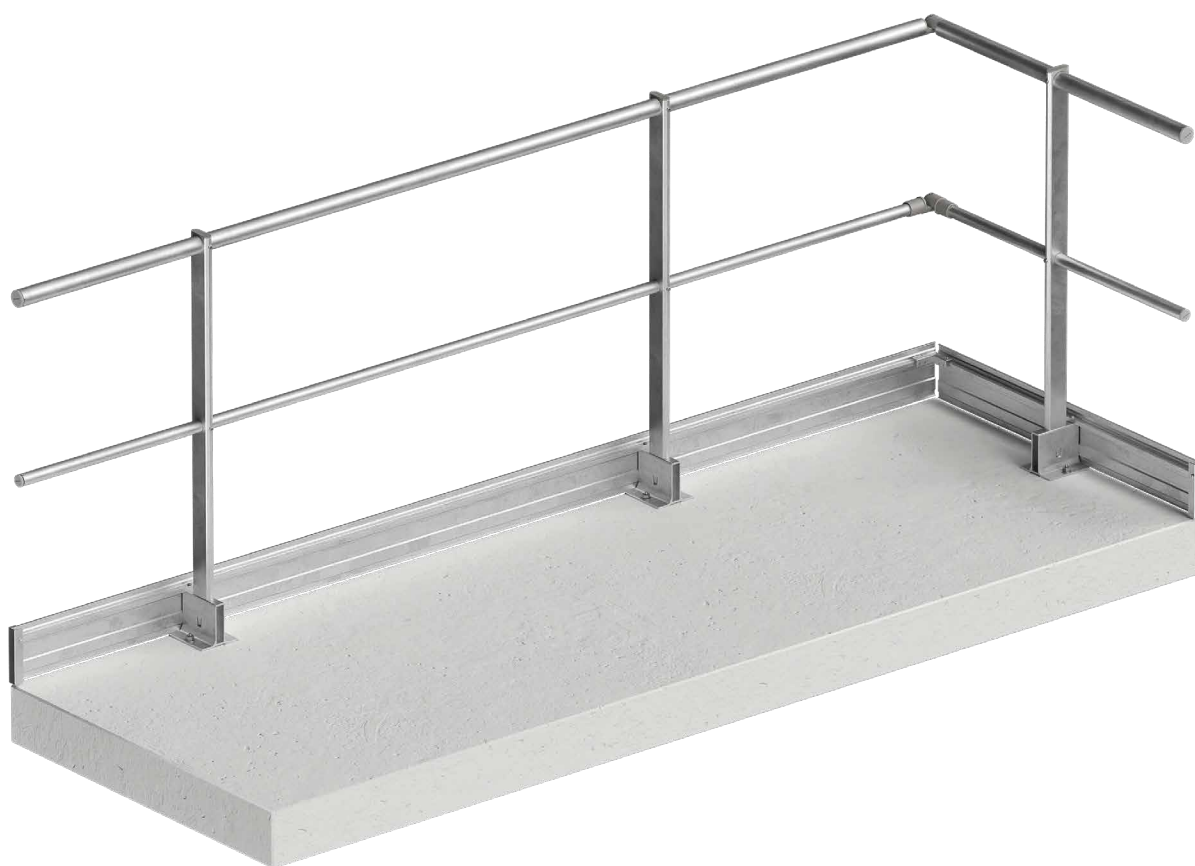
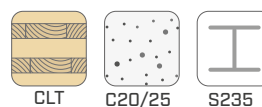


BORDER H

SAFETY REGULATIONS, INSTRUCTIONS FOR
INSTALLATION AND USE



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NORME DI SICUREZZA, ISTRUZIONI DI UTILIZZO E INSTALLAZIONE

INTRODUZIONE

DEFINIZIONE

Il parapetto a fissaggio orizzontale **BORDER H** è un sistema di protezione collettiva anticaduta, ideale per la sicurezza dei tetti, realizzato in lega di alluminio (**EN AW 6005A-T6 e EN AW 6063-T6**).

NORME

Il parapetto a fissaggio orizzontale **BORDER H** è conforme alle seguenti normative:

- **EN 14122-3:2016**
- **EN 13374:2025 Cl. A (eccetto punto 9)**
- **EN 13374:2013+A1:2018 Cl. A (eccetto punto 9)**
- **NTC (Tab.3.1.II - cat. A,B,C1,E1,F,G,H) e D. Lgs 81/08 (Italia)**
- **UNI 11996 - A (eccetto punto 10.4) (Italia)**
- **NF E 85-015:2019 (Francia)**

La tabella riporta i principali parametri geometrici previsti dalle normative di riferimento:

	EN 14122-3: 2016	EN 13374:2013 +A1:2018 Cl.A	EN 13374:2025 Cl.A	UNI 11996 - A	NTC 2018	D.Lgs. 81/08	NF E85-015: 2019
Min. altezza dal piano di calpestio	1,1 m	1 m			1 m	1 m	1 - 1,1 m
Max. interasse tra i correnti	500 mm	470 mm			-	500 mm	500 mm
Max. interasse tra i montanti	1,5 m (suggerito)	-			-	-	1,5 m (suggerito)
Min. altezza tavola fermapiEDE	10 cm	15 cm			-	15 cm	10 cm

QUADRO NORMATIVO ITALIANO



Il parapetto **BORDER H** è stato progettato e verificato in conformità alla norma UNI 11996:2025, "applicabile anche per le coperture di cui alla categoria H e alle coperture praticabili di ambienti di categoria d'uso A, B1, B2 e C1 di cui alla tabella 3.1.II di cui alla legislazione vigente." I valori riportati nelle tabelle del presente manuale (quali interassi e configurazioni di installazione) derivano da prove sperimentali eseguite in laboratorio e rappresentano configurazioni standard conformi ai requisiti della UNI 11996:2025. Tali configurazioni identificano un insieme di soluzioni tipiche validate, per le quali sono garantite le prestazioni richieste in termini di resistenza e sicurezza. Per configurazioni non riconducibili alle soluzioni standard indicate nel presente documento, o in presenza di condizioni progettuali particolari (richieste speciali), è necessario rivolgersi all'Ufficio Tecnico Rotho Blaas.

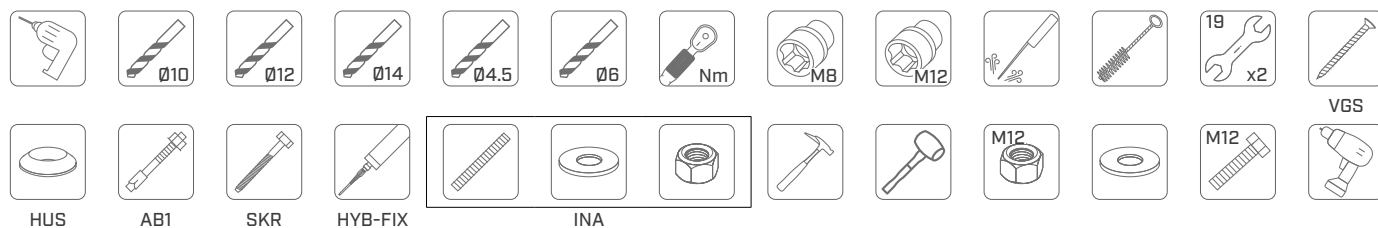
USO - MANUTENZIONE

- L'installazione del parapetto **BORDER** deve essere eseguita da personale qualificato, nel rispetto delle normative vigenti relative ai lavori in quota. Prima dell'uso, l'operatore deve garantire la propria sicurezza utilizzando una linea vita temporanea, DPI e una piattaforma di lavoro idonea.
- Prima dell'uso, l'utente deve verificare, tramite ispezione visiva, che il parapetto **BORDER** non presenti anomalie, danni o deformazioni (urti, piegature, ecc.).
 - Il parapetto **BORDER** non richiede interventi di manutenzione specifici. È tuttavia necessario eseguire almeno un controllo visivo annuale da parte di personale qualificato.
 - Se il parapetto **BORDER** non è installato in modo corretto, risulta danneggiato o ha arrestato una caduta, il suo utilizzo deve essere immediatamente sospeso.
 - Se il prodotto è rivenduto al di fuori del Paese di destinazione, è essenziale per la sicurezza dell'utente che il rivenditore fornisca il manuale di istruzioni nella lingua del Paese in cui il prodotto viene utilizzato. I documenti possono essere forniti su richiesta contattando il produttore.
 - Il parapetto **BORDER** è un dispositivo di protezione collettiva permanente, destinato esclusivamente a professionisti operanti su coperture non accessibili al pubblico.
 - Se installato in ambienti industriali inquinati, petrolchimici, navali o costieri, il parapetto **BORDER** deve essere sottoposto a un trattamento superficiale adeguato, come verniciatura a polvere o anodizzazione.
 - Se è stata fornita una planimetria, deve essere utilizzata come riferimento durante l'installazione.
 - Se necessario, si consiglia di collegare il parapetto ad un sistema di protezione anti-fulmini secondo le normative locali. Non utilizzare come linea di messa a terra del parafulmine.

STOCCAGGIO

I componenti in alluminio grezzo sono imballati a contatto tra loro. L'esposizione alla pioggia della confezione chiusa può favorire l'ossidazione dei componenti, con la possibile formazione di macchie superficiali. Queste non compromettono la qualità dell'alluminio, ma possono danneggiare l'aspetto estetico del parapetto. Si consiglia di disimballare il pacco e mantenere i componenti separati, evitando il contatto diretto tra loro, oppure di conservare le confezioni imballate in un luogo asciutto.

ATTREZZATURA



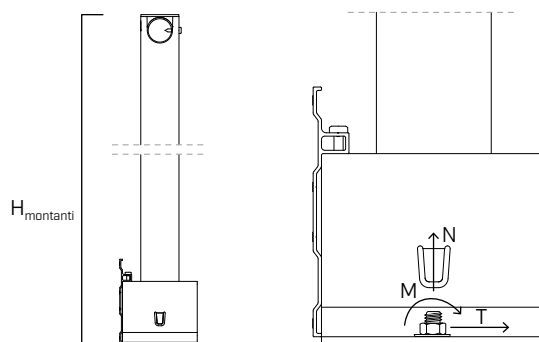
PRINCIPALI FORZE AGENTI SULL'ANCORAGGIO

Il bullone più sollecitato è soggetto alla combinazione delle seguenti forze e momenti risultanti, nell'ipotesi di flangia rigida con ripartizione lineare delle sollecitazioni:

$$M = F \cdot H$$

$$N = F_t = \frac{M \cdot y_j}{\sum n_i y_i^2}$$

$$T = \frac{F}{2}$$



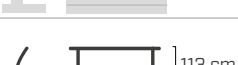
I valori risultanti agenti sul singolo fissaggio sono così definiti (nel caso di installazione della piastra BORBASEH):

H _{montanti} [m]	EN 14122-3: 2016		EN 13374:2013 +A1:2018 CLA		EN 13374:2025 CLA	UNI 11966 - A	NTC 2018 f=1,5	NTC 2018 f=1,0	NF E85-015: 2019
	T [N]	N [N]	T [N]	N [N]		T [N]	N [N]	T [N]	N [N]
0,53	394	3092	285	2238		1485	11660	464	3644
1	394	5833	285	4222		990	14667	464	6875
1,1	394	6417	285	4644		825	13444	464	7563

SPECIFICHE DI INSTALLAZIONE

INTERASSI AMMISSIBILI

Tabella 1

			EN 14122-3: 2016	UNI 11996 - A NTC 2018 f=1,5		UNI 11996 - A NTC 2018 f=1,0		EN 13374:2013 +A1:2018 C1A	EN 13374:2025 C1A	NF E85-015: 2019		
montante	H _{montanti}		interasse [cm]	correnti	interasse [cm]	correnti	interasse [cm]	correnti	interasse [cm]	correnti	interasse [cm]	correnti
dritto + ribaltabile	 110 cm		150	BORBAR45 BORBAR32	100	BORBAR45 BORBAR32	150	BORBAR45 BORBAR32	250	BORBAR45SR BORBAR32SR	150	BORBAR45 BORBAR32
	 100 cm		150 ⁽¹⁾	BORBAR45 BORBAR32	120	BORBAR45 BORBAR32	180	BORBAR45 BORBAR32	250 ⁽¹⁾	BORBAR45SR BORBAR32SR	150 ⁽¹⁾	BORBAR45 BORBAR32
dritto	 53 cm		150 ⁽¹⁾	BORBAR45	180	BORBAR45SR	250	BORBAR45SR	250 ⁽¹⁾	BORBAR45SR	150 ⁽¹⁾	BORBAR45
curvo	 113 cm		150 ⁽¹⁾	BORBAR45 BORBAR32	100 ⁽¹⁾	BORBAR45 BORBAR32	150 ⁽¹⁾	BORBAR45 BORBAR32	250 ⁽¹⁾	BORBAR45SR BORBAR32SR	150 ⁽¹⁾	BORBAR45 BORBAR32

⁽¹⁾Interassi ottenuti per interpolazione rispetto al caso più critico testato in laboratorio.

⁽²⁾Rispondente alla normativa UNI 11996, con coefficiente parziale delle azioni (variabili) $f=1,5$

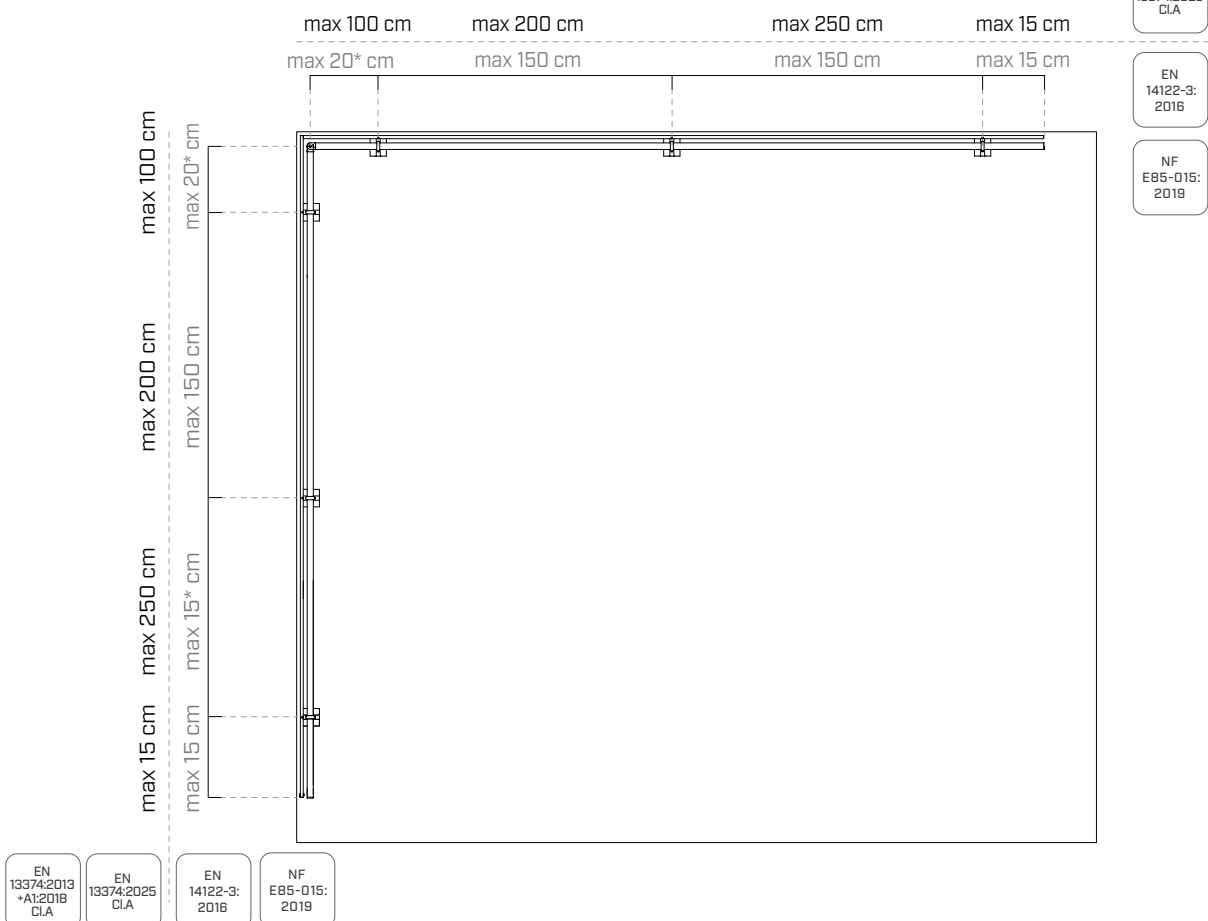
⁽³⁾Testato secondo le prove di operatività descritte nella UNI 11996, con coefficiente parziale delle azioni (accidentali) $f=1.0$



È necessario rispettare le altezze minime dal piano di calpestio prescritte da normativa.

Per soluzioni secondo NTC non incluse nella presente tabella, è richiesta una valutazione specifica da effettuarsi in collaborazione con l'Ufficio Tecnico Rotho Blaas.

SPECIFICHE DI INSTALLAZIONE
VALORI MASSIMI DI INTERASSE



*Per montante curvo BORUP113C: distanza minima 30 cm

Diagram showing dimensions (max 40 cm, x) and a table of values for different configurations. The table includes columns for Hmontanti, interasse x [cm], and interasse x [cm]. Rows include configurations like 'dritto + ribaltabile', 'dritto', and 'curvo' with corresponding dimensions and compliance logos (UNI 11996 - A NTC 2018 f=1,5).

IT

DE

EN

ES

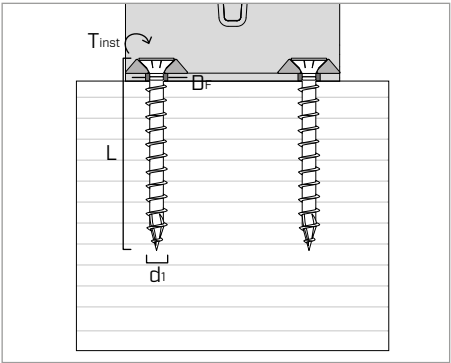
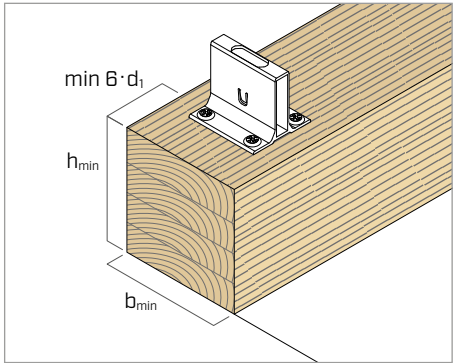
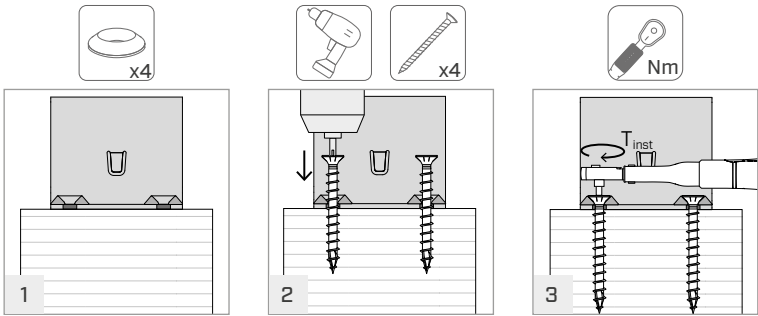
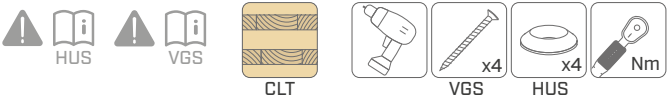
FR

PT

INSTALLAZIONE BASE4H

X-LAM

VGS13100 + HUS12

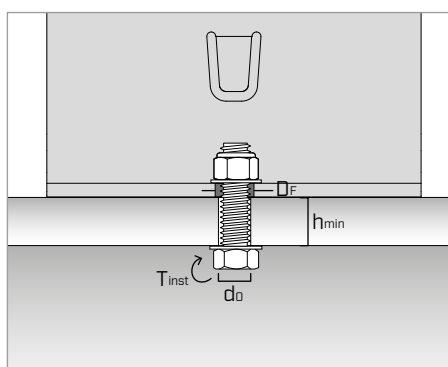
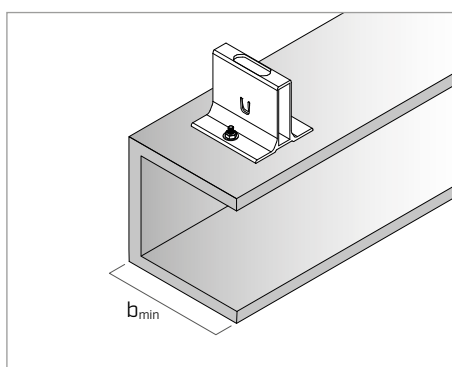
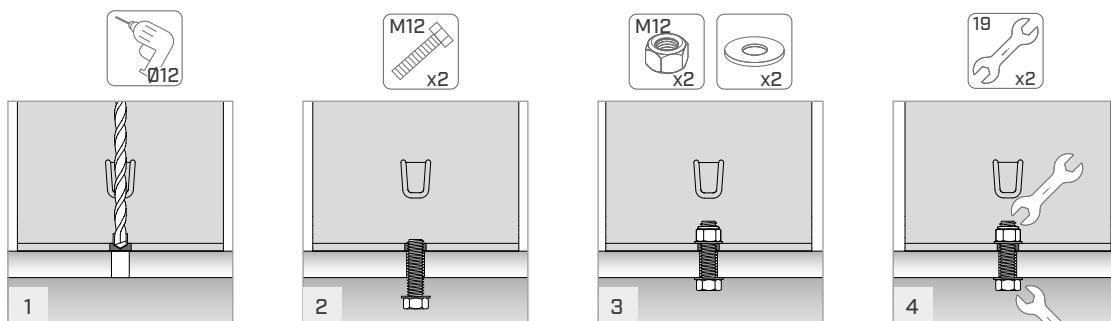


$b_{\min}$	=	260	mm
$h_{\min}$	=	120	mm
T_{inst}	=	50	Nm
L	=	100	mm
d_1	=	13	mm
D_F	=	14	mm

INSTALLAZIONE BASEH

ACCIAIO

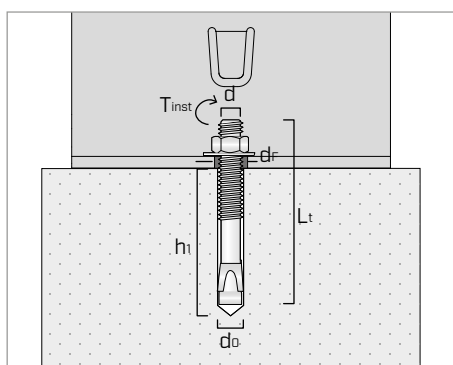
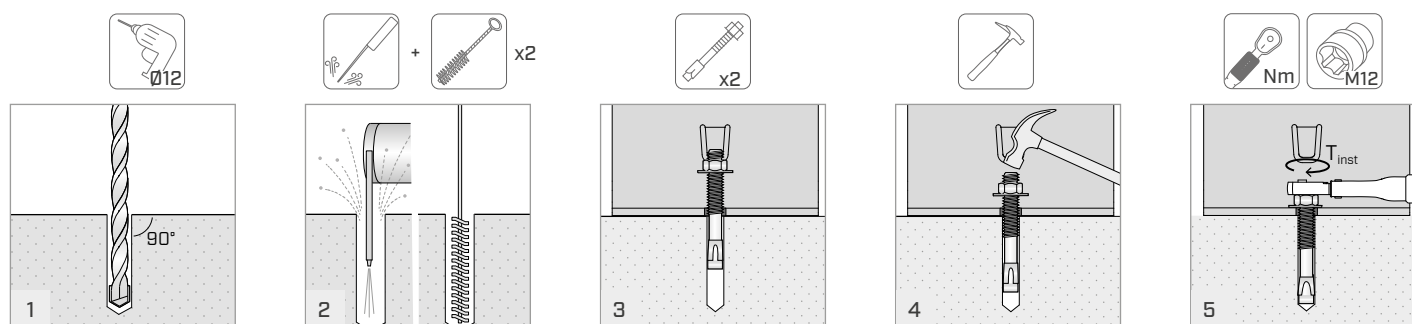
M12



$b_{min} = 140 \text{ mm}$
 $h_{min} = 5 \text{ mm}$
 $T_{inst} = 60 \text{ Nm}$
 $d_0 = 13 \text{ mm}$
 $d_F = 14 \text{ mm}$

CLS

AB112120



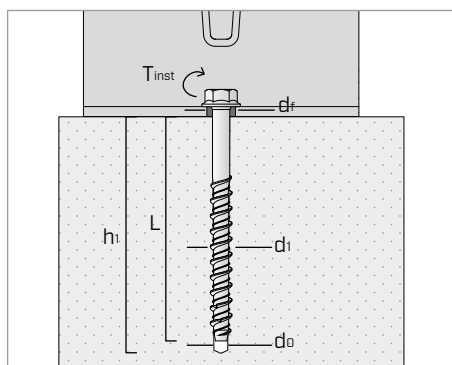
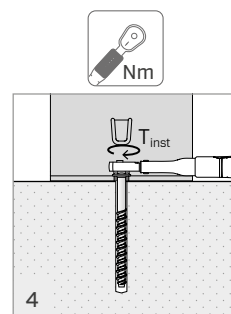
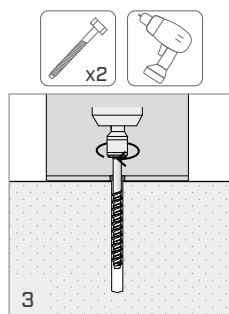
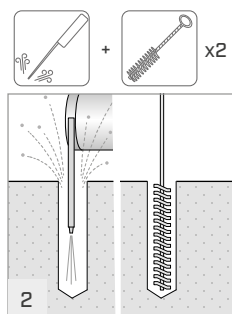
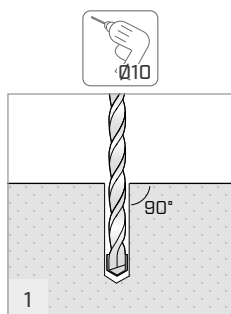
$T_{inst} = 60 \text{ Nm}$
 $h_1 = 104 \text{ mm}$
 $d = d_0 = 12 \text{ mm}$
 $d_F = 14 \text{ mm}$
 $L_t = 120 \text{ mm}$

Consultare distanze minime dal bordo a pag. 11

INSTALLAZIONE BASEH

CLS

SKR1290

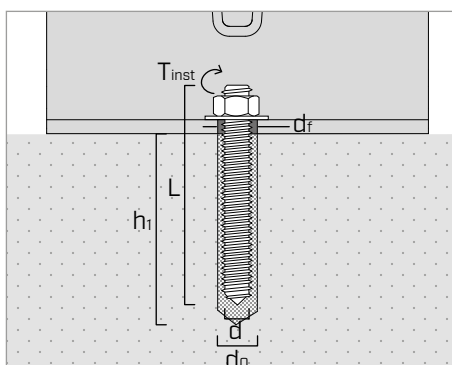
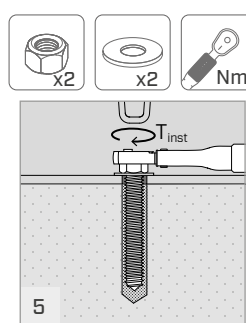
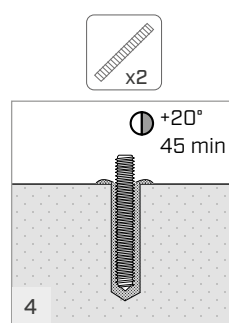
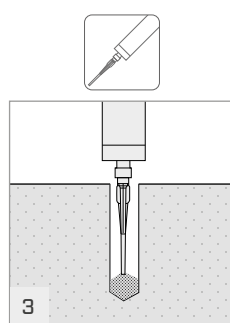
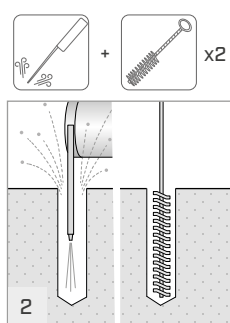
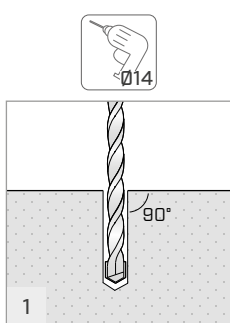
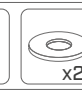
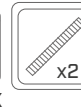


$T_{inst} = 80 \text{ Nm}$
 $h_1 = 100 \text{ mm}$
 $d_1 = 12 \text{ mm}$
 $d_0 = 10 \text{ mm}$
 $d_F = 14 \text{ mm}$
 $L = 85 \text{ mm}$

Consultare distanze minime dal bordo a pag. 11

CLS

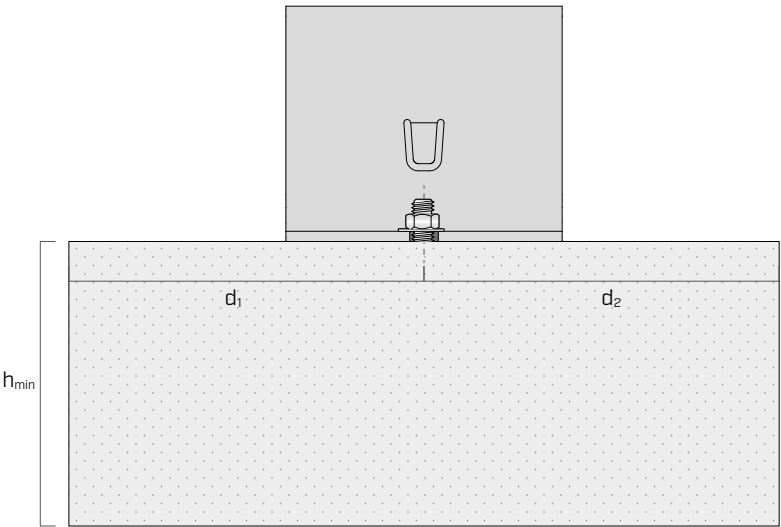
HYB-FIX + INA8812140



$T_{inst} = 40 \text{ Nm}$
 $h_1 = 140 \text{ mm}$
 $d = 12 \text{ mm}$
 $d_0 = 14 \text{ mm}$
 $d_F = 14 \text{ mm}$
 $L = 140 \text{ mm}$

Consultare distanze minime dal bordo a pag. 11

DISTANZE MINIME DAL BORDO



	EN 14122-3: 2016			UNI 11996 - A NTC 2018 f=1,5 UNI 11996 - A NTC 2018 f=1,0			EN 13374:2013 +A1:2018 C.I.A EN 13374:2025 C.I.A			NF E85-015: 2019		
	d ₁ [mm]	d ₂ [mm]	H _{min} [mm]	d ₁ [mm]	d ₂ [mm]	H _{min} [mm]	d ₁ [mm]	d ₂ [mm]	H _{min} [mm]	d ₁ [mm]	d ₂ [mm]	H _{min} [mm]
AB112120	90	90	150	215*	215*	140*	80	80	140	110	110	150
SKR1290	80	80	130	N/A	N/A	N/A	80	80	130	100	100	130
HYB-FIX + INA8812140	80	80	130	215	215	140	80	80	130	100	100	130

I valori in tabella rappresentano le distanze minime dal bordo necessarie per la verifica dei carichi puntuali sul montante.

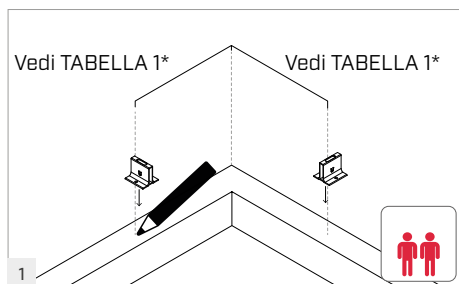
Tali valori sono stati determinati in condizioni cautelative (calcestruzzo C20/25 e massima azione agente sull'ancorante); condizioni differenti comportano prestazioni migliorative rispetto al caso più gravoso.

* L'utilizzo dell'AB112120 per UNI 11996 – A (NTC f=1,5 e NTC f=1,0) è consentito esclusivamente per montanti BORUP110 e BORUP530WH. Per BORUP100 si raccomanda l'impiego di ancoranti chimici

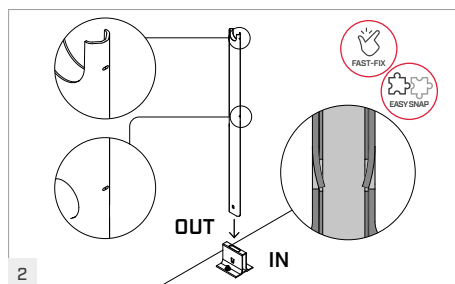
IT

INSTALLAZIONE

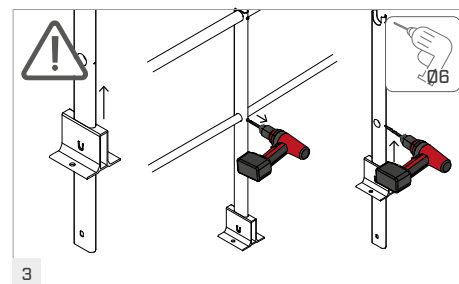
BORDER H



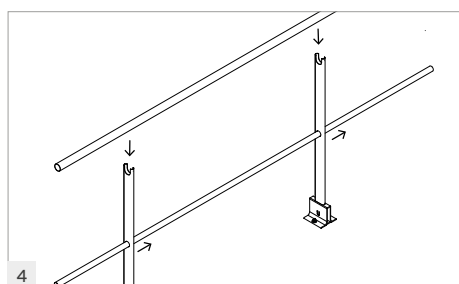
È necessaria la presenza di almeno due operatori qualificati. Per garantire una migliore riuscita, iniziare da un angolo. Installare le basi H (vedi pagine 3-4).



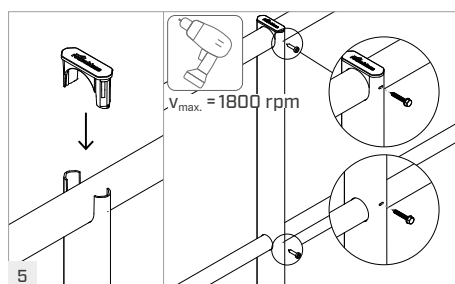
Inserire i montanti nelle basi **BORBASEH** con i segni rivolti verso l'operatore. Verificare il corretto incastro tra alette e finestre. Non servono viti per il fissaggio.



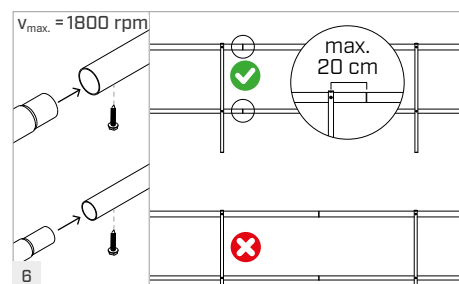
Il sistema base-montante si rimuove spingendo la base verso l'alto. Se sono presenti viti (punto 5), rimuoverle e forare Ø6 mm nel punto del foro a cono.



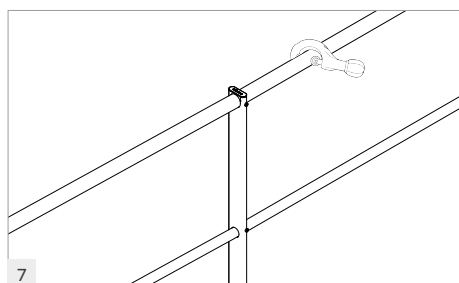
Inserire il corrente intermedio **BORBAR32** e successivamente il corrente superiore **BORBAR45**. In conformità alla norma EN 13374, è necessario installare i correnti maggiorati **BORBAR45R**.



