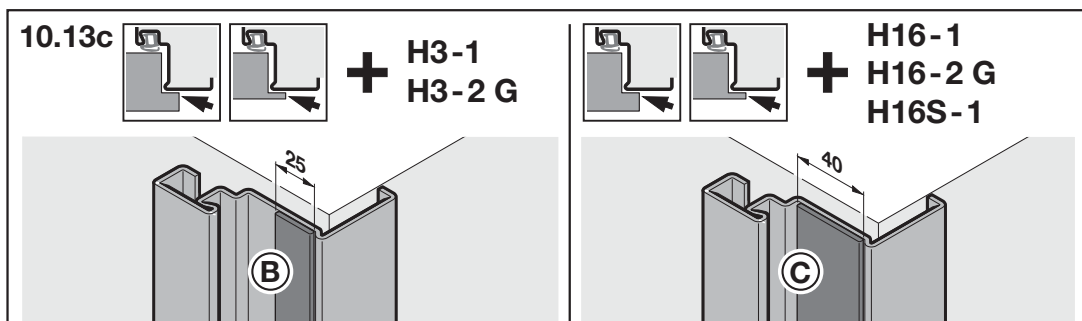
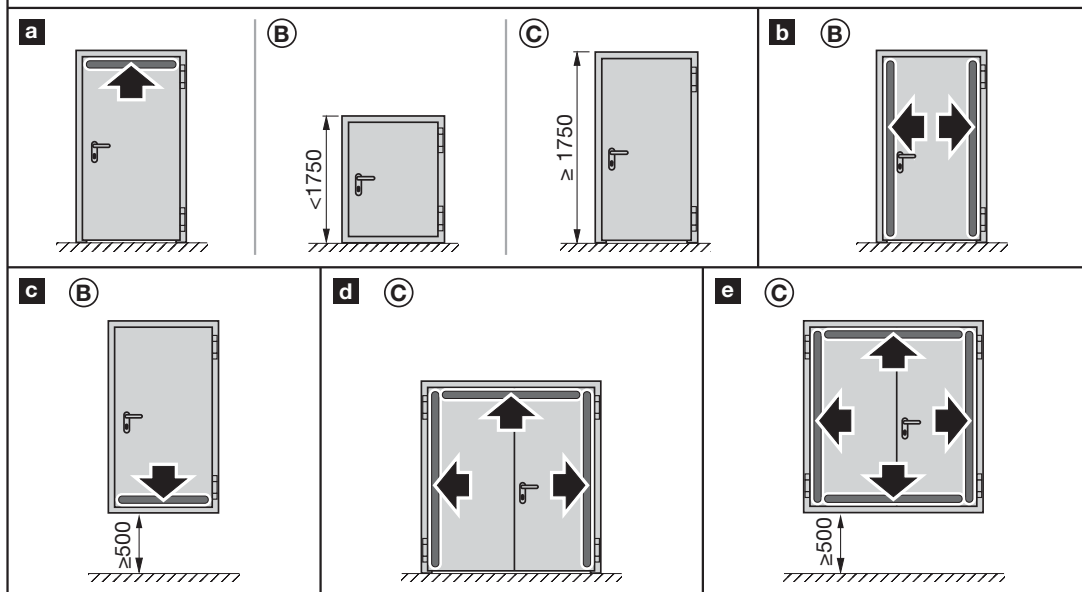
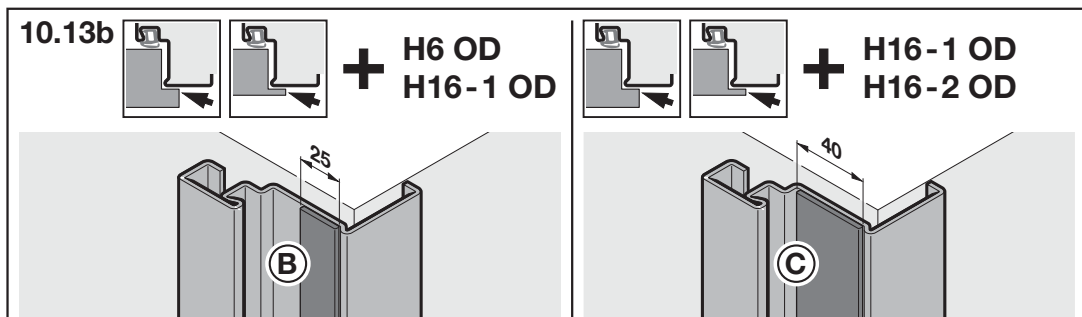
(A) (B)



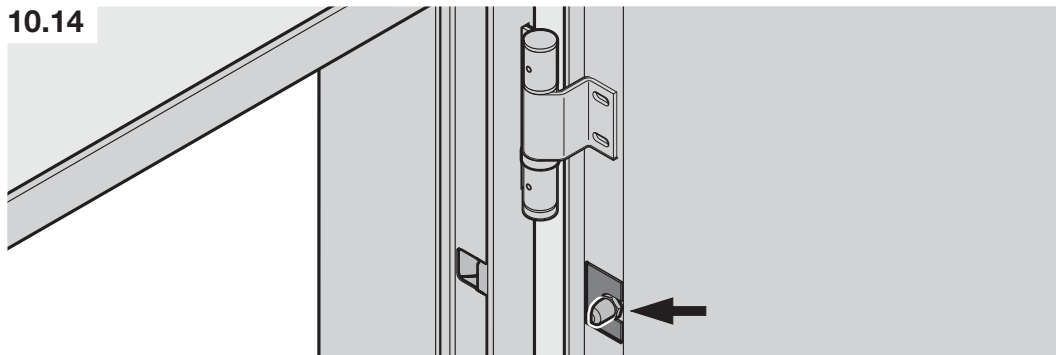
e

(A) (B)

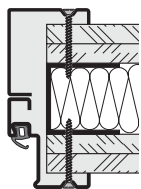




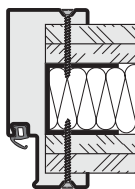
10.14



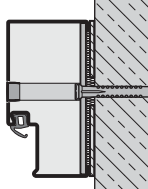
A10-A13



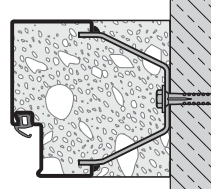
E5-E8



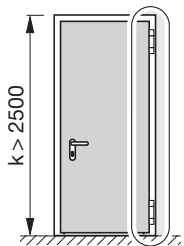
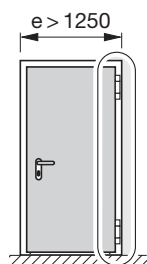
E1, E2



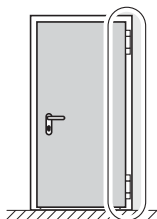
E3



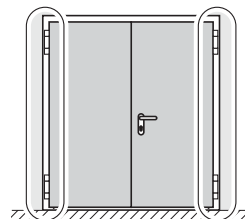
T30-1 / H_30-1



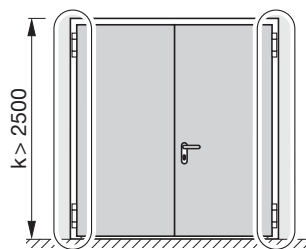
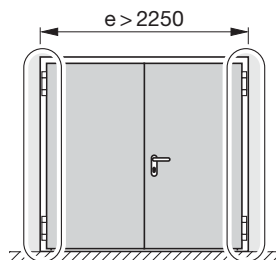
T90-1 / H_90-1



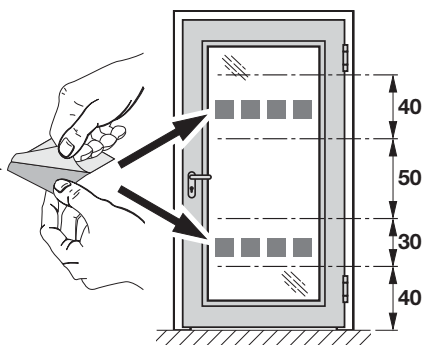
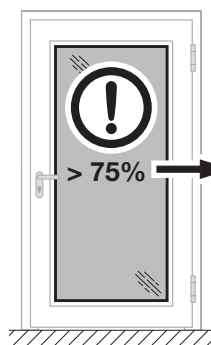
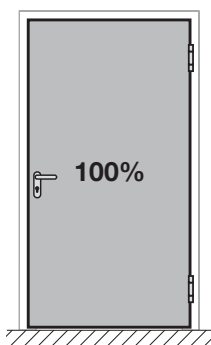
T30-2 RC3 / H_30-2 RC3



