Deutsches Institut für Bautechnik

Public-law institution jointly founded by the federal states and the Federation

European Technical Assessment Body for construction products

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European Technical Assessment ETA-16/0430 of 18 February 2026

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the European Technical Assessment:	Deutsches Institut für Bautechnik
Trade name of the construction product	WELDA®
Product family to which the construction product belongs	Steel plate with cast-in anchors
Manufacturer	PEIKKO GROUP CORPORATION Voimakatu 3 15101 Lahti FINNLAND
Manufacturing plant	Peikko Manufacturing Plants
This European Technical Assessment contains	14 pages including 3 annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with Article 95(4) of Regulation (EU) No 2024/3110, on the basis of	EAD 330084-00-0601
This version replaces	ETA-16/0430 issued on 3 July 2023

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Specific Part

1 Technical description of the product

The WELDA® steel plate with welded on anchors consist of steel and stainless steel.

The anchors have a diameter of the shaft of 10, 12, 13, 16, 19, 20, 22 and 25 mm. The Anchors consist of steel, stainless steel or ribbed reinforcing steel. At one end an anchor head is formed by upsetting. The other end is prepared for drawn arc stud welding with ceramic ferrule or shielding gas or metal active gas (MAG) welding with different electrodes (method 783, method 135, method 136 and method 138 according to EN ISO 4063).

The steel plates with welded on anchors are embedded surface-flush in the concrete.

The product description is given in Annex A.

2 Specification of the intended use in accordance with the applicable European Assessment Document

The performances given in section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annex B.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the anchor of at least 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Characteristic resistance to steel failure of anchors under tension load	$N_{Rk,s}$ see Annex C1
Characteristic resistance to pull-out failure under tension load	$N_{Rk,p}$ see Annex C1
Characteristic values for resistance to concrete cone failure under tension load	h_{ef}, $s_{cr,N}$, $c_{cr,N}$ k_{cr}, k_{ucr} see Annex C1
Characteristic resistance to steel failure for anchors under shear load without lever arm	$V_{Rk,s}$ see Annex C2
Characteristic value for resistance to pry-out failure	k_3 see Annex C2
Displacements	δ_{N0}, δ_{V0}, $\delta_{N\infty}$, $\delta_{V\infty}$ see Annex C1 and C2

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with EAD No. 330084-00-0601, the applicable European legal act is: [96/582/EC].

The system to be applied is: 1

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

The following standards are referred to in this European Technical Assessment:

EN ISO 4063:2023	Welding, brazing, soldering and cutting - Nomenclature of processes and reference numbers (ISO 4063:2023)
EN 10025-2:2019	Hot rolled products of structural steels - Part 2: Technical delivery conditions for non-alloy structural steels
EN 10088-1:2023	Stainless steels - Part 1: List of stainless steels
ISO/TR 15608:2017	Welding - Guidelines for a metallic materials grouping system
EN 1992-1-1:2023	Eurocode 2: Design of concrete structures - Part 1-1: General rules - Rules for buildings, bridges and civil engineering structures
EN ISO 13918:2018+A1:2021	Welding - Studs and ceramic ferrules for arc stud welding (ISO 13918:2017 + Amd 1:2021)
EN 206:2013 + A2:2021	Concrete - Specification, performance, production and conformity
CEN/TS 1992-4-2:2009	Design of fastenings for use in concrete - Part 4-2: Headed Fasteners
CEN/TS 1992-4-1:2009	Design of fastenings for use in concrete - Part 4-1: General
EN 1992-4:2018	Eurocode 2 - Design of concrete structures - Part 4: Design of fastenings for use in concrete

