TFE

TFF

CHARACTERISTICS

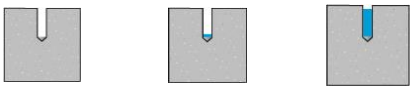
- Pilot hole in concrete needed, thread is created by the anchor during the Installation process.
- Use for high loads.
- Assessed for 2 installation depths and 3 for Ø10.
- Use in cracked and non-cracked concrete.
- Comply with guideline VdS CEA 4001:2021-01(07) “Guidelines for sprinklers systems. Planning and installation”
- Suitable when reduced edge distances or spacing required.
- Qualified for static and cuasi-static.
- Easy installation.
- Installation through the fixture.
- Reusable
- Removable, leaving concrete surface flat.
- Variety of lengths and sizes, assembly flexibility.
- VdS available from Ø6 to Ø18
- Available in INDEXcal

BASE MATERIAL

SIZE RANGE

Ø6 - Ø10

DRILL CONDITION



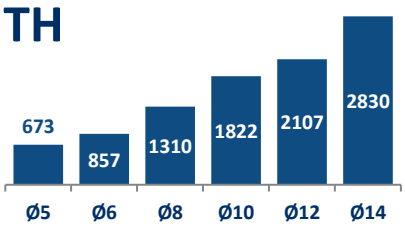
DRY WET FLOODED

APPLICATION

- Structural fixings in cracked and uncracked concrete subject to dry internal conditions.
- Glazing, windows and storefronts
- Racking and shelving
- Attaching railings, handrails and ledgers
- Fixings wood structures in concrete

ASSESMENTS

MAXIMUMUM LOADS RECOMMENDED FOR CRACKED AND UNCRACKED CONCRETE [kg]



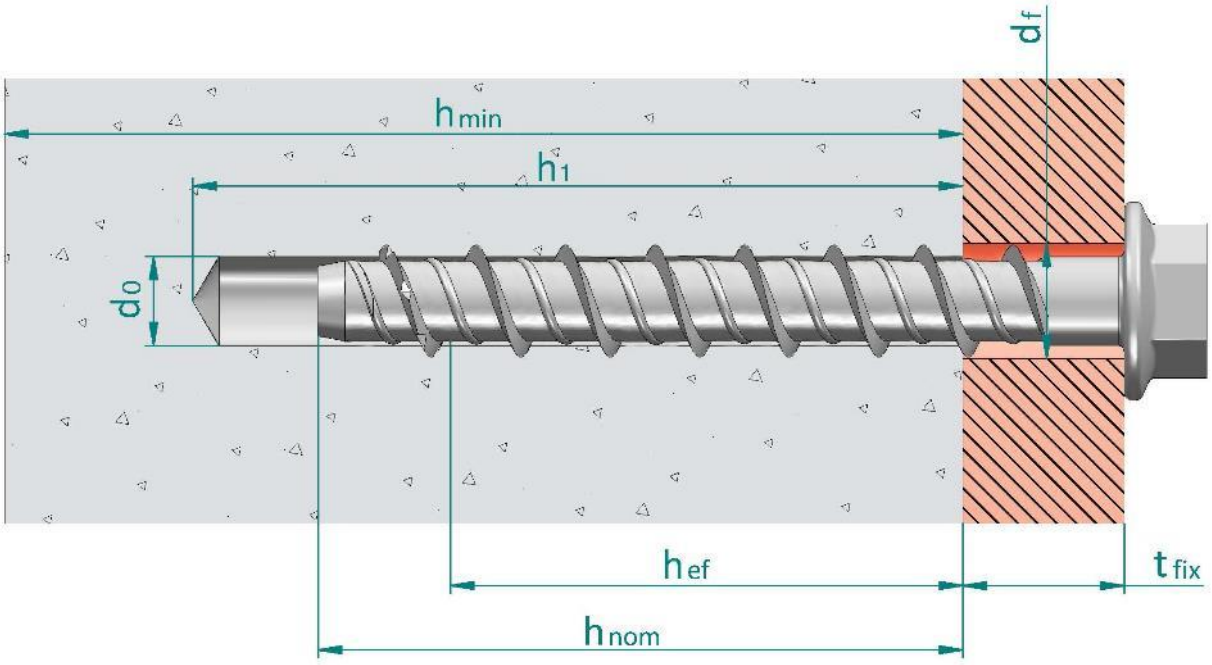
APPLICATION EXAMPLES

1. RANGE

ITEM	CODE	SIZES	PHOTO	DESCRIPTION	MATERIAL	COVERING
1	**TFE**	Ø6 - Ø10		Hexagonal head with flange screw anchor	Carbon steel, zinc plated coating ≥ 5 µm	C1 ZINC
2	**TFF**	Ø6		Rod hanger internal thread screw anchor	Carbon steel, zinc plated coating ≥ 5 µm	C1 ZINC