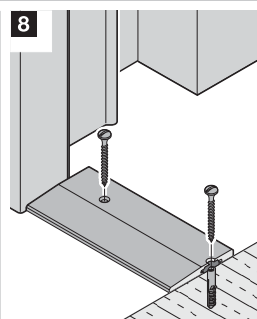
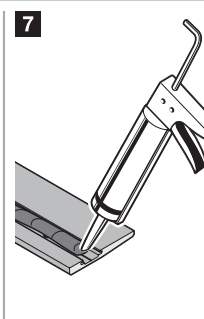
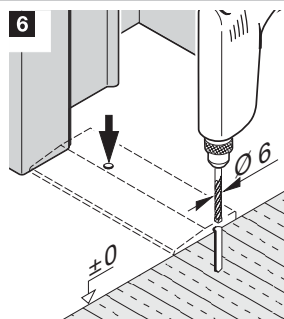
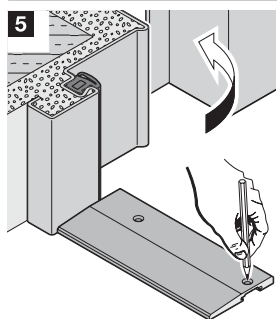
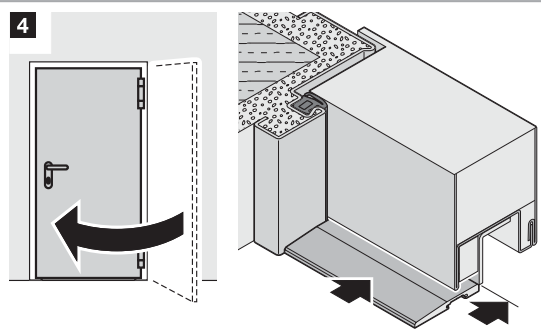
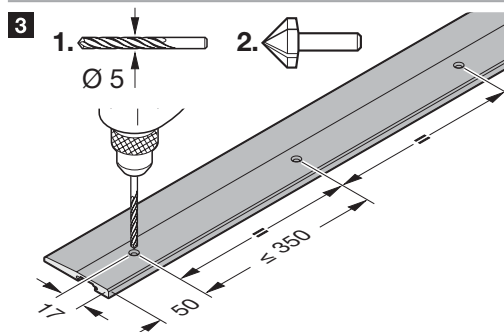
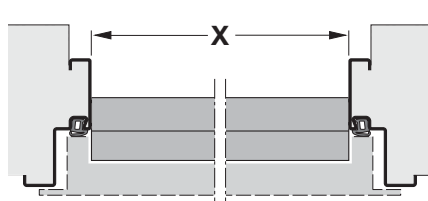
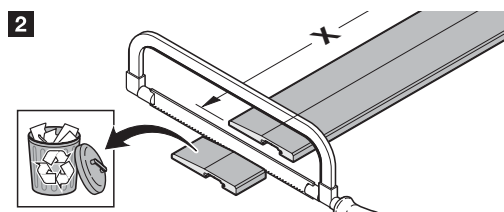
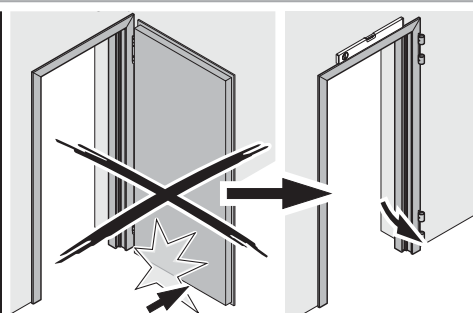
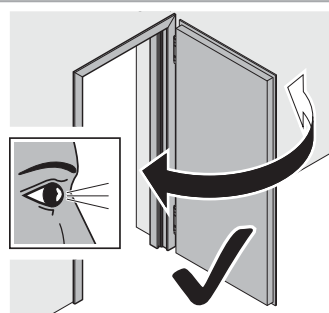
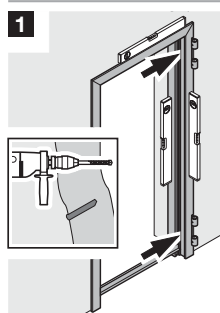
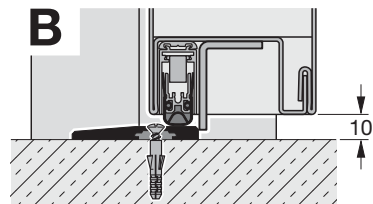
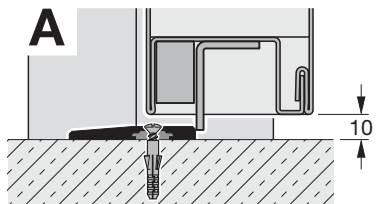
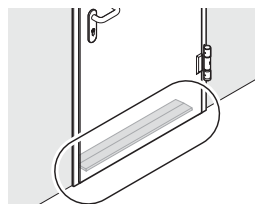
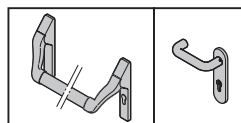
T90-2 / H_90-2



