

CELO

**Multifunction
frame plug
MFR**



Multifunction frame plug MFR

Assortment



SB TX

- zinc plated
- stainless steel A4
- hot-dip galvanized



SB SSKS

- zinc plated
- stainless steel A4
- hot-dip galvanized

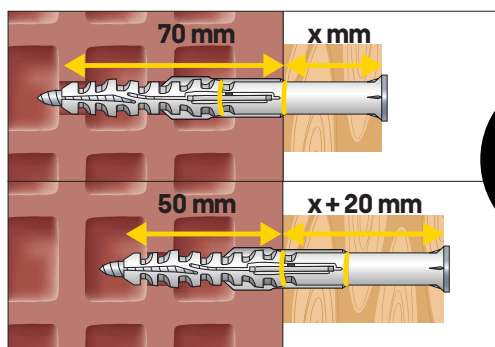
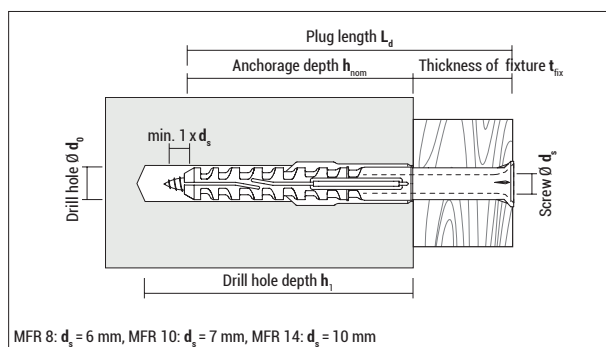


FB SSKS

- zinc plated
- stainless steel A4

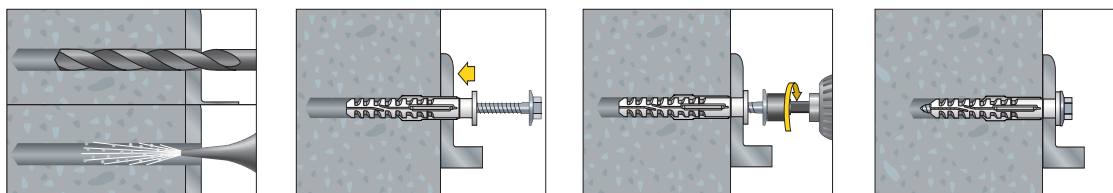


Mounting

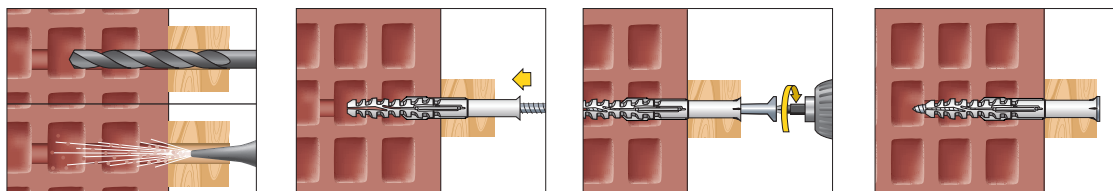


MFR 10:
Now with two
setting depths

Mounting flat rim plug with hex-head screw with integral washer



Mounting countersunk plug with countersunk screw



Approvals and certificates



European Technical Assessment
for multiple use for non-structural
applications in concrete and
masonry



see ETA



Suitable building materials



- Concrete
- Solid brick
- Solid sand-lime brick
- Aerated concrete
- Hollow brick
- Hollow sand-lime brick

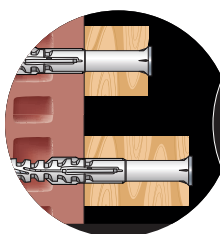


- Precast prestressed hollow core slabs
- Lightweight hollow concrete blocks
- Natural stone
- Lightweight solid concrete blocks

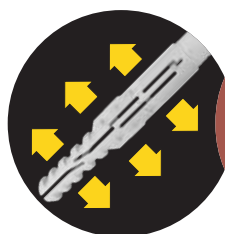
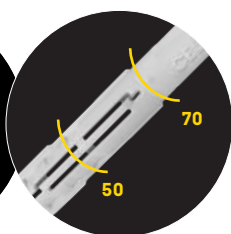


Approved for **all** base material groups (see ETA)!

