Loads

ZYKON undercut anchor FZA-D

Permissible loads of a single anchor[1] in normal concrete of strength class C20/25.
For the design the complete current assessment ETA-98/0004 has to be considered.

					Cracked concrete				Non-cracked concrete			
					Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads				Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads			
Type	Material/ surface[2]	Effective anchorage depth h_{ef} [mm]	Minimum member thickness h_{min} [mm]	Instal-lation torque T_{inst} [Nm]	N_{perm}[3] [kN]	V_{perm}[3] [kN]	s_{min}[3] [mm]	c_{min}[3] [mm]	N_{perm}[3] [kN]	V_{perm}[3] [kN]	s_{min}[3] [mm]	c_{min}[3] [mm]
FZA 12 x 50 M8 D	gvz	40	100	20	2.4	5.4	40	35	4.8	7.7	40	35
	R	40	100	20	2.4	5.4	40	35	4.8	7.7	40	35
FZA 12 x 60 M8 D	gvz	50	110	20	4.3	7.5	50	45	8.3	10.8	50	45
	R	50	110	20	4.3	7.5	50	45	8.3	10.8	50	45
FZA 14 x 80 M10 D	gvz	60	130	40	5.7	23.5	60	55	10.9	23.5	60	55
	R	60	130	40	5.7	16.1	60	55	10.9	16.1	60	55
FZA 18 x 100 M12 D	gvz	80	160	60	11.4	36.4	80	70	16.8	36.8	80	70
	R	80	160	60	11.4	36.4	80	70	16.8	40.4	80	70
FZA 22 x 125 M16 D	gvz	100	200	100	16.4	50.8	100	100	23.4	59.4	100	100
	R	100	200	100	16.4	50.8	100	100	24.4	64.6	100	100

[1] Design according to EN 1992-4:2018 (for static resp. quasi-static loads). The partial safety factors for material resistance as regulated in the ETA as well as a partial safety factor for load actions of $\gamma_L = 1.4$ are considered. As a single anchor counts e.g. an anchor with a spacing $s \geq 3 \times h_{ef}$ and an edge distance $c \geq 1.5 \times h_{ef}$. Accurate data see ETA.

[2] Further steel grades, versions and technical data see ETA, e.g. for dry internal conditions, galvanised steel (gvz); for damp interiors and for outdoor use, stainless steel (R).

[3] In the case of combinations of tension and shear loads, bending moments with reduced or minimum spacing and edge distances (anchor groups), the design must be carried out in accordance with the provisions of the complete ETA and the provisions of the EN 1992-4:2018. We recommend using our anchor design software C-FIX.

Installation Instructions fischer Zykon-Anchor

European Technical Approval – Option 1 for cracked concrete

ETA-98/0004, FZA, FZA A4, FZA C

For extraordinary actions e.g. in nuclear power plants. See approval for anchor types*.

Fire resistance classification F 120

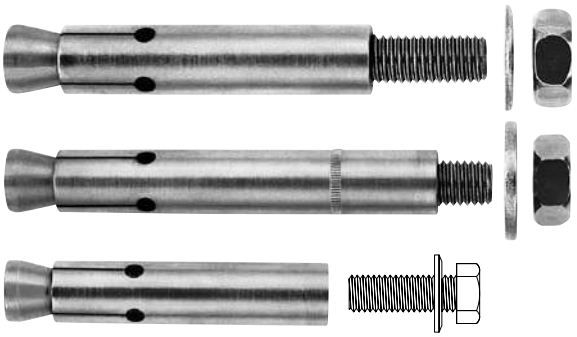
Sizes of anchors see examination report

Tension zone available

FM APPROVED

From thread M10

Shock-tested/ BZS approval for shock-resilient fixings in civil defence areas.



The regulations of the building-authority approvals ETA-98/0004 and respectively Z-21.1-1646 have to be observed.

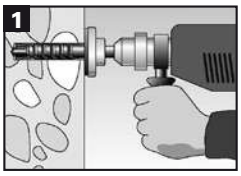
Pre-positioned installation

FZA

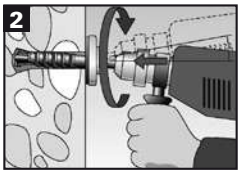


FZA-I

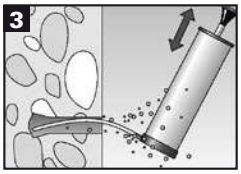




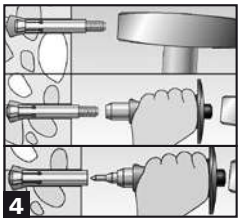
Create a drill hole at right angles to the surface of the anchor base with a hammer drill, using the corresponding Zykon universal drill bit FZUB. The required drill depth is reached once the FZUB depth stop meets the concrete.