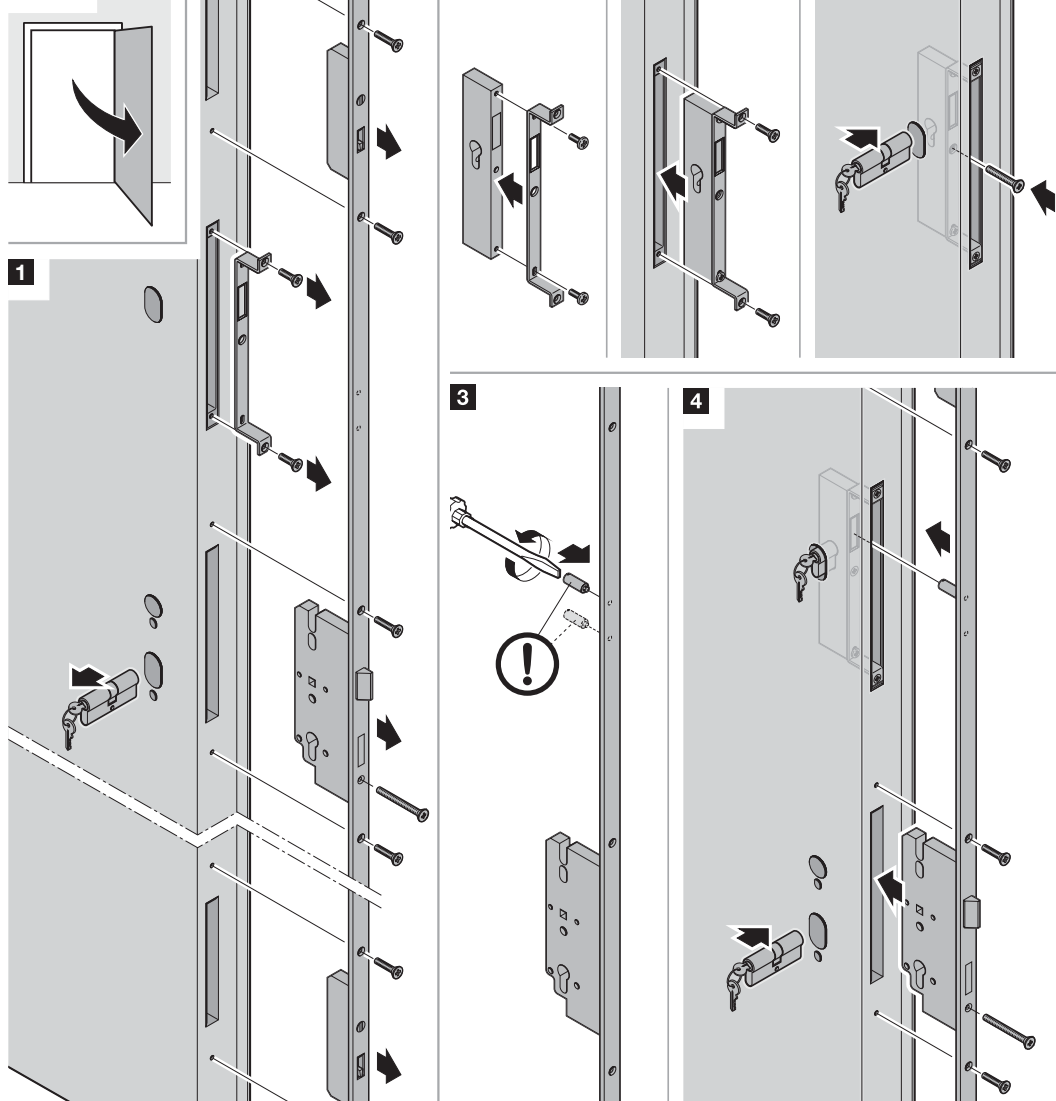
10.15



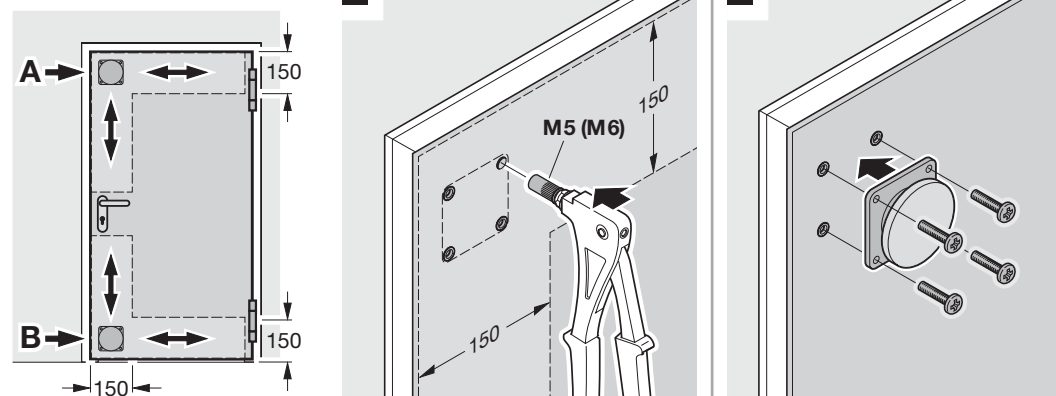
10.16



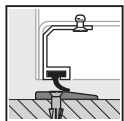
10.17



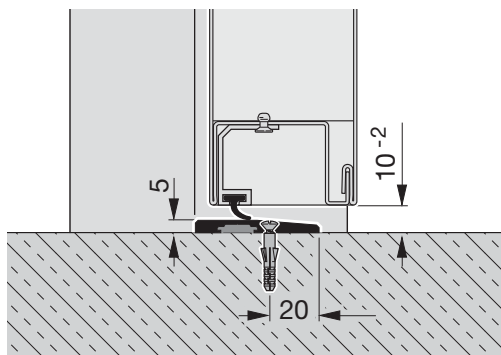
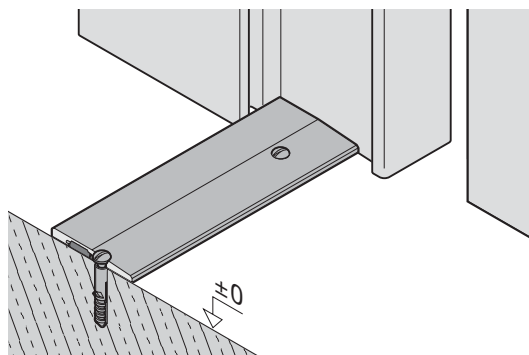
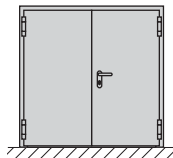
10.18



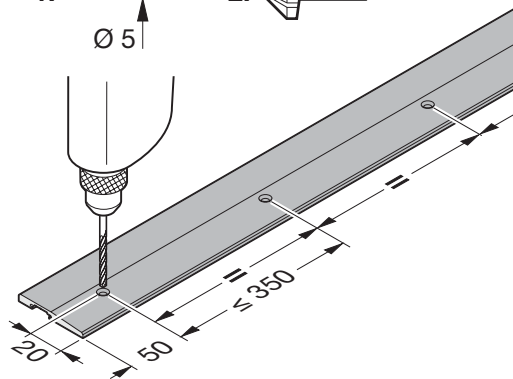
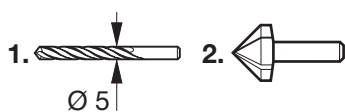
11b



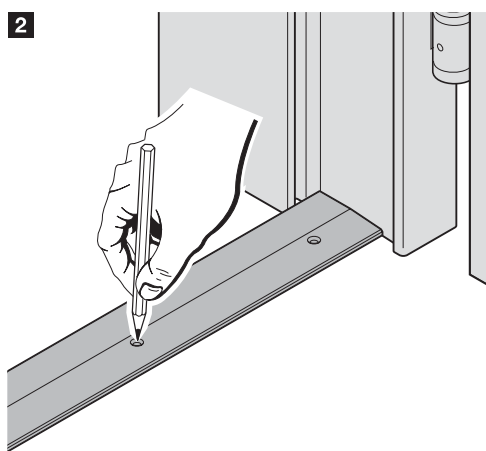
Typ 1



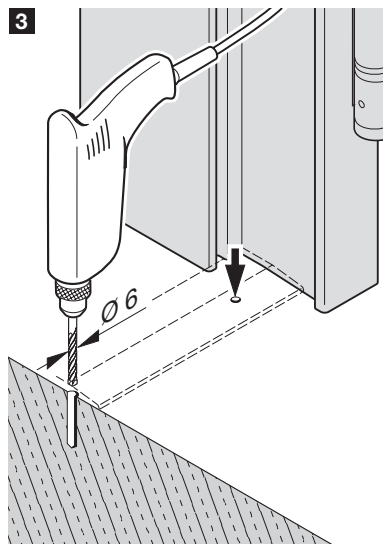
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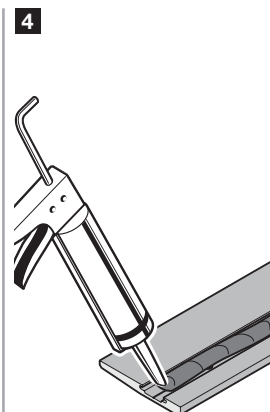
2



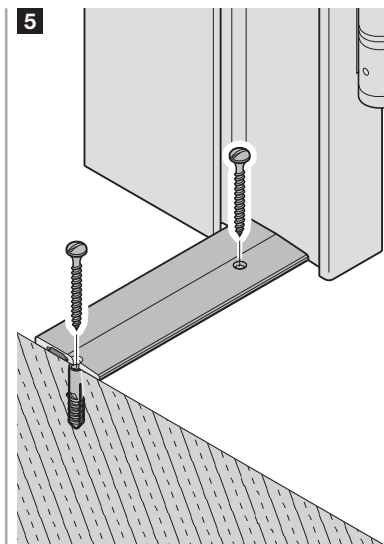
3



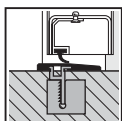
4



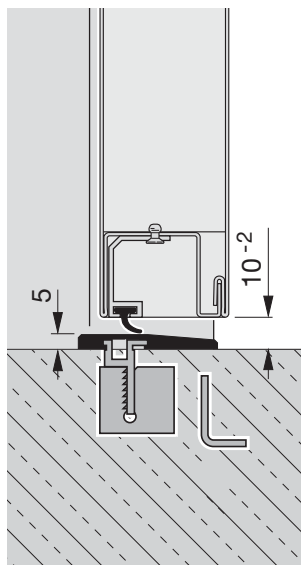
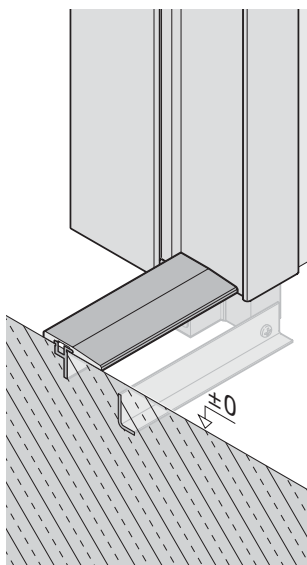
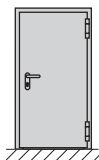
5



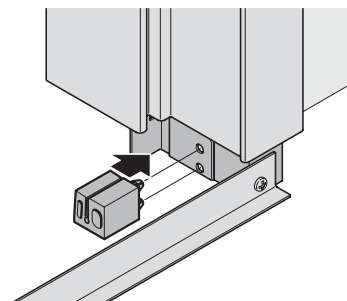
11c



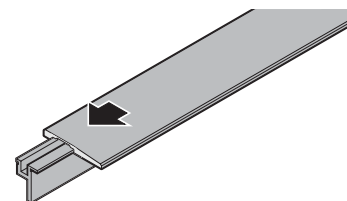
Typ 1



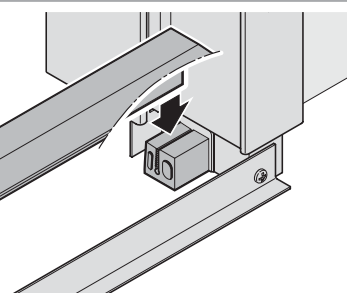
1



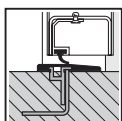
2



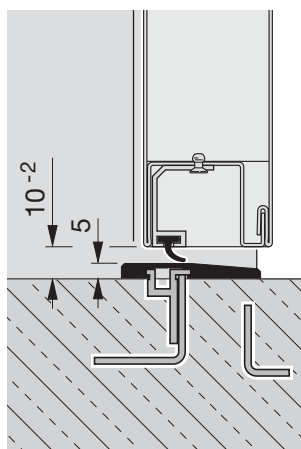
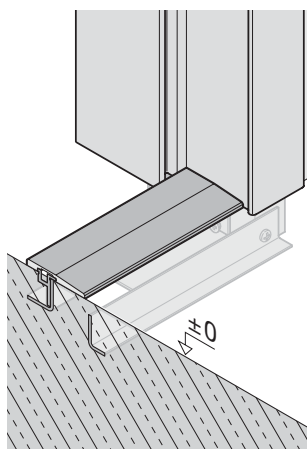
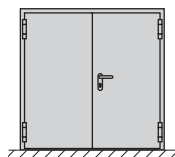
3