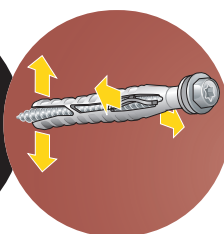
MFR 10 Advantages



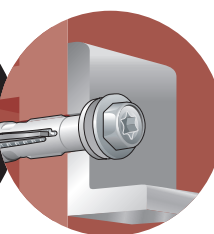
Setting depth 50 mm and 70 mm
for a big variety
of applications



Long expansion area and early
expansion achieved by **lateral**
bars ensure **secure hold**



Flat rim plug prevents
contact corrosion



Wide range:

- zinc plated
- stainless steel A4
- hot-dip galvanized



All lengths
pre-assembled



European Technical
Assessment for
concrete and masonry
(see ETA)



Countersunk plug for
smooth mounting
in fixture

MFR 10 Application examples



Suitable for
metal façade
substructures



Suitable for
wooden façade
substructures



Approved for
precast prestressed
hollow core slabs



Approved by company
Hörmann for **fire**
protection doors in solid
building materials

MFR Assortment



Countersunk plug
TX-Countersunk screw

SB
TX



head-Ø MFR 8: 11 mm; MFR 10: 14 mm; MFR 14: 21,5 mm

MFR SB TX, zinc plated countersunk plug with countersunk screw

Type	Art-No	d ₀ [mm]	h ₁ ≥ [mm]	h _{nom} ≥ [mm]	L _d [mm]	t _{fix} ≤ [mm]	Recess	ETA	€/100 pcs	[pcs]	[pcs]
8-60	9860MFRST	8	60	50	60	10	TX 30	●		100	800
8-80	9880MFRST	8	60	50	80	30	TX 30	●		100	800
8-100	98100MFRST	8	60	50	100	50	TX 30	●		50	400
8-120	98120MFRST	8	60	50	120	70	TX 30	●		50	400
10-60	91060MFRST	10	60	50	60	10	TX 40	●		50	400
10-80	91080MFRST	10	60 / 80	50 / 70	80	30 / 10	TX 40	●		50	400
10-100	910100MFRST	10	60 / 80	50 / 70	100	50 / 30	TX 40	●		50	400
10-115	910115MFRST	10	60 / 80	50 / 70	115	65 / 45	TX 40	●		50	400
10-135	910135MFRST	10	60 / 80	50 / 70	135	85 / 65	TX 40	●		50	400
10-160	910160MFRST	10	60 / 80	50 / 70	160	110 / 90	TX 40	●		50	400
10-180	910180MFRST	10	60 / 80	50 / 70	180	130 / 110	TX 40	●		50	200
10-200	910200MFRST50	10	60 / 80	50 / 70	200	150 / 130	TX 40	●		50	200
10-240	910240MFRST50	10	60 / 80	50 / 70	240	190 / 170	TX 40	●		50	200
10-280	910280MFRST50	10	60 / 80	50 / 70	280	230 / 210	TX 40	●		50	–
10-320	910320MFRST50	10	60 / 80	50 / 70	320	270 / 250	TX 40	●		50	–
14-80	91480MFRST	14	85	70	80	10	TX 50	●		25	200
14-110	914110MFRST	14	85	70	110	40	TX 50	●		25	200
14-140	914140MFRST	14	85	70	140	70	TX 50	●		25	200
14-170*	914170MFRST	14	85	70	170	100	TX 50	●		25	200
14-200*	914200MFRST	14	85	70	200	130	TX 50	●		25	200
14-230*	914230MFRST	14	85	70	230	160	TX 50	●		25	200
14-270*	914270MFRST	14	85	70	270	200	TX 50	●		25	100

