Peikko WRA Transport Anchors

Typ	$F_{zul.}$ $\beta_{max.}$ 30 ° [kN]	Concrete strength β_w 15 N/mm² d [cm]	30 N/mm² d [cm]	a [cm]	b [cm]	e [cm]	f [cm]
WRA-0,8	8,0	7	5	27	54	15	6
WRA-1,2	12,0	9	6	31	62	16	6,5
WRA-1,6	16,0	12	8	35	69	16,5	7
WRA-2,0	20,0	14	10	42	83	20	8
WRA-2,5	25,0	16	11	45	89	23	8,5
WRA-4,0	40,0	22	15	50	100	24	10
WRA-5,2	52,0	29	20	52	103	26	10
WRA-6,3	63,0	32	22	58	115	28	11
WRA-8,0	80,0	40	28	65	129	32	12
WRA-10,0	100,0	44	31	73	146	39	13,5
WRA-12,5	125,0	56	39	81	162	42	15
WRA-16,0	160,0	62	43	93	186	45	16,5
WRA-20,0	200,0	68	48	106	212	55	18
WRA-25,0	250,0	75	53	121	241	60	20

Chart 3 Distances and dimensions for parallel assembly

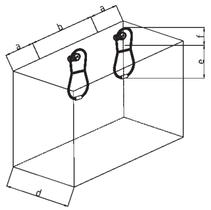

Figure 5 Parallel assembly

Article	$F_{zul.}$ $\beta_{max.}$ 30 ° [kN]	Concrete strength β_w 15 N/mm² d [cm]	30 N/mm² d [cm]	a [cm]	b [cm]	e [cm]	f [cm]
WRA-0,8	8,0	13,5	13,5	27	54	15	6
WRA-1,2	12,0	14	14	31	62	16	6,5
WRA-1,6	16,0	17	17	35	69	16,5	7
WRA-2,0	20,0	17,5	17,5	42	83	20	8
WRA-2,5	25,0	18	18	45	89	23	8,5
WRA-4,0	40,0	22	22	50	100	24	10
WRA-5,2	52,0	29	22	52	103	26	10
WRA-6,3	63,0	32	27,5	58	115	28	11
WRA-8,0	80,0	40	28	65	129	32	12
WRA-10,0	100,0	44	31	73	146	39	13,5
WRA-12,5	125,0	56	39	81	162	42	15
WRA-16,0	160,0	62	43	93	186	45	16,5
WRA-20,0	200,0	68	48	106	212	55	18
WRA-25,0	250,0	75	53	121	241	60	20

Chart 4 Distances and dimensions for vertical assembly

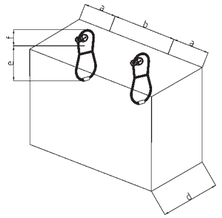

Figure 6 Vertical assembly

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WRA Transport Anchors

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11/2008

1. General Details

Peikko WR Anchors are part of the Peikko transport anchor system. They comply with the Accident Prevention & Insurance Association's safety rules "Safety regulation for transport anchors and systems of precast concrete parts" (BGR106). The anchors are dimensioned in a way that the necessary minimum breaking force and the number of single wires is held.

The compliance of these installation and application instructions as well as the consideration of the general installation and application instructions is essential for the insert of Peikko WR Anchors. The in each case effective installation and application instructions of the load-carrying equipment are to be considered, too.

Peikko WR Anchors are designed for the transport of precast concrete parts. Within the transport chain from the production until the installation of the precast concrete part multiple attaching is acceptable. These application does not count as repeated use. An application for repeated use (e.g. crane ballast, bulkhead gate closing) is not valid.

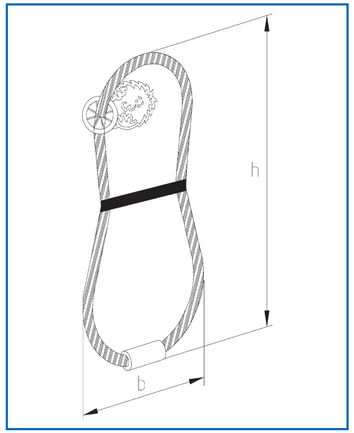

Figure 1. WR-Anker

Article		load capacity	colour code	Dimensions*	
blank	galvanised	(t)		h	b
WRA-0,8	WRA-0,8Z	0,8	Pure white	210	100
WRA-1,2	WRA-1,2Z	1,2	Blazing red	225	110
WRA-1,6	WRA-1,6Z	1,6	Light pink	235	120
WRA-2,0	WRA-2,0Z	2,0	White-green	280	130
WRA-2,5	WRA-2,5Z	2,5	Anthracite	315	140
WRA-4,0	WRA-4,0Z	4,0	Emerald-green	340	150
WRA-5,2	WRA-5,2Z	5,2	Curry-yellow	360	160
WRA-6,3	WRA-6,3Z	6,3	Light blue	390	195
WRA-8,0	WRA-8,0Z	8,0	Silver-grey	440	250
WRA-10,0	WRA-10,0Z	10,0	purple	525	270
WRA-12,5	WRA-12,5Z	12,5	yellow	570	300
WRA-16,0	WRA-16,0Z	16,0	Blue-lavender	615	330
WRA-20,0	WRA-20,0Z	20,0	Yellow-grey	730	360
WRA-25,0	WRA-25,0Z	25,0	Clay brown	800	390
* Metrics h and b can diversify due to flexibility of the rope					

2. Materials

Peikko WR Anchors are made of steel wire ropes according to DIN EN 12385-4 and connected to special ferrules according to EN 13411-3. The minimum strength of the steel wire ropes used by Peikko is 1770 N/mm².