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beglaubigt:
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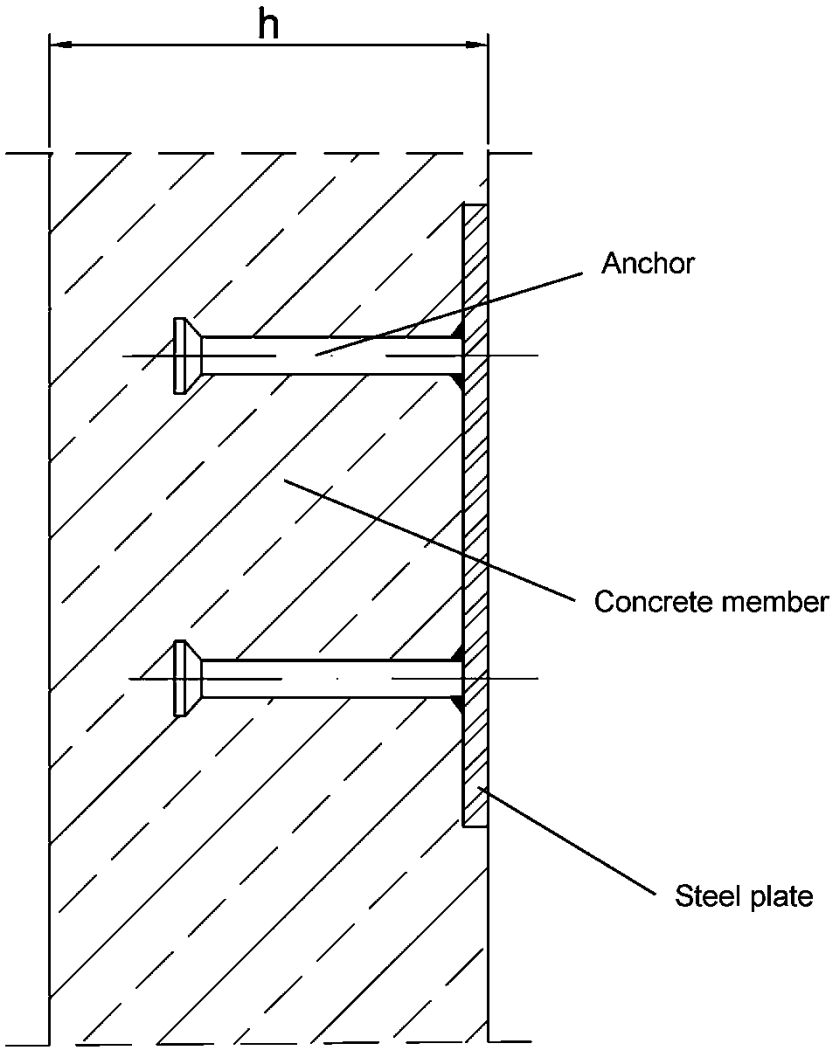

h = thickness of concrete member

WELDA® = Steel plate with welded on anchors made of steel or stainless steel

WELDA®	**Annex A1**
Product description Installation condition	

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Table 1: Materials, welding processes

