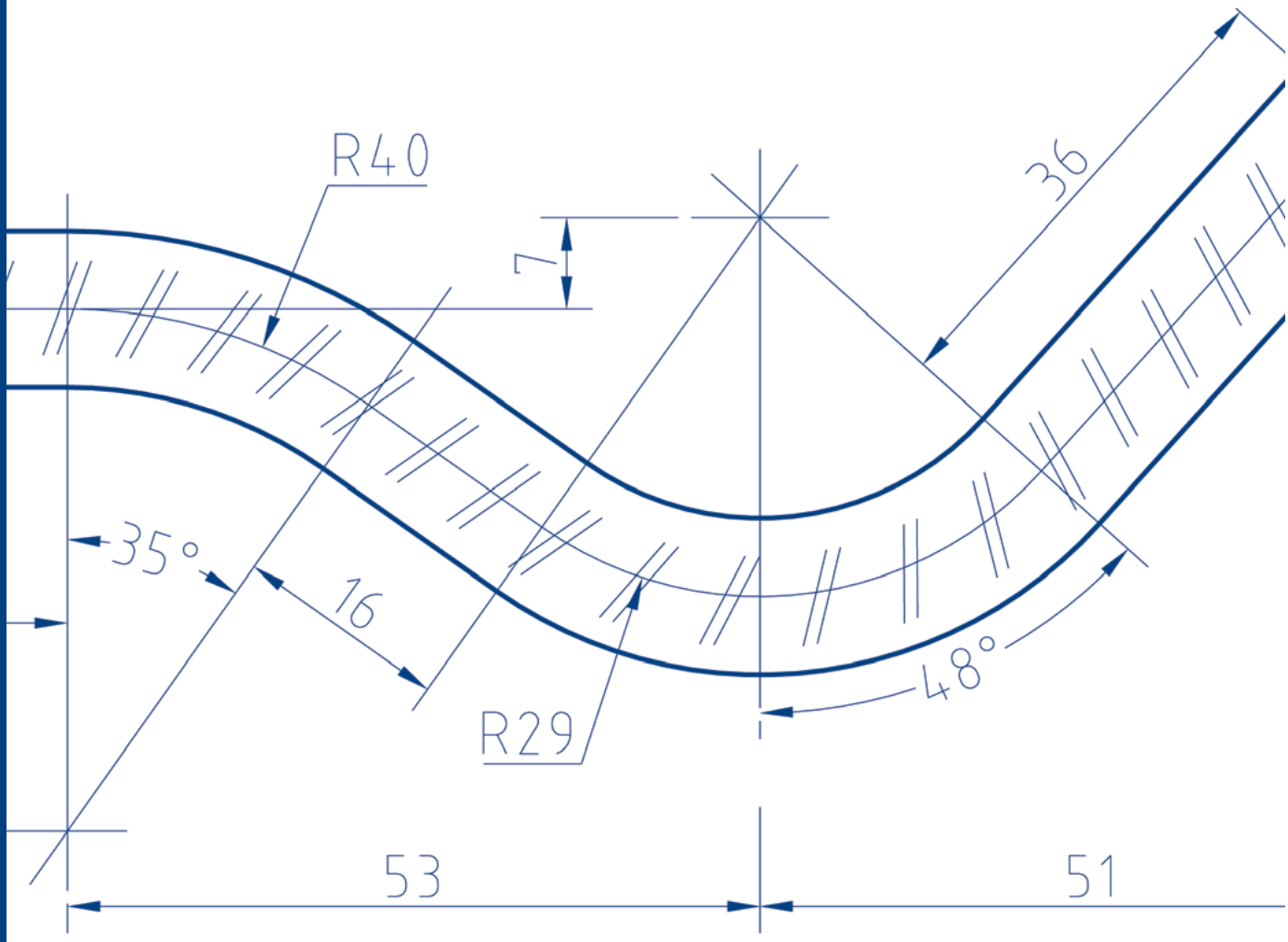


The Original Wave

- The patented wave underlines PFEIFER's leading technical position
- Optimised force transmission into thin precast panels
- Correct length of the rebar in combination with a discreet socket handle the panel with care
- Controlled force transmission at the whole length of the anchor without any tension or force peaks
- Maximum safety against pull-out
- Special designed wave shape for maximum force transmission without surface cracks
- Highest reserves with the load capacity enable a General German Technical Approval for the PFEIFER Waved Anchor DB682.