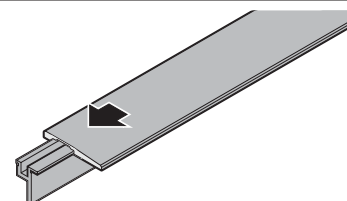
11d



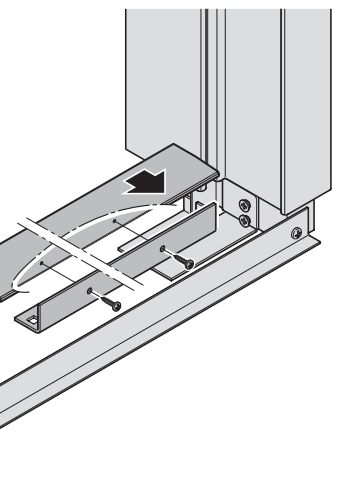
Typ 1



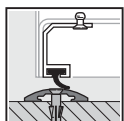
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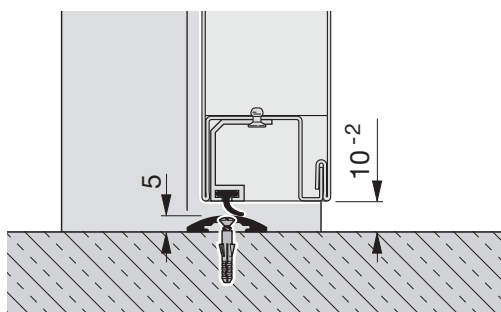
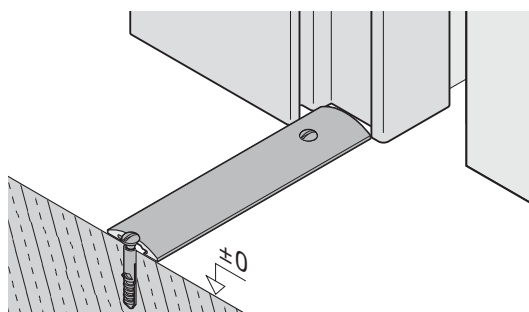
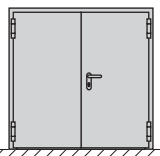
2



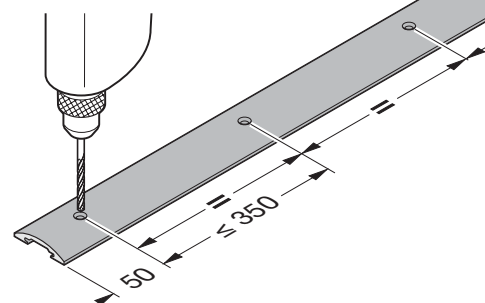
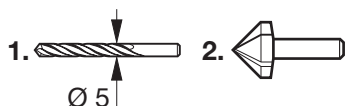
11e