	Part	Designation	Type	Material	Mechanical properties
WELDA®	Plate	Steel plate see below	P1	Steel S235JR, S235J0, S235J2, S355JR, S355J0, S355J2, S355K2 EN 10025-2	according to EN 10025-2
			P2	Stainless steel 1.4301, 1.4303, 1.4306, 1.4307 EN 10088-1	according to EN 10088-1
			P3	Stainless steel 1.4401, 1.4404, 1.4432, 1.4436, 1.4439, 1.4571 EN 10088-1	according to EN 10088-1
	Anchor	Headed studs EN ISO 13918 Types SD1, SD3 Welding process 783 according to EN ISO 4063	W1	SD1, Material group 1 with the limits: C ≤ 0,2 %, CEV ≤ 0,35, Al ≥ 0,02 % ISO/TR 15608	$f_{uk} \geq 450$ N/mm² $f_{uk} \leq 1000$ N/mm² $f_{yk} \geq 350$ N/mm²
			W2	SD3, Stainless steel 1.4301, 1.4303 EN 10088-1	$f_{uk} \geq 500$ N/mm² $f_{uk} \leq 1000$ N/mm² $f_{yk} \geq 350$ N/mm²
		Anchor bolts with smooth shaft provided with an anchor head Welding process 135, 136 and 138 according to EN ISO 4063	W3	Steel S235J2, S355J2 EN 10025-2	$f_{uk} \geq 450$ N/mm² $f_{uk} \leq 1000$ N/mm² $f_{yk} \geq 350$ N/mm²
			W4	Stainless steel 1.4301, 1.4303, 1.4306, 1.4307 EN 10088-1	$f_{uk} \geq 450$ N/mm² $f_{uk} \leq 1000$ N/mm² $f_{yk} \geq 350$ N/mm²
			W5	Stainless steel 1.4401, 1.4404, 1.4432, 1.4436, 1.4439, 1.4571 EN 10088-1	$f_{uk} \geq 450$ N/mm² $f_{uk} \leq 1000$ N/mm² $f_{yk} \geq 350$ N/mm²
		Anchor bolts of ribbed reinforcing steel provided with an anchor head Welding process 135, 136 and 138 according to EN ISO 4063	W6	Reinforcing steel B500B EN 1992-1-1, Annex C	$f_{uk} \geq 550$ N/mm² $f_{uk} \leq 1000$ N/mm² $f_{yk} \geq 500$ N/mm²

Table 2: Dimensions

WELDA® Anchor Type		**W1 – W5**								**W6**		
Nominal size diameter of shafts	**d [mm]**	**10**	**12**	**13**	**16**	**19**	**20**	**22**	**25**	**16**	**20**	**25**
Minimum nominal diameter of anchor head	min d_h [mm]	19	24	25	32	32	40	35	40	38	46	55
Bearing area of anchor head	A_h [mm²]	205	339	358	603	521	942	582	766	933	1348	1885
Thickness of the anchor head (Headed studs)	t_h [mm]	7	8	8	8	10	10	10	12	-	-	-
Thickness of the anchor head (Anchor bolts)	t_h [mm]	3	3	-	4	-	5	-	-	4	4	4
Nominal length of anchor	min h_{nom} [mm]	50	50	50	50	75	75	75	75	50	75	75
	max h_{nom} [mm]	200	200	400	525	525	525	525	525	800	800	1000

WELDA®

Product description
Dimensions, welding processes, materials

Annex A2

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Table 3: Steel plate and anchor combinations

	Product name	Plate	Anchors
1	WELDA®	P1	W1/W3
2	WELDA® R	P2	W1/W3
3	WELDA® Rr	P2	W2/W4
4	WELDA® A	P3	W1/W3
5	WELDA® Ar	P3	W2/W4
6	WELDA® Aa	P3	W5
7	WELDA® Strong	P1	W6
8	WELDA® Strong R	P2	W6
9	WELDA® Strong A	P3	W6

Marking of product

Products are marked with identifying mark of producer with a product name on the visible face of steel plate.

Example from marking

peikko group

WELDA® 150 x 150 Aa

WELDA®	Annex A3
Product description Steel plate and anchor combinations, Product Marking	

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Specifications of intended use

Loading of steel plate with welded on anchors subject to:

- Static and quasi-static loads in tension and shear.

Base materials:

- Reinforced compacted normal weight concrete according to EN 206 without fibres.
- Strength classes C20/25 to C90/105 according to EN 206.
- Cracked or non-cracked concrete.