Once the FZUB depth stop meets the concrete, create the drill hole undercut by making circular swivelling movements with the hammer drill while the hammer mechanism is engaged. Press the hammer drill firmly against the anchor base; 1–2 swivelling movements is sufficient for ⌀ 14 mm, with 3–5 movements for ⌀ 18 mm and ⌀ 22 mm.

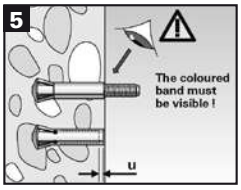


Clean drill hole;
blow out or clean with a vacuum cleaner.

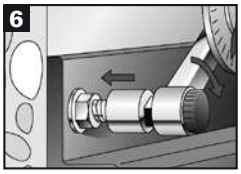


Insert the anchor into the drill hole and then drive the expansion sleeve in with hammer-set device FZE Plus, using a manual hammer. The anchor sleeve sits min. 1 mm behind the surface of the concrete (see picture 5).

Installing the FZA-I with internal thread the centring pin FZE-I should be used additionally.



The anchor is correctly expanded if the green colour on the thread of the tapered bolt is visible (FZA) or the gap u (FZA-I) (when installed acc. to table 8, annex 7) is fulfilled.

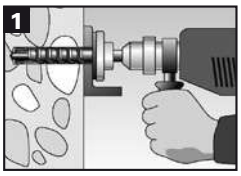


Mount installation object (e.g. anchor plate), washer and nut or screw (for FZA-I) and apply installation torque with torque spanner.
The thickness of the fixture have to fullfill the terms of the related approval.

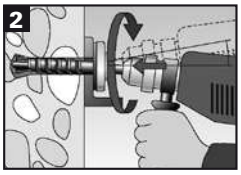
Push-through installation

FZA-D

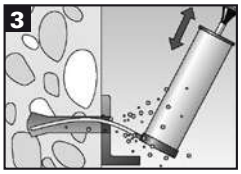




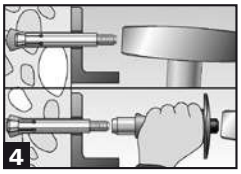
Create a drill hole through the installation object at right angles to the surface of the anchor base with a hammer drill, using the corresponding Zykon universal drill bit FZUB. The required drill depth is reached once the FZUB depth stop meets the concrete.



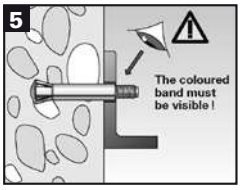
Once the FZUB depth stop meets the concrete, create the drill hole undercut by making circular swivelling movements with the hammer drill while the hammer mechanism is engaged. Press the hammer drill firmly against the fixture; 1–2 swivelling movements is sufficient for ⌀ 14 mm, with 3–5 movements for ⌀ 18 mm and ⌀ 22 mm.



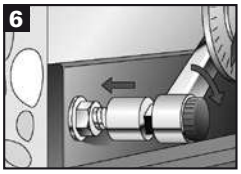
Clean drill hole;
blow out or clean with a vacuum cleaner.



Insert the anchor into the drill hole and then drive the expansion sleeve in with hammer-set device FZE Plus, using a manual hammer. The anchor sleeve sits min. 1 mm behind the surface of the attachment (see picture 5).

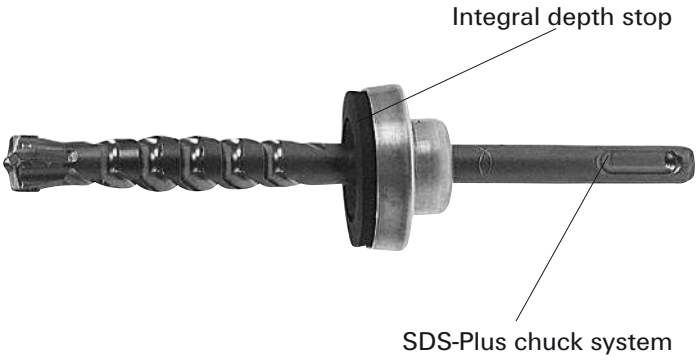


The anchor is correctly expanded if the green colour on the thread of the tapered bolt is visible.

