

# PFEIFER WK Anchor

Item No. 05.185

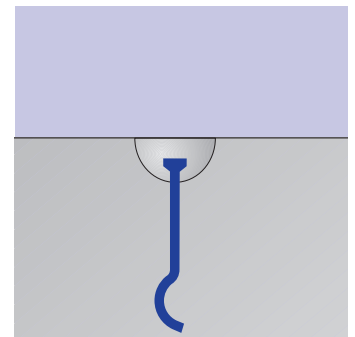
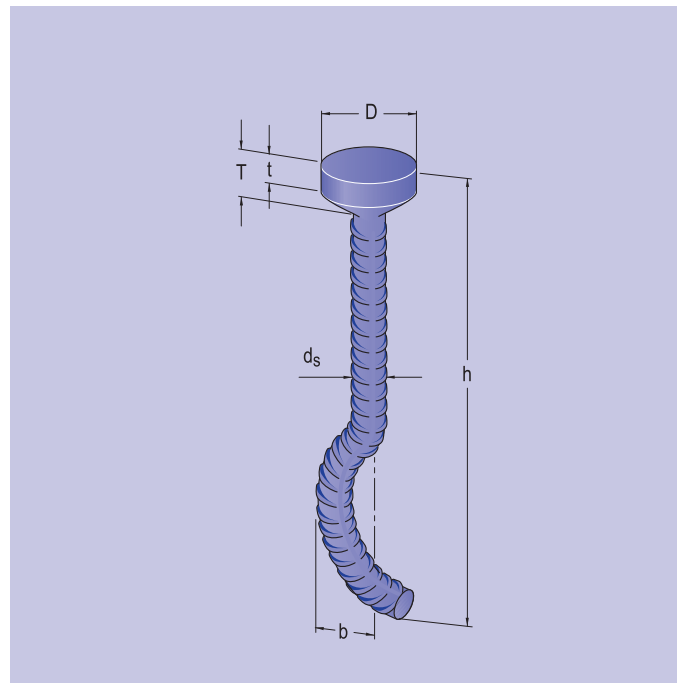


**PFEIFER**

WK System  
Lifting anchor

PFEIFER WK Anchors are in particular suited for the safe transport of linear reinforced concrete parts such as columns and beams. Due to the existing reinforcement the anchor is able – despite its short design – to transfer forces safely. The ribbed bars and the specially patented wave shape tail enable the anchor to transfer the force gently into the concrete so that even in thin columns and beams the danger of splitting is reduced to a minimum.

Material:  
BSt 500 S



Ref.-No plain	Ref.-No zinc-plated	Type	Load-bearing capacity t	adm. $F_z^*$ kN	adm. $F_0$ kN	Dimensions in mm						Packing unit piece	Weight approx. kg/packing unit
						$d_s$	D	h	t	T	b		
05.185.020.145.2	05.185.020.145.3	WK	2,0	20	10	14	26	145	7	10	38	100	21,6
05.185.025.190.2	05.185.025.190.3	WK	2,5	25	12,5	14	26	190	7	10	38	100	26,8
05.185.040.230.2	05.185.040.230.3	WK	4,0	40	20	20	36	230	9	13	53	25	18,0
05.185.063.270.2	05.185.063.270.3	WK	6,3	63	31,5	25	47	270	11	18	67	25	31,9
05.185.080.300.2	05.185.080.300.3	WK	8,0	80	40	28	47	300	11	18	80	20	37,1
05.185.100.325.2	05.185.100.325.3	WK	10,0	100	50	28	47	325	11	18	80	20	37,3
05.185.125.350.2	05.185.125.350.3	WK	12,5	125	62,5	32	70	350	15	26	95	10	28,4
05.185.150.400.2	05.185.150.400.3	WK	15,0	150	75	36	70	400	15	26	105	1	3,8
05.185.200.500.2	05.185.200.500.3	WK	20,0	200	100	40	70	500	15	26	103	1	5,4

(Annotation: 10 kN = 10 Kilonewton  $\approx$  weight force of a mass of 1 t)