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions:
  => steel plates and anchors acc. Annex A3, Table 3, Lines 1-9
- Structures subject to external atmospheric exposure or damp internal conditions if no particular aggressive conditions such as permanent or alternate immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulfurization plants or road tunnels, where de-icing materials are used) exist.
  => steel plates and anchors acc. Annex A3, Table 3, Line 6

Design:

- Steel plate with cast-in anchors is designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchors is indicated on the design drawings (e.g. position of the anchor relative to the reinforcement or to supports).
- For static and quasi-static loading the steel plate with cast-in anchors are designed in accordance with CEN/TS 1992-4-1 and CEN/TS 1992-4-2.
- It is generally assumed that the concrete is cracked and that the occurring splitting forces are resisted by the reinforcement. The required cross section of the minimum reinforcement is determined according to CEN/TS 1992-4-2 section 6.2.6.2 b).

Installation:

Placing steel plates into concrete

- The installation of anchors is carried out by appropriately qualified personnel under the supervision of the person responsible for the technical matters on site.
- Use of the product only as supplied by the manufacturer.
- Installation in accordance with the manufacturer's specifications given in Annexes B4 and B5.
- The anchorages are fixed on the formwork, reinforcement or auxiliary construction such that no movement of the product will occur during the time of laying the reinforcement and of placing and compacting the concrete.
- The concrete under the head of the anchors is properly compacted.
- For large fixtures (steel plate > 400 mm x 400 mm) vent openings are provided, specified in the design drawings.

WELDA®	Annex B1
Intended use Specifications	

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Table 4: Installation parameters

WELDA® Anchor Type		**W1 – W5**								**W6**		
Nominal size d [mm]		**10**	**12**	**13**	**16**	**19**	**20**	**22**	**25**	**16**	**20**	**25**
Anchorage depth	min h_{ef} mm]	50	50	50	50	75	75	75	75	50	75	75
Minimum spacing	s_{min} [mm]	50	50	50	50	70	70	70	70	50	70	70
Minimum edge distance	c_{min} [mm]	50	50	50	50	70	70	70	70	50	70	70
Minimum thickness of concrete member	h_{min} [mm]	$h_{ef} + t_h + c_{nom}$[1)]										