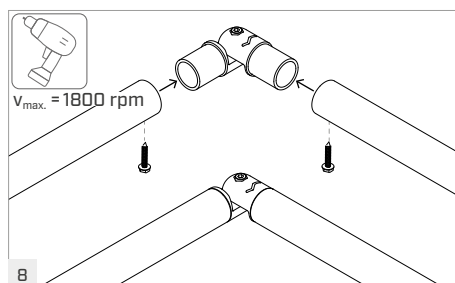
Inserire il tappo **BORCAP** sulla sommità del montante. Fissare i correnti ai montanti con viti **MM-S5525A2** in corrispondenza dei due segni laterali.



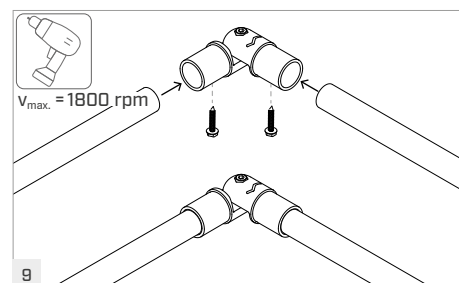
Collegare le estremità maschio/femmina di corrimano e correnti, fissandole con viti **MM-S5525A2**. Secondo EN 14122, il corrimano deve terminare a non più di 20 cm dal montante più vicino. Posizionare le viti sotto i correnti.



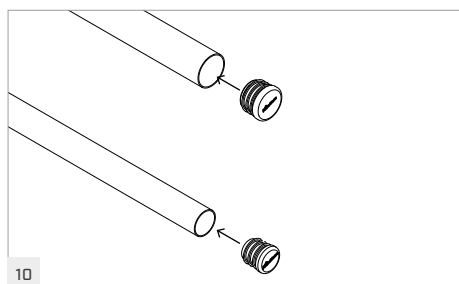
Adattare l'ultima sezione del parapetto tagliando la parte in eccesso dei correnti usando il tagliatubi.



Inserire lo snodo angolare **BORCOR** nel corrimano e fissare con viti autofilettanti **MMS5525A2**.

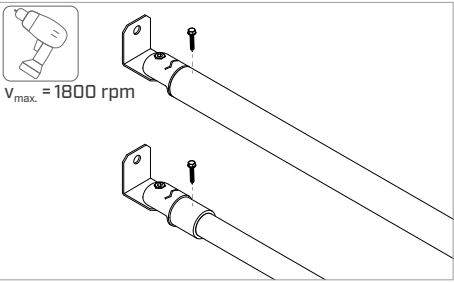


Inserire lo snodo angolare **BORCOR** nel corrente intermedio e fissare con viti autofilettanti **MMS5525A2**.

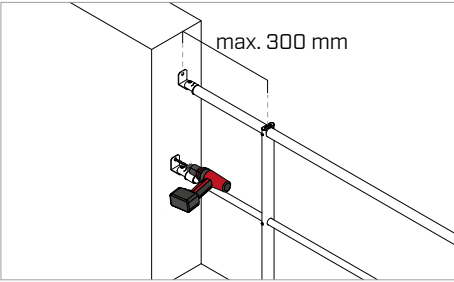


Inserire i tappi **BORCAP45** e **BORCAP32** nei corrimani o correnti intermedi.

■ **INSTALLAZIONE** **BORWALL**

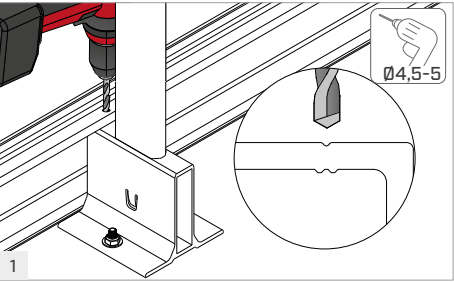


Inserire mancorrente e corrente intermedio nell'elemento terminale a muro **BORWALL** e fissare con vite autofilettante **MMS5525A2**.

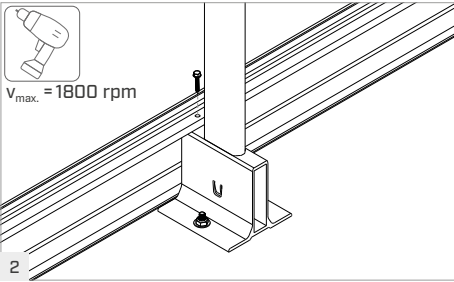


Rispettare la distanza massima di **300 mm** dal muro. Forare il muro con punta Ø10 mm e fissare l'elemento terminale con un tassello M10 (AB110115) o su legno con VGS Ø9 (VGS9100 + HUS8).

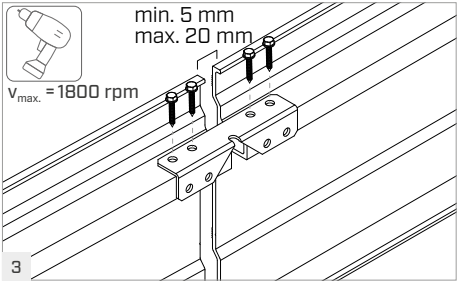
BORTB



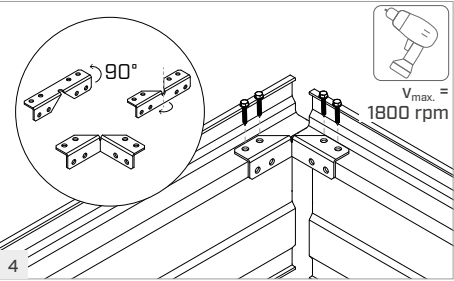
Posizionare **BORTB** con l'appoggio contro lo spallamento della base **BORBASEH**. Eseguire un preforo Ø4,5mm o Ø5mm passante. Usare la scalatura sull'appoggio come guida per la punta dell'avvitatore.



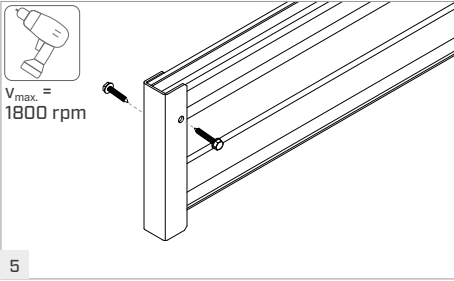
Una volta eseguito il preforo, è possibile fissare la tavola fermapiEDE alla base con una vite **MMS5525A2**.



Unire le estremità di **BORTB** con il connettore **BORTBJUN**. Fissare con 4 viti **MMS5525A2**, lasciando almeno 5 mm tra le tavole per evitare deformazioni termiche.

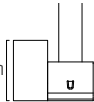


Negli angoli, ruotare e piegare a mano il connettore **BORTBJUN** fino a raggiungere l'angolo desiderato. Fissare con 4 viti autofilettanti **MMS5525A2**.



Fissare i tappi terminali della tavola fermapiEDE con 2 viti autofilettanti **MMS5525A2**.

SPECIFICHE DI UTILIZZO BORTB

		EN 14122-3: 2016	EN 13374:2013 +A1:2018 Cl.A	EN 13374:2025 Cl.A	UNI 11996 - A	NTC 2018 + D.Lgs. 81/08	NF E85-015: 2019
H _{montanti}	veletta	BORTB					
 53 cm		$h \geq 57 \text{ cm}$ ❌ $h < 57 \text{ cm}$ N/A	✅	$h \geq 47 \text{ cm}$ ❌ $h < 47 \text{ cm}$ N/A	$47 \text{ cm} \leq h \leq 57 \text{ cm}$ ❌ $h < 47 \text{ cm}$ N/A $h > 57 \text{ cm}$ N/A		
 100 cm		$h \geq 10 \text{ cm}$ ❌ $h < 10 \text{ cm}$ N/A	❌	❌	$h \geq 10 \text{ cm}$ ❌ $h < 10 \text{ cm}$ N/A		
 110 cm		$h \geq 10 \text{ cm}$ ❌ $h < 10 \text{ cm}$ ✅	$h \geq 15 \text{ cm}$ ❌ $h < 15 \text{ cm}$ ✅	$h \geq 15 \text{ cm}$ ❌ $h < 15 \text{ cm}$ ✅	$h \geq 10 \text{ cm}$ ❌ $h < 10 \text{ cm}$ ✅		
 110 cm							

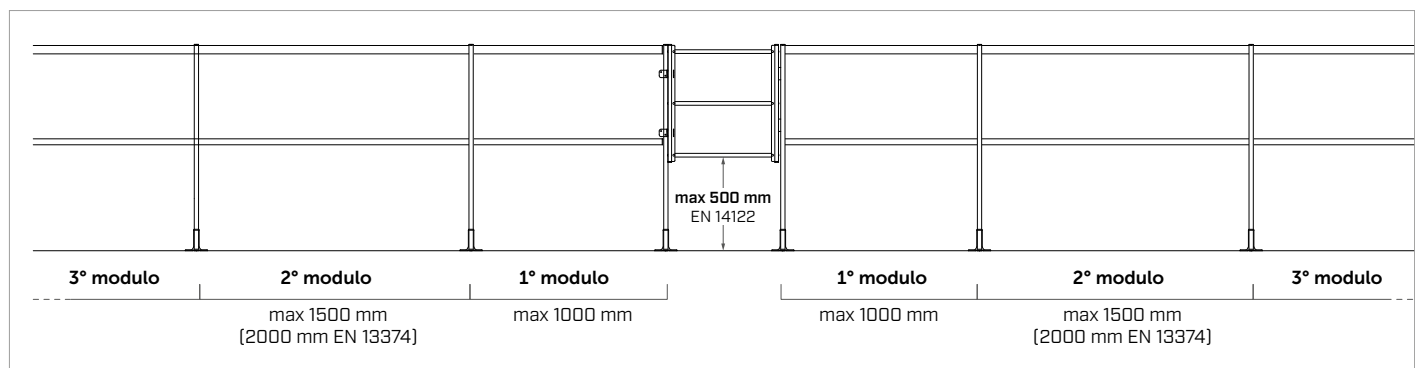
INSTALLAZIONE DEL CANCELLETTO

EN 14122-3: 2016	EN 13374:2013 +A1:2018 CLA	EN 13374:2025 CLA	UNI 11996 - A NTC 2018 f=1,0	UNI 11996 - A NTC 2018 f=1,5
------------------------	-------------------------------------	-------------------------	---------------------------------------	---------------------------------------

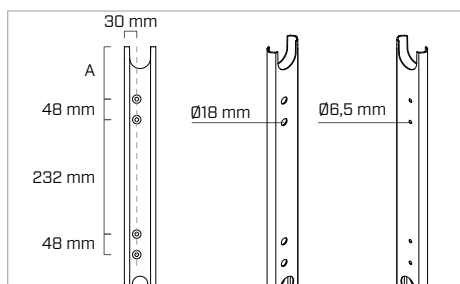
BORGATE600

L'installazione del cancelletto BORGATE600 deve essere eseguita rispettando i requisiti minimi di stabilità del sistema. È quindi necessario installare almeno tre montanti per lato, seguendo questa distribuzione massima degli interassi:

- **1° modulo:** 1000 mm max
- **2° modulo:**
 - 2000 mm max (per EN 13374)
 - secondo quanto riportato in Tabella 1 – Interassi (per EN 14122-3, NTC e UNI 11996 - A)
- **3° modulo:** secondo quanto riportato in Tabella 1 – Interassi



⚠ Il bordo inferiore del cancelletto deve trovarsi a una distanza inferiore a **500 mm** dal piano di calpestio, come definito secondo la EN 14122-3. Verificare la distanza massima consentita dalla normativa applicabile (es. EN 13374: spazio massimo 470 mm).

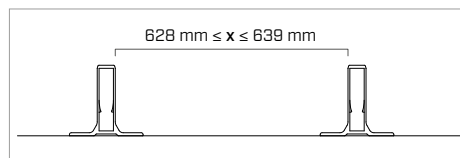


Riportare sul montante le misure indicate a disegno⁽¹⁾ e realizzare:

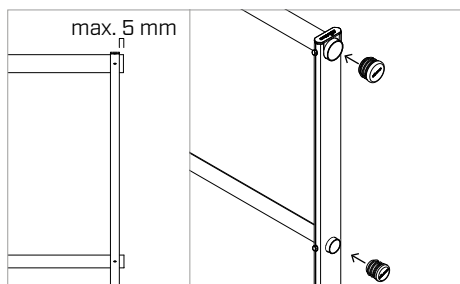
- n. 4 fori Ø 6,5 mm su un lato;
- n. 4 fori Ø 18 mm (min.) sull'altro lato.

⁽¹⁾ Il valore A è definito in funzione delle altezze di progetto richieste:

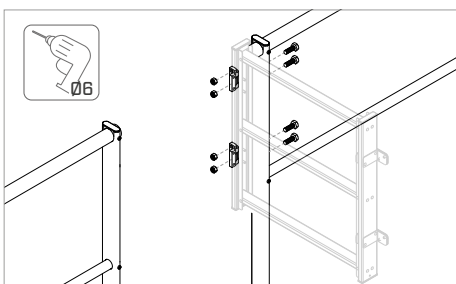
	H _{montanti}	EN 14122-3: 2016	UNI 11996 - A NTC 2018 f=1,5	UNI 11996 - A NTC 2018 f=1,0	EN 13374:2013 +A1:2018 CLA	EN 13374:2025 CLA	NF E85-015: 2019
dritto + ribaltabile	110 cm	130	160	160	N/A	N/A	N/A
	100 cm	130	130	130	N/A	N/A	N/A
dritto	53 cm	N/A	N/A	N/A	N/A	N/A	N/A
curvo	113 cm	N/A	N/A	N/A	N/A	N/A	N/A



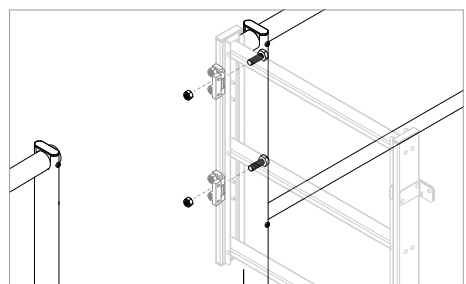
Fissare le piastre **BORBASEH/BORBASEH4H** a terra assicurando una distanza x compresa tra 628 mm e 639 mm.



Per una corretta posa, posizionare i correnti in modo che non sporgano oltre **5 mm** rispetto al fianco del montante. Se necessario, tagliare la parte eccedente. Successivamente montare il tappo previsto per il tipo di **tubo** utilizzato.



Montare il cancelletto utilizzando le **viti M6** e i **dadi autobloccanti** forniti nel sacchetto in dotazione.

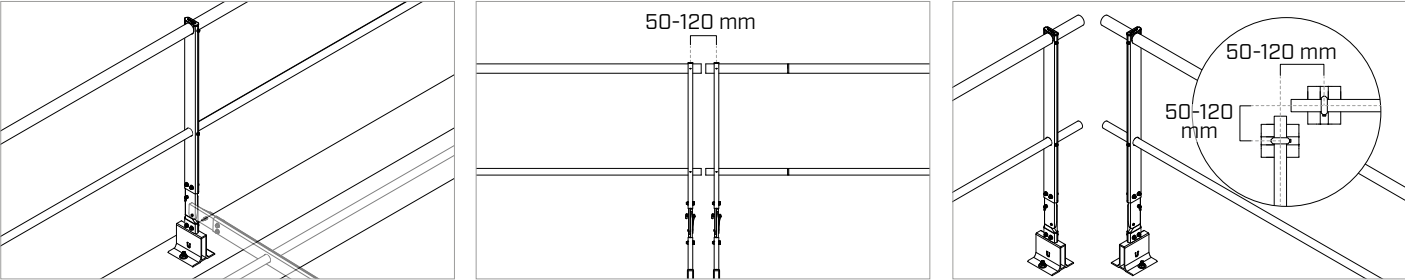


Per limitare l'**effetto vela** del cancelletto in presenza di vento o durante i periodi di non utilizzo, è possibile prevedere l'installazione di una **vite M10 aggiuntiva** (non inclusa in dotazione) al fine di bloccarne la chiusura in modo permanente.

INSTALLAZIONE DEL PARAPETTO RIBALTABILE

BORUP100F - BORUP110F

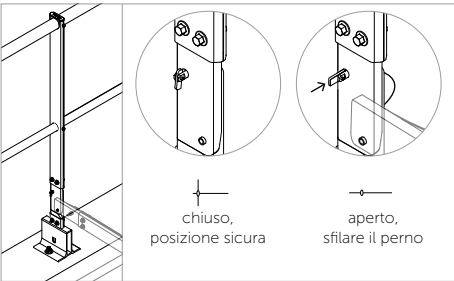
Per l'installazione dei parapetti ribaltabili, la procedura delineata fin qui rimane valida. Tuttavia, è necessario prestare attenzione ad alcune istruzioni aggiuntive:



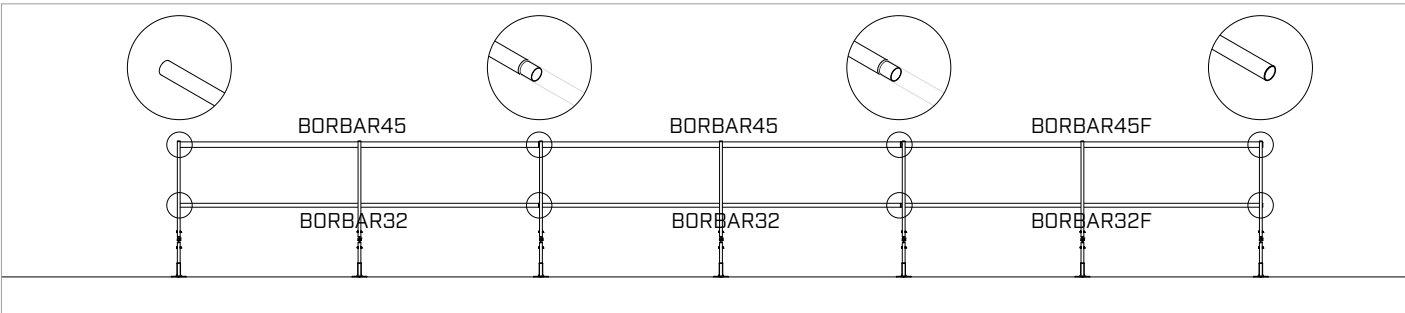
Installare i montanti ribaltabili BORUP100F/BORUP110F/BORUP110FR dal lato giunto (non lato perno), assicurando il ribaltamento verso l'interno della copertura e mai verso l'esterno.

I parapetti ribaltabili per **BORDER H** sono installati in moduli di 9m (cioè, 7 montanti collegati) o 12 m (cioè, 9 montanti collegati). Montare due montanti terminali di due moduli adiacenti con distanza **minima 50 mm e massima 120 mm** tra loro, come raffigurato

Gli angoli dei parapetti ribaltabili non devono essere collegati tra loro per consentire il ribaltamento in entrambe le direzioni. La distanza tra due montanti terminali deve stare nell'intervallo **50 - 120 mm** da bordo.



Per il ribaltamento dell'intero modulo parapetto, è opportuno sfilare i perni dalle rispettive sedi.



I correnti principali da utilizzare sono il **BORBAR45** e il **BORBAR32**, tuttavia ciascun modulo deve terminare su un lato con il corrente specifico senza riduzione **BORBAR45F** e **BORBAR32F**.

		EN 14122-3: 2016	UNI 11996 - A NTC 2018 f=1,5	UNI 11996 - A NTC 2018 f=1,0	EN 13374:2013 +A1:2019 CIA	EN 13374:2025 CIA	NF E85-015: 2019
 110 cm		BORUP110F	BORUP110F	BORUP110F	BORUP110FR		BORUP110F
corrente superiore		BORBAR45/F	BORBAR45/F	BORBAR45/F	BORBAR45R*		BORBAR45/F
corrente inferiore		BORBAR32/F	BORBAR32/F	BORBAR32/F	BORBAR45R*		BORBAR32/F
 100 cm		BORUP100F	BORUP100F	BORUP100F	N/A		BORUP100F
corrente superiore		BORBAR45/F	BORBAR45/F	BORBAR45/F	N/A		BORBAR45/F
corrente inferiore		BORBAR32/F	BORBAR32/F	BORBAR32/F	N/A		BORBAR32/F

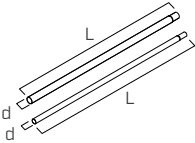
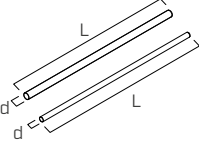
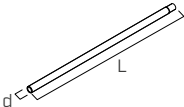
* Per correnti terminali in applicazione EN 13374 è necessario tagliare la parte con riduzione eccedente.

AVVERTENZE GENERALI PER L'USO

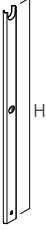
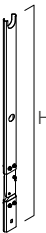
- Prima di procedere con il ribaltamento del parapetto, è obbligatorio assicurarsi che l'operatore sia posto in condizioni di sicurezza. L'utente deve essere ancorato a un dispositivo anticaduta, come una linea vita **PATROL** o un punto di ancoraggio **KITE**. Inoltre, è necessario verificare che tutti gli strumenti e le attrezzature siano in buone condizioni di funzionamento e che l'area di installazione sia libera da ostacoli.
- I moduli (9 m, 12 m, 15 m, 18 m) devono essere sempre maneggiati da due operatori per consentire il corretto ribaltamento.

CODICI E DIMENSIONI

CORRENTI

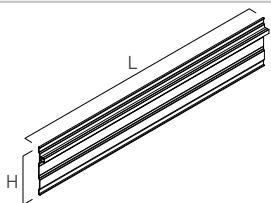
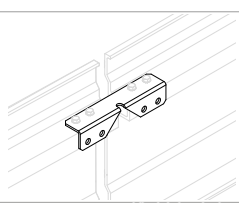
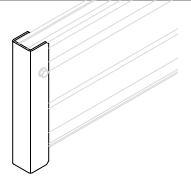
CODICE		d [mm]	L [mm]	
BORBAR45	EN AW 6063-T6	45	3000	
BORBAR32		32	3000	
BORBAR45F	EN AW 6063-T6	45	3000	
BORBAR32F		32	3000	
BORBAR45R	EN AW 6063-T6	45	3000	

MONTANTI

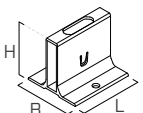
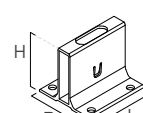
CODICE		H [mm]	
BORUP530WH	EN AW 6005A-T6	535	
BORUP760WH		765	
BORUP100	EN AW 6005A-T6	1005	
BORUP110		1105	
BORUP118		1185	
BORUP130	EN AW 6005A-T6	1305	
BORUP100F		1005	
BORUP110F		1105	
BORUP110FR		1105	
BORUP113C	EN AW 6005A-T6	1120	
BORUP100R	EN AW 6005A-T6	1005	
BORUP110R		1105	
BORUP100AS		1005	
BORUP107US		1075	

CODICI E DIMENSIONI

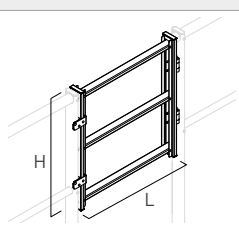
TAVOLA FERMAPIEDE

CODICE		H [mm]	L [mm]	
BORTB	EN AW 6063-T6	150	3000	
BORTBJUN	EN AW 6063 H111	-	-	
BORTBCAP	EN AW 6063 H111	-	-	

BASI

CODICE		B [mm]	H [mm]	L [mm]	
BORBASEH	EN AW 6005A-T6	120	115	135	
BORBASEH4H		120	115	135	

CANCELLETTO DI SICUREZZA

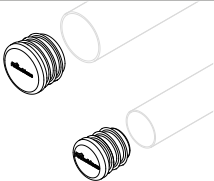
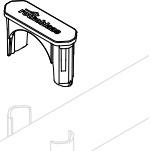
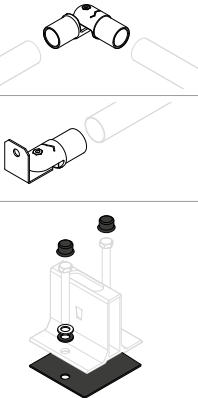
CODICE		L [mm]	H [mm]	
BORGATE600	EN AW 6063 H111	600	640	

FISSAGGI

CODICE		d [mm]	H [mm]	
MMS5525A2	1.4301 AISI304 INOX	5,5	25	

CODICI E DIMENSIONI

ACCESSORI

CODICE		
BORCAP45	LDPE	
BORCAP32		
BORCAP	PP RECYCLED	
BORCOR		
BORWALL	PP RECYCLED	
	1.4301 AISI304 INOX	
BORBASEHKIT	EPDM	

SICHERHEITSHINWEISE, GEBRAUCHS- UND MONTAGEANLEITUNG

Das Geländer mit horizontaler Befestigung **BORDER H** ist ein kollektives Absturzsicherungssystem. Es eignet sich hervorragend für die Dachsicherheit und ist aus Aluminiumlegierung hergestellt (**EN AW 6005A-T6** und **EN AW 6063-T6**).

Das Geländer mit horizontaler Befestigung **BORDER H** entspricht den folgenden Vorschriften:

- EN 14122-3:2016
- EN 13374:2025 Kl. A (außer Punkt 9)
- EN 13374:2013+A1:2018 Kl. A (außer Punkt 9)
- NTC (Tab. 3.1.II - Kat. A,B,C1,E1,F,G,H) und D. GvD 81/08 (Italien)
- NF E 85-015:2019 (Frankreich)

Die Tabelle enthält die wichtigsten geometrischen Parameter, die in den Bezugsnormen gefordert werden:

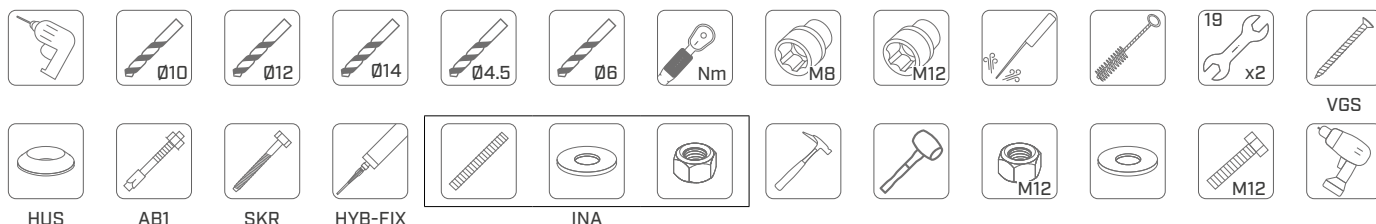
	EN 14122-3: 2016	EN 13374:2013 +A1:2018 Kl. A EN 13374:2025 Kl. A	NTC 2018	GvD 81/08	NF E85-015: 2019
Min. Höhe der begehbaren Fläche	1,1 m	1 m	1 m	1 m	1 - 1,1 m
Max. Achsabstand zwischen den Mittelläufen	500 mm	470 mm	-	500 mm	500 mm
Max. Achsabstand zwischen den Pfosten	1,5 m (empfohlen)	-	-	-	1,5 m (empfohlen)
Min. Höhe Fußleiste	10 cm	15 cm	-	15 cm	10 cm

Das Schutzgeländer BORDER muss von qualifiziertem Personal unter Einhaltung der geltenden Vorschriften für Höhenarbeiten montiert werden. Vor der Nutzung muss der Anwender seine eigene Sicherheit gewährleisten. Hierzu verwendet er ein temporäres Seilsystem, PSA und eine geeignete Hubarbeitsbühne.

- Vor der Nutzung muss der Anwender per Sichtprüfung sicherstellen, dass das Schutzgeländer **BORDER** keine Mängel, Schäden oder Verformungen aufweist (Stöße, Verbiegungen usw.).
- Für das Geländer **BORDER** sind keine spezifischen Wartungseingriffe erforderlich. Jedoch muss mindestens einmal pro Jahr eine Sichtprüfung durch Fachpersonal vorgenommen werden.
- Wenn das Geländer **BORDER** nicht korrekt installiert wird, beschädigt ist oder einen Sturz abgefangen hat, muss die Verwendung sofort eingestellt werden.
- Wenn das Produkt außerhalb des Bestimmungslandes weiterverkauft wird, ist es für die Sicherheit des Anwenders unerlässlich, dass der Händler die Betriebsanleitung in der Sprache des Landes bereitstellt, in dem das Produkt verwendet wird. Die Unterlagen können auf Anfrage durch den Hersteller zur Verfügung gestellt werden.
- Das Geländer **BORDER** ist eine permanente kollektive Schutzeinrichtung, die ausschließlich von Fachleuten auf Dächern verwendet werden darf, die für die Öffentlichkeit nicht zugänglich sind.
- Bei der Montage in einer geschützten Industrie-, Petrochemie-, Marine- oder Meeresumgebung muss die Oberfläche des Geländers **BORDER** entsprechend behandelt, d. h. einer Pulverlackierung oder Eloxierung unterzogen werden.
- Wenn ein Grundriss vorhanden ist, muss er bei der Montage als Anhaltspunkt verwendet werden.

Die unbehandelten Aluminiumteile sind in der Verpackung nicht voneinander getrennt. Wenn die ungeöffnete Packung Regen ausgesetzt ist, kann dies eine Oxidation der Bestandteile begünstigen, wodurch Flecken auf der Oberfläche entstehen könnten. Sie beeinträchtigen zwar nicht die Qualität des Aluminiums, evtl. aber das Erscheinungsbild des Geländers. Es empfiehlt sich, die Verpackung zu öffnen und die Komponenten getrennt voneinander zu lagern (ohne dass sie sich berühren) oder die Verpackungen verschlossen an einem trockenen Ort aufzubewahren.

1



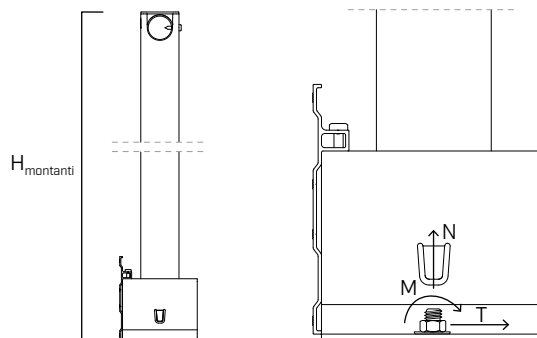
WICHTIGSTE AUF DEN ANSCHLAGPUNKT WIRKENDE KRÄFTE

Auf den am stärksten beanspruchten Bolzen wirkt die Kombination der Kräfte und der daraus resultierenden Momente:

$$M = F \cdot H$$

$$N = F_t = \frac{M \cdot y_i}{\sum n \cdot y_i^2}$$

$$T = \frac{F}{2}$$



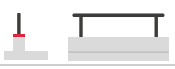
Die sich daraus ergebenden Werte, die auf die einzelne Befestigung wirken, sind wie folgt festgelegt (im Fall von BORBASEH):

H _{Pfosten} [m]	EN 14122-3: 2016			EN 13374:2013 +A1:2018 Kl. A			EN 13374:2025 Kl. A			NTC 2018 + GvD 81/08			NF E85-015: 2019		
	M [Nm]	T [N]	N [N]	M [Nm]	T [N]	N [N]	M [Nm]	T [N]	N [N]	M [Nm]	T [N]	N [N]	M [Nm]	T [N]	N [N]
0,53	418	394	3092	N/A	N/A	N/A	1574	1485	11660	522	492	3865			
1	788	394	5834	1425	713	10556	2970	1485	22000	985	492	7292			
1,1	866	394	6417	1568	713	11611	3267	1485	24200	1083	492	8021			

MONTAGEANWEISUNGEN

ZULÄSSIGE ACHSABSTÄNDE

Tabelle 1

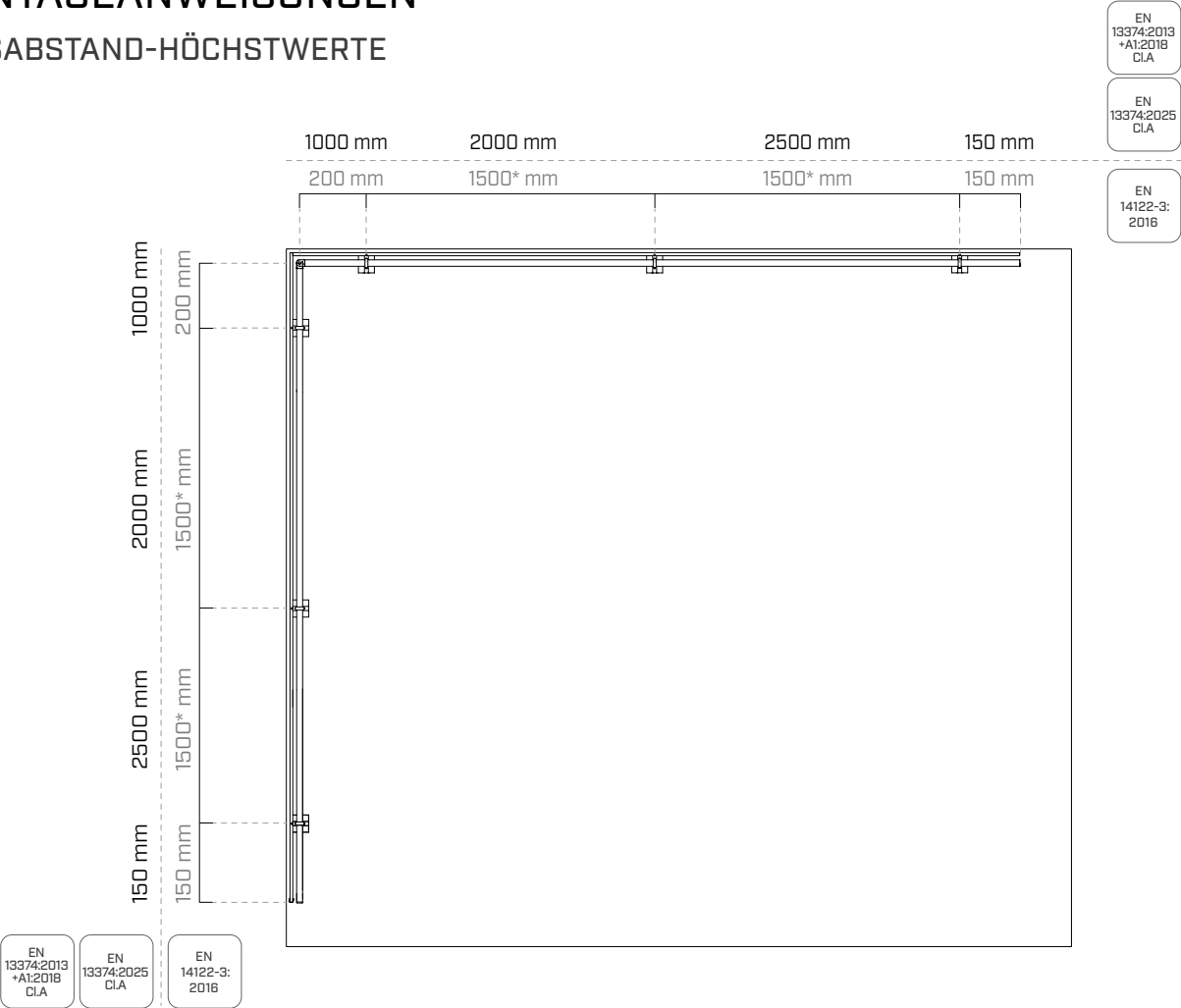
Pfosten	H _{Pfosten}	Achsabstand für Pfosten [cm]			
		EN 14122-3: 2016	EN 13374:2013 +A1:2018 Kl. A	EN 13374:2025 Kl. A	NF E85-015: 2019
gerade + klappbar*	 110 cm	150	250	180	150
	 100 cm(**)	150	250	180	150
Gerade	 53 cm(**)	150	N/A	180	150
gebogen	 110 cm	150	250	180	150

*Das Kippsystem ist derzeit nicht verfügbar

**Die Mindesthöhen über der Gehfläche gemäß den geltenden Vorschriften müssen eingehalten werden. Einige Anwendungen sind nur zulässig, wenn sie auf einer Schutzmauer montiert werden.