* not pre-assembled



head-Ø MFR 8: 11 mm; MFR 10: 14 mm

MFR SB TX, stainless steel A4 countersunk plug with countersunk screw

A4
STAINLESS
STEEL

Type	Art-No	d ₀ [mm]	h ₁ ≥ [mm]	h _{nom} ≥ [mm]	L _d [mm]	t _{fix} ≤ [mm]	Recess	ETA	€/100 pcs	[pcs]	[pcs]
8-60 A4	9X860MFRST	8	60	50	60	10	TX30	●		100	800
8-80 A4	9X880MFRST	8	60	50	80	30	TX 30	●		100	800
8-100 A4	9X8100MFRST	8	60	50	100	50	TX 30	●		50	400
10-60 A4	9X1060MFRST	10	60	50	60	10	TX40	●		50	400
10-80 A4	9X1080MFRST	10	60 / 80	50 / 70	80	30 / 10	TX 40	●		50	400
10-100 A4	9X10100MFRST	10	60 / 80	50 / 70	100	50 / 30	TX 40	●		50	400
10-115 A4	9X10115MFRST	10	60 / 80	50 / 70	115	65 / 45	TX 40	●		50	400
10-135 A4	9X10135MFRST	10	60 / 80	50 / 70	135	85 / 65	TX 40	●		50	400
10-160 A4	9X10160MFRST	10	60 / 80	50 / 70	160	110 / 90	TX 40	●		50	400
10-180 A4	9X10180MFRST	10	60 / 80	50 / 70	180	130 / 110	TX 40	●		50	200
10-200 A4	9X10200MFRST	10	60 / 80	50 / 70	200	150 / 130	TX 40	●		50	200



head-Ø MFR 10: 14 mm

MFR SB TX, hot-dip galvanized countersunk plug with countersunk screw

Type	Art-No	d ₀ [mm]	h ₁ ≥ [mm]	h _{nom} ≥ [mm]	L _d [mm]	t _{fix} ≤ [mm]	Recess	ETA	€/100 pcs	[pcs]	[pcs]
10-100 HD	9HD10100MFRST	10	60 / 80	50 / 70	100	50 / 30	TX 40	●		50	400
10-135 HD	9HD10135MFRST	10	60 / 80	50 / 70	135	85 / 65	TX 40	●		50	400
10-160 HD	9HD10160MFRST	10	60 / 80	50 / 70	160	110 / 90	TX 40	●		50	400

Hot-dip galvanized is not part of the ETA assessment

MFR Assortment



**Countersunk plug
Hex-head screw**
with integral washer and TX recess

**SB
SSKS**



washer-Ø MFR 8: 17 mm; MFR 10: 19 mm; MFR 14: 22 mm

MFR SB SSKS, zinc plated countersunk plug, hex-head screw with integral washer

Type	Art-No	d ₀ [mm]	h ₁ ≥ [mm]	h _{nom} ≥ [mm]	L _d [mm]	t _{fix} ≤ [mm]	Recess	ETA	€ / 100 pcs	[pcs]	[pcs]
8-60	9860MFRSB	8	60	50	60	10	SW10/TX 30	●		100	800
8-80	9880MFRSB	8	60	50	80	30	SW10/TX 30	●		100	800
8-100	98100MFRSB	8	60	50	100	50	SW10/TX 30	●		50	400
8-120	98120MFRSB	8	60	50	120	70	SW10/TX 30	●		50	400
10-60	91060MFRSB	10	60	50	60	10	SW13/TX 40	●		50	400
10-80	91080MFRSB	10	60 / 80	50 / 70	80	30 / 10	SW13/TX 40	●		50	400
10-100	910100MFRSB	10	60 / 80	50 / 70	100	50 / 30	SW13/TX 40	●		50	400
10-115	910115MFRSB	10	60 / 80	50 / 70	115	65 / 45	SW13/TX 40	●		50	400
10-135	910135MFRSB	10	60 / 80	50 / 70	135	85 / 65	SW13/TX 40	●		50	400
10-160	910160MFRSB	10	60 / 80	50 / 70	160	110 / 90	SW13/TX 40	●		50	400
10-180	910180MFRSB	10	60 / 80	50 / 70	180	130 / 110	SW13/TX 40	●		50	200
10-200	910200MFRSB50	10	60 / 80	50 / 70	200	150 / 130	SW13/TX 40	●		50	200
10-240	910240MFRSB50	10	60 / 80	50 / 70	240	190 / 170	SW13/TX 40	●		50	200
14-80	91480MFRSB	14	85	70	80	10	SW17/TX 50	●		25	200
14-110	914110MFRSB	14	85	70	110	40	SW17/TX 50	●		25	200
14-140	914140MFRSB	14	85	70	140	70	SW17/TX 50	●		25	200
14-170*	914170MFRSB	14	85	70	170	100	SW17/TX 50	●		25	200
14-200*	914200MFRSB	14	85	70	200	130	SW17/TX 50	●		25	200
14-230*	914230MFRSB	14	85	70	230	160	SW17/TX 50	●		25	100
14-270*	914270MFRSB	14	85	70	270	200	SW17/TX 50	●		25	100