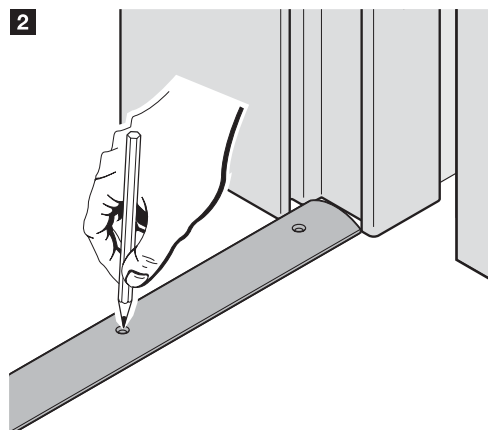
Typ2



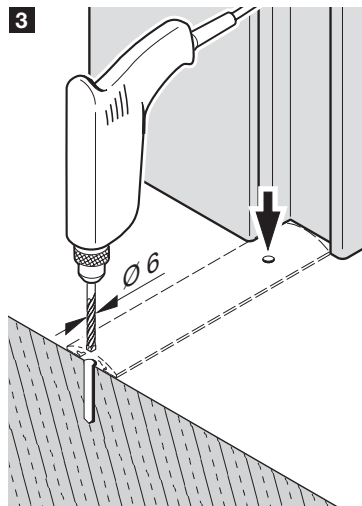
1



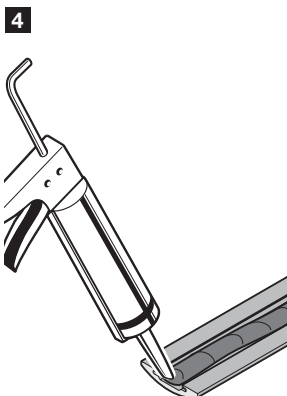
2



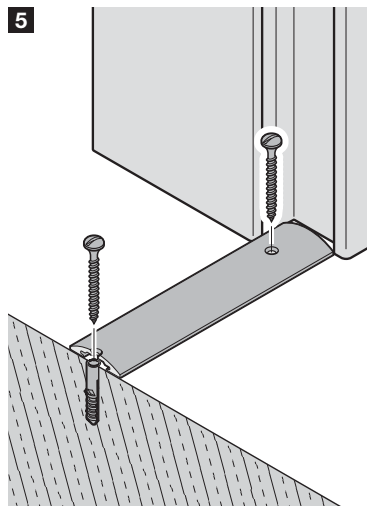
3

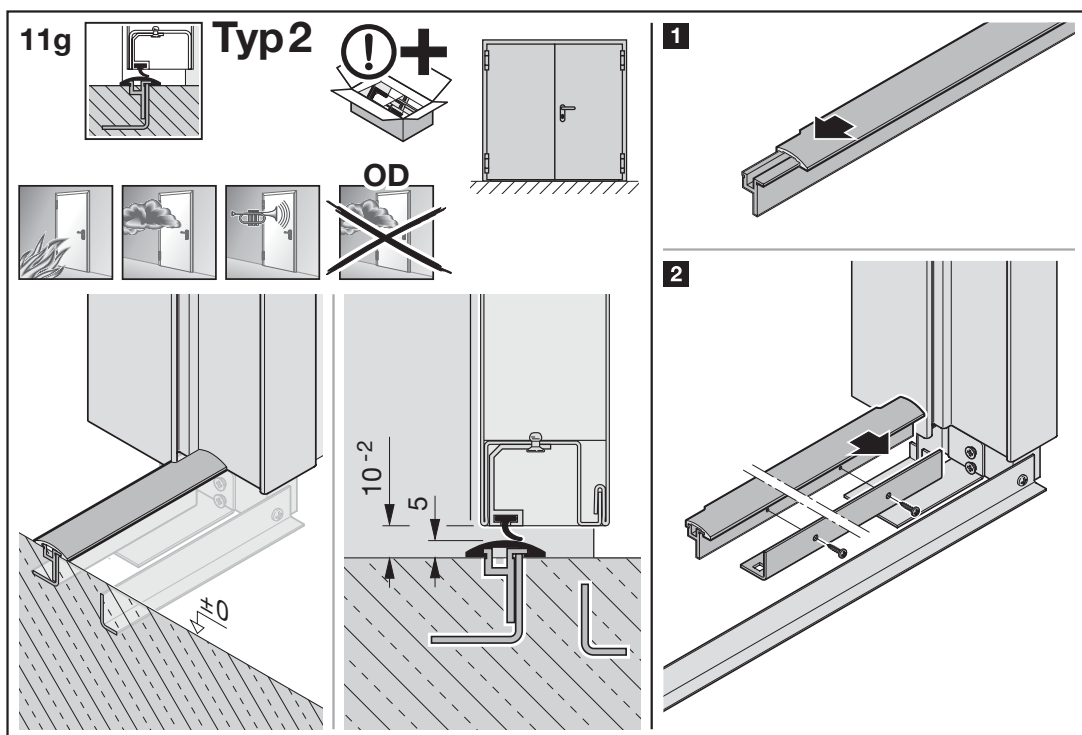
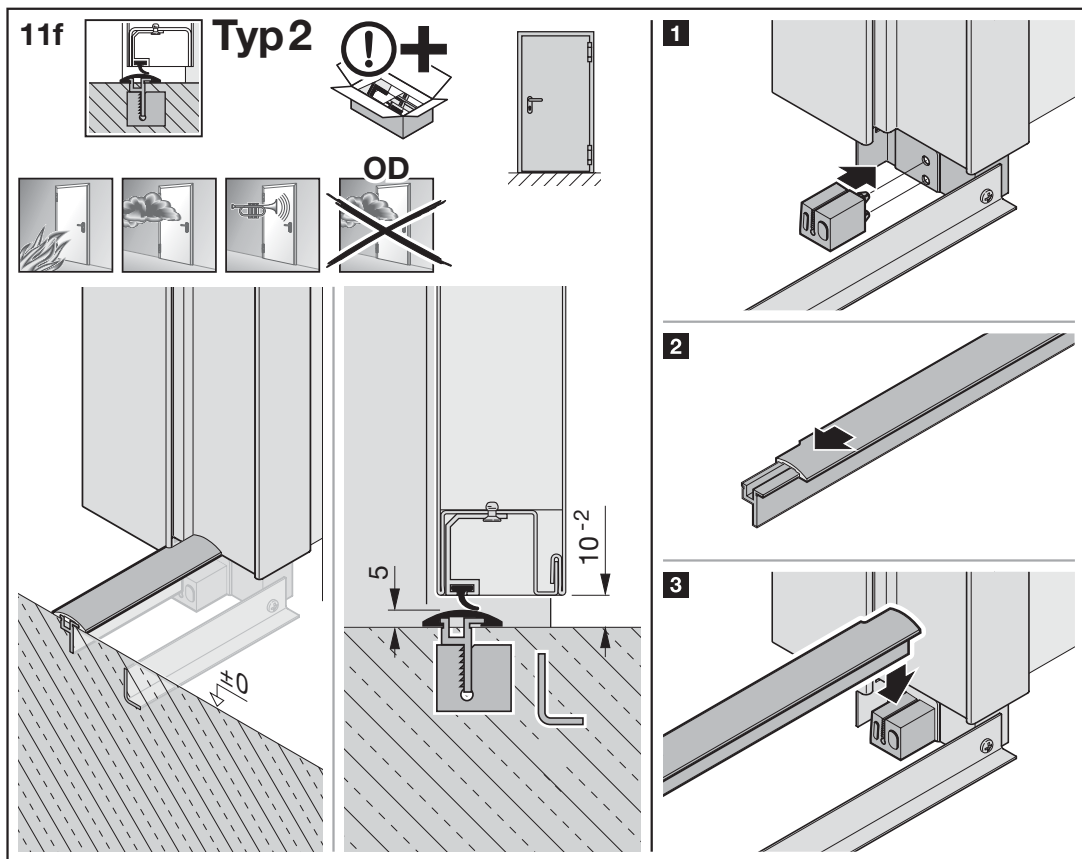