MONTAGEANWEISUNGEN

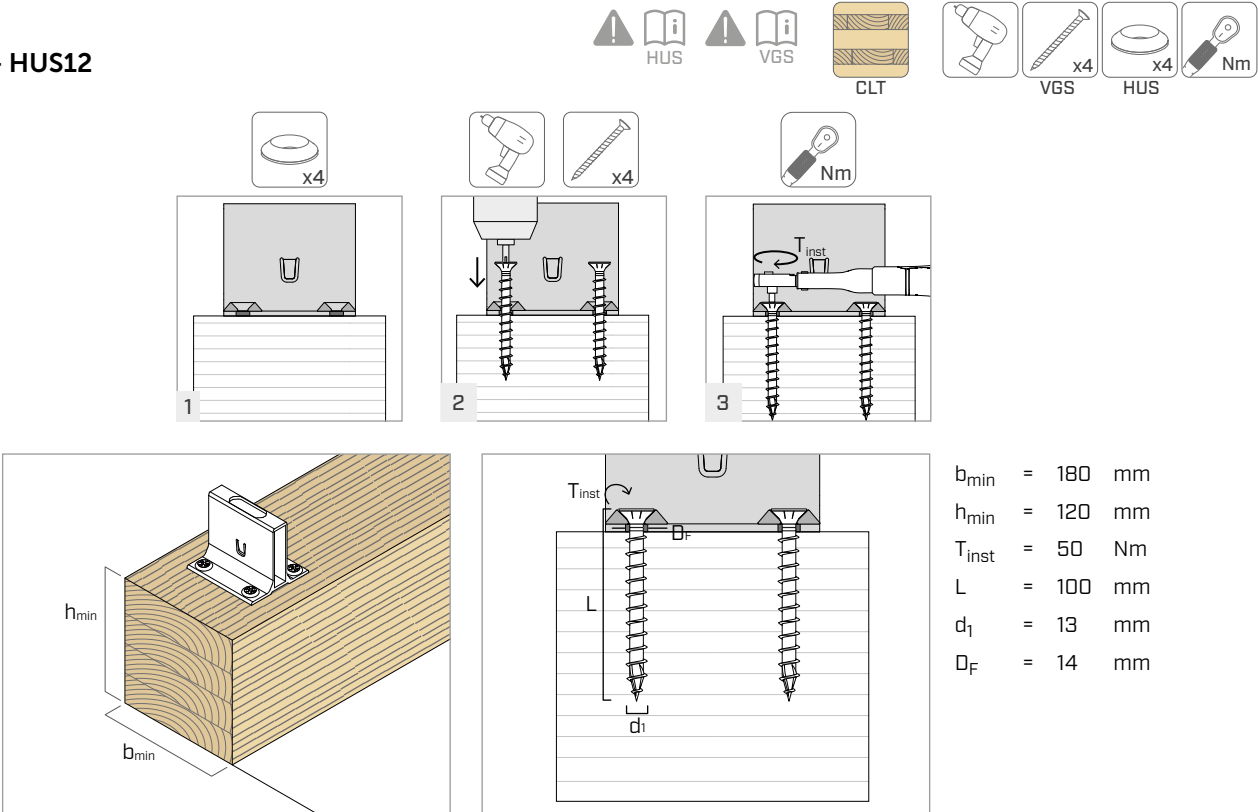
ACHSABSTAND-HÖCHSTWERTE



BASE4H-MONTAGE

BSP

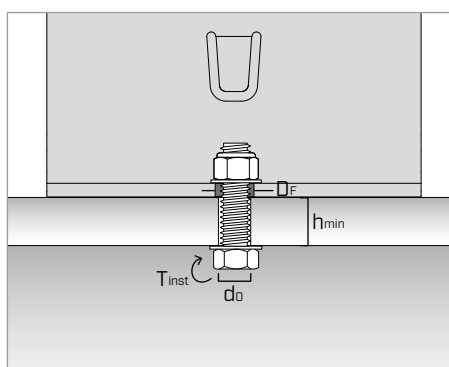
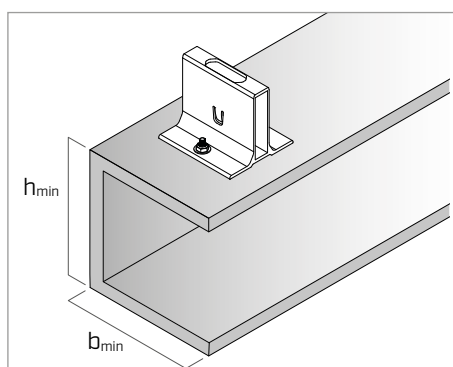
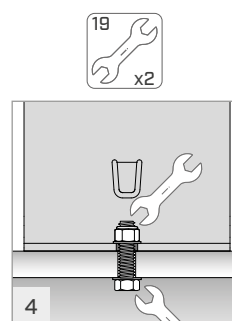
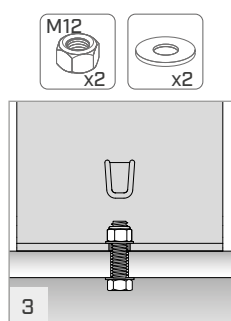
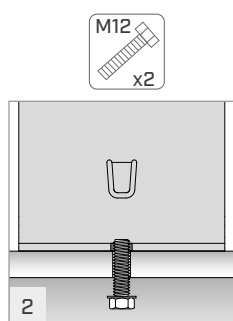
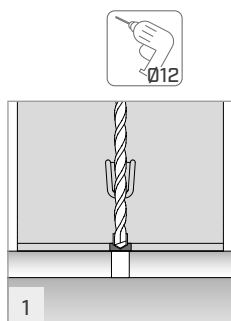
VGS13100 + HUS12



BASEH-MONTAGE

STAHL

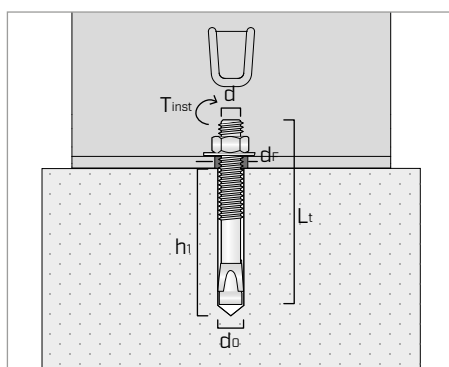
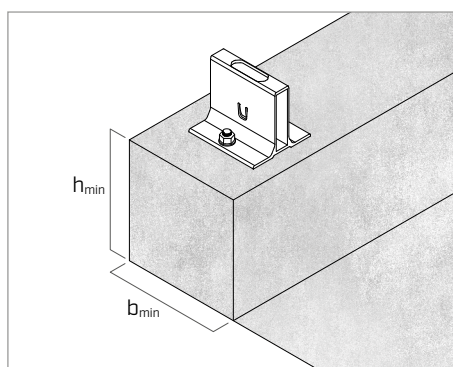
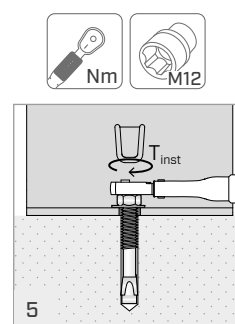
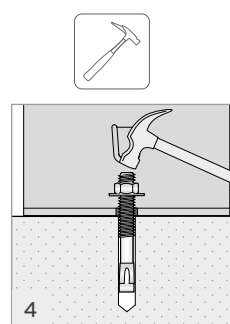
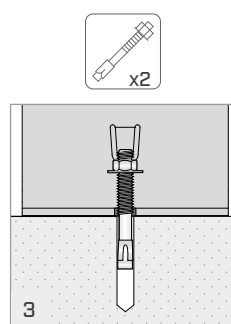
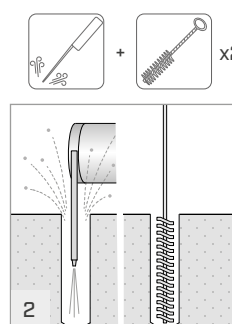
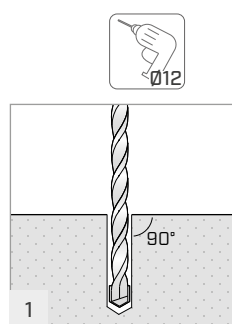
M12



$b_{min} = 140 \text{ mm}$
 $h_{min} = 5 \text{ mm}$
 $T_{inst} = 60 \text{ Nm}$
 $d_0 = 13 \text{ mm}$
 $d_F = 14 \text{ mm}$

BETON

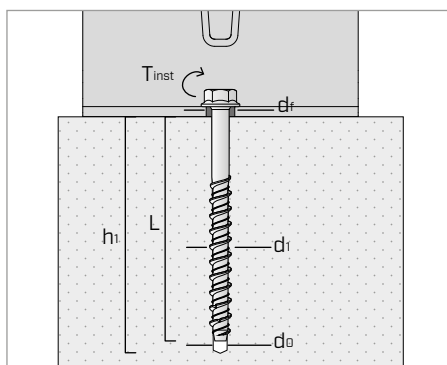
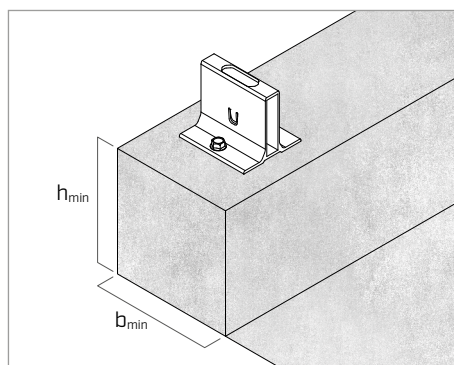
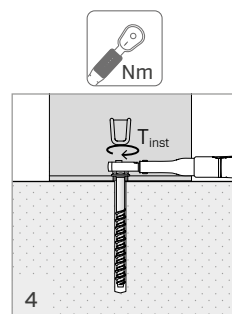
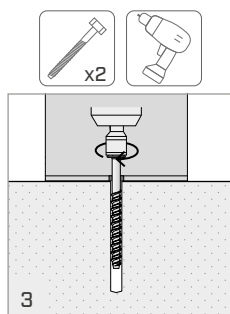
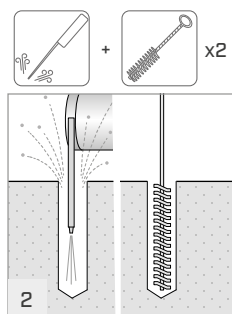
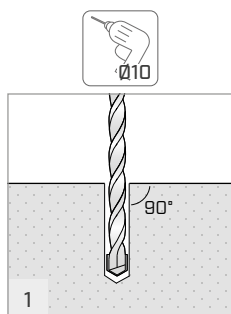
AB112100



$b_{min} = 140 \text{ mm}$
 $h_{min} = 140 \text{ mm}$
 $T_{inst} = 60 \text{ Nm}$
 $h_1 = 85 \text{ mm}$
 $d = d_0 = 12 \text{ mm}$
 $d_F = 14 \text{ mm}$
 $L_t = 100 \text{ mm}$

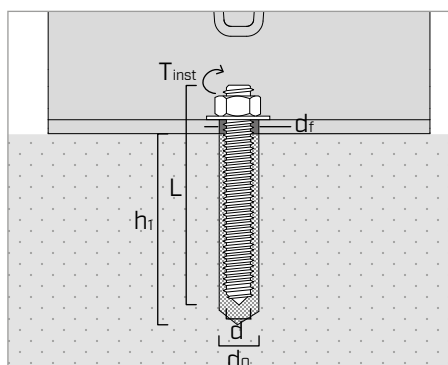
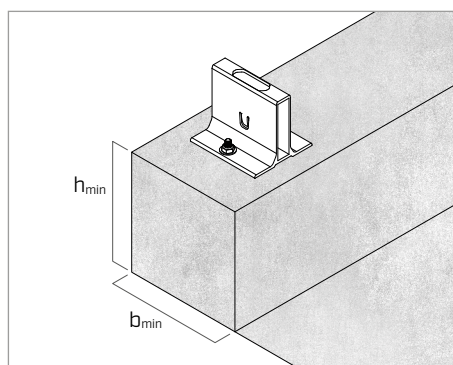
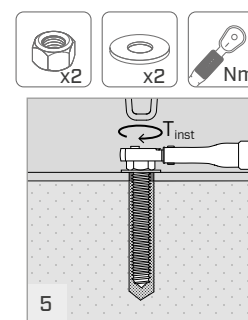
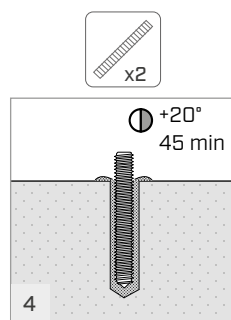
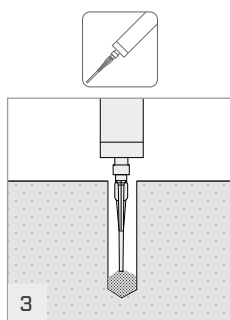
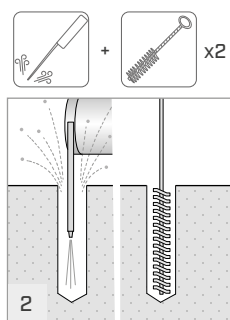
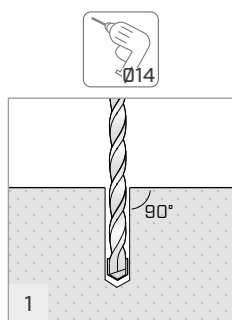
BASEH-MONTAGE

BETON
SKR1290



b_{min}	=	140	mm
h_{min}	=	100	mm
T_{inst}	=	80	Nm
h_1	=	100	mm
d_1	=	12	mm
d_0	=	10	mm
d_F	=	14	mm
L	=	90	mm

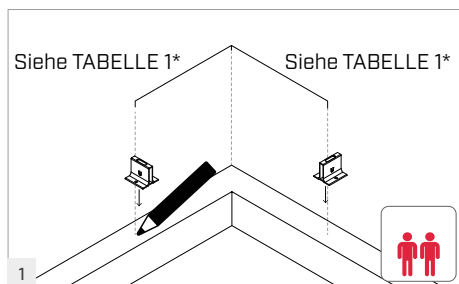
BETON
HYB-FIX + INA8812140



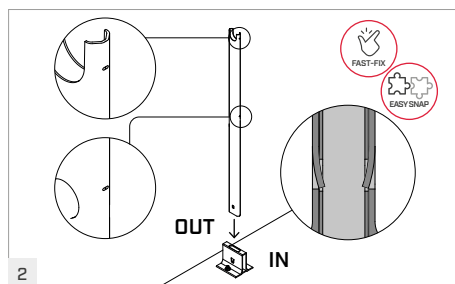
b_{min}	=	140	mm
h_{min}	=	160	mm
T_{inst}	=	60	Nm
h_1	=	140	mm
d	=	12	mm
d_0	=	14	mm
d_F	=	14	mm
L	=	140	mm

MONTAGE

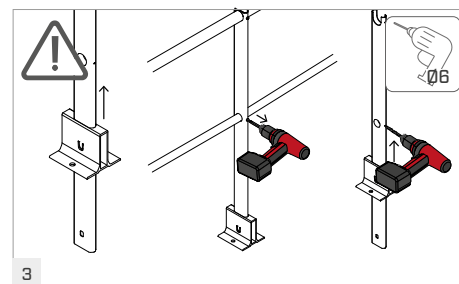
BORDER H



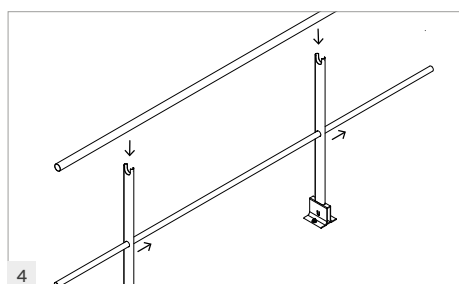
Mindestens zwei qualifizierte Anwender müssen anwesend sein. Für ein besseres Ergebnis in einer Ecke beginnen. Die Grundplatten H montieren (siehe S. 3-4).



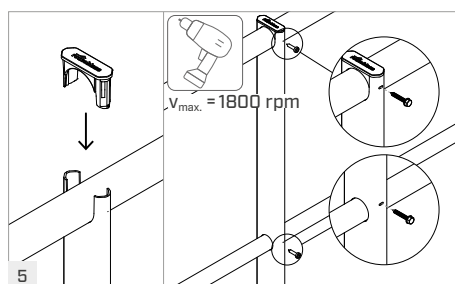
Die Pfosten mit den Markierungen zum Arbeiten in die Grundplatten **BORBASEH** einsetzen. Die korrekt eingespannte Verbindung zwischen Laschen und Fenstern überprüfen. Zur Befestigung werden keine Schrauben benötigt.



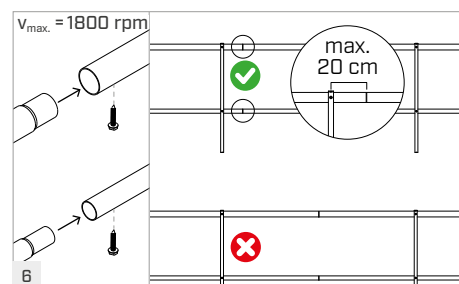
Das Grundplatte-Pfosten-System wird entfernt, indem die Grundplatte nach oben gedrückt wird. Falls Schrauben vorhanden sind (Punkt 5), diese entfernen und an der Stelle der Konusbohrung ein Ø6 mm Loch bohren.



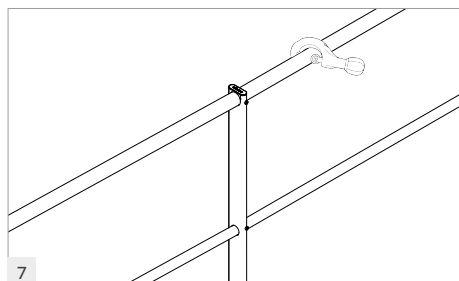
Den Mittellauf **BORBAR32** und daraufhin den oberen Handlauf **BORBAR45** einsetzen. Gemäß Norm EN 13374 müssen die verstärkten Handläufe **BORBAR45R** montiert werden.



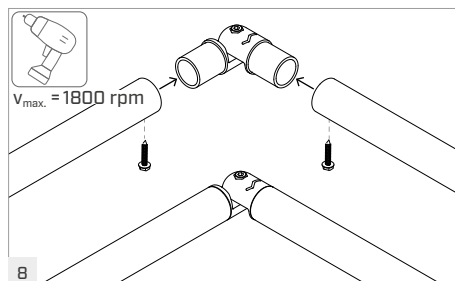
Die Klappe **BORCAP** oben am Pfosten einsetzen. Die Handläufe mit den Schrauben **MMS5525A2** auf der Höhe der beiden seitlichen Markierungen befestigen.



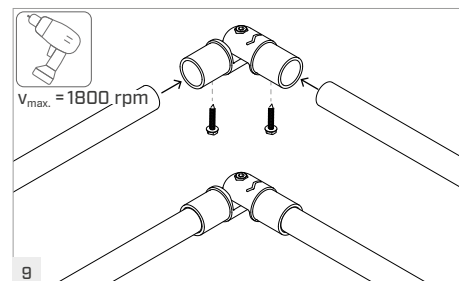
Die Außengewinde-/Innengewinde-Enden des Handlaufs und der Mittelläufe verbinden und mit Schrauben **MMS5525A2** befestigen. Gemäß EN 14122 darf der Handlauf nicht weiter als 20 cm vom nächsten Pfosten entfernt enden. Die Schrauben unter den Mittelläufen positionieren.



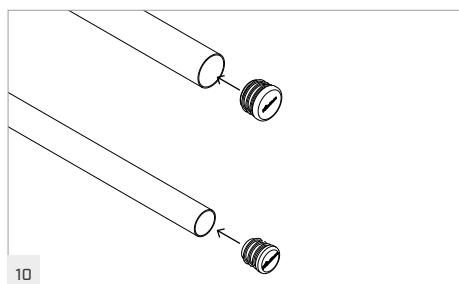
Den letzten Geländerabschnitt anpassen, indem der überstehende Teil der Läufe mit dem Rohrschneider abgetrennt wird.



Das Winkelgelenk **BORCOR** in den Handlauf einsetzen und mit gewindeschneidenden Schrauben **MMS5525A2** befestigen.



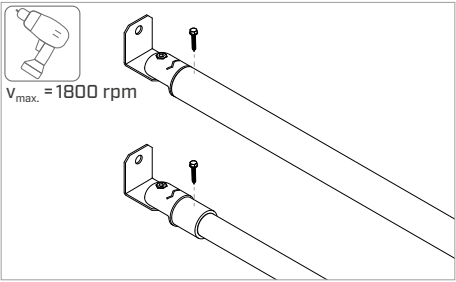
Das Winkelgelenk **BORCOR** in den Mittellauf einsetzen und mit gewindeschneidenden Schrauben **MMS5525A2** befestigen.



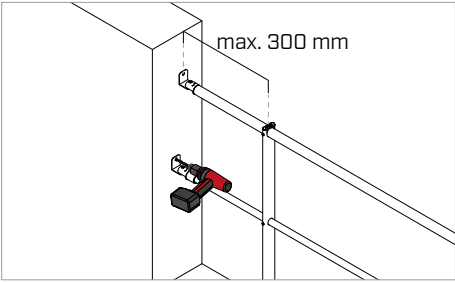
Die Kappen **BORCAP45** und **BORCAP32** in die Handläufe oder Mittelläufe einsetzen.

MONTAGE

BORWALL

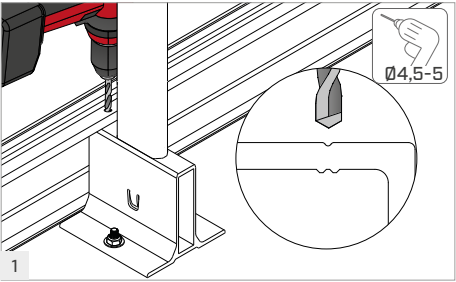


Handlauf und Mittellauf in das Wandabschlusselement **BORWALL** einsetzen und mit der gewindeschneidenden Schraube **MMS5525A2** befestigen.

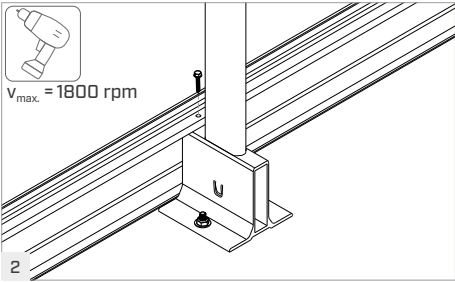


Den maximalen Abstand von **300 mm** zur Wand einhalten. Mit einer Spitze Ø10 mm ein Loch in die Wand bohren und das Abschlusselement mit einem Dübel M10 (AB110115) oder auf Holz mit VGS Ø9 (VGS9100 + HUS8) befestigen.

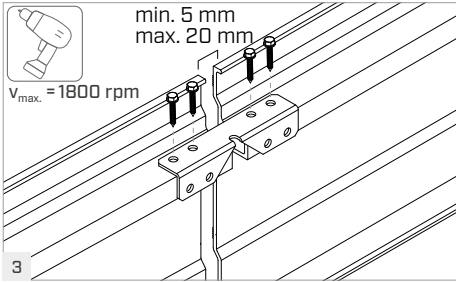
BORTB



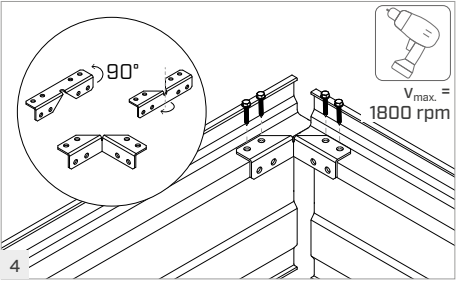
BORTB so positionieren, dass es an der die Schulter der Grundplatte **BORBASEH** anliegt. Eine durchgehende Vorbohrung von Ø4,5 mm oder Ø5 mm vornehmen. Die Nut auf der Auflage als Führung für die Spitze des Schraubers verwenden.



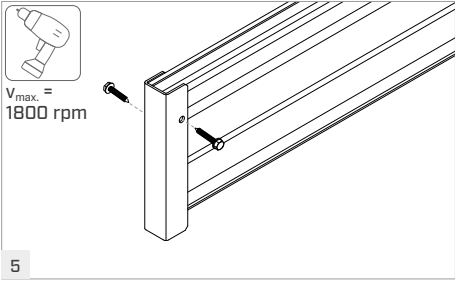
Nach dem Vorbohren kann die Fußleiste mit einer Schraube **MMS5525A2** an der Grundplatte befestigt werden.



Die Enden von **BORTB** mit dem Verbinder **BORTBJUN** verbinden. Mit 4 Schrauben **MMS5525A2** befestigen, wobei mindestens 5 mm zwischen den Platten liegen müssen, um eine thermische Verformung zu vermeiden.



Den Verbinder **BORTBJUN** in den Ecken bis zum gewünschten Winkel von Hand drehen und biegen. Mit 4 gewindeschneidenden Schrauben **MMS5525A2** befestigen.



Die Endkappen der Fußleiste mit 2 gewindeschneidenden Schrauben **MMS5525A2** befestigen.

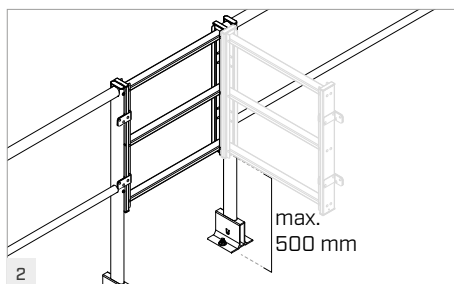
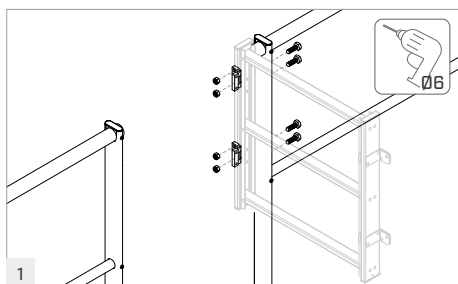
NUTZUNGSVORSCHRIFTEN BORTB

H _{montanti}	veletta	BORTB			
		EN 14122-3: 2016	EN 13374:2013 +A1:2018 CLA	EN 13374:2025 CLA	NF E85-015: 2019
		$h \geq 57 \text{ cm}$ ✗ $h < 57 \text{ cm}$ N/A	N/A	$h \geq 47 \text{ cm}$ ✗ $h < 47 \text{ cm}$ N/A	$47 \text{ cm} \leq h \leq 57 \text{ cm}$ ✗ $h < 47 \text{ cm}$ N/A $h > 57 \text{ cm}$ N/A
		$h \geq 10 \text{ cm}$ ✗ $h < 10 \text{ cm}$ N/A	✗	✗	$h \geq 10 \text{ cm}$ ✗ $h < 10 \text{ cm}$ N/A
		$h \geq 10 \text{ cm}$ ✗ $h < 10 \text{ cm}$ ✓	$h \geq 15 \text{ cm}$ ✗ $h < 15 \text{ cm}$ ✓	$h \geq 15 \text{ cm}$ ✗ $h < 15 \text{ cm}$ ✓	$h \geq 10 \text{ cm}$ ✗ $h < 10 \text{ cm}$ ✓

MONTAGE

BORGATE600

EN
14122-3:
2016



Die 2 Scharniere an der Seite des Tors mit 4 Schrauben **Ø6x35 ISO 4762** und den entsprechenden **selbstsichernden Muttern M6** im Lieferumfang des Tors befestigen.

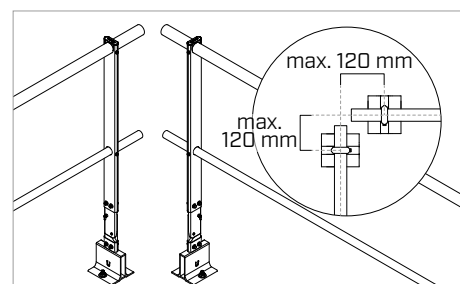
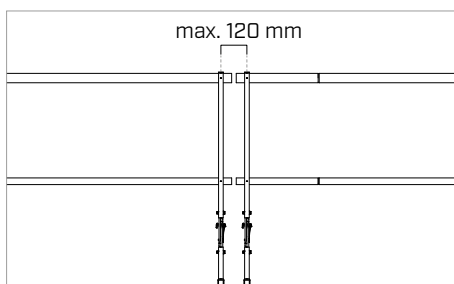
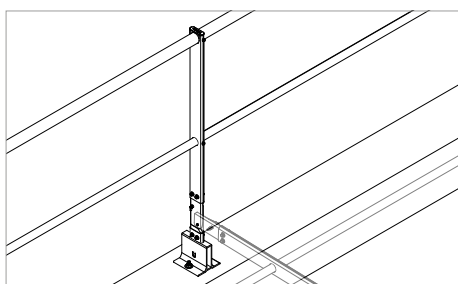
Sicherstellen, dass das Tor auf einer maximalen Höhe von **500 mm** zur begehbaren Fläche montiert ist und in geschlossener Position bleibt.

BORUP100F - BORUP110F

EN
14122-3:
2016

NTC
2018
+
DLgs.81/08

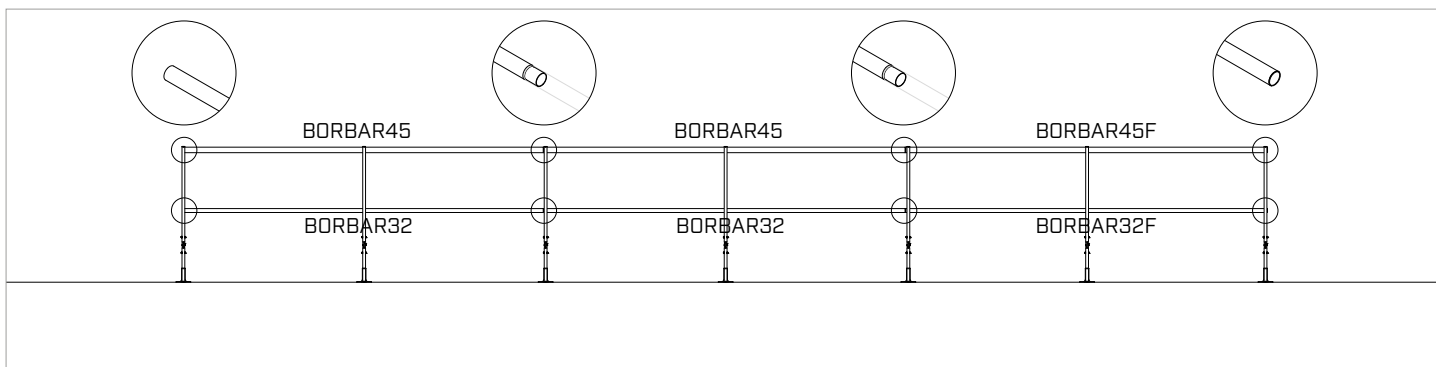
NF
E85-015:
2019



Die Klappgeländer **BORDER H** von der Verbindungsseite (nicht Zapfenseite) montieren und sicherstellen, dass der Pfosten zum Dach hin und niemals nach außen aufgeklappt wird.

Die Klappgeländer **BORDER H** werden in Modulen zu 9 m (7 Pfosten), 12 m (9 Pfosten), 15 m (11 Pfosten) oder 18 m (13 Pfosten) montiert. Zwei Endpfosten mit maximalem Abstand von **120 mm** zueinander montieren; siehe Abb.

Die Ecken der Klappgeländer dürfen nicht verbunden sein, damit ein Kippen in beide Richtungen möglich ist. Der Abstand zwischen zwei Endpfosten darf nicht mehr als **120 mm** vom Rand betragen.



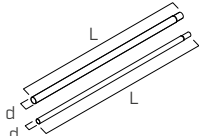
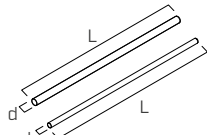
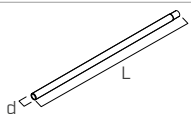
Hauptsächlich werden die Handläufe **BORBAR45** und **BORBAR32** verwendet, jedoch muss jedes Modul mit dem spezifischen, nicht verjüngten Mittel-
lauf **BORBAR45F** und **BORBAR32F** abschließen.

ALLGEMEINE VERWENDUNGSHINWEISE

- Vor dem Kippen des Schutzgeländers ist sicherzustellen, dass der Arbeiter gesichert ist. Der Anwender muss an einem Höhensicherungsgerät wie dem Seilsystem **PATROL** oder an einem Anschlagpunkt **KITE** verankert sein. Außerdem ist zu prüfen, ob alle Werkzeuge und Ausrüstungen in einwandfreiem Betriebszustand sind und der Montagebereich frei von Hindernissen ist.
- Die Module (9 m, 12 m, 15 m, 18 m) müssen immer von zwei Anwendern gehandhabt werden, um ein korrektes Kippen zu ermöglichen.

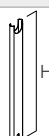
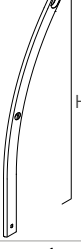
ARTIKELNUMMERN UND ABMESSUNGEN

HAND- UND MITTELLÄUFE

ART.-NR.	d [mm]	L [mm]	
BORBAR45	45	3000	
BORBAR32	32	3000	
BORBAR45F	45	3000	
BORBAR32F	32	3000	
BORBAR45R	45	3000	

EN AW
6063-T6

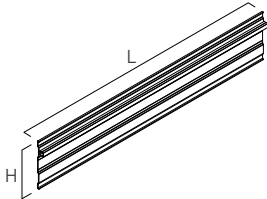
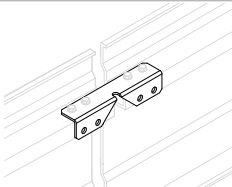
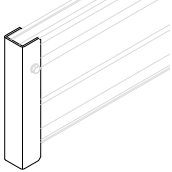
PFOSTEN

ART.-NR.	H [mm]	
BORUP530WH	535	
BORUP760WH	765	
BORUP100	1005	
BORUP110	1105	
BORUP118	1185	
BORUP130	1305	
BORUP100F	1005	
BORUP110F	1105	
BORUP113C	1120	
BORUP100R	1005	
BORUP110R	1105	
BORUP100AS	1005	
BORUP107US	1075	

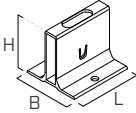
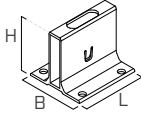
EN AW
6005A-T6

ARTIKELNUMMERN UND ABMESSUNGEN

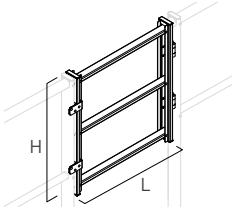
FUSSLEISTE

ART.-NR.		H [mm]	L [mm]	
BORTB	EN AW 6063-T6	150	3000	
BORTBJUN	EN AW 6063 H111	-	-	
BORTBCAP	EN AW 6063 H111	-	-	

BASIS

ART.-NR.		B [mm]	H [mm]	L [mm]	
BORBASEH	EN AW 6005A-T6	120	115	135	
BORBASEH4H		120	115	135	

SICHERHEITSTOR

ART.-NR.		L [mm]	H [mm]	
BORGATE600	EN AW 6063 H111	600	640	

BEFESTIGUNGEN

ART.-NR.		d [mm]	H [mm]	
MMS5525A2	1.4301 AISI304 INOX	5,5	25	

ARTIKELNUMMERN UND ABMESSUNGEN

ZUBEHÖR

ART.-NR.

BORCAP45

BORCAP32

BORCAP

BORCOR

BORWALL

BORBASEHKIT

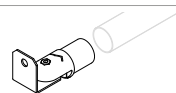
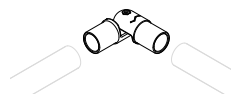
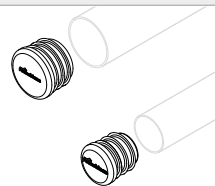
LDPE

PP
RECYCLED

PP
RECYCLED

1.4301
AISI304
INOX

EPDM



SAFETY REGULATIONS, INSTRUCTIONS FOR INSTALLATION AND USE

INTRODUCTION

DEFINITION

The **BORDER H** railing with horizontal fastening is a collective fall protection system designed for roof safety, made of aluminium alloy (**EN AW 6005A-T6** and **EN AW 6063-T6**).