* not pre-assembled



washer-Ø MFR 8: 17mm; MFR 10: 19 mm

MFR SB SSKS, stainless steel A4 countersunk plug, hex-head screw with integral washer

A4
STAINLESS
STEEL

Type	Art-No	d ₀ [mm]	h ₁ ≥ [mm]	h _{nom} ≥ [mm]	L _d [mm]	t _{fix} ≤ [mm]	Recess	ETA	€ / 100 pcs	[pcs]	[pcs]
8-60 A4	9X860MFRSB	8	60	50	60	10	SW10/TX 30	●		100	800
8-80 A4	9X880MFRSB	8	60	50	80	30	SW10/TX 30	●		100	800
8-100 A4	9X8100MFRSB	8	60	50	100	50	SW10/TX 30	●		50	400
10-60 A4	9X1060MFRSB	10	60	50	60	10	SW13/TX 40	●		50	400
10-80 A4	9X1080MFRSB	10	60 / 80	50 / 70	80	30 / 10	SW13/TX 40	●		50	400
10-100 A4	9X10100MFRSB	10	60 / 80	50 / 70	100	50 / 30	SW13/TX 40	●		50	400
10-115 A4	9X10115MFRSB	10	60 / 80	50 / 70	115	65 / 45	SW13/TX 40	●		50	400
10-135 A4	9X10135MFRSB	10	60 / 80	50 / 70	135	85 / 65	SW13/TX 40	●		50	400
10-160 A4	9X10160MFRSB	10	60 / 80	50 / 70	160	110 / 90	SW13/TX 40	●		50	400
10-180 A4	9X10180MFRSB	10	60 / 80	50 / 70	180	130 / 110	SW13/TX 40	●		50	200
10-200 A4	9X10200MFRSB	10	60 / 80	50 / 70	200	150 / 130	SW13/TX 40	●		50	200



washer-Ø MFR 10: 19 mm

MFR SB SSKS, hot-dip galvanized countersunk plug, hex-head screw with integral washer

Type	Art-No	d ₀ [mm]	h ₁ ≥ [mm]	h _{nom} ≥ [mm]	L _d [mm]	t _{fix} ≤ [mm]	Recess	ETA	€ / 100 pcs	[pcs]	[pcs]
10-100 HD	9HD10100MFRSB	10	60 / 80	50 / 70	100	50 / 30	SW13/TX 40			50	400
10-135 HD	9HD10135MFRSB	10	60 / 80	50 / 70	135	85 / 65	SW13/TX 40			50	400
10-160 HD	9HD10160MFRSB	10	60 / 80	50 / 70	160	110 / 90	SW13/TX 40			50	400

Hot-dip galvanized is not part of the ETA assessment

MFR Assortment



Flat rim plug
Hex-head screw
with integral washer and TX recess

FB
SSKS



washer-Ø MFR 8: 17 mm; MFR 10: 19 mm; MFR 14: 22 mm

MFR FB SSKS, zinc plated flat rim plug, hex-head screw with integral washer

Type	Art-No	d ₀ [mm]	h ₁ ≥ [mm]	h _{nom} ≥ [mm]	L _d [mm]	t _{fix} ≤ [mm]	Recess	ETA	€/ 100 pcs	[pcs]	[pcs]
8-60	9860MFRFB	8	60	50	60	10	SW10/TX 30	●		100	800
8-80	9880MFRFB	8	60	50	80	30	SW10/TX 30	●		100	800
10-60	91060MFRFB	10	60	50	60	10	SW13/TX 40	●		50	400
10-80	91080MFRFB	10	60 / 80	50 / 70	80	30 / 10	SW13/TX 40	●		50	400
10-100	910100MFRFB	10	60 / 80	50 / 70	100	50 / 30	SW13/TX 40	●		50	400
10-115	910115MFRFB	10	60 / 80	50 / 70	115	65 / 45	SW13/TX 40	●		50	400
10-135	910135MFRFB	10	60 / 80	50 / 70	135	85 / 65	SW13/TX 40	●		50	400
14-80	91480MFRFB	14	85	70	80	10	SW17/TX 50	●		25	200
14-110	914110MFRFB	14	85	70	110	40	SW17/TX 50	●		25	200
14-140	914140MFRFB	14	85	70	140	70	SW17/TX 50	●		25	200



washer-Ø MFR 8: 17 mm; MFR 10: 19 mm

MFR FB SSKS, stainless steel A4 flat rim plug, hex-head screw with integral washer