4



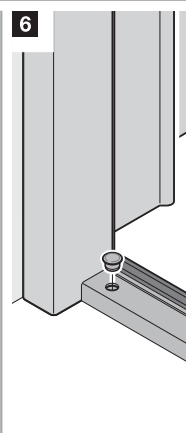
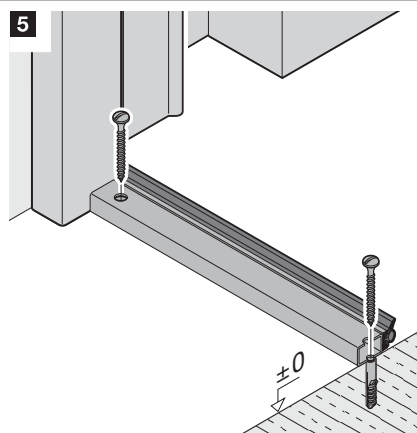
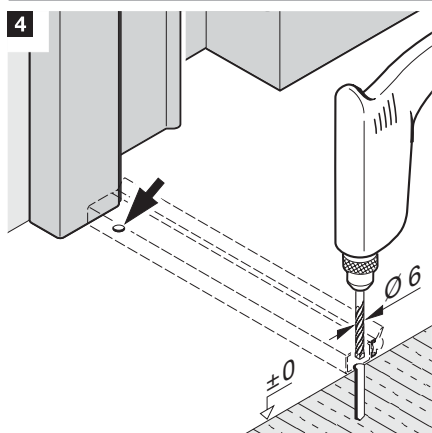
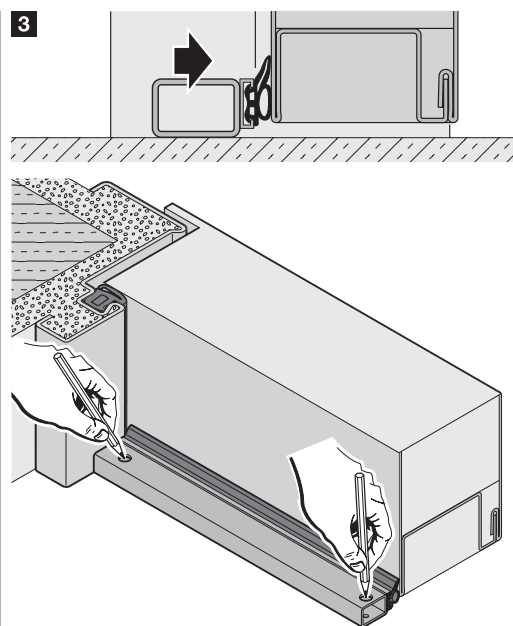
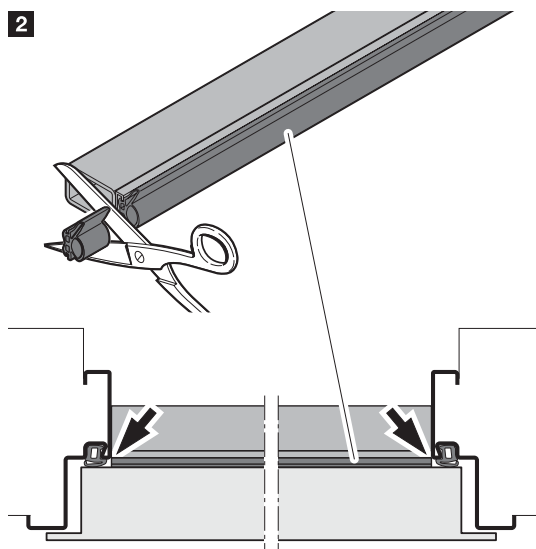
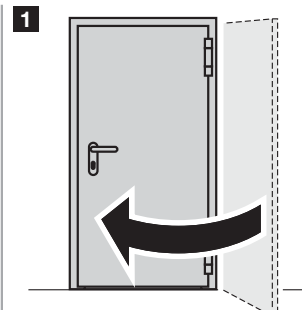
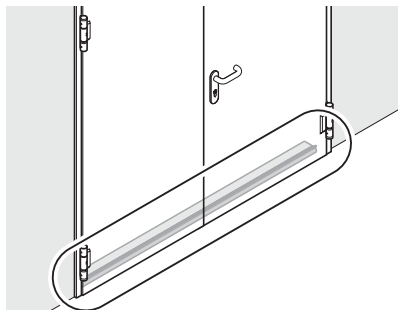
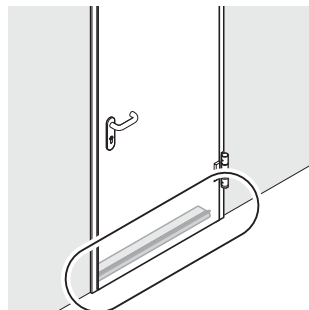
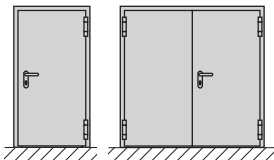
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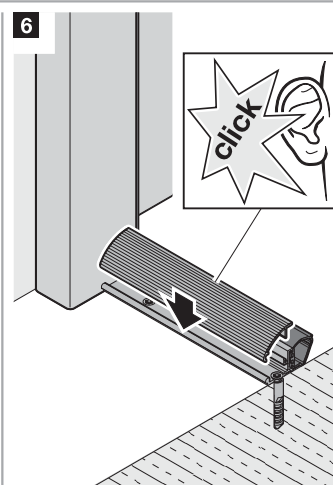
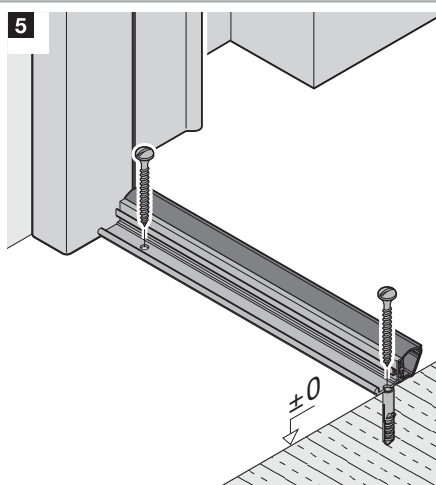
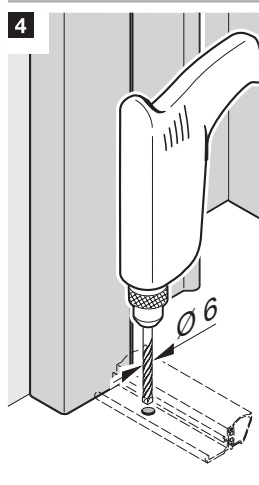
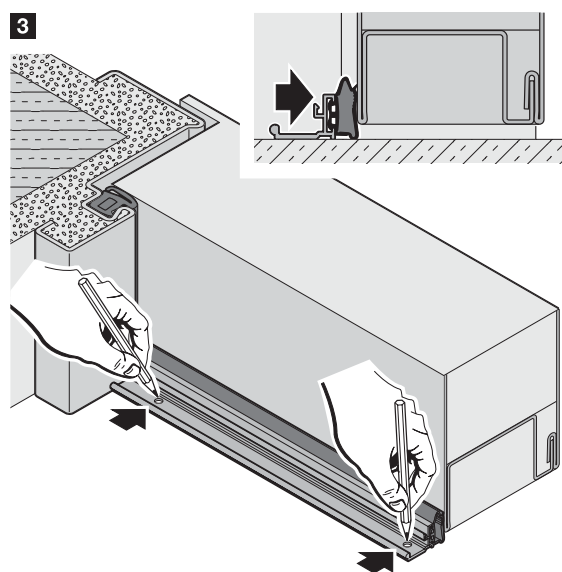
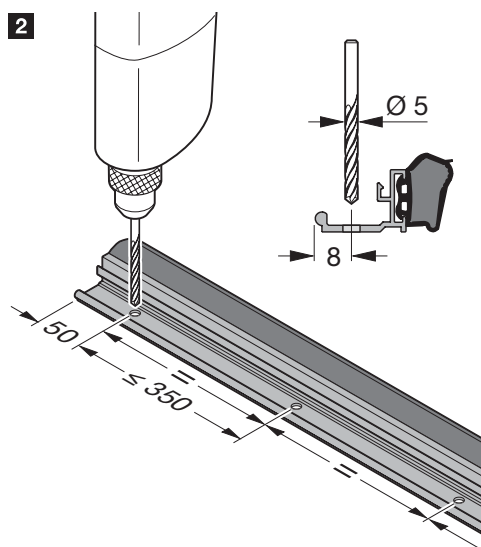
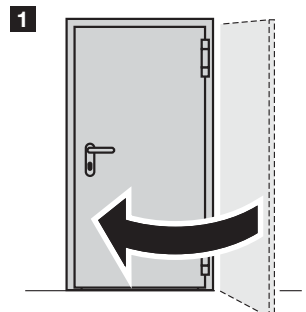
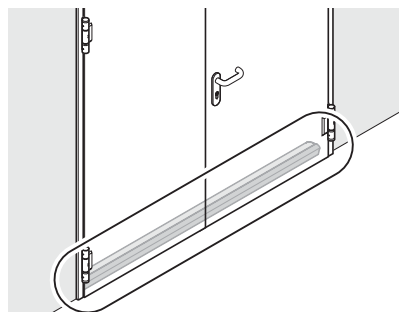
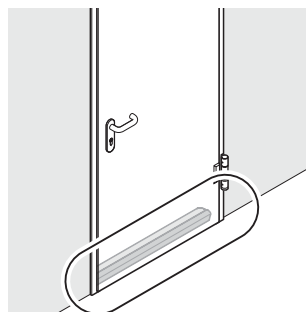
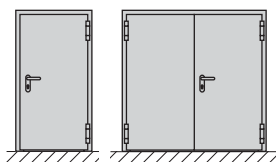
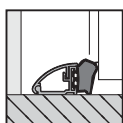
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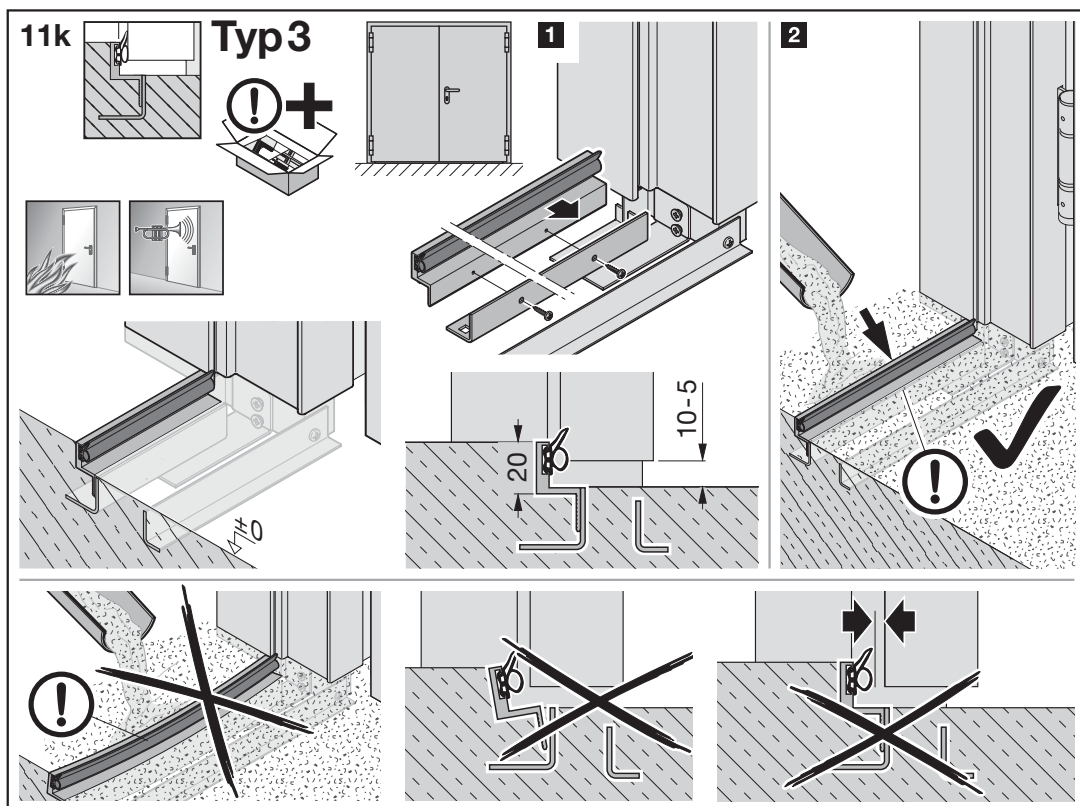
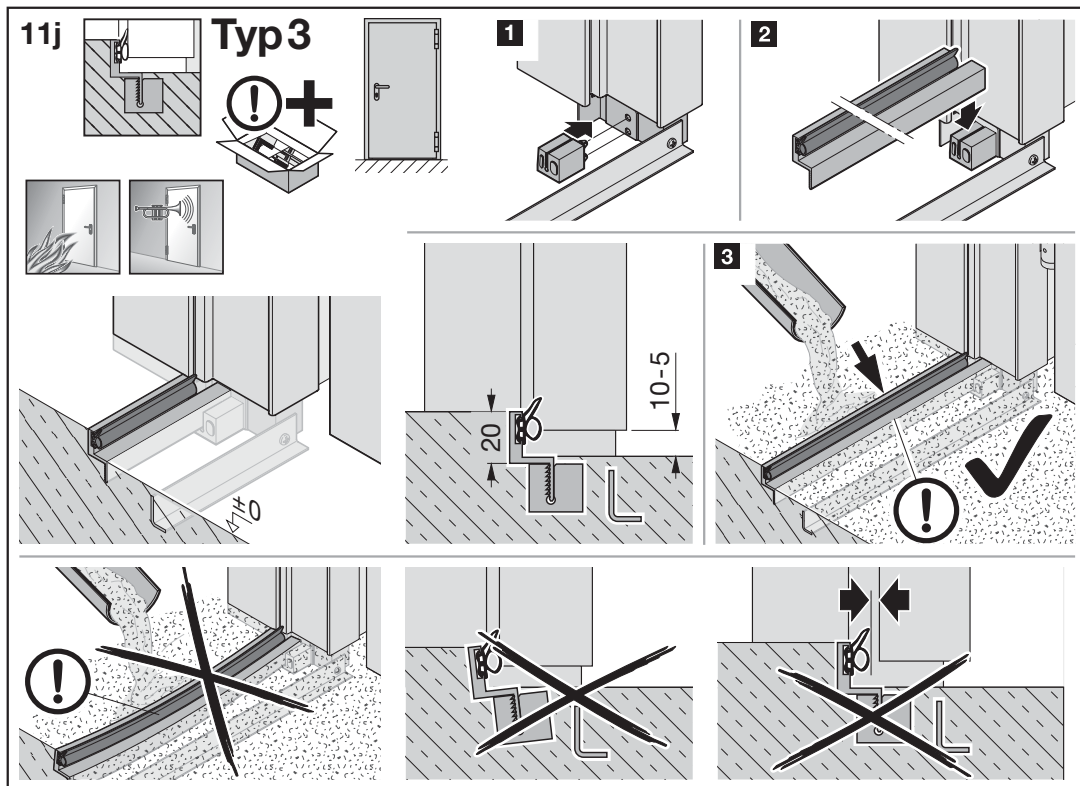
Typ 1