REGULATIONS

The **BORDER H** railing with horizontal fastening complies with the following regulations:

- **EN 14122-3:2016**
- **EN 13374:2025 Cl. A (except point 9)**
- **EN 13374:2013+A1:2018 Cl. A (except point 9)**
- **NTC (Tab.3.1.II - cat. A,B,C1,E1,F,G,H) and Legislative Decree 81/08 (Italy)**
- **NF E 85-015:2019 (France)**

The table shows the main geometric parameters required by the applicable regulations:

	EN 14122-3: 2016	EN 13374:2013 +A1:2018 Cl.A	EN 13374:2025 Cl.A	NTC 2018	Leg. Decree 81/08	NF E85-015: 2019
Min. height above walking surface	1,1 m	1 m	1 m	1 m	1 m	1 - 1,1 m
Max. spacing between rails	500 mm	470 mm	-	-	500 mm	500 mm
Max. spacing between uprights	1,5 m (suggested)	-	-	-	-	1,5 m (suggested)
Min. height of toe board	10 cm	15 cm	-	-	15 cm	10 cm

USE - MAINTENANCE

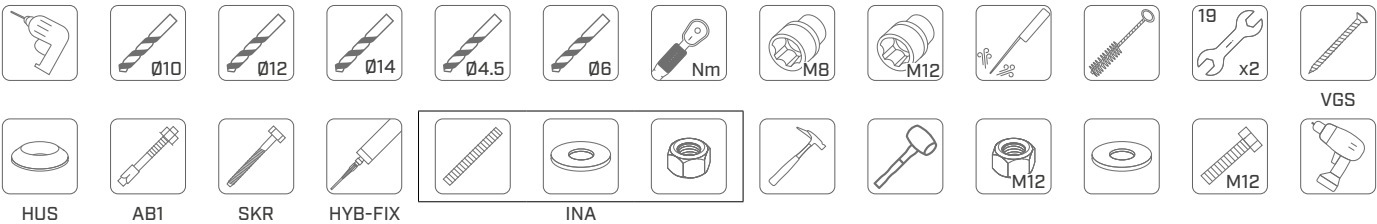
The **BORDER** railing must be installed by qualified personnel, in compliance with current regulations concerning work at height. Before use, the operator must ensure their own safety by using a temporary lifeline, PPE and a suitable work platform.

- Before use, the user must perform a visual inspection of the **BORDER** railing to ensure the absence of irregularities, damage or deformations (knocks, bending, etc.).
- The **BORDER** railing does not require any specific maintenance. However, it must be visually inspected at least once per year by qualified personnel.
- If the **BORDER** railing is incorrectly installed, damaged or has arrested a fall, its use must be immediately suspended.
- If the product is resold outside the country of destination, it is essential for the user's safety that the reseller provides the instruction manual in the language of the country where the product will be used. The documents can be provided to you on request by contacting the manufacturer.
- The **BORDER** railing is a permanent collective protective device intended exclusively for professionals working on roofs that are not accessible to the public.
- If installed in polluted industrial, petrochemical, marine or coastal environments, the **BORDER** railing must undergo an appropriate surface treatment, such as powder coating or anodizing.
- If a site plan has been provided, it must be used as a reference during installation.

STORAGE

The raw aluminium components are packed in contact with each other. Exposure of the unopened package to rain may cause oxidation of the components, resulting in possible surface stains. These do not compromise the quality of the aluminium but can damage the aesthetic appearance of the railing. We recommend unpacking the packages and storing the components separately from each other (no contact between them), or storing the packages still packed in a dry place.

TOOLS



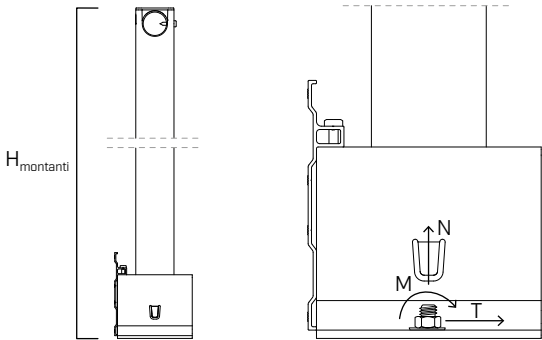
MAIN FORCES ACTING ON THE ANCHORAGE

The most heavily loaded bolt is subjected to the combined action of the forces and resulting moments:

$$M = F \cdot H$$

$$N = F_t = \frac{M \cdot y_i}{\sum n \cdot y_i^2}$$

$$T = \frac{F}{2}$$



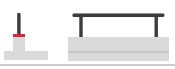
The resulting values acting on each individual fastening point are defined as follows (in the case of BORBASEH):

H _{uprights} [m]	EN 14122-3: 2016			EN 13374:2013 +A1:2018 CLA			EN 13374:2025 CLA			NTC 2018 + Leg. Decree 81/08			NF E85-015: 2019		
	M [Nm]	T [N]	N [N]	M [Nm]	T [N]	N [N]	M [Nm]	T [N]	N [N]	M [Nm]	T [N]	N [N]	M [Nm]	T [N]	N [N]
0,53	418	394	3092	N/A	N/A	N/A	1574	1485	11660	522	492	3865			
1	788	394	5834	1425	713	10556	2970	1485	22000	985	492	7292			
1,1	866	394	6417	1568	713	11611	3267	1485	24200	1083	492	8021			

INSTALLATION VIDEO

PERMISSIBLE SPACING

Table 1

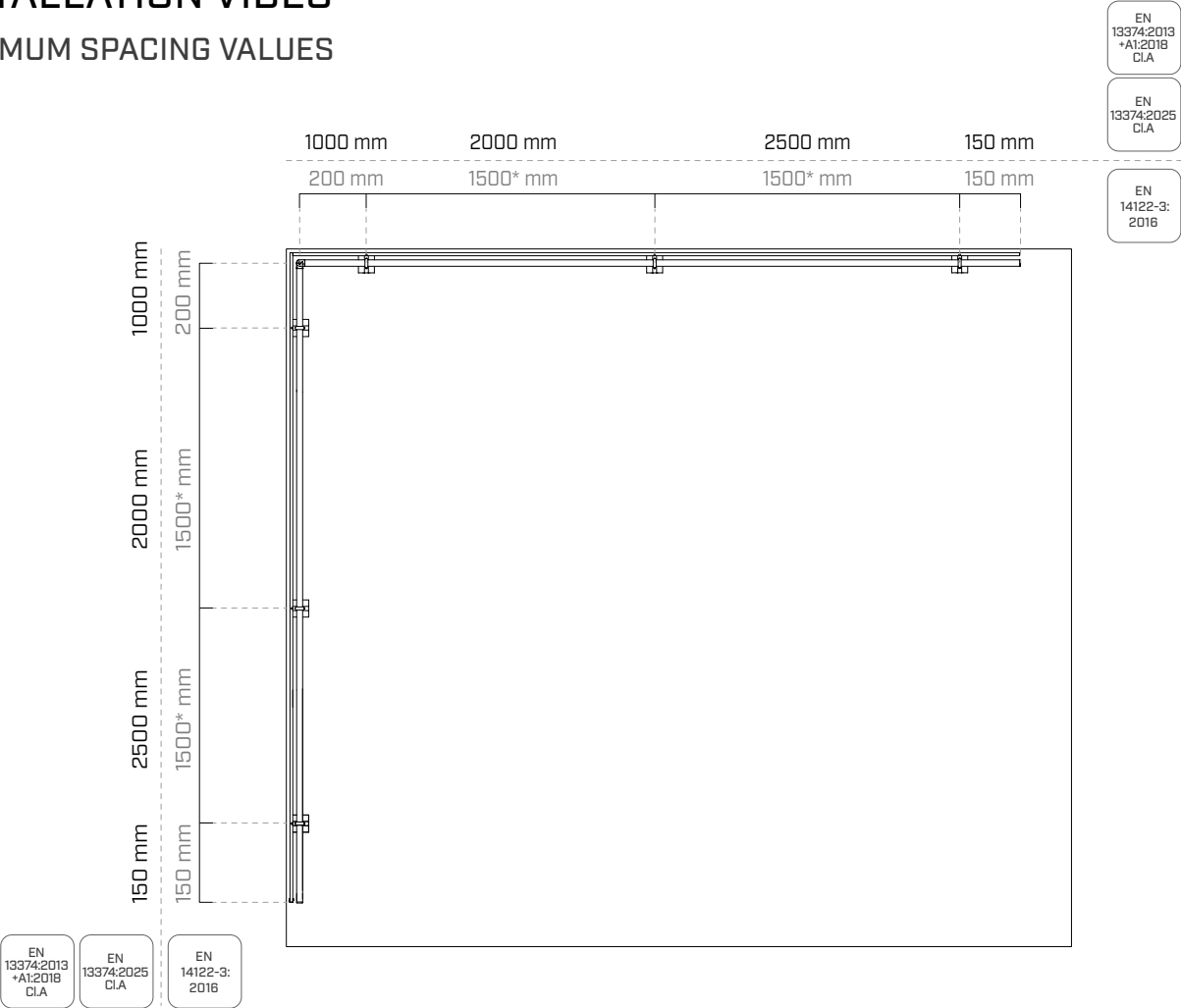
upright	H _{uprights}	spacing between uprights [cm]			
		EN 14122-3: 2016	EN 13374:2013 +A1:2018 CLA	EN 13374:2025 CLA	NTC 2018 + Leg. Decree 81/08
straight + folding*	 110 cm	150	250	180	150
	 100 cm(**)	150	250	180	150
straight	 53 cm(**)	150	N/A	180	150
curved	 110 cm	150	250	180	150

*The folding system is not currently available

** It is necessary to comply with the minimum heights from the walking surface as required by the applicable regulations. Some applications are permitted only if installed on a parapet.

INSTALLATION VIDEO

MAXIMUM SPACING VALUES

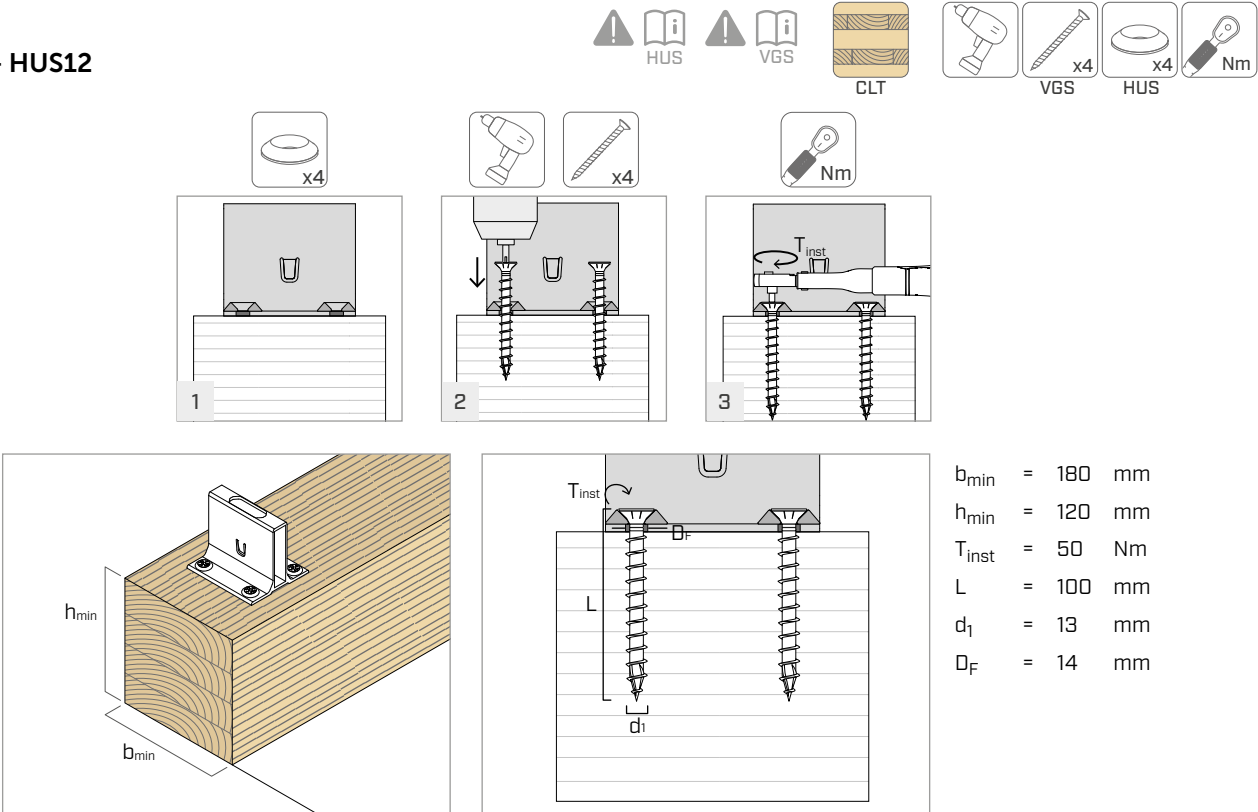


*Maximum spacing varies according to the applicable regulation and height of the upright (see table 1).

BASE4H INSTALLATION

CLT

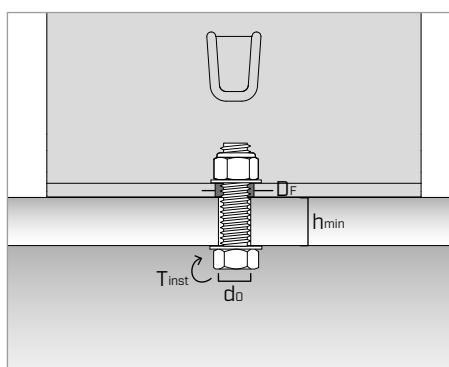
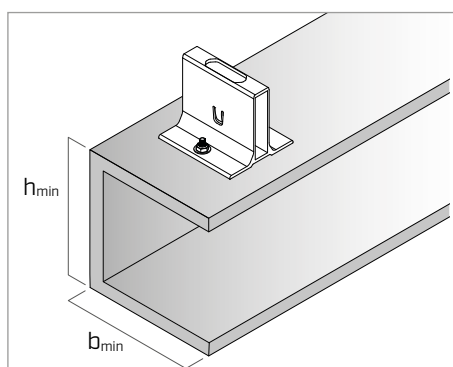
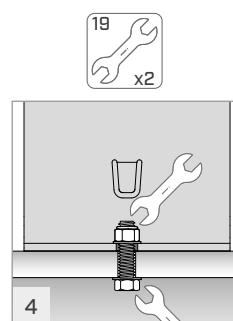
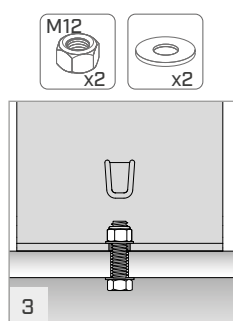
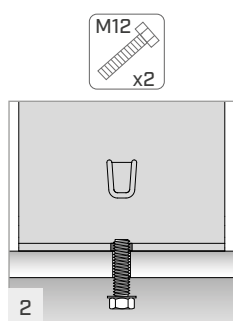
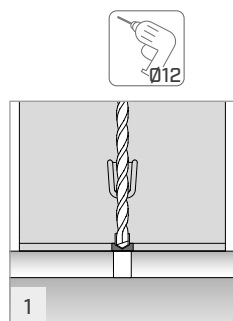
VGS13100 + HUS12



BASEH INSTALLATION

STEEL

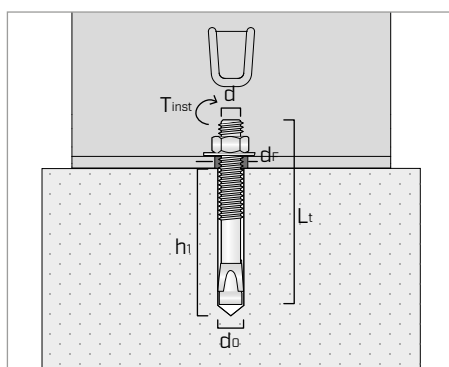
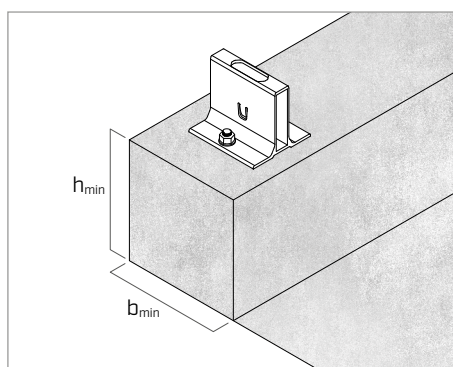
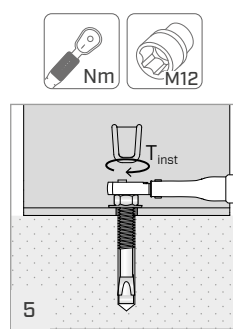
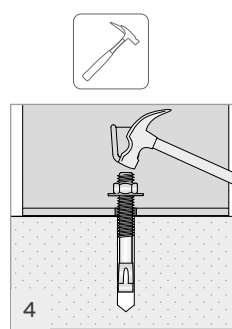
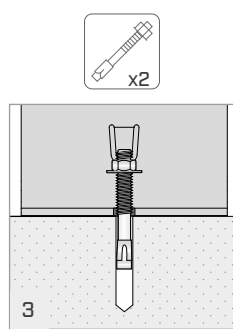
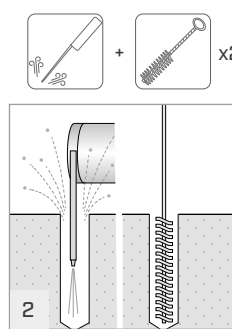
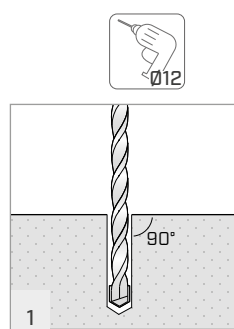
M12



$b_{min} = 140 \text{ mm}$
 $h_{min} = 5 \text{ mm}$
 $T_{inst} = 60 \text{ Nm}$
 $d_0 = 13 \text{ mm}$
 $d_F = 14 \text{ mm}$

CONCRETE

AB112100

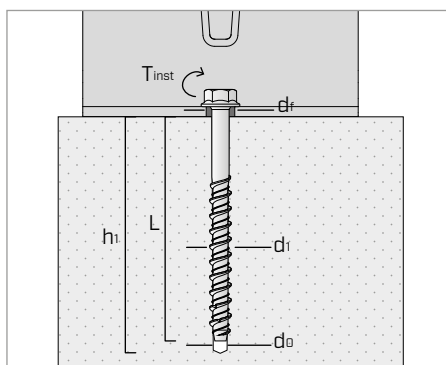
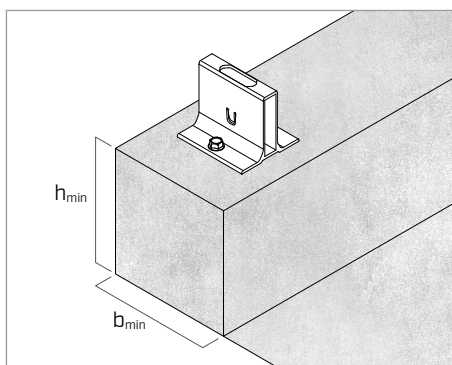
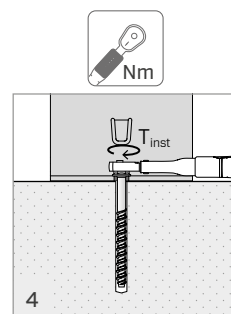
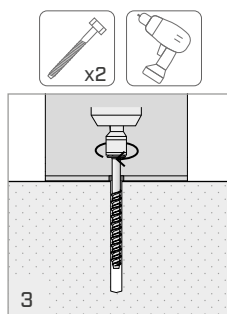
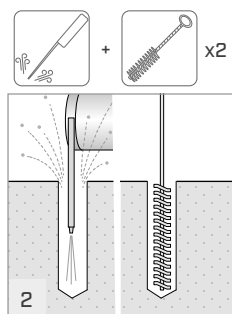
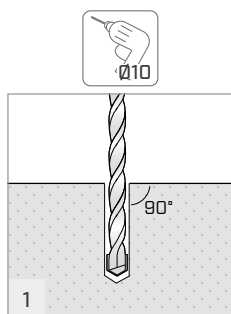


$b_{min} = 140 \text{ mm}$
 $h_{min} = 140 \text{ mm}$
 $T_{inst} = 60 \text{ Nm}$
 $h_1 = 85 \text{ mm}$
 $d = d_0 = 12 \text{ mm}$
 $d_F = 14 \text{ mm}$
 $L_t = 100 \text{ mm}$

BASEH INSTALLATION

CONCRETE

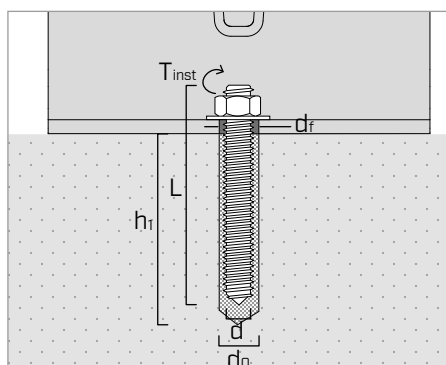
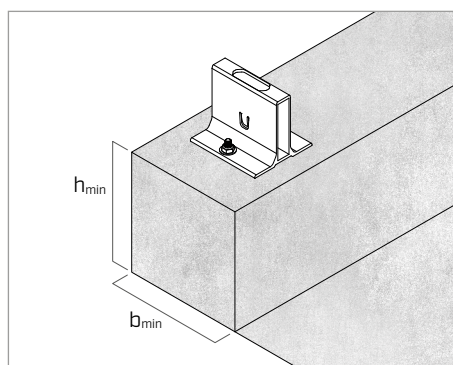
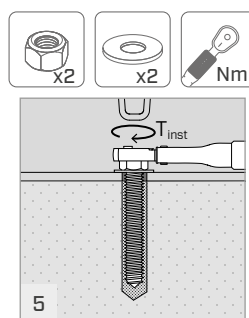
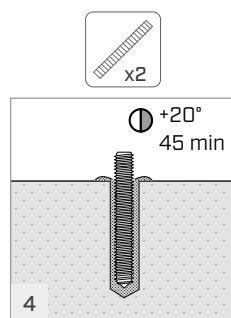
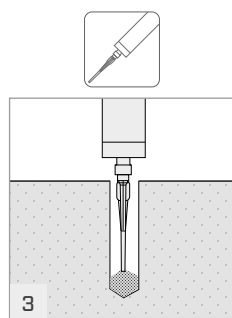
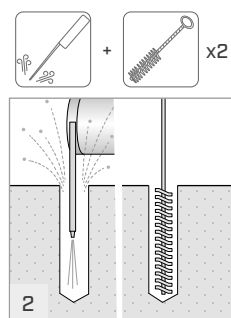
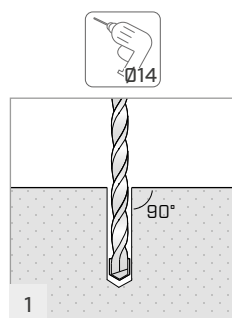
SKR1290



b_{min}	=	140	mm
h_{min}	=	100	mm
T_{inst}	=	80	Nm
h_1	=	100	mm
d_1	=	12	mm
d_0	=	10	mm
d_F	=	14	mm
L	=	90	mm

CONCRETE

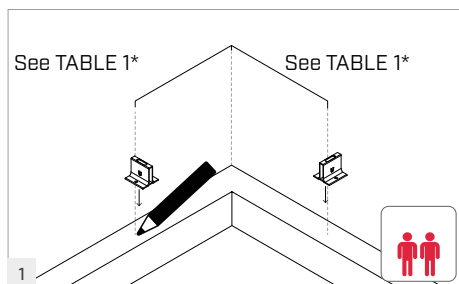
HYB-FIX + INA8812140



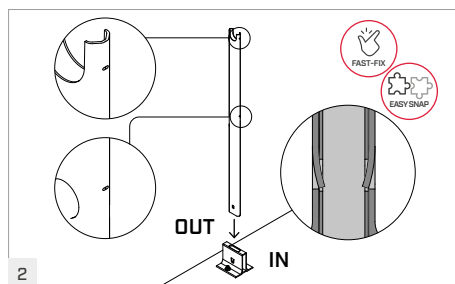
b_{min}	=	140	mm
h_{min}	=	160	mm
T_{inst}	=	60	Nm
h_1	=	140	mm
d	=	12	mm
d_0	=	14	mm
d_F	=	14	mm
L	=	140	mm

INSTALLATION

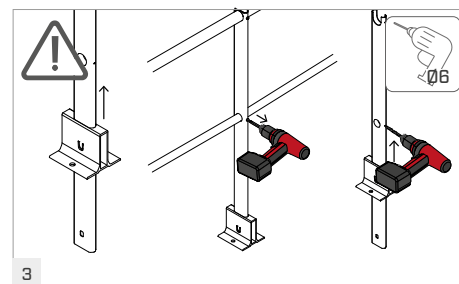
BORDER H



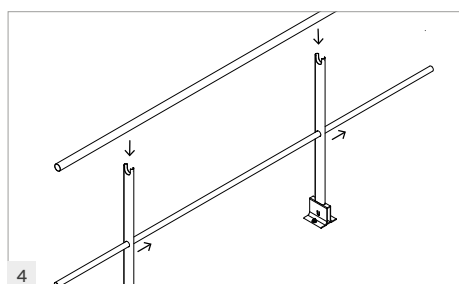
At least two qualified operators are required. For best results, start from a corner. Install the H bases (see pages 3–4).



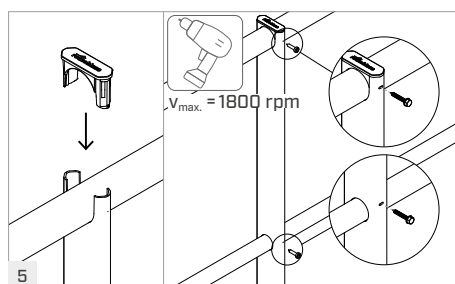
Insert the uprights into the **BORBASEH** bases with the markings facing the operator. Check that the tabs and slots are properly interconnected. No screws are required for fastening.



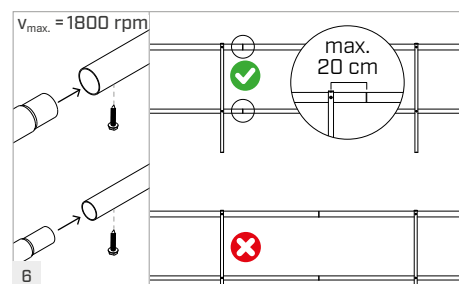
To remove the base-upright assembly, push the base upwards. If there are screws (point 5), remove them and drill Ø6 mm at the countersunk hole.



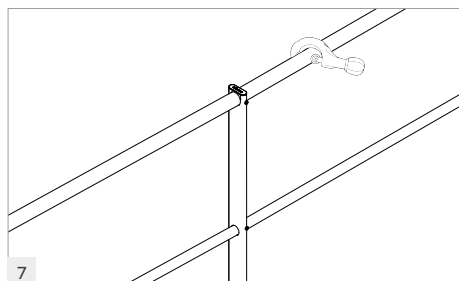
Insert the **BORBAR32** intermediate rail followed by the **BORBAR45** top rail. In compliance with EN 13374, the **BORBAR45R** reinforced rails must be installed.



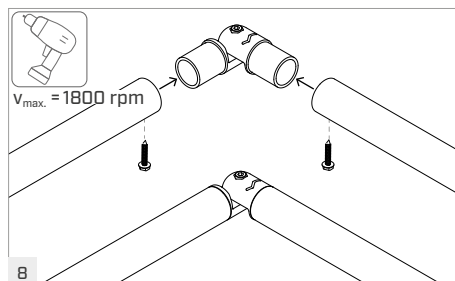
Insert the **BORCAP** cap on the top of each upright. Secure the rails to the uprights using screws **MMS5525A2** at the two side markings.



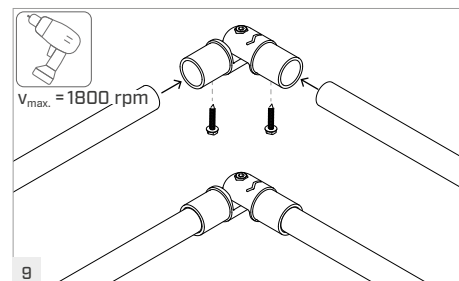
Connect the male/female ends of the handrail and rails, fastening them with screws **MMS5525A2**. In compliance with EN 14122, the handrail must end no more than 20 cm from the nearest upright. Position the screws under the rails.



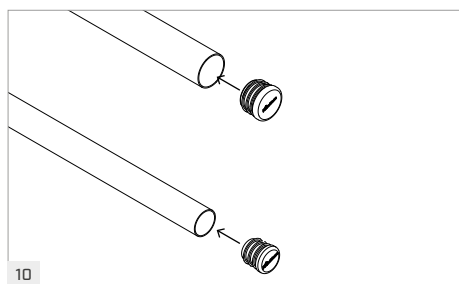
Adapt the final section of the railing by cutting off the excess length of the rails using the pipe cutter.



Insert the **BORCOR** corner joint into the handrail and fasten with self-tapping screws **MMS5525A2**.



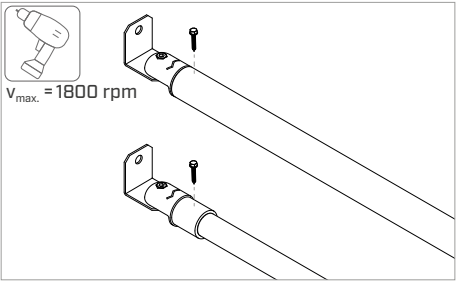
Insert the **BORCOR** corner joint into the intermediate rail and fasten with self-tapping screws **MMS5525A2**.



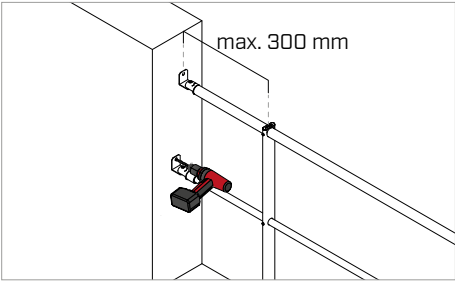
Insert the **BORCAP45** and **BORCAP32** caps into the handrails or intermediate rails.

INSTALLATION

BORWALL

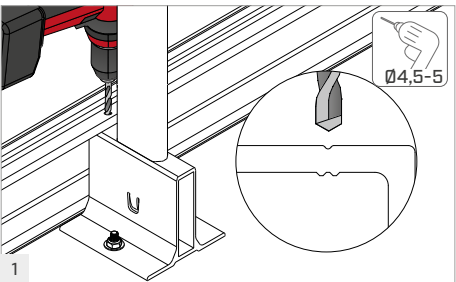


Insert the handrail and intermediate rail into the **BORWALL** wall end element and fasten with the self-tapping screw **MMS5525A2**.

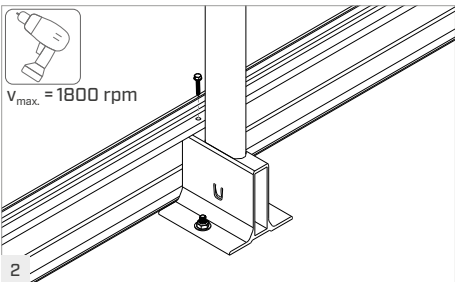


Ensure a maximum distance of **300 mm** from the wall. Drill the wall with a Ø10 mm bit and fasten the end element with an M10 anchor (AB110115), or on timber using VGS Ø9 (VGS9100 + HUS8).

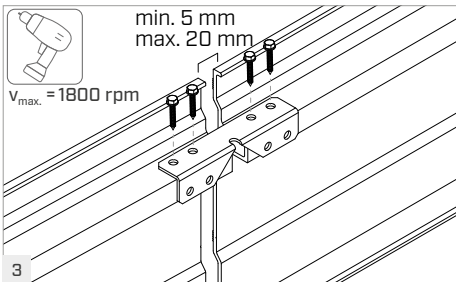
BORTB



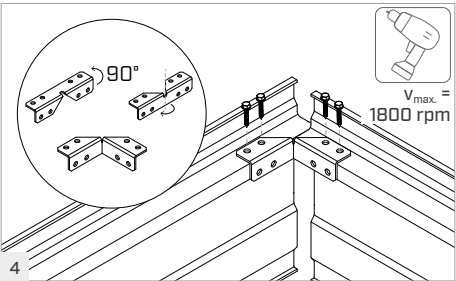
Position the **BORTB** so that its support rests against the shoulder of the **BORBASEH** base. Drill a Ø4.5mm or Ø5mm pilot through-hole. Use the channel on the support as a guide for the screwdriver bit.



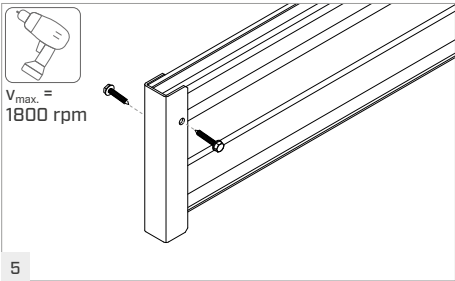
Once the pilot hole has been drilled, the toe board can be secured to the base with a screw **MMS5525A2**.



Join the ends of **BORTB** with the **BORTBJUN** connector. Fasten with 4 screws **MMS5525A2**, leaving at least 5 mm between boards to prevent thermal deformation.

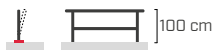
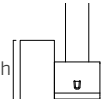


At the corners, manually rotate and bend the **BORTBJUN** connector until the desired angle is achieved. Fasten with 4 self-tapping screws **MMS5525A2**.



Fasten the end caps of the toe board with 2 self-tapping screws **MMS5525A2**.

BORTB USE SPECIFICATIONS

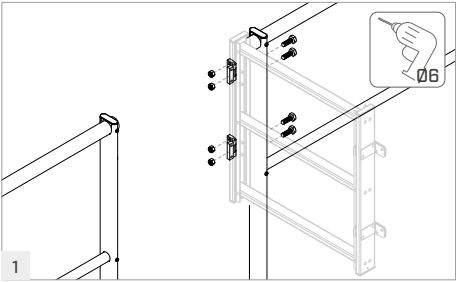
		EN 14122-3: 2016	EN 13374:2013 +A1:2018 CLA	EN 13374:2025 CLA	NTC 2018 + D.Lgs. 81/08	NF E85-015: 2019
H _{montanti}	veletta	BORTB				
 53 cm		$h \geq 57 \text{ cm}$ ❌ $h < 57 \text{ cm}$ N/A	N/A	$h \geq 47 \text{ cm}$ ❌ $h < 47 \text{ cm}$ N/A	$47 \text{ cm} \leq h \leq 57 \text{ cm}$ ❌ $h < 47 \text{ cm}$ N/A $h > 57 \text{ cm}$ N/A	
 100 cm		$h \geq 10 \text{ cm}$ ❌ $h < 10 \text{ cm}$ N/A		❌	❌	$h \geq 10 \text{ cm}$ ❌ $h < 10 \text{ cm}$ N/A
 110 cm				$h \geq 10 \text{ cm}$ ❌ $h < 10 \text{ cm}$ ✅	$h \geq 15 \text{ cm}$ ❌ $h < 15 \text{ cm}$ ✅	$h \geq 15 \text{ cm}$ ❌ $h < 15 \text{ cm}$ ✅
 110 cm						

IT
DE
EN
ES
FR
PT

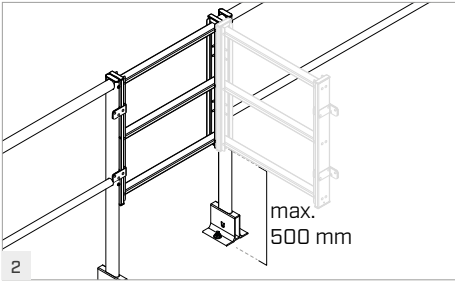
INSTALLATION

BORGATE600

EN
14122-3:
2016



Fasten the 2 hinges to the gate using 4 **Ø6x35 ISO 4762** screws and their respective **M6 self-locking nuts** supplied with the gate.