3. Application

Peikko WR Anchors are designed for the transport of precast concrete parts. The installation is carried out before the concreting of precast concrete part in the mould. Usually the anchors are arranged on the mould-open side and have to be securely fixed.

The WR Anchors' secure fixing can be carried out by additionally brought in reinforcing steel bars. Please assure in any case these bars are not laid onto the anchor's press fitting. In some cases this arrangement is not possible so that a block out in the boarding is necessary. WR Anchors installed this way have to be sealed carefully where they leave the boarding. An insufficient sealing may lead to the leakage of concrete slurry and the accumulation of a rock pocket. So the load capacity will be decreased. After hardening of the concrete and the removal of the boarding the precast element may be directly attached with the load hook on the overlaying loops of the WR Anchors.
WR Anchors are only allowed for straight and angle pull up to max. 30°.

4. Marking

Peikko WR Anchors are marked with plastic tags (Figure 2). The tags may be pushed to the desired position on the rope, outside of the concrete due to the fins and stay there without further fastening. A proper and safe classification of the anchor's possible load capacity is thus guaranteed anytime. On the marker the producer and the allowed load capacity are named. Additionally the shield is coloured according to the Peikko colour code system, thus the carrying load capacity is already obvious because of the colour.

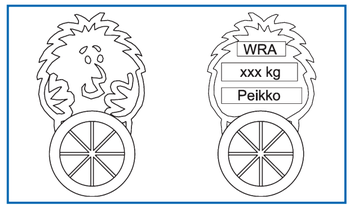

Figure 2. Tag

5. Application limitations

WR Anchors must not be bent sharply during storaging of the pre-fabricated elements as damages on the rope could be caused, which may lead to malfunction of the anchor. Storaging outside may lead to quick corrosion since blank ropes do only have a minor corrosion prevention. But if the prefabricated parts have to be storaged outside before the final installation for a longer time, we recommend the application of galvanised WR Anchors. Already attached and heavily corroded WR Anchors must not be used for transport any longer.
The near-surface application of WR Anchors is not recommended, if a constant humidity penetration of the concrete is expected. WR Anchors then are considered of being installed near-surface, if they are located in an area of once or twice of the concrete cover according to the appropriate environmental conditions of the DIN 1045.
WR Anchors are **not suitable** for being used in concrete with a high concentration of chloride. If the limit values according to DIN 1045 and DIN EN 206-1 are exceeded the concrete is considered to have an increased concentration of chloride.

6. Safety Instructions

WR Anchors with visible damages like e.g. cord breakage, bents or crushes must not be used. Acids and bases have to kept off the anchors. The limit values for diagonal pull (maximum 30°) have to be held. It must be pointed out that the transition radius of the hook is at least as big as the rope diameter of the WR Anchor while attaching with hooks. The application of wrong hooks (too small, too big or too sharp-edged) leads to damage of the anchor's bearing load. When attaching with shackles the bolt's diameter must not be smaller than twice the anchor's rope diameter. We recommend the fivefold rope diameter for the bolt, if the bearing loads are higher than 6,3 t. Weldings and soldering on Peikko WR Anchors are not allowed in either case.

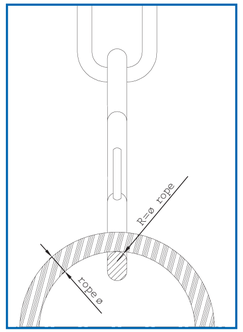

Figure 3. ~~Kook~~ with transition radius

Peikko WRA Transport Anchors

7. Reinforcement

If WR Anchors are used, concrete parts have to be armed with a minimum surface reinforcement. Already existing static or constructive reinforcements may be taken into account for the necessary minimum reinforement according to chart 2 and figure 4. The mat reinforcement may be replaced by steel bars. If it is necessary to cut single bars out of the mesh reinforcement in order to install the WR Anchors, these bars has to be replaced by steel bars of the same diameter and strength with adequate overlapping length according to DIN 1045-1. Before the first loading of the WR Anchor, the concrete has to have accomplished a minimum compression strength of 15 N/mm². The user is responsible for transmission of the occurring forces in the element.

Article	Mesh reinforcement [mm²/m]	L [cm]	H [cm]
WRA-0,8	131	40	25
WRA-1,2	131	45	30
WRA-1,6	131	50	35
WRA-2,0	188	55	35
WRA-2,5	188	65	45
WRA-4,0	188	70	50
WRA-5,2	188	80	55
WRA-6,3	188	95	60
WRA-8,0	221	105	70
WRA-10,0	221	120	80
WRA-12,5	221	130	90
WRA-16,0	221	150	100
WRA-20,0	377	170	115
WRA-25,0	377	195	130

Chart 2 Minimum reinforcement

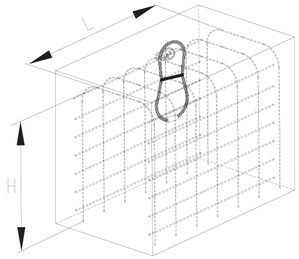

Figure 4 Reinforcement adjustment

8. Clearance and component thickness

For a safe load transmission in the element, the Peikko WR Anchors have to be positioned in the precast concrete part while considering the element`s minimum measurements and clearances. The allowed load capacities $F_{zul.}$ of WR Anchors for straight or angle pull (only approved for maximum β of 30°) are shown in fig. 3 and 4. Mind the compliance of the measurements "e" and "f" corresponding to fig 3 and 4!