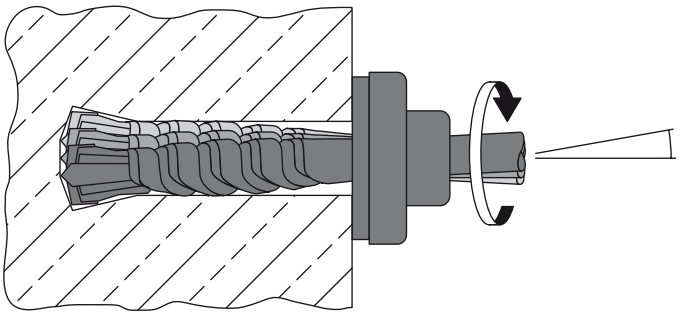


Mount installation object (e.g. anchor plate), washer and nut or screw (for FZA-I) and apply installation torque with torque spanner.

* Approval Z-21.1-1646 covers the following anchor types:
FZA: FZA 10 x 40 M 6, FZA 12 x 40 M 8, FZA 14 x 40 M 10 in galvanised steel and stainless steel A4.
FZA-I: FZA 12 x 40 M 6 I, FZA 14 x 60 M 8 I, FZA 18 x 80 M 10 I in galvanised steel and stainless steel A4.



The Zykon Universal drill FZUB drills a geometrically exact undercut drill hole in one operation without tool change.
The FZUB fits into all hammer drills with "SDS-Plus" chuck system and offers the same capacity and tool life. A feature of this drill is its new geometrical form and integral depth stop. These characteristics produce the simple and economical undercut drill hole.



One operation:
cylindrical drilling – swivel undercut.

The correct installation of fischer Zykon anchors in accordance with the official approval is possible only with the following original fischer Zykon tools.

Drilling and setting tools	Type	Art. No.	Suitable for fixing types Material: zinc plated, passivated steel, stainless steel A4 and high corrosion-resistant steel 1.4529 Bolt anchor	Through anchor	Internally-threaded anchor	Qty. per pack
 Zykon Universal drill FZUB	FZUB 10 x 40	60622	FZA 10 x 40 M 6	--------	--------	1
	FZUB 12 x 40	60623	FZA 12 x 40 M 8	--------	FZA 12 x 40 M 6 I	1
	FZUB 12 x 50	60627	FZA 12 x 50 M 8	FZA 12 x 50 M 8 D/10	FZA 12 x 50 M 6 I	1
	FZUB 12 x 60	60625	--------	FZA 12 x 60 M 8 D/10	--------	1
	FZUB 12 x 80	60626	--------	FZA 12 x 80 M 8 D/30	--------	1
	FZUB 14 x 40	60624	FZA 14 x 40 M 10	--------	--------	1
	FZUB 14 x 60	60628	FZA 14 x 60 M 10	--------	FZA 14 x 60 M 8 I	1
	FZUB 14 x 80	60629	--------	FZA 14 x 80 M 10 D/20	--------	1
	FZUB 14 x 100	60630	--------	FZA 14 x 100 M 10 D/40	--------	1
	FZUB 18 x 80	60634	FZA 18 x 80 M 12	--------	FZA 18 x 80 M 10 I	1
	FZUB 18 x 100	60632	--------	FZA 18 x 100 M 12 D/20	--------	1
	FZUB 18 x 130	60633	--------	FZA 18 x 130 M 12 D/50	--------	1
	FZUB 22 x 100	60636	FZA 22 x 100 M 16	--------	FZA 22 x 100 M 12 I	1
	FZUB 22 x 125	60638	FZA 22 x 125 M 16	FZA 22 x 125 M 16 D/25	FZA 22 x 125 M 12 I	1
 Setting tool FZE Plus	FZE Plus 10 [1]	44637	FZA 10 x . . . M 6	--------	--------	1
	FZE Plus 12	44638	FZA 12 x . . . M 8	FZA 12 x . . . M 8 D	FZA 12 x . . . M 6 I	1
	FZE Plus 14	44639	FZA 14 x . . . M 10	FZA 14 x . . . M 10 D	FZA 14 x . . . M 8 I	1
	FZE Plus 18	44640	FZA 18 x . . . M 12	FZA 18 x . . . M 12 D	FZA 18 x . . . M 10 I	1
	FZE Plus 22	44641	FZA 22 x . . . M 16	FZA 22 x . . . M 16 D	FZA 22 x . . . M 12 I	1

[1] without centring pin