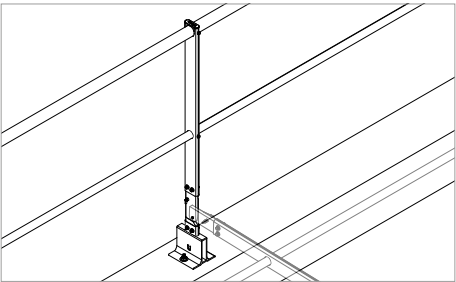
Check that the gate is installed at a maximum height of **500 mm** above the walking surface, keeping it in the closed position.

BORUP100F - BORUP110F

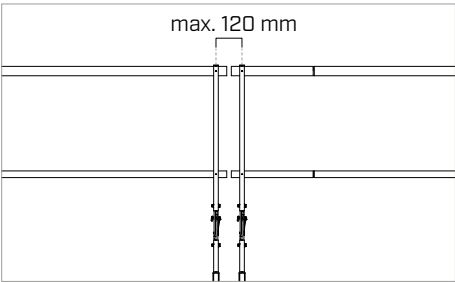
EN
14122-3:
2016

NTC
2018
DLgs.81/08

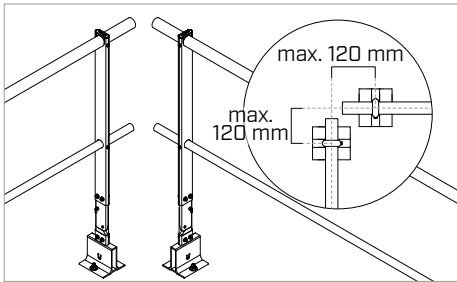
NF
E85-015:
2019



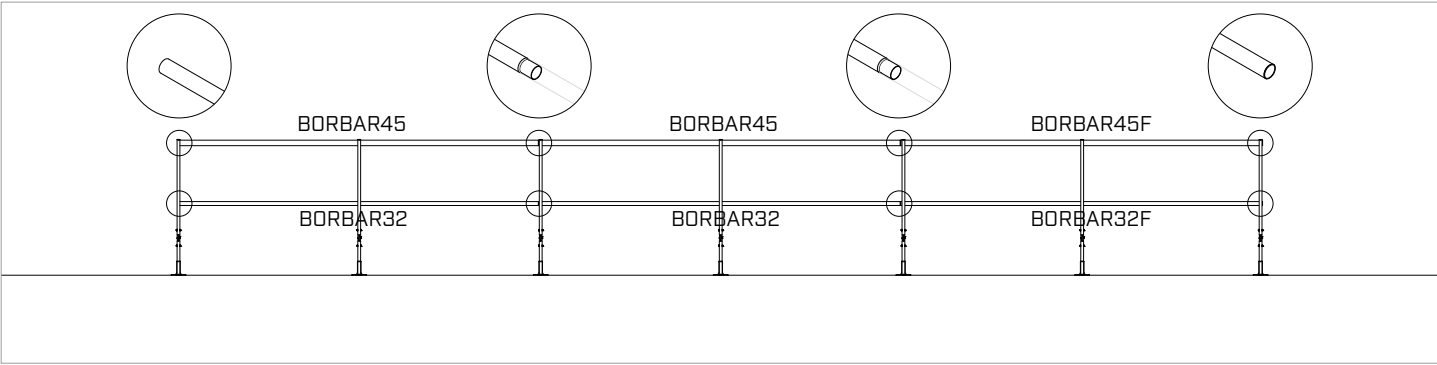
Install the **BORDER H** folding railings on the joint side (not the hinge side), ensuring the up-right folds towards the roof, never outwards.



The **BORDER H** folding railings are installed in modules of 9 m (7 uprights), 12 m (9 uprights), 15 m (11 uprights) or 18 m (13 uprights). Install the two end uprights with a maximum spacing of **120 mm**, as shown.



The corners of the folding railings must not be connected to allow folding in either direction. The distance between two end uprights must never exceed **120 mm** from the edge.



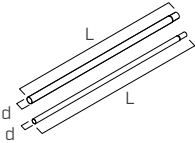
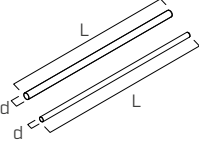
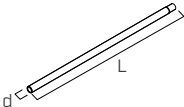
The main rails to be used are the **BORBAR45** and the **BORBAR32**; regardless, each module must end with the specific **BORBAR45F** and **BORBAR32F** rail with no reduction.

GENERAL WARNINGS FOR USE

- Before folding the railing, it is mandatory to ensure that the operator is working in safe conditions. The user must be secured to a fall arrester, such as a **PATROL** lifeline or a **KITE** anchor point. It is also necessary to check that all tools and equipment are in proper working order and that the installation area is clear of obstacles.
- The modules (9 m, 12 m, 15 m, 18 m) must always be handled by two operators to ensure proper folding.

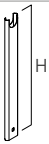
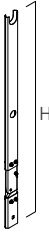
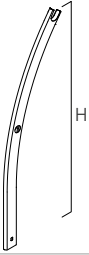
CODES AND DIMENSIONS

RAILS

CODE	d [mm]	L [mm]	
BORBAR45	45	3000	
BORBAR32	32	3000	
BORBAR45F	45	3000	
BORBAR32F	32	3000	
BORBAR45R	45	3000	

EN AW
6063-T6

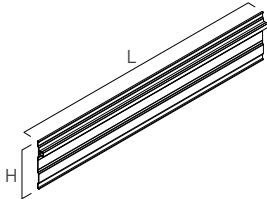
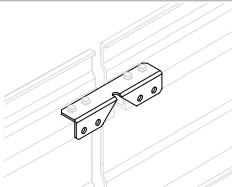
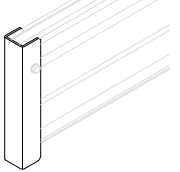
UPRIGHTS

CODE	H [mm]	
BORUP530WH	535	
BORUP760WH	765	
BORUP100	1005	
BORUP110	1105	
BORUP118	1185	
BORUP130	1305	
BORUP100F	1005	
BORUP110F	1105	
BORUP113C	1120	
BORUP100R	1005	
BORUP110R	1105	
BORUP100AS	1005	
BORUP107US	1075	

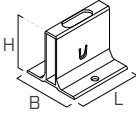
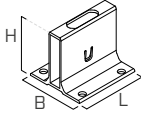
EN AW
6005A-T6

CODES AND DIMENSIONS

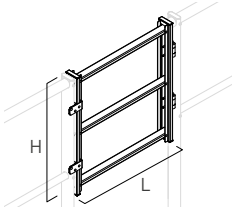
TOE BOARD

CODE		H [mm]	L [mm]	
BORTB	EN AW 6063-T6	150	3000	
BORTBJUN	EN AW 6063 H111	-	-	
BORTBCAP	EN AW 6063 H111	-	-	

BASES

CODE		B [mm]	H [mm]	L [mm]	
BORBASEH	EN AW 6005A-T6	120	115	135	
BORBASEH4H		120	115	135	

SAFETY GATE

CODE		L [mm]	H [mm]	
BORGATE600	EN AW 6063 H111	600	640	

FASTENERS

CODE		d [mm]	H [mm]	
MMS5525A2	1.4301 AISI304 INOX	5,5	25	

CODES AND DIMENSIONS

ACCESSORIES

CODE

BORCAP45

BORCAP32

BORCAP

BORCOR

BORWALL

BORBASEHKIT

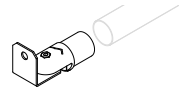
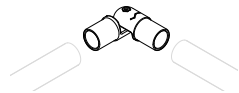
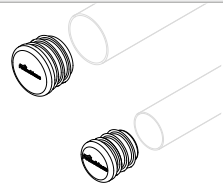
LDPE

PP
RECYCLED

PP
RECYCLED

1.4301
AISI304
INOX

EPDM



NORMAS DE SEGURIDAD, INSTRUCCIONES DE USO E INSTALACIÓN

INTRODUCCIÓN

DEFINICIÓN

La baranda de fijación horizontal **BORDER H** es un sistema de protección colectiva anticaída, ideal para garantizar la seguridad en las cubiertas, realizada en aleación de aluminio (**EN AW 6005A-T6** y **EN AW 6063-T6**).

NORMAS

La baranda de fijación horizontal **BORDER H** es conforme a las siguientes normativas:

- **EN 14122-3:2016**
- **EN 13374:2025 Cl. A (salvo punto 9)**
- **EN 13374:2013+A1:2018 Cl. A (salvo punto 9)**
- **NTC (Tabla 3.1.II - cat. A, B, C1, E1, F, G y H) y D. Leg. 81/08 (Italia)**
- **NF E 85-015:2019 (Francia)**

En la siguiente tabla se indican los principales parámetros geométricos previstos por las normativas de referencia:

	EN 14122-3: 2016	EN 13374:2013 +A1:2018 Cl.A	EN 13374:2025 Cl.A	NTC 2018	D. Leg. 81/08	NF E85-015: 2019
Altura mínima desde la superficie de pisoteo	1,1 m	1 m	1 m	1 m	1 m	1 - 1,1 m
Intereje máximo entre barras	500 mm	470 mm	-	500 mm	500 mm	500 mm
Intereje máximo entre montantes	1,5 m (recomendado)	-	-	-	1,5 m (recomendado)	1,5 m (recomendado)
Altura mínima del rodapié	10 cm	15 cm	-	15 cm	10 cm	10 cm

USO - MANTENIMIENTO

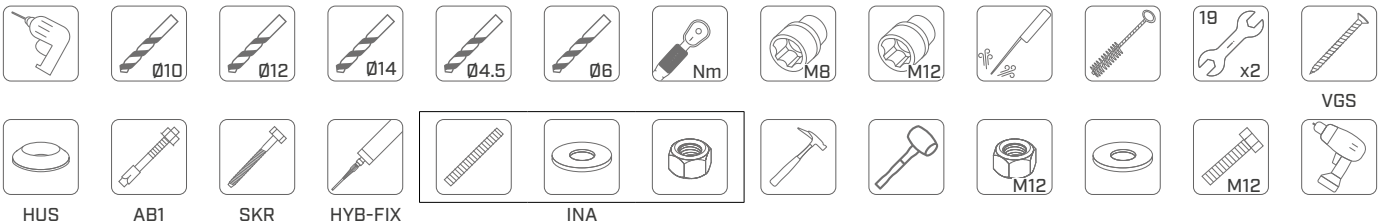
La baranda **BORDER** debe ser instalada por personal cualificado, respetando las normativas vigentes relativas a los trabajos en altura. Antes del uso, el operario debe garantizar su propia seguridad utilizando una línea de vida temporal, equipos de protección individual y una plataforma de trabajo adecuada.

- Antes de empezar a usar la baranda **BORDER**, el usuario debe inspeccionarla visualmente para asegurarse de que no presente anomalías, daños o deformaciones (golpes, dobleces, etc.).
- La baranda **BORDER** no requiere intervenciones de mantenimiento específicas. Sin embargo, es necesario que, al menos una vez al año, personal cualificado realice un control visual.
- Si la baranda **BORDER** no está bien instalada, está dañada o se ha utilizado para detener una caída, se debe dejar de usar de inmediato.
- Si el producto se revende fuera del país de destino, para garantizar la seguridad del usuario es esencial que el distribuidor suministre el manual de instrucciones en el idioma del país donde vaya a usarse el producto. Si se solicita, estos documentos los puede proporcionar el fabricante.
- La baranda **BORDER** es un equipo de protección colectiva permanente, destinado exclusivamente a profesionales que trabajen en cubiertas no accesibles al público.
- Si se instala en ambientes industriales contaminados, petroquímicos, navales o costeros, la baranda **BORDER** debe someterse a un tratamiento superficial adecuado, como pintado con pintura en polvo o anodizado.
- Si se proporciona un esquema de montaje, se debe utilizar como referencia durante la instalación.

ALMACENAMIENTO

Los componentes de aluminio bruto se empaquetan en contacto entre sí. Si el paquete cerrado queda expuesto a la lluvia, es posible que los componentes se oxiden y, por lo tanto, se formen manchas superficiales. Estas manchas no afectan la calidad del aluminio, pero pueden perjudicar el aspecto estético de la baranda. Se aconseja desembalar los productos y mantener los componentes separados, sin contacto entre sí, o bien guardar los componentes empaquetados en un lugar seco.

HERRAMIENTAS



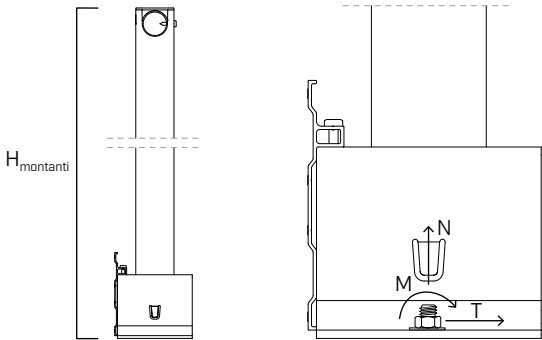
PRINCIPALES FUERZAS QUE ACTÚAN EN EL ANCLAJE

En el perno más solicitado, actúa la combinación de las siguientes fuerzas y momentos:

$$M = F \cdot H$$

$$N = F_t = \frac{M \cdot y_i}{\sum n \cdot y_i^2}$$

$$T = \frac{F}{2}$$



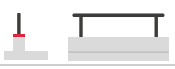
Los valores resultantes que actúan en cada fijación se definen de la siguiente manera (en el caso de BORBASEH):

H _{montantes} [m]	EN 14122-3: 2016			EN 13374:2013 +A1:2018 CLA			EN 13374:2025 CLA			NTC2018 + D.Leg. 81/08			NF E85-015: 2019		
	M [Nm]	T [N]	N [N]	M [Nm]	T [N]	N [N]	M [Nm]	T [N]	N [N]	M [Nm]	T [N]	N [N]	M [Nm]	T [N]	N [N]
0,53	418	394	3092	N/A	N/A	N/A	1574	1485	11660	522	492	3865			
1	788	394	5834	1425	713	10556	2970	1485	22000	985	492	7292			
1,1	866	394	6417	1568	713	11611	3267	1485	24200	1083	492	8021			

ESPECIFICACIONES DE INSTALACIÓN

INTEREJES ADMISIBLES

Tabla 1

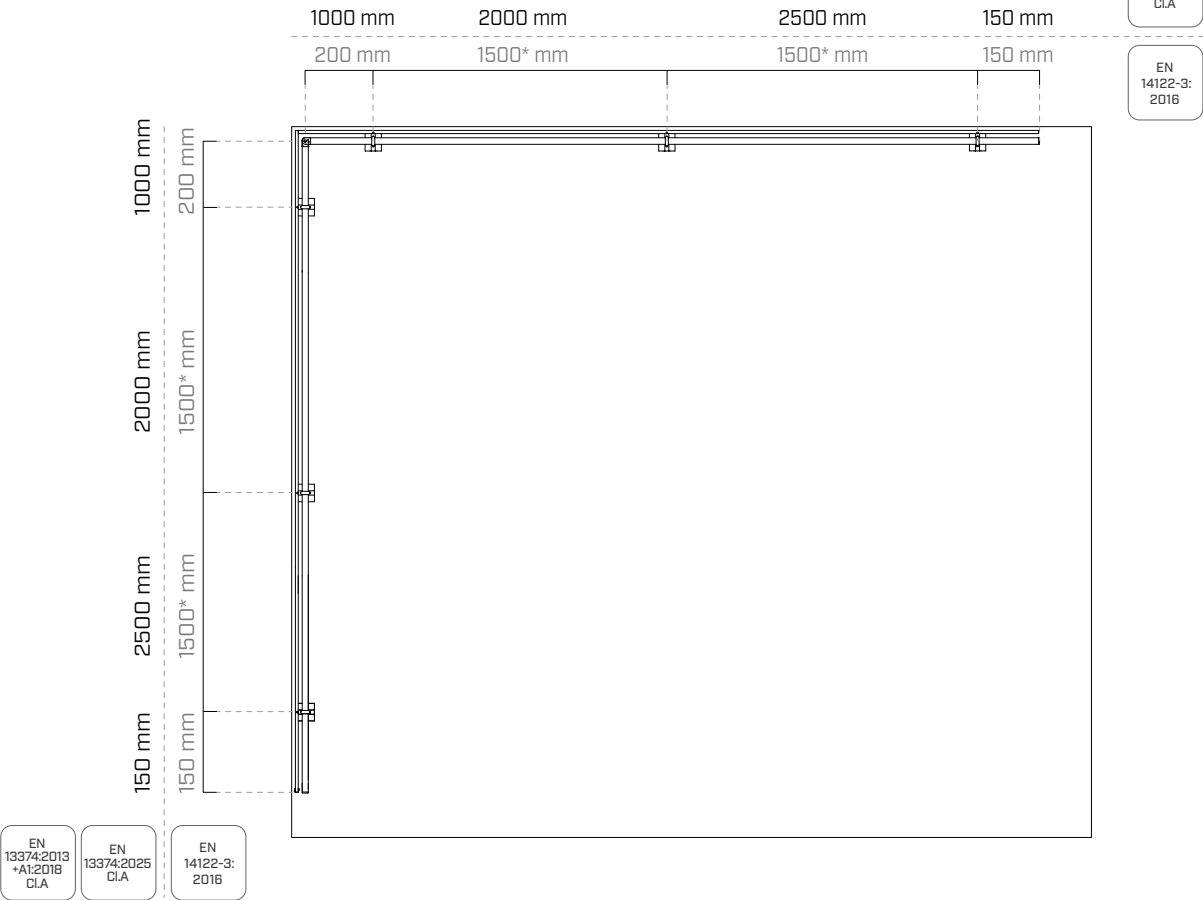
larguero	H _{montantes}	intereje para montantes [cm]			
		EN 14122-3: 2016	EN 13374:2013 +A1:2018 CLA	EN 13374:2025 CLA	NTC2018 + D.Leg. 81/08
recto + abatible*	 110 cm	150	250	180	150
	 100 cm(**)	150	250	180	150
recto	 53 cm(**)	150	N/A	180	150
curvado	 110 cm	150	250	180	150

*El sistema abatible todavía no está disponible

** Es necesario respetar las alturas mínimas desde el plano de pisada previstas por la normativa vigente. Algunas aplicaciones están permitidas únicamente si se instalan sobre un murete perimetral.

ESPECIFICACIONES DE INSTALACIÓN

VALORES MÁXIMOS DE INTEREJE

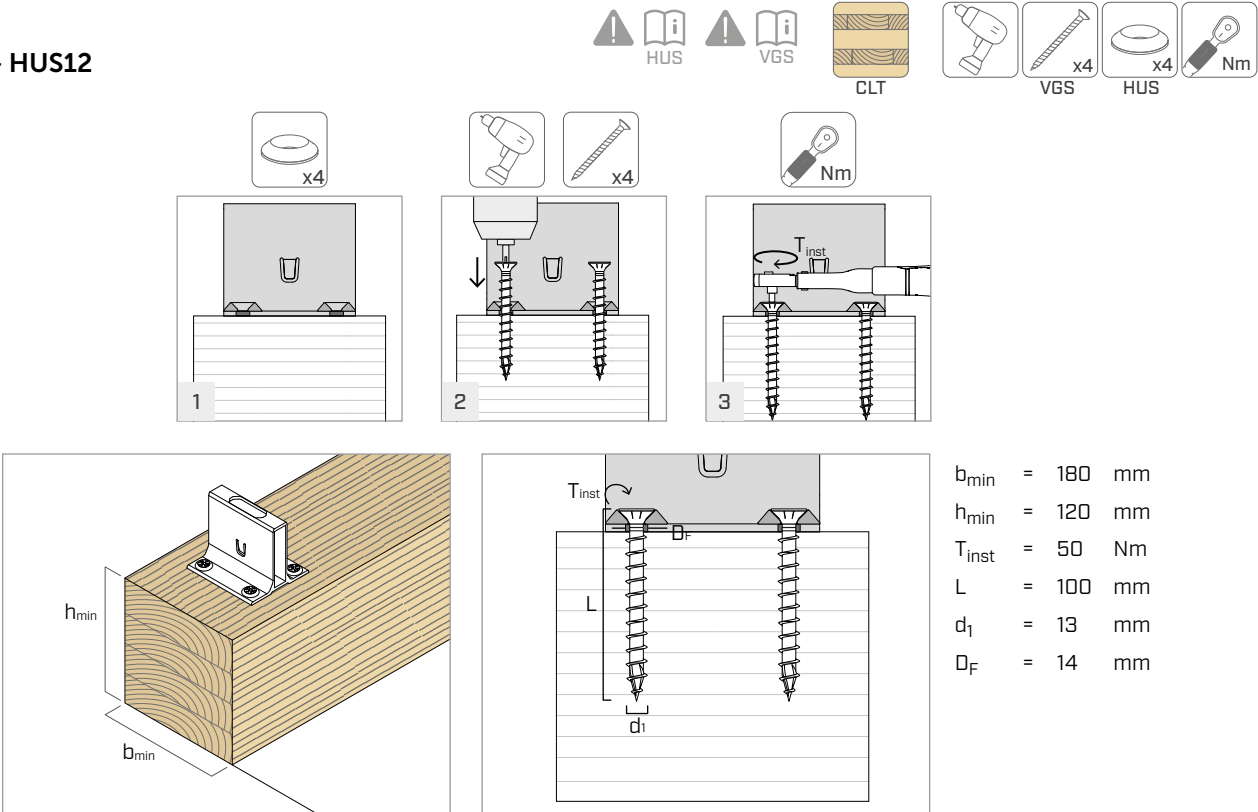


*Interje máximo variable según la normativa y la altura del montante (véase tabla 1).

INSTALACIÓN DE BASE4H

CLT

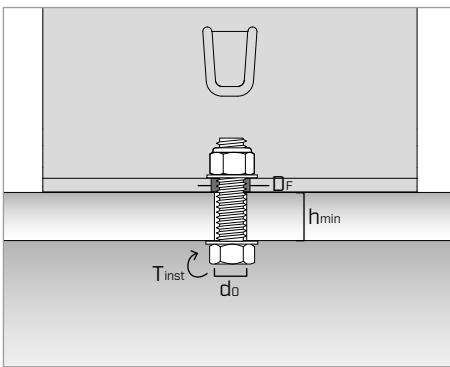
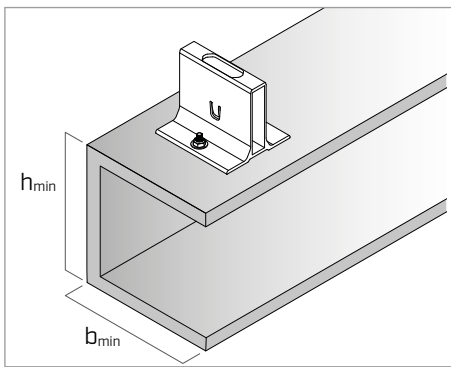
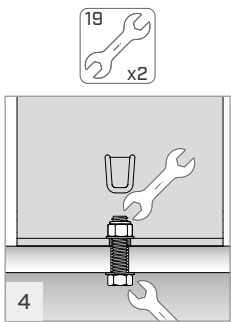
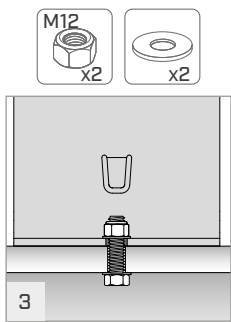
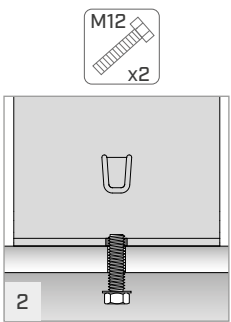
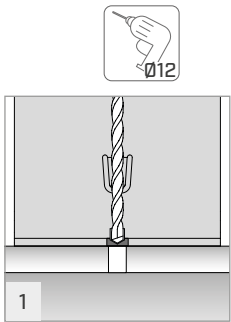
VGS13100 + HUS12



INSTALACIÓN DE BASEH

ACERO

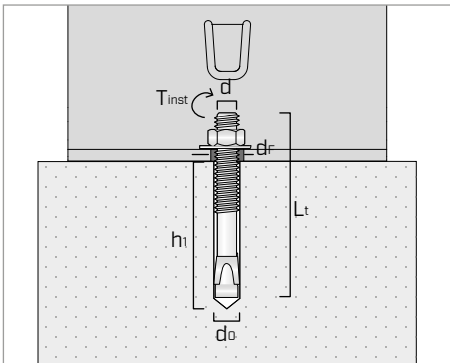
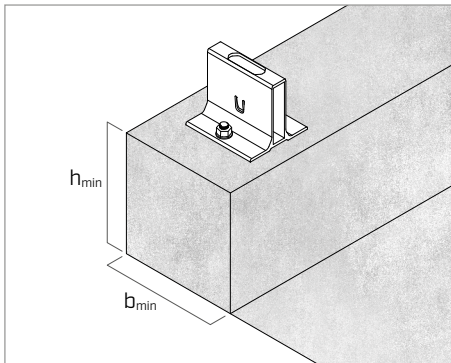
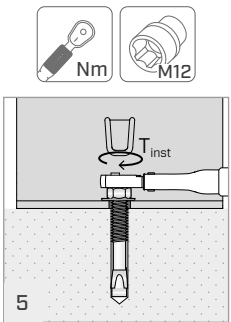
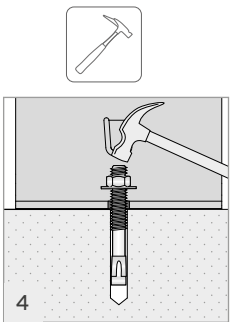
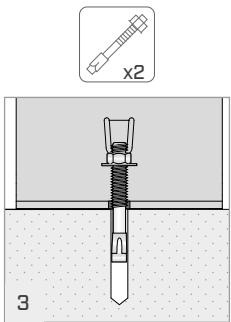
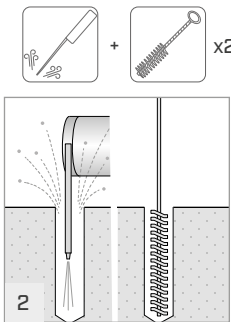
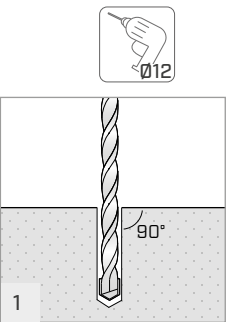
M12



b_{min}	=	140	mm
h_{min}	=	5	mm
T_{inst}	=	60	Nm
d_0	=	13	mm
d_F	=	14	mm

HORMIGÓN

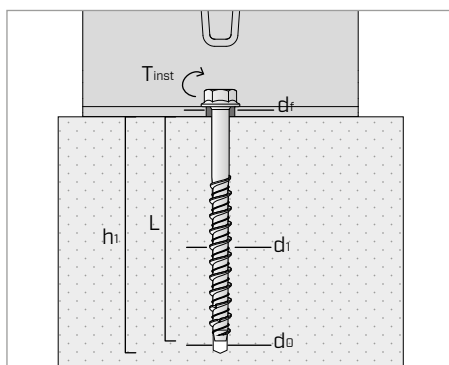
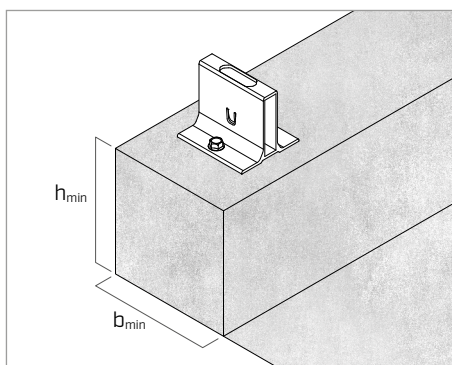
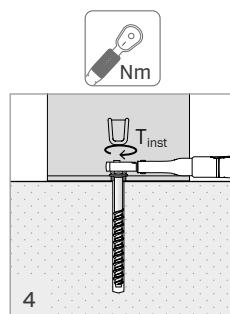
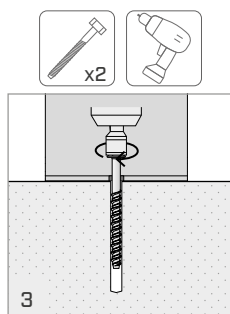
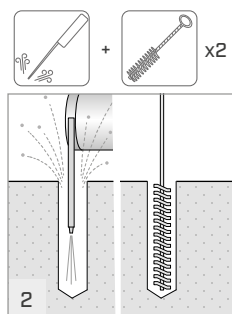
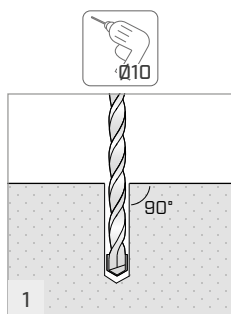
AB112100



b_{min}	=	140	mm
h_{min}	=	140	mm
T_{inst}	=	60	Nm
h_1	=	85	mm
d	=	d_0	= 12 mm
d_F	=	14	mm
L_t	=	100	mm

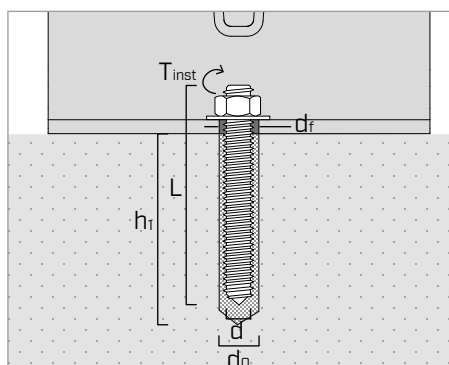
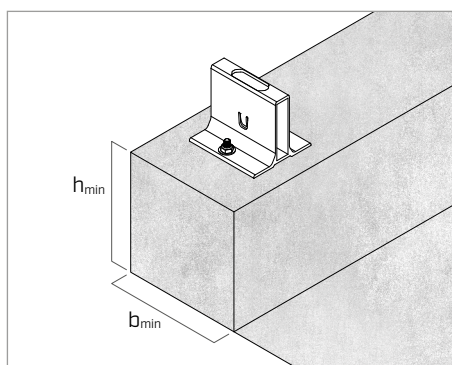
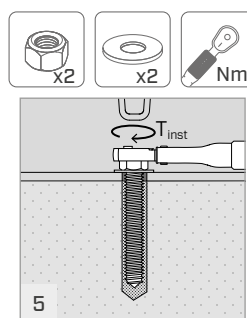
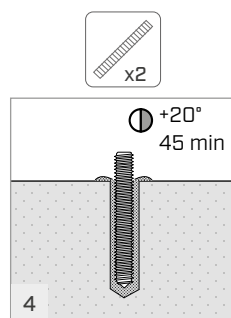
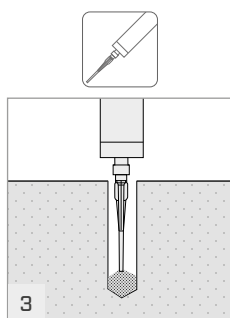
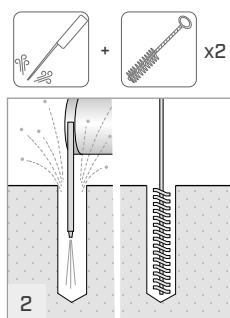
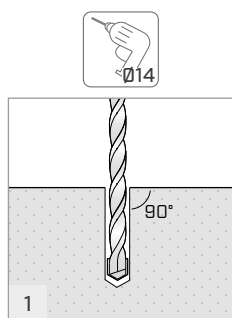
INSTALACIÓN DE BASEH

HORMIGÓN
SKR1290



b_{min}	=	140	mm
h_{min}	=	100	mm
T_{inst}	=	80	Nm
h_1	=	100	mm
d_1	=	12	mm
d_0	=	10	mm
d_F	=	14	mm
L	=	90	mm

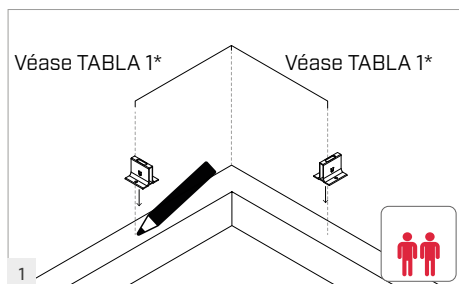
HORMIGÓN
HYB-FIX + INA8812140



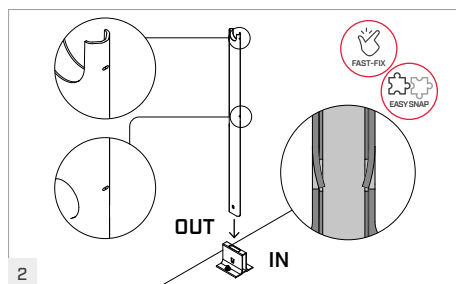
b_{min}	=	140	mm
h_{min}	=	160	mm
T_{inst}	=	60	Nm
h_1	=	140	mm
d	=	12	mm
d_0	=	14	mm
d_F	=	14	mm
L	=	140	mm

INSTALACIÓN

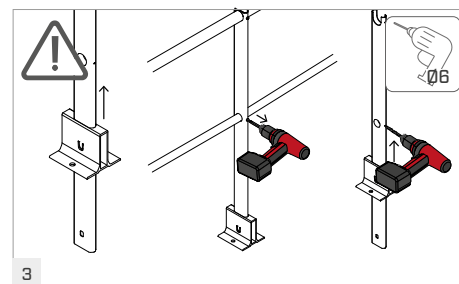
BORDER H



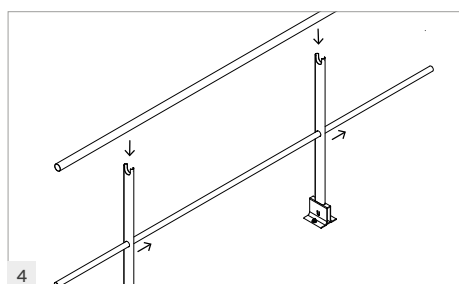
Se requiere la presencia de al menos dos operarios cualificados. Para garantizar un buen resultado, se recomienda empezar por una esquina. Instalar las bases H (véanse págs. 3-4).



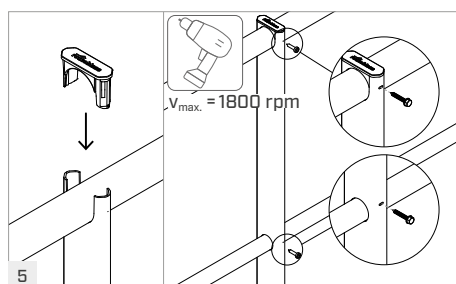
Introducir los montantes en las bases **BORBASEH** con las marcas orientadas hacia el operario. Comprobar que las aletas queden bien encastradas en las correspondientes aberturas. No se necesitan tornillos de fijación.



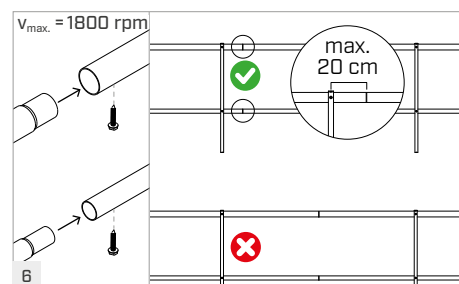
El sistema base-montante se quita empujando la base hacia arriba. Si hay tornillo (punto 5), quitarlos y realizar un agujero Ø6 mm en el punto del agujero cónico.