[1)] c_{nom} = required concrete cover according to national regulations

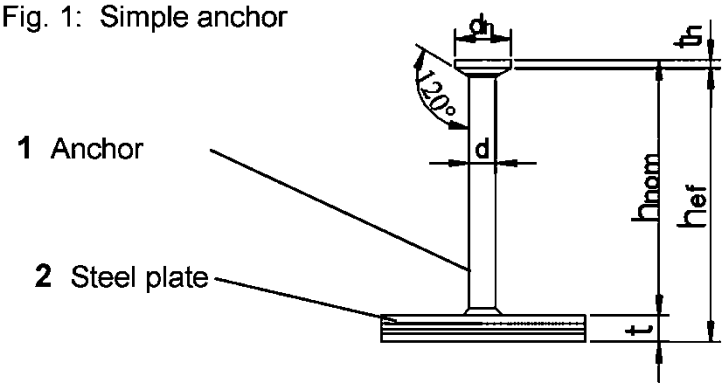
WELDA®

Intended use
Installation parameters

Annex B2

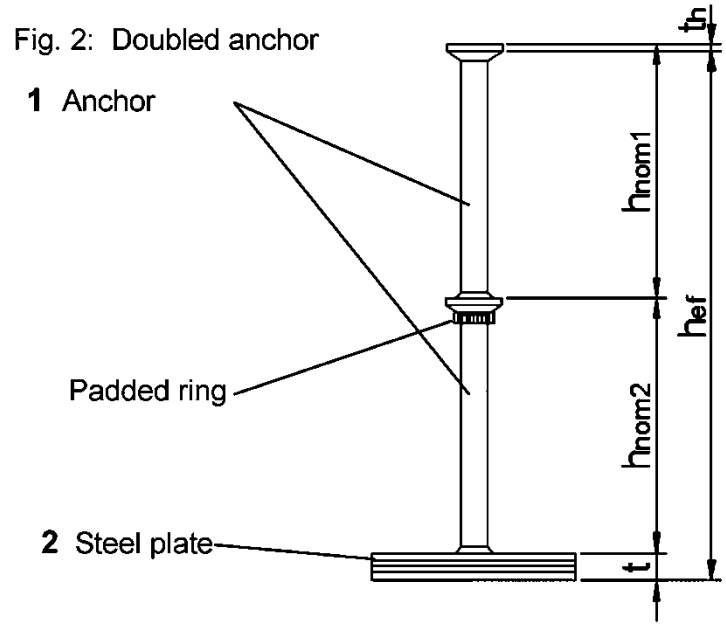
Deutsches Institut für Bautechnik DIBt

Fig. 1: Simple anchor



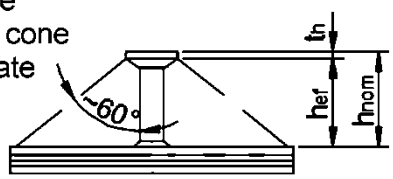
$$h_{ef} = h_{nom} - t_h + t \quad (1)$$

Fig. 2: Doubled anchor



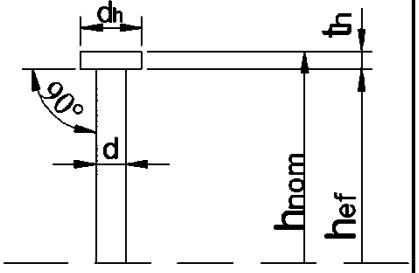
$$h_{ef} = h_{nom1} + h_{nom2} - t_h + t \quad (2)$$

Fig. 3: Short anchor, if the theoretic concrete cone meets the steel plate at angle of ~ 60° or $t \geq 0{,}2\ h_{nom}$



$$h_{ef} = h_{nom} - t_h \quad (3)$$

Alternative head form:



d = diameter of shaft
d_h = diameter of head
h_{ef} = effective embedment depth
h_{nom} = nominal length of the anchor (after welding)
t_h = thickness of the head
t = thickness of the steel plate

WELDA®

Intended use
Effective embedment depth

Annex B3

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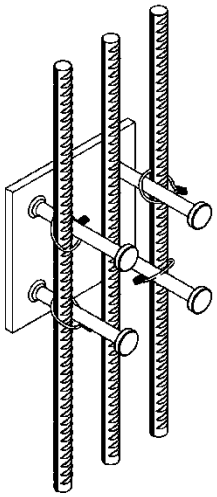
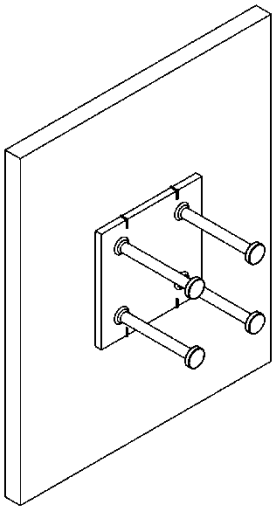
Installation instruction

1a Fixing WELDA® to reinforcement



- Fix WELDA® to reinforcement or to mounting bars by using wire bindings
- Pay attention strong fixing to avoid moving during pouring

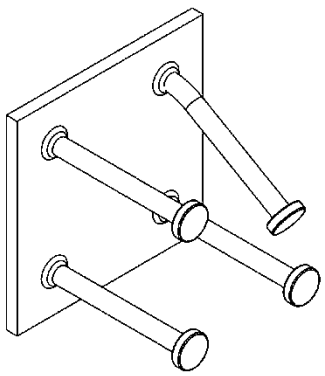
1b Fixing WELDA® to formwork



- Fix WELDA® directly to formwork by nails, screws, wire or magnets
- Control close contact between plate and formwork
- Pay attention strong fixing to avoid moving during pouring