\*See installation guidelines 2.2

Sample order for 50 PFEIFER WK Anchor, plain, with 4 t load bearing capacity:  
50 PFEIFER WK Anchor Ref No. 05.185.040.230.2

# Instructions for use and installation guidelines WK Anchor

## 1. Instructions for use

Due to the new design which makes use of the concrete part's reinforcement the following load types are possible:

**Straight pull**, occurs for example when lifting with the help of a spreader beam (figure 5). Adhering to the minimum standards of table 1 assures full security against concrete breakout under straight pressure. It is allowable to vary the diameter and the spacing of the reinforcement as long as the following two conditions are adhered to. Firstly, the specified cross sectional area per linear metre of each cross section must be observed. Secondly, the distance of the stirrup next to the WK Anchor has to be the same or smaller than value a given in table 1. Exceeding the width of the panel does not affect the anchor's load bearing capacity even though the reinforcement is then further away from the anchor and from the area of load application.

**Parallel shear pull** occurs for example when lifting with a 2-sling set (Figure 6). When adhering to the values given in table 1 and figure 9 parallel shear pull is admissible up to an angle of  $45^\circ$  (measured from the perpendicular). The shear reinforcement bar (see figure 9/table 2) together with the stirrups and the parallel reinforcement bars transfer the forces into the concrete. For all angles up to  $45^\circ$  the admissible force FZ in the direction of the load remains unchanged (see table 2). Please note that the resulting force increases enormously when increasing the load's angle of inclination even though the dead load of the precast unit stays the same (see "General installation guidelines"). Parallel shear pull in direction of the free edge is not admissible.

**Transversal shear pull in longitudinal direction of the beam** occurs for example when turning or erecting columns (figure 7). When utilising one anchor whilst turning a column or two anchors when erecting a column only half of the column's dead load affects each anchor. For these cases the admissible force FQ (Load bearing capacity) is given in table 1. This load bearing capacity adm. FQ allows the same edge distances and installation conditions as those for straight pull.

**Erecting and vertical lifting by the column head** occurs when positioning a lying column whose WK Anchor is installed at its head (figure 8). The reinforcement stirrups in the area of the column's head are usually packed close enough so that – after adding only a few additional U-shaped stirrups – the force caused by the columns dead load can be transferred safely. The minimum required amount of reinforcement is given in table 3 and figure 10, as well as details about the diameters of the stirrups and the distances.

### Concerning figures 1 to 4:

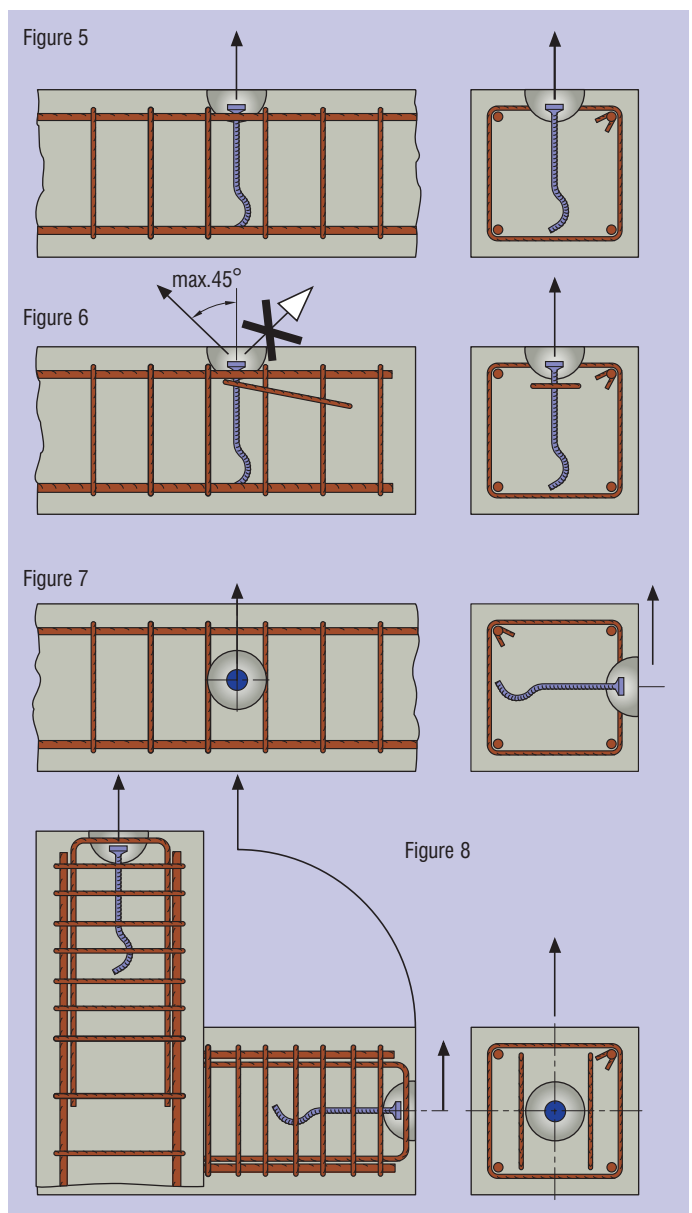
The load cases straight pull (figure 5), parallel shear pull (figure 6) and transversal shear pull (figure 7) require reinforcement as given in figure 5 and table 1.