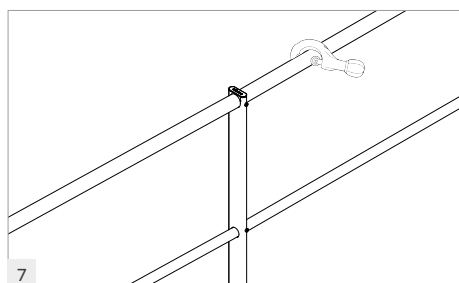
Introducir la barra intermedia **BORBAR32** y, luego, el pasamanos **BORBAR45**. Según la norma EN 13374, es necesario instalar los pasamanos reforzados **BORBAR45R**.



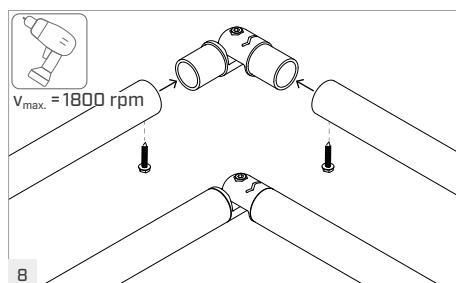
Introducir el tapón **BORCAP** en el extremo superior del montante. Fijar las barras a los montantes con los tornillos **MMS5525A2** en correspondencia de las dos marcas laterales.



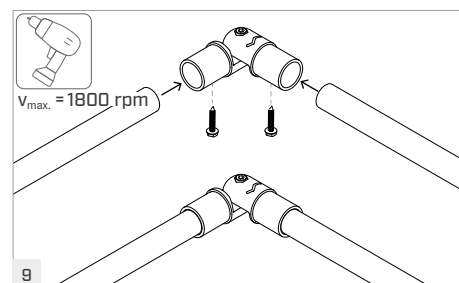
Conectar los extremos macho/hembra de los pasamanos y de las barras y fijarlos con los tornillos **MMS5525A2**. Según la norma EN 14122, la conexión del pasamanos debe quedar a no más de 20 cm del montante más cercano. Colocar los tornillos debajo de las barras.



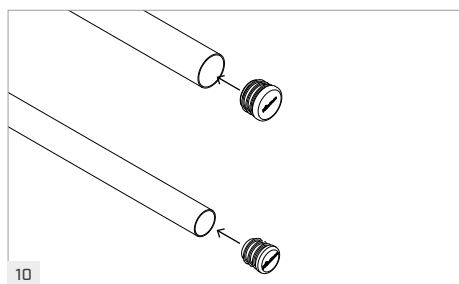
Adaptar la última sección de la baranda, cortando la parte sobrante de las barras con un cortador de tubos.



Introducir la articulación angular **BORCOR** en el pasamanos y fijarla con los tornillos autorroscantes **MMS5525A2**.

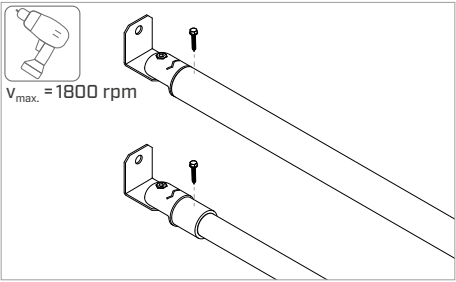


Introducir la articulación angular **BORCOR** en la barra intermedia y fijarla con los tornillos autorroscantes **MMS5525A2**.

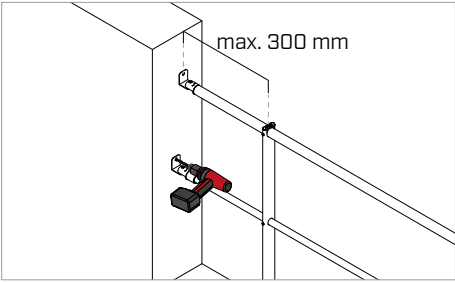


Poner los tapones **BORCAP45** y **BORCAP32** en los pasamanos y las barras intermedias.

INSTALACIÓN BORWALL

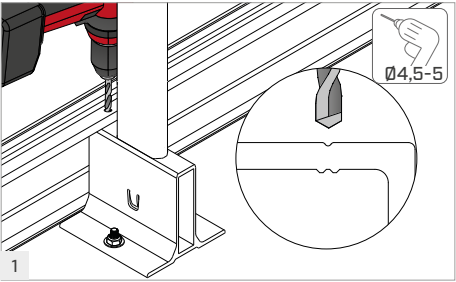


Introducir el pasamanos y la barra intermedia en el elemento terminal de pared **BORWALL** y fijarlos con los tornillos autorroscantes **MM-S5525A2**.

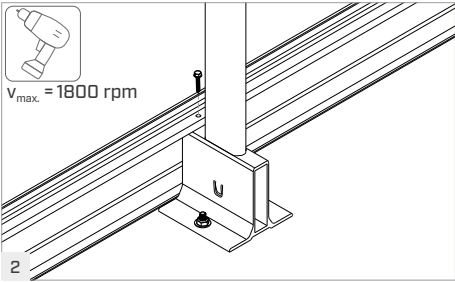


Respetar la distancia máxima de **300 mm** desde la pared. Taladrar la pared con una broca Ø10 mm y fijar el elemento terminal con un taco M10 (AB110115) o, en caso de madera, con VGS Ø9 (VGS9100 + HUS8).

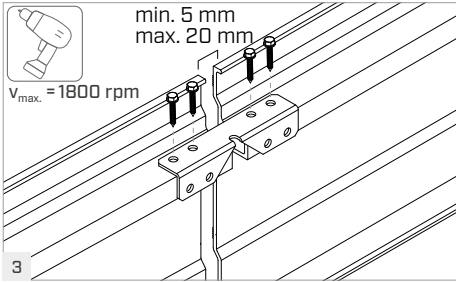
BORTB



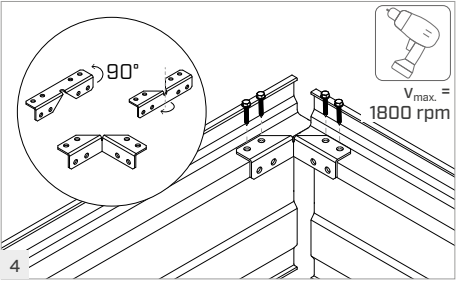
Colocar **BORTB** de manera que su apoyo quede contra el resalte de la base **BORBASEH**. Realizar un pre-agujero pasante Ø4,5 mm o Ø5 mm. Usar la ranura del apoyo como guía para la punta del atornillador.



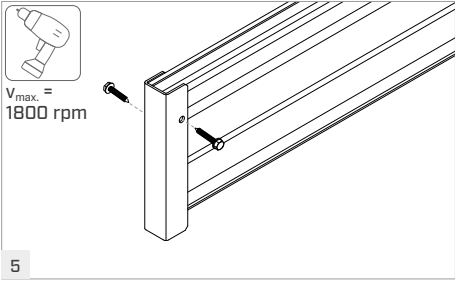
Una vez realizado el pre-agujero, es posible fijar el rodapié a la base con un tornillo **MM-S5525A2**.



Unir los extremos de **BORTB** con el conector **BORTBJUN**. Fijarlo con 4 tornillos **MMS5525A2**, dejando al menos 5 mm entre los rodapiés para evitar deformaciones térmicas.



En las esquinas, girar y doblar manualmente el conector **BORTBJUN** hasta alcanzar el ángulo deseado. Fijarlo con 4 tornillos autorroscantes **MMS5525A2**.



Fijar los tapones terminales del rodapié con 2 tornillos autorroscantes **MMS5525A2**.

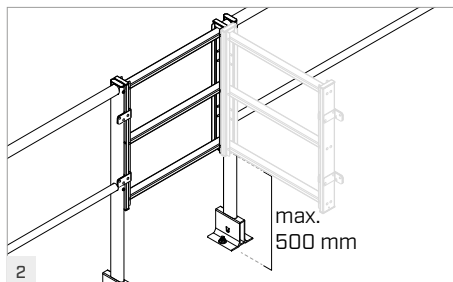
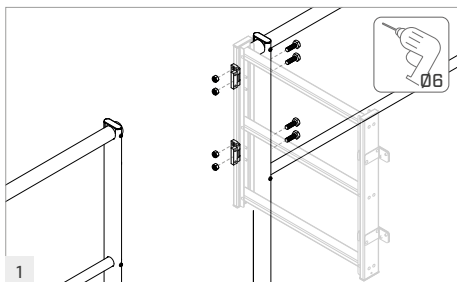
ESPECIFICACIONES DE USO DE BORTB

		EN 14122-3: 2016	EN 13374:2013 +A1:2018 CLA	EN 13374:2025 CLA	NTC 2018 + D.Lgs. 81/08	NF E85-015: 2019
H _{montanti}	veletta	BORTB				
 53 cm		$h \geq 57 \text{ cm}$  $h < 57 \text{ cm}$ N/A	N/A	$h \geq 47 \text{ cm}$  $h < 47 \text{ cm}$ N/A	$47 \text{ cm} \leq h \leq 57 \text{ cm}$  $h < 47 \text{ cm}$ N/A $h > 57 \text{ cm}$ N/A	
 100 cm		$h \geq 10 \text{ cm}$  $h < 10 \text{ cm}$ N/A				$h \geq 10 \text{ cm}$  $h < 10 \text{ cm}$ N/A
 110 cm		$h \geq 10 \text{ cm}$  $h < 10 \text{ cm}$ 	$h \geq 15 \text{ cm}$  $h < 15 \text{ cm}$ 	$h \geq 15 \text{ cm}$  $h < 15 \text{ cm}$ 	$h \geq 10 \text{ cm}$  $h < 10 \text{ cm}$ 	
 110 cm						

INSTALACIÓN

BORGATE600

EN
14122-3:
2016



Fijar las 2 bisagras en el lado de la cancela con los 4 tornillos **Ø6x35 ISO 4762** y las correspondientes **tuercas autoblocantes M6** suministradas con la cancela.

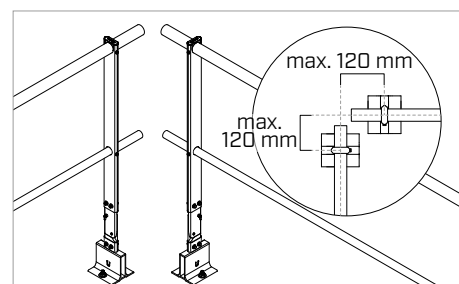
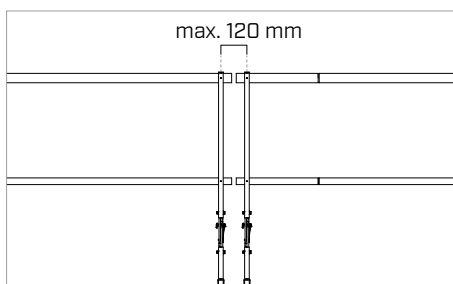
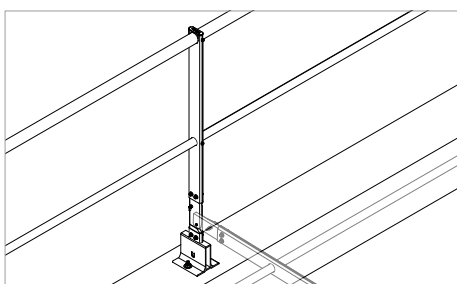
Asegurarse de que la cancela esté instalada a una altura máxima de **500 mm** de la superficie de pisoteo, manteniéndola cerrada.

BORUP100F - BORUP110F

EN
14122-3:
2016

NTC
2018
+
DLgs.81/08

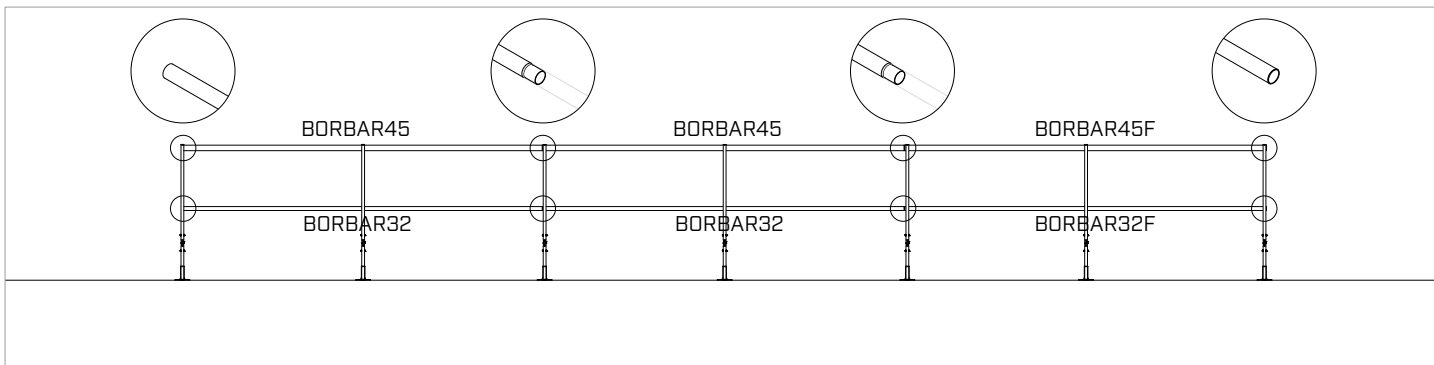
NF
E85-015:
2019



Instalar las barandas abatibles **BORDER H** por el lado de la junta (no por el lado del perno), asegurándose de que el montante se incline hacia la cubierta, nunca hacia el exterior.

Las barandas abatibles **BORDER H** se instalan en módulos de 9 m (7 montantes), 12 m (9 montantes), 15 m (11 montantes) o 18 m (13 montantes). Montar los dos montantes terminales con una distancia máxima de **120 mm** entre sí, tal como se ilustra en la figura.

Las esquinas de las barandas abatibles no deben estar unidas para poder abatirse en ambos sentidos. La distancia entre dos montantes terminales no debe ser superior a **120 mm** desde el borde.



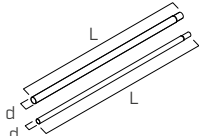
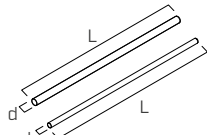
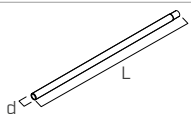
Las barras principales que se deben usar son la **BORBAR45** y la **BORBAR32**, sin embargo, cada módulo debe terminar con la barra específica sin reducción **BORBAR45F** y **BORBAR32F**.

ADVERTENCIAS GENERALES DE USO

- Antes de abatir la baranda, es obligatorio asegurarse de que el operario se encuentre en una posición segura. El usuario debe estar sujeto a un dispositivo anticaída, como una línea de vida **PATROL** o un punto de anclaje **KITE**. Además, es necesario comprobar que todas las herramientas y equipos estén en buenas condiciones de funcionamiento y que en la zona de instalación no haya obstáculos.
- Los módulos (9 m, 12 m, 15 m y 18 m) deben ser manipulados siempre por dos operarios para garantizar un correcto abatimiento.

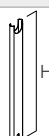
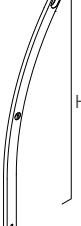
CÓDIGOS Y DIMENSIONES

LARGUEROS

CÓDIGO	d [mm]	L [mm]	
BORBAR45	45	3000	
BORBAR32	32	3000	
BORBAR45F	45	3000	
BORBAR32F	32	3000	
BORBAR45R	45	3000	

EN AW
6063-T6

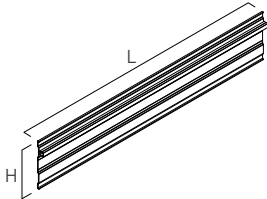
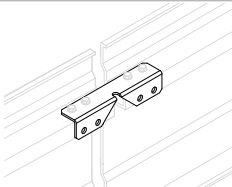
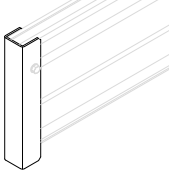
MONTANTES

CÓDIGO	H [mm]	
BORUP530WH	535	
BORUP760WH	765	
BORUP100	1005	
BORUP110	1105	
BORUP118	1185	
BORUP130	1305	
BORUP100F	1005	
BORUP110F	1105	
BORUP113C	1120	
BORUP100R	1005	
BORUP110R	1105	
BORUP100AS	1005	
BORUP107US	1075	

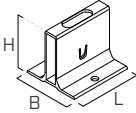
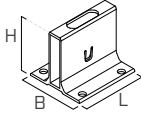
EN AW
6005A-T6

CÓDIGOS Y DIMENSIONES

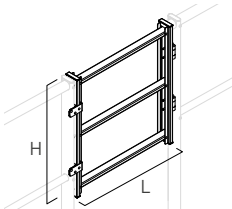
RODAPIÉ

CÓDIGO		H [mm]	L [mm]	
BORTB	EN AW 6063-T6	150	3000	
BORTBJUN	EN AW 6063 H111	-	-	
BORTBCAP	EN AW 6063 H111	-	-	

BASES

CÓDIGO		B [mm]	H [mm]	L [mm]	
BORBASEH	EN AW 6005A-T6	120	115	135	
BORBASEH4H		120	115	135	

CANCELA DE SEGURIDAD

CÓDIGO		L [mm]	H [mm]	
BORGATE600	EN AW 6063 H111	600	640	

FIJACIONES

CÓDIGO		d [mm]	H [mm]	
MMS5525A2	1.4301 AISI304 INOX	5,5	25	

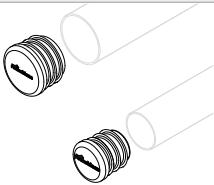
CÓDIGOS Y DIMENSIONES

ACCESORIOS

CÓDIGO

BORCAP45

LDPE



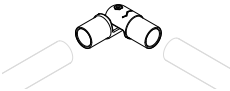
BORCAP32

BORCAP

PP
RECYCLED



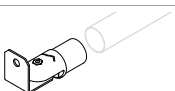
BORCOR



BORWALL

PP
RECYCLED

1.4301
AISI304
INOX



BORBASEHKIT

EPDM



CONSIGNES DE SÉCURITÉ, MODE D'EMPLOI ET INSTALLATION

INTRODUCTION

DÉFINITION

Le garde-corps à fixation horizontale **BORDER H** est un système de protection collective anti-chute, idéal pour la sécurité des toitures, réalisé en alliage d'aluminium (**EN AW 6005A-T6** et **EN AW 6063-T6**).

NORMES

Le garde-corps à fixation horizontale **BORDER H** est conforme aux normes suivantes :

- **EN 14122-3:2016**
- **EN 13374:2025 Cl. A (sauf le point 9)**
- **EN 13374:2013+A1:2018 Cl. A (sauf le point 9)**
- **NTC (Tab.3.1.II - cat. A,B,C1,E1,F,G,H) et D. Lgs 81/08 (Italie)**
- **NF E 85-015:2019 (France)**

Le tableau présente les principaux paramètres géométriques requis par les normes de référence :

	EN 14122-3: 2016	EN 13374:2013 +A1:2018 Cl.A	EN 13374:2025 Cl. A	NTC 2018	Décret-loi 81/08	NF E85-015: 2019
Hauteur min. par rapport au niveau du sol	1,1 m	1 m	1 m	1 m	1 m	1 - 1,1 m
Entraxe max. entre les sous-lisses	500 mm	470 mm	-	500 mm	500 mm	500 mm
Entraxe max. entre les montants	1,5 m (conseillé)	-	-	-	1,5 m (conseillé)	1,5 m (conseillé)
Hauteur min. plinthe garde-pieds	10 cm	15 cm	-	15 cm	10 cm	10 cm

UTILISATION - ENTRETIEN

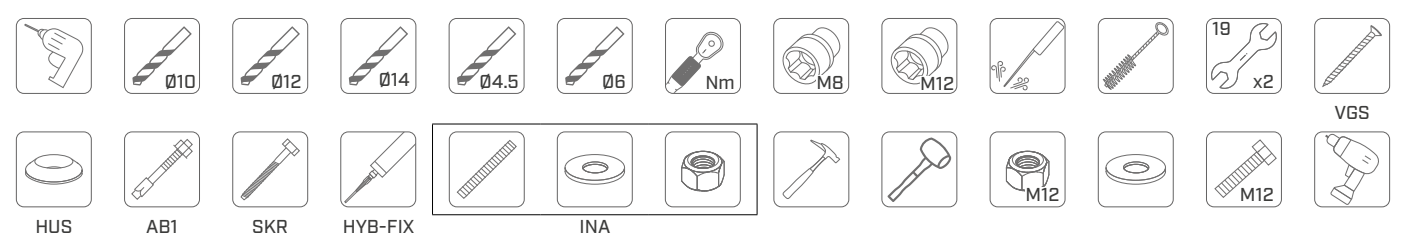
Le garde-corps **BORDER** doit être installé par du personnel qualifié, conformément aux réglementations en vigueur relatives aux travaux en hauteur. Avant l'utilisation, l'opérateur doit s'assurer de sa propre sécurité en utilisant une ligne de vie temporaire, des EPI et une plateforme de travail adaptée.

- Avant l'utilisation, l'utilisateur doit inspecter visuellement que le garde-corps **BORDER** ne présente pas d'anomalie, de dommage ou de déformation (impacts, pliures, etc.).
- Le garde-corps **BORDER** ne nécessite aucun entretien particulier. Toutefois, une inspection visuelle annuelle par un personnel qualifié est indispensable.
- Si le garde-corps **BORDER** est mal installé, endommagé ou a déjà permis d'arrêter une chute, son utilisation doit être immédiatement suspendue.
- Si le produit est revendu hors du pays de destination, il est essentiel, pour la sécurité de l'utilisateur que le revendeur fournisse le manuel d'instruction dans la langue du pays d'utilisation du produit. Les documents pourront être fournis sur demande en contactant le fabricant.
- Le garde-corps **BORDER** est un dispositif de protection collective permanent, destiné exclusivement aux professionnels travaillant sur des toitures non accessibles au public.
- Si le garde-corps **BORDER** est installé dans un milieu industriel pollué, pétrochimique, naval, ou en bord de mer, il devra nécessairement être soumis à un traitement de surface approprié comme le revêtement par poudre ou l'anodisation.
- Si un plan est fourni, il doit servir de référence lors de l'installation.

STOCKAGE

Les composants en aluminium brut sont conditionnés en contact les uns avec les autres. L'exposition de l'emballage fermé à la pluie peut favoriser l'oxydation des composants, avec la possibilité de formation de taches à la surface. Celles-ci ne compromettent pas la qualité de l'aluminium mais peuvent nuire à l'aspect esthétique du garde-corps. Il est conseillé de déballer le paquet et de conserver les composants séparés, en évitant le contact direct les uns avec les autres ou de conserver les paquets encore emballés dans un endroit sec.

ÉQUIPEMENT



PRINCIPALES FORCES AGISSANT SUR L'ANCRAGE

La combinaison des forces et des moments résultants agit sur le boulon le plus sollicité :

$$M = F \cdot H$$
$$N = F_t = \frac{M \cdot y_i}{\sum n \cdot y_i^2}$$
$$T = \frac{F}{2}$$

Les valeurs résultantes agissant sur chaque fixation sont définies comme suit (dans le cas de BORBASEH) :

H _{montants} [m]	EN 14122-3: 2016			EN 13374:2013 +A1:2018 CLA			EN 13374:2025 Cl. A			NTC 2018 + Décret-loi 81/08			NF E85-015: 2019		
	M [Nm]	T [N]	N [N]	M [Nm]	T [N]	N [N]	M [Nm]	T [N]	N [N]	M [Nm]	T [N]	N [N]	M [Nm]	T [N]	N [N]
0,53	418	394	3092	N/A	N/A	N/A	1574	1485	11660	522	492	3865			
1	788	394	5834	1425	713	10556	2970	1485	22000	985	492	7292			
1,1	866	394	6417	1568	713	11611	3267	1485	24200	1083	492	8021			

INDICATIONS D'INSTALLATION

ENTRAXES AUTORISÉS

Tableau 1

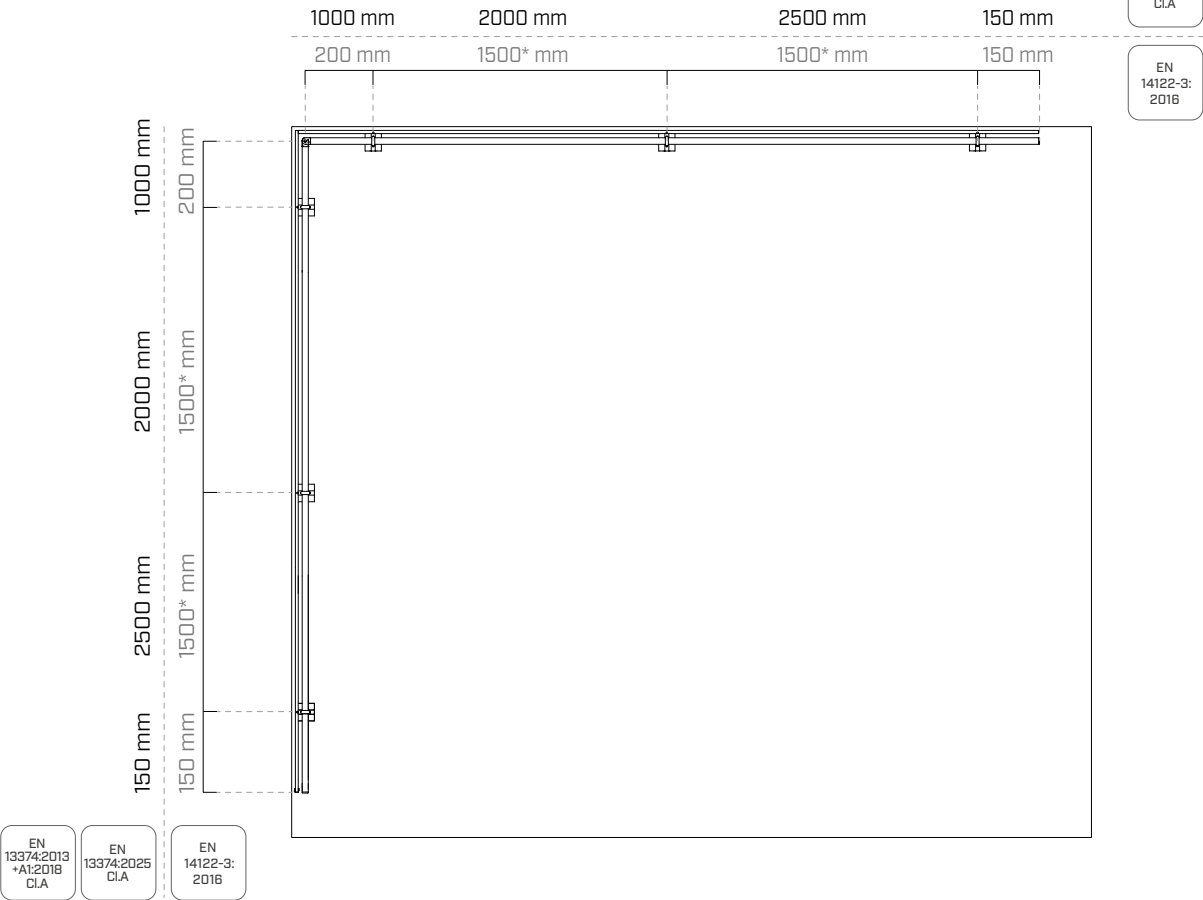
montant	H _{montants}	entraxe pour montants [cm]			
		EN 14122-3: 2016	EN 13374:2013 +A1:2018 CLA	EN 13374:2025 Cl. A	NTC 2018 + Décret-loi 81/08
droit + rabattable*	110 cm	150	250	180	150
	100 cm(**)	150	250	180	150
droit	53 cm(**)	150	N/A	180	150
courbé	110 cm	150	250	180	150

*Le système rabattable n'est pas actuellement disponible

**Il est nécessaire de respecter les hauteurs minimales par rapport au plan de circulation prévues par la réglementation en vigueur. Certaines applications sont autorisées uniquement si elles sont installées sur un rebord.

INDICATIONS D'INSTALLATION

VALEURS MAXIMALES D'ENTRAXE

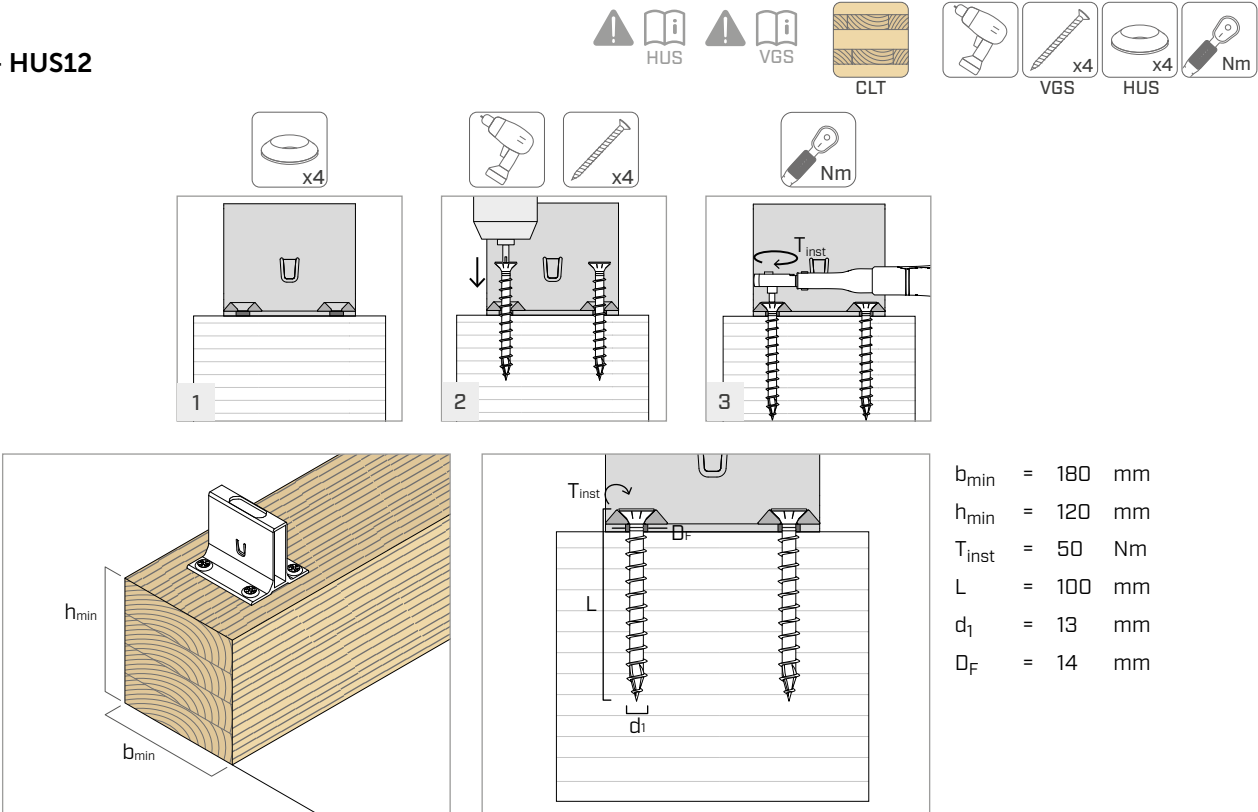


*Entraxe maximal variable selon la réglementation et la hauteur du montant (voir tableau 1).