2. INSTALLATION DATA

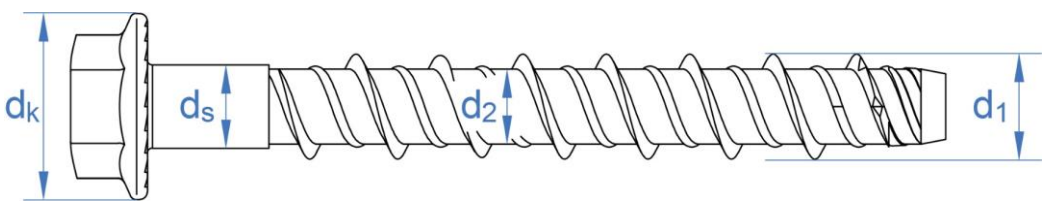
2.1. INSTALLATION DRAWING



d_0: Nominal diameter of drill bit
d_f: Fixture clearance hole diameter
h_{ef}: Effective anchorage depth
h_1: Depth of drilled hole
h_{nom}: Overall fastener embedment depth in the concrete
h_{min}: Minimum thickness of concrete member
t_{fix}: Fixture thickness

2.2. GEOMETRY

DIAMETER	[mm]	Ø6	Ø8	Ø10
TYPE	[TH/TF]	E, A, P, T, F, M, S	E, A, P, S	E, S
d_1: Threaded outer diameter	[mm]	7,35	10,45	12,55
d_2: Core diameter	[mm]	5,75	7,68	9,57
d_s: Shaft diameter	[mm]	5,95	8,20	10,14
d_k: Diameter of integrated washer	[mm]	14,00	17,00	20,00



2.3. SEISMIC LOAD ASSESSMENT

Family	Code	Size	Assessed	C1	C2
[--]	[--]	[--]	ETA	[--]	[--]
TFE	06050 - 03141	Ø6 x 50	✓	✓	--
	08060 - 03142	Ø8 x 60	✓	✓	✓
	10060 - 03143	Ø10 x 60	✓	--	--
TFF	06035 - 03117b	Ø6 x 35	✓	--	--

Brymec item codes are in blue

General Installation parameters										Standard Installation depth ($h_{ef,std}$)									Reduced Installation depth ($h_{ef,red}$)								
Family	Code	Size	Assessed	Drill bit diameter	Fixture clearance hole	Spanner	Maximum torque	Minimum allowable spacing	Minimum allowable edge distance	Minimum concrete thickness	Depth of drill hole	Installation depth	Effective anchorage depth	Thickness of fixture	Critical spacing (concrete cone)	Critical edge distance (cone)	Critical spacing(splitting)	Critical edge distance (splitting)	Minimum concrete thickness	Depth of drill hole	Installation depth	Effective anchorage depth	Thickness of fixture	Critical spacing (concrete cone)	Critical edge distance (cone)	Critical spacing(splitting)	Critical edge distance (splitting)
[--]	[--]	[--]	ETA	d_0	d_f	SW/Tx	T_{inst}	S_{min}	C_{min}	h_{min}	h_1	h_{nom}	h_{ef}	t_{fix}	$S_{cr,N}$	$C_{cr,N}$	$S_{cr,sp}$	$C_{cr,sp}$	h_{min}	h_1	h_{nom}	h_{ef}	t_{fix}	$S_{cr,N}$	$C_{cr,N}$	$S_{cr,sp}$	$C_{cr,sp}$
				[mm]	[mm]	[--]	[Nm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
TFE	06050 - 03141	Ø6 x 50	✓	6	9	SW 10	10	35	35	--	--	--	--	--	--	--	--	--	100	45	35	26,0	15	78	39	90	45
	08060 - 03142	Ø8 x 60	✓	8	12	SW 13	20	35	35	--	--	--	--	--	--	--	--	--	100	60	50	37,5	10	113	57	130	65
	10060 - 03143	Ø10 x 60	✓	10	14	SW 15	30	50	40	--	--	--	--	--	--	--	--	--	100	65	55	41,5	5	125	63	140	70

*Ø5 Assessed only for use in concrete and in precast prestressed hollow core slabs for redundant non-structural systems