WELDA®	Annex B4
Intended use Installation instruction	

2 Check WELDA® after installation



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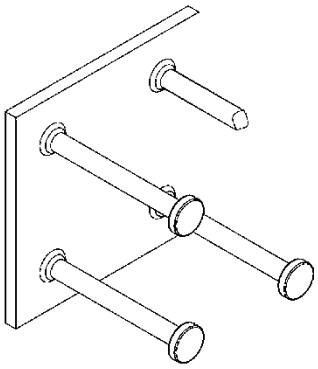

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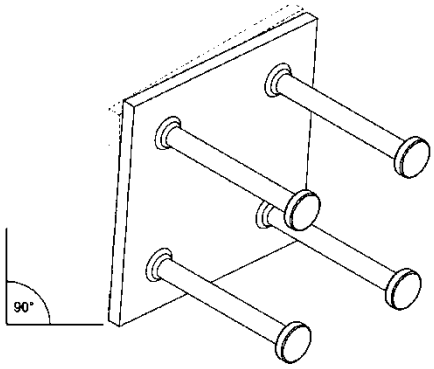
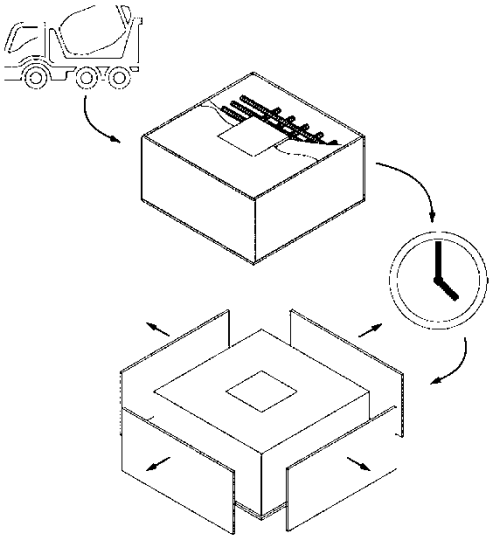


Not allowed

3 Pouring, compacting and curing concrete, remove formwork



- Compact concrete properly around and under the steel plate and anchors
- Avoid contact between the steel plate with anchor and the vibrator to avoid moving of the steel plate during compacting

WELDA®	Annex B5
Intended use Installation instruction	

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Table 5: Characteristic resistances under tension load

WELDA® Anchor Type		**W1 – W5**								**W6**		
Nominal size	**d [mm]**	**10**	**12**	**13**	**16**	**19**	**20**	**22**	**25**	**16**	**20**	**25**
Steel failure												
Characteristic resistance	$N_{Rk,s}$ [kN]	**35**	**51**	**60**	**90**	**128**	**141**	**171**	**221**	**111**	**173**	**270**
Partial safety factor	γ_{Ms} [1)]	1,54								1,4		
Pull-out failure (C20/25)												
diameter of anchor head	d_h [mm]	19	24	25	32	32	40	35	40	38	46	55
Characteristic resistance in uncracked concrete[4)]	$N_{Rk,p}$ [kN]	**43**	**71**	**75**	**127**	**109**	**198**	**122**	**161**	**196**	**283**	**396**
Characteristic resistance in cracked concrete	$N_{Rk,p}$ [kN]	**31**	**51**	**54**	**90**	**78**	**141**	**87**	**115**	**140**	**202**	**283**
Increasing factors Ψ for the characteristic pull-out Resistance[4)]	C25/30	1,20 (1,25)										
	C30/37	1,48 (1,50)										
	C35/45	1,80 (1,75)										
	C40/50	2,00 (2,00)										
	C45/55	2,20 (2,25)										
	≥ C50/60	2,40 (2,50)										
Partial safety factor	γ_{Mp} [1)]	1,5										
Concrete cone failure / splitting due to loading												
Effective embedment depth	h_{ef} [mm]	$h_{nom} - t_h + t$ [3)]										
Characteristic spacing	$s_{cr,N} = s_{cr,sp}$ [mm] [2)]	$3\ h_{ef}$										
Characteristic edge distance	$c_{cr,N} = c_{cr,sp}$ [mm] [2)]	$1{,}5\ h_{ef}$										
factor for cracked concrete[4)]	k_{cr} [-]	8,5 (8,9)										
factor for non-cracked concrete[4)]	k_{ucr} [-]	11,9 (12,7)										
Partial safety factor	γ_{Mc} [1)]	1,5										
Blow-out failure												
Partial safety factor	γ_{Mcb} [1)]	1,5										