A4
STAINLESS
STEEL

Type	Art-No	d ₀ [mm]	h ₁ ≥ [mm]	h _{nom} ≥ [mm]	L _d [mm]	t _{fix} ≤ [mm]	Recess	ETA	€/ 100 pcs	[pcs]	[pcs]
8-60 A4	9X860MFRFB	8	60	50	60	10	SW10/TX 30	●		100	800
8-80 A4	9X880MFRFB	8	60	50	80	30	SW10/TX 30	●		100	800
10-60 A4	9X1060MFRFB	10	60	50	60	10	SW13/TX 40	●		50	400
10-80 A4	9X1080MFRFB	10	60 / 80	50 / 70	80	30 / 10	SW13/TX 40	●		50	400
10-100 A4	9X10100MFRFB	10	60 / 80	50 / 70	100	50 / 30	SW13/TX 40	●		50	400
10-115 A4	9X10115MFRFB	10	60 / 80	50 / 70	115	65 / 45	SW13/TX 40	●		50	400
10-135 A4	9X10135MFRFB	10	60 / 80	50 / 70	135	85 / 65	SW13/TX 40	●		50	400

MFR Blisters



head-Ø MFR 8: 11 mm; MFR 10: 14 mm

Blister MFR SB TX, zinc plated Countersunk plug with countersunk screw



Type	Art-No	d ₀ [mm]	h ₁ ≥ [mm]	h _{nom} ≥ [mm]	L _d [mm]	t _{fix} ≤ [mm]	Recess	Type of screw	ETA	€/ Blister	[pcs]	[Blister]
8-60	5860MFRST4	8	60	50	60	10	TX 30	✦	●		4	10
8-80	5880MFRST4	8	60	50	80	30	TX 30	✦	●		4	10
10-60	51060MFRST4	10	60	50	60	10	TX 40	✦	●		4	10
10-80	51080MFRST4	10	60 / 80	50 / 70	80	30 / 10	TX 40	✦	●		4	10
10-100	510100MFRST4	10	60 / 80	50 / 70	100	50 / 30	TX 40	✦	●		4	10
10-115	510115MFRST4	10	60 / 80	50 / 70	115	65 / 45	TX 40	✦	●		4	10
10-135	510135MFRST4	10	60 / 80	50 / 70	135	85 / 65	TX 40	✦	●		4	10
10-160	510160MFRST4	10	60 / 80	50 / 70	160	110 / 90	TX 40	✦	●		4	10



Blister MFR SB SSKS, zinc plated

Countersunk plug, hex-head screw with integral washer

Type	Art-No	d ₀ [mm]	h ₁ ≥ [mm]	h _{nom} ≥ [mm]	L _d [mm]	t _{fix} ≤ [mm]	Recess	Type of screw	ETA	€/ Blister	[pcs]	[Blister]
8-60	5860MFRSB4	8	60	50	60	10	SW10/TX 30		●		4	10
10-80	51080MFRSB4	10	60/80	50/70	80	30/10	SW13/TX 40		●		4	10
10-100	510100MFRSB4	10	60/80	50/70	100	50/30	SW13/TX 40		●		4	10
10-115	510115MFRSB4	10	60/80	50/70	115	65/45	SW13/TX 40		●		4	10
10-135	510135MFRSB4	10	60/80	50/70	135	85/65	SW13/TX 40		●		4	10
10-160	510160MFRSB4	10	60/80	50/70	160	110/90	SW13/TX 40		●		4	10



Blister MFR FB SSKS, zinc plated

flat rim plug, hex-head screw with integral washer

Type	Art-No	d ₀ [mm]	h ₁ ≥ [mm]	h _{nom} ≥ [mm]	L _d [mm]	t _{fix} ≤ [mm]	Recess	Type of screw	ETA	€/ Blister	[pcs]	[Blister]
8-80	5880MFRFB4	8	60	50	80	30	SW10/TX 30		●		4	10
10-60	51060MFRFB4	10	60	50	60	10	SW13/TX 40		●		4	10