General Installation parameters										Standard Installation depth ($h_{ef,std}$)									Reduced Installation depth ($h_{ef,red}$)								
Family	Code	Size	Assessed	Drill bit diameter	Fixture clearance hole	Spanner	Maximum torque	Minimum allowable spacing	Minimum allowable edge	Minimum concrete thickness	Depth of drill hole	Installation depth	Effective anchorage depth	Thickness of fixture	Critical spacing (concrete cone)	Critical edge distance (cone)	Critical spacing(splitting)	Critical edge distance (splitting)	Minimum concrete thickness	Depth of drill hole	Installation depth	Effective anchorage depth	Thickness of fixture	Critical spacing (concrete cone)	Critical edge distance (cone)	Critical spacing(splitting)	Critical edge distance (splitting)
[--]	[--]	[--]	ETA	d_0	d_f	SW/Tx	T_{inst}	S_{min}	C_{min}	h_{min}	h_1	h_{nom}	h_{ef}	t_{fix}	$S_{cr,N}$	$C_{cr,N}$	$S_{cr,sp}$	$C_{cr,sp}$	h_{min}	h_1	h_{nom}	h_{ef}	t_{fix}	$S_{cr,N}$	$C_{cr,N}$	$S_{cr,sp}$	$C_{cr,sp}$
				[mm]	[mm]	[--]	[Nm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
TFF	06035 - 3117b	Ø6 x 35	✓	6	--	SW 13	10	35	35	--	--	--	--	--	--	--	--	--	100	45	35	26,0	--	78	39	90	45

Brymec item codes are in blue

4. INSTALLATION PROCEDURE

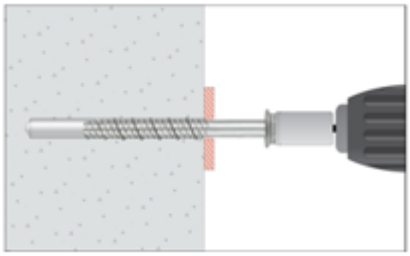
4.1. CONCRETE INSTALLATION

1. DRILLING

Check the concrete is well compacted and without significant porosity.
Suitable for dry, wet and flooded holes.
Use drill in hammer mode.
Drill according to specified depths in previous tables.

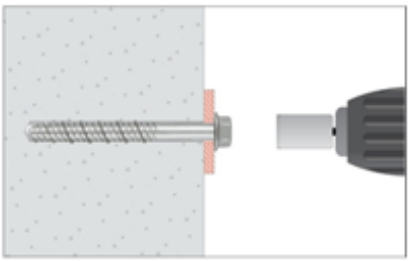
2. BLOW AND CLEAN

Clean the hole from dust and concrete remains.
Use blow pump and brush.



3. INSTALL

Select a powered impact wrench or a torque wrench that does not exceed the maximum torque indicated in previous tables.
Attach an appropriate size hex socket to the wrench.
Mount the screw anchor head in the socket.



4. APPLY THE TORQUE

Drive the anchor with an impact driver or a torque wrench through the fixture and into the hole until the anchor head washer comes in contact with the fixture. The anchor must be snug after installation. Do not spin the hex socket off the anchor to disengage.

5. RESISTANCES

Resistances in concrete class C20/25 for an isolated anchor without spacing or concrete edge distance effects are indicated in the following table:

Values *underlined and in italics* show Steel failure, **bold** values concrete failure and other indicate pull out failure.
1 KN ≈ 100 kg

5.1 CHARACTERISTIC RESISTANCE (STRUCTURAL APPLICATION) [kN]

General Parameter				Non-cracked concrete				Cracked concrete			
Family	Code	Size	ETA Assessed	Tension $N_{Rk,\,ucr}$		Shear $V_{Rk,\,ucr}$		Tension $N_{Rk,\,ucr}$		Shear $V_{Rk,\,ucr}$	
				($h_{ef,\,std}$)	($h_{ef,\,red}$)	($h_{ef,\,std}$)	($h_{ef,\,red}$)	($h_{ef,\,std}$)	($h_{ef,\,red}$)	($h_{ef,\,std}$)	($h_{ef,\,red}$)
TFE	06050 - 03141	Ø6 x 50	✓	--	5,00	--	*12,53*	--	**4,57**	--	**9,36**
	08060 - 03142	Ø8 x 60	✓	--	**11,30**	--	*19,57*	--	**7,91**	--	**14,23**
	10060 - 03143	Ø10 x 60	✓	--	**13,15**	--	**26,65**	--	**9,21**	--	**17,95**

General Parameter				Non-cracked concrete				Cracked concrete			
Family	Code	Size	ETA Assessed	Tension $N_{Rk,\,ucr}$		Shear $V_{Rk,\,ucr}$		Tension $N_{Rk,\,ucr}$		Shear $V_{Rk,\,ucr}$	
				($h_{ef,\,std}$)	($h_{ef,\,red}$)	($h_{ef,\,std}$)	($h_{ef,\,red}$)	($h_{ef,\,std}$)	($h_{ef,\,red}$)	($h_{ef,\,std}$)	($h_{ef,\,red}$)
TFF	06035 - 3117b	Ø6 x 35	✓	--	5,00	--	--	--	**4,57**	--	--