INSTALLATION BASE4H

CLT

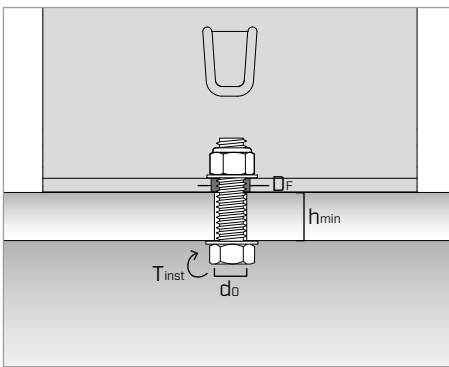
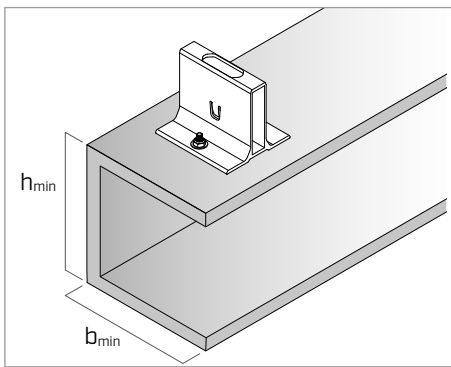
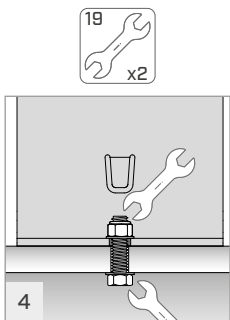
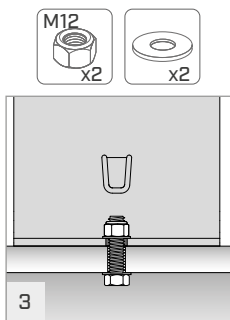
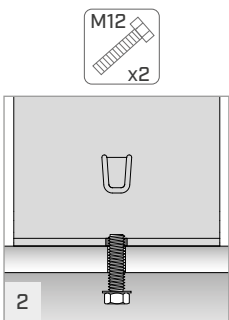
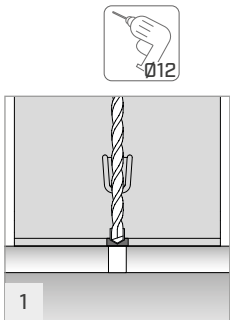
VGS13100 + HUS12



■ INSTALLATION BASEH

■ ACIER

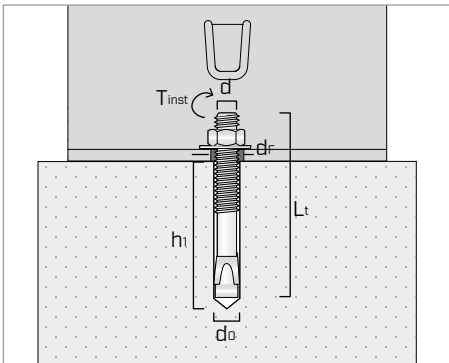
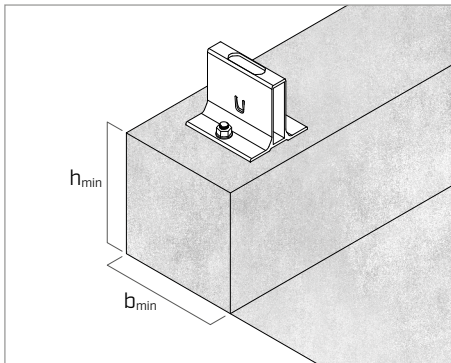
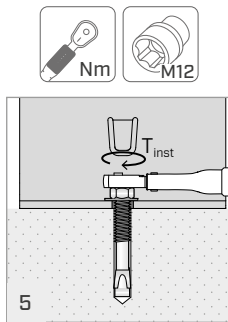
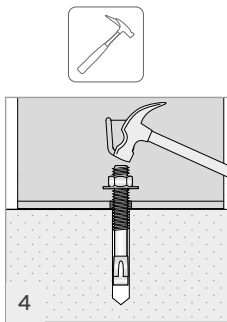
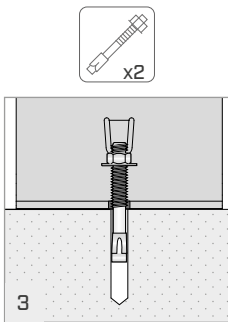
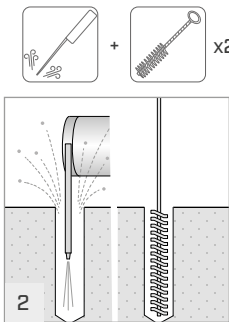
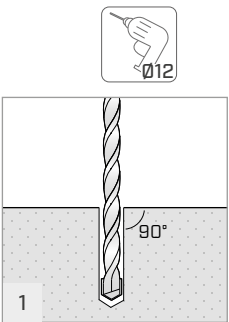
M12



b_{min}	=	140	mm
h_{min}	=	5	mm
T_{inst}	=	60	Nm
d_0	=	13	mm
d_F	=	14	mm

■ BÉTON

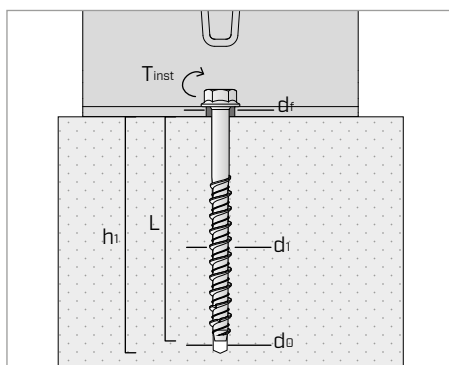
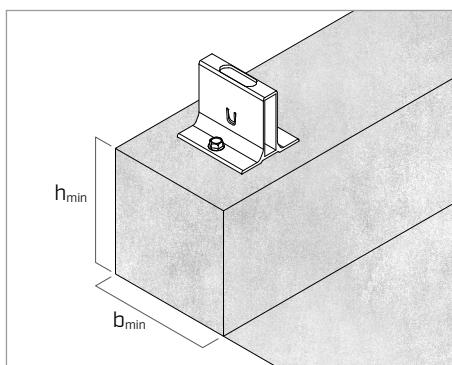
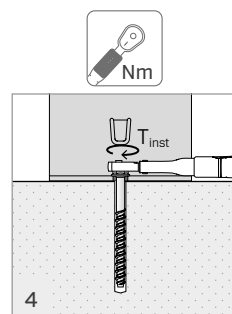
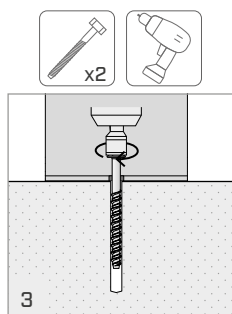
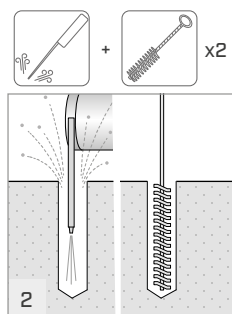
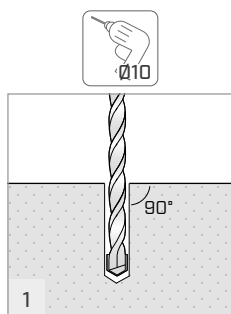
AB112100



b_{min}	=	140	mm
h_{min}	=	140	mm
T_{inst}	=	60	Nm
h_1	=	85	mm
d	=	d_0	= 12 mm
d_F	=	14	mm
L_t	=	100	mm

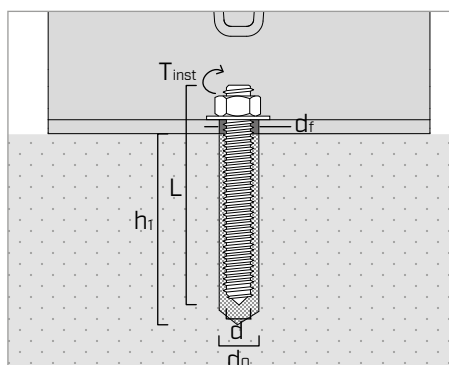
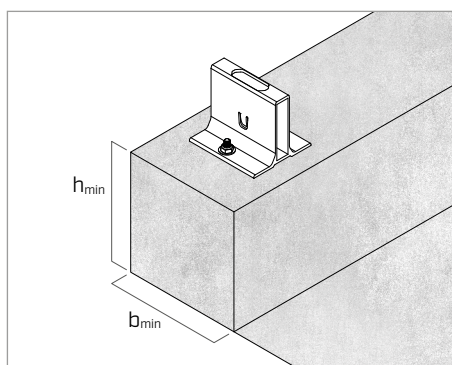
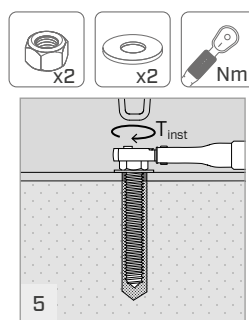
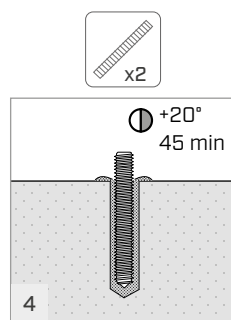
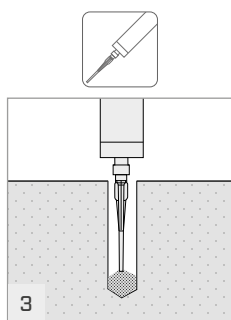
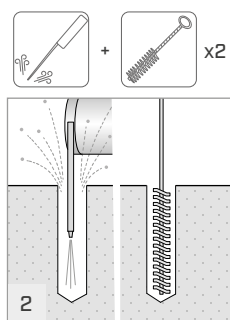
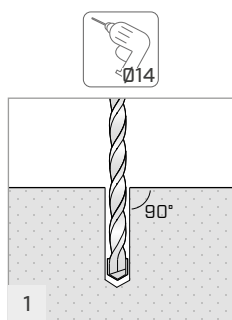
INSTALLATION BASEH

BÉTON
SKR1290



b_{min}	=	140	mm
h_{min}	=	100	mm
T_{inst}	=	80	Nm
h_1	=	100	mm
d_1	=	12	mm
d_0	=	10	mm
d_F	=	14	mm
L	=	90	mm

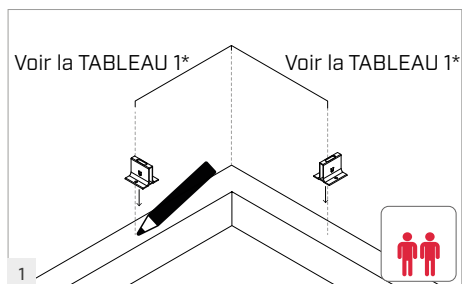
BÉTON
HYB-FIX + INA8812140



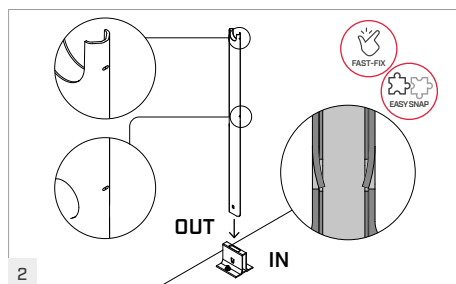
b_{min}	=	140	mm
h_{min}	=	160	mm
T_{inst}	=	60	Nm
h_1	=	140	mm
d	=	12	mm
d_0	=	14	mm
d_F	=	14	mm
L	=	140	mm

INSTALLATION

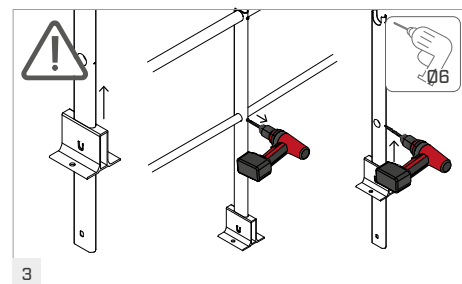
BORDER H



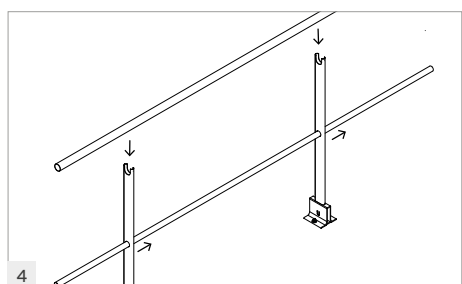
La présence d'au moins deux opérateurs qualifiés est requise. Pour un résultat optimal, il faut commencer par un angle. Installer les bases H (voir les pages 3-4).



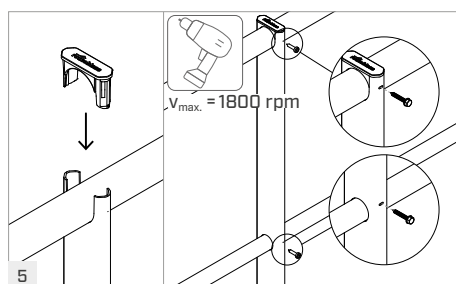
Insérer les montants dans les bases **BORBASEH** en orientant les marques vers l'opérateur. Vérifier que les ailettes et les fenêtres s'encastrent correctement. Aucune vis de fixation n'est nécessaire.



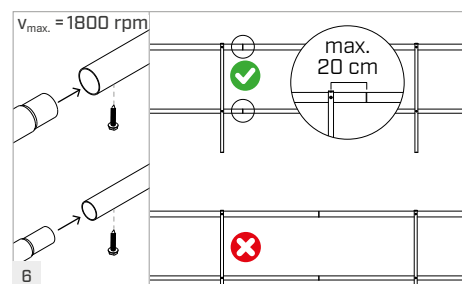
Le système base-montant se retire en poussant la base vers le haut. Si des vis sont présentes (point 5), il faut les retirer et percer un trou de Ø6 mm de diamètre à l'emplacement du trou conique.



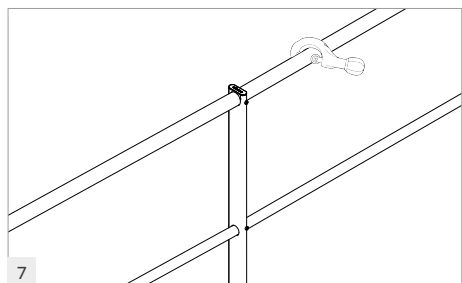
Insérer la sous-lisse intermédiaire **BORBAR32** puis la sous-lisse supérieure **BORBAR45**. Conformément à la norme EN 13374, il est nécessaire d'installer des sous-lisses plus grandes **BORBAR45R**.



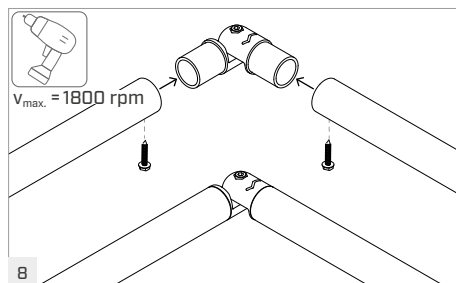
Insérer le capuchon **BORCAP** au sommet du montant. Fixer les sous-lisses aux montants avec des vis **MMS5525A2** au niveau des deux marques latérales.



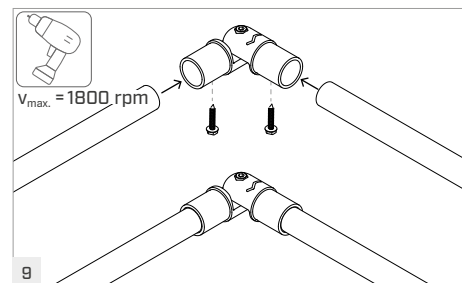
Raccorder les extrémités mâle/femelle de la lisse et sous-lisses, en les fixant avec des vis **MMS5525A2**. Conformément à la norme EN 14122, la sous-lisse doit s'arrêter à moins de 20 cm du montant le plus proche. Placer les vis sous les sous-lisses.



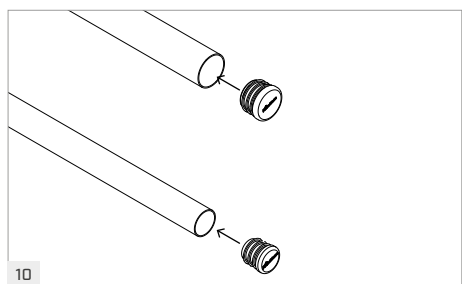
Adapter la dernière section du garde-corps en coupant la partie excédentaire des sous-lisses à l'aide du coupe-tube.



Insérer l'articulation angulaire **BORCOR** dans la sous-lisse et fixer avec des vis autotaraudeuses **MMS5525A2**.



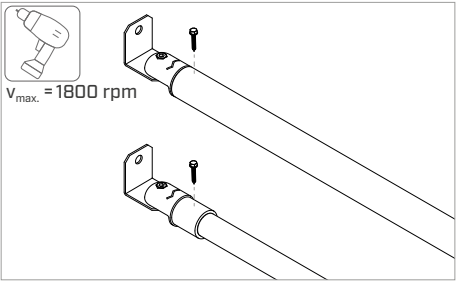
Insérer l'articulation angulaire **BORCOR** dans la sous-lisse intermédiaire et fixer avec des vis autotaraudeuses **MMS5525A2**.



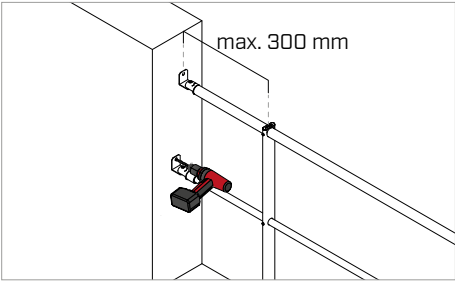
Insérer les capuchons **BORCAP45** et **BORCAP32** dans les lisses ou sous-lisses intermédiaires.

■ INSTALLATION

BORWALL

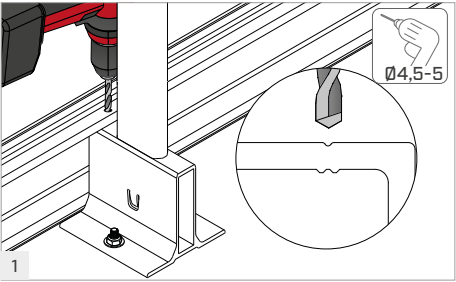


Insérer la lisse et la lisse intermédiaire dans l'élément terminal mural **BORWALL** et fixer avec des vis autotaraudeuses **MMS5525A2**.

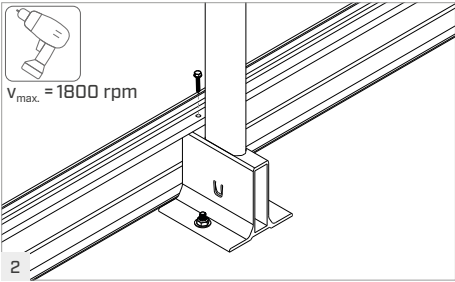


Respecter la distance maximale de **300 mm** par rapport au mur. Percer le mur avec une mèche de Ø10 mm et fixer l'élément terminal avec une cheville M10 (AB110115) ou sur du bois avec VGS Ø9 (VGS9100 + HUS8).

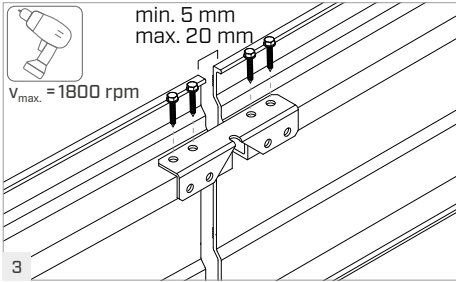
BORTB



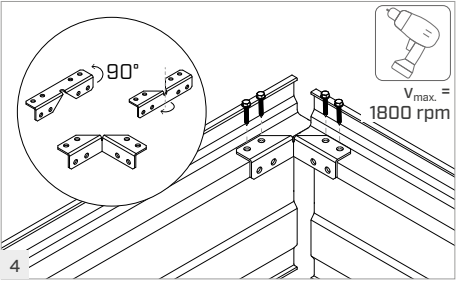
Positionner **BORTB** avec le support contre l'épaulement de la base **BORBASEH**. Effectuer un pré-perçage de Ø4,5mm o Ø5mm traversant. Utiliser la rainure du support comme guide pour la pointe du tournevis.



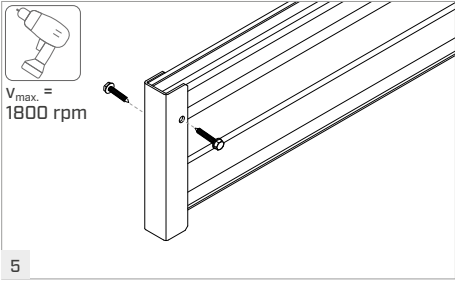
Une fois le pré-perçage réalisé, la plinthe garde-pieds peut être fixée à la base à l'aide d'une vis **MMS5525A2**.



Unir les extrémités de **BORTB** avec le connecteur **BORTBJUN**. Fixer avec les 4 vis **MM-S5525A2**, en laissant au moins 5 mm entre les plinthes pour éviter toute déformation thermique.



Dans les angles, tourner et plier manuellement le connecteur **BORTBJUN** jusqu'à obtenir l'angle souhaité. Fixer avec 4 vis autotaraudeuses **MMS5525A2**.



Fixer les capuchons de la plinthe garde-pieds avec 2 vis autotaraudeuses **MMS5525A2**.

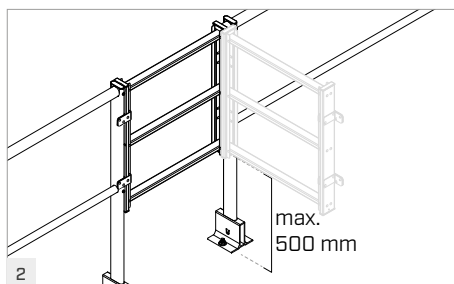
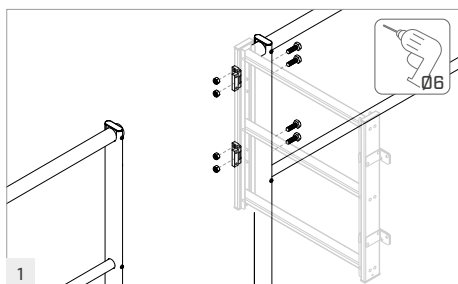
INDICATIONS POUR L'UTILISATION DE BORTB

		EN 14122-3: 2016	EN 13374:2013 +A1:2018 CLA	EN 13374:2025 CLA	NTC 2018 + D.Lgs. 81/08	NF E85-015: 2019
H _{montanti}	veletta	BORTB				
53 cm		h ≥ 57 cm h < 57 cm N/A	N/A	N/A	h ≥ 47 cm h < 47 cm N/A	47 cm ≤ h ≤ 57 cm h < 47 cm N/A h > 57 cm N/A
100 cm		h ≥ 10 cm h < 10 cm N/A				h ≥ 10 cm h < 10 cm N/A
110 cm		h ≥ 10 cm h < 10 cm	h ≥ 15 cm h < 15 cm	h ≥ 15 cm h < 15 cm	h ≥ 15 cm h < 15 cm	h ≥ 10 cm h < 10 cm
110 cm						

INSTALLATION

BORGATE600

EN
14122-3:
2016



Fixer les 2 charnières sur le côté du portail à l'aide de 4 vis **Ø6x35 ISO 4762** et des **écrous autobloquants M6** respectifs fournis avec le portail.

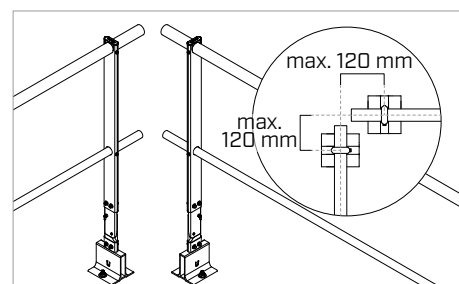
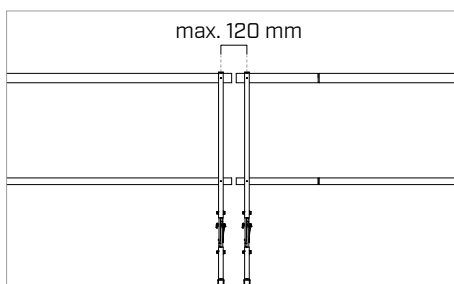
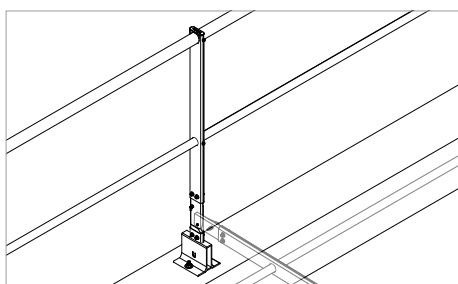
S'assurer que le portail soit installé à une hauteur maximale de **500 mm** du sol, en le maintenant en position fermée.

BORUP100F - BORUP110F

EN
14122-3:
2016

NTC
2018
+
DLgs.81/08

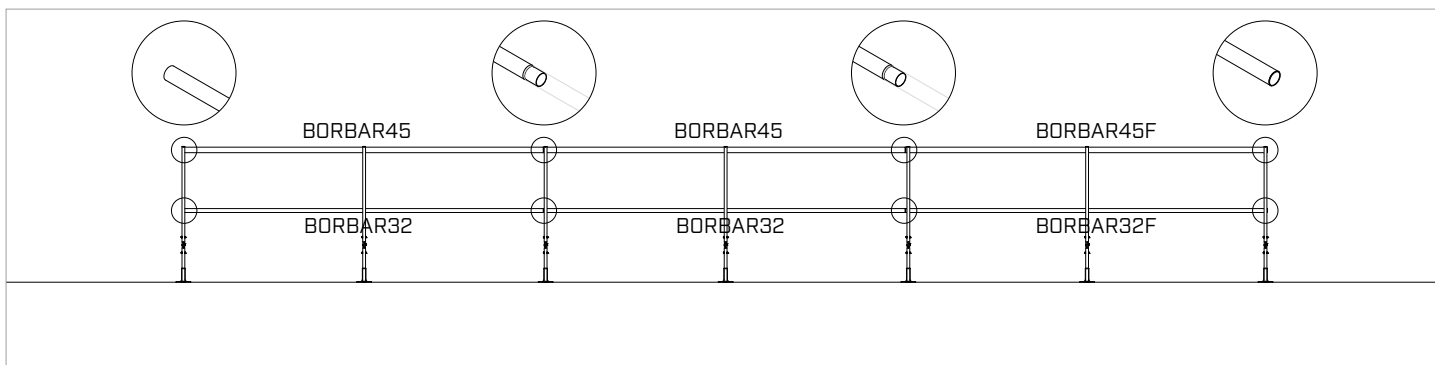
NF
E85-015:
2019



Installer les garde-corps rabattables **BORDER H** du côté de l'articulation (et non du pivot), en veillant à ce que le montant s'incline vers la toiture, et jamais vers l'extérieur.

Les garde-corps rabattables **BORDER H** s'installent dans des modules de 9 m (7 montants), 12 m (9 montants), 15 m (11 montants) ou 18 m (13 montants). Monter deux montants d'extrémité à une distance maximale de **120 mm** l'un de l'autre, comme illustré.

Les angles des garde-corps rabattables ne doivent pas être reliés, afin de permettre une inclinaison dans les deux sens. La distance entre deux montants d'extrémité ne doit pas dépasser **120 mm** par rapport au bord.



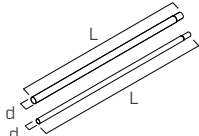
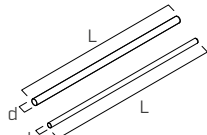
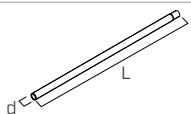
Les sous-lisses principales à utiliser sont **BORBAR45** et **BORBAR32**, toutefois chaque module doit se terminer avec la sous-lisse spécifique sans réduction **BORBAR45F** et **BORBAR32F**.

AVERTISSEMENTS GÉNÉRAUX POUR L'UTILISATION

- Avant de basculer le garde-corps, il est impératif de s'assurer que l'opérateur se trouve en conditions de sécurité. L'utilisateur doit être relié à un dispositif anti-chute, tel qu'une ligne de vie **PATROL** ou un point d'ancrage **KITE**. De plus, il est nécessaire de s'assurer que tous les outils et équipements soient en bon état de fonctionnement et que la zone d'installation soit parfaitement dégagée.
- Les modules (9 m, 12 m, 15 m, 18 m) doivent toujours être manipulés par deux opérateurs afin de garantir un basculement correct.

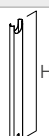
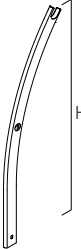
CODES ET DIMENSIONS

SOUS-LISSES

CODE	d [mm]	L [mm]	
BORBAR45	45	3000	
BORBAR32	32	3000	
BORBAR45F	45	3000	
BORBAR32F	32	3000	
BORBAR45R	45	3000	

EN AW
6063-T6

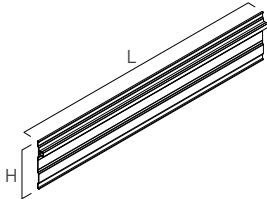
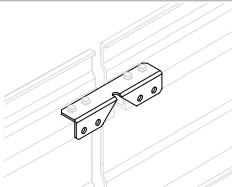
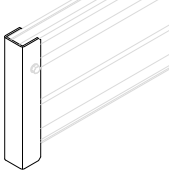
MONTANTS

CODE	H [mm]	
BORUP530WH	535	
BORUP760WH	765	
BORUP100	1005	
BORUP110	1105	
BORUP118	1185	
BORUP130	1305	
BORUP100F	1005	
BORUP110F	1105	
BORUP113C	1120	
BORUP100R	1005	
BORUP110R	1105	
BORUP100AS	1005	
BORUP107US	1075	

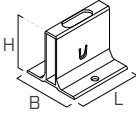
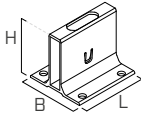
EN AW
6005A-T6

CODES ET DIMENSIONS

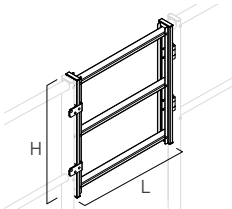
PLINTHE GARDE-PIEDS

CODE		H [mm]	L [mm]	
BORTB	EN AW 6063-T6	150	3000	
BORTBJUN	EN AW 6063 H111	-	-	
BORTBCAP	EN AW 6063 H111	-	-	

BASES

CODE		B [mm]	H [mm]	L [mm]	
BORBASEH	EN AW 6005A-T6	120	115	135	
BORBASEH4H		120	115	135	

PORTILLON DE SÉCURITÉ

CODE		L [mm]	H [mm]	
BORGATE600	EN AW 6063 H111	600	640	

FIXATIONS

CODE		d [mm]	H [mm]	
MMS5525A2	1.4301 AISI304 INOX	5,5	25	

CODES ET DIMENSIONS

ACCESSOIRES

CODE

BORCAP45

LDPE

BORCAP32

BORCAP

PP
RECYCLED

BORCOR

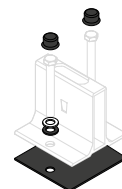
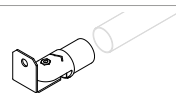
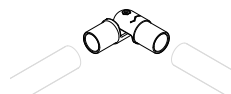
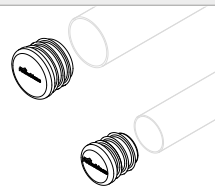
BORWALL

PP
RECYCLED

1.4301
AISI304
INOX

BORBASEHKIT

EPDM



NORMAS DE SEGURANÇA, INSTRUÇÕES DE UTILIZAÇÃO E INSTALAÇÃO

INTRODUÇÃO

DEFINIÇÕES

O parapeito de fixação horizontal **BORDER H** é um sistema de proteção coletiva antiqueda, ideal para a segurança em coberturas, realizado em liga de alumínio (**EN AW 6005A-T6** e **EN AW 6063-T6**).

NORMAS

O parapeito de fixação horizontal **BORDER H** cumpre as seguintes normas:

- **EN 14122-3:2016**
- **EN 13374:2025 Cl. A (exceto ponto 9)**
- **EN 13374:2013+A1:2018 Cl. A (exceto ponto 9)**
- **NTC (Tab.3.1.II - cat. A,B,C1,E1,F,G,H) e Decreto Legislativo 81/08 (Itália)**
- **NF E 85-015:2019 (França)**

A tabela mostra os principais parâmetros geométricos exigidos pelas normas de referência:

	EN 14122-3: 2016	EN 13374:2013 +A1:2018 Cl.A	EN 13374:2025 Cl.A	NTC 2018	D.Lgs. 81/08	NF E85-015: 2019
Altura mín. da superfície de passagem	1,1 m	1 m	1 m	1 m	1 m	1 - 1,1 m
Entre-eixo máx. entre as correntes	500 mm	470 mm	-	-	500 mm	500 mm
Entre-eixo máx. entre os montantes	1,5 m (recomendado)	-	-	-	-	1,5 m (recomendado)
Altura mín. do rodapé	10 cm	15 cm	-	-	15 cm	10 cm

USO - MANUTENÇÃO

A instalação do parapeito **BORDER** deve ser efetuada por pessoal qualificado, em conformidade com as normas em vigor relativas a trabalhos em altura.

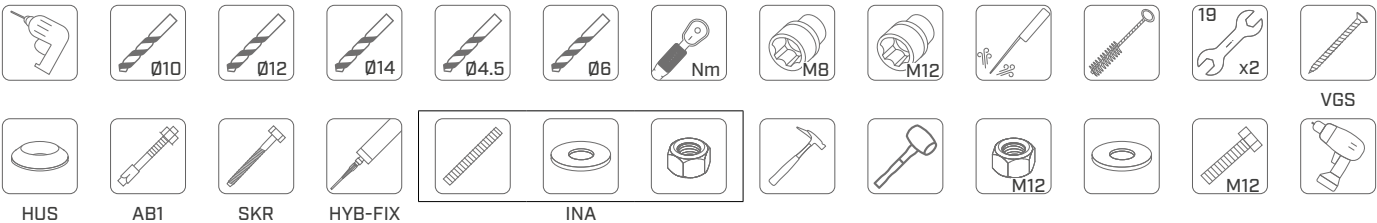
Antes da utilização, o operador deve garantir a sua própria segurança, utilizando uma linha de vida temporária, EPI e uma plataforma de trabalho adequada.

- Antes da utilização, o utilizador deve verificar, por inspeção visual, se o parapeito **BORDER** apresenta anomalias, danos ou deformações (choques, dobras, etc.).
- O parapeito **BORDER** não requer intervenções de manutenção específicas. No entanto, é necessária, pelo menos, uma inspeção visual anual por pessoal qualificado.
- Se o parapeito **BORDER** não estiver corretamente instalado, estiver danificado ou tiver travado uma queda, a sua utilização deve ser imediatamente interrompida.
- Se o produto for revendido fora do país de destino, é essencial para a segurança do utilizador que o revendedor forneça o manual de instruções na língua do país em que o produto é utilizado. Os documentos podem ser fornecidos a pedido, contactando o fabricante.
- O parapeito **BORDER** é um dispositivo de proteção coletiva permanente, destinado exclusivamente aos profissionais que trabalham em coberturas não acessíveis ao público.
- Se for instalado em ambientes industriais poluídos, petroquímicos, navais ou costeiros, o parapeito **BORDER** deve ser submetido a um tratamento de superfície adequado, como a pintura a pó ou a anodização.
- Se tiver sido fornecida uma planimetria, esta deve ser utilizada como referência durante a instalação.

ARMAZENAMENTO

Os componentes de alumínio em bruto são embalados em contacto uns com os outros. A exposição da embalagem fechada à chuva pode provocar a oxidação dos componentes, podendo resultar em manchas na superfície. Estas manchas não comprometem a qualidade do alumínio, mas podem prejudicar o aspeto estético do parapeito. É aconselhável desembalar a embalagem e manter os componentes separados, evitando o contacto direto entre si, ou armazenar as embalagens num local seco.

EQUIPAMENTO



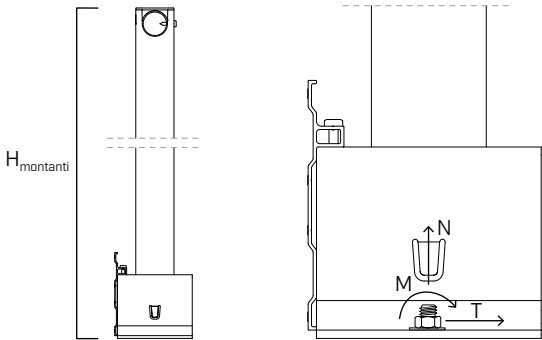
PRINCIPAIS FORÇAS QUE ATUAM NA ANCORAGEM

A combinação das forças e momentos resultantes atua sobre o parafuso mais sujeito a tensão:

$$M = F \cdot H$$

$$N = F_t = \frac{M \cdot y_i}{\sum n \cdot y_i^2}$$

$$T = \frac{F}{2}$$



Os valores resultantes que atuam sobre cada elemento de fixação são definidos da seguinte forma (no caso do BORBASEH):

H _{montantes} [m]	EN 14122-3: 2016			EN 13374:2013 +A1:2018 CLA			EN 13374:2025 CLA			NTC 2018 + Dec. Legislativo 81/08			NF E85-015: 2019		
	M [Nm]	T [N]	N [N]	M [Nm]	T [N]	N [N]	M [Nm]	T [N]	N [N]	M [Nm]	T [N]	N [N]	M [Nm]	T [N]	N [N]
0,53	418	394	3092	N/A	N/A	N/A	1574	1485	11660	522	492	3865			
1	788	394	5834	1425	713	10556	2970	1485	22000	985	492	7292			
1,1	866	394	6417	1568	713	11611	3267	1485	24200	1083	492	8021			

ESPECIFICAÇÕES DE INSTALAÇÃO

ENTRE-EIXOS ADMISSÍVEIS

Tabela 1

Tabela 1

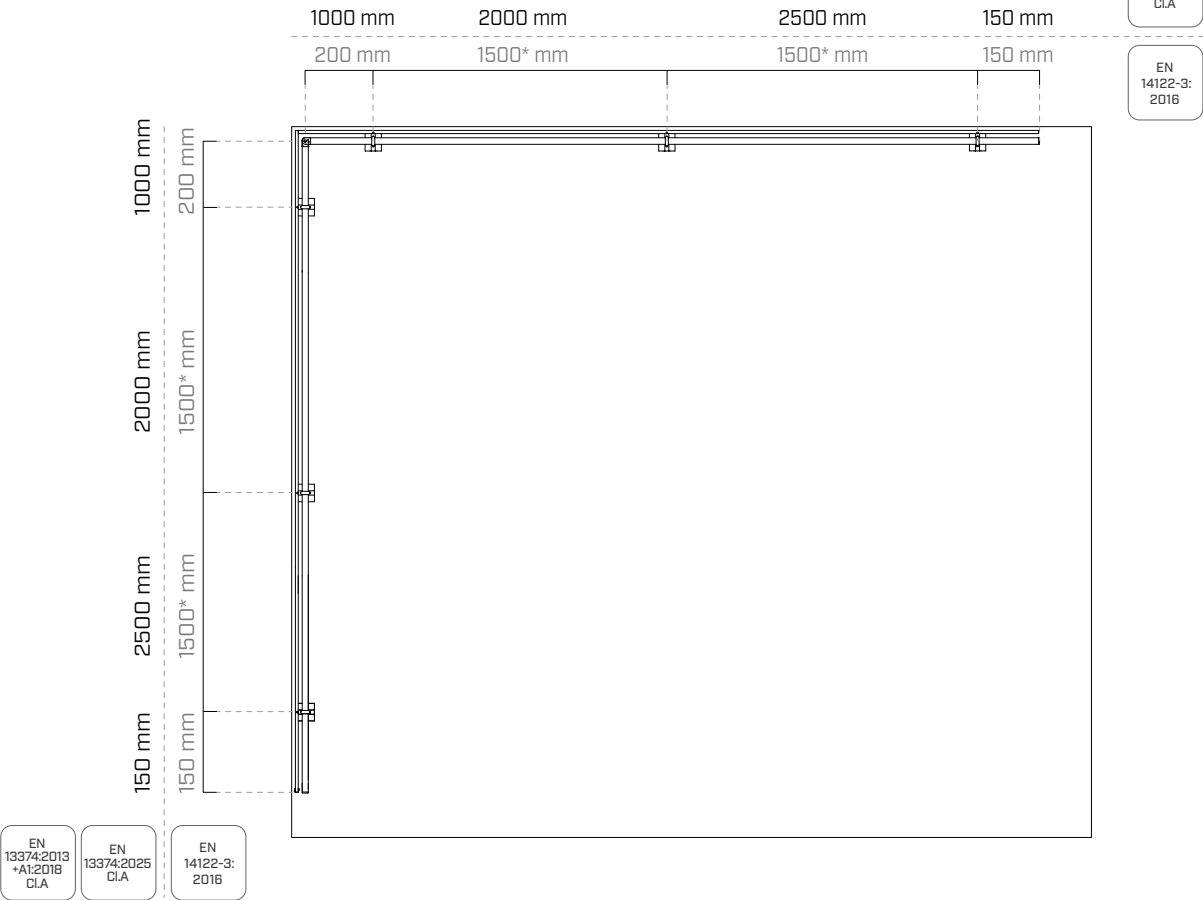
		EN 14122-3: 2016	EN 13374:2013 +A1:2018 Cl.A	EN 13374:2025 Cl.A	NTC 2018 + Dec. Legislativo 81/08	NF E85-015: 2019
montante	H _{montantes}	entre-eixo para montantes [cm]				
reto + rebatível*	 110 cm	150	250	180	150	
	 100 cm(**)	150	250	180	150	
reto	 53 cm(**)	150	N/A	180	150	
curvo	 110 cm	150	250	180	150	

*O sistema rebatível não se encontra atualmente disponível

**É necessário respeitar as alturas mínimas em relação ao piso de circulação previstas pela norma vigente. Algumas aplicações são permitidas apenas se instaladas sobre um véu.