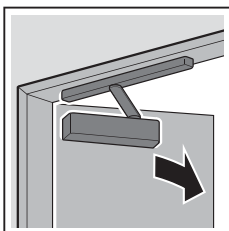
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Typ 2

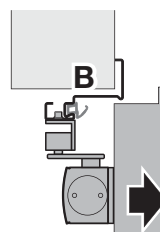
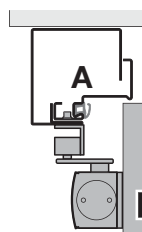




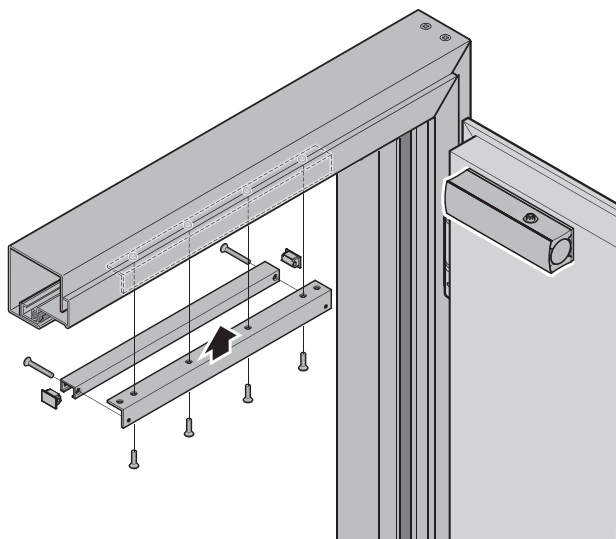
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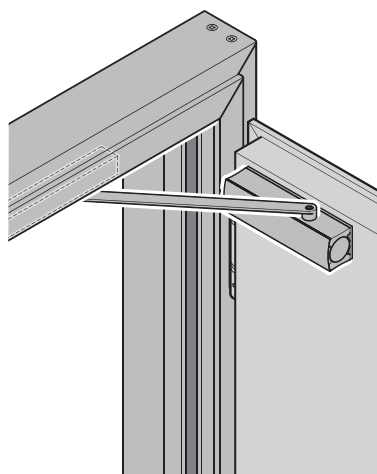
HDC 35 BG



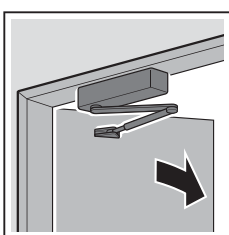
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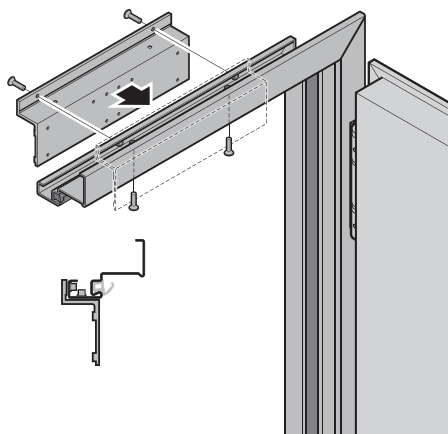
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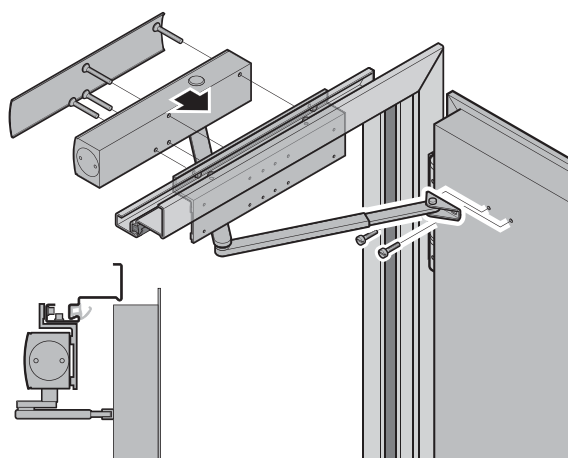
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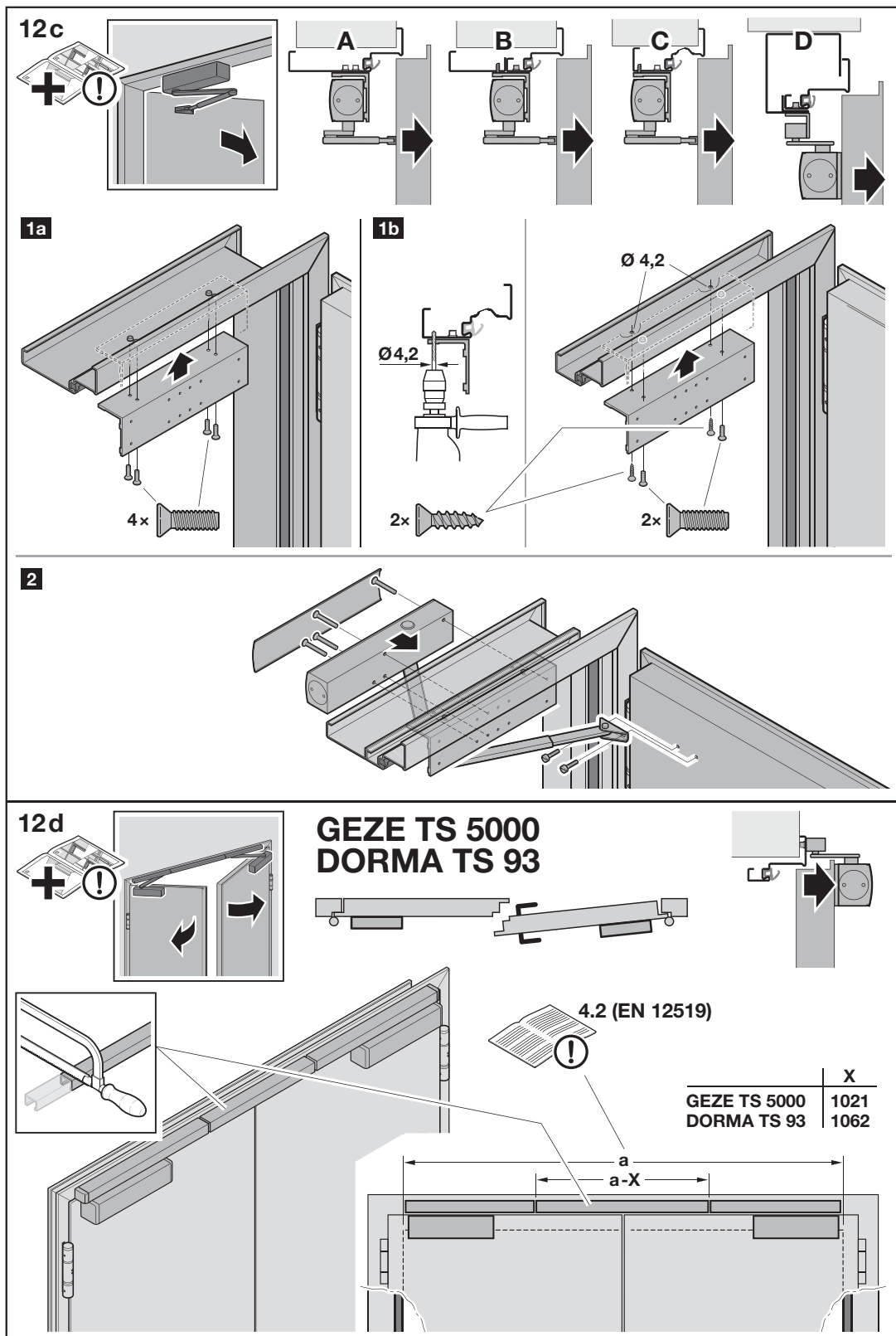