In the event of parallel shear pull (figure 6) it is necessary to refer to table 2 as well.

In the event of load case erecting and vertical lifting by the column head (figure 8) figure 10 and table 3 are to be observed. The required reinforcement is usually existent so that no additional effort is necessary.



**The WK Anchor has to be positioned in the middle between two stirrups.**



## 2. Reinforcement

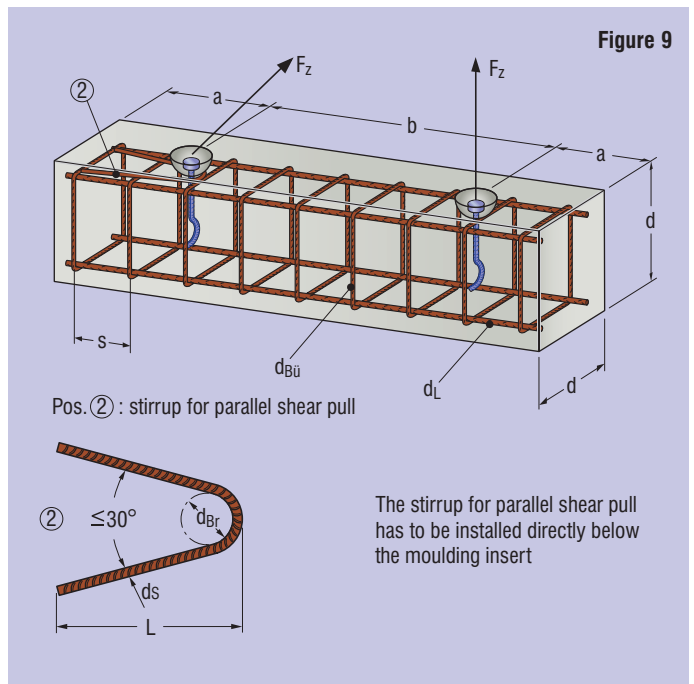
**Table 1 – Dimensions of the basic reinforcement for straight pull, parallel shear pull and transversal shear pull**

Size	a cm	b cm	d cm	$d_{Bü}$ mm	s cm	$d_L$ mm
WK 2	35	70	17	6	15	12
WK 2,5	45	90	20,5	6	15	14
WK 4	60	120	26	8	20	16
WK 6,3	70	140	30	10	20	20
WK 8	75	150	36	10	20	25
WK 10	80	160	38	12	20	25
WK 12,5	85	170	40	14	20	25
WK 15	100	200	45	16	20	28
WK 20	120	240	60	20	20	28

**Table 2 – Load bearing capacity and additional reinforcement for parallel shear pull up to an angle of 45° (Stirrups, longitudinal reinforcement, distances are valid as given in table 1)**