1) In absence of other national regulations
2) Reinforcement resists the splitting forces and limits the crack width to $w_w \leq 0.3$ mm
3) For simple anchors (For doubled anchors resp. short anchors see Fig. 2 resp. Fig. 3, Annex B3)
4) Values in brackets for calculation acc. to EN 1992-4.

Table 6: Displacement under tensile load

WELDA® Anchor Type		**W1 – W5**								**W6**		
Nominal size	d [mm]	10	12	13	16	19	20	22	25	16	20	25
Displacement[1)] $\delta_{N0} = 0{,}9$ *mm under following loads in [kN]*	$N_{0,9mm}$ [kN]	13	19	20	33	50	52	65	85	52	82	128
[1)] *The indicated displacements are valid for short term loading; the displacements may increase under long term loading to* $\delta_{N\infty} = 1.8$ *mm*												

WELDA®

Performance data
Characteristic resistances and displacements under tension load

Annex C1

Table 7: Characteristic resistances under shear load

WELDA® Anchor Type		**W1 – W5**								**W6**		
Nominal size	**d [mm]**	**10**	**12**	**13**	**16**	**19**	**20**	**22**	**25**	**16**	**20**	**25**
Steel failure												
Characteristic resistance[4]	$V_{Rk,s}$ [kN]	**21**	**31**	**36**	**54**	**77**	**85**	**103**	**133**	**66**	**104**	**162**
Partial safety factor	γ_{Ms} [1]	1,29								1,5		
Concrete pry-out failure												
Factor according to CEN/TS 1992-4-2, section 6.3.4 without supplementary reinforcement	k_3 [2]	2,0[5]										
Partial safety factor	γ_{Mcp} [1]	1,5										
Concrete edge failure												
Effective length of anchor	$l_f = h_{ef}$ [mm]	$h_{nom} - t_h + t$ [3]										
Effective outside diameter	$d_{nom} = d$ [mm]	10	12	13	16	19	20	22	25	16	20	25
Partial safety factor	γ_{Mc} [1]	1,5										

1) In absence of other national regulations
2) In case of supplementary reinforcement, the factor k_3 for CEN/TS 1992-4-2 respectively k_8 for EN 1992-4 should be multiplied with 0.75
3) For simple anchors (For doubled anchors resp. short anchors see Fig. 2 resp. Fig. 3, Annex B3)
4) Factor k_7 for calculation acc. to EN 1992-4, section 7.2.2.3.1 is $k_7 = 1,0$ and V_{Rks} may be used as V^0_{Rks}
5) Value may be used as k_8 for calculation acc. to EN 1992-4, section 7.2.2.4

Table 8: Displacements under shear load

WELDA® Anchor Type		**W1 – W5**								**W6**		
Nominal size	d [mm]	10	12	13	16	19	20	22	25	16	20	25
Displacement[1] δ_{V0} = 1,5 mm *under following loads in [kN]*	$V_{1,5mm}$ [kN]	11	16	20	29	40	45	54	70	30	45	72
[1] The indicated displacements are valid for short term loading; the displacements can be increased under long term loading to $\delta_{V\infty}$ = 2.0 mm.												

Combined tension and shear load

The factor according to CEN/TS 1992-4-2 section 6.4.1.3: $k_7 = 2/3$[6]

6) Value may be used as k_{11} for calculation acc. to EN 1992-4, section 7.2.3.2

WELDA®

Performance data
Characteristic resistance and displacements under shear load, combined tension and shear load

Annex C2