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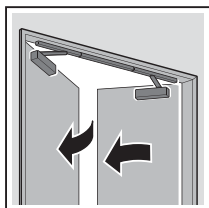


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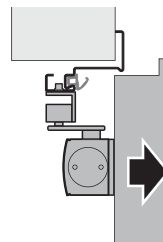




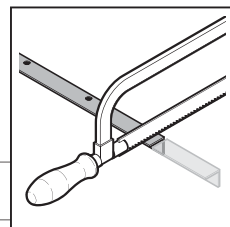
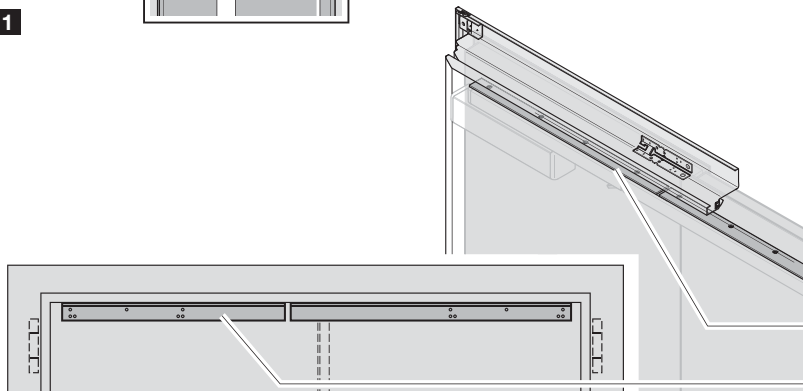
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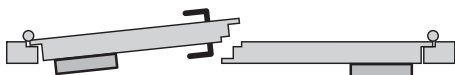
**GEZE TS 5000
DORMA TS 93**



1

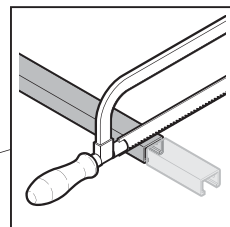
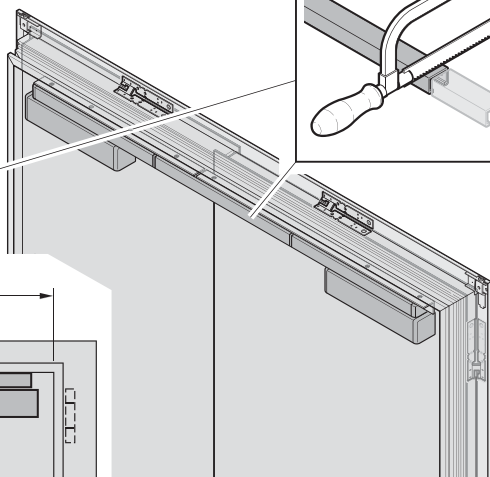
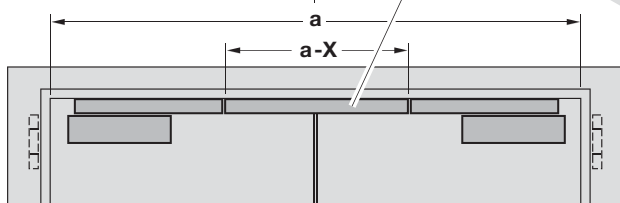


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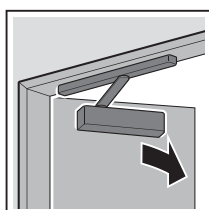
4.2 (EN 12519)

	X
GEZE TS 5000	1130
DORMA TS 93	1179

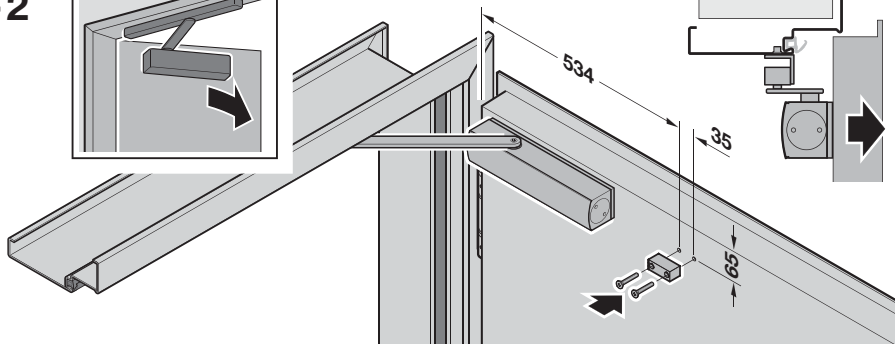


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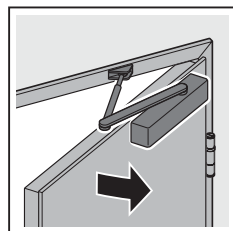
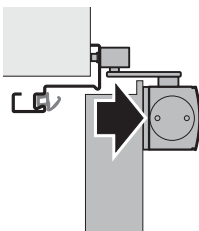
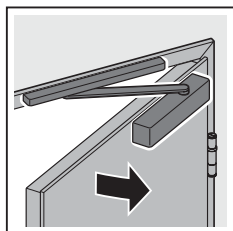
**H16-2
H3-2**



TS 93 GSR BG



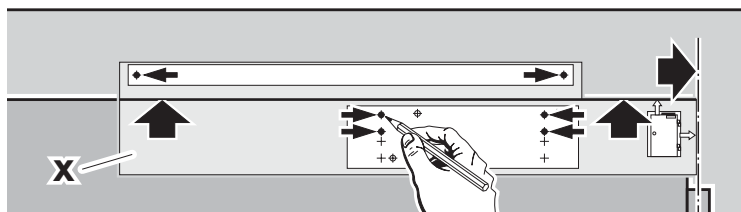
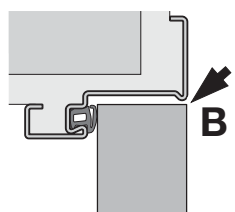
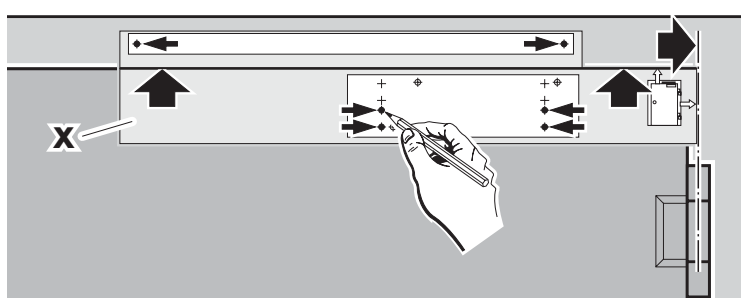
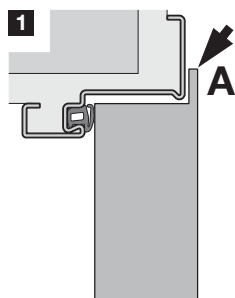
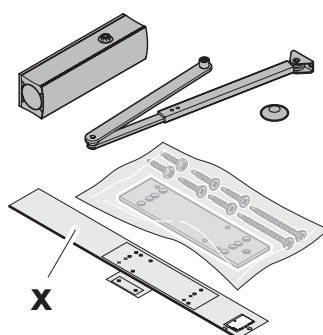
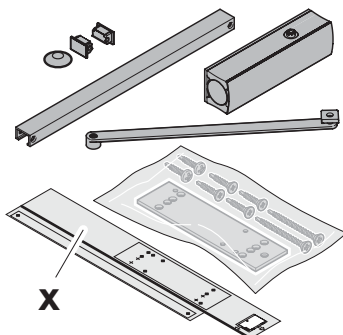
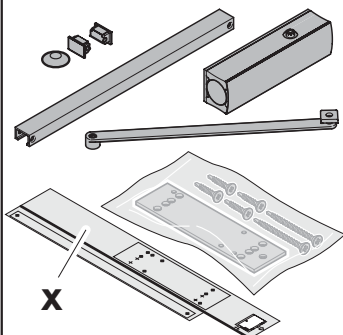
12g



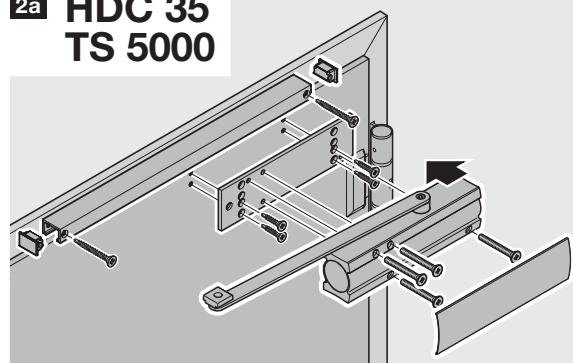
HDC 35

TS 5000

TS 4000



**2a HDC 35
TS 5000**



2b TS 4000