Size	Load bearing capacity t	adm. $F_z$ $\beta_w = 15 \text{ N/mm}^2$ kN	$d_s$	L cm	adm. $F_s$ $\beta_w \geq 20 \text{ N/mm}^2$ kN
WK 2	2,0	20	8	30	20
WK 2,5	2,5	25	8	35	25
WK 4	4,0	40	8	40	40
WK 6,3	6,3	63	12	45	63
WK 8	8,0	80	12	55	80
WK 10	10,0	100	14	60	100
WK 12,5	12,5	125	16	65	125
WK 15	15,0	150	16	80	150
WK 20	20,0	200	20	90	200

1 cm  $\triangleq$  10 mm

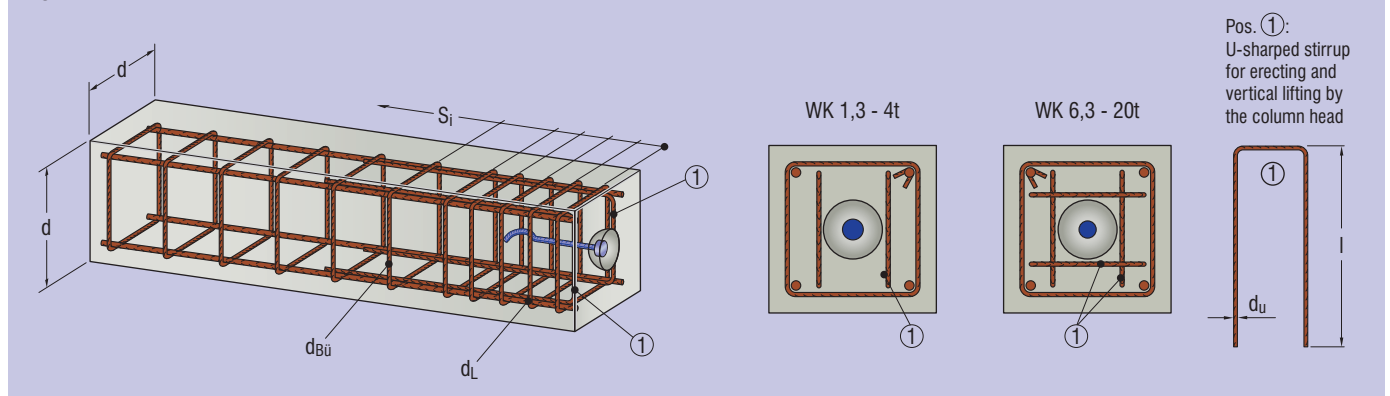


**For precast concrete units with a compressive strength  $\beta_w \geq 20 \text{ N/mm}^2$  at the time of lifting parallel shear reinforcement is not necessary.**



**Attention: For the smallest anchor size in table 2 (shear pull), the admissible force must be reduced to 11 kN for concrete with a compressive strength of 15 N/mm<sup>2</sup>.**

**Figure 10**



**Table 3 – Additional reinforcement for erecting and vertical lifting by the column head (figure 10)**

Size	adm. $F_z$ kN	adm. $F_Q$ kN	d cm	$d_{Bü}$ mm	s cm	$d_L$ mm	Number U-shaped stirrup	$d_u$ mm	l cm
WK 2	20	10	17	8	3, 3, 5, 5, 12,5	12	2	6	50
WK 2,5	25	12,5	19	8	3, 3, 5, 5, 12,5	14	2	8	50
WK 4	40	20	26	10	3, 5, 5, 5, 5, 15	16	2	10	60
WK 6,3	63	31,5	30	12	3, 3, 5, 5, 5, 15	20	4	8	70
WK 8	80	40	36	12	3, 5, 5, 5, 5, 5, 25	25	4	10	75
WK 10	100	50	38	14	3, 5, 5, 5, 5, 5, 25	25	4	10	90
WK 12,5	125	62,5	40	16	3, 5, 5, 5, 5, 5, 25	25	4	12	95
WK 15	150	75	45	20	3, 5, 5, 5, 5, 5, 5, 30	28	4	14	100
WK 20	200	100	60	20	3, 5, 5, 5, 5, 5, 5, 5, 30	28	4	16	150