■ ESPECIFICAÇÕES DE INSTALAÇÃO

■ VALORES MÁXIMOS DO ENTRE-EIXO

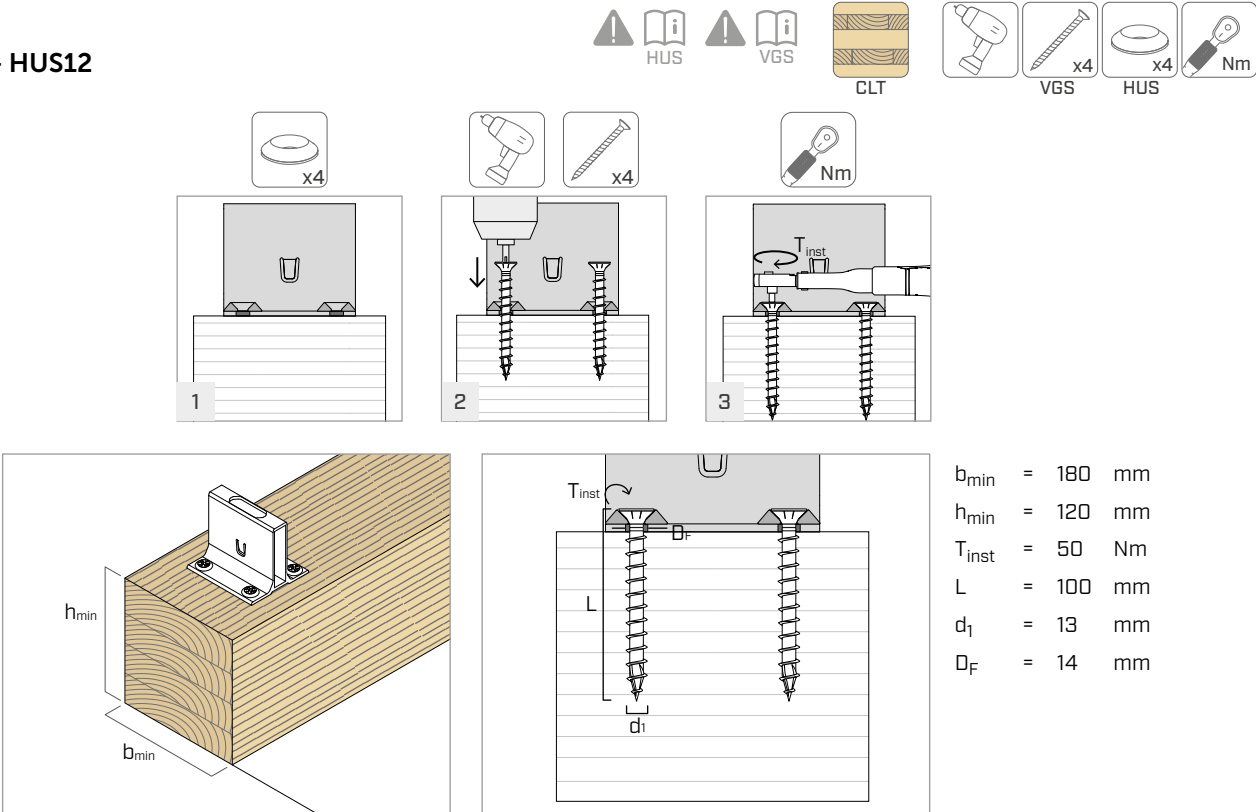


*O entre-eixo máximo varia consoante a regulamentação e a altura do montante (ver tabela 1).

■ INSTALAÇÃO BASE4H

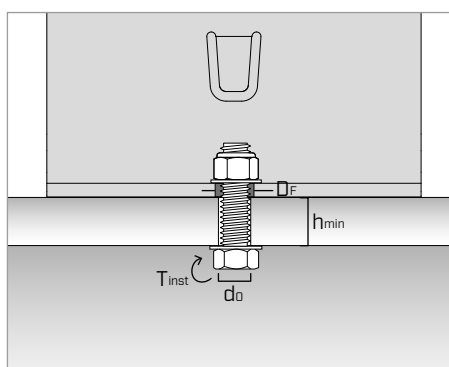
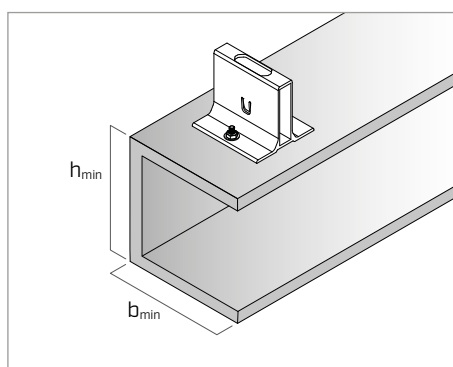
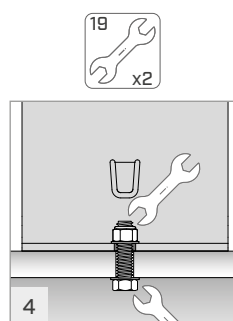
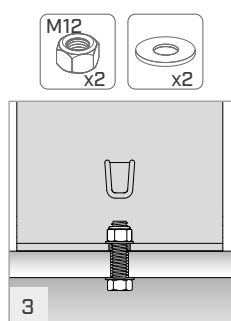
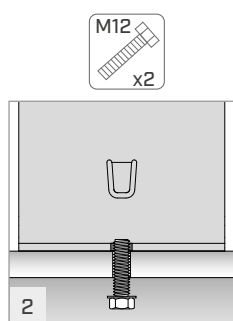
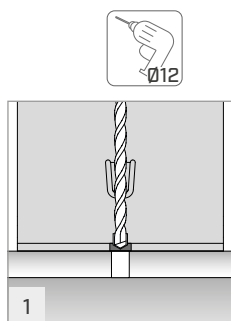
■ CLT

VGS13100 + HUS12



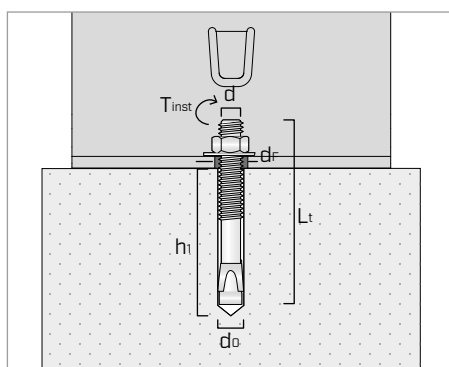
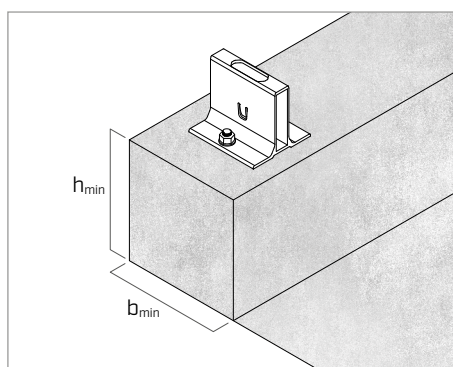
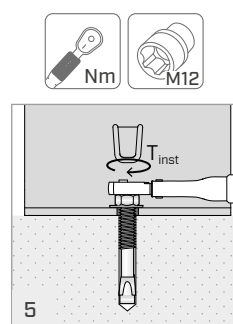
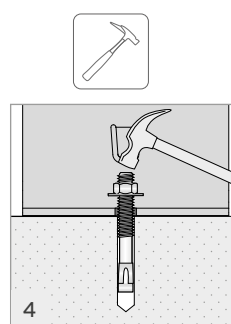
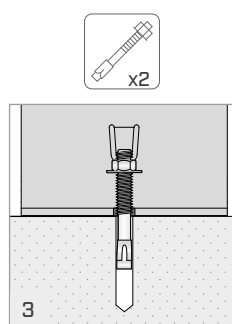
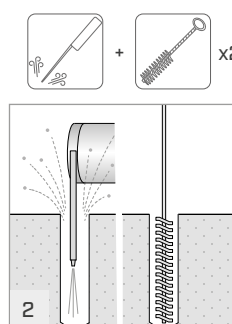
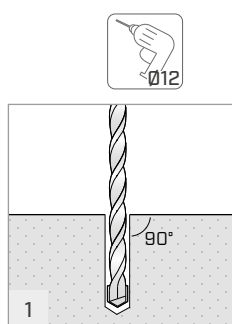
INSTALAÇÃO BASEH

AÇO
M12



$b_{min} = 140 \text{ mm}$
 $h_{min} = 5 \text{ mm}$
 $T_{inst} = 60 \text{ Nm}$
 $d_0 = 13 \text{ mm}$
 $d_F = 14 \text{ mm}$

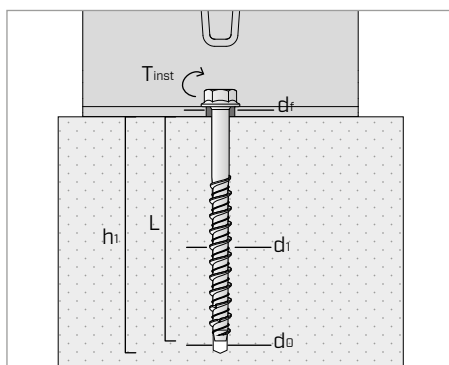
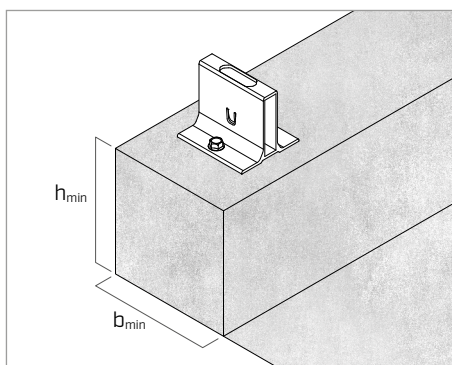
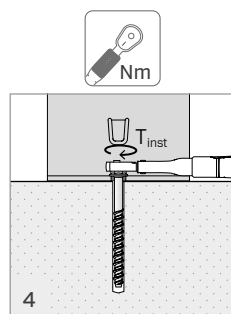
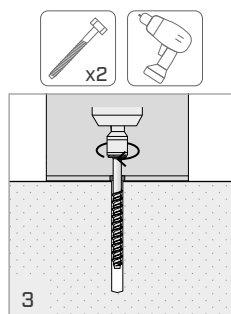
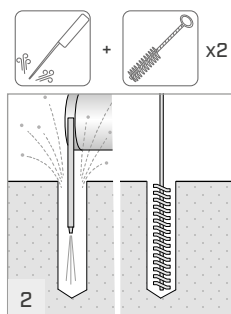
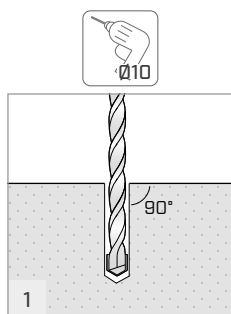
BETÃO
AB112100



$b_{min} = 140 \text{ mm}$
 $h_{min} = 140 \text{ mm}$
 $T_{inst} = 60 \text{ Nm}$
 $h_1 = 85 \text{ mm}$
 $d = d_0 = 12 \text{ mm}$
 $d_F = 14 \text{ mm}$
 $L_t = 100 \text{ mm}$

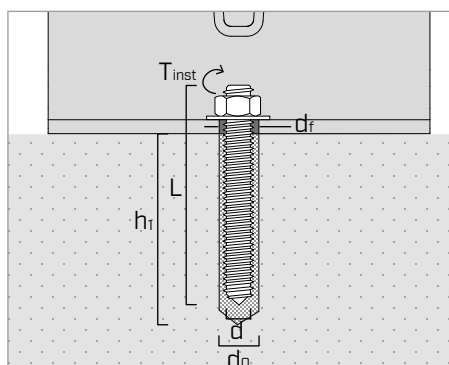
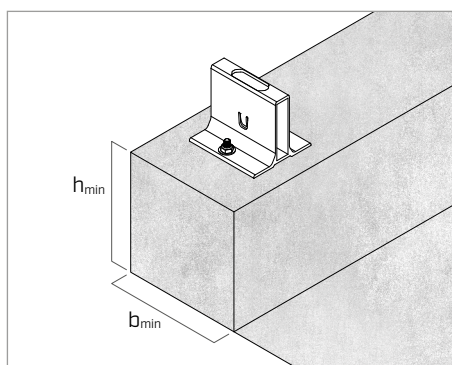
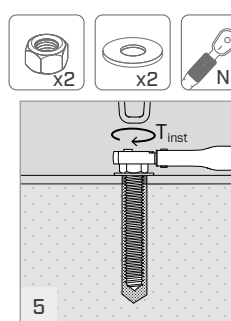
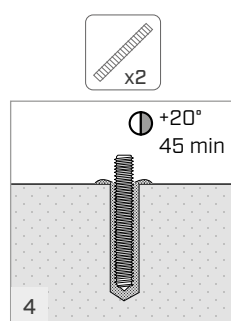
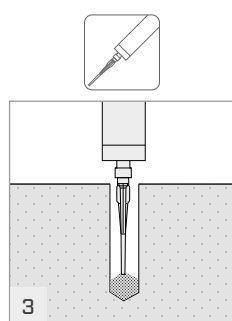
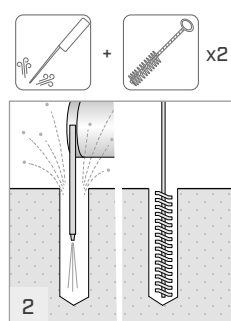
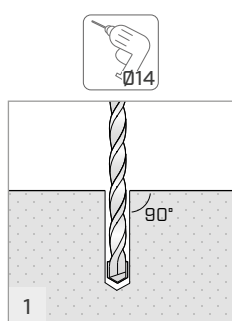
INSTALAÇÃO BASEH

BETÃO
SKR1290



b_{min}	=	140	mm
h_{min}	=	100	mm
T_{inst}	=	80	Nm
h_1	=	100	mm
d_1	=	12	mm
d_0	=	10	mm
d_F	=	14	mm
L	=	90	mm

BETÃO
HYB-FIX + INA8812140

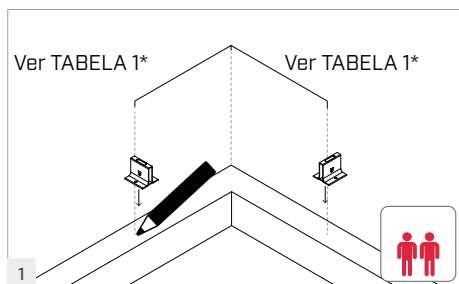


b_{min}	=	140	mm
h_{min}	=	160	mm
T_{inst}	=	60	Nm
h_1	=	140	mm
d	=	12	mm
d_0	=	14	mm
d_F	=	14	mm
L	=	140	mm

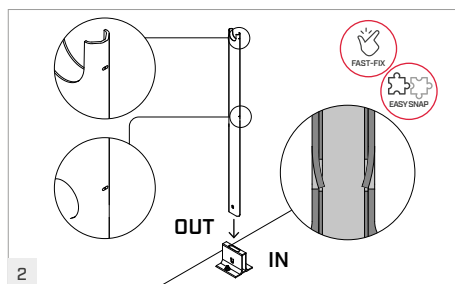
IT

INSTALAÇÃO

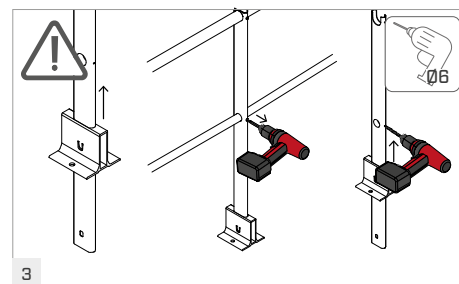
BORDER H



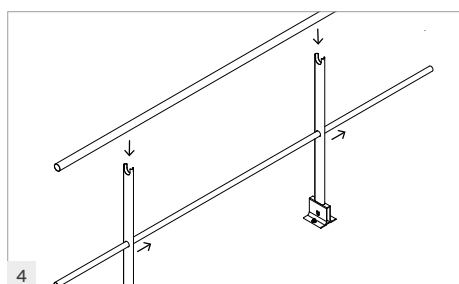
É necessária a presença de, pelo menos, dois operadores qualificados. Para obter melhores resultados, começar num canto. Instalar as bases H (ver páginas 3-4).



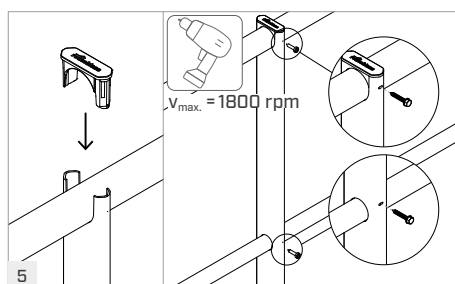
Inserir os montantes nas bases **BORBASEH** com as marcas viradas para o operador. Verificar o encaixe correto entre as aletas e as janelas. Não são necessários parafusos para a fixação.



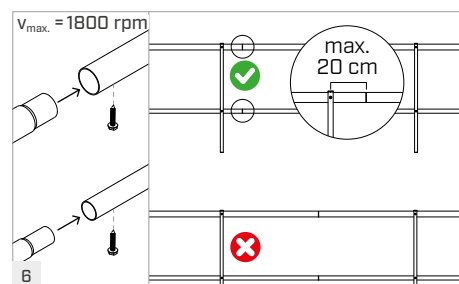
O sistema base-montante é removido empurrando a base para cima. Se existirem parafusos (ponto 5), retirá-los e furar Ø6 mm no ponto do furo cônico.



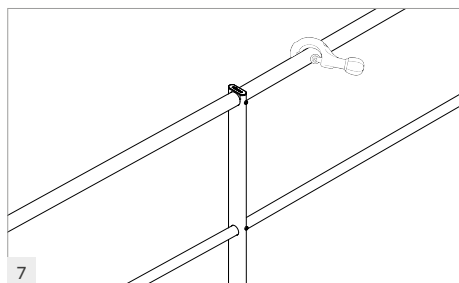
Inserir a corrente intermédia **BORBAR32** e, em seguida, a corrente superior **BORBAR45**. Em conformidade com a norma EN 13374, é necessário instalar as correntes aumentadas **BORBAR45R**.



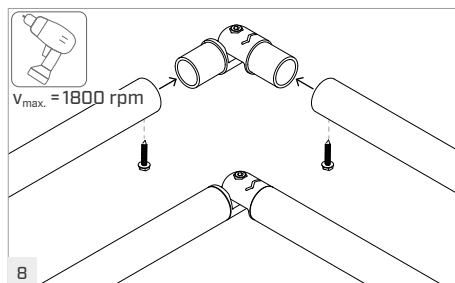
Inserir a tampa **BORCAP** no topo do montante. Fixar as correntes aos montantes com o parafuso **MMS5525A2** nas duas marcas laterais.



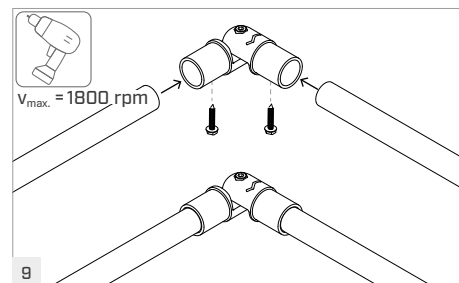
Ligar as extremidades macho/fêmea do corrimão e das correntes, fixando-as com parafusos **MMS5525A2**. De acordo com a EN 14122, o corrimão não deve terminar a mais de 20 cm do montante mais próximo. Colocar os parafusos sob as correntes.



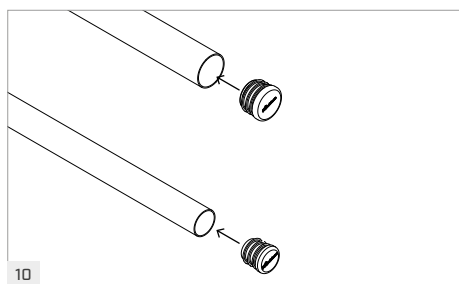
Adaptar a última secção do parapeito cortando a parte excedente das correntes com o corta-tubos.



Inserir a articulação angular **BORCOR** no corrimão e fixar com parafusos autoroscantes **MM-S5525A2**.

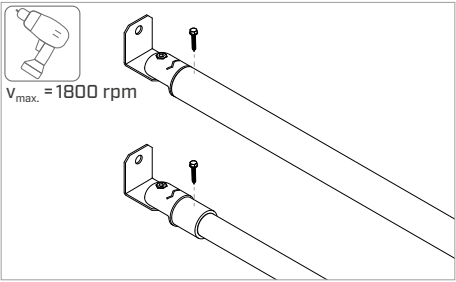


Inserir a articulação angular **BORCOR** na corrente intermédia e fixar com os parafusos autoroscantes **MMS5525A2**.

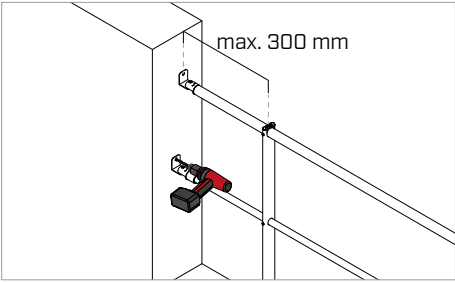


Inserir as tampas **BORCAP45** e **BORCAP32** nos corrimãos ou correntes intermédias.

INSTALAÇÃO BORWALL

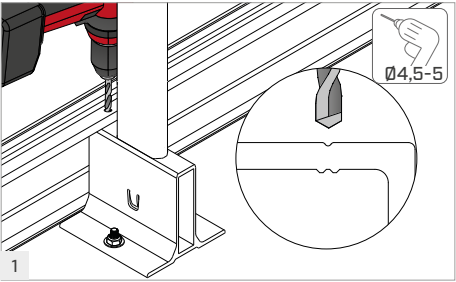


Inserir o corrimão e a corrente intermédia no elemento terminal de parede **BORWALL** e fixar com o parafuso autorroscante **MMS5525A2**.

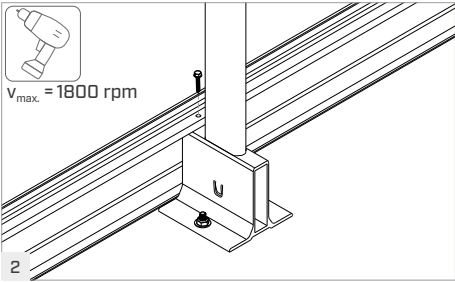


Respeitar a distância máxima de **300 mm** da parede. Furar a parede com a broca Ø10 mm e fixar o elemento terminal com uma bucha M10 (AB110115) ou em madeira com VGS Ø9 (VGS9100 + HUS8).

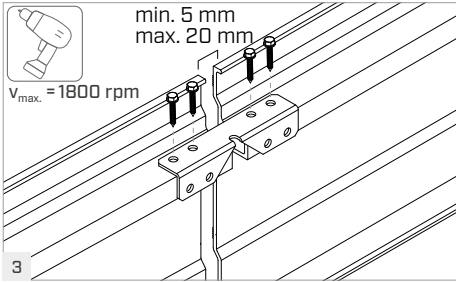
BORTB



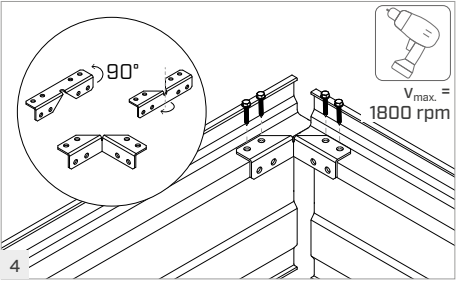
Colocar **BORTB** com o suporte contra o encosto da base **BORBASEH**. Fazer um pré-furo de Ø4,5 mm ou de Ø5 mm passante. Utilizar a ranhura do suporte como guia para a broca do aparafusador.



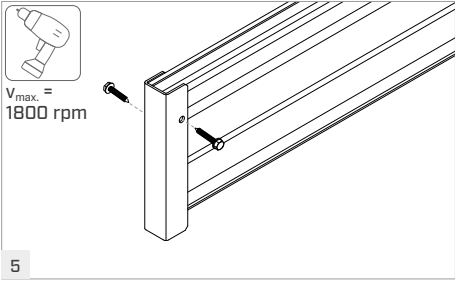
Após fazer o pré-furo, é possível fixar o rodapé à base com um parafuso **MMS5525A2**.



Unir as extremidades do **BORTB** com o conector **BORTBJUN**. Fixar com 4 parafusos **MM-S5525A2**, deixando, pelo menos, 5 mm entre as tábuas para evitar deformações térmicas.

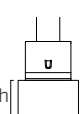
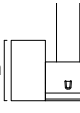


Nos cantos, rodar e dobrar o conector **BORTBJUN** com a mão até atingir o ângulo desejado. Fixar com 4 parafusos autorroscantes **MMS5525A2**.



Fixar as tampas terminais do rodapé com 2 parafusos autorroscantes **MMS5525A2**.

ESPECIFICAÇÕES DE UTILIZAÇÃO BORTB

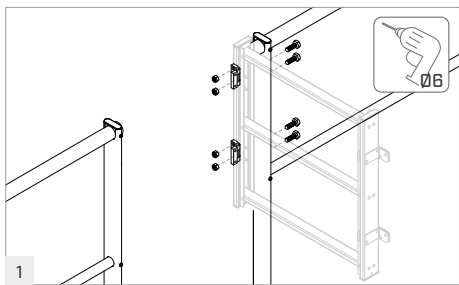
		EN 14122-3: 2016	EN 13374:2013 +A1:2018 CLA	EN 13374:2025 CLA	NTC 2018 + D.Lgs. 81/08	NF E85-015: 2019
H _{montanti}	veletta	BORTB				
		h ≥ 57 cm  h < 57 cm N/A	N/A		h ≥ 47 cm  h < 47 cm N/A	47 cm ≤ h ≤ 57 cm  h < 47 cm N/A h > 57 cm N/A
		h ≥ 10 cm  h < 10 cm N/A				h ≥ 10 cm  h < 10 cm N/A
		h ≥ 10 cm  h < 10 cm 	h ≥ 15 cm  h < 15 cm 		h ≥ 15 cm  h < 15 cm 	h ≥ 10 cm  h < 10 cm 

INSTALAÇÃO BORGATE600

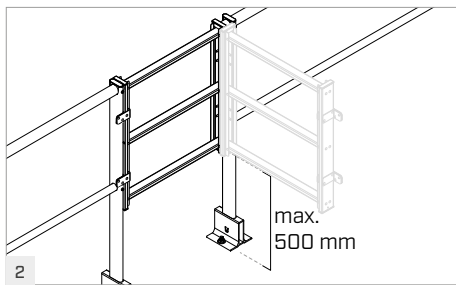
EN

14122-3:

2016



Fixar as 2 dobradiças na parte lateral do portão utilizando os 4 parafusos **Ø6x35 ISO 4762** e as respectivas **porcas autoblocantes M6** fornecidas com o portão.



Certificar-se de que o portão é instalado a uma altura máxima de **500 mm** da superfície de passagem, mantendo-o na posição fechada.

BORUP100F - BORUP110F

EN

14122-3:

2016

NTC

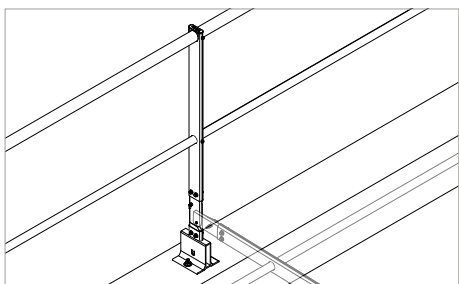
2018

DLgs.81/08

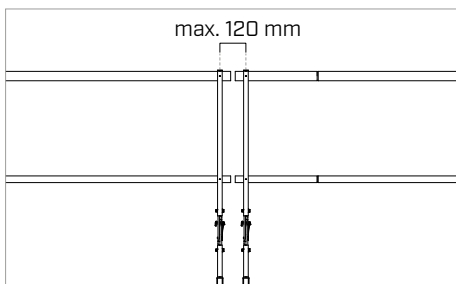
NF

E85-015:

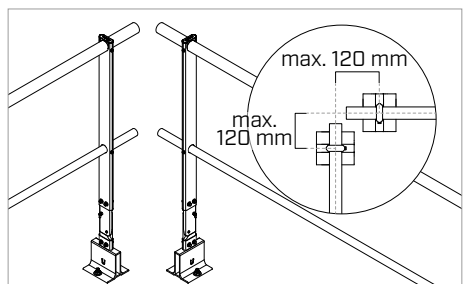
2019



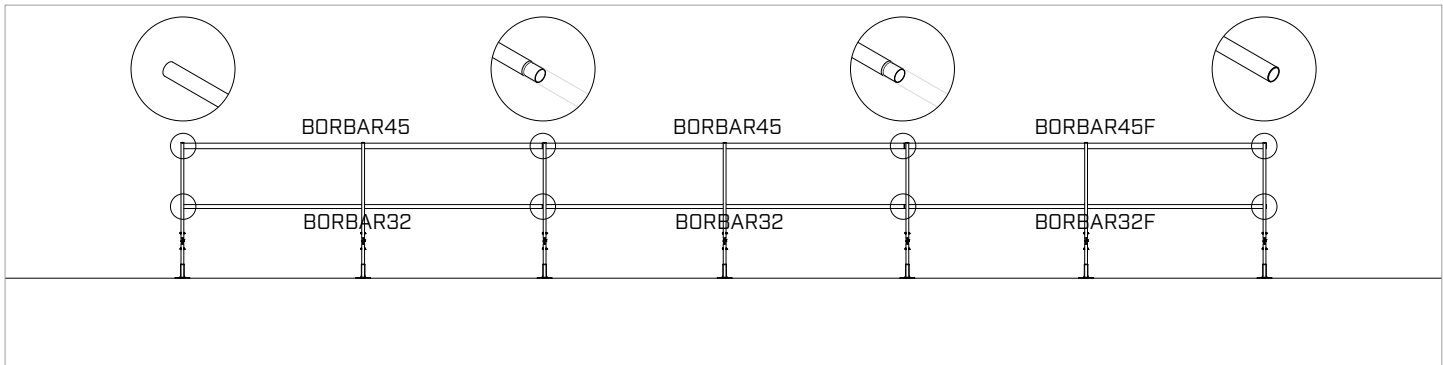
Instalar os parapeitos rebateis **BORDER H** do lado da junta (não do perno), certificando-se de que o montante é rebatido na direção da cobertura, nunca para fora.



Os parapeitos rebateis **BORDER H** são instalados em módulos de 9 m (7 montantes), 12 m (9 montantes), 15 m (11 montantes) ou 18 m (13 montantes). Montar os dois montantes terminais com uma distância máxima de **120 mm** entre eles, como mostrado.



Os cantos dos parapeitos rebateis não devem ser ligados para permitir o rebatimento em ambas as direções. A distância entre os dois montantes terminais não deve exceder **120 mm** do bordo.



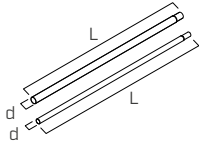
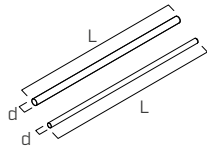
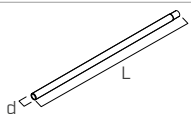
As correntes principais a utilizar são **BORBAR45** e **BORBAR32**, no entanto, cada módulo deve terminar com a corrente específica sem redução **BORBAR45F** e **BORBAR32F**.

AVISOS GERAIS DE UTILIZAÇÃO

- Antes de rebater o parapeito, é obrigatório garantir que o operador se encontra em condições de segurança. O utilizador deve estar ancorado a um dispositivo antiqueda, como uma linha de vida **PATROL** ou um ponto de ancoragem **KITE**. Além disso, é necessário garantir que todas as ferramentas e equipamentos estão em boas condições de funcionamento e que a área de instalação está desimpedida.
- Os módulos (9 m, 12 m, 15 m, 18 m) devem ser sempre manuseados por dois operadores, de modo a permitir um rebatimento correto.

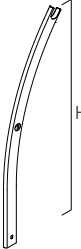
CÓDIGOS E DIMENSÕES

CORRENTES

CÓDIGO	d [mm]	L [mm]	
BORBAR45	45	3000	
BORBAR32	32	3000	
BORBAR45F	45	3000	
BORBAR32F	32	3000	
BORBAR45R	45	3000	

EN AW
6063-T6

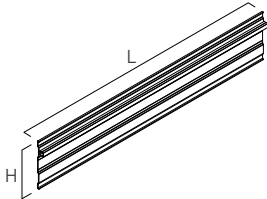
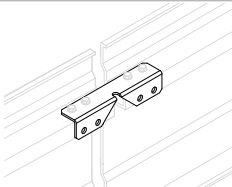
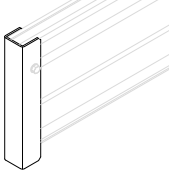
MONTANTES

CÓDIGO	H [mm]	
BORUP530WH	535	
BORUP760WH	765	
BORUP100	1005	
BORUP110	1105	
BORUP118	1185	
BORUP130	1305	
BORUP100F	1005	
BORUP110F	1105	
BORUP113C	1120	
BORUP100R	1005	
BORUP110R	1105	
BORUP100AS	1005	
BORUP107US	1075	

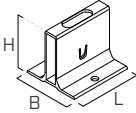
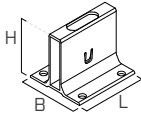
EN AW
6005A-T6

CÓDIGOS E DIMENSÕES

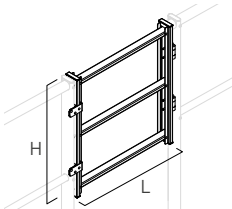
RODAPÉ

CÓDIGO		H [mm]	L [mm]	
BORTB	EN AW 6063-T6	150	3000	
BORTBJUN	EN AW 6063 H111	-	-	
BORTBCAP	EN AW 6063 H111	-	-	

BASES

CÓDIGO		B [mm]	H [mm]	L [mm]	
BORBASEH	EN AW 6005A-T6	120	115	135	
BORBASEH4H		120	115	135	

PORTÃO DE SEGURANÇA

CÓDIGO		L [mm]	H [mm]	
BORGATE600	EN AW 6063 H111	600	640	

FIXAÇÕES

CÓDIGO		d [mm]	H [mm]	
MMS5525A2	1.4301 AISI304 INOX	5,5	25	

CÓDIGOS E DIMENSÕES

ACESSÓRIOS

CÓDIGO

BORCAP45

BORCAP32

BORCAP

BORCOR

BORWALL

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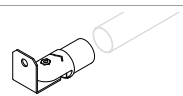
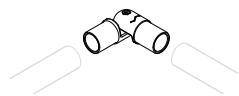
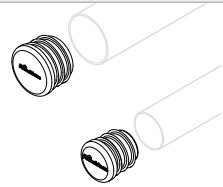
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