Loads MFR F_{per}

Type	Ancho- rage depth h _{nom} [mm]	Concrete		Solid brick		Solid sand-lime brick		Hollow brick	Hollow sand-li- me brick	Hollow concrete block	Aerated concrete			Precast pre- stressed hollow core slabs C45/55	Permissible bending moment for zinc plated screws
		N _{per} [kN]	V _{per} [kN]	Mz 10 F _{per} [kN]	Mz 20 F _{per} [kN]	KS 10 F _{per} [kN]	KS 20 F _{per} [kN]	HLz 12 F _{per} [kN]	KSL 12 F _{per} [kN]	Hbn 25 F _{per} [kN]	AAC2 F _{per} [kN]	AAC4 F _{per} [kN]	AAC6 F _{per} [kN]	N _{per} [kN]	M _{per} [Nm]
MFR 8	50	0,99	3,31	0,26	0,43	0,57	0,86	0,14	0,21	0,34	0,11	0,43	0,71	1,39	8,05
MFR 10	50	0,99	4,86	0,57	0,86	0,71	1,14	0,34	0,43	0,71	–	–	–	0,79	8,74
MFR 10	70	1,59	4,86	0,57	0,86	0,57	0,86	0,21	0,26	0,21	0,14	0,43	0,71	0,48	8,74
MFR 14	70	1,79	8,69	0,86	1,29	0,86	1,29	0,21	0,34	–	0,11	0,43	0,71	–	20,97

Permissible load in all directions, N_{per} = permissible tension load, V_{per} = permissible shear load according to ETA assessment for zinc plated screws

(For MFR with hot-dip galvanized screw: These values can be used as recommended loads)

Values apply to an average temperature range in the wall of max. + 24° C (temporarily + 40° C).

If the sustained average temperature is +50° C (temporarily +80° C) load capacities are reduced. In this case, refer to the assessment.

For further information regarding masonry (brick types and sizes) please refer to the assessment.

Spacing and edge distance

Type	Ancho- rage depth h _{nom} [mm]	Distances	Concrete ≥ C16/ 20 [mm]	Solid brick Mz/ Solid brick KS		Hollow brick HLz/ Hollow sand-lime brick KSL		AAC2		AAC4		AAC6	
				single plug [mm]	group of plugs [mm]	single plug [mm]	group of plugs [mm]	single plug [mm]	group of plugs [mm]	single plug [mm]	group of plugs [mm]	single plug [mm]	group of plugs [mm]
MFR 8	50	Spacing a / s _{2,min} parallel to edge	50	250	400	250	400	250	400	250	400	250	400
MFR 10	50		50	250	400	250	200	–	–	–	–	–	–
MFR 10	70		50	250	400	250	400	250	200	250	300	250	400
MFR 14	70		100	250	400	250	480*/400	250	200	250	300	250	400
MFR 8	50	Spacing a / s _{1,min} perpendicular to edge	50	250	200	250	200	250	200	250	200	250	200
MFR 10	50		50	250	200	250	200	–	–	–	–	–	–
MFR 10	70		50	250	200	250	200	250	100	250	150	250	200
MFR 14	70		100	250	200	250	240*/200	250	100	250	150	250	200
MFR 8	50	Min. edge distance c _{min}	60	100	100	100	100	50	–	90	–	150	–
MFR 10	50		50	100	100	100	100	–	–	–	–	–	–
MFR 10	70		60	100	100	100	100	50	50	75	75	100	100
MFR 14	70		100	100	100	120*/100	120*/100	50	50	75	75	100	100
MFR 8	50	Min. thickness of structural part h _{min}	100					240	240	240	240	240	240
MFR 10	50		100	depending on brick format		depending on brick format		–	–	–	–	–	–
MFR 10	70		110					100	100	100	100	100	100
MFR 14	70		120					100	100	100	100	100	100

* Value applies to HLz 12



CELO Befestigungssysteme GmbH
Industriestraße 6
D-86551 Aichach
www.celofixings.com
Hotline: +49 (0) 8251-90485-0
Telefax: +49 (0) 8251-90485-49
E-mail: info@celofixings.de

Small Things Matter

Presented by:

EN 10/23

Technical products and illustrations are subject to change. The reprint of this brochure, in part or in whole, is prohibited.
CELO Befestigungssysteme GmbH accepts no liability for the accuracy of the information provided.