Brymec item codes are in blue

5.2 DESIGN RESISTANCE (STRUCTURAL APPLICATION) [kN]

General Parameter				Non-cracked concrete				Cracked concrete			
Family	Code	Size	ETA Assessed	Tension $N_{Rk,\,ucr}$		Shear $V_{Rk,\,ucr}$		Tension $N_{Rk,\,ucr}$		Shear $V_{Rk,\,ucr}$	
				($h_{ef,\,std}$)	($h_{ef,\,red}$)	($h_{ef,\,std}$)	($h_{ef,\,red}$)	($h_{ef,\,std}$)	($h_{ef,\,red}$)	($h_{ef,\,std}$)	($h_{ef,\,red}$)
TFE	06050 - 03141	Ø6 x 50	✓	--	2,78	--	*8,35*	--	**2,54**	--	**6,24**
	08060 - 03142	Ø8 x 60	✓		6.28	--	*13,05*	--	**4,39**	--	**9,49**
	10060 - 03143	Ø10 x 60	✓	--	**8,77**	--	**17,10**	--	**6,14**	--	**11,97**

General Parameter				Non-cracked concrete				Cracked concrete			
Family	Code	Size	ETA Assessed	Tension $N_{Rk,\,ucr}$		Shear $V_{Rk,\,ucr}$		Tension $N_{Rk,\,ucr}$		Shear $V_{Rk,\,ucr}$	
TFF	06035 - 03117b	Ø6 x 35	✓	--	2,78	--	--	--	**2,65**	--	--

Brymec item codes are in blue

5.3 MAXIMUM LOADS RECOMMENDED (STRUCTURAL APPLICATION) [kN] (with γ_F= 1.4)

General Parameter				Non-cracked concrete				Cracked concrete			
Family	Code	Size	ETA Assessed	Tension $N_{Rk,\,ucr}$		Shear $V_{Rk,\,ucr}$		Tension $N_{Rk,\,ucr}$		Shear $V_{Rk,\,ucr}$	
				($h_{ef,\,std}$)	($h_{ef,\,red}$)	($h_{ef,\,std}$)	($h_{ef,\,red}$)	($h_{ef,\,std}$)	($h_{ef,\,red}$)	($h_{ef,\,std}$)	($h_{ef,\,red}$)
TFE	06050 - 03141	Ø6 x 50	✓	--	1,98	--	*5,97*	--	**1,81**	--	**4,46**
	08060 - 03142	Ø8 x 60	✓	--	**4,48**	--	*9,32*	--	**3,14**	--	**6,78**
	10060 - 03143	Ø10 x 60	✓	--	**6,26**	--	**12,21**	--	**4,38**	--	**8,55**
TFF	06035 - 3117b	Ø6 x 35	✓	--	1,98	--	--	--	**1,81**	--	--

Brymec item codes are in blue

PULL OUT INCREASING FACTOR FOR TENSION LOADS IN HIGH RESISTANCE CONCRETE Ψ_c

Diameter	Ø5		Ø6		Ø8		Ø10			Ø12		Ø14		Ø18	
Installation depth	($h_{ef,\,red}$)	($h_{ef,\,std}$)	($h_{ef,\,red}$)	($h_{ef,\,std}$)	($h_{ef,\,red}$)	($h_{ef,\,std}$)	($h_{ef,\,1}$)	($h_{ef,\,2}$)	($h_{ef,\,3}$)	($h_{ef,\,red}$)	($h_{ef,\,std}$)	($h_{ef,\,red}$)	($h_{ef,\,std}$)	($h_{ef,\,red}$)	($h_{ef,\,std}$)
C30/37	1,00	1,00	1,16	1,22	1,21	1,22	1,22	1,17	1,22	1,16	1,22	1,21	1,20	1,22	1,17
C40/50	1,00	1,00	1,28	1,41	1,39	1,41	1,41	1,30	1,41	1,29	1,41	1,39	1,37	1,40	1,32
C50/60	1,00	1,00	1,39	1,58	1,54	1,58	1,58	1,42	1,58	1,40	1,58	1,55	1,51	1,57	1,42

6. OFFICIAL DOCUMENTATION

The following documents are available on our official website www.indexfix.com:

- European assessment ETA 20/0046 for Installation in cracked and non-cracked concrete according to guideline EAD 330232-00-0601, option 1, from Ø6 to Ø18.
- European assessment ETA 20/0494 for use in concrete and prestressed hollow core slabs for redundant non-structural systems according to guideline EAD 330747-00-0601 from Ø5 to Ø6.
- Declaration of performance DoP THE.
- VdS certificate CEA 4001:2021-01(07) *Guidelines for sprinklers systems. Planning and installation for applications of water extinguising systems on concrete elements* from Ø6 to Ø18.
- Available in the anchor design software INDEXcal.