PFEIFER Waved Anchor – short

PFEIFER

Thread System

Lifting Anchor

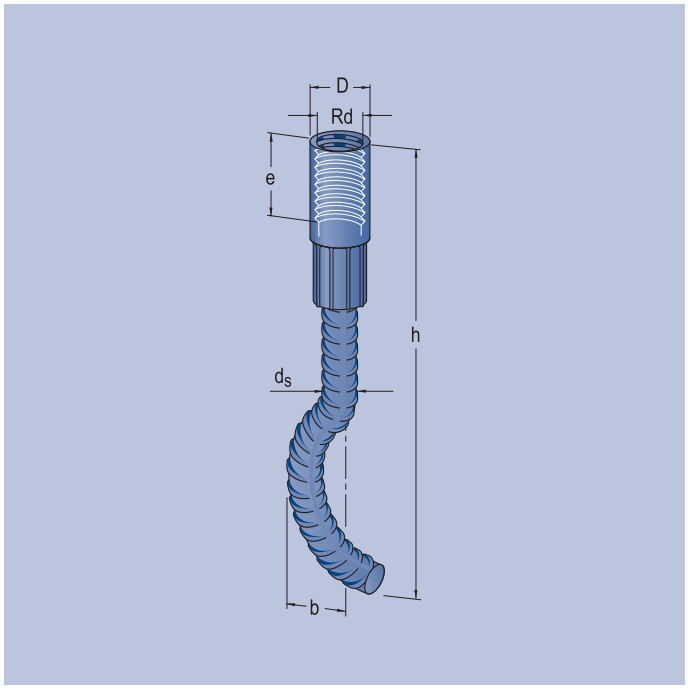
Item-No. 05.018

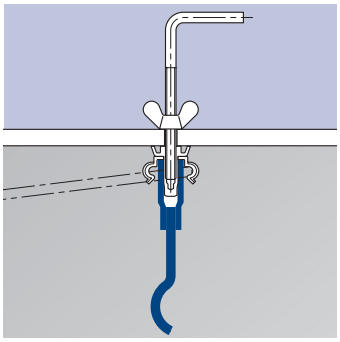
Pfeifer Waved Anchors have been approved by the German Institute for Civil Engineering in Berlin "Deutsches Institut für Bautechnik, Berlin" to carry permanent loads by approval no. Z-21.4-682.
Please see the related data sheet for "Waved Anchor DB682" in our brochure Fixing Systems.

PFEIFER-Waved Anchor short are manufactured completely with anchorage reinforcement for vertical installation into precast concrete units with large surface and average panel thickness.
The wave of the anchor guarantees a safe transmission of forces into the concrete.

Material:

Sockets high grade precision steel tube, zinc-plated or stainless steel swaged to waved bar BSt 500 S black





Ref. No. zinc-plated	Ref. No. stainless steel	MWL t	adm. F kN	Dimensions mm Rd	D	b	d_s	e	h	Packing Unit Pieces	Weight approx. kg/Packing Unit
05.018.123	**05.018.124**	0,5	5	Rd 12 x 1,75	15	15	8	22	108	200	13
05.018.143	**05.018.144**	0,8	8	Rd 14 x 2,0	18	20	10	25	130	100	12
05.018.163	**05.018.164**	1,2	12	Rd 16 x 2,0	21	21	12	27	167	100	20,5
05.018.183	**05.018.184**	1,6	16	Rd 18 x 2,5	24	25	14	34	175	50	14,5
05.018.203	**05.018.204**	2,0	20	Rd 20 x 2,5	27,2	25	16	35	187	50	20
05.018.243	**05.018.244**	2,5	25	Rd 24 x 3,0	31	30	16	43	250	50	30
05.018.303	**05.018.304**	4,0	40	Rd 30 x 3,5	40	40	20	56	300	1	1
05.018.363	**05.018.364**	6,3	63	Rd 36 x 4.0	47	50	25	69	380	1	2
05.018.423	**05.018.424**	8,0	80	Rd 42 x 4,5	54	50	28	80	450	1	3

(Note: 10kN = 10 Kilonewton = mass of 1ton or 1.000kg)

Sample order: 1000 Waved Anchors, short, zinc-plated, MWL 0,8 t
1000 Waved Anchors, ref. no. 05.018.143

MWL: Maximum working load

Installation Instructions for PFEIFER Waved Anchor – short

The following instructions pertain just to the above article. Additional General Instructions for the PFEIFER Thread System as well as the "General Technical Introduction concerning the PFEIFER Lifting Anchor Systems" must also be observed. The PFEIFER Waved Anchor is a component of the PFEIFER Thread System which has been tested and is in accordance with the "Safety Regulations for Lifting Anchors and Systems for Prefabricated Concrete Parts".

1. Reinforcement

PFEIFER Waved Anchors can be installed – as from a concrete compressive strength of 15 N/mm² with the minimum necessary surface reinforcement according to Table 1 – without special additional reinforcement, provided that the maximum angle of inclination (Section 3) is not exceeded. The swaged on waved rebar itself then transmits the local forces into the concrete. The user is then responsible for transmitting the forces within the precast concrete unit.

Table 1 – Surface reinforcement

Size	Surface* Reinforcement [mm²/m]	Size	Surface* Reinforcement [mm²/m]
Rd 12	131	**Rd 24**	188
Rd 14	131	**Rd 30**	188
Rd 16	131	**Rd 36**	188
Rd 18	188	**Rd 42**	188
Rd 20	188		

* The required amount of reinforcement has to be installed in both directions.

2. Edge distance, minimal distance, minimal thickness of building part

In order to guarantee the local transfer of forces into the concrete, certain distances between the individual anchors and from the edge must be observed. It is also important that the thickness of the precast concrete unit does not fall short of a certain minimum, in order to prevent corrosion.
Table 2 shows the minimum values for the individual anchors. See also Fig. 1.

Figure 1

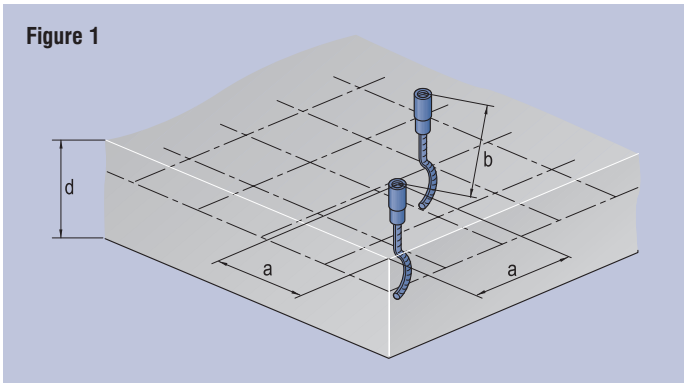


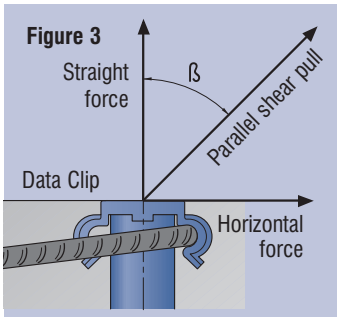
Table 2 – Minimal dimensions

Size	adm. F kN	Edge Distance a mm	Minimum Distance b mm	Minimum Panel Thickness d mm
Rd 12	5	95	200	130
Rd 14	8	115	220	150
Rd 16	12	135	260	195
Rd 18	16	155	300	195
Rd 20	20	170	350	215
Rd 24	25	220	440	270
Rd 30	40	275	550	320
Rd 36	63	300	600	405
Rd 42	80	400	800	470

The minimum panel thickness was determined by taking the concrete cover to 20 mm to section. For other uses and environmental conditions, the concrete cover c corresponding to section 6.3 of DIN 1045-1 must be increased so enlarging the panel thickness (Fig. 2.). When making a recessed installation with the PFEIFER Recess Disc or the Magnetic Fixing, the minimum panel thickness must be increased by the depth of the recess.

3. Parallel shear reinforcement

Figure 3



If the Waved Anchors are loaded by parallel shear pull (see Fig. 3 and Fig. 4), the ensuing horizontal components (Fig. 2) must be adopted by the precast unit. Therefore, at an angle of inclination $\beta > 12,5°$ it is necessary to employ a rebar (shear force reinforcement) in the opposite direction of the horizontal component of the force on the anchor (see Table 3).
This reinforcement must be fixed to the Waved Anchor with the Data Clip; close contact is imperative.

Figure 4

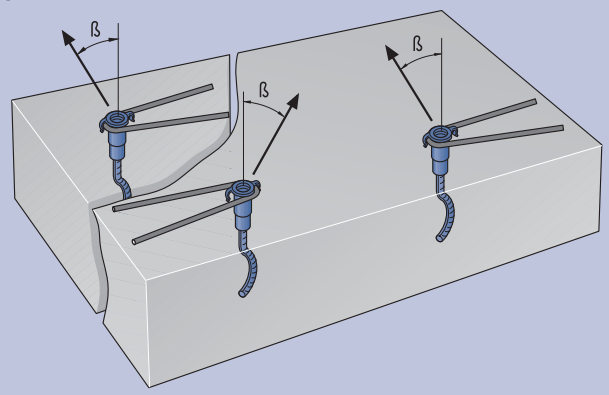


Table 3 – Parallel shear pull reinforcement with parallel pull with an angle of inclination $\beta > 12,5°$

Size	adm. F KN	d_S mm	L mm	d_{Br} mm
Rd 12	5	6	150	24
Rd 14	8	6	200	24
Rd 16	12	8	200	32
Rd 18	16	8	250	32
Rd 20	20	8	300	32
Rd 24	25	10	300	40
Rd 30	40	12	400	48
Rd 36	63	14	550	56
Rd 42	80	16	600	6

Length (L) according to DIN 1045-1, Section 12.6.2 for C12/15, good bond condition

Figure 2

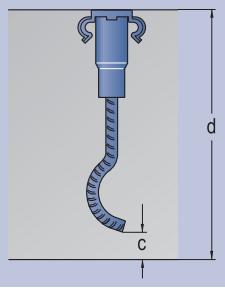
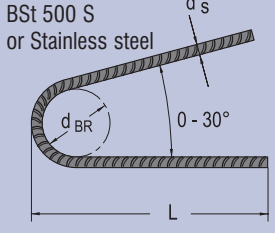


Figure 5



PFEIFER Engineering Services

- Installation proposals even for the most difficult situations
- Anchoring under boundary conditions, not covered by the regular installation instructions
- Technical consulting you can rely on in every situation
- Our comprehensive knowledge base contains solutions based on the results of continuous R&D work and regular tests
- Always providing the most economical solution for precast construction